MADISON ROAD
COMPLETE STREET STUDY
EXECUTIVE SUMMARY

THE KLEINGERS GROUP

December 11, 2023

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INTRODUCTION

This complete street study was conducted to analyze Madison Road within the Madisonville community in Cincinnati, Ohio to identify ways improve conditions for all users, including pedestrians, bicyclists, users of public transportation, and drivers. The desire to address these concerns was first expressed 15 to 20 years ago. As a result of continued coordination between the Madisonville Community Council and the City of Cincinnati, the City initiated this high-level study to evaluate the impact of potential improvement options and to identify preferred alternatives.

In preliminary discussions with representatives of the Madisonville Community Council, they expressed concerns that had been received from members of the community, including:

- The need for wider sidewalks and/or a new multi-use path
- There are safety concerns at the existing crosswalk across Madison Road at Anderson Place
- The travel lanes on west of Stewart Avenue are very narrow
- New left turn signals should be considered at some of the signalized intersections
- There are concerns with the configuration of the intersection of Madison Road and Camargo Avenue
- The low clearance of the railroad bridge near Kenwood Road has resulted in multiple bridge strikes

This study process included the following:

- Collection of traffic data and roadway geometric data along the Madison Road corridor
- Field observations of existing traffic conditions
- The creation of a traffic model to simulate existing traffic conditions and to evaluate potential changes in roadway configuration
- Conducting public meetings and online surveys to gather input on operational and safety concerns and existing travel modes and habits and to get feedback on potential changes the configuration of the roadway
- The preparation of conceptual roadway cross sections to improve conditions for all users
- Presentation of the preferred design concepts based on community feedback

The following summarizes the various components of this study.

STUDY AREA

The study area focuses on Madison Road, from Anderson Place to Camargo Road / Plainville Road. The following intersections are the key intersections the City of Cincinnati has identified for this study.

- Madison Road @ Anderson Place / St. Paul Village Access
- Madison Road @ Stewart Avenue
- Madison Road @ Whetsel Avenue
- Madison Road @ Mathis Street
- Madison Road @ Kenwood Road
- Madison Road @ Camargo Road / Plainville Road

A map illustrating the locations of the study area intersections, locations of an additional nine (9) intersections, and speed data collection locations is provided in Appendix A of this report.

DATA COLLECTION

Turning Movement Counts

Traffic counts for this study were collected on Wednesday, March 15, 2023, at the following intersections:

- Madison Road @ Whetsel Avenue (Study Int.)
- Madison Road @ Glenshade Avenue
- Madison Road @ Kenwood Road (Study Int.)
- Madison Road @ Stafford Street
- Madison Road @ Jameson Street
- Madison Road @ Camargo Road / Plainville Road (Study Int.)

Traffic counts were collected on Tuesday, March 21, 2023, at the following intersections:

- Madison Road @ Ward Street
- Madison Road @ Mathis Street (Study Int.)
- Madison Road @ Settle Street
- Madison Road @ Roanoke Street
- Madison Road @ Blaesi Street

Traffic counts were collected on Tuesday, April 4, 2023, at the following intersections:

- Madison Road @ Anderson Place / St/ Paul Village Access (Study Int.)
- Madison Road @ Stewart Avenue (Study Int.)
- Madison Road @ Ebersole Avenue
- Madison Road @ Ravenna Street
- Madison Road @ Whetsel Avenue (Study Int.)

Data was collected from 7:00 to 9:00 AM and from 4:00 to 6:00 PM at all study area intersections. Based on the collected data, the peak hours within the corridor were found to occur from 7:30 to 8:30 AM and from 4:45 to 5:45 PM. Data was collected at the remaining intersections only during the peak hours. Traffic count summaries are provided in Appendix B of this report.

Volume figures showing the counted volumes are presented in Figure A. Volume balancing was performed and are presented in Figure B. These volume figures are attached in Appendix B of this report.

Road Widths

Road widths along Madison Road between each street were field verified. The table below details these measurements.

Speed Data

Speed data was collected along Madison Road from 8:00 AM (4/5/2023) to 11:00 AM (4/7/2023) between Anderson Place and Stewart Avenue. The posted speed limit in this section is 35 mph.

	Eastbound	Westbound
Average Travel Speed (mph)	27	31
85th Percentile Travel Speed (mph)	34	35
Percent Vehicles Speeding	10%	13%
Highest Speed (mph)	92	62

Anderson Place - Stewart Avenue

Speed data was collected along Madison Road from 12:00 AM (4/4/2023) to 12:00 AM (4/5/2023) between Ebersole Avenue and Ravenna Street. The posted speed limit in this section is 25 mph.

	Eastbound	Westbound
Average Travel Speed (mph)	33	32
85th Percentile Travel Speed (mph)	37	37
Percent Vehicles Speeding	96%	91%
Highest Speed (mph)	91	83

Ebersole Avenue - Ravenna Street

Speed data was collected along Madison Road from 12:00 AM (3/14/2023) to 12:00 AM (3/16/2023) between Ward Street and Mathis Street. The posted speed limit in this section is 25 mph.

	Eastbound	Westbound
Average Travel Speed (mph)	34	31
85th Percentile Travel Speed (mph)	39	35
Percent Vehicles Speeding	96%	88%
Highest Speed (mph)	71	79

Ward Street - Mathis Street

Speed data was collected along Madison Road from 12:00 AM (3/14/2023) to 12:00 AM (3/16/2023) between Mathis Street and Glenshade Avenue. The posted speed limit in this section is 30 mph.

	Eastbound	Westbound
Average Travel Speed (mph)	35	32
85th Percentile Travel Speed (mph)	39	36
Percent Vehicles Speeding	83%	66%
Highest Speed (mph)	74	79

Mathis Street - Glenshade Avenue

Speed data was collected along Madison Road from 12:00 AM (3/14/2023) to 12:00 AM (3/16/2023) between Roanoke Street and Jameson Street. The posted speed limit in this section is 30 mph.

	Eastbound	Westbound
Average Travel Speed (mph)	32	31
85th Percentile Travel Speed (mph)	36	35
Percent Vehicles Speeding	66%	58%
Highest Speed (mph)	62	78

Roanoke Street - Jameson Street

85th percentile speed charts for each location along Madison Road are provided in Appendix C of this report.

Queuing Observations

Observations of existing queuing were performed in the field at the study intersections on Wednesday, March 15, 2023, during the AM and PM peak times at the following intersections along Madison Road:

- Stewart Avenue
- Whetsel Avenue
- Mathis Street
- Kenwood Road
- Camargo Road / Plainville Road

Queuing observations were performed in the field at the study intersections on Tuesday, April 4, 2023, during the PM peak time and on Wednesday, April 5, 2023, for the AM peak time at the following streets along Madison Road:

- Anderson Place / St. Paul Village Access
- Stewart Avenue
- Whetsel Avenue

The intersection at Anderson Place was not originally observed on March 15th due to a road closure. Observations were performed a second time at the Stewart Avenue and Whetsel Avenue to double check the effect the road closure had on them. The intersections at Mathis Street, Kenwood Road, and Camargo Road / Plainville Road were not observed a second time, as they were not deemed to be within a close enough proximity to be affected by the road closure of Anderson Place.

A queuing observation report is provided in Appendix D of this report.

Crash History

The City of Cincinnati provided 2020 to 2022 crash data along the corridor from ODOT's GIS Crash Analyses Tool (GCAT). The crash data is summarized in Appendix E of this report. From 2020 to 2022, there were a reported 119 crashes, with one crash involving a serious injury, ten crashes involving a minor injury, and eight crashes involving a possible injury. Twenty of the 119 crashes were vehicles striking the bridge just east of Kenwood Road (16 eastbound and 4 westbound). The majority of crashes reported were rear end (26), fixed object (26), sideswipe – passing (24), and angle (22).

An extended search from 2018 to March 2023 revealed two crashes involving a pedestrian / bicyclist and two crashes resulting in serious injuries.

EXISTING CONDITIONS

The existing Madison Road has varying speed limits and lane configurations throughout the study area and runs eastbound and westbound. The speed limit west of Ebersole Avenue is posted as 35 miles per hour. The speed limit between Ebersole Avenue and Mathis Street is posted as 25 miles per hour. The speed limit east of Mathis Street is posted as 30 miles per hour.

From Anderson Place to Ward Street, Madison Road is a five-lane roadway with narrow lanes varying from 9'-10' in width. On-street parking is permitted on both sides of the street, with restrictions during peak traffic times. In the blocks on each side of Whetsel Avenue, recent developments have occurred, the majority of which consists of ground floor retail with residential space above.

From Ward Street to Kenwood Road, Madison Road has two eastbound lanes and one westbound lane, all of which are about 10' in width. On-street parking is permitted on both sides of the roadway throughout this section.

From Kenwood Road to Camargo Road / Plainville Road, Madison Road is a two-lane roadway with lane widths of approximately 14'. On-street parking is permitted on both sides of the roadway throughout this section.

There are four (4) Pedestrian crossings throughout the corridor that cross free-flowing vehicular traffic. They are at the following locations.

- The eastern leg of Madison Road at Anderson Place
- The eastern leg of Madison Road at Ward Street
- Across Madison Road between Mathis Street and Glenshade Avenue
- The southern leg of Madison Road at Blaesi Street

An existing parking restrictions / pavement marking plan is attached in Appendix F of this report.

Madison Road @ Anderson Place /St. Paul Village Access

The intersection of Madison Road and Anderson Place is an unsignalized intersection. The eastbound and westbound approaches are free-flowing while the northbound and southbound approaches are stop controlled. On the east leg of this intersection, there is a pedestrian crosswalk across Madison Road with signs, high visibility pavement markings, and overhead flashing beacons, which operate continuously throughout the day.

Madison Road @ Stewart Avenue

The intersection of Madison Road and Stewart Avenue is a signalized intersection. The signal operates as a semi-actuated 4-phase signal, with a protected-permitted eastbound left. The centerlines of the northbound and southbound approaches are offset by approximately 55 feet and as such each approach operates as split phased, with the southbound leading. Right turns on red are prohibited on all approaches from 7 am to 4 pm on school days. The cycle length is 75 seconds.

Madison Road @ Whetsel Avenue

The intersection of Madison Road and Whetsel Avenue is a signalized intersection. The signal operates as a pretimed 2-phase signal with a cycle length of 75 seconds. In the public meetings conducted as part of this study, multiple people requested consideration for added left turn signals at this intersection.

Madison Road @ Mathis Street

The intersection of Madison Road and Mathis Street is a signalized intersection. The signal operates as a semi-actuated 2-phase signal with a cycle length of 75 seconds.

Madison Road @ Kenwood Road

The intersection of Madison Road and Kenwood Road is a signalized intersection. The signal operates as a semi-actuated 2-phase signal with a cycle length of 75 seconds.

Madison Road / East Fork Avenue @ Camargo Road / Plainville Road

The intersection of Madison Road / East Fork Avenue and Camargo Road / Plainville Road is an unsignalized intersection. The eastbound approach is free-flowing while the westbound, northbound, and southbound approaches are stop controlled. A separated channelized right turn lane is provided for the eastbound right turn movement. The southbound through movement is stop controlled at the main intersection and stop controlled at the channelized right (approximately 100' south of the main intersection).

PUBLIC MEETING #1 (JUNE-7-2023)

A public meeting was held on Wednesday, June 7, 2023. The purposes of this initial meeting were the following:

- Present study purpose
- Gather preliminary community feedback on the existing Madison Road corridor
- Present the traffic simulation model of the existing Madison Road corridor to gather feedback on accuracy.

As part of this first public meeting, an online survey was conducted regarding safety and accessibility along Madison Road. Some recurring themes from the survey are as follows:

- Speeding is a major issue
- Pedestrian facilities throughout the corridor are poor or inadequate
- People do not feel safe bicycling or using other mobility devices along the corridor
- Having bicyclists mixing with vehicular traffic is a significant safety concern

All public meeting #1 documents are presented in Appendix G of this report. The full results of meeting #1's survey are presented as part of the public meeting #2 in Appendix J of this report.

CAPACITY ANALYSES

Synchro 11 capacity analyses software was used to analyze the Madison Road corridor. The following three scenarios were analyzed:

- Existing Conditions
- Alternative 1 - 3 Lanes
- Alternative 2 - 3 Lanes – Ebersole to Camargo only (remain section remaining as existing)

Summaries for all analyses are provided in Appendix H of this report.

Also, it should be noted that the City of Cincinnati assembled historical traffic data from the late 1960's to the 2010's for two sections of Madison Road (from Ravenna Street to Ward Street and from Ward Street to Kenwood Road). In both cases, traffic volumes have either remained steady or have slightly declined.

Existing Conditions

The existing conditions of the Madison Road corridor, including existing signal timings, were used in these analyses. Capacity analyses reports for the six study intersections are provided in Appendix H of this report.

There are several locations along the Madison Road corridor where on-street parking is allowed during some times of the day and is prohibited during other times of the day. See existing curb control drawing in Appendix F for details. It should be noted however, that due to very limited usage of on-street parking during peak hours, the existing conditions analysis was performed assuming that no on-street parking is occurring and that all available lanes are open to vehicular travel.

According to the analyses, the following study intersections along Madison Road have acceptable levels of service:

- Anderson Place / St. Paul Village Access
- Whetsel Avenue
- Mathis Street
- Kenwood Road

According to the analyses, the following study intersections along Madison Road have failing levels of service:

- Stewart Avenue
- Camargo Road / Plainville Road

Alternative 1

The Alternative 1 conditions analyze the Madison Road corridor as a three-lane roadway for its entirety. These analyses also utilize optimized signal timings at all study intersections as well as added left turn signals where needed. Capacity analyses reports for the six study intersections are provided in Appendix H of this report.

According to the analyses, the following study intersections along Madison Road are expected to have acceptable overall levels of service:

- Whetsel Avenue
- Mathis Street
- Kenwood Road

It should be noted however, that while the overall level of service may have been found to be acceptable there may be individual movements with unacceptable delays.

According to the analyses, the following study intersections along Madison Road expected to have failing overall levels of service:

- Anderson Place / St. Paul Village Access
- Stewart Avenue
- Camargo Road / Plainville Road

Alternative 2

The Alternative 2 conditions analyze the Madison Road corridor as a three-lane roadway from Ebersole Avenue to Camargo Road / Plainville Road. This analyses also utilizes optimized signal timings at all study intersections as well as added left turn signals where needed. Capacity analyses reports for the six study intersections are provided in Appendix H of this report.

According to the analyses, the following study intersections along Madison Road expected to have acceptable levels of service:

- Anderson Place / St. Paul Village Access
- Stewart Avenue
- Whetsel Avenue
- Mathis Street
- Kenwood Road

It should be noted however, that while the overall level of service may have been found to be acceptable there may be individual movements with unacceptable delays.

According to the analyses, the following study intersections along Madison Road expected to have failing levels of service:

- Camargo Road / Plainville Road

QUEUING ANALYSES

Queuing analyses was performed using Synchro's SimTraffic software to analyses the 95th percentile queue lengths. Five (5) simulation runs were performed in the software to estimate the 95th percentile queues for each scenario. The existing conditions were modeled to reflect the field observed existing conditions.

In both Alternative 1 and Alternative 2, the expected queue lengths were noted to be significantly longer than those found in the existing conditions. Full queuing reports are provided in Appendix I of this report. These 95th percentile queue lengths are illustrated in the level of service figures as well.

CONCEPTUAL ALTERNATIVE CROSS SECTIONS

The existing roadway and sidewalks along Madison Road utilize nearly the entirety of the existing right of way. In order to implement improved bicycle and pedestrian accommodations along the corridor, the only way to do so along much of the corridor is to reduce the number of through travel lanes to one in each direction, along with a center turn lane. The alternative cross sections consider various configurations for the corridor if only a single through lane in each direction is provided.

The conceptual alternatives were prepared for community input as part of public meeting #2 and are shown in Appendix J .

PUBLIC MEETING #2 (AUGUST-12-2023)

A public meeting was held on Saturday, August 12, 2023. The purposes of this meeting were the following:

- Present the results of the community feedback collected as part of Public Meeting #1.
- Present the results of the capacity and queueing analyses with the modified lane configurations.
- Present alternative cross sections of complete street concepts

In the meeting, participants were given an opportunity to place stickers on boards displaying the various improvement concepts to indicate their favorite and second favorite concept. Also, an online survey was performed to gather community preferences regarding these plans. All meeting #2 documents are provided in Appendix J of this report. The results of this meetings survey can be found in the meeting #3 documents in Appendix K of this report.

It should be noted that the online survey was open to anyone, not just those that live or work in the Madisonville community. While this report contains the results of all votes received, this report also presents survey results among only those that live or work in the Madisonville community. The identification of the preferred alternatives was based primarily on the survey results of peoples' favorite improvement concept among those who live or work in Madisonville.

There were 120 total respondents to the survey, 68 of which reported to live or work in Madisonville.

Among the 68 respondents that live or work in Madisonville:

- 63% prefer to add bicycle infrastructure to the Madison Road corridor
- 37% prefer not to add bicycle infrastructure to the Madison Road corridor
  - o 22% prefer to retain the existing roadway configuration as it currently exists
  - o 13% prefer to prioritize on-street parking
  - o 2% prefer to maximize sidewalk space

Among those who live or work in Madisonville who prefer to add bicycle infrastructure to the Madison Road corridor:

- 79% prefer a bicycle facility that is separated from the roadway
- 21% prefer an on-street bicycle facility

The alternative corridor concepts that received the highest percentage of first choice votes among those who live or work in Madisonville are as follows:

1. Purple concept (26.5% of #1 votes) – Multi-use path on one side of the roadway and sidewalk on the other side of the roadway
2. Blue concept (22.1% of #1 votes) – Raised one-way bicycle path separated from sidewalk on each side of the roadway

Respondents were also given the opportunity to select their favorite improvement concept along the following four sections of Madison Road.

- Anderson Place to Ravenna Street
- Ravenna Street to Ward Street
- Ward Street to Kenwood Road
- Settle Street to Plainville Road

Among those who live or work in Madisonville, the Blue concept (Raised one-way bicycle path separated from sidewalk on each side of the roadway) received the highest number of votes in each section.

PUBLIC MEETING #3 (OCTOBER-26-2023)

A public meeting was held on Thursday, October 26, 2023. The purpose of this final meeting was to present the preferred cross sections based on the public input that was received.

As indicated previously, two of the improvement concepts received a similar portion of first choice votes among those who live or work in Madisonville. As such, it was decided to retain both options for consideration as part of funding applications for this corridor. The City of Cincinnati indicated that both improvement concepts will be evaluated further as part of preliminary design efforts and that members of the Madisonville community will have additional opportunity as part of the design process to provide feedback on the final design concept. All meeting #3 documents are presented in Appendix K of this report.

As part of this third public meeting, community members had discussion points regarding the corridor. Recurring topics are as follows:

- Speeding is a major issue
- Pedestrian facilities throughout the corridor are poor or inadequate
- There is a desire amongst bikers to have bicycling facilities connecting Madisonville to the Murray Path
- The crosswalk across Madison Road at Anderson Place is a major safety concern, as elderly people and school children often cross during peak times
- People do not feel safe bicycling or using other mobility devices along the corridor
- Having bicyclists mixing with vehicular traffic is a significant safety concern
- Parking desired to remain in the business district

The two improvement concepts being carried forward into the funding application process for this project are as follows:

- Purple concept – Multi-use path on one side of the roadway and sidewalk on the other side of the roadway
- Blue concept – Raised one-way bicycle path separated from sidewalk on each side of the roadway

CONFIGURATION OF INTERSECTION OF MADISON ROAD AND CAMARGO ROAD / PLAINVILLE ROAD

According the analyses earlier in this report, the intersection of Madison Road and Camargo Road / Plainville Road is modeled to operate with failing levels of service in existing conditions. The following three options have been analyzed to address this issue, both of which are expected to operate with acceptable levels of service.

1. Traffic Signal
2. Roundabout
3. All Way Stop Control

Traffic Signal

The installation of a traffic signal operates with acceptable levels of service with the following lane configuration. The eastbound approach has one (1) left-thru lane and one (1) right turn lane. The westbound approach has one (1) lane to service all vehicular turning movements. The northbound approach has one (1) left turn lane and one (1) thru-right lane. The southbound approach has one (1) lane to service all vehicular turning movements. The signal is to operate as a 3-phase signal, with a protected northbound left phase operating in concurrence with an eastbound right overlap. The signal is modeled to have coordinated operation with the corridor, and a cycle length of 75 seconds. HCS analyses reports are attached in Appendix L of this report.

Further investigation will be necessary to discover if a traffic signal is warranted at this location.

Roundabout

A single lane roundabout is expected to operate with acceptable levels of service at this intersection. HCS analyses reports are attached in Appendix K of this report. There are potential difficulties in configuration due to grading. A conceptual layout for a roundabout is included in Appendix L of this report.

All Way Stop Control

All way stop control at the four-leg intersection of Madison Road / East Fork Avenue and Camargo Road / Plainville Road is expected to operate with similar levels of service as existing conditions. However, there is a concern that the eastbound stop condition could cause queuing to extend past the free-flowing right turn onto Plainville Road.

Appendix A

Study Area Map


Red Bank Expy
Stewart Ave
Chandler St
Anderson Pl
Ravenna St
Ward St
Owasco St
Alpha St
Chapman St
Weltner Ave
Vistaridge Ln
Desmond St
Whetsel Ave
Mathis St
Glenshade Ave
Kenwood Rd
Sierra St
Madison Rd
E Ledge St
Peabody Ave
Hetzell St
Orlando Pl
Carothers St
Tompkins Ave
Erie Ave
Thoburne St
Tee St
Clephane Ave
Navarre Pl
Simpson Ave
Winona Terrace
Castle Pl
Stafford St
Settle St
Plainville Rd
1
2
3 - 4
5
6
7
8
9
10 - 11
12
13
14
15
16
1 - STUDY INTERSECTION
5 - ADDITIONAL COUNT INTERSECTION
- RADAR DATA COLLECTION LOCATION

Appendix B

Traffic Counts

Turning Movement Counts Summary Table

Location: 1 - Madison Rd @ Anderson Pl

Date of Counts: 04/04/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB St. Paul Village				SB Anderson Pl			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	19	71	0	0	0	226	4	0	0	0	0	1	0	0	5	0
7:15 to 7:30 am	30	107	1	0	0	301	4	0	0	0	1	0	2	0	28	0
7:30 to 7:45 am	33	104	0	0	0	392	7	0	1	0	1	3	0	0	35	0
7:45 to 8:00 am	17	142	0	0	0	338	6	0	0	0	0	1	1	0	48	0
8:00 to 8:15 am	9	126	0	0	1	356	0	1	0	0	0	0	0	0	17	0
8:15 to 8:30 am	5	118	3	0	0	328	1	0	1	0	0	4	1	0	4	0
8:30 to 8:45 am	3	134	0	1	2	277	1	0	1	0	1	0	0	0	6	1
8:45 to 9:00 am	7	144	3	0	0	217	0	1	0	0	1	1	1	0	11	0
AM Peak Hr Vol.	64	490	3	0	1	1414	14	1	2	0	1	8	2	0	104	0
Peak Hr Factor	0.48	0.86	0.25		0.25	0.90	0.50		0.50		0.25		0.50		0.54	

PM	EB Madison Road				WB Madison Road				NB St. Paul Village				SB Anderson Pl			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	10	288	2	0	1	204	1	0	0	0	0	2	1	0	10	0
4:30 to 4:45 pm	14	310	0	0	1	145	0	0	0	0	1	1	0	0	8	2
4:45 to 5:00 pm	13	298	1	0	0	204	1	0	1	0	2	1	0	0	7	2
5:00 to 5:15 pm	14	309	1	0	0	201	2	0	0	0	3	2	1	0	6	0
5:15 to 5:30 pm	10	291	0	0	0	213	1	3	0	0	1	6	0	0	12	1
5:30 to 5:45 pm	13	257	1	0	2	177	1	1	0	0	0	1	0	0	12	1
5:45 to 6:00 pm	8	275	0	0	0	187	1	0	0	0	0	1	0	0	20	0
6:00 to 6:15 pm	14	256	1	1	1	170	0	0	1	0	0	5	0	0	9	2
PM Peak Hr Vol.	50	1155	3	0	2	795	5	4	1	0	6	10	1	0	37	4
Peak Hr Factor	0.89	0.93	0.75		0.25	0.93	0.63		0.25		0.50		0.25		0.77	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB St. Paul Village				SB Anderson Pl			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	1	1	0		0	7	0		0	0	0		0	0	0	
7:15 to 7:30 am	0	7	0		0	6	0		0	0	0		0	0	2	
7:30 to 7:45 am	0	7	0		0	8	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	10	0		0	8	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	3	0		0	9	0		0	0	0		0	0	0	
8:15 to 8:30 am	1	3	0		0	4	0		0	0	0		0	0	0	
8:30 to 8:45 am	0	7	0		0	10	0		0	0	0		0	0	1	
8:45 to 9:00 am	1	5	1		0	8	0		0	0	1		0	0	0	
AM Peak HV	1	23	0	0	0	29	0	0	0	0	0	0	0	0	0	0
% Peak HV	2%	5%				2%										

HV - PM	EB Madison Road				WB Madison Road				NB St. Paul Village				SB Anderson Pl			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	7	0		0	7	0		0	0	0		0	0	0	
4:30 to 4:45 pm	0	3	0		0	2	0		0	0	0		0	0	0	
4:45 to 5:00 pm	0	1	0		0	3	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	2	0		0	4	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	4	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	2	0		0	1	0		0	0	0		0	0	0	
5:45 to 6:00 pm	0	0	0		0	7	0		0	0	0		0	0	0	
6:00 to 6:15 pm	0	3	0		0	4	0		0	0	0		0	0	0	
AM Peak HV	0	5	0	0	0	12	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%				2%										

Turning Movement Counts Summary Table

Location: 2 - Madison Rd @ Stewart Ave

Date of Counts: 04/04/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Stewart Ave.				SB Stewart Ave.			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	4	56	6	1	0	209	3	1	22	5	0	2	1	5	4	0
7:15 to 7:30 am	2	91	15	0	8	244	6	1	32	3	2	0	9	5	12	2
7:30 to 7:45 am	5	81	15	8	3	310	4	0	56	4	0	4	5	6	19	2
7:45 to 8:00 am	5	108	20	3	0	266	5	1	50	4	1	2	14	16	23	1
8:00 to 8:15 am	5	105	18	0	4	286	4	2	45	5	1	0	12	12	19	0
8:15 to 8:30 am	8	96	10	0	4	241	4	0	50	9	0	1	4	12	18	1
8:30 to 8:45 am	5	116	11	0	5	227	5	0	34	1	2	1	3	7	6	0
8:45 to 9:00 am	5	119	16	0	1	186	6	1	16	9	2	0	8	9	13	0
AM Peak Hr Vol.	23	390	63	11	11	1103	17	3	201	22	2	7	35	46	79	4
Peak Hr Factor	0.72	0.90	0.79	0.34	0.69	0.89	0.85		0.90	0.61	0.50		0.63	0.72	0.86	

PM	EB Madison Road				WB Madison Road				NB Stewart Ave.				SB Stewart Ave.			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	18	231	19	0	1	153	12	0	21	6	5	1	10	15	17	1
4:30 to 4:45 pm	23	264	23	0	0	106	11	1	27	8	6	3	9	3	4	1
4:45 to 5:00 pm	27	238	26	0	2	163	15	0	20	15	7	0	10	9	14	1
5:00 to 5:15 pm	24	255	17	0	0	135	6	0	41	17	10	2	8	4	15	1
5:15 to 5:30 pm	32	232	22	1	0	165	11	1	28	8	6	4	10	14	21	0
5:30 to 5:45 pm	18	210	22	0	2	145	12	0	26	7	2	0	14	7	12	1
5:45 to 6:00 pm	21	227	22	1	0	140	18	2	20	5	3	1	15	6	18	1
6:00 to 6:15 pm	21	206	16	0	0	137	12	1	19	6	2	5	8	10	14	2
PM Peak Hr Vol.	101	935	87	2	4	608	44	1	115	47	25	6	42	34	62	3
Peak Hr Factor	0.79	0.92	0.84		0.50	0.92	0.73		0.70	0.69	0.63		0.75	0.61	0.74	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Stewart Ave.				SB Stewart Ave.			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	1	0		0	6	0		0	0	0		1	0	1	
7:15 to 7:30 am	1	4	0		0	3	0		0	0	0		0	0	1	
7:30 to 7:45 am	1	5	1		0	4	0		0	0	0		0	0	0	
7:45 to 8:00 am	2	8	0		0	6	0		1	0	0		0	0	1	
8:00 to 8:15 am	0	4	0		0	9	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	3	0		0	5	0		1	0	0		0	0	0	
8:30 to 8:45 am	0	7	0		0	11	2		1	0	1		0	0	0	
8:45 to 9:00 am	0	5	1		0	8	0		0	0	0		0	0	0	
AM Peak HV	3	20	1	0	0	24	0	0	2	0	0	0	0	0	1	0
% Peak HV	13%	5%	2%			2%			1%						1%	

HV - PM	EB Madison Road				WB Madison Road				NB Stewart Ave.				SB Stewart Ave.			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	1	5	1		0	6	1		0	0	0		0	0	1	
4:30 to 4:45 pm	0	4	0		0	1	0		1	0	1		0	0	0	
4:45 to 5:00 pm	0	1	0		0	0	0		1	0	0		0	0	0	
5:00 to 5:15 pm	0	2	0		0	4	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	3	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	2	0		0	1	0		0	0	0		0	0	0	
5:45 to 6:00 pm	0	0	0		0	2	0		0	0	0		0	0	0	
6:00 to 6:15 pm	0	2	0		0	2	0		0	0	0		0	0	0	
AM Peak HV	0	5	0	0	0	8	0	0	1	0	0	0	0	0	0	0
% Peak HV		1%				1%			1%							

Turning Movement Counts Summary Table

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Location: 3-4 - Madison Rd @ Ebersole Ave
Date of Counts: 04/04/2023
Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Ebersole Ave							
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	87	2		0	317	1		3		1					
7:45 to 8:00 am	0	129	1		3	270	1		4		1					
8:00 to 8:15 am	1	116	1		0	278	2		2		2					
8:15 to 8:30 am	2	95	3		1	224	1		1		0					
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	3	427	7	0	4	1089	5	0	10	0	4	0	0	0	0	0
Peak Hr Factor	0.38	0.83	0.58		0.33	0.86	0.63		0.63		0.50					

PM	EB Madison Road				WB Madison Road				NB Ebersole Ave							
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	4	251	2		1	188	3		1		3					
5:00 to 5:15 pm	1	272	2		0	157	2		0		2					
5:15 to 5:30 pm	6	245	2		2	173	0		1		2					
5:30 to 5:45 pm	4	222	3		0	161	2		4		1					
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	15	990	9	0	3	679	7	0	6	0	8	0	0	0	0	0
Peak Hr Factor	0.63	0.91	0.75		0.38	0.90	0.58		0.38		0.67					

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Ebersole Ave							
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am		5	0		0	6			0		0					
7:45 to 8:00 am		9	0		0	7			0		0					
8:00 to 8:15 am		3	0		0	8			0		0					
8:15 to 8:30 am		3	0		0	4			0		0					
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	20	0	0	0	25	0	0	0	0	0	0	0	0	0	0
% Peak HV		5%				2%										

HV - PM	EB Madison Road				WB Madison Road				NB Ebersole Ave				0			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm		1	0		0	1			0		0					
5:00 to 5:15 pm		2	0		0	4			0		0					
5:15 to 5:30 pm		0	0		0	2			0		0					
5:30 to 5:45 pm		2	0		0	1			0		0					
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0
% Peak HV		1%				1%										

Turning Movement Counts Summary Table

Location: 5 - Madison Rd @ Ravenna St

Date of Counts: 04/04/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Ravenna St				SB Ravenna St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	2	85	0		0	308	0		7	0	1		0	0	3	
7:45 to 8:00 am	6	120	1		0	255	1		6	0	2		0	0	1	
8:00 to 8:15 am	2	110	4		2	280	0		7	0	0		0	1	2	
8:15 to 8:30 am	1	91	1		1	232	0		5	0	2		2	1	4	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	11	406	6	0	3	1075	1	0	25	0	5	0	2	2	10	0
Peak Hr Factor	0.46	0.85	0.38		0.38	0.87	0.25		0.89		0.63		0.25	0.50	0.63	

PM	EB Madison Road				WB Madison Road				NB Ravenna St				SB Ravenna St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	6	243	5		2	176	2		8	0	5		1	2	4	
5:00 to 5:15 pm	3	264	3		2	151	1		5	1	3		0	0	5	
5:15 to 5:30 pm	6	230	7		0	154	0		6	0	2		0	0	4	
5:30 to 5:45 pm	5	212	3		1	156	2		5	0	1		0	1	3	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	20	949	18	0	5	637	5	0	24	1	11	0	1	3	16	0
Peak Hr Factor	0.83	0.90	0.64		0.63	0.90	0.63		0.75	0.25	0.55		0.25	0.38	0.80	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Ravenna St				SB Ravenna St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	5	0		0	7	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	7	0		0	6	1		0	0	0		0	0	0	
8:00 to 8:15 am	0	3	0		0	8	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	3	0		0	4	0		0	0	0		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	18	0	0	0	25	1	0	0	0	0	0	0	0	0	0
% Peak HV		4%				2%	100%									

HV - PM	EB Madison Road				WB Madison Road				NB Ravenna St				SB Ravenna St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	1	0		0	1	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	2	0		0	3	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	4	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	2	0		0	0	0		0	0	0		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0
% Peak HV		1%				1%										

Turning Movement Counts Summary Table

Location: 6 - Madison Rd @ Whetsel Ave

Date of Counts: 03/15/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	9	47	11	0	11	138	4	0	36	13	14	0	3	11	15	0
7:15 to 7:30 am	5	52	16	2	7	179	3	1	59	32	10	0	5	14	24	0
7:30 to 7:45 am	6	80	18	0	8	184	6	1	73	36	14	2	9	29	23	0
7:45 to 8:00 am	14	107	8	2	22	178	4	0	66	44	18	2	9	35	23	0
8:00 to 8:15 am	13	82	17	0	7	172	9	0	41	32	19	2	5	46	26	0
8:15 to 8:30 am	11	93	19	4	19	170	10	1	46	37	23	2	8	25	29	1
8:30 to 8:45 am	10	69	19	3	19	181	5	1	55	27	8	1	2	25	33	0
8:45 to 9:00 am	10	89	27	2	22	131	2	3	41	16	12	2	10	31	26	2
AM Peak Hr Vol.	44	362	62	6	56	704	29	2	226	149	74	8	31	135	101	1
Peak Hr Factor	0.79	0.85	0.82	0.38	0.64	0.96	0.73		0.77	0.85	0.80		0.86	0.73	0.87	

PM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	23	132	20	2	13	96	5	4	23	31	36	3	6	40	16	0
4:30 to 4:45 pm	19	106	20	0	20	109	5	4	26	33	30	9	9	37	24	10
4:45 to 5:00 pm	18	135	22	2	10	108	2	5	29	38	24	5	7	43	17	4
5:00 to 5:15 pm	17	158	19	3	20	125	9	3	36	48	34	6	3	37	21	1
5:15 to 5:30 pm	13	147	25	3	16	111	2	3	45	42	40	3	5	47	16	1
5:30 to 5:45 pm	21	147	17	1	14	120	5	0	40	59	28	1	9	37	18	3
5:45 to 6:00 pm	14	132	25	1	20	106	5	3	37	33	22	1	7	41	14	4
6:00 to 6:15 pm	25	130	26	3	14	102	3	2	45	48	16	1	4	35	12	5
PM Peak Hr Vol.	69	587	83	9	60	464	18	11	150	187	126	15	24	164	72	9
Peak Hr Factor	0.82	0.93	0.83		0.75	0.93	0.50		0.83	0.79	0.79		0.67	0.87	0.86	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	1	0	0		2	6	0		0	2	0		0	0	1	
7:15 to 7:30 am	2	3	2		0	3	0		0	2	0		0	0	1	
7:30 to 7:45 am	2	3	0		0	1	0		0	1	0		0	1	2	
7:45 to 8:00 am	2	3	0		0	2	0		3	1	1		0	0	2	
8:00 to 8:15 am	1	1	0		0	4	0		0	0	0		0	1	0	
8:15 to 8:30 am	1	1	1		1	0	0		0	0	0		0	0	1	
8:30 to 8:45 am	4	5	1		0	2	0		2	1	1		0	0	4	
8:45 to 9:00 am	0	5	1		2	6	0		1	1	0		0	1	1	
AM Peak HV	6	8	1	0	1	7	0	0	3	2	1	0	0	2	5	0
% Peak HV	14%	2%	2%		2%	1%			1%	1%	1%			1%	5%	

HV - PM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	5	0		0	4	0		1	1	0		0	2	1	
4:30 to 4:45 pm	3	3	0		1	0	0		2	0	0		0	0	0	
4:45 to 5:00 pm	0	2	1		0	1	0		1	0	0		0	1	1	
5:00 to 5:15 pm	1	0	0		0	3	0		1	2	0		0	1	1	
5:15 to 5:30 pm	1	1	1		0	0	0		1	0	1		0	0	1	
5:30 to 5:45 pm	0	4	0		0	2	0		0	0	0		0	0	0	
5:45 to 6:00 pm	1	0	0		0	2	0		0	0	0		0	0	0	
6:00 to 6:15 pm	1	1	0		0	3	0		0	0	0		0	0	1	
AM Peak HV	2	7	2	0	0	6	0	0	3	2	1	0	0	2	3	0
% Peak HV	3%	1%	2%			1%			2%	1%	1%			1%	4%	

Turning Movement Counts Summary Table

Location: 6 - Madison Rd @ Whetsel Ave

Date of Counts: 04/04/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	3	45	7	1	9	146	3	2	47	17	6	2	4	14	16	0
7:15 to 7:30 am	5	81	8	3	4	179	3	2	50	24	12	2	4	22	23	0
7:30 to 7:45 am	6	64	14	0	12	193	5	1	78	32	14	4	7	31	29	1
7:45 to 8:00 am	6	97	20	3	19	172	4	3	55	39	15	1	9	37	25	3
8:00 to 8:15 am	11	85	14	4	10	193	7	3	68	36	15	2	11	27	21	5
8:15 to 8:30 am	8	72	13	6	16	158	6	1	55	20	7	0	7	24	20	7
8:30 to 8:45 am	7	84	21	3	20	164	2	1	45	19	13	3	7	16	26	1
8:45 to 9:00 am	11	94	16	0	24	131	6	2	34	20	11	3	4	13	17	3
AM Peak Hr Vol.	31	318	61	13	57	716	22	8	256	127	51	7	34	119	95	16
Peak Hr Factor	0.70	0.82	0.76	0.54	0.75	0.93	0.79		0.82	0.81	0.85		0.77	0.80	0.82	

PM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	19	182	36	2	16	93	9	4	39	33	12	3	7	40	22	4
4:30 to 4:45 pm	27	199	33	5	9	90	5	1	26	25	15	3	10	31	9	4
4:45 to 5:00 pm	27	188	31	2	19	136	7	1	21	22	16	0	7	42	18	1
5:00 to 5:15 pm	21	200	37	5	9	112	2	3	28	38	20	7	3	37	12	2
5:15 to 5:30 pm	20	175	31	4	20	105	7	0	26	36	27	3	6	49	21	0
5:30 to 5:45 pm	20	155	31	4	12	110	8	3	29	32	16	2	8	41	19	2
5:45 to 6:00 pm	26	164	39	2	17	103	5	13	36	28	17	8	5	34	10	6
6:00 to 6:15 pm	20	148	36	2	14	95	1	4	32	25	14	4	3	34	15	7
PM Peak Hr Vol.	88	718	130	17	60	463	24	7	104	128	79	12	24	169	70	5
Peak Hr Factor	0.81	0.90	0.88		0.75	0.85	0.75		0.90	0.84	0.73		0.75	0.86	0.83	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	1	1		1	4	0		0	3	0		0	0	2	
7:15 to 7:30 am	1	4	0		0	1	0		0	0	0		0	0	2	
7:30 to 7:45 am	1	2	2		1	1	0		2	0	0		0	1	2	
7:45 to 8:00 am	1	6	1		1	2	0		2	0	0		0	1	1	
8:00 to 8:15 am	1	2	0		0	8	0		1	0	0		0	0	1	
8:15 to 8:30 am	1	2	0		0	2	1		0	0	0		0	1	2	
8:30 to 8:45 am	4	1	1		0	7	0		2	0	0		0	0	4	
8:45 to 9:00 am	1	4	0		2	4	1		2	1	0		0	1	1	
AM Peak HV	4	12	3	0	2	13	1	0	5	0	0	0	0	3	6	0
% Peak HV	13%	4%	5%		4%	2%	5%		2%					3%	6%	

HV - PM	EB Madison Road				WB Madison Road				NB Whetsel Ave				SB Whetsel Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	6	0		0	3	0		1	0	0		0	1	1	
4:30 to 4:45 pm	1	1	1		0	1	0		0	0	0		0	1	0	
4:45 to 5:00 pm	0	0	0		1	0	0		0	0	0		0	0	2	
5:00 to 5:15 pm	1	1	0		0	2	0		2	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	2	0		0	0	0		0	0	0	
5:30 to 5:45 pm	1	1	0		0	1	1		0	0	0		0	0	0	
5:45 to 6:00 pm	0	0	0		0	2	0		0	0	0		0	0	0	
6:00 to 6:15 pm	0	2	0		0	0	0		0	0	0		0	0	2	
AM Peak HV	2	2	0	0	1	5	1	0	2	0	0	0	0	0	2	0
% Peak HV	2%	0%			2%	1%	4%		2%						3%	

Turning Movement Counts Summary Table

Location: 7 - Madison Rd @ Ward St

Date of Counts: 03/21/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Ward St				SB Ward St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	98	5	0	0	203	0	0	0	0	1	2	1	0	0	0
7:45 to 8:00 am	1	105	2	1	1	186	1	0	0	0	0	0	0	0	2	0
8:00 to 8:15 am	4	103	6	0	2	198	1	2	0	0	0	0	0	0	1	0
8:15 to 8:30 am	3	104	3	0	2	175	1	0	0	0	1	3	0	1	2	0
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	8	410	16	1	5	762	3	2	0	0	2	5	1	1	5	0
Peak Hr Factor	0.50	0.98	0.67	0.25	0.63	0.94	0.75				0.50		0.25	0.25	0.63	

PM	EB Madison Road				WB Madison Road				NB Ward St				SB Ward St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	1	200	2	0	0	138	2	0	0	0	0	0	0	0	1	0
5:00 to 5:15 pm	3	228	4	3	4	141	2	3	0	0	0	0	2	0	2	2
5:15 to 5:30 pm	4	203	4	0	4	147	1	1	0	0	0	0	0	0	3	0
5:30 to 5:45 pm	3	194	3	0	3	150	2	0	0	0	0	2	1	0	3	1
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	11	825	13	3	11	576	7	4	0	0	0	2	3	0	9	3
Peak Hr Factor	0.69	0.90	0.81		0.69	0.96	0.88						0.38		0.75	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Ward St				SB Ward St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	4	1		0	3	0		0	0	0		1	0	0	
7:45 to 8:00 am	0	4	0		0	4	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	1	0		0	4	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	3	0		0	3	1		0	0	1		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	12	1	0	0	14	1	0	0	0	1	0	1	0	0	0
% Peak HV		3%	6%			2%	33%				50%		100%			

HV - PM	EB Madison Road				WB Madison Road				NB Ward St				SB Ward St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	1	0		0	5	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	0	0		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	2	0		0	1	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	1	0		0	2	0		0	0	0		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	4	0	0	0	9	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%				2%										

Turning Movement Counts Summary Table

Location: 8 - Madison Rd @ Mathis St

Date of Counts: 03/21/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Mathis St				SB Mathis St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	1	47	0	0	0	144	0	0	6	0	0	0	0	0	0	0
7:15 to 7:30 am	2	71	0	0	0	188	0	0	0	1	1	0	0	0	0	0
7:30 to 7:45 am	1	97	0	0	0	199	1	0	2	2	3	0	0	0	1	0
7:45 to 8:00 am	1	101	0	0	0	180	0	0	6	0	2	0	0	0	2	1
8:00 to 8:15 am	3	105	0	0	0	198	1	0	0	0	0	0	0	0	4	0
8:15 to 8:30 am	4	104	0	0	0	166	0	1	4	0	0	1	0	0	3	0
8:30 to 8:45 am	6	78	0	1	0	186	0	0	3	0	0	1	0	0	2	1
8:45 to 9:00 am	3	102	0	0	0	150	0	0	1	0	0	0	1	0	2	2
AM Peak Hr Vol.	9	407	0	0	0	743	2	1	12	2	5	1	0	0	10	1
Peak Hr Factor	0.56	0.97				0.93	0.50		0.50	0.25	0.42				0.63	

PM	EB Madison Road				WB Madison Road				NB Mathis St				SB Mathis St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	2	196	0	0	0	112	0	1	5	2	0	1	1	0	4	1
4:30 to 4:45 pm	0	193	0	1	0	113	0	0	3	0	2	1	1	0	5	0
4:45 to 5:00 pm	0	207	0	0	0	135	0	0	1	1	0	0	1	0	0	0
5:00 to 5:15 pm	1	224	0	0	0	138	1	0	5	0	2	0	0	0	2	0
5:15 to 5:30 pm	1	206	0	0	0	142	0	0	4	0	1	0	0	0	2	2
5:30 to 5:45 pm	1	193	0	0	0	142	0	0	7	0	0	1	0	0	2	3
5:45 to 6:00 pm	1	181	0	2	0	112	1	0	3	0	1	2	0	0	2	2
6:00 to 6:15 pm	2	142	0	0	0	123	0	1	1	0	0	0	0	0	1	1
PM Peak Hr Vol.	3	830	0	0	0	557	1	0	17	1	3	1	1	0	6	5
Peak Hr Factor	0.75	0.93				0.98	0.25		0.61	0.25	0.38		0.25		0.75	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Mathis St				SB Mathis St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	1	0		0	4	0		1	0	0		0	0	0	
7:15 to 7:30 am	0	3	0		0	3	0		0	0	0		0	0	0	
7:30 to 7:45 am	0	5	0		0	2	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	4	0		0	1	0		1	0	0		0	0	1	
8:00 to 8:15 am	0	2	0		0	4	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	6	0		0	5	0		1	0	0		0	0	0	
8:30 to 8:45 am	0	1	0		0	2	0		0	0	0		0	0	0	
8:45 to 9:00 am	0	5	0		0	5	0		0	0	0		0	0	0	
AM Peak HV	0	17	0	0	0	12	0	0	2	0	0	0	0	0	1	0
% Peak HV		4%				2%			17%						10%	

HV - PM	EB Madison Road				WB Madison Road				NB Mathis St				SB Mathis St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	8	0		0	4	0		0	0	0		0	0	0	
4:30 to 4:45 pm	0	2	0		0	2	0		2	0	0		0	0	0	
4:45 to 5:00 pm	0	1	0		0	5	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	1	0		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	2	0		0	2	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	3	0		0	2	0		0	0	0		0	0	0	
5:45 to 6:00 pm	0	0	0		0	1	0		0	0	0		0	0	0	
6:00 to 6:15 pm	0	1	0		0	1	0		0	0	0		0	0	0	
AM Peak HV	0	7	0	0	0	10	0	0	0	0	0	0	0	0	0	0
% Peak HV		1%				2%										

Turning Movement Counts Summary Table

Location: 9 - Madison Rd @ Glenshade Ave

Date of Counts: 03/15/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Glenshade Ave				SB Glenshade Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	3	63	1		2	142	0		1	0	0		4	0	7	
7:15 to 7:30 am	0	54	0		0	189	1		0	0	0		1	0	0	
7:30 to 7:45 am	0	92	0		1	191	0		1	0	1		0	0	4	
7:45 to 8:00 am	2	112	3		1	197	1		0	0	1		2	0	5	
8:00 to 8:15 am	3	98	0		0	181	3		1	0	2		4	0	3	
8:15 to 8:30 am	4	115	0		0	176	1		0	0	0		0	0	6	
8:30 to 8:45 am	1	72	0		0	190	1		0	0	1		0	1	5	
8:45 to 9:00 am	0	93	1		0	148	1		0	1	1		0	0	6	
AM Peak Hr Vol.	9	417	3	0	2	745	5	0	2	0	4	0	6	0	18	0
Peak Hr Factor	0.56	0.91	0.25		0.50	0.95	0.42		0.50		0.50		0.38		0.75	

PM	EB Madison Road				WB Madison Road				NB Glenshade Ave				SB Glenshade Ave			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	3	156	1		2	101	2		3	2	3		3	1	7	
4:30 to 4:45 pm	4	120	0		0	121	2		2	0	2		3	0	3	
4:45 to 5:00 pm	2	169	2		0	122	2		0	1	1		1	0	4	
5:00 to 5:15 pm	4	188	0		0	124	1		0	0	1		4	2	4	
5:15 to 5:30 pm	1	182	0		0	129	3		0	0	1		1	0	5	
5:30 to 5:45 pm	3	178	0		1	125	0		1	0	4		0	0	3	
5:45 to 6:00 pm	5	151	1		1	114	2		1	0	1		2	0	2	
6:00 to 6:15 pm	4	141	1		0	106	1		0	1	0		2	0	8	
PM Peak Hr Vol.	10	717	2	0	1	500	6	0	1	1	7	0	6	2	16	0
Peak Hr Factor	0.63	0.95	0.25		0.25	0.97	0.50		0.25	0.25	0.44		0.38	0.25	0.80	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Glenshade Ave				SB Glenshade Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	1	0	1		1	4	0		0	0	0		1	0	3	
7:15 to 7:30 am	0	2	0		0	4	0		0	0	0		0	0	0	
7:30 to 7:45 am	0	3	0		0	1	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	3	1		0	1	0		0	0	0		1	0	1	
8:00 to 8:15 am	0	2	0		0	4	0		0	0	0		0	0	1	
8:15 to 8:30 am	0	3	0		0	0	0		0	0	0		0	0	1	
8:30 to 8:45 am	0	3	0		0	2	0		0	0	0		0	0	1	
8:45 to 9:00 am	0	3	0		0	5	1		0	0	0		0	0	3	
AM Peak HV	0	11	1	0	0	6	0	0	0	0	0	0	1	0	3	0
% Peak HV		3%	33%			1%							17%		17%	

HV - PM	EB Madison Road				WB Madison Road				NB Glenshade Ave				SB Glenshade Ave			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	4	0		0	1	0		0	0	0		0	0	3	
4:30 to 4:45 pm	0	0	0		0	1	0		0	0	0		0	0	0	
4:45 to 5:00 pm	0	3	1		0	0	1		0	0	0		0	0	1	
5:00 to 5:15 pm	0	0	0		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	2	0		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	3	0		0	2	0		0	0	0		0	0	0	
5:45 to 6:00 pm	0	2	0		0	2	0		0	0	0		0	0	1	
6:00 to 6:15 pm	0	2	0		0	0	0		0	0	0		0	0	2	
AM Peak HV	0	8	1	0	0	3	1	0	0	0	0	0	0	0	1	0
% Peak HV		1%	50%			1%	17%								6%	

Turning Movement Counts Summary Table

Location: 10-11 - Madison Rd @ Kenwood Rd

Date of Counts: 03/15/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Strafford St				SB Kenwood Rd			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	0	59	1	0	0	136	16		0	0	0	0	2	1	9	0
7:15 to 7:30 am	4	48	2	0	0	188	12		0	0	0	0	9	0	4	0
7:30 to 7:45 am	4	84	3	0	1	189	7		0	0	0	0	13	1	3	0
7:45 to 8:00 am	7	106	1	0	1	186	25		0	3	0	0	26	0	9	0
8:00 to 8:15 am	0	102	0	0	0	176	18		1	0	0	0	26	0	6	0
8:15 to 8:30 am	4	105	1	0	0	177	25		2	1	0	2	26	0	5	0
8:30 to 8:45 am	5	61	4	0	0	186	20		0	0	2	1	18	0	8	0
8:45 to 9:00 am	7	86	4	0	0	137	21		0	0	0	1	10	1	7	0
AM Peak Hr Vol.	15	397	5	0	2	728	75	0	3	4	0	2	91	1	23	0
Peak Hr Factor	0.54	0.94	0.42		0.50	0.96	0.75		0.38	0.33			0.88	0.25	0.64	

PM	EB Madison Road				WB Madison Road				NB Strafford St				SB Kenwood Rd			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	6	153	2	1	0	96	11		1	0	0	2	31	0	8	1
4:30 to 4:45 pm	9	122	2	1	0	112	12		1	0	0	2	26	1	4	1
4:45 to 5:00 pm	9	158	1	0	0	115	19		0	0	0	2	27	2	8	0
5:00 to 5:15 pm	11	171	2	0	0	121	17		1	0	1	1	31	0	5	1
5:15 to 5:30 pm	9	185	3	0	0	123	16		1	0	0	1	43	1	5	0
5:30 to 5:45 pm	11	177	0	0	0	113	21		2	0	1	3	37	1	8	0
5:45 to 6:00 pm	12	138	3	0	1	103	17		3	1	0	0	30	1	9	2
6:00 to 6:15 pm	6	123	3	0	0	96	14		3	0	1	0	20	4	7	0
PM Peak Hr Vol.	40	691	6	0	0	472	73	0	4	0	2	7	138	4	26	1
Peak Hr Factor	0.91	0.93	0.50			0.96	0.87		0.50		0.50		0.80	0.50	0.81	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Strafford St				SB Kenwood Rd			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	1	0		0	1	2		0	0	0		0	0	2	
7:15 to 7:30 am	2	0	0		0	3	1		0	0	0		1	0	0	
7:30 to 7:45 am	1	0	0		0	1	0		0	0	0		0	0	0	
7:45 to 8:00 am	1	4	0		0	1	3		0	0	0		2	0	0	
8:00 to 8:15 am	0	2	0		0	4	0		0	0	0		1	0	0	
8:15 to 8:30 am	1	2	0		0	0	1		0	0	0		3	0	0	
8:30 to 8:45 am	2	1	0		0	1	0		0	0	0		1	0	1	
8:45 to 9:00 am	2	1	0		0	4	0		0	0	0		0	0	2	
AM Peak HV	3	8	0	0	0	6	4	0	0	0	0	0	6	0	0	0
% Peak HV	20%	2%				1%	5%						7%			

HV - PM	EB Madison Road				WB Madison Road				NB Strafford St				SB Kenwood Rd			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	1	3	0		0	0	1		0	0	0		0	0	0	
4:30 to 4:45 pm	0	1	0		0	1	1		0	0	0		1	0	0	
4:45 to 5:00 pm	1	2	0		0	1	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	1	1		0	1	1		0	0	0		1	0	0	
5:15 to 5:30 pm	1	0	0		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	1	0	0		0	1	0		0	0	0		1	0	1	
5:45 to 6:00 pm	1	2	0		0	2	0		0	0	0		0	0	0	
6:00 to 6:15 pm	1	1	0		0	0	2		0	0	0		0	0	0	
AM Peak HV	3	3	1	0	0	3	1	0	0	0	0	0	2	0	1	0
% Peak HV	8%	0%	17%			1%	1%						1%		4%	

Turning Movement Counts Summary Table

Location: 12 - Madison Rd @ Settle St

Date of Counts: 03/21/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Settle St				SB Roanoke St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	111	4		1	210	0		3	0	3		0	0	0	
7:45 to 8:00 am	0	113	5		1	176	0		5	0	2		0	0	0	
8:00 to 8:15 am	1	131	2		1	200	0		4	0	1		0	0	1	
8:15 to 8:30 am	0	96	1		0	175	0		2	0	4		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	1	451	12	0	3	761	0	0	14	0	10	0	0	0	1	0
Peak Hr Factor	0.25	0.86	0.60		0.75	0.91			0.70		0.63				0.25	

PM	EB Madison Road				WB Madison Road				NB Settle St				SB Roanoke St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	215	5		1	134	0		2	0	1		1	1	0	
5:00 to 5:15 pm	0	242	4		1	130	0		6	0	4		0	0	0	
5:15 to 5:30 pm	0	231	4		3	145	0		1	0	3		0	0	0	
5:30 to 5:45 pm	0	209	4		3	151	0		3	0	1		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	0	897	17	0	8	560	0	0	12	0	9	0	1	1	0	0
Peak Hr Factor		0.93	0.85		0.67	0.93			0.50		0.56		0.25	0.25		

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Settle St				SB Roanoke St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	3	0		0	4	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	5	0		0	1	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	1	0		1	5	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	4	0		0	3	0		1	0	0		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	13	0	0	1	13	0	0	1	0	0	0	0	0	0	0
% Peak HV		3%			33%	2%			7%							

HV - PM	EB Madison Road				WB Madison Road				NB Settle St				SB Roanoke St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	0	0		0	1	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	1	0		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	1	0		0	3	0		0	0	0		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%				1%										

Turning Movement Counts Summary Table

Location: 13 - Madison Rd @ Roanoke St

Date of Counts: 03/21/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Roanoke St				SB Roanoke St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	1	112	0		2	205	0		0	0	2		0	0	0	
7:45 to 8:00 am	1	112	0		0	175	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	130	0		1	198	0		0	0	1		0	0	0	
8:15 to 8:30 am	0	96	1		0	169	1		2	0	0		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	2	450	1	0	3	747	1	0	2	0	3	0	0	0	0	0
Peak Hr Factor	0.50	0.87	0.25		0.38	0.91	0.25		0.25		0.38					

PM	EB Madison Road				WB Madison Road				NB Roanoke St				SB Roanoke St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	2	214	1		0	132	0		1	0	2		0	0	0	
5:00 to 5:15 pm	0	240	0		3	125	0		0	0	1		0	0	0	
5:15 to 5:30 pm	2	231	0		0	142	0		0	0	1		1	0	0	
5:30 to 5:45 pm	0	204	3		1	149	0		0	0	3		0	0	2	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	4	889	4	0	4	548	0	0	1	0	7	0	1	0	2	0
Peak Hr Factor	0.50	0.93	0.33		0.33	0.92			0.25		0.58		0.25		0.25	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Roanoke St				SB Roanoke St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	3	0		0	4	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	5	0		0	1	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	1	0		1	5	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	4	0		0	3	0		1	0	0		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	13	0	0	1	13	0	0	1	0	0	0	0	0	0	0
% Peak HV		3%			33%	2%			50%							

HV - PM	EB Madison Road				WB Madison Road				NB Roanoke St				SB Roanoke St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	0	0		0	1	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	1	0		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	0		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	1	0		0	3	0		0	0	0		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%				1%										

Turning Movement Counts Summary Table

Location: 14 - Madison Rd @ Jameson St

Date of Counts: 03/15/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Jameson St				SB Jameson St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	0	52	0		1	150	0		0	0	0		0	0	0	
7:15 to 7:30 am	0	57	0		0	193	0		1	0	0		0	0	1	
7:30 to 7:45 am	0	97	2		0	187	0		0	0	1		0	0	1	
7:45 to 8:00 am	0	131	0		0	206	0		0	0	1		0	0	1	
8:00 to 8:15 am	0	128	0		0	189	0		0	0	0		0	0	1	
8:15 to 8:30 am	0	131	1		0	199	0		1	0	0		0	0	0	
8:30 to 8:45 am	1	72	0		0	200	0		1	0	0		1	0	0	
8:45 to 9:00 am	4	90	2		0	143	0		0	0	0		0	0	1	
AM Peak Hr Vol.	0	487	3	0	0	781	0	0	1	0	2	0	0	0	3	0
Peak Hr Factor		0.93	0.38			0.95			0.25		0.50				0.75	

PM	EB Madison Road				WB Madison Road				NB Jameson St				SB Jameson St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	3	181	1		0	107	0		1	0	0		0	0	1	
4:30 to 4:45 pm	0	143	2		0	118	0		0	0	0		0	0	1	
4:45 to 5:00 pm	0	185	0		1	126	0		1	0	3		0	0	0	
5:00 to 5:15 pm	0	192	1		0	120	0		0	0	0		0	0	2	
5:15 to 5:30 pm	0	219	1		2	135	0		0	0	0		0	0	1	
5:30 to 5:45 pm	3	212	0		4	129	0		0	0	0		0	0	2	
5:45 to 6:00 pm	0	167	0		1	103	0		0	0	0		0	0	1	
6:00 to 6:15 pm	0	145	1		0	107	0		0	0	0		0	0	0	
PM Peak Hr Vol.	3	808	2	0	7	510	0	0	1	0	3	0	0	0	5	0
Peak Hr Factor	0.25	0.92	0.50		0.44	0.94			0.25		0.25				0.63	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Jameson St				SB Jameson St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	0	0		0	3	0		0	0	0		0	0	0	
7:15 to 7:30 am	0	1	0		0	4	0		0	0	0		0	0	0	
7:30 to 7:45 am	0	5	0		0	2	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	9	0		0	2	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	7	0		0	2	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	4	0		0	1	0		0	0	0		0	0	0	
8:30 to 8:45 am	0	2	0		0	2	0		0	0	0		0	0	0	
8:45 to 9:00 am	0	1	0		0	4	0		0	0	0		0	0	0	
AM Peak HV	0	25	0	0	0	7	0	0	0	0	0	0	0	0	0	0
% Peak HV		5%				1%										

HV - PM	EB Madison Road				WB Madison Road				NB Jameson St				SB Jameson St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	2	0		0	4	0		0	0	0		0	0	0	
4:30 to 4:45 pm	0	3	0		0	3	0		0	0	0		0	0	0	
4:45 to 5:00 pm	0	3	0		0	2	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	2	0		0	4	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	1	0		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	3	0		0	1	0		0	0	0		0	0	0	
5:45 to 6:00 pm	0	2	0		0	1	0		0	0	0		0	0	0	
6:00 to 6:15 pm	0	0	0		0	2	0		0	0	0		0	0	0	
AM Peak HV	0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	0
% Peak HV		1%				1%										

Turning Movement Counts Summary Table

Location: 15 - Madison Rd @ Baesil St

Date of Counts: 03/21/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB Madison Road				NB Baesil St				SB Baesil St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	18	93	0	0	199	0	0	0	0	0	0	0	0	2	0
7:45 to 8:00 am	0	25	86	0	0	174	0	0	0	0	0	0	0	1	0	0
8:00 to 8:15 am	0	20	112	0	1	212	0	0	0	0	0	0	0	0	1	0
8:15 to 8:30 am	2	20	78	0	7	176	0	0	0	0	0	0	0	1	0	0
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak Hr Vol.	2	83	369	0	8	761	0	0	0	0	0	0	0	2	3	0
Peak Hr Factor	0.25	0.83	0.82		0.29	0.90								0.50	0.38	

PM	EB Madison Road				WB Madison Road				NB Baesil St				SB Baesil St			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	4	60	153	0	0	127	0	0	0	0	0	0	0	1	2	0
5:00 to 5:15 pm	4	72	163	0	0	126	0	0	0	0	0	1	0	0	5	0
5:15 to 5:30 pm	5	65	177	4	2	136	2	0	0	0	0	0	0	3	2	0
5:30 to 5:45 pm	3	48	164	0	2	146	1	0	0	0	0	0	1	1	5	1
5:45 to 6:00 pm																
6:00 to 6:15 pm																
PM Peak Hr Vol.	16	245	657	4	4	535	3	0	0	0	0	1	1	5	14	1
Peak Hr Factor	0.80	0.85	0.93		0.50	0.92	0.38						0.25	0.42	0.70	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Madison Road				WB Madison Road				NB Baesil St				SB Baesil St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am	0	1	2		0	3	0		0	0	0		0	0	0	
7:45 to 8:00 am	0	1	4		0	2	0		0	0	0		0	0	0	
8:00 to 8:15 am	0	0	2		0	5	0		0	0	0		0	0	0	
8:15 to 8:30 am	0	0	4		0	3	0		0	0	0		0	0	0	
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	2	12	0	0	13	0	0	0	0	0	0	0	0	0	0
% Peak HV		2%	3%			2%										

HV - PM	EB Madison Road				WB Madison Road				NB Baesil St				SB Baesil St			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm	0	1	0		0	1	0		0	0	0		0	0	0	
5:00 to 5:15 pm	0	0	1		0	1	0		0	0	0		0	0	0	
5:15 to 5:30 pm	0	0	1		0	0	0		0	0	0		0	0	0	
5:30 to 5:45 pm	0	0	1		0	3	0		0	0	0		0	0	0	
5:45 to 6:00 pm																
6:00 to 6:15 pm																
AM Peak HV	0	1	3	0	0	5	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%	0%			1%										

Turning Movement Counts Summary Table

Location: 16 - Madison Rd @ Camargo Rd

Date of Counts: 03/15/2023

The Kleingers Group
6219 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Madison Road				WB E Fork Rd				NB Camargo Rd				SB Camargo Rd			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	11	0	42	0	0	0	0	0	129	12	0	0	0	13	20	0
7:15 to 7:30 am	13	0	43	0	0	0	0	0	158	14	0	0	0	14	39	0
7:30 to 7:45 am	25	0	77	0	0	0	0	0	156	17	0	0	0	17	32	0
7:45 to 8:00 am	28	0	107	0	0	0	0	0	157	19	0	0	0	23	50	0
8:00 to 8:15 am	32	0	91	0	0	1	0	0	149	29	0	0	0	26	39	0
8:15 to 8:30 am	28	0	101	0	0	0	0	0	160	10	0	0	0	18	43	0
8:30 to 8:45 am	15	0	57	0	0	0	0	0	160	34	0	1	0	10	43	0
8:45 to 9:00 am	21	1	65	0	0	0	1	0	111	15	1	0	0	23	30	0
AM Peak Hr Vol.	113	0	376	0	0	1	0	0	622	75	0	0	0	84	164	0
Peak Hr Factor	0.88		0.88			0.25			0.97	0.65				0.81	0.82	

PM	EB Madison Road				WB E Fork Rd				NB Camargo Rd				SB Camargo Rd			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:15 to 4:30 pm	45	0	133	0	0	0	0	0	78	37	0	0	1	20	26	0
4:30 to 4:45 pm	41	0	102	0	0	0	0	0	91	31	0	0	1	21	24	0
4:45 to 5:00 pm	50	0	134	1	0	1	1	0	92	24	0	0	0	29	37	0
5:00 to 5:15 pm	45	0	144	1	1	0	0	0	86	31	0	0	0	24	28	0
5:15 to 5:30 pm	61	1	140	0	0	1	0	0	105	40	0	0	0	27	30	0
5:30 to 5:45 pm	66	0	148	0	0	1	0	0	105	33	0	0	0	28	25	0
5:45 to 6:00 pm	42	1	117	0	1	1	0	0	82	38	0	0	0	23	23	0
6:00 to 6:15 pm	39	0	100	0	0	1	0	0	85	27	1	0	0	17	25	0
PM Peak Hr Vol.	222	1	566	2	1	3	1	0	388	128	0	0	0	108	120	0
Peak Hr Factor	0.84	0.25	0.96		0.25	0.75	0.25		0.92	0.80				0.93	0.81	

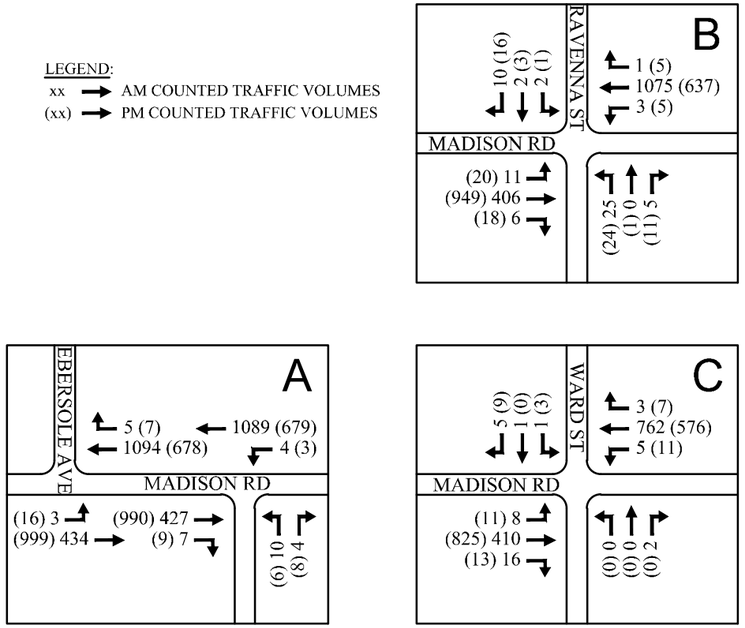
Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

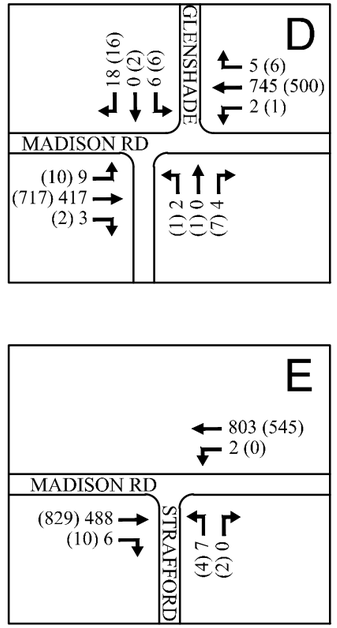
Heavy Vehicle Volumes

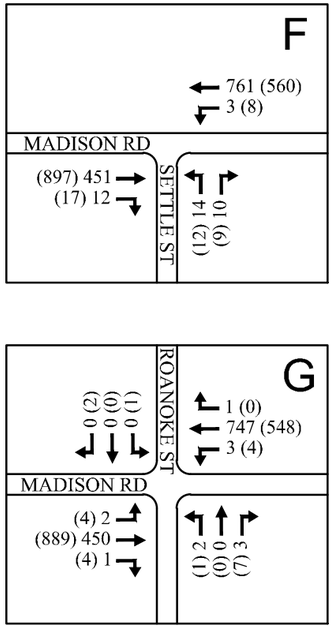
HV - AM	EB Madison Road				WB E Fork Rd				NB Camargo Rd				SB Camargo Rd			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	0	0		0	0	0		4	0	0		0	1	0	
7:15 to 7:30 am	0	0	2		0	0	0		3	1	0		0	0	1	
7:30 to 7:45 am	2	0	3		0	0	0		2	1	0		0	0	0	
7:45 to 8:00 am	1	0	7		0	0	0		3	0	0		0	0	0	
8:00 to 8:15 am	0	0	3		0	0	0		3	0	0		0	1	0	
8:15 to 8:30 am	0	0	5		0	0	0		1	0	0		0	0	0	
8:30 to 8:45 am	1	0	7		0	0	0		1	1	0		0	0	0	
8:45 to 9:00 am	0	0	2		0	0	0		3	2	0		0	1	0	
AM Peak HV	3	0	18	0	0	0	0	0	9	1	0	0	0	1	0	0
% Peak HV	3%		5%						1%	1%				1%		

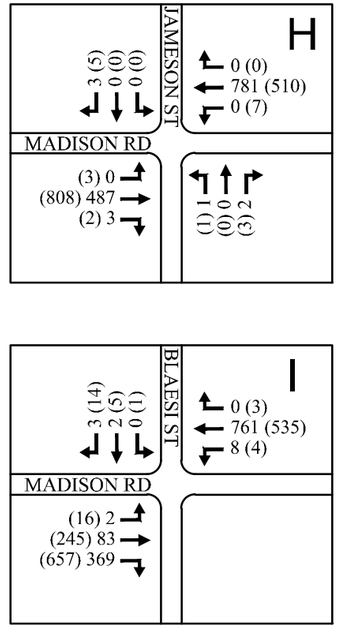
HV - PM	EB Madison Road				WB E Fork Rd				NB Camargo Rd				SB Camargo Rd			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:15 to 4:30 pm	0	0	2		0	0	0		2	0	0		0	1	0	
4:30 to 4:45 pm	0	0	1		0	0	0		2	0	0		0	0	0	
4:45 to 5:00 pm	1	0	0		0	0	0		1	0	0		0	0	0	
5:00 to 5:15 pm	0	0	1		0	0	0		2	0	0		0	0	0	
5:15 to 5:30 pm	0	0	1		0	0	0		0	1	0		0	0	0	
5:30 to 5:45 pm	0	0	2		0	0	0		1	0	0		0	0	0	
5:45 to 6:00 pm	0	0	1		0	0	0		1	0	0		0	0	0	
6:00 to 6:15 pm	0	0	0		0	0	0		1	0	0		0	0	0	
AM Peak HV	1	0	4	0	0	0	0	0	4	1	0	0	0	0	0	0
% Peak HV	0%		1%						1%	1%						

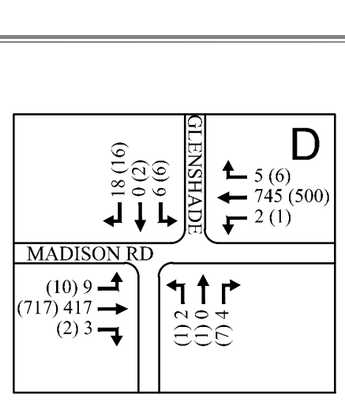
LEGEND:
xx → AM COUNTED TRAFFIC VOLUMES
(xx) → PM COUNTED TRAFFIC VOLUMES

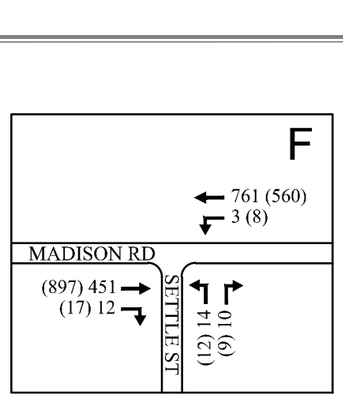


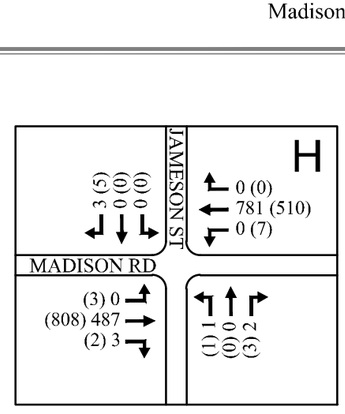


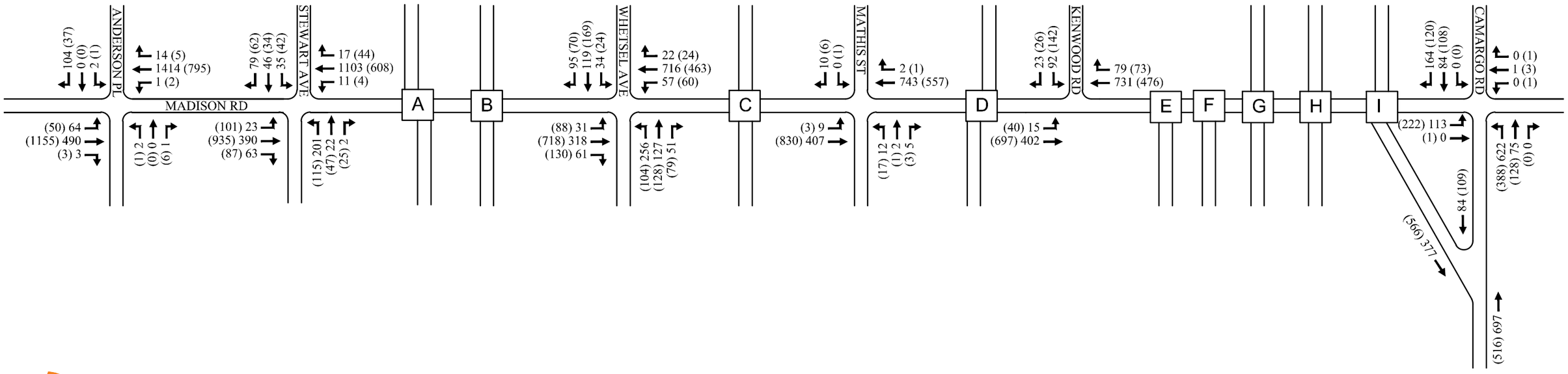








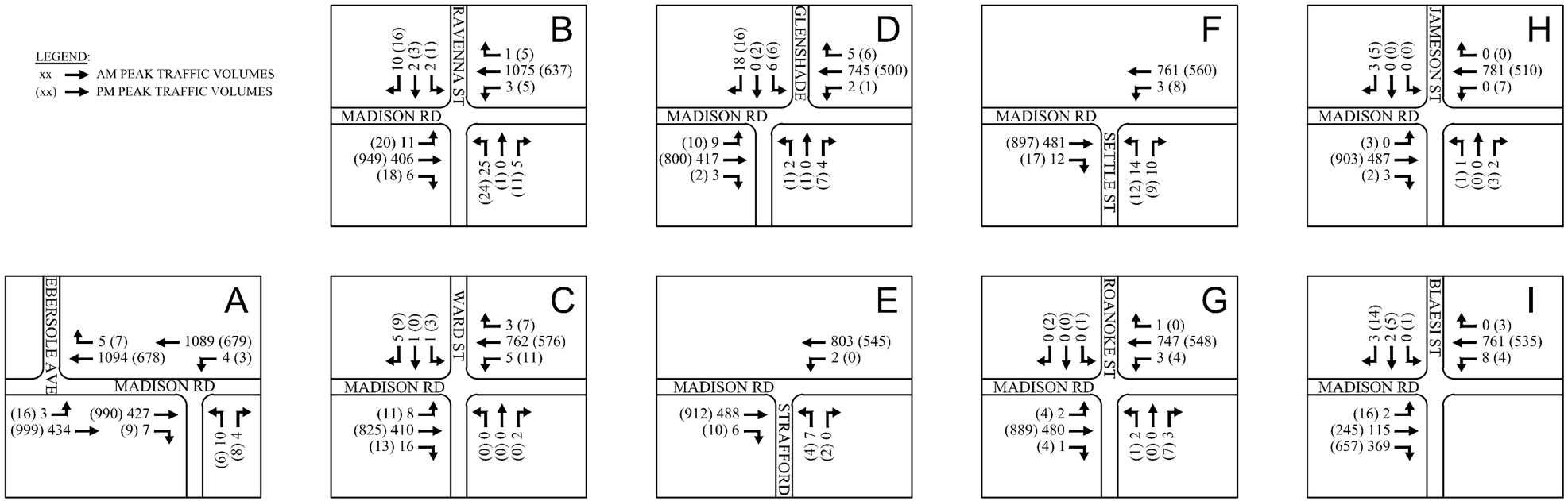




2023 COUNTED TRAFFIC VOLUMES
Figure B-1 11/8/2023

THE KLEINGERS GROUP
CIVIL ENGINEERING
SURVEYING
LANDSCAPE ARCHITECTURE
www.kleingers.com
6219 Centre Park Dr.
West Chester, OH 45069
513.779.7851

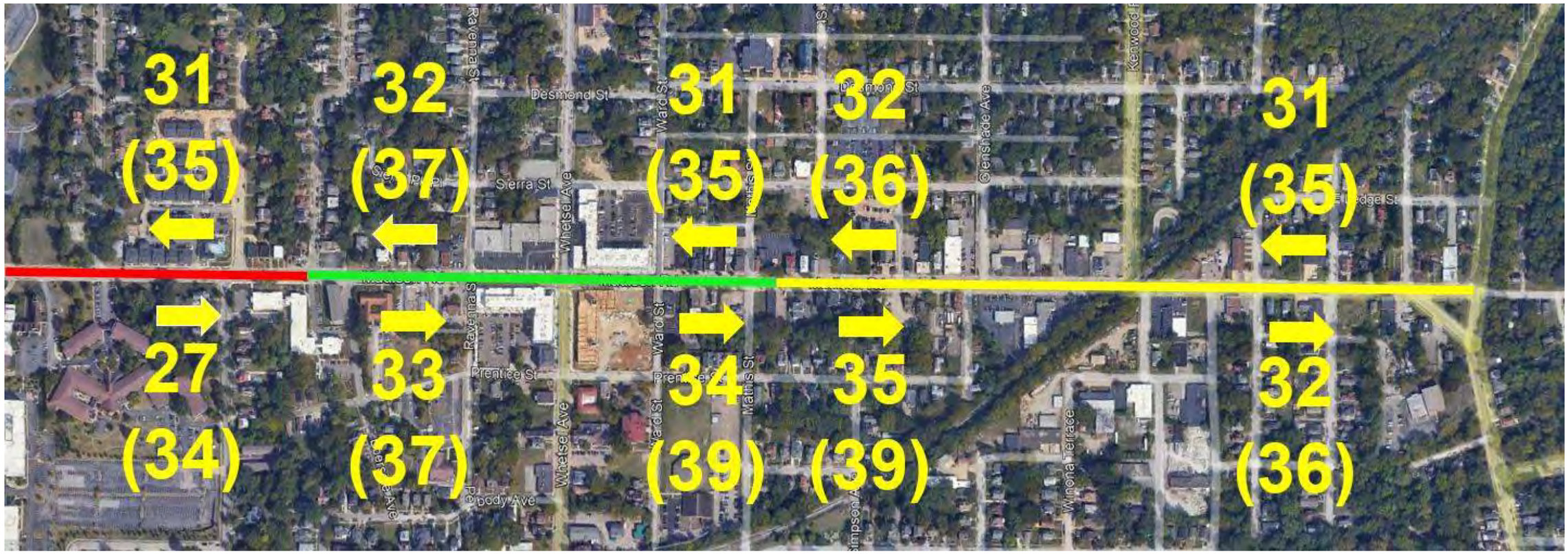
LEGEND:
xx → AM PEAK TRAFFIC VOLUMES
(xx) → PM PEAK TRAFFIC VOLUMES



Appendix C

Speed Data

Existing Average and (85th Percentile) Travel Speeds (MPH)



Speed Limit 35

Speed Limit 30

Speed Limit 25

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Existing Percent Speeding and (Highest Speeds – MPH)

Speed Limit 35

Speed Limit 30

Speed Limit 25

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Percentile Counts Vs. Speed for [221252.000 (Madisonville-5): Outgoing]

221252.000 (Madisonville-5)

85th Pct Speed=34.0 MPH
Vehicles in data=13810
4/5/2023 8:00:00 AM to 4/7/2023 10:59:59 AM

34.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 34 40 50 60 70 80 90 100

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville-5): Incoming]

221252.000 (Madisonville-5)

85th Pct Speed=35.0 MPH
Vehicles in data=19311
4/5/2023 8:00:00 AM to 4/7/2023 10:59:59 AM

35.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0
10
20
30
35
40
50
60
70

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville-4): Incoming]

221252.000 (Madisonville-4)

85th Pct Speed=37.0 MPH
Vehicles in data=8183
4/4/2023 12:00:00 AM to 4/4/2023 11:59:59 PM

37.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 37 40 50 60 70 80 90 100

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville-4): Outgoing]

221252.000 (Madisonville-4)

85th Pct Speed=37.0 MPH
Vehicles in data=8522
4/4/2023 12:00:00 AM to 4/4/2023 11:59:59 PM

37.0 (MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 37 40 50 60 70 80 90

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville): Incoming]

221252.000 (Madisonville)

85th Pct Speed=39.0 MPH
Vehicles in data=13411
3/14/2023 12:00:00 AM to 3/15/2023 10:59:59 PM

39.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 39 40 50 60 70 80

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville): Outgoing]

221252.000 (Madisonville)

85th Pct Speed=35.0 MPH
Vehicles in data=14037
3/14/2023 12:00:00 AM to 3/15/2023 10:59:59 PM

35.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 35 40 50 60 70 80 90

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madison3): Incoming]

221252.000 (Madison3)

85th Pct Speed=39.0 MPH
Vehicles in data=13826
3/14/2023 12:00:00 AM to 3/15/2023 11:59:59 PM

39.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 39 40 50 60 70 80

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madison3): Outgoing]

221252.000 (Madison3)

85th Pct Speed=36.0 MPH
Vehicles in data=13931
3/14/2023 12:00:00 AM to 3/15/2023 11:59:59 PM

36.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 36 40 50 60 70 80 90

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville-2): Incoming]

221252.000 (Madisonville-2)

85th Pct Speed=36.0 MPH
Vehicles in data=15056
3/14/2023 12:00:00 AM to 3/15/2023 11:59:59 PM

36.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0
10
20
30
36
40
50
60
70

Speed (MPH)

Percentile Counts Vs. Speed for [221252.000 (Madisonville-2): Outgoing]

221252.000 (Madisonville-2)

85th Pct Speed=35.0 MPH
Vehicles in data=14282
3/14/2023 12:00:00 AM to 3/15/2023 11:59:59 PM

35.0(MPH)

85pct

Percentile Counts

120
100
85
80
60
40
20
0

0 10 20 30 35 40 50 60 70 80 90

Speed (MPH)

Appendix D

Queuing Observation Report

December 11, 2023

Project Name: Madison Road Complete Street Study

Project Number: 221252.000

Field Observations Notes by AWS

Dates Observed: 3/15/2023 (Wed.), 4/4/2023 (Tues.), 4/5/2023 (Wed.)

Anderson Pl – 4/4-5/2023

Madison Rd @ Anderson Pl		Lane Group			
		EBL	WBL	NB	SB
Max Observed Queue Length (Vehicles)	AM	0	2	0	3
	PM	2	1	1	2
Max Observed Queue Length (Ft)	AM	0	50	0	75
	PM	50	25	25	50

Above are vehicle queues counted in the field. These counts were done between 8:20 and 8:30 AM and 4:45 and 4:55 PM.

Vehicle queues cleared in between light changes of the Stewart Avenue signal. Vehicles were observed encroaching over the double yellow line when entering the eastbound and westbound left turn lanes.

Stewart Avenue – 3/15/2023

Madison Rd @ Stewart Ave		Lane Group					
		EBTR	EBL	WBTR	WBL	NB	SB
Max Observed Queue Length (Vehicles)	AM	14	0	23	2	5	3
	PM	24	3	12	0	6	7
Max Observed Queue Length (Ft)	AM	175	0	287.5	50	125	75
	PM	300	75	150	0	150	175

Above are vehicle queues counted in the field. These counts were done between 7:15 and 7:25 AM and 4:30 and 4:40 PM, across 5 cycles. Note that after manual queue counts were performed, the westbound thru-right lane group queue in the AM peak was observed to extend to Ravenna Street (about 800-feet) later within the AM peak hour.

Eastbound left turning movements do not have a protected phase, and while this did not appear to cause queuing issues, has potential safety issues with the conflicting eastbound through. The sight distance for westbound left turning vehicles is also low, as there is a crest of a hill between Anderson Place and Stewart Avenue.

Stewart Avenue – 4/4-5/2023

Madison Rd @ Stewart Ave		Lane Group					
		EBTR	EBL	WBTR	WBL	NB	SB
Max Observed Queue Length (Vehicles)	AM	6	1	52	1	9	6
	PM	20	3	16	0	7	5
Max Observed Queue Length (Ft)	AM	75	25	650	25	225	150
	PM	250	75	200	0	175	125

Above are vehicle queues counted in the field. These counts were done between 8:00 and 8:10 AM on 4/5/2023 and 4:55 and 5:05 PM on 4/4/2023, across 5 cycles.

Vehicle queues in the AM peak extended to Ravenna Street. There is a bus stop at the corner of Stewart and Madison, in the rightmost westbound lane. This bus stop causes longer delays when active. Only 20-25 queued vehicles were observed clearing the intersections each cycle in the westbound direction, and with the westbound exceeding 50 vehicles in the queue, vehicles may have to wait through 2-3 cycles to clear the intersection.

Vehicle queues in the PM were observed backing up to Ebersole on the westbound approach, and Anderson on the eastbound approach. 1 vehicle was observed turning eastbound left into the apartment access drive (located just west of the intersection). This access drive is right-in right-out only.

Whetsel Avenue – 3/15/2023

Madison Rd @ Whetsel Ave		Lane Group							
		EBTR	EBL	WBTR	WBL	NBTR	NBL	SBTR	SBL
Max Observed Queue Length (Vehicles)	AM	5	1	12	1	2	9	2	1
	PM	12	1	7	2	8	3	6	1
Max Observed Queue Length (Ft)	AM	62.5	25	150	25	50	225	50	25
	PM	150	25	87.5	50	200	75	150	25

Above are vehicle queues counted in the field. These counts were done between 7:30 and 7:40 AM and 4:45 and 4:55 PM, across 5 cycles.

Vehicle queues were observed to stall in the AM peak when a vehicle going northbound, past the intersection, was turning left in to the development on the northwest quadrant. The vehicle could not turn left immediately due to a southbound left queue. The southbound left queue couldn't move immediately due to the northbound through vehicles blocking the intersection.

Whetsel Avenue – 4/4-5/2023

Madison Rd @ Whetsel Ave		Lane Group							
		EBTR	EBL	WBTR	WBL	NBTR	NBL	SBTR	SBL
Max Observed Queue	AM	5	1	12	1	2	9	2	1
	PM	21	3	15	4	8	4	6	1
Max Observed Queue	AM	62.5	25	150	25	50	225	50	25
	PM	262.5	75	187.5	100	200	100	150	25

Above are vehicle queues counted in the field. These counts were done between 8:10 and 8:20 AM and 5:05 and 5:15 PM, across 5 cycles.

Northbound left queues at times couldn't clear after 1 cycle due to extended southbound queues. Westbound and eastbound left queues similarly couldn't clear after 1 cycle due to extended westbound and eastbound through traffic volumes. Left turning vehicles were observed turning after the light turned red, and at times during green times of the opposing phase.

In the AM and PM peak hours, vehicle queues extended to Ward and Ravenna, for westbound and eastbound traffic, respectively.

Mathis Street – 3/15/2023

Madison Rd @ Mathis St		Lane Group			
		EB	WB	NB	SB
Max Observed Queue Length (Vehicles)	AM	2	10	1	0
	PM	2	6	1	1
Max Observed Queue Length (Ft)	AM	25	125	25	0
	PM	25	75	25	25

Above are vehicle queues counted in the field. These counts were done between 7:40 and 7:50 AM and 4:55 and 5:05 PM, across 5 cycles. Queuing did not appear to be an issue at this intersection.

Kenwood Road – 3/15/2023

Madison Rd @ Kenwood Rd		Lane Group				
		EBT	EBL	WB	SBL	SBR
Max Observed Queue Length (Vehicles)	AM	11		20	4	1
	PM	16	1	8	8	2
Max Observed Queue Length (Ft)	AM	275	0	500	100	25
	PM	400	25	200	200	50

Above are queues counted in the field. These counts were done between 7:50 and 8:00 AM and 5:05 and 5:15 PM, across 5 cycles.

Vehicle queues were observed to clear every cycle, with one exception. The bus loop to the north of the intersection stalled all movements when a bus was exiting the loop westbound right, and another bus was attempting to enter southbound left.

The westbound queues, at times, extended to Jameson St during the AM Peak hour.

Camargo Road – 3/15/2023

Madison Rd @ Camargo Rd		Lane Group				
		NBTR	NBL	WB	SB1	SB2
Max Observed Queue Length (Vehicles)	AM	1	14	0	3	3
	PM	2	5	0	2	2
Max Observed Queue Length (Ft)	AM	25	350	0	75	75
	PM	50	125	0	50	50

Above are queues counted in the field. These counts were done between 8:05 and 8:15 AM and 5:20 and 5:30 PM, across 5 cycles.

Queues appeared to build up in the AM peak hour in the northbound approach. The back of the queue appeared to reach Indian Hill Road at times.

Appendix E

Crash History

Crash History – 2020 to 2022

- Rear End, Fixed Object, Sideswipe, Angle Crashes
- 20 Bridge Strikes – 16 Eastbound, 4 Westbound

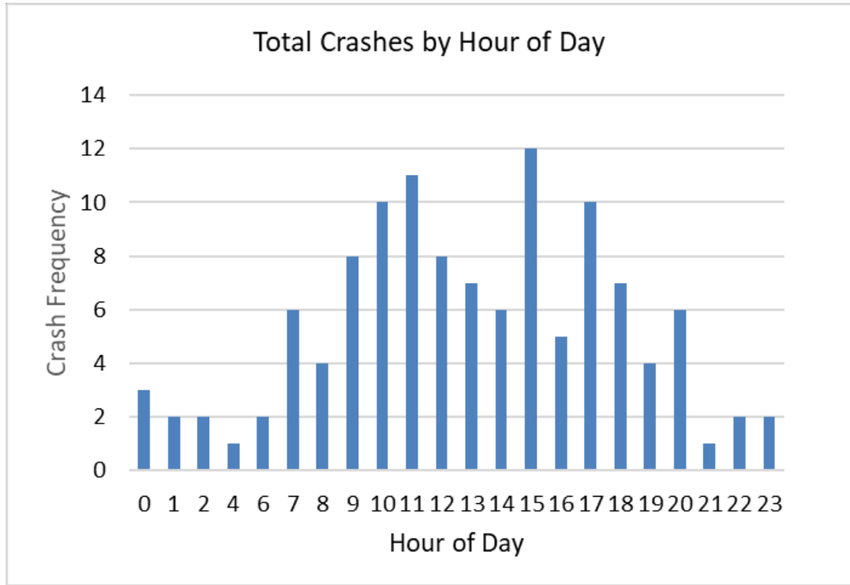
Year	Total Crashes	Fatalities	Serious Injuries
2020	36	0	0
2021	39	0	0
2022	44	0	1
Grand Total	119	0	1

Total Crashes	Injury Level				
Crash Type	(2) Serious Inju	(3) Minor Injury	(4) Injury Possi	(5) PDO/No Inju	Grand Total
Rear End	0	4	2	20	26
Fixed Object	0	2	0	24	26
Sideswipe - Passing	1	0	0	23	24
Angle	0	3	3	16	22
Right Turn	0	0	1	9	10
Left Turn	0	0	0	4	4
Backing	0	0	0	3	3
Head On	0	0	2	0	2
Unknown	0	0	0	1	1
Pedestrian	0	1	0	0	1
Grand Total	1	10	8	100	119

Crash History – 2020 to 2022

Day in Wee	Total Crashes
(1) Sunday	5
(2) Monday	14
(3) Tuesday	22
(4) Wednesday	23
(5) Thursday	18
(6) Friday	26
(7) Saturday	11
Grand Total	119

Month	Total Crashes
January	12
February	9
March	6
April	6
May	11
June	17
July	17
August	10
September	10
October	10
November	6
December	5
Grand Total	119



Crash History – Bike / Ped and Serious Injury

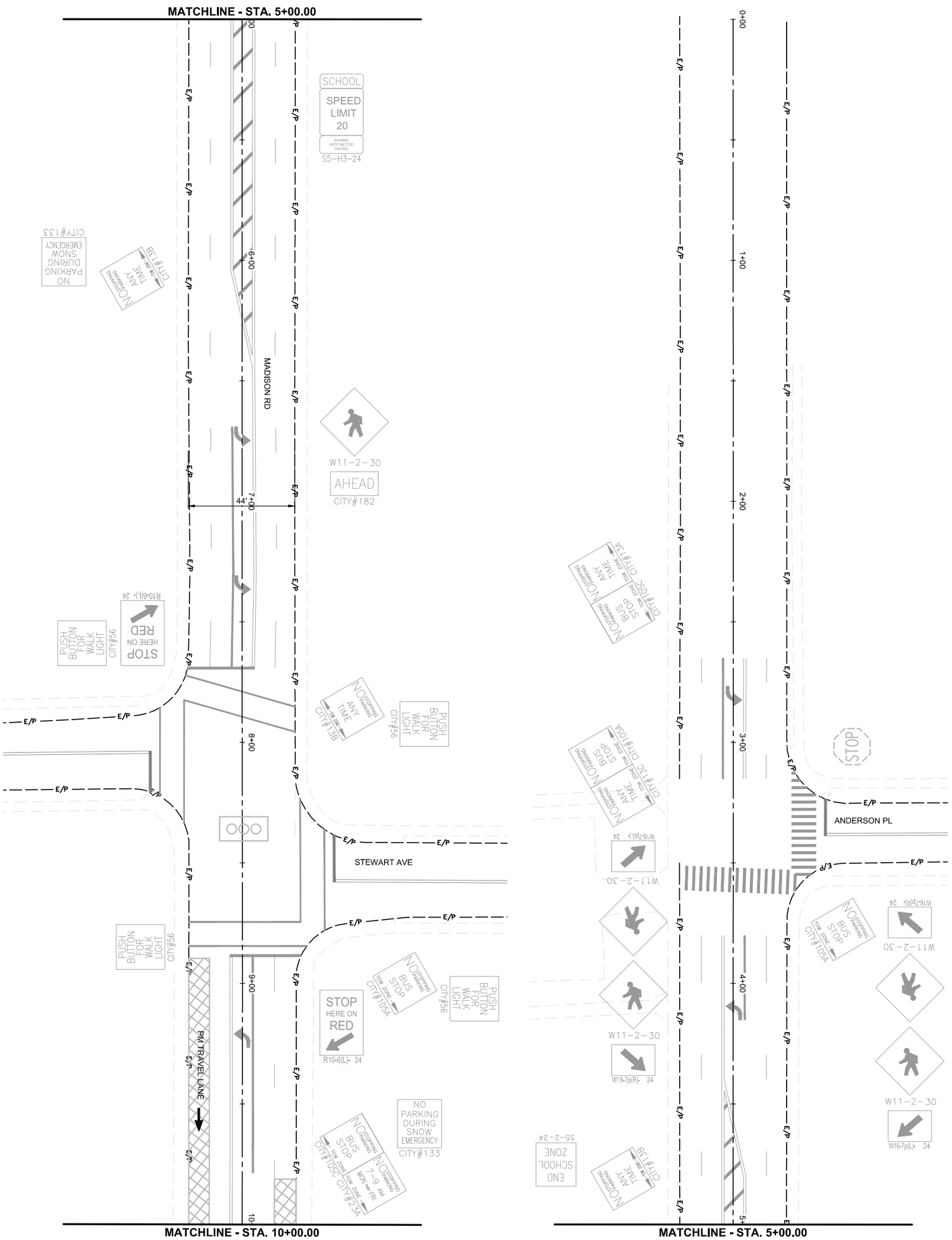
Broader Range – 2018 to Current (as of March 2023)

- Two pedestrian crashes
  - One pedestrian on sidewalk struck by vehicle exiting driveway
  - One motor vehicle crash involving person working in roadway
- Two serious injury crashes
  - One sideswipe resulting in head-on
  - One high-speed involving parked car

Appendix F

Existing Conditions

December 11, 2023



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

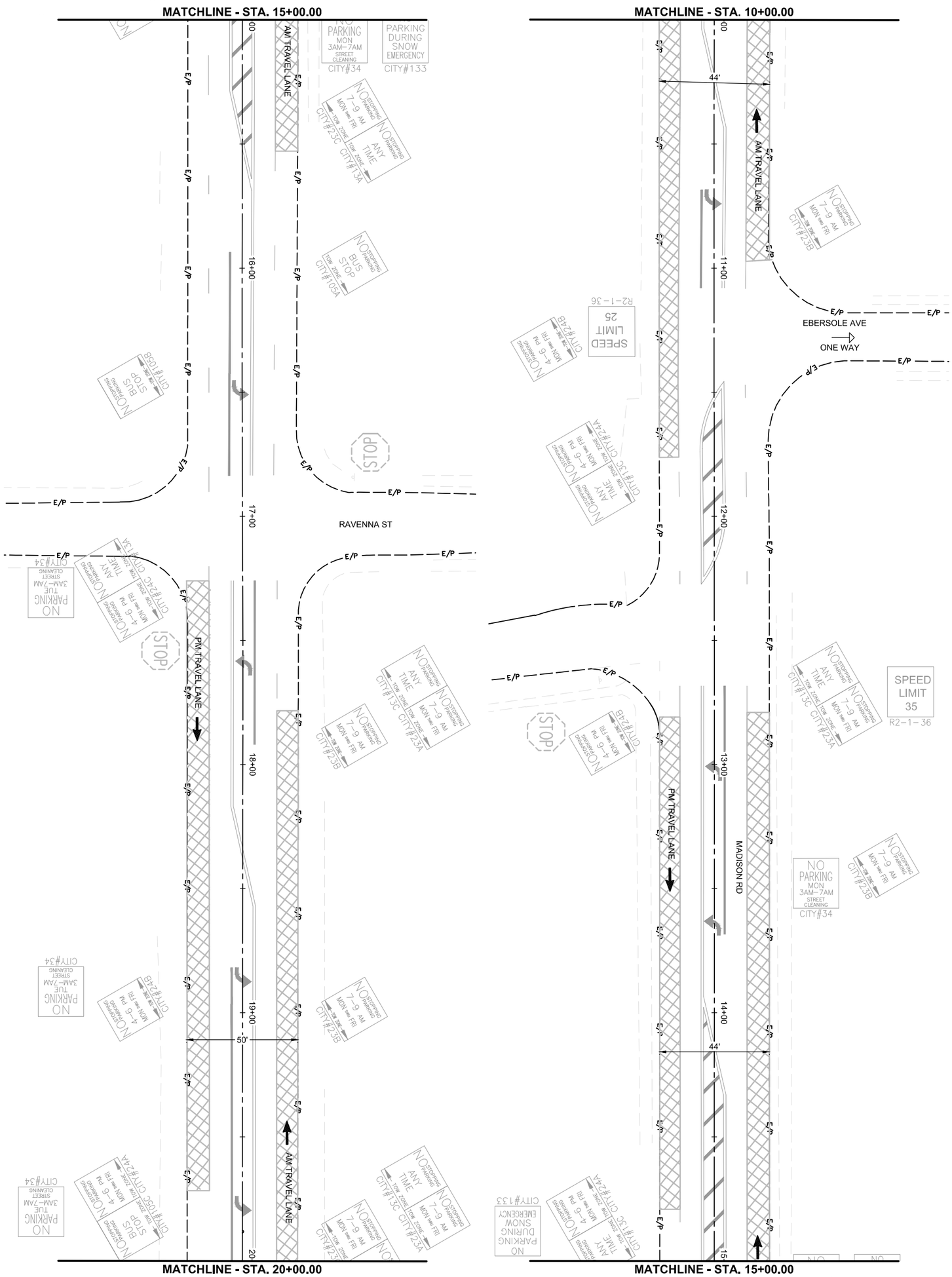
PARKING RESTRICTIONS

CALCULATED AWS

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

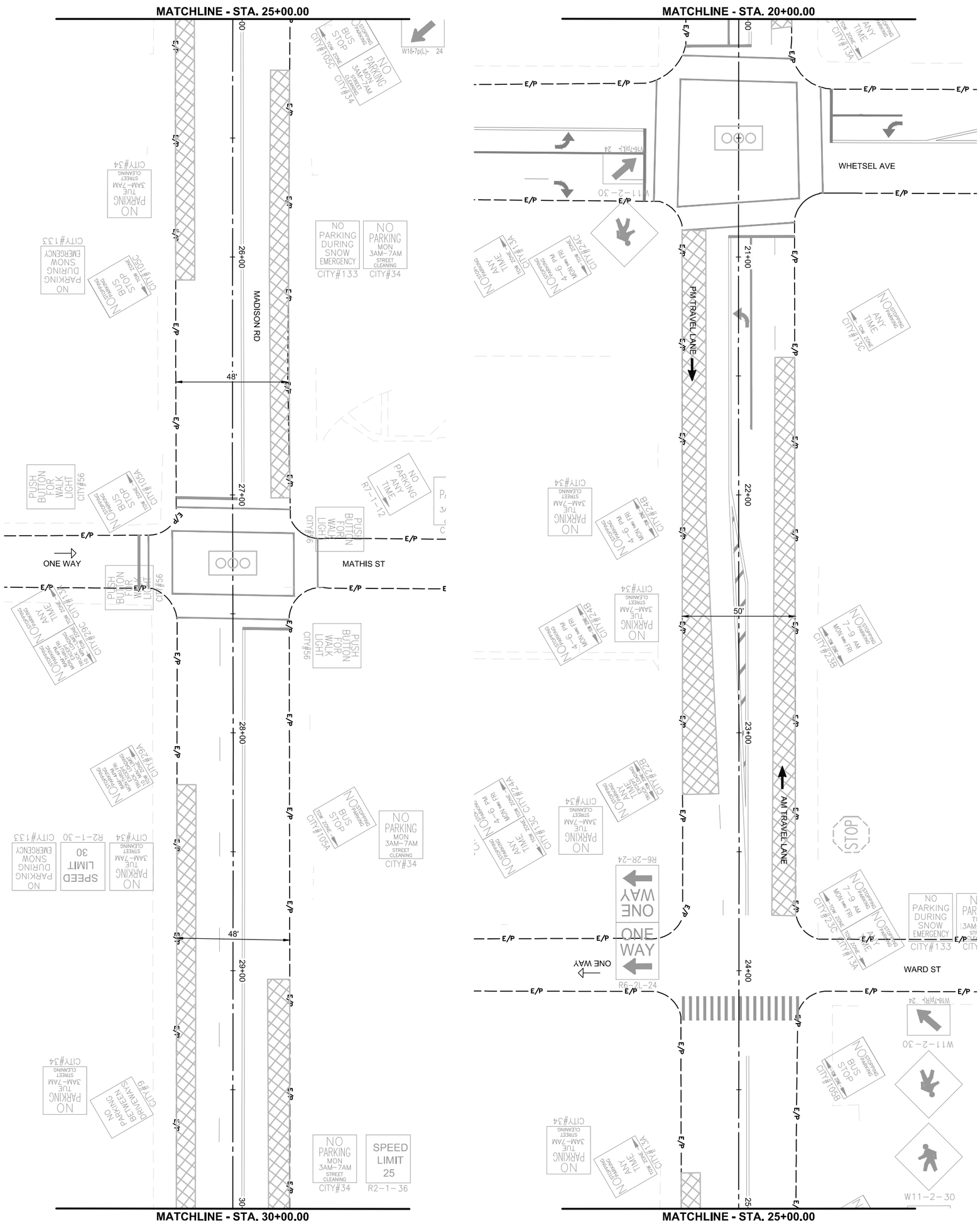
PARKING RESTRICTIONS

CALCULATED AWS

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

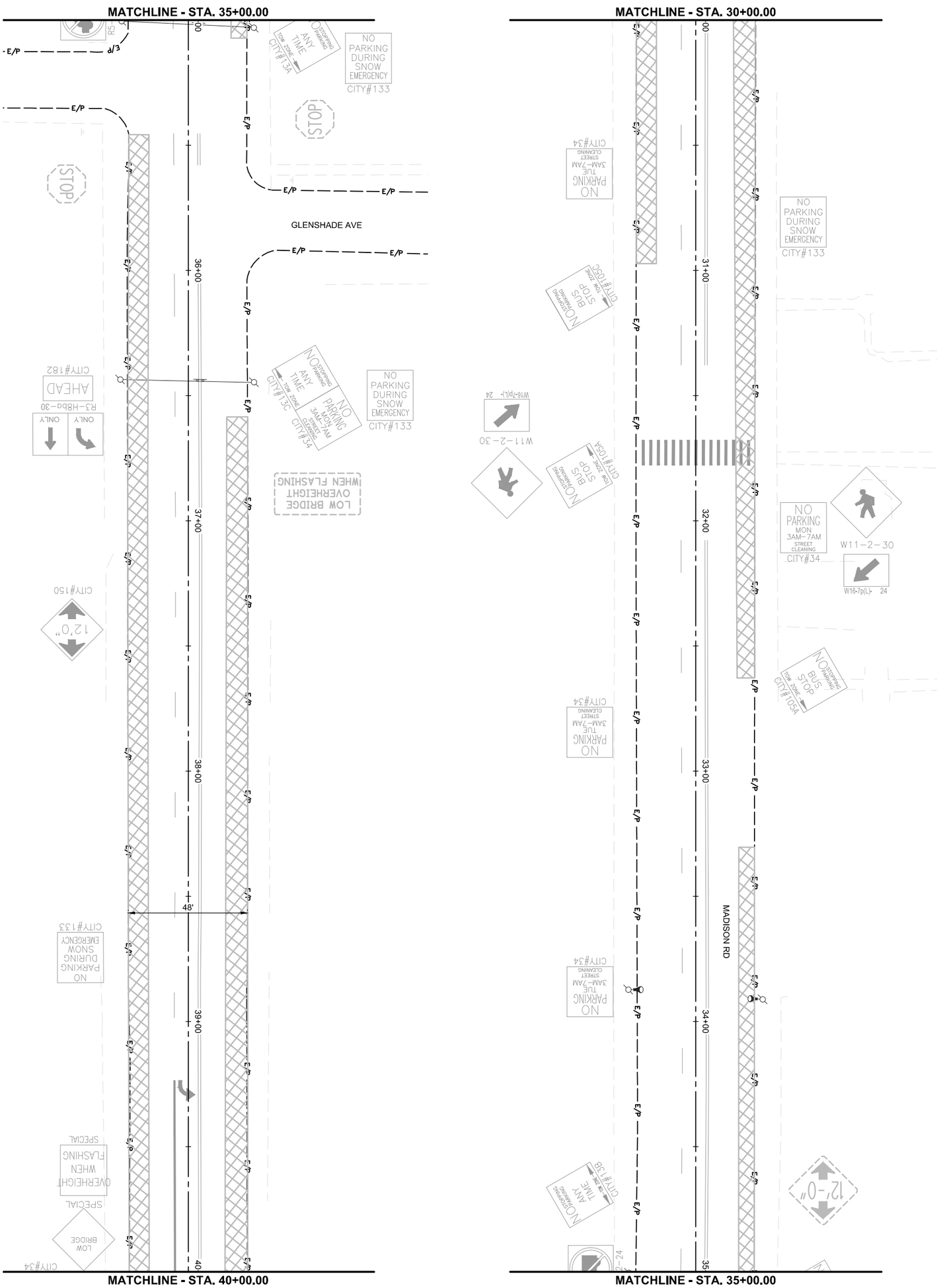
PARKING RESTRICTIONS - STA 20+00.00 TO STA 25+00.00

CALCULATED SEC

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

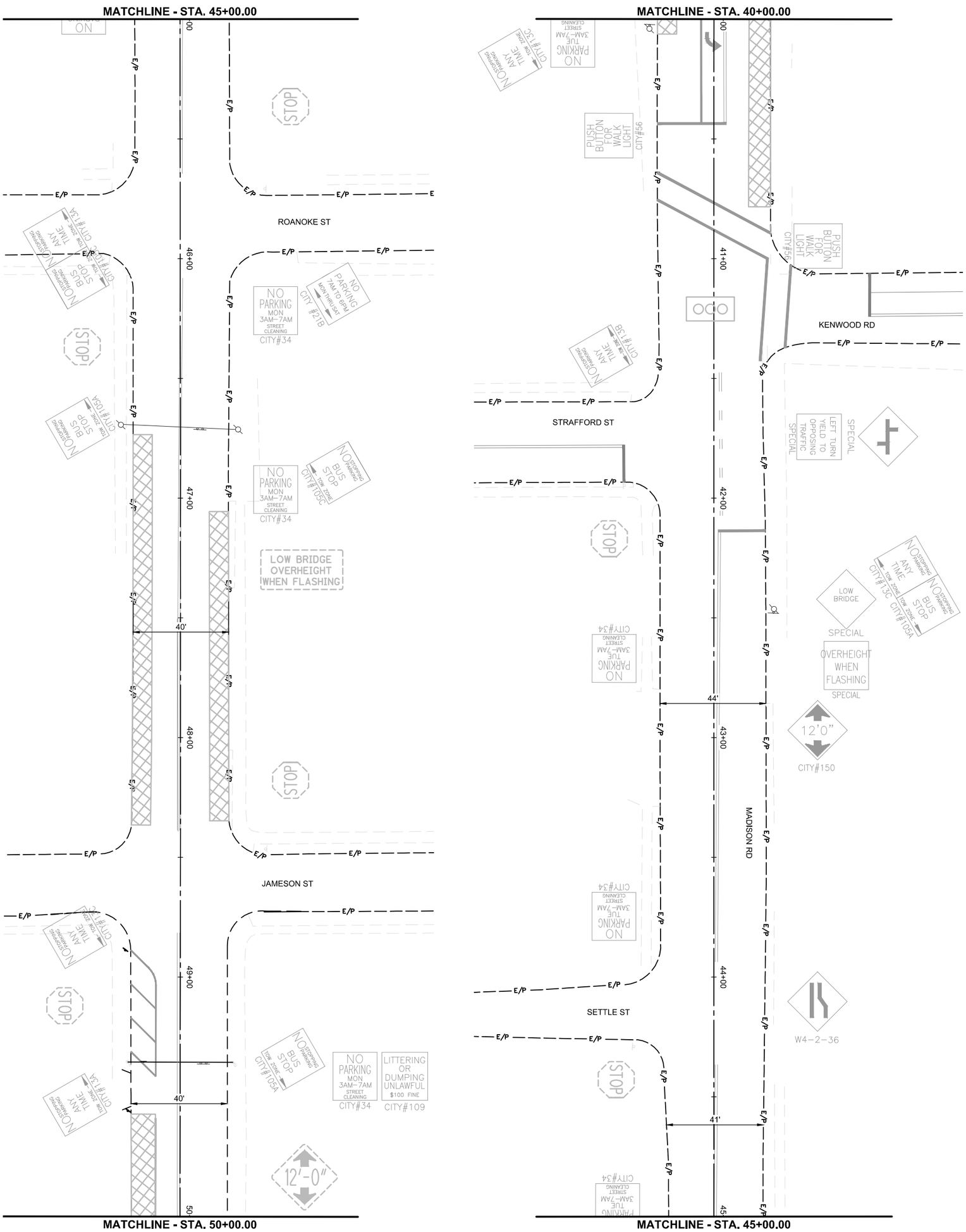
PARKING RESTRICTIONS

CALCULATED AWS

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

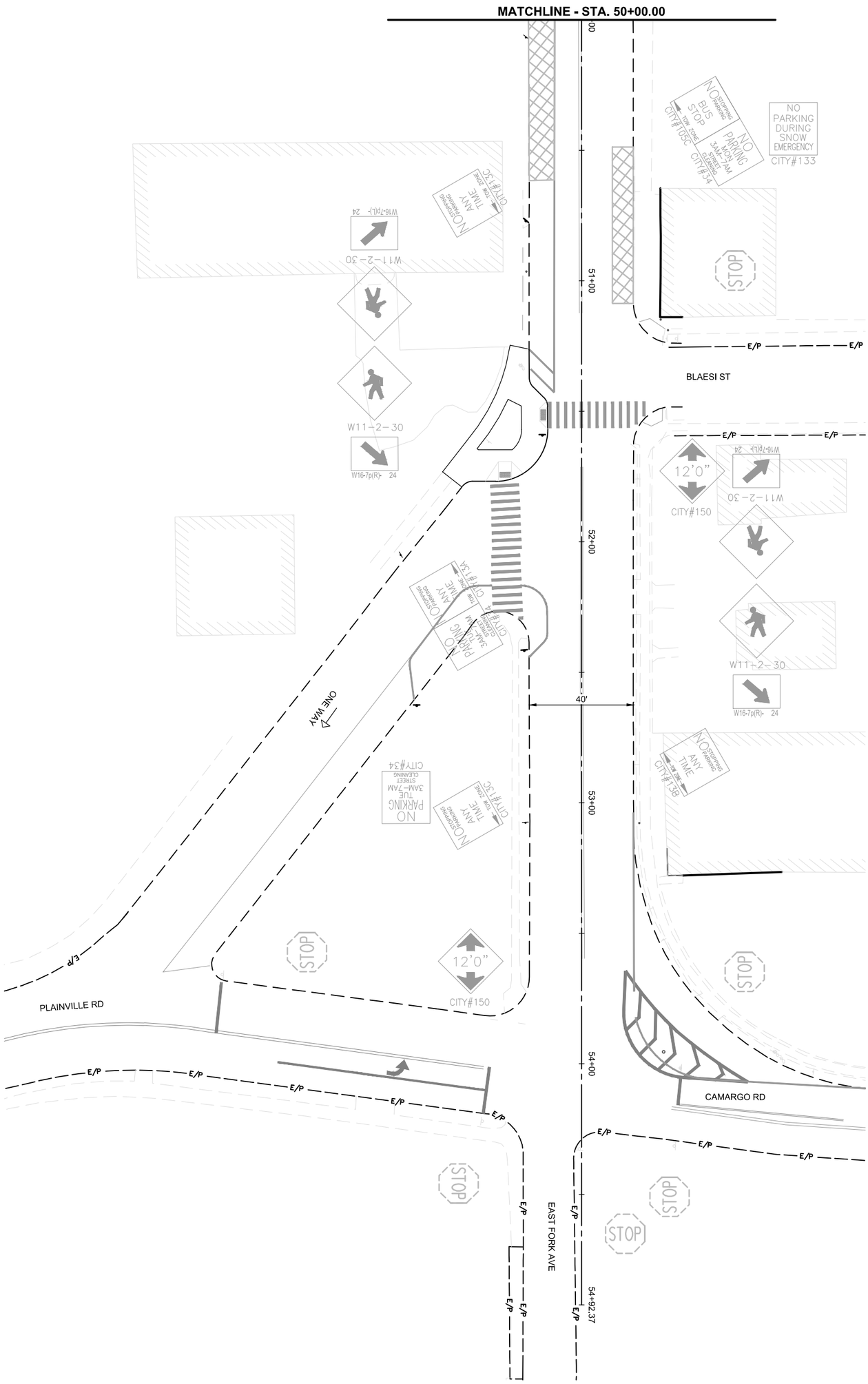
PARKING RESTRICTIONS

CALCULATED AWS

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET



THE KLEINGERS GROUP

MADISON ROAD COMPLETE STREET STUDY

PARKING RESTRICTIONS

CALCULATED AWS

CHECKED MWN

0 10 20 40

HORIZONTAL SCALE IN FEET

Appendix G

Public Meeting #1 Documents

Madison Road Complete Street Study

city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEING3RS GROUP

Welcome!

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Background:

- Desire to improve conditions for all users on Madison Road corridor
  - Initiated by Madisonville Community Council
  - History of 15-20 years
  - Improve conditions for pedestrians
  - City of Cincinnati initiated Complete Streets study
  - Selected The Kleingers Group to conduct study

Preliminary Issues Identified:

- Wider sidewalks / multi-use path
- Safety at Anderson Place crosswalk
- Travel lanes are narrow west of Stewart Avenue
- Need new left turn signals
- Concerns at Madison Road / Camargo Avenue intersection
- Railroad bridge clearance / strikes

What is a Complete Street?

- Provides for all users of all ages and abilities
  - Pedestrians
  - Bicyclists
  - Public transportation riders
  - Drivers

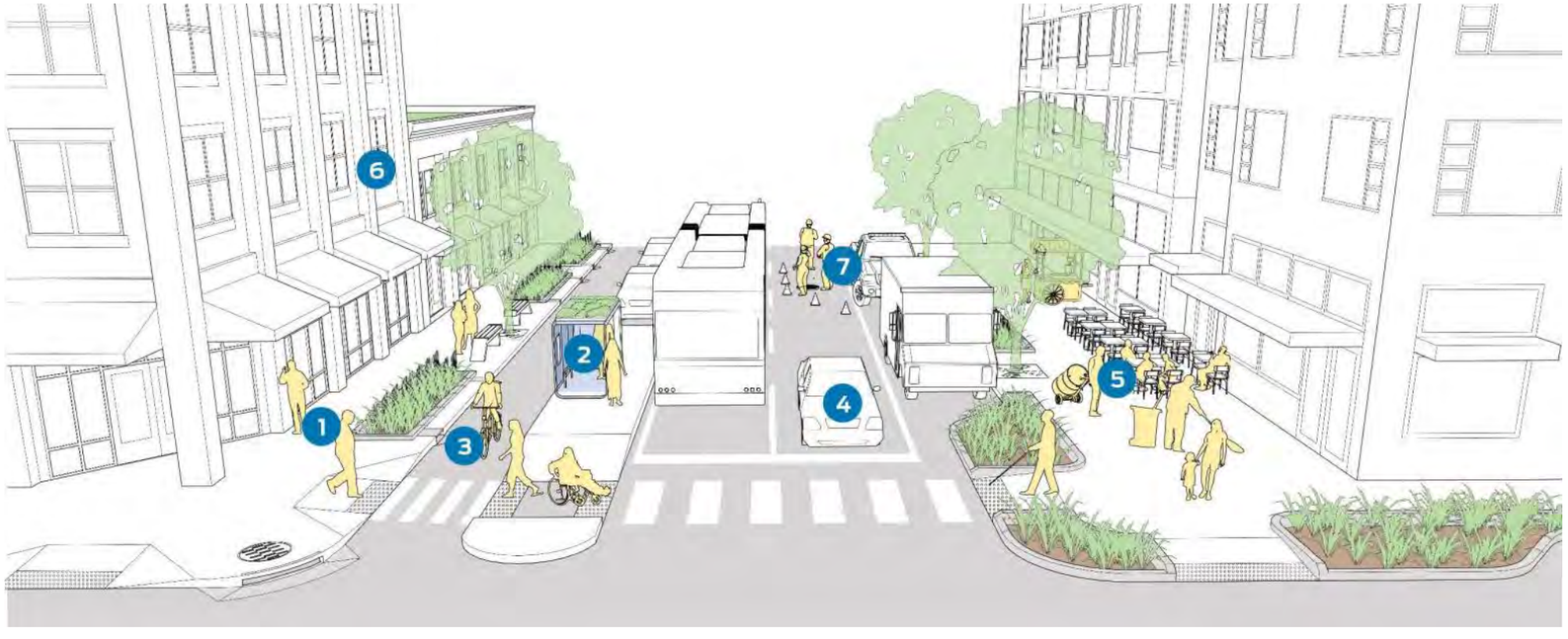


Image: National Association of City Transportation Officials

Study process to date

- Preliminary meeting with Community Council representatives
- Traffic counts and speed data collection
  - Mid-March to Early April, 2023
  - Observed existing traffic conditions during peak times
  - Existing roadway widths and parking configurations

Existing Conditions

Five Lanes

Two Lanes Eastbound, One Lane Westbound

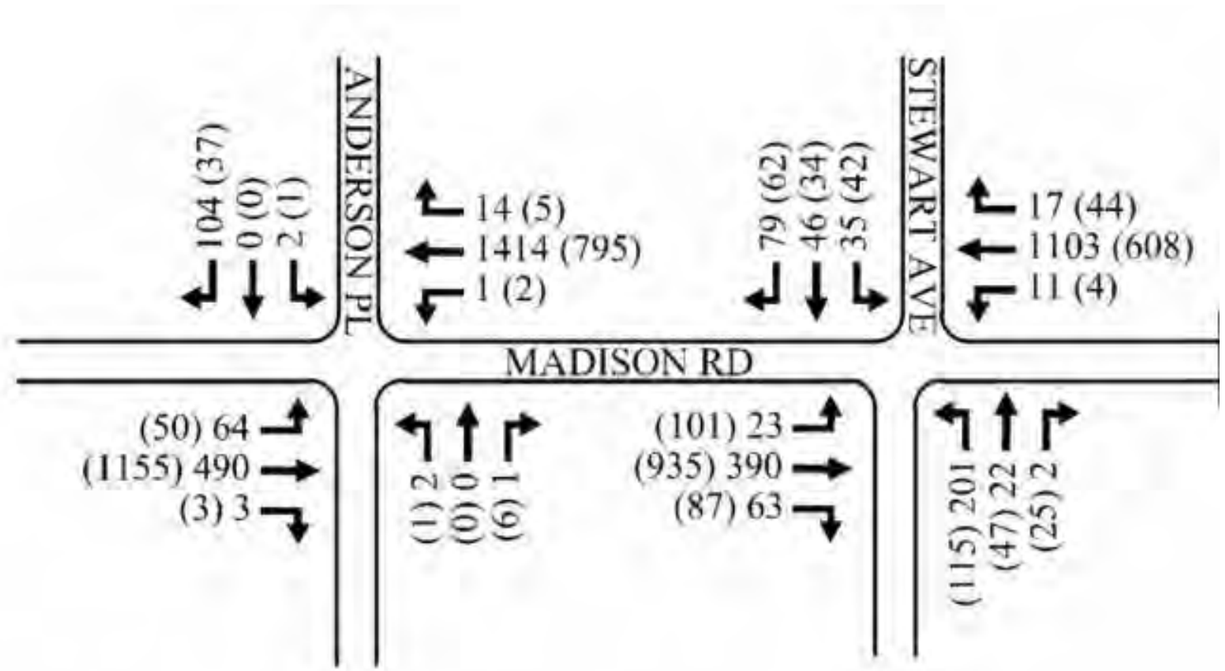
Two Lanes

city of CINCINNATI

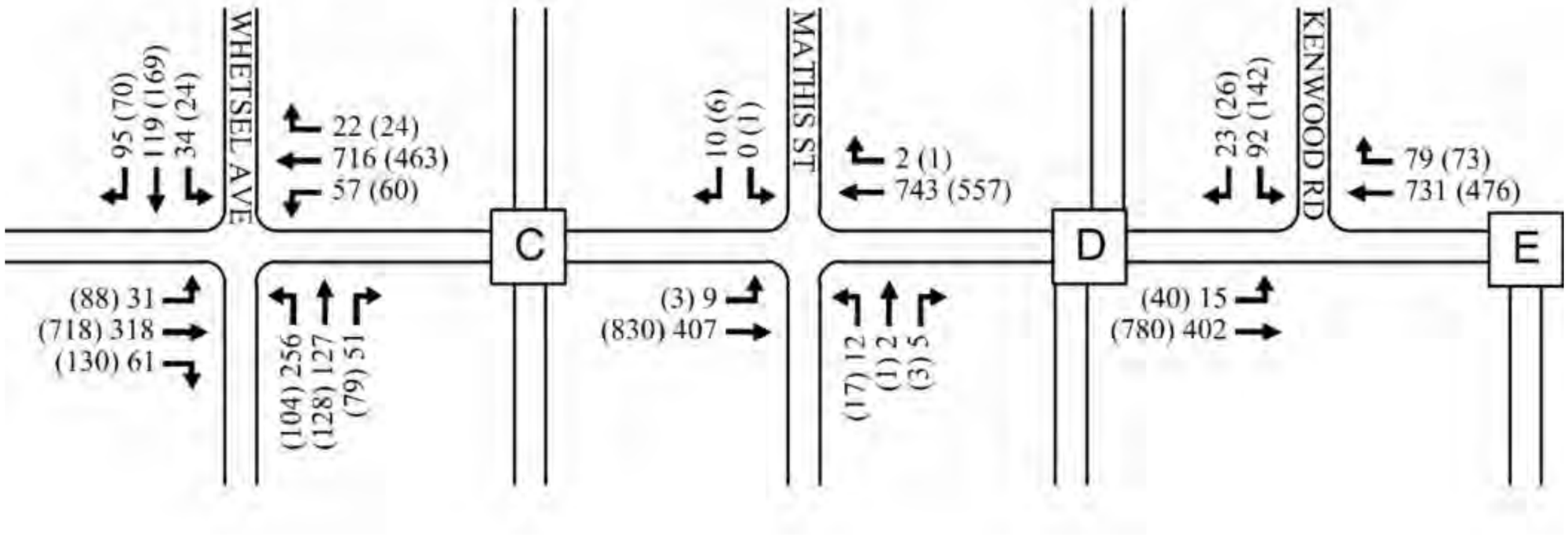
MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Traffic Counts



Traffic Counts

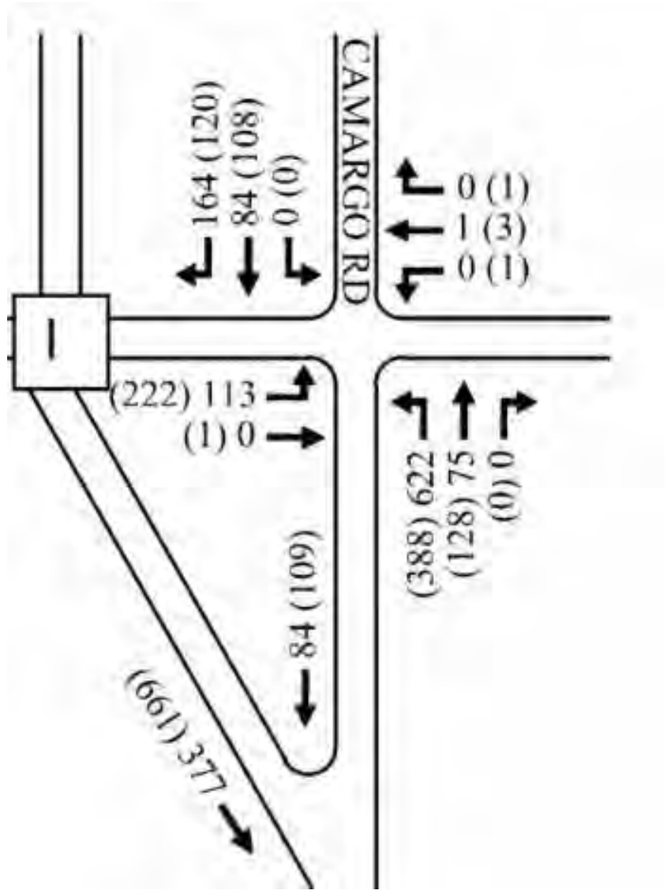


city of CINCINNATI

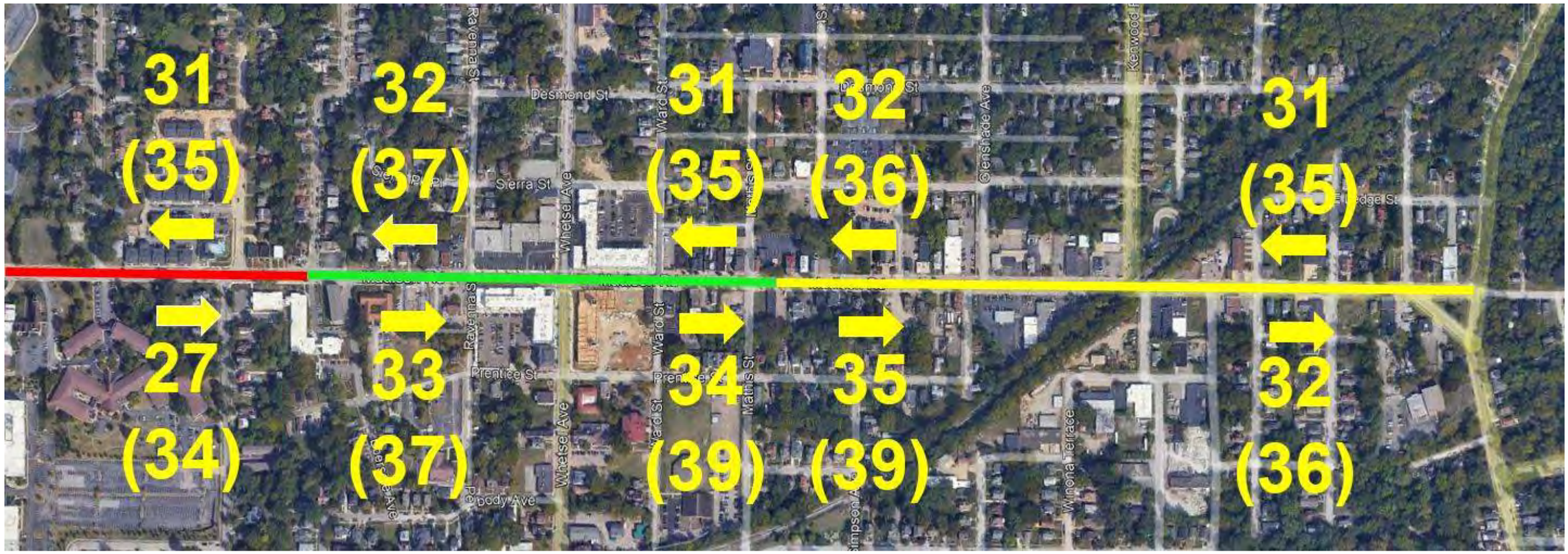
MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Traffic Counts



Existing Average and (85th Percentile) Travel Speeds (MPH)



Speed Limit 35

Speed Limit 30

Speed Limit 25

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Existing Percent Speeding and (Highest Speeds – MPH)

Speed Limit 35

Speed Limit 30

Speed Limit 25

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Crash History – 2020 to 2022

- Rear End, Fixed Object, Sideswipe, Angle Crashes
- 20 Bridge Strikes – 16 Eastbound, 4 Westbound

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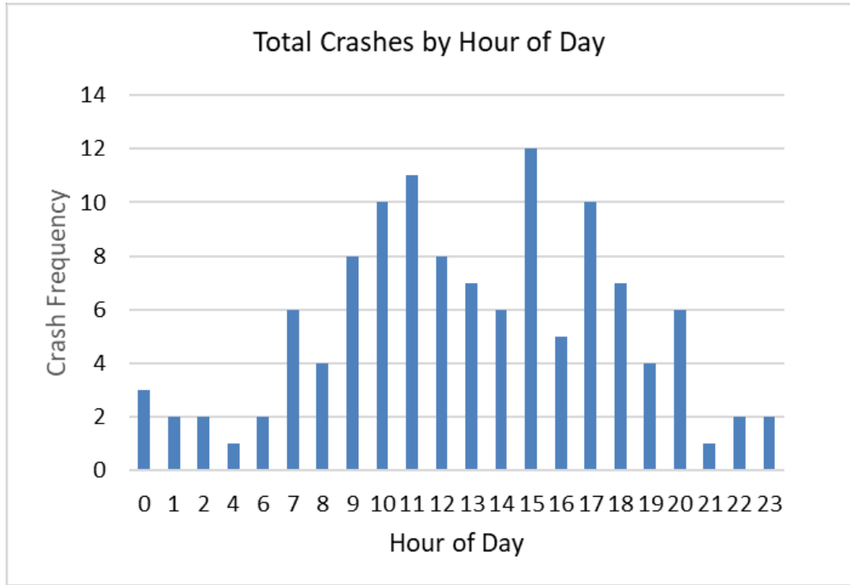
2020	36	0	0
2021	39	0	0
2022	44	0	1
Grand Total	119	0	1

Total Crashes	Injury Level				
Crash Type	(2) Serious Inju	(3) Minor Injury	(4) Injury Possi	(5) PDO/No Inju	Grand Total
Rear End	0	4	2	20	26
Fixed Object	0	2	0	24	26
Sideswipe - Passing	1	0	0	23	24
Angle	0	3	3	16	22
Right Turn	0	0	1	9	10
Left Turn	0	0	0	4	4
Backing	0	0	0	3	3
Head On	0	0	2	0	2
Unknown	0	0	0	1	1
Pedestrian	0	1	0	0	1
Grand Total	1	10	8	100	119

Crash History – 2020 to 2022

Day in Wee	Total Crashes
(1) Sunday	5
(2) Monday	14
(3) Tuesday	22
(4) Wednesday	23
(5) Thursday	18
(6) Friday	26
(7) Saturday	11
Grand Total	119

Month	Total Crashes
January	12
February	9
March	6
April	6
May	11
June	17
July	17
August	10
September	10
October	10
November	6
December	5
Grand Total	119



Crash History – Bike / Ped and Serious Injury

Broader Range – 2018 to Current (as of March 2023)

- Two pedestrian crashes
  - One pedestrian on sidewalk struck by vehicle exiting driveway
  - One motor vehicle crash involving person working in roadway
- Two serious injury crashes
  - One sideswipe resulting in head-on
  - One high-speed involving parked car

Preliminary Survey Results

In your opinion, what is the top concern when traveling on Madison Road in Madisonville?

Speeding	63%
No safe place for cycling	12%
Vehicles weaving in and out of lanes	8%
Pedestrian safety at crosswalks	9%
Vehicles running red lights	4%
Other (please specify in comments)	4%

Existing Conditions Traffic Models

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

What happens next?

- Make notes this evening on the corridor maps
- Take the survey! Closes June 21

- Compile survey results to summarize community input
- Analyze roadway operations that would result from roadway right-sizing and intersection modifications
- Prepare conceptual roadway improvement drawings

What happens next?

- Upcoming Public Meetings – Locations TBD
  - Saturday, August 12 – 10:00 am to 12:00 pm
    - Present summary of public feedback
    - Present potential improvement options and analysis
  - Thursday, October 26 – 7:00 pm – 9:00 pm
    - Present final recommended roadway cross-section

Thank You!

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

MADISONVILLE COMMUNITY COUNCIL

CINCINNATI

Public Meeting Sign-In Sheet

Date: June 7, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
JOE GROH	2982 MARKBREIT AVE	513-417-2284	JoeGroh@oakleymgm.com
NATHAN BROMEN	5543 ST. PAUL MADISON / 555 ST. PAUL VILLAGE MADISON	573-250-6123	nbromen@donan.com
Ann Boland		5138074833	
Rhoda Bates	4514 Whetsel Ave	513 316/2802	Rhodafbates@yahoo.com
Stanford Poole	5701 Lumin Ave	513 324-1182	—
Jim Eppens	6511 Windward		
Jim Eppens	" "	406-1239	
JON STEPHANS	6406 MADISON		
Kim Douthit	6913 Palmetto St.	513-520-6091	kimberly.douthit@gmail.com
Tony Brinkdopke	7040 Palmetto St.	513-295-1913	tbrinkdopke@gmail.com
LINDA Sellers	3995 ERIE AV	513 [illegible]-4476	—
Rose TANKS	6012 Desmond St.	513-213-7208	ttanks@fuse.net
Erin Couch	2950 Woodrow Ave.	513-787-5623	ecouch@gannett.com
Jeff Lamelee	4209 Simpson	513-561-3807	JLawes80@Live.com
Diana Vakharia	City of Cincinnati	513-352-6130	diana.vakharia@cincinnati-oh.gov

THE KLEINGERS GROUP

MADISONVILLE COMMUNITY COUNCIL

CINCINNATI city of

Public Meeting Sign-In Sheet

Date: June 7, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
BRITTANY T. JONES	5345 CHAPMAN ST. 45227	(513) 915-1301	MSBTJONES@GMAIL.COM
Katty GARRISON	5416 WARD St 45227	(513) 460-5061	KGARRISON14@gmail.com
Jay ELLIOTT	6613 Britton 45227	513-702-5096	payhay@gmail.com
Mary Turner	4703 Glenshade 45227	513-490-9127	mary-Turner35@yahoo
Melinda Richardson	5201 WHEOSEL AV	815-0101	r.chardsonmelinda@gar

THE KLEING3RS GROUP

MADISONVILLE COMMUNITY COUNCIL

CINCINNATI city of

Public Meeting Sign-In Sheet

Date: June 7, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
Darlene Casey	6118 Arnsby Pl # 4	513-515-5267	darlenecasey@gmail.com
Michael Lyfa	4234 Blaney	513-827-045	DEBBIE716HE9@GMAIL.COM
Jeanette Williams	6320 Chandler Street	513-919-7203	jaysbusiness62@gmail.com
NICK KEELING	4075 W 8th St	317-726-6967	nkeeling@go-metro.com
Anna Albi	5632 Bramble Ave	513-310-3529	anna.albi1e@gmail.com
David Rdard	6323 Mayflower Ave	513 232 0422	eastdrull21@gmail.com
Josh Ullrich	6129 MADISON RD.	248-895-4340	JOSHULLRICH@GMAIL.COM
Angela Pearson	6104 Chandler St	513-254-7270	APearson829@gmail
Kate Botos	6420 Erie Ave 45227	513-227-4352	botoscr@gmail.com
Courtney Chelgesen	5801 Prentice Ave 45227	513 823-8728	chelgesen1@gmail
Melissa Workerson	4717 Settle St 45227	513-608-7761	msmonk777@yahoo.com
Keishia Chamberlain	1056 Altamira Ave	859-631-5714	housing@ourmadisonville.com
Mark Powell	5915 Desmond St	937-727-7738	

THE KLEINGERS GROUP

MADISONVILLE COMMUNITY COUNCIL

city of CINCINNATI

Public Meeting Sign-In Sheet

Date: June 7, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
Isaiah Newberry	4280 Webster AVE	513-745-9059	
Kenneth Gibson	4334 Normandy	513-226-3822	

THE KLEINGERS GROUP

Madison Road Complete Street Study

Project Engagement

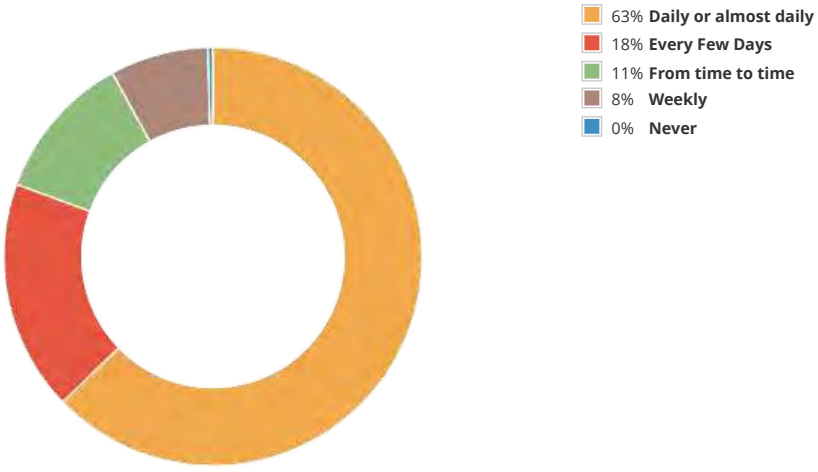
VIEWS	PARTICIPANTS
1,583	282
RESPONSES	**COMMENTS**
5,150	340
SUBSCRIBERS	
24	

What mode(s) of transportation do you use when travelling on Madison Road in Madisonville? Select all that apply

91%	Drive personal vehicle	221 ✓
57%	Walking	138 ✓
44%	Passenger in vehicle	106 ✓
29%	Bicycling	71 ✓
16%	Public Transit	38 ✓
2%	Rolling (mobility scooters)	4 ✓
0%	Stand-up E-scooters	1 ✓

243 Respondents

How often do you travel on or along Madison Road in Madisonville?



263 respondents

Check all that apply:

243 Respondents

The stretch of Madison Rd between Red Bank to Oaklawn and further down under the train tracks towards Oakley is a nightmare for pedestrians. Cars go extremely fast (east and west bound). There needs to be speed humps and/or safer sidewalks.

12 days ago

I think this so-called improvement has made traffic slower especially when you get down towards Camargo you took away a lot of street. Space

12 days ago

We need a Madison Road that is more pedestrian friendly and activates street level activities

13 days ago

This road is excessively wide and would more than benefit from more bump outs to slow down speeding vehicles that nearly hit me ever day I walk along this road. Bus lanes would be an amazing thing to add as well since occasional traffic can completely throw off the bus schedule and make it frustrating to catch a late or early bus.

16 days ago

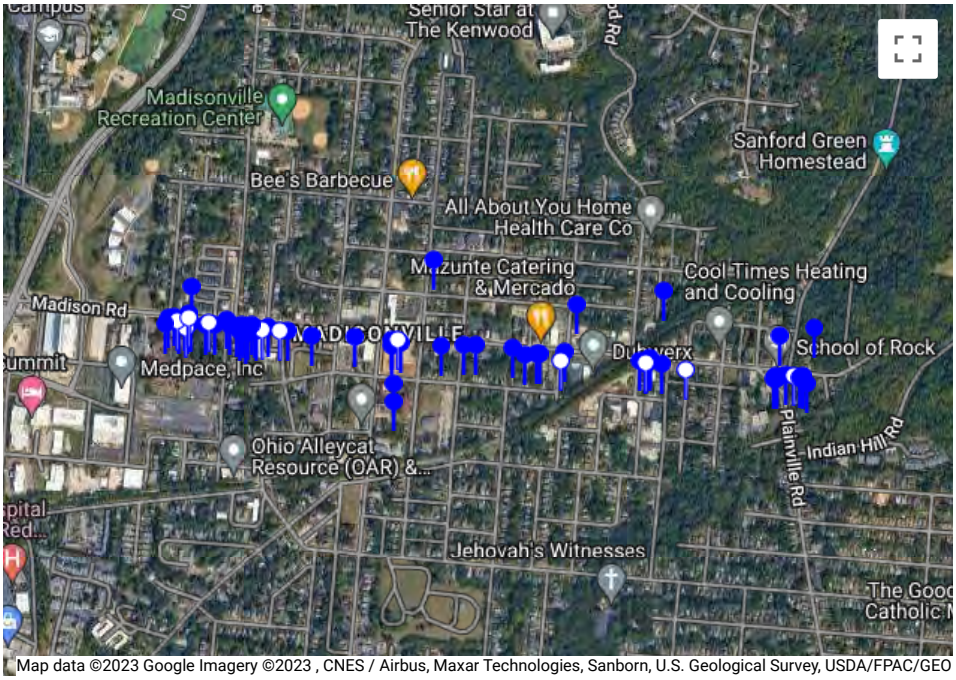
Show all comments

In a typical week, which forms of transportation do you use to get to the following locations?

	Walked	Mobility Scooter	Bicycled	Drove a Car	Rode in a Car	Took the Bus	Stand-up E-scooter	Other / N/A
Work	11% Walked	- Mobility Scooter	11% Bicycled	53% Drove a Car	10% Rode in a Car	6% Took the Bus	- Stand-up E-scooter	9% Other / N/A
School	10% Walked	- Mobility Scooter	3% Bicycled	16% Drove a Car	4% Rode in a Car	5% Took the Bus	- Stand-up E-scooter	62% Other / N/A
Running Errands	21% Walked	- Mobility Scooter	10% Bicycled	49% Drove a Car	15% Rode in a Car	3% Took the Bus	- Stand-up E-scooter	- Other / N/A
Rec Center or Park	30% Walked	1% Mobility Scooter	12% Bicycled	36% Drove a Car	11% Rode in a Car	3% Took the Bus	- Stand-up E-scooter	7% Other / N/A
Socializing	29% Walked	- Mobility Scooter	11% Bicycled	38% Drove a Car	17% Rode in a Car	3% Took the Bus	- Stand-up E-scooter	1% Other / N/A

366 respondents

Where, if anywhere, do you have safety concerns on or along Madison Road in Madisonville? Please place a pin (up to 3) where you have a concern, and include a brief description. (For example: "I don't feel safe crossing the road here.")



These lanes are super narrow, and there are street condition issues

one month ago

People regularly cross at Ebersole to get to Sunny Mart but there is no marked crosswalk or safe infrastructure for them to use

2 months ago

The utility poles around the bridge block access for people and the low, narrow curbs are very concerning. Pedestrians are not allowed to cross on the east side of the intersection and cars are allowed to turn right on red, even though it is the busiest bus stop in the neighborhood. People also make very tight right turns onto Kenwood which is a threat to people waiting on Kenwood

2 months ago

clumsy turn design.

one month ago

Show all comments

How safe do you feel while doing the following activities on or along Madison Road in Madisonville?

	Very Safe	Safe	Neither Safe or Unsafe	Unsafe	Very Unsafe	Not Applicable
Driving an Automobile	13% Very Safe	35% Safe	24% Neither Safe or Unsafe	23% Unsafe	3% Very Unsafe	2% Not Applicable
Riding in an Automobile	10% Very Safe	38% Safe	27% Neither Safe or Unsafe	18% Unsafe	2% Very Unsafe	6% Not Applicable
Walking	5% Very Safe	21% Safe	22% Neither Safe or Unsafe	25% Unsafe	20% Very Unsafe	7% Not Applicable
Rolling (mobility scooter)	- Very Safe	2% Safe	2% Neither Safe or Unsafe	5% Unsafe	8% Very Unsafe	82% Not Applicable
Bicycling	2% Very Safe	2% Safe	5% Neither Safe or Unsafe	18% Unsafe	31% Very Unsafe	42% Not Applicable
Riding the Bus	3% Very Safe	20% Safe	10% Neither Safe or Unsafe	4% Unsafe	1% Very Unsafe	62% Not Applicable
Riding a Stand-up E-Scooter	- Very Safe	1% Safe	4% Neither Safe or Unsafe	5% Unsafe	7% Very Unsafe	84% Not Applicable
Outdoor Dining	4% Very Safe	22% Safe	18% Neither Safe or Unsafe	12% Unsafe	5% Very Unsafe	39% Not Applicable

181 respondents

Have you experienced any accessibility challenges while using Madison Road? If so, please describe the nature of these challenges.

There are sections around that area that do not even have sidewalk in the first place. There are also overly wide roads and it is impossible to navigate them outside of a car. There is also no place for bikes. If people tried to use public transport, walked in these areas, or bike in these areas on their own they will see what problems there are. Obviously people do not do that when it is needed the most for people in positions of power to do these things.

10 days ago

It is very hostile to walk down Madison Road. I assume it's much, much worse for someone with mobility concerns. The recent sidewalk work around Whetsel has helped there but it still feels so hostile that it is not comfortable to even park on the street. It is also difficult to cross at Anderson, Mathis, Ward, Kenwood...really anywhere and everywhere.

14 days ago

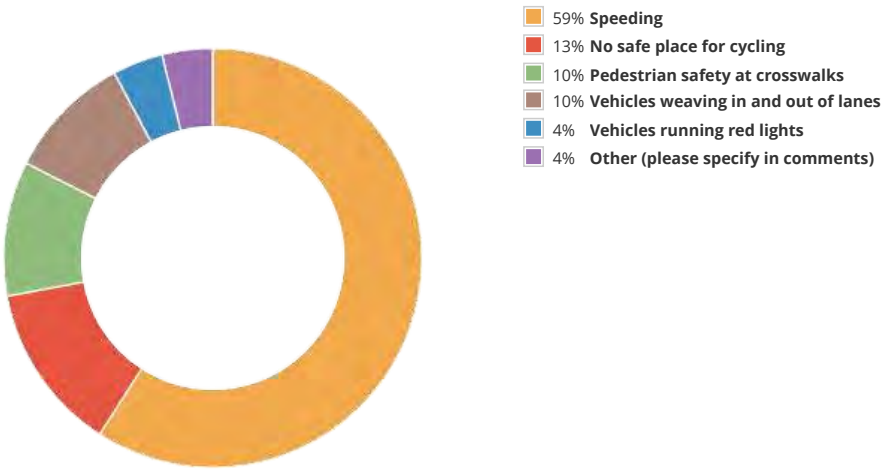
Only a narrow path.

19 days ago

22 days ago

Show all comments

In your opinion, what is the top concern when traveling on Madison Road in Madisonville?



154 respondents

Drivers are distracted, speeding, and weaving between lanes to gain 15 seconds on their travel time. More checks need to be in place to allow pedestrians and bicycles to move safely.

12 days ago

People seem to really ramp it up between Stewart and Whetsel, and the again from Whetsel to Kenwood. It's almost like they know that there isn't going to be anything to stop or slow them down so they just slam on the accelerator

14 days ago

More narrow roadways and protected bike lanes would be amazing

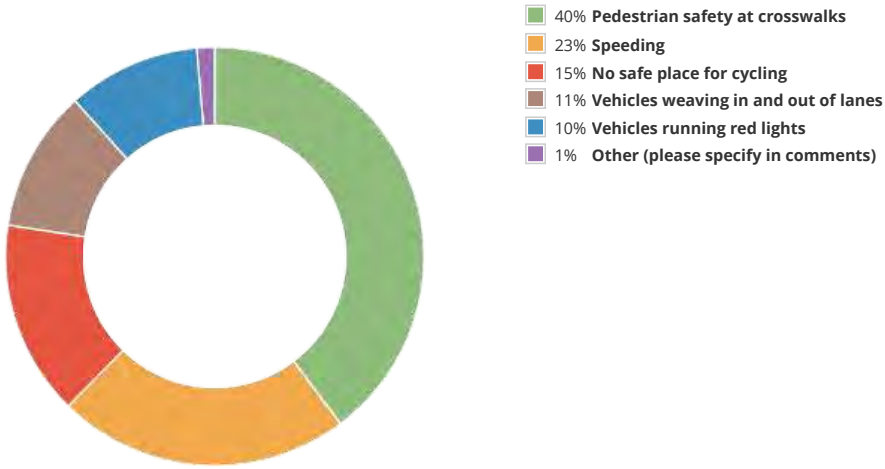
16 days ago

Red lights get run, people race down the streets, there's not enough crosswalks

17 days ago

Show all comments

In your opinion, what is the #2 concern when traveling on Madison Road in Madisonville?



146 respondents

It's basically impossible to safely cross the street anywhere along Madison Road

14 days ago

This road definitely needs safer, more numerous crosswalks and bike lanes. I rarely see anyone biking or walking here which just goes to show how hostile this area is to people outside of a car

16 days ago

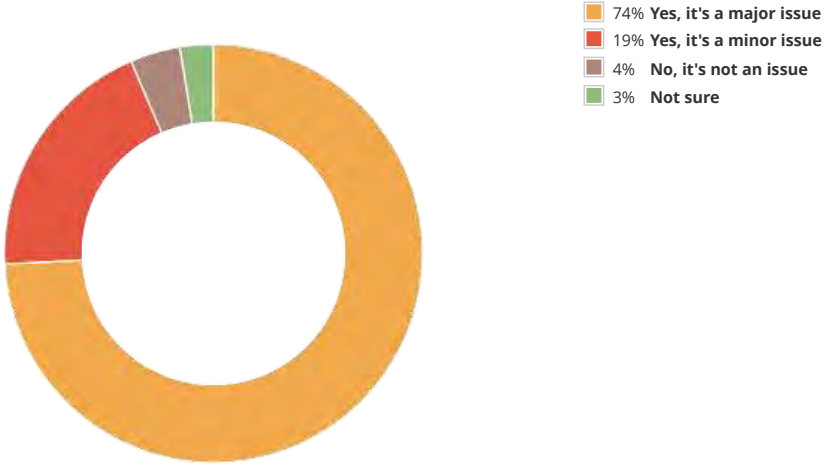
22 days ago

I have driven this road for the last ten years, many times per week. I see few to none people at crosswalks. Occasionally a person will cross the road not at a crosswalk. I see few to none bicyclists. The road doesn't need to be modified for bicyclists. Cars do speed but the limit is quite low in spots (25 mph is difficult to drive). I have seen no automobile accidents or any type of accident other than with the train bridge and a truck. I do not suggest an overhaul and I do NOT want to see reduced number of driving lanes.

26 days ago

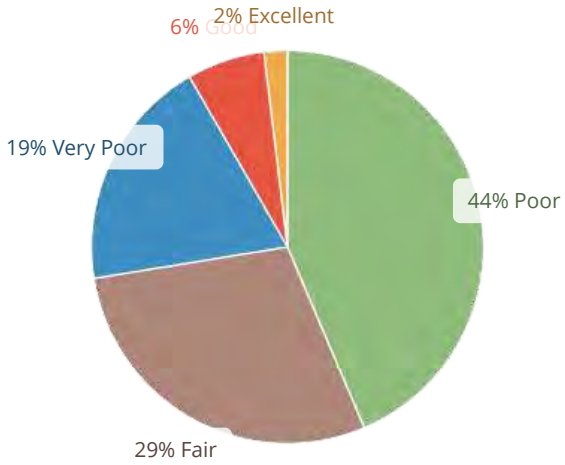
Show all comments

In your opinion, is speeding an issue on Madison Road?



155 respondents

How would you rate the pedestrian crossings on Madison Road in Madisonville in terms of safety?



155 respondents

Ban right turns on red. Put in some centerline hardening and right turn wedges

14 days ago

22 days ago

Madisonville is no longer a drive through part of the city. Madison road needs to be speed enforced and made into a pedestrian first area. Medpace is hiring 1,500 new employees in the next 6 years - if improvements aren't made Madison will become an expressway.

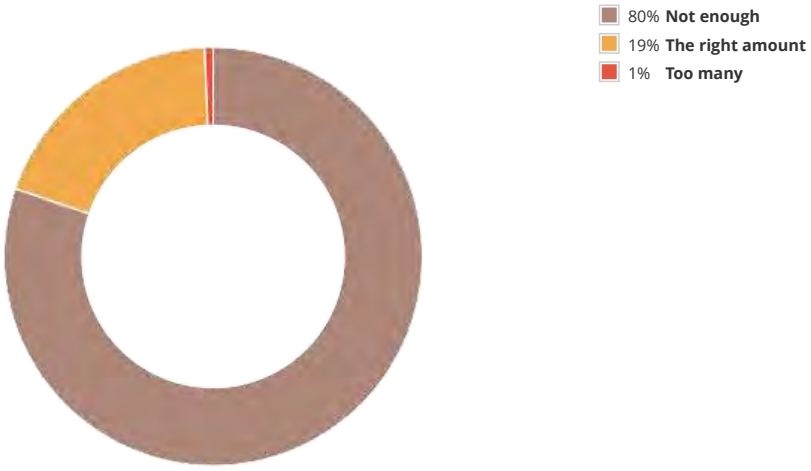
26 days ago

Pedestrians are not safe in Madisonville crosswalks

one month ago

Show all comments

When I think about the crosswalks on Madison Road in Madisonville, I feel there are:



152 respondents

Towns must be developed with the pedestrians in mind first. Not everyone can afford a personal car or uber. Cars rule this city and change needs to be made.

12 days ago

There are way too few crosswalks. There are too many places where people have to cross at unmarked crosswalks, or where one is not present at all. This gives people an awful choice. The long spaces between intersections and crosswalks really makes it feel like a speedway, not the center of a community.

14 days ago

Continuous, raised crosswalks please!

16 days ago

The amount is not the problem. The problem is the safety when crossing.

22 days ago

Show all comments

Do you have any additional comments, suggestions, or concerns regarding the Madison Road Complete Street Project that you would like to share?

Please address the stretch of Madison Rd west of Red Bank too. It's not safe.

12 days ago

A lot of Madisonville has some great tree coverage...but then other parts don't. Hopefully you can make that a little more consistent with this project.

14 days ago

Lower the speed limit!

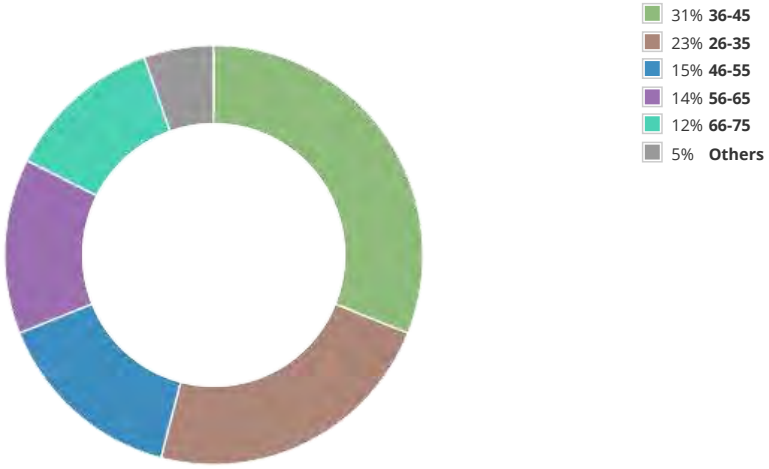
18 days ago

Distances that i travel in Madisonville are often too far to walk, but not too far to bike. I bike around town a lot and have found side streets to weave my way through Madisonville, but a bike Kane on Madison would be great b

20 days ago

Show all comments

What is your age?



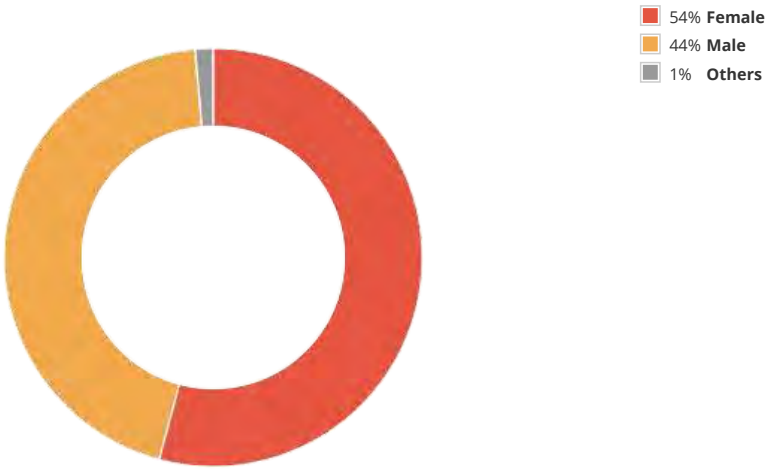
74 respondents

What is your race/ethnicity?

81%	White	59 ✓
8%	Black or African-American	6 ✓
7%	I prefer not to answer	5 ✓
3%	Other	2 ✓
1%	Hispanic, Latino, or Spanish	1 ✓
1%	Asian	1 ✓
0%	American Indian or Alaska Native	0 ✓
0%	Native Hawaiian or Other Pacific Islander	0 ✓

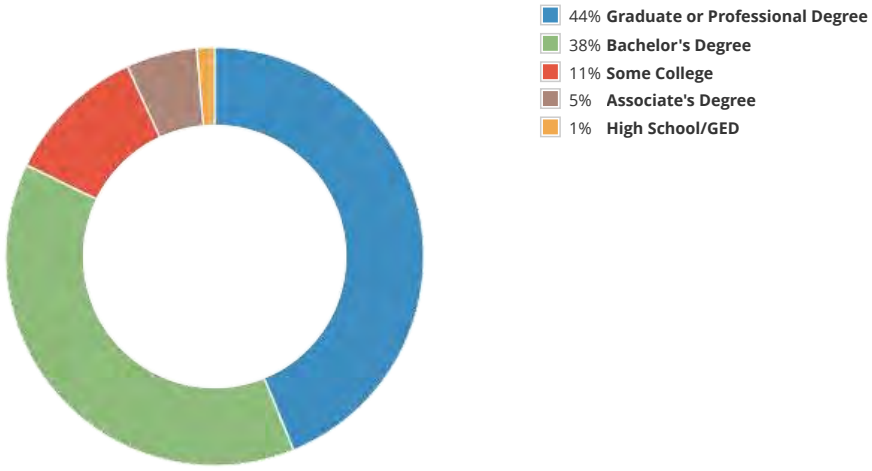
73 Respondents

What is your gender?



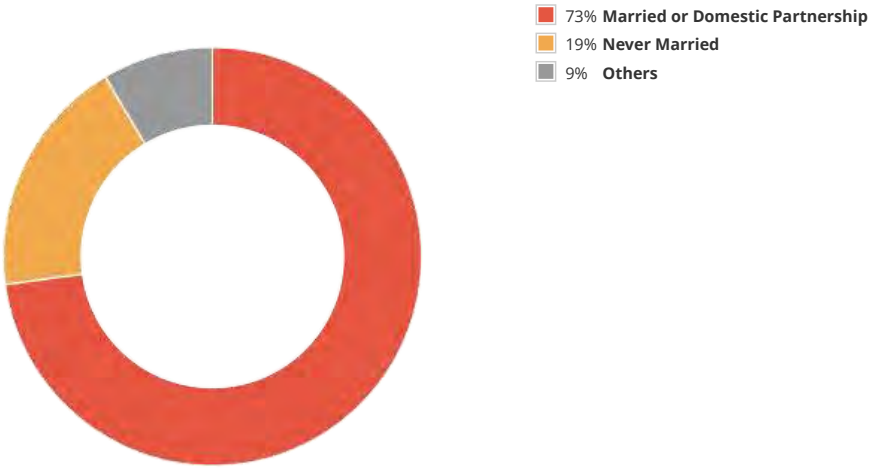
72 respondents

What is your highest formal education level?



73 respondents

What is your marital status?



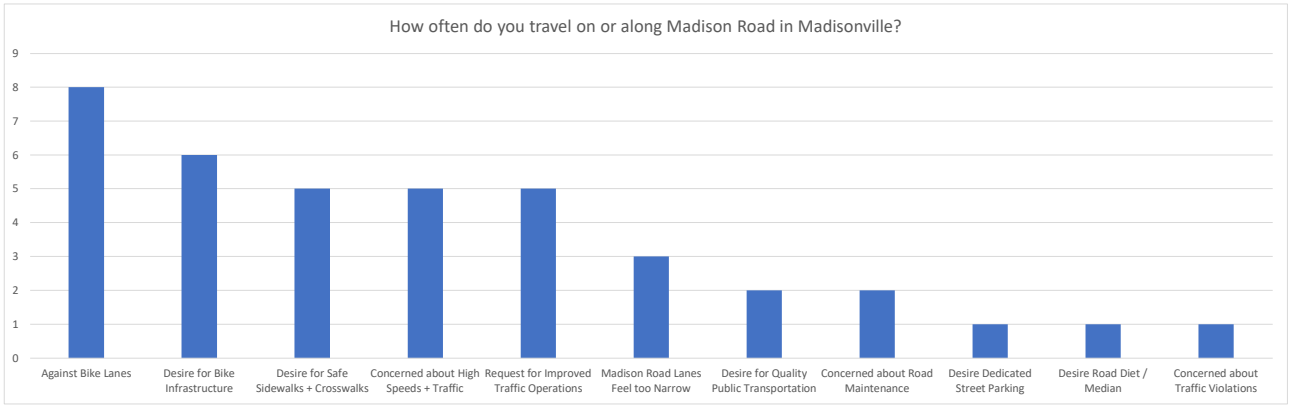
70 respondents

Madison Road Complete Street Study

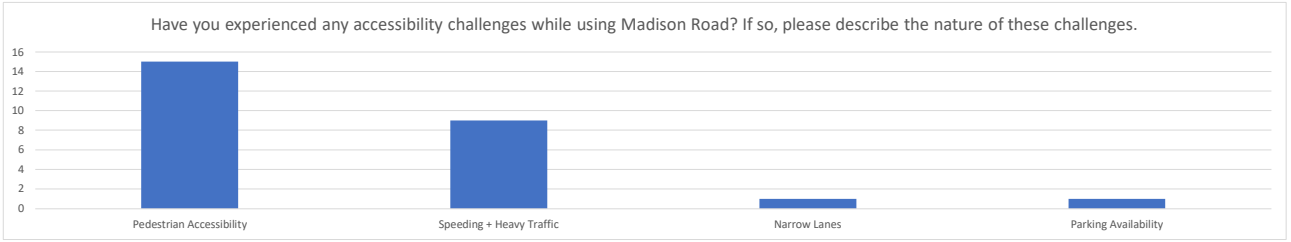
Public Engagement - Madisonville Resident Survey Results

Response to Comments

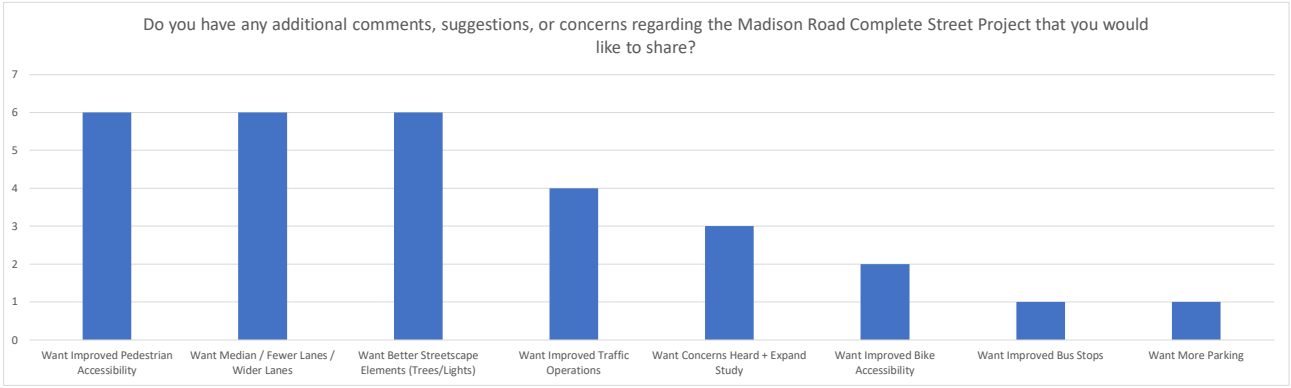
How often do you travel on or along Madison Road in Madisonville?	
Against Bike Lanes	8
Desire for Bike Infrastructure	6
Desire for Safe Sidewalks + Crosswalks	5
Concerned about High Speeds + Traffic	5
Request for Improved Traffic Operations	5
Madison Road Lanes Feel too Narrow	3
Desire for Quality Public Transportation	2
Concerned about Road Maintenance	2
Desire Dedicated Street Parking	1
Desire Road Diet / Median	1
Concerned about Traffic Violations	1



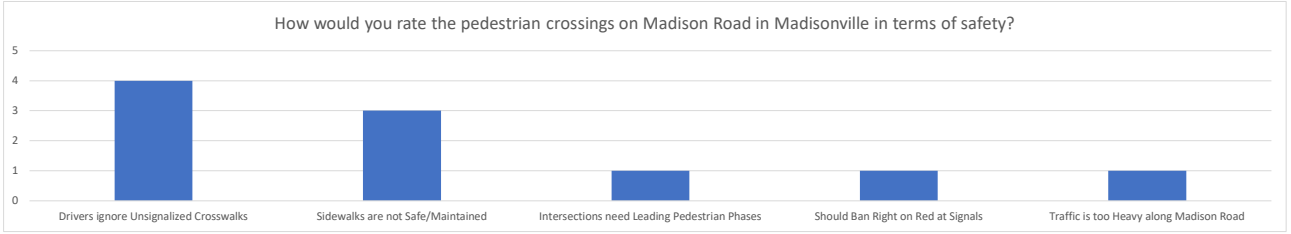
Have you experienced any accessibility challenges while using Madison Road? If so, please describe the nature of these challenges.	
Pedestrian Accessibility	15
Speeding + Heavy Traffic	9
Narrow Lanes	1
Parking Availability	1



Do you have any additional comments, suggestions, or concerns regarding the Madison Road Complete Street Project that you would like to share?	
Concerned about Speeding + Heavy Traffic	9
Want Improved Pedestrian Accessibility	6
Want Median / Fewer Lanes / Wider Lanes	6
Want Better Streetscape Elements (Trees/Lights)	6
Want Improved Traffic Operations	4
Want Concerns Heard + Expand Study	3
Want Improved Bike Accessibility	2
Want Improved Bus Stops	1
Want More Parking	1



How would you rate the pedestrian crossings on Madison Road in Madisonville in terms of safety?	
Drivers ignore Unsignalized Crosswalks	4
Sidewalks are not Safe/Maintained	3
Intersections need Leading Pedestrian Phases	1
Should Ban Right on Red at Signals	1
Traffic is too Heavy along Madison Road	1



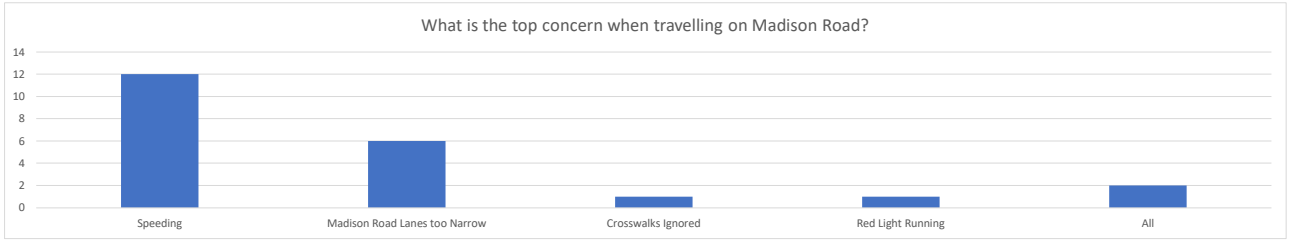
Madison Road Complete Street Study

Public Engagement - Madisonville Resident Survey Results

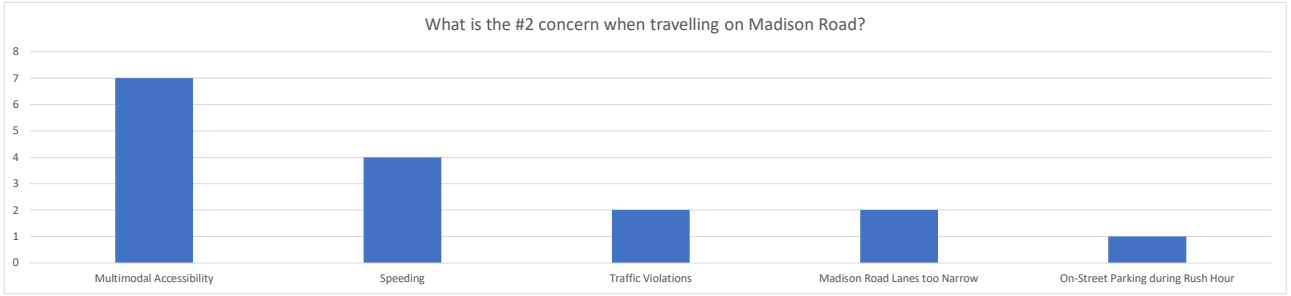
Response to Comments

When I think about the crosswalks on Madison Road in Madisonville, I feel there are:	
More Crosswalks Needed	3
Concern for Vulernable Users (Kids/Elders)	2
Raised Crosswalks Needed	2
Currently Dangerous Crosswalks	1
Little Emphasis on Pedestrian Design	1

In your opinion, what is the top concern when traveling on Madison Road in Madisonville?	
Speeding	12
Madison Road Lanes too Narrow	6
Crosswalks Ignored	1
Red Light Running	1
All	2

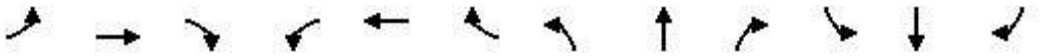


In your opinion, what is the #2 concern when traveling on Madison Road in Madisonville?	
Multimodal Accessibility	7
Speeding	4
Traffic Violations	2
Madison Road Lanes too Narrow	2
On-Street Parking during Rush Hour	1



Appendix H

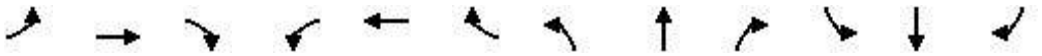
Synchro Capacity Analyses Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Future Volume (Veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	533	3	1	1537	15	2	0	1	2	0	113
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					505							
pX, platoon unblocked	0.76						0.76	0.76		0.76	0.76	0.76
vC, conflicting volume	1552			536			1558	2228	268	1954	2222	776
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1083			536			1091	1979	268	1615	1971	56
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			100			98	100	100	96	100	85
cM capacity (veh/h)	483			1042			98	40	736	47	41	759

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	70	355	181	1	1025	527	3	115
Volume Left	70	0	0	1	0	0	2	2
Volume Right	0	0	3	0	0	15	1	113
cSH	483	1700	1700	1042	1700	1700	138	601
Volume to Capacity	0.14	0.21	0.11	0.00	0.60	0.31	0.02	0.19
Queue Length 95th (ft)	13	0	0	0	0	0	2	18
Control Delay (s)	13.7	0.0	0.0	8.5	0.0	0.0	31.7	12.4
Lane LOS	B			A			D	B
Approach Delay (s)	1.6			0.0			31.7	12.4
Approach LOS							D	B

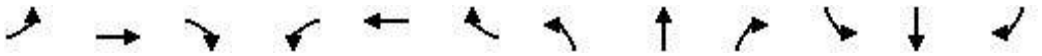
Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	68.9%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Future Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	9	9	9	9	9	9	10	10	10	10	10	10
Total Lost time (s)	6.0	7.0		7.0	7.0			6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1211	2562		1368	2677			1415			1372	
Flt Permitted	0.14	1.00		0.47	1.00			0.96			0.99	
Satd. Flow (perm)	185	2562		680	2677			1415			1372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	424	68	12	1199	18	218	24	2	38	50	86
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	492	0	12	1217	0	0	244	0	0	174	0
Heavy Vehicles (%)	13%	5%	2%	0%	2%	0%	1%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2			6								
Actuated Green, G (s)	28.8	28.8		21.6	21.6			14.0			13.2	
Effective Green, g (s)	28.8	28.8		21.6	21.6			14.0			13.2	
Actuated g/C Ratio	0.38	0.38		0.29	0.29			0.19			0.18	
Clearance Time (s)	6.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	87	983		195	770			264			241	
v/s Ratio Prot	0.00	c0.19			c0.45			c0.17			c0.13	
v/s Ratio Perm	0.11			0.02								
v/c Ratio	0.29	0.50		0.06	1.58			0.92			0.72	
Uniform Delay, d1	18.3	17.6		19.4	26.7			30.0			29.2	
Progression Factor	1.00	1.00		0.81	0.83			1.00			1.00	
Incremental Delay, d2	1.8	1.8		0.5	266.4			35.5			10.2	
Delay (s)	20.1	19.4		16.2	288.4			65.5			39.4	
Level of Service	C	B		B	F			E			D	
Approach Delay (s)		19.5			285.8			65.5			39.4	
Approach LOS		B			F			E			D	

Intersection Summary			
HCM 2000 Control Delay	177.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Future Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	10	10	10	12	12	12	11	11	11	10	14	14
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1255	2659		1462	2964		1441	1481		1419	1527	
Flt Permitted	0.29	1.00		0.51	1.00		0.59	1.00		0.64	1.00	
Satd. Flow (perm)	385	2659		785	2964		893	1481		950	1527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	346	66	62	778	24	278	138	55	37	129	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	34	412	0	62	802	0	278	193	0	37	232	0
Heavy Vehicles (%)	13%	4%	5%	4%	2%	5%	2%	0%	0%	0%	3%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	36.0	36.0		36.0	36.0		27.0	27.0		27.0	27.0	
Effective Green, g (s)	36.0	36.0		36.0	36.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36		0.36	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	184	1276		376	1422		321	533		342	549	
v/s Ratio Prot		0.15			c0.27			0.13			0.15	
v/s Ratio Perm	0.09			0.08			c0.31			0.04		
v/c Ratio	0.18	0.32		0.16	0.56		0.87	0.36		0.11	0.42	
Uniform Delay, d1	11.1	12.0		11.0	13.9		22.3	17.7		16.0	18.1	
Progression Factor	0.78	0.88		0.54	0.65		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.6		0.8	1.3		25.5	1.9		0.6	2.4	
Delay (s)	10.7	11.2		6.7	10.4		47.8	19.6		16.6	20.5	
Level of Service	B	B		A	B		D	B		B	C	
Approach Delay (s)		11.2			10.1			36.2			20.0	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Future Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.86	
Flt Protected		1.00			1.00			0.97			1.00	
Satd. Flow (prot)		2728			1464			1258			1174	
Flt Permitted		0.94			1.00			0.80			1.00	
Satd. Flow (perm)		2565			1464			1036			1174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	442	0	0	808	2	13	2	5	0	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	452	0	0	810	0	0	20	0	0	11	0
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	17%	0%	0%	0%	0%	10%
Turn Type	Perm	NA			NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)		59.0			59.0			6.0			6.0	
Effective Green, g (s)		59.0			59.0			6.0			6.0	
Actuated g/C Ratio		0.79			0.79			0.08			0.08	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		2017			1151			82			93	
v/s Ratio Prot					c0.55						0.01	
v/s Ratio Perm		0.18						c0.02				
v/c Ratio		0.22			0.70			0.24			0.12	
Uniform Delay, d1		2.1			3.8			32.4			32.0	
Progression Factor		2.06			0.67			1.00			1.00	
Incremental Delay, d2		0.3			2.5			1.6			0.6	
Delay (s)		4.5			5.0			33.9			32.6	
Level of Service		A			A			C			C	
Approach Delay (s)		4.5			5.0			33.9			32.6	
Approach LOS		A			A			C			C	

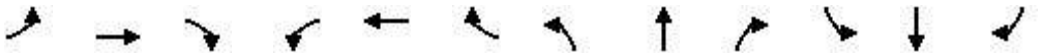
Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	402	731	79	92	23
Future Volume (vph)	15	402	731	79	92	23
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Lane Width	10	10	12	12	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1182	1464	1557		1326	1269
Flt Permitted	0.24	1.00	1.00		0.95	1.00
Satd. Flow (perm)	302	1464	1557		1326	1269
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	437	795	86	100	25
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	16	437	881	0	100	25
Heavy Vehicles (%)	20%	2%	1%	5%	7%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	53.2	53.2	53.2		9.8	9.8
Effective Green, g (s)	53.2	53.2	53.2		9.8	9.8
Actuated g/C Ratio	0.71	0.71	0.71		0.13	0.13
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	214	1038	1104		173	165
v/s Ratio Prot		0.30	c0.57		c0.08	
v/s Ratio Perm	0.05					0.02
v/c Ratio	0.07	0.42	0.80		0.58	0.15
Uniform Delay, d1	3.3	4.5	7.3		30.7	28.9
Progression Factor	0.46	0.99	1.00		1.00	1.00
Incremental Delay, d2	0.7	1.2	6.0		4.6	0.4
Delay (s)	2.2	5.7	13.3		35.3	29.3
Level of Service	A	A	B		D	C
Approach Delay (s)		5.6	13.3		34.1	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

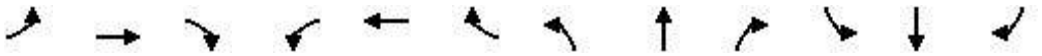
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Future Volume (Veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	123	0	0	0	1	0	676	82	0	0	91	178
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1278										
pX, platoon unblocked												
vC, conflicting volume	1			0			470	247	0	288	247	1
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1			0			470	247	0	288	247	1
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			0	86	100	100	85	84
cM capacity (veh/h)	1615			1636			353	607	1091	565	607	1090

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	123	1	676	82	269
Volume Left	123	0	676	0	0
Volume Right	0	0	0	0	178
cSH	1615	1636	353	607	859
Volume to Capacity	0.08	0.00	1.92	0.14	0.31
Queue Length 95th (ft)	6	0	1148	12	34
Control Delay (s)	7.4	0.0	448.0	11.9	11.1
Lane LOS	A		F	B	B
Approach Delay (s)	7.4	0.0	400.8		11.1
Approach LOS			F		B

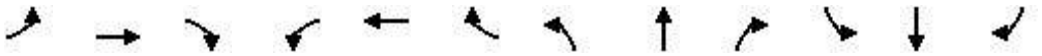
Intersection Summary				
Average Delay	267.3			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Future Volume (Veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	1255	3	2	864	5	1	0	7	1	0	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					505							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	869			1258			1840	2238	629	1613	2236	434
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	341			1258			1553	2049	629	1270	2047	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			98	100	98	99	100	95
cM capacity (veh/h)	973			549			56	42	425	94	42	869

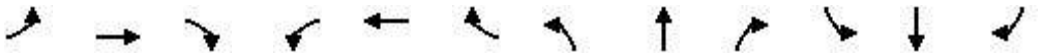
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	54	837	421	2	576	293	8	41
Volume Left	54	0	0	2	0	0	1	1
Volume Right	0	0	3	0	0	5	7	40
cSH	973	1700	1700	549	1700	1700	233	724
Volume to Capacity	0.06	0.49	0.25	0.00	0.34	0.17	0.03	0.06
Queue Length 95th (ft)	4	0	0	0	0	0	3	4
Control Delay (s)	8.9	0.0	0.0	11.6	0.0	0.0	21.0	10.3
Lane LOS	A			B			C	B
Approach Delay (s)	0.4			0.0			21.0	10.3
Approach LOS							C	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	54.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Future Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	9	9	9	9	9	9	10	10	10	10	10	10
Total Lost time (s)	6.0	7.0		7.0	7.0			6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1341	2648		1341	2655			1395			1355	
Flt Permitted	0.18	1.00		0.21	1.00			0.97			0.98	
Satd. Flow (perm)	248	2648		298	2655			1395			1355	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1016	95	4	661	48	125	51	27	46	37	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	1111	0	4	709	0	0	203	0	0	150	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	30.3	30.3		19.2	19.2			13.3			12.4	
Effective Green, g (s)	30.3	30.3		19.2	19.2			13.3			12.4	
Actuated g/C Ratio	0.40	0.40		0.26	0.26			0.18			0.17	
Clearance Time (s)	6.0	7.0		7.0	7.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	174	1069		76	679			247			224	
v/s Ratio Prot	0.04	c0.42			0.27			c0.15			c0.11	
v/s Ratio Perm	0.21			0.01								
v/c Ratio	0.63	1.04		0.05	1.04			0.82			0.67	
Uniform Delay, d1	16.1	22.4		21.0	27.9			29.7			29.4	
Progression Factor	1.00	1.00		1.00	0.95			1.00			1.00	
Incremental Delay, d2	7.3	38.3		1.2	45.5			19.3			7.4	
Delay (s)	23.3	60.6		22.3	71.9			49.0			36.8	
Level of Service	C	E		C	E			D			D	
Approach Delay (s)		57.3			71.6			49.0			36.8	
Approach LOS		E			E			D			D	

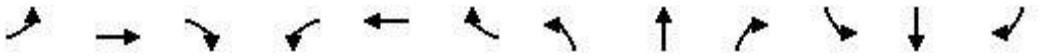
Intersection Summary			
HCM 2000 Control Delay	59.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Future Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1304	2548		1304	2589		1304	1294		1304	1312	
Flt Permitted	0.44	1.00		0.24	1.00		0.55	1.00		0.60	1.00	
Satd. Flow (perm)	606	2548		327	2589		757	1294		821	1312	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	780	141	65	503	26	113	139	86	26	184	76
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	96	921	0	65	529	0	113	225	0	26	260	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	36.0	36.0		36.0	36.0		27.0	27.0		27.0	27.0	
Effective Green, g (s)	36.0	36.0		36.0	36.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36		0.36	0.36	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	290	1223		156	1242		272	465		295	472	
v/s Ratio Prot		c0.36			0.20			0.17			c0.20	
v/s Ratio Perm	0.16			0.20			0.15			0.03		
v/c Ratio	0.33	0.75		0.42	0.43		0.42	0.48		0.09	0.55	
Uniform Delay, d1	12.1	15.9		12.7	12.7		18.1	18.6		15.9	19.2	
Progression Factor	0.12	0.19		0.67	0.68		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.2		7.4	1.0		4.6	3.6		0.6	4.6	
Delay (s)	2.2	4.3		15.9	9.7		22.7	22.2		16.5	23.7	
Level of Service	A	A		B	A		C	C		B	C	
Approach Delay (s)		4.1			10.4			22.3			23.1	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

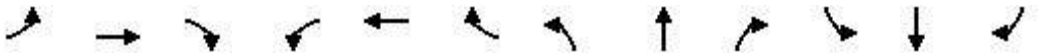


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Future Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		1.00			1.00			0.98			0.88	
Flt Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		2781			1464			1479			1375	
Flt Permitted		0.95			1.00			1.00			0.95	
Satd. Flow (perm)		2654			1464			1540			1316	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	902	0	0	605	1	18	1	3	1	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	905	0	0	606	0	0	22	0	0	8	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)		61.6			61.6			3.4			3.4	
Effective Green, g (s)		61.6			61.6			3.4			3.4	
Actuated g/C Ratio		0.82			0.82			0.05			0.05	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		2179			1202			69			59	
v/s Ratio Prot					c0.41							
v/s Ratio Perm		0.34						c0.01			0.01	
v/c Ratio		0.42			0.50			0.32			0.14	
Uniform Delay, d1		1.8			2.0			34.7			34.4	
Progression Factor		1.15			0.09			1.00			1.00	
Incremental Delay, d2		0.4			1.2			2.7			1.1	
Delay (s)		2.5			1.4			37.3			35.4	
Level of Service		A			A			D			D	
Approach Delay (s)		2.5			1.4			37.3			35.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	780	476	73	142	26
Future Volume (vph)	40	780	476	73	142	26
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500
Lane Width	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1304	1373	1348		1304	1167
Flt Permitted	0.38	1.00	1.00		0.95	1.00
Satd. Flow (perm)	517	1373	1348		1304	1167
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	848	517	79	154	28
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	43	848	596	0	154	28
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	48.8	48.8	48.8		14.2	14.2
Effective Green, g (s)	48.8	48.8	48.8		14.2	14.2
Actuated g/C Ratio	0.65	0.65	0.65		0.19	0.19
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	336	893	877		246	220
v/s Ratio Prot		c0.62	0.44		c0.12	
v/s Ratio Perm	0.08					0.02
v/c Ratio	0.13	0.95	0.68		0.63	0.13
Uniform Delay, d1	5.0	12.0	8.2		28.0	25.3
Progression Factor	0.56	0.77	1.00		1.00	1.00
Incremental Delay, d2	0.7	19.4	4.2		4.9	0.3
Delay (s)	3.5	28.6	12.4		32.9	25.5
Level of Service	A	C	B		C	C
Approach Delay (s)		27.4	12.4		31.7	
Approach LOS		C	B		C	

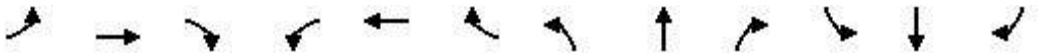
Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Future Volume (Veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	1	0	1	3	1	422	139	0	0	117	130
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1278										
pX, platoon unblocked												
vC, conflicting volume	4			1			677	489	1	558	488	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			1			677	489	1	558	488	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			100			0	66	100	100	71	88
cM capacity (veh/h)	1618			1622			224	408	1084	289	408	1080

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	242	5	422	139	247
Volume Left	241	1	422	0	0
Volume Right	0	1	0	0	130
cSH	1618	1622	224	408	607
Volume to Capacity	0.15	0.00	1.89	0.34	0.41
Queue Length 95th (ft)	13	0	751	37	49
Control Delay (s)	7.6	1.4	451.9	18.3	14.9
Lane LOS	A	A	F	C	B
Approach Delay (s)	7.6	1.4	344.4		14.9
Approach LOS			F		B

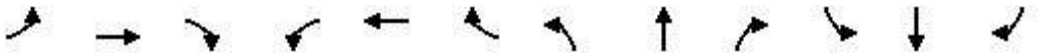
Intersection Summary				
Average Delay	188.4			
Intersection Capacity Utilization	72.3%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Future Volume (Veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	533	3	1	1537	15	2	0	1	2	0	113
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)					505							
pX, platoon unblocked	0.43						0.43	0.43		0.43	0.43	0.43
vC, conflicting volume	1552			536			2326	2228	534	2220	2222	1544
vC1, stage 1 conf vol							674	674		1546	1546	
vC2, stage 2 conf vol							1652	1554		674	676	
vCu, unblocked vol	1622			536			3435	3206	534	3187	3192	1604
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	59			100			0	100	100	96	100	0
cM capacity (veh/h)	171			1042			0	3	550	54	66	56

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	70	536	1	1552	3	115
Volume Left	70	0	1	0	2	2
Volume Right	0	3	0	15	1	113
cSH	171	1700	1042	1700	0	56
Volume to Capacity	0.41	0.32	0.00	0.91	Err	2.05
Queue Length 95th (ft)	45	0	0	0	Err	280
Control Delay (s)	39.8	0.0	8.5	0.0	Err	644.5
Lane LOS	E		A		F	F
Approach Delay (s)	4.6		0.0		Err	644.5
Approach LOS					F	F

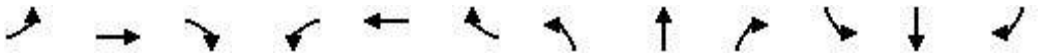
Intersection Summary				
Average Delay	Err			
Intersection Capacity Utilization	103.8%	ICU Level of Service	G	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Future Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1345	1498		1520	1566			1415			1372	
Flt Permitted	0.04	1.00		0.47	1.00			0.96			0.99	
Satd. Flow (perm)	60	1498		744	1566			1415			1372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	424	68	12	1199	18	218	24	2	38	50	86
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	492	0	12	1217	0	0	244	0	0	174	0
Heavy Vehicles (%)	13%	5%	2%	0%	2%	0%	1%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		3	3	
Permitted Phases	2			6								
Actuated Green, G (s)	98.0	98.0		87.8	87.8			20.0			14.0	
Effective Green, g (s)	98.0	98.0		87.8	87.8			20.0			14.0	
Actuated g/C Ratio	0.65	0.65		0.59	0.59			0.13			0.09	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	75	978		435	916			188			128	
v/s Ratio Prot	0.01	c0.33			c0.78			c0.17			c0.13	
v/s Ratio Perm	0.21			0.02								
v/c Ratio	0.33	0.50		0.03	1.33			1.30			1.36	
Uniform Delay, d1	36.5	13.4		13.1	31.1			65.0			68.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.6	1.8		0.1	155.4			167.4			203.9	
Delay (s)	39.2	15.3		13.2	186.5			232.4			271.9	
Level of Service	D	B		B	F			F			F	
Approach Delay (s)		16.4			184.8			232.4			271.9	
Approach LOS		B			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	157.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		

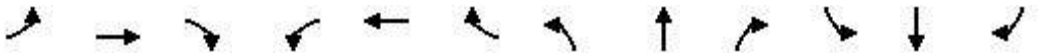
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Future Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	11	11	11	10	14	14
Total Lost time (s)	6.0	6.0		6.0	6.0		4.5	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1345	1499		1462	1560		1441	1481		1419	1527	
Flt Permitted	0.17	1.00		0.44	1.00		0.26	1.00		0.64	1.00	
Satd. Flow (perm)	240	1499		679	1560		398	1481		950	1527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	346	66	62	778	24	278	138	55	37	129	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	34	412	0	62	802	0	278	193	0	37	232	0
Heavy Vehicles (%)	13%	4%	5%	4%	2%	5%	2%	0%	0%	0%	3%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	85.0	85.0		85.0	85.0		51.9	51.9		24.9	24.9	
Effective Green, g (s)	85.0	85.0		85.0	85.0		51.9	51.9		24.9	24.9	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.35	0.35		0.17	0.17	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.5	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	137	855		387	890		296	516		158	255	
v/s Ratio Prot		0.27			c0.51		c0.14	0.13			0.15	
v/s Ratio Perm	0.14			0.09			c0.19			0.04		
v/c Ratio	0.25	0.48		0.16	0.90		0.94	0.37		0.23	0.91	
Uniform Delay, d1	16.0	18.9		15.1	28.2		41.0	36.3		53.7	60.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	1.9		0.9	14.0		36.0	0.5		0.8	33.0	
Delay (s)	20.3	20.9		16.0	42.3		77.0	36.8		54.5	93.9	
Level of Service	C	C		B	D		E	D		D	F	
Approach Delay (s)		20.8			40.4			60.5			88.5	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	148.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Future Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.97			0.86	
Flt Protected	0.95	1.00			1.00			0.97			1.00	
Satd. Flow (prot)	1520	1538			1568			1258			1174	
Flt Permitted	0.31	1.00			1.00			0.80			1.00	
Satd. Flow (perm)	497	1538			1568			1036			1174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	442	0	0	808	2	13	2	5	0	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	10	442	0	0	810	0	0	20	0	0	11	0
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	17%	0%	0%	0%	0%	10%
Turn Type	Perm	NA			NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)	59.0	59.0			59.0			6.0			6.0	
Effective Green, g (s)	59.0	59.0			59.0			6.0			6.0	
Actuated g/C Ratio	0.79	0.79			0.79			0.08			0.08	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	390	1209			1233			82			93	
v/s Ratio Prot		0.29			c0.52						0.01	
v/s Ratio Perm	0.02							c0.02				
v/c Ratio	0.03	0.37			0.66			0.24			0.12	
Uniform Delay, d1	1.7	2.4			3.5			32.4			32.0	
Progression Factor	1.00	1.00			0.14			1.00			1.00	
Incremental Delay, d2	0.1	0.9			1.9			1.6			0.6	
Delay (s)	1.9	3.3			2.4			33.9			32.6	
Level of Service	A	A			A			C			C	
Approach Delay (s)		3.2			2.4			33.9			32.6	
Approach LOS		A			A			C			C	

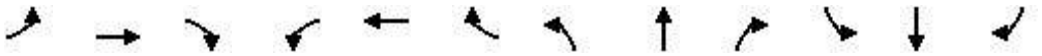
Intersection Summary			
HCM 2000 Control Delay	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	402	731	79	92	23
Future Volume (vph)	15	402	731	79	92	23
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1267	1569	1557		1326	1269
Flt Permitted	0.24	1.00	1.00		0.95	1.00
Satd. Flow (perm)	323	1569	1557		1326	1269
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	437	795	86	100	25
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	16	437	881	0	100	25
Heavy Vehicles (%)	20%	2%	1%	5%	7%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	53.2	53.2	53.2		9.8	9.8
Effective Green, g (s)	53.2	53.2	53.2		9.8	9.8
Actuated g/C Ratio	0.71	0.71	0.71		0.13	0.13
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	229	1112	1104		173	165
v/s Ratio Prot		0.28	c0.57		c0.08	
v/s Ratio Perm	0.05					0.02
v/c Ratio	0.07	0.39	0.80		0.58	0.15
Uniform Delay, d1	3.3	4.4	7.3		30.7	28.9
Progression Factor	0.78	1.02	1.00		1.00	1.00
Incremental Delay, d2	0.6	1.0	6.0		4.6	0.4
Delay (s)	3.2	5.5	13.3		35.3	29.3
Level of Service	A	A	B		D	C
Approach Delay (s)		5.4	13.3		34.1	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

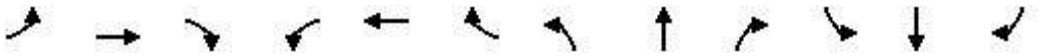
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Future Volume (Veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	123	0	0	0	1	0	676	82	0	0	91	178
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1278										
pX, platoon unblocked												
vC, conflicting volume	1			0			470	247	0	288	247	1
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1			0			470	247	0	288	247	1
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			0	86	100	100	85	84
cM capacity (veh/h)	1615			1636			353	607	1091	565	607	1090

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	123	1	676	82	269
Volume Left	123	0	676	0	0
Volume Right	0	0	0	0	178
cSH	1615	1636	353	607	859
Volume to Capacity	0.08	0.00	1.92	0.14	0.31
Queue Length 95th (ft)	6	0	1148	12	34
Control Delay (s)	7.4	0.0	448.0	11.9	11.1
Lane LOS	A		F	B	B
Approach Delay (s)	7.4	0.0	400.8		11.1
Approach LOS			F		B

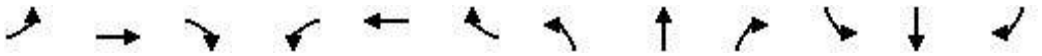
Intersection Summary				
Average Delay	267.3			
Intersection Capacity Utilization	82.2%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Future Volume (Veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	1255	3	2	864	5	1	0	7	1	0	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)					505							
pX, platoon unblocked	0.64						0.64	0.64		0.64	0.64	0.64
vC, conflicting volume	869			1258			2272	2238	1256	2240	2236	866
vC1, stage 1 conf vol							1364	1364		870	870	
vC2, stage 2 conf vol							908	873		1370	1366	
vCu, unblocked vol	513			1258			2709	2654	1256	2659	2653	509
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			99	100	97	99	100	89
cM capacity (veh/h)	673			553			128	154	209	137	161	361

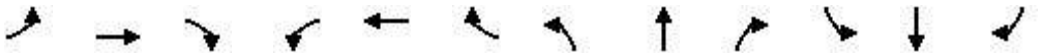
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	54	1258	2	869	8	41
Volume Left	54	0	2	0	1	1
Volume Right	0	3	0	5	7	40
cSH	673	1700	553	1700	194	347
Volume to Capacity	0.08	0.74	0.00	0.51	0.04	0.12
Queue Length 95th (ft)	7	0	0	0	3	10
Control Delay (s)	10.8	0.0	11.5	0.0	24.4	16.8
Lane LOS	B		B		C	C
Approach Delay (s)	0.4		0.0		24.4	16.8
Approach LOS					C	C

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	82.4%	ICU Level of Service		E
Analysis Period (min)	15			



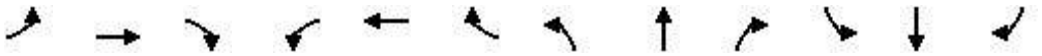
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Future Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1490	1549		1490	1553			1395			1355	
Flt Permitted	0.23	1.00		0.05	1.00			0.97			0.98	
Satd. Flow (perm)	366	1549		75	1553			1395			1355	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1016	95	4	661	48	125	51	27	46	37	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	1111	0	4	709	0	0	203	0	0	150	0
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2			6								
Actuated Green, G (s)	97.0	97.0		84.0	84.0			20.0			15.0	
Effective Green, g (s)	97.0	97.0		84.0	84.0			20.0			15.0	
Actuated g/C Ratio	0.65	0.65		0.56	0.56			0.13			0.10	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	289	1001		42	869			186			135	
v/s Ratio Prot	0.02	c0.72			0.46			c0.15			c0.11	
v/s Ratio Perm	0.23			0.05								
v/c Ratio	0.38	1.11		0.10	0.82			1.09			1.11	
Uniform Delay, d1	32.7	26.5		15.3	26.7			65.0			67.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	63.6		4.5	8.3			92.5			110.4	
Delay (s)	33.6	90.1		19.8	35.1			157.5			177.9	
Level of Service	C	F		B	D			F			F	
Approach Delay (s)		85.0			35.0			157.5			177.9	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	81.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	115.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Future Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	4.5	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1397	1437		1397	1460		1304	1294		1304	1312	
Flt Permitted	0.33	1.00		0.17	1.00		0.35	1.00		0.42	1.00	
Satd. Flow (perm)	488	1437		256	1460		483	1294		572	1312	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	780	141	65	503	26	113	139	86	26	184	76
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	96	921	0	65	529	0	113	225	0	26	260	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	96.0	96.0		84.5	84.5		42.0	42.0		29.0	29.0	
Effective Green, g (s)	96.0	96.0		84.5	84.5		42.0	42.0		29.0	29.0	
Actuated g/C Ratio	0.64	0.64		0.56	0.56		0.28	0.28		0.19	0.19	
Clearance Time (s)	4.5	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	919		144	822		173	362		110	253	
v/s Ratio Prot	0.01	c0.64			0.36		0.03	c0.17			c0.20	
v/s Ratio Perm	0.16			0.25			0.15			0.05		
v/c Ratio	0.27	1.00		0.45	0.64		0.65	0.62		0.24	1.03	
Uniform Delay, d1	13.0	27.0		19.2	22.4		57.9	47.1		51.1	60.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	30.2		2.2	1.7		8.5	3.3		1.1	63.9	
Delay (s)	13.4	57.2		21.4	24.2		66.5	50.4		52.3	124.4	
Level of Service	B	E		C	C		E	D		D	F	
Approach Delay (s)		53.1			23.9			55.8			117.9	
Approach LOS		D			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



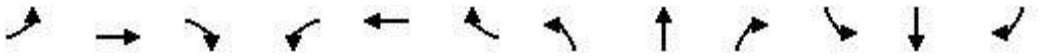
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Future Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.98			0.88	
Flt Protected	0.95	1.00			1.00			0.96			0.99	
Satd. Flow (prot)	1490	1569			1568			1479			1375	
Flt Permitted	0.42	1.00			1.00			1.00			0.95	
Satd. Flow (perm)	663	1569			1568			1540			1316	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	902	0	0	605	1	18	1	3	1	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	902	0	0	606	0	0	22	0	0	8	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)	61.6	61.6			61.6			3.4			3.4	
Effective Green, g (s)	61.6	61.6			61.6			3.4			3.4	
Actuated g/C Ratio	0.82	0.82			0.82			0.05			0.05	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	544	1288			1287			69			59	
v/s Ratio Prot		c0.58			0.39							
v/s Ratio Perm	0.00							c0.01			0.01	
v/c Ratio	0.01	0.70			0.47			0.32			0.14	
Uniform Delay, d1	1.2	2.8			2.0			34.7			34.4	
Progression Factor	1.00	1.00			2.12			1.00			1.00	
Incremental Delay, d2	0.0	3.2			1.1			2.7			1.1	
Delay (s)	1.2	6.0			5.2			37.3			35.4	
Level of Service	A	A			A			D			D	
Approach Delay (s)		6.0			5.2			37.3			35.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	780	476	73	142	26
Future Volume (vph)	40	780	476	73	142	26
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500
Lane Width	12	12	12	12	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1397	1471	1444		1304	1167
Flt Permitted	0.38	1.00	1.00		0.95	1.00
Satd. Flow (perm)	555	1471	1444		1304	1167
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	848	517	79	154	28
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	43	848	596	0	154	28
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	48.9	48.9	48.9		14.1	14.1
Effective Green, g (s)	48.9	48.9	48.9		14.1	14.1
Actuated g/C Ratio	0.65	0.65	0.65		0.19	0.19
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	361	959	941		245	219
v/s Ratio Prot		c0.58	0.41		c0.12	
v/s Ratio Perm	0.08					0.02
v/c Ratio	0.12	0.88	0.63		0.63	0.13
Uniform Delay, d1	4.9	10.7	7.7		28.0	25.3
Progression Factor	1.25	0.97	1.00		1.00	1.00
Incremental Delay, d2	0.5	9.5	3.2		5.0	0.3
Delay (s)	6.7	20.0	11.0		33.0	25.6
Level of Service	A	B	B		C	C
Approach Delay (s)		19.3	11.0		31.9	
Approach LOS		B	B		C	

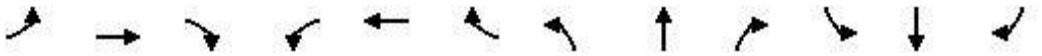
Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Future Volume (Veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	1	0	1	3	1	422	139	0	0	117	130
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1279										
pX, platoon unblocked												
vC, conflicting volume	4			1			677	489	1	558	488	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			1			677	489	1	558	488	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			100			0	66	100	100	71	88
cM capacity (veh/h)	1618			1622			224	408	1084	289	408	1080

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	242	5	422	139	247
Volume Left	241	1	422	0	0
Volume Right	0	1	0	0	130
cSH	1618	1622	224	408	607
Volume to Capacity	0.15	0.00	1.89	0.34	0.41
Queue Length 95th (ft)	13	0	751	37	49
Control Delay (s)	7.6	1.4	451.9	18.3	14.9
Lane LOS	A	A	F	C	B
Approach Delay (s)	7.6	1.4	344.4		14.9
Approach LOS			F		B

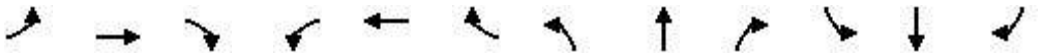
Intersection Summary				
Average Delay	188.4			
Intersection Capacity Utilization	72.3%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Future Volume (Veh/h)	64	490	3	1	1414	14	2	0	1	2	0	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	533	3	1	1537	15	2	0	1	2	0	113
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)					505							
pX, platoon unblocked	0.62						0.62	0.62		0.62	0.62	0.62
vC, conflicting volume	1552			536			1558	2228	268	1954	2222	776
vC1, stage 1 conf vol							674	674		1546	1546	
vC2, stage 2 conf vol							884	1554		408	676	
vCu, unblocked vol	658			536			667	1752	268	1308	1742	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			100			99	100	100	99	100	83
cM capacity (veh/h)	572			1042			313	189	736	236	231	674

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	70	355	181	1	1025	527	3	115
Volume Left	70	0	0	1	0	0	2	2
Volume Right	0	0	3	0	0	15	1	113
cSH	572	1700	1700	1042	1700	1700	387	653
Volume to Capacity	0.12	0.21	0.11	0.00	0.60	0.31	0.01	0.18
Queue Length 95th (ft)	10	0	0	0	0	0	1	16
Control Delay (s)	12.2	0.0	0.0	8.5	0.0	0.0	14.4	11.7
Lane LOS	B			A			B	B
Approach Delay (s)	1.4			0.0			14.4	11.7
Approach LOS							B	B

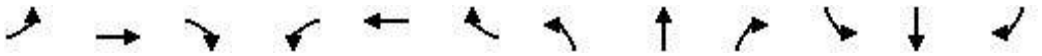
Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	68.9%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Future Volume (vph)	23	390	63	11	1103	17	201	22	2	35	46	79
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.98		1.00	1.00			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)	1345	2846		1520	2975			1415			1372	
Flt Permitted	0.08	1.00		0.47	1.00			0.96			0.99	
Satd. Flow (perm)	118	2846		756	2975			1415			1372	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	424	68	12	1199	18	218	24	2	38	50	86
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	492	0	12	1217	0	0	244	0	0	174	0
Heavy Vehicles (%)	13%	5%	2%	0%	2%	0%	1%	0%	0%	0%	0%	1%
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	5	2			6		8	8		3	3	
Permitted Phases	2			6								
Actuated Green, G (s)	52.0	52.0		43.2	43.2			17.0			13.0	
Effective Green, g (s)	52.0	52.0		43.2	43.2			17.0			13.0	
Actuated g/C Ratio	0.52	0.52		0.43	0.43			0.17			0.13	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	95	1479		326	1285			240			178	
v/s Ratio Prot	0.01	c0.17			c0.41			c0.17			c0.13	
v/s Ratio Perm	0.13			0.02								
v/c Ratio	0.26	0.33		0.04	0.95			1.02			0.98	
Uniform Delay, d1	17.1	13.9		16.4	27.3			41.5			43.4	
Progression Factor	1.00	1.00		1.03	1.05			1.00			1.00	
Incremental Delay, d2	1.5	0.6		0.1	8.7			62.4			60.2	
Delay (s)	18.6	14.5		17.1	37.5			103.9			103.6	
Level of Service	B	B		B	D			F			F	
Approach Delay (s)		14.7			37.3			103.9			103.6	
Approach LOS		B			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Future Volume (vph)	31	318	61	57	716	22	256	127	51	34	119	95
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	11	11	11	10	14	14
Total Lost time (s)	6.0	6.0		6.0	6.0		4.5	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.96		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1345	1499		1462	1560		1441	1481		1419	1527	
Flt Permitted	0.15	1.00		0.45	1.00		0.33	1.00		0.64	1.00	
Satd. Flow (perm)	218	1499		687	1560		499	1481		950	1527	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	346	66	62	778	24	278	138	55	37	129	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	34	412	0	62	802	0	278	193	0	37	232	0
Heavy Vehicles (%)	13%	4%	5%	4%	2%	5%	2%	0%	0%	0%	3%	6%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	53.9	53.9		53.9	53.9		34.1	34.1		18.3	18.3	
Effective Green, g (s)	53.9	53.9		53.9	53.9		34.1	34.1		18.3	18.3	
Actuated g/C Ratio	0.54	0.54		0.54	0.54		0.34	0.34		0.18	0.18	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.5	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	117	807		370	840		276	505		173	279	
v/s Ratio Prot		0.27			c0.51		c0.11	0.13			0.15	
v/s Ratio Perm	0.16			0.09			c0.23			0.04		
v/c Ratio	0.29	0.51		0.17	0.95		1.01	0.38		0.21	0.83	
Uniform Delay, d1	12.6	14.7		11.7	21.9		30.7	25.0		34.7	39.4	
Progression Factor	0.47	0.49		0.62	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.9	2.2		0.8	19.3		56.0	0.5		0.6	18.6	
Delay (s)	11.7	9.4		8.0	35.2		86.7	25.5		35.4	58.0	
Level of Service	B	A		A	D		F	C		D	E	
Approach Delay (s)		9.6			33.2			61.6			54.9	
Approach LOS		A			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Future Volume (vph)	9	407	0	0	743	2	12	2	5	0	0	10
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.97			0.86	
Flt Protected	0.95	1.00			1.00			0.97			1.00	
Satd. Flow (prot)	1520	1538			1568			1258			1174	
Flt Permitted	0.31	1.00			1.00			0.81			1.00	
Satd. Flow (perm)	501	1538			1568			1057			1174	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	442	0	0	808	2	13	2	5	0	0	11
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	10	442	0	0	810	0	0	20	0	0	11	0
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	17%	0%	0%	0%	0%	10%
Turn Type	Perm	NA			NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)	81.0	81.0			81.0			9.0			9.0	
Effective Green, g (s)	81.0	81.0			81.0			9.0			9.0	
Actuated g/C Ratio	0.81	0.81			0.81			0.09			0.09	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	405	1245			1270			95			105	
v/s Ratio Prot		0.29			c0.52						0.01	
v/s Ratio Perm	0.02							c0.02				
v/c Ratio	0.02	0.36			0.64			0.21			0.10	
Uniform Delay, d1	1.8	2.5			3.7			42.2			41.8	
Progression Factor	0.65	0.52			0.25			1.00			1.00	
Incremental Delay, d2	0.1	0.7			1.8			1.1			0.4	
Delay (s)	1.3	2.1			2.7			43.3			42.2	
Level of Service	A	A			A			D			D	
Approach Delay (s)		2.0			2.7			43.3			42.2	
Approach LOS		A			A			D			D	

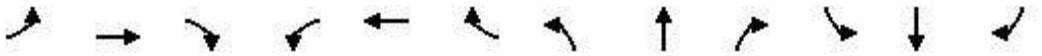
Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	402	731	79	92	23
Future Volume (vph)	15	402	731	79	92	23
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1267	1569	1557		1326	1269
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	353	1569	1557		1326	1269
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	437	795	86	100	25
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	16	437	881	0	100	25
Heavy Vehicles (%)	20%	2%	1%	5%	7%	0%
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	76.6	76.6	76.6		11.4	11.4
Effective Green, g (s)	76.6	76.6	76.6		11.4	11.4
Actuated g/C Ratio	0.77	0.77	0.77		0.11	0.11
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	270	1201	1192		151	144
v/s Ratio Prot		0.28	c0.57		c0.08	
v/s Ratio Perm	0.05					0.02
v/c Ratio	0.06	0.36	0.74		0.66	0.17
Uniform Delay, d1	2.9	3.8	6.3		42.5	40.0
Progression Factor	0.68	0.57	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.8	4.1		10.4	0.6
Delay (s)	2.3	3.0	10.4		52.9	40.6
Level of Service	A	A	B		D	D
Approach Delay (s)		3.0	10.4		50.4	
Approach LOS		A	B		D	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

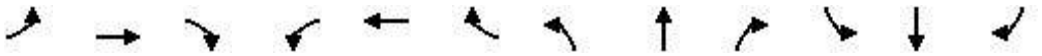
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Future Volume (Veh/h)	113	0	0	0	1	0	622	75	0	0	84	164
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	123	0	0	0	1	0	676	82	0	0	91	178
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1278										
pX, platoon unblocked												
vC, conflicting volume	1			0			470	247	0	288	247	1
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1			0			470	247	0	288	247	1
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			0	86	100	100	85	84
cM capacity (veh/h)	1615			1636			353	607	1091	565	607	1090

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	123	1	676	82	269
Volume Left	123	0	676	0	0
Volume Right	0	0	0	0	178
cSH	1615	1636	353	607	859
Volume to Capacity	0.08	0.00	1.92	0.14	0.31
Queue Length 95th (ft)	6	0	1148	12	34
Control Delay (s)	7.4	0.0	448.0	11.9	11.1
Lane LOS	A		F	B	B
Approach Delay (s)	7.4	0.0	400.8		11.1
Approach LOS			F		B

Intersection Summary				
Average Delay	267.3			
Intersection Capacity Utilization	82.2%	ICU Level of Service		E
Analysis Period (min)	15			



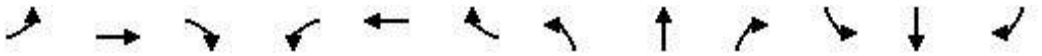
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Future Volume (Veh/h)	50	1155	3	2	795	5	1	0	6	1	0	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	1255	3	2	864	5	1	0	7	1	0	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)					505							
pX, platoon unblocked	0.81						0.81	0.81		0.81	0.81	0.81
vC, conflicting volume	869			1258			1840	2238	629	1613	2236	434
vC1, stage 1 conf vol							1364	1364		870	870	
vC2, stage 2 conf vol							476	873		742	1366	
vCu, unblocked vol	375			1258			1572	2061	629	1292	2060	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			99	100	98	100	100	95
cM capacity (veh/h)	958			549			142	181	425	289	182	880

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	54	837	421	2	576	293	8	41
Volume Left	54	0	0	2	0	0	1	1
Volume Right	0	0	3	0	0	5	7	40
cSH	958	1700	1700	549	1700	1700	340	838
Volume to Capacity	0.06	0.49	0.25	0.00	0.34	0.17	0.02	0.05
Queue Length 95th (ft)	4	0	0	0	0	0	2	4
Control Delay (s)	9.0	0.0	0.0	11.6	0.0	0.0	15.8	9.5
Lane LOS	A			B			C	A
Approach Delay (s)	0.4			0.0			15.8	9.5
Approach LOS							C	A

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	54.7%	ICU Level of Service		A
Analysis Period (min)	15			

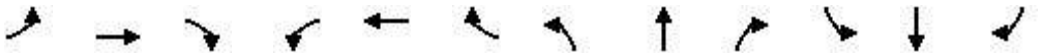
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Future Volume (vph)	101	935	87	4	608	44	115	47	25	42	34	62
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1490	2942		1490	2950			1395			1355	
Flt Permitted	0.27	1.00		0.21	1.00			0.97			0.98	
Satd. Flow (perm)	421	2942		334	2950			1395			1355	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1016	95	4	661	48	125	51	27	46	37	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	110	1111	0	4	709	0	0	203	0	0	150	0
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases	5	2			6		4	4		8	8	
Permitted Phases	2			6								
Actuated Green, G (s)	28.8	28.8		18.8	18.8			11.8			11.4	
Effective Green, g (s)	28.8	28.8		18.8	18.8			11.8			11.4	
Actuated g/C Ratio	0.41	0.41		0.27	0.27			0.17			0.16	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	234	1210		89	792			235			220	
v/s Ratio Prot	0.03	c0.38			0.24			c0.15			c0.11	
v/s Ratio Perm	0.17			0.01								
v/c Ratio	0.47	0.92		0.04	0.90			0.86			0.68	
Uniform Delay, d1	20.7	19.5		19.0	24.7			28.3			27.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	1.5	12.5		0.9	14.8			26.4			8.4	
Delay (s)	22.1	32.0		19.9	39.4			54.7			36.0	
Level of Service	C	C		B	D			D			D	
Approach Delay (s)		31.1			39.3			54.7			36.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Future Volume (vph)	88	718	130	60	463	24	104	128	79	24	169	70
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Lane Width	12	12	12	12	12	12	10	10	10	10	10	10
Total Lost time (s)	4.5	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1397	1437		1397	1460		1304	1294		1304	1312	
Flt Permitted	0.33	1.00		0.16	1.00		0.36	1.00		0.43	1.00	
Satd. Flow (perm)	487	1437		240	1460		496	1294		588	1312	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	780	141	65	503	26	113	139	86	26	184	76
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	96	921	0	65	529	0	113	225	0	26	260	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	88.0	88.0		78.4	78.4		40.0	40.0		27.0	27.0	
Effective Green, g (s)	88.0	88.0		78.4	78.4		40.0	40.0		27.0	27.0	
Actuated g/C Ratio	0.63	0.63		0.56	0.56		0.29	0.29		0.19	0.19	
Clearance Time (s)	4.5	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	903		134	817		182	369		113	253	
v/s Ratio Prot	0.01	c0.64			0.36		0.03	c0.17			c0.20	
v/s Ratio Perm	0.17			0.27			0.15			0.04		
v/c Ratio	0.28	1.02		0.49	0.65		0.62	0.61		0.23	1.03	
Uniform Delay, d1	12.8	26.0		18.6	21.3		52.9	43.2		47.7	56.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	35.1		2.8	1.8		6.4	2.9		1.0	63.9	
Delay (s)	13.2	61.1		21.4	23.0		59.4	46.1		48.8	120.4	
Level of Service	B	E		C	C		E	D		D	F	
Approach Delay (s)		56.5			22.9			50.5			113.9	
Approach LOS		E			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



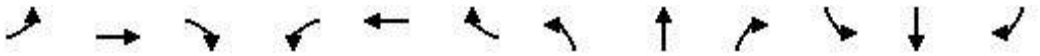
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Future Volume (vph)	3	830	0	0	557	1	17	1	3	1	0	6
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Total Lost time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	1.00			1.00			0.98			0.88	
Flt Protected	0.95	1.00			1.00			0.96			0.99	
Satd. Flow (prot)	1490	1569			1568			1479			1375	
Flt Permitted	0.42	1.00			1.00			1.00			0.95	
Satd. Flow (perm)	662	1569			1568			1540			1316	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	902	0	0	605	1	18	1	3	1	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	3	902	0	0	606	0	0	22	0	0	8	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2						4			4		
Actuated Green, G (s)	56.7	56.7			56.7			3.3			3.3	
Effective Green, g (s)	56.7	56.7			56.7			3.3			3.3	
Actuated g/C Ratio	0.81	0.81			0.81			0.05			0.05	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)	536	1270			1270			72			62	
v/s Ratio Prot		c0.58			0.39							
v/s Ratio Perm	0.00							c0.01			0.01	
v/c Ratio	0.01	0.71			0.48			0.31			0.13	
Uniform Delay, d1	1.3	3.0			2.1			32.2			32.0	
Progression Factor	1.00	1.00			2.32			1.00			1.00	
Incremental Delay, d2	0.0	3.4			1.1			2.4			0.9	
Delay (s)	1.3	6.4			5.9			34.6			32.9	
Level of Service	A	A			A			C			C	
Approach Delay (s)		6.3			5.9			34.6			32.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	780	476	73	142	26
Future Volume (vph)	40	780	476	73	142	26
Ideal Flow (vphpl)	1500	1500	1500	1500	1500	1500
Lane Width	12	12	12	12	10	10
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1397	1471	1444		1304	1167
Flt Permitted	0.37	1.00	1.00		0.95	1.00
Satd. Flow (perm)	550	1471	1444		1304	1167
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	848	517	79	154	28
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	43	848	596	0	154	28
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	2		4	
Permitted Phases	2					4
Actuated Green, G (s)	44.5	44.5	44.5		13.5	13.5
Effective Green, g (s)	44.5	44.5	44.5		13.5	13.5
Actuated g/C Ratio	0.64	0.64	0.64		0.19	0.19
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	349	935	917		251	225
v/s Ratio Prot		c0.58	0.41		c0.12	
v/s Ratio Perm	0.08					0.02
v/c Ratio	0.12	0.91	0.65		0.61	0.12
Uniform Delay, d1	5.0	11.0	7.9		25.9	23.4
Progression Factor	1.32	1.04	1.00		1.00	1.00
Incremental Delay, d2	0.6	11.5	3.6		4.4	0.2
Delay (s)	7.2	22.9	11.5		30.3	23.6
Level of Service	A	C	B		C	C
Approach Delay (s)		22.2	11.5		29.2	
Approach LOS		C	B		C	

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Future Volume (Veh/h)	222	1	0	1	3	1	388	128	0	0	108	120
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	1	0	1	3	1	422	139	0	0	117	130
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		1279										
pX, platoon unblocked												
vC, conflicting volume	4			1			677	489	1	558	488	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			1			677	489	1	558	488	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			100			0	66	100	100	71	88
cM capacity (veh/h)	1618			1622			224	408	1084	289	408	1080

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	242	5	422	139	247
Volume Left	241	1	422	0	0
Volume Right	0	1	0	0	130
cSH	1618	1622	224	408	607
Volume to Capacity	0.15	0.00	1.89	0.34	0.41
Queue Length 95th (ft)	13	0	751	37	49
Control Delay (s)	7.6	1.4	451.9	18.3	14.9
Lane LOS	A	A	F	C	B
Approach Delay (s)	7.6	1.4	344.4		14.9
Approach LOS			F		B

Intersection Summary				
Average Delay	188.4			
Intersection Capacity Utilization	72.3%	ICU Level of Service		C
Analysis Period (min)	15			

Appendix I

SimTraffic Queuing Analyses Reports

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	TR	LTR	LTR
Maximum Queue (ft)	107	4	42	40	31	234
Average Queue (ft)	35	0	3	3	2	85
95th Queue (ft)	77	3	35	35	16	227
Link Distance (ft)			368	368	288	980
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	120	50				
Storage Blk Time (%)	0		0			
Queuing Penalty (veh)	1		0			

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	47	130	147	122	284	284	269	191
Average Queue (ft)	6	62	76	13	227	236	137	88
95th Queue (ft)	22	110	132	65	331	337	227	152
Link Distance (ft)		368	368		224	224	842	924
Upstream Blk Time (%)					22	31		
Queuing Penalty (veh)					121	169		
Storage Bay Dist (ft)	140			100				
Storage Blk Time (%)		0			40			
Queuing Penalty (veh)		0			5			

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	78	118	143	76	135	157	192	355	99	181
Average Queue (ft)	28	54	79	27	70	86	124	104	21	87
95th Queue (ft)	64	99	124	63	117	134	201	252	61	156
Link Distance (ft)		291	291		274	274		688		650
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150			75			150		75	
Storage Blk Time (%)				0	5		12	1	0	13
Queuing Penalty (veh)				2	3		21	2	0	5

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	119	137	191	83	53
Average Queue (ft)	19	39	49	20	10
95th Queue (ft)	69	110	143	57	39
Link Distance (ft)	274	274	721	666	501
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	77	164	82	158	55
Average Queue (ft)	12	64	72	71	17
95th Queue (ft)	46	142	95	127	46
Link Distance (ft)	476	476	4	857	857
Upstream Blk Time (%)			16		
Queuing Penalty (veh)			128		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd/E Fork Ave

Movement	WB	NB	NB	SB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	24	127	202	121
Average Queue (ft)	0	115	130	55
95th Queue (ft)	6	145	244	89
Link Distance (ft)	253		128	563
Upstream Blk Time (%)		27	21	
Queuing Penalty (veh)		0	144	
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		54	2	
Queuing Penalty (veh)		41	13	

Zone Summary

Zone wide Queuing Penalty: 654

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	TR	L	LTR	LTR
Maximum Queue (ft)	59	83	90	20	44	50
Average Queue (ft)	15	15	15	1	9	23
95th Queue (ft)	42	129	122	7	34	48
Link Distance (ft)					288	973
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	120			50		
Storage Blk Time (%)		4				
Queuing Penalty (veh)		2				

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	190	400	390	25	218	242	338	289
Average Queue (ft)	40	189	195	4	123	137	132	100
95th Queue (ft)	133	360	353	18	214	226	346	242
Link Distance (ft)		368	368		224	224	842	924
Upstream Blk Time (%)		6	6		0	1	2	
Queuing Penalty (veh)		34	34		1	3	0	
Storage Bay Dist (ft)	140			100				
Storage Blk Time (%)	0	17			12			
Queuing Penalty (veh)	0	17			0			

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	89	236	269	118	215	184	113	275	108	178
Average Queue (ft)	34	96	125	54	74	67	51	116	25	92
95th Queue (ft)	72	240	267	115	177	146	97	341	75	155
Link Distance (ft)		294	294		274	274		689		655
Upstream Blk Time (%)		6	6		1	0		5		
Queuing Penalty (veh)		29	30		3	0		0		
Storage Bay Dist (ft)	150			75			150		75	
Storage Blk Time (%)		7		21	4		0	6	6	15
Queuing Penalty (veh)		6		50	2		0	6	13	4

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	LT	T	TR	LTR	LTR
Maximum Queue (ft)	157	200	117	79	44
Average Queue (ft)	46	70	20	26	9
95th Queue (ft)	192	224	83	80	32
Link Distance (ft)	275	275	722	666	501
Upstream Blk Time (%)	8	8			
Queuing Penalty (veh)	31	31			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	169	436	61	316	228
Average Queue (ft)	80	212	29	140	66
95th Queue (ft)	358	467	48	464	374
Link Distance (ft)	476	476	4	880	880
Upstream Blk Time (%)	10	10	16	5	4
Queuing Penalty (veh)	38	41	89	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	L	TR	LTR
Maximum Queue (ft)	4	30	127	190	213
Average Queue (ft)	0	4	89	78	107
95th Queue (ft)	3	22	129	179	344
Link Distance (ft)	151	253		128	563
Upstream Blk Time (%)			4	13	8
Queuing Penalty (veh)			0	67	0
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			22	11	
Queuing Penalty (veh)			29	42	

Zone Summary

Zone wide Queuing Penalty: 600

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	151	468	4	11	34	816
Average Queue (ft)	68	79	0	1	6	434
95th Queue (ft)	146	493	3	7	27	881
Link Distance (ft)		1213		364	292	984
Upstream Blk Time (%)		2				5
Queuing Penalty (veh)		11				0
Storage Bay Dist (ft)	120		50			
Storage Blk Time (%)	14	0		0		
Queuing Penalty (veh)	69	0		0		

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	136	341	78	243	634	741
Average Queue (ft)	13	141	8	229	398	456
95th Queue (ft)	68	277	41	237	688	894
Link Distance (ft)		364		224	846	929
Upstream Blk Time (%)		0		28		6
Queuing Penalty (veh)		0		312		0
Storage Bay Dist (ft)	140		100			
Storage Blk Time (%)		6		37		
Queuing Penalty (veh)		1		4		

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	173	298	125	293	200	739	125	689
Average Queue (ft)	50	169	35	275	190	568	35	455
95th Queue (ft)	133	298	99	308	232	950	108	814
Link Distance (ft)		292		273		696		662
Upstream Blk Time (%)		1		19		61		37
Queuing Penalty (veh)		4		148		0		0
Storage Bay Dist (ft)	150		75		150		75	
Storage Blk Time (%)	1	10	1	39	79	1	2	84
Queuing Penalty (veh)	3	3	9	22	140	3	5	29

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	LTR	LTR
Maximum Queue (ft)	46	166	278	81	53
Average Queue (ft)	5	39	70	20	11
95th Queue (ft)	26	124	196	59	38
Link Distance (ft)		275	726	668	493
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	2	6			
Queuing Penalty (veh)	7	1			

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	67	132	63	137	71
Average Queue (ft)	13	46	32	65	24
95th Queue (ft)	45	107	50	116	59
Link Distance (ft)		476	15	854	854
Upstream Blk Time (%)			17		
Queuing Penalty (veh)			140		
Storage Bay Dist (ft)	250				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd/E Fork Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	L	TR	LTR
Maximum Queue (ft)	4	24	126	187	126
Average Queue (ft)	0	1	116	131	58
95th Queue (ft)	3	10	145	232	104
Link Distance (ft)	146	253		126	563
Upstream Blk Time (%)			29	25	
Queuing Penalty (veh)			0	177	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			63	4	
Queuing Penalty (veh)			48	23	

Zone Summary

Zone wide Queuing Penalty: 1160

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	150	680	15	1	128	204
Average Queue (ft)	36	667	1	0	46	75
95th Queue (ft)	120	700	9	1	110	275
Link Distance (ft)		666		364	292	984
Upstream Blk Time (%)		9				
Queuing Penalty (veh)		110				
Storage Bay Dist (ft)	100		50			
Storage Blk Time (%)	0	31				
Queuing Penalty (veh)	0	16				

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	190	382	33	239	428	333
Average Queue (ft)	70	371	6	205	265	171
95th Queue (ft)	192	379	23	278	529	296
Link Distance (ft)		364		224	846	929
Upstream Blk Time (%)		21		12		
Queuing Penalty (veh)		243		84		
Storage Bay Dist (ft)	140		100			
Storage Blk Time (%)	0	33		27		
Queuing Penalty (veh)	4	33		1		

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	199	310	125	290	200	324	125	437
Average Queue (ft)	58	230	70	203	118	152	37	253
95th Queue (ft)	158	359	134	317	203	275	106	409
Link Distance (ft)		294		274		696		662
Upstream Blk Time (%)		5		4				
Queuing Penalty (veh)		44		25				
Storage Bay Dist (ft)	150		75		150		75	
Storage Blk Time (%)		18	28	28	11	10	4	66
Queuing Penalty (veh)		15	132	17	23	10	11	16

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	LTR	LTR
Maximum Queue (ft)	24	187	185	57	35
Average Queue (ft)	2	53	48	21	7
95th Queue (ft)	15	147	137	52	28
Link Distance (ft)		274	726	668	493
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100				
Storage Blk Time (%)		2			
Queuing Penalty (veh)		0			

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	65	296	60	166	58
Average Queue (ft)	23	167	31	81	21
95th Queue (ft)	55	291	48	138	52
Link Distance (ft)		476	6	878	878
Upstream Blk Time (%)			17		
Queuing Penalty (veh)			93		
Storage Bay Dist (ft)	250				
Storage Blk Time (%)		1			
Queuing Penalty (veh)		1			

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	L	TR	LTR
Maximum Queue (ft)	13	30	126	170	106
Average Queue (ft)	1	4	87	60	53
95th Queue (ft)	7	20	127	137	88
Link Distance (ft)	146	253		126	563
Upstream Blk Time (%)			2	2	
Queuing Penalty (veh)			0	11	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			10	1	
Queuing Penalty (veh)			13	4	

Zone Summary

Zone wide Queuing Penalty: 904

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	WB	NB	SB
Directions Served	L	TR	LTR	LTR
Maximum Queue (ft)	90	2	31	146
Average Queue (ft)	35	0	3	62
95th Queue (ft)	71	1	16	121
Link Distance (ft)		372	280	972
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	120			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	132	218	161	124	253	251	262	271
Average Queue (ft)	10	101	44	12	194	204	150	131
95th Queue (ft)	58	186	114	66	254	255	240	241
Link Distance (ft)		372	372		224	224	834	917
Upstream Blk Time (%)					2	4		
Queuing Penalty (veh)					11	21		
Storage Bay Dist (ft)	140			100				
Storage Blk Time (%)	0	3			21			
Queuing Penalty (veh)	0	1			2			

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	108	180	125	288	200	480	125	361
Average Queue (ft)	41	64	43	213	150	167	41	178
95th Queue (ft)	94	139	106	325	222	413	111	309
Link Distance (ft)		292		273		696		662
Upstream Blk Time (%)				5		0		
Queuing Penalty (veh)				39		0		
Storage Bay Dist (ft)	150		75		150		75	
Storage Blk Time (%)	1	1	2	37	23	1	1	54
Queuing Penalty (veh)	2	0	15	21	41	4	2	18

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	LTR	LTR
Maximum Queue (ft)	35	132	164	59	47
Average Queue (ft)	6	28	37	21	10
95th Queue (ft)	26	89	120	55	36
Link Distance (ft)		275	726	668	493
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	2	7			
Queuing Penalty (veh)	8	1			

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	65	139	57	160	61
Average Queue (ft)	14	49	30	76	21
95th Queue (ft)	47	110	45	138	53
Link Distance (ft)		476	15	854	854
Upstream Blk Time (%)			16		
Queuing Penalty (veh)			128		
Storage Bay Dist (ft)	250				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd/E Fork Ave

Movement	WB	NB	NB	SB
Directions Served	LTR	L	TR	LTR
Maximum Queue (ft)	12	126	185	104
Average Queue (ft)	0	118	140	58
95th Queue (ft)	6	143	228	90
Link Distance (ft)	253		126	563
Upstream Blk Time (%)		32	26	
Queuing Penalty (veh)		0	183	
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		65	4	
Queuing Penalty (veh)		50	24	

Zone Summary

Zone wide Queuing Penalty: 570

Intersection: 1: St. Paul Village/Anderson Pl & Madison Rd

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	LTR	LTR
Maximum Queue (ft)	150	680	657	4	7	57	101
Average Queue (ft)	71	390	361	0	0	12	33
95th Queue (ft)	185	833	803	3	5	48	91
Link Distance (ft)		666	666		372	280	972
Upstream Blk Time (%)		6	2				
Queuing Penalty (veh)		33	11				
Storage Bay Dist (ft)	100			50			
Storage Blk Time (%)		54			0		
Queuing Penalty (veh)		27			0		

Intersection: 2: Stewart Ave & Madison Rd

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	190	436	426	76	196	200	435	244
Average Queue (ft)	96	382	335	5	95	99	245	120
95th Queue (ft)	237	454	532	36	168	179	502	213
Link Distance (ft)		372	372		224	224	834	917
Upstream Blk Time (%)		37	16		0	0		
Queuing Penalty (veh)		217	95		0	0		
Storage Bay Dist (ft)	140			100				
Storage Blk Time (%)		44			5			
Queuing Penalty (veh)		45			0			

Intersection: 6: Whetsel Ave & Madison Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	200	313	125	292	188	278	125	447
Average Queue (ft)	84	293	77	221	99	138	42	272
95th Queue (ft)	209	337	143	345	174	233	115	504
Link Distance (ft)		294		274		696		662
Upstream Blk Time (%)		16		13				0
Queuing Penalty (veh)		150		78				0
Storage Bay Dist (ft)	150		75		150		75	
Storage Blk Time (%)	0	31	41	26	3	9	4	66
Queuing Penalty (veh)	0	27	195	16	6	9	9	16

Intersection: 8: Mathis St & Madison Rd

Movement	EB	EB	WB	NB	SB
Directions Served	L	T	TR	LTR	LTR
Maximum Queue (ft)	42	204	520	58	44
Average Queue (ft)	2	59	120	20	10
95th Queue (ft)	25	165	411	49	34
Link Distance (ft)		274	726	668	493
Upstream Blk Time (%)			1		
Queuing Penalty (veh)			4		
Storage Bay Dist (ft)	100				
Storage Blk Time (%)		2			
Queuing Penalty (veh)		0			

Intersection: 10: Madison Rd & Kenwood Rd

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	156	355	58	150	69
Average Queue (ft)	28	178	30	76	18
95th Queue (ft)	90	293	46	128	53
Link Distance (ft)		476	6	878	878
Upstream Blk Time (%)			16		
Queuing Penalty (veh)			87		
Storage Bay Dist (ft)	250				
Storage Blk Time (%)		1			
Queuing Penalty (veh)		1			

Intersection: 16: Plainville Rd/Camargo Pike & Madison Rd

Movement	EB	WB	NB	NB	SB
Directions Served	LT	LTR	L	TR	LTR
Maximum Queue (ft)	8	30	126	176	117
Average Queue (ft)	0	5	87	60	57
95th Queue (ft)	4	24	128	139	95
Link Distance (ft)	146	253		126	563
Upstream Blk Time (%)			3	3	
Queuing Penalty (veh)			0	16	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			12	1	
Queuing Penalty (veh)			15	3	

Zone Summary

Zone wide Queuing Penalty: 1062

Appendix J

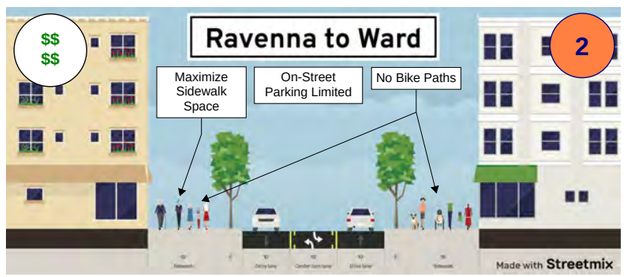
Public Meeting #2 Documents

MADISON ROAD - COMPLETE STREETS STUDY

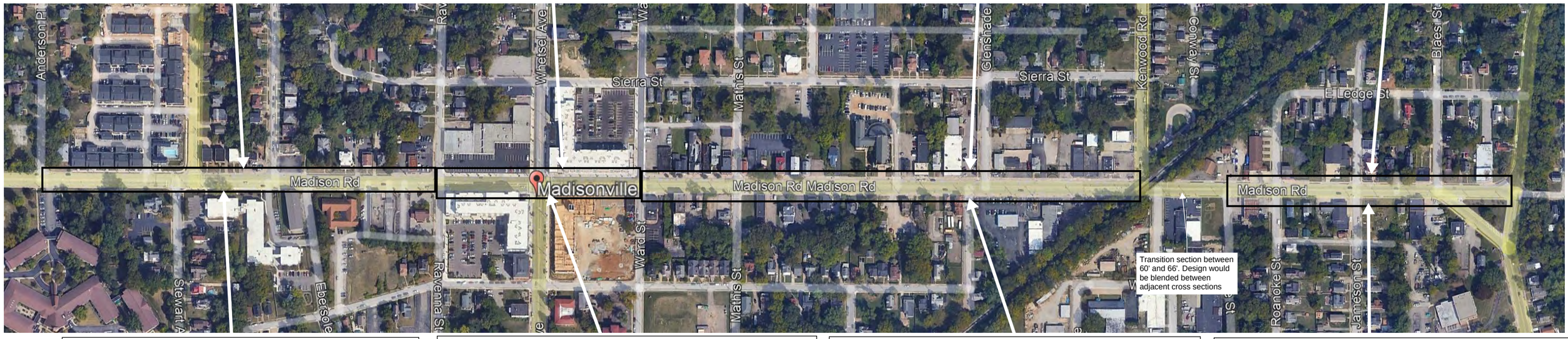
DISPLAY BOARD

ORANGE OPTION

ORANGE



PLACE STICKERS IN THIS BOX



60-ft Right-of-Way
44-ft Face-of-Curb to Face-of-Curb

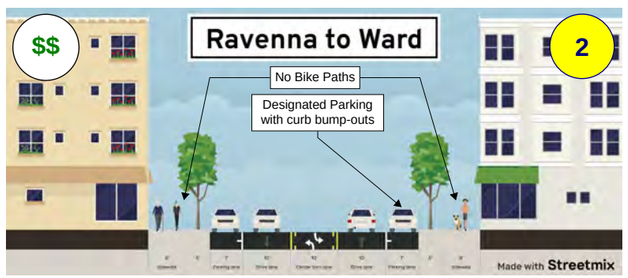
70-ft Right-of-Way
50-ft Face-of-Curb to Face-of-Curb

66-ft Right-of-Way
48-ft Face-of-Curb to Face-of-Curb

60-ft Right-of-Way
40-ft Face-of-Curb to Face-of-Curb

YELLOW OPTION

YELLOW



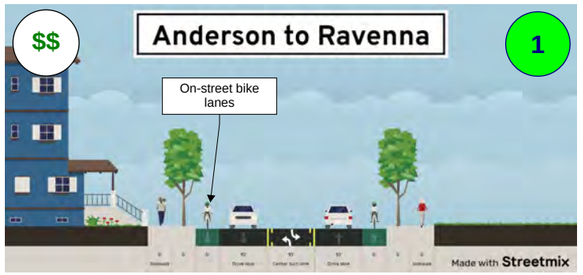
PLACE STICKERS IN THIS BOX

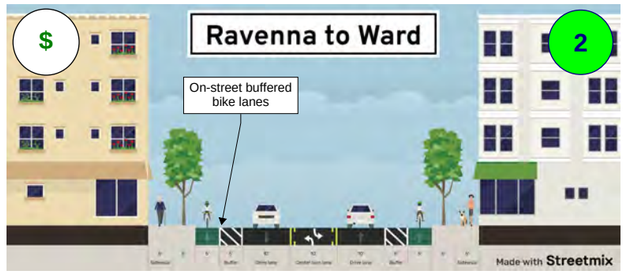
MADISON ROAD - COMPLETE STREETS STUDY

DISPLAY BOARD

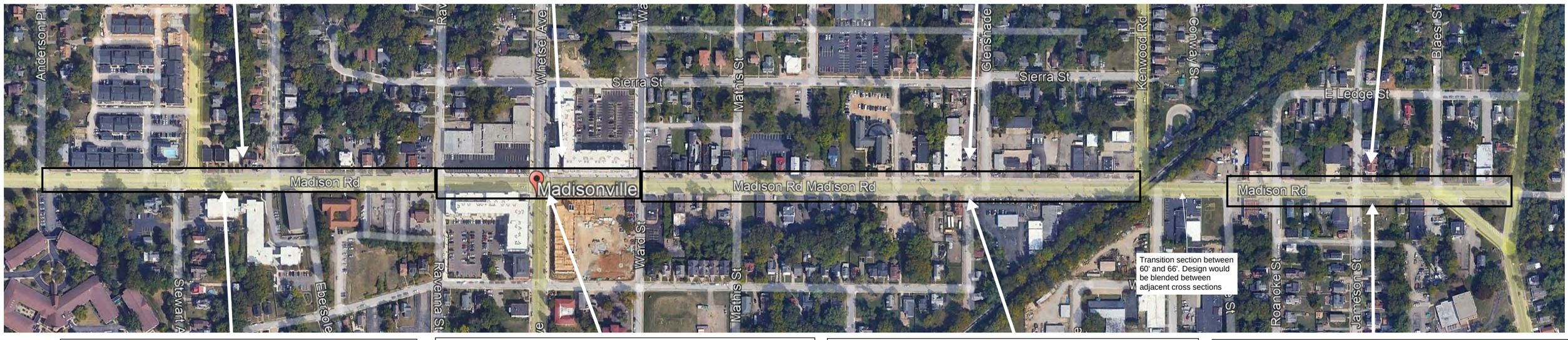
GREEN OPTION

GREEN





PLACE STICKERS IN THIS BOX



60-ft Right-of-Way
44-ft Face-of-Curb to Face-of-Curb

70-ft Right-of-Way
50-ft Face-of-Curb to Face-of-Curb

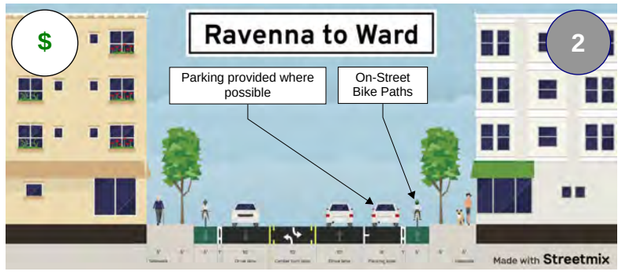
66-ft Right-of-Way
48-ft Face-of-Curb to Face-of-Curb

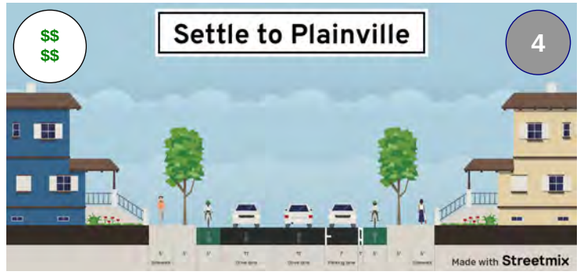
60-ft Right-of-Way
40-ft Face-of-Curb to Face-of-Curb

GREY OPTION

GREY

Parking not feasible with bike lanes at this location.





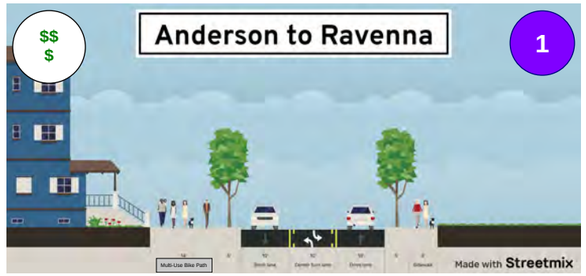
PLACE STICKERS IN THIS BOX

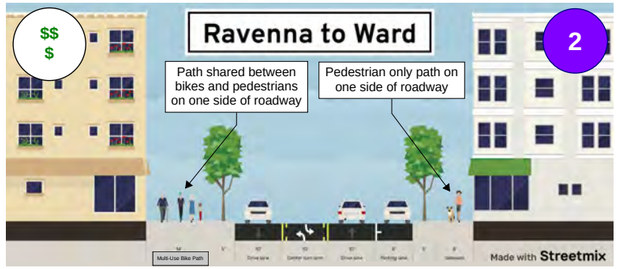
MADISON ROAD - COMPLETE STREETS STUDY

DISPLAY BOARD

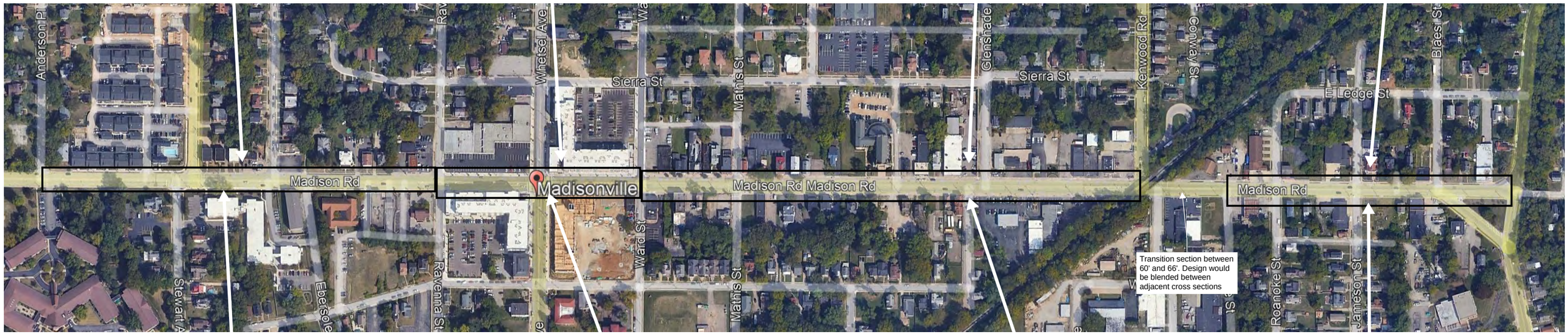
PURPLE OPTION

PURPLE





PLACE STICKERS IN THIS BOX



60-ft Right-of-Way
44-ft Face-of-Curb to Face-of-Curb

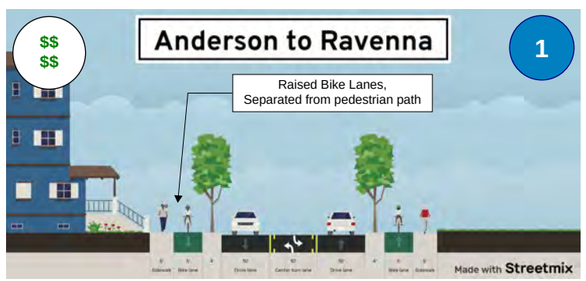
70-ft Right-of-Way
50-ft Face-of-Curb to Face-of-Curb

66-ft Right-of-Way
48-ft Face-of-Curb to Face-of-Curb

60-ft Right-of-Way
40-ft Face-of-Curb to Face-of-Curb

BLUE OPTION

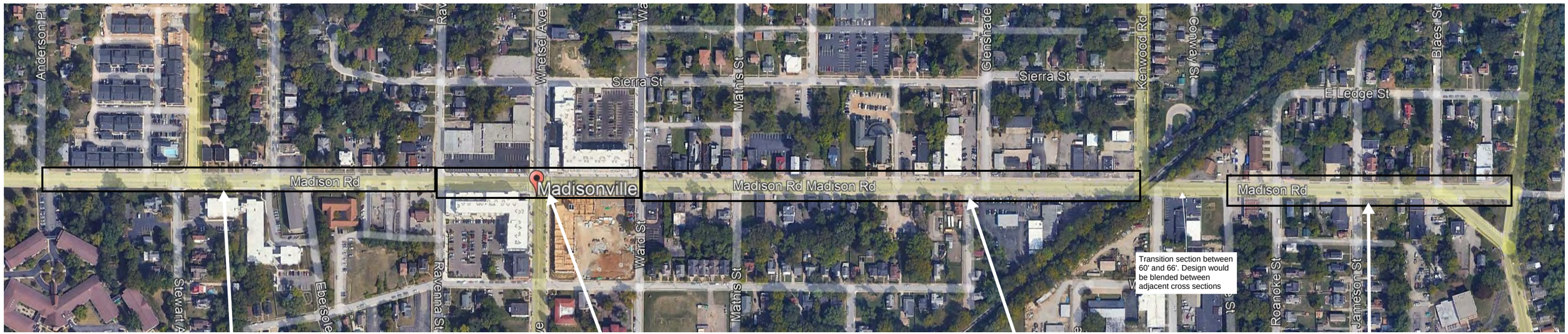
BLUE



PLACE STICKERS IN THIS BOX

MADISON ROAD - COMPLETE STREETS STUDY

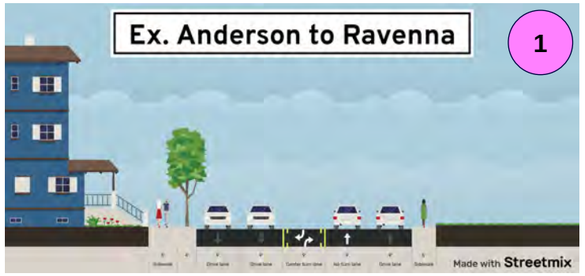
DISPLAY BOARD

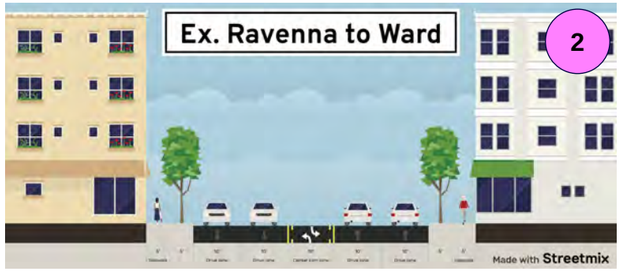


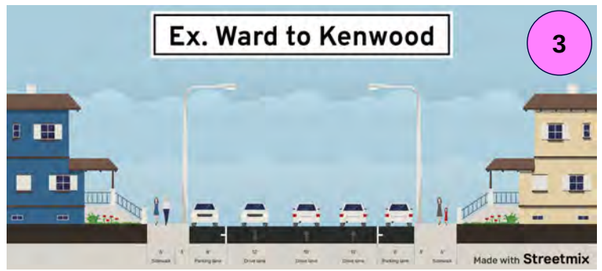
60-ft Right-of-Way **44-ft** Face-of-Curb to Face-of-Curb	**70-ft** Right-of-Way **50-ft** Face-of-Curb to Face-of-Curb	**66-ft** Right-of-Way **48-ft** Face-of-Curb to Face-of-Curb	**60-ft** Right-of-Way **40-ft** Face-of-Curb to Face-of-Curb

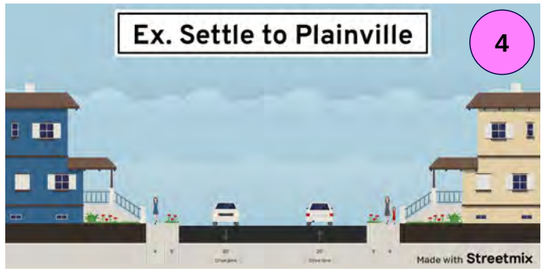
PINK OPTION

PINK









PLACE STICKERS IN THIS BOX

city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEING3RS GROUP

Welcome!

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Background:

- Desire to improve conditions for all users on Madison Road corridor
  - Initiated by Madisonville Community Council
  - History of 15-20 years
  - Improve conditions for pedestrians
  - City of Cincinnati initiated Complete Streets study
  - Selected The Kleingers Group to conduct study

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Preliminary Issues Identified:

- Wider sidewalks / multi-use path
- Safety at Anderson Place crosswalk
- Travel lanes are narrow west of Stewart Avenue
- Need new left turn signals
- Concerns at Madison Road / Camargo Avenue intersection
- Railroad bridge clearance / strikes

What is a Complete Street?

- Provides for all users of all ages and abilities
  - Pedestrians
  - Bicyclists
  - Public transportation riders
  - Drivers

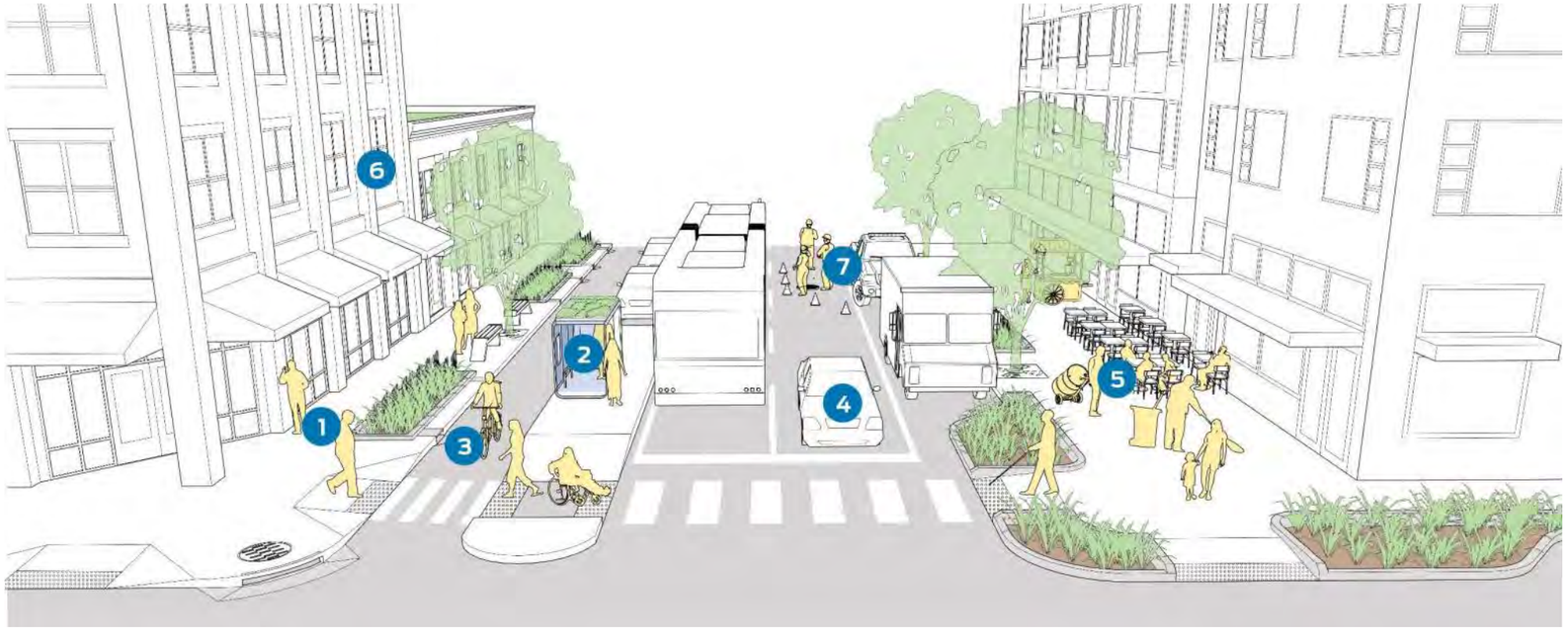


Image: National Association of City Transportation Officials

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Study process to date

- Preliminary meeting with Community Council representatives
- Traffic counts and speed data collection
  - Mid-March to Early April, 2023
  - Observed existing traffic conditions during peak times
  - Existing roadway widths and parking configurations
  - Conducted public survey + summarized results
  - Created concept drawings and typical sections

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Survey Results Summary

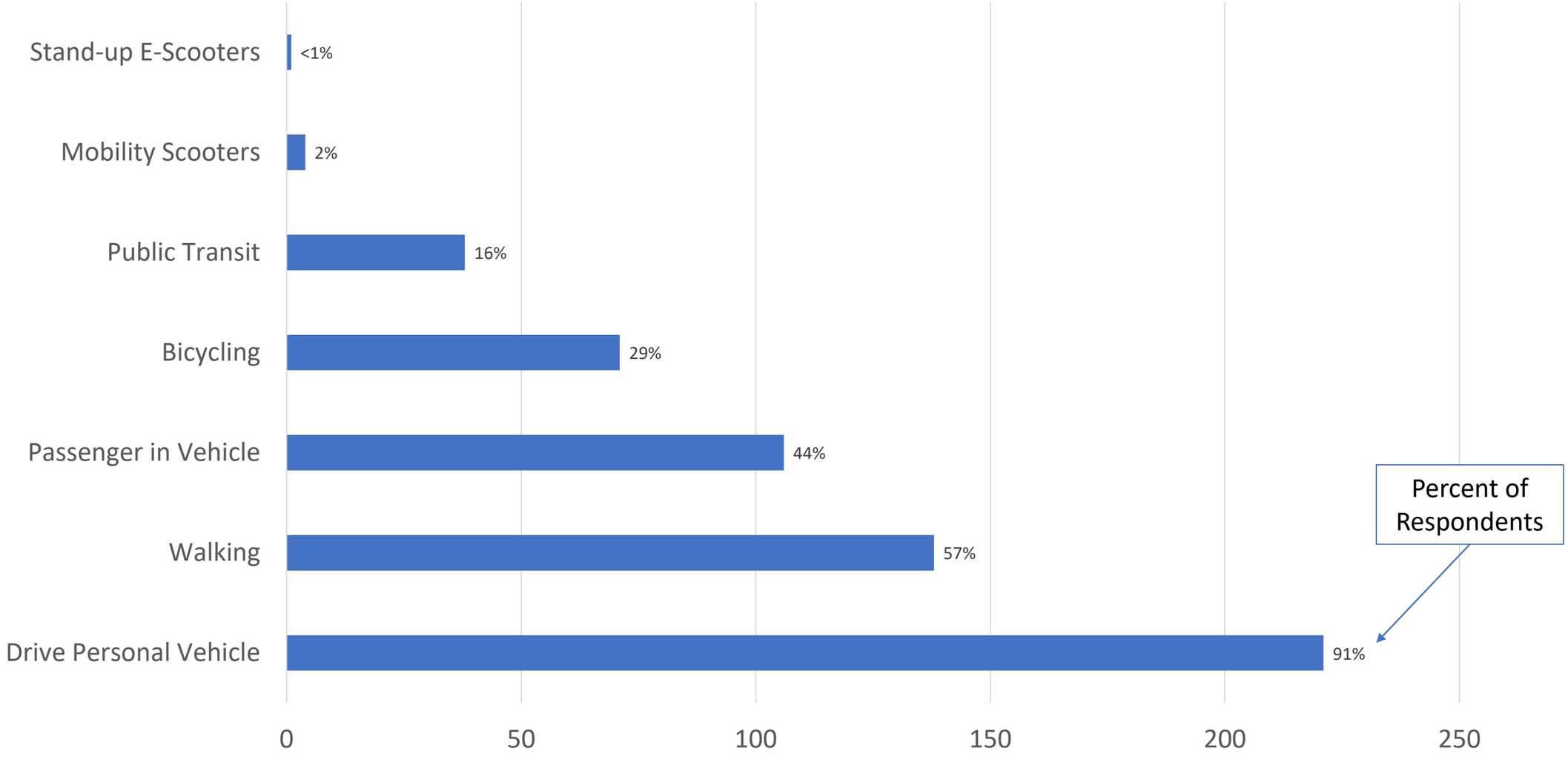
city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: What modes of transportation do you use when travelling on Madison Road in Madisonville? Select all that apply

243 Respondents



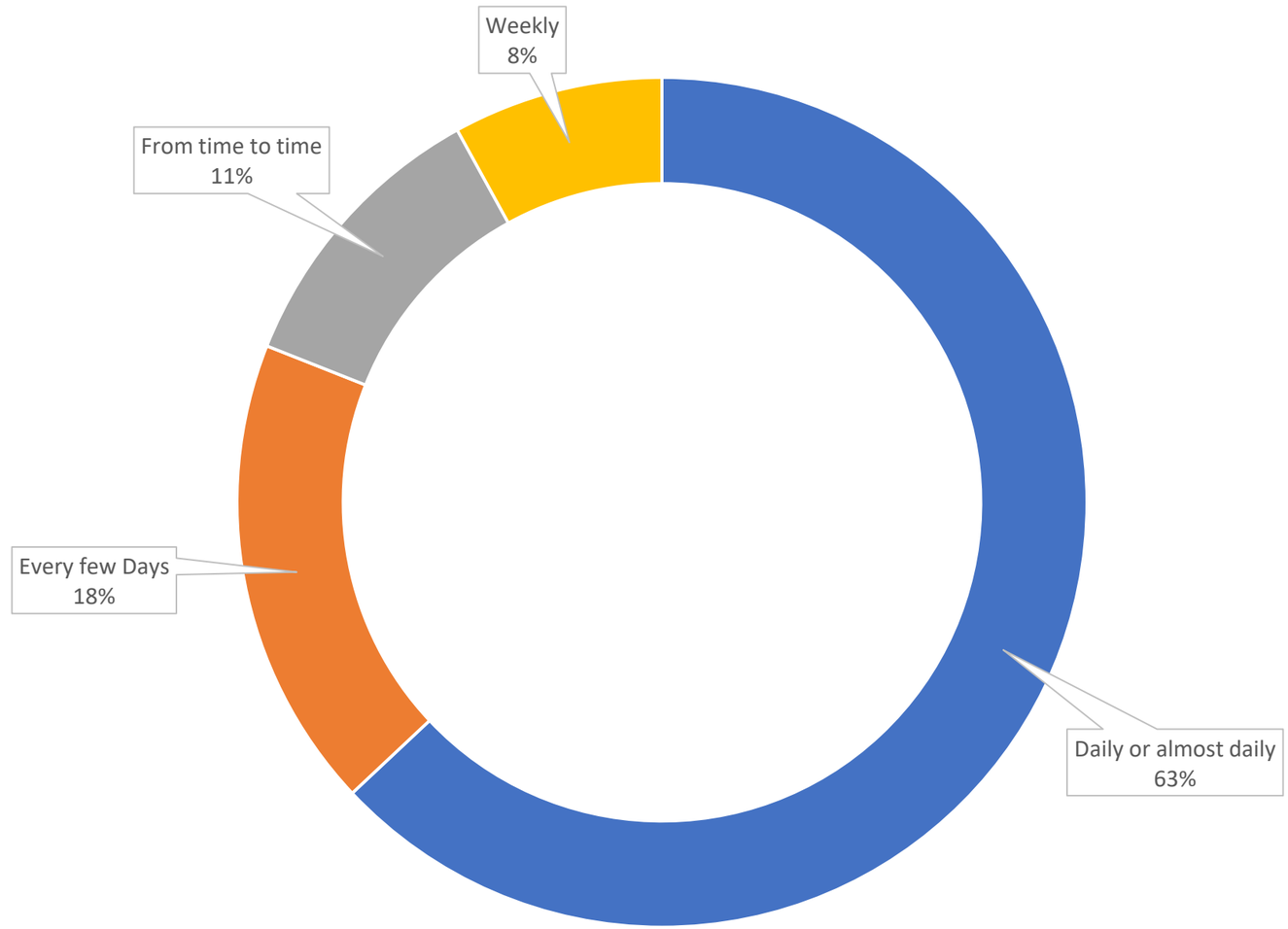
city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: How often do you travel on or along Madison Road in Madisonville?

263 Respondents



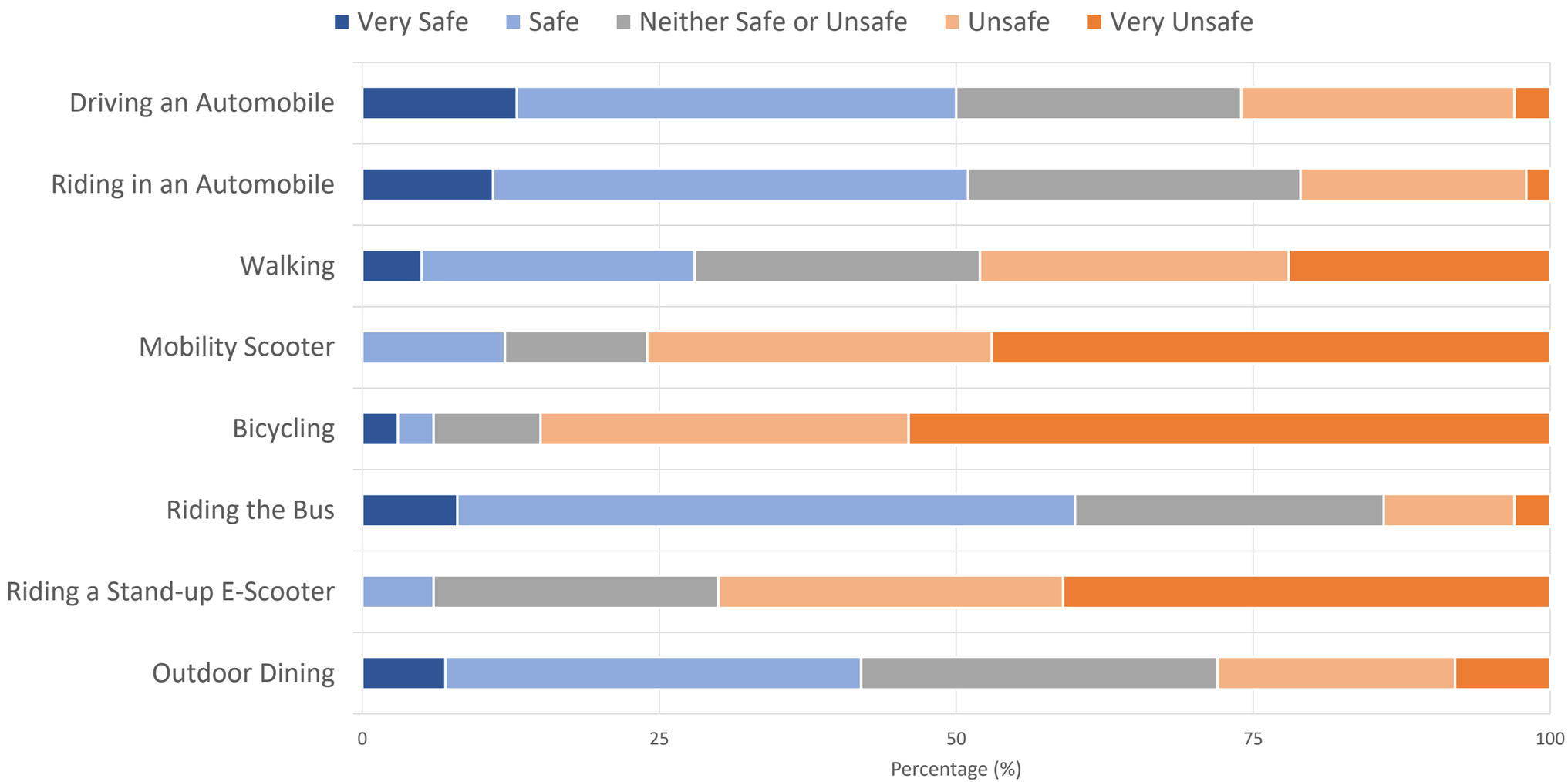
city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: How safe do you feel while doing the following activities on or along Madison Road in Madisonville?

181 Respondents



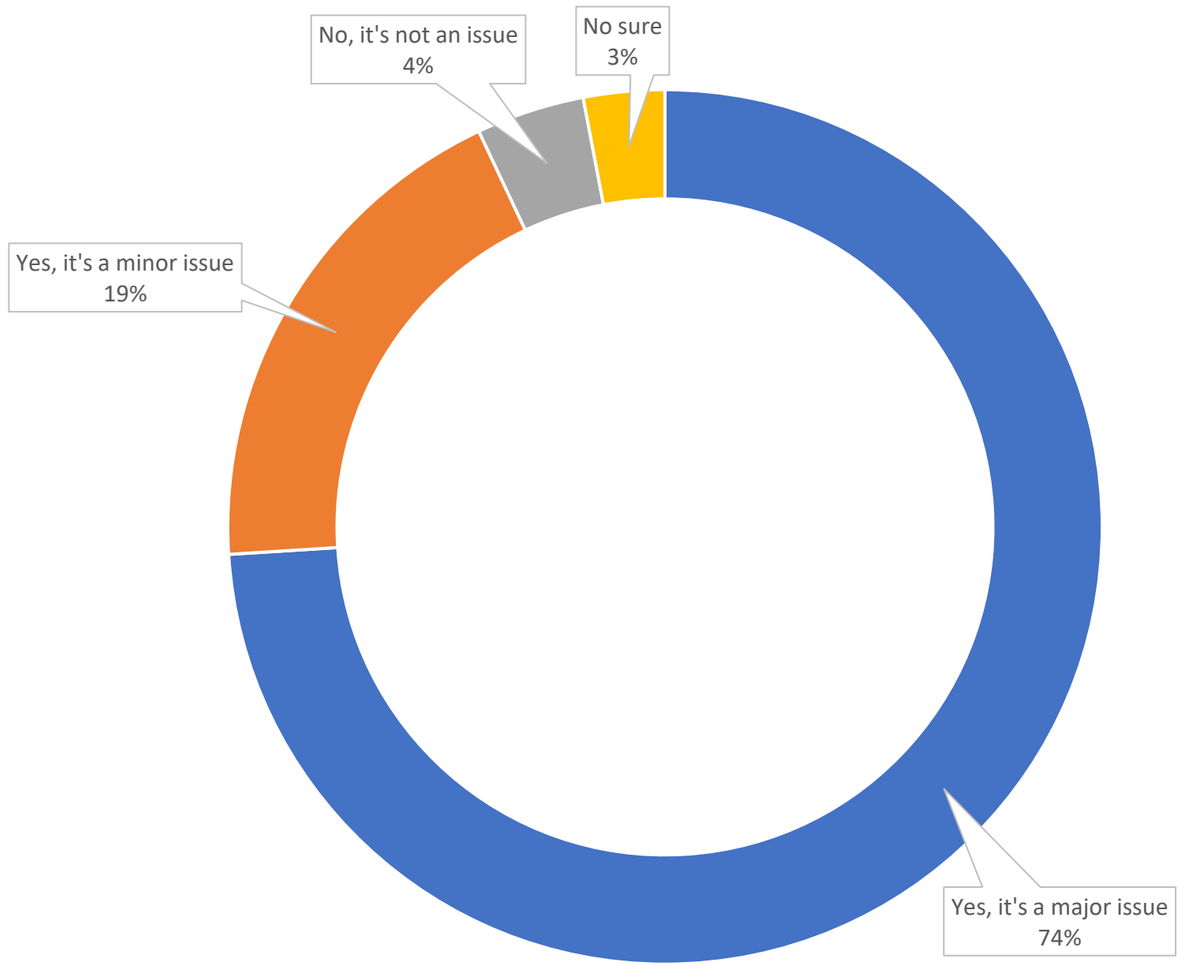
city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: In your opinion, is speeding an issue on Madison Road?

155 Respondents

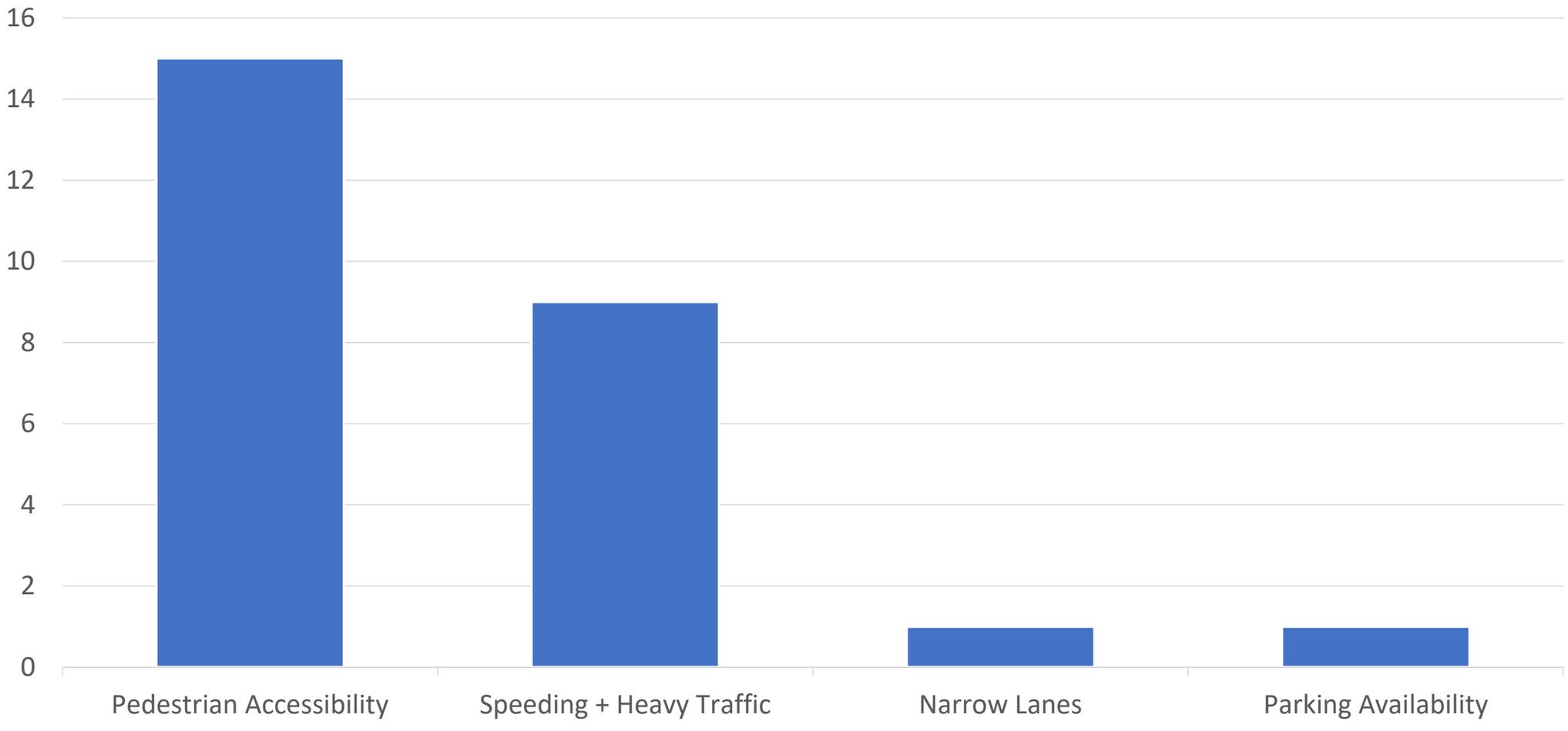


city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

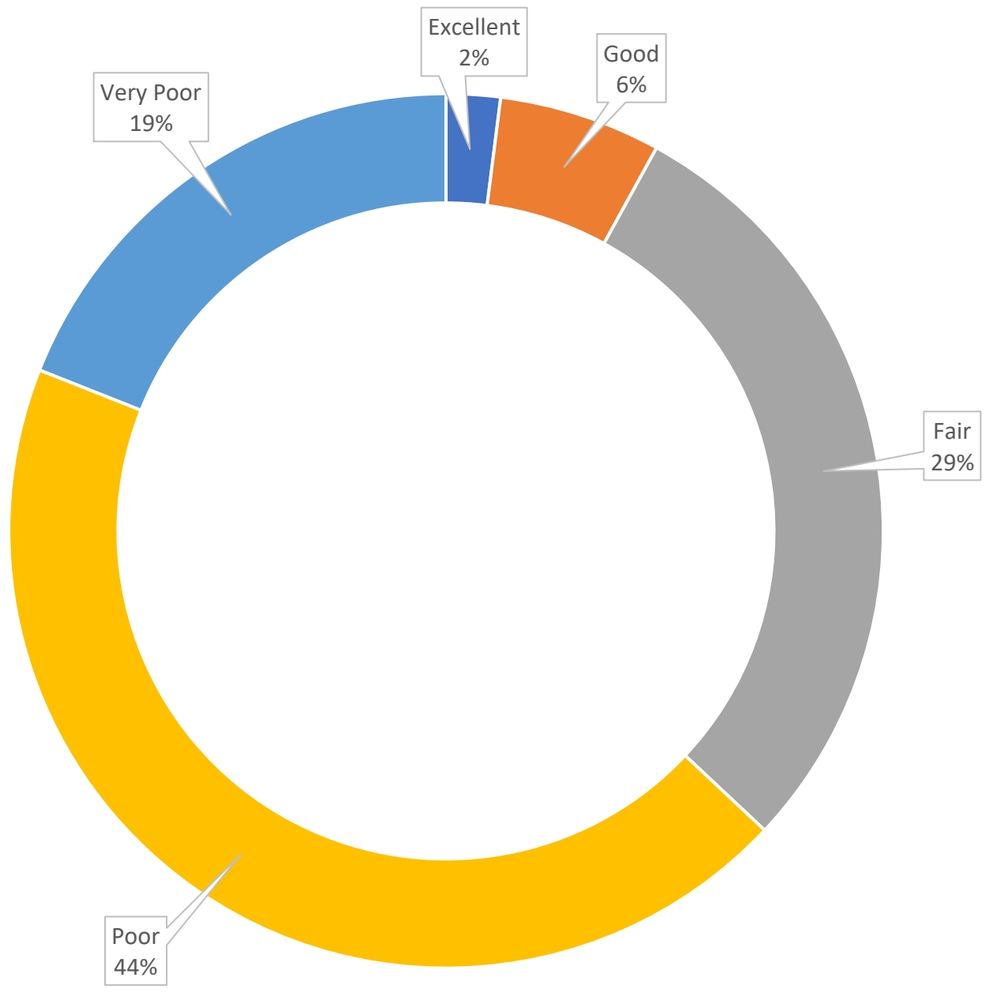
THE KLEING3RS GROUP

Q: Have you experienced any **<u>accessibility challenges</u>** while using Madison Road? If so, please describe the nature of these challenges. *Write-in Responses:*



Q: How would you rate the **pedestrian crossings** on Madison Road in Madisonville in terms of safety?

155 Respondents

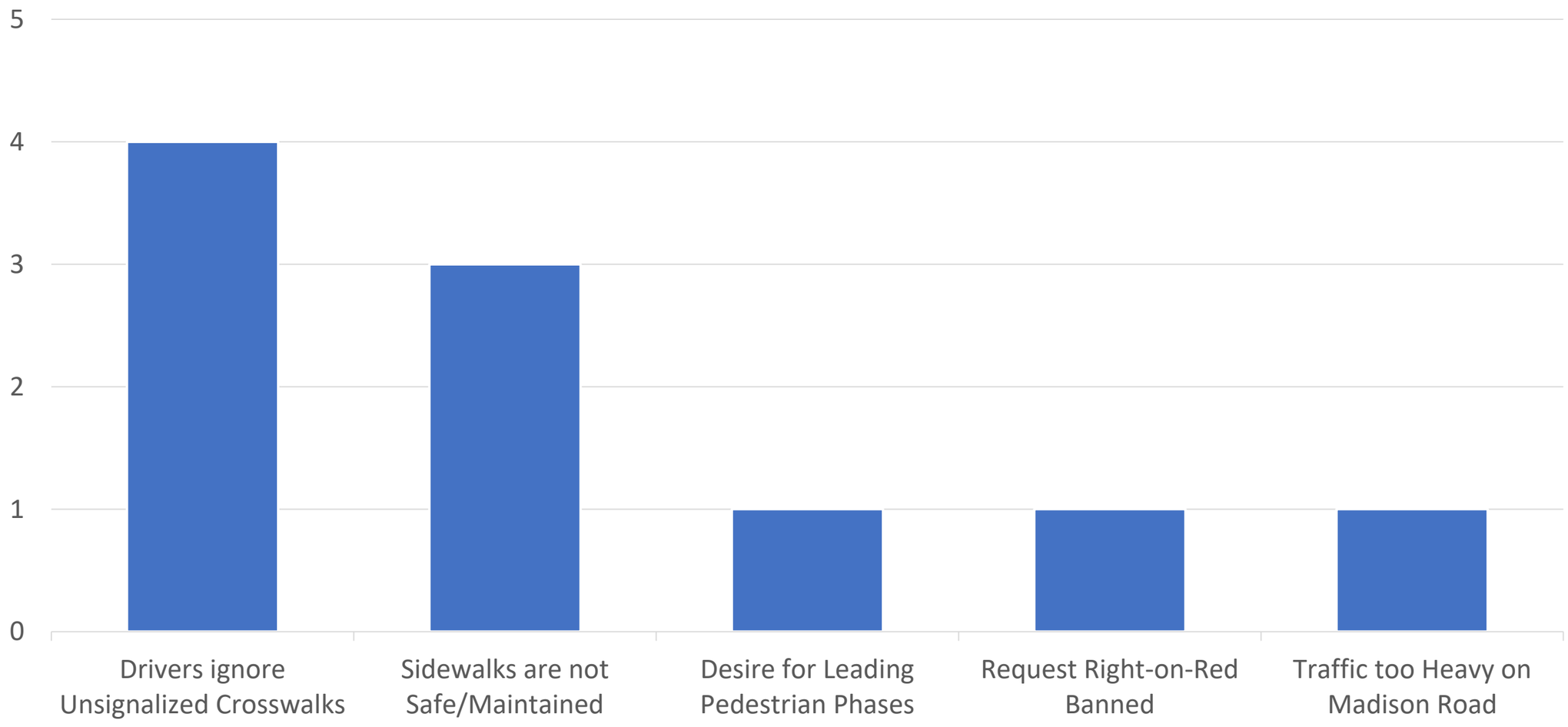


city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: How would you rate the **<u>pedestrian crossings</u>** on Madison Road in Madisonville in terms of safety? *Write-in Comments:*



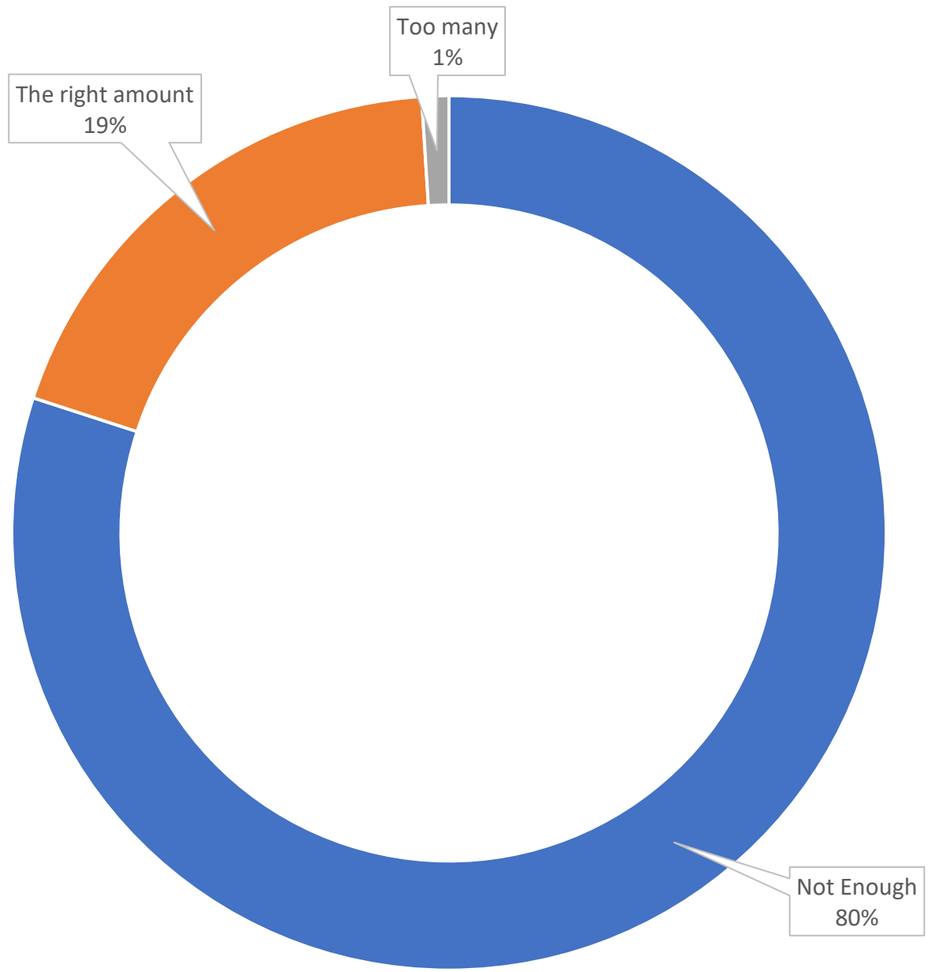
city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Q: When I think about the **crosswalks** on Madison Road in Madisonville, I feel there are:

152 Respondents



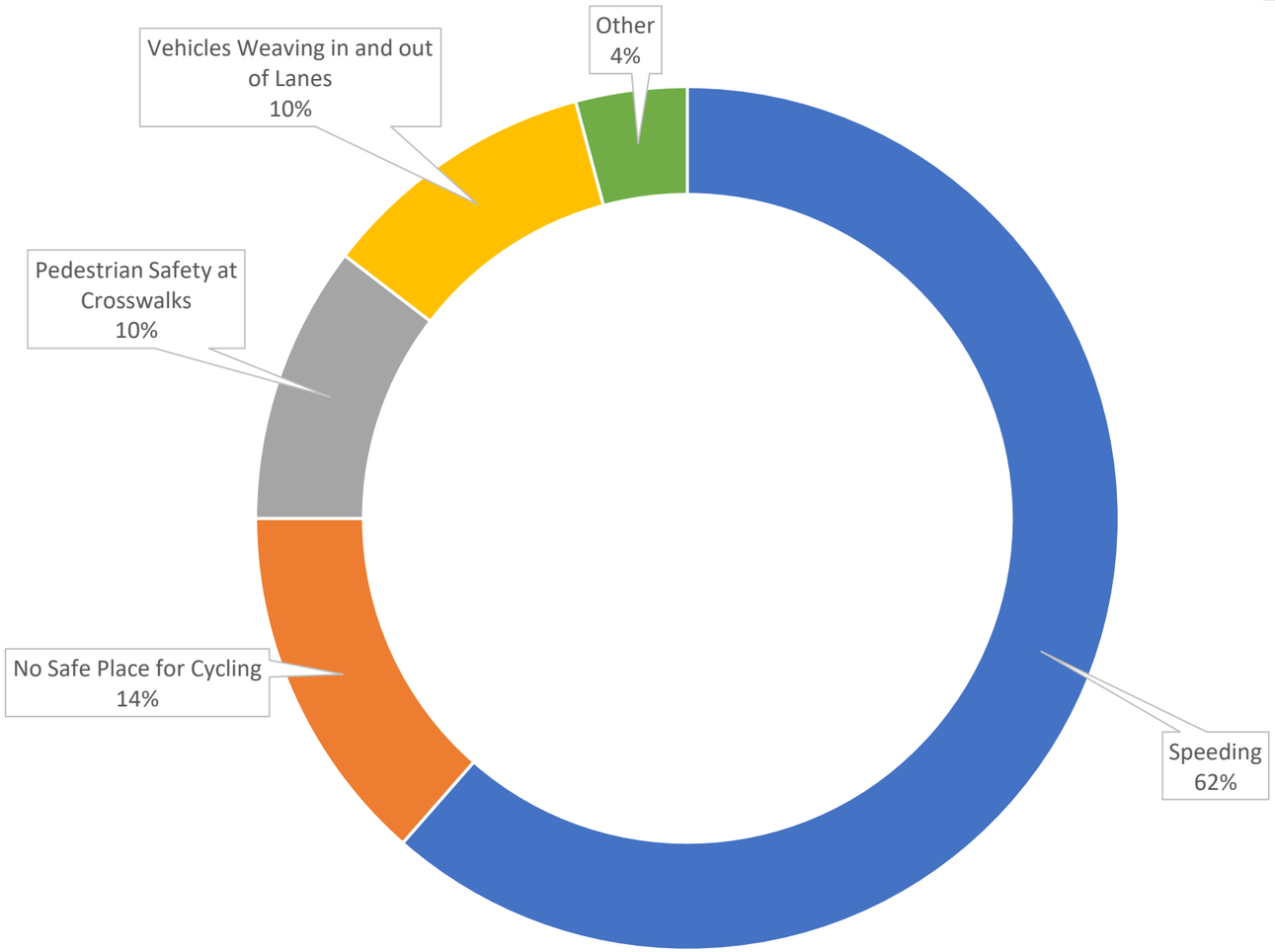
city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEING3RS GROUP

Q: In your opinion, what is the **top concern** when traveling on Madison Road in Madisonville?

154 Respondents



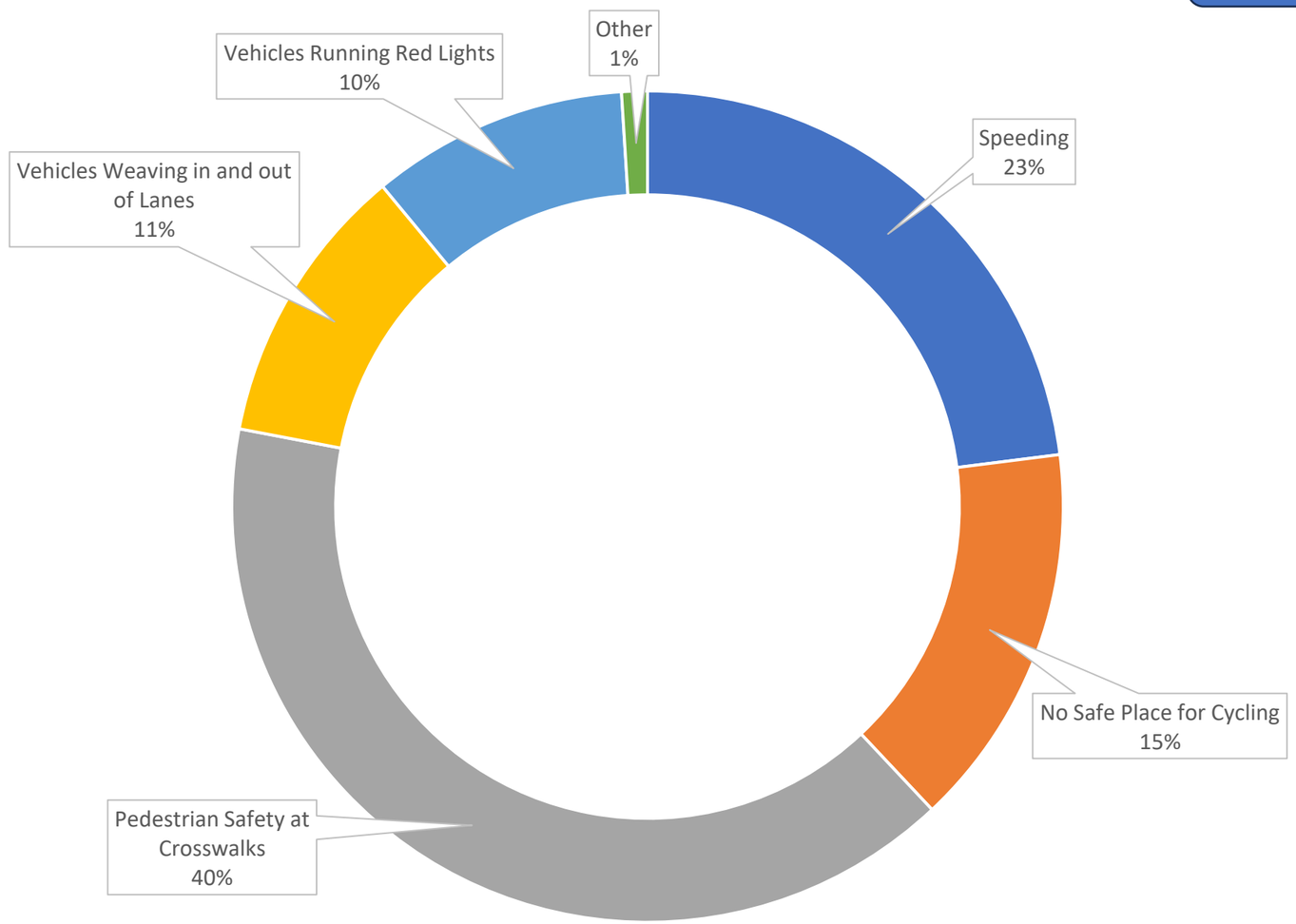
city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Q: In you opinion, what is the **#2 concern** when traveling on Madison Road in Madisonville?

146 Respondents

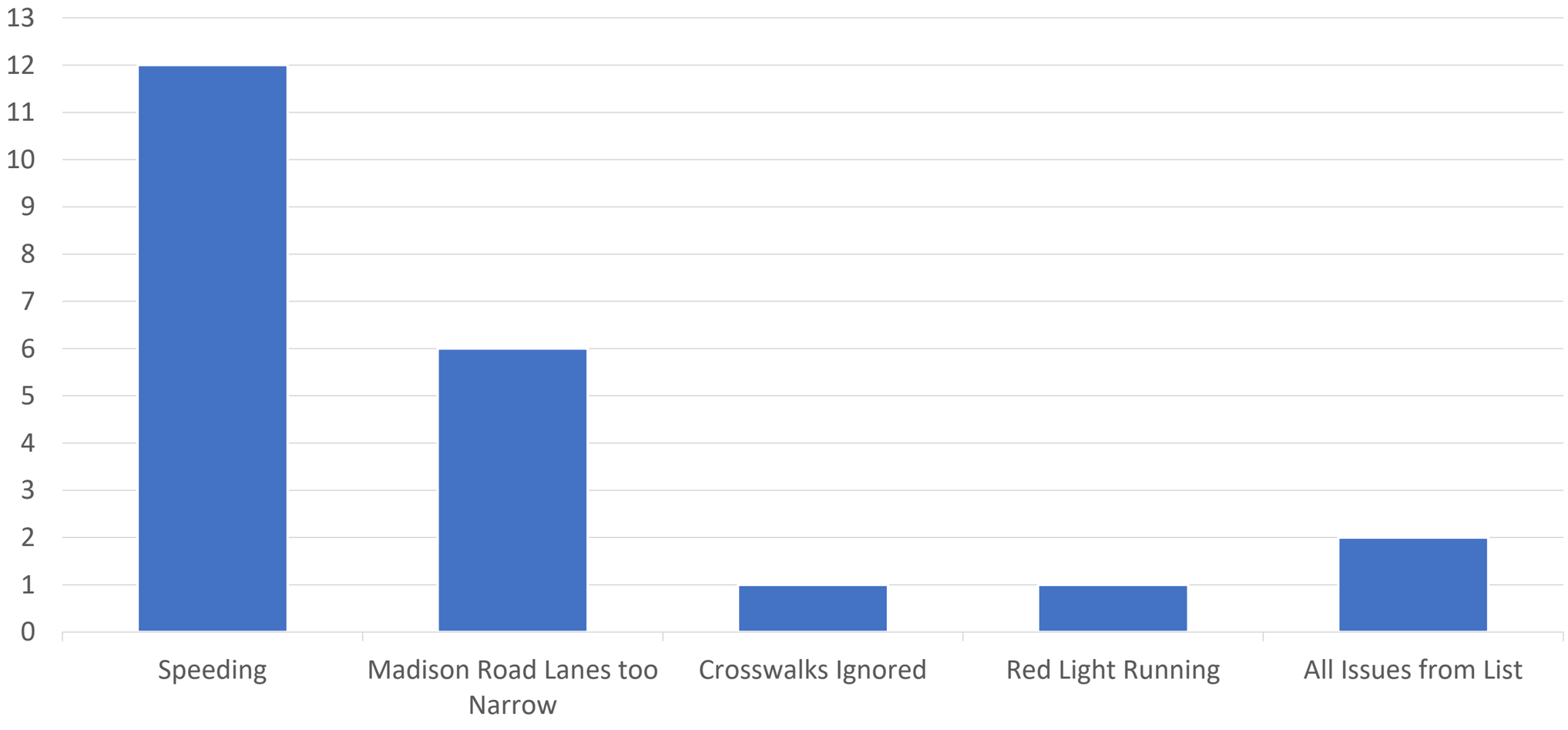


city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Q: In your opinion, what is the **top concern** when traveling on Madison Road in Madisonville? *Write-in Results:*

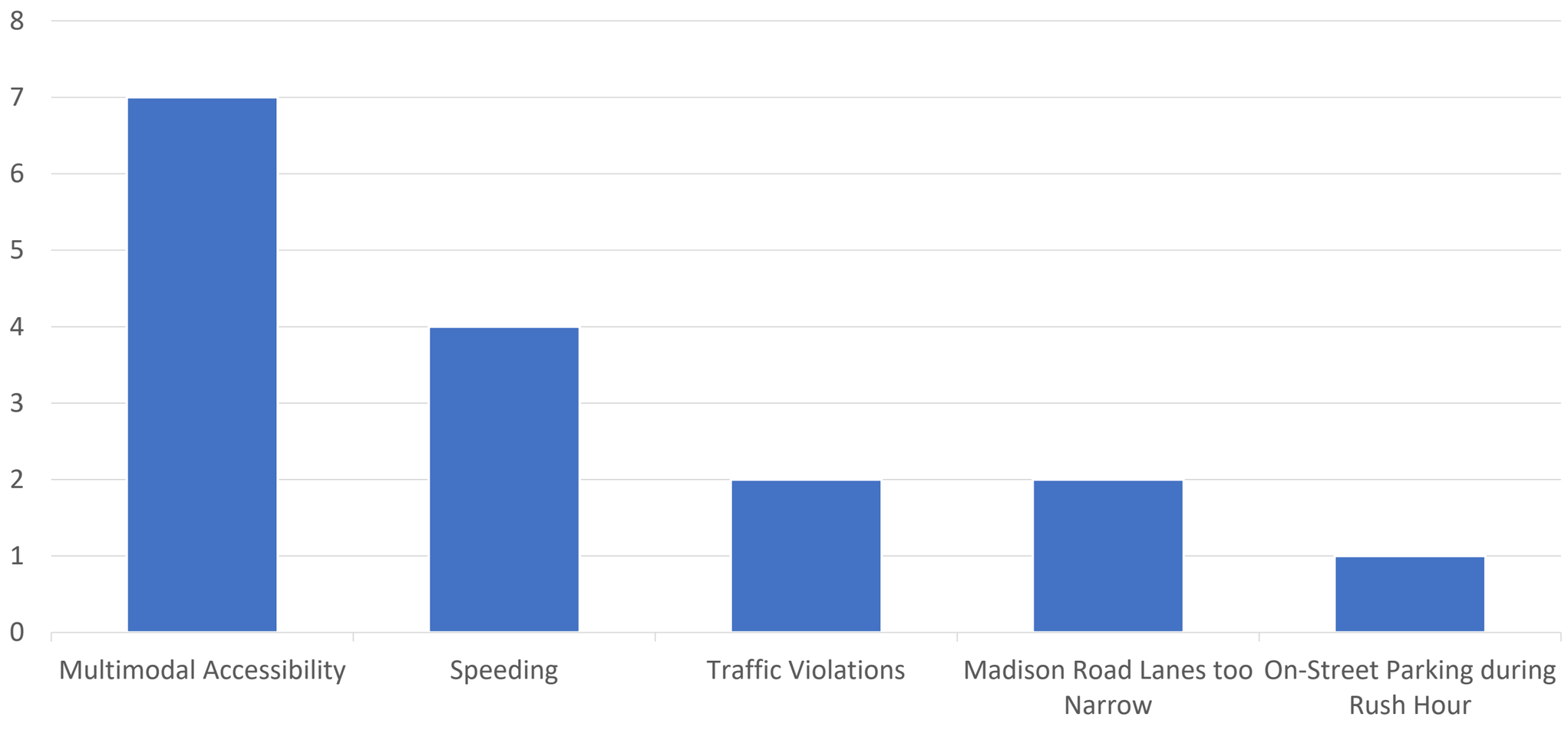


city of CINCINNATI

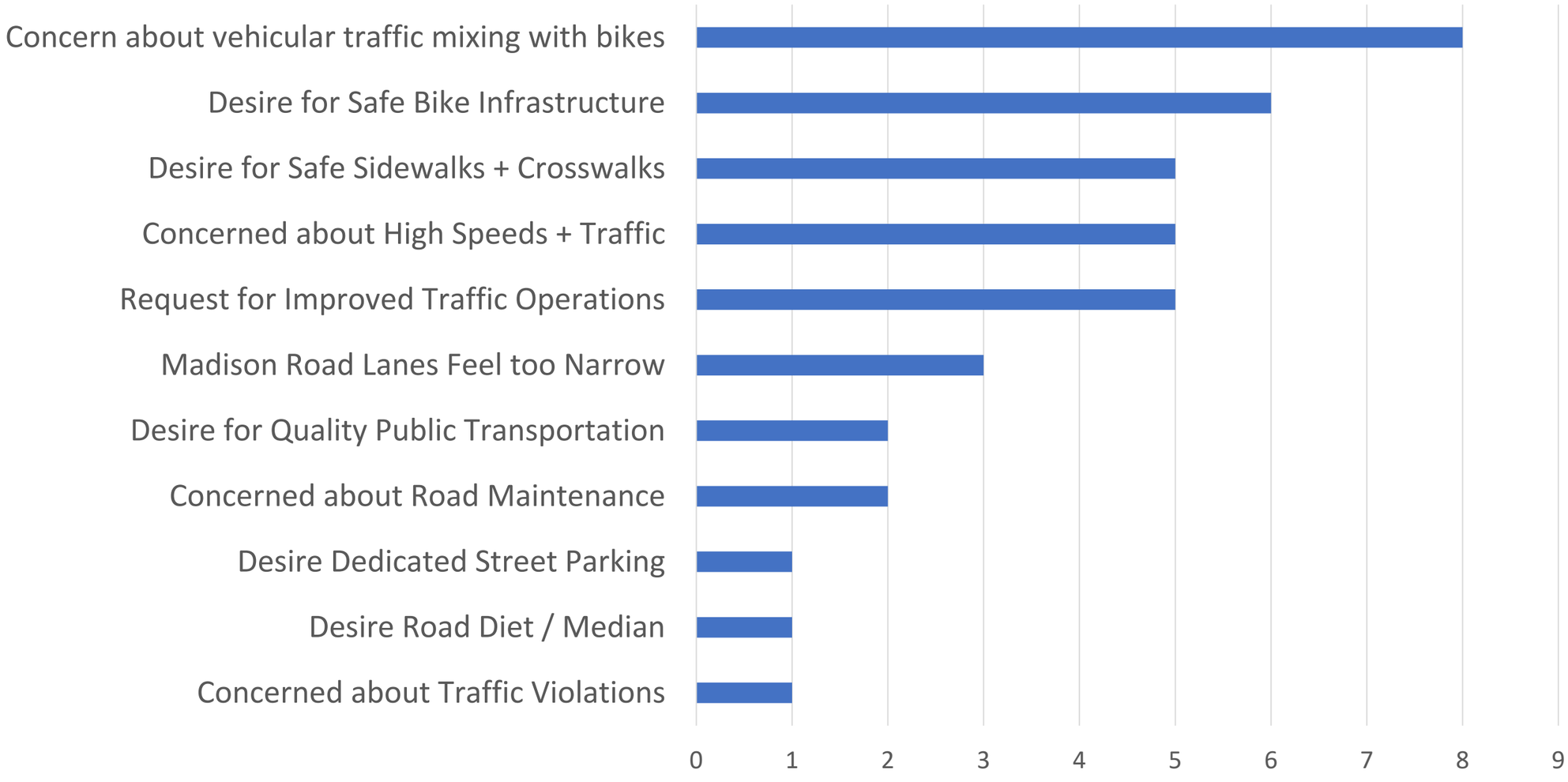
MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Q: In you opinion, what is the **#2 concern** when traveling on Madison Road in Madisonville? *Write-in Results:*



Q: Do you have any additional comments, suggestions, or concerns regarding the Madison Road Complete Street Project that you would like to share?



city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Level of Service and Queue Data

city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEINGERS GROUP

Estimated “Cut-Through” Traffic on Madison Road

Eastbound
All Day (Weekday) – 23%
AM Weekday – 14%
PM Weekday – 31%

Westbound
All Day (Weekday) – 37%
AM Weekday – 52%
PM Weekday – 26%

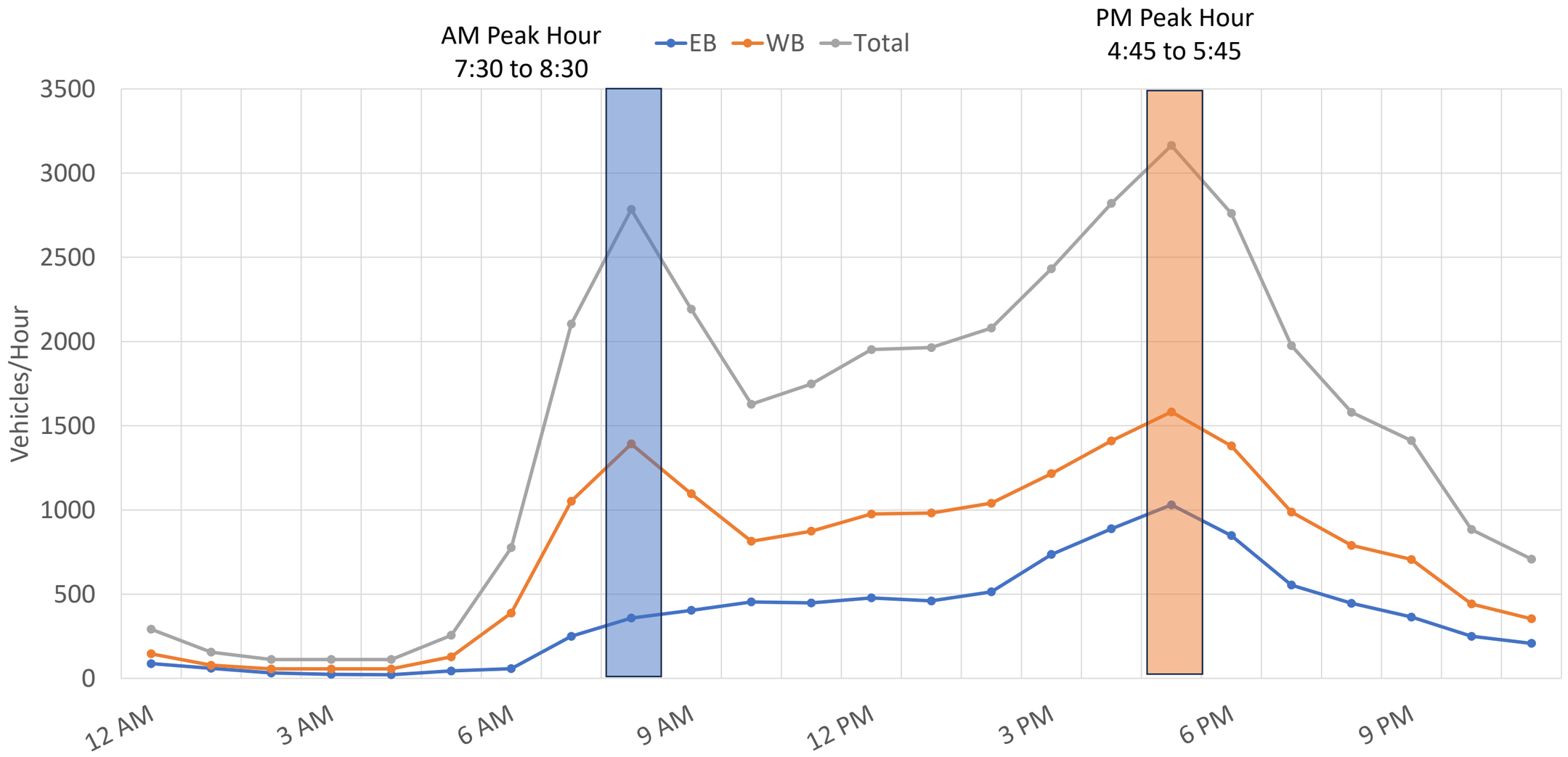
city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Madison Road Daily Typical Daily Traffic Patterns

- Between Stewart and Ebersole

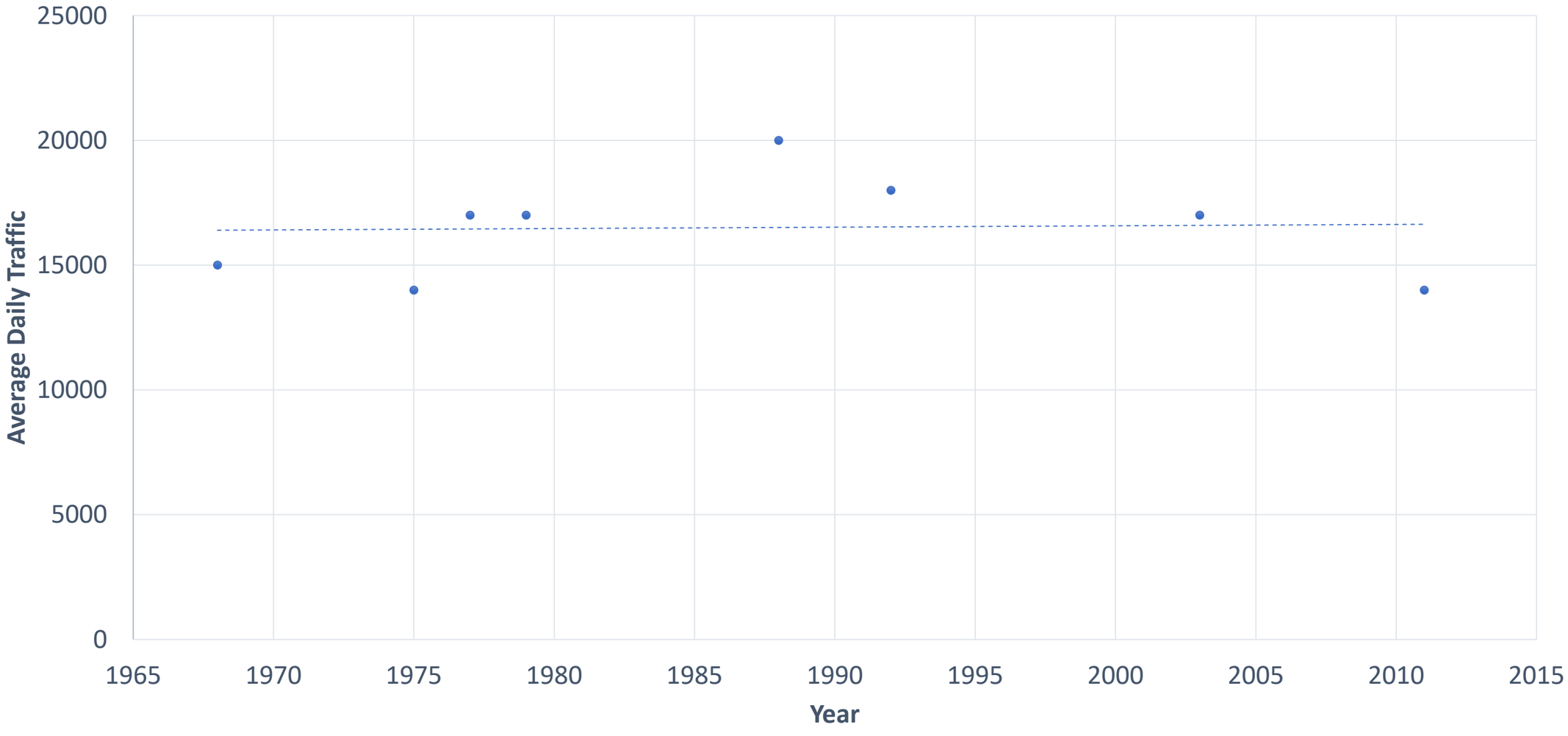


city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Madison Road Historical Daily Traffic (Ravenna to Ward)

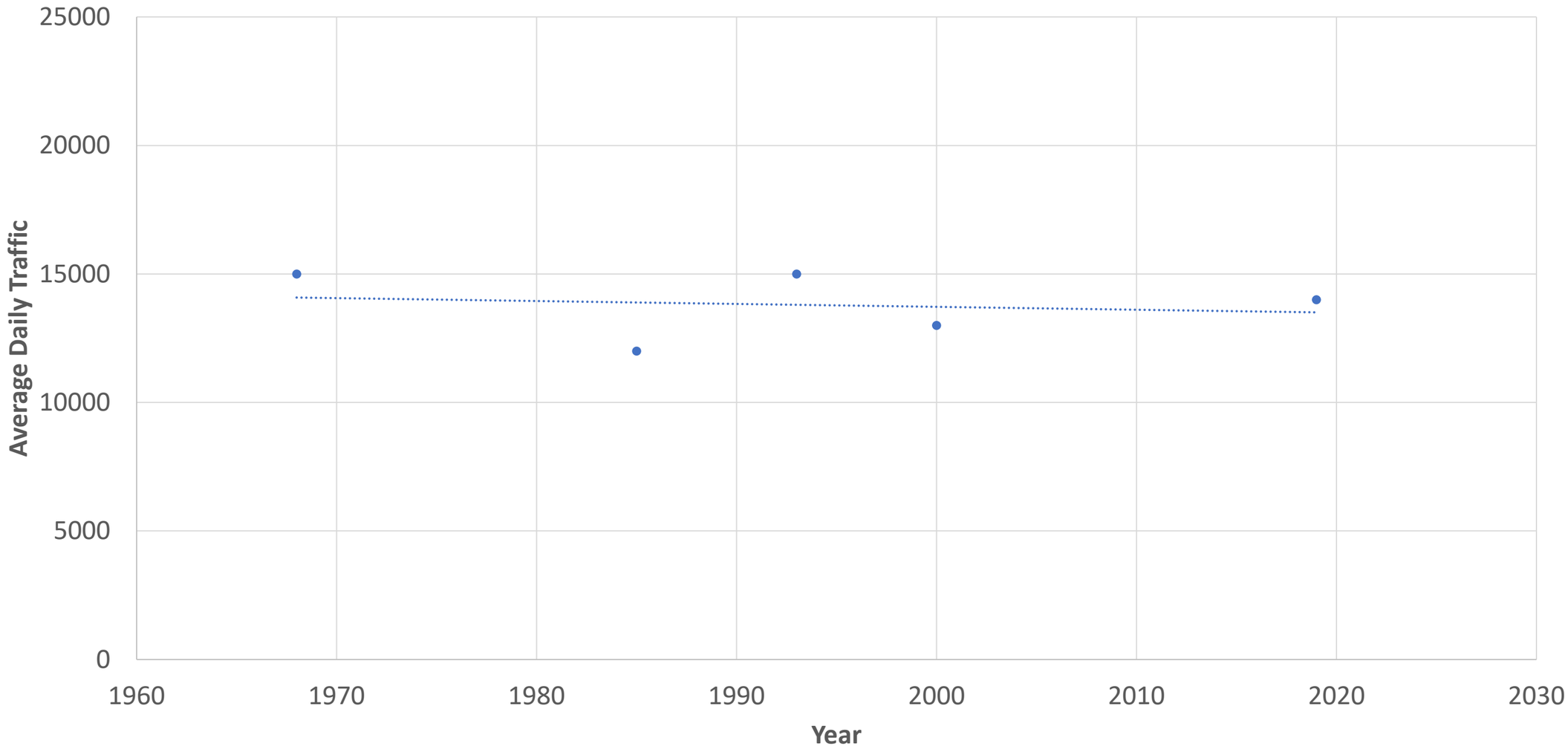


city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Madison Road Historical Daily Traffic (Ward to Kenwood)



city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

AM PEAK HOUR

PM PEAK HOUR

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6219 Centre Park Dr.
West Chester, OH 45069
513.779.7851

LEGEND

LOS A-C
LOS D
LOS E
LOS F

EB QUEUE
WB QUEUE
NB/SB QUEUE

CAPACITY ANALYSES AND QUEUING ANALYSES SUMMARY MAP

MADISON ROAD COMPLETE STREET STUDY

EXISTING CONDITIONS

N

N.T.S.

AM PEAK HOUR

PM PEAK HOUR

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LEGEND

LOS A-C
LOS D
LOS E
LOS F

EB QUEUE
WB QUEUE
NB/SB QUEUE

CAPACITY ANALYSES AND QUEUING ANALYSES SUMMARY MAP

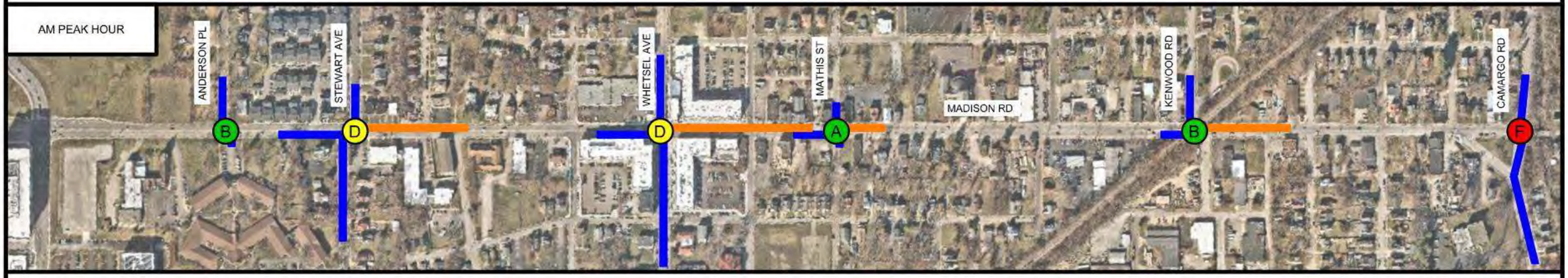
MADISON ROAD COMPLETE STREET STUDY

ALTERNATIVE 1 - 3 LANES

N

N.T.S.

AM PEAK HOUR



PM PEAK HOUR

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LEGEND

LOS A-C
LOS D
LOS E
LOS F

EB QUEUE
WB QUEUE
NB/SB QUEUE

CAPACITY ANALYSES AND QUEUING ANALYSES SUMMARY MAP

MADISON ROAD COMPLETE STREET STUDY

ALTERNATIVE 2 - 3 LANES (EBERSOLE TO CAMARGO)

N

N.T.S.

Proposed 3-Section Traffic Models

city of CINCINNATI

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THE KLEINGERS GROUP

Conceptual Plans

city of CINCINNATI

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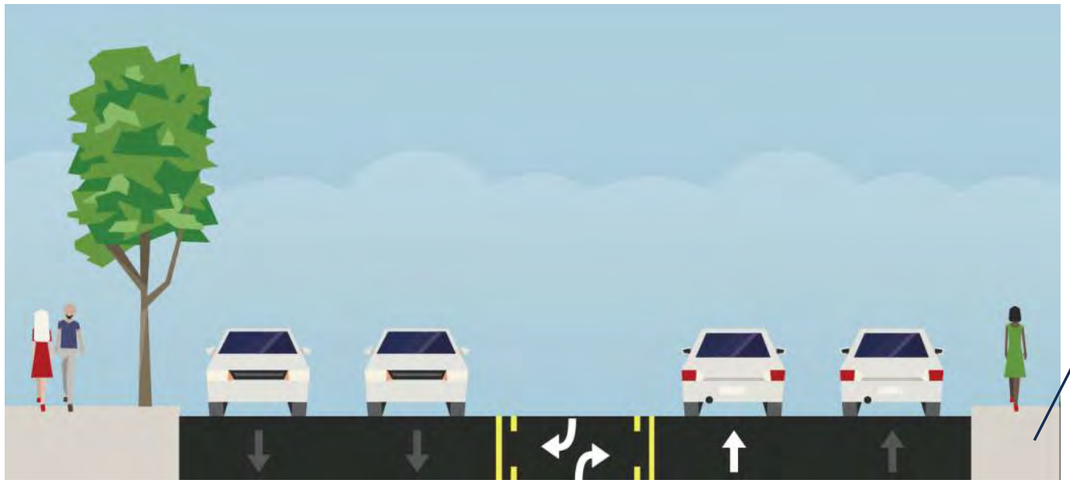
Existing Roadway

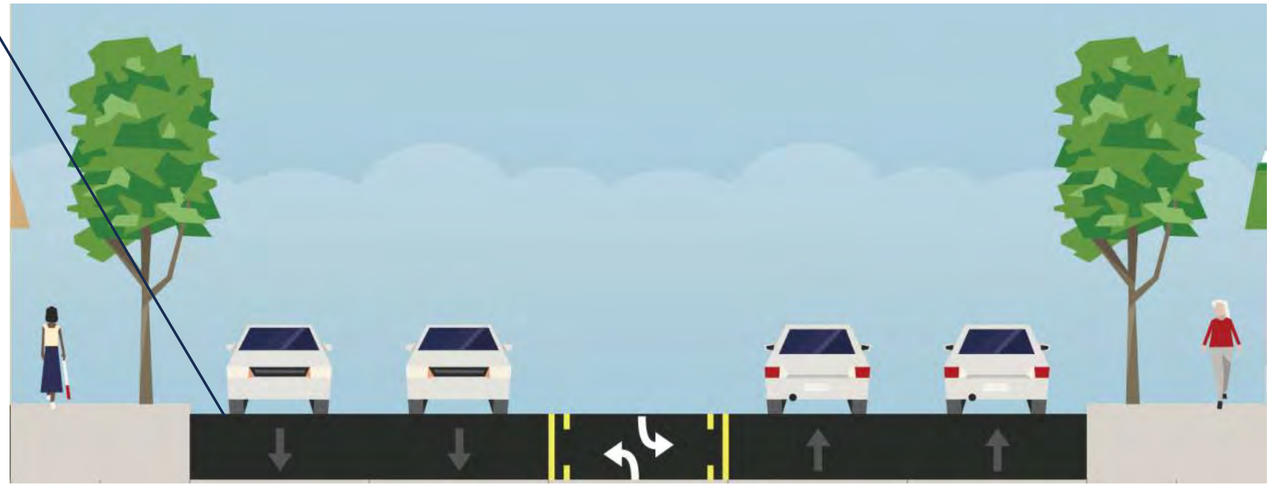
PINK



Narrow sidewalks

5-Lane Section

Narrow Lanes



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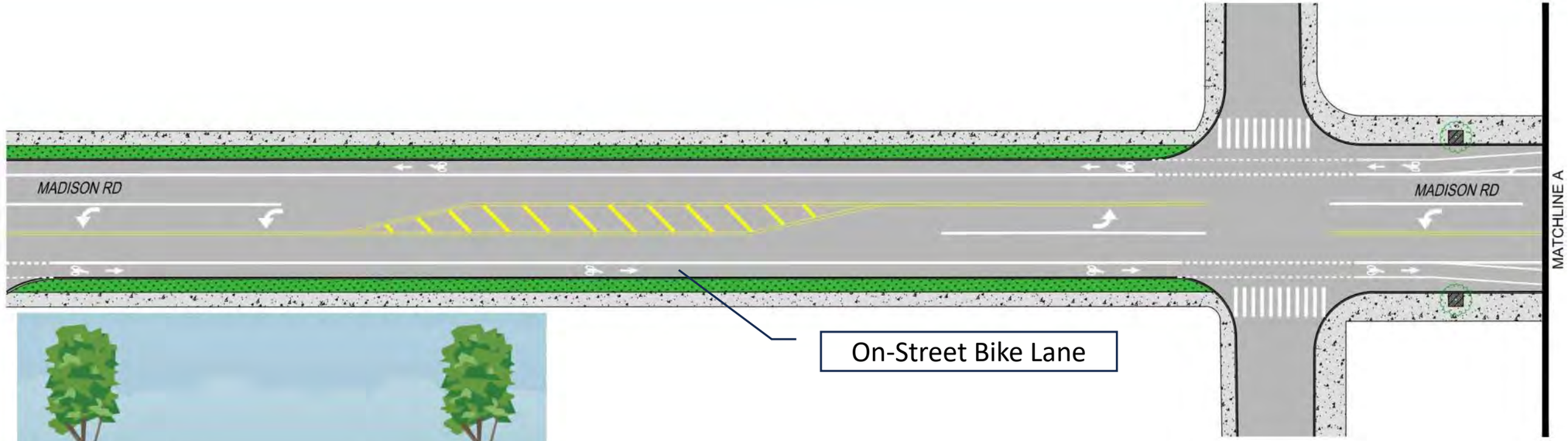
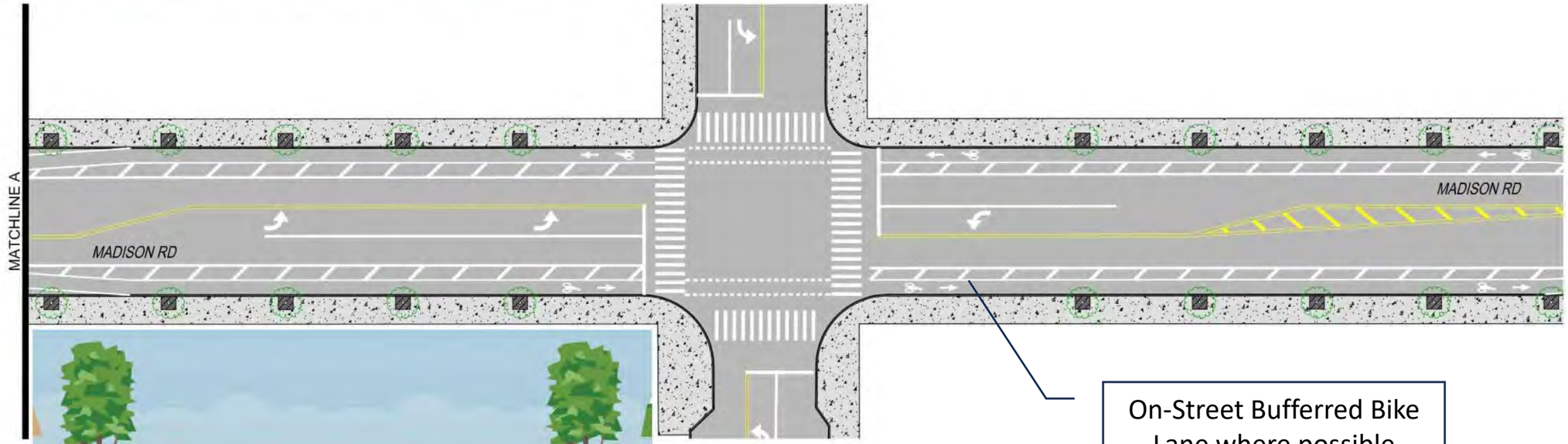
GREEN



On-Street Bike Lane

Widen Sidewalks



On-Street Bufferred Bike Lane where possible

HORIZONTAL SCALE IN FEET
0 10 20 40

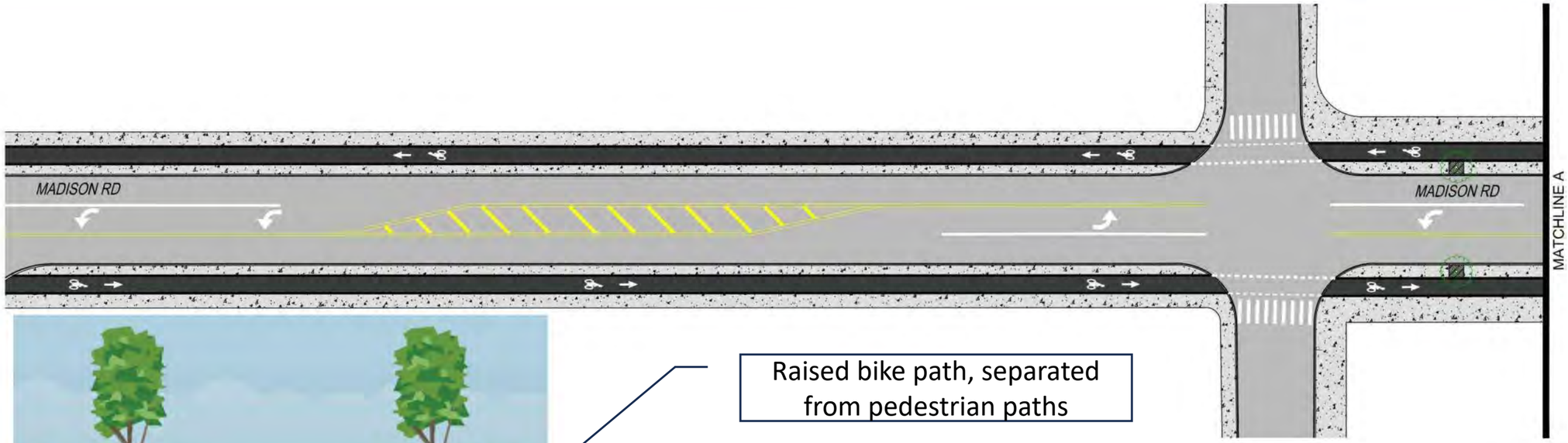
CALCULATED TAH
CHECKED MWN

MADISON ROAD COMPLETE STREETS
ALTERNATIVE

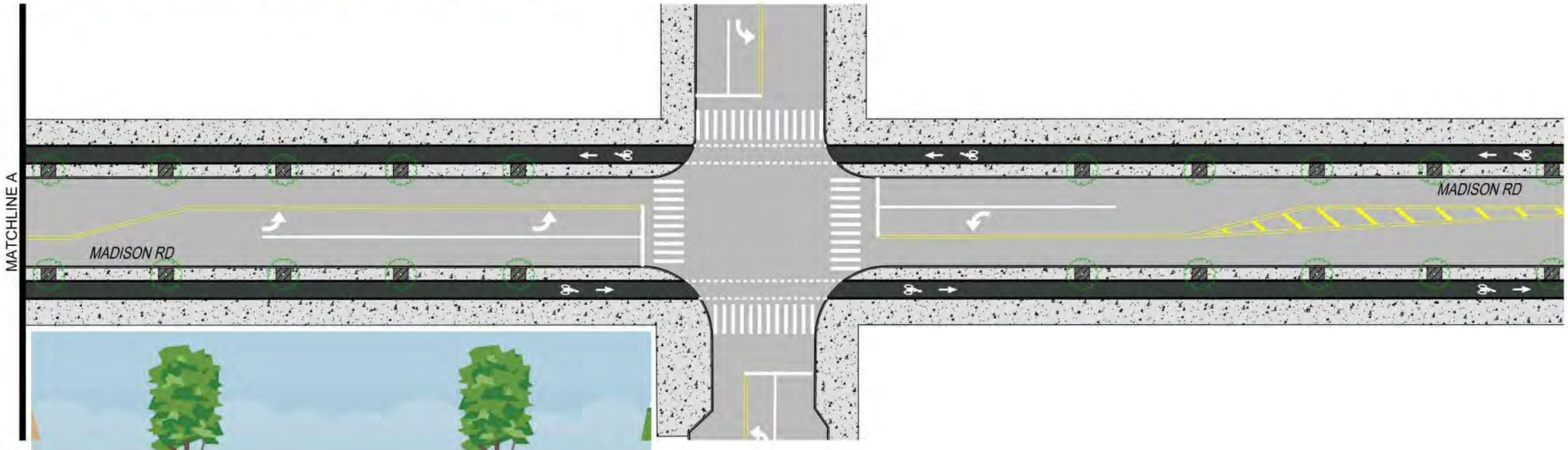
THE KLEINGERS GROUP

1
1

BLUE



Raised bike path, separated from pedestrian paths



HORIZONTAL SCALE IN FEET
0 10 20 40

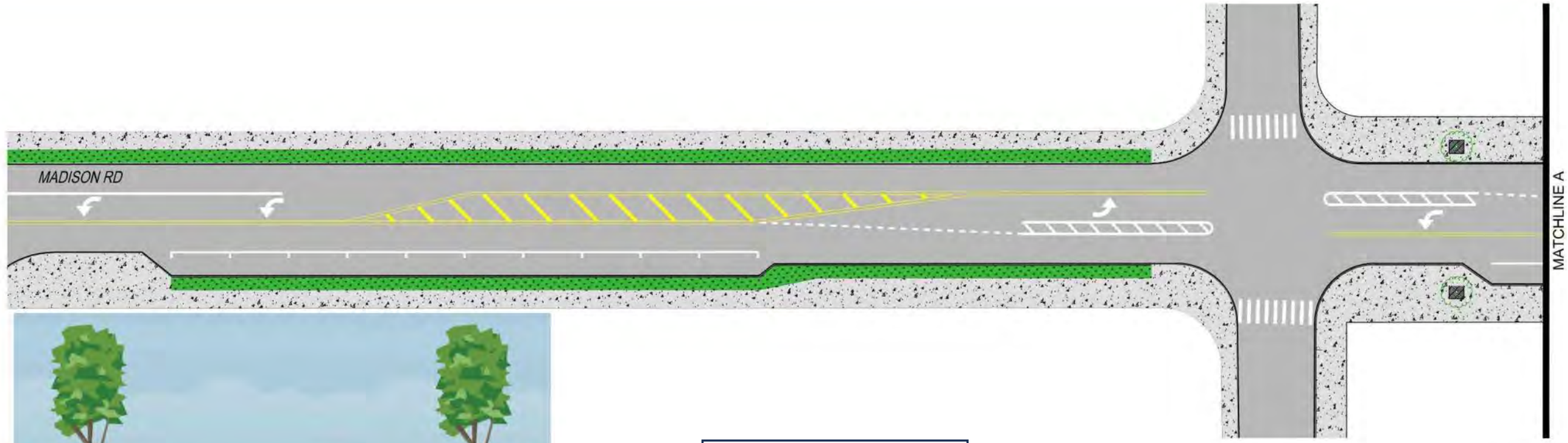
CALCULATED TAH
CHECKED MWN

MADISON ROAD COMPLETE STREETS
ALTERNATIVE

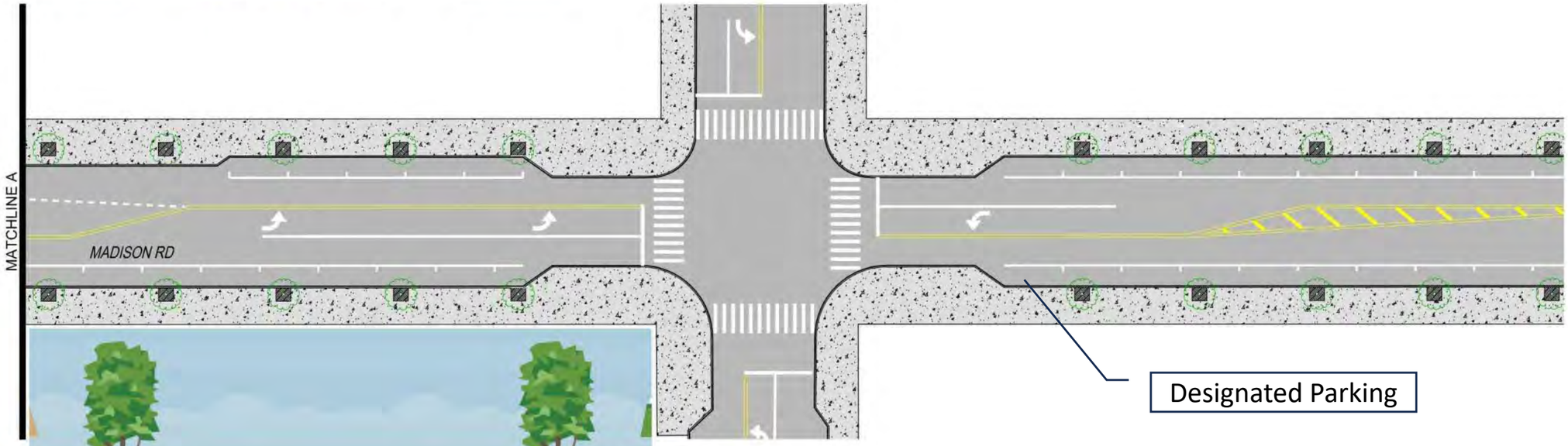
THE KLEINGERS GROUP

1
1

YELLOW



No Bike Path



Designated Parking

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED TAH
CHECKED MWN

MADISON ROAD COMPLETE STREETS
ALTERNATIVE

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1
1

Additional Typical Sections

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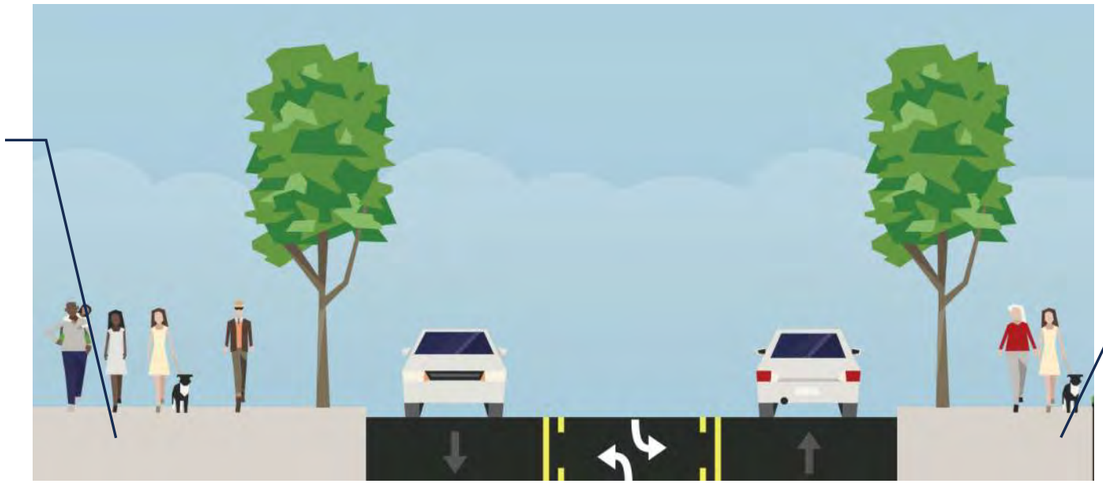
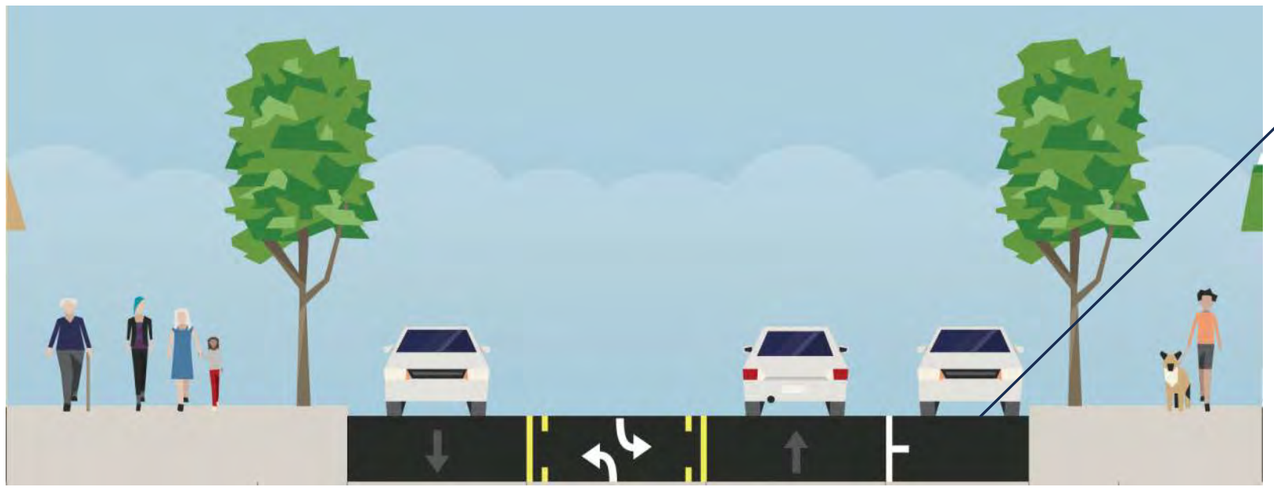
Additional Typical Sections

PURPLE

Multi-Use Shared Path
(Bikes and Pedestrians Mixed)



Pedestrian only paths on one side of roadway



Parking where possible

city of CINCINNATI

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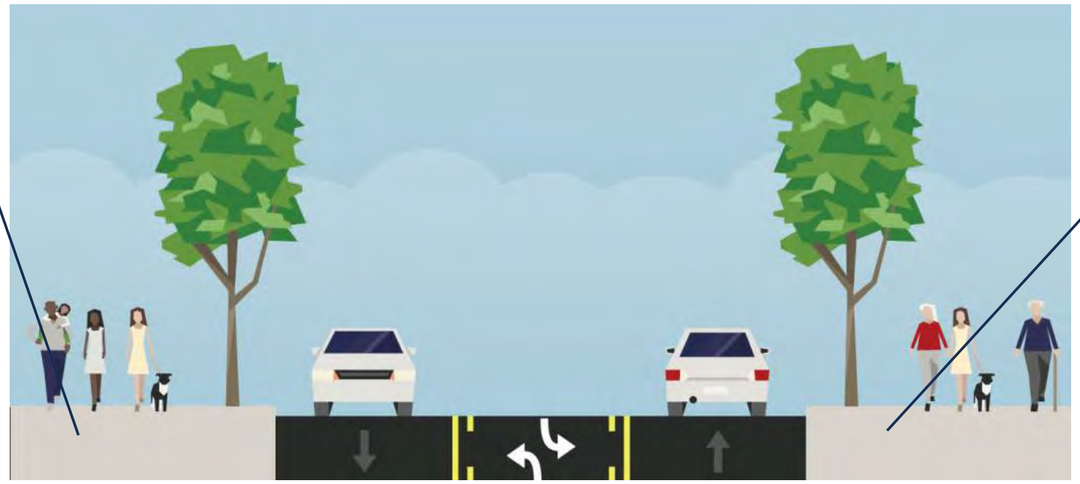
Additional Typical Sections

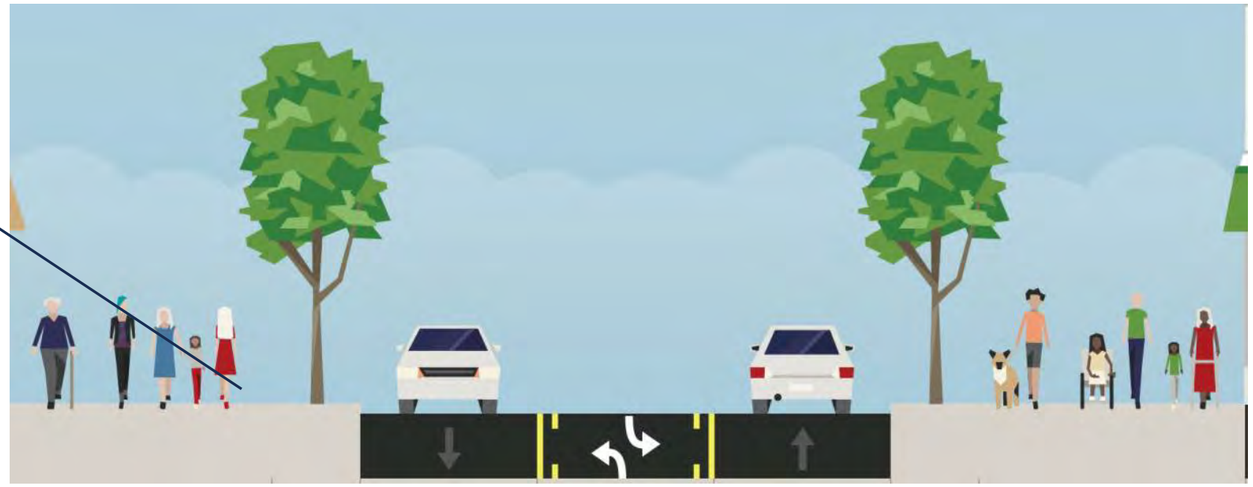
ORANGE

Maximize Sidewalks



No Bike Paths

Limited On-Street Parking



city of CINCINNATI

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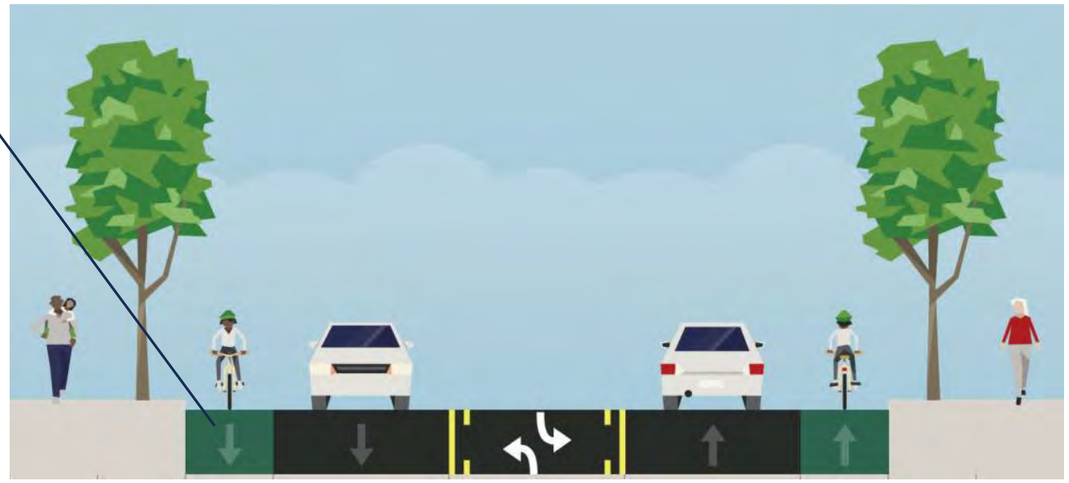
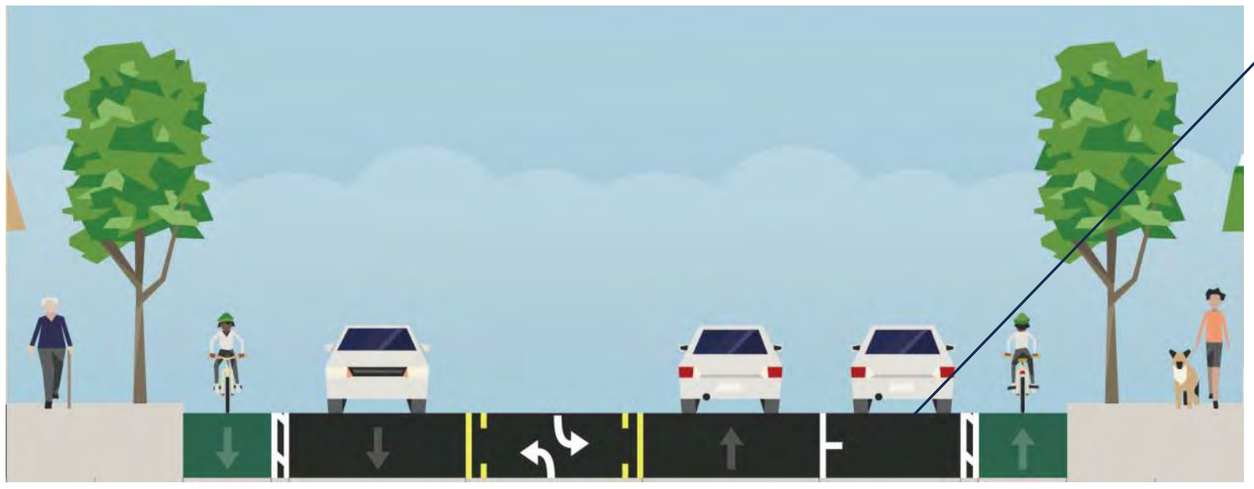
Additional Typical Sections

GREY

On-Street Bike Paths





Add parking where possible

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What happens next?

- Review Concept Boards
- Take the survey! Closes August 31
  - https://publicinput.com/madisonroad
- Compile survey results to identify preferred option(s)
- Update conceptual roadway improvement drawings

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What happens next?

- Upcoming Public Meetings – Location TBD
  - Thursday, October 26 – 7:00 pm – 9:00 pm
    - Present summary of public feedback
    - Present final recommended roadway cross-section

Thank You!

city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

THE KLEING3RS GROUP

MADISONVILLE COMMUNITY COUNCIL

city of CINCINNATI

Public Meeting Sign-In Sheet

Date: August 12, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
Jackie Helmitz	6715 Windward		Jahelmitz@yahoo.com
Anna Albi	5632 Bramble Ave		anna.albi6@gmail.com
Prencie Wilson	4314 Conant		Prencieslwe Aol.com
ms Darnell Busch	6309 Desmond St		sweetNell61@gmail
Jody Coaston	6710 Roe St.		jodysam@zoomtown.com
Kevin Shaw	634 Sycamore St.		Kshaw229@gmail.com
Kathy Cunningham	6271 Cortelyou Ave; 45213	513-652-0524 (M)	Kathy@queencitybike.org
Deborah Pilgrim	5530 Wagners Ct 45227	" 271-8518	
Josh Ullrich	6129 Madison	216-895-4340	JUllrich@SchoolofRock.com
Karen VINEGAR	6822 VINEWOOD AVE (27)	88[illegible]893	✓
Adrienne King	6908 Palmetto St.		Adriennking12@gmail.com
Diana Vakharia	City of Cincinnati	513 352-6130	diana.vakharia@cincinnati-oh.gov
Jeff Lawrence	4204 Simpson Ave		Jlaw18@live.com
Robert Igoe	5055 Anderson Pl	513-703-9188	
QUVADUS KINNEY	5326 WARD ST	513.952.0559	
Christina Ullrich	6129 Madison Rd	513 568-7259	christina.c.ullrich@gmail

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MADISONVILLE COMMUNITY COUNCIL

city of CINCINNATI

Public Meeting Sign-In Sheet

Date: August 12, 2023
Location: Madisonville Recreation Center
Madison Road Complete Streets

Name	Address	Phone	Email
Mike Tighe	4234 Blaney	513.827-0454	DebbieTighe9@G.MAIL.COM
Jim DiESEI	~~55~~ 45 MADISON RD. #80D	513-394-0810	
Brandon Gee	6700 Roe Street	513-218-2859	brandon.p.gee@gmail.com
Byron D. Coaston	6710 Roe "	513.490.0621	byron1@zoomtown.com
Edward Winslow	7258 Jethve	513-802-8843	edward_40515@yahoo.com
Don STEPHAN	6406 MADISON RD		
Tony Brinkdopke	7040 Palmetto	513-295-1913	Tbrinkdopke@gmail.com
Ann Boland	5515 Madison Rd #186E	5138074833	AnnBoland4833@gmail
Don Newberry	5030 Duck Creek Rd	513 348-9767	
Annie Duganier	7330 Smiley	513-382-3133	anniedugan@gmail
Monica Hill	5322 Ward St	(513) 827-1641	monicahill2@yahoo.com

THE KLEINGERS GROUP

Appendix K

Public Meeting #3 Documents

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MADISONVILLE
COMMUNITY COUNCIL

THE KLEING3RS GROUP

Welcome!

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MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Background:

- Desire to improve conditions for all users on Madison Road corridor
  - Initiated by Madisonville Community Council
  - History of 15-20 years
  - Improve conditions for pedestrians
  - City of Cincinnati initiated Complete Streets study
  - Selected The Kleingers Group to conduct study

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

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What is a Complete Street?

- Provides for all users of all ages and abilities
  - Pedestrians
  - Bicyclists
  - Public transportation riders
  - Drivers

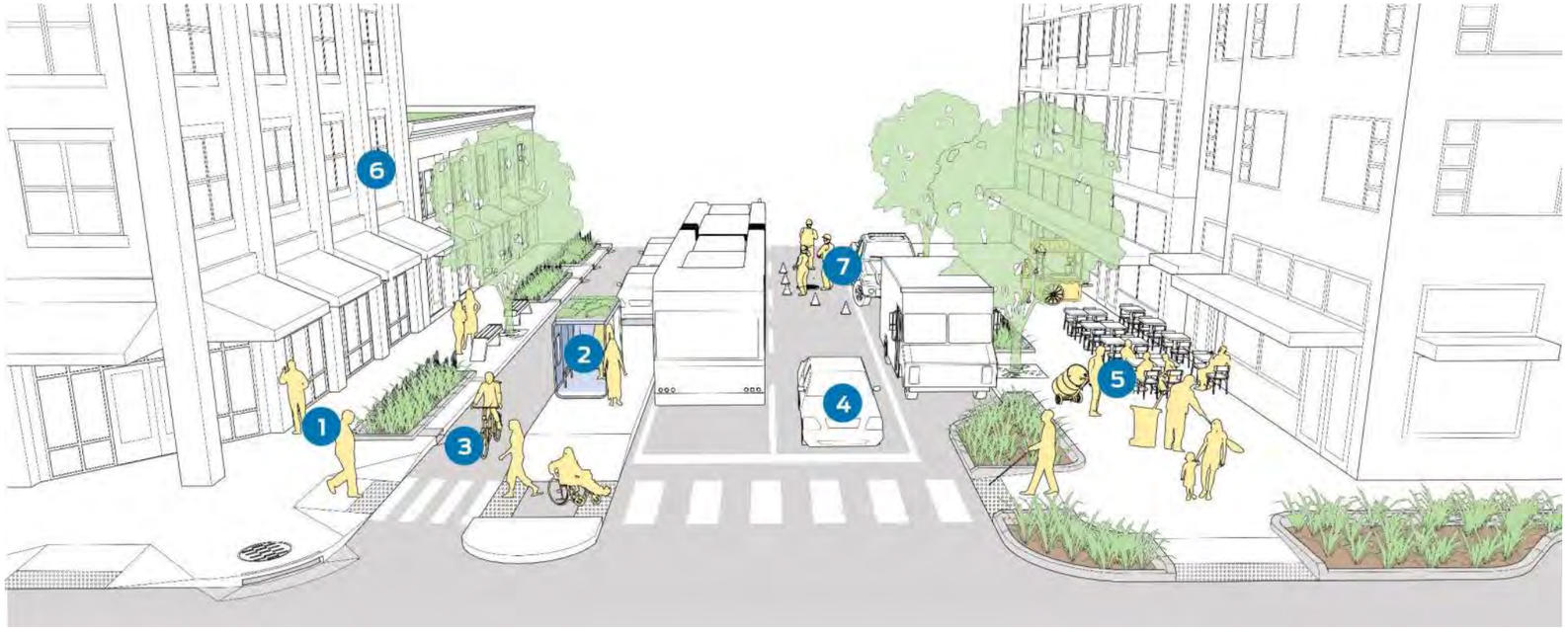

Image: National Association of City Transportation Officials

city of CINCINNATI

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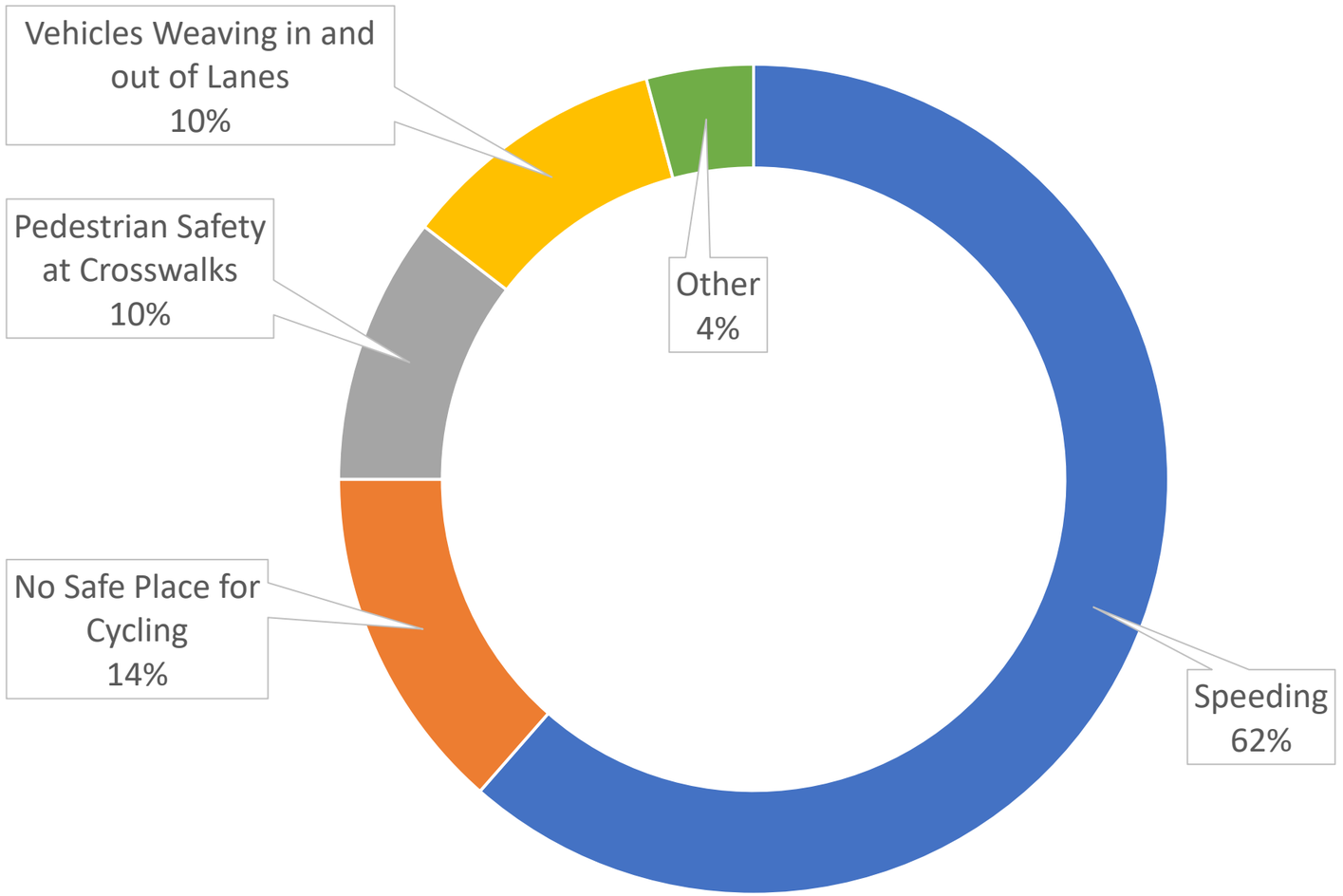
Study process to date

- Preliminary meeting with Community Council representatives
- Traffic counts and speed data collection
  - Mid-March to Early April, 2023
- Observed existing traffic conditions during peak times
- Existing roadway widths and parking configurations
- Conducted public survey + summarized results
- Created concept drawings and typical sections
- Public Input on concept drawings and typical sections

Q: In your opinion, what is the **top concern** when traveling on Madison Road in Madisonville?

154 Respondents



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MADISONVILLE COMMUNITY COUNCIL

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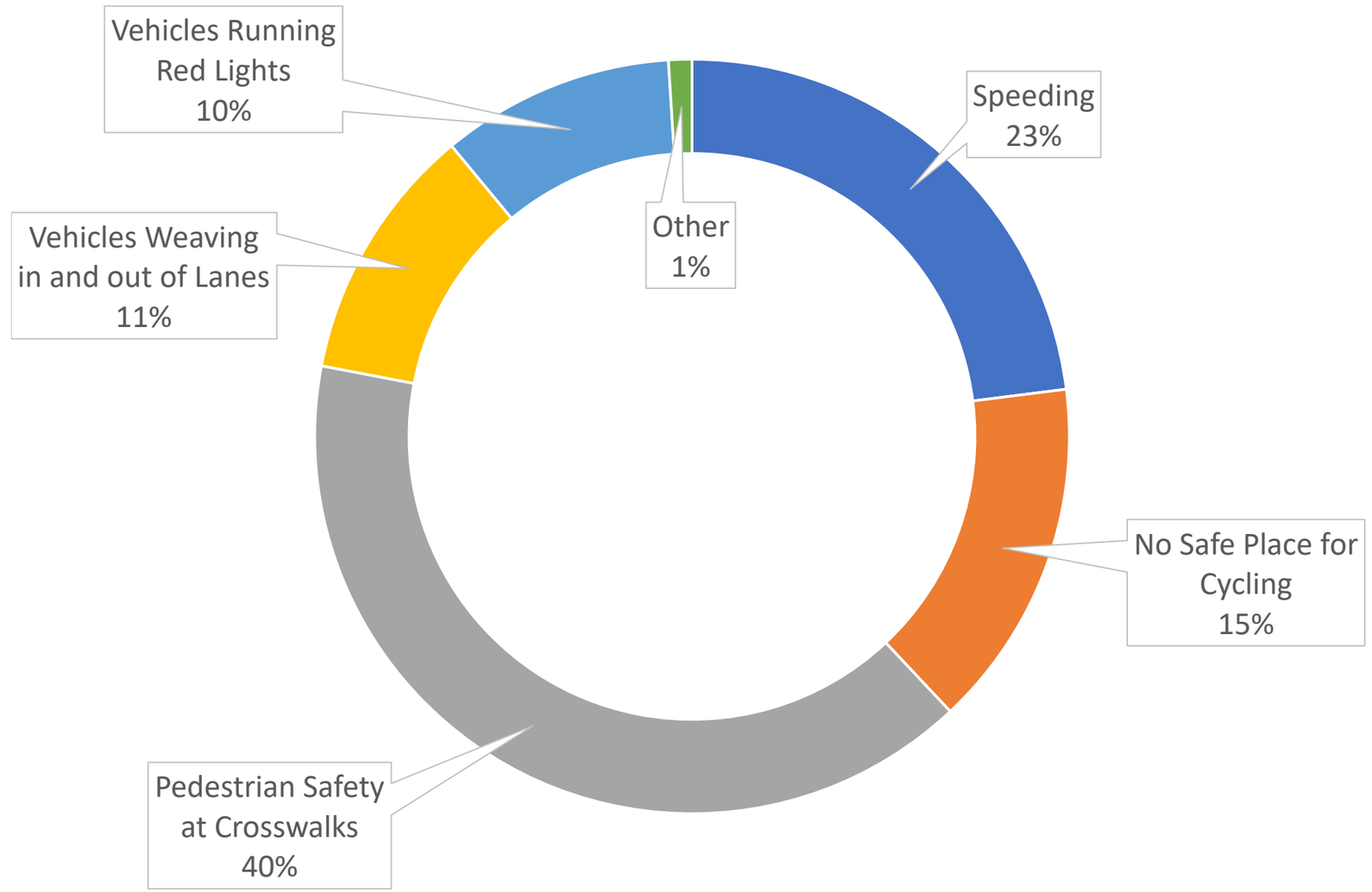
Q: In you opinion, what is the **#2 concern** when traveling on Madison Road in Madisonville?

146 Respondents



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MADISONVILLE COMMUNITY COUNCIL

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Conceptual Plans/Cross-Sections

&

Public Input Results

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MADISONVILLE COMMUNITY COUNCIL

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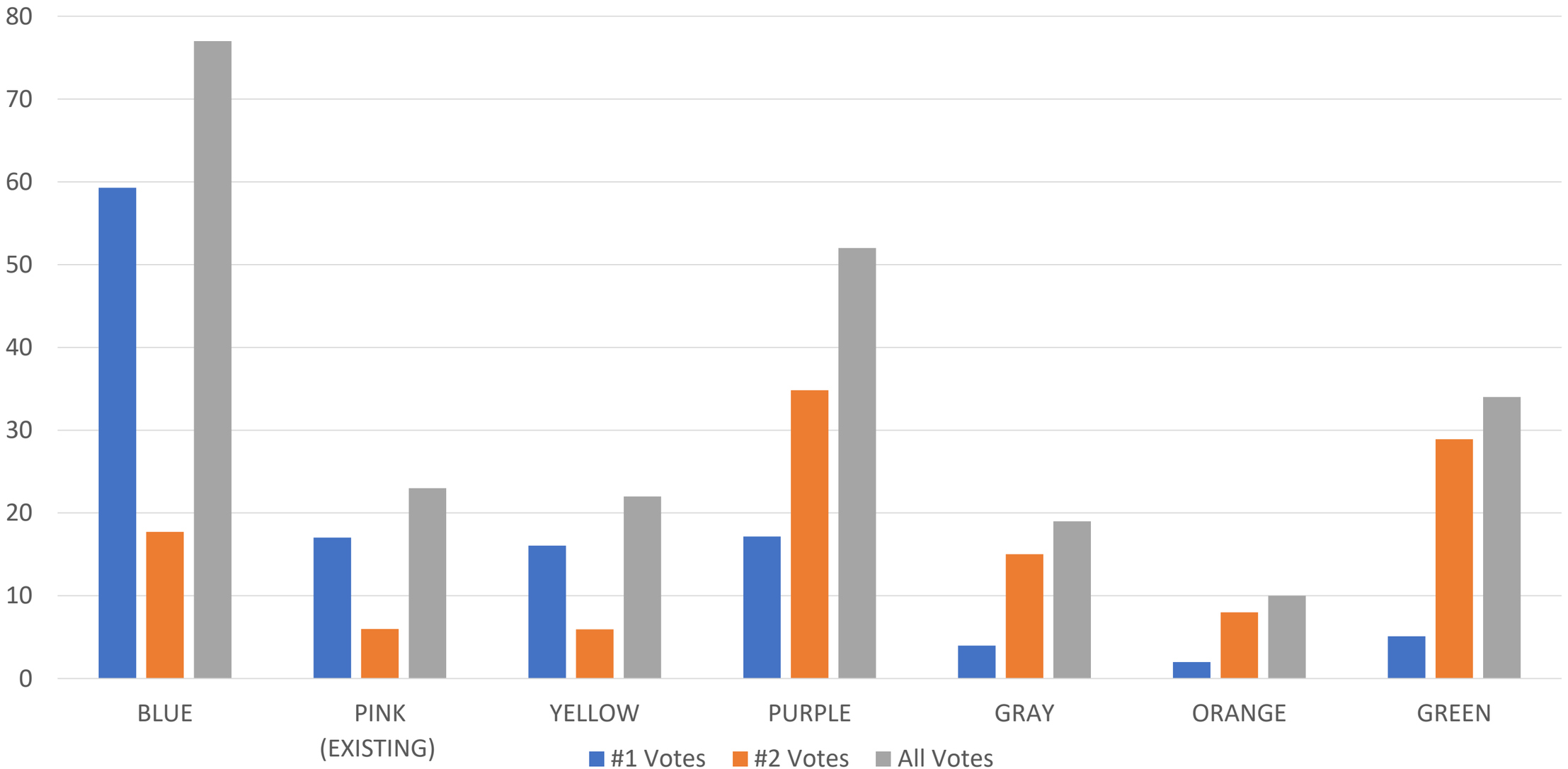
All User Input – 120 Respondents



city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

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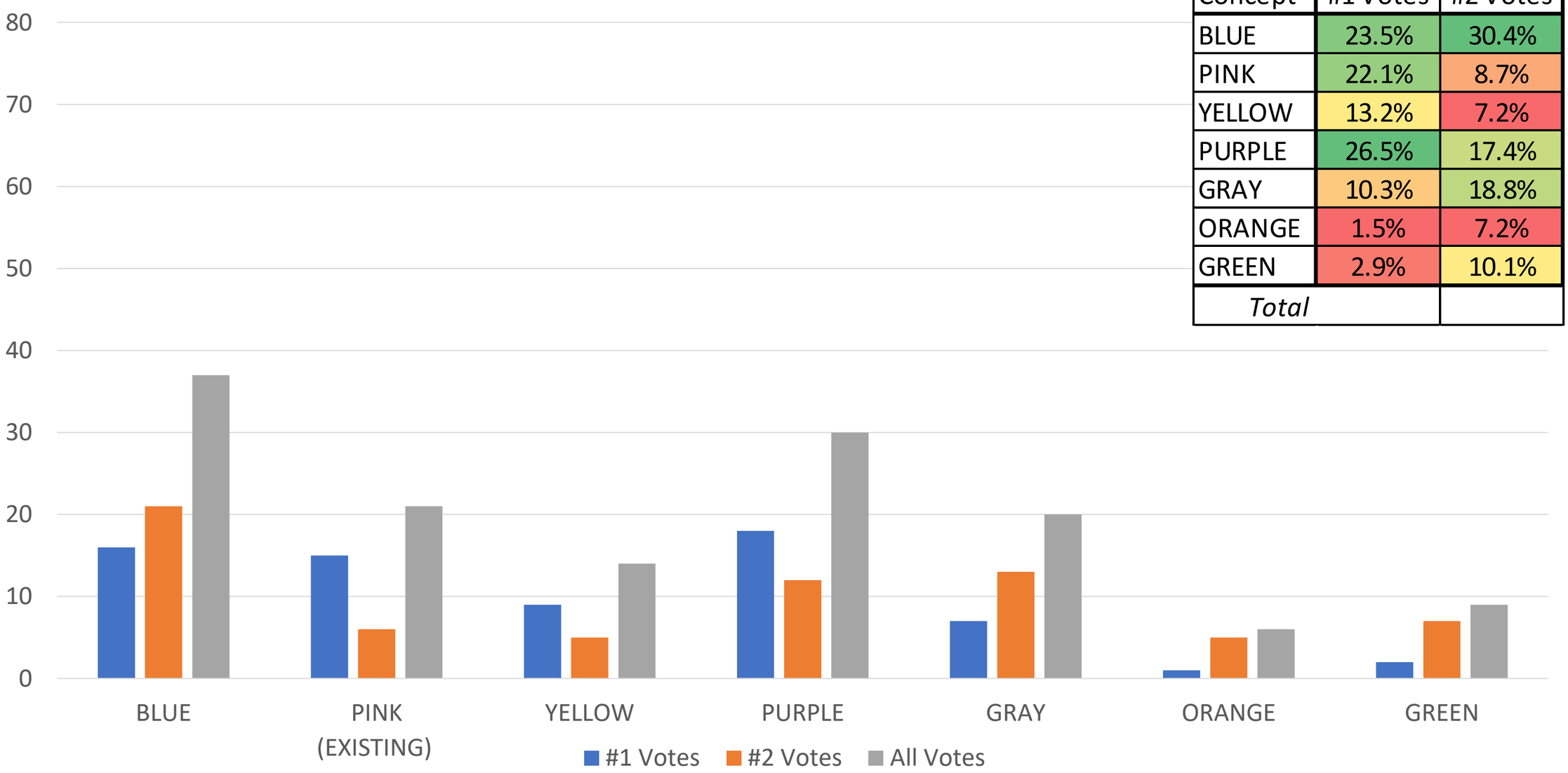
Work and/or Live in Madisonville – 68 Respondents



	% Votes	
Concept	#1 Votes	#2 Votes
BLUE	23.5%	30.4%
PINK	22.1%	8.7%
YELLOW	13.2%	7.2%
PURPLE	26.5%	17.4%
GRAY	10.3%	18.8%
ORANGE	1.5%	7.2%
GREEN	2.9%	10.1%
Total		

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

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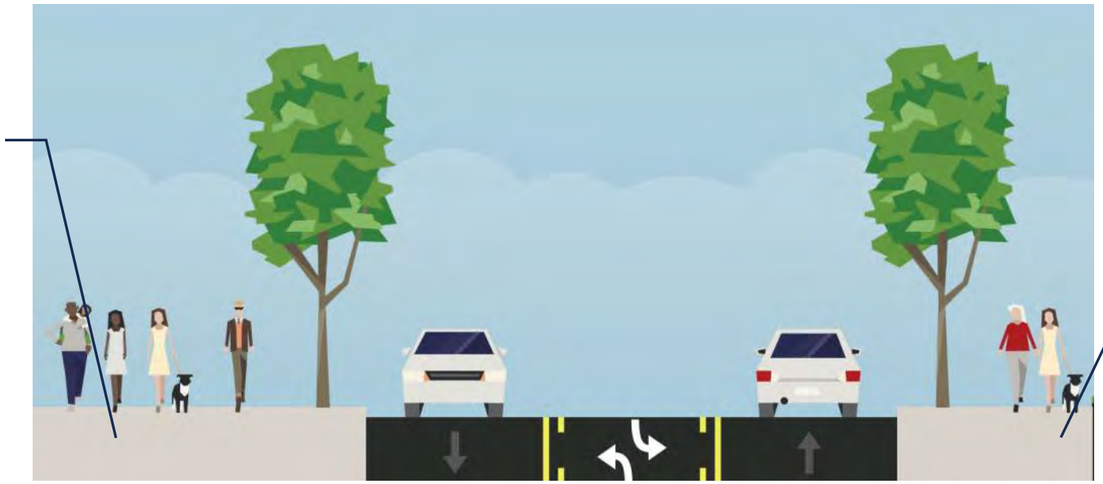
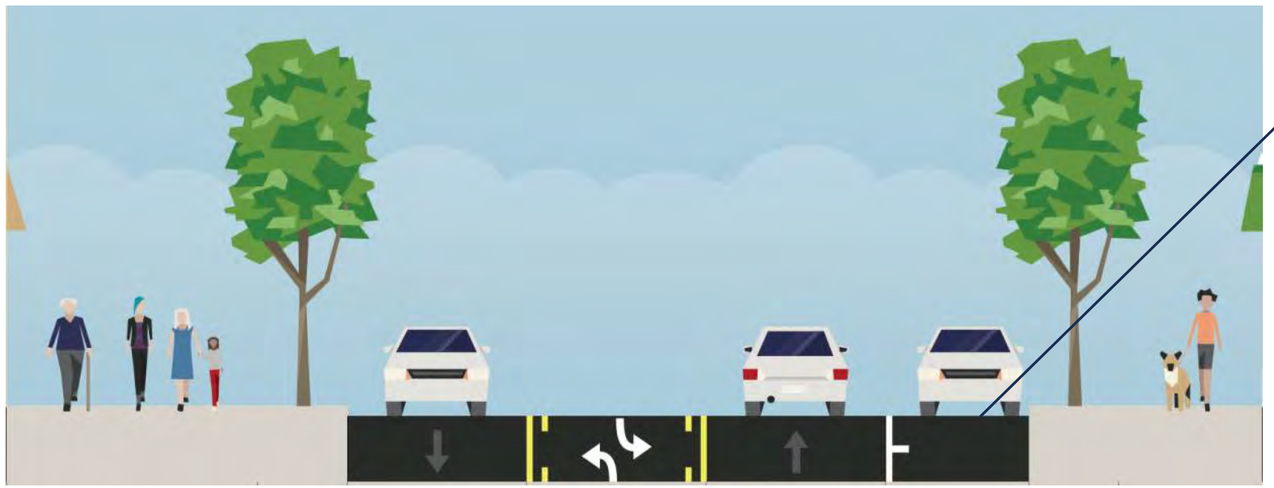
26.5% of #1 Votes

PURPLE

Multi-Use Shared Path
(Bikes and Pedestrians Mixed)



Pedestrian only paths on one side of roadway



Parking where possible

city of CINCINNATI

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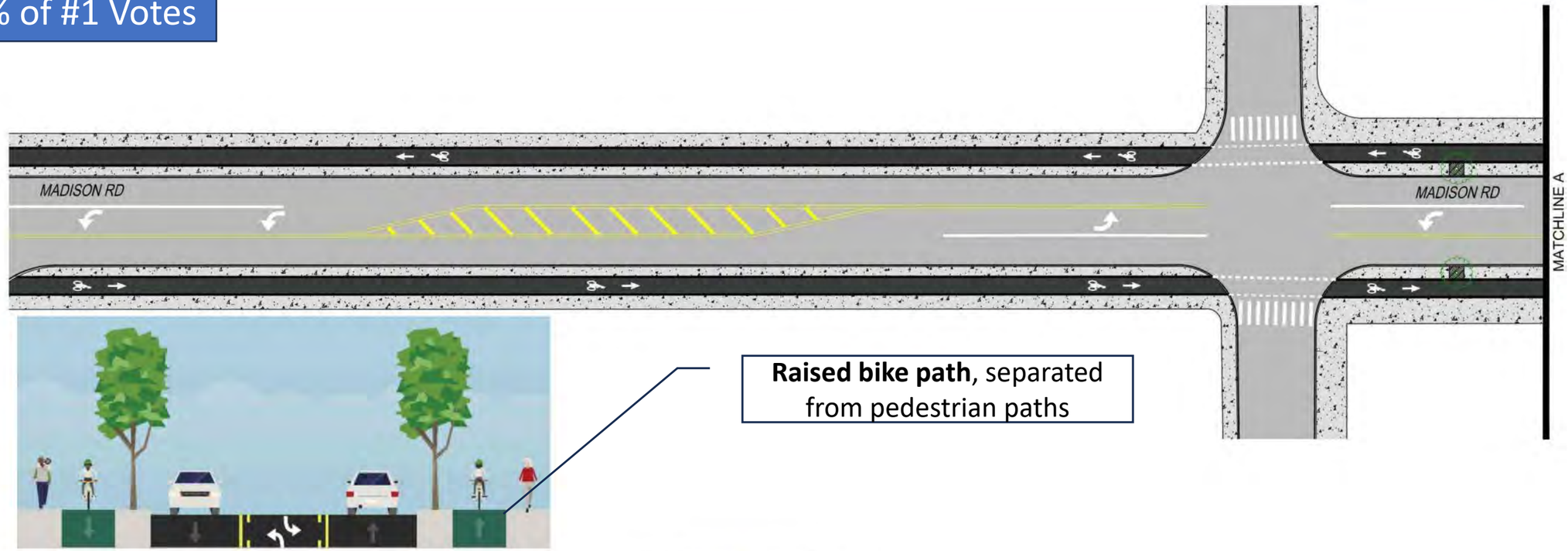
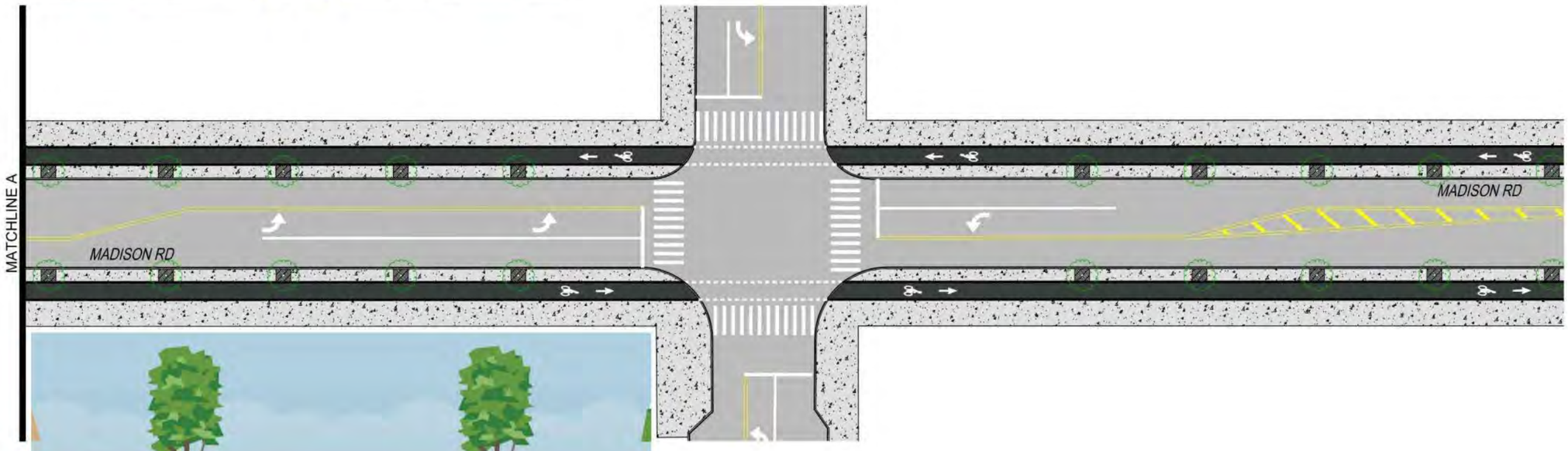
BLUE

23.5% of #1 Votes



Raised bike path, separated from pedestrian paths



MADISON ROAD COMPLETE STREETS
ALTERNATIVE

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED TAH
CHECKED MWN

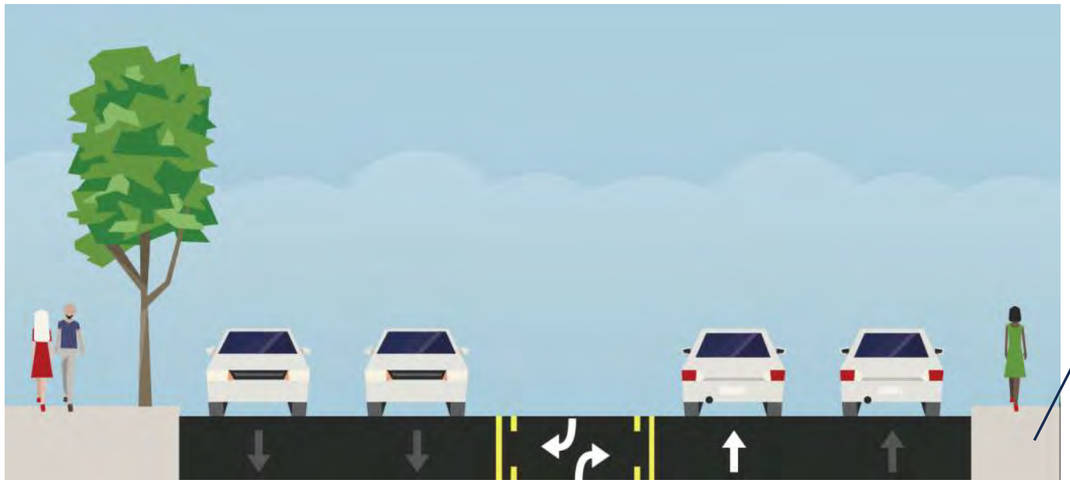
THE KLEINGERS GROUP

1
1

22.1% of #1 Votes

Existing Roadway

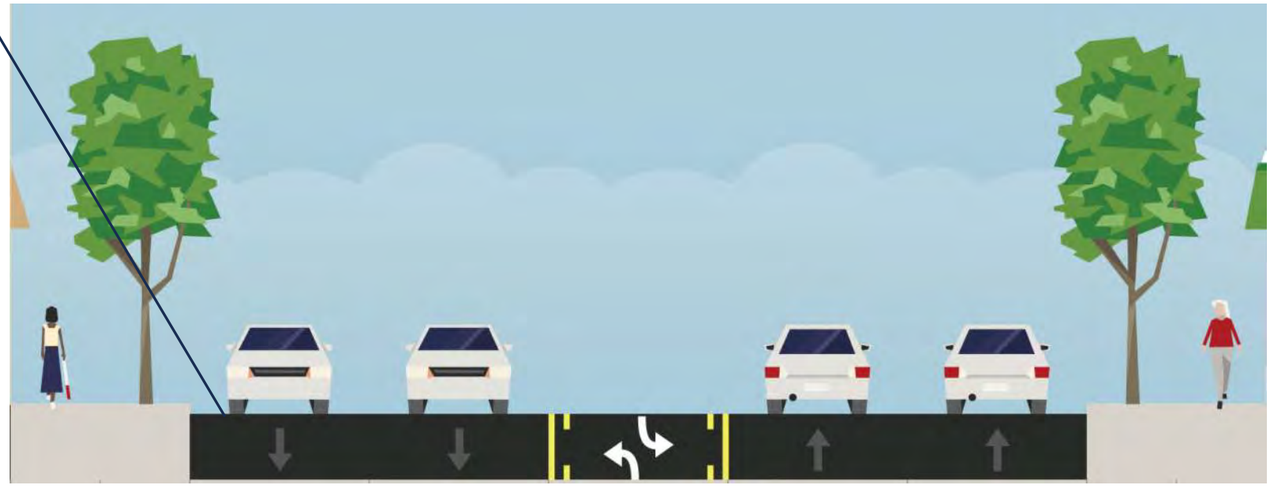
PINK



Narrow sidewalks

5-Lane Section

Narrow Lanes



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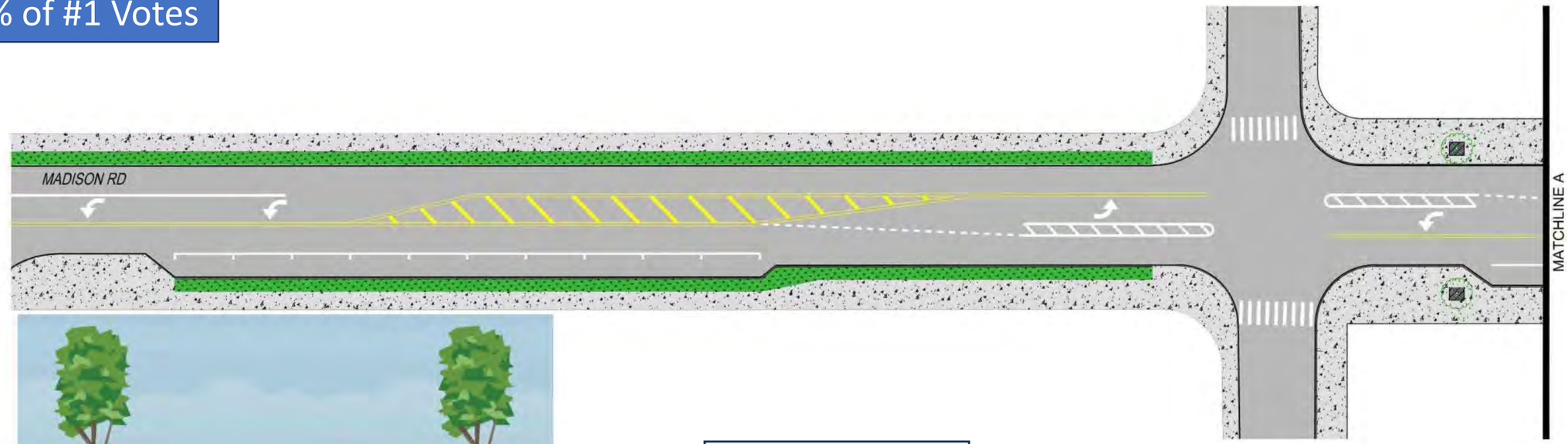
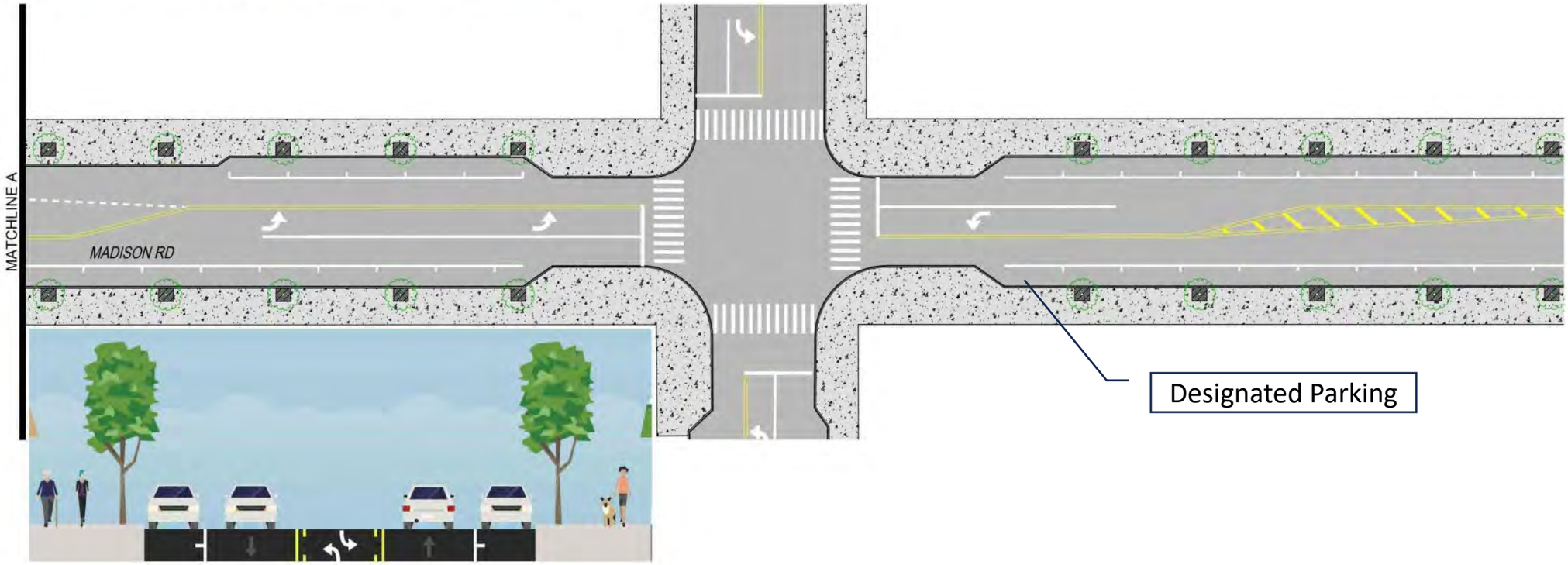
YELLOW

13.2% of #1 Votes



No Bike Path



Designated Parking

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED TAH
CHECKED MWN

MADISON ROAD COMPLETE STREETS
ALTERNATIVE

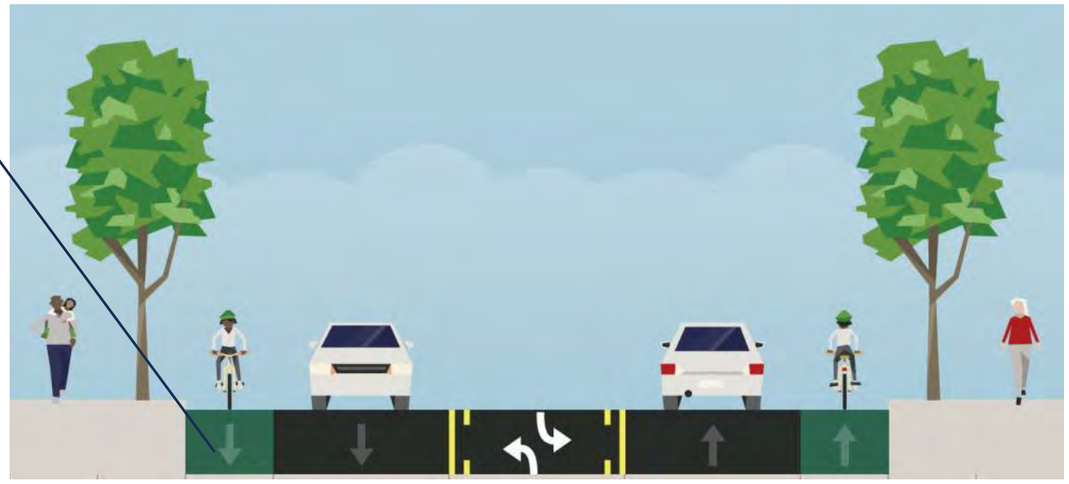
THE KLEINGERS GROUP

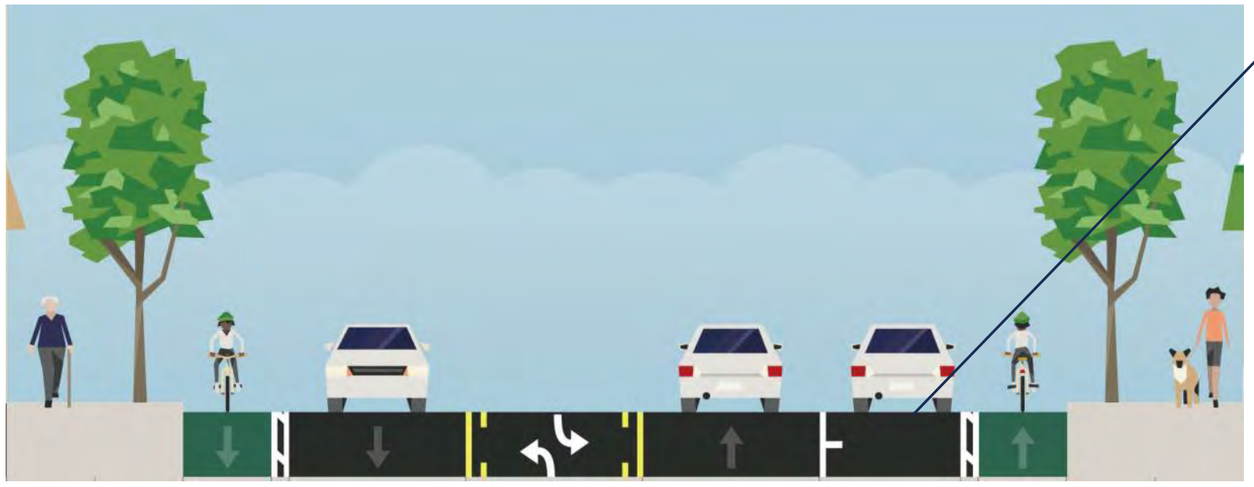
1
1

10.3% of #1 Votes

GREY

On-Street Bike Paths





Add parking where possible

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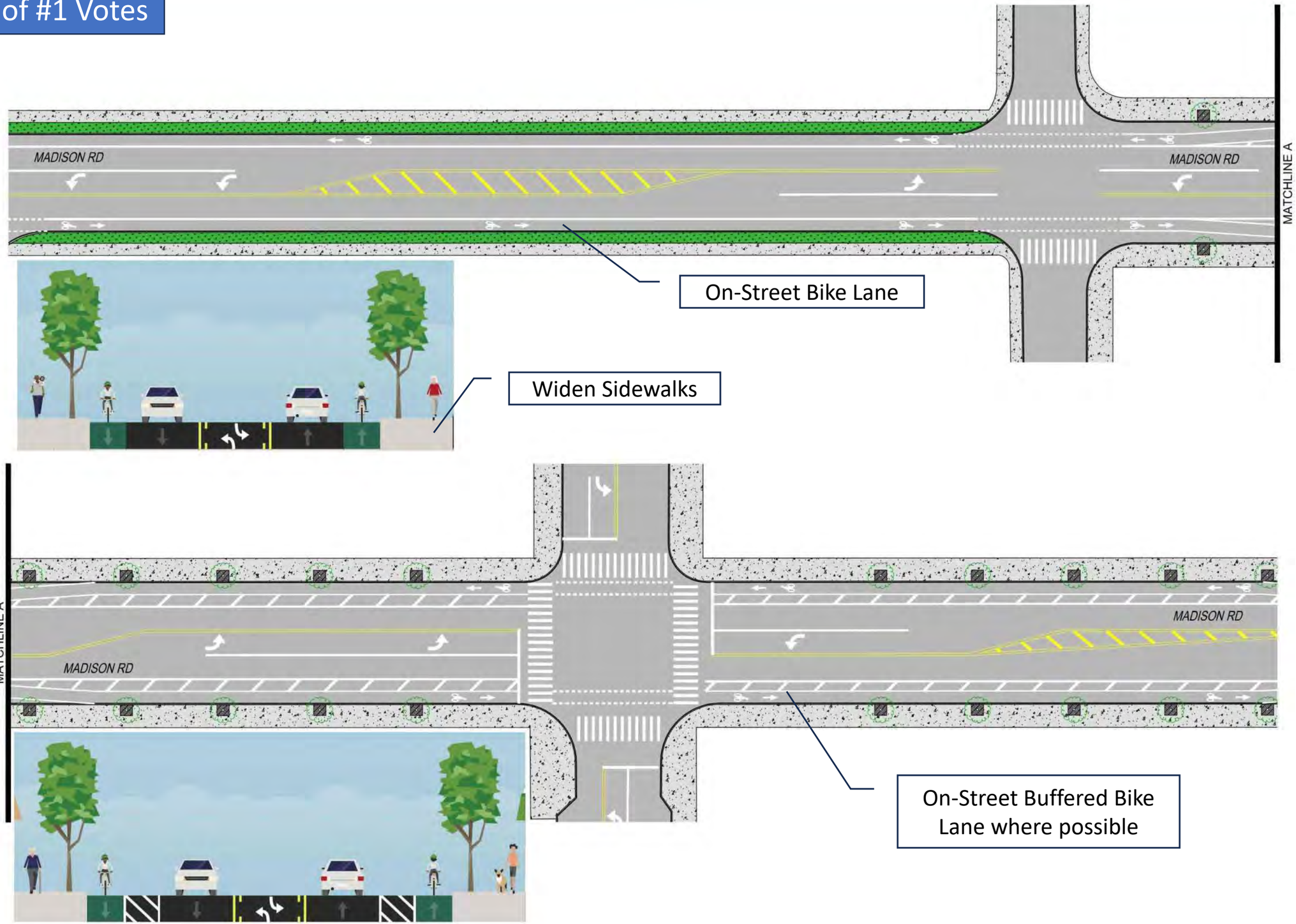
GREEN

2.9% of #1 Votes

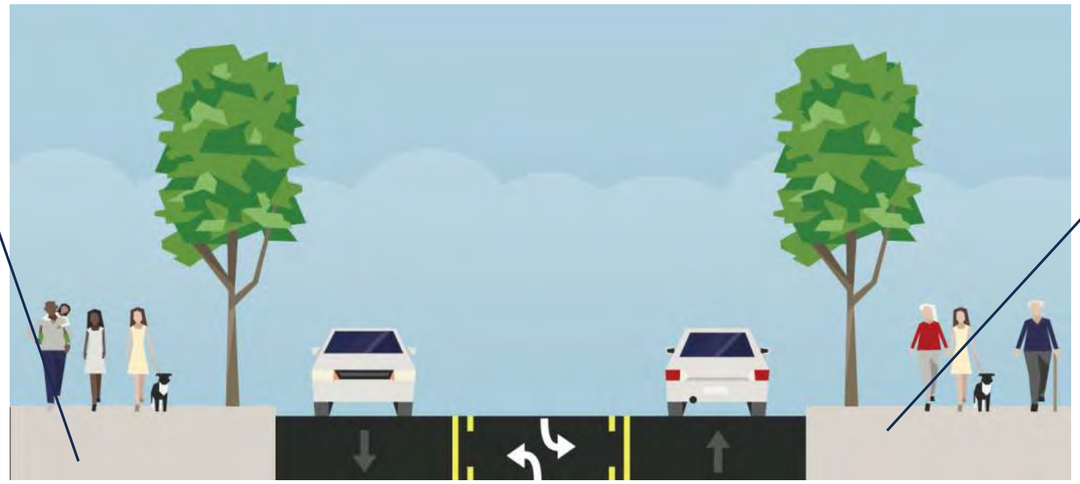


HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED TAH
CHECKED MWN
MADISON ROAD COMPLETE STREETS
ALTERNATIVE
THE KLEINGERS GROUP
1
1

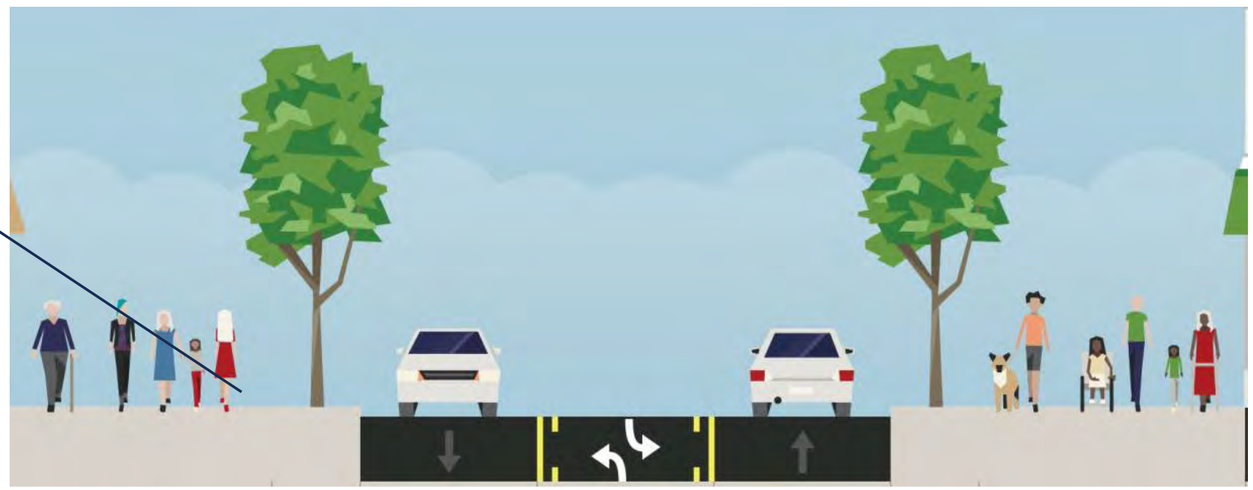
1.5% of #1 Votes

ORANGE

Maximize Sidewalks



No Bike Paths



Limited On-Street Parking

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Public Input Summary

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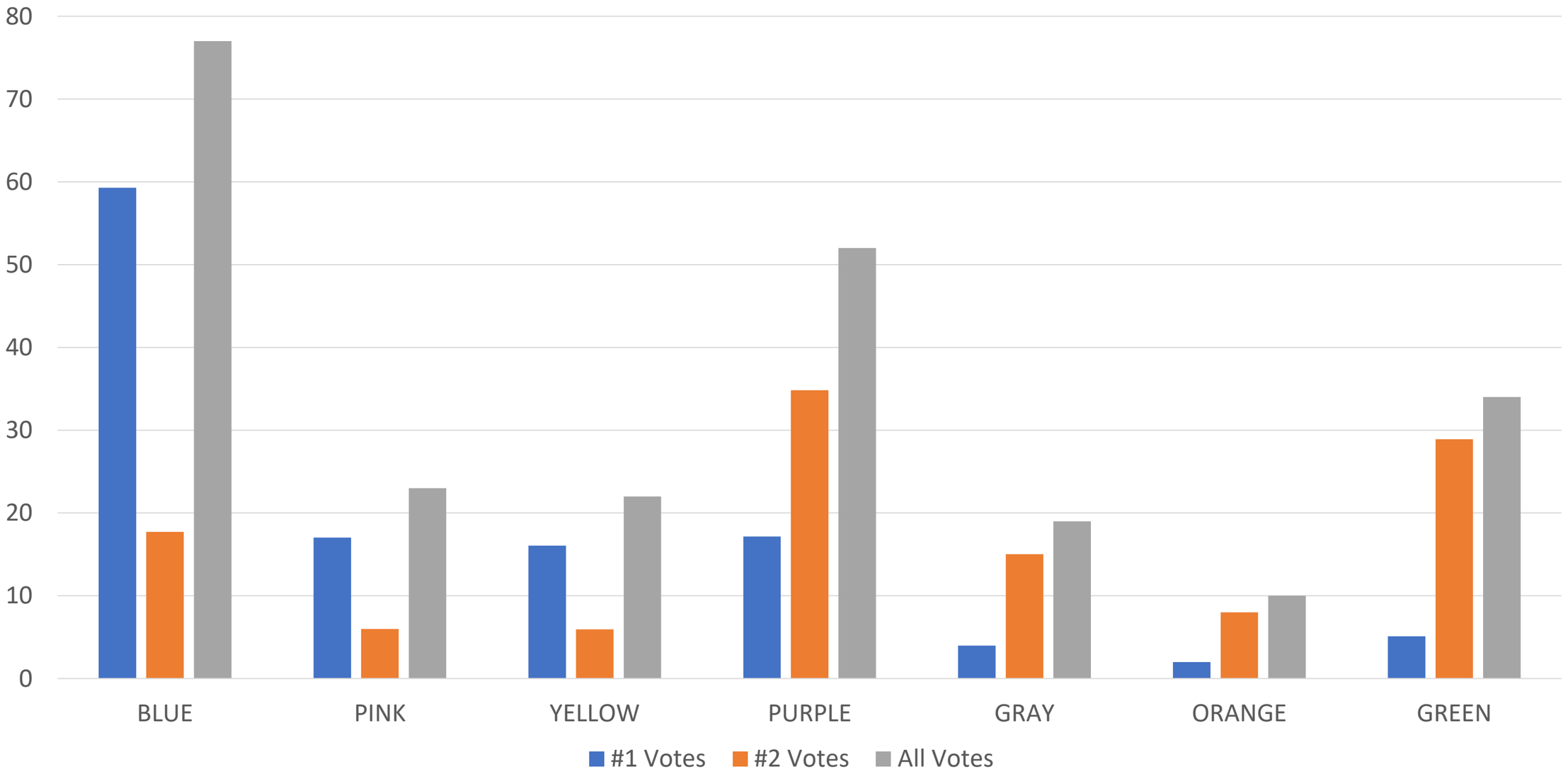
All User Input



city of CINCINNATI

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Work and/or Live in Madisonville

	% Votes	
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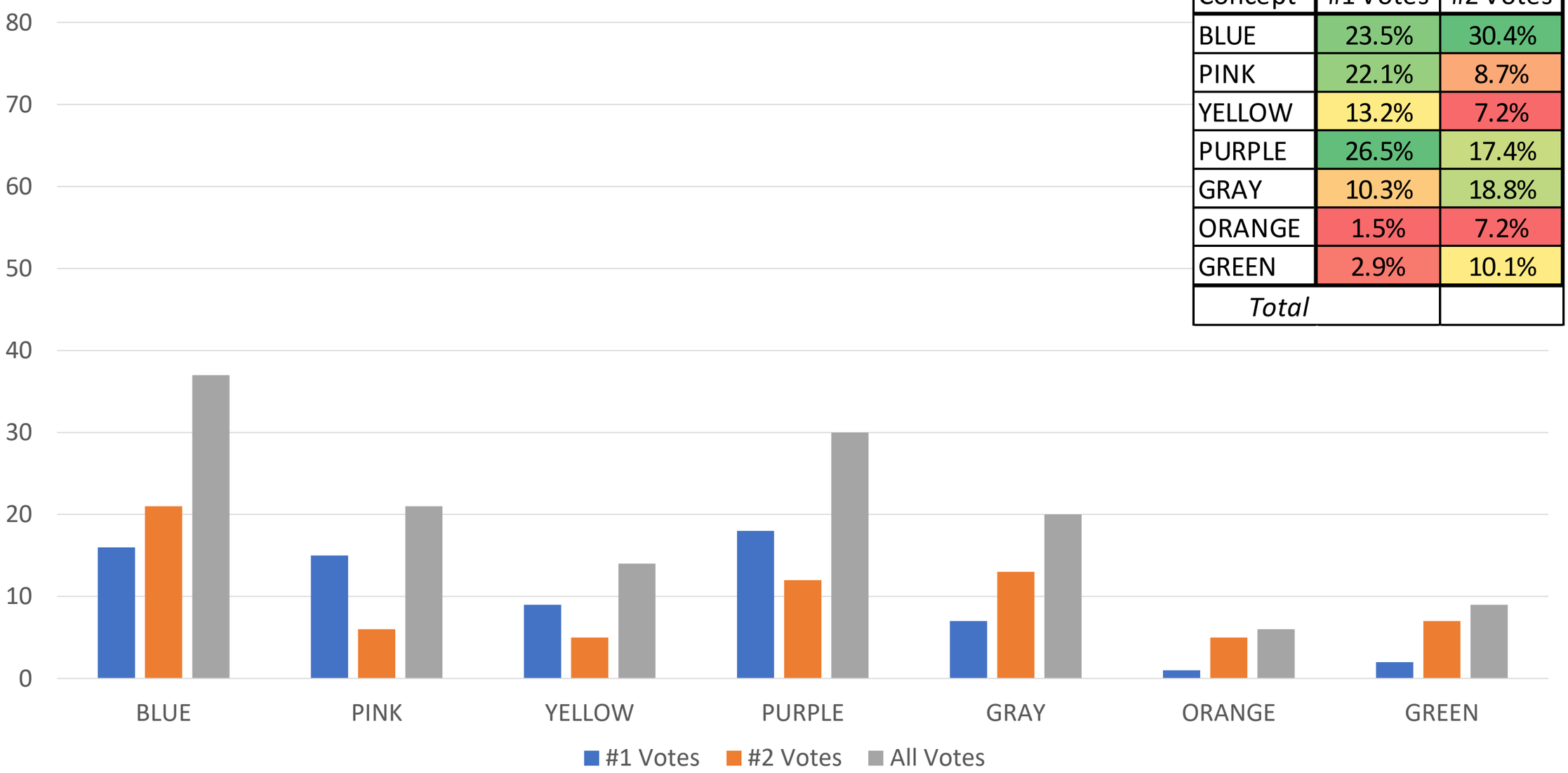

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MADISONVILLE COMMUNITY COUNCIL

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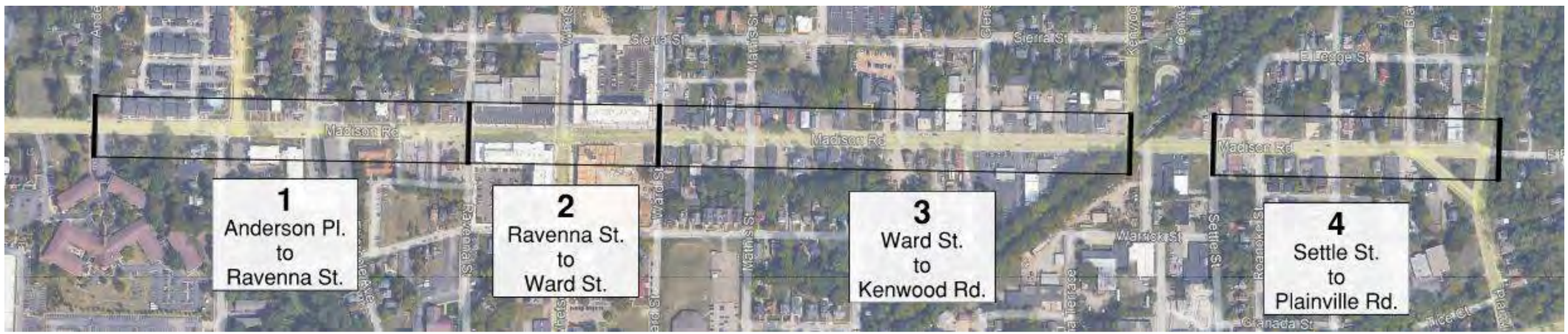
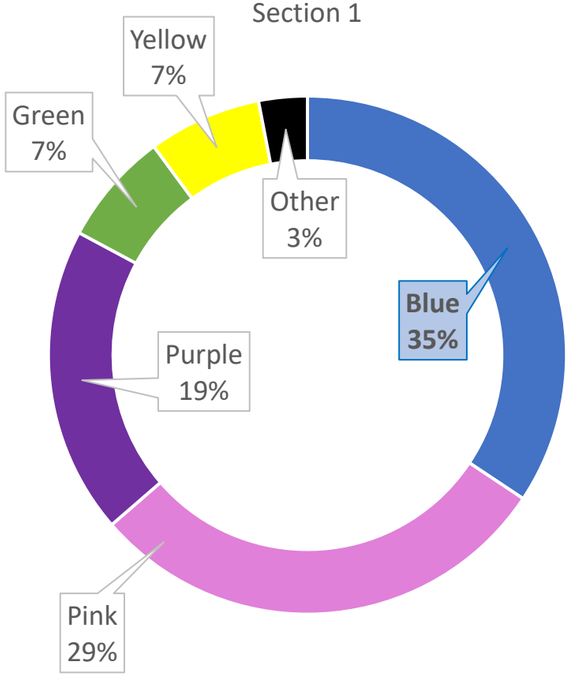
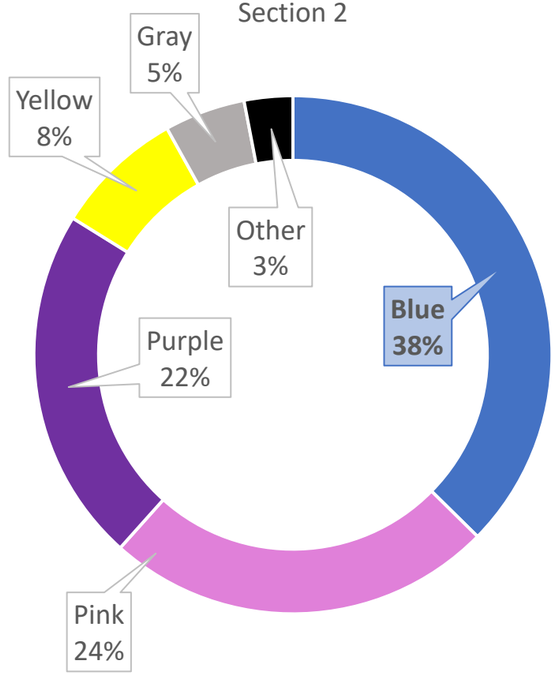
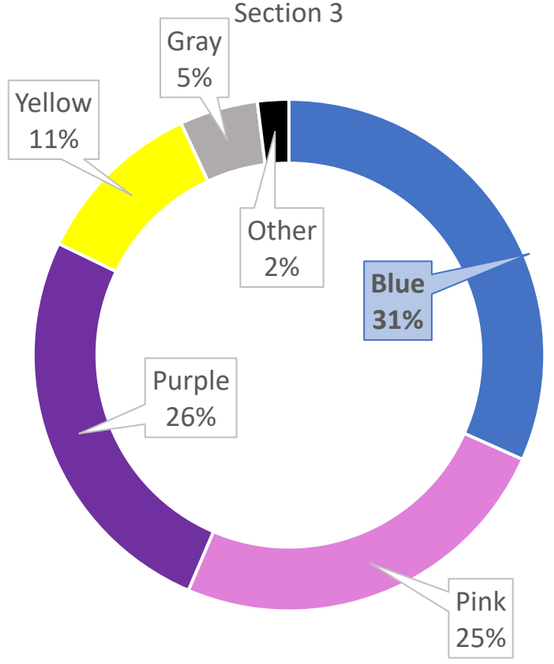
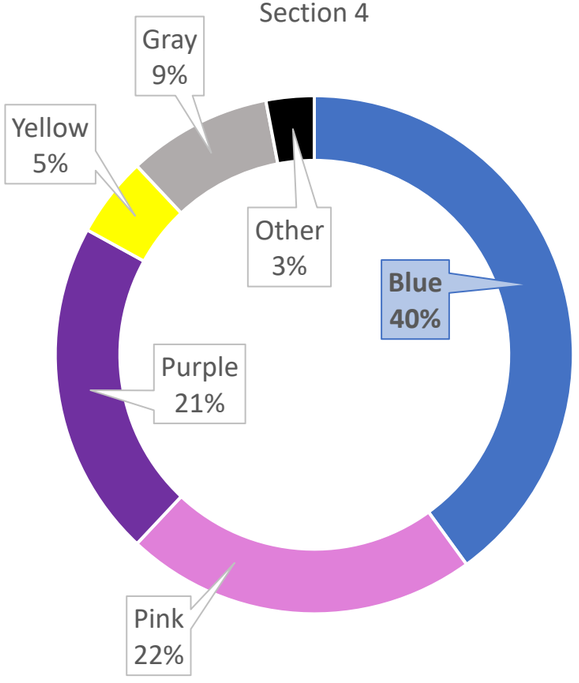
Madisonville Live and/or Work – By Location









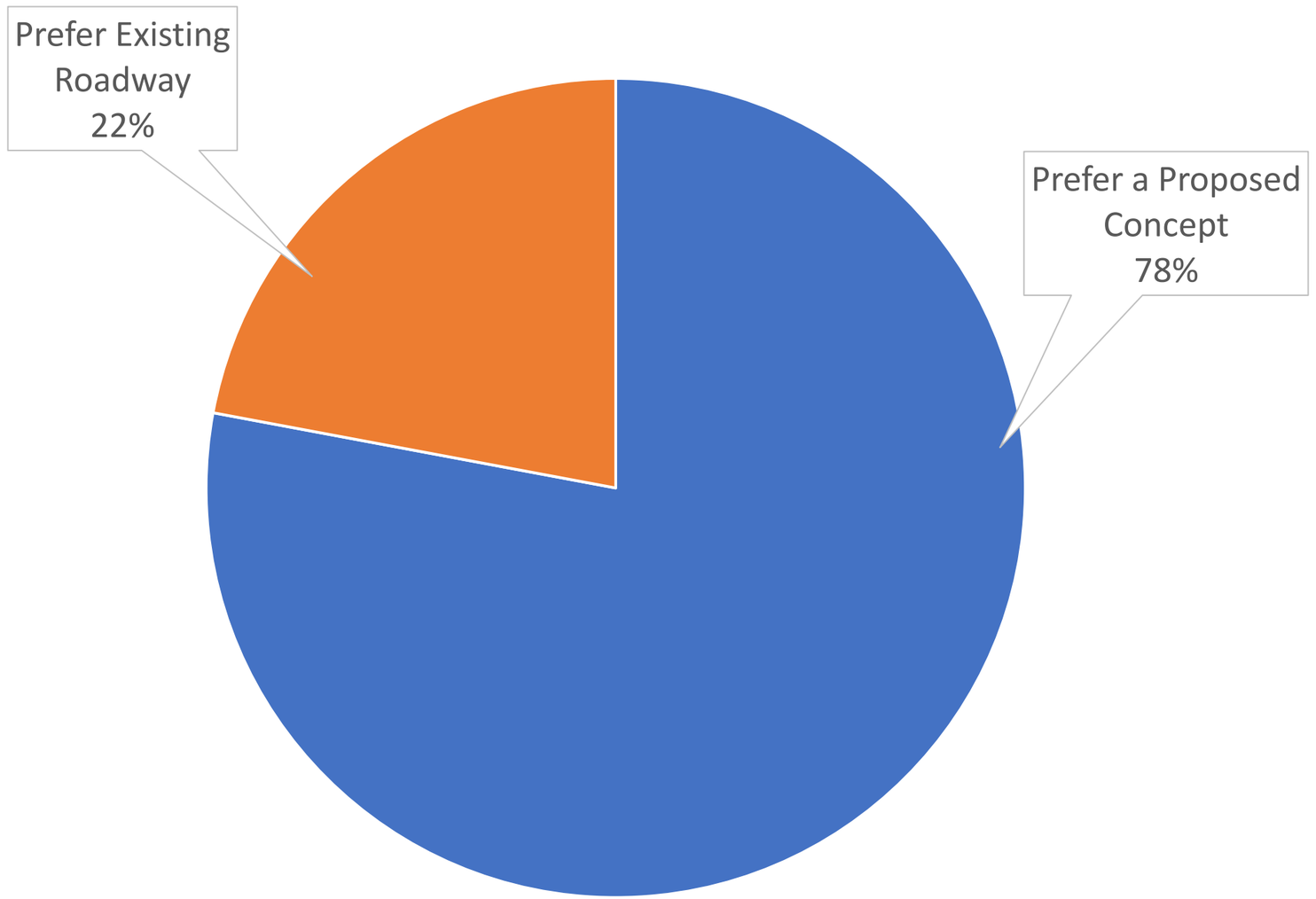


city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Percent of Votes for Action



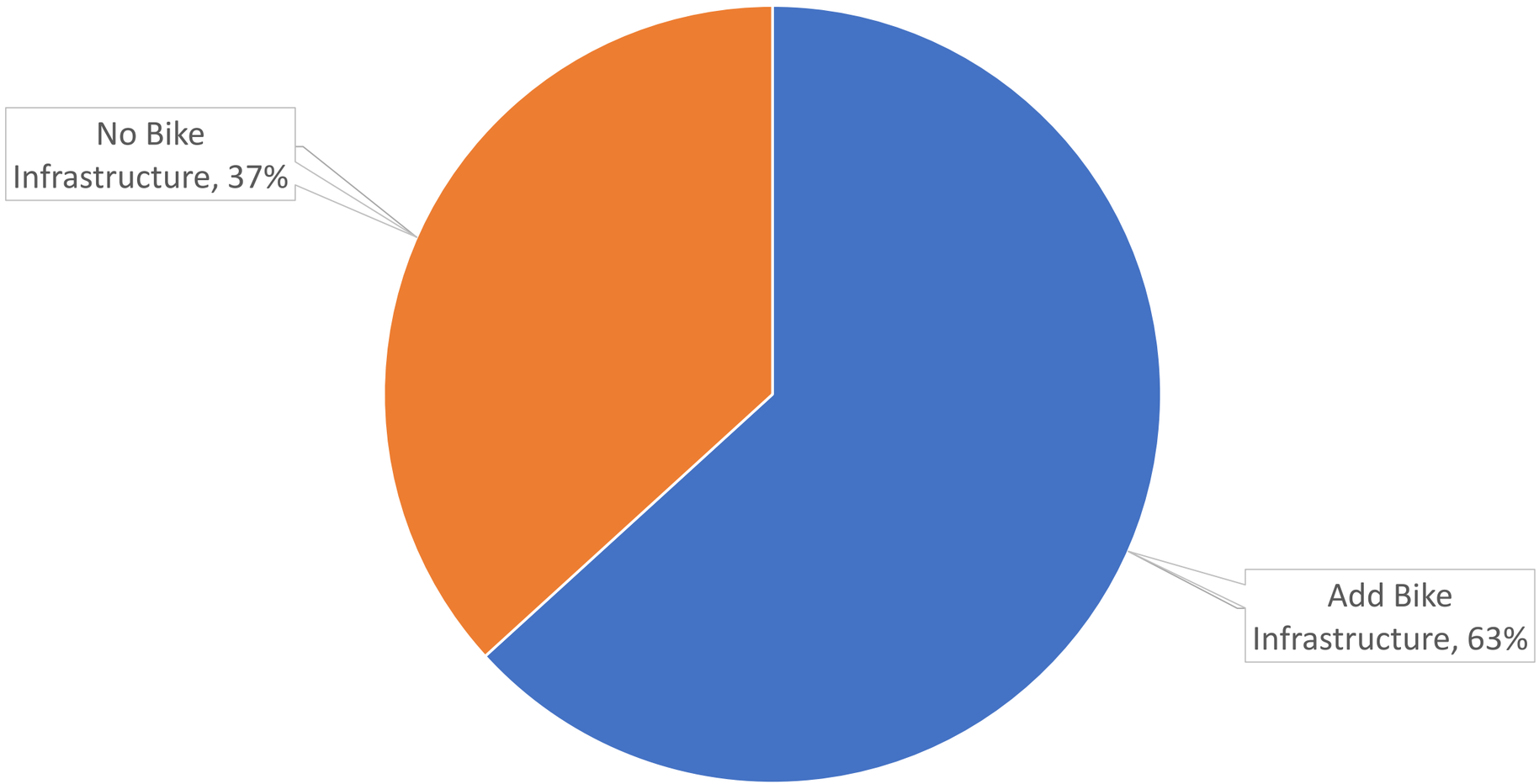
68 Votes
#1 Votes only
Work and/or Live in Madisonville

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Infrastructure Preferences



68 Votes

#1 Votes only

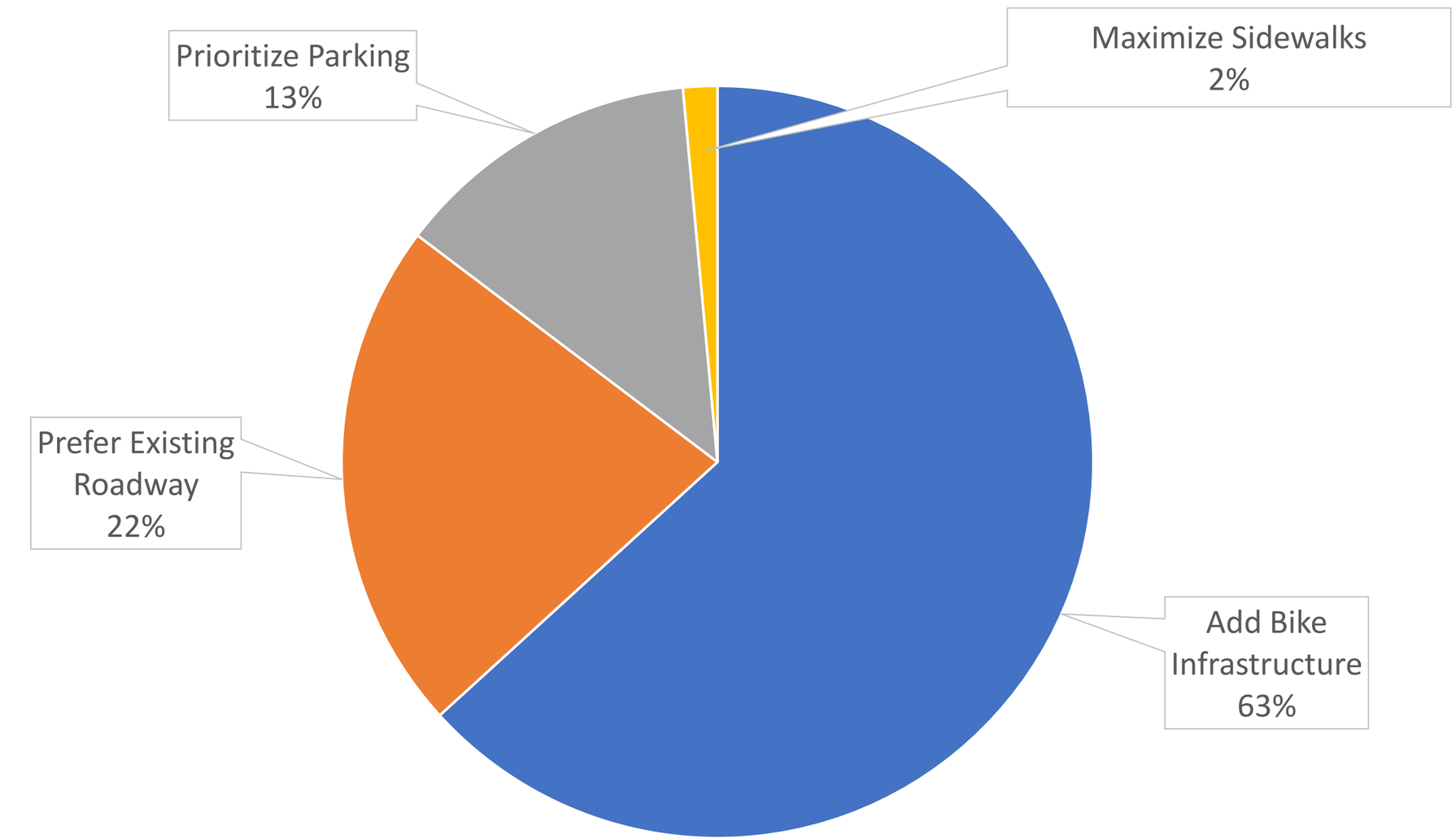
Work and/or Live in Madisonville

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEING3RS GROUP

Infrastructure Preferences



68 Votes

#1 Votes only

Work and/or Live in Madisonville

city of CINCINNATI

MADISONVILLE
COMMUNITY COUNCIL

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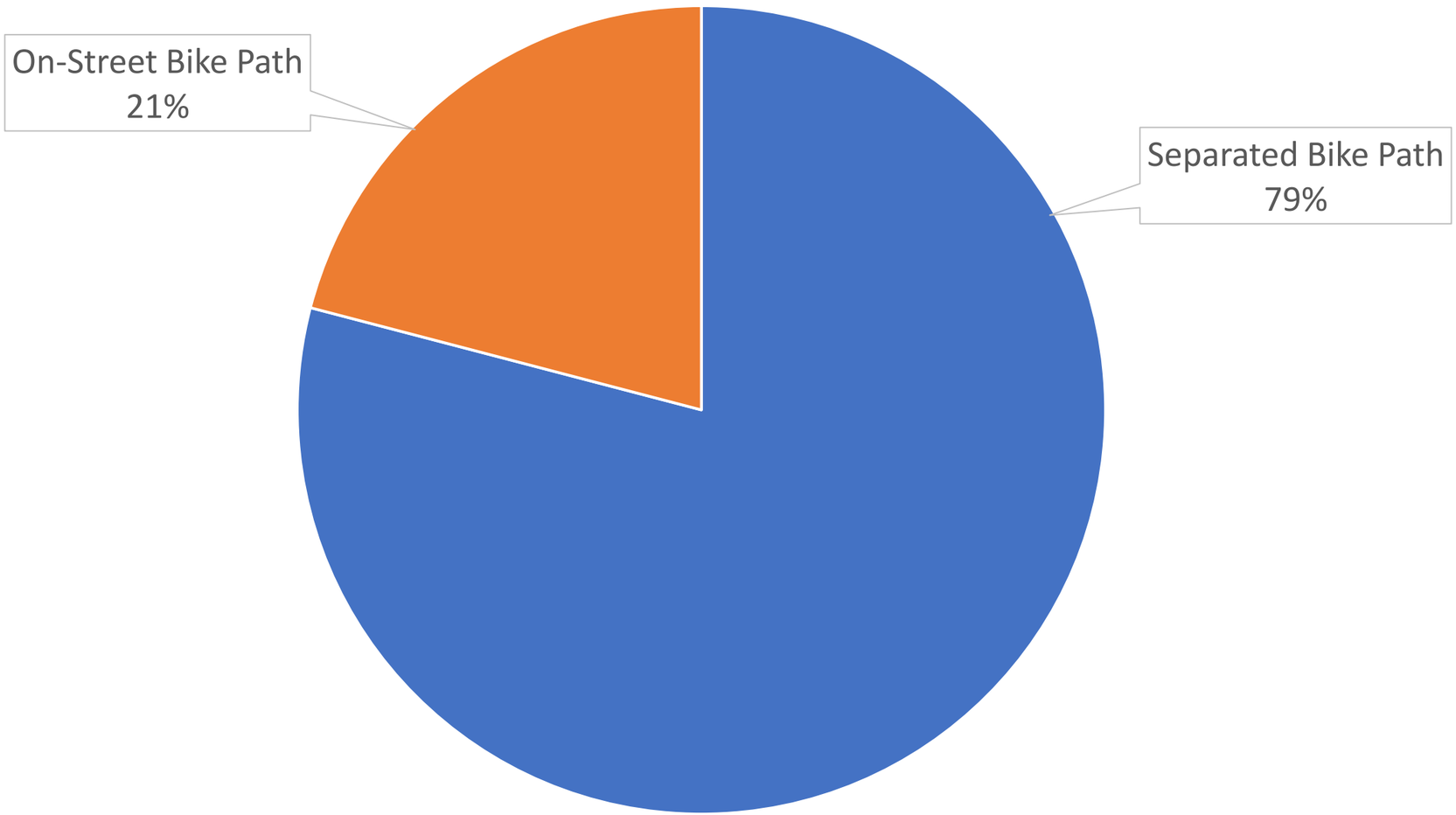
Bike Infastructure Preferences



68 Votes
#1 Votes only
Work and/or Live in Madisonville

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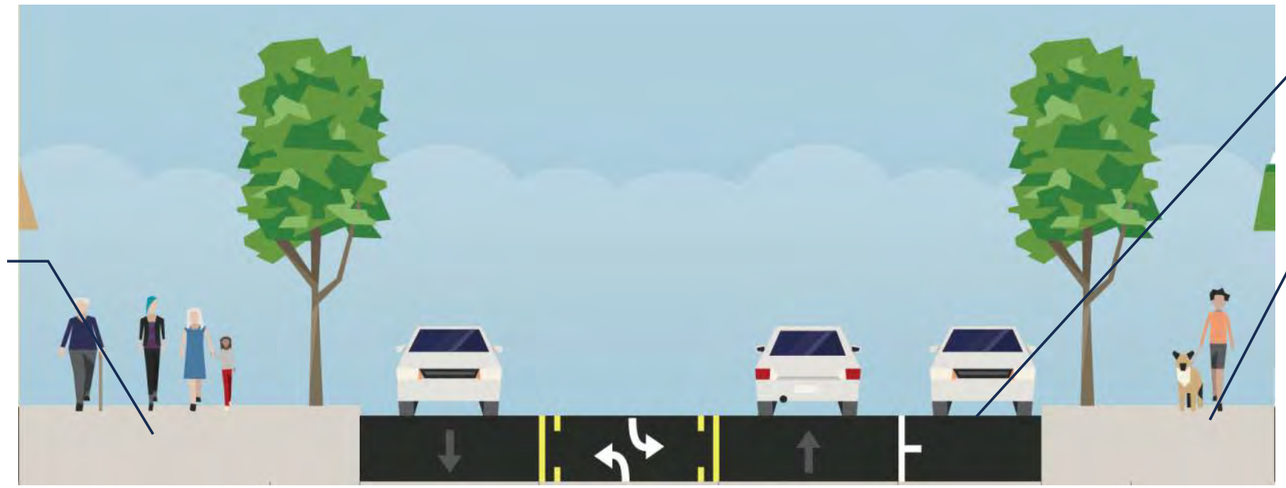
COMMUNITY COUNCIL

THE KLEING3RS GROUP

Summary – Preferred Design Concepts

PURPLE

Multi-Use Shared Path
(Bikes and Pedestrians Mixed)

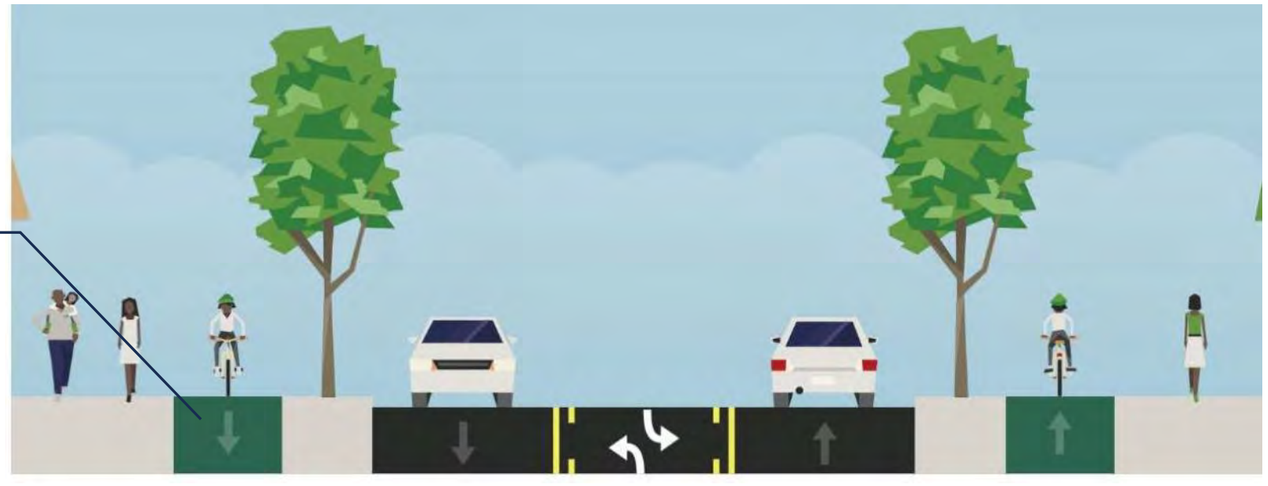


Parking where possible

Pedestrian only paths on one side of roadway

BLUE

Raised bike path, separated from pedestrian paths



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What happens next?

- Finalize Study in Final Report
- Seek funding for design phase of project using the preferred design concepts

city of CINCINNATI

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Thank You!

city of CINCINNATI

MADISONVILLE COMMUNITY COUNCIL

THE KLEINGERS GROUP

Last Name	First Name	Signature	Has Email or Address Changed
Abass	Zahara		-
Albi	Anna		-
Allen	Sandi		-
Barker	Shawnte		-
Bates	Rhoda	Rhoda Bates	-
Bell	Julia		-
Bendik	Elise		-
Bial	Benjamin		
Blanchard	Patty		
Boland	Ann		
Bolek	Sandy		
Boner	Tonia		
Born	Stephanie		
Botos	Catherine		
Bradbury	Christopher		
Bradley	Joe		
Bressler	Mary Anne		
Brewer	Jeffrey		
Brewster	Dawn		
Brinkdopke	Anthony		
Brock	Inez		
Brown	Jeffrey		
Brown	Karen		
Burden	Sandra		
Burgess	Patrick		
Burgess	Becca		
Butts	Theresa		
Cable	Stephanie		
Cable	Matt		
Carl-Heinbaugh	Anya		

Carter	Ethel		
Chamberlin	Elishia		
Clark	Naima		
Coaston	Byron		
Coaston	Jody		
Coggeshall	Mary Berta		
Colley	Kathleen		
Collins	Glenn		
Collins-Whitson	Joyce		
Collins-Whitson	Steve		
Crable	Suzanne		
Crable	Tom		
Cunningham	Wes		
Cutler	Laura		
Cutler	Luke		
Devery	Kerry		
Davis	Princess		
Diesel	Jim	Jim Diesel	
Donaldson	Heather		
Donaldson	Reginald		
Ekanayake	Indi		
Elliot	Jay		
Elliot	Michelle		
Engle	Sandra		
Engle	Vaughn		
Eppens	Kim		
Eppens	Tom		
Fetters	Matthew		
Fisher	William		
Folchi	Susan		
Francis	Amy		
Gable	Juanita		

Gallagher	Alice		
Garofalo	Lisa		
Garrison	Candice		
Garrison	James S		
Garrison	James E		
Garrison	Jay		
Garrison	Kathleen		
Garrison	Kasia		
Garrison	Nyssa		
Gilbert	Meghan		
Gillispie	Edith		
Gray	JoAnn		
Greewood	Theresa		
Greene	Maria		
Greene	Mary		
Griffin	Shirley		
Gutierrez	Alfredo		
Ham	Jared		
Ham	Kylie		
Hanlin	Chris		
Hanlin	Dawn		
Hardee	Brandon		
Hare	Julia		
Harper	Susan	Susan M Harper	
Hart	Jeffrey		
Hayden	Meghan		
Hedges	Blair		
Hellwig	Bethany		
Helms	Sophia		
Henry-Hayden	Terri	Terri Henry-Hayden	
Herdelin	Nils		
Hicks	Paul		

Hill	Bryant		
Hill	Charlene		
Hill	Monica		
Hofstetter	Matt		
Hofstetter	Theresa		
Huebner	Nikki		
Igoe	Elizabeth		
Igoe	Robert		
Immerman	Rachel		
Jackson	Deborah		
Johnson	Rev JJ		
Johnson	James		
Jones	Brittany		
Jones	Della		
Jones-Hudlin	April		
Juergens	Rita		
Kappesser	David	David Kappesser	
Kaylor	Scott		
Kelly	Kelsey		
Kibler	Kayla		
Kim	BJ		
Kupferle	Claire		
Lanier	Mary	Mary Lanier	
Landrum	Leslie		
Lindner	Avery		
Love	Todd		
Luginbill	JoAnn		
Luginbill	John		
McClintock	Douglas		
Mahaffey	Amanda		
Mahaffey	Sean		
Malmstrom	Amy		

Markwell	Robert		
Meyes	Helen		
Middleton	Joy		
Mioner	Sylvester		
Miller	Myrtle		
Nauman	Jordan		
Newberry	Isaiah	Isaiah Newberry	
Osborne	Clarine		
Osborne	Diana		
Pearson	Angela	Angela Pearson	
Pearson	Benita		
Pearson	Vanessa		
Pepmeyer	Kat		
Phillips	Michelle		
Poole	Stanford		
Powell	Mark		
Ramage	Jason	Jason Ramage	
Randall	Rhonda		
Richardson	Marcia		
Richardson	Melowese		
Richardson	Michael		
Rock	Steve		
Ross	Ben		
Saadawo	Ryan		
Sanders	Gertrude Elaine	GERTRUDE E SANDERS	Gertrude E Sanders
Schnirring	Bonnie		
Schneider	Raymond		
Schoeny	Rick		
Sheets	Sara		
Siefert	Steve		
Sinclair	Jon		
Solomon	Shannon		
Smith	Alexander		

Smith	Cheryl		
Smith	Christian		
Smith	Leslie		
Stephens	Yolanda		
SummerIn	Paulette		
Star	Darryl		
Tadlock	Mary		
Tanks	Rose	Lori Mayhew	
Tighe	Debbie		
Tighe	Michael	Michael T Tighe	
Tighe	Tim		
Timm	Tommy		
Timm	Pat		
Thigpen	Rebecca		
Ullrich	Charlie		
Ullrich	Christina		
Ullrich	Josh		NO
Walker-Jones	Karen		
Watson	Deaunna		
Wayne	Eric		
Wilfong	Yazmin		
Wilkerson	Melissa		
Williams	Kathleen		
Williams	Sandra		
Willis	Beth		
Willis	Joan		
Willis	Mike		
Wilson	Darnell		
Wilson	Diane		
Wilson	Rev. Willie		
Wise	Lauren		
Woolfolk	Debra		
Young	Allison		

Special Meeting - Madisonv Road Traffc Study

MCC Guest Sign In Sheet
10/26/2023

Print Name	Signature	Email	New Member (Y/N)
Kathy Cunningham	KC	kathy@queencitybike.org	N
Diana Vakharia	DianaVakharia	diana.vakharia@cincinnati-oh.gov	N

Special Meeting - Madison Road Traffic Study

Businss Sign In
10/26/2023

Business Name	Designee	Signature	Has Your Email/Address Changed
Best Point Education & Behavioral Health	Jill Smith		
The CheeseCakery	Liz Field		
Honey Bee Canning	Lauren Wise		
Johnson Management and Development	David Johnson		
Madsonville Community Urban Redevleopment	Sara Sheets		
Medpace	Chris Pfaff Sarah Johnson Austin LeMaster		
New Mission Baptist Church	Brian Lowe		
Pooh Bear's Playhouse	Patty Blanchard		
School of Rock	Josh Ullrich		
Sibcycline	Kimberly Douthit	Kim Douthit	
Trinity Missionary Baptist Church			
Vision and Dreams Ministries	Herschel Willis John Homestead Katie Homestead		
Fill More Waste Less	Gabrielle Buckley		

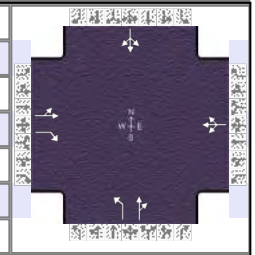
Appendix L

HCS Capacity Analyses - Madison Road at Camargo Road / Plainville Road

December 11, 2023

HCS Signalized Intersection Results Summary

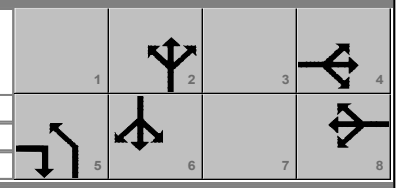
General Information				Intersection Information	
Agency	The Kleingers Group			Duration, h	0.250
Analyst	Anthony Supan	Analysis Date	Oct 24, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Madisonville Streetscape	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	Madison Rd @ Camarg…	File Name	2023 AM Peak Signalized.xus		
Project Description	2023 AM Peak Signalized				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	113	0	369	0	1	0	622	75	0	0	92	156

Signal Information			
Cycle, s	75.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	14.0	30.0	13.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	2.0	2.0	2.0	0.0	0.0	0.0	



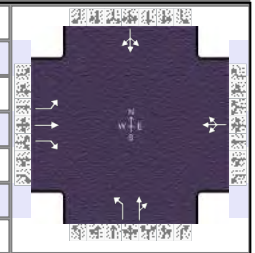
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2		6
Case Number		7.0		8.0	1.0	4.0		8.3
Phase Duration, s		19.0		19.0	20.0	56.0		36.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s		15.0		2.0	16.0			
Green Extension Time (g_e), s		0.0		1.0	0.0	0.0		0.0
Phase Call Probability		1.00		1.00	1.00			
Max Out Probability		1.00		0.02	1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		122	397		0		669	0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1379	1610		0		1795	0			0	
Queue Service Time (g_s), s		6.0	13.0		0.0		14.0	0.0			0.0	
Cycle Queue Clearance Time (g_c), s		6.0	13.0		0.0		14.0	0.0			0.0	
Green Ratio (*g/C*)		0.17	0.36				0.61					
Capacity (*c*), veh/h		335	580				754					
Volume-to-Capacity Ratio (*X*)		0.363	0.684		0.000		0.887	0.000			0.000	
Back of Queue (*Q*), ft/ln (95 th percentile)		88.6	244.6		0		309.3	0			0	
Back of Queue (*Q*), veh/ln (95 th percentile)		3.4	9.8		0.0		12.3	0.0			0.0	
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00		0.00		0.00	0.00			0.00	
Uniform Delay (d_1), s/veh		28.1	20.4				12.7					
Incremental Delay (d_2), s/veh		0.2	2.8		0.0		12.0	0.0			0.0	
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (*d*), s/veh		28.4	23.2				24.8					
Level of Service (LOS)		C	C				C					
Approach Delay, s/veh / LOS	24.4	C		25.6	C		22.6	C		17.7	B	
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	1.70	B	1.63	B	1.90	B
Bicycle LOS Score / LOS	1.34	A	0.49	A	1.72	B	0.93	A

HCS Signalized Intersection Results Summary

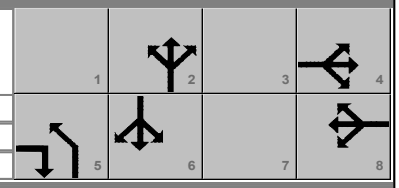
General Information				Intersection Information	
Agency	The Kleingers Group			Duration, h	0.250
Analyst	Anthony Supan	Analysis Date	Oct 24, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.93
Urban Street	Madisonville Streetscape	Analysis Year	2023	Analysis Period	1> 7:00
Intersection	Madison Rd @ Camarg…	File Name	2023 PM Peak Signalized.xus		
Project Description	2023 PM Peak Signalized				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	222	1	657	1	3	1	388	128	0	0	112	116

Signal Information			
Cycle, s	75.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	13.0	20.0	24.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	
Red	2.0	2.0	2.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2		6
Case Number		5.0		8.0	1.0	4.0		8.3
Phase Duration, s		30.0		30.0	19.0	45.0		26.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.3		3.3	3.1	0.0		0.0
Queue Clearance Time (g_s), s		26.0		2.2	14.1			
Green Extension Time (g_e), s		0.0		2.4	0.0	0.0		0.0
Phase Call Probability		1.00		1.00	1.00			
Max Out Probability		1.00		0.00	1.00			

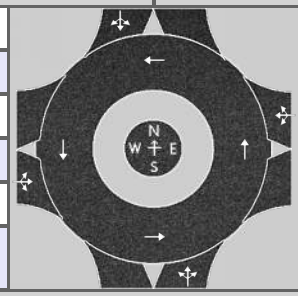
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	239	1	706		5		417	0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1434	1826	1610		1733		1795	0			0	
Queue Service Time (g_s), s	10.2	0.0	24.0		0.0		12.1	0.0			0.0	
Cycle Queue Clearance Time (g_c), s	10.4	0.0	24.0		0.2		12.1	0.0			0.0	
Green Ratio (*g/C*)	0.32	0.32	0.49		0.32		0.47					
Capacity (*c*), veh/h	552	584	794		612		573					
Volume-to-Capacity Ratio (*X*)	0.432	0.002	0.889		0.009		0.728	0.000			0.000	
Back of Queue (*Q*), ft/ln (95 th percentile)	144.3	0.6	440.5		2.7		217.3	0			0	
Back of Queue (*Q*), veh/ln (95 th percentile)	5.8	0.0	17.6		0.1		8.6	0.0			0.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00		0.00		0.00	0.00			0.00	
Uniform Delay (d_1), s/veh	20.9	17.4	17.2		17.4		15.2					
Incremental Delay (d_2), s/veh	0.2	0.0	11.7		0.0		4.0	0.0			0.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (*d*), s/veh	21.1	17.4	28.9		17.4		19.2					
Level of Service (LOS)	C	B	C		B		B					
Approach Delay, s/veh / LOS	26.9	C		17.4	B		16.9	B		27.9	C	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	1.69	B	1.66	B	2.11	B
Bicycle LOS Score / LOS	2.05	B	0.50	A	1.40	A	0.89	A

HCS Roundabouts Report

General Information

Analyst	Anthony Supan
Agency or Co.	The Kleingers Group
Date Performed	10/24/2023
Analysis Year	2023
Time Analyzed	AM Peak
Project Description	Madisonville Streetscape



Site Information

Intersection	Madison Rd @ Camargo Rd...
E/W Street Name	Madison Rd
N/S Street Name	Camargo Rd / Plainville Rd
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.93
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	113	0	369	0	0	1	0	0	622	75	0	0	0	92	156
Percent Heavy Vehicles, %	5	5	5	5	2	2	2	2	1	1	1	1	1	1	1	1
Flow Rate (v_{PCE}), pc/h	0	128	0	417	0	0	1	0	0	676	81	0	0	0	100	169
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		545			1			757			269	
Entry Volume, veh/h		519			1			750			266	
Circulating Flow (v_c), pc/h	100			885			128			677		
Exiting Flow (v_{ex}), pc/h	0			846			209			517		
Capacity (c_{pce}), pc/h		1246			560			1211			692	
Capacity (c), veh/h		1187			549			1199			685	
v/c Ratio (x)		0.44			0.00			0.63			0.39	

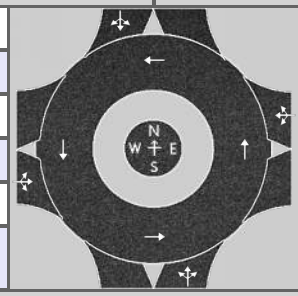
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		7.6			6.6			11.0			10.5	
Lane LOS		A			A			B			B	
95% Queue, veh		2.3			0.0			4.6			1.8	
Approach Delay, s/veh | LOS	7.6	A		6.6	A		11.0	B		10.5	B	
Intersection Delay, s/veh | LOS	9.7						A					

HCS Roundabouts Report

General Information

Analyst	Anthony Supan
Agency or Co.	The Kleingers Group
Date Performed	10/24/2023
Analysis Year	2023
Time Analyzed	PM Peak
Project Description	Madisonville Streetscape



Site Information

Intersection	Madison Rd @ Camargo Rd...
E/W Street Name	Madison Rd
N/S Street Name	Camargo Rd / Plainville Rd
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.95
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	222	1	657	0	1	3	1	0	388	128	0	0	0	112	116
Percent Heavy Vehicles, %	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2
Flow Rate (v_{PCE}), pc/h	0	238	1	705	0	1	3	1	0	413	136	0	0	0	120	125
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		944			5			549			245	
Entry Volume, veh/h		925			5			544			240	
Circulating Flow (v_c), pc/h	121			787			239			417		
Exiting Flow (v_{ex}), pc/h	1			541			375			826		
Capacity (c_{pce}), pc/h		1220			618			1081			902	
Capacity (c), veh/h		1196			606			1071			884	
v/c Ratio (x)		0.77			0.01			0.51			0.27	

Delay and Level of Service

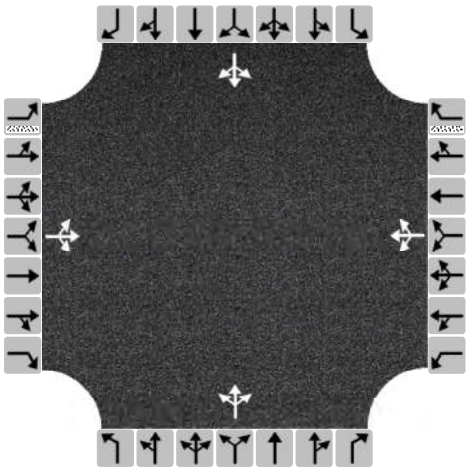
Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		16.3			6.0			9.3			6.9	
Lane LOS		C			A			A			A	
95% Queue, veh		8.3			0.0			3.0			1.1	
Approach Delay, s/veh | LOS	16.3	C		6.0	A		9.3	A		6.9	A	
Intersection Delay, s/veh | LOS	12.7						B					

HCS All-Way Stop Control Report

General and Site Information

Analyst	M Nolt
Agency/Co.	The Kleingers Group
Date Performed	12/7/2023
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	AM Peak
Project Description	Madison Road Complete Streets
Intersection	
Jurisdiction	City of Cincinnati
East/West Street	Madison Road
North/South Street	Camargo Road
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	113	0	369	0	1	0	622	75	0	0	92	156
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	524			1			758			270		
Percent Heavy Vehicles	5			2			1			1		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.466			0.001			0.673			0.240		
Final Departure Headway, h_d (s)	6.02			7.99			6.35			6.32		
Final Degree of Utilization, x	0.876			0.002			1.336			0.473		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	4.02			5.99			4.35			4.32		

Capacity, Delay and Level of Service

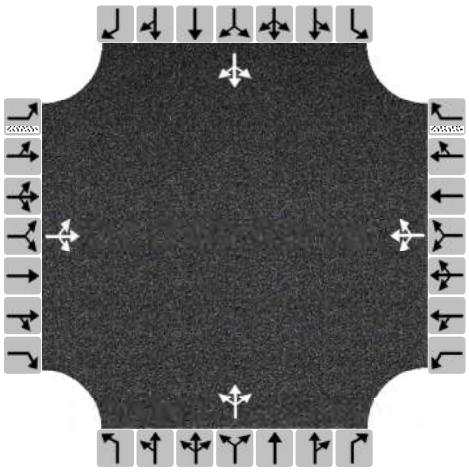
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	524			1			758			270		
Capacity (veh/h)	598			451			567			569		
95% Queue Length, Q_{95} (veh)	10.1			0.0			32.5			2.5		
Control Delay (s/veh)	37.3			11.0			182.5			14.9		
Level of Service, LOS	E			B			F			B		
Approach Delay (s/veh) | LOS	37.3	E		11.0	B		182.5	F		14.9	B	
Intersection Delay (s/veh) | LOS	104.3						F					

HCS All-Way Stop Control Report

General and Site Information

Analyst	M Nolt
Agency/Co.	The Kleingers Group
Date Performed	12/7/2023
Analysis Year	2023
Analysis Time Period (hrs)	0.25
Time Analyzed	PM Peak
Project Description	Madison Road Complete Streets
Intersection	
Jurisdiction	City of Cincinnati
East/West Street	Madison Road
North/South Street	Camargo Road
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	222	1	657	1	3	1	388	128	0	0	112	116
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	957			5			561			248		
Percent Heavy Vehicles	2			2			1			2		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.850			0.005			0.499			0.220		
Final Departure Headway, h_d (s)	5.98			8.12			6.51			6.75		
Final Degree of Utilization, x	1.590			0.012			1.015			0.464		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	3.98			6.12			4.51			4.75		

Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	957			5			561			248		
Capacity (veh/h)	602			443			553			534		
95% Queue Length, Q_{95} (veh)	51.4			0.0			15.0			2.4		
Control Delay (s/veh)	289.8			11.2			67.5			15.5		
Level of Service, LOS	F			B			F			C		
Approach Delay (s/veh) | LOS	289.8	F		11.2	B		67.5	F		15.5	C	
Intersection Delay (s/veh) | LOS	180.1						F