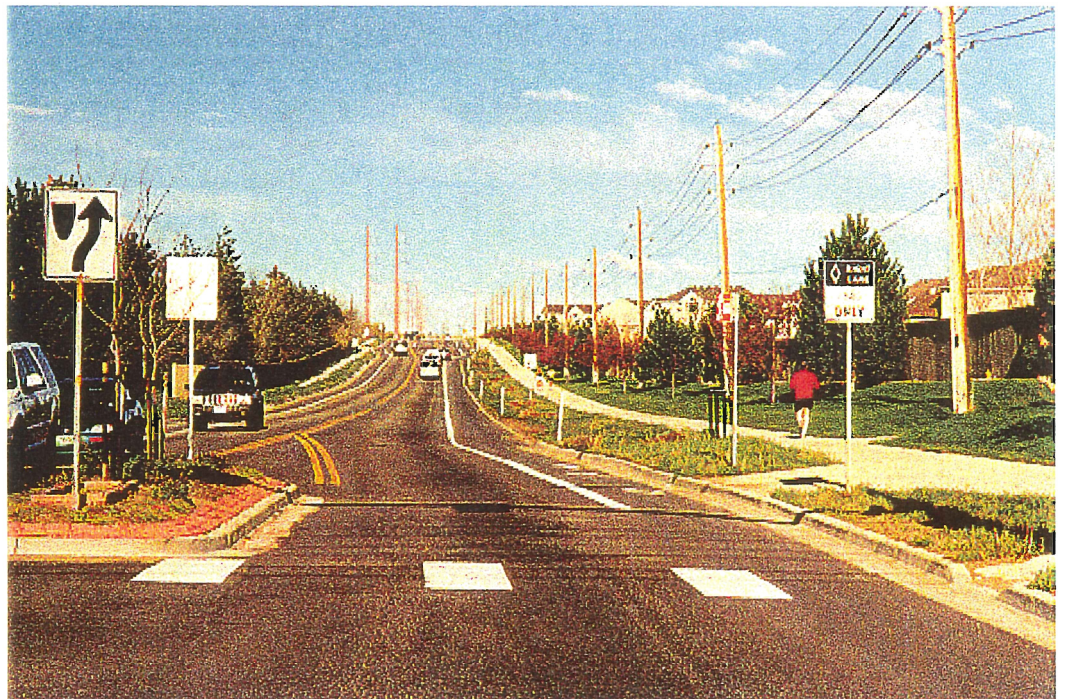




*final draft
May 1999*

Non-Motorized Transportation Plan



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Non- Motorized Transportation Plan

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"As the non-motorized coordinator for the City of Kalamazoo and administrator of the project, it has been a pleasure to have the opportunity to work with the various community and agency volunteers on this project. The response from not only citizens of the City of Kalamazoo, but of the surrounding jurisdictions is overwhelming.

It has been a great pleasure and help to have this support. I would like to personally thank everyone who gave up their valuable time to truly make this plan a plan of the Kalamazoo Area!!!"

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A Non-Motorized Transportation Plan for The City of Kalamazoo

The document you are holding in your hands represents the result of 18 months of planning and community input regarding strategies on how to improve Kalamazoo for bicycling and walking. If one thing was learned through this process, it is that a non-motorized plan means different things to different people.

- ▶ **Trailway promoters** have stressed the need for this plan to incorporate off-road walking, biking and hiking facilities that provide recreation, habitat protection, and tourism/economic benefits to the community.
- ▶ **Cyclists** who use their bikes to travel to and from work or to complete around town errands want this plan to focus on the maintenance of, and improvements to, the City's street system to make their daily commutes safer, convenient and pleasant.
- ▶ **Pedestrians** have said that this plan should address the need for continuous, well maintained walkways, safer conditions for crossing streets, and the continued creation of welcoming and attractive environments that encourage walking.
- ▶ **Proponents of smart growth** want this plan to support efforts to limit sprawl, reduce trip distances, and limit the number of four- and five-lane roads bisecting the community.
- ▶ **Proponents of a more balanced transportation system** would like to see greater priority given to non-motorized and transit modes, and hope that this plan will generate much needed support and funding for bicycling, walking and public transit improvements.

- ▶ **Kalamazoo youth** have told us that this plan simply needs to make roads safer for kids. Besides fixing streets and sidewalks, they'd like to see more trees and less traffic.
- ▶ **Western Michigan University and Kalamazoo College** view this plan as a means to enhance their gateways, improve connections with downtown, and reduce the demand for on-campus parking by providing alternatives to driving to school.
- ▶ **The Michigan Department of Transportation** desires for this plan to contain implementation details that can serve as a model for non-motorized transportation planning in other communities statewide.
- ▶ **Supporters of the City of Kalamazoo Comprehensive Plan** and its downtown revitalization efforts are looking to this plan as a means to realize some of their goals, as both plans have similar visions for creating a vibrant, accessible community.
- ▶ And **many involved** would like to see this plan raise community awareness so that area motorists drive slower and pay more respect to persons who are on foot or on bike.

Even people who don't necessarily think of themselves as pedestrians or bicyclists can support this plan as a means to improve the quality of life in Kalamazoo. All residents enjoy the benefits of public rights-of-way that are greener, less congested, less noisy, and designed as places for people as well as motor vehicles.

Plan Organization

All of these diverse needs result in a complex and lengthy plan that comprehensively addresses non-motorized transportation in Kalamazoo. The plan is organized so that one can quickly get an overview of its intent, yet it is packed full of details to assist those who will be responsible for its implementation. The following table can help you find the area of greatest interest to you.

If you are....	Look in....
<ul style="list-style-type: none"> ▶ wanting to know why this effort is important 	<p>Section I: Why Plan for Bicycles and Pedestrians?</p> <ul style="list-style-type: none"> ▶ Discusses the benefits of biking and walking. ▶ Summarizes local and national statistics and research.
<ul style="list-style-type: none"> ▶ interested in the process used to arrive at the plan's recommendations 	<p>Section II: Project History</p> <ul style="list-style-type: none"> ▶ A time line of events and summation of the public input received at various meetings and work sessions.
<ul style="list-style-type: none"> ▶ wanting an update of current conditions 	<p>Section III: Kalamazoo Today</p> <ul style="list-style-type: none"> ▶ A status report on existing bicycle and pedestrian facilities in Kalamazoo, and public perceptions toward non-motorized activities.

<ul style="list-style-type: none"> ▶ wanting to know what is being planned to improve non-motorized travel in Kalamazoo 	<p>Section IV: The Vision for the Future</p> <ul style="list-style-type: none"> ▶ Contains the plan’s vision, goals and objectives. ▶ Presents photos and definitions of facility types, maps, and a detailed listing of proposed bicycle improvements. ▶ Prioritizes projects. ▶ Summarizes pedestrian needs identified through the planning process. ▶ Identifies specific sidewalk infill projects.
<ul style="list-style-type: none"> ▶ in need of specific details to assist with the planning, engineering or maintenance of non-motorized facilities ▶ from a jurisdiction other than Kalamazoo and interested in design treatments available for use in your community 	<p>Section V: How To Get There</p> <ul style="list-style-type: none"> ▶ Contains three “toolkits” that address: <ul style="list-style-type: none"> ▶ the design and maintenance of bicycle facilities ▶ the design and maintenance pedestrian facilities ▶ traffic calming, street design and other tools to improve non-motorized travel.
<ul style="list-style-type: none"> ▶ a policy maker who wants to provide direction for creating a more bicycle-friendly and walkable community ▶ a citizen who is interested in becoming involved 	<p>Section VI: Action Plan</p> <ul style="list-style-type: none"> ▶ Presents a series of “action” strategies to implement plan recommendations and to institutionalize bicycling and walking within the transportation planning process.
<ul style="list-style-type: none"> ▶ really into the details of the non-motorized plan ▶ looking for supporting information 	<p>Section VII: Appendices</p> <ul style="list-style-type: none"> ▶ Includes copies of various memos developed throughout the planning process. ▶ Presents the technical data used in developing the proposed bicycle system. ▶ Includes sample materials and summaries of the pedestrian audit and the hazard reporting program used for plan development. ▶ Contains various examples from other communities of ordinances to improve non-motorized conditions ▶ Contains a detailed listing of potential funding sources. ▶ Lists contacts for obtaining resources for non-motorized safety and education.



**Non-
Motorized
Transportation
Plan**

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THE CITY OF



Section I: Why Plan For Bicycles and Pedestrians?

The Need for Planning

This report is about enhancing bicycling and walking as travel options for the residents of Kalamazoo. In this community, like many nationwide, developments of the past few decades have created cities that are increasingly auto-dominated. The construction and routine maintenance of sidewalks used to be the norm. Streets used to carry fewer cars at slower speeds, so planning special facilities for bicycle travel was not necessary. However, today's transportation and land use planning practices routinely call for traffic analysis studies, and the subsequent construction of infrastructure improvements to benefit the movement of a maximum number of cars at relatively high speeds. The consequences for the American landscape are communities where it becomes increasingly difficult and uncomfortable to walk across the street or ride a bike to close-to-home destinations.

In 1991, the passage of landmark federal legislation called the Intermodal Surface Transportation Efficiency Act (ISTEA) provided broad eligibility to use State and Federal transportation funds for bicycling and walking projects. This encouraged many local communities, Kalamazoo included, to develop local plans for where such funds are most needed and how the community proposes to undertake supplemental efforts to promote non-motorized travel.

The U.S. Department of Transportation set the following goals as part of its 1994 National Bicycling and Walking Study:¹

- ◆ *To double the current (1994) percentage (from 7.9% to 15.8%) of total trips made by bicycling and walking; and*
- ◆ *To simultaneously reduce by ten percent the number of bicyclists and pedestrians killed or injured in traffic crashes.*

Considering that the average person makes 20 trips per week, meeting this goal means that an average of three travel trips per week would be made by bike or on foot rather than by automobile.²

Since bicycling and walking are inherently local forms of transportation, best suited to the shorter travel distances of local trips, it is critical for local transportation systems to accommodate non-motorized users. The *National Bicycling and Walking Study* recognized this need and outlined a series of action plans and programs recommended to be implemented at the local level to help realize the national goals. The *Non-Motorized Transportation Plan* for the City of Kalamazoo thus follows the federal guidance in an effort to make Kalamazoo a more bicycle- and pedestrian-friendly community.

Part A: Who Benefits?

It is important to recognize that this plan is not a special interest plan for recreational walkers, joggers and cyclists. While these users stand to benefit from improvements to the environments where they recreate, the focus of this plan is to improve public rights-of-way so that Kalamazoo's transportation system becomes more multi-modal in nature. The benefits of such³ will be realized by individual citizens and the community as a whole:

Benefits to Individuals

- ◆ Reducing dependence on the automobile is economical. Individuals may realize cost savings in terms of car ownership, insurance and/or reduced fuel requirements.
- ◆ Providing facilities for bicycling and walking increases mobility for elderly and youth, thereby decreasing the amount of time others spend transporting these age groups.
- ◆ Tree planting and other aesthetic improvements are pleasing to motorists and residents, as well as bicyclists and pedestrians.
- ◆ Bicycling and walking for transportation allow two activities to be accomplished at once — travel and exercise.
- ◆ Low to moderate levels of exercise, such as regular bicycling or walking, can reduce the risk of heart disease, stroke, obesity, diabetes, hypertension, osteoporosis, depression and other chronic diseases.
- ◆ Regular physical activity increases life expectancy and contributes to greater functional independence later in life.
- ◆ Recreating outdoors improves mental outlook, improves self image, creates greater self-reliance, improves social relationships, and enhances sense of independence and freedom.

Benefits to Society

- ◆ As non-polluting modes of travel, bicycling and walking offer tremendous potential to ease the pressure that transportation places on the environment
- ◆ Urban congestion can be reduced as bicycling and walking require less space per traveler than automobiles, both in terms of roadway space and parking requirements.
- ◆ The number of short motor vehicle trips, which are the least fuel-efficient and generate the most pollution per mile traveled, can be reduced.
- ◆ Urban levels of ozone and carbon monoxide can be reduced to meet air quality standards required under the 1990 Clean Air Act Amendments.
- ◆ The negative environmental impacts from drilling, refining, transporting, storing and disposing of petroleum products can be reduced.
- ◆ The cost of building transportation facilities for bicyclists and pedestrians is far less expensive than those for motor vehicles.

- ◆ Biking and walking provide additional travel options to those who are unable or chose not to drive for some or all trips.
- ◆ Providing increased opportunities for individuals to get low to moderate levels of exercise helps reduce national health care costs.
- ◆ Employers who encourage bicycling and walking to work can contribute to an upgraded corporate image, can realize improved employee health status, greater worker satisfaction, increased productivity, and decreased employee absenteeism, employee turnover and injury rates. Financial benefits may also be realized through lower automobile parking facility costs.
- ◆ On-road bicycling improvements, such as paved shoulders, have been shown to reduce the frequency of certain types of motor vehicle crashes.
- ◆ Widening improvements can also result in a decrease in the rate of normal roadway edge degradation, thus increasing road longevity and saving money in maintenance costs.
- ◆ Measures to reduce vehicle speeds and encourage greater pedestrian activity in residential or downtown shopping and business areas also impact positively on motor vehicle safety.
- ◆ Depending on location and design, off-road trails can significantly increase the percentage of bicycling and walking trips, improve safety, increase access, and promote intermodal travel.
- ◆ Linear parks or greenways, where non-motorized trails are often located, offer park visitors more opportunities for different and varying experiences than possible in traditional compact parks, and provide opportunity for public access to waterways and urban habitat.
- ◆ Environmental benefits of greenways include wildlife preservation, water quality protection, storm water management, and preservation of vegetation.
- ◆ Off-road trails can also produce income from tourism, shared utility leases, and increased value of neighboring real estate.
- ◆ Bicycling and walking, and the facilities to accommodate these modes, can promote community cohesion and help foster a heightened sense of neighborhood.
- ◆ A general enhancement of the “livability” of our cities parallels a truly intermodal system in which bicycling and walking are valuable components.

Part B: Modal Split

A Disparity in Transportation Planning

Nationally, if one compares transportation modes in terms of levels of use, crash statistics and funding allocations, a huge disparity exists.

Non-motorized modes represent approximately:

- ◆ 6.5% of all trips (1% bicycling; 5.5% walking)⁴
- ◆ 16% of all traffic fatalities⁵
- ◆ 1% of transportation spending.⁶

(Similar statistics are not fully available for Kalamazoo, but the numbers are estimated to be comparable.)

Over the past few decades, transportation planning in Kalamazoo and other communities nationwide has increasingly placed emphasis on accommodating motor vehicles. With the passage of ISTEA and its recent reauthorization as TEA-21, many communities are now re-examining the effectiveness of their infrastructure and programs to create more balanced transportation systems to better meet the needs of their residents.

Part C: Levels of Use

Potential for Non-Motorized Travel in Kalamazoo

It is important for the design of the *Non-Motorized Plan* network to understand who will be walking and cycling in Kalamazoo and how the non-motorized network will be utilized. There are several national studies that help to explain factors that encourage or deter non-motorized travel and identify demographic features of a community that lead to relatively high demand for walking and cycling. Furthermore, data from the *1990 Census* and the *1995 Nationwide Personal Transportation Survey (NPTS)*, offers insight into patterns of non-motorized travel.

What factors encourage and deter non-motorized travel?

*The National Bicycling and Walking Study*⁷ states that there are three primary factors that correlate with high levels of bicycle commuting:

- ◆ Relatively high percentage of population (~35%) with work commutes < 5 miles
- ◆ Relatively high ratio of bike lanes to arterials
- ◆ Presence of a university

In addition, the most commonly identified deterrents to bicycling in national studies are:

- ◆ Concern about traffic safety
- ◆ Adverse weather
- ◆ Poor roadway conditions
- ◆ Trip distances

Walking trips are correlated with similar factors. Additionally, studies have shown that higher levels of walking trips are made by those who do not have regular access to an automobile. As a group, non-drivers include school-age children and the elderly, and also include college age students and those who cannot afford to or chose not to own a car. For trips made by bicycle and walking, the 1995 NPTS summarizes trip purposes as follows:⁸

Bicycling and Walking Trips by Purpose (NPTS, 1995)

Trip Purpose	Bicycling	Walking
Work	9%	9%
School/Church	9%	15%
Shopping/ Personal	22%	42%
Social/ Recreational	60%	34%

Shopping, school and personal trips dominate within trip purposes for walking trips, whereas, most bicycle trips are for social and recreational purposes.

Who will use the bicycle and pedestrian network?

While improvements to the non-motorized network will benefit Kalamazoo as a whole, those in the university community and those without access to an automobile, particularly children and the elderly, tend to make more walking and cycling trips. And, in fact, many in Kalamazoo fall into these demographic

categories. The total number of students enrolled in universities within Kalamazoo County is between 25,000 - 30,000 (primarily due to WMU). Also, the 1990 Census Data show that over 23 percent of the Kalamazoo County population is under 16 years old, 14.5 percent over 60 years old, and approximately 35 percent college age or younger.⁹ Therefore, approximately half of Kalamazoo County falls in the demographic categories that tend to make more bicycle and walking trips. The 1995 NPTS data show the varying percentage of non-motorized trips for the age groups mentioned above. Clearly, younger individuals are more likely to bicycle and walk, but some increase in walking takes place as people reach 60 years and older.

Bicycling and Walking Trips by Age Group (NPTS, 1995)

Age Group	Percent Walking Trips	Percent Bicycling Trips
16 & under	10%	3.5%
24 & under	8%	2.2%
25-59	4%	<1%
60 & over	5%	<1%

What other factors influence walking and cycling?

Other factors in Kalamazoo might tend to favor non-motorized travel, including the presence of an active public transit system, prevailing short-block grid patterns within older, sidewalk oriented residential and commercial areas, and a relatively short commute to work distance in Kalamazoo. Any trip on public transit is usually linked with a walking trip, so that improvements in pedestrian networks would improve access to the bus system in Kalamazoo. Improvements in continuity and maintenance of sidewalks within the older grid pattern would increase accessibility into and around the center of the city, and would tend to increase the number of walking trips in the area.

The average commute to work distance in Kalamazoo County in 1995, according to models used by KATS (the Kalamazoo Area Transportation Study), was 6.4 miles. It is a safe assumption that a considerable number of work trips are far shorter than the average distance of 6.4 miles, and it is these trips in particular that could produce more cycling and walking trips when coupled with physical improvements in the non-motorized network. The 1990 Census estimates that five percent of work trips in Kalamazoo County are taken by means of bicycling and walking. Improvements recommended by the *Kalamazoo Non-Motorized Transportation Plan* would augment the already existing conditions in Kalamazoo that are conducive to non-motorized travel and increase those conditions that encourage bicycling and walking.

Part D: Kalamazoo Crash Analysis

An Understanding of Safety Needs

Recent injuries and fatalities involving non-motorized users within Kalamazoo prompted an analysis of bicycle and pedestrian crashes to gain an understanding of how crashes occur and how to avoid them.

We use the term “crash” instead of “accident” because accidents are random occurrences of chance with the connotation that nothing can be done to prevent them. Research has shown that these events are not

random — they fall into patterns of reoccurring crash types which happen because people make mistakes. (See Memo #1 in Appendix B for a report on the common types of crashes involving non-motorized users.)

For this planning study, local traffic crash reports involving pedestrians and bicyclists for the period from January 1993 through July 1997 were analyzed.¹⁰ It is important to note that these police reports are likely to under-represent the true impact that non-motorized crashes are having on the local community, as discussed in Appendix B.

In the five-year period analyzed, there were almost twice as many bicycle-motor vehicle crashes (177) reported as pedestrian-motor vehicle crashes (90). Nine percent of the crashes resulted in serious, incapacitating injuries; and two deaths occurred — both pedestrians and both involved in a “Dart-Out” crash type, crossing in a non-intersection location.

How are pedestrians most at risk?

According to national research,¹¹ the six most common types of crashes involving pedestrians include:

- ◆ a pedestrian “darts out” mid-block in front of oncoming traffic
- ◆ a pedestrian dashes across an intersection
- ◆ a pedestrian is walking/standing in the roadway
- ◆ a vehicle is backing up and strikes a pedestrian
- ◆ a driver is turning and merging and does not see the pedestrian
- ◆ a vehicle strikes a pedestrian in a location other than in the roadway.

It is interesting to note, that during the time period analyzed, Kalamazoo had a much higher percentage of intersection dash, walking/standing in roadway, and backing vehicle crashes than reflected in national averages.

How are bicyclists most at risk?

The three most common types of crashes involving adult bicyclists nationally are:¹²

- ◆ a motorist turns unexpectedly and hits cyclist
- ◆ a motorist fails to yield at intersections/driveways and hits cyclist
- ◆ a motorist overtakes cyclist

While crashes involving adult cyclists are often the fault of a motorist, it is the behavior of a child bicyclist that frequently causes a collision. This is reflected in the most common crash types involving children:

- ◆ a cyclist rides out and fails to yield at a controlled intersection
- ◆ a cyclist unexpectedly turns or swerves into motorist path of travel
- ◆ a cyclist rides out into the street at mid-block and fails to yield.

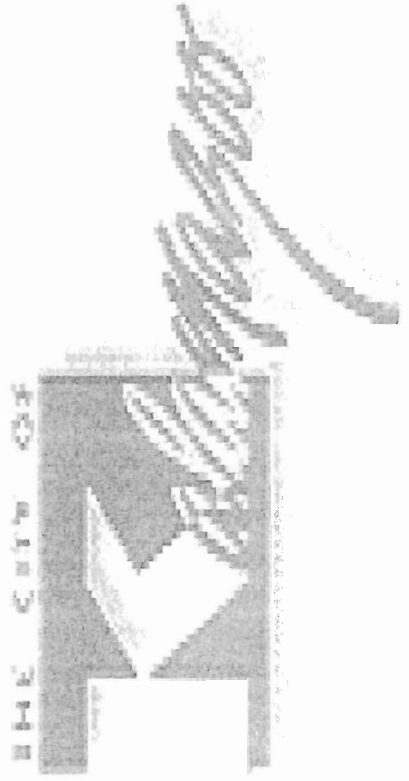
For all crash types, additional contributing bicyclist actions include inconspicuity, wrong-way riding and sidewalk or sidepath riding — all of which result in the bicyclist being less likely to be detected by the motorist.

Where do most crashes occur?

When plotted on a map, the pedestrian crashes in Kalamazoo were generally located randomly throughout the community, but the bicycle crashes tended to be clustered at intersections involving one or more arterial streets.

Section Endnotes

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10. Local crash database printouts furnished by John Start, City of Kalamazoo Public Services Department, September 1997. Source of data: "State of Michigan Traffic Crash Reports."
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Section II

Project History

The Planning Process

The assembly of ideas, strategies and recommendations into a plan for making Kalamazoo a more bicycle and pedestrian-friendly city represents the culmination of a 18-month formal planning process, with additional planning happening several years prior. In total, it is estimated that approximately 250 people have been directly involved in creating this report and supporting its recommendations.

March 1996

The Need for a Plan

In the late 1980s, Michigan Department of Transportation (MDOT) had identified and budgeted funds for a bike trail along Stadium Drive. A lack of support for and progress on this project raised the question of whether there was a more appropriate use for the money. Following a March 7, 1997 meeting with MDOT officials in Lansing and the District representative, it was decided that MDOT would support development of a long-range plan to comprehensively examine the City's bicycling and walking infrastructure and identify needed improvements.

Fall 1996

The Opportunity

MDOT and The City were awarded an enhancement grant through the ISTEA program for \$120,000 to develop a city-wide plan for improving bicycle and pedestrian transportation. The grant was made possible through a \$20,000 match from MDOT, with a supplemental budget from the City's General Fund to cover administrative costs.

Dec. 12, 1996

Project Visioning Meeting

The City of Kalamazoo hired The Forum for Kalamazoo County to facilitate a workshop to gather additional citizen input into the desired focus and content of a non-motorized plan. Approximately 50 people participated by offering their ideas on what types of things would make Kalamazoo a non-motorized transportation

friendly community, and what they felt was important to the public input process. The results of this meeting helped to guide the development of a desired scope of work for the project.

Jan. 9, 1997

Requests for Qualifications

The City solicited RFQs from consulting firms who were interested and experienced in completing work on this project.

May 14, 1997

Requests for Proposals

From the short-list of prequalified firms, the City requested and reviewed consultant team proposals specifying various work approaches for facilitating citizen involvement and recommending bicycle and pedestrian improvements.

June 16, 1997

Consultant Selection

A multi-disciplinary consultant team comprised of the firms of Bicycles & Co., Inc., Bolingbrook, IL; Suzan Anderson Pinsof, Evanston, IL; O'Boyle, Cowell, Blalock and Associates, Kalamazoo; The Greenway Collaborative, Ann Arbor; and The Forum for Kalamazoo County was selected to simultaneously develop the *City of Kalamazoo Non-Motorized Transportation Plan* and the *Kalamazoo River Valley Trailway Master Plan*.

July 15, 1997

Project Scoping Meeting

The consultant team met with members of the Selection/Plan Advisory Committee and MDOT to review the proposed project work agenda, begin the data collection process, and refine the outline of public involvement in developing the plan.

Sept. 29, 1997

Contract Awarded

MDOT review process completed.
City Commission approves contract for services and gives notice to proceed.

Nov. 13, 1997

Plan Advisory Committee Meeting

As work on the project officially got underway, the membership of the Plan Advisory Committee was expanded beyond the selection committee to include representatives from surrounding jurisdictions as well as citizen interests. A balance of members bringing both bicycling and walking viewpoints was sought to form a 21-person group that would be charged with providing oversight to the consultant team throughout the various steps in the planning process, and guiding decisions regarding scope of the work tasks and outcomes of the project.

Nov. 14, 1997

Kid's Planning Charrette

As the public kick-off event for the *Non-Motorized Transportation Plan*, seventy Milwood Elementary students in Grades 5th and 6th participated in a half-day event to provide the project consultants and City staff with their opinions of bicycling and walking conditions. These young planners examined how they used various forms of transportation to get to different destinations within the community, conducted walking audits of the neighborhood around their school, discussed their findings, and developed a "Kid's Report Card" for grading streets on how well they accommodate bicyclists and pedestrians.

Dec./Jan.

Task Forces Formed

Since it was recognized that bicyclists and pedestrians have very different needs, two Task Forces were created to directly guide development of each of these components of the Plan respectively. The Bicycle Task Force consisted of 14 area cyclists and 6 staff persons from affected agencies; the Pedestrian Task Force was a working group of 18 citizen and staff representatives. While general public input was solicited at various junctures throughout the planning process, the ongoing contributions of the Task Force members offered coherence to the planning effort and provided a fairly large group of people the opportunity to claim ownership to plan development.

Feb. 4, 1998

Plan Advisory Committee Meeting

The primary objective of this meeting was to develop a set of goals and objectives for the planning effort, the resulting infrastructure improvements, and benefits to the community. The Plan Advisory Committee also heard about the Kid's Planning Charrette and discussed the insights gained from that event.

Feb. 5, 1998

Pedestrian Task Force Meeting

At the first task force meeting of the Pedestrian Task Force, members discussed pedestrian issues in the Kalamazoo area including pedestrian accidents, as analyzed and mapped by the consultant. The strengths and weaknesses of the general pedestrian environment were identified. Participants, who came from a variety of neighborhoods, then chose three representative areas of the City for a future pedestrian audit and indicated the kinds of issues they would expect to find on the walking audits.

Bicycle Task Force Meeting

The first working meeting of the Bicycle Task Force provided opportunity for members to get to know one another, discuss the consultant's analysis of local bicycle/motor vehicle crashes, review findings of the Kid's Planning Charrette, and offer opinions of Kalamazoo's existing bicycle facilities and general on-road riding conditions. The group also discussed bicycling needs within the community such as adoption of a bicycle parking ordinance and the need for community-wide awareness of the benefits of non-motorized transportation. The meeting concluded with Task Force members mapping opportunities and constraints for bicycle travel within the existing transportation system.

Apr. 23, 1998

Downtown Drop-In Session

This workshop was held to 1) to discuss options for routing the Kalamazoo River Valley Trailway through the City of Kalamazoo; 2) to meet with key stakeholders, learn of their plans for various projects in the Downtown area, and discuss how bicycling and walking may be best integrated into these projects; and 3) to examine the feasibility of bicycle lane striping or bike route designation on various streets into and out of Downtown. The day-long series of meetings provided opportunity for in-depth discussions with 21 people on issues relating to roadway improvements, planning, economic development, community gateways and trailways.

Apr. 25, 1998

Effective Cycling Course

Eleven members of the Bicycle Task Force completed eight hours of classroom and on-bike instruction to become certified *Effective Cyclists*.™ This course was included as part of the planning process in an effort to educate non-cyclists and less experienced riders on behaving as operators of motor vehicles, and to create awareness with roadway planners and engineers as to how and where cyclists should ride so that facility improvements will reflect and encourage safe bicycling practices. Since several participants were already very experienced cyclists, these persons attended to determine if they may be interested in becoming *Effective Cycling* instructors to bring the EC classes to members of the broader community on an ongoing basis.

Apr. 26, 1998

Pedestrian Audits

Members of the Pedestrian Task Force spent an afternoon evaluating three neighborhoods which were thought to contain safety and access issues that would be typical of many areas in Kalamazoo. The three areas were: WMU / K. College/ Downtown Interface, the Milwood Neighborhood, and part of the Northside Neighborhood. Five walks were taken all together in the three areas, each by two or three task force members.

The audit results included the perception that crosswalk markings and pedestrian signals would facilitate crossing busy streets in many locations. Sidewalks were generally present in the areas of the audits, but were sometimes in poor condition or available on only one side of the street. Accommodations for the disabled were commonly found to be in poor condition or lacking altogether. The behavior of drivers and lack of good pedestrian access to transit and other destinations were additional deficiencies noted. Some positive perceptions included the presence of sidewalks and the many trees along residential and some commercial streets.

May 6, 1998

Plan Advisory Committee Meeting

The Advisory Committee met to discuss the consultants' work completed to date and to develop a strategy to prepare for the upcoming public meetings.

May 7, 1998

Pedestrian Task Force Meeting

The results of the pedestrian audit were the focus of the second meeting of the Pedestrian Task Force. Design concepts to address the identified issues were presented by the consultants and discussed. Illustrations and photographs were used to stimulate discussion about crossing streets; sidewalk installation policy, design and maintenance; curb cuts for ADA compliance; and bus and building access. Street and neighborhood design including amenities like trees, well kept street lawns, snow removal, lighting, business facades and pedestrian friendly parking design were also identified as important to the pedestrian environment.

Bicycle Task Force Meeting

This was a meeting to discuss three primary issues that affect how easy or difficult it is to choose bicycling over driving for short distance trips:

1) Presence of secure and convenient parking facilities at destinations; businesses need guidance on why, where and what types of bike parking racks are desired.

- 2) Motorists need to learn to share the road with cyclists and treat them with civility; strategies include getting more people on bikes more often and providing guidance on how to interact with bicyclists as part of driver's education programs.
- 3) Infrastructure modifications such as bike lanes and trailways are needed to improve conditions for bicycling and send the message that cyclists are legitimate users of the transportation system.

July 15, 1998

Neighborhood Workshop

Due to a number of site-specific issues that need to be resolved to link Kalamazoo College and Western Michigan University with the Vine neighborhood and Downtown, a special focus meeting was held to discuss options for facility improvements in this area of the City. The 25 people attending this neighborhood workshop focused on needs and potential design solutions to improve bicycling and walking within and crossing six corridors: West Michigan Avenue, Stadium Drive/railroad corridor, Academy/South/Lovell, Burdick/Rose Streets, Oakland Drive and Vine Street.

July 16, 1998

City-Wide Plan Review Workshop

City staff, consultants and the Task Forces sponsored a workshop where 60 plus people came out to review the working draft of a proposed bicycle facility system, discuss pedestrian needs and issues, identify missing or damaged segments of sidewalks, and provide input into suggested routes for bicycle travel throughout the City and connecting to adjacent jurisdictions. Participants voiced enthusiasm for the plan, and a need for City and KATS commitment to plan implementation.

Oct. 15, 1998

Plan Advisory Committee Meeting

This meeting entailed an update of activities on both the *City of Kalamazoo Non-Motorized Transportation Plan* and the *Kalamazoo River Valley Trailway Plan*. Results of the July public meetings were reviewed and discussed, the draft toolkits were presented, and a plan of action was laid out for production of the rest of the plan elements. Also key was a thorough review and refinement of the draft bicycle facility network as developed by the Bicycle Task Force and public workshop participants.

Oct. 16, 1998

Staff Review and Training

Thirty representatives of City departments, MDOT, KATS and several surrounding jurisdictions attended this half-day session to give the consultants input into the draft "toolkits" being developed to provide guidance when designing and maintaining bicycle, pedestrian, and traffic calming facilities. This work session also offered an opportunity to present the plan's goals and implementation approaches to several individuals who had not yet been actively involved in this planning process.

Aug 98 - Feb 99

Task Force Plan Review

As the consultant team completed individual chapters of the *Non-Motorized Plan*, sections were forwarded to the Task Forces and Plan Advisory Committee for their review and input.

Comments received ranged from improvements to sentence structure and clarity of intended the messages, to additional ideas for supplemental implementation strategies and modifications to the proposed system of facility improvements. Several of the Task Force members provided personal perspectives on various issues, which have been incorporated in the form of quotes throughout the report document.

March 15, 1999 **Final Meeting of the Task Forces**

Committee members met to discuss and refine the Action Plan element. Other final comments were solicited for incorporation into the plan before going to the public and Kalamazoo City Commission.

May 13, 1999 **Public Review**

The City of Kalamazoo held a public meeting to present the *Non-Motorized Transportation Plan* and receive questions and comments.

Summer 1999 **City Manager and
City Commission Review and Adoption**



Section III: Kalamazoo Today

Existing Conditions

Kalamazoo, Michigan is an older community with a good pre-World War II infrastructure base. The block grid system of this era is much more conducive to bicycling and walking activities than newer communities built around suburban development patterns. However, in certain areas of Kalamazoo, this older infrastructure is in need of repair — for both motorized and non-motorized travel. Narrow rights-of-way also mean that bicycling and walking activities must compete for space with other uses, including not only motorized travel, but also tree planting, streetscape amenities, and parking for delivery vehicles and personal automobiles.

The size of the city and layout of land uses are very favorable for bicycling and walking. With a concentrated geographic area approximately six miles wide and five miles long, most trips are within reasonable bicycling distance. Concentrated areas of activity such as neighborhood commercial centers are located in close proximity to residences, making many trips within easy walking distance.

The topography of the community can present challenges to non-motorized travel. Certain hills, such as Austin Street, are too intimidating for all but the strongest cyclists. But fortunately, there are often alternative routes available that offer milder grades. Other slopes are too steep to accommodate any infrastructure development, and create barriers to all modes of travel. The Kalamazoo River and Portage Creek are other natural barriers that bisect the community and thus require frequent bicycle and pedestrian crossings to make non-motorized travel convenient.

Winter in the Midwest presents certain challenges for bicycling and walking. In addition to colder weather, Kalamazoo receives considerable lake effect snow from Lake Michigan. This may deter some fair-weather cyclists and pedestrians, but several bike-friendly cities are in northern locations such as Montreal, Quebec, Canada; Toronto, Ontario, Canada; Denver, CO; Chicago, IL; Madison, WI; and Anchorage, AK. However, winter conditions result in higher maintenance needs for non-motorized facilities. Common complaints include the lack of snow removal from streets, sidewalks and trails; failure to sweep away sand applied in winter months; and, higher costs associated with designing and maintaining facilities to withstand freeze/thaw cycles.

Part A: The Overall Transportation System

Since the safety, convenience, and enjoyment of using non-motorized modes of travel depends directly upon the City's transportation infrastructure, it is important to look at the entire transportation system and how it both favorably and negatively impacts bicycle and pedestrian travel.

A.1 Streets and Roadways

Most bicycle travel will take place on area streets and roadways; most pedestrian travel also occurs within these right-of-ways. Thus an examination of roadway function and space allocation is a critical part of developing a non-motorized transportation plan.

A roadway's functional classification determines how that street should be designed to meet travel goals and be compatible with adjacent land uses. This also influences right-of-way width, how many cars will be accommodated in the roadway's design, and ultimately, average daily traffic (ADT).

These factors are critical considerations when planning a bicycle network (see Section IV and Appendix G), and can also play roles in determining the location of priority pedestrian facilities such as new sidewalks and enhanced roadway crossings (see p. 6-7). For these reasons, the consultant team developed a GIS database (see Appendix C) containing the current roadway classification system as outlined in the 1998 *City of Kalamazoo Comprehensive Plan*,¹ and peak hour traffic counts as furnished by KATS and adjusted for 1998 travel.² The results are mapped on the following pages.

Intersections — The design of most intersections in Kalamazoo makes them adequate for safe non-motorized crossing. However, several areas and street types present challenges. Certain streets such as Stadium Drive and West Michigan Avenue in the university/college area are very difficult to cross and present significant obstacles to pedestrian and bicycle travel. Part of the difficulty is due to angled streets which lengthen the distance of the cross walk and therefore increase the exposure of the pedestrian to traffic. There is also simply a lack of crosswalk locations.

Other difficulties include crossing busy, multi-lane, one-way streets such as Westnedge, and maneuvering through intersections that have been widened to accommodate additional turn lanes and faster motor vehicle traffic flows. Such designs create problems for bicyclists and pedestrians by increasing speeds, lengthening travel distances and reducing unexposed crossing times for non-motorized users.

The placement and timing of traffic lights is another key aspect of intersection design. Pedestrian signals are not provided in some locations where they are needed, and angled signals can be difficult for pedestrians to see. Other signals are not set to permit adequate crossing time, especially for slower youth bicyclists and elderly pedestrians. And few demand-actuated signals in Kalamazoo are set such that a bicycle can trip the light.

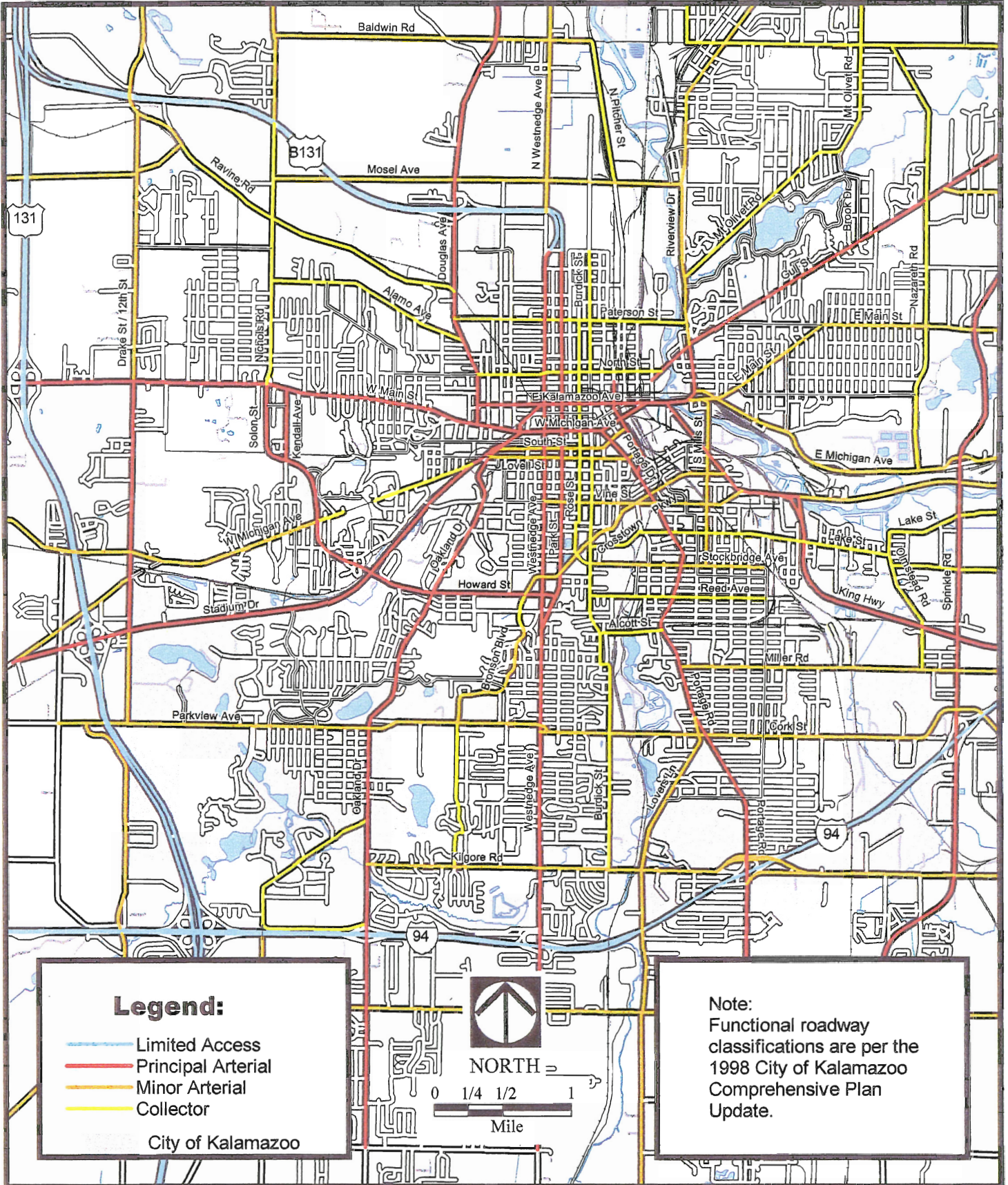
"I have lived in the Kalamazoo area for nearly 8 years. During that time there has been a very noticeable increase in the amount of automobile traffic. This community is heading towards a future with more automobiles, attempting to drive faster, on increasingly crowded streets and roads.

Is this the future we want? A growing number of people in this community are realizing that it is not a future we want, nor is it one we can afford.

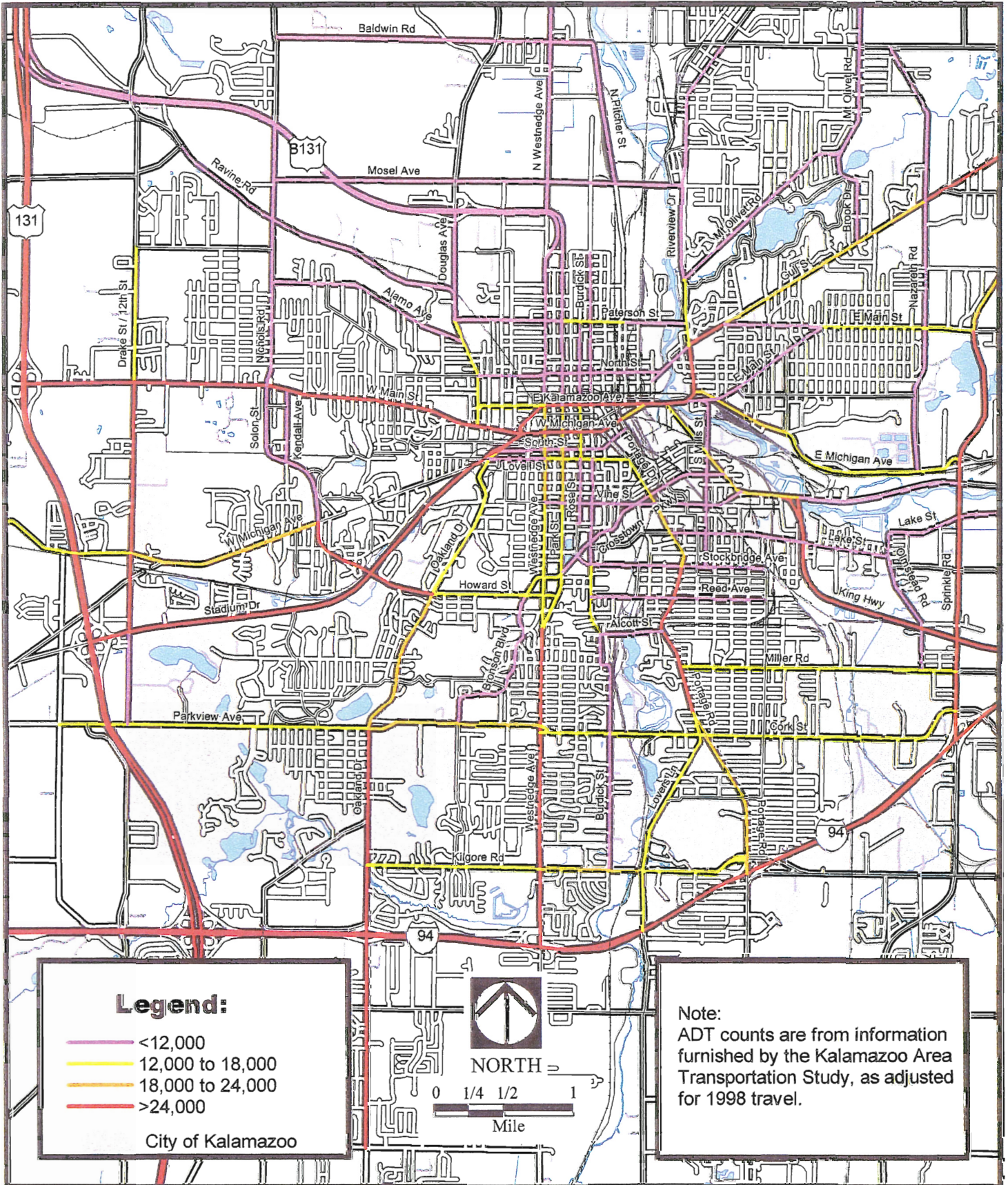
The Non-Motorized Transportation Plan is a step to providing an alternative. It is a tiny step, but at least it is a step."

— Steven Vonderfecht,
Bicycle Task Force member

Functional Classifications



Average Daily Traffic Volumes



Lane Striping — How roadway space is allocated is often more critical to non-motorized travel than the overall roadway pavement width. This is because most bicyclists ride two to three feet away from the right-hand edge of the roadway. Often, minor modifications in lane striping can greatly improve the curb lane condition. In parts of Kalamazoo, bicycle travel is made difficult due to a lack of edge striping or a stripe that meanders and creates a curb lane of varying width. Such condition leads to swerving and unpredictable behavior by both cyclists and motorists.

On other streets, roadway space has been solely allocated for the movement and storage (parking) of motor vehicles. In certain areas, by simply shifting the configuration of the lane striping, Kalamazoo may create a more multi-modal transportation system that is friendlier to bicyclists and pedestrians. The same may be true if selected one-way streets are allowed to return to two-way travel.

Maintenance — There seems to be a general deficiency in roadway maintenance in Kalamazoo. While deteriorated pavement edges, potholes and debris may be annoying to motor vehicle use, they present serious hazards to those traveling by bicycle. In some of the older neighborhoods of Kalamazoo, the condition of the sidewalks is also poor. Snow removal on sidewalks is an issue of concern to pedestrians, as is winter street and trailway maintenance for bicyclists.

A.2 Rights-of-Way

Narrow street pavement widths do not necessarily deter non-motorized travel. In fact, skinny streets are increasingly being viewed as a traffic calming measure that allows motorized and non-motorized modes to more safely share the roadway. However, in corridors where there is narrow right-of-way, it is often the bicycling, walking and streetscape amenities that suffer. Such is the case in Kalamazoo. The community's newer transportation corridors, however, have adequate right-of-way such that all users may be better accommodated.

A.3 Waterways

The Kalamazoo River used to be a major transportation artery. Over time, transportation function gave way to industrial function, but today, Kalamazoo's river and stream corridors are once again being viewed as a transportation resource. With most of the City built out, lands along the Kalamazoo River, Portage Creek and Arcadia Creek offer the few remaining opportunities for open space preservation and reclamation to accommodate off-road trailways. However, these same waterways also impede non-motorized travel since not all bridges in the community have been built to accommodate bicyclists and pedestrians, and infrequent crossing opportunities severely increase trip lengths for those on foot or bike.

A.4 Transit

Public transportation and walking work together to offer longer trip options for pedestrians. The Kalamazoo area is served by Metro Transit, and special bus routes run through the WMU campus to serve the increased ridership needs of students and faculty. Currently, bicycle trips are not integrated with transit. However, a program to provide bike racks on Metro buses has been proposed and funding is being sought. For inter-community transit, the Kalamazoo area is served by Amtrak, with the train station conveniently located in downtown Kalamazoo.

A.5 Railroads

Several rail lines converge within Kalamazoo, creating barriers to bicycling and walking since non-motorized modes must cross

"A good transportation system should be efficient and environmentally friendly. Kalamazoo County will benefit greatly by providing a balance of adequate transportation options, including bicycling, walking, and public transit."

— Joe Comiskey,
alternative transportation advocate

active rail tracks at an existing roadway crossing, or cross via a grade-separated structure. Nationwide, many at-grade railroad crossings are being closed in an effort to improve safety and increase rail efficiency. The same is true in Kalamazoo, with current plans underway to bring high-speed rail to and through the community.

Abandoned rail corridors are excellent candidates for trailway development, such as the proposed extension to the Kal-Haven State Trail. Still other corridors have wide enough right-of-way to offer potential for rail-with-trail development. Talks are currently underway with the State and Amtrak to consider this treatment along Arcadia Creek and through downtown.

A.6 Land Use

Land use and transportation are intrinsically linked. Newer suburban development patterns necessitate auto trips, while development of a more traditional, compact nature encourages bicycling and walking activities. The City of Kalamazoo has both types of development.

Probably most important in the transportation-land use equation is the trip distance involved. However, the character of the area, and the presence or absence of various types of infrastructure also come into play. For example, the older areas of Kalamazoo are organized into neighborhoods most of which are well served by sidewalks. In many cases, nearby retail and other destinations are walkable distances. Newer areas of the metro area have been developed to maintain a "rural" character within the neighborhoods and therefore lack sidewalks. As development continues, these neighborhoods suffer from high traffic volumes and speeds. Also, by design and current custom, newer neighborhoods are separated from commercial areas by substantial distances and roads that are not conducive to walking.

Part B. Bicycle Facilities

The following is a summary of existing bicycle facilities within and immediately adjacent to the City of Kalamazoo. Field investigations were conducted by the consultant in September and November 1997, and January 1998.

Please reference Appendix A for definitions of each facility type. As applicable, details of proposed improvements for the following corridors are presented in Sections IV and V.

B.1 Shared Roadways

The majority of streets and roads that provide bicyclists with travel options within Kalamazoo fall into this classification — where bicyclists and motor vehicles share a travel lane. In most instances, lane widths in Kalamazoo are 11 feet, less than the AASHTO standard of 12 feet. According to the principles of *Effective Cycling*, cyclists are advised to “take the lane” where lane sharing is difficult or feels dangerous rather than riding at the extreme far right-hand pavement edge.³ This is to avoid motor vehicles trying to pass in inadequate lane widths, especially important on very narrow stretches of roadway and in locations where there may be obstacles or hazards. With the narrower lane widths, cyclists in Kalamazoo should use judgement on when to “take the lane” and when to ride far enough to the right to facilitate safe motor vehicle passing and avoid animosity between roadway users.

B.2 Designated Shared Roadways (Bicycle Routes)

In the fall of 1997, several interim bicycle routes were designated by the City of Kalamazoo. Green “Bike Route” signs were posted, sometimes with supplemental arrow plaques indicating directional changes in the route. These routes were selected as the proposed skeleton of a citywide system to be further studied by this Plan. Comments on individual corridors are given under the appropriate bikeway type following.

In general, the routes selected are good choices, but need to be connected together to facilitate cross-town access to major destinations. As AASHTO states, bicycle routes should designate “a system of bikeways... with appropriate directional and information route markers... (they) should establish a continuous routing, but may be a combination of any and all types of bikeways.” The City may therefore wish to consider supplementing the existing green route signs with navigational information such as destination and/or distance plaques.

Erecting bicycle route signs is usually recommended as being most appropriate on streets with low traffic volumes and slower travel speeds, such as local and minor collector streets in residential areas. On busier roadways, additional accommodations such as wide curb lanes, paved shoulders or bike lanes are recommended before designating as a bicycle facility — simply posting a sign in and of itself does not improve conditions. As an interim measure on such roadways, “Share The Road” warning signs are preferred in lieu of “Bike Route” signing.

It is important to recognize that designating bicycle routes should only be done after all hazards to bicycle travel, such as parallel bar drainage grates or angled railroad crossings, have been removed/corrected. Roadways should also have a commitment to maintenance of the bicycle travelway before being designated as a bike route.

In addition to the newly designated routes, there are some miscellaneous bicycle route signs remaining

scattered throughout the City from an earlier effort to designate bikeways. These should be taken down, as should signs along certain sidepaths, as discussed in that section following.

The following corridors are currently designated as bike routes without any special improvements or extra lane space to accommodate bicycle travel:

- ▶ Douglas Avenue — Four-lane roadway; 30 to 40 mph; some sections with narrow lanes and bumpy pavement. This is a fairly busy street to be designated as a route with no bicycle improvements. Thus may want to consider restriping as a three-lane with a center turn lane and two bicycle lanes.
- ▶ Alta Vista/Edgemoor/Chevy Chase — Two-lane residential street with 25 mph speed limit. Steep grades and curvy alignment. Pedestrians also use roadway as there are no sidewalks. Additional directional signing needed from the south on Alta Vista. Warning signage recommended on Oakland for busy crossing.
- ▶ Lorraine/Wellington/Kensington — Continuation of the above facility on residential streets. Good directional route signing; easy to follow. Overall, is an aesthetically pleasing corridor to ride in.
- ▶ Lakeway Avenue — Nice tree-lined local street. Trees, a jog in the alignment and a 25 mph speed limit keep traffic moving slow. 31' of pavement width with no parking restrictions. Traffic signal at Portage. Works nicely as a designated shared roadway.
- ▶ Egleston — Divided, tree-lined residential street with large planted median and on-street parking. Stop signs at every block are discouraging to cyclists; may want to consider reassigning right of way to Egleston to minimize number of stops. May also want to add signing or pavement markings to encourage riding with traffic on the proper side of the street.
- ▶ Race/Jackson/Sheldon/Crosstown/Sheldon/Gibson — A lot of stop signs along this stretch. Again, may want to consider reassigning right of way at some of the intersections. All are local streets, except Crosstown Parkway. Saw several wrong-way riders along this stretch; may want to consider marking bicycle lanes with pavement arrows or undertaking an educational campaign to correct this problem. Need definite crossing improvements in the area of Mill/King Highway to access Annen Park.

B.3 Bicycle Lanes

The following is signed as a bicycle route, but with bicycle lane markings:

- ▶ Oakland Drive — Three-lane with continuous center turn lane; motor vehicle travel lanes are narrow. Shoulders are striped and marked as bicycle lanes. Posted at 35 mph, but feels fast and busy. Would thus be good to widen roadway during future roadway reconstruction, especially since travel lanes and shoulders are narrower than AASHTO standards. Recommend using bicycle lane signs.

B.4 Wide Curb Lanes

- ▶ Ravine Road — Section within City limits is a 35 mph very wide two lane, which may in effect function as a four-lane. (The Ravine Road cross-section transitions into a rural one with paved

shoulders and speed limit 45 mph at the Township line, but is no longer signed as a Bike Route.) The future Kalamazoo River Valley Trailway route within this corridor is planned to be a shared use path within parallel abandoned rail right-of-way.

- ▶ Bronson Blvd — Wide, hilly, very curvy two-lane through residential area. 25/30 mph, with double centerline stripe. Need to determine if bikes can activate traffic signal at Whites Road. Should add advance crossing signs on Kilgore Road due to difficult crossing/limited sight distance on top of hill.
- ▶ Moreland/Fulford — Varying pavement widths, but wider than normal street overall. On-street parking permitted in various sections. Bus route. 25 mph. Works as a bike route, but may want to stripe with bike lanes due to extra pavement width.

B.5 Paved Shoulders

- ▶ Lovers Lane — Two-lane with 3' to 4' shoulders, travel lanes 10½' wide. Signed no parking. 35 mph. To the south, becomes a four-lane at the City limits line, then is part of the Portage Bikeway system. Would be good to widen roadway during future roadway reconstruction, since travel lanes and shoulders are narrow. Needs attention to maintenance issues such as water puddles, leaf piles and snow accumulation.
- ▶ Parkview Ave — Two-lane with centerline stripe and narrow shoulder. Semi-rural character. Traffic feels fast; posted 45 mph speed limit. Route is signed to 12th Street, just before the Business 94 overpass.
- ▶ Mt. Olivet Rd — Two-lane with shoulder. 30 mph. This street, and the others above, needs to have the shoulder striping redone at intersections as recommended for a bike lane treatment. (See page 5-20.) Current striping configuration runs bicyclists into the ditch and encourages motorists to make wide turns that cut off bicyclists traveling straight through the intersection. Wrong-way riding also observed; thus recommend adding bike lane arrows and markings.

B.6 Shared Use Paths

- ▶ Annen Sports and Recreation Complex — Includes a 12-foot wide asphalt trail along the riverfront. This half-mile segment is the first piece of the proposed 30-mile Kalamazoo River Valley Trailway. Alone, it currently serves little transportation function; but the next phase of the KRVT will be an extension heading west under the Mills Street bridge, skirting Red Arrow Golf Course, and connecting into Downtown Kalamazoo.

B.7 Rail-Trails

- ▶ The Kal-Haven Trail Sesquicentennial State Park — A multi-use recreation park on the abandoned rail line between Kalamazoo and South Haven, a Lake Michigan resort area. Acquired and built as a unique cooperative effort between the Friends of the Kal-Haven State Trail and the Michigan Department of Natural Resources, the trail provides recreation for hikers, bicyclists, nature lovers, snowmobilers, equestrians and cross-country skiers. The trail is now operated by the DNR as part of the Michigan rail-trail system.

The 10-foot wide surface of limestone/slag runs for 34 miles from the 10th Street trailhead and parking lot west of Kalamazoo to the South Haven trailhead. Trailway connectors through South Haven provide a link to the Van Buren State Park and the Van Buren Trail.

B.8 Sidepaths

- ▶ West Main Street — Two segments of sidepath have been implemented by MDOT. The first runs along the north side of West Main Street (M43), from Nichols Street to Picadilly. Total paved path width could not be determined from winter field investigations; snow-cleared width approximately 6½ feet, if and where cleared. There is less than the AASHTO recommended 5 feet of clearance between the path and roadway, and the path crosses many multi-family and commercial driveway intersections. The sidepath is currently signed as a bicycle route, but is not recommended to be signed for liability reasons associated with the facility deficits.
- ▶ Stadium Drive/ 9th Street — MDOT also provided a widened bridge on 9th Street over I-94 to accommodate non-motorized users on 10-foot shoulders. The Kalamazoo County Road Commission constructed a path parallel to Stadium Drive and 9th Street, leading to the Kalamazoo Valley Community College. This path is not signed as a bike route. Pavement width is unknown because this path was also buried under snow at the time of the consultant's field investigations. However, this corridor is less built up than West Main Street, and thus has fewer intersection conflicts to present safety hazards for a sidepath type of facility.
- ▶ Howard Street — Within the City of Kalamazoo is another sidepath along the north side of Howard, connecting the Stadium Drive Apartments with the WMU campus as an alternative to riding on the hilly, busy four-lane roadway. This 8-foot wide path has good separation from the roadway and only intersects with the apartment driveway. After crossing Stadium Drive, where crossing and signal improvements may be warranted, the unsigned path veers to the right toward WMU and continues immediately back-of-curb along Vande Giessen and Western. Due to poor pavement quality and lack of curb cuts, bicyclists may be better off riding in the street for this section than on the path.

B.9 Other

- ▶ Portage Bikeways — The City of Portage has designated a 30-mile bikeway system with customized blue and orange signs. Their facilities are a combination of shared roadway, paved shoulder and shared use path facilities. For bicyclists, a continuous route of travel is important regardless the jurisdiction going through. Thus, extension of some of the Portage bikeways, such as along Oakland and Lovers Lane, would be desired to connect with existing and planned City of Kalamazoo bicycle facilities within these same corridors.

In Summary

- 1) Most of the interim bicycle routes have been designated on local collector streets within residential areas, where traffic volumes and speeds are moderate. Such streets make good bike routes.
- 2) A few of the designated routes fall on busier collectors/minor arterials, where widening or reassignment of roadway space to create wider bicycle lanes or wide curb lanes is desired.
- 3) The practice of creating “skinny streets” also has merit for creating traffic-calmed corridors that permit safer sharing of roadways by motorized and non-motorized modes.
- 4) In general, there are operation problems on sidepaths at driveway and street intersections. For this reason, such existing facilities should not be signed as bicycle routes.
- 5) On some existing shoulder facilities, the combined width for the motor vehicle travelway and shoulder is less than national standards, thus shoulder widening should be considered in the future, especially on higher speed roadways. Immediately, shoulder/lane striping at intersections needs to be modified to encourage proper turning movements.
- 6) Attention needs to be paid to maintenance issues on all facilities — both on- and off-road.

Part C: The Walking Environment

Kalamazoo has a history of addressing pedestrian needs in its downtown and neighborhoods, and was a pioneer in the development of the Country's first pedestrian mall. A progressive attitude can be attributed to a number of factors including the influence of Western Michigan University and Kalamazoo College, the health and fitness focus of Borgess and Bronson Hospitals, an active downtown business community, and the strength of Kalamazoo's neighborhood associations.

Most of the older sections of Kalamazoo have an excellent network of sidewalks allowing easy movement between neighborhoods, schools, and shopping areas. Walkability is somewhat degraded in these areas by the deteriorated condition of older sidewalks, a lack of curb cuts, and poor routine maintenance (snow removal, sweeping, etc.).

The City lacks an ordinance to require sidewalks in new development and some of the newer sections of the City have incomplete sidewalk networks. Where sidewalks are lacking and traffic moves fast, conditions for walking are less safe and attractive. Many of these post WWII neighborhoods also have larger lot sizes and are isolated from shopping, parks and other amenities, making walking more difficult.

The City's Business Districts have a similar disparity in walkability based on the age of the development. Downtown Kalamazoo and the City's older neighborhood commercial districts (i.e., the Vine Neighborhood.) generally have a good network of sidewalks. Some of these areas also have amenities such as street trees, benches, ornamental lighting and decorative paving to make them more attractive to pedestrians. In contrast, the City's newer commercial districts (and adjoining neighborhoods) have poor or non-existent sidewalk networks and no amenities to make pedestrians feel comfortable. These areas are identified in detail in the missing sidewalk inventory in Section IV.

C.1 Existing Conditions

An assessment of the current status of walkability in Kalamazoo was made with the assistance of the Pedestrian Task Force who participated in a number of meetings and exercises to discuss issues and gauge existing conditions. The results of Task Force planning activities are incorporated into the recommendations in the overview of proposed pedestrian improvements in Section IV of the plan; in the pedestrian design options developed for two toolkits in Section V: Tools for Designing and Maintaining Pedestrian Facilities and Traffic Calming, Street Design and Planning Tools to Improve Bicycling and Walking; and, in many of the strategies developed for the Action Plan, Section VI of the plan.

Early in the planning process, the Task Force and other volunteers conducted an on-foot evaluation of pedestrian conditions called a walking audit. Several neighborhoods were chosen for the audit and five distinct walks were taken. The walking audit asked participants to make use of maps that indicated each of the walking routes and to record observations about pedestrian conditions on a "walkability checklist." Primary among the issues identified through the walking audits are:

- ◆ The need to improve crossing conditions at many busy intersections
- ◆ Sidewalks missing or in poor condition
- ◆ Curb cuts lacking or in poor condition
- ◆ A lack of good transit access facilities in some locations
- ◆ Speeding on the part of drivers

The materials used for the audit and the issues identified on the five walking routes can be found in Appendix D. These issues became the focus of additional planning meetings and of the recommendations developed for the *Kalamazoo Non-Motorized Transportation Plan*.

The Milwood Elementary students who participated in the Kid's Planning Charrette (see Appendix F) conducted a similar walking evaluation of the commercial area and neighborhoods in the vicinity of Portage Street, Lovers Lane and Cork Street. Their list of pedestrian issues included all of the above, as well as noting that intersections are sometimes too wide to cross easily; walkways are often blocked by utility poles, trash dumpsters, etc.; and, streets tend to be dirty, noisy or smelly and in need of grass, flowers and trees.

C.2 Missing Sidewalk Links

Of special significance to the pedestrian planning process are two exercises developed for the July, 1998 public meetings. These are the identification of missing sidewalk links and the identification of hazardous conditions for both pedestrians and bicyclists.

Missing sections of sidewalk were mapped by Task Force Members and the public. A spreadsheet and map of missing sidewalk links can be found in Section IV (see pp. 4-32 to 4-34).

Participants at the planning workshops were most concerned about major arterial streets such as the Stadium Drive corridor, Lake Road, West Main Street near Maple Hill Mall, Howard Street near the University, and Kilgore Road near Westnedge Avenue. These roads have heavy, high speed traffic, yet have no sidewalks. Some streets with an existing sidewalk on one side were identified as needing a walkway on the other side. Workshop participants desire to have sidewalks on both sides of busy streets to increase pedestrian convenience and enhance safety by eliminating the need for multiple pedestrian street crossings.

C.3 Hazards to Pedestrian Travel

Information about hazardous conditions was also solicited at the public meeting. Hazard cards were available for reporting problematic conditions. The purpose of this exercise was to test a program that the City might undertake through which citizens can report pedestrian and bicycle problems. The test card and summary of the hazards reported at the July meeting can be found in Appendix E. Strategies to implement a hazard reporting and "spot improvement" response program are included in Section VI: Action Plan. (See Strategies G.2 and G.3.)

Among the hazardous conditions identified at the public meeting and throughout the planning process that are of most concern to participants are:

- ◆ The difficulties of crossing very wide, complex streets, especially those that are one-way.
- ◆ The speed of traffic.
- ◆ The need for sidewalk maintenance, especially snow removal.

Part D. Related Planning Efforts

There are several concurrent planning efforts, elements of which coordinate with the *City of Kalamazoo Non-Motorized Transportation Plan*. Many of the following represent proposals that members of the non-motorized consultant team have reviewed and provided City Staff with comments on ways to better accommodate bicyclists and pedestrians in these projects.

D.1 Walking

Several current and recent projects in the Kalamazoo area have supported the idea that walkability is an important issue to its citizens. These projects include the following:

- ▶ Kalamazoo Mall Renovations — The country's first permanent pedestrian mall received a major facelift in 1998 which involved introducing one lane of southbound traffic to the southern two blocks of the mall. The new mall includes brick walks and road surfaces, landscaping, lighting, and street furniture. One lane each of traffic and parking are provided. The design of the mall compels drivers to travel slowly and the wide walkways and many decorative elements create a sense of pedestrian priority.

The northern two blocks of the mall (between Michigan Avenue and Eleanor Street) will remain as pedestrian-only space. The block immediately north of Michigan Avenue was renovated in the early 1990's and seems to function well for pedestrians. The block between Water and Eleanor Streets has not been renovated since the 1970's and is overdue for improvements to bring it up to par with other blocks of the mall.

- ▶ Arcadia Creek Festival Site — The public parking lot north of Arcadia Pond and south of Kalamazoo Avenue is heavily used during the summer for festivals and special events. Very few pedestrian amenities exist in this area to make the space inviting. Plans for the Festival Site developed in the mid-1990's called for a pedestrian bridge to be built across the pond, additional green space around the pond with new walks and sitting areas, permanent shelters for vendors along Kalamazoo Avenue, and additional lighting, landscaping, and furniture throughout the site.
- ▶ Arcadia Creek Linear Park — Walkways, landscaping, lighting, and other pedestrian amenities were constructed along Arcadia Creek in the mid-1990's to provide a strong east/west pedestrian corridor through the north downtown area. The eastern three blocks of this linear park (from Park Street to the Kalamazoo Mall) were built by the adjoining private developers and each provides good facilities for pedestrians. The western two blocks of the linear park (between Park St. and Westnedge Ave.) were built by the City/Downtown Kalamazoo, Inc. as a first phase to entice private development of the adjoining parcels. The long range plan for these blocks is to widen the walks from 6' to 12' to provide more generous walking spaces.
- ▶ Bronson Park — The Kalamazoo Rotary Club is sponsoring the development of a permanent band shell in the park to replace the portable stage that is currently used. This proposal would likely also involve reconstructing the park's walkway system.

This project is at an early stage of development and no details are available yet. Funds for the development of final plans have been secured and the Coalition is hopeful that, if private fundraising efforts are successful, construction will take place in 1999.

- ▶ Southern Gateways Project — This urban design plan addresses the southern gateways to downtown (Park Street and Burdick Street) and is sponsored by the Vine Neighborhood Association. Proposed improvements include typical streetscape elements (landscaping, decorative lighting, and street furniture) and park improvements along Crosstown Ponds (boardwalks, picnic shelter, landscaping, and a loop path system).

Fundraising and implementation plans are still in the planning stage. The first project will be streetscape improvements on South Burdick Street.

D.2 Bicycling and Walking

As with the above projects, the following represent efforts to improve the pedestrian environment, but these projects also include facilities for bicycle travel:

- ▶ Western Gateway Project — This urban design plan for the western approach to downtown is sponsored by the Gateway Coalition, a private non-profit group with its roots as a neighborhood organization. Plans for this gateway focus primarily on aesthetic improvements including landscaping, garden pavilions, and brick gateway columns to be constructed in the Michigan Ave. traffic islands north of Lovell Street.

The Gateway Coalition is also very concerned about the ability of pedestrians, as well as bicyclists, to circulate east and west across the state highway (BL-94/West Michigan Avenue) thereby strengthening links between WMU/K-College and downtown. Towards this end, the Coalition has proposed the development of a bike path paralleling Arcadia Creek and the railroad to improve connections between the campuses and downtown destinations.

- ▶ The Kalamazoo Comprehensive Plan — The recently completed Comprehensive Plan update for the City of Kalamazoo offers many suggestions that will improve walking conditions in the City. Of particular note are the recommendations to develop more mixed-use areas and the proposal to plant street trees and create green transportation corridors. These and other recommendations of the plan will help to encourage walking and create a less automobile-oriented city.

The Comprehensive Plan also makes recommendations to create a safe and efficient bicycle circulation system throughout the City of Kalamazoo. A Bikeways Committee of the Kalamazoo Area Transportation Study (KATS) established guidelines for providing additional outside lane width or paved roadway shoulders on roads that provide access to the area's major schools and business and activity centers (shopping malls). In addition, the Parks and Recreation component of this plan recommends several off-road trailway projects, as well as the development of non-motorized "accessibility penetrations" to connect neighborhood streets to adjacent trails.

- ▶ Western Michigan University — WMU is examining their existing campus to enhance non-motorized use by their student and faculty populations. With the planned development of an engineering school on the Lee Baker site, this issue will become more vital than ever. As the University grows and expands, it is important that choices and alternatives to the automobile be offered. Land required for parking can then be better utilized for class rooms or open spaces to enhance the campus environment.
- ▶ The Kalamazoo River Valley Trailway — Planning for this regional greenway trail began in the early 1990's and was led by The Forum for Kalamazoo County. Since that time, a half-mile long

demonstration trail was built in the Annen Sports and Recreation Complex (1996), and a master plan for 30 miles of trailway was developed with the assistance of regional trailway teams (1998). The City of Kalamazoo is currently developing implementation plans for several of its trail segments.

The City just received notification of a grant to construct the portion from the sports complex northwest through the Red Arrow Golf Course to the near east downtown. In addition, the City has applied to MDOT for a grant to construct the trailway from the west downtown area to the Kal-Haven trailhead. When completed this system will link the City of Battle Creek Linear Park System through Kalamazoo to the Kal-Haven Trail and on to South Haven. In addition, the Trailway will continue along the River to Markin Glen and the Kalamazoo Nature Center.

- ▶ Portage Creek Bicentennial Park — The City of Portage has completed the Bicentennial Park non-motorized facility along Portage Creek from their library to Milham Road. They recently received a grant to continue this trailway along the creek to I-94, and have submitted a request for additional funding to continue north to Kilgore Road and Milham Park. This will undoubtedly expand the use of this facility and will provide opportunities for the City of Kalamazoo to make connections.

The City of Kalamazoo intends to continue this trailway through the City to link with the Kalamazoo River Valley Trailway near the confluence of Portage Creek with the Kalamazoo River. When completed, this facility will offer the community an excellent recreational asset, and due to the access provided to residential areas along the corridor and business destinations to the north, it will also offer an excellent travel option for commuter cyclists.

Community Perspective

At the start of this project, City staff and the consultant team created an extensive citizen involvement plan. (See Section II: Project History for a summary of key events in the planning process.) The goal was to generate a broad cross-section of public input to help identify bicycle and walking needs within the City of Kalamazoo, and develop consensus for proposed recommendations.

Key to this process was the regular input received from the individuals who served on the project's Bicycle Task Force, Pedestrian Task Force and Non-Motorized Plan Advisory Committee. Additional input was solicited at special planning events and public work sessions, as well as numerous one-on-one contacts with various individuals and key stakeholders.

The following is a summary of general perceptions regarding the planning effort, non-motorized travel in general, and special perspectives gathered from specific groups. Together, with the evaluation of existing conditions found in the physical environment, this creates an understanding of where Kalamazoo is today with regard to non-motorized transportation.

General Public Input

There was a lot of enthusiasm expressed regarding this study. Many felt that bicycling and walking needs have not received adequate attention in the past, and are anxious to begin seeing projects implemented. On this note, many expressed concern that the momentum generated during the planning process not be lost.

Citizen requests included keeping the dialogue going and putting pressure on the powers that be to realize the plan's recommendations. They also expressed the need to get the

"Great! When will it be done??"

"Keep up and speed up the good work."

"Thank you... How do we help work on it?"

— general citizen comments on the plan

"I grew up in Denmark and have only been in this country for three years. Thus I do not have much knowledge of the Kalamazoo area.

However, I did grow up with bikes and legs as the normal integrated transportation tools in everybody's daily lives."

— Helle Speidel
planning workshop participant

word out to other people on the results of the plan, and why it is important. Several feared that if the resulting quality of life benefits are not understood by the community at large, bicycling and walking needs may be viewed as special interest requests, and will not receive adequate levels of funding. Without funding allocations for project construction and education programs, all of the effort and energy put into this study will be wasted.

It was felt that the timing is right for this plan. Bicycling and walking are important issues, and current state and federal funding programs provide opportunities formerly unavailable to local governments. Many persons involved in this effort were active in the *Comprehensive Plan* process, and view non-motorized

projects as a first phase in implementing several recommendations of that plan. Citizens also stressed the need for a commitment from the City to aggressively tap into funding sources that are available under TEA-21 and other programs.

Many also expressed a desire to see language adopted that will require current KATS roadway plans to incorporate the recommended non-motorized facilities, and procedures be put in place for regular consideration of bicyclist and pedestrian needs in future projects.

Youth Input

Many of the adults contributing to the *Non-Motorized Plan* development recognized the benefits that bicycling and walking improvements would have for the community's youth. However, involving kids directly in the planning process provided additional insights.

Seventy 5th and 6th grade Milwood Elementary students provided City Staff and the project consultants with their opinions of bicycling and walking conditions during a half-day Kid's Planning Charrette on November 14th, 1997. The students discussed how they use various forms of transportation to get to different destinations within the community. Then they moved outside in seven groups to conduct walking audits around Milwood Elementary School. Each group was asked to think about travel needs for persons on foot, on bike, in a wheelchair and/or pushing a baby stroller.

The walks proved to be both fun and educational as the students attempted to overcome some of the existing obstacles to pedestrian travel in neighborhoods around the school. Following the field trip, the groups reconvened to discuss their findings and develop a "Kid's Report Card" which can be used to grade other streets within the community on how well they accommodate bicyclists and pedestrians.

The report card and a complete summary of the Kid's Planning Charrette are contained in Appendix F.

Why walk?

"I live close by."

"No where to lock up my bike."

Why bike?

"It's easy."

"It's funner and faster than walking."

Why go in a car?

"Not safe any other ways."

"There's not enough sidewalks."

"Very busy street/too many cars."

"I don't want to get run over."

— Milwood Elementary Students,
participating in the Kid's Planning Charrette

The youths' top recommendations for improving bicycling and walking conditions include "car control" or making drivers drive slower; fixing "broken" sidewalks; completing missing sections of walkways; adding sidewalk ramps for wheelchair and stroller access; having less traffic on the streets; and planting shade trees.

Downtown and Adjacent Neighborhoods

On April 23rd, 1998, a day-long "drop-in session" was held with various groups of stakeholders involved in improving and promoting downtown Kalamazoo. All participants seemed very interested in enhancing bicycling and walking within and to the downtown area, and many discussed current initiatives underway to accomplish this objective.

The existing downtown environment is very favorable for walking. The only suggestion for further enhancing the pedestrian environment was the consideration of additional measures to make crossing multi-lane streets easier. Slowing vehicular speeds, reverting some of the one-way streets to two-way travel, and/or providing pedestrian refuge islands such as that on Rose Street were discussed.

Individuals participating in the drop-in session felt that providing bicycle accommodations within the downtown area may be more difficult. Multiple interests must compete for limited space, bicyclists included. Dispersing bicycle parking throughout downtown was viewed as a cost effective and space-saving way to provide improved customer access to businesses. While recognizing the value of on-street bicycle lanes as a means to encourage increased non-motorized use, the accommodation of such may prove challenging if area businesses lose parking spaces or delivery vehicles are inconvenienced.

There was great interest in bringing the Kalamazoo River Valley Trailway routing directly into and through the core of downtown for tourism and economic reasons. But the largest need for bicycle travel is to determine a safe and convenient way to offer a non-motorized connection from downtown to Kalamazoo College, Western Michigan University and surrounding neighborhoods.

WMU Student Project Summary

Student projects from Professor David Lemberg's Western Michigan University Geography 556 course, winter 1998, offer insight into the non-motorized transportation needs of the WMU community within Kalamazoo. The reports provide recommendations on issues such as bicycle routes in and around the campus, non-motorized access from campus to downtown, a sidewalk inventory and assessment, as well as the alleviation of parking woes and automobile congestion on campus.

Projects included a small student survey which showed that a majority of students live within five miles of campus and are willing to use bicycle corridors to commute to school. Some improvements to the bicycle routes included: widening existing sidewalks to accommodate bike traffic; marking bike routes on streets with low levels of motorized traffic; improving integration and maintenance of present bike routes; and, construction of a pedestrian/bike overpass over Stadium Drive. Suggestions for the pedestrian network included: construction of new sidewalks along major use routes around campus; improving curb cuts at intersections; increased expenditures for sidewalk repair, maintenance and reconstruction; and, improving snow removal.

Other recommendations employ the improvements above to increase non-motorized access from campus to the downtown area. Although the distance is relatively short, several obstacles hinder present access for pedestrians and bicyclists. The projects all mentioned the problem of automobile congestion on

campus and some solutions were to increase bicycle storage capacity on campus, as well as restrict those living in university dorms (especially freshmen) from having a car on campus. Throughout the projects, a belief is expressed that specific, cost-effective actions by the City and University could greatly improve non-motorized travel into and within the WMU campus.

Kalamazoo Non-Motorized Transportation and WMU **A summary —**

- ◆ **Accessibility and Connectivity:**
There is poor accessibility from WMU and Kalamazoo College to Downtown Kalamazoo and the major areas of student housing.
- ◆ **Easements:**
The combination of narrow streets, on-street parking, street trees and utility poles leave little room for bike lanes and sidewalk improvements.
- ◆ **Topology:**
The slopes of the hills make it difficult to facilitate bikeways and pedestrian paths.
- ◆ **Safety:**
Railroads and highways create barriers and hazards for cyclists and pedestrians.
- ◆ **Pavements:**
Many of the paths and roads in Kalamazoo are in poor condition (potholes, gaps, uplifts, etc.)
- ◆ **Security:**
Secure places are required for the more expensive bicycles that have become the norm.
- ◆ **Maintenance:**
The sidewalks and bikeways must be constructed and maintained for a four-season environment (fall leaves, rain, and snow)
- ◆ **Finances:**
The community needs to find the financial resources required to implement the plan.

— findings of students enrolled in
WMU Geography 556, Winter Semester 1998

Section Endnotes

1. Kalamazoo Comprehensive Plan Update. Draft Recommendations, April 20, 1998. Chapter 4.
2. Source of data: Kalamazoo Area Transportation Study. Traffic Counting Program data as furnished by Dave Krueger.
3. Forester, John, Effective Cycling. Sixth Edition. The MIT Press, Cambridge, MA, 1993.

THE CITY OF



Section IV: The Vision for the Future

Vision Statement

"In the new century, Kalamazoo will be a place where walking and bicycling are safe and enjoyable daily activities. Residents using non-motorized transportation modes will co-exist with motorized traffic on a well-maintained network of roadways and bicycle and pedestrian facilities which provide convenient access throughout the community."

This is the vision of the *City of Kalamazoo Non-Motorized Transportation Plan*. The recommendations contained within this planning document have been made with the overall goal of creating a community that is friendly to all people wishing to utilize and enjoy non-motorized transportation.

This vision was developed following another community-based planning effort which provided strong direction for encouraging non-motorized transportation and developing associated public infrastructure. On August 6, 1998, the City of Kalamazoo completed a two-year planning process to update and adopt a new comprehensive plan. Approximately 100 public meetings were held throughout the community. A key component of this effort was the establishment of a broad community vision to guide land use, development and a variety of regional programs for the next twenty years. The following *City of Kalamazoo Comprehensive Plan* vision statement thus sets a precedence for implementing non-motorized transportation enhancements:

"In 2015, Kalamazoo will be a region of easy movement for residents, whether motorized or non-motorized, between vibrant neighborhoods, including an active downtown that is the focus of important community activities. It will be the regional center of cultural, educational, and economic activity and healthcare services. And it will have well established, preserved, and used greenways and open spaces including neighborhood and community parks that are effectively interconnected by bikeways, pedestrian paths, and roads. Diversity will be a virtue and Kalamazoo's vitality will be sustainable with balance between the needs of the environment, the economy, and the social needs of its residents."

Goals & Objectives

To realize the community's vision for creating a walkable and bicycle-friendly city, it was recognized that change must occur on several fronts. Seven broad goals were thus established for this project, and are listed following. In addition, the Plan Advisory Committee outlined more specific objectives that are to be realized through the immediate and long-term implementation of the *Non-Motorized Transportation Plan* recommendations.

Goal #1: Provide Transportation Choices

- ▶ Serve non-drivers: elderly, children, disabled, and lower income populations.
- ▶ Link modes to provide more options (transit, high speed rail). *Consolidation @ RR, Bus*
- ▶ Reduce crashes and enhance the perception of safety.
 - ▶ Consider trade-offs: quality of transportation vs. speed of transportation.
- ▶ Pair modest constraints on automobiles with increases in provision for bicycling and walking.
 - ▶ Increase pedestrian and bicycle safety, and track pedestrian and bicycle crashes resulting in injuries on a yearly basis.
- ▶ Increase in bicycle parking and track progress.
- ▶ Increase the number of paved sidewalks and other pedestrian amenities and track progress.

Goal #2: Increase Economic Vitality

- ▶ Create lively community centers.
- ▶ Stimulate private investment with appealing public infrastructure.

Goal #3: Improve the Health of Citizens and The Environment

- ▶ Promote moderate exercise as a part of everyday activities.
- ▶ Get children moving again. *Milwood Survey*
- ▶ "Green" streets and neighborhoods.
- ▶ Decrease air pollution.

Goal #4: Improve Quality of Life

- ▶ Provide low cost, quality family time opportunities.
- ▶ Make downtown and neighborhoods inviting.
- ▶ Increase neighborhood security and friendliness through more contact between residents.

Goal #5: Make Connections Within and Between Communities

- ▶ Connect neighborhoods, business areas, and parks.
- ▶ Link universities to rest of city.
- ▶ Link disconnected areas of city to whole.
- ▶ Provide system continuity and well designed facilities.

Goal #6: Coordinate Planning at All Levels

- ▶ Incorporate bicycle/pedestrian needs into all levels of public planning and development.
- ▶ Promote bicycle/pedestrian-friendly private development. *Bike Racks Apts.*
- ▶ Increase efficiency of transportation investment. *Bike Racks*
- ▶ Develop a more balanced multi-modal investment strategy.

Goal #7: Foster Attitudinal Changes

- ▶ Educate pedestrians, bicyclists and general public. *Riding way way -*
- ▶ Encourage non-motorized travel through annual bike and walk-to-work days.
- ▶ Create "friendly" communities through the increased personal interactions and neighborliness encouraged by more bicycling and walking.
- ▶ Increase the recognition that bicycles and pedestrians are legitimate users of the transportation system.

Overview of Kalamazoo's Proposed Bicycle System

This section contains the corridor-specific bicycle facility recommendations of the plan. Page 4-11 is a map of streets and trailway connectors being recommended to create a continuous system of bicycle travel throughout the City. Accompanying the map is a table that outlines details of the proposed improvements for each identified corridor. The following overview of the planning approach and various facility definitions are provided to help visualize each of these improvements, and understand how they work together for bicyclists.

Part A: Bicycle Planning Overview

This plan recognizes that no single type of bicycle facility will accommodate all types of bicyclists. That's why the plan isn't simply a trailways plan which identifies off-road paths linking area parks and natural areas. While the recreational nature of bicycling is inherent, the potential to use the bicycle as a form of local transportation is the purpose of this study.

Communities nationwide are experiencing increased traffic congestion, air pollution, and frustration with total dependence on the automobile for even the shortest of local trips. National research has shown that 27 percent of all trips are one mile or less; 40 percent are two miles or less; and 49 percent are three miles or less in length.¹ With a national average bicycle trip length of two miles,² all of these trips are within reasonable bicycling distance — if a community is designed to make bike trips just as easy and convenient as automobile trips.

For this reason, the *Kalamazoo Non-Motorized Transportation Plan* looks at the community as a whole and proposes ways to connect neighborhoods with downtown, local commercial areas, employment centers, schools and mass transit, as well as scenic corridors and recreational lands. The goal is to develop a plan for a network of bicycle facilities that will allow any person safe and convenient access from any origin to any destination within the community.

A.1 Types of Cyclists

The plan proposes a two-pronged approach to facility development to meet the needs of different kinds of bicyclists, which will result in an interconnected system of on-street and off-street bikeways.

It is generally recognized that there are two types of adult cyclists: Group A or Advanced Bicyclists, and Group B or Basic Bicyclists.³

“Group A” is composed of experienced adult riders who can operate a bicycle under most traffic conditions. Bicycle commuters, bike club riders and other cyclists currently following the rules of the road and riding on area streets and roadways with no special accommodations for bicyclists fall into this category.

“Group B” bicyclists are casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but there will always be millions of basic bicyclists nationwide who prefer comfortable access to destinations and well-defined separation of bicycles and motor vehicles.

“20% of the bicyclists bicycle 80% of the miles... those cyclists are going to be experienced cyclists who feel comfortable on the street system. That’s why it’s important that all streets and bridges work for bicyclists.

On the other hand, probably 20% of the miles are biked by 80% of the cyclists... they are inexperienced cyclists and they feel more comfortable on paths that are separated from motor vehicles.”

**— Peter Lagerwey,
Bicycle Program Coordinator for
the City of Seattle, rated America’s #1 city for cycling**

Thus, bicycle planning in the 1990's generally promotes a “design cyclist” concept that recognizes and accommodates the needs of both Group A and B bicyclists. Group A cyclists will be best served by making every street bicycle-friendly by removing hazards and maintaining smooth pavement surfaces. Group B riders will be best served in key travel corridors where designated bicycle facilities are provided in the form of signed and striped bicycle lanes on selected roadways, and off-road trails following waterways and other linear open space corridors.

Children

There is also a “Group C,” comprised of pre-teen riders whose bicycling activity is closely monitored by their parents. Before age 10, bike riding choices are extremely limited and parental supervision is extremely important. While sidewalks are often the best choices for such young riders, sidewalks have many liabilities if promoted for bicycle use. Likewise, wide asphalt trails immediately parallel to roadways are generally not recommended for those reasons discussed under sidepaths on page 5-30 of this report. Even bicycle trails in a park-like setting may not be a good choice for young children. Trail intersections and conflicts with faster, older cyclists will likely prove difficult for kids without developed control and anticipation of the movements of other vehicles, bicycles and pedestrians.

Sidewalks, which are traditionally reserved for pedestrian use and are addressed in the pedestrian sections of this plan, may accommodate the youngest Group C riders, but should not be designated as bicycle facilities or promoted for adult bicycle use. Therefore, sidewalks are not included as part of the bicycle facility system.

A.2 Facility Types

The first four definitions are general terms used intermittently throughout this plan; the remainder correspond with the legend used on the City of Kalamazoo bicycle system map. Facility definitions in *italics* come from the American Association of State Highway and Transportation Officials (AASHTO), which is generally considered the national source of standards for bicycle facility development.⁴

Bikeway

A generic term for any road, street, path or way which in some manner is specifically designated as being available for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Trailway

A term used locally in the Kalamazoo area for a multiple-use facility for bicycling, walking, running, cross-country skiing and roller skating. Trailways are preferred to be constructed as off-road paths separated from the roadway network, but sections of on-road bicycle facilities are used as needed for connections.

Greenway

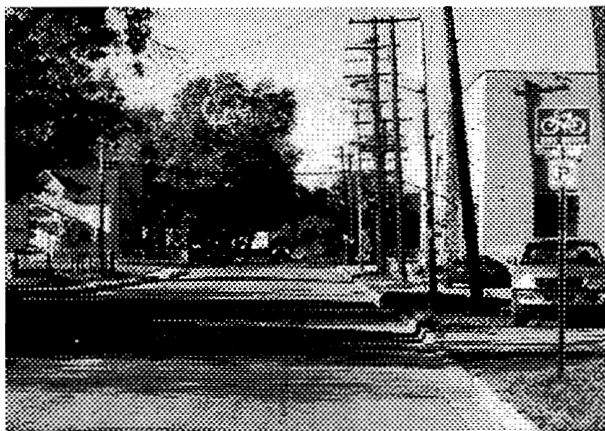
A linear open space established along either a natural corridor, such as a riverfront, stream valley or ridgeline; or overland along a railroad right-of-way converted to recreational use, a canal, or other route. A greenway, as a broad conservation concept, may or may not allow public access or formal trailway development.

Bicycle Facilities

A general term for improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, mapping all bikeways, and shared roadways not specifically designated for bicycle use.

Shared Roadway

A roadway which is not officially designated and marked as a bicycle route, but is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or a road with paved shoulders. The acknowledgment of a shared roadway as a bicycle facility type reflects the fact that every street is a bicycling street (unless bicycles are expressly prohibited), and in many locations no special accommodations are required for safe bicycle travel.



Designated Shared Roadway

A shared roadway which has been designated by signing as a preferred route for bicycle use. (Same as Bike Route.)

◀ Bicycle Route (Bike Route)

A system of bikeways designated by the jurisdiction having authority with appropriate directional and information route markers, with or without specific bicycle route number. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

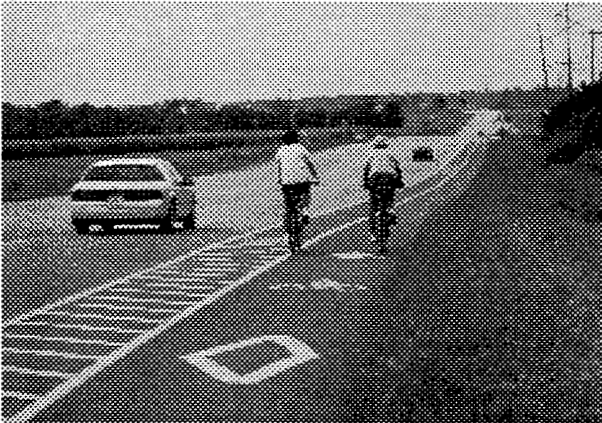


◀ **Bicycle Lane (Bike Lane)**

A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Typically 4 feet wide, one-way, and marked on both sides of a street or on paved shoulders.

Wide Curb Lane

An outside or curbside travel lane of sufficient width for a bicyclist and motorist to share the lane with a comfortable degree of separation. The bicycle space is not striped, and generally the total width is less than a road with a paved shoulder or bike lane treatment.



◀ **Shoulder**

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses. When paved and of sufficient width, shoulders provide space for bicycle and pedestrian travel. A shoulder is usually separated from the travel lane by striping, and may be signed as a bike lane under moderate traffic conditions.



◀ **Shared Use Path**

A bikeway physically separated from motorized vehicular traffic by an open space or barrier, and either within the highway right-of-way or within an independent right-of-way. Shared use paths will also be used by pedestrians, skaters, joggers and other non-motorized users.

Trail, Multi-Use Path or Bicycle Path

Same as Shared Use Path. However, the term bicycle path is becoming less common, since such facilities are rarely used exclusively by cyclists.



◀ **Sidewalk**

A two-way shared use path located immediately adjacent to a roadway, like an extra wide sidewalk. Not recommended in most applications due to space limitations, operational problems, and safety hazards at intersections.

Rail-Trail

A multi-use path built within the right-of-way of an existing or former railroad, that is either paved or unpaved.

Part B: Recommendations

B.1 Corridor Improvements

The following map and corresponding spreadsheets outline where each of the facility types are to be implemented within Kalamazoo. For each street corridor, the consultant team analyzed the roadway's functional classification and average daily traffic count (ADT) as adjusted to reflect peak hour 1998 traffic. (see database spreadsheets in Appendix C)

The Bicycle Task Force then looked at seven general factors (see Memo #5 in Appendix G) that must be addressed in order to improve bicyclists' safety, mobility and comfort levels when using area streets and roadways:

- 1) the number of cars,
- 2) the speed those cars are traveling,
- 3) the amount of space available to share with the cars,
- 4) how well that space is maintained,
- 5) the directness and convenience of the route,
- 6) the attitudes of drivers, and
- 7) the attitude of the community.

Based upon a combination of these factors, a facility design treatment is recommended for each street segment proposed to be included in the City of Kalamazoo bicycle system. Selected off-road corridors are also targeted for trailway development to provide a variety of riding environments. The specific details of how to implement each of these bikeway design treatments are contained in Section V of the plan, with corridor-specific strategies noted on the spreadsheets. For existing facilities, additional notes on the effectiveness of each corridor are found beginning on page 3-7.

In addition to creating a city-wide bike system, public input into the planning process brought out the need to focus on resolving difficult connections into and through Downtown Kalamazoo — specifically from the existing Kal-Haven Trail, the proposed Kalamazoo River Valley Trailway, and the Western Michigan University/Kalamazoo College area. More detailed corridor maps of these three proposed connections are presented beginning on page 4-17.

B.2 Implementation

Once the routing for a city-wide bicycle system was established, members of the Bicycle Task Force and City staff ranked each proposed bikeway segment based on the perceived level of need for that improvement.

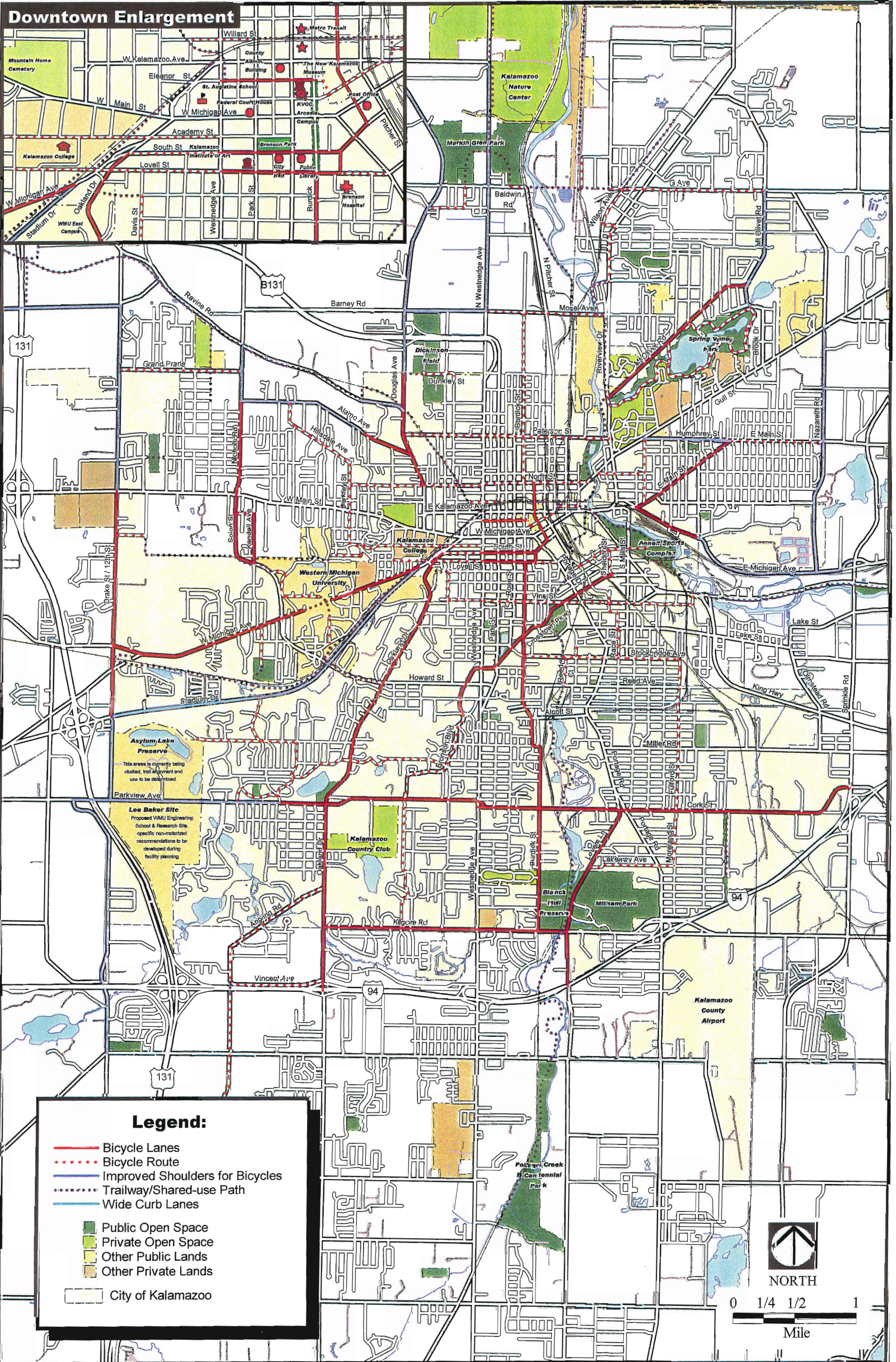
On the following spreadsheets, highest levels of need are assigned to those projects which committee members felt must be implemented to permit or dramatically improve safety and accessibility for bicyclists. Many of these highest priorities represent corridors that currently do not accommodate bicycle travel and are likely intimidating to most riders. Other corridors, which are desired to complete the citywide system, are assigned a lower priority since travel is possible under existing conditions, or parallel alternative routes exist. (See pages 4-20 and 4-21 for a summary listing and map of the most needed projects.)

It is important to acknowledge that need for an improvement isn't the only factor influencing which projects will be implemented first. Opportunities presented through programmed roadway improvements, acceptance of a proposed project by adjacent property owners, project cost, and availability of funding all determine the feasibility of an infrastructure improvement. Task Force members have attempted to identify those bicycle projects which may be relatively easy to implement, as well as those which will require outside funding and political backing to bring them to reality. In addition, the spreadsheets identify those jurisdiction(s) who will need to assume prime responsibility for project implementation.

Some corridors list multiple design options for how bicyclists may be accommodated. This gives the *Non-Motorized Transportation Plan* the flexibility to be fine-tuned with additional study and the implementation of infrastructure improvements on a corridor-by-corridor basis. City staff, the Kalamazoo City Commission, and the Non-Motorized Advisory Committee will need to work together to determine where it is more prudent to provide additional pavement width to accommodate bicycle lanes, for example, or restripe a roadway with narrower travel lanes to create a traffic calming effect. Ongoing assessments will need to be made regarding whether the City of Kalamazoo should add more lanes for motor vehicles or implement transportation demand management measures that incorporate bicycling as a viable transportation alternative.

Lastly, one must recognize that to only focus on implementing bicycling improvements within a few corridors would be a disservice to the community. New opportunities and unexpected obstacles will likely arise over time, making it necessary to regularly reassess the project listing and modify it accordingly. For these reasons, the project-specific recommendations contained within this chapter are supplemented with an Action Plan (see Section VI) that outlines more general policies and procedures which should be incorporated into all land use and transportation planning decisions made in Kalamazoo.

Proposed Bicycle System



BICYCLE SYSTEM OVERVIEW

Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
H Avenue	from Drake Road west	paved shoulders	maintain/improve existing shoulders; sign as bike lanes	KCRC	medium	relatively easy
Drake Road	H Ave. to Canterbury	paved shoulders	improve/add shoulders; sign as bike lanes	KCRC, CK	high	relatively easy
Drake Road	Canterbury to W. Main	wide curb lanes	shift lane striping to provide extra operating space in a shared right-hand travel lane	CK	high	relatively easy
Drake Road	W. Main to Stadium	wide curb lanes	shift lane striping to provide extra operating space in a shared right-hand travel lane; or widen roadway to accommodate bicycle lanes	KCRC	very high	relatively easy
Drake Road	Stadium to Parkview	paved shoulders	maintain/improve/stripe shoulders; sign as bike lanes	CK	very high	relatively easy
Canterbury Avenue	Frays Park	off-road trailway	formalize bike/ped only connection through park	CK	medium	relatively easy
West Main	entire length	to be determined	cyclists want to use it, but tough to improve without lowering traffic volumes/speeds; sidepath not recommended; potential for a parallel route should be explored	MDOT	high	more difficult
Arboretum & WMU properties	Drake Rd. to Greenlawn Ave.	off-road trailway	would more or less follow the north edge of these properties; to occur with development	CK	medium	relatively easy
Greenlawn/Academy	WMU to W. Michigan Ave.	bike route	construct short path & improve ped. connection at Greenlawn dead-end to accommodate bikes	CK	medium	moderate
W. Michigan Avenue	Drake Rd. to WMU	bicycle lanes	improve pavement quality; reassess need for number of vehicle lanes and restripe; reduce speed limit; if cannot reduce number of travel lanes in conjunction with WMU disincentives to driving, widen roadway to provide bicycle lanes	CK	very high	moderate
W. Michigan Avenue	WMU to Stadium Dr.	bike lanes	reassess need for number o	CK	very high	relatively easy
Nichols Road	Ravine/KRVT to Alamo	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Nichols Road	Alamo to W. Main	bicycle lanes	reassess need for number of vehicle lanes and restripe	KCRC	medium	relatively easy
Solon & Kendall	W. Main to Howard	bicycle lanes	implement as a one-way pair, with a cross over bike route on Santos; to reach Nichols, may need to implement a stretch of sidepath as an alternative to W. Main	KCRC	very high	relatively easy
through WMU Campus	Kendall to Stadium	bike route	may require short sections of path to link with existing facilities on WMU property	WMU	very high	moderate
Howard Street	Stadium to Oakland Drive	off-road trailway	existing sidepath	CK	medium	relatively easy
Howard Street	Oakland to Crosstown	to be determined	cyclists want to use it, but tough to improve without lowering traffic volumes/speeds; sidepath difficult to implement; potential for a parallel route should be explored	CK	medium	moderate
Amtrak/Arcadia Creek	W. Michigan to Rambling Rd.	off-road trailway	coordinate with railroad; trail must cross RR tracks at the Drake Rd. crossing and double back to connect with W. Michigan; will need a short stretch of sidepath along Stadium to link to the Rambling Rd. light	CK	medium	relatively easy

Route	Section	Treatment	Implementation	Jurisdiction	Need	Feasibility
Amtrak/Arcadia Creek	Rambling Rd. to Howard	off-road trailway	continue trail in floodplain on south side of RR, if space permits; wetlands may be a problem	CK	medium	moderate
Amtrak/Arcadia Creek	Howard to W. Michigan	off-road trailway	switch to north side of tracks, if space permits; then onto WMU property	CK	medium	moderate
Seneca Lane	Stadium Drive to Arcadia Creek trail	misc. connections	obtain easement to create a non-motorized link through apartment complex area	CK	medium	relatively easy
El Rancho Drive & Adios Drive	Stadium Drive to Arcadia Creek trail	misc. connections	create non-motorized links through mobile home park	CK	lower	relatively easy
Rambling Road/Greenwood Drive	Stadium Drive to Knollwood Park	misc. connections	create non-motorized link; will require complex bike/ped bridge over high-speed rail line to connect the two bike routes	CK	lower	more difficult
Stadium Drive	Drake Rd. to Rambling Rd.	wide curb lanes & traffic calming	shift lane striping if possible; evaluate potential for landscape median islands; reduce speeds; plant street trees	MDOT	high	moderate
Stadium Drive	Rambling Rd. to Howard	paved shoulder & sidepath	use shoulder on north side for west-bound cyclists; construct trailway on south side for east-bound cyclists	MDOT	high	moderate
Stadium Drive	Howard to W. Michigan	paved shoulders & traffic calming	maintain existing shoulders and consider restriping to widen shoulder area; evaluate potential for center lane to become a median planted with street trees; reduce speeds; accommodate bicycle needs when redesigning intersection/RR crossing	MDOT	high	moderate
Rambling Road	Stadium Dr. to Winchell Ave.	bike route	sign	CK	very high	relatively easy
Winchell Avenue	Winchell Way Apts. to Broadway	bike route	sign	CK	very high	relatively easy
Winchell Avenue/Stadium Drive	Winchell Avenue to Stadium	off-road trailway	connection from Winchell to access Stadium Drive bike and pedestrian	CK	medium	moderate
Parkview Avenue	12th St. to Broadway	paved shoulders	maintain/improve existing shoulders	CK	high	relatively easy
12th Street	Parkview Ave. to Milham Rd.	bike lane & paved shoulder	maintain and stripe bike lane south-bound & paved shoulder north-bound; consider shoulder widening	KCRC, CP	medium	relatively easy
Angling Road	Oakland into Portage	bike route	work with MDOT for bike/ped-only crossing of I-94 via bridge or tunnel	CK, MDOT, CP	medium	more difficult
Oakland Drive	Michigan & Lovell to Howard	bike lanes	reassess traffic and lane needs and restripe; if cannot reduce vehicular lanes, widen to provide bicycle lanes	CK	very high	moderate
Oakland Drive	Howard to Chevy Chase	bike lanes	maintain/improve existing bike lanes	CK	very high	relatively easy
Oakland Drive	Chevy Chase to Kilgore/I-94	bike lanes	as part of new construction; connect with Milham/City of Portage facilities	CK	high	moderate
Vine Street	Davis St. to Hatfield	bike route	plant trees; improvements/assistance crossing major intersections, especially King Highway to link with the KRVT	CK	high	relatively easy
Gibson	Portage Creek to Mills Street	bike route	create link between the Portage Creek trailway and the Annen Complex/KRVT	CK	medium	moderate
Crosstown Parkway	King Highway to Park St.	bike lanes	reassess traffic and need for number of vehicle lanes and restripe or widen; make connection to trailway along Portage Creek	CK	medium	moderate

Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Crosstown Parkway	Park St. to Westnedge Ave.	to be determined; bike lanes preferred	difficult one-block section; need to further study both vehicular and bicycle accommodation through this area; will likely need to widen roadway and/or explore potential trail to and along Axtel Creek corridor as alternative route	CK	medium	more difficult
Crosstown Parkway	Westnedge Ave. to Bronson Blvd.	bike lanes	reassess traffic and need for number of vehicle lanes and restripe or widen; explore potential trail along Axtel Creek corridor as alternative route	CK	medium	moderate
Stockbridge Avenue	Crosstown to Fulford	bike lanes	bike lanes preferred, but may need to restrict parking on one side of street; with pavement maintenance, signing as bike route may be an option; also designate spur route connecting to Farmer's Market	CK	high	moderate
S. Burdick Street	pedestrian mall to Crosstown	bike lanes	striped lanes preferred over simply posting bike route signs; proposed traffic calming measures to be bike-friendly and not take up bicycle space; need to accommodate two-way operation at north end	CK	medium	relatively easy to moderate
S. Burdick Street	Crosstown to Kilgore	bike lanes	reassess need for number of vehicle lanes/parking configuration and restripe, restrict parking and/or widen sections; consider share the road signing an interim measure	CK	high	moderate
Bronson Blvd	Crosstown to Kilgore	bike route	existing; stripe bike lane lines through curves to aid with traffic calming and designation of travel space where sight distances are limited	CK	medium	relatively easy
Wellington/Kensington/ Broadway/Lorraine/ Chev Chase/Edgemoor	Parkview to Bronson	bike route	existing; stripe bike lane lines through curves to aid with traffic calming and designation of travel space where sight distances are limited; sign connection up to Winchell	CK	medium	relatively easy
Parkview Avenue/Whites Road	Broadway to Westnedge	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CK	high	moderate
Cork Street	Westnedge to Sprinkle	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CK	medium	moderate
Kilgore Road	Oakland to Westnedge	bike lanes	as part of new construction	CK	high	moderate
Kilgore Road	Westnedge to Lovers Lane	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CP	high	moderate
Vincent Ave./Holiday Ln./West Fork	Angling Rd to Kilgore	bike route & trailways	link existing streets with short sections of off-road path along stream corridor	CP	lower	moderate
Portage Creek	Millham Rd. to Kilgore Rd.	off-road trailway	continuation of existing path by Portage Parks and Recreation; link to shoulder bike lanes on Lovers Lane; provides alternative I-94 crossing	CP	high	moderate
Portage Creek	Kilgore Rd. to Kalamazoo River	off-road trailway	long-term planning needed to become reality; coordinate with land use redevelopment	CK	medium	moderate
Lovers Lane	Kilgore Rd. to Cork Street	paved shoulders	maintain/improve existing shoulders as bike lanes; change bike route signing	CK	very high	relatively easy
Lakeway Ave./Moreland/ Fulford St./Egleston	Lovers Lane to Stockbridge	bike route	existing	CK	high	relatively easy
Race/Russel/Sheldon	Stockbridge to Gibson	bike route	existing	CK	high	relatively easy
Kalamazoo River corridor	Parchment to Galesburg	KRVT trailway	off-road and on-road sections per plans for Kalamazoo River Valley Trailway	various	medium	moderate
Mt. Olivet Road	Riverview to G Ave.	paved shoulders	maintain/improve existing shoulders as bike lanes; change bike route signing; provide connection to KRVT path at Riverview Dr.	CK	very high	moderate
Brook Drive	Mt. Olivet Rd. to Spring Valley Park Drive	paved shoulders	maintain/improve; explore potential to link with Kalamazoo County Human Services	CK	medium	moderate

Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Spring Valley Park Drive	around lake	bike route	recreational loop ride within park	CK	medium	relatively easy
Bridge Street	Gull Street/ Kalamazoo River to Charlotte	bike route	sign; tie in with East Side Neighborhood gateway project; examine Riverview intersection for potential signal to enhance bicycle crossing	CK	medium	relatively easy
Charlotte Avenue	Humphrey to Main E.	bike route	sign	CK	high	relatively easy
Humphrey Street	Charlotte to Main E.	paved shoulders	improve shoulders	CK/KCRC	high	moderate
E. Main Street	Michigan to Nazareth	bike route or share the road signing; ideally, bike lanes	sign; reassess traffic and need for number of vehicle lanes and restripe; share the road signing as an interim measure	CK/KCRC	high	relatively easy
E. Michigan Avenue	E. Main to Wallace	bike lane	reassess traffic and need for number of vehicle lanes and restripe; share the road signing as an interim measure	CK	medium	moderate
E. Michigan Avenue	Wallace to east of Sprinkle	paved shoulders	sign shoulders	KCRC	medium	relatively easy
Nazareth Street	E. Michigan to Gull Road	paved shoulders	improve shoulders	KCRC	medium	relatively easy
N. Burdick Street	Willard to Mosel	bike route	sign	KCRC, CK	medium	relatively easy
Mosel Avenue	Douglas Ave. to Riverview Dr.	bike route	look at implementing paved shoulders or bike lanes if traffic volumes increase with future development, or potential for off-road trailway	KCRC	medium	moderate
Westnedge Ave.	Mosel to Markin Glen Park	paved shoulders	maintain existing shoulders	KCRC	high	relatively easy
Douglas Drive	city limits to Markin Glen Park	paved shoulders	maintain/improve existing shoulders	KCRC	high	relatively easy
Douglas Avenue	city limits to W. Main	shared roadway	sign as bike route or use Share-the-Road warning signs; reassess need for number of vehicle lanes and consider restriping	MDOT, CK	high	moderate
abandoned Conrail corridor/Ravine Rd.	Westnedge to KalHaven Trail	KRVT rail-trail	off-road and on-road sections per plans for Kalamazoo River Valley Trailway	various	medium	moderate
Grand Prairie Rd.	Drake to Nichols	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Alamo Avenue	Nichols to city limits	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Alamo Avenue	city limits to Douglas	bike lanes	reassess parking configuration and restripe	CK	medium	relatively easy
Hillsdale Ave./Berkley St.	Alamo to Greenlawn Ave.	bike route	sign	KCRC	medium	relatively easy
Paterson St.	Douglas to river trail	bike route	sign	CK	medium	relatively easy
North St.	Berkley to Gull	bike route	sign	CK	medium	relatively easy
Willard Street	KRVT rail-trail to river trail	bike route & rail-with trail	use landscape buffer to separate trail from RR tracks; plant trees entire corridor; sections of trail to have dual function as alley to access businesses; encourage redevelopment around trailway	CK	medium	moderate

Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Eleanor Street	KRVT rail-trail to Festival Site	bike lanes	need short sidepath along Westnedge to access Eleanor; reassess need for number of vehicle lanes/parking configuration and restripe; ideally provide bike path through Festival Site	CK	medium	relatively easy
Water Street	Festival Site to Kalamazoo Ave.	bike route	maintain on-street parking; dead-end Water St. at Kalamazoo Ave; provide non-motorized access	CK	medium	more difficult
Kalamazoo Avenue/ Harrison Court	Water Street to KRVT river trail	off-road trailway	shift south curb of Kalamazoo Ave. to provide space for sidepath past RR crossing; add traffic signal; rail-with-trail for one half block; then route on Harrison Court	MDOT, CK	high	more difficult
South/Lovell Streets	W. Michigan/Oakland to Westnedge	one-way bike route pair	sign for one-way travel	CK	very high	moderate
Westnedge Avenue	South St. to Lovell St.	dual bike/left turn lane	designate left travel lane to be restricted for use by bicycles and left-turning vehicles only; needed if Lovell is to be the two-way bike lane corridor between Westnedge and Henrietta (preferred option)	MDOT	high	moderate
South/Lovell Streets	Westnedge to Henrietta	to be determined	preferred option is to i	CK	high	moderate
Lovell Street	Burdick to Henrietta	bike lanes	need bike lanes on both sides of Lovell for at least this one block to complete connection between Burdick and Henrietta/Edwards	CK	high	moderate
Henrietta Street	South St. to Lovell St.	bike lanes	bike lanes on both sides of street	CK	medium	relatively easy
Edwards Street	South St. to North St.	bike lanes	convert to two-way travel with bike lanes on both sides of street	CK	medium	moderate
W. Michigan Avenue/ Oakland Drive	Lovell St. to South St.	one-way bike lane	add bike lane on east side to get bike traffic to one-way route on South St.	MDOT, CK	high	moderate
intersection of Lovell Street & W. Michigan/Oakland	Lovell St. to Lovell Street Park	intersection redesign	improve Lovell Street crossing of W. Michigan/Oakland for bikes via on-street bike lane for west-bound traffic & sidepath for east-bound traffic; accommodate two-way bicycle access on Lovell west of Michigan	MDOT, CK	very high	moderate
Lovell Street Park/College Park/ Amtrak corridor	W. Michigan Ave. to Academy St.	off-road trailway	improve existing path from Michigan to Lovell; construct new path from Lovell to Academy along RR corridor	CK	medium	moderate
Amtrak corridor	Academy St. to Westnedge/rail-trail	off-road trailway	rail-with-trail, with special attention to treatment of angled crossings; need to coordinate with railroad companies	CK	medium	more difficult

BICYCLE SYSTEM OVERVIEW						
Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
H Avenue	from Drake Road west	paved shoulders	maintain/improve existing shoulders; sign as bike lanes	KCRC	medium	relatively easy
Drake Road	H Ave. to Canterbury	paved shoulders	improve/add shoulders; sign as bike lanes	KCRC, CK	high	relatively easy
Drake Road	Canterbury to W. Main	wide curb lanes	shift lane striping	CK	high	relatively easy
Drake Road	W. Main to Stadium	wide curb lanes	shift lane striping	KCRC	very high	relatively easy
Drake Road	Stadium to Parkview	paved shoulders	maintain/improve/stripe shoulders; sign as bike lanes	CK	very high	relatively easy
Canterbury Avenue	Frays Park	off-road trailway	formalize bike/ped only connection through park	CK	medium	relatively easy
West Main	entire length	to be determined	cyclists want to use it, but tough to improve without lowering traffic volumes/speeds; sidepath not recommended; potential for a parallel route should be explored	MDOT	high	more difficult
Arboretum & WMU properties	Drake Rd. to Greenlawn Ave.	off-road trailway	would more or less follow the north edge of these properties; to occur with development	CK	medium	relatively easy
Greenlawn/Academy	WMU to W. Michigan Ave.	bike route	construct short path & improve ped. connection at Greenlawn dead-end to accommodate bikes	CK	medium	moderate
W. Michigan Avenue	Drake Rd. to WMU	bicycle lanes	improve pavement quality; reassess need for number of vehicle lanes and restripe; reduce speed limit	CK	very high	moderate
W. Michigan Avenue	WMU to Stadium Dr.	bike lanes	reassess need for number of vehicle lanes/parking configuration and restripe; long-term plans at WMU may also include a sidepath on south side of street	CK	very high	relatively easy
Nichols Road	Ravine/KRVT to Alamo	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Nichols Road	Alamo to W. Main	bicycle lanes	reassess need for number of vehicle lanes and restripe	KCRC	medium	relatively easy
Solon & Kendall	W. Main to Howard	bicycle lanes	implement as a one-way pair, with a cross over bike route on Santos; Kendall needs sidewalks	KCRC	very high	relatively easy
through WMU Campus	Kendall to Stadium	bike route	may require short sections of path to link with existing facilities on WMU property	WMU	very high	moderate
Howard Street	Stadium to Oakland Drive	off-road trailway	maintain existing sidepath	CK	medium	relatively easy
Howard Street	Oakland to Crosstown	to be determined	cyclists want to use it, but tough to improve without lowering traffic volumes/speeds; sidepath difficult to implement; potential for a parallel route should be explored	CK	medium	moderate
Amtrak/Arcadia Creek	W. Michigan to Rambling Rd.	off-road trailway	to connect with W. Michigan, trail must cross RR tracks at the Drake Rd. crossing and double back; will need a short stretch of sidepath along Stadium to link to the Rambling Rd. light	CK	medium	relatively easy
Amtrak/Arcadia Creek	Rambling Rd. to Howard	off-road trailway	continue trail in floodplain on south side of RR, if space permits; wetlands may be a problem	CK	medium	moderate
Amtrak/Arcadia Creek	Howard to W. Michigan	off-road trailway	switch to north side of tracks, if space permits; then onto WMU property	CK	medium	moderate
Seneca Lane	Stadium Drive to Arcadia Creek trail	misc. connections	create a non-motorized link through apartment complex area	CK	medium	relatively easy
El Rancho Drive & Adios Drive	Stadium Drive to Arcadia Creek trail	misc. connections	create non-motorized links through mobile home park	CK	lower	relatively easy
Rambling Road/Greenwood Drive	Stadium Drive to Knollwood Park	misc. connections	create non-motorized link; will require complex bike/ped bridge over high-speed rail line to connect the two bike routes	CK	lower	more difficult
Rambling Rd./Ferdon Rd./Broadway	Parkview to Stadium	bike route	sign	CK	very high	relatively easy
Stadium Drive	Drake Rd. to Rambling Rd.	wide curb lanes & traffic calming	shift lane striping if possible; evaluate potential for landscape median islands; reduce speeds; plant street trees	MDOT	high	moderate

BICYCLE SYSTEM OVERVIEW						
Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Stadium Drive	Rambling Rd. to Howard	paved shoulder & sidepath	use shoulder on north side for west-bound cyclists; construct trailway on south side for east-bound cyclists	MDOT	high	moderate
Stadium Drive	Howard to W. Michigan	paved shoulders & traffic calming	maintain existing shoulders and consider restriping to widen shoulder area; evaluate potential for center lane to become a median planted with street trees; reduce speeds; accommodate bicycle needs when redesigning intersection/RR crossing	MDOT	high	moderate
Asylum Lake	Winchell Ave. to Stadium Dr.	to be determined	consider the potential to make some form of non-motorized connection as part of future plans for this property	WMU	lower	more difficult
Parkview Avenue	12th St. to Broadway	paved shoulders	maintain/improve existing shoulders	CK	high	relatively easy
12th Street	Parkview Ave. to Milham Rd.	bike lane & paved shoulder	maintain and stripe bike lane south-bound & paved shoulder north-bound; consider shoulder widening	KCRC, CP	medium	relatively easy
Angling Road	Oakland into Portage	bike route	work with MDOT for bike/ped-only crossing of I-94 via bridge or tunnel	CK, MDOT, CP	medium	more difficult
Oakland Drive	Michigan & Lovell to Howard	bike lanes	reassess need for number of vehicle lanes and restripe	CK	very high	moderate
Oakland Drive	Howard to Chevy Chase	bike lanes	maintain/improve existing bike lanes	CK	very high	relatively easy
Oakland Drive	Chevy Chase to Kilgore/I-94	bike lanes	as part of new construction; connect with Milham/City of Portage facilities	CK	high	moderate
Vine Street	entire length	bike route	plant street trees; improvements/assistance crossing major intersections	CK	high	relatively easy
Crosstown Parkway	King Highway to Park St.	bike lanes	reassess need for number of vehicle lanes and restripe; make connection to trailway along Portage Creek	CK	medium	moderate
Crosstown Parkway	Park St. to Westnedge Ave.	to be determined; bike lanes preferred	difficult one-block section; need to further study both vehicular and bicycle accommodation through this area; explore potential trail to and along Axtel Creek corridor as alternative route	CK	medium	more difficult
Crosstown Parkway	Westnedge Ave. to Bronson Blvd.	bike lanes	reassess need for number of vehicle lanes and restripe; explore potential trail along Axtel Creek corridor as alternative route	CK	medium	moderate
Stockbridge Avenue	Crosstown to Fulford	bike lanes	bike lanes preferred; with pavement maintenance, signing as bike route may be an option; also designate spur route leading to Farmer's Market	CK	high	moderate
S. Burdick Street	pedestrian mall to Crosstown	bike lanes	striped lanes preferred over simply posting bike route signs; proposed traffic calming measures to be bike-friendly and not take up bicycle space; need to accommodate two-way operation at north end	CK	medium	relatively easy to moderate
S. Burdick Street	Crosstown to Kilgore	bike lanes	reassess need for number of vehicle lanes/parking configuration and restripe	CK	high	moderate
Bronson Blvd	Crosstown to Kilgore	bike route	existing; stripe bike lane lines through curves to aid with traffic calming	CK	medium	relatively easy
Wellington/Kensington/Broadway/Lorraine/Chevy Chase/Edgemoor	Parkview to Bronson	bike route	existing; stripe bike lane lines through curves to aid with traffic calming	CK	medium	relatively easy
Parkview Avenue/Whites Road	Broadway to Westnedge	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CK	high	moderate
Cork Street	Westnedge to Sprinkle	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CK	medium	moderate
Kilgore Road	Oakland to Westnedge	bike lanes	as part of new construction	CK	high	moderate
Kilgore Road	Westnedge to Lovers Lane	bike lanes	reassess need for number of vehicle lanes and restripe; may need to widen roadway	CP	high	moderate
Vincent Ave./Holiday Ln./West Fork	Angling Rd to Kilgore	bike route & trailways	link existing streets with short sections of off-road path along stream corridor	CP	lower	moderate
Portage Creek	Millham Rd. to Kilgore Rd.	off-road trailway	continuation of existing path by Portage Parks and Recreation; link to shoulder bike lanes on Lovers Lane; provides alternative I-94 crossing	CP	high	moderate

BICYCLE SYSTEM OVERVIEW						
Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Portage Creek	Kilgore Rd. to Kalamazoo River	off-road trailway	long-term planning needed to become reality; coordinate with land use redevelopment	CK	medium	moderate
Lovers Lane	Kilgore Rd. to Cork Street	paved shoulders	maintain/improve existing shoulders as bike lanes; change bike route signing	CK	very high	relatively easy
Lakeway Ave./Moreland/Fulford St./Egleston	Lovers Lane to Stockbridge	bike route	existing	CK	high	relatively easy
Race/Russel/Sheldon	Stockbridge to Gibson	bike route	existing	CK	high	relatively easy
Kalamazoo River corridor	Parchment to Galesburg	KRVT trailway	off-road and on-road sections per plans for Kalamazoo River Valley Trailway	various	medium	moderate
Mt. Olivet Road	Riverview to G Ave.	paved shoulders	maintain/improve existing shoulders as bike lanes; change bike route signing; provide connection to KRVT path at Riverview Dr.	CK	very high	moderate
Spring Valley Park Drive	around lake	bike route	recreational loop ride within park	CK	medium	relatively easy
N. Burdick Street	Willard to Mosel	bike route	sign	KCRC, CK	medium	relatively easy
Mosel Avenue	N. Burdick St. to Douglas Dr.	bike route	look at implementing paved shoulders or bike lanes if traffic volumes increase with future development, or potential for off-road trailway	KCRC	medium	moderate
Westnedge Ave.	Mosel to Markin Glen Park	paved shoulders	maintain existing shoulders	KCRC	high	relatively easy
Douglas Drive	city limits to Markin Glen Park	paved shoulders	maintain/improve existing shoulders	KCRC	high	relatively easy
Douglas Avenue	city limits to W. Main	shared roadway	sign as bike route or use Share-the-Road warning signs; reassess need for number of vehicle lanes and consider restriping	MDOT, CK	high	moderate
abandoned Conrail corridor/Ravine Rd.	Westnedge to KalHaven Trail	KRVT rail-trail	off-road and on-road sections per plans for Kalamazoo River Valley Trailway	various	medium	moderate
Grand Prairie Rd.	Drake to Nichols	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Alamo Avenue	Nichols to city limits	paved shoulders	maintain/improve existing shoulders	KCRC	medium	relatively easy
Alamo Avenue	city limits to Douglas	bike lanes	reassess parking configuration and restripe	CK	medium	relatively easy
Hillsdale Ave./Berkley St.	Alamo to Greenlawn Ave.	bike route	sign	KCRC	medium	relatively easy
Paterson St.	Douglas to river trail	bike route	sign	CK	medium	relatively easy
North St.	Berkley to Gull	bike route	sign	CK	medium	relatively easy
Willard Street	KRVT rail-trail to river trail	bike route & rail-with trail	use landscape buffer to separate trail from RR tracks; plant trees entire corridor; sections of trail to have dual function as alley to access businesses; encourage redevelopment around trailway	CK	medium	moderate
Eleanor Street	KRVT rail-trail to Festival Site	bike lanes	need short sidepath along Westnedge to access Eleanor; reassess need for number of vehicle lanes/parking configuration and restripe; ideally provide bike path through Festival Site	CK	medium	relatively easy
Water Street	Festival Site to Kalamazoo Ave.	bike route	maintain on-street parking; dead-end Water St. at Kalamazoo Ave; provide non-motorized access	CK	medium	more difficult
Kalamazoo Avenue/Harrison Court	Water Street to KRVT river trail	off-road trailway	shift south curb of Kalamazoo Ave. to provide space for sidepath past RR crossing; add traffic signal; rail-with-trail for one half block; then route on Harrison Court	MDOT, CK	high	more difficult
South/Lovell Streets	W. Michigan/Oakland to Westnedge	one-way bike route pair	sign for one-way travel	CK	very high	moderate

BICYCLE SYSTEM OVERVIEW						
Route	Section	Treatment	Implementation Notes	Jurisdiction	Need	Feasibility
Westnedge Avenue	South St. to Lovell St.	dual bike/left turn lane	designate left travel lane to be restricted for use by bicycles and left-turning vehicles only; needed if Lovell is to be the two-way bike lane corridor between Westnedge and Henrietta (preferred option)	MDOT	high	moderate
South/Lovell Streets	Westnedge to Henrietta	to be determined	four options depending if streets are to be two-way or one-way: 1) include bike lanes on both sides of Lovell; 2) include bike lanes on both sides of South; 3) provide a single one-way bike lane on both streets; 4) sign as one-way bike routes or use Share the Road warning signs	CK	high	moderate
Lovell Street	Burdick to Henrietta	bike lanes	need bike lanes on both sides of Lovell for at least this one block to complete connection between Burdick and Henrietta/Edwards	CK	high	moderate
Henrietta Street	South St. to Lovell St.	bike lanes	bike lanes on both sides of street	CK	medium	relatively easy
South Street	Henrietta to Edwards	bike lanes	bike lanes on both sides of street	CK	medium	moderate
Edwards Street	South St. to Willard/rail-trail	bike lanes	convert to two-way travel with bike lanes on both sides of street	CK	medium	moderate
W. Michigan Avenue/ Oakland Drive	Lovell St. to South St.	one-way bike lane	add bike lane on east side to get bike traffic to one-way route on South St.	MDOT, CK	high	moderate
intersection of Lovell Street & W. Michigan/Oakland	Lovell St. to Lovell Street Park	intersection redesign	improve Lovell Street crossing of W. Michigan/Oakland for bikes via on-street bike lane for west-bound traffic & sidepath for east-bound traffic; accommodate two-way bicycle access on Lovell west of Michigan	MDOT, CK	very high	moderate
Lovell Street Park/College Park/ Amtrak corridor	W. Michigan Ave. to Academy St.	off-road trailway	improve existing path from Michigan to Lovell; construct new path from Lovell to Academy along RR corridor	CK	medium	moderate
Amtrak corridor	Academy St. to Westnedge/rail-trail	off-road trailway	rail-with-trail, with special attention to treatment of angled crossings; need to coordinate with railroad companies	CK	medium	more difficult

Downtown Kalamazoo Connections

Corridor A: Willard Street/Rail-with-Trail

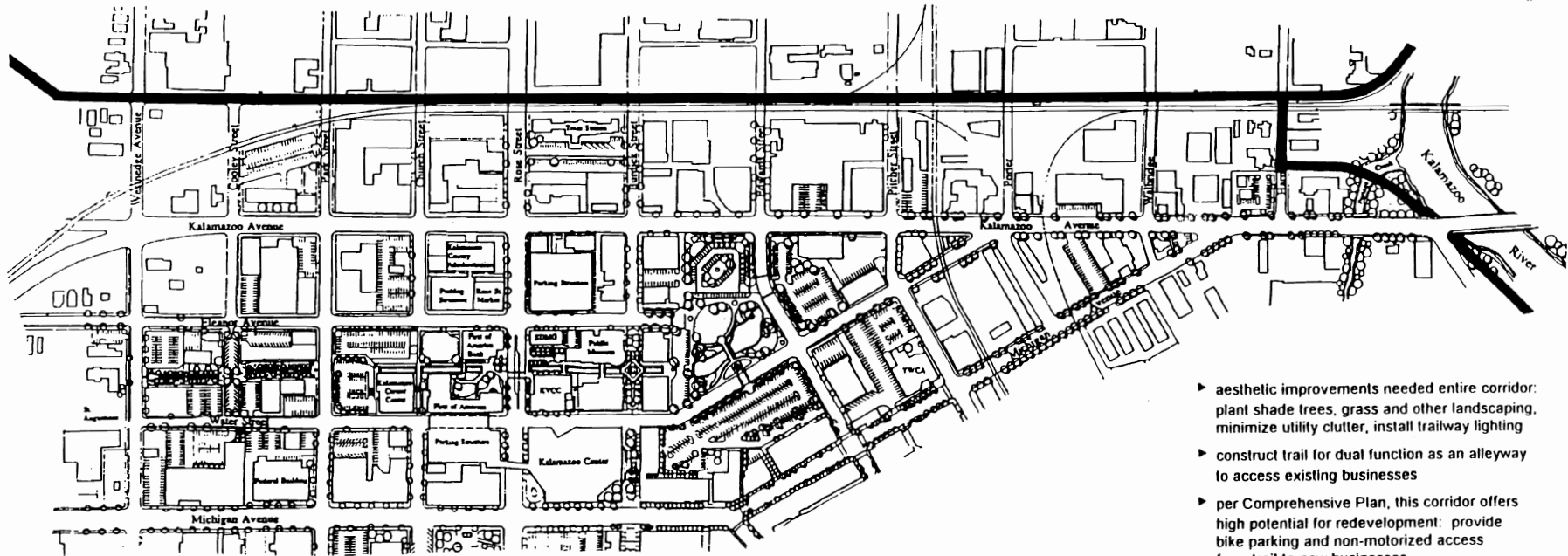
- ▶ sign low-traffic Willard Street as Bike Route
- ▶ add landscaping and other measures to "green" the street environment

- ▶ rail-with-trail on north side of RR tracks
- ▶ separate from tracks with landscape buffer

- ▶ connection to city-wide bike system via proposed bike lanes on Edwards

- ▶ first priority — will need to determine if RR tracks may be crossed at RR crossing location, or only at street crossings

- ▶ Willard right-of-way no longer in City ownership between Porter and Walbridge



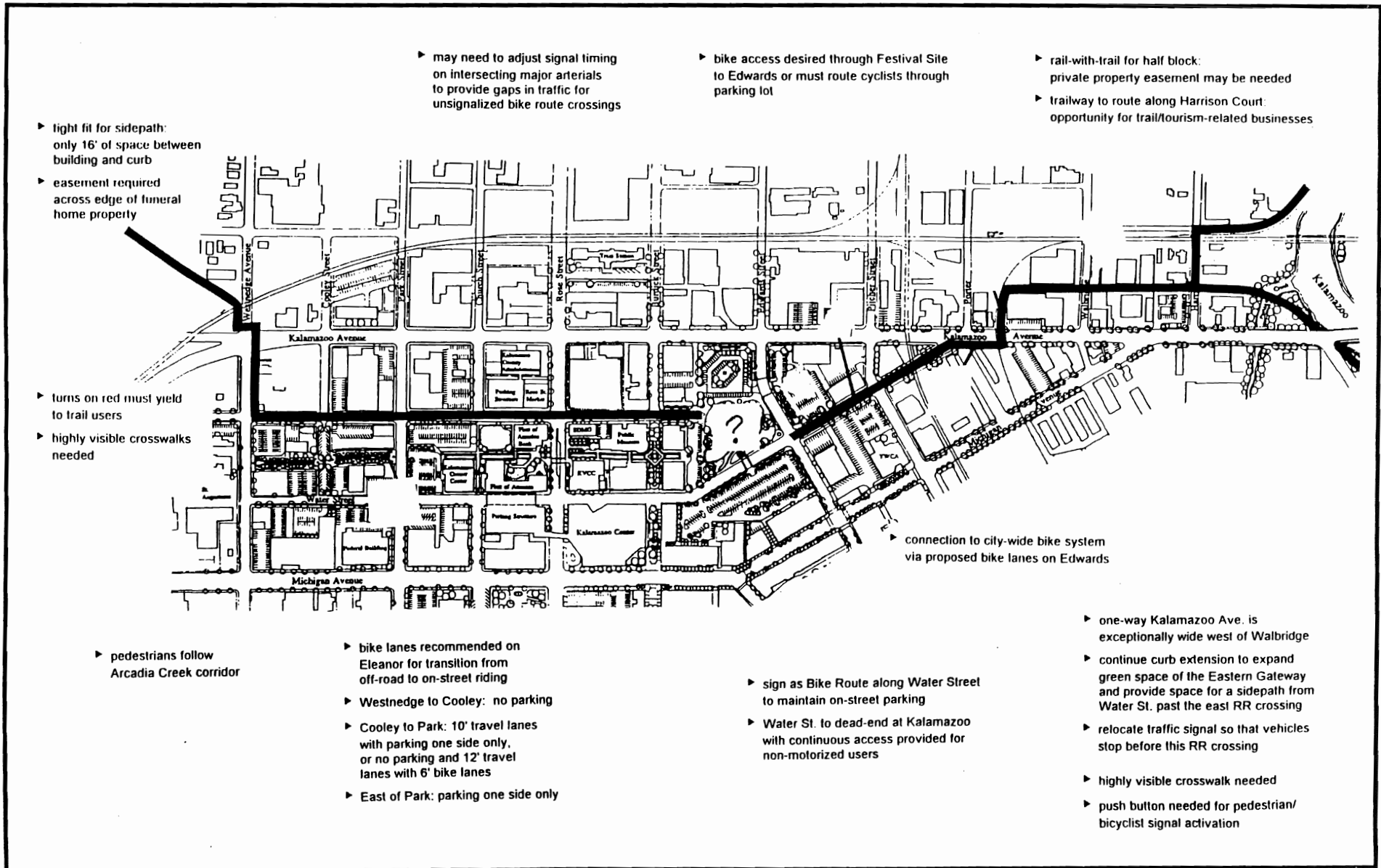
- ▶ aesthetic improvements needed entire corridor: plant shade trees, grass and other landscaping, minimize utility clutter, install trailway lighting
- ▶ construct trail for dual function as an alleyway to access existing businesses
- ▶ per Comprehensive Plan, this corridor offers high potential for redevelopment: provide bike parking and non-motorized access from trail to new businesses

- ▶ may need to adjust signal timing on intersecting major arterials to provide gaps in traffic for unsignalized bike route crossings
- ▶ use highly-visible crosswalks at mid-block intersections of trail and arterial streets

- ▶ offers a direct east-west through route that bypasses Downtown, yet Downtown amenities are easily accessible via Edwards Street
- ▶ provides a direct link with inter-modal transportation center

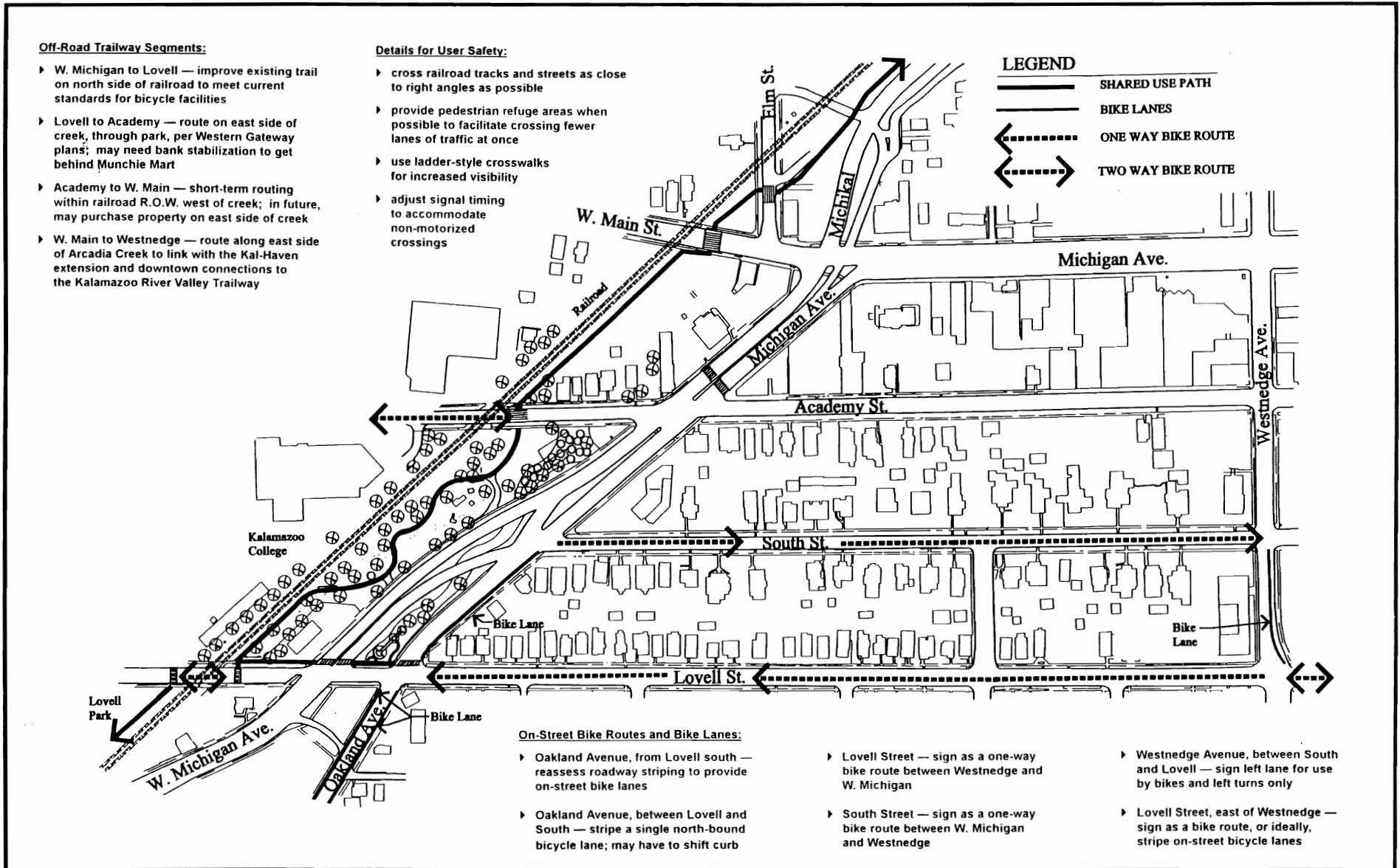
Downtown Kalamazoo Connections

Corridor B: Eleanor/Water Streets



Downtown Kalamazoo Connections

Corridor C: Western Gateways



B.3 Priorities

The routine maintenance of all streets and trails, combined with the corridor improvements previously identified, are important to create a citywide bicycle system such that any person can safely and conveniently travel from point A to point B. However, the tabulation of the Task Force rankings based upon the need for a given facility yielded thirteen highest priority projects needed to improve bicycling conditions. Most of these streets are under City of Kalamazoo jurisdiction, while others will require coordination with affected agencies.

The identified bicycle transportation priorities include:

- 1) designate **Rambling Road/Ferdon Road/Broadway** as a bicycle route
- 2) maintain/improve **Drake Road** shoulders from Stadium to Parkview
- 3) restripe and/or widen **West Michigan Avenue/KL Avenue** to create bicycle lanes between Drake Road and WMU
- 4) implement one-way bike lane pair on **Solon** and **Kendall**
- 5) maintain/improve existing bike lanes on **Oakland Drive**
- 6) restripe and/or widen **Drake Road** to create bicycle lanes from West Main to Stadium Drive
- 7) provide accommodations on **Lovell** and **South** to link downtown with WMU and K-College
- 8) maintain/improve existing bike lanes on **Lovers Lane**
- 9) restripe and/or widen **West Michigan Avenue** to create bicycle lanes between Stadium Drive and WMU
- 10) designate north/south bicycle route through **WMU campus**
- 11) maintain/improve existing bike route on **Mt. Olivet Road** and/or designate bicycle lanes
- 12) improve **intersection of Lovell/West Michigan/Oakland**
- 13) restripe **Oakland Drive** to create bicycle lanes between West Michigan/Lovell and Howard Street

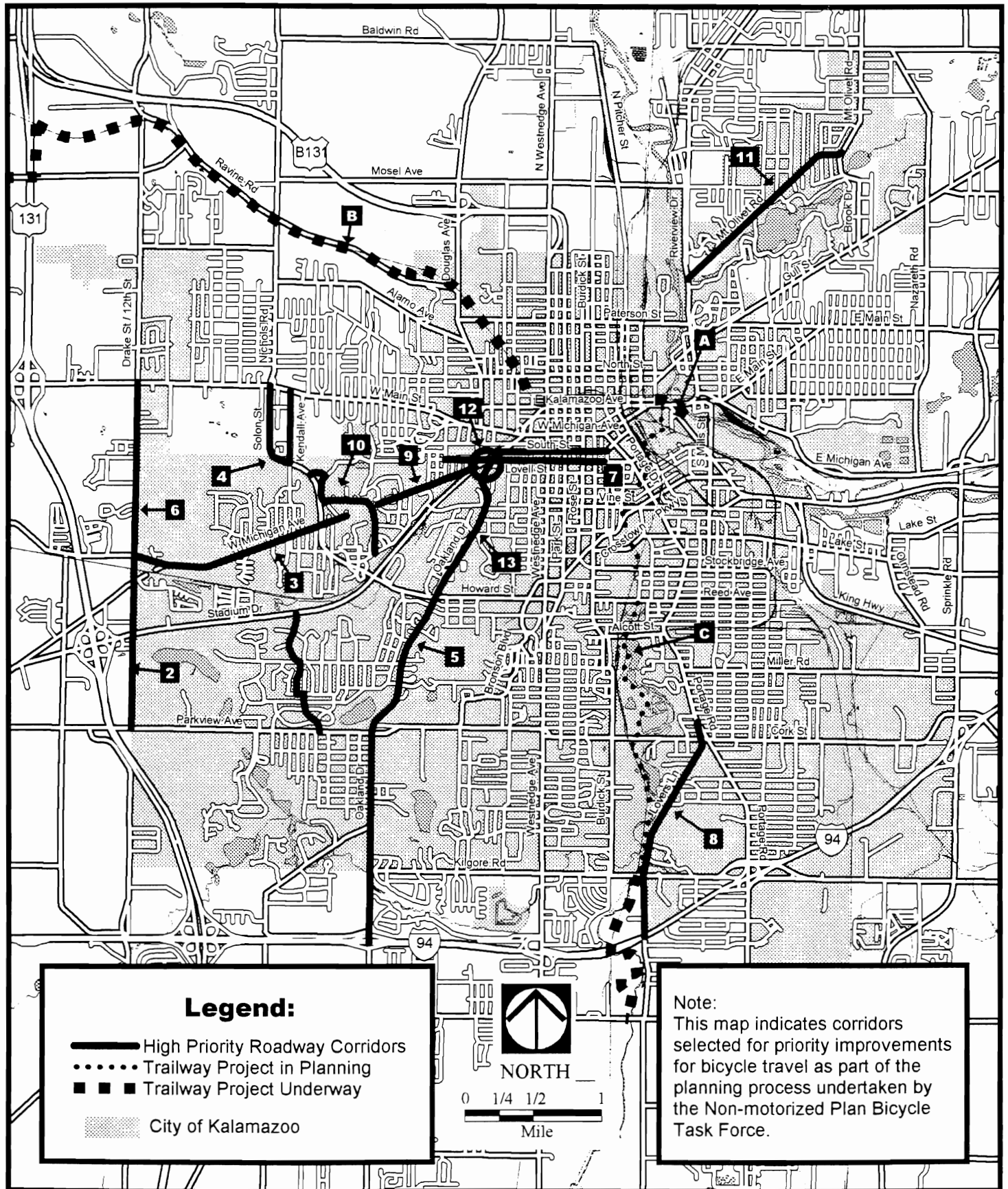
These same corridors were brought up repeatedly throughout the planning process as those most in need of some form of improvement, and several were examined in detail during project work sessions focusing on the downtown, campus, West Main and Vine neighborhoods.

It is important to note that all of these areas of critical need are streets and roadways, demonstrating that cyclists wish to have access to the same destinations as motor vehicles if they are to be able to use their bikes as a viable form of local transportation. Construction of separated trailways and signing of side streets as bike routes are good supplements to a network of bicycle improvements on the principal street system, but in most communities they cannot replace the need for travel on major streets. Kalamazoo is no exception.

However, it is important to also recognize the value of off-road facilities for those intimidated by riding in traffic. Trails often serve as training grounds for young cyclists, and encourage those who have not ridden their bikes in years to try again. The following trailway projects are currently moving into implementation:

- a) **Kalamazoo River Valley Trailway:** Red Arrow Golf Course section is currently funded
- b) **Kal-Haven Trail Extension:** application recently submitted for MDOT TEA-21 funds
- c) **Portage Creek:** City of Portage is currently extending the Portage Creek Bicentennial Park to Kilgore Road; funding to continue the facility north to be applied for in fall 1999.

Priority Bicycle Corridors



Overview of Proposed Pedestrian Improvements

This section of the *Kalamazoo Non-Motorized Transportation Plan* summarizes priority infrastructure improvements needed to create a more pedestrian friendly Kalamazoo. These priorities are based upon the issues raised through the public involvement process, especially the work of the Pedestrian Task Force.

The following issues are addressed and **priority pedestrian infrastructure improvements** are identified:

- ▶ sidewalks: in-fill and repair
- ▶ sidewalks: regular maintenance
- ▶ access for disabled individuals, children, and the elderly
- ▶ crossing streets: improve safety and convenience
- ▶ neighborhood traffic access and speed
- ▶ ambient conditions
- ▶ access to and between destinations and to transit.

Additional areas of concern include the overall safety and security of pedestrians as associated with both traffic and crime. Infrastructure improvements alone cannot address these concerns but can increase safety and security when combined with law enforcement and other community building initiatives.

The public process also identified certain **priority locations** for pedestrian improvements. These include:

- ▶ school routes
- ▶ university/college area access
- ▶ access to downtown from surrounding neighborhoods
- ▶ facilities and neighborhoods with concentrations of elderly pedestrians
- ▶ arterial and collector roadways that serve commercial and residential areas
- ▶ high density residential areas
- ▶ neighborhood commercial areas
- ▶ access to parks.

These infrastructure and location priorities are recommended for priority implementation by the City. Each of the types of infrastructure improvements are discussed below with general or specific locations identified as appropriate.

Among these recommended improvements is a list of proposed sidewalk segments that would expand and complete Kalamazoo's extensive system of sidewalks. This list has been developed in consultation with the public and City staff. It is not a comprehensive list of all sidewalk gaps but it reflects most of the high priority segments in the more developed areas of the City.

With the exception of sidewalk in-fill recommendations and those specific locations that were identified in the public planning process, this plan is not developing specific project recommendations for pedestrian improvements. The City will consider adoption of policies and procedures that will lead to implementation of specific projects. These policies and procedures are presented as part of the Action Plan in Section VI.

Part A. Pedestrian Planning Overview

The City of Kalamazoo enjoys an extensive sidewalk system and a pedestrian friendly downtown. Kalamazoo was one of the first cities in the nation to experiment with a pedestrian mall. Although the mall has recently been redesigned to reintroduce a traffic lane, pedestrian access is a priority. The goal of this and other downtown improvements, is to create a lively and pleasant downtown which is welcoming to pedestrians. These improvements and the historic commitment to sidewalk development serve as the basis for what can become an even more pedestrian friendly environment.

Pedestrian planning is different from bicycle planning partly because all of us who are mobile are pedestrians at one time or another. Every age group and ability level uses the pedestrian environment and most destinations need to be accessible to pedestrians. Some evidence suggests that our communities are becoming more intimidating and in some ways more dangerous. People may be walking less, especially where land use and a lack of pedestrian accommodations make it very difficult. Pedestrian planning attempts to reverse this trend since walking is healthful, brings us in contact with our community and offers mobility to those who cannot or choose not to drive.

Transportation planning has responded to traffic congestion... by recommending that we build additional roads. Two lane streets are widened with turning lanes, intersections are expanded, two lanes become four, and four lanes become six. Wider roads attract more traffic and more traffic going at faster speeds makes walking more dangerous."

— *Mean Streets 1998*,
a report of the Surface Transportation Policy Project

A pedestrian friendly community today must provide the needed facilities to allow people to safely walk and it must in some cases retrofit roadways and developments to make walking easier and more inviting.

The Pedestrian Task Force and other citizens are concerned that pedestrian conditions are deteriorating even where roadway improvements are made. Such deterioration results from designs that favor automobile flow over pedestrian access and/or the omission of pedestrian facilities in projects. There are sometimes unavoidable trade-offs that must be made to accommodate all forms of transportation. The City of Kalamazoo is addressing the challenge of better accommodating pedestrians in transportation projects.

Some of the missing sidewalks identified through the public process have recently been built or will be included in upcoming projects. These include projects on Gull Road and West Main Street.

Part B. Recommendations

The vision for the future involves resolving pedestrian obstacles and meeting facility needs over time. Following is a summary of the priority infrastructure recommendations for the *Kalamazoo Non-Motorized Transportation Plan*. Detailed facility design concepts and implementation strategies are addressed in the next chapter, Section V: How to Get There.

B.1 Sidewalk In-fill and Repair

A lack of sidewalks in some areas and gaps in the sidewalk network were identified as issues by the planning process. Additionally, many existing sidewalk segments are due for repair. The map on page 4-32 and table on 4-33 summarize the missing sidewalk links identified at the July, 1998 public meeting along with supplemental comments by City of Kalamazoo staff and members of the Pedestrian and Bicycle Task Forces. The summary of missing sidewalks is not a complete listing, but probably captures most of the missing sidewalk links in areas of highest pedestrian demand.

The *Kalamazoo Non-Motorized Transportation Plan* recommends that the City should begin the process of sidewalk in-fill by developing a procedure to prioritize projects and develop a funding mechanism for such projects. This recommendation is further discussed in the Action Plan (see Strategies B.6 and B.7).

The City of Kalamazoo strongly encourages the inclusion of sidewalks in all new development and re-development projects. The plan recommends a policy of requiring developers to include sidewalks with development and re-development projects. (see Action Plan, Strategy B.8) Site plan design and review should include requirements for pedestrian facilities and attempt to promote connections from the site to nearby destinations.

At one time, the City of Kalamazoo practiced a policy to inspect and repair broken and uneven sidewalks on a ten year cycle. Due to other budget priorities this practice was dropped. The sidewalks in older areas, some of which are in poor condition, will need to be repaired over time. Repair projects may, like in-fill projects, be prioritized on the basis of several factors including state of disrepair and adjacent land use.

B.2 Regular Sidewalk Maintenance

The two primary sidewalk maintenance issues identified by the planning process are snow removal and gravel migrating onto the sidewalk.

Snow removal is a problem in residential areas, despite an ordinance requiring that property owners keep sidewalks clean of snow. Several participants in the planning process stated that business owners contribute to the problem by piling snow from parking lots onto the sidewalk.

"We need new ways of thinking about transportation. We need to focus on moving people, not cars. Why should those too young, too old, or too poor to own or drive cars have their mobility restricted by missing sidewalks, lack of safe bicycle routes, or even piles of snow?"

— Kay Chase,
pedestrian advocate and
Pedestrian Task Force member

Some municipalities, such as Grand Rapids, MI, clear snow from sidewalks as a function of local government. Such an approach might be too expensive for the City of Kalamazoo to assume at this time. If complete snow removal is not affordable, the City should consider priority snow removal on sidewalks in several locations:

- ▶ The Central Business District
- ▶ Along major arterial roadways
- ▶ In the vicinity of bus stops

To encourage better efforts by private property owners the City could step up enforcement of the snow removal ordinance and increase the effort to remind property owners of their responsibilities. It is especially important that snow removal efforts directed toward automobile access do not degrade conditions for pedestrians. Business owners should be informed and, if necessary, fined for piling snow on sidewalks. Also, care should be taken that snow plows do not pile snow on sidewalks. It was observed in a recent storm (winter, 1999) that plowed snow was piled on sidewalks that residents had just shoveled! As a snowbelt city, Kalamazoo needs to intensify both public and private efforts at snow removal if pedestrian access is to be improved and maintained.

B.3 Access for Disabled Individuals, Children and the Elderly

Special care and specific accommodations are needed to serve the needs of less able individuals. The City of Kalamazoo uses the State of Michigan's design options for curb cuts and other requirements of the American With Disabilities Act (ADA). (See Appendix H) New sidewalks are routinely designed to the appropriate standards. Nevertheless, some existing situations are not adequate. The Pedestrian Audit noted both a lack of curb cuts in some locations and some that were poorly designed or in need of repair. At a few busy intersections, curb cuts are provided in one direction but not in the other. This might have been done to discourage young bicyclists, who also use the curb cuts, from shooting out into on-coming traffic. This is a valid concern but it is recommended that these locations do need curb cuts so that wheelchair bound pedestrians are not prevented from crossing. The surface of curb cuts should communicate the street edge to those with sight impairments, through tactile perception. The plan recommends that all intersections where pedestrian traffic can be expected will be served by sidewalks and curb cuts designed to the current ADA and State of Michigan standards.

Young and elderly individuals, whether disabled or not, sometimes require additional concessions in the design of pedestrian facilities. It is recommended that special consideration be given to walk-to-school routes to see that crosswalk markings, light timing and intersection design provide roadway crossing opportunities that allow children to safely walk or bicycle to school. The children's planning charrette discovered that many families did not allow their children to walk or bicycle to school because the trip is perceived as unsafe. Elderly people also need more time to cross the street. At locations where concentrations of elderly people can be expected, consideration should be given to longer walk cycles if needed to accommodate a crossing time of less than 3.5 feet per second. (See discussion, page 5-62.) If a longer cycle cannot be provided, then a median refuge island should be considered.

B.4 Crossing Streets

Except where prohibited by signing or barriers, legal crosswalks at intersections include the area of the intersection that is the natural extension of the sidewalk. Legal crosswalks can be signed or un-signed. The difficulty of crossing wide streets that have large traffic volumes and fast moving vehicles emerged as a priority pedestrian issue in the planning process.

This difficulty can, in some cases, be addressed by the use of designated/marked crosswalks and through the use of signing and signalization. Most major streets in Kalamazoo have marked crosswalks and signals that allow for pedestrian crossing movements. Crosswalks are repainted each year. However some areas lack clearly indicated crossing opportunities (e.g., West Michigan Avenue in the University/College area) and some intersections are complex because of the angle and/or width of the intersection, (e.g., Lovers Lane/Portage Street, Riverview Drive/Gull Road and Academy/West Michigan intersections).

Additional options for improving crossing conditions include: shortening or breaking up the crossing movement through the redesign of intersections or the addition of median refuge islands; and, traffic signal modifications in locations where vehicle indications cannot be seen or do not adequately serve pedestrians. See Section V, Tools for Designing and Maintaining Pedestrian Facilities, for a further discussion of design for the following recommendations to facilitate crossing streets.

Marked Crosswalks

It is recommended that pedestrian crossing opportunities be clarified as needed at complex and angled intersections. Crosswalk markings can be used to direct pedestrians to the safest and shortest route when the legal crosswalk is angled or overly complex. Generally, it is not desirable to prohibit crossing, but marking and sometimes signing a preferred route can increase pedestrian safety. If the preferred crossing is shorter and more direct it will more likely be used even where other "natural" crosswalks are not blocked.

Shortening Crossing Movements

The widening of streets to accommodate extra lanes of traffic and, especially the widening of intersections, results in difficult-to-cross intersections. Median refuge islands offer the possibility of staging the street crossing, especially for slower pedestrians. Some communities are considering a policy that pedestrians should not have to cross more than two lanes of traffic without the aid of a pedestrian refuge. This is standard practice in Stockholm, Sweden.

Medians are used in several locations in Kalamazoo. In some cases the median is designed to facilitate pedestrian crossing, as on Rose Street at Arcadia Creek. In other locations, such as the West Michigan Avenue/MichiKal Avenue intersection, the medians should be redesigned to better serve pedestrians. It is recommended that the existing medians for the Western Gateway be re-designed to provide pedestrian refuge areas.

Curb extensions or corner bulbs also shorten the crossing distance for pedestrians and increase safety by improving pedestrian and vehicle visibility. This technique is being used in downtown Kalamazoo. It is most applicable in central business districts and on local residential streets where pedestrian traffic is given priority. Curb extensions create a non-travel area behind the extension which is useful for parking

"Kalamazoo is perceived as a high traffic city. However, I think the problem is not high traffic volume but the way in which traffic is spread on our 4- and 5-lane roads, and the problem of managing huge signalized intersections. Complex intersections, in addition to being very intimidating for pedestrians to cross, are one of the primary causes of traffic congestion due to the huge traffic backups they induce at rush hour.

Four-lane roads encourage overall higher speeds in that slower traffic (meaning cars traveling at the speed limit) can be easily passed

I think this is a critical issue since drivers shift into 'expressway mode' on our 4-lane roads."

*— Richard Voorman,
concerned citizen and
Pedestrian Task Force member*

and for bus stops. Extensions can be useful where arterial roadways meet local streets if it is desirable to control access or the speed of traffic entering the local street. It is recommended that the City continue to explore opportunities to use curb extensions to increase pedestrian safety and shorten crossing distances.

One-way Streets

Heavily traveled, multi-lane one-way streets pose a special challenge to pedestrians. The crossing distance is wide and the danger exists that pedestrians will have trouble seeing and being seen. The City is committed to a system of paired one-way streets to facilitate traffic flow but several streets are under consideration for reversal to two-way traffic. The advantages of two-way travel are slower vehicle speeds (in some cases), and the opportunity to stage the crossing movement, especially if a median refuge island is provided. Intersections where pedestrians must cross one-way arterial roadways should be provided with pedestrian signal heads that are timed adequately to cross the entire width in one cycle. It is recommended that no additional lanes be added to any one-way streets within the City and that consideration be given to reducing the number of travel lanes and travel speeds on some one-way streets.

Mid-block Crosswalks

Mid-block crossing opportunities consist of crosswalk markings (at locations other than intersections,) that are either un-signalized, if adequate gaps exist (60 or more gaps per hour), or signalized where roadway width and traffic volumes and speeds make crossing difficult. Certain locations in Kalamazoo (e.g., Stadium Drive near the West Town Mall and Stadium Drive, West Main and Douglas, in the university areas), create a demand for mid-block crossings due to various land uses and services on either side of the road. It is recommended that pedestrian crossing patterns be observed and measures taken to create convenient crossing opportunities. Some of these locations, especially near Western Michigan University might be candidates for a pedestrian overpass. It is recommended that appropriate studies and negotiations be undertaken to explore the usefulness of a pedestrian overpass at Oliver Street and Stadium Drive to connect the east campus with WMU's main campus.

Traffic Signals

Traffic signals control pedestrian crossing opportunities just as they regulate vehicular traffic. Many considerations go into the placement and timing of signals. The Manual on Uniform Traffic Control Devices (MUTCD), recommends that pedestrian signal indications should be used in the following circumstances:

- ▶ where certain minimum pedestrian volumes are present
- ▶ at school crossing locations
- ▶ when an all-pedestrian interval is provided
- ▶ and, when the vehicle signals are not visible to pedestrians.

It is recommended by this plan that land use may also be a consideration in the placement of pedestrian signals. Sometimes pedestrian volumes do not reach the level of an MUTCD warrant because the crossing environment is very intimidating. In cases where destinations are within short walking distances and a potential for pedestrian access exists, consideration should be given to improving the crossing to see if untapped demand exists. Pedestrian signals are also recommended where crossings are complex due to intersection geometry and multi-phase signals and where older or disabled adults or young children are frequently present.

In some cases, it is difficult for pedestrians to see signals. This is especially true at locations with diagonal spans (signals hanging from wires). Sight impaired people also have difficulty seeing signals across wide intersections. Intersections that are 75 feet or more in width may be improved with the addition of pedestrian signals placed in the median, in one exists.

Signal Timing

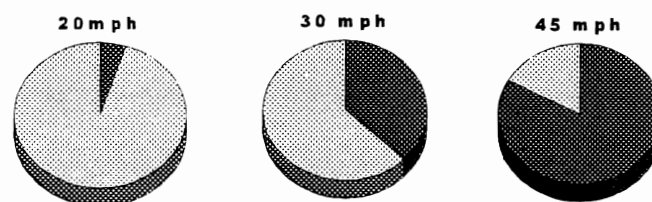
The timing of lights can also present difficulties for pedestrians. Lights are timed to maximize efficient traffic flow and minimize congestion and air pollution. It is not always easy to integrate adequate pedestrian crossing time into the light phases. The MUTCD recommends a 4 to 7 second walk interval but a longer interval is often desirable. Elderly pedestrians walk at a speed of approximately 3 to 4 feet per second which would require a longer phase in most locations. It is recommended that consideration be given to longer phases where observation and experience indicate that a need exists.

B.5 Neighborhood Traffic Access

There is concern in some Kalamazoo neighborhoods about cut-through traffic and speeding, conditions that negatively impact the pedestrian environment. Certain streets, including Lovell and South are one-way, partly as a means to prevent cut through traffic. The Elm Crossover is controversial due to an influx of traffic onto neighborhood streets. West Michigan is being considered for a return to two-way traffic to address these concerns. The reversion of Lovell to two-way traffic has been considered in the context of the bicycle system proposals and other planning efforts. Where consideration is given to a return to two-way traffic, additional strategies to control motor vehicle access and speed can be considered. These include partial diversion through extended corners (see page 5-55) in combination with signing which can restrict turning movements onto the local street. Other traffic calming measures can slow speeds and decrease the attractiveness of streets to cut-through traffic.

B.6 Controlling Speed

Some remarkable research has been coming out in recent years concerning the impact on the number and severity of injuries from traffic accidents in relation to vehicle speed. Some of these studies are discussed in Section V (see page 5-73). Dramatic crash reductions have resulted from traffic calming programs in Seattle, WA and from other programs to slow traffic in cities Great Britain, Australia, Austria, Switzerland and other European cities. The conclusion of much of this research is that the probability of a pedestrian fatality in a traffic accident is 5 percent at 20 mph vehicle speed, 37 percent at 30 mph, and 83 percent at 45 mph.



Probability of a Pedestrian Fatality in a Traffic Accident

This research creates a powerful argument for reducing vehicle speeds in areas where pedestrian safety should be paramount: residential areas, central business districts, schools, etc. The Swedish government has recently adopted a goal to reduce traffic fatalities to zero. Central to this goal is the recognition that the safety needs of pedestrians and bicyclists must take precedence over those of drivers because of their relative vulnerability to injury. It is critical that local interests should take precedence over the interests of through-traffic when State truck lines are within City limits. Speeds must be modified to reflect a compromise between the needs of fast-moving through-traffic and the safety of pedestrians and bicyclists.

It is recommended that Kalamazoo adopt the policies in this plan that promote pedestrian and bicycle safety over speed and increase the priority of non-motorized modes in relationship to motor vehicle access. A combination of city-wide speed limit reductions, coupled with enforcement and roadway design modifications can create slower streets.

B.7 Ambient Conditions

An aspect of the transportation system that is of importance to all users, but especially to pedestrians, is the aesthetic appeal and sense of security of the immediate environment. This emerged as an issue in the public process in which comments expressed appreciation for the many tree filled neighborhoods in Kalamazoo and criticism about a lack of trees on some major roadways. One example of the general appreciation of trees is a comment by one member of the Pedestrian Task Force, "I always bring people into Kalamazoo from the airport by way of Oakland Drive because of the trees." The addition of landscaped medians to some arterial and major collector roadways would improve the general ambience of the roadway and provide locations for pedestrian median refuges. Medians can, in some cases, also be used to store snow.

Another aspect of the pedestrian environment noted by participants in the pedestrian audit was debris along streets and curb lawns. A lack of maintenance and general care contributes to a feeling of reduced security, whether or not the area is less safe. As with snow removal, much of the responsibility for maintenance must fall to private property owners. An educational effort along with enforcement of appearance ordinances might lead to improvement. Such an effort would coordinate well with the goal of the *Kalamazoo Comprehensive Plan Update* to strengthen neighborhoods through the encouragement of home ownership.

B.8 Access To and Between Destinations and To Transit

In addition to the provision of a system of sidewalks adjacent to roadways, it is theoretically desirable to connect various destinations by way of pedestrian or multi-use pathways. In newly developed areas, the local street system is sometimes confined to the sub-division and all traffic must exit the residential area and access local shopping, schools and community services via a few heavily traveled roadways. If right-of-way can be found or preserved, as new development is planned, additional non-motorized access can be provided between homes and various destinations that are within reasonable walking or bicycling distances. It is recommended that the City adopt a policy to require or encourage developers to consider pedestrian circulation and preserve the necessary right-of-way to provide these non-motorized connections.

Pedestrian connections are also sometimes needed within already developed areas. As an example, the Pedestrian Audit identified a need for an access route into Verburg Park from the adjacent neighborhood. There is currently a muddy pathway that seems to be the preferred route. Providing this route with a stable surface would clarify access and prevent an unsightly situation.

A variation on the concept of auxiliary access can be seen downtown where pedestrian walkways have been provided to interconnect the businesses, restaurants, parking lots and other services in the Kalamazoo Avenue/Arcadia Festival Site area. The Arcadia Creek riverwalk serves this function as well. A dense network of pedestrian friendly connections that complements the street system adds convenience and a sense of a lively activity to commercial/business districts.

Transit Access

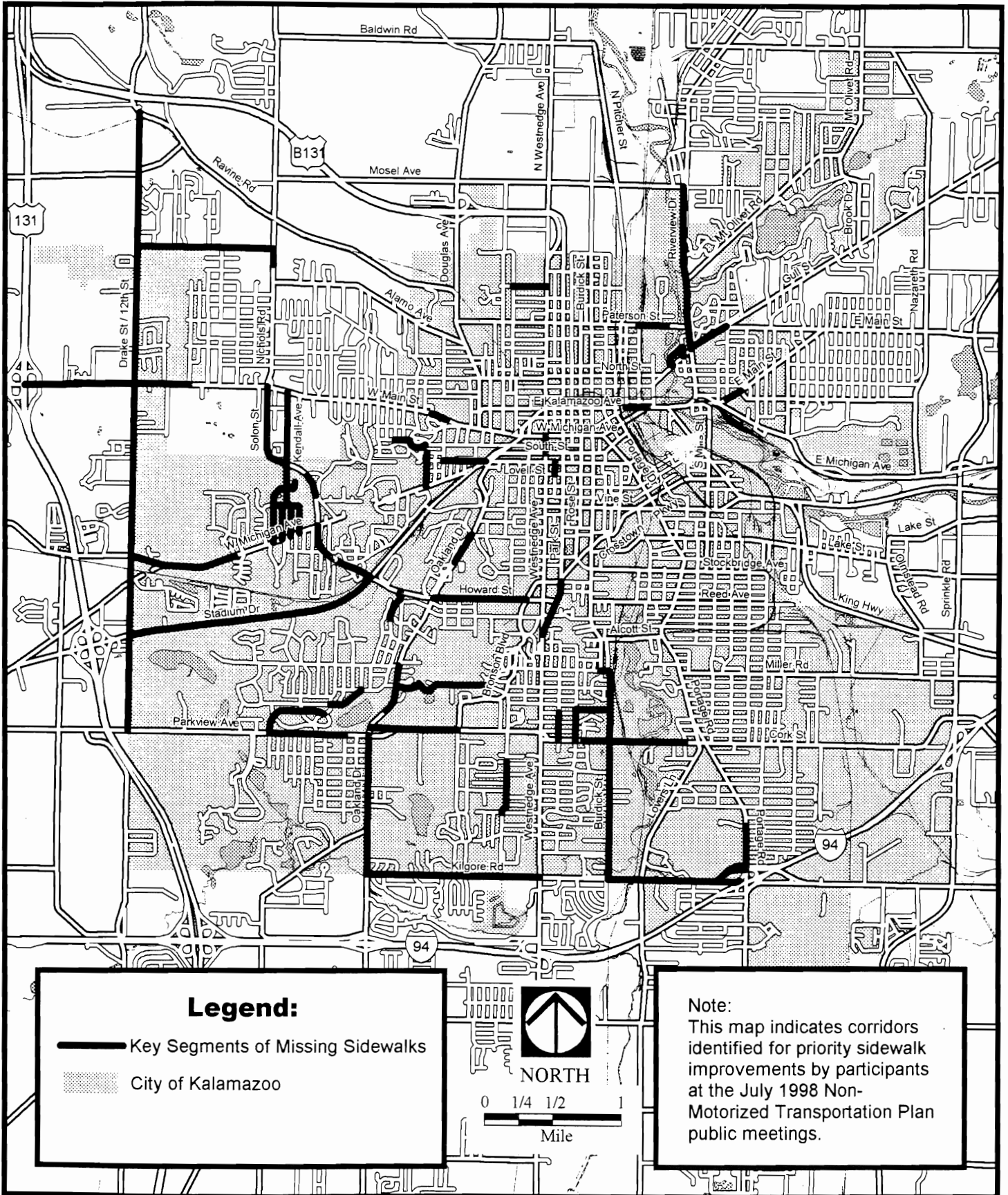
Access to Metro buses can be improved through the creation of paved landing areas that connect to the sidewalk system and the addition and proper placement of bus shelters. It is recommended that all transit stops should provide a paved landing area on the curb lawn to prevent a muddy waiting area. It is also

recommended that sidewalk construction should be a priority along transit routes, as part of the sidewalk in-fill program and that the City remove snow from landing areas and adjacent sidewalks.

The pedestrian audit discovered a bus shelter that was situated so that one could enter it only by stepping into the street. A setback with a paved landing area adjacent to the curb would improve this installation.

Another issue for transit is the placement of bus stops where patrons can safely cross the street to access the stop. Again, a coordinated effort might resolve this issue. Ideally, transit stops on busy roadways should be located in close proximity to designated crosswalks, whether at intersections or at mid-block locations.

Missing Sidewalk Links



PEDESTRIAN SYSTEM OVERVIEW: Missing Sidewalks

Street	Section	Treatment	Implementation Notes
Amperssee Ave.	Ray St. to Gull Rd.	add sidewalks	
Arcadia Neighborhood		no sidewalks (Dobbin and Farrel), no curb cuts (Lancaster and Dobbin)	
Benjamin Ave.	Howard St. to Evergreen	add sidewalks - on west side of road	
Bronson Blvd.	Crosstown to Kilgore Rd.	add sidewalks where missing	cars going fast on some segments
Burdick St.	Inkster St. to Cork St.	add sidewalks - both sides	
Burdick St.	Cork St. to Kilgore Rd.	add sidewalk - east side of road	
Burrows St.	W. Michigan Ave. to South St.	add sidewalks	Kalamazoo College area
Chevy Chase	Oakland to Edgemoor	add sidewalk and bike lane	blind curves, no pedestrian walks, no lanes or bike path
Cork St.	Rose St. to Saint Mary's St.	add sidewalks where missing	
Drake Rd.	H Ave. to W. Main	add sidewalks	
Drake Rd.	W. Main to Stadium Dr.	add sidewalks	
Drake Rd.	Stadium Dr. to Parkview Ave.	add sidewalks	particulary needed past Asylum Lake Preserve and WMU Land
Drake Rd.	Stadium Dr. and N. City Limit	no sidewalk	build sidewalks as part of the W. Main 2001 Project
Duke St.	Hutchinson St. to Denway Circle	add sidewalks	
E. Paterson St.	Walbridge to Verburg Park	add sidewalks	
Edgemoore Ave.	Oakland to Bronson Blvd.	add sidewalks	
Edgemoore Ave.	Chevy Chase to Bronson	add sidewalks	
Grand Prairie Ave.	Drake Rd. to Nichols Rd.	add curb cuts and sidewalks	serves residential developments
Henderson Dr.	Grand Ave. to Academy	add sidewalks	
Howard St./Kendall/Solon	Stadium through WMU to W. Main	add sidewalks	sidewalks exist for small section
Howard St.	Bronson Blvd. to Oakland Dr.	add sidewalks - north side of road	
Kalamazoo Ave.	east of Porter St.	add sidewalks on both sides of street	
Kendall Ave.	Westfall Ave. to W. Main St.	add sidewalks	
Kensington Dr./Chevy Chase Blvd./	Parkview to Bronson	add sidewalks	cars going fast on some segments
Kilgore Rd.	Oakland to Westnedge	add sidewalks	
Kilgore Rd.	Portage Rd. to Lovers Lane	add sidewalk	fast cars - walkers to Milham Park and Norrix High School (north side in park)
Kilgore Rd./Burdick St. intersection			improve visibility of sidewalk/pedestrians - trees/shrubs
Lorraine St.	Chevy Chase and Bruce St. west to Broadway	add sidewalks	
Lovell St.	Monroe to W. Michigan	add sidewalks	bad crossing
Nichols Rd. and Grand Ave.		add sidewalks and safe crossings	
Oakland Dr.	Wheaton St. to Howard St.	add sidewalks	along Michigan School for Blind and Kennedy Center
Oakland Dr.	Winchell to Woods Lake Public park	add sidewalks - west side of road	may be difficult due to slope and grade
		repair sidewalks - east side of road	
Oakland Dr.	Parkview Ave. to Kilgore Rd.	add sidewalks - east side of road	
Park St.	Crane Park/Westnedge to Crosstown Pkwy.	add sidewalks	
Park St. at Crosstown Pkwy.		no sidewalk at Hardings	install a sidewalk and bike path

PEDESTRIAN SYSTEM OVERVIEW: Missing Sidewalks			
Street	Section	Treatment	Implementation Notes
Parkview Ave.	Wellington Rd. to Laird	add sidewalk - north side of road	may be difficult on north side, due to steep grade
Portage St.	Kilgore Rd. to Banbury Rd.	add sidewalk - west side of road	
Potter St.	Cedar to Lovell St.	add sidewalk	add two segments of sidewalk - north end
Prouty St.	Westnedge to Cobb St.	add sidewalks	
Ray St.	Gull Rd. to Ampersee Ave.	add sidewalks	
Ridgewood St.	Burdick to S. Rose	add sidewalk - north side of road	
Riverview Dr.	Paterson to Mosel Ave.	add pathways or sidewalks	if on one side only, prefer river side on west
RR Crossings at Crosstown Pkwy & Walnut St. & Gibson St.		improve RR crossings	poor condition at RR crossings and adjacent streets for pedestrians/bikes
S. Rose St.	Cork St. to Garland Ave.	add sidewalks	
Solon St. to Kendall Ave.	W. Main to Howard	add sidewalks	
Stadium Dr.	W. Michigan Ave. to Drake Rd.	add sidewalks	busy road past WMU and neighborhoods/malls; evaluate potential for landscaped median islands; reduce speeds
W. Kalamazoo Ave. and Westnedge		build sidewalk on S. side of Kalamazoo Ave.	intersection is too large for easy crossing, no sidewalk for Westnedge to Kalamazoo Ave.
W. Kalamazoo Ave.	Westnedge to MichiKAL	add sidewalks	
W. Main St.	Drake Rd. to Maple Hill	add sidewalks	Westmain Mall area - unsafe
W. Main St.	Drake Rd. to Northhampton	add sidewalks	major residential areas
W. Main St.	Prospect St. to Grand Ave.	add sidewalks - south side of road	south side of road parallel to Prospect Hill across from Mountain Home Cemetary; (to be involved in MDOT project-2001)
W. Michigan Ave.	Drake Rd. to Howard St.	add sidewalks	add ramps; curb cuts for ADA access needed
Weaver Ave., Westoreland Ave., Westfall Ave., Farrell Aves, Memory Lane		add sidewalks	
Wellington Rd.	Parkview to Broadway	add sidewalk - south side of road	
Westnedge	Academy to Lovell St.	fix sidewalk	crumbling concrete in sidewalks; smooth out or repave sidewalks
Westnedge Ave.	W. Michigan Ave. to South St.	repair sidewalks	very poor sidewalk conditions
Whites Rd.	Bronson Blvd. to Oakland Dr.	add sidewalk - on north side	

Section Endnotes

1. U.S. Department of Transportation, Federal Highway Administration, The National Walking and Bicycling Study: Transportation Choices for a Changing America, Publication No. FHWA-PD-94-023. 1994.
2. Ibid.
3. U.S. Department of Transportation, Federal Highway Administration, Selecting Roadway Design Treatments to Accommodate Bicycles, Publication No. FHWA-RD-92-073. 1994.
4. American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities. AASHTO, Washington, DC, 1991.

THE CITY OF



Section V: How To Get There

Introduction

The previous chapter of this plan defined a network of corridors and suggested improvements that are to be targeted for non-motorized infrastructure improvements. The final sections of the plan follow up with the many details that are needed to realize those improvements — both physical design details and recommended policies and procedures to be undertaken by various agencies. These are presented in the form of “toolkits” and an “action plan.”

The Toolkits

The design element of the Kalamazoo Non-Motorized Transportation Plan is organized into three “toolkits” which present both a further rationale for and basic how-to information for bicycle and pedestrian infrastructure improvements. These toolkits are designed to provide planners, engineers and maintenance personnel with key information needed to make daily decisions that impact the ability of a person to walk or bike:

- Tools for Designing and Maintaining Bicycle Facilities
- Tools for Designing and Maintaining Pedestrian Facilities
- Traffic Calming, Street Design and Planning Tools to Improve Bicycling and Walking

While developed specifically to meet the identified needs of the Kalamazoo community, the toolkits also serve as a primary means of fulfilling MDOT’s goal of having the Kalamazoo plan serve as a model for other non-motorized transportation planning efforts. The consultant team has thus designed the toolkits to contain information that will have application in Kalamazoo as well as other Michigan communities as they strive to become more bicycle and pedestrian friendly.

A workshop was held at the District MDOT offices on October 16, 1998 to provide review and input into the proposed toolkits. Over thirty representatives from area municipalities, various transportation agencies, and local engineering consulting firms participated.

Their comments and suggestions, as well as those of Bicycle and Pedestrian Task Force members, have been incorporated into this section of the plan in an effort to have the toolkits serve as a resource for any person who makes day-to-day planning, design, construction, or maintenance decisions. The goal is to gradually modify current policies and practices so that transportation and land use decisions can benefit non-motorized users as well as motorized users.

"I hope other communities will use Kalamazoo's bicycle and pedestrian plan as a model of institutionalizing better facilities. Michigan Department of Transportation's goal is to make Michigan more bicycle and pedestrian friendly, which in turn will make our Michigan cities more friendly and livable."

— Cynthia Krupp,
Michigan Department of Transportation
Nonmotorized Program Planner

The Action Plan

The toolkits outline what needs to be done. A second part of determining "how to get there" is to summarize how this is likely to happen and who will need to be involved. This information is presented in Section VI: Action Plan, where thirty-nine implementation strategies have been identified under seven general categories of need:

- Part A: Community Acceptance/Understanding
- Part B: Internal City Policies and Practices
- Part C: Multi-Jurisdictional Coordination
- Part D: Continued Citizen and Agency Involvement
- Part E: Educational Initiatives
- Part F: Funding Opportunities
- Part G: Facility Maintenance

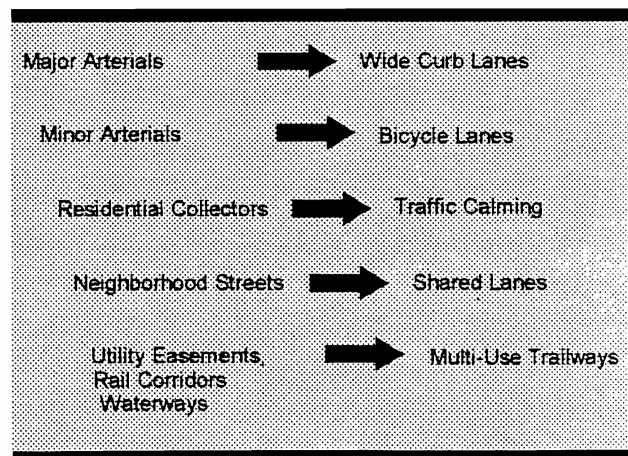
As a supplement to the toolkits, the strategies recommend ordinances, programs and policies that will facilitate the implementation of the plan and institutionalize bicycle and pedestrian considerations in transportation policy.

Tools for Designing and Maintaining Bicycle Facilities

Planning and designing community infrastructure to meet the mobility and safety needs of bicyclists must be a multi-faceted process to adequately address the skill levels and interests of a diverse bicycling population. The needs of a child just learning to ride are much different than that of an adult who understands basic traffic principles. Likewise, the desires of casual recreational cyclists who seek out long, meandering routes do not match those of commuter or utilitarian cyclists who want direct, fast and convenient routes of travel from one destination to another.

No single type of bicycle facility will meet all of these needs. Nor will a single type of bikeway allow users to reach all destinations within a community. Therefore, a community-wide system of bicycle-friendly streets, roadways and trailways is needed, whereby individual users can select a given route for a specific trip based upon their skill level and travel needs. Within any given transportation corridor, bicyclists may actually be provided with more than one option to meet the through travel and access needs of all potential users. This approach is similar to that of traditional transportation planning whereby motorized vehicles are provided a hierarchy of facility types ranging from the interstate system to arterials to local residential streets and alleys.

To create a similar bicycle system, planners and engineers need to take a holistic look at the community's transportation infrastructure in an effort to determine what bicycle facility type is most prudent for implementation within a given corridor. The graphic at right presents a model



for providing various levels of bicycle accommodation based upon the characteristics of the physical environment through which a cyclist travels. For example, since it is likely that only confident, experienced cyclists will want to ride on the busiest streets, providing additional right-hand lane width in such corridors may be an adequate infrastructure improvement to facilitate easier lane sharing by bikes and motor vehicles. In moderately traveled corridors, such as minor arterials and collector streets, the presence of a designated facility such as signed and striped on-street bicycle lanes will serve to attract cyclists of all skill levels and aid in the lane channelization of both bicyclists and motor vehicles. On traffic-calmed streets, no special accommodation is necessary as slow travel speeds permit bikes and cars to share lane space. And, for those who desire complete separation from motor vehicles, off-road trailways are good facilities for development within scenic linear open space corridors.

When planning a bicycle system, the important thing to keep in mind is that all of the bikeway types are interrelated, and must be interconnected to provide continuous routes of travel and various travel options throughout the community. This is illustrated in conceptual form on the following page, and can also be seen in the variety of facility types included in the proposed City of Kalamazoo bicycle system map presented in Section IV, p. 4-11.

While they don't show up on a city-wide map, it is often the little details that make or break a system for non-motorized travel. People need to be able to safely cross busy roadways, transition from on-road to off-road facilities, have access across natural barriers, position themselves properly at intersections, and ride on well maintained streets and trails that are free from glass, snow and sand. These issues and more are addressed in this chapter, which is intended to provide the technical details necessary for City staff and other affected jurisdictions to make day-to-day changes in planning, designing and maintaining Kalamazoo's existing transportation infrastructure to become more friendly toward bicycle travel.

Finally, it is important to recognize that no facility type in and of itself will ensure safe passage for bicyclists. Infrastructure improvements must be accompanied by educational efforts designed to change attitudes toward non-motorized users, a topic which is addressed in detail beginning on pages 6-4 and 6-15 of this plan.

**LINEAR OPEN SPACE
CORRIDORS:**

Off-Road Trailways

- 10 to 12 wide paths separated from motor vehicle traffic.
- Designed for multiple-use by cyclists, pedestrians and in-line skaters.

Provide transition between on-road and off-road facilities.

MINOR ARTERIAL OR COLLECTOR:

Bicycle Lanes

- Preferred bicycling streets due to a combination of moderate traffic volumes and speeds, conjoined with access to destinations.
- Provides signed and striped roadway space for bicycle use.
- Encourages people to apt for bicycle travel on these routes.

Provide access ways for non-motorized links between cul-de-sacs and adjacent streets or trails.

MAJOR ARTERIALS:

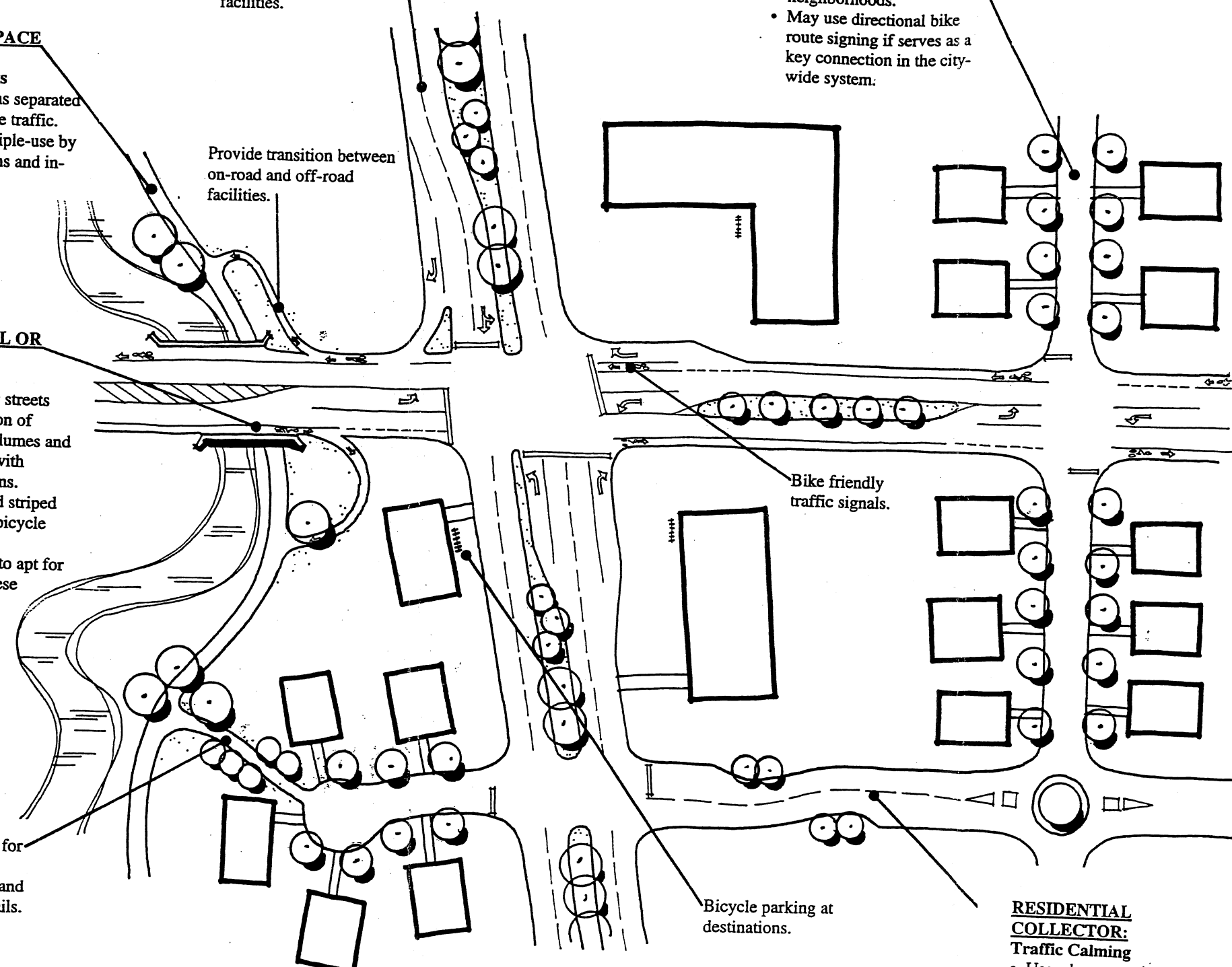
Wide Curb Lanes

- Provides additional operating space in right hand traffic lane for cyclists who are confident riding in traffic.
- Such corridors are typically not designated as bicycle facilities.

LOCAL STREETS:

Shared Roadway

- Low traffic volumes and speeds permit sharing of lane space.
- Local street network provides connections into neighborhoods.
- May use directional bike route signing if serves as a key connection in the city-wide system.



Bike friendly traffic signals.

Bicycle parking at destinations.

**RESIDENTIAL COLLECTOR:
Traffic Calming**

- Use when street is too narrow to provide space for bicycle lanes and on-street parking.
- Discourages fast, through motor vehicle traffic which makes shared roadway more attractive for bicycle use.

Bicycle-Friendly Infrastructure

An interconnected system of improvements to encourage bicycling

Kalamazoo Non-Motorized Transportation Plan
 Bicycles & Co., Inc.
 Suzan Anderson Pinosof
 The Greenway Collaborative, Inc.
 O'Boyle, Cowell, Blalock and Associates, Inc.

The Importance of Good Design

Well-designed bicycle facilities are those that are safe, attractive, convenient and easy to use. They minimize user conflicts and promote good riding habits. As such, well-designed facilities are popular community amenities and are heavily used.

Poor bicycle facilities are those that are little used, are used irresponsibly because of poor design, or have not been designed for ease of maintenance. Inadequate facilities discourage users from bicycling on a regular basis. Plus, unnecessary facilities waste money and resources, and make future bicycle improvements less favorable with the general public.

The best way to ensure good facility design is to include the needs of bicyclists at the inception of a transportation project or improvement, so that the bicycle improvement is integrated into the total design of the project. If added as an afterthought, the bicycle accommodations will likely be under-designed, and will probably cost more as independent improvements.

To assist communities in planning and implementing well-designed bicycle facilities, national organizations such as the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) have developed guidelines to accommodate the operating characteristics of bicycles and ensure user safety. These guidelines have been used as the basis for the following section of the Kalamazoo Non-Motorized Transportation Plan, with supplemental detail furnished as necessary to more easily and effectively convey specific design details and adapt them to local conditions.

Both the 1991 AASHTO and 1988 MUTCD guides are currently undergoing substantial revisions and should become available in 1999-2000. Designers of local bicycle facilities are encouraged to reference the current and/or new manuals directly.

Sources for these key reference publications include:

- ▶ **AASHTO Guide for the Development of Bicycle Facilities**
Published by the American Association of State Highway and Transportation Officials
444 North Capitol Street, NW, Suite 249, Washington, DC 20001
(800) 231-3475
- ▶ **Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)**
U.S. Department of Transportation, Federal Highway Administration
Available from the U.S. Government Printing Office, Superintendent of Documents
P.O. Box 371954, Pittsburg, PA 15250-7954
- ▶ **Selecting Roadway Design Treatments to Accommodate Bicycles**
U.S. Department of Transportation, Federal Highway Administration
Document #FHWA-RD-92-073
Available through the national Bicycle/Pedestrian Clearinghouse: (800) 760-6272
Bicycle Federation of America, 1506 21st Street NW, Suite 200, Washington DC 20036
- ▶ **Traditional Neighborhood Development Street Design Guidelines**
ITE Publication #RP-027
Available from the Institute of Transportation Engineers
525 School Street, SW, Suite 410, Washington, DC 20024-2797
Fax (202) 863-5486

Part A. Bicycle Lanes

Good design does more than provide a facility for people who are already bicycling. Good design creates attractive, inviting facilities that encourage more people to bike more often. A prime example is the bicycle lane — which is defined as “a portion of the roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.”¹

Motorists driving down a roadway which has bicycle-friendly drainage grates or widened curb lanes probably won't notice such bicycle accommodations. But a designated lane on the street is difficult to ignore. As such, bicycle lanes on collector and arterial streets have been prominent components in most bicycle plans of the 1990s.

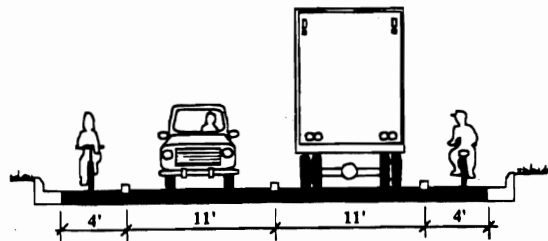
Properly designed bicycle lanes offer the following benefits:²

- Establish the correct position of bicyclists on the roadway;
- Reduce bicycle/pedestrian conflicts as fewer people ride on sidewalks;
- Provide bicyclists a space to travel at their own speed next to motorists;
- Guide bicyclists through intersections;
- Allow bicyclists to pass vehicles backed up at intersection (a bike lane is a legal travel lane); and
- Send a message to motorists that bicyclists have a right to the roadway.

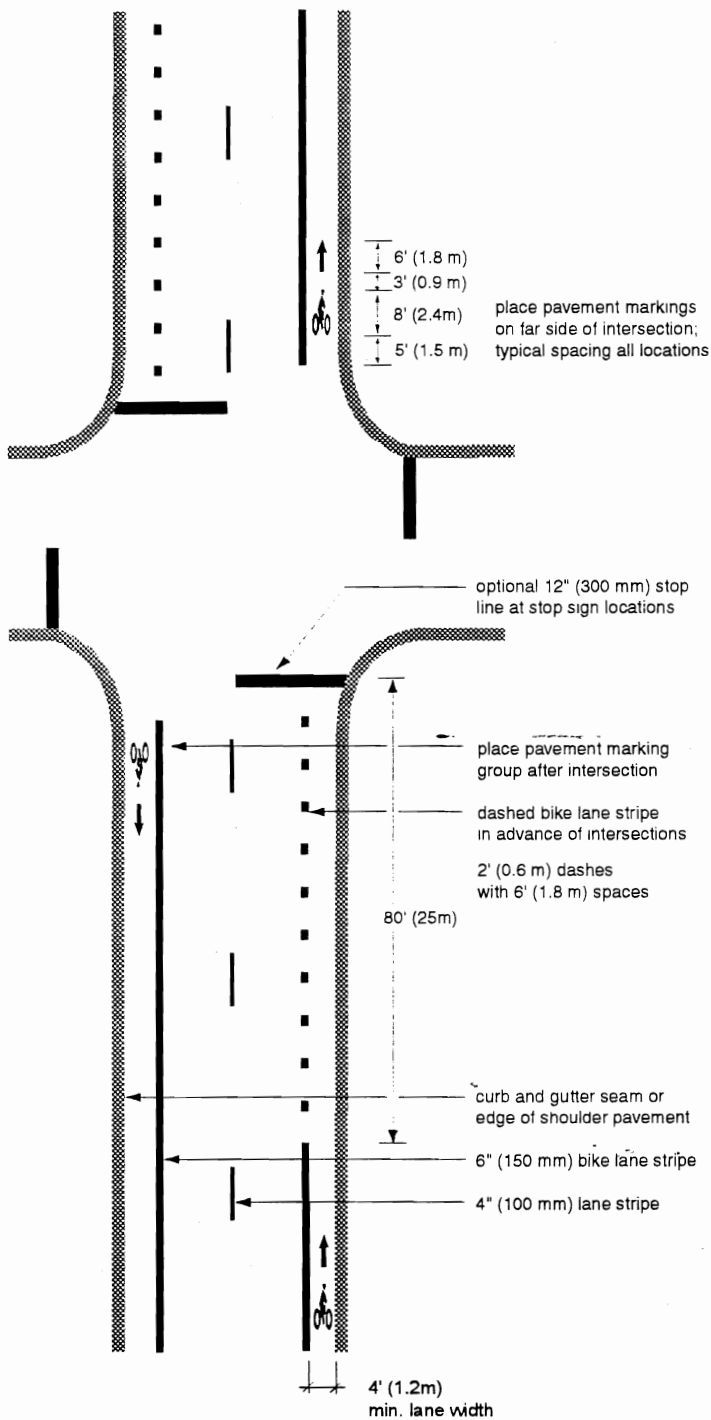
A.1 Design Specifications

Per national AASHTO and MUTCD standards, highlights of designing bicycle lanes include:³

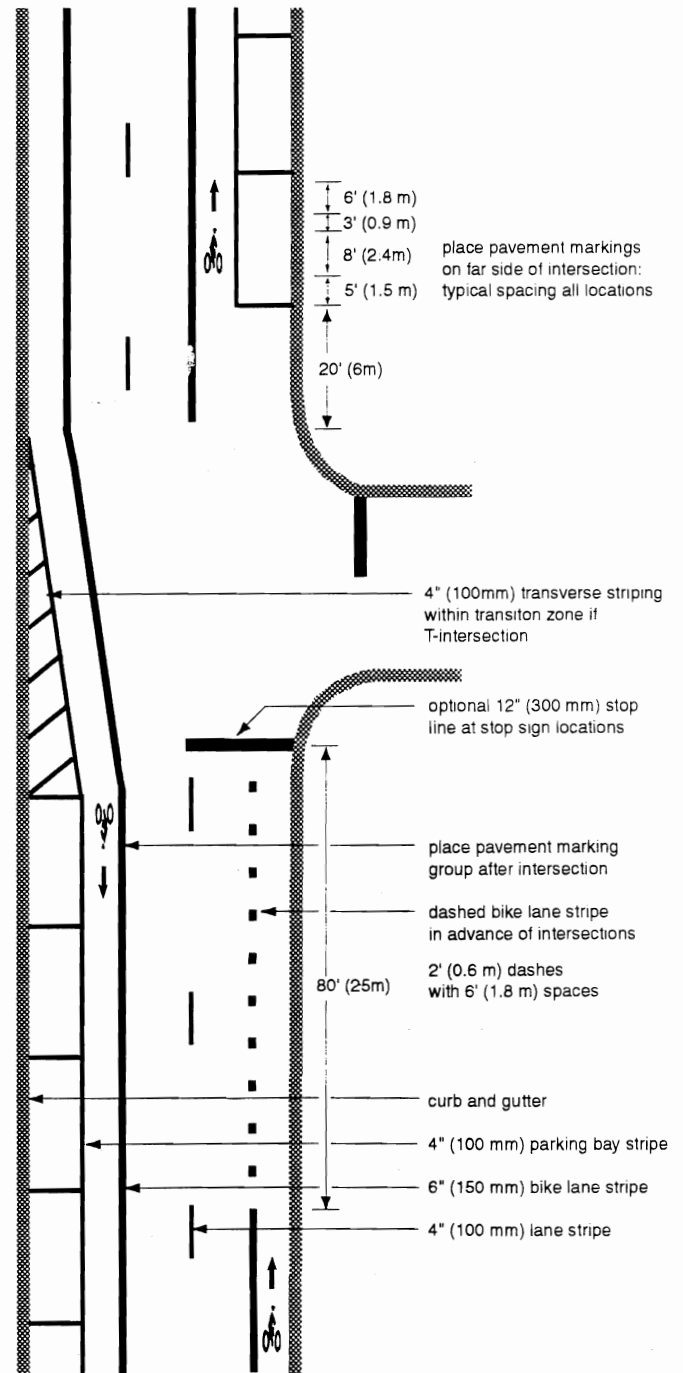
- Always implement as one-way facilities located on each side of a street.
- Use arrow pavement stencils to indicate direction of travel, on the right with the flow of traffic.
- In urban conditions, a minimum lane width of 1.5 m (5 ft.) measured from face of curb; or a minimum of 0.9 m (4 ft.) of rideable surface measured from the gutter pan seam.
- For shoulder bike lane applications, a minimum of 1.2 m (4 ft.); or a minimum of 1.5 m (5 ft.) with truck traffic or vehicular speeds over 90 km/hr (55 mph).
- It is very important that the pavement surface in the bike lane be smooth and free of debris. (For detailed maintenance recommendations, see Part B.1 of this section.)
- Drain inlets or manholes should not be located within this zone. Where such structures exist, bicycle lane widths should be adjusted accordingly. Bicycle-safe drain grates shall be used.
- Adequate drainage in bike lanes is essential to prevent ponding, washouts, debris accumulation and other potentially hazardous situations for bicyclists.
- A 150 mm (6") white lane stripe is used to separate the bike lane from the adjacent travel lane.
- Standard pavement markings shall include a white bicyclist symbol (or the words “BIKE LANE”) and a directional arrow. Note that the use of the diamond preferential lane symbol is no longer recommended for use in bicycle lanes.



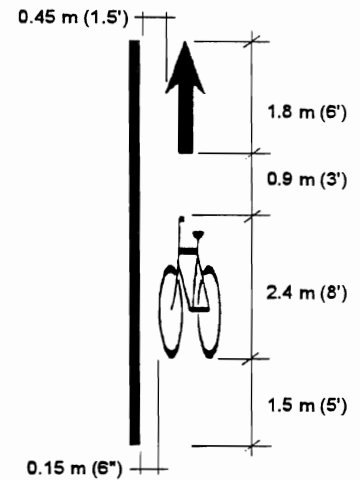
Typical Bicycle Lane Striping Treatment



Bicycle Lane Treatment with On-Street Parking

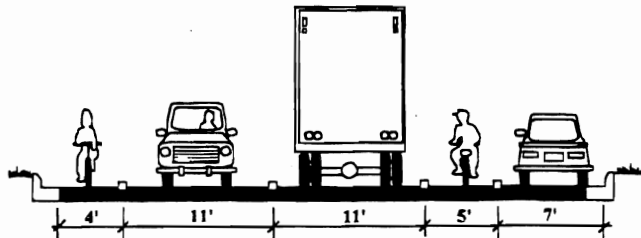


- Of the pavement marking options offered in the new MUTCD, participants at the Plan public workshops indicated a preference for the markings at right for use in Kalamazoo.
- Pavement marking groups shall be placed outside the turning radius at the beginning of each block, outside of the path of turning vehicle tires to minimize stencil replacement cost.
- If blocks are excessively long, consider placing additional marking groups after high volume, big box retail driveways or other high volume turning conflict points.



With On-Street Parking

- Bike lanes work in corridors with or without on-street parking. Or parking may be located on one side only, alternating sides of the street as land uses dictate.
- Where parking is present, bike lanes should always be placed between the parking bays and the right-hand travel lane.
- The minimum bike lane width is 1.5 m (5 ft.) between parking stalls and the travel lane with 3.6 m (12 ft.) minimum pavement width for a combined bike/parking lane; however, 3.9 m (13 ft.) minimum is recommended in commercial areas with a high parking turnover rate.
- A 150 mm (6") lane stripe is used to separate the bike lane from the adjacent travel lane.
- A 100 mm (4") lane stripe is used to separate the bike lane from adjacent parking stalls.

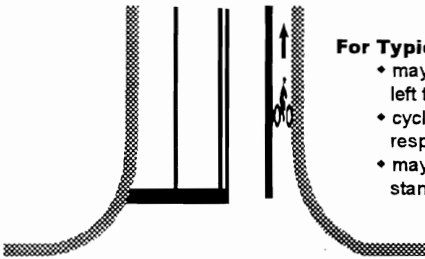
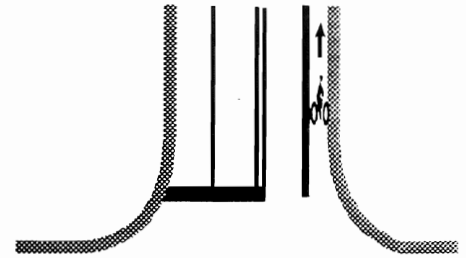


Signalized Intersections

- Whenever space permits, it is desired to provide space for bicycle lanes at intersections.
- However, where space is limited due to multiple turn lanes, the approaching bike lane may be dropped in advance of the intersection, whereby the cyclist assumes proper lane position to proceed straight, and then picks up the designated bike lane on the other side of the intersection. In such instances, signing should be used to inform motorists to yield to cyclists.
- Bicycle lane striping should not continue through street intersections.
- Bicycle lane striping should not be painted over pedestrian crosswalks.
- On an intersection's far side, bike lane striping should resume immediately past the crosswalk.
- At signalized intersections with right-turning motor vehicles, the solid striping to the approach should be replaced with a broken line with 0.6 m dashes and 1.8 m spaces, for a distance of 15 m to 60 m; or may be dropped completely.
- NEVER locate a bike lane to the right of a right-turn lane.
- Where sufficient width exists at the intersection, a separate bike lane should be placed to the right of the right most through lane.

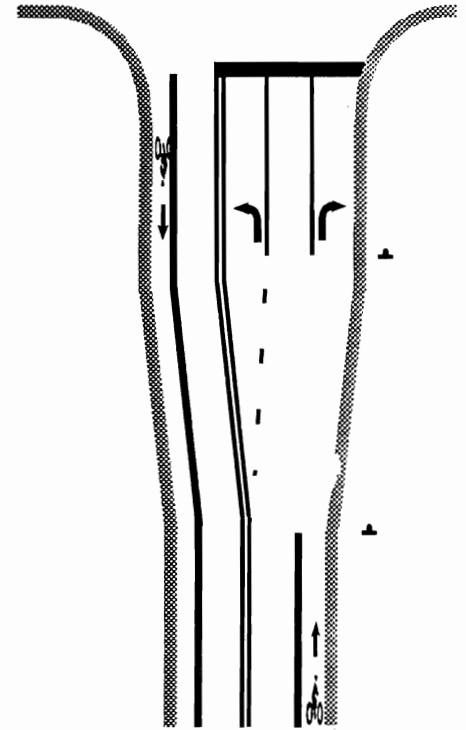
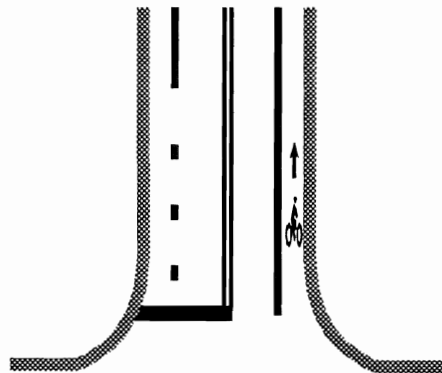
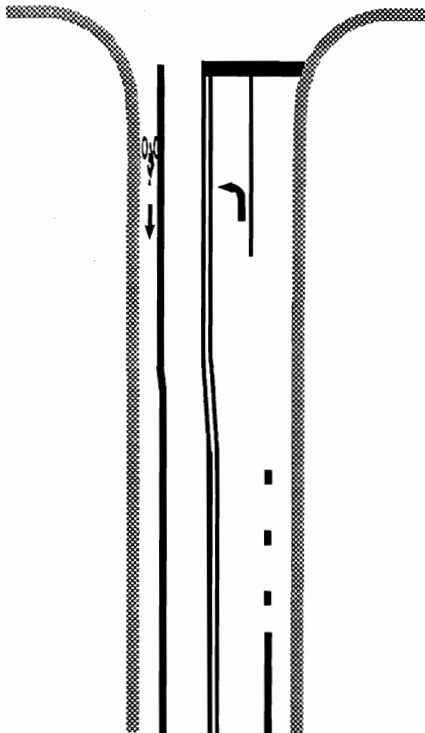
Intersection Treatments

- examples are for signalized intersections
- at unsignalized intersections, continue solid bike lane striping all the way to the crosswalk on near side of the intersection
- whenever a bus stop is present, dash bike lane striping through the length of the bus stop
- reference the AASHTO and MUTCD guides for additional details



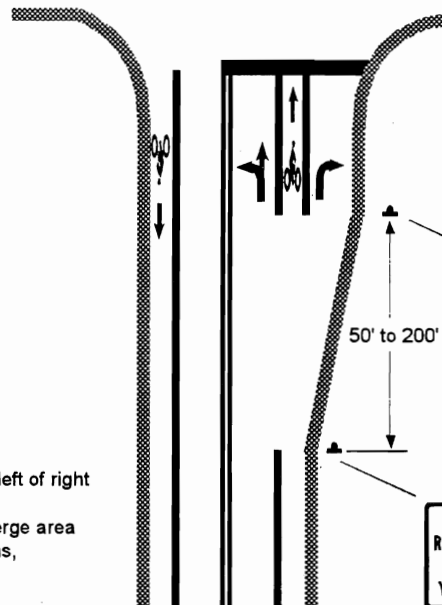
For Typical Pavement Widths:

- may drop approaching bike lane to accommodate left turn motor vehicle lane
- cyclist assumes proper lane position for his respective movement through the intersection
- may need to slightly narrow all lanes at intersection; standard lane widths to resume beyond turn pockets



With Right and Left Turn Bays:

- as at left, may drop approaching bike lane to accommodate left turn lane
- cyclist assumes proper lane position for his respective movement through the intersection
- use MUTCD signing for right turns as illustrated below



With Right Turn Only Lane:

- bike lane must be located to the left of right turn only lanes
- drop lane striping through the merge area
- use MUTCD signing for right turns, spacing as indicated

Unsignalized Intersections

- Since there are usually small volumes of right-turning traffic at nonsignalized minor intersections with no stop controls, bike lane striping should continue as a solid line all the way to the crosswalk on the near side of an intersection.

T-Intersections

- On the side of the street across from the T-intersection approach leg, extend bicycle lane striping through the intersection with no break.
- If there are painted crosswalks, the bike lane striping on the side across from the T-intersection should be discontinued only at the crosswalks.
- On the side with the approach leg, treat the T-intersection as any other, stopping lane striping at the crosswalk or stop bar, or transition to a dashed line in advance of shared turn bays.

Bus Stops

- If there is a bus stop at the near side of an intersection, a broken line segment should extend at least the length of the bus stop.
- If there is a bus stop at the far side of an intersection, use a broken line for a distance of at least 24 m (80 feet) from the crosswalk.

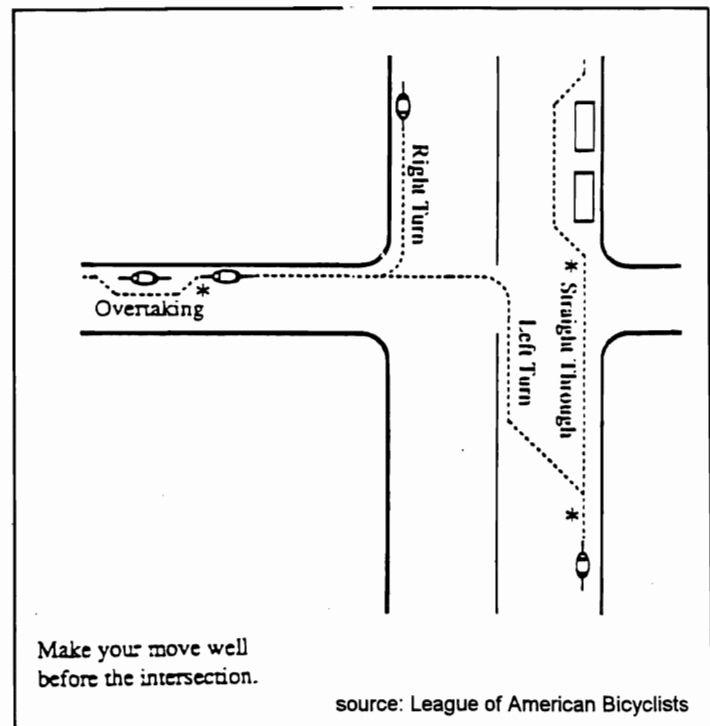
Understanding Bicyclist

Lane Positioning at Intersections

Since the unique configuration of each intersection will ultimately determine the treatment of the bicycle lane striping within a given intersection, it is important to have a general understanding of where bicyclists should position themselves on a roadway, with or without bike lanes.

Generally speaking, a bicyclist should be in the right-most lane that goes in the direction he is traveling. A bicyclist, though, has three positions within the lane to choose from: the right third, the center, and the left third. The specific portion of the lane depends on the distinct characteristics of the intersection.

These principles come from *Effective Cycling*,TM an educational program of the League of American Bicyclists designed to develop the basic ability to use a bicycle with confidence and competence under a variety of riding conditions. Basic maneuvers of *Effective Cycling* are shown at right, with common turn situations depicted opposite.⁴ These diagrams are being provided to serve as supplemental guidance in determining appropriate bike lane striping at intersections.

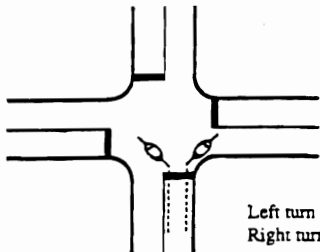


"Bicyclists fare best when they act and are treated as drivers of vehicles."

— Basic principle of *Effective Cycling*
as developed by John Forester

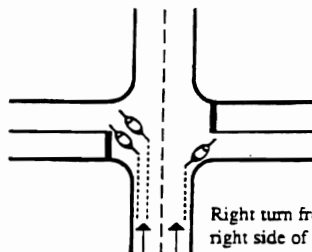
Effective Cycling™ Lane Positioning for Common Turn Situations

TWO-WAY STREETS



Left turn from left side of lane.
Right turn from right side of lane.

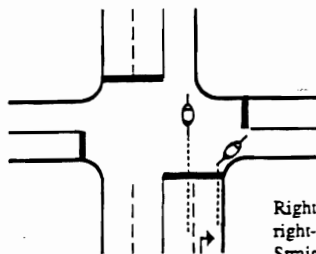
ONE-WAY STREET



Right turn from right side of lane.

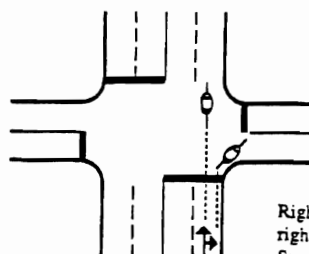
Left turn from left side of lane if there is little turning traffic, from center or right side of lane if both left and straight traffic is heavy.

RIGHT-TURN-ONLY LANE



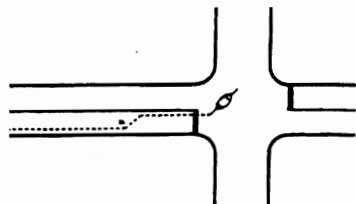
Right turn from right side of right-turn-only lane.
Straight from right side of next lane left.

DUAL-DESTINATION RIGHT-TURN LANE

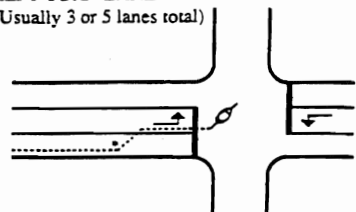


Right turn from right side of right-turn lane.
Straight from center of lane.

TWO-LANE ROAD WITH NO TURN LANE

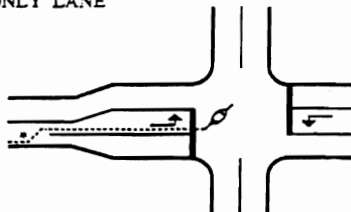


ROAD WITH CONTINUOUS LEFT TURN LANE (Usually 3 or 5 lanes total)

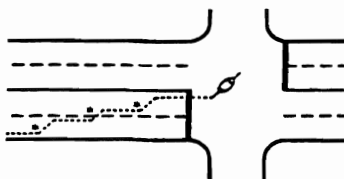


COMMON LEFT TURN SITUATIONS

ROAD WITH LEFT-TURN-ONLY LANE



MULTILANE ROAD WITH NO TURN LANE



Cyclist tracks are shown

* Indicates "look behind, and make your move as traffic permits."

source: League of American Bicyclists

A.2 Retrofitting Existing Corridors

In fringe areas where new development is taking place, bicycle lanes or paved shoulders should be included as part of all collector and arterial street projects. However, in most of the built-up areas of Kalamazoo, it is difficult to impossible to widen streets and/or acquire additional right-of-way for bicycle lane accommodation. Therefore, examining how existing streets are currently being used, and how roadway space may be reallocated, is often the most prudent and cost effective means of creating a bicycle-friendly community.

Reducing Number of Travel Lanes

A preliminary analysis of traffic counts on Kalamazoo streets (see map of Estimated Traffic Volumes, page 3-4), combined with initial field investigations of traffic turning movements, indicates that several multi-lane streets may be over designed for the traffic they carry; meaning that the number of automobile travel lanes may be able to be reduced to create space for on-street bicycle lanes.⁵

A classic example is a light to moderately traveled 4-lane arterial with frequent drives and intersecting streets. At intersections and driveways, the center two lanes of such roadway frequently do not function for through travel, but rather, become queuing spaces for turning vehicles. Reallocation of lane space on such a roadway could provide the same queuing areas in a center turn lane, while allowing the “extra lane” to be divided into two bicycle lanes.

The research backing this concept is presented opposite. Illustrations of typical design treatments are contained on the following three pages for typical existing conditions, proposed lane restriping, and long-term recommendations for additional street “greening” through the addition of landscape medians.

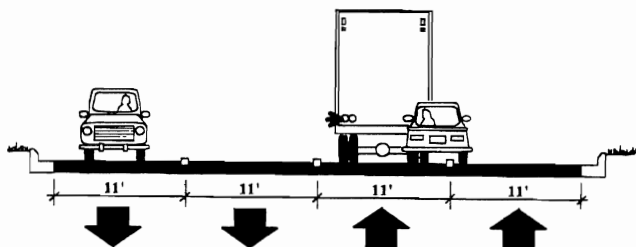
This type of retrofit treatment has been successful in other communities because the capacity of a roadway is determined by the movement, or lack of movement, of vehicles at nodes or intersections. Often, providing extra capacity space at intersections does not mean that similar roadway space is required for the entire length of a roadway between intersections. However, before a restriping project is implemented within a suggested corridor, a supplemental capacity analysis of vehicular turning movement needs will be necessary to make sure that the proposed design works for all roadway users.

The map and table on pages 4-11 to 4-16 in Section IV depict multi-lane corridors that have been identified as likely candidates for retrofit treatments. Many are lower volume arterials where four lanes of traffic are suggested to be converted into two lanes with center turn lane. In other targeted corridors, existing center turn lanes are proposed to be removed in areas where adjacent land uses do not generate turning movements.

Do We Really Need 4 Lanes of Traffic?

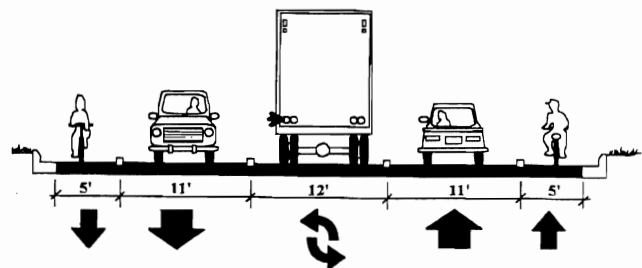
This Design?

Or This Design?



**AUTOMOBILE-ORIENTED
STREET DESIGN**

- Benefits motorists (who want the ability to speed and pass turning vehicles on either the left or right)



**MULTI-MODAL
STREET DESIGN**

- Benefits motorists (who need to make a left turn)
- Benefits other motorists (who are stuck behind someone making a left turn)
- Benefits businesses (through improved turning access to their establishment)
- Benefits the neighborhood (through traffic calming — cars can't speed and pass one another)
- Benefits pedestrians (makes for easier street crossings and offers potential for mid-block refuge islands)
- Benefits bicyclists (provides space for on-street bike lanes)

Has it Been Done Before?

A partial sampling of communities who have had success with this type of street conversion:

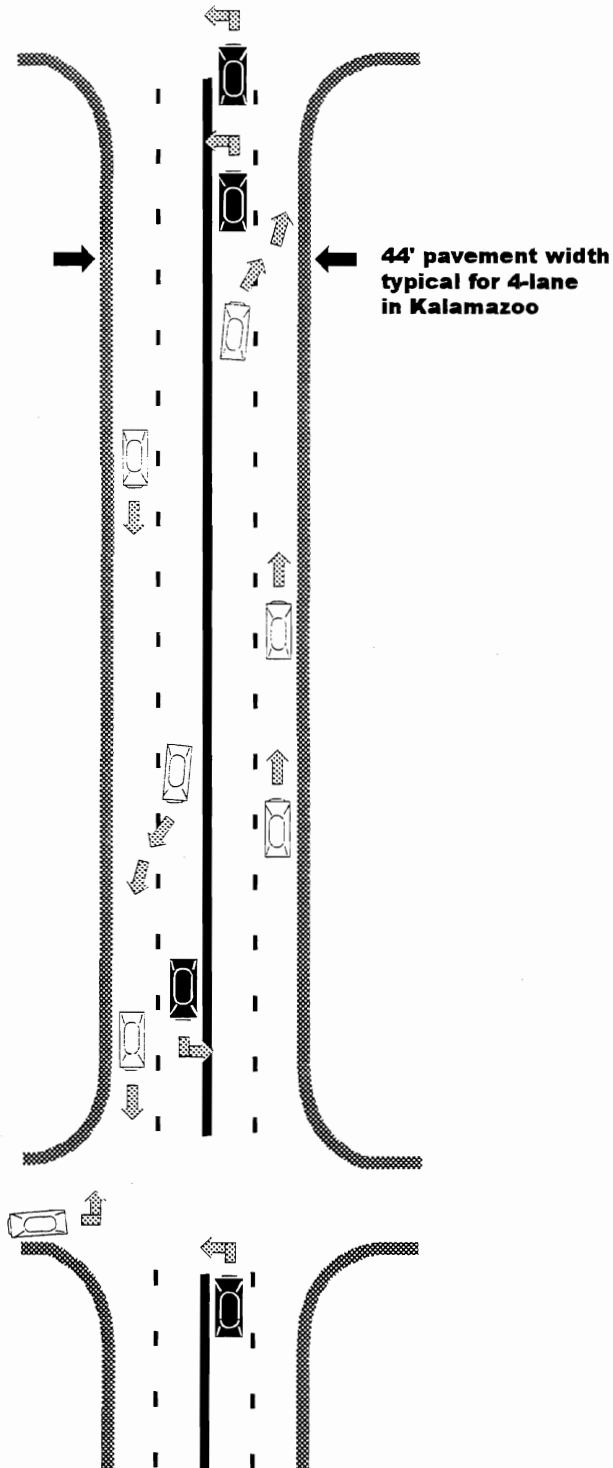
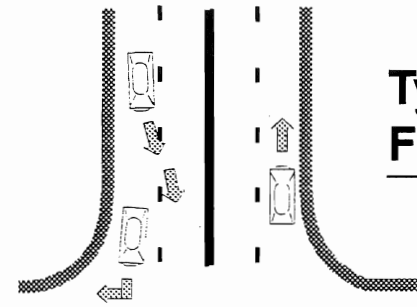
- | | | |
|-----------------------|---------------------|------------------|
| ▶ Santa Barbara, CA | ▶ Madison, WI | ▶ Austin, TX |
| ▶ Deerfield Beach, FL | ▶ Cambridge, MA | ▶ Boulder, CO |
| ▶ Palo Alto, CA | ▶ Mountain View, CA | ▶ Salem, OR |
| ▶ Santa Cruz, CA | ▶ Salem, WA | ▶ Baker City, OR |
| ▶ Portland, OR | ▶ Greenbelt, MD | ▶ Seattle, WA |
| ▶ East Lansing, MI | ▶ Santa Monica, CA | ▶ Sunnyvale, CA |

Where Will it Work?

Experience from these communities indicates that a 2-lane-with-turn-lane can be very effective on streets with traffic volumes up to approx. 18,000 ADT. Other successful conversions carry up to 24,000 ADT. Ultimately, feasibility is dependent on number of turning movements, which will need to be further examined on a corridor by corridor basis prior to project implementation.

Source: research by Bicycles & Co., Inc. May 1998

Typical Auto-Oriented Four-Lane Roadway



Traditional Roadway Design:

- ♦ automobile dominated corridor
- ♦ typically (4) 11-foot travel lanes (12-foot new construction)
- ♦ posted 35 - 45 mph, but cars travel much faster
- ♦ often designed to handle more traffic than is actually using roadway

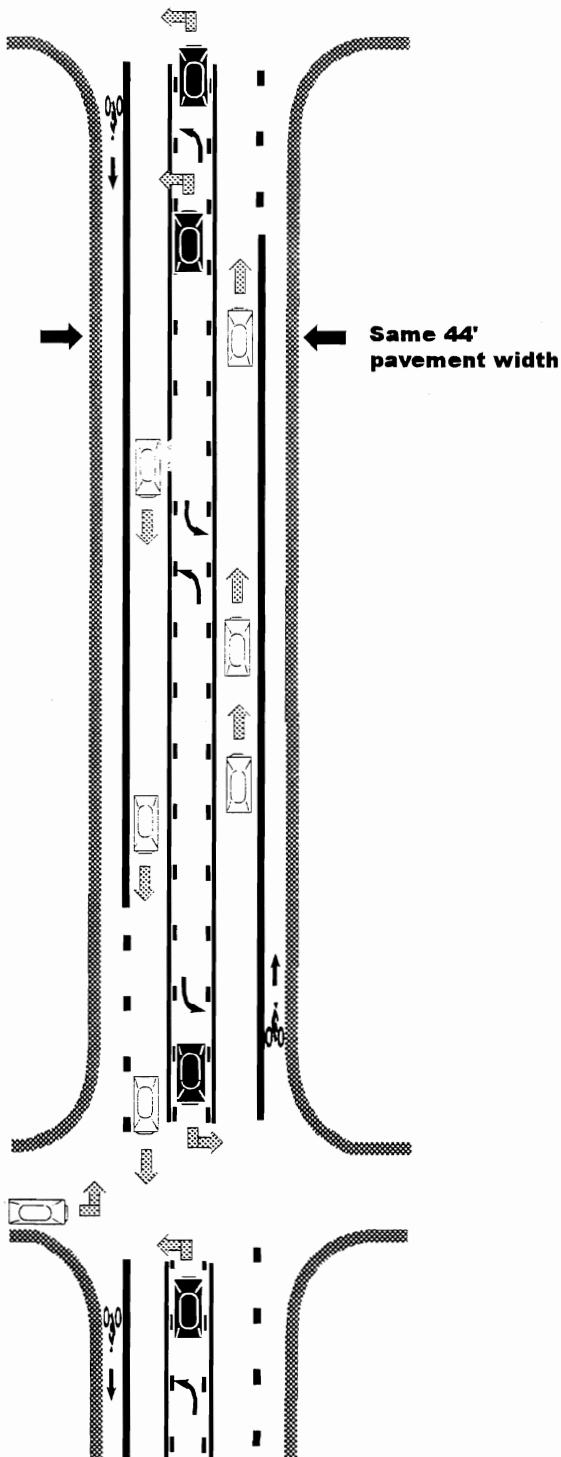
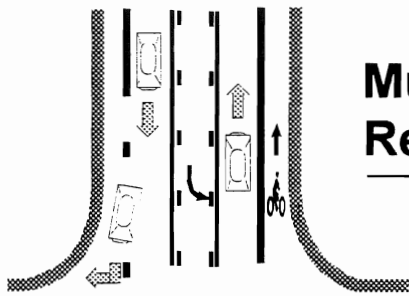
Cars Can Have Problems:

- ♦ left turning motorists who are waiting for gaps in traffic reduce the effectiveness of center lanes for through travel
- ♦ this decreases roadway capacity
- ♦ results in many lane change maneuvers and speeding as cars try to pass turning vehicles in both left and right lanes
- ♦ adds to perception of roadway congestion
- ♦ entering motorists can have difficulty finding adequate gaps in all lanes of traffic to make left turns onto roadway
- ♦ results in heavy acceleration in order to enter roadway

Bike Use Practically Nonexistent:

- ♦ no lane space for bicyclists
- ♦ high travel speeds make it difficult for bikes and cars to effectively share a lane
- ♦ frequent lane changes pose additional hazards to cyclists
- ♦ unsignalized crossings not easy for cars; extremely difficult for persons on foot or bike

Multi-Modal Redesign



Proposed Restriping of Moderately Traveled Streets:

- ◆ creates multi-modal corridor
- ◆ results in (2) 11-foot through lanes with a 12-foot center turn lane, plus 5-foot bike lanes
- ◆ inexpensive to implement -- simply shift paint lines and add bike lane designation
- ◆ successful on streets in several communities on roads with 18,000 ADT or less
- ◆ design may handle up to 24,000 ADT depending on intersections
- ◆ recommend testing restriping on a trial basis, with the option to return to a 4-lane design if area residents are unsatisfied or if future traffic volumes exceed 3-lane capacity

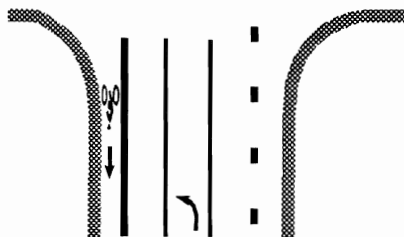
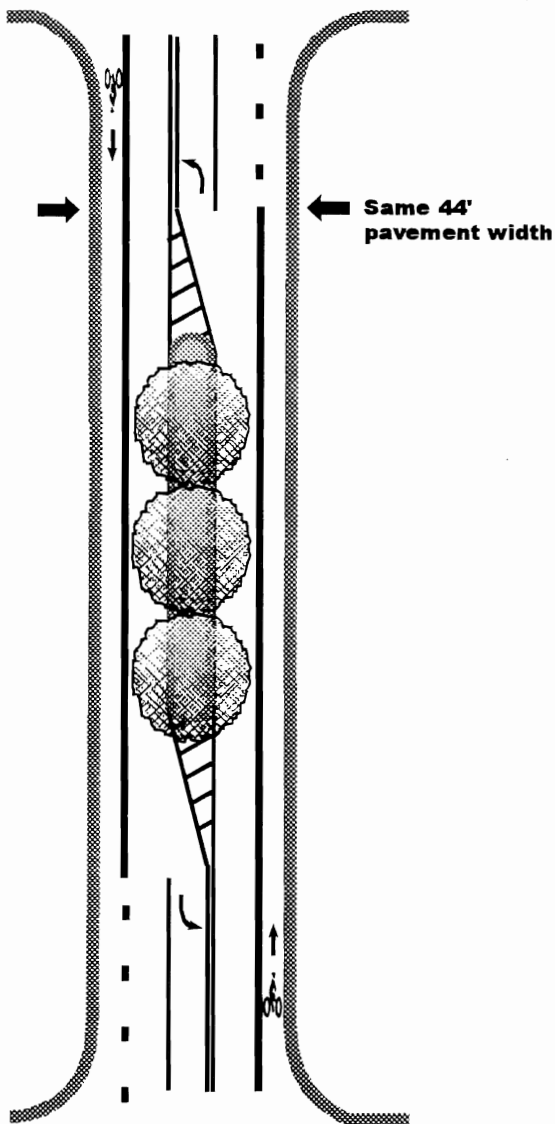
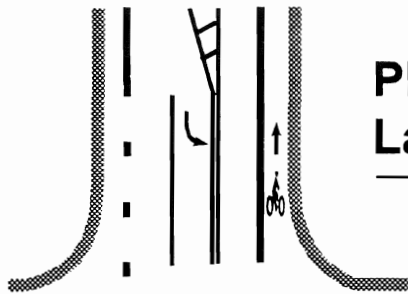
Lane Maneuvering Simplified while Maintaining Capacity:

- ◆ left turning motorists are removed from the travelway
- ◆ results in through cars maintaining continuous movement throughout corridor without speeding and passing
- ◆ entering motorists only need to cross one lane of traffic; if needed, have median refuge area in which to wait for second gap in traffic
- ◆ changes the "feel" of the roadway
- ◆ offers traffic calming benefits by modifying perception of appropriate travel speeds
- ◆ intersections determine roadway capacity; not the number of travel lanes mid-block
- ◆ provides turning lanes to handle capacity

Non-Motorized Users Benefit:

- ◆ provides space for on-street bike lanes
- ◆ simplifies turning movements
- ◆ simplifies crossings in non-signalized locations

Phase 2: Landscaped Medians



Long-Term Recommendations:

- ♦ add landscaped medians in areas with no intersecting driveways or streets
- ♦ adjacent land use determines areas of excess pavement where center turn lanes are unused
- ♦ to be implemented at or near build-out of corridor, when traffic volumes and land uses are known
- ♦ in areas with planned access management, may be implemented as an incidental part of roadway development

Additional Benefits:

- ♦ enhances aesthetics of the corridor
- ♦ provides additional traffic calming
- ♦ helps to create gateways and a sense of identity for neighborhoods
- ♦ creates opportunities for locating mid-block pedestrian crossings

Reconfiguring On-Street Parking

Other retrofit opportunities arise in corridors that currently provide on-street parking that is not being fully utilized. When looking at the trade-offs between providing on-street parking and providing bicycle lanes, it is important to remember that a public roadway's primary function is to move people and goods, rather than to store stationary vehicles. While on-street parking has some traffic calming benefits, safety and capacity are generally improved when parking is removed.

However, it is also critical to acknowledge that adjacent landowners often view on-street parking as personal space, and careful negotiations between the City and affected business owners and/or residents will be required. Thus the following actions are recommended on a corridor by corridor basis before the City proceeds to remove existing parking spaces to accommodate new bicycle lanes:

- ♦ An assessment of the number of on- and off-street parking spaces available to residences and businesses.
- ♦ Examination of available alternatives such as shared parking on adjacent lots, or constructing special parking spaces for residents or businesses with no other options.
- ♦ Restricting available on-street parking to use by customers, and providing nearby parking for employees use.
- ♦ Potential to change from diagonal to parallel parking. (Parallel parking reduces availability by less than one-half, and improves safety as drivers backing out of diagonal spaces cannot see oncoming traffic.)
- ♦ Potential to narrow the parking lane and/or limit parking to one side of the street.
- ♦ Selection of which side of the street would be least affected by parking removal. (Parking may alternate sides of the street throughout a corridor with bicycle lanes depending on which side has fewer businesses or residences in a given section. See graphic on page 5.)
- ♦ Completion of bicycle lanes within a corridor of significant length, so that affected property owners can see that the change to their block is part of a larger, community-wide improvement.
- ♦ Acceptance of bicycling as a transportation mode, so that proposed bicycle improvements are not viewed as special-interest recreational facilities.

Widening Streets

Certain segments of targeted bike lane corridors do not offer an opportunity for reducing the number of vehicular travel lanes or removing parking to accommodate the bicycle lanes. In such areas, widening will be required to provide the necessary space.

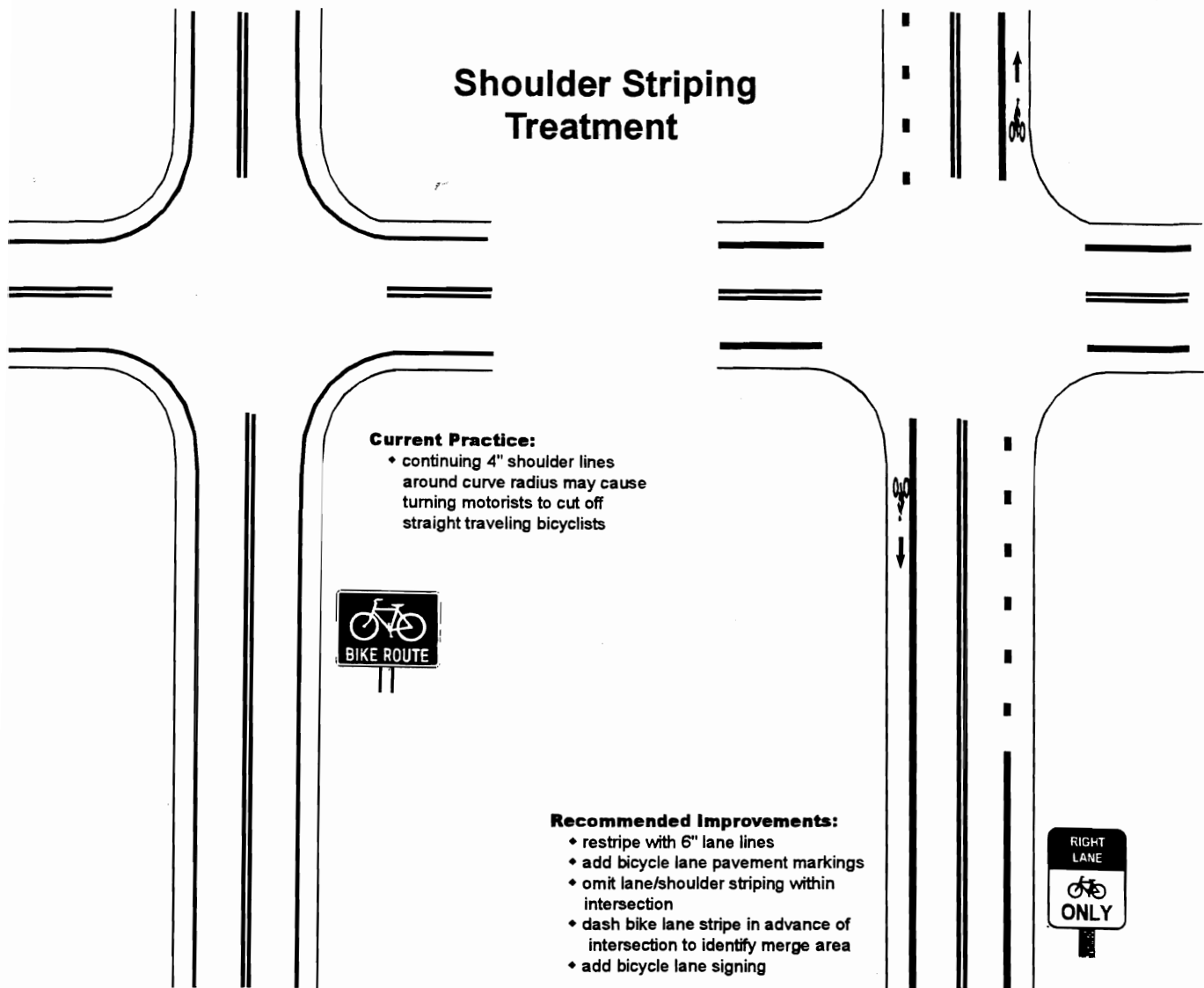
It is strongly recommended that the City plan and budget for such improvements to occur at the same time that bicycle lanes are scheduled to be painted within the larger corridor. If this is not possible, appropriate warnings signs shall be used to inform motorists and cyclists of the temporary width restrictions and termination of the bicycle lane.

It is important that every effort be made to ensure bike lane continuity. Practices such as directing bicyclists onto sidewalks or other streets for short distances should be avoided as they may introduce unsafe conditions.

Retrofitting Shoulders

The Kalamazoo area has a number of streets with 3- to 4-foot paved shoulders, several of which are currently designated as bicycle routes. Where speed limits are posted under 45 mph, it is recommended that these shoulders be designated as bicycle lanes. Bicycle lane signs should replace the current bike route signs, and pavement icons with directional arrows should be added to help to educate users to ride on the right, with traffic.

Most critically, the treatment of lane/shoulder striping at intersections needs to be reconfigured. The current design, where the lane line wraps the corner radius, lends toward a motorist making a right-hand turn which cuts off a straight traveling cyclist who is riding on the shoulder bike lane. As presented in the bicycle lane intersection design section, dash the bike lane line in advance of the intersection to indicate a potential merge area. Begin a solid bike lane stripe again on the far side of the intersection, placing a pavement marking group just beyond where turning automobile tire treads will wear off the stenciling.



A.3 Special Circumstances: One-Way Streets

One-way streets pose special challenges for bicycle lanes, and bike travel in general. Legally, bicyclists must ride with traffic, meaning returning trips are often indirect or frequently involve wrong-way riding and/or sidewalk riding. Furthermore, wide one-way streets make it difficult for cyclists to merge across multiple lanes of traffic to make a left turn, a maneuver which is often necessary to complete within a very short distance.

With Kalamazoo's existing one-way circulation patterns, bicyclists must travel in one-way corridors in order to reach key destinations. Within such corridors, the following considerations should be made to enhance bicycle travel:

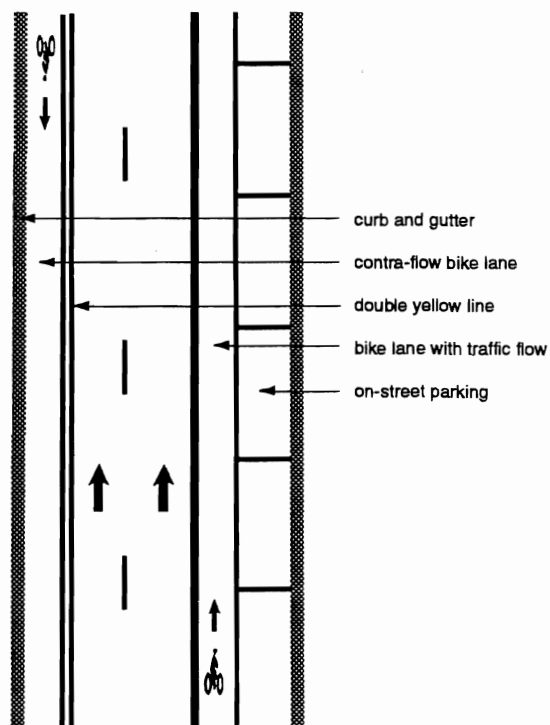
- When incorporating bike lanes into one-way couplets, the bicycle lanes should generally be placed on the right side of the street.
- If cyclists must make left turns across multiple lanes of one-way traffic to link to other bike facilities, consideration may be given to placing the bike lane on the left-hand side.
- A corresponding bike lane traveling in the opposite direction should be placed on the other street comprising the one-way couplet.
- Conversion of streets to two-way traffic is ultimately recommended to enhance bicyclist safety.

Contra-Flow Bicycle Lanes

Cyclists can be given the legal right to ride the “wrong” way on a one-way street. However, this treatment should only be considered when no alternative routing options are available.

Design solutions in such situations are very site-specific and need to include elements to make both motorized and non-motorized users aware of the special condition that exists on this one-way street vs. others in the community. Successful treatments that have been used in communities like Madison, WI and Boulder, CO include:

- Create a contra-flow bike lane on the left side of the street by placing a “centerline” stripe or landscape median 4 to 6 feet from the left curb.
- Sign and mark the reverse lane with pavement stencils for bikes only.
- The entire contra-flow bike lane may be colored blue or red to make the unusual situation highly visible.
- A regular bicycle lane is then typically provided on the right side of the street.
- On-street parking may or may not be present on the side that flows with vehicular traffic.
- Parking is not recommended on the contra-flow side.



- Each intersection should be signed for two-way bike traffic and one-way motor vehicle traffic.
- Do not enter signing should be supplemented with an exception for bikes.
- Special treatment is also needed at signals to provide a clear green for wrong-way bike traffic.

Please note, a single on-street bike lane flowing with traffic combined with use of a sidewalk or sidepath is not recommended unless few intersection conflicts exist with cross streets or driveways. As discussed under sidepaths in Section C.3 on page 5-30, cyclists who use a sidewalk are more at risk in being involved in a motor vehicle collision than cyclists using the roadway, and wrong-way sidewalk riders are at even higher risk. Furthermore, a single bike lane may encourage wrong-way riding in the street, a practice which should always be avoided.

Part B. Other On-Road Improvements

Since bicycle lanes are highly visible and attract increased cycling use, much of the planning for the Kalamazoo bicycle system focuses on minor arterial streets targeted for bike lane implementation. However, more subtle improvements are also being recommended to improve the bicycling conditions on major arterials and local neighborhood streets.

B.1 Maintenance and Hazard Removal

Since Kalamazoo's bicycle system includes all streets and roads, special attention should be given to maintaining the right-hand travel edge of all roadways. Within designated bicycle corridors, it is essential to design, construct and maintain bicycle lanes and paved shoulders to the highest standards.

This includes careful design and ongoing attention to the following:

- continuous bicycle lanes and/or paved shoulders that are of uniform width
- smooth pavement, free of surface irregularities and potholes
- correction of ponding water or other drainage problems
- use of bicycle-safe drainage grates
- feathering of new asphalt to allow pavement surfaces to meet adjacent gutter pans smoothly
- adjustment of drainage grates and utility covers so as to be flush with pavement surfaces
- filling of any longitudinal cracks that may trap a bicycle wheel
- widening approach pavements to permit crossing railroad tracks at right angles, or as close as possible to 90°; and/or filling the rail flangeway with a rubberized material
- adjusting traffic-actuated signals and/or reconfiguring pavement loop designs to be sensitive to bicycles; or installing video or microwave systems that are bike friendly
- timing light cycles to allow a safe bicycle clearance interval
- removal of all excess gravel when applying chip seal coats (since chip sealing tends to roughen the pavement surface, slurry seal is preferred on roads where bicycle traffic is to be encouraged)
- no rumble strips present on paved shoulders
- maintaining the full paved width and not allowing pavement edges to ravel or deteriorate

*"Build it, they may come.
Build it and maintain it, and
they will come."*

— Mary Hostley,
Bicycle Task Force member

- ♦ programmed improvements to widen existing 3-foot shoulders to the 4-foot minimum width recommended for bike lanes
- ♦ regularly scheduled inspections
- ♦ routine sweeping of broken glass, gravel, wet leaves and other debris
- ♦ routine snow plowing/sweeping of sand after major winter storms in high use corridors; for all other streets, an early spring sweeping of any remaining sand
- ♦ control of trees, shrubs and other vegetation to provide adequate clearances and sight distances
- ♦ signs and pavement markings regularly inspected and kept in good condition
- ♦ prompt attention to hazards and maintenance problems reported by users.

B.2 Designating Bicycle Routes

It is important to remember that all streets are bicycling streets. But it would be inappropriate to go out and sign each and every street in town as a bicycle route. Plus, posting a bike route sign does not, by itself, improve conditions for bicycling.

Thus, bike route signing is recommended only in the following situations:

- ♦ on low-traffic/low-speed streets (bicycle lanes or widened curb lanes are the preferred treatments for busier streets); and
- ♦ on those streets which are necessary routes to make connections to key destinations or other bicycle facilities.

All streets designated as bicycle routes should meet minimum standards and have all hazards to bicycle travel removed before signing. In general, sidewalks and sidepaths are NOT recommended to be signed as bike routes

It is also important to note that bike route signs are intended to be information/navigational signs designed to guide cyclists. Thus supplemental information should be added to the generic route sign, including:

- ♦ destination of the route
- ♦ direction of travel
- ♦ distance to destination.



B.3 Traffic Calming

Corridors with traffic calming treatments such as curb extensions, traffic circles, chicanes, speed tables or landscaped medians are logical corridors for bicycle route designation since slower vehicular traffic speeds make these routes more compatible for bicycle travel. The diversion of auto traffic from calmed corridors can, in effect, create bicycle boulevards when cyclists are permitted through travel in areas where cars are prohibited or detained. In such corridors, bicycle lanes or extra pavement width is typically not needed. In fact, constructing “skinny streets” can be a traffic calming method in and of itself.

Many communities use frequent placement of stop signs as a traffic calming device. However, the signs do not slow or reduce traffic, and may even contribute to drivers speeding in between stop sign locations to make up for lost time. Bicyclists are even more inconvenienced than motorists by unnecessary stopping, and the compliance by bicycles is thus very low. For these reasons, routes with frequent stops are not recommended for bicycle route designation. Implementation of traffic calming measures such as those described beginning on page 5-67 are preferred.

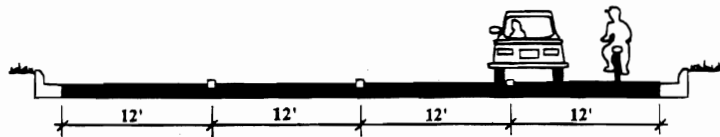
B.4 Wide Curb Lanes

Wide curb lanes are a treatment frequently used to make major arterials more bike-friendly for those experienced cyclists seeking to use such routes. Providing extra width (typically 14 feet) in the right-hand travel lane enhances shared use of the lane by cyclists and motorists. Benefits include:

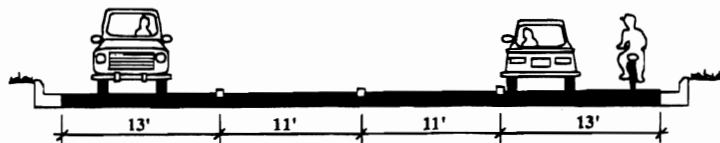
- provides additional operating room in right-hand lane, which is typically where trucks and other larger vehicles travel
- maintains motor vehicle capacity of the curb lane when it is also used by cyclists
- minimizes both real and perceived operating conflicts between bicyclists and motor vehicles
- allows motor vehicles to pass slower moving bicycles without crossing over the lane line, or forcing the cyclist to ride too far to the right
- offers some form of infrastructure improvement where there is not enough space to accommodate bicycle lanes
- typically is not enough of an improvement to benefit less experienced bicyclists who will remain intimidated by busy multi-lane roadways and will thus not be encouraged to use such corridors.

Unlike bicycle lanes, wide curb lanes do not act as a host facility for bicycling because streets with this treatment are not recommended to be signed as bicycle routes or otherwise designated for bicycle use. The design also does not offer traffic calming benefits. However, the extra foot or two of space that is provided is appreciated by experienced commuter cyclists who use arterial routes for their speed, directness and convenience.

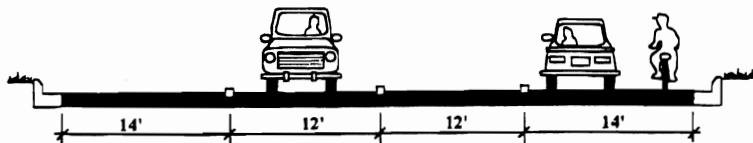
In Kalamazoo, lane widths are typically 11 feet. Some of the more recently improved arterial streets such as Drake Road have 12-foot lanes per typical AASHTO standards.



In such corridors, it is recommended to shift lane striping to create 11-foot interior lanes and 13-foot curb lanes for shared bicycle/motor vehicle use.



New roadways should be constructed with 12' interior lanes and 14' curb lanes per AASHTO recommendations.



On multi-lane, one-way arterial streets a similar treatment may be undertaken to create additional space in the right-hand lane. Shifting lane lines in such a manner may also extend the life of the pavement as tire ruts will be shifted to a new location.

On other one-way streets, actually having too much space and/or a right-hand lane that is not of uniform width can create problems for cyclists who ride too far to the right and unexpectedly get cut off by motorists when the roadway space they are using suddenly ends. Adding edge striping or relocating sections of curb and gutter can alleviate this problem.

Part C. Off-Road Trailways

The term “trailway” has been generically used by the Kalamazoo River Valley Trailway Partnership to describe a multiple-use facility intended for bicycling, walking, running, cross-country skiing and in-line skating. Trailways, as used in this report, refer to shared use paths separated from vehicular travel.

Properly designed off-road paths are good investments of public dollars since they provide multiple benefits:

- are invaluable for their ability to accommodate the increasing demands for facilities for biking, hiking, in-line skating, horseback riding, and other forms of linear recreation
- allow people to renew their energies and relax in a natural setting
- provide a learning experience in local ecology when traversing natural environments
- serve a valuable transportation service when providing access to schools, shopping, recreation and employment sites
- become part of the identity of an area when incorporated into business names and used as an asset in marketing real estate properties and attracting tourism
- provide a positive change in the landscape, making neighborhoods, communities and the entire region a better place in which to live and work.

C.1 Design Specifications

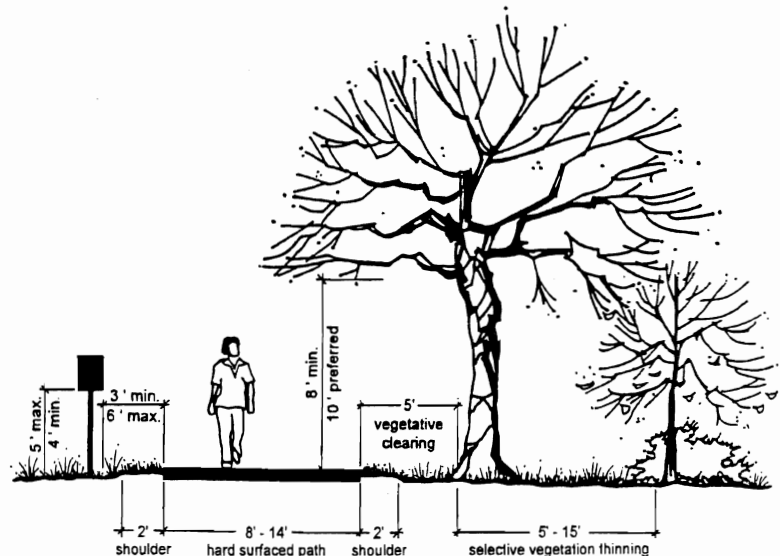
The Kalamazoo River Valley Trailway Design Team has developed regional trailway standards⁶ patterned after current guidelines from ADA, AASHTO, DNR Trailways, North Country Trailways, National Park Service trails and *Trails for the 21st Century*. This section of the Non-Motorized Transportation Plan therefore graphically summarizes the KRVT design guidelines and presents supplemental detail to further ensure safety for bicycle users. It also focuses on the integration of Kalamazoo’s off-road trailways with its on-road bikeways so as to form a continuous system for bicycle travel.

Planners and engineers are encouraged to directly reference the AASHTO *Guide for the Development of Bicycle Facilities* and the *Manual on Uniform Traffic Control Devices (MUTCD)* when constructing specific facilities. For the KRVT project, additional detail is provided in the Kalamazoo River Valley Trailway Master Plan developed for this project by the consultant team in conjunction with the Kalamazoo Non-Motorized Transportation Plan.⁷

Trail Width and Clearances

Per the KRVT Design Team specifications, off-road trails in Kalamazoo should be designed as:

- a minimum 12-foot wide hard-surfaced path, with the option of a 10-foot or 8-foot minimum width in rural, low-traffic areas
- 2- to 4-foot cleared shoulders
- 125 foot minimum sight distance
- 95 foot minimum curve radii.



Topography and Grade

Cross slopes on paths should not exceed 2 percent. Grades on off-road paths should be kept to a minimum, preferably under 5 percent. However, in areas with steeper terrain or to transition from a floodplain trailway to street grade, designers may need to exceed the 5 percent grade recommendation for short distances. As a general guide, the following restrictions should be followed:⁸

- 5-6% for up to 240 m (800 feet)
- 7% for up to 120 m (400 feet)
- 8% for up to 90 m (300 feet)
- 9% for up to 60 m (200 feet)
- 10% for up to 30 m (100 feet)
- >10% for up to 15 m (50 feet)

If these cannot be met, the following options are available to help mitigate excessive grades:

- add an extra 4 feet of pavement width on steep inclines to allow cyclists to dismount and walk
- provide warning signing per the MUTCD to alert bicyclists to steep grades
- provide signing for recommended descent speed
- provide adequate stopping sight distances
- provide adequate horizontal clearances, recovery area and/or protective bike rail
- consider a series of short switchbacks to contain the speed of descending bicyclists.

C.2 Intersections with Roadways

Paths, as defined, should be physically separated from motorized traffic by an open space or barrier, most often within an independent right-of-way such as a utility easement, a conservation easement along a waterway, or within a linear park. As such, off-road paths are often viewed as safer than on-road bicycle facilities for young children and less experienced adult cyclists who are intimidated by vehicular traffic. However, the locations where trailways intersect with roadways can be very hazardous, especially in locations where motorists are not expecting non-motorized users, or when trail users do not follow vehicular traffic principles at the crossing.

For these reasons, all trail/roadway intersections shall follow signing and pavement marking guidelines presented in the national MUTCD. Even when path facilities are designed to be recreational in nature and do not meet AASHTO criteria for bicycle facilities, the interface of the natural environment with the man-made environment should be treated as specified in transportation manuals to ensure consistency in establishing motorist awareness of all non-motorized crossings.

Basic design principles include:

- locate crossings in areas with good visibility, removed from roadway intersections if possible (path intersections that are located mid-block permit trail users to cross a roadway far enough away from any other junction so that there is no close proximity or unexpected motor vehicle turning movements for the trail user to encounter)
- ideally, trail crossings should be positioned at right angles to the roadway for the shortest crossing distances and best visibility by non-motorized users
- diagonal trail approaches should curve to facilitate right angle crossings
- if right-of-way is a constraint, the crossing may be angled a maximum of 75 degrees, which lengthens the crossing distance by only 4 percent
- the ladder style crosswalk is traditionally reserved for use in high-visibility locations, thus it is warranted at all trailway crossings
- to save long-term maintenance dollars, the spacings of the crosswalk bars may be shifted so as not to fall in the line of vehicular tire treads.

With these principles in mind, it is important to recognize that each intersection is unique, and will require sound judgement on the part of the designer as to the appropriate solution. The guidance provided in this section of the Non-Motorized Plan shall therefore be used as such; site-specific modifications will likely be required to resolve each roadway crossing.

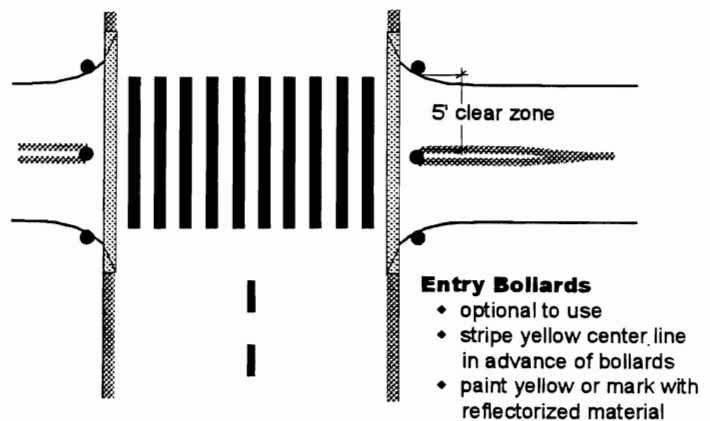
Trail Entrances

Bollards or similar vertical posts are sometimes used at the intersections of trails and roadways to prohibit motorized vehicles from using a path. However, such treatment is not being recommended for typical application within the City of Kalamazoo or the surrounding area.

However, where desired, entrance bollards should be removable or of a drop-down design so that emergency and maintenance personnel may unlock them for vehicular access to the trailway. A set of three bollards shall be used — one in the center of the path, and one at each pavement edge. The clear zone for each direction of travel shall be no less than 5 feet between bollards.

Gates or similar structures are not recommended as alternatives because they typically do not allow for two 5-foot entrances.

If bollards are used, it is recommended that yellow center lines be painted on the trail in advance of the bollard locations, and that the bollards be painted bright yellow and/or marked with reflective material for user safety.



Crossing Multi-Lane Roadways

Multiple-lane roadways pose a special challenge to the non-motorized user who frequently encounters the following difficulties:

- typically, automobiles travel at higher speeds on major roadways
- higher traffic volumes can create a lack of adequate gaps in traffic
- less experienced trail users often have difficulty in simultaneously judging the speed of oncoming traffic from both directions
- automobiles in near lanes may create visual obstructions blocking views of other lanes
- intersections of two streets are complicated by multiple vehicular turning movements; motorists do not expect non-motorized traffic to be entering the intersection from an off-road location

Therefore, trailways are preferred to cross multi-lane roadways mid-block, in locations where a center median is present to provide refuge to the trail user after crossing one direction of travel, before proceeding to cross the other. Such mid-block crossings may or may not have a pedestrian activated signal or flashing warning light, depending on the difficulty of the crossing and whether or not the crossing non-motorized volumes meet MUTCD and MDOT warrants for signal installation.

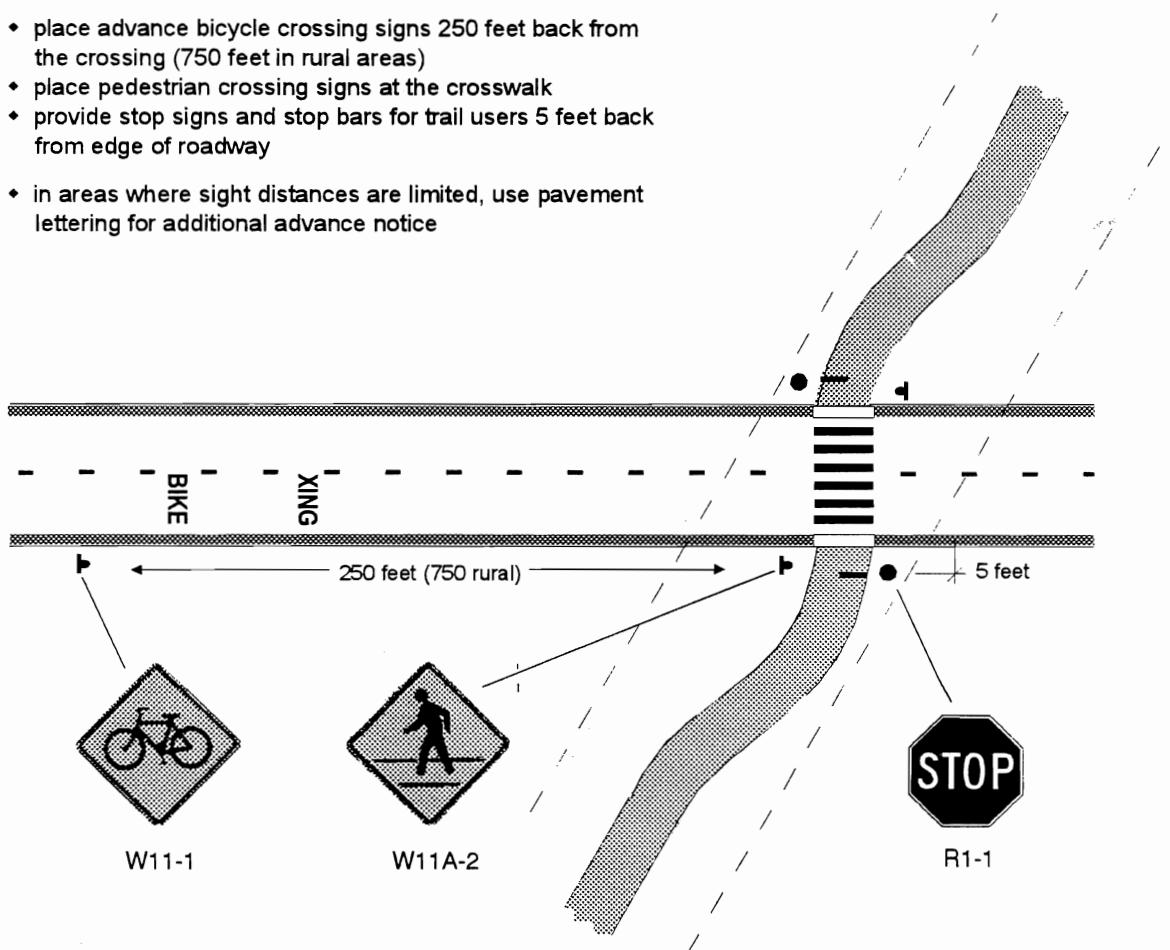
Crossing at Intersections

If trails are routed to cross a major arterial at the intersection of two roadways, it is preferred that the trail crossing be carefully integrated close to the intersection so as to allow motorists and trail users to recognize each other as intersecting traffic. Motorists turning unexpectedly in front of cyclists and cyclists failing to yield to motorists are two common causes of bicycle/motor vehicle crashes.⁹

Typical At-Grade Trail Crossing Treatment

Crossing Details

- ♦ as necessary, add a slight curvature to the trail as it approaches the roadway to permit a 90 degree crossing
- ♦ for higher visibility, a ladder-style crosswalk is recommended; for lower maintenance, space painted lines to avoid the path of vehicular tire treads
- ♦ crosswalk and curb cuts shall be the full width of the path, typically 12 feet
- ♦ place advance bicycle crossing signs 250 feet back from the crossing (750 feet in rural areas)
- ♦ place pedestrian crossing signs at the crosswalk
- ♦ provide stop signs and stop bars for trail users 5 feet back from edge of roadway
- ♦ in areas where sight distances are limited, use pavement lettering for additional advance notice

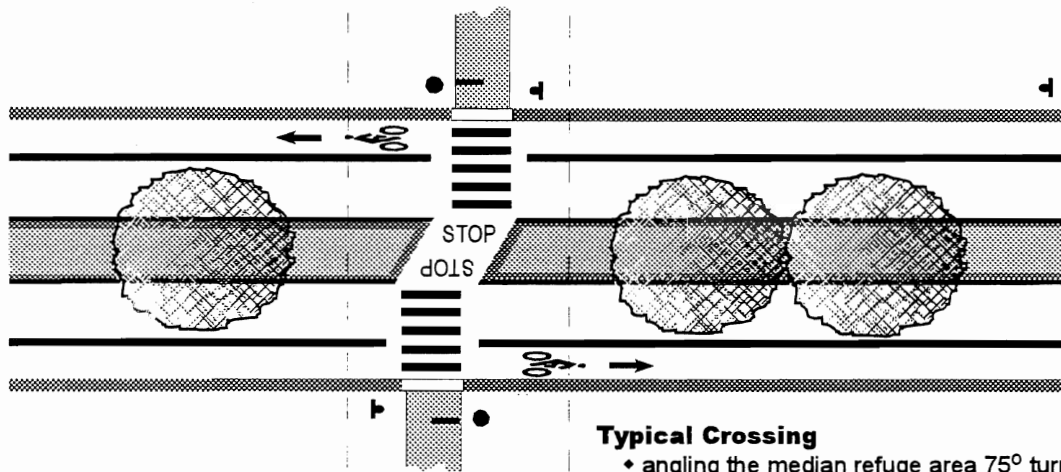


Sign Specifications

- ♦ roadway signs to be 30" x 30"
- ♦ use the new neon-yellow-green color reflective material as recently recommended for bicycle/pedestrian applications
- ♦ trail stop signs 18" x 18", with 12" white stop bar on pavement
- ♦ mount signs 4' to 5' high; place 3' to 6' from the pavement edge

At-Grade Crossing Options for Major Arterials¹⁰

- ♦ mid-block median refuge areas minimize trail user crossing distance
- ♦ tree-planted medians serve a traffic calming function
- ♦ where bike lanes are present, the crosswalk markings should have right-of-way across the bicycle lanes; bike lane pavement stencils should be placed in the vicinity of the crossing to discourage wrong-way riding in the bicycle lanes

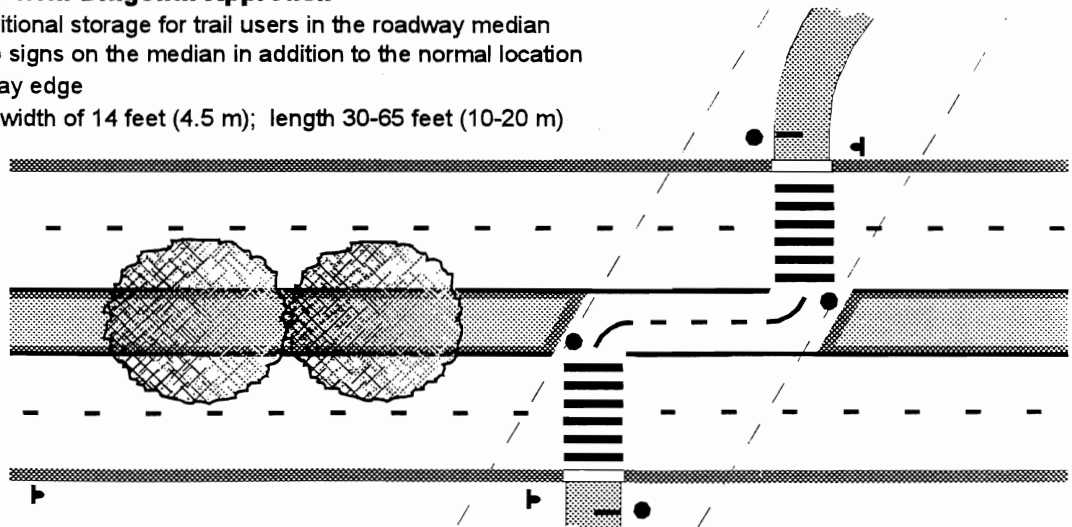


Typical Crossing

- ♦ angling the median refuge area 75° turns trail users toward approaching motor vehicle traffic to aid in visual searching while permitting crossing of the travel lanes at right angles
- ♦ a min. median width of 12 feet (3.7 m) is recommended
- ♦ requires a refuge area center line and STOP or YIELD pavement markings as appropriate within the refuge area

Median Refuge with Diagonal Approach

- ♦ provides additional storage for trail users in the roadway median
- ♦ requires stop signs on the median in addition to the normal location at the roadway edge
- ♦ min. median width of 14 feet (4.5 m); length 30-65 feet (10-20 m)



Depending on the specific circumstances of the intersection, design suggestions to minimize potential conflicts include:¹⁰

- prohibiting permissive left turns off of high-volume parallel roadways
- using as small as practical corner turning radii to reduce speeds of motor vehicles
- prohibiting right-turn-on-red and placing a stop bar in advance of the trail crossing
- offering an all-red signal phase to protect the trail users
- providing a refuge island and creating a two-step crossing for trail users

Providing clear sight lines across all corners is especially necessary.

C.3 Sidepaths

A sidepath is a two-way shared use path located immediately adjacent to a roadway, like an extra wide sidewalk. This facility type is not recommended in most applications due to space limitations, operational problems, and safety hazards that occur at roadway intersections as discussed above.

Sidepaths can be effective facilities along corridors paralleling waterways, railroads, linear parks, or in similar roadway corridors with limited adjacent development. However, in most applications where a trailway is proposed to utilize a roadway corridor, the preferred design treatments for bicyclists and in-line skaters are on-road bicycle lanes or paved shoulders. Pedestrians and very young bicyclists have the option of using sidewalks as available.

Conflicts with Sidepaths

AASHTO warns of the following problems associated with sidepaths:¹¹

- Unless paired, they require one direction of bicycle traffic to ride against motor vehicle traffic, contrary to normal Rules of the Road.
- When the bicycle path ends, bicyclists going against traffic will tend to continue to travel on the wrong side of the street. Likewise, bicyclists approaching a bicycle path often travel on the wrong side of the street in getting to the path. Wrong-way travel by bicyclists is a major cause of bicycle/automobile accidents and should be discouraged at every opportunity.
- At intersections, motorists entering or crossing the roadway often will not notice bicyclists coming from their right, as they are not expecting contra-flow vehicles. Even bicyclists coming from the left often go unnoticed, especially when sight distances are poor.
- When constructed in narrow roadway right of way, the shoulder is often sacrificed, thereby decreasing safety for motorists and bicyclists using the roadway.
- Many bicyclists will use the roadway instead of the bicycle path because they have found the roadway to be safer, more convenient, or better maintained. Bicyclists using the roadway are often subjected to harassment by motorists who feel that in all cases bicyclists should be on the path instead.
- Bicyclists using the bicycle path generally are required to stop or yield at all cross streets and driveways, while bicyclists using the roadway usually have priority over cross traffic, because they have the same right of way as motorists.
- Stopped cross street motor vehicle traffic or vehicles exiting side streets or driveways may block the path crossing.
- Because of the closeness of motor vehicle traffic to opposing bicycle traffic, barriers are often necessary to keep motor vehicles out of bicycle paths and bicyclists out of traffic

lanes. These barriers can represent an obstruction to bicyclists and motorists, can complicate maintenance of the facility, and can cause other problems as well.

Design Considerations

Only when it has been determined that on-road improvements are not feasible, should a sidepath trailway be considered. Then, additional criteria must be met to ensure user safety:

Available Right-of-Way

To accommodate the KRVTTP's 12' urban path standard, there should be 20' of available right-of-way. This is necessary to provide for a 3' clear zone from obstructions, a 12' wide trail, and a 5' buffer/open space which separates the path from the road. (Per AASHTO standards, if there is less than a 5' buffer width, a 4.5' high physical barrier needs to be constructed.)

Number of Street and Driveway Intersections

Studies show that bicyclists who ride on sidewalks or sidepaths incur 1.8 times greater risk of being involved in a collision with a motor vehicle than those who ride on the roadway.¹² This risk increases for path users who are traveling against traffic — they have been found to be 4.5 times at risk as right-way sidepath travelers¹³ — because motor vehicle operators are not looking for bicycles or other traffic off of the roadway and/or coming from the opposite direction.

For this reason, sidepaths should not be considered when there are more than 12 residential driveways, 6 commercial drives/minor streets, or 3 major street intersections per mile.¹⁴ Beyond this, a cyclist would face more than 1 driveway every 30 seconds, or 1 street every minute, whereby the safety and utility of the path deteriorates dramatically. Commercial strips or other areas with heavy vehicular turning movements are particularly dangerous.

Final Design Considerations

The above two criteria are most important to assess feasibility during the planning stages of a project. However, when the trailway moves into the design and construction phase, additional problems will need to be resolved, such as providing access to destinations located on the opposite side of the street from the sidepath, modifying signal timing to permit non-motorized users to move through an intersection without being hit by turning traffic, removing obstructions from sight triangles, locating crosswalks a proper distance from the parallel roadway, and providing appropriate curb cuts and transition areas so that bicyclists may access the path from both the parallel and intersecting streets.

In no instance should development of a sidepath preclude bicyclist use of the adjacent roadway.

Pavement Markings

Since the Kalamazoo Non-Motorized Plan calls for a couple of short stretches of sidepath to make key connections between other bicycle facilities — for one block along both Westnedge and Kalamazoo Avenues for example — it is critical that sidepaths be differentiated from sidewalks, so that such facilities do not encourage additional sidewalk riding in other parts of the community.

For this reason, consider striping sidepaths with 4" white edge lines and a 4" yellow center line. A pavement marking symbol group consisting of a white bicycle icon and arrow may also be located at either end of such facilities to promote travel on the right side of the path by both bicyclists and pedestrians.

All crosswalks to be used by sidepaths shall be of the ladder style for high visibility. Curb cuts and crosswalks shall be the same width as the path, typically 12 feet.

Design Considerations for Sidepath Facilities

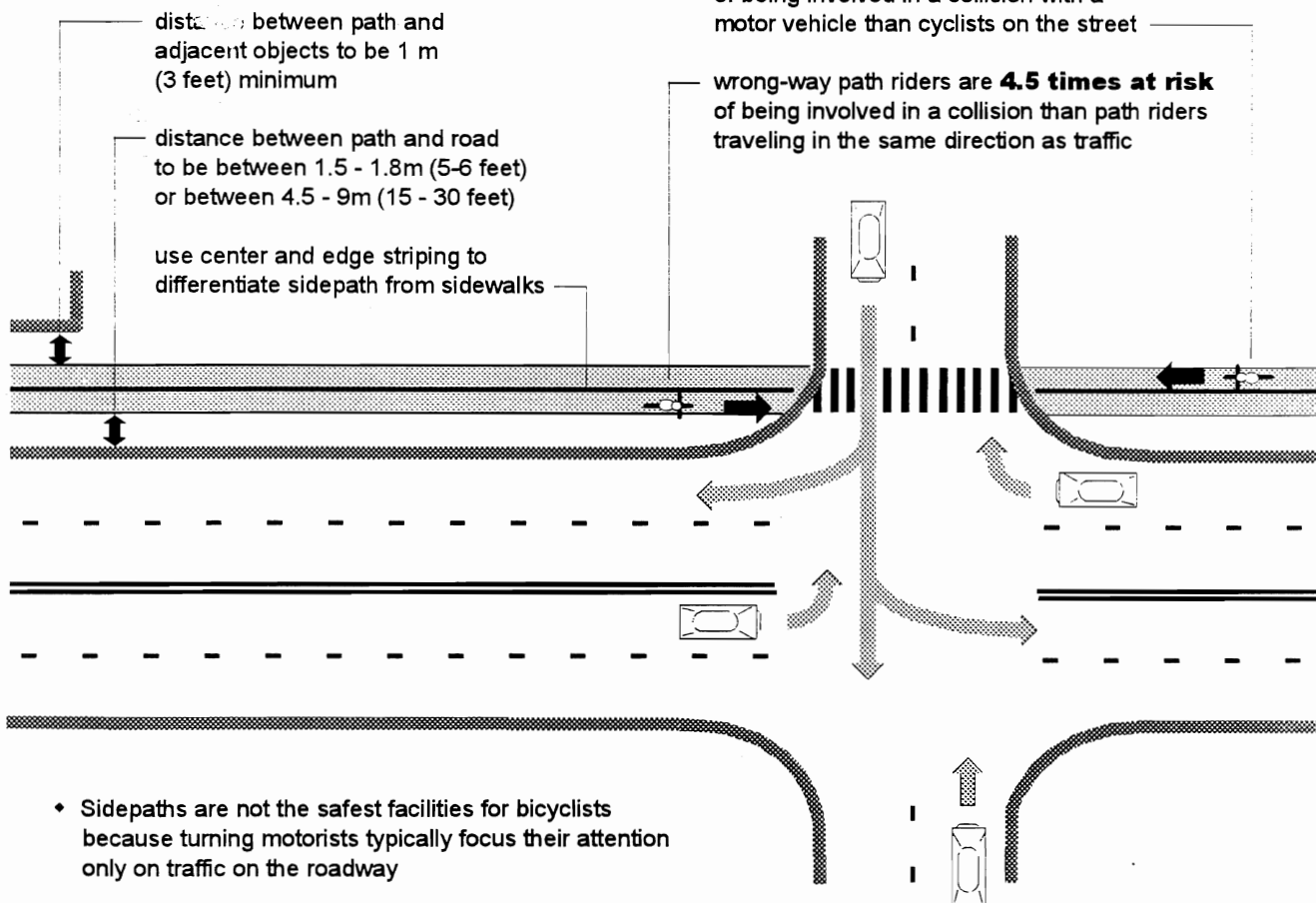
Limitations

- ♦ not recommended if on-road bicycle facilities can be accommodated
- ♦ not recommended where less than 6 m (20 feet) of right-of-way is available for the path and lateral clearances
- ♦ not recommended in corridors with frequent intersecting streets or driveways, especially corridors with commercial strip development
- ♦ not recommended unless signal timing can be appropriately modified and all intersection sight triangles can be free of visual obstructions

Did You Know?

sidepath riders are **1.8 times at risk** of being involved in a collision with a motor vehicle than cyclists on the street

wrong-way path riders are **4.5 times at risk** of being involved in a collision than path riders traveling in the same direction as traffic



C.4 Trailway Maintenance

Off-road paths have special maintenance needs since standard street-sweeping and snow plowing equipment often cannot be used on these facilities. Taking future maintenance needs into account when designing trailways can help to alleviate some of the additional maintenance responsibilities, but routine maintenance and repair is required to minimize liability for the managing governmental agencies.

Recommended maintenance actions for off-road trails include:

- Follow the standards set forth in the *AASHTO Guide for the Development of Bicycle Facilities*.
- Design trail cross-sections to withstand loading equivalent to the weight of small maintenance truck or ambulance. Design trail widths so that maintenance and emergency truck wheels do not drive on and deteriorate pavement edges.
- Develop a complete maintenance program for the Kalamazoo River Valley Trailway, all sidepaths and other segments of off-road trails. Develop multi-jurisdictional agreements between communities and agencies to ensure that maintenance of no section of trailway be unaccounted for.
- Sweep debris and remove snow regularly.
- Pave a 10- to 15-foot apron on gravel driveway approaches to reduce loose gravel on paved trail surfaces.
- Regularly overlay unpaved trail surfaces and maintain the full width of paths to prevent deterioration of path edges.
- Inspect for flood damage after each major storm and repair problems as soon as possible. In the interim, prominently use warning signs and markings to identify hazards.
- Keep vegetation cleared to provide a minimum 8-foot vertical and 3-foot horizontal clearance. Selectively remove underbrush and prune lower tree branches to improve sight distances through curves, at intersections, and in any areas where personal safety and security is a concern.
- Give prompt attention to hazards and maintenance problems reported by trailway users.

Part D. Bicycle Parking

A component not to be overlooked in any local bicycle plan is the provision for adequate bicycle parking at destinations. Investments in bicycle parking will:

- Increase overall parking capacity at little cost.
- Eliminate the clutter, pedestrian hazards and tree damage from randomly parked bicycles.
- Let people know that they and their bikes are welcome to shop locally.
- Attract additional users to Kalamazoo's bicycle system.

This plan recommends three basic actions to ensure secure and convenient bicycle parking:

- 1) Incorporate a bicycle parking requirement into local development ordinances.
- 2) Proactively encourage existing businesses to add bike racks.
- 3) Install bicycle parking facilities at public buildings.

D.1 Bicycle Parking Ordinance

A good ordinance is one which requires all buildings to provide a few bicycle parking spaces.

Model language for a simple ordinance is presented at right, based upon regulations in place in other communities nationwide.¹⁵

Land uses which attract more users, such as grocery stores, libraries and recreational facilities, usually will need more bicycle parking. As a general guide, businesses should provide enough parking to accommodate current demand, yet allow room for parking expansion since more racks may be needed as more people begin to bike more often.

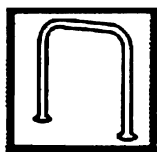
"All residential uses except single family residential and duplexes, and all non-residential uses, shall provide sufficient bicycle parking facilities consisting of not less than one (1) bicycle parking space for every twenty (20) required automobile spaces, with a minimum of two (2) bicycle parking spaces for any use."

— sample language for a local bicycle parking ordinance

D.2 Rack Types

Short-term bicycle parking spaces that shall count toward this requirement include those provided by racks where a cyclist can approach the rack and lock up quickly and easily. Racks that are complicated to use, or any old-fashioned racks that only hold the wheel of the bicycle, should not be considered acceptable.

The short-term parking needs of visitors, customers and employees may be met by the following styles of bicycle racks, if located near main building entrances where they will be convenient and highly visible:¹⁶



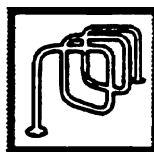
Inverted
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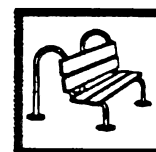
Post
and Ring



Genesis



Cora
Rack



Contemporary
Bike Bench

All of these recommended short-term bicycle parking racks meet the following criteria:

- Of a simple design that can be permanently installed into the ground.
- Accept both the popular cable and U-shaped bike locks.
- Allow a cyclist to easily lock the bike frame and one wheel to the rack.

Different Needs for Longer Stays

Long-term bicycle parking should be encouraged in areas where it is necessary for employees, transit commuters or tenants to park for more than two hours. The simplest and most common way to provide long-term parking is to allow bicycles to be brought and stored inside the workplace. Other options include installing high-security racks, bicycle lids, bicycle lockers and/or designating locked rooms or cages for bicycle storage.

D.3 Location Criteria

The most important considerations to ensure successful bicycle parking are a good rack and a good location. When siting parking facilities, consider the following:

- *Racks must be convenient.*
Bicycle parking must be as convenient or more convenient than auto parking. In strip developments, strive to place parking units no further than 50' from a main building entrance, or no further than the closest non-handicap automobile parking space. In commercial neighborhoods, smaller racks should be dispersed along sidewalks to provide close access to multiple store fronts.
- *Racks must be visible.*
Parked bicycles should be easily visible from the street or adjacent to high pedestrian traffic to discourage bike theft and vandalism. Adequate lighting of the parking area is also critical.
- *Racks must be accessible.*
Locate racks far enough away from walls and other obstacles so that a bicycle can maneuver in and out even when other bikes are using the rack.
- *Racks should not interfere with other uses.*
This includes taking care not to infringe upon pedestrian travel zones, as well as separating bike and auto parking areas to protect parked bicycles from being damaged by motor vehicles.
- *Racks should, ideally, be protected from inclement weather.*
Wherever possible, install bicycle parking under an existing awning or overhang. And always place racks on a paved surface.

D.4 Bike Parking Manufacturers

There are many manufacturers and suppliers of bicycle parking facilities, and several municipalities make their own units in-house. The following list is therefore not all-inclusive, but represents companies located in proximity to Kalamazoo and/or those who offer specific styles of parking units that were found desirable by members of the Bicycle Task Force:

Short-Term Racks

- **Cora**
P.O. Box 1647, Bellingham, WA 98227 800-354-8624
- **Cycle-Safe**
478 Arrowhead SE, Grand Rapids, MI 49546 616-538-0079 www.cycle-safe.com

Short-Term Racks, cont.

- ♦ **Dero**
1429 Washington Ave. S., Minneapolis, MN 55454 888-337-6729
- ♦ **G. F. Structures**
4655 W. Arthington Street, Chicago, IL 60644 773-626-4122
- ♦ **Madrax**
2210 Pinehurst Drive, Middleton, WI 53562 800-448-7931

Bike Lockers

- ♦ **Cycle-Safe**
478 Arrowhead SE, Grand Rapids, MI 49546 616-538-0079

Bike Lids

- ♦ **Plastron Products**
10434 NE 17th Street, Bellevue, WA 98004 425-455-9014

High-Security Racks

- ♦ **Bernard's**
4800 S. Lake Park Avenue, Chicago, IL 60615 773-488-8984
- ♦ **Graber**
5253 W. Verona Road, Madison, WI 53711 800-546-6644

Bicycle Toolkit Endnotes

1. American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities. AASHTO, Washington, DC, 1991, p. 3.
2. Oregon Department of Transportation, Oregon Bicycle and Pedestrian Plan: An Element of the Oregon Transportation Plan, 1995, p. 35.
3. 1991 AASHTO Guide, pp.16-20.
U.S. Department of Transportation, Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Government Printing Office, Washington, DC. 1988 Edition, Part III — Markings, and Part IX — Traffic Controls for Bicycle Facilities.
American Association of State Highway and Transportation Officials, Draft 1998 Guide for the Development of Bicycle Facilities. Draft review version of new manual, April 1997, pp. 27-41.
4. Student Notebook: Effective Cycling™ Road I. League of American Bicyclists, Baltimore, MD. First Edition, 1996, pp. 30-31.
5. Bicycles & Co., Inc. May 1998 — research conducted through personal correspondence between Terri Musser and members of the Association of Pedestrian and Bicycle Professionals.
6. River Partners Program, Forum for Kalamazoo County, and Kalamazoo River Valley Trailway Partnership. “Kalamazoo River Valley Trailway Design Guidelines.” Kalamazoo, MI. February 1996.
7. Kalamazoo River Valley Trailway Master Plan. January 1999. Prepared for the City of Kalamazoo, Kalamazoo, MI.
8. Draft 1998 AASHTO Guide, p. 50.
9. Pein, Wayne E., Trail Intersection Design Guidelines, University of North Carolina, Highway Safety Research Center, Chapel Hill, NC. June 1996 draft, p. 3-2 to 3-6.
10. Ibid. p. 3-30.
11. 1991 AASHTO Guide, p. 22.
12. Watchel, Alan and Diana Lewiston, “Risk Factors for Bicycle-Motor Vehicle Collisions at Intersections,” ITE Journal, September 1994, Institute of Transportation Engineers, Washington, DC, p. 33.
13. Ibid. p. 34.
14. Neufeld, Randy and Terri Musser, “Tech Sheet #1: Sidepath Bicycle Facilities,” Chicagoland Bicycle Federation, Chicago, IL. 1997.
15. Bicycles & Co., Inc.— recommendation based upon research conducted into model parking ordinances in other communities nationwide.
16. Bike Parking for Your Business, Chicagoland Bicycle Federation, City of Chicago and the Chicago Area Transportation Study Council of Mayors, Chicago, IL. October 1998.

Tools for Designing and Maintaining Pedestrian Facilities

The creation of a pedestrian-friendly community, in which people want to, and are able to walk for many purposes, depends upon appropriate facilities and certain kinds of community form. Kalamazoo has much that encourages walking, including an active downtown and a consistent network of sidewalks in many neighborhoods. Downtown has become even more pedestrian-friendly in recent years with streetscaping projects, development and a redesigned pedestrian mall.

The needs of pedestrians in Kalamazoo have been examined through a public planning process. Additional facilities, modification of existing facilities and improved maintenance are desirable to improve the pedestrian environment. Following is a toolbox of improvements including recommendations for the sidewalk corridor, street corners and crosswalks.

Developing specific pedestrian plans that address design options and policies that favorably impact walking is a relatively new activity for municipal government. This report depends in part on a review of the efforts of other local and state governments. The City of Portland, Oregon undertook an extensive project to develop pedestrian planning tools that resulted in several excellent products. The *Portland Pedestrian Design Guide* has served as a model for the approach taken in this section of the Kalamazoo Non-Motorized Transportation Plan. Information provided is specific to Kalamazoo, the State of Michigan and federal guidance but many valuable ideas are gathered from the experience of other communities.

The Pedestrian Transportation System

Pedestrian facilities, like those for any transportation mode, are most effective when part of a system of facilities that assures connections, continuity, access and safety. A community-wide system of facilities that are well designed and well maintained is essential. Also, consideration must be made of the needs of pedestrians in transportation and development projects. The drawing on the following page illustrates the idea of an interconnected system of facilities for pedestrians. Sidewalks are continuous; crossing streets safely is possible; and, where appropriate, measures are taken to slow motorized traffic.

90 degree Crosswalks:

- Creates shorter, and therefore safer, crossing distances on angled streets

Median Refuge Islands:

- Appropriate for long crosswalk distances
- Appropriate at complex intersections
- Should be a minimum of 6 feet wide and 12 feet long

Recessed Stop Lines:

- Increase driver site lines
- Use on multi-lane and one-way streets

Parkway:

- Separates pedestrians from traffic lane
- Provides space for signing, lighting
- Landscaping creates a more pleasant walk

Speed Table/Hump:

- Slows traffic
- Provides place for mid-block crossing

Chicane:

- Slows traffic
- Provides space for landscaping
- Can create parking bay

visibility of the crossing area

- Should not be marked indiscriminately because motorists may cease to notice or respect their significance
- May be used at intersections or mid-block crossings

Appropriate for multi-lane roadways

- Increase vehicle and pedestrian safety
- May be landscaped to provide a more pleasant roadway
- Safer than two-way left turn lanes

Corner Radius:

- Larger corner radii create longer crossing distances and encourage faster vehicle turns
- Smaller radii increase pedestrian site lines and visibility

Curb Bulbs/Extensions:

- Increase pedestrian site lines and visibility
- Shorten crosswalk distances
- Provide space for sidewalk amenities

Right Turn Lane Islands:

- Shorten legs of crossing and increase pedestrian visibility and site lines
- Channelize turning vehicles

Sidewalk:

- Primary transportation facility for walking
- Separates pedestrians from traffic
- Minimum 5' width
- Must be continuous, well maintained

Curb Cuts/Ramps:

- Must comply with ADA
- Direct wheelchair into crosswalk
- Perceptible texture for visually impaired
- Assure proper design and maintenance

Traffic Circle:

- Slows traffic
- Replaces stop signs at intersections
- Provides space for landscaping

Pedestrian-Friendly Infrastructure

An interconnected system of improvements to encourage walking

Kalamazoo Non-Motorized Transportation Plan
 Bicycles &, Inc.
 Suzan Anderson Pinosof
 The Greenway Collaborative, Inc.
 O'Boyle, Cowell, Blalock and Associates, Inc.

Part A. The Sidewalk Corridor

Sidewalks represent the primary transportation facility for walking. As such, the sidewalk system must be continuous and provide access to all the destinations a pedestrian would like to reach. The sidewalk corridor usually follows along the side of the road from corner to corner and encompasses the area from the edge of the road to the property line. The sidewalk corridor provides an area for walking, separated from vehicle traffic, and additional space for signs, streetscaping and amenities. It must be adequately maintained to remain useful.

Attributes of a Good Sidewalk Corridor¹

- ◆ **Accessibility** - Sidewalks should be easily accessible to users of all ability levels.
- ◆ **Continuity and Connectedness** - As the primary transportation facility for walking, the sidewalk route should be clear to users and should not be interrupted by gaps and intervening obstacles and conflicting uses.
- ◆ **Safety** - Sidewalks should be adequately separated from traffic, well lighted and free of dangerous surface irregularities.
- ◆ **Landscaping** - Trees and landscaping within the sidewalk corridor should be used to contribute to the physical, psychological and visual comfort of users.
- ◆ **Social Space** - The social aspect of sidewalk corridors should not be ignored; standing, sitting, visiting and children's play take place within the sidewalk corridor.
- ◆ **Community Form** - Sidewalk corridors should be recognized as a community asset and used to contribute to the character of neighborhoods and business districts, and to strengthen community identity.

The Sidewalk Corridor: Planning and Regulation

The *City of Kalamazoo Zoning Ordinance* requires that, "the pedestrian circulation system (in planned unit developments) . . . shall be as insulated as completely and as reasonably as possible from the vehicular street system in order to provide separation of pedestrian and vehicular movement."² Requirements for sidewalks are not defined by ordinance but the City works with developers to have them installed. The City will participate with a property owner on a 50/50 basis in the cost of sidewalk installation. Maintenance is the responsibility of the property owner, unless the City has disturbed a sidewalk. It will then be replaced at City expense. At one time, the City had a sidewalk repair program through which every sidewalk segment was inspected and if needed, repaired on a ten-year schedule. Due to budget constraints this program was abandoned.

The newly drafted *Kalamazoo Comprehensive Plan Update* acknowledges the importance of pedestrian circulation to positive community form. As a "city of neighborhoods," Kalamazoo requires the preservation and extension of pedestrian scale improvements.

The extensive public involvement process undertaken for the development of the *Kalamazoo Non-Motorized Transportation Plan* has identified the need for substantial sidewalk in-fill and repair and the provisions of sidewalks in many locations where they do not exist.

Sidewalk Corridors and The Americans with Disabilities Act (ADA)

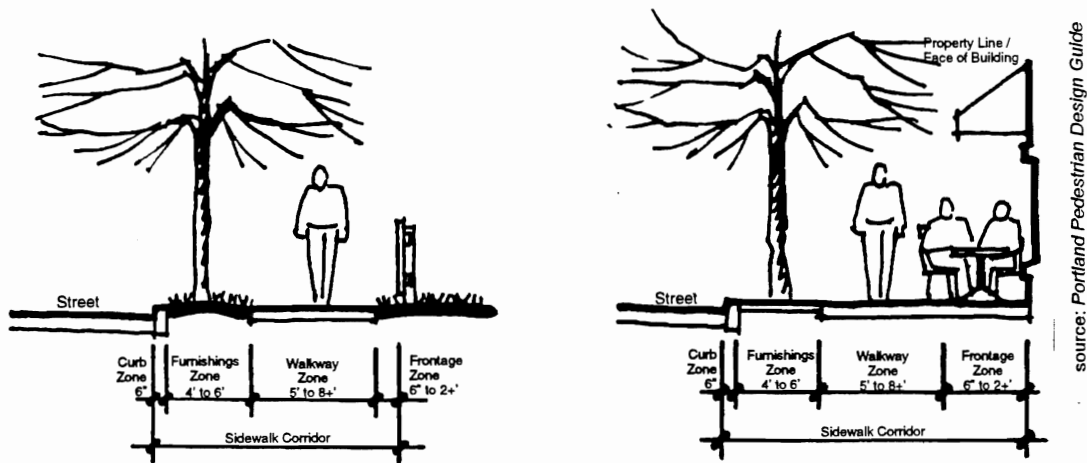
The design of ADA accessible improvements in public rights-of-way is covered by *Bulletin #7: Accessible Rights-of-Ways*, an interim final rule by the U.S. Architectural and Transportation Barriers Compliance Board.³ A new publication, *Accessible Rights-of-Way: A Design Manual*, is under review and will be published in 1999 by The Federal Highway Administration and the U.S. Architectural and Transportation

Barriers Compliance Board. Key provisions of the interim final rule which will be reinforced by the new guidance include:

- ◆ A minimum required useable width of 915 mm (3 ft.) for accessible passage on a sidewalk
- ◆ A sidewalk running slope limited to 1:20 (5%) with allowable exceptions where required by topography
- ◆ Maximum cross-slope for the sidewalk of 1:50 (2%), at least within the 3' accessible passage area of the sidewalk
- ◆ The sidewalk surface should be stable, firm, and slip-resistant
- ◆ Vertical differences in level between abutting surfaces should be no more than 6.5 mm (1/4 in) or 13 mm (1/2 in. if beveled at 1:2); it is acknowledged that this goal cannot always be met on older sidewalks

Sidewalk Corridor Zones

The sidewalk corridor is made up of four distinct zones: the Curb Zone, the Furnishing/Curb Lawn Zone, the Walkway Zone and the Frontage Zone. The role and design elements of each of these zones are discussed below.



Two common types of sidewalk corridors

Two common variations of the sidewalk zone in cities are: a grassy curb lawn in the furnishing zone with a minimal frontage zone, typical of residential areas; and a paved, sometimes landscaped furnishing zone with a larger frontage zone put to public use, typical of commercial areas.

Recommendations of the Portland plan for zone widths cannot always be met. Much of Kalamazoo is already built and sidewalk corridors are constrained. Competition for space can be resolved in one of two ways:

- ◆ Reducing the width of some or all of the zones, or
- ◆ Increasing the dimensions of the entire sidewalk corridor.

The benefits, costs and feasibility of these options must be assessed case by case.

A.1 The Curb Zone

Curbs prevent water from entering the other zones of the sidewalk corridor. They also discourage drivers from entering the pedestrian space. At corners, the curb is a useful indicator for pedestrians who navigate with the assistance of a cane. Curb area dimensions vary but a general rule of thumb is that the curb

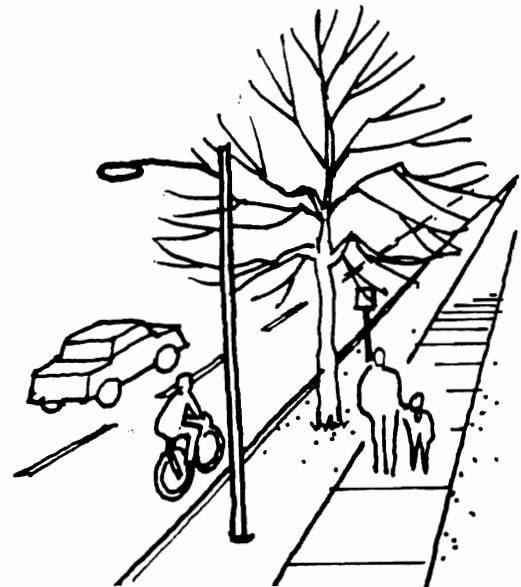
should be 150 mm (6 in.) in height and from 100 mm (4 in.) to 175 mm (7 in.) in width.⁴ These dimensions are modified at corners, as needed to construct curb ramps.

A.2 The Furnishing/Curb Lawn Zone

The furnishing zone is the section of the sidewalk corridor, between the curb and the walkway, that provides space for landscaping, utilities, signs, and other amenities. It should be between 4 feet and 6 feet in width. An important function of this area is that it buffers pedestrians from adjacent traffic. This is especially important on streets with heavy, fast traffic. Unfortunately, such streets often have a minimal furnishing zone, if they have a sidewalk corridor at all.

Residential/Neighborhood Commercial

In residential and neighborhood commercial areas the furnishing zone usually contains a curb lawn planted with grass and trees in keeping with the surrounding environment. The coolness and shade provided by these elements are very important to the pleasantness of the neighborhood. The furnishing zone also provides space for signs, utilities, transit stops and other amenities



source: Portland Pedestrian Design Guide

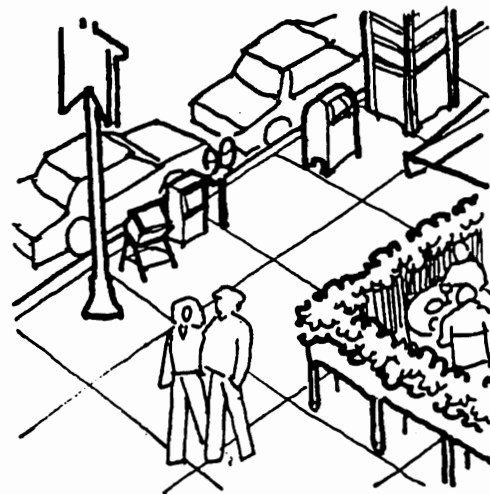
Residential/neighborhood curb lawn

Downtown Commercial

In commercial areas the furnishing zone can be paved or planted. It is always desirable to include landscaping elements in the furnishing zone, even where it is paved. Trees in wells and flowers in planters greatly improve the walking environment and the street presence of adjacent development.

Grates for ventilation or tree wells should always be flush with the surrounding pavement and openings should be modest in size. (The City of Portland, Oregon recommends openings no larger than ½ inch). Hatch covers should be put in the furnishing zone, flush with adjacent pavement and textured slip resistant surfaces should be used.

The furnishing zone provides space for many of the functions of the downtown sidewalk corridor, including signs, newspaper vending boxes, mailboxes, transit stops, phone booths, traffic control hardware and other utilities. It is essential that the furnishing area is adequate so that space is retained for the walkway.



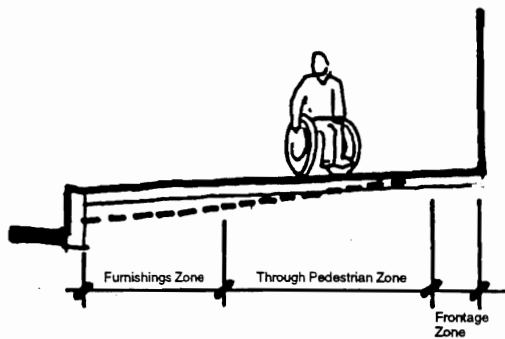
source: Portland Pedestrian Design Guide

Downtown furnishing zone

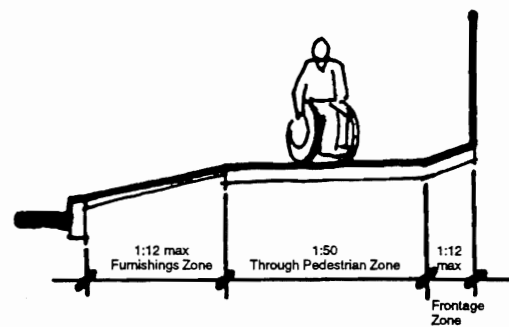
Grade and Cross Slope

Running grade is dependent on topography but the goal for grade on public walkways is the same as that required by ADA for private walkways: 1:20 (5%) or 1:12 (8%) for ramps.⁶

Walking surfaces should be level. The preferred cross slope for a walkway is 1:50 (2%). If a greater slope is unavoidable, the cross slope of the walkway as a whole can be as much as 1:25 (4%), as long as the 900mm (3 ft.) portion of the walkway zone remains at 1:50 (2%). Raising the curb is one way to maintain the preferred cross-slope; another way is to more steeply slope the furnishing and frontage zones, while maintaining the preferred slope in the walkway zone.



Raising the curb is one way to maintain the preferred cross-slope



The furnishing and frontage zones may be sloped more steeply to maintain a flatter cross-slope in the walkway zone

source: Portland Pedestrian Design Guide

Sidewalk Installation Guidance

National guidance for where to install sidewalks has been adopted by many state and local governments. The following table summarizes this guidance. Although some situations are identified that might require sidewalks on only one side of the road or might be served by usable shoulders, most urban and suburban streets require sidewalks on both sides of the street. Providing a sidewalk on only one side of a road can be adequate if very few destinations are served by the other side. However, consideration should be given to the inconvenience of crossing the road. If a worn path indicates pedestrian usage on both sides, sidewalks should be provided on both sides. Ideally, the following guidance should be considered as providing minimal pedestrian accommodation. A lesser standard assumes that every person traveling along a road, or wishing to access a destination on that road, will be in a motor vehicle.

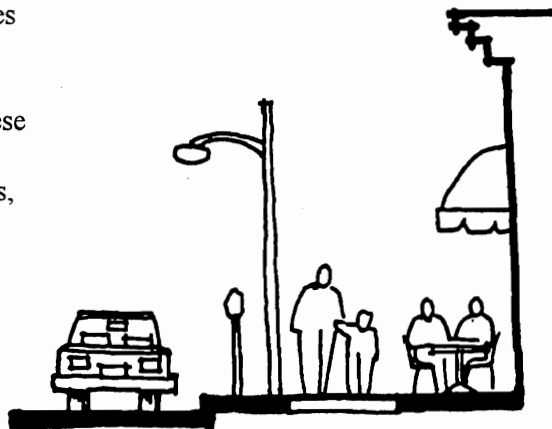
(See table next page.)

Guidelines for Sidewalk Installation (FHWA)⁷

<u>Land-Use/Roadway Functional Classification/Dwelling Unit</u>	<u>New Urban and Suburban Streets</u>	<u>Existing Urban and Suburban Streets</u>
Commercial & Industrial/ All Streets	Both sides.	Both sides. Every effort should be made to add sidewalks where they do not exist and complete missing links.
Residential/Major Arterials	Both sides.	
Residential/Collectors	Both sides.	Multi-family - both sides. Single-family dwellings - prefer both sides required at least one side.
Residential/Local Streets More than 4 Units Per Acre	Both sides.	Prefer both sides, required at least one side.
1 to 4 Units Per Acre	Prefer both sides; required at least one side.	One side preferred, at least 4-foot (1.2 m) shoulder on both sides required.
Less than 1 Unit Per Acre	One side preferred, shoulder both sides required.	At least 4-foot (1.2 m) shoulder on both sides required.

A.4 The Frontage Zone

The frontage zone is a space of from a few inches to several feet in width that occupies the area between the walkway zone and the adjacent property line. This zone allows for a comfortable shy distance for pedestrians from walls, bushes or fences. In sidewalk corridors that lack an adequate furnishing zone, items such as poles, signs, transit shelters and controller boxes may occupy the frontage zone. In these cases, additional easements are sometimes required. Additional uses of the frontage zone include sidewalk cafes, benches, awnings and planter boxes, especially in neighborhood and central commercial areas. Whatever occupies the frontage zone should not block the walkway zone.



source: Portland Pedestrian Design Guide

The frontage zone is the area between the walkway and the adjacent property

A.5 Encroachments

Many elements can encroach upon the sidewalk corridor. Stairs, railings utilities and driveways are common encroachments. Lack of maintenance, especially snow removal, also interferes with the usefulness of the sidewalk corridor.

Use of the Frontage Zone

Bay windows, canopies, signs, flags, walls and planters are allowable in the frontage zone but should not encroach upon the walkway zone. Standpipe systems and other building appurtenances are allowable, as long as there is adequate frontage space. ADA requires that building appurtenances may not project more than 100 mm (4 in.) in the area between the heights of 685 mm (2'3") and 2030 mm (6'8").⁸

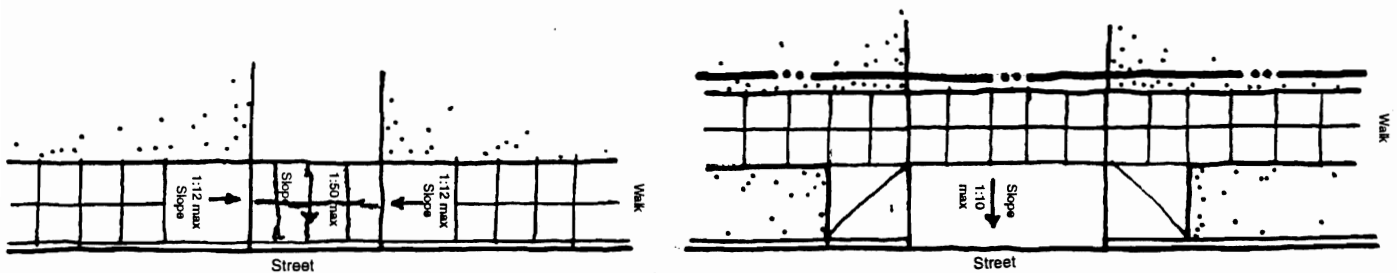
Blocked Sidewalks

It is not uncommon for sidewalks to be blocked by poles, controller boxes and any number of other utilities. Such blockages can, in extreme cases, force pedestrian traffic into the roadway and should be recognized as hazardous as well as inconvenient.

Driveways

Driveway intersections are potentially dangerous for pedestrians. The sidewalk should cross the driveway rather than the other way around. Ideally, the walkway cross-slope of 1:50 (2%) should be maintained as the sidewalk crosses the driveway. The sidewalk scoring or pattern should be continued to maintain the priority and right of way of the pedestrian at the driveway. The sloped portion of the driveway apron should be entirely within the furnishing zone and can be sloped to the maximum slope of 1:10 (10%) to keep the apron as narrow as possible. If necessary, the walkway can be dropped to meet the grade of the apron, as in the illustration at left, below. This drop should be ramped as per ADA and MDOT requirements.⁹ (See Appendix H.)

source: Portland Pedestrian Design Guide

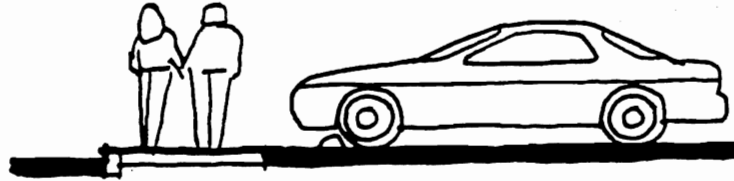


Two acceptable driveway design options

Driveway aprons that intersect with sidewalks should be kept free of debris and gravel, by design and/or by ordinance. Accumulated gravel on the sidewalk presents a hazard to pedestrians and gravel in the right most section of the travel lane is a hazard to bicyclists. To minimize gravel migration, gravel driveways can be paved back to the right-of-way line or a minimum distance of 3.0m (10 ft.) feet from the edge of the street so that the pavement extends several feet behind the sidewalk corridor.¹⁰

Adjacent Parking Lots

Parked vehicles sometimes overhang into the frontage or walkway sections of the sidewalk corridor. Parking lots should provide landscaping, wheel stops, walls or fences to prevent this encroachment. Gravel from unpaved parking lots should not be allowed to accumulate on sidewalks (see discussion above), and snow cleared from lots should not be piled onto the sidewalk.



Wheelstops restrain cars from encroaching into the sidewalk corridor

Part B. Street Corners

Pedestrian activities are concentrated at street corners. People socialize at street corners, buy their newspapers, mail letters and window shop while waiting for changing lights or buses. They also stage the most dangerous and complicated part of their walk — crossing intersections — at street corners. At the same time, street corners house much of the hardware that controls the complicated movements at intersections. Street corners are busy places. Because of their importance to traffic movement and safety, street corners must be highly visible and provide elements that consider the needs of all users.

Attributes of a Good Street Corner¹¹

The following attributes are typical of well functioning street corners within the pedestrian transportation network:

- ◆ **Adequate Space** - Corners should be large enough to accommodate the typical number of pedestrians waiting to cross, congregating for social reasons or waiting for transit. They also must be able to accommodate curb ramps, poles and signs, as well as street furniture, transit shelters and other amenities.
- ◆ **Separation From Traffic** - Corner design should effectively discourage the encroachment of motor vehicles into the pedestrian area.
- ◆ **Visibility** - Pedestrians must be able to see and be seen by motorists. Traffic controls and signals must also be visible from the pedestrian perspective.
- ◆ **Legibility** - Signals, signs and pavement markings should communicate clear messages to the pedestrian.
- ◆ **Accessibility** - All corner features including ramps, landings, call buttons, pavement markings and textures should meet ADA standards.

Americans with Disabilities Act

The State of Michigan, in compliance with ADA, requires the installation of curb ramps at all corners of an intersection where there is existing or proposed sidewalk and curb. Ramps are also to be provided at mid-block crossing locations and in the vicinity of medical facilities and large athletic facilities. Design specifications are available from the Michigan Department of Transportation (MDOT.)¹² The *Bulletin #7: Accessible Rights-of-Ways* issued as an interim final rule by the U.S. Architectural and Transportation Barriers Compliance Board in 1994, provides additional guidance for the design, placement and other

considerations for curb cuts. Key provisions of the interim final rule include:

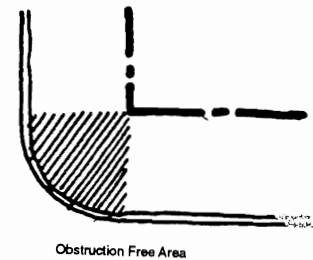
- ◆ The slope of the ramp should be no more than 1:12 (8%)
- ◆ The cross-slope should be no greater than 1:50 (2%)
- ◆ Every ramp should have a landing at the top and the bottom, the cross-slope of which should not exceed 1:50 (2%) and it should be 1220 mm (4 ft.) in length.
- ◆ The width of the ramp and the landing should be at least 915 mm (3 ft.).¹³

B.1 Adequate Pedestrian Area

The adequacy of the pedestrian area at corners is determined by considering several factors: the need to provide obstruction free areas; the amount and type of pedestrian demand to be served; and, the dimensions of the corner which are influenced by the size of the curb radius and the placement of buildings.

Obstruction Free Area

The Portland, Oregon pedestrian guidelines recommend that an area that is free of obstructions is necessary to accommodate multiple pedestrians and to assure adequate visibility. "The obstruction free area of a corner is the space between the curb and the lines created by extending the property line to the curb face."¹⁴ Exceptions to this "free" area include bollards to separate pedestrians from traffic and posts for pedestrian activated signal controls. Utility poles are sometimes present in this area. Consideration should be given to moving the pole from this area when it is to be replaced.

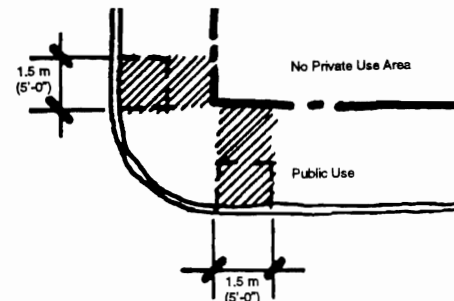


source: Portland Pedestrian Design Guide

The obstruction free area should be free of obstacles and most furnishings

No Private Use Area

To provide space for all the public hardware and amenities for which space is needed, the Portland plan recommends that uses such as cafes, kiosks and newspaper vending machines, "are not permitted in an area 1.5 m (5 ft.) back from the extension of the property line at any corner."¹⁵



Private uses should be discouraged here

Determining Adequate Pedestrian Area

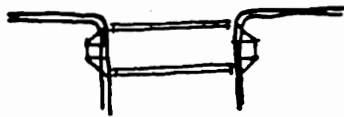
Corners must accommodate pedestrians walking through, pedestrians waiting to cross, those waiting for transit and those who are pushing strollers or using wheelchairs. In busy pedestrian locations, adequate area is determined by the volume of pedestrians using the corner, the types of uses, the waiting time for crossing and the size of the sidewalk corridor that feeds into it. Quantitative methods exist to calculate pedestrian levels of service¹⁶ but these are generally used only for areas that expect very large volumes of pedestrian traffic. It is usually possible to weigh the relative needs of pedestrians in various situations by considering land use patterns, destinations, current conditions and clues like worn paths.

The Portland, Oregon pedestrian design guide recommends that, "... the corner should provide at least 0.5 sq m (5 sq ft) for each pedestrian expected to wait or pass by during any given period."¹⁷

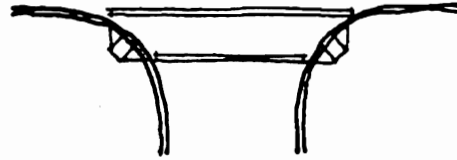
The addition of space at existing corners can be achieved by adding right-of-way or an easement or by changing the configuration of the corner through curb extensions or the reduction of the curb radius.

Curb Radius

In general, the smaller (tighter) the corner radius, the better are conditions for pedestrians. Advantages of small curb radii include a larger pedestrian area, a shorter crosswalk, slower vehicle turning movements and better placement of curb ramps. The disadvantages of small curve radii include turning difficulties for large trucks and buses. If the curb radius is small trucks and buses can run over the corner. This situation is dangerous for pedestrians and can cause damage to the corner and curb. Therefore, the nature of the vehicular and pedestrian traffic must be considered for each location.



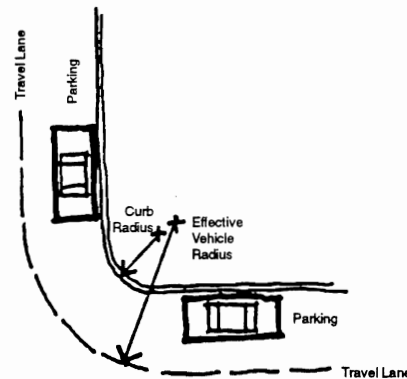
Smaller curb radius means a shorter walk



Wide curb radius lengthens crosswalk

Effective Curb Radius

The presence of a parking or bicycle lane creates an “effective radius” that is larger than the actual curb radius, thereby allowing larger design vehicles to be accommodated.¹⁸



source: Portland Pedestrian Design Guide

“Effective radius” is larger than actual radius

B.2 Curb Ramps

Curb cuts/ramps must be ADA compatible in design and placement and must be adequately maintained to operate optimally. The best placement of curb cuts is that which directs the pedestrian (in a wheelchair or on foot) into the crosswalk. Generally two curb cuts, one in each direction are preferable to one wide corner cut. Every curb cut should have a level landing area at the top and bottom of the ramp. A tactile surface that is perceptible to visually impaired pedestrians should be included in the center area of the curb cut as it approaches the crosswalk.

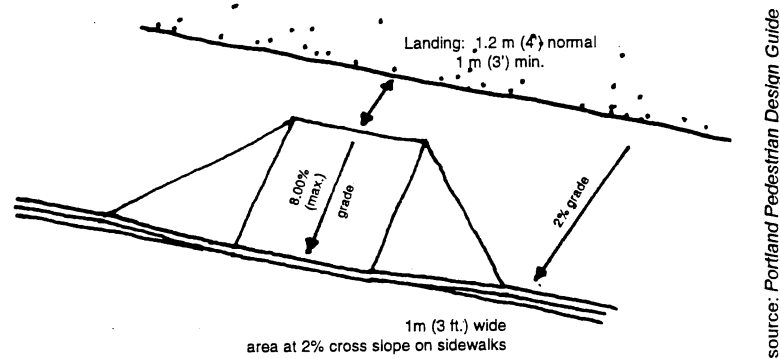
Curb Ramp and Landing Design

MDOT standards for curb ramp design are consistent with ADA requirements (see Appendix H). Several variations of curb ramp and landing design are acceptable. Most fall into either the familiar perpendicular or the less common parallel design types. The perpendicular design extends the sidewalk by way of a ramp that cuts through the curb to meet the crosswalk. The parallel design provides ramps down to a landing that is flush with the crosswalk where a turn is required to enter the crosswalk. The top landing of the perpendicular ramp is part of the approach walkway and the bottom ramp is in the street, and should be fully contained in the crosswalk. The landings for the parallel ramp are all within the walkway.

Each ramp must have top and bottom landings. The maximum ramp slope is 1:12 (8%) and the cross-slope should not exceed 1:50 (2%). Ramps should be at least 915 mm (3 ft.) in width. The top landing should be at least 1220 mm (4 ft.) in length and should not slope in any direction more than 1:50 (2%). Bottom landings, if in the street, should be 1220 mm (4 ft.) in length with a running slope of no more than 1:20

(5%). The dropped ramp (as in the parallel ramp design) should be 1525 mm (5 ft.) in length and at least as wide as the ramp, and preferably, 1525 mm (5 ft.) wide to accommodate turning wheelchairs.¹⁹

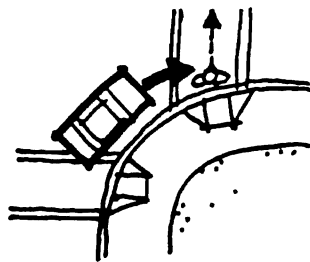
To create a ramp within the 1:12 (8%) slope limit, it is usually necessary to lower the curb height at corners. It is recommended that the curb should not be eliminated for the entire corner area because curbs protect the pedestrian area from the incursion of storm water and turning vehicles.



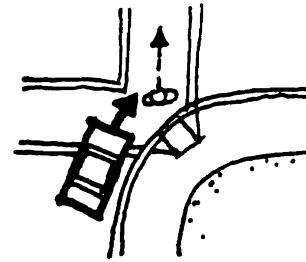
Typical perpendicular curb ramp design

Placement and Number of Ramps

It is preferred practice in Kalamazoo and elsewhere to provide two ramps at each corner that lead directly into the crosswalk. This is safer than a ramp that directs pedestrians in wheelchairs or pushing strollers into the street away from the crosswalk. Pedestrians might encounter cross traffic or have difficulty perceiving turning vehicles, as illustrated at right, below.



Turning vehicles approach from the side:
pedestrian more likely to see vehicle



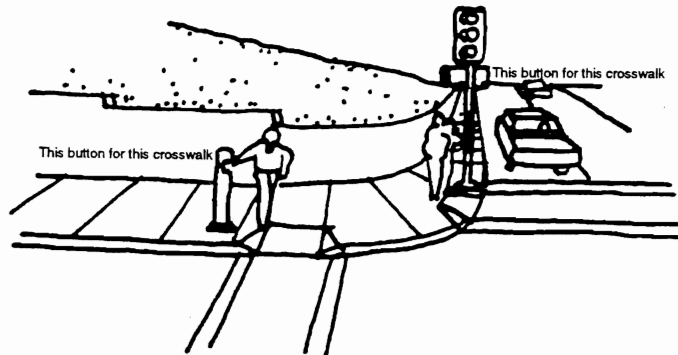
Turning vehicle approach from the rear:
pedestrian might not see vehicle

Ramp Maintenance

Curb ramps and landings require good drainage and regular sweeping. Puddling water and debris at the bottom of curb ramps can be a problem. Proper design that places drainage away from the curb ramp can help to prevent these problems. Additional concerns include the maintenance of the interface between the ramp and the street. Potholes in the landing area can cause tipping of wheelchairs and resurfacing can cause level changes. Appropriate repairs and tapering the infill at the base of the ramp can address these problems.

B.3 Pedestrian Call Button Location

At pedestrian-activated signals, the call buttons should be visible and conveniently placed for all users, including those in wheelchairs. The crossing direction controlled by the button should be indicated through placement or by an arrow. The button should be accessible from the upper landing of a curb ramp.



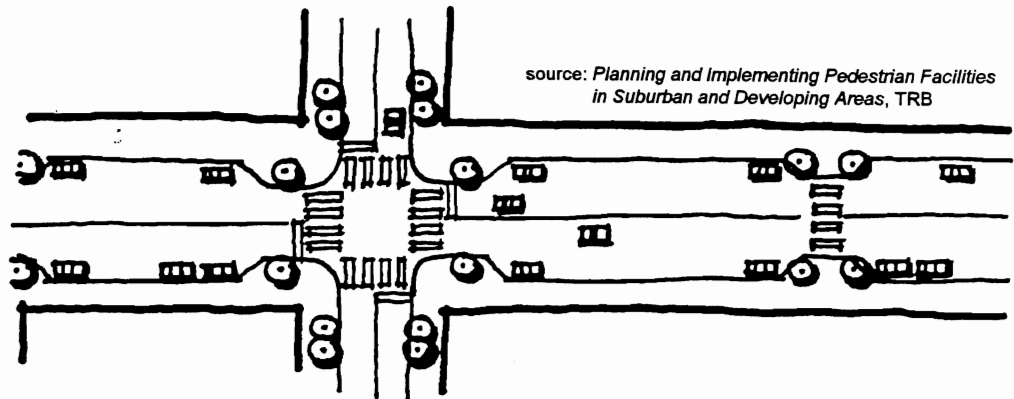
Conveniently placed push buttons

source: Oregon Bicycle and Pedestrian Plan

B.4 Curb Extensions

Curb extensions have been used in some of Kalamazoo's downtown revitalization projects. They benefit pedestrians in a variety of ways and create additional space for various streetscaping and design elements. Some of the benefits to pedestrians include:

- ◆ Shortening the crossing distance at intersections
- ◆ Creating more space at corners for amenities, utilities and curb cuts
- ◆ Improving pedestrian visibility



Corner curb bulbs or extensions

Design Considerations for Curb Extensions

Curbs may be extended into one or both corners of a street. The principles of the Obstruction-Free Area and No Private Use Area, discussed above, apply at extended corners. The design of the extension is subject to the dimensions of the intersection. If the street is to remain open to two-way traffic then the extension is limited by the required space for two lanes of traffic. In some cases the extension becomes part of a traffic calming scheme and the extension(s) purposely creates a pinch point to slow motor vehicles. In other cases, curb extensions are used for traffic management, in which case one lane is closed to entering traffic. The remaining lane allows local traffic to exit and should allow bicycle traffic to enter as well as exit. Curb extensions might present difficulties for truck traffic.

Location of Curb Extensions

Curb extensions may be used at any corner or at a mid-block location in combination with a marked mid-block crosswalk. They are not generally located on streets that do not have parking because the empty lane that would be created might encourage swerving in and out of traffic by motor vehicles and bicycles. Curb extensions are sometimes used in conjunction with bus stops, "eliminating the need for the bus to pull out of the travel lane to load and unload passengers."²⁰

Part C: Crosswalks

Crosswalks are essential for the most hazardous aspect of any pedestrian trip, crossing the street. The purpose of crosswalks is to concentrate pedestrian crossing movements so that the potential number of conflict points between pedestrians and motor vehicles are reduced. There are two types of crosswalks: marked and unmarked.

Crosswalks are the natural extension of the sidewalk at corners (or if there is no sidewalk, the area that would extend if there were a sidewalk). The majority of crosswalks are unmarked. Crosswalks are sometimes marked at mid-block locations. Pedestrians have the right of way at crosswalks but are required by law to obey traffic control devices and laws.

Attributes of Good Crosswalks

- ◆ **Clarity** - It is clear where to cross and easy to understand possible conflict points with traffic.
- ◆ **Visibility** - Pedestrians can see and be seen by approaching traffic - lighting is adequate and obstacles and the location of the crosswalk do not obscure the view.
- ◆ **Appropriate Intervals** - The potential demand for crossing is reasonably well served by available crossing opportunities.
- ◆ **Adequate Crossing Time** - The pedestrian is allotted or can take an adequate amount of time to cross and does not need to wait an unreasonably long time to begin crossing.
- ◆ **Limited Exposure** - The distance required to cross is short or it is divided into shorter segments with median refuges.
- ◆ **Continuos Path** - The crosswalk is a direct extension of the pedestrian travel path and is free of obstacles and hazards.

C.1 Unmarked Crosswalks

Most crosswalks at minor street intersections are unmarked. The distance traveled at these crosswalks is usually short. The greatest dangers at these intersections come from obscured sight lines and turning vehicles. Maintaining small turning radii at corners on minor streets is important. Enhancing the visibility of crosswalks can be advisable if children or slower pedestrians are regular users. Visibility can be enhanced through traditional crosswalk markings, a change in the material of the road at the crosswalk or through various traffic calming measures. (See following section on Traffic Calming).

Frequency of Crossing Opportunities

Pedestrians are very distance sensitive and will cross at the nearest opportunity unless they perceive the value of an alternative. At busy intersections most people see the benefit of using the designated crosswalk unless it is beyond what is perceived to be a reasonable distance. In central business districts, blocks are usually short enough that pedestrians will use the crosswalk unless there is an especially low volume of traffic. Portland, Oregon recommends that crosswalks be no farther apart than 60-90 m (200-300 ft.) and

not closer together than 45 m (150 ft.) in high priority pedestrian districts. In other locations, distances are variable, but pedestrian crossings should not be prohibited for more than 120 m (400 ft).²¹

Mid-block Crossings

National guidance says that mid-block crossings should not be provided if an intersection is within 120 m (400 ft.). There are exceptions to this rule especially where there is heavy demand due to attractions on either side of the road or a vulnerable population. Sometimes mid-block crossing locations can be safer than those at intersections. As intersections have become very wide with additional turning lanes and very large turning radii, the mid-block location presents a shorter crossing distance and far fewer conflicts. At mid-block locations, marked crosswalks are always accompanied by signing to warn motorists of the upcoming crosswalk.

Pedestrian Delay at Unsignalized Crosswalks

It is difficult for pedestrians to judge the speed and closing distance of oncoming vehicles, especially on wide, high speed roads. The Manual on Uniform Traffic Control Devices (MUTCD, 4C-5) suggests that approximately 60 seconds is an adequate frequency for pedestrian crossing.²² Recent studies of pedestrian behavior suggest that pedestrians typically wait a much shorter time, (only 15 seconds) before choosing to cross within an interval that might have previously been rejected.²³ Ideally, gaps should occur frequently enough at unsignalized intersections that pedestrians do not take unsafe risks to cross the street. Pedestrian delays can be reduced by adjusting nearby traffic lights to control the platooning of motor vehicles or by providing median refuge islands. Where problems are reported or observed, consideration should be given to some type of traffic control even if MUTCD warrants are not met.

C.2 Marked Crosswalks

The safety value of crosswalk markings has been debated. Some studies have found an increase in accidents at marked crosswalks and others have found a decrease. The consensus is that crosswalk markings are valuable to pedestrians for guidance and visibility and the markings might increase their safety in some locations. National guidance states that there is a danger that motorists will no longer pay attention to crosswalk markings if they are used too liberally. The following are considered as priority locations for the installation of marked crosswalks:²⁴

- ◆ In urban or rural areas whenever there is a need for increased visibility and designation of the crossing area.
- ◆ When multiple pedestrian crossing locations exist and a marked crossing would serve to channelize pedestrian crossing at a single location.
- ◆ Where there is substantial conflict between motorist and pedestrian movement.
- ◆ When the best location for pedestrians to cross may be unclear due to geometric or traffic operational conditions.
- ◆ When pedestrian volumes are sufficiently high that a familiar driver would anticipate pedestrians desiring to cross in the crosswalk.
- ◆ At arterial crossings in central business districts.
- ◆ At signalized intersections equipped with pedestrian signals.
- ◆ At approved school crossings that have been established by the local school authority.
- ◆ At crossings on recommended safe school routes.

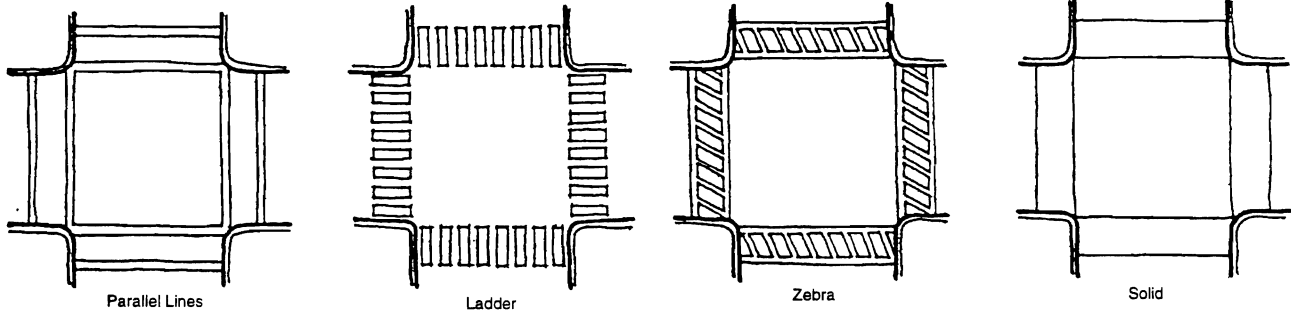
Crosswalk Markings

Crosswalk marking choices include the following:

- ◆ Two solid, parallel lines at least 6" wide.
- ◆ Ladder style: stripes that run parallel to the flow of traffic.

- ◆ Zebra striping: diagonal stripes.
- ◆ A solid marking of the entire crosswalk area with paint or a different material such as brick pavers.

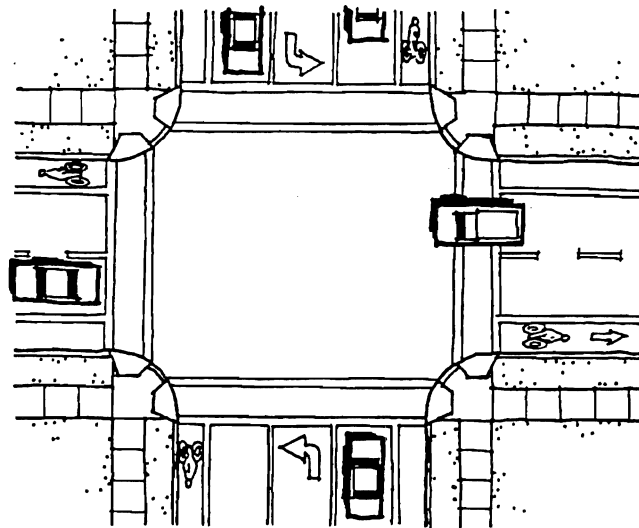
source: *Planning, Design and Maintenance of Pedestrian Facilities*, FHWA



The first style, that of the two parallel lines is by far the most commonly used. The ladder or zebra style is recommended for applications where extra visibility of the crosswalk is needed, especially at mid-block crossings. One problem with the ladder crossing is that the markings wear unevenly as tires are channeled over the same sections repeatedly. This problem can be partly avoided by careful spacing of the bars of the ladder. The final, solid style is seen most frequently as part of downtown streetscaping projects and on raised crosswalks where the solid area is sometimes constructed with paving bricks.

Crosswalks Lined Up with Curb Cuts and Sidewalks

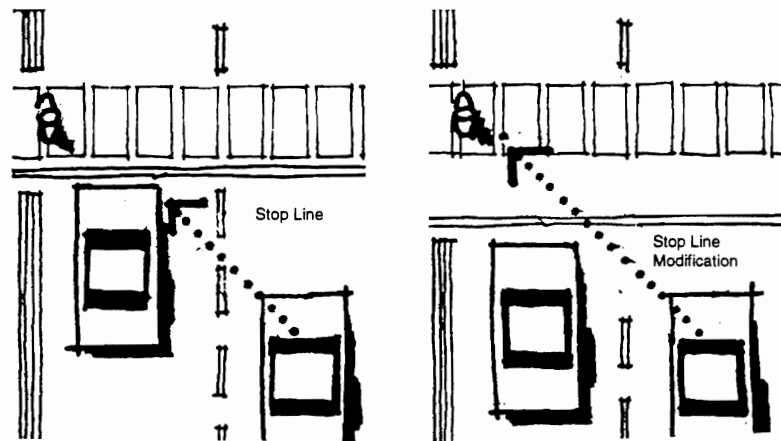
Crosswalks should be lined up as closely as possible with the sidewalks they serve and curb ramps should always feed as directly as possible into the center of the crosswalk.



Curb ramps should feed directly into crosswalk markings

Recessed Stop Lines

Recessed stop lines are especially important where multiple travel and turning lanes can block the driver's view of crossing pedestrians. The driver has a larger field of vision when stopped farther back from the crosswalk.²⁵ The driver might have difficulty seeing intersecting traffic if stopped too far from the intersection. The City of Kalamazoo recesses stop lines on multi-lane one-way streets.

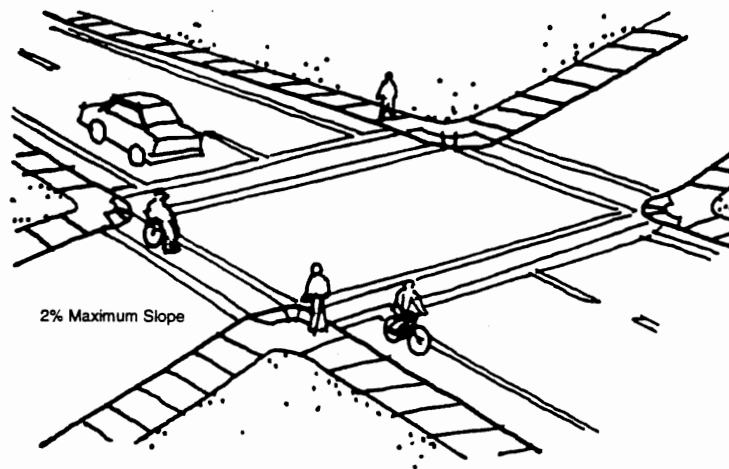


source: Planning, Design and Maintenance of Pedestrian Facilities, FHWA

Sight lines are improved by recessed stop lines

C.3 Cross-slope of Crosswalks

The maximum allowable cross-slope of 1:50 (2%) for walkways must be maintained for a width of 915 mm (3 ft.) through the crosswalk to meet ADA requirements.²⁶



source: Oregon Bicycle and Pedestrian Plan

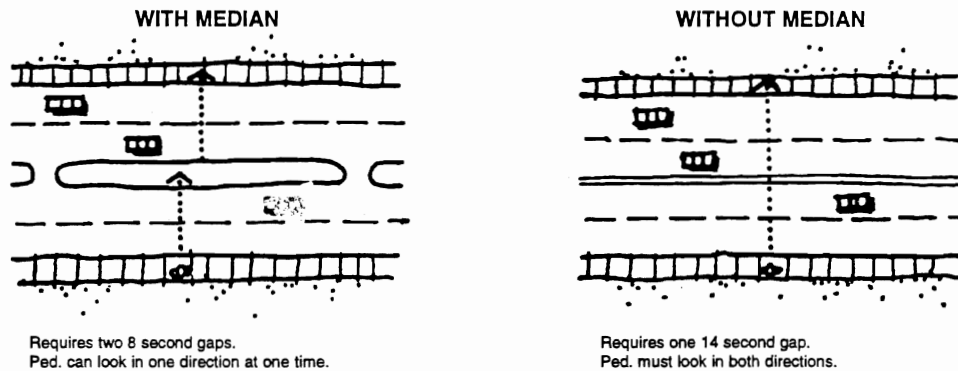
Crosswalks should be level even as the street changes grade

C.4 Minimizing Exposure During Crossing

Pedestrian exposure to traffic should be minimized as much as is possible. Generally 15 m (50 ft.) is the longest distance a pedestrian should be expected to cross at an un-signalized intersection.²⁷ Crossing a four lane 48 foot wide road takes 10.7 seconds at the average walking speed of 4.5 feet per second (fps).²⁸ Several tools are available to shorten or stage the walking distance at crosswalks, including shortening the walking distance by providing curb extensions or reduced curb radii (see Section B, above).

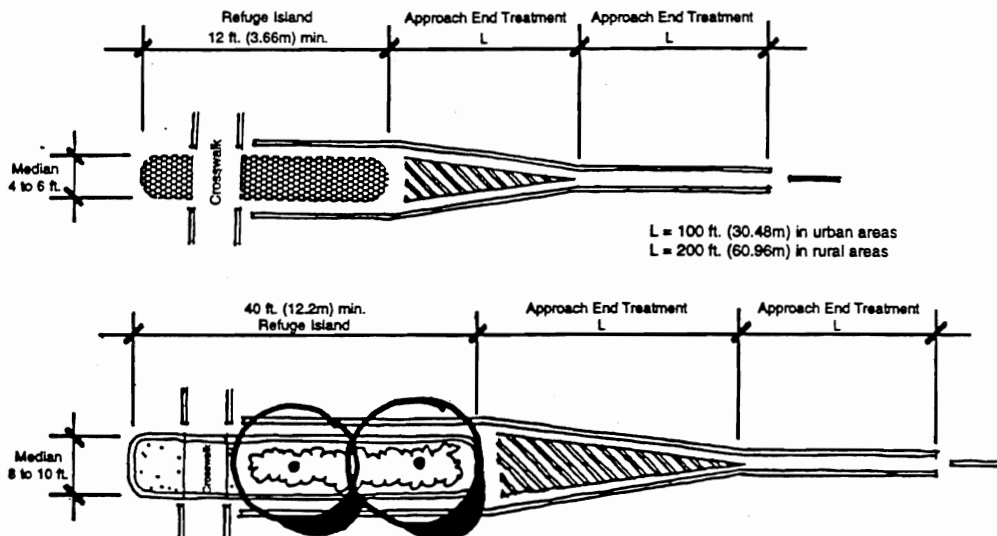
Refuge Islands and Medians

Refuge islands should be used to stage pedestrian street crossings on wide streets. Using a median refuge at unsignalized crosswalks on a two-way street, a pedestrian can assess an appropriate gap one lane at a time. At signalized intersections, slower pedestrians use the refuge to cross multiple lanes in stages.²⁹ The New Jersey Department of Transportation (NJDOT) recommends that a median refuge should be provided whenever the crossing distance exceeds 18 m (60 ft).³⁰ The Institute of Transportation Engineers recommends the use of pedestrian refuge islands at signalized intersections which cannot be crossed in one pedestrian phase. Special consideration should be given to locations having large numbers of elderly or disabled pedestrians and to complex or irregularly shaped intersections. A minimum width of 4 feet and preferably 6 feet, and a minimum length of 12 feet is recommended. A ramp or full cut should be provided on medians to provide adequate access. Motorists should be warned through appropriate pavement markings, signing and illumination.³¹ At mid-block, unsignalized locations, a median refuge island can help the pedestrian to assess the gap in traffic more easily and, therefore, cross the street more safely.



Pedestrians can stage crossings of multi-lane roadways

Medians can improve the pedestrian environment in other ways as well. Medians can be landscaped which improves the appearance of the facility for all users and medians can be used to control dangerous or undesirable vehicle turning movements at mid-block locations.



source: *Planning and Implementing Pedestrian Facilities in Suburban and Developing Areas*, TRB

source: *Planning, Design and Maintenance of Pedestrian Facilities*, FHWA

Pedestrian Grade Separation

Pedestrians often ignore grade separated pedestrian facilities unless there is no at-grade alternative. For this reason fairly strict warrants are used as guidance for installation. The NJDOT suggests that arterial roadways should consider over or underpasses where for any given 4 hour period, the pedestrian volume is 300 and the vehicular volume is 10,000 (35,000 AADT). The warrant also states that a grade separated crossing should not be considered within 180m (600 ft.) of a “safe” crossing. However, an exception to this guidance is noted that might have application in Kalamazoo, especially to connect the WMU campus.

“ A grade separated pedestrian crossing may still be appropriate despite the availability of a nearby crossing. This is especially likely if the pedestrian demand is substantially greater than the minimum required for the warrant, or if grade differences make installation of an over or underpass especially convenient. Grade separated crossing would be especially appropriate on college or university campuses, at crossings linking recreation areas and schools, at major activity centers, adjacent to train or bus stops or at other sites having very high and concentrated pedestrian flows.”³¹

C.5 Traffic Signals and Crosswalks

Most signals in urban areas will be used by pedestrians, whether or not a pedestrian signal head is provided. It is important that signal heads are visible to pedestrians at the corner. Diagonally strung lights are sometimes difficult to see from the pedestrian angle.

Pedestrian Signal Indications

Pedestrian signal heads should be installed at urban signalized intersections when field studies warrant. The placement of pedestrian signal heads should follow MUTCD guidance.³² The revised minimum pedestrian volume warrant states that a traffic signal may be warranted when the pedestrian volume crossing a major street at either an intersection or mid-block location averages either 100 or more for any given four hour period of the day, or 190 or more during any one hour. These volume warrants can be reduced for large populations of pedestrians who walk more slowly than average.

Current standards for pedestrian signal heads specify the use of white and Portland orange colors only. Symbols rather than words are preferred. This configuration can be seen more easily by elderly and sight impaired individuals.

Pedestrian only signals are used at mid-block locations where pedestrian volumes meet the warrants established by the MUTCD. These signals are always pedestrian activated.

Pedestrian Activated Signals and Other Types of Detection

Pedestrian detection can be active or passive: the pedestrian pushes a button or the presence of a waiting pedestrian is sensed through infrared or other type of detection system. The most common type of detection is the pedestrian push button or call button. The mechanism of the call button is often misunderstood. Pedestrians expect the walk cycle to begin very shortly after the button is pushed. In most cases the signal will activate the walk cycle with the parallel green cycle. This might entail a wait and sometimes pedestrians think that the button is inoperative. The use of a call button that lights when pressed could reassure pedestrians. In Europe both lighted and chiming devices are used, the latter to inform visually impaired pedestrians that



source: MUTCD

they should wait for the light.

Passive detection has some advantages over active options. The detector can sense the presence of the pedestrian and bring up the walk cycle as needed. It can detect the pedestrian who needs more time and adjust the cycle accordingly. The sensor can also adjust to the pedestrian who crosses in a gap prior to the activation of the walk cycle. Traffic is not unnecessarily stopped. Passive detection systems are still new and require technical refinements to operate reliably.

Crossing Intervals

The walk cycle is controlled by either the green phase of the light or if that phase is not long enough, the timing needs of the crossing pedestrian. The MUTCD recommends a minimum interval for the "walk" symbol of 4 to 7 seconds which is just long enough for the pedestrian to step off the curb and begin to cross the street. The flashing "don't walk" symbol should be long enough for the completion of the crossing at the speed of 3 to 4 ft/sec. Pedestrians often complain about crossing intervals that are too brief. Part of these complaints are due to a misunderstanding of the walk cycle symbols. However, it is genuinely confusing when the "walk" segment of the crossing interval is so brief that the pedestrian has made little progress beyond the curb when the "don't walk" starts to flash. It would be desirable to lengthen the "walk" interval in some locations and the overall design walk speed should be reduced where slower walkers can be expected: for instance, near medical facilities, schools and elderly housing. Consideration should be given to pedestrian priority in downtown and neighborhood business districts.

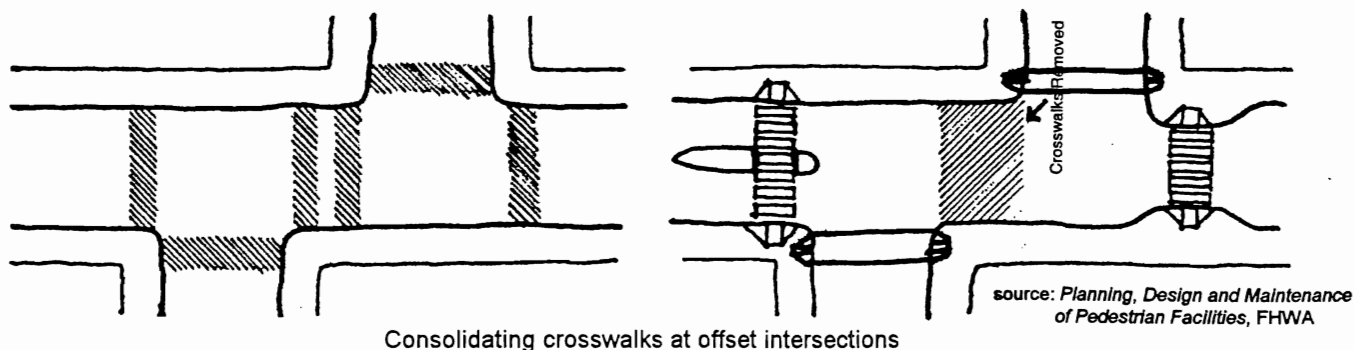
Occasionally, crossing conditions are so hazardous that the pedestrian crossing phase is provided during an all-way red phase that stops other traffic. This approach is warranted by conditions of pedestrian demand at very confusing intersections that cannot be retrofitted for safe crossing through other traffic controls or redesign of the intersection. To minimize disruption to traffic, all-way stops should be pedestrian activated except in areas of very heavy pedestrian demand.

C.6 Crosswalks at Offset and Skewed Intersections

Kalamazoo has many diagonal streets, resulting in off-set or skewed intersections. The "natural" crosswalks at these locations are long and complex. Preferred treatments include consolidating the location of crosswalks at offset intersections and providing crossings that more closely approximate right angles at skewed intersections.

Offset Intersection

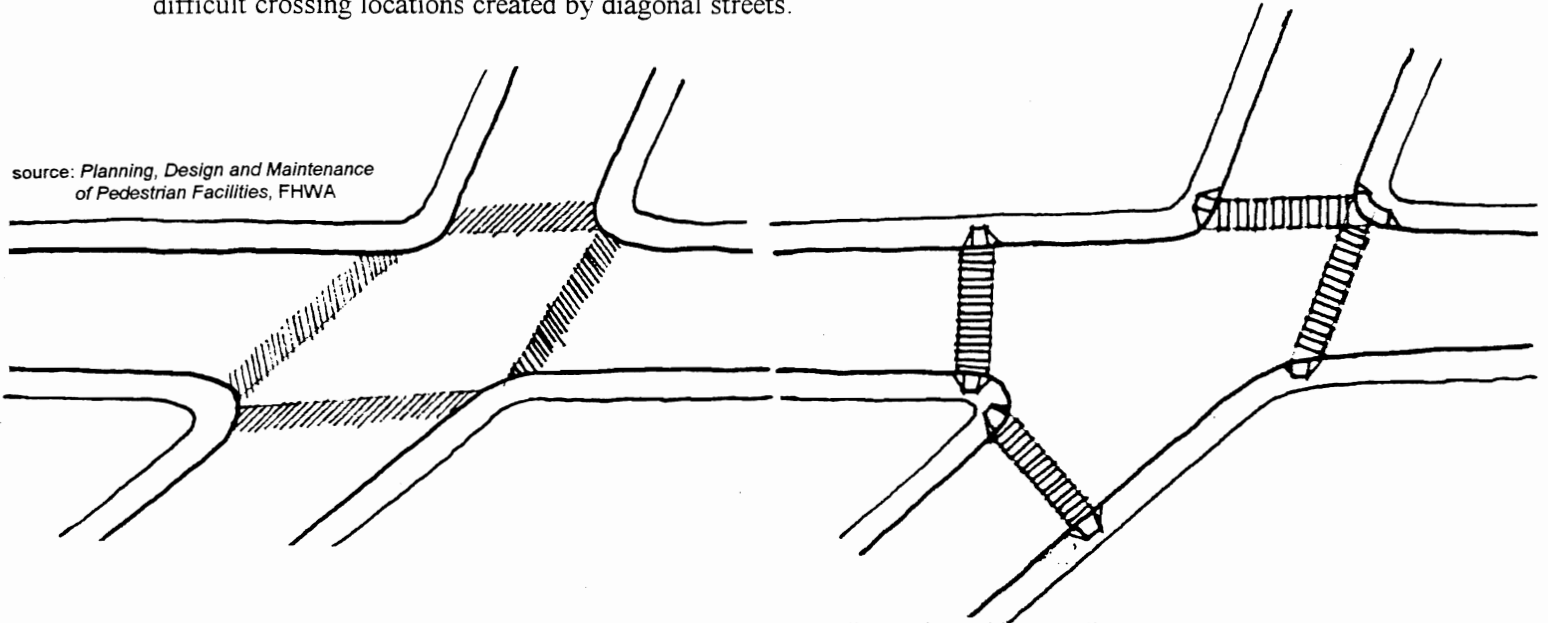
In general, enhancement of the outer crosswalks and elimination of the inner crosswalks is the preferred treatment for off-set crosswalks. The use of "No Pedestrian Crossing" signs is discouraged in Portland, Oregon since the un-marked crosswalk is still legal. The addition of pavement markings, and where warranted, traffic signals will encourage most pedestrians to use the preferred crossing locations.



Skewed Intersection

At skewed intersections the length and angle of the natural crosswalk exposes the pedestrian to hazardous conditions. In Kalamazoo, pedestrians can be observed making the correction to an approximate 90 degree crossing as they try to assess gaps and intuitively seek the shortest route. Through the consolidation of crossing locations and the provision of shorter, straighter crosswalks conditions can be improved at the difficult crossing locations created by diagonal streets.

source: *Planning, Design and Maintenance of Pedestrian Facilities*, FHWA



Straightening and shortening crosswalks at skewed intersections

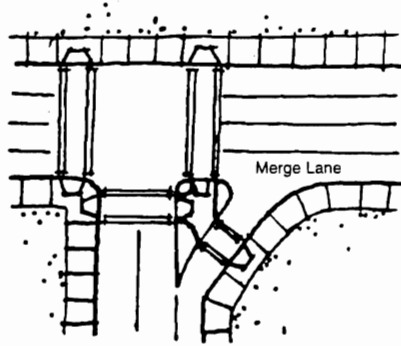
C.7 Crosswalks and Intersection Treatments

Many intersection treatments that facilitate the flow of motor vehicle traffic, have a negative impact on conditions for pedestrians. Turning lanes, especially multiple turning lanes in one direction, require pedestrians to be exceptionally vigilant as they proceed into the crosswalk. Right turn on red provisions intensify the difficulties. The fact that the provision of turning lanes often widens the intersection and increases the corner radius contribute to longer exposure times and decreased visibility for pedestrians. Several intersection treatments can help to reduce these difficulties.

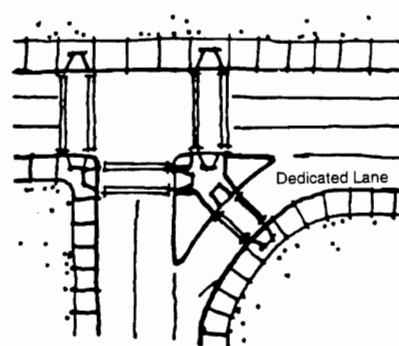
Right-turn Slip Lanes

Right turn slip lanes are intended to reduce traffic congestion by allowing traffic to by-pass a signalized intersection. They are not recommended in areas of high pedestrian uses; concomitantly, arterial streets with slip lanes and wide intersections discourage pedestrian traffic even where pedestrian attractions are present on each side of the road. There are considerations that affect how well a given slip lane performs for pedestrians.

One factor is whether traffic must yield to the cross-street traffic or has a dedicated lane to turn into. If the traffic must yield and then merge, the pedestrian has the advantage of cars stopping to assess the cross traffic. If the traffic has a dedicated lane to turn into, and volumes are high, it can be very difficult for the pedestrian to find a gap. It is best from the pedestrian perspective if traffic must yield to cross-traffic. It is also recommended that crosswalk markings and appropriate curb cuts and ramps are used to indicate the correct crossing route to the pedestrian and the motorist.



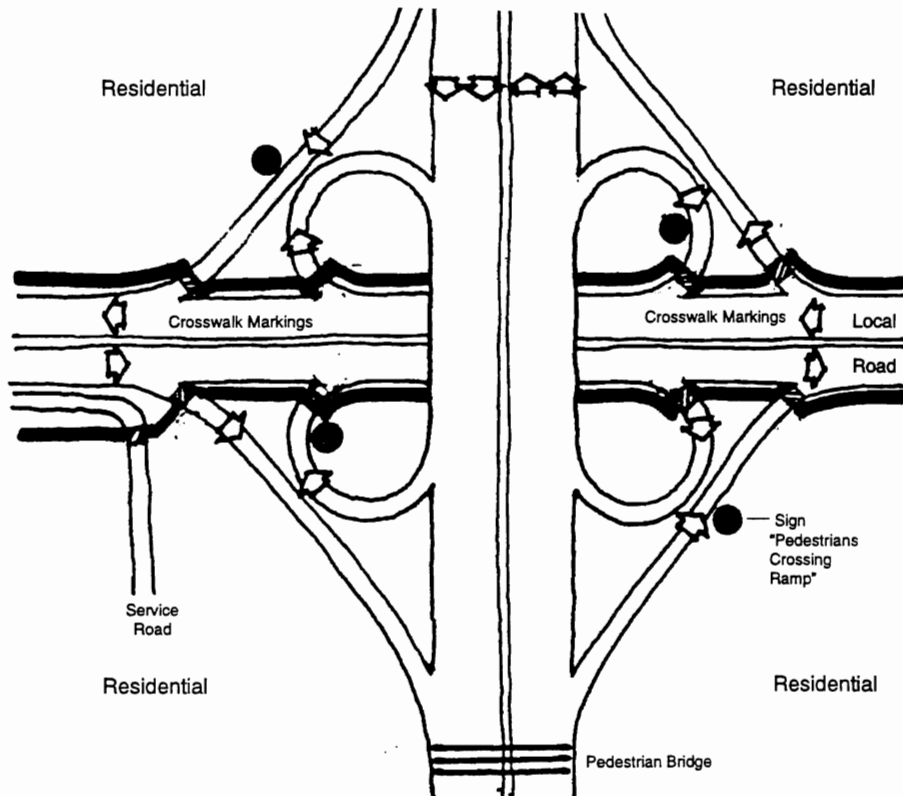
Yielding vehicles allow pedestrians to cross



Free-flow vehicles reduce crossing opportunities

Pedestrian Movements at Freeway Interchanges

Sidewalks often end and pedestrian accommodations cease as a local road approaches an interstate or freeway interchange. This is unfortunate for the pedestrian and definitely discourages walking. Guidance should be given in the form of walkways and marked and signed crosswalks to get the pedestrian through these complex intersections whenever possible.³⁴ Interchanges that use a ramp design that meets local streets at a right angle are easiest to negotiate for the pedestrian. Traffic controls and crosswalks can be used as for any urban intersection. Rural design interchanges are more difficult to cross especially when combined with free flowing right turns and multiple turn lanes. The goal of pedestrian accommodations at these locations is to indicate crossing locations with good visibility and slower traffic speeds. The sidewalk in the drawing below (heavy black line) crosses the ramps at a 90 degree angle. Additional traffic controls might be needed to slow traffic that would tend to accelerate as it approaches the on-ramp.



Pedestrian accommodation at freeway interchange

source: *Planning and Implementing Pedestrian Facilities in Suburban and Developing Areas*, TRB

Pedestrian Toolkit: Endnotes

1. Based upon Portland Office of Transportation, Portland Pedestrian Design Guide, City of Portland, Oregon, June, 1998.
2. Kalamazoo City Commission, Zoning Ordinance, Appendix A, Section 9A 20, City of Kalamazoo, Michigan, reprinted 1985, updated July, 1996.
3. U. S. Architectural and Transportation Barriers Compliance Board, "Bulletin #7: Accessible Rights of Way", March 1997.
4. Portland Office of Transportation, p. A-7.
5. Ibid, p. A-8.
6. U.S. Architectural and Transportation Barriers Compliance Board, p. 6.
7. Bowman, Brian L., et al., Planning, Design and Maintenance of Pedestrian Facilities, FHWA Report No. IP-88-019, U. S. Department of Transportation Federal Highway Administration, 1989, p. 80.
8. U.S. Architectural and Transportation Barriers Compliance Board, p. 10.
9. Michigan Department of Transportation, Bureau of Highway Technical Services, "Standard Plan for Driveway Openings and Approaches and Concrete Sidewalk," Plan Date: 8-11-97.
10. New Jersey Department of Transportation, Bicycle Compatible Planning and Design Guidelines, April, 1996, p. 15.
11. Based upon Portland Office of Transportation, p. B-1.
12. Michigan Department of Transportation, Bureau of Highway Technical Services, "Standard Plan for Sidewalk Ramp Detail," Plan Date: 5-16-96.
13. U.S. Architectural and Transportation Barriers Compliance Board, pp. 12-14.
14. Portland Office of Transportation, p. B-2.
15. Ibid, p. B-3.
16. Bowman, Brian L., et al., p. 21-28.
17. Portland Office of Transportation, p. B-4.
18. Ibid, p. B-4.
19. U.S. Architectural and Transportation Barriers Compliance Board, pp. 12-15.
20. Portland Office of Transportation, p. B-9.

21. Ibid, p. C-3.
22. Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), U. S. Department of Transportation, Washington DC, 1988.
23. City of Boulder, "Pedestrian Crossing Treatment Warrants", Boulder, Colorado, 1996.
24. Bowman, Brian L., et al., p. 85-86.
25. Ibid, p. 94.
26. Oregon Department of Transportation, Oregon Bicycle and Pedestrian Plan, 1995, p. 97.
27. Portland Office of Transportation, p. C-5.
28. Bowman, Brian L., et al., p. 7.
29. Smith, S.S., et al., Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas, National Cooperative Highway Research Program, report 294A, National Research Council, 1987, pp. 59-63.
30. New Jersey Department of Transportation, Pedestrian Compatible Planning and Design Guidelines, 1996, p. 28.
31. Zeeger, Charles V., et al., Design and Safety of Pedestrian Facilities, prepared by Traffic Engineering Council Committee TENC-5A-5, Institute of Transportation Engineers, Washington, D.C., 1998, p. 63.
32. New Jersey Department of Transportation, Pedestrian Compatible Planning and Design Guidelines, 1996, p. 245.
33. FHWA, MUTCD, p. 4-D3
34. Smith, S. A., et al., p. 68.

Traffic Calming, Street Design and Planning Tools to Improve Bicycling & Walking

The tools available to create bicycle and pedestrian friendly communities include not only the bicycle and pedestrian facilities discussed in the two previous toolkits, but also traffic calming, street design, land use planning and site design.

Traffic calming is the term used to describe a variety of techniques that slow or constrain traffic, so that pedestrians, bicyclists and motor vehicles share the road on more equal terms. Traffic calming measures are most often used on residential or central business district streets where increasing pedestrian access and safety is desirable. In Seattle, where traffic calming measures have been introduced to many neighborhoods, studies have found significant reductions in motor vehicle speeds, the number and severity of accidents and air pollution.¹

Traffic calming introduces variety to streets that contravenes standard street design. A related trend is the introduction of more flexible street design standards, especially in residential development. The use of national standards for the design and dimensions of residential streets has resulted in excessively wide and monotonous streets that encourage speeding and are not inviting to pedestrians. Some communities are finding that they want to reclaim street space for multiple uses including play space for children and a safer, more interesting environment for pedestrians and bicyclists.

"Traffic calming seeks to find design solutions... its goal is not to make driving impossible but to slow it down to a more human pace."

— excerpt on traffic calming
from *City Comforts* by David Sucher

National organizations involved in the development of street standards, such as the Institute of Transportation Engineers (ITE), are exploring traffic calming and flexible street design as options for development and redevelopment.

The figure on page 5-41 of this plan, illustrates a well connected, comprehensive pedestrian system. It also illustrates several traffic calming techniques including a traffic circle, a speed table and a curb extension. These measures are not bicycle or pedestrian facilities but, nevertheless, create an environment that is more bicycle and pedestrian friendly by slowing traffic and increasing driver awareness.

Land use patterns and site design can also play an important role in determining how comfortable people feel walking and riding a bicycle. The proximity of destinations is especially important for walking. Not only actual distance, but access and an attractive facade at a pedestrian scale will encourage both bicycling and walking.

There is no doubt that variety in street design sometimes creates maintenance challenges. Communities address these concerns by testing for fire truck and snow removal access.

Traffic engineers have expressed safety concerns about roadway obstructions and irregularities. So far, the speed reductions associated with traffic calming seem to produce accident reductions. As experimentation continues, understanding of the impacts of traffic calming and flexible street design will increase.

Part A: Traffic Calming: Constraining Vehicle Speeds and Access

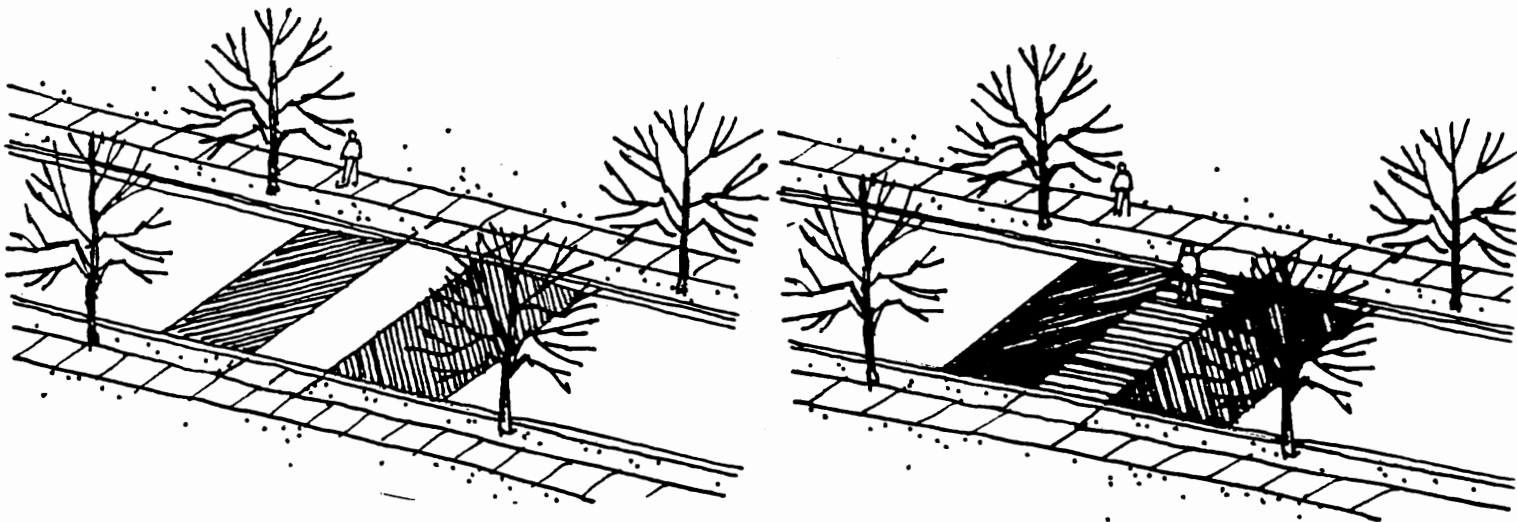
Properly designed and implemented traffic calming measures provide the following benefits:

- ◆ Slow and/or divert traffic
- ◆ Reduce traffic accidents
- ◆ Reduce pollution
- ◆ Increase the safety and pleasure of walking and bicycling
- ◆ Provide opportunities for street “greening”
- ◆ Improve the visual appeal of neighborhoods
- ◆ Provide opportunities for the shared use of streets as public space

Traffic calming measures interrupt the linear flow of streets by introducing curves and obstacles which slow traffic. Emergency and snow removal equipment can still be accommodated. Traffic calming is most effective when the community installs measures widely throughout a neighborhood.

A.1 Speed Tables or Humps

Speed tables or traffic humps are used on streets, driveways and in parking lots. An area of the street is raised by several inches. Traffic tables or humps create a gradual change in elevation that causes vehicles to slow down without creating a hazard for bicyclists. A motor vehicle can be driven over it at the intended speed with little discomfort; going faster would rock the vehicle uncomfortably. The level area is long enough to accommodate an average wheelbase.² The raised area sometimes serves as a crosswalk at either an intersection or mid-block, as illustrated below. Pavement markings may be used on the approach to warn motorists and bicyclists of the hump.

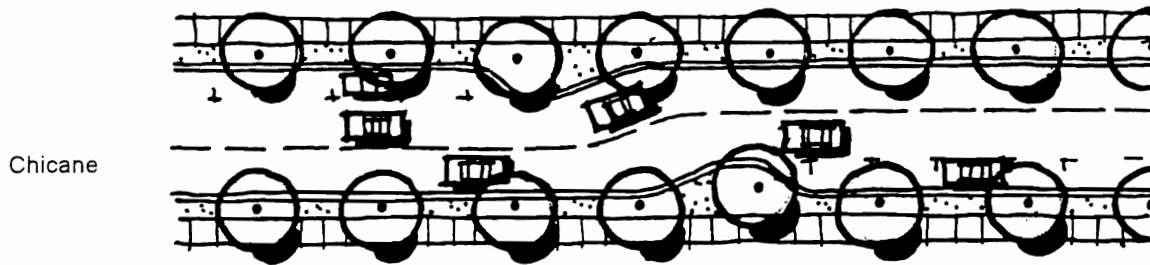


source: Oregon Bicycle and Pedestrian Plan

Speed tables slow traffic and can provide a visible pedestrian crossing location

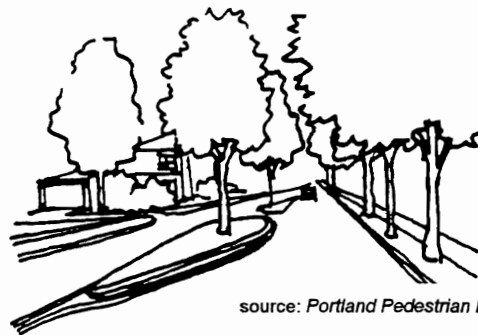
A.2 Chicanes/Slow Points

Chicanes or slow points narrow the travel lane and thereby slow traffic. While the driver no longer sees an uninterrupted length of pavement, the road remains wide enough for two cars to pass. A chicane is an outcropping of the curb lawn that is sometimes combined with parking bays provided on alternating sides of the road. Slow points are created by the installation of intermittent medians.



source: Oregon Bicycle and Pedestrian Plan

Slow point



source: Portland Pedestrian Design Guide

A.3 Modern Roundabouts and Traffic Circles

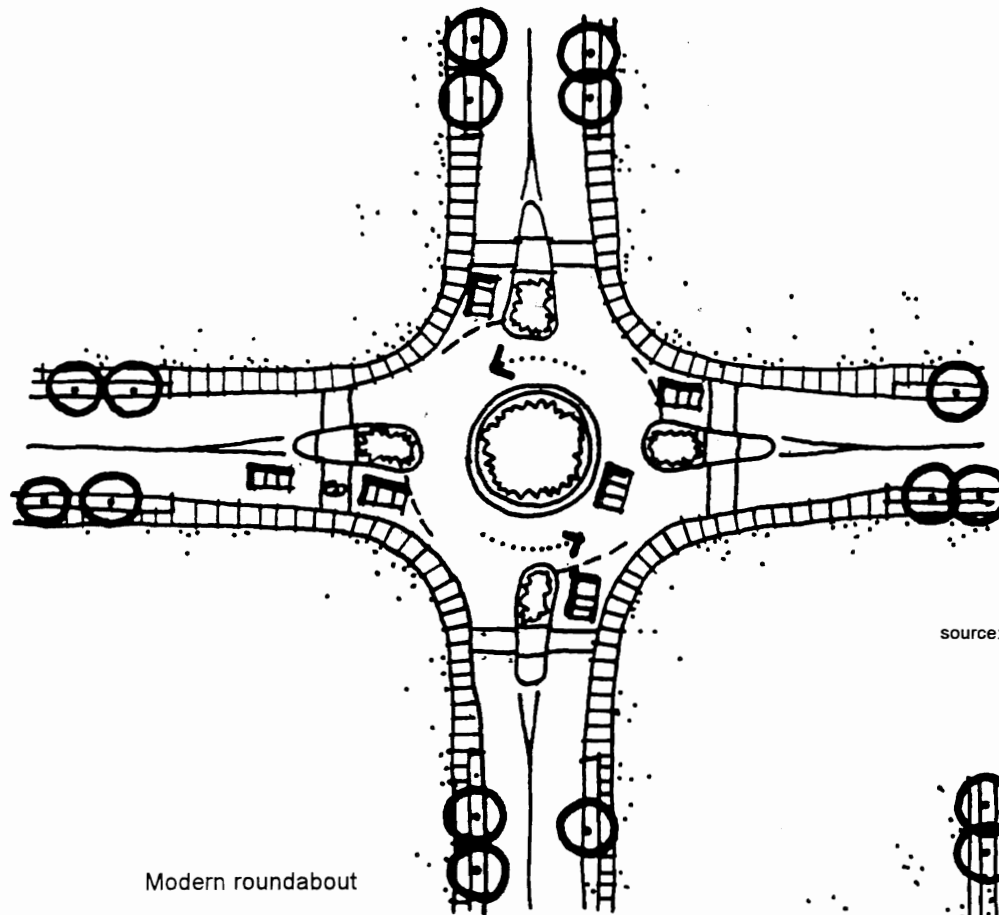
The term roundabout is sometimes used interchangeably with traffic circles. However, circular intersection treatments can be differentiated by their size and the relative complexity of operation. At sizable urban intersections circular treatments can be installed that can be multi-lane in operation and provide for improved traffic flows and safety. These are referred to here as roundabouts. These facilities require certain considerations for pedestrian safety. Studies in Europe indicate that more accidents occur at some roundabouts than at ordinary intersections.³ Modern roundabout design addresses these safety issues by controlling the speed of motor vehicle entrance, by pulling the pedestrian crosswalk back from the circle and by staging the merging movements of motor vehicles to give pedestrians an opportunity to cross. Roundabout movements are controlled by traffic signals, stop signs or yield signs.

With careful design, roundabouts have been shown to lower accidents. According to one study, "Roundabouts experience substantially lower motor vehicle collision rates than other types of intersections.... Studies show that pedestrian accidents and severity decrease at roundabouts. Bicycle accidents do not change appreciably, but injury severity declines."⁴

Traffic circles are mini-roundabouts. Landscaped or paved circles of varying dimensions are placed in the center of intersections to slow traffic as it approaches and goes through the intersection. The City of Seattle has installed traffic circles extensively. The circles are custom fitted to the geometry of the intersection. Each circle has a two-foot concrete apron. The traffic lane is designed to remain wide enough for a single unit truck to maneuver around it. Larger vehicles may run over the apron. When installed as

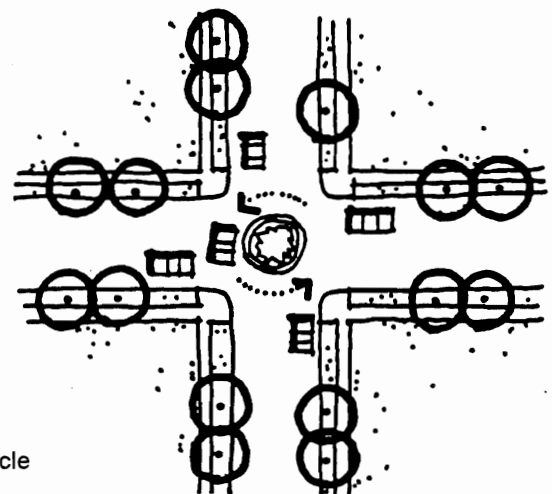
part of a traffic calming system throughout a neighborhood, traffic circles have been found to slow traffic from one intersection to the next more effectively than stop signs. Generally, stop signs are no longer needed at treated intersections. Yield signs are sometimes used, as are signs directing traffic to merge right to traverse the circle.

The single most dramatic impact of traffic circle installations in Seattle is the decrease in accidents and injuries. Between 1991 and 1994 a total of 119 traffic circles were constructed in several areas of Seattle. There was a 94% reduction in accidents when comparing figures for the year before installation of the traffic circles, (187 accidents,) and for the year after (11 accidents). The reduction in injuries was even more dramatic with 153 occurring before and just one in the year after.⁵ The accident reduction associated with neighborhood wide traffic circle installation can greatly improve conditions for walking and in combination with fewer stop signs bicycling is both safer and more convenient.



Modern roundabout

source: Oregon Bicycle and Pedestrian Plan

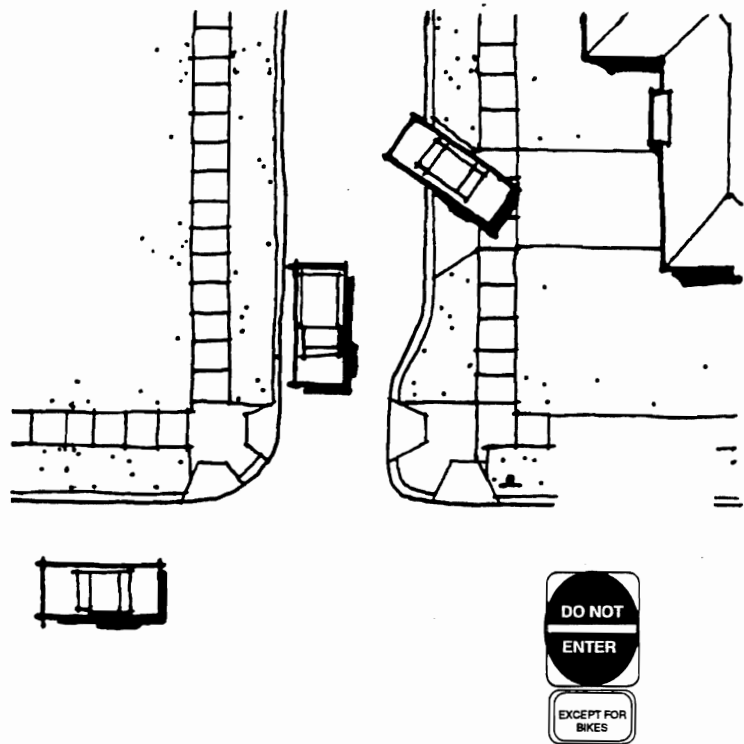


Traffic circle

A.4 Curb Extensions and Traffic Diverters

Curb extensions (or bulbs) are used at corners to shorten the crossing distance and increase visibility (see p. 5-56.)

When used as diverters, curb extensions, combined with signing, can serve to discourage or prohibit traffic access. Bicycles should generally be exempt from the prohibition. Curb extensions effectively narrow the intersection, causing motor vehicles to slow down when approaching the intersection. On streets with bike lanes, extensions should not protrude into the bicycle travel lane. Double curb extensions, also called neck downs, can serve as entry points to a neighborhood where signing can establish neighborhood identity and can also announce that the driver is entering a slow zone or shared use zone.



Curb extension used for traffic management

Part B: Street Design and Regulation: Narrowing the Actual and Perceived Street Width

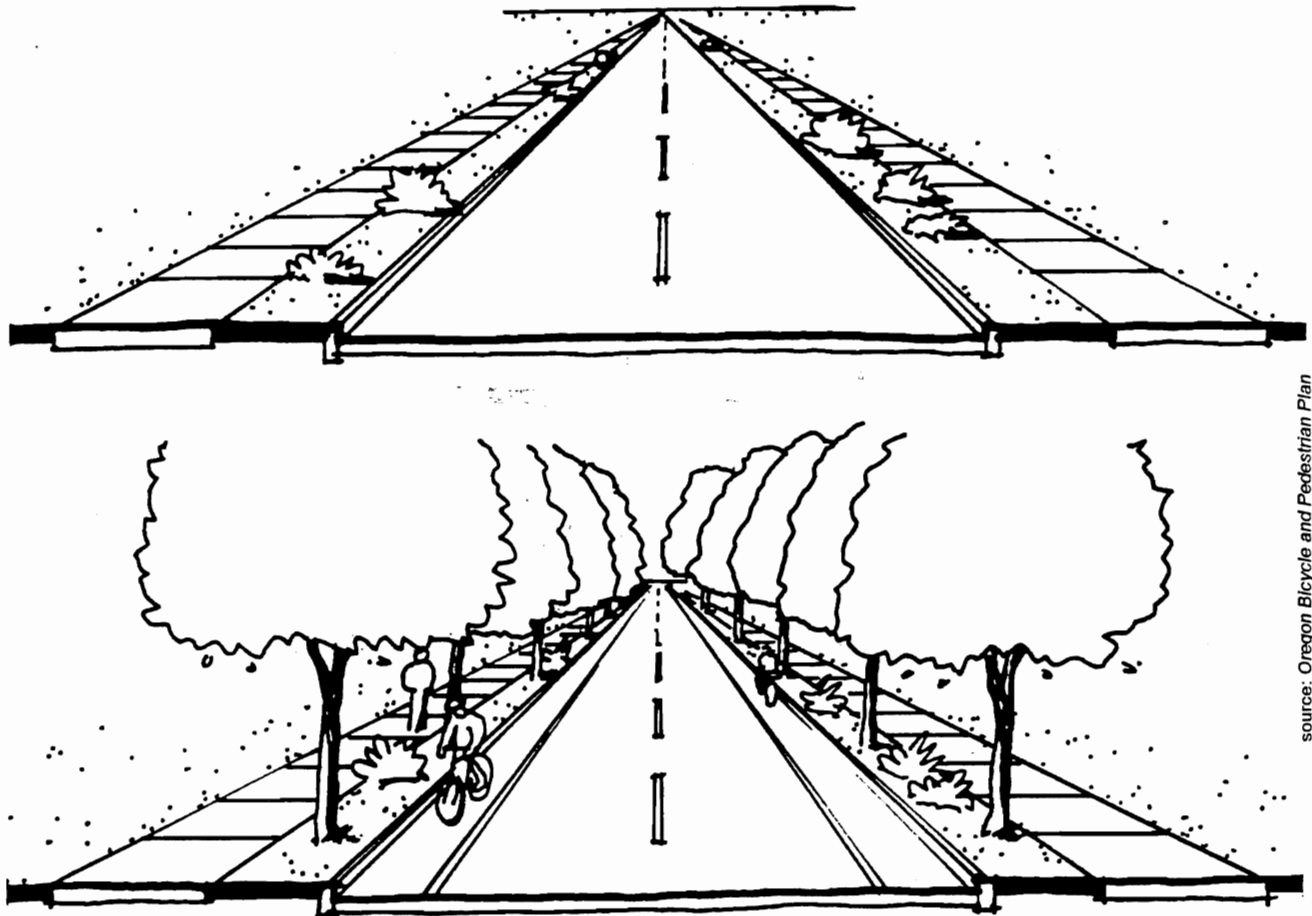
B.1 Street Design

Planners and traffic engineers throughout the country are exploring the potential benefits of more flexible approaches to street design. As part of the “new urbanism” and neo-traditional town planning narrower streets, on-street parking and pedestrian oriented development are enjoying a resurgence. Rather than the 36-foot wide suburban street often recommended by design manuals for the past several decades, streets as narrow as 20 feet are recommended. Local authorities sometimes question the safety of such streets for emergency vehicle access. Studies conducted on Portland, Oregon’s “skinny streets” initiative have concluded that the streets generally perform adequately.⁶ However, local needs and conditions must be assessed on a project by project basis. The benefits of narrower streets include:

- ◆ Slower traffic speeds
- ◆ Pedestrian scale and neighborliness
- ◆ Less costly to the developer and consumer
- ◆ Allows redirection of costs to sidewalks, trails and other amenities

B.2 Narrowing the Perceived Street Width

Bicycle lanes and trees are not traffic calming measures but can serve the same end. Bike lanes, and even on-street parking, can reduce the number or the width of travel lanes which sometimes has the effect of slowing traffic speeds. The addition of trees on curb lawns and landscaping treatments at corners and in medians does not physically slow traffic but studies have found that wrapping a street in green has a traffic calming effect. One reason for this is that mature street trees visually narrow the street. The “greening” of streets also improves the pedestrian environment by creating a much more welcoming, calming and cool environment than concrete and asphalt. The addition of public art, banners and human scale lighting also contribute to a welcoming environment.



source: Oregon Bicycle and Pedestrian Plan

Narrowing the perceived street width

B.3 Slow Zones

Slow zones are streets or areas that are signed with lower than usual speed limits sometimes in conjunction with traffic calming measures. Many communities sign residential streets with 25mph speed limits and school zones are often marked with 20mph speed limits during school hours. The most extensive experience with comprehensive slow zones is in Europe. Several German cities have instituted “Tempo 30” areas, residential neighborhoods where cars are expected to go no faster than 30 km/h. The City of Graz, Austria has instituted a very comprehensive program which limits speeds to 30 km/h on all streets except priority streets (major collector and arterial roadways), for which speeds are set at 50 k/ph.

The program has two primary goals:

- ◆ Maximum promotion of pedestrian, bicycle and public transportation, and
- ◆ Restraint of motor vehicle traffic in residential neighborhoods and the city center.

As part of the program the City of Graz has undertaken an extensive public information and enforcement effort in addition to traffic regulation. A City wide assessment of accidents indicated that the number and, especially, the severity of injuries from accidents were significantly reduced during the program's implementation. Serious injuries were reduced by 24% in the first year of the program with pedestrian injuries most significantly reduced.⁷

Benefits of the program include:

- ◆ Serious traffic related injuries were reduced by 24%.
- ◆ While median speeds have not been significantly reduced city wide, traffic flow is more homogenous.
- ◆ Traffic behavior has improved, especially that of motorists toward pedestrians.
- ◆ Noise levels have been reduced.

In pedestrian-friendly U.S. communities like Madison, Wisconsin and Portland, Maine, selected slow zones are given extra emphasis by placing traffic cones in the street to call attention to the high levels of pedestrian use. On multi-lane arterials in Madison, a series of cones are placed in advance of a school crossing, along the roadway's lane stripes, at the start and dismissal of school. In Portland, cones in the downtown area bear a message to remind motorists to stop for pedestrians in crosswalks.

Part C: Land Use and Site Design

C.1 Land Use Patterns

Land use patterns are notoriously difficult to influence. Yet, the proximity of development and the potential for access and connectedness between destinations is a primary determinate of walking and bicycling patterns. Studies as well as observation lead to the conclusion that areas with higher densities and mixed use development are more conducive to walking.⁸ Bicycling is less distance sensitive but is often precluded in lower density suburban environments by various obstacles including relatively few through streets with high traffic volumes and no accommodations for bicycling.

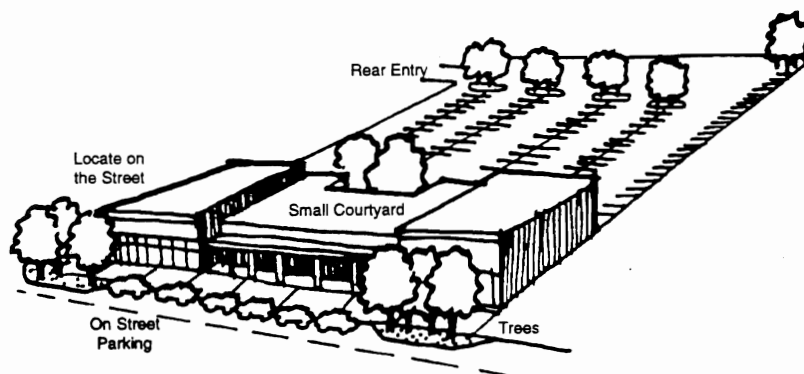
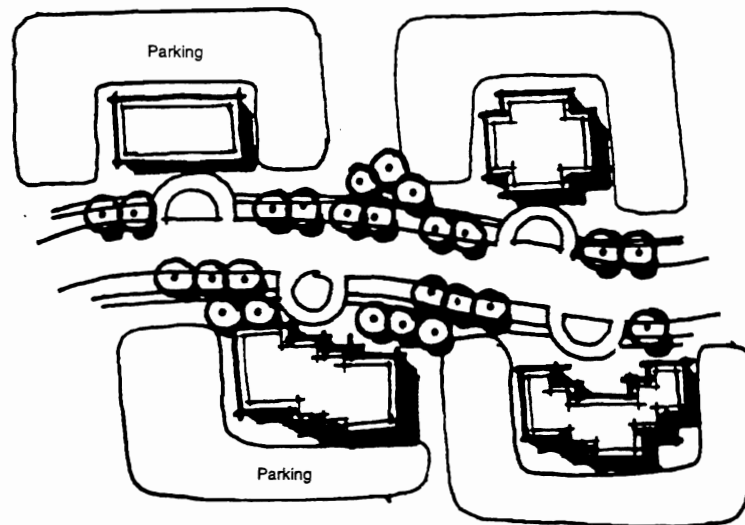
Several land use planning tools can have a positive impact on the potential of walking and bicycling in both new and existing developments:

- ◆ Encourage in-fill development.
- ◆ Provide connections between adjacent developments through a comprehensive network of local streets and/or a series of non-motorized paths.
- ◆ Provide back access to retail areas from bordering residential neighborhoods to shorten trip distances for those on foot or on bike.
- ◆ Provide pedestrian connections and adequate crossing opportunities between adjacent areas of strip development and across busy streets that border those developments.
- ◆ Limit motor vehicle access points to commercial developments in order to reduce conflict points with bicyclists and pedestrians.
- ◆ Where access is controlled for motor vehicles, provide additional access points for non-motorized traffic.

C.2 Site Design

In addition to the overall pattern of development, the design of individual sites can encourage or discourage bicycling and walking. Large parking lots in the front of buildings, berms that discourage easy access and blank walls are intimidating to the passerby. Interesting facades and buildings that face the street and are pulled forward toward the sidewalk create a pedestrian scale environment that is attractive for walking. Parking should be provided on the street, behind the development or in a parking structure. Bicycle parking should also be provided in a protected location close to the building to encourage non-motorized access.

It is essential that sidewalks are required in conjunction with development, including appropriate sections of the public right-of-way and private access to buildings. Negotiations with developers can also encourage the provision of open space easements and donations for trail development.



Pull building forward; place parking in back; create an interesting facade

Traffic Calming, Street Design and Planning Toolkit: Endnotes

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7. Tolley, Rodney, (Ed.) The Greening of Urban Transport, John Wiley & Sons, Chichester, 1997, pp.385-389.
8. Robinson, Ferrol O., et al., "Strategies for Increasing the Levels of Walking and Bicycling for Utilitarian Purposes," presented at Annual Meeting of the Transportation Research Board, Washington, D.C., January, 1980.

THE KATH ON



Section VI: Action Plan

Implementation Strategies

Following is a plan of action to implement the recommendations of the *Kalamazoo Non-Motorized Transportation Plan*. The planning process has been guided by the vision, goals and objectives developed by the Plan Advisory Committee and summarized in Section IV of the plan. The goals of the plan are to:

- ▶ Provide Transportation Choices
- ▶ Increase Economic Vitality
- ▶ Improve the Health of Citizens and The Environment
- ▶ Improve Quality of Life
- ▶ Make Connections Within and Between Communities
- ▶ Coordinate Planning at All Levels
- ▶ Foster Attitudinal Changes

These goals can be partially met through the expansion of the bicycle facility network and the repair and improvement of the pedestrian network as proposed in Section IV. Section V of the plan includes a summary of the design tools needed to improve Kalamazoo's bicycle and pedestrian infrastructure.

The following areas of action will facilitate these network improvements and set in motion the institutional framework to assure a comprehensive approach to enhancing conditions for bicycling and walking in Kalamazoo. Within each action area, a series of strategies are recommended and the parties responsible for implementation are identified.

Many of the strategies called for in the Action Plan involve redirecting various City agencies to place more priority on bicyclist and pedestrian needs, to create new programs and/or to increase budget allocations for

existing programs. Such actions will need to be reviewed and adopted individually by the Kalamazoo City Commission and other governing bodies, as appropriate. The following list summarizes the recommended strategies for making Kalamazoo more bicycle and pedestrian-friendly:

Part A: Community Acceptance/Understanding

- A.1** Promote bicycling and walking as integral parts of daily life.
- A.2** Enforce laws that enhance safety for non-motorized users.
- A.3** Reach adults through children.
- A.4** Expand current trailway initiatives to encompass more comprehensive bicycling and walking needs.
- A.5** Seek endorsement of Kalamazoo's non-motorized planning efforts through recognition programs.

Part B: Internal City Policies and Practices

- B.1** Adopt the Non-Motorized Plan as part of the Comprehensive Plan.
- B.2** Include non-motorized projects as components of on-going roadway improvements.
- B.3** Adopt recommendations from the *Kalamazoo Comprehensive Plan Update*.
- B.4** Develop and adopt annual and long range improvement programs for independent non-motorized projects.
- B.5** Adopt land-use and site design policies to encourage non-motorized travel.
- B.6** Develop and adopt ordinance to fill in missing sidewalk links and a policy to improve pedestrian crossing conditions.
- B.7** Adopt policy to replace seriously deteriorated sidewalks.
- B.8** Adopt policies to require inclusion of sidewalks and bicycle facilities as part of development projects.
- B.9** Adopt a bicycle parking ordinance.
- B.10** Establish a program to make bicycle parking available for City and commercial establishments.
- B.11** Install bike racks on Metro buses and encourage bike racks on taxis.

Part C: Multi-Jurisdictional Coordination

- C.1** Establish a Trailway Commission to coordinate planning and operation of regional trails.
- C.2** Continue work of the KATS Non-Motorized Technical Committee.
- C.3** Develop multi-jurisdictional joint funding applications.

Part D: Continued Citizen and Agency Involvement

- D.1** Continue work of the project Task Forces as a City Advisory Committee.
- D.2** Maintain a non-motorized coordinating function within City government.
- D.3** Make improvements for non-motorized transportation as high priority as motorized improvements.
- D.4** Support the establishment of an alternative transportation citizen advocacy group.

Part E: Education Initiatives

- E.1** Construct facilities that encourage increased non-motorized use and promote rules of the road.
- E.2** Launch an organized media campaign.
- E.3** Target local driver education programs to simultaneously reach bicyclists, pedestrians, and future drivers.
- E.4** Include bicycle safety as a part of new student orientation at area colleges.
- E.5** Provide resources for those interested in educating children.
- E.6** Explore additional venues to educate children and get them excited about bicycling.

Part F: Funding Opportunities

- F.1** Fund non-motorized improvements as components of larger transportation projects.
- F.2** Set aside local funds to serve as match money to leverage State and Federal grants for independent non-motorized projects.
- F.3** Selectively apply for grants through various transportation, recreation and open space preservation programs.
- F.4** Actively solicit funding from private sources to assist with local matches for grant Requirements.
- F.5** Actively solicit funding and citizen participation to fund project amenities which fall outside of criteria that qualify for grant programs.
- F.6** Research other local fund raising efforts to ensure timeliness and avoid colliding with major competition.

Part G: Facility Maintenance

- G.1** Adopt procedures to maintain bicycle facilities and sidewalks.
- G.2** Adopt a hazard reporting system or similar procedures to repair bicycle facilities and sidewalks.
- G.3** Establish a spot improvement program.
- G.4** Develop and adopt new policies and procedures to increase compliance with snow removal ordinance.

Part A:

Community Acceptance/Understanding

Strategy A.1 Promote bicycling and walking as integral parts of daily life

Bicyclists and pedestrians are not, and cannot be thought of as, special interest groups. These activities offer benefits to every member of the community — whether the motivation to bike or walk is for personal health and fitness, or for the greater environmental/community good of reducing the number of cars on the streets.

People who bike and walk should be treated with respect and common courtesy. This includes the attitude of individual drivers, as well as a broader community-wide understanding of and support for non-motorized needs.

Area residents must realize that the factors which combine to create bicycle-friendly and walkable communities also create more liveable communities. Things such as slower and more cordial traffic, choices of how to get from here to there, options for outdoor recreation, urban greening through streetscape improvements, and facilities that provide independence for children and mobility for the elderly benefit the entire community. This understanding must permeate through all levels of society if we are to change from an increasingly auto-dominated society to one that places value on such quality of life issues.

While the non-motorized planning effort generated significant public input, additional outreach is still needed. Development of a slide show or other traveling presentation is desired to introduce the goals and objectives of the Non-Motorized Plan to various community groups at their regularly scheduled meetings. Hazard reporting cards, bicycle parking brochures and similar resources can be distributed at this time, and presentations can be made on specific projects and facility recommendations. This activity should be done in tandem with more formal media awareness-raising efforts, as recommended under Strategy E.2.

Implementors: City staff and non-motorized advisory group

Strategy A.2 Enforce laws that enhance safety for non-motorized users

Area law enforcement agencies need to be involved in creating safer streets for people, whether on foot or bike. Since it is acknowledged that police officers have a multitude of responsibilities, selective enforcement of common infractions will allow officers to concentrate on a few violations which frequently lead to accidents. Those include:

Motorist Infractions:

- ▶ speeding
- ▶ failing to yield when turning
- ▶ running stop signs and traffic signals
- ▶ failing to share the road with bicyclists
- ▶ exhibiting aggressive behavior toward bicyclists and pedestrians

"All the cycling confidence and experience in the world can't possibly go one-on-one with a 4,000 pound vehicle piloted by a driver who thinks you have no right to share the road."

— Joan Orman,
Bicycle Task Force member
and daily bicycle commuter

Bicyclist Infractions:

- ▶ running stop signs and traffic signals
- ▶ riding on the wrong side of the road
- ▶ riding on sidewalks where prohibited
- ▶ riding at night without a headlight/taillight

Pedestrian Infractions:

- ▶ jay walking
- ▶ crossing against traffic signals

Implementors: Law Enforcement Personnel; potential also for a Community Watch Program or similar effort whereby citizens report wreckless or unlawful driving

Strategy A.3 Reach adults through children

The Kid's Planning Charrette held as part of the non-motorized planning process demonstrated the insight and problem-solving skills of our youth. For example, the participants at the Milwood charrette felt that the number one problem affecting biking and walking in Kalamazoo is that "drivers drive too fast." Adults (those drivers) need to realize this.

Make America
Bike Friendly



A new national initiative is underway to undertake similar activities to further involve youth in creating bike-friendly communities. Organized by the non-profit Earth Force organization, *Get Out Spoke'n* is a two-year campaign by young people, ages 10-16, to reduce air pollution and traffic congestion by making their communities safer and easier for bicycle transportation.

Get Out Spoke'n is about young people working to improve their communities. Educators and adult leaders help them identify a problem and give them the right tools and knowledge to address it. The campaign teaches young people how to collect information and network with local groups, empowering them to make a difference in their communities and nationally through their collective efforts.

In Kalamazoo, the Earth Force program is recommended as a way to implement various projects and awareness-raising efforts outlined in this plan. Each middle school in Kalamazoo is encouraged to start an Earth Force group to take on one project, and work with local agencies and community residents to get it implemented.

Implementors: Youth, with assistance from teachers, youth group leaders, etc.
City staff to work with each school group to provide guidance on their project.

More details on Get Out Spoke'n can be found on the web at www.earthforce.com or by calling the national Earth Force offices at (703) 519-6868.

For pedestrian youth involvement, the City of Kalamazoo is encouraged to participate in the annual Walk Your Child to School Week. Held each May, this event is often locally sponsored by the city mayor. Nationally, the event is sponsored by the Partnership for a Walkable America — whose members include the National Highway Traffic Safety Administration (NHTSA), Center for Disease Control (CDC), Walking Magazine, Institute of Transportation Engineers, National Safety Council (NSC), National Safe Kids Campaign, and the Campaign to Make America Walkable.

Implementors: The Mayor's Office, in conjunction with schools and parents

More details can be obtained from Harold Thompson, National Safety Council, thompsonh@nsc.org; or Mark Fenton, Walking magazine, (617)574-0076; or at <http://claire.hsnc.unc.edu/publicaware/walk/>

Strategy A.4 Expand current trailway initiatives to encompass more comprehensive bicycling and walking needs

The Kalamazoo River Valley Trailway Partnership has generated significant regional interest in the development of off-road bicycling/walking facilities. However, promoting bicycling only as an off-road, recreational activity may contribute to the perception that cyclists do not belong on area roadways. Therefore all trailway promotions are encouraged to also address bicycling as an on-road activity, since sections of the KRVT will route on area roadways and since cyclists will be riding on streets to access the trailway facility. Likewise, trailway planning creates a forum in which to raise awareness of basic pedestrian needs, such as the need for drivers to yield to pedestrians crossing streets.

Implementors: The KRVTP/Forum for Kalamazoo County
Area governmental agencies

Strategy A.5 Seek endorsement of Kalamazoo's non-motorized planning efforts through recognition programs.

The League of American Bicyclists has established a program called "Bicycle Friendly Communities" that recognizes communities that meet four primary criteria and at least two secondary criteria. The primary criteria include:

- ▶ The establishment of a policy to create bicycle-safe streets and pathways.
- ▶ The budgeting of at least \$1.00 per capita per year for bicycle facilities and events.
- ▶ Establishment of a local bicycle advisory committee

Qualifying communities receive a plaque and two highway signs noting certification, membership in the LAB and receipt of its publications. Applications can be made to:

League of American Bicyclists National Office
1612 K Street NW, Washington, D.C. 20006
(202) 822-1333

Both *Bicycling* and *Walking* magazines regularly choose cities throughout the country for recognition as "Most Bicycle Friendly" and "Best Walking Towns," respectively. *Bicycling* looks for a high level of commitment to bicycling as well as a system of facilities. *Walking* looks for communities that seek to have the following four qualities:

- ▶ A comprehensive network of sidewalks and trails with few barriers to pedestrians
- ▶ A safe and aesthetically pleasing walking environment
- ▶ Compact and diverse development, offering plenty of walking destinations
- ▶ A culture of promoting walking in citizen activism, civic planning and administration

The City should use the goals and qualities defined by these programs as guidance for establishing good conditions for bicycling and walking and then make these efforts known to the endorsing organizations.

Implementors: City of Kalamazoo Public Services Department, Engineering Division

Part B:

Internal City Policies and Practices

Strategy B.1 Adopt the Non-Motorized Plan as part of the Comprehensive Plan

At the end of the non-motorized planning process, this plan needs to be officially adopted as a component of the *Kalamazoo Comprehensive Plan Update*.

Working toward this ultimate goal, both plans share the same vision (See Chapter IV), emphasizing easy movement within and between vibrant neighborhoods and an active downtown for future economic and cultural viability. Open space preservation and opportunities for outdoor recreation are also emphasized. Vibrant neighborhoods are pedestrian friendly, and non-motorized movements within and between areas of the City contribute to the quality of life for all residents.

Implementor: Kalamazoo City Commission

Strategy B.2 Include non-motorized projects as components of on-going roadway improvements.

Often, the most effective way to realize bicycle and pedestrian infrastructure enhancement is through inclusion of such improvements as an integral, incidental part of a larger transportation project. All new street construction and major roadway retrofits should routinely include sidewalks and provide additional pavement width or shift lane striping to create wide curb lanes, bike lanes or paved shoulders. Likewise, bridge design should provide access across barriers for both motorized and non-motorized users.

When included in the earliest phases of planning and design, such costs are usually marginal, and can be funded as incidental components of the overall project.

The feasibility of including such items should be considered on every construction project. And extra effort should be made to provide the needed accommodations within corridors identified as part of the proposed non-motorized network. Also critical are intersection designs that facilitate safe non-motorized movement. Every project on the Transportation Improvement Program (TIP) should be reviewed to determine locations where identified bicycling corridors intersect with streets scheduled for improvements, or locations noted as particularly hazardous for pedestrian crossing.

A scoping checklist that would apply to TIP projects would be useful for assuring consideration of non-motorized considerations in transportation projects. Such a checklist would result in a recommendation for the kind of bicycle or pedestrian accommodation that would be appropriate for the project.

Implementor: KATS, MDOT, Kalamazoo County Road Commission,
City of Kalamazoo Public Services Department, Engineering Division

"Completion of the Kalamazoo Non-Motorized Transportation Plan is relatively simple. The real problem is changing the state-of-mind of the people in the various governmental agencies who do the design, funding, construction and maintenance of transportation facilities so that they actually desire to implement this plan, and want Kalamazoo to have top-notch facilities for people who choose to travel under their own power."

— Doug Kirk,
Non-Motorized Plan Advisory Committee
and avid cyclist

Strategy B.3 Adopt recommendations from the Kalamazoo Comprehensive Plan Update.

The following recommendations are contained in the *Kalamazoo Comprehensive Plan Update*, and should be adopted as a means to implement the *Kalamazoo Non-Motorized Transportation Plan*:

- ▶ **“Capital Improvement Program (CIP)** - Appropriate bike facilities may be annually programmed in the Ten-Year CIP. To realize cost savings and efficiencies, the bicycle facilities should be programmed, where possible, with street and public utility projects. According to State of Michigan guidelines, one percent of the Act 51 money received by the City must be allocated toward non-motorized transportation. Act 51 funds will be designated on an annual basis toward projects to implement this (Non-Motorized Transportation) Plan.
- ▶ **Annual Budget Process** - In the annual operating budget, the programming of planned bikeway facilities will be accomplished in conjunction with scheduled shoulder and strip-paving.
- ▶ **Kalamazoo Area Transportation Improvement Plan (TIP)** - Development of bicycle facilities in conjunction with improvements to County roads should be monitored. The Kalamazoo County Road Commission should be encouraged to incorporate facilities into street/roadway projects, as appropriate.
- ▶ **Grants** - Relevant grant applications will be pursued for projects where identified bikeways and sidewalks can be incorporated. The Portage Creek Bicentennial Park development program is a key example of where grants can help in the implementation of the walkway and bicycle projects.”

Implementor: KATS, MDOT, Kalamazoo County Road Commission, Kalamazoo City Commission
City of Kalamazoo Public Services Department, Engineering Division

Strategy B.4 Develop and adopt annual and long range improvement programs for independent non-motorized projects.

The City of Kalamazoo currently incorporates bicycle and pedestrian projects into its annual capital improvement budget and seeks grants to fund some aspects of these projects. Plan recommendations should be prioritized, and long term and annual programs submitted for funding. Projects seeking transportation funding should be added to the TIP through the Unified Work Program procedure.

Implementor: City of Kalamazoo Public Services Department, Engineering Division
Kalamazoo City Commission, KATS

Strategy B.5 Adopt land-use and site design policies to encourage non-motorized travel

The site plan review ordinance under development should incorporate the following site design and land-use principals to enhance conditions for walking and bicycling:

- ▶ Encourage in-fill development and higher densities.
- ▶ Provide connections between adjacent developments through a comprehensive network of local streets and/or a series of non-motorized paths.
- ▶ Require sidewalk connections to transit.
- ▶ Allow narrower than standard street widths (“skinny streets”) to effectively slow traffic and provide more green space.
- ▶ Provide back access to retail areas from bordering residential neighborhoods to shorten trip distances for those on foot or on bike.

- ▶ Provide pedestrian connections and adequate crossing opportunities between adjacent areas of strip development and across busy streets that border those developments.
- ▶ Limit motor vehicle access points to commercial developments in order to reduce conflict points with bicyclists and pedestrians.
- ▶ Where access is controlled for motor vehicles, provide additional access points for non-motorized traffic.
- ▶ Consider reduced requirements for automobile parking where bicycle parking is provided.

Implementor: City of Kalamazoo Planning Department
Kalamazoo City Commission

Strategy B.6 Develop and adopt an ordinance to fill in missing sidewalk links and a policy to improve pedestrian crossing conditions

The planning process identified missing pieces in the sidewalk network. Sidewalk links and improved pedestrian crossing conditions should be constructed on a prioritized basis that considers the following conditions:

- ▶ The proximity of a grade or high school
- ▶ the proximity of a hospital or elderly housing
- ▶ The proximity of a university or college
- ▶ The proximity of a significant pedestrian traffic generator
- ▶ The proximity of transit
- ▶ The measured volume of pedestrian traffic and relative complexity of intersections
- ▶ The measured volume of vehicular traffic
- ▶ Available right of way for a sidewalk corridor
- ▶ Roadside sight obstructions
- ▶ Impact of the sidewalk on character of the area
- ▶ Lighting in the area

Each of these factors can be weighted for their relative importance. Other municipalities have adopted systems to prioritize the installation of missing sidewalk links. The ratings that emerge from this type of ranking can be used to develop a matrix of prioritized sidewalk in-fill projects and crossing improvements. The list is advisory and a final decision on an annual sidewalk in-fill program would lie with the City Commission. (See Appendix I for examples of a sidewalk priority classification system and related policies.)

Implementor: City of Kalamazoo Public Services Department, Engineering Division
Kalamazoo City Commission

Strategy B.7 Adopt policy to replace seriously deteriorated sidewalks.

Deteriorated sidewalks are both unattractive and unsafe. The City of Wauwatosa, Wisconsin has reduced the City's trip and fall injuries (and claims) to near zero through an aggressive sidewalk repair program. Deteriorated sidewalks should be replaced. The following sidewalk locations should generally have priority for replacement:

- ▶ Business districts
- ▶ School properties and routes
- ▶ Routes near elderly housing, hospitals or other generators of trips by less able individuals

If possible, the City should replace these sidewalks at City expense.

A program for non-priority sidewalk replacement should also be established. Property owners should continue to be given the opportunity to request up to 50% participation by the City for the cost of replacing a deteriorated sidewalk.

Implementor: City of Kalamazoo Public Services Department, Department of Planning
Kalamazoo City Commission

Strategy B.8 Adopt policies to require inclusion of sidewalks and bicycle facilities as part of development projects.

The construction of sidewalks should be required as part of the public improvements to be provided by the developer in new developments (including subdivisions) and by property owners constructing buildings in the City. The site plan and review process should also encourage non-motorized connections to nearby destinations. A good example is the City zoning ordinance for the Lee Baker Farm.

Exceptions to this requirement may be made for accessory buildings and residential remodeling projects. Additional exceptions are appropriate for minor additions to other existing buildings. (See Appendix I for an example of a policy to require sidewalks within development projects.)

Implementor: City of Kalamazoo Department of Planning
Kalamazoo City Commission

Strategy B.9 Adopt a bicycle parking ordinance.

Bicycle parking ordinances have been adopted by many cities throughout the United States. Ordinances are often adopted as amendments to existing parking regulations. Many link bicycle parking requirements to land use and automobile parking requirements. Sometimes, bicycle parking is allowed to replace some of the required automobile parking. Bicycle parking requirements generally apply to new construction although existing property owners are encouraged to provide parking as well.

The Bicycle Task Force endorsed recommendations for bicycle parking including the adoption of a bicycle parking ordinance. (See pp. 5-34 to 5-36 for parking requirements, location criteria and facility types.)

Implementor: City of Kalamazoo Public Services Department, Engineering Division
City of Kalamazoo Planning Department
Kalamazoo City Commission

Strategy B.10 Establish a program to make bicycle parking available for City and commercial establishments.

Bicycle parking is so important to the usefulness of bicycles for transportation that some cities are establishing programs to install bicycle parking upon request at employment and commercial locations. The City of Chicago has had a bicycle parking program for several years and has installed close to 5,000 racks throughout the City. Suggestions for rack locations are accepted from businesses and private citizens but racks are installed on public property only. Priority locations include colleges, schools, public buildings, parks, neighborhood business districts and downtown. The program in Chicago has been mostly

funded through Congestion and Air Quality Mitigation Funds, but projects are eligible for many federal source grant programs.

A similar program could be established by the City of Kalamazoo. A low cost pilot project could be tried and, if successful, funding could be sought for a larger program.

Implementor: City of Kalamazoo Public Services Department, Engineering Division
Kalamazoo City Commission

Strategy B.11 Install bike racks on Metro buses and encourage bike racks on taxis.

Pilot bikes-on-buses programs have proven to be very successful in a number of U.S. communities since they allow for bike trips to become part of longer multi-modal trips. Flat tires, broken chains, bad weather and fatigue are a few other reasons cyclists appreciate an alternative ride home when depending on a bicycle for transportation.

A two-bike rack installed on the front of buses has been commercially developed that offers several convenient features for bicycle users, bus operators, and transit maintenance personnel. An application for State and Federal funds is currently being reviewed to help implement a program to install such racks on Metro Transit buses.

An excellent idea arising from citizen input at one of the planning meetings is to encourage bicycle racks on cabs as a supplement to the bikes-on-buses program. While the transit system only serves specific routes at designated times, taxis offer disabled bicyclists a direct pick-up and delivery service with just a phone call. Costs for bicycle racks would be nominal, since standard auto carrying racks would be appropriate and are readily available. Such requirement could be accomplished through local taxi licensing procedures.

Implementor: Kalamazoo Metro Transit
City of Kalamazoo Public Safety Department
Kalamazoo City Commission

Part C:

Multi-Jurisdictional Coordination

Strategy C.1 Establish a Trailway Commission to coordinate the planning and operation of regional trails.

The Forum of Kalamazoo County is working with Kalamazoo County Parks and Recreation to establish an inter-jurisdictional Trailway Commission to coordinate the planning, funding and operations of regional trails. Coordination insures efficiency of project implementation. A multi-agency commission can also examine best practices for maintenance and issues such as liability.

Implementors: The Forum of Kalamazoo County
Kalamazoo County Parks and Recreation

"This plan is for Kalamazoo, but the vision is for the region. Thus, it is important that the non-motorized transportation plan be integrated across the metropolitan area. This means developing enthusiasm among adjoining jurisdictions to adopt similar policies and coordinate efforts."

— Richard Voorman
Pedestrian Task Force member

Strategy C.2 Continue work of the KATS Non-Motorized Technical Committee.

A Non-Motorized Technical Committee, made up of representatives of the various jurisdictions and citizens in the region, has been created by KATS to establish policies and funding procedures for non-motorized transportation projects.

Specifically this committee should consider the following activities:

- ▶ Develop policies such as a scoping procedure to integrate bicycle/pedestrian accommodations as recommended in Strategy B.2.
- ▶ Assure that non-motorized considerations are included in City, County and State road projects including provisions for bicycle/pedestrian considerations on all bridge and roadway projects.
- ▶ Assure that the one percent State funding is appropriately directed to non-motorized projects.
- ▶ Develop a methodology to prioritize projects for Enhancement and other TEA 21 funded non-motorized projects.
- ▶ Approve non-motorized projects for the TIP.

Implementor: KATS
Area governmental agencies

Strategy C.3 Develop multi-jurisdictional joint funding applications.

The Trailway Commission and the KATS Non-Motorized Technical Committee will provide the opportunity to prepare joint funding applications that coordinate the bicycle and pedestrian needs of multiple communities and major institutions such as colleges and universities. In addition to coordinated development, such joint planning can ensure that bikeway and sidewalk projects extend to logical destinations and avoid unnecessary gaps in the system at jurisdictional boundaries.

Implementors: Trailway Commission
KATS Non-Motorized Technical Committee

Part D:

Continued Citizen and Agency Involvement

Strategy D.1 Continue work of the project Task Forces as a City Advisory Committee.

The Plan Advisory Committee for the *Kalamazoo Non-Motorized Transportation Plan* can serve as a model for an on-going Kalamazoo based advisory group on Non-Motorized issues. This joint citizen/staff committee would serve as a forum for discussion of non-motorized issues.

The primary task of the Advisory Committee would be to establish priorities for non-motorized programming and assist with the development and review of an annual and long-range non-motorized program.

Implementor: City of Kalamazoo Public Services
Department, Engineering Division
Plan Advisory Committee

Strategy D.2 Maintain a non-motorized coordinating function within City government.

A bicycle/pedestrian coordinator should be designated by the City of Kalamazoo. The logical location for this position is in the Division of Engineering as it has led the effort to develop the *Non-Motorized Transportation Plan* and will take the lead in implementing the recommended infrastructure improvements.

Non-motorized planning is always multi-departmental as well as multi-agency. The person to whom this responsibility is assigned will coordinate with the Planning Department, Parks and Recreation, the Police Department, other divisions of the Public Service Department and other agencies and jurisdictions. He/she will serve as the primary staff coordinator for the Non-Motorized Advisory Committee.

Implementors: City of Kalamazoo Public Services Department, Engineering Division
Kalamazoo City Commission

Strategy D.3 Make improvements for non-motorized transportation as high a priority as motorized improvements.

The City of Kalamazoo and other jurisdictions need to give as high a priority to non-motorized transportation and its benefits as it does to fixing streets for cars. To do this, all staff need to recognize their responsibilities to assist the bicycle/pedestrian coordinator in implementing and promoting/educating area residents about the non-motorized system and its benefits. If this does not happen, many involved in this planning effort have a great concern that the plan and its implementation may not survive long.

Implementor: all area governmental jurisdictions and agencies

"The City of Kalamazoo should be applauded for making public involvement real in their decisions affecting bikes and peds. Active engagement is crucial on these issues and I hope they'll continue it by establishing either a task force or a standing advisory committee representing those most affected. ...a very good step in being serious about institutionalizing multi-modalism, transportation choice, and improving the quality of life."

— Dave DeRight,
Non-Motorized Plan Advisory Committee

Strategy D.4 Support the establishment of an alternative transportation citizen advocacy group.

A group of interested citizens is in the process of establishing a regional citizen advocacy group called Transportation Action Strategy for Kalamazoo County (TASK). It will involve itself in activities to encourage non-motorized transportation and recreation opportunities. It will also monitor progress and participate in planning for implementation of the *City of Kalamazoo Non-Motorized Transportation Plan* through participation in the Non-Motorized Advisory Committee as described in Strategy D.1, and through attendance at key KATS meetings as described in Strategy C.2.

One goal of the group is to raise public awareness of transportation issues, including the high fiscal, social and environmental costs of an auto centered transportation system. It also plans to involve the public through events such as a Bike-to-Work Week.

Advocacy groups in other cities have been very instrumental in keeping non-motorized issues before the public: in assuring that proposed projects meet the needs of users; and, in providing needed information and political support to policy makers and implementing organizations. The City of Kalamazoo should encourage and support the establishment of such citizen-based organization.

Implementor: Transportation Action Strategy for Kalamazoo County (TASK)
City of Kalamazoo Public Services Department, Engineering Division

**Transportation Action Strategy
for Kalamazoo County**

"Our purpose is to enhance the quality of life in Kalamazoo County by promoting transportation choices which are environmentally friendly, efficient and equitable.

In the spirit of TEA-21, this group will keep abreast of area transportation developments and ensure that environmentally friendly modes of transportation such as bicycling, walking and public transit are satisfactorily improved and maintained.

We seek greater public involvement in transportation policy and decisions. The rewards will be enhanced quality of life for all citizens, including the poor, the elderly and the disabled."

— Richard Voorman,
for the steering committee establishing the citizen-based
Transportation Action Plan for Kalamazoo County

Part E: Education Initiatives

There are numerous ways in which to educate youth and adults about biking and walking safely. Activities such as making use of bicycles in the police department, conducting professional training on safe facility design, offering *Effective Cycling* adult education classes, teaching cycling basics in the school system and park district programs, developing maps, and establishing incentives for commuters are all examples of ways communities can teach the rules of the road to various segments of the population.

After much discussion of this matter, the Task Forces decided that the following five actions should be the focus of the first phase of a non-motorized education program in Kalamazoo.

Strategy E.1 Construct facilities that encourage increased non-motorized use and promote rules of the road.

People learn by seeing and doing, and by having fun. Thus, having more people out riding bikes and walking more often is viewed as a primary way to help educate more people about these activities. This can be accomplished by building more bicycle lanes, bike parking areas, etc.

Good facility design encourages not only increased use, but also proper behavior by bicyclists, pedestrians and motorists. At minimum, facilities must meet national standards that have been established for user safety, and must be adequately maintained. Non-motorized facilities should further educate users through design practice, such as: directional arrows painted in bicycle lanes to discourage wrong-way riding; minimal construction of sidepath facilities to discourage sidewalk riding; proper bike lane striping at intersections to minimize conflicts with turning vehicles; trails that are wide enough to accommodate multiple users; highly visible and well maintained crosswalk markings; use of "share the road" or similar signs that send a message to passing motorists; and adequate signal timing to allow easy non-motorized crossings.

Implementors: City of Kalamazoo Departments of Public Services and Parks and Recreation, KATS, MDOT, Kalamazoo County Road Commission and Parks Department

Strategy E.2 Launch an organized media campaign.

The number of bicyclists and pedestrians seen in a community on a daily basis helps contribute to the "friendliness" of that city or town. Therefore, increasing the number of non-motorized users in Kalamazoo is a primary goal of this planning effort.

To realize this increase in use, the benefits of physical fitness, quality personal time, variety in daily routines and enhanced social interaction need to be actively marketed. Society today is increasingly

"... need a campaign to educate motorists/bicyclists on laws about sharing the road"

"our objective should be to create respect and trust between all traffic..."

"... need to remind drivers that bikes have equal rights to the streets"

"focus on awareness issues... bikes follow the same traffic rules as cars"

— a sampling of citizen comments received during the July 1998 planning workshops

sedentary, as more time is spent driving from place to place and entertainment often comes primarily in the form of watching television. Bicycling and walking offer alternatives to both activities, but are often not considered. An integrated local media/public relations campaign to promote bicycling and walking is needed. Over time, people have come to rely on the automobile for even the shortest trips. Now they need to be reminded of the fun and benefits of getting around on foot or bike. Such a campaign also offers an excellent opportunity to promote courtesy between motorized and non-motorized users, and to share safety tips for bicycle commuting, properly using newly striped bicycle lanes, or understanding WALK signal lights.

Newspaper feature stories, radio and television interviews, brochures, signs, print ads, streetlight banners, bumper stickers and T-shirts have all been identified as appropriate media for transmitting messages relating to health and fitness, sharing the road, and/or wearing a helmet. It is recommended that the City of Kalamazoo and/or private foundations develop a budget for public relations outreach, and then hire a local ad agency to work with the ongoing non-motorized citizens advisory group to determine the intended messages, audiences and media.

Implementors: Non-Motorized Citizen Advisory Group,
with assistance from the City of Kalamazoo, private foundations and advertising agencies

Strategy E.3 Target local driver education programs to simultaneously reach bicyclists, pedestrians and future drivers.

If the Kalamazoo area can only implement one formal educational venue, it should be through the local drivers education program. The Bicycle Task Force unanimously agreed that future drivers were the ideal target audience for bicycle safety education. Topics to be addressed include how to react to motorists and obey rules of the road when bicycling, as well as how to relate to bicyclists and pedestrians when driving an automobile. A model publication for use in such program is currently being developed for St. Louis County, Missouri. A similar undertaking is recommended for Kalamazoo; or the Kalamazoo area may wish to initiate a statewide drivers education effort for Michigan.

Implementors: City of Kalamazoo and/or MDOT
Drivers education instructors

Strategy E.4 Include bicycle safety as a part of new student orientation at area colleges.

The recent National Bicycling and Walking Study found that the presence of a university was a major factor contributing to high levels of bicycling and walking in a community. Thus, the City of Kalamazoo Non-Motorized Transportation Plan has placed emphasis on making facility connections to WMU and K-College. Students should be made aware of these improvements; the personal benefits of bicycling and walking on and commuting to campus; and the ways in which they, as cyclists, are expected to operate as drivers of vehicles. Incorporating these educational messages into materials/instruction given each year to incoming freshmen is recommended.

Implementors: Western Michigan University
Kalamazoo College
Kalamazoo Valley Community College

Strategy E.5 Provide resources for those interested in educating children.

A variety of resources are available to help teach young children about biking and walking safely, ranging from videos and pamphlets to on-bike training curriculums. Local law enforcement agencies, the Michigan AAA, MDOT, the League of Michigan Bicyclists and Safe Kids all offer resource materials. A complete list of resource materials can be found in Appendix M.

Implementors: youth group leaders, school administrators and teachers, DARE officers, bicycle advocates, health professionals, parents, etc.

Strategy E.6 Explore additional venues to educate children and get them excited about bicycling.

Two additional ideas that were suggested as ways to raise youth interest in bicycling as a sport and/or means of personal transportation are:

- ▶ Gather old bikes, tune them up, and give them to kids.
This concept has been successful in other communities where after-school classes and community cycling programs for kids are building self-esteem and team responsibility; teaching mechanical, problem-solving and job skills; engaging kids in positive and creative recreational activities; improving bike safety and handling skills; introducing children to their community and surroundings; and distributing affordable bikes and helmets to low income families. Model programs exist in Portland, OR, Atlanta, GA, Philadelphia, PA, San Francisco, CA, St. Louis, MO and Chicago, IL.

- ▶ Build a bicycle track (velodrome)
Velodromes are tracks made of hardwood, are banked, and are generally 250 meters around. There are no cars, the bikes can be very simple, and the object is to go fast. And kids love to go fast. If one can get youth involved in racing and competitions, they will be hooked on the sport of bicycling at an age that really matters — teenage years — when they would typically have no interest in going for rides on trails or other facilities with parents. A velodrome could be a terrific asset to the City, bringing people for events and providing a great outlet for youngsters' energy. Plus, a velodrome presents a great way to redevelop one of Kalamazoo's brownfield sites into something ecologically oriented.

Implementors: interested citizens and bicycle advocates,
with funding support from the City, grant programs and/or private sources

Part F: Funding Opportunities

Strategy F.1 Fund non-motorized improvements as components of larger transportation projects.

Most non-motorized transportation projects do not need to be singled out as separate improvements which require separate funding sources. As presented under Part B strategies, bicycling and walking should be routinely accommodated as part of Kalamazoo's transportation infrastructure. As such, most Federal and State transportation funds, such as the Surface Transportation Program (STP) of TEA 21 may be used for these modes as well as vehicular modes. Furthermore, the State of Michigan Act 51 requires that one percent of all State highway funding be used for non-motorized accommodations.

"Unless funds are allocated to implement a plan's recommendations, a planning document is merely a neatly bound pile of paper. However, even more critical than funding is a community-wide understanding of what is needed and why, because as they say, 'where there is a will, there is a way.'"

Terri Musser
Lead Project Consultant,
Bicycles & Co., Inc.

The KATS Transportation Improvement Program (TIP) and the appropriate local budgets should reflect the inclusion of non-motorized accommodations as a part of all scheduled construction projects, unless reason is found that such accommodations are not possible. An initial review should be undertaken to examine those TIP projects scheduled prior to completion of the Non-Motorized Transportation Plan, to see if non-motorized accommodations are still possible.

As previously discussed, the development of a bicycle/pedestrian scoping checklist would be useful to evaluate the need for and feasibility of non-motorized accommodations in roadway improvements.

Implementors: KATS, MDOT, Kalamazoo County Road Commission,
City of Kalamazoo Public Services Department, Engineering Division
Private developers, as applicable

Strategy F.2 Set aside local funds to serve as match money to leverage State and Federal grants for independent non-motorized projects.

Not all projects outlined in this plan will be able to be implemented in conjunction with larger transportation or private development projects. Outside funding should be sought for those projects that will need to be constructed independently of other activities — most likely off-road trailways and roadway improvements specifically undertaken to accommodate bicycle lanes.

A variety of Federal and State grant programs are available to assist local communities with such projects. (See Appendix J for a detailed listing; Appendix L for additional contacts.) The primary sources of federal funding for bicycle and pedestrian projects include various programs authorized by TEA 21, the 1998 re-authorization of the federal surface transportation funding package. The most significant of these programs are as follows:

Transportation Enhancement Program: funds bicycle and pedestrian projects (among several other project categories) that serve the transportation system; new area of eligibility is safety and educational activities for pedestrians and bicyclists.

- ▶ \$3.3 billion nationwide over six years
- ▶ Available for bicycle or pedestrian projects that relate to “surface transportation”
- ▶ 80/20 match applies to state program not necessarily to individual projects
- ▶ Match may be other federal funds, in-kind services or contributions

Hazard Elimination Program: directed toward elimination of hazardous roadway conditions

- ▶ \$3.3 billion nationwide over six years
- ▶ Bicyclists added to the list of road users for whom hazardous locations can be treated
- ▶ Trails and traffic calming measures explicitly made eligible activities
- ▶ 90% federal share

CMAQ (Congestion Mitigation and Air Quality) Program:

funds projects that improve air quality in non-attainment areas

- ▶ \$270 million over six years
- ▶ Bicycle and pedestrian projects remain eligible

Transit Enhancements: funds to improve access to transit

- ▶ \$25-\$35 million over six years
- ▶ Bicyclists and pedestrian projects are eligible for this new funding category
- ▶ 95% federal funds

Recreational Trails Program: Special category of TEA 21 specifically for trail development

- ▶ \$270 million over six years
- ▶ 50% federal share

Additionally, bicycle and pedestrian projects remain eligible for Scenic Byways Program; Bridge Programs; Federal Lands Highways; and, Section 402 safety programs administered through the Governor’s Highway Safety Program

Whichever funding source is being sought, it will likely fund only a portion of the overall costs of the project. Requirements for local matches generally range from 50:50 to 80:20, and many times a community can gain extra points if they are providing more than the minimum requirement for the local share. For this reason, the City of Kalamazoo should set aside an annual budget of funds that can be used toward bringing significant outside dollars into the community through such programs.

Implementor: Kalamazoo City Commission

Strategy F.3 Selectively apply for grants through various transportation, recreation and open space preservation programs.

Grant programs rarely have enough funds to meet the demands of the various communities seeking financial assistance. For this reason, it is critical to closely match project components with the most appropriate grant source. For example, sources which fund construction projects often do not fund land acquisition and vice versa. As another example, urban trails stand a good chance of receiving funding through transportation programs since they are located in proximity to many origins, destinations and potential users; however, trails outside of communities may fair better under recreational grant programs since daily transportation use will likely be lower on such facilities.

It is also important to make sure that the requirements of a given grant program meet the needs of a specific project. A small project that could be relatively easy and inexpensive to implement with local funds may become much more complex than needed if channeled through a grant program that is only marginally compatible.

On the other hand, several small projects may be effectively combined into one larger project to offset the administrative costs associated with grant management. This is especially true when one looks at a project from a transportation standpoint, making sure that it creates a logical link between origins and destinations rather than merely beginning and ending at property lines or jurisdictional boundaries. Such a comprehensive approach will likely result in applications for projects that are a combination of on- and off-road facility types, rather than sections of trailway only.

Implementor: City of Kalamazoo, in cooperation with adjacent jurisdictions

Strategy F.4 Actively solicit funding from private sources to assist with local matches for grant requirements.

Since most State and Federal grant programs are for a pre-determined duration of time and are subject to continuation through the ever-changing political environment, the Kalamazoo community must be prepared to take advantage of various opportunities when they arise. Even with an allocation set-aside for such purposes, as proposed in Strategy F.3 above, adequate levels of matching funds may not be available for a given year if several projects are desired to be funded in the same round of grant applications. For this reason, and to show a more widespread level of community support for a project, supplemental funds from private sources such as foundations, trusts, corporations and individuals are encouraged. (See Appendix J for a list of Kalamazoo area foundations, their purposes, and contact information; and Appendix K for guidelines on how to approach these groups.)

Other projects that are likely candidates for private funding are those that have a strong tie to community improvement projects. Funders are more likely to seriously consider a project or part of a project if it connects with a broader community/neighborhood goal. A good example is the Gateway Coalition's western and southern gateway beautification projects which include non-motorized improvements to connect the colleges to downtown Kalamazoo and the proposed Kalamazoo River Valley Trailway and Kal-Haven Trailway.

Implementors: Foundations and trusts, corporations, mid- and small-sized businesses, non-profit organizations, private individuals and families

Strategy F.5 Actively solicit funding and citizen participation to fund project amenities which fall outside of criteria that qualify for grant programs.

Private sources are also logical choices for funding various amenities that enhance, but are not essential to, a transportation project. For example, a trailway can function without interpretive signing or overlook rest areas, but these features contribute to the overall trailway experience, and give the project its unique sense of place. Using local Kalamazoo sources is recommended not only to fund, but to help determine the local history associated with such amenities. Many communities have created organized donor programs and "friends" groups to raise funds and offer volunteer assistance for items such as bridges, benches and trailheads, and for events and adopt-a-trail maintenance programs.

Implementors: Individual donors and interested citizens, foundations and trusts, corporations, mid- and small-sized businesses, non-profit organizations

Strategy F.6 Research other local fund raising efforts to ensure timeliness and avoid colliding with major competition.

Finding out what major fund raising efforts are occurring or planned in the community can be critical to the success of major non-motorized funding efforts. If several organizations are actively soliciting millions of dollars for human service kinds of projects, non-motorized fund raising is likely to suffer because a) there is a limited amount of money available in the community; b) human service and arts organizations are well known in this area and maintain a high priority on many funders' lists; and c) non-motorized projects may require millions of dollars for implementation and timing of local match with donors must be done many months, and sometimes years in advance, to ensure the funds are put aside. (See guidelines in Appendix K)

Implementors: Foundations and Trusts, Corporations, Mid- and Small-Sized Businesses,
Non-Profit Organizations, Private Individuals and Families

Part G:

Facility Maintenance

In addition to the internal policies identified in Part B, there is a need for additional City policies and practices to maintain existing and future bicycle and pedestrian facilities. This topic was brought up repeatedly throughout the planning process by members of the project Task Forces and citizens at large as a critical need requiring ongoing attention.

Strategy G.1 Adopt procedures to maintain bicycle facilities and sidewalks.

Regular inspection and maintenance of bicycle facilities and sidewalks is necessary. This especially includes the routine sweeping of leaves, snow, gravel and other debris from bicycle and pedestrian travelways.

Recommendations for routine maintenance of on-road bicycle facilities can be found in Tools for Designing and Maintaining Bicycle Facilities, p. 5-22; off-road trail maintenance is addressed on p. 5-33.

On-street bicycle facilities should also be inspected on an annual basis, with re-striping and sign repair taking place with normal annual roadway repairs.

An inspection and repair cycle for sidewalks should be re-established. A ten-year cycle, as was previously practiced in Kalamazoo, would assure that most sidewalks would be maintained in adequate condition. (See Strategy B.7).

Implementors: MDOT; Kalamazoo County Road Commission; City of Kalamazoo Public Services Department, Engineering Division

Strategy G.2 Adopt a hazard reporting system or similar procedures to repair bicycle facilities and sidewalks.

A hazard reporting system involves a means by which citizens can notify the City of a hazardous condition for pedestrians or bicyclists. The cards can be made available at bicycle shops, recreation centers, schools and places of employment, as well as at City offices.

"I must stress road/path maintenance. I biked this past weekend. The roads do not get cleaned and in the fall, stuff gets brushed into the bike lane. This must be stressed!!"

"Business owners seem oblivious to the fact that there are people on foot -- parking lot snow is piled onto sidewalks."

"Maintenance would be one step in the right direction."

"I am most impressed with the plan. It will be absolutely wonderful if it can be implemented. I'll believe the 'keeping pathways free of debris' part when I see it! This will require constant sweeping throughout the system."

"The present pavement, especially in the curb lanes, is in very poor shape. Without significant improvements in the pavement quality, marked bike lanes would be nearly useless. The curb lanes at least should be repaired, made smooth, kept cleaned and maintained in good condition."

"One easy step the City/County can take for promoting bicycling is to simply ensure that bike routes are kept free from snow, leaves, gravel and other debris"

— a sampling of citizen comments received throughout the planning process

Individuals provide the location and nature of the problem along with their name, address and phone number. When the form is received, staff assess the problem and call the individual to inform him/her of what action will be taken. In Seattle, where this program has been in place for many years, citizens appreciate the quick response to their concerns.

Sample hazard reporting cards were developed for the July, 1998 Kalamazoo public meeting and elicited a strong response from participants. (See Appendix E for a summary of responses and a sample card.) Developing this into an established program can increase the City's knowledge and understanding of which problems are important to citizens, and provide a source of small projects to be addressed through a spot improvement program (see below.)

It is important, however, that the City allocate funding for a spot improvement program before hazard comments are solicited, or such a program may prove frustrating for citizens who report problems that are never fixed.

Implementor: City of Kalamazoo Public Services Department, Engineering Division

Strategy G.3 Establish a spot improvement program.

The City of Seattle was one of the first cities to use a relatively small fund for incidental, short term repairs to improve conditions for bicyclists and pedestrians. A small annual fund can be established with which the City can respond quickly to some of the needs identified by the hazard reporting system, as well as other maintenance and small repair issues that come to the attention of City personnel. In Seattle, this program is very popular with public officials who frequently receive thank you letters and phone calls.

Some of the repairs that are identified will fall within existing maintenance programs, but implementation of a "spot improvement program" may also be eligible for federal transportation funding.

Implementor: City of Kalamazoo Public Services Department, Engineering Division

Strategy G.4 Develop and adopt new policies and procedures to improve snow and debris removal from sidewalks.

Consider the adoption of an ordinance to implement a system of warnings and fines for failure to clear sidewalks during emergency snow days. The ordinance could be limited (to commercial properties) or more broadly based (to include residential areas).

Also, consider adoption an ordinance to require that property owners keep sidewalks relatively clear of gravel and debris.

Develop a procedure to educate and notify property owners of their responsibility to keep walkways clear of snow and debris.

Coordinate with other jurisdictions (such as the County) who have snow clearing responsibilities to assure that plowed snow is not dumped on walkways, trailways or within designated on-street bicycle lanes.

Implementors: Kalamazoo City Commission; City of Kalamazoo Public Services, Engineering Division; Kalamazoo County Road Commission

AGRICULTURE



Section VII: Appendices

Establishing a Common Vocabulary

Terms used in transportation planning can get confusing, thus the following definitions are provided to make sure that everyone can communicate effectively. This first page includes generic terms, followed by definitions that further clarify specific types of non-motorized facilities.

Definitions in italics come from the American Association of State Highway and Transportation Officials (AASHTO).

Right-of-Way

A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation and/or conservation purposes.

Highway

A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Roadway

The portion of the highway, including shoulders, for vehicular use.

Greenway

A linear open space established along either a natural corridor, such as a riverfront, stream valley or ridgeline, or overland along a railroad right-of-way converted to recreational use, a canal, or other route; may or may not allow public access.

Trailway

A term used locally for a multiple-use facility for bicycling, walking, running, cross-country skiing and roller skating; preferably to be implemented as a shared use path, but may also route on roadways.

Bikeway

A generic term for any road, street, path or way which in some manner is specifically designated as being available for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Walkway

A transportation facility built for use by pedestrians, including persons in wheelchairs. Walkways may include sidewalks, paths and paved shoulders.

Pedestrian Facilities

A general term for improvements which provide for public pedestrian foot traffic including sidewalks, walkways, crosswalks and other improvements, such as lighting and benches which make it accessible, convenient, safe and enjoyable to walk.

Crosswalk

Any portion of a highway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface. Unmarked extensions of the shoulder, curb line or sidewalk are also referred to as crosswalks.

Curb Bulb

An extension of the sidewalk at an intersection to effectively narrow the street crossing and provide additional sidewalk space.

Curb Radius

A measure of the sharpness of the corner formed by two intersecting streets.

Curb Ramp

A combined ramp and landing within a public sidewalk to accomplish a change of level at a curbed street crossing.

Grade Separation

The vertical separation of conflicting travel ways with a structure, usually a bridge or underpass.

Median

A raised or painted portion of a divided highway separating travel lanes carrying traffic in opposite directions.

Parkway

The space provided to separate the sidewalk from the vehicular travel facilities, usually landscaped and used for various utilities and signing.

Pavement Markings

Painted or applied lines or symbols placed on a roadway surface for regulating, guiding or warning traffic.

Pedestrian Signal

The signal head that indicates the walk/don't walk phase of a traffic signal.

Public Walkway

A pedestrian facility on public or private space intended to provide passage for public use.

Raised Crosswalk

A variation of a speed hump in which a crosswalk is raised to sidewalk level and frequently surfaced to coordinate with the sidewalk rather than the street.

Refuge Island

A raised, curbed or painted area within an intersection that allows the pedestrian to cross a portion of the street in one movement and continue or wait to cross the next portion.

Right of way

The right of one vehicle operator or pedestrian to proceed in a lawful manner in preference to another.

Sidewalk

The portion of a highway, designed for preferential or exclusive use by pedestrians.

Sidewalks are usually separated from the roadway with a curb and/or parkway and constructed of a hard durable material.

Speed Humps/Tables

Raised street sections placed either at intersections or in other locations where they are intended to slow traffic. They are usually 10-12 feet in longitudinal length.

Traffic Calming

Roadway design measures used to slow or divert traffic to increase the safety and attractiveness of streets, especially for pedestrians.

Traffic Circles

A circular installment of varying diameter in the center of an intersection. They are generally defined by a curb which is mountable to accommodate emergency vehicles. Other vehicles must drive around the circle which effectively slows traffic.

Bicycle Facilities

A general term for improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, mapping all bikeways, and shared roadways not specifically designated for bicycle use.

Shared Roadway

A roadway which is not officially designated and marked as a bicycle route, but is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or a road with paved shoulders.

Designated Shared Roadway

A shared roadway which has been designated by signing as a preferred route for bicycle use. (See Bike Route.)

Bicycle Route (Bike Route)

A system of bikeways designated by the jurisdiction having authority with appropriate directional and information route markers, with or without specific bicycle route number. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

Bicycle Lane (Bike Lane)

A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Wide Curb Lane

An outside or curbside travel lane of sufficient width for a bicyclist and motorist to share the lane with a comfortable degree of separation. The bicycle space is not striped, and generally the total width is less than a road with a paved shoulder or bike lane treatment.

Shoulder

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses. When paved and of sufficient width, shoulders provide space for bicycle and pedestrian travel. A shoulder is usually separated from the travel lane by striping, and may be designated as a bike lane.

Shared Use Path

A bikeway physically separated from motorized vehicular traffic by an open space or barrier, and either within the highway right-of-way or within an independent right-of-way. Shared use paths will also be used by pedestrians, skaters, joggers and other non-motorized users.

Trail, Multi-Use Path or Bicycle Path

Same as Shared Use Path. However, the term bicycle path is becoming less common, since such facilities are rarely used exclusively by cyclists.

Rail-Trail

A multi-use path built within the right-of-way of an existing or former railroad, that is either paved or unpaved.

Sidepath

A two-way shared use path located immediately adjacent to a roadway, like an extra wide sidewalk. Not recommended in most applications due to space limitations, operational problems, and safety hazards at intersections.

Unpaved Path

Paths not surfaced with asphalt or Portland cement concrete.

Common Acronyms

AASHTO

American Association of State Highway and Transportation Officials.

ADA

Americans with Disabilities Act of 1990. Broad legislation mandating provision of access to employment, services, and the built environment to those with disabilities. New guidance entitled *Accessible Rights-of-Way: A Design Manual*, is in the process of development by the FHWA and the U.S. Architectural and Transportation Barriers Compliance Board.

ADT

Average Daily Traffic.

FHWA

Federal Highway Administration.

ISTEA

The Intermodal Surface Transportation Efficiency Act of 1991. Federal transportation legislation that strengthened public involvement in the planning process and made transportation funds more flexible so they could be used for bicycle and pedestrian projects as well as highways. ISTEA is the source of the enhancements program and many other programs that can be directed toward bicycle and pedestrian projects.

MUTCD

Manual on Uniform Traffic Control Devices. Approved by FHWA as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

TEA-21

Transportation Equity Act for the 21st Century. This reauthorization of ISTEA increases overall surface transportation funding by 40 percent and adds several new categories of eligible funding for bicycle and pedestrian projects including the Hazard Elimination program; the Transit Enhancements program; and funding for Bicycle and Pedestrian Design Study, and a Safety Education Curriculum initiative.

Crash Analysis

Recent injuries and fatalities involving non-motorized users within Kalamazoo prompted an analysis of bicycle and pedestrian crashes to gain an understanding of how crashes occur and how to avoid them. We use the term “crash” instead of “accident” because accidents are random occurrences of chance with the connotation that nothing can be done to prevent them. Research has shown that these events are not random — they fall into patterns of reoccurring crash types which happen because people make mistakes.

The following section summarizes the results of an evaluation of local traffic crash reports involving pedestrians and bicyclists for the period from January 1993 through July 1997, supplemented with national and state trends. As one reviews this evaluation, it is important to note that crashes must involve a motor vehicle to generate a police accident report and be counted as a crash statistic. National studies of emergency room medical reports have shown that approximately only 10% of bicycle crashes that result in injuries get reported to police. Data on pedestrian injuries is also difficult to obtain with any high degree of accuracy since many pedestrian injuries are not reported.

Many reportable crashes go unreported for reasons such as the crash is deemed too minor; the parties don't want to involve the police; drivers don't want insurance companies to know; and children don't want their parents to find out. Even if police are reported to the scene, tracking associated crash data is difficult.

Thus the following statistics are likely to under-represent the true impact that non-motorized crashes are having on the local community. In the five-year period analyzed, there were almost twice as many bicycle-motor vehicle crashes (177) reported as pedestrian-motor vehicle crashes (90). Two deaths resulted — both pedestrians and both involved in a “Dart-Out” crash type, crossing in a non-intersection location. Additionally, nine percent of the crashes resulted in serious, incapacitating injuries.

Of the pedestrian crashes, 63.6% occurred in non-intersection locations; while 76.7% of the bicycle crashes occurred at or within 100 feet of intersections. The pedestrian crashes were located randomly throughout the community, but the bicycle crashes tended to be clustered at intersections of arterial streets.

Pedestrian Crashes

On average, a pedestrian is killed in traffic every 96 minutes in the United States. Another is injured every 4 minutes. National data shows that 5,472 pedestrians were killed in traffic in 1994 (the most current year data is available). This number is a decrease from 1991 fatalities; still these pedestrian deaths represent approximately 13% of total 1994 traffic fatalities.

In the State of Michigan, one pedestrian is injured every 2.5 hours. For 1995 (the most current year data is available), the pedestrian death toll stands at 190 persons. This represents an increase of 8 deaths over the 1994 figure. And for each pedestrian killed, there were 18.4 pedestrians injured. During the past five years, a total of 893 pedestrians have been killed in Michigan, an average of 179 per year.

Throughout the five year period for which motor vehicle crash reports were analyzed for the City of Kalamazoo, there were 90 crashes involving pedestrians. Two were fatal, and 11 resulted in incapacitating injuries — those which prevented the injured person from walking, driving or continuing the activities which he or she was capable of performing prior to the crash.

Demographics

Detailed data on pedestrian crashes is difficult to obtain with any high degree of accuracy since many pedestrian injuries are not reported. Of those that are, additional accuracy depends on the completeness of the accident report file by police. The sidebar at right lists data that is available nationally to provide insight on the demographics of pedestrian crashes.

Of all the pedestrians killed in Michigan in 1995, 20% were under the age of 21 years and 25.8% were 55 and older. Similar data was not available locally.

Alcohol

A high proportion of pedestrian crashes show alcohol as a contributing factor. Nationally, alcohol involvement was reported in almost one half of crashes resulting in pedestrian fatalities. In Michigan, 12.6% of the pedestrian/motor vehicle crashes involved drinking, with 8.4% including pedestrians under the influence. In Kalamazoo, 14.4% of the pedestrian crashes involved alcohol, with 13% involving drunken pedestrians and another 2.2% involving drunken drivers.

Crash Types

Research has found that pedestrian crashes fall into distinct, reoccurring crash types. Details of the six most common types, as found nationally and in Kalamazoo, are presented on the following pages.

Summary of National Pedestrian Crash Characteristics

- ◆ Over two thirds (71%) of pedestrian fatalities occur in urban areas
- ◆ Most fatal crashes occur at night (62%)
- ◆ Almost 70% of the pedestrian fatalities are males. The Pedestrian fatality rate per 100,000 population for males is more than twice the rate for females
- ◆ Most pedestrian fatalities occur at non-intersection locations (80%)
- ◆ Of all children between the ages of 5 and 9 years killed in traffic crashes, more than one-third are pedestrians
- ◆ For traffic fatalities under age 16, almost one-fourth are pedestrians
- ◆ Almost half occur from 4:00 to 8:00 pm
- ◆ Older pedestrians (ages 70+) account for 19% of all pedestrian fatalities and have the highest death rate of any age group (both male and female) — 4.36 fatalities per 100,000 population
- ◆ Of all fatalities to nonoccupants of motor vehicles, 85.7% are pedestrians
- ◆ Alcohol involvement (either motorist or pedestrian) was reported in almost one half of crashes resulting in pedestrian fatalities. Of these, 30% of the pedestrians were legally intoxicated; 13% of the drivers were intoxicated; and 5.6% involved both intoxicated drivers and pedestrians
- ◆ The highest rate of intoxication for pedestrian fatalities is found in ages 24 to 34 years. This rate has increased for this age group over the past ten years, contrasted with decreases in intoxication rates for ages 65 years and older and ages 16 to 20 years
- ◆ Almost one-half of all pedestrian fatalities occur on Friday, Saturday or Sunday

Dart-Out

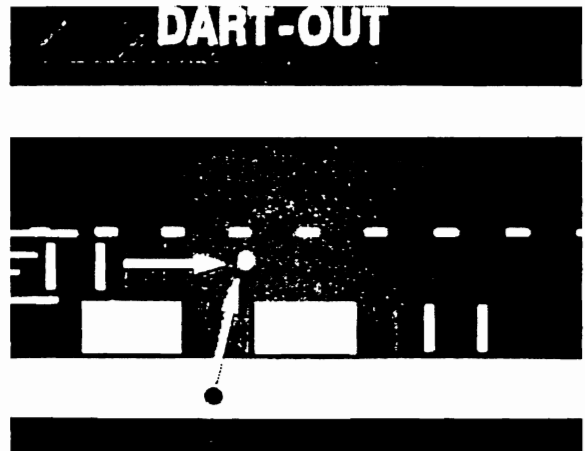
20% of pedestrian crashes in Kalamazoo, including both fatalities
33% of all pedestrian crashes nationally

Contributing factors

The pedestrian enters the street in the middle of a block and either runs into or is hit by a moving vehicle. The majority of pedestrians are struck in the near lane. This type of crash occurs most often in residential neighborhoods.

Primary errors

- Intoxication (of pedestrian or motorist).
- Pedestrian fails to search for traffic.
- Pedestrian fails to yield right-of-way.
- Pedestrian is not visible (obstructed or inconspicuous).
- Pedestrian runs (instead of walks) into the roadway (no signal light).



Intersection Dash

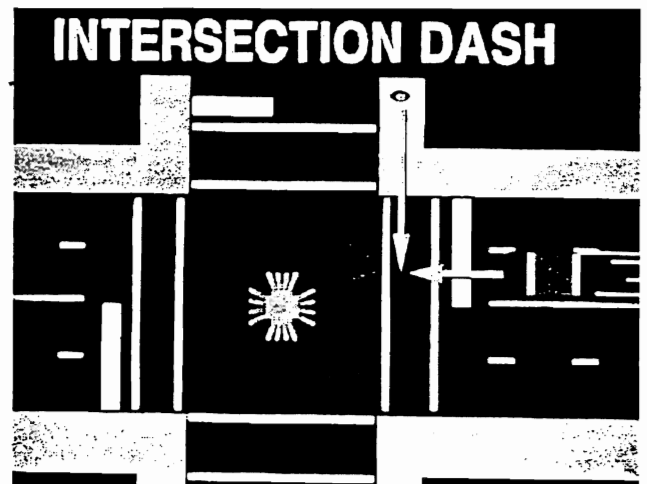
17% of pedestrian crashes in Kalamazoo
5% of crashes nationally

Contributing factors

The driver does not see the pedestrian running across an intersection in time to stop. This type of crash occurs most often in or near a marked or unmarked crosswalk.

Primary Errors

- Confusion over *Walk/Don't Walk* signal.
- Pedestrian not visible or conspicuous.
- Pedestrian runs (instead of walks) into the intersection.



Walking/Standing in Roadway

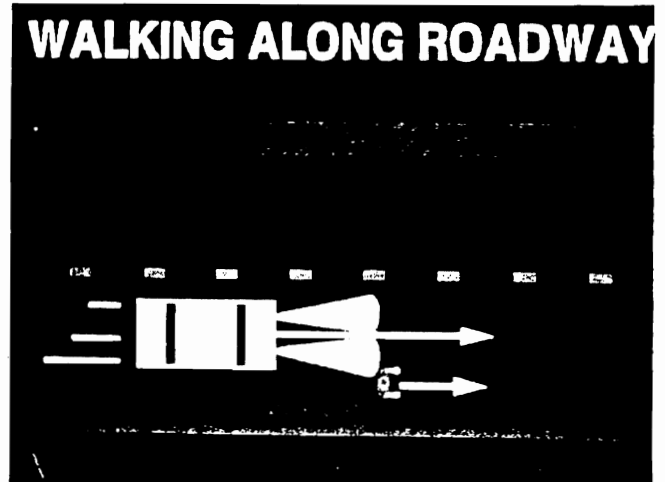
14% of pedestrian crashes in Kalamazoo
5% of crashes nationally

Contributing factors

A pedestrian is walking along the edge of the roadway or on the shoulder and is struck by a moving vehicle. This type of crash occurs most often on country roads after dark. Frequently, the pedestrian is walking with traffic and is not paying attention to vehicles coming from behind.

Primary errors

- Pedestrian does not wear conspicuity devices or retro-reflective clothing.
- Pedestrian inattentive.
- Motorist not expecting or searching for pedestrians.
- Walking with, instead of facing, traffic.



Backing Vehicle

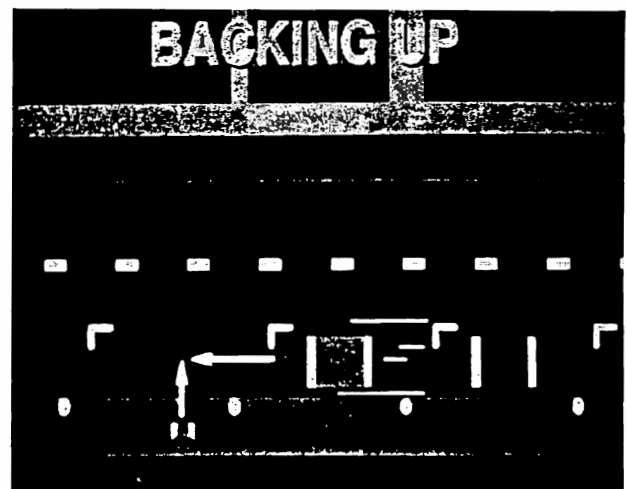
13% of pedestrian crashes in Kalamazoo
5% of crashes nationally

Contributing factors

A vehicle is backing up and strikes a pedestrian who is crossing behind it. This crash usually occurs because the driver does not see the pedestrian or the pedestrian does not realize the vehicle is backing up. This type of crash frequently occurs in parking lots, private driveways, streets or on sidewalks that intersect driveways. Older adults and children are often involved.

Primary Errors

- Pedestrian's failure to search for and detect backing vehicles.
- Motorist's unsafe backing practice.
- Motorist's failure to anticipate and search for pedestrians.
- Failure to use OSHA-required backing signal (commercial vehicles only).



Vehicle Turn-Merge

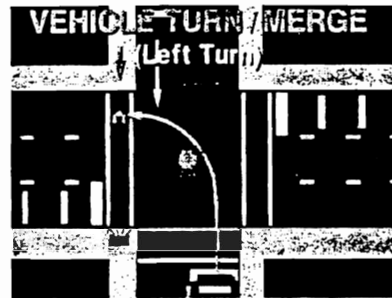
8% of pedestrian crashes in Kalamazoo
11% of crashes nationally

Contributing factors

The driver is turning into and merging with traffic. The pedestrian is usually walking in a direction that is different from the driver's focus of attention. Because the driver is looking the other way or has an obstructed view, the vehicle strikes the pedestrian.

Primary Errors

- Motorist fails to search for and detect the pedestrian.
- "Hurry up" attitude or driver overload.
- Pedestrian fails to search for motorists.
- The pedestrian does not enhance his or her conspicuity.



Not in Roadway/Waiting to Cross

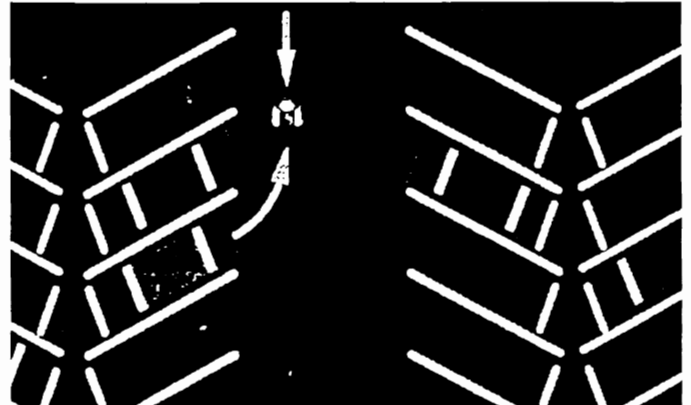
4% of pedestrian crashes in Kalamazoo
5% of crashes nationally

Contributing factors

A vehicle strikes a pedestrian in a parking lot, driveway, private road, yard or gas station. This type of crash also occurs to pedestrians standing on the curb, waiting to cross a roadway.

Primary errors

- Motorist not searching for pedestrians.
- Pedestrian walks into path of vehicle from unexpected direction.
- Pedestrian assumes motorist will yield.



Other Pedestrian Crash Types

The following crash types occur less frequently but still represent substantial risk:

Disabled or Emergency Vehicle Related

A moving vehicle strikes a pedestrian who is working on, standing next to or walking from a disabled vehicle. This type of crash also occurs when pedestrians are near a police or emergency vehicle.

Multiple Threat

One or more vehicles have slowed or stopped, allowing the pedestrian to safely cross the first lanes of a multi-lane street. A moving vehicle traveling in the same direction as the yielding vehicles strikes the pedestrian. Neither pedestrian nor driver of the moving vehicle saw each other because of the yielding vehicles blocked their vision.

Note: This crash type may be more common in Kalamazoo than many cities due to the abundance of multi-lane, one-way streets, but frequency could not be determined based upon available data included within the local crash summary reports.

Playing in Road/Play Vehicle Related

A moving vehicle strikes a child who is playing in a roadway or driveway. Frequently, children are involved with play activities, such as pulling a wagon or riding a skateboard and dart into the path of a moving vehicle without realizing it.

Commercial Bus Stop Related

At a bus stop, a passenger gets off and crosses the road in front of a stopped bus, or a pedestrian walks in front of the bus to cross the road. A moving vehicle passing the bus strikes the pedestrian.

Vendor Related

A moving vehicle strikes a young pedestrian going to or from an ice cream truck or other vendor. This crash occurs most often in residential neighborhoods, usually as the person is leaving the truck.

School Bus Related

While crossing the road when going to or from a school bus, a pedestrian is struck by a moving vehicle, usually a vehicle other than the school bus.

Working In or On the Roadway

A construction worker or other pedestrian is struck by a moving vehicle while working in the roadway.

Expressway Related

A pedestrian walking or standing in a expressway or access ramp is struck by a moving vehicle.

Bicycle Crashes

According to the National Highway Traffic Safety Administration, in 1994 (the most current year data is available) 802 bicyclists died in the United States in traffic crashes — 2% of all traffic fatalities for that year. Since the Fatal Accident Reporting System (FARS) became operational in 1975, the number of bicyclist fatalities has declined by 28%.

In Michigan in 1995 (the most current year data is available), there were 3,239 bicyclists involved in motor vehicle crashes, with 28 bicyclists killed and 2,468 injured. The number of bicyclists killed represents a -3.4% change from 1994. On average, a bicyclist is injured every 3.3 hours somewhere in the state.

Throughout the five year period for which motor vehicle crash reports were analyzed for the City of Kalamazoo, there were 177 reported crashes involving bicyclists. None were fatal, but 13 resulted in incapacitating injuries.

Demographics

Nationally, the age of bicyclists involved in fatal crashes has increased, from an average of 17.7 years in 1975 to 28.8 years of age in 1994. However, children under the age of 16 accounted for 40.3% of the bicycle deaths nationwide, and 46.4% of the fatalities in Michigan in the most recent years data is available.

Alcohol

In Michigan, 4.9% of bicyclist crashes involved persons who had been drinking and 3.1% involving a drinking bicyclist. In Kalamazoo, 10.7% of the bicycle crashes involved alcohol, with 9% involving drunken cyclists and another 1.7% involving drunken drivers.

Crash Types

As discussed in the crash analysis introduction, the majority of bicycle crashes do not involve motor vehicles. Only those that do are reported to police, but these include the majority of serious injuries and fatalities.

The factors that contribute to these crashes vary depending on age of the bicyclist, resulting in identification of 36 unique problem types and seven general classes of crashes. Unfortunately, available local crash data does not provide information on age or other details to accurately type each incident, so the following crashes types are those determined nationally by the Cross-Fischer study.

Most common crash types involving child bicyclists:

- ◆ Bicyclist Mid-Block Rideout
- ◆ Bicyclist Rideout at Controlled Intersection
- ◆ Bicyclist Unexpected Turn or Swerve

Summary of National Bicycle Crash Characteristics

- ◆ Of all bicycle crash fatalities, 86% are males
- ◆ Adults (age 16 years and older) are involved in 59.7% of all fatal bicycle/motor vehicle crashes. In adult bicyclists crashes, the primary error is most typically made by the motorist.
- ◆ Nearly half of all fatal crashes occur at night. In two thirds of these cases, drivers said they didn't see the bicyclists in time to avoid collision, thus raising the issue of conspicuity. (In about 95% of overtaking crashes, the bicyclist did not have an active red taillight and in 40% the bicyclist had no rear reflector.)
- ◆ Late afternoon hours show a higher frequency of bicycle/motor vehicle crashes. Reasons for this may relate to several factors:
 - ◆ increased peak traffic volumes in the afternoon;
 - ◆ a "hurry up" attitude on the part of drivers and bicyclists;
 - ◆ glare problems caused by the sun at lower angles;
 - ◆ increased calls in the afternoon for police service reduce enforcement efforts.
- ◆ While only 15% of all bicycle crashes involve a motor vehicle, 85% of the fatalities involve a motor vehicle.
- ◆ Head and/or neck injuries are the primary cause of death in over 70% of the bicycle fatalities. Some say as high as 80% to 85% of the fatalities are head- or neck-related.
- ◆ Head or neck injuries account for about 75% of permanent disability resulting from

Most common crash types involving adult bicyclists:

- ◆ Motorist Drive Through or Stop and Go
- ◆ Motorist Overtaking
- ◆ Motorist Unexpected Turn

In the child bicyclist crashes, the bicyclist makes the primary error and the motorist has insufficient time to adjust and avoid a collision. These cyclist errors are often the result of inexperience and improper or deficient bicycle training and education, with many occurring in residential areas where children have little fear of riding.

In contrast, the crashes involving adult bicyclists result from a primary error being committed by the motorist, and the cyclist not having time to take corrective action and avoid a collision. However, three contributing bicyclist actions include inconspicuity, wrong-way riding, and sidewalk or sidepath riding — all of which result in the bicyclist being less likely to be detected by the motorist.

A recent study found that bicycle crashes at intersections accounted for 64% of total bicycle crashes and 74% of bicycle/motor vehicle crashes. Bicyclists traveling the wrong-way, against traffic, incur 3.6 times the risk of being involved in a collision with a motor vehicle than those traveling on the right side of the street, with traffic. Bicyclists who ride on sidewalks or sidepaths incur 1.8 times greater risk than those who ride on the roadway, most likely because of blind conflicts at intersections. Intersections are especially hazardous for wrong-way sidewalk riders, who have been found to be 4.5 times at risk as right-way sidewalk riders.

In the Kalamazoo crashes studied, 5.6% were caused by wrong-way riding; the number involving sidewalk/sidepath riders in either direction is unknown.

ADULT BICYCLIST CRASHES

Notes: 1) “types” refer to the nationally-recognized Cross/Fischer crash typology

2) All percentages reflect national data, as local reports were not detailed enough for classification

Motorist Drive-Through or Stop and Go

Fatal: 2.4% of all bike/motor vehicle crashes

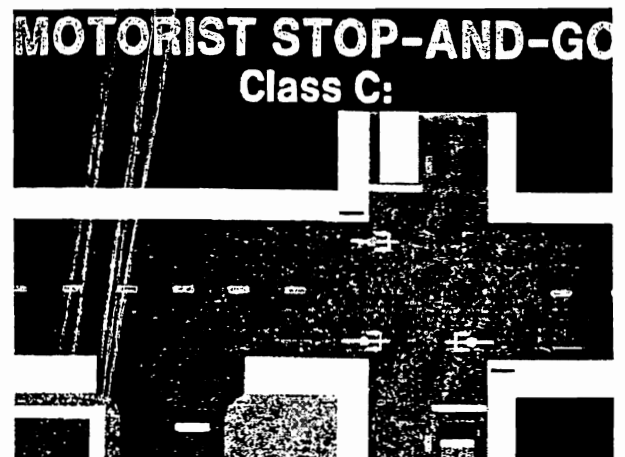
Non-Fatal: 18.8%

Crash Types

- Motorist turn-merge from commercial driveway or alley (*Type 8*).
- Motorist drive-out from intersection controlled by sign -- stop and go (fails to yield to cyclist) (*Type 9*).
- Motorist drive-out at controlled intersection (motorist disobeys the control device) (*Type 12*).

Primary Errors

- Failure of motorist to search and see bicycle traffic.
- Failure of motorist to yield right-of-way.
- Failure of motorist to obey traffic control device.



Motorist Unexpected Turns

Fatal: 2.4% of all bike/motor vehicle crashes

Non-Fatal: 14.5%

Most common adult bike crash type;

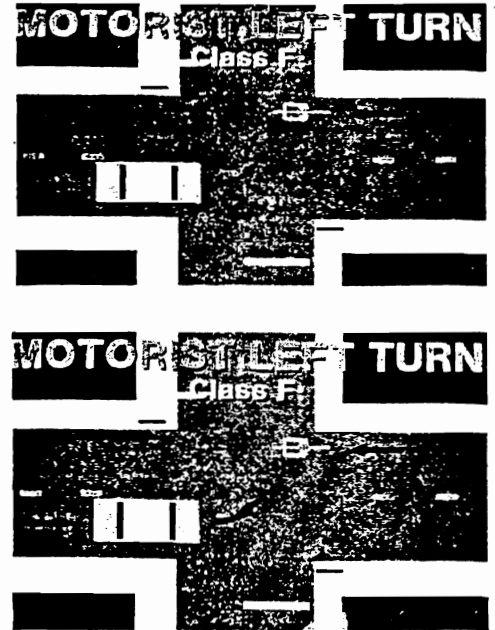
low speeds account for the low percentages of injuries and fatalities.

Crash Types

- Motorist left turn: same direction of travel (affects wrong-way cyclists) (Type 22).
- Motorist left turn: facing approach (Type 23).
- Motorist right turn: parallel paths (Type 24).

Primary Errors

- Motorist failure to yield right-of-way.
- Motorist failure to signal turn.
- Motorist failure to search for and see bicycle traffic.
- Motorist inability to interpret the bike's speed accurately.
- Cyclist wrong-way riding.



Motorist Overtaking

Fatal: 37.8% of all bike/motor vehicle crashes

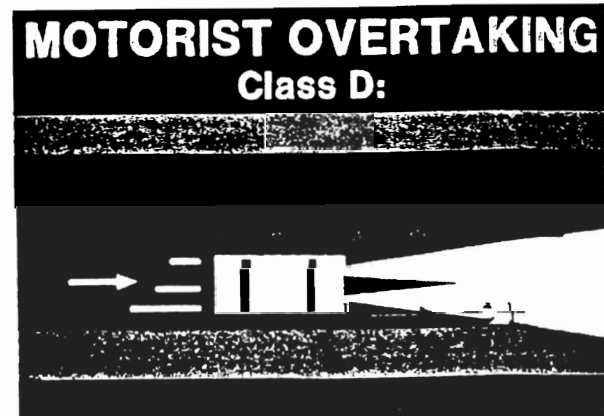
Non-Fatal: 10.5%

Crash Types

- Motorist overtaking: bike not seen (Type 13).
- Motorist overtaking: motorist out of control (intoxicated, ill) (Type 14).
- Motorist overtaking: counteractive measures ("Other" Type)
- Motorist overtaking: misjudged space ("Other" Type)
- Motorist overtaking: bike's path blocked (unexpected swerve) ("Other" Type).

Primary Errors:

- Motorist's improper passing.
- Cyclist's inadequate or illegal lighting and/or reflectors.
- Cyclist's improper lane use.
- DUI or other impairment.



CHILD BICYCLIST CRASHES

Bicycle Rideout at Controlled Intersection

Fatal: 12% of all bike/motor vehicle crashes

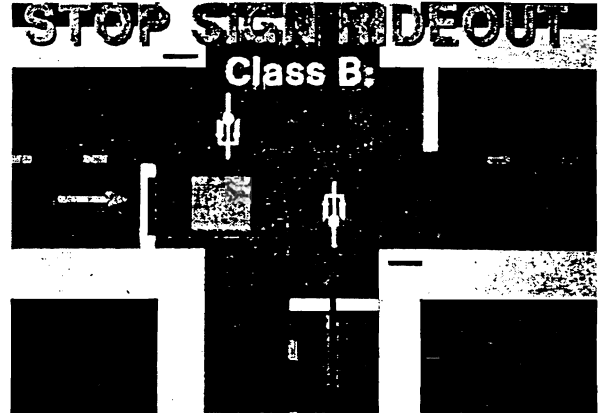
Non-Fatal: 17%

Crash Types

- Bike rideout from intersection controlled by stop sign (*Type 5*)
- Bike rideout from intersection controlled by traffic signal -- phase change (*Type 6*).
- Bike rideout from intersection controlled by a signal -- multiple threat (*Type 7*).

Primary Errors

- Fails to obey traffic control device.
- Fails to search for and see oncoming vehicles.
- Cyclist unable to judge closure speed.
- Wrong-way cyclist does not see stop sign or other traffic control device.
- Cyclist enters on yellow and is trapped by the light.



Bicyclist Unexpected Turn or Swerve

Fatal: 16% of all bike/motor vehicle crashes

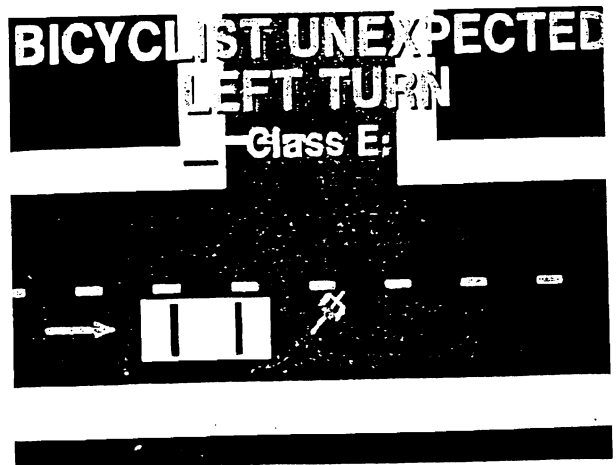
Non-Fatal: 14%

Crash Type

- Bicycle unexpected left turn, same direction of travel (*Type 18*)

Primary Errors

- Failure to search or scan traffic to the rear before moving into traffic lane.
- Failure to signal intention to turn or change course.
- Fail to keep watch and recognize road hazards in time to respond appropriately.
- Failure to take the entire lane, if necessary, to avoid road hazards, opening doors, etc.
- Inability of cyclist to hear the sound of vehicles approaching from the rear because of headphone use.



Bicyclist Mid-Block Rideout

Fatal: 15% of all bike/motor vehicle crashes

Non-Fatal: 14%

Types of Crashes

("Types" refer to Cross/Fischer typology)

- Bicyclist rides out from a residential driveway or alley (Type 1).
- Bicyclist rides out from a commercial driveway or alley (Type 2).
- The bicyclist's pre-crash route parallels the road, then veers into the road from a driveway or alley (Type 3).
- The bicyclist's pre-crash route parallels the road, then goes over a curb or shoulder into roadway (Type 4).

Primary Errors:

- Cyclist's failure to stop, search and yield right-of-way.
- Inability of cyclist to judge closing speeds.
- Cyclist enters the road suddenly and from an unexpected location.

MIDBLOCK RIDEOUT Class A: Type 1



MIDBLOCK RIDEOUT Class A: Type 2



MIDBLOCK RIDEOUT Class A: Type 3



MIDBLOCK RIDEOUT Class A: Type 4



References

1. All national statistics and crash typing illustrations come from:
Pedestrian and Bicyclist Safety and Accommodation, May 1996. National Highway Institute, Publication No. FHWA-HI-96-028.
2. All state statistics come from:
1995 Michigan Traffic Crash Facts, May 1996. Office of Highway Safety Planning, Michigan Department of State Police, Lansing, MI.
3. All local statistics come from crash summary database printouts furnished by:
John Stark, City of Kalamazoo Public Services Department, September 1997.
4. "Risk Factors for Bicycle-Motor Vehicle Collisions at Intersections" by Alan Wachtel and Diana Lewiston. ITE Journal, September 1994. Institute of Transportation Engineers, Washington, DC.

Proposed Bicycle System Summary

<u>Name</u>	<u>End Points</u>	<u>Mile(s)</u>	<u>Classification</u>	<u>Average Daily Traffic Volumes</u>
Bronson Blvd	Crosstown Pkwy to Whites Rd	1.00	Minor Arterial	<12,000
Burdick St	North St North	0.88	Collector	<12,000
Chevy Chase Blvd	Lorraine Ave to Edgemoore Ave	0.61	Local	?
Davis St	Cedar St to Vine St	0.23	Local	?
Dunkley St	Cobb Ave to Versiuis Park	0.27	Local	?
Edgemoor Ave	Chevy Chase to Bronson Blvd	0.50	Local	?
Edison St	Douglas Ave to Glen St	0.30	Local	?
Entry Rd	Howard to Rankin Ave	0.12	Local	?
Everhard Ave.	Old G.T.W. RR to G Ave Extension	0.26	Local	?
Ferdon Rd	Appelane dr	0.32	Local	?
Ferndale Ave	Alamo Ave to Hillsdale Ave	0.22	Local	?
Fulford St	Egeston Ave	0.09	Local	?
Fulford St/Moreland St	Egleston Ave to Lakeway Ave	1.62	Local	?
G Ave	KRVT	1.25	Collector	?
Gibson St	Sheldon St to S Mills St	0.15	Local	?
Glen St.	Baldwin Rd to Edison St	0.18	Local	?
Grand Prarie	Drake Rd to Nichols Rd	0.99	Local	?
Greenlawn Ave	WMU and Woodside Ave	0.24	Local	?
Greenwood Ave	W Michigan Ave and Knollwood Park	0.33	Local	?
Harrison Ct	KRVT	0.20	Local	?
Henderson Dr	Woodside Ave	0.13	Local	?
Hillsdale Ave	Ferndale to Berkley	0.54	Local	?
Jackson St	Sheldon St to Russel St	0.07	Local	?
Kensington Dr	Wellington Rd to Broadway St	0.33	Local	?
Lake St	Race St to Russel St	0.02	Collector	<12,000
Lakeway Ave	Lovers Ln to Moreland St	0.70	Local	?
Lorraine Ave	Broadway St to Chevy Chase Blvd	0.26	Local	?
Lovell St	Monroe St to Oakland Dr	0.34	Local	?
Lovell St	Henrietta St to Portage St	0.20	Minor Arterial	12,000 to 18,000
Lovell St	Oakland Dr to Westnedge Ave	0.40	Minor Arterial	<12,000
Mosel Ave	Doublas Ave to Riverview Ave	0.48	Minor Arterial	<12,000
North St	Berkley St to Douglas Ave	0.60	Local	?
North St	Douglas Ave to Gull St	1.34	Collector	<12,000
Oak Grove Ave.	Wilson Ave to Riverview Dr	0.11	Local	?
Paterson St	Douglas Ave to KRVT	0.17	Collector	<12,000
Paterson St	Pitcher St to Riverview Dr	0.46	Collector	<12,000
Paterson St	KRVT to Park St	0.61	Collector	<12,000
Paterson St	Park St to Pitcher St	0.45	Collector	12,000 to 18,000
Peak Rd	Berkley St to Woodside Ave	0.12	Local	?
Pitcher St	Crosstown Pkwy to Sheldon St	0.37	Local	?
Race St	Lake St to Egleston Ave	0.24	Local	?
Rambling Rd	Stadium Dr to Appelane Dr	0.64	Local	?
Rankin Ave	? and Wilbur St	0.21	Local	?
Reed Ct	Reed Ave to Stockbridge Ave	0.23	Local	?
Riverview Dr	Commerce Ln to Oak Grove Ave	0.46	Minor Arterial	<12,000
Russel St	Jackson St to Lake St	0.14	Local	?
Santos Dr	Solan St and Kendell St	0.15	Local	?
Sheldon St	Pitcher St to Jackson St	0.12	Local	?
Sheldon St	Crosstown Pkwy to Gibson St	0.22	Local	?
South St	Oakland Dr to Westnedge Ave	0.33	Minor Arterial	<12,000
South St	Edwards Ally to Pitcher st	0.22	Minor Arterial	<12,000
Spring Valey Park Drive	Mt. Olivet	2.35	Local	?
Spring Valley Park Drive	Riverview Dr	0.71	Local	?
Stockbridge Ave	Burdick St to Mooreland St	1.25	Minor Arterial	<12,000
Vande Giessen Rd	Arcadia Rd to Western Ave	0.21	Local	?
Vincent Ave	Angling Rd to Oakland Dr	0.77	Collector	?
Vine St	Davis St to Westnedge Ave	0.29	Local	?
Vine St	Westnedge Ave to King Hwy	1.47	Minor Arterial	<12,000
Water St	Kalamazoo Ave	0.23	Local	?

Proposed Bicycle System Summary

<u>Name</u>	<u>End Points</u>	<u>Mile(s)</u>	<u>Classification</u>	<u>Average Daily Traffic Volumes</u>
Wellington Rd	Parkview Ave to Kensington Dr	0.13	Local	?
Wilbur St	Rankin Ave and WMU	0.28	Local	?
Willard St	KRVT to Park St	0.22	Local	?
Wilson Ave.	Oak Grove Ave to G Ave	0.34	Local	?
Woodside Ave	WMU and Woodside Ave	0.09	Local	?
		34.67		
Improved Shoulder for Bicycle				
10th Street	H Ave Kal-Haven Trail	0.49	Local	?
12th St	Parkview Ave to Milham Rd	2.18	Minor Arterial	?
Alamo Ave	Nichols to City Limits	1.06	Collector	<12,000
Douglas Ave	I-131 to City Limits	0.27	Principal Arterial	<12,000
Douglas Ave	F Ave to I-131	2.44	Principal Arterial	?
Drake St / 12th St	Stadium Dr to Parkview	0.68	Minor Arterial	<12,000
Drake St / 12th St	H Ave to Grand Prarie	0.52	Minor Arterial	?
Drake St / 12th St	Grand Prarie to W Main St	0.98	Minor Arterial	12,000 to 18,000
H Ave / Maltby Rd	Drake Rd to US-131	0.75	Minor Arterial	?
H Ave / Maltby Rd	US-131 to 10th St	0.24	Minor Arterial	?
Mt Olivet Rd	Brook Dr to G Ave	0.80	Collector	<12,000
N Westnedge Ave	F Ave to I-131	2.25	Minor Arterial	<12,000
Nichols Rd	Ravine Rd to Alamo Ave	0.46	Collector	<12,000
Parkview Ave	12th St to Ferdon Rd	1.37	Minor Arterial	12,000 to 18,000
Parkview Ave	12th St to 12th St under US-131	0.30	Minor Arterial	12,000 to 18,000
Ravine Rd	Douglas Ave to City Limits	0.38	Collector	<12,000
Stadium Dr	Rambling Rd to Howard	0.64	Principal Arterial	>24,000
Stadium Dr	Howard to Michigan Ave	1.09	Principal Arterial	>24,000
		16.90		
Trailway/Shared-use Path				
Amtrack Corridor	Academy St to Westnedge Ave	0.43	N/A	N/A
Angling Rd Connector	Under I-94	0.11	N/A	N/A
Annen Sports Complex Trail	within Annen Sports Complex	0.42	N/A	N/A
Arboretum/WMU Properties	Drake Rd to Greenlawn	1.74	N/A	N/A
Asylum Lake Trail	Parkview Ave to Vinehill Ave	0.85	N/A	N/A
Cantebury Ave Extention	Through Frays Park	0.14	N/A	N/A
Cedar St Extension	Oakland Dr to Davis St	0.16	N/A	N/A
Commerce Ln	Service Ln to Riverview Dr	0.14	N/A	N/A
Dunkley Street Extension	Versiuus Park to Douglas Ave	0.16	N/A	N/A
G Ave Crossover	KRVT	0.45	N/A	N/A
G. Ave Extension	KRVT	0.24	N/A	N/A
GH Ave. Connector	KRVT	0.21	N/A	N/A
Howard St Sidepath	Kendall Ave	0.17	N/A	N/A
Howard Street Sidepath	WMU and Oakland Dr	0.67	N/A	N/A
Kal-Haven Trail Extension	Downtown to US-131	4.65	N/A	N/A
Kal-Haven Trail Extension	10th St to US-131	0.27	N/A	N/A
Kal-Haven Trailway Extension	Kal-Haven Trail to H Ave	0.38	N/A	N/A
Knollwood Park Bridge	Knollwood Park and Trailway	0.05	N/A	N/A
Knollwood Park Trailway	Knollwood Park	0.14	N/A	N/A
KRVT	Annen Sports Complex Trail and US-12	0.71	N/A	N/A
KRVT	Harrison Ct and Annen Sports Complex	0.51	N/A	N/A
KRVT	Patterson St to Willard St	0.62	N/A	N/A
KRVT	Mosel Ave to E Patterson St	1.09	N/A	N/A
KRVT	Mosel Ave to G Ave Crossover	1.14	N/A	N/A
KRVT	Through Markin Glen Park	0.82	N/A	N/A
KRVT	Along Douglas through Markin Glen and	2.27	N/A	N/A
KRVT	Through Cooper Tree Farm and Co Road	1.02	N/A	N/A

Proposed Bicycle System Summary

<u>Name</u>	<u>End Points</u>	<u>Mile(s)</u>	<u>Classification</u>	<u>Average Daily Traffic Volumes</u>
KRVT	Along D Ave Accross River	0.35	N/A	N/A
KRVT	King Hwy East	2.06	N/A	N/A
KRVT	Kalamazoo Ave and RR	0.12	N/A	N/A
Old Conrail Line	KRVT	0.71	N/A	N/A
Old G.T.W. RR	KRVT	2.80	N/A	N/A
Portage Creek Greenway	Kalamazoo Ave to Kilgore Rd	3.55	N/A	N/A
Portage Creek Trail	Milham Rd to Garden Ln	1.47	N/A	N/A
Portage Creek Trail	Kilgore Rd to Milham Rd	1.46	N/A	N/A
Rail-with-Trail	Park St to KRVT	0.67	N/A	N/A
Service Ln	Mosel Ave to Commerce Ln	0.24	N/A	N/A
Stadium Connector	Jody Ln	0.07	N/A	N/A
W Michigan Ave Extension	Gap through WMU	0.24	N/A	?
West Acadia Creek Corrdior	Lovel St to Academy St	0.17	N/A	N/A
West Arcadia Creek Corridor	Rambling Rd to Howard St	0.67	N/A	N/A
West Arcadia Creek Corridor	Howard St to Lovel St	1.05	N/A	N/A
West Arcadia Creek Corridor	Drake Rd to Rambling Rd	1.49	N/A	N/A
Westnedge Path	Kal-Haven Trail to Eleanor St	0.13	N/A	N/A
Westwood Neighborhood Trail	Kal-haven Trail Extension	0.63	N/A	N/A
WMU Trailway	Howard St Clessen Rd	0.21	N/A	N/A
		<u>37.65</u>		

Wide Curb Lanes

Stadium Dr	Drake Rd to Rambling Rd	1.20	Principal Arterial	>24,000
		<u>1.20</u>		
Grand Total:		118.92		

Pedestrian Task Force Committee



Walkability Checklist

The goal of the pedestrian audit is to assess the quality of the walkable environment in our chosen study areas. Facilities, safety, security, aesthetics, pleasure, motorist behavior, and access to transit all contribute to walkability. Furthermore, a good pedestrian environment should be useable and safe for all including the young, the elderly and those with disabilities.

Getting Started:

Go to your designated starting area. Look over the checklist and the map so that you are familiar with the questions and your route. As you walk, check the problems you encounter for each section of the route. The sections are marked on the map. Note locations of things you would like to see changed right on the map.

How to use the Audit:

- ◇ Note section numbers (from map) on the audit form.
- ◇ For each section, use a check mark to indicate the specific problems encountered.
- ◇ Note comments and mark problem locations on map.
- ◇ Assign an overall rating for each of the six basic questions by circling one option.

Section	Section	Section	Section	Section

1. Is there a place to walk?

- No sidewalks
- Sidewalks are discontinuous
- Sidewalks are blocked
- Sidewalks are in bad shape

• Overall Rating: 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

Walkability Checklist

Section	Section	Section	Section	Section

2. Is it possible to cross the street safely?

- No crosswalks where needed
- No ped signal on traffic light
- Light not timed adequately
- Road/intersection too wide

• **Overall Rating:** 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

3. ADA access, needs of elderly and children are accommodated?

- Curb cuts/ramps not available
- Ramps lead to traffic lane rather than crosswalk
- Width or condition of sidewalk inadequate
- Sidewalk/street boundary is not discernable to blind
- Signal actuators are not accessible
- Timing of lights is inadequate for slower walkers

• **Overall Rating:** 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

4. Is it pleasant and convenient to walk?

- Needs more grass, flowers, trees
- Dirty, litter and trash
- Not well lit
- Too much traffic
- Pedestrian access lacking to key destinations
- Walkways do not access buildings

• **Overall Rating:** 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

5. Do drivers behave well?

- Do not yield to crossing pedestrians
- Block crosswalk with turning movements
- Drive too fast for conditions
- Back up without looking

• **Overall Rating:** 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

6. Is transit access convenient?

- Bus stop not served by sidewalk
- Bus stop not close to destination
- Difficult to get to bus stop
- Bus shelter difficult to use

• **Overall Rating:** 1 awful; 2 many problems; 3 some problems, not too bad; 4 good; 5 very good.

WALK A: PEDESTRIAN AUDIT ISSUES

Crosswalks

- lack of markings

Sidewalks

- poor conditions
- discontinuous
- one side only

ADA Access

- difficult grades
- lack of curb cuts
- badly placed
- wheelchair cannot get through Kalamazoo College campus
- poor boundary indicators for blind

Drivers

- too fast for conditions
- do not yield

Trouble Spot

- Academy/Stadium crossing

WALK B: PEDESTRIAN AUDIT ISSUES

Crosswalks

- lack of markings
- lack of pedestrian signals

Sidewalks

- poor condition

ADA Access

- lack of curb cuts
- poor condition of curb cuts

Lighting

- good for streets
- not good for sidewalks

Transit

- need place to stand

Site

- many empty lots: gardens or parks

WALK C: PEDESTRIAN AUDIT ISSUES

Crosswalks

- lack of markings
- pedestrian signal not working
- very wide intersections

Sidewalks

- lacking in some areas
- discontinuous
- poor condition

ADA Access

- width or condition of sidewalk inadequate
- street boundary not discernible to blind
- signal actuators are not accessible

Litter

- some areas

Drivers

- do not yield
- drive too fast for conditions

Site

- parked car overhang walkway

Trouble Spots

- access to Verburg Park not well defined
- very difficult to cross Riverview/Gull Road intersection

WALK D: PEDESTRIAN AUDIT ISSUES

Crosswalks

- lack of markings

Sidewalks

- poor condition

ADA Access

- sidewalks often impassable for wheelchairs
- curb cuts lacking
- curb cuts in poor condition

Litter

- some areas

Trouble Spot

- Lovers Lane/Portage crossing

WALK E: PEDESTRIAN AUDIT ISSUES

Crosswalks

- pedestrian signal lacking
- very wide intersections

Sidewalks

- lacking
- discontinuous
- poor condition

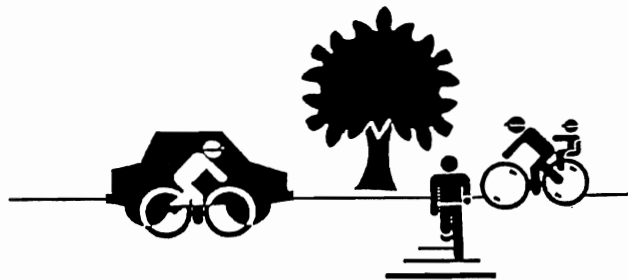
ADA Access

- curb cuts lacking
- curb cuts badly placed

Site

- pedestrian access to key locations lacking

Hazard Reporting Card and Results



THE CITY OF KALAMAZOO NON-MOTORIZED TRANSPORTATION PLAN



The City of Kalamazoo wants to improve conditions for bicycling and walking. Please identify hazards and facility needs on these cards and return them as you leave the meeting.

SAFETY HAZARD

FACILITY NEED

LOCATION (*Street, Cross Streets, Landmarks*):

PROBLEM (*What is it and Why is it a problem?*):

RECOMMENDATION (*What should be done about it?*):

REPORTED BY: Name:

Address: Day Phone:

Safety Hazard/Facility Need Reports				
Reported By	Hazard/Need	Location	Problem	Recommendation
	Hazard/Need	Oakland Drive, Lover's Lane, Kilgore, existing bike lanes	Bike lanes are cluttered with dirt, debris, sticks, leaves, and water	Allow WMU students, or K-PEP juveniles (or other volunteers) to clean these areas
	Hazard	Arcadia Creek as it goes under W. Main St.	Deep Water is a danger-some may drive off the bridge while trying to drive into Burger King Parking lot	
	Hazard	W. Main, Nichols South, (Solon)	Bike Routes too short, business entries unsafe	
	Hazard/ Need	Lovell, South, Academy, between Stadium and downtown	lack of snow removal on sidewalks	personal contacts with business owners, inquire about rent brakes for tenants who shovel snow
	Hazard	South and Park Streets, Civic Auditorium	Pedestrian crossing e to w blocked by large pole, n to s crossing subject to heavy traffic	slow the right turning traffic off park, and warn drivers about pedestrians
	Hazard	Major Arterioles ex: Howard	Antagonistic Drivers (verbal abuse)	Education and awareness
	Need	Parview Ave. E. of Wellington to D&W	No Shoulder for people who like to shop, neighborhood roads must be taken	Install and bike lane/Shoulder all the way on both sides
	Need	All over Kalamazoo	Bus Shelters that have No sidewalk access and located on Curb Lawn	Paved connectors to curb and sidewalk
	Hazard/ Need	Seneca and Stadium Intersection	2-3 fatalities at the intersection	Traffic calming, narrowing of road way, incorporate intersection in off road trail along Arcadia creek
	Hazard	E. Walnut, Mills, Kings Hwy intersection	Motorists pay no attention to rt turn sign on Walnut	Traffic island, signs on far side of mills
	Need	W. Michigan, Dobbin, Weaver, Westmoreland, Farrell	No Curb Cut, difficult to get bikes on/off sidewalk	Add curb cuts
	need	No one particular location	No on/off ramps for bikes on sidewalks	Fit sidewalks with ramps at intersections and build bike trails
	Hazard	Gull Rd. and Parkview	Low hanging wire over sidewalk on traffic island, walk signal not functional	Tighten the wire, fix the signals
	Hazard/Need	Howard St. and W. Michigan and Drake Rd.	No Pedestrian or Bike Lanes	build sidewalks and bike lanes
	Hazard/Need	Whites rd. from S. Westnedge to Oakland	No Sidewalk on the N. Side to link the residential and commercial areas	add a sidewalk
	Hazard	West Michigan at Lovell St. Intersection	Pedestrians don't have enough time to cross 4 traffic lanes without light changing	Longer "walk" time, or add an island for safety
	Hazard	House at 1200 blk of W. Michigan and Phi Sigma House on Stone St.	Gravel from driveway leaking onto sidewalk making it slippery for bikes and walkers	City Ordinance
	Need	Sidewalk in front of SuperCuts east of Lovell Park	Snow piled blocking sidewalk every winter by SuperCuts plows (and Walgreens on W. Main)	City needs to enforce ordinance
	Need	1100-1200-1300 blocks of W. Michigan	Sidewalk is used by bike riders	Need a bike path to and from WMU along W. Michigan
	Hazard	Drake rd. between W. Main, W. Michigan, Stadium, W. Michigan	Numerous cyclists & pedestrians use the road or a curved path next to Drake	4 foot wide asphalt path
	Need	Amtrak barrier, Stadium Dr. between Drake and Howard	No North South crossing of RR tracks near Stadium between Drake and Howard for bicycles	Add a bridge, tunnel, or grade crossing with path access across from Rambling Rd. for bikes and pedestrians

	Need/Hazard	Intersection of Chevy Chase and Waite	Autos go through the stop sign on Chevy Chase 1/2 way into intersection-no clear crossing for bikes or pedestrians.	install either a Ped X-ing sign, a yield sign or a 3 way stop.
	Need	Oakland Dr. Parkview to Kilgore	Poorly maintained and discontinuous shoulders	Repair and mark to shoulder lanes
	Hazard	Howard St. from Stadium to W. Michigan	Heavy traffic, no bike lanes, no clearly marked crossing lanes, no clear detour around traffic	Make an off-street bike path and create clear crossing lanes
	Hazard	All approaches to Parkview, Oakland, White Rd. intersections	No clearly marked bike lanes, no continuous shoulders, broken pavement on shoulders	Mark the shoulder areas, provide bike lanes, and center turn lanes
	Need	Virtually all shopping centers and Mini-malls	No provision for pedestrians and bikes	bike racks and paths and clearly marked crossings
	Need	Oakland south of Parkview to city line	Lack of paved, designated shoulder	pave shoulder and designate a bike lane
	Need	Kilgore between Westnedge and Oakland	Lack of paved shoulder. speed limit needs to be lower	Repave shoulders, and designate bike lane. Lower speed limit by 5mph
	Need	Bronson and White Rd. Intersection	No pedestrian signal at very busy intersection	Put in a walk/don't walk signal
	Hazard	Numerous	Potholes, especially at major intersections-danger to walkers and joggers	Fix the potholes
	Need	Lovers Lane across from Milham Park	Sand, sticks, dead animals on bike area. Poorly marked bike lane	Street sweepers sweep the bike lane, make bike lane with diamonds
	Need/Hazard	Corner of South and Park by Civic Theater	Utility pole obstructs view of oncoming traffic on park	Reposition pole
	Need	South st. E of Westnedge on N side of the Street	Traffic light is out	
	Hazard	Academy, Lovell and South intersections with Stadium, and Oakland/Stadium merger into W. Michigan	No Pedestrian Crossing	Create a safe passage for pedestrians and bicyclists
	Need	Spring Valley Park	Unfriendly for families	Limit or ban on motorized traffic in park
	Hazard	Drake North of Maple Hill Mall to Ravine	Shoulder is gravel and dirt, so bicyclists must ride in traffic or on gravel shoulder.	Widen the road so bicyclists can ride along side the road

Youth Input

As the kick-off event for the Non-Motorized Transportation Planning effort, seventy students from Milwood Elementary provided City Staff and the project consultants with their opinions of bicycling and walking conditions during a half-day Kid's Planning Charrette on November 14th, 1997. Participating 5th and 6th Grade students were first introduced to the concept of a "charrette" — a French term for the cart used to collect student drawings during intense design competitions of the Beaux Arts School in 19th Century Paris.

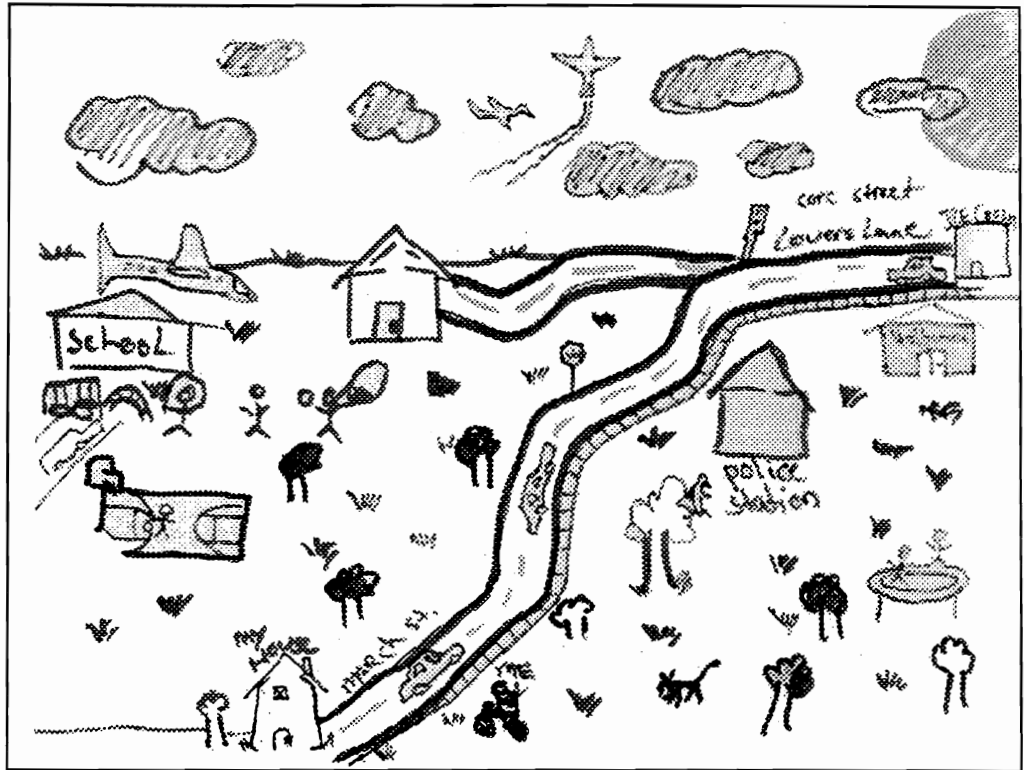
With the stage set for a similar intense day of problem solving, the students — who became "Planners for a Day" — began to examine how they use various forms of transportation to get to different destinations within the community. Each student was assigned a destination and told to draw a picture of how they get there. Trips made by bus, car, bike and foot were all depicted.

As illustrated by the two drawings contained on the following page, the scope of the drawings and the level of detail varied greatly by transportation mode. In general, in the non-motorized trips the sun was shining, trees were green, and there were lots of people and little details. The kids' drawings of auto trips tended to show more streets, parking lots, lots of buildings, and lots of cars.

What Kids Think The Problems Are....	
85%	Drivers drive too fast.
74%	No sidewalks or pathways Difficult to use wheelchairs/strollers Drivers pass bicyclists going too fast.
70%	Gaps in the sidewalk system
59%	Too much traffic. Drivers speed up at intersections.
56%	Heavy traffic leaves no place to bike
52%	Streets too narrow for bicyclists
44%	Walks blocked by poles/dumpsters. Drivers don't look when backing out of driveways. Intersections too wide to cross easily Parked vehicles block views
41%	Street is dirty, noisy or smelly Trees, bushes or plants block views.
37%	Drivers drive too close to cyclists Street needs grass, flowers or trees Bicycle hazards in the street

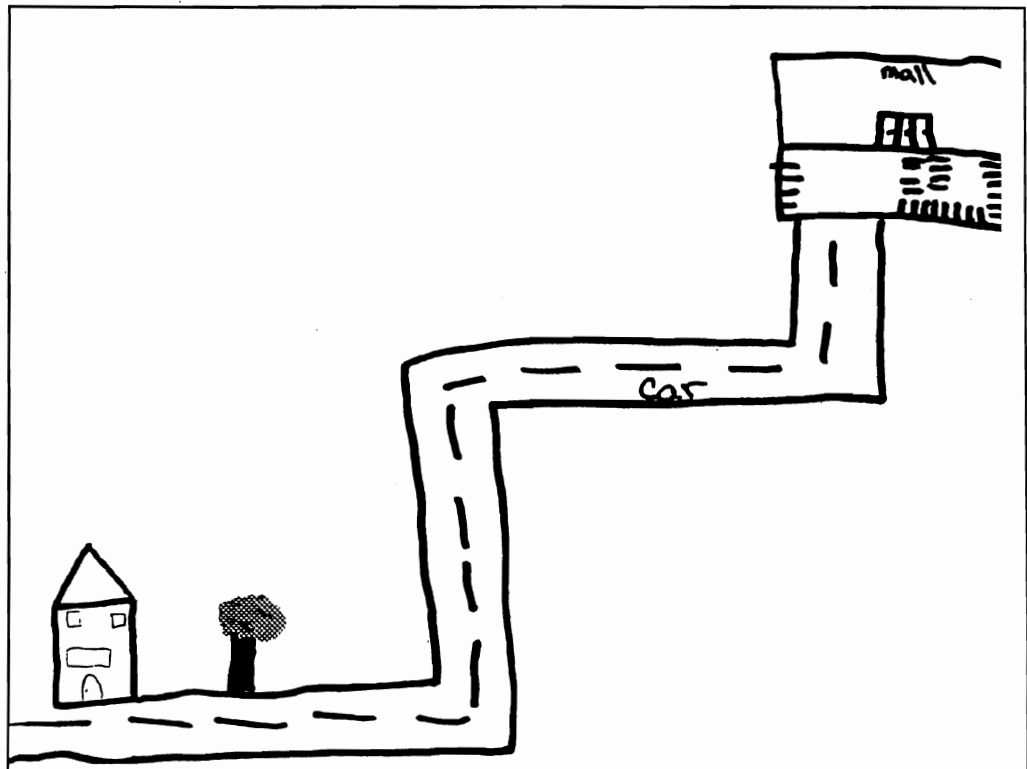
Trip Purpose:
To Get Ice Cream

**Choice of:
Transportation**
Bicycle



Trip Purpose:
To Go Shopping

**Choice of
Transportation:**
Car



A second activity of the charrette involved having each child locate their home on a map of Kalamazoo, and identifying which transportation mode they use to get to school — bus, car, bike or walk. Findings of this activity resulted in a clustering of biking and walking trips originating from houses that were within 1.5 miles from the school. Distance was thus determined to be a key factor in determining choice of transportation mode. Bad weather and oversleeping/running late were two other reasons why it's easier to take the bus or have Mom or Dad drive the kids to school.

Walking Audits

Armed with a checklist of items to evaluate (a copy of which is contained at the end of this memo), the students then moved outside in seven groups to conduct walking audits of the area around Milwood Elementary School. Each group was asked to think about travel needs for persons on foot, on bike, in a wheelchair and/or pushing a baby stroller.

The walks proved to be both fun and educational as the students attempted to overcome some of the existing obstacles to pedestrian travel in commercial and residential neighborhoods around the school. The audit checklists that were turned in and tallied yield some interesting perceptions on what is needed to improve the bicycling and walking environment (see page 1). Of those problems reported most frequently by the students, six are a direct result of driver behavior, and another six may be corrected by changes in policies or maintenance practices. Others require minor modifications to the transportation infrastructure.

Each group of students was asked to stop and evaluate five specific areas along their designated route, which included two residential neighborhood stops, two commercial development stops, and an intersection evaluation. Their findings are summarized following.

Residential Areas

The students looked at conditions along St. Mary's Street, Foley Street, Lovers Lane, Reycraft Drive and Pasadena Street. They were asked to respond to a variety of questions at each stop. Interestingly, a lot of similarities were found between those qualities that make a neighborhood good for biking and walking, and those which make a neighborhood a nice place to live.

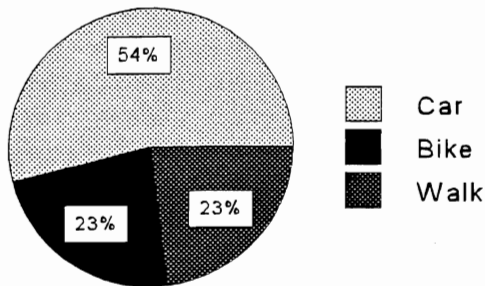
What makes this a nice place to....	Bike?	Walk?	Live?
	<ul style="list-style-type: none"> ◆ quiet roads ◆ smooth roads ◆ no traffic 	<ul style="list-style-type: none"> ◆ sidewalks on both sides of street ◆ stop signs/stop lights ◆ things to see ◆ not that many cars ◆ nice trees ◆ school crossing guard 	<ul style="list-style-type: none"> ◆ trees ◆ nice houses ◆ sidewalks ◆ speed limits ◆ close to stores ◆ people
What makes this a difficult place to...	Bike?	Walk?	Live?
	<ul style="list-style-type: none"> ◆ roads are bumpy ◆ cars go too fast ◆ piles of leaves/messy ◆ not enough sidewalks ◆ cars parked in street ◆ can be very icy ◆ no bike path/bike lanes ◆ sidewalks need handicap ramps 	<ul style="list-style-type: none"> ◆ no sidewalks ◆ sidewalks too narrow ◆ tree branches/snow/leaf piles in the way ◆ sidewalks are broken ◆ too many cars ◆ no crosswalks ◆ no sidewalk ramps ◆ a lot of bike riders on sidewalks 	<ul style="list-style-type: none"> ◆ cars going too fast

Commercial Streets

For a commercial area, the student groups evaluated development north and west of Cork Lane Shopping Center, along both sides of Portage Street and Cork Street. Along the way, they were asked how they felt walking through the area. "Non-safe; stupid, sloppy and smelly; OK; crowded; grumpy; scared I might get hit; inconvenienced" are terms that summarized their feelings.

If you were to rent a movie at Hollywood Video or get ice cream at Dairy Queen....

Would you want to walk, bike or ride in a car?



Why walk....

- ♦ I live close by
- ♦ No where to lock up my bike

Why bike....

- ♦ It's easy
- ♦ It's funner and faster than walking

Why go in a car....

- ♦ Not safe any other ways
- ♦ There's not enough sidewalks
- ♦ Very busy street / too many cars
- ♦ I don't want to get run over

When asked what types of changes would make them want to walk along these streets, their answers fell into three broad groups:

Sidewalks should be wider, level and of better quality, without all of the slopes and potholes, and should be continuous without gaps in the system.

Roads need to be safer, with "car control" and lower speed limits.

Amenities were important for both safety and aesthetic reasons. Included in the wish list were more crosswalks and pedestrian crossing lights, bus shelters, plants, signs, and more space between the street and sidewalk. "Plant a lot of trees" was the most popular request, with several students clarifying that shade was needed in the summertime.

The Shopping Center

Many pedestrians were shopping at the stores of Cork Lane Shopping Center as the kids did their evaluations. Most were determined to be coming from their cars in the parking lot, with some walking in from other areas. The pedestrians have a large sidewalk by the street, but have harder time walking within the parking lot because there are too many cars. Overall, the shopping center was thought of as a good place to walk, mainly because the people are friendly.

For bicyclists, lack of a place to park a bike was an issue. Some options included leaning bikes along the building, but it was decided that this was a bad idea because the bikes could get stolen. Bikes could be locked up to metal poles and railings, but then the cars could run into you. All in all, it was decided that there is no good place to park; bicycle racks are needed, especially in front of Hardings.

Intersections

The crossing of Portage Street at Sheridan proved most difficult. Only 25% of the students crossing at this location said that they felt safe. Most reported "nothing" as what they liked about this intersection. The list of don't likes included noise and exhaust, drivers who drive too fast and don't stop for pedestrians, no crosswalks, no pedestrian light, too many cars, and just plain too confusing to get across.

On Cork Street, the intersections of Portage Street and Lovers Lane were evaluated. Several good items were noted, including street signs, stop lights located close to stores, trees, walk/don't walk lights, handicap access ramps, and white crosswalk lines. Things to be improved upon included cars driving too fast, cars rushing across and running lights, smelly/polluted, no buttons for pedestrians to push at some of the lights, not a lot of time to cross, have to stand close to the road, have to walk through standing water in the gutters, painted lines are worn off, snow not shoveled, bushes/poles/obstructions on the sidewalk, and cable barriers/gates on sidewalk so have to go way around the intersection.

The Kid's Report Card

Following the field trip, the student groups reconvened to discuss their findings and develop a 'Kid's Report Card' (a copy of which is attached) designed to be used to grade other streets within the community on how well they accommodate bicyclists and pedestrians. Reversing roles, the kids decided what 'subjects' that they felt will be most important for creating places that are inviting to non-motorized users, and then proceeded to 'grade' adults' work in accommodating bicyclists and pedestrians within the corridors that they visited on the walking audits. As a follow-up activity, teachers were encouraged to send the report card home so that students could go on a family walk and grade their neighborhood.

Kid's

Kalamazoo Report Card

Grading Streets for Bicycling and Walking Conditions

Grader's Name _____

Address _____

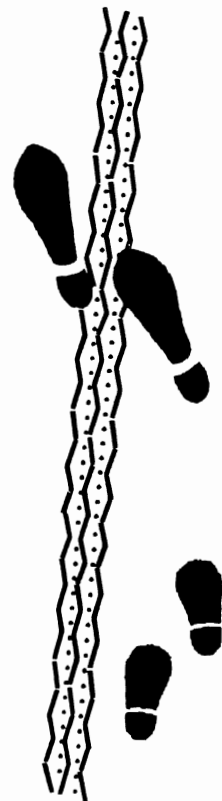
Return to:

The City of Kalamazoo, Public Services Dept.
415 Stockbridge Ave., Kalamazoo, MI 49001

On November 14, 1997, seventy Milwood Elementary students developed this report card as part of a Kid's Planning Charrette for Kalamazoo's Non-Motorized Transportation Plan. Based upon what they felt were the most important "subjects" to be evaluated, please assign a letter grade to streets in your neighborhood for their walkability and bicycle friendliness.

Subjects

		Street Name				
Walking:	Streets Have Sidewalks					
	Sidewalks Are Not "Messed Up" with Dents, Holes, etc.					
	Drivers Stop for Pedestrians					
	Sidewalk Curbs Are Not "Steep" / Are Good for Wheelchairs					
	Traffic Does Not Speed					
	Walk Lights Are Long Enough To Get Across the Street					
Bicycling:	Cars Don't Drive Too Close To Bikes / Streets Are Not Dangerous					
	There are Bicycle Racks so Bikes Won't Get Stolen					
	No Poles with Nails or Other Hazards To Run Into					
	Streets Have Bike Lanes					
	There's No "Junk" in the Streets					
	Streets Have Curb Cuts to Ride on Sidewalks					
There Are Trees along the Street						
OVERALL LETTER GRADE:						



Check It Out

Taking a Walk in Your Neighborhood

This checklist is designed to help you evaluate conditions for bicycling and walking. Read over the list before you begin your walk to give you an idea of what to look for. As you go, note details of what you observe.

Do you have a place to walk?



yes

I see these
problems:

- No sidewalks or pathways
- Gaps in sidewalk system
- Sidewalks blocked by poles, trash, dumpsters, etc.
- Cars too close to sidewalk space
- Difficult to use wheelchairs and strollers
- Something else? _____

Do you have a place to bike?



yes

I see these
problems:

- Heavy traffic
- Cars drive too fast
- Streets are too narrow--no room for bicyclists
- Hazards in the street
- No place to park bikes at destinations
- Something else? _____

Is it pleasant to walk and bike here?



yes

I see these
problems:

- Needs more grass, flowers, or trees
- Too much traffic
- Scary dogs
- Scary people
- Dirty, noisy, or smelly
- Something else? _____

Is it easy to cross streets?



yes

I see these
problems:

- Road is too wide
- Traffic lights make pedestrians wait too long
- Bicyclists cannot make light turn green
- Not enough traffic lights
- Parked vehicles block the view
- Trees, bushes, or plants block the view
- Something else? _____

How do drivers behave?



yes

I see these
problems:

- Drive too close to bicyclists
- Back out of driveways without looking
- Do not yield to pedestrians crossing streets
- Make turns into pedestrians crossing streets
- Drive too fast
- At intersections drivers speed up to make green lights, race through yellow lights, or run red lights
- Something else? _____

What do you think?

Name _____

Address _____

Streets Evaluated _____

Bike-Friendly Roadways

“Bicycle facility planning is commonly thought of as the effort undertaken to develop a separate bikeway system composed completely of bicycle paths and lanes all interconnected and spaced closely enough to satisfy all the travel needs of bicyclists. In fact, such systems can be unnecessarily expensive and do not provide for the vast majority of bicycle travel. Existing highways, often with relatively inexpensive improvements, must serve as the base system to provide for the travel needs of bicyclists.”

— 1991 AASHTO Guide for the Development of Bicycle Facilities

A system of separated, off-road trailways that connect all destinations within a community may be an ideal vision for bicycle travel. However, in Kalamazoo, like most communities, the reality is that there is not enough undeveloped urban space or public funds available to create such a system.

Key trailways are being proposed along rail lines, the Kalamazoo River and Portage Creek; however, the remainder of Kalamazoo’s proposed bicycle system routes on area roadways. Thus the non-motorized plan focuses on re-creating streets and roadways that are “friendly” to non-motorized users.

What Makes A Great Street?

Close your eyes and imagine riding on the ideal bicycling route....

not too many cars, which are traveling at slow speeds, driven by people who are courteous, on streets that have plenty of room for all users, with minimal debris and potholes, “greened” with trees and plants, which provide convenient and direct connections to destinations, in a community that places value on such quality-of-life features.

Now, open your eyes and look out the nearest window....

What happened?

How did our community become auto-dominated and bicycle-unfriendly? Can anything be done to create great bicycling streets (which are also great streets to skate on, walk along and live on!) or should there be a giant community-wide bike sale?

There is no single, easy answer. But fortunately, there are several solutions which, when implemented together, can turn Kalamazoo into a bike-friendly city.

However, since the many solutions are all interrelated, the options can seem overwhelming and confusing. Unlike railway planning — where the goal is to construct a path from Point A with Point B, maybe with a link to Point C along the way — Non-Motorized Transportation Planning takes a comprehensive approach to system-wide solutions. And not all of the solutions involve pavement, paint, or posting signs.

So where does one start?

We began with the visioning process that was held in December 1996 to determine what kinds of things would make Kalamazoo a non-motorized transportation friendly community. The ideas that were generated in the small group brainstorming sessions can be grouped into seven factors that must be addressed in order to improve bicyclists' safety, mobility and comfort levels when using area streets and roadways.



1. The Number of Cars

Cars are remarkable machines that have transformed our American society, but 10,000-pound pieces of machinery are intimidating — especially when it's just you, your bike, and your helmet against them.

Research has shown that a cyclist's stress level increases with an increase in curb lane traffic volumes. The riding conditions created when a bicyclist is passed by a car every 8 seconds (volumes of ≥ 450 vehicles per hour per lane, as on many arterial streets) are significantly different than when passed only once every minute or two (≤ 50 vehicles per lane per hour, as on a typical residential street).

Thus, the amount of traffic that a bicyclist is willing to tolerate is a major factor in deciding where to ride, or whether to ride at all. Most cyclists will naturally select routes with low to moderate traffic volumes, for all but short stretches that are absolutely necessary to reach desired destinations. Commuter cyclists are more tolerant of traffic as they become experienced riding on those roadways that permit the fastest work commute. Inexperienced cyclists may limit their riding strictly to trails and sidewalks due to the stress encountered when operating near motor vehicles, not knowing that they are actually at greater risk of being hit by a car when riding off of sidewalks into intersections.

Stress caused from the number of passing vehicles does not mean that bicycle planning should ignore streets with higher traffic volumes, but rather, must focus on mitigating measures to improve on-road bicycling conditions in these corridors of greatest need.

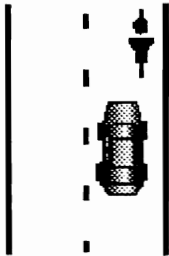


2. The Speed Those Cars are Traveling

Cars and bicycles can effectively share space when they are traveling at similar speeds. A bicyclist's comfort level and perceived safety decrease when motor vehicles travel at higher speeds and the severity of a potential collision increases.

Enforcement of existing and/or a potential lowering of posted speed limits is thus critical.

In recent years, there has been growing interest nationwide in traffic calming, or the ability to slow motor vehicle traffic through facility design rather than posting signs and issuing citations. Techniques such as landscaped traffic circles, chicanes, traffic diverters, speed tables, curb bulb-outs, use of colored pavements, and an acceptance of "skinny streets" can force drivers to travel slower while simultaneously improving the aesthetics of a neighborhood or roadway corridor. Streets that have been calmed to motor vehicle traffic while providing for through bicycle travel attract heavy bicycle use and are often referred to as bicycle boulevards.



3. The Amount of Space Available to Share with the Cars

This is where the "bicycle facility" options come in, since the physical space is what most people think of when they think of a Bicycle Transportation Plan. As discussed above, if there are relatively few cars traveling at slow to moderate speeds, no additional space is required; bicyclists and motor vehicles can effectively share 11-foot travel lanes. Such shared roadways may be designated as bicycle routes, but one must remember that all streets are bicycling streets regardless of whether or not there is a sign posted to that effect, or if there are traffic calming measures implemented along the route.

Where volumes and speeds are higher, wide curb lanes (right-hand lanes that are 13 to 14 feet wide to be shared by cars and bikes) make for safer passing and improved motor vehicle capacity. Designated, striped bicycle lanes offer even more space as the combined right-hand lane plus bike lane width is 15 to 16 feet. Bicycle lanes have the added benefit of acting as a "host facility" and thus encourage additional bicycle use on streets striped with bike lanes.

On rural cross-sections, 4-foot paved shoulders are recommended, which combine with 11-foot travel lanes for 15 feet of space. On heavily traveled rural roadways where traffic volumes and speeds are high, wider shoulders are recommended to accommodate bicycles.

As a matter of policy, all new roadways and major retrofit projects should provide adequate roadway space for bicyclists. However, additional paving and right-of-way acquisition isn't always necessary for bicycle accommodation. Reexamining roadway space allocations for scramble turn lanes and on-street parking can often cost-effectively provide additional space, as can narrowing center lanes to widen curb lanes. Likewise, restriping rural roadways from 12-foot lanes with 3-foot shoulders to 11-foot lanes with 4-foot shoulders is recommended.



4. How Well that Space is Maintained

Providing bicycle facilities or extra roadway space without a commitment to long-term maintenance is just a token gesture at meeting bicyclist transportation needs. Maintaining existing streets and roadways to safely accommodate bicycle travel is the most efficient expenditure of public funds and benefits the greatest number of bicyclists.

Maintenance needs occur at three levels. The first involves designing facilities for minimal long-term upkeep. This includes selecting proper materials for lane striping and pavement symbols, placement of pavement markings where they are least likely to be worn off by vehicular tire treads, and selecting roadway cross-sections and construction materials appropriate to the micro-environment being traversed.

The second level includes routine maintenance needs. This involves policy changes whereby designated bicycle routes and streets with bicycle lanes are put on a regular and frequent sweeping and snow plowing schedule that focuses on the right edge or shoulder of the roadway. Similarly, all off-road paths must have an agency responsible for routine sweeping and snow plowing, as well as routine vegetative pruning and shoulder mowing.

Finally, preventative maintenance and repair is required for longevity. All existing bikeways should be inspected by local city staff once per year to identify areas in need of major improvements, and all future roadway improvement projects should be reviewed to ensure no new hazards to bicycle travel are created. Major repairs such as fixing potholes and drainage problems for both on- and off-road facilities need to be programmed into the Capital Improvements Program. Establishing a "Bicycle Spot Improvement Program" to allow users to report problem areas is also encouraged.

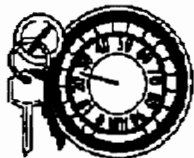


5. The Directness and Convenience of the Route

Even a well maintained route will not be frequently used by bicyclists if it does not provide convenient and direct connections to destinations. Winding, out-of-the-way routes are fine for recreational outings, but since the goal of this plan is to shift a portion of Kalamazoo's around-town automobile trips to bicycle trips, the selected bicycling routes need to be direct so that a utilitarian bike trip can be time-competitive with an auto trip. For this reason, bicyclists should not be routed in corridors with numerous stop signs or unsignalized arterial street crossings.

The analysis of bicycle/motor vehicle crashes in Kalamazoo indicates that cyclists currently ride on major arterial streets — those routes that offer efficiency, directness, convenience and linkage to destinations. Thus the City needs to focus on making these routes safer for bicyclist use.

A common request from citizen input gathered during this planning process is for "bike routes that go somewhere." Pieces of designated bikeways scattered here and there throughout a community are frustrating for cyclists who begin along a route, only to find that they are suddenly dumped into less desirable riding conditions without any warning. The City must thus make an attempt to develop a connected system of bikeways. While such system is under development, it is advisable to use "Share the Road" warning signs on unimproved segments to alert bicyclists and motor vehicle operators that they must remember to be especially courteous to each other in these areas.



6. The Attitudes of Drivers

Since designated bicycle facilities cannot be constructed in every street corridor, motorists and bicyclists must learn to share the road. This fact was brought up repeatedly at the December 1996 visioning session, the November 1997 Kid's Planning Charrette, and ongoing project meetings of the Bicycle Task Force and Plan Advisory Committee.

Motorists, as well as bicyclists, need to be educated on cyclists' rights and responsibilities. Simultaneously needed is better enforcement of traffic laws and concepts for violators. Motorist infractions of particular problem include speeding, failing to yield when turning, running stop signs and traffic signals, failing to share the road with bicyclists, and exhibiting aggressive behavior and road rage toward non-motorized users.



7. The Attitude of the Community

In addition to modifying individual behavior, the community consciousness of non-motorized transportation options and facilities must be raised. By changing the way transportation and land use decisions are made from solely focusing on the needs of automobiles, the City of Kalamazoo and the surrounding community can increase the efficiency of transportation investments. Bicyclists and pedestrians stand to benefit, but trade offs will need to be made. Motor vehicle operators may need to take an extra minute or two to drive across town, but can then make the next trip by bike with the confidence that other drivers will also yield to them when roles are reversed.

Kalamazoo needs to recognize and embrace those changes that improve the bicycling (and living) environment.... slower traffic, choices of how to get from here to there, options for outdoor recreation, catalysts for downtown revitalization, urban greening through streetscape improvements, independence for children, mobility for the elderly, and opportunities to regularly meet neighbors on the street.

Only after Kalamazoo becomes a city that places value on such quality-of-life features, can it truly call itself a non-motorized transportation friendly community.

In Summary

- 1) The goal is to make every street a bicycling street, because people want access to the same destinations whether they arrive by bike or by car.
- 2) The combination of motor vehicle speeds, traffic volumes, and available roadway space are the primary factors impacting bicycle use and safety on streets and roadways.
- 3) These factors combine to create different treatments for different types of streets -- all of which are integral components to a successful bicycle transportation system. For example, traffic calming works well in residential areas, while the added width of bicycle lanes is most needed on busier streets. Both treatments combine to encourage more bicycling, thus less dependence on the automobile and fewer cars on the streets.
- 4) The on-street bicycling system should be supplemented with off-road trailways to provide a variety of riding experiences. Such trailways are recommended for development in linear open space corridors not served by vehicular transportation.
- 5) There needs to be an attitudinal shift on the part of residents of the community in order for non-motorized transportation to be an effective, enjoyable, and viable option for getting around town. Individual drivers need to modify their behavior to improve safety for all road users. Decision-makers and the voting public need to recognize the trade-offs between a community designed for cars and a community designed for people who, at various times, are in their cars, on foot or on bike.

Part D: Private Funding Sources

American Greenways Dupont Awards Program

Administered by the Conservation Fund, in partnership with Dupont, and the National Geographic Society, this program provides grants of \$500 to \$2,500 to local greenways projects. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, hosting conferences, developing brochures, producing interpretive displays and audio-visual material, incorporating land trusts, building trail and trail facilities or other creative projects. Grants can't be used for academic research, general institutional support, lobbying or political activities. The submission period for grant applications is September 1st to December 31st.

For further information contact:

- ▶ The Conservation Fund
Amy Gibson, Greenways Coordinator
1800 North Kent Street, Suite 1120, Arlington, VA 22209
phone: 703-525-6300 fax: 703-525-4610
<http://www.conservationfund.org/conservation/amgreen/index.html>

DALMAC Fund

Established in 1975 to promote bicycling in Michigan, the DALMAC FUND is administered by the Tri-County Bicycle Association and supported by proceeds from the DALMAC (Dick Allen Lansing to Mackinaw) bicycle tour. The Fund has supported safety and education programs, bicycle trail development, statewide bicycle organizations and route mapping projects. Since its inception, the Fund has provided over \$240,000 to seventeen organizations. Applications must be submitted between January 1st and April 1st. Grants are awarded between June and August.

For further information contact:

- ▶ Tom Hardenbergh, Chair DALMAC Fund Committee
P.O. Box 22146, Lansing, MI 48909-2146
phone: 517-485-7818
<http://www.voyager.net/TCBA/dframe.html>

Design Arts Program

The National Endowment for the Arts provides grants to non-profit organizations for specific projects. Due to major funding cuts, grants that had been available to promote excellence in urban design, historic preservation, planning, architecture, landscape architecture and other community improvement activities, while not impossible to get, are very unlikely.

For further information contact:

- ▶ Design Arts Program
National Endowment for the Arts
1100 Pennsylvania Avenue, NW, Washington, DC 20506
phone: 202-682-5437
<http://arts.endow.gov/>

Recreation Improvement Fund

This program, administered by the Forest Management Division of the Michigan Department of Natural Resources, makes some \$500,000 per year available for the operation, maintenance and development of recreation trails, restoration of lands damaged by off-road vehicles, and inland lake cleanup. There is no open application process and most of the money is used on DNR projects, a DNR Division can sponsor local projects. Projects are evaluated based on the following criteria:

- ▶ special Department initiative;
- ▶ citizen/local government support;
- ▶ contribution to economic development through tourism;
- ▶ provides linkages to parks, natural resources, communities and other major trails;
- ▶ number and variety of uses to be accommodated;
- ▶ provides year-round opportunities; and
- ▶ resolves issues or conflicts.

For further information contact:

- ▶ Hector Chiunti, State Trails Coordinator
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30452, Lansing, MI 48909
phone: 517-373-9483 fax: 517-373-2443
e-mail: fullerm1@state.mi.us
<http://www.dnr.state.mi.us/www/bps/index.htm>

Part C: Local Funding Sources

Transportation Improvements Program (TIP) and Capital Improvements Program (CIP)

Non-motorized improvements, especially located those within road rights-of-ways, are most likely to be funded as incidental parts of larger transportation projects, and thus should qualify for the same transportation funds as the rest of the roadway construction or improvement project.

Parks and Recreation Budgets

Trailway funding can come from the budgets of willing agencies, which may include local and county parks and recreation departments, the HCMA, or the MDNR Parks and Recreation Division.

Millages and Bonds

Local, county, or state millages and bond issues may be passed by voters or governing bodies. A number of Southeast Michigan communities — for example, Ann Arbor, Rochester Hills, Grosse Ile, Novi, and West Bloomfield Township — have millages for park operations, maintenance, development, and land acquisition. This can be one of the most effective approaches for funding a greenway initiative.

Leases

Public greenway corridors can obtain lease revenue from compatible uses, such as buried pipelines or communication lines. There can be one-time payments for acquisition or development or annual payments for operation and maintenance.

Part B: Michigan Funding Sources

Section 10K of Public Act 51 of 1951, as amended

Michigan's transportation law (MCLA 247.660k) reserves 1% of state transportation funds for non-motorized transportation — several million dollars per year. Unfortunately, Section 10K is more of a bookkeeping task for road projects than an effective tool for creating an efficient nonmotorized transportation system.

Any improvement in a road, street, or highway which facilitates nonmotorized transportation by the paving of unpaved road surfaces and shoulders, widening of lanes, or any other appropriate measure is considered a qualified nonmotorized facility for the purposes of this section.

For further information contact:

- ▶ Mike Eberlein, Non-Motorized Coordinator
Bureau of Transportation Planning, Michigan Department of Transportation
425 West Ottawa, P.O. Box 30050, Lansing, MI 48909
phone: 517-335-2823 fax: 517-373-9255
e-mail: eberleinm@mdot.state.mi.us

Michigan Natural Resources Trust Fund

This program, administered by the Budget and Program Support Division of the Michigan Department of Natural Resources, makes some \$20 million (\$25 million in 1997) per year available for acquisition and development of lands and facilities for outdoor recreation and environmental protection. Money for the Fund is dependent on revenue and interest accruing to the Trust Fund in part from oil and gas exploration and sales from state land.

Applications are evaluated on established criteria such as resource protection, water access, and community recreation. At least a 25 percent match on either acquisition or development projects is required from local applicants. Any unit of government, including school districts, or any combination of units in which authority is legally constituted to provide recreation is eligible to apply for funding.

Applications must be postmarked no later than April 1st, and September 1st of each year. The DNR is working to shorten the decision making process from 15 months to eight months from grant application to award and beginning of project. There is no minimum or maximum limits on land acquisition grants, while development grants have a \$15,000 minimum and a \$500,000 maximum.

For further information contact:

- ▶ Sharon Edgar
Recreation Grants Section, Budget and Program Support Division
Michigan Department of Natural Resources
P.O. Box 30425, Lansing, MI 48909
phone: 517-241-3100 fax: 517-335-6813
<http://www.dnr.state.mi.us/www/bps/index.htm>

Conservation Reserve Program (CRP)

The Department of Agriculture, through its Agricultural Stabilization and Conservation Service, provides payments to farm owners and operators to place highly erodible or environmentally sensitive cropland into a 10–15 year contract. The participant, in return for annual payments, agrees to implement a conservation plan approved by the local conservation district for converting these sensitive lands to a less intensive use: i.e., cropland must be planted with a vegetated cover that reduces soil erosion, improves water quality, and enhances or establishes wildlife habitat. For further information contact:

- ▶ Kimberly Newmann
Natural Resources Conservation Service
1405 S. Harrison Rd., E. Lansing, MI 48823
phone: 517-337-6701 ext. 1217
<http://www.epa.gov/OWOW/watershed/wacademy/fundcons.html>

Wetlands Reserve Program (WRP)

The Department of Agriculture, through its Agricultural Stabilization and Conservation Service, provides direct payments to private landowners who agree to place sensitive wetlands under permanent easements. This program might be used to permanently protect wetland areas as open space along a greenway corridor. For further information contact:

- ▶ Jim Marshall
Natural Resources Conservation Service
1405 S. Harrison Rd., E. Lansing, MI 48823
phone: 517-337-6701 ext. 1234
<http://www.epa.gov/OWOW/watershed/wacademy/fundwet.html>

Watershed Protection and Flood Prevention (Small Watershed Protection) Grants

The Natural Resources Conservation Service (NRCS) provides funding to state and local agencies or non-profit organizations authorized to carryout, maintain and operate watershed improvements in watersheds of less than 250,000 acres. The NRCS provides financial and technical assistance to eligible projects that improve watershed protection, flood prevention, sedimentation control, public water-based fish and wildlife enhancements and recreation planning. The NRCS provides a 50% local match for public recreation and fish and wildlife purposes; there is no matching requirement for flood prevention projects.

For further information contact:

- ▶ Kimberly Newmann
Natural Resources Conservation Service
1405 S. Harrison Rd., E. Lansing, MI 48823
phone: 517-337-6701 ext. 1217
<http://www.epa.gov/OWOW/watershed/wacademy/fundppc.html>

Directory of Federal Funding Sources:

- ▶ *Guide to Federal Funding and Assistance for Rivers, Trails, and Open Space Conservation*, 2nd edition. Prepared by National Center for Recreation and Conservation, National Park Service. April 1996. Lists information regarding some 50 federal funding programs and some 15 federal technical assistance programs that may support non-motorized projects. The most useful, such as the TEA-21 Enhancements Program, are described earlier in this section.

Available from NPS (330) 657-2378.

projects such as resource protection, trails, boardwalks, scenic overlooks, education and/or interpretive displays, restoration of historic coastal structures, and barrier-free retrofitting.

An estimated 40 projects are approved for funding each year, ranging up to \$50,000 of federal funding. Applications are due no later than April 1st. For further information contact:

- ▶ Jim Ribbens, Supervisor Coastal Management Program
Land and Water Management Division, Michigan Dept. of Environmental Quality
P.O. Box 30458, Lansing, MI 48909-7958
phone: 517-373-1950
e-mail: ribbensj@state.mi.us
http://www.deq.state.mi.us/lwm.grt_lakes/czm/czm.html

Non-Point Source Pollution Control Grants

The Surface Water Quality Division's Non-point Source Unit in the Michigan Department of Environmental Quality administers this Environmental Protection Agency Program. Grants are provided to county or local units of government, Cooperative Extension Service agencies, soil conservation districts, regional planning commissions, lake boards and water management districts.

Program priorities are established for each fiscal year. Examples of previous priorities include projects that demonstrated new or innovative technical and institutional approaches, watershed restoration activities, and groundwater protection activities. A project on the Huron River (Washtenaw County) focused on information/education activities targeted toward local governmental units, land use planners, local businesses and large institutional landowners. Activities included expansion of the Adopt-A-Stream program and development of partnerships with local businesses and large institutional landowners.

Since 1988, when the program began, \$9.4 million dollars have been passed through to local communities to fund projects in over 35 watersheds statewide. The deadline for submittal of proposals for FY 1999 grant funding was February 2, 1998. For further information contact:

- ▶ Karol Smith, Non-point Source Unit
Surface Water Quality Division, Michigan Dept. of Environmental Quality
P.O. Box 30458, Lansing, MI 48909-7958
phone: 517-241-7733
e-mail: smithk2@state.mi.us
<http://www.deq.state.mi.us/swq/nps/npshome.htm>

State Wetlands Protection Development Grant Program

This Environmental Protection Agency Program provides grants to States and local governments for developing new or enhancing existing wetlands protection programs. Funding priority is focused on Wetland/Watershed Protection Approach Demonstration Projects and River Corridor and Wetland Restoration Projects. For further information contact:

- ▶ Lori Williams, Wetlands Division
Office of Wetlands, Oceans and Watersheds (4502F), Environmental Protection Agency
401 M Street, SW, Washington, DC 20460
phone: 202-260-5084
- ▶ Sue Elston
EPA, Region V, Chicago, IL 60604
phone: 312-886-6115
<http://www.epa.gov.OWOW/watershed/wacademy/fundwet.html>

Project categories include:

- ▶ local government program development;
- ▶ non-profit program development;
- ▶ demonstration projects;
- ▶ information/education projects; and
- ▶ tree planting.

For further information contact:

- ▶ Cara Boucher, Urban and Community Forester
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30452, Lansing, MI 48909
phone: 517-373-1275
<http://www.dnr.state.mi.us/www/bps/index.htm>

Environmental Protection Agency Demonstration Projects

The EPA's Office of Mobile Sources (OMS), Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) are soliciting proposals from organizations and communities around the country to participate as Demonstration Communities in the "It All Adds Up to Cleaner Air" initiative. The project is designed to educate people about the connections between their transportation choices, traffic congestion, air pollution and public health, and emphasizes that individuals can make a difference by adopting environmentally-sound travel choices. The deadline for the \$25,000 demonstration grant proposals is March 5, 1999. For more information, contact:

- ▶ Susan Bullard
Office of Mobile Sources, Environmental Protection Agency
phone: 202-260-2614

Other Federal Sources (potential greenway funding)

The following programs may be applicable for selected off-road trailway projects that have a larger goal of conserving greenway lands and protecting natural habitats:

Michigan Coastal Management Program

Michigan's Coastal Management Program was developed under the Coastal Zone Management Act (CZMA) and approved in 1978. The program is administered by the Great Lakes Shorelands Section in the Land and Water Management Division of the Michigan Department of Environmental Quality (DEQ). The DEQ receives approximately \$2.4 million per year, roughly one third of which is passed through each year to local communities located on the Great Lakes shoreline for a variety of projects. Michigan's coastal zone boundary generally extends a minimum of 1,000 feet inland from the Ordinary High Water Mark of the Great Lakes and connecting channels, or further to include coastal lakes, river mouths and bays, floodplains, coastal wetlands, designated sand dune areas, public parks, recreation and natural areas, and urban areas.

Section 306 and 306A of the CZMA are the two most common types of grants available through the Coastal Program and require match in an amount equal to the grant. Project selection is competitive and is based on how well each project meets Coastal Program objectives. Section 306 funds are used for planning activities, site design, engineering, feasibility and natural features studies, historic preservation projects, coastal education materials, developing portions of local zoning ordinances, master planning of coastal significance, and waterfront redevelopment studies. Section 306A funds are used for low-cost construction

Land and Water Conservation Fund (LWCF)

This federal program, administered in Michigan by MDNR, once funded the planning, acquisition, and development of land for outdoor recreation.

Established in 1965, money for the fund comes from the sale or lease of non-renewable resources, primarily federal offshore oil and gas leases and surplus federal land sales. In the 30 years since its creation, LWCF has been responsible for the acquisition of nearly seven million acres of park land, open space, and the development of more than 37,000 parks and recreation projects. From playgrounds and ball fields to national historical sites, scenic trails, and nature reserves, LWCF has been the key to providing places for all Americans to recreate, relax, and get outdoors. Until 1980, allocations from the fund closely matched annual revenues.

LWCF is authorized by Congress to receive \$900 million each year. However, since the early 1980's, the funds have nearly been zeroed out. In 1996, LWCF hit an all time low when less than 15% of the fund was used for its intended purpose. At least 40 percent of the funds appropriated must be used for federal purposes in a given year.

A new organization, Americans for Our Heritage and Recreation (AHR), is working to revitalize the Land and Water Conservation Fund. AHR represents environmentalists, park and recreation specialists, advocates for urban and wilderness areas, preservationists of cultural and historic sites, and sporting goods manufacturers. In 1997, AHR and its coalition partners fought to revitalize LWCF, successfully funding the federal side of the program at its highest level in two decades. AHR is currently working to revitalize the state-side grants program.

State-side LWCF funds can generally be used to acquire land, build or repair recreation or park facilities, provide riding and hiking trails, enhance recreational access, and provide wildlife and hunting areas. The LWCF state grant program matches up to 50 percent of the cost of the project, with the balance of project funds paid by states or localities. Fund recipients are limited to state agencies or municipalities. Roughly 40 percent of the funds for the state program are divided equally among the states while the remainder is distributed based on population and other factors.

For further information contact:

- ▶ Jane Danowitz, Executive Director
Americans for Our Heritage and Recreation
900 17th Street, NW, Washington, DC 20006
phone: 202-429-2663 fax: 202-429-3958

- ▶ Bob Anderson, Recreation Assistance Program
National Park Service, Midwest Support Office
1709 Jackson Street, Omaha, NE 68102
phone: 402-221-3358
<http://www.nps.gov/crweb1/lwcf/lwcf.htm>

Urban and Community Forestry Program

The Forest Management Division of the Michigan Department of Natural Resources (DNR) administers this program. The Department provides approximately \$130,000 for grants annually from this Department of Agriculture program. Applicants must be local units of government or non-profit organizations. Grants up to \$20,000 are awarded to projects that develop or enhance urban and community forestry resources in Michigan.

- ▶ Katherine Shriver, Director
The National Transportation Enhancement Clearinghouse
1100 Seventeenth St., NW, 10th Floor, Washington, DC 20036
phone: 888-388-6832 fax: 202-463-0875

National Recreational Trails Funding Program

The Recreational Trails Program provides funds for both motorized and non-motorized trail development. The Act provides for the transfer from the Highway Trust Fund of federal gasoline taxes paid on non-highway recreation fuel for off-road vehicles and camping equipment. The program is continued in TEA-21 with annual funding beginning at \$30 million for FY 1998, \$40 million for FY 1999 and rising to \$50 million per year for the remaining years of the bill.

States can grant these funds to private individuals, organizations, city and county governments, and other government entities. Grant recipients are required to provide 20% of the total project cost. In Michigan, the Department of Natural Resources (MDNR) administers the program. There is no open application process and most of the money is used on DNR projects, a DNR Division can sponsor local projects. Permissible uses of the fund include:

- ▶ state administrative costs;
- ▶ environmental and safety education programs;
- ▶ development of urban trail linkages;
- ▶ maintenance of existing trails;
- ▶ restoration of areas damaged by trail use;
- ▶ trail facilities development;
- ▶ provision of access for people with disabilities;
- ▶ acquisition of easements; and
- ▶ fee simple title for property and construction of new trails.

For further information contact:

- ▶ Hector Chiunti, State Trails Coordinator
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30452, Lansing, MI 48909
phone: 517-373-9483 fax: 517-373-2443
e-mail: fullerm1@state.mi.us

Scenic Byways Program

TEA-21 authorizes the use of federal funds to identify and designate federal, state, and local scenic byways. These byways, typically back roads, are intended to showcase areas of great beauty and rich history. Funds may be spent on the construction of facilities for pedestrians and bicyclists along these designated highways. Twenty roads (none in Michigan) have been recognized under this program. TEA-21 authorized a six-year total of \$148 million for this program.

For further information contact:

- ▶ Scenic America
21 Dupont Circle, NW, Washington, DC 20036
phone: 202-833-4300 fax: 202-833-4304
e-mail: scenica@soho.ios.com
<http://www.transact.org/sa/scenic.htm>

Several new activities and categories have become eligible for Enhancements funding in TEA-21. Two new categories were added to the existing ten categories as eligible enhancements activities: the establishment of transportation museums and the provision of safety and educational activities for pedestrians and bicyclists. Modifications to existing categories included making the development of tourist and welcome centers an eligible activity under category 3, Scenic or Historic Highway Programs, and language enlarging the scope of category 10, Mitigation of Highway Runoff, to include projects that reduce vehicle-caused wildlife mortality while maintaining habitat connectivity for threatened or endangered species. Finally, new language was adopted which encourages states to utilize youth conservation or service corps in contracts or cooperative agreements to perform work involved with developing Enhancements projects, a situation which is already occurring on many rail-trails across the country.

The 10 continuing eligible activities are:

- ▶ building facilities for bicycles and pedestrians;
- ▶ acquiring scenic or historic sites;
- ▶ sponsoring scenic or historic highway programs;
- ▶ preserving historic sites;
- ▶ roadside beautification efforts, such as landscaping;
- ▶ rehabilitating historic buildings or facilities to serve a transportation need;
- ▶ converting abandoned railroad corridors into bicycle and pedestrian paths;
- ▶ performing archeological research, such as excavations;
- ▶ mitigating water pollution caused by road runoff; and
- ▶ removing outdoor advertising signs.

The Michigan Department of Transportation is responsible for administering the funds. According to initial estimates, Michigan will receive approximately \$135,514,800 for the Transportation Enhancements program over the six year authorization period of TEA-21.

Anyone can sponsor a project, but they must apply through an eligible applicant. Eligible applicants include all governmental entities that receive fuel tax revenues. These include city and village road agencies, all county road commissions, public transit agencies, the Michigan Department of Transportation, and the Michigan Department of Natural Resources for rail/bike path projects.

Applications are due in early April or at the end of September, and the project sponsor must pay at least 20 percent of a project's cost. The average match in Michigan has been more than 30 percent. Project amounts have ranged from a few thousand dollars to one-million dollars.

For further information contact:

- ▶ Paul McAllister, Enhancement Program Manager
Bureau of Transportation Planning, Michigan Department of Transportation
425 West Ottawa, P.O. Box 30050, Lansing, MI 48909
phone: 517-335-2622 fax: 517-373-9255
e-mail: mcallisterp@mdot.state.mi.us
<http://www.mdot.state.mi.us/business/enhance/enhance.htm>

- ▶ Mike Eberlein, Non-Motorized Coordinator
Bureau of Transportation Planning, Michigan Department of Transportation
425 West Ottawa, P.O. Box 30050, Lansing, MI 48909
phone: 517-335-2823 fax: 517-373-9255
e-mail: eberleinm@mdot.state.mi.us

Potential Funding Sources

The following governmental and private sources may be considered for assistance in funding non-motorized transportation facilities in the Kalamazoo area. Few will cover 100 percent of projects costs. Most funding programs, both public and private, like to see wide-spread support for and funding from other sectors of the community. Matching funds are thus often requested, and many times favor is given to those applicants who demonstrate community financial support above and beyond the minimum levels requested.

Part A: Federal Funding Sources

The Transportation Equity Act for the 21st Century (TEA-21)

Congress passed TEA-21, the ISTEA reauthorization bill, on May 22, 1998. TEA-21, the Transportation Equity Act for the 21st Century, is the largest public works bill in America's history and significantly increases funding for every type of transportation activity including the development of trails and greenways.

TEA-21 includes several sections that can be used for the creation of trails and greenways. The following information provides an overview of these funding opportunities. However, please note that at the time of the printing of this report final details about specific program funding levels were still being researched. Transportation Enhancement Program.

TEA-21 reauthorizes the Enhancements program with significantly increased funding levels and only in or changes to the eligible program activities. Initial estimates by the Federal Highway Administration indicate that annual apportionments for the Transportation Enhancements Program will average \$630 million, a 40% increase over ISTEA.

16. That this resolution shall be in full force and effect from and after its passage as provided by law.

Betty M. Cheever, Mayor

Passed: October 19, 1992
Attest: Barbara Waldner, Village Clerk

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MAJOR CONDITIONS

- a. The proximity to grade (K-6) schools.
- b. The measured vehicular traffic volume of the adjacent street.
- c. Pedestrian clearance width.
- d. The measured volume of pedestrian traffic, both general and school-related.

MINOR CONDITIONS

- e. The proximity of the area to a significant pedestrian traffic generator.
- f. Any roadside sight obstructions (Distance from edge of pavement to obstruction).
- g. The impact of sidewalk installation on the character of the area.
- h. Lighting in the area.

10. That recommendations for construction of sidewalks in areas previously developed without sidewalks may be made at any time, but shall be compiled annually and programmed for implementation over time, as appropriate, based on need and availability of funds, within the annual Five Year Financial Plan of the Village.

11. That in areas where sidewalks currently exist, it is the policy of the Village to replace hazardous or deteriorated sidewalks as funds become available, in accordance with the following priorities:

- a. In Business Districts
- b. Adjacent to Railroad Stations
- c. Adjacent to School Property
- d. On designated School Routes
- e. Along other routes extending away from Schools
- f. Along other streets upon the determination of the Village that the location or condition of the sidewalks warrants priority in replacement.

12. In cases where a property owner requests replacement of sidewalk adjacent to his property other than in the order of priority stated above, the Village may, based on its evaluation of the condition of the sidewalk, and if funding is available, participate in up to one-half of the replacement cost, such cost not to exceed the maximum per square foot cost determined uniformly and annually by the Village Engineer or his designee.

13. In all areas, the Village will allow any property owner to replace the sidewalk adjacent to his property at the property owner's expense so long as the property owner or his contractor shall obtain the necessary permit from the Village.

14. That nothing contained in this Resolution shall prevent the Village Council, on its own initiative, from installing sidewalks or other types of pedestrian ways other than as provided herein where the Council, in its discretion, deems such action to be necessary and appropriate.

15. That all resolutions or parts of resolutions in conflict with the provisions of this Resolution, and specifically the provisions of Resolution No. 85-6 and Resolution 90-7, are hereby repealed.

2. That when required by the conditions established in Paragraph 1 of this resolution, sidewalk shall be constructed along the side of all rights-of-way abutting the property to the limits of the property, unless it is determined by the Village Engineer that actual construction is not required pursuant to the criteria established in Paragraph 3 hereof.

3. That in lieu of constructing the sidewalk a contribution to the Village's sidewalk construction fund shall be required if:

a. The right-of-way abutting the property is not an arterial street as shown on the Village of Downers Grove future land use map; and

b. The installation of walk on such right-of-way, in addition to any existing walk, does not complete 50% or more of the side of the block of right-of-way on which such property is located.

4. That in all locations meeting the criteria established in paragraph 3 of this Resolution, the property owner shall pay a fee equal to the cost to the Village per square foot for construction of the sidewalk abutting the property. Said fee shall be annually determined on the basis of the unit price for new sidewalk construction in the most recently Council awarded contract for Village wide sidewalk improvements.

5. That all fees collected shall be segregated into four separate accounts, each account representing one of the four quadrants of the Village with said quadrants being delineated by the Burlington Northern Railroad and Main Street south of 39th Street, and Highland Avenue north of 39th Street.

6. That the Village shall utilize all collected funds from each quadrant for new walk being built within that quadrant; provided, that the value of walk being constructed shall not exceed the amount of accrued funds. In the event that the available money collected within a given quadrant exceeds the value of new walk, such funds along with all accrued interest shall be carried over to future sidewalk construction contracts.

7. Any person aggrieved by any decision of the Village Engineer regarding construction of sidewalks abutting such person's property may appeal the decision within 30 days of the date thereof to the Plan Commission which shall hear and decide such appeal. Application for such appeal shall be in writing, accompanied by a one hundred dollar (\$100.00) application fee. The Plan Commission may either affirm the decision of the Village Engineer, or may reverse such decision.

8. That in the event that the Plan Commission as part of its final review of any plat of subdivision or planned development recommends that sidewalk not be constructed on any right-of-way within or adjacent to the proposed subdivision or planned development, the developer shall be subject to the requirements of this resolution for payment of a fee in lieu of sidewalk construction.

9. That the Village Council will consider constructing sidewalks in areas previously developed without sidewalks upon a recommendation of the Village Manager or Parking and Traffic Commission that a special need for such sidewalks appears to exist. In making such a recommendation, the Village Manager or Parking and Traffic Commission shall consider such factors and criteria as they consider relevant, including, but not limited to, the following:

VILLAGE POLICY-PROCEDURE STATEMENT

VILLAGE OF DOWNERS GROVE, ILLINOIS

SUBJECT: Sidewalk Construction & Replacement, Priority Schedule

ISSUED BY: Village Council Effective Date: October 19, 1992

CHECK ONE: X Official Village Council Policy Approved by Council
Administrative Regulation Issued by Village Manager
Departmental Procedure Applying to _____ Dept.

THESE ARE: _____ New Policy or Procedure
_____ Amends or X Supersedes Previous Policy Dated 2/11/85, 2/26/90 Relating to Sidewalk Construction and Replacement

RESOLUTION NO. 92-44

A RESOLUTION AMENDING RESOLUTION 90-7 REGARDING THE PRIORITY SCHEDULE FOR SIDEWALK CONSTRUCTION AND REPLACEMENT IN THE VILLAGE OF DOWNERS GROVE

WHEREAS, the Council of the Village of Downers Grove, (the "Village"), has heretofore determined that sidewalks are necessary and desirable to facilitate pedestrian movement in the Village and that it should, therefore, be the policy of the Village to encourage the construction of sidewalks in appropriate locations; and,

WHEREAS, sidewalks have not been constructed on all Village streets and the Council recognizes that it may not be necessary or feasible in the future to construct sidewalks on all such streets; and,

WHEREAS, the Council of the Village of Downers Grove has established by Resolution No. 85-6, adopted February 11, 1985, as amended by Resolution No. 90-7 adopted February 26, 1990, its policy on sidewalk construction and replacement in the Village of Downers Grove; and,

WHEREAS, the Village Council has now determined that the Sidewalk Policy should be further amended to set forth criteria for use of funds received in lieu of sidewalk construction.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Village of Downers Grove, DuPage County, Illinois, as follows:

1. That the policy of the Council of the Village of Downers Grove contained in Chapters 19 and 20 of the Municipal Code is to require construction of sidewalks as part of the public improvements to be completed by the developer in new subdivisions, and to require construction of sidewalks by a property owner constructing any building within the Village except for:

a. accessory buildings and reconstruction or remodeling of, or additions to existing buildings in any single family or two family residential zoning district; and,

b. accessory buildings, reconstruction or remodeling of existing buildings, and additions to existing buildings which amount to less than 25% of the gross floor area of such building in all other zoning districts.

1. The homeowner shall write a letter to the Senior Director of Engineering, 801 Burlington Avenue, Downers Grove, IL 60515, stating the location and amount of sidewalk desired to be replaced.
2. The Engineering Staff will make a field inspection to determine that the sidewalk requested to be replaced is in a deteriorated condition or presents a safety hazard.
3. The Engineering staff will write a letter to the homeowner stating the amount of sidewalk the Village will share in the cost of replacement, based upon the field inspection. (Exhibit II).
4. If the homeowner wishes to proceed with the replacement of sidewalk adjacent to his property, the homeowner's contractor shall apply for a sidewalk permit through the Public Works Department. Upon issuance of the permit, the contractor may proceed with replacement of the sidewalk.
5. The Village will inspect the sidewalk upon notification from the contractor or homeowner that the work is completed, and, upon receiving a copy of a paid receipted invoice from the owner, the Village will process payment for its share of the construction to the homeowner if the sidewalk was completed in accordance with Village specifications.

NOTE: Public sidewalk which is neither deteriorated nor hazardous but is being replaced in conjunction with the development or redevelopment of the adjacent property is NOT eligible for cost sharing.

#####

A:\admin\sidewlk.pro

VILLAGE POLICY-PROCEDURE STATEMENT

VILLAGE OF DOWNERS GROVE, ILLINOIS

SUBJECT: Sidewalk Replacement Program

ISSUED BY: Kurt Bressner *Kurt Bressner* Effective Date: September 1, 1995

CHECK ONE: Official Village Policy Approved by Council
 Administrative Regulation Issued by Village Manager
 Departmental Procedure Applying to _____ Dept.

THIS IS A New Policy or Procedure
 Amends or Supersedes Previous Policy Dated May 1, 1990
Relating to Sidewalk Replacement Program Procedures

VILLAGE OF DOWNERS GROVE

SIDEWALK REPLACEMENT PROGRAM

I. POLICY AND PROCEDURES FOR REPLACEMENT OF SERIOUSLY DETERIORATED SIDEWALK

All hazardous and deteriorated sidewalks will be replaced by the Village at the Village's expense as funds become available. The funds available will be apportioned to the replacement of sidewalks according to pedestrian volume and degree of hazard. As such, the following sidewalks will generally have priority:

1. Business Districts
2. Railroad Stations
3. School Properties
4. School Routes

The Village will accept requests from homeowners for replacement of sidewalk in front of their homes. These individual requests will be reviewed by the Village and the homeowner will be advised when replacement of the sidewalk is anticipated based on priorities and anticipated available funds. (see Exhibit I). Funding for such priority projects will be 100% Village funds.

II. POLICY & PROCEDURES FOR NON-PRIORITY SIDEWALK REPLACEMENT

If the sidewalk does not qualify for priority replacement per the above, and the homeowner still wishes to replace the sidewalk, the Village may enter into a cost sharing replacement program, assuming the availability of Village funds. In such cases, the Village will participate in 50% of the cost to replace hazardous or deteriorated sidewalk, not to exceed \$1.35 per square foot, in accordance with the following procedures:

SIDEWALK PRIORITY CLASSIFICATION RATING WORKSHEET

Location: _____ from _____ to _____

Date of Study: _____

Prepared By: _____

Approved By: _____

MAJOR CONDITIONS

Average Daily Traffic

ADT	Points	
Over 7,000	10	
3,000-7,000	9	ADT = _____
1,250-2,999	8	
750-1,249	6	Count Date _____
500-749	4	
250-499	2	
Under 250	0	points = <input type="text"/>

Pedestrian Clearance

Pedestrian Clearance = Roadway Width - (# of Lanes x 12)

Feet	Points	
Less Than 1	10	Minimum
1	9	Roadway Width _____
2	8	
3 - 4	6	
5 - 8	3	
More Than 9	1	points = <input type="text"/>

Pedestrian Volume

Volume	Points	Pedestrian Volume = _____
Over 50	10	
30 - 49	8	Count Date _____
15-29	6	
Less Than 15	2	points = <input type="text"/>

Proximity to Grade (K-6) School

Feet	Points	
0-999	10	Closest Grade
1,000-1,999	7	School _____
2,000-2,999	4	
3,000-6000	1	Distance = _____
Over 6,000	0	points = <input type="text"/>

MINOR CONDITIONS

Proximity to Pedestrian Generator

Feet	Points	Closest Ped Generator _____
0-499	4	
500-999	3	
1,000-2,499	2	Distance = _____
Over 2,500	0	
		points = <input type="text"/>

Roadway Lighting

	Points	
None	4	
Intersections Only	3	
Uniform / Inadequate	2	
Uniform & Adequate	0	points = <input type="text"/>

Roadside Sight Obstruction

Feet	Points	Sight Obst. Location _____
Less than 3	4	
3-6	2	
More Than 6	0	points = <input type="text"/>

Existing Sidewalk

	Points	
None	10	
Walk On Opposite Side (excluding Arterials)	0	points = <input type="text"/>

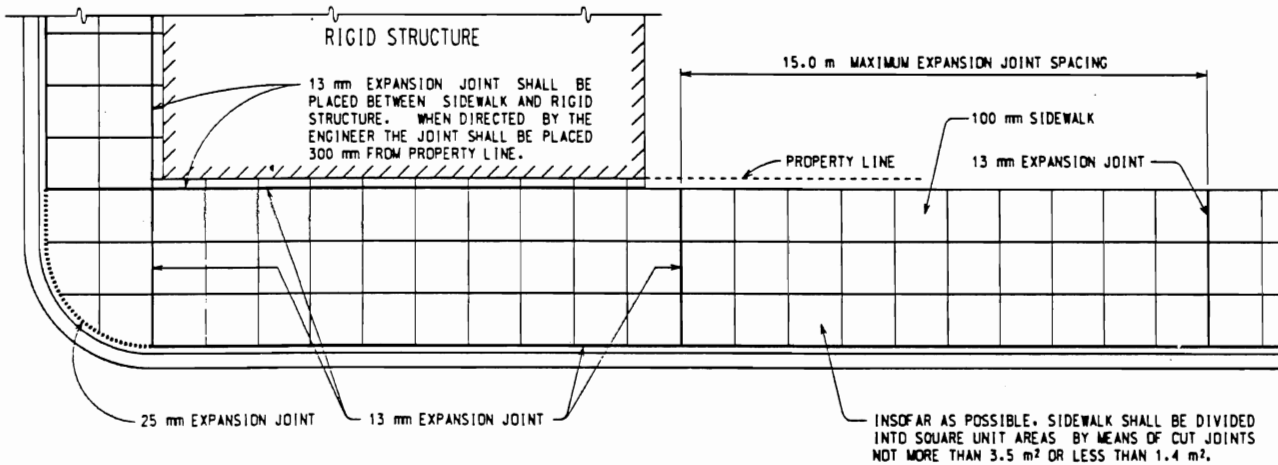
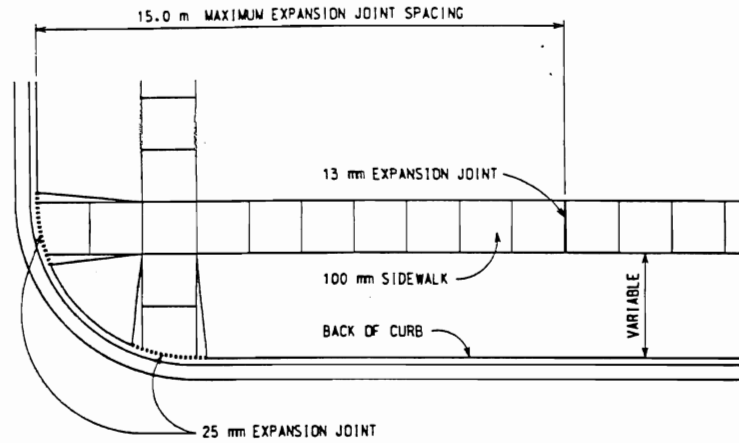
POINT TABLE

Point Range	Priority	
Over 52	1	
55-62	2	
47-54	3	TOTAL # OF POINTS = <input type="text"/>
39-46	4	
31-38	5	
23-30	6	
10-22	7	PRIORITY ASSIGNED = <input type="text"/>
0-9	8	

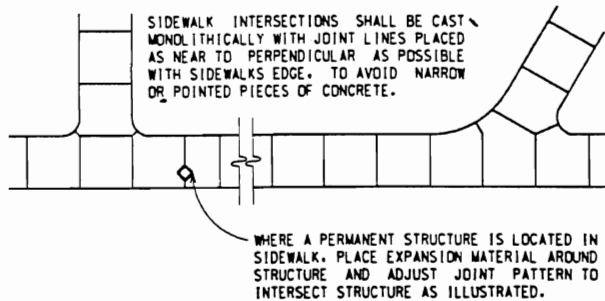
**Model Sidewalk
Policies and Procedures
from the
Village of Downers Grove, IL**

**Sidewalk Priorities:
Classification Rating Worksheet
Evaluation Matrix**

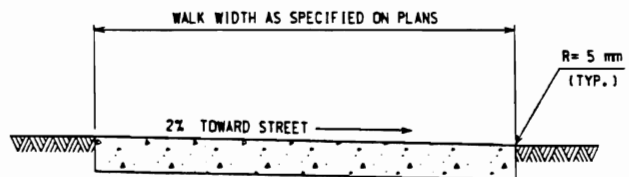
**Policies:
Sidewalk Replacement Program
Sidewalk Priority Schedule**




LOCATION OF JOINTS IN CONCRETE SIDEWALK









TYPICAL SIDEWALK JOINT LAYOUTS

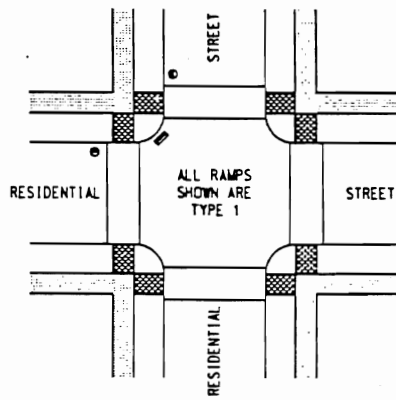


100 mm CONCRETE SIDEWALK

 PREPARED BY DESIGN DIVISION	<i>James P. [Signature]</i> ENGINEER OF CONSTRUCTION & TECHNOLOGY	<i>John B. [Signature]</i> ENGINEER - ROAD DESIGN	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK	10-30-97	8-11-97	R-29-B	SHEET 1 OF 3
	<i>Cornelius Roberts</i> ENGINEER OF MAINTENANCE	<i>James R. DeSoria</i> ENGINEER OF DESIGN DEPARTMENT DIRECTOR James R. DeSoria		10-30-97 F.H.W.A. APPROVAL	8-11-97 PLAN DATE		
DRAWN BY: B.L.T. CHECKED BY: W.K.P.	<i>John J. [Signature]</i> ENGINEER OF TRAFFIC AND SAFETY	<i>John J. [Signature]</i> CHIEF ENGINEER/DEPUTY DIRECTOR BUREAU OF HIGHWAY TECHNICAL SERVICES					

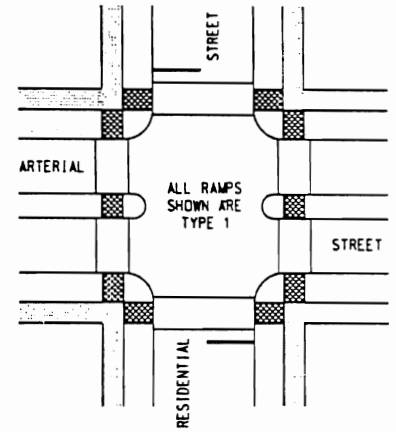
LEGEND

-  SIDEWALK
-  INDICATES PAY LIMITS OF SIDEWALK RAMPS TYPE 1, 2 AND 4
-  PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
-  ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)
-  CROSSWALK MARKING
-  STOP LINE MARKING



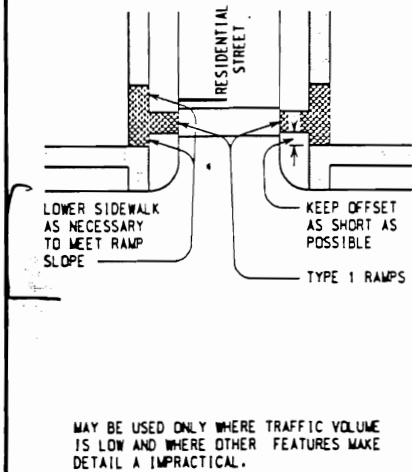
NORMAL TREATMENT IN RESIDENTIAL AREAS

A

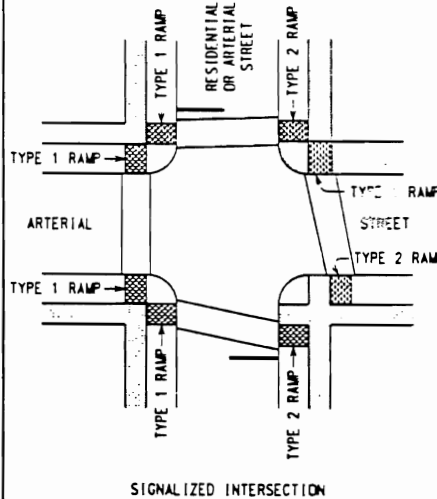


DIVIDED ARTERIAL STREET

B

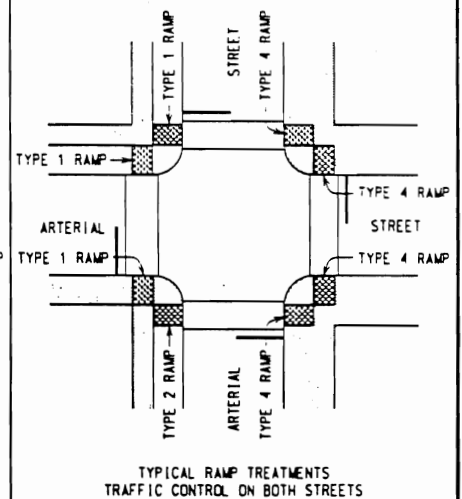


C



SIGNALIZED INTERSECTION

D



TYPICAL RAMP TREATMENTS TRAFFIC CONTROL ON BOTH STREETS

E

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION OR RECONSTRUCTION OF STREETS, CURBS, OR SIDEWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT WALK LOCATIONS IN MID-BLOCK IN THE VICINITIES OF HOSPITALS, MEDICAL CENTERS, AND LARGE ATHLETIC FACILITIES.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF RAMP.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, FREE OF SAGS AND SHORT GRADE CHANGES. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION, LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.

THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

GIVEN A CHOICE, SIDEWALK RAMP TYPE 1 IS CONSIDERED PREFERABLE TO TYPE 2.

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR

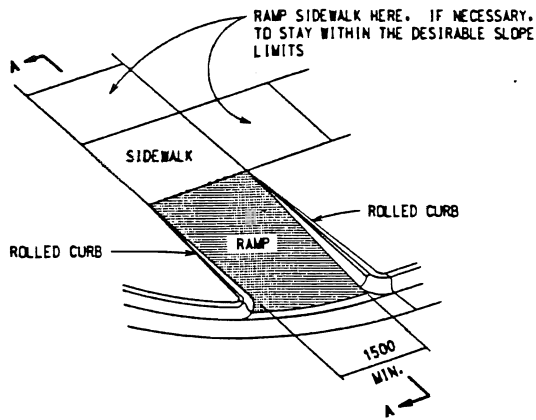
SIDEWALK RAMP DETAIL

1-16-97
F.H.W.A. APPROVAL

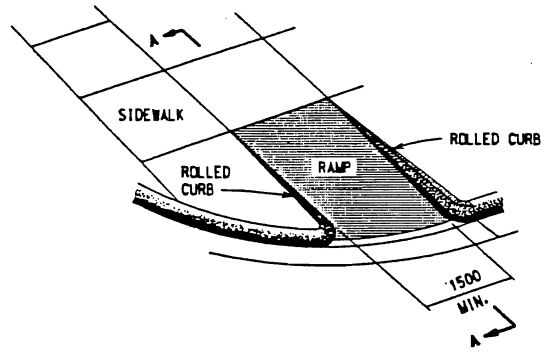
5-16-96
PLAN DATE

R-28-B

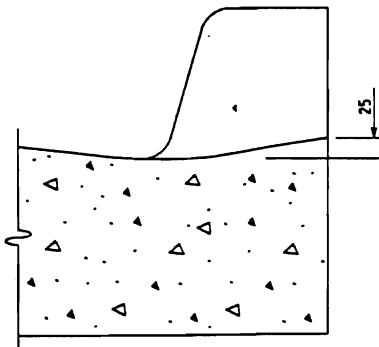
SHEET
2 OF 2



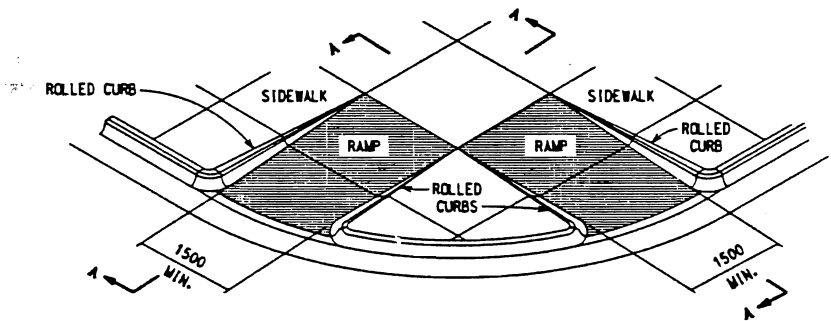
SIDEWALK RAMP TYPE 1



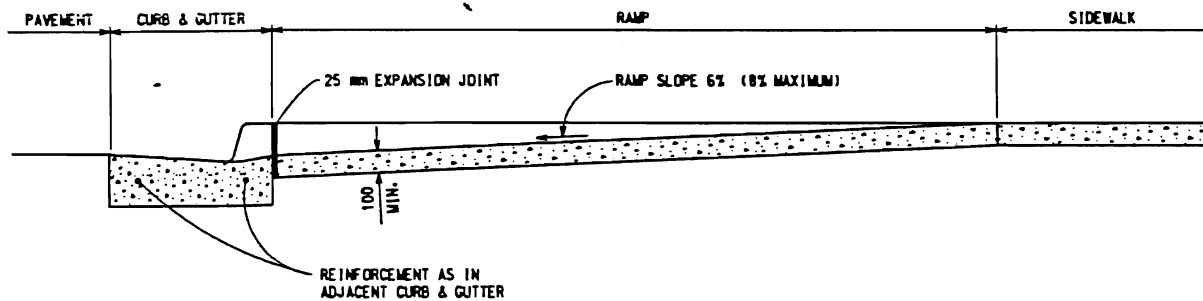
SIDEWALK RAMP TYPE 2




SECTION THROUGH CURB CUT
(TYPICAL ALL RAMP TYPES)

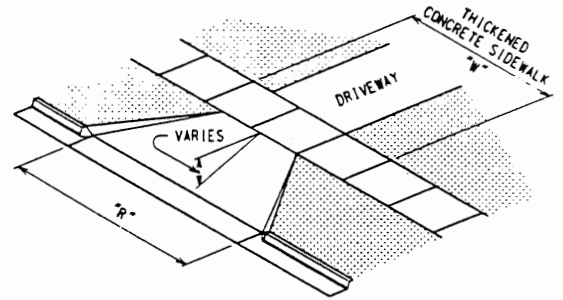
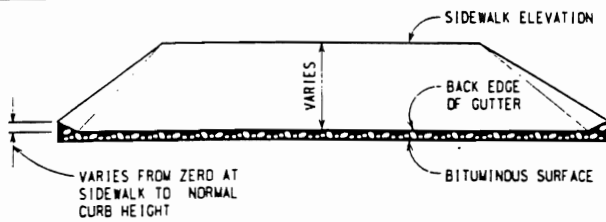


SIDEWALK RAMP TYPE 4
(TWO RAMPS ARE SHOWN)

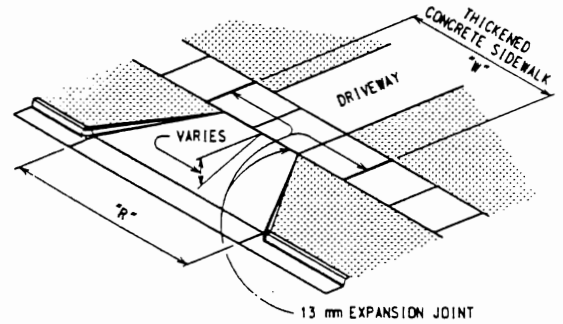
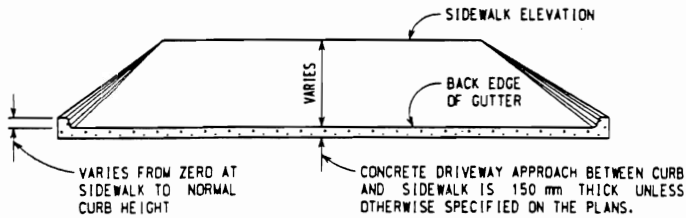


SECTION A - A (TYPICAL ALL RAMP DETAILS)

 PREPARED BY DESIGN DIVISION DRAWN BY: <u>B.L.T.</u> CHECKED BY: <u>W.K.P.</u>	<u>Ed H. Miller</u> ENGINEER OF CONSTRUCTION	<u>Wm. C. Powell</u> ENGINEER - ROAD DESIGN	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR SIDEWALK RAMP DETAIL	
	<u>Samuel Brown</u> ENGINEER OF MAINTENANCE	<u>Wm. C. Powell</u> ENGINEER OF DESIGN		
	<u>Charles Roberts</u> ENGINEER OF MATERIALS & TECHNOLOGY	DEPARTMENT DIRECTOR ROBERT A. WELKE		
	<u>James D. Culp</u> ENGINEER OF TRAFFIC AND SAFETY	BY: <u>James D. Culp</u> BUREAU DIRECTOR HIGHWAY TECHNICAL SERVICES		
	1-16-97 F.H.W.A. APPROVAL	5-16-96 PLAN DATE	R-28-B	SHEET 1 OF 2



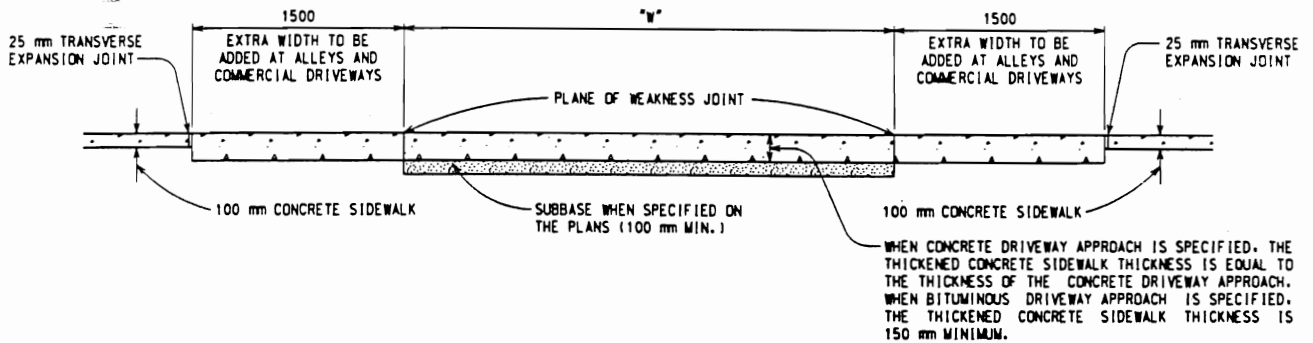
BITUMINOUS DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L)



NOTES:

MONOLITHIC CURB IS INCLUDED IN THE CONCRETE DRIVEWAY APPROACH QUANTITY.
REINFORCEMENT IS NOT REQUIRED UNLESS SPECIFIED ON THE PLANS. WHEN REINFORCEMENT IS SPECIFIED, SEE CHART ON THIS SHEET.
WHEN AREA BETWEEN CURB & GUTTER AND SIDEWALK IS MORE THAN 30.0 m², PLACE A CONTRACTION JOINT IN LINE WITH CENTERLINE OF DRIVEWAY AND PERPENDICULAR TO ROADWAY.

CONCRETE DRIVEWAY APPROACH
(TO BE USED WITH DETAIL L OR M)



THICKENED CONCRETE SIDEWALK

REINFORCEMENT FOR CONCRETE DRIVEWAYS

CONCRETE DRIVEWAY THICKNESS (mm)	WIRE SIZE (150 mm X 150 mm MESH)	AVERAGE WEIGHT (kg / m ²)
LESS THAN 200	W1.4	103
	W2.9	205
200 OR GREATER	USE WIRE FABRIC REINFORCEMENT SPECIFIED ON STANDARD PLAN R-45-SERIES	

NOTES:

FOR DRIVEWAY DESIGN REFER ALSO TO "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BARRIERS, AND PARADES ON OR OVER HIGHWAYS" AND GEOMETRIC DESIGN G-680-SERIES, COMMERCIAL DRIVEWAYS.
FOR CURB AND GUTTER DETAILS, SEE STANDARD PLAN R-30-SERIES.
SIDEWALK TRANSVERSE SLOPE MAY VARY FROM 0% TO 4% TO MEET THE SIDE CONDITIONS. WHEN TRANSVERSE SLOPE IS LESS THAN 2%, LONGITUDINAL DRAINAGE MUST BE PROVIDED.
WHEN SETTING GRADES FOR COMMERCIAL DRIVES, THE TYPES OF VEHICLES USING THE DRIVE SHOULD BE CONSIDERED.
ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

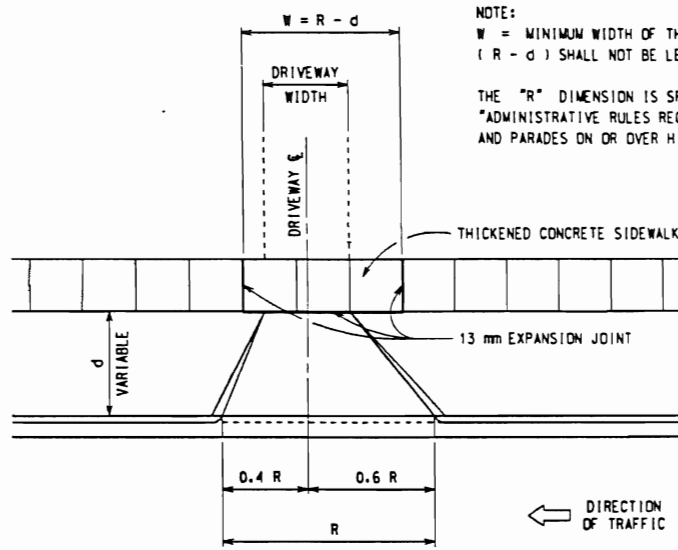
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS STANDARD PLAN FOR
**DRIVEWAY OPENINGS
& APPROACHES,
AND CONCRETE SIDEWALK**

10-30-97
F.H.W.A. APPROVAL

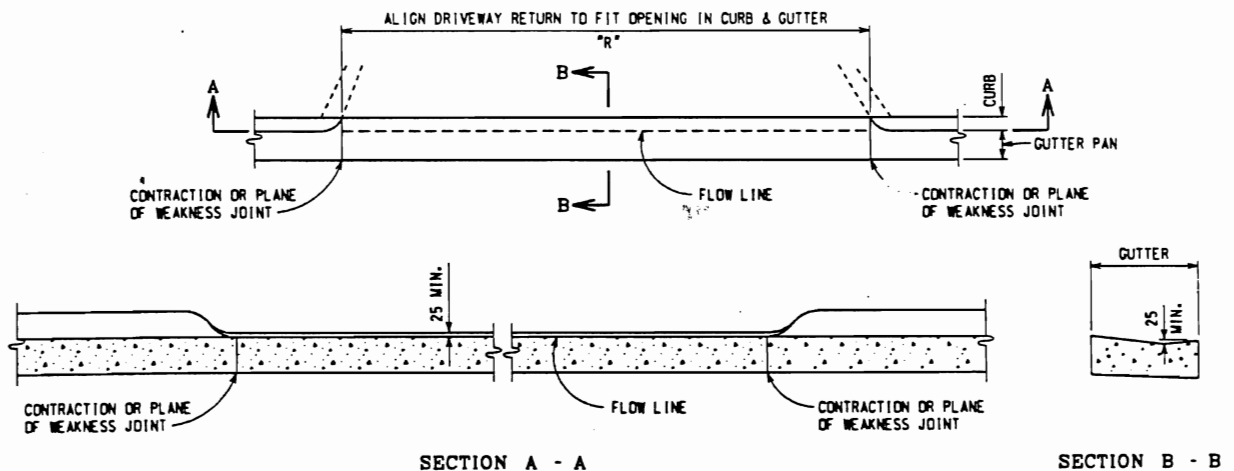
8-11-97
PLAN DATE

R-29-B

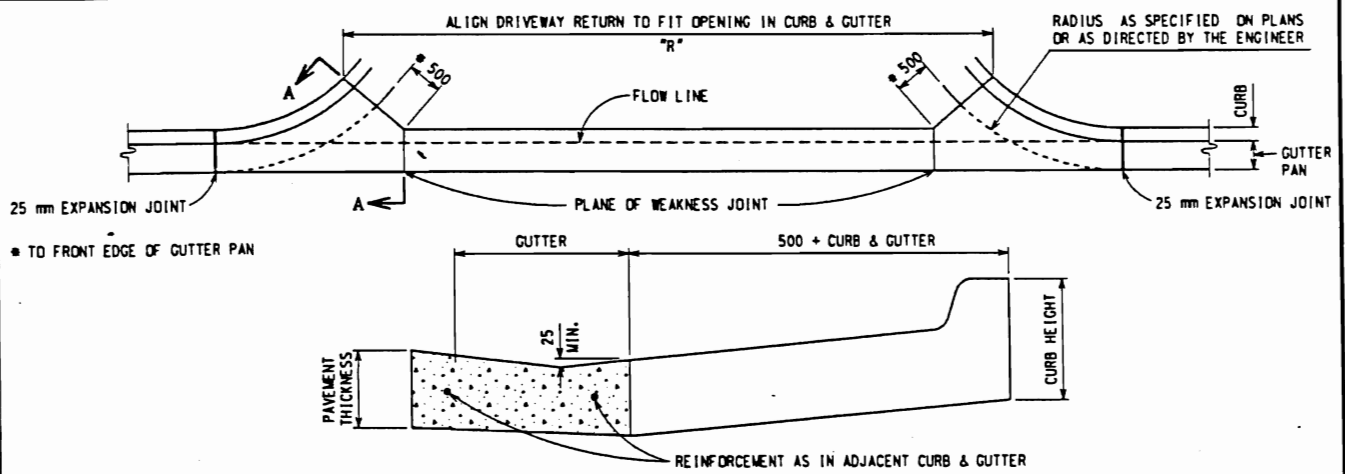
SHEET
3 OF 3



CONCRETE DRIVEWAY OPENING LAYOUT



CONCRETE DRIVEWAY OPENING, DETAIL L



SECTION A - A
CONCRETE DRIVEWAY OPENING, DETAIL M

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY TECHNICAL SERVICES STANDARD PLAN FOR
**DRIVEWAY OPENINGS
& APPROACHES,
AND CONCRETE SIDEWALK**

10-30-97	8-11-97	R-29-B	SHEET 2 OF 3
F.H.W.A. APPROVAL	PLAN DATE		

XX.

State

MDOT
Construction Details

**for Driveway Openings,
Approaches, Sidewalks
and Sidewalk Ramps**

MICHIGANDER / Rails-to-Trails Conservancy Fund

The Michigan Field Office of Rails-to-Trails Conservancy has initiated a small grants program based on revenue from the Detroit Free Press MICHIGANDER Fat-Tire Tour. The purpose of this new program is to aid the development of a connected trail initiative throughout the State of Michigan. The program goals are to develop new projects, assist with grassroots start-up costs, and help provide leverage for additional funding.

For further information contact:

- ▶ Rails-to-Trails Conservancy, Michigan Field Office
913 W. Holmes, Suite 145, Lansing, MI 48910
phone: 517-393-6022 fax: 517-393-1960
e-mail: rtcpl@aol.com

Recreational Equipment Incorporated (REI) Environmental Grants

REI awards these grants to organizations for protection and enhancement of natural resources for use in outdoor recreation. Grants of up to \$5,000 are offered to accomplish any of the following:

- ▶ preservation of wildlands and open space;
- ▶ advocacy-oriented education for the general public about conservation issues;
- ▶ building a membership base of a conservation organization;
- ▶ direct citizen action (lobbying) campaigns on public land and water recreation issues; and
- ▶ projects working to organize a trail constituency or to enhance the effectiveness of a trail organization's work as a trail advocate at the state or local level.

There is more than one deadline date for the submission of grant applications.

For further information contact:

- ▶ Barry Devenney, Grants Administrator
Recreational Equipment, Inc.
6750 S. 228th Street, Kent, WA 98032
phone: 253-395-5928
<http://www.rei.com/index.html>

Land Trusts

National, state, regional, county, and local private land trusts (or conservancies) can purchase land for resale to public agencies, buy options to protect land temporarily, receive land donations, put together land deals, and provide technical assistance. As private entities, land trusts can often act more quickly than public agencies.

Businesses

Most towns have companies that can be considered as public-spirited. These firms have a history of helping worthy projects by providing a meeting room in a company building, giving small grants, donating copying or printing services on company equipment, or giving free or reduced-fee use of the company's special services. For example, a law firm might provide "pro bono" (free) legal advice or an accounting firm might donate staff time to assist in developing a simple bookkeeping system.

Friends Groups

We all need friends, and this holds true for greenway and non-motorized projects as well. In fact, the long-term success of a project can well depend on the formation of an ongoing, private "Friends of the Trail" organization. Friends groups can provide a number of services including; physical labor as through "Adopt-a-Trail" maintenance or construction activities, fundraising, user education, promotion, and actual surveillance of the facility. These groups are important in all project phases: planning, acquisition, development, and operation.

Other Organizations

Civic groups and school groups can play an important role in support of a greenway project. They might help with trail development and maintenance, funding, promotion, and through the hosting of events. These activities can be separate from, or in conjunction with a friends group.

Individuals

Willing individuals can donate money, land, easements, and services. The vast majority of money donated in this country comes from individuals. In numerous cases across the country, the financial contribution of a single individual has meant the success of a trail or greenway project.

Foundations

Private Foundations are non-governmental, nonprofit organizations having a principal fund of its own managed by its own trustees and directors, and established to maintain or aid charitable, educational, religious, or other activities serving the public good, primarily by making grants to other nonprofit organizations. The overwhelming majority of foundation grants are awarded to nonprofit organizations that qualify for "public charity" status under Section 501(c)(3) of the Internal Revenue Code.

See the list of Kalamazoo Area Resources for foundations and trusts in the greater Kalamazoo area. Or research additional opportunities that may be available through the following resources:

Directories of Foundation Funding Sources

- ▶ *Guide to Foundation Grants for Rivers, Trails, and Open Space Conservation*, 2nd edition. Prepared by National Center for Recreation and Conservation, National Park Service. June 1996. Available from NPS (330)-657-2378.
This guide lists information about selected foundations that may have interest in greenway projects.
- ▶ *Michigan Foundation Directory*. Prepared by Council of Michigan Foundations and Michigan League for Human Services. Available from libraries and the Council of Michigan Foundations (616-842-7080). <http://www.novagate.com/~cmf/index.html>
This directory gives information about the programs of hundreds of Michigan foundations and numerous corporations, and is updated biennially.
- ▶ *The Foundation Directory, & The Foundation Directory Part 2*. Prepared by the Foundation Center. Available from libraries and the Foundation Center (212) 620-4230 in New York). <http://fdncenter.org>
Describes the programs of thousands of large foundations throughout the U.S., and is updated annually.

- ▶ *The Foundation Grants Index*. Prepared by the Foundation Center. Available from libraries and the Foundation Center (212) 620-4230.

Lists recent foundation grants, and is updated annually.

Part E: Kalamazoo Area Resources

The Kalamazoo area resources available for funding for non-motorized transportation planning and implementation fall under three general categories: Foundations and Trusts, Corporations, and Individual Donors.

The following list is based on Michigan Foundation Directory information with assistance from local foundation sources. Corporate and individual donors should be considered on a case by case basis and are not listed individually. As the Kalamazoo Area is increasingly linked to our regional prosperity, adjacent county funders are included.

Funding sources should be approached to request further clarification on what they are interested in funding via a short summary of the project and phone call first. Linking non-motorized transportation facilities to the greater health, economic well being and educational/recreational activities for families, schools, handicapped people, businesses, seniors and, in appropriate cases art, water or community-related projects may help funders recognize greater benefits.

The A. M. Todd Company Fund

Purpose: Support for education, the humanities, the environment and healthcare, human service and public benefit agencies.

- ▶ Contact: Mr. Ian Blair
The A. M. Todd Company Foundation
Box 50711, Kalamazoo, MI 49005
Phone: 616-343-2603

The Allegan Foundation

Mission: To better conditions in Allegan County, thereby making its citizens healthier and happier, improve the quality of life for all, children through seniors.

- ▶ Contact: Ms. Lisa Richlich
The Allegan Foundation
325 Hubbard ST., Box 15, Allegan, MI 49010
Phone: 616-673-8344

The Consumers Power Foundation

Purpose: Provide financial support primarily to organizations tax exempt under 501(c)(3) of the IRS tax code. Looks for solutions to problems faced by individuals/families unable to address their own needs without help, primarily through United Way. Protect and enhance the natural environmental, enhance community development and betterment of the citizenry and their governments.....stimulate community volunteers. Increase awareness of the values of artistic and cultural achievements and encourage their growth.

- ▶ Contact: The Consumers Power Foundation
212 W. Michigan Avenue. Jackson, MI 49201
Phone: 517-788-0318

The Dorothy Dalton Fund

Broad purposes: Primarily local giving with emphasis on healthcare, cultural, education programs and human service and community benefit organizations.

- ▶ Contact: Mr. Ronald Kilgore
The Dorothy Dalton Fund
c/o FMB Bank, 2519 E. Michigan Avenue, Kalamazoo MI 49007
Phone: 616-373-6387

The Delano, Mignon, Sherwood Foundation

Purpose: Support for public benefits, education, humanities, human services and healthcare agencies

- ▶ Contact: Mr. G. Philip Dietrich
The Delano, Mignon, Sherwood Foundation
834 King Highway, Suite 110, Kalamazoo, MI 49001
Phone: 616-344-9236

The Eliason Foundation

Purpose: Support for humanities, education, healthcare, religious public benefit and human service organizations

- ▶ Contact: Ms. Edwanda Eliason
The Eliason Foundation
Box 2353, Kalamazoo, MI 49003
Phone: 616-327-7007

The Fetzer Institute Foundation

Mission: General Purpose Funding up to \$5,000

- ▶ Contact: Kalamazoo Foundation, Mr. David Gardner
332 Comerica Bldg., Kalamazoo, MI 49007
Phone: 616-381-4416

The Irving S. Gilmore Foundation

Purpose: To make grants for improvement in the cultural, social and economic life in the greater Kalamazoo area.

- ▶ Contact: Mr. Frederick Freund
The Irving S. Gilmore Foundation
136 E. Michigan Avenue, Suite 615, Kalamazoo, MI 49007
Phone: 616-342-6411

The James Gilmore Foundation

- ▶ Contact: Mr. Jim Gilmore
162 E. Michigan Ave., Kalamazoo, MI 49007
Phone: 616-381-6744

The Hammond Foundation

Purpose: Support for education, wildlife, ministry, health care, human service and community organizations

- ▶ Contact: Mr. Michael Carl
The Hammond Foundation
1600 Douglas Avenue, Kalamazoo, MI 49007
Phone: 616-345-7151

The Kalamazoo Foundation

Purpose: Allocates community resources to areas of the most pressing need. A large portion of the unrestricted grants are directed toward education, health, housing, and economic development. The Foundation is especially interested in new or innovative programs offering effective solutions to persistent problems and hold promise for change.

- ▶ Contact: Mr. David Gardiner
The Kalamazoo Foundation
Comerica Bank Bldg., 151 S. Rose St., Suite 332, Kalamazoo, MI 49007
Phone: 616-381-4416

The W. K. Kellogg Foundation

Purpose: The Foundation was established in 1930 to help people help themselves through the practical applications of knowledge and resources to improve their quality of life and that of future generations. The Foundation targets its grants toward specific focal points or areas such as health food systems and rural development, youth and education, higher education, philanthropy and volunteerism. When woven throughout these areas, funding is also provided for leadership, information systems/technology, efforts to capitalize on diversity, and family/neighborhood and community development programming.

- ▶ Contact: Ms. Nancy Sims
The W. K. Kellogg Foundation
One Michigan Avenue East, Battle Creek, MI 49017
Phone: 616-969-1611

The Kresge Foundation

Purpose: Awards challenge grants for capital projects, most often construction and renovation of buildings and also for purchase of major equipment and real estate. Their review goes beyond an evaluation of the capital need and incorporates close scrutiny of program and organizational strengths. As challenge grants, they intend to stimulate new private gifts in the midst of a fund-raising effort. They offer special opportunities to build capacity, both in providing enhanced facilities in which to present programs, and in strengthening the organizations ability to generate private support.

- ▶ Contact: Mr. John E. Marshall, III
Box 3151, 3215 W. Big Beaver Rd., Troy, MI 49001
Phone: 313-643-9630

The McColl Batts Foundation

Purpose: Support for charitable organizations

- ▶ Contact: Mr. William Lee
The McColl Batts Foundation c/o Old Kent Bank
Box 4019, Kalamazoo, MI 49003
Phone: 616-337-6958

The Miller Foundation

Purpose: To use our resources to help things happen such that Battle Creek can be a finer, happier, healthier area.

- ▶ Contact: Mr. Arthur W. Angood
The Miller Foundation
310 Wah Wah Tay See Way, Battle Creek, MI 49015
Phone: 616-964-3542

The Monroe-Brown Foundation

Purpose: Emphasis on projects in education. Interests in economic development.

- ▶ Contact: Mr. Bob Brown
The Monroe-Brown Foundation
259 East Michigan Ave., Kalamazoo, MI 49007
Phone: 616-324-4880

The George and Amy Monroe Foundation, Inc.

Purpose: Support for higher education, arts, human service and youth agencies, healthcare and environmental organizations.

- ▶ Contact: Ms. Dorothy Sullivan
c/o National City Bank
108 E. Michigan Avenue, Kalamazoo, MI 49007
Phone: 616-376-1155

National City Bank of Michigan/Illinois

- ▶ Contact: Mr. John Schroeder
National City of Michigan/Illinois Foundation
108 East Michigan, Kalamazoo, MI 49007
Phone: 616-376-7006

The Don and Ann Parfet Family Foundation

Purpose: Supports education, health care organizations and environmental/conservation groups

- ▶ Contact: Mr. David B. Furgason
The Don and Ann Parfet Family Foundation
555 W. Crosstown Parkway, Suite 101, Kalamazoo, MI 49008
Phone: 616-337-4102

The Parks Foundation of Kalamazoo County

Purpose: The Parks Foundation of Kalamazoo County exists solely to support and assist the Kalamazoo County Parks Department.

- ▶ Contact: Robert Gregersen, County Parks Director
Box 50467, Kalamazoo MI 49005
Phone: 616-383-8778

The Parish Foundation

Purpose: Support for healthcare and human services agencies, environmental causes, religion, the arts, and educational institutions.

- ▶ Contact: Mr. Preston Parish
The Parish Foundation
244 N. Rose St., Suite 100, Kalamazoo, MI 49007
Phone: 616-343-0526

The Pharmacia and Upjohn Foundation

Purpose: Support for healthcare, education, social services, civic and environmental causes.

- ▶ Contact: The Pharmacia and Upjohn Foundation
7000 Portage Road, Kalamazoo, MI 49001
Phone: 616-833-1554

The Schubeck-Monsour Foundation

Purpose: Financial support to exempt organizations which provide services and sponsor programs which address the need and enhance the well-being of people who live in SW Michigan. Support for arts, education, healthcare and human services.

- ▶ Contact: Mr. Michael Schubeck
The Schubeck-Monsour Foundation
1500 Long Road, Kalamazoo, MI 49008
Phone: 616-343-1452

The Stryker Foundation-Ronda S. Stryker and William D. Johnston

Purpose: Support for education, the arts, healthcare, religious, human service and public benefit organizations

- ▶ Contact: Mr. William D. Johnston
The Stryker Foundation
3505 Greenleaf Blvd., Kalamazoo, MI 49008
Phone: 616-353-8484

The Burton H. and Elizabeth S. Upjohn Charitable Trust

Purpose: Support for human service and public benefit agencies, education, the arts and healthcare

- ▶ Contact: Ms. Elizabeth S. Upjohn Mason
The Burton H. and Elizabeth S. Charitable Trust
3505 Greenleaf Blvd., Kalamazoo, MI 49008
Phone: 616-375-2000

The Harold and Grace Upjohn Foundation

Purpose: Support of religious, charitable, scientific, literary and education purposes within the United States of America

- ▶ Contact: Mr. Floyd Parks
The Harold and Grace Foundation
157 S. Kalamazoo Mall, Suite 60, Kalamazoo, MI 49007
Phone: 616-344-2818

The Vicksburg Foundation

Purpose: Support organization which contribute to the betterment of life in the Vicksburg or SE Kalamazoo County areas.

- ▶ Contact: Ms. Barbara Hoekzema
The Vicksburg Foundation c/o National City Bank

108 E. Michigan Avenue, Kalamazoo, MI 49007
Phone: 616-649-0706

The Wege Foundation

Purpose: Grants largely for education and the environment. Support also for human service and civic organizations, the arts, museum and healthcare.

- ▶ Contact: Mr. Peter Wege
The Wege Foundation
Box 6388, Grand Rapids, MI 49506
Phone: 616-957-0480

The Weisblat Foundation

Purpose: Support for religious, charitable, scientific, testing for public safety, literary, artistic, ecological, environmental or educational activities or for the prevention of cruelty to children or animals.

- ▶ Contact: Ms. Christine Weisblat
The Weisblat Foundation
834 King Highway, Suite 110, Kalamazoo, MI 49001
Phone: 616-376-8016

The Lawrence and Sylvia Wong Foundation

Purpose: Supports organizations which benefit children including the arts, education, medical research and conservation.

- ▶ Contact: Mr. G. Philip Dietrich
The Lawrence and Sylvia Wong Foundation
124 S. Minges Rd., Battle Creek, MI 49017
Phone: 616-963-6394

Guidelines for Approaching Local Funding Sources

Often, the success in securing funding for projects depends just as much on how a potential funder is approached as the type of project to be funded. Foundations, corporations, nonprofit groups, and individual and family donors are owed, and expect, professionalism and courtesy from those seeking financial assistance. In all cases:

- ▶ Address all letters individually. Be short and clear. Send pictures or graphics. Include a return envelope.
- ▶ Thank you's are a must.
- ▶ Extend invitations to events celebrating ground breakings, final construction, and special programs. These are important ways of expressing public appreciation and urging increased use of facilities.

Foundations

Many foundations, large and small, exist in the Kalamazoo Area who may be interested in supporting non-motorized projects. (See Appendix J for a list of local contacts.)

Approaching funders should always be done carefully. Steps to consider:

- ▶ Research the actual Foundation giving patterns. A preliminary, well-prepared phone call to the contact person will provide an indication of whether the foundation will consider this plan or aspects of it within their mission and giving pattern. Contacts will also indicate how they want to be approached, applications format and time frame.

- ▶ A well-designed initial letter and single page description of the goals, benefits, costs, budget, and partnerships of the plan may be submitted.
- ▶ Linking the Plan funding request to larger community, neighborhood, economic, environmental, beautification and youth and healthcare benefits is important.
- ▶ A full grant application may be requested.
- ▶ Interviews or meetings to discuss the project face to face are important when requested by the funder.
- ▶ Large foundations may have more complicated procedures than the smaller foundations. Know the foundation.
- ▶ Follow up calls and thank you letters are welcomed and appropriate.
- ▶ Most foundations want to see that other foundations, businesses and individuals are contributing. Be prepared with other contributors lists towards the total amount of the request.

Corporations and Businesses

Identify which are likely to be interested in non-motorized projects in this area. Some will be interested in community improvement, or economic benefits, or neighborhood revitalization.

Use the same approach as for foundations, but incorporate ways the plan improvements will contribute to their business. Be prepared with a match or contributions from others.

Nonprofit Organizations

Many nonprofits have a genuine interest in non-motorized transportation. Larger nonprofits, like the hospitals and government units, will often contribute if they see direct benefits to healthcare, community improvement or bringing people to their facilities. Emphasize these important aspects.

Utilize the same strategies as for foundations and corporations, but address broader community values the nonprofit embraces through their mission and program. Provide match and/or other contribution list from others.

Individual/Family Donors

Research those individual/family donors who are community contributors.

Approach them through someone who knows them and can speak with you about the Plan and funding need.

Develop clarity about the size and purpose of each individual/family request before any approach is taken. Individual/family approaches can be taken through:

- ▶ Personal phone calls and meetings
- ▶ Fund Raising letters to the public and/or through a targeted list developed for fund raising for this project.

Agency and Organization Contacts

The following governmental agencies and non-profit organizations can provide further information on funding, technical assistance, helpful web sites and other resources that they offer as relating to trails, greenways and non-motorized transportation.

Part A: State and Federal Government

Michigan Department of Transportation (MDOT)

- ▶ <http://www.mdot.state.mi.us>

Non-Motorized Transportation Program

- ▶ Michael Eberlein, Non-Motorized Coordinator
Bureau of Transportation Planning, Michigan Department of Transportation
425 West Ottawa, P.O. Box 30050, Lansing, MI 48909
Phone: 517-335-2823 Fax: 517-373-9255

Transportation Enhancement Program

- ▶ Paul McAllister, Enhancement Program Manager
Bureau of Transportation Planning, Michigan Department of Transportation
425 West Ottawa, P.O. Box 30050, Lansing, MI 48909
Phone: 517-335-2622 Fax: 517-373-9255
E-mail: mcallisterp@mdot.state.mi.us
<http://www.mdot.state.mi.us/business/enhn>

U.S. Department of Transportation, Federal Highway Administration (FHWA)

Bicycle and Pedestrian Program

- ▶ John Fegan, Bicycle and Pedestrian Program Manager
Planning and Programming Branch, Federal Highway Administration
HEP-10, 400 Seventh Street, SW, Washington, DC 20590
Phone: 202-366-5007 Fax: 202-366-3713

U.S. Environmental Protection Agency (EPA)

EPA's Transportation Partners

Transportation Partners (TP) is a cooperative program of the U.S. Environmental Protection Agency that works with citizen groups, local governments, businesses and associations (Project Partners) to develop transportation choices and practical solutions to improve mobility, efficiency, quality of life and the environment, while reducing the vehicle miles traveled.

- ▶ <http://www.epa.gov/tp>

Michigan Department of Natural Resources (DNR)

- ▶ <http://www.dnr.state.mi.us>

Forest Management Division

Administrators of the Michigan Trailways program and the Natural Rivers program.

- ▶ <http://www.dnr.state.mi.us/www/fmdhome.html>
- ▶ Hector Chiunti, State Trails Coordinator
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30452, Lansing, MI 48909
Phone: 517-373-9483 Fax: 517-373-2443
- ▶ Philip Wells, Trailways Program Leader
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30452, Lansing, MI 48909
Phone: 517-373-3038 Fax: 517-373-2443
- ▶ Steve Sutton, Southern Michigan Rivers Administrator
Michigan's Natural River Program
Forest Management Division, Michigan Department of Natural Resources
P.O. Box 30459, Lansing, MI 48909
Phone: 517-241-9049
E-mail: suttonsl@state.mi.us
<http://www.dnr.state.mi.us/www/fmd/natrriver/natriv.htm>

Parks and Recreation Division

- ▶ Mark Pearson, Master Planning Unit
Parks and Recreation Division, Michigan Department of Natural Resources
P.O. Box 30257, Lansing, MI 48909
Phone: 517-373-1270
[Http://www.dnr.state.mi.us/www/parks/index.htm](http://www.dnr.state.mi.us/www/parks/index.htm)

Wildlife Division

- ▶ Dick Elden
Wildlife Division, Michigan Department of Natural Resources
P.O. Box 30028, Lansing, MI 48909
Phone: 517-373-1263 Fax: 517-373-6705
<http://www.dnr.state.mi.us/wildlife/default.htm>

Michigan Department of Environmental Quality (DEQ)

- ▶ <http://www.deq.state.mi.us>

Land and Water Management Division

Administrators of the Coastal Management Program and the Nonpoint Source Program.

- ▶ Cathie Cunningham, Supervisor
Coastal Management Program
Land and Water Management Program, Michigan Department of Environmental Quality
P.O. Box 30458, Lansing, MI 48909-7958
Phone: 517-373-1950
E-Mail: CunningC@state.mi.us
http://www.deq.state.mi.us/lwm.grt_lakes/czm/czm.html
- ▶ Karol Smith
Non-point Source Unit
Surface Water Quality Division, Michigan Department of Environmental Quality
P.O. Box 30458, Lansing, MI 48909-7958
Phone: 517-241-7733
E-mail: smithk2@state.mi.us
<http://www.deq.state.mi.us/swq/nps/npsHOME.htm>

National Park Service (NPS)

- ▶ <http://www.nps.gov>

Rivers, Trails, and Conservation Assistance Program (RTCA)

The RTCA program helps communities protect rivers, trails, and greenways on lands outside the federal domain and without federal ownership.

- ▶ Barbara Nelson-Jameson, Outdoor Recreation Planner
National Park Service – Rivers, Trails and Conservation Assistance Program
4570 Akron-Peninsula Road, Peninsula, OH 44264
Phone: 330-657-2951 Fax: 330-657-2955
E-mail: Barbara_Nelson-Jameson@nps.gov
<http://www.cr.nps.gov/rtca>

Part B: Nonprofit Organizations

Surface Transportation Policy Project (STPP)

The goal of Surface Transportation Policy Project is to ensure that transportation policy and investments help conserve energy, protect environmental and aesthetic quality, strengthen the economy, promote social equity, and make communities more livable. The STPP emphasizes the needs of people, rather than vehicles, in assuring access to jobs, services, and recreational opportunities.

- ▶ Surface Transportation Policy Project
1100 17th Street, NW, 10th Floor, Washington DC 20036
Phone: 202-466-2636 Fax: 202-466-2247
E-mail: stpp@transact.org
[Http://www.transact.org](http://www.transact.org)

Environmental Law and Policy Center (ELPC)

The Environmental Law and Policy Center is a Midwest public interest environmental advocacy organization working to achieve cleaner energy resources and implement sustainable energy strategies, promote innovative and efficient transportation and land use approaches that produce cleaner air and more jobs, and develop sound environmental management practices that conserve natural resources and improve the quality of life in Midwest communities.

- ▶ Environmental Law and Policy Center of the Midwest
35 East Wacker Drive, Suite 1300, Chicago, IL 60601-2208
Phone: (312)759-3400 Fax: (312)332-1580
[Http://www.elpc.org](http://www.elpc.org)

Bicycle Federation of America (BFA)

The Bicycle Federation of America is a national, not-for-profit organization working with people in communities to make America more bicycle friendly and walkable. The BFA's resource center provides updates, information and resources for bicycle and pedestrian practitioners, related professionals, and citizen advocates.

- ▶ Bicycle Federation of America
1506 21st Street NW, Suite 200, Washington DC 20036
Phone: 202-463-6622 Fax: 202-463-6625
E-mail: bikefed@aol.com
[Http://www.bikefed.org](http://www.bikefed.org)

League of American Bicyclists (LAB)

The League of American Bicyclists was founded in 1880 as the League of American Wheelmen. It promotes cycling for fun, fitness and transportation, and works through advocacy and education for a more bicycle-friendly America. LAB's current efforts include fighting for the rights of bicyclists through an aggressive national advocacy program, promoting bicycling recreation and transportation, and increasing bicycle safety and awareness by educating bicyclists and other road users.

- ▶ League of American Bicyclists
1612 K Street, NW, Suite 401, Washington DC 20006
Phone: 202-822-1333 Fax: 202-822-1334

E-mail: bikexec@aol.com
Http://www.bikeleague.org

League of Michigan Bicyclists (LMB)

The statewide organization of Michigan's bicyclists. Similar in organization and goals as LAB.

- ▶ League of Michigan Bicyclists
P.O. Box 16201, Lansing, MI 48901
Phone: 517-394-2453 or 1-888-MI-BIKES Fax: 517-394-7814
E-mail: lmeans@igc.org
Http://www.lmb.org

Rails-to-Trails Conservancy (RTC)

The purpose of Rails-to-Trails Conservancy is to enrich America's communities and countryside by creating a nationwide network of public trails from former rail lines and connecting corridors.

- ▶ Rails-to-Trails Conservancy
1100 Seventeenth Street, NW, 10th Floor, Washington, DC 20036
Phone: 202-331-9696 Fax: 202-331-9680
E-mail: rtrails@transact.org
Http://www.railtrails.org
- ▶ Rails-to-Trails Conservancy, Michigan Field Office
913 W. Homes, Suite 145, Lansing, MI 48910
Phone: 517-393-6022 Fax: 517-393-1960
E-mail: rtcmichigan@transact.org

National Transportation Enhancement Clearinghouse (NTEC)

NTEC is a central point of contact for information, resources, and referrals concerning all aspects of Transportation Enhancement Program implementation.

- ▶ The National Transportation Enhancement Clearinghouse
1100 Seventeenth Street, NW, 10th Floor, Washington, DC 20036
Phone: 888-388-6832 Fax: 202-463-0875
E-mail: ntec@transact.org

Part C: Land Conservancies

Also known as Land Trusts, are national, state, regional, county, and local private organizations that can acquire or otherwise protect land.

Land Trust Alliance

The Land Trust Alliance is a national organization of land trusts. The Alliance provides specialized services, publications, and training for land trusts and other land conservation organizations.

- ▶ Land Trust Alliance
1319 F Street, Suite 501, Washington, DC 20004-1106
Phone: 202-638-4725 Fax: 202-638-4730
[Http://www.lta.org](http://www.lta.org)

Trust for Public Land (TPL)

TPL is a national organization formed to help public agencies and communities acquire land of recreational, cultural, and ecological value.

- ▶ Trust for Public Land
116 New Montgomery Street, 4th Floor
San Francisco, CA 94105

Education Resources

The following is a brief list of recommended materials for those interested in teaching youth bicycle and pedestrian safety:

Bicycle Safety Resources

- ▶ *A Guide to Bicycle Rodeos* contains all the information needed to plan, fund, set up and operate a successful bicycle rodeo based on safety and accident prevention — Adventure Cycling Association, 150 East Pine Street, P.O. Box 8308, Missoula, MT 57807-8308.
- ▶ *The Bicycle Rodeo Kit* contains the above rodeo guide, station posters, braking time test rulers, workbooks, brochures, bicycle check cards and bicycle driver's licenses for 100 kids — Outdoor Empire Publishing, Inc., 511 Eastlake Avenue East, Seattle, WA 98109 (206) 624-3845
- ▶ Several bicycle safety and helmet promotion videos, a "take-home bicycle rodeo" guide, as well as everything needed to offer bulk helmet purchase programs — RideSafe, Inc., 30W260 Butterfield Road, Suite 212, Warrenville, IL 60555 1-800-285-7433
- ▶ A variety of bicycle safety videos for various age groups — The League of American Bicyclists, 1612 K Street NW, Suite 401, Washington, DC 20006 (202) 822-1333
- ▶ A variety of brochures and other publications, and/or funds to produce such materials — National Highway Traffic Safety Administration (NHTSA), U.S. DOT, 400 Seventh Street SW, Washington, DC 20590 1-800-424-9393
- ▶ *The Basics of Bicycling* consists of a series of lessons, on video and on-bike, designed to give 4th grade students the skills needed for bicycling in traffic — Bicycle Federation of America, 1506 21st Street NW, Washington, DC 20036 (202) 463-6622

- ▶ *The Effective Cycling Program* is an adult education course for commuter and recreational cyclists who desire to improve their skills operating in a variety of traffic conditions. May work for teenage audiences; good for college students — League of American Bicyclists, 1612 K Street NW, Suite 401, Washington, DC 20006 (202) 822-1333
- ▶ *Bike to School Safety Education Program Safety Guide* is a comprehensive package for use by school administrators and teachers to develop and implement successful programs for bicycle education. Includes on-bike elements and interactive instructional video — Florida Bicycle and Pedestrian Safety Program, University of Florida, 431 ARCH, Post Office Box 115706, Gainesville, Florida, 32611-5706. (352) 392-8192.
- ▶ *The Safe Moves* educational program for elementary school age children has taught hundreds of thousands of Los Angeles-area children safe bicycling strategies and has reduced bicycle-related crashes among elementary school-aged children — Safe Moves, 21745 Ulmas Drive, Woodland Hills, CA, 91367.
- ▶ *The Safe Kids Cycle Smart* guide includes information on coalition building and community outreach, data collection and evaluation, helmet legislation, engineering, policies, publicity, bicycle helmet discount and distribution programs, and a listing of bicycle safety and helmet resources — National Safe Kids Campaign, 111 Michigan Ave., NW, Washington, D.C., 20010. (202) 884-4993.
- ▶ *Bike Helmet Injury Prevention Kit for Medical Professionals*. A kit specifically designed for medical professionals encourage use of bike helmets by their patients. Consists of a colorful 17x26 inch educational poster for parents, 100 bike helmet brochures, a 100-sheet “prescription pad” for physicians to “prescribe” helmet use with every bike ride, 100 pledge cards and 100 discount coupons — National Safe Kids Campaign, 111 Michigan Ave., NW, Washington, D.C., 20010. (202) 884-4993.

Pedestrian Safety Resources

- ▶ *A Guidebook for Student Pedestrian Safety* outlines directions for developing school walk routes, identifies deficiencies along walking routes and suggests remedial actions, and recommends procedures for school administrators to work with local public works agencies to remedy these deficiencies — Washington State Department of Transportation, Washington State Transportation Safety Commission, Transportation Building KF-10, Olympia, Washington, 98504.
- ▶ *Development and Evaluation of a Pedestrian Safety Program for Elementary School Bus Riders* is a straightforward guide to teaching programs for elementary pedestrian safety — National Bicycle and Pedestrian Clearinghouse, 1506 21st Street, NW, Suite 200, Washington, D.C., 20036. (800) 760-6272.
- ▶ *The Sidewalk Rangers Program* teaches third graders pedestrian safety skills. The program is conducted on a “walking course”—a large intersection created on the stage in the elementary school. Each third grade class attends a 45-minute session and is taught pedestrian safety by enacting different traffic situations. Students receive two pedestrian safety activity books, one to take home to share with parents and siblings, and one to keep in the classroom to be discussed by the teacher — City of Allentown, Penn., Highway Safety Program.
- ▶ *The Walk Alert Program* aids communities in developing a program that focuses on educating pedestrians and motorists about what they can do to reduce the risk of crashes. Developed by the National Safety Council for the National Highway Traffic Safety Administration — NHTSA, 400 7th Street, SW, Washington, D.C., 20590. (202) 366-1739.

Appendix N

NON-MOTORIZED TRAILWAY DEVELOPMENT CONSTRUCTION COSTS

These costs are provided and intended as a guide in establishing budgets only. Actual costs may vary depending on levels of construction, traffic, and other considerations.

<u>Development Type</u>	<u>Cost Per Mile</u>
A. 8' Path, Separate facility Asphalt on gravel	\$ 75,000
B. 4' Bike Lanes, No curb Paved Shoulder	\$ 75,000
C. 4' Bike Lanes, Curb-and-gutter, widening with roadway reconstruction	\$ 80,000
D. 4' Bike Lanes, Curb-and-gutter, widening without roadway reconstruction	\$235,000
E. Striping and pavement marking 4' White edge line \$0.20/ft.	\$ 2,200
Bike symbol 260 ft.+/- Spacing \$50/ea.	\$ 2,000
Word bike (optional) 260 ft. +/- Spacing \$50/ea.	\$ 2,000
Signal installation 260 ft. +/- Spacing \$50/ea.	\$ 2,000

Note: Items B-E assume both sides of street in per mile cost estimates

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