WEST SIDE AREA PLAN

QUALITY OF LIFE

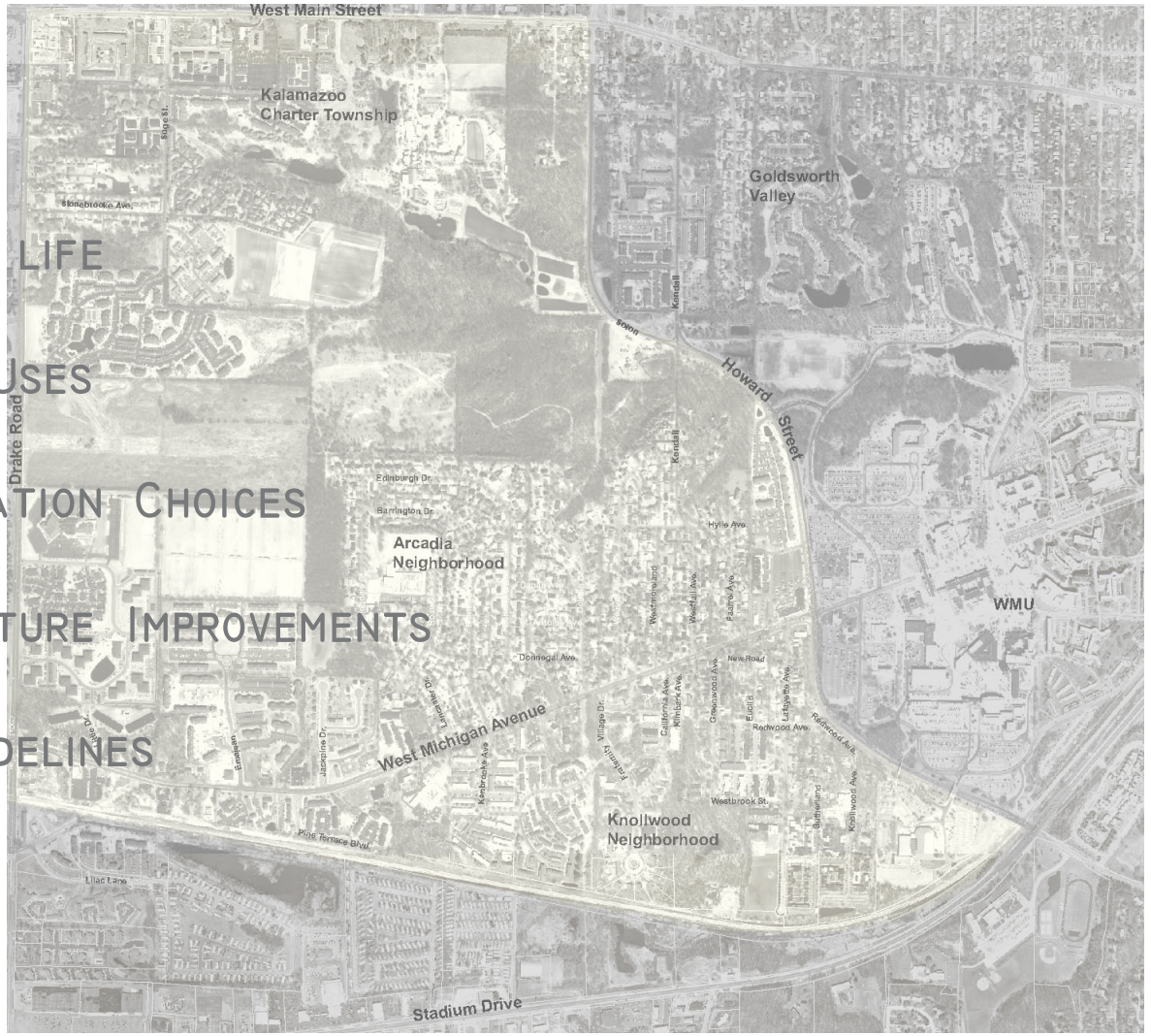
NEW LAND USES

TRANSPORTATION CHOICES

INFRASTRUCTURE IMPROVEMENTS

DESIGN GUIDELINES

DRAFT



CITY OF KALAMAZOO, MICHIGAN

OCTOBER 2003

TABLE OF CONTENTS

ACKNOWLEDGMENTS

The West Side Area Plan is the product of many contributors including residents of the Arcadia and Knollwood neighborhoods, Western Michigan University (WMU), City staff, the West Side Land Use Advisory Board and consultants. The City of Kalamazoo especially thanks the following for their invaluable contributions to the development of this plan:

- The citizens of Kalamazoo for taking part in the public workshops and meetings.
- Grace Fellowship Church and Pastor Thomas Pace for hosting all the public meetings over the last year.
- The West Side Land Use Advisory Board for providing leadership and direction.
- WMU Foundation for funding the planning study.

Those who took leadership roles in the development of this plan are listed below:

City Planning Commission

Commissioners:
Frank Cody
Andrew DeGraves
Robert Dunbar
Norman Hamann, Jr.
Mark Hoffman (Chair)
Jeanne McGeorge (Vice-Chair)
Marcia Miller
Bertha Stewart
Linda Wienir

City Staff
Jeffrey Chamberlain, AICP, City Planner
Andrea Augustine, Neighborhood Planner

West Side Land Use Advisory Board

Evie Asken	WMU-Campus Planning
Bob Miller	WMU- Office of the President
Bonnie Hanson	WMU- Student Affairs
Bob Brown	WMU- Public Safety
Jimmy Jolly	WMU Student Association
Ben Appleby	WMU Student Association
Jeff Chamberlain	City of Kalamazoo
Andrea Augustine	City of Kalamazoo
Jeanne McGeorge	Planning Commission
Darlene Davis	KAHRA
Gerry Hunt	Dover Hills Apartments
Bob Totten	Arcadia Neighborhood Association
Sue Stapleton	Arcadia Neighborhood Association
Louis Meinema	Kalamazoo Township
Elizabeth Heiny-Cogswell	Oshtemo Township
Dick Skalski	Engineering (CoK)
Bill Schomisch	Metro Transit (CoK)
Corey Talcott	Firehouse Saloon
Bob Beam	WMU- Office of the President

WMU Real Estate Committee (Funders)
Robert M. Beam
Bud Bender
William A. Brown, Jr.
Kenneth J. DeVries
Joseph L. Gesmundo
Lowell P. Rinker
Wendy L. Stock
Jan Van DerKley
Jerry L. VanderVeen
Joshua T. Weiner

Prepared by:
SmithGroup JJR
30 West Monroe
Suite 1010
Chicago, Illinois 60603

In Association with:
HNTB

EXECUTIVE SUMMARY

In the past decade, the west side of Kalamazoo has become increasingly urbanized, as a result of an increased demand for housing, particularly multi-family and student-oriented housing. In response to the high demand, the private market continues to build further west from the city, into adjoining townships, including Oshtemo and Kalamazoo Charter Townships. In addition, increasing numbers of single-family homes in these areas have been converted to student rentals, especially in the Knollwood neighborhood.

As more and more student housing is built further from the city, significant traffic congestion has resulted on streets leading into Western Michigan University (WMU) and the downtown area. This is particularly true on West Michigan Avenue. Heavy reliance on the private automobile, relatively low transit ridership, and the lack of pedestrian and bike routes has exacerbated traffic congestion on the west side of Kalamazoo. Without a sensible plan to address short-term problems and to guide future development in a sustainable fashion, the quality of life in this part of the city will deteriorate.

The West Side Area Plan makes recommendations for land use and transportation policy changes for the short term, for the long term sustainability of the West Side, and for a healthy "town and gown" co-existence between the University and its neighbors. This plan will be used to guide zoning, land use, and transportation decisions for the next several decades. Its recommendations focus on complementary land use policies to:

- Create better neighborhoods;
- Reduce car dependency;
- Expand choices for alternative modes of transportation;
- Improve the physical character of the public realm; and
- Preserve and enhance neighborhood quality of life.

The plan's key policy recommendations are summarized below.

LAND USE PLAN

WMU Foundation Parcels
Rezone the 183-acre WMU Foundation-owned parcel for residential, commercial and open space uses.

West Michigan Avenue/Howard Street Intersection
Rezone the southwest portion of this intersection for commercial/retail use, extending into the Knollwood neighborhood.

West Michigan Avenue and Drake Road Gateway
Create a gateway at the northeast corner of this intersection, marking this entry into the City of Kalamazoo and directing motorists to WMU.

Knollwood Neighborhood Improvements
Provide curbs, gutters and sidewalks throughout the Knollwood neighborhood to decrease pedestrian-traffic conflicts and inappropriate parking practices. Convert single-family homes to multi-family complexes and other high density housing, with Zone 7B design guidelines. Continue to use Knollwood Park used as an active, student-oriented park with disc golf and other amenities.

Arcadia Neighborhood
Protect and preserve the single-family character of this predominantly owner-occupied neighborhood.

TRANSPORTATION PLAN

West Michigan Avenue
Reconstruct West Michigan Avenue as a five-lane boulevard with bike lanes and sidewalks on both sides.

Parkway through WMU Foundation Parcels
Construct a parkway connecting Drake Road to the Howard Street/Kendall Street intersection.

Connector Streets
Extend Emajean Street north of the Arboretum Apartments to the proposed parkway to allow for access from West Michigan Avenue. The Emajean extension should be done only if the American Youth Soccer Organization (AYSO) were to vacate their current site.

Extend Redwood Avenue from Knollwood Avenue to the Lawson Ice Arena, for bus, pedestrian, and bicycle access only.

Connect the two halves of the Arcadia neighborhood with a new street between Dobbin Drive and Edinburgh Drive.

Traffic Control
Improve the Howard Street and Stadium Drive intersection to reduce traffic delays.

Alternative Transportation
Add a pedestrian-only light sequence at the intersection of West Michigan Avenue and Howard Street.

Bike Lanes
Incorporate dedicated bike lanes into the design of all of the roadways proposed in this plan, as well as along the rail lines at the southern boundary of the study area.

Commuter Lots
Identify commuter parking locations within the study area, in addition to a Metro Transit bus transfer area.

Restricted Parking
Restrict WMU campus parking passes for students who live within 1.5 miles of the campus.

IMPLEMENTATION

The City of Kalamazoo is the lead agency for the implementation of the West Side Area Plan. The following three principle components are recommended as part of the implementation strategy:

Regulatory
- Adopt new land use designations recommended in the plan.
- Develop design guidelines for proposed retail/ commercial areas.
- Establish a coordinated transportation policy for the area.

Budgetary
- *Capital Improvement Program (CIP):* A number of the recommended street and transportation improvements (discussed in detail in the Transportation section) require funding for implementation. The projected cost of these improvements can be found in the Appendix. The plan recommends that the City include these improvements in its CIP. Specifically, the plan recommends the following projects for inclusion in the City's 2004 - 2010 CIP:

  - West Michigan Avenue Improvements, including restricted left turns, dedicated left turn lanes and right-of-way acquisition
  - New roundabout at Kendall and Howard
  - Street signalization
  - Knollwood curb and gutter improvements
  - Knollwood Park improvements

- *Special Assessment:* Consider the use of special assessments to finance the construction and implementation of recommended public improvements, especially in the Knollwood neighborhood. Designated special assessment areas should include properties directly adjacent to, or directly utilizing, the proposed public improvements.

- *Outside Funding Sources:* Consider the following sources of funds for proposed transportation improvements, especially for transit, bike and pedestrian improvements:

  - Contributions from developers proposing developments under the new zoning
  - Federal transit capital and operating assistance
  - State transit capital and operating assistance
  - State Surface Transportation Program (STP) funding for Transportation Enhancement Activity Program.

Partnerships
- While the City will be responsible for implementation of the primary public improvements, WMU, as a major tenant and land owner within the study area, will play a significant role in helping to realize the policies and recommendations outlined in this plan. The plan recommends close coordination and partnership between the City and WMU as part of the implementation strategy. Specifically, implementation of the proposed parkway, and the definition of the amount and character of publicly accessible open space within WMU parcels, should be undertaken through partnership and coordination between the two entities.

- In addition, pursue partnerships with private sponsors of development projects in the area for such elements as publicly accessible open space, public plazas, and street amenities such as benches and landscaping at neighborhood retail locations.

INTRODUCTION

WHY A NEW PLAN ?

In recent years, the West Side of Kalamazoo has seen a boom in housing needs fueled by the growth of the university community in the area. Development pressure for more multi-family housing has resulted in the conversion of many single-family homes into rentals and has pushed development westward, into Kalamazoo and Oshtemo Charter Townships. This has resulted in haphazard development and serious infrastructure and traffic problems. To address these issues, the City of Kalamazoo commissioned a planning study to define land use and transportation policy recommendations. Over the course of a year, four public workshops with area residents, and many individual meetings with stakeholders and the Advisory Committee, were held. The result of those meetings is the West Side Area Plan, a document that will guide future development through sensible and sustainable land use and transportation policies.

THE SETTING

The primary focus of the West Side Area plan is the area to the west of WMU, particularly the Arcadia and Knollwood neighborhoods and their street networks. The planning area is bounded by West Main Street on the north, the railroad tracks on the south, Howard Street on the east, and Drake Road on the west (See Map 1).

WMU has a significant presence in the study area, both in size and importance as an educational institution employing and educating a large percentage of the people who live on the West Side. In implementing its current campus master plan, which addresses many of the same issues as the West Side Area Plan, WMU is particularly focused on policy and design changes to improve vehicular and non-motorized transportation.

The Western Michigan University Foundation parcels, located north of the Arcadia neighborhood and stretching from Howard and Kendall on the east to Drake Road on the west, is a 183-acre area used primarily for informal, passive recreation. This property, comprised of woodland and prairie, has been the subject of much controversy over the years. A Planned Unit Development approved for this property in the late 1990's (known as "The Arboretum") was the subject of extended public debate and was never constructed.

The Arcadia neighborhood, north of West Michigan Avenue, is a stable, single-family neighborhood. It is surrounded on three sides by encroaching commercial and multi-family residential uses. While change and growth in this area are inevitable, the neighborhood needs to be protected from adverse impacts from traffic and surrounding development.

The Knollwood neighborhood, the railroad tracks, and Stadium Drive are located in the southern half of the study area. This area is dominated by student rentals, including many single-family homes converted to multi-family rental use and many new apartment complexes. The architecture of this area's residential buildings lacks a unified character, and many buildings are in deteriorating condition. This is a pedestrian focus area, although most streets have no sidewalks, curbs, or gutters. As a result, pedestrians and vehicles frequently come into conflict. These problems are more pronounced in the winter months when heavy snow and ice on the roadways leave little room for pedestrians.

West Michigan Avenue is a major east-west street serving both the entry point to the study area from the west at Drake Road and as the entry point to WMU at Howard Street. It is also the thoroughfare that separates the very different neighborhoods of Arcadia on the north and Knollwood on the south. As the main connector between WMU and the area to the west of campus, it suffers from serious traffic congestion. The future of West Michigan Avenue is a major focus for plan recommendations.

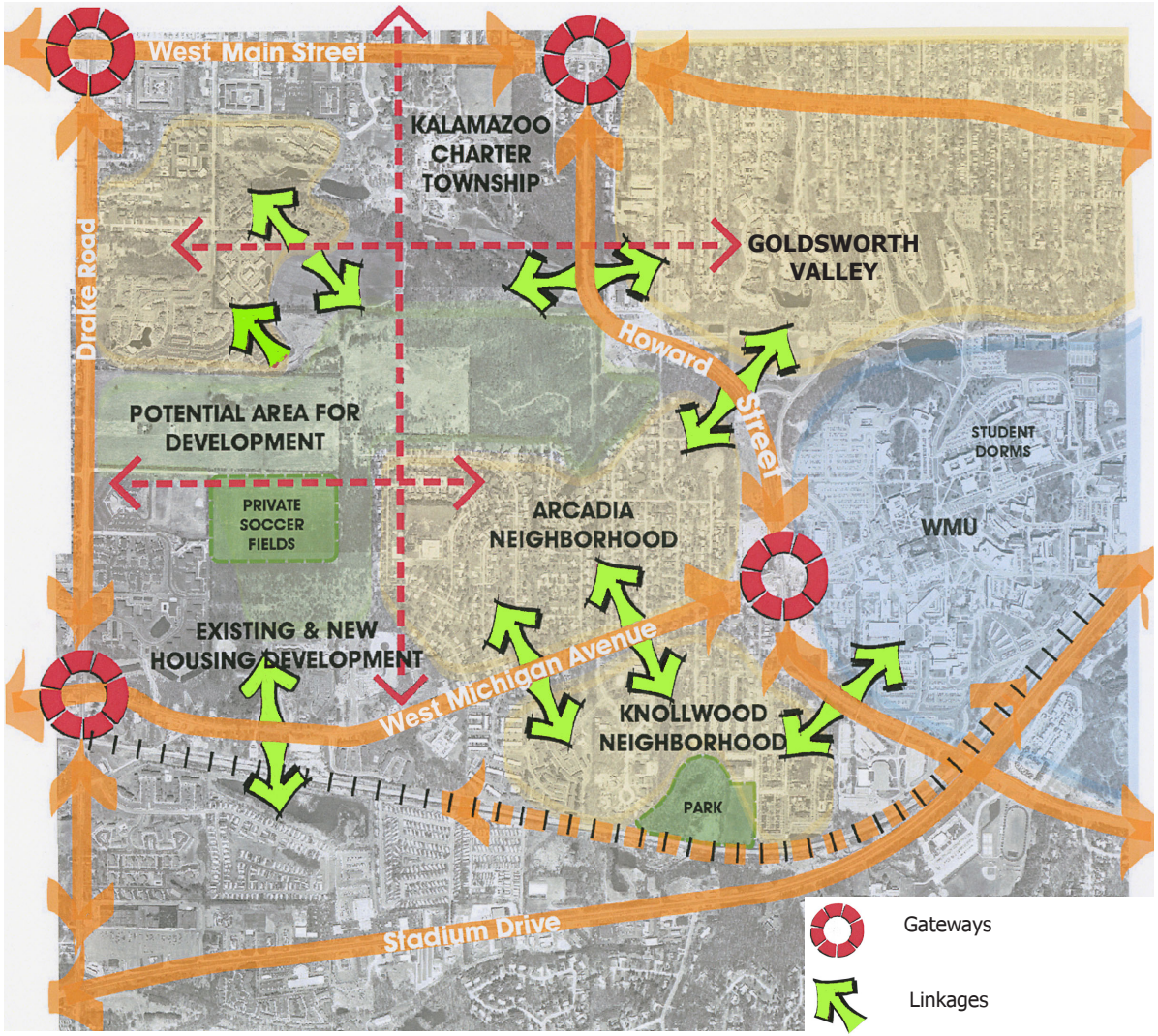
KEY ISSUES

Through a series of community workshops, four main topics of interest were identified:

Future use of WMU Foundation Parcels
- Interest in the future development of this land and its eventual impact on community open space needs.

West Michigan Avenue - Traffic Congestion
- The impact of increased traffic in recent years on the neighborhoods, on West Michigan Avenue, and on accessibility in the study area.

Land use/Open Space
- The impact of different land uses existing in close proximity to one another - commercial, multi-family and single-family housing, parks, and open space.



Map 1 Planning Framework

PROCESS AND CONCEPT EVOLUTION

PROCESS

Figure 1 Planning Process

Four public workshops were held in the study area at the Grace Fellowship Church on Farrell Avenue, and each was attending by approximately 50 people. Each public workshop was followed by an Advisory Committee meeting, at which the Committee reviewed the results of the public workshops and set direction. Several additional meetings with stakeholders, including the Western Michigan University Foundation Real Estate Board and the Arcadia Neighborhood Association Board, were also held.

Public Workshop

Public Workshop

Workshop #1

On October 9, 2002, the first public workshop for the West Side Area Plan was held. A survey was conducted at the workshop to identify priorities among key planning issues including Neighborhood Character/Land Use, Shopping, Michigan Avenue, Gateways, Transportation Access, Arboretum Area Future Use, and Student Housing. Within the seven categories, issue subcategories were also prioritized.

Student Housing ranked as the highest priority among the seven key issues with 63% of the people surveyed ranking it as the # 1 issue. Issues that ranked as the top three priorities were Student Housing, Michigan Avenue, and Transportation Access.

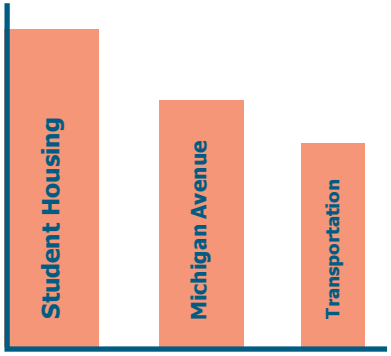


Figure 2 Priority issues in order of rankings

Workshop #2
On the basis of the key issues identified at Workshop #1, three plan alternatives were developed for public review and comment at the second workshop. These alternatives are summarized below.

Student Housing Alternative:

- Provide student housing in close proximity to the campus to increase pedestrian/bike trips.
- Reduce traffic congestion.
- Create linkages across Howard and Stadium Drive.
- Encourage downtown student housing.

Michigan Avenue Alternative:

- Encourage new land uses along Drake Road between West Michigan Avenue and West Main Street.
- Provide a 5-lane Michigan Avenue cross section where the center lane could be used as a dedicated left-turn lane.
- Explore possible median options on Michigan Avenue.
- Provide additional pedestrian/bike paths.
- Provide signalization improvements to improve the flow of traffic.

Transportation Alternative:

- Provide more pedestrian/bike paths.
- Introduce an east-west road connection from Drake Road to Howard and Kendall.
- Encourage alternative modes of transportation.
- Beautify streets.

Several areas of consensus were established at Workshop #2:

- Balance housing and open space in the study area.
- Formulate policies to encourage downtown housing.
- Create opportunities for private/public partnership.
- Improve mass transit by making it convenient, safe and dependable.
- Provide for new commercial land use along Drake Road.
- Design Michigan Avenue with five lanes, middle left turn, and a landscaped median.
- Minimize cut-through traffic in the Arcadia neighborhood.
- Avoid connections from proposed roadways and existing residential streets.
- Design a roundabout to improve traffic flow at the intersection of Howard, Kendall, Solon, and the proposed roadway.
- Improve sidewalks, curbs and gutters in the Knollwood neighborhood.
- Improve signalization on Michigan Avenue to improve traffic flow and to provide safe pedestrian crossings.

Using maps and illustrations of the area, participants evaluated and commented on the strengths and weaknesses of each alternative, as well as establishing areas of consensus. The results of the workshop were reviewed at the second Advisory Committee meeting. The direction was set for the development of a draft plan combining the key elements from each of three alternatives and the consensus points.

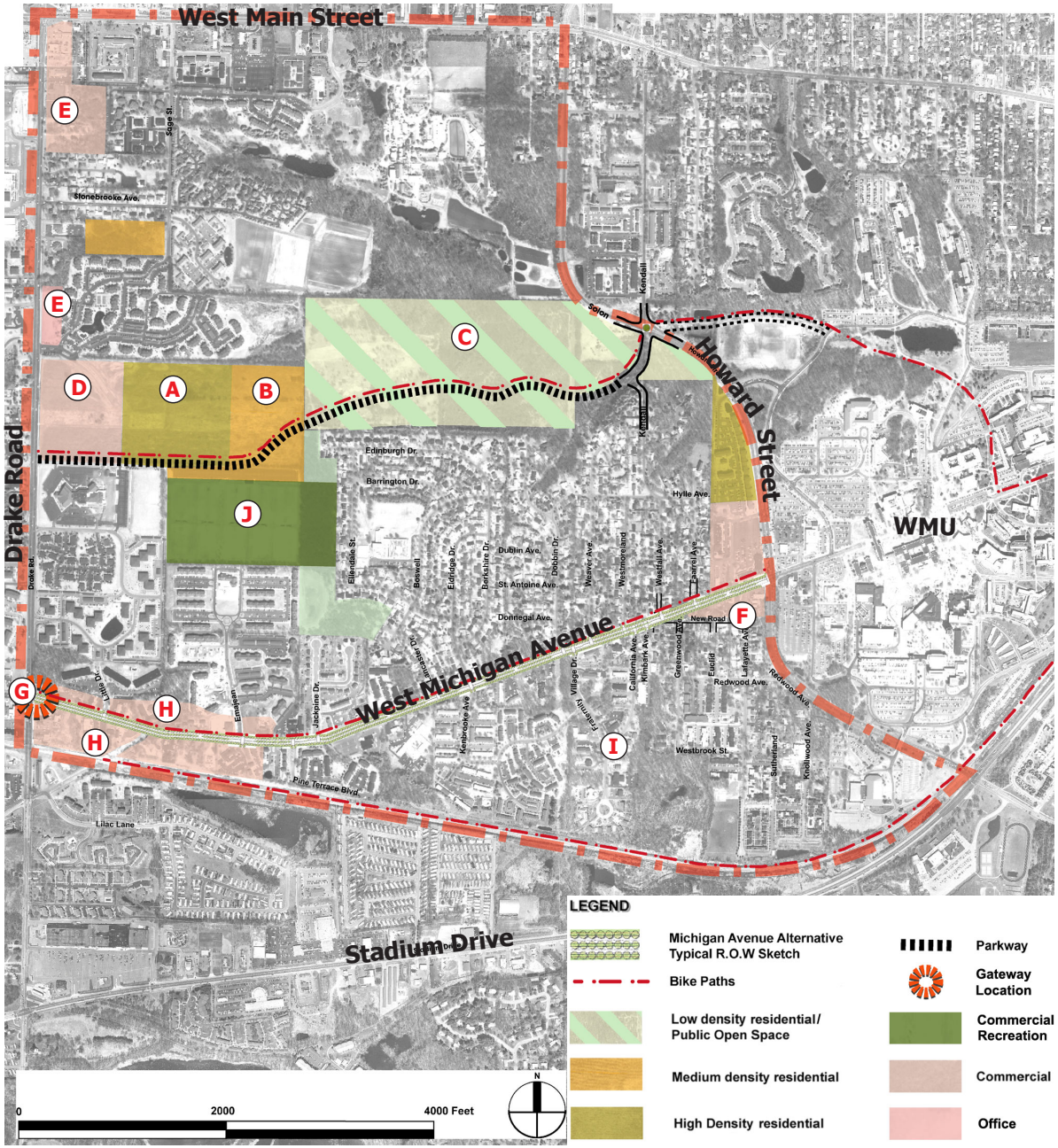
Workshop #3
The Draft Plan was reviewed at the third public workshop. The Advisory Committee reviewed the public input and contributed additional comments.

Workshop #4
A revised Draft Plan, incorporating comments from Workshop #3 and individual stakeholder meetings, was presented at Workshop #4. Public comment on the Draft Plan was recorded, and the Advisory Committee reached consensus on the preparation of the final plan document.

LAND USE POLICY RECOMMENDATIONS

- Coordinate land use and transportation decisions to encourage walking to shops, campus, and neighborhoods.
- Create a mixed-use environment that enhances the quality of the neighborhoods and provides a transition between the WMU campus and residential areas.
- Establish design guidelines for large-scale retail and commercial uses to encourage a scale and architectural character compatible with established residential neighborhoods, particularly the Arcadia neighborhood.
- Create a balanced integration of new development and public open space.

Each of these land use recommendations is discussed in the following pages. The recommended land uses have been labeled from "A" to "J" and their locations are illustrated on map 2.



Map 2 Proposed land use plan on an aerial image

WMU FOUNDATION PARCELS

A balanced mix of commercial, residential, and publicly accessible open space is envisioned for this 183-acre property north of the Arcadia neighborhood (See Figure 3). Because of its proximity to a major arterial street and the existing commercial uses along Drake Road, retail/commercial use is recommended on the western portion of the property. Residential and open space uses are recommended on the balance of the site. A transition in residential density is recommended across the site, with higher densities located adjacent to the commercial area on the west and lower densities located adjacent to single-family residential uses in the Arcadia neighborhood on the east.

A High Density Residential

Approximately 30 acres of land immediately east of the retail/commercial area is proposed for high density residential use. Consistent with the Kalamazoo Comprehensive Plan's definition of high density, this area is envisioned to have 12 to 15 dwelling units per acre. The types of residential units here could range from multi-family apartments to single-family attached townhouses (See Figure 4). These units would be attractive to WMU faculty, students, and staff, with the adjacent retail/commercial area providing for their shopping needs. The parkway recommended through the WMU Foundation property will provide access to WMU (via shuttle, bus, bike or car), reducing traffic on West Michigan Avenue.

B Medium Density Residential

Approximately 25 acres of land immediately east of the proposed high density residential area is proposed as a medium density residential zone. According to the City's Comprehensive Plan, medium density residential is defined as having between 6 and 12 dwelling units per acre. This medium density residential development could include detached single-family, two-family, or cluster housing (See Figure 5). These units could be one or two stories in height and be located on lots approximately 40' to 50' wide.

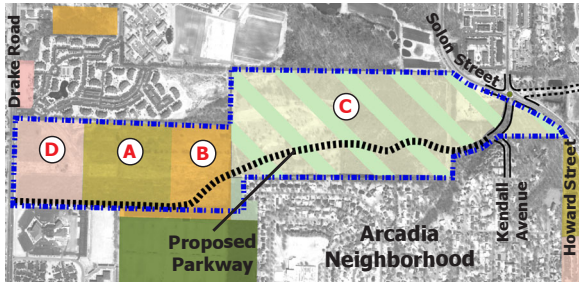


Figure 3 WMU Foundation Parcels

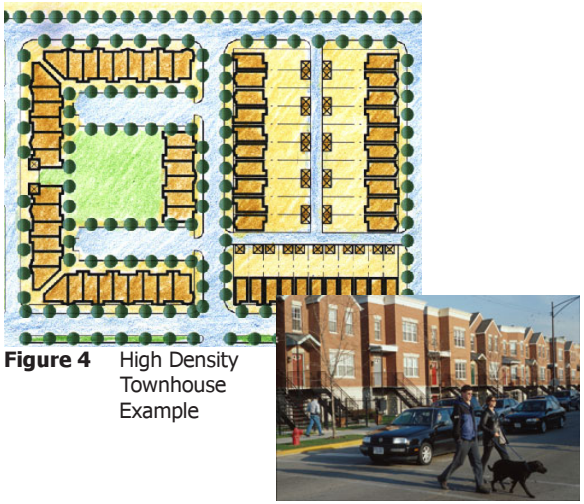


Figure 4 High Density Townhouse Example

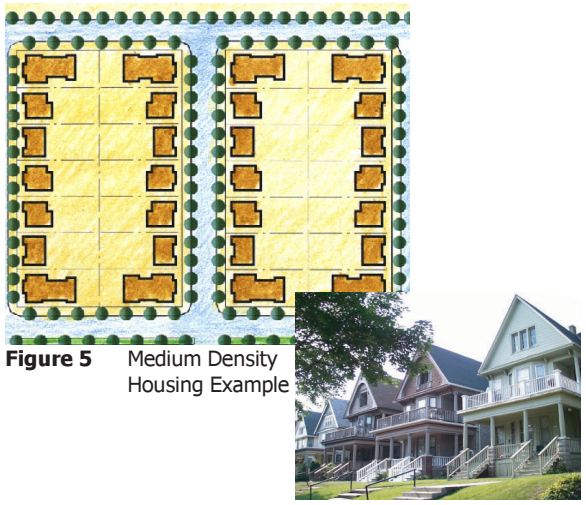


Figure 5 Medium Density Housing Example

WMU FOUNDATION PARCELS

C Low Density Residential /Public Open space

Approximately half of an 80-acre area within the WMU Foundation site is proposed to remain as low density residential (as it is currently zoned) and allow approximately 40 acres of publicly accessible open space (See Figure 6). The 40 acres of open space may not be a dedicated public park, but it should remain accessible to the entire community. This could be achieved by clustering new housing units and establishing pedestrian connections to link open space to the Arcadia neighborhood south of the proposed parkway.

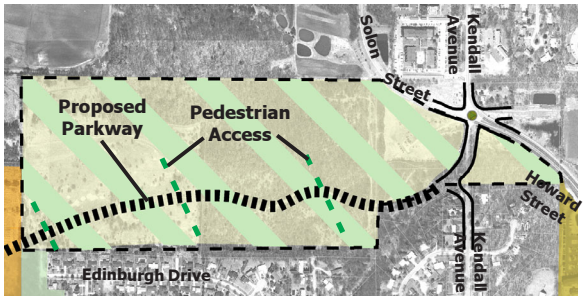


Figure 6 Low Density Residential/Public Open Space

Low Density Residential/Public Open Space Example

D Drake Road Commercial

Along Drake Road, approximately 20 acres of the WMU Foundation parcel is proposed for retail/commercial uses (See Figure 7). With immediate access to Drake Road, this area could become a destination retail area for the entire city, as well adjacent neighborhoods. Proximity to the proposed residential area will allow future residents to walk to grocery stores, restaurants, shops, and other retail activities, reducing car dependency. In order to encourage appropriate development in this area, it is recommended that the City of Kalamazoo develop commercial design guidelines (see Appendix D for recommended guidelines).

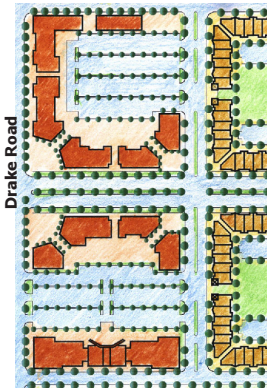
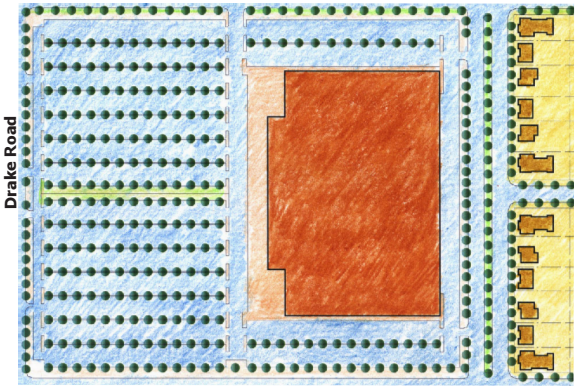


Figure 7 Retail/Commercial Illustration (Recommended)



Large Scale Retail/Commercial Illustration (Not Recommended)

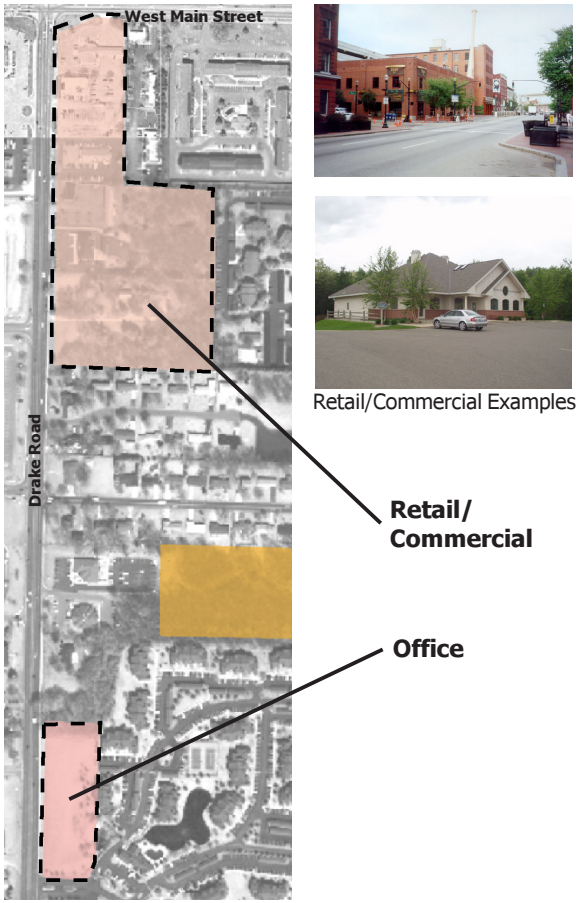
Small Scale Retail/Commercial Examples

Large Scale Retail/Commercial Example with design standards

ADDITIONAL LAND USE RECOMMENDATIONS

E Drake Road Commercial

Parcels along Drake Road between the WMU Foundation parcel and Main Street should be zoned to encourage retail commercial and office uses. The Drake Road and Main Street intersection could develop into a cohesive retail commercial center to serve nearby neighborhoods and create a regional retail destination (See Figure 8).



Retail/Commercial Examples

Figure 8 Drake Road Retail/Commercial Areas

F West Michigan Avenue / Howard Street Retail/Commercial

The plan proposes to rezone a portion of the northeast corner of Knollwood to retail/commercial use. Located at the entrance to WMU and flanked by existing commercial/retail uses on three corners, it is an appropriate retail location to serve the neighborhood and the WMU community, as well as reinforce the importance of the intersection as the place where "Town and Gown" meet (See Figure 9). Neighborhood and student service uses, such as shops and restaurants built around outdoor spaces and plazas, would create an active and festive place. The plan recommends the City establish design guidelines for building placement, ground floor retail use, and public open space for this site (see Appendix D for recommended guidelines).

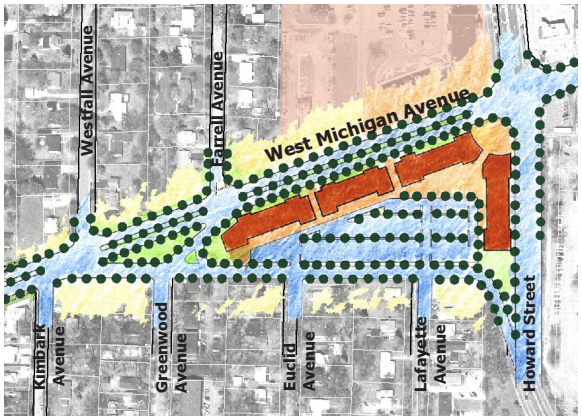
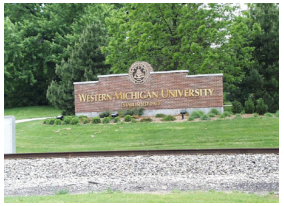


Figure 9 West Michigan Avenue/Howard Street Retail/Commercial Illustration

G West Michigan Avenue Gateway

The Drake and KL intersection is a point of entry to the area from the west side of the City. A gateway design to indicate its importance to the neighborhood would be appropriate (See Figure 10). Proposed improvements to West Michigan Avenue, including a landscaped median, sidewalks and bike paths, would terminate at KL and Drake and contribute to the attractive entry. The plan recommends the northeast corner of the intersection be designated as the location for a gateway element including landscaping, a sculpture, or other elements to announce entry into the community.

Figure 10 West Michigan Avenue Gateway



Gateway Examples

ADDITIONAL LAND USE RECOMMENDATIONS

H West Michigan Avenue Commercial

To establish a mixed-use gateway to the neighborhood and to continue the existing pattern of retail/commercial uses, the plan recommends a number of parcels between Drake Road and Jack Pine Drive be zoned to encourage neighborhood service retail and commercial uses (See Figure 11).

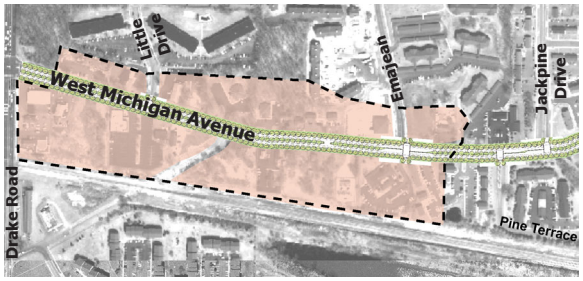


Figure 11 West Michigan Avenue Commercial Areas

I Knollwood Neighborhood Improvement

This area is primarily home to students from WMU, and it has experienced increased conversion of single-family homes to multi-family rentals. The architecture of the residential buildings generally lacks a unified character. The recently enacted change to 7B (Multiple-Family Residential-Campus Area) zoning in the Knollwood area addresses some of these issues, including the requirement that developers adhere to higher design standards.

In addition to recommending the City actively enforce the requirements of 7B zoning, the following policies are recommended:

- Provide curb, gutters, and sidewalks to streets lacking such amenities.
- Enforce laws that prohibit parking on lawns.
- Redevelop available or underutilized sites for student housing.
- Combine/convert rental homes into apartments.
- Provide street lighting and landscaping improvements.
- Maintain Knollwood Park as an active student park.

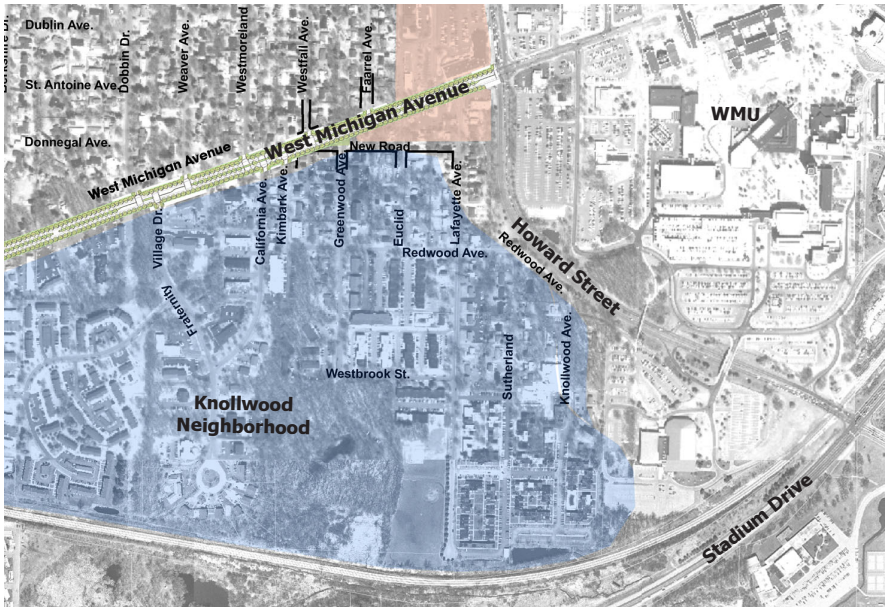


Figure 12 Knollwood Neighborhood

Knollwood Park

ADDITIONAL LAND USE RECOMMENDATIONS

(J) AYSO Soccer Fields

This plan recognizes the vital role that the AYSO soccer complex plays in the development of youth for the entire region. The plan also recognizes the substantial investment made by AYSO in the past and the likelihood for future improvements. Therefore, it is recommended that the AYSO soccer fields remain as an area for active, outdoor recreation (See figure 13). In the event that the soccer fields were made available for private development, it is recommended that they be designated for medium density residential uses, and that Emajean Street be extended northbound to connect to the proposed parkway.

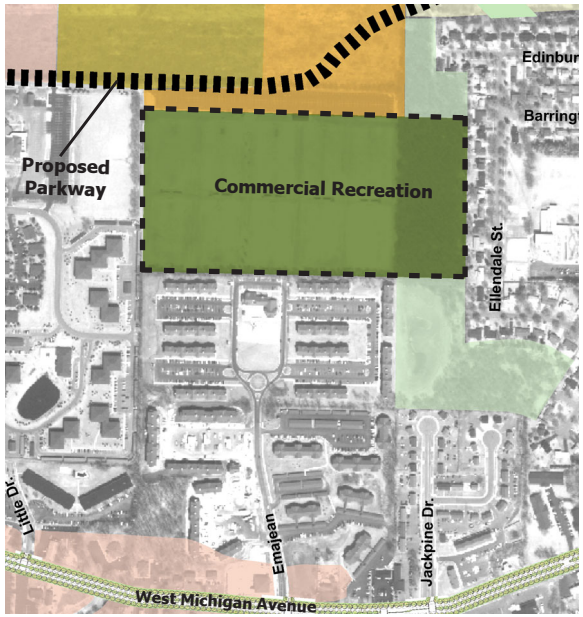


Figure 13 - - - - AYSO Soccer Field

LAND USE CATEGORIES DEFINITION

(Source: City of Kalamazoo Comprehensive Plan, 1998)

Residential

- Low Density: 5 or fewer dwelling units per acre; typically single family structures
- Medium Density: 6 to 12 dwelling units per acre; may include two-family and multi-family structures
- High Density: More than 12 dwelling units per acre

Mobile Home Park: 9 or fewer dwelling units per acre

Office: Business and professional offices and ancillary services

General Commercial: Serves area larger than a neighborhood, usually with shared parking

Neighborhood Commercial: Serves a neighborhood population with smaller stores and limited off street parking

Commercial Recreation: Publicly or privately owned land on which active or passive recreation is available for a fee

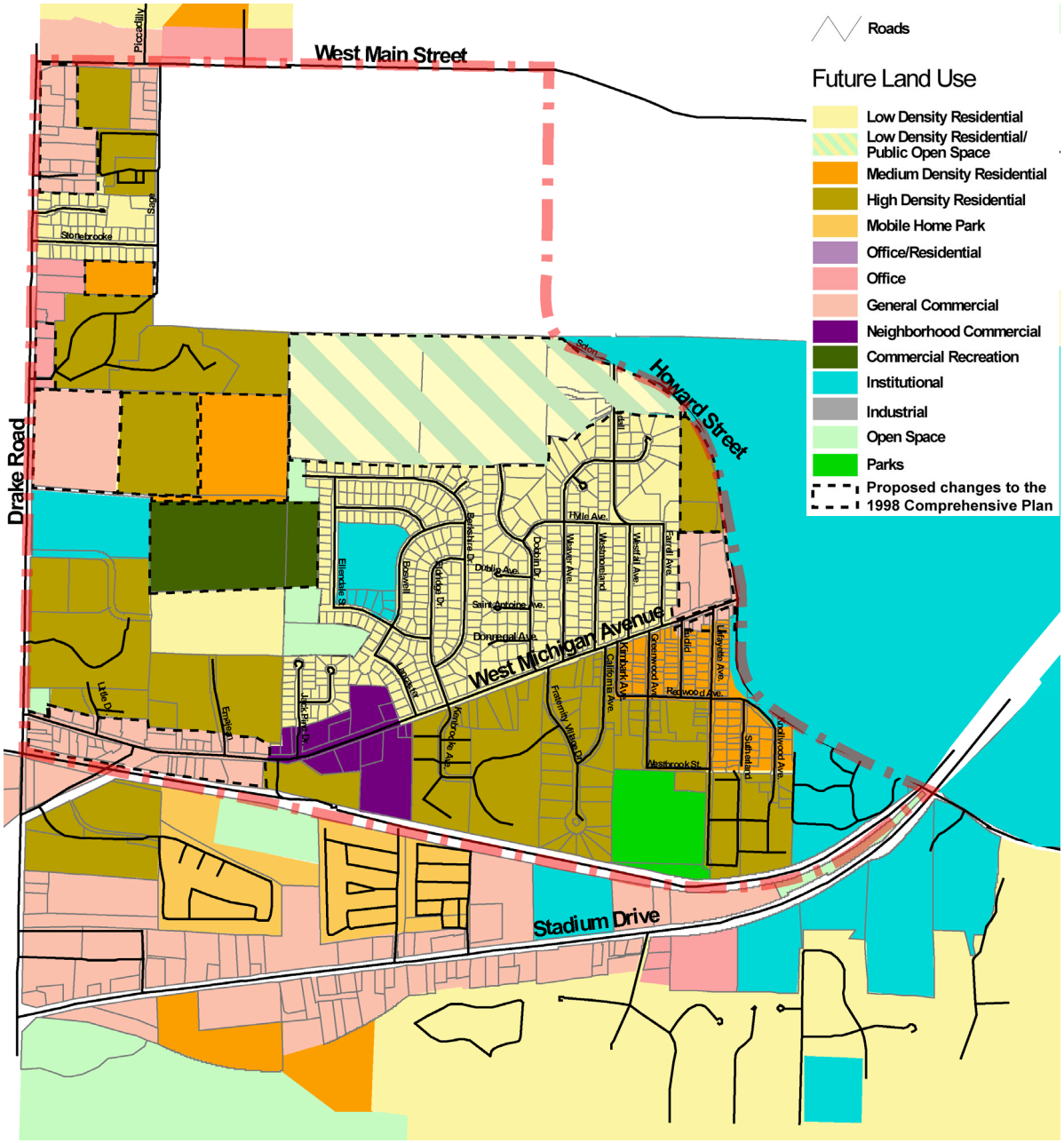
Institutional: Tract of land owned by a non-tax paying entity

Light Industrial: The present Zone 2 Light Manufacturing

Industrial: The present Zone 1 General Manufacturing

Open Space: Tract of land to remain undeveloped and may be used for passive recreation

Parks: Tract of publicly owned land for public use in active or passive recreation



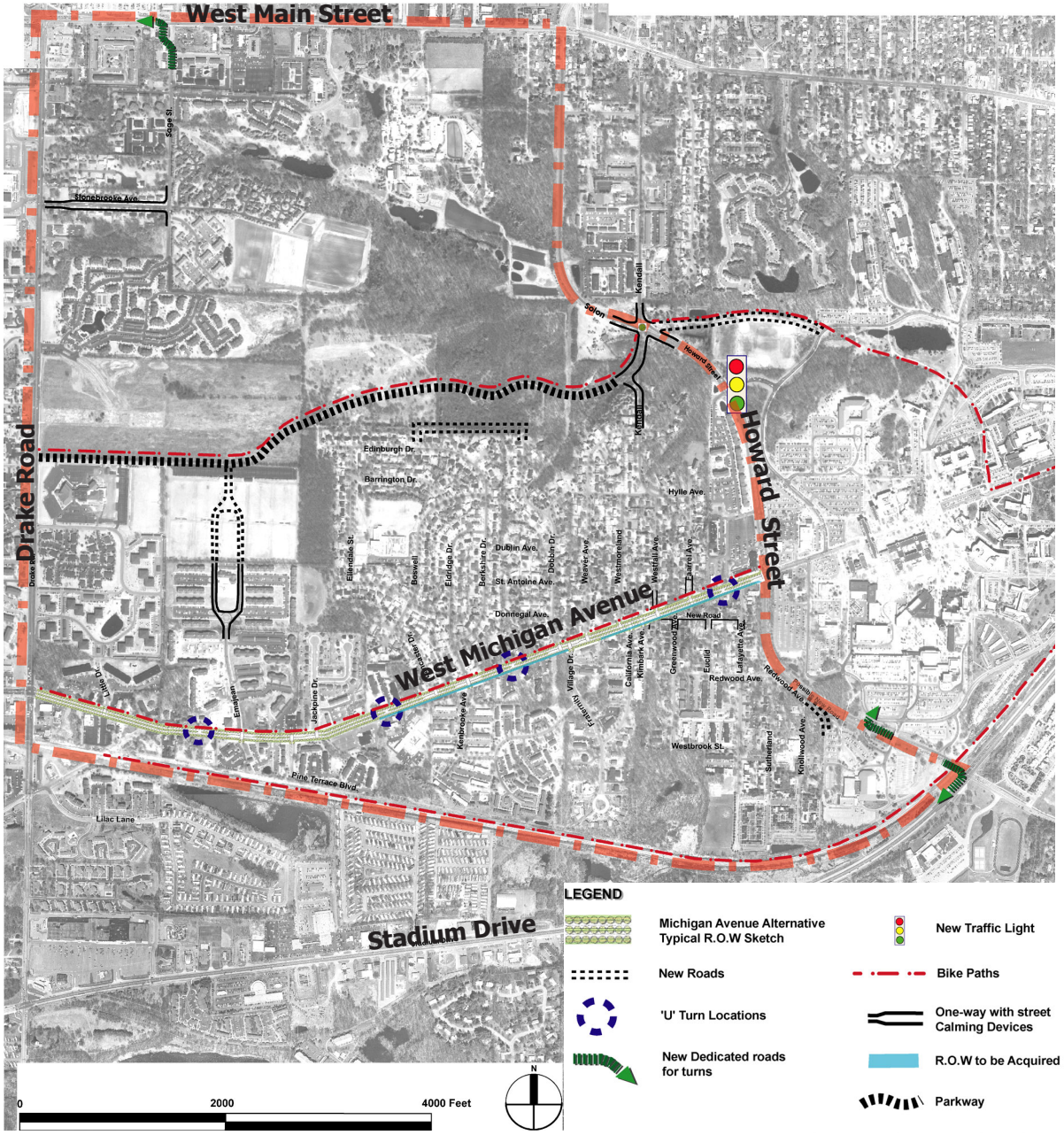
Map 3 Proposed land use plan

OVERVIEW

This section presents key transportation issues and general recommendations for transportation improvements in the study area, including lane improvements on West Michigan Avenue, construction of new east/west and north/south streets, a roundabout, and other intersection improvements. Each recommended improvement is described in greater detail, along with expected impacts to traffic operations and construction cost estimates, in Appendix C. The plan also recommends working closely with WMU as it implements their Master Plan to provide seamless improvements along West Michigan Avenue as it enters the campus.

A Note on Traffic Data

The West Side Area Plan's review of traffic issues was based on data from the Traffic Impact Study report for the Arboretum Apartment development at West Michigan Avenue and Emajean Drive (The Arboretum Apartment Traffic Study), submitted to WMU in June 2001. All traffic data for that study was collected during school hours in January 2001 and included 13 intersections along M-43 (West Main Street), Drake Road, Howard Street, and West Michigan Avenue. No new traffic data was collected for the West Side Area Plan.



Map 4 Concept Plan: Transportation

TRANSPORTATION POLICY RECOMMENDATIONS

- Create incentives for using alternate modes of transportation (transit, walking, biking) and disincentives for private auto dependency.
- Provide alternative modes of transportation.
- Provide bus transfer stations and commuter parking.
- Increase Metro Transit shuttle service between WMU and adjacent neighborhoods.
- Restrict on-campus parking passes for students living within 1.5 miles of WMU campus.
- Provide safe streets for bikes and pedestrians, by providing sidewalks and dedicated bike lanes.
- Enhance the physical quality of public streets and sidewalks with landscaping and regular maintenance.
- Coordinate land use and transportation decisions to encourage walking to shops, campus, and neighborhoods.
- Provide sidewalks along all roads in the study area.

WEST MICHIGAN AVENUE

The Plan proposes to reconstruct West Michigan Avenue with a central raised median and two through lanes, plus a bike-only lane in each direction (See Figures 14 and 15). Median openings allowing full turning movements are recommended at all signalized intersections and some unsignalized intersections. U-turn median openings should be provided at select locations along West Michigan Avenue for turnaround maneuvers. The size, configuration and location of the U-turns and intersection median openings will be determined based on future detailed traffic studies along West Michigan Avenue.

Bike lanes on both sides of West Michigan Avenue are recommended to separate bicycle and pedestrian traffic and to encourage an increase in bicycle trips to and from campus.

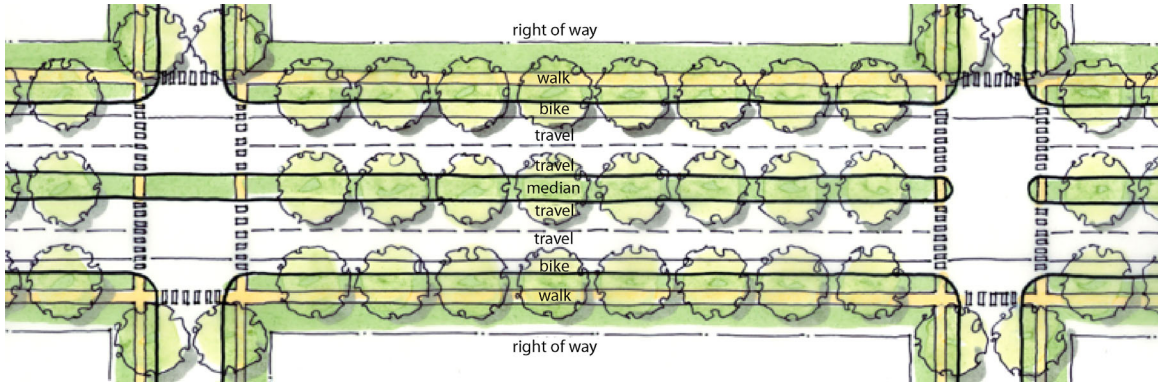


Figure 14 Typical road plan at West Michigan Avenue

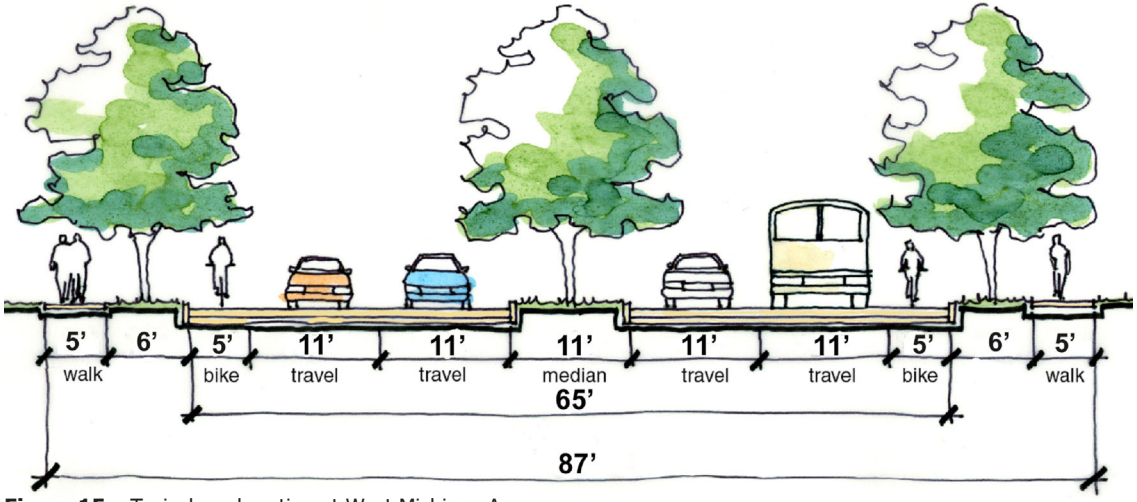


Figure 15 Typical road section at West Michigan Avenue

Restricted Left Turns

A boulevard on West Michigan Avenue helps to reduce traffic conflicts by physically restricting left turn movements to median openings only (See Figure 16). This restricted access will reduce delays to through traffic on the eastern section of West Michigan Avenue, where the Arcadia and Knollwood roadways are off-set from one another. Currently, left turning traffic stops or slows in the through lane to wait for gaps in opposing traffic before completing a turn.

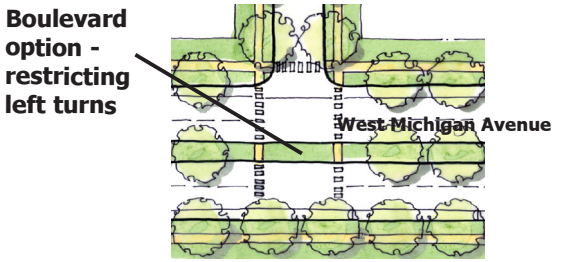


Figure 16 Typical restricting turns detail illustration

Dedicated Left Turn Lanes

Median openings would include exclusive lanes on West Michigan Avenue for left turn maneuvers (See Figure 17). These "turn bays" would remove turning traffic from the through lanes and provide greater capacity for traffic flow through intersections.

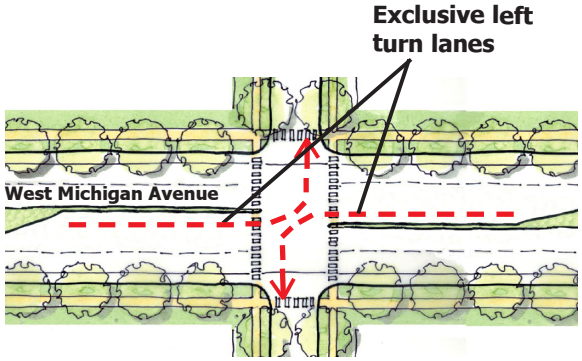


Figure 17 Typical dedicated turning detail illustration

RIGHT-OF-WAY (R.O.W) ACQUISITION

The proposed improvements to West Michigan Avenue will require additional R.O.W. at certain locations (See Figure 18). The existing R.O.W. for West Michigan Avenue from Drake Road to Howard Street varies from 66 feet to 100 feet.

Detailed studies will be required to determine the final locations and land areas for acquisition. The following map shows the approximate locations where the existing R.O.W. would not accommodate the proposed road section.

Figure 18 Additional R.O.W required along West Michigan Avenue

PARKWAY

The proposed parkway through the WMU Foundation parcels is recommended to be a two-lane, east/west connection from Drake Road to Howard Street. The parkway will be accessible to the Arcadia neighborhood via a northern extension of Emajean Street and a connection of Kendall Avenue from Howard Street to the parkway (See Figure 19).

The location and capacity of the parkway is expected to divert 10 - 15 percent of the traffic from West Michigan Avenue. It is also expected to be able to carry all of the traffic generated from the proposed new development on the WMU Foundation parcels.

To accommodate traffic volumes diverted from West Michigan Avenue, a traffic signal will likely be required at the intersection of the proposed parkway with Drake Road. Access to public open space through pedestrian and bike underpasses should be located at appropriate locations along the parkway.

Underpass Example

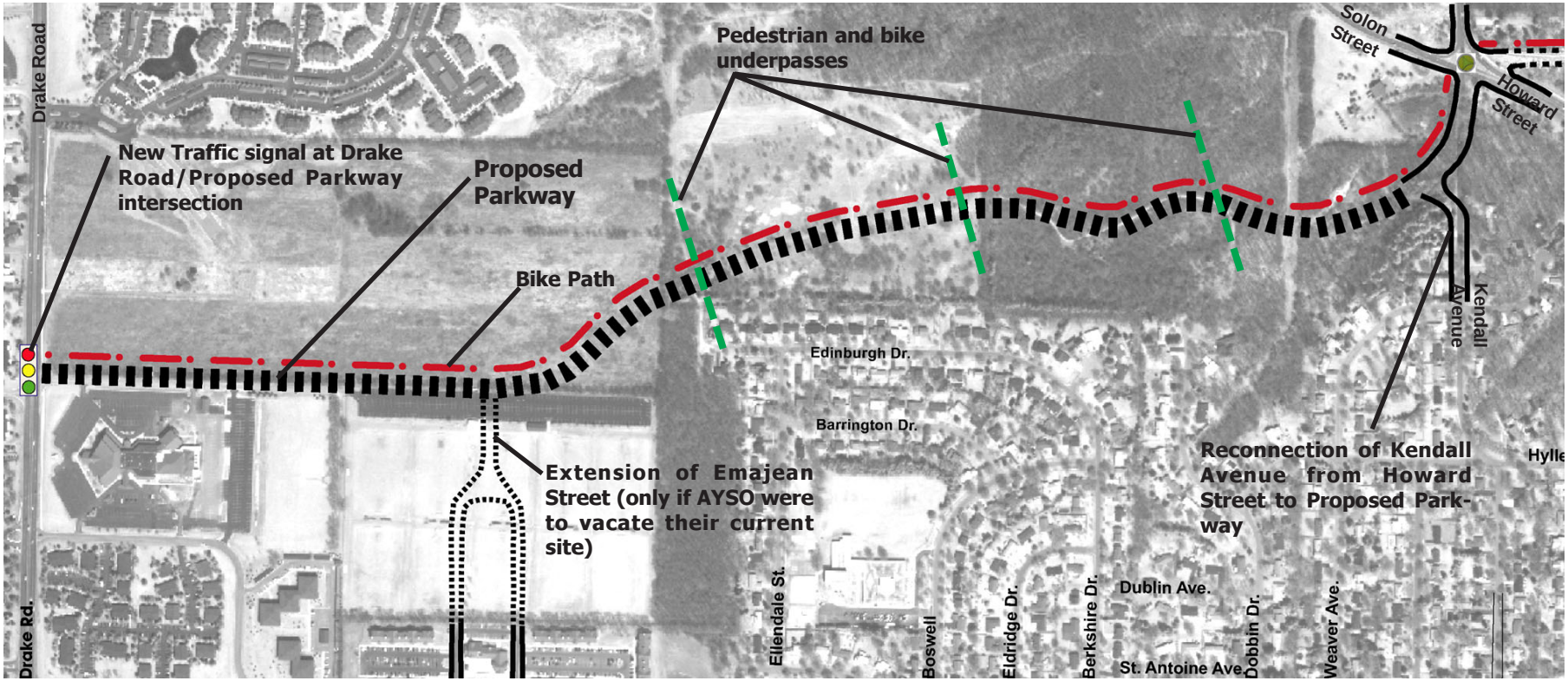


Figure 19 Proposed Parkway through West Michigan University parcels

NEW CONNECTOR STREETS

Extend Emajean Street

The plan recommends Emajean Street be extended further north from West Michigan Avenue to connect with the proposed parkway (extending from Drake Road to Howard Street) and to provide another north/south connection (See Figure 20). This connection would primarily service the existing student housing developments and the proposed residential area flanking the new road.

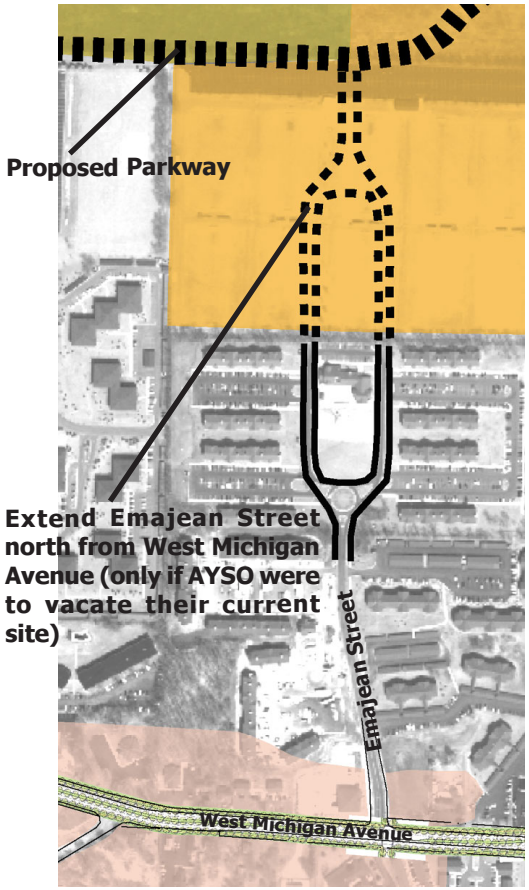


Figure 20 Extend Emajean Street

Redwood Avenue Extension

The plan recommends that Redwood Avenue be extended from Knollwood Avenue to the Lawson Ice Arena, parallel with Howard Street (See Figure 21). This extension should be designed as a two-lane roadway restricted to bus, pedestrian and bicycle traffic accessing the Knollwood neighborhood and the WMU campus.

More efficient bus, pedestrian, and bicycle access to campus will encourage more Knollwood neighborhood residents to utilize alternative modes of transportation.

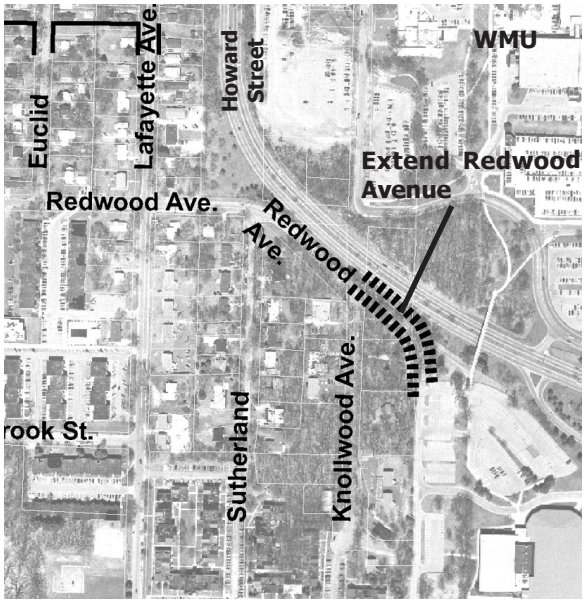


Figure 21 Redwood Avenue Extension

Dobbin Drive and Edinburgh Drive Extension

The plan proposes a new street in the Arcadia Neighborhood connecting Dobbin Drive and Edinburgh Drive (See Figure 22). This will improve access between the two halves of the Arcadia Neighborhood.

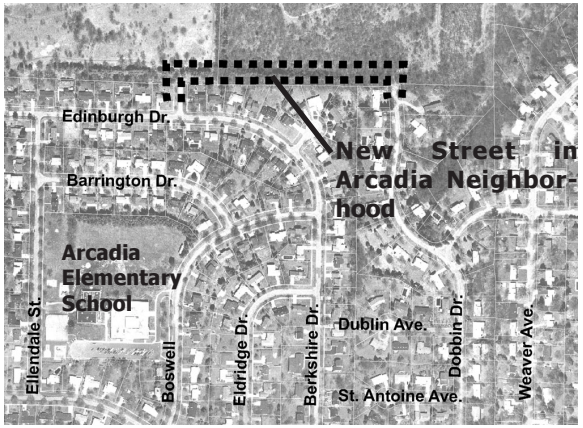


Figure 22 New Connector Street in Arcadia Neighborhood

NEW CONNECTOR STREETS

Parkway to WMU Extension

The plan recommends a new access road to the WMU campus by extending the proposed parkway across Howard Street and connecting it to Rankin Avenue (See Figure 23). This would provide direct access to the campus on the north and help reduce traffic at the Howard/West Michigan intersection. Currently, a large number of vehicular and pedestrian traffic passes through this intersection to access the campus.

Howard Street Bypass

The plan recommends reconfiguring the roads in the southwest corner of West Michigan Avenue/ Howard Street intersection. A new roadway, extending due east from Westfall/Michigan Avenue to east of Lafayette Avenue (See Figure 24) is recommended as a bypass to Howard Street for southbound traffic. This road provides an alternate access to traffic from West Michigan Avenue heading south on Howard Street and helps reduce traffic at the Howard/West Michigan intersection. It would also provide access to the proposed new commercial and retail uses at West Michigan Avenue and Howard Street.

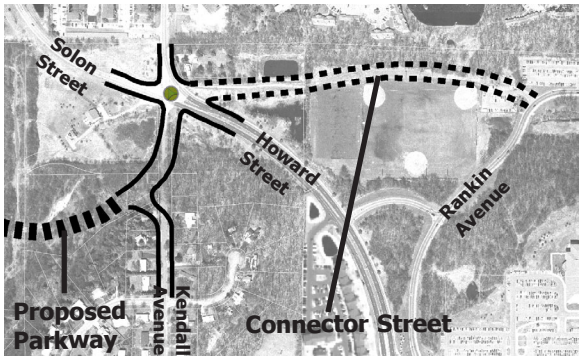


Figure 23 New Connector Street to West Michigan University Campus

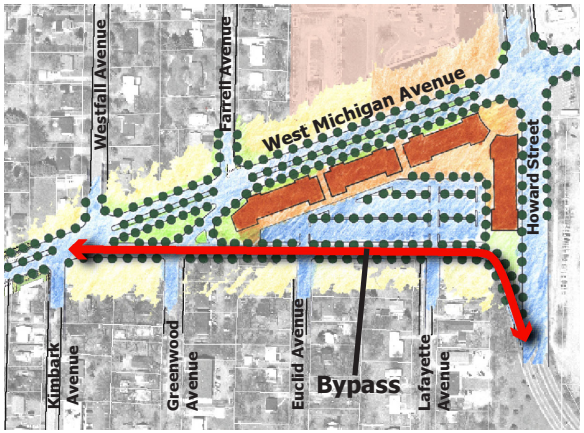


Figure 24 Howard Street Bypass Road

TRAFFIC CONTROL

Euclid and Lafayette Avenues Closure

The plan recommends closing Euclid and Lafayette Avenue entrances from West Michigan Avenue (See Figure 25) to reduce traffic conflicts and make it safer for cars, bikes and pedestrians. Currently, the two streets are in close proximity to the busy Howard Street/West Michigan Avenue intersection, causing traffic conflicts with vehicles turning in and out of those streets. Vehicular safety and pedestrian safety is compromised by this conflict, since most pedestrian traffic heading to or coming from WMU uses the sidewalk along the south side of West Michigan Avenue. Closing Euclid and Lafayette Avenues at the West Michigan Avenue entrance eliminates current traffic conflicts and improves vehicle and pedestrian safety. Access to the two streets would be provided by the new proposed Howard Street bypass.

Under the proposed street configuration, the Greenwood Avenue access to West Michigan Avenue would be closed. The traffic signal currently located at the intersection of Greenwood Avenue and West Michigan Avenue is to be relocated at the intersection of Westfall Avenue and West Michigan Avenue (See Figure 25). The signal controls traffic from Lafayette, Euclid and Greenwood Avenues, exiting onto West Michigan Avenue westbound at a signalized intersection.

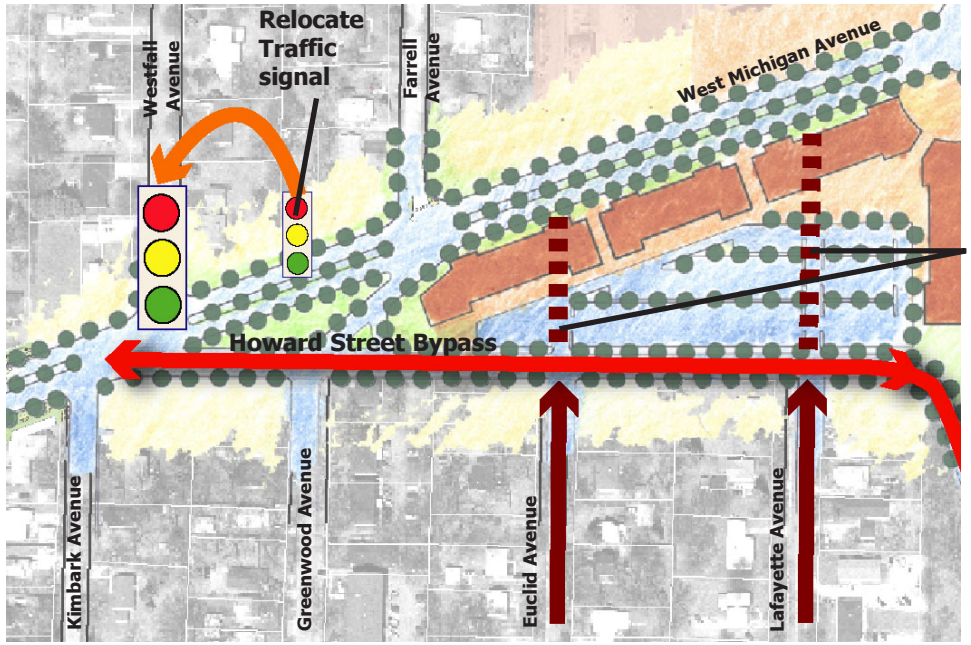


Figure 25 Close Euclid and Lafayette Avenues, and Relocate traffic light

Pedestrian Only Crossing

At the intersection of West Michigan Avenue and Howard Street, the plan recommends timed traffic lights to allow a pedestrian-only crossing cycle.

TRAFFIC CONTROL

Howard Street / Stadium Drive Right Turn Lane

This intersection operates with long delays and traffic back-ups during peak hours. This is due to the heavy volume of turning traffic between the north side of Howard Street and the south side of Stadium Drive. Traffic congestion would be alleviated at this intersection by constructing additional turn lanes. The following lane improvements are recommended:

- Right turn lane and second left turn lane on southbound Howard Street (See Figure 26a)
- Second left turn lane on northbound Howard Street (See Figure 26b)
- Second left turn lane on eastbound Stadium Drive (See Figure 26c)

The additional turn lanes at this intersection will encroach on the existing railroad crossing over Howard Street on the north side of the intersection. The improvements will require close coordination with the Michigan Department of Transportation and the railroad agency concerning right-of-way, railroad crossing lights and gates, and intersection signal timing.

The cost of these improvements will depend heavily on the length of each dedicated turn lane, the cost of railroad signal equipment, and other needed traffic signal equipment. A more detailed study will be required to develop an accurate estimate of costs.

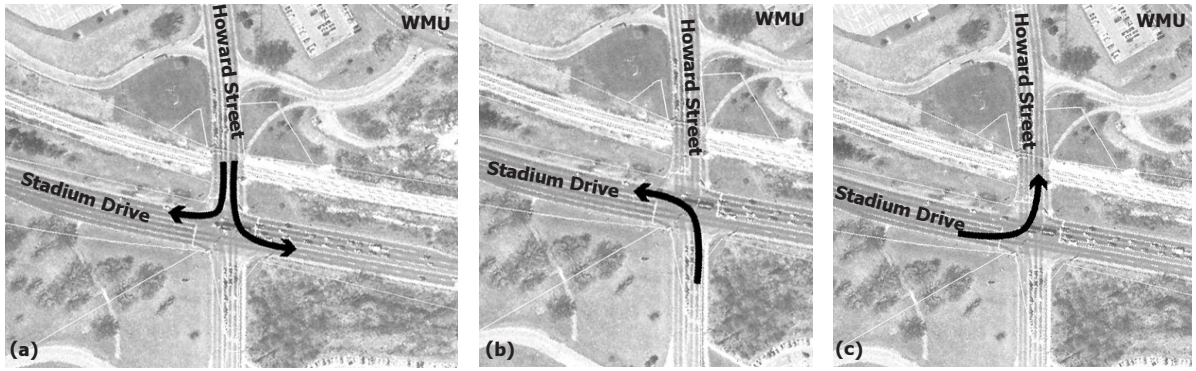


Figure 26 Howard Street to Stadium Drive turning illustration

Howard Street at Stadium Drive

North bound Howard Street to WMU Campus

Howard Street / WMU Campus Right Turn Lane

The plan proposes an exclusive right turn lane from northbound Howard Street to the WMU entrance at Crane Lane (See Figure 27). Currently, traffic comes to a complete standstill on Howard Street as cars wait to enter the campus. A right turn lane leading to this campus entrance will allow vehicles to move out of the through lanes on Howard Street before decelerating to a stop.

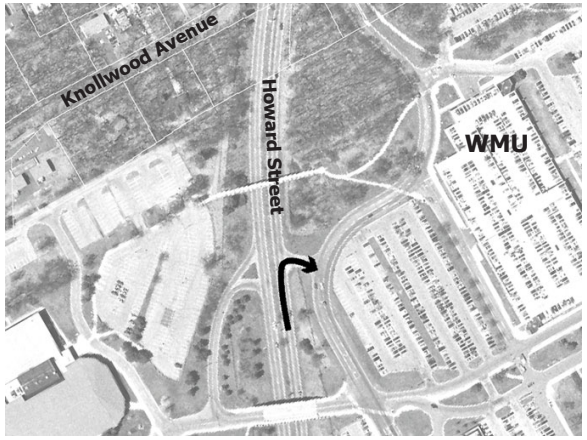


Figure 27 Howard Street/WMU Campus right turn lane illustration

TRAFFIC CONTROL

Roundabout

To facilitate traffic movement at the intersection of Kendall/Solon/Howard and the potential new road into WMU, the construction of a five-leg roundabout is recommended. A roundabout would improve the area aesthetically and more easily accommodate traffic than a stop sign or signalized intersection.

The proposed roundabout would consist of: one-way southbound Solon, one-way northbound Kendall Avenue, two-way Howard Street, two-way proposed parkway, and a potential new two-way roadway into Western Michigan University's campus (See figure 28).

Kendall Avenue, south of Howard Street would be reconstructed to "T" into the parkway, with a stop sign. The combined traffic from Kendall Avenue and the parkway enters the proposed roundabout at Howard Street.

The roundabout will lower vehicle speeds at the Kendall/Solon/Howard intersection by replacing the existing uncontrolled through movements for southbound Solon/Howard and northbound Howard/Kendall.

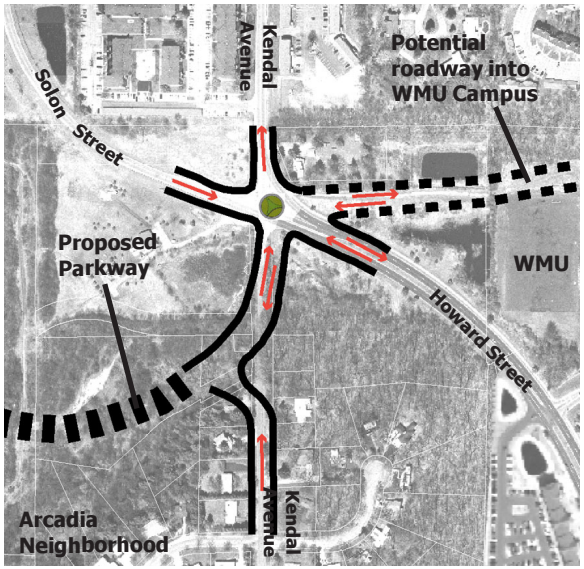
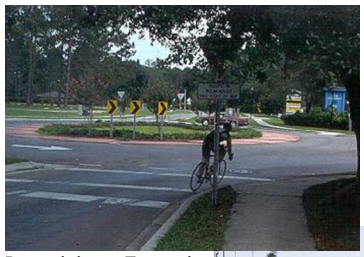


Figure 28 The roundabout and traffic movement illustration



Roundabout Examples

Stonebrooke Avenue Conversion to One-Way Street

Stonebrooke Avenue and Sage Street are currently being used as a bypass to the busy intersection at West Main Street/Drake Road. This cut-through pattern is evidenced by the heavy turning movements at the intersection of Stonebrooke Avenue/ Drake Road. (2001 traffic counts show about 320 vehicles per hour turning to and from the east on Stonebrooke Avenue and south on Drake Road). To discourage this cut-through traffic and improve safety on Stonebrooke Avenue, the plan recommends Stonebrooke be converted from a two-way roadway to one-way only (See figure 29). In addition, traffic calming devices such as narrowing of entrances, paving patterns, striping and speed bumps should be considered. This recommendation should be implemented in conjunction with West Main Street/Sage Street intersection improvements (See figure 30, page 21).

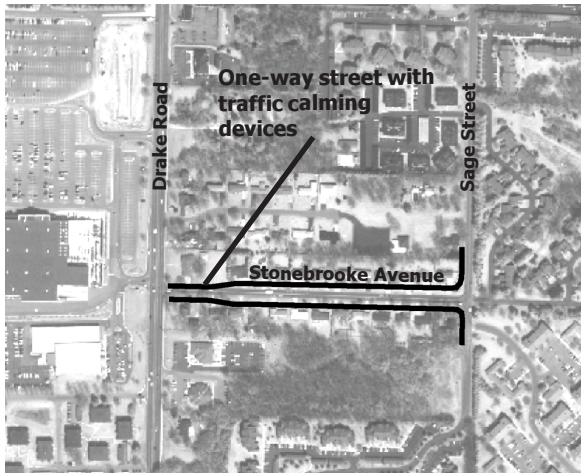


Figure 29 Stonebrooke Avenue conversion to one-way street illustration

TRAFFIC CONTROL

West Main Street/Sage Street Intersection

In conjunction with the conversion of Stonebrooke Avenue to one-way movement, the intersection at West Main Street and Sage Street (See Figure 30) should be reconstructed to allow traffic access for vehicles turning left from Sage Street onto west-bound West Main Street. Currently, this movement is prohibited. To reduce traffic backup at this intersection, Sage Street should be realigned with the signalized Piccadilly Road, allowing all movements at Sage Street to be controlled by a traffic signal.

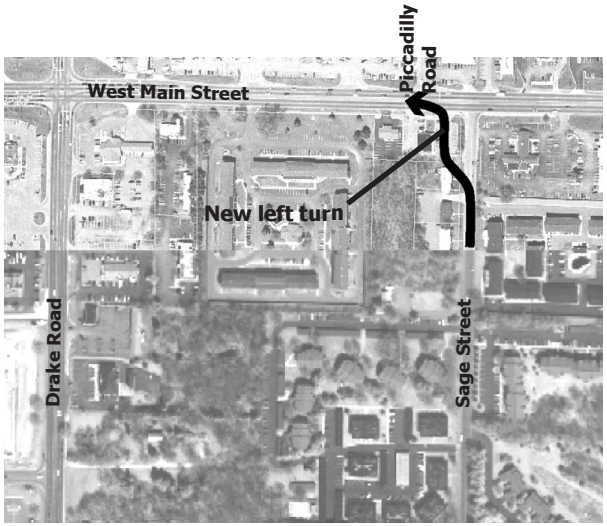


Figure 30 West Main Street/Sage Street intersection improvement

Commuter parking lots

To encourage transit ridership and to reduce WMU bound vehicles on West Michigan Avenue, the plan recommends the City, in collaboration with WMU, identify sites for commuter parking and a bus turnaround (See Figure 31). An area somewhere near the West Michigan/Drake Road intersection or on the western part of the WMU Foundation Parcels, should be studied.

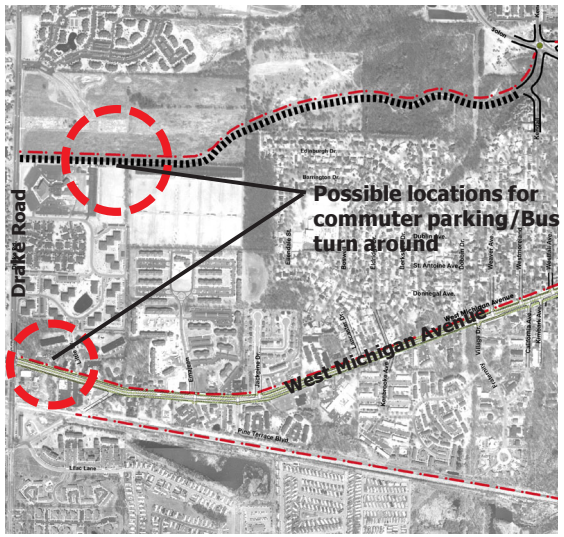


Figure 31 Commuter parking lot and bus turn around locations

APPENDIX A

PLANNING PRIORITIES SURVEY

On October 9, 2002, a planning priority survey was conducted at a public workshop attended by approximately 50 people, including residents, city staff and planning consultants. The purpose of the workshop was to discuss key issues related to the West Side Area Plan and to identify priorities among the key issues. After a presentation and discussion of seven categories of key issues, a survey was distributed asking participants to identify the priorities for the West Side Area Plan.

The following questionnaire was used to conduct the survey:

Based on the discussions at this meeting, and your own knowledge of the area, please indicate the priorities for the West Side Area Plan by completing the Planning Priorities form as follows:

1. State your affiliation (resident, business owner, student, etc.) in the space provided.

2. Rank the 7 key issues listed on page 2 in order of priority by indicating a number in the box provided (1 being highest priority).

3. Next, for each of the 7 key issues, rank the specific issues listed beginning on page three (1 being highest priority).

4. If you have additional comments, please use the space provided at the end.

1. Affiliation

2 Key Issues

Rank the following 7 key issues in order of priority by indicating a number in the box provided (1 being highest priority).

Ranking Order

- NEIGHBORHOOD CHARACTER/LAND USE
- SHOPPING
- MICHIGAN AVENUE
- GATEWAYS
- TRANSPORTATION ACCESS
- ARBORETUM FUTURE USE
- STUDENT HOUSING

3. Specific Issues:

Rank the following specific issues in order of priority by indicating a number in the box provided (1 being highest priority).

NEIGHBORHOOD CHARACTER
- Infrastructure (roads, sidewalks, curbs, gutters)
- Open Space
- Architecture
- Safety
- Parking

SHOPPING
- Commercial at Michigan/Howard
- Commercial along Michigan Avenue
- Commercial at Drake/Michigan

MICHIGAN AVENUE
- Pedestrian/Bike Access
- Roadway Widening
- Street Amenities (signage, lighting, median)

GATEWAYS
- Michigan/Drake
- Michigan/Howard
- Drake/Main
- Main/Howard

TRANSPORTATION ACCESS
- Road Network
- Transit Services
- Pedestrian & Bike Ways

ARBORETUM FUTURE USE
- Future Development
- Open Space
- Through Access

STUDENT HOUSING
- New Housing On Campus
- New Housing Off-Campus

Comments:

SUMMARY

Student Housing was identified by the survey as the highest priority among the 7 key issues, with 63% of people surveyed ranking it as the # 1 issue. Issues that ranked as the top three priorities, i.e., issues with a combined ranking of #1, #2 or #3, were Student Housing (89%), Michigan Avenue (60%), and Transportation Access (56%) respectively.

The lowest priority indicated by the survey was Shopping, with 67% of people giving it a ranking of 7. Issues ranked as the least three priorities, i.e., issues with a combined ranking of #5, #6 or #7, were Shopping (93%), Gateways (90%), and Neighborhood Character/Land Use (41%) respectively.

Specific Issues

In addition to ranking the seven key issues, participants were further asked to prioritize specific issues related to each of the key issues. The following is a summary of specific issues for each of the top three key issues identified as priorities:

Student Housing
- On Campus
- Off-Campus

While student housing was identified as the # 1 priority, 92% indicated new on-campus housing as the priority for new student housing. This was in comparison to new off-campus housing in which only 8% surveyed identified it to be a priority.

Michigan Avenue
- Pedestrian/Bike Access
- Roadway Widening
- Street Amenities (signage, lighting, median)
- Safety

In regards to Michigan Avenue, safety was identified as the priority with 81% identifying it as the #1 or #2 priority. Next to safety, Roadway Widening and Pedestrian/Bike Access were identified as the most important priorities receiving a ranking of #1 or #2 by 55% and 50% surveyed respectively.

Street Amenities was identified as the least priority with 64% surveyed ranked it as the 3rd or 4th priority out of 4 categories.

Transportation Access
- Road Network
- Transit Services
- Pedestrian & Bike Ways

55% of people surveyed identified transit service as the #1 priority regarding transportation, followed by Pedestrian & Bike Ways identified by 33%. Road Network was identified as the least priority with 53% giving it a ranking of 3 out of 3 categories.

APPENDIX B

ALTERNATIVES - TRAFFIC REPORT

This document addresses the general traffic impacts related to each of the three alternatives developed for the West Side Area Plan. These alternatives include the Student Housing Alternative, Transportation Alternative, and Michigan Avenue Alternative.

Student Housing Alternative

Any additional roadways that need to be constructed as part of the student housing developments could cost about $160 per lane per foot. This is a probable construction cost based on conceptual-level schematics and may change as more detailed information becomes known.

General Assumptions:
- 2 bedrooms per unit
- 15-20% use Metro Transit City Bus System
- 20-30% walk instead of drive
- 50% enter and 50% exit development in evening peak hour (highest volume hour)

Southwest of the Solon Street/Kendall Avenue/ Howard Street intersection (100-200 units)
- Relatively low traffic volumes, most staying on Howard to access Main Street, Stadium Drive, or campus.
- Campus-bound traffic would likely use Valley rather than Michigan Avenue, since it is closer to the proposed development, unless southbound left turns at Valley are overly congested (no signal at Valley).
- Minimal impact to Michigan Avenue

South of Stadium Drive, east of the Howard Street/ Stadium Drive intersection (200-300 units)
- Low-medium traffic volumes, most traveling on Stadium Drive to get to campus or other areas.
- Proximity to campus would encourage walking trips
- Minimal impact to Michigan Avenue

Northwest of the Howard Street/Stadium Drive intersection (300-500 units)
- Medium traffic volumes, most traveling along Michigan Avenue and/or Howard, depending on access locations.
- Proximity to campus would encourage walking trips
- Access on Michigan Avenue would increase westbound left turns onto Greenwood (signal location), which could necessitate exclusive left turn lane to reduce backups on the Michigan Avenue through lane.
- Access on Michigan Avenue could increase "illegal" westbound left turns onto Lafayette.
- Additional turning movements at unsignalized streets on Michigan Avenue would experience increased delays due to congestion on Michigan Avenue.

Transportation Alternative

The probable construction cost is about $10 to $12 million dollars based on the conceptual-level schematics developed for this alternative.

- The location and capacity of the Arboretum Boulevard could divert 10-15 percent of the traffic from Michigan Avenue (based on existing travel patterns and turning movement percentages of PM peak hour traffic on Michigan Avenue).
- To accommodate the traffic volumes diverted from Michigan Avenue, a traffic signal may need to be located at the Arboretum Boulevard intersection with Drake Road (signal warrant analysis and capacity analysis would need to be conducted).
- A five-leg roundabout (Arboretum Boulevard would join/connect with existing Kendall Avenue), with Kendall Avenue and Solon Avenue converted to two-way operation would continue to provide free-flow operation of Howard Avenue, while also allowing more efficient movement of the Arboretum Boulevard onto the main roadways. The existing stop-controlled intersection, with Howard Avenue splitting into the one-way pair of Kendall Avenue and Solon Avenue could experience higher delays with increased traffic volumes to/from the Arboretum Boulevard.

Michigan Avenue Alternative

The following indicates the traffic impacts to several Michigan Avenue roadway improvements. These improvements are expected to be constructed from Drake Road to Howard Street:

Add Bike-Only Lanes (estimated cost: $2.5M)
- Provides better facilities for bicyclists.
- Encourages more students to travel by this mode instead of by automobile.
- Reduction in vehicle traffic volumes is minimal.

Add Bike-Only Lanes plus Raised Median (estimated cost: $5.0M)
- Benefits to bicyclists, minimal reduction in traffic volumes.
- Except at median openings for signalized intersections, all left turns from the neighborhoods would become "indirect" (to go left, vehicles would make a right turn, then U-turn in the median opening).
- Accommodates more turns from neighborhood streets since vehicles would need shorter gaps in traffic (time when there are no oncoming cars) to complete the turn.
- Maintains access to Michigan Avenue with indirect lefts, but with better/safer control of turning movements.

- Controls left turns from Michigan Avenue into the neighborhoods to the signalized intersections, reducing delays to through traffic on Michigan Avenue.

Add Center Left Turn Lane where Absent (estimated cost: $1.5M)

- Widening Michigan Avenue to include a center left turn lane between Howard and Drake will remove left turn movements from through lanes, reducing delays to through traffic on Michigan Avenue. On busy streets such as Michigan Avenue, even low left turn volumes can temporarily block a through lane while they wait for gaps in oncoming traffic. When this happens, the through lane becomes what is called a "defacto left turn lane," reducing the usable capacity of the through lanes from two lanes to one.
- The center turn lane allows for turns to be conducted from either direction on Michigan Avenue. This is useful for areas where the staggered neighborhood roadways to Michigan Avenue make constructing exclusive left turn lanes impractical.
- The center left turn lane would become an exclusive left turn lane at the signalized intersections, increasing the capacity and improving the efficiency of the intersections.

Add Center Left Turn Lane where Absent plus Bike-Only Lanes (estimated cost: $2.7M)

- Benefits to bicyclists, minimal reduction in traffic volumes.
- Improves flow of traffic on Michigan Avenue by removing left turn traffic movements from the through lanes (see center left turn lane benefits in section above).

Add Bus-only Lanes (estimated cost: $2.8M)

- Bus-only lanes would allow for largely uninterrupted traffic flow of buses traveling along Michigan Avenue.
- Adding bus-only lanes could possibly encourage more students to travel by this mode instead of by automobile; however, the expected reduction in vehicle traffic volumes is minimal.
- Bus-only lanes would create exclusive right turn lanes for traffic at intersections along Michigan Avenue, thus removing right turn traffic from the through lanes. Since right turn movements typically don't block traffic as much as left turn movements (right turns don't need to wait for gaps in traffic before making their turn), this is expected to only minimally impact/improve traffic operations on Michigan Avenue.
- Due to the heavy turning movements at the Michigan/Howard intersection, eastbound buses may need to merge back into the regular lanes (for those buses turning left on Howard or staying straight to go on campus) far in advance of the intersection to avoid the traffic queues that typically occur.
- Enforcement of bus-only lane (keeping automobiles from traveling along the bus lanes) may be difficult.

Four-Lane Cross-section with Separated One-Way Local Access Roads (estimated cost: $6.5M)

- Local access roads would separate local traffic from the heavy through traffic on Michigan Avenue.
- The raised landscaped median between Michigan Avenue and the local access road would prohibit left turns from the neighborhood streets, except at the signalized intersection locations. Controlling left turns at the signalized intersection would provide better/safer control of turning movements.
- Like Michigan Avenue, the local access road would be controlled (stopped) by the traffic signals. This gives the local access road the ability to: (1) stay on the local access road, (2) merge with Michigan Avenue, or (3) U-turn onto Michigan Avenue. The U-turn would be effective for neighborhood vehicles that want to turn left onto Michigan Avenue but can't due to the raised median barriers.
- Bike lanes and sidewalks would be located on the low-volume local access roads instead of the higher-volume Michigan Avenue, creating a safer environment for pedestrian and bicycle travel.
- May consider adding short left-turn only lanes at the signalized Michigan Avenue intersections to prevent the through lane from becoming a "defacto left turn lane" (when left turns block the through lane while waiting for gaps in oncoming traffic).
- Prior to Howard Street and Drake Road, the local access road would become a right turn only lane. For local vehicles choosing to turn right at these intersections, the local access road would bypass the congestion occurring on Michigan Avenue. Local access road vehicles choosing to turn left or remain straight through would need to merge onto Michigan Avenue prior to the Howard Street or Drake Road intersections.

APPENDIX C

FINAL TRAFFIC IMPACTS REPORT

This document addresses the general traffic impacts of the Draft Plan developed for the West Side Area Plan.

Traffic Data

The traffic review of the Draft Plan was based on data from the Traffic Impact Study report for the Arboretum Apartment Development at West Michigan Avenue and Emajean Drive (herein referred to as the Arboretum Apartment Traffic Study) submitted to Western Michigan University (WMU) in June 2001. All traffic data for this study was collected during school hours in January 2001, and included 13 intersections along M-43 (West Main Street), Drake Road, Howard Street, and Michigan Avenue. No new traffic data was collected for the study of the West Side Area Plan.

West Side Area Transportation Plan

The transportation system plan includes lane improvements to West Michigan Avenue, construction of new east/west and north/south streets, a roundabout, and other intersection improvements. Each proposed improvement of the Draft Plan is described below with construction cost estimates and expected impacts to traffic operations.

Michigan Avenue - Four-Lane Boulevard with Bike Lanes

Michigan Avenue would be reconstructed with a center raised median and two through lanes plus a bike-only lane in each direction. Median openings allowing full turning movements would be located at all signalized intersections and some unsignalized intersections. U-turn median openings would be provided at select locations along West Michigan Avenue for turnaround maneuvers.

Estimated Probable Construction Cost: $5.8 million

The cost estimate includes existing pavement removal, regrading, lighting, new pavement, curb & gutter, sidewalk, utilities, maintenance of traffic, signing, signals, striping, etc.

Traffic Impacts/Design Details:

- In addition to aesthetic enhancements, a boulevard cross-section on West Michigan Avenue would help to reduce traffic conflicts by physically restricting turning left turn movements from occurring anywhere but median openings. This restricted access will be most beneficial to the eastern section of West Michigan Avenue, where the neighborhood roadways are off-set (do not line up) from one another.
- Controlling left turns from Michigan Avenue into the neighborhoods by restricting them to the intersections with median openings would reduce delays to through traffic on Michigan Avenue. Currently, left turning traffic stops or slows in the through lane to wait for gaps in opposing traffic before completing their turn.
- Median openings would include exclusive lanes on West Michigan Avenue for left turn maneuvers. The exclusive lanes, or turn bays, would remove turning traffic from the through lanes and provide greater capacity for traffic flow through the intersection.
- U-turn median openings would provide vehicle access to driveways, neighborhood roads, and businesses on the opposite side of the raised median barrier. The U-turn should be designed to accommodate the turning radius of passenger cars (at a minimum). For a four-lane boulevard, the median should be at least eight feet wide to accommodate a passenger car turning from the inside through lane and encroaching on the shoulder lane (in this case, it would be the bike-only lane and possibly a safety hazard). A median width of 18 feet would allow for a passenger car to turn from the inside through lane directly into the outside through lane of the opposite direction, without encroaching into the bike lane.
- Bike lanes on either side of West Michigan Avenue would separate bicycle and pedestrian traffic, and could encourage an increase in bicycle trips to and from campus.

Reconfigure Roads in SW Corner of West Michigan Avenue/Howard Street

This options involves a new roadway extending due east from Westfall/Michigan Avenue to east of Lafayette, with a possible right in/right out connection to Howard Street.

Estimated Probable Construction Cost: $600,000

The cost estimate includes regrading, lighting, new pavement, curb & gutter, sidewalk, utilities, maintenance of traffic, signing, striping, etc.

Traffic Impacts/Design Details:

- Traffic signal at Greenwood/Michigan Avenue would be relocated to Westfall/Michigan Avenue.
- Shopping center would close off Euclid and Lafayette access to Michigan Avenue, reducing traffic conflicts of vehicles turning in/out of neighborhoods & retail establishments close to the congested Howard intersection. Vehicle and pedestrian safety in this area would likely be improved.
- Traffic from Lafayette, Euclid and Greenwood would collect on the New Roadway and exit to westbound Michigan Avenue at the signalized Westfall/Michigan intersection. Due to the acute

angle between New Road and Michigan Avenue, right turns to eastbound Michigan Avenue would occur at the unsignalized right-turn only access from Greenwood.
- Traffic entering neighborhood/shopping center would turn at the Westfall/Michigan Avenue signal. Michigan Avenue westbound left turns may have a protected phase (exclusive left turn arrow) depending on volume levels.
- The Westfall/Michigan Avenue traffic signal would operate with split phasing: southbound Westfall traffic would have separate green time from the westbound New Road. Eastbound and westbound Michigan Avenue through traffic would have concurrent green time.

WMU Foundation Parcels

The proposed parkway would be a four-lane east/west connection from Drake Road to Howard Street.

Estimated of Probable Construction Cost: $5.2 million (parkway plus other roadways)

The cost estimate includes grading, lighting, new pavement, curb & gutter, sidewalk, utilities, maintenance of traffic, signing, signals, striping, etc. The total cost includes the four-lane proposed parkway ($4 million) and the two-lane + parking Emajean extension plus reconstruction of Kendall Street ($1.2 million).

Traffic Impacts/Design Details:
- As a four-lane limited access divided roadway, the proposed parkway would be able to carry traffic without the congestion experienced on Michigan Avenue.
- The location and capacity of the proposed parkway could divert 10-15 percent of the traffic from Michigan Avenue (based on existing travel patterns and turning movement percentages of PM peak hour traffic on Michigan Avenue).
- To accommodate the traffic volumes diverted from Michigan Avenue, a traffic signal may need to be located at the proposed parkway intersection with Drake Road (signal warrant analysis and capacity analysis would need to be conducted).
- Emajean Street would be extended north from West Michigan Avenue to connect with the proposed parkway providing another north/south connection through the study area. This connection would primarily service the student housing developments and the proposed residential area surrounding the new road. The proposed traffic signal and lane geometrics at the West Michigan Avenue/Emajean intersection would likely accommodate the additional traffic volumes that would turn at the intersection. This extension would only occur if the AYSO Soccer Fields become available for development.

Single-Lane Roundabout at Howard/Kendall/Solon/Proposed Parkway

A four-leg roundabout would connect the proposed parkway with the existing intersection of Kendall/Solon/Howard. Kendall & Solon would remain one-way in the roundabout.

Estimated Probable Engineering and Construction Cost: $150 - $250 thousand.

The estimate is based on a comparison of other Michigan roundabout costs (per square foot) applied to a 100-130 foot diameter single lane roundabout.

Traffic Impacts/Design Details:
- Four-leg roundabout consisting of: one-way southbound Solon, one-way northbound Kendall, two-way Howard, two-way proposed parkway.
- Kendall Street, south of Howard Street would be reconstructed to "T" into the proposed parkway. The intersection is expected to require only stop control for Kendall Street traffic. The combined traffic from Kendall Street and the proposed parkway would then enter the proposed roundabout at Howard Street.
- Roundabout would aesthetically enhance the area.
- The roundabout could be designed with a single circular lane if a right turn bypass is included for northbound Howard/Kendall traffic. Without the bypass lanes, the expected traffic volumes at the intersection would require a double circulating lane. A single lane roundabout has a smaller diameter and lower design speeds (100-130 feet and 30-40 mph) compared to a double-lane roundabout (150-180 feet and 45-55 mph).
- The roundabout would lower vehicle speeds at the Howard/Kendall/Solon intersection. The existing uncontrolled free-flow through movements for southbound Solon/Howard and northbound Howard/Kendall would be slowed through the roundabout. Roundabouts are typically designed to deflect vehicles entering and traveling through the roundabout to encourage slower vehicle speeds.
- Since the minor street (parkway) traffic is expected to be a low proportion of the total intersection traffic, a roundabout does not improve the overall intersection delay or capacity over two-way stop control. Improvements are expected at the lower-volume minor street of the proposed parkway, but the major streets, which

once experienced free-flow conditions now must slow and maneuver through the roundabout. However, the roundabout can be designed with adequate capacity and low levels of delay to efficiently service all movements at all approaches.

New Roadway from Knollwood Neighborhood to Campus

Reconstruct the portion of Redwood Avenue that parallels Howard Street with curb and gutter as well as sidewalks to provide better access between the Knollwood neighborhood and campus.

Estimated of Probable Construction Cost: $110,000

The cost estimate includes regrading, lighting, new pavement, utilities, maintenance of traffic, signing, striping, etc.

Traffic Impacts/Design Details:
- Upgrading the roadway could provide opportunity for better lighting and definition of pedestrian bridge, thus increasing safety in the area.
- Extending the roadway to connect with the Lawson Ice Area roadway system would allow for access from the Knollwood neighborhood to the Roell vehicle bridge crossing Howard Street to campus roadways.

Zoning Impacts

The Draft Plan includes several land areas rezoned for new land uses. These parcels largely cover unoccupied land. The land areas assessed cover about 19 acres of commercial/retail (office space, retail shops, small grocery, restaurants, etc.) off Drake Road, about 100 acres of residential off the proposed parkway and the Emajean extension, and about 15 acres of commercial/retail off West Michigan Avenue and Howard Street. For each land use, future trips were estimated to determine the traffic impact on the adjacent street system.

The approximate future trips were estimated based on land use categories from the ITE Trip Generation Manual

The trips were determined based on an estimate of gross leasable floor area, housing units per acre, and the size and type of developments per parcel. The impact of these trips on the study area roadways are listed below:
- The Drake Road commercial/retail developments could generate about 9,000 additional trips per day onto Drake Road. Most of these trips are expected to travel from the north and south on Drake Road.
- The residential development off the proposed parkway and Emajean extension could generate about 19,000 trips per day. Travel to and from the residential developments could be split fairly evenly between Drake Road/proposed parkway, Howard Street/proposed parkway, and Emajean Street/West Michigan Avenue.
- The West Michigan Avenue and Howard Street commercial/retail developments could generate about 6,000 additional vehicle trips per day along those roadways. The vehicle trip estimate assumes a high volume of walking trips from the WMU campus and student housing neighborhoods in the vicinity. Access locations to these developments would be critical due to the heavy delays already experienced at the West Michigan Avenue/Howard Street intersection.
- The additional trips at the intersections of Drake Road/proposed parkway and Emajean Street/West Michigan Avenue would likely support warrants for the installation of traffic signals. Traffic signals at these locations would reduce delays for vehicles turning in and out of the proposed parkway and Emajean Street.
- The additional trips on the study area roadways could result in additional turn lanes or signal control modification (phasing or timing improvements) to the intersections along West Main Street, Drake Road, West Michigan Avenue/KL, Howard Street, Kendall Street, and Solon Street.

COMMERCIAL DESIGN GUIDELINES

The following design guidelines are recommended for any new retail and commercial use to ensure appropriate scale, building placement, architecture, that is compatible and complementary to the existing primarily residential context:

Building Massing

- Utilize design techniques and or material changes to differentiate the building base from its top.
- Minimize building mass through vertical modulation and articulation.
- Create visual interest and hierarchy by emphasizing entry points, corners and special functions of a building.
- Utilize horizontal and vertical articulation for visual interest and to visually reduce the scale of large buildings.
- Pay special attention to the ground floor in terms of scale, material and detailing to enrich the pedestrian experience.
- Maximize physical and visual permeability of the building at the ground level with building entrances, fenestration and other elements such as arcades to create human scale interest.

Building Placement

- To the extent possible, utilize building foot-prints that create usable outdoor spaces such as courtyards and plazas.
- Place buildings on the site to create a cohesive relationship with adjacent buildings. Avoid random placement of buildings, especially in relation to adjacent residential buildings.
- Place buildings on the site to complement and enhance landscaping, open space and other natural features found in nearby developments.

Materials

- Utilize innovative materials and design features that enrich the architecture and complements the primarily residential neighborhood nearby. Preferred primary building facade materials shall be masonry, wood and glass. Whenever metal is used to articulate facades, it shall be used to enhance the overall harmony of building materials and not to create extreme contrast.
- Coordinate building materials with landscaping to complement and enhance the natural environment.
- Coordinate materials and color to create harmony among the various materials used on a building, as well as to create harmony with adjacent residential buildings.

Roof Elements and Mechanical Structures

- Visually integrate the design of penthouses, roof mechanical structures and any roof projections with the overall design of the building.
- Screen mechanical elements with materials designed to integrate with the primary facade materials.

Sustainable Design

- During construction, minimize factors that contribute to waste such as over-packaging and contamination of materials. To the extent possible, utilize a waste management plan to identify salvage, recycling and reuse opportunities.
- Develop a waste management plan during construction to minimize waste and maximize recycling of construction and land clearing waste.
- Incorporate building components and systems that meet or exceed ASHRAE standards for indoor air quality.
- To the extent possible, use materials and products that are extracted and manufactured regionally.