APPENDIX F:

GREATER MT. PLEASANT AREA NON-MOTORIZED PLAN

Greater Mt. Pleasant Area Non-motorized Plan

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November 30, 2011

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All of those who contributed to the Non-Motorized Master Plan development process

Plan Funding

The Greater Mt. Pleasant Area Non-motorized Plan was funded by the Saginaw Chippewa Indian Tribe

Charter Township of Union

Isabella County, Michigan

RESOLUTION TO ADOPT THE GREATER MT PLEASANT AREA NON MOTORIZED PLAN

WHEREAS,
The Charter Township of Union has received a grant from the Saginaw Chippewa Indian Tribe in the sum of Fifty Thousand Dollars to produce an Area Wide Non Motorized Transportation Plan

WHEREAS,
The steering committee for the plan represents a diversity of interests and participants from the local units of government, agencies, educational institutions and citizens of the greater Mt Pleasant Area and Isabella County

WHEREAS,
The steering committee selected The Greenway Collaborative of Ann Arbor, a nationally recognized leader in Non Motorized Transportation Planning

WHEREAS,
The completed plan meets the goals of the steering committee, The Charter Township of Union Master Plan, and The Charter Township of Union Board Policy Manual Global Ends

NOW, THEREFORE, BE IT RESOLVED that
The Charter Township of Union Adopts the Greater Mt Pleasant Area Non Motorized Transportation Plan

The foregoing resolution offered by Board Member Lannen

Second offered by Board Member Dinse

Upon roll call vote the following voted "aye": Dinse, Gallinat, Lannen, Mikus, Stovak, Barker

"nay": Verwey

The Supervisor declared the resolution adopted.

Peter Gallinat

Peter Gallinat, Clerk
Resolution # 2011-10-26

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1. Introduction

The Greater Mt. Pleasant Area Non-motorized Transportation Plan presents a clear vision of how the City of Mt. Pleasant, Union Township, Central Michigan University and the Saginaw Chippewa Indian Tribe may improve their non-motorized connections as well as links to surrounding communities and regional trail resources in Isabella County. The plan looks at how these communities may transform their streets into outstanding attractive public spaces that are friendly to bicyclist, pedestrians and transit users while continuing to serve the needs of motorized traffic. This plan complements the goals of existing redevelopment, trail planning, energy efficiency, storm water mitigation, recreation, wayfinding and community enhancement efforts within the communities. Once implemented, the proposed improvements will help the Greater Mt. Pleasant Area continue to be an attractive place to live, work, get an education and play.

Helping to shape this plan, has been a dedicated group of elected officials, appointed officials, public employees and the general public. The results of an on-line survey and the input gathered at two public workshops guided the proposed non-motorized network as well as setting implementation priorities.

The Non-Motorized Master Plan recommendations will help establish a physical and cultural environment that supports and encourages safe, comfortable and convenient ways for pedestrians and bicyclists to travel throughout the city and into the surrounding communities. It is anticipated that the physical cultural changes will result in a greater number of individuals choosing walking and bicycling as their preferred mode of transportation for many local trips. These choices will in turn lead to healthier lifestyles, improved air and water quality, and a more energy efficient and sustainable transportation system.

The document is divided into eight main segments:

Goals and Objectives
Vision that guides the plan

Inventory & Analysis
Assesses the state of the existing pedestrian and bicycle facilities

Proposed Facilities
Covers the specific infrastructure improvements to the transportation system to establish a non-motorized transportation network

Implementation Plan
Provides the phasing, costs and funding recommendations for near, mid and long term improvements to the non-motorized network

Planning & Zoning Review and Recommendations
Describes how planning and zoning codes can be structured to support a bicycle and pedestrian friendly community

Proposed Policies & Programs
Describes the support system necessary for a successful pedestrian and bicycle network

Education & Marketing
Provides ways to promote non-motorized transportation while providing information on safe bicycling and walking

Design Guidelines
Provides a background on non-motorized transportation issues and defines current best practices for bicycle and pedestrian facility design

1.1 Why Walking and Bicycling Are Important

A comprehensive non-motorized transportation system based on best practices is of paramount importance to the health, safety and general welfare of the citizens of the Greater Mt. Pleasant Area. The benefits of a comprehensive non-motorized transportation system extend beyond the direct benefits to the users of the system to the public as a whole. A well-implemented non-motorized transportation system will reap rewards by:

- Providing viable transportation alternatives for individuals who are capable of independent travel yet do not hold a driver's license or have access to a motor vehicle at all times.
- Improving safety, especially for the young and old who are at most risk due to their dependence on non-motorized facilities and their physical abilities.
- Improving access for the 20% of all Americans who have some type of disability and the 10% of all Americans who have a serious disability.[1]
- Improving the economic viability of a community by making it an attractive place to locate a business while simultaneously reducing public and private health care costs associated with inactivity.
- Encouraging healthy lifestyles by promoting active living.
- Reducing the water, air, and noise pollution associated with automobile use by shifting local trips from automobiles to walking or bicycling.
- Improving the aesthetics of the roadway and community by adding landscaping and medians that improve the pedestrian environment and safety.
- Providing more transportation choices that respect an individual's religious beliefs, environmental ethic, and/or uneasiness in operating a vehicle.
- Reducing the need for parking spaces.
- Creating a stronger social fabric by fostering the personal interaction that takes place while on foot or on bicycle.
- Reducing dependence on and use of fossil fuel with the resulting positive impact on climate change.

Improvements to non-motorized facilities touch all individuals directly, as almost all trips begin and end as a pedestrian.

Where We Are Now

There is little question that the most significant influence on the design of American communities is the automobile. About eighty percent of America has been built in the last fifty years.[2] During those years, the design of everything from homes, neighborhoods, shopping center, schools, workplaces and churches have been profoundly shaped around the car. This is true not only for the site-specific placement of driveways and parking lots, but also the distribution and mixing of land uses.

[1] Disability Status: 2000 - Census 2000 Brief.
[2] Jim Kunstler, *Geography of Nowhere.*

Accommodations to the automobile came not simply as the logical outgrowth of an additional mode of travel, but often at the expense of bicycling, walking and transit. Increases in automobile volumes and speeds have made sharing a roadway uncomfortable and often unsafe. Also, the need for additional rights-of-way to accommodate added vehicle lanes has regularly come at the expense of space typically set aside for sidewalks.

The pattern of public investment in motor vehicle transportation above all other modes has resulted in an overall reduction in transportation options for the average citizen. Communities are now weighing the convenience of the automobile against the consequences of its use at current levels and trying to strike a balance. The direct and indirect consequences include:

- Current guidelines for exercise call for one hour of activity daily. Physical inactivity is a primary factor in at least 200,000 deaths annually and 25% of all chronic disease-related deaths.[3] Forty percent of adults do not participate in any leisure time physical activity;[4] of those who do participate in exercise, 66.1% use their local streets.[5]
- About 40% of all trips are estimated to be less than two miles which is an easy distance for walking or bicycling, provided appropriate facilities are available. In practice, automobiles are used for 76% of all trips under one mile and 91% of all trips between one and two miles.[6]
- While money for bicycle and pedestrian projects has increased dramatically since 1989 with the passage of federal transportation programs known as ISTEA and TEA-21, in Michigan, only $0.16 per person is spent on pedestrian facilities vs. $58.49 per person on highway projects annually.[7]
- The nation is experiencing an obesity epidemic; 61% of Michigan's adults are considered overweight, which is the second highest rate in the country.[8] While there may be other significant factors, the increase in obesity nationally over the past fifteen years corresponds with an increase in the number of miles driven and a decrease in the number of trips made by walking and bicycling. This epidemic is estimated to result in $22 billion a year in health care and personal expenses.[9]
- In southeast Michigan, people spend on average 18.8% of their income on transportation, second only to shelter at 19.1%.[10]
- The number of children that walk or bike to school has dropped 37% over the last twenty years.[11] The increase in traffic caused by parents taking their children to and from school and other activities has been estimated to be 20 to 25% of morning traffic. Half of the children hit by cars while walking or bicycling to school were hit by parents of other children.[12] Today only about 8% of children walk to school.

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[3] Ibid.
[4] W.C. Wilkinson, et. al. Increasing Physical Activity through Community Design: A Guide for Public Health Practitioners. Washington: National Center for Bicycling and Walking. May 2002.
[5] Brownson, Dr. Ross, et.al. "Environmental and policy determinants of physical activity in the United States", American Journal of Public Health, Dec 2001.
[6] Chicago Department of Transportation
[7] Surface transportation Policy Project, "Mean Streets 2000", 2000.
[8] Michigan Governor's Council on Physical Fitness, Health, and Sports.
[9] Ed Pavelka, "Can Commuting Help You Lose Weight?", League of American Bicyclists, Summer 2002.
[10] Surface Transportation Policy Project, "Driven to Spend", 2000.
[11] W.C. Wilkinson, et. al. Increasing Physical Activity through Community Design: A Guide for Public Health Practitioners. Washington: National Center for Bicycling and Walking. May 2002.
[12] Michigan Governor's Council on Physical Fitness, Health, and Sports.

- The result of automobile emissions on public health is just beginning to be understood. In Atlanta during the 1996 Olympics, there was a 22.5% reduction in automobile use; during the same period of time admissions to hospitals due to asthma decreased by 41.6%.[13]In Michigan, non-motorized trips account for about 7% of all trips, but make up about 12% of all traffic fatalities and severe injuries. Non-motorized modes are not inherently dangerous; communities have been able to significantly increase the non-motorized mode-share while simultaneously decreasing the number of non-motorized crashes. Emerging research is showing the single most important factor for improving bicycle and pedestrian safety is increasing the number of bicyclists and pedestrians.

The Intention of This Plan

The purpose of this plan is to provide a general background on the issues of non-motorized transportation as well as to present a proposal on how to address the issues through policies, programs, and design guidelines for facility improvements. This is not intended to be a replacement for the *AASHTO Guide for the Development of Bicycle Facilities*, *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, AASHTO Guide for Achieving Flexibility in Highway Design,* USDOT's *Designing Sidewalks and Trails for Access – Part II, Best Practices Design Guide*, *Accessible Public Right-of-Way, Planning and Designing for Alternations*, the *Revised Draft Guidelines for Accessible Public Rights-of-Way*, MUTCD, MMUTCD or any other applicable federal, state, or local guidelines. Rather, it is intended as a synthesis of key aspects of those documents to provide an interpretation on how they may be applied in typical situations in the Greater Mt. Pleasant Area. Given the evolving nature of non-motorized transportation planning, these guidelines should be periodically reevaluated to determine their appropriateness.

The specific facility recommendations within this plan represent a Master Plan level evaluation of the suitability of the proposed facilities for the existing conditions. Prior to proceeding with any of the recommendations in this report though, a more detailed corridor level assessment or traffic study should be done in order to fully investigate the appropriateness of the proposed roadway modifications and/or proposed bicycle or pedestrian facilities.

[13] Friedman, Michael S., et. al. Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma, Journal of the American Medical association, February 21, 2001.

1.2 Glossary of Terms

Within this document there are a number of terms that may be unfamiliar to many people. The following is a brief glossary of some of the transportation terms that are found in this document:

AASHTO – American Association of State Highway & Transportation Officials.

Bicycle Quality/Level of Service (Bike Q/LOS) – a model for evaluating the perceived safety and comfort of bicycling in a roadway based on conditions within the road (not surrounding land uses) expressed as a letter grade with "A" being best and "F" being worst.

Bicycle Boulevard - a low-volume and low-speed street that has been optimized for bicycle travel through treatments such as traffic calming and traffic reduction; signage and pavement markings; and intersection crossing treatments.

Bike Lane – a portion of the roadway designated for bicycle use. Pavement striping and markings typically accompanied with signage are used to delineate the lane.

Bike Route – a designation that can be applied to any type of bicycle facility. It is intended as an aid to help bicyclists find their way to a destination where the route is not obvious.

Bulb-outs – see Curb Extensions.

Clear Zones – area free of obstructions around roads, Shared-use Paths, and Walkways.

Clearance Interval – the flashing "Don't Walk" or flashing "Red Hand" phase of pedestrian signals. It indicates to pedestrians that they should not begin to cross the street. A correctly timed clearance interval allows a pedestrian who entered the crosswalk during the "Walk" phase to finish crossing the street at an unhurried pace.

Complete Street – streets that are planned, designed, operated and maintained such that all users may safely, comfortably and conveniently move along and across streets throughout a community.

Crossing Islands – a raised median within a roadway typically set between opposing directions of traffic that permits pedestrians to cross the roadway in two stages. A crossing island may be located at signalized intersections or at an unsignalized mid-block crosswalk. These are also known as **Refuge Islands.**

Crosswalk – the area of a roadway that connects sidewalks on either side at an intersection of roads (whether marked or not marked) and other locations distinctly indicated for pedestrian crossings by pavement markings.

Curb Extensions – extending the curb into the roadway in order to minimize pedestrian crossing distance and to improve visibility when on-street parking is present, also known as **Bulb-outs**.

Dispersed Crossing – where pedestrians typically cross the road at numerous points along the roadway, rather than at an officially marked crosswalk.

E-Bike – a bicycle that is propelled by an electric motor and/or peddling.

Fines – finely crushed gravel 3/8" or smaller. The fines may be loosely applied or bound together with a stabilizing agent.

Inside Lane – the travel lane adjacent to the center of the road or the Center Turn Lane.

Ladder Style Crosswalk – a special emphasis crosswalk marking where 1' to 2' wide white pavement markings are placed perpendicular to the direction of a crosswalk to clearly identify the crosswalk.

Lateral Separation – horizontal distance separating one use from another (pedestrians from cars, for example) or motor vehicles from a fixed obstruction such as a tree.

Leading Pedestrian Interval –a traffic signal phasing approach where the pedestrian "Walk" phase precedes the green light going in the same direction by generally 4 to 5 seconds.

Level of Service (LOS) – a measurement of the motor vehicle flow of a roadway expressed by a letter grade with "A" being best or free flowing and "F" being worst or forced flow/heavily congested. Also see Bicycle Level of Service and Pedestrian Level of Service.

Long-term Plan – reflects the vision of the completed non-motorized system. Some improvements may require the reconstruction of existing roadways, the acquisition of new right-of-way, or significant capital investments.

Mid-block Crossings – locations that have been identified based on land uses, bus stop locations and the difficulty of crossing the street as probable candidates for Mid-block Crosswalks. Additional studies will need to be completed for each location to determine the ultimate suitability as a crosswalk location and appropriate solution to address the demand to cross the road.

Mid-block Crosswalk – a crosswalk where motorized vehicles are not controlled by a traffic signal or stop sign. At these locations, pedestrians wait for a gap in traffic to cross the street, motorists are required to yield to a pedestrian who is in the crosswalk (but not if the pedestrian is on the side of the road waiting to cross).

MMUTCD – Michigan Manual of Uniform Traffic Control Devices. This document is based on the National Manual of Uniform Traffic Control Devices (MUTCD). It specifics how signs, pavement markings and traffic signals are to be used. The current version is the 2005 MMUTCD. It was adopted on August 15, 2005 and is based on the 2003 National MUTCD. In 2009 a new National MUTCD was adopted, the state has two years to adopt the national manual. Typically, there are only minor divergences between the two manuals due to specifics in Michigan's traffic laws.

Mode-share / Mode split – the percent of trips for a particular mode of transportation relative to all trips. A mode-share / mode split may be for a particular type of trip such as home-to-work.

Mode – distinct types of transportation (cars, bicycles and pedestrians are all different modes of travel).

MVC – Michigan Vehicle Code, a state law addressing the operation of motor vehicles and other modes of transportation.

Near-term Opportunities –improvements that may generally be done with minimal changes to existing roadway infrastructure. They include road re-striping projects, paved shoulders, new sidewalks and crossing islands. In general, existing curbs and drainage structures are not changed.

Neighborhood Connector – a route that primarily utilizes residential streets and short connecting pathways that link destinations such as parks, schools and **Shared Use Paths**. Neighborhood Connectors may contain the characteristics of a **Bicycle Boulevard** but, in addition, provide accommodations for pedestrians.

Out-of-Direction Travel – travel in an out-of-the-way, undesirable direction.

Outside Lane – the travel lane closest to the side of the road.

Off-road Trail – see Shared Use Path

Pedestrian Desire Lines – preferred pedestrian direction of travel.

Pedestrian Hybrid Beacon – also known as a HAWK signal, is a beacon used to help pedestrians cross mid-block by stopping motorized traffic.

Pedestrian Quality/Level of Service (Ped. Q/LOS) – a model for evaluating the perceived safety and comfort of the pedestrian experience based on conditions within the road ROW (not surrounding land uses) expressed as a letter grade with "A" being best and "F" being worst.

Rectangular Rapid Flash Beacons – are high intensity alternating LED flashers that are paired with standard crosswalk signs. The LED flashers are activated when a pedestrian or bicyclists is crossing the road to draw motorists attention to the crosswalk at the time it is being used.

Refuge Islands – see Crossing Islands.

Roundabouts – yield-based circular intersections that permit continuous vehicle travel movement.

Shared Roadway –bicycles and vehicles share the roadway without any portion of the road specifically designated for the bicycle use. Shared Roadways may have certain undesignated accommodations for bicyclists such as wide lanes, paved shoulders, and/or low speeds. These routes may also be signed and include pavement markings such as Shared-Lane Markings.

Shared Lane Markings – a pavement marking consisting of a bike symbol with a double chevron above, also known as "sharrows". These pavement markings are used for on-road bicycle facilities where the right-of-way is too narrow for designated bike lanes. The shared lane markings alerts cars to take caution and allow cyclist to safely travel in these lanes when striping is not possible. They are often used in conjunction with signage.

Shared Use Path – a wide pathway that is separate from a roadway by an open unpaved space or barrier or located completely away from a roadway. A Shared Use Path is shared by bicyclists and pedestrians. There are numerous sub-types of Shared Use Paths including Sidewalk Bikeways that have unique characteristics and issues. An example of a Shared Use Path would be the I-275 Metro Trail.

Shy Distance – the distance that pedestrians, bicyclists and motorists naturally keep between themselves and a vertical obstruction such as a wall or curb.

Sidepath – see **Roadside Pathway**

Roadside Pathway – a specific type of Shared Use Path that parallels a roadway generally within the road right-of-way. This is also known as a **Sidepath**.

Signalized Crosswalk – a crosswalk where motor vehicle and pedestrian movements are controlled by traffic signals. These are most frequently a part of a signalized roadway intersection but a signal may be installed solely to facilitate pedestrian crossings.

Speed Table – raised area across the road with a flat top to slow traffic oftn used in conjunction with a crosswalk.

Splitter Islands – crossing islands leading up to roundabouts that offer a haven for pedestrians and that guide and slow the flow of traffic. They may also be used at intersections in place of a turning lane.

UTC – Uniform Traffic Code, is a set of laws that can be adopted by municipalities to become local law that address the operation of motor vehicles and other modes of transportation. The UTC is a complementary set of laws to the MVC.

Yield Lines – a row of triangle shaped pavement markings placed on a roadway to signal to vehicles the appropriate place to yield right-of-way. This is a new pavement marking that is used in conjunction with the new "Yield to Pedestrians Here" sign in advance of marked crosswalks.

2. Project Goals and Objectives

The following vision, goals and objectives were developed to guide the development of the master plan. They evolved through an extensive public involvement process that began with a web survey that was completed by 548 people. Participants were asked to individually list their top three desired project outcomes. From this visioning process the project team found that the desired "outcomes" of the plan fell into four categories:

- Non-motorized Connectivity
- Community Health
- Pedestrian and Bicycle Safety
- Pedestrian and Bicycle Friendly Community

Using the survey input as a guide, the project team developed goals and objectives for the plan that would deliver these outcomes. The vision, goals and objectives were then presented at the public workshop and the public was asked to indicate their agreement or disagreement and offer modifications to improve them. Public input was incorporated as appropriate and the following vision, goals and objectives resulted.

Topics:

2.1 – Purpose of the Plan and Community Vision

2.2 – Goals and Objectives

2.1 Purpose of the Plan and Community Vision

The purpose of the plan is to identify the non-motorized network and the support systems necessary for safe and convenient non-motorized travel throughout the Greater Mt. Pleasant Area and Isabella County. As the network and systems are implemented, it is envisioned that this will result in more people freely choosing to walk and bicycle.

It is further envisioned that this will in turn lead to a healthier and more socially engaged community where walking and bicycling is a natural choice because there are easy and convenient ways to get from one destination to another.

2.2 Goals & Objectives

In addition to a vision statement, there are four goals listed below. Each statement is a general representation of the top desired project outcomes from the web survey.

1. **Provide better non-motorized connectivity**
2. **Advance community health**
3. **Improve pedestrian and bicycle safety**
4. **Institute changes that lead to a pedestrian and bicycle friendly community**

Goal One: Provide better non-motorized connectivity

Objectives:

a) Provide non-motorized links between key destinations within the Greater Mt. Pleasant area (such as shopping centers, parks, schools, campuses, downtown, etc.)

b) Provide non-motorized connections between the Mt. Pleasant area and regional destinations (such as the Pere-Marquette Rail-Trail, Clair, Fred Meijer Hartland Trail, Deerfield Park etc.)

c) Provide a complete non-motorized network (including features such as sidewalks, bike lanes, bike routes, safe road crossings etc.)

d) Provide an implementation plan that addresses the phasing of the network in a realistic manner that takes cost and benefits into consideration

e) Provide appropriate identification and wayfinding signage for pedestrian and bicycle routes that link to key destinations in the Greater Mount Pleasant Area and Isabella County

Goal Two: Advance community health

Objectives:

a) Reduce automobile dependency

b) Reduce obesity due to physical inactivity

c) Provide more active recreation opportunities (such as off-road trails)

d) Increase the number of people walking and bicycling especially for daily transportation trips such as commuting and errands

e) Improve air quality (such as reducing CO2 emissions)

Goal Three: Improve bicycle and pedestrian safety

Objectives:

a) Reduce the number of bicycle and pedestrian crashes

b) Maintain non-motorized facilities such that they are safe to use in a cost effective manner

c) Improve the education of motorists in regards to pedestrian and bicyclist issues

d) Improve the education of pedestrians and bicyclists in regards to rules of the road, motorists concerns and safe travel

e) Improve the safety of pedestrians and bicyclists at existing busy road intersections

f) Provide safe options to cross the road between existing signalized intersections

g) Provide appropriate lighting along non-motorized routes

h) Utilize current best practices in the design of non-motorized facilities and update standard plans and details to incorporated best practices

Goal Four: Institute changes that lead to a bicycle and pedestrian friendly community

Objectives:

a) Establish family friendly non-motorized facilities (such as neighborhood routes to parks and schools)

b) Provide more bike parking and a range of bike parking options (such as downtown, shopping centers, including some that are covered and secured)

c) Create and distribute a guide map that shows pedestrian and bicycle facilities and recommended walking and biking routes

d) Enhance the sense of community through increased social interaction between non-motorized transportation users

e) Provide bike racks on buses

f) Improve the aesthetics of the area's transportation system (such as by adding street trees, decorative lighting, benches etc.)

g) Establish performance benchmarks and track progress in the implementation of facilities, programs and policies as well as non-motorized use and crashes

h) Participate in active transportation recognition programs to track community progress in comparison to peer communities

3. Inventory and Analysis

The major influences on non-motorized travel may be distilled down to two factors: the physical environment and the social environment. The influence of the physical environment is not limited to the existence of specific facilities such as bike lanes and sidewalks. Just as important as facilities is the underlying urban form. The majority of bicycle and pedestrian trips are for short distances. Even with first-rate facilities, large blocks of homogeneous land uses and spread-out development will inhibit many non-motorized trips.

The Greater Mt. Pleasant Area and Isabella County as a whole are at a key juncture. Mainstream media has begun to cover the health and economic implications of our land use and transportation infrastructure decisions. Community leaders and citizen activists are calling for a greater emphasis on non-motorized travel. Yet, there is a tremendous physical legacy to overcome.

Topics:

3.1 – General Conditions

3.2 – The Pedestrian Environment

3.3 – The Bicycling Environment

3.1 General Conditions

The Greater Mt. Pleasant Area is the primary activity center of Isabella County, a generally rural county which is primarily made up of farmland. The Greater Mt. Pleasant Area has been developed into three different context zones with distinct patterns. They include general urban, suburban and suburban fringe/transitional.

The general urban area consists of high density development where there is a grid street pattern and a nearly complete sidewalk system in place. Pedestrian and bicycle travel is generally easy and comfortable in these areas and there are often numerous route options. This area includes the downtown, campus and many of the commercial centers. This area generally has high pedestrian activity and easy access to transit. However, the primary commercial centers that are located along Mission Road and Pickard Street carry high volumes of automobile traffic and present a challenging environment for non-motorized users.

The suburban area consists of moderate density development, with a partially complete sidewalk system and some commercial centers. The area is made up of predominantly single-family housing units with retail and business located in shopping centers and office parks. Residential streets are generally curved and some terminate in cul-de-sacs. There are developments of high density apartment buildings in this area that are isolated from the commercial centers and campus from a non-motorized point of view. Few arterial and collector alternatives exist in these areas for bicyclists and pedestrians. Many times, bicyclists and pedestrians are directed into the corridors with high concentrations of vehicular traffic, limited paved shoulders and very few pedestrian facilities. This area is generally auto-dependent with limited transit and pedestrian activity.

The suburban fringe/transitional area consist generally of dispersed land uses that for the most part are scaled towards automobile use. They are predominantly low-density and single-family with residential housing typically along country roads or detached subdivisions surrounded by agricultural and park land. They are auto-dependent, without sidewalks and generally have few if any paved shoulders.

Overall, bicycle and pedestrian travel outside of neighborhood streets generally follows the primary road system with limited sidewalks and paved shoulders. Opportunities to cross the primary road system are limited with poor bicycle and pedestrian connectivity between neighborhoods that are located on opposite sides of the roadway. The artificial barriers of the railroad, expressways and the four and five-lane arterials also tend to fragment the community from a non-motorized standpoint. The result is a non-motorized environment that is generally not favorable to walking and bicycling for everyday transportation.

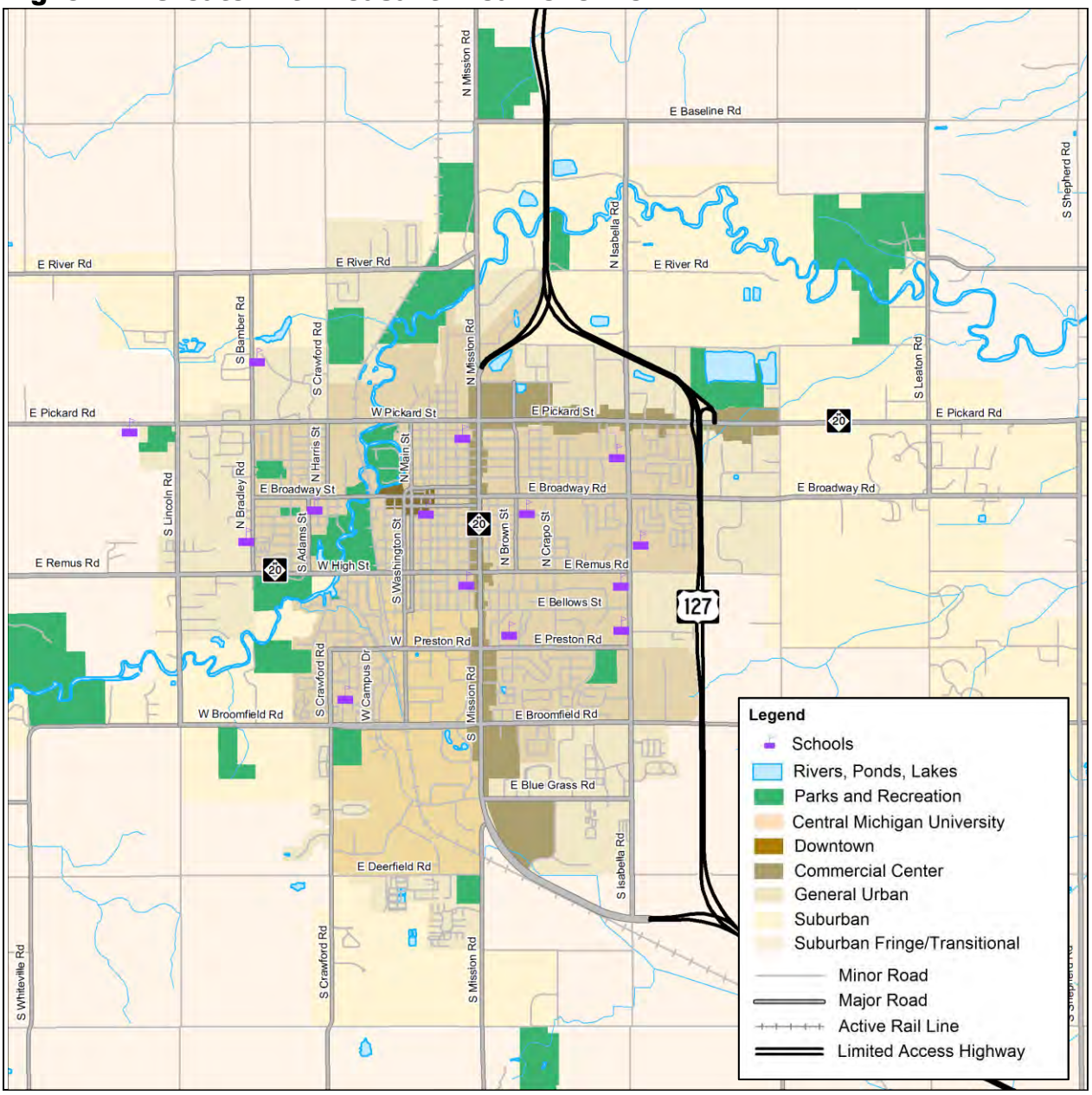
The following maps provide a general summary of the existing conditions in the Greater Mt. Pleasant Area and the Region:

- Fig. 3.1A. Greater Mt. Pleasant Area: Overview
- Fig. 3.1B. Greater Mt. Pleasant Area: Existing Non-motorized Facilities
- Fig. 3.1C. Greater Mt. Pleasant Area: Population Density 2010
- Fig. 3.1D. Greater Mt. Pleasant Area: Landscape Types
- Fig. 3.1E. Greater Mt. Pleasant Area: ICTC Bus Stops
- Fig. 3.1F. Greater Mt. Pleasant Area: No Bus Zone
- Fig. 3.1G. Greater Mt. Pleasant Area: Road Classification
- Fig. 3.1H. Greater Mt. Pleasant Area: Road Jurisdiction
- Fig. 3.1I. Greater Mt. Pleasant Area: Average Daily Traffic Volumes
- Fig. 3.1J. Greater Mt. Pleasant Area: Existing Road Cross Section
- Fig. 3.1K. Greater Mt. Pleasant Area: Block Size Analysis
- Fig. 3.1L. Greater Mt. Pleasant Area: Existing Bike and Pedestrian Activity Generators
- Fig. 3.1M. Greater Mt. Pleasant Area: Potential Bike and Pedestrian Activity Generators

The following maps provide a general summary of the existing conditions in Isabella County:

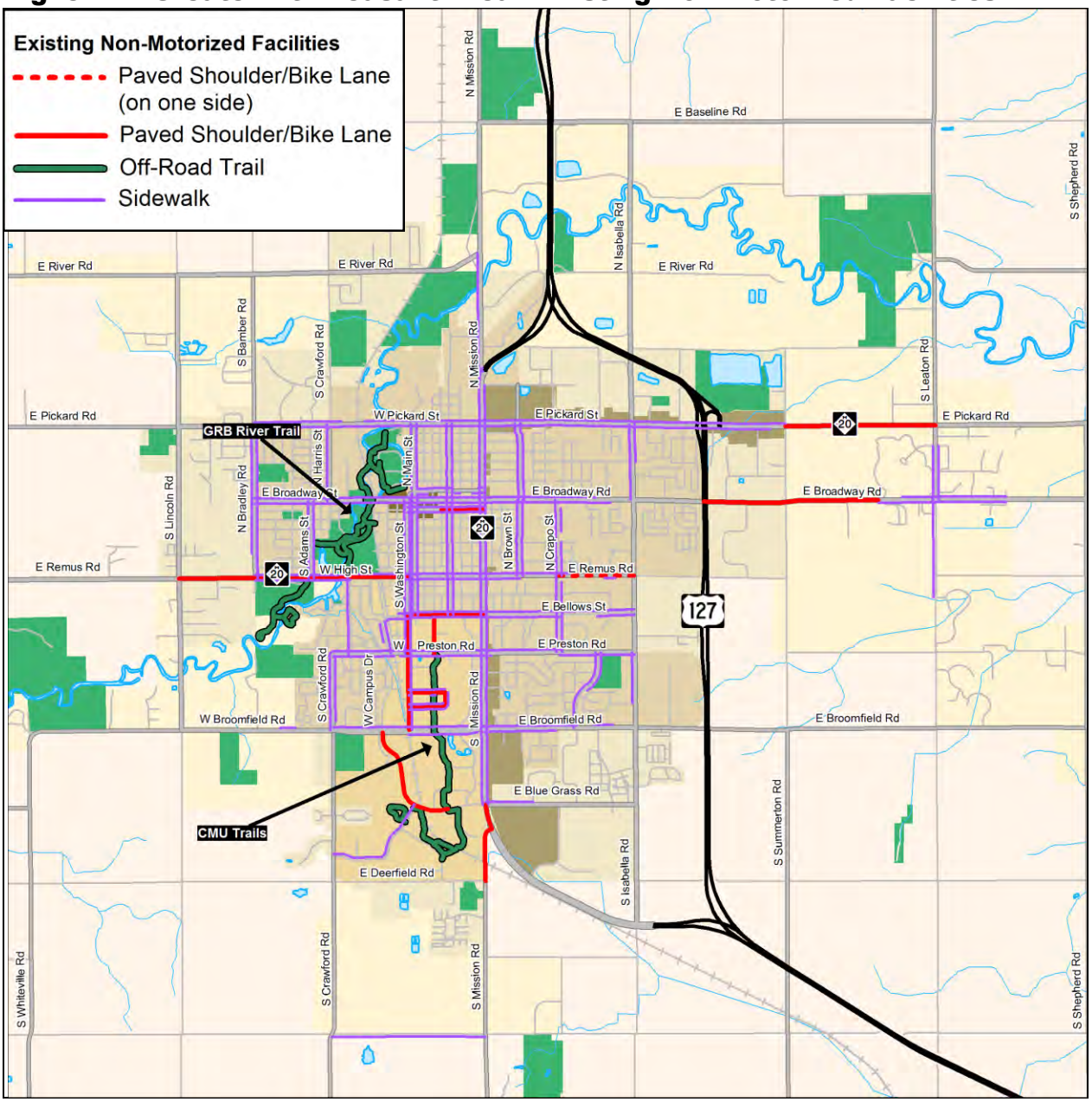
- Fig. 3.1N. Regional: Overview
- Fig. 3.1O. Regional: Landscape Types
- Fig. 3.1P. Regional: Road Classification
- Fig. 3.1Q. Regional: Road Jurisdiction
- Fig. 3.1R Regional: Average Daily Traffic Volumes
- Fig. 3.1S. Regional: Existing Bike and Pedestrian Activity Generators
- Fig. 3.1T. Regional: Potential Bike and Pedestrian Activity Generators

Fig. 3.1A. Greater Mt. Pleasant Area: Overview



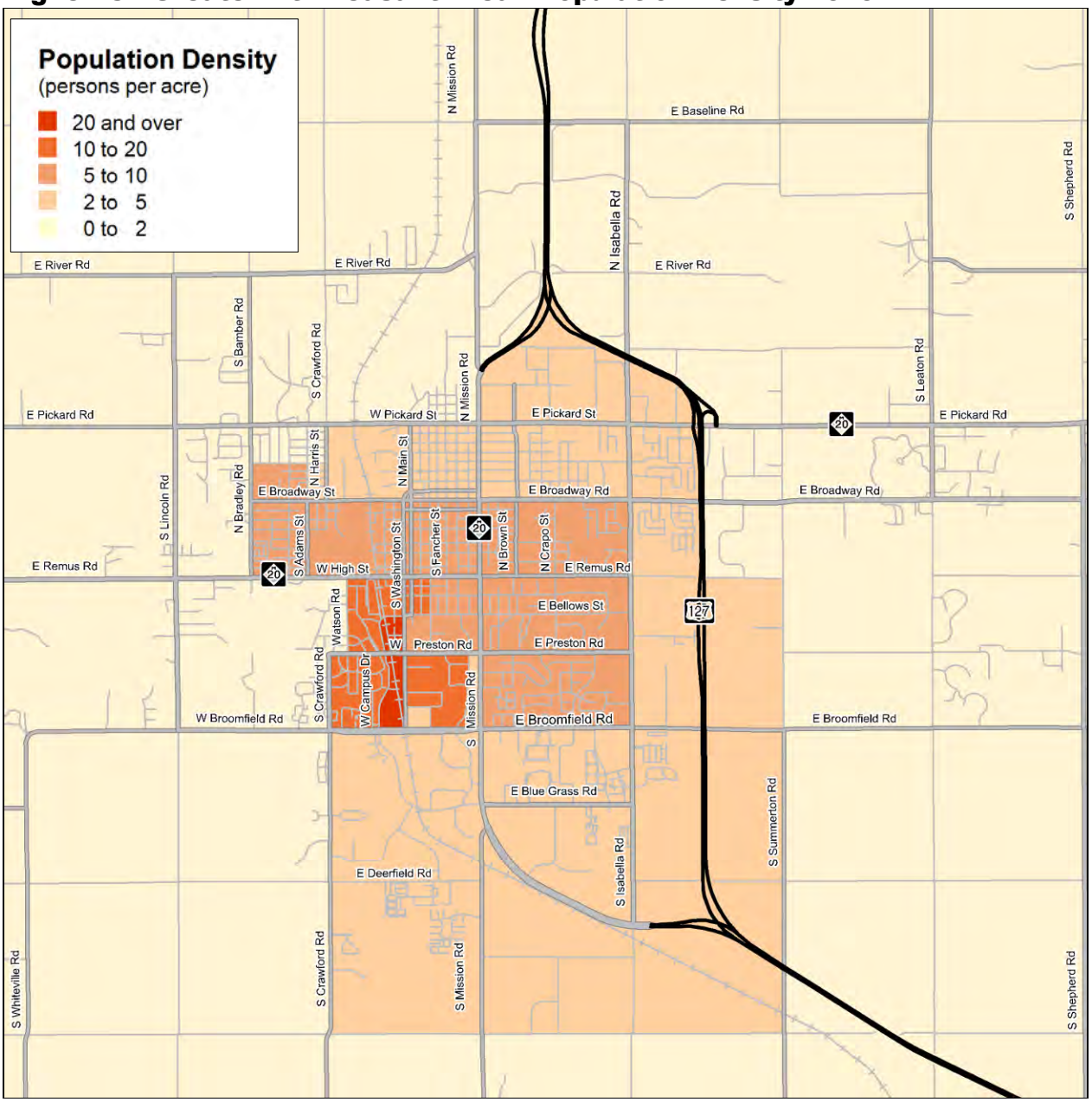
The Greater Mt. Pleasant Area includes the City of Mt. Pleasant, Union Township, Central Michigan University and the Saginaw Chippewa Indian Tribe.

Fig. 3.1B. Greater Mt. Pleasant Area: Existing Non-motorized Facilities



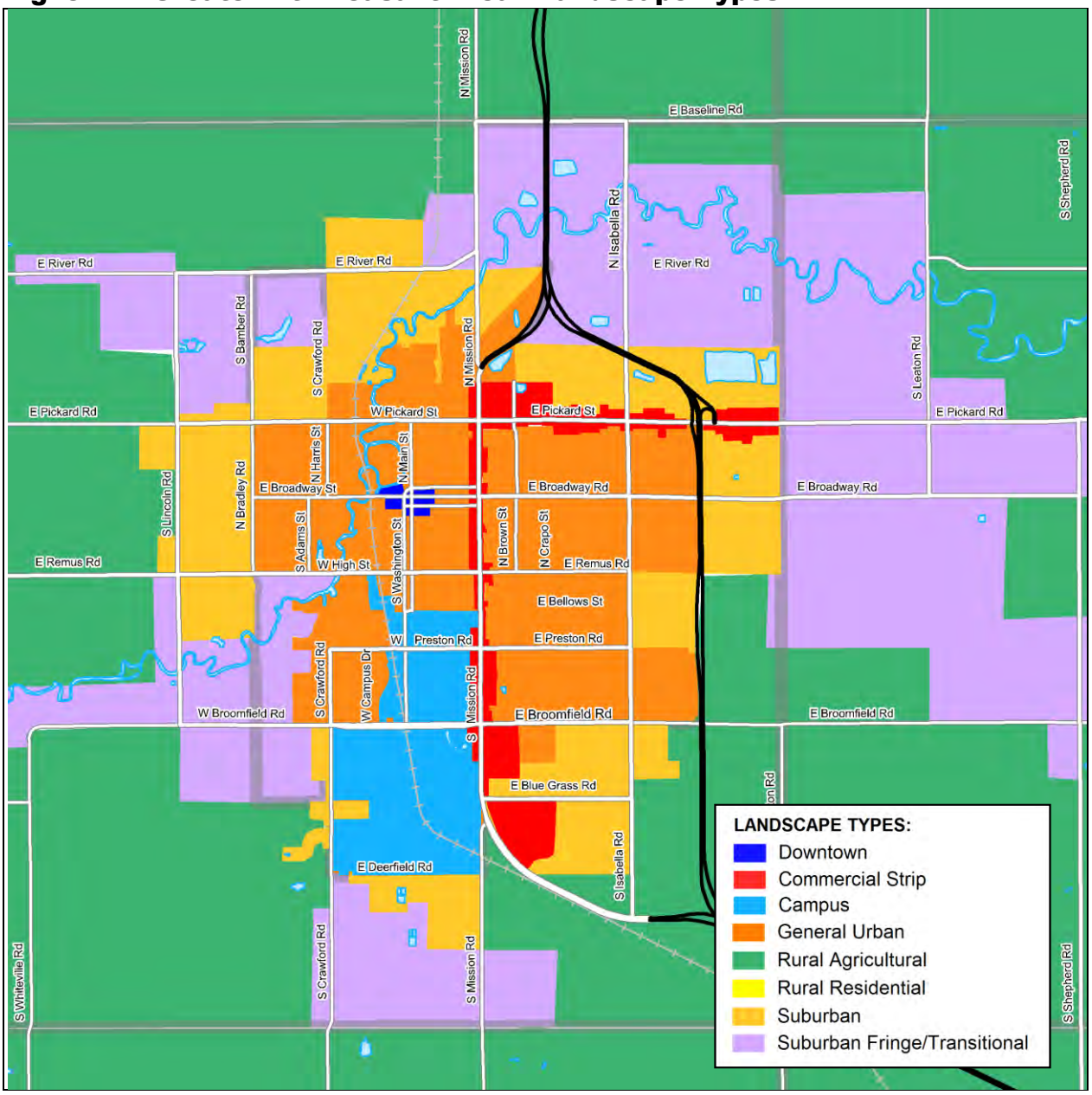
There are approximately 7 miles of existing bike lanes and 5 miles of existing off-road trails in the Greater Mt. Pleasant Area. The GRB RiverWalk is located along the Chippewa River and provides recreational opportunities in the parks.

Fig. 3.1C. Greater Mt. Pleasant Area: Population Density 2010



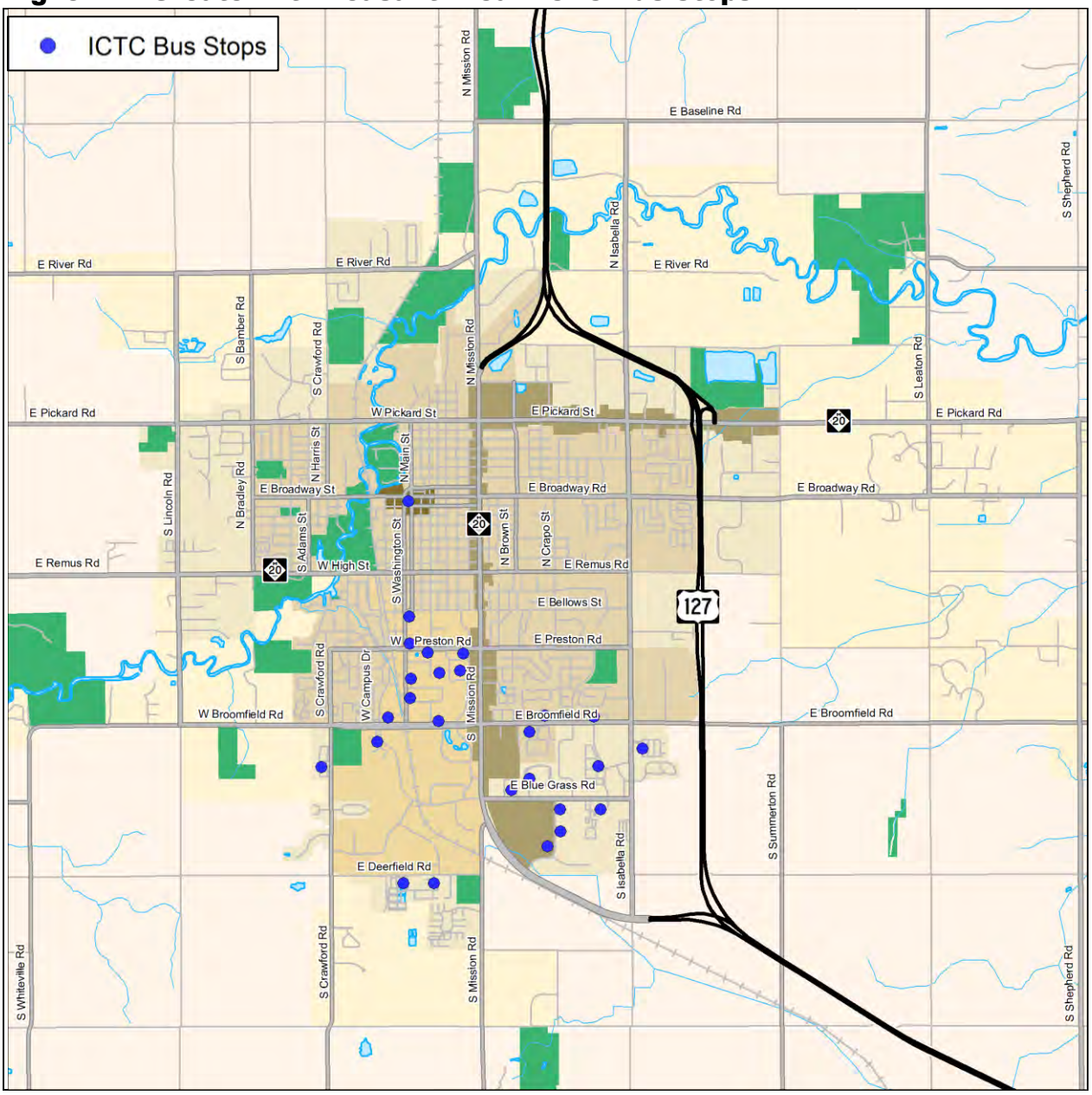
As of the 2010 census, the City of Mt. Pleasants population was 26,016 and Union Township population was 12,927. Central Michigan University has more than 20,000 students on its Mt. Pleasant Campus.

Fig. 3.1D. Greater Mt. Pleasant Area: Landscape Types



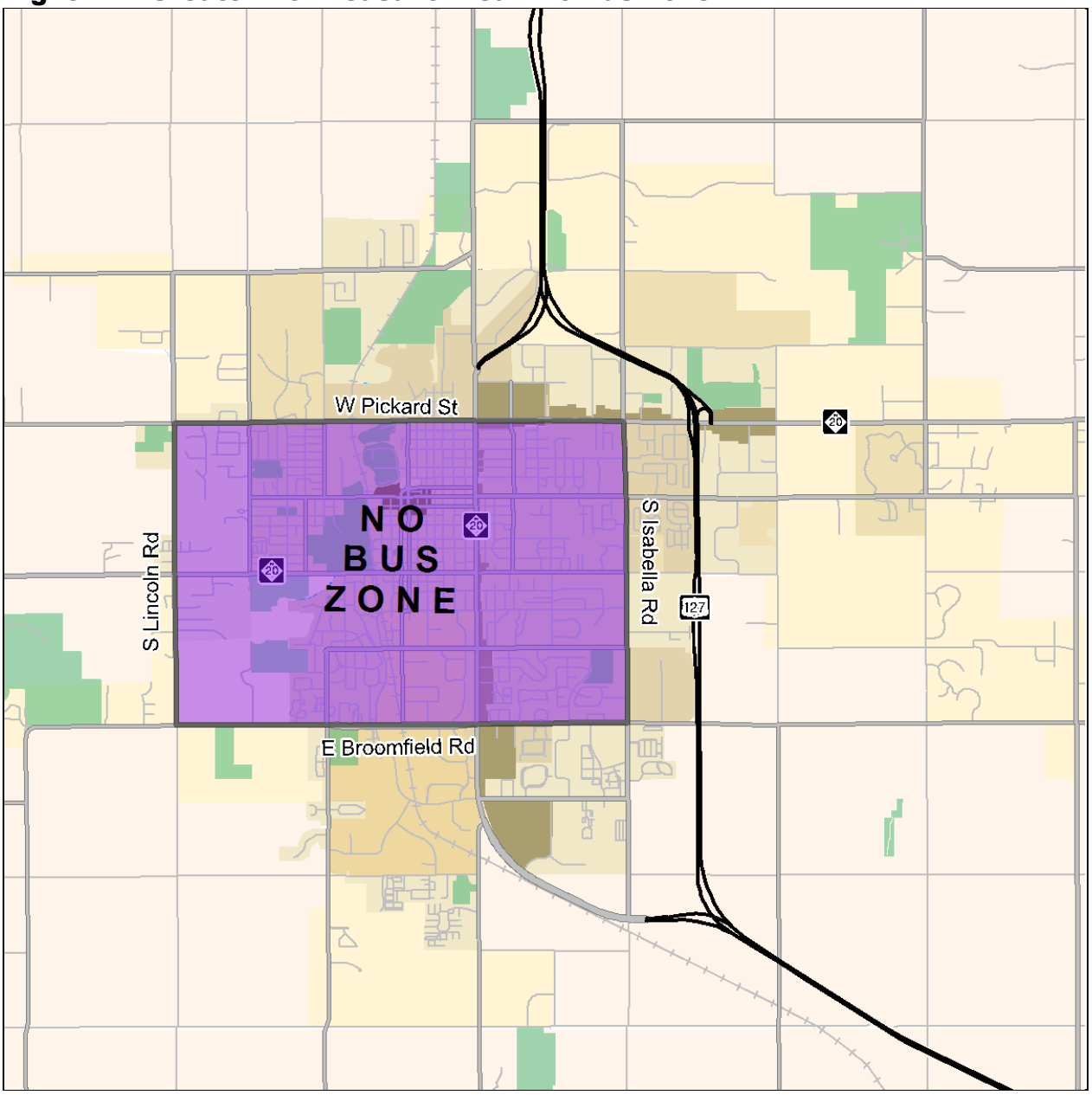
These landscape types where created based on the existing land use and character of the area. Different types of non-motorized facilities are appropriate for different types of landscapes.

Fig. 3.1E. Greater Mt. Pleasant Area: ICTC Bus Stops



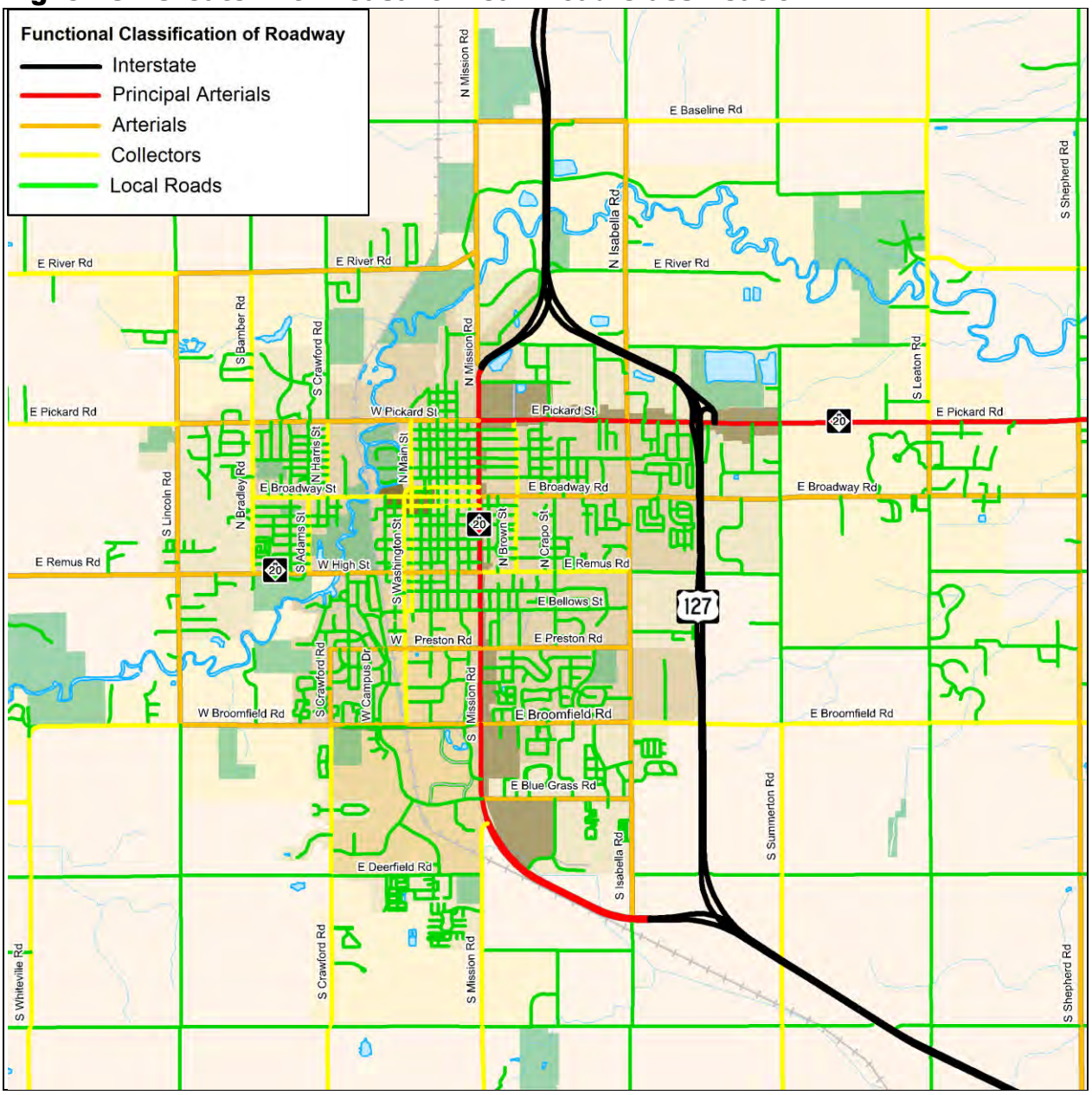
Transit stops generate non-motorized activity. It is important to make sure there are safe and convenient facilities to get people along and cross a roadway to access a bus stop.

Fig. 3.1F. Greater Mt. Pleasant Area: No Bus Zone



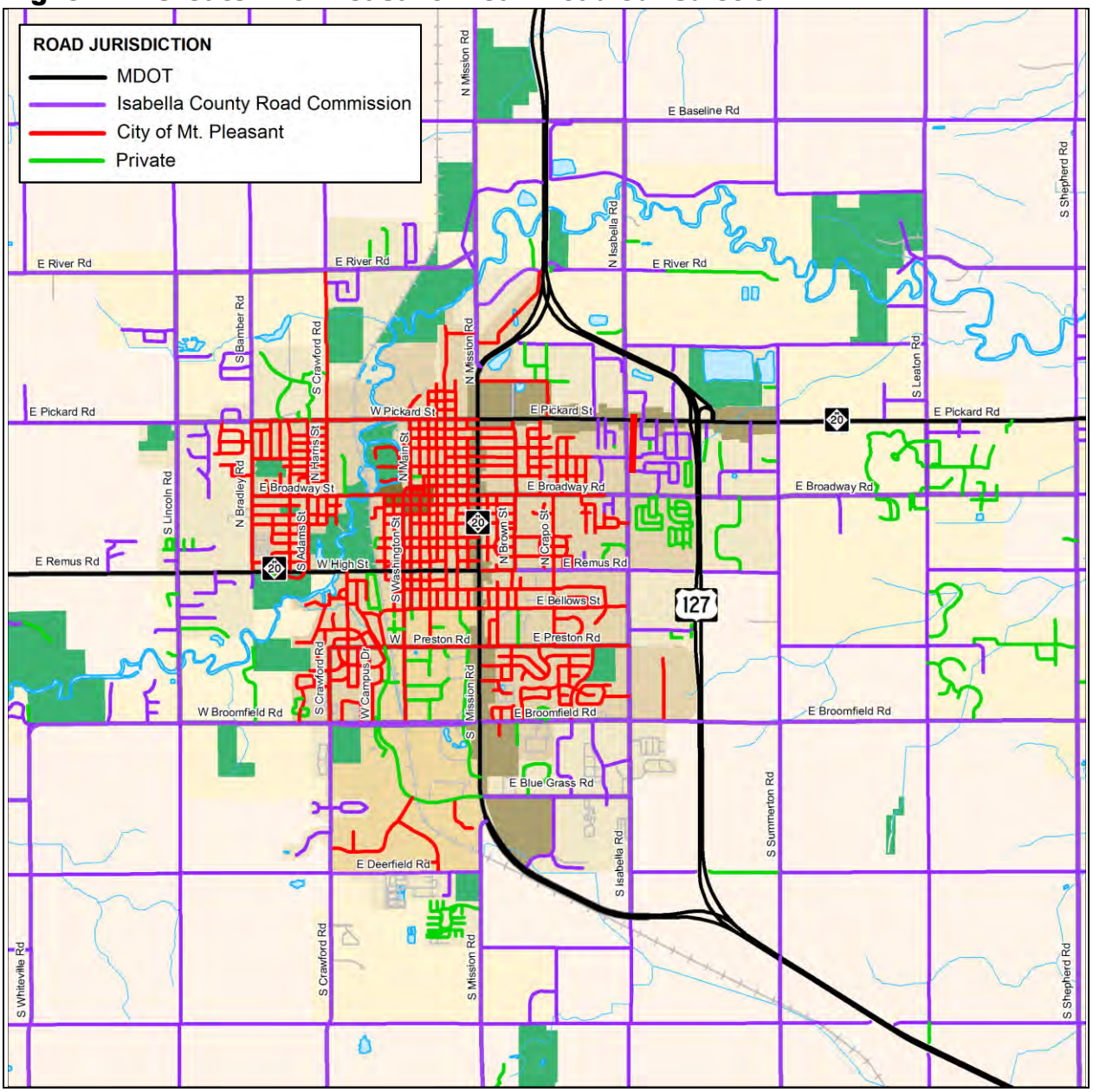
In 2011 a "No Bus Zone" was established for school buses. Children living within the boundary of S Lincoln Road, W Pickard Street, S Isabella Road and E Broomfield Road will no longer be provided school bus service. It is critical that a complete sidewalk system and safe road crossing be established within this zone so children can safely walk to school.

Fig. 3.1G. Greater Mt. Pleasant Area: Road Classification



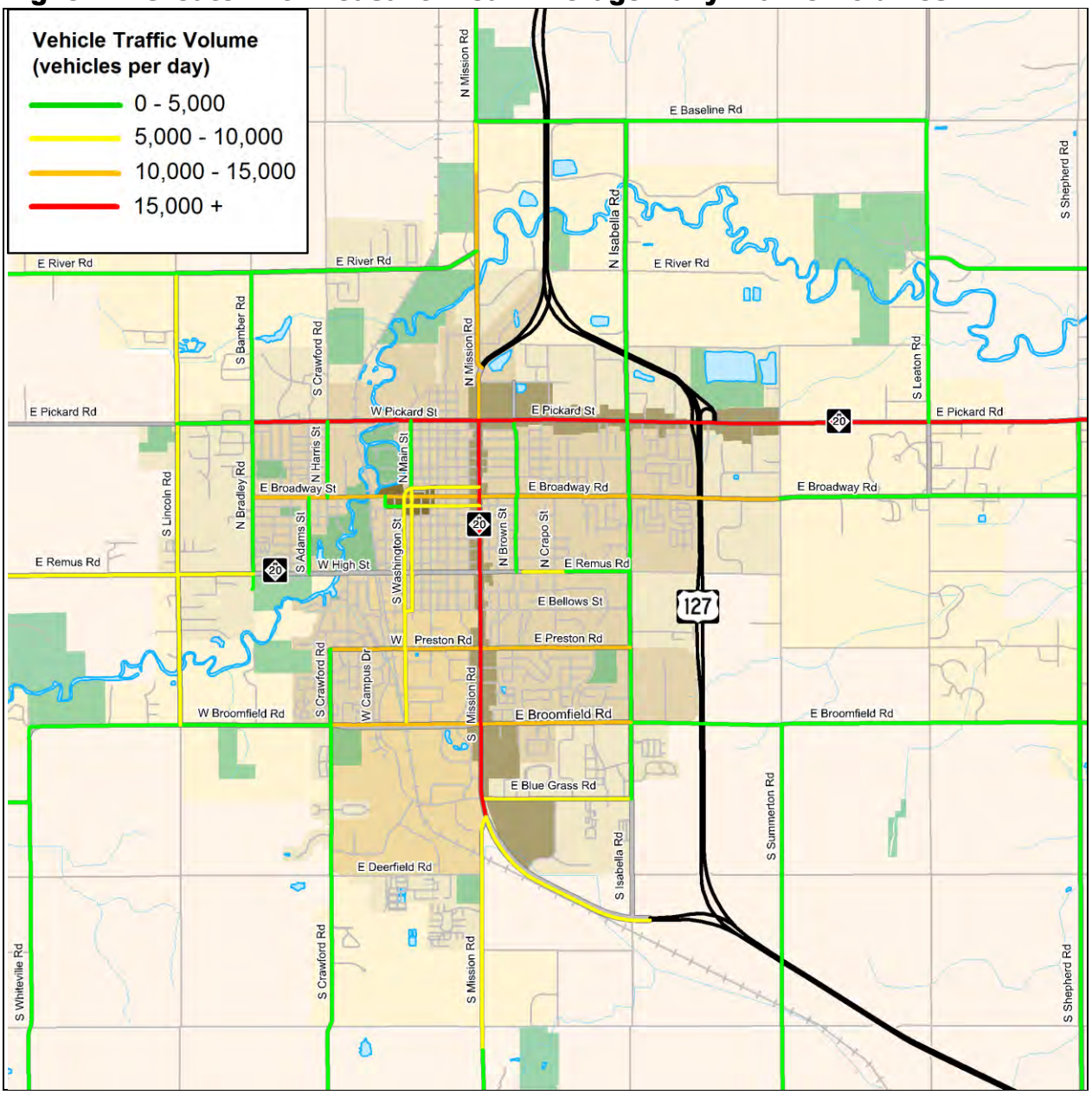
The National Functional Classifications are referenced in AASHTO guidelines and the guidelines in this document. While the National Functional Classification is intended to define a road hierarchy, substantial variation in road characteristics may be found within the classifications. The actual and projected road characteristics should be the determining factor when selecting appropriate sidewalk, buffer and bike lane widths.

Fig. 3.1H. Greater Mt. Pleasant Area: Road Jurisdiction



A local municipality may not always have jurisdiction over all of the roads within its borders. Roads can be owned by the State, County and City and though Private Ownership. It is important to identify the ownership of all roads especially if bike lanes or routes are going to be proposed along a roadway. Any modifications to the roadway must be coordinated with the approved by the agency that has jurisdiction over the road.

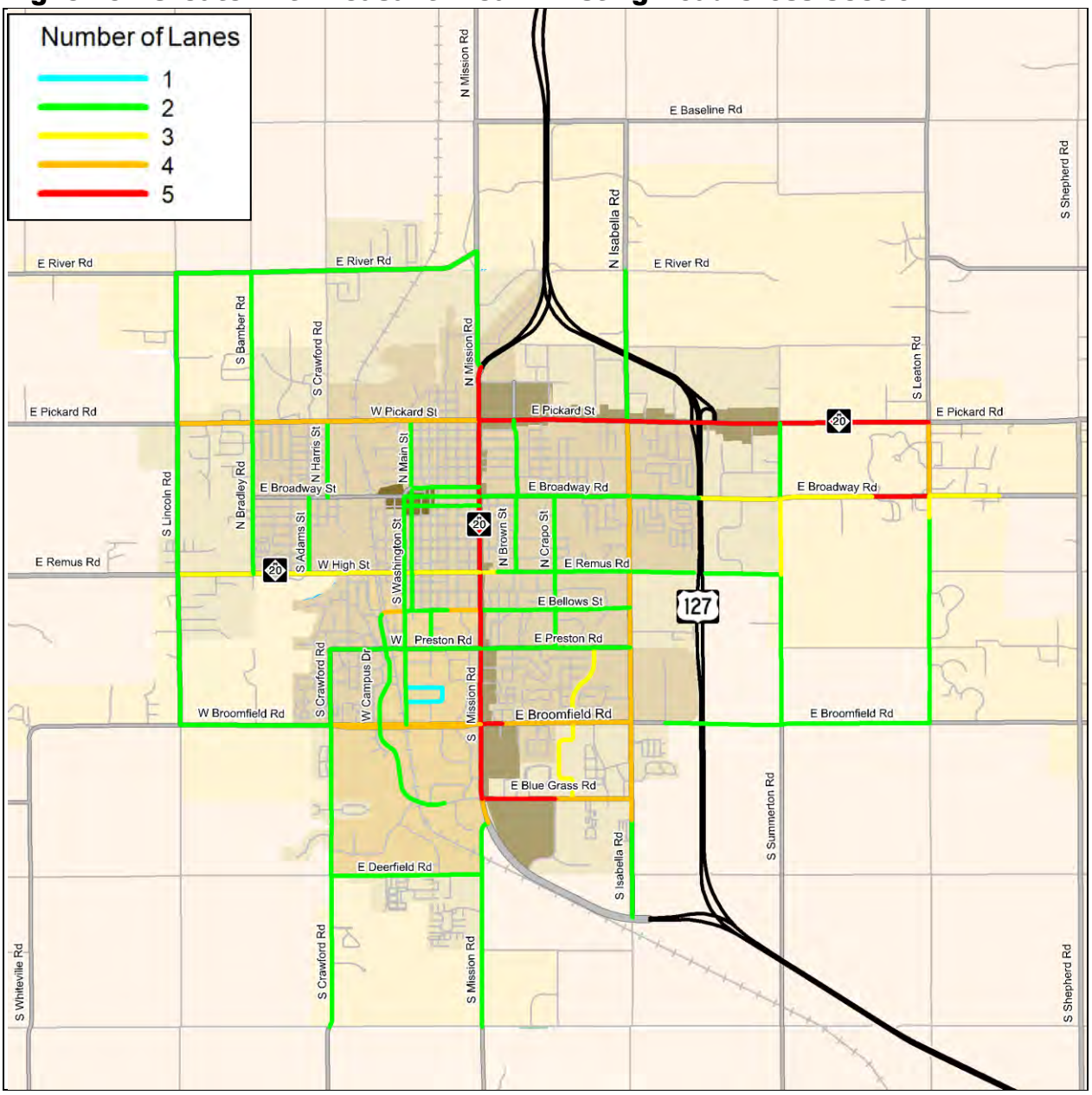
Fig. 3.1I. Greater Mt. Pleasant Area: Average Daily Traffic Volumes



Annual Average Daily Traffic (AADT) is an estimate of traffic volumes. The volumes are based on total two-way traffic over a 24-hour period and may vary by season or day of the week. The volumes are determined from a combination of actual traffic counts and modeling. The map shows data provided by EMCOG.

The gradations used generally reflect noticeable changes in the comfort level of bicyclists sharing a roadway with motorists, all other factors being equal.

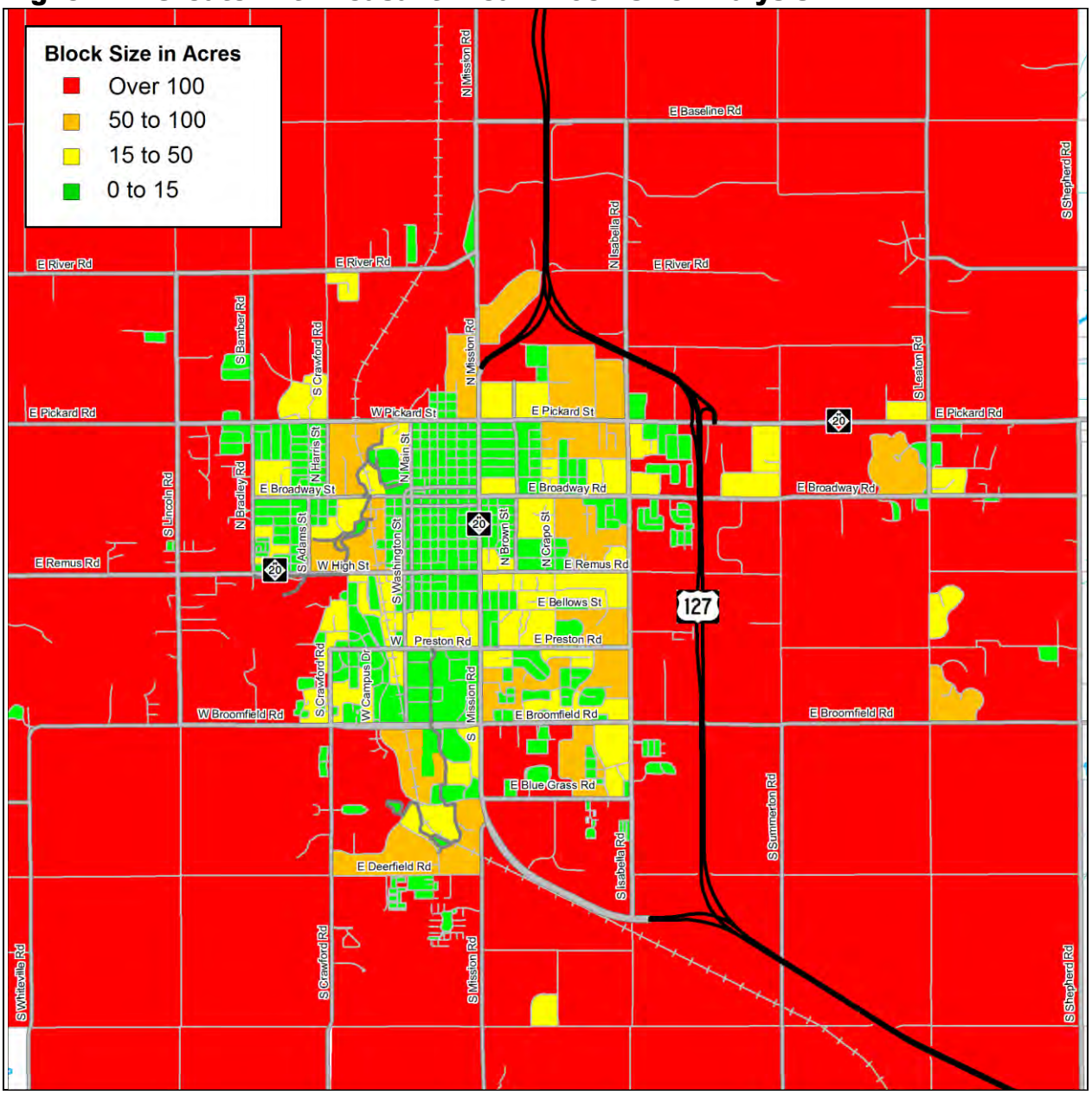
Fig. 3.1J. Greater Mt. Pleasant Area: Existing Road Cross Section



The majority of the roads in the area are two lane roads. The widest roads for the most part are bordered by commercial and industrial centers.

Generally, roadways with numerous lanes present challenges when trying to get bicyclists and pedestrians across the roadway, especially where demand between commercial centers and neighborhoods exists on both sides of the road.

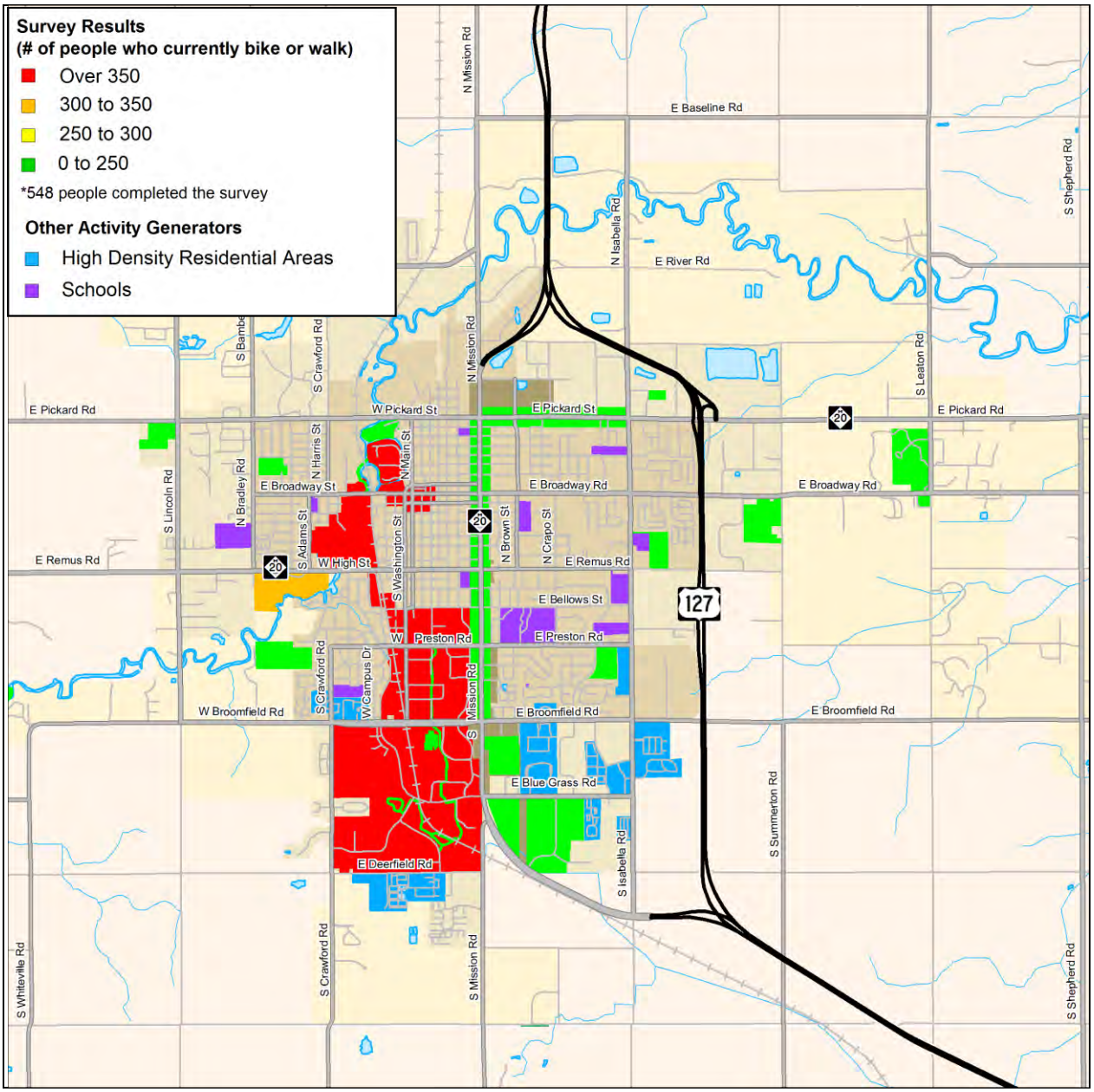
Fig. 3.1K. Greater Mt. Pleasant Area: Block Size Analysis



Block size is an excellent measurement of directness of travel and a key indicator in the level of pedestrian activity. A block is defined as an area that a person cannot pass through. These areas usually do not have any sidewalks, roadways or bike paths allowing access between two points. One example is an expressway where you may have to go a mile or more out of your way just to get to the other side.

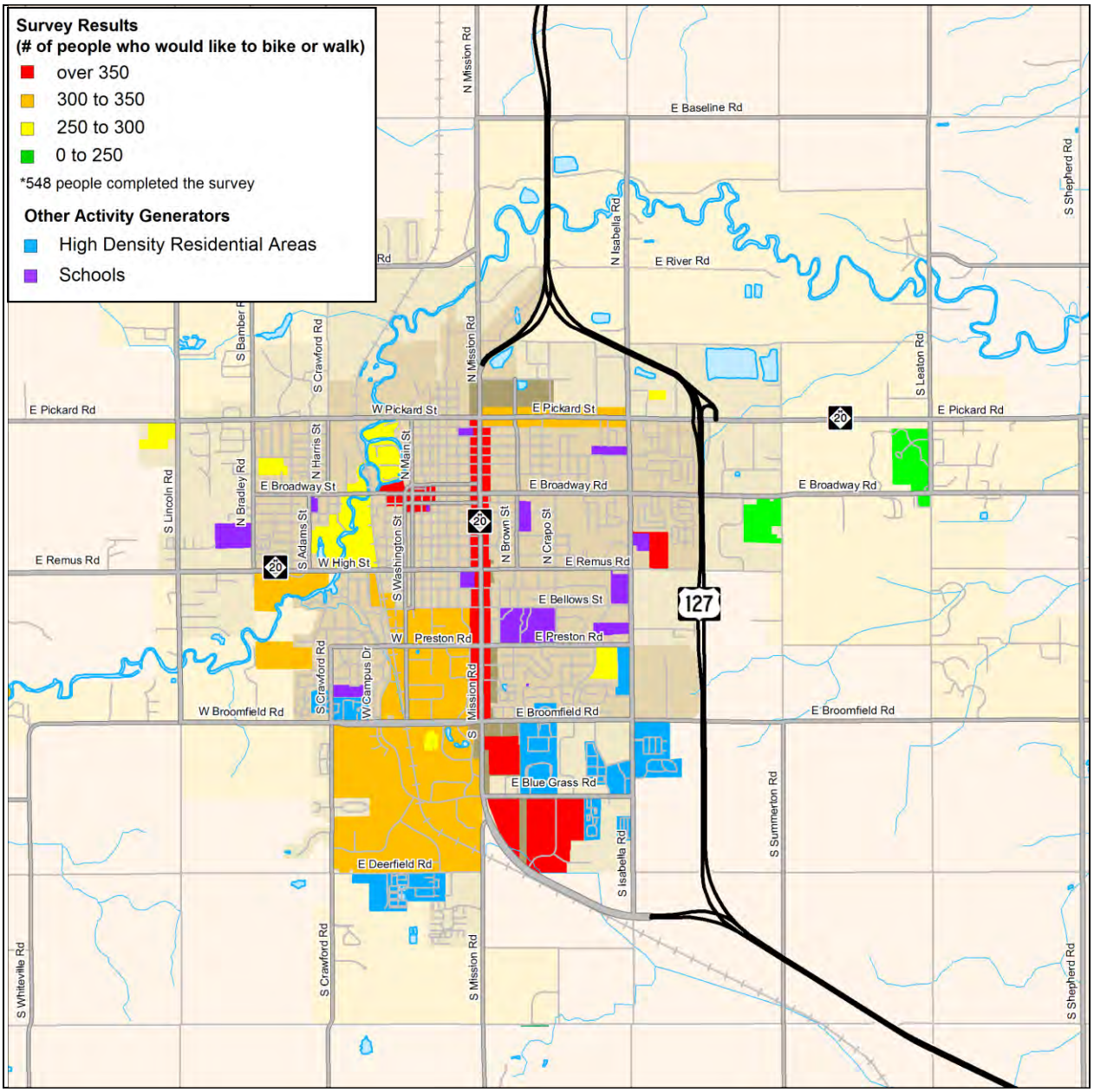
The majority of the City of Mt. Pleasant has blocks under 50 acres in size. This means that with the proper facilities implemented, based on the existing transportation network, there is potential for the community to increase bicycle and pedestrian activity. On the other hand, areas surrounding the city, such as Union Twp. Are primarily blocks over 100 acres in size that presents a challenging landscape for non-motorized transportation.

Fig. 3.1L. Greater Mt. Pleasant Area: Existing Bike and Pedestrian Activity Generators



According to the web survey, CMU campus, downtown and the park generate most of the current bicycle and pedestrian activity.

Fig. 3.1M. Greater Mt. Pleasant Area: Potential Bike and Pedestrian Activity Generators

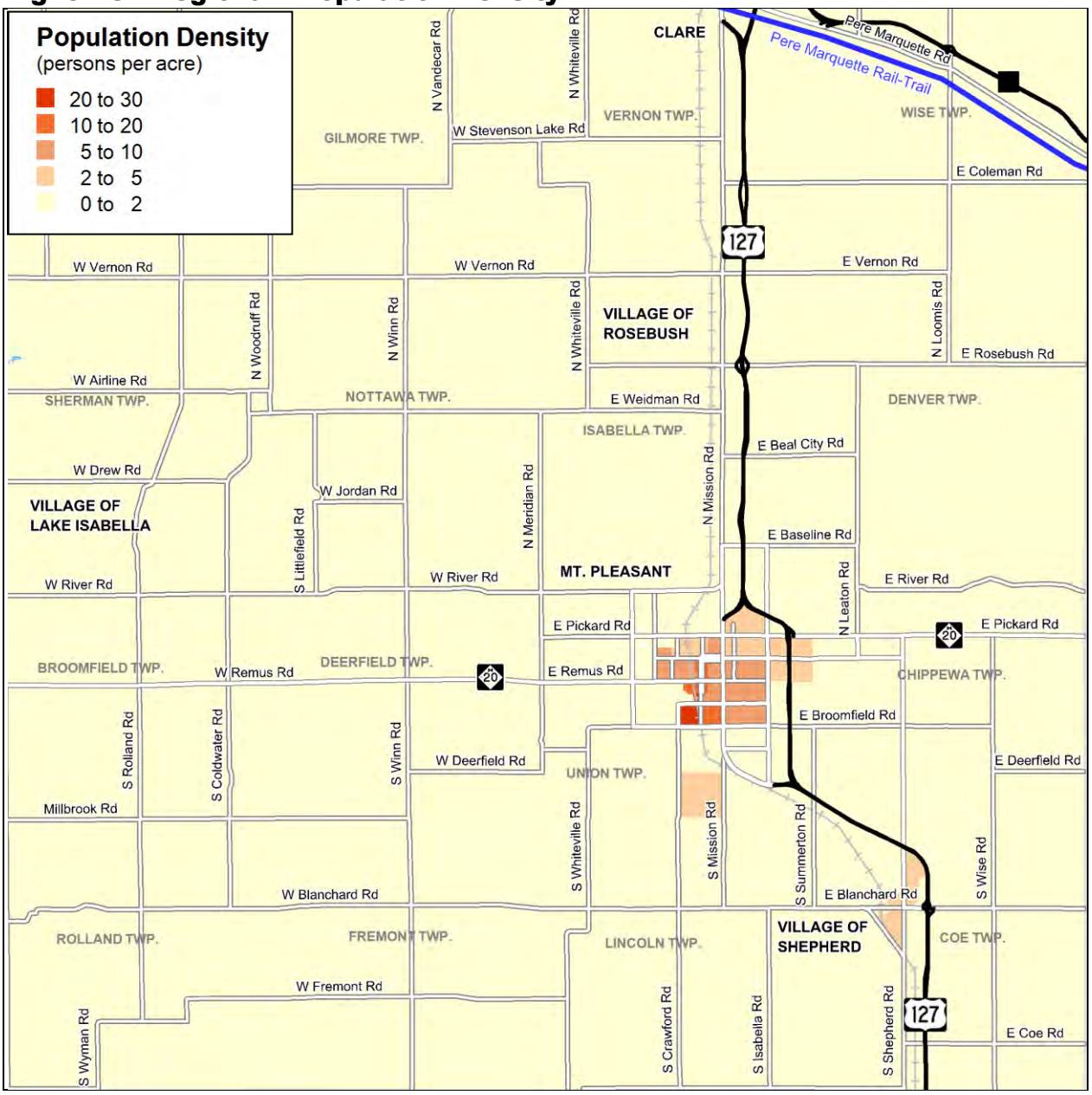


According to the web survey, if a complete and safe non-motorized network was established the shopping centers would see the most growth by non-motorized users based on feedback from the online survey.

Fig. 3.1N. Regional: Overview

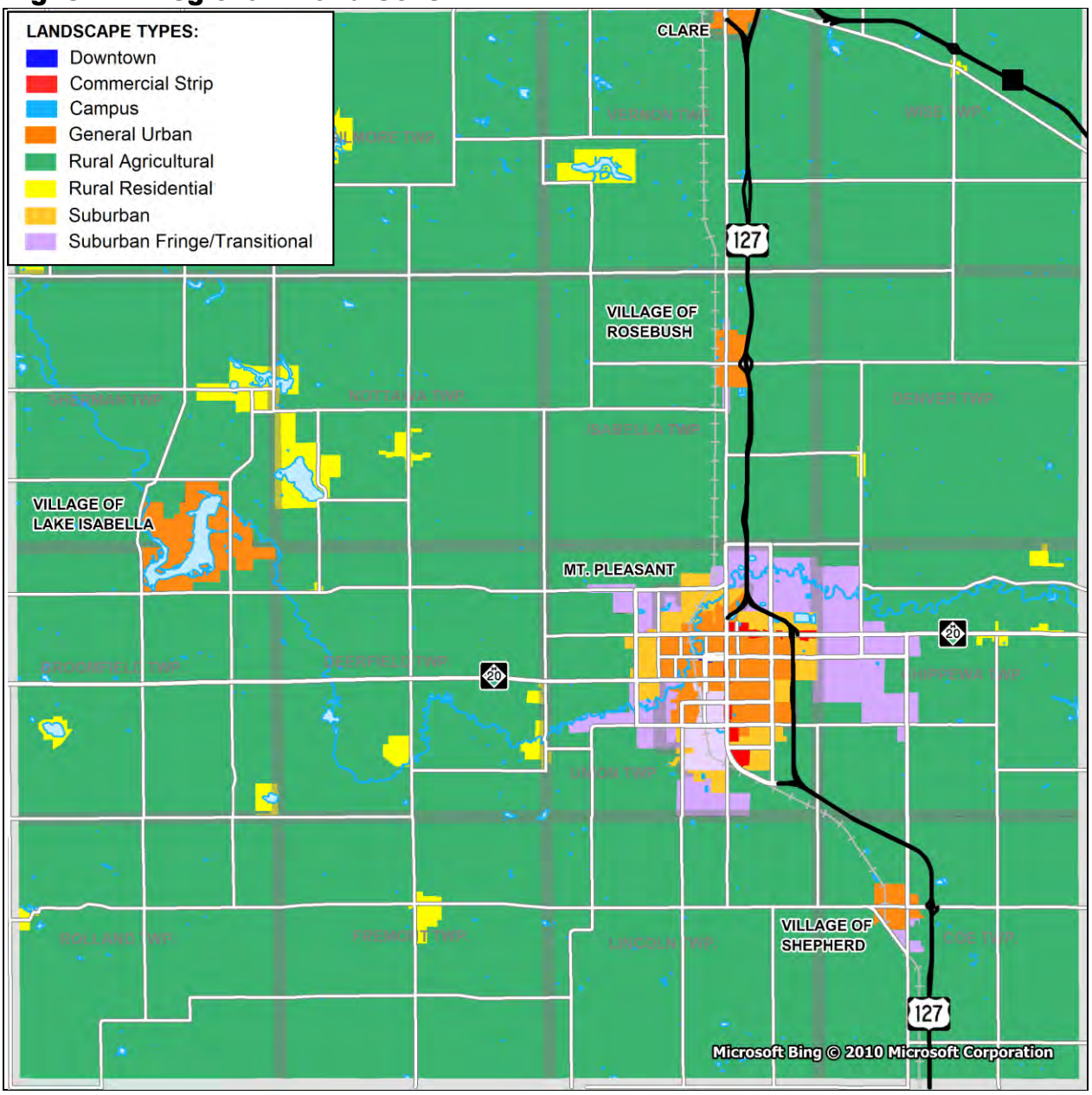
Isabella County is approximately 578 square miles. The Greater Mt. Pleasant Area is located in the south east quadrant of the county. The city of Clare is to the north of the county and Almont is to the south.

Fig. 3.1O. Regional: Population Density



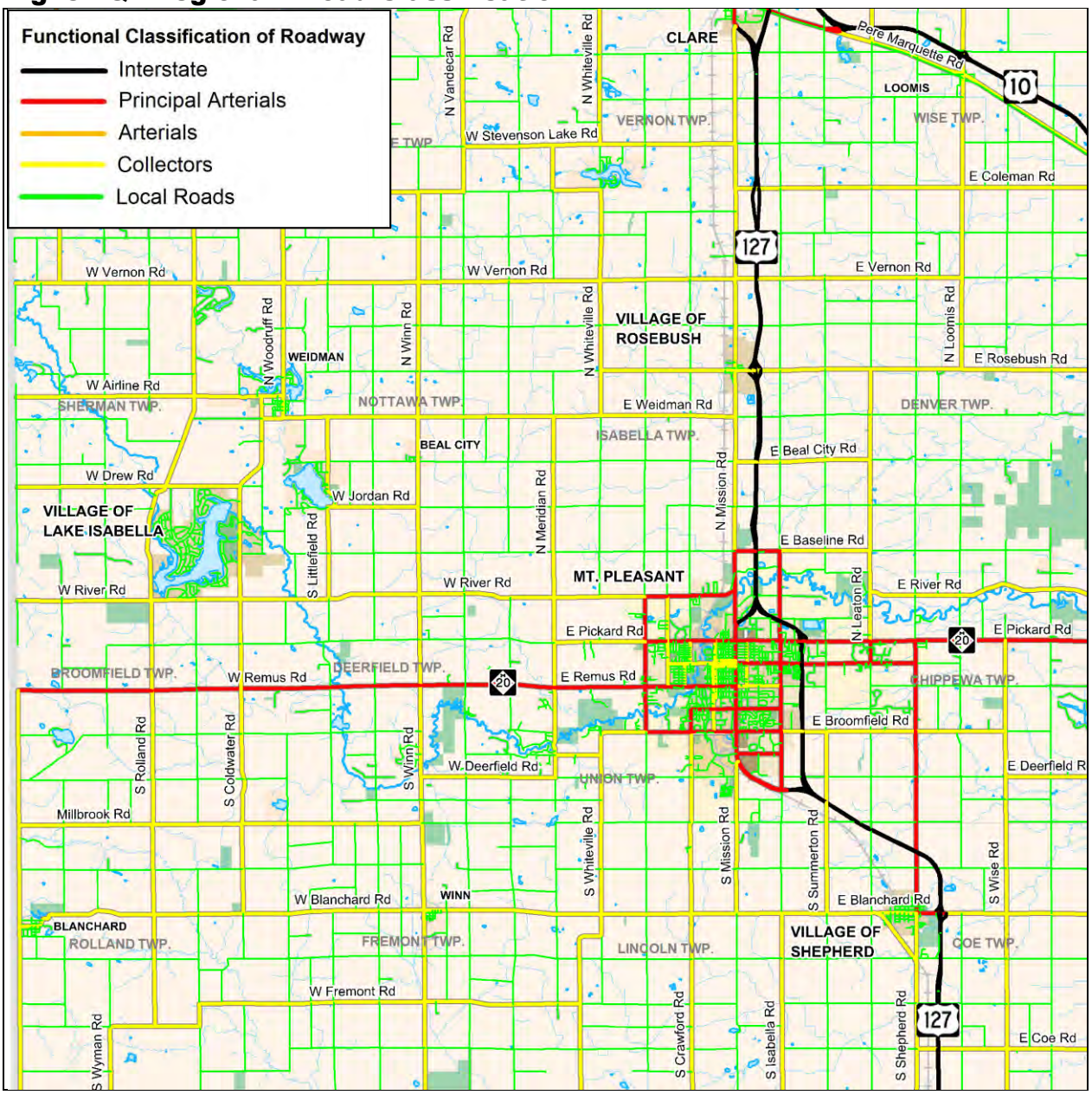
Based on the 2000 census has a population of 63,351 people. The majority of the population is located in the Greater Mt. Pleasant Area and the Village of Shepherd.

Fig. 3.1P. Regional: Land Cover



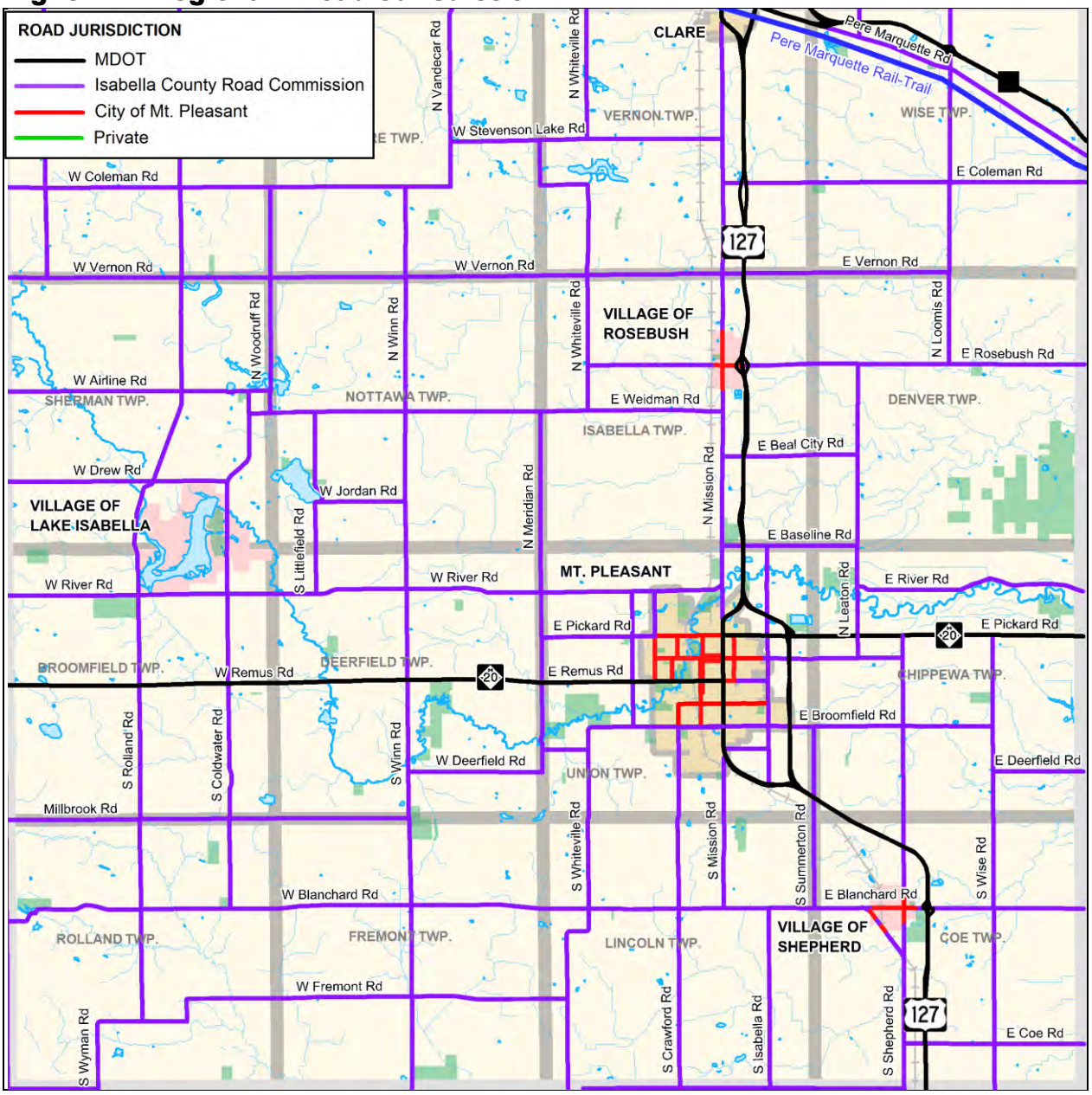
These landscape types where created based on the existing land use and character of the area. Different types of non-motorized facilities are appropriate for different types of landscapes.

Fig. 3.1Q. Regional: Road Classification



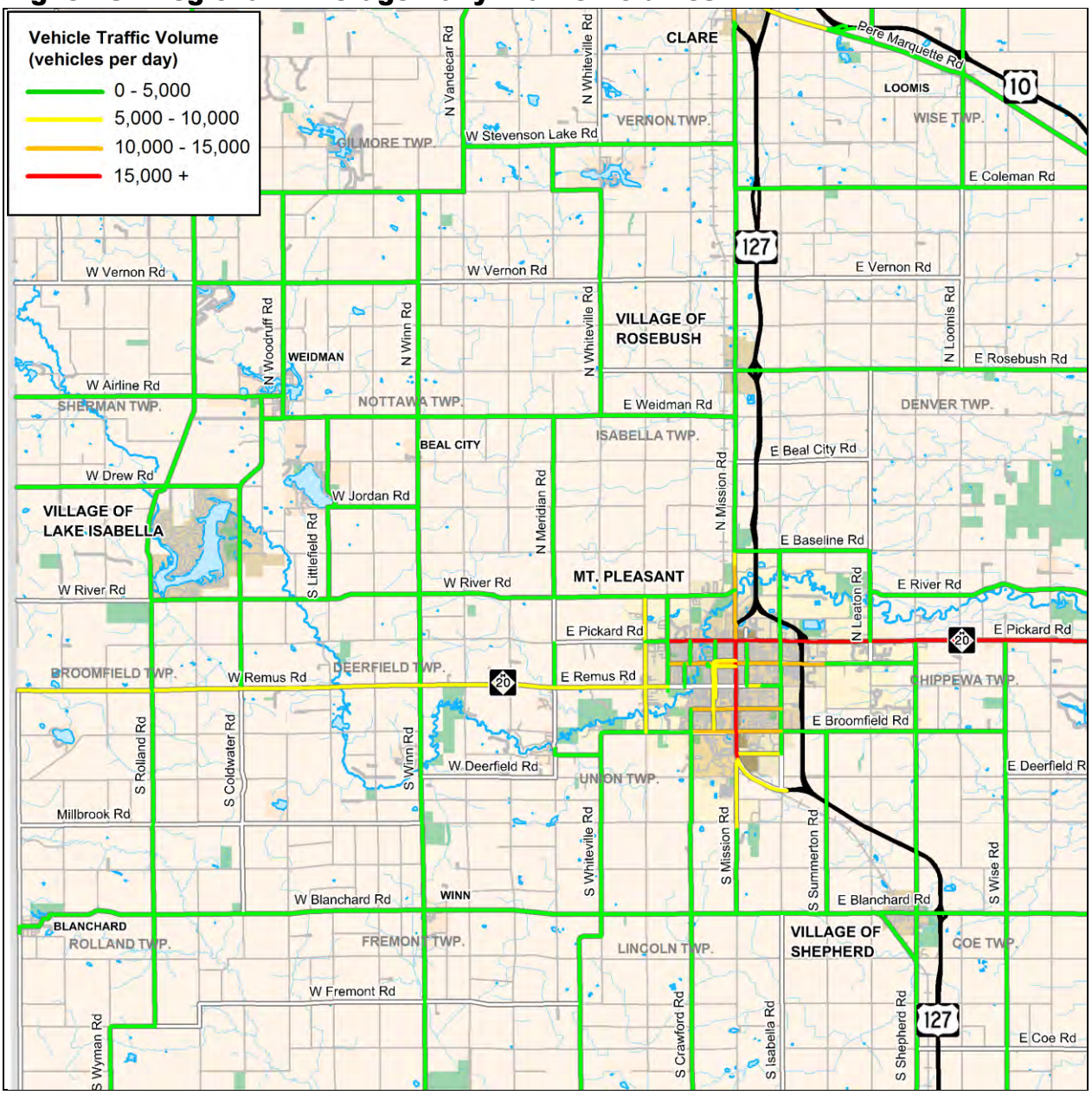
The National Functional Classifications are referenced in AASHTO guidelines and the guidelines in this document. While the National Functional Classification is intended to define a road hierarchy, substantial variation in road characteristics may be found within the classifications. The actual and projected road characteristics should be the determining factor when selecting appropriate sidewalk, buffer and bike lane widths.

Fig. 3.1R. Regional: Road Jurisdiction



Roads owned by the state and managed by the Michigan Department of Transportation (MDOT) are shown in red. Any modifications to these "trunkline" roads must be coordinated with and approved by MDOT. Likewise any roads shown in blue are under the jurisdiction of the county road commission and any modifications to these roads must be coordinated with and approved by the county road commission.

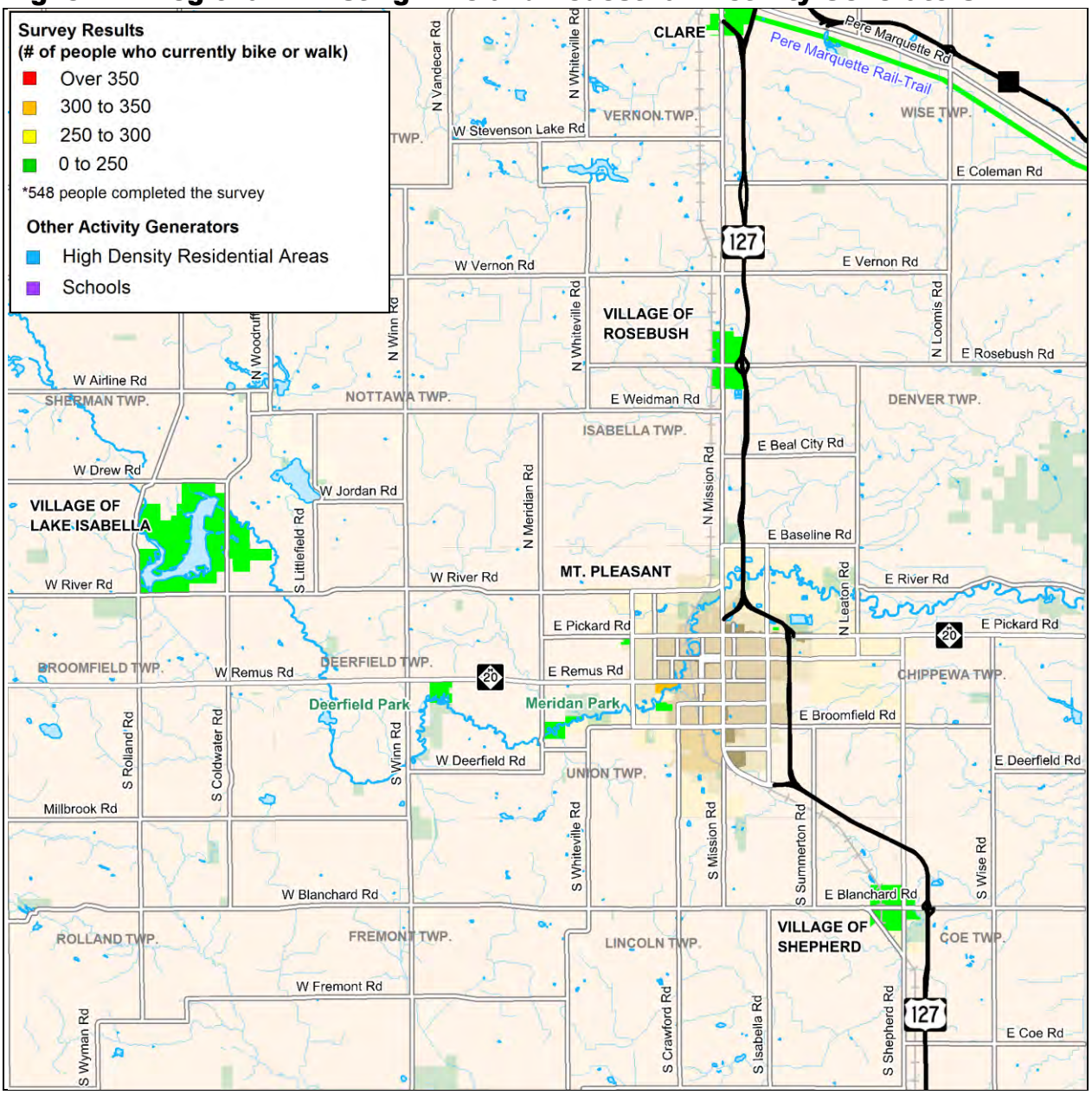
Fig. 3.1S. Regional: Average Daily Traffic Volumes



Annual Average Daily Traffic (AADT) is an estimate of traffic volumes. The volumes are based on total two-way traffic over a 24-hour period and may vary by season or day of the week. The volumes are determined from a combination of actual traffic counts and modeling. The map shows data provided by EMCOG.

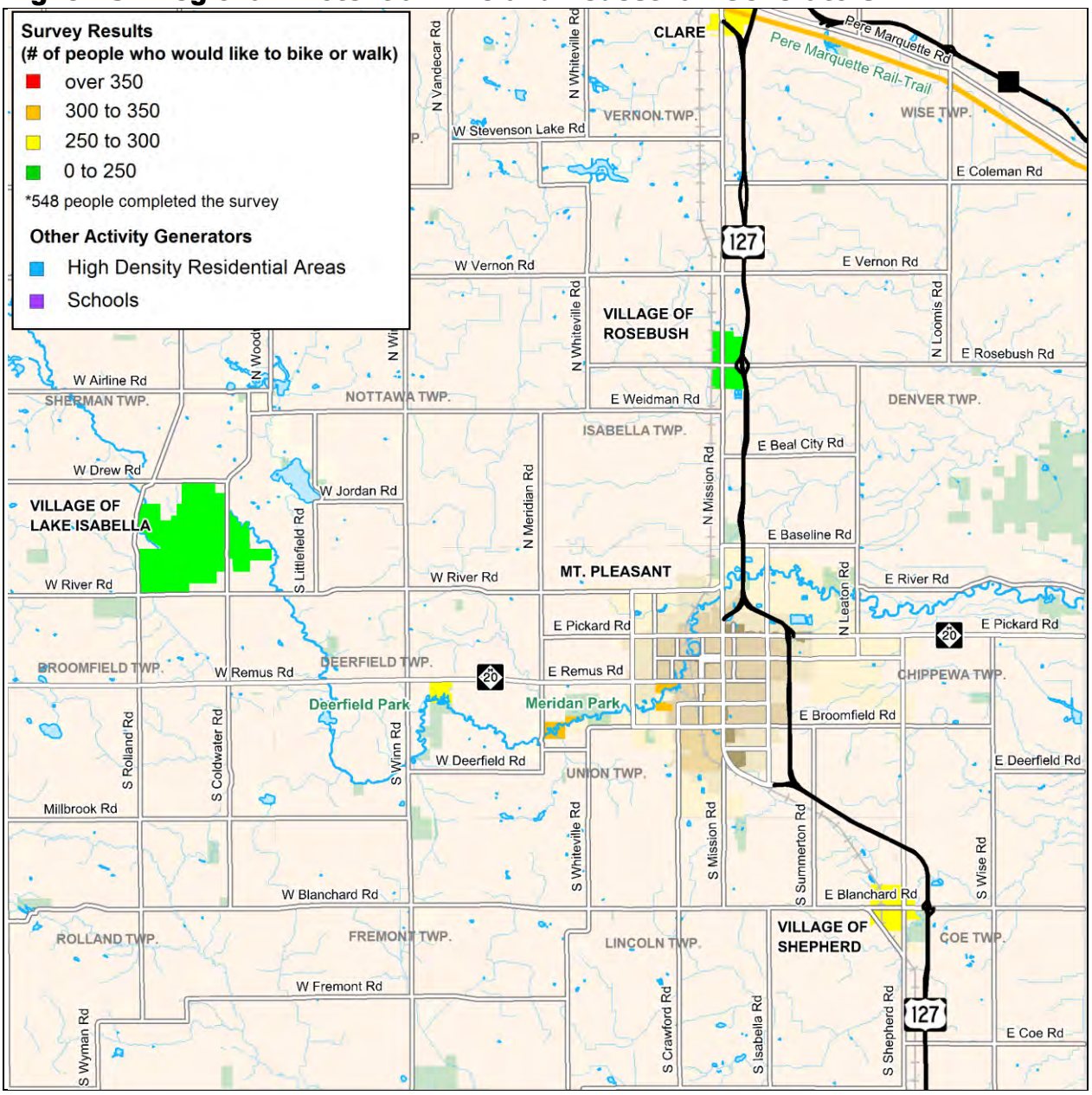
The gradations used generally reflect noticeable changes in the comfort level of bicyclists sharing a roadway with motorists, all other factors being equal.

Fig. 3.1T. Regional: Existing Bike and Pedestrian Activity Generators



Based on feedback from the online web survey. There are not a lot of people using non-motorized transportation to get to regional destinations.

Fig. 3.1U. Regional: Potential Bike and Pedestrian Generators



Based on input from the web survey there is some desire to walk or bike to regional destinations. Parks close to the Greater Mt. Pleasant Area and the Pere Marquette Rail-Trail have the highest latent demand. The Village of Shephard, Deerfiled Park and Clare were also noted as regional destinations that people would like to walk or bike to.

3.2 The Pedestrian Environment

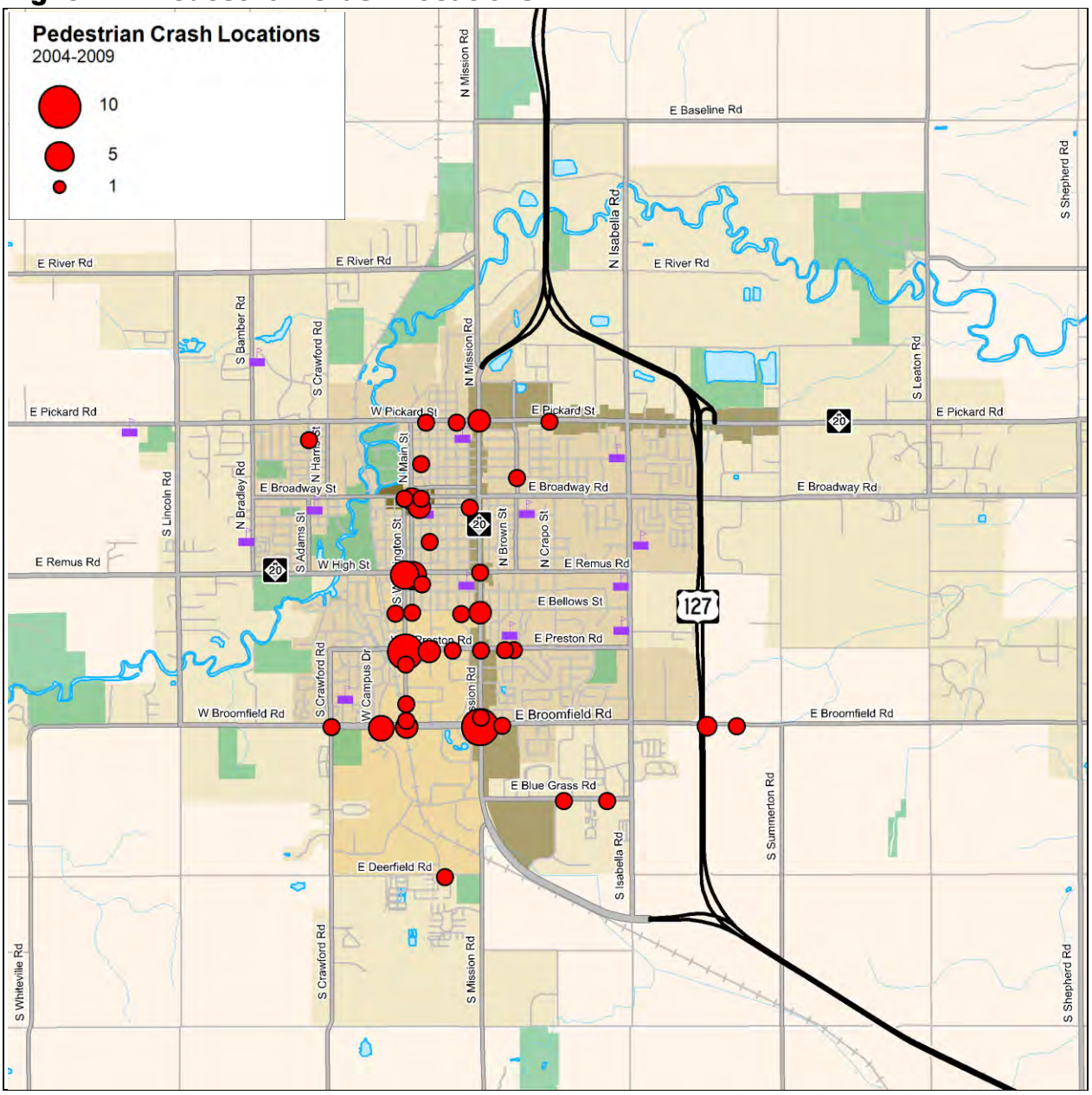
The Greater Mt. Pleasant Area has a partially complete sidewalk system along the major roadways, especially in areas outside of the downtown neighborhoods. There are still significant gaps along major roadways especially in the more suburban parts of town. The quality of the pedestrian experience on these sidewalks varies greatly throughout the Greater Mt. Pleasant Area. Some sidewalks have little if any buffer such as a row of trees or parked cars, between the sidewalk and the roadway. This lack of a barrier has been shown to have a significant adverse impact on the quality of the walking experience. Other sidewalks and roadside pathways are set well back from the road and have substantial vegetated buffer.

Another major issue lies with cross-roadway accommodations. There are significant stretches of the major thoroughfares that provide no means to cross the roadway safely. There are also places where logical crossings are not accommodated. Even where there are marked crosswalks, they are often inadequate. Many times the existing crossings are missing key safety features, making them difficult to cross, especially on high speed multi-lane roadways.

The following maps provide a general summary of the existing conditions of pedestrian facilities:

- Fig. 3.2 A. Pedestrian Crash Locations
- Fig. 3.2 B. Pedestrian Crash Data
- Fig. 3.2 C. Existing Sidewalks

Fig. 3.2A. Pedestrian Crash Locations



The crashes shown are from a five year period, 2004 – 2009 for the Greater Mt. Pleasant Area.

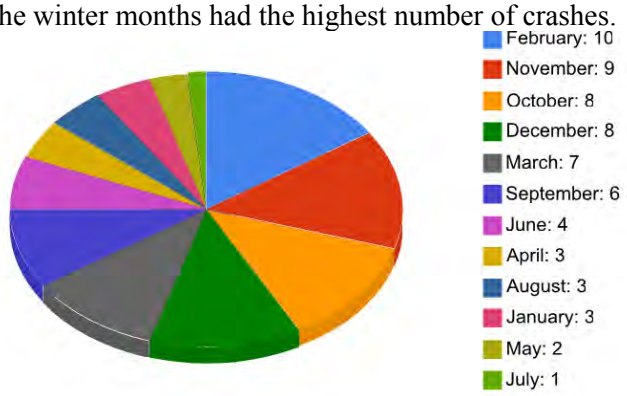
There were 64 pedestrian involved crashes, none were fatal and 13 resulted in serious injuries. Drinking or drug use was involved in 12 of the crashes. There was no traffic control at 42% of the crash locations.

The Michigan Traffic Crash Fact website was the source of the data and charts.

Fig. 3.2B. Pedestrian Crash Data

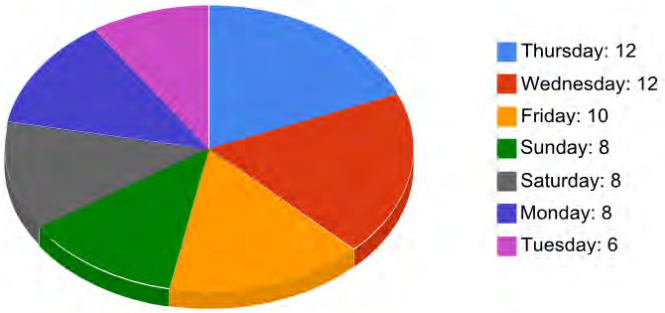
Month of Crash

The winter months had the highest number of crashes.



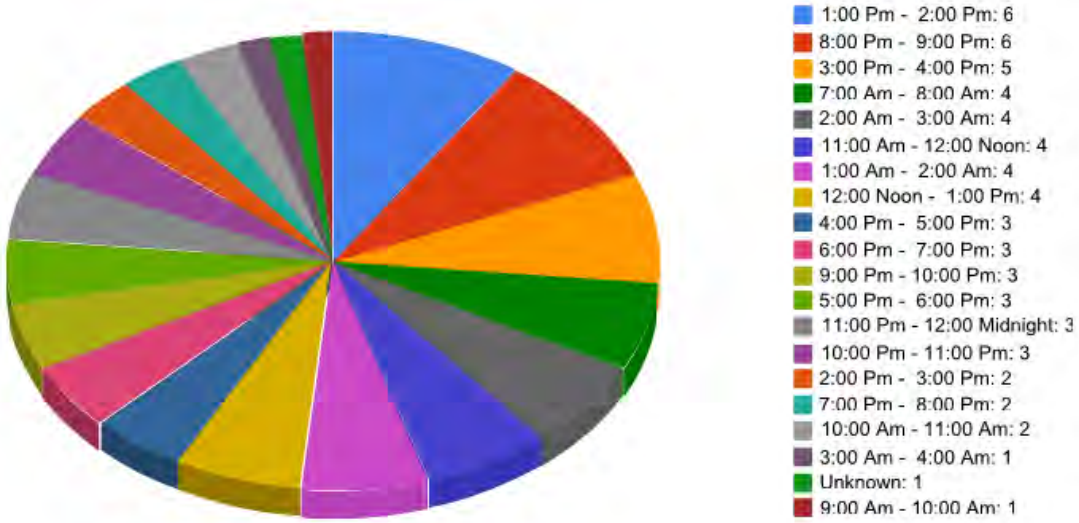
Day of Week

Crashes took place on every day of the week with the most occurring on a Wednesday and Thursday.



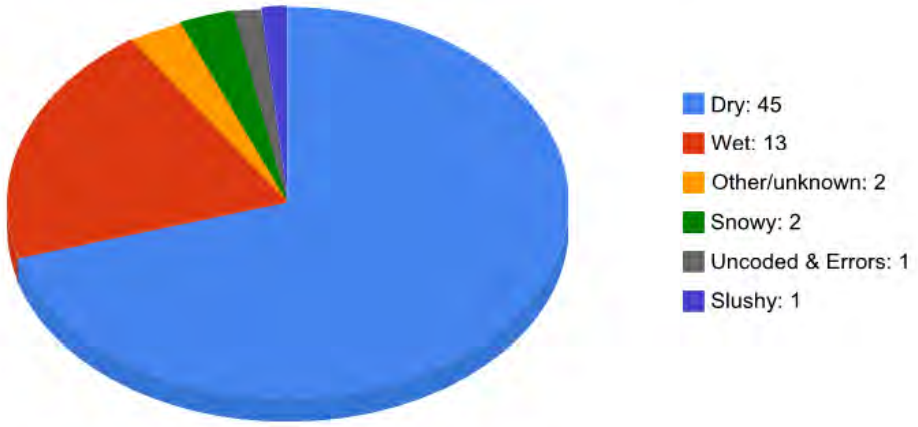
Time of Day

Crashes took place during all hours of the day. 46% of the crashes took place during daylight, 3% took place during dawn, 1% took place during dusk and 45% took place in the dark (3% were not coded).



Road Conditions

Wet, Snowy or Icy roads were a factor in about a quarter of the crashes.



Relation to Roadway

86% of the crashes took place on the roadway.

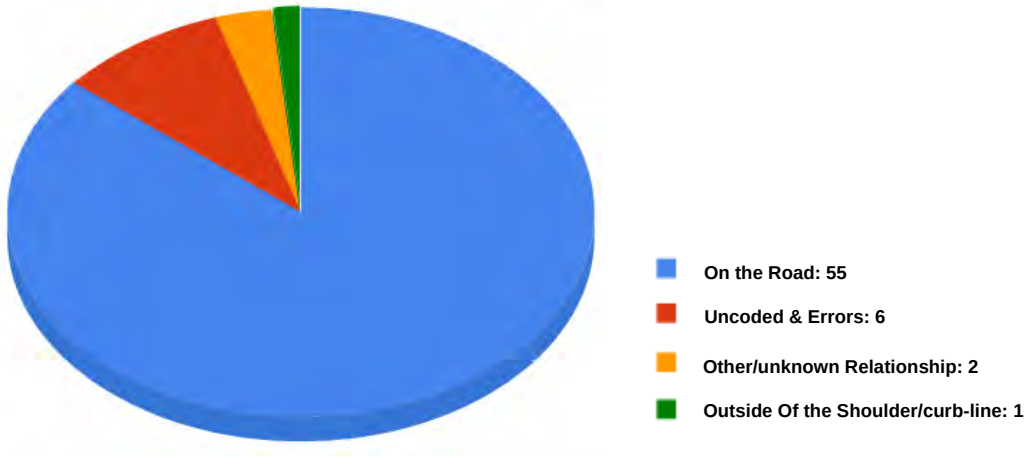
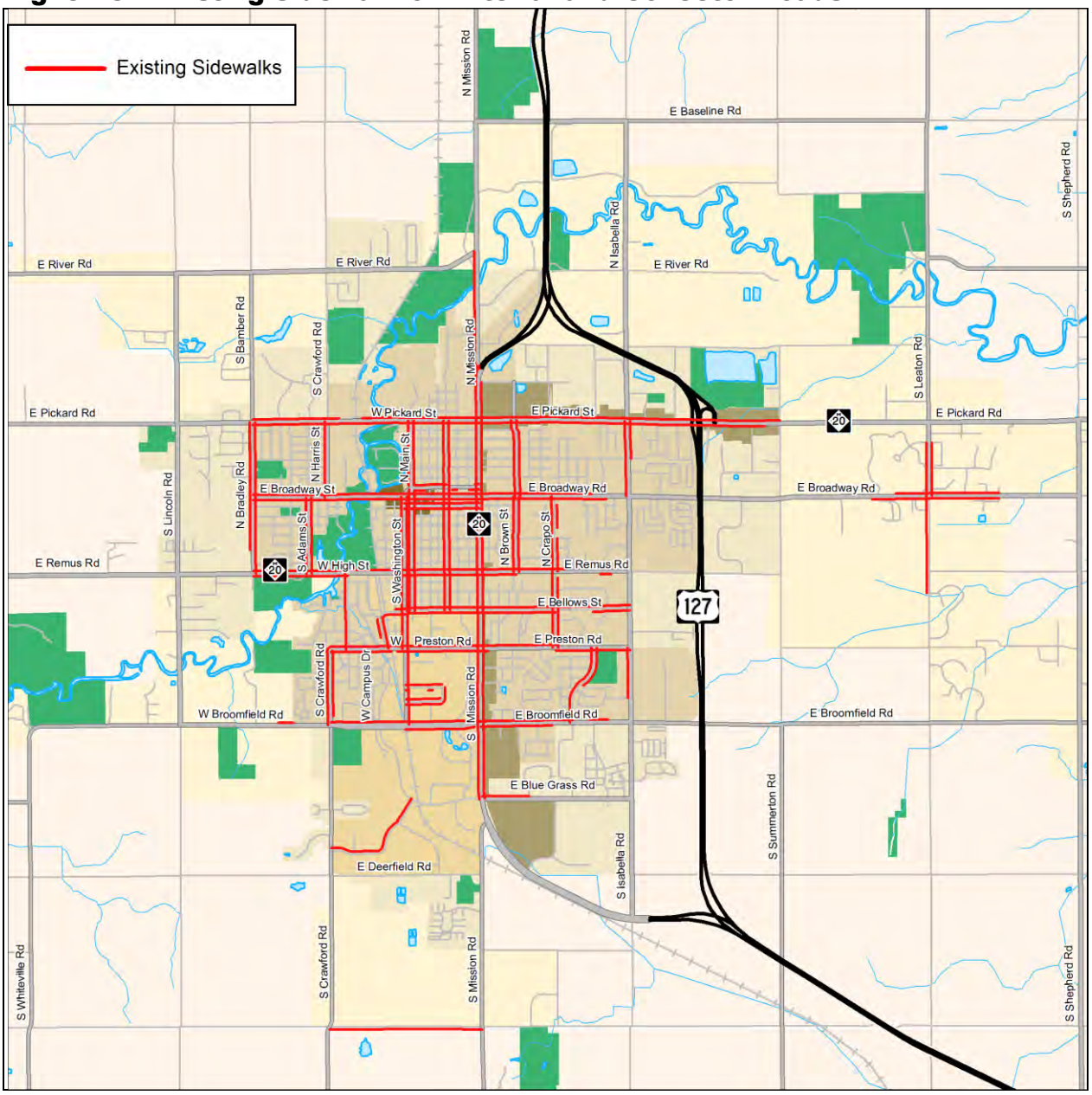


Fig. 3.2C. Existing Sidewalk on Arterial and Collector Roads



There are about 50 miles of existing sidewalk in the Greater Mt. Pleasant Area. A key factor to a pedestrians comfort on a sidewalk is the degree of separation from the roadway. Buffer (lawn extensions) and vertical elements such as trees and light poles increase the pedestrians comfort level.

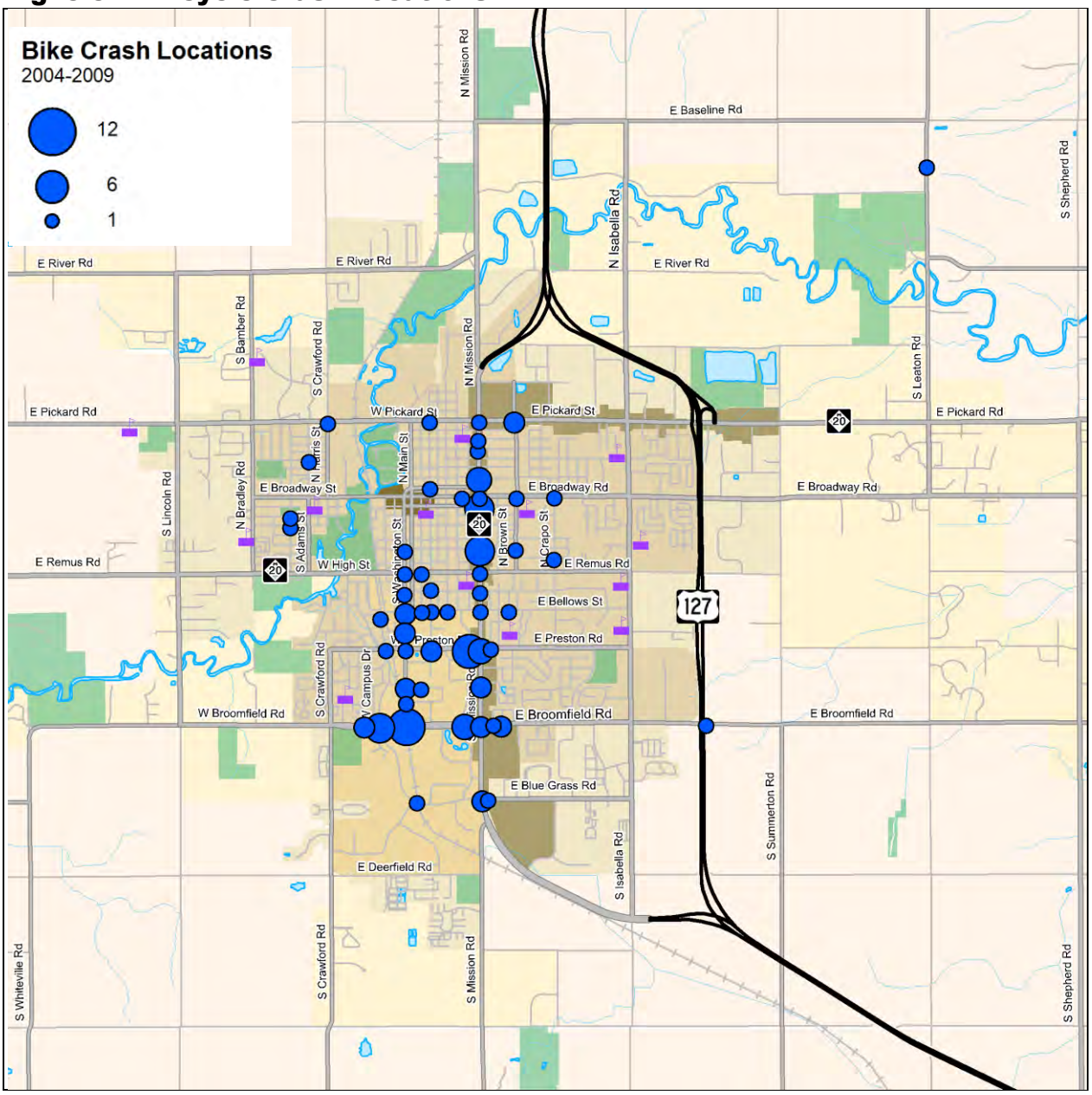
3.3 The Bicycling Environment

The approach to handling bicycles in the Greater Mt. Pleasant Area is inconsistent and incomplete. There are a few short segments of existing bike lanes in the city but they do not connect or create system. The on-road facilities are not logical or convenient.

The following maps provide a general summary of the existing conditions:

- Fig. 3.3A. Bicycle Crash Locations
- Fig. 3.3B. Bicycle Crash Data
- Fig. 3.3C. Existing Bike Lanes
- Fig. 3.3D. Existing Off-Road Trails and Roadside Pathways
- Fig. 3.3E. Potential Bike Lanes Opportunities

Fig. 3.3A. Bicycle Crash Locations



The crashes shown are from a five year period, 2004 – 2009.

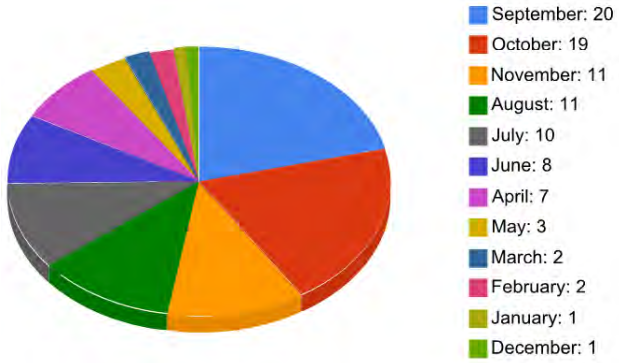
There were 95 bicycle involved crashes, none were fatal and 8 resulted in serious injury. Drinking or drug use was involved in 6 of the crashes. There was no traffic control at 25% of the crashes; a signal was present at 27% and a stop sign at 45% of the locations.

The Michigan Traffic Crash Fact website was the source of the data and charts.

Fig. 3.3B. Bicycle Crash Data

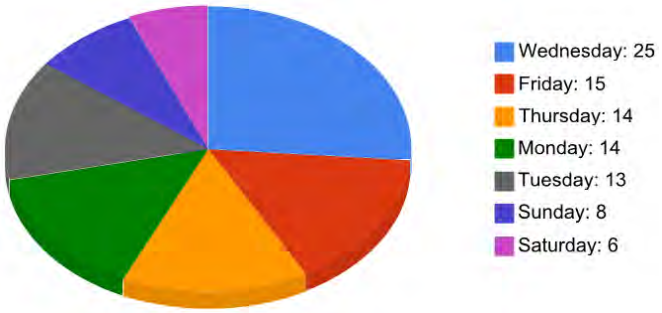
Month of Crash

Crashes occurred during every month. The Fall had the most crashes with September and October with the highest. This is likely due to the University being in session in combination with good weather.



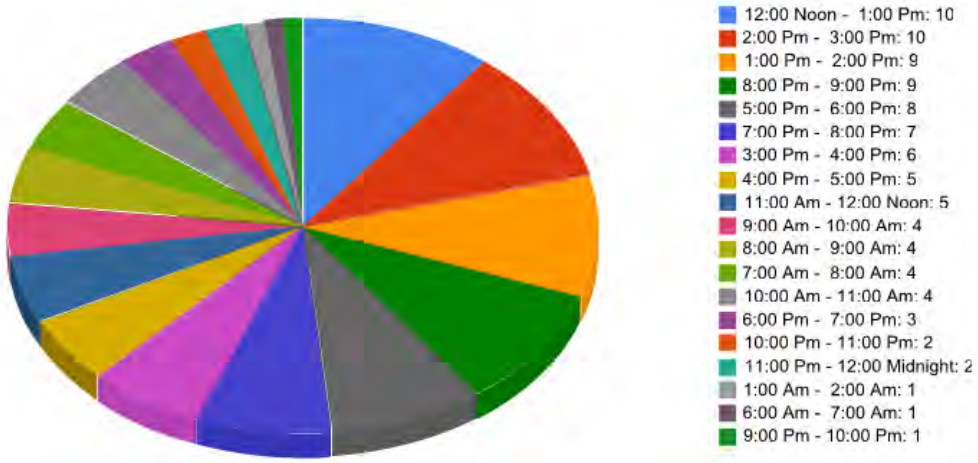
Day of Week

Crashes were fairly evenly distributed throughout the week with the fewest crashes occurring on the weekend.



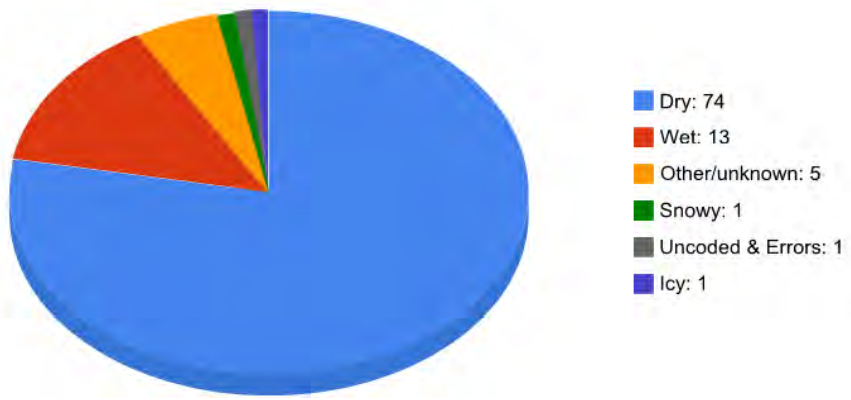
Time of Day

The crashes took place between 7:00 AM and 10 PM. 81% of the crashes took place in daylight, 5% at dusk and 10% took place when it was dark (9% were not coded).



Road Conditions

The road was dry for 78% of the crashes.



Relation to Roadway

85% of the crashes took place in the roadway.

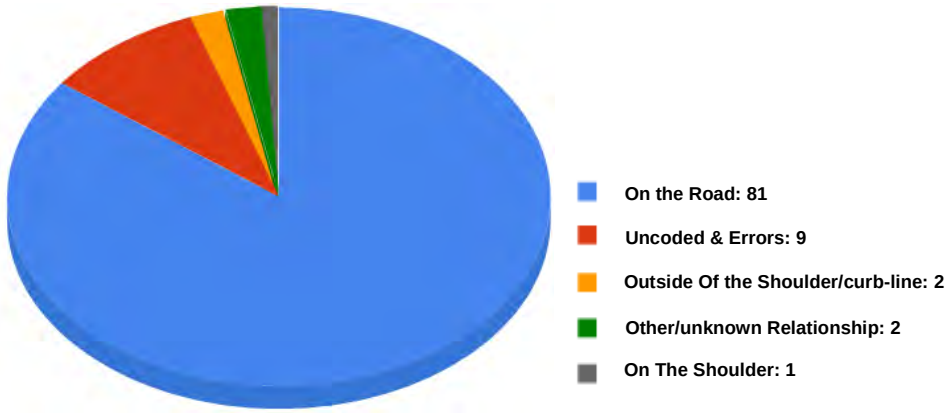
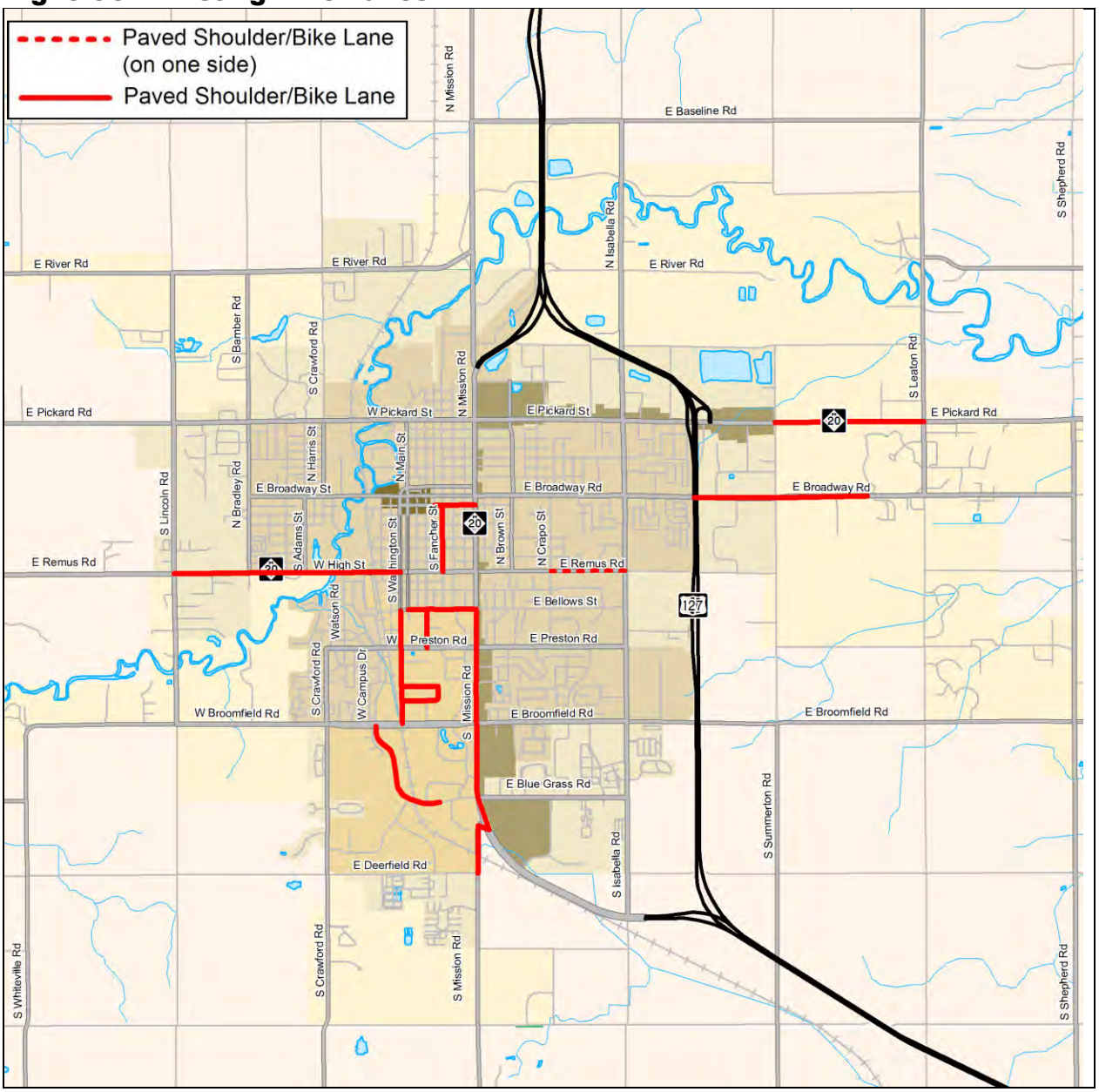
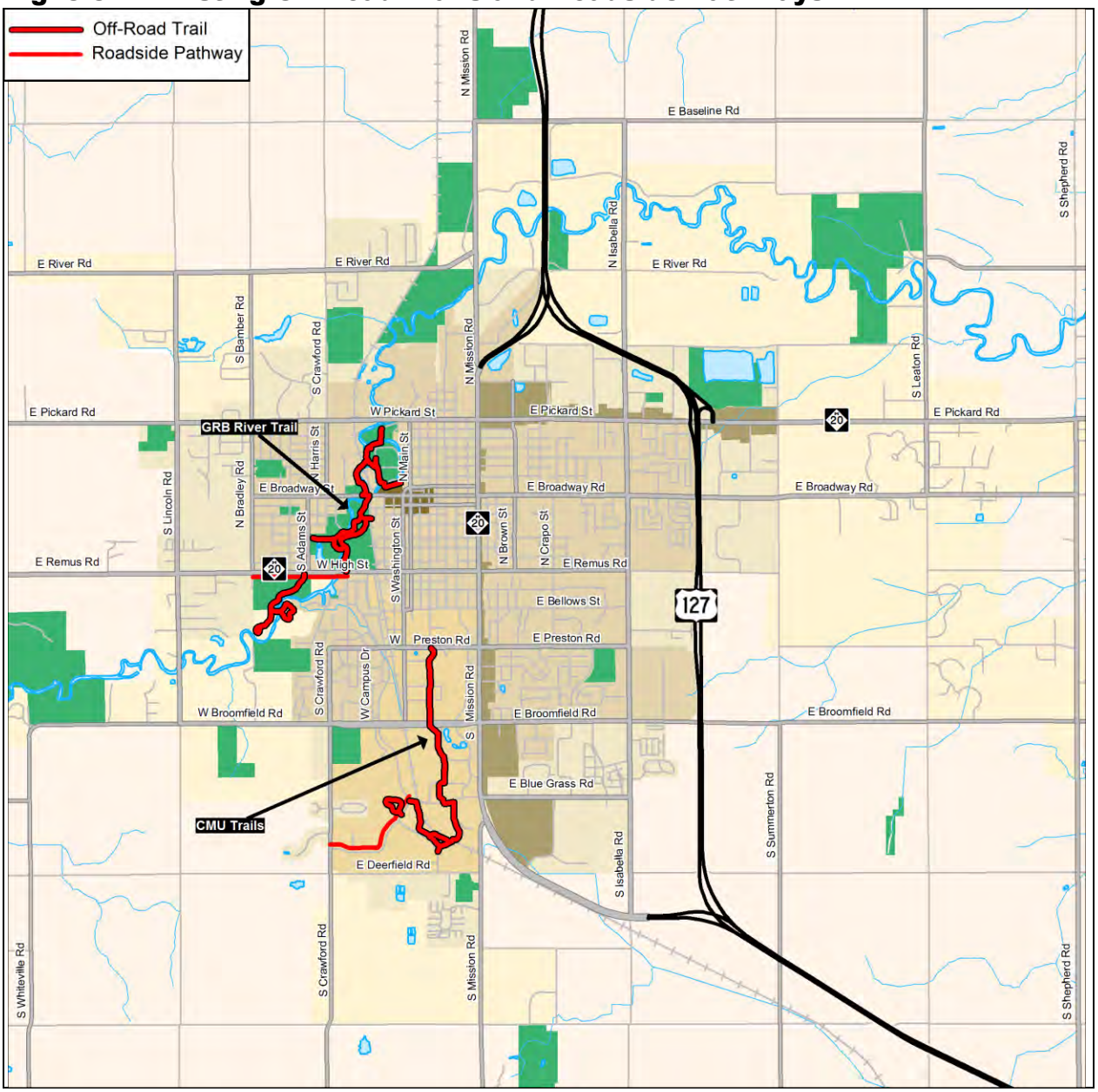


Fig. 3.3C. Existing Bike Lanes



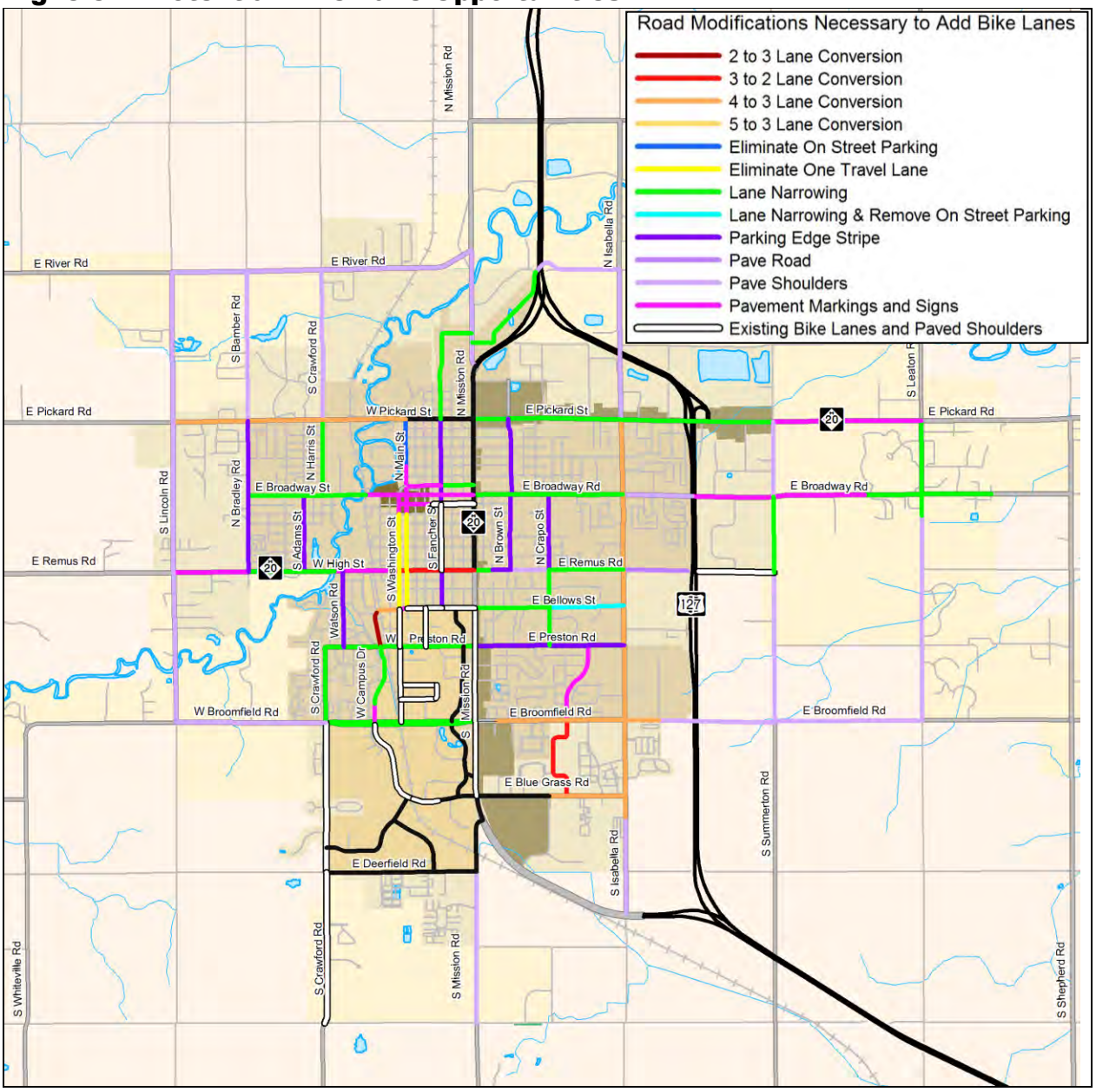
There are about 8 miles of existing bike lanes/paved shoulders in the Greater Mt. Pleasant Area. However, they are inconsistent and do not connect to make a complete system.

Fig. 3.3D. Existing Off-Road Trails and Roadside Pathways



There are 5.25 miles of existing trails and roadside pathways in the Greater Mt. Pleasant Area.

Fig. 3.3E. Potential Bike Lane Opportunities



There is tremendous potential to add bike lanes to the majority of the primary roads the near future just by restriping the roadway.

4. Proposed Facilities

Master Plan vs. Corridor Planning

The recommendations in this Section represent a Master Plan level evaluation of the suitability of the proposed facilities for the existing conditions. Prior to proceeding with any of the recommendations, a corridor level assessment should be done in order to fully evaluate the feasibility and appropriateness of any roadway modification and/or proposed bicycle or pedestrian facility.

Topics:

4.1 –Non-Motorized Transportation Network

4.2 – Specific Area Concept Plans

4.3 – Projected Energy Savings

4.1 Non-Motorized Transportation Network

There is no such thing as a typical pedestrian or bicyclist. A single person's preferences for a walking or bicycle route may vary based on the type of trip. A person's daily commute route will likely favor directness of travel over a scenic route (but not always). An evening or weekend ride, walk or run for recreation and exercise will be based on an entirely different set of criteria. It will likely favor local roads and trails through parks and schools.

Individuals also vary greatly in their tolerance of traffic, hills, weather and numerous other factors. A child will likely choose to keep to local roadways on their way to school provided they have safe ways to cross busy streets. An adult who is just starting to bicycle again will likewise shy away from busy roadways, sticking to residential roads wherever possible. But an experienced bicyclist may choose the busy road for its directness of travel. The solution then is not one dimensional, but rather responds to the needs of the various users and trip types. By doing so the plan addresses the needs of the majority of the community's population, not simply a small interest group.

Bicycle and walking are not exclusive modes of travel either. Most bicycle trips will also include some time as pedestrian. Also, some bicycling and walking trips may be a part of a longer multi-modal journey. For example, someone may ride their bike to a bus and then walk from the bus to their final destination.

For all the reasons listed above, there needs to be a spectrum of non-motorized facilities available that gives the user the choice to choose the route that they feel most comfortable with. Off-road trails, neighborhood connector routes, sidewalks, roadside pathways and bike lanes are some of the most common facilities that make up the network.

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- Fig. 4.1C. Proposed Near-term Bike Lanes via Lane Narrowing
- Fig. 4.1D. Proposed Near-term Bike Lanes via 4 to 3 Lane Conversions
- Fig. 4.1E. Proposed Near-term Bike Lanes via Other Lane Conversions
- Fig. 4.1F. Proposed Near-term Bike Facilities through Edge Striping
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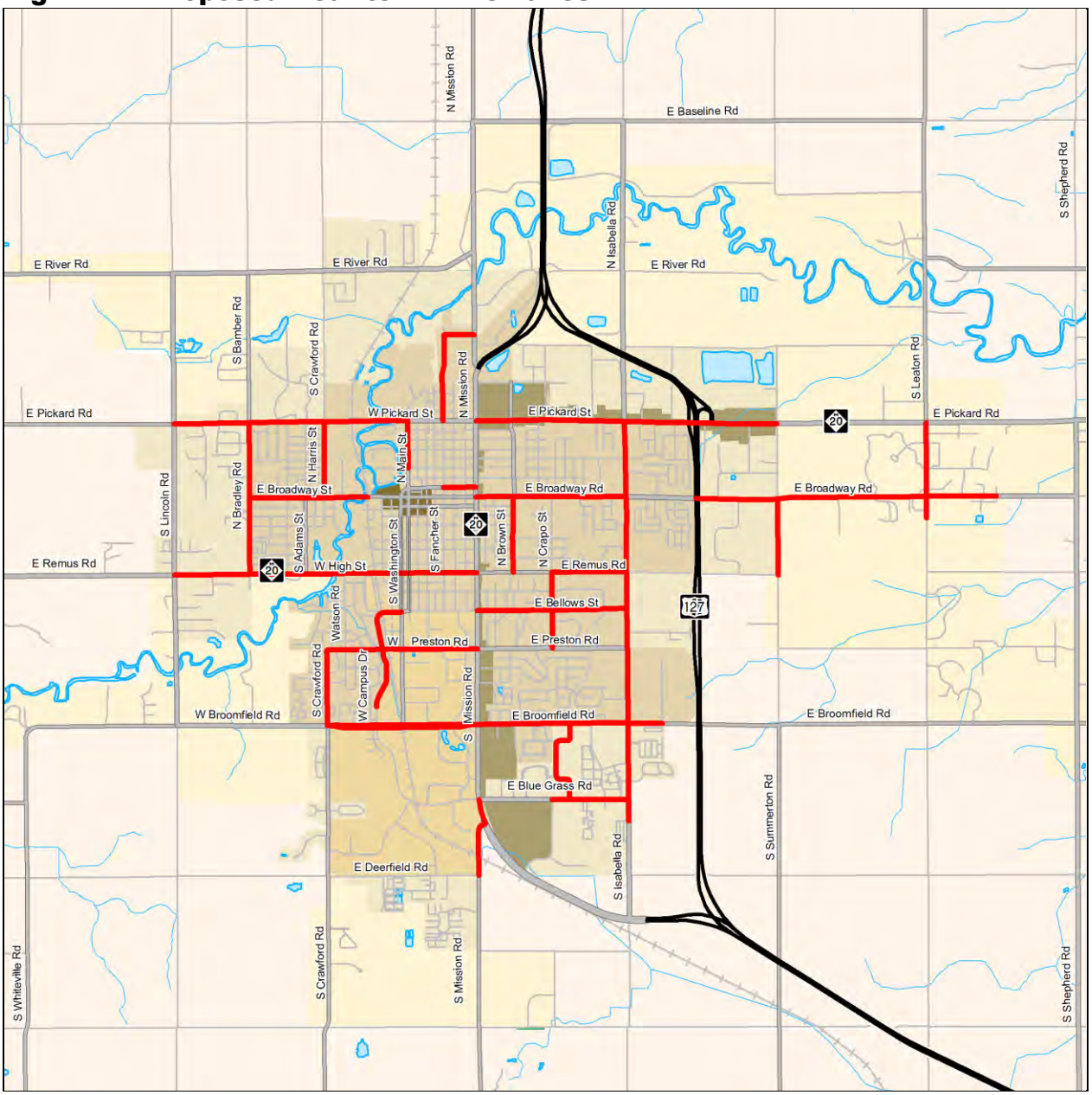
Fig. 4.1A. Spectrum of Non-motorized Routes

A non-motorized system is made up of a variety of routes that provide options for the user to choose their most comfortable route. The following chart gives a brief overview of some of the most common non-motorized facilities that are available.

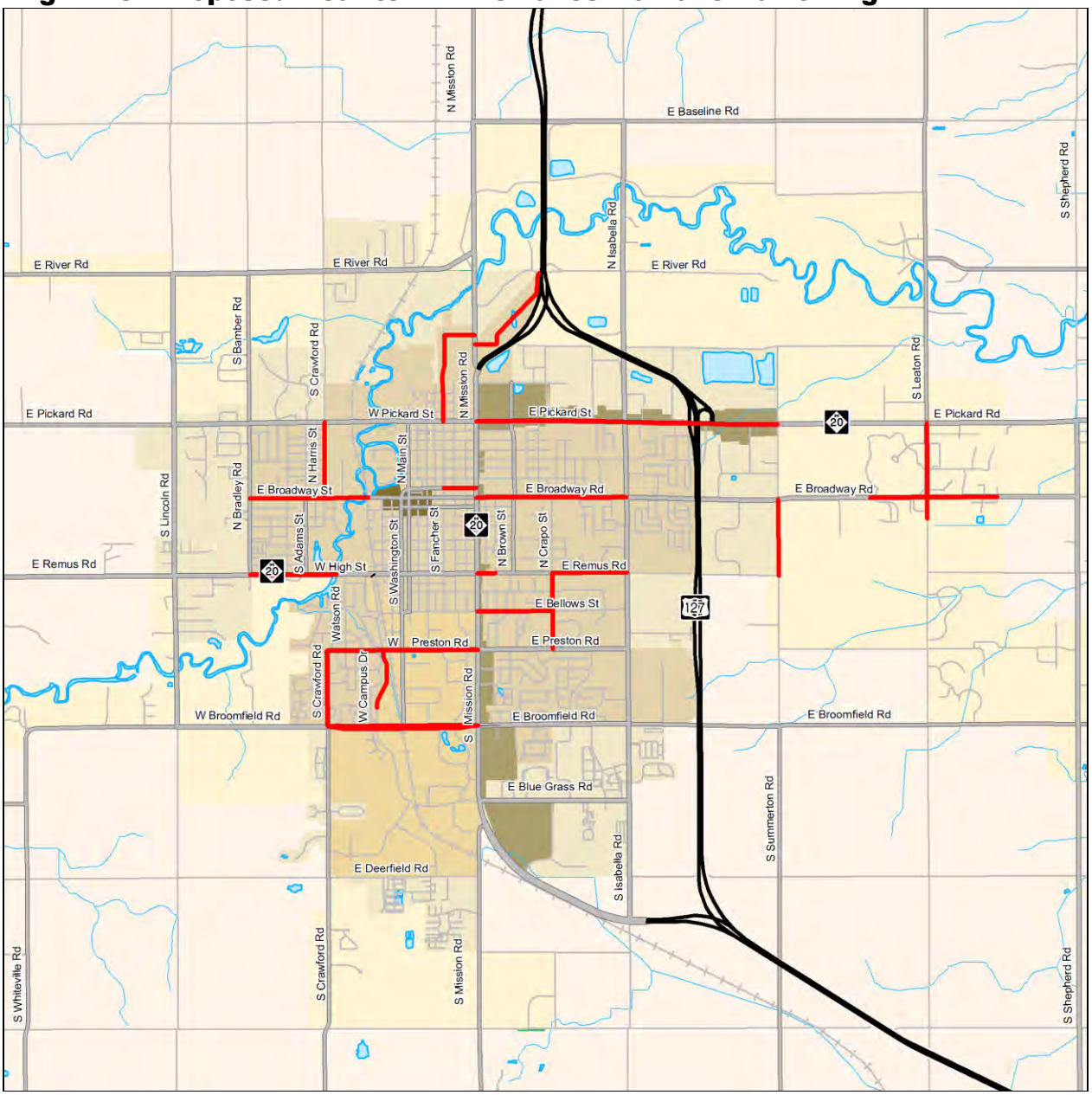
PRIMARY LINKS	NEIGHBORHOOD CONNECTORS	OFF-ROAD TRAILS
TYPICAL FACILITY TYPES:		
Complete Streets that may include the following: • Bike Lanes & Sidewalks • Sidepaths • Paved Shoulders • Shared-use Arrows • Road Crossing Improvements	Complete Streets that may include the following: • Guided Routes • Named Routes • Bike and Pedestrian Boulevards • Neighborhood Greenways • Crossing Improvements Where Neighborhood Connectors Intersect Primary Roadways	• Foot Trails • Soft-surfaced Trails • Hard-surfaced Trails • Road Crossing Improvements Where Trails Intersect Primary Roadways
CONTEXT AREAS:		
• Urban Suburban and Rural Primary Roads (Arterials and Collectors) • Urban and Suburban roads typically have bike lanes or shared lane markings paired with sidewalks or sidepaths • Rural typically has paved shoulders	• Urban and Suburban Local and Residential Roads • Connecting Pathways Through Neighborhood Parks and Schools • Provide alternative routes to busy Primary Links	• Major Parks • Waterfronts • Abandoned Rail Corridors • Active Rail Corridors • Transmission Corridors
PRIMARY TRIP TYPES:		
• Daily Transportation to Work and Personal Business	• Mix of Daily Transportation, Safe Routes to School and Close to Home Recreation	• Use Depends on Location • Recreation Destination
TRIP CHARACTERISTCS:		
• Users Typically Segregated Into Mode Specific Facilities Such as Sidewalks and Bike Lanes • Exposure to High Speed and High Volumes of Motorized Vehicle Traffic • Just as Direct a Path of Travel as Using a Motor Vehicle	• More of a Shared Space, Sidewalks May or May Not Be Present • Moderate Exposure to Low Speed and Low Volumes of Motorized Vehicle Traffic • In Some Cases Trips Via Neighborhood Connectors May Be Longer Than the Same Trip Via Complete Streets	• Non-motorized Users Separated from Motorized Vehicle Traffic • Minimal Exposure to Motorized Traffic at Roadway Crossings • Directness of Travel Depends on the Route and What Resources It Connects

Fig. 4.1B. Proposed Near-term Bike Lanes



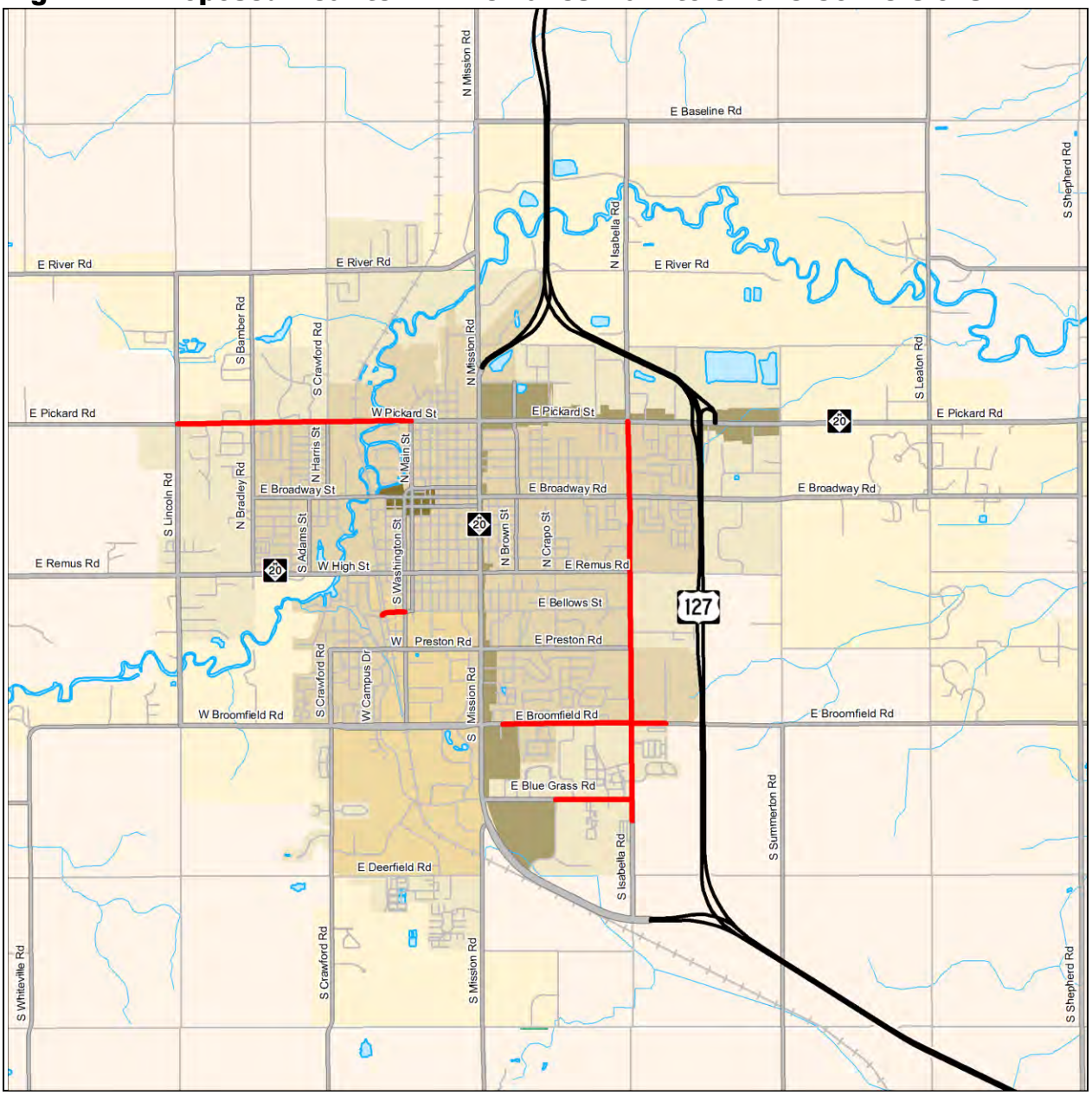
Approximatly 25 miles (40%) of the major roadways can have bike lanes added in the near term, with minor adjustments.

Fig. 4.1C. Proposed Near-term Bike Lanes via Lane Narrowing

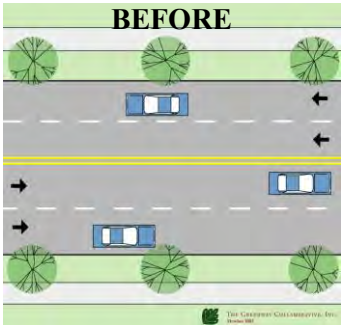


Approximatly 13 miles (20%) of the major roadways can have bike lanes added in the near term, just by restriping the roadway to narrow the lanes.

Fig. 4.1D. Proposed Near-term Bike Lanes via 4 to 3 Lane Conversions



Approximately 6 miles of bike lanes could be add in the near-term through 4 to 3 lane conversions. Please refer to Section 5.6 Modifying Existing Facilities for more information on 4 to 3 lane conversions.



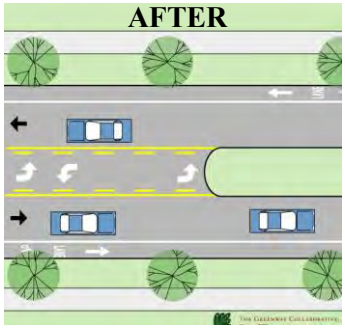
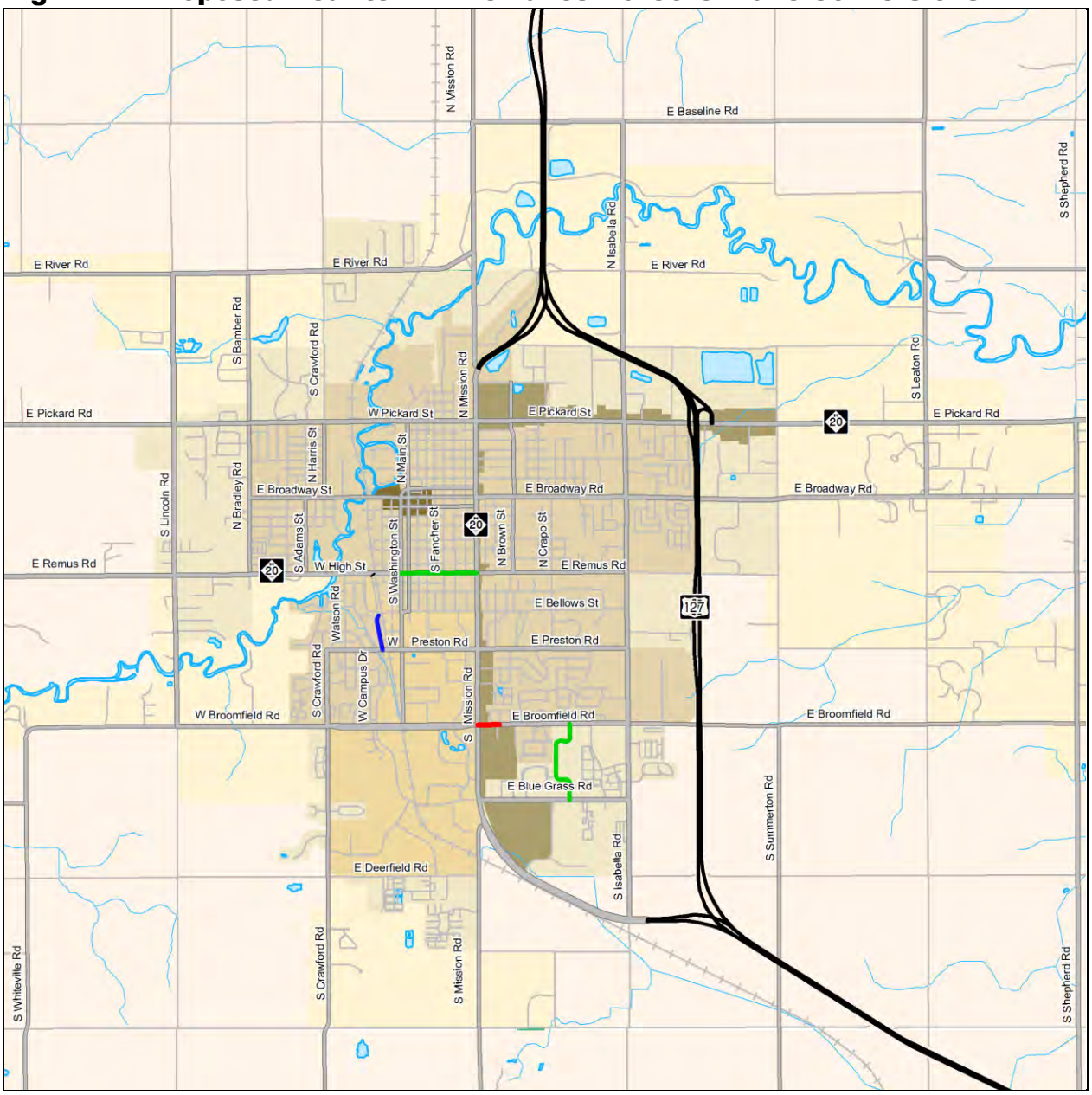


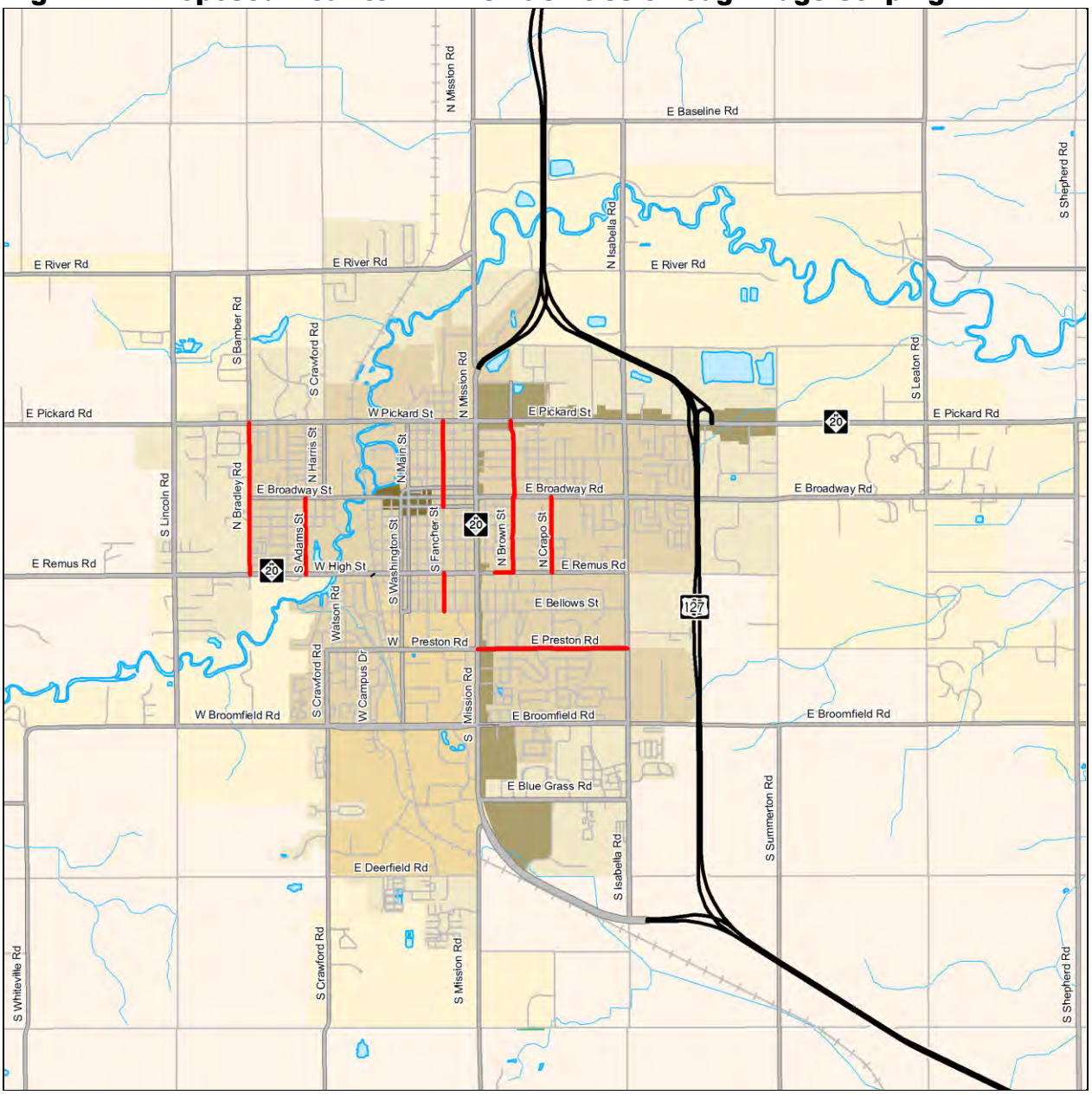
Fig. 4.1E. Proposed Near-term Bike Lanes via Other Lane Conversions



Approximately 1.5 miles of bike lanes could be add in the near-term through 5 to 3 lane conversions, 3 to 2 lane conversions and 2 to 3 lane conversions.

5 to 3 Lane Conversion
3 to 2 Lane Conversion
2 to 3 Lane Conversion

Fig. 4.1F. Proposed Near-term Bike Facilities through Edge Striping

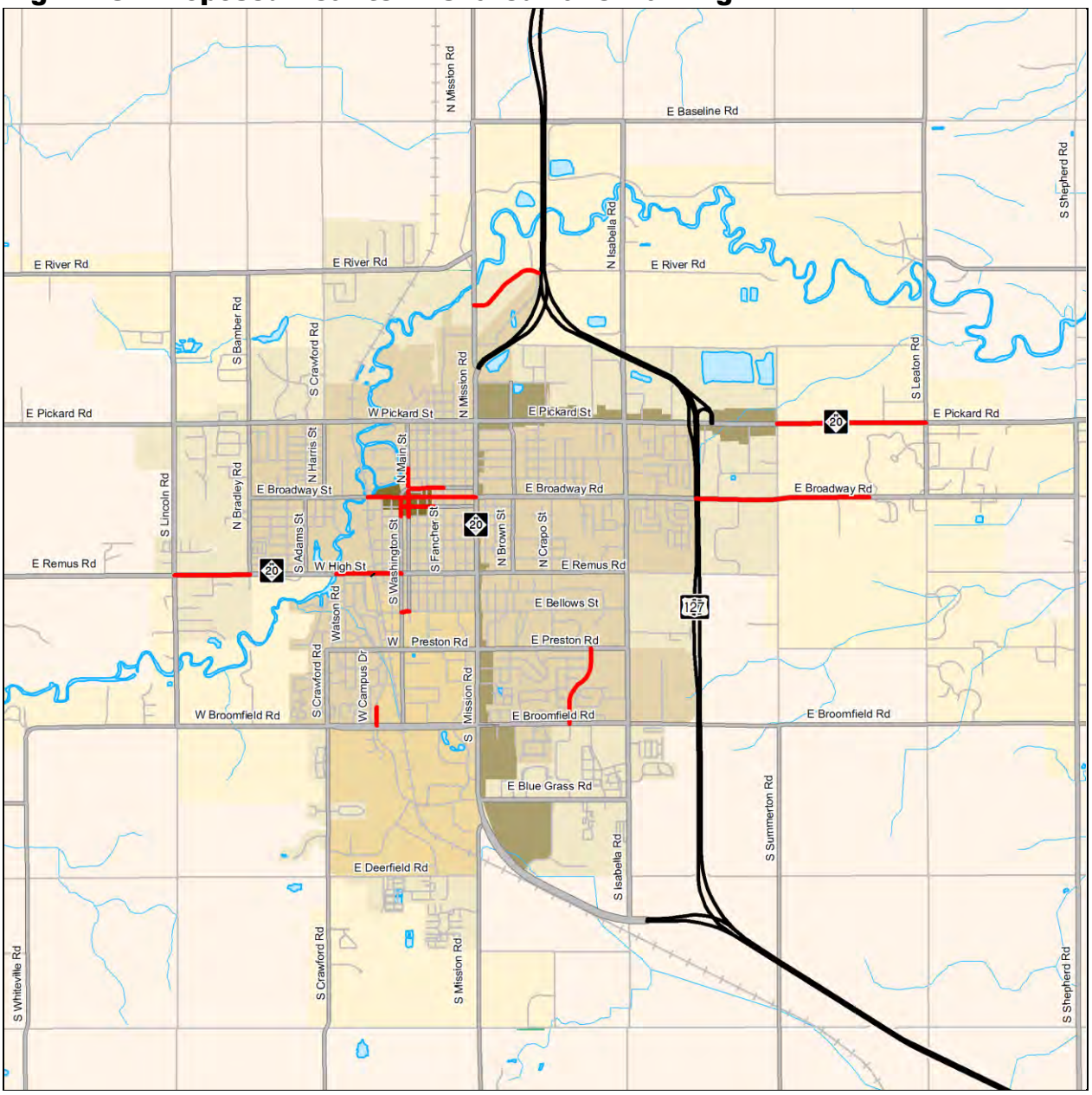


Edge Stripes are recommended for roadways that do not have enough room for a designated bike lane. These roads typically have on-street parking that is used rarely or only during certain events. On these roads, the parking area is defined with a stipe 7 to 8' from curb. Bikes may use the parking area when cars are not present. The striped off area also creates a traffic calming effect because it visually narrows the roadway.

Approximately 6.5 miles of Edge Stripe can be added in the near-term

This plan only recommends Edge Stripes along the neighborhood connector routes. However, many of the local roads in the project area are very wide with limited on street parking, and if desired Edge Stripes should be implemented on other local roads that are not identified in this plan.

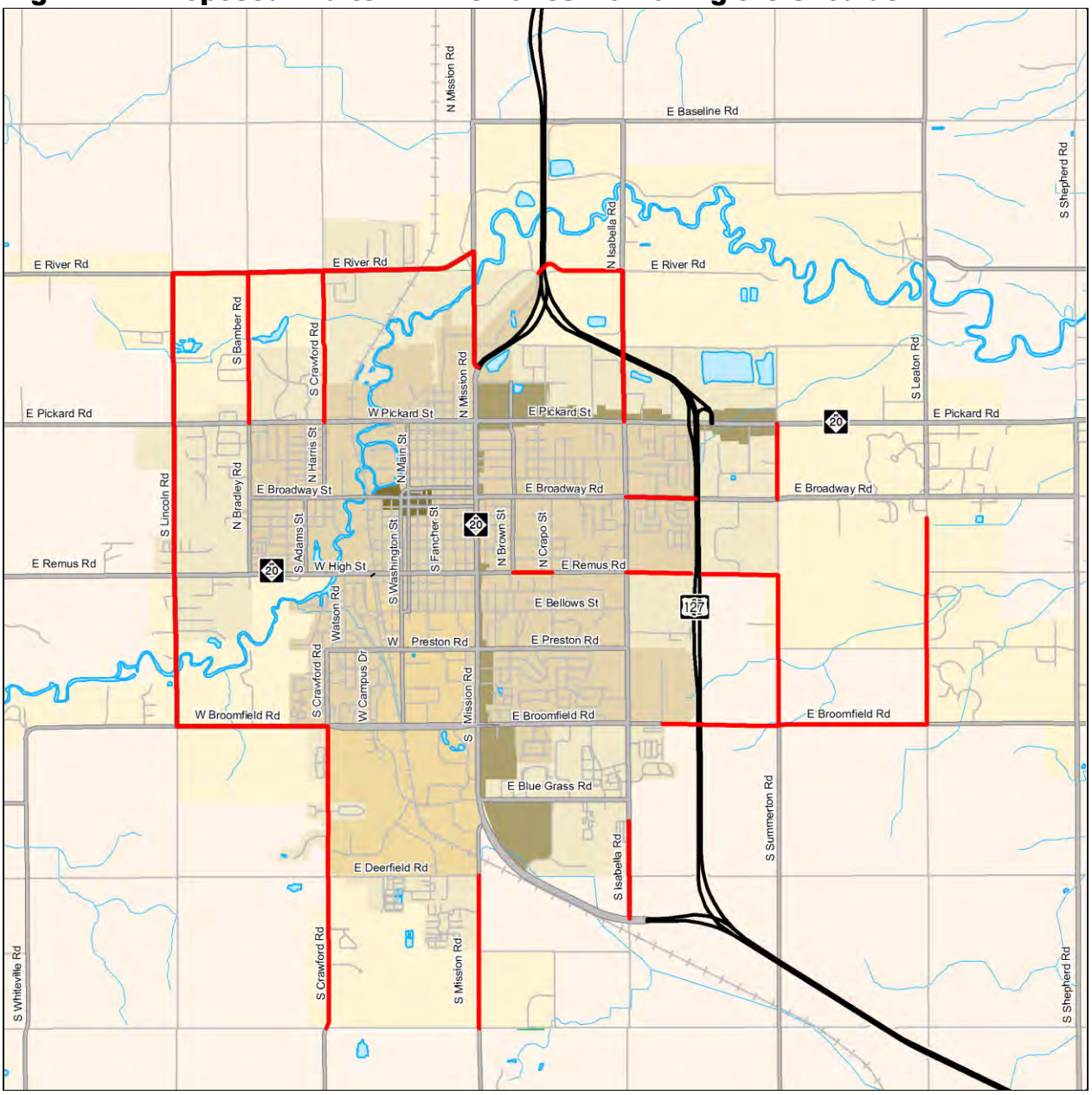
Fig. 4.1G. Proposed Near-term Shared Lane Marking



Shared Lane Markings are used for on-road bicycle facilites where the right-of-way is too narrow for designated bike lanes. The shared lane marking alerts cars to take caution and allows cyclists to safely travel in these lanes when striping is not possible. Typically they are used in downtwon streets where there is not room for a bike lane, there is on-street parallel parking and bicycles are discouraged from using sidewalks. They are often used in conjunction with a Shared the Road Sign.

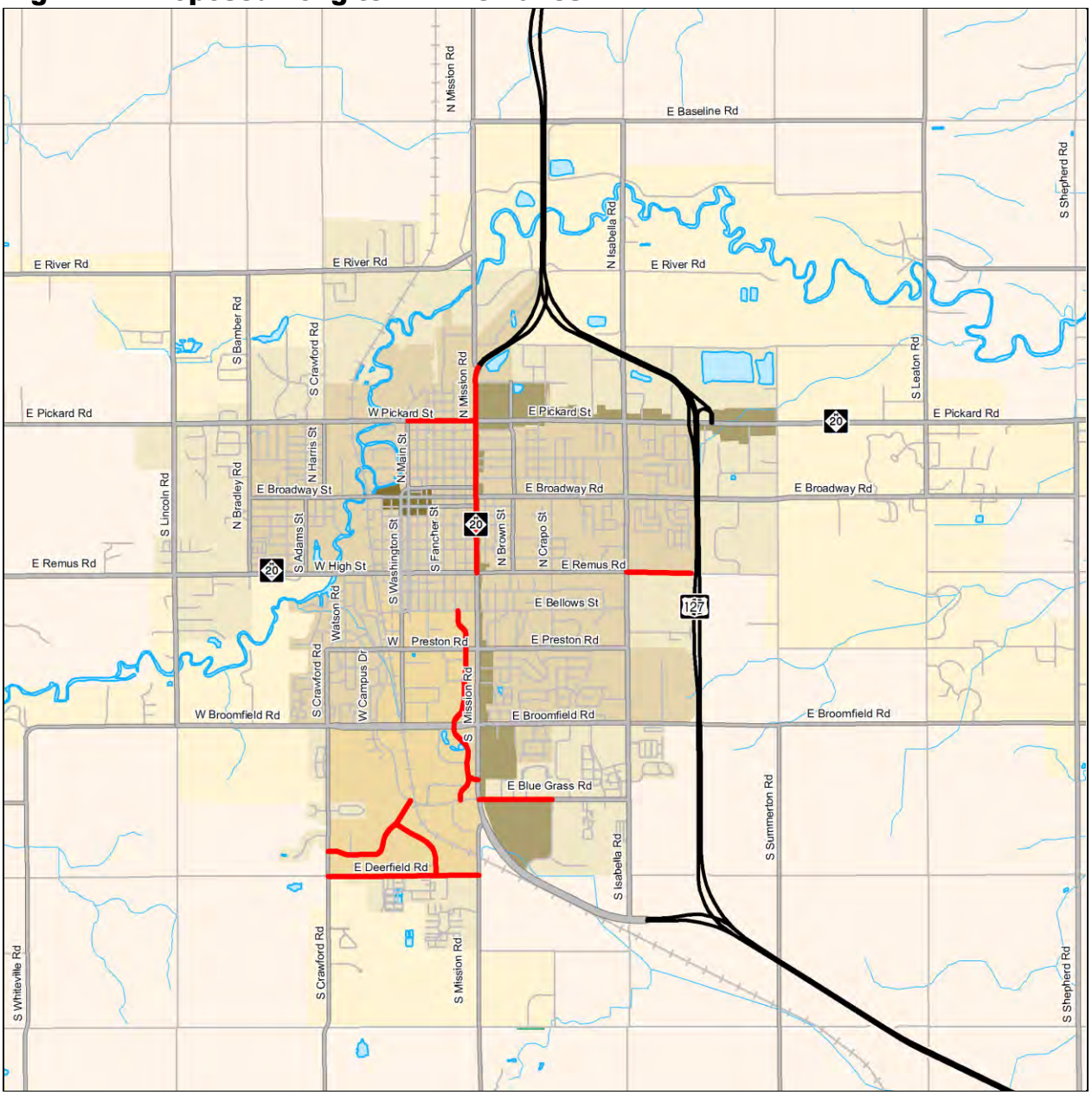
Approximately 2.5 miles of Share Lane Markings can be added in the near-term

Fig. 4.1H. Proposed Mid-term Bike Lanes via Paving the Shoulder



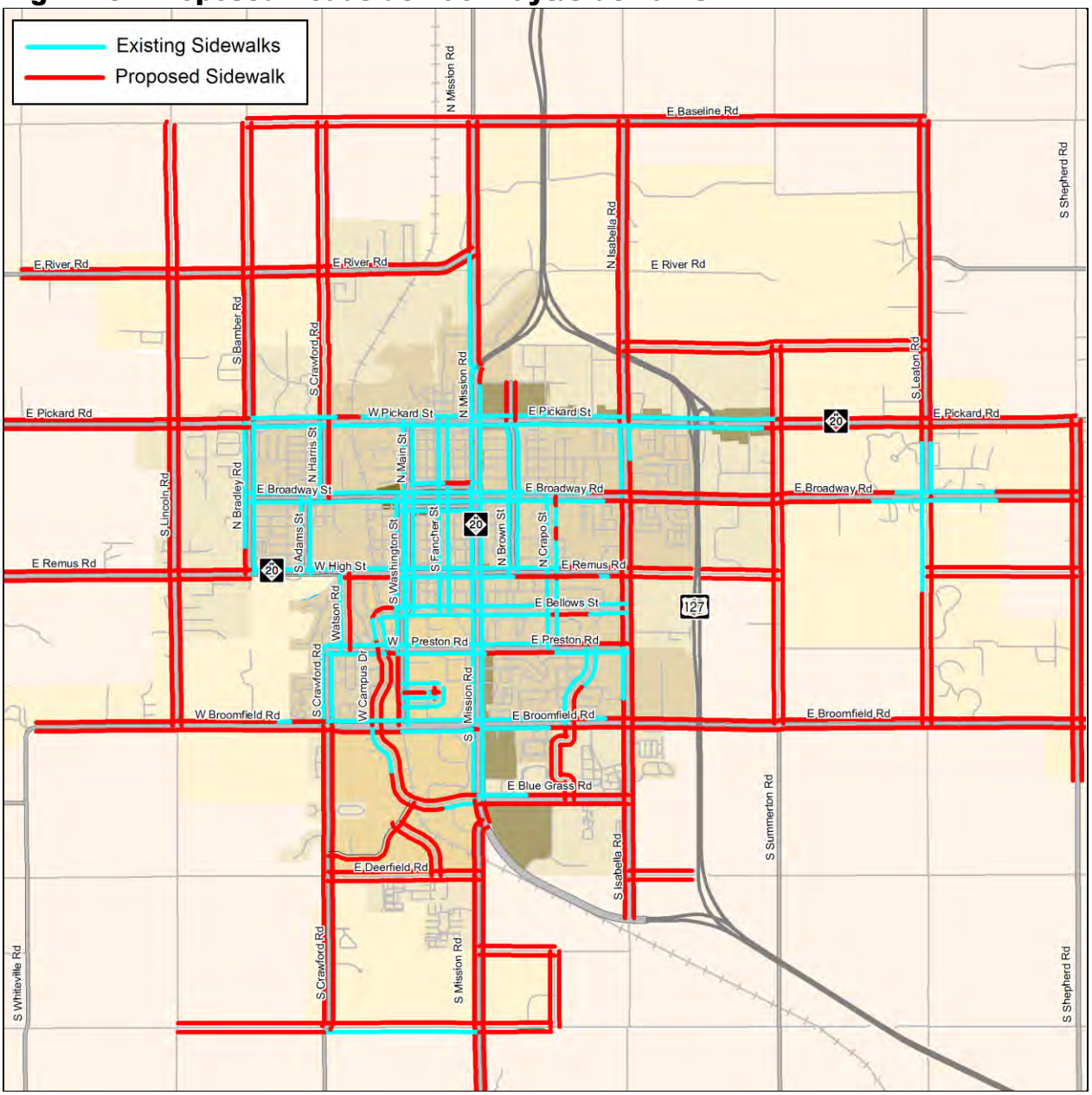
Approximately 20 miles (30%) of the primary roadways can have bike lanes added in the mid-term by paving the road shoulder.

Fig. 4.1I. Proposed Long-term Bike Lanes



Approximately 7 miles (10%) of the primary roadways can have bike lanes added in the long-term. These generally are due to a narrow roadway and bike lanes should be implemented when reconstruction occurs on the roadway.

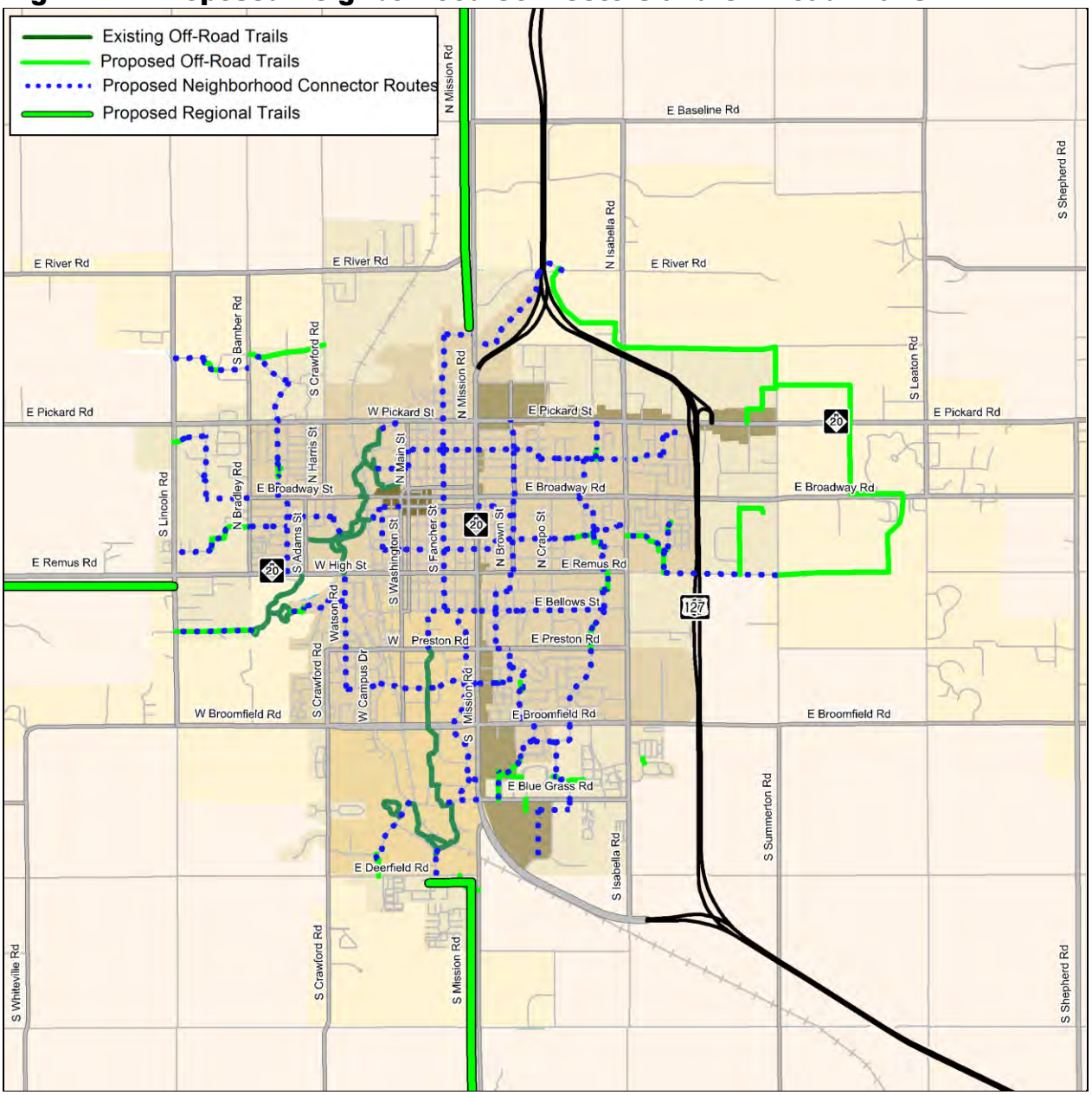
Fig. 4.1J. Proposed Roadside Pathways/Sidewalks



Ideally, all roads should have sidewalks on both sides of the street in an urban environment. In the transistion areas where new development is occuring a sidewalk should be built on at least one side of the roadway in the near-term. It is recommended that sidewalks along major collector and arterial roads have a minimum 6' wide a buffer zone and vertical elements such as trees between the sidewalk and road. Please refer to Section 8.1 and 8.4 for more details.

There are approximately 74 miles of proposed sidewalks.

Fig. 4.1K. Proposed Neighborhood Connectors and Off-Road Trails



The neighborhood connector routes and off-road trails provide connectivity between destinations around the city for bicyclists who would not be comfortable bicycling on the primary road system, even if bicycle lanes were present.

Please note that neighborhood connectors are not just restricted to the routes highlighted above. If elements of neighborhood connectors are desired, they could be used elswhere in the city as a means to calm traffic, provide non-motorized links and enhance a streetscape.

There are approximately 23 miles of neighborhood connectors, 4 miles of short connector pathways and 5 miles of off-road trails proposed.

Fig. 4.1L. Neighborhood Connectors Examples

GUIDED ROUTES:

At each decision point signs, about the size of a typical street sign, indicate the route direction, destination and distance

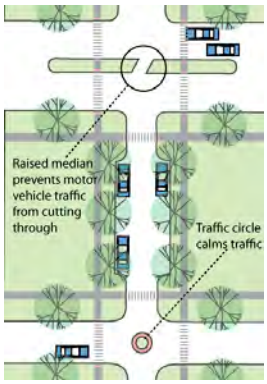
- Located primarily on low speed, low traffic volume local roads and connecting pathways
- Signs provide wayfinding by noting direction and distance to key destination such as schools, parks and the downtown
- Identify routes that may not be obvious to someone who is unfamiliar to the area
- Along the route signs are used periodically to reassure users they are still along the route

NAMED ROUTES:

- Incorporates the elements of the Guided Routes
- Provides trail system branding and specific route identification
- Are helpful in providing consistency where a long-distance route is comprised of a number of different facility types
- Generally used on routes that provide key connections between major destinations – something worthy of a name or number

BICYCLE AND PEDESTRIAN BOULEVARDS:

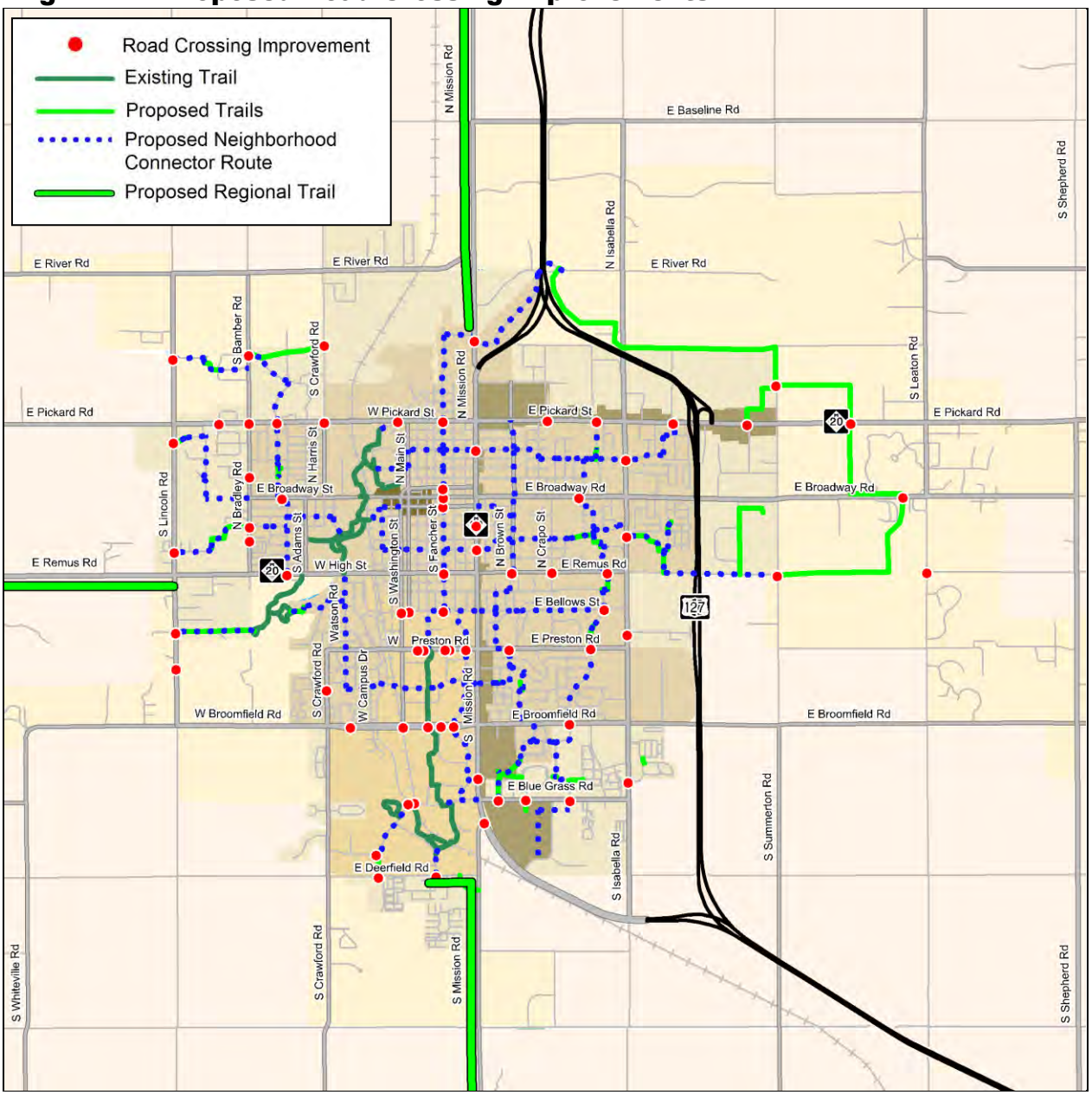
- Generally Incorporates the elements in Guided Routes, and Named Routes
- Route is optimized for bicycle travel while discouraging through motor vehicle traffic via tools such as motor vehicle diverter islands that are permeable to bicycles and pedestrians
- Motor vehicle speeds reduced through calming measures
- Stop signs and yield sign are oriented to provide unimpeded flow of bicycle traffic



NEIGHBORHOOD GREENWAYS:

- Incorporates elements of the Guided Bike Routes, Named Bike Routes, and Bicycle Boulevards
- Designed for pedestrian and bicycle use
- Contains elements that reflect the character of the surrounding community such as natural areas, local art, community gardens and historic features.
- Has sustainable design elements such as rain gardens and permeable pavement

Fig. 4.1M. Proposed Road Crossing Improvements



Road Crossing Improvements are needed in areas where there is a high demand to cross. These areas occur where a bike route crosses a collector or arterial road, a major bus stop or bus shelter is present, there is a long distance between crosswalks, or there is a high demand based on land use and population density.

This map illustrates where crossing improvements are needed. Many of these crossings are addressed in the implementation plan with the neighborhood connector routes and major corriodor developments. However, if demand is present they can be implemented sooner. Please note that these are initial recommendations and they need to be studied further prior to implementation.

Fig. 4.1N. Road Crossing Improvements Examples

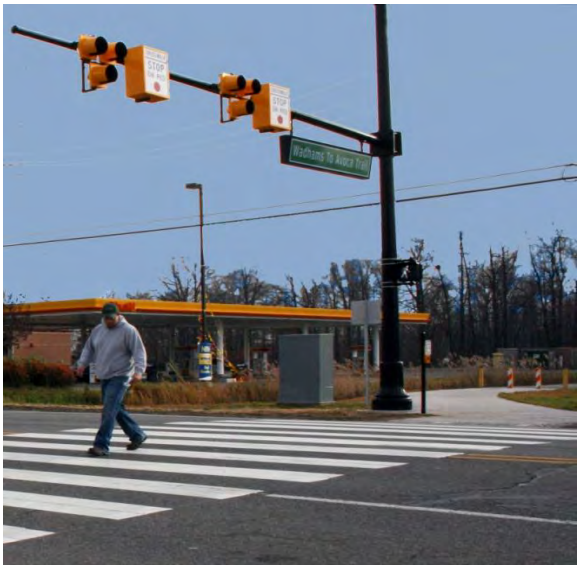
ACTUATED RECTANGULAR RAPID FLASH BEACON:

- High intensity LED flashers that are paired with crosswalk signs
- LED flashers alternate and get motorist attention when activated
- Push-button or passively activated
- Can be linked to advanced warning signs with LED flashers
- Solar powered models available
- Passive activation works best when there is a long pedestrian approach, such as a pathway

CROSSING ISLAND:

- Pedestrians only have to cross one direction of traffic at a time
- Provide Storage area for pedestrians waiting for acceptable gaps in the flow of traffic before completing the street crossing
- Can be combined with Actuated Rectangular Rapid Flash Beacons
- Good for locations where there are three or more busy lanes and/or high speed roadways

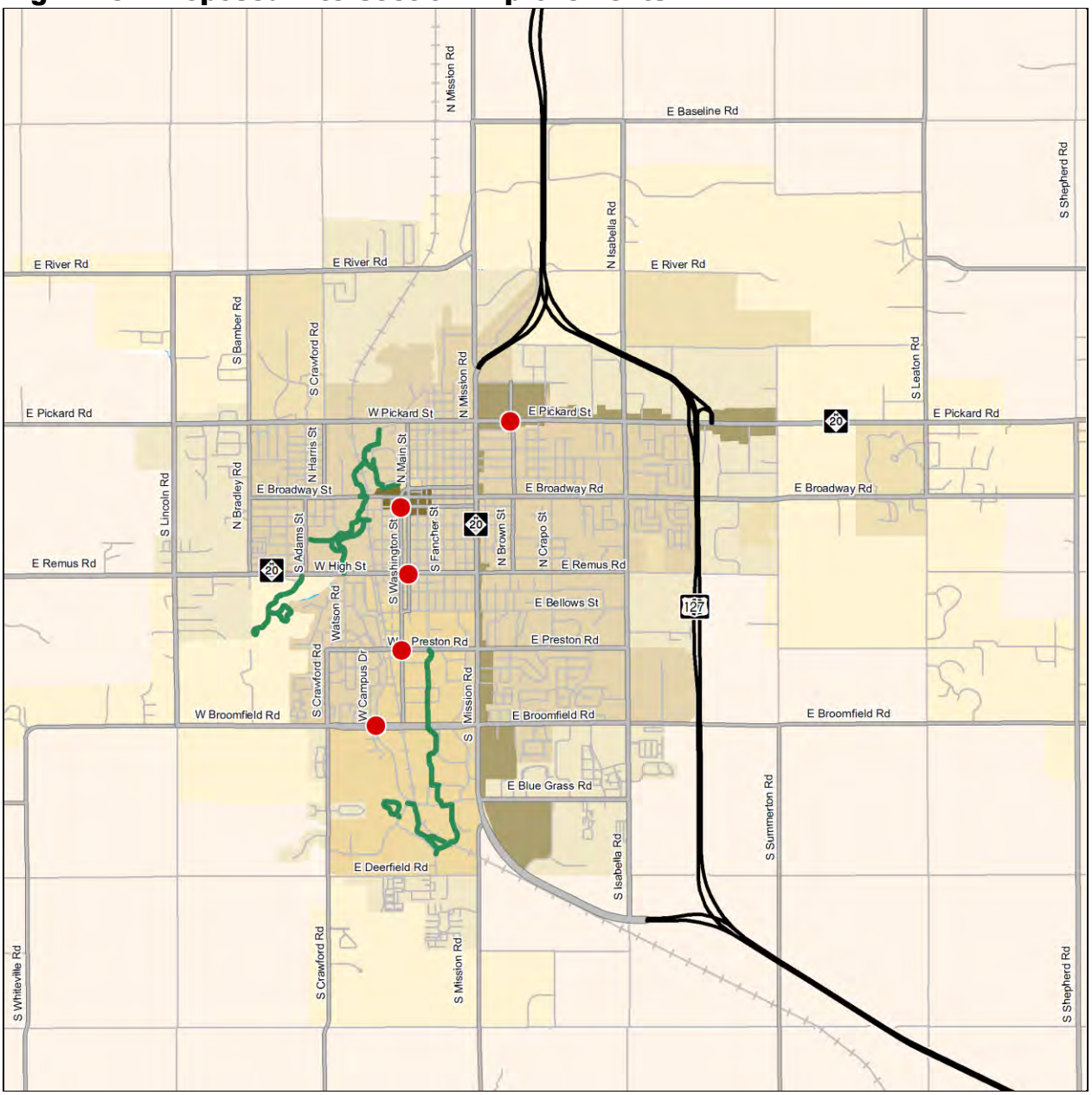
HYBRID PEDESTRIAN SIGNAL:



- Used to help pedestrians cross mid-block where a traditional pedestrian crosswalk signal would be inappropriate
- Minimizes delay to motor vehicle traffic
- Good for locations where there are few usable gaps in traffic, usually on high speed/high volume roadways when a crossing island is not feasible

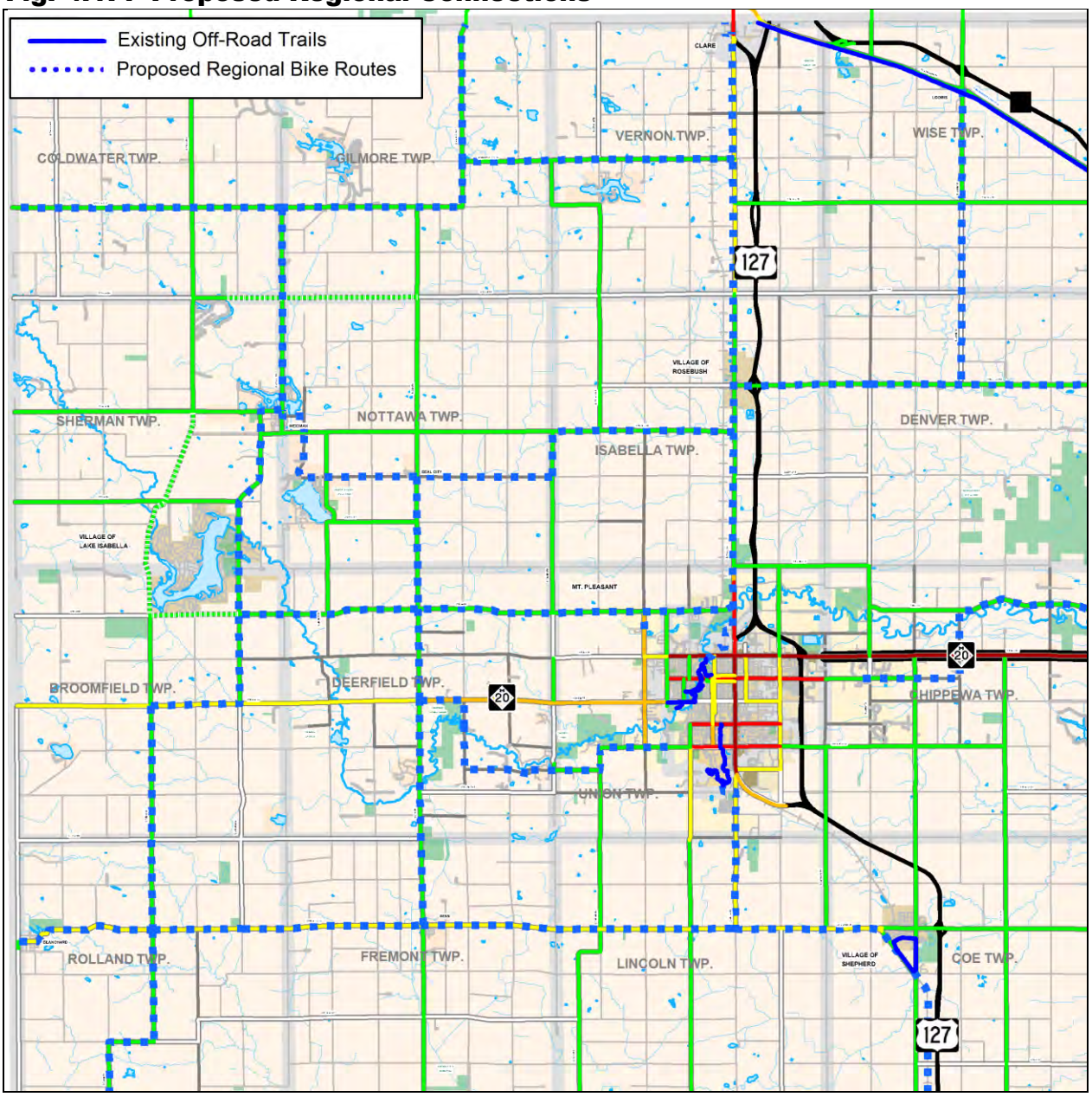
The signal is kept dark at its resting state. When a pedestrian activates the crossing button, a flashing yellow signal is displayed to motorists. This is followed by a steady yellow then a solid red at which time the pedestrian is displayed a walk signal. During the clearance interval, the motorists are displayed an alternating flashing red signal. Motorists may then move forward if the pedestrian or bicyclist has already crossed the road.

Fig. 4.1O. Proposed Intersection Improvements



cImprovements at intersections need to address, directional ramps, high visibility crosswalk markings and ADA issues.

Fig. 4.1P. Proposed Regional Connections



The proposed regional connectors are generally on- road routes with some existing segments of paved shoulder. They are on paved, low-volume roads where wayfinding would be used to help with navigation across the county. There are 188 miles of proposed regional connections.

4.2 Specific Area Concept Plans

The following concept plans were prepared to show how some of the ideas of the Non-motorized Plan may be applied to specific areas. These concept plans should not be taken as completely developed designs. Rather, they are to illustrate a design idea. The areas shown will require separate design studies that may involve a more detailed investigation of the site conditions including public input and the development of alternatives and draft preliminary plans.

Mission Road

Mission Road is a state trunk line route that passes through the center of the City of Mt. Pleasant. It is bordered by commercial centers and serves as the US-127 Business Route through town. It is a five lane road with extremely high traffic volumes and numerous driveway intersections. Overall this corridor is not a bicycle and pedestrian friendly environment, although the recently added edge stripe and improved intersections have improved the corridor significantly.

According to the public workshops and surveys, this corridor presents the most challenges for bicyclist and pedestrians who want to navigate this corridor. With business and residential neighborhoods on both sides of the street and a major university to the west, there is a lot of demand for non-motorized travel both along and across the street.

Currently, there are very few opportunities to add medians for mid-block crossings. Even with access consolidation it may be difficult to find locations for crossing islands because there are so many driveways and generally short blocks. Much of the cross-corridor pedestrian and bicycle demand is at intersection streets.

Mission Street will likely never be a pedestrian and bicycle focused corridor because it was designed to move vehicles. In the near and mid-term focus should be on providing safe crossings, alternative routes and improving the pedestrian environment of redevelopments. Also, continue the mixed-use, short set-back development proposed in city plans.

Recommendations for Near and Mid-term Improvements include:

- Provide parallel routes East and West of Mission Road along the local neighborhood roads that provide connection to the business district from behind
- Improve the buffer between the street and sidewalk by adding pedestrian scale lighting and street trees
- Improve the Signalized Crosswalks by including countdown signals, high visibility crosswalks and directional ramps
- Add crossings between signals

Example: Stadium Blvd in Ann Arbor, Michigan

Locations along Mission Street Slated for Road Crossing Improvements

Below are locations that were identified based on public input, proposed routes and demand based on land use.

Intersections:

- Andre Avenue
- Wisconsin Avenue
- Maple Road
- Mission Road at US 127Business Route

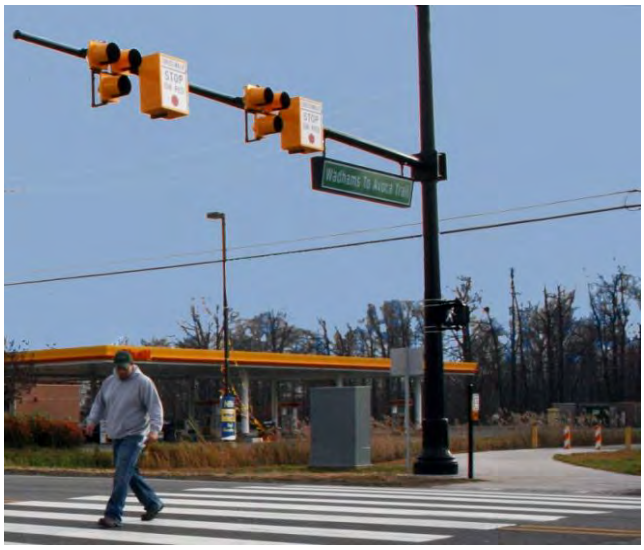
Midblock:

- Mission Mall – A crossing island could be incorporated here

Crossing Improvement Options at Road Intersections

Eliminate Left Turn Lane
There is potential to eliminate one left-turn movement and add a Crossing Island at intersections. Since there is a short distance between intersections, vehicles would only have to go an extra block to make the turn. A similar example of this can be seen on High Street where the Washington and Main Street intersect High Street. This could work at Lincoln Street, Wisconsin Street and Maple Street

Pedestrian Hybrid Beacon
There is potential to add Pedestrian Hybrid Beacon, although these would probably require mitigating measures as they generally should not be used at intersections. Pedestrian Hybrid Beacons are generally good for locations where a crossing island is not feasible. They generally should not be used within 100' of an intersection, but may be used if validated by engineering study. This could work at Lincoln Street, Wisconsin Street and Maple Street



Example: Waddams to Avoca Trail in St. Clair County

Toucan Crossing

Toucan Crossings are essentially a Pedestrian Hybrid Beacon but placed in the middle of the cross street. They eliminate through traffic and left turns for vehicles. Bicyclists and pedestrians cross the intersection at the middle of the road. The signal is only for bicyclists and pedestrians and is activated through a push button or passive detection. Bicyclists respond to a bicycle signal and use a special lane when crossing the roadway. Pedestrians get a standard WALK indication and have a separate, adjacent crosswalk. Motorists receive a standard signal. NO TURN ON RED should be implemented to prevent motorist from making a right turn in order to allow bicyclist to safely merge back onto the roadway after crossing the intersection.

Example: From Tucson, Arizona at, www.tocsonaz.gov

Toucan Crossings are placed at locations of heavy bicycle and pedestrian crossing activity and where roadways are prioritized for non-motorized uses, such as neighborhood connectors. A benefit of the Toucan Crossing is that motorized traffic in not allowed to proceed through the signal, decreasing the number of cars on the neighborhood street, thus enhancing the neighborhood connector route for bicyclists and pedestrians.

Numerous installations have been done in Arizona, but this would be the first in Michigan. This could work at Andre Avenue, Wisconsin Street and Maple Street.

Typically, Pedestrian Hybrid Beacons are not recommended to be used at the intersection of roadways, however, given that the Toucan configuration mitigates many of the concerns of Hybrid Pedestrian Signals at intersections, it can be justified with an engineering study.

4.3 Projected Energy Savings

The desire to expand non-motorized transportation choices is generally driven by two factors. First, is the goal to accommodate non-motorized transportation given the numerous economic, social and public health benefits. The second goal is to reduce the number of Vehicle Miles Traveled (VMT) and the corresponding reduction in Green House Gas (GHG) emissions. This could include shifting trips from single occupancy motor vehicles to bicycling, walking or transit. Regardless of the goal, the question is what change in transportation choices will occur if the environment for walking or bicycling is improved?

Answering this question precisely is hampered by limited data, sparse research on the subject, and the nuances that go into any transportation choice. What is likely, though, is that the number of people who walk and bicycle will increase when the environment for bicycling and walking is improved. It should be noted though that these increases in walking and bicycling do not necessarily have a reciprocal increase in bicycle and pedestrian crashes. Rather, with improved facilities and increases in the number of bicyclists and pedestrians, the crash rates typically decrease as motorists become accustomed to the presence of non-motorized traffic.

One of the least understood aspects of transportation planning is the notion of self-selection. It has been demonstrated that individuals who move to an area with a better non-motorized environment will indeed walk and bicycle more[1]. What is unknown is how much of that increase is the result of the environment alone vs. how much is the result of an individual's choice to live in a place because its environment supports bicycling and walking.

Existing Commuter Mode-split

To understand the Greater Mt. Pleasant Area potential to increase the number of people walking and bicycling, it is helpful to look at the areas current bicycling and walking trends compared to other communities. Then we may be able to gauge approximately how many more people may be enticed to walk and bicycle.

The mode-split is the overall proportion of trips made by a particular mode of travel. This information is generally determined by surveys or census data. When looking at how the Mt. Pleasant area compares to other cities between 20,000 and 40,000 in population, its pedestrian and bicycle commute numbers are the highest. The percent that commute by bike, 1.5%, is well above the peer city average of 0.3% and the national average of 0.5% and. The percent that walk, 15.9% is significantly higher the peer city average of 3.4% and the national average of 2.8%. These numbers can likely be attributed to the presence of CMU and MMCC in combination with the relatively compact nature of the city.

[1] Krizek, Kevin J., Residential Relocation and Changes in Urban Travel: Does Neighborhood-Scale Urban Form Matter? *Journal of the American Planning Association*. Spring, Vol. 69, No. 3, p.265-281.

Table 4.3A Commute to Work Comparison (20,000 to 40,000 Population)

			% of Commuters Who:				Percent
Rank	Place	Pop.	Bike	Walk	Use Transit	Don't Drive	Households W/O Car
1	Ypsilanti	22,403	0.4	15.6	4.6	20.6	14.1
2	Mount Pleasant	26,101	1.5	15.9	0.7	18.2	10.0
3	Holland	35,211	0.5	7.8	1.1	9.3	7.5
4	Hamtramck	22,976	0.2	4.9	3.6	8.7	20.5
5	Port Huron	32,363	0.9	3.9	1.8	6.6	13.9
6	Adrian	21,497	0.3	5.5	0.7	6.5	10.2
7	Jackson	36,316	0.4	3.1	1.5	5.0	15.6
8	Inkster	30,115	0.6	2.2	2.2	5.0	14.9
9	Bay City	36,817	0.4	3.1	1.2	4.7	11.3
10	Monroe	22,349	0.1	2.6	1.1	3.8	11.8
11	Ferndale	22,105	0.3	1.9	1.3	3.4	8.2
12	Oak ParK	29,793	0.2	2.1	1.2	3.4	9.6
13	Okemos	22,686	0.5	1.6	1.3	3.4	3.6
14	Eastpointe	34,077	0.1	1.3	1.0	2.5	7.8
15	Walker	21,795	0.1	1.4	0.9	2.3	5.6
16	Southgate	30,136	0.1	1.3	1.0	2.3	8.1
17	Wyandotte	28,006	0.2	1.9	0.2	2.3	7.8
18	Romulus	22,979	0.1	1.7	0.4	2.2	7.1
19	Madison Heights	31,101	0.3	1.1	0.7	2.0	8.6
20	Garden City	30,047	0.3	1.4	0.2	1.9	5.2
21	Allen Park	29,376	0.1	1.2	0.5	1.7	6.8
22	Burton	30,308	0.1	1.2	0.4	1.7	5.1
23	Saginaw Township North	25,061	0.2	0.5	0.5	1.2	8.2
24	Plymouth Township	27,650	0.1	0.7	0.1	0.9	4.3
25	Forest Hills	20,931	0.2	0.6	0.1	0.9	1.4
	Averages	**27,688**	**0.3**	**3.4**	**1.1**	**4.8**	**9.1**

From the US 2000 Census commute to work data as compiled in the online Carfree Census Database found at Bikesatwork.com, compiled by Bikes At Work, Inc., Ames, IA.

Probable Mode Shift Due to Environmental Change

California Department of Transportation (Caltrans) Air Resources Board has developed guidelines to determine the emission reduction benefits associated with auto trips replaced by bicycle trips. Their research concluded that the key aspect in projecting the percent of trips that may done by bicycle is the ratio of bicycle lane miles to arterial/freeway miles. They concluded that if the ratio is less than 0.35 then a 0.65% bicycle mode share should be projected. If the ratio is greater than 0.35 a 2% mode share should be used (or 6.8% for university towns).

While it may seem easy to dismiss these numbers because they are from California, a state with a much milder climate that Michigan, climate is not the factor most people think it is. In fact, the 2000 census commute data show that many of the cities with the highest percentage of bicycle commuters are from northern climates: Boulder, Colorado - 7.4%, Aspen, Colorado - 6.6%, Missoula, Montana -5.9% and Madison, Wisconsin, 3.29%. These percentages are also ten years old. The 2009 National Household Travel Survey found that bicycling and walking has increased by 25% from 2001.

Table 4.3B Existing to Proposed Conditions Comparison

Existing Conditions		
Primary Motorized Routes		
Freeways	10	Miles
Principal Arterials	5	Miles
Minor Arterial	22	Miles
Collectors	17	Miles
Total	**54**	**Miles**
Primary Pedestrian Routes		
Sidewalk / Roadside Path*	26.2	Total miles divided by two
Off-Road Trails	2.5	Miles
Total	**28.7**	**Miles**
Primary Bicycle Routes		
Bike Lanes	7.2	Miles
Edge Stripe	0	Miles
Shared Lane Marking	0	Miles
Bike Routes	0	Miles
Off-Road Trails	2.5	Miles
Total	**9.7**	**Miles**
Proposed Conditions		
Primary Pedestrian Routes		
Sidewalk / Roadside Path*	36.8	Total miles divided by two
Off-Road Trails	5.2	Miles
	42	**Miles**
Primary Bicycle Routes		
Bike Lanes	52.6	Miles
Edge Stripe	6	Miles
Shared Lane Marking	2	Miles
On-Road Bike Routes	32	Miles
Off-Road Trails	5.2	Miles
	97.8	**Miles**
* equals the equivalent of a road with sidewalks on both sides		
Comparisons		
Pedestrian		
Existing Miles of Pedestrian Routes	53%	of Existing Miles of Motorized Routes
Exist. + Prop. Miles of Ped. Routes	131%	of Existing Miles of Motorized Routes
Exist. + Prop. Miles of Ped. Routes	246%	of Existing Miles of Pedestrian Routes
Bicycle		
Existing Miles of Bicycle Routes	18%	of Existing Miles of Motorized Routes
Exist. + Prop. Miles of Bike Routes	199%	of Existing Miles of Motorized Routes
Proposed Miles of Bicycle Routes	1108%	of Existing Miles of Bicycle Routes

To determine the probable mode shift, a variation of the Caltrans approach has been used. Table 4.3B, Existing to Proposed Conditions Comparison, shows the comparison between existing primary bicycle and pedestrian routes and primary motorized routes for both existing and proposed conditions. The primary routes do not take into account the local residential roadways unless they are part of a designated bicycle route.

The data shows that currently, primary pedestrian routes are about 0.48 of the total of primary motorized routes. When looking at peer cities, the Greater Mt. Pleasant Area already has the highest walking mode share of 15.9% for commuters, the city of Ypsilanti is close behind at 15.6%.

Existing primary bicycle routes are 0.17 of the existing primary motorized routes. When completed the primary bicycle route system will be 1.9 of the primary motorized routes. Even when the system is only partially completed, the change will be significant. Looking at the peer cities, the Greater Mt. Pleasant Area already has the highest bike mode share of 1.5 %. Since the ratio is greater than 0.35 it seems reasonable that the Caltrans approach of a 2% mode share should be used once a bicycle system becomes substantially complete.

An 18% pedestrian and 4% bicycle mode share will be used for the targets. This represents 2.1% mode shift for pedestrians and a 2.5% mode shift for bicycles.

Reduction Vehicle Miles Traveled

Not all trip types are the same. People tend to devote more time to a trip to work than a trip to a grocery store. A 30 minute commute may be typical, but people generally would not spend more than 10 minutes traveling to a grocery store. And the average trip distance varies dramatically based on the mode. For example, a 30 minute commute to work may be 20 miles by car, 4 miles by bike or little less than 2 miles by foot.

Some trips are more likely to be undertaken via walking and bicycling than others. Many work commute trips do not require carrying substantial amounts of materials or supplies. But a trip to the grocery store to acquire a week or two worth of groceries is unlikely to be done by bike or foot. But, if a grocery store is located between home and work, a person's shopping patterns may change. They may find they make more frequent trips to the grocery store carrying only a few days worth of food home each time which is easily accomplished via foot or bike. This is very common travel and shopping pattern in some communities.

To estimate the trip and related greenhouse gas reduction, an estimate of the % of trip types that may be done by walking or bicycling has been made with a rough average of 2% overall. Also, for each trip type reduced, an estimate of the miles for that trip type has been made.

The end result is that with a substantially complete system, the Mt. Pleasant Area could expect to daily replace over 13,000 miles of automobile trips with bicycle or pedestrian trips. This would require on average for each person in the City to replace about 1/3 of a mile trip that currently done by automobile with a trip by bicycle or walking. The trip could be of any sort – a trip to work, the store, to visit with friends, for recreation or to school.

This would result in 34 fewer barrels of oil being used and 7 tons less of CO2 being released into the environment each day – that translates into about 12,402 barrels of oil and 2,520 tons of CO2 per year. The active transportation choices will also improve resident's health in many other ways.

Table 4.3C Estimated Trip and Greenhouse Gas Reduction

Vehicle Miles Traveled (VMT)							
	Greater Mt. Pleasant Area Population	39,854	City Estimate				
	Daily Trips per Person	4.03	2010 National Household Travel Survey				
	Daily Total Number of Trips	160,612					
	Average Vehicle Trip Length	10.10	2010 National Household Travel Survey				
	Daily Total Vehicle Miles Traveled	402,525	Miles				
Reduction in Vehicle Miles Traveled By Walking Trips:							
	Trip by Type	**Daily Total of Trips**	**Percent of Total**	**Reduction Goal**	**Trip Reduction**	**Trip Length**	**VMT Reduction**
	To or From Work	25,216	16%	2%	504	1	504
	Work Related Business	4,818	3%	0%	-	0.25	-
	Shopping	31,640	20%	1%	316	0.25	79
	All Other Family & Personal Business	38,707	24%	2%	774	0.5	387
	School/Church	15,740	10%	2%	315	0.5	157
	Social and Recreational	42,723	27%	3%	1,282	2	2,563
	Other	1,285	1%	0%	-	1	-
		160,130	100%	2.0%	3,191		**3,691**
Reduction in Vehicle Miles Traveled By Bicycle Trips:							
	Trip by Type	**Daily Total of Trips**	**Percent of Total**	**Reduction Goal**	**Trip Reduction**	**Trip Length**	**VMT Reduction**
	To or From Work	25,216	16%	2%	504	2	1,009
	Work Related Business	4,818	3%	0%	-	0.5	-
	Shopping	31,640	20%	1%	316	1	316
	All Other Family & Personal Business	38,707	24%	2%	774	1	774
	School/Church	15,740	10%	2%	315	1	315
	Social and Recreational	42,723	27%	3%	1,282	6	7,690
	Other	1,285	1%	0%	-	2	-
		160,130	100%	2.0%	3,191		**10,104**
	Reduction in Vehicle Miles Traveled	13,795	Miles Per Day				
		3.4%	Total Reduction in VMT				
		0.35	Miles Per Person/Per Day				
		5,035,297	Total Reduction in VMT Per Year				
Projected CO2 Reductions							
	CO2 Emission Factor	454	Grams Per Mile				
	Daily CO2 Reduction	6,263,081	Grams (based on 454 grams per mile)				
	Daily CO2 Reduction	6.90	Tons				
	Yearly CO2 Reduction	2,520	Tons				
Projected Fuel Savings							
	Daily motor gasoline savings	680	Gallons of Gasoline (based on avg. of 20.3 mi. / gal.)				
	Daily Oil Savings	34	Barrels of Oil (based on20 gallons of gas per barrel)				
	Yearly Oil Savings	12,402	Barrels of Oil				

5. Implementation Plan

Master Plan Adoption and Implementation

Adopting the Non-motorized Plan is the first step in the implementation process. Since there are many different agencies involved in this plan, each one will have to adopt the plan. The plan may be adopted in a few different ways, depending on what works best for each agency.

Typically, a non-motorized plan can be adopted in two ways. It can be adopted as an infrastructure improvement plan or as part of an existing community master plan. A community master plan usually contains multiple elements such as transportation, zoning, economic development etc. Adopting the non-motorized plan as part of a community master plan requires (Michigan Public Act 33 of 2008) the agency to send out the master plan to adjacent communities and the county for review for 42 days before the plan can be adopted. The alternative method is to adopt the plan as an infrastructure improvement plan and not part of the Master Plan. By doing this the agency does not have to meet the Act 33 requirement and can wait and include the Non-motorized Plan into the Community Master Plan next time it is updated, which at that point it would go through the Act 33 requirements.

Coordination

The Project Steering Committee contains representatives from all of the different agencies that will adopt this plan. This group should continue to meet after the plan has been adopted to provide residual coordination and to help oversee the implementation across jurisdiction boundaries. The group may want to expand to include representatives from the local school district, public health officials, police departments and other agencies as the group's mission expands.

Topics:

5.1 –Implementation Plan

5.2 – Funding Opportunities

5.3 –Annual Maintenance & Operation Costs

5.1 Implementation Plan

The proposed improvements fall into seven tasks. The first task is Initial Primary Corridors. This task includes projects that should be done first because they create key connections across the city that provide a backbone to the non-motorized system. The connections incorporate the existing pathways, employ near-term bike lane improvements and provide alternative routes to busy roads. These routes were determined based on public input, existing conditions, geographic distribution and desire to create key cross-community connections.

After the Initial Primary Corridors are completed, the following six tasks should be implemented concurrently as opportunities and funding become available. The six parallel tasks include the following:

- Bike Lanes
- Neighborhood Connectors
- Sidewalk Gaps
- Road Crossing Improvements
- Intersection Improvements
- Regional Connections

Some of the improvements include relatively modest changes such as road conversions and signage and others may take longer based on opportunities and available funding. Each task may take multiple years to implement. The speed of the implementation depends on the amount of money that is dedicated to the implementation along with the success of obtaining outside funding.

Implementation Tasks
These six implementation tasks fall into three categories, Near-term, Mid-term and Long-term. In general Near-term opportunities include improvements that may be accomplished by relatively modest changes to the existing road system. Mid-term opportunities include improvements that may be accomplished in the near future; however they may require some additional construction. Long-term improvements are projects that will be implemented with new development or reconstruction of existing roadways. Some construction intensive projects are identified as a Near-term or Mid-term improvement when it addresses safety concerns or there is a high demand for its implementation.

Please note that this report does not define the ideal long-term cross section for every primary road in the area. Rather it defines what improvements should be included and provides guidelines for a wide variety of road and right-of-way scenarios. Projects that require reconstruction may be very important; however they can be very capital intensive and should be prioritized after the initial primary corridors are implemented. Hopefully with the adoption of a complete streets ordinance, is it assumed that bicycle and pedestrian improvements will be incorporated into all projects as a matter of course.

Cost Estimate Introduction
In order to illustrate magnitude of costs and begin planning and budgeting for implementation, planning level cost estimates have been completed for the improvements proposed in the Initial Primary Corridors. In addition, cost estimates for a handful of “typical” treatments have been developed so that staff can consider these treatments in other areas if so desired.

It should be noted that these estimates are based on concepts only, and while they include healthy (20%) contingencies, they are not based on detailed designs. Quantities were derived from GIS data and aerial

imagery. If the community moves forward with implementation, detailed design will be completed and construction cost estimates recalculated at that time.

Acquiring Right –of-Way
Please note that acquiring easements and right-of-way will add to the financial burden of implementation, and can sometimes be as much as the project cost itself. Please refer to the following section for a detailed breakdown of the cost estimate for the Initial Primary Corridors.

Concurrent Studies
A separate study was being conducted of Main Street and Washington Street in Mt. Pleasant during the development of this plan. Due to this occurrence recommendations for Main Street and Washington Street are not provided in this plan. Please refer to the separate study for recommendations on how to proceed with these corridors.

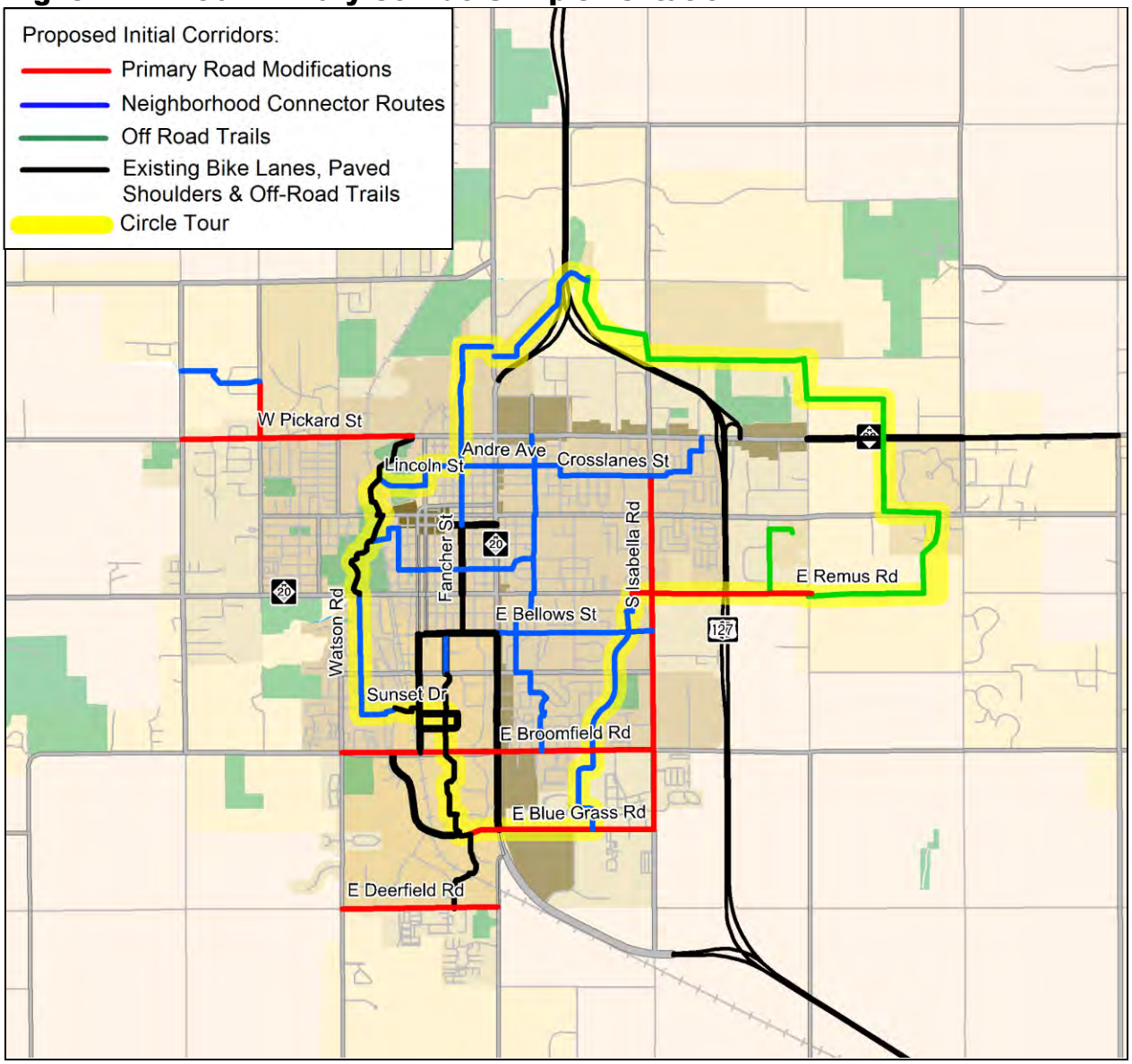
List of Figures
The following maps illustrate the non-motorized facilities implementation recommendations for the Greater Mt. Pleasant Area and Isabella County:

- Fig. 5.1A. Initial Primary Corridors Implementation
- Fig. 5.1B. Circle Tour
- Fig. 5.1C. Circle Tour Implementation
- Fig. 5.1D. Bike Lane Implementation
- Fig. 5.1E. Neighborhood Connectors and Off-Road Trails Implementation
- Fig. 5.1F. Sidewalk Implementation
- Fig. 5.1G. Road Crossing Improvement Implementation
- Fig. 5.1H. Regional Initial Primary Corridor Implementation
- Fig. 5.1I. Regional Connectors Implementation

Initial Primary Corridors Implementation

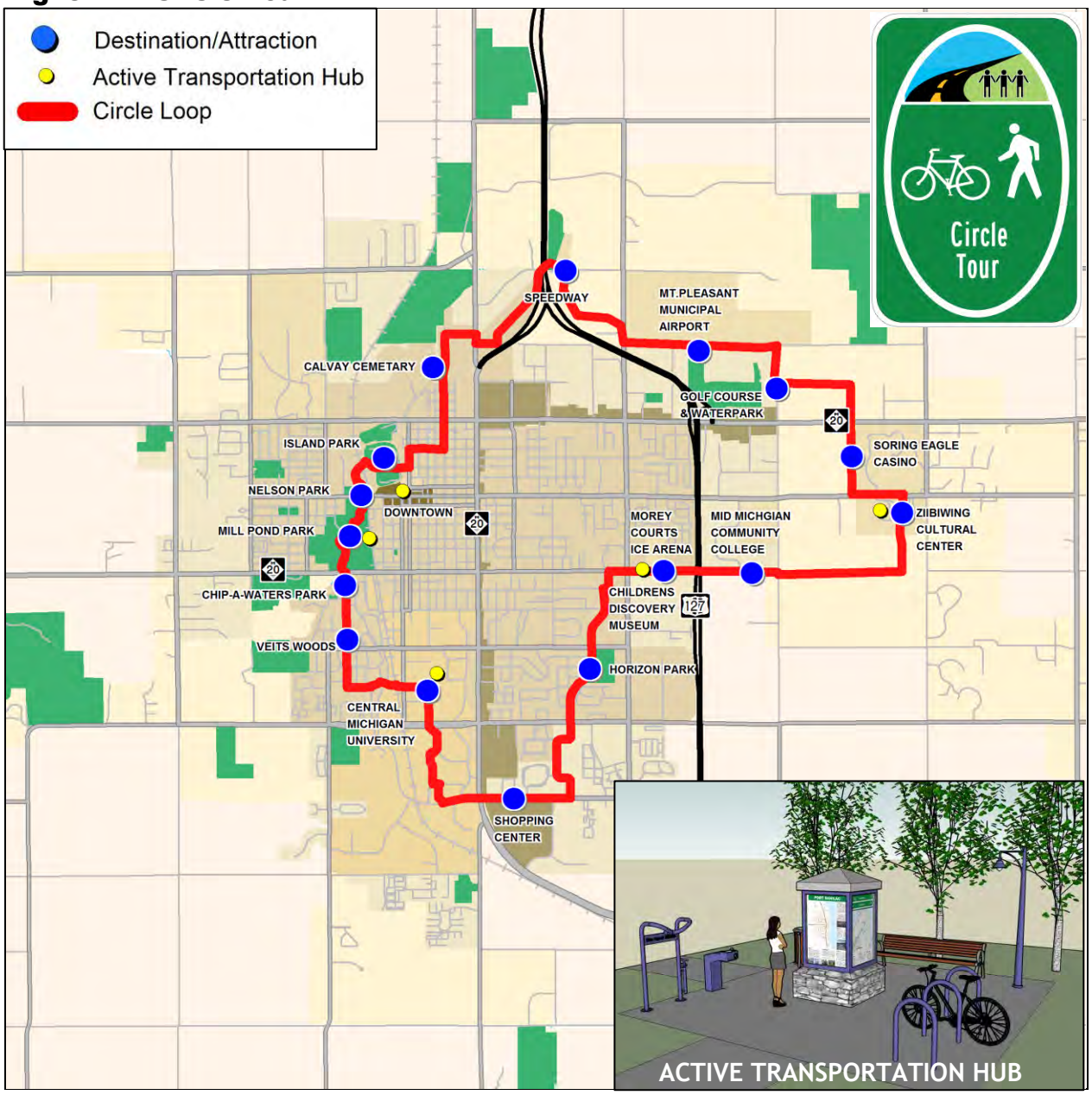
These are near-term projects that may be accomplished by simply restriping the road and large multi-year projects that may be implemented in pieces based on opportunities and funding. Overall, they will provide the framework for the non-motorized system.

Fig. 5.1A. Initial Primary Corridors Implementation



This task focuses on creating key connections across the city that provides a backbone to the non-motorized system. The connections incorporate the existing pathways, employ near-term bike lanes improvements, neighborhood connector routes, and provide alternative to busy roadways such as Mission Road and Pickard Street along the local neighborhood roads. Please note that some of the corridors, such as the Circle Tour described on the follow page, may include large multi-year projects that may be implemented in pieces based on opportunities and funding. Overall, the Circle Tour will provide the initial framework for the non-motorized system with routes across the community building upon and feeding into it. Approximately 28 miles of new facilities are proposed in this phase.

Fig. 5.1B. Circle Tour



Part of the Initial Primary Corridors, the Circle Tour could be a recreational loop around the Greater Mt. Pleasant Area that links key destinations. It would be a combination of on and off-road non-motorized facilities with minimal interaction with high speed, high volume motor vehicle traffic. This route is significant enough that special branding and signage could be designated to this route. There is also potential for art, interpretive and green technology installations along the route to essentially make this route an Urban Greenway. The loop is approximately 15 miles.

Active Transportation Hubs serve as orientation and resources centers for non-motorized trips and could be incorporated into the Circle Tour Route. These centers could contain additional information and amenities such as compressed air, bike parking and vending machines that dispenses basic bicycle supplies such as tubes and repair kits. The hubs would be located in high visibility locations around the Greater Mt. Pleasant Area. They would let people know that they could have walked or biked to that location and other destinations around the city. This would especially be an information source for CMU students and guest who may be less knowledgable to the area and the non-motorized opportunities it provides.

Initial Primary Corridors Cost Estimate

The projected cost for the implementation of the Initial Primary Corridors is $13,099,071.58. Please refer to the following tables below for a breakdown of the projected implementation costs based on facility type. Within each facility type the improvements are listed in order of implementation. The order of implementation was developed based on public input, near-term opportunities, demand and where the majority of the population would be served.

1) Proposed Neighborhood Connector Routes and Pathways (approximately 16 miles)
Provide alternative route to the major roads utilizing local neighborhood streets.

- Neighborhood connector routes are proposed on the following local streets, McDonald Drive, Joseph Drive, Lincoln Street, N Main Street, Andre Ave, Kane Street, Crosslanes Street, E Kay Street, 3rd Street, Palmer Street, 2nd Street, Mill Street, S Oak Street, E Maple Street, E River Road, Industrial Ave, Fancher Street, S Franklin Street, Brown Street, E Gaylord Street, S Elizabeth Street, S Lynnwood Drive, Fairfield Drive, Carnahan Place, Churchill Boulevard, Sweeney Street
- Due to the wide roadways and sporadic on-street parking, there is potential for near-term bike lanes to be added to some of the Neighborhood Connector Routes. These include the following road segments; see Fig. 5.2C for reference:
    - Add bike lane to E Bellows Street between N Main Street and N Crapo Street by narrowing the lanes to 11'
    - Add bike lane to E Bellows Street between N Crapo Street and Isabella Road by removing on street parking and narrowing the lanes to 11'
    - Add bike lanes to Watson Road by eliminating on-street parking, narrowing the lanes to 11' and adding an edge stripe
    - Add road edge stripe to S Fancher Street between Pickard Street and Michigan Street and between High Street and E Bellows Street (proposed construction 2011)
    - Add bike lanes to N Fancher Street between Pickard Street and Industrial Avenue through lane narrowing
    - Add bike lanes to Industrial Avenue between N Fancher Street and Mission Road through lane narrowing
    - Add bike lanes to Industrial Park Drive between Mission Road and E River Road by narrowing the lanes to 10' with 5' bike lanes.
    - Add shared lane markings to E River Road between Mission Road and S Isabella Road
    - Add shared lane marking to Sweeny Street between E Preston Road and E Broomfield Road
    - Add bike lanes to Sweeny Street between E Broomfield Road and E Blue Grass Road between 3 to 2 Lane Conversion
    - Add parking edge stripe to N Brown Street between E Pickard Street and E Remus Road
- Obtain easements to build the following short connector pathways through undeveloped Private Property:
    - Build 10' asphalt pathway between McDonald Drive to Joseph Drive
- Build the following short connector pathways through School Property:

- Build 10' asphalt pathway between Sweeney Drive and E Remus Road connecting to Mt. Pleasant Baptists Academy
- Build 10' asphalt pathway between Sweeney Drive and E Preston Road connecting to Oasis High School
- Build 10' asphalt pathway between Carnahan Place and Churchill Boulevard

- Provide traffic calming techniques on local neighborhood streets, such as re-orienting stop signs and implementing curb extensions and mini-roundabouts.
- Provide wayfinding signage along routes to direct users
- Provide safe road crossing where the route crosses a major roadway (see road crossing improvements below)

Neighborhood Connector Cost Estimate:

Street	Between		Quantity	Unit	Unit Price	Cost Estimate	
Connector Routes			16.00	mi	$ 261,600.00	$ 4,185,600.00	Assumes (4) intersections with curb bumpouts ($53K each), wayfinding signage, and (6) traffic calming treatments (i.e. traffic buttons, one way choker, speed table)
Connector Routes with Bike Lanes							
E Bellow Street	Main	Crapo	0.95	mi	$ 6,000.00	$ 5,700.00	Narrow lanes to 11'
E Bellow Street	Crapo	Isabella Rd	0.50	mi	$ 6,000.00	$ 3,000.00	Remove on-street parking and narrow lanes to 11'
Watson Road			0.77	mi	$ 5,200.00	$ 4,004.00	Eliminate parking, narrow lanes to 11', add edge stripe
S Fancher St	Pickard St	E Bellows St	4350.00	ft	$ 0.10	$ 435.00	Road Edge Stripe
N Fancher St	Pickard St	Industrial Ave	0.57	mi	$ 6,000.00	$ 3,420.00	Lane narrowing
Industrial Ave	N Fancher St	Mission Rd	0.20	mi	$ 6,000.00	$ 1,200.00	Lane narrowing
Industrial Park Dr	Mission Rd	E River Rd	0.72	mi	$ 6,000.00	$ 4,320.00	Lane narrowing
S Brown Street	E Remus Rd	E Broadway Rd	2640.00	ft	$ 0.10	$ 264.00	Road Edge Stripe
N Brown Street	E Pickard St	E Broadway Rd	2698.08	ft	$ 0.10	$ 269.81	Road Edge Stripe
Sweeney Street	E Preston Rd	E Broomfiled Rd	15.00	ea	$ 225.00	$ 3,375.00	Shared Lane Marking
Sweeney Street	E Broomfield	E Blue Grass Rd	0.65	mi	$ 6,000.00	$ 3,900.00	3 to 2 lane conversion
Connector Pathways							
Asphalt Trail	Mcdonald Dr	Joseph Dr	784.79	ft	$ 45.00	$ 35,315.55	Plus Easement Cost
Asphalt Trail	Sweeney Dr	E Remus	804.28	ft	$ 45.00	$ 36,192.60	To Mt Pleasant Baptist Academy
Asphalt Trail	Sweeney Dr	E Preston Rd	817.99	ft	$ 45.00	$ 36,809.55	To Oasis High School
Asphalt Trail	Carnahan Place	Churchill Blvd	353.95	ft	$ 45.00	$ 15,927.75	
Asphalt Trail	E River	Isabella	4195	ft	$ 45.00	$ 258,775.00	Drain Crossing
			TOTAL			**$ 4,598,508.26**	

Please note that the $4.5 million dollar estimation is assuming the neighborhood connector routes are completely built out with pavement markings, signage and traffic calming elements. To reduce the initial costs, the neighborhood connector routes can be implemented in stages. Since the majority of the routes already exist, with exception to a few connector pathways, neighborhood connector routes can be designated by implementing wayfinding signs and reorienting the stop signs to establish a basic network. With the cost of bike route signage at around $1,200 per mile (assuming 6 signs in three locations) the first stage of implementation for neighborhood connector routes would cost around $20,000. In addition, many of the routes have potential for on-road bicycle facilities by adding pavement markings. Edge stripes, shared lane markings and bike lane markings could be added to these routes in the near-term for a total cost of around $10,000. See the Appendix for more details on costs.

2) Proposed Bike Lanes on Primary Roads (approximately 5.5 miles)
Implement near-term road conversions to add bike lanes on major roadways.

- Add bike lanes to W Pickard Street between S Lincoln Road and N Main Street through a 4 to 3 lane conversion
- Add bike lanes to S Isabella Road between E Pickard Street and E Blue Grass Road through a 4 to 3 lane conversion
- Add bike lanes to E Broomfield Road between S Mission Road and S Isabella Road through a 4 to 3 lane conversion, where E Broomfield widens to 5 lanes at the intersection, implement a 5 to 4 lane conversion with designated right, straight and left turn lanes for west bound traffic and one lane of east bound traffic.
- Add bike lanes to E Blue Grass Rd between Encore Drive and S Isabella Road through a 4 to 3 lane conversion

Bike Lane Cost Estimate:

Street	Between		Quantity	Unit	Unit Price	Cost Estimate
W Pickard Street	S Lincoln	N Main St	1.56	mi	$ 6,000.00	$ 9,360.00
S Isabella Rd	E Pickard St	E Blue Grass Rd	2.51	mi	$ 6,000.00	$ 15,060.00
E Broomfield Rd	S Mission Rd	S Isabella Rd	1.00	mi	$ 6,000.00	$ 6,000.00
E Broomfield Rd	Near Mission		0.24	mi	$ 10,000.00	$ 2,400.00
E Blue Grass Rd	Encore Dr	S Isabella Rd	0.51	mi	$ 6,000.00	$ 3,060.00
			TOTAL			**$ 35,880.00**

3) Proposed Sidewalk Gap Improvements (approximately13 miles)
Complete sidewalk gaps on the following roadways. For a more detailed map of the Initial Priority Corridor Sidewalk Gaps please refer to Fig. 4.2E.

- Complete sidewalk gaps on E Broomfield Road by adding 8' sidewalk to both sides
- Complete sidewalk gaps on E Blue Grass Road by adding 8' sidewalks to both sides
- Add 8' sidewalk on west side of S Isabella Road from E Blue Grass Road to E Pickard Street
- Add 10' sidewalk on E Remus Road with construction of proposed overpass
- Add 10' sidewalk on the south side of E Deerfield Road
- Complete sidewalk gaps on Pickard Street by adding 8' sidewalks to both sides of the road
- Complete sidewalk gaps on the south side of Bellow Street between N Crapo Street and S Isabella Road by adding 6' sidewalk
- Complete the sidewalk gaps on the west side of Sweeney Road between E Broomfield Road and E Blue Grass Road by adding a 6' sidewalk
- Add 8' sidewalk on the east side of S Bamber Road between Pickard Street and Joseph Street
- Complete Sidewalk gap on the south side of Remus Road between S Isabella Road and the proposed pathway through Mt. Pleasant Baptist Academy by adding a 8' sidewalk

Sidewalk Gaps Cost Estimate:

Street	Between		Quantity	Unit	Unit Price	Cost Estimate
E Broomfield			6736.93	ft	$ 36.00	$ 242,529.48
E Blue Grass Rd			8679.08	ft	$ 36.00	$ 312,446.88
Isabella Rd (west)	E Blue Grass	E Pickard	8554.60	ft	$ 36.00	$ 307,965.60
E Remus Rd	Asphalt		9572.00	ft	$ 45.00	$ 630,740.00
E Deerfield Rd (south)	Asphalt		5229.00	ft	$ 45.00	$ 235,305.00
Pickard St			6241.00	ft	$ 36.00	$ 234,676.00
Bellow St (south)	Crapo St	S Isabella	1285.00	ft	$ 24.00	$ 30,840.00
Sweeney Rd (west)	Broomfield	E Blue Grass	3422.14	ft	$ 24.00	$ 82,131.36
S Bamber Rd (east)	Pickard	Joseph St	1836.00	ft	$ 36.00	$ 66,096.00
Remus Rd (south)	Isabella	MPB Academy	669.00	ft	$ 45.00	$ 30,105.00
				TOTAL		$ 2,172,835.32

4) Proposed Road Crossing Improvements

Provide safe crossing where a neighborhood connector crosses a major road or there is demand to get across the road. The following types of crossing improvements should be considered at each road crossing.

- Toucan Crossing with Pedestrian Hybrid Beacon
  - N Mission Road at Andre Ave
- Crossing Island with Rectangular Rapid Flash Beacon:
  - W Pickard Street at S Fancher Street (evaluate roundabout in future)
  - E Pickard Street at Airway Drive/2nd Street
  - E Pickard Street at Proposed Off-road Trail between S Summerton Road and S Leaton Road
  - E Broadway Road connecting Soaring Eagle Casino to Ziibiwing Cultural Center between S Summerton Road and S Leaton Road
  - E Broomfield Road at Sweeney Road
  - E Blue Grass Road at Sweeney Road
  - S Isabella Road at Crosslanes Street
- Crossing Island:
  - E Preston Road at South Lynnwood Drive
- Rectangular Rapid Flash Beacon:
  - Mission Road at Industrial Ave / Industrial Pak Drive
  - S Summerton Road at proposed trail crossing and Remus Road
  - E Deerfield Road at Three Leaves Drive
  - E Remus Road proposed Neighborhood Connector Pathway near S Isabella Street
  - E High Street at N Brown Street
  - W High Street at S Fancher Street
  - E Preston at Sweeny Street
- Rectangular Rapid Flash Beacon with Curb Extensions:
  - E Bellows at Sweeny Street
- Curb Extensions:
  - E Mosher Street at S Fancher Street
  - E Broadway Street at S Fancher Street
  - E Michigan Street at S Fancher Street
  - E Bellows Street at S Fancher Street
  - CMU Trail at Three Leaves Drives crossing driveway

- Other:
    - E Broomfield Road at Sweeney Street and at the existing CMU Trail. The pushbutton is currently hidden behind the controller box. The pushbutton should be relocated to a landing not more than 10 feet (6 is preferred) from the face of the curb on eastbound Broomfield Road and not more than 5 feet from the right edge of the crossing. The surface area of the landing must be a minimum of 5 by 5 feet and have a cross slope of less than 2% in all directions. If the pushbutton does fall within these limitations, then is can be relocated without addition infrastructure costs. For a major trail like this, as well as the major crosswalk for University activities, it is strongly recommended that there is correct placement of all pushbuttons to meet ADA requirements.

Road Crossing Improvements Cost Estimate:

Street	At	Quantity	Unit	Unit Price	Cost Estimate
Toucan Crossing with Pedestrian Hybrid Beacon					
N Mission Rd	Andre Ave	1	ea	$ 160,000	$ 160,000.00
			TOTAL		**$ 160,000.00**
Crossing Island with Rectangular Rapid Flash Beacon					
W Pickard St	S Fancher St	1	ea	$ 29,000.00	$ 29,000.00
E Pickard St	Airway Dr/2nd St	1	ea	$ 29,000.00	$ 29,000.00
E Pickard St	Proposed Trail	1	ea	$ 29,000.00	$ 29,000.00
E Broadway Rd	Soaring Eagle to Ziibiwing	1	ea	$ 29,000.00	$ 29,000.00
E Broomfield Rd	Sweeney Rd	1	ea	$ 29,000.00	$ 29,000.00
E Blue Grass Rd	Sweeney Rd	1	ea	$ 29,000.00	$ 29,000.00
S Isabella Rd	Crosslanes St	1	ea	$ 29,000.00	$ 29,000.00
			TOTAL		**$ 203,000.00**
Crossing Island (Bollards, landscaping, concrete curbs, pavement removal, striping, ped light)					
E Preston Rd	South Lynnwood Dr	1	ea	$ 18,000.00	$ 18,000.00
			TOTAL		**$ 18,000.00**
Rectangular Rapid Flash Beacon					
Mission Rd	Industrial Ave	1	ea	$ 11,000.00	$ 11,000.00
S Summerton Rd	Porposed Trail Crossing	1	ea	$ 11,000.00	$ 11,000.00
E Deerfield Rd	Three Leaves Dr	1	ea	$ 11,000.00	$ 11,000.00
E Remus Rd	Near S Isabella St	1	ea	$ 11,000.00	$ 11,000.00
E High St	N Brown St	1	ea	$ 11,000.00	$ 11,000.00
W High St	S Fancher St	1	ea	$ 11,000.00	$ 11,000.00
E Preston	Sweeney St	1	ea	$ 11,000.00	$ 11,000.00
			TOTAL		**$ 77,000.00**
Rectangular Rapid Flash Beacon with Curb Extensions					
E Bellows	Sweeney St	1	ea	$ 37,000.00	$ 37,000.00
			TOTAL		**$ 37,000.00**
Curb Extensions					
E Mosher St	S Fancher St	1	ea	$ 26,000.00	$ 26,000.00
E Broadway St	S Fancher St	1	ea	$ 26,000.00	$ 26,000.00
E Michigan St	S Fancher St	1	ea	$ 26,000.00	$ 26,000.00
E Bellows St	S Fancher St	1	ea	$ 26,000.00	$ 26,000.00
CMU Trail	Three Leaves Drives	1	ea	$ 26,000.00	$ 26,000.00
			TOTAL		**$ 130,000.00**
Other					
E Broomfield Rd	CMU Trail Crossing	1	ea	$ 2,500.00	$ 2,500.00
			TOTAL		**$ 2,500.00**

5) Proposed Off-Road Trails (approximately 5 miles)

Add trail connection to connect the City with Mid Michigan Community College and Soaring Eagle Casino/Ziibiwing Center on the East side of US 127.

- Build 10' wide asphalt pathway extending from Remus Road to Soaring Eagle Casino then up through tribal lands to connect to the Soaring Eagle Water Park and S Summerton Road
- Build 10' wide asphalt pathway connecting to Mid Michigan Community College
- Build 10' wide asphalt pathway along the west side of S Summerton Road from proposed trail up to E Airport Road
- Build 10'wide asphalt pathway along the south side of E Airport Road between S Summerton Road and S Isabella Road
- Build 10'wide asphalt pathway along the west side of S Isabella Road between E Airport Road and E River Road

Off-Road Trail Cost Estimate:

Street	Quantity	Unit	Unit Price	Cost Estimate
Remus Rd to Summerton Rd (path)	13780.8	ft	$ 45.00	$ 620,136.00
Boardwalk/Wetlands	1330.0	ft	$ 400.00	$ 532,000.00
Creek/Drain Crossing	1.0	ls	$ 70,000.00	$ 70,000.00
		TOTAL		$ 1,222,136.00
Connecting to Mid Michigan Comm College	2217.6	ft	$ 45.00	$ 99,792.00
Creek/Drain Crossing	1.0	ls	$ 70,000.00	$ 70,000.00
		TOTAL		$ 169,792.00
Summerton Rd (west) (from trail to E Airport Rd)	1454.0	ft	$ 45.00	$ 65,430.00
E Airport Rd (south) (Btwn Summerton and Isabella Rd)	4458.0	ft	$ 45.00	$ 200,610.00
Boardwalk/Wetlands	950.0	ft	$ 400.00	$ 380,000.00
		TOTAL		$ 580,610.00
		TOTAL		$ 2,037,968.00

6) Intersection Improvements
Provide save intersections that address ADA issues, high visibility cross walks and ramps.

- E Broomfield Road at W Campus Drive
- N Brown Street at E Pickard Street

Intersection Improvements Cost Estimate:

Street	AT	Quantity	Unit	Cost Estimate	Assumptions
E Broomfield Rd	W Campus Dr	1	ls	$ 4,175.00	4 ramps, 90 ft of crosswalk plus lump sum for misc
N Brown St	E Pickard St	1	ls	$ 8,430.00	8 ramps, 210 ft of crosswalk plus lump sum for misc
		TOTAL		$ 12,605.00	

7) New Bridge over US 127
There have been discussions about extending E Remus Rd over US 127 to connect the Saginaw Chippewa Tribal Land and Mid Michigan Community College to the downtown.

- Evaluate if potential vehicle bridge with bike lanes and sidewalks is feasible at Remus Rd over US 127

New Bridge over US 127 Cost Estimate:

According to a cost estimate conducted by MDOT in 2010 it was projected the cost of a new vehicle bridge with bicycle and pedestrian facilities would cost around $3.5 million dollars to construct.

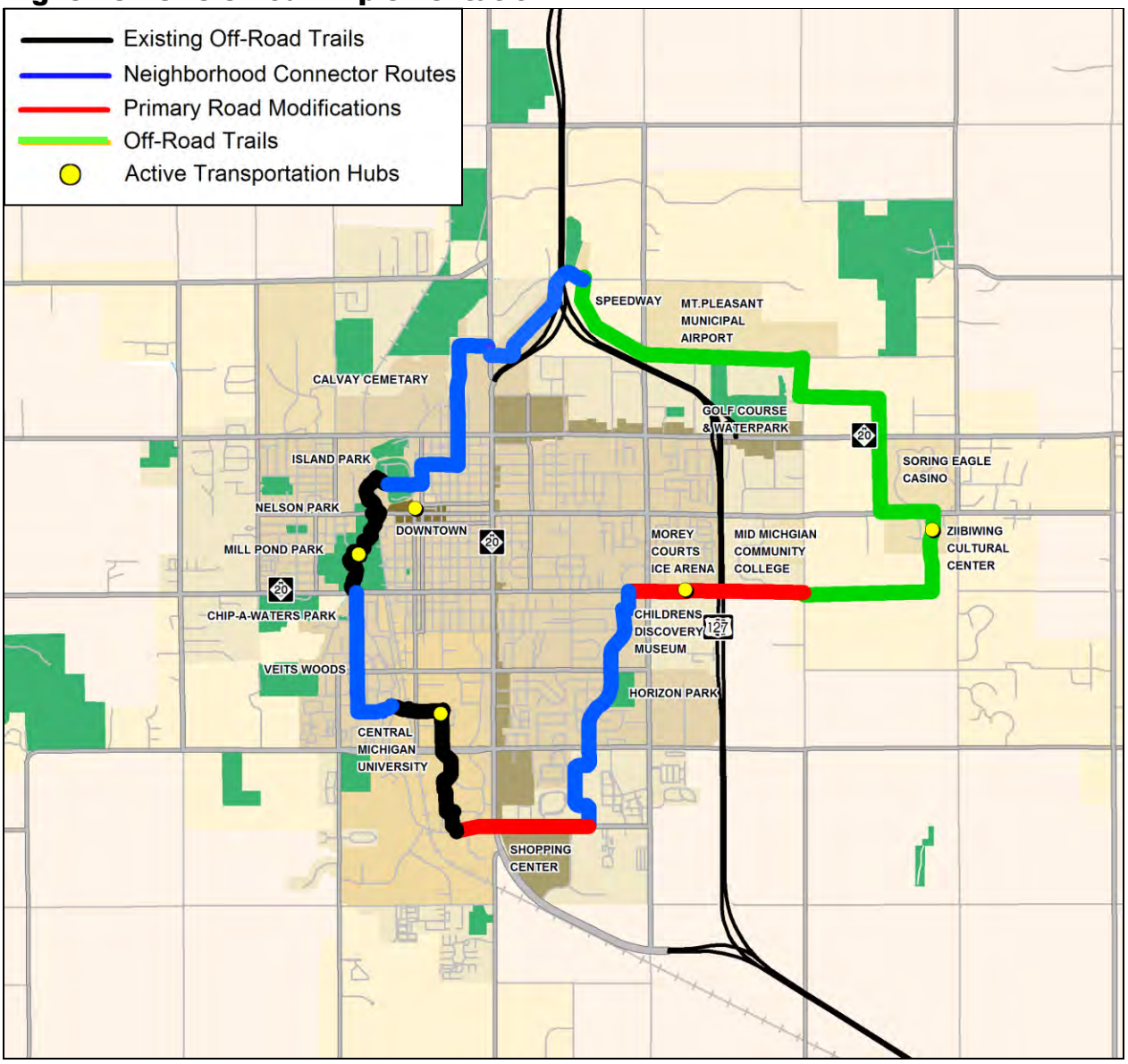
Alternative routes were evaluated, however based on current conditions there is not enough room to retrofit the E Broadway Road or E Broomfield Road overpasses to accommodate bicycle and pedestrian facilities in the near-term. The cost of adding a separate facility at Remus Road would probably cost the same as adding new facilities at E Broomfield Road or E Broadway Road.

Total Initial Primary Corridors Estimate = $13,099,071.58

Circle Tour Implementation

The Circle Tour is part of the Initial Primary Corridor system. Below is a breakdown of the different facilities and costs that make up the circle tour.

Fig. 5.1c. Circle Tour Implementation



The Circle Tour connects to major destinations in the City of Mt. Pleasant, Union Township, Central Michigan University and the Saginaw Chippewa Indian Tribal Lands along with a potential to link to the proposed regional trails that will connect to Clare to the north and Shepherd to the south. Overall this loop is about 15 miles long with 2.4 miles of Existing Off-Road Trails, 5.3 miles of Proposed Neighborhood Connector Routes, 2.2 miles of Proposed Primary Road Modifications and 4.7 Miles of Proposed Off-Road Trails.

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Circle Tour Cost Estimate

The projected cost for the implantation of the Circle Tour Loop (which is a part of the initial primary connectors) is $7,144,618.15. This includes the 5 proposed active transportation hubs, wayfinding signage, traffic calming, bike lanes, multi-modal overpass, off-road trails and 10 road crossing improvements. Please refer to the table below for a breakdown of the projected implementation costs.

Street	Between		Quantity	Unit	Unit Price	Cost Estimate	
Traffic Calming Improvements							
Andre/Main/Lincoln			0.88	mi	$ 261,600.00	$ 230,208.00	
Sunset Lane			0.07	mi	$ 261,600.00	$ 18,312.00	
Sweeney			0.27	mi	$ 261,600.00	$ 70,632.00	
Bike Lanes							
E Blue Grass Rd	Sweeney	University Park Dr	0.81	mi	$ 6,000.00	$ 4,860.00	
Watson Rd			0.77	mi	$ 5,200.00	$ 4,004.00	Eliminate parking, narrow lanes to 11', add edge stripe
S Fancher St	Pickard	Andre	0.19	mi	$ 6,000.00	$ 1,140.00	
N Fancher St	Pickard St	Industrial Ave	0.57	mi	$ 6,000.00	$ 3,420.00	Narrowing
Industrial Ave	N Fancher St	Mission Rd	0.20	mi	$ 6,000.00	$ 1,200.00	Lane narrowing
Industrial Park Dr	Mission Rd	E River Rd	0.72	mi	$ 6,000.00	$ 4,320.00	Lane narrowing
Sweeney St	E Preston Rd	E Broomfield Rd	15.00	ea	$ 225.00	$ 3,375.00	Shared lane markings
Sweeney St	E Broomfield	E Blue Grass Rd	0.65	mi	$ 6,000.00	$ 3,900.00	3 to 2 lane conversion
Sidepaths / Off-Road Trails							
E Blue Grass Rd	Sweeney	University Park Dr	6040.00	ft	$ 45.00	$ 271,800.00	10' wide asphalt
Trail	Sweeney	E Remus	804.28	ft	$ 45.00	$ 36,192.60	10' wide asphalt
Trail	Sweeney	E Preston	817.99	ft	$ 45.00	$ 36,809.55	10' wide asphalt
Trail	E River	Isabella	1.00	ls	$ 188,775.00	$ 188,775.00	4,195 ft plus drain crossing
Remus Rd	Isabella	Summerton	1.00	ls	$ 440,750.00	$ 440,750.00	5350 ft plus boardwalk
Remus Rd	Isabella	MPB Academy	669.00	ft	$ 45.00	$ 30,105.00	10' wide asphalt
Trail	Remus Rd	Summerton	1.00	ls	$ 1,220,000.00	$ 1,220,000.00	15,110 ft plus boardwalk and creek crossing
Summerton Rd (west)	Trail to E Airport Rd		1454.00	ft	$ 45.00	$ 65,430.00	
E Airport Rd (south)	Summerton	Isabella	1.00	ls	$ 580,610.00	$ 580,610.00	5408 ft plus boardwalk

Road Crossing Improvements								
W Pickard St	S Fancher St	1	ea	$	29,000.00	$	29,000.00	
E Pickard St	Proposed Trail	1	ea	$	29,000.00	$	29,000.00	
E Broadway Rd	Soaring Eagle to Ziibiwing	1	ea	$	29,000.00	$	29,000.00	
E Broomfield Rd	Sweeney Rd	1	ea	$	29,000.00	$	29,000.00	
E Blue Grass Rd	Sweeney Rd	1	ea	$	29,000.00	$	29,000.00	
Mission Rd	Industrial Ave	1	ea	$	11,000.00	$	11,000.00	
S Summerton Rd	Porposed Trail Crossing	1	ea	$	11,000.00	$	11,000.00	
E Remus Rd	Near S Isabella St	1	ea	$	11,000.00	$	11,000.00	
E Preston	Sweeney St	1	ea	$	11,000.00	$	11,000.00	
E Bellows	Sweeney St	1	ea	$	37,000.00	$	37,000.00	
Active Transportation Hubs		5.00	ea	$	29,555.00	$	147,775.00	
Wayfinding Signage		1.00	ls	$	25,000.00	$	25,000.00	Route signs, pavement markings and street signs
		Sub-Total					**$ 3,614,618.15**	
127 Bridge Crossing		**Sub-Total**					**$ 3,500,000.00**	Vehicle and ped bridge (2010 MDOT Cost Estimate)
		TOTAL:					**$ 7,114,618.15**	

Total Cost of the Circle Tour Estimate= $7,114,618.15

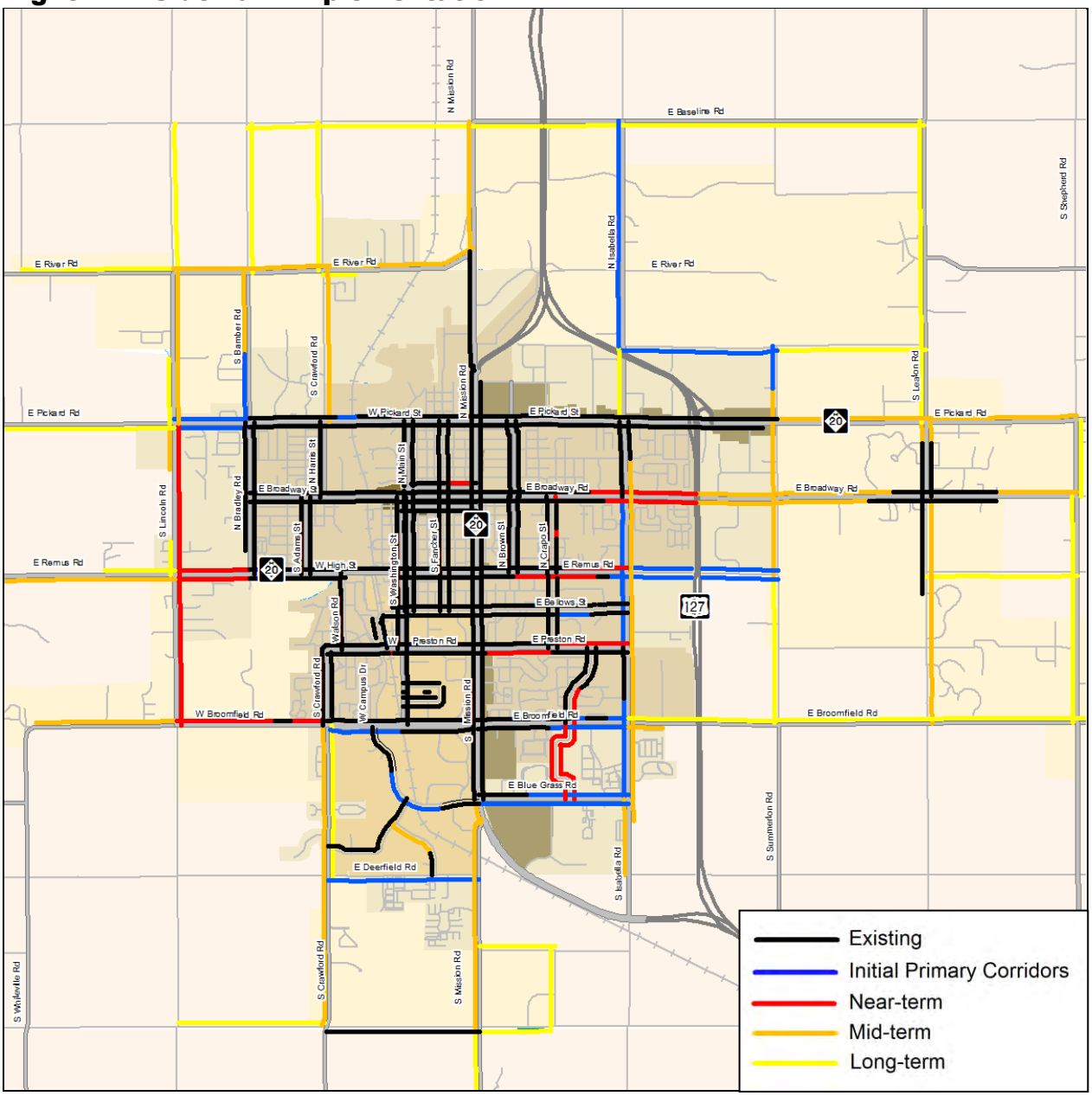
Non-motorized Network Implementation for the Greater Mt. Pleasant Area

The following maps display how the remaining segments of the network should be implemented. The proposed near-term, mid-term and long-term improvements are provided for each of the following facility types; Sidewalks, Bike Lanes, Neighborhood Connectors and Off-Road Trails, Road Crossing Improvements and Intersection Improvements.

Sidewalks Implementation

Some of the sidewalk gaps are addressed in the Initial Primary Corridors task.

Fig. 5.1D. Sidewalk Implementation



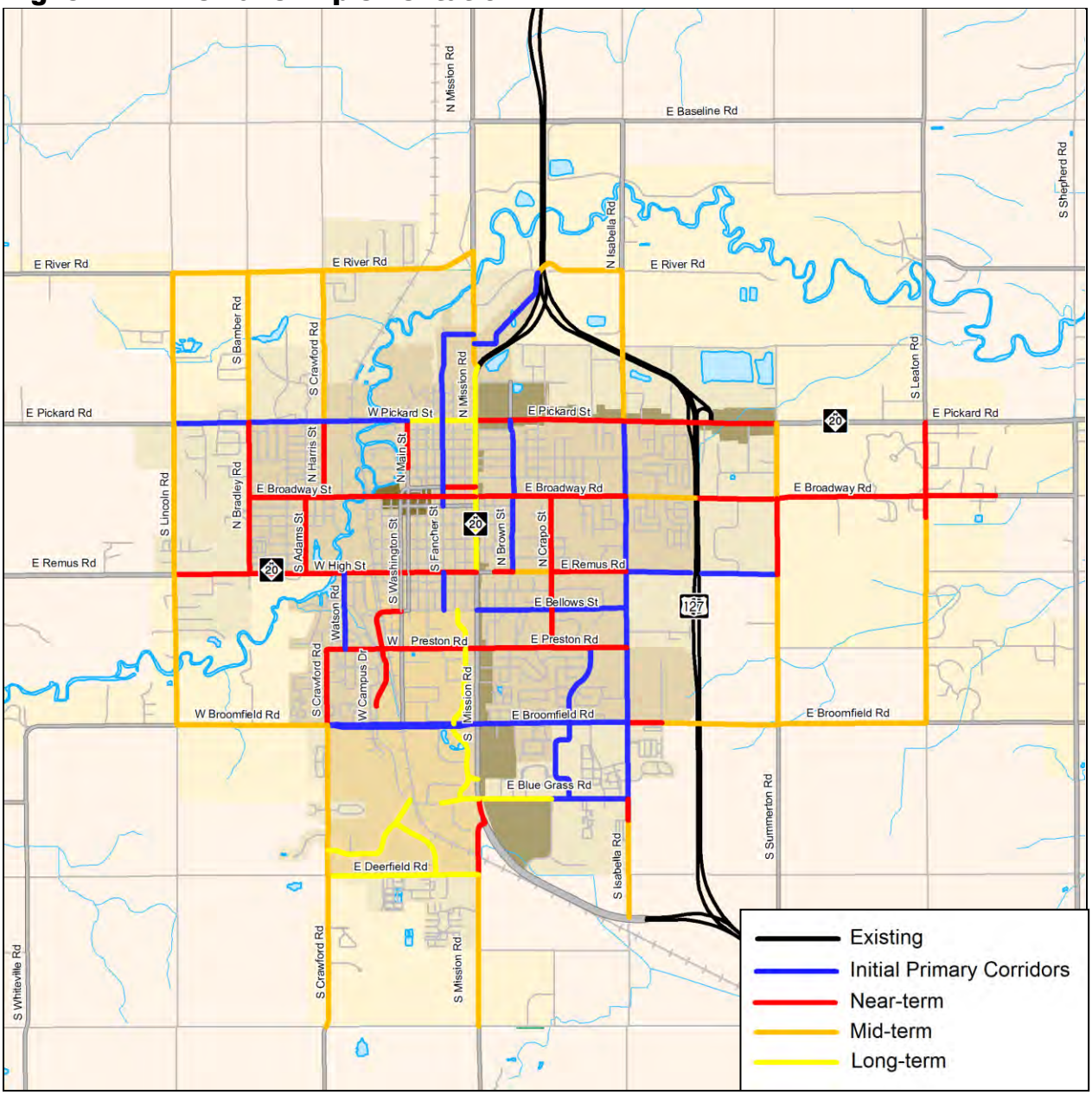
Some of the sidewalk gaps are addressed through the Initial Primary Corridor task. The remaining sidewalk gaps are broken into near-term, mid-term and long-term implementation. However, if opportunities become available to implement sidewalks from the mid or long term group they should be completed first.

In the near-term focus on completing sidewalk gaps in the urban areas, especially within the "No Bus Zone" and to neighborhoods that are isolated from the city center. In the mid-term focus on completing sidewalk gaps in the suburban areas on at least one side of the road. In the long-term focus on completing sidewalks in the suburban fringe areas and trying to connect all of the surrounding neighborhoods to the interior system.

Bike Lane Implementation

There is potential to add 21 miles of bike lanes to the Greater Mt. Pleasant Area in the Near-term.

Fig. 5.1E. Bike Lane Implementation



This task focuses on implementing on-road bike lanes. Most of the near-term bike lanes can be implemented simply by restriping the roadway. The mid-term bike lanes require minimal construction such as paving the shoulder. The long-term bike lanes should be implemented when a roadway is reconstructed.

1) Near-term Bike Lanes (approximately 21 miles)

Cost-effective and easily implemented by minor changes such as re-striping the existing road surface.

- Add shared lane markings to E Michigan Street between S Washington Street and S Lansing Street (planned reconstruction in 2012 between Washington Street and Fancher Street)
- Add bike lanes to W Preston Road between S Crawford Road and S Mission Road by narrowing the lanes to 11' (planned reconstruction in 2012 between Washington Street and E Campus Drive)
- Add parking edge stripe to S Adams Street between W High Street and E Broadway Street (planned overlay in 2013 between E Broadway Street and E High Street)
- Add bike lanes to E Broadway Street between N Bradley Road and the Chippewa River and between N Mission Road and S Isabella Road and between Soaring Eagle Casino and S Leaton Road by narrowing the lanes to 11' (planned reconstruction in 2014 from S Harris Street to S Washington Street)
- Add shared lane markings to E Broadway Street between Chippewa River and S Mission Road (planned reconstruction in 2014 from Harris Street to S Washington Street)
- Add bike lanes to W Campus Drive between W Preston Road and E Bellows Street through a 4 to 3 lane conversion (planned overlay in 2015 between W Preston Road and E Bellows Street)
- Add pavement marking and signs where there are existing paved shoulders on W High Street between S Lincoln Road and S Washington Street to make it a designated bike lane
- Add bike lanes to E High Street between S Washington Street and S Mission Road through a 3 to 2 lane conversion
- Add bike lanes to E High Street Between S Mission Road and Eastlawn Street by narrowing the lanes to 11'
- Add parking edge strip to E High Street between Eastlawn Street and N Brown Street
- Add bike lanes to E Remus Road between N Crapo Street and S Isabella Road by narrowing the lanes to 11'
- Add bike lane to E Pickard Street between N Mission Road and S Summerton Road by narrowing the lanes to 10.5'
- Add pavement marking and signs where there are existing paved shoulders on E Pickard Street between S Summerton Road and S Leaton Road to make it a designated bike lane
- Add pavement marking and signs where there are existing paved shoulders on E Broadway Road between US 127 and Soaring Eagle Boulevard to make it a designated bike lane
- Add shared lane markings to E Mosher Street between N Main Street and S Fancher Street
- Add bike lanes to E Mosher Street between N Main Street and S Mission Road by narrowing the lanes to 11'
- Add parking edge stipe to E Preston Road between S Mission Road and S Isabella Road
- Add parking edge strip to N Bradley Road between W High Street and W Pickard Street by eliminating on-street parking
- Add bike lane to N Harris Street between E Broadway Street and W Pickard Street by narrowing the lane to 11'

- Add bike lane to S Crawford Road between W Preston Road and W Broomfield Road by narrowing the lane to 11'
- Add bike lanes to W Campus Drive between W Broomfeild Road and West Preston Road by narrowing the lane to 11' and adding shared lane marking near the intersection of W Campus Drive and W Broomfield Road
- Add bike lanes to N Main Street between W Pickard Street and E Lincoln Street by eliminating on street parking
- Add shared lane marking to N Main Street between E Mosher Street and E Lincoln Street
- Narrow lanes to 11' and add road edge stripe on S Mission Road between W High Street and E Blue Grass Road
- Add bike lanes to N Crapo Street between E Broadway Road and E Remus Road by adding a parking edge stripe
- Add bike lanes to N Crapo Street between E Remus Road and E Preston Road by narrowing the lanes to 11'
- Add bike lanes to S Summerton Road between E Broadway Road and E Remus Road by narrowing the lanes to 10'

2) Mid-term Bike Lanes (approximately 20 miles)
Minor changes needed such as paving the road shoulder.

- Add bike lanes to S Lincoln Road by paving the shoulder between W Broomfield Road and E River
- Add bike lanes to S Bamber Road by paving the shoulder between E River Road and W Pickard Street
- Add bike lanes to S Crawford Road by paving the shoulder between E River Road and W Pickard Street and between W Broomfield Road and E Millbrook Road
- Add bike lanes to N Mission Road by paving the shoulder between Industrial Avenues and E River Road
- Add bike lanes by paving the shoulder to S Summerton Road between E Pickard Street and E Broadway Road and between E Remus Road and E Broomfield Road
- Add bike lanes to S Isabella Road by paving the shoulder between E Blue Grass Road and BR US 127
- Add bike lanes to S Mission Road by paving the shoulder between E Deerfield Road and E Millbrook Road
- Add bike lanes on W Broomfeild Road by paving the shoulder between S Lincoln Road and S Crawford Road and between Grover Parkway and S Leaton Road
- Add bike lanes to E Remus Road by paving the shoulder between N Brown Street and N Crapo Street
- Add bike lanes to E Broadway Street by paving the shoulder between S Isabella Road and US 127

3) Long-term Bike Lanes (approximately 6 miles)

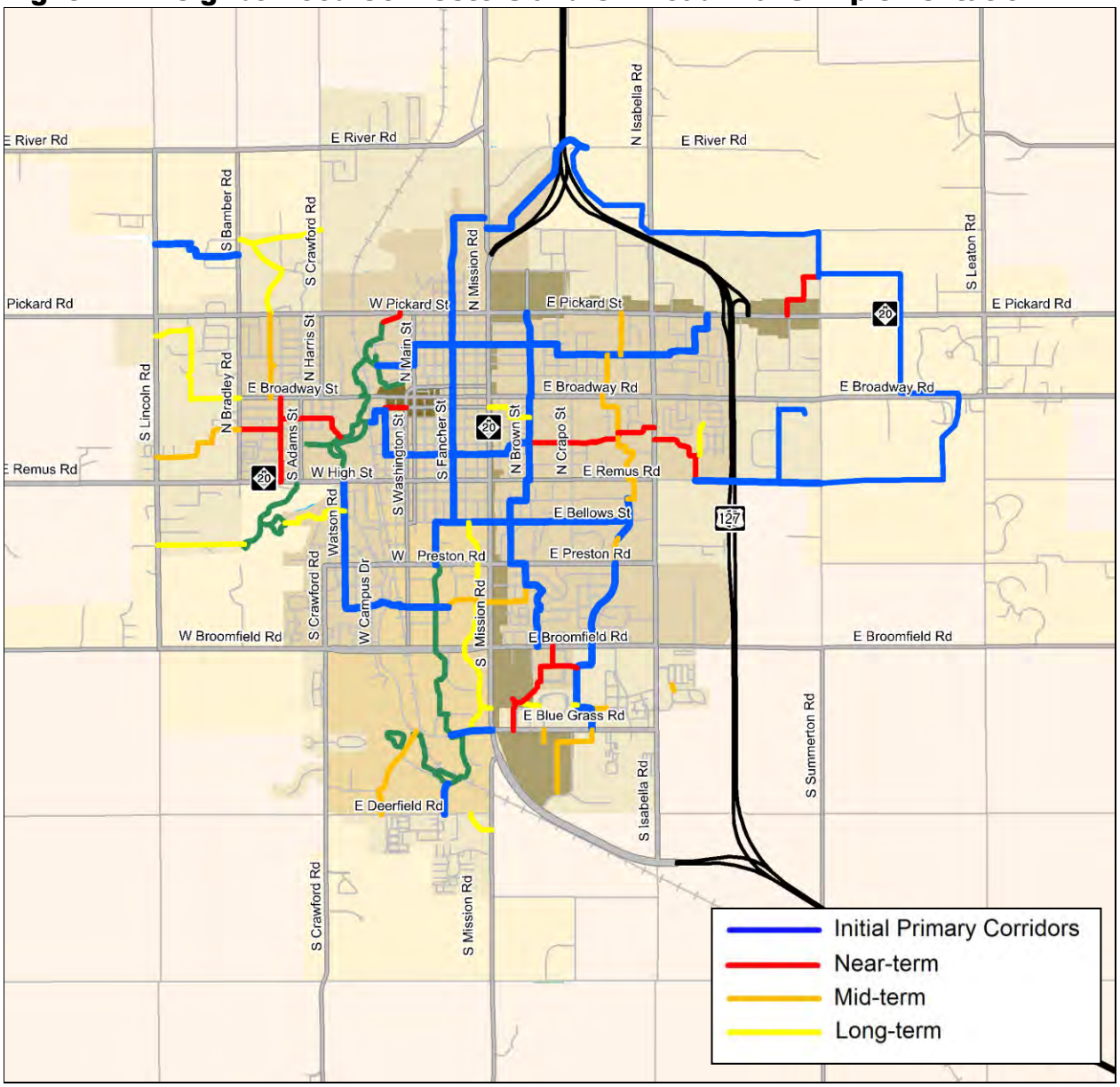
The cost to add bike lanes to these roadways independently of a road reconstruction project would be significant. Thus to maximize the impact of finite resources the long-term improvements are expected to be implemented when a road is completely reconstructed (not just resurfaced).

- Add bike lanes to E Blue Grass Rd between Mission Road and Encore Drive.
- Add bike lanes to E Deerfield Rd between S Crawford Road and S Mission Road
- Add Bike lanes to Mission Road between E High St and Industrial Ave
- Add Bike lanes to E Campus Drive between E Bellow Street and E Blue Grass Road
- Add Bike lanes to Three Leaves Drive between E Deerfield Road and W Campus Drive
- Add Bike lanes to Denison Drive between Three Leaves Drive and S Crawford Road
- Add Bike Lanes to Pickard Street between Main Street and N Mission Road

Neighborhood Connectors and Off-Road Trails Implementation

Please note that neighborhood connectors are not just restricted to the routes highlighted above. If desired elements of neighborhood connectors are desired, they could be used elsewhere in the city as a means to calm traffic, provide non-motorized links and enhance a streetscape.

Fig. 5.1F. Neighborhood Connectors and Off-Road Trails Implementation



This task focuses on implementation of the neighborhood connector routes and off-road trails. The near-term improvements are located mainly along existing roadways and only a few short connector pathways are needed. The mid-term improvements require short connector pathways to help link up the neighborhood connector routes. The long-term improvements include major off-road trails and the remainder of the neighborhood connector routes and pathways.

1) Near-term Neighborhood Connectors and Off-Road Trails (approximately 3.5 miles)

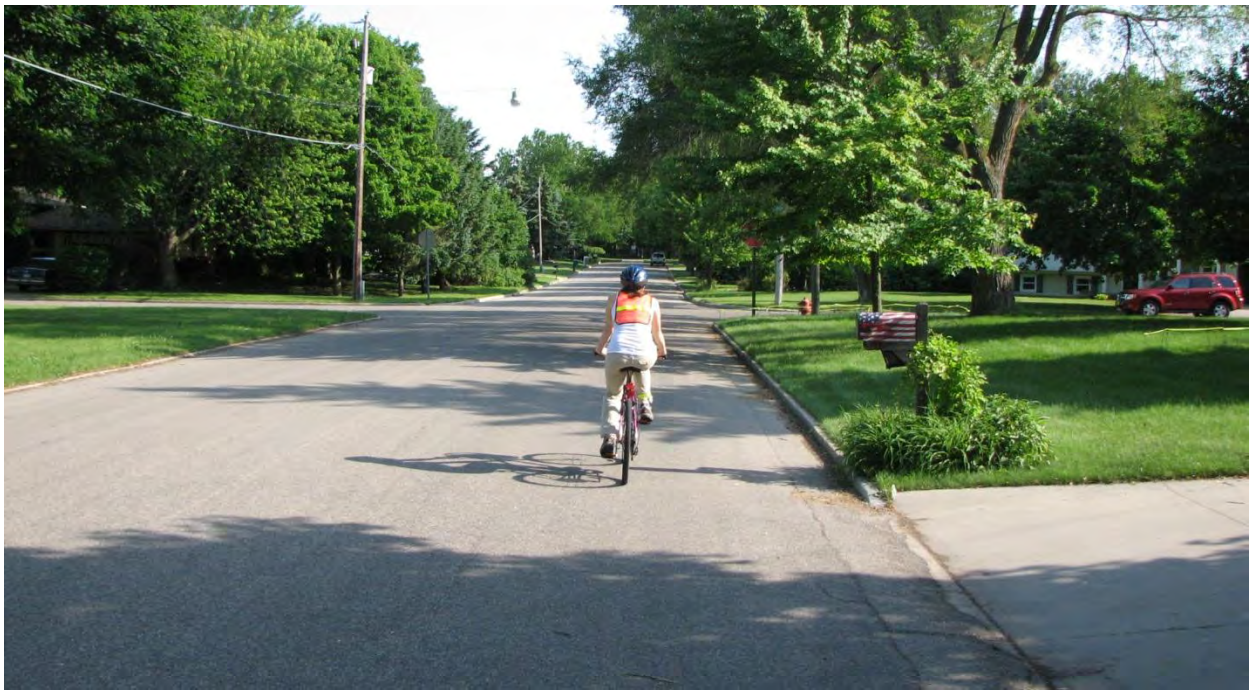
- Obtain easements to build the following short connector pathways through undeveloped Private Property:
  - Connect North Drive to Smalley Drive with a 8' pathway
  - Connect S Ivy over to Morey Courts and the Ice Arena with an 8' pathway
- Build the following short connector pathways through Public and Quasi-Public Property:
  - Provide an 8' pathway around Morey Court and Ice Arena connecting to S Isabella Road and E Remus Road
  - Build 10' pathway between the Ziibiwing Center/Soaring Eagle Casino and the Soaring Eagle Inn and Water Park
- Provide wayfinding and signage along near-term routes
- Implement traffic calming elements along near-term routes
- Implement road crossing improvements where near-term neighborhood connector routes cross a major roadway

2) Mid-term Neighborhood Connectors and Off-Road Trails (approximately 4 miles)

- Obtain easements to build the following short connector pathways through undeveloped Private Property:
  - Connect Sweeny Street to Tallgrass Apartments with a 8' pathway
  - Connect Sweeny Street to Sterling Way with a 8' Pathway
  - Connect Sweeney Street to Apartments on Collegiate Way with a 8' pathway
  - Connect E Blue Grass Road to Wal-Mart with a 8' pathway that extends south from the intersection of E Blue Grass Road and Sterling Way
  - Connect the Existing River Trail to S Lincoln Road with a 8' pathway that crosses through the southern end of the Central Concrete Products Property
- Build the following short connector pathways through Public and Quasi-Public Property:
  - Connect Sweeny Street to Preston Road with a 8' pathway across school property
  - Connect Crosslanes Street to Carter Street with a 8' pathway across school property
  - Build 8' pathway through Sunnyside Park that connects to N Cooley Street and Bruce Street
  - Connect N Bradley Road to E Transportation Drive with a 8' pathway across school property
  - Connect Denison Drive to E Deerfield Road with a 8' pathway across CMU property
  - Build 8' asphalt pathway between York Street and Appian Way
- Provide wayfinding and signage along routes
- Implement traffic calming elements along routes
- Implement road crossing improvements where neighborhood connector routes cross a major roadway

3) Long-term Neighborhood Connectors and Off-Road Trails (approximately 4.5 miles)

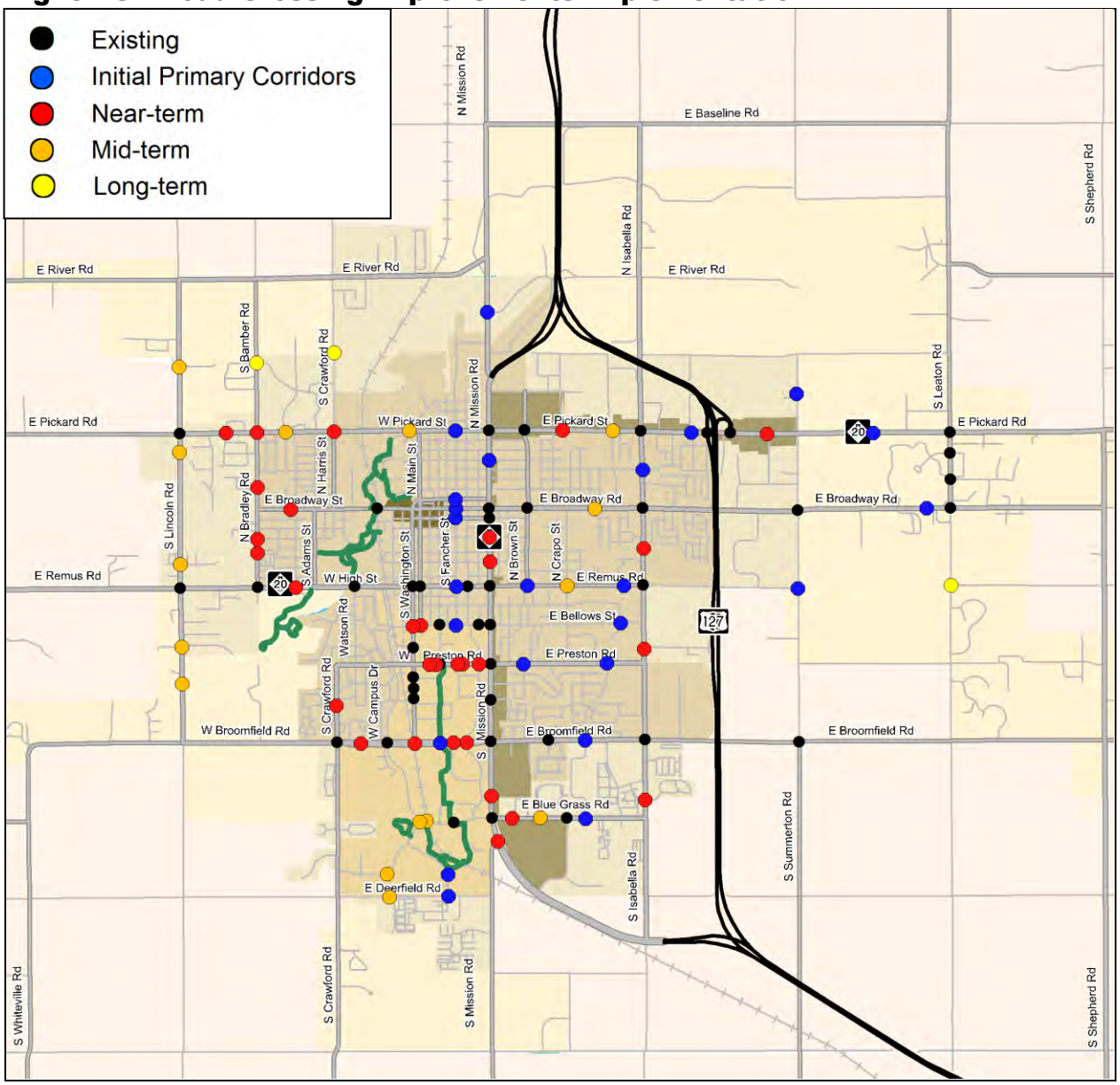
- Obtain easements to build the following short connector pathways through undeveloped Private Property:
  - Build 8' pathways connecting Target and Mission Mall to the nearby residential areas to the east and to Indian Hills Plaza to the south
  - Connect S Ivy to E Crossway Lane with a 8' pathway
  - Connect Flagstone Court to S Lincoln Road with a 8' pathway
- Build the following short connector pathways through Public and Quasi-Public Property:
  - Build 8' pathway through Union Township property near the intersection of Deerfield Road and S Mission Road, this area also has potential to become a trail head
  - Connect Greenbanks Drive to the existing River Trail with a 12' pathway
  - Coordinate with the City of Mt. Pleasant to provide pathway connections through the recently purchased property near Pickard Street and N Crawford Street when new development occurs
- Provide wayfinding and signage along routes
- Implement traffic calming elements along routes
- Implement road crossing improvements where neighborhood connector routes cross a major roadway
- Coordinate with Saginaw Chippewa Tribe to provide non-motorized connections when new roads are constructed
- Coordinate with the City of Mt. Pleasant to provide pathway connection through the recently purchased property near Pickard Street and N Crawford Street



Road Crossing Improvements Implementation

Some of the roads crossing improvements are addressed in the Initial Primary Corridors task.

Fig. 5.1G. Road Crossing Improvements Implementation

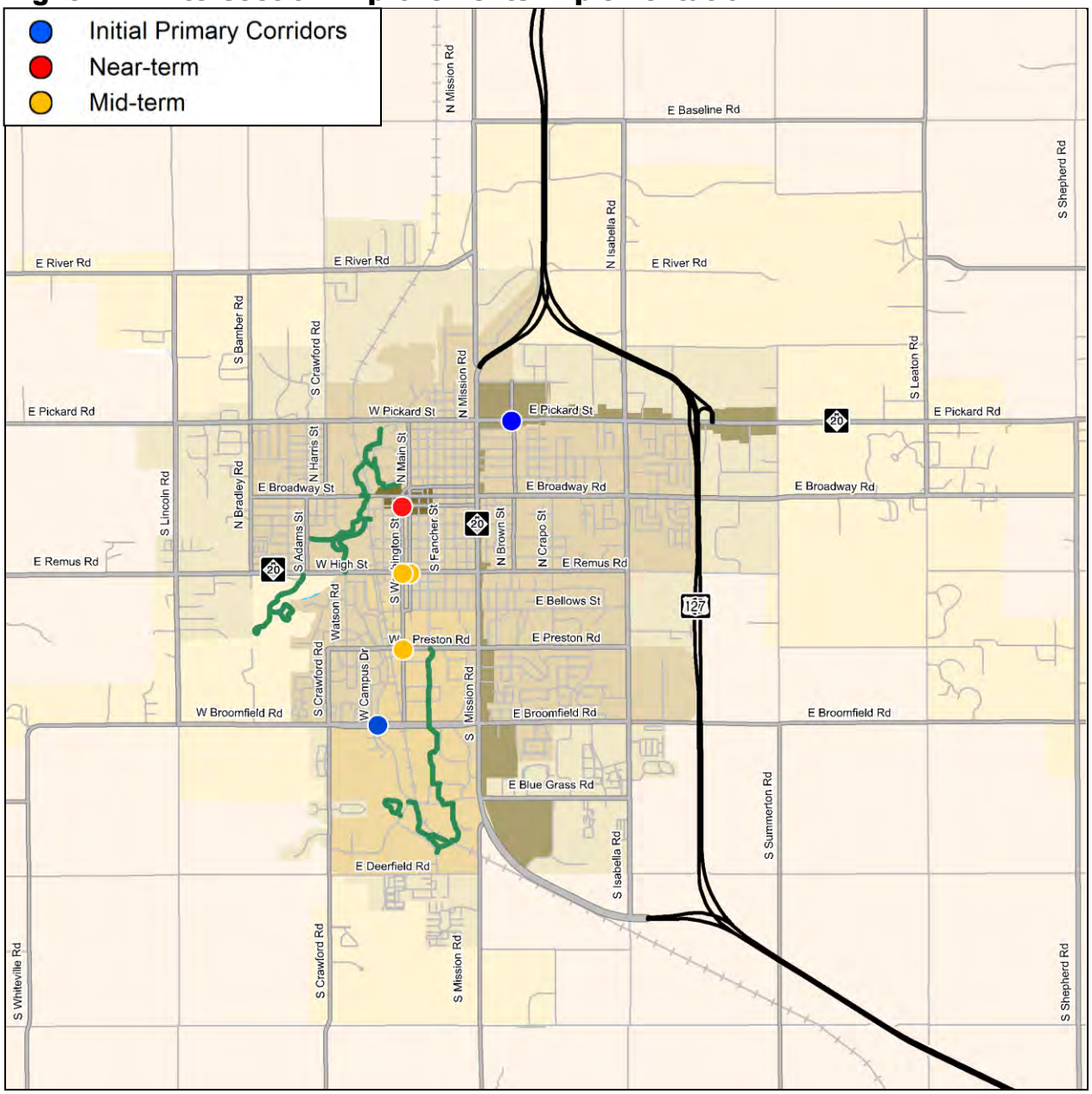


Road crossing improvements implementation rank was established based on the recommended implementation for neighborhood connector routes, sidewalks, and bike lanes. They were also selected based on latent demand to get across the street and safety concerns. Road crossing improvements should be coordinated with the other implementation tasks which include Neighborhood Connector Routes, Sidewalks, and Bike Lanes.

Intersection Improvements Implementation

Some of the intersection improvements are addressed in the Initial Primary Corridors task.

Fig. 5.1H. Intersection Improvements Implementation

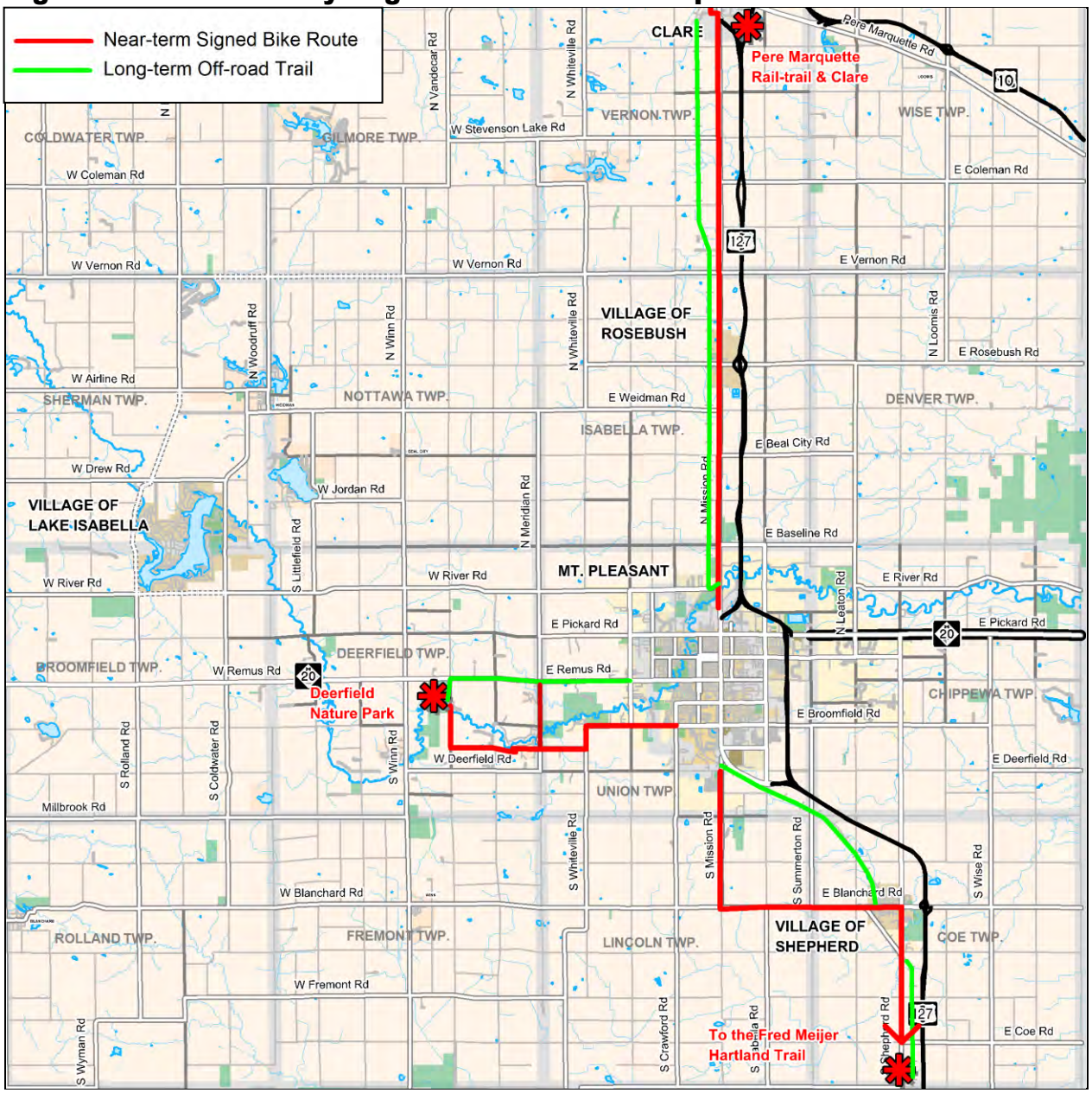


Intersection improvements implementation rank was established based on the recommended implementation for neighborhood connector routes, sidewalks, and bike lanes. They were also selected based on latent demand to get across the street and safety concerns. Intersection improvements should be coordinated with the other implementation tasks which include Neighborhood Connector Routes, Sidewalks, and Bike Lanes.

Initial Primary Regional Connections Implementation

The following improvements were determined based on public input, near-term opportunities, demand and where the majority of the population would be served. Overall, they will provide the framework for the regional non-motorized system.

Fig. 5.1I. Initial Primary Regional Connections Implementation



This task focuses on creating key connections across the county that would provide a backbone to the non-motorized system. These routes are broken up into near-term and long-term improvements that can be implemented based on opportunities and funding. There are 30 miles of signed bike routes proposed and 28 miles of off-road trail proposed in this phase.

1) Connection to Meridian and Deerfield Park

- Near-term: Implement signed bike route along E Bloomfeild Road, S Whiteville Road, E Bluegrass Road, and S Vandercar Road out to Deerfield Park, with a signed bike route along S Meridian Road to Meridian Park.
- Long-term: Implement 10' Roadside Pathway on the south side of E Remus Road between S Vandecar Road and S Lincoln Road.
- It would be dangerous to continue the roadside pathway on the south side of E Remus Road due to the high volume of driveways between S Lincoln Road and S Bradley Road, the alternative option would be to use the proposed sidewalks going north or south on S Lincoln Street and then using the proposed Neighborhood Connector Routes paralleling E Remus Road to the North and South as an alternative route.
- When complete the near-term and long-term solutions will provide a 10 mile loop

2) Connection to Clare and the Pere Marquette Rail-Trail

- Near-term: Implement signed bike route along N Mission Road between Mt. Pleasant and Clare
- Long-term: Acquire easement to implement a Rail-with-Trail between Mt. Pleasant and Clare following the Great Lakes Central Railroad north of E River Road. The railroad has a 50' easement which means there is not enough room for a trail within its right-of-way so an additional property easement from the adjacent landowners (approximately 57 private owners) would be necessary to implement a path along this route. Obtaining easements from the adjacent land owners should be pursued and if the task presents too many challenges than a roadside pathway along N Mission Road should be considered. Please note that driveways that intersect the roadside pathway present safety hazards. Access consolidation may be necessary in some areas where there are a numerous driveways in close proximity to each other, such as near the Village of Rosebush.
- A Rail-with-Trail would be the more desirable option to placing a roadside pathway along N Mission Road because roadside pathways can be very difficult to fund due to their unsatisfactory nature as a bike facility. Also, a Rail-with-Trail would provide a more natural and scenic setting away from the roadway.

3) Connection to the Village of Shepherd and Fred Hartland Trail

- Near-term: Implement signed bike route along N Mission Road, E Blanchard Road and S Shepherd Road between Mt. Pleasant and the Village of Shepherd and then extending south to the Fred Meijer Hartland Trail.
- Long-term: Acquire easement to implement a Rail-with-Trail between Mt. Pleasant and Shepherd following the Great Lakes Central Railroad north of South of E Deerfield Road. The railroad has a 50' easement which means there is not enough room for a trail within its right-of-way so an additional property easement from the adjacent landowners (approximately 15 private owners) would be necessary to implement a path along this route. Obtaining easements from the adjacent land owners should be pursued and if the task presents too many challenges than a roadside pathway along S Mission Road, E Blanchard Road and S Shepherd Road between Mt. Pleasant and the Village of Shepherd should be considered. Please note that driveways that intersect the roadside pathway present safety hazards. Access consolidation may be necessary in some areas where there are a lot of driveways in close proximity to each other, such as near the Village of Shepherd.

- A Rail-with-Trail would be the more desirable option to placing a roadside pathway along S Mission Road because roadside pathways can be very difficult to fund due to their unsatisfactory nature as a bike facility. Also, a Rail-with-Trail would provide a more natural and scenic setting away from the roadway.

Initial Primary Regional Connections Cost Estimate:

	Quantity	Unit	Unit Price	Cost Estimate	
To Meridian and Deerfield Park					
Near-Term					
Signed Bike Route	7.96	mi	$ 1,200.00	$ 9,552.00	Bloomfield Road, Whiteville Road, Bluegrass Rd, Vandercar Rd to Deerfield Park. Also along Meridian Rd (this line should be red)
		TOTAL		**$ 9,552.00**	
Long-Term					
10' Path	23705.19	ft	$ 45.00	$ 1,066,733.55	S side of Remus Rd between Vandecar and Lincoln
		TOTAL		**$ 1,066,733.55**	

	Quantity	Unit	Unit Price	Cost Estimate	
To Clare and Pere Marquette Rail Trail					
Near-Term					
Signed Bike Route	13.83	mi	$ 1,200.00	$ 16,596.00	N Mission Rd between Mt Pleasant and Clare
		TOTAL		**$ 16,596.00**	
Long-Term (Rail w Trail)					
Obtain Easements				TBD	57 Private landowners along railroad - easements needed to fit "rail with trail"
10' Path along RR	71997.8	ft	$ 45.00	$ 3,239,901.00	Along RR from Mission Rd to Pere Marquette Trail in Clare
Bridge Allowance	1	ls	$ 500,000.00	$ 500,000.00	
Boardwalk Allowance	1	ls	$ 225,000.00	$ 225,000.00	
Contingency (20%)				$ 792,980.20	
		TOTAL		**$ 4,757,881.20**	Plus Easements from 57 landowners

To Village of Shepherd and Fred Meijer Hartland Trail

Near-Term

Signed Bike Route	11.11 mi	$	1,200.00	$	13,332.00	Mission Rd, Blanchard Rd and Shepherd Rd toward the Fred Meijer Hartland Trail (end distance calculation at Isabella Co line)
	TOTAL			**$**	**13,332.00**	

Long-Term (Rail w Trail)

Obtain Easements				TBD		15 private landowners along railroad - easements needed to fit "rail with trail"
10' Path along RR	42115.2 ft	$	45.00	$	1,895,184.00	Segment would become a signed bike route within the village of Shepherd -- approx 1.56 miles.
Bridge Allowance	1 ls	$	280,000.00	$	280,000.00	
Boardwalk Allowance	1 ls	$	160,000.00	$	160,000.00	
Contingency (20%)				$	467,036.80	
	TOTAL			**$**	**2,802,220.80**	Plus Easements from 15 landowners

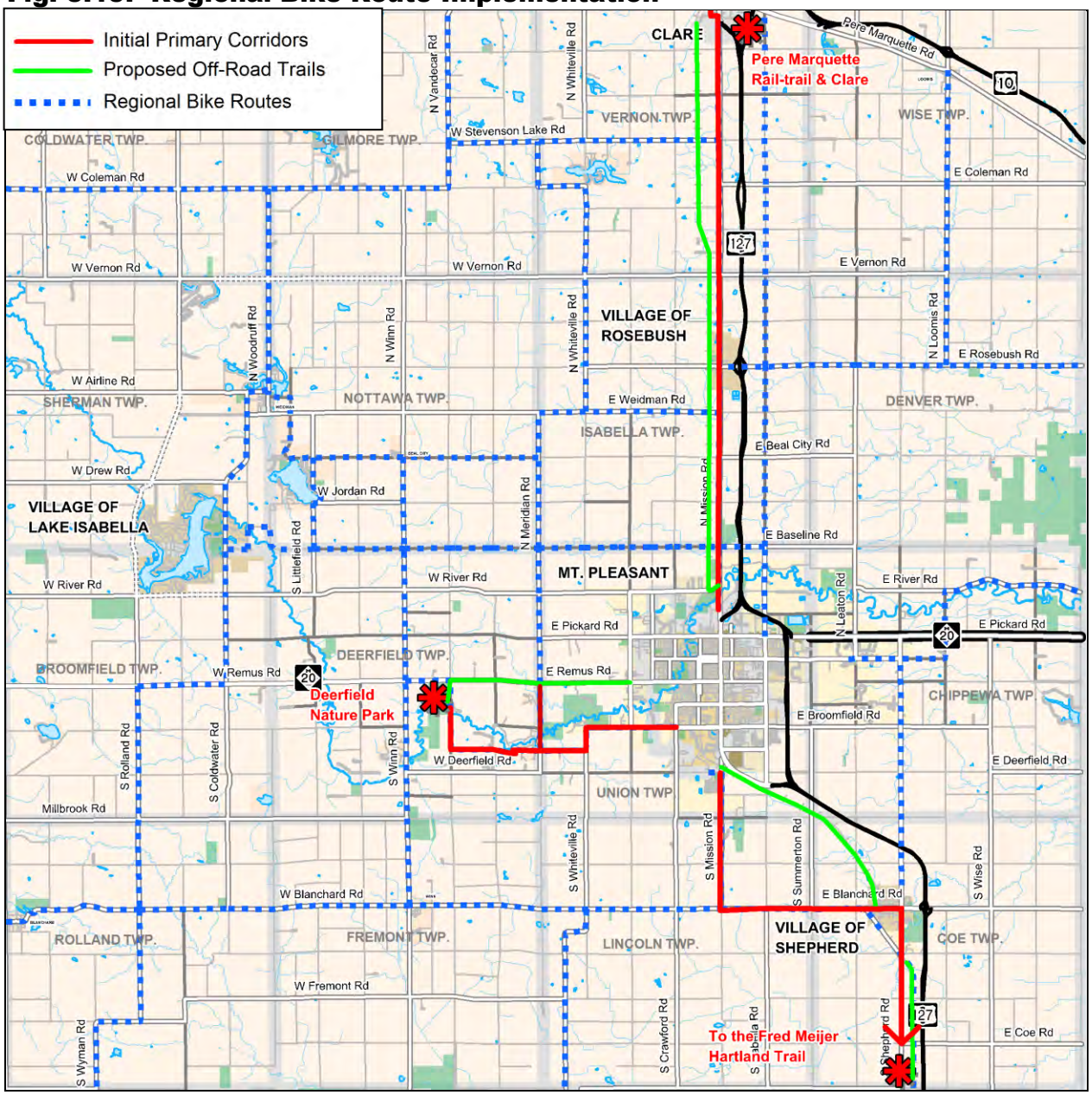
Total Cost of Near-term Initial Primary Regional Connections = $39,480

Total Cost of Long-term Initial Primary Regional Connections = $8,626,835.55

Regional Bike Route Implementation

Some of the roads crossing improvements are addressed in the Initial Primary Corridors task.

Fig. 5.1J. Regional Bike Route Implementation



The proposed Regional Bike Routes will help to link key destinations across the county. The connections include signed bike routes, paved shoulders, and potential off-road trails.

1) Near-term Regional Bike Routes

- Implement wayfinding signs on all routes so road can be used as on-road bike routes

2) Mid-term Regional Bike Routes

- Add bike lanes to the routes by paving the shoulder

3) Long-term Regional Bike Routes

- Implement off-road trails and roadway pathways

5.2 Potential Funding Sources

There are several potential funding sources to investigate as projects move toward implementation. Some projects have a higher likelihood of receiving outside funding assistance than others. Potential funding sources from outside entities change and evolve on a regular basis. Understanding available funding programs, their requirements and deadlines requires continuous monitoring. A few of the more common funding sources have been detailed here as a reference and resource. These are in addition to traditional funding methods such as the general fund, millages, bonds, Community Development Block Grants, etc.

MDOT Transportation Enhancement Program
Transportation Enhancement (TE) activities are federally funded, community-based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of the transportation infrastructure. To be eligible, a project must fall into one of the 12 TE activities and relate to surface transportation. Activities that relate to the implementation of this Master Plan include:

- Provision of facilities for pedestrians and bicycles: Includes bike lane striping, wide paved shoulders, bike parking, bus racks, off-road trails, bike and pedestrian bridges and underpasses.
- Paved shoulders four or more feet wide
- Bike lanes
- Pedestrian crosswalks
- Shared use paths 10 feet wide or greater
- Path/trail user amenities
- Grade separations
- Bicycle parking facilities
- Bicycle accommodations on public transportation
- Provision of safety and educational activities for pedestrians and bicyclists
- Programs designed to encourage walking and bicycling by providing potential users with education and safety instruction through classes, pamphlets and signage
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails).
- Acquiring railroad rights-of-way; planning, designing and constructing multi-use trails; developing rail-with-trail projects; purchasing unused railroad property for reuse.

A minimum 20% local match is required (although more match is preferred) for proposed projects and applications are accepted on an on-going basis.

Michigan Natural Resources Trust Fund
The MNRTF provides funding for both the purchase of land (or interests in land) for recreation or protection of land because of its environmental importance or scenic beauty and the appropriate development of land for public outdoor recreation use. Goals of the program are to: 1) protect Michigan's natural resources and provide for their access, public use and enjoyment; 2) provide public access to Michigan's water bodies, particularly the Great Lakes, and facilitate their recreation use; 3) meet regional, county and community needs for outdoor recreation opportunities; 4) improve the opportunities for outdoor recreation in Michigan's urban areas; and, 5) stimulate Michigan's economy through recreation-related tourism and community revitalization.

All proposals for grants must include a local match of at least 25% of the total project cost. There is no minimum or maximum for acquisition projects. For development projects, the minimum funding request is $15,000 and the maximum is $300,000. Applications are due in April and projects must meet the goals of the community's Parks and Recreation Master Plan. If a community has recently received a significant MDNRE Trust Fund award for a project it may be a few years (2 to 3) before the community can be successful in approaching the Trust Fund again for additional projects. This is due to the Trust Funds historical pattern of dispersing their dollars geographically.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)
The CMAQ program was created to reduce congestion on local streets and improve air quality. Funds are available to urban communities designated as "non-attainment" areas for air quality. Pedestrian and bicycle projects are eligible for CMAQ funding where they can be shown to divert motor vehicle commuting traffic that would otherwise take place. CMAQ projects on roads must be on federal-aid eligible roads. There is typically a 20% local match requirement.

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 DALMAC. The DALMAC Fund supports safety and education programs, bicycle trail development, state-wide bicycle organizations, and route mapping projects. Applications must be submitted by March 1. They are reviewed by the DALMAC Fund Committee and approved by the Board. Grants are made by May of the year they were submitted. Applications can be found at www.biketcba.org. This is a relatively small grant program with a total of $70,000 in 2010.

KODAK American Greenways Awards
Kodak, The Conservation Fund, and the National Geographic Society, provide small grants to stimulate the planning and design of greenways in communities throughout America. Made possible by a grant from Eastman Kodak, the program also honors groups and individuals whose ingenuity and creativity foster the creation of greenways. The application period typically runs from March 1st through June 1st. Program goals are to: develop new, action-oriented greenways projects; assist grassroots greenway organizations; leverage additional money for conservation and greenway development; and, recognize and encourage greenway proponents and organizations. Maximum grant is $2,500. For more information go to www.conservationfund.org.

Safe Routes to School
The Safe Routes To School Program is a national movement to make it safe, convenient and fun for children to bicycle and walk to school. In Michigan, the program is sponsored by the Michigan Fitness Foundation and has gained momentum over the past few years. Examples of projects and programs eligible for funding include sidewalks, traffic calming, crossing improvements, bicycle and pedestrian facilities, public awareness campaigns, traffic education and enforcement, etc. Schools must be registered and develop a Walking Audit in order to be eligible to apply. SR2S funding is 100 percent federal; no

match is required. Projects must be constructed within 2 miles of the school. Applications are received and reviewed quarterly. Typical funding is approximately $200,000 per school and does not cover engineering, administration or permits.
www.saferoutesmichigan.org

Bikes Belong
The Bikes Belong Coalition is sponsored by members of the American Bicycle Industry. Their mission is to put more people on bikes more often. The program funds projects in three categories: Facility, Education, and Capacity Building. Requests for funding can be up to $10,000 for projects such as bike paths, trails, lanes, parking, and transit, and safe routes to school. Applications are accepted via email three times per year (April, August and November). More information can be found at www.bikesbelong.org.

MDOT Small Urban Program
The Small Urban Program provides federal Surface Transportation Program (STP) funding to areas with a population of 5,000 to 49,999. Road and transit capital projects are eligible for STP funds. During a call for projects, MDOT requests that eligible areas, such as Mt. Pleasant, submit road and transit capital projects for funding consideration. All road projects must be located on the federal-aid highway system and consistent with regional land use and development plans. Urban areas may submit for up to $375,000 federal STP per project with a required 20% local match. Eligible projects include non-motorized shoulders, reconstruction, and non-motorized trails (along roads).

Foundations
There are a handful of private Foundations in the Mt. Pleasant area that may be considered for assistance in moving the non-motorized plan forward. It is unclear as to the likelihood of receiving assistance from these Foundations as many do not accept unsolicited proposals. Discussions would begin with an existing relationship and/or association with Foundation staff.

- Mount Pleasant Area Community Foundation
- W.E. Martin Foundation
- Dorsay Foundation
- Isabella Bank and Trust Foundation

5.3 Annual Maintenance & Operation Costs

There are many other factors that can affect cost of maintenance for a non-motorized system. However, the main factor affecting cost is the difference in agencies that maintain and operate facilities. Each agency will have different labor costs, access to different machinery and equipment, and may or may not have a volunteer base to offer assistance.

Routine maintenance can be defined as maintenance that is needed to keep the facility operating in a safe and usable condition, not involving major development or reconstruction. Below is a list of typical routine maintenance activities and their associated annual cost per mile (when applicable):

- Asphalt Paved Trail - $4,500 per mile annually (includes sweeping/blowing of debris, mowing of shoulders, vegetation control, asphalt sealing, and snow removal)
- Asphalt Side Path - $700 per mile annually (includes asphalt sealing, and snow removal)
- Concrete Sidewalk – 30+ year useful life with little or no yearly maintenance (assumes adjacent property owners are required to remove snow and repair broken or shifting flags as needed)
- Pedestrian Bridge – 50+ year useful life with little or no yearly maintenance (dependent on deck surface)
- Boardwalk - $18,000 per mile annually (based on power-washing, mildewcide application and sealing of decking every three years)
- Bicycle Lanes - $10,000 per mile annually (includes weekly sweeping and annual re-striping)
- Signals - $200 annually

6. Planning and Zoning Review and Recommendations

Accomplishing the vision for the Greater Mt. Pleasant Area requires the combination of a variety of elements, from policy changes, to revised funding priorities, to modified laws and regulations. Many of the physical improvements needed to provide walkable, bikeable places are required within the road right-of-way, often resulting in large public costs. In some cases, retrofitting existing conditions can be avoided if sites, sidewalk systems and access are properly designed at the outset. This section discusses changes to local policy and regulations to minimize some of the conditions discussed in this report, such as lack of connectivity, need for amenities, and even lack of awareness.

The City of Mt. Pleasant and Union Township's ability to regulate development is limited by Michigan law. The Michigan Zoning Enabling Act governs what must and may be contained in a local zoning ordinance, and subsequent case law suggests that municipalities have little jurisdiction or legal right to assess impact fees or require off-site improvements, considered to be those not immediately adjacent to the site. As a result, communities often try to avoid requiring improvements within road rights-of-way. Despite these setbacks, there are some things that can be done to prevent these conditions during the planning and site development stages.

Topics:

6.1 – Master Planning

6.2 – Subdivision Regulations

6.3 – Zoning Ordinance

6.4 – Recommendations for Planning and Zoning

6.1 Master Planning

The overarching goal of this plan is to give residents a viable alternative to vehicular travel. Auto trips are often reduced when development includes a variety of uses on one site so travelers can choose to walk a comfortable distance rather than drive, or if it includes strong physical links between the site and transit facilities, pathways, and other facilities. Other tools like travel demand management, parking programs, transit carpool lots, etc. can also reduce dependency on the automobile. Improving the non-motorized environment and maintaining a vibrant downtown will ultimately require a variety of strategies, but when discussing non-motorized needs, efficiency of design, compact development and mixed use are the key elements.

Efficient Design

Efficient design maximizes public investment in transportation, water and sewer systems. Simply put, maximizing the number of residences or businesses within a system will spread costs among more users, thus lowering the per user cost to provide services.

To prevent a "leapfrog" pattern of development, Master Plan goals should prioritize development within areas already served by infrastructure before undeveloped land is rezoned or otherwise made available for development. This includes development of vacant land as well as redevelopment of underutilized sites. Mt. Pleasant is largely built, and so the City should focus its resources on accommodating redevelopment in a way that does not discourage improvement. Flexibility in the ordinance and review procedures will help to make brownfield and other obsolete sites more attractive to the developer. The Union Township Master Plan embraces this concept well. It states that development opportunities for land within the first tier (usually those lands not in agricultural use that are located within closest proximity to the City) should be exhausted before land beyond are rezoned for development. This efficient design policy will minimize the need to run costly infrastructure to outlying areas, eliminating large gaps in the system that would otherwise go unutilized. It will also result in more compact, pedestrian-friendly development.

Compact Development

Compact development is a critical component of most sustainable communities. The efficient design inherent in compact neighborhoods and higher-rise buildings can be financially enticing both to a community and a private developer. Compact development encourages more people to live and work in close proximity, often resulting in the type of urban places desired by young professionals and modern seniors. Also, by focusing transportation, water and sewer resources more efficiently, surplus budgets can be shifted to providing other amenities like public squares, pedestrian safety improvements or road design modifications that will encourage more walking and biking, such as those presented in this plan.

Fig. 6.1A. Compact Development

Image: www.builderonline.com

The collaboration between Mt. Pleasant and Union Township will be significant in preventing sprawl within the region. Often sprawl occurs as a result of poor inter-jurisdictional communication and an instinctive desire to "push" undesirable uses to the periphery of the community. By working together on regional planning efforts such as this one, the community as a whole will grow together in harmony. The fact that the two community goals are distinct, yet compatible (i.e. to maintain a strong downtown core in the city and to maintain some order to conversion of undeveloped land in the township) will eliminate competition and ill will between the two as they continue to grow into the future.

Mixed Use

Integrating residential and non-residential uses within compact development areas further enhances the non-motorized environment by injecting daytime populations (i.e. employees) to the area. Mixed use development is attractive to businesses because it brings more "customers" to the area, as opposed to single-use districts that tend to slow down during off-peak times. As a result, businesses can market to both daytime and evening populations, and residents have broader access to goods and services.
Higher population and employment densities can also support additional public transportation options to accommodate people of all age and ability. While the City of Mt. Pleasant and Union Township's current zoning would likely not result in the density needed to support rail or high capacity service, they are likely to support continued bus service. Therefore, non-motorized systems should include accessible connections to bus stops and transfer stations. The table below shows the general densities needed to support the various types of transit service.

Fig. 6.1B. Densities Required to Support Transit

Service:	Density (per acre) Requirements	
	Residential(units)	Business (employees)
▪ High Capacity Service ▪ Rail Service	15 to 24+	150+
▪ Local Bus Service	7+	40+
▪ Cars ▪ Carpools ▪ Vanpools	1 to 6	2+

Master Plan Reviews

The City of Mt. Pleasant is an urbanizing City surrounded by Union Township, a community that is somewhat rural, but growing to accommodate additional development attracted to the City. The City of Mt. Pleasant and Union Township both have Master Plan documents that guide planning and zoning decisions within each community. Analysis of these plans suggests the City and township are considering the proper elements when planning for the future.

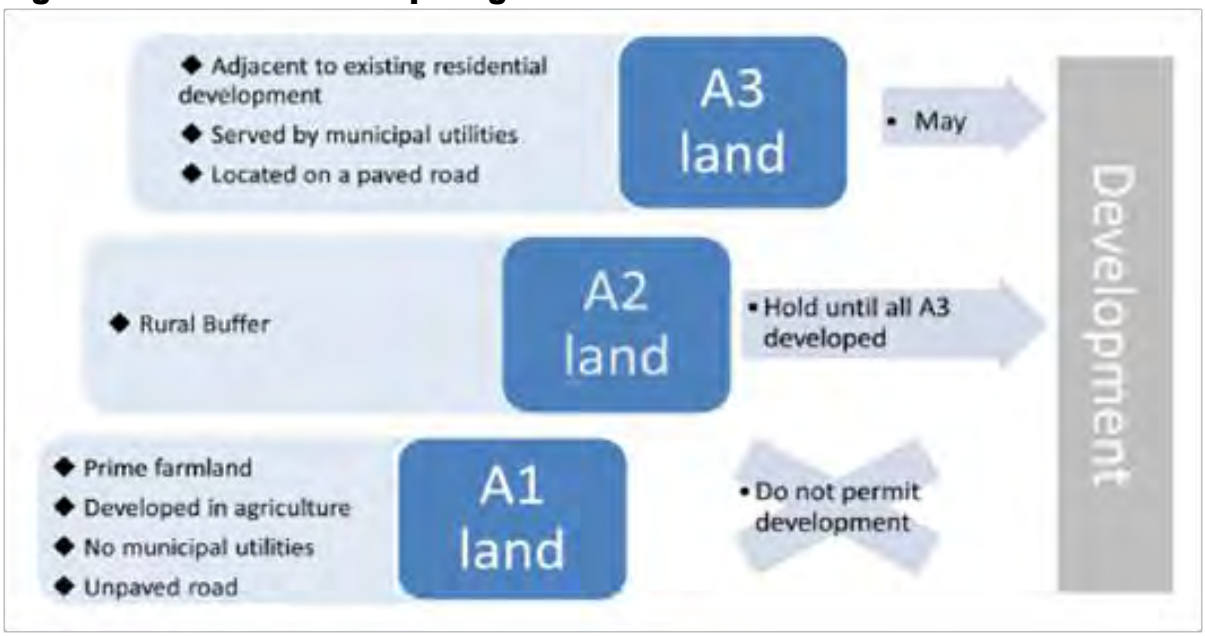
Mt. Pleasant is largely built, with few large tracts of land left to develop. Therefore, local planning policies (from the 2006 City of Mt. Pleasant Master Plan) focus on improving existing conditions and maintaining safety and economic viability. Some key points from the plan include:

- The City wants to encourage activity in the downtown. It calls for business diversity, marketing, and improvements that will attract residents and new businesses. In particular, the plan suggests using TIFA or PSD monies toward pedestrian walkability improvements.
- Preserving high-quality, owner-occupied residential neighborhoods are a priority for the City. The plan suggests traffic calming, property maintenance standards, sidewalk improvements and installation of bicycle paths to provide the safety, recreation and quality desired.
- Improved bicycle and pedestrian facilities are desired, especially near schools, parks and neighborhoods. Providing connections between neighborhoods and community destinations is a goal.
- Transit and taxi services should be expanded to meet the needs of seniors.
- A City-wide multi-use pathway is envisioned to connect parks, community facilities, schools, businesses, employment centers, and neighborhoods, as well as providing connections within and outside the City.
- Traffic safety should be preserved through access management, traffic calming, and sidewalk/bike path development.

Union Township, on the other hand, has significant agricultural and vacant lands that are ripe for development. Due to its location immediately surrounding the City, Union Township's planning policies (from the 2011Union Township Master Plan) focus more on managing future development rather than trying to prevent it through costly preservation efforts. Some key points from the plan include:

- Union Township acknowledges that, despite its affection for the local rural character, the pressures of land development proximate to the City of Mt. Pleasant are too strong. The township is focusing on how best to manage future growth rather than spend resources on costly and uncertain preservation and protection efforts.
- The plan suggests development should occur in an orderly, tired development pattern, with full development of land located closest to Mt. Pleasant occurring first, before development boundaries (i.e. high density zoning districts) are extended to outlying areas.
- To prevent leapfrog development patterns, the township encourages infill and redevelopment before development of Greenfield sites. Utility extensions are recommended only when needed to protect public health or the operational safety of the system.
- Roads in the township should be safe, with access management regulations and integration of proper non-motorized facilities like sidewalks and bike lanes.
- Non-motorized systems should include all types of facilities, and prioritize improvements according to local demand, destinations and need. Systems should connect local destinations and link to the City of Mt. Pleasant as well as other regional systems.

Fig. 6.1C. Union Township's Agricultural Priorities



6.2 Subdivision Regulations

Street connections and non-motorized improvements can be required during the subdivision or site condominium development processes. In many communities, such connections and facilities are technically required, but for reasons of precedent or lack of enforcement over time, have not been enforced or required. Both Mt. Pleasant and Union Township require wide pedestrian pathways (12 feet and 10 feet respectively), both require street connections and both require stub streets to ensure a continuous street network, so no changes are suggested to the local ordinances. We encourage the City and township to be vigilant in requiring such improvements.

What to Require:

- Street connections to future sites
- Walkable block lengths
- Limited cul-de-sac length
- Sidewalks on both sides of the street
- Connections to local and regional trail systems, where applicable

Benefits of Connectivity:

- Shorter vehicle trips, less fuel consumption
- Provides alternative pedestrian/bike routes
- Improved emergency access

6.3 Zoning Ordinance

When properly designed, development sites can enhance the non-motorized environment. Buildings that align public streets and open spaces shape the ambiance of the area and create its character. Therefore, the placement and design of buildings is important to creating the desired type of place. Where the master plan sets forth the vision for such places, it is the zoning ordinance that sets forth the specific setbacks, building heights and design required. The ordinance also governs certain items like internal pedestrian circulation, driveway access and other requirements to protect the public health, safety and welfare. Therefore, it is critical that such elements are properly addressed in the zoning ordinance.

Zoning Approaches

The various approaches to zoning can be divided into four broad categories: Euclidean, Performance, Incentive, and Form-based. In the past, Michigan communities have typically used Euclidian zoning to regulate development. This form of zoning focuses more on separation of incompatible uses and often results in segregation of land uses, sprawling suburban development and increased automobile use. While the original sentiment to protect public health and safety was valid, total separation of uses does not usually create the sense of community that many citizens desire. More modern approaches to zoning shift the focus from segregation of uses to integration; from rigid dimensional requirements to performance-based review standards; and from imposing regulations to incentives. Each approach can have benefits and drawbacks that should be carefully considered to ensure the proper approach, or a combination thereof, is applied within the local context. For example, Euclidian zoning standards could be applied in industrial areas, where separation of offensive uses or activities is appropriate, but a form-based code may be more appropriate in other areas like the downtown, where integrated use and compact development is desired.

Fig. 6.3A. Zoning Approaches

Approach	Description	Pros	Cons
Euclidian	• Separates uses into districts • Requires larger building setbacks	• Historically used • Easy to enforce	• Rigid and inflexible • Can contribute to sprawl and higher auto travel
Performance	• Development reviewed according to established goals or criteria rather than specific dimensional requirements	• Provides more flexibility • Protects private property rights • Helpful in redevelopment where creative approaches are needed	• Can be perceived as too discretionary
Incentive	• Offers rewards like increased density, building height, or regulatory flexibility for developments that provide elements that are desired by the community	• Provides a means to achieve better development in a way that benefits both the public and the private developer	• Can be difficult to administer • Regulations can be complex and difficult to navigate
Form-Based	• Shifts the focus away from the use of land to the building form and character	• Creates "places" by relating buildings to the public realm (i.e. streets and parks) rather than one single site	• Newer concept is more difficult to grasp • Requires some knowledge of architecture and urban design • Can be difficult to administer

Site Design

As discussed, conventional zoning focused on separation of uses and buildings, often requiring large building setbacks, high parking ratios, and significant landscaping. While these regulations can create attractive lawns and detention basins, these areas are often unused as parkland. The separation of uses requires each business to maintain often oversized parking and detention facilities, where in mixed use environments, these facilities are often shared for maximum use. The larger lot size and lot width requirements can result in sprawling patterns that demand longer travel trips.

Modern regulations focus more on the building form and community character and less on the specific use. The concept is based on the idea that the building is the more permanent community fixture, and uses come and go. Therefore, rather than building the site to suit one particular use, the building and site should be designed to accommodate many different uses. The following key site design elements should be incorporated into any site design where pedestrian, bicycle or transit activity is encouraged:

- **Building placement.** Where pedestrian activity is desired, businesses should be located within close proximity so the required walk is not so excessive to deter customers. Buildings should be designed with the customer in mind, with frequent windows and entrances, and proper height and scale to the area.

- **Internal sidewalk connections.** To attract pedestrian traffic, connections to bus stops, building entrances and public sidewalks must be safe, convenient, and of sufficient width to accommodate the type of traffic desired.

- **Bicycle amendments.** Bike amenities could include upgrades to bike paths or routes and/or the provision of onsite facilities like bike racks. Accommodations for bicycle parking should be available in urban settings, or areas proximate to multi-use pathways or bike lane systems. Secured parking is needed in residential areas or employment centers, where long-term bike parking occurs.

- **Transit facilities.** A development is considered transit-friendly when it is expected to result in higher than ordinary transit use. To encourage transit use, facilities must be convenient, comfortable and safe. Transit stops need to be accessible to those with mobility challenges. Preferably, concrete or asphalt pads should be a minimum of 8 feet wide by 5 feet to accommodate seating areas and shelters. Three-foot wide connections should also be provided between the sidewalk and these pads to accommodate wheelchairs. Providing shelter from rain and snow is especially important during winter, but shelters can also provide needed shade in the summer. Snow should be cleared from sidewalks and bus stop connections to provide waiting areas for riders. Snow removal for both the transit stop and connecting sidewalks is critical to providing a visible and safe waiting location.

The City of Mt. Pleasant has created a special overlay zoning district for the Mission Street corridor. This overlay embodies the type of philosophy proposed in this plan. The preferred form of development in the Mission Street overlay district addresses the following objectives:

- Improved building appearance
- Use of durable building materials, such as brick masonry
- Increased pedestrian accommodations and facilities
- Less required parking
- Safe and efficient vehicle circulation
- Appropriate transitions to adjoining single-family residential
- Signs of a compatible size and materials
- Buildings located closer to the street
- Multiple story buildings
- Varied and interesting architectural styles and features
- Increased building transparency on the first floors
- Mixed uses

Fig. 6.3B. Mission Street Design Guidelines

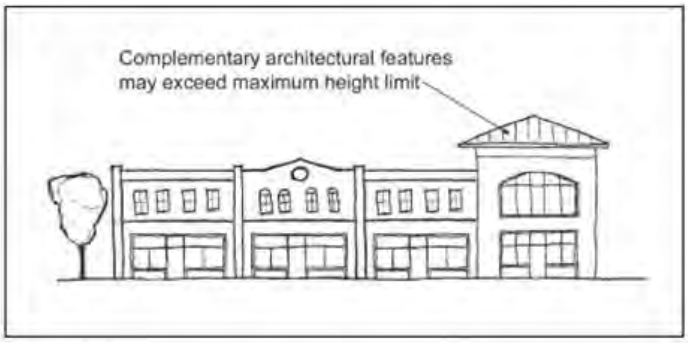
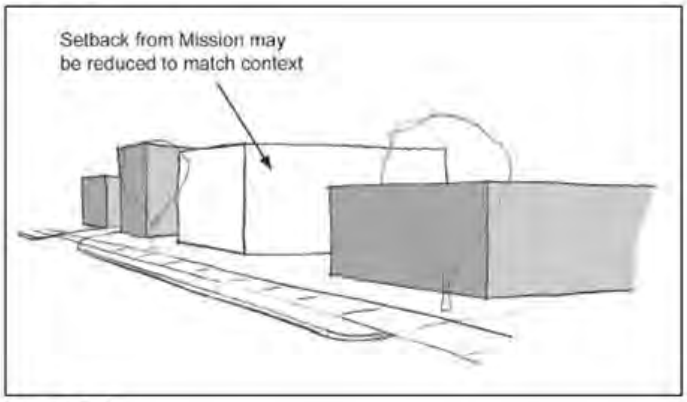


Figure I-1



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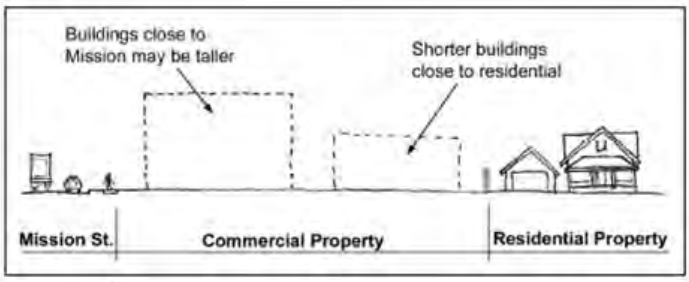

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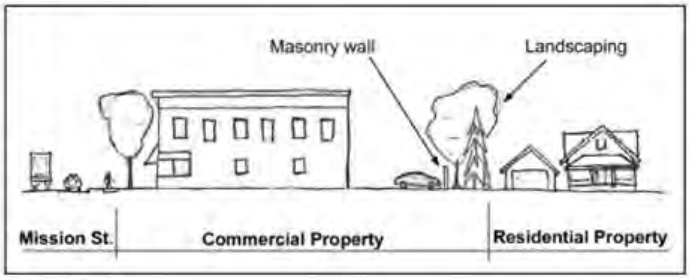


Figure I-4

Because it surrounds the City of Mt. Pleasant, Union Township has developed into a more suburban community. It does not contain a downtown, rather it functions as an extension of Mt. Pleasant, with development patterns generally continuing out from those established in the City. Therefore, transit feasibility in the Township will not likely occur unless it is also feasible in the City. Transit routes are likely to extend out from the City, and so the Township should consider where it wishes to encourage such non-motorized use, then match areas of the township to areas in the City that are served by or are planned for transit.

Standards to Ensure Safety for All Users

Pedestrians and bicyclists (referred to as "non-motorized users") are the most vulnerable travelers. To be most effective when planning corridor features, the pedestrian and bicyclist must be considered a priority. The following tools are available to improve safety for non-motorized users:

Access management

By minimizing the number of access points and ensuring proper spacing and design, access management can improve the non-motorized environment. Improved driveway design (e.g. geometric, materials) can improve visibility of pedestrians and bicyclists. Pedestrian and bicycle travel along corridors with a proliferation of access points can be dangerous for several reasons:

- More driveway crossings means pedestrians face interaction with vehicles more often, increasing the likelihood of a vehicle-to-pedestrian crash.
- More driveways often results in more signs and clutter within the right-of-way, which can be distracting to motorists and can block views of pedestrians and bicyclists.
- Driveways designed without proper curb radii, throat depth, and other design factors can reduce visibility, reaction times and hamper circulation. Access management supports driveway designs that intuitively cause motorists to drive with caution.

Access management is a concept that has been endorsed by MDOT and local road agencies for several years. As a result, many Michigan communities, including both Mt. Pleasant and Union Township, have incorporated standards to regulate the number, placement and design of access points into their Master Plans. The City of Mt. Pleasant Zoning Ordinance regulates access based on the proposed land use, and has adopted a specific overlay district for the U.S. 127/M-20 Corridor. The Union Township Zoning Ordinance includes incentives to encourage access management in the Auto-Related Highway Business District and Retail and Service Highway Business District. To discourage new access points to U.S. 127/M-20, the ordinance allows reduced lot widths and increased lot coverage.

Quality of Service v. Level of Service

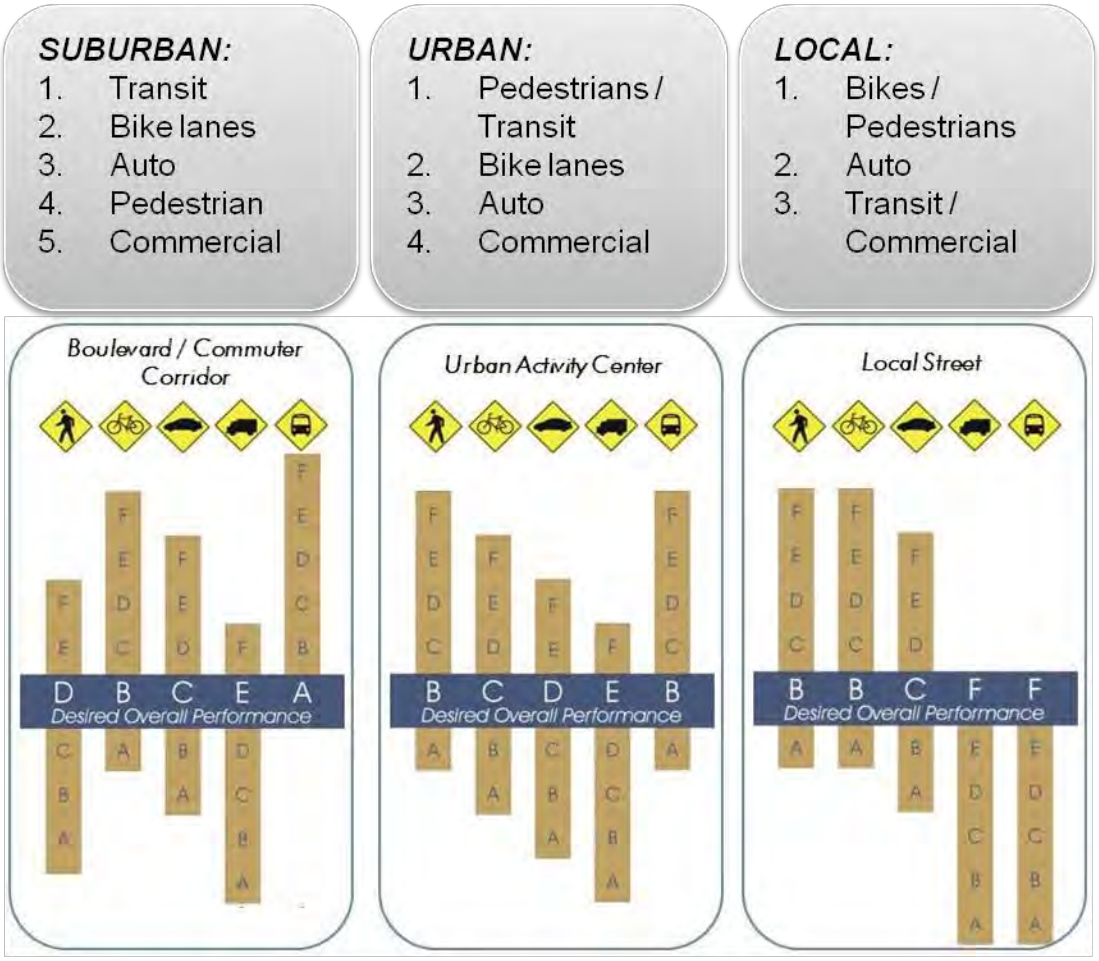
Travelers will generally choose the mode of travel that is most convenient, comfortable and safe, and so it stands to reason why non-motorized and transit modes have lost their attraction; there have been little standards by which to measure their quality. Most measures of service have been established for motorized vehicular travel. Adequacy of road systems is measured by level of service (LOS), which is an intuitive scale of "grades" from A to F that measure how a roadway is operating. The level of service is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. When developments are proposed, they are often required to evaluate pre- and post-development traffic to assess the impact that the development will have, and what sorts of road improvements may be needed to mitigate any functional deficiencies. While past LOS ratings have helped to improve road safety and operations, they do not assess impacts to non-motorized users. Arguably, improved safety and operations of the road system have come at the expense of other modes, as the improvements needed to maintain adequate roadway LOS generally result in higher vehicle speeds and more continuous traffic, which is desirable for the automobile driver, but less so for the pedestrian or bicyclist. In response to this imbalance, the LOS standards of the past have been modified into multi-modal standards, or "Quality of Service" (QOS) standards that consider impacts to pedestrian, bicycle and transit users in addition to vehicular users. These comprehensive indicators are important to ensuring comfort, safety and timely travel for all modes, without giving priority to any one mode. Please refer to Figure 6.3.

Transportation Impact Studies
In order for transportation impacts of proposed development to be anticipated and mitigated, it is important to understand how many new "trips' will be generated, and how those trips will impact the transportation system.

Typical Traffic Impact Studies are required for any project expected to generate 50 or more directional (one-way) trips in the peak hour or 500 trips expected in an average day. Guidelines for preparing transportation impact studies have been established by the "Evaluating Traffic Impact Studies: A Recommended Practice for Michigan Communities," the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, the Transportation Research Board (TRB) *Highway Capacity Manual*, and other handbooks. Traditionally, these studies have focused on traffic impacts and what improvements are needed to retain a certain "acceptable" Level of Service (LOS) of traffic operations. This predominantly auto-oriented analysis has resulted in a disproportionate amount of attention paid to road systems. In response, the latest volume of the TRB Highway Capacity Manual expands traffic impact study requirement to require evaluation of all modes of transportation when analyzing transportation impacts of a proposed development.

Fig. 6.3C. Transportation Priorities

Priorities for transportation should vary based on the type of road. Pedestrian movement should be the focus in urban areas, and movement of people and goods should be a focus in suburban areas.



A "transportation" impact study evaluates the existing conditions for pedestrians, bicyclists and transit users in addition to vehicular users. Such studies are generally based on the following service indicators:

Roadway Service Indicators:

- Existing v. proposed road capacity
- Financial costs to governments
- Vehicle operating costs (fuel, tolls, tire wear)
- Travel time (reduced congestion)
- Per-mile crash risk
- Project construction environmental impacts

Pedestrian level of service Indicators:

- Ease of crossing the street for pedestrians (note: traffic impact mitigation should not include signal optimization that reduces pedestrian crossing time)
- Presence of elements that make it inviting for pedestrians such as the presence of a sidewalk, width of sidewalk, buffers between sidewalk and motor vehicle travel lanes

Bicycle level of service Indicators:

- Ease of bicycling to/from and within a site
- Presence of bike lane or paved shoulder
- Motorized vehicle volume, speed and percentage of trucks
- Pavement condition
- Potential to improve safety and comfort with elements to buffer bicyclists from pedestrians
- On-street parking
- Availability of bicycle parking

Transit level of service Indicators:

- Service Frequency
- Information on transit availability (such as kiosks)
- Sidewalk connection to transit stop
- Proximity and ease of travel along the sidewalk and from building front and street sidewalk to transit stop

6.4 Recommendations for Planning and Zoning

To implement their respective Master Plans, the City of Mt. Pleasant and Union Township both have zoning ordinances that regulate the development process. Based on the discussion above, the following revisions are suggested:

Mt. Pleasant Zoning Ordinance

The City currently uses an administrative review process that involves discussions with staff before development projects are forwarded on to the proper boards for review. This helps to streamline the number of meetings required for approval, and often results in better development overall, since they can discuss changes to plans before extensive investments are made in site engineering. The following suggestions are provided to improve the process even further:

Procedures:

- Many of the administrative procedures (some discussed above) are not explicitly mentioned in the zoning ordinance. The City could revise Chapter 154, Administration and Enforcement, of the ordinance to discuss pre-application meetings, requirements for impact studies, and access issues that relate to the development. This will help developers who are unfamiliar with the City know of this option before they submit a formal application.
- Consider tiered standards and review procedures that can be used as an incentive to developers. Projects that meet basic standards for approval could be routed according to the City's current protocol, but projects that meet a higher set of standards, such as those that include improved building design, inclusion of bicycle facilities, etc., could be reviewed and approved administratively or by Planning Commission sub-committee.

Zoning Regulations:

- Consider a form-based code for the Central Business District. As written, this district does not indicate the type of character and building form desired to maintain the integrity of the downtown. Developing a form-based code would provide developers with a clear understanding of what is required to create the pedestrian-friendly environments envisioned in the Master Plan and this non-motorized plan. Since much of the focus of a form-based code relates to the scale of buildings as they relate to the public realm, the street and the pedestrian, they often result in more comfortable, vibrant places.
- Allow mixed use in areas where walking and biking is encouraged. If applied to these areas, a form-based code can also help to encourage pedestrian activity because of the building placement and storefront design elements that are often included. These types of places, where residential and smaller-scale commercial uses are intermingled, are becoming more popular amongst retired adults and young professionals.
- PUD ordinances and commercial districts should allow mixed-use development, where they will contribute to pedestrian-friendly or transit-friendly environments.
- Identify where higher residential densities and multiple-family development could be allowed by right. At the fringe of commercial areas, or even as mixed-use developments, infusing residential uses will increase business viability and generate additional pedestrian activity, and can often result in less vehicular traffic because these residential types often cater to smaller families with less vehicles.

- Revise parking requirements so they are not excessive or limit redevelopment of smaller sites. Current standards are somewhat "suburban" and require individual off-street parking lots. Some shared parking is allowed, but no reduction in parking is permitted for uses with staggered peak demand times. There are areas of the City that contain underutilized on-street parking, so requirements for the downtown could be reduced where such on-street or other municipal parking is located nearby.

Review Standards:

- Discuss internal pedestrian connections between public sidewalks, transit stops, building entrances, in the Site Plan Review section of the ordinance. Additional standards for approval could be added to Chapter 154 that discuss these requirements more specifically. Allow additional flexibility in site design when needed to accommodate pedestrian, bike or transit facilities, possibly as an incentive to include such facilities.
- Require transportation impact studies during development review. A multi-modal approach should be taken to ensure walking, biking and transit facilities are as safe, convenient and comfortable as road facilities.

Union Township Zoning Ordinance

Procedures:

- Consider tiered standards and review procedures that can be used as an incentive to developers. Projects that meet basic standards for approval could be routed according to the City's current protocol, but projects that meet a higher set of standards, such as those that include improved building design, inclusion of bicycle facilities, etc., could be reviewed and approved administratively or by Planning Commission sub-committee.

Zoning Regulations:

- Revise parking requirements so they are not excessive. Current standards are somewhat "suburban" and may result in large expanses of pavement. Some shared parking is allowed, but no reduction in parking is permitted for uses with staggered peak demand times. Maximum parking requirements should also be considered so parking lots are not constructed for the peak holiday demand only.
- The ordinance requires spaces that are 9 feet wide by 20 feet deep, which may be wider than necessary. Parking spaces that are 8 ½ feet by 18 feet are adequate, and can reduce the impervious coverage and expanse of parking that pedestrians must cross to reach the building entrance.
- Expand the access management regulations to apply to all major corridors throughout the township. The township's current incentive approach in the B-6 and B-7 districts could be applied in other areas. However, because there is such a strong basis of research that indicates the safety benefits of access management are great enough that incentives are not necessary and the township could simply require compliance with access requirements, if so desired.

Review Standards:

- Require transportation impact studies during development review. A multi-modal approach should be taken to ensure walking, biking and transit facilities are as safe, convenient and comfortable as road facilities.

- Discuss internal pedestrian connections between public sidewalks, transit stops, building entrances, in the Site Plan Review section of the ordinance. Additional standards for approval could be added to Section 12 that discuss these requirements more specifically. Allow additional flexibility in site design when needed to accommodate pedestrian, bike or transit facilities, possibly as an incentive to include such facilities.

7. Proposed Policies & Programs

These policies and programs provide the institutional support for the non-motorized system. They provide the necessary support systems for the proposed physical system. They also provide a framework within which new issues related to non-motorized transportation may be addressed.

Topics:

7.1 – Compete Streets Policy

7.2 – ADA Compliance Issues

7.3 – Safe Routes to School

7.4 – Bike Parking

7.5 – Maintenance of Non-motorized Facilities

7.6 – Sidewalk/Roadside Pathway Completion

Prioritization Process for Policy Recommendations:

The method of prioritization for the following policy recommendations was made by identifying the relative importance of that policy and the ease with which it could be implemented within a given time frame. Some policy items could readily be achievable within a year. Others, due to the process required to put together the necessary items needed to fully implement the policy, may take three to five years. These policies are flexible enough that they can be rearranged as priorities and available resources change.

Roles and Responsibilities in Implementing Policy Recommendations:

The policy recommendations have not been assigned to particular departments or staff positions in the community. One of the first tasks in implementing these recommendations would be assigning each policy recommendation to a responsible party.

7.1 Complete Streets Policy

Complete Streets Background

States, regions, counties and cities around the country have used various complete street policies to unambiguously endorse and define their support for non-motorized transportation. Complete streets are planned, designed, operated and maintained such that all users may safely, comfortably and conveniently move along and across streets throughout a community. The complete streets concept recognizes that streets serve multiple purposes and that a community's roadways must be designed such that they balance the needs of all of the transportation users. Complete streets are key to creating healthy, active communities and establishing safe routes to school. There has been a concerted move towards complete streets in the United States since the 1990's.

Recently, the US Department of Transportation issued a Policy Statement on Complete Streets. It indicated that it is the DOT's policy to incorporate safe and convenient walking and bicycling facilities into transportation projects. It also noted that it is every transportation agency's responsibility to improve conditions and opportunities for walking and bicycling and integrate improvements for such into the transportation system. It also encourages transportation agencies to go beyond the minimum standards. Part of the DOT recommended actions include:

- Providing accommodations on new, rehabilitated and limited-access bridges
- Collecting data, setting targets and tracking progress
- Maintaining sidewalks and pathways the same way roads are maintained
- Improving facilities as part of maintenance projects

In short, the policy states that walking and bicycling should be considered equals with other transportation modes.

In the fall of 2010, The State of Michigan adopted Complete Streets legislation. The complete streets legislation was in the form of two bills. The first bill revised Act 51, addressing transportation issues. The second bill revised Act 33 that addresses planning issues.

Act 51 Revision Highlights:

- Requires interjurisdictional consultation on non-motorized projects and 5-year plans
- Use of established best practices
- Directs MDOT to draft and adopt a complete streets policy as well as develop model polices for local agencies
- Directs MDOT to advise local agencies on non-motorized issues
- Enables interjurisdictional agreements for maintenance

Act 33 Revision Highlights:

- Expands the definition of "streets" to include all legal users
- Expands elements that may be included in a master plan to include all forms of transportation
- Specifies that transportation improvements be appropriate to their context
- Specifies cooperation with road agencies.

Numerous local communities have already adopted complete streets resolutions or ordinances.

National Complete Streets Coalition Model

Since the FHWA model was developed, The National Complete Streets Coalition has taken the idea further and identified ten elements of a comprehensive Complete Streets policy:

1. A vision for how and why the community wants to complete its streets. Specifies that all users including pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.
2. Specifies that 'all users' includes pedestrians, bicyclists and transit passengers of all ages and abilities; as well as trucks, buses and automobiles.
3. Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
4. Is adoptable by all agencies to cover all roads.
5. Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
6. Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
7. Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
8. Directs that complete streets solutions will complement the context of the community.
9. Establishes performance standards with measurable outcomes.
10. Includes specific next steps for implementation of the policy.

The adoption of this plan addresses many of the elements.

Policy Recommendations for Complete Streets:

Within One Year:

- Adopt a Complete Streets Resolution that includes language about developing a complete streets policy.
- Adopt the Non-motorized Transportation Plan
- Draft a Complete Streets Policy that address the ten key elements as defined by the National Complete Streets Coalition and that clearly defines the responsible authorities
- Adopt a Complete Streets Policy
- Develop 5-year non-motorized improvement plan (based on the Non-Motorized Master Plan)
- Meet with MDOT and Isabella County Road Commission to review 5-year plan as it relates to facilities under their jurisdiction

Within Three Years:

- Implement recommended operations procedures
- Establish performance measures
- Begin data collection
- Build a reference library of current best practices
- Establish professional staff training program
- Identify local municipality standard plans and details that need to be revised
- Begin revising standard plans and details

Within Five Years:

- Complete update of standard plans and details
- Evaluate progress

7.2 ADA and Transition Plan

Title II of the Americans with Disabilities Act of 1990 (ADA) requires local governments to make their activities, programs and services accessible to persons with disabilities. In the area of non-motorized transportation, public entities with 50 or more employees are required to use accessible design standards for newly constructed and reconstructed sidewalks and shared use paths to the maximum extent feasible and make altered facilities through the City as part of a transition plan.

Four recent publications address accessibility of non-motorized facilities. They are:

1. *Designing Sidewalks and Trails for Access Part 2 – Best Practices Design Guide* (FHWA, Publication # FHWA-EP-01-027)
2. *Building a True Community – Final Report of the Public Rights-of-Way Access Advisory Committee,* November, 2005 (Public Rights-of-Way Access Advisory Committee)
3. *Draft Guidelines for Accessible Rights-of-Way*, November 23, 2005 (FHWA, Pub. # FHWA-SA-03-019, based in part on the preceding publication)
4. *Accessible Public Rights-of-Way, Planning and Designing for Alternations,* July 2007 (Public Rights-of-Way Access Advisory Committee)

Together these documents define current best practices for accommodating pedestrians with disabilities for sidewalks and shared-use paths, intersections, crosswalks, and signalization. Until public rights-of-way standards are adopted by the Department of Justice and the U.S. Department of Transportation, the DOT has identified the 2005 draft PROWAG as the current best practice in accessible pedestrian design.

Transition Plan

Title II requires that public entities with 50 or more employees create and regularly update an ADA Transition Plan and make this plan available to the public. The transition plan should at a minimum identify physical barriers and provide a detailed outline to remove those barriers. An ADA coordinator must be designated to coordinate compliance efforts. The following outlines the key elements of a transition plan.

Identification of Physical Barriers

The identification of physical barriers may take place on a number of levels:

- **Complaint-Based** – At the most basic level, there should be a process in place for citizens to register a complaint and for that complaint to receive appropriate evaluation and action.
- **Inventory Based** – More commonly, existing facilities receive a base line documentation that may be accomplished with simple tools such as a smart level, digital camera and a standard recording form. For example, the inventory of sidewalk curb ramps would identify issues such as the presence of a ramp, ramp slope and cross slope and the presence, type and condition of a detectable warning strip. The goal of this inventory is to identify the geographic location, type and severity of barriers. Often this survey would be done using a Global Positioning System and the data stored in a Geographic Information System. This inventory would be completed over time with the most heavily traveled areas completed first and then covering other, less traveled areas in a systematic approach.
- **Survey Based** – In a few cases where there is a high degree of controversy regarding a specific area or facility type, trained surveyors will take detailed field measurements and elevations of the facilities and translate them into survey drawings. This is by far the most expensive identification

approach but may be appropriate if construction to remedy the solution is considered likely to occur in the near future.

Outline of Methods to Remove Barriers
A systematic approach for removing barriers should be established.

- **New and Altered Facilities Policy** – There should be in place a policy for how accessibility is achieved for new construction and alterations. This should include addressing how areas adjacent to new construction or alternation projects may be incorporated into a project. For example, when a new construction or alternation project is undertaken, the inventory of physical barriers for the immediate surrounding areas should be consulted to see if limited targeted improvements in adjacent areas would make a much larger area accessible. If so, those changes should be incorporated into the project.
- **Prioritization of Routes** – As it will be many years before new construction and alterations will provide accessible routes along all public right-of-ways, a process should be established to identify which routes should be upgraded independent of new or altered facilities. This would be based on the inventory of the physical barriers, citizen complaints and relative demand. This way, key routes such as those in the downtown, near schools and public buildings may be targeted improvements independently of new construction or alternation projects.

Schedule for Implementation
After the routes are prioritized, general costs of removing the barriers should be determined. Then using those costs, the removal of barriers should be integrated into the city's capital improvement plan.

Policy Recommendations for ADA Compliance:

Even if a community is not required to do an ADA transition plan it is still recommended that it be done as a best practice to prevent any incidents. See the Appendix for more details on ADA and Transition Plans.

Within One Year:

- Establish an interim transition complaint based transition plan.
- Designate an ADA coordinator.

Within Three Years:

- Have an inventory based transition plan in place.
- Integrate the transition plan into the capital improvement plan.

Within Five Years:

- Complete the inventory of physical barriers.
- Have made substantial progress in removing barriers in the most highly traveled corridors.

7.3 Safe Routes to Schools

The challenges to getting more children to walk and or bike to school are significant. Approximately half of all children in the United States are driven to school in a private vehicle and only 13% walk or bike to school.[1] The number of children walking or biking to school has dropped 37% in 20 years.[2] This drop in the number of children walking and bicycling to school can be attributed to many factors that have changed over the past 20 years:

- Increase in availability of before and after-school programs.
- Increase in the number of schools of choice, private schools and charter schools.
- Increase in the number of grade-based elementary schools.
- Increase in the number of children bused to school who live within walking distance due to real or perceived safety concerns.
- Fewer children living in each home.

These factors have combined to simultaneously reduce the total number of children who attend their neighborhood school, reduce the number of kids who walk and spread out the times children arrive at and depart from school. The result is a loss of the critical mass of children walking to school and the perceived safety in numbers.

These factors are combined with the fact that there is also an increase in the number of two-wage earner families where both wage-earners are leaving for work in the morning. This makes dropping a child off at school on the way to work the easy and seemingly logical choice. We have now entered a period in time where choosing to have a child walk to school is considered a political statement or some act tantamount to child neglect rather than the default choice.

While the challenges to getting more children to walk and bicycle to school are significant, the consequences of doing nothing are even more challenging. The Center for Disease Control states that 13% of children in the United States are overweight, and the number of overweight teens has tripled since 1980. Many children in the United States do not get the hour of daily physical activity recommended by the Surgeon General. Decreased participation in physical activities, and fewer students walking or riding their bikes to school may be contributing to the rise in childhood obesity.

For many children who live very far away from school, walking or biking is not a feasible option. However, the CDC estimates that only 31% of the children living a mile away or less walk or bike to school. Often times, schools and their surrounding areas lack safe road crossings, preventing children from having safe access to school on foot. Parents and caregivers cite perceived traffic danger as the second most common barrier to children walking and biking to school, preventing as many as 20 million children from walking or biking to school nationwide.[3] The amount of people driving their children to school in private automobiles not only represents a missed opportunity for physical activity, but also increases traffic congestion and puts a huge strain on existing road systems during peak travel times. In one city examined, 20-25% of morning traffic consisted of students being driven to school and 50% percent of children hit near schools were hit by parents of other students.[4]

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[1] Center for Disease Control. *MMWR Weekly*. August 16, 2002. 51(32);701-704
[2] Michigan Governor's Council on Physical Fitness, Health and Sports.
[3] Center for Disease Control. *MMWR Weekly*. August 16, 2002. 51(32);701-704
[4] Center for Disease Control, 1995.

In an effort to reverse these alarming trends, the CDC announced a national health objective to increase the proportion of walking and biking trips to school for children living a mile or less from 31% to 50% by the year 2010. Communities, school groups, and local officials all over the country are responding to this challenge by mobilizing children to walk to school, addressing traffic safety concerns, mapping safe routes to school, and by measuring and taking account of their neighborhoods' walkability.

Michigan's Safe Routes to School (SR2S)

Michigan has a model Safe Routes to School program that is managed by the Michigan Department of Transportation (MDOT) in partnership with the Michigan Fitness Foundation which provides training, administrative and technical support. The center for Michigan SR2S program's website www.saferoutesmichigan.org has extensive information on how a school may start a SR2S program.

The website describes the six step SR2S planning process:

1. Register a school on the website.
2. Designate a SR2S coordinator.
3. Establish a SR2S team comprised of school officials, students and their parents and local officials.
4. Survey the students and parents to understand the issues.
5. Perform a safety assessment of the physical environment.
6. Develop an action plan.

Beyond describing the planning process Michigan's SR2S program offers technical assistance and support to schools. These include:

- A SR2S Handbook with a wealth of information including templates and forms useful in implementing a program.
- Providing training programs.
- Walk to School Day kits.
- Newsletters.
- Direct technical assistance.

The Community's Role in SR2S Programs

The community a key partner in any Safe Routes to School Program. SR2S school teams typically include a local law enforcement official or officer and a representative from the local road authority. These officials provide the technical expertise to help the team implement some of the programs and physical improvements.

A typical SR2S program addresses issues such as the education of parents and students as well as improvements to the physical conditions on the school grounds. But much of the SR2S physical improvements take place on facilities outside of the school's jurisdiction and must be undertaken in partnership. Likewise the city's non-motorized network identifies key routes that transverse school grounds. Thus, both entities must work together in order to meet their shared goals.

Community policies should include a system of accountability for responding to and remedying safety concerns along children's routes to school. The community should work with the surrounding School

Districts to evaluate how best to spend transportation dollars, looking at busing, facility improvements, and the addition of adult supervisors for children walking to school.

Ensuring safety in the school zone must be a combined effort of traffic engineers, local officials, law enforcement, school officials, parents and children. In addition to promotional and educational programs, a variety of roadway improvements can be used to increase safety in school zones and for children on their routes to school. Some important safety design guidelines for school zones include[1]:

- Reduced speed zones.
- Marked crosswalks.
- Signalized crossings at intersections with pedestrian activation.
- Pedestrian crossing islands and bulb outs where needed.
- Special crosswalk striping, painted according to state standards, and "School Crossing" signage where appropriate.

Police enforcement of yielding and speeding in school zones, and the utilization of adult crossing guards at difficult intersections can also increase safety in the school zone.

Individual school policies as well as district wide policies should be evaluated to make sure that they promote bicycling and walking.

The National Highway Traffic Safety Administration has provided some resources that may be useful in teaching children pedestrian safety and cycling skills. Please visit their website at, http://www.nhtsa.gov/ChildPedestrianSafetyCurriculum for more information.

In conclusion, increasing the number of children who are able to safely walk and bike to school is part of a national goal that will address childhood obesity, enhance neighborhood walkability, and help alleviate traffic congestion problems.

Key Programs to Continue for School Transportation

The Greater Mt. Pleasant Area has some good existing policies and programs that support the non-motorized system. The following policies and programs should be reinforced and continued.

- Fancher Elementary participates in the Safe Routes to School Program.
- The local government should continue to enforcement speeding in school zones and yielding to pedestrians in the crosswalks within school safety zone.
- The local government should continue to encourage that within school safety zones, all safety design guidelines are in place and current with national safety guidelines.

[1] San Diego's Regional Planning Agency. Model Guidelines for the San Diego Region. April 2002. p. 105.

Policy Recommendations for School Transportation

The local government and the Surrounding School Districts should jointly explore the following options.

Within One Year:

- The local government and the School Districts should develop maintenance standards as well as fix defects and gaps in public sidewalk system adjoining school sites.
- Encourage the School District to consider the safest routes to school for children when adjusting school boundaries.
- The local government and the School District should develop a cost-share policy for the construction and maintenance on pathways that are part of the City's Non-motorized System and traverse school property.
- The local government and School District should develop a strategic implementation plan for pathways and trails that are part of the City's Non-motorized System that traverse school property.

Within Three Years:

- The local government and School District should continue to enhance a system of accountability for responding to and correcting safety concerns along routes to school and other problems identified through these programs.
- The local government should continue to promote and initiate with the school system and parents Walk-to-School Day events, "walking school bus" programs, "Safe Routes to School" programs, and walkability audits in conjunction with the state-wide program.
- School Districts should perform formal evaluations of how pedestrians and bicyclists are accommodated to all school grounds and prepare action plans to address deficiencies.
- School Districts should encourage walking and bicycling to school as a part of the physical education and well being of the students.
- School Districts should try to eliminate the need for all "Safety Busing" by remedying the hazards that currently warrant the safety busing.

Within Five Years:

- School Districts should evaluate all individual school and district wide policies regarding bicycling to school and amend policies that discourage bicycling.
- Encourage residential infill projects within walking distance of schools.

7.4 Bike Parking

The lack of a secure parking space discourages many people from using their bikes for basic transportation. When sufficient bike parking is not provided, theft becomes a concern and it leads to bikes being locked up to sign post, benches and other street furniture. When bicycles are parked in these spaces, they often disrupt pedestrian flow because the bikes impede the walkway. Bicycles also get impounded by local enforcement when parked in these areas causing an even greater deterrent to bicycle use. Bicycle parking needs to be visible, accessible, plentiful and convenient. If any of these criteria are not met, there is a good chance cyclist will not use the facilities and will park their bike wherever they feel it will be safest.

Definition of a Bicycle Parking Space- A bicycle parking space is an area two feet by six feet or the area occupied by a bicycle when using a bicycle parking device as designed.

Short-Term Bicycle Parking - Short-term bicycle parking is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short term parking at locations such as shopping areas, libraries, restaurants and other places where typical parking duration is less than two hours.

Long-Term Bicycle Parking- A long-term bicycle parking space is defined as protecting the entire bicycle and its components from inclement weather and theft or vandalism. It is to be located where it will serve the needs of cyclist who need to leave their bicycles unattended for extended periods of time, such as employees, tenants or residents.

Uncovered Bicycle Racks

Uncovered Bicycle Racks are the primary bike parking approach for areas where people are expected to park their bikes for only a few hours.

Design-Generally, bicycle racks of the inverted "U" design are considered the best models. Alternative designs may be considered for special situations, although they should function similar to the inverted "U" design, providing at least two contact points for a bicycle and be a shape and size that would permit locking of a bicycle through the frame and one wheel with a standard U-Lock or cable.

Location- Bicycle racks should be located on every city block where there is retail within a commercial district. The hoops should be placed on a hard surface with ample lighting and high visibility (e.g. in front of a store window) to discourage theft and vandalism. Racks should be placed to avoid conflicts with pedestrians, usually installed near the curb and away from building entrances and crosswalks. When racks are installed in public spaces there needs to be at least 5 feet of clear sidewalk space in order to allow for pedestrian flow.

Covered Bicycle Parking

Covered Bike Parking is desirable for both long-term and short-term bicycle storage. Basic bicycle racks should be placed under an overhang whenever possible, and specific covered bicycle parking should be created when needed. Covered Bicycle Parking should be available in areas where bikes are kept for an extended period of time, such as apartment buildings or at large commercial centers where employees and customers will utilize the covered spaces.

Design- The covering for bicycle parking will vary depending on the location. In addition to a roof, complete or partial side enclosures should be provided to minimize exposure to windblown rain and snow. The design of the racks is the same as for the basic uncovered bicycle hoops. When creating covered parking, there is also the opportunity to incorporate a green roof or solar panels into the rooftop to add to the functionality of the structure.

Photo: Athens, Ohio

Location- Covered Bike Parking should be incorporated whenever there is opportunity to do so. Long-term covered bike parking should be located within 400 feet of the building it is intended to serve. Centralized locations further than 400 feet are also acceptable.

Enclosed and Secured Bicycle Parking

Enclosed and Secured Bicycle Parking is best for areas where bikes are kept for extended periods of time, such as apartment buildings and near places of employment. These types of facilities are usually placed within existing parking structures and come with extra bicycle parking amenities.

Design- Enclosed and Secured Bicycle Parking generally consists of an enclosed room or fenced off-area where access is controlled through a doorway. The configuration of the bike racks will vary based on the space, but in general they are designed to maximize the number of bicycles that may be fit in the space. Double tier bike racks and hanging bike racks are used to provide the majority of the bike storage. A few standard inverted "U' hoops should be provided and reserved for atypical bicycle designs that may not be accommodated by the other racks.

When bike racks are located within a parking decks there should be a safe means of egress to the parking area. If bicycles must access the space via a gate controlled access point, care should be taken to minimize conflicts with the gate arm. The gate arm should be shortened to allow a 4' wide pathway for bicycles. The end of the gate arm should be rounded and covered with foam. The pathway for bicycles should be clearly marked on the pavement. This pathway should be 3' wide and be located at least one foot from the end of the gate. Users of enclosed secured bike parking that is accessed via gate control should be provided instruction on how to safely navigate around the gate.

Access Control- Is by identification badge reader and for a specific location only.

Location- Generally within parking decks, but individual facilities may be established.

Amenities- Will vary by site. Ideally these include compressed air, lockers, a bench and a vending machine that dispenses basic bicycle supplies such as tubes and repair kits.

User Costs- Generally $60 to $80 per year rental plus $20 account set-up fee.

Enclosed and Secured Bicycle Parking works best at areas with high concentrations of people, such as at Hospitals or Regional Shopping Centers where the facilities are targeted toward employees.

Bike Station

Bike Stations are premium secured bike parking and maintenance facilities intended for transit stations located in high density areas. They are intended primarily to serve transit riders who will disembark and then retrieve their bike and continue onto their final destination. They will also serve as a centralized bike parking solution for bicyclists who are not using the transit station but whose final destination is near the bike station. The bike station has an attendant that assist with the bicycle storage and the day-to-day operations of the facility.

Amount of Parking- Based on the expected number of transit users and a survey of potential users.

Design- The bike parking and maintenance areas are restricted to bike station employees only.

Access Control- The bike station is generally attended for extended hours.

Location- Generally within parking decks

Amenities- Compressed air, lockers, benches, changing room, showers and bicycle repair shop. The changing room and showers may be omitted if most of the users are expected to arrive via transit.

User Costs- Generally $60 to $80 per year rental plus $20 account set-up fee or an hourly charge for parking. Repair cost at market rate.

At this point the Mt. Pleasant area probably does not have the density to support a full blown Bike Station but some scaled back version may be appropriate on campus.

Bike Lockers

Bike Lockers are individual premium bike parking solution intended for remote and lower density areas where enclosed and secured bike parking is not available or feasible. Given the cost, appearance and space requirements of bike lockers they are only appropriate for limited locations.

Design- There is substantial variability in the designs of the bike lockers. Typically, individual bike lockers have an interior diagonal divider and doors on either end such that they may accommodate two bicycles. Bike Lockers may be arranged in row, in a circular pattern and stacked.

Access Control- Typically via a key.

User Costs- Generally around $60 per year rental plus a $20 key deposit.

On-Street Bicycle Parking

On-Street Bicycle Parking consists of movable bike racks that take the place of on-street motor vehicle parking. These racks are temporary and can be experimented with and moved as needed. They can also be used on a seasonal basis and can be removed during the winter.

Design- On-Street Bicycle Parking Racks are the size of a standard vehicle parking space and hold about 12 bicycles. These Racks are bolted into the pavement and can be removed when needed.

Location- These racks should be placed in active areas where it is difficult to accommodate sidewalk bicycle parking due to the competing demand for café tables and pedestrian walking space within the sidewalk area. Urban public spaces where there is on-street parking, such as Main Street would be a good location to test these facilities once non-motorized facilities are provided to this area.

Bike Racks on Buses

Used individually, bicycling and transit provide low-cost mobility and place fewer demands on local roads and highways to carry every day trips. Studies show that people are most likely to use public transit when it's within a quarter mile walking distance or when it's within a three mile bike ride. By combining bikes and transit it makes it easier for bicyclists to take their vehicles along on public transit, opening up a 12 times larger drawing zone for riders. Also, many bicyclists are constrained by bridges, tunnels, freeways and other barriers that prevent them from using their bicycle. Adding bike racks to buses provides an alternative option to overcome geographical barriers, thus creating more opportunities for commuters to choose to use their bicycle over automobile.

Current Programs

The City of Mt. Pleasant, as part of their Capital Improvement Plan, is going to implement bike shelters in the downtown area over the next few years. The attempt will be made to place bike shelters in and around parking lots over time as they are repaved in the next 10 to 15 years. There are plans to begin an installation of a prototype bike shelter in 2012.

Photo: City of Mt. Pleasant Capitol Improvement Plan

Bicycle Parking Requirements

Currently the communities' do not have bicycle parking requirements in their ordinances. The code should be revised and updated as necessary to address the following issues:

- Require a minimum of 4 bicycle parking spaces at each commercial development or multi-family dwelling.
- For each multi-family dwelling require half of the bicycle parking spaces to be covered if the site is required to have 16 or more spaces based on the existing code description.
- Incentives should be provided to commercial and multi-family dwellings for providing covered and secured bicycle parking (e.g. reduction of vehicular parking and/or density bonus could be offered).
- Incentives should be provided to commercial and multi-family dwellings for providing covered bicycle parking over uncovered bicycle parking when not required to by code (e.g. reduction of vehicular parking and/or density bonus could be offered).
- Explore the idea of required bicycle parking facilities being credited toward provision of motor vehicle parking. Each ten required bicycle parking spaces, or fraction thereof, may be substituted for one code required motor vehicle parking space.
- Provide or reference graphical design guidelines with information on the specifics of bicycle rack design and placement. The Association of Pedestrian and Bicycle Professionals recently published the 2nd Edition of Bicycle Parking Guidelines; these serve as a good model or may be referenced. The report may be found at http://www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf
- Require hoops on every block with retail in a downtown/commercial zone.

Policy Recommendations for Bicycle Parking:

Within One Year:

- Update the local government code to include bicycle parking requirements and design standards.
- Encourage Isabella County Transportation Commission to implement bike racks on bus racks on at least one of the bus routes

Within Three Years:

- Implement the bicycle parking requirements and design standards.
- If the bike racks on buses is successful after the first year add bike racks to the entire fleet.

7.5 Maintenance of Non-motorized Facilities

The success of the City's non-motorized transportation system ultimately depends on thorough and timely maintenance of all its facilities. Typical problems that can occur on pedestrian and bike facilities include cracked pavement, standing water, obstructions in the clear zone such as sidewalk furniture, overgrown trees and shrubs, construction equipment and signs, and road debris. Without proper maintenance and removal of these problems, people are not encouraged or able to use non-motorized modes of transportation.

General Maintenance of Sidewalks

Regular and consistent maintenance of sidewalks, particularly along arterials and collectors, is important for non-motorized modes of travel. Conditions such as cracks, heaving from tree roots, icy surfaces and surface spalling create trip hazards for pedestrians. Inadequate maintenance of sidewalks is not only dangerous, but can complicate any travel by pedestrians who are elderly or have mobility impairments.

It is recommended that the communities update their ordinances to require property owners to maintain the sidewalk adjacent to their property. It is recommended that the city develop a citywide inspection program to identify and cite hazardous sidewalks. The program should evaluate different areas of the city each year and property owners should be notified if their sidewalk is not in compliance with city regulations. If a property owner does not make the required repairs, the community should make the repairs and assess the property for cost. This may be integrated into a comprehensive citywide asset management system that also addresses ADA issues.

For asphalt shared use paths, an asset management system should be created to track condition and repairs. The surface should be inspected every other year to make sure the surface is appropriate for all users and to determine what repairs and preventative maintenance operations should be scheduled.

In addition to the sidewalk and path surface evaluation programs, a systematic tree and brush trimming program for sidewalks along major streets and shared use paths should be undertaken. Overhanging vegetation can greatly reduce the usable width of a walkway, cause injury to users and obstruct views. There should be a 2 foot clear zone on each side of the walkway and a vertical clearance of 8 feet above the walkway. Routine trimming should be done at least twice a year to keep the sidewalk clear of vegetation.

Snow Removal

People who rely on non-motorized transportation as a means of travel are often at the mercy of the weather, especially in the winter. The current practices of snow removal on sidewalks, curb cuts and crossing islands make large portions of the City impassable to many mobility impaired pedestrians or those pushing strollers or grocery carts.

Many northern cities around the globe maintain excellent facilities for non-motorized travel in the winter. For example, Boulder, Colorado and Madison, Wisconsin, cities that both have comparable amounts of annual snow to the Mt. Pleasant area , (Boulder-60", Madison-42", Mt. Pleasant-36") have bicycle mode-

shares higher than the Mt. Pleasant area. Both Minneapolis and Madison have higher bicycle commuting rates than San Diego[1].

Just as it is important for roads to be cleared for automobile, it is important for sidewalks to be cleared for pedestrians. If the sidewalks are not cleared, many times pedestrians will use the cleared roadway, presenting a dangerous situation for both cars and pedestrians. Areas of special concern are curb ramps at intersections and pedestrian crossing islands. Crossing islands are not the responsibility of an adjacent property owner, so they require clearing by City staff. Additional attention may be needed to identify "orphan" areas, such as over freeways or along other public rights-of-way to ensure that these areas are cleared by the appropriate agency. Shared-use Trails should also be included in snow removal because they provide a non-motorized route of travel.

Crosswalks

While motorists can tolerate bumpy roads, uneven pavement surfaces at intersection crosswalks can be hazardous for pedestrians. The City should develop criteria to identify those pedestrian crossings that are in need of resurfacing. In addition to a smooth pavement surface, crosswalks need markings that provide good contrast for motorists and a non-slip surface for pedestrians.

Bicycle Lanes

Motor vehicles tend to sweep debris into bicycle lanes filling them with debris quicker than the motor vehicle lanes. If debris is left in place it becomes a hazard for cyclists and some cyclists will no longer ride in the bicycle lanes. To avoid this problem, bicycle lanes should receive more frequent sweeping. This has the added benefit of reducing the amount of sediment washed into the storm sewer system and some communities have increased the frequency of street cleaning solely for that purpose.

Maintaining visibility and reflectivity of bicycle lane pavement markings and symbols are important to nighttime cycling safety, especially when raining or snowing. The City should repaint its pavement markings on all roadways, including bike lanes and crosswalks on a yearly basis. This type of maintenance is important to retain high contrast and visibility. The City should avoid multiple layers of thermoplastic because it results in rough surfaces for bikers. Materials used for bicycle markings should be non-slip.

When snow is removed, it is critical that the entire bicycle lane be cleared since many cyclists use their bicycle year round. Any loss of bicycle lane width means cyclists are more likely to use the motor vehicle lanes.

The City should also undertake a public awareness campaign on the value of keeping bicycle lanes and curbs in general free of debris to promote bicycle safety and water quality. It is recommended that the City evaluate if more frequent street sweeping is necessary to keep the bicycle lanes and curb areas cleared.

[1] Federal Highway Administration. Publication FHWA-PD-041. Case Study No.1:Reasons Why Bicycling and Walking Are Not Being Used More Extensively as Travel Modes.

Signalized Intersections

Bicyclists and Pedestrians in many cases, cross the road in very different fashions. Bicyclists in the roadway most likely will treat the intersection the same as a vehicle, merging across lanes and making a left turn from the center turn lane. Their restrictions to crossing the road are primarily based on their comfort level of riding with traffic and the volumes, speed and gaps that exist. Since many bicycles function similar to vehicles at intersections it is important that signals are able to detect bicycles even when no motor vehicles are present. The City should develop a system to identify and replace the signals that do not identify bicycles at an intersection.

Problem Identification and Prioritization

Encouraging the community to identify non-motorized facility problems and maintenance issues can save City staff both time and resources. Public participation also allows citizens to feel that the City is responding to their needs and concerns. The City of Portland, Oregon uses a phone hotline, web pages and postcard/comment cards to aid citizens in reporting maintenance issues. Problems may include malfunctioning pedestrian signals, gaps in the sidewalk system, maintenance of crosswalk or bicycle lane markings, or debris in bicycle lanes. In addition to providing comment cards at locations such as bicycle stores and public buildings, the City should set up web-based forms that allow tracking of service requests and direct the request to the appropriate person.

One area that demands particular attention is pedestrian-activated crosswalk signals that are not functioning properly. By the time pedestrians have completed their trip, they may not remember or do not know how to report the problem. Posting a phone number on the post, along with the fixture number, could allow those with cell phones to call in a report.

Key Programs to Continue for Maintenance of Non-motorized Facilities

The Greater Mt. Pleasant Area has many good existing policies and programs that support the non-motorized system. The following policies and programs should be reinforced and continued.

- The City of Mt. Pleasant has a sidewalk snow removal policy in place. Property Owners are responsible for the snow removal of at least 48” width on their property within 18 hours after the end of each accumulation of snow, sleet or freezing rain. This policy should be enforced and continued.
- The City of Mt. Pleasant has an ordinance to give written notice to the owner or occupant of the premises when a sidewalk needs repair or when the sidewalk is unsafe for use or required to be constructed for the public safety. This policy should be enforced and continued.

Policy Recommendations on Maintenance of Non-motorized Facilities

Within One Year:

- The local government should develop a multi-year maintenance schedule as part of the annual striping program for updating signs and refreshing pavement markings on Trails and Bike Routes to maintain high contrast and visibility and help bicyclist and pedestrians navigate.
- The local government should develop a community inspection program to identify and cite hazardous sidewalks.
- The local government should develop a comprehensive community asset management for entire system that addresses regular inspections, preventative maintenance and ADA issues.
- Establish a dedicated website form for non-motorized service requests.
- Develop an educational campaign encouraging property owners to clear curb ramps and bus stops when shoveling their sidewalks.
- Establish a policy for maintenance and snow removal of crossing islands.
- The local government should continue to refresh pavement marking on all roadways, including bike lanes and crosswalks, yearly to maintain high contrast and visibility.
- The local government should enforce a street sweeping policy to keep the bike lanes clear of debris
- Establish a policy to integrate all of the non-motorized facilities that are part of the Network Plan into the current snow removal program.

Within Three Years:

- The local governments should determine if additional means are necessary to develop a program that provides maintenance contact information, such as stickers or signs to be placed on pedestrian signals.
- The local government should assess the effectiveness of the efforts of the code compliance staff to enforce the existing snow removal ordinance on privately owned hard surfaced sidewalks and pathways, specifically on local roads and private drives. If necessary, the City should develop a program to assure snow removal from privately owned sidewalks and pathways along Arterials and Collectors.
- The local government should designate or hire additional staff and assign responsibility for clearing and maintaining crossing islands, shared-use trails and off-road pathways of snow and ice.
- The local government should develop a program that monitors the condition of sidewalks along Arterials and Collectors on a yearly basis.

Within Five Years:

- Establish a maintenance hot-line and website for non-motorized issues (this may be integrated with other maintenance hot-lines) and place a sticker with this hotline number and website address at locations around town including at all pedestrian activated signals.

7.6 Sidewalk/Roadside Pathway Completion

Sidewalks are the unsung heroes of a non-motorized system. They are usually the first facilities to be constructed and provide a backbone to a complete non-motorized network. Sidewalks are one of the key components to a walkable community and policies and programs need to be established to support the installation of these facilities.

In general, sidewalks should be installed by developers when constructing new buildings or homes and by the local city, county or state agency during a roadway improvement project. Every city and municipality handles sidewalk installation differently, but the important thing is to have policies in place that require the installation of sidewalks in both existing and newly developed areas.

Sidewalks/Roadside Pathways along Arterial and Collector Roads

There are usually many destinations along arterial and collector roads so it is important to have a complete sidewalk and/or pathway on both sides of the street.

The Greater Mt. Pleasant Area has a fairly complete system in the neighborhoods, however the areas of new develop have little to no pedestrian connections. A sidewalk should be built on at least one side of the road in these areas to help link people to existing non-motorized system.

Sidewalks in Residential Neighborhoods

Local sidewalks are critical to the walkability of a neighborhood. In many communities, local sidewalks are where a majority of daily recreation takes place. Daily activities such as jogging, dog walking, and socializing occur along local neighborhood streets so it is important to provide a safe alternative to the roadway where these activities can take place.

There are some neighborhoods in the Greater Mt. Pleasant Area that have an incomplete sidewalk system along the local roadways. Many times the existing policies for sidewalk construction only apply to new construction, not to existing subdivisions where there are many gaps or no sidewalks at all within the entire development. Also, in some of the newly constructed subdivisions, sidewalk construction is not always required until the house is completed. As a result of the current economic downturn, many of the new subdivisions are only partly built out, creating many gaps in the sidewalk system where houses have not been built yet.

The local government policies should be revised for a possible updated to include the following:

> In New Construction of Subdivisions, given the development may take up to 10 years to complete, sidewalks must be complete at the time the road is being built.
>
> In Existing Subdivisions where there are sidewalk gaps, or no sidewalks are present, establish a process for completing the sidewalk system. It is suggested that if 2/3 of the occupied households vote to complete the sidewalk system that is being constructed with cost assessed to the landowners who segments are incomplete. If it is for a sidewalk along a local neighborhood road the vote should be among property owners just on that road. If it is for a sidewalk along a neighborhood collector road then the vote should be among the property owner in the neighborhood.

Key Programs to Continue for Sidewalk/Roadside Pathway Completion

The Greater Mt. Pleasant Area has many good existing policies and programs that support the non-motorized system. The following policies and programs should be reinforced and continued.

- There is a Sidewalk and Pathways Committee that is part of a regional effort that is prioritizing non-motorized routes for development. The committee includes representatives from Union Township, Central Michigan University, the City of Mt. Pleasant, four townships to the north of Union Township and the Bay Region office of the Michigan Department of Transportation.
- Union Township adopted a sidewalk and pathway ordinance which requires all new development and redevelopment requiring site plan approval and substantial remodeling to include a sidewalk plan.

Policy Recommendations on Sidewalk/Roadside Pathway Completion

Within One Year:

- Establish a committee to update the local government code based on the recommendations within this report.

Within Three Years:

- Establish the process for neighborhoods to complete their sidewalk system.

Within Five Years:

- Track the progress of sidewalks constructed.

8. Education & Marketing

The education and marketing is critical for the establishment of a successful non-motorized environment in the Greater Mt. Pleasant Area. This section outlines recommendations and strategies on how the area can develop a program for public outreach and education for the non-motorized system.

Topics:

8.1 – Existing Promotional and Marketing Activities

8.2 – Opportunities and Assets

8.3 – Public Outreach and Educational Strategies

8.4 – Methods of Evaluation

8.5 – Outreach and Education Recommendations

Imagine walking into a new sandwich shop. In front of you is a menu 6 feet high and 8 feet wide filled with an overwhelming array of sandwich choices. Many of the sandwiches listed have ingredients you've never tried before. So you decide to go with what you know: a ham and cheese sandwich on white bread. The next day you walk into the shop and order the same thing. And again the day after that. Even though some of the other sandwiches might be cheaper, or better for you, you are hesitant to break out of your routine.

Many people experience their transportation choices in the same way. They think "I could walk to the grocery store or bike downtown, but will it be safe? Will I get dirty? Will I look silly?" So many people stick to what they know and lose out on the great benefits non-motorized transportation can offer.
So how do we get people to break out of their routine and encourage them to try non-motorized transportation? A public education and marketing program can provide the encouragement many people need to move them from considering using non-motorized transportation to actually using it.

The following recommendations outline the strategies the community can use to develop a public education and marketing program for the non-motorized system. It is important that the recommendations outlined in this section are done in tandem with the infrastructure changes so that what is being sold by the outreach program is truly a good product. If people are told that a particular bike route is safe and then have a fearful experience when they try it out, the result will be counterproductive.

8.1 Existing Promotional and Marketing Activities

The following is a list of activities that are already being done to promote non-motorized transportation in the area.

Safe Routes to School (http://www.saferoutesmichigan.org)
Fancher Elementary is enrolled in the Safe Route to School Program and has participated in the International Walk to School Day in the past.

League of Michigan Bicyclists (www.lmb.org)
The League of Michigan Bicyclists provides advocacy, events, and resources for cycling in Michigan. Their website contains information on bike rides, Smart Commute events throughout the state, and ways to get involved in advocacy efforts around cycling. LMB has regional representatives for each part of the state. Barbara Schmid is the current representative for the Greater Mt. Pleasant Area.

Michigan Mountain Biking Association (www.mmba.org)
The MMBA provides advocacy, events, programs and resources for mountain biking in Michigan. Their website contains information on trail guides, news, upcoming events, and ways to get involved in advocacy efforts around mountain biking. MMBA has regional representatives for each part of the state.

Michigan Trails & Greenways Alliance www.michigantrails.org/
Michigan Trails and Greenways Alliance fosters and facilitates the creation of an interconnected statewide system of trails and greenways for environmental/cultural preservation purposes, and includes an extensive database of Michigan's trails.

8.2 Opportunities and Assets

When developing a public outreach and education program for the non-motorized plan, it is important to survey the opportunities and assets for promoting and encouraging non-motorized transportation.

Partnerships

There are many opportunities for the community to partner with other groups to promote non-motorized transportation and collaborate on programming educational opportunities and events.

Police Department: The mission of the Mt. Pleasant Police Department is to establish partnerships with the community to identify and resolve problems, to implement new ideas and concepts, and to maintain a safe environment for all. There may be opportunities to partner with the department to help educate the community about non-motorized transportation through events and programs.

Safe Routes to School (SRTS): It is a national program funded by the National Highway Traffic Safety Administration devoted to identifying the best routes for children to walk to school based on safe facilities and street crossings. The local community should be a key partner in any SRTS Programs. SRTS teams typically include a local law enforcement official or officer and a representative from the local road authority. These officials provide the technical expertise to help the team implement some of the programs and physical improvements.

Many of the proposed improvements in this plan may be helpful and could be considered as part of a SRTS program as they would provide access to schools. For more information on SRTS please visit their website at, www.saferoutesinfo.org.

Local Hospitals: Collaborating with medical centers may be a powerful partner in programs and events that promote healthy, active lifestyles, reduce traffic-related crashes, and reduce the incidences and severity of injuries through traffic safety campaigns and classes, such as youth and adult cycling education.

The Merchant Community: Merchant developments and downtown business districts are generally developed with the pedestrian and bicycling environment in mind. Merchants may be enthusiastic participants in programs and events that encourage residents to bike and walk to their businesses.

Corporations: Effective company wellness programs send cost savings in health insurance and lost productivity straight to a company's bottom line. There may be opportunities to engage companies from an employee wellness perspective as partners in bicycling and walking programs and events. Corporations can also apply for Bicycle Friendly Business awards as well, from the League of American Bicyclists.

Community Groups: Local groups such as Neighborhood Associations, civic groups, environmental groups and volunteer associations, may be interested in promoting a higher quality of life for the Greater Mt. Pleasant area residents. These groups may represent a good avenue for promoting non-motorized transportation and creating a movement around walking and biking as a way of life.

ICTC Shuttle: The shuttle is already an alternative form of transportation that supports and generates pedestrian activity. This group may provide advertising and marketing opportunities as well as incorporating bike racks on the bus.

Student Groups: Groups such as fraternities and sororities might represent good places to promote non-motorized transportation. It might be useful to coordinate with the new cycling course PED 169A at Central Michigan University that teaches and promotes bike safety.

Mt. Pleasant Bike Cooperative: The Mt. Pleasant Bike Cooperative is a grassroots organization that aims to unite and educate the local community on cycling. It aims to accomplish this by ultimately finding a location with the necessary tools to fix bikes. They provide a free service to the local cycling community that is economical, environmentally friendly and empowering to everyone involved. They would be a helpful resources that is local to the area and already supports a bicycle use.

Local Bike Shops: Local bike shops are usually the most knowledgeable about the local bicycling environment and culture. Not only will they provide a resource, but they may be enthusiastic participants in programs and events that encourage more bicycling in the area.

Communications

Media Sources: There are a number of local media sources that may be friendly to promoting non-motorized transportation. The Morning Sun is the area's local daily paper and the Central Michigan Life is CMU's daily paper. Also, inquire with Local T.V. and Radio Stations.

Social networks: Downtown Mt. Pleasant has a robust social networking presence on Facebook and Twitter.

Events

Major Community Events: The Greater Mt. Pleasant Area hosts many events that could be opportunities for promoting biking and walking and providing traffic safety education.

Live Well Weekend/R.A.T. Race Info: The Live Well Weekend is sponsored by Central Michigan Community Health and promotes health and wellness in central Michigan. It features the R.A.T. Race which is the largest annual race in Mt. Pleasant and is for individuals of all ages and abilities.

Le Tour De Mount Pleasant: This annual event occurs during the Mt. Pleasant Summer Festival and includes exhibitors that promote health and wellness, bicycle safety, great food, artwork, contests, competitive bicycle races, a family fun ride and opportunities to meet professional cyclists, book signings and more. There may be opportunities to coordinate and provide bicycle and walking safety information during this event.

Resources

For Public Services, Planning, Police and Parks and Recreation Staff involved in the planning, design and implementation of non-motorized transportation, there are a number of on-line resources and standards texts that are exceptionally helpful.

FHWA Course on Bicycle and Pedestrian Transportation
http://safety.fhwa.dot.gov/ped_bike/univcourse/instrtoc.htm

The following is the outline of the online course.
Lesson 1: The Need for Bicycle and Pedestrian Mobility
Lesson 2: Bicycling and Walking in the United States Today

Planning Section
Lesson 3: Bicycle and Pedestrian Planning Overview
Lesson 4: Pedestrian and Bicycle Crash Types
Lesson 5: Adapting Suburban Communities for Bicycle and Pedestrian Travel
Lesson 6: Neo-Traditional Neighborhood Design
Lesson 7: Using Land-Use Regulations to Encourage Non-Motorized Travel
Lesson 8: Tort Liability and Risk Management
Lesson 9: Bicycle and Pedestrian Connections to Transit
Lesson 10: Off-Road Trials
Lesson 11: Traffic Calming
Lesson 12: Pedestrian and Bicycle Facilities in Work Zones

Pedestrian Facility Design
Lesson 13: Walkways, Sidewalks and Public Spaces
Lesson 14: Pedestrian Signing and Pavement Markings
Lesson 15: Pedestrian Accommodations at Intersections
Lesson 16: Mid-Block Crossings
Lesson 17: Pedestrians with Disabilities

Bicycle Facility Design
Lesson 18: Shared Roadways
Lesson 19: Bike Lanes
Lesson 20: Restriping Existing Roads with Bike Lanes
Lesson 21: Bicycle Facility Maintenance
Lesson 22: Bicycle Parking and Storage
Lesson 23: European Approaches to Bicycle and Pedestrian Facility Design
Lesson 24: Education, Encouragement, and Enforcement

Association of Pedestrian and Bicycle Professionals (APBP)

http://www.apbp.org
This organization is the only organization that focuses specifically on bicycle and pedestrian issues. Some of the benefits of membership include a newsletter with the latest resources and studies, members only list serve (best source for peer review) and in-depth training seminars.

League of Michigan Bicyclists

www.lmb.org
This organization promotes bicycling and the safety of bicyclists in Michigan. Their website includes news, events, resources and educational information regarding bicycling in Michigan.

Pro-Walk/Pro-Bike Biannual Conference

www.bikewalk.org
Organized by the National Center for Bicycling and Walking, this conference is a large gathering of bicycle and pedestrian advocated and professionals from around the US and Canada. It is an excellent way to learn a great deal in a short period of time. There are presentations and workshops on the latest issues and technologies and networking with others involved in non-motorized facilities.

ITE Transportation Planning Handbook, Chapter 16 Bicycle and Pedestrian Facilities
Chapter 16 is a good introduction to the bicycle and pedestrian planning and design issues.

AASHTO Guide for the Development of Bicycle Facilities
Incorporated by reference into AASHTO's A policy on Geometric Design of Highways and Streets. Most public and private funding sources require projects to be in compliance with this guide.

AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
Incorporated by reference into AASHTO's A policy on Geometric Design of Highways and Streets. Most public and private funding sources require projects to be in compliance with this guide.

What Every Michigan Bicyclist Must Know – A Guide for Bicyclists
Created through a partnership between the League of Michigan Bicyclists, the Governor's Council on Physical Fitness, MDOT and the Michigan Department of Community Health, this brief pocket size booklet is an excellent resource for anyone riding a bicycle in Michigan. This document can be found on the League of Michigan Bicyclists website at www.lmb.org.

8.3 Public Outreach and Educational Strategies

A non-motorized transportation system isn't of much use if people do not use the system. Too often there is a reliance on a "build it and they will come" approach. This ignores the fact that the Greater Mt. Pleasant Area and many other communities have been designed around automobile use for the last 50 years. Thus, many residents will not naturally feel comfortable using a non-motorized system and will benefit from some encouragement.

The great thing about public outreach and education is that it can start immediately, before the community lays one more mile of sidewalk or completes another trail connection. Fortunately, the Greater Mt. Pleasant Area has enough infrastructure and the programs, partners, and community pride to begin adding to the numbers of residents willing to try biking and walking right now. Efforts now will prime the area for success as it begins the hard, tedious work of improving its infrastructure for non-motorized transportation.

Regional Fitness & Safety Campaign

A Regional Fitness and Safety Campaign should be developed in the county to help support active and healthy lifestyles and promote non-motorized transportation in the region.

Establish a Bicycling and Walking Task Force to help shape and direct the Regional Fitness & Safety Campaign

If the outreach and education program is going to be successful, its development, direction and oversight needs to include key stakeholders, including interested residents. Forming a Regional Fitness & Safety Campaign Task Force that engages stakeholders helps provide buy-in from important groups as they are involved in the process of creating this program. They'll also be important channels for promoting efforts and programs to their constituencies, enabling the program to tap a much larger pool of potential volunteers, resources, energy and enthusiasm.

The primary responsibility of the Task Force will be to establish the needs of the community for non-motorized transportation education, information, promotion and events, and to provide the expertise, partnerships, resources and coordination to fulfill them.

This plan recommends that the Task Force have members from the City of Mt. Pleasant, Union Township, Saginaw Chippewa Indian Tribe, Central Michigan University, Isabella County and other key stakeholder groups in the community. Suggested stakeholders for this Advisory Board include the following:

- Staff member from the different municipalities that represent parks and recreation
- Staff members from the different municipalities that represents transportation, public relations
- A representative of the Chamber of Commerce
- A representative from the Police Department
- A representative from the County Road Commission
- A representative from the business community
- A representative from the Hospital
- A representative from Michigan Trails and Greenways Alliance
- A representative from the Isabella County Transit Commission
- A representative from Central Michigan University student body
- Up to three residents interested in bicycling and walking
- Representative of the Public Schools, potentially working on Safe Routes to School issues

The Task Force will also help to establish relationships among groups that are effected by non-motorized and sustainable transportation issues, highlight programs and services that should not be duplicated and generally contribute to a program that is more likely to meet the needs of the community.

This Task Force should meet on a monthly basis to provide input on the direction of the program and help find ways to partner with the program once it is created.

Define a brand
The first step for creating a public outreach and education program is both literally and figuratively creating the program's image. What does someone "see" when they think about this program? If a person can't figure out what the program is or what it does, it's going to be very hard for the program to share its message with the intended audiences. A branded program gives the region a tool for promoting, communicating and creating buy-in for its facilities and initiatives.

Most public outreach and education programs form an identify through creating a name for the program, determining the mission for the program, creating program goals, identifying what it is the program does, and finally what it looks like (logo, website, ect.). This image doesn't have to be anything fancy, but it does have to distinguish the program as something unique and worth paying attention to. Once a brand is developed it can be marketed. The brand should be incorporated into events, bike maps, signage, tourist information and websites. Together these elements help to build a brand that can be marketed to help support and promote the messages that are developed by the regional fitness & safety campaign.

Targeting the Message
Though a partnership between the different stakeholders, create a regional campaign that presents a simple focused message to all roadway users. Have a key safety message and a key health message that stresses only a few focused points to the public.

The safety message should be "Understand and Respect All Roadway Users." The message should be a two-way conversation between non-motorized users and motorists. The message should not be condescending or accusing but be rather be structured to foster a better understanding of the perspective of other users. Another key aspect is that bicyclists, pedestrians and motorists should be seen as people, not modes. The message should highlight that all of the users of the roadway should be treated as your neighbors, friends, family and guests. The following are three points to focus on:

- Bikes are Vehicles – Bicyclists on the roadways need to operate the same as motor vehicles and motorists should accord bicyclists the same the same rights they would for other motorists.
- Using Crosswalks – Pedestrians should use crosswalks when available and motorists should be acutely aware of the potential for pedestrians at crosswalks and yield to pedestrians in crosswalks.
- See and be Seen – Bicyclists and pedestrians should be encouraged to wear bright and reflective clothing and use lights at night and motorists should be encouraged to keep an eye out for pedestrians especially at dusk and at night.

The key health message could be "Active Transportation Improves Quality of Life." The message should stress the individual benefits gained from walking and bicycling. It should avoid being condescending, overloading people with statistics and setting unrealistic expectations. Rather it should be encouraging people to simply integrate walking and/or bicycling into everyday activities such as a trip to school, the store or to see a friend. The following are three points to focus on:

- Improved Fitness Level – How improving your physical fitness does not necessarily require joining a gym.
- Mental Well Being – How physical activity has a positive impact on a person's mood.
- Air Quality – How driving less improves the air that you breathe.

Programs that Promote the Message of the Regional Fitness & Safety Campaign

Establish a web presence for the Regional Fitness & Safety Campaign
The branded program should have a website. The page should offer a calendar of biking and walking-related events in the area, information available through the program, an explanation of the Task Force and meeting minutes, and updates regarding grant awards and efforts to improve the built environment. The page should be complimented by links to follow the non-motorized transportation plan on Facebook and Twitter.

It's important that the social networking feeds, Facebook and Twitter, post not just the communities progress towards bicycling and walking improvements but ANY information about walking or biking in the County or neighboring communities, including mountain biking events and races, The Facebook page should be open to all notes, commentary and encouragement regarding the current cycling and walking experience, good and bad. Build upon existing walking and cycling groups to create a movement around sustainable transportation. Both Facebook and Twitter can build community but only if communication is two-way and open.

A great strategy would be to make two or more of the Task Force members administrators for these pages, allowing posts to reflect a variety of opinions and perspectives about walking and biking. The goal is to start and grow a conversation around the shared vision of a walking and biking-friendly community. The payoff is community buy-in, a rich source of viewpoints, a ready company of potential volunteers, and a qualified audience for programming and events.

Produce Walking and Bicycle Maps
A map does more than simply provide wayfinding information. It defines an area as accommodating and welcoming to bicyclists and pedestrians and encourages exploration. A map produced by a region's tourism partners can also be an effective marketing tool for local merchants and businesses by offering advertising and sponsorship space, which can offset the cost of production and printing.

A bike map of the county and the Greater Mt. Pleasant Area should be produced. The map should provide recommended bicycle routes, with emphasis on connectivity using existing infrastructure for all residents to destinations (including trails, other routes and surrounding communities). It is recommended to include loops, such as 15 mile, 30 mile and 60 miles be identified to encourage local cycling trips starting and returning to the same major destination. Other information such as identifying gravel roads and rolling terrain may be valuable on a county map.

Fig 7.3A Example Bicycle Map

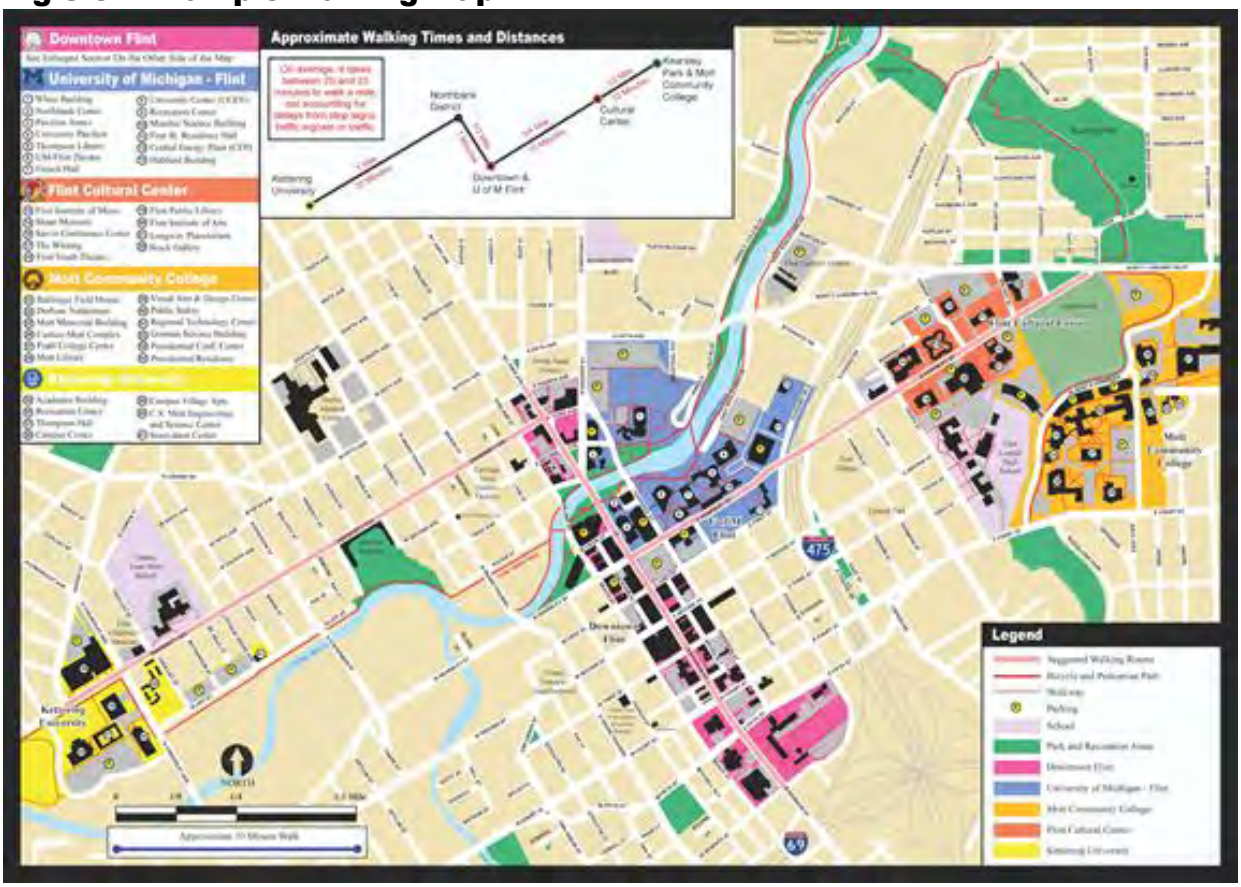
The best bicycling maps include the entire street network as a base, and rank on-street routes by color corresponding with the necessary traffic tolerance a cyclist would need to feel comfortable using them. A great map also includes basic traffic cycling safety and trails etiquette information, including equipment choice, helmet information, locking information, and how drivers should pass cyclists on the street.

A walking map should be developed for the downtown area and it should highlight the different amenities and resources in the area. The noted destinations may include both publicly owned structures such as museums and libraries as well as private enterprises that are open to the public. The map may also include suggested walking routes, local walking events and safety information.

The maps should be stand-alone documents distributed to every household to generate excitement and awareness about walking and bicycling in the community. The goal should be to distribute the map for free. Map production and print costs can be offset by selling advertising. The map can be paired with other publications already targeting residents' mailbox for efficiency and coverage as well. The map should also be located at welcome centers, local gas stations and businesses and at the proposed Active Transportation Hub locations for further distribution.

Michigan is home to several large, active bicycle organizations that can become outstanding distribution centers for the maps as well. National organizations, such as Adventure Cycling and the International Mountain Bicycling Association, may be willing and natural outlets for the maps as well.

Fig 8.3B Example Walking Map



Implement Active Transportation Hubs

Developing Infrastructure that Supports Bicycle Touring

Developing infrastructure that supports bicycle touring is important to encourage and extend bicycling trips in the region. Amenities that support cycling, such as bike parking, ready access to repairs and supplies, bathrooms, water fountains and food providers, make bicycling an easier and less stressful choice, which encourages more bicycle travel and more visits by bicycle travelers.

Part of this initiative should be to spread bicyclists' common needs beyond the bike shop. Bicycle repair stations could be located in areas with high bicycle traffic such as near campus, in major parks and in the downtown. Local merchants, especially in rural areas where there are no bike shops, should also be encouraged to stock a range of inner tube and tire choices, bicycle lube, and tire patch kits and pumps. As an incentive the business could be identified on the county's bike map. For example, the tire company Continental has converted used cigarette vending machines all over Germany instead to vend the company's line of inner tubes and patch kits, and now offers purpose-build vending machine to bike shops. Vending machines provide 24/7/365 service. Either existing bike shops or other businesses throughout the county could be invited to install the machines at their locations.

Photo: www.boston.com

A free bike maintenance station in Cambridge, Massachusetts includes tire gauges, air pump and basic hand tools such as screwdrivers, wrenches and tire levers. Each station cost the city about $1,000.

There may be opportunities to partner with Mid Michigan Community College to build bicycle parking racks. Mid Michigan offers a certificate program in Welding Technology. This may open opportunities to supply the region with bicycle parking racks for much less cost. Racks could be stamped with the school's website or some other message to return value to the school.

Photo: www.24hrbikeshop.com

A "bike box" from www.24hrBikeShop.com is stocked with supplies such as tubes, patch kits, C02 cartridges, energy supplements, etc. They offer retailers a readymade kit.

Photo: www.24hrbikeshop.com

A vending machine for bike supplies in Moab, Utah.

Active Transportation Hub
Active Transportation Hubs serve as orientation and resource centers for non-motorized trips. The goal of the active transportation hubs is to provide new ways for people to experience the non-motorized opportunities in the Greater Mt. Pleasant Area. If done well and in a systematic way, the area can build up its reputation as a close to home recreation destination. This will benefit the residents of the communities not only from an economic standpoint, but also by helping to make walking and bicycling a natural choice for many of their daily trips.

Active Transportation Hubs include the following amenities:

- Downtown Information Kiosk
  - county bike map
  - list of downtown attractions
  - bulletin board that lists resources and events
  - general tourist information
- Compressed Air or heavy duty fixed hand pump
- Vending Machine that dispenses basic bicycle supplies such as tubes and repair kits.
- Bike Parking
- Bench
- Trash Receptacle
- Lighting

Fig. 8.3C. Active Transportation Hub Example

Active Transportation Hubs should be located in the downtown area, Central Michigan University Campus, Tribal Lands, Parks and Trailheads.

Commuter Challenge Program

A Commuter Challenge Programs is a competition between local business and employees to see who can get the most employees to try a green commute (walking ,biking, busing, carpooling, ect.). The program leverages this activity to expand awareness of bicycling and other non-motorized connections to the work place and to generate excitement among the corporate community around the health and well-being benefits or cycling or walking to work. This event generally occurs in May with National Bike to Work Month. Please visit League of American Bicyclist website at, www.bikeleague.org/programs/bikemonth to learn more about promoting National Bike to Work Month.

Key tasks are event promotion and providing a registration and tracking process, which can be as simple as a basic web-based form. Companies, organizations, and other job centers appoint a Commuter Challenge Team Leader who signs up co-workers to try biking or walking to work at least once during Bike to Work Month. The Team Leader also becomes the liaison to the program's organizers and a distribution point for safety information and encouragement items such as maps and fitness gear. During Bike to Work month, employees track the days they tried walking or biking to work, and report them to the program organizer. When the week is over, the program organizers tally the counts and award prizes and acknowledgement to winners in each category as well as an overall winner.

University Orientation

Students represent a key target audience for the non-motorized outreach program. Beginning freshman year students should be educated and encourage to take advantage of the non-motorized transportation options in the community. The Regional Fitness & Safety council should develop an information package for students that include; maps, educational and safety information, bicycle maintenance, local bike shop information and how to register their bikes on campus. Orientation would be the ideal time to distribute these materials to students.

Programs for K-12 Schools

The Regional Fitness & Safety Taskforce should partner with local schools to provide consistent programming. The following paragraphs give examples of the types of programs that the Regional Fitness & Safety Taskforce should encourage the local schools to undertake.

Walking School Bus or Bicycle Train

A walking school bus is a group of children walking to school with one or more adults. A bicycle train is a group of children riding their bikes to school with one or more adults supervising. Both programs work similar to a regular bus with a timetable and regularly rotated schedule of trained supervisors or volunteers.

Now that a "No Bus Zone" has been established in the City of Mt. Pleasant, a walking school bus or bicycle train would provide an alternative mode to safely get children to school.

For more information on how to organize a walking school bus and/or bicycle train please visit, www.walkingschoolbus.org.

Child Pedestrian Safety Curriculum

The Child Pedestrian Safety Curriculum was developed by the National Highway Traffic Safety Administration to teach and encourage pedestrian safety for students grades Kindergarten through 5th

Grade. It is organized into five lessons, walking near traffic, crossing streets, crossing intersections, parking lot safety, and school bus safety. Each lesson builds upon the previous set of skills learned.

Lesson Plans, Assessment Guides, Student Response Forms and a Teacher's Guide are all available on the NHTSA website. For more information on how to develop a Child Pedestrian Safety Curriculum please visit the Nation Highway Traffic Safety Administration website at, www.nhtsa.gov/ChildPedestrianSafetyCurriculum.

Cycling Skills Clinic
A Cycling Skills Clinic is a program that provides bicycle safety information and includes on-bike training. Also known as "bicycle rodeos," these programs are designed to be a fun educational activity for children of varying levels of bicycle riding experience. They are generally, held for children at schools or at other community events.

The Cycling Skills Clinic was developed by the National Highway Traffic Safety Administration to provide a step-by-step approach to planning and initiating a bicycle safety skills event, including instructors and resources for setting up a course and conducting it to meet the needs of all the children participating.

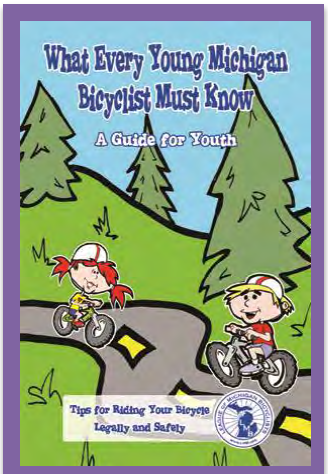
It is recommended that the Regional Fitness & Safety Task Force develop a program for a Cycling Skills Clinic that can be held at the different schools throughout the county.

For more information on how to hold a Cycling Skills Clinic please visit the Nation Highway Traffic Safety Administration website at, www.nhtsa.gov/Driving+Safety/Bicycles/CyclingSkillsClinic.

Third Grade Bicycle Academy
Begin normalizing the broad-based delivery of safe cycling education to children and their parents in a fun, engaging way by making the completion of a safe cycling course at the end of the third grade as a prerequisite for the privilege of cycling to school.

This program could be tied into the Cycling Skills Clinic. The elementary school district could adopt a school travel policy that limits cycling to school to fourth grade and above, and establish a week-long, end-of-the-year "bicycle academy" integrated into the third grade physical education. During the event, children learn cycling skill basics, basic bicycle safety check, helmet fit, and appropriate traffic cycling skills such as how to safely cross roads, driveway dangers and negotiating sidewalks. Children completing the academy would receive a free helmet and certificate permitting them to bicycle to school in fourth grade.

This program would require that children have a bicycle to use during the program. Not all children wishing to participate will have their own bike to use. A small fleet may quickly be established for the program by repurposing unclaimed bicycles recovered by the police department. The Mt. Pleasant Bike Cooperative may be a good resource to help supply and repurpose bikes as well.



Another resource for educating children is the League of Michigan Bicyclists "What Every Young Michigan Bicyclist Must Know, A Guide for Youth." The guide was created to help young bicyclists understand how to ride their bicycles legally and safely in Michigan. The guide can be downloaded from the League of Michigan Bicyclists website at www.lmb.org.

Reaching Motorists
It can be difficult to reach Motorists with your message, especially if motorist do not live in the area or are just passing through town. The following examples are provided as ways to promote educational and safety information to motorists.

Gas Pump Campaign
Motorists are always on the move so it can be difficult to find ways to get your message to them. However, filling up at the gas station may present an opportunity to get their undivided attention. It is recommended that the Task Force coordinate with the local Gas Stations to provide educational and safety information at gas pumps.

Advertise on Buses
Work with the Isabella County Transportation Commission to provide educational and safety adds inside and outside of the bus. Recently, the City of Ann Arbor passed a new law regarding right-of-way of pedestrians approaching a crosswalk. In cooperation with the transit system they were able to put adds on the back of the bus to inform motorists of the new law.

Targeted Promotion
The most cost effective and best way to communicate to an audience is to target the message specifically to them. An effective public outreach and education campaign recognizes that different audiences have different needs. Residents, for example, are going to need different information and have different needs for non-motorized transportation than commuters. The same goes for students versus youth versus seniors. While there are a myriad of audiences for any public outreach and education campaign, it would be completely overwhelming to try to reach all of them. So an education and outreach campaign should start by identifying the key groups to focus the program on to begin with. Once the key audiences are identified, there are many techniques to try and figure out what messages might work for those audiences. These techniques include focus groups made up of the audience, surveys of the audience and interviews with key stakeholders.

The following are example of five different target groups and the specific message for that group that the Regional Fitness & Safety Campaign may want to focus on.

- Children – Physical Fitness
- Residents – Healthy Lifestyles
- Seniors – Physical Activity
- University Students – Save Money
- Business Community – Keeping the Work Force Healthy

Public Service Adds
A public service announcement can be a cost-effective and powerful way to send your message. Although public service announcements were are no longer mandated by law to air them for free, many new ones are still being produces and aired today.

The Task Force should contact the local television and radio stations and speak with the public affairs director to find out what guidelines and format are required for a submission. Some TV and radio stations may also offer these details on their website.

New Events
While paper ads, Facebook pages and other communication techniques are important to a public outreach and education campaign, there is nothing like an event to get people engaged and excited about using sustainable transportation. In effect, the communications component of a public outreach and education campaign is a way to prime the individual to take action, and the action taking can actually happen at the event.

Events that generally work best for promoting the use of sustainable transportation are events that are time sensitive, low risk, high fun and offer some incentive. In addition, these events are often targeted at a certain audience, such as employees or students, ect. Many people don't necessarily have time to come to an event, so it's best to create an event that will come to the people, or create an event with a strong online component. The following examples describe events that the Regional Fitness & Safety Task Force may want to consider.

Bike & Dine:
A Bike & Dine is simply a progressive dinner by bicycle event. The Task Force identifies 3 to 5 Restaurants in the Greater Mt. Pleasant Area to visit by bicycle and asks each restaurant to offer one course of a meal to all participants. Following a pre-selected route, with police escort if desired, participants ride to each establishment, enjoy the restaurant's offerings and continue on to the next. Bike & Dines typically are limited to less than 35 participants and involve a fee to cover the restaurant costs. If well publicized, a small event like this can generate interest and excitement community wide with modest resources. Also a bicycle tour of the establishments can garner media attention to the local business and raise the profile of cycling as a way to encourage and enjoy local patronage.

Large Scale Ride:
Generate regional excitement and notoriety for the Greater Mt. Pleasant Area as a healthy community that encourages cycling and walking by hosting a large scale ride event. Establish a closed-course route within the community, preferably a route that includes a major thoroughfare for a unique and family-friendly celebration of active living and recreation.

Many of the residents and visitors to the Greater Mt. Pleasant Area have only experienced travel around the community from inside a car, whose speed and seclusion blunt and condense observations and interaction with the true character of its streets and neighborhoods. On a bike, residents and visitors will have a richer experience that often times seems wonderfully unfamiliar as participants literally see, hear and feel more of their community along the routes many of them have only ever driven. For many, it will begin to change their perspective of the quality of their community and the potential for active living.

A large scale ride will engage the entire Task Force, a crew of Ambassadors, and a team of volunteers. The Regional Fitness & Safety Campaign should also invite a partner expert in large scale ride production and management to join the force, such as the organizers of Tour De Troit or

the Michigan Trails and Greenways Alliance. Involving these organizations also invites their partnership in event promotion to their constituencies.

The event should charge a registration fee. Most of the costs will be for personnel, including police control of any intersections with open streets, and they are substantial. Still, the City can expect to raise funding that can be used as matching dollars for federal walking and biking grants, as education and outreach funding, or to fund the bicycling and walking coordinator position. These program options for the funding should be a key message of the events' promotion.

Promote mixed-surface riding in the Region

Mixed surface riding taps the growing appeal of back road bicycle touring and cyclists' natural inclination toward exploration and personal challenge. In addition to off-road mountain bikes and cyclecross bikes, which blend road racing and off-road racing features, bicycle manufacturers are also beginning to sell bicycles specifically for mixed-surface touring to satisfy a growing market.

The region should promote the mixed-surface bicycle touring experience in the area. Isabella County's generally flat landscape encourages experienced cyclists to set personal bests in distance and speed, and invites all levels of cyclists to ride. The regions rural characteristics of unique small towns, acres of pasture land with farm houses and rolling landscape are natural draws for cyclists. With a little marketing and some significant efforts, such as a signature ride, the area could become a great location for mixed-surface riding.

8.4 Methods of Evaluation

Complete application for Bike Friendly Community Award with community and partner input
The League of American Bicyclists promotes communities throughout the country with its Bike Friendly Community Award. The process of applying for the award is a great way to determine what is being done in the community as well as where improvements might need to be made. The community can be engaged in the process of applying for the award through public meetings. In addition, if a city or village receives a Bike Friendly Community Award, this becomes a great promotional tool not only for the program but for the community as a whole. Currently, Ann Arbor (Silver Award), Traverse City (Bronze Award), Grand Rapids (Bronze Award), Houghton (Bronze Award), Lansing (Bronze Award), Marquette (Bronze Award), and Portage (Bronze Award) are the other cities in Michigan with Bike Friendly Community designations.

Complete application for the Promoting Active Communities Award with community and partner input
The Promoting Active Communities Award is a Michigan-Based award for communities that show a strong commitment to supporting physical activity. Just like the Bike Friendly Community Award, this award is a great way to engage the community in non-motorized transportation issues as well as a good promotional tool, should a community receive a designation.

Central Michigan University should complete application for the Bicycle Friendly University Award
The Bicycle Friendly University program recognizes institution of higher education for promoting and providing a more bicycle friendly campus for students, staff and visitors. The Bicycle Friendly University program provides the road map and technical assistance to create great campuses for cycling. Currently, Michigan State University received a Bronze Medal in 2011.

Encourage local businesses to complete application for the Bicycle Friendly Business Award
The Bicycle Friendly Business award, put on by the League of American Bicyclists, recognizes employers' efforts to encourage a more bicycle friendly atmosphere for employees and customers. The program honors innovative bike friendly efforts and provides technical assistance and information to help companies and organizations become even better for bicyclists.

Recommended data collection and performance evaluation criteria
A bicycle and Pedestrian Count should be conducted as part of the National Bicycle and Pedestrian Documentation Project to document the uses and demand of non-motorized facilities in the cities and villages. The National Bicycle and Pedestrian Documentation Project is a nationwide effort to provide a consistent model of data collection and ongoing data for use by planners, governments, and bicycle and pedestrian professionals. The counts should be done on a yearly bases, with consistent locations used each year. Please visit, www.bikepeddocumentation.org for more information on conducting a bicycle and pedestrian count and on ways the local communities can participate in national count.

In addition to counting the number of users, the miles of built facilities should also be documented on a yearly bases to track the development of the non-motorized network. The miles of bike lanes, pathways, sidewalks, neighborhood connectors/bike routes, number of mid-block crossing improvements and number of bike parking spaces should be tracked. It is important to keep up-to-date documentation of these facilities because these measurements are used to apply for awards, such as the Bike Friendly Community Award.

8.5 Outreach and Education Recommendations

This section breaks out a Year One and a Year Two for outreach and encouragement to help the Regional Fitness & Safety Task Force set a direction and build momentum towards a sustainable, rich and varied outreach and education program.

Year One: Establish the Program

In the first year expect to do the following:

- The city administration should determine the home of the city's biking and walking outreach and education program. The Parks and Recreation Department may be a natural location should additional resources be provided
- Establish a Bicycling and Walking Task Force to help shape, produce and guide the outreach and education efforts.
- Establish a brand for the Regional Fitness & Safety Campaign
- Create a Facebook and Twitter presence for the Regional Fitness & Safety Campaign
- Establish partnerships with experienced bicycling and walking organizations such as Michigan Trails and Greenways Alliance, Michigan Mountain Biking Alliance and League of Michigan Bicyclists
- Apply for grants to fund a part-time coordinator for the Regional Fitness & Safety Campaign and related tools and materials like website development, printed materials, and events promotion
- Begin tying active transportation messages and information into existing events
- Measure the miles of existing non-motorized facilities in the city
- Participate in the National Bicycle and Pedestrian Documentation Project

Year Two: Build a culture of biking and walking

Year one recommendations provide a structure and process for establishing outreach and education objectives, helps the community identify partners and supporters in the community, and begins a dialogue with the community about biking and walking. Year two recommendations leverage these efforts to begin initiatives in Education, Enforcement, and Encouragement that can grow biking and walking modeshare and consideration for other transportation system users going forward.

In year two, expect to do the following:

- Produce a community bicycle map and walking map
- Host Commuter Challenge
- Produce a larger bicycling event
- Survey residents' attitudes towards biking and walking efforts
- Measure the miles of non-motorized facilities in the city
- Participate in the National Bicycle and Pedestrian Documentation Project

- Apply for the League of American Bicyclists' Bicycle Friendly Community, Bike Friendly University Award, and Bicycle Friendly Business Award and the state's Promoting Active Communities award

Year Three and Beyond: Strengthen the Walking and Biking Community

In year three, expect to do the following:

- Update and distribute community bicycle map and walking map yearly
- Host Commuter Challenge on a yearly basis
- Survey residents' attitudes towards biking and walking efforts yearly
- Install Active Transportation Hubs and update information on a seasonal basis
- Measure the miles of non-motorized facilities in the city yearly
- Participate in the National Bicycle and Pedestrian Documentation Project yearly
- Apply for the League of American Bicyclists' Bicycle Friendly Community, Bike Friendly University Award, and Bicycle Friendly Business Award and the state's Promoting Active Communities award yearly

9. Design Guidelines

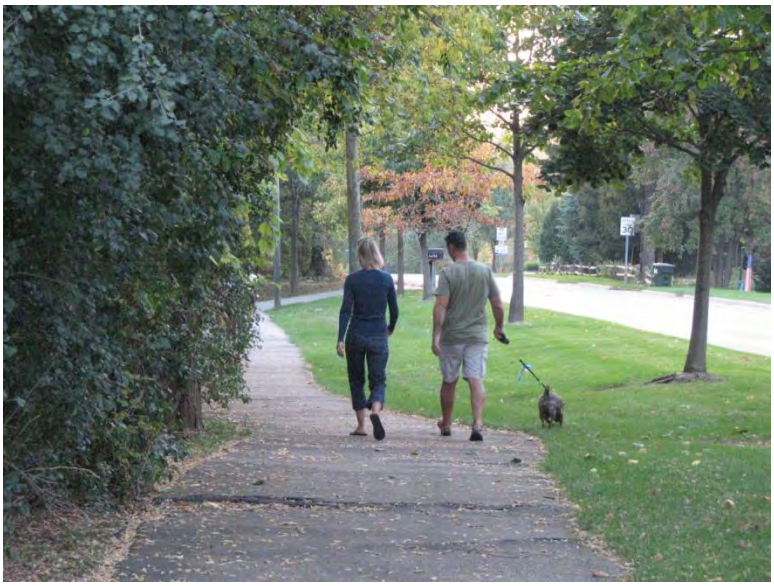
These design guidelines should be consulted when planning new facilities, reconstructing or modifying existing facilities, and updating city and design standards.

Topics:

9.1 Key Factors for Pedestrians
9.2 Key Factors for Bicyclist Travel
9.3 Travel Along Road Corridors
9.4 Developing Complete Street Cross Sections
9.5 Transitions Between On and Off-Road Bicycle Facilities
9.6 Modifying Existing Facilities
9.7 Travel Across the Road Corridor
9.8 Neighborhood Connectors
9.9 Bike Route Signs and Wayfinding
9.10 Bike and Pedestrian Boulevards and Neighborhood Greenways
9.11 Off-Road Trails
9.12 Gateway Transitions
9.12 Commercial Centers
9.13 Land Use Planning

9.1 Key factors for Pedestrians

Travel time and continuity of travel path are key factors that influence the likelihood of a person attempting a trip on foot, versus in the car or on a bike. The average speed for a pedestrian is 3 to 4 mph. This speed varies greatly according to age, trip purpose and fitness level. Pedestrians, like drivers, are significantly affected by the number of traffic signs and signals encountered. The number of traffic signs and signals significantly affect travel time for pedestrians, as well as motor vehicles, and can slow them down and add to the time of their trip.



The buffer between the sidewalk and the street as well as the degree of exposure in the crosswalks has a significant impact on the pedestrian's experience

Because walking is such a comparatively slow method of transportation, most trips that are taken by pedestrians are limited to short distances. Nationally 44% of trips taken by foot are for personal or family business, with social and recreational trips close behind at 35%. Earning a living only counts for 7% of pedestrian trips. The percentage of people who will choose walking as a form of transportation drops off significantly for trips of over a mile-and-a-half and is negligible for trips over 3 miles. Pedestrians generally take the shortest possible route available, and are not willing to go far out of their way. For example, many pedestrians will make a dash across a busy street if they must walk more than a typical downtown city block to a signalized intersection.

Perhaps the most important factor influencing the nature of a pedestrian trip is exposure to motor vehicles and the speed at which the motor vehicles are moving. For both safety and aesthetic reasons, the quality of a pedestrian's journey is much different when walking along a tree-lined path versus along a busy five-lane road with heavy truck traffic and no vegetation for shade. Also, it is much safer and more pleasant to walk along a street where the speed limit is 25 mph versus a street where the speed limit is 45 mph. National statistics show that a pedestrian's probability of death if hit by a motor vehicle increases from 15% when the car is going 20 mph to 85% if the car is going 40 mph.

Most likely, for a trip of any length, a pedestrian will need to cross a roadway. The availability and convenience of mid-block and signalized crossings as well as the nature of the roadway been crossed strongly influence the decision to walk, the safety of the walk and the decision to make that walk again in the future.

Pedestrian Quality/Level of Service

In order to make recommendations on appropriate for pedestrians, the pedestrian quality of service model that was developed by Sprinkle Consulting, Inc. was utilized. The model is based on data gathered from a wide cross section of users who evaluated numerous real world scenarios. A simplified version of this model has been incorporated in the 2010 Highway Capacity Manual's multi-model level of service evaluation. The following summarizes the key factors for pedestrians.

Key Factors (in order of statistical significance):

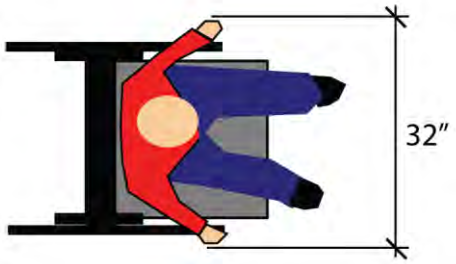
1. Presence of a sidewalk
2. Amount of lateral separation between pedestrians and motor vehicles
3. Presence of physical barriers (such as trees) and buffers (including parking) between pedestrians and motor vehicles
4. Motorized vehicle volume
5. Motorized vehicle speed

Pedestrian Spatial Requirements and Sidewalk Width

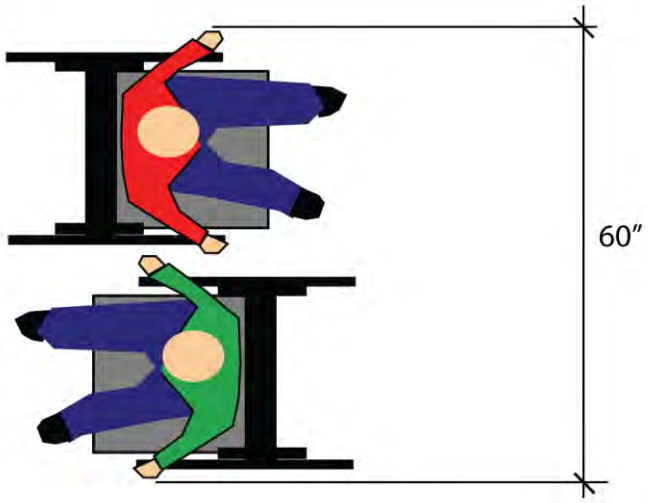
Pedestrian spatial requirements vary greatly given the variety of pedestrians. More significant than the size differential between individuals, the various mobility aids utilized have a major impact on how much space is required. Pedestrians who use crutches, walkers, wheel chairs, scooters or guide dogs require more space than pedestrian not using any of those aids. 2'-6" (30") is generally considered the bare minimum necessary for a person using a wheel chair. Thus 3' (36") is considered the narrowest a sidewalk should be at any point and only then for short distances. 4' (48") is required for a person with a guide dog.

For two pedestrians to comfortably walk side by side or pass each other, a five foot wide sidewalk is required. This is reflected in AASHTO Guidelines. With an aging population and the fact that most pedestrians will use some type of mobility aid at some time, sidewalk widths should accommodate the ability for two people to comfortably pass each other, even if they are using some type of mobility aid. Thus, a 6' wide sidewalk is considered more appropriate, especially when along collector and arterial streets where there is more pedestrian traffic. This has the added advantage of an adult walking with a child or someone walking a dog being able to pass another adult without having to do so single file. Where occasional bicycle traffic is to be encountered, an eight foot wide sidewalk is a more appropriate width and this is typically used along primary roads.

Figure 9.1A Wheelchair Spatial Requirements



Single Wheelchair Passage



Two Wheelchairs Passing

Providing Seating

Providing benches and other seating options along collectors and arterials help make longer trips manageable for some pedestrians. The seating should be located in as pleasant a place as possible and shaded from the summer sun. Businesses and residents should be encouraged to provide and maintain benches for use by the general public.

9.2 Key Factors for Bicycle Travel

One of the most controversial issues with regard to accommodating bicyclists within the road right-of-way is whether they are better accommodated in the roadway itself or on a path alongside the road. Also, if bicycles are to be accommodated within the roadway, should a portion of the roadway be officially designated for bicycles? When addressing these issues, legal rights, safety, travel efficiency, nationally accepted guidelines and conflicts with pedestrians need to be considered.

Legal Rights

Bicyclists, for the most part, are granted the same rights and subject to the same regulations as motorists. There are some exceptions, such as their use being restricted from freeways, and some special rules regarding their operation.

Safety

While it may seem that bicyclists would be safer on a Sidewalk Bikeway than riding in the roadway, the inverse is actually true in most cases for experienced adult cyclists. This is due primarily to the bicycles traveling at a high rate of speed in an area where the drivers of turning vehicles are not looking. This is illustrated in Fig. 2.2A *Bicycle Lane visibility Vs. Sidewalk Visibility* illustration on the next page. The more frequent and busy the road and driveway intersections are the more chances there are for conflicts.

Travel Efficiency

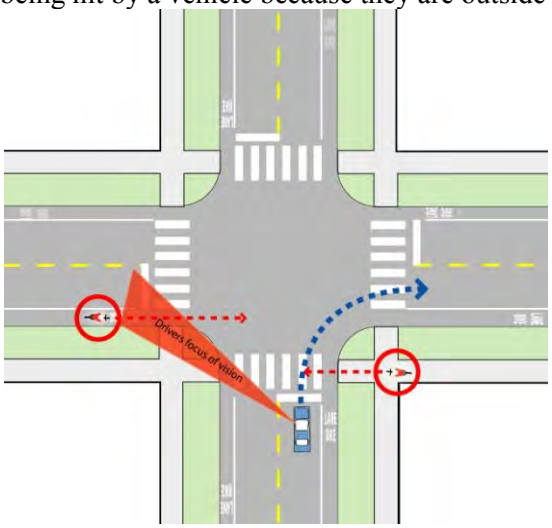
One of the most significant drawbacks to bicycling on sidewalks as opposed to bicycling in the roadway is the loss of right-of-way when traveling along collectors and arterials. When riding in the roadway of a major road, the vehicular traffic on side streets that do not have a traffic light generally yield to the bicyclists on the main road. If riding on a sidewalk, the bicyclist generally ends up yielding at those same side streets. In addition, the cyclist must approach every driveway with caution due to the visibility issues cited in the previous section and the fact that drivers rarely give right-of-way to a bicyclist on sidewalks. As well, the placement of many push-buttons used to trigger walk signals are often inconveniently placed for a cyclist.

Bicyclists are also required by law to yield to all pedestrians when riding on a sidewalk and provide an audible signal of their approach. As the number of pedestrians increase, a bicyclist's progress can be impeded.

The location of sidewalks is often such that when a vehicle on an intersecting driveway or roadway is stopped and waiting for traffic to clear on the through road, their position blocks the sidewalk. This requires difficult and often dangerous maneuvering to ride around the stopped vehicle. As a result of all of the above factors, bicyclists who are using their bike for utilitarian purposes infrequently use sidewalks because they essentially have to yield to all other users in the road corridor. Although separate facilities are appropriate in most cases, shared facilities will continue to be a preferred facility by some bicyclists in some cases.

Fig. 9.2A. Bicycle Lane Visibility Vs. Sidewalk Visibility

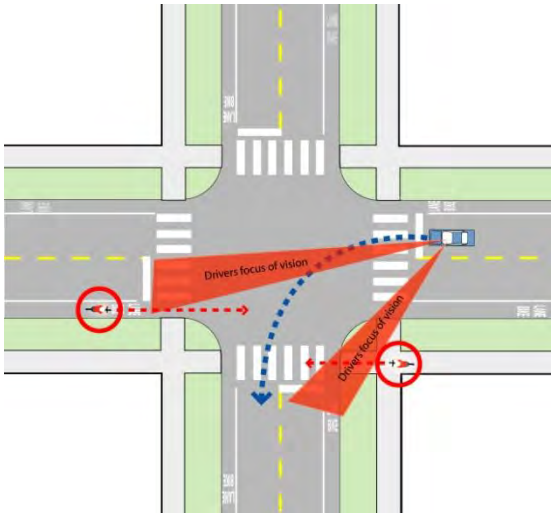
Bicycles traveling in the opposite direction of traffic on sidewalks have significantly greater chance of being hit by a vehicle because they are outside of the driver's typical field of view.



Car turning right

Bicyclist in Bike Lane is in the driver's focus of vision as they scan oncoming traffic and is easily seen.

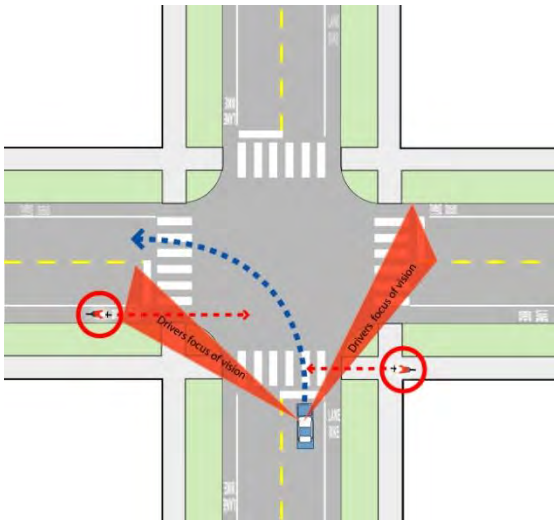
Bicyclist on Sidewalk Bikeway/Sidewalk is not in the driver's focus of vision and can't easily be seen until just before impact.



Car turning left

Bicyclist in Bike Lane is in the driver's focus of vision as he/she scans oncoming traffic and is easily seen.

Bicyclist on Sidewalk Bikeway/Sidewalk is not in the driver's focus of vision and can't easily be seen until they are in crosswalk.



Car turning left

Bicyclist in Bike Lane is in the driver's focus of vision and is easily seen.

Bicyclist on Sidewalk Bikeway/Sidewalk is not in the driver's focus until just before impact.

Graphics based on those prepared by Richard Moeur, P.E. for his Good Bicycle Facility Design Presentation available at http://www.richardcmoeur.com/docs/bikepres.pdf

Pedestrian Conflicts

As the number of bicyclists and pedestrians increase on a shared facility, the number of conflicts increase and pedestrians' comfort decreases. Pedestrians typically travel 2 to 4 miles per hour and bicyclists travel between 8 and 20 miles per hour. The speed difference is significant and the stealthy nature of a bicycle means that pedestrians generally have little to no audible warning of a bicycle approaching from behind. Pedestrians and bicyclists can both be severely injured in bicycle / pedestrian crashes.

Nationally Accepted Guidelines

The American Association of State Highway and Transportation Officials (AASHTO) publishes *A Policy on Geometric Design of Highways and Streets* that is also known as "The Green Book." This set of guidelines is the primary reference for street design used by federal, state, county and local transportation agencies. For guidance on how to accommodate bicycles, The Green Book references AASHTO's *Guide for the Development of Bicycles Facilities*. Federal and most state sources of funding require that bicycle projects conform to these guidelines. AASHTO's guidelines specifically discuss the undesirability of Sidewalks as Shared Use Paths. Sidewalk Bikeways are considered unsatisfactory for the all of the reasons listed above. Only under certain limited circumstances do the AASHTO guidelines call for Sidewalk Bikeways to be considered. On page 20 of the guidelines these circumstances are spelled out as:

a) *To provide bikeway continuity along high speed or heavily traveled roadways having inadequate space for bicyclists, and uninterrupted by driveways and intersections for long distances.*

b) *On long, narrow bridges. In such cases, ramps should be installed at the sidewalk approaches. If approach bikeways are two-way, sidewalk facilities also should be two-way.*

Bicycle Quality/Level of Service

In order to make recommendations on appropriate bike lane widths, the bicycle quality of service model that was developed by Sprinkle Consulting, Inc. was utilized. The model is based on data gathered from a wide cross section of users who evaluated numerous real world scenarios. A simplified version of this model has been incorporated in the 2010 Highway Capacity Manual's multi-model level of service evaluation. The following summarizes the key factors for bicyclists.

Key Factors (in order of statistical significance):

1. Presence of bicycle lane or paved shoulder
2. Proximity of bicyclists to motorized vehicles
3. Motorized vehicle volume
4. Motorized vehicle speed
5. Motorized vehicle type (percent truck/commercial traffic)
6. Pavement condition
7. The amount of on-street parking

Bicycle Spatial Requirements

Bicycle spatial requirements vary greatly given the variety of bicycle styles out there. Tricycles, tandems, recumbent all have different special requirement. For a typical two wheel bicycle, a stationary bicyclist is only about 2' wide. But when in motion, the bicyclist requires 5' of width to operate. The extra space is required for essential maneuvering and to provide a comfortable lateral clearance. Thus, a path that is capable of having two bicyclists comfortably pass each other needs to be 10' wide.

Additional Considerations

Children Riding on Sidewalks – Young children will most likely continue to ride bicycles on sidewalks even if on-road facilities are provided. The risks previously mentioned still hold true, but factors such as unfamiliarity with traffic and the limited depth perception typical of young children should also be considered when choosing the most appropriate facility to use. Also, young children, in general, may be riding at lower speeds than adults.

Adults Riding on Sidewalks – Even with the presence of on-road bicycle facilities, many adults will not feel comfortable riding in the roadway in some or all situations. It should be recognized that the choice to ride in the road or on a sidewalk will vary with each individual's skills, weather and roadway conditions.

Transition Points – One of the difficulties in creating a system where bicycle travel is accommodated within a patchwork of on- and off-road facilities is the transition from one facility to the other. The point where the bicyclist leaves the sidewalk to join the roadway is especially difficult at intersections.

Redundancy of Facilities – Bicyclists are not restricted from riding in most roadways, nor is it likely that bicyclists will ever be required to ride on a Sidewalk Bikeway given their known safety issues. Therefore, the presence of bicycles in the roadway should be anticipated. Any off-road facilities that are constructed should be viewed as supplemental to accommodations within the roadway.

Driver and Bicyclist Behavior – There is ample room for improvement to the behavior of bicyclists and motorists alike in the way they currently share (or don't share) the roadway. Community education programs coupled with enforcement programs are the best approach for addressing this issue.

Passing on the Right – In a shared roadway scenario, it is dangerous for a bicyclist to pass a line of cars on the right. Bike lanes have the important advantage of allowing bicyclists to safely pass a line of cars waiting at an intersection. Much like the rewards for carpoolers traveling in a high occupancy vehicle lane, a bike lane gives bicyclists preference in moving through congested areas. Bikes can move to the front of an intersection more easily, allowing for better visibility and safer integration among motor vehicles, as well faster travel.

9.3 Travel Along Road Corridors

Our roadway network has been designed primarily to move cars safely, efficiently, and with minimal disruption. This network includes major arterial streets that place cars in multiple lanes moving at high speeds for long distances. These major transportation corridors usually present tremendous challenges when we try to retrofit them with non-motorized facilities. There are two primary types of non-motorized movements related to road corridors:

- Travel Along the Road Corridor (Axial Movements) that utilizes sidewalks, shoulders, and bikeways.
- Travel Across the Road Corridor (Cross-corridor Movements) that utilizes intersections, crosswalks, and grade-separated crossings such as bridge overpasses or tunnel underpasses.

Pedestrian travel along road corridors is accommodated by sidewalks or shared-use paths.

Bicycle travel along road corridors is accommodated by Bike Lanes, shared roadways, and shared-use paths. Restricting bicycles to a path along a roadway—while potentially a legal option—is fraught with safety concerns. This diminishes the attractiveness of using a bicycle for transportation.

Multi-Modal Corridor Width Requirements

While primary roads are classified as Principal Arterials, Minor Arterials, and Collectors, there is not always in practice a direct relationship between a road's classification and the number of lanes or lane width. Factors such as the available right-of-way, existing infrastructure and context have a significant influence in a road's design.

Multi-Modal Roadway Widths

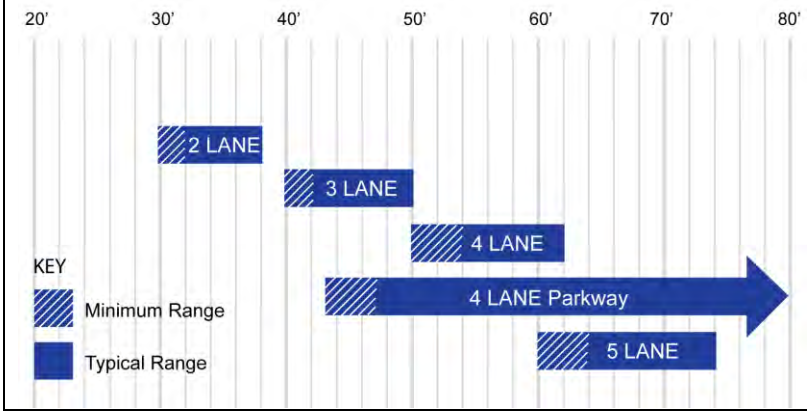
There are various configurations of overall road widths depending on individual lane widths. For instance, a road may have anywhere from ten to twelve foot travel lanes and five to eight foot Bike Lanes. Variation in any or all of these widths has an impact on overall road width.

Also affecting roadway widths are:

- Parking – adds approximately seven feet to each side of the road and increases roadway width requirements.
- Speed – wider motor vehicle lanes generally increase speed of motor vehicles. With high speed roads, wider Bike Lanes are desirable to increase the lateral separation between motor vehicles and bicycles.

Fig 5.3A, Multi-Modal Roadway Width Requirements, illustrates the range of widths for typical multi-modal road types. The Minimum Range is based on AASHTO minimum guidelines. The Typical Range begins based on generally preferred minimums. The upper range is based on the maximum dimensions that would typically be encountered for motor vehicle and Bike Lanes.

Fig 9.3A. Multi-Modal Roadway with Bike Lanes Width Requirements



Multi-modal ROW Widths

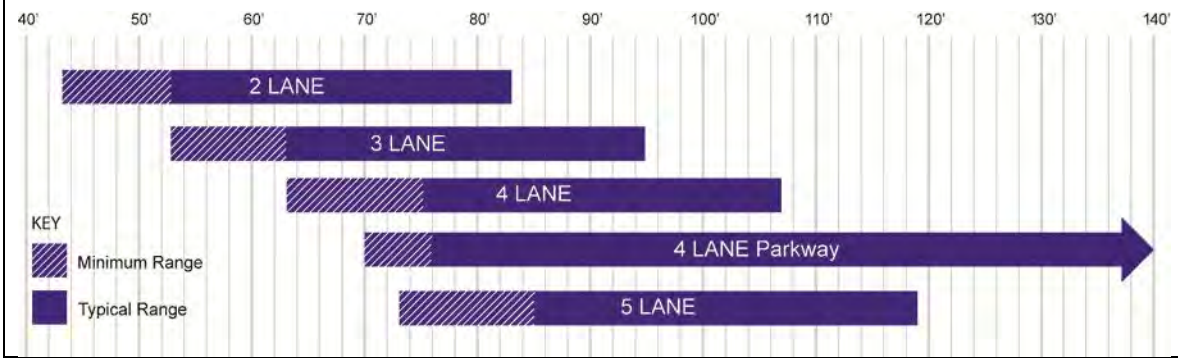
In addition to the road, the ROW contains sidewalks/path, the buffer area between the sidewalk and the road and space for a median if any. There is tremendous variation within some variables such as the buffer and the median distance.

Fig 9.3B, Multi-Modal ROW Width Requirements, illustrates the range of widths for typical multi-modal ROWs. If ROW is greater than any of the given scenarios, then all those that fall within that width are feasible. For instance, a ROW of 66' is capable of accommodating a two or three lane road. The two lane road would simply have more opportunities for flexibility than the three lanes. Note that it is not always preferable to go to the maximum allowable ROW width. Bigger is not necessarily better. The best width will depend on contextual circumstances in a given a situation. Special circumstances, however, may make it necessary to make maximum use of the ROW.

Other issues that have a bearing on ROW widths include:

- Parking – parallel on-street parking adds approximately seven feet to each side of the road and increases ROW requirements, though in some circumstances the space would be deducted from the buffer.
- Speed – as noted under Multi-Modal Roadway Widths, higher speeds generally increase the need for a wider road. Higher speeds also make a wider buffer more desirable.

Fig 9.3B. Multi-Modal Right-of-Way Width Requirements



9.4 Developing Complete Street Cross Sections

Integrating bicycle and pedestrian facilities into existing roadways takes into account the road's context, the type of road, the desired motor vehicle speeds, the anticipated amount of motor vehicle traffic and the available ROW. Roadways that are designated as having a focus on bicycle and pedestrian traffic should be designed such that motorists naturally travel the roadway at the desired speed range of 30 to 35 MPH. This may be accomplished by the combination of narrow motor vehicle travel lanes, street trees close to the edge of the roadway and introducing elements into the roadway such as medians and crossing islands that interrupt long straight stretches of roadway.

The following is an overview of the key design of each segment of roadway. More information regarding road corridor cross sections may be found in the Appendix.

Sidewalk Guidelines

- Sidewalks should be a minimum of 5' wide as per AASHTO guidelines. 4' wide sidewalks may be used if a 5' wide passing spaces for wheelchair users are proved at reasonable intervals but this is not recommended.
- If sidewalk is placed at the back of a curb (curb-attached sidewalk) then the sidewalk should be a minimum of 6' wide, providing at least a 5' clear path taking into consideration signs and utility poles.
- It is recommended that all sidewalks along all Arterial and Collector roadways be at least 6' wide. In certain circumstances, such as completing a gap between two existing 5' sidewalks and where valuable trees and easements restrict the space, a 5' sidewalk may be used.
- It is recommended that at least one sidewalk along all Arterials and Collectors be at least 8' wide and that the location of the wider sidewalk/road side pathway be consistent from segment to segment.
- It is recommended that when a sidewalk/road side pathway is used as a link in a regional trail system, that it conform to AASHTO guidelines for Shared-Use Paths having a minimum width of 10' with 2' shoulders.

Buffer Width

- Buffers should be a minimum of 2' on Collectors and 5' on Arterials as per AASHTO Guidelines.
- A 5' wide buffer is generally considered the minimum to accommodate street tree plantings.
- A 6' wide buffer is considered the desirable minimum with along Collector roadways.
- A 9' wide buffer is considered the desirable minimum along Arterial roadways.

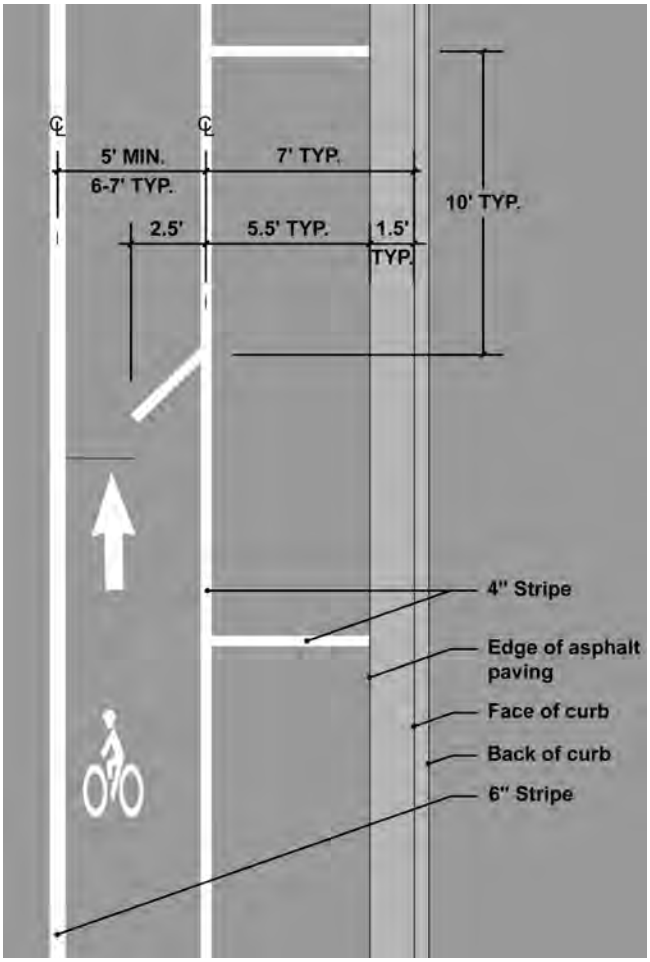
Buffer Plantings/Street Trees

- Tree spacing should be approximately 30' on center.
- Trees should be placed a minimum 5' back from the face of curb on Arterials and a minimum of 2' back from the face of curb on Collectors. The trees should also be placed a minimum of 2' back from the edge of sidewalk.
- Tree spacing/alignment should be varied as necessary to permit good visibility at crosswalks and intersections.

Bike Lane:

- Generally roads with ADT's below 3,500 vehicle per day do not require bike lanes as the traffic flow is such that motorists can generally pass bicyclists without waiting for oncoming traffic to clear.
- 5' minimum as measured from face of curb to edge line with a minimum of 3' rideable surface outside of the gutter plan.
- If the seam between the gutter pan and the road surface is not smooth than a minimum of 4' of rideable surface should be provided.
- 4' minimum as measured from the edge of pavement to the edge line when no curb is present.
- Bike Lanes may be located on either side of a one-way road. For consistency sake, the right hand side should be the default choice. If, however there are numerous bus stops with frequent bus service the left and side of the road may be preferable. If there is on-street parking on one side of the road, the bicycle lane should generally be located on the opposite side of the road than the on-street parking.

On-Street Parking:



- When adding parking the parking lane should be set at 7' measured from face of curb and the bike lane width should be a minimum of 5' wide.
- Additional width for bike lanes is desirable due to opening doors of parked cars infringing on the bike lane width.
- A 4" stripe should mark the edge of the parking lane to encourage parking as close to the curb as possible.
- The parking lane should always remain at 7'. Any additional room should be allocated toward the Bike Lane first, then to the travel lane adjacent to the bike lane.
- Bike Lanes wider than 5' may have the "door zone" cross-hatched to encourage bicyclists to ride a safe distance away from the parked cars. The bicycle symbol and arrow should be placed to the outside of the bicycle lane to encourage safe bicycle lane position. Please note that cross hatching in the "door zone" is NOT a standard marking included in the MUTCD. To utilize this marking a request need to be made to the FHWA asking for permission to conduct an experiment with this marking.

Shared Lane Markings:

- Used on primary roads with speeds 35 MPH or lower generally where the right-of-way is too narrow for designated bike lanes.
- Pavement markings direct bicyclists to move with traffic and outside of the reach of opening car doors.
- Markings indicate to motor vehicles to expect bicycles in the roadway.
- If used on a street with parallel on-street parking, shared lane markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb

Sub-standard Bicycle Lanes and Edge Striping

There will be places where it will be impossible to reconfigure a roadway to accommodate even the minimum width of bicycle lane as described in AASHTO. In such cases it may be desirable to place a bike lane of a slightly narrower width in order to provide continuity of on-road facilities. At an absolute minimum, a bicycle lane next to a standard curb and gutter should have 3' of ridable surface (measured to the centerline of the lane stripe). In a case where that is not possible, a standard 4" edge stripe may be considered without the standard bicycle lane markings and signs.

Paved Shoulder

Paved shoulders are generally added to arterial and collector roadways in rural areas as a designated space in the roadway to accommodate bicycle and pedestrians. In order to be usable for bicyclists they need to be a minimum of 4' wide as measured from the edge of pavement to the edge of line when no curb is present. Generally, paved shoulders do not have bike lanes signs and/or pavement markings except at intersections where a designated right turn lane is present, than a paved shoulder should be transitioned to a standard bike lane pavement marking to avoid conflicts with right turning vehicles. A paved shoulder may be signed as a bike route or with a Share the Road Sign.

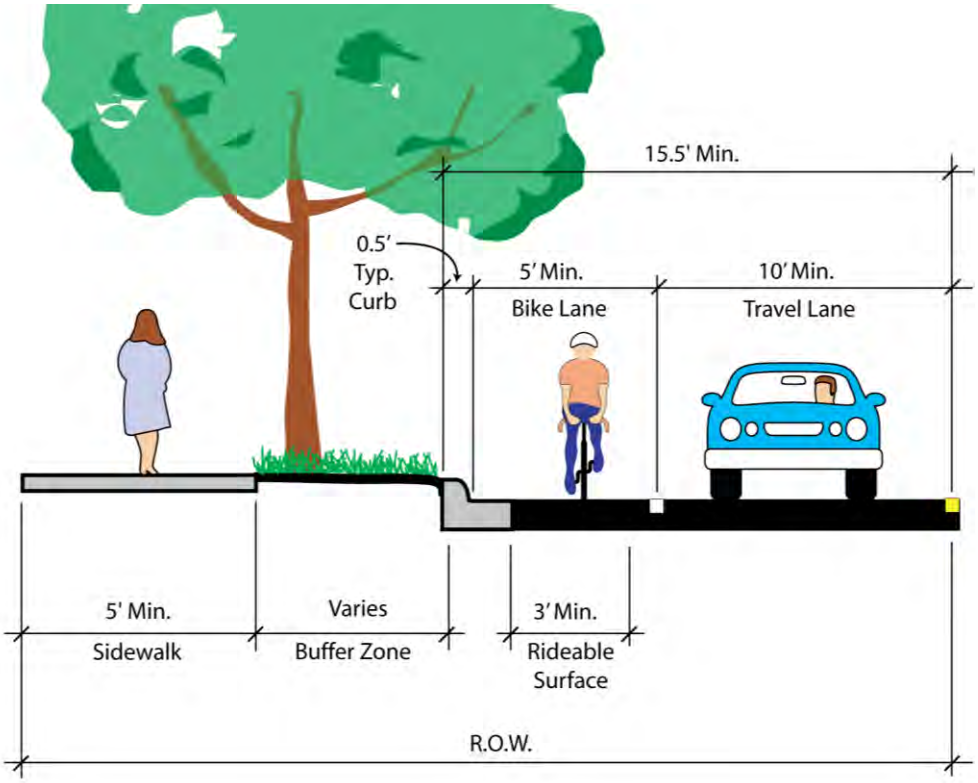
Motor Vehicle Lane Width

A 2007 Transportation Research Report, *Relationship of Lane Width to Safety for Urban and Suburban Arterials*, which included evaluation of roads in Oakland County, found that there is no discernable safety difference between roads that have lane widths of 10 and 11' when compared to a comparable road with a 12' lane width. This was especially the case for two and three lane roads. The Oakland County data indicated that there may be concerns when going below 11' lanes on 5 lane roads.

Sidewalk/Roadside Pathway Marking and Signing

In instances where existing sightlines and visibility are limited use an advanced warning sign to notify walker and bicyclist of an approaching subdivision entrance or busy drive. Only use a stop sign at the drive on extreme cases where warranted.

Fig 9.4A Urban Multi-Modal Roadway Design Guidelines



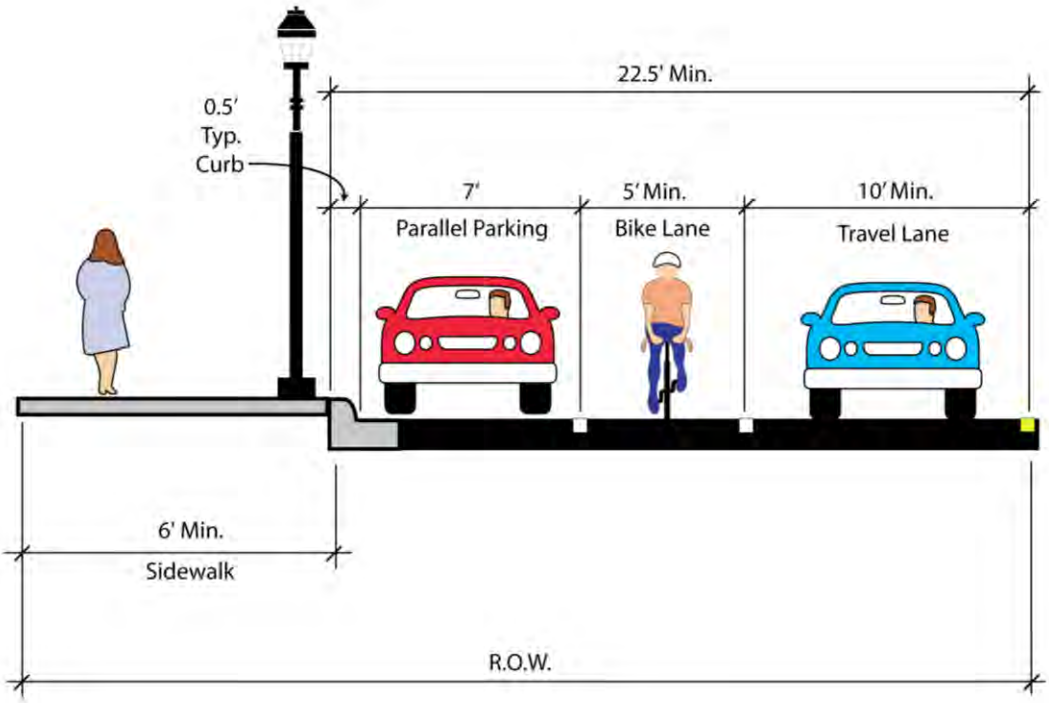


Fig 9.4B Urban Bike Lane Sizing Chart

The following chart indicates the minimum bike lane width necessary to maintain a bicycle quality/level of service of C or above.

12' Travel Lanes

	Urban 2 Lane Road:					Urban 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	5	5	5	5	5	5	5	5	5	5	5
30 mph	5	5	5	5.5	6	5	5	5.5	5.5	5.5	6
35 mph	5	5	5.5	6	6.5	5	5.5	5.5	6	6	6
40 mph	5	5	5.5	6	6.5	5.5	5.5	6	6	6.5	6.5
45 mph	5	5.5	6	6.5	6.5	5.5	6	6	6.5	6.5	6.5
50 mph	5	5.5	6	6.5	7	6	6.5	6.5	6.5	6.5	7
55 mph	5	5.5	6	6.5	7	6	6.5	7	7	7	7

11' Travel Lanes

	Urban 2 Lane Road:					Urban 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	5	5	5	5.5	5.5	5	5	5	5.5	5.5	5.5
30 mph	5	5	5.5	6	6.5	5	5.5	6	6	6	6.5
35 mph	5	5	6	6.5	6.5	5.5	6	6	6.5	6.5	6.5
40 mph	5	5	6	6.5	7	6	6	6.5	6.5	7	7
45 mph	5	5.5	6.5	7	7	6	6.5	6.5	7	7	7
50 mph	5	5.5	6.5	7	7.5	6	6.5	7	7	7	7.5
55 mph	5	6	6.5	7	7.5	6.5	6.5	7	7	7.5	7.5

10' Travel Lanes

	Urban 2 Lane Road:					Urban 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	5	5	5	6	6	5	5	5.5	6	6	6
30 mph	5	5	6	6.5	7	5.5	6	6.5	6.5	6.5	7
35 mph	5	5.5	6.5	7	7	6.5	6.5	6.5	7	7	7
40 mph	5	5.5	6.5	7	7.5	6.5	6.5	7	7	7.5	7.5
45 mph	5	6	7	7.5	7.5	6.5	7	7	7.5	7.5	7.5
50 mph	5	6	7	7.5	8	6.5	7	7.5	7.5	7.5	8
55 mph	5	6.5	7	7.5	8	7	7	7.5	7.5	8	8

Notes

1. Size is based on an 18" wide gutter pan. If the gutter is only 1' wide or there is no gutter the width may be reduced by 0.5'.
2. Bike lane sizing is based on 3% truck traffic. For every 1% increase in heavy vehicles add approximately 8" to 9" of additional bike lane width.
3. In urban areas, where there is a demand for on-street parking and none exists, bike lanes 7' and over may experience illegal parking.

Fig 9.4C Rural Multi-Modal Roadway Design Guidelines

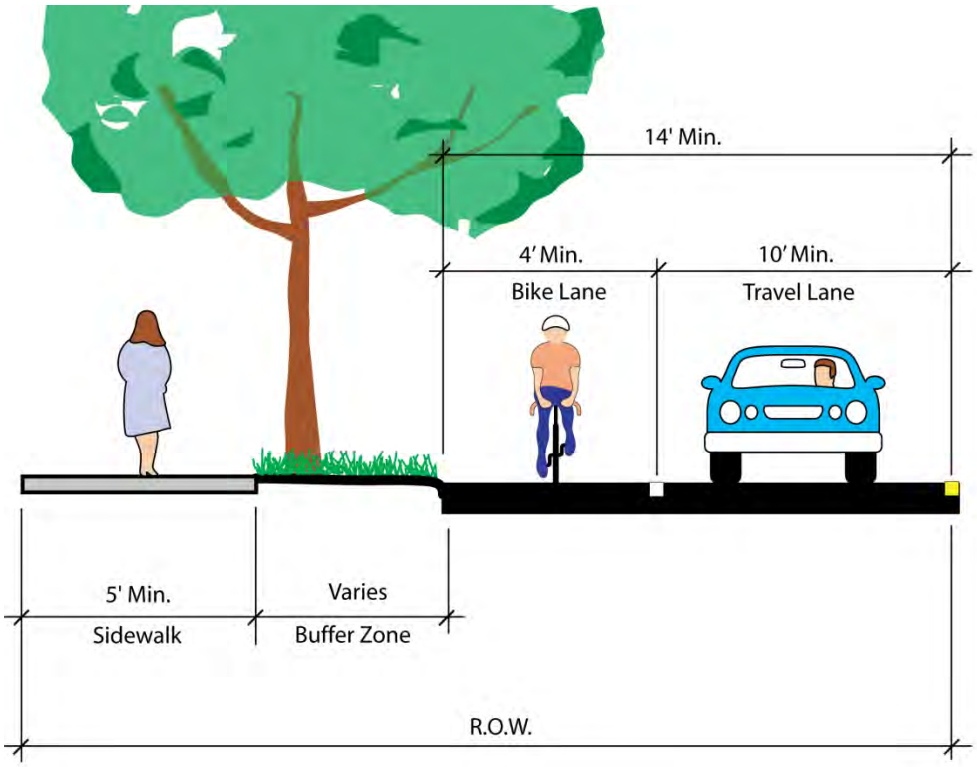


Fig 9.4D Rural Bike Lane Sizing Chart

The following chart indicated the minimum bike lane width necessary to maintain a bicycle quality/level of service of C or above.

12' Travel Lanes

	Rural 2 Lane Road:					Rural 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	4	4	4	4	4	4	4	4	4	4	4
30 mph	4	4	4	4	4.5	4	4	4	4	4	4.5
35 mph	4	4	4	4.5	5	4	4	4	4.5	4.5	4.5
40 mph	4	4	4	4.5	5	4	4	4.5	4.5	5	5
45 mph	4	4	4.5	5	5	4	4.5	4.5	5	5	5
50 mph	4	4	4.5	5	5.5	4.5	5	5	5	5	5.5
55 mph	4	4	4.5	5	5.5	4.5	5	5.5	5.5	5.5	5.5

11' Travel Lanes

	Rural 2 Lane Road:					Rural 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	4	4	4	4	4	4	4	4	4	4	4
30 mph	4	4	4	4.5	5	4	4	4.5	4.5	4.5	5
35 mph	4	4	4.5	5	5	4	4.5	4.5	5	5	5
40 mph	4	4	4.5	5	5.5	4.5	4.5	5	5	5.5	5.5
45 mph	4	4	5	5.5	5.5	4.5	5	5	5.5	5.5	5.5
50 mph	4	4	5	5.5	6	4.5	5	5.5	5.5	5.5	6
55 mph	4	4.5	5	5.5	6	5	5	5.5	5.5	6	6

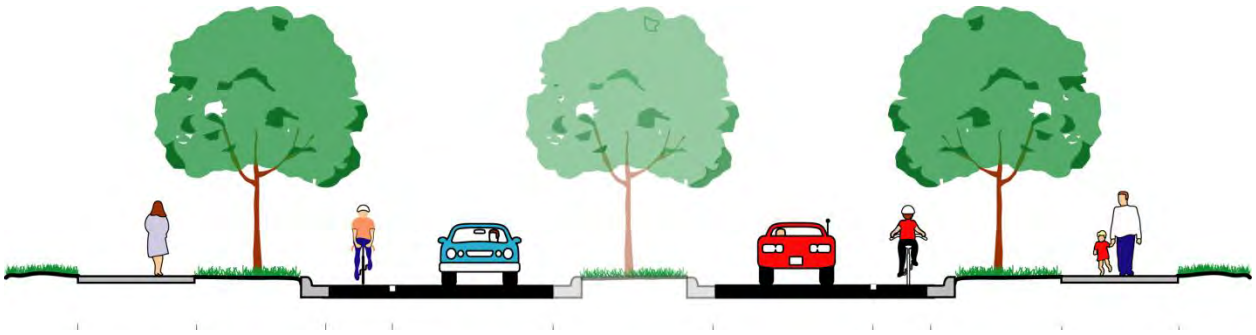
10' Travel Lanes

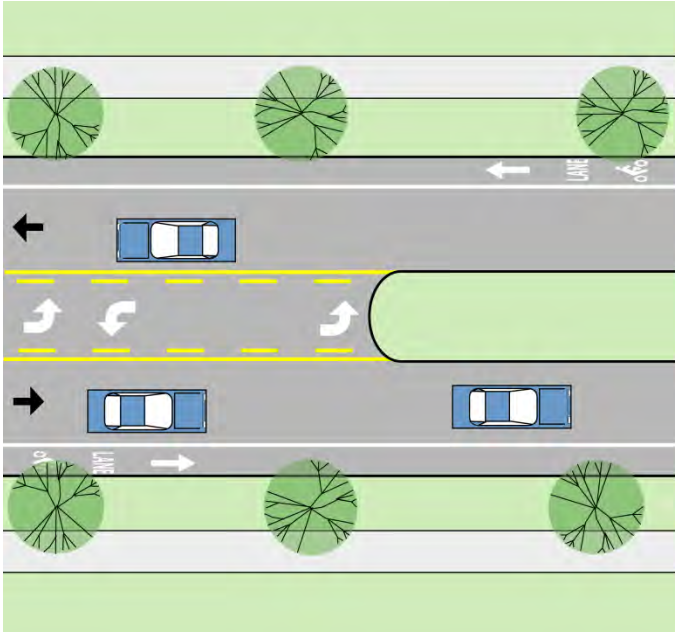
	Rural 2 Lane Road:					Rural 4 Lane Road:					
No. of Lanes	2	2	2	2	2	4	4	4	4	4	4
Design ADT	3,500	5,000	10,000	15,000	20,000	15,000	20,000	25,000	30,000	35,000	40,000
25 mph	4	4	4	4.5	4.5	4	4	4	4.5	4.5	4.5
30 mph	4	4	4.5	5	5.5	4	4.5	5	5	5	5.5
35 mph	4	4	5	5.5	5.5	5	5	5	5.5	5.5	5.5
40 mph	4	4	5	5.5	6	5	5	5.5	5.5	6	6
45 mph	4	4.5	5.5	6	6	5	5.5	5.5	6	6	6
50 mph	4	4.5	5.5	6	6.5	5	5.5	6	6	6	6.5
55 mph	4	5	5.5	6	6.5	5	5.5	6	6	6.5	6.5

Notes

1. The reduction in width in comparison to the Urban Bike Lane Sizing Chart is due to the lack of curb.

Fig 9.4E Use of Medians





A planted median should be considered whenever a turn lane is not needed. The planted median improves the aesthetics of the roadway, reduces the impervious surfaces and can act as an informal crossing island for dispersed mid-block crossings. Medians have also been shown to be less expensive to construct and maintain than paving in the long run. The median may also be constructed in a manner that will mitigate storm water run-off.

9.5 Transitions Between On and Off-Road Bicycle Facilities

The recommended approach to accommodating bicycles along arterials and collectors is with a bicycle lane. However, there will be places, especially in the near-term, where that may not be possible. This presents a situation where some bicyclists will prefer to continue bicycling in the roadway and others will prefer to leave the roadway and use a sidewalk bikeway. Given the significant variances in bicyclist's abilities, trip purposes, and cycling speeds, forcing all cyclists into a single solution is inappropriate. The solution then is to accommodate both preferences.

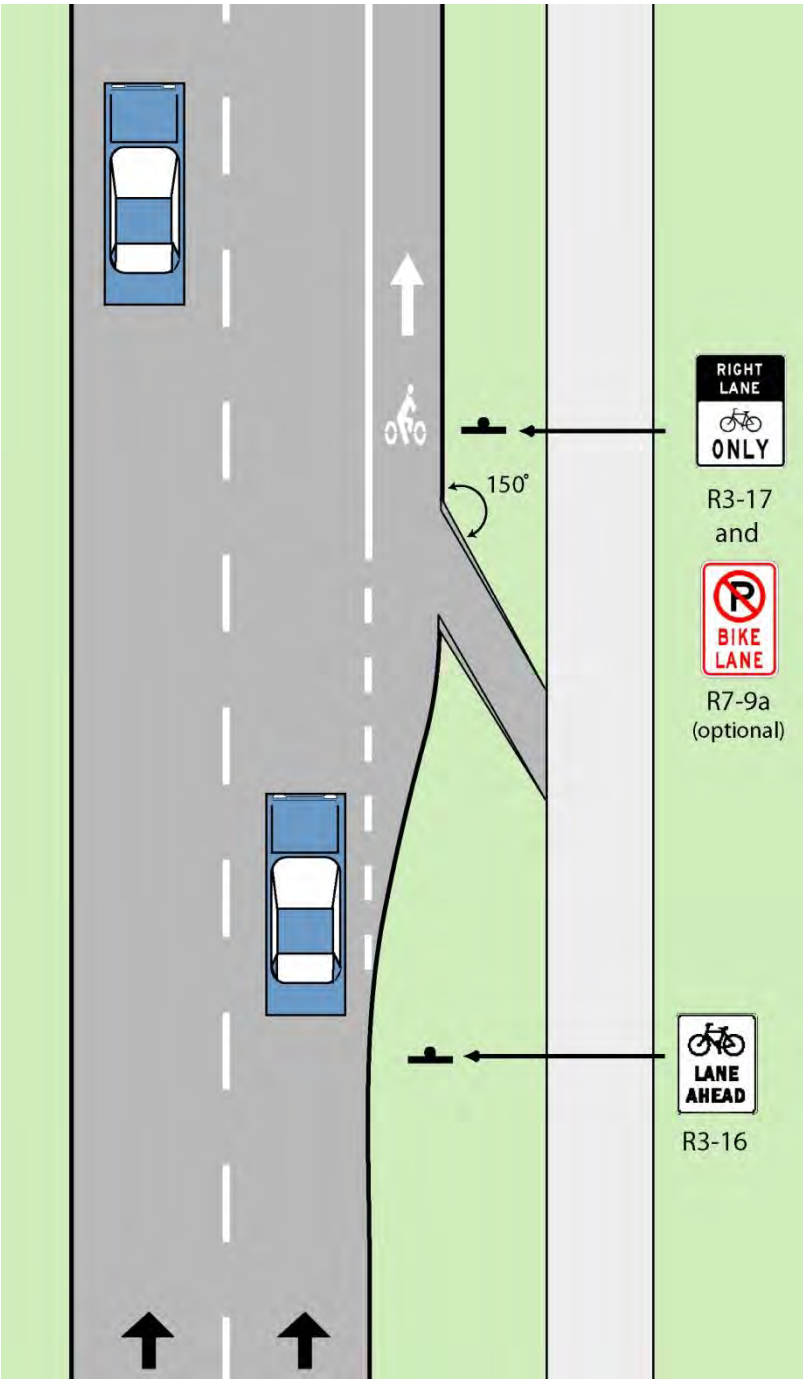
The transition points between sidewalk bikeways and bike lanes, presents a number of challenges. This underscores the importance of making the non-motorized system as consistent as possible. When bringing bicyclists into the roadway as shown in Fig 9.5A (next page), the entrance point needs to be protected. Unlike merging points between motor vehicles, the speed differential between bicyclists and motor vehicles may be significant with the potential for hit-from-behind crashes if the merging area is not protected.

When bringing bicycles onto a pathway, there is the potential for conflicts with pedestrians and bicyclists already on the pathway. Trying to segregate bicycles and pedestrians on a single 8 – 10 feet wide path is not feasible. Each direction for bicycle use requires 4 feet. Some busy shared-use paths have a dashed yellow line down the center to separate path users by direction of travel. While these tend to work to a degree in busier off-road pathways they are rarely used in sidewalk bikeway situations.

The solution does not differentiate between the sidewalk bikeways that are adjacent to a bike lane from a typical sidewalk. A sign along the pathway can instruct bicyclists to yield to pedestrians per City code. The approach is based on the assumption that the fastest bicyclists will remain in the roadway and share the lane with the motor vehicles rather than leave the roadway and have their travel impeded by pedestrians and driveway crossings.

A ramp that eases the transition from a Bike Lane to a Shared-use Path is provided where the Bike Lane ends.

Fig. 9.5A. Bicycle Entrance Ramp from Sidewalk Bikeway to Bike Lane Design Guideline



Applications

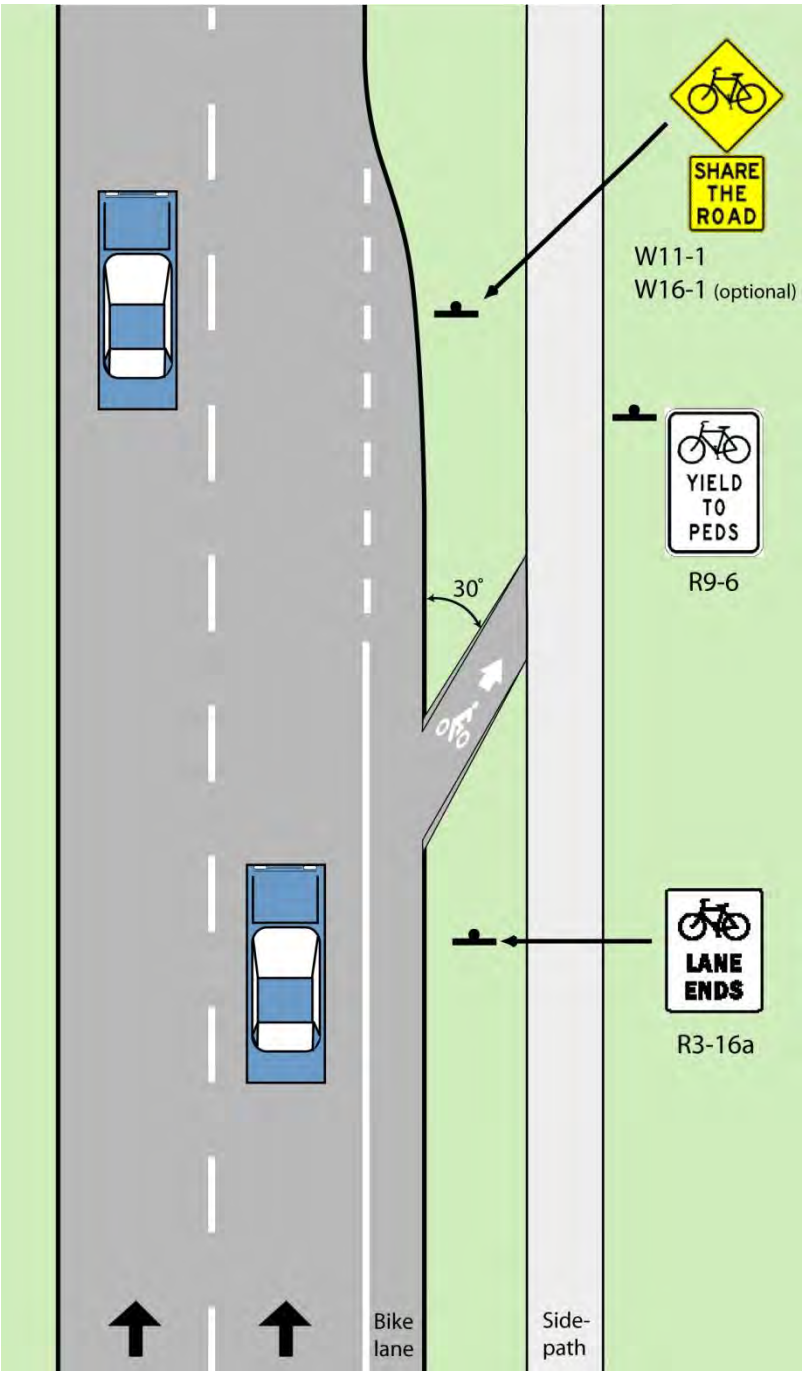
The bike entrance ramp is used to provide easy transition from a sidewalk bikeway to a bike lane or to allow a bicyclist to enter the roadway to make a turn as a vehicle.

The ramp may be used where a bike lane begins or periodically along a sidewalk bikeway that parallels a bike lane.

Key Elements:

1. Bicyclists have an option to bike either in the bike lane or along the sidewalk bikeway.
2. The ramp should resemble a curb ramp with flared sides and a flush edge with the road grade.
3. The mouth of the ramp (not including the flared sides) should be 5' wide or sized to fit maintenance vehicles designed for sweeping and snow removal.
4. When used at the beginning of a bike lane, the road should be widened to accommodate the bike lane and protect bikers entering the roadway from the sidewalk bikeway given the sharp angle of entry. As the road is flared, dashed pavement markings should be used to indicate the beginning of the bike lane and an area where bikers in the roadway can merge into the bike lane.

Fig. 9.5B. Bicycle Exit Ramp from Bike Lane to Sidewalk Bikeway Design Guideline



Applications

The bike exit ramp is used to provide easy transition from a bike lane to a sidewalk bikeway.

The ramp may be used where a bike lane ends or periodically along a sidewalk bikeway that parallels a bike lane.

Key Elements:

1. Bicyclists have the option of bicycling in the roadway or on a sidewalk bikeway.
2. The exit ramp should resemble a curb ramp with flared sides and a flush edge with the road grade.
3. The mouth of the ramp (not including the flared sides) should be 5' wide or sized to fit maintenance vehicles designed for sweeping and snow removal.
4. Where a bike lane ends, dashed pavement markings indicate the end of the bike lane and an area where bikers are merging back into the roadway. Dashed lines should begin well in advance of the end of the bike lane to ensure adequate warning and a large transition zone.
5. A bike symbol and arrow on the ramp to discourage bicyclists on the sidewalk bikeway to enter the roadway going the wrong way.

9.6 Modifying Existing Facilities

The existing road infrastructure must be considered when looking at how bicycle lanes may be added. Waiting for a complete road reconstruction at which time the "ideal" scenario may be applied would result in unnecessary delay in implementing a bicycle lane system. Also, in many cases, existing development, historic structures and natural features dictate that the roadway width will change little if at all even in the long run. Hence, approaches to modifying facilities that work within existing curb lines and with existing storm sewer systems need to be employed.

In some cases, existing travel lanes may need to be narrowed to accommodate bicycle lanes. In other cases there may be excess road capacity that permits eliminating a lane in order to accommodate bicycle lanes. There may be cases where an alternative road configuration that includes bicycle lanes will work equally as well if not better than the existing conditions for motorists, such as a four to three lane conversion. In most cases though, incorporating bicycle lanes is a compromise between the ideal motorized transportation facility and the ideal bicycle facility in order to establish a true multi-modal facility within existing infrastructure limitations. The following guidelines illustrate various techniques for modifying existing facilities in order to incorporate bicycle lanes.

Adding Bike Lanes to High Speed Four and Five-Lane Roads

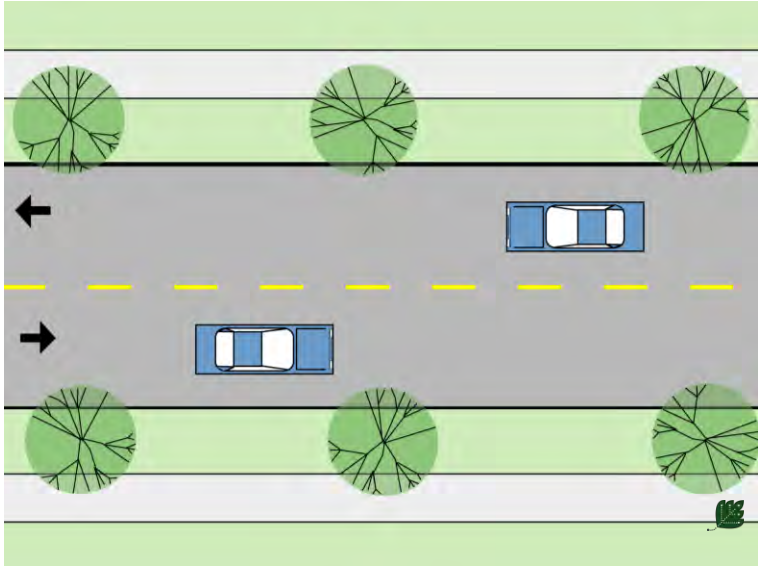
The narrowing of high speed four and five-lane roads to accommodate bike lanes has some specific conversion issues. Given the higher volumes of traffic, higher speeds and higher number of heavy vehicles on some of these roadways, it is desirable to keep the motor vehicle lane widths as close to an 11' minimum as possible or put in place measures to slow the traffic speeds.

As an interim measure for roads less than 60' wide, a bike lane on one side may be considered in conjunction with a shared lane/side path option on the other side. The bike lane should be located on the side with the most driveways and intersecting roads. The other option to consider if there are numerous intersecting roads and driveways on both sides to lower the speed of the roadway so that sub-11' lanes are more appropriate. This is best accomplished with changes to the physical roadway with such things as planted medians and/or crossing islands. These in combination with the narrow lanes will naturally slow traffic.

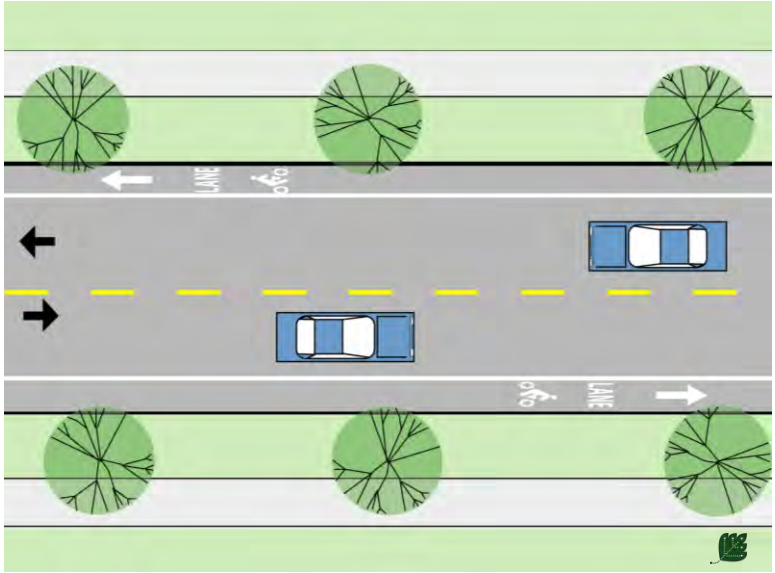
When there is not a bike lane in the road, the bicyclist should be provided the option to use a sidewalk or to bike in the road. Exit and entrance ramps should be used to ease the transition between on-road and off-road facilities.

Fig. 9.6A. Providing Bicycle Lanes Through Lane Narrowing Design Guidelines

Existing Conditions



Proposed Condition



Description

The travel lanes are narrowed allowing room for the inclusion of a bike lane. The bicycle lane has the additional advantage of providing a buffer between the travel lane and the curb.

AASHTO guidelines specifically discuss narrowing travel lanes in order to accommodate bicycle travel, although there are some situations where narrowing lanes may not be appropriate.

Application

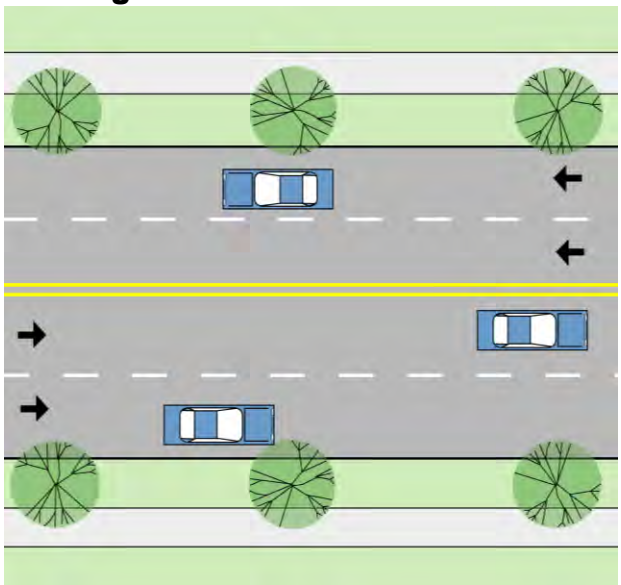
In general, lane narrowing to provide for bicycle lanes may be considered in the following situations (as measured from back of curb):

- 31’ or wider, 2 lane road
- 41’ or wider, 3 lane road (2 lane road with a center turn lane)
- 45’ or wider, 2 lane road with parking on both sides
- 51’ or wider, 4 lane road
- 55’ or wider, 3 lane road with parking on both sides
- 61’ or wider, 5 lane road

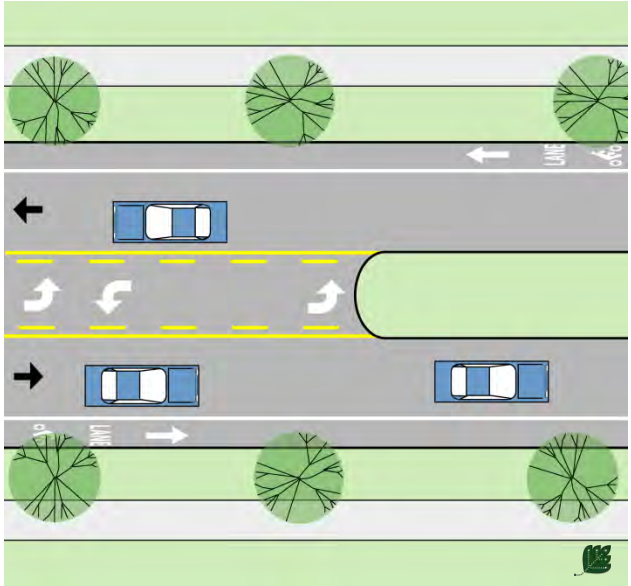
Higher speed roads may require additional width; see notes on multi-modal roadway design guidelines.

Fig. 9.6B. Four-Lane to Three-Lane Road Conversions Design Guidelines

Existing Conditions



Proposed Conditions



Application statistics are referenced from:

Guidelines for the Conversion of Urban Four-lane Undivided Roadways to Three-lane Two-way Left-turn Lane Facilities, April 2001, Sponsored by the Office of Traffic and Safety of the Iowa Department of Transportation, CTRE Management Project 99-54

Description

Four-lane roads present several operational difficulties to motorists. Traffic is often weaving from lane to lane to avoid vehicles that are stopped in the left lane while waiting for a gap in oncoming traffic to make a left turn, or those slowing down in the right lane to make a right turn. The presence of a bicycle in the curb lane also adds to the weaving of traffic if there is not sufficient lane width to pass the bicycle while staying within the lane.

This constant weaving of traffic also makes judging when to enter the road from a driveway or side street difficult as lane positions are changing frequently. This is especially the case for left turns. To address the operational difficulties of 4-lane roadway, the roadway is reconfigured to two through lanes; a center shared left turn lane and/or median and two bike lanes.

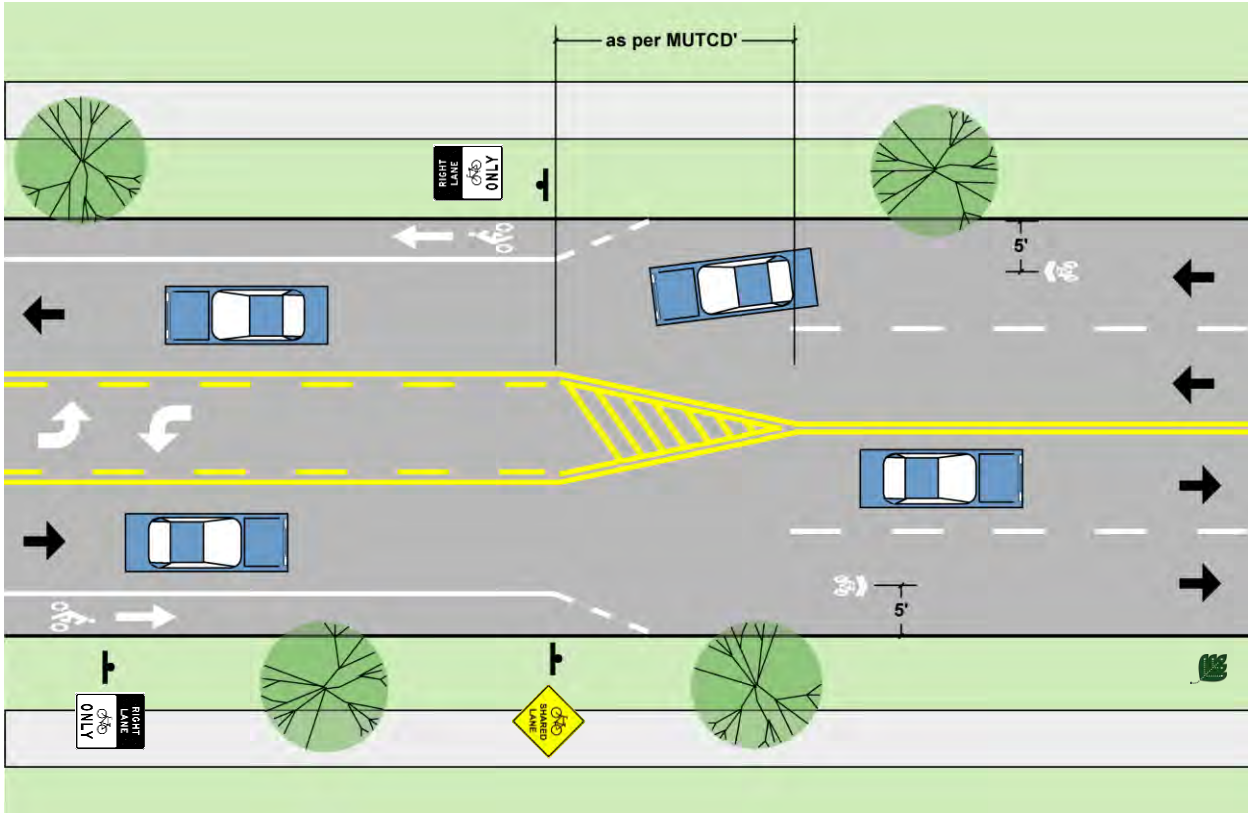
Application

This type of conversion has been used on roadways with up to 24,000 vehicles per day (VPD). Modeling research has shown that there is no loss in Vehicular Level of Service until about 1,750 vehicles per hour (approximately 17,500 VPD) compared to a four-lane configuration. In addition to a significant improvement in the Bicycle Level of Service, these conversions have been also shown to provide a:

- Reduction of the 85% speed by about 5 MPH
- Dramatic reduction in excessive speeding (60-70%) of vehicles going greater than 5 MPH over the posted speed limit.
- Dramatic reduction in the total number of crashes (17-62%).

Conversions though must be evaluated on a case-by-case basis as numerous factors influence the appropriateness of 4 to 3 lane conversion.

Fig. 9.6C. Near-term Opportunities – Transition From Three Lanes to Four Lanes at Signals



Description

Where two motor vehicle lanes are needed to accommodate motor vehicle stacking at signalized intersections the bicycle lane may be dropped and replaced with the Shared-Use Arrow.

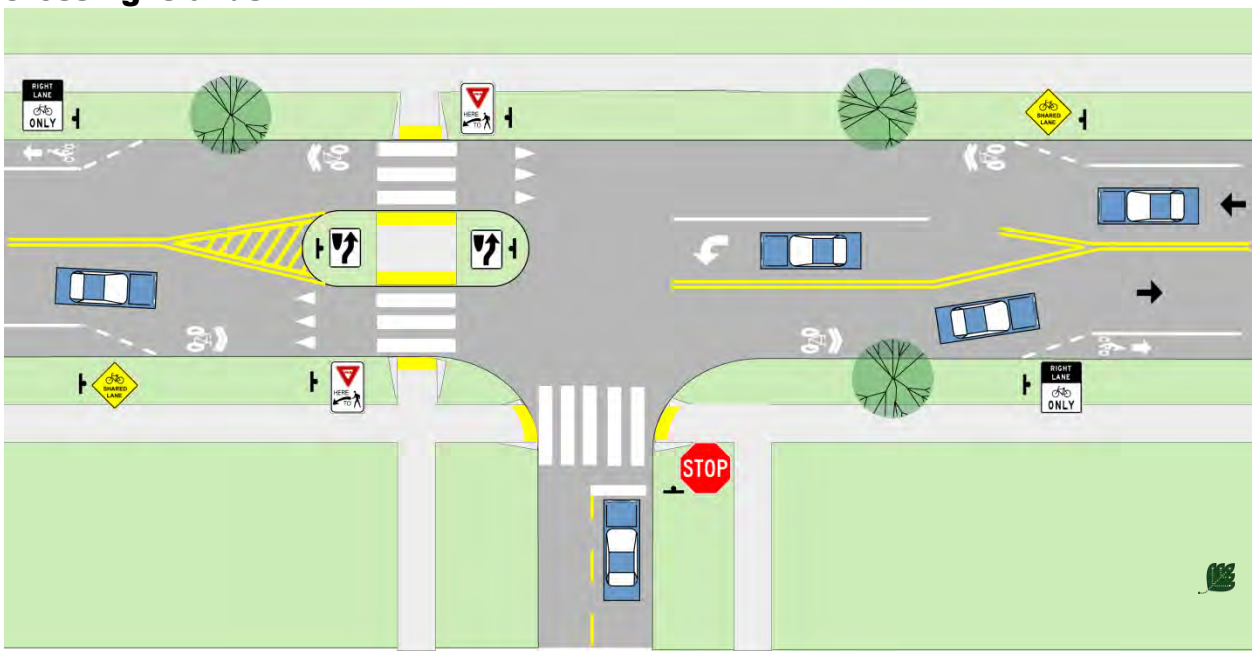
Application

This is an interim approach to accommodating vehicle stacking needs to be used where a bike lane is interrupted in the vicinity of a signal. The long-term solution would expand the intersection to accommodate bicycle lanes. The length of the four-lane segment should be minimized.

Three to Two-Lane Road Conversions

There are cases where a three-lane cross section is used consistently when the need for turn lanes is only intermittent. In these cases a bike lane may be added in places where the turn lane is not warranted. The bike lane then may be dropped when the turn lane is introduced.

Fig. 9.6D. Near-term Opportunities – Accommodation of Turn Lanes and Crossing islands



Description

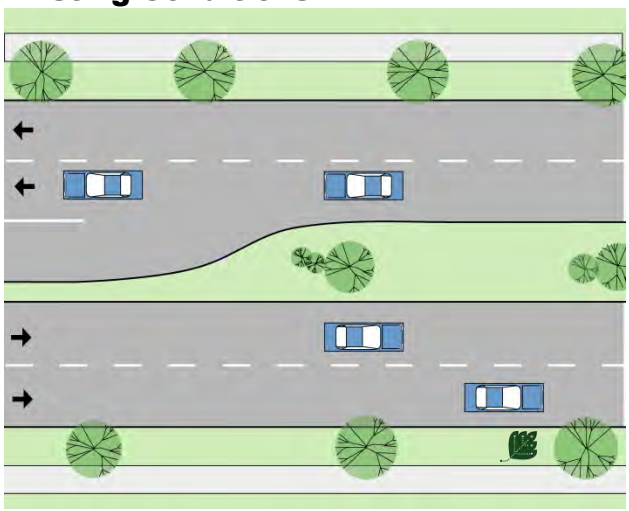
Where a designated left-turn lane is warranted and/or a pedestrian crossing island is appropriate, the bicycle lane may be dropped and replaced with the Shared-Use Arrow.

Application

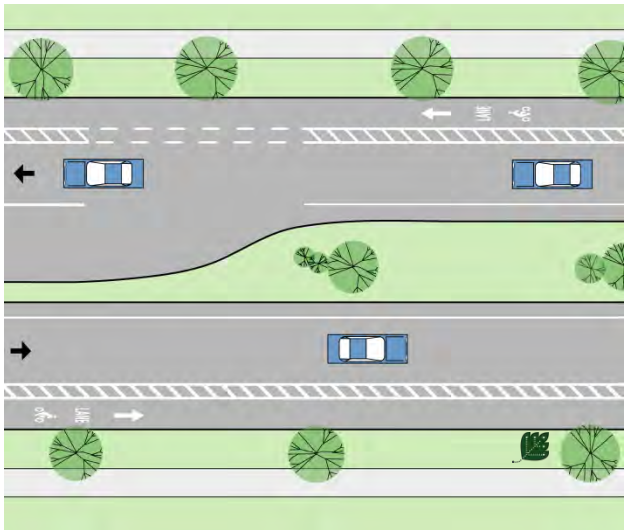
This is an interim approach to accommodating the turn lane and the crossing island. The long-term solution would expand the intersection to accommodate bicycle lanes. The length of the left-turn lane should only be as long as it needs to be to accommodate the conditions of each specific site.

Fig. 9.6E. Four to Two-Lane Boulevard Conversions Design Guidelines

Existing Conditions



Proposed Conditions



Description

The existing condition is a four-lane boulevard with designated turn lanes. These roads have tremendous traffic volume capacity. There are some situations where this road design exceeds the needs of the roadway.

In the proposed condition, two lanes of through traffic are eliminated and bicycle lanes are added. As bicycle lanes are considerably more narrow than travel lanes, a striped buffer is added between the vehicular travel lane and the bike lane and an edge line is placed a few feet from the inside curb. This allows emergency vehicles to pass.

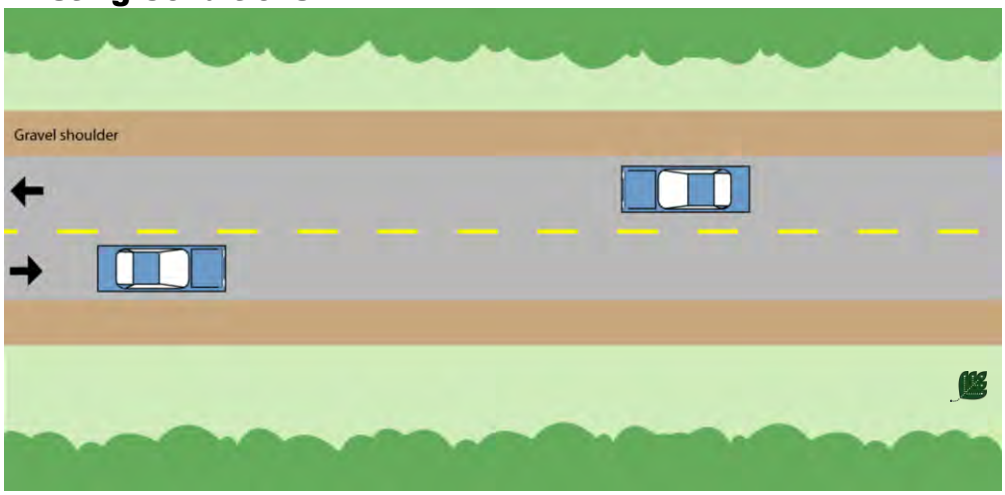
This striped buffer is replaced with a dashed line where bicycle-merging movements are expected.

Application

Where the existing and expected traffic volumes do not warrant four lanes of traffic with extended designated turn lanes.

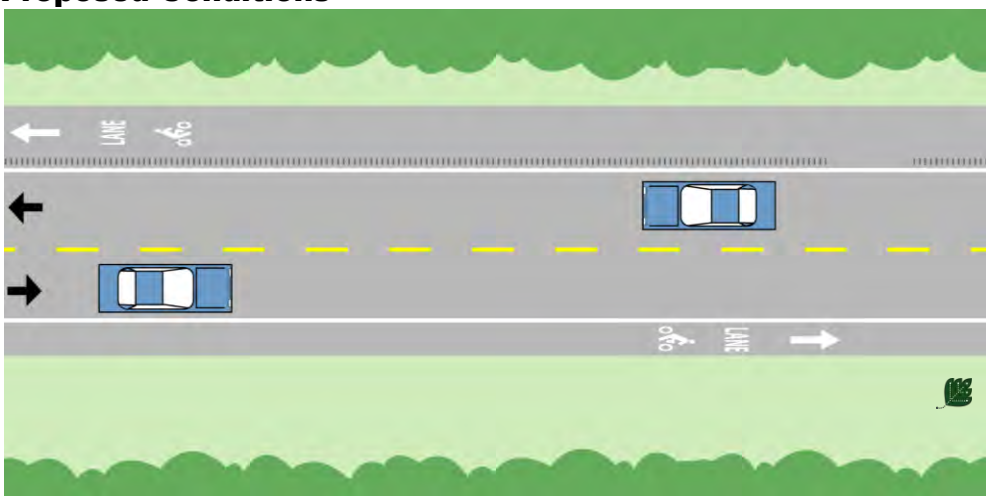
Fig. 9.6F. Paving Shoulders

Existing Conditions



A rural cross-section (no curbs) with gravel or grass shoulder. The existing roadway travel lanes are not of a sufficient width to accommodate bicycle lanes by lane narrowing.

Proposed Conditions



.

Description

Paving the shoulder provides a separate bicycle facility and improves roadway conditions from a motor vehicle and maintenance standpoint. The use of rumble strips is discouraged as they may cause a bicyclist to lose control when they leave the bicycle lane to make a turn or to avoid an obstacle. If extenuating circumstances call for the use of rumble strips, breaks should be provided where appropriate to allow for a bicycle to safely leave the bike lane.

Application

Paved shoulders should be provided on all rural cross section roadways within the City. Where appropriate, bicycle lane pavement markings may be applied.

9.7 Travel Across The Road Corridor

Despite the dangers or inconveniences that exist, at some point in a pedestrian's or bicyclist's journey they will be required to cross a road. Crossing roadways pose challenges to safe navigation for pedestrians and bicyclists on their journeys. Ways to get across a road (including railroads) include intersections, mid-block crosswalks, bridges and tunnels. All pose unique challenges to pedestrians and bicyclists.

Bicyclists and pedestrians in many cases, cross the road in very different fashions. Bicyclists in the roadway most likely will make left turns just like a vehicle, merging across lanes as necessary. Their restrictions to crossing the road are primarily based on their comfort level of riding with traffic and the volumes, speed and gaps that exist. Some bicyclists, depending on the traffic conditions, choose to make left turns as pedestrians. They leave the roadway and cross the road at a crosswalk.

For pedestrians and bicyclists who choose to cross the road as a pedestrian, crossing a road can be an intimidating experience. There are often limited safe and legal crossing options. Pedestrians are directed to cross roads at either intersections or at mid-block crosswalks. Each of those options has their own set of issues.

Intersection Issues

While generally, intersections are the safest place for pedestrians and bicyclists to cross the road, there are a number of issues to consider. Intersections are the most common places of conflict for automobiles, bikes and pedestrians. Even at a simple four way stop, there can be up to twelve different possible movements from the cars alone. Add in more lanes of traffic, and it can quickly get overwhelming. In 2009, 52% of non-motorized crashes in Southeast Michigan were intersection related[1]. However, if designed correctly, intersections can facilitate convenient and safe interactions for all users.

Signalized intersections are the hubs of activity on the roadway. It is a place with conflicting demands from many different users. For the most part, a roadway's vehicular capacity is determined at signalized intersections. From a pedestrian's standpoint, they often face a sea of left turning vehicles, right turning vehicles, and through traffic from four directions. When crosswalk signals require activation by a push button, pedestrians often ignore them because of their inconvenience. Even when pedestrians push the button, in most cases there is no feedback to the pedestrian that they have indeed activated the signal. Often when the signal phases are long, they will assume that the button is broken and cross the road at an inappropriate time.

Vehicles turning right-on-red also pose dangers to pedestrians. The driver of a vehicle is focused on the traffic to the left, looking for a gap. Frequently drivers do not look right for pedestrians beginning to cross the street before beginning their turn. Another problem occurs in situations where the view of the oncoming traffic is obstructed if the vehicle is behind the stop bar. Often times the driver of the vehicle will advance over the crosswalk to improve their sightline. If they are unable to proceed they completely block the crosswalk with their vehicle. This is a common occurrence especially in the downtown area where right-on-red is permitted even when clear sight lines do not exist from behind the stop bar.

Vehicles turning left at busy intersections with few gaps in traffic can also be problematic to pedestrians. The driver of a left turning vehicle in such cases is often focused primarily on finding a suitable gap in oncoming traffic and may commit to turning left before noticing a pedestrian in the crosswalk.

[1] Michigan Traffic Crash Facts, 2009.

Unsignalized intersections are also key points where pedestrians and bicyclists want to cross the road corridor. When the crosswalks are left unmarked, pedestrian travel is often discouraged.

The aforementioned issues are addressed throughout the following guidelines and in *Section 4 – Proposed Policies and Programs*. In addition, special attention has been paid to addressing crossings at points other than signalized intersections.

General Crosswalk Design

Marking a crosswalk serves two purposes: (1) it clarifies that a legal crosswalk exists at that location and (2) it tells the pedestrian the best place to cross .[1] Several issues should be considered when designing safe crosswalks, including visibility, communicating the pedestrian's intent, minimizing crossing distance, snow obscuring the road surface, and accommodating persons with special needs.

Visibility

Increasing the visibility of all users crossing the road is a key issue for pedestrian safety. The ability of pedestrians to see motorists is equally as important as their own visibility in the roadway. Marked crosswalks should be included only where sight distance is adequate for both pedestrians and motorists. Obstructions in sight lines should be minimized. Visibility can also be improved with the following design treatments:

- Wide white ladder crosswalks.
- Stop lines or yield lines that are set back from the crosswalk a sufficient distance to increase visibility from all lanes of traffic.
- Signage directing motorists to yield to the pedestrians.
- Placement of signage that does not obstruct the visibility of the pedestrians.
- Curb extensions (bulb outs), extending the curb out at intersections, also minimizes the pedestrian crossing distance.
- Removal of low hanging branches and minimal planting between the oncoming vehicles and the sidewalk approaches to the crosswalk such that sight distances are in accordance with AASHTO guidelines.
- Lighting of the crosswalk and the sidewalk approaches.

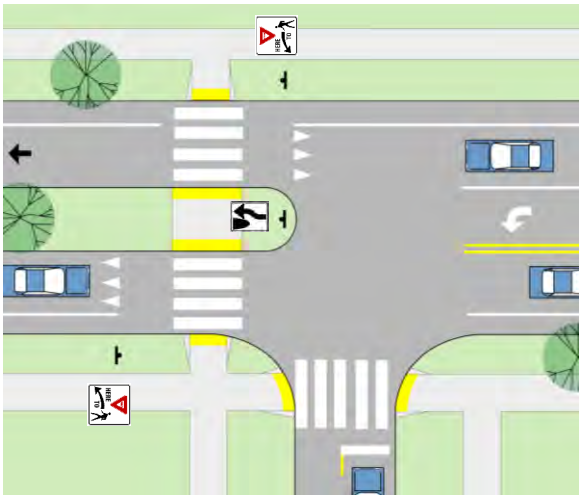
[1] AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities (Draft).* August 2001.

Understanding the Pedestrian's Intent

Road users should be able to discern if a pedestrian is planning to cross the road so that they may take appropriate measures. If a crosswalk is located where a sidewalk directly abuts the roadway, the road users cannot tell if someone is simply going to walk by the crosswalk or abruptly turn and attempt to cross the street. Also, places where pedestrians may typically congregate, such as bus stops, may cause road users to needlessly stop. To help clarify the pedestrian's intent to cross the road, intersections should incorporate the following features:

- A short stretch of sidewalk perpendicular to the roadway where only pedestrians planning to cross the street would typically stand.
- Placing bus stops past the crosswalk to avoid blocking the crosswalk.
- Distancing the crosswalk from places where pedestrians may congregate adjacent to the roadway without the intent to cross the road.
- Installing curb extensions to reduce the crossing distance for pedestrians and to slow traffic, (see Fig. 9.7B)

Figure 9.7A. Pedestrian Crossing Island



Crossing islands

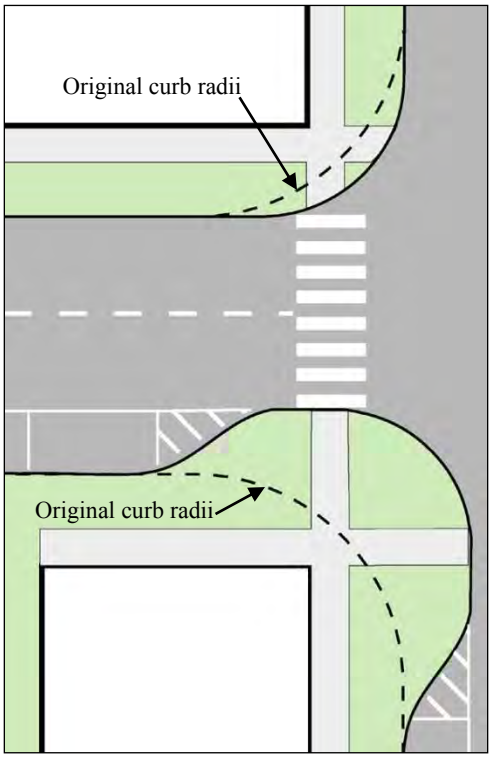
Crossing islands are raised areas that separate lanes of opposing traffic and eliminate the need for pedestrians to cross more than one direction of traffic at a time (see Figure 8.7A to the left).

Crossing islands allow the pedestrian to undertake the crossing in two separate stages. This increases their comfort level and opens up many more opportunities to safely cross the road.

Crossing islands increase the visibility of the crosswalk to motorists and reduce pedestrian crossing distances.

Crossing islands should be considered for all unsignalized marked crosswalks that traverse three or more lanes.

Fig. 9.7B. Effect of curb extensions and smaller curb radii on pedestrian crossing distances



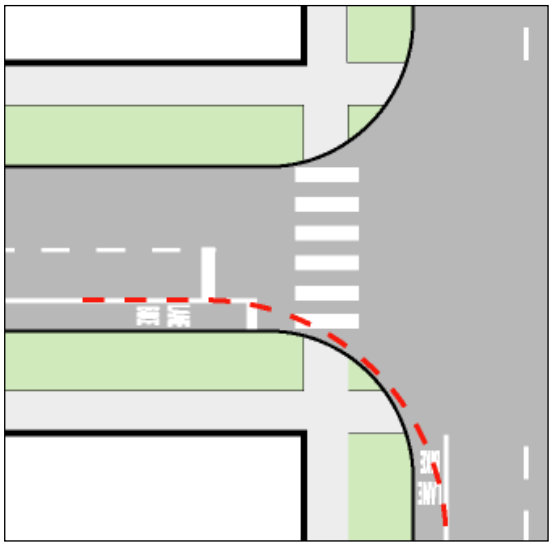
Minimizing Crossing Distances

Minimizing the distance that pedestrians need to cross the street is another critical safety solution. As crossing distances increase, the comfort and safety of a pedestrian decreases. Simple design solutions such as reducing curb radii, and adding curb extensions, shorten crosswalk distances. As well, they reduce the potential for pedestrian-vehicle conflict. Larger corner radii promote higher turning speeds and increase pedestrian crossing distances. See the figure to the left.

In addition to increasing visibility and shortening crossing distances for pedestrians, curb extensions increase the space available for directional curb ramps and prevent parked cars from encroaching on the crosswalk. Curb extensions also serve to make a pedestrian's intent to cross the road known to motorists before they have to step into the roadway.

For signalized intersections, shorter crosswalks mean more time for the pedestrian "Walk" phase and a shorter clearance interval "Flashing Don't Walk" phase.

Fig 9.7C. Effect of Bike Lanes on Turning Radius



Minimizing Turning Radius When Bike Lanes are Present

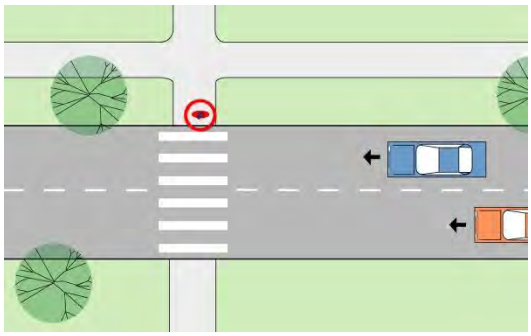
Bicycle lanes provide an added advantage of effectively increasing the turning radius for motor vehicles. This is especially the case where both intersecting roads have bike lanes as shown in the figure to the left.

This also applies to driveways. When a sidewalk is close to the road, the curb radius of an intersecting driveway is typically quite small. In these cases, a bicycle lane can significantly improve the ease of entering and exiting the driveway. For example a 5' curb radius adjacent to a 3.5' bike lane has an effective turning radius of 10' (including the gutter).

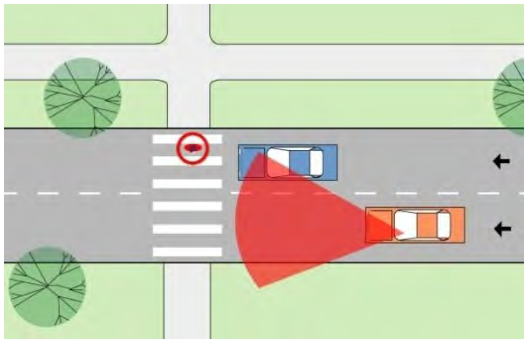
The increased effective turning radius means that motorists are less likely to encroach on adjacent motor vehicle lanes during the turning movements.

Fig. 9.7D. Multiple Threat Crashes Issues

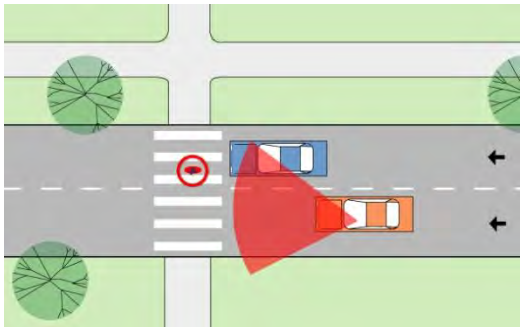
Whenever a crosswalk traverses multiple lanes of traffic traveling in the same direction, there is a potential for what is known as a multiple-threat crash. The crash unfolds as follows:



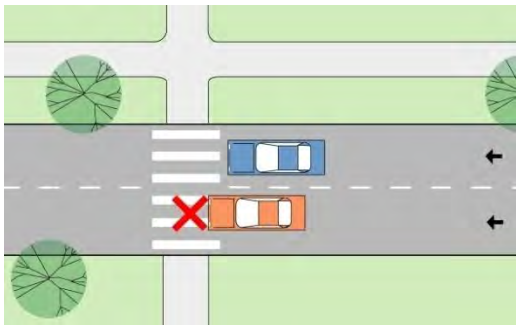
1. The driver in the lane closest to the pedestrian sees the pedestrian approaching the ramp or just entering the roadway and begins to slow down



2. The driver closest to the pedestrian lane stops, yielding the right-of-way to the pedestrian. The car is stopped immediately adjacent to the crosswalk, therefore blocking the sightlines between the pedestrian and the driver of the other car.



3. The driver of the other car fails to see the pedestrian and continues towards the crosswalks without slowing down.



4. The driver of the second car does not see the pedestrian until it is too late to come to a complete stop and hits the pedestrian.

A combination of high visibility crosswalks, yield lines set back from the crosswalk, and crosswalk signage on both sides of the street can help provide better visibility of pedestrians in the crosswalk. See Fig. 9.7Q for recommended countermeasures.

Fig. 9.7E. Countdown Signals

"Walk" Phase

Clearance Interval

"Don't Walk" Phase

Description

These operate in the same manner as typical pedestrian signals, with one addition. At the onset of the Clearance Interval (flashing "Don't walk" or red hand), the signal counts down the remaining time until the "Don't Walk" phase (solid "Don't Walk" or red hand).

Pedestrians find these very intuitive to use and they can help clear up many misunderstandings as to the purpose of the Clearance Interval. Studies have shown that fewer pedestrians remain in the street at the end of the Clearance Interval with countdown signals than with standard pedestrian signals. These signals have been very well received by pedestrians and have reduced complaints in some communities regarding pedestrian signal timing.

Application

The City should consider using the pedestrian signals with an integrated countdown clock for all new and replacement pedestrian signals. The City should consider adding countdown clocks to existing signals at high pedestrian volume signalized crosswalks and locations where the crosswalk is longer than 50'.

Fig. 9.7F. Portable Speed and Traffic Detectors

Description

These portable detectors have the ability to perform traffic counts, speed studies and indicate a driver's speed on a LED display. Some models have a strobe light that may be activated when the speed limit is exceeded. They have been shown to reduce speed in before and after studies.

Application

These may be moved into an area where speeding is of concern to residents. The device may be used without displaying the speed to get a baseline speed study and traffic count in an unobtrusive manner. It may then be set to display the speed. Numerous inexpensive mounting plates may be put in place around the City and the detector can be easily and economically moved from place to place. These would be ideal for school zones where speed is a concern.

Fig. 9.7G. Active Crosswalk Warning Systems

Description

A flashing beacon and/or in-pavement flashing LEDs are activated when a pedestrian is present. The signals may be passively activated through a number of methods or activated via a standard push button. The pedestrian approach can also be set to flash a red light with a sign indicating to cross after traffic clears. Various manufacturers have solar powered models with radio controls to activate flashers on advance warning signs and on signs on the opposite side of the street. This significantly reduces the cost of installation and operation.

Application

These systems are best located at pathway and major road intersections, or mid-block crosswalks on major roadways where pedestrian traffic is sporadic. Passive activation works best when there is a long pedestrian approach such as a pathway.

Fig. 9.7H. Rectangular Rapid Flash Beacon

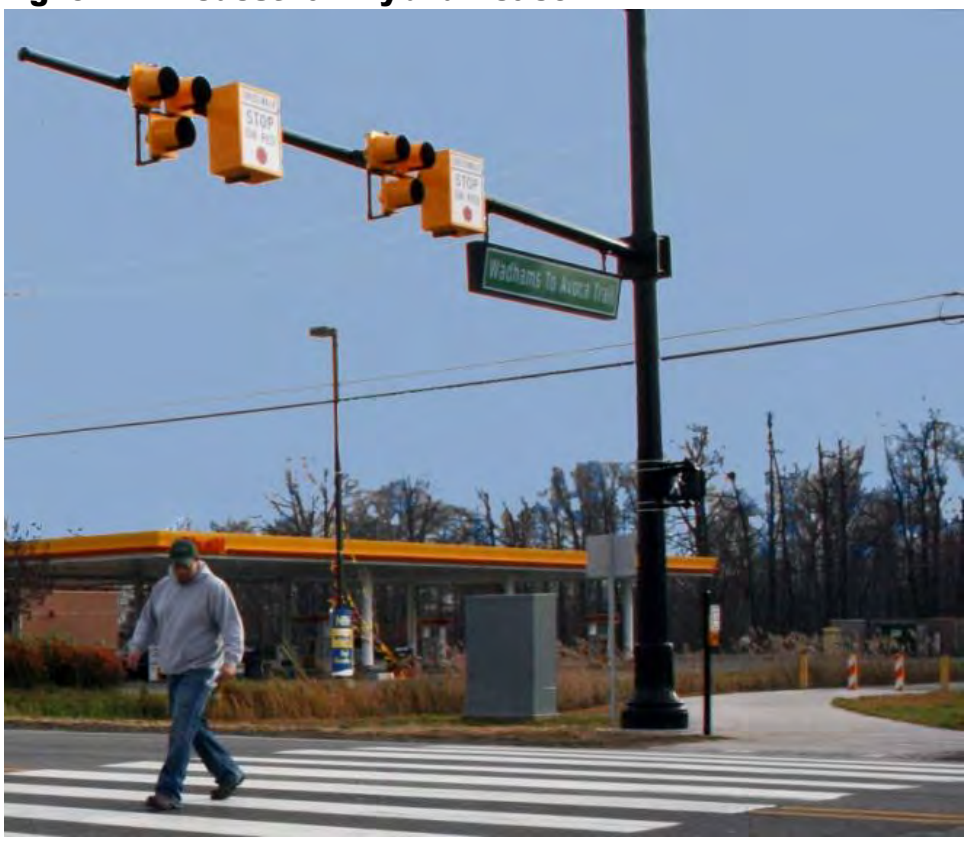
Description

Actuated Rectangular Rapid Flash Beacons are high intensity LED flashers that are paired with crosswalk signs. The LED flashers alternate and get motorists attention when activated. They can be passively or push-button activated and are sometimes linked to advanced warning signs. Various manufacturers have solar powered models that significantly reduce the cost of installation and operation.

Application

These systems are best located at pathway and major road intersections, or mid-block crosswalks on major roadways where pedestrian traffic is sporadic. Passive activation works best when there is a long pedestrian approach such as pathway.

Fig. 9.7I. Pedestrian Hybrid Beacon



Description

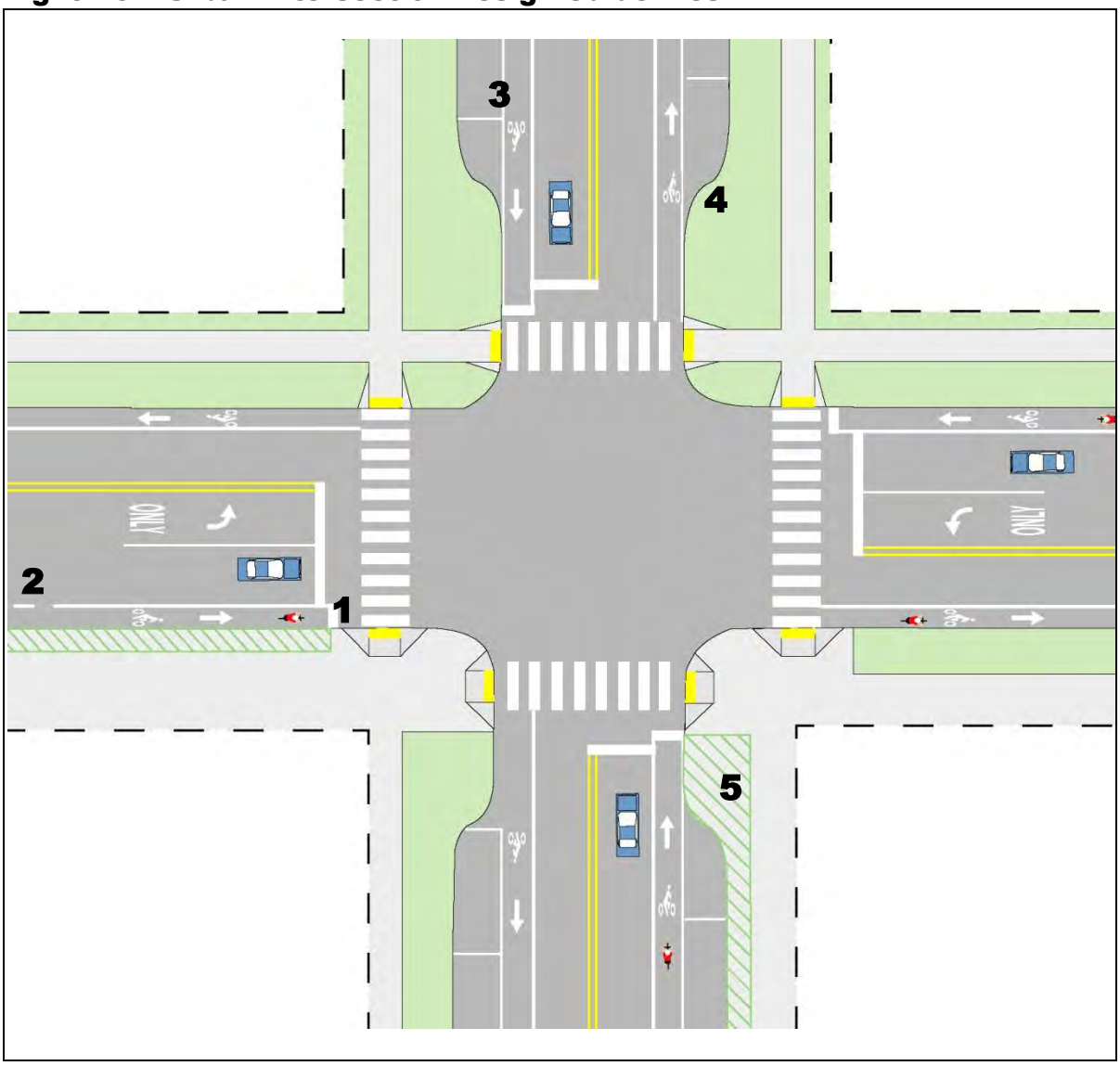
The Pedestrian Hybrid Beacon, also known as a HAWK signal, is a beacon used to help pedestrians cross mid-block where a traditional pedestrian crosswalk signal would be inappropriate. The pedestrian hybrid beacon is similar to an emergency beacon in that the signal's purpose is clearly signed adjacent to the signal.

The signal is kept dark at its resting state. When a pedestrian activates the crossing button, a flashing yellow signal is displayed to motorists. This is followed by a steady yellow then a solid red at which time the pedestrian is displayed a walk signal. During the clearance interval, the motorists are displayed an alternating flashing red signal. Motorists may then move forward if the pedestrian or bicyclist has already crossed the road.

Application

These system work best at mid-block crosswalk locations where poor sight lines, infrequent usable gaps and/or inability to install a crossing island make an unsignalized crossing unsafe. They should not be installed at or within 100 feet of an intersection.

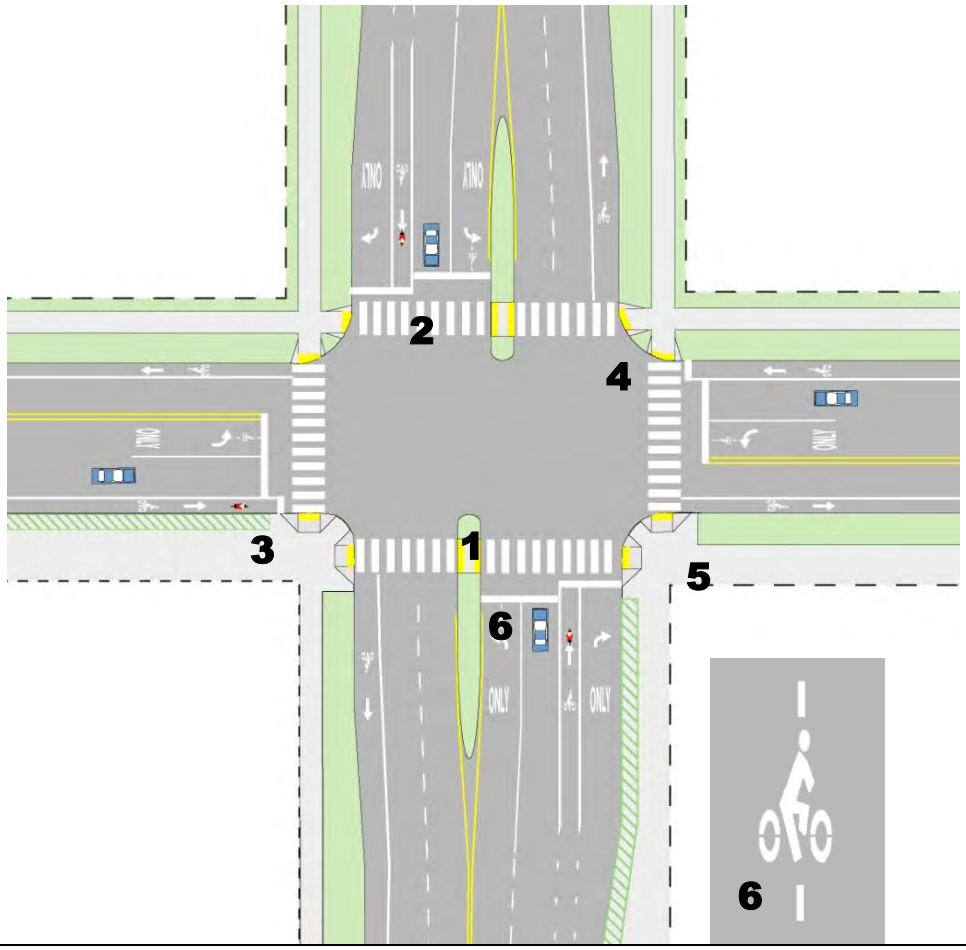
Fig. 9.7J Urban Intersection Design Guidelines



Key Elements

1. Bike lane striping should stop at the pedestrian crosswalks and resume on the far side of the intersection. Unusual alignments may be aided by extending dashed guidelines through the intersection.
2. Bike lane striping is dashed at the intersection approach to indicate that bikers may be merging with traffic to make a turn.
3. Striping between the parking lane and bike lane encourages motorists to park closer to the curb and discourages motorists from using the bike lane in combination with an unused parking bay as a travel lane.
4. Curb extensions reduce the crossing distance of pedestrians and improve sight distance for both motorists and pedestrians. Curb extensions should be used wherever there is on-street parking.
5. In urban areas, a furniture and street tree zone provides a buffer from the street and improves the pedestrian level of service rating. A sufficiently wide travel way should be clear of any obstructions.

Fig. 9.7K. Multi-lane Urban Intersection Design Guidelines

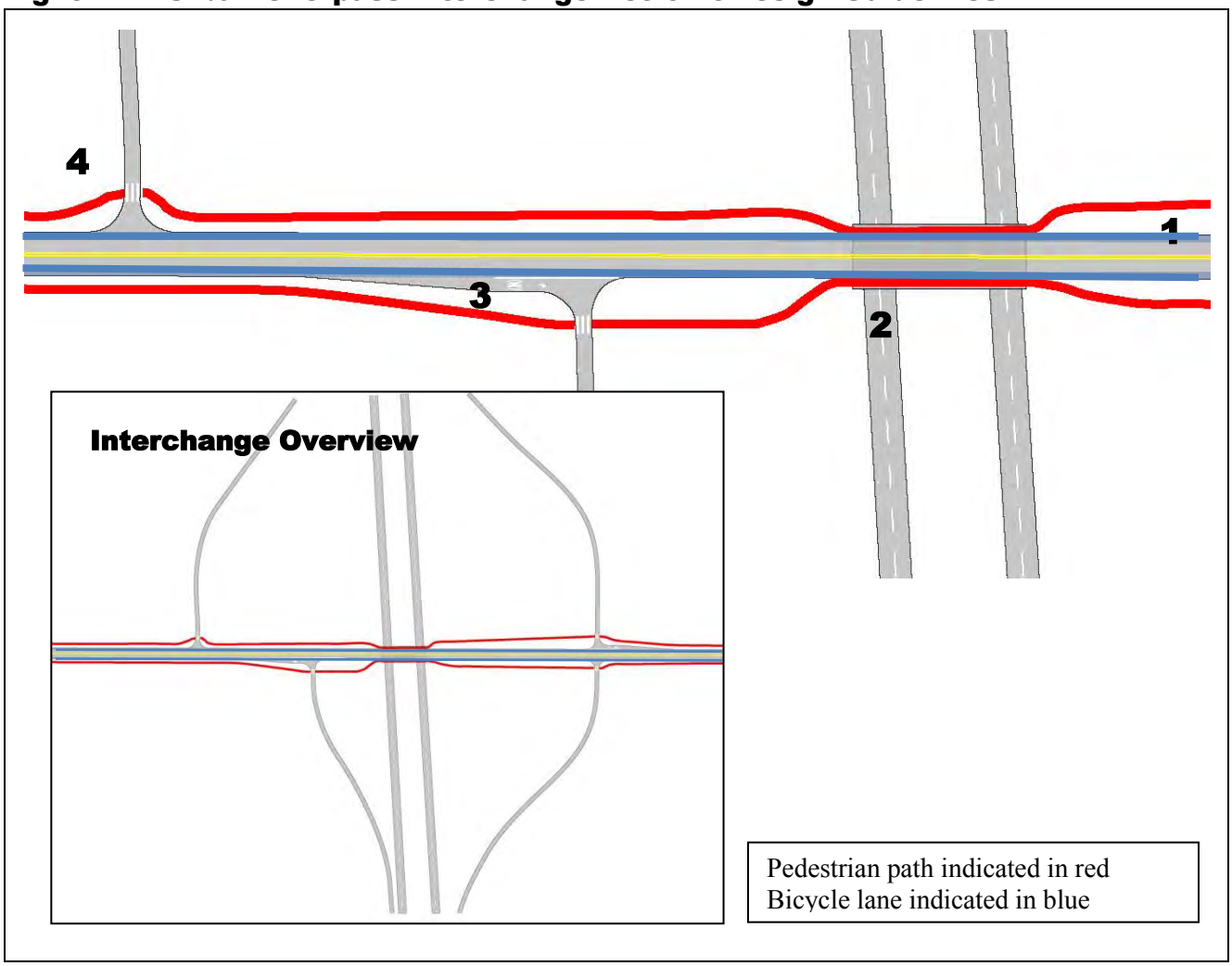


Key Elements

1. Pedestrian crossing islands should be installed at wide, multi-lane streets with high traffic volumes. Curbs, signs, and street hazard markings should delineate the islands.
2. Crosswalks should be a minimum of 10' wide and clearly marked with a white ladder design to increase visibility and resist tire wear.
3. Bike stop bar is advanced several feet ahead of vehicle stop bar to minimize conflicts of right turning cars with through bike traffic.
4. A small curb radius shortens the pedestrian's crossing distance and controls traffic speed around corners. Bike lanes provide a significantly larger effective turning radius than the actual curb radius and should be considered in turning radius calculations.
5. Perpendicular ramps should be built 90 degrees to the curb face and should include a detectable warning strip for visually impaired people.
6. Traffic detectors in left turn lanes should be designed to detect bicycles. Detectors should include pavement markings that indicate where bikes can best be detected.
7. Timing of the traffic signal should allow adequate all red phases to provide sufficient clearance time for bikes to clear an intersection.

Other intersection features may include Right-On-Red turning restrictions, leading pedestrian interval signal phases, and audible signals for visually impaired users where appropriate.

Fig. 9.7L. Urban Overpass Interchange Retro-fit Design Guidelines



Key Elements

1. Bike lanes must be on both sides of the road to allow cyclists to ride with traffic.
2. Sidewalks with barriers between the sidewalk and the roadway should be provided at the bridge. If retrofitting an existing bridge, consider cantilevering a sidewalk.
3. The through bike lane should be to the left of the right turn lane onto the approach ramp.
4. Curb radii of ramps are tightened to narrow pedestrian crossing distances and crosswalks are clearly marked.

Signal Timing and Turn Restrictions

The length of a pedestrian signal is generally determined primarily by the motor vehicle flow with the exception of a few cases where the motor vehicle phase is lengthened to accommodate a long pedestrian clearance interval. Where there is heavy pedestrian flow, such as in the campus area, the flow of pedestrians should be given the same consideration as motor vehicles in setting signal timing.

Where intersection geometry is such that the intersection is wider than typical, motor vehicle clearances should be evaluated to make sure that the pedestrian Walk phase is not started when motor vehicles would be moving through the crosswalk. Also, the motor vehicle clearance time should be set to account for bicycle traffic.

Motorists are prohibited from blocking crosswalks by law. The City should evaluate restricting right turns where a vehicle cannot see cross street traffic without entering a crosswalk. Where there is significant pedestrian traffic in a crosswalk that conflicts with motor vehicles making right turns, the City should evaluate the feasibility of using a leading pedestrian interval of approximately 5 seconds. A leading pedestrian interval providing pedestrians with the “Walk” phase prior to motor vehicles given the green light has been shown to help prevent right turning vehicles from cutting off pedestrians trying to leave the curb.

Unsignalized Mid-block Crosswalks

The majority of pedestrian trips are ¼ mile or less, or a five to ten minute walk at a comfortable pace[23]. Any small forced detour in a pedestrian's path has the potential to cause significant time delays if not shift the trip to another mode (most likely motorized). Pedestrians will seek the most direct route possible and are not willing to go far out of their way. Thus, they will often cross the road whether there are crosswalks or not. This results in the increased likelihood of pedestrians unexpectedly dashing out mid-block. This is the second most common type of pedestrian/vehicle collision after intersection related crashes.[24]

A concern with any mid-block crosswalk is providing the pedestrian with a false sense of security. This concern must be weighed against accommodating and encouraging pedestrian travel. If we are to encourage safe and legal pedestrian travel, well designed, high visibility mid-block crosswalks should be provided at appropriate locations. The use of a sign oriented toward pedestrians that states "Cross Road When Traffic Clears" has been used in other communities to underscore the pedestrian's responsibilities at unsignalized crosswalks.

Understanding pedestrian routes and common pedestrian destinations will guide the placement of mid-block crosswalks at needed locations. According to AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, there are numerous attributes to consider when determining whether placement of a mid-block crosswalk is appropriate. These include:

- The location is already a source of a substantial number of mid-block crossings.
- A new development is anticipated to generate mid-block crossings.
- The land use is such that pedestrians are highly unlikely to cross the street at the next intersection.
- The safety and capacity of adjacent intersections or large turning volumes create a situation where it is difficult to cross the street at the intersection.
- Spacing between adjacent intersections exceeds 200 m (660 ft or an 1/8 of a mile).
- The vehicular capacity of the roadway may not be substantially reduced by the midblock crossing.
- Adequate sight distance is available for both pedestrians and motorists.

The 2009 MUTCD revised guidance for provision of marked crosswalks states:
New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

A. *The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or*

B. *The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater*

[23] AASHTO. *Guide for the Planning, Design, and Operation of Pedestrian Facilities.* July 2004.
[24] FHWA, Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, June 1996

Unsignalized Marked Mid-block Crosswalk Signage

Fig. 9.7M. Crosswalk Signage

Pedestrain Warning Sign

W11-2
and
W16-Ahead

Preferred
Crossing Sign

R1-5

The current version of the Michigan Manual of Uniform Traffic Control Devices illustrates numerous ways to sign a crosswalk. When an advanced warning sign is desired, the W11-2 and W16-Ahead should be used. At the crosswalk itself there are a number of options. One option to use a W11-2 (pedestrian warning sign) with a W16-7P (arrow pointing at the crosswalk). Another option uses one of the new Yield Here to Pedestrian Signs either the R1-5 (shown) or the R1-5a (where the word pedestrian is used rather than the icon). It is recommended in most cases to use the R1-5 in conjunction with a yield line consisting of a row of isosceles triangle pavement markings across approach lanes and pointed towards approaching vehicles. This help to get vehicles to yield to pedestrians at a safe distance back from the crosswalk.

Fig. 9.7N. In-Road Signs

R1-6

Many communities use Yield to Pedestrian signs placed within the crosswalk that alert motorists of pedestrian crossings and calm traffic in the vicinity of the crosswalk. These in-street crossing signs cannot be used at signalized locations. If the In-Street Pedestrian Crossing sign is placed in the roadway, the sign should comply with the breakaway requirements of AASHTO's guidelines. The in-street sign may be used seasonally to prevent damage in winter from plowing operations.

In-Road Removable Yield to Pedestrian signs may be used temporarily as part of an education and/or enforcement program in a targeted area or on a semi-permanent basis for critical crosswalks.

Fig. 9.7O. Yellow vs. Fluorescent Green Signs

W11-2

The 2009 MUTCD requires fluorescent yellow-green colored signs be used for school and school bus signs. MDOT has until the end of 2011 to adopt these changes. Fluorescent yellow-green colored signs are optional for pedestrian, bike and playground signs, however, if they should be used consistently throughout the city.

Fig. 9.7P. School Crossing Sign Options

Advanced Warning

S1-1*

W16-9P*

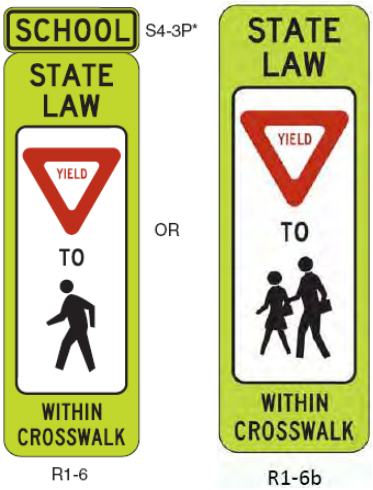
Or

Crosswalk Warning

S1-1*

W16-7P*

In-Street Pedestrian Crossing Sign
Alternative to Crosswalk Warning Sign



The use of the STATE LAW legend is optional on the R1-6 series signs

Overhead Pedestrian Crossing Signs

The Overhead Pedestrian Crossing (R1-9 or R1-9a) may be modified to replace the standard pedestrian with schoolchildren symbols and may be used at unsignalized school crossings. The STATE LAW legend may be omitted on the R1-9 signs.

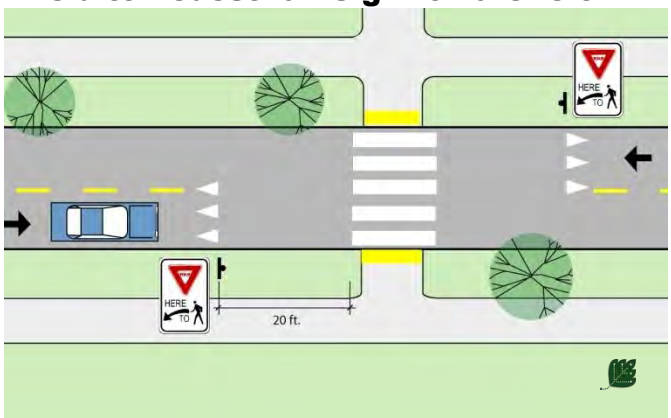
The School Crossing signs are intended to be placed at established crossings that are used by students going to and from school. However, if the crossing is controlled by stop signs, S1-1 should be omitted at the crosswalk location. Only crossings adjacent to schools or on designated routes to school should be signed with S1-1.

The In-street Pedestrian Crossing (R1-b or R1-6a) sign may be used at unsignalized school crossings. If used at a school crossing a SCHOOL (S4-3P) sign may be mounted above the sign.

The signs in Fig. 9.4P are required in the 2009 MUTCD. MDOT has until the end of 2011 to adopt these changes.

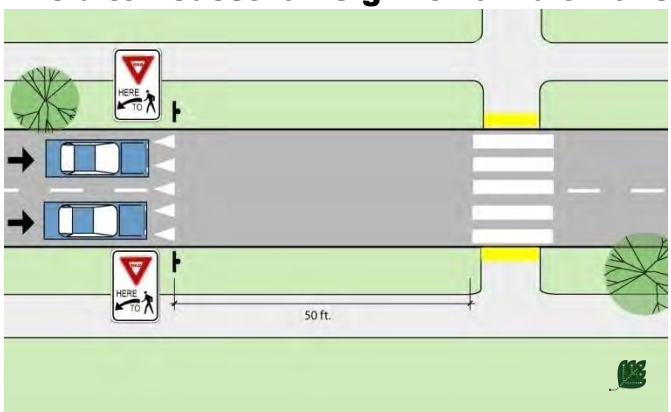
.Fig.9.7Q. Crosswalk Sign and Yield Line Placement

"Yield to Pedestrian Sign" on a One or Two-Lane Road



"Yield Here to Pedestrians" signs and yield line pavement markings should be placed a minimum of 20 ft. in advance of a crosswalk to encourage drivers to stop a greater distance from the crosswalk.

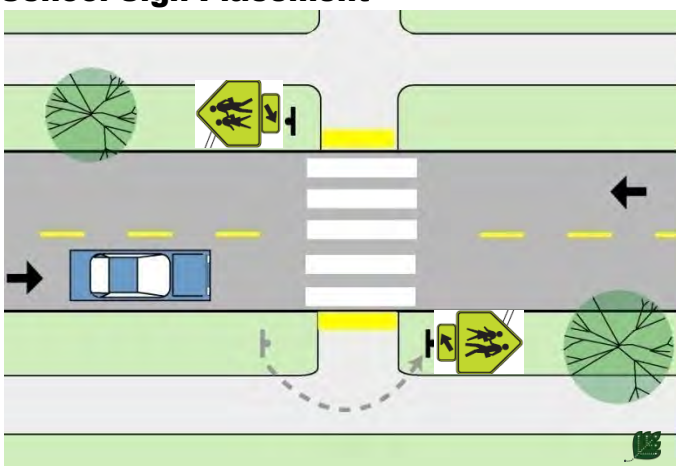
"Yield to Pedestrian Sign" on a Multi-Lane Road



"Yield Here to Pedestrians" signs and yield line pavement markings should be placed further in advance of a crosswalk on multi-lane roads to minimize the risk of a multiple-threat crash (see illustration in this section) and provide improved visibility for motorists in adjacent lanes.

"Yield Here to Pedestrians" signs should be placed on either side of the road to ensure visibility for motorists in both lanes.

School Sign Placement

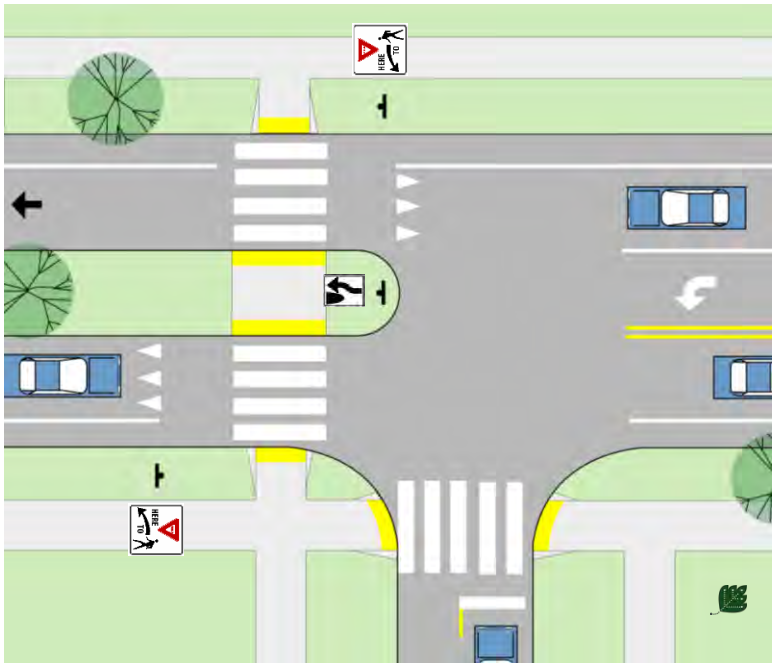


School Crossing Signs should be placed behind the crosswalk to improve visibility of crossing pedestrians rather than in front of the crosswalk where the large signs may obstruct motorists' views.

Selected Placement of Crosswalks at Tee intersections Design Guidelines

On some roads it may be desirable to mark only one of the crosswalks at a Tee intersection in order to channel pedestrians to a safer crossing point and to maximize the effectiveness of the crosswalk by not overusing high visibility crosswalks.

Fig. 9.7R. Unsignalized Tee Intersection with Turn Lane Guidelines



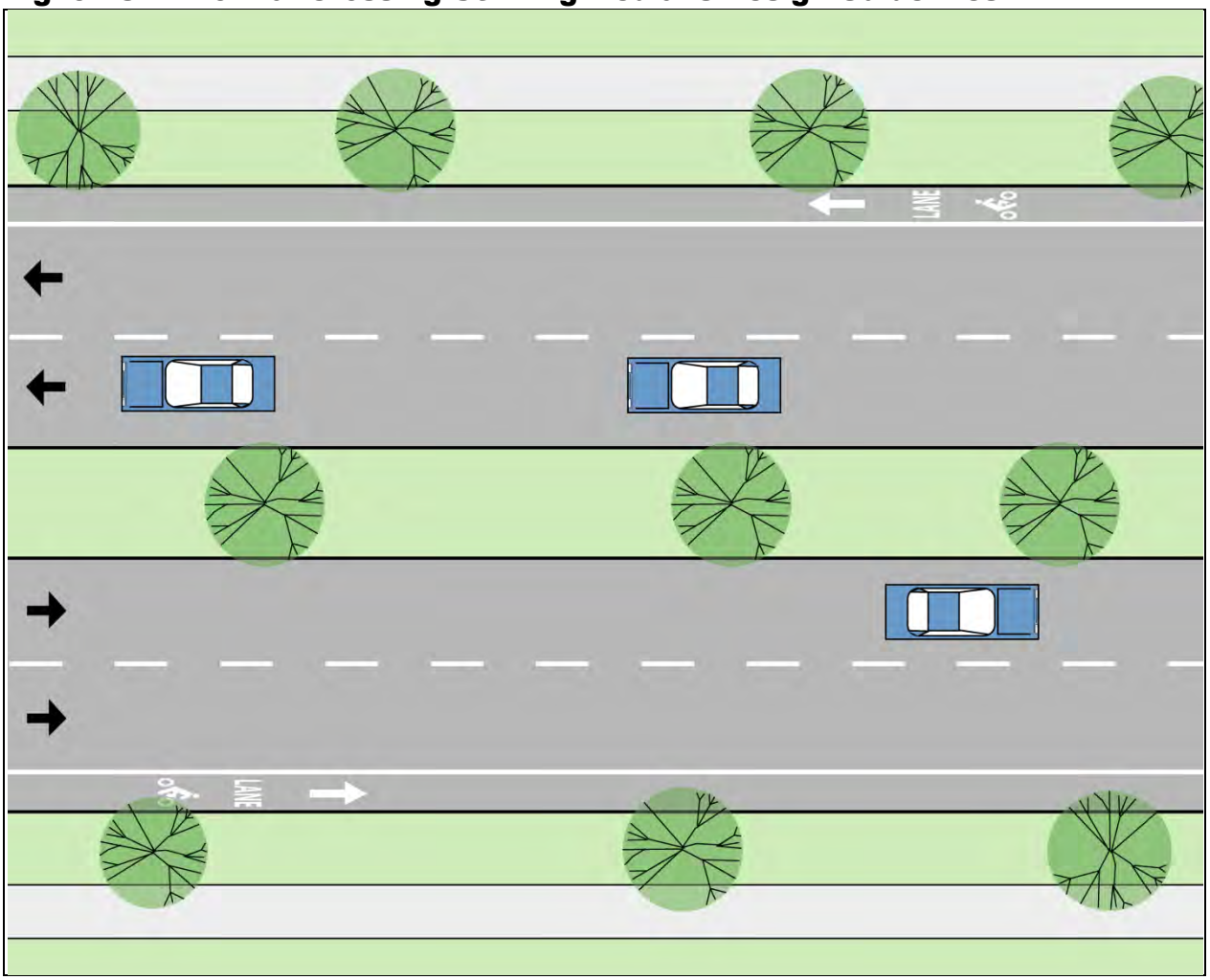
Description

At unsignalized Tee intersections with center turn lanes, the marked crosswalk is located to the left of the intersecting street and the turn lane is converted to a pedestrian crossing island. The crossing island should be located such that it requires left turns from the intersecting street to have a fairly tight turning radius, therefore reducing their travel speed.

Curb ramps should be provided at all legal crosswalks, regardless of whether the crosswalk is marked. Driveways should be prohibited in the vicinity of the intersection.

The treatment shown should be used in conjunction with advance warning signs (not shown).

Fig. 9.7S. Informal Crossing Utilizing Medians Design Guidelines



Description

Raised medians may somewhat accommodate dispersed informal crossings by able-bodied adults during periods of no or low snowfall.

Key Elements

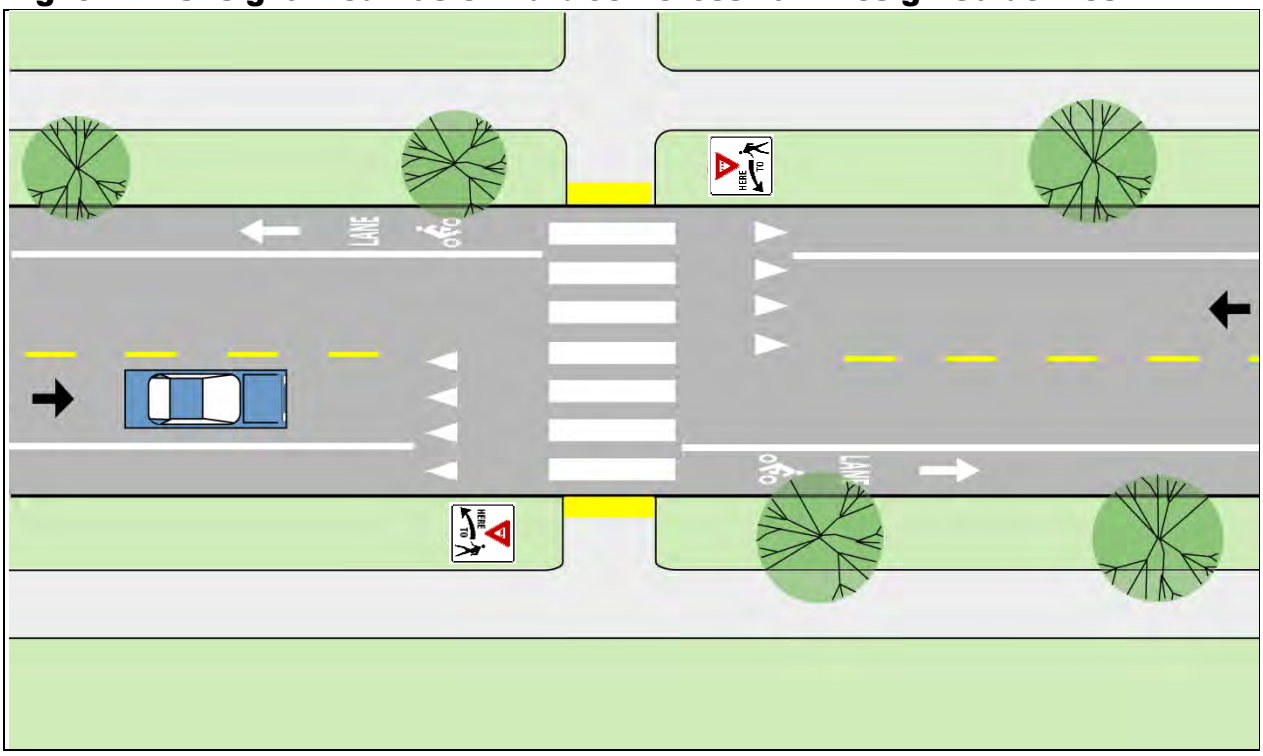
A median with plantings that permits traversing by foot and allows good visibility between the driver and the pedestrian.

Applications

On roads of four or more lanes where dispersed crossings are anticipated, where center left-turn lanes are unused, where minimum pavement is desired, and where traffic calming is desired. They may be used where a marked crosswalk is being considered as a Near-term Opportunities measure.

Example

Fig. 9.7T. Unsignalized Basic Mid-block Crosswalk Design Guidelines



Description

A mid-block crosswalk for a two-lane road at an unsignalized location without parking. The treatments shown should be used in conjunction with advance warning signs (not shown).

Key Elements:

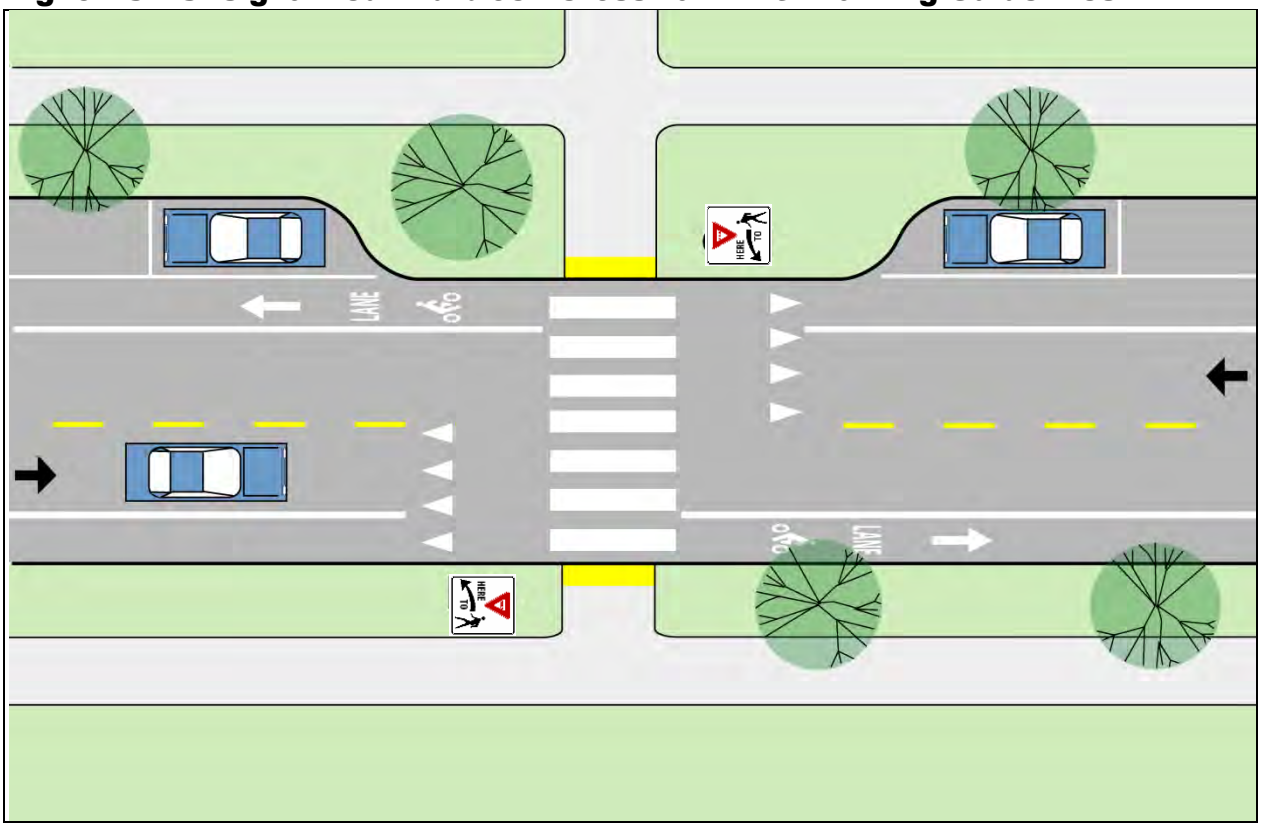
- The yield markings are set back from the ladder crosswalk to minimize the potential for a multiple threat crash.
- Where crossing signs other than the R1-5/ R1-5a "Yield Here to Pedestrians" are used, yield lines should be omitted.
- Sightlines are kept clear of vegetation.
- A 2' wide detectable warning strip is used at the base of the ramps.

Applications

Generally used on relatively low volume, low speed roads where sufficient gaps in the motorized traffic exist. This crosswalk design should not be used in any situations where there are greater than two travel lanes or when there is on street parking.

Example

Fig. 9.7U. Unsignalized Mid-block Crosswalk With Parking Guidelines



Description

A mid-block crosswalk for a two-lane road at an unsignalized location with parking. The treatments shown should be used in conjunction with advance warning signs (not shown).

Key Elements:

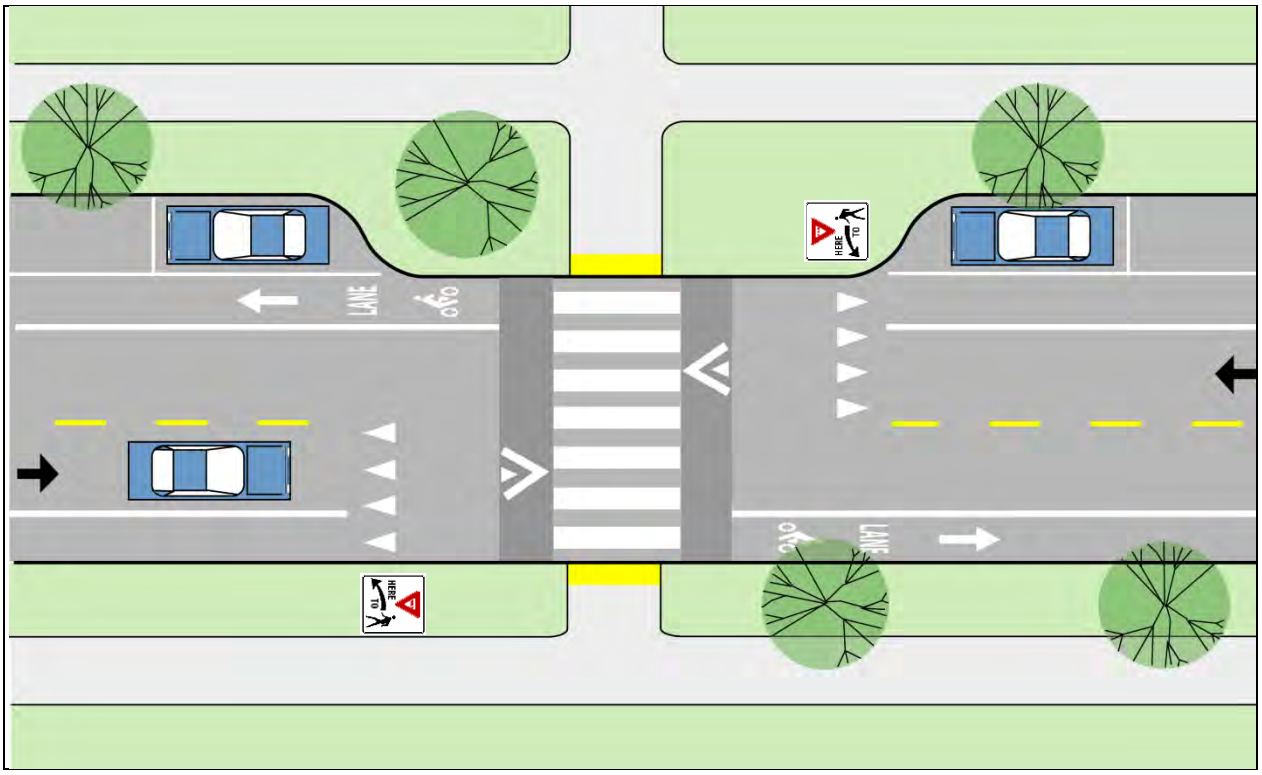
- See elements listed under Unsignalized Basic Mid-block Crosswalk.
- A bulb-out extends the pedestrian ramp into the sightlines of oncoming vehicles, reducing the potential for a "dart-out" type crash.

Applications

Generally used on relatively low volume, low speed roads where sufficient gaps in the motorized traffic exist. This crosswalk design should not be used in any situations where there are greater than two travel lanes.

Example

Fig. 9.7V. Unsignalized Speed Table Mid-block Crosswalk Design Guidelines



Description

A mid-block crosswalk for a two-lane road at an unsignalized location with parking. The treatments shown should be used in conjunction with advance warning signs (not shown).

Key Elements:

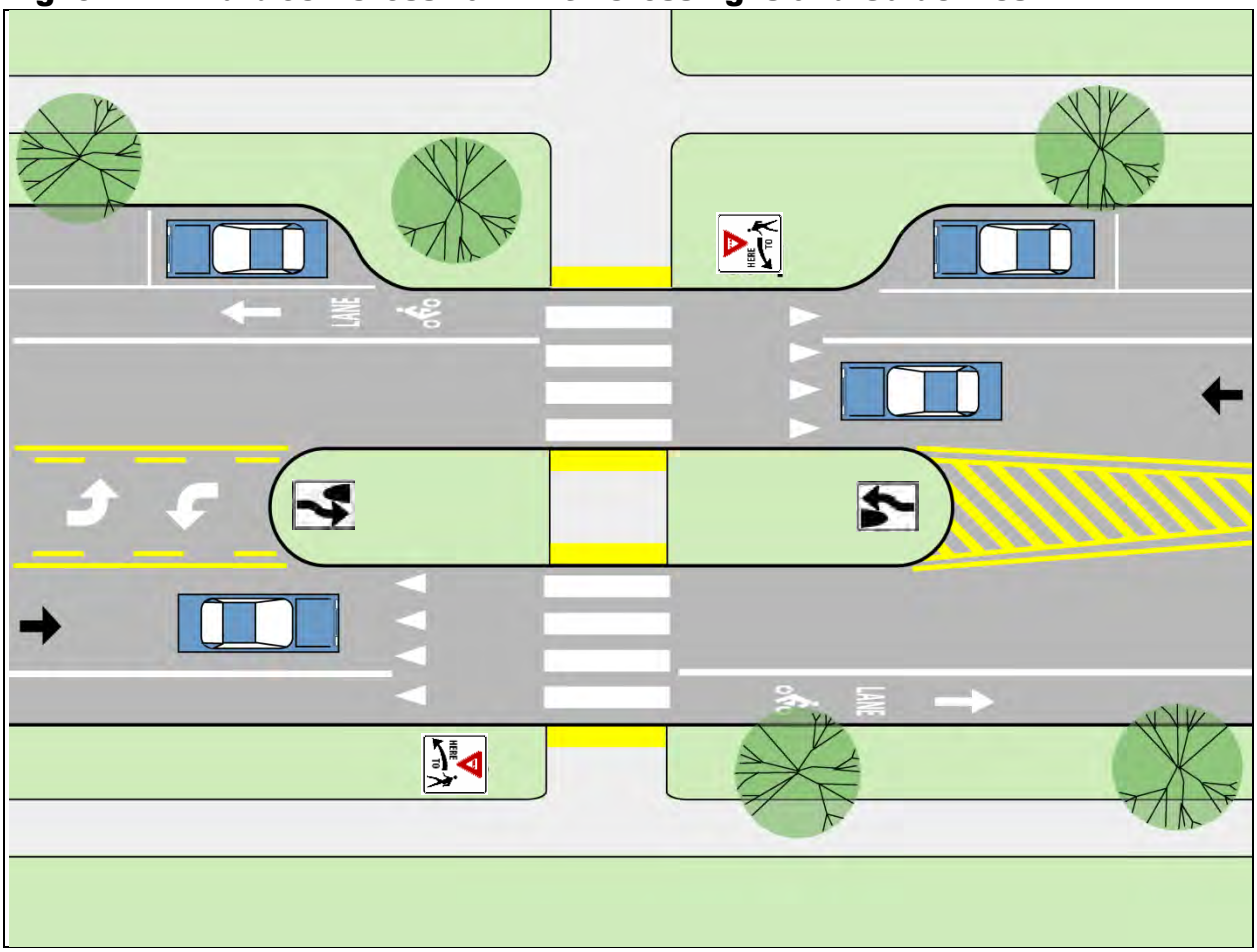
- See elements listed under Unsignalized Basic Mid-block Crosswalk and Unsignalized Mid-block Crosswalk with Parking.
- A speed table with 6' long approach ramps and a 4" high table is placed under the crosswalk to bring travel speeds to approximately 25 MPH.
- When retrofitting existing roadways, maintaining drainage along the curb may present challenges in meeting ADA ramp requirements.

Applications

Generally used on relatively low volume, low speed roads where sufficient gaps in the motorized traffic exist. This crosswalk design should be used in areas where traffic speeds typically exceed posted speeds. May only be used as a part of a traffic calming program.

Example

Fig. 9.7W. Mid-block Crosswalk with Crossing island Guidelines



Description

A mid-block crosswalk for a two-lane or three-lane road at an unsignalized location with or without parking. The treatments shown should be used in conjunction with advance warning signs (not shown).

Key Elements:

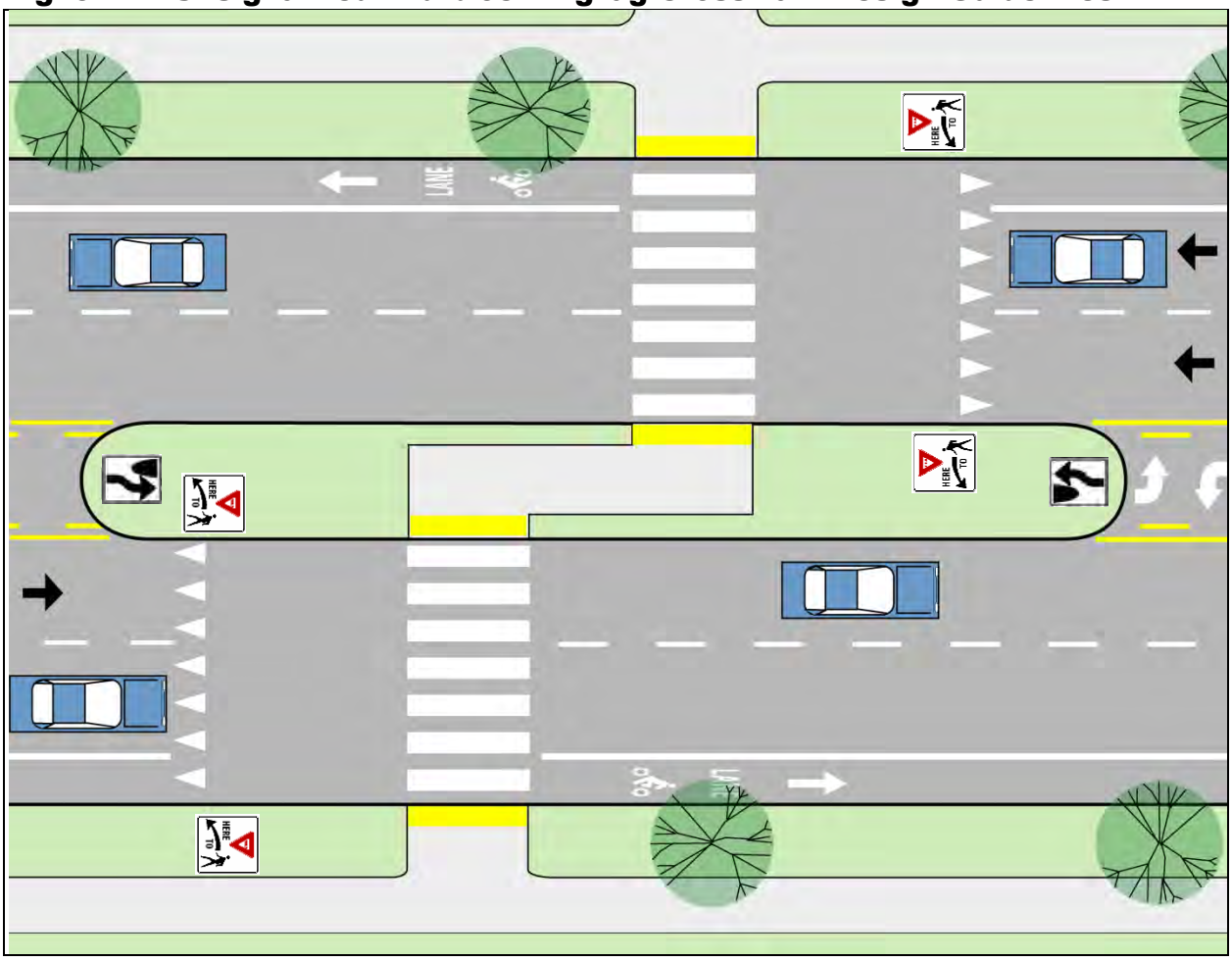
- See elements listed under Unsignalized Basic Mid-block Crosswalk and Unsignalized Mid-block Crosswalk with Parking.
- A crossing island is provided to break the crossing into two separate legs. The island has a minimum width of 6' with 11' or wider preferred.
- Planting on crossing islands should be kept low so as not to obstruct visibility.

Applications

Generally used on a higher volume and higher speed road where suitable gaps to cross both directions of traffic in one movement are infrequent.

Example

Fig. 9.7X. Unsignalized Mid-block Zigzag Crosswalk Design Guidelines



Description

A mid-block crosswalk for a four or more lane road at an unsignalized location without parking.

Key Elements:

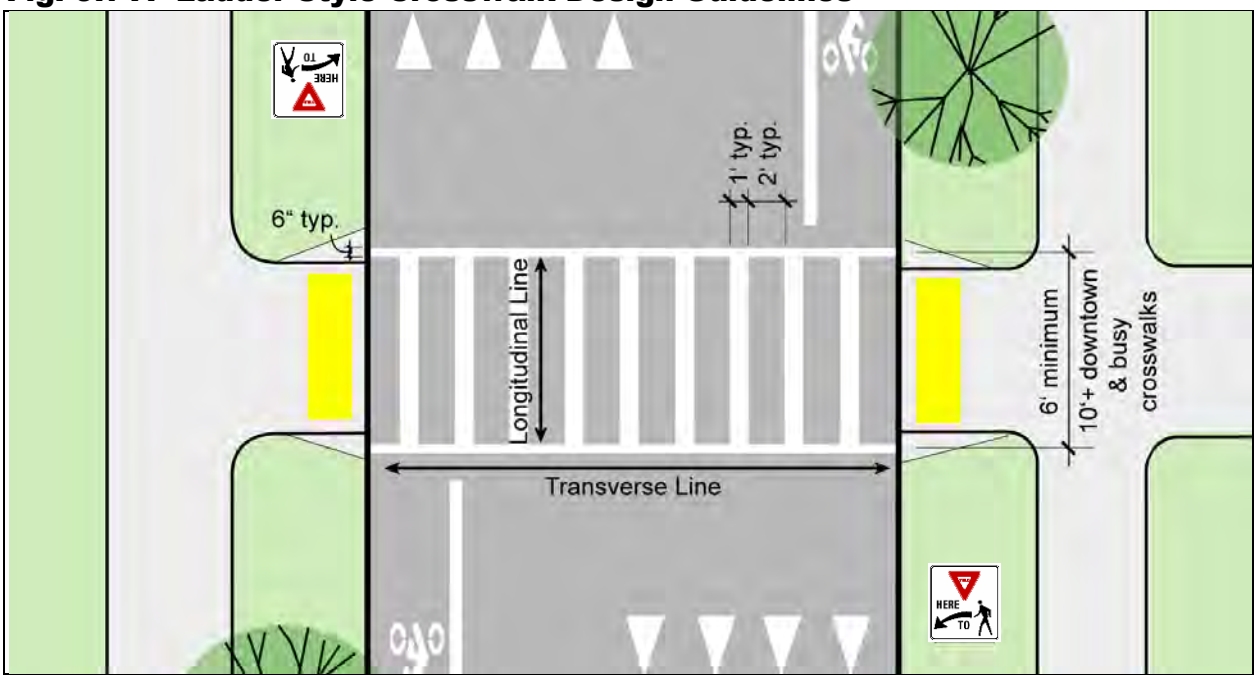
- See elements listed under Unsignalized Basic Mid-block Crosswalk and Unsignalized Mid-block Crosswalk with Crossing Island.
- The crosswalks are staggered to direct the pedestrian view towards oncoming traffic.
- Yield markings are set further back to improve pedestrian visibility from both lanes and minimize multiple-threat crashes.
- Median signs are placed higher than typical so as not to impede sightlines.

Application

Generally used on high volume / high-speed multi-lane roads.

Example

Fig. 9.7Y. Ladder Style Crosswalk Design Guidelines



Description

A combination of Transverse and Longitudinal style crosswalks to improve visibility for motorists and usability for pedestrians with sight impairments.

Key Elements:

- All crosswalk markings are highly skid-resistant and strongly contrast pavement.
- Longitudinal lines are no more than 1' wide to minimize areas of thermoplastic markings.
- The clear spacing between the longitudinal lines is no more than 2' to improve the visibility of the crosswalk to motorists.
- Transverse lines are used to aid pedestrians with sight impairments in finding the edge of the crosswalks (this can be difficult with longitudinal lines alone, especially when spaced far apart).
- The width of the crosswalk is set such that it can easily accommodate all pedestrians crossing the road.

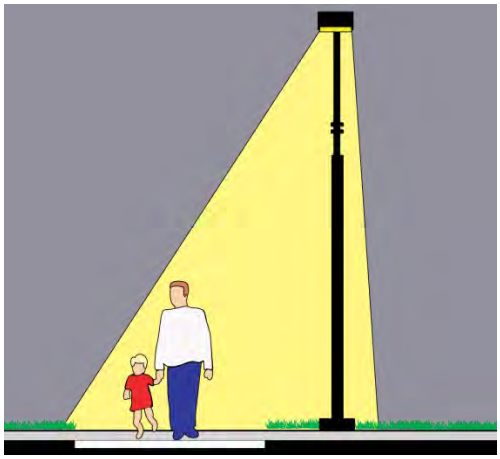
Application

For all marked mid-block crosswalks across Arterial and Collector streets and signalized crosswalks downtown. Also, on local streets where there is a high potential for conflict between motorists and pedestrians such as crosswalks that serve schools. Locations where pedestrian crossing is sporadic require high visibility as the motorist's expectation for the presence of pedestrians is low.

Example

Lighting of Crosswalks

Lighting is a key element for a pedestrian's safety and comfort. It is most important to provide lighting where a pedestrian crosses a roadway to make the pedestrian visible to motorists. All marked crosswalks, including intersections and midblock crossings, should be well lit with overhead lighting. The lighting should be such that it illuminates the side of the pedestrian facing traffic. Lighting along sidewalks and roadside pathways increases the comfort level for pedestrians at night and in the early morning, especially for school age children. However, the cost of lighting an entire pathway could be prohibitive; therefore lighting should be administered where there are safety issues first and foremost.



Marking of Crossing Islands

Crossing islands can present an obstruction in the roadway for motorists. The presence of this obstacle is key to the visibility of the crosswalk even more so than the signage or pavement markings and flush crossing islands have not been shown to have the same safety benefits as raised crossing islands. When the crosswalk is located in a left-turn lane it is located outside of the typically traveled roadway and is a minimum obstruction. When the road flairs around a crossing island it is more of an obstruction for a motorist. To draw attention to the obstruction, typical pavement markings as called for in MUTCD should be utilized. In addition, reflective material may be added to the sign posts, and reflective flexible bollards may be placed on the ends of the islands to increase the island's visibility at night and during inclement weather.

Roundabouts

In many situations, roundabouts have several advantages over typical intersection design: vehicles move at slower speeds, traffic flows more smoothly, and reduced pavement enhances aesthetics and offers the opportunity for landscaping in the central and splitter islands. There are however, serious drawbacks to roundabouts for those with vision impairments, and two-lane roundabouts are problematic for bicycles in particular. Roundabouts, especially larger ones, can present significant out-of-direction travel for pedestrians. Depending on the nature of the surrounding land uses and the design of the roundabouts, pedestrians may attempt to walk directly across the center of the roundabout.

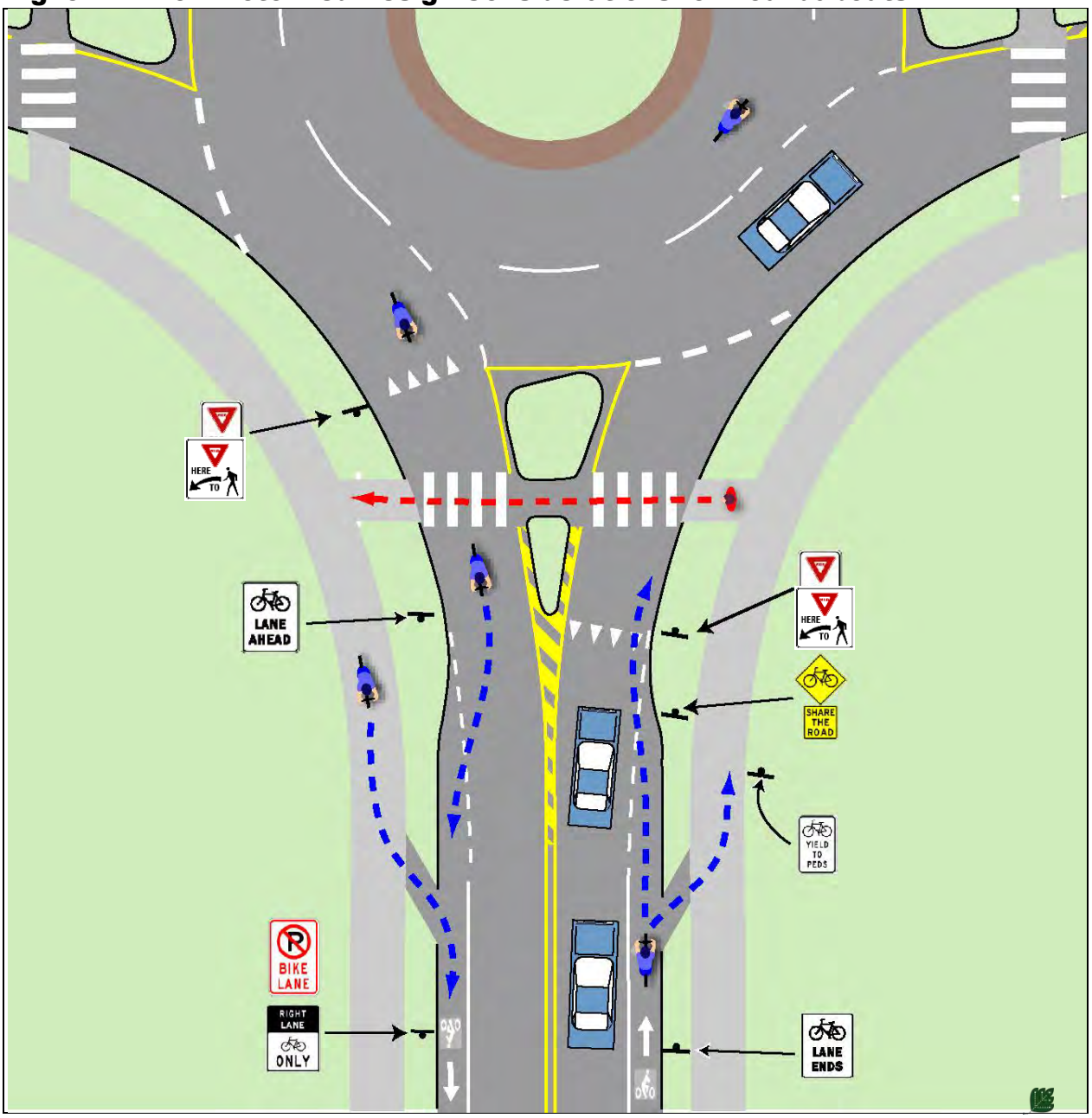
Because there are no traffic control signals to provide a pedestrian "walk" signal, pedestrians wait for an appropriate gap in traffic and cross. The splitter or diversion islands provide a crossing island for the pedestrian, breaking the road crossing into two stages so that they are only dealing with one direction of traffic at a time. This system works quite well for pedestrians without vision difficulties. Studies have shown a reduction in pedestrian crashes for single lane roundabouts and about the same number for multiple lane roundabouts as compared to a traditional signalized intersection. Pedestrians with vision impairments often find roundabouts very intimidating as the audible queues are sometimes insufficient to judge a suitable gap in traffic. Research is currently underway to determine the most appropriate way to accommodate blind and vision impaired pedestrians in roundabouts.

Multi-lane roundabouts are especially problematic for bicyclists. Studies have shown that while single lane roundabouts have about the same number of bicycle crashes when compared to traditional signalized intersections, multi-lane roundabouts have significantly more. AASHTO warns that the overbuilding of roundabouts should be avoided. Design guidelines recommend allowing bicyclists who are traveling in the roadway approaching the roundabout to exit the roadway prior to the roundabout and navigate the roundabout as a pedestrian would. More confident bicyclists may remain in the roadway and merge with the motor vehicles. Bike lanes should not be placed within the roundabout itself because a bicyclist close to the edge of the roadway is not the usual position where an entering motorist expects to look for circulating traffic.

Design Guidelines:

- Roundabout approaches should include bicycle entrance and exit ramps to give bicyclists the option of biking on a sidewalk bikeway as well as the roadway.
- Roundabouts should include pedestrian crossing islands on all entering roadways.
- The use of roundabouts should be accompanied by an education campaign regarding the issues with blind pedestrians and a motorist responsibly when they see a pedestrian using a white cane.
- The bicycle and pedestrian safety issues should be carefully evaluated for any multiple lane roundabouts.
- The latest research on accommodating blind and vision impaired pedestrians in roundabouts should be consulted before designing and constructing a roundabout.
- Bicycle and pedestrian pavement markings and signs should be regularly evaluated for every roundabout.

Fig. 9.7Z. Non-motorized Design Considerations for Roundabouts



9.8 Local Roadways

The local roadways that serve residential and mixed use areas are critical to the success of a City's non-motorized system. Local roads that serve neighborhoods are typically attractive non-motorized links due to the lower vehicle volumes and speeds.

Bicycle Travel in Neighborhoods

Bicycles typically do not need any special accommodations on local residential streets as they can comfortably share the road with the limited motor vehicle traffic. Some local residential streets, by themselves or in combination with off-road paths, provide excellent and attractive alternatives to the primary road system. In some cases, it may be desirable to sign bicycle routes that provide access to destinations such as schools and parks where the route may not be obvious to a cyclist unfamiliar with the area.

Public vs. Private Roads

It is just as important to provide safe and comfortable pedestrian facilities on private streets as on public streets. Regardless of ownership, neighborhood roads should include concrete sidewalks a minimum of 5' wide and compliant with ADA standards, on both sides of the street with a landscaped buffer between the sidewalk and the road.

An issue with private roads is the perception that they may not be open for use by the general public. For this reason public roads should always be the preference for new developments. In crafting development agreements that incorporate private roads it should be clear that the roads are open to all pedestrians and bicyclists and that there should be no signage or physical structures that imply that non-motorized access is limited to the residents of that neighborhood.

Both public and private neighborhood streets should be designed to incorporate the same pedestrian safety enhancing measures as those previously noted for primary public roadways. These include reduced curb radii, narrower street widths, curb extensions, and traffic calming measures such as speed tables.

Connectivity Between Neighborhoods and to the Primary Road System

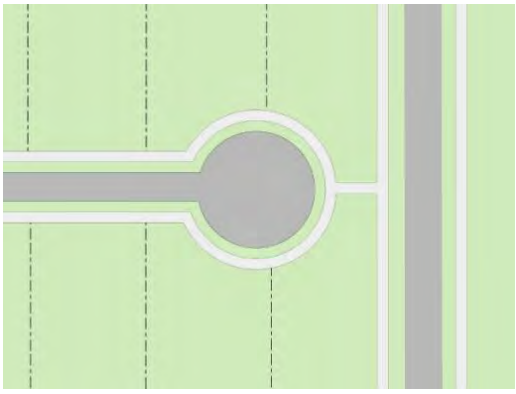
If a new development has limited road access to surrounding arterial streets, special access points for pedestrians and bikes should be incorporated between property lines or along utility rights-of-way. Non-motorized connectivity between adjacent residential, commercial and institutional developments should be provided. The City can regulate the form and shape of new neighborhoods to support and promote pedestrian and bike mobility by modifying master plans and development standards. Careful site design encourages walking by making non-motorized travel more direct than motorized transportation modes.

Neighborhood Roadways Design

Public and private street standards should clearly require sidewalks on both sides of the street, subject to City review. Neighborhood streets should have the following amenities to encourage pedestrian and bicycle access in neighborhoods:

- Design the road to slow vehicular speeds.
- Small block sizes.
- Interconnected streets.
- Sidewalks on both sides of the streets.
- Landscaped buffer between the street and the sidewalk with street trees that will provide shade.
- Connections to adjoining neighborhoods.
- Direct walkway connections between residential areas and commercial and institutional areas when not afforded by the street system

Fig. 9.8A. Cul-de-sac connector



Grid patterned streets with sidewalks and small block sizes are preferred for pedestrian use. They allow pedestrians to have multiple options in route choices and follow the most direct route possible. It is desirable for street networks and pedestrian facilities to correspond wherever possible. However, even if grid streets are not desired or feasible, pedestrian and bike links should still be provided even where the road does not connect. If cul-de-sacs and dead end streets are used, pedestrian and bike cut-throughs meeting AASHTO guidelines should be created to link to adjacent streets (Figure 8.8A).

9.9 Neighborhood Connector Routes

Neighborhood connector routes are designated routes that are primarily located on low speed, low traffic volume local roads and connecting pathways. They link neighborhoods to parks, schools and downtowns. Signs provide wayfinding by noting direction and distance to key destinations. Generally, neighborhood connector routes begin as guided routes and as their popularity grows and opportunities arise they can be developed to incorporate additional amenities, such as traffic calming measures, rain gardens and public art. The following sections describe the different types of elements that can be applied to a neighborhood connector route.

Bike Route Signs and Wayfinding

Bike route signs and wayfinding techniques can be used to established guided and named routes along a neighborhood connector route.

Route Characteristics

Routes signed as a Bike Route should be roads that have a relatively high Quality/Level of Service for bicyclists. The route should not have any known hazards to bicyclists and should be maintained in a manner that is appropriate for bicycle use. While many local roads may meet these criteria, the key is that the road is part of a specific route to a particular place. Obvious routes need not be marked. Bike Routes should be used judiciously to identify obscure routes to key destinations that avoid travel along major roadways.

Where a bicycle route on a local road intersects a busy multi-lane primary road and continues on the other side of the road, a traffic signal or appropriately designed mid-block crossing should be provided.

Bike Routes generally do not include specific bicycle improvements such as Bike Lanes. Bike Lane pavement markings and signs already indicate that a road segment is designed to specifically accommodate bicycles. Bike Route signs are to be used where no obvious bicycle facility exists yet the route is advantageous to bicyclists. Thus road segments with Bike Lanes should generally not be marked as a Bike Route, except where the bike route uses these facilities as short connectors to continue the route.

Bike Route Guide Signs

The most basic bike route signs are Bike Route Guide Signs (shown to the right). These are used on designated bike routes to inform bicyclist of changes in direction and the distance to the next destination. Bike Route Guide Signs are placed at changes in direction of designated bike routes. Not every bicycle facility will necessarily be designated a bike route. Bike routes should be used where the signage would help direct a bicyclist to a key destination that may not be obvious.

D1-1c
MUTCD 2009

Bike Route Identification Signs

Some bike routes are significant enough to warrant a name or numerical designation. Typically these are key connectors between off-road trails or used to help delineate a trail that incorporates many different facility types. Bike Route Identification Signs (shown to the right) establish a unique identification for a bike route. These signs are typically used with auxiliary plaques that indicate the direction of travel and any changes in direction of the route.

M1-8a
MUTCD 2009

Bicycle and Pedestrian Boulevards and Neighborhood Greenways

Bicycle and Pedestrian Boulevards and Neighborhood Greenways are Neighborhood Connectors that function as premium bicycle and pedestrian routes. They create an attractive, convenient and comfortable environment that is welcoming to all cyclists and pedestrians. Bicycle and Pedestrian Boulevards and Neighborhood Greenways are a great way to navigate through a city, where arterial and collector roads may be undesirable to bicyclist and pedestrians. They can also function as an extension of an off-road trail, creating a smooth transition between two trail systems.

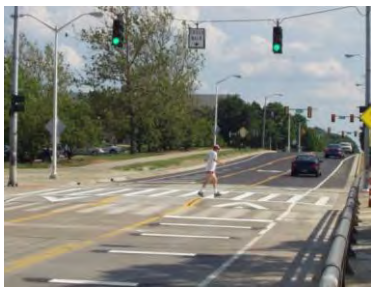
Bicycle and Pedestrian Boulevard Design Elements
Bicycle and Pedestrian Boulevards are located on low-volume and low-speed streets that have been optimized for bicycle and pedestrian travel through special treatments that allow through movement for bicyclist and pedestrians while discouraging similar through trips by non-local motorized traffic. Bicycle and Pedestrian Boulevards can take many forms. Special treatments such as traffic calming and traffic reduction, signage and pavement markings and intersection crossing treatments all help to optimize these routes for cyclists.

The following are some example of treatments that can be used to develop a Bicycle and Pedestrian Boulevard:

Pavement Markings
Identifies this route as a Bicycle Boulevard

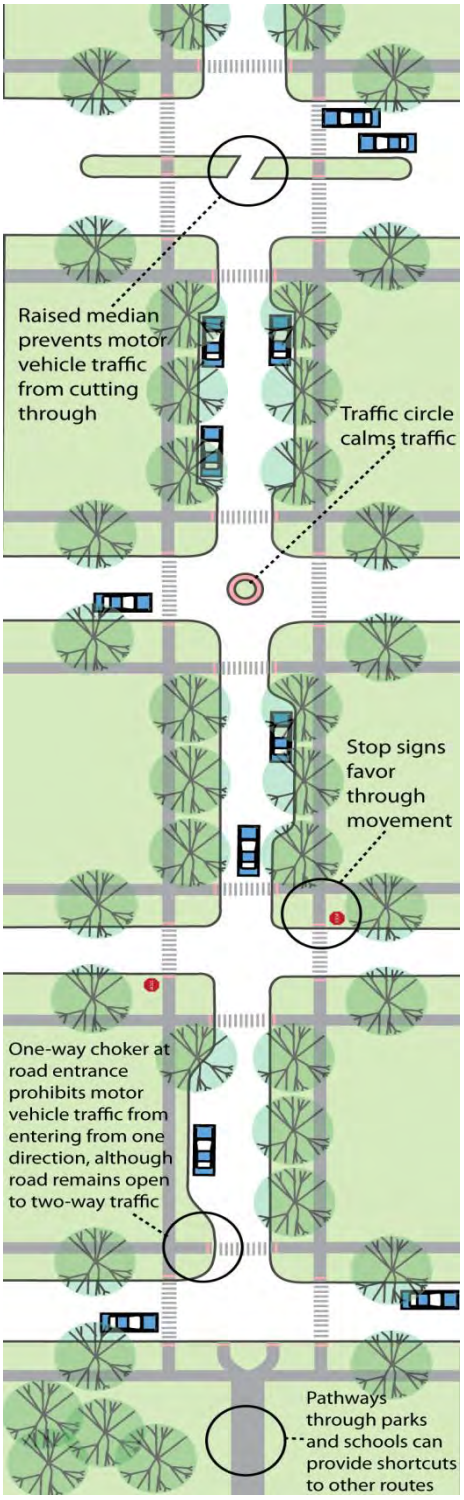
Traffic Reduction
Restricts motorized vehicles while allowing bicycle traffic

Traffic Calming
Mini Traffic Circles help reduce speed at intersection without stopping



Traffic Calming
Speed Tables help to reduce speed and enhance the crosswalk

Fig. 9.9A.
Each corridor needs to be specifically tailored to its needs by selecting the appropriate mix of design elements.



Neighborhood Greenway Design Elements
Neighborhood Greenways incorporate all the elements of bicycle boulevards but take the concept to the next level.

They typically incorporate sustainable design elements such as:

- rain gardens
- bio-swales
- native plantings

They should incorporate pedestrian amenities such as:

- art installations
- benches
- interpretive sign
- community vegetable gardens
- ornamental gardens

They may take on many different looks from avant-garde to traditional.

Lansing, MI

www.seatle.gov

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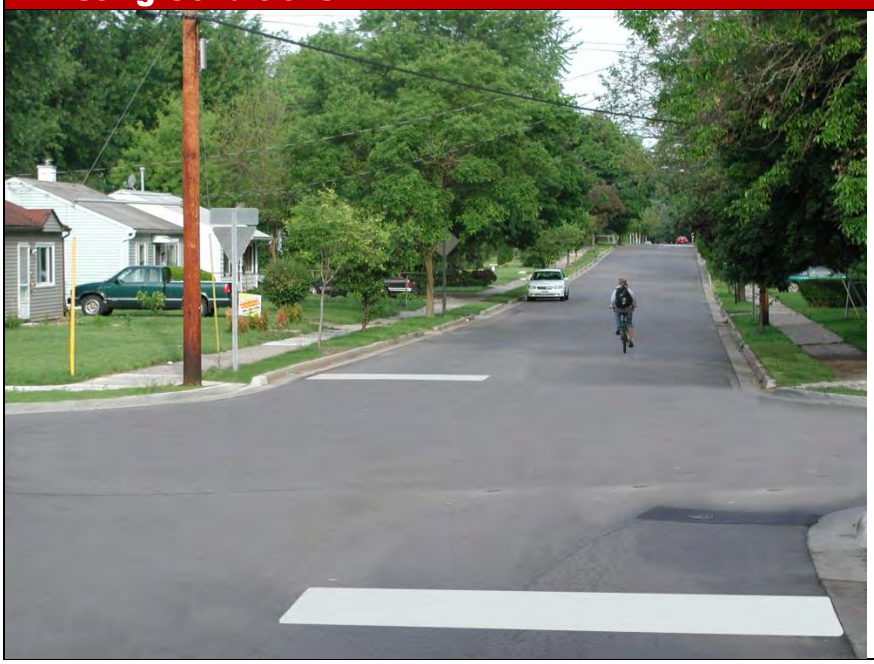
Neighborhood Connector Routes Implementation

Neighborhood connector routes, for the most part, utilize existing roadways and pathways in a community. When it comes to implementation, many of these routes can be accomplished in the first phase by simply adding some signage and wayfinding to designate them as a route. As the route grows in popularity, or when funding becomes available, other elements such as traffic calming, rain gardens and street art can be incorporated. However, before any routes are established always make sure there are safe road crossing in place where a neighborhood connector route intersects a major roadway. The following is an example of how a neighborhood connector route could be implemented over time.

Existing Conditions

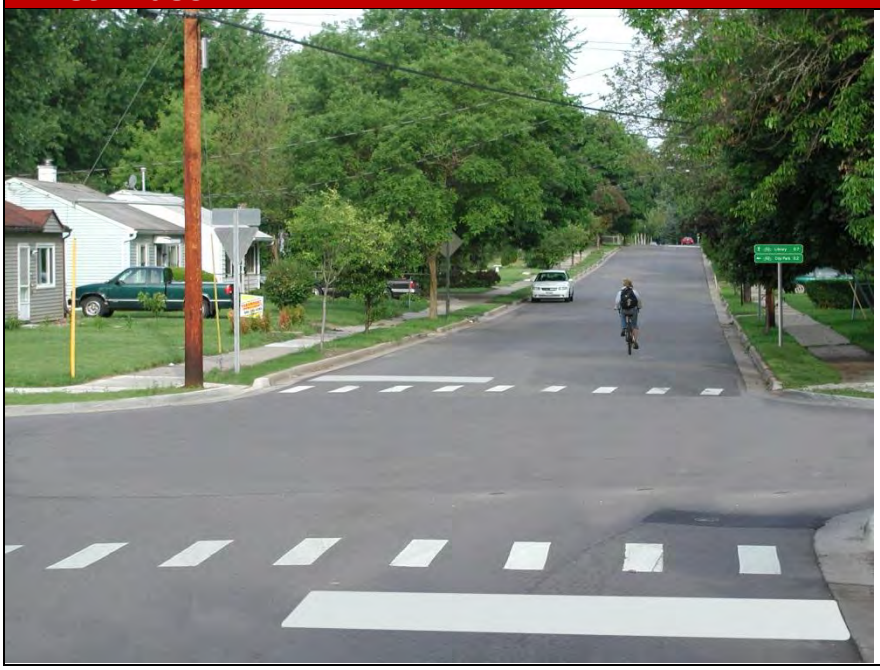


Local Roadway in a Residential Neighborhood

- Low speed
- Low traffic volumes
- Majority of bicyclists feel comfortable riding their bicycle in the street.

This could essentially be any road in a residential neighborhood.

First Phase



Designate as a Neighborhood Connector Route

- Map out Neighborhood Connector Routes
- Add wayfinding signage to route
- Provide safe road crossings especially where a neighborhood connector route meets a major road

Providing safe crossing at major roads and signage that directs bicyclists and pedestrians to major destinations is essential to this phase.

Implementation of Connector Pathways

Due the existing road network, many times neighborhood connector routes require off-road pathways to continue a route where a roadway ends. These pathways are critical to the success of the network because they generally link up isolated neighborhoods and provide key connections to get to major destinations such as schools and parks. Many times these types of pathways are funding and opportunity based. When available, it is recommended that these pathways be implemented along existing right-of-way or semi or quazi-public areas first because they tend to provide the least resistance.

Second Phase

Add Traffic Calming Elements to Create a Bicycle and Pedestrian Boulevard

- Mini Traffic Circles
- Orient Stop Signs for bicycle movement
- Medians
- Curb Extensions and bump outs
- Chicanes

When restricting vehicle access down the street it is important to maintain bicycle access to continue through.

Third Phase

Establish the route as a Neighborhood Greenway

- Rain gardens/Bio-swales
- Permeable pavement
- Unique bike route identification sign with name and optional custom logo
- Art Installations

9.10 Off-Road Trails

There are many types of Off-road Trails, each with unique issues. One type of Off-road Trail is the independent pathway that is separate from the road system. Independent pathways include rail-to-trail corridors, paths through parks and other trail systems. Independent pathways can be important and beneficial links to the non-motorized transportation system provided they have direct connections to the existing network of bike lanes and sidewalks. If designed and maintained properly, they can be the "jewels" of a City's non-motorized transportation system.

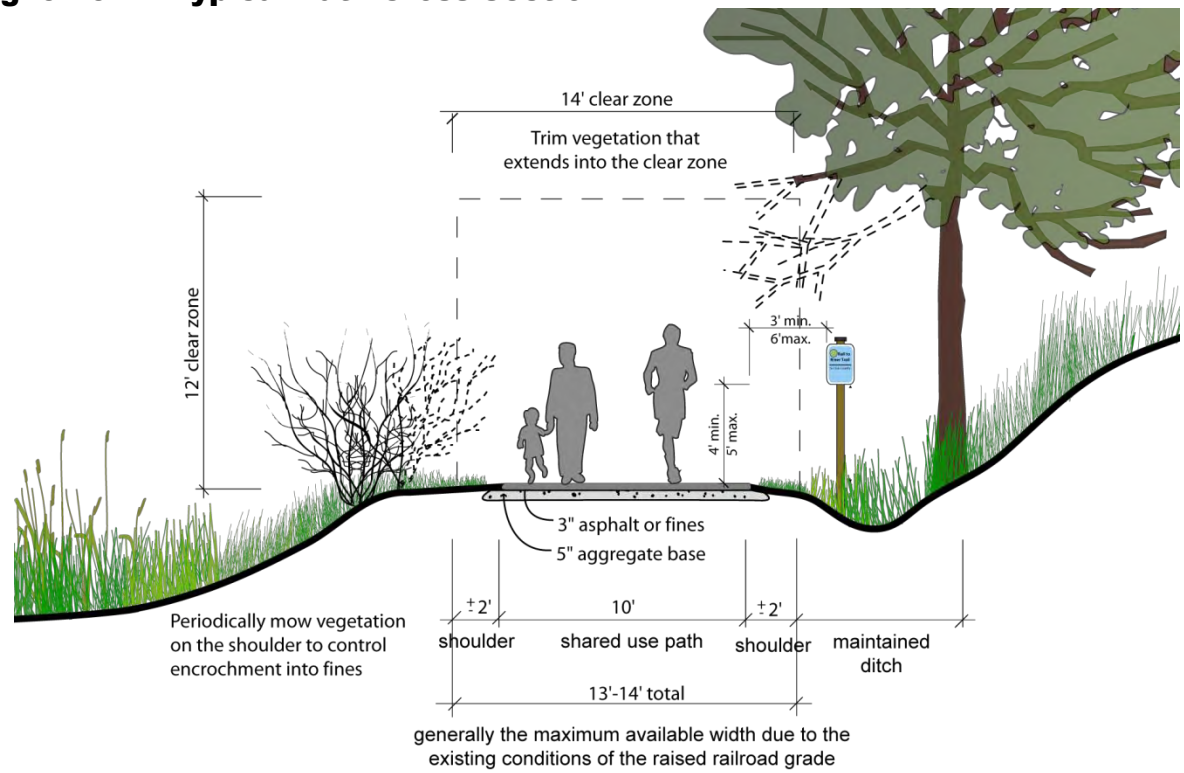
Independent pathways should be designed to accommodate shared uses including cyclists, walkers, strollers, in-line skaters, and people in wheelchairs. For the safety of all users, the pathway should be built wide enough to accommodate these shared uses. AASHTO guidelines indicate that a 10' wide path is the minimum width for a Shared-Use path. The preferred minimum width is 12' in most cases in urban areas with 14' to 16' being common widths.

Studies done by the Rails-to-Trails Conservancy have shown that off-road pathways in general are quite safe from a personal safety standpoint. But in urban areas it is important that pathways follow the principles of Crime Prevention Through Environmental Design (CPTED).

Trail Cross Section Design Guidelines

Figure 9.11A below illustrates several key points about the design and maintenance of Shared-Use paths. Whether the surface of the path is asphalt, fines or other material, it should have a solid base and positive drainage as the path may have maintenance vehicles on it at all times of the year. The vegetation along the trail should be regularly trimmed and mowed to maintain a clear zone around the trail.

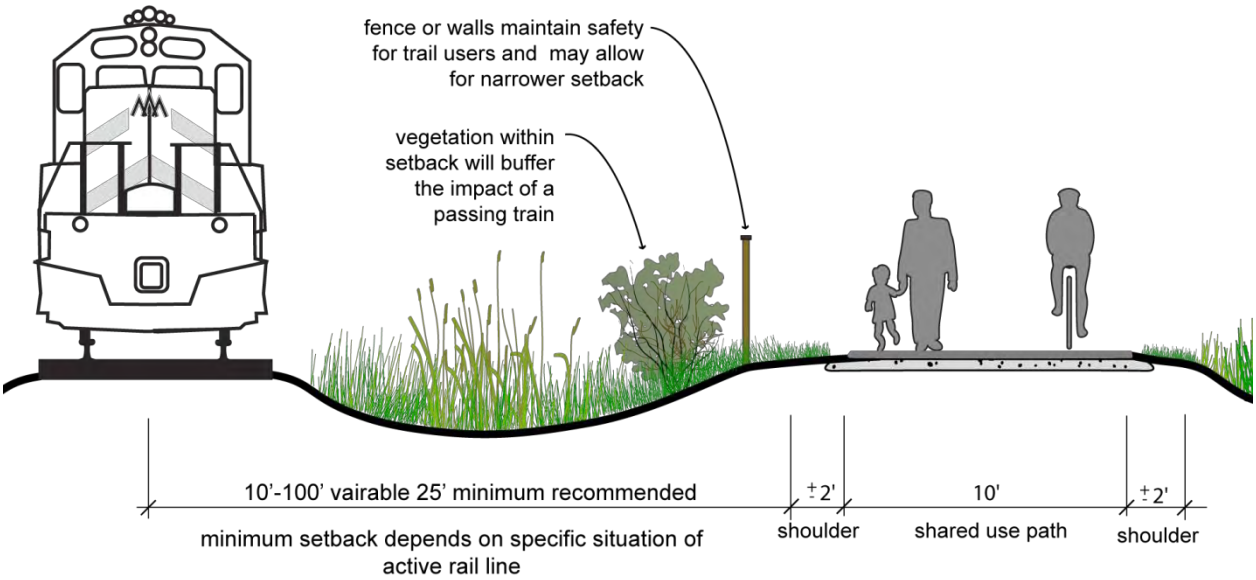
Fig. 9.10A. Typical Path Cross Section



Rail with Trail Design Guidelines

Figure 9.11B below illustrates how a trail can be incorporated alongside an active railroad. Theses may be built on an easement within the railroad right-of-way or on property immediately adjacent to the railroad. The trail may be separated from the railroad by a fence where the trail is in close proximity to the railroad.

Fig. 9.10B. Rail with Trail Cross Section



Key Recommendations:

- The 10' to 100' potential setback distance from an active rail line responds to the specific situation of the rail line (i.e. type, speed and frequency of trains, right-of-way width, level of separation, sight lines and topography)
- A minimum of 25' setback with a fence is recommended.
- Vegetation planted within the setback zone provides an additional level of security and buffers the impact of a passing train

Allegheny Highlands Trail, Maryland
www.railstotrails.org

For further information please refer to the following resources:

- U.S. DOT federal Highway Administration 2002 "Rails-with-Trails: Lessons Learned, Literature Review, Current Practices, Conclusions" at, www.fhwa.dot.gov/environment/rectrails/rwt
- Rails to Trails/National Park Service 2000 "Rails with Trails, Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines at, www.railstotrails.org
- California2009 "Rails-with-Trails: A Survey of Trails Along Active Rail Lines" at www.railstotrails.org

Independent Pathway / Road Intersection Design Guidelines

Independent pathways often intersect roadways at unsignalized mid-block crossings. Many of the design guidelines for a typical mid-block crosswalk apply but because of the unique nature of independent pathways, several additional safety points must be considered. The following plan illustrates the key points needed for a safe design of the intersection of an independent pathway with a roadway:

- Clear signage that identifies user rights-of-way and notifies both the users of the pathway and the motorists that an intersection is approaching.
- Pavement markings at the beginning of the trail intersection notify users of direction of travel and rights-of-way. Pavement markings further along the trail should be minimized to avoid visual clutter.
- The pathway should meet the roadway at as close to a 90-degree angle as possible for maximum visibility of users.
- Supplemental trail signage is often set back outside the road right-of-way.
- Regardless of the surfacing material of the trail, asphalt or concrete should be used for the portion of the trail that intersects the road. The hard surface increases traction for bicycle users and cuts down on debris from the shoulder of the road accumulating in the pathway. The change in materials can also help to notify users of the upcoming intersection. At rural intersections, gravel shoulders should also be paved adjacent to the trail to minimize debris in the stopping zone.

Fig. 9.10C. Typical Pathway/Roadway Intersection

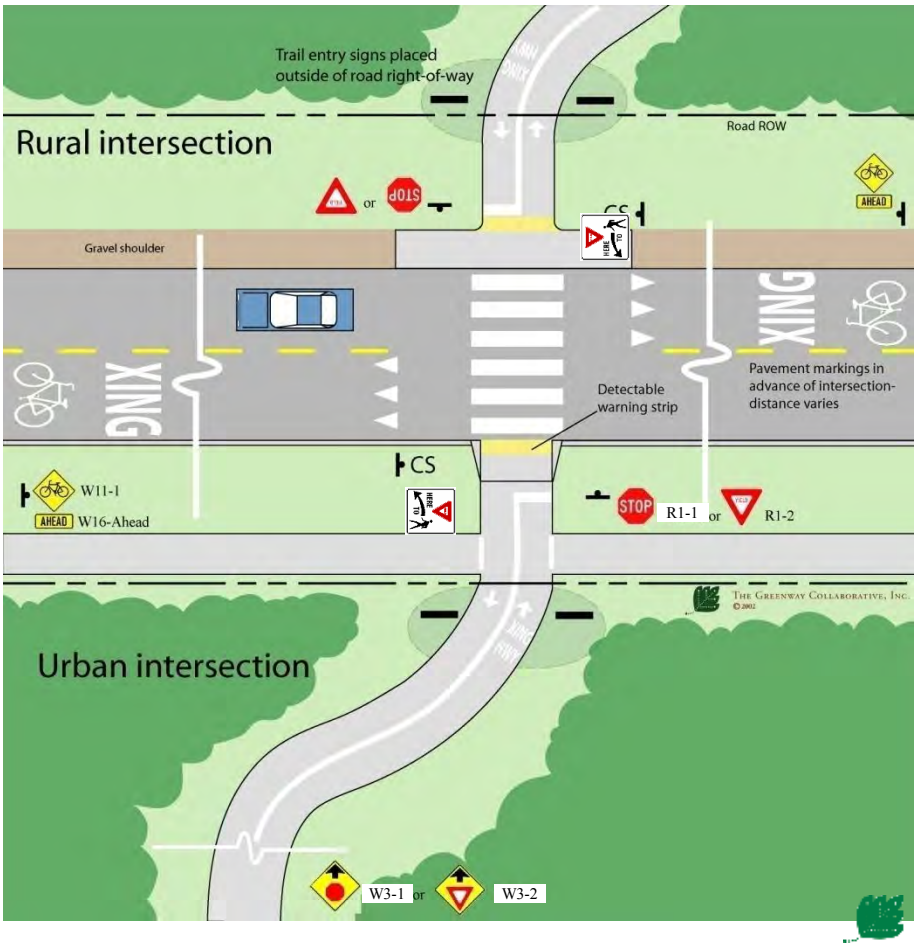


Fig. 9.10D. Trail Signs at Road Intersections

Trail View

Key Recommendations:

- Two sign posts form a gateway to the trail at road intersections.
- On the right above a Stop or Yield sign, a standard street name sign is used to identify the cross street.
- All parts of the signs should be set back 3' from the trail.
- On the left side, an optional plaque identifies the local agency in charge of the trail, trail rules, and emergency and maintenance contact numbers.

Road View

Key Recommendations:

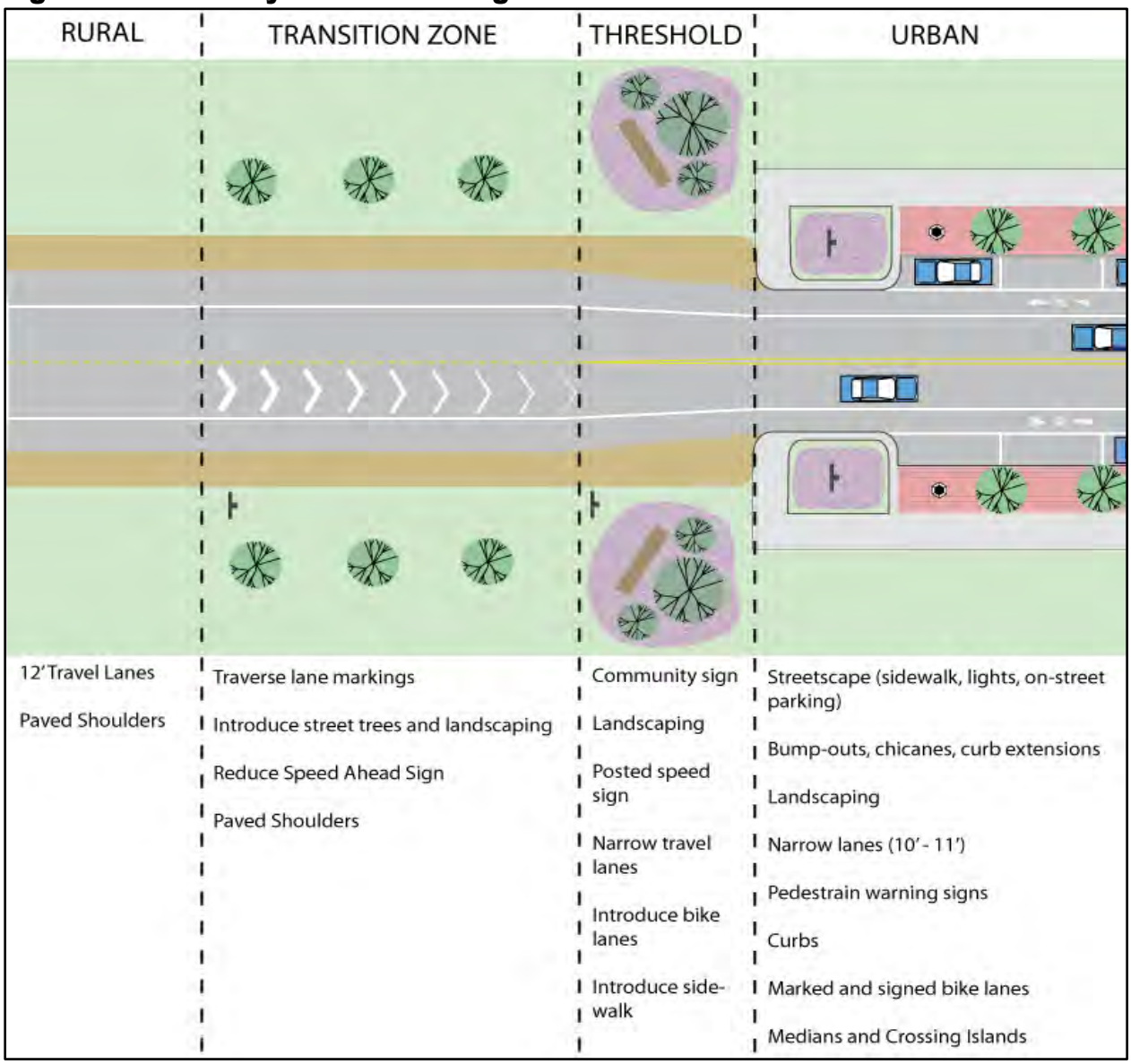
- On the right side, a No-Motor-Vehicle Sign and a Bicycle Yield-to-Pedestrian Sign should be posted to address the key rules of the trail.
- On the left side, a Bike Route Destination sign listing the direction and distance to the next major destination may be placed.
- On the left side, the Bike Route Identification Sign with a custom logo, direction of travel and route name may be used to identify the route.
- A detectable warning strip should be placed across the entire trail.
- Pavement markings should be used for the first 100' to 150' of trail.

9.11 Gateway Transition

Many times the main roadway that cuts through a small community is also a major roadway. In these situations it is difficult for motorists to transition from 55 mph to 30 or 25 mph. When this situation occurs it is important to visually and physically establish a gateway to the community so motorists know they are entering an urban environment and should slow down their speeds. Elements such as traverse lane markings, street trees, landscaping, signage, and narrow travel lanes help to establish the gateway.

Gateway treatments should be used when a roadway changes from a rural to an urban setting and needs to provide a slower environment for non-motorized users. Many of the small villages and communities in Isabella County could benefit from these types of improvements. Figure 3.2E displays the types of elements that may be applied in each zone to encourage the appropriate motor vehicle speeds.

Fig. 9.11A Gateway Transition Diagram



9.12 Commercial Centers

Many new commercial, office, institutional and mixed use developments being built today are designed for easy access by motor vehicles and do not take into adequate consideration the patrons arriving by other means of travel. Aspects of site design can discourage non-motorized traffic when designed solely for automobile use. New developments today often have poorly placed bike-parking facilities, large setbacks with parking lots that lack direct access for pedestrians or bicyclists and face large arterial roadways with little or no direct access to neighborhoods and residential areas that may be surrounding them. These problems can be remedied by improving site design and enhancing connections to the external transportation system.

Most commercial developments are oriented to motor vehicles, resulting in an often oppressive environment for pedestrians and bicyclists.

Circulation within the Site

Buildings with frontages located near the street create a streetscape that is comfortable and accommodating to pedestrians, and help keep traffic moving at slower speeds. Parking to the side or the rear of the building keeps the streetscape intact, allows easy access for pedestrians from adjacent sidewalks and minimizes automobile and pedestrian conflicts. As the building frontages are moved back from the streetscape to accommodate parking, the pedestrian's sense of exposure to traffic, the distance they must walk to access the store, and their resulting discomfort substantially increases.

Setback of the building frontages from adjacent intersections also complicates pedestrian travel across the roadways. Typical development patterns are "L" shaped with the majority of buildings set back from the intersection and one or two isolated buildings near the intersection. This pattern places the majority of the buildings away from the primary pedestrian crossing point and puts a large expanse of parking between the isolated buildings on the corner and the majority of the buildings. Depending on the development across the street, "L" shaped developments can set up strong pedestrian desired lines across mid-block locations. Because of the large scale of most of these developments, the distance between the desired lines and the signal is significant.

If orienting proposed development projects to improve non-motorized uses is not a feasible option in designing the layout of the buildings, then providing clear, direct and safe pedestrian access at mid-block locations is necessary to minimize out of direction travel through or around the parking lot by pedestrians. Parking lots can be dangerous areas for pedestrians and present many challenges for safe navigation. Older adult pedestrians have a high incidence of accidents involving vehicles backing up, a common maneuver in parking lots.[25] Site plans should be required to include the following design measures:

- Reduce building setbacks as much as possible and provide walkways to the entrances that are clearly marked, accessible and buffered from the surrounding parking lot.
- Use raised crosswalks and striping to clearly differentiate the walkways from driveways. Speed tables and raised crosswalks can calm traffic and increase visibility.

[25] National Highway Traffic Safety Administration. *Pedestrian Safety for the Older Adult*.

Fig. 9.12A. Typical Commercial Center at Intersection of Main Roads

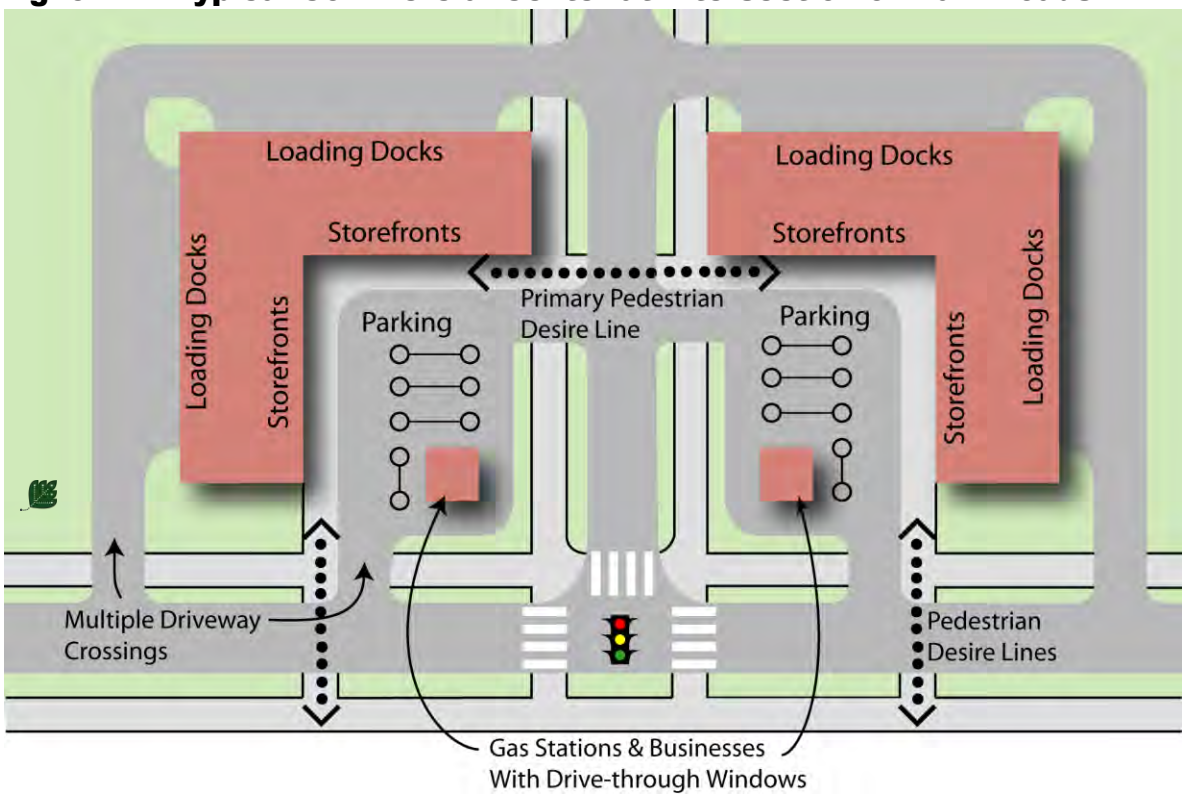
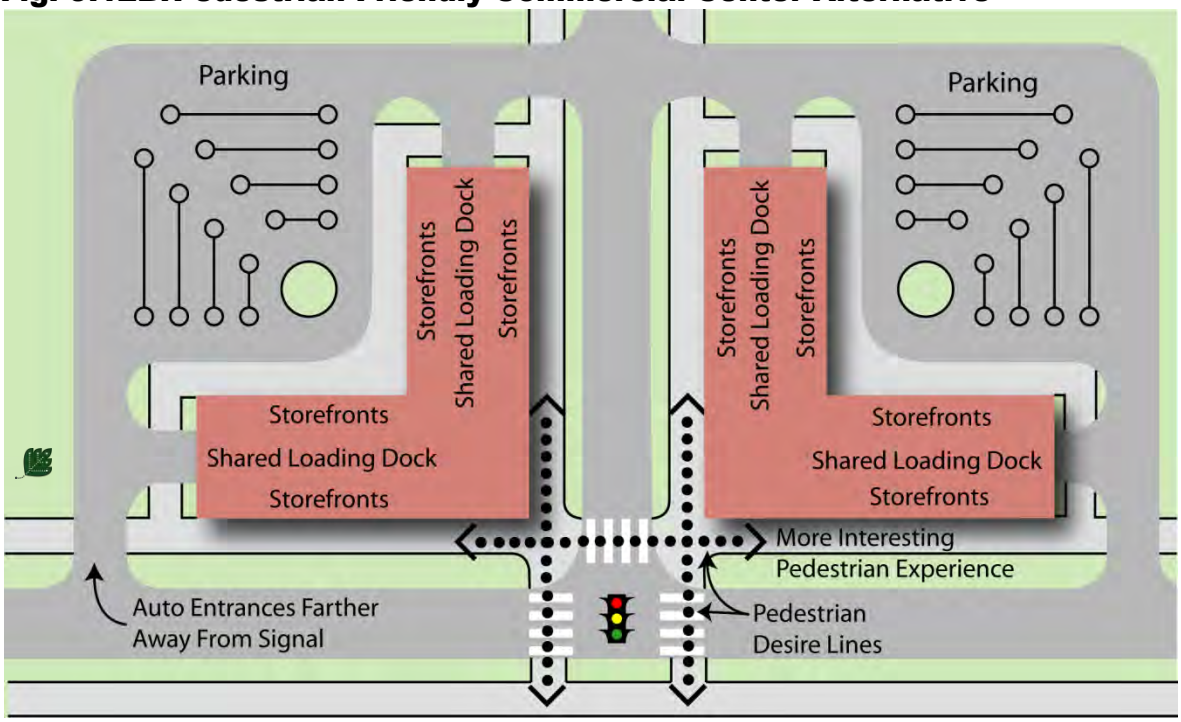


Fig. 9.12B. Pedestrian Friendly Commercial Center Alternative



- Provide trees and other plantings to buffer pedestrians from parking areas, enhance parking lot aesthetics, and minimize the pedestrian's exposure to the elements while crossing the vast expanse of pavement.
- Walkways should have direct and clear access to building entrances and be designed to safely go through the parking lot, or circumnavigate it if necessary.
- Walkways along the buildings should be wide enough to accommodate several people abreast and have frequent curb cuts and ramps for accessibility, as well as tactile and audible pedestrian information.

Just as pedestrians need direct and clear access through the parking lots to the buildings, bikes should also be safely directed through the parking lot. Bike parking should be provided in a visible and convenient location. Many cyclists are reluctant to lock their bikes in an area that is out of the way and unfrequented because of the greater likelihood of theft. This leads to situations where bikes are locked to anything available such as signposts or railings. These bikes can cause hazards for pedestrians and obstacles to accessibility. Providing bike parking facilities in convenient and well-lit locations will minimize these problems.

The site plan review process will allow the City to ensure that these design measures are followed. The City should require that developers include these specific pedestrian and bike accommodations early in the site planning.

Connections to the External System

The site must have convenient and safe access to pedestrian, bicycle and transit facilities outside the development. Frequently, large new developments are located on the edge of town along major arterials with limited non-motorized facilities. New developments should always connect to an existing non-motorized transportation network. Commercial developments should include specific plans for connecting to existing facilities and neighborhoods in surrounding areas.

Motor vehicle access to commercial development should be constructed as a conventional driveway with small turning radii and a ramp up to the sidewalk level, rather than a typical public intersection where the roadbed continues at the same level and there are curbs on either side. Use of driveway entrances rather than typical intersections enhance pedestrian safety and comfort because motorists must drive slowly when entering and exiting the development. When a typical intersection-style entrance is used, the sidewalk should continue across the entrance, preferably at sidewalk height, so the right-of-way is clearly established and motorists understand they are entering a pedestrian area. Supplemental signage and crosswalk pavement markings should be used to indicate a crosswalk and the pedestrian right-of-way.

Plantings should be pulled back away from the entrance crossings to allow maximum visibility for both pedestrians crossing the entrance and the cars entering the commercial development. The radius of the intersection curb should be kept as small as possible, and the width of the driveway should be the minimum needed. Just as roads are updated to accommodate vehicular access at new developments with turning lanes or signals, so should non-motorized facilities be updated with new crosswalks, signage and pedestrian signals.

New roadway designs often favor access control for businesses along the road. In this scenario, several businesses share access through one driveway instead of each business having its own entrance and exit onto the main street. In addition to the advantages for vehicles, this is an advantage for the lateral movement of pedestrians along the street because they do not have to cross as many driveways.

However, more direct pedestrian access points from the sidewalk to the individual building entrances should be incorporated. The spacing of crosswalks along the primary road to developments across the road should also be considered.

The design and placement of the buildings should allow direct and clear access from surrounding neighborhoods and residential areas. Too often, what could be a short walk to a nearby store from a residential street becomes dangerous and un-navigable because the store does not have public access on the side facing the residential streets. Both pedestrian and bicycle access should be unimpeded from these areas. During site plan evaluation, development access and travel distances from surrounding residential areas should be a prime consideration.

Encouraging Mixed Use

While tying commercial developments to surrounding residential areas is a good practice, a better practice is to eliminate the segregation of commercial and housing areas. Incorporating higher density housing into commercial developments can dramatically alter the character of commercial development making the project more similar in feel to a small downtown rather than a strip development. For more information see the Land Use Considerations in the next section. Mixed land uses can significantly increase the number of non-motorized trips.

Site Design Checklist

A site design checklist or similar tool should be provided to developers and used by the City in their review of site plans to make sure that bicycle and pedestrian issues are being adequately addressed. The following checklist was adapted with minor modifications from *The Canadian Guide to Promoting Sustainable Transportation through Site Design* by the Canadian Institute of Traffic Engineers. It is a part of a larger publication that looks at site design issues more fully.

Land Use & Urban Form Checklist:

- ❑ Densities are sufficient to support transit (3 to 7 households an acre / 4 to 7 jobs an acre)
- ❑ Highest density land uses are located close to activity nodes such as transit corridors and intersections.
- ❑ Proposed use provides or adds to a diversity of land uses in the surrounding area and does not result in large tracts of similar uses.
- ❑ Proposed use is compatible with adjacent land uses and with long term land use plans for the area.
- ❑ Adjacent street network provides for connectivity of transit, cycling and pedestrian routes.
- ❑ Mixed uses help support non-motorized transportation.

Safety & Security Checklist:

- ❑ Overall site design attempts to minimize conflict points between vehicles, pedestrians and cyclists.
- ❑ Sight distances have been considered in overall site design and in the placement of entry signs and landscaping.
- ❑ Consideration has been given to personal security for pedestrians, cyclists and transit users.
- ❑ Buildings are located close to the street, but provide adequate clearance for pedestrian activities along street frontage.
- ❑ Where appropriate, retail, restaurants and other pedestrian oriented uses animate the street frontage.

Building Entrances Checklist:

- ❑ Building entrances are located close to the street, with direct pedestrian access.
- ❑ Potential conflict points between users arriving by different modes are minimized.

Internal Transportation Network Checklist:

- ❑ Roads and paths match up with surrounding networks and ensure direct connections through the site for cyclists and pedestrians.
- ❑ Block lengths are limited and mid-block crosswalks are provided where appropriate.
- ❑ Traffic-calming principles are applied, where appropriate (proper site design should avoid the need to apply extensive traffic calming).
- ❑ Appropriate measures have been taken to ensure easy progress of transit through the site.

Desired Pedestrian & Cyclist Routes Checklist:

- ❑ Safe, continuous and clearly defined routes for pedestrians and cyclists are provided along desire lines including links to surrounding residential areas.
- ❑ Weather protection and amenities such as trees are provided.
- ❑ Intersections are designated to facilitate pedestrian and cyclist crossings.

Transit Stops Checklist:

- ❑ Walking distances to stops do not exceed 1300 feet, and pathways to stops are safe and direct.
- ❑ Waiting areas are well lit and attractive.

Site Grading Checklist:

- ❑ Terrain along pathways is kept reasonably level, and ramps are also provided wherever stairs are necessary.
- ❑ Slopes along pathways are designed to avoid the ponding of slush and water.

Motor Vehicle Parking Configuration & Treatment Checklist:

- ❑ Off-street parking is located away from the street, preferably behind buildings or underground.
- ❑ Vehicle access is separate from pedestrian access, and access and egress controls are designed so vehicles do not block pedestrian ways.
- ❑ Parking lots are kept small and designed to prevent speeding.
- ❑ Pedestrians have protected walkways through the lots.

Motor Vehicle Parking Supply & Management Checklist:

- ❑ Off-street parking should be provided, where necessary, at the sides and rear of buildings.

Bicycle Parking Checklist:

- ❑ Bicycle parking is located near entrance for short term users in a high visibility location.
- ❑ Weather protected bicycle parking for longer term users is provided in a secure area. Storage possibilities for gear are considered.
- ❑ Showers, changing rooms and lockers are provided within employment centers.

Passenger Pick-up & Drop-off Areas Checklist:

- ❑ Passenger pick-up and drop-off areas are located to the side or rear of buildings, downstream from the entrance, but no more than 100 feet away from it.

Loading Areas Checklist:

- ❑ Loading areas are located off the street, and are screened from public view.
- ❑ Loading area access is designed so that pedestrian, cyclist, and transit routes are never severed.

Internal Road Design Checklist:

- ❑ Appropriate traffic signals and compact geometry of intersections control speeds and allow for safe passage of cyclists. Roads are designed to cross at right angles. Sight lines are respected.
- ❑ Lanes are designed to accommodate motor vehicles and cyclists, and remind users of the other networks on the site.
- ❑ Facilities for cyclists and sustainable modes are provided and continued across the site.

Pedestrian Facilities Checklist:

- ❑ Sidewalks are provided along all roads, and follow pedestrian desire lines where possible.
- ❑ Properly signed crossings are provided wherever a path or sidewalk crosses a road.
- ❑ Pathways are clearly defined, delineated, and are of a sufficient unobstructed width. Appropriate amenities such as lighting and weather protection are provided and safety along path is addressed.

Transit Facilities Checklist:

- ❑ Stops are located close to the main entrances of activity generators. Crosswalks are provided at all stops.
- ❑ Stops and waiting areas are properly illuminated, visible from a distance, and have warranted amenities such as shelters and benches.
- ❑ Spacing between stops is minimized.
- ❑ Shelters and rest areas are provided at transit stops and locations where there is a high number of users, the elderly or the disabled.
- ❑ Shelters and rest areas are identifiable, accessible, placed appropriately, and are comfortable.

Wayfinding Checklist:

- ❑ Appropriate signage and physical features are provided for users of all networks to determine their location, identify their destination, and progress towards it.

Street Furniture & Amenities Checklist:

- ❑ Amenities are provided to create a comfortable and appealing environment, pre-empting litter and responding to user needs.

Landscaping Checklist:

- ❑ Landscaping does not compromise user security and safety.

10. Appendix

Topics:

10.1 – Web Survey Results

10.2 – Public Workshop Summary: Visioning

10.3 – Public Workshop Summary: Preliminary Plan

10.4 – Non-motorized Improvements & Details

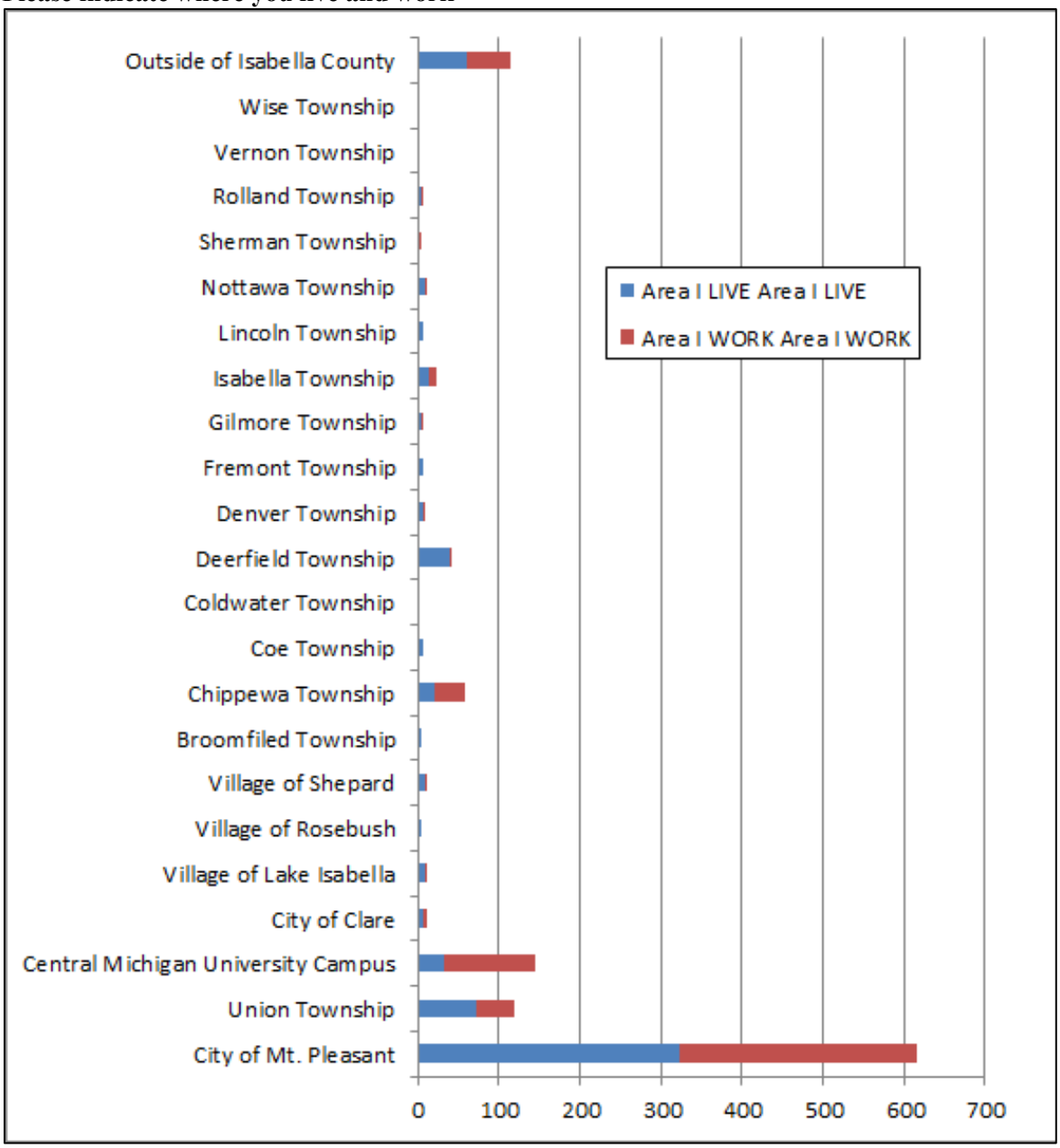
10.5 – Evaluating Alternative Scenarios for Travel Along Road Corridors

10.1 Web Survey Results

A web survey for the Greater Mt. Pleasant Area Non-motorized Plan was conducted over a three week period in the month of January, 2011. The purpose of the survey way to collect information about current walking and bicycling patterns, determine the comfort level of using different non-motorized facility types, identify popular bicycle and pedestrian destinations as well as hope and concerns for a non-motorized network in the project area. A total of 719 people took the survey and 548 completed it. The following pages provide the results.

Section 1: About Yourself

Please indicate where you live and work



Please indicate which of the following best describes your circumstance. For the purposes of this question, a household is considered any type of residence with or more occupants.

	Response Percent	Response Count
I am less than 18 years old	0.6%	4
I am a full time college or university student	23.5%	166
I am part of a household without school age children	**38.0%**	**268**
I am part of a household with school age children	31.9%	225
I am a senior citizen	6.1%	43
	answered question	706
	skipped question	13

Please indicate your gender

	Response Percent	Response Count
Male	41.9%	296
Female	**58.1%**	**410**
	answered question	706
	skipped question	13

What is your primary mode of transportation for the following types of trips? Please select walking, bicycling, bus, motorcycle, drive yourself, passenger or other. If you don't typically make a particular trip type select "Not Applicable"

	Not Applicable	Walking	Bicycling	Bus	Motorcycle	Drive Yourself	Carpool	Passenger	Other	Response Count
To Work	13.1% (91)	8.0% (56)	6.5% (45)	0.7% (5)	0.0% (0)	**68.6% (478)**	2.3% (16)	0.9% (6)	0.0% (0)	697
Education/School	**45.2% (298)**	14.5% (96)	5.2% (34)	2.6% (17)	0.0% (0)	29.7% (196)	1.5% (10)	0.8% (5)	0.6% (4)	660
Shopping & Personal Business	0.6% (4)	5.2% (37)	3.7% (26)	0.4% (3)	0.0% (0)	**83.9% (594)**	2.5% (18)	3.4% (24)	0.3% (2)	708
Leisure & Recreation	0.8% (6)	18.7% (132)	22.3% (158)	0.3% (2)	0.4% (3)	**48.2% (341)**	3.3% (23)	4.8% (34)	1.1% (8)	707
Other	25.2% (103)	19.4% (79)	16.4% (67)	0.5% (2)	1.5% (6)	**30.9% (126)**	1.5% (6)	1.2% (5)	3.4% (14)	408
						Other (please specify) Show Responses				101
						answered question				711
						skipped question			8	

Other (please specify)

1	Visiting friends	Mar 1, 2011 4:51 PM
2	I try to bike when the weather allows.	Mar 1, 2011 2:17 PM
3	exercise	Mar 1, 2011 1:21 PM
4	Driving while snow is on the ground	Mar 1, 2011 12:23 PM
5	Occasional leisure travel	Mar 1, 2011 12:00 PM
6	Going to Downtown Mount Pleasant	Mar 1, 2011 11:46 AM
7	I like riding bikes.	Mar 1, 2011 11:41 AM
8	Scenic Drives	Mar 1, 2011 11:38 AM
9	Anything not listed above I still have to drive to.	Mar 1, 2011 11:32 AM
10	As part of leisure and recreation	Mar 1, 2011 11:32 AM
11	Exercise - bicycling and walking in the neighborhoods	Mar 1, 2011 11:31 AM
12	City Bus during car issues	Mar 1, 2011 11:24 AM
13	To go down town in the summer	Feb 28, 2011 12:49 PM
14	Church	Feb 28, 2011 10:21 AM
15	Other Recreation	Feb 24, 2011 5:42 PM
16	Some shopping and recreation	Feb 24, 2011 3:17 PM
17	Skateboarding	Feb 23, 2011 10:01 PM
18	going to city park	Feb 23, 2011 8:36 PM
19	Vacations	Feb 23, 2011 3:15 PM
20	going to the Bar	Feb 23, 2011 10:12 AM
21	Summertime short trips	Feb 23, 2011 10:07 AM
22	travel to traditional ceremonies out of state	Feb 23, 2011 9:33 AM
23	Live in Lake Isabella - transportation to town mandates vehicles - no way to walk or ride no place in town to leave a bike and get around if I did intend to.	Feb 23, 2011 8:47 AM
24	motorcycle and walking	Feb 22, 2011 6:35 PM
25	whenever	Feb 22, 2011 5:49 PM
26	golf cart	Feb 22, 2011 5:43 PM
27	church	Feb 21, 2011 3:01 PM

28	Going out to a bar.	Feb 20, 2011 11:33 AM
29	to church, library, friends	Feb 19, 2011 11:46 PM
30	I would ride my bike of shopping and personal business, if the road from my house to Mission street had a side walk on this stretch of the road.	Feb 19, 2011 2:47 PM
31	I run for leisure with no destination other than back home	Feb 19, 2011 9:48 AM
32	running	Feb 18, 2011 6:13 PM
33	I do not own a car, and would like to get a bike.	Feb 18, 2011 10:05 AM
34	trips to conferences	Feb 17, 2011 2:59 PM
35	exercise	Feb 17, 2011 2:26 PM
36	Sometimes I ride bicycle to work or for pleasure.	Feb 17, 2011 12:50 PM
37	jogging	Feb 17, 2011 11:55 AM
38	Bike when the weather is good!	Feb 17, 2011 11:46 AM
39	I bicycle to work in the summer months.	Feb 17, 2011 10:24 AM
40	walk dog	Feb 17, 2011 9:44 AM
41	Running member of the Striders	Feb 17, 2011 7:36 AM
42	exercise	Feb 16, 2011 10:59 PM
43	Running	Feb 16, 2011 2:54 PM
44	running	Feb 16, 2011 1:18 PM
45	running, bicycling, and walking	Feb 16, 2011 1:10 PM
46	Running training	Feb 16, 2011 1:08 PM
47	running/kayaking	Feb 16, 2011 12:47 PM
48	exercise/fitness	Feb 16, 2011 12:21 PM
49	Running	Feb 16, 2011 12:13 PM
50	I ride my bike all summer long, most summers I do not go through a tank of gas	Feb 16, 2011 9:24 AM
51	tennis - drive	Feb 15, 2011 3:55 PM
52	visiting friends and family	Feb 15, 2011 10:59 AM
53	I bicycle to work when the weather is warmer. I walk and bicycle for	Feb 15, 2011 10:11 AM
54	When the weather is nice, I do some walking to shopping, but it's not easy on the road.	Feb 15, 2011 9:20 AM

55	depends on what, when and where	Feb 14, 2011 11:09 PM
56	Visiting friends in neighborhood.	Feb 14, 2011 10:51 PM
57	Drive kids to school	Feb 14, 2011 10:38 PM
58	Walking thru the parks-thru the dams and chippewaters is a great route	Feb 14, 2011 9:36 PM
59	taxi	Feb 14, 2011 3:55 PM
60	family functions	Feb 14, 2011 3:55 PM
61	Shopping when the weather is poor	Feb 13, 2011 10:58 PM
62	I bicycle when weather permits bus when it doesnt	Feb 13, 2011 5:12 PM
63	Fitness and Travel on Campus	Feb 13, 2011 3:08 PM
64	use bike or walk for some errands	Feb 12, 2011 8:23 AM
65	I love to run outside but there are few unobstructed options to do so.	Feb 11, 2011 3:16 PM
66	I am trying incorporate more biking into my daily routine	Feb 11, 2011 10:55 AM
67	Exercise	Feb 10, 2011 10:27 PM
68	Out of state travel	Feb 10, 2011 12:56 PM
69	Bicycling and walking, sometimes Rollerblading	Feb 10, 2011 10:40 AM
70	when the weather is condusive	Feb 10, 2011 10:32 AM
71	some shopping	Feb 10, 2011 10:04 AM
72	running - recreation	Feb 10, 2011 9:24 AM
73	Avid cyclist	Feb 10, 2011 8:22 AM
74	going home	Feb 10, 2011 12:02 AM
75	leisure and fitness	Feb 9, 2011 10:49 PM
76	I usually walk to stores unless I'm getting heavy stuff.	Feb 9, 2011 10:32 PM
77	running	Feb 9, 2011 10:00 PM
78	Primary mode of transportation is seasonal. I drive myself in the winter and bicycle in the summer.	Feb 9, 2011 9:56 PM
79	around town when weather is good.	Feb 9, 2011 8:54 PM
80	Second job	Feb 9, 2011 7:28 PM
81	Running	Feb 9, 2011 7:19 PM

82	to downtown businesses	Feb 9, 2011 7:00 PM
83	live close to downtown & walk there sometimes	Feb 9, 2011 5:26 PM
84	Ride bike when there isn't snow on the ground instead of driving	Feb 9, 2011 5:17 PM
85	Neighborhood walks, going to lunch, shopping near work, etc.	Feb 9, 2011 4:54 PM
86	I like to bicycle to school or to run errands when the weather is not snowy.	Feb 9, 2011 4:49 PM
87	Both work and leisure in the summer without the kids	Feb 9, 2011 4:20 PM
88	winter errands	Feb 9, 2011 4:09 PM
89	Bike to work, weather permitting	Feb 9, 2011 4:07 PM
90	leisure	Feb 9, 2011 4:03 PM
91	Bicycling is primary in good weather (no icy roads)	Feb 9, 2011 3:51 PM
92	Long distance running	Feb 9, 2011 3:30 PM
93	walk son to school in good weather, walk to dentist and Dr. appts, etc.	Feb 9, 2011 3:04 PM
94	I also reside in the Metro Detroit area and go to that home several times per month	Feb 9, 2011 1:38 PM
95	Trips	Feb 9, 2011 1:04 PM
96	This is norm doing a test	Feb 9, 2011 12:39 PM
97	travel outside Mount Pleasant	Feb 9, 2011 12:37 PM
98	Health Fitness	Feb 9, 2011 12:12 PM
99	Long trips outside of Mt. Pleasant	Feb 9, 2011 12:00 PM
100	Since I work in Midland sometime I have to drive. But sometimes when I work in Mt.Pleasant I bicycle.	Feb 9, 2011 11:43 AM
101	Bicycle to store or errands	Feb 9, 2011 11:20 AM

Do you own a bicycle?

	Response Percent	Response Count
Yes	**82.7%**	**564**
No	17.3%	118
	answered question	682
	skipped question	37

Is your bicycle in working condition?

2. Is your bicycle in working condition? Create Chart Download

	Response Percent	Response Count
Yes	**77.4%**	**528**
No	5.9%	40
Not Applicable	16.7%	114
	answered question	682
	skipped question	37

Please describe how frequently you walk and bicycle for the following types of trips:

	Daily	Weekly	Monthly	Rarely	Never	Response Count
Walk for fun and/or exercise	**35.5% (240)**	35.2% (238)	11.2% (76)	13.6% (92)	4.6% (31)	677
Walk for transportation	21.2% (144)	16.8% (114)	10.9% (74)	**33.0% (224)**	18.0% (122)	678
Bicycle for fun and/or exercise	12.9% (88)	**28.7% (196)**	20.1% (137)	23.0% (157)	15.4% (105)	683
Bicycle for transportation	8.9% (60)	15.2% (102)	10.0% (67)	**33.1% (222)**	32.8% (220)	671
					Other (please specify) Show Responses	58
					answered question	686
					skipped question	33

Other (please specify)

1	I walk in the summer months, but not in the winter.	Mar 1, 2011 5:20 PM
2	clearlym, my responses are for good weather months	Mar 1, 2011 4:01 PM
3	This is weather dependent.	Mar 1, 2011 2:18 PM
4	biking not done during winter months	Mar 1, 2011 1:43 PM
5	Waliking and biking daily are in good weather only	Mar 1, 2011 11:33 AM
6	I do use my Bicycle more in the Summer, but never in the winter	Mar 1, 2011 11:25 AM
7	I walk or bike more frequently in the summer months	Feb 28, 2011 12:50 PM
8	depends greatly on the weather. i mainly use the car in the winter, and sub in the bike in the warm weather. so these answers are skewed since we're in February.	Feb 28, 2011 10:22 AM
9	we take biking trips	Feb 24, 2011 2:32 PM
10	much more bike in summer/ no bike in winter	Feb 24, 2011 2:25 PM
11	would bike to work in good weather but afraid of no sidewalks	Feb 23, 2011 4:50 PM
12	Just got the bike, this winter.	Feb 22, 2011 6:18 PM
13	Walk Daily for work	Feb 22, 2011 5:57 PM
14	golf cart	Feb 22, 2011 5:44 PM
15	would bike more if had sidewalk	Feb 22, 2011 5:26 PM
16	I bike/walk more during the warmer months	Feb 19, 2011 11:48 PM
17	Weather permitting for the bicycle reference	Feb 19, 2011 2:48 PM
18	run almost daily for fun and exercise	Feb 19, 2011 9:50 AM
19	Would like to bike more	Feb 18, 2011 10:06 AM
20	run every day	Feb 17, 2011 4:46 PM
21	It depends upon the weather - my responses reflect an average	Feb 17, 2011 3:02 PM
22	cannot ride bicycle due to disability	Feb 17, 2011 2:28 PM
23	Obviously less in the winter months...	Feb 17, 2011 11:48 AM
24	electric scooter available	Feb 17, 2011 10:30 AM
25	bicycle for transportation in spring and summer	Feb 17, 2011 10:29 AM
26	Running for exercise daily	Feb 17, 2011 7:38 AM
27	Rollerblade for fun and/or exercise - Weekly	Feb 16, 2011 10:42 PM
28	run 4 to 5 days a week	Feb 16, 2011 6:44 PM

29	Bicycle for transportation in summer months.	Feb 16, 2011 3:35 PM
30	running 30 to 40 miles a week	Feb 16, 2011 1:12 PM
31	Summer answers...don't ride much in winter	Feb 16, 2011 1:10 PM
32	Running for Exercise	Feb 16, 2011 1:09 PM
33	In the summer I bike/walk every day for exercise and transportation	Feb 15, 2011 3:23 PM
34	(In Shepherd)	Feb 15, 2011 2:36 PM
35	you have not counted weather into this. I bike to work every day when it isn't winter	Feb 15, 2011 1:34 PM
36	these questions are very influenced seasonally... I answered for the summer when it is possible to bike on the sidewalks	Feb 15, 2011 1:32 PM
37	biking is only really feasible in the summer due to snow banks in winter	Feb 15, 2011 1:09 PM
38	In the summer I bicycle often for transportation	Feb 15, 2011 10:12 AM
39	Would walk and bike more if the roads had space for it, drivers don't give any leeway and it's scary with kids.	Feb 15, 2011 9:21 AM
40	I would LIKE to walk to nearby stores but we don't have sidewalks so it is too dangerous.	Feb 15, 2011 8:51 AM
41	Do not own a bike.	Feb 14, 2011 10:29 PM
42	I live in the country, biking for anything other than fun it tough	Feb 12, 2011 11:44 AM
43	We love to bicycle but there are no sidewalks by our house.	Feb 11, 2011 3:18 PM
44	In summer, rollerblade	Feb 10, 2011 10:42 AM
45	run daily all over town	Feb 9, 2011 10:01 PM
46	not often in the winter but all the time in the other seasons!	Feb 9, 2011 10:01 PM
47	All these are for Spring/Summer/Fall, not in the Winter.	Feb 9, 2011 9:58 PM
48	you need to address weather changes--my transportation changes radically by season.	Feb 9, 2011 8:55 PM
49	I can't drive in the dark: I walk out of necessity	Feb 9, 2011 7:02 PM
50	Bike to work weekly in warm months	Feb 9, 2011 5:48 PM
51	Walk and bicycle for transportation in spring, summer, and fall	Feb 9, 2011 5:18 PM
52	Walk (for transportation) about campus after parking my car	Feb 9, 2011 4:40 PM
53	In non-icy weather conditions.	Feb 9, 2011 3:52 PM
54	Bicycle daily for exercie in warm weather	Feb 9, 2011 3:19 PM
55	walking/biking limited to appropriate weather...usually March thru Nov	Feb 9, 2011 3:06 PM
56	I run on the trail system; I don't walk.	Feb 9, 2011 1:35 PM
57	Bicycle in the summer only	Feb 9, 2011 1:30 PM
58	Bicycling during summer	Feb 9, 2011 1:03 PM

If a system of sidewalks, pathways, crosswalks, bike lanes, etc. is constructed, how do you think that would change your walking and bicycling habits?

	Daily	Weekly	Monthly	Rarely	Never	Response Count
Walk for fun and/or exercise	**47.9% (315)**	32.2% (212)	7.4% (49)	7.6% (50)	4.9% (32)	658
Walk for transportation	**33.5% (219)**	22.6% (148)	12.1% (79)	19.9% (130)	11.9% (78)	654
Bicycle for fun and/or exercise	33.1% (221)	**34.0% (227)**	13.0% (87)	10.8% (72)	9.0% (60)	667
Bicycle for transportation	**30.9% (203)**	24.5% (161)	11.9% (78)	15.7% (103)	17.0% (112)	657
					Other (please specify) Show Responses	41
					answered question	**673**
					skipped question	**46**

Other (please specify)

1	I would spend more time in Mt. Pleasant biking.	Mar 2, 2011 3:48 PM
2	It would not change, since my available time for walking would still be the same.	Mar 1, 2011 5:20 PM
3	It would not change what I currently do but it would be much safer.	Mar 1, 2011 2:18 PM
4	Be a lot happier. Can't bike or walk more, but better biking is needed.	Mar 1, 2011 12:39 PM
5	Safer biking	Mar 1, 2011 12:24 PM
6	I live in Lansing, but would love access to for walking or biking routes in Mt. Pleasant.	Mar 1, 2011 11:25 AM
7	Depending on up keep in winter	Mar 1, 2011 11:13 AM
8	Walk/Run/Rollerblade for fun/exercise	Mar 1, 2011 11:06 AM
9	we already are big bikers in summer	Feb 24, 2011 2:25 PM
10	it might add a few trips to Mt. Pleasant for biking /month	Feb 18, 2011 6:15 PM
11	jogging out of the city	Feb 17, 2011 11:57 AM
12	Again, weather affects this...	Feb 17, 2011 11:48 AM
13	this would be dependent on whether I would need to drive to access the constructed areas.	Feb 17, 2011 10:29 AM
14	Running daily	Feb 17, 2011 7:38 AM
15	Skateboard	Feb 16, 2011 8:30 PM
16	would still run 4 to 5 days a week	Feb 16, 2011 6:44 PM
17	Bicycle in summer.	Feb 16, 2011 3:35 PM

18	my habits would not change.	Feb 16, 2011 1:12 PM
19	I would run on this weekly...ALL YEAR LONG!!	Feb 16, 2011 1:10 PM
20	Running for excerices	Feb 16, 2011 1:09 PM
21	I would bike longer into the falll and earler in the spring	Feb 16, 2011 9:26 AM
22	(While I was in Mt. Pleasant)	Feb 15, 2011 2:36 PM
23	not in the case of rain or snow or wind	Feb 15, 2011 10:37 AM
24	I don't bike but my daughter does and I know if we had sidewalks she would use them	Feb 15, 2011 8:51 AM
25	Might change if I owned a bike.	Feb 14, 2011 10:29 PM
26	On Pickard Rd. we would still have to haul our bikes first, but would be willing to if the options were greater.	Feb 11, 2011 3:18 PM
27	Some parts of town are unsafe to bicycle and reduces my use	Feb 10, 2011 10:42 AM
28	I would most definitely use this system of sidewalks, pathways, crosswalks, bike lanes, etc.	Feb 9, 2011 10:02 PM
29	run daily but be safer away from cars	Feb 9, 2011 10:01 PM
30	would not change a thing	Feb 9, 2011 9:41 PM
31	i already do it...no change	Feb 9, 2011 8:42 PM
32	It depends on where the pathways go	Feb 9, 2011 5:52 PM
33	Might consider getting a bicycle if there such a system.	Feb 9, 2011 5:27 PM
34	I would ride my bike more often in town (rather than rail trail) if I felt safe from traffic and there were bike racks on Broadway	Feb 9, 2011 4:10 PM
35	It might make my commute safer...	Feb 9, 2011 3:52 PM
36	Not at all	Feb 9, 2011 3:36 PM
37	Would be safer to ride on the roads	Feb 9, 2011 2:26 PM
38	I may be more likely to purchase a bike	Feb 9, 2011 1:40 PM
39	I would run on a good trail; the current trails are MUCH too short for a good workout.	Feb 9, 2011 1:35 PM
40	Bicycle in the summer only	Feb 9, 2011 1:30 PM
41	It would be difficult to use since my workplace is around 20 miles from my home.	Feb 9, 2011 1:25 PM

Section 2: Where do you or would you like to walk and bicycle to?

For the following commercial/employment areas, please indicate if you currently walk and/or bicycle to the destinations and if you would be interested in doing so in the future if there was a network of sidewalks, pathways, crosswalks, bike lanes, etc.

	Currently WALK	Would Like to WALK	Would Not WALK	Currently BIKE	Would Like to BIKE	Would Not BIKE	Response Count
Downtown Mt. Pleasant	**39.6% (234)**	28.1% (166)	14.4% (85)	22.8% (135)	35.4% (209)	12.9% (76)	591
Central Michigan University Campus	**38.9% (225)**	20.0% (116)	17.8% (103)	22.3% (129)	35.1% (203)	16.8% (97)	579
Mid Michigan Community College Campus	3.5% (17)	15.4% (75)	**54.5% (265)**	2.1% (10)	30.2% (147)	46.3% (225)	486
Mission Street between High Street and Pickard Street	12.5% (70)	29.2% (164)	30.4% (171)	8.4% (47)	**42.5% (239)**	27.0% (152)	562
Mission Street between Broomfield Street and High Street	10.5% (59)	29.6% (166)	30.3% (170)	7.3% (41)	**44.6% (250)**	26.9% (151)	561
Indian Hills Plaza Shopping Center (Southwest of Mission Street and Blue Grass Road)	5.3% (29)	24.4% (134)	39.9% (219)	2.7% (15)	**43.5% (239)**	33.3% (183)	549
Mission Mall (Northeast of Mission Street and Blue Grass Road)	5.1% (28)	24.0% (131)	39.8% (217)	2.6% (14)	**43.9% (239)**	33.6% (183)	545
Kohl's/Walmart/Menards	3.5% (19)	24.8% (136)	41.3% (227)	1.8% (10)	**41.9% (230)**	36.4% (200)	549
Pickard Street between Mission Street and the Freeway	3.5% (19)	21.9% (118)	**42.5% (229)**	3.7% (20)	42.1% (227)	34.9% (188)	539
Soaring Eagle Casino	2.9% (15)	14.2% (73)	**55.5% (286)**	0.8% (4)	29.9% (154)	50.7% (261)	515
Ziibiwing Center	2.8% (14)	14.4% (72)	**53.1% (266)**	1.2% (6)	34.7% (174)	45.9% (230)	501
						Other (please specify) Show Responses	46
						answered question	**604**
						skipped question	**115**

Other (please specify)

1	Would like to bike on Isabella Road	Mar 4, 2011 12:20 PM
2	Connections ACROSS/UNDER 127 are needed!	Mar 1, 2011 12:42 PM
3	There needs to be a sidewalk connecting Jamestown and campus. There NEEDS to be pedestrian signals at the Broomfield Rd. and Isabella.	Mar 1, 2011 12:00 PM
4	I would like to bike to the Nimkee Heath Clinic	Feb 28, 2011 12:54 PM
5	mission street deemed too dangerous to bike as is	Feb 24, 2011 2:28 PM
6	City Park Tails I walk and bike use to get around too	Feb 24, 2011 9:54 AM
7	Would love to see a lane for bikes from town and then along Leaton Road clear up to the rails for trails path. I see people riding their bikes on Leaton frequently	Feb 22, 2011 5:38 PM
8	I bike and walk on the side streets	Feb 17, 2011 3:06 PM
9	the noise on mission is overwhelming	Feb 17, 2011 2:31 PM
10	would jog in most areas	Feb 17, 2011 12:00 PM
11	If I lived in the city, I would be more interested in walking.	Feb 17, 2011 10:36 AM
12	Park System would like to walk	Feb 17, 2011 9:45 AM
13	actually run in all of these areas	Feb 16, 2011 6:46 PM
14	Disc Golf Course	Feb 16, 2011 1:17 PM
15	connetivity to park system trails of course	Feb 16, 2011 12:29 PM
16	Would really like to run	Feb 16, 2011 12:16 PM
17	Alot of these places you can bike to you just REALLY have to watch the traffic.	Feb 16, 2011 10:20 AM
18	to meijer from broadway	Feb 15, 2011 3:25 PM
19	would like to bike/walk down Isabella from Freeway to Pickard	Feb 15, 2011 1:27 PM
20	I would only commonly walk or bike during warm weather months	Feb 15, 2011 1:13 PM
21	Pickard between Lincoln and Meridian	Feb 15, 2011 10:49 AM
22	Island Park, Nelson Park - would like to walk, Would like to bike	Feb 15, 2011 10:05 AM
23	I say would not walk because it's just too far away from home.	Feb 15, 2011 9:23 AM
24	Keep in mind that I live at Isabella and Bluegrass so I wouldn't be walking down by Pickard or out at the Casino etc.. but would LOVE to be able to walk to Walmart, Target etc!	Feb 15, 2011 8:54 AM
25	mission street needs to be safer...alot safer...and pickard	Feb 14, 2011 10:02 PM

26	I would love to be able to connect to Mission Creek park from the current park system	Feb 14, 2011 9:38 PM
27	Campus to downtown for quicker lunches	Feb 13, 2011 10:37 PM
28	Very interested in being able to bicycle from Coe Township to Mt Pleasant	Feb 11, 2011 9:25 PM
29	high street from mission to bradley	Feb 10, 2011 10:13 PM
30	It would be nice to have a city maintained (plowed) path running parralell to Mission Street. The implementation of bike lanes on Mission may lead to more traffic problems	Feb 10, 2011 9:44 PM
31	would like to bike pickard to lincoln and lincoln to broomfield	Feb 10, 2011 5:20 PM
32	The Park; the post office; the Library;	Feb 10, 2011 10:58 AM
33	Mt. Pleasant to Clare or Lansing	Feb 10, 2011 10:36 AM
34	Midland would like to bike	Feb 10, 2011 10:07 AM
35	Meijer or Kroger--would like to Bike or Walk	Feb 9, 2011 7:32 PM
36	Currently walk on Preston Road, but no street lights	Feb 9, 2011 7:06 PM
37	I would really only bike in good weather	Feb 9, 2011 5:54 PM
38	Pickard from Mission to Lincoln, and Lincoln road from Pickard down to High	Feb 9, 2011 5:24 PM
39	I would really like a bike lane to cross the bridge over the express way on Broadway St. going towards Doan Center from downtown.	Feb 9, 2011 5:02 PM
40	A Bike path along River Rd!	Feb 9, 2011 4:38 PM
41	Bluegrass between mission and Isabella needs a sidewalk	Feb 9, 2011 4:23 PM
42	having bike lanes, etc. would not make me bike more. Certainly not across town.	Feb 9, 2011 3:37 PM
43	Routes along the river and connections to the rail trails would be very popular.	Feb 9, 2011 3:22 PM
44	East Broomfield Rd from Leaton to Mission	Feb 9, 2011 2:26 PM
45	Morey Courts should be bike/walk accessible for children and adults who wish to use the facility; it would also be wonderful to have recreation trails to popular county parks such as Coldwater Lake and Deerfield so that we could ride out there rather than driving.	Feb 9, 2011 2:01 PM
46	We walk recreational dowtown and to campus during the summer/fall/spring	Feb 9, 2011 1:32 PM

For the following communities and trails surrounding the Greater Mt. Plesant Area, pleae indicate if you currently bicycle to the destinations and if you would be interested in doing so in the future if there was a network of sidewalks, pathways, crosswalks, bike lanes, etc.

	Currently BIKE	Would Like to BIKE	Would Not BIKE	Response Count
Alma	8.4% (44)	42.4% (221)	**50.7% (264)**	521
Clare	6.8% (36)	**47.7% (252)**	46.2% (244)	528
Village of Lake Isabella	6.7% (34)	42.3% (215)	**51.6% (262)**	508
Village of Rosebush	5.3% (27)	**48.2% (246)**	46.9% (239)	510
Village of Shepherd	8.7% (45)	**50.5% (262)**	42.0% (218)	519
Pere Marquette Rail-Trail of Mid-Michigan	16.8% (93)	**58.4% (324)**	27.7% (154)	555
Fred Meijer Hartland Trail	10.8% (55)	**56.6% (288)**	33.6% (171)	509
		Other (please specify) Show Responses		21
			answered question	**579**
			skipped question	**140**

Other (please specify)

1	I am unfamiliar with where the Fred Meijer Hartland Trail is.	Mar 1, 2011 5:24 PM
2	Currently bike the trails, but drive to get there. Would prefer to bike to the trails.	Mar 1, 2011 12:42 PM
3	do not know of fred meijer	Feb 24, 2011 2:28 PM
4	Midland Chippewa Nature Center - walk & bike	Feb 22, 2011 5:54 PM
5	Also running would be great!	Feb 17, 2011 11:51 AM
6	Mt. Bike trail riding	Feb 17, 2011 10:46 AM
7	I have used, and like to use, bike trails.	Feb 17, 2011 10:36 AM
8	Currently we drive to PMRT and then bike	Feb 17, 2011 7:41 AM
9	Deerfield County Park	Feb 16, 2011 1:17 PM
10	Would like to run	Feb 16, 2011 1:11 PM
11	Currently run to Rosebush would like to have better path	Feb 16, 2011 12:16 PM
12	The more place to ride to safly the better	Feb 16, 2011 9:29 AM
13	Would like to bike to work in Blanchard (Rolland Twp) regularly	Feb 15, 2011 11:13 AM
14	I don't own a bike so really this is N/A	Feb 15, 2011 8:54 AM
15	do not own a bike	Feb 14, 2011 10:31 PM
16	east/west near m-46 would definitely bike	Feb 9, 2011 10:55 PM
17	I would lov e a route west along the river.	Feb 9, 2011 3:22 PM
18	Currently biking to the locations mentioned is somewhat dangerous	Feb 9, 2011 2:28 PM
19	I bike using main roads, but would like a designated path	Feb 9, 2011 2:03 PM
20	Would bike to Deerfield Park and Coldwater Lake also	Feb 9, 2011 2:01 PM
21	Lake George	Feb 9, 2011 1:43 PM

For the following recreation areas, please indicate if you currently walk and/or bicycle to those destinations and if you would be interested in doing so in the future if there was a network of sidewalks, pathways, crosswalks, bike lanes, etc.

	Currently WALK	Would Like to WALK	Would Not WALK	Currently BIKE	Would Like to BIKE	Would Not BIKE	Response Count
GKB River Trail	16.9% (68)	29.9% (120)	23.9% (96)	12.2% (49)	**41.8% (168)**	21.1% (85)	402
CMU Trail	23.6% (112)	30.2% (143)	16.7% (79)	19.6% (93)	**39.0% (185)**	14.8% (70)	474
Pickens Field	16.4% (71)	28.2% (122)	24.3% (105)	19.9% (86)	**36.1% (156)**	19.4% (84)	432
Island Park	**44.7% (233)**	19.8% (103)	11.5% (60)	35.1% (183)	29.9% (156)	10.6% (55)	521
Nelson Park	**40.8% (207)**	19.7% (100)	13.2% (67)	34.3% (174)	30.4% (154)	11.6% (59)	507
Mill Pond Park	**39.6% (201)**	22.3% (113)	13.4% (68)	32.7% (166)	30.8% (156)	11.4% (58)	507
Chipp-a-Waters Park	31.9% (162)	26.0% (132)	14.4% (73)	27.6% (140)	**35.2% (179)**	11.8% (60)	508
Veits Woods	21.4% (98)	28.4% (130)	21.9% (100)	12.7% (58)	**38.7% (177)**	20.4% (93)	457
Horizon Park	11.3% (46)	26.8% (109)	30.8% (125)	12.1% (49)	**37.9% (154)**	25.1% (102)	406
Sunnyside Park	10.6% (44)	27.9% (116)	28.4% (118)	14.2% (59)	**38.9% (162)**	22.6% (94)	416
Jamison Park	5.3% (21)	27.7% (109)	34.0% (134)	6.6% (26)	**40.4% (159)**	29.2% (115)	394
SAC Arena	19.2% (88)	22.7% (104)	24.7% (113)	16.6% (76)	**37.6% (172)**	21.6% (99)	458
Community Recreation Center/I.C.E. Arena/Morey Courts	4.7% (21)	30.0% (134)	29.5% (132)	5.1% (23)	**49.0% (219)**	24.6% (110)	447
Union Township Park	4.4% (18)	26.0% (107)	32.8% (135)	6.8% (28)	**45.9% (189)**	26.5% (109)	412
Deerfield County Park	15.0% (70)	24.6% (115)	25.7% (120)	10.5% (49)	**49.9% (233)**	19.3% (90)	467
Meridian County Park	5.1% (21)	26.0% (106)	32.4% (132)	5.9% (24)	**47.1% (192)**	26.7% (109)	408
					Other (please specify) Show Responses		32
						answered question	541
						skipped question	178

Other (please specify)

1	I am new in town and do not know where any of these are	Mar 4, 2011 12:22 PM
2	Items without checkmarks are items I am unfamiliar with the location.	Mar 1, 2011 5:28 PM
3	would use extended bike trails	Mar 1, 2011 1:47 PM
4	Midland Chippewa Nature Center	Feb 22, 2011 5:57 PM
5	Around the Isabella Reservation	Feb 22, 2011 5:48 PM
6	How come there are no parks in Chippewa township?	Feb 22, 2011 5:41 PM
7	I drive my car into town then get out and walk in these	Feb 22, 2011 5:37 PM
8	currently jog in these areas	Feb 17, 2011 12:03 PM
9	Getting to Union Township Park by any method other than vehicle is currently dangerous! Lines I left blank I don't know where they are. :)	Feb 17, 2011 11:54 AM
10	Mission Creek Park mountain bike trail riding	Feb 17, 2011 10:49 AM
11	Biking in the parks is difficult due to volume of walkers and a narrow trail, if the park trails were lined to separate walkers and bikers, or were wider, I would bike them more.	Feb 17, 2011 10:47 AM
12	I have to drive to the parks so that I can run	Feb 17, 2011 7:44 AM
13	actually run in all of the areas marked walk	Feb 16, 2011 6:48 PM
14	Deerfield park, cross country skiing	Feb 16, 2011 1:48 PM
15	I run!	Feb 16, 2011 1:12 PM
16	Running area	Feb 16, 2011 1:12 PM
17	Run most of them also.	Feb 16, 2011 12:18 PM
18	Would like to bike down crawford S and broomfiled west to Lincoln	Feb 15, 2011 9:52 PM
19	I live 9 miles out of MP	Feb 15, 2011 4:00 PM
20	Although I wouldn't personally go to some of the parks (due to distance and lack of amenities) I think it is VERY important that this system of trails not leave out parks in the poorer sections of town. This should be a system for ALL the people, not just for those of us well-off enough to live near the better-developed parks.	Feb 15, 2011 11:18 AM
21	We live one mile west on Pickard and we will not bike to anyplace becuase of the traffic on Pickard I have a 1 year old and a 4 year old and we would love to start biking places in next couple of years.	Feb 15, 2011 10:53 AM
22	mission creek park	Feb 14, 2011 3:14 PM
23	Sylvan Solace Hiking	Feb 13, 2011 10:43 PM
24	What is the GKB River Trail? Would like to bike to Celebration Cinema (west of Jameson Park).	Feb 10, 2011 1:14 PM
25	Mission Creek Park - Crawford Road	Feb 10, 2011 9:29 AM
26	i don't know what GKB River trail is or what CMU trail is	Feb 9, 2011 5:56 PM
27	I don't know a few of these parks.	Feb 9, 2011 5:10 PM
28	I run instead of walk	Feb 9, 2011 3:37 PM
29	I roller ski and skate as well as walk and bike.	Feb 9, 2011 3:27 PM
30	Meijer, would like to bike for groceries	Feb 9, 2011 3:21 PM
31	I checked walk, but I would job/run to these destinations	Feb 9, 2011 2:07 PM
32	We walk more than we bike but i wouldn't mind biking if we didn't have to cross Mission.	Feb 9, 2011 1:35 PM

For those destinations on this and the previous page that you indicated that you would like to walk or bicycle to in the future, please indicate the importance of following items in making that trip actually happen in the future.

	Very Important	Somewhat Important	Not Very Important	Not Important	Response Count
Bicycle parking	**41.2% (218)**	36.3% (192)	12.1% (64)	10.4% (55)	529
Complete sidewalk / roadside pathway system	**76.9% (412)**	16.8% (90)	2.6% (14)	3.7% (20)	536
Complete bike lane system	**59.1% (311)**	24.3% (128)	8.7% (46)	7.8% (41)	526
Hands-on training on safe and effective bicycling	14.8% (77)	26.2% (136)	**34.7% (180)**	24.3% (126)	519
Lighting along sidewalks and pathways	**50.5% (269)**	31.0% (165)	12.2% (65)	6.4% (34)	533
Mid-block crosswalks	28.0% (145)	**35.1% (182)**	24.1% (125)	12.7% (66)	518
Map of available pedestrian and bicycle facilities	**46.5% (247)**	34.3% (182)	13.0% (69)	6.2% (33)	531
On-line customized walking and bicycling routes	**35.1% (183)**	34.0% (177)	22.8% (119)	8.1% (42)	521
Snow and ice removal from sidewalks and pathways	**63.6% (343)**	23.0% (124)	7.1% (38)	6.3% (34)	539
Wayfinding signs for suggested bicycle and pedestrian routes to key destinations	**46.0% (242)**	37.8% (199)	10.8% (57)	5.3% (28)	526
			Other (please specify) Show Responses		22
				answered question	**548**
				skipped question	**171**

Other (please specify)

1	Keep area natural. Don't pave or "develop". There are plenty of paved areas already.	Mar 3, 2011 4:13 PM
2	Mid-block crosswalks ESSENTIAL on Mission & Pickard.	Mar 1, 2011 12:50 PM
3	If a bike/walking system is done, it needs to be complete to be safe.	Mar 1, 2011 11:32 AM
4	do not bike in winter	Feb 24, 2011 2:31 PM
5	Don't know what mid-block crosswalks means	Feb 22, 2011 5:37 PM
6	Larger Sidewalks... NO BIKE LANES IN THE ROAD! (to dangerous)	Feb 21, 2011 3:49 PM
7	Someplace that is safe for just biking with my 7 year old.	Feb 17, 2011 7:53 PM
8	Public media/internet networking education for those who will continue to drive for the safety of pedestrians and bicyclists	Feb 17, 2011 10:47 AM
9	put the paths in first then add the "extras" as money allows	Feb 16, 2011 12:53 PM
10	too far	Feb 15, 2011 4:00 PM
11	what are the bike sign things attached to the roadsigns downtown? I don't understand what they're for.	Feb 15, 2011 1:38 PM
12	the customized routes would be very cool, but isn't of dire importance	Feb 15, 2011 9:26 AM
13	disabled vet	Feb 14, 2011 3:59 PM
14	I cannot stress how important great lighting is, I often go later in day, but do not feel safe without proper lighting. Also Snow removal is critical!	Feb 10, 2011 10:50 AM
15	keep away from insane car traffic	Feb 9, 2011 10:58 PM
16	remove obstacles at driveways that prevent drivers from seeing bikes when they back out	Feb 9, 2011 4:18 PM
17	Would not bike during winter	Feb 9, 2011 3:37 PM
18	Getting safe and protected routes is what matters. Rest is waste of money.	Feb 9, 2011 3:27 PM
19	Please light PRESTON ST between Mission and Isabella!	Feb 9, 2011 3:21 PM
20	Drivers need training on sharing the road, not the cyclists	Feb 9, 2011 2:31 PM
21	Off street paths are superior to bike lanes because families with children can use them.	Feb 9, 2011 2:07 PM
22	i would voolunteer to remove snow on some pathways	Feb 9, 2011 12:33 PM

Section 3: Walking and Bicycling to School

Are you the parent of a school age child or a student yourself? An answer to this question is required as it determines if you are presented with some additional questions specific to school age children.

	Response Percent	Response Count
Yes	37.9%	220
No	62.1%	361
	answered question	581
	skipped question	138

Elementary School which elementary school do you or your children attend and how do you typically get to school?

How do your or your children typically get to school?

	Walk	Bike	Bus	Driven	Response Count
Fancher Elementary School	21.7% (5)	4.3% (1)	30.4% (7)	**43.5% (10)**	23
Ganiard Elementary School	8.0% (2)	0.0% (0)	28.0% (7)	**64.0% (16)**	25
Kinney Elementary School	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	1
McGuire Elementary School	8.3% (1)	8.3% (1)	**50.0% (6)**	33.3% (4)	12
Pullen Elementary School	12.5% (2)	6.3% (1)	**43.8% (7)**	37.5% (6)	16
Seventh Day Adventist Elementary School	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0
Vowels Elementary School	8.7% (2)	0.0% (0)	34.8% (8)	**56.5% (13)**	23
Orchard Hills Elementary School	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	1
Parkview Elementary School	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0
Thornton Creek Elementary School	**100.0% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	1
Village Oaks Elementary School	**100.0% (2)**	0.0% (0)	0.0% (0)	0.0% (0)	2
				Other (please specify) Show Responses	40
				answered question	84
				skipped question	635

Other (please specify)

1	St. Cecilia in Clare	Mar 1, 2011 1:35 PM
2	Sacred Heart Academy	Mar 1, 2011 12:11 PM
3	Shepherd	Mar 1, 2011 11:19 AM
4	Coleman, Driven	Mar 1, 2011 11:13 AM
5	Saginaw Chippewa Academy, by Vehicle	Feb 24, 2011 4:50 PM
6	St. Joseph the Worker Catholic School in Beal City	Feb 23, 2011 4:31 PM
7	West Midland Family Center	Feb 23, 2011 10:59 AM
8	five children in weidman elementary	Feb 23, 2011 8:50 AM
9	Saginaw Chippewa Academy-bus, walk and I drive	Feb 22, 2011 6:46 PM
10	Shepherd	Feb 22, 2011 6:21 PM
11	Clare Elementary - Driven	Feb 22, 2011 6:01 PM
12	homeschool	Feb 17, 2011 8:47 PM
13	Rosebush Elementary	Feb 17, 2011 12:11 PM
14	Sacred Heart - they walk	Feb 17, 2011 10:58 AM
15	shepherd, bus	Feb 17, 2011 9:50 AM
16	Winn Elementary	Feb 16, 2011 1:16 PM
17	Clare-Gladwin RESD	Feb 16, 2011 11:29 AM
18	zion Lutheran-Drive	Feb 15, 2011 10:53 AM
19	Beal City Schools - 1	Feb 15, 2011 10:42 AM
20	Headstart II at Rosebush Elementary building - we drive as it is all the way on the other end of the county	Feb 15, 2011 9:27 AM
21	Morey PSA, takes the bus, sometimes I drive	Feb 15, 2011 8:58 AM
22	homeschool	Feb 14, 2011 11:03 PM
23	Saginaw Chippewa Academy - Drive	Feb 14, 2011 10:46 PM
24	homeschool	Feb 14, 2011 10:15 PM
25	shepherd	Feb 14, 2011 10:04 PM
26	homeschooled	Feb 14, 2011 9:33 PM
27	beal city	Feb 14, 2011 9:26 PM

28	Mid Mi	Feb 14, 2011 4:04 PM
29	shepherd	Feb 14, 2011 4:01 PM
30	Evart Elementary	Feb 11, 2011 11:13 PM
31	n/a	Feb 11, 2011 10:52 AM
32	Child Development Learning Lab (CMU preschool), Drive	Feb 10, 2011 11:36 AM
33	Breckenridge Elementary	Feb 9, 2011 10:59 PM
34	Shepherd	Feb 9, 2011 4:59 PM
35	Shepherd Elementary - Walk	Feb 9, 2011 4:33 PM
36	My childern go to Alma Public Schools	Feb 9, 2011 3:25 PM
37	Home School	Feb 9, 2011 3:22 PM
38	MP High School-student drives a car	Feb 9, 2011 2:09 PM
39	CMU	Feb 9, 2011 12:34 PM
40	Shepherd Elementary -- walk	Feb 9, 2011 11:59 AM

Which middle school do you or your children attend and how do you typically get to school?

	Walk	Bike	Bus	Driven	Response Count
West Intermediate School	0.0% (0)	2.6% (1)	42.1% (16)	**55.3% (21)**	38
			Other (please specify) Show Responses		14
			answered question		**38**
			skipped question		**681**

Other (please specify)

1	Shepherd	Mar 1, 2011 2:22 PM
2	Clare Public	Mar 1, 2011 1:35 PM
3	Chippewa Hills	Feb 24, 2011 12:09 PM
4	Beal City Schools	Feb 23, 2011 4:31 PM
5	Shepherd Middle School - bus	Feb 23, 2011 9:11 AM
6	Sacred Heart - she walks	Feb 17, 2011 10:58 AM
7	Shepherd Middle School	Feb 16, 2011 8:55 PM
8	Shepherd Middle School	Feb 16, 2011 1:16 PM
9	Beal City Schools -1	Feb 15, 2011 10:42 AM
10	homeschool	Feb 14, 2011 10:15 PM
11	shepherd	Feb 14, 2011 10:04 PM
12	beal city	Feb 14, 2011 9:26 PM
13	shepherd	Feb 14, 2011 4:01 PM
14	Shepherd Middle School (bus)	Feb 11, 2011 9:36 PM

High Schools: Which high school do you or your children attend and how do you typically get to school?

	Walk	Bike	Bus	Driven	Drive Themselves	Response Count
Oasis High School	0.0% (0)	0.0% (0)	0.0% (0)	**66.7% (2)**	33.3% (1)	3
Mt. Pleasant High School	9.1% (4)	2.3% (1)	9.1% (4)	**59.1% (26)**	20.5% (9)	44
				Other (please specify) Show Responses		13
				answered question		**46**
				skipped question	**673**	

Other (please specify)

1	Clare Public	Mar 1, 2011 1:35 PM
2	Shepherd-Drive Self	Mar 1, 2011 12:46 PM
3	Chippewa Hills	Feb 24, 2011 12:09 PM
4	Beal City High School	Feb 23, 2011 6:23 PM
5	Beal City High School	Feb 23, 2011 4:31 PM
6	Shepherd High School - bus	Feb 23, 2011 9:11 AM
7	Beal City - Son drives self	Feb 19, 2011 9:55 AM
8	Grand Ledge High School by personal car	Feb 17, 2011 12:10 PM
9	Shepherd High School	Feb 16, 2011 8:55 PM
10	Beal City Schools - 1	Feb 15, 2011 10:42 AM
11	homeschool	Feb 14, 2011 10:15 PM
12	shepherd	Feb 14, 2011 4:01 PM
13	Clare High School	Feb 9, 2011 2:17 PM

Other Schools: Which school do you or your children attend and how do you typically get to school?

	Walk	Bike	Bus	Driven	Drive Themselves	Response Count
Renaissance Public School Academy	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (4)**	0.0% (0)	4
Mt. Pleasant Baptist Academy	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0
Sacred Hart Academy	21.1% (4)	0.0% (0)	0.0% (0)	**52.6% (10)**	26.3% (5)	19
				Other (please specify) Show Responses		19
				answered question		**23**
				skipped question	**696**	

Other (please specify)

1	Clare Public	Mar 1, 2011 1:35 PM
2	Central Michigan University/Mid Mich Comm College, by vehicle	Feb 24, 2011 4:50 PM
3	Beal City Schools	Feb 23, 2011 4:31 PM
4	Central Michigan University Student	Feb 21, 2011 3:50 PM
5	Beal City - drives self	Feb 19, 2011 9:55 AM
6	Central Michigan University	Feb 18, 2011 6:09 PM
7	homwschool	Feb 18, 2011 2:56 PM
8	Beal City - BUS	Feb 17, 2011 9:49 AM
9	CMU	Feb 16, 2011 11:59 PM
10	Morey PSA	Feb 15, 2011 8:58 AM
11	homeschool	Feb 14, 2011 10:15 PM
12	shepherd	Feb 14, 2011 10:04 PM
13	beal city (driven)	Feb 14, 2011 9:26 PM
14	shepherd	Feb 14, 2011 4:01 PM
15	MMCC	Feb 9, 2011 10:59 PM
16	Preschool, FUMC walk	Feb 9, 2011 10:42 PM
17	drive for the winter months (Jan/Feb)	Feb 9, 2011 3:12 PM
18	It is Sacred Heart Academy, not Hart	Feb 9, 2011 1:36 PM
19	CMU Preschool -- drive	Feb 9, 2011 11:59 AM

How likely are you or your child to walk or bike to school in the future if there is a network of sidewalks, pathways, crosswalks, bike lanes, etc.?

	Response Percent	Response Count
Already walk or bike	13.4%	26
Likely to walk or bike most of the time	25.3%	49
Likely to walk or bike some of the time	32.0%	62
Not likely to start walking or biking	29.4%	57
	answered question	194
	skipped question	525

What concerns do you have about walking or bicycling to school?

	Major Concern	Somewhat of a Concern	Minor Concern	Not a Concern	Not Applicable or Not Sure	Response Count
Lack of sidewalks in the neighborhood	**44.7% (76)**	21.8% (37)	11.2% (19)	11.2% (19)	11.2% (19)	170
Lack of sidewalks or pathways along the main roads	**64.2% (111)**	13.3% (23)	4.0% (7)	9.2% (16)	9.2% (16)	173
Existing crosswalks too far out of way	**25.0% (41)**	22.0% (36)	24.4% (40)	14.0% (23)	14.6% (24)	164
Signalized intersections too busy	**47.1% (81)**	22.1% (38)	14.0% (24)	5.2% (9)	11.6% (20)	172
Too far to walk or bike	**31.0% (57)**	15.2% (28)	17.4% (32)	29.3% (54)	7.1% (13)	184
No bike racks at school	11.5% (19)	23.6% (39)	15.2% (25)	**29.7% (49)**	20.0% (33)	165
Weather	**38.8% (69)**	29.2% (52)	15.7% (28)	9.6% (17)	6.7% (12)	178
Poor lighting along route	**33.1% (56)**	23.7% (40)	14.8% (25)	18.3% (31)	10.1% (17)	169
Personal security concerns	**37.8% (68)**	27.2% (49)	12.8% (23)	15.6% (28)	6.7% (12)	180
					Other (please specify) Show Responses	18
					answered question	**196**
					skipped question	**523**

Other (please specify)

1	age	Mar 1, 2011 11:08 PM
2	Too much traffic	Mar 1, 2011 12:46 PM
3	kids loaded down woth backpacks and other material my daughter plays tenor sax	Feb 24, 2011 2:34 PM
4	Crossing High Street a Major Concern	Feb 24, 2011 1:44 PM
5	Pedafiles in the area	Feb 23, 2011 3:25 PM
6	Lose dogs in area make it unsafe to bike or walk.	Feb 23, 2011 9:44 AM
7	Too far, Roads are too busy for my kids or myself to bike to school or work. I/they would get hit by a car	Feb 22, 2011 6:22 PM
8	excessive speeds	Feb 21, 2011 3:09 PM
9	Homework too cumbersome to safely bike	Feb 17, 2011 7:48 AM
10	amount of time to get to school/work	Feb 15, 2011 9:08 PM
11	Child is too young; other young children to transport to daycare	Feb 15, 2011 4:42 PM
12	The pedestrian light at broadway/brown is always out	Feb 15, 2011 3:28 PM
13	No traffic light at intersection of Pickard and Crawford	Feb 14, 2011 9:43 PM
14	crazy parents driving	Feb 10, 2011 10:27 PM
15	Child to young to walk	Feb 10, 2011 9:31 AM
16	We ride when there is good weather and when I can be at work later.	Feb 9, 2011 8:58 PM
17	Your not supposed to bike on the sidewalks....	Feb 9, 2011 2:32 PM
18	Crossing Mission is challenging even for an adult; there needs to be a series of rideable pedestrian bridges form children; otherwise, most parents won't let their children cross Mission Blvd. I have had drivers bear down on me in the crosswalk.	Feb 9, 2011 2:13 PM

Section 4: Walking and Bicycling to Campus

Are you a student at Central Michigan University or Mid Michigan Community College?
An answer to this question is required as it determines if you are presented with some additional questions specific to college and university students.

	Response Percent	Response Count
Yes	30.1%	171
No	69.9%	398
	answered question	569
	skipped question	150

What school do you attend?

What year are you?

	Freshman	Softmore	Junior	Senior	Graduate Student	Other	Response Count
Central Michigan University	**23.8% (31)**	12.3% (16)	19.2% (25)	16.2% (21)	22.3% (29)	6.2% (8)	130
Mid Michigan Community College	16.3% (7)	**39.5% (17)**	16.3% (7)	14.0% (6)	0.0% (0)	14.0% (6)	43
					answered question		160
					skipped question	559	

Do you use a motor vehicle on campus?

2. Do you use a motor vehicle on campus? Create Chart Download

	Response Percent	Response Count
Yes, I use it daily to get to class	37.8%	62
Yes, I use it weekly to get to class	15.2%	25
Yes, but I seldom use it to get to class	27.4%	45
No I do not have a motor vehicle	19.5%	32
	answered question	164
	skipped question	555

How do you generally get to the following locations?

	Walk	Bike	Bus	Motorcycle/Scooter	Drive Myself	Carpool	Passenger	Taxi	Other	Response Count
Class	35.4% (58)	13.4% (22)	2.4% (4)	0.6% (1)	**44.5% (73)**	0.6% (1)	0.6% (1)	0.0% (0)	2.4% (4)	164
Errands and Shopping	6.7% (11)	6.7% (11)	1.8% (3)	0.0% (0)	**73.2% (120)**	4.9% (8)	6.1% (10)	0.0% (0)	0.6% (1)	164
Entertainment	11.1% (18)	7.4% (12)	2.5% (4)	0.6% (1)	**56.2% (91)**	9.9% (16)	9.9% (16)	1.2% (2)	1.2% (2)	162
						Other (please specify) Show Responses				17
						answered question				165
						skipped question		554		

Other (please specify)

1	run for fun and excercise sometimes walk downtown	Mar 1, 2011 11:53 PM
2	Drive when snow is on the ground	Mar 1, 2011 12:28 PM
3	I attend online classes so the library is the only place I go on campus for class materials.	Mar 1, 2011 11:40 AM
4	Drive if its far but walk if its downtown or Campus	Mar 1, 2011 11:12 AM
5	visit at hospital/ / medical appointments / government offices	Feb 16, 2011 12:39 PM
6	Fitness and Recreation: I walk	Feb 13, 2011 3:15 PM
7	older student	Feb 12, 2011 11:48 AM
8	Borrow car	Feb 10, 2011 1:07 PM
9	Car when too much snow, too cold, or running late.	Feb 10, 2011 10:53 AM
10	shopping is 50/50 drive/walk	Feb 9, 2011 10:40 PM
11	In the Winter I drive myself and in the Spring/Summer/Fall I ride my bike.	Feb 9, 2011 10:15 PM
12	This section is difficult as I am faculty at CMU and Mid-- I Bike to CMU when the weather allows and drive to MMCC since it is difficult ot bike there	Feb 9, 2011 7:40 PM
13	I take classes occasionally, and would like to bike instead of drive.	Feb 9, 2011 5:27 PM
14	Only in winter. Bike/walk other seasons	Feb 9, 2011 5:22 PM
15	When the weather is nice I ride my motorcycle or try to bicycle.	Feb 9, 2011 5:14 PM
16	would be interested in walking/biking trails	Feb 9, 2011 4:47 PM
17	I am a faculty member and I ride a bike to work all year.	Feb 9, 2011 2:14 PM

How likely are you to walk or bike to school in the future if there is a network of sidewalks, pathways, crosswalks, bike lanes, etc.?

	Response Percent	Response Count
Already walk or bike	39.3%	64
Likely to walk or bike most of the time	27.0%	44
Likely to walk or bike some of the time	20.9%	34
Not likely to start walking or biking	12.9%	21
	answered question	163
	skipped question	556

What concerns do you have about walking or bicycling to campus?

	Major Concern	Somewhat of a Concern	Minor Concern	Not a Concern	Not Applicable or Not Sure	Response Count
Lack of sidewalks in the neighborhood	**31.6% (49)**	28.4% (44)	20.0% (31)	13.5% (21)	6.5% (10)	155
Lack of sidewalks or pathways along the main roads	**53.2% (83)**	20.5% (32)	10.9% (17)	10.9% (17)	4.5% (7)	156
Existing crosswalks too far out of way	22.4% (34)	25.0% (38)	**27.6% (42)**	18.4% (28)	6.6% (10)	152
Signalized intersections too busy	**40.0% (62)**	28.4% (44)	17.4% (27)	11.0% (17)	3.2% (5)	155
Too far to walk or bike	24.5% (38)	23.2% (36)	18.1% (28)	**30.3% (47)**	3.9% (6)	155
No bike racks at school	11.0% (17)	19.5% (30)	22.1% (34)	**35.1% (54)**	12.3% (19)	154
Weather	**45.3% (72)**	26.4% (42)	19.5% (31)	6.9% (11)	1.9% (3)	159
Poor lighting along route	**32.7% (51)**	30.8% (48)	19.2% (30)	12.8% (20)	4.5% (7)	156
Personal security concerns	**29.7% (47)**	22.8% (36)	18.4% (29)	23.4% (37)	5.7% (9)	158
				Other (please specify) Show Responses		8
				answered question		**161**
				skipped question		**558**

Other (please specify)

1	Tight Schedule	Feb 24, 2011 1:45 PM
2	Of these, weather and lack of pathways is the major concerns	Feb 17, 2011 10:53 AM
3	bad drivers	Feb 10, 2011 9:44 PM
4	My biggest problem are the driveways along Pickard. Drivers do not watch for bikes, only other cars.	Feb 9, 2011 10:18 PM
5	General safety, motorists are not aware that bicycles are SUPPOSE to ride in the road and pedestrians on the sidewalk. Motorists don't seem to pay attention to pedestrians/bicyclists.	Feb 9, 2011 8:49 PM
6	No room on shoulder of bridge that crosses expressway on Broadway.	Feb 9, 2011 5:17 PM
7	Too much foot traffic to bike safely	Feb 9, 2011 4:56 PM
8	The biggest issue with riding to work during the winter is that the snow isn't cleared from the side of the road where I ride. I have to ride with the cars in their tire tracks.	Feb 9, 2011 2:18 PM

Section 5: Roadside Pathways

Please indicate how frequently you use a roadside pathway?

	Daily	Weekly	Monlthy	Rarely	Never	Response Count
As a pedestrian	19.5% (105)	21.2% (114)	14.1% (76)	**32.3% (174)**	12.8% (69)	538
As a bicyclist	10.0% (53)	20.7% (110)	15.4% (82)	**31.2% (166)**	22.7% (121)	532
					answered question	550
					skipped question	169

What are your concerns when walking or bicycling on a roadside pathway?

	Major Concern	Somewhat of a Concern	Minor Concern	Not a Concern	Not Applicable or Not Sure	Response Count
Overhanging vegetation	9.7% (51)	30.4% (160)	**34.8% (183)**	20.3% (107)	4.8% (25)	526
Condition of pavement	31.3% (168)	**37.9% (203)**	20.3% (109)	6.9% (37)	3.5% (19)	536
Rough pavement transitions at intersecting driveways and roadways	25.6% (135)	**35.1% (185)**	24.7% (130)	10.4% (55)	4.2% (22)	527
Conflicts with pedestrians	14.8% (77)	27.8% (145)	**32.1% (167)**	21.1% (110)	4.2% (22)	521
Conflicts with bicyclists	12.3% (64)	25.9% (135)	**34.1% (178)**	23.9% (125)	3.8% (20)	522
Being hit by motor vehicles at intersecting driveways and roadways	**48.2% (256)**	21.8% (116)	14.9% (79)	11.3% (60)	3.8% (20)	531
Snow and ice	**43.3% (231)**	28.7% (153)	13.7% (73)	9.0% (48)	5.3% (28)	533
Puddles	14.0% (73)	26.8% (140)	**34.3% (179)**	20.7% (108)	4.2% (22)	522
Lighting	**32.0% (169)**	30.9% (163)	20.5% (108)	12.5% (66)	4.2% (22)	528
Gaps in the system	**51.5% (270)**	29.6% (155)	7.8% (41)	6.7% (35)	4.4% (23)	524
				Other (please specify) Show Responses		37
					answered question	543

What are your concerns when walking or bicycling on a roadside pathway?

1	snow and ice are not a concern b/c I don't ride my bike in the winter	Mar 5, 2011 9:53 PM
2	Sidewalks on Isabella Road?	Mar 4, 2011 12:24 PM
3	As a driver the biggest concern is hitting a bicyclist.	Mar 3, 2011 4:13 PM
4	overall safety of users. Police should patrol on regular basis to keep it safe and free of criminal activity.	Mar 2, 2011 4:00 PM
5	biking in Mt. P is currently dangerous because of vehicles, poor pavement, and lack of bike lanes	Mar 1, 2011 1:49 PM
6	Connect the park trail (Island, Mill Pond, etc.) through Veits Woods to Center St.	Mar 1, 2011 12:52 PM
7	Being hit by a motor vehicle isn't a concern because I'm not an idiot and only cross when clear whether I have the right away or not.	Mar 1, 2011 11:42 AM
8	Bicycle paths on Bellows scare me as a driver and riding a bike. Too close to traffic.	Mar 1, 2011 11:26 AM
9	only one i can think of is island park and that is not roadside	Feb 24, 2011 2:36 PM
10	Lose dogs in the area make it unsafe to walk or bike.	Feb 23, 2011 9:46 AM
11	they are not available.	Feb 22, 2011 12:57 AM
12	Proximity to roads, the further the better!	Feb 21, 2011 4:06 PM
13	I run not walk	Feb 17, 2011 8:49 PM
14	I have had many close calls when walking in the cross walk. I would never walk in the road. I think I would get hit.	Feb 17, 2011 7:57 PM
15	Roads too narrow in some neighborhoods for much change	Feb 16, 2011 8:40 PM
16	It is important that creating a roadside pathway does not preclude riding my bicycle on the road parallel to it.	Feb 16, 2011 11:41 AM
17	The bigest concern is cycling not they need to follow the rules of the road, stopping at stop sign, and car's not realizing cyclist have rights on the road.	Feb 16, 2011 9:37 AM
18	Mostly just worry about safety of my children; roads are just too busy and drivers don't seem to be watching	Feb 15, 2011 4:44 PM
19	I am extremely concerned about being hit by vehicles at all times, not just at intersections. I would not prefer roadside pathways directly adjacent to roadways for this reason.	Feb 15, 2011 1:36 PM
20	We don't have any for where I want to bike.	Feb 15, 2011 10:57 AM
21	The roadside pathways in this town aren't that useful. The only one I know of is on campus, that doesn't help me walk my boys to the store.	Feb 15, 2011 9:30 AM
22	none available i dont think	Feb 14, 2011 10:06 PM
23	No roadside pathways around here	Feb 11, 2011 7:04 PM

24	we love to run on these paths but again, we live out of the city and would have to haul our bikes.	Feb 11, 2011 3:25 PM
25	An issue I've noticed with many pedestian/bike pahts is that they are not designed to funnel to water away and many times water will puddle and poses a hazard in the winter.	Feb 10, 2011 9:53 PM
26	Short lengths of the Riverwalk Trail in Mt Pleasant are next to High St and could be considered roadside pathway.	Feb 10, 2011 1:14 PM
27	Being hit by motor vehicles at intersecting driveways and roadways is a major concern! Snow and ice are also a deterrent.	Feb 10, 2011 10:57 AM
28	I went to the hospital once because I was hit by a bicycle while walking to school	Feb 10, 2011 1:49 AM
29	no crosswalks, signs or signals at roads between river park systems is a major concern	Feb 9, 2011 10:45 PM
30	they should go somewhere useful	Feb 9, 2011 8:50 PM
31	We don't have any of these in our AREA	Feb 9, 2011 5:17 PM
32	Major bike use is warm weather. Paved safe route is the issue.	Feb 9, 2011 3:30 PM
33	Most are not plowed after major snowfall, which means I have to drive to school	Feb 9, 2011 3:26 PM
34	The only roadside path I am aware of are at CMU and MP High school; I use the CMU paths during the winter because they are cleared of snow. I do not use the high school paths because they are icy and too short for my commute.	Feb 9, 2011 2:24 PM
35	That the existence of a trail system would prohibit me from riding on the parallel road.	Feb 9, 2011 1:21 PM
36	Not only being hit at intersections, but alongside the road itself. The idea of a roadside pathway, not just a painted lane, is extremely appealing.	Feb 9, 2011 11:39 AM
37	there are hardly roadside paths in mt. pleasant right now so this isn't very applicable.	Feb 9, 2011 11:19 AM

What is you comfort level using a roadside pathway in the following contexts:

	Uncomfortable	Somewhat Uncomfortable	Somewhat Comfortable	Comfortable	Not Applicable or Not Sure	Response Count
With frequent intersecting driveways and/or roadways	15.2% (82)	**33.5% (181)**	26.8% (145)	21.3% (115)	3.3% (18)	541
When the pathway is right next to the roadway	19.6% (105)	**27.2% (146)**	24.3% (130)	25.9% (139)	3.0% (16)	536
When there is a strip of grass between the road and pathway	2.0% (11)	6.9% (37)	18.2% (98)	**69.1% (372)**	3.7% (20)	538
When there is a strip of grass and trees between the road and pathway	3.0% (16)	4.9% (26)	9.9% (53)	**77.9% (417)**	4.3% (23)	535
					answered question	542
					skipped question	177

Section 6: Bike Lanes

How frequently do you bicycle in a designated bike lane?

	Response Percent	Response Count
Daily	6.5%	35
Weekly	11.5%	62
Monthly	10.2%	55
Rarely	33.3%	179
Never	38.5%	207
	answered question	538
	skipped question	181

What are your concerns when using or contemplating using a bike lane?

	Major Concern	Somewhat of a Concern	Minor Concern	Not a Concern	Not Applicable or Not Sure	Response Count
Debris	22.1% (114)	**32.6% (168)**	25.8% (133)	9.5% (49)	10.1% (52)	516
Condition of the pavement	28.4% (146)	**38.7% (199)**	18.3% (94)	5.6% (29)	8.9% (46)	514
Being hit by motor vehicles turning into or out of driveways or local roadways	**64.4% (337)**	17.0% (89)	7.5% (39)	2.9% (15)	8.2% (43)	523
Making left turns on busy roadways	**57.5% (296)**	21.6% (111)	8.7% (45)	3.7% (19)	8.5% (44)	515
Being hit from behind by a motor vehicle	**60.7% (318)**	18.1% (95)	9.5% (50)	3.2% (17)	8.4% (44)	524
Snow and ice	**40.3% (208)**	25.8% (133)	14.0% (72)	8.9% (46)	11.0% (57)	516
Puddles	16.2% (83)	23.0% (118)	**32.9% (169)**	18.1% (93)	9.7% (50)	513
Lighting	**27.0% (139)**	**27.0% (139)**	21.8% (112)	13.4% (69)	10.7% (55)	514
Gaps in the system	**42.7% (218)**	29.2% (149)	11.8% (60)	6.7% (34)	9.6% (49)	510
				Other (please specify) Show Responses		21
				answered question		527
				skipped question		192

What are your concerns when using or contemplating using a bike lane?

1	there are no bike lanes currently in Mt Pleasant	Mar 5, 2011 12:39 AM
2	This is a bad idea--major safety concern	Mar 3, 2011 4:13 PM
3	grates	Mar 1, 2011 11:11 PM
4	bike lines currently end and start randomly (in middle of street, e.g. Bellows)	Mar 1, 2011 1:50 PM
5	Being crowded from the side; "right hooks" - vehicle passes & turns right; bike lanes make bikes "second class citizens" even though the motor vehicle code regards bikes has having the same rights to the road as cars.	Mar 1, 2011 12:54 PM
6	Unless bicyclists start paying a license fee I don't think they should share the road with motor vehicles by being given specific paths to use.	Mar 1, 2011 11:45 AM
7	Snow is rarely cleared from this area, when there are gaps, then the bicyclist doesn't know where to ride. Confusing to both mortorist and bicyclist	Mar 1, 2011 11:43 AM
8	this type of bike lane in mt pl IS SUPER DANGEROUS AND MUST BE AVOIDED /too many littlekid bikers/ too many young student drivers	Feb 24, 2011 2:38 PM
9	They don't exist here!	Feb 19, 2011 6:01 PM
10	broken glass in the roadway is a common encounter when I bicycle	Feb 17, 2011 11:01 AM
11	MAJOR CONCERN, traffic circle at Bellows and Arnold. It sucks for cyclists. Bike lane disappears and the entry into the circle is barely wide enough for a vehicle.	Feb 16, 2011 1:28 PM
12	Often I will ride on the sidewalks instead of an existing bike lane to separate myself from car traffic. I feel better on the bike lane on Michigan street, there's not much traffic..I don't think I'd ride on a bike lane on mission, at least not very often.	Feb 15, 2011 1:43 PM
13	I am extremely afraid of being hit by cars while in a bike lane.	Feb 15, 2011 1:37 PM
14	no bike lanes by my house	Feb 11, 2011 7:05 PM
15	I would not allow my children to ride on a bike lane. we prefer a bike path.	Feb 11, 2011 3:26 PM
16	street lights are out in my neighborhood making it difficult to see or be seen	Feb 9, 2011 4:21 PM
17	Best set up is lanes with a barrier to keep cars out of the lanes. See Madison, WI	Feb 9, 2011 3:37 PM
18	The students here are terrible drivers, bike lanes are useless when you can't trust the drivers to stay in the lines or pay attention to their surroundings.	Feb 9, 2011 3:28 PM
19	there are no bike lanes in this town exept the one on west campus that doesn't connect with anything	Feb 9, 2011 2:37 PM
20	Bike lanes in MP generally contain snow and ice pushing bikes back into the road. I'm not complaining; it's just the way it is.	Feb 9, 2011 2:27 PM
21	Dealing with motorists is my #1 concern; it trumps all the others.	Feb 9, 2011 11:41 AM

What is or would be your comfort level in using a bike lane in the following contexts:

	Uncomfortable	Somewhat Uncomfortable	Somewhat Comfortable	Comfortable	Not Applicable or Not Sure	Response Count
2 to 3 lane road with speeds 35 MPH or less	10.9% (58)	11.7% (62)	27.9% (148)	**40.8% (216)**	8.7% (46)	530
2 to 3 lane road with speeds 35 to 45 MPH	22.3% (117)	21.3% (112)	**26.9% (141)**	21.0% (110)	8.6% (45)	525
2 to 3 lane road with speeds greater than 45 MPH	**42.8% (224)**	23.5% (123)	15.5% (81)	9.6% (50)	8.6% (45)	523
4 to 5 lane road with speeds 35 to 45 MPH	**41.6% (218)**	23.9% (125)	14.5% (76)	11.6% (61)	8.4% (44)	524
4 to 5 lane road with speeds greater than 45 MPH	**58.5% (306)**	16.8% (88)	8.4% (44)	7.8% (41)	8.4% (44)	523
					answered question	531
					skipped question	188

Section 7: Project Hopes and Concerns

Desired Project Outcomes Visualize the impact of this plan. Think ten or so years into the future and visualize The Mt. Pleasant area as you would like it to be. How have walking, bicycling and other non-motorized trips changed in the area? What are you, your neighbors, visitors, or government doing differently? Tell us your priorities. Please concisely list your top three desired outcomes of the non-motorized Plan based on your vision of the future. Try to focus on general ideas.

In town errands being easier to do on a bike
access to education, entertainment, and shopping via bicyle and walk pathways
Students can get to schools
Definitely having access to a bicycle or walking area
Mt P becoming a friendlier city/ people would have more contact with each other
Being able to walk or bike anywhere in Mt pleasant
Pedestrian community - can get anywhere you want to go on foot or bike
Communicate. Pedestrians, cyclists and automobiles must share. If our community becomes non-motorized, we must be reminded and instructed again and again until we get it.
I think completing the system to enable people to walk and bike to save gas
Easier to bike travel to weekly chores like gerocery shop, errond shopping.
All citizens within biking or walking distance of work and school do so as often as possible.
More bike lanes
Roadway Bike lanes
Highway Overpass bike/pedestrian lanes (In Summer months I ride to Mt Pleasant from Shepherd and these are most frightening)
Bicycle lanes
Separated bike lanes with at least grass buffer on all major access roads into Mt. Pleasant
bike lanes between downtown and cmu
Bike lanes on every road

Bicycle paths, lanes throughout the city of Mt. Pleasant
Bike lanes linking all major areas
Bike lanes or paths throughout the Mt Pleasant area to permit travel anywhere within the area.
More bike lanes
All new roads built with bike lanes
More bicycle lanes on the roads.
lanes for bikes in town
bike lanes in and around mt. pleasant
Better system for bicyclists whether they're bicycle lanes or making drivers more aware of bicyclists
Reduced numbers of parents queing to retrieve and drop off kids at schools
Ease of non-motorized transportation between CMU and MMCC campuses.
Enforce the law about cars in crosswalks when people are walking in them or bikes are in them
People need to know we have a right to be on the road not the side walk
Education of moterists in regards to pedestrians and cyclists
Greener enviorment
Healthier population getting exercise
Exercise more meaning less obesity
Healthier and happier citizens
The majority of the population will be biking, walking, skating, rollerblading and carpooling using methods that are great forms of exercise as well as eco efficient.
Healthier community
healthier residents - clean air!
Healthier community
Greater emphasis on health, wellness, and exercise
healther people
I would like to see the major intersections more pedestrian and bicycle friendly.
ALTERNATIVE TRANSPORTATION
To decrease our dependancy on cars for in town transportation.
How about a reliable bus system that allows us to put our bikes on the buses
Motor-free downtown with ample parking outside downtown proper From May to September
Make it appealing and easier to use non-motorized transportation than motorized.
I would love to cut down to only one car for our family
less gas cosumption in the area/state/and eventually US
reduced in town driving
People leave their cars at home
Not depending so much on fuel for our vehicles
Better street lighting in pedestrian/biking areas. Even with a bike light, riding at night is treacherous in this town.
Consistent street lighting
maintenance of current paths in the MP city park system
improve sidewalks and require maintenance by home owners/businesses
mission street is one of the most dangerous roads for pedestrians, especially for CMU students/staff. this needs to be fixed.
Nothing should be on Mission nor Pickard due to safety
Do not, under any circumstances, put bike lanes on Mission Street. They would be unusable in periods of snow and rain. The margin for error on the part of an auto or truck driver is fatally small.
Walking/Bike Paths OVER Mission street
To feel safe riding my bike to shopping areas (Mission, Pickard, downtown). Bike paths.
create more bike paths so bicycling along Mission is safer, consider "bridge" for bicycles to cross

Being able to walk across major streets safely. Specifically Mission Road.
Sidewalks everywhere with safe crossings on main streets like Mission.
Sidewalks linking the area of Isabella rd between Bluegrass and Broomfield to the Mission Street sidewalks
Clairity and purpose - none of these three block long bike trails nor ignorant placements of dinky roundabouts
i am not for this i think we need to worry about fixing the roads since there are more people that drive deff summerton
Don't spend too much money on this project.
a connected system
Interconnected system of non-motorized pathways offering an alternative to auto transportation
Extend the existing sidewalk network beyond the City of Mt Pleasant into Union Twp to connect parks, schools, and tribal areas.
connected bike paths throughout town
more roadside pathways throughout the city
connectivity to existing trails
Pathways with no gaps
bike paths/lanes throughout the area
Walking paths in all areas that di not end in the middle of nowhere (as they do now) and lead to interesting places such as shopping and dining
Connect as many communities with the path as possible
Need of More bike Paths on Primary Roads Between Mt. P and Chippewa Township
More trails to walk/bike off campus.
Expansion of the Heartland Trail
Bike/Walking Paths
walking/bike path completed to the casino on broadway and on pickard
consistent and well cared for bike paths throughout Union Township
Organize paths to be utilized by all.
Connecting Rails to Trails
More bike or walking paths next to the roads.
More bicycle paths
more trails
Bike Paths on all road ways through out the city
Available Bike Paths - clear of debris and visibly marked
good trails
bike/walking paths on all major streets
Nice family bike and walking paths
safer walk/run/bike paths
pedestrian or bicycle paths entirely separate from roadway (not bike lanes)
A system of designated bike paths
More roadside or bike lanes throughout town. Especially leading to major business (Meijers) and east and west of town (out to Deerfield).
bike lane and walk way conections so that all areas of Mt. pleasant can be reached
have biking trails to get around town easily with school aged children
Complete pathways from outer areas to shopping
Paved biking trails that extend from Clare to Lansing thru Mt. Pleasant!
Car free area to run or ride bike for transportation
lighted trails
Interconnected paved system
More non-motorized pathways extending beyond Mt. Pleasant city limits
GIVE ME TRAILS AT MISSION CREEK PLEASE

separate recreational biketrails
more off road acess/trails
Having rail trail for recreation
Bike trails that connect the parks are wonderful.
Non-motorized pathway between Clare & Mt Pleasant to link w/Pere-Marquette
Complete trail systems and make bike & pedestrian connections across (or under) 127. There are NO good crossings now.
safe bike paths for kids and adults on logical connecting roads (between neighborhoods and parks, etc..)
a safe seamless system of paths/bike routes
Having designated pathways and safe routes to common place
Safe paths for walking/biking are available to all major Mt. Pleasant destinations (downtown, Meijers, Parks, ect.)
To travel safely on a network of non-motorized paths.
Bike/pedestrian paths avoiding all major roads, cross country to get to all major areas of Mt. Pleasant safely
Walking and biking pathways exist to go to parks and for commuting
Walking routes everywhere.
A walkable community
Expansion of recreational opportunities afforded by traveling along new trails/paths
Connect to parks to improve the recreational opportunities in the county and give people a place to go other than the little downtown parks that are all packed in toghether near downtown
Safety
Safe traveling where everyone knows and follows the rules of non-motorized transportation
safety
Safety for not only the person walking/biking but also for the driver of a vehicle. People tend to concentrate on the walker/biker but the person in the vehicle as the innocent victim. I drive to my job everyday on campus and people walking/biking are not paying attention, texting, talking walk into oncoming traffic. They feel they always have the right of way. They must yield to oncoming traffic.
riding safely
Be able to safely go with my family on a bike ride all the way to down towm comforatbly
Safety
To increase safety for non motorized travel
Travel in and around Mt. Pleasant is safe
Create the opportunity for people in neighborhoods to complete minor errands (downtown, etc.) safely via bicycle or walking
continuous and safe trails used to encourage healthy living.
More people in the community making safe non-motorized trips in their day-to-day activies.
Sharing the road with motor vehicles
Increased safety for those already walking or bicycling the existing paths.
safety
Safety of travel
How to get from where I live to Mt. Pleasant or other areas safely - rural access to biking.
SAFETY for our children!
give families a place to safely be active.
Safety of cyclist and pedestrians, hit and runs are too common of an occurance
Provide safe options for non-motorized transportation
Safety. No cars.
Safe cycling and running for myself and my family members
Safety of Children From Home to Destination Point
Safety of trails/lanes/etc.
To become a community for cyclist and walkers to be able to go were ever they want to go safely.
bike lanes that are safe - that means bike lanes not part of auto roads/ BIKES AND CARS TOGETHER IS TOO DANGEROUS FOR THE WAY MT PL IS
Biking/walking lanes that are safe between CMU campus & downtown

would like to see wide bike lanes criss crossing Mt. pleasant community to encourage safe bicycling as mode of transportation
bikes able to safely travel in Mt P (CMU to downtown, even to Mission)
safe, effective means to walk or bike to many local destinations
Safe, Well-Integrated Biking and Walking System That Links Key Points in Mount Pleasant
safely going to parks
ability to bike comfortably, safely from home to parks and stores
eliminating gaps in sidewalk and bike path areas, and increase their coverage so that those that choose or need to make biking/walking their primary transportation method, can do so safely.
Safety of pedestrians and bicyclists from motorized traffic has improved
I would like to be able to bike to work while feeling safe.
A safe and complete bicycle pathway system throughout the major roads and business districts. Many residents are voluntarily bicycling or walking to their employment.
there are sidewalks along Blue Grass, Broomfield and Isabella Roads
Sidewalks on all streets in Mt. Pleasant. Many streets have no sidewalks especially on west side
Sidewalks connecting union township to Mt. Pleasant sidewalks
A system of well maintained sidewalks and paths throughout the area
Widen Sidewalks
increase sidewalks or add bike paths (especially down Isabella)
Sidewalks everywhere
Sidewalks or walking paths
Sidewalks down Isabella, Bluegrass, Broomfield and High St Roads.
Sidewalks on at least one side of the street in every neighborhood
Sidewalks fully extending through the greater Mount Pleasant area
Requiring, and strongly enforcing, snow and ice removal from sidewalks.
less vehicular traffic
Main roads like Lincoln and Pickard need bike paths. Once I can get to a neighborhood with sidewalks I am fine, but biking on the busy streets in traffic isn't ideal.
More people biking to work
CMU, as an employer, embraces biking or walking to work by revising dress codes or providing showers
Being able to go to work without the car.
To have parking lots to access the trail for those people that have to drive to it first.
Bike sharing/loaning program in place
To get people moving more
Reimplement the program the city formerly had to build a certain amount (miles) every year.
more people bicycle
Attractive, functional bikepaths - include public art
Highlight and show off our non-motorized routes with lighting, banners, landscaping. They should be a jewel in our community.
Main routes for non-motorized users
More people are walking and bicycling as a means of recreation.
Family friendly
comprehensive coverage - can get just about anywhere on foot or on bike
The ability to easily access all county parks via bicycle
Being able to ride a bike to do a little shopping.
easy access to work and shopping
Repaving existing roads add bike lanes
continue bike lanes esp on Michigan St. where started
It's comfortable (i.e. safety/sidewalks/crossings) to ride your bike places most people drive (i.e. mission, meijer, walmart)
Protected bike lanes all over the area with snow clearance to allow winter commutes
sharing the road with bikes and vehicles
bike lanes
bike lanes
Having bike lane

Widen Roads
more bicycle lanes and routes from Mt Pleasant to outter shopping and other destinations (movie theater, Tribal Center, shopping centers, etc)
conduct all my business by walking and/or biking in the summer months
Bike lanes or sidewalks for all streets in Mt. Pleasant
ample parking for bicycles especially on MMCC and CMU campuses, at shopping centers, restaurants, parks, etc.
More bike parking, especially at businesses. I would be more likely to ride my bike when running errands.
have bike racks available at all major destinations (stores, gas stations)
Increased Physical Activitity for Children/Like when I was younger and my parents felt comfortable
Greater sense of community / interacting with others
better community
Help improve the 'welcome' factor of Mt. Pleasant
Connect the CMU Campus to the greater community (i.e. Saginaw Chippewa Tribe, Downtown, other cities)
All citizens within walking or biking distance of shopping and eating establishments do so often
system that goes to destinations I would use schools, parks, shopping, downtown
Safe, Well-Integrated Systems That Link Mount Pleasant to Surrounding Towns and Trail Systems
Our child is an infant now, but once she is older, we would like to use sidewalks on Lincoln road to get to the township park.
Education and ettiquette - respect for walkers and bikers
More bicycle awareness programs
better education of motorists regarding cyclists rights
increased awareness of bicyclists and walkers
Better education toward walkers/bicyclers
Motorist education regarding the right of cyclists to share the roadway and more acceptability of that concept
Motorists understanding that cyclists need room and respect
Cyclist/pedestrian awareness and respect
Having a mutual understanding and respect for motorists and cyclists
motorist that respect the bike and cyclist lanes, too many times I have been riding my bike down a road and a car honks at me even though I have the obvious right-of-way and they are at a stop sign
Mt P would be a healthier city
To get more people off of the couch and out into the fresh air!
We get more exercise built into the day when we are using our bikes as transportation
Getting much needed exercise
healthy attitudes
promote exercise/health in a pleasant community
drop in gas prices from people using less
fewer cars on the road
Gas conservation
less motorized traffic
To decrease use on motorized vehicles
more safe bike routes in town with good lighting
competant lighting of these bike/pedesrian trails - look at the elevated trail next to millpond along High/M-20
Lighting along these routes.
More lighting
better lighting
lighting
better nighttime lighting at pedestrian crosswalks
Lighting for all sidewalk areas
good lighting and clear paths
Non dangerous or uncomfortable bicycling/walking situations on Mission street.
make Mission street more esthetically pleasing and safer for people who are walking
To decrease the amount of cars on Mission
Be realistic, bike path out of town won't affect enough residents
there are sidewalks dowton thats where everyone walks i think we need to put our money towards more imporant stuff
emcompasses whole city with surrounding immediate areas
Create an integrated and interesting system for training runners, bikers, and avid walkers
networked together
Create a path system that has minimal driveways, intersections with cars that aren't controlled by lights and keep it well lit

designated bike paths throughout Isabella Cty
more paved bicycle trails
More lanes or connect more or the rail trails so we dont have to ride on the road
bike paths separate from roadways esp along Mission Street and CMU campus
Need of More bike Paths on Secondary Roads Betweeb Mt. P and Chippewa Township
more trails
Create these paths in areas that will actually be utilized. Do not put in area that will not be used.
having the path connect to all urban areas
Paths bike and running paths
Increased use of new paths by new walkers/bikers.
Roadside paths on Mission, Broomfield, Deerfield, and Bluegrass
Would like to see more walk wasy to encourage excercise for community
Bike paths in Mt.Pleasant
Bike paths
Construct better paths for both bicyclists and pedestrians that would make it simpler for everyone
Have long stretches of path...many miles where walking and biking is possible
I would like to see better walking and bicycle paths to the shopping centers.
Create paths to MP destinations so that families can ride bikes to school or Morey courts or the SAC
Longer distant bike walk paths that are safe. The minute you leave MP the danger in walking and bikeing significanlty increases
have biking trails between nearby towns (MP, Shepherd, Rosebush, Clare, Alma)
Non-motorized pathway between Mt. Pleasant & Ithaca w/link to Fred Meijer in Alma
Connect Mt. Pleasant to the rail-trail systems.
To travel to other towns by non- motorized path.
consistent and well cared for bike paths within town
Pathways that cover many areas of community, not just down town area
A system of roadside paths
Walking/Bike Paths throughout the city but not on the streets - more as a sidewalk
Transportation paths connecting the county parks
Paths to major parks
pathways and/or trails to connect chip-a-waters park with the other parks in town all the way to Island Park.
Consise path system connecting major destinations; downtown, campus, shopping malls, the reservaiton and the city/county parks
Safe walking/biking path on Isabella Rd between Broomfield & Pickard
no gaps in sidewalk layout
More sidewalks in general
Sidewalks paths are kept in good condition and cleaned of snow and ice and other debris
Better pavement conditions.
better access for wheelchairs
Side walks seperated by grass on all roadways through out the city
Increased number of sidewalks for pedestrians
Leisure recreation in and around Mt. Pleasant
Bicycling and hiking tourists are seeking Mt. Pleasant as a travel destination due to the lovely trails along the river system that connects to other tourist destinations.
All busy or multi-lane roads should have pedestrian crossing signals
safe crossings across mission at preston bellows michigan and broadway
Marked bicycle paths that cross busy streets, i.e. Pickard, Broomfield, etc
Crosswalks with appropriate vehicle notification at connections between river parks
Pedestrian bridges over major streets.
Safety
pickard street is also dangerous, but not as crucial for CMU.
More people cycling because of improved safety
safely visiting friends
Signage makes it obvious to area visitors that they have to be more cautious drivers.
Riding across town is somewhat challenging; many stop signs and visibility issues.
Safer Bike and pedistrian lanes
Education of people on safety and driving with bike lanes present
Increase awareness of importance of bikable/walkable communities, including bicycle safety issues.

Safe walking and biking system
create safe areas that are monitored for recreation such as running, walking and biking.
Ease of getting to recreation (parks) destinations safely on foot or by bicycle
More sidewalks
Consistent system of sidewalks
Sidewalks along Isabella Rd all the way from BUS 127 to Pickard St.
sidewalks on all streets
Sidewalks in working condition
clear Routes
increase maintenance (path conditions, snow removal, debris removal) so that areas can be traveled without hazzard
Maintenance is critical, clear debris, snow, fill potholes.
snow removal of bike lanes and walkways
Walks cleared of snow in the winter to make walking the City possible. Kids should be able to walk to school on sidewalks.
More enforcement of sidewalk snow removal rules
Sidewalks are maintained in the winter, either by residents or by the city
Sidewalks cleared of ice and snow
Make it part of the city & township codes to have all sidewalks cleared of snow/ice in the winter
Less automobiles on the road.
less traffic
Lower traffic accidents
People can travel to work and back
Short trips for errands (store, post office, etc) are now done walking/biking by 80% of neighbors
There is an expectation that walking or riding a bike to work is entirely normal
More people biking to work or school
Less polution
EMISSION CONTROLS
greatly diminish the amount of pollution
trail conditions
Nature trails
function
the disc golf course south of campus is removed so walkers can return to the area and feel welcome
battery powered bike`s for seniors
To have bathroom facilities and picnic areas along the trail system.
Lobby for more money for non-motorized or mass transit ways of transportation.
in allowing me to ride my bike from our home to the Downtown area, which was close to 6 miles.
Riding East or West is difficult; no bike lanes on highways and back country roads.
Walking/Bike Paths to stores and areas surrounding MP - Kohls, Walmart, Meijer, etc.
See people out enjoying the community without a lot of speeding cars, with most people walking or biking. Families !
The City of Mt. Pleasant wins award for being the top bicycle and pedestrian friendly city in the U.S.
A very walking/bike friendly downtown
That these will be generally accepted go-to modes of transportation.
Enjoying the outdoors more as a family, especially with the kids
3. Develop the complete streets idea. Allow for shared use of expanded network of sidewalks and pathways.
accomadate the increase of winter bikers
Construct Bike Lanes
wider improved bicycle/pedestrian shoulders on designated rural bicycle routes
condition on shoulders improved
improve bike lanes to connect the rez and mt pleasant businesses better
Bike Lanes
more bike lanes going north and south between campus and downtown
Paved trails to destinations around the county. E.g. Wide shoulders on county roads for touring bike riders.
Wider shoulders on all county roads, especially those newly constructed
Accomodation of cyclists at all business. providing for not only safe access but parking as well
Bike racks at all major destinations.
More bicycle parking in business/commercial areas of the city
Northwest side of town has no sidewalks. Children must walk/bike in the street. Sunnyside park has no sidewalks in the surrnounding neighborhoods.
Green Community

Improve the 'going green' attitude in Mt. Pleasant
asthetics
connections to all parks, public buildings, and schools
covered route`s to popular area`s
Links to trail systems from within city.
Connecting close communities such as Shepard with paths for non-motorized means of transportation
Bicycle paths linked to surronding towns, MP to Shephard, etc
City bicycle registry? Preventing bike theft?
Educate drivers
Bicycle awareness programs to encourage biking in town. If the local government supports and encourages it, more people will do it.
Walking/Biking awareness
Cyclists understanding the rules of the road
Educating the community on safe healthy alternatives to motorized transportation about laws and expectations of non-motorized transportation.
More police traffic control
bicylce training some bicyclist do not obey the laws and piss off drivers
driver education required in Michigan. Drivers often do not stop for pedestrians, bikes
Instruct drivers that pedestrians have the right of way!
Driver awareness of pedestrians
motorist knowing the rules
Education campaign has taught drivers and bicyclists proper right-of-way and traffic rules
lower crime rate
To get the younger generation away from computers and "virtual" exercise into real exercise!
Healthier citizens
People can exercise by walking and biking
More people exercising
HEALTH & WELLBEING
pedestrian activated signals at major intersections
Less motorized vehicles on the road
1/4 as many cars on the road
downtown area for delivery vehicles, buses only. Parking lots outside the perimeter for personal cars.
lighting
lighting
Better lighting on designated walking/biking paths, ie. mill pond, deerfield, chip-a water
paved and maintained trails to surrounding cities
upkeep upkeep upkeep
To have the trails well maintained.
Make it possible for children, no everyone, to cross Mission safely. I cross it everyday and it is crazy.
safely walk along Mission
safe plan for crossing Mission
Forget side-of-the-street bike lanes. These are more dangerous than riding in the lane and usually force cyclists into roadside debris, curbs, and vehicles pulling out from driveways and cross streets.
Bike lanes off main roads
more off road acess/trails
Access to regional and state-wide paths directly from Mt. Pleasant
Maintain good shape of the trails.
Pathways that are maintained
maintenance of pathways
connect Mt. Pleasant with a rail trail
Bike paths in Union Township
bike paths towards out of town for longer leisure routes.
Transportation paths connecting with other counties
To have safe paths for my children.
Pave the path
Better pavement
more people aware of more people walking a biking on the road where there is no path
Increase out door activities in the community

Greater foot/riding access within parks
Meridian and Deerfield parks have adequate funding for maintenance and for personnel to staff the entrance gates
Increased use of currently available parks due to new ability to get their safely via non-motorized vehicles.
Linking all the riverside county and city parks with non-motorized trails.
Connecting Deerfield and Pere-Marquette Rail Trail to Mt. Pleasant non-motorized trails
create a rail trail between mt. pleasant and shepherd and clare
Walkways over the major roads at multiple locations throughout the city
safe crossing at bluegrass to connect apartments to w campus drive
More crosswalks
The city offers countdown crosswalks at more locations across Mission to connect with CMU campus
More signs making moterists aware of pedestrians and cyclists
Greater sense of safety
safety
Safety
safety
extremely safe ways to do the aforementioned through waking and biking roadways
safe bike lanes on roads out of Mt. Pleasant to reach bike paths to other towns
Schools providing incentive to children/families for children to bike to and from school reducing traffic issues
Safe walking/biking path from Broomfield to Walmart/Kohls/Mendard
Educational programs for pedestrians, bikers, and drivers in the area with public safety support for pedestrians and bikers
increase lighting in biking and walking areas to promote safety
Intersections more pedestrian and biker friendly to avoid accidents, maybe with more traffic lights
Safety and maintenance plan (lighting and upkeep)
maintain the vegetation/landscape so that it does not become an unsafe place
I would commute to work on my bike a couple of days a week if there was a safe way to get here from the west. M 20 is not an option.
good sidewalks for walking
Expansion of sidewalks
Sidewalks down Pickard
More snow removal
More people are choosing to walk and bicycle to work and to conduct personal business.
the ability to bring bikes onto public transportation quickly and with ease (an external rack) so that one can ride to work, but have public transportation as an option should adverse weather occur during the day that makes biking difficult
I could save a ton of money by leaving my car parked at home!
safely going to work
Rather than talking about getting my car stuck on a winter day, I am talking about the brisk ride into work.
more hot women bicycle
No car zones
Offer incentives for non-motorized activity such as 'cyclists receive 10% off their bill.' Promote non-motorized recreation such as 5Ks.
Having sections go through natural areas
less polution
willingness to work
cleaner air
common sense in archtecture - no trails to nowhere - a flow 'sense'
places to repair and air up tires, etc
I am originally from Portage, MI. A few years ago, the city created a walking/bicycling path that went through beautiful sections of the city, while connecting major sections of the city. On any given day, I had seen hundreds of people on the path and I believe it was one of the greatest assets to the city. http://www.portagemi.gov/Departments/ParksRecreation/PortageBikeway.aspx has more information.
Increase the number of rest stops along the routes with public restroom & water facilities
Minimize impact on the environment

Needed improvements Recall the streets and trails that you frequent. Now think of those places at different times of the day, weather conditions and seasons. In these places that you are familiar with, please tell us about three specific areas that this project should address. These issue areas may be an off-road trail opportunity, a challenging intersection, a difficult road to cross, or a hard stretch of road to walk or bicycle along. Please note the location and concisely describe the issue.

The bend on Bellows (by the tracks): Poor lighting and a fairly bling corner make crossing this road dangerous.
better bike lanes
bike lanes
Pretty much all county roads with little or no shoulder to accommodate cars and bikes (this includes most out-county roads)
No shoulder or limited shoulder on most roads in the biggest problem
The main north/south and east/west roads do not have designated bike lanes, and the roads are currently too tight to ride safely
Designated lane for cycling (e.g. Broadway from Isabella to Bradley)
From Deerfield to Broomfield on Crawford road -- I ride this daily. There is no shoulder at all and speeds are over 55 mph
Lincoln Road. It would be helpful to have a bike lane or path along Lincoln road throughout mt. pleasant area
Narrow or non-existant shoulders on Old Mission between Clare & Mt. Pleasant
Bicycle lanes all the way down Main St. from CMU campus to Downtown Mt. Pleasant
Difficulty of using major roads (High, Mission, Pickard, Broadway, Main and Washington on a bike
Downtown is difficult to cycle. Back in angled parking improve situation (i.e. State of Iowa)
Old Mission Road between River and Mission, there is no off-road path and the shoulder of the road is very small, so walking/biking is very dangerous as the speed limit is 50mph.
Bluegrass Rd. by the Wallmart area. Needs safe trail from town and campus!
Bluegrass Road, a lot of college students live in apartments around there and they all have to walk in the road or strip of land and mostly end up driving. It would be nice if there was a wide lane there for them to use
extend a shoulder of bike lane on Broomfield out to BluegrassRd.
The intersections at Bluegrass and Isabella and at Broomfield and Isabella
A light at Bluegrass and Isabella
on Bluegrass near Target, there is a major gap in the sidewalk
The bridge on Broadway street going over the highway, very poor visibility for cars to see cyclists and pedestrians while going over the bridge.
Broadway from Isabella to Bradley
Broadway Road from city limits to the Reservation
Broadway from Isabella to Bradley
broadway east of mission
Broadway over US 127- no room to walk or bike safely
Broadway/Crapo
Broadway to casino
Broadway street daily snow and ice removal during winter so that pedestrians can avoid walking in streets
Broomfield road between lincoln around the turn where it turns to Whiteville and out a couple miles
Broomfield from Isabella to Lincoln needs a bike lane, drivers don't look for bikers on sidewalks
On college campuses (both CMU and MMCC)
East Campus Drive at Preston is impossible to cross during the day
Intrsection of east campus and Preston is impossible- needs a round about
Riding to Casino is out of the question...no shoulder and the drivers of cars could be drunk
Bike path along North Crawford Road connecting Mission Creek Park to current park system
Crawford Rd between Deerfield and Broomfield
Deerfield road between Crawford and Mission lots of pedestrians/bicyclists no bike/pedestrian trail here
Downtown area of all cities
M-20 (High Street) between Deerfield park and Mission in Mt. Pleasant, and then continuing on High until Isabella Rd is reached
High Street from Fancher st. to Lincoln
Connection to Mill Pond Park along High Street from CMU campus area RR bridge is frequently used by others.
High Street east of Crapo - sidewalk ends as you get closer to isabella Rd.
M-20
East and West M-20 are main thoroughfares into the city. Speeds of cars excess 55 mph and west M-20 (where I live) has a narrow shoulder to bicycle on. I believe these may be an off-road trail opportunity except for the state's jurisdiction.
The sidewalk along High Street between Washington Street and Oak Street needs repairs
millpond pard - lighting
light the trails

the walking paths south of campus (Comfort Inn area) need either more lighting or maintenance of current lighting upgraded as it is too dark there in the evenings
Lincoln road is very dark at night, but I don't bike often in the dark.
Preston Road: no street lights around high school area - I am night blind and dread this walk every night
Trails in parks not cleared during winter time on a timely basis, specifically Chipp-a-Waters and Mill pond
all of the exsiting ones need work...
Meridian Road - major potholes - terrible road
Fix the holes in Meridian Rd.
I am disappointed that the Rail-trail is only open seasonally. I would greatly appreciate a place to walk/exercise outdoors in winter without having to drive to get there. I live within walking distance of the Loomis trailhead. I wish the county would plow it.
Clear paths
the condition of the edge of the road and shoulders are dangerous
Many bike lanes are currently (2/10/11) a place to pile snow. Then ones that aren't were not salted and have ice boulders on them. Many are also lower than the primary part of the street which allows for them to collect water. (noticed on CMU campus Frankin St and Washington.)
Rough pavement on Crawford south of Bluegrass
The uneven roads cause my children to fall off their bikes and hurt my knees. (downtown area)
Preston Street on CMU's campus is in terrible condition. Awful to bike on.
lower speed limits on Mission Street to 35
Mission Road
Mission St. the whole street needs to be revamped to allow for safe driving and biking
anywhere along Mission is a problem
mission,mission, mission
Mission/west campus east to Isabella
All of Mission street is a challenge
Mission __ no way to use a bike
Mission
because its so busy main issue would be mission rd from freeway to freeway
mission st
Mission Rd, too many drivers, too little shoulder or bike lanes
Mission street would be great if it had a dedicated bicycle lane, In Lansing one land of Mt.Hope road was taken away from cars and given to bikes.
bicycling along Mission St is concern due to all the driveways
Mission Street. This route is dangerous as a motorist, let alone walking/biking. It's also one of the least glamorous aspects of the city.
Mission Street between Pickard and Bluegrass and drivers not being aware of bicyclists
Reduce congestion on Mission Street south of High Street to Bluegrass
Broomfiled and Mission interesection is dangerous even for those crossing the street... better marked cross walks and perhpas a little bit longer lights might help
Pickard and Mission
Pickard and Mission are really for cars, connecting traffic generators (big stores & apartment complexes).
Crossing at Mission and Pickard, not safe for walking or biking.
Difficult road to cross - I walk frequently from Mission street to the MMCC campus. I will typically cross at the Pickard/Mission intersection.
Mission and Pichard intersection
Corner of Preston & Mission
pedestrian traffic light on Mission at Appian
Finding a way to cross Mission safely on a bike.
again, mission is a disaster and very dangerous - especially for students living on the opposite side of the road.
Misson Street - CMU students living on hte east side. ICTC provides free shuttle. Walking is dangerous when crossing Mission. I believe overhead crosswalks could be utilized. These can be made to look very attractive.
When I cross Mission walking or biking (at a light), drivers rarely give a walker the right of way.
Mission Road is a barrier. It is difficult and dangerous to walk across from east to west and vice versa
crossing mission st at the pixie with little kid bikers usually means taking lives into your hands- very dangerous
Crossing Mission street (almost anywhere) it is so hard to cross withing the time alloted and with people turning.
a pedestrian bridge needs to be placed on Mission by CMU, it is too dangerous now.
As a pedestrian, crossing Mission, even with traffic lights is risking one's life, especially rush hours.
Mission Street is very congested and dangerous to cross, so I often don't walk or bike to areas on the other side..

Mission road is always hard to cross as a pedestrian or bicyclist.
Mission Street is too busy to cross and the traffic lights are far apart
Mission Street is difficult to cross
Mission Street - it is difficult to cross
Mission & Michigan - crossing there can be dicey when motorists don't look for pedestrians/bicycles even though we have the right of way
Mission and Broadway -the pedestrian light changes too quickly and it is difficult to get the entire family across
mission and high street intersection safety crossing
Mission/High Street intersection - very difficult for pedestrians to cross safely
pickard street from isabella rd. out to lincoln rd.
between the MMCC Pickard and Doane location
Mid Michigan Community College Pickard Campus
Most of Pickard street.
The Picard Mission intersection is so tricky, and you have to wait a while for your turn to cross.
Crossing Pickard from Fancher.
Pickard Street leading to Union Township Park... no shoulder, busy and fast traffic, poor snow/ice removal
crossing US 127 @ broadway - how come there were no trails developed when paved?
crosswalk between millpond park and Nelson Park and a Crosswalk leading to island Park at Borden building
bike crossing High St. between Kinney and Washington (no lights or crosswalks)
Intersection of High street and Watson street: easy to cross High from the North going South but very dangerous in the opposite direction - drivers are not used to looking for pedestrians. What's that pedestrian sign on the East side of Watson where it crosses with High? There is no need to cross to that side because there is no walking path along the South side of High.
High st. between Bradley and Washington: there is only one crosswalk in between these streets to cross from the north side to the south side.
It is sometimes difficult to cross High Street at Fancher during evening rush hour.
To enter the MP trail system from south, you have to cross MI20; the trail should be rerouted under the bride over the chippewa river so that bikes can simply ride under the bridge to the other side and pick up the trail.
The area near Kohls/Menards/Walmart is a disaster, if not impossible for foot and bike traffic. It's dangerous! Sidewalks are very imcomplete.
Finger of Union Township prodtruding into Mt. Pleasant on Gaylord: No sidewalks
I would like the sidewalk to extend on Broadway(past brown) and onto Isabella road so my daughter could ride her bike to school.
Walkways and bike lanes on Broomfield and preston allthe way to CMU
Broomfield Road would be a great place for bike/walking path.
sidewalk or path down Isabella
Isabella from Pickard to Broomfield where there are currently areas with no sidewalks
On Isabella road around the apartments, there is a roaad with a curb, no shoulder for cycling to get off to the side road. Alot of student housing and everyoned drives because it can be come unsafe.
Pickard Street, no sidewalks or paths all the way. Often weave from sidewalk to road and back when riding bike due to accesibility.
Sidewalks (or other SEPARATED FROM THE ROADWAY paths) along Pickard.
pickard/m-20 between MMCC and Leaton - Lack of lighting and sidewalks/bike paths
Area near Highschool including Gaylord and Crapo No connected set of sidewalks, dangerous for those on bikes, pathes are not cleared
Some sidewalks in the residential streets around downtown have foliage overhanging.
pavement / cracks in sidewalk
Washington and Preston, too many cars
biking from broomfield to pickard on mission is unappealing and unsafe
Fred Meijer trail maps are incorrect the trail does not connect between Riverdale & Edmore. Very frustrating to have incorrect maps.
Post signs at city boundaries and major intersections "turning traffic must yield to pedestrians"
Safer crossings of mission near CMU
Franklin Street needs to be repaved
Poor signage
The riverside trail system should be completed so it runs continously from north of Pickard to Bloomfield, with a connection to Center St.
River Road between Mission and Lincoln (at least(needs a bike path or bike lane

Chipp-a-waters Park: more paved paths
Puddles along the roadside.
permanent paths
West Campus Drive - no sidewalks, a bike/walking path would be nice
Upgrade of Route along Broadway to Island Park and Nelson Park (for example)
South leaton has too many pot holes that been patched up and there arent sidewalks the whole way
Pedestrian Bicycle overpass High and Watson area (finish Greg Baderschneider's dream)
Walking around this town is dangerous right now
GIVE ME TRAILS AT MISSION CREEK PLEASE
Connect Chip-e-waters parks to the rest of the park system via an overpass.
Most existing trails are great, just have to get to them using a vehicle or run in the street.
Connecting Existing paths
Need rail trail system between mt. pleasant and clare
More trails at deerfield park would be nice
connect existing parks
Complete linkage between city and county parks
Leaton Road, between Pickard and Rosebush; difficult biking and needs lane or bikeway
airport rd, behind meijer
Franklin street between High and Broadway - poor pavement
bike paths clearly marked
outlying major roads at 8am and 5pm
Safety. No cars. I will not bike if there is any chance I will be hit by cars on the roadway.
Motorist failure to share the road
Blanchard Road, either going into Shepherd or leaving Shepherd and heading towards Mission and Blanchard Roads
Veits Woods - trails can get very wet and muddy
Security for solo walkers, runners, cyclists
Would love to see a connection between the Pere-Marquette trail and Mt. Pleasant.
Campus, the laws are not known or ENFORCED by those who use the trails and sidewalks. Cyclists and motorists alike need to know the rules.
I haven't been to Veits Woods in quite some time, but if there is not already one there, a bike rack at the entrance would be fantastic.
We need a dedicated pathway connecting the current trail system to Mission Creek
contecting bike trails, fred mieyer all the way to edmore
Maybe a bike land on Russell street.
wider roads with bike lanes on township roads ringing mount pleasant
one N/S street from CMU to downtown having bike lanes or shared space (any designated street)
M-20 High St. a lane for biking west of town.
High Street, The one way roads mess everything up, there is too little road space, there are no bike lanes or large shoulders
There is no bike lanes or paths east or west of town (ex: W. M-20 and/or Broadway east of town)
Bicycle lanes all the way down Washington from CMU Campus to Downtown Mt. Pleasant
Set up bike lanes on the one ways of Washington and Main St to promote travel to the downtown area from campus. Midland has a similar system in place.
Bicycle down Main adn Washington street in Mt. Pleasant, difficult to cycle down.
Building a cycling-friendly community
Washington St between campus and downtown, needs to have safer ways to get to downtown
Bluegrass Rd between Mission and Isabella
there is a path on Bluegrass that I would use in the winter, ecept it is not plowed
The East-West routes (Pickard, High, Broomfield, Bluegrass).
Uneven road suface - broadway to Bradley
Broadway
over the bridge on Broadway going out to the Casino. This is a major route for employee's and guest and the bridge narrows not giving enough room for non-notorized transportation
Broadway once you enter union township.
Along much of the streets around Fessenden, Henry, and even some parts of broadway the snow and ice seem to be a problem.
Broomfield west of crawford to Lincoln
Broomfield has no sidewalk safety areas
A left turn light at Broomfield & Isabella
Side walk along broomfield is completely covered in ice and snow from Washington to Crawford. At Stockman it would be nice to see a ramp instead of a curb.

CMU campus intermittent trail/walk system creates safety concerns
Preston road through CMU campus is more pothole than road; this road could be an excellent bicycle route if it were reconstructed.
Connect CMU campus with SAC via an overpass
S. Crawford past Broomfield: There is no path to ride on and the speed limit is 55 on a narrow 2 lane road.
Deerfield Road - paved area - potholes
Downtown Mt P
Downtown has the same issues as above.
Snow removal from the sidewalks on Washington and Main between downtown and campus is BAD, especially by the frat houses
High Street
high st
High Street is too narrow for bicycle paths
Washington and High, islands somewhat clutter space
Issabella Rd. it is a death road for nm. traffic!
Better lighting on some of the trails
Lincoln Rd between US20 and Broomfield is a death trap for any living creature!!!!
Widen Lincoln Rd.
lincoln rd from river rd. to broomfield
The intersection of Mission and Pickard is a nightmare, the crosswalks don't make much sense, I worked at the MP Country Club and it was easier to just ride out of the way to Crawlford than to try to cross that
Mission and Broomfield
Campus to East side development areas (Broomfield to 127 between Mission and Isabella
Old Mission Rd. to Rosebush and beyond
Busy streets areas (i.e., Mission, Pickard, WalMart, Meijer)
West bound preston to mission needs a green arrow
Broomfield road between Mission and Isabella lots of pedestrians/bicyclists no bike/pedestrian trail here
Broomfield west of Mission would be a great place to have bike paths as well.
Crossing Mission on Preston: drivers often have no clue that there are pedestrians present
Rough pavemnet on un-repaired part of S. Mission
Mission Street in general
Mission street is too congested. I know this is a difficult situation though, as it is a main road of Mt. Pleasant. It is hard for me to see a solution.
Corner of Bellows & Mission
Bike lanes along Mission.
Remove the roundabout that is on Bellows, near Mission. The bike lane ends as you approach the circle and the biker must merge into the one lane. In addition, there needs to be yellow painted strips outlining the roundabout. It is very difficult to see in clear weather with snow. Your attention is not drawn to the narrowing lane until you are driving over the hump.
Mission and High -the pedestrian light changes too quickly and it is difficult to get the entire family across
Mission/Preston Street intersection - extremely difficult for pedestrians to cross safely
bicking along broadway from mission to home depot is dangerous
Mission street generally. Too difficult to cross, and the stop lights are only on heavily travelled streets like Broadway.
Baseline Road, between Leaton and Old Mission, busy, fast moving traffic
We need a coherent system allowing access to business on Mission St.
pathways from end of town to ther other, but off mission street
Mission Street from Broomfield to Pickard is unfriendly to bike traffic or to pedestrians attempting to cross
Mission Street is a horrible road to bike on the sidewalk... and unsafe to bike on the road.
Mission street is impossible to bike on, too many drive ways and sidwalks too rough for bike tires
Mission sidewalks need repair/change. Make these bike friendly?
A North-south continuous path for biking from Pickard and Blue Grass between Mission and Isabella
Same as above for Mission and Bluygrass road.. these are very busey intersections and really discourage bicycling, yet are the best thorough fares to get across mission
Broomfield between Isabella and Mission where there are currently areas with no sidewalks
Pickard rd from Mission to Lincoln road: sidewalk should be completed for entire section or bike lanes added
Mission Street leveling out sidewalks so that people are not riding or walking at a slant.
Both Mission and Pickard streets are nearly impossible to bicycle on unless you take the sidewalk unlawfully. Then the risk of entering and exiting cars from the road is especially dangerous.
Mission Street: Ice and snow on sidewalks, including by businesses
Pickard St in all of Mt. Pleasant, extending through Union township in both directions
Pickard is also a challenge
also due to the amount of traffic another main issues would be pickard rd between leaton rd and lincoln rd
Pickard by helping drivers be aware of bicyclists on the road, so there are no accidents.
Pickard road past linicon, going west, lots of rough road, and patch work.

REMOVAL of current turn-lane island on Pickard that often cause more problems than they resolve.
It's tough to cycle from downtown to northwest. West Pickard is not bike friendly.
Signal at North Crawford and Pickard Street
High Street crossings
High Street can be difficult to cross and it has few traffic lights
Kinney and High street. When I am biking I hit the crosswalk button even though I probably shouldn't! However something like that for bikes would be great.
ever try to get across M20 to Chipp-a-waters? Watson or DIE thanks to the brilliant engineers @ MI-DOT
a traffic light at Franklin and High Street
High Street and Watson: safer crossing into the Millpond Park system
sidewalks
There are too many places where the sidewalk runs out or there are gaps here on the east side.
East Campus Drive - no sidewalks, a bike/walking path would be nice
complete sidewalk down high street all the way to Isabella
Upgrade of Sidewalk along the North Side of High Street, West M-20
I live on Isabella Road and feel there should be a sidewalk on either the west or east side of that road
Isabella Road from Broadway south - no sidewalks or bike lanes
Leaton north of casino - lack of sidewalks/bike paths and lighting
The full length of Isabella is unsafe, no safe crossings at Renn or McG schools. No sidewalks after Broadway--people walk in the street, and slip in the street when it's snow covered.
Pickard Road between Mission and Main Street sidewalks are very small and very close to the road, walking/bicycling is very uncomfortable in these areas, and it is a major route to get to downtown.
There needs to be a sidewalk and pedestrian signals connecting Jamestown Apartments to campus
Broken sidewalk/no sidewalk available.
City sidewalks (residential areas): uncleared snow and ice.
sidewalk conditions - all over
de ice the trails
shoveling of sidewalks and crosswalks need to be enforced - fines if not cleared within 24 hours after snowfall
Walking in winter is hard because there are always large snow piles to climb over to cross a street
Many sidewalks in the residential streets around downtown are not maintained in the winter.
Snow & Ice removal
crossing M-20 at Summerton
Mid Michigan Community College Summerton Campus
Riding North of Shepherd on Summerton Road
In the Walmart/Menards/Kroger area, there is no safe place for cyclists. I would ride there more often if there were.
Intersections and turns
west of mt.pleasant to parks and lakes
bellows
millpound park to much dog poop
Lincoln between Broomfield and High
East-West routes need bike lanes, across town and out of town
Connect all parks
deerfield park
You can see drug deals and frightening people at night in town parks after 7 pm
they need to be in a "system, or network"
Smooth pathways
I cannot send my children to school on their bike unless I want them on the busy Shepherd Road with traffic.
Need some connection with the West side of town (beyond Lincoln rd.)
trails at millpond park need to be level and a smoother transition to the grass
The overpass on Broaday going out to the Tribal Operations is dangerous!
Isabella toward airport
trail system through parks is very nice, but needs to be salted to use more in winter. I run there occasionally but it's icy.
Traveling outside of Mt Pleasant city limits is often dangerous on a bicycle because of insufficient space for bicycles and drivers going much too fast.

Kinney and Fancher poor road quality, potholes and bumps make biking difficult
More obvious (to vehicles) walking/biking path through parking lot at Borden building heading into Island Park
Shepherd Road would be a great place for a bike/walking path.
PereMarquette Trail near Northwood University - sometimes there are sketchy characters out there. Should be patroled more. Had a friend that was attacked out there several years ago in broad day light.
pthway ends/Not clear where pathway picks up
A Shepherd to Mt Pleasant route improved for bicycle lane
Bicycling around this town is too dangerous right now
connect the trail from clare to mt pleasant
education of citizens
Mount Pleasant streets are ugly. There is no point in walking in order to enjoy the environment. The condition of the city, in terms of zoning and upkeep, is deplorable.
Distance markers
Would be great if the trails could somehow accomodate cross country skiers too.
off-road, easily navigable bike trails between Mount Pleasant and Lake George. A readily available map of this and other trails (also to Harrison) would be fantastic.
Bellows St--bike lane starts and stops in middle of street
Multiple bicycle lanes stretching from Mt Pleasant/CMU out to other destinations of interest
Broadway needs lanes
Some more bike lanes on Central's roads would be nice, on Preson. That area gets pretty packed
good lanes for bikes along High Street the entire width of the city
Washington (on campus): Vehicles parked in the bike lanes.
Safer paths for bikers/walkers between CMU and downtown Mount Pleasant
Walking or biking on or near campus during the school year is too dangerous!
roads leaving campus - heading west. there is no safe way to ride a bike onto or out of campus
only other i can think of is downtown because its so congested and close together down there and I'm having trouble seeing how they could make the room for biking and walking lanes.
Bluegrass road out by Walmart -- not a friendly area for walking or biking it's barely safe for cars
biking along bluegrass from mission to kohls is dangerous
Blue Grass Road - no safe way to walk or bike to campus or shopping centers
Need more user friendly crosswalk on Bluegrass by Walmart and at intersection of Pickard and Brown Street.
there is a crucial need for sidewalks on Blue Grass road. too dark and dangerous for anyone to have to walk there now
The complete lack of sidewalks along Broomfield & Bluegrass
No sidewalks or trails from Isabella road to the shopping on Blue Grass, not save for cars, grass and weeds are overgrown, so you can't see to turn left. Traffic is traveling to fast to cross to other side. Need a light at that corner, so heavyly traveled.
Bike path along Broadway Streets
Broomfield between Mission and Crawford
Bloomfield
Broomfield from Whiteville to Mission
Broomfield is not bikeable passed Isabella going east
Broomfield and Isabella Rd. Frequent car accidents, and pedistrian accidents
127. There are no good ways for cyclists or pedestrians to cross 127. The bridges at Isabella Rd., Broadway and Bloomfield need physically separated bike lanes and sidewalks, and there need to be underpasses at Remus and Pickard.
CMU campus -- cars will kill you
Crawford south of Broomfield
Isabella Rd from Broomfield to Pickard
isabella rd. from pickard to broomfield
Isabella Road in Mount Pleasant
Isabella in town is a major artery but has no shoulder and is very difficult/unsafe to bike or run on.
Weather conditions and lighting
Lighting
biking through any of the trails when icy is a challenge. It would be nice if they were clear
Most of the streets in the winter because the snow cleanup is poorly done.
street debris while biking
Rough pavement on Lincoln between Baseline and Weidman Road.
Meridan south of M-20 and Whiteville south of Broomfield--the pavement is in horrible condition
Side streets: Ice and snow on sidewalks

and upkeep needs to a priority
road conditions
On CMUs campus -- bike lanes are poorly marked and not at all recognized by pedestrians.
Mission between Broomfield and Preston
Mission
The two stop lights on mission at Michigan and Broomfield are overkill. We only need one.
better visability on mission st.
Cycling anywhere around Mission is a problem
all of Mission and Old Mission to fairgrounds, too busy, no safe place for bike to get around in MP to run errands
Mission St. - wider sidewalks, less dangerous
bluegrass & mission
The most challenging instersections for bicycles and pedestrians must be Pickard/Mission and Mission/Bluegrass.
Mission/Broomfield intersection - extremely difficult for pedestrians to cross safely
The link between the main part of Campus at CMU and Apartments is at Deerfield is mostly frozen over in the winter. This causes bikers to take a longer route in the street to get to campus. Deerfield is also very narrow and as a safe biker, I have had a few close calls riding down Deerfield between Mission and Crawford.
Corner of High & Mission
Pickard and Mission
The shopping centers. There needs to be easier access and easier ways to cross mission and pickard for non-motorized transportation, I think creating pthways on those roads is not necessary, but crossing them is.
Anytime you cross mission or pickard is hard no one pays attention
crossing Mission st. from east or west
N. Old Mission
Old Mission rd. to Shepherd
Old Mission rd. to Shepherd
Pickard
pickard
Pickard St from Broomfield to Isabella Rd. is also a death trap for cyclists & pedestrians.
Pickard from Hotel areas to reservation (casino)
We need a coherent sytem allowing travel parallel with Pickard St.
preston
crosswalks
High Street difficult to cross
Add overhead crosswalks for students to use to cross on Preston St. at Washington and in front of the University Center or the Library.. Also on Washington in front of Powers.
Crapo south of High - sidewalk needed on east side of rd/incomplete.
No sidewalks through the area immediately south of the high school.
I would gladly ride my bike to work but we do not have connecting sidewalks from Little Elk Estates to other areas!
complete sidewalk down Broadwa to Isabella (small gap at the end)
Isabella road has no sidewalks or bike lane, so I just don't go there. Also, try getting to the east side of town from campus. You either have to ride on MI 20 or cross the highway on Broadway or go way out of the way. The Broadway bridge is way too narrow to cross safely and drivers is this area are not very courteous.
Brown and Pickard (at meijer)- no sidewalks and the light changes too quickly
city wide code enforcement during winter months for ice/snow removal so that people can actually walk on the sidewalks instead of the street
All of the sidewalks are impassible in bad weather, or when there has recently been bad weather
Clearing sidewalks in the winter early before they get walked on and the snow gets packed down would be helpful for sidewalks students use to get to classes
Keep the oneway traffic on Washington and Main
safe connections to clare and alma
West of town, out by Meridian road, there need to be bike lanes on Meridian and many other surrounding roads so that recreational riders and commuters to town can feel safe
Any country roads that should be pure pleasure for a cyclist actually feel like a Nascar track. The only truly safe country road to drive on is the Rails-to-Trails and I have to load the bike in the car to get there.
A connection of Mt. Pleasant to the Pere Marquette rail trail, either by Mission St or the old RR grade to Coleman.
Some places like old downtown (where green tree, police station, and CRDL Library are) are great examples of a pedestrian/bicycling friendly environment!
Find a way to connect Mt. Pleasant with the Pere Marquette Trail in Clare
The railroad track from High st. to CMU campus: There should be a path to ride next to or follow the same path as the tracks to avoid traffic and make a direct route to campus.
Whiteville Road - improvements
All roads should be like the new Baseline Rd. with bike lanes on both sides1

Trails to get out of the city so you don't have to haul your bike, drive, etc.
Areas around all the schools, elementary schools in particular, that lack sidewalks. A better sidewalk system would lead to more students walking or riding to school.
Any off-road trail opportunity would benefit the city in many ways. It will allow people to feel comfortable walking or bicycling outside and a set location where they can do so with others.
No access to Alma, Clare, Lansing from Mt. Pleasant via bike trail
bike path to Deerfied from Mt. Pleasant
On Whiteville road, just as it begin by Broomfield, very rough, not shoulder, and you are going up a hill car in both direction and not were to get off if you need to when you are on a bike.
Stop-light controlled crosswalk in place of island. Safer for both cars and pedestrians.
River Rd. and Weidman Rd. are scary to cycle. The new bike lane on Michigan in town is great
I wish the Rails Trails came to Mount Pleasant!! So consider that a non-location but much desired.
Purchase the State Home and just see what kind of a recreational trail network could be developed and integrated with the rest of the park system
Baseline Rd. - lack of sidewalks/paths and lighting
No trails available at all.
catwalks at major intersections
Dont like bike lane in road
Wise Road south of Blanchard Road, its all pot holes and no place for a bike rider to ride!!!
chippawater trails better info bike allowed or not
meridian park
Baselien east of mission
Walking path that continues completely around river in Island Park, continuing behing veteran's Memorial so people don't have to walk through the busy thoroughfare to the parking lot to complete a loop.
White Pine Trail was a bit overgrown with thorn bushes a few summers ago north of comstock park.
i don't understand what you want here
Intersection warning signs
Many bicyclists are not familiar with proper signalling or the driving laws they are supposed to follow. Somehow requiring cyclists to take a bicycle safety course to use roadways would be fantastic. Drivers, too, should be aware of these expectations for cyclists to prevent conflicts between them.

10.2 Public Workshop Summary: Visioning

Public Workshop –Documentation of Input

March 15, 2011

List of Figures

Public Input

A Public Workshop was held on March 15, 2011 for the Greater Mt. Pleasant Non-motorized Transportation Plan. Thirty-five people attended. During the public workshop, participants were given the opportunity to give input. There was an exercise that focused on the project goals and objectives. The participants were also encouraged to mark additional information the on the maps.

The following pages document the input that was collected during the workshop.

1. Goals and Objectives Exercise
    - Purpose of Plan and Community Vision
    - Goal 1: Provide better non-motorized connectivity
    - Goal 2: Institute changes that lead to a bicycle and pedestrian friendly community
    - Goal 3: Improve bicycle and pedestrian safety
    - Goal 4: Advance community health
2. Greater Mt. Pleasant Area Map Exercise
    - Feedback Map
    - Notes
3. Isabella County Map Exercise
    - Feedback Map
    - Notes

Goals and Objectives Exercise

Each participant was given a Draft Goals and Objectives Input worksheet and was asked review and note if they agreed, agreed but with modifications or disagreed with the goals and objectives. Participants were also encouraged to include any additions, modification or strong objections they had regarding any of the draft goals and objective. Documented below is a list of all of the responses.

Purpose of the Plan and Community Vision:		
The purpose of the plan is to identify the non-motorized network and the support systems necessary for safe and convenient non-motorized travel. As the network and systems are implemented, it is envisioned that this will result in more people freely choosing to walk and bicycle. It is futher envisioned that this will in turn lead to a healthier an dmore socially engaged community.		
Stongly Agree	**Agree, with Modifications**	**Disagree**
26 (84%)	5 (14%)	1 (3%)
Comments:		
Economic Benefits		
Seems the plan is more focused on Mt.Pleasant rather then outward areas like union township or connection to regoina ldestinations this should be more of the focus		
Scope of plan (time, county, intercounty, ect)		
Should include linkages between where people live and where they work, shop (Mission and Downtown) and recreate		
The plan should also be a guide for area planning boards and other agencies to set polices and improvement standards that help meet those objectives. If we can not get buy in by the road commission and the city to change their roadway standards this will not move forward.		
I doubt that the future is really going to be non-motorized transportation. The population is ageing and while, safe sidewalksare good few people will walk long distances or bike to Lake Isabell.a		
For community to/from work, fitness, recreation and leisure. (add to end of second sentence)		
We need to strengthen regional planning and zoning! Housing should be concentrated in larger areas (not thost pinpointed areas where a farmer happens to be willing to sell his land to a developer) which can be connected with roads and bike paths and public transportation. We must be planning for a future with more expensive and less oil.		
It sounds wonderful! I would like to see children riding and wlaking around again. Signage is important.		
I think the City commission should reinstitute the policy that was formerly held that a certain amount of new sidewalk be built every year until the whole city has them.		
No mention of environmental and sustainability goals		
The plan should also include a lot of pubilc education about bike and walkers on roadways and they have the right to be on the road just like the cars do.		
I would add to the plan the idea of achieving an educated and suportive community for non-motorized traffic.		
Due to rising energy and health conerns related to motorized vehicles, the plan should also extend beyond the current time frame and extend the network to all accessible places. Hopefully, 10-20 years from now motor vehicles will only be used if absolutely neccessary.		
More education and awarness of drivers. Drivers need to be more aware of the laws concerning pedestrain crossings. Cyclists		
A non-motorized network leads to more vibrant an dattractive communities.		

Goal #1: Provide Better Non-motorized Connectivity			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
31 (89%)	4 (11%)	1 (3%)	
Objectives:			
1. Provide non-motorized connection between the Mt.Pleasant Area and Regional Destinations (such as Pere-Marquette Rail-Trail, Clair, Deerfield Park Ect.)			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
24 (69%)	10 (29%)	2 (6%)	
2. Provide non-motorized links between key destinations within the Greater Mt.Pleasant area (such as shopping centers, parks, schools, campuses, downtown, ect.)			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
31 (89%)	5 (14%)	0 (0%)	
3. Provide a Compete Non-motorized Network (including features such as sidewalks, bike lanes, bike routes, safe road crossings,			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
23 (67%)	10 (29%)	3 (9%)	
Comments:			
Provide education to the public or the benefits. Look at/provide examples on community changes toward non-motorized availablity to help convice those who are not familiar with the benefits.			
I believe the destinations are too far for the average biker/walker to biek/walk there and back and bike/walk at the destination. This seems only possible for Deerfield Park (objective 1).			
Strongly agree (and considering the need this should get the highest priorityobjective 2).			
Agree but lower priority also considering budget situation(objective 3) .			
The Pere-Marquette Rail Trail may be to long of a distance to connect for most users, even though I would personally love it!			
Obviously this system would have to happen over time. There would have to be a way of doing it incrementally according to community priorities.			
As a long term goal, provide a complete non-motorized network (objective 3).			
I would bike to see the objectives reversed in order. I believe that a complete network within Mt.Pleasant should be the 1st objective and further away destinations in later phases of the project.			
Working toward this goal is improtant, but achieving a complete network may not be realistic (objective 3).			
I strongly feel that th ecommercial land developers should provide economic input to this plan. If this will help bring more			
What about connection to large subidivsions on the west side of town? Hiawatha Hills, Mineral Springs, Oak Hills, Pickard and Lincoln Area, Blue Grass, bike lane on Broomfield? Or Blue Grass? Many people biek on Deerfield and Meridian.			
What about connecting with the Fred Meijer Heartland Trail that goes form Alma, though Riverdale to Edmore to Greenville, actually closer to Mt.Pleasant than Pere Marquette (objective 1)			
Add a system of "off-road", non-paved trails. Off-road trails should include non-paved trails. This would be low cost and would be for mountain bike riders (objective 3).			
Look at the Marquette County and City of Marquette for an example of bike trail system. Heritage trail, ect.			
Need to add bike trail when Lincoln Road is improved between Pickard and M-20. Also south of M-20 for people walking to river for tubing, need crossing on east side of road.			
Maybe we should be building the sidewalk sand bike lanes into one non-motorized pahtway system (objective 3)			
Should be a long term goal, not this primary objective. This is very expensive and involves several governing agencies and private landowners. How can we focus on this benefits building network in and around town? (objective 1)			
Promote non-motorized policies at road commission			
Need to have more focus on objective 2			
Don't think that objective 3 is realistic			
Make Mt Pleasant a way-point and destination for non-motorized leisure travel in Michigan			
Public safety, signage and policy changes to encourage/protect non-motorized travelers			
Would change order of objectives 1 and 2 because local connections is a high priority			
Need to define area for complete network, not every part of county needs complete network (objective 3)			
Need to incorporate tribe/reservation area and there overall master plan (objective 2)			
Cost? I doubt the survey is representative of the population			

Goal #2: Institute changes that lead to a bicyle and pedestrian friendly community

Stongly Agree	Agree, with Modifications	Disagree
28 (80%)	4 (11%)	1 (3%)

Objectives:

1. Provide more bike parking and a range of bike parking options (such as downtown, shopping centers, including some covered and secured)

Stongly Agree	Agree, with Modifications	Disagree
24 (69%)	9 (26%)	0 (0%)

2. Provide bike racks on buses

Stongly Agree	Agree, with Modifications	Disagree
20 (57%)	6 (17%)	4 (11%)

3. Establish family friendly non-motorized facilities (such as neighborhood routes to parks and schools)

Stongly Agree	Agree, with Modifications	Disagree
27 (77%)	6 (17%)	0 (0%)

4. Create and distribute a guide map that shows bicycle facilities and recommeneded routes

Stongly Agree	Agree, with Modifications	Disagree
24 (68%)	8 (23%)	1 (3%)

5. Improve the aesthetics of the area's transportation system (such as by adding street trees, decorative lighting, ect.)

Stongly Agree	Agree, with Modifications	Disagree
16 (46%)	12 (34%)	5 (14%)

6. Enhance the sense of community through increased social interaction between non-motorized transportation users

Stongly Agree	Agree, with Modifications	Disagree
23 (66%)	6 (17%)	2 (6%)

Comments:

With additional bike facilities and aestentics need to addresss long term commitement to maintenance. Something that is aestetically pleasing now, left unattended will be an eyesoar in a short order.

This goal focuses heavily ofn biking and should include walking, provide a more complete sideawlk network, betweeen homes and key destinations

Provide signage along routes (objective 4)

Don't have to make it happen it just happens (objective 6)

University to enforce traffic rules, zoning and promote linkages

More areas to park bike at businesses and offices would lead me to ride my bike more in the inner city

Motoristis need education as to how to deal with bicyclists. Motorists often feel they "own the road" and do not have respect for bicyclists and will not allow bicyclist to use the roads safely.

Not liking the fact that we are heavily steering this study in the direction of "biking". We should be primarily focused on making this an "active & fit" community first.

Set one standard for biek parking that is easily identifiable (objective 1)

Create a wayfinding map of the entire network, not just for bikes (objective 4)

My concern is that I would not want to see money put toards starting or supporting NMT groups (clubs) (objective 6).

Need to connect apartment complexes in Union Twp to city sidewalk system. Need to connect MMCC to Saginace Chipewa Casino and to Mt.Pleasant. Need to provide better connectivity from Mt. Pleasant "south-side" to "big-box area.

The La belle's need to add some bike parking racks at their buisness establishments, they can afford it. Especially in front of the salvation army store.

Child safety is very important and it was said that abduction was rare , however it still makes parents very afraid. These areas should not have closed spaces to go behind buildings. Totally open so everyone can see who is on the path.

I chose to "agree with modificatios" because I could forgo this objective in order to save the project money. Grants may be achieved here (objective 5).
Create routes with more of a focus on electronic distribution versus paper distribution (objective 4)
Provide options based on a survey of needs (objective 1).
Making stuff look nice is fine as long as it's practice, pretty but not distracting (objective 5).
I like the decks currently found on trails downtown. We can sit, talk, rest, eat, watch the river and enjoy the area.
The more bike friendly (bike racks, routes, maps, aesthetics, ect.) the system is the more it will be used, thus enhansing
We don't have a public transport system with buses (objective 2)
Less important, we spend to much money already on benches no one uses (objective 5)
Attempt to get people on board to support the issue

Goal #3: Improve bicycle and pedestrain safety			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
29 (83%)	2 (6%)	0 (0%)	
Objectives:			
1. Provide better lighting along non-motorized routes			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
22 (65%)	10 (28%)	1 (3%)	
2. Improve the safety of bicyclists and pedestrians at existing busy road intersections			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
28 ((80%)	5 (14%)	0 (0%)	
3. Provide safe options to cross the road between existing signalized intersections			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
26 (74%)	6 (17%)	1 (3%)	
4. Improve education of motorists in regards to pedestrainand bicyclist issues			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
29 (83%)	3 (9%)	1 (3%)	
5. Improve the education of pedestrians and bicyclists in regards to rules of the road, motorists concerns and safe travel			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
29 (83%)	3 (9%)	1 (3%)	
6. Maintain non-motorized facilties such that they are passable and safe to use			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
29 (83%)	4 (11%)	0 (0%)	
7. Reduce the number of bicycle and pedestrian crahses			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
31 (89%)	1 (3%)	1 (3%)	
Comments:			
No lighting currently exists(objective 1)			
Not sure, you cannot have too many crossing on Mission (objective 3)			
On Mission bikes have to option than the sidewalk, but it is suicide becaseu of all the cars going to the stores, I think Mission is not solvable (objective 4 & 5)			
I strongly disagree with bikers on the sidewalks, dangerous fo rthe bikers themselves, but for kids coming out of the house directly on the sideway ok playing there			
Education is most important to achieve safety			

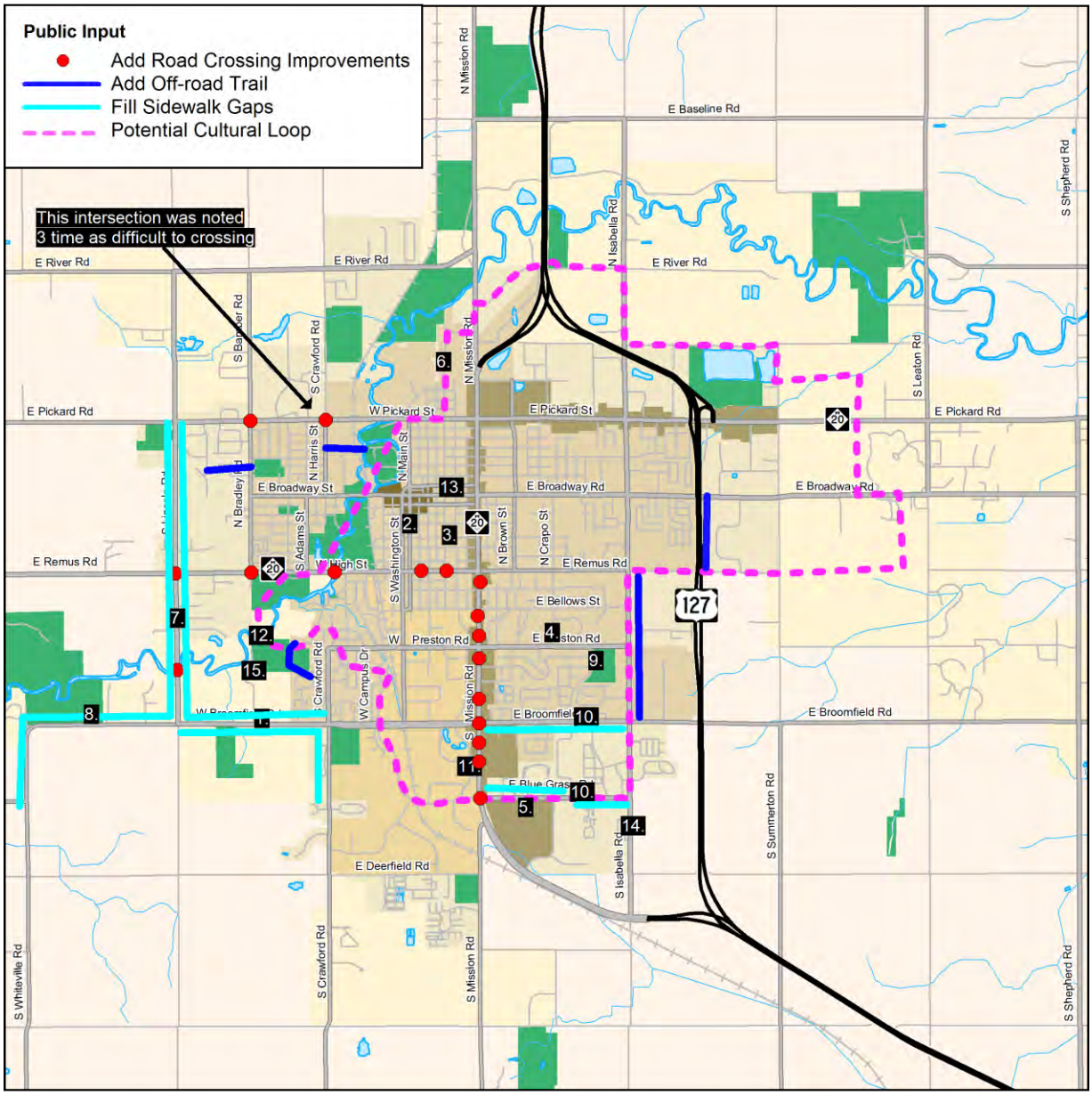
Not too much lighing
Education is very important (objective 4 & 5)
Objectives 1, 3 & 6 may be too costly
Safety first, ecducate motorists first
Obejctives 4 & 5 are very important
Objectives 1, 2 & 7 should be cost effective solutions, not just wasteful spending
People riding bikes after dark should have lights and wear reflective clothing. It is the law in some states.
Do we need lighting everywhere or just in more congested areas?
Is this practical in winter? May not be as important (objective 6)
The awareness on roads like Mission from Pickard to Bluegrass
Promote use of lights on bikes, rather than pay for the installation of lights
Switch the placement of Bicycle and Pedestrian in the sentence
Motorists need education as to how to deal with bicyclists. Motorists often feel they "own the road" and do not have respect for bicyclist and will not allow bicyclists to use the roads safely.
Don't think this a a major priority compared to others (objective 1)
Not sure this is the greatest priority (objective 2)
Not sure how this can be done (objective 7)
Provide lighting on selected routes, high traffic and commerical areas (objective 1)
Don't make bike conveniences a burden on automobile traffic (objective 2)
No more or less then roadways (objective 6)
Not sure what "passable" means (objective 6)

Goal #4: Advance community health			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
30 (86%)	2 (6%)	0 (0%)	
Objectives:			
1. Provide more active recreation opportunities (such as off-road trails)			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
26 (74%)	5 (14%)	0 (0%)	
2. Reduce automobile dependency			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
27 (77%)	4 (11%)	2 (6%)	
3. Increase the number of people walking and bicycling especially for daily transportation trips such as commuting and errands			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
26 (74%)	4 (11%)	2 (6%)	
4. Improve air quality (such as reducing C02 emissions)			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
24 (69%)	5 (14%)	2 (6%)	
5. Reduce obesity due to physical inactivity			
Stongly Agree	**Agree, with Modifications**	**Disagree**	
27 (77%)	4 (11%)	2 (6%)	
Comments:			
Not sure this is realistic (objective 4)			
To reduce obesity it will take more than just bike paths (objective 5)			
Vehicles actually more gas on short trips within a 25 mile radius, a bike makes more sense aroud town (objective 3)			
Should be goal number 1!			
Bicyclists are very friendly and outgoing, usually courteous and respectful			
With the increase in sense of commuinty and accessiblity to use of bike paths, the possibility of icrease in use which will improve overall health			
Protect the enviornment and the future of our children, we cannot keep using the quantities of oil we do. There is an end to it and it is bad for the enviornment (objective 5)			
Continue to educate people with positive ways to promote a healthy community			

Greater Mt. Pleasant Area Map Exercise

As a group, participants were asked to think about the non-motorized routes that they currently use or would like to use to get to destinations in the Mt. Pleasant area. Participants were asked to evaluate the provided potential routes and note directly on the large map any changes or concerns they had with the routes. The following maps document the input.

Greater Mt. Pleasant Area Feedback



Please note that alternatives presented in the exercise do not include all potential routes.

The numbered boxes on the map correspond to the numbed notes on the following page.

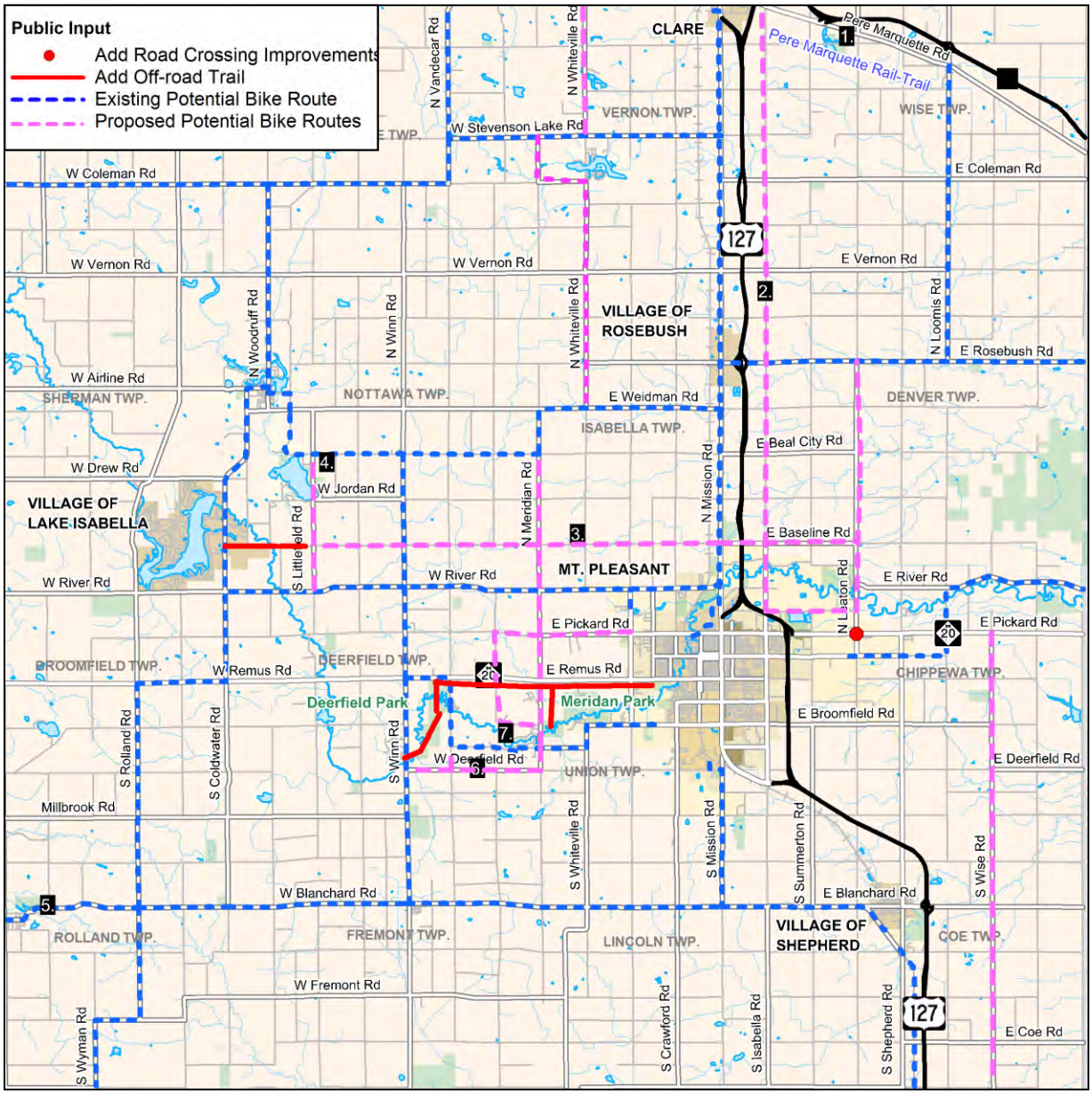
Notes:

1. A lot of bikes and runners use E. Broomfield Road between S. Crawford Road and S. Lincoln Road
2. Washington & Main will only work if you implement traffic calming
3. Concerns with Maple Street – narrow, 2 Lanes of parking, and student housing – it may be difficult to remove parking
4. On-street parking is used on S. Crapo and E. Preston Road near the High School during events and games
5. Trails are not a priority to shopping centers
6. N. Harris Street north of Pickard St is a pretty ride but it is lacking a good paved shoulder to ride on
7. S. Lincoln Road is a great road, but it is dangerous, there are lots of dead critters in the road and river turtles
8. E. Broomfield between S. Whiteville Road and S. Lincoln Road have an good existing shoulder
9. On-street parking is used on Sweeney Street near Horizon Park during soccer and softball season
10. E. Broomfield Road and E. Bluegrass Road have a high concentration of students with no existing sidewalks or bike paths
11. CMU's plan is to construct bike lanes on E. Campus Dr
12. The potential bridge across the river that is proposed near Veits Wood may be difficult to construct
13. Angled parking on E. Broadway Street between Mission and Main is difficult for bikers
14. Keep in mind that US-127 was recently (2 years ago) connected to Isabella Rd and that it will be built up more in the future so good friendly pedestrian access can be in place that will work with future development
15. Remove potential bike route from Red Bridge Road, it is a private road.
16. Concern about narrowing roads include snowplows in winter, drivers don't like to be to close to each other on slippery roads and the lines are not always visible
17. In the summer, lanes are extremely difficult to see on wet pavement because Mt. Pleasant doesn't use reflective lane markings

Isabella County Map Exercise

As a group, participants were asked to think about the non-motorized routes that currently use or would like to use to key destinations in the county. Participants were asked to evaluate the provided potential routes and note directly on the large map any changes or concerns they had with the routes. The following map documents the input.

Isabella County Feedback



Please note that alternatives presented in the exercise do not include all potential routes.

The numbered boxes on the map correspond to the numbed notes on the following page.

Notes:

1. Henrrick recreation area has tent camping
2. Pave Isabella Road north of E. Rosebush Road instead of building path along Mission Street
3. E. Baseline Rd between Mission Rd and S. Littlefield is a nice ride and recently was paved and has a 3' paved shoulder on both sides
4. Coldwater Lake Family Park has a campground with trailers and tents and it is heavily used
5. Blanchard is a cute town to visit by bike, but W. Blanchard Road is dangerous (narrow, speeding, visibility when sun in eyes) it needs a paved shoulder
6. W. Deerfield between S.Winn Rd and S. Whiteville Road has a lot of bike traffic from people traveling to the parks
7. Make route to Deerfield Park legal

10.3 Public Workshop Summary: Preliminary Plan

Public Workshop –Documentation of Input

April 26, 2011

List of Figures

Public Input

A Public Workshop was held on April 26, 2011 for the Greater Mt. Pleasant Non-motorized Transportation Plan. Twenty-five people attended. During the public workshop, participants were given a number of opportunities to provide input. There were three individual exercises that focused on refinements to the proposed non-motorized routes and prioritization of the policies, programs and non-motorized system. The participants were also encouraged to mark additional information the on the two large maps provided at each table.

The following pages document the input that was collected during the workshop.

4. Prioritization Exercise
    - Policy Elements
    - Programs Elements
    - Non-motorized System Elements
5. Proposed Initial Corridors Refinement Exercise Results
    - Primary Road Modifications
    - Neighborhood Connector Routes
    - Off-Road Trails
    - Additional Comments
6. Proposed Initial Regional Corridors Refinement Exercise Results
    - Appropriate Facility Types
    - Additional Comments
7. Greater Mt. Pleasant Area Map Exercise
    - General Feedback on the Map
    - Notes
8. Isabella County Map Exercise
    - General Feedback on the Map
    - Notes

1. Prioritization Refinement Exercise

Individually, each participant was asked how they would allocate $100 into the following three categories, programs, policies and non-motorized system. Then participants were asked to determine how important they felt each line item was in each category and rank them from 1 to 5 with 1 being the highest. Below is a summary of the input.

Programs:

$ 27 Total Dollar Allocation for Category

	Prioritization (Number of Votes listed below)					Rank
	Very Important	Important	Somewhat Important	Not Important	Not Sure	1 to 5 with 1 the highest
Bike and Walking Map	14	6	3	0	0	1
Active Transportation Hubs	6	10	4	3	0	2
Coordinated Safety and Fitness Campaign	3	9	7	2	1	5
Walking School Bus	5	8	9	1	0	3
Month-long alternative commute program	6	7	8	2	0	4

Additional Comments:

- LIGHTING AT NIGHT IS ESSENTIAL FOR BOTH WALKING AND BIKING
- I ALSO REALLY LIKE THE IDEA OF A BIKE SHARING PROGRAM, MAYBE RUNNING ALONG A CORRIDOR FROM CAMPUS TO DOWNTOWN
- ROAD SIGNS TO INDICATE THE BIKE ROUTES
- NOT SURE IF MISSION SHOULD BE INCLUDED WHEN CONSIDERING BIKE LANES ON PRIMARY ROADS MOTORISTS ARE NOT READY YET…NEED TIME TO ADJUST TO BICYCLISTS
- NEED ITEM FOR DESTINATION ROUTE SIGNS

Policy:

$ 29 Total Dollar Allocation for Category

	Prioritization (Number of Votes listed below)					Rank
	Very Important	Important	Somewhat Important	Not Important	Not Sure	1 to 5 with 1 the highest
Snow Removal Policy and Enforcement	14	8	1	0	0	1
Sidewalk Repair Program	7	9	6	0	0	3
Bike Lane Debris Sweeping	2	14	6	0	0	4
Improve Access for People with Disabilities	8	9	3	1	0	2
Increase Bike Parking Options	6	7	8	1	0	5

Additional Comments:

- WE ALSO SHOULD REMIND FOLKS WHO WALK COSTS ARE ATTRACKED TO BIKNG WALKING MODES
- BIKE LANES ON PRIMARY ROADS WILL MOVE THE MOST PEOPLE AT THE LEAST COST AND BE EASY TO MAINTAIN
- EDUCATION AND ENCOURAGEMENT PROGRAMS SHOULD BE IMPLEMENTED BETWEEN CHANGES

Non-motorized System:

$ 44 Total Dollar Allocation for Category

	Prioritization (Number of Votes listed below)					Rank
	Very Important	Important	Somewhat Important	Not Important	Not Sure	1 to 5 with 1 the highest
Bike lanes on Primary Roads	12	6	2	3	0	1*
Neighborhood Connector Routes	9	10	4	1	0	2
Provide Sidewalk links to Isolated Neighborhoods	1	12	9	0	0	3
Additional and Safer Road Crossing Options	12	9	2	0	0	1*
Add non-motorized connections to regional destinations	2	9	9	2	1	4

*Bike lanes on Primary Roads and Additional Safer Links to Isolated Neighborhoods Tied for 1st

Additional Comments:

- TRAFFIC CALMING ON RESIDENTIAL STREETS

2. Proposed Initial Corridors Refinement Exercise

Individually, each participant was asked to note if they agree, disagree or not sure about the proposed initial corridors. Below is a summary of the input with the number of votes listed in under each category.

	Agree	Disagree	Not Sure
Primary Road Modifications			
W. Pickard Street – add bike lanes through a 4 to 3 lane conversion	19	2	2
S. Isabella Road – add bike lanes through a 4 to 3 lane conversion and complete sidewalk gaps	23	0	0
E. Broomfield Road – add bike lanes through a 4 to 3 lane conversion and complete sidewalk gaps	20	0	3
E. Deerfield Road – Add sidewalk along south side of the road	17	2	5
E. Remus Road – Add bike lanes and sidewalk to corridor by paving the shoulder and add a bridge with bicycle and pedestrian facilities over US-127	17	1	5

	Agree	Disagree	Not Sure
Neighborhood Connector Routes			
Lincoln Street – add wayfinding signage	21	0	2
Andre Avenue - add wayfinding signage	19	1	4
Crosslanes Street - add wayfinding signage	20	1	3
Sunset Drive - add wayfinding signage	17	1	4
E. Bellow Street – add bike line through lane narrowing and wayfinding signage	22	0	1
Fancher Street – add parking edge stripe that bicyclists may use when parked cars are not present and add wayfinding signage	23	0	0
Watson Road – remove on-street parking and to provide a 4' edge stripe that may be used by bicyclists and add wayfinding signage	17	0	6

	Agree	Disagree	Not Sure
Off-Road Trail			
Existing GKB River Trail through Mill Pond Park, Nelson Park and Island Park	16	0	1
Existing Trail through Central Michigan University	16	0	2
Potential Trail Spur connecting to Mid Michigan Community College	15	1	2
Potential Trail Spur to Soaring Eagle Casino	10	2	4

Additional Comments:

- Bluegrass Road should be done first
- Add Bluegrass Road
- Pickard Street is a good idea, but a low priority
- Isabella Road would be a big bang for the buck
- Andre Avenue at Mission St will be difficult to cross, not many traffic gaps and signals will be needed or shift the route south to Lincoln
- Would add Brown for a parallel route east of Mission
- There are limited funds to provide a safe crossing at Mission St and Andre Avenue, use Arnold to Broadway than Brown.
- Need no truck signs on major streets that are not truck routes to keep bikers safe
- Do not put an auto bridge at Remus Road and US-127
- Concerns with removing parking on Watson Road
- Conflict between those who like on-street parking and those who don't is a big political divide in this community, implementation plans are likely to be easier if parking and bike lanes can be done together
- Too many big trucks use Pickard Street
- Andre Ave is very wide and cars really speed all the time, I think it would be good for a bike lane or two to slow traffic down
- A good connector would be where Mosher crosses Mission headed each by the car dealer connecting to Brown Street
- On Deerfield road add a bike path instead of a sidewalk (2 comments)
- Well thought out!
- Fancher will have bike lane signage (partially) see DPW/City of Mt. Pleasant website (summer 2011)
- Bridge over US-127 at Remus Road will be very expensive
- Using CMU backbone during class change is daunting for non-student population
- Connect Deerfield Road Apartments to Campus
- I am especially in favor of improvements and additions to sidewalks, people who currently drive can start walking without having to purchase additional equipment
- Concern with lighting and safety on potential trail spur connecting to Mid Michigan Community College

3. Proposed Initial Corridors Refinement Exercise

Individually, each participant was asked to select which type of non-motorized facility they thought would be best for each regional bike route. Below is a summary of the input with the number of votes listed in under each category.

	Signed Bike Route	Signed Bike Route with 4' Paved Shoulder	10' Roadside Pathway
Route from Mt. Pleasant to Clare and Pere Marquette Trail (13 Miles)	5	9	3
Route from Mt. Pleasant to Deerfield Park (6 Miles)	8	8	3
Route from Mt. Pleasant to Fred Meijer Hartland Trail (10 Miles)	10	6	1

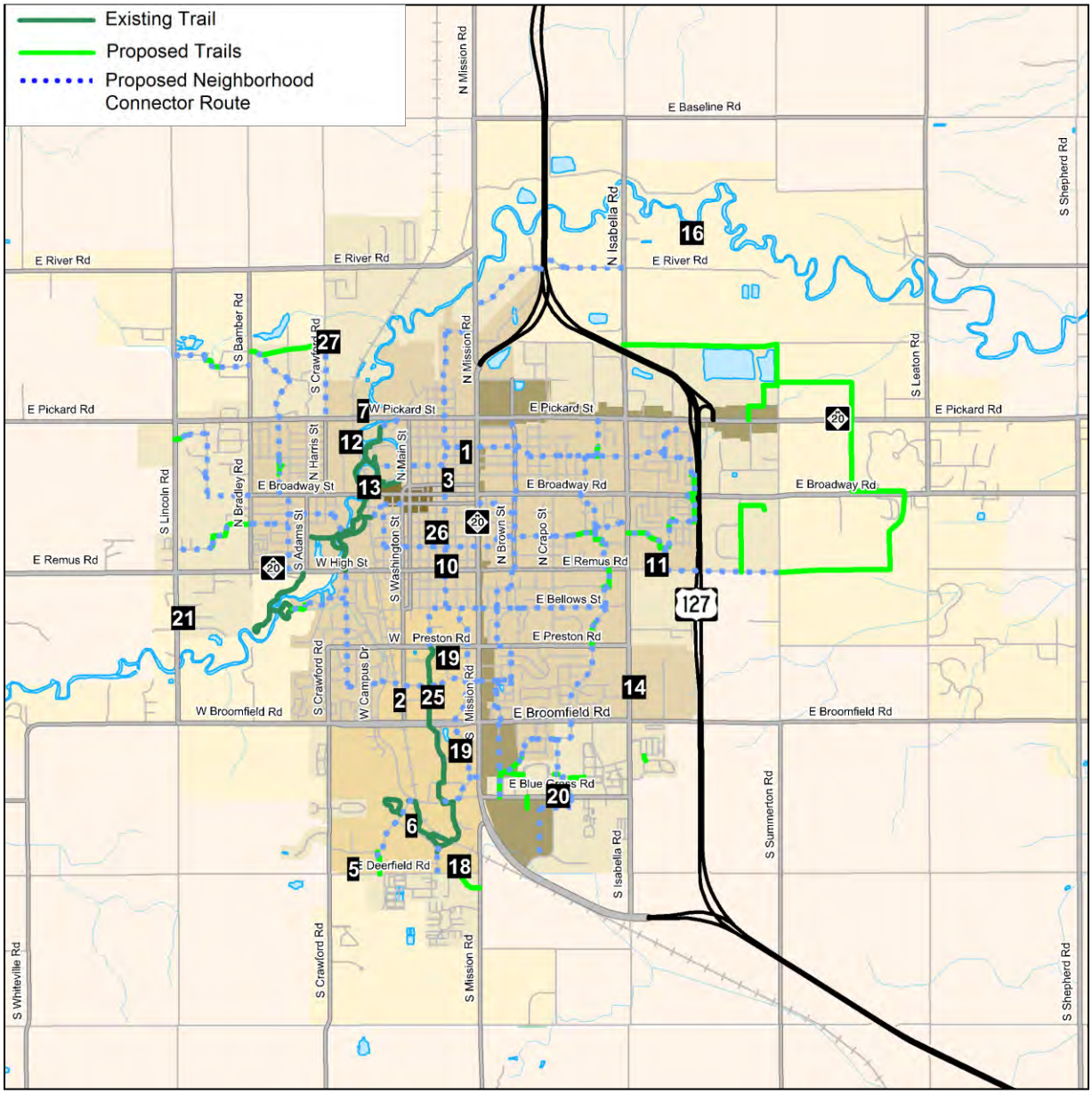
Additional Comments:

- Making the route on Mission to connect to Clare would help with fostering connection to Rosebush and Clare communities and events
- The alternative "Isabella Rd" for going to Clare is probably less attractive because not all of it is paved yet, less people live off that road, and it doesn't go through Rosebush
- Prefer the alternative route on Isabella Road instead of Mission due to traffic
- Mt. Pleasant's route to the south should go through Shepherd, not follow green road
- The route to Deerfield park should include a spur to Meridian Park (2 comments)
- I think that connecting to Clare and Pere Marquette Trail will really revitalize Rosebush, the Fairgrounds, Restaurants and businesses along the way and bring folks from Midland here and vice versa.
- I would like the route to Deerfield Park to be a dirt off-road trail, not along the roadway but along the river
- The right-of-way along US-27 Old Mission, is 100ft which allows a route to Fred Meijer while still connecting downtown communities to increase economic development
- Would like to have a 4' paved shoulder but with money tight, I would suggest less expensive option for now
- None of the alternatives are worth the cost! Identify alternative paved routes with lower traffic and speed
- I don't have a strong opinion about the appropriate connections to regional facilities, connection in immediate area are top priority
- First priority is Bluegrass, second priority is campus and downtown bike hubs, third priority is connecting to Deerfield Park, and forth priority is circle loop

Greater Mt. Pleasant Area Map Exercise

As a group, participants were asked to think about the non-motorized routes that they currently use or would like to use to get to destinations in the Mt. Pleasant area. Participants were asked to evaluate the provided potential routes and note directly on the large map any changes or concerns they had with the routes. The following maps document the input.

Greater Mt. Pleasant Area Feedback



The numbered boxes on the map correspond to the numbed notes on the following page.

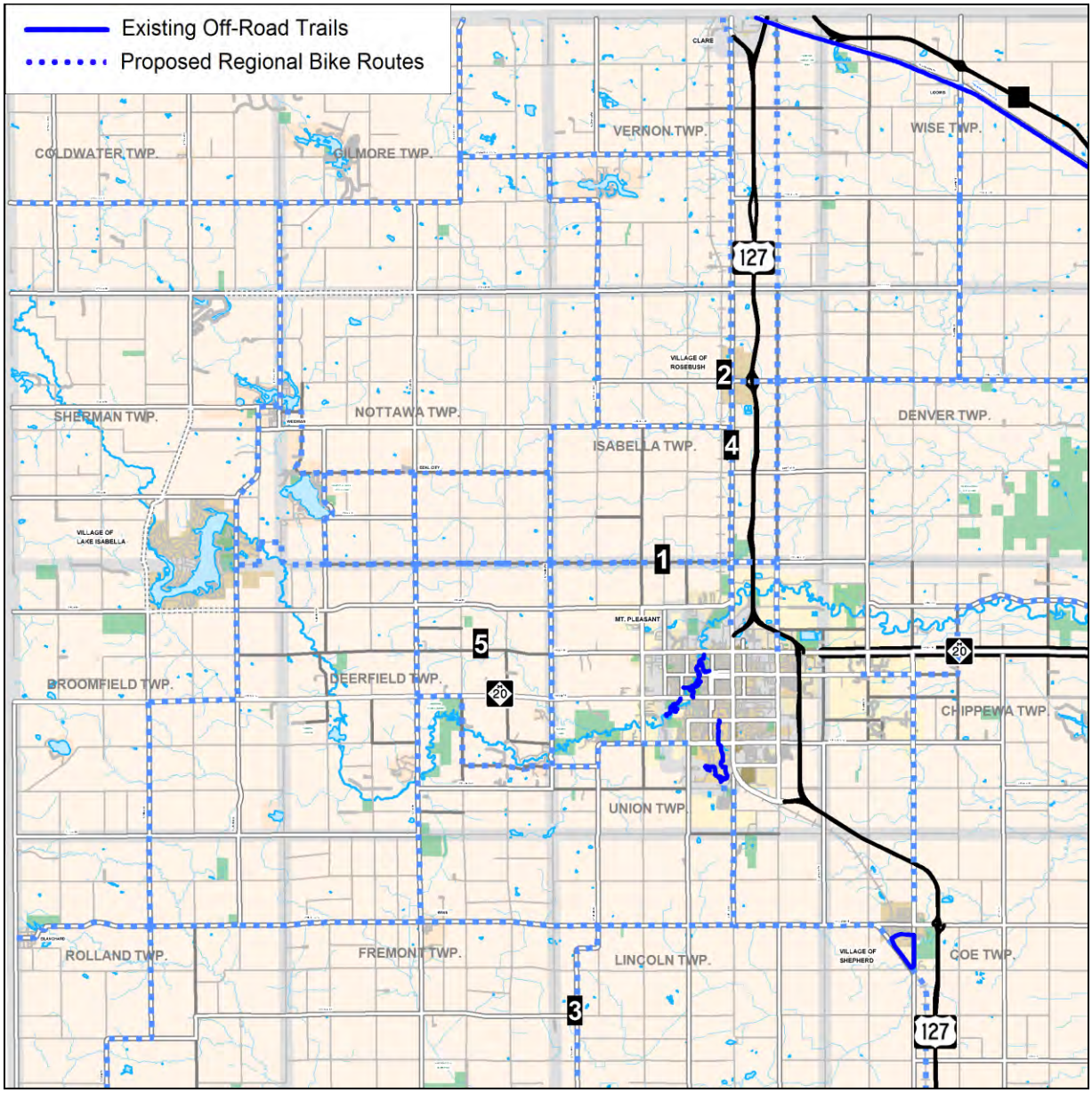
Notes:

1. Use Arnold as an alternative to Mission St
2. Southbound bike lane ends on S Washington St just before E Broomfield Road
3. Mosher St may not have enough right-of-way for sidewalks
4. We would prefer paved shoulders to sidewalks along roads outside of town where pedestrians and bicyclists can use the shoulder
5. Add proposed paved shoulder to Deerfield Road
6. Modify sidewalk along Three Leaves Drive to an Off-Road Trail
7. Pickard between Harris Street and Main may be too busy for 4 to 3 lane conversion
8. We like pathways to all schools
9. Left turn light at Isabella Road and Broomfield Road intersection
10. Lots of student traffic crossing up and down High Street between Main and Mission
11. Consider lighting for safety along Remus Road
12. Add connecting walking path between Island Park and N Harris St
13. Better pedestrian crossing needed where the River Trail crosses Broadway St
14. Really like the sidewalks on Isabella
15. Consider crushed limestone paths for easier upkeep
16. On the property to the north of the airport there is an 100' easement from the water's edge and it was once old Indian Pines Park
17. Primary road restriping is the highest priority
18. Off-road trails instead of sidewalks along Deerfield
19. The Library and S.A.C. are potential Bike Parking Hubs on campus
20. Bluegrass is a high priority for a walkway
21. No shoulder to pave on Lincoln St
22. Bikes and Pedestrians don't mix well on campus.
23. Place bike parking hubs near bike lanes on campus and then encourage walking on the pathways.
24. Define bike routes away from major roads
25. The pavement markings on main campus spine trail are not clear. They have faded over time and not sure where to park
26. Add a shortcut link to the proposed circle tour route connecting east west between Mill Pond Park and Morey Courts Ice Arena using Maple Street
27. Crawford Road is a good connection to Baseline which is a regional route so may want to make this route a proposed initial corridor

Isabella County Map Exercise

As a group, participants were asked to think about the non-motorized routes that currently use or would like to use to key destinations in the county. Participants were asked to evaluate the provided potential routes and note directly on the large map any changes or concerns they had with the routes. The following map documents the input.

Isabella County Feedback



The numbered boxes on the map correspond to the numbed notes on the following page.

Notes:

1. Stinky cow feed lots on Baseline Road
2. The problem with using Isabella Road over Mission Road is that you lose the connectivity between downtown Clare as well as Rosebush, also the right of way is much wider (100 ft) and missing the downtowns decreases the economic development piece
3. Losing downtown revitalization by using Green Rd instead of going through the Village of Shephard
4. Like the route to Pere Marquette Rail trail
5. Pave the shoulder on Pickard Road and use a regional connection to the west

Additional Comments Regarding the Project:

- I think that in the educational section, biking on the sidewalks needs special attention. I personally think it should not be allowed because it is dangerous for the bikers and people coming out of their houses. But when and if allowed in most situations in Mt. Pleasant the road is safer.
- If we can create a community that accepts all forms of non-motorized transportation, we wouldn't need to spend so much money on infrastructure and engineering - education and encouragement are much more affordable.
- The city needs to do a better job of traffic calming on residential streets even if the streets are currently designated as a major street.
- Great Work – overall good workshop design!

10.4 Non-motorized Improvements & Details

	Quantity	Unit	Unit Price	Cost Estimate	
Active Transportation Hub					
Pad/Plaza (12' x 15') concrete (4")	180	sf	$ 5	$ 900	
Compressed Air	1	ea	$ 3,000	$ 3,000	
Bench	1	ea	$ 1,000	$ 1,000	
Hub Kiosk	1	ea	$ 14,000	$ 14,000	
Bike Rack	4	ea	$ 200	$ 800	
Ped Level Light Fixture	1	ea	$ 3,500	$ 3,500	
Landscaping	1	ls	$ 1,500	$ 1,500	
Trash/ Recycle Receptacle	1	ea	$ 1,000	$ 1,000	
	Sub-Total			$ 25,700	
	Contingency (15%)			$ 3,855	
			TOTAL	$ 29,555	
Active Transportation Hub Kiosk (7' tall; 3.5' wide)			4 sided, glass and steel		
Kiosk Frame/Structure	1	ls	$ 14,000	$ 14,000	
Bike Weathervane					
Limestone Base Vineer					
Vinyl Graphics					
Back Lighting					
	TOTAL			$ 14,000	
Curb Extension (Typical Existing 15' radius curb - Proposed 20' radius)					
Removals/Demo	1	ls	$ 2,200	$ 2,200	
Drainage Structures (Adjust)	1	ls	$ 2,200	$ 2,200	This item is highly variable depending on drainage issues at intersection
Concrete (Curb, Gutter, Sidewalk)	1	ls	$ 5,700	$ 5,700	
ADA Ramps	2	ea	$ 600	$ 1,200	
Detectable Warning Strip	20	sft	$ 35	$ 700	
Restoration	1	ls	$ 1,000	$ 1,000	
		TOTAL		$ 13,000	Per Corner

Non-Motorized Elements (typical)

Curb Extension (per corner)	$	13,000.00	ea		
Crossing Island	$	18,000.00	ea	Bollards, landscaping, concrete curbs, pavement removal, striping, ped level lighting	
Edge Striping (white)	$	0.10	lf	4"	Edge stripe parking lane
Shared Use Arrows (Overlay Cold Plastic)	$	225.00	ea	place every 200' - 250'	
Bike Route Signing (urban)	$	1,200.00	mi	6 signs in 3 locations	
Bike Route Signing (rural)	$	400.00	mi	2 signs in 1 location	
Concrete Sidewalk (6' wide)	$	24.00	lf	restortation and contingency	
Concrete Sidewalk (8' wide)	$	36.00	lf	restoration and contingency	
Asphalt Path (10' wide, $45/lf)	$	310,000.00	mi	8 ADA ramps, restoration and contingency	
ADA Ramps	$	600.00	ea		
Paved Shoulders (4', signs, markings)	$	160,000.00	mi		
Bike Locker	$	1,800.00	ea		
Restripe Road and Add Bike Lanes	$	6,000.00	mi	Assuming 4 to 3 lane conversions, stripe removal and bike signage	
Crosswalk Striping	$	3.00	ft		
Rectangular Rapid Flash Beacon	$	11,000.00	ea	Sign and solar beacon in each direction, advance crossing signs and installation	
Pedestrian Hybrid Beacon	$	80,000.00	ea	With Category III Mast Arm (no intersection improvements)	
Boardwalk (14' wide)	$	400.00	lf	Highly variable depending on design, material, and soil conditions	
Bridge (14' wide x 30' long)	$	70,000.00	ea		
Toucan Crossing	$	160,000.00	ea	Curb, 4" concrete sidewalk, bollards, HAWK signal, ADA ramps, signage, markings, plantings	

10.5 Evaluating Alternative Scenarios for Travel Along Road Corridors

There is no single solution for handling bicycle traffic along road corridors that will be the most appropriate facility in all cases. But the City should still strive to establish a consistent approach as possible so that motorists and bicycles have clear and consistent expectations of each other.

Restricting bicycles to a path along the side of a roadway—while potentially a legal option—is fraught with safety concerns. This diminishes the attractiveness of using a bicycle for transportation for many adult cyclists. On the other hand, there exists a great diversity of bicycling skills and comfort levels and the system should attempt to safely accommodate all users to the degree possible. Also, where a bicyclists chooses to ride has an impact on the pedestrian's experience.

Quality and Level of Service Evaluation of Alternative Scenarios

In order to evaluate the alternative approaches to accommodating bicycle and pedestrian travel along the roadway, quality/level of services models were used. The Bicycle and Pedestrian Level of Service Models are statistically reliable methods for evaluating the quality and effectiveness of pedestrian and bicycle conditions of a given roadway environment. Various models have been developed over the past decade. The Bicycle and Pedestrian Level of Service Models used for this plan, developed by Bruce Landis, PE, AICP of Sprinkle Consulting, Inc., models bicycle and pedestrian environments based on data gathered from a wide cross section of users who evaluated numerous real world scenarios. Simplified versions of these models have been incorporated in the Florida Department of Transportation's Multi-modal Quality/Level of Service Model, which is the only LOS analysis that FDOT currently accepts. The Quality/Level of Service score is a measurement of the perceived safety and comfort of pedestrians and bicyclists.

It should be noted that the Bicycle Quality/Level of Service model applies only to bicycle environments *within* the roadway. There currently are not any well-researched models for Bicycle Quality/Level of Service for Shared Use Paths. The Pedestrian Quality/Level of Service Model also does not account for the increased conflicts with bicyclists that are likely to occur on a Shared-use Path.

Pedestrian Quality/Level of Service - Key Factors (in order of statistical significance):

1. Presence of a sidewalk
2. Amount of lateral separation between pedestrians and motor vehicles
3. Presence of physical barriers and buffers (including parking) between pedestrians and motor vehicles
4. Motorized vehicle volume
5. Motorized vehicle speed

Bicycle Quality/Level of Service - Key Factors (in order of statistical significance):

1. Presence of bicycle lane or paved shoulder
2. Proximity of bicyclists to motorized vehicles
3. Motorized vehicle volume
4. Motorized vehicle speed

5. Motorized vehicle type (percent truck/commercial traffic)
6. Pavement condition
7. The amount of on-street parking

The key factors for both modes are the existence of their own space, how far that space is from the traffic, and the nature of the traffic. The Bicycle and Pedestrian Quality/Level of Service score system has been developed using the same letter grading system with the same connotations as the letter grades used in schools: A being the best and F being the worst.

Because letter-grade Level of Service assessments are typical for vehicular traffic, there may be a desire to compare Vehicular Level of Service to that of Bicycle and/or Pedestrian Level of Service. However, the two evaluation systems are quite different and should not be directly compared. One illustration of the difference is that a Pedestrian Level of Service of "E" is likely the result of there not being any accommodations for a pedestrian. A Vehicular Level of Service "E" is defined as a point along an existing facility in which operations are at or near capacity and are quite unstable.

Three Scenarios for Providing Multi-modal Road ROW's

There are three typical scenarios for accommodating pedestrians, bicycles and motorists within a road Right-of-Way:

- Sidewalk (for pedestrians) and a Shared Roadway (for bicyclists and motorists).
- Sidewalk (for pedestrians) and a Bike Lane (a separate bike-only lane in the roadway).
- Shared Use Path (for pedestrians and some cyclists) and a Shared Roadway (for other bicyclists and motorists).

The following section looks at these three different scenarios for accommodating bicyclists, pedestrians and motorists. To evaluate each of these scenarios, a generalized cross section was prepared for each scenario along three different classifications of primary roadways: Principal Arterials (e.g. Grand River Avenue), Minor Arterials (e.g. W 9 Mile), and Urban Collectors (e.g. West 11 Mile Road). While there are significant variances among different road classifications, the generalized input used for each covers most roadway situations.

The following table summarizes the input used in this analysis: along the road corridor have been explored using a Quality/Level of Service Analysis to determine which combination is the most beneficial for users

Table 10.5A . Generalized Road Conditions and Existing AASHTO Guidelines

Criteria		Urban Principal Arterial	Urban Minor Arterial	Urban Collector
ADT motor vehicles	Generalized Average Daily Traffic Volumes for Both Directions	30,000	20,000	10,000
Number of Lanes	Generalized Average	4 Total (2 each way)	4 Total (2 each way)	2 Total (1 each way)
Posted Speed	Generalized Average	40 MPH	35 MPH	30 MPH
Sidewalk Width	AASHTO Pedestrian Guidelines	5' Minimum 6 – 8' Preferred 10 – 15'in CBD & High Use Areas	5' Minimum 6 – 8' Preferred 10 – 15'in CBD & High Use Areas	5' Minimum
Buffer Width	AASHTO Pedestrian Guidelines (from edge of road to sidewalk)	5' Minimum 6' Preferred	5' Minimum 6' Preferred	2' Minimum 4' Preferred
Bike Lane Width	AASHTO Bicycle Guidelines	3.5' minimum (5' total width including gutter)	3.5' minimum (5' total width including gutter)	3.5' minimum (5' total width including gutter)
Shared Outside Lane	AASHTO Bicycle Guidelines	14' recommended 15' maximum	14' recommended 15' maximum	14' recommended 15' maximum

Notes:

- 4' minimum walks may be used if 5' wide passing spaces for wheelchair users are provided at reasonable intervals. Although AASHTO permits 4' foot minimum walks with passing lanes, they are not desirable and should only be used for special circumstances.
- AASHTO also provides guidelines for curb-attached sidewalks (no buffer is provided between the sidewalk and roadway). The minimum width is 6', 8 – 10' is recommended along busy Arterials.
- There are many variables that AASHTO considers that are not articulated in this simplified chart.

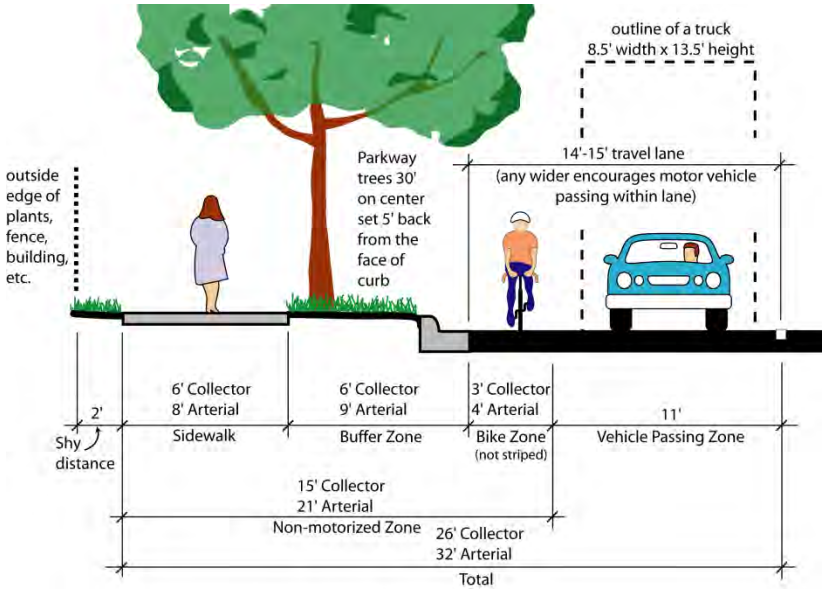
Refining the Scenarios

In comparing the different scenarios, the following design criteria were taken into consideration:

- **Widening the Buffer to Accommodate Trees** – As noted in the Pedestrian Quality /Level of Service – Key Factors, the lateral separation of pedestrians from the roadway and the presence of physical barriers such as trees, are the most important factors after the existence of a sidewalk. While trees provide benefits for pedestrian and roadway aesthetics, they are considered hazards to motorists. To minimize vehicular crashes with fixed roadside objects such as trees and light poles, current guidelines recommend placing the fixed objects at least 5' from the face of curb on urban arterials and 2' on collectors. Trees should be setback from the sidewalk at least 2' to allow for root growth and to provide a clear zone for the sidewalk users. To determine the total minimum desirable buffer with for Arterials, 6" is allocated for the width of a new tree trunk and the 18" from the face of curb to the edge of road is included. The result is that the minimum desirable buffer for Arterials is set at 9' wide. For Collectors, 4' is considered the minimum width for a planting strip that could support trees. This results in the total minimum desirable buffer for Collectors being set at 6' wide. As a general rule, the buffer should be as wide as reasonable for the conditions to minimize vehicular crashes with fixed objects, allow optimum planting conditions for trees, and improve the pedestrian environment.
- **Guidelines and Precedents for Narrow Lanes** - AASHTO guidelines and the MDOT Road Design Manual indicate that 12' lanes are most desirable and should be used where practical. They both indicate that in urban areas on low-speed roads (45 mph or less) 11' lanes are often used, and that 10' lanes may be used in restricted areas where there is little or no truck traffic.
- **Preserved Capacity with Narrower Lanes** - an 11' vehicular lane with an adjacent bike lane likely operates at near the same capacity as a 12' vehicular lane adjacent to a curb.
- **Narrow Turn Lanes -** AASHTO guidelines note that continuous two-way left-turn lanes may be as narrow as 10'.
- **Vehicle Widths** - A generalized sport utility vehicle is 6'- 4" wide, City buses and trucks are 8'- 6" wide.
- **Working Within Existing ROW** - Typical ROW Widths are 66' and 99', which means that the combined width of the sidewalk, buffer zone (space between the road and the sidewalk), bike lane (if any), and outside vehicle lane should be no wider than 33' in order to avoid the need for additional ROW. Using inside and continuous two-way left-turn lanes of 11', a four-lane road can be accommodated in 88' and a five-lane road can be accommodated in 99'.
- **Maximizing Bicycle and Pedestrian Level of Service** - Three scenarios were initially designed based on AASHTO guidelines. The scenarios were then refined by adjusting variables within the parameters of AASHTO guidelines such as the sidewalk width, the width of the buffer between the road, sidewalk and tree spacing, the bike lane width, and right lane width, all to achieve the most desirable Quality/Level of Service score possible within the typical ROW's.

The following pages include an overview of the three scenarios, their general advantages and disadvantages, and the results of the Quality and Level of Service analyses for the three road classifications.

Fig. 10.5B. Scenario A – Sidewalk and Shared Roadway



In this scenario, there are no specifically designated bicycle facilities within the roadway. Bicycles are accommodated through increased right-hand lane width (14' to 15') and reduced traffic speeds. Education and enforcement programs along with signage and potential pavement markings, such as the Shared-use Arrow, are utilized to alert motorists to the bicyclist's presence in the roadway.

Evaluation Results:

Road Classification	Pedestrian Q/LOS	On-road Bike Q/LOS	Notes
Principal Arterial	3.05 = C	4.55 = E	Extremely poor Bicycle Q/LOS
Minor Arterial	2.32 = B	4.23 = D	
Collector	2.47 = B	4.22 = D	Tied for worst Bike Q/LOS w/ scenario C

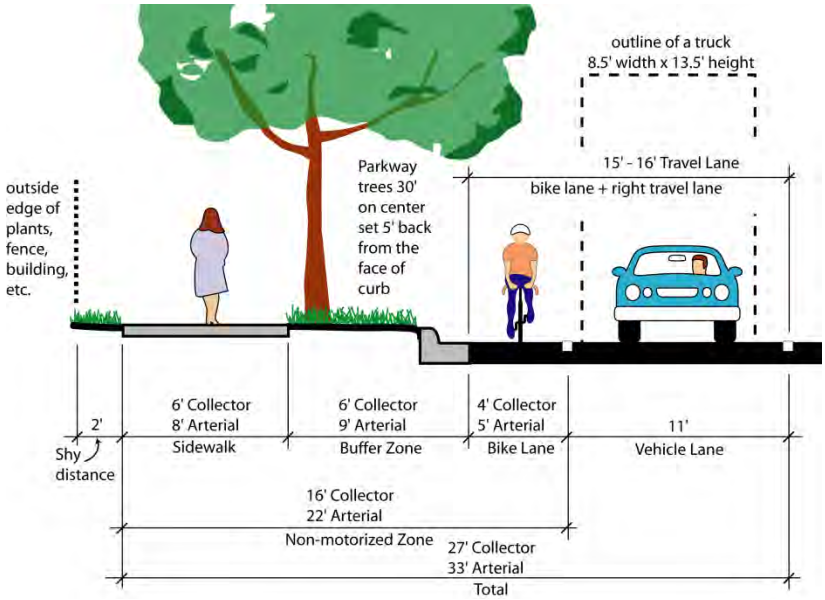
Advantages:

- Simple treatment at intersections.
- Considered by some to be the safest way to integrate bicyclists and motorized vehicles.
- Wide curb lane vs. bicycle lane studies have shown no significant safety differences in separation distances between the bicyclist and motorist.
- Appeals to experienced bicyclists who are often commuters.

Disadvantages:

- Unlikely to attract many new cyclists.
- May be viewed as a do nothing approach by many.
- Many bicyclists will still ride on the sidewalk.
- Cars tend to move further to the left and encroach into adjacent travel lanes when passing a cyclist with wide curb lanes than with bicycle lanes.
- Wider lanes may encourage higher speeds and may require traffic calming measures.

Fig. 10.5C. Scenario B – Sidewalk and Bike Lane (Preferred Option)



In this scenario, striped bicycle lanes or designated paved shoulders are provided on all collectors and minor arterials. Principal Arterials may have bike lanes or widened curb lanes, as determined most prudent for specific situations. The width of the bicycle lanes or shoulders should increase in areas with poor sight lines and/or higher vehicular speeds and volumes.

Evaluation Results:

Road Classifications	Pedestrian Q/LOS	On-road Bike Q/LOS	Notes
Principal Arterial	3.04 = C	3.47 = C	Best Bike Q/LOS, only Scenario with a C rating
Minor Arterial	2.31 = B	3.15 = C	Best Bike Q/LOS, only Scenario with a C rating
Collector	2.46 = B	3.39 = C	Best Bike Q/LOS, only Scenario with a C rating

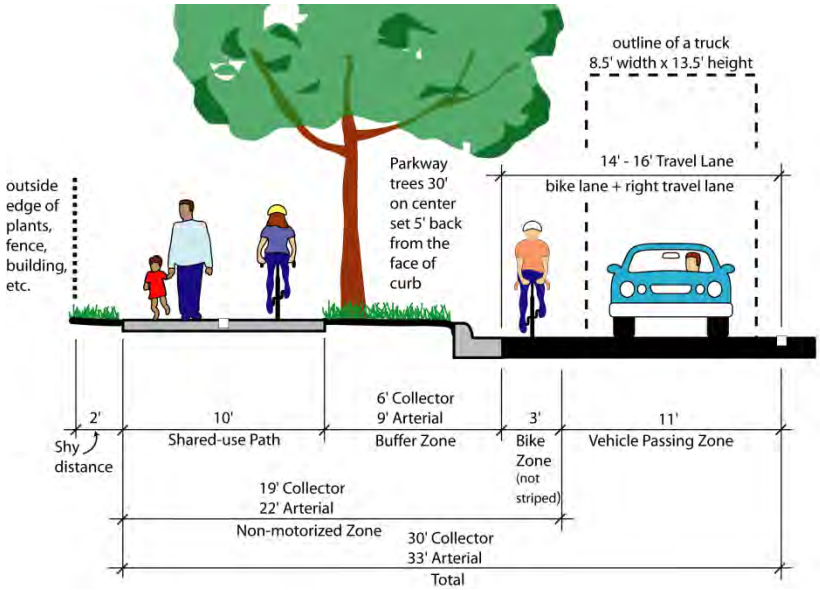
Advantages:

- Highly visible, designated facilities encourage increased bicycle use.
- Designated facilities alert motorists of the presence of bicyclists in the roadway.
- May have a slight traffic calming impact in some situations.
- Concurrent with AASHTO guidelines for most situations.
- Motorists are much less likely to encroach into the adjacent lane when passing a bicyclist.
- Motorists have less variation in their lane placement.

Disadvantages:

- Bicycle lanes require supplemental maintenance to be kept free of debris.
- Intersections must be designed carefully to minimize conflicts with turning movements.
- Presence of lanes may attract less experienced bicyclists to busier roadways.
- Some bicyclists will still ride on the sidewalk.

Fig. 10.5D. Scenario C – Shared-use Path



In this scenario, off-road shared-use paths are provided on Principal and Minor Arterials. Bicycle lanes or designated paved shoulders are provided on Collectors. Some collectors may also have shared-use paths. Driveways crossing shared use paths are modified to improve bicyclist and pedestrian safety.

Evaluation Scenarios:

Road Classifications	Pedestrian Q/LOS	On-road Bike Q/LOS	Notes
Principal Arterial	3.05 = C	4.69 = E	Worst Bike Q/LOS
Minor Arterial	2.32 = B	4.38 = D	Worst Bike Q/LOS
Collector	2.39 = B	3.89 = D	Tied for worst Bike Q/LOS w/ Scenario A

The analysis does not account for increased conflicts between bikes and pedestrians

Advantages:

- Similar to some existing non-motorized facilities.
- Do not have to modify existing roadways.
- Facilities separate from busy roads appeal to novice users and those with slower reflexes.

Disadvantages:

- Off-road facilities such as sidewalks and pathways are statistically the most dangerous places to bike due to conflicts with motor vehicles at intersections and driveways.
- Increased number of conflicts between bicyclists and pedestrians on pathways.
- Some bicyclists will still choose the roadway rather than a Shared-use Path.
- Few of the City's existing shared-use paths meet current AASHTO guidelines.
- Off-road facilities will need to be cleared of snow and have a higher maintenance standard than is currently in place to be considered a transportation facility.
- Transition between Shared-use Paths and Bike Lanes are awkward.

Scenario Observations

After reviewing the Quality/Level of Service (Q/LOS) analysis and testing alternative inputs for the alternative scenarios, a number of observations were made. These include:

- AASHTO minimum guidelines in many cases do not result in a Q/LOS grade of "C" or better.
- The Sidewalk and Bike Lane scenarios were the only scenarios that consistently achieved a Q/LOS of C or better for bicyclists and pedestrians. The other scenarios consistently had at least one mode rated a Q/LOS of D or worse.
- An 8' wide Bike Lane would be required to achieve a Bicycle Q/LOS higher than C on a typical Principal Arterial due to the traffic volumes and speeds. At that width, the Bike Lane may be misinterpreted as a travel lane and would be difficult to fit in most road ROW's.
- A 21' wide buffer would be required to achieve a Pedestrian Q/LOS higher than C on a typical Principal Arterial due to the traffic volumes and speeds. This would be difficult to accommodate in most road ROW's.
- The non-motorized zone does not vary in width much and all of the scenarios can be accommodated in standard ROW widths.
- While Bike Lanes provide additional buffer space between the vehicular travel way and the sidewalks, the difference in the Q/LOS is not significant.
- The Average Daily Traffic Volume for a 2 Lane Urban Collector would have to be below 3,500 to achieve a Bicycle Q/LOS of C.
- A Bike Lane provides an additional 4 to 5' of lateral separation between fixed objects such as trees and street lights and the motorized travel lanes increasing motorized safety.
- A Bike Lane provides a benefit to trees planted in the buffer by providing an additional 4' to 5' between the canopy of the tree and trucks that may hit the lower branches.

Conclusion

Based on these observations **Scenario B – Sidewalk and Bike Lane** is the preferred alternative for all road classifications under most circumstances. Scenario A – Sidewalks and Shared Roadway may be appropriate for lower volume (<3,500 ADT) and lower speed (<= 30 MPH) Collectors. Scenario C – Shared-use Path may be appropriate for Parkway situations where intersecting roadways and driveways are widely spaced (typically father apart than 1/2 mile). In addition, there should be little need to get to destinations on the other side of the road between intersecting roadways and marked mid-block crosswalks.

While Scenario B – Sidewalk and Bike Lane, is the preferred alternative, the City should not restrict bicycling on most sidewalks. Bicyclists will choose to ride in the road or on a sidewalk based on their individual skills and comfort riding in traffic and current conditions. Thus an individual who may typically ride in the road may choose to ride on a sidewalk if the road is icy or slushy. Also, some individuals may be comfortable riding in bike lanes on some roads but not others. It is not the City's place to dictate where a bicyclist should ride but rather provide new facilities in accordance with current best practices and retrofit existing facilities as best as possible.

The City though needs to underscore that when bicyclists ride on sidewalks they need to always yield to pedestrians. Six to eight foot wide sidewalks can accommodate moderate slower paced bicycle traffic in suburban settings. Thus Scenario B – Sidewalk and Bike Lane provides that option for both on-road and off-road bicycling in many situations. Given that some bicyclists will choose to ride on the sidewalks, the

sidewalks should be designed and maintained such to accommodate these users. This is not to say that they need to meet AASHTO Guidelines for shared-use pathways, but that sightlines at intersecting driveways and roadways should be open so that motorists and bicyclist can see each other. Sidewalk and ramp alignments should take into consideration bicycle travel. Obstructions within and immediately adjacent to the sidewalk should be avoided. Also, the sidewalk surfaces and adjacent overhanging vegetation need to be maintained with bicycle travel in mind.

There will be places in the downtown or other high density mixed use areas where the combination of high pedestrian volumes and limited sidewalk widths will dictate that bicyclists should walk their bikes when on the sidewalk. There may also be places where sidewalk bicycling may be hazardous and likewise require that bicyclists walk their bicycle. Whenever bicycles are restricted from riding on the sidewalk every effort should be made to improve bicyclists accommodations within the roadway.

Notes on the Application of the Conclusions

It should be noted that traffic volumes and speed, rather than road classifications, should determine whether to use a 4' or 5' wide bike lane. As a general rule, where volumes are expected to be over 25,000 trips per day and/or speeds are posted at 40 MPH or above, a 5' bike lane is preferred. 5' bike lanes are also preferable in situations where the vertical and horizontal curves limit sight lines.