

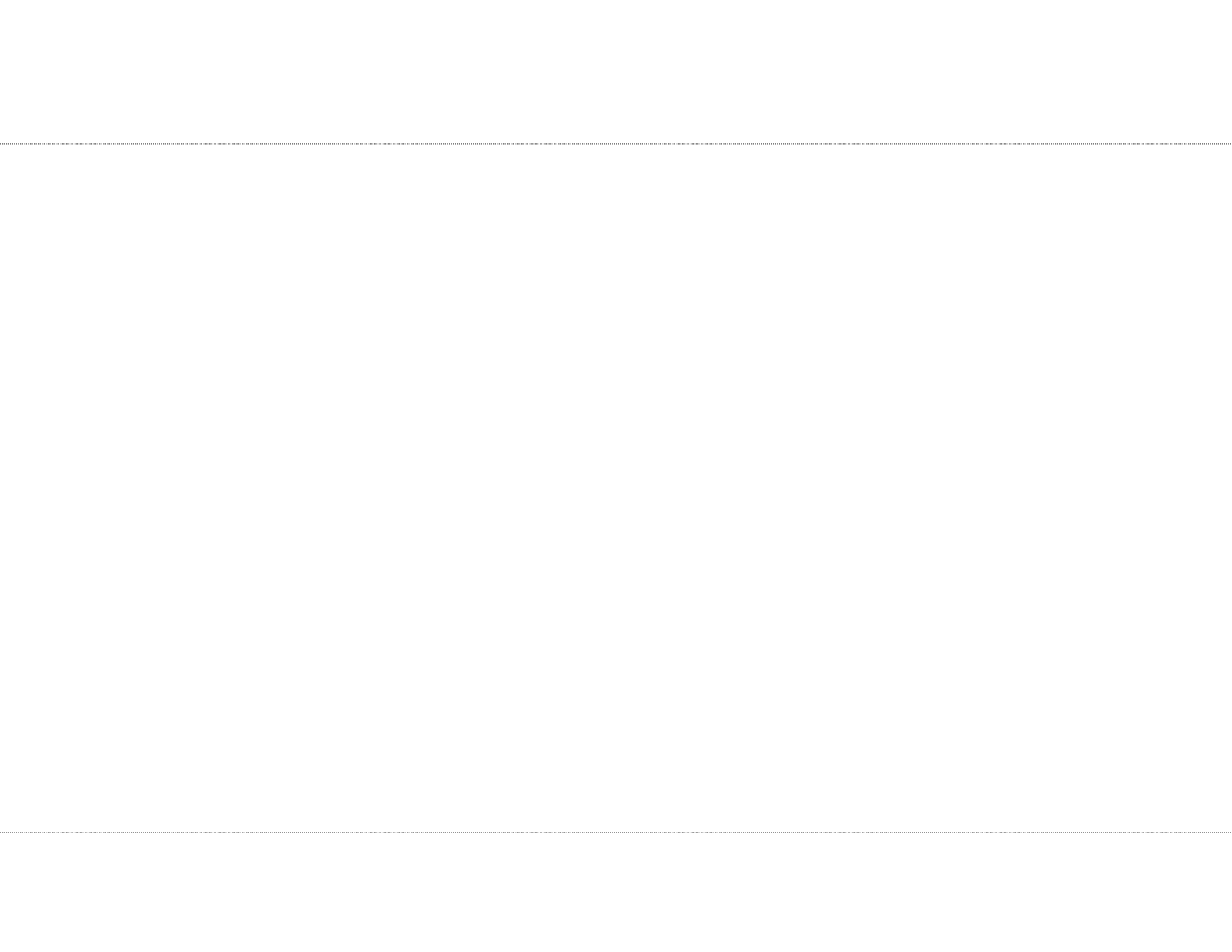
# ReImagine Washtenaw

## Corridor Improvement Study

Summary Report – April 2014



Prepared For: Washtenaw County Office of Community & Economic Development





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# Partners

## Joint Technical Committee

A Joint Technical Committee, coordinated through the Washtenaw County Office of Community & Economic Development, was organized to advance the ReImagine Washtenaw Corridor Improvement Study. The Committee includes elected officials from Ypsilanti Township, Pittsfield Township, the City of Ann Arbor and the City of Ypsilanti, as well as representatives from the Michigan Department of Transportation (MDOT), the Washtenaw Area Transportation Study (WATS), the Ann Arbor Area Transportation Authority (AAATA) and the Washtenaw County Road Commission (WCRC).

A subcommittee of this group, including planners and transportation officials, was formed to coordinate the ReImagine Washtenaw Corridor Improvement Study and to develop the concepts and strategies identified in this report.

## Subcommittee Representatives

Nathan Voght – Washtenaw County Project Manager  
Stephen Wade – Washtenaw County  
Kari Martin – Michigan Department of Transportation  
Ryan Buck – Washtenaw Area Transportation Study  
Sheryl Siddall – Washtenaw County Road Commission  
Wendy Rampson – City of Ann Arbor  
Jeff Kahan – City of Ann Arbor  
Paul Montagno – Pittsfield Township  
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Chris White – Ann Arbor Area Transportation Authority

## Consultants:

SmithGroupJJR  
Parsons Brinckerhoff of Michigan

**This project was funded through a Housing and Urban Development (HUD) Sustainable Communities Planning Grant**



Subcommittee Representatives

ReImagine Washtenaw

# Executive Summary

# [Executive Summary] Corridor Improvement Study

*"A multi-jurisdictional, cooperative initiative to TRANSFORM Washtenaw Avenue around efficient mass transit into an attractive, vibrant, walkable, mixed-use corridor, with sense of place."*

The transformation of Washtenaw Avenue is gaining momentum. Recent sidewalk installation, signal improvements and new commercial redevelopment is encouraging...and more progress is underway. The implementation of the recommendations of this study will move the multi-jurisdictional Relmagine Washtenaw initiative one step closer to becoming a reality.

The current experience for motorized, non-motorized and transit users is far from equal. Since the early 1900's, public and private investment priorities were focused on auto-oriented land use and transportation solutions.

This has resulted in a noisy, congested corridor with high traffic volumes and speeds, multiple wide lanes, excessive driveway cuts and a land use pattern that favors automobile movement at the expense of other transportation modes.

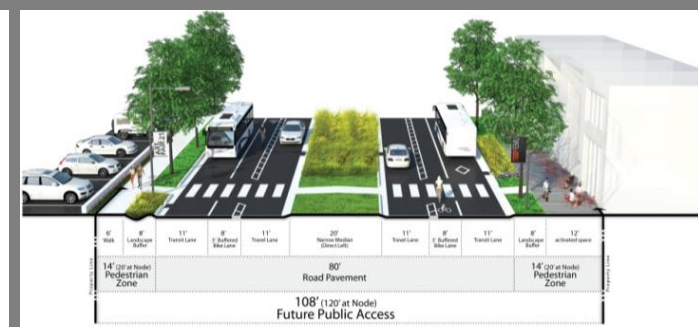
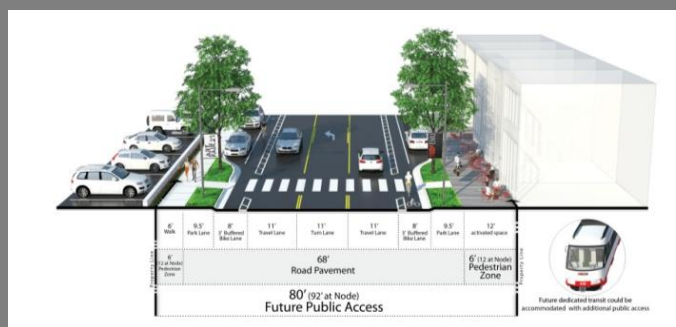
This corridor improvement study embraces a complete streets philosophy. The recommended improvements strive to provide a safe and comfortable environment for all legal users—pedestrians, bicyclists, transit riders and motorists. This vision of Washtenaw Avenue as a complete street requires a strong emphasis on non-motorized and transit solutions.

The recommendations developed as part of this corridor improvement study are intended to improve the inequality that currently exists between modes by increasing non-motorized transportation and enhancing transit facilities.

Specific goals of this corridor improvement study included:

- Identifying the limits of the existing MDOT right-of-way.
- Expand multi-modal transportation choices and increase user safety.
- Improve the streetscape environment and non-motorized infrastructure.
- Improve pedestrian safety at signalized intersections and proposed mid-block crossings.
- Provide the potential for improved transit service and enhanced user experience.
- Identify the extent of additional property required to implement the recommended improvements.

This effort has been led by Washtenaw County Office of Community & Economic Development. A multi-jurisdictional subcommittee provided insight and guidance throughout the process. A comprehensive public outreach effort validated corridor priorities and assisted in the development of the study recommendations.



Proposed Cross Section Improvements

## [Executive Summary] Corridor Improvement Study

A significant aspect of transforming the corridor as a whole includes physical improvements within the Washtenaw Avenue (M-17) right-of-way itself. As a state truckline, the right-of-way is under the jurisdiction of MDOT. The width of the existing right-of-way along the corridor is, in most cases, not adequate to accommodate the recommended improvements. This study delineates the extent of additional public access needed to improve the safety and comfort of pedestrians, bicyclists and transit users. Additional public access requirements vary along the corridor depending on the width of existing right-of-way and the proposed geometry of road.

Over the long-term, the recommended improvements along the corridor will allow users more transportation choices and encourage meaningful mode shifts to non-motorized and transit options. These improvements include:

- An upgraded pedestrian zone along the road with wider sidewalks, landscape buffers between the walk and the road, landscape, lighting and street furnishings. Wider sidewalks in higher density nodes, such as at the intersection of Washtenaw Avenue and Golfside Road, will accommodate greater pedestrian volumes and encourage increased economic activity.
- A continuous buffered bike lane on both sides of the road along the entire corridor.

- Crossing the street will be made safer and more convenient with improvements to existing pedestrian crossings at signalized intersections as well as the addition of six mid-block crossings in locations that currently have the greatest need.
- Enhanced transit service by implementing transit signal priority, queue jumps and eight new Super Stops that add larger shelters, more seating, lighting, signage and other amenities for transit riders
- Proposed physical improvements to the road tailored to the specific conditions and character of each segment along the corridor:
  - In the busiest segment, west of US-23 in Ann Arbor, the number of vehicles travel lanes will stay the same – two in each direction. A center median with indirect left hand turns will be added to improve traffic flow pedestrian safety.
  - In the commercial corridor of Pittsfield and Ypsilanti Townships, the number of vehicle travel lanes will also remain with two in each direction. In this segment, a narrow median is proposed to improve traffic flow, control left hand turning movements and provide safer pedestrian crossings.
  - In the less busy portion of the corridor, Courtland Street to Oakwood Street in Ypsilanti, adjacent neighborhood businesses will be supported with on-street parking. Vehicle travel lanes will be reduced to one travel lane in each direction and a center turn lane.

Implementation of the recommendations is expected to be phased over several decades as redevelopment opportunities arise and the required public access can be aggregated. The ReImagine Washtenaw steering committee and governing agencies will continue to be advocates for transformation by actively working to implement these recommendations. Initial efforts include advancing a strategy to obtain additional public access, installing missing gaps in the sidewalk system, installing select mid-block crossings and Super Stops and continued joint efforts to address proposed mode shifts.

Other corridor improvement studies, in addition to this study, include:

1. Corridor Land Use and Development Guidelines for Pittsfield and Ypsilanti Townships;
2. Recommendations for Corridor Art Installations; and
3. A Transportation Demand Management Analysis Funded through Smart Growth America.

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ReImagine Washtenaw

# Introduction

## [Introduction] What is ReImagine Washtenaw?

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ReImagine Washtenaw represents a new vision for the Washtenaw Avenue corridor. Improved land use and development patterns, promoting mixed-use centers in nodes of development, providing alternative transportation, and enhancing visual aesthetics, will make the corridor a regional magnet for attracting people and business.

Significant opportunities exist to improve the economic environment and promote infill development and redevelopment of the corridor. The resulting revitalized neighborhoods, increased social interaction and pedestrian activity, increased economic opportunity and enhanced safety will create a quality that promotes investment and is attractive to visitors and residents.

The use of smart growth principles for the Washtenaw Avenue corridor can facilitate increased residential density, improved walkability and improved transit service. Compact infill development and redevelopment will strengthen the economic vitality of the corridor and provide a greater range of housing and transportation options. Other benefits will include improved public health through encouraging walkability, reducing vehicle miles travelled and vehicle emissions, reducing impervious surfaces and encouraging brownfield remediation.

ReImagine Washtenaw will serve as a model for implementing smart growth by retrofitting existing suburban corridors to dense, compact, walkable mixed-use transit nodes and implementing a complete streets approach to corridor improvements. This report provides recommendations for cross section details and identifies specific implementation actions for each segment of the corridor with the goal of creating a unified vision that concurrently embraces land use and transportation planning in an integrated fashion.

Regional collaboration to explore the potential for Washtenaw Avenue to be transformed into a transit corridor with nodes of development based on smart growth and transit oriented development (TOD) principles was documented in a 2009 report titled *Re-Imagining Washtenaw Avenue, A Vision for Corridor Redevelopment*. As part of a visionary effort, a group of leaders from local government, businesses, public interest groups, business owners, and community service associations evaluated the potential of the regional corridor for redevelopment into a compact, mixed-use transit corridor and identified key actions to retrofit Washtenaw Avenue into an enhanced transit corridor.

As a follow-up to *Re-Imagining Washtenaw Avenue, A Vision for Corridor Redevelopment* (2009) report, the Joint Technical Committee drafted the *Washtenaw Avenue Corridor Redevelopment Strategy* (2010) with specific recommendations to achieve the vision for this corridor.



# [Introduction] What is ReImagine Washtenaw?

## Corridor Improvement Study Project Goals

Based on the previous efforts completed by the Joint Technical Committee, this Corridor Improvement Study was initiated to establish a framework within the road corridor that would facilitate the identified land use vision for ReImagine Washtenaw. The goals for this study are:

- Expand multi-modal transportation choices
- Increase pedestrian safety and experience
- Improve streetscape and non-motorized infrastructure
- Enhance transit service operations and facilities

The specific elements identified to accomplish these goals include:

- Provide the communities along Washtenaw Avenue with right-of-way needs for identified improvements
- Recommend proposed road cross sections for development nodes and links between nodes
- Identify suitable transit Super Stop locations and develop concept plans for each one
- Identify suitable pedestrian improvements including mid-block crossings



Proposed Improvements Looking East on Washtenaw Avenue at Foster Road

## [Introduction] Study Area

Washtenaw Avenue, between Ann Arbor and Ypsilanti, serves as the primary connection between the region's largest employment and educational centers. The corridor's historic auto-centric design prohibits compact, walkable and mixed land uses despite the presence of commercial hubs and high-density residential neighborhoods. Many existing developments have excessive building setbacks and largely unused frontage parking lots. This development pattern creates automobile dependency, increased air pollution, limited accessibility along with storm water management and public health issues. It also compromises the needs of residents in adjacent neighborhoods by limiting safe access to services and employment centers.

The project area includes numerous vacant or underutilized sites with significant potential for infill development and redevelopment. This provides the opportunity to integrate sustainable strategies and enhanced transportation options

The implementation of the strategies and concepts identified through this project will increase multi-modal accessibility thereby encouraging walkability and increased transit service and use.

### **Study Area Fast Facts**

*1/4 mile buffer around five mile stretch of  
State Trunkline Washtenaw Avenue*

*2.5 square miles of land = 640 city blocks*

*100 acres or 40 city blocks of land identified as under utilized  
and appropriate for infill development or redevelopment*

*Storefront Vacancy Rates are average at 11% with  
rates as high as 14% in sections of the corridor.*

*Study Area contains nearly 250 acres of  
preserved parkland and/or open space*

*AATA Route #4 is the most productive route in the system.*

*Along the Washtenaw Avenue Corridor, over 700 people  
use public transit to get to work (2000 Census Data)*

*Washtenaw County Road Commission owns many major N-S  
roads including Hogback/Carpenter, Golfside and Hewitt*

*City of Ann Arbor and City of Ypsilanti primarily owns  
roads to far west and far east of corridor respectively*

*Seven percent of people taking vehicle-trips  
on Washtenaw Avenue use the bus*

Source: Re-Imagining Washtenaw Avenue, A Vision for Corridor Redevelopment (2009)

## [Introduction] Corridor Governance

The project corridor extends from the Washtenaw Avenue/Stadium Boulevard split in Ann Arbor east to Normal Street in Ypsilanti, a distance of approximately 5 miles. Washtenaw Avenue and its associated right-of-way is a state trunkline, M-17, under the authority of MDOT. Trunklines are identified by the state in order to provide reasonable access for all Michigan residents to the state highway system. It is also a designated state truck route which is intended to provide direct access for the commercial trucking industry.

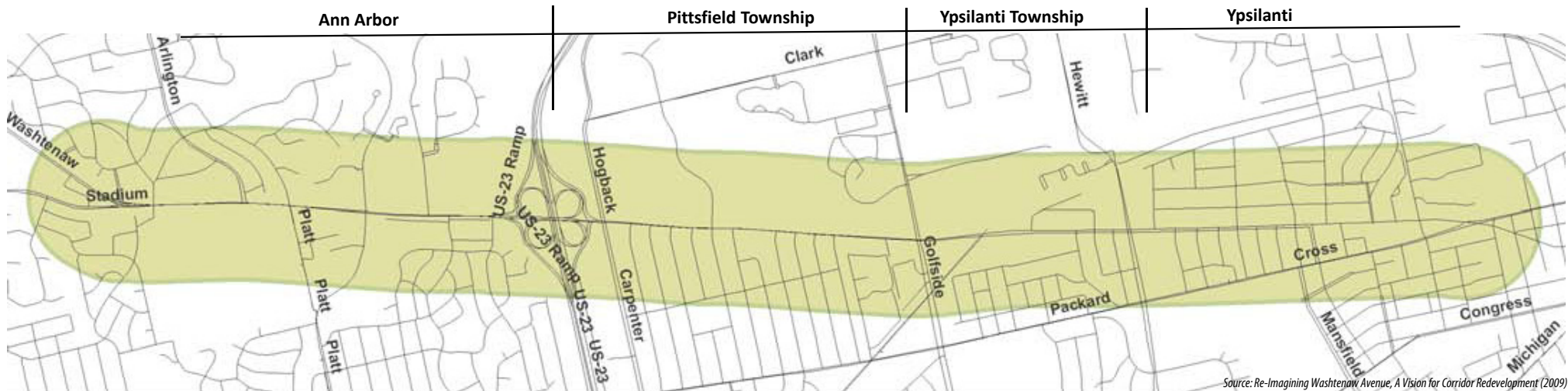
The City of Ann Arbor and the City of Ypsilanti are responsible for roads within their municipal boundaries. The Washtenaw County Road Commission is responsible for many of the major north/south roads including Hogback Road/Carpenter Road, Golfside Road and Hewitt Road.

Four different municipalities have jurisdiction over land use adjacent to the corridor – the City of Ann Arbor, Pittsfield Township, Ypsilanti Township and the City of Ypsilanti.

AAATA operates several bus routes utilizing the Washtenaw Avenue corridor. Route 4 has the most ridership of all routes within their system.

### Did You Know?

- Washtenaw Avenue is state trunkline called M-17; it is also a designated truck route.
- Any road improvements being considered will require review and approval by MDOT.



Source: Re-Imagining Washtenaw Avenue, A Vision for Corridor Redevelopment (2009)

Figure 1.1: Project Area

# [Introduction] Community Engagement

An initial round of four public meetings was held in the spring of 2013. These meetings were scheduled in locations throughout the corridor, as well as at different times in the day to be available to the wide group of corridor residents, travelers, business owners and employees. The purpose of these meetings was to gather public input regarding various alternative road cross sections and pedestrian and transit improvements. In addition to a general presentation, several stations were set up that focused on the various elements of the project.

Community input was gathered in three ways:

1. Meeting attendees were encouraged to comment directly on boards at each of the stations;
2. Comment forms were completed at the meeting or were faxed to Washtenaw County after the meeting; and
3. Washtenaw County worked directly with the City of Ann Arbor to use the City's Peak Democracy online comment tool.

The feedback was intended to gather public input on desired improvements and important issues of concern, as well as evaluating options for the future design and character of the corridor. Community feedback is discussed in Chapter 3 and a summary of the comments can be found in Appendix A.

This information was used by the subcommittee as part of their decision making process for developing the final recommendations.

A final public meeting was held on Wednesday, December 11, 2013 from 6:30 to 8:00 pm at the Washtenaw County Learning Resource Center (LRC) where the final recommendations were presented.

## Initial Public Meetings: Dates & Locations

Meeting #1 - Tuesday, May 28, 6:00 to 8:00 pm, LRC

Meeting #2 - Wednesday, May 29, 8:00 to 10:00 am, LRC

Meeting #3 - Thursday, May 30, 7:00 to 9:00 pm, Carpenter School

Meeting #4 - Friday, May 31, 2:00 to 4 pm, McKinny Union, Eastern Michigan University

## Final Public Meeting

Wednesday, December 11, 6:30 to 8:00 pm, LRC

Come help us **Reimagine Washtenaw Avenue!**



Reimagine Washtenaw envisions Washtenaw Avenue as a **walkable, bikeable, transit-friendly** street. The corridor is an important artery that connects Ann Arbor and Ypsilanti and is very important to the daily lives of Washtenaw County residents and employees.

A transit stop and multi-modal transportation design of the corridor, linking Ann Arbor and Ypsilanti, is being led by the Washtenaw County Department of Community and Economic Development in cooperation with:

- City of Ann Arbor
- Pittsfield Township
- Ypsilanti Township
- City of Ypsilanti
- Ann Arbor Transportation Authority
- Washtenaw Area Transportation Study
- Michigan Department of Transportation

Implementation is already underway with improvements at Arbor Hills Crossing shopping center and at the US-23 interchange. You're already seeing the vision take shape, and there's more to come! Funding provided by the U.S. Department of Housing and Urban Development.

Please join us for **one** of our public meetings:

Tuesday, May 28 from 6-8pm at Washtenaw Co. Service Center 4135 Washtenaw Ave. LRC (Learning Resource Center) Room A	Wednesday, May 29 from 8-10am at Washtenaw Co. Service Center 4135 Washtenaw Ave. LRC (Learning Resource Center) Room A	Thursday, May 30 from 7-9pm at Carpenter Elementary School 4250 Central Blvd. Multi Purpose Room <small>(park in the east south parking lot near playground)</small>	Friday, May 31 from 2-4pm at xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxx

Unable to attend? Go ahead and provide **input** and find additional information at:

 [www.washtenawavenue.org](http://www.washtenawavenue.org)  [www.facebook.com/reimaginewashtenaw](http://www.facebook.com/reimaginewashtenaw)  @WashtenawAvenue

Nathan Voght, Project Manager  
734.222.3860  
Email: [voghtn@washtenaw.org](mailto:voghtn@washtenaw.org)

Poster for Public Meetings

# 02

ReImagine Washtenaw

## Existing Corridor Conditions



# [Existing Corridor Conditions] Land Use

## A Mixed-Use Corridor

Washtenaw Avenue, a state trunkline (M-17), is intended to move vehicular traffic between Ypsilanti and Ann Arbor and connect to both US-23 and I-94. In addition to this role, it also serves to provide access to businesses, homes, parks, offices, hospitals and academic institutions. Land use is distributed throughout the four communities with the primary land use being service oriented commercial mixed with single- and multi-family residential.



Multi-Family Residential in Pittsfield Township



Single-Family Residential in Ypsilanti

### Commerce

- 53% of the 5 mile corridor is commercial
- There are numerous active, successful commercial businesses with more under development
- There is significant land (approximately 100 acres of vacant/underutilized buildings) positioned for redevelopment

### Housing

- 24% of the corridor's frontage is occupied by single- and multi-family
- Many residential neighborhoods along the entire 5 miles are accessed directly from Washtenaw Avenue

### Other Significant Land Uses

- Eastern Michigan University
- County Farm Park
- Meri Lou Murray Recreation Center
- Washtenaw County Service Center



Source: SmithGroupJJR

Vacant Commercial Building in Ypsilanti Township



Source: SmithGroupJJR

Commercial Building in Ann Arbor

## ReImagined Vision

### Strengthening Land Use

*ReImagine Washtenaw envisions an expanded mixed-use environment with stronger commerce, an improved shopper experience, and improved "curb appeal" to welcome residents home.*

# [Existing Corridor Conditions] Vehicular Traffic

## Existing Traffic Conditions

As part of this project, traffic conditions along Washtenaw Avenue were analyzed between Cross Street in the City of Ypsilanti and Stadium Boulevard in the City of Ann Arbor. This analysis provides a baseline from which to understand the impact of different design alternatives.

Modeling efforts included five primary study intersections including

- Huron Parkway
- Hogback Road/Carpenter Road
- Golfside Road
- Hewitt Road
- Oakwood Street

## Vehicle Counts - Average Daily Trip (ADT)

- Western end of the corridor ADT is around **32,000** vehicles per day
- East of Huron Parkway, ADT increases to approximately **42,000** vehicles per day
- Through the US-23 interchange, traffic volumes are the greatest, with the ADT around **46,000** vehicles per day
- East of Hogback Road/Carpenter Road traffic volumes decrease to the City of Ypsilanti
- East of Hogback Road/Carpenter Road the ADT is around **33,000** vehicles per day
- East of Oakwood Street the ADT decreases to **27,000** vehicles per day

## Road Geometrics and Speed Limits

Generally, Washtenaw Avenue is five lanes, with two lanes in each direction and a continuous center left-turn lane. West of Pittsfield Boulevard to west of Hogback Road/Carpenter Road, there is a raised median and left-turns are prohibited except at signalized intersections. The speed limit along the corridor varies:

- 40 MPH east of Oakwood Street
- 45 MPH west of Oakwood Street

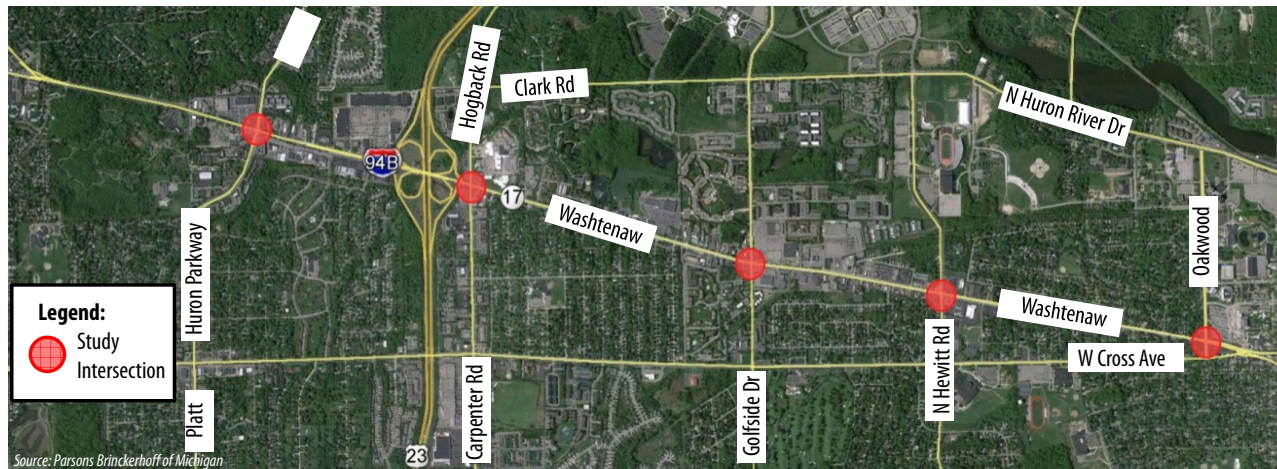


Figure 2.1 : Study Intersections

## ReImagine Vision

*Traffic improvements along the corridor will improve safety and maintain acceptable levels of service as the corridor evolves.*

# [Existing Corridor Conditions] Vehicular Traffic

## Delay and Level of Service

Modeling was conducted to determine the amount of time that the driver waits at signalized intersections. This delay is commonly referred to as Level of Service (LOS). In urban areas, LOS A through D is typically considered acceptable. The modeling shows that:

- All of the signalized locations except the intersection at Hogback Road/Carpenter Road operate at an overall LOS D or better.
- Hogback Road/Carpenter Road is operating at an overall LOS E during both the AM and PM peak hours.
- Northbound Huron Parkway operates at LOS E in the PM peak hour.
- Northbound Golfside Road operates at LOS E in the AM peak hour and southbound Golfside Road in the PM peak hour.

## Crash Analysis

A crash analysis was performed at intersections along segments to understand traffic safety issues in the study area. The segment and intersection analysis is noted in the adjacent tables.

## Did You Know?

One pedestrian death every 2 hours and a pedestrian injury every 8 minutes.

[http://www.cdc.gov/motorvehiclesafety/pedestrian\\_safety/factsheet.htmlKDC, 2010](http://www.cdc.gov/motorvehiclesafety/pedestrian_safety/factsheet.htmlKDC, 2010)

Segment	Average Daily Traffic	% Single Vehicle	% Head-on and Side Swipe Opposite	% Head-on Left-turn and Rear End Left	% Angle	% Rear-end and Side Swipe Same	% Other	Grand Total
Stadium to Sheridan	31,765	50%	0%	0%	0%	50%	0%	100%
Sheridan to Huron Pkwy	31,765	9%	1%	2%	28%	58%	1%	100%
Huron Pkwy to Pittsfield Blvd	35,550	0%	0%	0%	27%	71%	2%	100%
Pittsfield Blvd to Yost Blvd	41,735	0%	0%	0%	0%	67%	33%	100%
SB US-23 to NB US-23	45,750	8%	0%	0%	4%	85%	4%	100%
Carpenter / Hogback to University Square	32,285	4%	0%	3%	28%	65%	0%	100%
University Square to Golfside	26,315	7%	7%	2%	37%	40%	7%	100%
Golfside to TSM Property	28,000	0%	3%	6%	47%	36%	8%	100%
TSM Property to Hewitt	27,650	6%	0%	8%	18%	63%	6%	100%
Hewitt to Mansfield	26,340	3%	9%	3%	18%	67%	0%	100%
Mansfield to Oakwood	26,160	8%	3%	3%	39%	45%	3%	100%

Figure 2.2 : Segment Crash Type Analysis

Intersection	Average Daily Traffic	% Single Vehicle	% Head-on and Side Swipe Opposite	% Head-on Left-turn and Rear End Left	% Angle	% Rear-end and Side Swipe Same	% Other	Grand Total
Huron Pkwy	54,215	2%	2%	1%	19%	74%	2%	100%
Hogback/Carpenter	60,175	5%	2%	3%	17%	74%	1%	100%
Golfside	45,710	2%	5%	3%	36%	51%	2%	100%
Hewitt	41,640	1%	8%	2%	25%	63%	1%	100%
Oakwood	35,850	9%	2%	16%	18%	51%	4%	100%

Figure 2.3 : Intersection Crash Type Analysis



## [Existing Corridor Conditions] Transit



Figure 2.4: Existing Bus Routes

### Existing Transit

Washtenaw Avenue has the highest ridership in AAATA transit system. Bus transit data, including routes and schedule, was obtained from AAATA:

**AAATA Route 4 – Washtenaw:** This route is one of highest ridership routes for AAATA and runs from Ypsilanti to downtown Ann Arbor. There is an A Route and a B Route, with a minor difference in route and stops. Within the study area, both the A Route and B Route stay along Washtenaw Avenue. Headways for this route vary between 5 to 10 minutes.

**AAATA Route 7 – South Main – East:** This route services downtown Ann Arbor, south Main Street, parts of Washtenaw Avenue and Saint Joseph Mercy Hospital/Washtenaw Community College. This route is along Washtenaw Avenue between Platt Road and Golfside Road. Headways for this route are every 30 minutes.

**AAATA Route 22 – North – South Connector:** This route services the Meijer store on Carpenter Road, Glencoe Hills along Washtenaw Avenue, the VA Medical Center, and the Green Road Park & Ride. The route is along Washtenaw Avenue between Glencoe Hills and Huron Parkway. Headways for this route are every 30 minutes.

**AAATA Route 33 – College of Business Shuttle:** This route services the Eastern Michigan University College of Business and other locations on the Eastern Michigan University campus. This route is along Washtenaw Avenue west of Oakwood Street only. Headways for this route are every 20 minutes.

Current conditions along the corridor diminish the safety and comfort of the transit user.

- Lack of sidewalks make bus accessibility poor
- Narrow right-of-way limits ability to add bus stop amenities
- Traffic congestion affects service reliability (delay)
- Too many bus stops
- Few amenities at bus stops

## ReImagine Vision

*A true “transit oriented” corridor with an efficient and effective mass transit system.*

## [Existing Corridor Conditions] Non-Motorized Traffic

### Pedestrian Conditions

20<sup>th</sup> Century improvement priorities for Washtenaw Avenue focused on accommodating the vehicle. As a result, like so many other commercial corridors in the United States, the pedestrian environment along the corridor is unsafe and uncomfortable.

Despite adjacent residential and commercial land uses that generate significant pedestrian foot traffic, the corridor currently has little to offer residents and visitors.

Pedestrian travel along the corridor is challenged by:

- Sidewalks gaps
- Sidewalks that are too narrow, in poor condition and do not have snow removal
- Sidewalks that are not accessible to all users (Not ADA compliant)
- No buffer between walk and street
- Limited street trees, pedestrian oriented lighting or amenities, such as waste receptacles, for user safety and comfort



Pedestrian Crossing the Street at an Undesignated Location

Pedestrian crossings in the corridor do not meet current needs. Because of the large block sizes, there are many locations where pedestrians are crossing mid-block without any crossing facilities. And while some signalized intersection do have pedestrian signals, they are often not timed well and are not ADA compliant. In some instances there are no pedestrian crossings at all at the intersection, such as at the Yost Boulevard and Washtenaw Avenue intersection. (See Chapter 6 for background)



Missing Sidewalk along the Corridor

## ReImagine Vision

*A corridor that provides a safe and comfortable experience for all non-motorized users all year long.*



## [Existing Corridor Conditions] Non-Motorized Traffic

### Bicycling

Bicycling is a rapidly expanding method of transportation. According to National Sporting Goods Association 2011 it increased nationally 11.8% in a five-year period (2006-2011).

Currently there are no bike lanes along Washtenaw Avenue. There is a section of shared-use path (accommodating both pedestrian and bicyclists, between Stadium Boulevard and Huron Parkway and another one between Pittsfield Boulevard and Hogback Road/Carpenter Road. There is a planned shared-use path on the south side of Washtenaw Avenue, between Huron Parkway and Pittsfield Boulevard.

### Non-Motorized Crash Summaries

There were eight pedestrian crashes along the corridor and six bicycle crashes along the corridor within the three years of crash history. Of the eight pedestrian crashes, four occurred at mid-block locations and four at signalized intersections. There was one fatality that occurred at the signalized intersection at the University Square Shopping Center. An injury crash occurred at the partially unsignalized intersection at Stadium Drive.

Of the six bicycle crashes, one occurred at a mid-block location and the remaining five occurred at signalized intersections. There was one fatal crash (at the mid-block location).

### Segment Assessment

To better understand the existing conditions, the corridor was divided into eight segments and assessed at a greater level of detail. For each segment, the assessment identifies:

- Adjacent future land use (Source: Compilation of Community Future Land Use Maps)
- Areas that have redevelopment potential (shown as hatched)
- Traffic conditions – Volumes and pavement widths
- Curb Cut – Frequency and volumes
- Pedestrian Conditions – Crossings, gaps and connectors

- Existing public right-of-way (Source: MDTOT)
- Transit stops and ridership (Source: The Ride)

### Did You Know?

After buffered bike lanes were installed on Philadelphia's Spruce and Pine streets, bike traffic increased 95% and the number of bicyclists riding on the sidewalks decreased by up to 75%

*Bicycle Coalition of Greater Philadelphia, 2010*

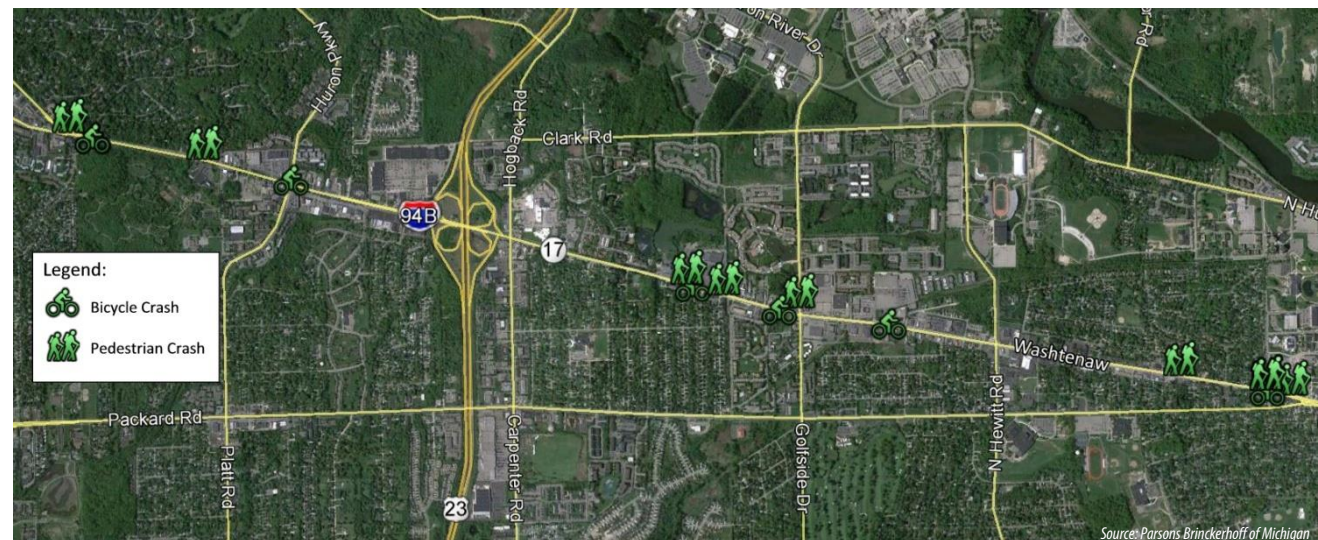


Figure 2.5: Pedestrian and Bicycle Crash Locations

## [Existing Corridor Conditions] Stadium – Platt Assessment



Legend

-  Single / Two Family Residential
-  Multi-Family Residential
-  Public / Semipublic
-  Commercial / Business / Office

- Park
- Signalized Intersection with pedestrian crossing
- Signalized Intersection without pedestrian crossing
- Unsignalized Crossing

-  Bus Stop With Monthly Ridership
-  Potential Roundabout Location  
(per access management plan)
-  Missing Sidewalk
-  Potential Neighborhood Connection Route  
(per access management plan)

-



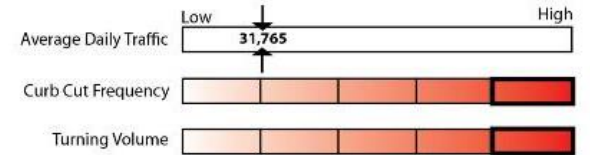
## [Existing Corridor Conditions] Platt – Huron Parkway Assessment



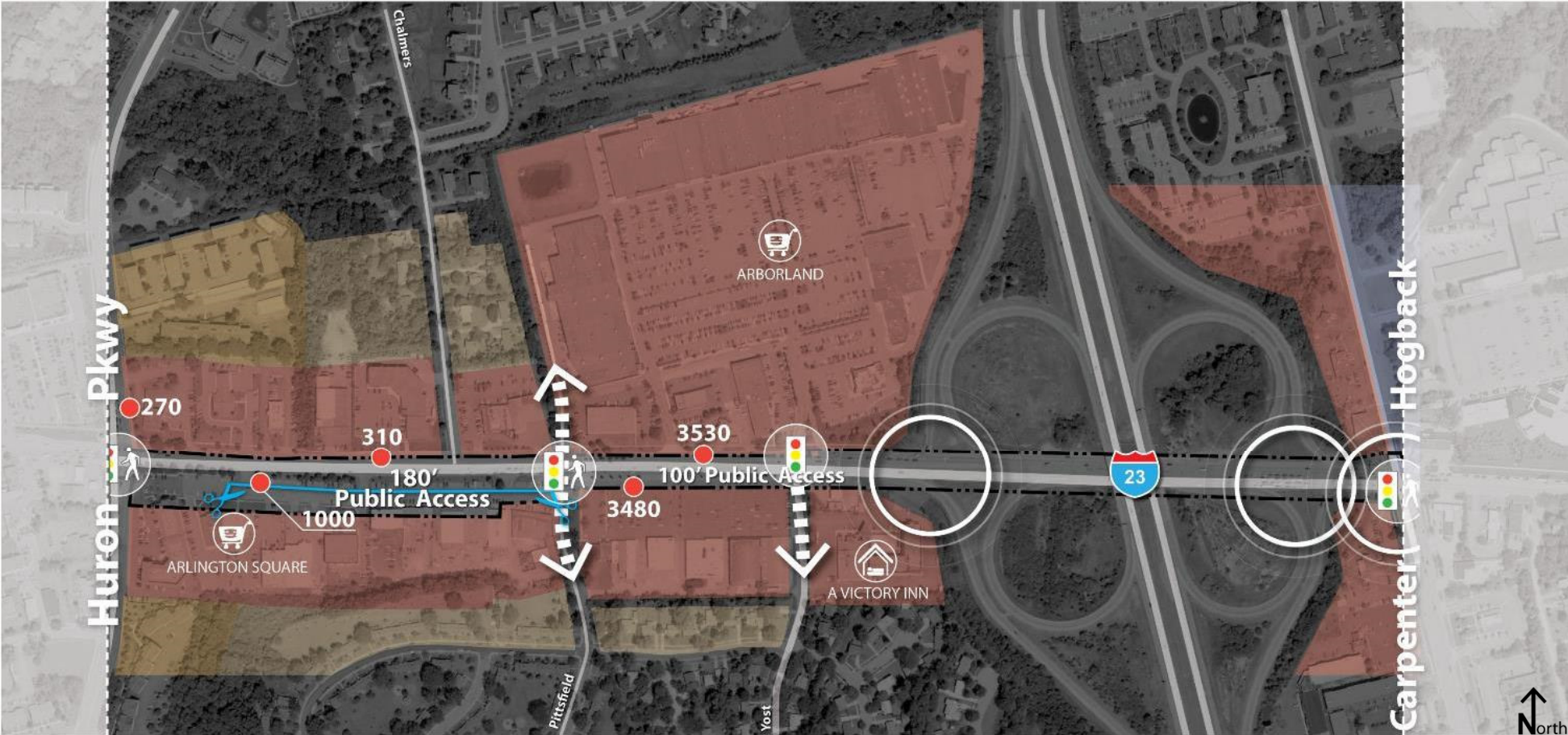
## Segment Summaries

**Stadium-Platt:** Land use is residential (north) and County Farm Park (south). This segment has a 100-foot right-of-way (generally), active bus stops at Sheridan Street and a shared-use path along the north side.

**Platt-Huron Parkway:** Land use is active retail on both sides. This segment has a narrow 80-foot right-of-way, many high vehicle turning volumes, an improved transit stop (south) and a new traffic signal at Platt Road.



# [Existing Corridor Conditions] Huron Parkway – Carpenter Assessment

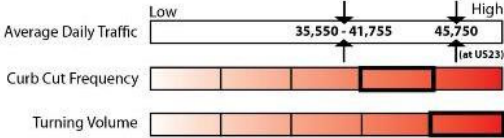


Legend

- Single / Two Family Residential
- Multi-Family Residential
- Public / Semipublic
- Commercial / Business / Office

- Park
- Signalized Intersection with pedestrian crossing
- Signalized Intersection without pedestrian crossing
- Unsignalized Crossing

- Bus Stop With Monthly Ridership
- Potential Roundabout Location (per access management plan)
- Missing Sidewalk
- Potential Neighborhood Connection Route (per access management plan)





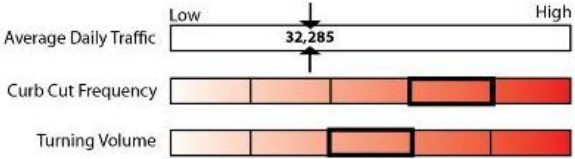
# [Existing Corridor Conditions] Carpenter – Torrey Assessment



## Segment Summaries

**Huron Pkwy-Carpenter:** Land use is commercial. This segment has the highest traffic volumes, high turning volumes, 180-foot public access (partial south). Enhanced bus stop at Pittsfield Boulevard.

**Carpenter-Torrey:** Land use is primarily residential. This segment has a significant amount of sidewalk gaps, high pedestrian volumes and limited public access (73- to 80-feet ).



# [Existing Corridor Conditions] Torrey – Fountain Plaza Assessment





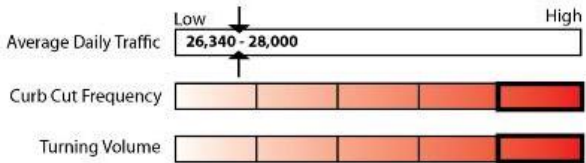
# [Existing Corridor Conditions] Fountain Plaza to Kewanee Assessment



## Segment Summaries

**Torrey-Fountain Plaza:** Land use is commercial. This segment has a significant amount of sidewalk gaps, high turning volumes, and limited public access (80-feet).

**Fountain Plaza-Kewanee:** Land use is commercial. This segment has a significant amount of sidewalk gaps, high turning volumes, and limited public access (80-feet).



-  Single / Two Family Residential
-  Multi-Family Residential
-  Public / Semipublic
-  Commercial / Business / Office

- Park
- Signalized Intersection with pedestrian crossing
- Signalized Intersection without pedestrian crossing
- Unsignalized Crossing

-  Bus Stop With Monthly Ridership
-  Potential Roundabout Location  
(per access management plan)
-  Missing Sidewalk
-  Potential Neighborhood Connection Route  
(per access management plan)

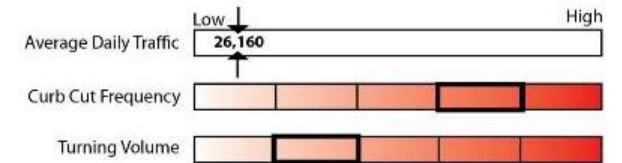
Figure 1 is a horizontal bar chart illustrating the relative importance of three factors for the selection of a location for a new transit station. The factors are Average Daily Traffic, Curb Cut Frequency, and Turning Volume. The chart uses a color scale from white (Low) to red (High). Average Daily Traffic is marked with a value range of 26,160 to 26,340. Curb Cut Frequency and Turning Volume are marked with a value range of 10 to 15.

Factor	Value Range	Relative Importance (Low to High)
Average Daily Traffic	26,160 - 26,340	Low to High
Curb Cut Frequency	10 - 15	Low to High
Turning Volume	10 - 15	Low to High



**Kewanee-Cornell:** Land use is residential (north) and commercial (south). This segment has significant amounts of sidewalk gaps, lowest traffic volumes and limited public access (80-feet).

**Cornell-Oakwood:** Land use is single-family residential on both sides. This segment has lowest traffic volumes and limited public access (80-feet).



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# 03

ReImagine Washtenaw

## Corridor Cross Sections

# [Corridor Cross Sections] Building a Complete Street

## “Streets are streets for everyone.”

*National Complete Streets Coalition*

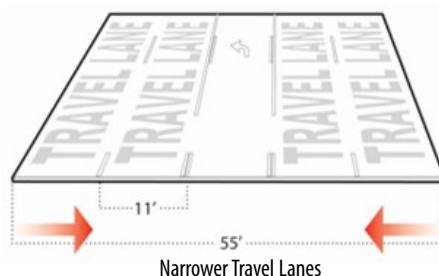
ReImagine Washtenaw is based on a vision for the corridor that embraces smart growth principles to provide choices in housing, shopping, recreation and transportation. Complete streets is a holistic approach to transportation planning and design that supports these principles. Complete streets are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Embracing a complete streets approach for ReImagine Washtenaw is a commitment that all future transportation projects will take into account the needs of everyone using the road. Implementation is where the work truly begins. All future funding, planning and design decisions regarding improvements in the corridor need to be aligned with goals of the consolidated vision which focus on meeting local needs, ensuring safe travel and creating stronger communities.

There is no singular design approach for complete streets; each project is unique and responds to its community context. The ReImagine Washtenaw vision for complete streets includes several elements that are recommended for the entire corridor or as appropriate relative to the desired need in specific segments:

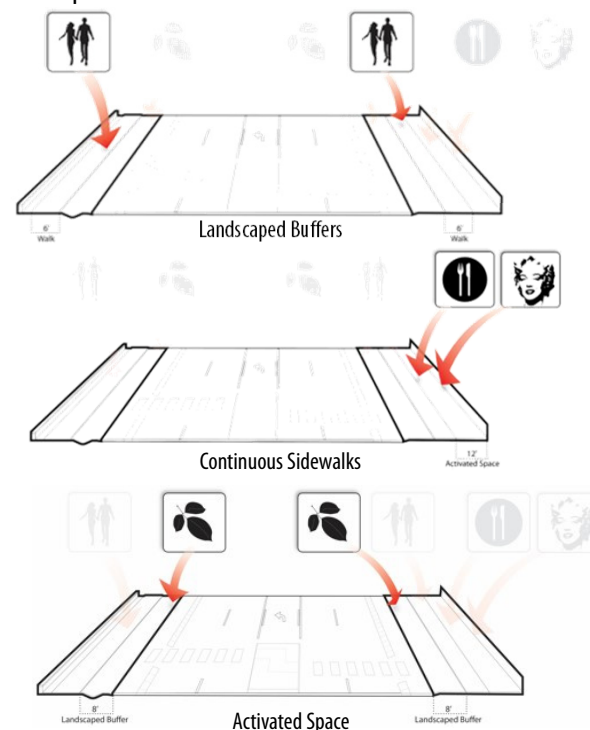
## Narrower Travel Lanes

The existing Washtenaw Avenue travel lanes range from 12- to 14-foot wide. This is a function of the prior auto-centric design of the corridor, promotes higher vehicular speeds and compromises pedestrian safety. This study is recommending all travel lanes be reduced to an 11-foot width.



## Continuous Sidewalks

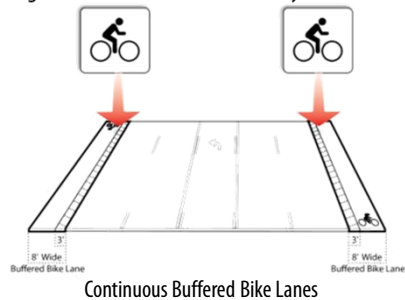
There are numerous sidewalk gaps identified on both sides of Washtenaw Avenue. One element to improve pedestrian connectivity is to fill these gaps. This study recommends a minimum 6-foot wide sidewalk in Link areas and 12-foot wide sidewalks in Node segments. Nodes are areas identified for more intense development while Links serve as a transition between the Nodes. A larger pedestrian zone at the Nodes allows for opportunities to activate the space. An 8-foot wide landscape buffer is recommended for both conditions.



## [Corridor Cross Sections] Building a Complete Street

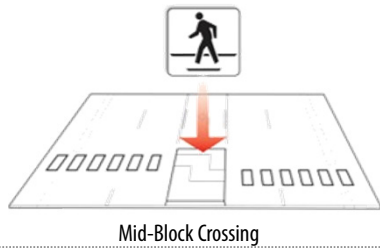
### Continuous Buffered Bike Lanes

Currently there are no bike lanes on Washtenaw Avenue. In an effort to promote a more equitable distribution of transportation options, continuous 5-foot bike lanes with a 3-foot buffer are recommended in both directions. This will improve non-motorized connectivity along the corridor and the buffer will encourage use and add to user safety.



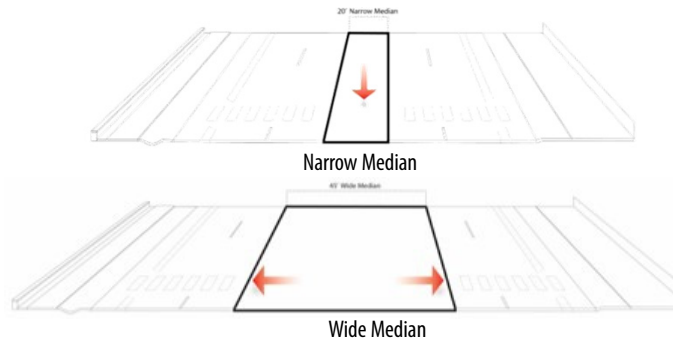
### Mid-Block Crossings

Providing safe pedestrian access along the corridor and across the corridor are important elements of the ReImagine Washtenaw vision. This study is recommending pedestrian improvements at all signalized intersections. In addition, it is recommended to implement mid-block crossings at specific locations to improve access across the roadway. Mid-block crossings are discussed in greater detail in Chapter 5.



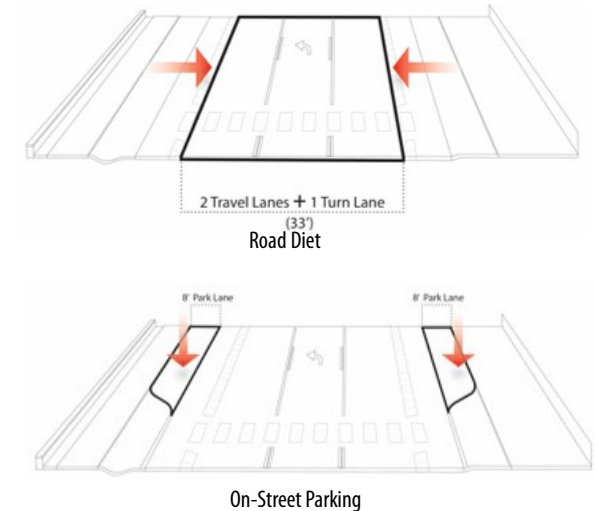
### Medians

A majority of the existing Washtenaw Avenue is 5-lanes of pavement. Wide and narrow medians are recommended in specific segments to improve traffic flow, enhance pedestrian safety and provide opportunities for landscaping and stormwater management. More detail regarding median location and operations is found later in this chapter.



### Road Diet

A road diet conversion of 5-lanes to 3-lanes is recommended for the segment of the corridor in Ypsilanti. While this may require a reduction in traffic volumes, it provides the opportunity for traffic calming and improves both vehicular and pedestrian safety. Another benefit of a road diet is that it allows on-street parking in specific areas which would serve to enhance the street and business environment.



# [Corridor Cross Sections] Alternatives

## Introduction

Three cross section scenarios were developed as part of the community engagement process to obtain input with respect to corridor preferences. These scenarios represented a wide range of improvement alternatives with the primary difference being in the travel lane configurations. It is important to note that the cross sections evaluated extend beyond the curb-to-curb dimension of the road to include the pedestrian zone parallel to the road. The development of this pedestrian zone is a critical element of the ReImagine Washtenaw vision as it relates to connectivity along the corridor and a revitalized economic environment.

The following elements were common to all the scenarios:

- A 5-foot wide bike lane with a 3-foot wide buffer located outside of the travel lanes and continuous through the entire corridor.
- A minimum 8-foot wide landscape buffer to provide separation for pedestrians from the road. This buffer may be planted with trees, shrubs, flowers or grass or it may be used as an infiltration swale for localized stormwater management.
- A minimum 20-foot wide pedestrian zone, including the landscape buffer, at identified Nodes. A minimum 14-foot wide pedestrian zone, including the landscape buffer, is proposed for Links which connect the Nodes.

## Uniform (5-lane)

The Uniform scenario includes two 11-foot wide travel lanes in each direction with an 11-foot wide center left-turn lane continuous through the entire corridor.

## Varied (5-lane, 4-lane w/median and 3-lane)

The Varied scenario includes a combination of cross sections that relate to specific conditions along the corridor:

- A 4-lane section with a narrow (13-foot) median is proposed west of Platt Road. The narrow median would allow direct left-turns to the limited number of existing intersections in this segment.
- A 5-lane section is proposed between Platt Road and Huron Parkway and between Hogback Road/Carpenter Road and Torrey Avenue.
- A 4-lane section with a wide (45-foot) median is proposed from Huron Parkway to the US-23 interchange. The wide median would allow indirect left-turns.
- A 3-lane section is proposed between Torrey Avenue and Kewanee Avenue and between Cornell Road and Oakwood Street.
- A 3-lane section with on-street parking is proposed between Kewanee Avenue and Cornell Road.

## Dedicated Transit (4-lane w/median and 3-lane)

The Dedicated Transit scenario includes a combination of two cross sections that both include dedicated transit lanes. A 4-lane section with a wide (45-foot) median is proposed from Stadium Boulevard to Torrey Avenue (with the exception of through the US-23 interchange). Dedicated transit could be accommodated in the 45-foot wide median or shifted to the outside lanes resulting in a  $\pm$  20-foot median. A 3-lane section is proposed from Torrey Avenue to Oakwood Street that would include dedicated transit lanes on the outside.

## Community Preference

Overall, the top three most important issues documented in the public comments were:

- Making safer pedestrian crossings on Washtenaw Avenue
- Improving and adding sidewalks
- Improving pedestrian connectivity

The Dedicated Transit scenario was the most popular scenario by a significant margin compared to the Uniform and Varied scenarios.

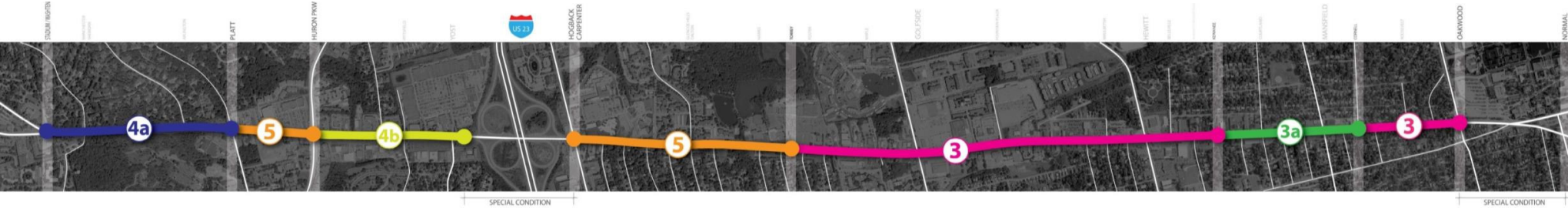


# [Corridor Cross Sections] Alternatives

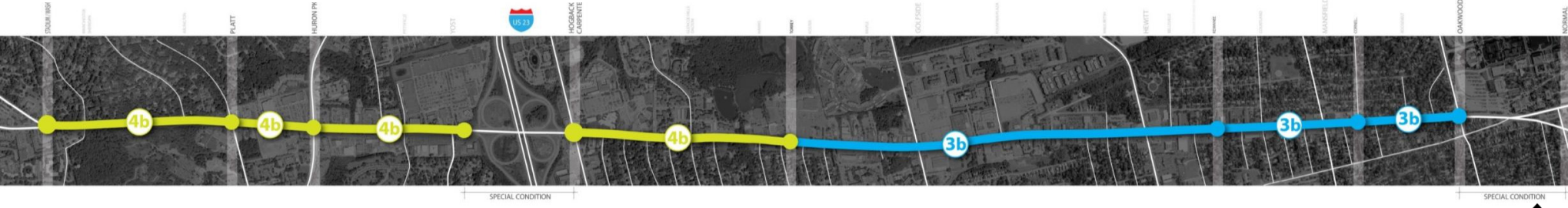
Uniform (5-lane)



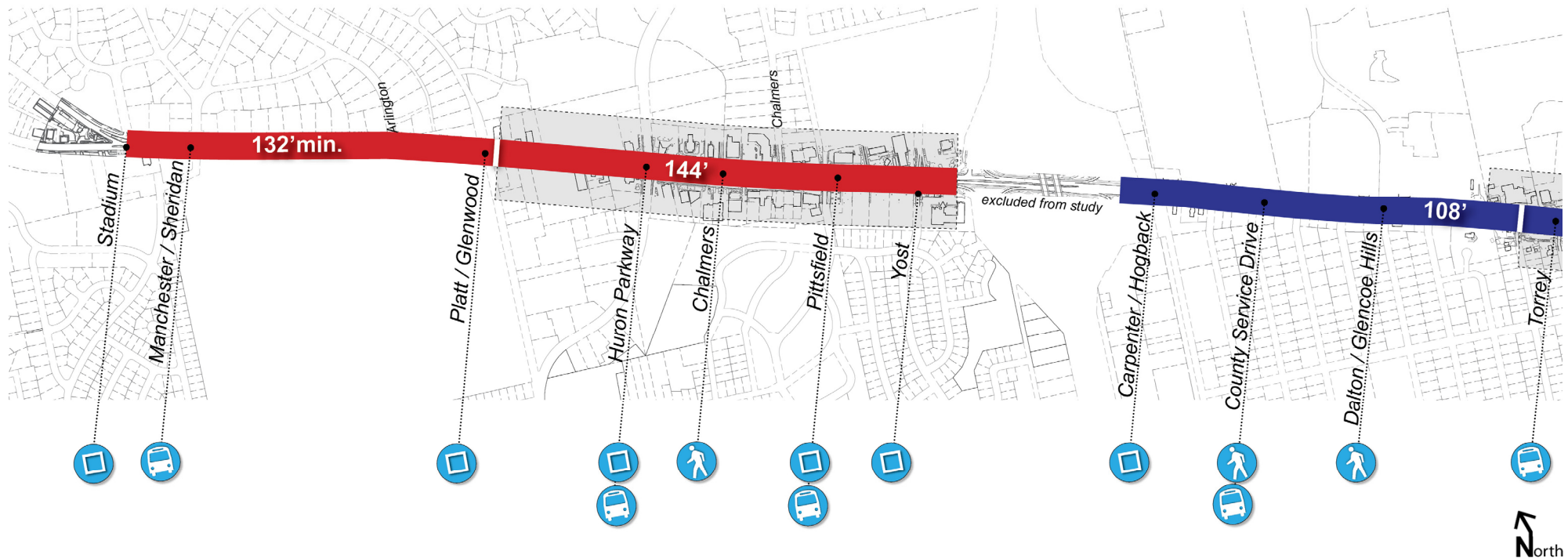
Varied (5-lane, 4-lane w/median and 3-lane)



Dedicated transit (4-lane w/median and 3-lane)



## [Corridor Cross Sections] Corridor Vision Plan - Overall

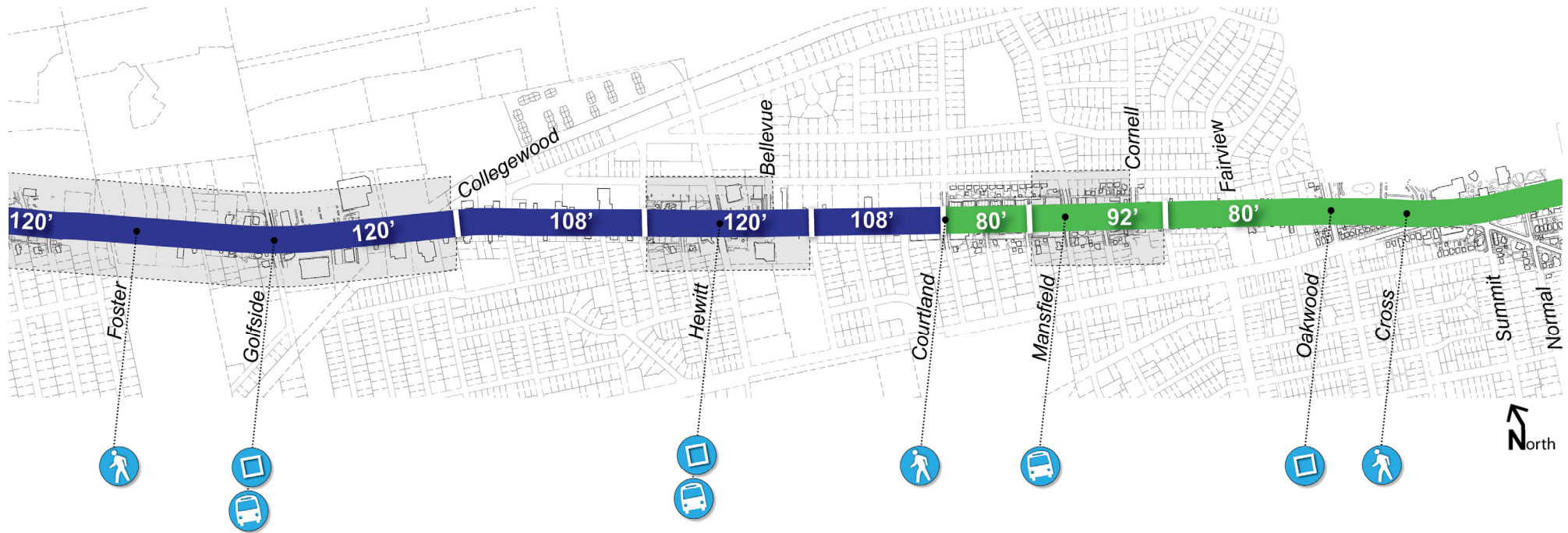


### Corridor Vision Plan

The Corridor Vision Plan represents a focused application of community preferences along with an emphasis on complete streets, pedestrian and non-motorized improvements, transit enhancements and a strategic alignment with municipal goals related to proposed land uses along the corridor. This includes identification of nodes for intensified mixed-use development as well as links that connect the nodes and provide a transition to moderate density residential and office uses.

This section provides a closer look at each segment and includes details of the proposed associated cross sections. A description of pedestrian improvements, including mid-block crossings, and transit enhancements, with concept plans for Super Stops is found in following sections of this report. Several cross section alternatives and combinations were considered relative to the limits of existing right-of-way, adjacent land use, and proposed development in the corridor. A result of this was the identification of additional land required to accommodate the proposed cross sections and transit enhancements.

## [Corridor Cross Sections] Corridor Vision Plan - Overall



It is important to realize that the road improvements recommended in this report are not anticipated as a single project but rather incremental as parcels may be aggregated and development opportunities arise along the corridor. As these opportunities present themselves, acquisition of areas needed to accommodate the vision could be in the form of easement from proposed developers; not necessarily through purchase. As such, this report is referencing the additional lands needed as public access requirements. A detailed survey delineating the extent of proposed public access requirements has been prepared (a reduced version can be found in Appendix B).

The recommended cross sections were developed based on traffic analysis that evaluated how the cross sections would function and/or the extent of mode shift/traffic diversion required. More information regarding the traffic analysis can be found in Appendix C. A summary of the analysis follows the cross section discussion.

### Non-Motorized Regional Connections

The Washtenaw County Parks & Recreation Commission has made a serious commitment to expand non-motorized facilities throughout the county. The Border-to-Border Trail, of which major segments have been

completed, will ultimately span across Washtenaw County, roughly following the Huron River. While the trail was originally thought of as a recreational pathway, in times of rising energy costs, the facility is being used more and more for non-motorized transportation. Segments already completed allow users to go from Ypsilanti to Ann Arbor completely off street, and in doing so passing immediately next to Eastern Michigan University, The University of Michigan hospital, Washtenaw Community College and Saint Joseph Mercy Hospital. Along Washtenaw Avenue, connections to the Border-to-Border Trail can be realized north along Hewitt and east along Cross Street.



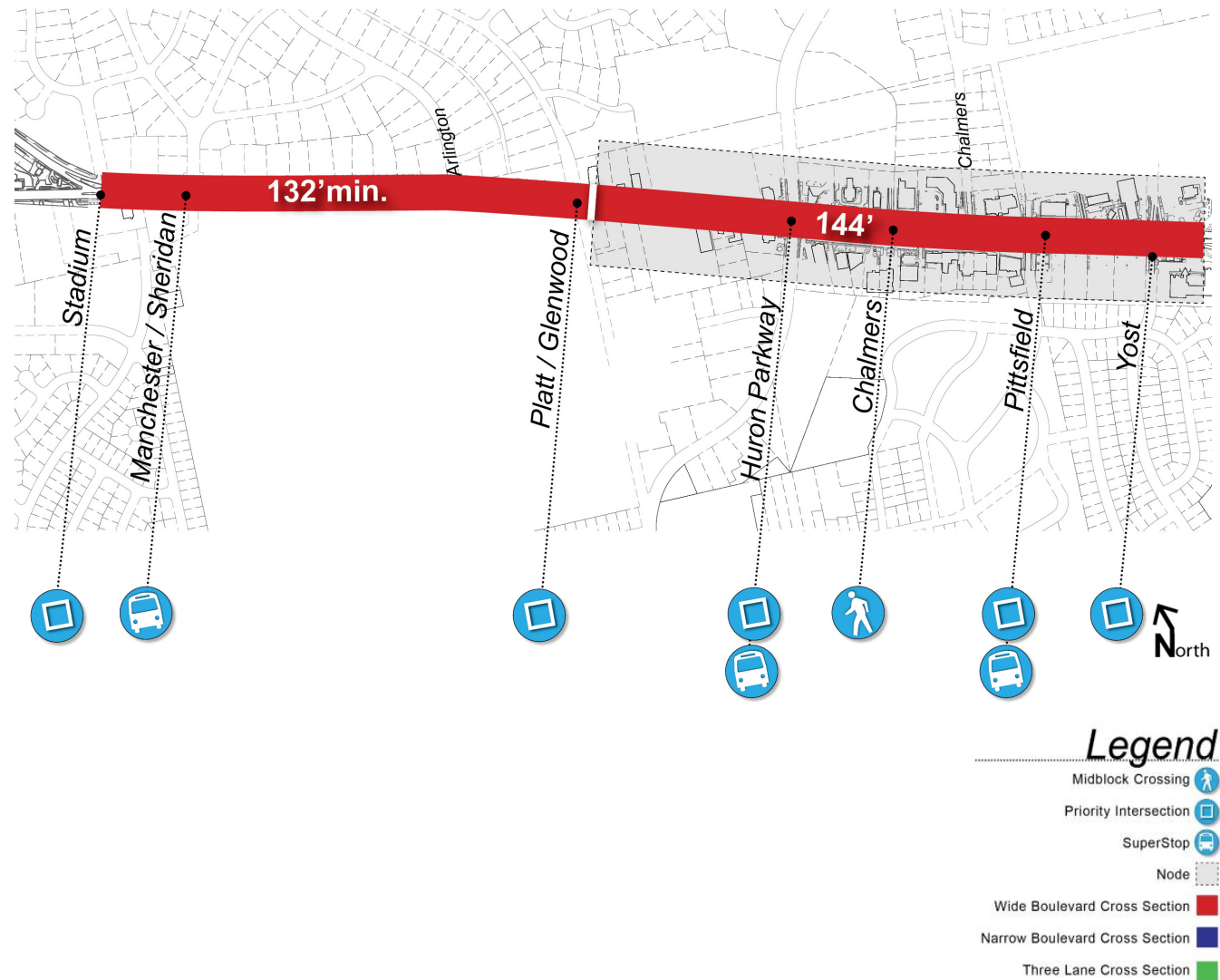
# [Corridor Cross Sections] Corridor Vision Plan – Ann Arbor

## Overview

### Wide Median Boulevard Cross Section

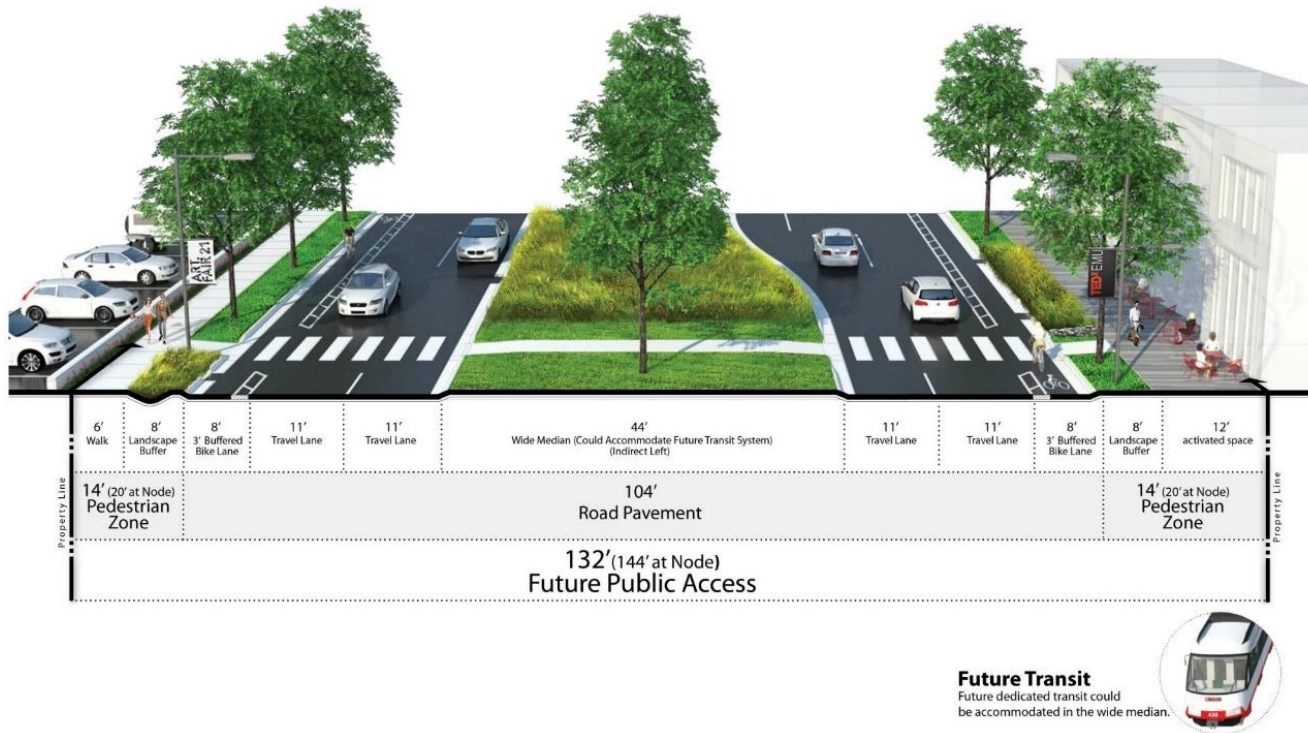
A wide median boulevard cross section is recommended for this segment within the City of Ann Arbor limits extending from the Washtenaw Avenue/Stadium Boulevard split to east of US-23. This cross section was selected for specific qualities including:

- Improves traffic flow by allowing greater vehicular capacity with indirect left-turns
- Improves pedestrian safety
- Provides opportunities for stormwater management
- The existing right-of-way between Huron Parkway and Yost Boulevard can accommodate the wider public access requirements
- This cross section is consistent with Ann Arbor's long range plan for the corridor as described in the adopted City of Ann Arbor 2013 *Non-Motorized Transportation Plan Final Draft*





## [Corridor Cross Sections] Corridor Vision Plan – Ann Arbor



### Four Travel Lanes with Wide Median and Bike Lanes

This cross section includes two 11-foot travel lanes in each direction and a 44-foot wide center median. The wide median is an excellent method to improve traffic flow through use of indirect left-turns (“Michigan lefts”) and it accommodates the turning movements of larger vehicles while also increasing safety for pedestrian crossings. The wide median also provides an opportunity for stormwater management. As with all of the cross sections, this recommendation includes a buffered bike lane, a continuous pedestrian zone with a landscape buffer and screen walls where buildings are not adjacent to the public access limits.

A future alternative of this cross section would implement center-operated dedicated transit lanes within the wide median.

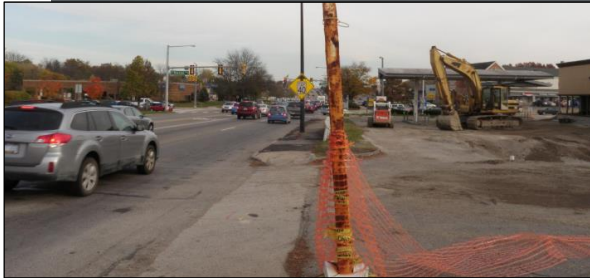
All of these strategies would require more detailed design analysis, justification through traffic studies and coordination with MDOT.

## [Corridor Cross Sections] Corridor Vision Plan – Ann Arbor



Source: SmithGroupJJR

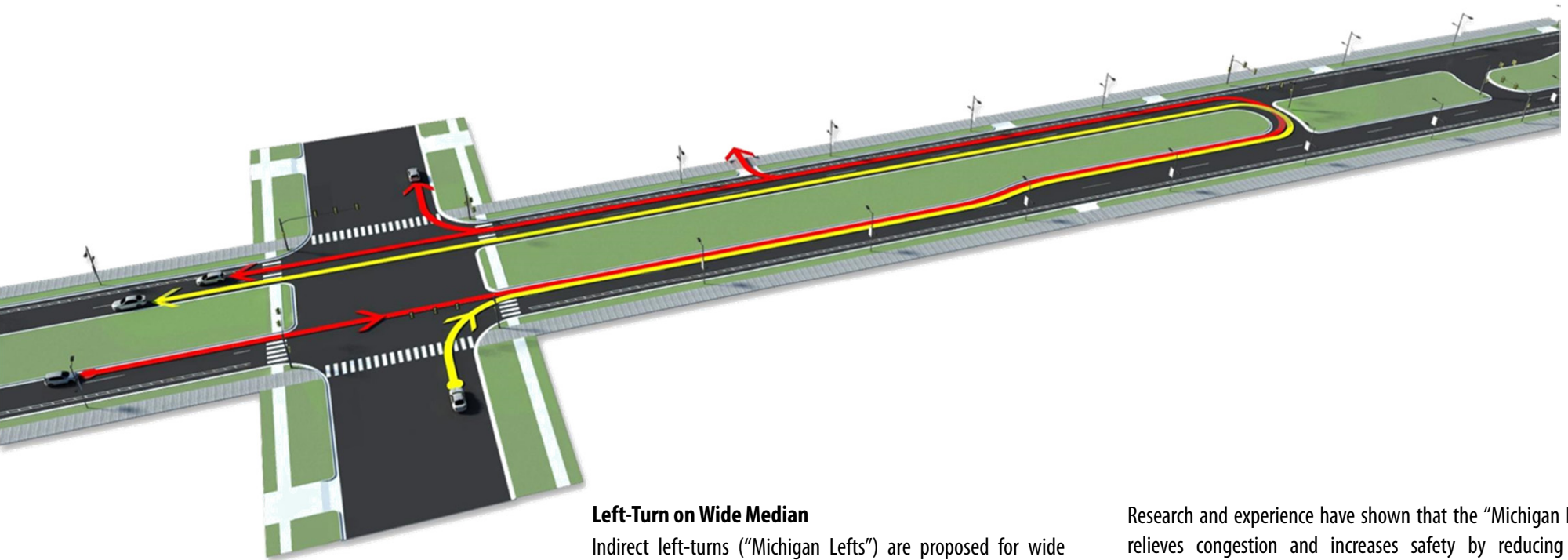
**PROPOSED**



**BEFORE**

View Looking East at the Washtenaw Avenue/Huron Parkway Intersection

## [Corridor Cross Sections] Corridor Vision Plan – Ann Arbor



### Left-Turn on Wide Median

Indirect left-turns (“Michigan Lefts”) are proposed for wide median segments to improve traffic flow and safety, to facilitate left-turns and to access property on the opposite side of the road. Where a “Michigan Left” is in place, left-turns at the intersection are not allowed. Instead, to turn left, you must drive straight or turn right, then make a U-turn at a median crossover.

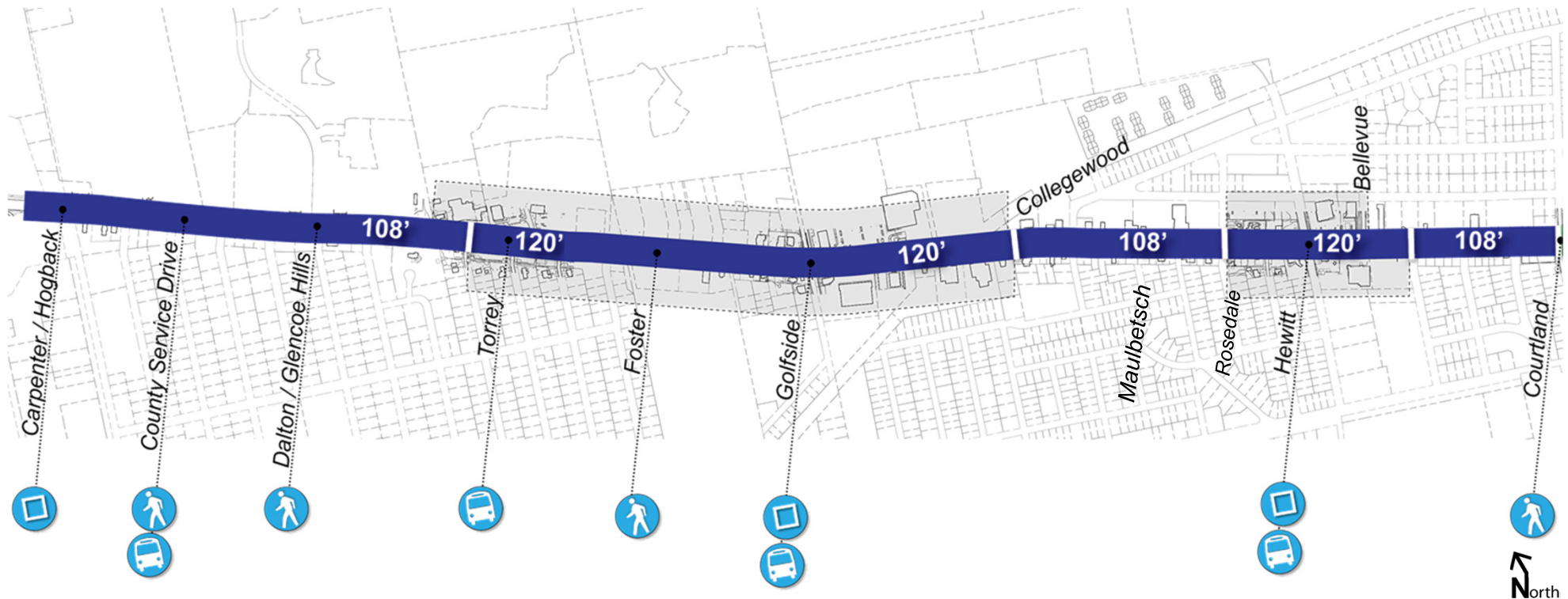
Research and experience have shown that the “Michigan Left” relieves congestion and increases safety by reducing the number and severity of crashes. In commercial corridors like Washtenaw Avenue, crossovers typically need to accommodate a 74-foot overall length truck with a 45-foot turning radius.

“Michigan Lefts” have been part of Michigan roadways since at least the late 1960s.

Specific bike circulation design, including left hand turn methods, will be developed as part of the overall roadway engineering at the time of implementation.



## [Corridor Cross Sections] Corridor Vision Plan – Pittsfield/Ypsilanti Township



### Overview

#### Narrow Median Boulevard Cross Section

A narrow median boulevard cross section is recommended for the segments in Pittsfield and Ypsilanti Townships extending from Hogback Road/Carpenter Road east to Courtland Street. This cross section was selected for specific qualities including:

- An ability to manage left-turn movements and improve vehicular safety

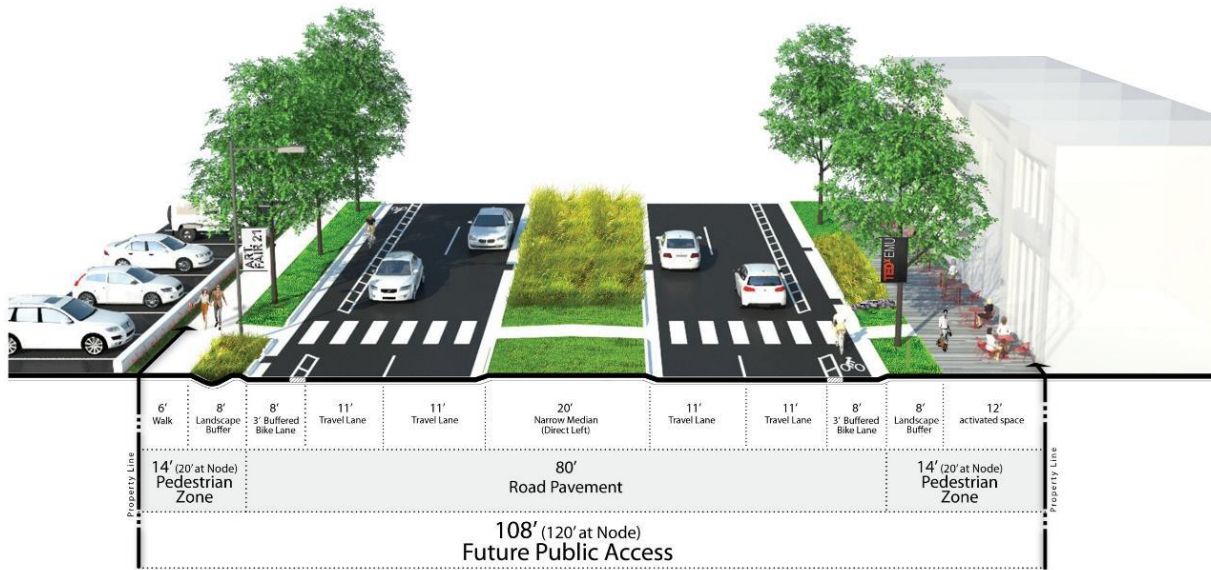
- Requires less public access than the wide median and maintains acceptable traffic capacity
- Improves pedestrian safety by providing a middle refuge island
- Provides traffic calming qualities
- Opportunities for stormwater management

### Legend

- Midblock Crossing
- Priority Intersection
- SuperStop
- Node
- Wide Boulevard Cross Section
- Narrow Boulevard Cross Section
- Three Lane Cross Section



## [Corridor Cross Sections] Corridor Vision Plan – Pittsfield/Ypsilanti Township



### Future Transit

A dedicated transit lane, as part of a road diet, could replace a travel lane when a needed mode shift has occurred.



As with all of the cross sections, this recommendation includes a buffered bike lane, a continuous pedestrian zone with a landscape buffer and screen walls where buildings are not adjacent to the public access limits.

A future alternative of this cross section would implement dedicated outside transit lanes requiring a reduction of travel lanes to one in each direction. This is an alternative that could only be implemented with a  $\pm 15\%$  reduction in traffic volumes.

All of these strategies would require more detail design analysis, justification through traffic studies and coordination with MDOT.

### Four Travel Lanes with Narrow Median

This cross section includes two 11-foot travel lanes in each direction and a 20-foot wide center median. The narrow median is used to implement access management strategies and control left-turns in a segment with an excess number of drives. This improves traffic flow and safety while maintaining an acceptable level of vehicular capacity. The narrow median provides for safer pedestrian crossings as pedestrians only need to cross two travel lanes at a time.

The 20-foot dimension, which is wider than many narrow medians, was selected to provide greater landscape enhancement and stormwater management opportunities.

Each of the municipalities will need to strategically consider locations for direct lefts which can be accommodated by sheltered turn lanes in the median. Another method to manage left-turns as well as access to parcels on the opposite side of the road includes roundabouts and “bulb outs” to accommodate the turning radius of larger vehicles.

## [Corridor Cross Sections] Corridor Vision Plan – Pittsfield/Ypsilanti Township



Source: SmithGroupJJR

**PROPOSED**



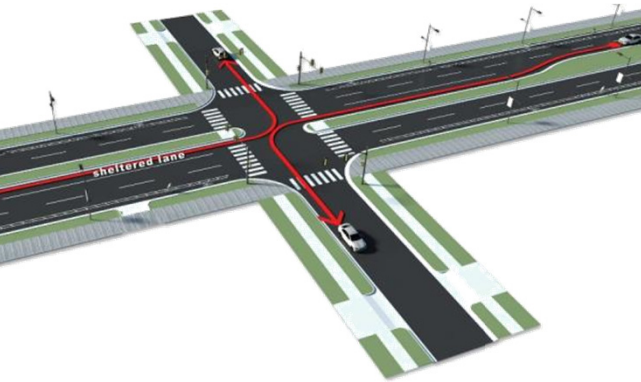
**BEFORE**

View of Boulevard Looking East at the Washtenaw/Foster Intersection



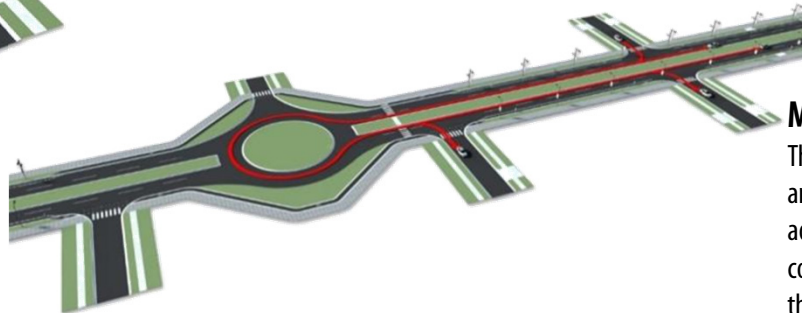
# [Corridor Cross Sections] Corridor Vision Plan – Pittsfield/Ypsilanti Township

## Options for Left-Turns on Narrow Median



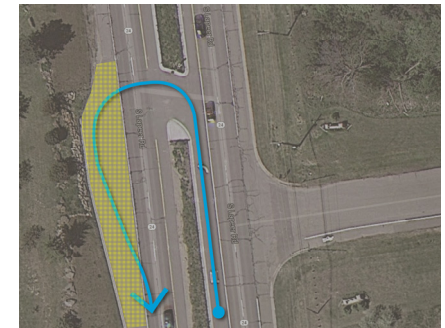
### Method #1 – Direct Left-Turns

The sheltered lane accommodates direct left-turns without impacting the through travel traffic. Locations for direct lefts need to be determined based on traffic volumes, adjacent land use and the need for specific access management strategies. The 20-foot dimension allows for implementation of sheltered lanes while maintaining a refuge island for pedestrian crossings.



### Method #2 – Roundabout

Roundabouts are circular intersections in which traffic flows continuously in one direction around a central island. They can reduce left-turn traffic conflicts that are a frequent cause of crashes at traditional intersections. A roundabout would allow vehicles to access properties on the opposite side in segments of the corridor with no left-turns. The location of a roundabout(s) would be determined based on detailed traffic analysis and coordination with MDOT and local municipalities



M-24 Lake Orion – “Bulb Out”

### Method #3 – Indirect Lefts

The “bulb out” allows U-turns for larger vehicles such as buses and trucks in road segments that do not otherwise contain adequate dimension for the required turning radius. “Bulb outs” could be installed in areas where the potential exists to obtain the additional public access.

Specific bike circulation design, including left hand turn methods, will be developed as part of the overall roadway engineering at the time of implementation.

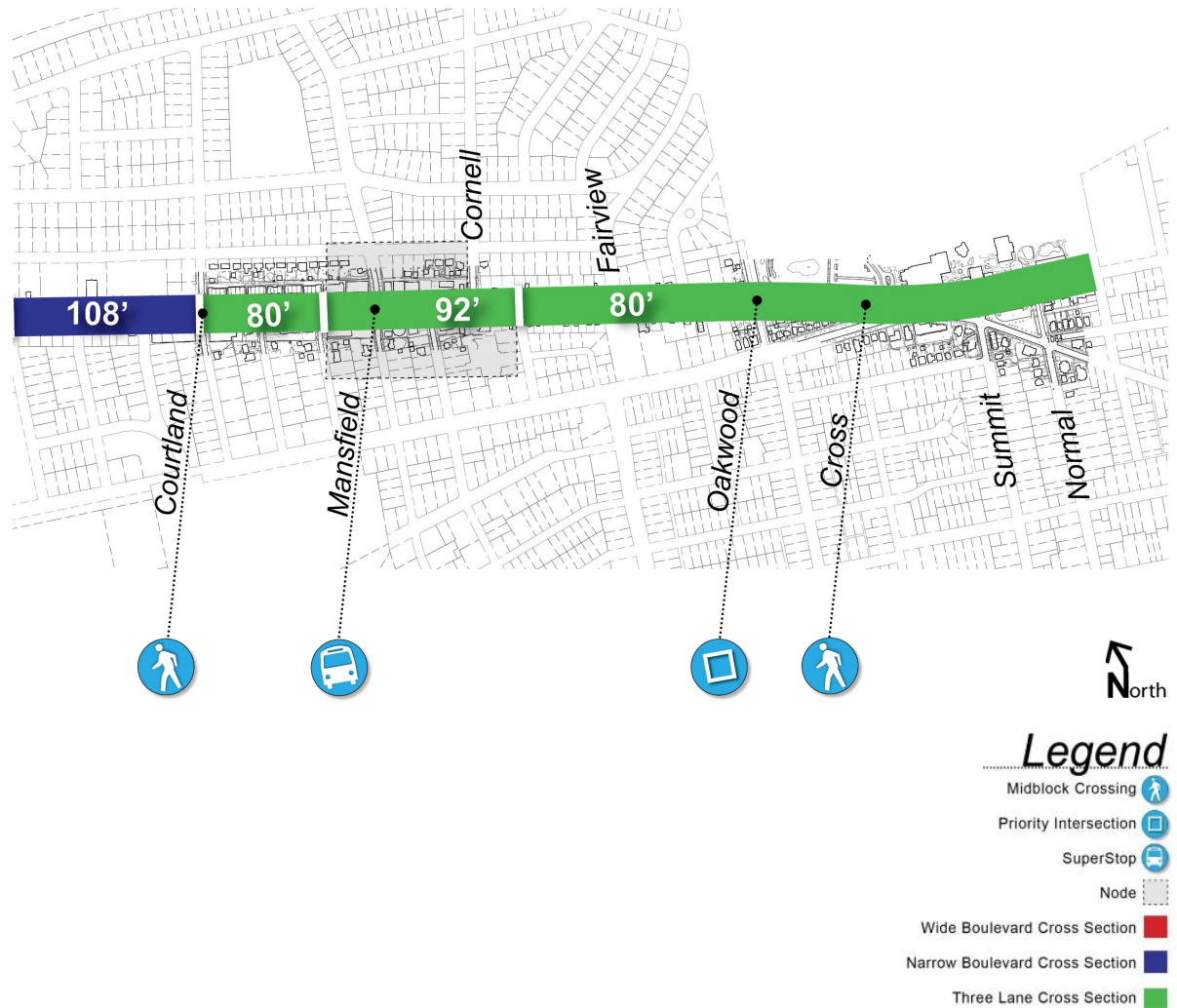
# [Corridor Cross Sections] Corridor Vision Plan – Ypsilanti

## Overview

### Three Lane Cross Section

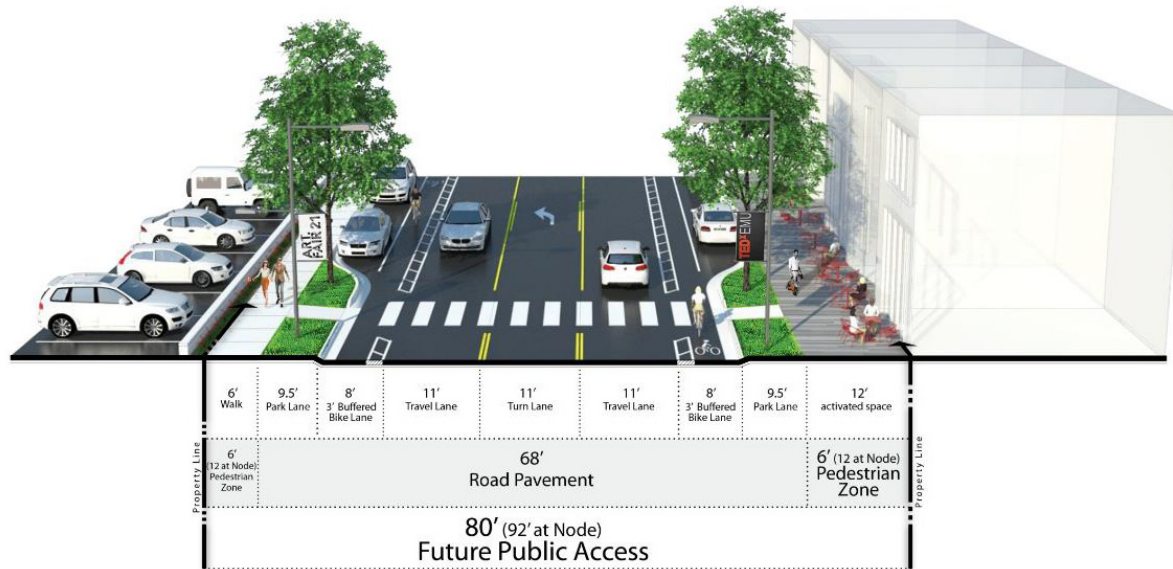
A three lane cross section is recommended for the segment in the City of Ypsilanti extending from Courtland Street to the eastern project limits. This cross section was selected for specific qualities including:

- Requiring limited additional public access
- Capacity to provide on-street parking and an enhanced business atmosphere
- Potential for traffic calming
- Decreased pedestrian crossing time and improved safety





## [Corridor Cross Sections] Corridor Vision Plan – Ypsilanti



### Future Transit

Future dedicated transit could be accommodated with additional public access beyond what is being proposed



### Two Travel Lanes with Bike Lanes

This cross section includes a reduction from two travel lanes in each direction to one 11-foot travel lane in each direction with a center turn lane. This segment of the corridor has dimensional restrictions with respect to existing buildings. The proposed “road diet” allows for the buffered bike lane and a continuous pedestrian zone with a landscape buffer. In the node area, on-street parking is proposed to enhance the business atmosphere.

A future alternative of this cross section would implement dedicated outside transit lanes requiring additional public access beyond what is being proposed at this time.

All of these strategies would require more detail design analysis, justification through traffic studies and coordination with MDOT.

## [Corridor Cross Sections] Corridor Vision Plan – Ypsilanti



Source: SmithGroupJJR

**PROPOSED**



**BEFORE**

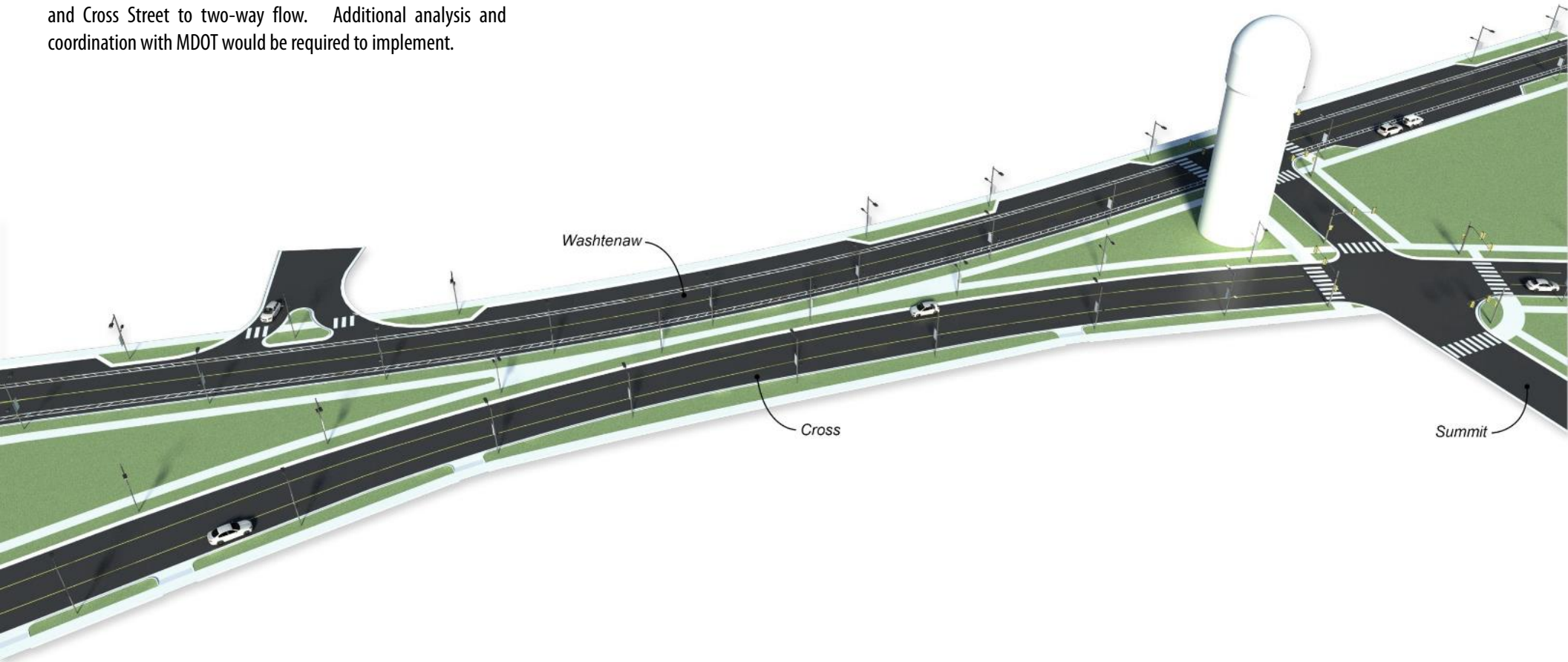
View of the Looking East at the Washtenaw Avenue/Mansfield Street Intersection



## [Corridor Cross Sections] Corridor Vision Plan – Ypsilanti

### Washtenaw Avenue - Cross Street Redirection

This graphic represents a vision being advanced by the City of Ypsilanti to improve traffic flow by returning Washtenaw Avenue and Cross Street to two-way flow. Additional analysis and coordination with MDOT would be required to implement.



## [Cross Sections] Traffic Summary

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The final vision developed for Relmagine Washtenaw balanced all modes of transportation along the corridor, including non-motorized, transit, and vehicular traffic. A VISSIM analysis, a simulation tool for modelling multi-modal traffic conditions, was conducted for the final vision for the year 2020 and 2040 to ensure that traffic would operate acceptably. The following describes the recommendations of the corridor from west to east.

### **Stadium Drive to Yost Boulevard/US-23**

This section would have a wide boulevard with indirect left-turns for the majority of the corridor. Direct left-turns are still proposed at some locations due to the high amount of left-turn volumes in this area. Within the model, there were direct left-turns for Huron Parkway onto Washtenaw Avenue; however, not for Washtenaw Avenue onto Huron Parkway. In addition, there would be direct left-turns for Washtenaw Avenue onto Yost Boulevard/Arborland Shopping Center, which currently exists. However, there would not be direct left-turns from Washtenaw Avenue onto Pittsfield Boulevard, which would instead be accomplished either by utilizing the Yost Boulevard intersection or a crossover west of Pittsfield Boulevard.

There would still be direct left-turns from Pittsfield Boulevard/Arborland Shopping Center onto Washtenaw Avenue. Limiting some of these turning movements and introducing indirect left-turns reduces the congestion along Washtenaw Avenue within this area. In addition, it also reduces the crash potential of vehicles wanting to turn left from driveways onto Washtenaw Avenue.

### **US-23 to east of Hewitt Road**

This section would have a narrow median and would still allow direct left-turns at signalized intersections and would have some breaks for indirect left-turns between the signalized intersections. Signalized intersection operations would not change from the No-Build Conditions as there would still be two lanes in each direction and a center left-turn lane at each of the signalized intersections within this section.

### **East of Hewitt Road to east of Oakwood Street**

This section would have one lane in each direction with a continuous center left-turn lane. Through a sensitivity analysis, it was found that a 15% reduction in traffic volumes would need to occur along this section of the corridor to maintain operations at LOS D or better at the study intersections for the year 2040.

If right-turn only lanes were added to the signalized intersections in this section (though they are not proposed at this time), a 15-percent reduction in traffic volumes would not need to occur.

The final vision was coded into the 2020 and 2040 VISSIM model with a 15% reduction in traffic volumes for the year 2040. A reduction in traffic volumes was not utilized for 2020. Figure 3.1 illustrates the traffic volumes that were utilized in the VISSIM analysis for the year 2040. Tables 3.1 and 3.2 illustrate the delay and levels of service for the year 2020 and 2040, respectively. Appendix B details the intersection MOE's for each of the intersections.

In the year 2020 and 2040, the overall intersection levels of service are expected to be a LOS D or better at all study locations. However, in the year 2020, there are some approaches in the PM peak hour that are expected to operate at LOS E, including some approaches at Huron Parkway and Hogback Road/Carpenter Road. Some approaches at Oakwood Street are also expected to operate at a LOS E. However, signal timing changes at these intersections may improve the approaches at this intersection.



## [Cross Sections] Traffic Analysis

For the year 2020, the 15% decrease of traffic volume was not applied to the intersection at Oakwood Street. As indicated, a few of the approaches are anticipated to operate at LOS E, and it is expected that after the year 2020, a decrease may end up occurring due to the increase of congestion that one may experience at these intersections. With a 15% decrease by the year 2040, all approaches at the intersection are expected to operate at LOS D or better.

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
AM Peak Hour					
Huron Parkway	37 / D	25 / C	44 / D	51 / D	36 / D
Hogback / Carpenter	12 / B	39 / D	51 / D	32 / C	29 / C
Golfside	35 / D	30 / C	42 / D	34 / C	35 / C
Hewitt	20 / C	20 / C	31 / C	28 / C	24 / C
Oakwood	13 / B	17 / B	31 / C	24 / C	17 / B
PM Peak Hour					
Huron Parkway	40 / D	28 / C	59 / E	60 / E	45 / D
Hogback / Carpenter	20 / C	56 / E	50 / D	47 / D	42 / D
Golfside	43 / D	41 / D	51 / D	41 / D	43 / D
Hewitt	26 / C	26 / C	45 / D	53 / D	36 / D
Oakwood	51 / E	40 / D	56 / E	60 / E	32 / C

Figure 3.1: 2020 AM and PM Peak Hour Delay and Levels of Service with Future Vision

\* Delay (seconds per vehicle) / Level of Service

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
AM Peak Hour					
Huron Parkway	43 / D	33 / C	46 / D	56 / E	41 / D
Hogback / Carpenter	12 / B	39 / D	52 / D	34 / C	30 / C
Golfside	39 / D	32 / C	55 / D	36 / D	40 / D
Hewitt	21 / C	21 / C	36 / D	27 / C	26 / C
Oakwood	15 / B	28 / C	31 / C	24 / C	23 / C
PM Peak Hour					
Huron Parkway	44 / D	29 / C	57 / E	69 / E	48 / D
Hogback / Carpenter	20 / C	50 / D	51 / D	45 / D	39 / D
Golfside	37 / D	36 / D	54 / D	52 / D	42 / D
Hewitt	23 / C	24 / C	37 / D	41 / D	30 / C
Oakwood	20 / B	83 / F	25 / C	48 / D	48 / D

Figure 3.2: 2040 AM and PM Peak Hour Delay and Levels of Service with Future Vision

\* Delay (seconds per vehicle) / Level of Service

\*\*Decrease in volumes by 15-percent from No-Build

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04

ReImagine Washtenaw

**Transit**

# [Transit] Transit Improvements

## Transit Improvements

The vision for Washtenaw Avenue is a true “transit oriented” corridor with an efficient and effective mass transit system. Existing conditions include:

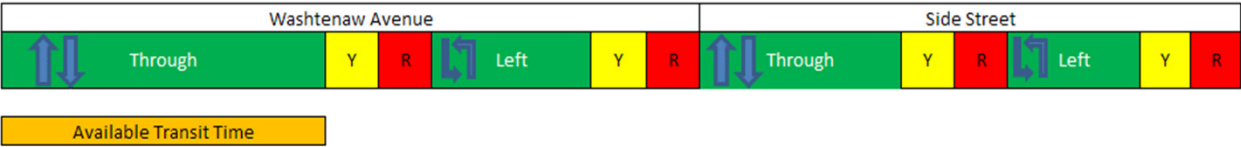
- Highest ridership in AAATA transit system
- Sidewalks gaps makes bus accessibility poor
- Narrow right-of-way limits ability to add bus stop amenities
- Traffic congestion affects service reliability

AAATA has several transit improvements underway. Recent increases in bus frequency has led to significant ridership increases. Transit signal priority, queue jumps and transit-only lanes are proposed solutions that will improve reliability of the system and further increase ridership.

Transit signal priority changes the traffic signals extending the green time along the roadway in favor of oncoming buses in order to minimize delays and improve consistent service. An analysis of implementing transit signal priority is currently underway.

Queue jumps allow buses to get through signalized intersections in advance of automobile traffic and can be considered at intersections that are busy and where transit signal priority is not successful.

Without Transit Signal Priority



With Transit Signal Priority

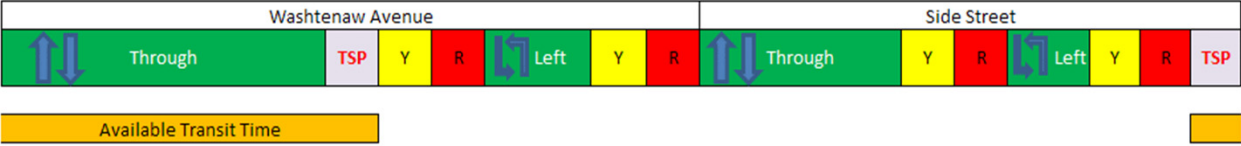
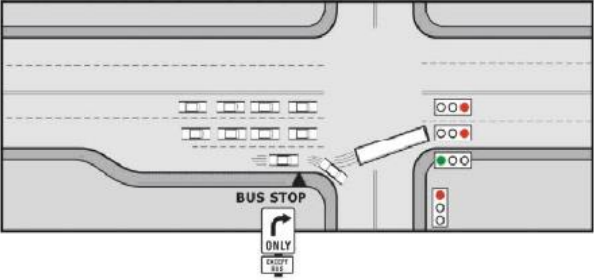


Figure 4.1: Transit Signal Priority  
Source: Parsons Brinckerhoff of Michigan

Bus pulls into near side turn lane; Passengers board during red



Bus receives green before other vehicles



Other vehicles proceed a few seconds later

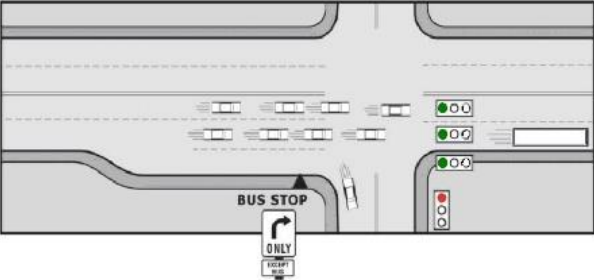


Figure 4.2: Bus Queue Jump Illustration  
Source: Parsons Brinckerhoff of Michigan



# [Transit] Transit Improvements



Source: www.streetsblognyc.org

Example of Transit Dedicated Lanes

Bus/Transit-Only Lanes are part of the long range vision for the entire corridor. Considered when transit travel time reliability becomes an issue through either parts of or the whole corridor and when queue jump/bypass lanes are needed at every intersection. A commitment to acquisition of additional public access and realization of necessary mode shift metrics is an important part of dedicated transit implementation.

## Super Stop Guidelines

The 2010 Washtenaw Avenue Corridor Redevelopment Strategy identified AAATA's intent to install eight Super Stops along the

corridor. Located in areas of higher density and major destinations, and at current bus stops with high ridership. The Super Stops will provide enhanced transit facilities including bus pull-offs, larger shelters, and additional passenger amenities.

**Recommendation #1 Far Side Super Stop Placement:** Super Stops will be placed far-side (downstream) of an intersection, as preferred by AAATA.

**Benefits:** On thoroughfares with high volumes of traffic, at intersections with multi-phase signals and with the potential for transit signal priority treatments, the far-side placement is a best practice that minimizes conflicts between right turning vehicles and buses, frees up right turning capacity on the near side, encourages pedestrians to cross behind the bus and allows bus drivers to take advantage of traffic gaps.

**Recommendation #2 Install Bus Bays:** The Super Stops will include a pull-off (bus bay) inset from the curb, deceleration and acceleration tapers and a stopping zone.

**Benefits:** Bus bays allow passenger pick-up and drop-off outside the travel lanes, allowing unobstructed traffic flow while the bus is stopped. They minimize rear end collisions and improve pedestrian safety by increasing distance from vehicles in travel lanes.

Preferred bus bay geometry and design:

- Taper lengths: 50 feet
- Stopping zone: 100 - 150 feet
- Bay Depth: 10 ½ feet min. (15 feet when needed to accommodate future road conditions)
- Boarding Area: Provide ample room for passenger loading/unloading. In general boarding areas shall be as wide as the stopping area and a minimum 12 feet deep

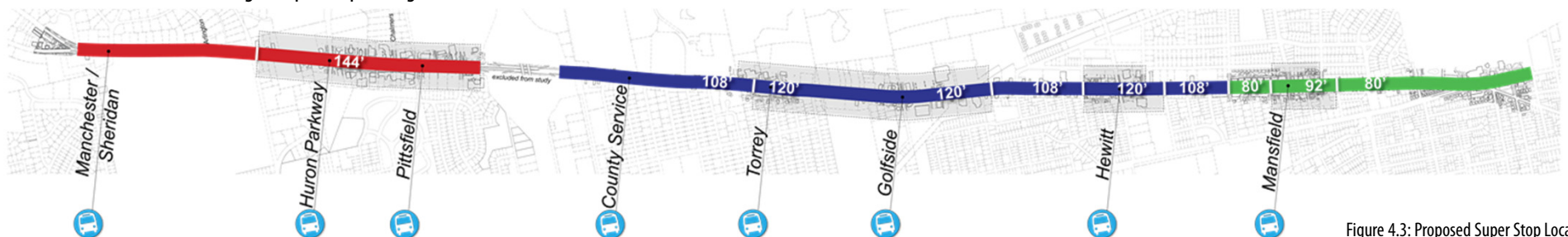


Figure 4.3: Proposed Super Stop Locations

# [Transit] Super Stop Guidelines

- Pavement: Heavy duty concrete
- Detectable Warning Strip: Located along boarding area curb
- Access: Meet adjacent sidewalks. Locate pedestrian crossings behind bus stopping areas whenever possible

## **Recommendation #3 Install Bus Stop Amenities at every Super Stop.**

*Benefits:* Providing amenities for transit riders as they wait for the bus improves user safety and comfort. The improved experience and enhanced image of transit along the corridor will encourage more residents to choose transit as a viable transportation mode.

*The specific configuration and amenities provided at each stop will vary based on need, budget and land availability. In general, bus stop amenities will include:*

### **Taking a Load Off: Seating**

The quantity of seating should respond to current and anticipated boarding counts. At a minimum, formal seating (not including seat sleeping walls or leaning rails) should be provided for 12-15 people.

### Benches

- Located in covered and uncovered locations
- Locate so as not to impede on the landing area or clear travel path of bisecting sidewalk

- Material – Recycled content, durable, heavy duty, metal, vandal resistant, coordinate finish and color with other stop amenities
- Benches shall have back support and mid-dividers/arms to discourage sleeping

### Bistro Bars/ Bistro Height Chairs

- Located in covered and uncovered locations
- Locate so as not to impede on the landing area or clear travel path of bisecting sidewalk
- Material – durable, heavy duty, metal, vandal resistant, coordinate finish and color with other stop amenities
- Chairs shall have back support

### Seat/Screen Walls

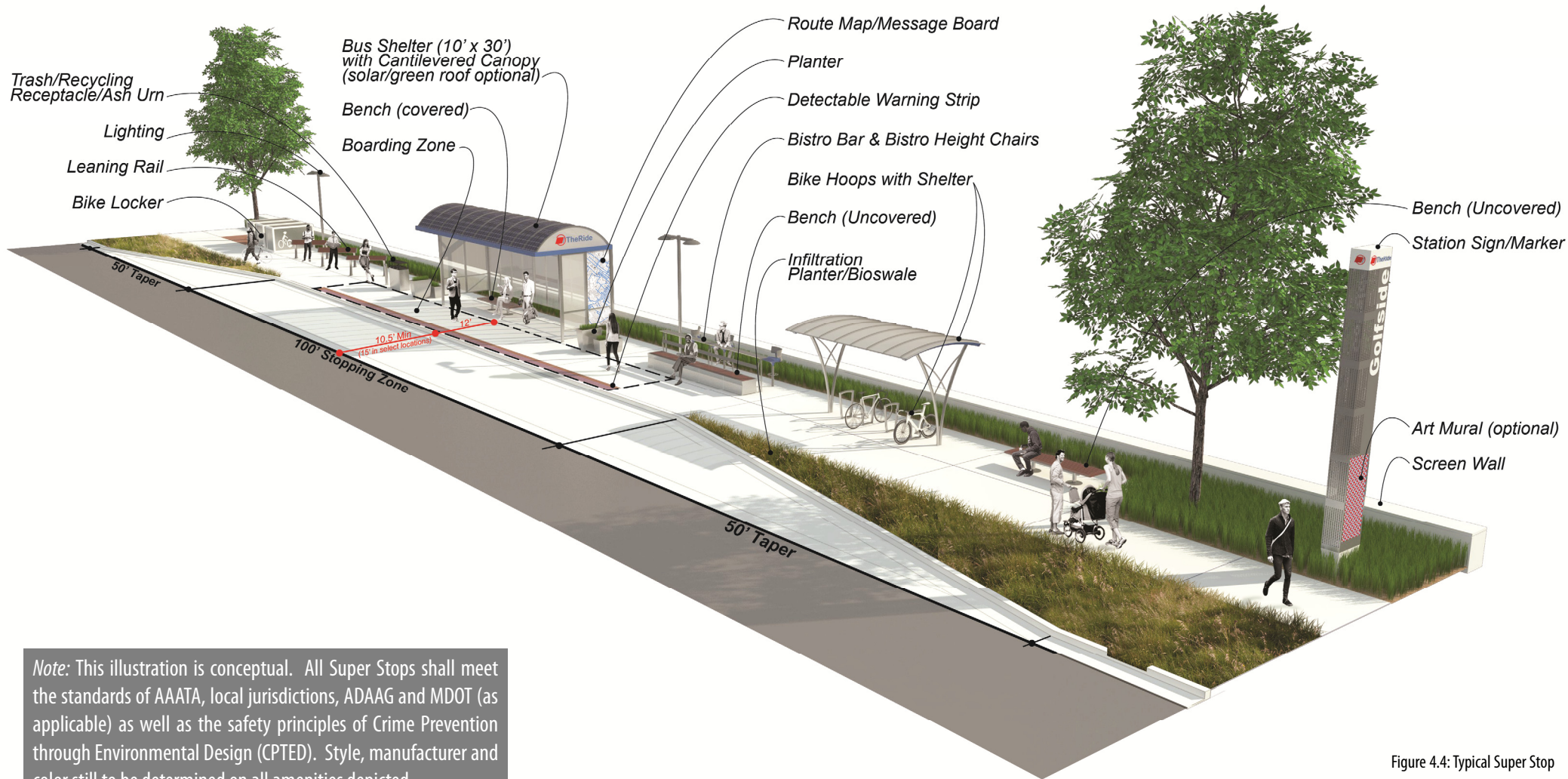
- Walls for parking lot screening and/or access control shall be designed at a height to accommodate short-term seating (24"-30" range).
- Walls shall be made of durable material – concrete, brick or stone face
- Cap shall be sloped to drain, but flat enough to allow seating. Caps shall have skateboard resistant design elements



Super Stop Examples



# [Transit] Super Stop Guidelines



*Note:* This illustration is conceptual. All Super Stops shall meet the standards of AAATA, local jurisdictions, ADAAG and MDOT (as applicable) as well as the safety principles of Crime Prevention through Environmental Design (CPTED). Style, manufacturer and color still to be determined on all amenities depicted.

Figure 4.4: Typical Super Stop

# [Transit] Super Stop Guidelines



Shelter Concepts

## Leaning Rails

- Intended for short-term waiting, leaning rails provide a respite option in addition to benches
- Locate so as not to impede on the landing area or clear travel path of bisecting sidewalk
- Material – durable, heavy duty, metal, vandal resistant, coordinate finish and color with other stop amenities

## Getting Out of the Elements: The Shelter

- 10-feet x 30-feet typical size
- Locate so as not to impede on the landing area or clear travel path of bisecting sidewalk
- Maintain same shelter silhouette. Change color; provide clear glass, with etching on lower panels
- Add solar panels and/or green roof

## Information Access

- Digital Information – route information and live messaging – generally as part of the shelter
- Station Sign/Marker – free standing vertical marker with The Ride logo, Super Stop name and art mural

## Lighting

- Shelter lighting - Solar
- Pedestrian scale lighting

## Multi-Modal Amenities

- Park & Ride lot/spaces where possible
- Zip Car parking spaces (where appropriate)
- Bike hoops (with shelter) and bike lockers

## Keeping It Tidy

- Waste receptacle
- Recycling (single stream)
- Places to put shopping carts
- Ash urns (away from shelter)
- No vendor boxes

## Interesting/Welcoming

### Landscape

Provide shade trees and landscape beds for comfort, to reduce heat island effect and increase pavement life. Utilize plant beds and trees to separate transit stop from other uses.

### Storm Water

Install storm water infiltration planters/bioswales at each of the Super Stops to collect walk and street run-off when possible.

### Art Opportunities

In addition to murals on each station sign, art installations could be considered elsewhere including custom benches, etched shelter glass, sculpture etc.

## Sustainability

Sustainable elements include:

- Storm water infiltration planters/bioswales
- Pervious paving
- Solar powered and LED lighting
- Recycled materials
- Zip Car parking spaces (where appropriate)
- Bike hoops and lockers



# [Transit] Super Stop Guidelines



Green Roof in South Yorkshire, England



Solar Roof in San Francisco, California

### Recommendation #4 Implement Super Stops with Partnerships.

Successful installation of the eight Super Stops will require collaboration between the transit authority, MDOT, local jurisdictions and adjacent property owners in order to implement Super Stops, public access is need to be obtained. The adjacent table shows which stops require additional public access and identifies potential timing for implementation.

### Corridor Super Stop Concepts

Conceptual designs of each the eight Super Stop locations have been developed to establish public access needs and guide future development (see following pages). Each concept reflects one possible layout of the amenities at the stop with the understanding that final layout will be the responsibility of AAATA as each Super Stop is implemented. Concepts assume current roadway widths to illustrate how the Super Stops could be installed in the near future. Land use and built form on the adjacent parcels reflect current or future condition depending on the stop location (see individual plans)

Super Stop		Additional Public Access Needed	Potential for Short-Term Implementation
Manchester Road/Sheridan Drive	North	NO	High
	South	YES	High
Huron Parkway	North	YES	Medium
	South	NO	High* (A2 shared-use path)
Pittsfield Boulevard	North	YES	Medium
	South	YES	Medium
Washtenaw County Service Center	North	YES	High
	South	YES	Low
Torrey/Glencoe Crossing	North	YES	Medium
	South	YES	Low
Golfside Road	North	YES	Low
	South	YES	Medium* (old Ypsi Arbor site)
Hewitt Road	North	YES	Medium* (Cueter expansion)
	South	YES	Low
Mansfield Street	North	YES	Medium
	South	YES	Low

Figure 4.5: Corridor Super Stops

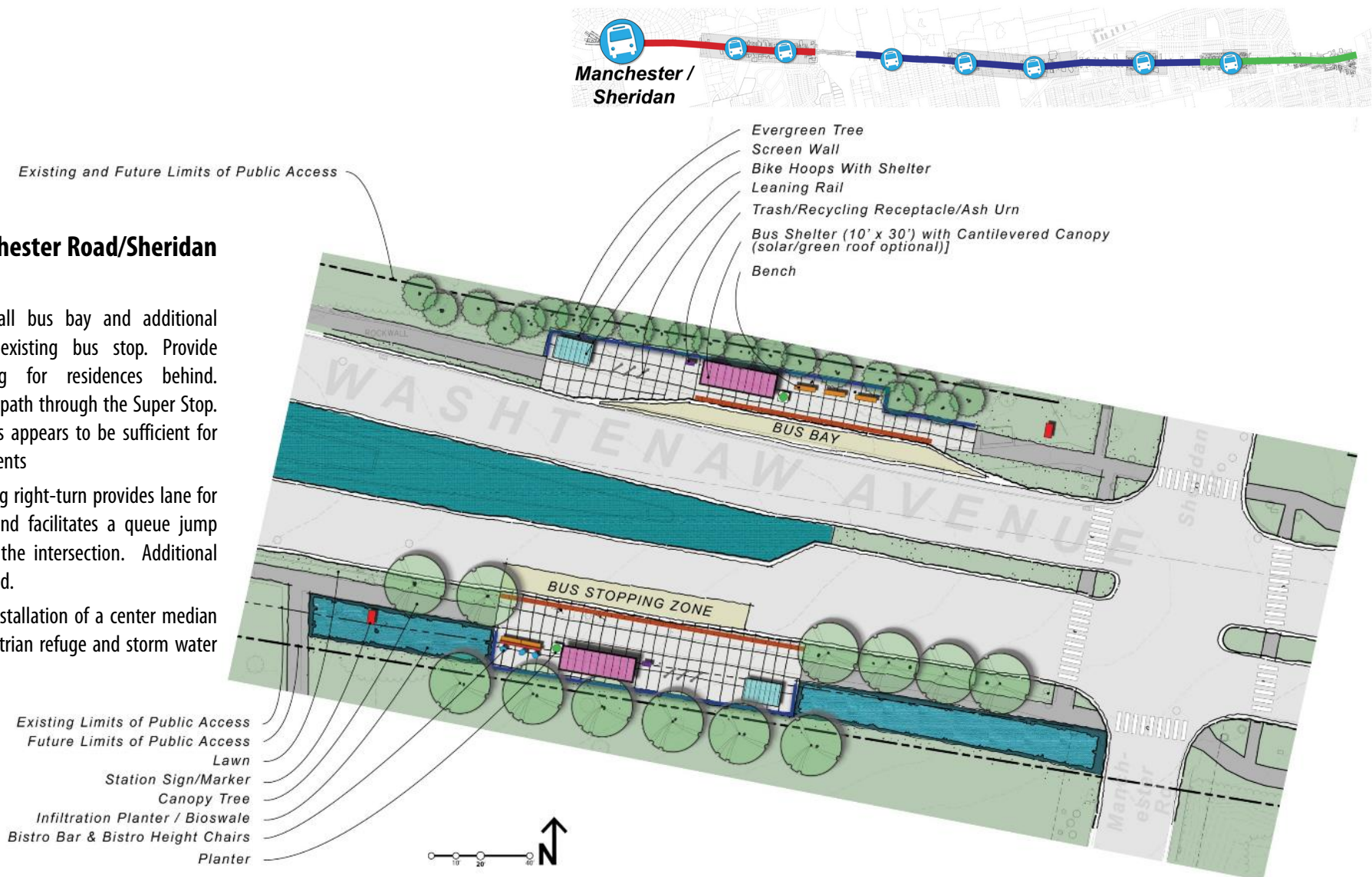
# [Transit] Super Stop Locations

## Location: Manchester Road/Sheridan Road

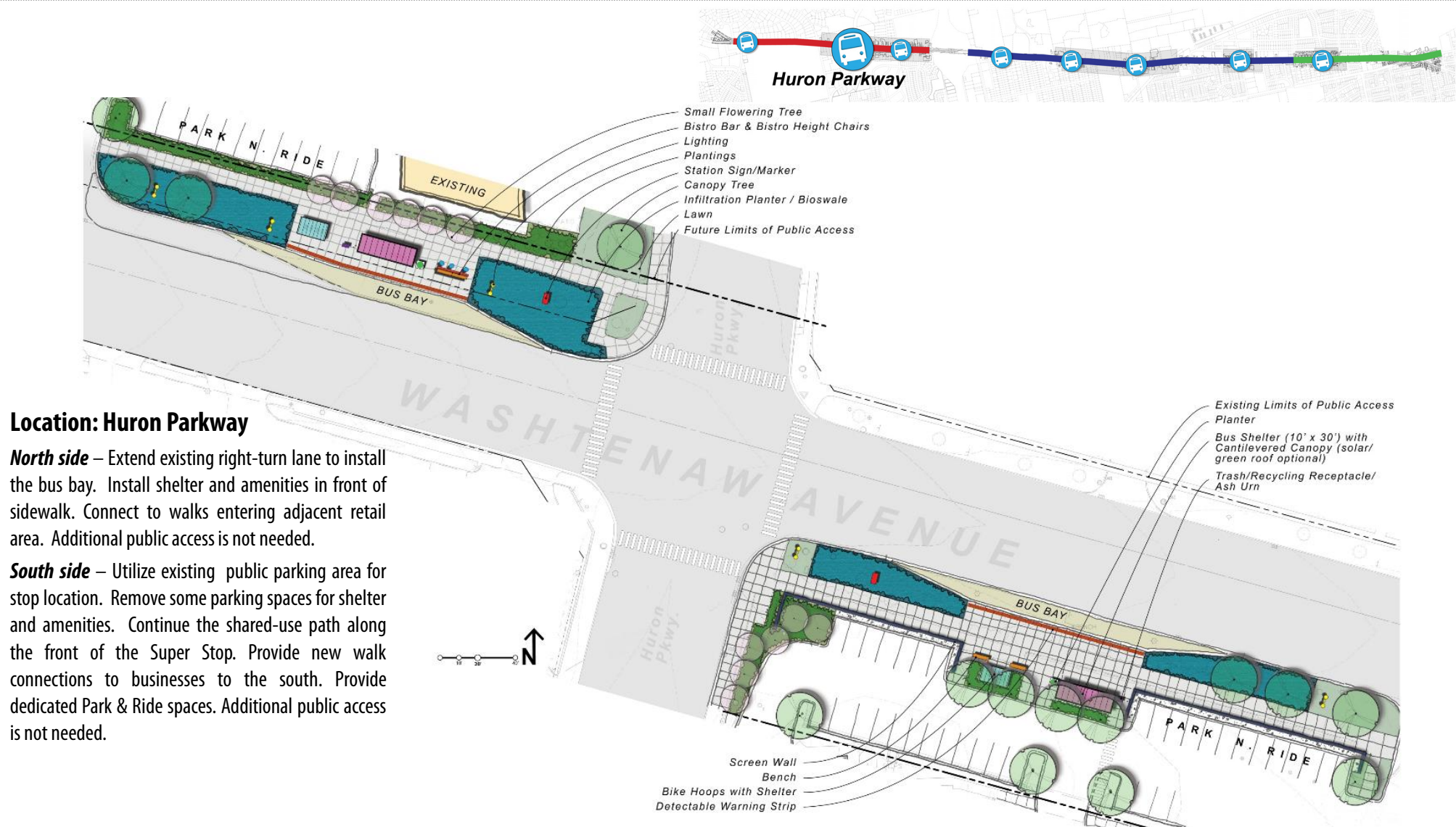
**North side** – Install bus bay and additional amenities at this existing bus stop. Provide additional screening for residences behind. Maintain shared-use path through the Super Stop. Existing public access appears to be sufficient for additional improvements

**South side** – Existing right-turn provides lane for bus stopping area and facilitates a queue jump westbound through the intersection. Additional public access is needed.

**Center Median** – Installation of a center median would provide pedestrian refuge and storm water management.



# [Transit] Super Stop Locations



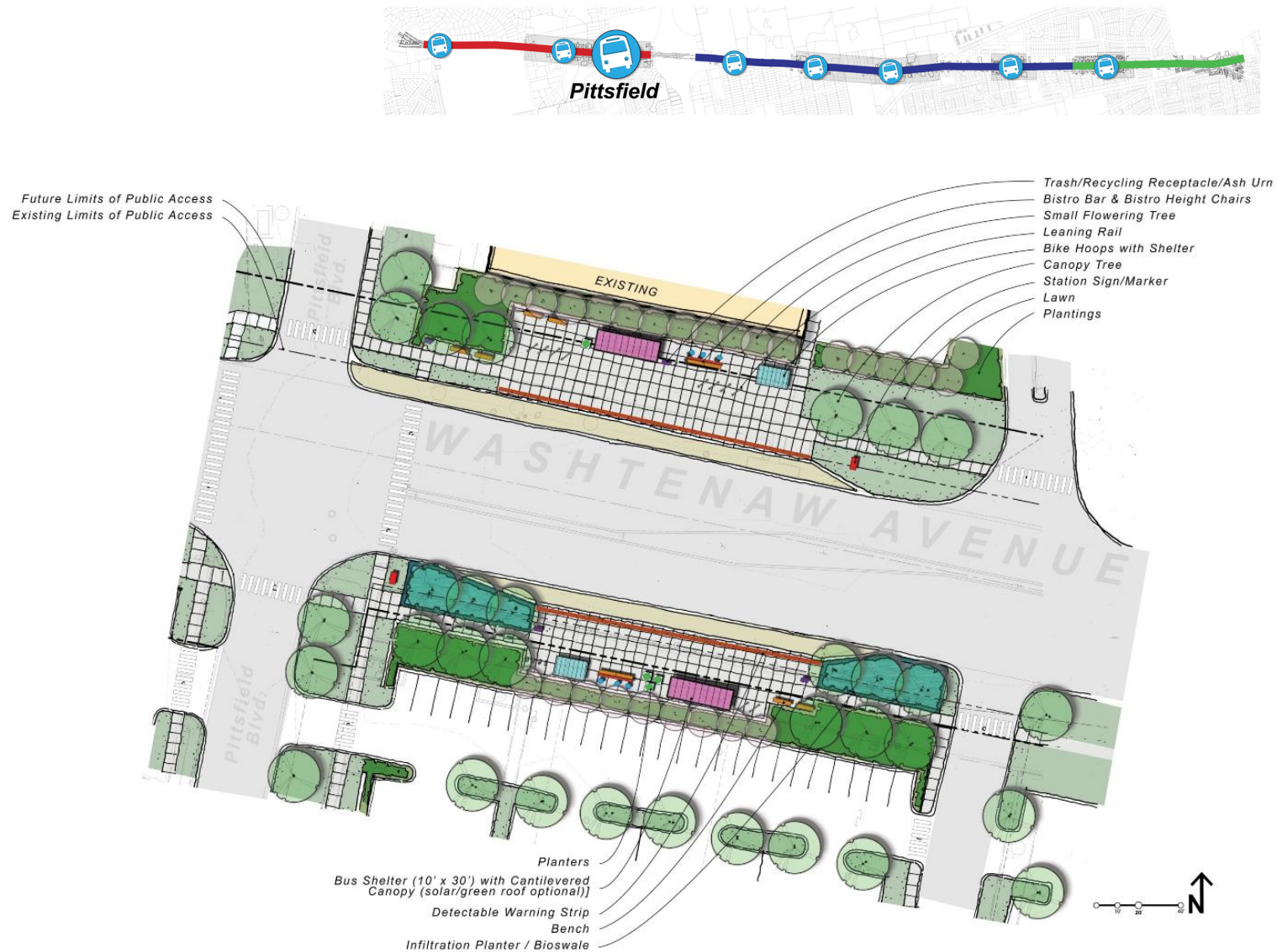


# [Transit] Super Stop Locations

## Location: Pittsfield Boulevard

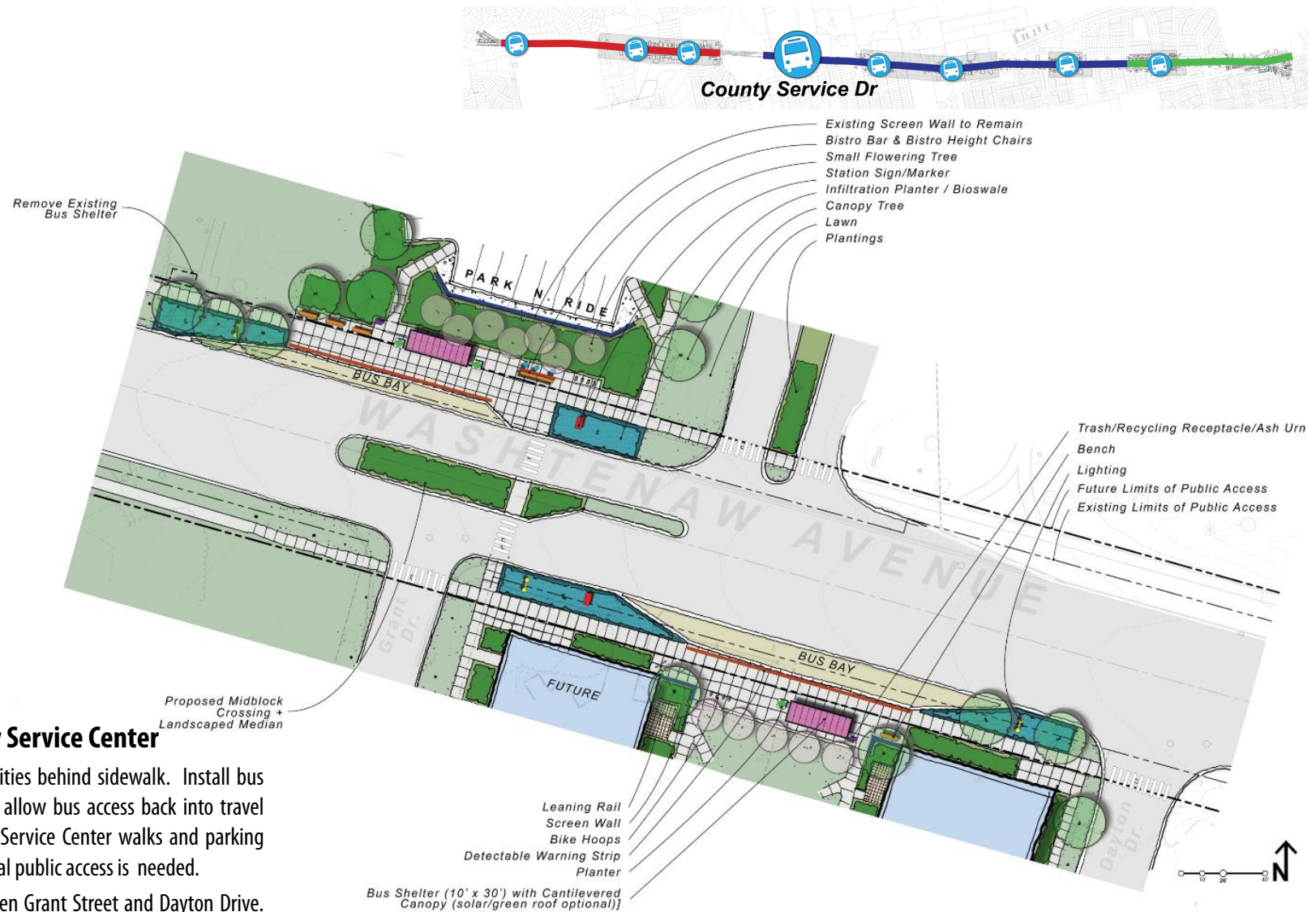
**North side** – In the near-term, locate stop on the near-side of the intersection. Install bus bay and queue jump lane. Connect to walks entering adjacent retail area. Note: Far side (northwest corner) of the intersection is the preferred Super Stop location and should be considered in future land use changes. Additional public access is needed.

**South side** – Utilize existing public access to expand current bus stop. Work with adjacent property owner to reconfigure parking areas. (Concept plan shows the ability to increase the number of parking spaces). Continue the shared use path along the front of the Super Stop. Provide new walk connections to businesses to the south. Provide dedicated Park & Ride spaces. Additional public access is not needed.





# [Transit] Super Stop Locations

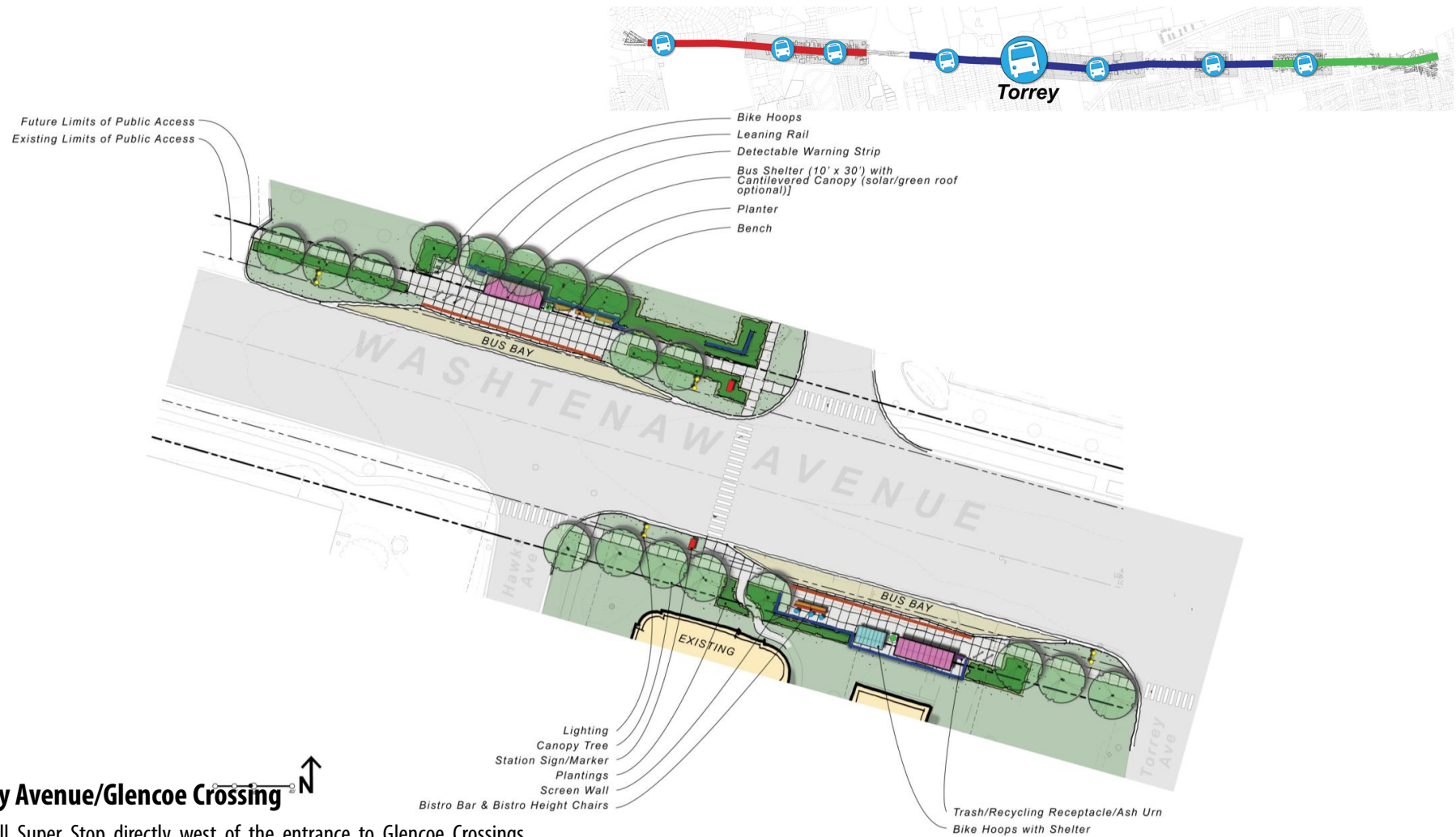


## Location: Washtenaw County Service Center

**North side** – Install shelter and amenities behind sidewalk. Install bus bay if traffic operations at intersection allow bus access back into travel lanes. Connect to Washtenaw County Service Center walks and parking lot. Install mid-block crossing. Additional public access is needed.

**South side** – Install Super Stop between Grant Street and Dayton Drive. Additional public access is needed.

# [Transit] Super Stop Locations

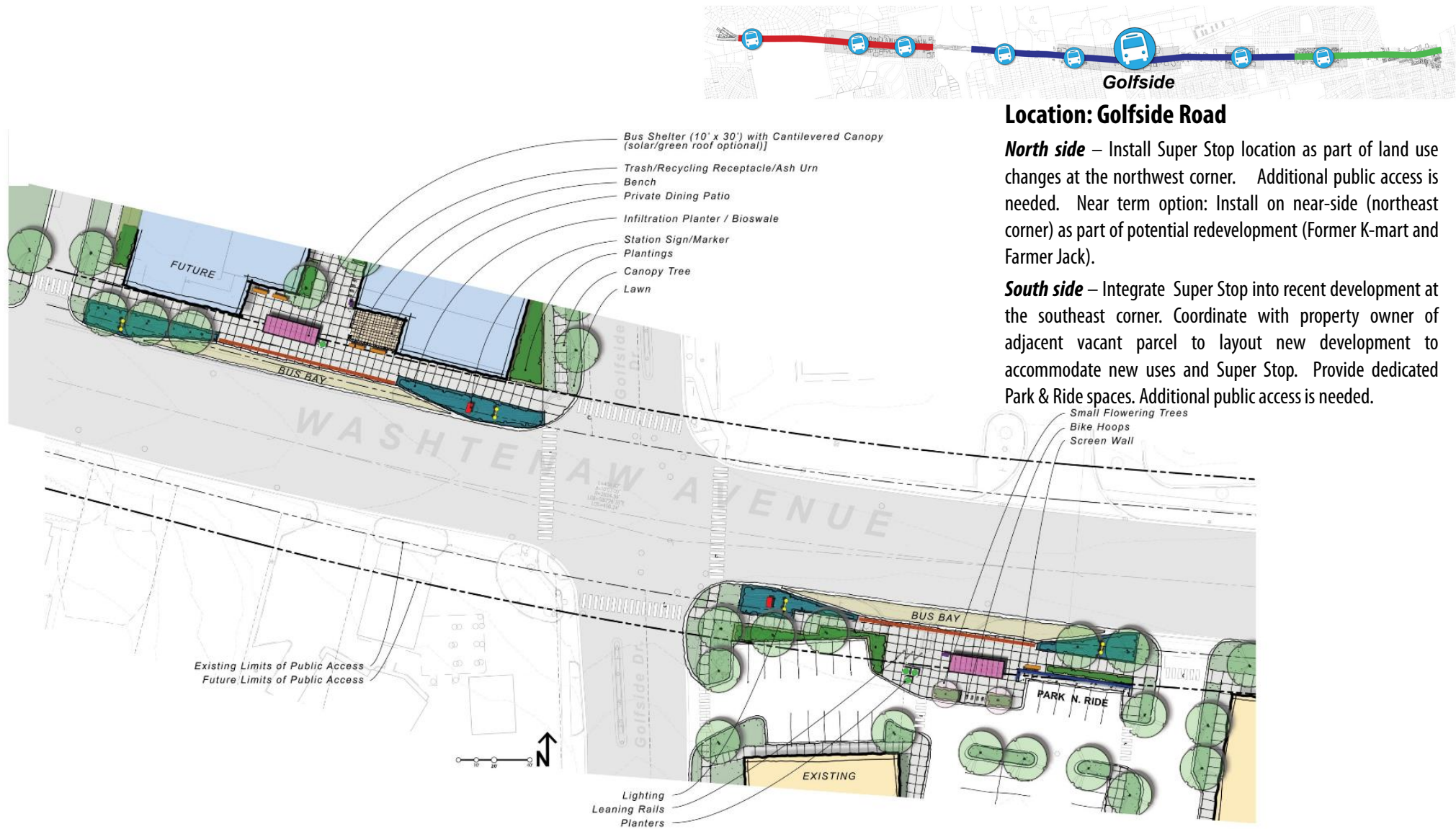


## Location: Torrey Avenue/Glencoe Crossing

**North side** – Install Super Stop directly west of the entrance to Glencoe Crossings. Connect to walks entering adjacent retail area. Additional public access is needed.

**South side** – Install Super Stop between Torrey Avenue and Deake Avenue. Additional public access is needed.

# [Transit] Super Stop Locations



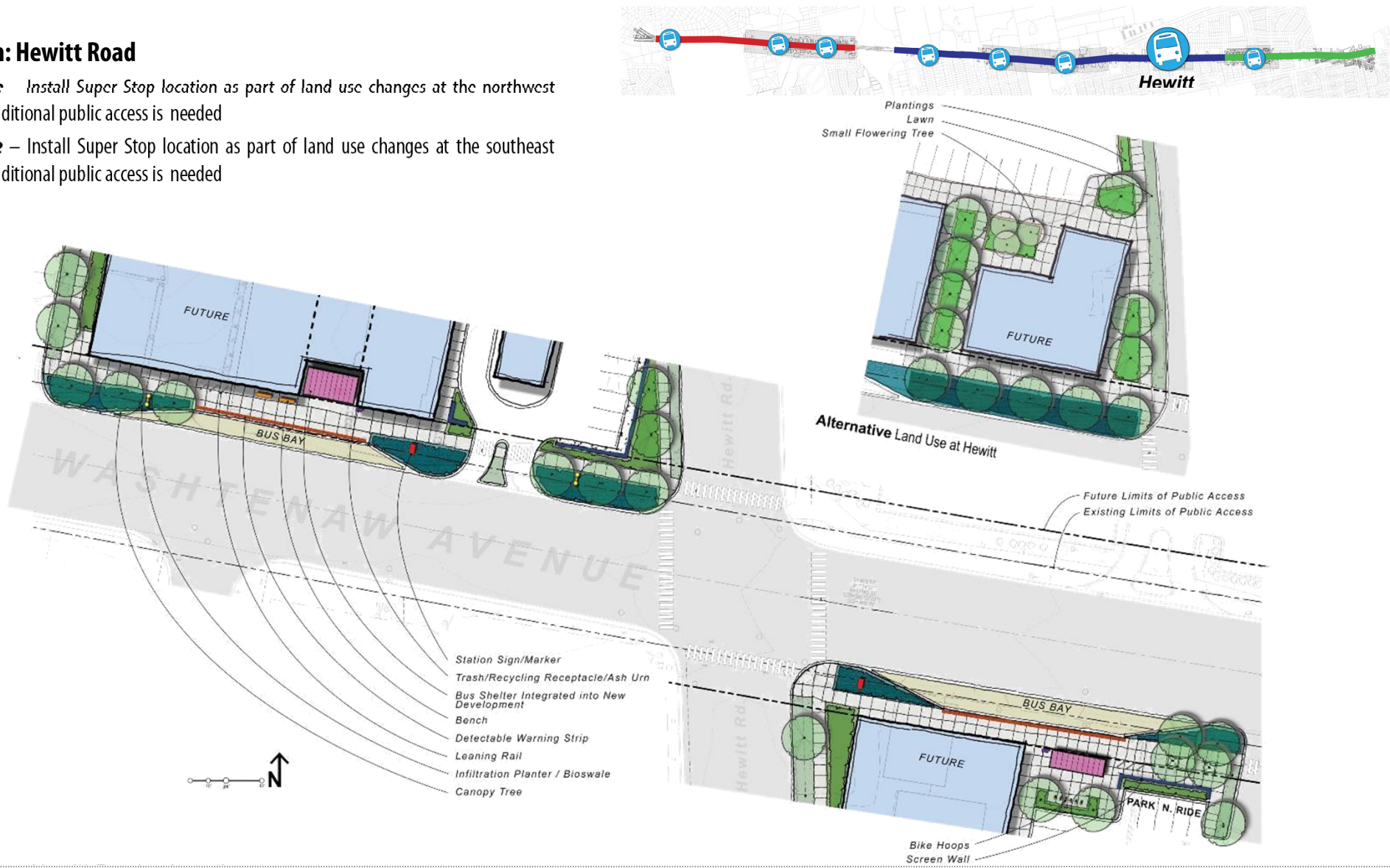


# [Transit] Super Stop Locations

## Location: Hewitt Road

**North side** Install Super Stop location as part of land use changes at the northwest corner. Additional public access is needed

**South side** – Install Super Stop location as part of land use changes at the southeast corner. Additional public access is needed



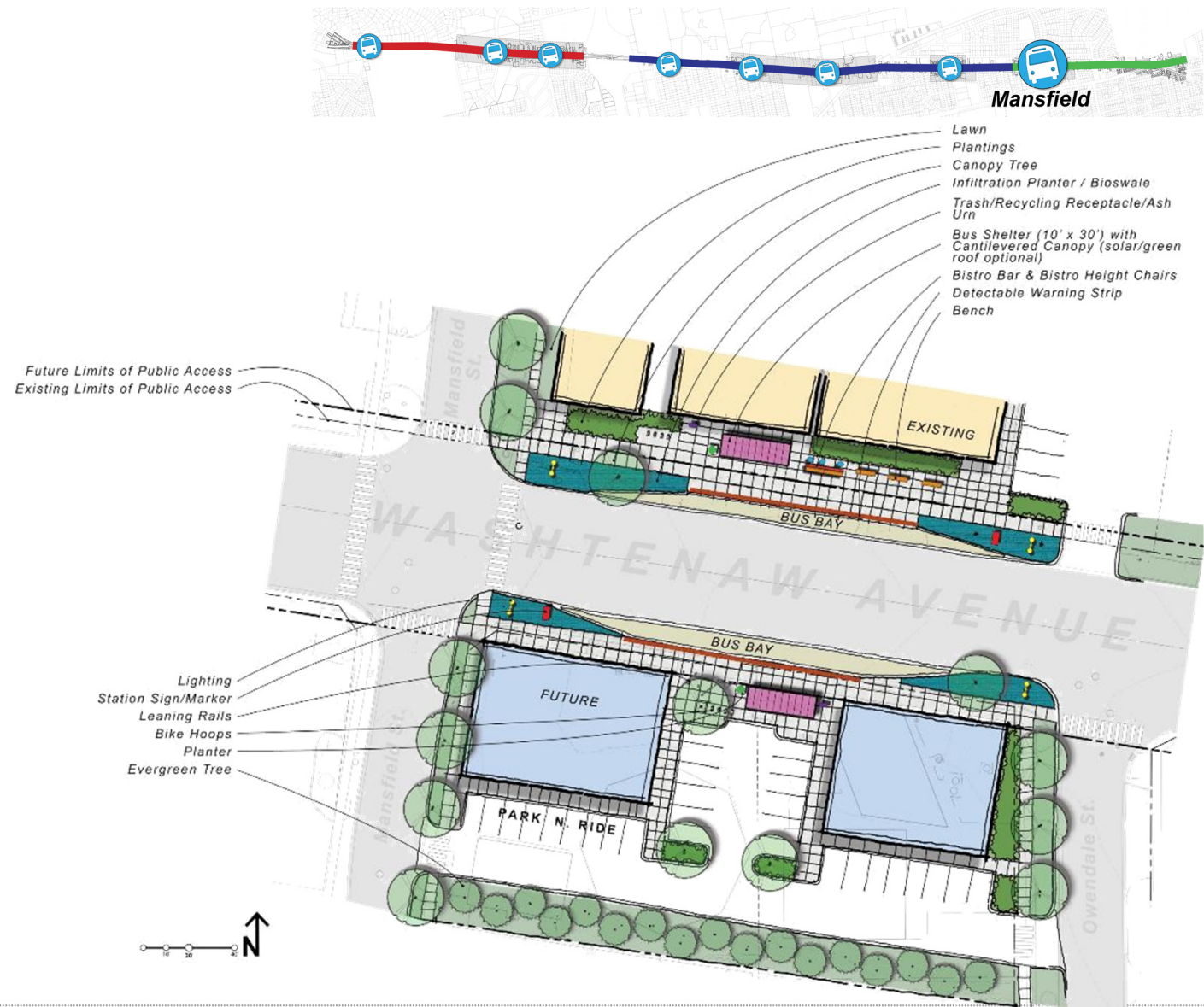


# [Transit] Super Stop Locations

## Location: Mansfield Street

**North side** – Integrate new Super Stop on the northeast corner. Remove three existing drive approaches and angled parking (existing parking provided behind and next to existing buildings to accommodate bus bay, shelter and amenities). Additional public access is needed

**South side** – Install Super Stop location as part of land use changes at the southeast corner. Additional public access is needed



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05

ReImagine Washtenaw

## **Pedestrian Improvements**

# [Pedestrian Improvements] Pedestrian Crossings

## Need

In addition to the proposed sidewalk and streetscape improvements identified in Chapter 4, improving the pedestrian's ability to safely and conveniently cross Washtenaw Avenue, was raised as a high priority by the community.

Pedestrian volumes are higher than what is typically expected along a state trunkline because of the active transit service, the major destinations like Eastern Michigan University and the significant amount of adjacent residential land use.

Currently, Washtenaw Avenue has characteristics that makes it unfriendly to pedestrians. Crossing the street is a challenge along the entire corridor due to:

- High traffic volumes and speeds
- Wide road widths that increase pedestrian crossing times
- Block sizes that often exceed 1,200-feet limit pedestrian crossing locations

Pedestrian crossing conditions vary at the intersections across the corridor. There are many locations where pedestrians are crossing the street without a pedestrian crossing.

Indicator	Washtenaw	"Pedestrian Friendly" Street
Traffic volumes	26,000 – 45,750 ADT	14,000 ADT (Main St. Ann Arbor)
Speed limit	40-45 mph	25 – 30 mph
Road width (average)	63 feet	30 feet
Crossing time (average)	18 seconds	8.5 seconds
Block size	Platt – Huron Parkway 1250 feet Huron Parkway – Pittsfield 1360 feet	300 – 400 feet
Accidents	<div>Intersection</div> <div>Average Crash Frequency</div> <div>23/Hogback/Carpenter ..... 65</div> <div>Golfside ..... 45</div> <div>Huron Parkway ..... 34</div> <div>Hewitt ..... 29</div>	

Figure 5.1: Washtenaw Avenue "Pedestrian Friendly" Comparison



# [Pedestrian Improvements] Pedestrian Crossings

## Pedestrian Crossing Recommendations

Twenty-five existing and proposed pedestrian crossings along the Washtenaw Avenue corridor have been identified as opportunities to improve pedestrian safety, convenience and comfort. Fifteen of these are at existing signalized intersections and ten are at potential mid-block crossings.

**Future-/Long-Term:** Implementation of the three road cross sections will improve pedestrian safety and comfort along the corridor and at pedestrian crossing locations.

In addition to the non-motorized improvements, targeted lane and lane width reductions, traffic calming and traffic speed reduction will further assist in creating a “complete street” for Washtenaw Avenue.

**Near-Term Solutions:** Transformation of the corridor is a vision that will take decades to achieve. During that time, there are many opportunities to improve the pedestrian conditions. Of particular priority is the improvement of current and the installation of new pedestrian crossings.

## ***Recommendation #1 Improve Pedestrian Crossings at Existing Signalized Intersections.***

- Identify and remove the pedestrian crossing barriers at each signalized intersection
- All signalized intersections should be upgraded to improve the level of pedestrian safety

The following intersections and related improvements have been identified as a priority for study and improvement:

- Stadium Boulevard Split : Add east/west crosswalk/Washtenaw Avenue leg
- Platt Road (new signal install in 20132)
- Huron Parkway
- Pittsfield Boulevard: Add north/south pedestrian crossing (east side)
- Yost Boulevard: Add north/south pedestrian crossing
- Hogback Road/Carpenter Road: Add north/south pedestrian crossing (west side)
- Oakwood Street: Retime traffic light so left-turn and pedestrians do not have same right-of-way time and add refuge island (east side)
- Hewitt Road: Add barrier free curb ramps to all corners
- Oakwood Street: Retime traffic light so left-turn and pedestrians do not have same right-of-way time and add refuge island (east side)



Pedestrian Crossing Needed along Vehicular Oriented Corridor



Pedestrian Crossing will Improve Safety for Non-Motorized Users

# [Pedestrian Improvements] Pedestrian Crossing Best Practices

## Pedestrian Crossing Best Practices

### Signal Oriented – Informational

- Add traffic and pedestrian signal indications if they do not already exist.
- Improve existing pedestrian signals to assist in providing people with vision impairments enough time to cross the street.
- Increase crossing times so that people who walk slowly will have sufficient time to cross before the signal indication changes.
- Restrict right-turns on red.
- Increase number of cycles so there are more opportunities for pedestrians to cross.

### Markings – Informational

- Provide highly visible markings (ladder striping) and/or a raised crosswalk to enhance the visibility of the crosswalk.

### Hardscape – walks, curbs , bump outs

- Install new pedestrian crosswalk (where none currently exists), including markings, signals etc.
- Provide curb ramps (and level landings) to reduce crossing distances and increase visibility.

- Install a center median (with protected “nose”) to provide a refuge for slower pedestrians.
- Connect pedestrian crosswalks to adjacent sidewalks, where there are gaps.
- Reduce curb radius at intersection to reduce vehicular turning speed.
- Install “no left-turn” islands at intersections to reduce congestion and improve predictability for pedestrian safety. Whenever existing pavement width allows, provide refuge island for pedestrian crossing.

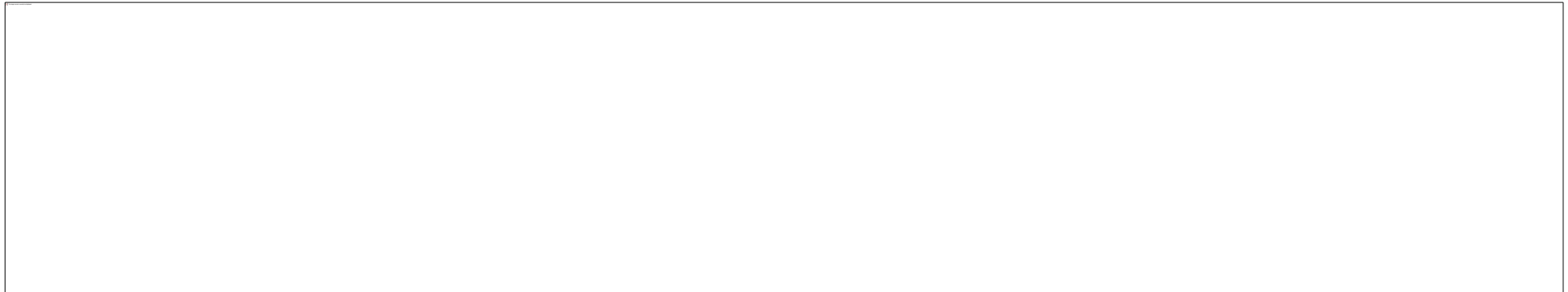


Figure 5.2: Pedestrian Improvement Locations - Intersections

## [Pedestrian Improvements] Mid-Block Crossings

### MDOT Attributes for Mid-Block Crossing

Per MDOT's Traffic and Safety Note 401C, evaluate the following:

- The location is already a source of a substantial number of mid-block crossings.
  - Where 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.
- Evaluate safety and capacity of adjacent intersections or intersections with large turning volumes.
  - Create a situation where it is difficult to cross the street at the intersection.
  - Spacing between adjacent intersections exceeds 660-feet.
  - The vehicular capacity of the roadway may not be substantially reduced by the mid-block crossing.
  - Adequate sight distance is available for both pedestrians and motorists.

### Recommendation #2 Install Mid-Block Crossings at Priority Locations.

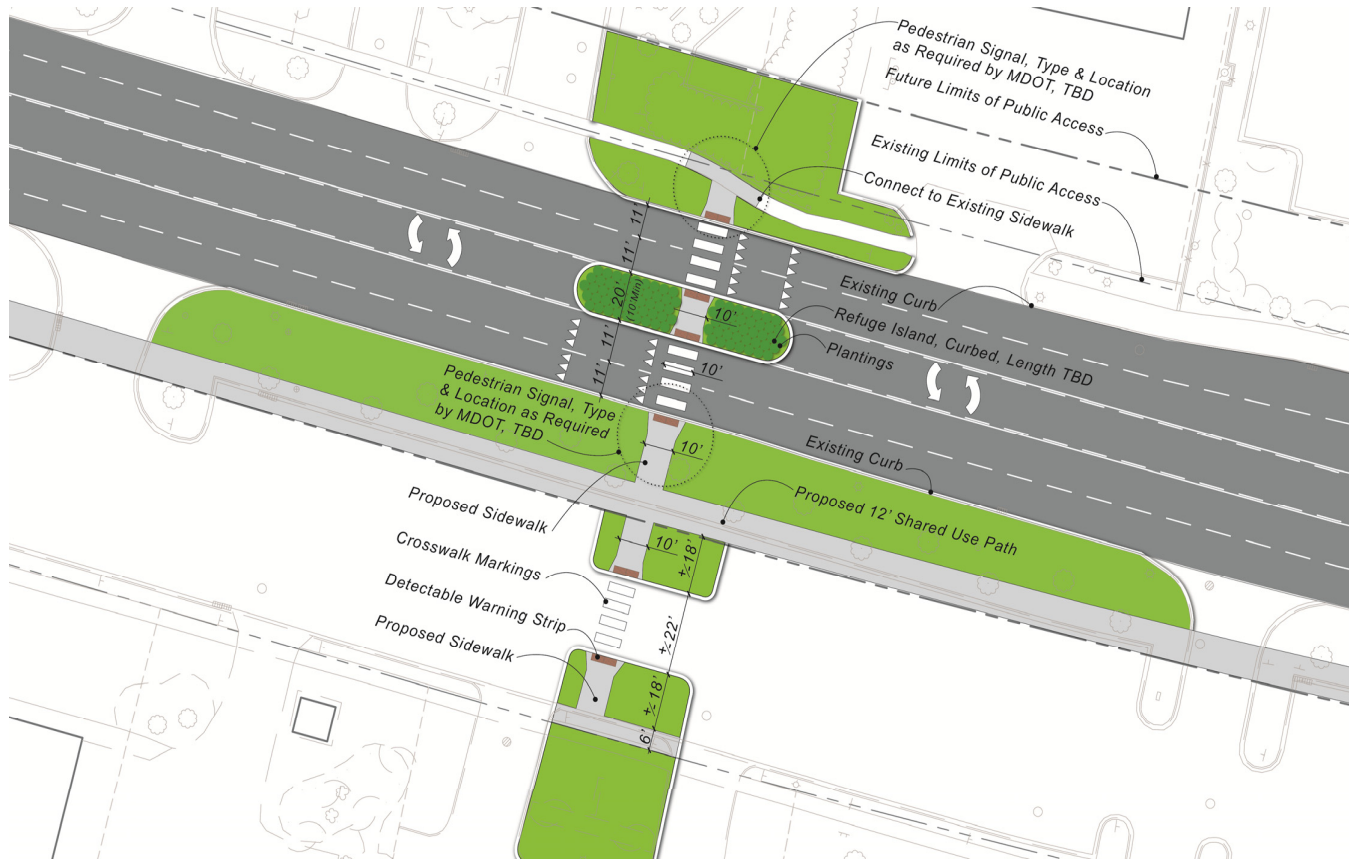
- Ten mid-block crossings were identified as potential locations for additional pedestrian crossings along the corridor.
- Six have been identified as priority based on MDOT's Traffic and Safety Note 401C.

Concept plans for these six crossings are shown on the following pages. While important to the overall vision, these concepts are intended for implementation in advance of public access acquisition. Consequently, elements such as bike lanes and pedestrian zone improvements are not shown.



Figure 5.3: Pedestrian Improvement Locations - Proposed Mid-Block Crossings

## [Pedestrian Improvements] Mid-Block Crossings



### Mid-Block Crossing: West of Chalmers

- Currently is a source of mid-block crossings to access adjacent retail land uses
- 1,500-foot distance between Huron Parkway and Pittsfield Boulevard (Spacing exceeds 660-feet)
- Identified as the 3rd highest priority in the public outreach effort
- Generally midway between Pittsfield Boulevard and Huron Parkway (Mallet's Creek)

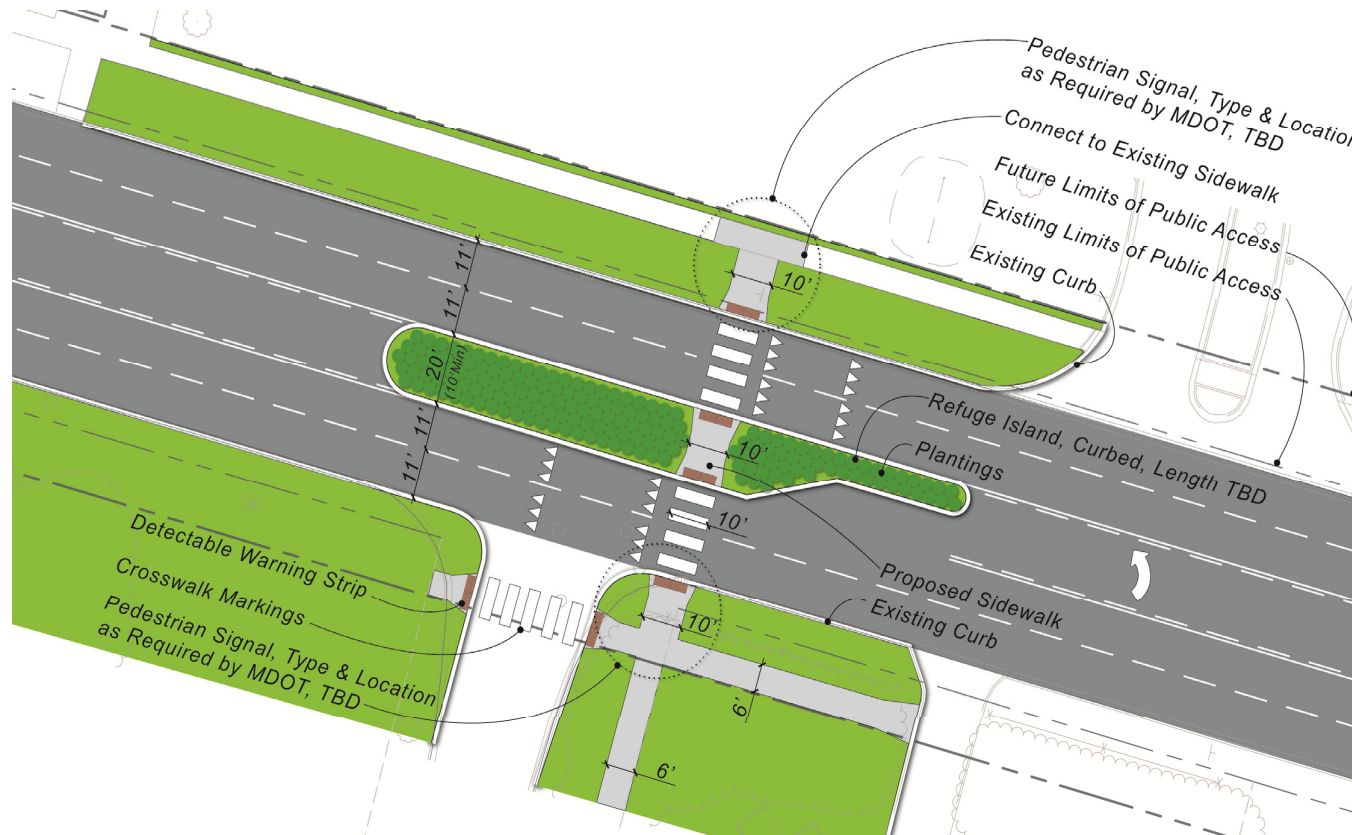
### Design Elements Include

- Curbed and landscaped refuge Island (10-foot minimum)
- Connect to existing sidewalk on north side
- Connect to future shared-use path on south side
- Provide new pedestrian crossing through parking to south businesses

Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .



## [Pedestrian Improvements] Mid-Block Crossings



### Mid-Block Crossing: Washtenaw County Service Center

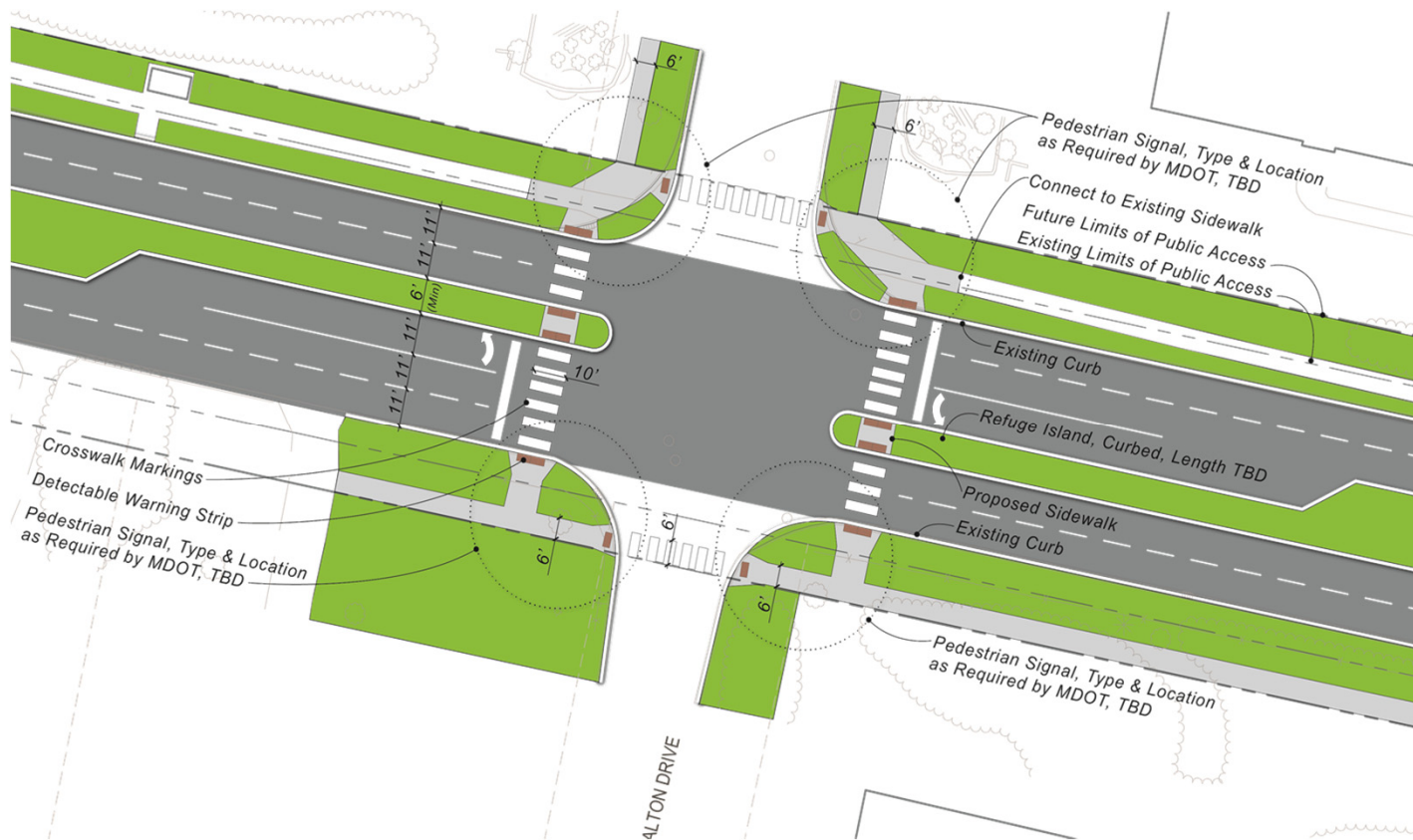
- A current pedestrian generator and a location of a bus stop with high-volume ridership. This stop is targeted to become an AAATA Super Stop
- 3,400-foot Carpenter Road to Glencoe Crossing Driveway (Exceeds 660-feet)
- Identified as the 2nd highest priority in the public outreach effort
- Proposed location is directly east of Grant Street and is located to serve both north and south Super Stops

#### Design Elements Include

- Curbed and landscaped refuge Island (10-feet minimum)
- Connect to existing sidewalk on north side
- Connect to future sidewalk on south side

Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .

## [Pedestrian Improvements] Mid-Block Crossings



### Mid-Block Crossing: Glencoe Hills Drive

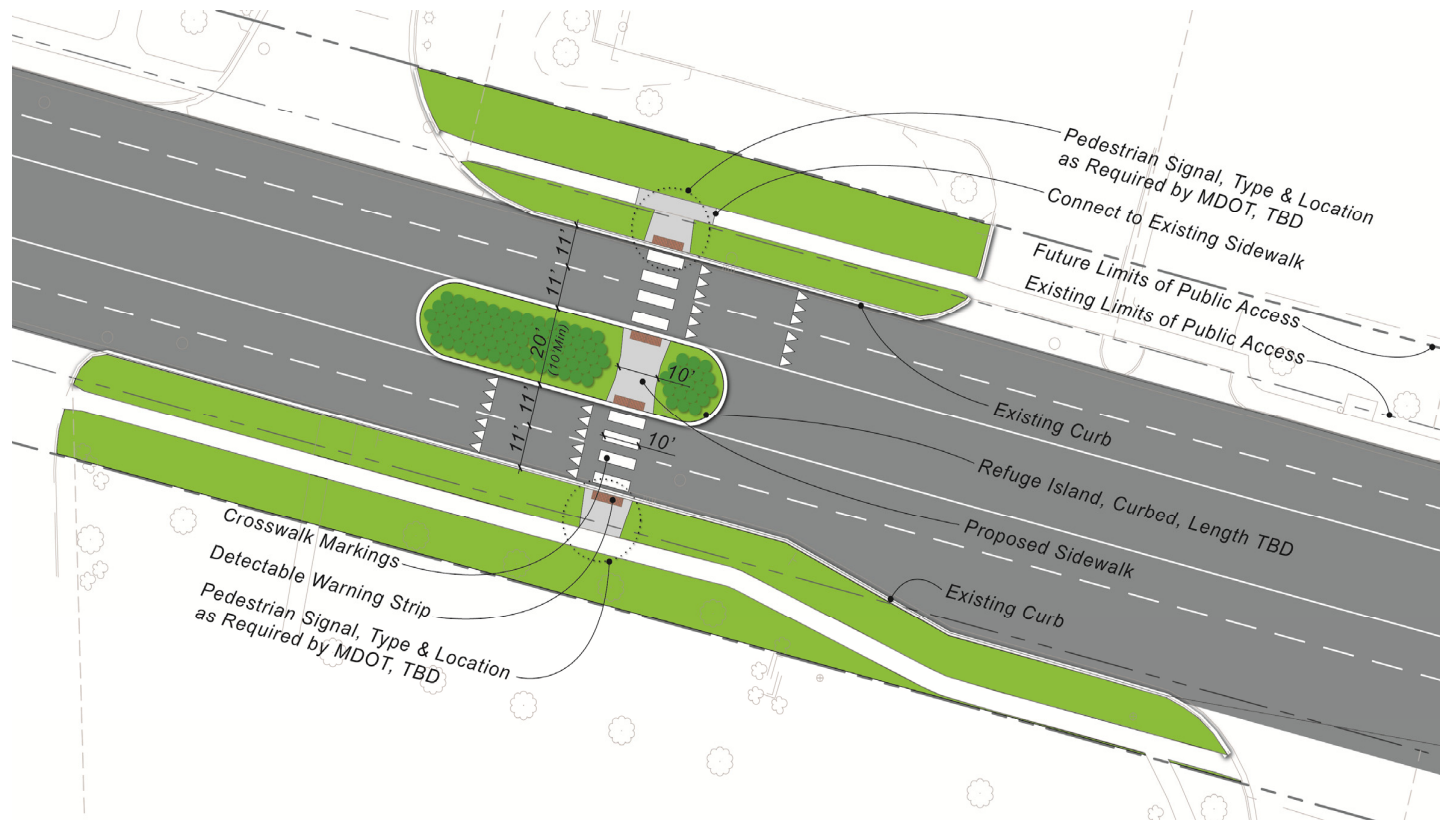
- This intersection is a current source of mid-block crossings due to high residential densities and an active bus stop
- 3,400-foot distance between Carpenter Road and Glencoe Crossing Driveway (Exceeds 660-feet)
- May benefit from a traffic signal (Illustration reflects pedestrian crossings at a fully signalized intersection). A traffic signal warrant is required to determine need

#### Design Elements Include

- Curbed and landscaped refuge Island (10-feet minimum) associated with sheltered left-turn lane
- Connect to existing sidewalk on north side
- Connect to future sidewalk on south side

Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .

## [Pedestrian Improvements] Mid-Block Crossings



Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .

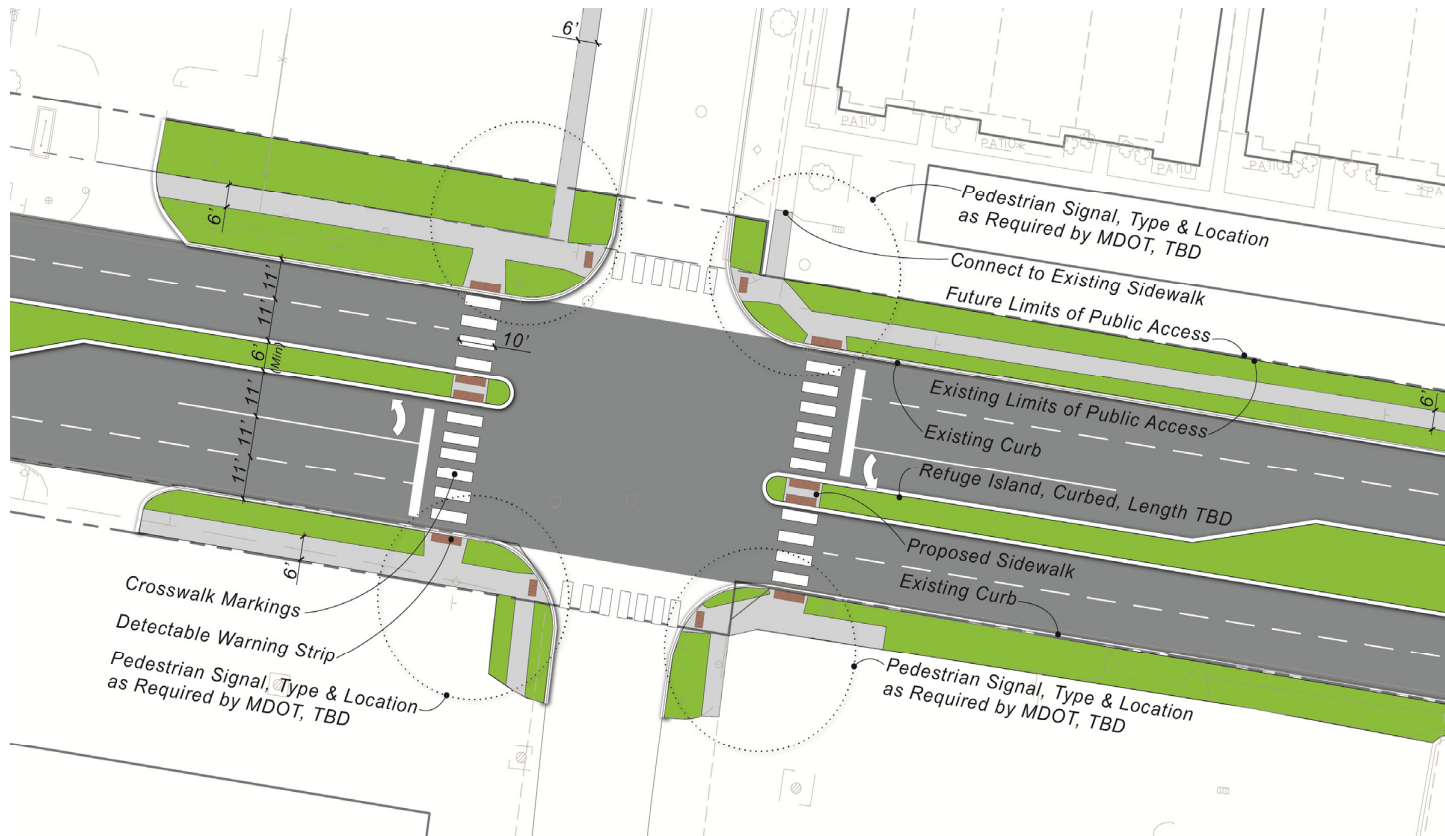
### Mid-Block Crossing: Spice Tree Apartments

- Between Glencoe Crossing Driveway and Golfside Road
- This is an area where mid-block crossings are currently occurring due to higher residential densities and an active bus stop
- 2,100-foot distance between Glencoe Crossing Driveway and Golfside Road (Exceeds 660-feet)
- Crosswalk location (as illustrated) is 320-feet east of Foster Road

#### Design Elements Include

- Curbed and landscaped refuge Island (10-feet minimum)
- Connect to existing sidewalk on north and south side

## [Pedestrian Improvements] Mid-Block Crossings



### Mid-Block Crossing: Courtland Street

- This is an area where midblock crossings are currently occurring due to higher residential densities and retail areas
- 2,700-foot distance between Hewitt Road and Mansfield Street (exceeds 660-feet)
- May benefit from a traffic signal (Illustration reflects pedestrian crossings at a fully signalized intersection). A traffic signal warrant is required to determine need

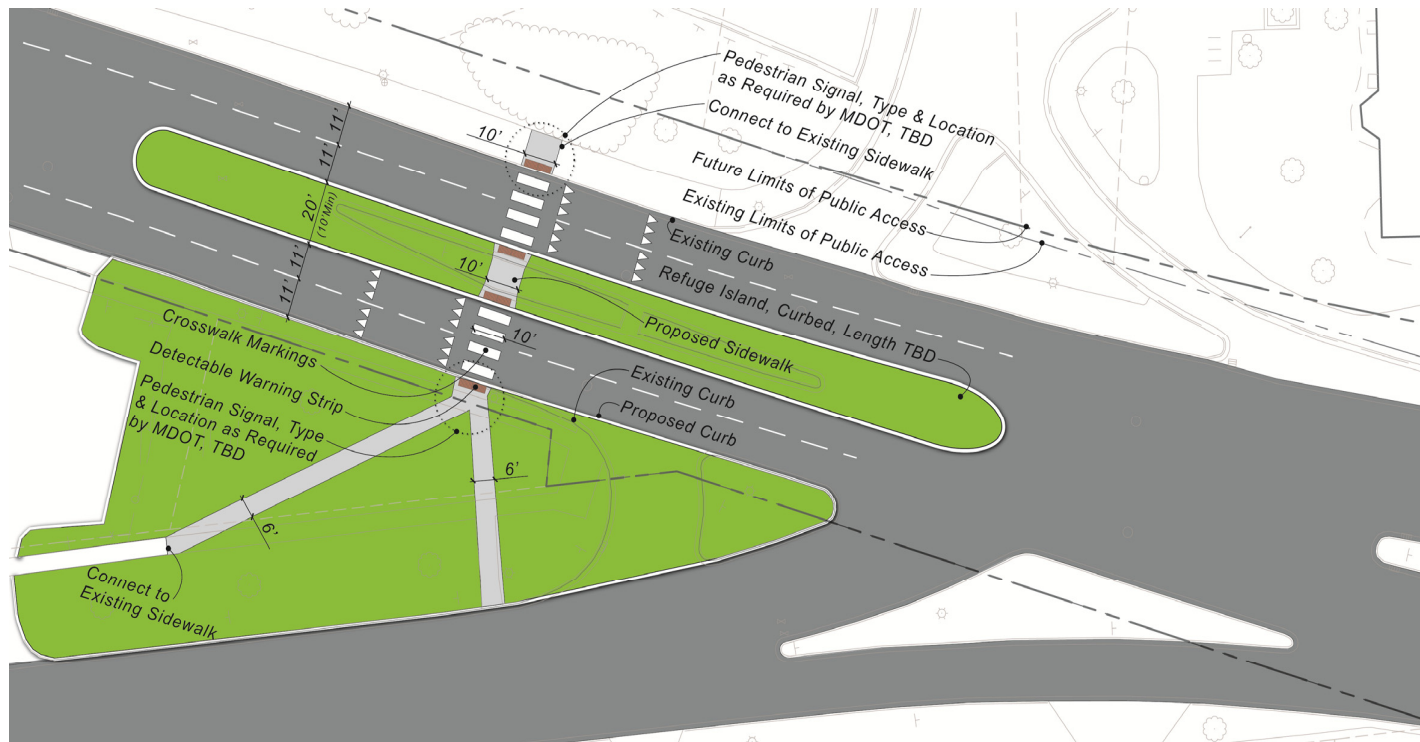
#### Design Elements Include

- Curbed and landscaped refuge Island (10-feet minimum)
- Connect to future sidewalks on north and south side

Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .



## [Pedestrian Improvements] Mid-Block Crossings



### Mid-Block Crossing: Eastern Michigan University

- Between Oakwood Street and Cross Street
- Student access to the campus generates traffic from the residential neighborhoods on the south side of Washtenaw Avenue. The active bus stop in this location further generates pedestrian crossings
- 1,200-foot distance between Oakwood Street and Summit Street (exceeds 660-feet)

#### Design Elements Include

- Curbed and landscaped refuge Island (10-feet minimum)
- Connect to future sidewalks on north and south side

Pavement markings, signs and signals shall be in accordance with MDOT, MMUTCD and AASHTO Standards .

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# 06

ReImagine Washtenaw

## Implementation

## [Implementation] Public Access Approach

The established vision for implementation of the proposed cross sections is predicated on diligent adherence to the recommendations outlined in this report as a means to assemble public access throughout the corridor. The amount of public access varies depending on location along the segment as well as location north or south of the road. It also varies with each of the Super Stop locations depending on existing conditions and eventual area requirements for each Super Stop. There is no intent that this vision be implemented as a single project. That would be a massive undertaking requiring a significant investment and a major coordination effort. Rather, acquisition of the required public access should be assembled as property redevelops along the corridor. The primary mechanisms for aggregating the required public access includes voluntary easement, donation or outright purchase. While easements or donation may be the least costly approach, there may be certain parcels that require outright purchase or means other than described in this report. In all cases, each municipality should reference the Future Limits of Public Access plans and negotiate with developers to facilitate the vision for ReImagine Washtenaw.

### Recommendations

1. Each municipality, or other entity as appropriate, will acquire the required public access through:
  - Voluntary easements as property redevelops along the corridor;
  - Donation; or,
  - Outright purchase.

### 2. Public Access:

- Will remain as an easement to the municipality;
- Will be held by other entities; or,
- Will be transferred to MDOT as part of the corridor right-of-way.

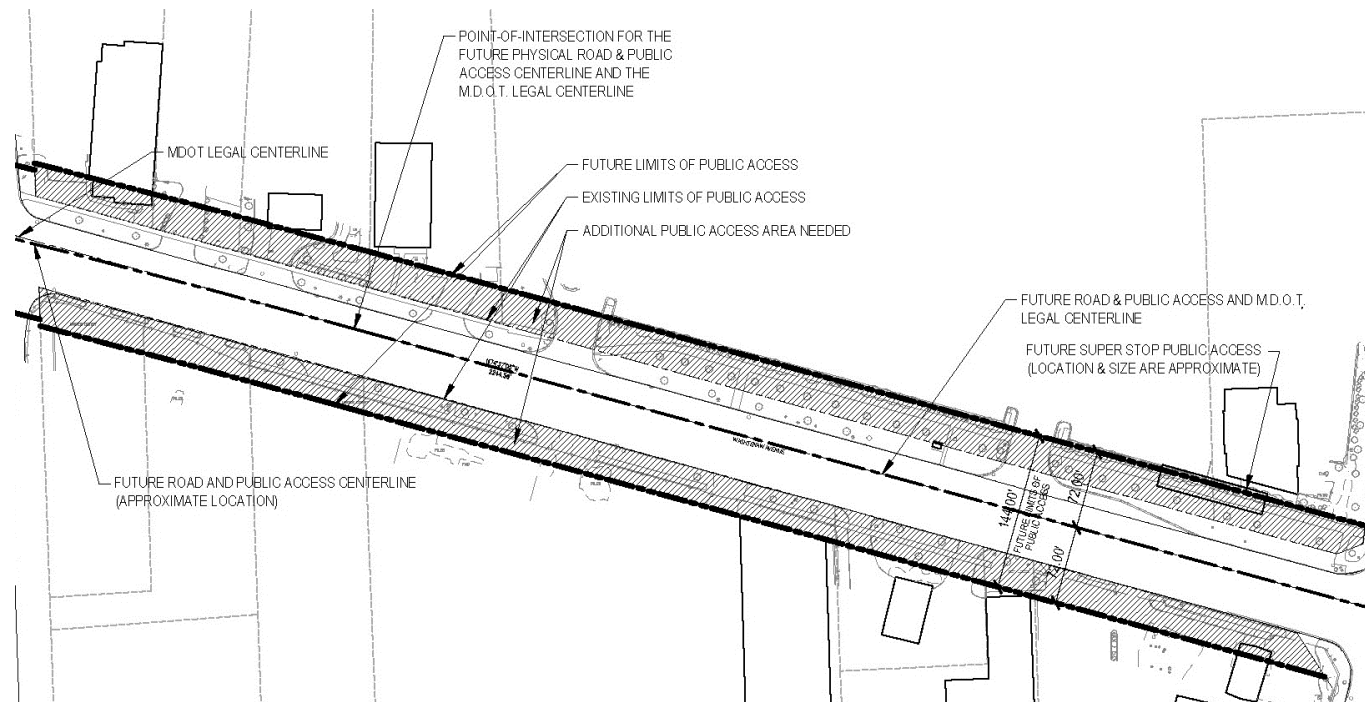


Figure 6.1: Typical Section from Future Limits of Public Access Plans



# [Implementation] Traffic Volume Reduction Strategy

A primary requirement of realizing the Relmagine Washtenaw vision is obtaining the recommended reduction of vehicular traffic volumes. This is required to facilitate the road diet in the City of Ypsilanti segment but also a means of creating a more walkable pedestrian environment with an emphasis of an equitable distribution of transportation modes. Strategies to implement traffic volume reductions include a focus on mode shifts, traffic diversion, Transportation Demand Management (TDM) and Park Once.

## Mode Shift

Mode shifts involve making modes other than the automobile, such as transit and non-motorized travel, more attractive than use of automobiles, especially single-occupancy automobile use. This is one of the goals of Relmagine Washtenaw. Mode shift is a primary target of AAATA as they continue to focus on transit service improvements in the Washtenaw Avenue corridor.



Mode Shift Opportunities

## Traffic Diversion

Traffic diversion considers an individual's route select preferences based on congestion and time to arrive at their destination. Major alternative east/west routes for the use of Washtenaw Avenue include Packard Road to the south and Clark Road /Huron River Drive to the north.

## Transportation Demand Management

TDM involves coordination with major employers to alter the employee shift start and end times, among numerous other strategies, to reduce traffic congestion during major traffic peak flows. A TDM study was completed for the Washtenaw Avenue corridor separate from this study. Major employers, including The University of Michigan and the associated hospital system, Saint Joseph Mercy Hospital, Washtenaw Community College, VA Ann Arbor Healthcare System and Eastern Michigan University, participated in an effort to review TDM strategies. Relmagine Washtenaw should support continued meetings with this group with a goal of shifting employee travel from peak travel times on Washtenaw Avenue.

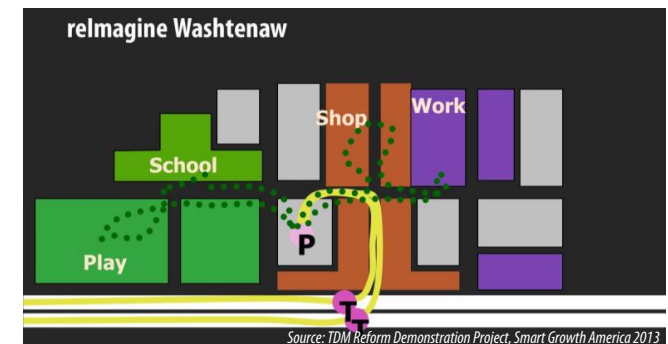
## Park Once

Park Once is a long-range strategy that is associated with coordinated redevelopment projects in the corridor. This concept is focused on development that allows pedestrian access to a variety of destinations – employment, shopping, fitness, etc. – from a single location.

It is recommended that a proactive stakeholder subcommittee be established to advance mode shift strategies and establish milestone to measure success.

## Recommendations

1. Pursue a multi-faceted approach including:
  - Mode shifts
  - Traffic diversion
  - Transportation Demand Management
  - Park Once
2. Establish a proactive stakeholder subcommittee to advance traffic volume reduction strategies.



Park Once

## [Implementation] Phased Projects

The Relmagine Washtenaw vision does not anticipate implementation of the recommended improvements as a single project. Success will be realized through incremental improvements as conditions allow. Consequently, consideration of phasing projects is important to take advantage of implementable elements as well as to document continued progress toward the established vision.

Projects that should be considered in the short-term include:

### **Sidewalks**

Installation of sidewalks in segments identified as gaps. A continuous sidewalk system along Washtenaw Avenue would be the first step in establishing a pedestrian zone.

### **Narrow Median**

There are segments along the corridor that could accommodate initial implementation of the narrow median cross section. Evaluation of the corridor for these opportunities should be assessed.

### **Pedestrian Crossings**

Implementation of potential pedestrian crossing improvements at intersections and at identified mid-block locations should be further evaluated through traffic engineering analysis and coordination with MDOT and local municipalities. While documentation to support some of the proposed pedestrian improvements may not be practical at this time, other recommendations are more realistic and offer an opportunity to initiate pedestrian safety strategies.

### **Super Stops**

The proposed Super Stop locations have been ranked, in part, for ease of implementation with respect to availability of existing of public access requirements. This includes locations on the northwest side of the Washtenaw Avenue/Huron Parkway intersection and on the north side of Washtenaw Avenue at the Washtenaw County Service Center. The design of these specific locations should be advanced to finalize public access requirements and demonstrate transit service improvements on the corridor.

### **Recommendations**

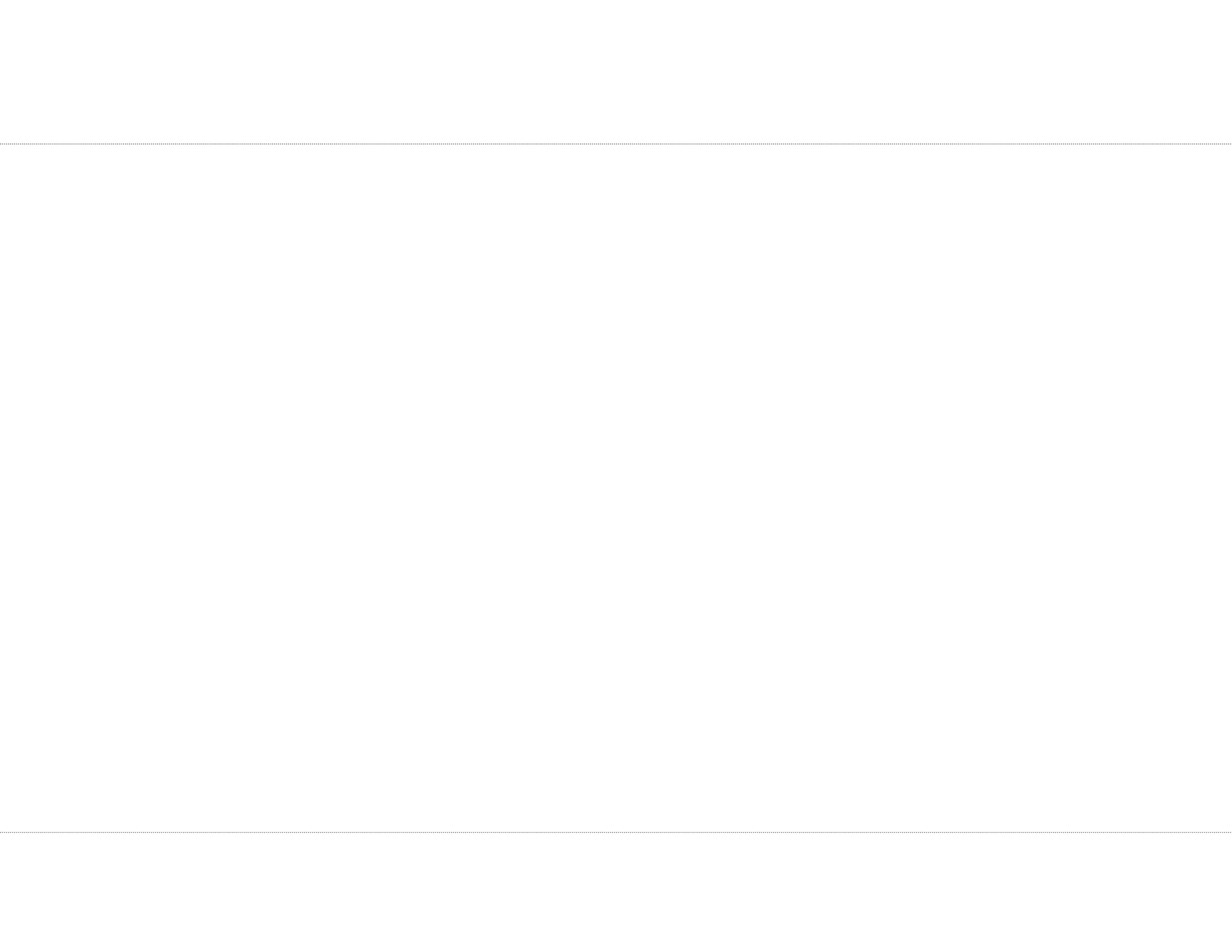
Advance initial projects that demonstrate commitment to action and provide a phased transition to the ultimate vision such as:

- Installation of missing sidewalk segments
- Partial narrow median installation
- Pedestrian crossings – intersections and mid-block
- Super Stops



ReImagine Washtenaw

# Appendices





A

ReImagine Washtenaw

# **Community Engagement Survey and Summary**



# REIMAGINE WASHTENAW

## Public Workshop & Online Survey Results Summary

*July 19, 2013*

*The vision for the Washtenaw Avenue Corridor is one that supports a high quality of life with walkable shopping options, housing choices, efficient transit service, great public spaces, bike paths, and access to educational, cultural and employment centers.*

This document summarizes the results of four public workshops and an online survey that was conducted in 2013 as part of the planning activities for Reimagine Washtenaw. The feedback intended to gather public input on desired improvements, important issues of concern, as well as evaluating options for the future design and character of the corridor.

### Participation

In total, approximately 120 community members participated across the four public workshop and 75 participated in the online survey. Below are the workshop and survey dates:

- Public Workshop #1 – May 28<sup>th</sup>, 2013
- Public Workshop #2 – May 29<sup>th</sup>, 2013
- Public Workshop #3 – May 30<sup>th</sup>, 2013
- Public Workshop #4 – May 31<sup>st</sup>, 2013
- Online Survey – Open through July 2<sup>nd</sup>, 2013

The public workshops and online survey drew participation from a modest geographic area. For the online survey, 35 respondents were located within Ann Arbor and 33 were from outside of Ann Arbor. For the public workshops, respondents were asked to mark their location on a map relative to the Washtenaw Corridor. 19 respondents identified locations west of US-23 and 44 identified locations east of US-23.

### Feedback Summary

The questions asked in the public workshops and the online survey were generally the same. For the purposes of this summary document, the questions and responses are organized into five sections:

- Section 1: General Corridor
- Section 2: Streetscape Enhancements
- Section 3: Corridor Alternatives
- Section 4: Pedestrian Crossings
- Section 5: Segment-by-Segment Feedback

Key observations and points from each of these sections are summarized below. The full feedback results, including all written comments and response charts for each question, is attached to this summary document.

### **Section 1: General Corridor**

This section asked participants to rate how important 11 different issues affecting the corridor are to address, as well as asking an open ended question about their general perception of the Washtenaw Corridor.

Overall, the top three most important issues in the ratings were (1) making safer pedestrian crossings on Washtenaw; (2) improving and adding sidewalks; and (3) improving pedestrian connectivity. These are all aimed at pedestrian level improvements. The next most important issues, (4) improving and adding bike lanes; and (5) bike connectivity are aimed at improving bicycling conditions.

The least important average issues including slowing down traffic speeds and improving vehicular connectivity. However, all of the issues averaged above a 3.0 score (on a 1-5 scale), with 7 of the issues above a 4.0 (important to very important) – indicating that there are many important concerns along the corridor.

Among the written comments, common themes included:

- The need for better pedestrian crossings.
- Better signal timing for traffic lights.
- Traffic congestion.
- Improving the aesthetics / image of the corridor.
- Improving bike facilities – although opinions varied on the most appropriate way to accomplish this issue. Many felt bike lanes were appropriate, while others felt bike traffic should be handled on off-street paths. There also comments that there should be no biking in the corridor.
- Speed and lane reductions where feasible (mostly west of US-23).
- The need for better maintenance along the corridor.

### **Section 2: Streetscape Enhancements**

This section asked participants to identify specific streetscape enhancements they felt are important for improving the corridor, and whether they had additional specific ideas for corridor improvements.

Overall, the most important streetscape enhancements included (1) improving transit facilities; (2) adding more street trees (3) better lighting; (4) corridor beautification; and (5) incorporating stormwater and landscape buffers. The least important issues were incorporating screening walls for parking lots and art. All the improvements, aside from art and screen walls, scored over a 3.0 average (on a 1-5 scale) for the level of importance.

Written comments highlighting additional ideas included:

- Improving vehicular flows (less congestion)
- Universal design for better accessibility
- Dedicated transit lanes

### **Section 3: Corridor Alternatives**

Section 3 asked participants to review three proposed corridor cross-section Scenarios (A, B, and C), and identify their preferred option. Scenario A is a universal 5-lane design; Scenario B is combination of 5-lane, 4-lane with median, and 3-lane roads; and Scenario C is a 4-lane road with dedicated transit lanes, medians, and 3-lane segments.

Overall, Scenario C received 45% of the votes, followed closely by Scenario B with 38% of the votes. Scenario A trailed further behind with only 17% of the votes.

Participants were then asked to qualify their votes by identifying the attributes of their scenario that caused them to prefer that one over the other Scenarios. Improving the pedestrian and bicycling environment were the two most often provided reasons (22% and 20% of the votes respectively). The least important reasons were the need to minimize adjacent property impacts, improving vehicular commutes, and providing traffic calming.

Other reasons for selecting the preferred Scenario, asked in an opened ended question, emphasized the following:

- Improvements to the transit system and its level of service.
- Enhancements to the character and aesthetics of the corridor.
- Better usability throughout the corridor through universal design and smoother traffic flows.

Three follow-up yes/no questions were asked pertaining to the implementation of future improvements.

- Question 1 asked whether it is acceptable to acquire land beyond the right-of-way for corridor improvements. 85% of respondents answered Yes.
- Question 2 asked whether or not cross-jurisdictional coordination would be important for ensuring successful improvements along the corridor. 98% responded Yes.
- Question 3 asked whether the corridor should have a consistent look and feel along its entirety. 59% responded Yes and 41% responded No.



#### **Section 4: Pedestrian Crossings**

In this section, participants were asked to identify priority intersections for pedestrian crossing improvements, as well as opportunities for mid-block crossings.

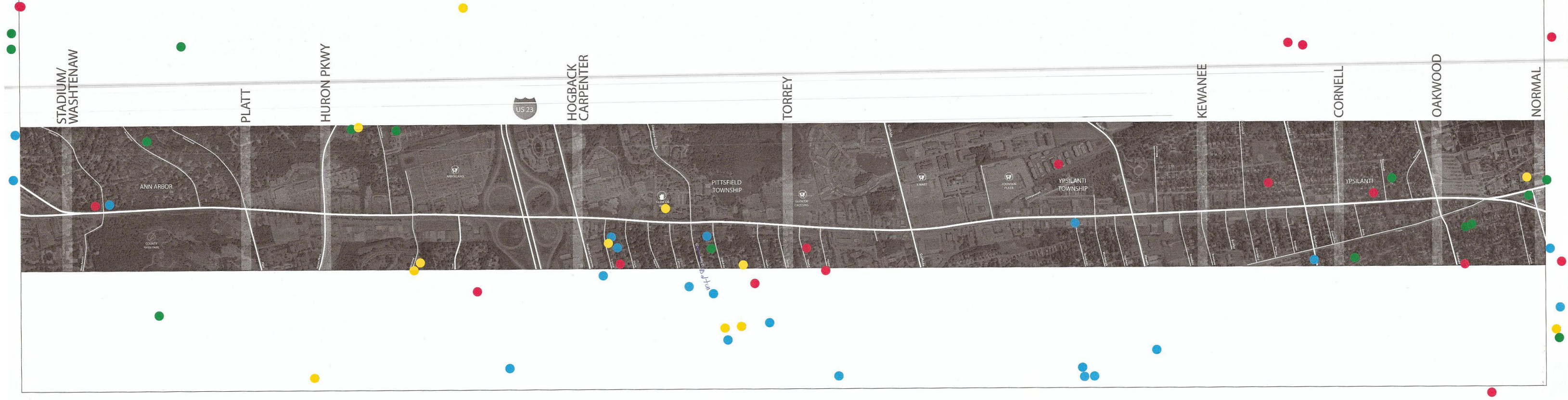
The Huron Parkway pedestrian crossing received the most number of votes by a significant margin (17% of the total). The next most important three intersections included Golfside (12%), Carpenter (12%), and Platt (10%) – recognizing that intersection improvements are currently underway at Platt.

In terms of midblock crossings, the most identified opportunity were between Platt and Huron Parkway (13%), followed by Carpenter & Glencoe Hills (11%) and Huron Parkway & Pittsfield (10%). In the open ended responses to mid-block crossings, there were many comments speaking against mid-block crossings due to safety and traffic concerns. However, other participants noted that midblock crossings can be important for transit riders to get across busy street – and if designed with adequate signage, lighting, signalization could provide safe crossing.

#### **Section 5: Segment-by-Segment Feedback**

In the final section, participants were asked to comment on the major concerns and issues addressing the corridor along the each of the major segments. This question was only asked among participants of the public workshops. In general, comments ranged across a variety of topics and concerns – but were consistent with the feedback summarized above.












# Where do you call home?



## Summary Tables for Improvements











How important are the following improvements?

- Ordered based on average response rating

	2 <-----scale-----> 5	Avg.
Safer for pedestrians to cross Washtenaw		4.65
Improving/adding sidewalks		4.58
Improving pedestrian connectivity		4.39
Improving/adding bike lanes		4.16
Improving bike connectivity		4.15
Improving bus connectivity		4.14
Beautifying the corridor		4.05
Adding amenities to bus stops along Washtenaw		3.89
Providing better connections to adjacent neighborhoods		3.66
Improving vehicular connectivity		3.43
Slowing down traffic speeds along Washtenaw		3.28

How important are the following *streetscape* improvements?

- Ordered based on average response rating

	2 <-----scale-----> 5	Avg.
Transit facilities		4.12
Street trees		3.98
Lighting		3.74
Beautification		3.74
Stormwater/landscape buffers		3.70
Trash/recycling containers		3.56
Wayfinding/signage		3.41
Benches		3.38
Art		2.75
Screen walls to screen parking		2.39

## Section 1: Overall Corridor

How important is it to make it safer for pedestrians to cross Washtenaw?

<i>Avg. 4.65</i>		#	%
Very important (5)		95	71%
Important (4)		31	23%
Neutral (3)		5	4%
Not very (2)		2	2%
Not at all (1)		0	0%
Total		133	

How important is it to slow down traffic speeds along Washtenaw?

<i>Avg. 3.28</i>		#	%
Very important (5)		23	18%
Important (4)		31	24%
Neutral (3)		40	31%
Not very (2)		24	19%
Not at all (1)		9	7%
Total		127	






How important is it to add amenities to bus stops along Washtenaw?

<i>Avg. 3.89</i>		#	%
Very important (5)		40	31%
Important (4)		51	40%
Neutral (3)		23	18%
Not very (2)		14	11%
Not at all (1)		1	1%
Total		129	








## Section 1: Overall Corridor






### How important is improving/adding sidewalks?

<i>Avg. 4.58</i>		#	%
Very important (5)		93	70%
Important (4)		25	19%
Neutral (3)		11	8%
Not very (2)		3	2%
Not at all (1)		0	0%
Total		132	

### How important is improving/adding bike lanes?

<i>Avg. 4.16</i>		#	%
Very important (5)		68	54%
Important (4)		32	25%
Neutral (3)		13	10%
Not very (2)		7	6%
Not at all (1)		7	6%
Total		127	

### How important is beautifying the corridor?

<i>Avg. 4.05</i>		#	%
Very important (5)		52	40%
Important (4)		45	35%
Neutral (3)		21	16%
Not very (2)		11	8%
Not at all (1)		1	1%
Total		130	

## Section 1: Overall Corridor

### How important is providing better connections to adjacent neighborhoods?

<i>Avg. 3.66</i>		#	%
Very important (5)		33	26%
Important (4)		39	31%
Neutral (3)		37	29%
Not very (2)		12	10%
Not at all (1)		5	4%
Total		126	

### How important is improving vehicular connectivity?

<i>Avg. 3.43</i>		#	%
Very important (5)		25	21%
Important (4)		31	26%
Neutral (3)		37	31%
Not very (2)		20	17%
Not at all (1)		5	4%
Total		118	

### How important is providing better pedestrian connectivity? (Results only from Public Workshop)

<i>Avg. 4.39</i>		#	%
Very important (5)		26	51%
Important (4)		20	39%
Neutral (3)		4	8%
Not very (2)		1	2%
Not at all (1)		0	0%
Total		51	51

## Section 1: Overall Corridor

### How important is improving bike connectivity?

<b>Avg. 4.15</b>		<b>#</b>	<b>%</b>
Very important (5)		<b>58</b>	<b>47%</b>
Important (4)		<b>39</b>	<b>32%</b>
Neutral (3)		<b>14</b>	<b>11%</b>
Not very (2)		<b>10</b>	<b>8%</b>
Not at all (1)		<b>2</b>	<b>2%</b>
Total		<b>123</b>	

### How important is improving bus connectivity?

<b>Avg. 4.14</b>		<b>#</b>	<b>%</b>
Very important (5)		<b>53</b>	<b>42%</b>
Important (4)		<b>44</b>	<b>35%</b>
Neutral (3)		<b>23</b>	<b>18%</b>
Not very (2)		<b>6</b>	<b>5%</b>
Not at all (1)		<b>0</b>	<b>0%</b>
Total		<b>126</b>	

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

**1**

The lack of walkability in this area is upsetting. The surface lots are waaaay too big and the shops are set too far back from the street to walk between any of them (because of the outsized parking lots). You know there's a problem when you have to drive to get between stores on the opposite sides of a parking lot. The large amount of surface parking and lack of any sort of public spaces worth caring about makes the area ugly and depressing.

The high-speed traffic makes one feel unsafe while crossing the street and makes too much noise for feel comfortable while walking along it.

**2**

Vitally important to, attract, develop and keep new business; important to maintain current business; improve quality of living in surrounding neighborhoods; improve safety for drivers, pedestrians and encourage bicyclists.

Putting in sidewalks and maintaining the sidewalks during the summer and winter are important. Leaving the sidewalks to property owners results in sidewalks not being cleared.

Increased garbage pickup is important. Watering sod and trees is important.

In sum, I would like to know more about how the upgrades will have an improved level of county, township and city service.

**3**

Terrible sidewalks, interchange at US 23 needs more pedestrian friendly improvements. The traffic light at Washtenaw and Oakwood needs to be re-timed because the left turn lane and pedestrian light both give the right of way at the same time. Traffic lanes should be reduced near this intersection to promote pedestrian safety and neighborhood cohesion.

**4**

It is THE main thoroughfare connecting Ypsi/Ann Arbor and serving as a main transit corridor for people coming in/out from US-23 and I-94. There are no good alternatives unless an additional US-23 exit is constructed, which is not likely. Traffic congestion is a major problem. The lights are poorly timed. 5 lanes are needed to maintain efficient traffic flow. The Washtenaw Corridor is not an appropriate location to consider a "road diet" or dedicated bus lanes. Consider Packard as an alternative for a dedicated bus or alternative transit connection between Ann Arbor/Ypsi, not Washtenaw Ave.



## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

5	It's a busy street. I try and usually do only use this Ave when I need to. I also try to do more than one errand when I go. I do have 3 young children and walking, biking, and busing riding is hard to do with them (and pick up needed items). I really have to take my car. We live in A2 Hills and it's not easier to safely get to Washtenaw because our neighborhood doesn't have sidewalks throughout. Can we make Arlington safer too? Plus, every time I try to take the bus with my kids, I find that it's hard to get back home. Can we improve the bus schedule and routes?
6	It is not pleasant for anybody, least of all pedestrians and cyclists.
7	I like it so far. The new traffic light at Platt is a good thing. People need a place to cross safely from the Recreation Center. I hope to see an upgrade to the triangular median where Stadium meets Washtenaw.
8	I avoid driving on it as much as possible. My daughter totaled a car there. The bike route doesn't lend itself to fast safe travel.
9	Now, it's terrible. There are no continuous sidewalks along the entire length of Washtenaw from the Stadium split to the EMU campus. There should be. There should also be pedestrian bridges at the Washtenaw-Carpenter Rd, Hogback Rd intersection as well as at the Packard Rd, Carpenter Rd intersection. The amount of J-walking that goes on at these intersections is dangerous. Bike paths would be nice too as long as they don't increase traffic congestion along the corridor.
10	A mess, dangerous, ugly, and to be avoided even though I live near it in Ypsilanti. A classic example of what Transportation for America calls "dangerous by design." Negative impact is particularly severe in Ypsilanti, where it slashes through residential neighborhoods and is only a block from another major corridor, Cross/Packard.
11	I think it's a great idea overall, but I worry that it will lead to gentrification. I live along Washtenaw and there are so many people who do that aren't well off financially. How is this going to impact them? Are there protections in place to make sure lower income people aren't being pushed out of their neighborhoods? I'd love to see a revitalization happen, as long as it doesn't hurt the people that already live there.

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

12	I really don't think a lot about it and I don't many others do either. Washtenaw is a thru roadway, not a neighborhood. Please don't reduce lanes, for any reason like bike lanes because they are really not needed. It is a through road.
13	The Washtenaw Corridor Avenue is the busiest street in Ann Arbor. As the most direct route to U-M and new commercial activity in the near future, I fear that traffic will worsen (longer delays) and will become more dangerous for pedestrians to cross.
14	<p>It is too congested with auto traffic; the drive between Carpenter and Huron Parkway can be very slow and crowded. The appearance of the strip malls along the corridor is fairly shabby. There are a lot of good businesses in the area, but they can be hard to reach sometimes due to traffic congestion.</p> <p>In general, that area has been heavily overdeveloped. New businesses in brand-new shopping centers, while the older ones continue to decay. We need to redevelop existing shopping centers, rather than create new ones.</p>
15	
16	<p>I think there is a great disparity in the development that takes place in the corridor. Specifically when you compare new development east and west of Carpenter Road.</p> <p>I would like to see a way that could be addressed at least somewhat.</p>
17	I think it's fine, but RAISED crossings would do a world of good. Slowing the traffic is a terrible idea, and will just make rush hour worse than it already is. Adding a median to prevent left turns from driveways could help, though. All mid-block crossings should not interfere with the flow of traffic, it's already bad enough.
18	A very busy road, mostly strip malls, unappealing, and a hassle.
19	<p>I live right off of it so I have a lot of thoughts. What is most frustrating is that it takes 10 minutes to drive 2 miles and where I live, the sidewalk system is not complete or even existent in spots so walking and riding a bike are not necessarily an option. I live near Yost &amp; Washtenaw behind the Dollar Store.</p> <p>The worst part is the timing of lights does not change throughout the day as volumes change. It goes to blinking at midnight which is ridiculous. Traffic fluctuates wildly at rush hour compared to other times and the timing needs to reflect that on the lights.</p>

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

20	I mostly enjoy it - the food options are varied, the traffic (mostly) flows well, I wish Ypsi was less car dealer-focused. I do wish the traffic lights were more synced to help traffic flow more smoothly as it can be frustrating to start/stop.
21	Currently, while there are great restaurants, shopping, etc. that I utilize frequently, there could be a lot more attractive multi-use commerce and activity going on. Also it is SUPER dangerous to bike (minus the new corridor pedestrian sidewalks that just recently were added), and walking is dangerous as well. This makes even crossing the Washtenaw Corridor to get to another destination on foot or on a bike dangerous and inconvenient.
22	I really don't think about the Washtenaw corridor very often.
23	Very hard to bike. Not pleasing to the eye.
24	A very busy area, mostly designed for cars. Has a mix of people commuting into/out of Ann Arbor for work and local shopping. With more upscale stores the shopping is attracting out of town customers. It is within walking and biking distance for me but I don't feel safe so I use my car.
25	I drive cab in Ann arbor and I feel it must remain 2 lanes each direction to facilitate the movement of traffic. With the new shopping areas being added the traffic will really increase. I am also very concerned about the safety of street cafes on this street as one proposal suggests. I literally see traffic accidents in the Ann Arbor areas daily. With diners and pedestrians close to the travel lanes I feel there would be danger. West Liberty and Main street are much different than Washtenaw. Parked cars buffer the diners and pedestrians along with slower speeds. Washtenaw is the same as Jackson... both trails to the freeways for those that come to work here from out of town. The fate is sealed in these two cases. Turning it into three lanes so you can reduce the speed limit is not a solution. The back up on Jackson and Washtenaw would be quite astounding if any reduction takes place. Please go to both locations starting around 4 pm each day to see for yourselves. I would predict if Washtenaw was narrowed the back up will be all the way back to the stadium and Packard intersection. I believe you would be creating a giant bottleneck making even roads once passable very congested. I truly love the European style that I seeing dreamed about. However when you take a closer look at those cafe lined streets they are not roads leading to any freeway system. They are like W Liberty and Main.

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

26	I try to avoid East of 23 on Washtenaw as much as possible. I live in the NE quadrant of Packard/Platt and would love to feel safer crossing Washtenaw on either my bike or walking. Bike and pedestrian safety is important to me.
27	It could be a lot better.
28	<p>It has a lot of useful and interesting stores and restaurants, but the traffic lights turn the area from Stadium to US-23 into a 20 minute gauntlet. Timing needs to be improved, or roundabouts should be placed. Also, sidewalk gaps should be filled in with wide sidewalks for walkers, bicycles, roller-bladers, and so forth. Nicer bus stations with wayfinding and heated waiting areas would also be beneficial. Ann Arbor focuses too much on bike lanes--which are only good for about 10% of bike users. 80% are intimidated by them or find them highly unpleasant, and 10% would rather ride with the cars in the lane. Extra-wide sidewalks are cheaper to install, and provide a much more pleasant and safe experience for slower recreational bicyclists (who make up the majority). This is not unheard of--I've traveled to many European cities that prioritize off-road bike facilities over bike lanes and it seems to work there. We need to check whether the bike lane lobby actually represents most bikers (I don't think they do) and whether it really is safer (My hunch is it just trades one danger for another.) Also, we need to check: Perhaps bike lanes might be safer for the top 20% of bikers, but less safe for the bottom 50% of bikers--who just avoid using the lanes, throwing off statistics. Also note that on Plymouth Road, that has extra-wide sidewalks and bike lanes, most bicyclists choose to ride on the extra-wide sidewalks.</p>
29	I think that this road has so much room for improvement! I go out of my way to avoid it because of the traffic and lack of aesthetics. I would never ride my bike on this road as it is now because I value my safety.
30	Congested and full of angry drivers, I avoid it as much as possible
31	The Washtenaw Corridor between 23 and EMU is one of the most depressing stretches of road I've ever encountered. The road and many of the businesses and empty buildings are a physical mess. I've always been shocked at the amount of people trying to cross in between intersections and am amazed at the bravery of the few who are daring enough to ride a bike on Washtenaw.



## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

32

"Washtenaw Corridor Avenue"? Please proofread!

I definitely think there's potential for improving Washtenaw Avenue, though I'm skeptical of plans to reduce general traffic lanes in the process, without larger systemic changes in traffic flow in the area between Ann Arbor and Ypsilanti. I think the coordinated tactical changes -- filling sidewalk gaps, intersection repair, transit traffic signal prioritization -- can show high return in a short timeframe.

33

I travel the corridor between Stadium and Cross Street at least twice a day, nearly every day. Although changes need to be made, none of the changes should include narrowing the roadway. The traffic lights, especially those between Huron Parkway and Carpenter need to be synced to provide a steady flow of traffic. As they are now, traffic frequently backs up through the previous intersection, meaning that you may be waiting at a light for more than a full cycle before being able to move ahead. Also, I am strongly opposed to narrowing the road to three lanes near Ypsilanti. Although the speed limit is 40/45 mph, there are still many people who go 25 mph. Narrowing this to 3 lanes would only mean that people who are trying to go close to the speed limit are stuck behind these slower people, with no opportunity to pass. There is already a ton of road rage that occurs on this road, with absolutely no need to increase it, which will likely happen when the road is narrowed. Narrowing the road will not help to facilitate traffic in the least.

34

It's currently just for single passenger vehicles. It doesn't accommodate other travelers very well at all. It's also unattractive with the worst features of retail development, although the area between by County Farm Park is really lovely now.

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

- 35 Better coordination of traffic lights would help traffic flow. Do NOT favor any major change to the road...malls along the edge need improvement. Do NOT like malls that come out to the streets. Bike lanes are not important and are negative. This channel is for cars...use slower routes for bike lanes...keep the bikes separate from large-volume auto corridors. Better for all...cars, bikes....
- Some of the questions are just plain unfair and seem designed to be self-fulfilling. For example, "how important is it to make it safer for pedestrians to cross Washtenaw"...if I say it's not important then I am a nasty and uncaring person in some eyes....but, it may in fact be unimportant because it may already be relatively safe. For questions like this one to have any validity, a frame of reference or context must be given...how many pedestrian accidents are there? How high is that number in relation to other locations? Are they at intersections with traffic lights or is this a case of illegal crossings which then perhaps is a problem for law enforcement and not for planning?
- 36 It's ugly, it's dangerous, it's frustrating, it's congested. If I have a choice, I avoid it.
- 37 New design is more attractive and promotes a "village" like environment. HOWEVER, it assumes people use Washtenaw for stop and go type errands when in truth, they use Washtenaw as a commuter pipeline and they do not shop along it. That makes traffic volume high and locals actually avoid it. The new design does nothing to reduce the big problem: traffic volume. Please do not tell us the bus lanes will fix that because commuters going to Livonia/Northville/Novi etc will NOT opt to take a bus. I live one house off Washtenaw so am very familiar with it.
- 38 Washtenaw avenue is what it is: a major artery for vehicles to travel to and from a2 and ypsi. Don't waste time and tax dollars trying to make it what it is not.

## Section 1: Overall Corridor

### What do you think about the Washtenaw Corridor?

39	<p>First, I think about Washtenaw AVENUE, not Washtenaw Corridor [Ave]. I live on East Stadium Blvd so I am highly interested in improving Washtenaw Avenue, clarifying its image, so that the character of my residential street becomes even safer, calmer and more beautiful. I think many drivers think of E Stadium as 'Washtenaw Extended' making volume and speed inappropriate. We are already seeing a mode shift on E Stadium with new bike lanes and mid-block crossings. On the larger scale of Washtenaw Ave, the transition to multi-modal is surely to be more dramatically positive. Further, I have used AATA buses, both in Ann Arbor and commuting to work in Ypsilanti. Bicycle commuting to Ypsilanti has been highly impractical (impossible for me). I can definitely see positive benefit in the suggested modal shift improvements. Even as a driver, I have looked at the underutilized potential of Washtenaw Ave for years. It really should be re-imagined as a to-and-through multi-modal transportation system. There definitely are many untapped opportunities for building re-development and economic enhancement.</p>
40	<p>I think that you need more information about how vehicles are used along Washtenaw Avenue. Specifically, you need to know how many vehicles use Washtenaw Avenue in order to access US23 and then other Interstate highways for commuting purposes. You would not want to delay this component of traffic.</p>
41	<p>It's amusing that it is often shown by Google Maps as the fastest way to get to points east, when it is always slowest by experience. I think there are just too many curb cuts.</p>
42	<p>It's not a place. It's an unpleasant stretch you have to traverse to get to some place.</p>
43	<p>It is ridiculous for a vehicle to take 30-minutes to travel from Stadium Blvd to Carpenter Rd during the evening rush hour. Cannot lights be better coordinated or other traffic flow measures be implemented?</p> <p>On a side note regarding this survey: The questions about crosswalks could be improved with graphics noting each location and number of estimated street crossers.</p>
44	<p>I think maintaining traffic flow (5 lanes) and speed (45 mph) are imperative. People have places to go, and things to do. Walking and biking are fine, but the vast majority of people (read: taxpayers) travel by car, and will continue to do so.</p>

## Section 1: Overall Corridor

### What other elements of Washtenaw Corridor Avenue are important to you?

1	Reducing setback of buildings from the street
2	upgraded township and city maintenance to protect investment
3	Pedestrian safety and walkability, improving traffic flow, reducing congestion, having alternative modes of transit-bike lanes, bus options.
4	Better timed traffic lights. Address the traffic flow in/out of Arbor land (current system unnecessarily doubles up traffic on Washtenaw)
5	I would like to see surrounding neighborhoods get sidewalks as well to provide better connection to these improvements
6	just make it more accessible to people who aren't in cars.
7	Since I live in Ann Arbor Hills, the access to Washtenaw Avenue is 5.
8	the ability to ride a bicycle fast on a smooth road with some protection from traffic
9	Efficient traffic flow and timing of lights. Consideration of QUALITY OF LIFE for residents who LIVE along Washtenaw.
10	Improved quality of businesses and access from adjoining neighborhoods.
11	For the love of God, please take a cue from places where people actually bike (like Amsterdam) and realize that bikes and cars don't make good neighbors. Separated bike lanes (E.g., multi-use paths)!! Otherwise half of bikers will keep riding on the sidewalk like they do everywhere else. I realize you are following AASHTO standards, but AASHTO standards are not well thought out. <a href="http://dc.streetsblog.org/2011/04/27/research-bolsters-case-for-cycle-tracks-while-aashto-updates-guide/">http://dc.streetsblog.org/2011/04/27/research-bolsters-case-for-cycle-tracks-while-aashto-updates-guide/</a> At least analyze a separated bikeway scenario!
12	If we're going to do this, make it attractive and functional for everyone (cars, bikes, etc). This area has looked shabby for too long. Spend the money and go all out and make it green and natural looking as much as possible. And let's forget about art.
13	Permaculture techniques in plantings, work with local groups
14	Remove unneeded signage and lights; need bike lanes
15	Protecting the people that live there already. Making sure they don't get pushed out of their neighborhoods..
16	No bike lane on roadway. Use side pathway
17	none
18	Safety of left turns onto very busy roads (Washtenaw and Huron Parkway in particular)



## Section 1: Overall Corridor

### What other elements of Washtenaw Corridor Avenue are important to you?

19	Business facades that fit in with the scenario
20	Pedestrian & Bike safety.
21	Consistency of what the corridor looks like between Ann Arbor and Ypsilanti
22	I like that it's a 45 mph road. Slowing it down would make it unusable.
23	Finding ways to improve traffic flow during peak hours.
24	Being able to leave my neighborhood via Chalmers, especially to turn left/east.
25	Prefer bikes off road & on sidewalks. Safer
26	Proper timing of lights.
27	appearance, accessibility, functionality, safe for bikers and walkers.
28	Make it safer to get from sidewalks to store entrances.
29	Bike share stations; pleasant stores to shop in (i.e. not just big box stores)
30	The best improvement would be to find a way to move traffic and Washtenaw and the parkway intersection much more quickly. Right now no one wants to travel it but may must because of the freeway. People may want to stop and shop more often if it could be traveled better.
31	Automobile safety at intersections, there are a lot of car accidents
32	General softening and beautification
33	Wide sidewalks!!
34	n/a
35	SAFER BIKE LANES
36	Property maintenance, filling vacant buildings.
37	Coordinate traffic light timing...then it would all be fine.
38	Needs a friendlier, more downtown feeling to attract businesses and residents.
39	A rear entrance to Arborland and cutting down on the volume of cars. OR- add a third lane in each direction.
40	to make sure it doesn't become a traffic nightmare.... this is not a place for bikes.
41	Minimize waiting times at traffic lights
42	It is a corridor so try to improve signaling so that traffic flows smoothly.

## Section 1: Overall Corridor

### What other elements of Washtenaw Corridor Avenue are important to you?

43	Improving traffic flow. Pedestrian/bike access at US-23.
44	Reducing traffic congestion related to the US-23 interchange.
45	Not just a bike lane, separate bike path
46	making it appealing and friendly user. I would like to start riding the bus in this area so bus stops are 5 to me.
47	Improving flow of auto traffic.
48	Improving traffic flow: why not on list?
49	Allowing this road to be utilized by cars/transit and we, the people who live here.
50	Bike racks at bus stops would help people get to the bus stop. If shopping for groceries how do you transport the bags of groceries home on the bus?
51	Improving exits from business onto Washtenaw Ave.
52	I only drive it, so not sure about pedestrians, bikers, bus riders.
53	These are all so important! I think that these will come about if the vision and infrastructure supports them. I guess it's the build it and they will come concept.
54	Make it appealing, accessible, and of value to the community universally.
55	Transit bike lanes: bike lanes must be by curb not bus lanes.
56	Safe pedestrian crossings.
57	I'd like bike lanes on the sidewalk, the way it is on Packard.
58	Reducing noise and air pollution.
59	Building guidelines: working with designers for more timeless-looking buildings ("downtown" feel).
60	Increase speed of traffic; reduce gridlock traffic by eliminating some traffic lights.
61	Dedicated bike turn signals.
62	Raised bike lanes.
63	Landscaping, trees to block noise, beautify corridor, encourage pedestrian activity.
64	Walkable development.
65	I'm not convinced a problem – real problem exists.
66	Clearly marked: for winter and summers all seasons.






## Section 1: Overall Corridor

What other elements of Washtenaw Corridor Avenue are important to you?






**67** Using tram/train.

## Section 2: Streetscape Enhancements






### How important is improving lighting?

<i>Avg. 3.74</i>		#	%
Very important (5)		34	27%
Important (4)		45	36%
Neutral (3)		29	23%
Not very (2)		14	11%
Not at all (1)		3	2%
Total		125	125

### How important is improving transit facilities? (Results only from Public Workshop)

<i>Avg. 4.12</i>		#	%
Very important (5)		24	48%
Important (4)		12	24%
Neutral (3)		11	22%
Not very (2)		2	4%
Not at all (1)		1	2%
Total		50	47

### How important is improving stormwater/landscape buffers?

<i>Avg. 3.70</i>		#	%
Very important (5)		29	24%
Important (4)		45	37%
Neutral (3)		37	30%
Not very (2)		5	4%
Not at all (1)		6	5%
Total		122	



## Section 2: Streetscape Enhancements

### How important is beautification?

(Results only from Public Workshop)

<i>Avg. 3.74</i>		#	%
Very important (5)		17	34%
Important (4)		13	26%
Neutral (3)		11	22%
Not very (2)		8	16%
Not at all (1)		1	2%
Total		50	

### How important is adding screen walls to screen parking?

<i>Avg. 2.39</i>		#	%
Very important (5)		5	4%
Important (4)		9	7%
Neutral (3)		44	36%
Not very (2)		35	29%
Not at all (1)		29	24%
Total		122	125

### How important are street trees?

<i>Avg. 3.98</i>		#	%
Very important (5)		50	39%
Important (4)		42	33%
Neutral (3)		20	16%
Not very (2)		12	9%
Not at all (1)		3	2%
Total		127	47

## Section 2: Streetscape Enhancements

### How important are trash/recycling containers?

<i>Avg. 3.56</i>		#	%
Very important (5)		28	22%
Important (4)		46	37%
Neutral (3)		28	22%
Not very (2)		16	13%
Not at all (1)		8	6%
Total		126	

### How important are benches?

<i>Avg. 3.38</i>		#	%
Very important (5)		20	16%
Important (4)		39	32%
Neutral (3)		35	29%
Not very (2)		23	19%
Not at all (1)		5	4%
Total		122	

### How important is Wayfinding signage?

<i>Avg. 3.41</i>		#	%
Very important (5)		23	19%
Important (4)		38	32%
Neutral (3)		28	24%
Not very (2)		22	19%
Not at all (1)		7	6%
Total		118	

## Section 2: Streetscape Enhancements

### How important is art?




<b>Avg. 2.75</b>		<b>#</b>	<b>%</b>
Very important (5)		<b>10</b>	8%
Important (4)		<b>29</b>	24%
Neutral (3)		<b>30</b>	25%
Not very (2)		<b>26</b>	21%
Not at all (1)		<b>27</b>	22%
Total		<b>122</b>	

### SECTION 2 COMMENTS








- 1 Smoother, faster vehicle traffic.
- 2 Improved vehicular flow and access.
- 3 Clean clean clean.
- 4 Heating.
- 5 Universal design accessibility.
- 6 I would like all these things. I want quieter calmer more of future multi model.
- 7 Dedicated transit.

## Section 3: Corridor Alternatives

Regardless of the anticipated construction costs, which scenario do you prefer?



		#	%
A. Uniform: 5-lane		21	17%
B. Varied-5-lane, 4-lane with median and 3-lane		48	38%
C. Dedicated transit-4-lane with median and 3-lane		56	45%
Total		125	

Why did you choose one scenario over the others?


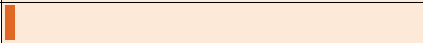
		#	%
Improves your vehicular commute		46	12%
Provides adequate traffic calming (slows vehicles)		48	12%
Provides a safer pedestrian environment (along the corridor and at crossings)		87	22%
Improves bicycling experience and safety (ease of bicycling)		77	20%
Minimizes the need for adjacent property acquisitions/easements		19	5%
Has the potential to enhance adjacent land use		54	14%
Beautifies the corridor		63	16%
Total		213	

### Section 3: Corridor Alternatives



Some elements being considered require additional space beyond the existing right-of-way. In the past this was accomplished by acquisition (purchase/donated easement). Do you believe this is an acceptable trade-off for the benefit of Complete Streets?

		#	%
Yes		103	85%
No		18	15%
Total		121	

Do you agree that future corridor improvement will be most successful if coordinated with all four jurisdictions along the corridor? (Ann Arbor, Pittsfield Township, Ypsilanti Township, Ypsilanti)

		#	%
Yes		124	98%
No		3	2%
Total		127	

Do you believe it is important for the corridor (through all four jurisdictions) to have consistent look and feel? (Materials, lighting, street furniture, wayfinding)

		#	%
Yes		71	59%
No		50	41%
Total		121	



### Section 3: Corridor Alternatives

Do you have other reasons for why you choose one scenario over the others?

1	Adds to street livability.
2	Efficient movement of transit.
3	More useable. These improvements seem like an attempt to quiet traffic in order to make people not want to drive here. That's not imaginable for a main artery from highway to downtown areas. Sad but true.
4	Really excited about redevelopment.
5	Provide better exits from business onto Washtenaw Ave.
6	Beautifying corridor wastes tax payer money!
7	If it can be done without "Michigan Lefts".
8	Enhances transit.
9	Allows improved transit flow, which will attract more riders.
10	Universal access.
11	Need to focus on transit and make transit a priority.
12	Improve transit options.
13	Avoids lanes ending.
14	Peak oil? Able to take bus when I'm too old to drive?
15	Meets the needs of traffic in different areas.
16	Friendly user town more tourist.
17	Adapts to the varied traffic levels and patterns.
18	Speeds transit commute.
19	Good entrance into Ypsi. Better ability for walkable, transit oriented development in the Ypsilanti section.
20	Seems modifications and existing scenario should be sufficient. It still employs a boat load of consultants, too!

## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

1

I particularly like the narrow 3-lane section in Ypsilanti and Ypsilanti Twp (this will make the space much more walkable and feel more enclosed), but instead of a mix of 4 and 5-lane sections farther to the west, use all 4b and keep the possibility of a future transit system (but only if there's a real chance of that happening--a super wide median would be a waste unless it were actually serving a useful purpose). By the way, there's a section marked 3a, but there is no plan view in the PDF of a 3a layout. After reading through the existing responses, I saw several people mention that the primary purpose of Washtenaw is as a through-route for cars and that reducing the number of lanes will make it unusable. I don't think there were any proposals to reduce Washtenaw to less than four lanes west of M-24, so I don't see the problem, since that's where most of the traffic is. In terms of reducing lanes east of Carpenter, there is rarely excessive traffic, only excessive speed. If people are worried that there will be too much traffic after reducing the number of lanes, they shouldn't worry so much, since traffic tends to reach a similar equilibrium point whether there are more lanes or fewer lanes: adding lanes encourages latent traffic demand to fill the extra capacity and reducing lanes causes people to find alternative transport methods and routes. A narrower road will make Washtenaw east of Carpenter far more pleasant and walkable.

2

Switch the 3b section, to 4 lane with 13' foot median and dedicated bike lane. That would allow traffic flow and pedestrian safety while also allowing buses to stop and pick up passengers.

3

Eliminate any pedestrian crosswalks without a signal.

4

I think the area needs to be very family friendly.

5

We need consistent upkeep of trees/shrubbery

6

second choice is the varied concept.

## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

7

I don't understand why the section between Carpenter & Torrey is designated to remain 5 lanes in Scenario B. I think 5-lanes here isn't warranted as it is on the other side of US23 where you have more traffic trying to get to US23 from inner Ann Arbor. (The portion between Huron Parkway and US23 designated as 4B is madness unless the road will be widened as well. That section single-handedly is the section of Washtenaw that needs the most attention. Perhaps an elevated entrance ramp beginning at Huron Parkway to the US23 interchanges.) East of US23, I think Washtenaw Ave. is wide enough to handle 3 lanes with turning islands ("Michigan Left's") with landscaping (tall hybrid Elms, please) East to Oakwood. This would help improve the aesthetics of the residential neighborhoods on either side and make this corridor more attractive for business development on existing vacant lots. Sidewalk improvements along the businesses in Pittsfield Township and Ypsilanti Township will also encourage local FOOT TRAFFIC from the residents in the area further encouraging and building business GROWTH. Tall elms would reduce the visual CLUTTER that short trees often create at eye level, and provide needed SHADE to areas that may be dominated by concrete. Future consideration should be given to Hewitt as a connector to Washtenaw. A "Park and Ride" should be located off of I-94 at Michigan Ave for people who live in Saline, southern and eastern Ypsilanti Township, and further East who commute in on West-bound I-94 to North-bound US23 to Washtenaw Ave. into Ann Arbor in the morning and out in the evening. If you want to make Washtenaw Ave. west of US23 less congested and have more people on public transit, then you will need to make it easy & appealing for them to use with buses every 15 minutes (possibly 24 hours & all seven days). Anything less is unreliable and will not be considered except by those who HAVE NO OTHER CHOICE.

8

Do not install any mid-block pedestrian crossing. This will slow traffic way too much.

9

I like elements of both B & C. Either seems acceptable. In Ypsilanti, important to factor in impact on intersecting residential streets and relation to nearby Cross/Packard corridor.

10

use native plants rather than grass along road - ask garden clubs, botanical gardens, general public for donations of native plants

## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

11	Adaptive signaling giving preferences to buses and emergency vehicles. If you must have a separate bus lane, please put the bike lane against the curb... do you REALLY think it's OK to for all bikers (think grandmas and 12-year-olds) to be riding between buses and traffic? No one will use those lanes. For an example of how well-used bike lanes are in heavy traffic corridors when there is a sidewalk available, go count bikes for a day on Jackson Avenue west of town. That bike lane was a complete waste of money, increases drainage requirements, makes the surrounding area warmer on warm days, and encourages traffic to move faster. Integrated bike lanes have a place... heavy-use corridors with multiple lanes is not that place.
12	Have people color-code their own vision of varied using the streetscape options given.
13	Less individual driving, more adequate public transportation
14	none
15	Avoid midblock crossings
16	Protected bike lanes when possible.
17	
18	Not an improvement, but a comment. I walk along Washtenaw between Kewanee and Oakwood regularly, often with a baby in a stroller. The street and sidewalk is hazardous as traffic flies by, the margin is tiny. Decreasing the street in this area to three lanes would be a significant improvement for the residents in the surrounding neighborhoods.
19	Please, for the love of god, don't drop the speed limit! Traffic doesn't need "calming"!
20	Reducing the eyesore effect of large parking lots
21	Pedestrian islands for crossing can also be used to keep left-turners in place so they don't coast and threaten head-on collisions.
22	Blvds are great *IF* they are maintained & kept tidy
23	Please, more greenery.
24	I just think the essential elements to any scenario are bike lanes, street beautification, and ability to integrate with bus transit.
25	Make the bus lanes even clearer, and improve separation of bike lanes (i.e. with flexible poles or other physical barrier)
26	Wider bike lanes

## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

27	I prefer the 97' version with dedicated bus and bike lanes. Seems very doable and would be a vast improvement.
28	I like the idea of medians, but think that we should not be eliminating through lanes---Washtenaw needs at least two lanes in each direction. In an ideal cash-is-no-object world, I'd love to see elevated rail down the medians of all our major roads, connecting to park-and-ride lots at the freeways, and connecting to long-distance rail lines across the state (including to Detroit and the airport).
29	A dedicated bike lane with a small median protecting it, worked for a neighborhood in NYC
30	I'm skeptical of the 3-lane section, and would want to see much more information before truly supporting this. While I'd love to see dedicated transit lanes, I'm opposed to anything that requires ROW acquisition east of Hewitt -- the commercial area there is already so crunched for space so as to be hard to use.
31	I like the proposed medians between Huron Parkway and US 23 that would provide indirect left turns. People frequently pull into the left turn lanes much too soon before turning, or drive down them to try to merge into traffic. As a result of this, I have seen several very close accidents. The indirect left turns seem as though they would help prevent this, and make it safer for drivers. They would also probably make any pedestrian mid-block crossings safer as well, for pedestrians and drivers both.
32	Really, I don't want any changes of the sort you are talking about and think they are a waste of taxpayer dollars. Just improve the pattern of green wave and things will work a bit better. They already work pretty well. The improved intersection at Washtenaw and Huron Parkway helped that.
33	"Diet" to two through lanes of traffic should not be considered until vehicle traffic diminishes. Dedicated transit lanes in narrow right-of-way will need to wait.
34	add two more lanes-one in and one out of town
35	Curb cuts for all bus stops
36	Traffic lanes need to be standard 12', not 11'.
37	Separated cycle tracks instead of bike lanes.
38	Art, trees, lights.
39	More busses, better bus stops, walkable spaces.



## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

40	Off-street bus stops and super stops.
41	Green parking buffer (bushes) instead of a wall.
42	Add bike lanes/sidewalks where there are not already ones. Add “Michigan Left” crossings at lower traffic areas. More trees less lot west of US23, Southside. Ypsi has lots of underused parking in the corridor.
43	East Washtenaw needs a convenient food store. I’d love to see a Kerrytown like market maybe a co-op sort of market.
44	No Michigan Lefts.
45	Complete bicycle accessibility.
46	Heat at bus stops.
47	Make it convenient and accessible in all areas.
48	Encourage buses first. But keep access to bikes, tor.
49	Reduce traffic lights or synchronize so you can make most of them. Need much better bus service- maybe express AA to Ypsi will stop at Arborland. Need bicycle lanes all the way to Ypsilanti. I am very opposed to on street parking.
50	Sidewalks, off-street biking.
51	Start with 5 lanes, narrowed to slow traffic and make other options more appealing.
52	Smooth transitions.
53	Protected (raised barrier) bike lanes.
54	Please, please, auto-activate pedestrian crossing lights. There is no reason to have to push the button to activate as pedestrians often misses the light that is green but pedestrian signal is red.
55	What about closing every other residential street where it meets Washtenaw and putting mini parks at the end of the street? That would relieve traffic on Washtenaw and eliminate some of the danger of pulling out into traffic on Washtenaw.
56	More street lighting.
57	Even more buses along Wash during busy hours and later buses – both would increase ridership.
58	High visibility marking on bike lanes. Lights bikes can trigger on side streets crossing the corridor.

## Section 3: Corridor Alternatives

### What ideas do you have to improve your preferred scenario?

59	Include median more often, ask people to compile their own optimal transitions from type to type.
60	Smooth sidewalk and well marks bike lanes.
61	Bike sharing.
62	Develop/coordinate carpooling services/hub.
63	More zip car locations along corridor.
64	Need buy in from the existing property/business owners. They should recognize complete streets will increase their business opportunities.
65	Pedestrian activated crossing signals (RRFB).

### Acceptable Trade-off for Right of Way Use -Comments

1	But complete streets not realistic for Washtenaw west of 23. It is already built!
2	How much? Where? Give specifics.
3	R/W acquisition if always a challenge.
4	I can't say because I don't own a home on Washtenaw.
5	As long as people aren't short-changed/taken advantage of.
6	Washtenaw is the center of our community. If the center is dangerous and ugly it sets the stage for our whole county.
7	Not unless property owner is agreeable.
8	Many businesses have underutilized arranged parking in front that could be better.
9	However, include their ideas, projects and personnel for accountable implementation.
10	Too costly.
11	Business/land owners should make the financial commitment as they will have a gain! The county or city should not have to buy the land. Is it possible to do it through zoning?
12	Avoid eminent domain.

## Section 3: Corridor Alternatives

### Jurisdictional Coordination - Comments

1	Sure, but please no TIFF!
2	Of course.
3	For sure! Great cooperation/coordination.
4	Also the schools.
5	Yes, if transit ridership is to be improved, there has to be a good connectivity between AA and Ypsi.
6	But the “hot spot” from Platt to Hogback could be done on its own, and would provide the best “bang”!
7	It’s needed.
8	We must work together. Also need collaboration on Ellsworth, Plymouth, Geddes, and Packard.
9	But if all 4 cannot agree, the improvements should continue separately.
10	Duh.
11	Especially for coordinated beautification efforts. We don’t want Washtenaw to seem disjointed.
12	Of course, any one of the communities could make things very difficult for the others.
13	Bioregionalism is the future.
14	Definitely.
15	But don’t wait for all, just do it.

### Consistent Look and Feel - Comments

1	But impossible from here.
2	Depends upon the local jurisdiction’s planning guidelines and funding capacity.
3	Some uniformity is nice but individual neighborhood character is also a good idea.
4	The areas are used very differently. Making them look the same does not make them get used in the same way.
5	This would improve the perception of Ypsi.
6	Don’t know what wayfinding is.










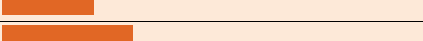
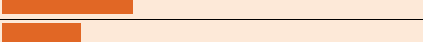

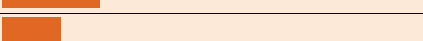

## Section 3: Corridor Alternatives

### Consistent Look and Feel - Comments

7	Let each node have its own “look”, but have a consistent level of service.
8	It will help create a consistent image/”branding” of the corridor, which will increase its value.
9	I’d kind of like to know when I’ve gone from one to another. But “wayfinding” and signage consistency would be good.
10	Super important.
11	To feel confident and comfortable need consistency.
12	Yes please!!
13	Not necessarily, signage yes of course but giving different sections distinction may allow for a bit of community pride and beauty in variation.
14	Different areas require a different set up.
15	Not essential.
16	Please no Ann Arbor-style Disneyland wayfinding.
17	Nice, not necessary.
18	What Gillian said.
19	Consistency in function and traffic management is more important than cosmetics.
20	Not as important.
21	Be nice, not necessary.
22	To some extent but maybe the guidelines are the same with creative license. Each community could have their uniqueness.
23	Not necessarily.

## Section 4: Pedestrian Crossings

Help us to understand, where you think the most important pedestrian crossings at intersections are. Pick the top 3.

		#	%
1 Stadium		24	7%
2 Manchester		10	3%
4 Platt (under development)		31	10%
6 Huron Parkway		53	17%
8 Pittsfield		24	7%
9 Yost		10	3%
10 Carpenter		37	12%
12 Glencoe Crossing		23	7%
15 Golfside		39	12%
16 Fountain Plaza		14	4%
18 Hewitt		20	6%
20 Mansfield		12	4%
22 Oakwood		15	5%
24 Summit		9	3%
Total		321	



## Section 4: Pedestrian Crossings

Help us to understand, where you think the most important mid-block pedestrian crossings are. Pick the top 3.

		#	%
3	Manchester & Platt	18	6%
5	Platt & Huron Parkway	42	13%
7	Huron Parkway & Pittsfield	31	10%
11	Carpenter & Glencoe Hills	36	11%
13	West of Glencoe Hills Drive	17	5%
14	Spicetree & McDonalds	30	9%
17	Maulbetsch (@ Cueter Chrysler)	8	2%
19	West of Courtland (near Dairy Queen)	20	6%
21	Near Roosevelt	14	4%
23	Oakwood & Cross	19	6%
Total		235	

## Section 4: Pedestrian Crossings

### Are there any midblock crossings needed that are not shown? Is yes, where?

1	Washtenaw and Hewitt
2	No midblock crossings should be added without light/signal!
3	No, there should not be any mid-block crossings!
4	Really shouldn't have any. Cross at corner.
5	Between Washtenaw and Arbor Hills Apartments on Huron Parkway near Walgreens (currently you have residents crossing the street at that section of the road)
6	not a fan of midblock crossings
7	Crossings desperately needed between Pittsfield and Huron Pkwy near McDonalds/Collision shop and near Chalmers for bus stops
8	Whole Foods
9	One or two community connectors needed between Washtenaw and Northbrook with mid-block crossing to Fountain Plaza; Fountain Plaza also needs a bus pull-off and stop.
10	midblock crossings are a stupid idea on a road that has this much traffic on it.
11	No midblock crossings
12	Not certain.
13	Can't answer – I don't cross Washtenaw and would be afraid to try.
14	Pittsfield: at present AATA passengers have to cross three streets to get between bus stops on Washtenaw at Arborland. Add a direct crossing.
15	Mid-block crossings along Washtenaw would adversely impact traffic flow and make no sense unless goal is to severely handicap mobility, business and residential access. I DO NOT SUPPORT mid-block crossings.
16	Those "flashing beacon" midblock crossings area a danger in poorly lit areas.
17	As a senior citizen, it's hard to get on and off a bus, and I sure don't see myself carrying groceries on a bus - get real!
18	Just north of Bearclaw Coffee on Washtenaw, where it splits with Stadium (a lot of students living in apartments cross there).
19	No, I'm wary of mid-block crossings. Any used should definitely have lots of flashing lights.
20	Midblock not the preference. Need signals!!! Need cars to STOP.
21	I wouldn't use at midblock crossing at "7"/"310". 6 and 8 are close enough.

## Section 4: Pedestrian Crossings

### Are there any midblock crossings needed that are not shown? Is yes, where?

22	Wherever the balance of pedestrian traffic and danger is the highest.
23	This needs to be answered by the residents living in or daily using the crossing.
24	I think the Meri Lou Murray crossing is being improved. With sidewalks, the distances between traffic lights can be handled.
25	Mid-block crossings should coordinate with bus stops.
26	Someplace between Hawks to Dalton.
27	I would not go overboard with mid-block crossings.
28	Scio Church and Churchill – there is a bus stop but no sidewalk on Scio Church on that side and no sidewalk to the curb on Churchill. I need a sign and stop so that I can cross safely. I am deaf and legally blind.
29	Scio Church and Ann Arbor Saline – I have no way to walk directly to the shopping area at that corner. There is no sidewalk on Scio Church that goes to that corner.

## Section 5: Segment-by-Segment Feedback

### A Stadium/Huron Split to Platt

- 1 Current crossing is accident waiting to happen.
- 2 Light a great idea with pedestrian crossing.
- 3 Already has excellent biking available.
- 4 Bus loading cutouts anywhere?
- 5 What happens to traffic here?
- 6 Hard to cross on foot.
- 7 Sidewalks, sidewalks, sidewalks.
- 8 Hard to cross on foot.
- 9 Make curb at new sidewalk into ramp to get on at Crystal.
- 10 Platt needs to be graded for better sight line south to Huron Parkway.
- 11 Formalize in-neighborhood bike trail parallel to Washtenaw.
- 12 At Manchester: Could traffic signal be activated on demand for peds/Manchester traffic?

### B Platt to Huron Parkway

- 1 Inadequate parking and new development.
- 2 Complete sidewalk.
- 3 Just hoping to make sure there will be good sidewalks along AHC, including by Shell, Midas, Uncle Ed's?
- 4 Platt traffic is very heavy.
- 5 Re-design Platt Huron Parkway intersection.
- 6 Going to get crazy when center is complete.
- 7 Eliminate exit in middle of block for new shopping center.
- 8 Street lights.
- 9 More trees!

## Section 5: Segment-by-Segment Feedback

### **C Huron Parkway to US-23 (Hogback/Carpenter)**

- 1** Cross for pedestrians at Wash./Yost.
- 2** Need sidewalk and crosswalk.
- 3** South side of street needs parking and beautification (which means clean and green).
- 4** Roundabout good idea.
- 5** Centralized bus area at Arborland (again).
- 6** Roundabout a good idea.
- 7** What about pedestrian bridges where traffic is heavy?
- 8** Where will stadium goers, work commuters, downtown visitors go?
- 9** Don't calm traffic – keep it moving!
- 10** Light needs to be timed based on volume – flashing most of the time.
- 11** Better in-out flow for Arborland.
- 12** Need better access to Arborland and easy crosswalk entry.
- 13** Figure out crosswalk at both Yost-Washtenaw and at Pittsfield-Washtenaw.
- 14** Improve sidewalks along both sides of Washtenaw.
- 15** Pave Chalmers and bring them into AA tax base. This gives a relief street for Washtenaw Ave. on Huron River Dr.
- 16** I never shop at any of these business unless I have access to a light for a right or left turn. No McDonalds, no bank, no Arby's.
- 17** Traffic lights too close together or need to synchronize very well.
- 18** Pittsfield Washtenaw good area for roundabout.
- 19** Washtenaw is really crowded much of the time.
- 20** Put bus stops back in Arborland somehow someway.
- 21** How can we address volume of non-local 23 peak hour traffic.
- 22** More trees!
- 23** Frequent transit and spur routes that connect to Washtenaw.
- 24** Looks like a construction zone at 23.
- 25** Too long wait for left turn Carpenter to Washtenaw.



## Section 5: Segment-by-Segment Feedback

### **D US-23 to Carpenter/Hogback (Highway Interchange)**

- 1** Need street lights.
- 2** From highway to Hogback difficult left turn.
- 3** Need better way to get traffic from Carpenter to Washtenaw.
- 4** Left turn from east Washtenaw to south Huron Parkway is too long.
- 5** Turning east on Washtenaw from Chalmers is really difficult!
- 6** Need bike path along south side of Washtenaw.
- 7** Nightmare since inception.
- 8** Decorate/landscape at entrance/exits on 23.

### **E Carpenter/Hogback to Torrey**

- 1** No islands.
- 2** No boulevards.
- 3** Need signal.
- 4** Improve bus stops on south side.
- 5** Buy my house.
- 6** Need to extend bike path on south side of Washtenaw.
- 7** More trees!
- 8** Replace trees cut down by Glencoe Hills.
- 9** Need safe pedestrian crossing.
- 10** Unattractive.
- 11** Plant native plants rather than grass – no mowing – self limiting heights.

### **F Torrey to Fountain Place**

- 1** Continue sidewalks.
- 2** Green and landscaping please green.
- 3** Public art.

## Section 5: Segment-by-Segment Feedback

### F Torrey to Fountain Place

- 4 New mixed use.
- 5 No islands.
- 6 No boulevards.
- 7 Sidewalks.
- 8 Laws/zoning to require/meet aesthetic standards (all along Washtenaw).
- 9 I have needed sidewalks along here several times. Lots of businesses that cannot be accessed by foot or bike.
- 10 Signage for intro to Ypsi Twp.
- 11 Need better left turn ??? soul Golfside to east Washtenaw.
- 12 Could all pedestrian crossing lights auto-activate? It does not impede traffic unless there are pedestrians.
- 13 Spice tree to north side ped crossing.
- 14 Sidewalks would be good (both sides).
- 15 More landscaping/trees.
- 16 Obnoxious LED signage.

### G Fountain Plaza to Kewanee

- 1 Continue sidewalks on both sides of Avenue.
- 2 Redo the sidewalks on both sides of Washtenaw between Golfside and Hewitt on into Ypsilanti.
- 3 Green and landscaping.
- 4 Bus pull offs to aid traffic speed and safe embark/disembark.
- 5 Updated architecture.
- 6 Green. Green.
- 7 Covered bus stops with live updates.
- 8 No islands. No boulevards.
- 9 3 lanes and reduce to 35 MPH.

## Section 5: Segment-by-Segment Feedback

### **G Fountain Plaza to Kewanee**

- 10** NW intersection crosswalk/ramp is inaccessible for everyone.
- 11** Public art; mini parks where people can sit.
- 12** Need to extend bike path all the way to EMU north and south sides.
- 13** Extend Border to Border Trail spur along old railroad line to Fountain Square Center.
- 14** Need sidewalks. I see many people walking in this area.
- 15** Trees.
- 16** Nothing to walk to here.

### **H Kewanee to Cornell**

- 1** Just tidy up, sidewalks along the road
- 2** Trees and walkways very.....coupled with 3 lanes and 35 mph.
- 3** Mini garden-parks.
- 4** Public art.
- 5** Trees! More trees!
- 6** Need sidewalks.
- 7** Both Mansfield and Cornell are major entries to the neighborhoods.
- 8** Sidewalks and bike lanes.

### **I Cornell to Oakwood**

- 1** Need sidewalks.
- 2** Trees/shrubs to cushion noise.
- 3** Traffic calming needed.
- 4** Road noise significantly increased with speed limit. 35 to 45(in addition to less safe for pedestrians, cyclists, people driving in and out of sub, etc.).
- 5** Reduce speed limits.
- 6** Bike lanes, 2 traffic lanes, 1 turn lane.

## Section 5: Segment-by-Segment Feedback

### J Oakwood to Normal

- 1 Eliminate 1-way streets.
- 2 Public art – like the horses in Louisville, coros in Chicago, etc. – maybe based on local product or education theme.
- 3 Pedestrian crossing at Normal.
- 4 Need pedestrian crossings.

### General Comments

- 1 Improved landscape (more trees) from AA to Ypsilanti
- 2 Artwork.
- 3 No more commercial development from AA to Ypsilanti along Washtenaw.
- 4 Bike access similar to one on Platt Rd. for walking and biking from downtown AA to Ypsilanti.



ReImagine Washtenaw

# Traffic Report

**Prepared by  
Parsons Brinckerhoff Michigan  
February 2014**



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## 1 Background

The purpose of this report is to detail the traffic analysis for the Reimagine Washtenaw project within Washtenaw County, Michigan. As part of this project, traffic conditions along Washtenaw Avenue were analyzed between Cross Street in the City of Ypsilanti and Stadium Boulevard in the City of Ann Arbor. There are four municipalities included the project, which include the City of Ypsilanti, Ypsilanti Township, Pittsfield Township, and the City of Ann Arbor. Washtenaw County and the Michigan Department of Transportation (MDOT) are also among the project partners. This report details the existing traffic conditions along the corridor as well as two future year analyses, which include the year 2020 and the year 2040.

## 2 Existing Operations Analysis

This chapter details the analysis of the existing roadway network and presents the existing intersection performance, which will provide a baseline from which to understand the impact of different design alternatives.

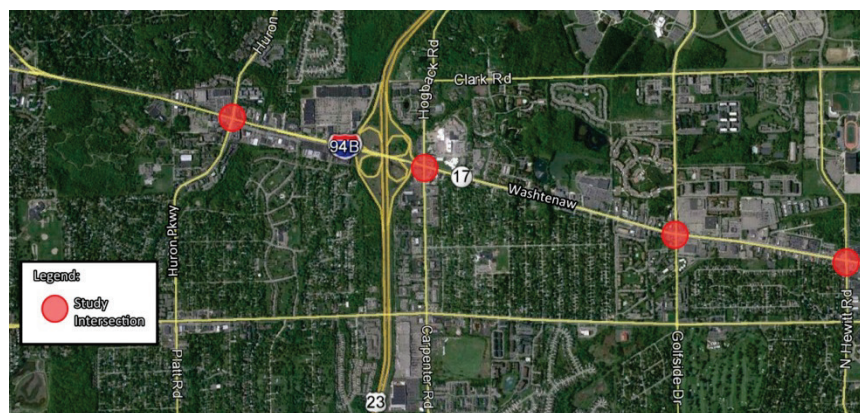
### 2.1 Study Area

The geographic limits of the modeling efforts include five primary study intersections along Washtenaw Avenue between Huron Parkway to Oakwood Street, as well as signalized intersections between Huron Parkway and Hogback Road because they are in close proximity to the primary study intersections. Following is a complete list of intersections included in the AM and PM VISSIM models (see Figure 1).

- Washtenaw Avenue and Huron Parkway (Primary Study intersection)
  - Washtenaw Avenue and Pittsfield Boulevard
  - Washtenaw Avenue and Yost Boulevard
  - Washtenaw Avenue and SB US-23 to WB Washtenaw off-ramp
  - Washtenaw Avenue and NB US-23 to EB Washtenaw off-ramp
  - Washtenaw Avenue and Hogback Road (Primary Study intersection)
  - Washtenaw Avenue and Golfside Drive (Primary Study intersection)
  - Washtenaw Avenue and N Hewitt Road (Primary Study intersection)
  - Washtenaw Avenue and Oakwood Street (Primary Study intersection)
-

While all of these intersections were included in the VISSIM analysis, only five of the intersections were analyzed and summarized as part of this study. The other intersections were included in order to ensure that the simulation of the corridor is reflective of the dense signal spacing west of US-23.

**Figure 1: Study Intersections**



## 2.2 Data Collection

This section describes the data collected for the study including traffic counts, speed limits, intersection geometries, existing signal timings, and crash data.

### 2.2.1 Intersection geometry, speed limits, signal timings

Intersection geometry, speed limits, and signal timings were obtained from Synchro models provided by MDOT and verified through field survey. These parameters as well as peak hour turning movement counts were then entered into corresponding AM and PM VISSIM models. Generally, Washtenaw Avenue is five lanes, with two lanes in each direction and a continuous center left-turn

lane. West of Pittsfield Boulevard to west of Hogback Road / Carpenter Road, there is a raised median and left-turns are prohibited except at signalized intersections. The geometry at each of the primary study intersections vary and are described below. The speed limit along the corridor varies. Washtenaw Avenue has a speed limit of 40 miles per hour (MPH) east of Oakwood Street and 45 MPH west of Oakwood Street.

**Huron Parkway** – Washtenaw Avenue at Huron Parkway has two through lane in each direction and a single left-turn only lane at the intersection. The left-turn only lane is a continuous left-turn only lane. Huron Parkway at Washtenaw Avenue has two through lanes in each direction and dual left-turn lanes at the intersection for both the northbound and southbound approaches. The dual left-turn lanes are between 200 to 250-feet in length. The signal operates with a leading eastbound left-turn/through movement, a shared eastbound/westbound through movement, then a lagging westbound left-turn/through movement. For the north-south phase sequence, a leading northbound left-turn/through, is followed by a shared northbound/southbound through movement, and concludes with a lagging southbound left-turn/through movement.

**Hogback Road / Carpenter Road** - Eastbound Washtenaw Avenue has two through lanes and one right-turn only lane and one left-turn only lane at this intersection. The northbound US-23 off-ramp is approximately 225-feet immediately west of the intersection with Hogback Road / Carpenter Road. The left-turn and right-turn lanes extend past the US-23 off-ramp. The two intersections greatly influence each other and the signals operate under one controller. Westbound Washtenaw Avenue has two through lanes and one

through/right-turn only lane and one left-turn only lane. The shared through/right-turn only lane becomes the entrance lane northbound US-23 immediately west of the intersection. The shared through/right-turn lane is approximately 350-feet in length and was constructed in 2012 to alleviate congestion at the intersection. Northbound Carpenter Road has one left-turn only lane, one shared through / left-turn lane, one dedicated through lane, and one right-turn only lane. The right-turn only lane is approximately 250-feet long. Southbound Hogback Road has one left-turn only lane, one through lane, and one right-turn only lane. Due to the laneage of northbound Carpenter Road with the shared through / left-turn lane, the northbound and southbound approaches are split-phased. The signal operates with a leading eastbound/westbound left-turn movement, then a shared eastbound / westbound through movement, next is the northbound phase, and then ends with a southbound phase.

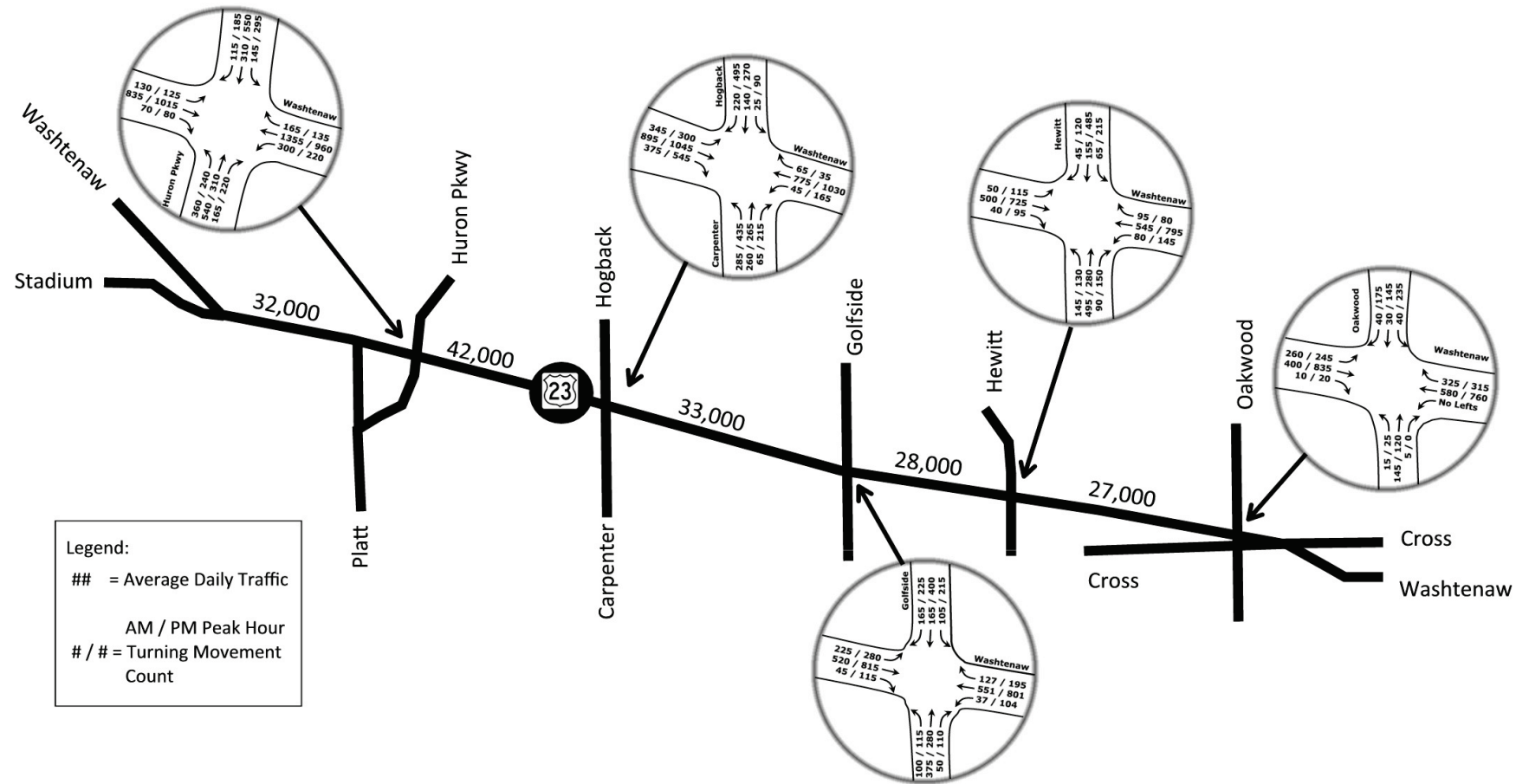
**Golfside Drive** – Eastbound and westbound Washtenaw Avenue at Golfside Drive has two through lanes in each direction with a continuous center left-turn only lane at the intersection. Northbound and southbound Golfside Drive includes one through lane in each direction, a center left-turn only lane, and a right-turn only lane at the intersection with Washtenaw Avenue. In 2012, Golfside Drive had two lanes in each direction with a center left-turn lane at the intersection, however, a bicycle lane was added and the number of through lanes were reduced along this corridor. The signal operates with a leading eastbound / westbound left-turn phase, then a shared eastbound / westbound through phase, then a northbound / southbound left-turn phase, then concludes with a shared northbound / southbound through phase.

**Hewitt Road** - Eastbound and westbound Washtenaw Avenue at Hewitt Road has two through lanes in each direction with a continuous center left-turn only lane at the intersection. Northbound and southbound Hewitt Road includes two through lanes in each direction and a continuous center left-turn only lane at the intersection with Washtenaw Avenue. The signal operates with a leading eastbound / westbound left-turn phase, then a shared eastbound / westbound through phase, then a northbound / southbound left-turn phase, then concludes with a shared northbound / southbound through phase.

**Oakwood Street** – Eastbound Washtenaw Avenue has two through lanes and one left-turn only lane at the intersection. Westbound Washtenaw Avenue has two through lanes and one right-turn only lane at the intersection, which is approximately 200-feet long. Left-turns are prohibited for westbound Washtenaw Avenue onto Oakwood Street. Northbound Oakwood Street has a left-turn only and one shared through / right-turn only lane. The intersection of Cross Street with Oakwood Street is approximately 300-feet south of Washtenaw Avenue, limiting the amount of storage between Cross Street and Washtenaw Avenue. Southbound Cross Street has one left-turn only lane, one through lane, and a right-turn only lane, which was recently constructed. The signal operates with a shared eastbound / westbound through phase, then a dedicated eastbound left-turn / through phase, then concludes with a shared northbound / southbound through phase. The northbound and southbound left-turns are permitted with the through phase.



Figure 2: Existing Traffic Volumes



### 2.2.2 Vehicle Counts

Existing AM and PM peak hour traffic volumes were obtained from Synchro models provided by MDOT. The data used in these Synchro models were collected during previous signal optimization project conducted within the last five years. Figure 2 illustrates the existing AM and PM peak hour volumes entered into the VISSIM models as well as the average daily traffic (ADT) volumes. Traffic volumes along the western end of the corridor are around 32,000 vehicles per day. East of Huron Parkway, the ADT increases to approximately 42,000 vehicles per day. Under US-23, traffic volumes are the greatest, with the ADT around 46,000 vehicles per day. East of Hogback Road / Carpenter Road, traffic volumes start to decrease all the way to the City of Ypsilanti. East of Hogback Road / Carpenter Road, the ADT is around 33,000 vehicles per day and east of Oakwood Street, the volumes decrease to 27,000 vehicles per day.

### 2.2.3 Crash Data

Crash data was obtained from the MDOT for crashes along Washtenaw Avenue between East Stadium Boulevard and North Summit Street and for crashes that occurred within 250-feet of the study intersections on the side streets. The time period for the analysis was 36 months (3 years) from January 1, 2009 to December 31, 2011.

### 2.2.4 Bus Transit

Bus transit data, including routes and schedule, was obtained from the website of the Ann Arbor Transportation Authority ([www.theride.org](http://www.theride.org)). The following routes operated along Washtenaw Avenue at the time of the analysis:

**AATA Route 4 – Washtenaw:** This route is one of highest ridership routes for AATA and runs from Ypsilanti to downtown Ann Arbor. There is an A Route and a B Route, with a minor difference in route and stops. Within the study area, both the A Route and B Route stay along Washtenaw Avenue. Headways for this route vary between five (5) to ten (10) minutes.

**AATA Route 7 – South Main – East:** This route services downtown Ann Arbor, south Main Street, parts of Washtenaw Avenue and St. Joseph Hospital / Washtenaw Community College. This route is along Washtenaw Avenue between Platt Road and Golfside Drive. Headways for this route are every 30 minutes.

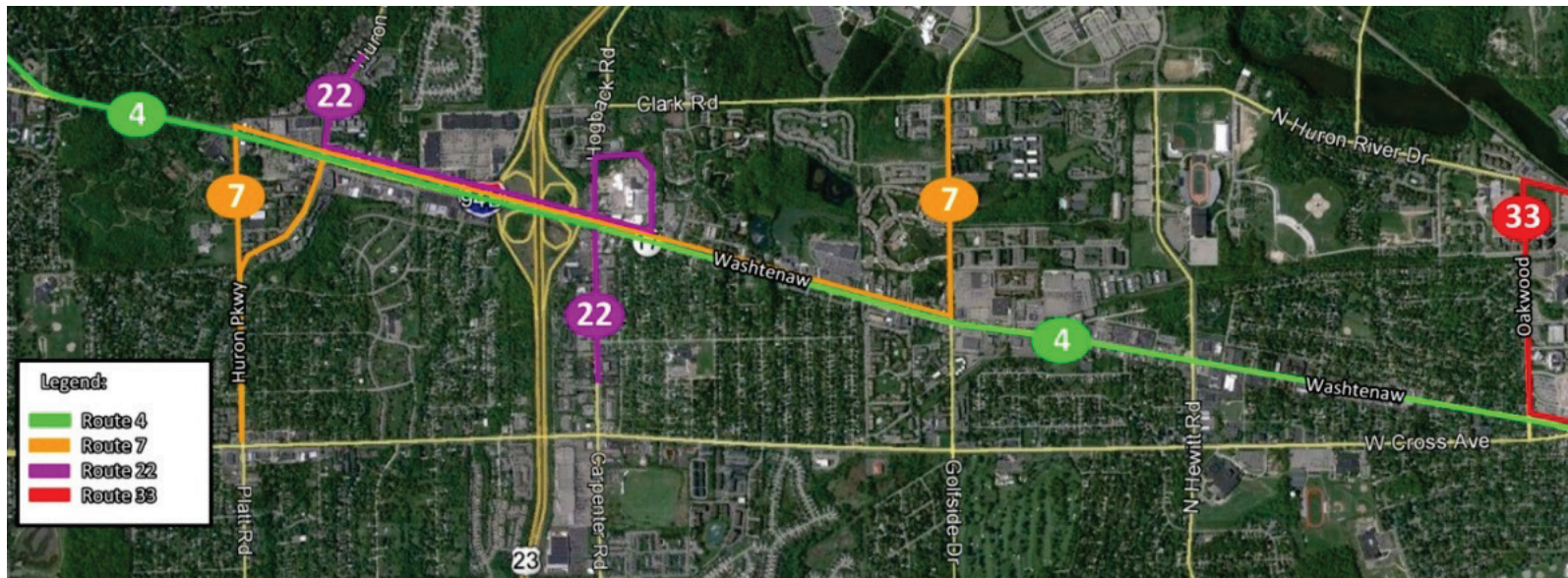
**AATA Route 22 – North-South Connector:** This route services the Meijer store on Carpenter Road, Glencoe Hills along Washtenaw Avenue, the VA Medical Center, and the Green Road Park and Ride. The route is along Washtenaw Avenue between Glencoe Hills and Huron Parkway. Headways for this route are every 30 minutes.

**AATA Route 33 – College of Business Shuttle:** This route services the Eastern Michigan University (EMU) College of Business and other locations on the EMU campus. This route is along Washtenaw Avenue west of Oakwood Street only. Headways for this route are every 20 minutes.

All routes through the study area, except for AATA Route 33, were coded into the VISSIM models. AATA Route 33 was not coded into the model since it was only on Washtenaw Avenue for a short distance within the study area. Figure 3 illustrates the bus routes within the study area. AATA provided a shapefile with stop locations along Washtenaw Avenue for all of the routes. These

stops were coded into the VISSIM model. Dwell time for transit stops was assumed to be 20-seconds with a 2-second standard deviation.

**Figure 3: Transit Routes**



## 2.3 Operations Analysis

### 2.3.1 Methodology

VISSIM 5.40 software was used for the traffic operations analysis. VISSIM is a microsimulation model, where traffic movements are explicitly modeled based on geometric parameters, traffic volumes, vehicle types, intersection control, and driver behavior and interaction. VISSIM assesses the roadway network in a dynamic fashion, instead of analyzing each intersection or each roadway segment in isolation. VISSIM can provide Measures of Effectiveness (MOEs) such as vehicle delay, travel time, queuing, and fuel consumption on a network-wide basis, so that the effects of improvements at a single location may be measured throughout the network. This ability makes VISSIM an ideal tool for testing and comparing alternatives to determine the most effective combination of elements in facilitating traffic flow. In addition, the sensitivity of the VISSIM model allows the user to test more subtle changes to the roadway system, such as adjustments in traffic signalization, changes in transit operations, and the addition of lanes, and others. The assumptions that went into developing the microsimulation model are as follows:

**Vehicle Fleet Composition:** The vehicle fleet composition (cars versus heavy vehicles) of 98-percent cars and 2-percent trucks within the study area, was obtained from the MDOT 2012 Sufficiency Rating Report. Trucks in the immediate study area would be limited to single-unit trucks (delivery-type trucks of approximately 35-feet in length) and not tractor-trailer vehicles.

**Driver Behavior:** The default VISSIM driver behavior parameters were left in place and unadjusted. The Wiedemann 74 car-following model defaults were utilized which are specifically oriented towards urban surface street driving parameters, versus the Wiedemann 99-car following model that is specifically oriented towards freeway driving and is the other car following model supported within VISSIM.

**Seed Interval:** A seed interval is the amount of time the model is run in advance of summarizing measures of effectiveness (MOEs) in order to load the network and reach a state of equilibrium flow (vehicles in = vehicles out). A 900-second (15-minute) seed interval was used for both the AM and PM peak hour models. This ensures that the appropriate level of traffic is on the roadway network at the time the measures of effectiveness begin recording in the model.

**Model Calibration:** For this project, volume served was chosen as the primary validation measure. A comparison of volume entered into VISSIM models and the VISSIM volume served was conducted to assure that actual volume levels observed in the field were being replicated by the VISSIM model. The greater of +/-10-percent or +/-20 vehicles was considered a reasonable threshold for model validation. The queue length report was also reviewed to ensure that queuing and delays were consistent with what was witnessed during the field reviews. The average of five runs of the simulation models were used in the calibration to eliminate any variations caused by randomness in the model.

**Measure of Effectiveness Summaries:** VISSIM is capable of reporting several MOEs. For the purposes of this analysis, delay and level of service were recorded for each intersection (approach, movement, and overall). Queue lengths (average and 95th-percentile) were summarized for each signalized intersection along Washtenaw Ave. Each time the model is run, these MOEs are summarized and can vary based on the random number seed

utilized. Since the MOEs vary slightly with different random number seeds, much like how traffic can vary day by day, the VISSIM models were run a total of five times (five different random number seeds) and then the MOEs were averaged.

The performance of the signalized locations in the study area was evaluated as part of the VISSIM modeling effort. Table 1 displays the level of service (LOS) criteria for signalized intersections.

**Table 1: Level of Service Definitions for Signalized Intersections**

Level-of-Service	Description	Average Control Delay Per Vehicle (seconds)
A	Operations with very low control delay occurring with favorable progression and/or short cycle lengths.	$\leq 10.0$
B	Operations with low control delay occurring with good progression and/or short cycle lengths.	$> 10.0$ and $\leq 20.0$
C	Operations with average control delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	$> 20.0$ and $\leq 35.0$
D	Operations with longer control delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	$> 35.0$ and $\leq 55.0$
E	Operations with high control delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered the limit of acceptable delay.	$> 55.0$ and $\leq 80.0$
F	Operation with control delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	$> 80.0$

Source: 2010 Highway Capacity Manual



### 2.3.2 Delay and Level of Service Results

The following section summarizes the various MOE results obtained from the AM and PM peak hour microsimulation models for all signalized intersections in the study area. Table 2 summarizes the approach and intersection delay and levels of service for each of the five study intersections.

**Table 2: Existing AM and PM Peak Hour Delay and Levels of Service**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Huron Parkway	36 / D	33 / C	50 / D	50 / D	41 / D
Hogback / Carpenter	<b>67 / E</b>	52 / D	<b>73 / E</b>	37 / D	<b>64 / E</b>
Golfside	24 / C	28 / C	<b>63 / E</b>	39 / D	36 / D
Hewitt	22 / C	23 / C	27 / C	25 / C	24 / C
Oakwood	7 / A	8 / A	33 / C	25 / C	11 / B
<b>PM Peak Hour</b>					
Huron Parkway	40 / D	38 / D	<b>59 / E</b>	54 / D	47 / D
Hogback / Carpenter	<b>86 / F</b>	<b>56 / E</b>	<b>72 / E</b>	49 / D	<b>70 / E</b>
Golfside	36 / D	35 / D	53 / D	<b>61 / E</b>	44 / D
Hewitt	27 / C	29 / C	27 / C	30 / C	29 / C
Oakwood	11 / B	12 / B	24 / C	26 / C	15 / B

\* Delay (seconds per vehicle) / Level of Service

In urban areas, LOS A through D is typically considered acceptable. As shown in the table, all of the signalized locations except the intersection of Washtenaw and Hogback/Carpenter operate at an overall level of service (LOS) D or better. The intersection of Hogback/Carpenter is operating at an overall LOS E during both the AM and PM peak hours. This is due to the northbound and

eastbound approaches in the AM peak hour and the same approaches in the PM peak hour plus the westbound approach. In addition, eastbound Washtenaw Avenue at Hogback/Carpenter currently operates at LOS F during the PM peak hour. Northbound Huron Parkway operates at LOS E in the PM peak hour, as does northbound Golfside in the AM peak hour and southbound Golfside in the PM peak hour. Appendix A contains the detailed intersection MOE data.

## 2.4 Crash Analysis

A crash analysis was performed to determine whether any discernable crash patterns could be identified in the study area.

### 2.4.1 Crash Definitions

The crash summaries define crashes by six types and four injury severity classifications. The definitions of the crash types are taken directly from the State of Michigan UD-10 Traffic Crash Report Instruction Manual, revised in May, 2010. The manual was produced and distributed by the Michigan Department of State Police, and the Office of Highway Safety Planning. The crash types are based on the intended direction of travel, regardless of point(s) of impact or direction vehicles ultimately face after the crash.

- **Single Motor Vehicle:** A single or multiple unit crash which involves only one motor vehicle as defined in the manual. This includes those cases in which a motor vehicle was: 1) the only traffic unit; and 2) the only motor vehicle involved in a collision with a bicyclist, pedestrian, animal, railroad train, or any other non-motorized object. Any motorized (i.e., self-propelled) vehicle or device is considered a “motor vehicle” even though the vehicle or device may not be defined as a motor vehicle on the Michigan Motor Vehicle Code or other applicable legislation.
- **Head On:** The intended direction of travel of both vehicles must be towards each other. The directions that the vehicles are facing when they come to rest, or the points of impact on the vehicles, are not the determining factors.
- **Angle:** This will be marked when the intended direction of travel is basically perpendicular for both drivers and there is a side impact of approximately 90-degrees. If the side impact

takes place during a “Head On-Left Turn,” “Rear End-Left Turn,” or “Rear End-Right Turn,” it is not an “Angle”.

- **Rear End:** When the vehicles are traveling in the same direction, one behind the other, and no turn is involved. Area of damage on the vehicles is not the determining factor. Any crash involving any vehicle backing into another is not considered a “rear-end” crash.
- **Sideswipe:** Vehicles traveling in the same direction, or vehicles traveling in opposite directions, making side contact or if a vehicle spins out of control and makes contact with another vehicle traveling in the same direction. “Sideswipe” differs from “Angle” in that a sideswipe is a glancing impact and should not in itself stop the forward movement of the vehicle. An angle crash is a more direct impact and may stop the forward movement of one vehicle.
- **Other/Unknown:** The crash does not fit in one of the other selections.

The definitions of the injury severity classification are taken directly from the State of Michigan UD-10 Traffic Crash Report Instruction Manual, revised September 1994.

- **Fatal Injury (K):** Any injury that results in death due to a motor vehicle traffic crash.
- **Incapacitating Injury (A):** Any injury, other than fatal, which prevents the injured person from walking, driving, or normally continuing the activities which he or she was capable of performing prior to the motor vehicle traffic crash.
- **Non-incapacitating Evident Injury (B):** Any injury, other than fatal and incapacitating, which is evident at the scene of the crash.

- **Possible Injury (C):** Any injury reported or claimed which is not a fatal, incapacitating, or non-incapacitating evident injury.

#### 2.4.2 Intersection Crash Summaries

This section summarizes the crash data collected for each of the study intersections during the three-year analysis period.

Table 3 summarizes the total number of crashes at each study intersection for the three-year analysis period. Crash frequency per year and crash rate per million entering vehicles were calculated and compared to SEMCOG critical crash frequency and crash rate. The crash rate normalizes crash frequency based on exposure (number of vehicles traversing the intersection). The ADT used for the crash rate calculations was obtained from the 24-hour approach counts performed for this study. Intersections that have crash frequency and/or crash rate higher than critical values are highlighted in red.

The crash rates shown along this corridor can also be compared to crash rates along similar corridors within Michigan. The M-53 (Ford Road) corridor from Telegraph Road to Hix Road has a similar AADT and corridor layout. The majority of the average crash rates along this corridor range from 0.78 to 2.30 with some as high as 3.83. Another similar corridor is Rochester Road from Main Street in Royal Oak to Tienken Road in Rochester Hills. Average crash rates along this corridor range from 1.2 to 2.3. The average crash rates along Washtenaw Avenue are all at the higher end of these ranges with two intersections exceeding the range.

The percentage of crashes by type are summarized in Table 4. These percentages were then compared to the SEMCOG average crash

type percentages to determine which crash types may be high and identify mitigation measures for those crash types. Following the table is an analysis for each of the high crash intersections within the corridor.

**Huron Parkway** – Approximately 74-percent of crashes at the intersection with Huron Parkway are either rear-end or side-swipe same crashes. These may be a result of congestion (stop-and-go traffic) at the intersection as well as the dual left-turn lanes for the northbound and southbound approaches.

**Hogback Road / Carpenter Road** – Approximately 74-percent of the crashes at this intersection are either rear-end or side-swipe same crashes. The crashes that occurred at the northbound US-23 off-ramp were also included in the analysis due to the close proximity of this intersection. As a result, this may explain why the intersection is a critical crash location. A review of the crashes found that the majority of the rear-end crashes occur along Washtenaw Avenue, which may be due to the congestion at the intersection (stop-and-go traffic) for eastbound and westbound. In addition there were some side-swipe same crashes for the northbound approach due to the dual left-turn lane. It is recommended that lane marking be added for the northbound dual left-turn lane as well as additional signage for northbound indicating that the shared through/left-turn lane is for northbound US-23. There is currently a sign above the lane, but additional signage along the side may also help. For the northbound US-23 off-ramp, a longer all-red phase for northbound could be attempted to reduce the amount of vehicles blocking the intersection. An additional sign could be added instructing vehicles not to block the intersection.

Table 3: Intersection Crash Analysis

Intersection	Single Vehicle	Head-on and Side Swipe Opposite	Head-on Left-turn and Rear End Left	Angle	Rear-end and Side Swipe Same	Other	Total Crashes	Average Crashes per Year	Crash Rate*
Huron Pkwy	2	2	1	20	76	2	103	34	1.74
Hogback / Carpenter	9	3	5	33	144	1	195	65	2.96
Golfside	3	7	4	48	69	3	134	45	2.68
Hewitt	1	7	2	22	55	1	88	29	1.93
Oakwood	4	1	7	8	23	2	45	15	1.15

\* Crash Rate is the average number of crashes per million entering vehicles

Table 4: Intersection Crash Type Analysis

Intersection	Average Daily Traffic	% Single Vehicle	% Head-on and Side Swipe Opposite	% Head-on Left-turn and Rear End Left	% Angle	% Rear-end and Side Swipe Same	% Other	Grand Total
Huron Pkwy	54,215	2%	2%	1%	19%	74%	2%	100%
Hogback/Carpenter	60,175	5%	2%	3%	17%	74%	1%	100%
Golfside	45,710	2%	5%	3%	36%	51%	2%	100%
Hewitt	41,640	1%	8%	2%	25%	63%	1%	100%
Oakwood	35,850	9%	2%	16%	18%	51%	4%	100%

**Golfside Drive** – This intersection was recently changed and it is recommended that an additional crash analysis be conducted after three years to determine if crashes were reduced. It appears that some of the angle crashes are as a result of driveways close to the intersection. It is recommended that driveways close to the intersection be consolidated as part of the recommendations from the Access Management Study.

**Hewitt Road** – This intersection has a higher than average occurrence of angle crashes and head-on / side-swipe opposite crashes. A review of these crashes indicates that most occur at the intersection, with a few occurring at driveway locations. Several of the angle or side-swipe opposite crashes were miscoded and should have been side-swipe same. One should have been a head-on left-turn and was construction related. Another angle crash occurred during construction. One angle crash was due to the sunlight. One was due to distracted driving. Eleven of the angle crashes occurred while the signal was in flash mode. It is recommended that the signal not be in flash mode overnight.

### 2.4.3 Segment Crash Summaries

A segment crash analysis was also summarized for each of the study segments between signalized intersections during the three-year analysis period.

Table 5 summarizes the total number of crashes within each of the study segments for the three-year analysis period. Crash frequencies per year and crash rate per million miles traveled per year were calculated. The ADT used for the crash rate calculations was obtained from the 24-hour approach counts performed for this study. Segments that have higher crash frequency and/or crash rate are highlighted in red. The average crash rates for segments along M-53 (Ford Road) range from 1.33 to 7.00 and along Rochester Road range from 0.85 to 13.34. The average crash rates for the segments along Washtenaw Avenue reflect this range as well. Table 6 summarizes the percentage of crashes for each segment to assist in determining mitigation measures.



Table 5: Segment Crash Analysis

Section	Distance (miles)	Single Vehicle	Head-on and Side Swipe Opposite	Head-on Left-turn and Rear End Left	Angle	Rear-end and Side Swipe Same	Pedestrian	Bicycle	Other	Total Crashes	Average Crashes per Year	Crash Rate*
Stadium to Sheridan	0.61	1				1				2	1	5.35
Sheridan to Huron Pkwy	0.18	10	1	2	30	62		1		106	35	4.99
Huron Pkwy to Pittsfield Blvd	0.05				13	34	1			48	16	6.86
Pittsfield Blvd to Yost Blvd	0.16					2	1			3	1	1.29
SB US-23 to NB US-23	0.56	2			1	22	1			26	9	3.17
Carpenter / Hogback to University Square	0.29	3		2	20	47				72	24	3.62
University Square to Golfside	0.16	3	3	1	16	17	1	1	1	43	14	5.08
Golfside to TSM Property	0.34		1	2	17	13	3			36	12	7.15
TSM Property to Hewitt	0.45	3		4	9	32	2		1	51	17	4.92
Hewitt to Mansfield	0.32	1	3	1	6	22				33	11	2.54
Mansfield to Oakwood	0.06	3	1	1	15	17		1		38	13	4.19

\* Crash Rate is number of crashes per million vehicles

**Table 6: Segment Crash Type Analysis**

Intersection	Average Daily Traffic	% Single Vehicle	% Head-on and Side Swipe Opposite	% Head-on Left-turn and Rear End Left	% Angle	% Rear-end and Side Swipe Same	% Other	Grand Total
Stadium to Sheridan	31,765	50%	0%	0%	0%	50%	0%	100%
Sheridan to Huron Pkwy	31,765	9%	1%	2%	28%	58%	1%	100%
Huron Pkwy to Pittsfield Blvd	35,550	0%	0%	0%	27%	71%	2%	100%
Pittsfield Blvd to Yost Blvd	41,735	0%	0%	0%	0%	67%	33%	100%
SB US-23 to NB US-23	45,750	8%	0%	0%	4%	85%	4%	100%
Carpenter / Hogback to University Square	32,285	4%	0%	3%	28%	65%	0%	100%
University Square to Golfside	26,315	7%	7%	2%	37%	40%	7%	100%
Golfside to TSM Property	28,000	0%	3%	6%	47%	36%	8%	100%
TSM Property to Hewitt	27,650	6%	0%	8%	18%	63%	6%	100%
Hewitt to Mansfield	26,340	3%	9%	3%	18%	67%	0%	100%
Mansfield to Oakwood	26,160	8%	3%	3%	39%	45%	3%	100%

For the segment between Huron Parkway and Pittsfield Boulevard, there are a high number of rear-end crashes and side-swipe same crashes. These are likely a result of congestion along the corridor and the number of driveway and access issues. Decreasing the amount of congestion may help to alleviate some of these crashes.

For the segment between Golfside Drive and the TSM Property (approximately ¼ mile east of Golfside), the percentage of angle crashes is somewhat higher. A review of the location of angle

crashes in this section indicates that most occur near driveways. As a result, a consolidation of driveways along the corridor or a form of access management would benefit this section of Washtenaw Avenue.

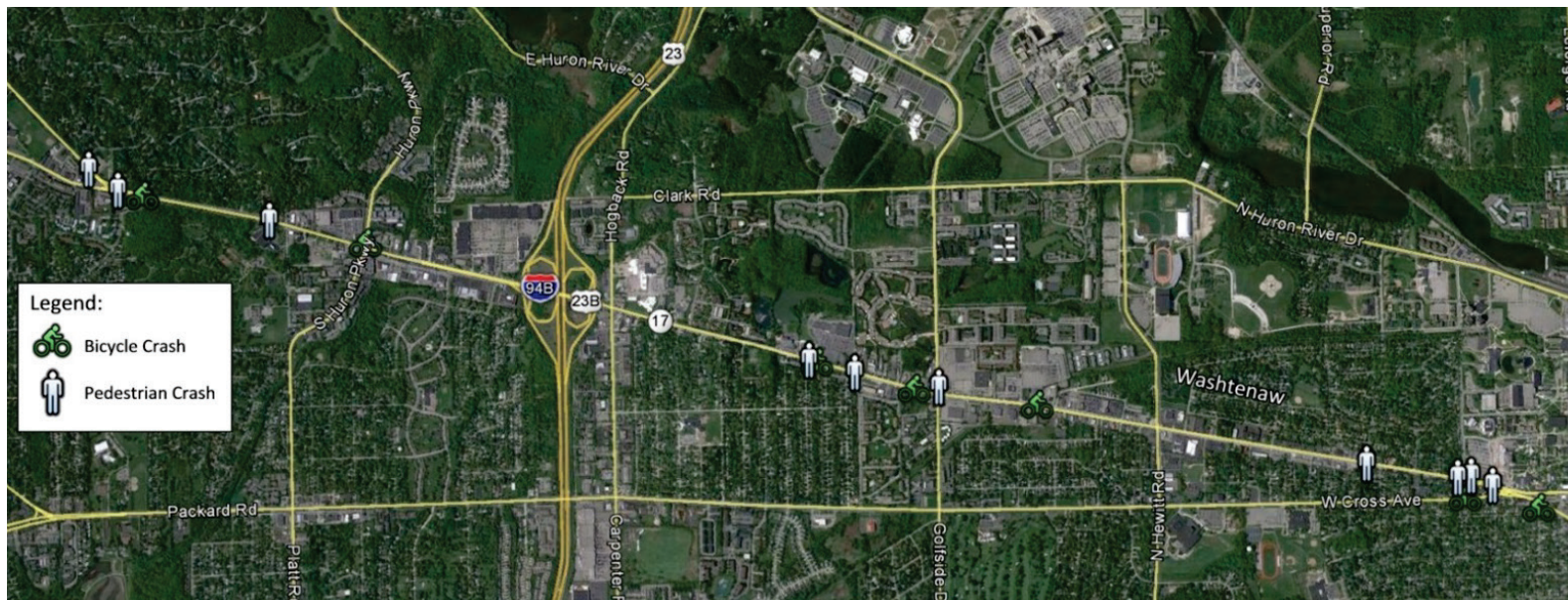
#### 2.4.4 Non-motorized Crash Summaries

There were eight (8) pedestrian crashes along the corridor and six (6) bicycle crashes along the corridor within the three years of crash history. Of the eight pedestrian crashes, four occurred at midblock

locations and four at signalized intersections. There was one fatality, one A-injury crash, one B-injury crash, three C-injury crashes and two with no injuries. The fatal crash occurred at the signalized intersection at the University Square Shopping Center. The A-injury crash occurred at the partially unsignalized intersection at Stadium Drive.

Of the six (6) bicycle crashes, one occurred at a mid-block location and the remaining five occurred at signalized intersections. There was one fatal crash (at the mid-block location), one B-injury crash, three C-injury crashes, and one with no injuries. Figure 4 illustrates the locations of pedestrian and bicycle crashes.

**Figure 4: Pedestrian and Bicycle Crash Locations**



### 3 Future Conditions Analysis

There were two future year horizons that were analyzed as part of this study: 2020 and 2040. The Washtenaw Area Transportation Study (WATS) travel demand forecasting model was utilized to determine future year traffic along the corridor. The WATS model uses socio-economic information within Washtenaw County, such as population and employment, to predict the amount of traffic along the roadways in various years up to the year 2040. A base year 2010 model was built based upon existing socio-economic information and calibrated to best match existing traffic volumes along roadways within Washtenaw County. Primarily major and minor roadways are included in the model, but not residential streets. A review of the 2010 traffic volumes along Washtenaw Avenue from the model were compared to existing traffic counts and found that they were within 10-percent of counts, which is generally considered a high confidence level. The model has an AM and PM peak period to be able to distinguish between any direction traffic volume impacts along the corridor. Table 7 below summarizes the percent increase in traffic from the 2010 base year to the 2020 and 2040 models.

**Table 7: Future Year Traffic Growth**

Year	AM Peak Hour	PM Peak Hour
2020	2%	3%
2040	12%	6%

Utilizing the growth rates from the WATS model as presented in Table 7, the traffic volumes were updated within the VISSIM model. Figures 5 and 6 illustrate the traffic volumes that were input into

the VISSIM model for the year 2020 and 2040, respectively. Within the next few years it is expected that MDOT will be upgrading the signal controllers and transit signal priority (TSP) will be added to the corridor. TSP allows transit vehicles to put in a call to the traffic signal controller to either allow additional time along Washtenaw Avenue or start the green phase earlier. As a result of this, traffic operations would typically be expected to improve along Washtenaw Avenue, while there may be some increased delay along the cross-streets. The addition of TSP and an optimization of traffic signals was conducted for this analysis. An optimization involves adjusting the signal timing at the signalized intersections to better serve the forecasted demand. No other characteristics (i.e. laneage or driver characteristics) were changed within the VISSIM model. The transit routes were also kept the same as existing. Tables 8 and 9 illustrate the approach and intersection delay for each of the five study intersections for the year 2020 and 2040, respectively. Appendix B details the intersection MOE's for each of the intersections.

As shown in Tables 8 and 9, the performance is expected to improve at the intersection of Hogback Road / Carpenter Road from the existing condition. This was due in part to the introduction of the transit signal priority (TSP), as well as a significant change in signal timing proposed. The current signal timing has a cycle length of 184-seconds. For this analysis, the cycle length was decreased to 110-seconds, which reduced the amount of delay for the intersection. The intersection performance at Golfside Drive is expected to degrade in the PM peak hour for the years 2020 and 2040, while the intersections of Hewitt Road and Oakwood Street are expected to have acceptable levels of service.

**Table 8: 2020 AM and PM Peak Hour Delay and Levels of Service**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Huron Parkway	34 / C	31 / C	<b>59 / E</b>	52 / D	41 / D
Hogback / Carpenter	15 / B	42 / D	45 / D	31 / C	30 / C
Golfside	25 / C	26 / C	<b>67 / E</b>	40 / D	37 / D
Hewitt	23 / C	22 / C	27 / C	26 / C	24 / C
Oakwood	9 / A	9 / A	31 / C	23 / C	12 / B
<b>PM Peak Hour</b>					
Huron Parkway	39 / D	35 / D	<b>66 / E</b>	<b>84 / F</b>	53 / D
Hogback / Carpenter	19 / B	54 / D	51 / D	51 / D	40 / D
Golfside	53 / D	34 / C	<b>57 / E</b>	<b>69 / E</b>	52 / D
Hewitt	28 / C	28 / C	28 / C	32 / C	29 / C
Oakwood	13 / B	14 / B	25 / C	27 / C	16 / B

\* Delay (seconds per vehicle) / Level of Service

**Table 9: 2040 AM and PM Peak Hour Delay and Levels of Service**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Huron Parkway	37 / D	44 / D	<b>71 / E</b>	<b>58 / E</b>	50 / D
Hogback / Carpenter	16 / B	45 / D	45 / D	33 / C	31 / C
Golfside	26 / C	28 / C	122 / F	41 / D	49 / D
Hewitt	23 / C	23 / C	27 / C	26 / C	25 / C
Oakwood	11 / B	10 / B	31 / C	24 / C	13 / B
<b>PM Peak Hour</b>					
Huron Parkway	39 / D	41 / D	<b>69 / E</b>	<b>97 / F</b>	<b>59 / E</b>
Hogback / Carpenter	19 / B	<b>59 / E</b>	52 / D	55 / D	42 / D
Golfside	<b>67 / E</b>	36 / D	<b>63 / E</b>	<b>82 / F</b>	<b>61 / E</b>
Hewitt	28 / C	30 / C	29 / C	32 / C	30 / C
Oakwood	13 / B	15 / B	25 / C	29 / C	17 / B

\* Delay (seconds per vehicle) / Level of Service



Figure 5: 2020 AM and PM Peak Hour Traffic Volumes

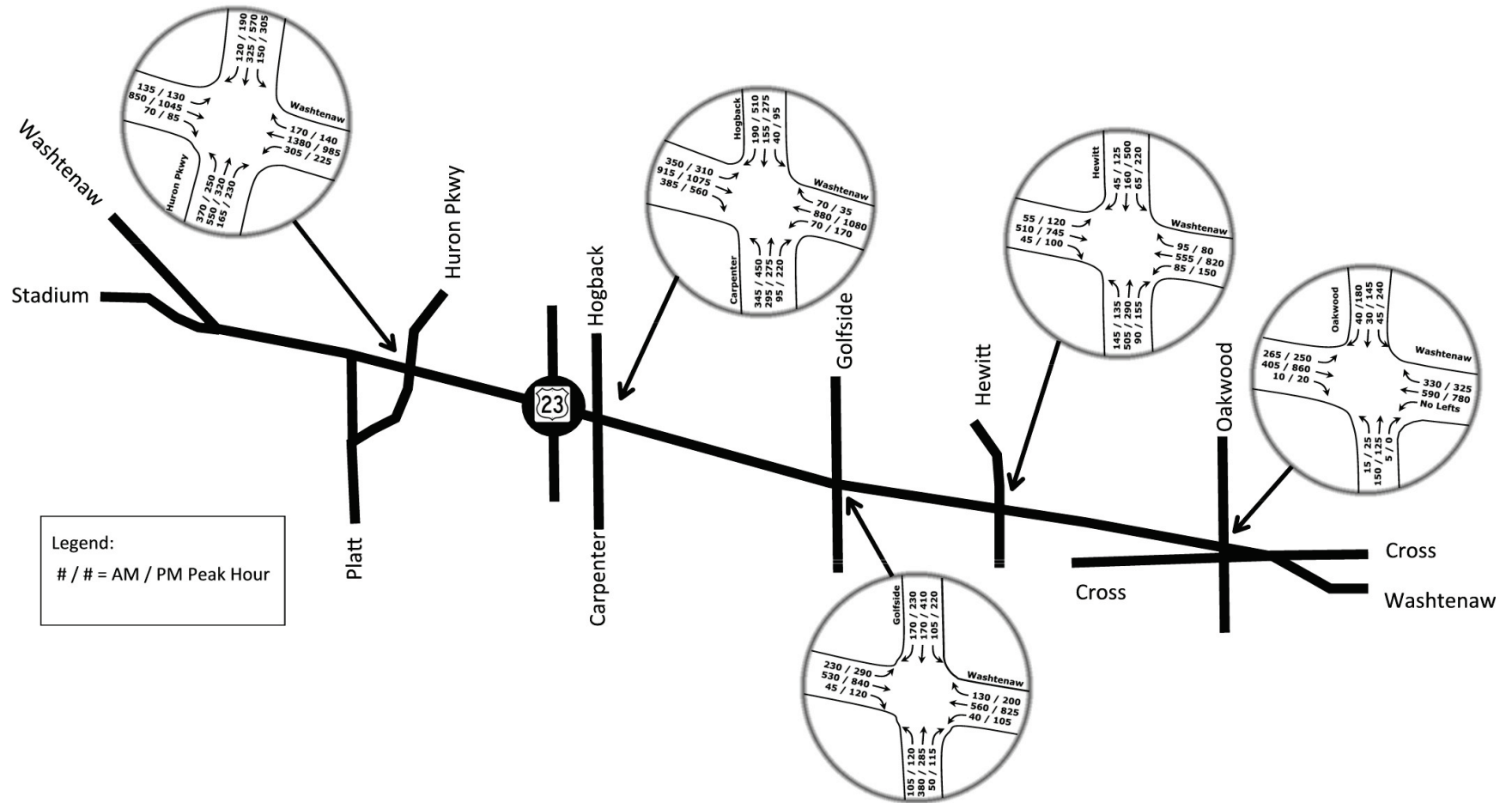
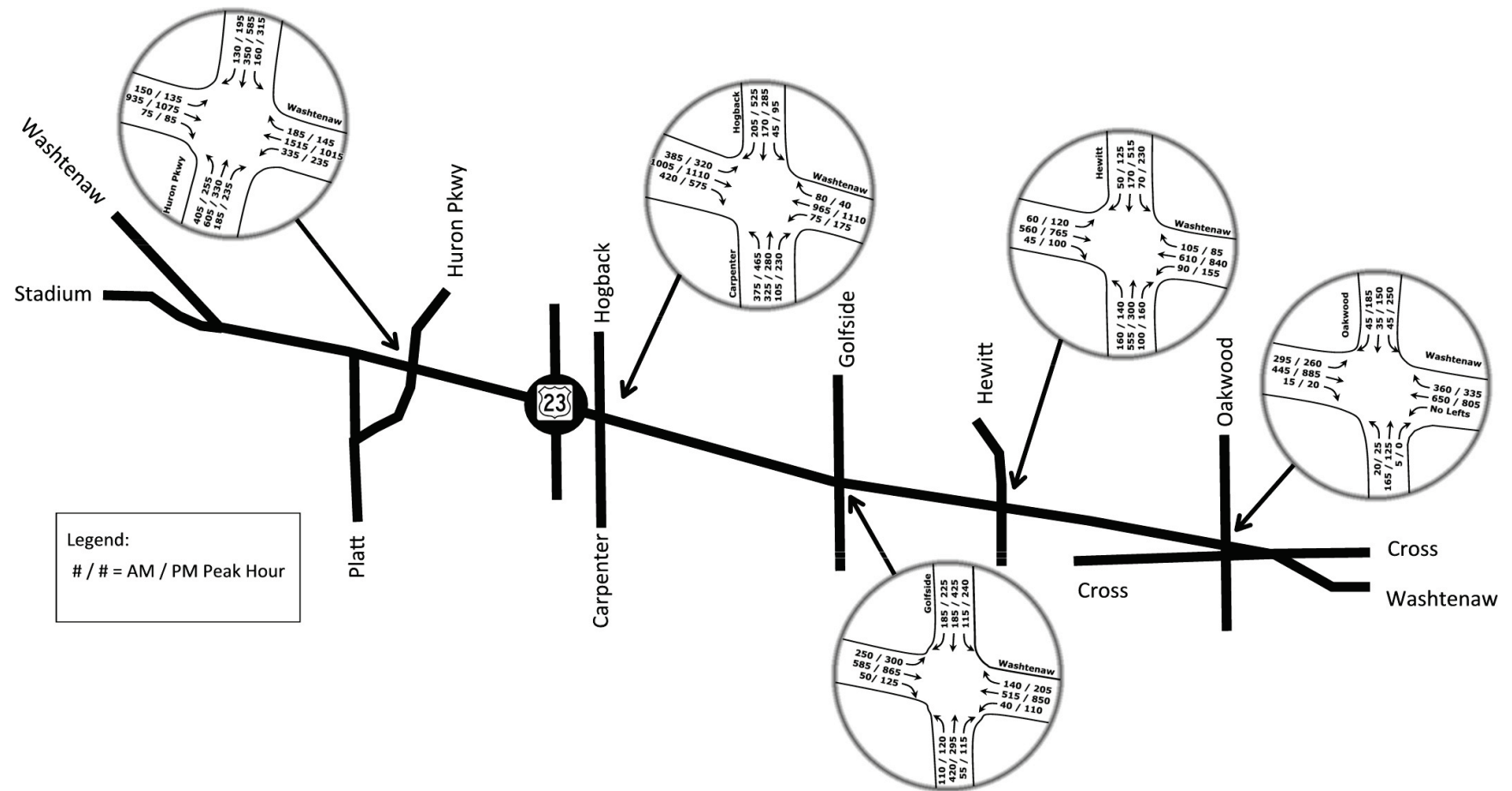


Figure 6: 2040 AM and PM Peak Hour Traffic Volumes



## 4 Alternatives Considered

Throughout the course of the study, several alternatives were considered which involved a variety of laneage configurations along the corridor. Throughout the process, it was determined from the Steering Committee that LOS D was desirable for future year intersection operations, while LOS E was acceptable for the overall intersection operations. Balancing the desires of the community and Steering Committee with the vehicle operations along the corridor, several alternatives were considered.

The interchange at US-23 was not considered as part of this study, as any modifications to the interchange would be the subject of a separate more comprehensive study given the associated cost and complexity. However, the northbound US-23 off-ramp to eastbound Washtenaw Avenue does greatly impact the operations of the Hogback Road / Carpenter Road intersection. A Single Point Urban Interchange (SPUI) was modeled as part of the final alternative as one example to determine how the off-ramp impacted the intersection. While several interchange options could also improve the intersection and may be considered in any future studies, the SPUI configuration was tested because it could move the off-ramp the greatest distance away from the Hogback Road / Carpenter Road intersection. Other options which may be considered include a diverging diamond interchange, or a “dumbbell interchange” with roundabouts at the ramp terminals and the intersection of Hogback Road / Carpenter Road. It was found through the VISSIM analysis that a SPUI improved the overall intersection operations at Hogback Road / Carpenter Road. However, a change in signal timings at the intersection also improved operations as well. The SPUI also adds delay for some of

the approaches that are free-flow now, however, improves the northbound to eastbound off-ramp and would have less potential to back-up onto US-23.

In order to better balance modal use within the corridor and reduce the total number of travel lanes in some locations, it is the desire to employ Travel Demand Management (TDM) strategies to reduce overall vehicle demand. These strategies include encouraging mode shift to transit and non-motorized modes, encouraging route shifting to more appropriate routes to take advantage of surplus capacity, supporting development of land uses that encourage “park once” activities, reducing multi-stop trips, or putting in place policies to encouraging shifts in the time periods trips are made away from the peak periods. For each alternative evaluated, the reduction in traffic (if any) necessary through TDM strategies to maintain an acceptable intersection performance was determined.

### 4.1 Three lanes from Hogback Road / Carpenter Road to east of Oakwood Street

The first concept considered would include a three lane cross-section between Hogback Road / Carpenter Road to east of Oakwood Street, with one lane in each direction and a continuous left-turn lane. There would be bus pull-outs for all AATA routes where there were three lanes. Early VISSIM analysis indicated that even with a reduction in traffic volumes at the intersection of Hogback Road / Carpenter Road, there would need to be at least two eastbound through lanes for Washtenaw Avenue at Hogback Road / Carpenter Road. There would need to be a reduction of at least 25-percent, which was deemed too high of a reduction to be

expected through TDM methods. This alternative was eliminated from further consideration.

#### **4.2 Three lanes east of Hogback Road / Carpenter Road to east of Oakwood Street**

The next concept considered would include a three lane section starting east of Hogback Road / Carpenter Road to east of Oakwood Street. The intersection of Hogback Road / Carpenter Road would be configured as it is today, and the laneage would be reduced east of the intersection. It was found that that this alternative would need to have a 15-percent reduction in traffic volumes to maintain an acceptable level of service at the primary study intersections of Golfside Drive, Hewitt Road, and Oakwood Street.

#### **4.3 Three lanes east of Golfside Drive to east of Oakwood Street**

This alternative would include a three lane section from east of Golfside Drive to east of Oakwood Street. Again, it was found with a 15-percent decrease in traffic volumes at Hewitt Road and Oakwood Street would maintain an acceptable level of service at these intersections. If right-turn only lanes were kept at these two signalized intersections along Washtenaw Avenue, the reduction in traffic volumes would not be needed to maintain acceptable performance.

#### **4.4 Narrow four lanes divided roadway between Hogback Road / Carpenter Road to east of Hewitt Road**

This alternative would include a narrow median between Hogback Road / Carpenter Road to east of Hewitt Road. This section would

have four lanes in each direction and keep the direct center left-turn only lane at the signalized intersections. This is essentially the same as exists currently, except that direct left-turns would not be permitted between the signalized intersections. As a result, the study intersections of Hogback Road / Carpenter Road, Golfside Drive, and Hewitt Road would operate acceptably with forecasted traffic volumes.

#### **4.5 Wide Boulevard from Stadium Boulevard to US-23**

The concept west of US-23 that was considered includes a wide boulevard with indirect left turns. With this option, some of the direct left-turns are proposed to remain (see Chapter 5 for a more detailed description). Introducing indirect left-turns for Washtenaw Avenue at Huron Parkway did not change the overall level of service of delay, but greatly improved travel time reliability along the corridor between Stadium Boulevard to US-23. With this option, a reduction in traffic volumes was not needed.

## 5 Final Vision

After several public meetings and Steering Committee meetings, a final vision was developed for the corridor. This vision balanced all modes of transportation along the corridor, including non-motorized, transit, and vehicular traffic. A final VISSIM analysis was conducted for the final vision for the year 2020 and 2040 to ensure that traffic would operate acceptably. The following describes the Final Vision of the corridor from west to east:

**Stadium Drive to Yost Boulevard / US-23:** This section would have a wide boulevard with indirect left-turns for the majority of the corridor. Direct left-turns are still proposed at some locations due to the high amount of left-turn volumes in this area. Figure 7 illustrates the preliminary locations of indirect and direct left-turn locations (as modeled in VISSIM). Within the model, there were direct left-turns for Huron Parkway onto Washtenaw Avenue, however, not for Washtenaw Avenue onto Huron Parkway. In addition, there would be direct left-turns for Washtenaw Avenue onto Yost Boulevard / Arborland Mall, which currently exists. However, there would not be direct left-turns from Washtenaw Avenue onto Pittsfield Boulevard, which would instead be accomplished either by utilizing the Yost Boulevard intersection or a cross-over west of Pittsfield Boulevard. There would still be direct left-turns from Pittsfield Boulevard / Arborland Mall onto Washtenaw Avenue. Limiting some of these turning movements and introducing indirect left-turns reduces the congestion along Washtenaw Avenue within this area. In addition, it also reduces the crash potential of vehicles wanting to turn left from driveways onto Washtenaw Avenue.

**US-23 to east of Hewitt Road:** This section would have a narrow median and would still allow direct left-turns at signalized intersections and would have some breaks for indirect left-turns between the signalized intersections. Figure 8 illustrates preliminary locations for indirect left turns between Hogback Road / Carpenter Road to just east of Golfside Drive. Figure 9 illustrates the preliminary locations for indirect left turns between Golfside Drive to just east of Hewitt Road (Mansfield Street). Signalized intersection operations would not change from the No-Build Conditions as there would still be two lanes in each direction and a center left-turn lane at each of the signalized intersections within this section.

**East of Hewitt Road to east of Oakwood Street:** This section would have one lane in each direction with a continuous center left-turn lane. Through a sensitivity analysis as described in Chapter 4, it was found that a 15-percent reduction in traffic volumes would need to occur at Oakwood Street to maintain operations at LOS D or better at the study intersections for the year 2040. If right-turn only lanes were added to the signalized intersections in this section (though they are not proposed at this time), a reduction in traffic volumes would not need to occur.

The final vision was coded into the 2020 and 2040 VISSIM model with traffic volumes for the year 2020 and 2040. Tables 10 and 11 illustrate the delay and levels of service for the year 2020 and 2040, respectively. Appendix C details the intersection MOE's for each of the intersections.



Figure 7: Indirect left-turn locations west of US-23





Figure 8: Indirect left-turn locations east of US-23 to Golfside Drive

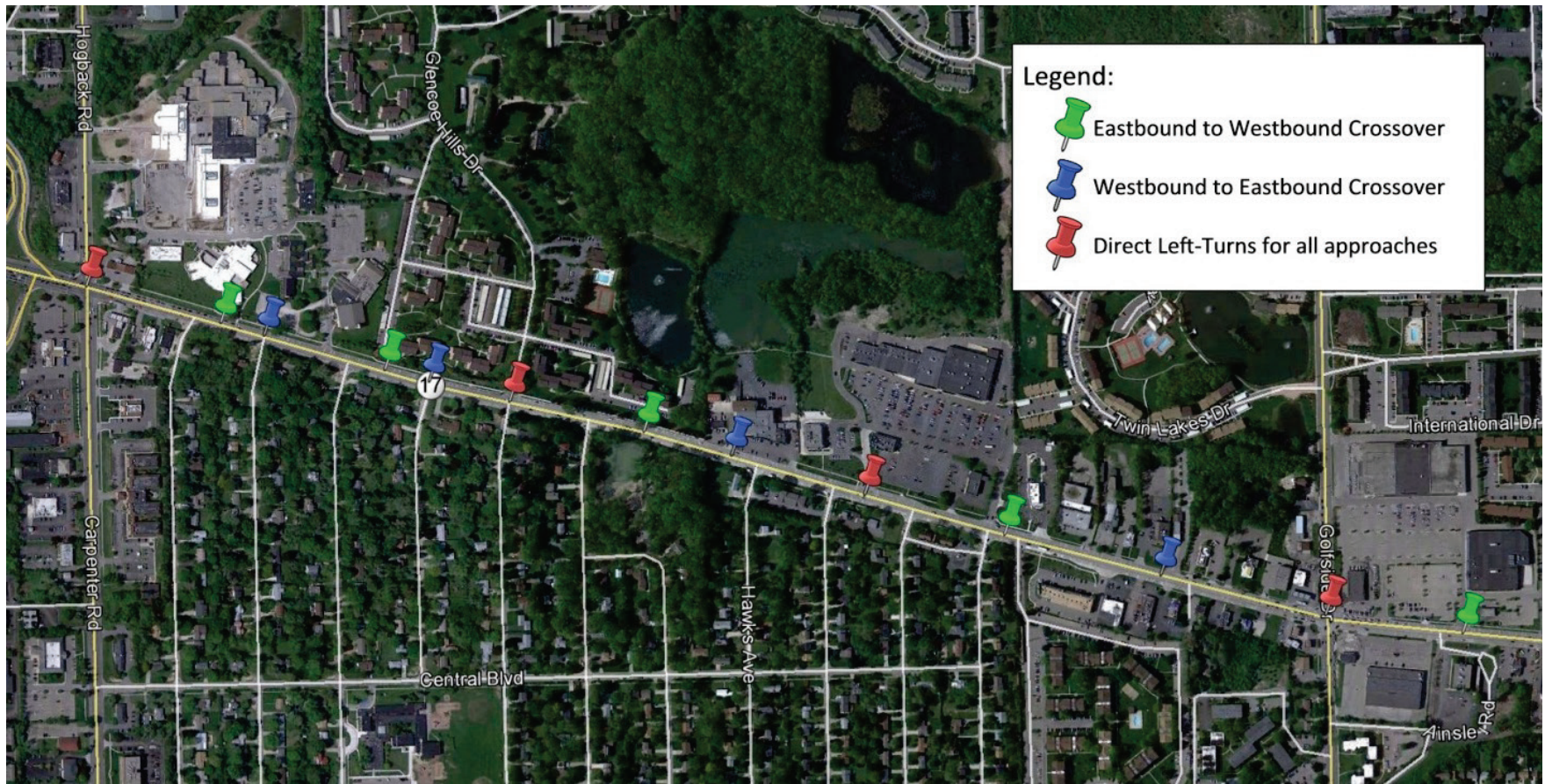




Figure 9: Indirect left-turn locations from Golfside Drive to Mansfield Street



**Table 10: 2020 AM and PM Peak Hour Delay and Levels of Service with Future Vision**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Huron Parkway	37 / D	25 / C	44 / D	51 / D	36 / D
Hogback / Carpenter	12 / B	39 / D	51 / D	32 / C	29 / C
Golfside	35 / D	30 / C	42 / D	34 / C	35 / C
Hewitt	20 / C	20 / C	31 / C	28 / C	24 / C
Oakwood	13 / B	17 / B	31 / C	24 / C	17 / B
<b>PM Peak Hour</b>					
Huron Parkway	40 / D	28 / C	59 / E	60 / E	45 / D
Hogback / Carpenter	20 / C	56 / E	50 / D	47 / D	42 / D
Golfside	43 / D	41 / D	51 / D	41 / D	43 / D
Hewitt	26 / C	26 / C	45 / D	53 / D	36 / D
Oakwood	51 / E	40 / D	56 / E	60 / E	32 / C

\* Delay (seconds per vehicle) / Level of Service

**Table 11: 2040 AM and PM Peak Hour Delay and Levels of Service with Future Vision**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Huron Parkway	43 / D	33 / C	46 / D	56 / E	41 / D
Hogback / Carpenter	12 / B	39 / D	52 / D	34 / C	30 / C
Golfside	39 / D	32 / C	55 / D	36 / D	40 / D
Hewitt	21 / C	21 / C	36 / D	27 / C	26 / C
Oakwood	15 / B	28 / C	31 / C	24 / C	23 / C
<b>PM Peak Hour</b>					
Huron Parkway	44 / D	29 / C	57 / E	69 / E	48 / D
Hogback / Carpenter	20 / C	50 / D	51 / D	45 / D	39 / D
Golfside	37 / D	36 / D	54 / D	52 / D	42 / D
Hewitt	23 / C	24 / C	37 / D	41 / D	30 / C
Oakwood	20 / B	83 / F	25 / C	48 / D	48 / D

\* Delay (seconds per vehicle) / Level of Service

In the year 2020 and 2040, the overall intersection levels of service are expected to be a LOS D or better at all study locations. However, in the year 2020, there are some approaches in the PM peak hour that are expected to operate at LOS E, including some approaches at Huron Parkway and Hogback Road / Carpenter Road. Some approaches at Oakwood Drive are also expected to operate at a LOS F. However, signal timing changes at these intersections may improve the approaches at this intersection.

As indicated, a few of the approaches are anticipated to operate at LOS E or F, and it is expected that after the year 2020, a decrease

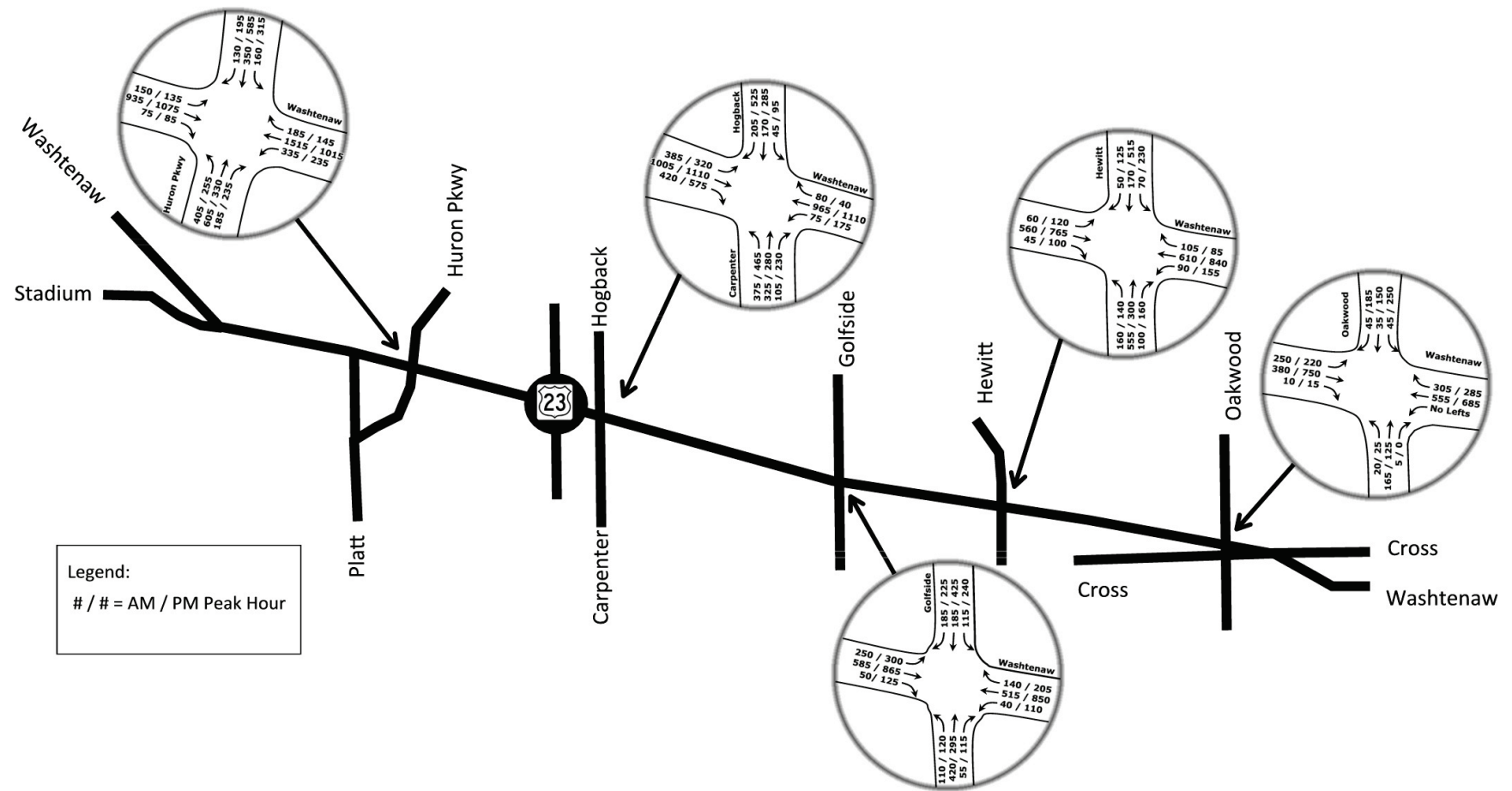
may end up occurring due to the increase of congestion that one may experience along the corridor. Figure 10 illustrates the traffic volumes with the reduction shown at Oakwood Street for the year 2040. The comparison of delay and LOS with and without the 15-percent reduction at Oakwood Street is shown in Table 12. With a 15-percent decrease by the year 2040 at the Oakwood Street intersection only, all approaches at the intersection are expected to operate at LOS D or better.

**Table 12: 2040 AM and PM Peak Hour Delay and Levels of Service at Oakwood Drive with and without a 15-percent reduction**

Intersection	Eastbound*	Westbound*	Northbound*	Southbound*	Total*
<b>AM Peak Hour</b>					
Without Reduction	15 / B	28 / C	31 / C	24 / C	23 / C
With Reduction	13 / B	16 / B	31 / C	24 / C	17 / B
<b>PM Peak Hour</b>					
Without Reduction	20 / B	83 / F	25 / C	48 / D	48 / D
With Reduction	18 / B	47 / D	25 / C	42 / D	34 / C



Figure 10: 2040 AM and PM Peak Hour Traffic Volumes with Final Vision (with Oakwood Street reduction)



# **APPENDIX A**

## **Existing Year Measure's of Effectiveness**

## Existing Year - AM Peak Hour Delay

DELAY																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	51.6	355	49.2	391	51.3	372	50.8	373	50.9	379		50.7	29.3	1.5	129.6
		Through	52	514	47.3	557	48.8	530	43.3	525	45.3	561		47.3	29.7	0	172.6
		Right 2	67.3	173	56.2	140	58.5	173	50.2	140	55.1	165		57.8	32.2	0.8	172.7
		Total	54.4	1042	49.1	1088	51.2	1075	46.9	1038	48.7	1105		49.8	30.8	0	172.7
	EB	Left 2	56.2	123	60.7	122	53.4	130	60.9	129	70.4	131		60.4	33.7	0.8	169.5
		Through	32.9	827	34.8	826	34.1	864	32.8	859	33	822		33.5	24.1	0	98.5
		Right 2	31.3	66	34.7	66	35.2	78	39.1	70	34.7	60		35.1	23.1	0.4	93.1
		Total	35.6	1016	37.9	1014	36.5	1072	36.6	1058	37.9	1013		36.1	26.7	0	169.5
	SB	Left 2	51.7	151	49.1	139	49	135	55.5	143	54.5	153		52	31.9	0.6	148.7
		Through	46.1	322	46.9	296	53	350	47.4	313	53.8	317		49.6	30	0	159.1
		Right 2	58.6	120	54.9	113	59.5	114	50.5	127	61.3	129		57	33.1	1.8	161.2
		Total	50.1	593	49.1	548	53.3	599	50.1	583	55.6	599		50.4	31.2	0	161.2
	WB	Left 2	44.5	276	47.6	291	42	298	47.6	289	48.7	311		46.1	36.5	0.3	136.9
		Through	29.7	1326	37.1	1356	32.1	1382	26.7	1297	31.2	1340		31.4	30.3	0	200.1
		Right 2	37.4	156	38.7	149	33.5	144	34.4	158	32.5	174		35.2	30.8	0.4	160.6
		Total	32.7	1758	38.9	1796	33.8	1824	30.9	1744	34.3	1825		32.9	31.6	0	200.1
	Total		40.8	4409	42.4	4446	41.1	4570	38.5	4423	41.4	4542	D	40.9	31.2	0	200.1
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	U-turn Mark	22.8	135	34.5	138	26.6	131	38.6	125	22.6	148		28.8	24.3	0.7	148
		Left 2	80.7	238	77.1	241	81.5	244	81.5	249	79.2	232		80	48.6	0.4	165.2
		Left 1	83.8	101	76.4	102	80.6	103	81.6	124	79.9	114		80.5	48.1	2.7	190.5
		Through	91.4	406	86.8	448	88.9	424	103	405	85.7	420		91	54.4	0	318.1
		Right 2	60.9	403	80.5	423	65.1	368	84.2	402	59.5	373		70.4	50.3	0	260
		Total	72	1283	77	1352	73.5	1270	84.9	1305	69.2	1287		73.1	51.7	0	318.1
	EB	Left 2	114.3	185	110.5	202	115.7	211	125.4	209	112.9	185		115.9	56.2	4.2	283.4
		Through	59.1	547	57.9	560	56.7	561	56.5	631	57.7	562		57.5	43	0	163.3
		Right 2	62.2	263	64.6	233	56.2	257	60.5	229	57.9	237		60.2	41.9	0.2	145.1
		Total	70.2	995	70.1	995	68.7	1029	70.8	1069	68.1	984		67.4	50	0	283.4
	SB	Left 2	56.3	42	48.6	34	54.5	33	56.1	40	57.1	29		54.6	46.9	0.3	148.4
		Through	60.9	185	62.2	140	70.3	157	67.6	154	58.4	158		63.8	47.3	0	151.2
		Right 2	13.7	128	9.8	123	12.3	142	13.2	105	11.9	140		12.2	12.9	0	65.6
		Right 3	17.3	55	9.6	50	10.1	61	13.6	62	12.3	42		12.6	14.1	0.1	75.4
	WB	Total	39.8	410	34.7	347	38.7	393	41.2	361	35.4	369		36.7	42	0	151.2
		Left 2	58	82	56.2	78	50.8	56	64.5	73	60	62		58.2	47.8	0.3	150.3
		Through	52	600	50	624	53.8	596	52.8	604	47.9	623		51.3	40.8	0	133.9
		Right 1	57.9	284	45.5	246	50.5	258	51.8	242	52.5	270		51.8	40.3	0	129
	Total	Right 2	51.4	77	45.4	72	52.4	66	48	60	48.6	72		49.2	40.7	0.5	138.9
		Total	54	1043	49.1	1020	52.7	976	53.1	979	49.9	1027		51.6	40.8	0	150.3
	Total		62.9	3731	63.5	3714	62.9	3668	68.2	3714	60.1	3667	E	63.5	49.9	0	318.1

DELAY																		
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)	
			1		2		3		4		5							
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume						
Washtenaw & Golfside	NB	Left 2	83.2	107	60	114	56.7	106	55.3	113	69	92		64.6		41.6	0.8	215.6
		Through	78.8	379	55.8	352	49.6	399	56.7	340	70.4	344		62.2		42.4	0	230.1
		Right 2	78.6	49	48.7	51	58.8	35	51.7	46	64.1	54		60.6		43.6	0.6	197.1
		Total	79.7	535	56	517	51.6	540	55.9	499	69.4	490		62.6		43.2	0	230.1
	EB	Left 2	41.9	235	41.6	220	42.6	220	42.4	245	41.8	219		42.1		23.3	1.3	95.6
		Through	15	535	16	533	15.9	532	18.3	560	17.4	500		16.5		17.1	0	58.7
		Right 2	16.6	36	16	44	24.6	47	16	38	14.7	48		17.7		17.1	0.4	55.3
		Total	22.9	806	23.1	797	23.8	799	25.2	843	24.2	767		23.7		22	0	95.6
	SB	Left 2	39.1	118	45.4	103	47	90	43.7	111	44	109		43.6		24.6	0.6	120.2
		Through	36.4	176	35.7	147	36.5	151	39.4	182	32.5	166		36.2		24.5	0	115.6
		Right 2	42	155	41.1	158	39.5	148	49.5	170	33.4	156		41.3		28.4	0	144.7
		Total	39	449	40.2	408	40.1	389	44.1	463	35.7	431		38.7		25.8	0	144.7
	WB	Left 2	43.2	38	39.5	35	37.2	35	47.4	42	53.8	37		44.4		25.6	0.7	93.4
		Through	26.6	547	27.7	597	26.6	537	26.6	504	26.9	563		26.9		20.3	0	72.8
		Right 2	27.3	146	27.7	120	29.1	132	23.1	118	28.1	136		27.1		20	0.4	85.3
		Total	27.6	731	28.2	752	27.6	704	27.3	664	28.5	736		27.7		20.8	0	93.4
	Total		39.2	2521	34.3	2474	33.7	2432	35.5	2469	36.7	2424	D	35.9		31.6	0	230.1
Washtenaw & Hewitt	NB	Left 2	33.7	125	38.9	140	38.7	154	38.4	147	36.7	128		37.4		22.3	0.6	108.4
		Through	24.2	475	24.5	512	24.6	509	28.5	505	25.9	474		25.5		19.4	0	74.7
		Right 2	13.8	81	17.2	99	16.3	83	22.9	85	16.8	87		17.4		15.1	0.4	56.6
		Total	24.7	681	26.2	751	26.6	746	29.8	737	26.8	689		26.5		20.3	0	108.4
	EB	Left 2	31.4	40	44.7	46	36.8	49	40.1	57	41.2	50		39.1		22.3	0.8	82.2
		Through	22.9	474	21	454	18.9	513	21.6	509	22.3	500		21.3		18.2	0	60.9
		Right 2	14	40	11.3	41	8.3	41	11.6	36	10.6	31		11.2		11.6	0.5	46.2
		Total	22.9	554	22.3	541	19.6	603	22.8	602	23.3	581		21.9		19.1	0	82.2
	SB	Left 2	40.2	65	40.2	53	37.8	54	38.2	71	38.5	57		39		23.3	0.8	81.7
		Through	23.1	148	24.9	145	25.2	153	25.8	142	24.3	149		24.7		20.6	0	66.4
		Right 2	9.4	48	15.2	29	12.8	39	8.6	46	10.3	48		10.9		11.2	0.5	55.9
		Total	24.8	261	27.2	227	26	246	26.1	259	24.8	254		25.3		21.8	0	81.7
	WB	Left 2	36	88	40.1	90	44.5	69	39.7	69	32.4	87		38.2		22.7	0.8	101.8
		Through	20.5	564	19.9	543	23.1	568	22.2	526	19.7	538		21.1		18.1	0	71.1
		Right 2	14.7	95	15	106	16.5	86	16.5	89	18.9	95		16.3		13.6	0.4	55.8
		Total	21.6	747	21.7	739	24.4	723	23.2	684	21.1	720		22.5		19.1	0	101.8
	Total		23.2	2243	23.9	2258	24	2318	25.6	2282	23.8	2244	C	24.1		19.9	0	108.4
Washtenaw & Oakwood	NB	Left 2	22.5	8	32.2	12	29.8	16	29.7	19	35.5	20		30.9		22.1	0.1	72.5
		Through	35.6	148	32.3	134	37.6	144	32.3	157	29.6	149		33.5		21.5	0	86.4
		Right 2	4.6	3	43.7	5	26.7	3	1.2	1	8.8	4		21.8		20.4	1.2	56.6
		Total	34.4	159	32.7	151	36.6	163	31.8	177	29.8	173		32.5		21.9	0	86.4
	EB	Left 2	8.6	228	10.3	264	10.1	256	8.8	256	10.3	285		9.6		10	0.2	48.8
		Through	4.2	395	4.5	402	4.4	409	4.1	362	3.9	418		4.2		7	0	37.7
		Right 2	1.9	14	2.9	14	2.1	6	3.1	15	3.2	11		2.7		3.3	0.3	17.1
		Total	5.7	637	6.7	680	6.6	671	6	633	6.4	714		6.5		8.9	0	48.8
	SB	Left 2	41.4	36	44.8	47	35.6	33	40.6	41	35.6	37		40		22.7	0.1	95.7
		Through	32.3	25	36.8	35	27.9	22	37.7	27	25.1	21		32.7		23.2	0	74.8
		Right 2	4.5	34	4.2	38	4.2	38	4.2	37	4.3	51		4.3		2	0.2	12.2
		Total	25.8	95	29.6	120	20.9	93	27	105	18.9	109		24.9		24.4	0	95.7
	WB	Through	6.8	586	7.5	559	7.8	606	7.5	579	7.7	564		7.5		10.2	0	45.6
		Right 2	8.3	315	8.8	321	9.5	335	8.8	310	10.5	320		9.2		9.9	0.1	46
		Total	7.3	901	8	880	8.4	941	8	889	8.7	884		8.4		10.4	0	46
	Total		10.1	1792	11	1831	10.8	1868	10.7	1804	10.4	1880	B	10.6		14.8	0	95.7

Existing PM Peak Hour Delay																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	61.6	230	72.9	259	66.5	233	75	247	69.2	242		69.2	39.3	1.3	198.5
		Through	50.4	301	50.5	340	48.4	286	53.7	320	49.9	314		50.6	35.1	0	225.7
		Right 2	59.7	222	59	202	53.2	230	68.6	210	56.6	250		59.2	36	0.7	188.3
		Total	56.6	753	59.9	801	55.5	749	64.5	777	57.8	806		58.7	37.5	0	225.7
	EB	Left 2	76.6	118	74.5	111	72.9	109	69.2	116	81.9	117		75.1	41.7	1.7	220.7
		Through	36.6	973	37.7	994	38.2	1006	38	1032	36.5	965		37.4	28	0	120.8
		Right 2	32.7	77	36.6	83	35.2	90	28.9	86	34.5	72		33.6	26.1	0.4	87.1
		Total	40.4	1168	41.1	1188	41.1	1205	40.3	1234	41	1154		40.4	31.5	0	220.7
	SB	Left 2	68.7	322	69.3	308	67.5	290	75.9	328	71.6	309		70.7	40.6	0.4	205.2
		Through	51.7	589	45.9	565	45.8	559	45.4	561	46.9	561		47.2	33.9	0	222.8
		Right 2	54.8	164	51.4	187	50.6	171	48.9	191	48.5	191		50.7	32.1	0.4	227.4
		Total	57.3	1075	53.7	1060	52.8	1020	55.3	1080	54.4	1061		53.9	36.9	0	227.4
	WB	Left 2	74.3	196	143.3	230	140.8	222	103.8	228	132.2	238		120.2	74.3	1.7	331.9
		Through	24.3	962	21.9	927	25.1	923	22.4	975	21.8	955		23.1	24.9	0	150.6
		Right 2	26.7	134	28.7	136	26.1	133	29.7	126	20.3	125		26.3	25.9	0.3	117.8
Total		32.1	1292	44.2	1293	45.3	1278	37.1	1329	41.6	1318		38.2	50	0	331.9	
Total		45	4288	48.6	4342	47.7	4252	47.3	4420	47.6	4339	D	47.2	42.1	0	331.9	
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	U-turn Mark	22.4	100	21.1	104	19.9	83	23.1	97	20.1	116		21.3	16.8	0.6	116.7
		Left 2	80.5	311	87.6	353	88.3	331	81.2	337	88.1	322		85.2	48.9	1	205.9
		Left 1	89.8	112	103.9	107	112.9	115	97.2	137	98.2	115		100.3	49	4.4	221.5
		Through	84.5	323	92.7	378	84.3	360	99.4	324	99.2	353		92	52.8	0	321.1
		Right 2	55.6	485	57.2	500	53.6	452	64.2	461	56.2	440		57.4	45.2	0.4	226.5
		Total	68.8	1331	74.8	1442	73.4	1341	77.2	1356	75.6	1346		72.4	51.8	0	321.1
	EB	Left 2	148.3	207	151.1	205	138.1	203	265.3	218	182.9	220		178.3	83.7	15.4	493.8
		Through	67.1	756	64.4	746	66.2	758	114.4	793	64.2	714		75.8	57.3	0	457.6
		Right 2	70.9	455	69.4	405	67.9	431	95.1	402	67.1	429		73.8	45.3	0.4	269.7
		Total	80.2	1418	79	1356	77.2	1392	132.2	1413	84.3	1363		86.4	67	0	493.8
	SB	Left 2	62.2	95	64.6	88	66.1	84	73.1	91	59.4	86		65.1	47.9	0.3	145.9
		Through	70.7	286	70.7	265	62	295	72.8	282	67.5	286		68.7	46.1	0	178.9
		Right 2	36	382	35.3	367	36.8	411	35.2	364	41.6	381		37	25.4	0.6	115.7
		Right 3	35	123	36.6	121	37.1	123	33.1	135	35.8	115		35.5	24.9	0.7	106.5
		Total	49.9	886	49.7	841	47.7	913	51	872	51.1	868		48.8	38.9	0	178.9
	WB	Left 2	68.2	193	73.7	184	75.2	148	72.8	168	77	150		73.1	46.8	0.4	168.8
		Through	49.9	781	53.4	785	50.3	783	55.3	782	58.5	793		53.5	39.9	0	135.4
		Right 1	52	279	60.9	260	52.5	243	55.4	251	57.5	292		55.7	40.1	0	138.2
		Right 2	34.3	26	48.9	37	46.7	31	54.2	37	52.1	49		48.4	39.8	0.5	133.6
Total		52.8	1279	57.8	1266	53.7	1205	57.7	1238	60.2	1284		55.9	41.3	0	168.8	
Total		64.5	4914	67.3	4905	64.8	4851	83.5	4879	69.6	4861	E	69.9	55.6	0	493.8	



Existing PM Peak Hour Delay																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	52.1	116	62.9	120	58	123	55.4	119	63.6	102		58.3	33.7	0.8	196.3
		Through	47.2	290	52.7	258	51.3	297	46.4	265	48.1	263		49.2	30.7	0	191.1
		Right 2	44.1	114	51.3	119	47.2	93	51.2	95	51.7	99		49	32.4	0.4	208.7
		Total	47.6	520	54.8	497	52.2	513	49.6	479	52.3	464		53	34.3	0	208.7
	EB	Left 2	68.4	284	54.4	279	81.7	306	65.3	290	82	293		70.6	40.1	1.2	213.8
		Through	28.1	859	25.9	800	27.6	817	27.8	894	26.5	814		27.2	21	0	101.3
		Right 2	23.8	104	28.6	111	27.3	112	31.2	102	28	128		27.8	20	0.4	69
		Total	36.9	1247	32.8	1190	41	1235	36.5	1286	39.8	1235		36.3	31.2	0	213.8
	SB	Left 2	87.8	228	58.6	205	57.1	225	62.7	207	50.9	224		63.6	35.5	1.1	202.6
		Through	86.4	434	56.5	421	43.9	340	64.2	429	45.2	402		60.2	38.5	0	211.9
		Right 2	92.1	218	61.9	208	54.1	216	64.3	221	45.4	231		63.4	39.3	0.5	212
		Total	88.2	880	58.4	834	50.5	781	63.9	857	46.7	857		61.4	37.9	0	212
	WB	Left 2	45.5	113	52.3	111	52.1	107	52.4	117	44.8	94		49.5	29.9	0.8	137.1
		Through	32.9	782	32.5	858	33.5	802	31.5	789	33	824		32.7	22.1	0	116.6
		Right 2	38.1	225	33.5	179	36.2	190	32.7	190	35.2	203		35.3	21.7	0.4	115.8
Total		35.2	1120	34.6	1148	35.8	1099	33.9	1096	34.4	1121		34.8	23.3	0	137.1	
Total		49.9	3767	42.2	3669	43.1	3628	43.7	3718	41.3	3677	D	44.1	33.2	0	213.8	
Washtenaw & Hewitt	NB	Left 2	37.6	102	40.9	122	40.7	143	34.2	119	36.9	119		38.2	22.3	0.7	113.7
		Through	28.2	271	26.1	282	26.7	299	28.4	297	27.7	275		27.4	20.6	0	72.1
		Right 2	19.1	135	14.1	156	18	135	17.8	134	18.3	140		17.4	14	0.4	58.7
		Total	27.7	508	26	560	28.1	577	27.1	550	27.3	534		27.4	20.8	0	113.7
	EB	Left 2	41.4	119	40.2	112	35	119	34.1	126	44.7	114		39	24.2	0.7	116.8
		Through	26.1	715	25.2	700	26.5	729	25.2	717	28.5	752		26.3	18.6	0	80.8
		Right 2	19.2	99	19	97	17.3	92	15.3	105	19.9	82		18	14.6	0.6	63.1
		Total	27.3	933	26.4	909	26.7	940	25.3	948	29.7	948		27	19.6	0	116.8
	SB	Left 2	37.2	219	40.4	204	35.2	195	48.3	240	38.3	225		40.1	23.7	0.8	120.9
		Through	25.3	495	27.2	540	28.5	448	28.2	496	28.5	478		27.5	19.5	0	82.4
		Right 2	17.5	125	22.4	95	17.9	122	19.5	119	19.6	126		19.3	15	0.7	69
		Total	27.2	839	29.9	839	28.5	765	32.6	855	29.8	829		30.2	22.7	0	120.9
	WB	Left 2	41.9	147	35.9	148	46.7	147	40.1	122	40.1	160		40.9	23.2	1	143.7
		Through	28.7	812	28.4	790	29.6	820	25.8	757	27.8	806		28.1	18.4	0	87.4
		Right 2	22	84	25	82	22.2	76	16.7	69	23.8	73		22.1	16.3	0.5	62.3
Total		30	1043	29.2	1020	31.5	1043	27	948	29.4	1039		29.1	19.7	0	143.7	
Total		28.2	3323	28.1	3328	28.9	3325	28	3301	29.2	3350	C	28.5	20.3	0	143.7	
Washtenaw & Oakwood	NB	Left 2	19	11	30	18	20.4	23	29.9	26	30.9	25		26.9	21.4	0.2	73.9
		Through	25.6	123	23.3	118	19.9	117	23.9	132	23.4	115		23.3	20	0	68.7
		Total	25.1	134	24.2	136	20	140	24.9	158	24.7	140		23.5	20.4	0	73.9
		Left 2	19.4	242	20.2	248	22.2	239	20.2	250	19.4	256		20.3	16.3	0.2	72.9
	EB	Through	8.7	793	9.3	854	9	840	8.1	800	8.8	854		8.8	10.9	0	62.1
		Right 2	4.3	16	7.5	22	4.4	13	5.5	19	4.4	16		5.4	6	0.3	24.7
		Total	11.1	1051	11.7	1124	11.8	1092	10.9	1069	11.1	1126		11.2	13	0	72.9
		Left 2	40.2	234	35.8	216	37.8	262	38.3	225	44.8	224		39.3	23.9	0.9	145.8
	SB	Through	24.7	140	27.7	144	24.2	144	20.1	156	27.7	139		24.8	19.6	0	71.9
		Right 2	9	165	9.6	159	10.4	171	11.3	187	8.7	161		9.9	8.5	0.3	43.4
		Total	26.6	539	25.5	519	26.3	577	24.4	568	29.2	524		26.2	22.8	0	145.8
		Through	11.7	729	11.7	737	12	799	12.2	745	12.3	736		12	13.2	0	52.6
	WB	Right 2	13.4	328	13.6	303	13.1	301	12.1	310	13.8	319		13.2	12.8	0.3	54.8
		Total	12.2	1057	12.3	1040	12.3	1100	12.2	1055	12.8	1055		12.4	13.1	0	54.8
	Total		15.2	2781	15.1	2819	15.3	2909	14.8	2850	15.7	2845	B	15.2	17	0	145.8

## **APPENDIX B**

### **Future Year No-Build Measure's of Effectiveness**

# Future 2020 No Build AM Peak Hour Delay

Intersection	Approach	Movement	From Link	To Link	Run															
					1		2		3		4		5		LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)	
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume						
Washtenaw & Huron Parkway	NB	Left 2	4	12	58.3	442	55.7	478	58.4	444	56.5	458	57.4	461		57.2		32.7	1.6	188.5
		Through	4	13	57.8	653	49.5	709	58.5	631	55.1	668	59.6	661		56		34.7	0	209.4
		Right 2	4	139	80.9	222	56.8	175	73.9	217	63.2	182	75.2	213		70.8		39.4	0.5	221.4
		Total			61.9	1317	52.6	1362	61.1	1292	56.7	1308	61.3	1335		58.7		35.2	0	221.4
	EB	Left 2	1	13	52.4	151	59.3	162	57	161	58.5	153	63.5	162		58.2		34.2	1.2	172.2
		Through	1	139	30.9	1008	30.2	1062	31.3	1082	30.4	1043	30.8	1058		30.7		23.4	0	107.1
		Right 2	1	6	29.8	89	31.3	83	28.5	107	34.2	91	28.7	83		30.5		23.2	0.4	103.4
		Total			33.4	1248	33.9	1307	34.1	1350	34	1287	34.7	1303		34		26.5	0	172.2
	SB	Left 2	7	139	49	190	55.6	169	51.4	182	51.8	179	49.2	195		51.3		31.7	0.8	140.8
		Through	7	6	52.9	402	46.9	351	52.6	423	48.7	366	48.7	380		50.1		31.3	0	164.5
		Right 2	7	12	58.3	153	58.9	141	56.5	141	58.7	156	62.8	154		59.1		34.9	1.5	190.5
		Total			53	745	51.7	661	53	746	51.7	701	51.8	729		52.3		32.4	0	190.5
	WB	Left 2	11	6	41.5	337	48.1	367	48.6	376	46.8	373	62.4	401		49.8		40.6	0.4	241.5
		Through	11	12	27.7	1646	26.6	1689	28.4	1671	25	1656	29.1	1694		27.4		27.2	0	123.2
		Right 2	11	13	27.9	203	32.3	189	29	183	29.4	192	31.4	212		30		27.7	0.2	118.4
		Total			29.8	2186	30.6	2245	31.9	2230	29	2221	35.1	2307		31.3		31	0	241.5
Total				41.5	5496	39.3	5575	41.9	5618	39.6	5517	43.3	5674	D	41.1		33.4	0	241.5	
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	81	8	52.9	421	47.1	423	55	443	47.2	431	46.1	440		49.7		33.2	0.4	211.6
		Through	81	33	44.2	356	47	390	48.9	355	42.9	317	45.8	379		45.8		30.5	0	151.5
		Right 2	81	2	25.7	109	20.1	114	22.8	123	23	115	24.4	115		23.2		19.8	0	81.9
		Total			46.1	886	43.7	927	48.3	921	42.4	863	43.3	934		44.8		31.9	0	211.6
	EB	Left 2	48	33	34.3	368	32.8	406	32.7	401	33.8	421	34.4	382		33.6		33	0.7	120.6
		Through	48	2	13.1	1127	13.1	1140	12	1100	10.8	1172	11.6	1100		12.1		19	0	109.9
		Right 2	48	47	7.4	463	7.3	468	7.1	491	7.4	444	7.3	507		7.3		5.1	0.2	37.4
		Total			15.7	1958	15.7	2014	15	1992	14.8	2037	14.9	1989		15.2		22.6	0	120.6
	SB	Left 2	32	2	43.1	52	43.7	40	32.7	40	50.1	46	43.5	41		42.8		29.6	0.4	99.7
		Through	32	47	57.3	224	50.8	169	50.1	190	48.3	195	47.9	193		51.1		32.6	0	203.2
		Right 2	32	8	11.1	236	11.7	237	12.3	253	11.5	224	11.1	204		11.6		11.1	0	57.8
		Total			34.6	512	29.4	446	28.9	483	30.8	465	30.3	438		30.8		30.8	0	203.2
	WB	Left 2	3	47	60.5	96	55.4	96	43.4	65	50.6	86	49.3	72		52.7		33.7	0.4	188.3
		Through	3	8	41.1	1129	43.2	1113	39.3	1074	40.3	1094	41.3	1132		41.1		26.9	0	132.4
		Right 2	3	33	47.2	99	41.8	88	38.4	88	43.6	78	44.1	87		43.1		26.5	0.4	98.7
		Total			43	1324	44	1297	39.5	1227	41.2	1258	41.9	1291		42		27.6	0	188.3
Total				31.2	4680	30.4	4684	29.6	4623	28.7	4623	29.5	4652	C	29.9		30	0	211.6	

Future 2020 No Build AM Peak Hour Delay																				
Intersection	Approach	Movement	From Link	To Link	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)	
					1		2		3		4		5							
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume						
Washtenaw & Golfside	NB	Left 2	53	52	83	119	69.4	137	62.3	130	66	137	73.3	108		70.4		41.9	0.7	209.6
		Through	53	61	74.6	450	61.6	454	54.8	489	64	438	76.7	446		66.1		43.3	0	245.6
		Right 2	53	56	66.7	60	57.3	65	59.2	43	65.7	56	66.4	62		63.2		43.7	0	206
		Total			75.4	629	62.8	656	56.6	662	64.6	631	75.1	616		66.7		43.1	0	245.6
	EB	Left 2	50	61	46.2	285	45	257	46.2	262	47.2	292	41.7	271		45.3		26.1	0.8	142.2
		Through	50	56	17.9	674	15.8	648	18.4	684	17	687	15.5	639		16.9		17.3	0	62.1
		Right 2	50	58	16.7	47	14.6	56	21.3	60	19.4	51	15	54		17.5		17.2	0.4	55.8
		Total			25.9	1006	23.5	961	25.8	1006	25.7	1030	22.8	964		24.8		23.7	0	142.2
	SB	Left 2	59	56	38.8	144	40.1	127	39.1	109	47.8	134	43.2	138		41.9		26.2	0.7	126.2
		Through	59	58	34.4	215	39.7	201	32.7	204	39.9	240	35.4	212		36.5		25.8	0	148.9
		Right 2	59	52	37.7	193	44.7	206	43.7	203	54.7	212	36.9	204		43.7		31.5	0.2	183.5
		Total			36.7	552	41.7	534	38.4	516	47.1	586	37.9	554		40.4		28.3	0	183.5
	WB	Left 2	54	58	40.8	49	40.9	43	45.8	43	41.4	53	42.2	46		42.1		24.7	0.9	91.8
		Through	54	52	25.2	706	26.5	733	24.4	692	25.2	659	25.1	721		25.3		19.8	0	69.4
		Right 2	54	61	26.9	177	25.4	154	26.2	160	26.1	148	27.4	168		26.4		18.8	0.4	74.7
		Total			26.3	932	27	930	25.7	895	26.4	860	26.4	935		26.3		20.2	0	91.8
	Total				37.9	3119	36.1	3081	34.5	3079	37.8	3107	37.1	3069	D	36.7		33.1	0	245.6
Washtenaw & Hewitt	NB	Left 2	72	77	41.6	153	39.5	172	38.3	194	40.8	184	38.3	170		39.6		23.2	0.6	137.6
		Through	72	75	26.4	610	23.3	660	24.3	631	24.5	623	25.5	613		24.8		18.8	0	97.3
		Right 2	72	79	19.9	104	18.8	123	18.5	113	18	107	17.2	108		18.5		15.1	0.5	88.3
		Total			28.3	867	25.6	955	26.5	938	27	914	26.9	891		26.9		20.4	0	137.6
	EB	Left 2	80	75	44.7	53	35.7	64	35.5	61	35.2	69	34.1	60		36.8		22.6	0.7	103.1
		Through	80	79	22.3	624	23	600	22.9	660	22.4	647	21.9	630		22.5		18.5	0	63.5
		Right 2	80	74	10.5	49	9.3	49	14.9	49	10.3	52	11.8	45		11.3		12.1	0.5	51.8
		Total			23.1	726	23.2	713	23.4	770	22.7	768	22.3	735		22.9		19.2	0	103.1
	SB	Left 2	73	79	37.1	84	36	71	36	68	34.8	79	40.4	76		36.9		22.9	0.7	82.6
		Through	73	74	25.6	190	25.6	180	22.6	209	25.8	195	26.3	178		25.1		20.5	0	78.9
		Right 2	73	77	10.3	56	11.7	47	12.1	50	11.8	55	14.7	57		12.2		12.4	0.6	55.6
		Total			25.9	330	25.9	298	23.8	327	25.6	329	27.6	311		25.8		21.5	0	82.6
	WB	Left 2	76	74	36.8	106	35.6	111	35.2	94	34.6	91	40	98		36.5		21.6	0.8	89.9
		Through	76	77	20.7	720	21.6	693	21.9	717	20.1	683	21.9	702		21.3		17.8	0	66.9
		Right 2	76	75	15.4	123	16.8	133	17.5	105	15.4	116	16.4	121		16.3		13.9	0.5	58.3
		Total			21.8	949	22.6	937	22.8	916	21	890	23.1	921		22.3		18.5	0	89.9
	Total				24.6	2872	24.1	2903	24.2	2951	23.9	2901	24.6	2858	C	24.3		19.7	0	137.6
Washtenaw & Oakwood	NB	Left 2	70	65	36.9	13	39.5	15	32.3	20	33.7	23	22.3	32		31.2		23.2	0.1	80
		Through	70	68	29.6	184	30.8	165	31.9	182	32.8	197	31.5	185		31.4		21.3	0	93.5
		Right 2	70	63	25.5	4	38.8	5	25.6	4	46	1	27.6	4		30.8		22.6	5	69.9
		Total			30	201	31.7	185	31.8	206	33	221	30.1	221		31.3		21.5	0	93.5
	EB	Left 2	66	68	15.6	312	18.1	322	16.5	326	15.8	322	18.6	352		17		13.5	0.2	71.1
		Through	66	63	4.5	513	3.6	516	3.6	520	4.6	475	4.4	549		4.1		7	0	35.2
		Right 2	66	71	3.6	15	3.4	19	3.5	8	4.1	18	3.4	13		3.6		4	0.3	21.4
		Total			8.6	840	9	857	8.5	854	9	815	9.9	914		9		11.7	0	71.1
	SB	Left 2	147	63	35.8	52	33.6	65	38.4	47	38.4	52	34.6	47		36		23.3	0.2	105.9
		Through	147	71	29.8	38	30.6	47	30.6	33	30.9	36	32.8	26		30.8		22.5	0	72.1
		Right 2	147	65	4.1	47	4.4	47	4.6	47	3.9	42	4.3	63		4.3		2	0.2	19.2
		Total			23.3	137	24.1	159	23.9	127	25.2	130	20.2	136		23.3		23.4	0	105.9
	WB	Through	62	65	8.7	734	7.8	721	8.9	789	8	747	7.6	721		8.2		10.8	0	47.8
		Right 2	62	68	9.2	394	8.2	395	10	406	10.9	398	10.3	402		9.7		10.3	0.2	44.9
		Total			8.9	1128	7.9	1116	9.3	1195	9	1145	8.6	1123		8.7		10.7	0	47.8
	Total				11.5	2306	11.3	2317	11.7	2382	12.2	2311	11.7	2394	B	11.7		15.1	0	105.9

# Future Year 2020 No Build PM Peak Hour Delay

Intersection	Approach	Movement	From Link	To Link	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
					1		2		3		4		5						
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	4	12	76.7	293	75.5	319	73.6	290	79.2	313	82.4	307	77.5	41.9	1.1	232.8	
		Through	4	13	51.3	380	52	433	52.4	353	56.2	399	54.2	375	53.2	38.7	0	195.9	
		Right 2	4	139	64.5	299	71.5	258	74.6	290	72	274	67	301	69.8	43.9	0.4	263.2	
		Total			63	972	64.4	1010	65.9	933	67.9	986	66.9	983	65.6	42.6	0	263.2	
	EB	Left 2	1	13	80.8	155	81.6	151	71.5	141	76	142	90	147	80.1	43.3	2.7	215.8	
		Through	1	139	36.1	1223	36.1	1307	35.2	1297	32.6	1308	34.6	1295	34.9	28.1	0	116.5	
		Right 2	1	6	37.2	106	37	103	38.3	118	32.7	117	37.1	107	36.4	28.1	0.4	110.4	
		Total			40.8	1484	40.6	1561	38.7	1556	36.5	1567	40	1549	39.3	32.7	0	215.8	
	SB	Left 2	7	139	106.8	385	90.4	354	91.9	374	157.9	384	123.5	357	114.5	87	0.6	457.3	
		Through	7	6	58.9	733	69.4	661	60.1	713	82.7	646	81	677	70	54.1	0	325.8	
		Right 2	7	12	63	220	69	224	72.4	222	92	233	85.6	228	76.6	52.2	0.4	259.1	
		Total			73.4	1338	75.3	1239	71.3	1309	107.3	1263	93.9	1262	84	67.9	0	457.3	
	WB	Left 2	11	6	75.4	240	103.1	276	89.6	271	139.2	282	118.7	294	106.4	63.6	0.8	320.6	
		Through	11	12	20.5	1196	20.5	1173	19.5	1177	20.4	1214	21.4	1199	20.5	23.3	0	105.2	
		Right 2	11	13	22.8	170	23.2	181	28.7	171	22.8	169	22.4	160	24	24.8	0.3	99.2	
		Total			28.9	1606	34.8	1630	32.2	1619	40.8	1665	38.8	1653	35.2	46.4	0	320.6	
	Total			49.3	5400	51.2	5440	49.3	5417	59.8	5481	57	5447	D	53.3	52.6	0	457.3	
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	81	8	59.6	533	63.6	561	62.2	571	56.8	545	59.2	546	60.3	38.2	0.4	215.6	
		Through	81	33	51.7	303	53.4	362	52.9	327	51.6	296	53.9	340	52.7	36.5	0	155.8	
		Right 2	81	2	28.3	278	29.8	286	28.6	280	28.8	256	24.6	276	28	21.4	0	93.6	
		Total			49.6	1114	52.6	1209	51.6	1178	48.9	1097	49.4	1162	50.5	36.8	0	215.6	
	EB	Left 2	48	33	62.5	343	56.1	348	64.1	339	79.1	364	58.3	364	64.1	52.9	1.6	187.3	
		Through	48	2	13.9	1332	13.9	1300	12.1	1289	12.8	1343	12.8	1241	13.1	24	0	138.2	
		Right 2	48	47	6.2	687	5.3	646	5.8	670	6	652	6.3	721	5.9	5.6	0	95.2	
		Total			18.7	2362	17.9	2294	17.9	2298	21.2	2359	17.9	2326	18.7	33.6	0	187.3	
	SB	Left 2	32	2	52.6	114	44.5	105	45.1	105	50.9	106	53.2	102	49.3	36.8	0.3	138.5	
		Through	32	47	97.8	357	58.3	318	68.1	354	64	351	58.2	343	69.6	45.5	0	236.8	
		Right 2	32	8	46	634	45.9	625	38.4	662	36.6	637	38.6	592	41.1	27.3	0.1	165	
		Total			63.4	1105	49.5	1048	48.4	1121	46.8	1094	46.5	1037	51	37.4	0	236.8	
	WB	Left 2	3	47	105.2	232	94.1	226	68.8	179	69.8	198	71.2	180	83.4	57.2	0.7	328.9	
		Through	3	8	52.7	1382	49.3	1375	48	1334	49	1363	50.2	1404	49.8	33	0	147.9	
		Right 2	3	33	51.1	38	51.9	43	49.7	42	51.3	43	46.8	60	49.9	32.8	0.5	123.4	
		Total			60	1652	55.5	1644	50.4	1555	51.6	1604	52.4	1644	54.1	38.5	0	328.9	
	Total			43.1	6233	40	6195	38.1	6152	38.6	6154	37.8	6169	D	39.5	39.7	0	328.9	



Future Year 2020 No Build PM Peak Hour Delay																			
Intersection	Approach	Movement	From Link	To Link	Run														
					1		2		3		4		5		LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	53	52	58.2	135	70	155	55.9	154	74.7	145	62.6	123		64.4	39.5	1.2	223.2
		Through	53	61	50.7	344	52.2	349	52	365	67	351	54.3	351		55.3	38.3	0	216
		Right 2	53	56	46.4	141	57.5	151	49.2	116	65.5	118	52.7	123		54.2	39.7	0.2	232.9
		Total			51.4	620	57.6	655	52.4	635	68.5	614	55.7	597		57.1	39.1	0	232.9
	EB	Left 2	50	61	129.3	344	105	335	157.7	355	85.4	358	158.3	344		127.1	86.8	2.3	394.1
		Through	50	56	32.4	1106	26.5	1002	30.1	1029	28	1099	43.2	1021		32	27.5	0	186.1
		Right 2	50	58	34.7	131	24.9	140	28.7	157	26.2	133	42.7	151		31.6	26.9	0.5	161.5
		Total			53.7	1581	44.2	1477	59.4	1541	40.8	1590	69.3	1516		53.4	62.1	0	394.1
	SB	Left 2	59	56	95.2	281	78	247	75.2	271	74.3	259	57.3	291		75.8	44.7	2.7	269.6
		Through	59	58	86.1	521	67.6	540	60.4	464	67.7	559	43.1	514		65.2	41.9	0	217.7
		Right 2	59	52	85.7	271	72.1	261	69.4	274	74.8	278	46.5	286		69.4	42.9	0.5	206.2
		Total			88.4	1073	71.2	1048	66.8	1009	71.1	1096	47.8	1091		69	43.1	0	269.6
	WB	Left 2	54	58	49.7	141	48.4	139	62.9	129	51	139	43.7	119		51.2	31	0.8	157.2
		Through	54	52	31.5	1000	32.8	1074	30.3	1028	31	1016	31.3	1055		31.4	21.7	0	106.5
		Right 2	54	61	39.4	273	37.1	229	34.3	238	35.6	235	35	256		36.4	21.8	0.4	98.6
		Total			34.8	1414	35	1442	34	1395	33.8	1390	33	1430		34.1	23.5	0	157.2
	Total				55.6	4688	49.4	4622	52.3	4580	49.4	4690	51.3	4634	D	51.6	47.4	0	394.1
Washtenaw & Hewitt	NB	Left 2	72	77	43.4	132	40.3	159	38.6	180	34.2	157	44.5	158		40.1	24.8	0.8	126.4
		Through	72	75	26.7	363	27.5	370	29.4	367	28.9	363	29.8	358		28.4	20.5	0	77.4
		Right 2	72	79	14.9	173	19.9	196	19.7	185	16.7	176	17.4	184		17.8	13.7	0.1	59.8
		Total			26.9	668	28.3	725	29.2	732	27	696	29.9	700		28.3	21.5	0	126.4
	EB	Left 2	80	75	39.9	149	42.8	142	38.1	153	39.8	155	44.1	144		40.9	24.3	0.8	148.4
		Through	80	79	27.2	910	26.4	902	26.2	939	26.1	914	28.1	941		26.8	18.2	0	120.5
		Right 2	80	74	18.7	125	18.5	117	14.3	119	19.7	129	19.3	106		18.1	13.2	0.6	63
		Total			27.9	1184	27.6	1161	26.5	1211	27.2	1198	29.3	1191		27.7	19.5	0	148.4
	SB	Left 2	73	79	45.8	283	47.1	256	41.2	243	53.6	285	56.1	285		49	31.5	0.9	206.5
		Through	73	74	27.1	629	27	655	28.5	611	27.1	630	30.2	584		27.9	19.8	0	113
		Right 2	73	77	21	153	20.9	132	19.6	155	20.3	148	21.9	160		20.8	15.2	0.5	103.6
		Total			31.2	1065	31.2	1043	30.2	1009	33.3	1063	36.1	1029		32.4	25.1	0	206.5
	WB	Left 2	76	74	41.6	190	41.6	188	38.8	185	41.6	161	42	186		41.1	24.4	0.9	122.2
		Through	76	77	27.9	1033	25.9	1017	26.6	1035	26.4	980	26.6	1037		26.7	18.2	0	84.9
		Right 2	76	75	24.3	106	18.3	109	19.4	87	23.2	89	23.1	93		21.6	16	0.6	80
		Total			29.6	1329	27.5	1314	27.8	1307	28.2	1230	28.5	1316		28.3	19.8	0	122.2
	Total				29.1	4246	28.6	4243	28.2	4259	29	4187	30.8	4236	C	29.1	21.5	0	206.5
Washtenaw & Oakwood	NB	Left 2	70	65	33.9	18	28.7	22	29.7	33	24.5	31	28.8	37		28.7	21.7	0.1	77.4
		Through	70	68	21.3	157	26.6	148	24	150	24.1	159	24.7	149		24.1	19.6	0	80
		Total			22.6	175	26.9	170	25	183	24.2	190	25.5	186		24.8	20	0	80
	EB	Left 2	66	68	29.2	300	23.1	309	26.6	306	25.7	324	26	318		26.1	17.4	0.2	80.2
		Through	66	63	9.2	1042	8.2	1097	9.2	1059	9	1028	8.8	1124		8.9	10.6	0	48.2
		Right 2	66	71	5.7	20	8.1	30	8.9	18	9	27	7.9	21		8	7.4	0.3	27
		Total			13.6	1362	11.4	1436	13	1383	12.9	1379	12.5	1463		12.7	14.3	0	80.2
	SB	Left 2	147	63	38.7	292	39.4	288	40	317	43.7	275	42.2	272		40.8	25	0	154.9
		Through	147	71	23.6	182	23.6	194	26.8	184	23.2	201	26.6	179		24.7	19.7	0	73.2
		Right 2	147	65	9.4	205	11.4	204	11.5	207	12.1	224	10	209		10.9	9.5	0.3	46.3
		Total			25.8	679	26.6	686	28.2	708	27.7	700	27.8	660		27.2	23.6	0	154.9
	WB	Through	62	65	13.1	941	12.6	959	13.2	1052	14	986	12.6	960		13.1	14	0	101.8
		Right 2	62	68	14.6	404	14.1	385	14	373	18.1	393	13.9	402		14.9	13.9	0	112.6
		Total			13.6	1345	13	1344	13.4	1425	15.2	1379	13	1362		13.6	14	0	112.6
	Total				16.4	3561	15.6	3636	16.7	3699	17.2	3648	16.1	3671	B	16.4	17.7	0	154.9

# Future Year 2040 No Build AM Peak Hour Delay

Intersection	Approach	Movement	From Link	To Link	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
					1		2		3		4		5						
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	4	12	67.8	476	69.3	522	79.7	490	55.2	508	70.9	509	68.5	39.8	1.6	213.8	
		Through	4	13	72.7	715	72.2	771	76.1	698	55.1	735	64.7	721	68.1	39.5	0	236.6	
		Right 2	4	139	92.1	241	91.1	191	92.9	236	69.2	197	80.5	235	85.5	43.4	0.8	224.8	
		Total			74.3	1432	73.6	1484	80.1	1424	57.1	1440	69.4	1465	70.9	40.7	0	236.6	
	EB	Left 2	1	13	68.8	171	60.5	181	71.1	172	59.6	167	60.3	181	64	37.2	1.5	221.8	
		Through	1	139	31	1108	32.6	1163	34	1201	31.9	1154	33.4	1157	32.6	23.7	0	126.2	
		Right 2	1	6	33	99	30.7	95	36.7	116	34.5	104	30.5	94	33.3	22.7	0.5	106.5	
		Total			35.8	1378	36	1439	38.5	1489	35.3	1425	36.6	1432	36.5	27.6	0	221.8	
	SB	Left 2	7	139	57.4	211	55.2	188	59	195	50.8	196	50.4	204	54.5	32.2	0.5	179.7	
		Through	7	6	60.1	441	49.9	389	54	456	49.2	402	55.7	414	53.9	33.9	0	211	
		Right 2	7	12	76.8	163	67.9	153	69.5	151	61.5	167	81.5	171	71.6	40.5	0.5	236.7	
		Total			62.7	815	55	730	58.1	802	52.3	765	59.9	789	57.7	35.7	0	236.7	
	WB	Left 2	11	6	49.6	367	57.3	395	63.3	411	58.3	413	73.5	429	60.8	40.5	0.4	241.5	
		Through	11	12	38	1804	39.6	1842	39.5	1838	31.1	1818	51.2	1837	39.9	31.5	0	202	
		Right 2	11	13	39.5	222	43.9	206	43.3	195	35.2	211	53.7	231	43.3	31.5	0.4	138	
		Total			39.9	2393	42.8	2443	43.8	2444	36.1	2442	55.3	2497	43.7	34	0	241.5	
	Total			50.2	6018	50.2	6096	52.8	6159	42.9	6072	54.9	6183	D	50.2	37	0	241.5	
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	81	8	48.4	459	46.7	457	52	478	50.8	475	52.4	471	50.1	31.5	0.4	171.3	
		Through	81	33	44.2	397	45.9	442	45.5	394	45.5	355	46.2	408	45.5	30.2	0	151.3	
		Right 2	81	2	23.2	122	20.4	129	26.8	132	22.9	127	26.4	123	23.9	20.1	0	86.7	
		Total			43.6	978	43.1	1028	46.1	1004	45.1	957	46.7	1002	44.9	30.9	0	171.3	
	EB	Left 2	48	33	34.9	409	33.3	438	33.5	435	34.3	453	33.7	418	33.9	33.9	0.7	132.3	
		Through	48	2	13.3	1247	14.1	1233	13.6	1214	11.9	1267	12.2	1210	13	19.6	0	109.2	
		Right 2	48	47	7.3	496	7.5	514	7.7	528	7.7	489	7.2	563	7.5	5.5	0.2	46.6	
		Total			16	2152	16.4	2185	16.1	2177	15.6	2209	15	2191	15.8	23.1	0	132.3	
	SB	Left 2	32	2	38.2	56	41.1	48	43.9	43	47	50	40.6	45	42	29.6	0.3	106.6	
		Through	32	47	64.2	241	52.3	183	53	210	55	218	53.6	211	55.9	34.1	0	200.9	
		Right 2	32	8	12.9	257	14.1	256	11	276	10.1	251	14.2	234	12.4	11.6	0	58.8	
		Total			37.8	554	31.1	487	30.3	529	32.5	519	33.6	490	33.1	32.6	0	200.9	
	WB	Left 2	3	47	51.7	103	60	105	55.4	74	53.6	96	55.4	79	55.2	34.3	0.9	176.2	
		Through	3	8	44.1	1226	44.5	1221	44.6	1155	42.9	1210	44.6	1248	44.1	27.4	0	124.8	
		Right 2	3	33	48.6	106	46.6	100	47.1	91	40.9	85	39.9	92	44.8	28.7	0.4	126.6	
		Total			45	1435	45.8	1426	45.4	1320	43.5	1391	44.9	1419	44.9	28.1	0	176.2	
	Total			31.8	5119	31.3	5126	31.3	5030	30.5	5076	31.3	5102	C	31.2	30.5	0	200.9	

Future Year 2040 No Build AM Peak Hour Delay																			
Intersection	Approach	Movement	From Link	To Link	Run														
					1		2		3		4		5		LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	53	52	168.3	127	100.6	140	166	135	110.1	145	93.7	113		127.9	76.8	1.4	344.8
		Through	53	61	147.7	471	100.4	487	157.9	511	106.6	485	92.1	491		121.1	77.4	0	361.9
		Right 2	53	56	148.5	62	101.7	71	146	46	106.4	59	90.7	69		116.2	75.4	0.2	350.9
		Total			151.7	660	100.6	698	158.7	692	107.3	689	92.2	673		122	77.2	0	361.9
	EB	Left 2	50	61	45	309	44.2	287	50.4	282	46.2	319	52.7	305		47.7	29.6	1.1	175.9
		Through	50	56	16.5	748	18.6	701	18.5	752	17.8	749	16.5	712		17.6	17.4	0	63.8
		Right 2	50	58	17.5	53	18.8	61	18.1	66	21.6	57	17.1	64		18.6	17	0.5	54.9
		Total			24.5	1110	25.6	1049	26.7	1100	26	1125	26.7	1081		25.9	25.3	0	175.9
	SB	Left 2	59	56	43	155	44.2	142	44	122	49.9	140	40.8	145		44.4	27.3	0.7	150.1
		Through	59	58	34.7	245	34.8	218	32.6	228	41.3	255	35.1	239		35.8	25.2	0	153.4
		Right 2	59	52	40.7	211	46.4	223	43.4	225	53.1	230	43	229		45.4	29.8	0.3	177.1
		Total			38.9	611	41.5	583	39.2	575	47.6	625	39.4	613		41.4	27.9	0	177.1
	WB	Left 2	54	58	39.5	55	50.8	50	44.6	48	34.3	55	37.8	50		41.2	24.8	0.7	95.3
		Through	54	52	27.3	759	25.8	808	25.7	745	27	721	27.9	800		26.7	20.2	0	81.6
		Right 2	54	61	28.2	191	28.4	170	28.9	175	25.2	164	28.1	183		27.8	19.2	0.4	70.6
		Total			28.1	1005	27.4	1028	27.2	968	27.1	940	28.4	1033		27.7	20.6	0	95.3
	Total				53	3386	44.5	3358	56.4	3335	46.9	3379	42.5	3400	D	48.6	55.4	0	361.9
Washtenaw & Hewitt	NB	Left 2	72	77	38.4	170	39.6	194	38.6	211	41	196	40.7	185		39.7	25.2	0.7	157.7
		Through	72	75	26.8	669	25	710	24.4	695	26	685	25.8	668		25.6	19.1	0	81.4
		Right 2	72	79	20.2	116	18.8	136	16.9	124	19.3	122	17.7	120		18.6	14.9	0.5	65.1
		Total			28.1	955	26.9	1040	26.4	1030	28.1	1003	27.6	973		27.4	20.9	0	157.7
	EB	Left 2	80	75	39.8	59	42	70	40.2	66	37.2	74	35.8	64		39	22.4	0.7	81.5
		Through	80	79	23.2	686	22.2	654	21.7	732	23.8	705	22	694		22.6	18.3	0	64.5
		Right 2	80	74	15.3	58	11	55	14.6	53	15.1	56	10	53		13.2	12.9	0.5	49.9
		Total			23.8	803	23.2	779	22.7	851	24.4	835	22.3	811		23.3	19.1	0	81.5
	SB	Left 2	73	79	31.7	95	36.6	77	38.9	76	39	90	34.6	83		36	22.9	0.4	117
		Through	73	74	24.9	207	23.2	204	24.4	224	26.8	220	26	201		25.1	20.7	0	68.6
		Right 2	73	77	14.2	63	15.1	55	13.9	57	9.4	57	11.7	60		12.8	13	0.6	53.4
		Total			24.8	365	24.9	336	25.8	357	27.1	367	25.6	344		25.7	21.5	0	117
	WB	Left 2	76	74	38.7	117	35.8	120	37.4	100	36.6	100	39.3	109		37.5	22.6	0.7	110.5
		Through	76	77	23	793	21.8	761	21.9	783	22	743	22.8	789		22.3	17.6	0	80.5
		Right 2	76	75	16.9	133	16.2	149	17.8	114	15.6	129	18.5	135		17	13.9	0.4	57.9
		Total			24	1043	22.6	1030	23	997	22.7	972	24	1033		23.3	18.5	0	110.5
	Total				25.3	3166	24.4	3185	24.3	3235	25.4	3177	24.8	3161	C	24.8	19.9	0	157.7
Washtenaw & Oakwood	NB	Left 2	70	65	21	15	41.4	17	29.7	21	36.9	23	26.7	34		30.9	23.9	0.2	81.9
		Through	70	68	28.7	203	29.5	186	32.7	199	32.7	214	32.1	202		31.2	20.9	0	85.2
		Right 2	70	63	20.4	6	22.8	5	30.9	4	41.7	2	20.8	5		24.9	22.4	0.5	74.1
		Total			28	224	30.3	208	32.4	224	33.2	239	31.1	241		31	21.2	0	85.2
	EB	Left 2	66	68	18.4	348	18.2	351	21.8	355	23.7	355	19.4	390		20.3	16	0.2	81.4
		Through	66	63	4.8	549	4.9	572	4	566	4.5	523	4.9	599		4.6	7.4	0	37.3
		Right 2	66	71	3.1	16	4	19	2.4	9	3.1	20	2.4	13		3.1	2.9	0.3	12.4
		Total			10	913	9.8	942	10.8	930	12.1	898	10.5	1002		10.6	13.8	0	81.4
	SB	Left 2	147	63	45.5	57	44.1	69	40.7	53	41.2	58	38	53	42 WA			0.2	142.7
		Through	147	71	27.4	41	27.1	51	22.8	40	25.8	39	23.1	30		25.5	21.9	0	75.8
		Right 2	147	65	4.1	48	4	49	4.6	59	4.2	46	4.5	68		4.3	2.2	0.2	16
		Total			26.8	146	27.3	169	22	152	25.1	143	20	151		24.3	25.3	0	142.7
	WB	Through	62	65	9	792	9.6	806	9.3	866	10.4	815	8.8	790		9.4	11.8	0	50.6
		Right 2	62	68	11.4	438	11.4	426	11.8	439	11	450	11.5	447		11.4	11.4	0.3	61.1
		Total			9.9	1230	10.2	1232	10.1	1305	10.6	1265	9.8	1237		10.1	11.7	0	61.1
	Total				12.5	2513	12.8	2551	13	2611	14.1	2545	12.6	2631	B	13	16	0	142.7

# Future Year 2040 No Build PM Peak Hour Delay

Intersection	Approach	Movement	From Link	To Link	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)	
					1		2		3		4		5							
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume						
Washtenaw & Huron Parkway	NB	Left 2	4	12	84.7	298	82.8	332	78.3	298	77.8	328	86.6	315		82		47.6	0.4	258
		Through	4	13	50.4	390	55.5	440	51.9	358	60.9	411	59.5	381		55.7		40.5	0	223
		Right 2	4	139	67.9	305	75.8	269	73.9	292	75.7	286	75.1	304		73.6		47.5	0.6	277.3
		Total			66.1	993	69.5	1041	67	948	70.4	1025	72.8	1000		69.2		46.3	0	277.3
	EB	Left 2	1	13	73.1	160	78.3	155	79.9	147	77.4	148	104.8	151		82.6		47.4	2.9	253.9
		Through	1	139	32.6	1272	34.7	1314	34.8	1350	33	1342	35.5	1347		34.1		28.1	0	123.2
		Right 2	1	6	31.4	112	30.8	103	32.9	121	36.4	120	37.9	111		33.9		26.8	0.4	92.8
		Total			36.7	1544	38.7	1572	38.8	1618	37.3	1610	42.2	1609		38.8		33.6	0	253.9
	SB	Left 2	7	139	108.5	392	117.9	366	97.4	382	173.7	383	142.6	373		127.9		93.1	0.5	445.2
		Through	7	6	72.1	734	85.5	683	65.8	720	104.1	671	93.6	687		83.8		63	0	355.3
		Right 2	7	12	75.5	222	88.2	229	74.2	224	105.6	241	93.3	234		87.7		64	0.5	351.8
		Total			83.2	1348	95.3	1278	76.3	1326	125	1295	107.7	1294		97.3		75.7	0	445.2
	WB	Left 2	11	6	82.8	250	134.6	286	115.3	281	143.3	283	160.8	299		128.8		80.7	1	398.1
		Through	11	12	22.1	1242	21.7	1197	21.6	1226	22	1238	26.3	1243		22.7		25	0	172.8
		Right 2	11	13	29.2	175	22.5	185	23.7	178	25.6	171	23.6	163		24.9		25.8	0.3	150.3
		Total			31.9	1667	41.1	1668	37.4	1685	42.7	1692	49.6	1705		40.6		56.2	0	398.1
	Total				51.8	5552	58.2	5559	52.1	5577	65.2	5622	65	5608	E	58.5		59.8	0	445.2
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	81	8	59.6	553	66	575	60.6	589	60.1	563	59.2	557		61.1		36.9	0.5	193.3
		Through	81	33	51	313	58.8	373	53	341	53.2	307	52.3	347		53.8		35.6	0	159.8
		Right 2	81	2	29.7	285	28.8	298	31.9	292	33.5	267	27.2	282		30.2		22.7	0	112.3
		Total			49.9	1151	54.9	1246	51.6	1222	52	1137	49.6	1186		51.6		35.8	0	193.3
	EB	Left 2	48	33	66.5	351	61.8	354	53.4	346	74.9	370	61.3	366		63.7		53.1	1.6	193.2
		Through	48	2	13.4	1360	14.3	1309	12	1322	14.8	1357	12.1	1262		13.3		24.4	0	138.9
		Right 2	48	47	6	703	5.9	652	6.1	695	6.7	659	5.9	730		6.1		6.5	0.2	125.4
		Total			19	2414	19.2	2315	16.3	2363	21.9	2386	17.8	2358		18.8		33.7	0	193.2
	SB	Left 2	32	2	50.1	118	52.2	107	58.5	108	51.8	111	45.1	104		51.6		35.8	0.3	124.9
		Through	32	47	107.7	362	60.1	326	62.2	368	72.3	362	60	348		72.8		51	0	282.9
		Right 2	32	8	48.1	648	45.6	641	59	679	40.1	656	39.4	612		46.6		30.2	0.5	182.7
		Total			67.4	1128	50.7	1074	60	1155	51.6	1129	46.7	1064		55.4		40.4	0	282.9
	WB	Left 2	3	47	115.5	240	141.7	232	68.1	184	77	203	84	185		99.9		78.6	1.5	429.7
		Through	3	8	54.3	1413	53.6	1419	49.7	1368	50.8	1407	55.5	1446		52.8		33.5	0	151.4
		Right 2	3	33	47.7	41	55.3	45	52.9	42	48	43	45.7	62		49.6		32.1	0.5	128.2
		Total			62.8	1694	65.7	1696	51.9	1594	53.9	1653	58.3	1693		58.6		44.7	0	429.7
	Total				44.7	6387	44	6331	40	6334	41	6305	39.5	6301	D	41.9		42.4	0	429.7

Future Year 2040 No Build PM Peak Hour Delay																			
Intersection	Approach	Movement	From Link	To Link	Run														
					1		2		3		4		5		LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
					Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	53	52	55.7	137	71.4	155	72.2	157	78.3	149	67.6	128		69.4	44.2	0.8	240.4
		Through	53	61	48	351	57.6	364	62	375	81	362	59.4	361		61.7	41.3	0	237.7
		Right 2	53	56	47.7	143	61.8	156	50.9	119	71.6	119	54.3	125		57.1	41.2	0.4	245.6
		Total			49.6	631	61.7	675	62.4	651	78.6	630	60.1	614		62.5	42.1	0	245.6
	EB	Left 2	50	61	112.3	354	163.3	323	199.6	356	94.8	365	196.3	325		152	112.3	1.7	475.5
		Through	50	56	30.1	1132	41.6	1003	38.7	1058	27.2	1120	78.9	996		42.5	46.1	0	308.4
		Right 2	50	58	32.5	135	43.6	141	36.8	165	29.1	139	79.5	146		44.5	46.3	0.4	310
		Total			48.3	1621	68.6	1467	74.8	1579	42.6	1624	105	1467		67	80.7	0	475.5
	SB	Left 2	59	56	106.6	284	103.5	250	75.3	277	97	264	65.8	291		89.1	50.4	0.7	262
		Through	59	58	98.4	527	101.3	553	58.7	476	85.1	565	47.7	528		78.9	50.4	0	253.5
		Right 2	59	52	95.5	274	105.2	268	66.9	285	93.4	282	51.3	293		81.9	49.8	0	263.8
		Total			99.8	1085	102.8	1071	65.4	1038	90	1111	53.4	1112		82.3	50.4	0	263.8
	WB	Left 2	54	58	48.5	148	48.5	142	54.3	132	58.5	146	46.1	122		51.3	30.8	0.8	159
		Through	54	52	33.3	1027	34.9	1095	32.2	1051	32.6	1036	36.6	1097		34	23	0	151.8
		Right 2	54	61	38.9	277	40.1	238	37.9	246	35.9	243	37.6	265		38.1	22.6	0.5	151.2
		Total			35.9	1452	37	1475	35.2	1429	35.8	1425	37.6	1484		36.3	24.3	0	159
	Total				56.4	4789	65.5	4688	59	4697	56.3	4790	65.5	4677	E	60.5	58.7	0	475.5
Washtenaw & Hewitt	NB	Left 2	72	77	41.6	139	39.9	164	40.9	184	36.8	160	38.7	160		39.6	23.7	0.7	134.3
		Through	72	75	28.9	376	27.2	386	29.6	375	31.4	375	30.3	371		29.5	20.8	0	118.8
		Right 2	72	79	18.3	178	17.9	201	18.9	188	22.6	180	18.7	185		19.2	15	0	65.4
		Total			28.7	693	27.5	751	29.7	747	30.4	715	29.2	716		29.1	21.4	0	134.3
	EB	Left 2	80	75	39.8	151	39.6	149	40.5	157	38.1	158	38.6	150		39.3	24.3	0.8	139.1
		Through	80	79	26.9	937	26.6	932	26.7	977	26.1	943	27.8	975		26.8	18.1	0	84.6
		Right 2	80	74	18.5	126	19.7	120	20	122	18	134	20.2	109		19.2	13.6	0.6	74
		Total			27.6	1214	27.5	1201	27.8	1256	26.8	1235	28.4	1234		27.6	19.2	0	139.1
	SB	Left 2	73	79	47.5	286	45.8	265	39.6	248	43.7	293	56.3	293		46.8	31.8	0.8	196.1
		Through	73	74	26.9	646	27.7	677	26.8	622	31.2	650	27.8	603		28.1	19.8	0	94.9
		Right 2	73	77	20	157	19	136	20.1	156	22.3	152	19.9	168		20.3	15.3	0.5	73.2
		Total			31.3	1089	31.1	1078	28.9	1026	33.3	1095	34.4	1064		31.8	24.8	0	196.1
	WB	Left 2	76	74	43.4	197	37.7	197	48.3	188	43	169	44.6	191		43.4	26.1	0.7	134.7
		Through	76	77	27.3	1054	26.9	1049	28.2	1063	28	1018	27.8	1060		27.6	19	0	125.4
		Right 2	76	75	21.8	108	23.4	114	23.2	87	22.6	91	22.8	96		22.8	15.9	0.5	77.4
		Total			29.2	1359	28.2	1360	30.7	1338	29.6	1278	29.8	1347		29.5	20.8	0	134.7
	Total				29.2	4355	28.6	4390	29.3	4367	29.9	4323	30.4	4361	C	29.5	21.6	0	196.1
Washtenaw & Oakwood	NB	Left 2	70	65	29.8	19	23.9	22	23.3	33	25.1	32	28.4	38		26	20.3	0.2	77.1
		Through	70	68	25.4	163	27.1	150	19.4	153	26	160	23.5	162		24.3	20.3	0	69.1
		Total			25.9	182	26.7	172	20.1	186	25.8	192	24.4	200		24.6	20.3	0	77.1
	EB	Left 2	66	68	29	306	26.1	316	29.1	312	27.5	330	27.2	323		27.8	18.7	0.2	105.8
		Through	66	63	8.6	1067	9	1121	8.9	1083	8.4	1064	8.6	1155		8.7	10.4	0	58.6
		Right 2	66	71	7.7	20	8	30	7.3	18	6.6	29	7.6	22		7.4	6.8	0.3	28.2
		Total			13.1	1393	12.7	1467	13.3	1413	12.8	1423	12.6	1500		12.9	15	0	105.8
	SB	Left 2	147	63	43.1	300	38.8	299	47.6	328	45.2	278	51.5	280		45.2	29.1	0.2	173.2
		Through	147	71	22.8	190	24.6	200	24	188	24.2	206	26.9	181		24.5	19.7	0	88.1
		Right 2	147	65	11.7	211	10.5	205	11.2	211	11.5	230	9.3	215		10.9	9.9	0.3	56.4
		Total			28.1	701	26.5	704	30.9	727	28.3	714	31.5	676		29.1	26.7	0	173.2
	WB	Through	62	65	15.3	971	13.2	994	14.1	1079	13.9	1014	12.4	987		13.8	14	0	49.2
		Right 2	62	68	16.8	412	16.9	395	15.8	387	15.9	402	16	415		16.3	13.5	0.3	56.4
		Total			15.7	1383	14.3	1389	14.5	1466	14.5	1416	13.5	1402		14.5	13.9	0	56.4
	Total				17.6	3659	16.5	3732	17.5	3792	17.1	3745	16.9	3778	B	17.1	18.8	0	173.2



## **APPENDIX C**

### **Future Year Final Vision Measure's of Effectiveness**

Future Year 2020 Final Vision AM Peak Hour

Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	49.9	438	50.1	478	50.1	444	51.5	466	50.2	463		50.4	29.4	0.4	130.1
		Through	42	661	42.4	710	41.4	639	44	675	43.3	667		42.6	27.9	0	148
		Right 2	30.3	227	29.3	177	33.5	223	34.9	184	36.9	215		33	27.6	0	152.9
		Total	42.6	1326	43.4	1365	43	1306	45.4	1325	44.7	1345		43.8	28.9	0	152.9
	EB	Through	25.5	784	25.7	859	28.1	889	33.2	836	34.2	852		29.4	26.2	0	190.6
		Right 2	42.2	804	43.8	800	45.6	838	46.7	826	50.1	854		45.7	24.3	0.3	130.7
		Total	34	1588	34.4	1659	36.6	1727	39.9	1662	42.2	1706		37.4	26.6	0	190.6
	SB	Left 2	52.7	197	54.4	173	54.4	184	52.4	184	49.2	199		52.5	31.1	0.6	128
		Through	46.8	410	48.2	361	48.2	431	49.2	373	49.3	388		48.3	29.8	0	141.5
		Right 2	52.7	157	63.4	144	52.6	143	59.1	158	60.8	156		57.7	31.6	0.9	138.8
		Total	49.5	764	53	678	50.5	758	52.2	715	51.7	743		51.3	30.7	0	141.5
	WB	Through	21.6	1991	19.3	2067	21.9	2065	20.9	2029	21.5	2099		21	21.7	0	96.6
		Right 2	45.3	357	44.5	348	45.2	341	45.1	340	46.2	379		45.3	30.5	0.2	103.9
		Total	25.2	2348	22.9	2415	25.2	2406	24.4	2369	25.3	2478		24.6	24.7	0	103.9
	Total		34.4	6026	33.9	6117	35.2	6197	36.5	6071	37.2	6272	D	35.5	28.6	0	190.6
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	50.7	420	52	418	52	440	53.2	427	71	440		55.9	40.1	0.3	340.3
		Through	48.9	356	51.4	389	50.1	354	47.9	317	67.7	378		53.5	37.3	0	301.7
		Right 2	27.5	109	23.4	114	23.1	123	25.6	115	27.1	115		25.3	21.7	0	142.7
		Total	47.1	885	48.2	921	47.4	917	47.5	859	64.3	933		51	38.4	0	340.3
	EB	Left 2	31.8	370	32.4	404	31.3	404	33.9	421	33.2	384		32.6	35.3	0	194.7
		Through	6.5	694	6.6	672	5.7	687	5.5	743	5.7	685		6	13.2	0	73.4
		Right 2	6.5	783	6.5	810	6.4	791	6.1	756	6.2	786		6.4	4.6	0.1	44.5
		Total	11.6	1847	12.1	1886	11.5	1882	12	1920	11.6	1855		11.8	21.2	0	194.7
	SB	Left 2	42.6	52	36.5	40	38	41	48.5	46	53.1	41		43.8	33.1	0.3	176.5
		Through	59.2	225	51.6	170	43	192	50.7	196	65.6	195		54.3	43.9	0	353.7
		Right 2	9.9	239	12.2	238	11.7	254	11.2	225	12.2	206		11.4	10.4	0.4	54
		Total	34.7	516	29.3	448	26.3	487	31.5	467	39.6	442		32.2	37.1	0	353.7
	WB	Left 2	58.9	97	57.2	95	44.5	64	56.6	85	54.2	71		55	34.1	0.4	171.8
		Through	38.6	1130	38.2	1112	37.5	1076	37.2	1110	36.2	1137		37.5	26.5	0	104.7
		Right 2	41.7	99	39.4	90	37.4	87	37.4	77	32.9	84		37.9	25.4	0.4	90.7
	Total		40.3	1326	39.7	1297	37.9	1227	38.5	1272	37	1292		38.7	27.3	0	171.8
	Total		29.4	4574	29	4552	27.6	4513	28.2	4518	32.5	4522	C	29.3	32.9	0	353.7

Future Year 2020 Final Vision AM Peak Hour																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	47.8	119	56.6	137	50.6	131	55.8	138	44.6	109		51.5	29.9	0.9	146.6
		Through	33.1	458	39.3	471	41.7	493	45.9	444	41	448		40.2	27.5	0	158.7
		Right 2	32.3	60	38.1	68	41.5	45	42.3	56	33.7	62		37.3	28.3	0.3	133.4
		Total	35.8	637	42.7	676	43.4	669	47.7	638	40.9	619		42.1	28.5	0	158.7
	EB	Left 2	95.9	269	59.3	257	46.8	257	98.8	291	68.7	270		74.7	67	0.8	351.9
		Through	22	673	20.9	645	18.5	688	19.5	684	19.1	639		20	18.8	0	67.8
		Right 2	25	47	24.2	56	16.7	59	20.2	52	18.2	54		20.7	19.4	0.3	62.6
		Total	42.2	989	31.4	958	25.6	1004	42	1027	33	963		34.9	45.5	0	351.9
	SB	Left 2	40.1	143	38.1	127	39.2	109	43.9	134	48.5	138		42.1	26.2	0.7	118.5
		Through	27.1	214	33	201	29.7	204	29.8	240	29.7	212		29.8	23.4	0	98.6
		Right 2	29	193	35.7	206	35.5	202	37.6	212	32.3	205		34.1	24.3	0.1	123.1
		Total	31.1	550	35.3	534	34	515	35.8	586	35.3	555		34.3	24.8	0	123.1
	WB	Left 2	40.1	56	40.3	45	43.2	36	41.1	46	48.1	42		42.3	26.6	0.7	94.3
		Through	28.5	690	29.7	744	26.7	720	28.4	672	29.5	731		28.6	20.7	0	74.9
		Right 2	32.8	186	31.1	141	27.3	139	32.7	146	30.7	160		31	20.4	0.4	87.7
		Total	30.1	932	30.4	930	27.5	895	29.8	864	30.5	933		29.7	21.2	0	94.3
	Total		35.3	3108	34.2	3098	31.4	3083	38.6	3115	34.2	3070	C	34.8	33	0	351.9
Washtenaw & Hewitt	NB	Left 2	51.4	182	47.2	215	65.9	232	46.6	202	45.7	201		51.8	32.4	0.4	176.2
		Through	27.6	460	26.6	483	27.3	463	26.2	469	28	446		27.1	20	0	91.4
		Right 2	19.1	224	20.2	249	18.9	240	19.8	235	17.4	242		19.1	14.9	0.1	65.1
		Total	30.4	866	29.6	947	34.7	935	29.1	906	29.1	889		30.6	25.4	0	176.2
	EB	Left 2	34.7	53	38.7	63	38	62	36.7	71	38.8	61		37.4	23	0.6	83
		Through	18.4	633	19.7	602	19.6	663	18.9	653	20.4	635		19.4	17.4	0	67.7
		Right 2	15.1	51	12.1	52	9.4	50	8.7	49	13.2	47		11.7	12.6	0.1	51.7
		Total	19.3	737	20.8	717	20.4	775	19.9	773	21.5	743		20.4	18.5	0	83
	SB	Left 2	36.1	86	38	72	37.3	70	40.8	82	39.1	81		38.3	23.2	0.9	101.8
		Through	31.1	190	26.1	185	28	208	25.3	197	27.7	180		27.6	20.3	0	69.3
		Right 2	13.1	57	14.7	47	11.5	52	9.5	55	16.4	55		13	13.2	0.5	55
		Total	29.3	333	27.2	304	27.4	330	26.5	334	28.7	316		27.8	21.6	0	101.8
	WB	Left 2	35.1	101	32.5	111	40.8	93	33.9	88	35.7	95		35.5	22.1	0.8	87.9
		Through	17.8	734	18.5	696	19.8	716	19.9	683	19.1	700		19	17	0	77
		Right 2	14.7	121	15.7	131	15.9	106	13.7	119	14.5	115		14.9	13.3	0.3	53.9
		Total	19.2	956	19.8	938	21.5	915	20.5	890	20.3	910		20.2	18	0	87.9
	Total		23.7	2892	24	2906	26	2955	23.7	2903	24.3	2858	C	24.4	21.6	0	176.2
Washtenaw & Oakwood	NB	Left 2	24.7	13	29.3	17	32.8	21	33.5	25	33.4	33		31.6	23.5	0.1	80.3
		Through	33.7	182	32.8	165	31.6	179	31	192	30.4	184		31.9	21.5	0	98.6
		Right 2	25.5	6	14.6	6	7.2	6	18.5	4	15.6	4		16.2	17.5	0.4	57.5
		Total	32.9	201	31.9	188	31	206	31.1	221	30.6	221		31.4	21.7	0	98.6
	EB	Left 2	23.3	331	24.9	332	22.9	287	24.2	301	22.6	336		23.6	17.5	0.2	75.4
		Through	5.8	487	6.1	507	5.9	540	6.3	497	5.8	551		6	8.7	0	53.2
		Right 2	9.3	14	13.8	12	5.9	10	11.4	12	4.9	16		8.9	10.7	0.3	39.7
		Total	12.8	832	13.5	851	11.7	837	13	810	12	903		12.6	15.3	0	75.4
	SB	Left 2	40.9	51	34.7	65	34.7	45	36.8	50	29.1	45		35.3	24.1	0	99.5
		Through	31.5	39	28.8	47	35.3	36	31.2	37	34	29		31.9	22.1	0	77.9
		Right 2	4.3	47	5	47	4.8	46	4.8	41	5.3	62		4.9	3.1	0.3	19.6
		Total	25.7	137	24.2	159	24	127	24.9	128	19.3	136		23.6	23.4	0	99.5
	WB	Through	19.2	748	13.2	725	17.6	799	19.3	733	17.1	731		17.3	15.1	0	90.2
		Right 2	18.3	378	13	388	16.5	395	18.1	409	17.3	392		16.7	15.3	0	87
		Total	18.9	1126	13.1	1113	17.2	1194	18.9	1142	17.2	1123		17.1	15.2	0	90.2
	Total		18.3	2296	15.5	2311	16.8	2364	18.3	2301	16.6	2383	B	17.1	17.3	0	99.5

Future Year 2020 Final Vision PM Peak Hour

Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	67.3	296	64.6	321	68	288	69.3	317	66	307		67	39.4	0.7	230.5
		Through	54.6	375	52.6	436	75.8	350	60.4	400	56.3	375		59.5	41.9	0	259.1
		Right 2	48.5	295	49.9	263	60.2	288	52.8	280	45	304		51.2	33	0.9	209
		Total	56.6	966	55.7	1020	68.5	926	61.1	997	55.8	986		59.4	39.2	0	259.1
	EB	Through	35.8	881	34.4	940	43.6	977	29.9	950	38	950		36.4	32.4	0	178.4
		Right 2	42.8	840	45.3	868	52.6	878	39	882	45	893		44.9	34.7	0.3	192.4
		Total	39.2	1721	39.6	1808	47.9	1855	34.3	1832	41.4	1843		40.5	33.8	0	192.4
		Left 2	59.7	395	68.3	369	75.5	371	72.2	398	69	383		68.9	42.5	0.3	277.6
	SB	Through	51.9	726	55.2	681	64.5	705	59.8	676	59.4	697		58.1	41.2	0	224.5
		Right 2	43.8	219	47.9	229	63.2	218	51	243	54.6	235		52.1	41.2	0.3	214.1
		Total	52.9	1340	57.7	1279	67.4	1294	61.9	1317	61.3	1315		60.2	42	0	277.6
		Through	23.2	1409	24.3	1429	25	1458	23.5	1449	25.6	1486		24.3	28.2	0	183.4
	WB	Right 2	49	320	47.7	331	46.6	313	47.7	305	46.7	301		47.5	42.7	0.3	145
		Total	28	1729	28.7	1760	28.8	1771	27.7	1754	29.2	1787		28.5	32.5	0	183.4
	Total			41.9	5756	43.1	5867	49.7	5846	43	5900	44.5	5931	D	44.5	38.7	0
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	54.9	537	59.3	564	59.5	577	58.4	551	57.7	549		58	37.3	0.3	202.6
		Through	57.5	303	57.9	362	53.5	325	52.2	292	54	339		55.1	39.1	0	201.3
		Right 2	26.8	279	30.9	287	26.5	282	26	258	27.1	278		27.5	21.3	0	103.7
		Total	48.6	1119	52.2	1213	50	1184	49.2	1101	49.3	1166		49.9	36.9	0	202.6
	EB	Left 2	67.4	280	72.2	279	67.8	293	79.6	297	75.3	306		72.6	55.6	1.3	255.3
		Through	13.6	794	15.6	800	11.8	783	12.4	776	11.9	797		13.1	24.9	0	78.2
		Right 2	4.1	688	4.4	705	3.8	670	4.3	672	4	650		4.1	3	0.2	31.4
		Total	18.4	1762	20	1784	18.1	1746	20.7	1745	20	1753		19.5	37	0	255.3
	SB	Left 2	50	114	41.3	105	40.4	105	48.5	106	52	102		46.5	36.1	0.4	134.3
		Through	67.2	357	54	318	58.3	355	55.9	351	54.4	343		58.1	37.9	0	205.9
		Right 2	42.4	633	39.6	625	39	667	38	638	50.5	591		41.7	27.8	0	153.9
		Total	51.2	1104	44.1	1048	45.2	1127	44.8	1095	51.9	1036		47.4	33	0	205.9
	WB	Left 2	118.2	233	128.4	226	75	181	67.6	197	72	179		94.8	68.2	0.4	380.5
		Through	54.9	1379	49.7	1368	48.6	1323	46.7	1358	52.1	1399		50.4	33.8	0	186.8
		Right 2	56.4	40	53.3	43	49.2	40	34	42	56.3	58		50.3	33.1	0.4	129.8
		Total	63.9	1652	60.7	1637	51.7	1544	48.9	1597	54.4	1636		56	42.4	0	380.5
	Total			44.2	5637	43	5682	39.6	5601	39.3	5538	42.1	5591	D	41.6	40.9	0

Future Year 2020 Final Vision PM Peak Hour																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	53.8	135	64.4	155	58.7	155	72.8	146	55.8	125		61.4	37.3	1	199.8
		Through	42.3	344	43.6	353	51.6	372	57	351	49.3	355		48.8	33.5	0	182.2
		Right 2	38.9	141	47.4	153	50.3	117	57	118	46.7	124		47.7	34.2	0.4	171.3
		Total	44	620	49.4	661	53.1	644	60.8	615	50.1	604		51.4	35	0	199.8
	EB	Left 2	82.9	348	89.2	335	101.2	356	72	363	126	350		94.1	58.4	2.5	315.2
		Through	28.8	1100	27.9	997	26.5	1023	29.5	1088	29.1	1015		28.4	21	0	103
		Right 2	27.6	133	27.5	142	29.9	159	28.9	140	29.3	154		28.7	20.2	0.4	81.4
		Total	40.6	1581	41.8	1474	44.1	1538	39.1	1591	51.4	1519		43.4	43.3	0	315.2
	SB	Left 2	60.2	285	59.6	247	59.4	272	59.1	258	49.8	290		57.5	32.2	1.1	172.7
		Through	47.7	537	46.7	540	47.6	468	49.5	557	38	513		46	28.4	0	137.8
		Right 2	16	279	17.4	257	15.8	281	19.1	277	10	285		15.6	13.9	0	82.4
		Total	42.9	1101	42.5	1044	42	1021	44.1	1092	33.8	1088		41	30.9	0	172.7
	WB	Left 2	55.2	129	48.6	139	48.2	117	51.5	129	49.3	118		50.6	29.4	0.7	162
		Through	42.1	1018	38.1	1065	38.8	1042	38.4	1006	37.6	1052		39	23.4	0	127.1
		Right 2	45.8	265	41.2	230	42.4	232	40.9	247	41.3	249		42.4	24.1	0.4	113.3
Total		44	1412	39.6	1434	40.2	1391	40.1	1382	39.2	1419		40.6	24.3	0	162	
Total		42.6	4714	42.4	4613	43.7	4594	43.4	4680	43.4	4630	D	43.1	34.6	0	315.2	
Washtenaw & Hewitt	NB	Left 2	57.5	135	64.2	159	65.9	180	58.6	156	56.4	158		60.8	35.8	0.6	197.4
		Through	41.3	363	45	372	43.5	367	45.9	367	48.3	361		44.8	29.1	0	142.2
		Right 2	24.6	174	29.1	197	30.5	188	35.4	174	37.3	183		31.3	24.9	0.8	119.7
		Total	40.2	672	44.9	728	45.7	735	46.1	697	47.3	702		44.9	31.5	0	197.4
	EB	Left 2	67	149	75.1	141	65.6	154	62	154	61.4	146		66.1	39.4	1.2	195
		Through	22	922	20.2	920	20	952	21.5	921	21.1	956		21	20	0	66.6
		Right 2	15.1	126	13.4	117	13.9	119	14.9	132	15.9	106		14.6	14.3	0.4	56.3
		Total	26.9	1197	26.1	1178	25.1	1225	25.9	1207	25.5	1208		25.9	27.5	0	195
	SB	Left 2	69.5	279	66.2	256	61.9	240	120.6	284	81.9	275		80.9	56.5	0.7	312.4
		Through	44.4	630	46.1	654	45	613	48.8	630	44.8	583		45.8	28.7	0	157.4
		Right 2	35.3	155	34.4	132	36.3	154	36	148	34.2	161		35.2	25.4	0.8	131
		Total	49.7	1064	49.6	1042	47.7	1007	66.2	1062	53.1	1019		53.3	41	0	312.4
	WB	Left 2	62.8	192	64.5	187	60.6	184	58.6	160	62	189		61.8	34.5	1	175.3
		Through	21.6	1045	20.3	1037	20.9	1058	20.9	1003	22.1	1049		21.2	19.7	0	70.1
		Right 2	17.7	107	15	115	14.7	86	17.7	89	17.4	96		16.5	16	0.4	58.4
Total		27.2	1344	26	1339	26	1328	25.5	1252	27.4	1334		26.4	26.3	0	175.3	
Total		34.8	4277	35	4287	34.2	4295	39.3	4218	36.3	4263	D	35.9	33.8	0	312.4	
Washtenaw & Oakwood	NB	Left 2	26	18	37.2	22	39	33	52.2	31	36.2	37		39.2	27.9	0.1	95.9
		Through	31.8	158	31.1	149	29.1	150	33.8	160	32	150		31.6	25.6	0	89.9
		Total	31.2	176	31.9	171	30.9	183	36.8	191	32.8	187		32.8	26.1	0	95.9
	EB	Left 2	70.5	305	52.9	299	56.3	291	52.5	304	45.3	295		55.6	36.2	0.2	232.2
		Through	13.3	1032	12.1	1107	11.1	1061	11.2	1047	12.4	1133		12	12.7	0	50.1
		Right 2	9.5	21	11.6	22	11.8	19	7.8	21	13	28		10.9	10.3	0.3	36.4
		Total	26.1	1358	20.6	1428	20.7	1371	20.3	1372	19.1	1456		21.3	26.9	0	232.2
	SB	Left 2	53.6	290	48.3	288	51.7	316	55.8	275	47.6	272		51.4	31.8	0	217.8
		Through	29.4	182	35.4	194	34.5	184	31.3	201	30.6	179		32.3	24.8	0	91.7
		Right 2	21.4	204	26.8	202	25.1	207	23.4	221	24.2	209		24.2	20.5	0.3	98.5
		Total	37.4	676	38.3	684	39.4	707	38.5	697	35.6	660		37.9	29.4	0	217.8
	WB	Through	60.2	931	50.3	944	70.6	978	65.1	965	55.1	948		60.4	28.4	0	124.4
		Right 2	61.4	385	48.5	377	69.8	355	64.1	383	58.5	384		60.4	27.2	0	119.8
		Total	60.6	1316	49.8	1321	70.4	1333	64.8	1348	56.1	1332		60.4	28.1	0	124.4
	Total		41.4	3526	35.2	3604	43.3	3594	41.3	3608	36.4	3635	D	39.5	32.6	0	232.2

Future Year 2040 Final Vision AM Peak Hour

Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	49.9	479	53	523	51.3	499	50.9	509	51.7	513		51.4	29.5	1.1	139.6
		Through	45.6	727	43.4	775	43.6	712	43.6	734	46.4	737		44.5	27.7	0	127.3
		Right 2	39.1	247	32.3	198	36.8	242	33.2	202	40.1	240		36.6	27.2	0	117.8
		Total	45.9	1453	45.3	1496	45.1	1453	44.7	1445	47.2	1490		45.7	28.7	0	139.6
	EB	Through	32.2	861	30.3	941	42.1	985	30.5	915	40.2	933		35.2	30.4	0	182.7
		Right 2	47.3	886	51.3	887	52.2	912	48.7	902	55.8	929		51.1	24.8	0.3	148.9
		Total	39.9	1747	40.5	1828	47	1897	39.5	1817	48	1862		43	28.9	0	182.7
	SB	Left 2	55	212	56	188	58.1	195	51.3	198	54.2	205		54.9	32.5	0.7	134.5
		Through	54.2	441	48.2	392	52	456	50.5	404	53.6	417		51.8	32.1	0	182.2
		Right 2	69.9	165	58.9	154	64.1	151	66.2	167	70.4	171		66	37.4	0.5	228.4
		Total	57.6	818	52.4	734	55.8	802	54.1	769	57.4	793		55.5	33.8	0	228.4
	WB	Through	25.9	2169	26	2271	26.7	2278	29.9	2188	35.8	2309		28.9	25.5	0	161.7
		Right 2	51.7	392	50.8	382	53.2	368	54.9	378	57.2	408		53.6	31.1	0.4	184.2
		Total	29.8	2561	29.6	2653	30.4	2646	33.6	2566	39	2717		32.5	27.8	0	184.2
	Total		39.5	6579	38.6	6711	41.2	6798	40	6597	45.3	6862	D	41	30.1	0	228.4
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	52.9	460	53.5	460	53.7	479	66.3	474	56.6	469		56.6	37.4	0.6	333.1
		Through	52.7	396	53.6	443	50.4	395	65.7	357	53.7	409		55	36.2	0	295.1
		Right 2	25.8	123	22	129	22.7	132	28.9	128	22.7	123		24.4	22.3	0	165.3
		Total	49.4	979	49.6	1032	48.3	1006	61.1	959	51.2	1001		51.8	36.9	0	333.1
	EB	Left 2	35.2	410	30.6	439	34.3	437	36.3	448	30.6	426		33.4	36.7	0	295
		Through	7.2	752	7.5	736	6.9	762	6.3	802	6.6	769		6.9	14.6	0	110.9
		Right 2	6.5	870	6.7	880	7	853	6.8	827	6.7	862		6.8	5.2	0.2	108.9
		Total	12.5	2032	12.1	2055	12.8	2052	13	2077	11.6	2057		12.4	22.2	0	295
	SB	Left 2	39.8	56	47.2	48	39.3	43	60.2	51	36.2	45		44.8	37.9	0.1	288.7
		Through	67.5	241	49.6	183	49.2	210	61.4	219	50	211		56.1	38.1	0	277.2
		Right 2	12.2	257	14.3	256	11.2	276	12.2	252	12.2	234		12.4	11.1	0.4	58.8
		Total	39	554	30.8	487	28.6	529	37.5	522	30.7	490		33.5	35.2	0	288.7
	WB	Left 2	72.8	100	49.3	105	45	70	51.1	96	51.4	79		54.6	38.7	0.3	246.4
		Through	36.6	1227	39.4	1227	39	1162	36.6	1209	37.6	1248		37.8	26.2	0	105.2
		Right 2	41	106	44.8	97	40.2	91	40.3	86	37.6	92		40.8	26.7	0.5	118.1
		Total	39.5	1433	40.5	1429	39.4	1323	37.8	1391	38.4	1419		39.1	27.5	0	246.4
	Total		30.4	4998	29.8	5003	28.9	4910	31.9	4949	29.1	4967	C	30	32.6	0	333.1



Future Year 2040 Final Vision AM Peak Hour																	
Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Golfside	NB	Left 2	62.7	138	70.1	145	61	140	67.3	148	68.1	116		65.8	37.7	1.8	200.1
		Through	44.3	493	64.2	512	38.9	534	60.5	487	50.8	493		51.6	38	0	205.6
		Right 2	45.2	64	64.8	73	51.4	48	58.3	59	49.1	72		54	38.8	0.5	186.4
		Total	48	695	65.4	730	44	722	61.8	694	53.6	681		54.6	38.4	0	205.6
	EB	Left 2	88.5	313	51.3	286	103.6	288	43.8	320	143.7	264		84.4	92.4	0.9	583.7
		Through	19.9	746	20	697	20.8	754	19.1	750	29.7	668		21.7	22.2	0	250.5
		Right 2	19.3	54	21.8	62	24.1	65	23.4	57	51.4	58		28	42.4	0.4	349
		Total	39.2	1113	28.7	1045	42.5	1107	26.3	1127	61.4	990		39.2	59.4	0	583.7
	SB	Left 2	43.6	155	44.7	142	46.4	122	46.3	140	42.4	146		44.6	27	0.9	144.6
		Through	29.8	247	31	218	29.9	228	36.1	255	26.3	239		30.7	23.4	0	100.9
		Right 2	32.1	213	40.2	223	32.9	225	44.4	230	29.2	229		35.8	25.5	0.2	129.7
		Total	34.1	615	37.9	583	34.6	575	41.4	625	31.2	614		35.9	25.6	0	144.6
	WB	Left 2	44.8	60	45.9	52	50.3	36	46.5	53	39.9	48		45.2	27.1	0.8	95.7
		Through	32.2	746	29	823	30.2	778	30.3	724	31.5	807		30.6	21	0	106.2
		Right 2	34.7	200	29	154	33.9	156	28.9	163	35.5	179		32.6	21.1	0.5	111.1
		Total	33.4	1006	29.9	1029	31.5	970	31	940	32.6	1034		31.7	21.6	0	111.1
	Total		38.4	3429	38.6	3387	38.3	3374	37.7	3386	45.2	3319	D	39.6	41.9	0	583.7
Washtenaw & Hewitt	NB	Left 2	60.9	202	73.7	236	67.2	252	60.2	221	63	218		65.2	39	0.4	228
		Through	31.5	510	31.4	529	29	506	28.8	522	29.7	484		30.1	20.6	0	115.6
		Right 2	19.9	245	23.2	272	20.2	267	20.6	260	21.8	269		21.2	15.9	0.6	86.1
		Total	34.7	957	38.9	1037	36.1	1025	33.6	1003	35	971		35.7	29.9	0	228
	EB	Left 2	43	57	39.8	68	39.6	66	33.7	75	43.6	65		39.7	23.2	0.9	81.3
		Through	19.3	689	20.1	657	19.5	733	19.6	703	20.4	693		19.8	17.2	0	64.9
		Right 2	11.5	58	11.8	55	9.5	53	8.8	59	11.2	55		10.6	10.3	0.1	44.9
		Total	20.4	804	21.2	780	20.4	852	20.1	837	21.6	813		20.8	18.4	0	81.3
	SB	Left 2	34.1	94	33.8	78	39.8	77	35.7	92	36.6	85		35.9	22.4	0.4	91.2
		Through	28.7	207	24.8	203	26.2	223	27.6	217	27.4	201		26.9	21	0	67.9
		Right 2	11	66	18.1	55	15.1	57	15.6	57	14.3	61		14.7	14.7	0.6	57.7
		Total	26.9	367	25.8	336	27.4	357	27.8	366	27.4	347		27.1	21.5	0	91.2
	WB	Left 2	41	114	39.1	117	39.3	98	36.2	96	42.8	108		39.8	22.7	0.8	134
		Through	19.9	797	17.9	761	18.9	781	19.8	745	20.5	784		19.4	16.8	0	80
		Right 2	15.3	131	14.7	149	13.8	115	15.2	129	14.1	135		14.6	13.1	0.3	55
		Total	21.6	1042	19.9	1027	20.3	994	20.8	970	22	1027		20.9	18.3	0	134
	Total		25.9	3170	27	3180	26.1	3228	25.5	3176	26.5	3158	C	26.2	23.9	0	228
Washtenaw & Oakwood	NB	Left 2	23.1	16	31.9	19	29.9	23	29.2	26	28.8	36		28.8	23.8	0.1	89.4
		Through	32.5	207	32	188	30.5	204	33.2	217	30.2	206		31.7	21.6	0	88.7
		Right 2	13.2	8	13.2	6	35.6	6	16.9	5	20	5		19.4	17.9	0.6	60.8
		Total	31.2	231	31.5	213	30.6	233	32.5	248	29.8	247		31.1	21.8	0	89.4
	EB	Left 2	23.1	311	21.2	317	21.6	274	25.6	282	21	321		22.4	17.4	0.2	107
		Through	6.1	465	6.2	473	6.6	506	6.4	465	7.3	517		6.5	8.6	0	42.9
		Right 2	9.8	12	10.4	12	5.3	9	3.7	12	5.8	16		7	7.8	0.3	31.2
		Total	12.9	788	12.2	802	11.8	789	13.5	759	12.4	854		12.5	14.8	0	107
	SB	Left 2	37.1	55	37.1	68	39.5	51	35.1	56	30.7	51		36	23.8	0.2	92.3
		Through	31.9	42	34	51	29	43	29.1	41	33.5	33		31.5	22.8	0	72.6
		Right 2	4.6	48	4.8	47	6.2	58	5	44	5.1	65		5.2	4	0.3	36.1
		Total	24.8	145	27	166	23.8	152	24	141	20.2	149		24	23.5	0	92.3
	WB	Through	14.8	709	15.2	680	17.3	758	16.8	697	14.9	678		15.8	14.6	0	84.1
		Right 2	13.6	356	15.8	359	16	372	16.2	383	15.5	370		15.4	14.9	0	81.2
		Total	14.4	1065	15.4	1039	16.9	1130	16.6	1080	15.1	1048		15.7	14.7	0	84.1
	Total		16.3	2229	16.7	2220	17	2304	17.8	2228	16	2298	B	16.7	17.3	0	107

Future Year 2040 Final Vision PM Peak Hour

Intersection	Approach	Movement	Run										LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
			1		2		3		4		5						
			Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume					
Washtenaw & Huron Parkway	NB	Left 2	63.1	298	64.3	332	69.5	299	66.7	328	66	321		65.9	40.7	1.3	213.6
		Through	54.3	388	54.2	443	56.2	358	54.5	411	62.6	382		56.3	37.8	0	184.8
		Right 2	44.3	307	45.7	268	45.3	298	55.4	289	49.1	308		48	31.7	1.1	181.6
		Total	53.8	993	55.2	1043	57	955	58.6	1028	59.6	1011		56.9	37.7	0	213.6
	EB	Through	31.8	921	49.5	968	39	988	42.6	974	48.2	976		42.3	37.6	0	234.9
		Right 2	39.2	852	53.2	873	45.1	889	41.2	881	53.9	908		46.6	36.1	0.3	279.7
		Total	35.4	1773	51.3	1841	41.9	1877	41.9	1855	50.9	1884		44.4	36.9	0	279.7
	SB	Left 2	67.8	400	71.7	377	83.3	387	110.5	405	71.7	392		81.2	51.1	1	350.9
		Through	62.9	740	59.2	696	67.4	715	79.6	688	54.9	713		64.7	43.1	0	247.3
		Right 2	59.1	225	50.5	234	68.4	225	75.9	246	49.2	242		60.7	43.7	0.5	233.2
		Total	63.7	1365	61.2	1307	72.2	1327	88.3	1339	58.8	1347		68.8	46.4	0	350.9
	WB	Through	24	1414	25.6	1441	25.8	1450	22.1	1446	28.1	1494		25.1	28.8	0	200.5
		Right 2	49.4	329	48.9	331	47.3	318	44.7	303	51.9	307		48.5	43.1	0.3	151
		Total	28.8	1743	30	1772	29.7	1768	26	1749	32.2	1801		29.3	33.1	0	200.5
	Total		43.1	5874	47.8	5963	47.5	5927	50.5	5971	48.5	6043	D	47.5	41.1	0	350.9
Washtenaw & Hogback/Carpenter & NB US-23 Off	NB	Left 2	57.3	558	63.6	582	58.1	593	56.7	569	57.9	564		58.7	36.3	0.3	194.3
		Through	51.5	313	62.1	372	55.9	341	52.7	306	54.6	347		55.6	36.8	0	180.6
		Right 2	29.6	287	27.8	299	32.2	293	27	266	26.7	283		28.7	20.9	0	116.5
		Total	48.9	1158	54.6	1253	51.3	1227	48.7	1141	49.5	1194		50.7	35.7	0	194.3
	EB	Left 2	70.7	280	78.3	287	69.8	292	76.4	300	77.7	303		74.6	55.1	1.1	257.9
		Through	13.4	807	14.9	826	11.2	802	11.9	814	12.2	793		12.7	24.7	0	78
		Right 2	4.3	703	4.1	721	4	682	3.9	702	4.2	672		4.1	3	0.2	30
		Total	18.8	1790	20.6	1834	18.1	1776	19.5	1816	20.4	1768		19.5	37.1	0	257.9
	SB	Left 2	46.6	118	50.6	107	53.6	108	48.3	111	42	104		48.2	35.2	0.4	122.2
		Through	63	362	51.5	326	54.7	366	55.9	363	54.7	350		56.1	37.4	0	209.8
		Right 2	37.3	647	40.8	640	45.1	682	34.6	658	35.8	612		38.8	25.3	0.5	140.5
		Total	46.5	1127	45	1073	48.9	1156	42.8	1132	42.6	1066		45.2	31.6	0	209.8
	WB	Left 2	89.7	205	74.1	194	64.1	152	63.9	175	70	164		73.2	43.6	0.4	200
		Through	48.5	1214	46.2	1209	45.5	1161	46	1198	48	1221		46.8	32.7	0	143.5
		Right 2	42.1	35	45.1	40	52.6	35	42.2	37	54.5	52		47.8	31.5	0.4	127.8
		Total	54.2	1454	49.9	1443	47.8	1348	48.1	1410	50.7	1437		50.2	35.4	0	200
	Total		40.1	5529	40.4	5603	39.2	5507	37.7	5499	39.1	5465	D	39.3	37.9	0	257.9

Future Year 2040 Final Vision PM Peak Hour																	
Intersection	Approach	Movement	Run														
			1		2		3		4		5		LOS	Average(s)	Standard Deviation(s)	Min(s)	Max(s)
Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume	Delay(s)	Volume						
Washtenaw & Golfside	NB	Left 2	59.2	137	85.2	155	71.5	158	78	149	64	128		72.1	44.7	0.8	243.6
		Through	40.9	352	58.2	360	45.7	385	52.5	362	44.1	361		48.3	33	0	184.9
		Right 2	42.3	143	59.2	155	43.1	120	52.1	120	38.9	125		47.5	34.8	0.3	195.8
		Total	45.2	632	64.7	670	51.4	663	58.4	631	47.2	614		53.5	37.7	0	243.6
	EB	Left 2	72.4	356	84.7	353	72.2	369	56.6	371	79.6	368		73	47.8	1.8	281.4
		Through	25.9	1133	26.2	1026	26.9	1053	26.8	1118	25.9	1054		26.3	20.7	0	92.2
		Right 2	25.6	137	26.7	155	25.9	163	28.2	142	28	159		26.9	19.9	0.4	90
		Total	36.1	1626	39.7	1534	37.3	1585	33.7	1631	38.6	1581		37	35.1	0	281.4
	SB	Left 2	59.4	158	54.8	157	55.9	139	59.4	144	52	160		56.2	31.1	1	159.8
		Through	52.7	562	51.2	535	54.7	517	58.9	565	41.3	533		51.8	30.6	0	155.7
		Right 2	46.7	152	41.6	141	49.4	147	53.9	170	37.2	174		45.7	30.7	0.4	153.2
		Total	52.9	872	50.3	833	53.9	803	58	879	42.5	867		51.5	30.9	0	159.8
	WB	Left 2	55.1	117	48.1	124	50.5	99	49.2	113	46.8	102		50	30	0.7	152.5
		Through	33	842	33.1	902	32.5	893	34.4	840	34	901		33.4	23	0	104.4
Right 2		37.2	232	35.9	195	36.7	194	36	211	35.5	208		36.3	22.8	0.4	99.5	
Total		36	1191	35.1	1221	34.7	1186	36.1	1164	35.3	1211		35.5	24.2	0	152.5	
Total		40.8	4321	44.4	4258	41.9	4237	42.9	4305	39.7	4273	D	41.9	32.9	0	281.4	
Washtenaw & Hewitt	NB	Left 2	42.3	138	50.1	164	41.9	184	41.1	162	44.6	161		44	23.9	0.8	120.9
		Through	41.4	377	37.8	383	35.8	373	38.5	376	41.2	368		38.9	24.1	0	135.2
		Right 2	27.1	178	25.3	205	24	191	27.7	179	27.5	191		26.3	19.5	0	115.5
		Total	37.9	693	37.1	752	34.3	748	36.4	717	38.3	720		36.8	23.8	0	135.2
	EB	Left 2	43.3	152	39.8	149	40.8	159	36.5	158	38.6	154		39.8	23.5	0.7	114.5
		Through	22.2	935	21.1	938	21.1	972	20.8	946	22.4	976		21.5	16.8	0	66.6
		Right 2	13.9	127	14.7	119	11.7	123	12.8	134	13.2	108		13.2	11.4	0.4	53.1
		Total	24	1214	22.8	1206	22.7	1254	21.9	1238	23.6	1238		23	18.6	0	114.5
	SB	Left 2	39.7	288	56.5	264	39.8	248	52.5	293	61.6	292		50.2	34.1	0.8	216.9
		Through	36.1	647	36.7	678	38	624	46.9	648	38.5	600		39.2	24.7	0	169.2
		Right 2	24.9	157	25.3	138	29.7	156	39	153	28.6	169		29.5	23.9	0.5	157.8
		Total	35.4	1092	40.1	1080	37.2	1028	47.3	1094	43.3	1061		40.7	28.1	0	216.9
	WB	Left 2	42	197	42.1	195	39.9	186	43.2	165	45.2	192		42.5	25.3	0.8	132.6
		Through	21.6	1062	20.2	1054	20.9	1075	21.2	1031	21.5	1069		21.1	17.1	0	79.8
Right 2		18.4	108	14.7	115	19	87	17.2	89	19.5	96		17.7	14.2	0.4	53.6	
Total		24.3	1367	22.9	1364	23.4	1348	23.7	1285	24.7	1357	C	23.8	19.7	0	132.6	
Total		29.2	4366	29.5	4402	28.3	4378	31.2	4334	31.1	4376		29.9	23.8	0	216.9	
Washtenaw & Oakwood	NB	Left 2	29.6	19	28.8	22	28.3	33	31.8	33	31	38		30	20.9	0.1	70.9
		Through	25.6	163	23.1	150	19.4	153	26.3	163	23	162		23.5	20.1	0	70.3
		Total	26	182	23.8	172	21	186	27.2	196	24.5	200		24.5	20.3	0	70.9
	EB	Left 2	40.6	270	36	267	37.7	252	35.3	270	35.4	258		37	22.2	0.2	113.6
		Through	12.2	892	13.2	958	12.5	934	11.3	907	12.6	986		12.4	12.3	0	75.4
		Right 2	9.9	17	11.8	21	10.7	14	10	19	11.3	25		10.8	10.2	0.3	53.7
		Total	18.7	1179	18.1	1246	17.8	1200	16.7	1196	17.2	1269		17.7	18.1	0	113.6
	SB	Left 2	68.4	362	69	370	74.2	389	53.5	336	63.8	333		66.1	44.2	0	220.3
		Through	31.3	237	31.5	234	32.4	227	24.5	248	28.7	216		29.6	25.7	0	163.8
		Right 2	19.8	267	20.6	248	21.7	264	18.6	286	19.4	273		20	16.2	0.3	105
		Total	43.3	866	44.6	852	47.7	880	33.8	870	39.8	822		41.8	38.9	0	220.3
	WB	Through	41	840	39.1	822	67.4	920	48.7	867	36.1	841		46.9	28.2	0	131
		Right 2	39.6	340	41.1	332	69.2	329	46.8	338	37.3	341		46.7	28.5	0	132.9
		Total	40.6	1180	39.7	1154	67.9	1249	48.2	1205	36.4	1182		46.8	28.3	0	132.9
Total		32.9	3407	32.3	3424	43.3	3515	32.5	3467	29.5	3473	C	34.1	31	0	220.3	





ReImagine Washtenaw

# Future Public Access Plans

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SEAL AND SIGNATURES

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### KEY PLAN



PROJECT NO.

DRAWING TITLE

FUTURE LIMITS OF  
PUBLIC ACCESSSS  
INDEX

SCALE	50591.00
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PROJECT NUMBER	30391.00
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DRAWING NUMBER \_\_\_\_\_

PORTIONS OF CITY OF ANN ARBOR, ANN ARBOR TOWNSHIP, CITY OF YPSILANTI  
WASHTENAW COUNTY, MICHIGAN



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KEY PLAN



DRAWING TITLE

FUTURE LIMITS OF  
PUBLIC ACCESS



SCALE 50591.001

PROJECT NUMBER: \_\_\_\_\_

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NOTE ON CENTERLINES:  
IN SOME LOCATIONS THE CENTERLINE OF THE PUBLISHED M.D.O.T. CORRIDOR  
DEVIATES FROM THE FUTURE PHYSICAL ROAD AND PUBLIC ACCESS CENTERLINE. THIS  
IS NECESSARY TO ACCOMMODATE THE NEW ROAD CROSS SECTION

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## KEY PLAN



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FUTURE LIMITS OF  
PUBLIC ACCESS



SCALE	50591.001
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PROJECT NUMBER:

DRAWING NUMBER:

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SCALE

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WASHTENAW COUNTY

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PROJECT NUMBER

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DRAWING NUMBER \_\_\_\_\_

This site plan illustrates the proposed future super stop public access area along West Boulevard. The plan includes several key features and labels:

- FUTURE SUPER STOP PUBLIC ACCESS**: Indicated by a dashed line along the corridor.
- (LOCATION & SIZE ARE APPROXIMATE)**: A note indicating the approximate nature of the location and size.
- FUTURE LIMITS OF PUBLIC ACCESS**: Shown as a solid line parallel to the future road.
- EXISTING LIMITS OF PUBLIC ACCESS**: Shown as a solid line further from the road.
- ADDITIONAL PUBLIC ACCESS AREA NEEDED**: The shaded area between the existing and future limits of public access.
- FUTURE ROAD & PUBLIC ACCESS AND M.D.O.T. LEGAL CENTERLINE**: A label pointing to the future road alignment.
- LEG-666 OF TRANSPORTATION ACT OF 1966**: A reference to the legal centerline.
- MICHIGAN DEPARTMENT OF TRANSPORTATION**: Multiple instances of this text are present near the road alignment.
- WEST BOULEVARD**: Labeled at the bottom left of the plan.
- N72°20'W 178.00'**: A bearing and distance measurement for a boundary line.
- 144.00'**, **72.00'**, and **72.00'**: Dimensional measurements for the public access areas.

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SCALE 50591.001

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PROJECT NUMBER

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PROJECT NUMBER

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DRAWING TITLE

FUTURE LIMITS OF  
PUBLIC ACCESS



SCALE

PROJECT NUMBER: \_\_\_\_\_

XXXXXXXXXXXXXXXXXXXX

12

XXXXXXXXXXXXXXXXXXXX

FUTURE SUPER STOP PUBLIC ACCESS  
(LOCATION & SIZE ARE APPROXIMATE)

108'00"

URE LIMITS OF  
PUBLIC ACCESS

00' 54.00'

120.00' 60.00'

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SCALE	50504.00
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## KEY PLAN



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SCALE

PROJECT NUMBER: \_\_\_\_\_

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