Sam Schwartz
322 8th Avenue
New York, NY 10001
(212) 598-9010
samschwartz.com

Sam Schwartz
A TYLin Company

Memorandum

To: Cavnue and MDOT
From: Jeff Smithline, PE, PTOE; Christian Arkell
Date: May 16, 2024
Re: I-94 Connected and Automated Vehicle Corridor Project: Traffic Analysis

Introduction

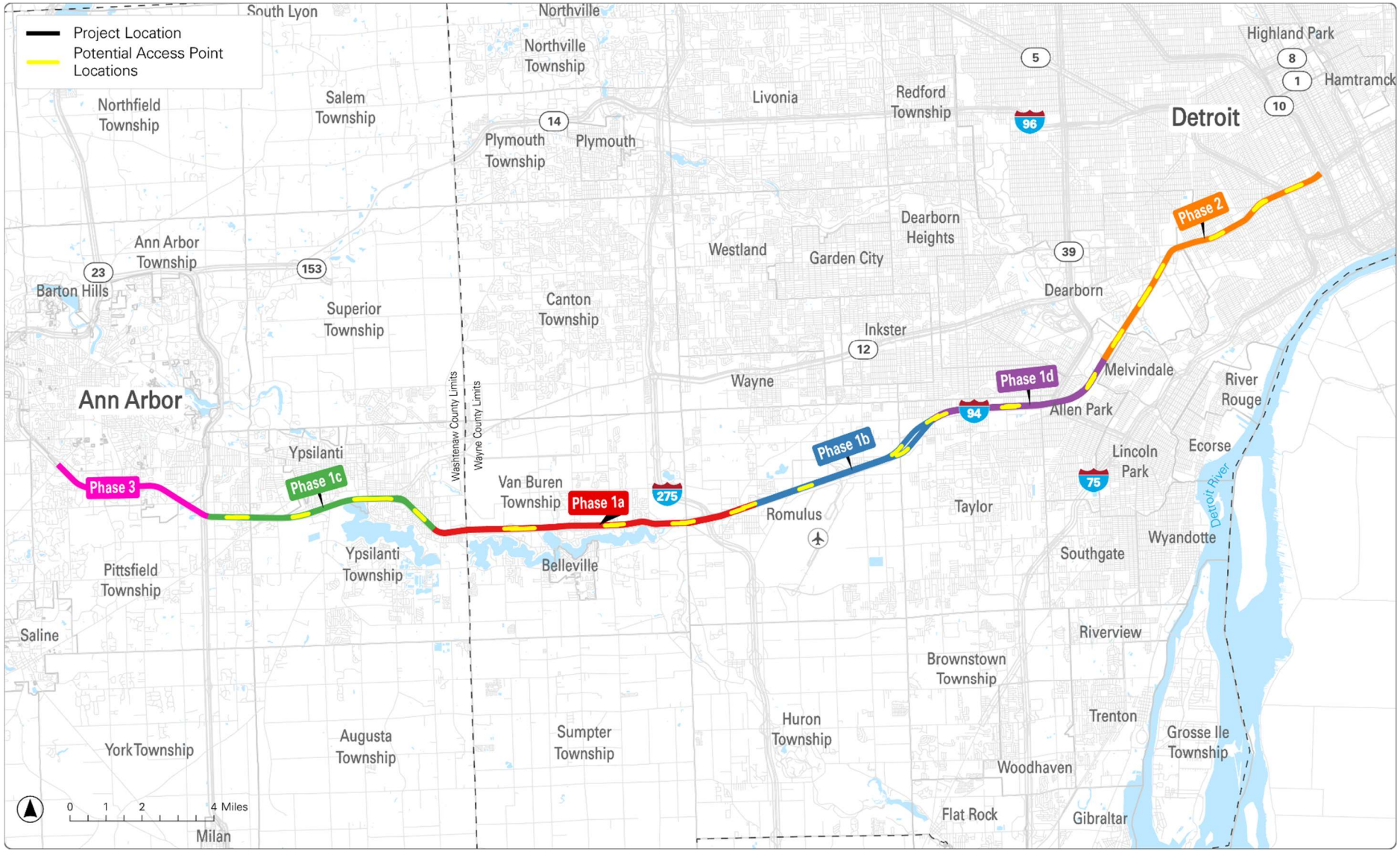
I-94 is an east-west corridor running from central Montana to Port Huron, Michigan where it connects with I-69 to cross into Canada. The Michigan Department of Transportation (MDOT), in partnership with Cavnue, is proposing to implement the I-94 Connected and Automated Vehicle Corridor Project (Proposed Project) along an approximately 39.3-mile segment of I-94 between Ann Arbor to the west, and Detroit to the east (Project Corridor). The Proposed Project would include equipping a general-purpose lane with Cavnue's digital infrastructure and a series of physical improvements. Vehicles would be able to access the lane through access points, which are breaks between physical separation that are at least 2,000 feet in length to facilitate vehicle merges.

I-94 within the Project Corridor is a median-divided, at-grade highway ranging from two lanes to four lanes in each direction. 46 overpasses and 61 underpasses connect surface streets over and under I-94 along the Project Corridor.

Typical sections of the existing roadway and the Proposed Project are shown in Appendix A, and a typical plan view of the proposed technology-enabled express lane access points is shown in Appendix B. A Plan view of the left side exit from eastbound I-94 to US 12 is shown in Appendix C. Plan views of the eastern and western most entrance and exits to the technology-enabled lane are provided in Appendix D and E.

Figure 1 shows the location of the Proposed Project, the proposed managed lane access points, and the segment limits along I-94 that will be improved over each of the three project phases. The number and location of access points are based on the latest available design however there may be modifications made as the design progresses in coordination with the MDOT Geometric Unit. The project schedule anticipates that Phase 1 would be complete by 2035 and Phase 2 by 2045. The Phase 3 segment would include technology upgrades only and no new managed lane. Therefore, the Phase 3 segment does not involve any changes to the geometric roadway environment that would impact traffic movements, capacity, or throughput.

Figure 1: Project Location and Proposed Access Points



The environmental, social, and economic effects of the Proposed Project are being evaluated under the National Environmental Policy Act (NEPA). A traffic impact study, consistent with NEPA guidelines, has been conducted to evaluate the potential effects of the project on the transportation network within the project area. This memorandum presents the methodology and results of the traffic study.

Connected and Autonomous Vehicles (CAV)

CAVs refer to vehicles with compatible Advanced Driver Assistance Systems (ADAS) and Automated Driving Systems (ADS) such as automatic emergency braking, advanced lane detection, lane keep assist, and adaptive cruise control. Connected vehicles receive information to and from outside sources to help them navigate the road environment.

The Society of Automotive Engineers (SAE) defines six levels of driving automation ranging from 0 (fully manual) to 5 (fully autonomous). CAVs are vehicles that can achieve SAE Level 3 and above, where a vehicle Is capable of driving itself in particular conditions, during which it would take control of all safety-critical systems. The ADS completes the entire dynamic driving task and then disengages quickly upon the driver's command.

Most new vehicles produced today are equipped with Level 2 driver assistance systems that require driver monitoring or intervention. However, the leap from Level 2 to Level 3 autonomy has been hampered by the lack of a consistent, predictable, and physically separated roadway environment. The Proposed Project would create the environment such that the benefits of Level 3 and above Hands Off Eyes Off (HOEO) driving can occur.

Methodology

The first stage of the traffic analysis involved a Traffic and Revenue study, conducted by Steer, as part of which a travel demand model was developed.

Traffic and Revenue (T&R) Model

A Level 2 traffic and revenue study for the Project has been developed by Steer, a leading transportation advisor with expertise in managed lane demand studies. The model provides detailed information on road use in southeast Michigan, including the choice elements leading to use of the CAV lane and adjacent general purpose lanes.

The forecasting approach consists of three elements:

- Definition of the traffic demand that could use the I-94 corridor - consists of traffic currently using I-94 plus additional traffic that could be attracted by the Project. The model is validated against available traffic counts to establish the baseline traffic.
- Estimation of the proportion of the traffic that will pay and use the lane. This is termed Capture rates and is driven by the benefits of the Project combined with the willingness to pay for those benefits. The choice parameters are developed from a bespoke stated preference survey of I-94 drivers and validated against industry metrics and academic literature.
- Conversion of the capture rate outputs into annual forecasts, including the use of future year traffic growth forecasts, assumptions about ramp-up and annualization.

To implement this approach, a network model was developed in Cube Voyager based on the Michigan Statewide Passenger and Freight Travel Demand mode (MDOT model), including networks, parameters and matrices, as well as recent traffic data, trip patterns, and estimates for regional growth. The study also estimated the "value of autonomy," a behavioral parameter used to represent the benefits from the Project such as safety, reliability, and autonomy. The model was also used to forecast traffic diversions from I-94 to alternate routes.

The T&R model utilized a CAV penetration curve developed by Cavnue and reviewed by S&P Global Mobility advisors. The curve estimates a CAV penetration rate of 39% in 2035 and 74% in 2045.

A summary of the T&R model methodology is included in Appendix G and the S&P Global Mobility review is included in Appendix H.

The traffic analysis documented in this memo used outputs from the T&R model to develop volumes which were analyzed using the 2023 version of the Highway Capacity Software (HCS), which is a deterministic traffic analysis tool that analyzes traffic conditions based on the latest edition of the Transportation Research Board's *Highway Capacity Manual* (HCM, 7th Edition). A summary of the HCS analysis methodology that was approved by MDOT is outlined below, and the detailed HCS methodology memo is provided in Appendix F.

Traffic analysis was conducted to evaluate existing (2023) traffic conditions as well as future year (2035 and 2045) conditions for both the No Build Alternative and Build Alternative.

No Build Alternative: Represents future conditions if the Proposed Project was not implemented and provides a baseline of comparison with the build alternative.

Build Alternative: Assumes the existing inside (left) general-purpose lane is equipped with Cavnue's digital infrastructure and separated from the remaining general purpose lanes. Vehicles would be able to access the lane through access points, which are breaks between physical separation that are at least 2,000 feet in length to facilitate vehicle merges.

The geographic scope of the traffic analysis includes the entire project corridor (from M-10 in the east to Ann Arbor Saline Road in the west) plus at least one interchange upstream of the eastern and western most lane access points, located at I-96 and US-23 respectively. This captures all new lane change, merge, and diverge movements introduced by the presence of the proposed lane and its access points so that potential impacts can be identified.

The 'Freeway Facility' module of HCS was utilized for the analysis which allows for continuous segments of various freeway types (basic, merge, diverge and weave) to be analyzed as a combined facility. This methodology considers traffic conditions along each segment of the study area as a combined facility such that traffic congestion along one segment is accounted for when analyzing segments upstream and downstream of that congestion.

In coordination with MDOT, the corridor was separated into the following four segments, each of which were evaluated as a single freeway facility in each travel direction using HCS:

- Facility 1 – Phase 3 segment comprised of I-94 between Ann Arbor – Saline Road to the west and US-23 to the east
- Facility 2 – Phases 1c and 1a segments comprised of I-94 between W Michigan Avenue to the west and Belleville Road to the east
- Facility 3 – Phase 1b and 1d segments comprised of I-94 between I-275 to the west and Southfield Road to the east
- Facility 4 – Phase 2 segment comprised of I-94 between Enterprise Drive to the west and M-10 to the east

The project schedule anticipates that Phase 1 would be complete by 2035 and Phase 2 by 2045. Phase 3 does not involve the installation of the advanced lane or any changes to the geometric roadway environment that would impact traffic movements, capacity or throughput. As such, the 2035 Build Alternative incorporates the geometric and operational changes associated with the technology-enabled express lane for Phase 1 only and the 2045 Build Alternative incorporates the geometric and operational changes associated with the technology-enabled express lane for Phase 1 and Phase 2.

The analysis of the Build Alternatives utilized the 'Managed Lane' feature of HCS to represent the technology-enabled express lane. This allows for specific volumes to be assigned to either the general purpose lanes or the technology-enabled express lane while also providing the capability to model the proposed managed lane access points and the potential impacts of lane changing maneuvers as vehicles enter and exit the lane.

HCS Inputs

Free Flow Speed: MDOT has access to vehicle probe data through the Regional Integrated Traveler Information System (RITIS), which provides real-time and historical vehicle probe data for speeds on all of Michigan's interstate system. This data was used to determine free flow speeds for each HCS freeway facility.

Peak Hour Factor: Traffic count data collected in May and September of 2023 were used to determine the following peak hour factors by direction and by peak hour.

- AM peak hour eastbound facilities: 0.97
- AM peak hour westbound facilities: 0.97
- PM peak hour eastbound facilities: 0.95
- PM peak hour westbound facilities: 0.94

Managed Lane Type: For analysis of the Build Alternative, a barrier separator was assumed between the general purpose lanes and the technology-enabled express lane.

Managed Lane Capacity Adjustment Factor: The capacity of the technology-enabled express lane was adjusted to account for the benefits of a traffic steam of 100% CAVs in the lane. An extensive review of available research literature was conducted in collaboration with FHWA and MDOT, and it was determined that an adjustment factor of 1.4 would be applied to the HCS managed lane in the 2045 Build condition. This increases the HCS Managed Lane capacity from the default of 1754 passenger cars per hour per lane (pc/hour/lane) to 2456 pc/hour/lane. A lower adjustment factor of 1.25 (resulting in 2192 pc/hour/lane) was used in the 2035 Build condition to account for the higher operational uncertainties of programmed CAV vehicle headways in the earlier years of CAV adoption.

Traffic Volumes

Several data sources, selected in coordination with MDOT, were used to develop 2023 volumes:

- Traffic counts collected in May and September 2023
- Previous MDOT traffic studies: "Ann Arbor – Saline Road to US-23" and "I-275 to M-39"
- Volumes from MDOT's Transportation Data Management System (TDMS)
- 2022 Existing Condition volumes from Cavnue's Traffic and Revenue (T&R) Study

2023 count data served as the primary source with the remaining sources used to fill gaps in the network as necessary. Volumes at the 2023 count locations were held constant while secondary sources were adjusted as required to develop a fully balanced set of volumes. Based on the data, the weekday morning (AM) and evening (PM) peak hours were determined to be 7:00 to 8:00 am and 4:30 to 5:30 pm, respectively.

Volumes for future horizon years were developed by growing 2023 volumes in accordance with the following annual growth rates provided by MDOT:

- 0.30% from 2023 to 2025
- 0.42% from 2025 to 2035
- 0.40% from 2035 to 2040
- 0.24% from 2040 to 2045

These growth rates were applied to the 2023 volumes to develop the No Build Alternative traffic volumes for each of the two horizon years (2035 and 2045). The volumes for the Build Alternative were based on the grown No Build volumes however they also considered the diversion analysis undertaken in the T&R study. The T&R model outputs were also used to determine the volume of vehicles entering/exiting the managed lane at each proposed access point, which in turn provided the lane assignments of vehicles between the general purpose lanes and advanced lane.

Note that the analysis requires the use of various assumptions and estimates, including the need to forecast future grow rates, CAV penetration rates, and the road user's willingness to pay a toll. While these projections are all based on industry-standard methods, research, and the most current information available, the number of assumptions used in combination can lead to inherent uncertainty that may be greater than for a typical traffic analysis project. For the purpose of this study, however, the best-available projections and assumptions were made based on data and information available today, which is consistent with the requirements under Title 40 of the Code of Federal Regulations.

Calibration

The Existing Conditions HCS analysis was calibrated based on RITIS speed data from 2023. Along analysis segments where RITIS showed slower speeds (denoting congestion) than the initial HCS results, modifications were made to bring the HCS results closer to RITIS. This calibration was performed using capacity adjustment factors (CAF) that lowered the default HCS capacity parameters at specific locations along the corridor. These were generally locations where atypical roadway geometry and/or sight distance issues were contributing to lower travel speeds that were not otherwise captured in the HCS inputs.

CAFs were used to adjust HCS capacities at the following locations:

<u>Westbound at the US-23 interchange</u>

The approach to the US-23 weaving segment is on a horizontal curve, and the weave itself travels under an overpass with bridge abutments and narrowed shoulders. These conditions seem to limit the sight distance for vehicles approaching the weave area, and off-peak RITIS data shows that vehicles naturally slow down at this location even when very low traffic volumes are present. Furthermore, the off ramp to US-23 Northbound is often congested and queues from this ramp can affect the capacity of the I-94 westbound mainline.

CAFs were used to lower the capacities in HCS and better match the RITIS speeds during the AM Peak Hour as outlined below:

Segment Name	Segment Type	CAF
US-23 Off-Ramp 1	Diverge	0.7
I-94 WB	Basic	0.75
US-23 On-Ramp 1 Off-Ramp 2	Weave	0.8
I-94 WB	Basic	0.8
US-23 On-Ramp 2	Merge	0.8

While the congestion shown in RITIS was only present during the AM peak hour, these same CAFs were applied to the PM peak hour for consistency.

Eastbound at the State Street interchange

A review of site conditions at this location shows that there is an uphill grade approaching the State Street on-ramp. This would lead to slower speeds and acceleration for some vehicles which is likely contributing to slower actual speeds than is being reported in the HCS results.

CAFs were used to lower the capacities in HCS and better match the RITIS speeds during the PM Peak Hour as outlined below:

Segment Name	Segment Type	CAF
State Street On-Ramp 2	Merge	0.88

While the congestion shown in RITIS was only present during the PM peak hour, the same CAF was applied to the AM peak hour for consistency.

Future Roadway Improvements

The 2035 and 2045 No Build Alternative and Build Alternative traffic analyses accounted for planned roadway improvement projects and associated geometric changes to the study corridor that are scheduled to be completed by the respective horizon years. Table 1 summarizes all projects that were considered for inclusion in future year scenarios. MDOT provided the most current design information for each project during a project coordination meeting on 9/18/23.

Table 1: Future Roadway Improvements

Project	Included in future scenarios?	Comments
WB I-94 to NB US-23 Ramp	2035 and 2045	Modification to I-94 Westbound (WB) to provide a two-lane exit ramp from I-94 WB to US 23 Northbound (NB).
US-23 CD lanes between I-94 and US-12	No	Outside study area
I-94 Flex Route west of US-23 to State Street	2035 and 2045	Flex lanes along I-94 that utilize the right shoulder during peak periods to add one travel lane: • Eastbound (EB) between Ann Arbor -Saline Road and State Street and between State Street and US-23, in PM Peak • WB between U-23 and State Street in AM Peak.
I-94 Reconstruction- Wayne to Middlebelt & Middlebelt to Beech Daly Rd	2035 and 2045	The proposed new diamond interchange at Ecorse Road and auxiliary lane between Middlebelt Road and Ecorse Road has been incorporated. These are the only components of the project which affect roadway geometry.
Pelham to Outer Drive and M-39 Interchange	No	No changes to roadway geometry
Gate 10/Ford Rouge	No	No changes to roadway geometry
I-94 Modernization Package 7- Connor to M-10	No	Planned to be implemented after 2045
I-94 Modernization Package 8- M-10 Interchange	No	Planned to be implemented after 2045
I-94 Modernization- Potential Drainage Tunnel Project	No	Planned to be implemented after 2045

HCS Results

HCS results are summarized in Figure 2. For all analyzed scenarios, traffic volumes and resulting speeds are provided for each freeway segment. For the Build scenarios, separate results are provided for the general purpose lanes and the proposed technology-enabled express lane.

2023 Existing Conditions Results

Results of the 2023 Existing Conditions analysis show generally free-flow conditions on the project corridor, with the HCS analysis results showing operating speeds along I-94 that were lower than the posted speed near the following locations:

Eastbound AM peak hour:

- State Street and US 23 interchanges
- Vining Road interchange
- Rotunda Drive interchange
- Continuous segment from Lonyo Street to the eastern end of project corridor

Eastbound PM peak hour:

- Vining Road interchange
- Rotunda Drive interchange
- Continuous segment from Lonyo Street to the eastern end of project corridor

Westbound AM peak hour:

- I-96 interchange
- Merriman Road/Auxiliary Road on-ramp
- US 23 and State Street interchanges

Westbound PM peak hour:

- I-96 interchange
- Merriman Road/Auxiliary Road on-ramp
- US 23 and State Street interchanges

2035 No Build and Build Results

In the 2035 Build Alternative, average travel time outputs from the HCS analysis in the general purpose lanes remain generally consistent with the No Build Alternative for all analyzed peak hours, as shown in Table 2.

Table 2: 2035 Travel Times – HCS Analysis

Eastbound			AM				PM			
			2035				2035			
From	To	Length (mi)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)
Ann Arbor - Saline Road	US-23	4.47	4:21	4:21	0	0%	4:12	4:12	0	0%
US-23	US-12	5.75	5:15	5:22	+0:07	+2%	5:19	5:28	+0:09	+3%
US-12	I-275	8.96	8:01	8:21	+0:20	+4%	8:04	8:10	+0:06	+1%
I-275	Southfield Road	11.53	11:24	13:35	+2:11	+19%	11:19	11:29	+0:10	+1%
Southfield Road	M-10	9.95	10:25	10:28	+0:03	+0%	10:20	10:21	+0:01	+0%
		Total	**39:26**	**42:07**	**+2:41**	**+7%**	**39:14**	**39:40**	**+0:26**	**+1%**

Westbound			AM				PM			
			2035				2035			
From	To	Length (mi)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)
I-96	US-39	8.61	8:27	8:32	+0:05	+1%	8:31	8:37	+0:06	+1%
US-39	I-275	9.89	9:23	9:31	+0:08	+1%	9:26	9:34	+0:08	+1%
I-275	US-12	9.85	8:50	8:57	+0:07	+1%	8:49	8:57	+0:08	+2%
US-12	US-23	4.57	4:12	4:26	+0:14	+6%	4:09	4:17	+0:08	+3%
US-23	Ann Arbor - Saline Rd	6.02	5:49	5:49	0	0%	5:58	6:02	+0:04	+1%
		Total	**36:41**	**37:15**	**+0:34**	**+2%**	**36:53**	**37:27**	**+0:34**	**+2%**

There would be a notable increase in travel times for the eastbound I-275 to Southfield Road segment during the AM peak hour. The detailed 2035 HCS results in Figure 2 show that this speed reduction is localized to one section of the eastbound corridor (I-94 between Middlebelt Road and Ecorse Road) with speeds reducing to approximately 15 to 25 mph. All future year scenarios have incorporated the planned I-94 Reconstruction project, which will provide an auxiliary lane for this segment of the corridor and a new diamond interchange at Ecorse Road, and the apparent cause of the travel time increase is the lane drop that reduces the number of general purpose lanes from 3 to 2 at the Ecorse Road off-ramp. This location is approximately 1500 ft downstream of the end of the proposed technology-enabled express lane access point located between Middlebelt Road and Ecorse Road.

However, the traffic analysis shows that this congestion would remain localized to this one segment (less than 1 mile in length). of the corridor and would not extend back to the upstream Middlebelt Road on-ramp. Furthermore, the congestion is not observed in the 2045 Build Alternative, which means that speeds are expected to return to levels consistent with the No Build Alternative some time before 2045 as CAV penetration increases and more vehicles use the technology-enabled express lane (leaving fewer vehicles using the general purpose lanes).

Potential mitigation measures to improve the performance of the general purpose lanes at this location may include adjustments to the user fees to increase the attractiveness of the technology-enabled express lane in this section of the corridor. These adjustments could lead to reduced volumes and improved speeds within the general purpose lanes along this segment.

Similarly, it is expected that drivers will make choices to bring equilibrium to the system. For example, a driver who would otherwise be opposed to paying a fee for a longer stretch of the corridor may decide to move into the technology-enabled express lane for a short time to avoid the forecasted congestion. This

driver would only need to pay a relatively low fee for the short I-94 segment between Middlebelt Road and Ecorse Road to avoid congestion in the general purpose lanes before moving back into the no-cost general purpose lanes. Ultimately, the congestion itself would create an additional incentive for a driver to pay to use the managed lane that would not otherwise exist without the congestion present.

Due to the short-term nature of the identified slow-down, the potential for vehicles to choose the uncongested advanced lane, and the potential for user fees to be adjusted dynamically if needed, it is expected that any adverse traffic impacts projected for this location could be sufficiently mitigated.

No congestion or flow breakdown is projected to occur in the technology-enabled express lane or at any of the access points.

2045 No Build and Build Results

In the 2045 Build Alternative, average general purpose travel time outputs from the HCS analysis for the project corridor remain generally consistent with the No Build Alternative for all analyzed peak hours, as shown in Table 3. Whilst travel time increases are predicted for most segments of the corridor, the changes are minor and well within the day-to-day variation that typically occurs for peak period travel on a freeway facility. The largest increase for full corridor travel time is 1 minute 7 seconds (+3%) and would occur in the westbound direction in the PM peak hour.

Table 3: 2045 Travel Times – HCS Analysis

Eastbound			AM				PM			
			2045				2045			
From	To	Length (mi)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)
Ann Arbor - Saline Rd	US-23	4.47	4:22	4:22	0	0%	4:12	4:12	0	0%
US-23	US-12	5.75	5:15	5:17	+0:02	+1%	5:21	5:31	+0:10	+3%
US-12	I-275	8.96	8:02	8:15	+0:13	+3%	8:05	8:12	+0:07	+1%
I-275	Southfield Road	11.53	11:28	11:45	+0:17	+2%	11:22	11:33	+0:11	+2%
Southfield Road	M-10	9.95	10:27	10:34	+0:07	+1%	10:21	10:30	+0:09	+1%
		Total	**39:34**	**40:13**	**+0:39**	**+2%**	**39:21**	**39:58**	**+0:37**	**+2%**

Westbound			AM				PM			
			2045				2045			
From	To	Length (mi)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)	No Build (mm:ss)	Build (mm:ss)	Change (mm:ss)	Change (%)
I-96	US-39	8.61	8:27	8:44	+0:17	+3%	8:32	8:53	+0:21	+4%
US-39	I-275	9.89	9:24	9:32	+0:08	+1%	9:27	9:36	+0:09	+2%
I-275	US-12	9.85	8:50	8:57	+0:07	+1%	8:50	8:58	+0:08	+2%
US-12	US-23	4.57	4:13	4:21	+0:08	+3%	4:10	4:24	+0:14	+6%
US-23	Ann Arbor - Saline Rd	6.02	5:51	5:55	+0:04	+1%	6:00	6:15	+0:15	+4%
		Total	**36:45**	**37:29**	**+0:44**	**+2%**	**36:59**	**38:06**	**+1:07**	**+3%**

The detailed 2045 HCS results in Figure 2 show that every analyzed segment of the project corridor in the Build Alternative would perform similarly to the No Build Alternative.

No congestion or flow breakdown is projected to occur in the technology-enabled express lane or at any of the access points.

Figure 2: HCS Results

Eastbound - AM Peak Hour

Facility	Segment	Segment Name	Segment Type	ML Segment Type	AM																											
					2023 Existing				2035 No-Build				2035 Build General Purpose Lanes				2035 Build Managed Lane				2045 No-Build				2045 Build General Purpose Lanes				2045 Build Managed Lane			
					Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C
1	1	Ann Arbor-Saline Off -Ramp	Diverge		2500	25.9	54.7	0.60	2623	27.2	54.7	0.63	2623	27.2	54.6	0.63					2708	28.1	54.6	0.65	2708	28.1	54.6	0.65				
	2	I-94 EB1	Basic		2068	17.8	65.4	0.50	2169	18.6	65.4	0.52	2157	18.5	65.4	0.52					2240	19.2	65.4	0.54	2232	19.2	65.4	0.54				
	3	Ann Arbor-Saline Road On-Ramp 1	Merge		2574	25.00	58.0	0.62	2700	26.40	57.8	0.65	2688	26.20	57.8	0.65					2788	27.30	57.6	0.67	2780	27.20	57.6	0.67				
	4	I-94 EB2	Basic		2574	22.2	64.2	0.62	2700	23.3	64.1	0.65	2688	23.2	64.1	0.65					2788	24.2	64.1	0.67	2780	24.1	64.1	0.67				
	5	Ann Arbor-Saline Road On-Ramp 2	Merge		2798	27.3	57.8	0.67	2935	28.9	57.4	0.71	2940	28.9	57.4	0.71					3031	30.0	57.1	0.73	3038	30.0	57.1	0.73				
	6	I-94 EB3	Basic		2798	24.3	65.0	0.67	2935	25.7	64.7	0.71	2940	25.8	64.7	0.71					3031	26.7	64.3	0.73	3038	26.8	64.2	0.73				
	7	State Street Off-Ramp	Diverge		2798	29.7	53.4	0.68	2935	31.2	53.3	0.71	2940	31.3	53.3	0.71					3031	32.3	53.2	0.73	3038	32.4	53.2	0.73				
	8	I-94 EB4	Basic		1798	15.5	65.2	0.43	1886	16.2	65.2	0.45	1893	16.3	65.2	0.45					1948	16.7	65.2	0.47	1954	16.8	65.2	0.47				
	9	State Street On-Ramp 1	Merge		2242	21.5	58.6	0.61	2352	22.6	58.4	0.64	2361	22.7	58.4	0.64					2429	23.4	58.3	0.66	2435	23.4	58.3	0.66				
	10	I-94 EB5	Basic		2242	19.3	64.5	0.54	2352	20.2	64.5	0.57	2361	20.3	64.5	0.57					2429	20.9	64.5	0.58	2435	20.9	64.5	0.59				
	11	State Street On-Ramp 2	Merge		2605	25.9	57.0	0.63	2733	27.3	56.8	0.66	2739	27.4	56.7	0.66					2822	28.3	56.5	0.68	2831	28.4	56.5	0.68				
	12	I-94 EB6	Basic		2605	22.4	65.8	0.63	2733	23.7	65.5	0.66	2739	23.7	65.5	0.66					2822	24.5	65.2	0.68	2831	24.6	65.2	0.68				
	13	US 23 Off-Ramp 1	Diverge		2605	28.0	52.8	0.63	2733	29.5	52.6	0.66	2739	29.5	52.6	0.66					2822	30.5	52.5	0.68	2831	16.2	66.0	0.45				
	14	I-94 EB7	Basic		1391	12.0	65.9	0.33	1459	12.5	65.9	0.35	1462	12.6	65.9	0.35					1507	12.9	65.9	0.36	1522	13.1	66.0	0.37				
	15	US 23 On-Ramp 1	Merge		2889	16.9	66.0	0.47	3031	17.7	66.0	0.50	3066	17.9	66.0	0.50					3130	18.3	66.0	0.51	3183	18.6	66.0	0.52				
	16	I-94 EB8	Basic		2889	16.5	66.0	0.46	3031	17.4	66.0	0.49	3066	17.6	66.0	0.49					3130	17.9	66.0	0.50	3183	18.2	66.0	0.51				
2	1	I-94 EB9	Basic	Access	2889	15.6	70.0	0.46	3031	16.7	70.0	0.49	2446	20.3	69.5	0.59	620	14.4	67.7	0.38	3129	17.2	70.0	0.50	2432	20.2	69.5	0.59	751	17.7	66.6	0.41
	2	W Michigan Ave Off-Ramp	Diverge	Access	2889	17.6	62.1	0.46	3031	18.8	62.1	0.49	2147	21.6	57.3	0.52	919	13.8	70.7	0.34	3129	19.4	62.1	0.50	2072	20.9	57.2	0.50	1111	17.0	69.7	0.36
	3	I-94 EB10	Basic		2629	14.3	69.6	0.42	2759	15.2	69.6	0.44	1874	15.5	69.3	0.45	919	13.7	71.5	0.45	2848	15.7	69.6	0.46	1790	14.8	69.3	0.43	1111	16.7	70.7	0.48
	4	W Michigan Ave On-Ramp 1	Merge		2859	16.8	64.6	0.45	3000	17.8	64.4	0.48	1874	19.4	62.7	0.51	919	13.7	71.5	0.45	3097	18.4	64.4	0.49	1790	18.6	62.8	0.49	1111	16.7	70.7	0.48
	5	I-94 EB11	Basic		2859	15.4	69.0	0.45	3000	16.5	69.0	0.48	2117	17.5	68.6	0.51	919	13.7	71.5	0.45	3097	17.0	69.0	0.50	2044	16.9	68.7	0.49	1111	16.7	70.7	0.48
	6	W Michigan Ave On-Ramp 2	Merge		3349	20.0	63.0	0.52	3514	21.4	62.7	0.56	2117	24.9	60.1	0.62	919	13.7	71.5	0.45	3628	22.1	62.6	0.58	2044	24.3	60.2	0.61	1111	16.7	70.7	0.48
	7	I-94 EB12	Basic		3349	18.1	68.9	0.53	3514	19.4	68.9	0.56	2620	21.9	68.5	0.63	919	13.7	71.5	0.45	3628	20.1	68.9	0.58	2567	21.4	68.5	0.62	1111	16.7	70.7	0.48
	8	I-94 EB13	Basic	Access	3349	18.1	69.9	0.53	3514	19.4	69.7	0.56	2620	21.9	68.9	0.63	919	23.6	64.8	0.58	3628	20.1	69.6	0.58	2567	21.4	69.1	0.62	1111	31.0	62.4	0.66
	9	Whittaker Off-Ramp	Diverge		3349	20.7	61.2	0.53	3514	22.1	61.2	0.56	2760	28.0	56.8	0.66	779	11.5	72.1	0.38	3628	22.8	61.1	0.58	2712	27.8	56.4	0.65	966	14.4	71.3	0.42
	10	I-94 EB14	Basic		2734	14.9	69.1	0.43	2869	15.8	69.1	0.46	2308	19.1	68.7	0.56	779	11.5	72.1	0.38	2962	16.3	69.1	0.47	2108	17.4	68.7	0.51	966	14.4	71.3	0.42
	11	Hamilton On-Ramp	Merge		2900	17.1	64.4	0.46	3043	18.2	64.2	0.49	2308	22.9	61.7	0.59	779	11.5	72.1	0.38	3142	18.8	64.1	0.50	2108	21.2	62.0	0.55	966	14.4	71.3	0.42
	12	I-94 EB15	Basic		2900	15.8	68.9	0.46	3043	16.7	68.8	0.49	2456	20.4	68.3	0.59	779	11.5	72.1	0.38	3142	17.3	68.8	0.50	2283	18.9	68.4	0.55	966	14.4	71.3	0.42
	13	Whittaker On-Ramp	Merge		3245	19.5	63.0	0.51	3405	20.7	62.7	0.54	2456	27.1	59.3	0.67	779	11.5	72.1	0.38	3515	21.4	62.6	0.56	2283	25.4	59.8	0.63	966	14.4	71.3	0.42
	14	I-94 EB16	Basic		3245	17.5	68.7	0.51	3405	18.7	68.7	0.55	2804	23.8	68.0	0.67	779	11.5	72.1	0.38	3515	19.4	68.7	0.56	2657	22.3	68.2	0.64	966	14.4	71.3	0.42
	15	I-94 EB17	Basic	Access	3245	17.5	70.0	0.51	3405	18.7	69.9	0.55	2804	23.8	68.0	0.67	779	12.1	75.4	0.30	3515	19.4	69.7	0.56	2657	22.3	68.7	0.64	966	15.1	75.4	0.34
	16	US 12 Off-Ramp	Diverge	Access	3245	20.8	59.0	0.51	3405	22.2	59.1	0.55	2725	28.5	55.1	0.66	858	12.9	71.0	0.32	3515	22.9	59.1	0.56	2556	26.8	55.0	0.61	1067	16.2	70.0	0.35
	17	I-94 EB18	Basic		2218	12.6	69.9	0.37	2328	12.8	69.9	0.37	1647	13.6	69.8	0.40	858	12.7	71.7	0.42	2403	13.2	69.9	0.39	1443	11.9	69.8	0.35	1067	16.0	70.9	0.46
	18	I-94 EB19	Basic	Access	2218	12.6	70.0	0.37	2328	12.8	70.0	0.37	1647	13.6	70.0	0.40	858	17.9	67.3	0.44	2403	13.2	70.0	0.39	1443	11.9	70.0	0.35	1067	22.4	65.9	0.48
	19	I-94 EB20	Basic		2218	12.6	70.0	0.37	2328	12.8	70.0	0.37	1924	15.9	70.0	0.46	581	8.5	72.9	0.28	2403	13.2	70.0	0.39	1745	14.4	70.0	0.42	765	11.3	72.1	0.33
	20	Wiard On-Ramp	Weave		2440	11.7	61.4	0.34	2561	12.1	61.1	0.35	1924	13.9	59.9	0.41	581	8.5	72.9	0.28	2643	12.5	60.9	0.36	1745	12.8	59.8	0.38	765	11.3	72.1	0.33
	21	I-94 EB21	Basic		2175	12.5	69.8	0.36	2283	12.6	69.8	0.37	1834	15.1	69.8	0.44	581	8.5	72.9	0.28	2356	13.0	69.8	0.38	1641	13.5	69.8	0.39	765	11.3	72.1	0.33
	22	Rawsonville On-Ramp	Merge		3041	19.1	63.3	0.50	3191	19.4	63.2	0.51	1834	26.5	60.3	0.66	581	8.5	72.9	0.28	3294	20.1	63.0	0.53	1641	24.6	60.8	0.62	765	11.3	72.1	0.33
	23	I-94 EB22	Basic		3041	17.2	69.9	0.50	3191	17.5	69.9	0.51	2769	23.4	68.2	0.67	581	8.5	72.9	0.28	3294	18.1	69.9	0.53	2597	21.7	69.0	0.62	765	11.3	72.1	0.33
	24	I-94 EB23	Basic	Access	3041	17.2	70.0	0.50	3191	17.5	70.0	0.51	2769	23.4	68.2	0.67	581	10.9	70.1	0.26	3294	18.1	69.9	0.53	2597	21.7	69.0	0.62	765	14.9	68.7	0.32
	25	I-94 EB24	Basic		3041	17.2	70.0	0.50	3191	17.5	70.0	0.51	2634	22.1	68.8	0.63	716	10.5	72.4	0.35	3294	18.1	69.9	0.53	2401	19.9	69.6	0.58	961	14.3	71.3	0.42
	26	Belleville Rd Off-Ramp	Diverge		3041	19.2	62.7	0.50	3191	19.6	62.6	0.51	2634	26.4	57.6	0.63	716	10.5	72.4	0.35	3294	20.3	62.6	0.53	2401	24.1	57.6	0.58	961	14.3	71.3	0.42
	27	I-94 EB25	Basic		2952	16.8	69.5	0.49	3098	17.0	69.5	0.50	2489	20.7	69.2	0.60	716	10.5	72.4	0.35	3198	17.6	69.5	0.51	2257	18.6	69.2	0.54	961	14.3	71.3	0.42
	28	Belleville Rd On-Ramp 1	Merge		3398	21.1	63.5	0.56	3566	21.5	63.4	0.57	2489	28.6	60.1	0.72	716	10.5	72.4	0.35	3682	22.3	63.3	0.59	2257	26.2	60.8	0.66	961	14.3	71.3	0.42
	29	I-94 EB26	Basic		3398	19.2	68.8	0.56	3566	19.7	68.8	0.57	3001	26.0	66.7	0.72	716	10.5	72.4	0.35	3682	20.4	68.8	0.59	2787	23.6	68.1	0.67	961	14.3	71.3	0.42
	30	Belleville Rd On-Ramp 2	Merge		3778	23.6	62.7	0.62	3965	24.3	62.5	0.63	3001	33.9	57.5	0.81	716	10.5	72.4	0.35	4094	25.2	62.3	0.65	2787	31.2	58.6	0.76	961	14.3	71.3	0.42
	31	I-94 EB27	Basic		3778	21.4	69.1	0.62	3965	22.2	68.8	0.64	3394	30.9	63.3	0.82	716	10.5	72.4	0.35	4094	23.0	68.4	0.66	3188	28.2	65.3	0.77	961	14.3	71.3	0.42
	32	I-94 EB28	Basic	Access	3778	21.4	69.1	0.62	3965	22.2	68.8	0.64	3394	30.9	63.3	0.82	716	16.9	67.0	0.43	4094	23.0	68.4	0.66	3188	28.2	65.3	0.77	961	22.8	65.2	0.50
	33	I-94 EB29	Basic		3778	21.4	69.1	0.62	3965	22.2	68.8	0.64	3180	28.1	65.3	0.76	930	13.9	71.4	0.45	4094	23.0	68.4	0.66	2937	25.2	67.2	0.71	1212	18.4	70.2	0.52
	34	Haggerty Rd Off-Ramp	Diverge		3778	23.8	62.3	0.62	3965	24.5	62.3	0.64	3180	32.0	57.3	0.76	930	13.9	71.4	0.45	4094	25.3	62.3	0.66	2937	29.6	57.2	0.71	1212	18.4	70.2	0.52
	35	I-94 EB30	Basic		3545	20.1	69.2	0.58	3720	20.6	69.2	0.60	2923	25.1	67.3	0.70	930	13.9	71.4	0.45	3841	21.4	69.1	0.62	2669	22.4	68.7	0.64	1212	18.4	70.2	0.52
	36	Haggerty Rd On-Ramp 1	Merge		3772	23.7	62.7	0.62	3958	24.3	62.6	0.63	2923	31.1	58.6	0.76	930	13.9	71.4	0.45	4087	25.2	62.4	0.65	2669	28.2	59.6	0.70	1212	18.4	70.2	0.52
	37	I-94 EB31	Basic		3772	21.4	68.0	0.62	3958	22.1	68.0	0.63	3161	27.8	65.5	0.76	930	13.9	71.4	0.45	4087	23.0	68.0	0.66	2914	25.0	67.2	0.70	1212	18.4	70.2	0.52
	38	Haggerty Rd On-Ramp 2	Merge	Access	4002	25.1	62.3	0.65	4199	25.9	62.2	0.67	3161	34.3	57.2	0.80	930	23.7	64.4	0.60	4406	27.4	61.8	0.70	2914	31.1	58.5	0.75	1212	29.3	63.1	0.63
	39	I-94 EB32	Basic	Access	4002	22.9	68.4	0.65	4199	23.8	68.0	0.67	3552	33.3	61.6	0.85	781	17.6	66.5	0.46	4406	25.2	67.2	0.71	3297	29.6	64.3	0.79	1078	22.9	65.2	0.72
3	1	I-94 EB33	Basic		4003	24.3	64.6	0.67	4199	24.9	64.4	0.68	3625	35.4	58.6	0.88	705	10.4	71.8	0.26	4335	25.8	64.1	0.70	3443	32.6	60.4	0.84	933	14.1	70.6	0.31
	2	US 275 Off-Ramp 1	Diverge		4003	27.0	58.2	0.67	4199	27.6	58.1	0.68	3625	38.6	53.7	0.88	705	10.4	72.4	0.34	4335	28.5	58.1	0.70	3443	36.7	53.7	0.84	933	13.9	71.4	0.40
	3	I-94 EB34	Basic		3497	20.9	63.5	0.58	3668	21.5	63.4	0.60	3056	27.2	62.4	0.74	705	10.4	72.4	0.34	3787	22.2	63.4	0.61	2859	25.5	62.4	0.70	933	13.9	71.4	0.40
	4	US 275 Off Ramp 2	Diverge		3497	23.3	58.2	0.58	3668	24.0	58.2	0.60	3056	32.3	53.6	0.74	705	10.4	72.4	0.34	3787	24.9	58.1	0.61	2859	30.5	53.6	0.70	933	13.9	71.4	0.40
	5	I-94 EB35	Basic		2993	18.0	64.6	0.50	3139	18.4	64.6	0.51	2423	20.9	64.4	0.59	705	10.4	72.4	0.34	3241	19.0	64.6	0.53	2222	19.6	64.4	0.54	933	13.9	71.4	0.40
	6	US 275 On-Ramp	Merge	Access	4435	22.0	59.8	0.56	4652	22.7	59.7	0.58	2423	25.9	58.6	0.68	705	17.3	66.6	0.45	4803	23.6	59.4	0.60	2222	25.2	58.7	0.66	933	21.6	65.5	0.48
	7	I-94 EB36	Basic	Access	4435	20.0	63.9	0.55	4652	20.5	63.9	0.57	3395	23.4	63.7	0.55	1247	21.5	67.3	0.53	4803	21.1	63.8	0.58	3219	18.9	63.7	0.52	1499	26.1	66.0	0.56
	8	Wayne Rd Off-Ramp	Diverge	Access	4435	20.0	64.8	0.55	4652	20.5	64.8	0.57	3282	25.7	59.1	0.53	1360	21.1	68.5	0.50	4803	21.1	64.8	0.58	3101	18.2	64.7	0.50	1617	25.6	67.1	0.53
	9	I-94 EB37	Basic		4273	26.2	63.9	0.71	4482	26.9	63.6	0.73	3152	39.4	55.9	0.77	1360	20.8	69.5	0.66	4628	28.0	63.1	0.75	2964	26.6	63.8	0.72	1617	24.9	69.1	0.70
	10	Wayne Rd On-Ramp 1	Merge		4492	30.5	57.6	0.75	4712	31.2	57.5	0.76	3152	46.7	49.9	0.82	1360	20.8	69.5	0.66	4866	32.4	57.2	0.79	2964	33.0	55.4	0.78	1617	24.9	69.1	0.70
	11	Wayne Rd On-Ramp 2	Weave		4594	23.9	56.5	0.62	4819	24.5	56.3	0.64	3382	28.5	55.5	0.61	1360	20.8	69.5	0.66	4976	25.4	56.0	0.66	3202	22.5	56.5	0.59	1617	24.9	69.1	0.70
	12	I-94 EB38	Basic		4485	27.8	63.2	0.75	4705	28.6	62.8	0.76	3333	43.0	53.5	0.81	1360	20.8	69.5	0.66	4858	29.8	62.1	0.79	3210	29.5	62.3	0.78	1617	24.9	69.1	0.70
	13	I-94 EB39	Basic	Access	4485	27.8	63.2	0.75	4705	28.6	62.8	0.76	3333	43.0	53.5	0.81	1360	22.8	67.2	0.56	4858	29.8	62.1	0.79	3210	29.5	62.3	0.78	1617	27.9	65.7	0.60
	14	Vining Rd On-Ramp	Weave	Access	4773	30.4	45.9	0.71	5007	31.7	45.3	0.73	3344	40.5	41.0	0.76	1349	29.0	64.0	0.66	5170	33.1	44.7	0.75	3235	31.5	43.4	0.75	1592	36.0	62.0	0.71
	15	I-94 EB40	Basic		3649	22.0	65.0	0.61	3828	22.5	64.9	0.62	2545	29.6	61.3	0.62	1298	19.8	69.9	0.63	3952	23.3	64.8	0.64	2475	22.5	63.0	0.61	1471	22.6	69.1	0.64
	16	Auxiliary On-Ramp	Merge		4849	30.5	61.7	0.80	5087	22.3	65.0	0.62	2545	27.9	57.1	0.63	1298	19.8	69.9	0.63	5252	23.1	64.9	0.64	2475	22.8	63.0	0.62	1471	22.6	69.1	0.64
	17	I-94 EB41	Basic	Access	4849	30.5	61.7	0.80	5087	22.4	65.0	0.62	3823	60.0	24.4	0.63	1298	30.4	63.1	0.72	5252	23.1	64.9	0.64	3783	22.9	63.0	0.62	1471	34.7	61.9	0.71
	18	Ecorse Rd Off-Ramp	Diverge		4849	32.1	58.7	0.80	5087	22.4	65.0	0.62	3601	86.3	15.8	0.58	1520	23.7	68.3	0.74	5252	23.1	64.9	0.64	3608	21.2	64.9	0.59	1646	25.3	69.1	0.71
	19	I-94 EB42	Basic		4676	29.1	62.5	0.77	4906	30.2	61.9	0.80	3460	71.1	26.3	0.84	1520	23.7	68.3	0.74	5065	31.7	61.0	0.82	3432	32.5	60.5	0.84	1646	25.3	69.1	0.71
	20	Ecorse Rd On-Ramp	Merge		5138	36.2	55.1	0.85	5391	36.6	56.3	0.88	3460	41.4	52.9	0.98	1520	23.7	68.3	0.74	5566	38.2	55.7	0.91	3432	43.2	52.0	0.96	1646	25.3	69.1	0.71
	21	I-94 EB43	Basic		5138	33.2	60.0	0.85	5391	34.9	58.9	0.87	3995	38.9	56.2	0.97	1520	23.7	68.3	0.74	5566	36.9	57.6	0.90	3915	40.7	55.0	0.95	1646	25.3	69.1	0.71
	22	I-94 EB44	Basic	Access	5138	33.2	60.0	0.85	5391	34.9	58.9	0.87	3995	38.9	56.2	0.97	1520	36.1	61.5	0.83	5566	36.9	57.6	0.90	3915	40.7	55.0	0.95	1646	41.6	59.8	0.84
	23	Telegraph Rd Off-Ramp	Diverge		5138	34.3	58.1	0.85	5391	35.5	57.9	0.87	4176	40.7	53.8	1.02	1339	20.4	69.7	0.65	5566	36.7	57.9	0.90	4071	43.3	53.8	0.99	1490	22.9	69.1	0.65
	24	I-94 EB45	Basic		4619	28.9	62.6	0.77	4846	29.7	62.2	0.79	3577	30.0	62.0	0.87	1339	20.4	69.7	0.65	5004	31.1	61.3	0.81	3465	32.9	60.2	0.84	1490	22.9	69.1	0.65
	25	Telegraph Rd On-Ramp	Merge		6209	31.1	57.8	0.76	6514	32.2	57.3	0.79	3577	32.0	57.1	0.83	1339	20.4	69.7	0.65	6727	33.6	56.8	0.81	3465	35.1	55.9	0.84	1490	22.9	69.1	0.65
	26	I-94 EB46	Basic		6209	28.2	63.0	0.76	6514	30.0	62.0	0.79	5181	29.3	62.4	0.84	1339	20.4	69.7	0.65	6727	31.5	61.1	0.82	5209	33.1	60.1	0.85	1490	22.9	69.1	0.65
	27	I-94 EB47	Basic	Access	6209	28.2	63.0	0.76	6514	30.0	62.0	0.79	5181	29.3	62.4	0.84	1339	41.5	58.9	0.97	6727	31.5	61.1	0.82	5209	33.1	60.1	0.85	1490	50.1	56.5	1.02
	28	Pelham Rd Off-Ramp	Diverge	Access	6209	32.6	54.5	0.76	6514	34.4	54.1	0.79	5336	35.9	50.9	0.89	1184	18.2	69.4	0.44	6727	35.7	53.9	0.82	5274	39.5	50.9	0.88	1425	22.3	68.1	0.47
	29	I-94 EB48	Basic		3188	19.0	64.9	0.53	3345	19.6	64.9	0.54	2212	14.6	64.8	0.54	1184	17.9	70.4	0.57	3455	20.3	64.9	0.56	2021	17.8	64.8	0.49	1425	21.9	69.3	0.62
	30	Pelham Rd On-Ramp	Merge		3470	22.7	59.1	0.57	3641	23.5	59.0	0.59	2212	18.3	58.2	0.59	1184	17.9	70.4	0.57	3761	24.3	58.8	0.61	2021	22.6	57.7	0.55	1425	21.9	69.3	0.62
	31	I-94 EB49	Basic		3470	20.5	64.5	0.57	3641	21.4	64.5	0.59	2418	16.3	64.5	0.59	1184	17.9	70.4	0.57	3761	22.1	64.5	0.61	2288	20.1	64.4	0.56	1425	21.9	69.3	0.62
	32	Southfield Rd On-Ramp	Merge		3774	24.4	59.4	0.62	3960	25.5	59.2	0.64	2418	21.2	58.9	0.67	1184	17.9	70.4	0.57	4090	26.4	59.0	0.66	2288	26.1	58.2	0.65	1425	21.9	69.3	0.62
	33	I-94 EB50	Basic		3774	22.3	64.0	0.62	3960	23.3	64.0	0.64	2744	19.2	63.9	0.67	1184	17.9	70.4	0.57	4090	24.1	64.0	0.66	2651	23.4	63.8	0.65	1425	26.4	57.4	0.86
4	1	I-94 EB51	Basic		3775	22.4	65.0	0.62	3960	23.3	64.8	0.64	2835	25.2	64.3	0.69	1094	16.5	70.7	0.53	4089	24.1	64.6	0.66	2651	23.4	64.8	0.65	1426	21.9	69.3	0.62
	2	I-94 EB52	Basic	Access	3775	22.4	65.0	0.62	3960	23.3	64.8	0.64	2835	25.2	64.3	0.69	1094	23.8	65.3	0.57	4089	24.1	64.6	0.66	2651	23.4	64.8	0.65	1426	31.8	63.0	0.66
	3	I-94 EB53	Basic		3775	22.4	65.0	0.62	3960	23.3	64.8	0.64	3022	27.2	63.5	0.74	907	13.5	71.5	0.44	4089	24.1	64.6	0.66	2796	24.8	64.4	0.68	1281	19.5	69.9	0.55
	4	Enterprise Dr Off-Ramp	Diverge		3775	24.6	59.0	0.62	3960	25.6	59.0	0.64	3022	31.6	54.8	0.74	907	13.5	71.5	0.44	4089	26.5	58.9	0.66	2796	29.2	54.8	0.68	1281	19.5	69.9	0.55
	5	I-94 EB54	Basic		3614	21.4	64.3	0.59	3791	22.2	64.3	0.62	2874	25.6	63.8	0.70	907	13.5	71.5	0.44	3915	23.0	64.3	0.64	2657	23.5	63.8	0.65	1281	19.5	69.9	0.55
	6	Enterprise Dr On-Ramp 1	Merge		3685	23.9	59.4	0.60	3865	25.0	59.1	0.63	2874	29.6	57.0	0.72	907	13.5	71.5	0.44	3992	25.8	59.0	0.65	2657	27.2	57.6	0.67	1281	19.5	69.9	0.55
	7	I-94 EB55	Basic		3685	21.8	64.1	0.60	3865	22.7	64.1	0.63	2948	26.4	63.8	0.72	907	13.5	71.5	0.44	3992	23.5	64.0	0.65	2734	24.2	64.6	0.67	1281	19.5	69.9	0.55
	8	Enterprise Dr On-Ramp 2	Merge	Access	3914	25.4	59.3	0.64	4105	26.5	59.1	0.67	2948	32.1	56.6	0.77	907	31.7	61.0	0.81	4240	27.5	58.9	0.69	2734	30.0	57.2	0.74	1281	27.6	64.2	0.59
	9	I-94 EB56	Basic	Access	3914	23.2	63.5	0.64	4105	24.2	63.4	0.67	4087	44.5	52.5	0.99	0	1.3	67.1	0.05	4240	25.1	63.4	0.69	3026	27.3	62.9	0.74	1254	20.0	68.4	0.44
	10	Greenfield Rd Off-Ramp	Diverge	Access	3914	25.7	58.6	0.64	4105	26.7	58.6	0.67	4084	26.6	58.6	0.66					4240	27.6	58.5	0.69	3029	31.9	54.3	0.74	1251	19.3	69.0	0.41
	11	I-94 EB57	Basic		3568	21.1	64.9	0.58	3742	22.0	64.9	0.61	3713	21.8	64.9	0.60					3865	22.7	64.9	0.63	2652	23.4	64.8	0.65	1251	19.0	70.1	0.54
	12	Schaefer Rd On-Ramp	Merge	Access	3642	24.0	58.7	0.60	3819	25.0	58.5	0.62	3793	24.9	58.5	0.62					3945	25.9	58.3	0.64	2652	28.3	56.3	0.68	1251	19.3	69.0	0.41
	13	I-94 EB58	Basic	Access	3642	21.8	64.2	0.60	3819	22.4	64.2	0.62	3793	22.3	64.2	0.62					3945	23.2	64.2	0.64	2763	24.5	63.9	0.67	1251	25.7	64.9	0.56
	14	I-94 EB59	Basic		3642	21.8	64.9	0.60	3819	22.4	64.9	0.62	3793	22.3	64.9	0.62					3945	23.2	64.8	0.64	2819	25.0	64.4	0.69	1195	18.1	70.3	0.52
	15	Rotunda Dr On-Ramp	Weave		3799	22.8	47.9	0.62	3983	24.2	47.2	0.65	3957	24.0	47.2	0.65					4115	25.2	46.7	0.67	2819	24.4	46.8	0.67	1195	18.1	70.3	0.52
	16	I-94 EB60	Basic		2667	16.1	64.6	0.44	2795	16.4	64.6	0.45	2762	16.2	64.6	0.45					2889	17.0	64.6	0.47	1757	15.5	64.6	0.43	1195	18.1	70.3	0.52
	17	US 12 On-Ramp	Merge		3061	20.3	59.0	0.51	3208	20.8	58.9	0.52	3175	20.5	59.0	0.52					3316	21.5	58.9	0.54	1757	21.8	57.2	0.53	1195	18.1	70.3	0.52
	18	I-94 EB61	Basic		3061	18.3	63.9	0.51	3208	18.8	63.9	0.52	3175	18.6	63.9	0.52					3316	19.5	63.9	0.54	2180	19.2	63.6	0.53	1195	18.1	70.3	0.52
	19	Wyoming Ave On-Ramp	Merge		3158	20.7	59.1	0.52	3310	21.4	59.0	0.54	3277	21.2	59.1	0.53					3421	22.2	58.9	0.56	2180	22.8	57.2	0.55	1195	18.1	70.3	0.52
	20	Weir St On-Ramp	Merge		3613	23.9	58.6	0.60	3788	24.7	58.5	0.62	3742	24.4	58.5	0.61					3914	25.6	58.3	0.64	2278	27.7	56.4	0.67	1195	18.1	70.3	0.52
	21	I-94 EB62	Basic		3613	21.4	64.2	0.59	3788	22.2	64.2	0.61	3742	22.0	64.2	0.61					3914	23.0	64.1	0.64	2734	24.2	63.9	0.67	1195	18.1	70.3	0.52
	22	Lonyo St On-Ramp	Merge	Access	3811	26.5	55.3	0.64	3996	27.6	55.2	0.66	3950	27.3	55.2	0.66					4129	28.6	55.0	0.68	2734	32.0	53.3	0.74	1195	18.3	69.3	0.39
	23	I-94 EB63	Basic	Access	3811	24.0	60.3	0.63	3996	25.0	60.3	0.66	3950	24.7	60.3	0.65					4129	25.8	60.3	0.68	2976	28.0	60.1	0.74	1195	28.2	63.3	0.62
	24	Cecil On-Ramp	Weave	Access	3999	23.5	49.0	0.57	4193	24.7	48.5	0.59	4146	24.4	48.6	0.59					4332	25.7	48.2	0.61	2869	24.4	48.2	0.60	1302	20.1	68.8	0.42
	25	I-94 EB64	Basic		3507	22.3	60.2	0.59	3676	23.0	60.1	0.61	3631	22.7	60.1	0.60					3799	23.8	60.1	0.63	2507	23.5	60.1	0.62	1302	19.8	69.9	0.56
	26	Livernois On-Ramp	Weave		4024	24.0	48.7	0.58	4218	25.1	48.2	0.60	4171	24.7	48.3	0.59					4359	26.0	47.9	0.62	2507	24.6	47.9	0.60	1302	19.8	69.9	0.56
	27	I-94 EB65	Basic		3824	24.1	60.1	0.64	4008	25.1	60.1	0.66	3961	24.8	60.1	0.65					4143	25.9	60.1	0.68	2873	27.0	60.1	0.71	1302	19.8	69.9	0.56
	28	I-94 EB66	Basic	Access	3824	24.1	60.7	0.64	4008	25.1	60.7	0.66	3961	24.8	60.7	0.65					4143	25.9	60.7	0.68	2873	27.0	60.7	0.71	1302	20.1	68.8	0.45
	29	30th St On-Ramp	Merge	Access	3875	27.0	55.2	0.65	4062	28.2	55.0	0.67	4015	27.8	55.1	0.67					4199	29.2	54.8	0.70	2873	31.4	53.4	0.73	1302	43.1	57.8	0.91
	30	Grand Blvd On-Ramp	Weave	Access	3958	25.2	45.3	0.59	4149	26.6	44.7	0.62	4101	26.3	44.6	0.61					4289	27.7	44.3	0.64	2657	23.1	45.3	0.58	1574	24.8	67.4	0.50
	31	Jeffries Fwy Off-Ra	Diverge		2900	20.3	55.4	0.49	3039	20.9	55.4	0.50	2965	20.4	55.4	0.49					3143	21.6	55.4	0.52	1622	17.9	51.8	0.40	1574	24.2	69.1	0.68
	32	I-94 EB67	Basic		2636	17.2	58.6	0.45	2762	17.6	58.6	0.46	2687	17.1	58.6	0.45					2857	18.2	58.6	0.47	1330	12.7	57.6	0.33	1574	24.2	69.1	0.68
	33	Jeffries Fwy On-Ramp 1	Merge	Access	3405	24.3	54.6	0.58	3569	25.0	54.5	0.59	3486	24.4	54.6	0.58					3690	25.9	54.4	0.61	1330	18.7	54.0	0.44	1574	24.8	67.4	0.53
	34	Jeffries Fwy On-Ramp 2	Merge	Access	4627	33.8	53.0	0.78	4851	35.1	52.7	0.81	4731	34.1	52.9	0.79					5014	36.7	52.2	0.83	1765	32.7	52.6	0.75	1574	24.9	67.4	0.53
	35	Esdel Ford Service Dr On-Ramp 1	Merge	Access	4803	34.3	53.3	0.79	5035	36.2	52.9	0.83	4915	35.2	53.1	0.81					5204	37.6	52.7	0.86	3006	34.3	52.3	0.78	1573	24.8	67.4	0.53
	36	Esdel Ford Service Dr On-Ramp 2	Weave		4862	28.9	48.1	0.67	5096	30.6	47.7	0.71	4976	29.5	48.3	0.69					5267	31.8	47.4	0.73	3145	25.3	48.4	0.60	1573	24.8	67.4	0.51
	37	Trumbull Off-Ra	Diverge		4573	32.5	53.7	0.78	4793	34.1	53.6	0.81	4721	33.6	53.6	0.80					4954	35.3	53.5	0.84	2858	32.2	50.7	0.73	1573	24.2	69.1	0.68
	38	I-94 EB68	Basic		4246	25.2	63.7	0.69	4450	26.6	63.7	0.72	4397	26.2	63.7	0.71					4600	27.8	63.2	0.75	2598	22.9	63.4	0.63	1573	31.7	52.7	0.95

Speed (mph)
<20
20-30
30-40
40-50
50-60
>60

Eastbound - PM Peak Hour

					PM																											
					2023 Existing				2035 No-Build				2035 Build								2045 No-Build				2045 Build							
													General Purpose Lanes				Managed Lane								General Purpose Lanes				Managed Lane			
Facility	Segment	Segment Name	GP Lanes Segment Type	ML Segment Type	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C
1	1	Ann Arbor-Saline Off -Ramp	Diverge		2175	25.8	54.5	0.53	2098	22.1	54.4	0.51	2098	22.1	54.4	0.51					2166	22.8	54.4	0.53	2166	22.8	54.4	0.53				
	2	I-94 EB1	Basic		1649	17.0	65.4	0.41	1546	13.5	65.4	0.38	1536	13.4	65.4	0.37					1597	13.9	65.4	0.39	1592	14.1	65.4	0.39				
	3	Ann Arbor-Saline Road On-Ramp 1	Merge		1906	21.40	58.2	0.47	1815	17.50	59.0	0.44	1805	17.40	59.0	0.44					1875	18.10	58.9	0.45	1870	18.30	58.9	0.46				
	4	I-94 EB2	Basic		1906	19.1	64.2	0.47	1815	15.8	64.4	0.44	1805	15.7	64.4	0.44					1875	16.3	64.4	0.46	1870	16.4	64.4	0.46				
	5	Ann Arbor-Saline Road On-Ramp 2	Merge		2139	23.6	58.1	0.52	2060	11.9	65.6	0.33	2042	11.8	65.6	0.33					2128	12.3	65.6	0.34	2115	12.3	65.6	0.34				
	6	I-94 EB3	Basic		2139	21.1	65.0	0.52	2060	11.9	66.0	0.33	2042	11.8	66.0	0.33					2128	12.3	66.0	0.35	2115	12.3	66.0	0.34				
	7	State Street Off-Ramp	Diverge		2139	26.6	51.1	0.55	2060	11.9	66.0	0.33	2042	11.8	66.0	0.33					2128	12.3	66.0	0.35	2115	12.3	66.0	0.34				
	8	I-94 EB4	Basic		1630	58.5	16.1	0.40	1529	13.3	66.0	0.37	1511	13.1	66.0	0.37					1577	13.7	66.0	0.38	1564	13.7	66.0	0.38				
	9	State Street On-Ramp 1	Merge		2728	79.8	16.8	0.66	2681	26.0	57.9	0.64	2685	26.0	57.9	0.64					2766	26.9	57.7	0.66	2767	27.1	57.6	0.66				
	10	I-94 EB5	Basic		2728	92.5	14.6	0.65	2681	23.5	64.4	0.65	2685	23.5	64.4	0.65					2766	24.3	64.3	0.67	2767	23.8	64.3	0.66				
	11	State Street On-Ramp 2	Merge		3728	34.5	53.9	1.01	3730	22.1	63.6	0.68	3718	22.0	63.7	0.67					3849	23.0	63.0	0.70	3811	22.3	63.5	0.68				
	12	I-94 EB6	Basic		3728	29.4	61.7	0.88	3730	21.7	65.9	0.60	3718	21.6	65.9	0.60					3849	22.4	65.8	0.62	3811	21.5	66.0	0.60				
	13	US 23 Off-Ramp 1	Diverge		3728	34.4	52.7	0.89	3730	21.7	65.9	0.60	3718	21.6	65.9	0.60					3849	22.4	65.8	0.62	3811	21.5	66.0	0.60				
	14	I-94 EB7	Basic		2452	17.5	65.9	0.58	2391	20.8	66.0	0.58	2372	20.6	66.0	0.58					2466	21.5	66.0	0.60	2429	20.5	66.0	0.57				
	15	US 23 On-Ramp 1	Merge		3727	20.7	60.1	0.60	4100	24.9	65.1	0.69	4043	23.8	65.5	0.66					4175	25.9	64.7	0.71	4138	24.7	65.2	0.68				
	16	I-94 EB8	Basic		3727	18.6	64.8	0.59	4100	24.0	65.4	0.66	4043	23.6	65.5	0.66					4175	24.5	65.2	0.68	4138	23.7	65.5	0.66				
2	1	I-94 EB9	Basic	Access	4002	21.8	68.9	0.63	4199	23.6	68.1	0.67	3260	28.9	64.8	0.78	783	18.6	66.3	0.48	4335	24.5	67.6	0.69	3362	30.3	63.8	0.80	874	21.0	65.6	0.48
	2	W Michigan Ave Off-Ramp	Diverge	Access	4002	24.3	61.9	0.63	4199	26.0	61.9	0.67	2882	29.1	56.9	0.69	1161	17.8	69.5	0.43	4335	26.8	61.8	0.69	2941	29.7	56.8	0.70	1295	20.0	68.8	0.43
	3	I-94 EB10	Basic		3596	19.6	69.5	0.57	3773	20.8	69.3	0.60	2455	20.3	69.3	0.59	1161	17.5	70.5	0.56	3895	21.6	69.0	0.62	2500	20.7	69.3	0.60	1295	19.7	69.9	0.56
	4	W Michigan Ave On-Ramp 1	Merge		4132	24.7	63.0	0.65	4336	26.4	62.5	0.69	2455	27.9	60.7	0.71	1161	17.5	70.5	0.56	4476	27.3	62.3	0.71	2500	28.8	60.4	0.72	1295	19.7	69.9	0.56
	5	I-94 EB11	Basic		4132	22.6	68.6	0.65	4336	24.5	67.6	0.69	2985	25.6	66.9	0.71	1161	17.5	70.5	0.56	4476	25.6	67.0	0.71	3062	26.5	66.4	0.73	1295	19.7	69.9	0.56
	6	W Michigan Ave On-Ramp 2	Merge		4768	29.2	60.8	0.74	5003	31.6	60.0	0.79	2985	37.5	55.3	0.86	1161	17.5	70.5	0.56	5164	32.9	59.5	0.82	3062	38.7	54.7	0.88	1295	19.7	69.9	0.56
	7	I-94 EB12	Basic		4768	27.1	66.0	0.75	5003	29.9	64.1	0.80	3656	34.6	60.7	0.87	1161	17.5	70.5	0.56	5164	31.4	63.0	0.82	3731	35.9	59.7	0.89	1295	19.7	69.9	0.56
	8	I-94 EB13	Basic	Access	4768	27.1	66.0	0.75	5003	29.9	64.1	0.80	3656	34.6	60.7	0.87	1161	27.1	64.1	0.64	5164	31.4	63.0	0.82	3731	35.9	59.7	0.89	1295	39.3	59.9	0.81
	9	Whittaker Off-Ramp	Diverge		4768	29.8	60.0	0.75	5003	32.0	59.9	0.80	3641	38.2	54.7	0.87	1176	17.8	70.4	0.57	5164	33.0	59.8	0.82	3800	39.9	54.6	0.91	1226	18.6	70.2	0.53
	10	I-94 EB14	Basic		3643	19.8	69.0	0.58	3823	21.1	69.0	0.61	2432	20.1	68.5	0.58	1176	17.8	70.4	0.57	3946	21.9	68.9	0.63	2560	21.2	68.5	0.61	1226	18.6	70.2	0.53
	11	Hamilton On-Ramp	Merge		4028	24.1	63.0	0.63	4227	25.7	62.6	0.67	2432	25.8	61.0	0.65	1176	17.8	70.4	0.57	4363	26.6	62.4	0.69	2560	27.2	60.6	0.69	1226	18.6	70.2	0.53
	12	I-94 EB15	Basic		4028	21.9	68.6	0.63	4227	23.8	68.0	0.67	2758	23.2	68.2	0.66	1176	17.8	70.4	0.57	4363	24.7	67.5	0.70	2898	24.7	67.5	0.69	1226	18.6	70.2	0.53
	13	Whittaker On-Ramp	Merge		4345	26.4	61.7	0.68	4560	28.4	61.2	0.72	2758	30.3	58.3	0.74	1176	17.8	70.4	0.57	4707	29.5	60.9	0.75	2898	32.1	57.6	0.77	1226	18.6	70.2	0.53
	14	I-94 EB16	Basic		4345	24.1	67.8	0.68	4560	26.2	66.6	0.73	3092	26.8	66.2	0.74	1176	17.8	70.4	0.57	4707	27.4	65.8	0.75	3242	28.7	64.9	0.78	1226	18.6	70.2	0.53
	15	I-94 EB17	Basic	Access	4345	24.1	67.8	0.68	4560	26.2	66.6	0.73	3092	26.8	66.2	0.74	1176	18.3	75.4	0.46	4707	27.4	65.8	0.75	3242	28.7	64.9	0.78	1226	18.0	75.4	0.40
	16	US 12 Off-Ramp	Diverge	Access	4345	27.5	59.2	0.68	4560	29.5	59.1	0.73	2974	31.3	54.5	0.71	1294	20.0	68.8	0.48	4707	30.5	59.0	0.75	3189	33.6	54.4	0.76	1279	19.8	68.9	0.42
	17	I-94 EB18	Basic		3117	17.0	69.9	0.50	3272	17.9	69.9	0.52	1685	13.8	69.8	0.40	1294	19.7	69.9	0.63	3377	18.5	69.9	0.54	1858	15.2	69.8	0.44	1279	19.4	70.0	0.55
	18	I-94 EB19	Basic	Access	3117	17.0	70.0	0.50	3272	17.9	70.0	0.52	1685	13.8	70.0	0.40	1294	28.3	64.1	0.67	3377	18.5	69.9	0.54	1858	15.2	70.0	0.44	1279	28.6	63.8	0.60
	19	I-94 EB20	Basic		3117	17.0	70.0	0.50	3272	17.9	70.0	0.52	2038	16.7	70.0	0.49	941	14.0	71.4	0.46	3377	18.5	69.9	0.54	2241	18.4	69.9	0.54	896	13.3	71.6	0.39
	20	Wiard On-Ramp	Weave		3471	17.8	55.4	0.49	3643	18.9	54.8	0.51	2038	16.5	54.9	0.49	941	14.0	71.4	0.46	3760	19.7	54.3	0.53	2241	18.1	54.5	0.51	896	13.3	71.6	0.39
	21	I-94 EB21	Basic		2800	15.3	69.6	0.45	2939	16.1	69.6	0.47	1691	13.9	69.6	0.40	941	14.0	71.4	0.46	3033	16.6	69.6	0.48	1901	15.6	69.6	0.45	896	13.3	71.6	0.39
	22	Rawsonville On-Ramp	Merge		3372	20.3	63.3	0.53	3539	21.3	63.1	0.56	1691	21.1	61.5	0.54	941	14.0	71.4	0.46	3653	22.1	63.0	0.58	1901	23.6	61.0	0.60	896	13.3	71.6	0.39
	23	I-94 EB22	Basic		3372	18.5	69.9	0.54	3539	19.4	69.7	0.56	2284	18.8	69.9	0.55	941	14.0	71.4	0.46	3653	20.1	69.5	0.58	2529	21.0	69.3	0.60	896	13.3	71.6	0.39
	24	I-94 EB23	Basic	Access	3372	18.5	69.9	0.54	3539	19.4	69.7	0.56	2284	18.8	69.9	0.55	941	16.2	69.0	0.37	3653	20.1	69.5	0.58	2529	21.0	69.3	0.60	896	14.0	75.4	0.31
	25	I-94 EB24	Basic		3372	18.5	69.9	0.54	3539	19.4	69.7	0.56	2177	17.9	70.0	0.52	1048	15.7	70.9	0.51	3653	20.1	69.5	0.58	2436	20.1	69.5	0.58	989	14.8	71.2	0.43
	26	Belleville Rd Off-Ramp	Diverge		3372	20.7	62.4	0.54	3539	21.7	62.3	0.56	2177	21.8	57.2	0.52	1048	15.7	70.9	0.51	3653	22.4	62.4	0.58	2436	24.5	57.1	0.58	989	14.8	71.2	0.43
	27	I-94 EB25	Basic		3171	17.3	69.5	0.51	3328	18.2	69.5	0.53	1875	15.4	69.2	0.45	1048	15.7	70.9	0.51	3435	18.8	69.5	0.55	2124	17.4	69.2	0.51	989	14.8	71.2	0.43
	28	Belleville Rd On-Ramp 1	Merge		3460	20.7	63.7	0.55	3631	21.8	63.5	0.58	1875	19.5	62.2	0.51	1048	15.7	70.9	0.51	3748	22.6	63.3	0.60	2124	22.1	61.8	0.57	989	14.8	71.2	0.43
	29	I-94 EB26	Basic		3460	19.0	68.8	0.55	3631	20.0	68.8	0.58	2122	17.4	68.6	0.51	1048	15.7	70.9	0.51	3748	20.7	68.8	0.60	2388	19.7	68.5	0.57	989	14.8	71.2	0.43
	30	Belleville Rd On-Ramp 2	Merge		3712	22.5	63.0	0.59	3896	23.7	62.7	0.62	2122	22.0	61.2	0.56	1048	15.7	70.9	0.51	4021	24.5	62.6	0.64	2388	25.0	60.6	0.63	989	14.8	71.2	0.43
	31	I-94 EB27	Basic		3712	20.5	69.1	0.59	3896	21.6	69.0	0.62	2357	19.4	68.9	0.56	1048	15.7	70.9	0.51	4021	22.4	68.7	0.64	2653	22.1	68.8	0.63	989	14.8	71.2	0.43
	32	I-94 EB28	Basic	Access	3712	20.5	69.4	0.59	3896	21.6	69.0	0.62	2357	19.4	69.7	0.56	1048	20.7	66.7	0.50	4021	22.4	68.7	0.64	2653	22.1	68.8	0.63	989	21.9	65.8	0.48
	33	I-94 EB29	Basic		3712	20.5	69.4	0.59	3896	21.6	69.0	0.62	2318	19.1	69.8	0.55	1087	16.3	70.8	0.53	4021	22.4	68.7	0.64	2579	21.4	69.1	0.62	1063	16.0	70.9	0.46
	34	Haggerty Rd Off-Ramp	Diverge		3712	22.9	61.9	0.59	3896	24.1	61.9	0.62	2318	23.4	56.9	0.55	1087	16.3	70.8	0.53	4021	24.9	61.8	0.64	2579	26.0	56.9	0.62	1063	16.0	70.9	0.46
	35	I-94 EB30	Basic		3318	18.2	69.2	0.53	3483	19.1	69.2	0.56	1931	15.8	68.6	0.46	1087	16.3	70.8	0.53	3595	19.8	69.2	0.57	2167	17.8	68.6	0.52	1063	16.0	70.9	0.46
	36	Haggerty Rd On-Ramp 1	Merge		3471	21.0	63.3	0.55	3644	22.1	63.0	0.58	1931	19.4	61.6	0.50	1087	16.3	70.8	0.53	3761	22.9	62.9	0.60	2167	21.9	61.2	0.56	1063	16.0	70.9	0.46
	37	I-94 EB31	Basic		3471	19.0	68.2	0.55	3644	20.0	68.1	0.58	2090	17.1	67.7	0.50	1087	16.3	70.8	0.53	3761	20.8	68.1	0.60	2336	19.2	67.6	0.56	1063	16.0	70.9	0.46
	38	Haggerty Rd On-Ramp 2	Merge	Access	3607	21.9	63.1	0.57	3786	23.1	62.8	0.60	2090	21.1	61.2	0.52	1087	23.6	65.3	0.58	3908	23.8	62.7	0.62	2336	23.3	60.8	0.58	1063	25.3	64.3	0.56
	39	I-94 EB32	Basic	Access	3607	19.8	68.9	0.58	3786	20.9	68.8	0.60	2514	20.8	68.5	0.60	824	15.5	68.4	0.40	3908	21.7	68.8	0.62	2671	22.3	68.5	0.64	865	17.2	67.5	0.55
3	1	I-94 EB33	Basic		3608	21.2	65.0	0.59	3785	22.3	65.0	0.62	2644	23.4	64.8	0.65	693	10.3	71.9	0.26	3908	23.0	64.9	0.64	2821	25.2	64.3	0.69	715	10.6	71.7	0.24
	2	US 275 Off-Ramp 1	Diverge		3608	23.9	57.8	0.59	3785	25.1	57.8	0.62	2644	28.3	53.6	0.65	693	10.2	72.5	0.34	3908	25.9	57.7	0.64	2821	30.2	53.6	0.69	715	10.5	72.4	0.31
	3	I-94 EB34	Basic		2941	17.3	63.4	0.48	3085	18.2	63.4	0.50	1978	17.5	62.4	0.48	693	10.2	72.5	0.34	3185	18.8	63.3	0.52	2155	19.0	62.4	0.53	715	10.5	72.4	0.31
	4	US 275 Off Ramp 2	Diverge		2941	19.3	58.3	0.48	3085	20.2	58.3	0.50	1978	21.0	54.1	0.48	693	10.2	72.5	0.34	3185	20.9	58.3	0.52	2155	22.9	54.1	0.53	715	10.5	72.4	0.31
	5	I-94 EB35	Basic		2518	14.8	64.6	0.41	2641	15.6	64.6	0.43	1520	13.4	64.4	0.37	693	10.2	72.5	0.34	2727	16.0	64.6	0.44	1702	15.0	64.4	0.42	715	10.5	72.4	0.31
	6	US 275 On-Ramp	Merge	Access	3789	17.9	60.7	0.46	3975	18.9	60.5	0.49	1520	18.2	60.0	0.48	693	14.2	68.4	0.36	4104	19.5	60.4	0.50	1702	19.7	59.8	0.52	715	16.4	67.2	0.38
	7	I-94 EB36	Basic	Access	3789	16.6	64.1	0.46	3975	17.6	64.1	0.49	2538	14.9	64.0	0.41	1010	16.5	69.2	0.42	4104	18.1	64.1	0.50	2646	15.6	63.9	0.43	1149	21.2	66.7	0.47
	8	Wayne Rd Off-Ramp	Diverge	Access	3789	16.6	64.8	0.46	3975	17.6	64.8	0.49	2472	14.6	64.8	0.40	1076	16.4	69.9	0.40	4104	18.1	64.8	0.50	2466	14.5	64.8	0.40	1329	20.6	68.6	0.44
	9	I-94 EB37	Basic		3684	21.7	65.0	0.60	3865	22.8	64.9	0.63	2389	21.1	65.0	0.58	1076	16.2	70.8	0.52	3991	23.6	64.8	0.65	2379	21.0	65.0	0.58	1329	20.3	69.7	0.58
	10	Wayne Rd On-Ramp 1	Merge		3919	25.6	58.6	0.64	4111	26.9	58.4	0.67	2389	26.4	57.0	0.64	1076	16.2	70.8	0.52	4245	27.9	58.2	0.69	2379	26.4	57.0	0.64	1329	20.3	69.7	0.58
	11	Wayne Rd On-Ramp 2	Weave		4093	20.5	57.3	0.55	4293	21.6	56.9	0.57	2629	17.9	58.5	0.49	1076	16.2	70.8	0.52	4433	22.4	56.7	0.59	2626	18.1	58.2	0.49	1329	20.3	69.7	0.58
	12	I-94 EB38	Basic		4050	23.7	64.7	0.65	4248	25.3	64.3	0.69	2691	23.9	64.7	0.66	1076	16.2	70.8	0.52	4386	26.3	63.9	0.71	2708	24.0	64.7	0.66	1329	20.3	69.7	0.58
	13	I-94 EB39	Basic	Access	4050	23.7	64.7	0.65	4248	25.3	64.3	0.69	2691	23.9	64.7	0.66	1076	17.9	68.7	0.45	4386	26.3	63.9	0.71	2708	24.0	64.7	0.66	1329	22.7	67.1	0.50
	14	Vining Rd On-Ramp	Weave	Access	4452	28.5	44.4	0.81	4670	30.7	43.6	0.85	2691	29.7	43.0	0.94	1076	23.6	65.5	0.55	4821	32.1	43.0	0.88	2714	30.8	42.2	1.00	1323	30.3	63.4	0.62
	15	I-94 EB40	Basic		3152	18.4	65.0	0.51	3306	19.5	65.0	0.54	1921	17.0	65.0	0.47	1178	17.8	70.4	0.57	3413	20.1	65.0	0.56	2029	17.9	65.0	0.50	1293	19.7	69.9	0.56
	16	Auxiliary On-Ramp	Merge		4789	28.8	62.7	0.77	5023	22.0	65.0	0.61	1921	21.1	65.0	0.58	1178	17.8	70.4	0.57	5186	22.7	64.9	0.63	2029	22.0	65.0	0.61	1293	19.7	69.9	0.56
	17	I-94 EB41	Basic	Access	4789	29.0	62.6	0.77	5023	22.2	65.0	0.61	3629	21.4	65.0	0.59	1178	29.1	63.2	0.70	5186	22.9	64.9	0.63	3783	22.3	65.0	0.62	1293	34.0	61.6	0.72
	18	Ecorse Rd Off-Ramp	Diverge		4789	31.0	58.5	0.77	5023	22.2	65.0	0.61	3434	20.2	65.0	0.56	1373	21.1	69.4	0.67	5186	22.9	64.9	0.63	3588	21.1	65.0	0.58	1488	22.9	69.1	0.64
	19	I-94 EB42	Basic		4406	26.1	64.0	0.71	4621	28.0	63.1	0.75	3015	27.2	63.5	0.74	1373	21.1	69.4	0.67	4771	29.3	62.4	0.78	3184	29.3	62.4	0.78	1488	22.9	69.1	0.64
	20	Ecorse Rd On-Ramp	Merge		4940	33.2	56.4	0.80	5181	34.9	56.8	0.84	3015	38.7	54.1	0.89	1373	21.1	69.4	0.67	5349	36.3	56.3	0.87	3184	41.8	52.7	0.94	1488	22.9	69.1	0.64
	21	I-94 EB43	Basic		4940	30.3	61.8	0.80	5181	32.9	60.2	0.84	3655	36.1	58.1	0.89	1373	21.1	69.4	0.67	5349	34.6	59.1	0.87	3842	39.5	55.8	0.94	1488	22.9	69.1	0.64
	22	I-94 EB44	Basic	Access	4940	30.3	61.8	0.80	5181	32.9	60.2	0.84	3655	36.1	58.1	0.89	1373	32.5	62.4	0.76	5349	34.6	59.1	0.87	3842	39.5	55.8	0.94	1488	35.4	61.7	0.73
	23	Telegraph Rd Off-Ramp	Diverge		4940	32.3	57.9	0.80	5181	34.3	57.8	0.84	3917	41.9	53.7	0.96	1111	16.7	70.7	0.54	5349	35.5	57.7	0.87	3951	42.2	53.7	0.96	1379	21.1	69.5	0.60
	24	I-94 EB45	Basic		4302	25.7	64.1	0.70	4512	27.2	63.5	0.73	3287	30.6	61.7	0.80	1111	16.7	70.7	0.54	4659	28.3	62.9	0.76	3287	30.6	61.7	0.80	1379	21.1	69.5	0.60
	25	Telegraph Rd On-Ramp	Merge		5573	26.7	59.2	0.67	5846	28.2	58.9	0.71	3287	29.9	58.0	0.74	1111	16.7	70.7	0.54	6036	29.3	58.6	0.73	3287	30.4	57.9	0.75	1379	21.1	69.5	0.60
	26	I-94 EB46	Basic		5573	24.3	64.4	0.67	5846	26.3	63.9	0.71	4598	27.8	63.2	0.75	1111	16.7	70.7	0.54	6036	27.3	63.4	0.74	4659	28.3	62.9	0.76	1379	21.1	69.5	0.60
	27	I-94 EB47	Basic	Access	5573	24.3	64.6	0.67	5846	26.3	63.9	0.71	4598	27.8	63.2	0.75	1111	36.5	60.1	0.89	6036	27.3	63.4	0.74	4659	28.3	62.9	0.76	1379	45.6	57.7	0.94
	28	Pelham Rd Off-Ramp	Diverge	Access	5573	28.2	55.7	0.67	5846	30.2	55.5	0.71	4829	34.9	52.9	0.80	880	13.2	70.9	0.32	6036	31.3	55.3	0.74	4772	34.8	52.5	0.80	1266	19.6	68.9	0.42
	29	I-94 EB48	Basic		2884	17.0	64.9	0.47	3025	17.8	64.9	0.49	2079	18.4	64.9	0.51	880	13.1	71.7	0.43	3124	18.4	64.9	0.51	1915	16.9	64.9	0.47	1266	19.2	70.0	0.55
	30	Pelham Rd On-Ramp	Merge		3066	19.7	59.5	0.50	3216	20.7	59.4	0.52	2079	21.6	57.8	0.53	880	13.1	71.7	0.43	3321	21.4	59.3	0.54	1915	20.3	58.0	0.50	1266	19.2	70.0	0.55
	31	I-94 EB49	Basic		3066	18.0	64.6	0.50	3216	18.9	64.6	0.52	2176	19.2	64.4	0.53	880	13.1	71.7	0.43	3321	19.6	64.6	0.54	2056	18.2	64.5	0.50	1266	19.2	70.0	0.55
	32	Southfield Rd On-Ramp	Merge		3264	20.8	60.0	0.53	3424	21.8	59.9	0.56	2176	23.3	58.7	0.58	880	13.1	71.7	0.43	3536	22.6	59.8	0.57	2056	22.3	58.8	0.56	1266	19.2	70.0	0.55
	33	I-94 EB50	Basic		3264	19.2	64.1	0.53	3424	20.2	64.1	0.56	2391	21.1	63.9	0.58	880	13.2	70.8	0.53	3536	20.8	64.1	0.58	2298	20.3	63.9	0.56	1266	21.7	62.1	0.77
4	1	I-94 EB51	Basic		3265	19.2	65.0	0.53	3425	20.3	65.0	0.56	2390	21.3	65.0	0.59	880	13.1	71.7	0.43	3536	21.0	65.0	0.58	2300	20.5	65.0	0.57	1265	19.2	70.0	0.55
	2	I-94 EB52	Basic	Access	3265	19.2	65.0	0.53	3425	20.3	65.0	0.56	2390	21.3	65.0	0.59	880	19.3	66.6	0.48	3536	21.0	65.0	0.58	2300	20.5	65.0	0.57	1265	28.0	64.1	0.59
	3	I-94 EB53	Basic		3265	19.2	65.0	0.53	3425	20.3	65.0	0.56	2588	23.1	64.9	0.64	682	10.0	72.5	0.33	3536	21.0	65.0	0.58	2493	22.2	65.0	0.61	1072	16.1	70.8	0.46
	4	Enterprise Dr Off-Ramp	Diverge		3265	21.2	58.9	0.53	3425	22.4	58.9	0.56	2588	27.4	54.6	0.64	682	10.0	72.5	0.33	3536	23.2	58.9	0.58	2493	26.4	54.6	0.61	1072	16.1	70.8	0.46
	5	I-94 EB54	Basic		3041	17.9	64.3	0.50	3190	18.9	64.3	0.52	2344	20.9	63.8	0.58	682	10.0	72.5	0.33	3293	19.6	64.3	0.54	2272	20.2	63.8	0.56	1072	16.1	70.8	0.46
	6	Enterprise Dr On-Ramp 1	Merge		3154	20.1	59.9	0.51	3309	21.3	59.8	0.54	2344	24.5	58.1	0.60	682	10.0	72.5	0.33	3416	22.0	59.7	0.56	2272	23.8	58.2	0.59	1072	16.1	70.8	0.46
	7	I-94 EB55	Basic		3154	18.6	64.2	0.51	3309	19.6	64.2	0.54	2463	21.9	63.9	0.61	682	10.0	72.5	0.33	3416	20.3	64.2	0.56	2395	21.3	65.0	0.59	1072	16.1	70.8	0.46
	8	Enterprise Dr On-Ramp 2	Merge	Access	3403	21.7	59.9	0.55	3570	23.0	59.7	0.58	2463	26.8	58.0	0.66	682	24.5	62.9	0.65	3685	23.8	59.6	0.60	2395	26.4	58.1	0.66	1072	22.8	65.6	0.50
	9	I-94 EB56	Basic	Access	3403	20.0	63.6	0.55	3570	21.2	63.6	0.59	3459	33.4	59.9	0.85	0	1.0	68.0	0.05	3685	21.9	63.6	0.61	2574	23.0	63.2	0.63	1152	18.2	68.9	0.41
	10	Greenfield Rd Off-Ramp	Diverge	Access	3403	22.1	58.9	0.55	3570	23.4	58.9	0.59	3377	22.1	58.9	0.55					3685	24.1	58.9	0.61	2573	27.3	54.6	0.63	1153	17.7	69.5	0.38
	11	I-94 EB57	Basic		3168	18.6	64.9	0.52	3323	19.7	64.9	0.55	3131	18.6	64.9	0.51					3430	20.4	64.9	0.56	2335	20.8	64.8	0.58	1153	17.4	70.5	0.50
	12	Schaefer Rd On-Ramp	Merge	Access	3228	20.9	59.2	0.53	3386	22.2	58.9	0.56	3194	20.8	59.2	0.52					3495	23.0	58.8	0.57	2335	24.3	57.1	0.59	1153	17.7	69.5	0.38
	13	I-94 EB58	Basic	Access	3228	19.0	64.3	0.53	3386	20.1	64.2	0.56	3194	19.0	64.3	0.52					3495	20.8	64.2	0.57	2383	21.2	64.0	0.59	1153	24.9	64.8	0.55
	14	I-94 EB59	Basic		3228	19.0	64.9	0.53	3386	20.1	64.9	0.56	3194	19.0	64.9	0.52					3495	20.8	64.9	0.57	2405	21.4	64.9	0.59	1131	17.0	70.6	0.49
	15	Rotunda Dr On-Ramp	Weave		3419	18.8	51.7	0.49	3587	20.1	51.1	0.51	3405	18.9	51.4	0.49					3702	20.9	50.7	0.53	2405	20.0	50.3	0.53	1131	17.0	70.6	0.49
	16	I-94 EB60	Basic		2688	16.0	64.7	0.44	2820	16.8	64.7	0.46	2652	15.8	64.7	0.44					2910	17.3	64.7	0.48	1804	16.1	64.7	0.44	1131	17.0	70.6	0.49
	17	US 12 On-Ramp	Merge		3095	20.1	59.0	0.51	3247	21.2	58.9	0.53	3079	20.0	59.1	0.50					3351	21.9	58.8	0.55	1804	22.7	57.1	0.55	1131	17.0	70.6	0.49
	18	I-94 EB61	Basic		3095	18.4	63.9	0.51	3247	19.3	63.9	0.53	3079	18.3	63.9	0.51					3351	19.9	63.9	0.55	2241	20.0	63.5	0.55	1131	17.0	70.6	0.49
	19	Wyoming Ave On-Ramp	Merge		3201	20.9	59.1	0.52	3358	22.0	58.9	0.55	3190	20.8	59.1	0.52					3465	22.7	58.9	0.57	2241	23.7	57.1	0.58	1131	17.0	70.6	0.49
	20	Weir St On-Ramp	Merge		3758	24.4	58.5	0.61	3942	26.0	58.2	0.64	3767	24.7	58.5	0.61					4068	26.9	58.0	0.66	2336	30.0	55.9	0.71	1131	17.0	70.6	0.49
	21	I-94 EB62	Basic		3758	22.1	64.2	0.61	3942	23.5	64.1	0.65	3767	22.4	64.2	0.62					4068	24.3	64.1	0.67	2898	26.3	63.8	0.71	1131	17.0	70.6	0.49
	22	Lonyo St On-Ramp	Merge	Access	3918	27.1	55.2	0.65	4110	28.8	55.0	0.69	3930	27.4	55.2	0.66					4241	29.8	54.8	0.71	2898	33.8	52.9	0.78	1131	17.3	69.6	0.37
	23	I-94 EB63	Basic	Access	3918	24.6	60.3	0.65	4110	26.0	60.3	0.69	3930	24.9	60.3	0.66					4241	26.9	60.3	0.71	3092	29.8	60.0	0.78	1131	27.3	63.4	0.60
	24	Cecil On-Ramp	Weave	Access	4044	22.4	51.7	0.56	4242	23.9	51.2	0.59	4063	22.7	51.5	0.56					4378	24.8	50.9	0.61	2996	23.6	51.1	0.59	1227	18.9	69.1	0.40
	25	I-94 EB64	Basic		3757	23.6	60.3	0.62	3941	24.9	60.3	0.66	3770	23.9	60.3	0.63					4068	25.7	60.3	0.68	2831	26.9	60.3	0.71	1227	18.6	70.2	0.53
	26	Livernois On-Ramp	Weave		4029	22.5	51.1	0.56	4227	24.1	50.6	0.59	4058	23.0	50.8	0.57					4363	25.0	50.3	0.61	2831	24.4	50.0	0.60	1227	18.6	70.2	0.53
	27	I-94 EB65	Basic		3829	24.0	60.3	0.63	4017	25.4	60.2	0.67	3849	24.4	60.3	0.64					4147	26.2	60.2	0.69	2948	28.2	60.2	0.74	1227	18.6	70.2	0.53
	28	I-94 EB66	Basic	Access	3829	24.0	60.7	0.63	4017	25.4	60.7	0.67	3849	24.4	60.7	0.64					4147	26.2	60.7	0.69	2948	28.2	60.6	0.74	1227	18.9	69.1	0.42
	29	30th St On-Ramp	Merge	Access	3881	26.9	55.2	0.65	4072	28.6	54.9	0.68	3904	27.3	55.1	0.65					4204	29.6	54.8	0.71	2948	32.8	53.1	0.76	1227	38.8	59.1	0.84
	30	Grand Blvd On-Ramp	Weave	Access	3982	26.6	42.4	0.74	4178	28.5	41.6	0.78	4005	27.0	42.1	0.77					4313	29.8	41.2	0.81	2885	27.3	41.9	0.80	1347	20.9	68.5	0.43
	31	Jeffries Fwy Off-Ra	Diverge		2467	17.4	55.6	0.42	2589	18.0	55.6	0.43	2442	17.0	55.5	0.41					2672	18.5	55.6	0.45	1395	15.5	52.0	0.35	1347	20.6	69.7	0.58
	32	I-94 EB67	Basic		2335	15.3	58.7	0.40	2451	15.8	58.7	0.41	2303	14.8	58.7	0.39					2529	16.3	58.7	0.42	1246	12.0	57.6	0.31	1347	20.6	69.7	0.58
	33	Jeffries Fwy On-Ramp 1	Merge	Access	2595	18.3	55.4	0.44	2724	18.9	55.3	0.46	2589	17.9	55.4	0.43					2811	19.6	55.2	0.47	1246	13.3	54.2	0.31	1347	20.9	68.5	0.45
	34	Jeffries Fwy On-Ramp 2	Merge	Access	3393	23.8	54.9	0.57	3561	24.9	54.7	0.59	3406	23.7	54.9	0.57					3675	25.7	54.6	0.61	1246	21.9	54.0	0.52	1347	20.9	68.5	0.45
	35	Esdel Ford Service Dr On-Ramp 1	Merge	Access	3493	25.0	54.7	0.60	3666	25.9	54.6	0.61	3511	24.7	54.8	0.59					3783	26.7	54.5	0.63	2054	23.1	53.9	0.54	1346	20.9	68.5	0.46
	36	Esdel Ford Service Dr On-Ramp 2	Weave		3530	20.2	49.9	0.49	3705	21.6	49.5	0.52	3550	20.6	49.7	0.50					3823	22.4	49.2	0.54	2161	17.2	49.3	0.43	1346	20.9	68.5	0.43
	37	Trumbull Off-Ra	Diverge		3210	23.0	53.8	0.55	3369	24.2	53.8	0.58	3214	23.1	53.8	0.55					3477	24.9	53.8	0.60	1753	20.1	50.6	0.45	1346	20.5	69.7	0.58
	38	I-94 EB68	Basic		2827	16.9	63.7	0.47	2967	17.6	63.7	0.49	2811	16.7	63.7	0.46					3062	18.2	63.7	0.50	1393	12.4	63.4	0.34	1346	23.9	59.8	0.82

Speed (mph)
<20
20-30
30-40
40-50
50-60
>60

Westbound - AM Peak Hour

					AM																											
					2023 Existing				2035 No-Build				2035 Build								2045 No-Build				2045 Build							
													General Purpose Lanes				Managed Lane								General Purpose Lanes				Managed Lane			
Facility	Segment	Segment Name	GP Lanes Segment Type	ML Segment Type	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C
	5	US 96 Off-Ramp	Diverge	Access	3784	23.7	56.4	0.57	3970	25.2	56.3	0.60	3983	26.8	53.0	0.62					4098	26.0	56.2	0.62	3017	32.4	49.9	0.70	1068	16.3	69.9	0.35
	6	I-94 WB60	Basic		2525	13.4	64.8	0.38	2649	14.3	64.8	0.40	2659	14.4	64.4	0.40					2734	14.8	64.8	0.41	1753	14.2	64.0	0.40	1068	16.0	70.9	0.46
	7	Esdel Ford Service Dr On-Ramp	Merge		2615	15.2	60.6	0.39	2743	16.3	60.4	0.42	2756	16.3	60.4	0.42					2831	16.8	60.4	0.43	1753	16.9	58.4	0.42	1068	16.0	70.9	0.46
	8	US 96 On-Ramp	Weave		3715	20.5	49.1	0.61	3897	22.1	48.4	0.64	3936	22.4	48.2	0.65					4022	23.0	48.0	0.66	1837	24.6	47.2	0.70	1068	16.0	70.9	0.46
	9	I-94 WB61	Basic		3537	18.8	62.9	0.53	3711	20.1	62.7	0.56	3750	20.3	62.7	0.57					3830	20.7	62.7	0.58	2979	24.5	62.5	0.68	1068	16.0	70.9	0.46
	10	I-94 WB62	Basic	Access	3537	18.8	65.5	0.53	3711	20.1	65.5	0.56	3750	20.3	65.5	0.57					3830	20.7	65.5	0.58	2979	24.5	65.2	0.68	1068	25.4	64.4	0.55
	11	I-94 WB63	Basic		3537	18.8	65.9	0.53	3711	20.1	65.9	0.56	3750	20.3	65.9	0.57					3830	20.7	65.9	0.58	3069	25.3	64.9	0.70	978	14.6	71.2	0.42
	12	Livernois Off-Ramp	Weave		3691	17.2	57.1	0.46	3873	18.5	56.6	0.49	3913	18.7	56.5	0.50					3997	19.2	56.3	0.51	3069	21.0	55.6	0.56	978	14.6	71.2	0.42
	13	I-94 WB64	Basic		3433	18.4	65.4	0.51	3602	19.5	65.4	0.55	3642	19.7	65.4	0.55					3717	20.1	65.4	0.56	2923	23.9	65.3	0.66	978	14.6	71.2	0.42
	14	Livernois On-Ramp	Weave	Access	3701	17.2	57.6	0.47	3884	18.3	57.2	0.49	3900	18.3	57.5	0.49					4008	19.0	56.9	0.51	2923	20.5	56.6	0.55	978	20.1	66.7	0.44
	15	I-94 WB65	Basic	Access	3616	19.4	65.5	0.54	3795	20.5	65.5	0.57	3811	20.6	65.5	0.58					3916	21.2	65.5	0.59	3192	26.6	64.3	0.72	904	17.5	67.8	0.39
	16	Lonyo Street Off-Ramp	Diverge	Access	3616	21.5	59.6	0.54	3795	22.7	59.6	0.58	3811	22.8	59.6	0.58					3916	23.5	59.6	0.60	3278	31.8	55.2	0.75	818	12.2	71.2	0.27
	17	I-94 WB66	Basic		3421	18.3	64.2	0.51	3591	19.4	64.2	0.54	3606	19.5	64.2	0.55					3705	20.0	64.2	0.56	3064	25.3	62.9	0.70	818	12.1	71.9	0.35
	18	Addison Street Off-Ramp	Diverge		3421	20.6	58.7	0.52	3591	21.9	58.7	0.55	3606	21.9	58.7	0.55					3705	22.6	58.6	0.56	3064	30.2	54.3	0.70	818	12.1	71.9	0.35
	19	I-94 WB67	Basic		2892	15.7	65.1	0.44	3037	16.4	65.1	0.46	3053	16.5	65.1	0.46					3133	17.0	65.1	0.47	2501	20.3	64.5	0.57	818	12.1	71.9	0.35
	20	US-12 Off-Ramp	Diverge		2892	17.6	58.8	0.44	3037	18.4	58.9	0.46	3053	18.5	58.9	0.46					3133	19.0	58.9	0.48	2501	24.5	54.7	0.57	818	12.1	71.9	0.35
4	21	I-94 WB68	Basic		2488	13.6	65.7	0.38	2613	14.1	65.7	0.40	2629	14.2	65.7	0.40					2695	14.6	65.7	0.41	2099	17.0	65.6	0.48	818	12.1	71.9	0.35
	22	US-12 On-Ramp	Merge	Access	3078	18.8	59.7	0.48	3232	19.7	59.5	0.50	3253	19.8	59.5	0.50					3334	20.3	59.4	0.51	2099	26.0	56.9	0.63	818	17.3	67.3	0.39
	23	I-94 WB69	Basic	Access	3078	16.8	64.9	0.47	3232	17.5	64.9	0.49	3253	17.6	64.9	0.49					3334	18.0	64.8	0.50	2697	21.9	64.4	0.61	841	14.7	69.2	0.34
	24	Rotunda Drive Off-Ramp	Diverge	Access	3078	19.1	58.2	0.47	3232	19.8	58.2	0.49	3253	20.0	58.2	0.49					3334	20.2	58.9	0.51	2687	26.4	54.5	0.61	851	12.7	71.1	0.28
	25	I-94 WB70	Basic		2638	14.2	64.8	0.40	2770	15.0	64.8	0.42	2791	15.1	64.8	0.42					2857	15.5	64.9	0.43	2179	17.7	64.3	0.49	851	12.6	71.8	0.37
	26	I-94 WB71	Basic	Access	2638	14.2	65.9	0.40	2770	15.0	65.9	0.42	2791	15.1	65.9	0.42					2857	15.5	65.9	0.43	2179	17.7	65.8	0.49	851	13.5	70.4	0.29
	27	Schaefer Road Off-Ramp	Diverge	Access	2638	15.6	59.8	0.40	2770	16.5	59.9	0.42	2791	16.7	59.8	0.42					2857	17.1	59.8	0.43	2233	21.6	55.5	0.50	797	11.9	71.3	0.26
	28	I-94 WB72	Basic		2578	14.0	65.1	0.39	2707	14.7	65.2	0.41	2721	14.7	65.1	0.41					2792	15.1	65.1	0.42	2152	17.5	64.6	0.49	797	11.8	72.0	0.35
	29	Schaefer Road On-Ramp	Merge		2764	16.4	61.0	0.43	2902	17.3	60.9	0.45	2914	17.3	60.9	0.45					2993	17.8	60.8	0.46	2152	21.8	58.9	0.55	797	11.8	72.0	0.35
	30	I-94 WB73	Basic		2764	15.0	65.4	0.42	2902	15.7	65.4	0.44	2914	15.8	65.4	0.44					2993	16.2	65.4	0.45	2356	19.1	65.2	0.53	797	11.8	72.0	0.35
	31	Greenfield Road On-Ramp	Merge	Access	2937	17.4	60.4	0.45	3084	18.4	60.2	0.47	2912	29.5	56.6	0.70	0	5.9	66.7	0.22	3181	18.9	60.2	0.49	2356	23.8	57.8	0.58	797	15.2	68.6	0.34
	32	I-94 WB74	Basic	Access	2937	15.7	65.3	0.44	3084	16.7	65.3	0.47	2723	22.1	64.8	0.62	388	10.0	68.6	0.28	3181	17.2	65.3	0.48	2643	21.5	64.9	0.60	713	12.8	69.6	0.29
	33	I-94 WB75	Basic		2937	15.7	65.7	0.44	3084	16.7	65.7	0.47	2468	20.0	65.6	0.56	643	9.4	72.7	0.31	3181	17.2	65.7	0.48	2719	22.1	65.6	0.62	637	9.3	72.7	0.28
	34	Oakwood Blvd Off-Ramp 1	Diverge		2937	17.6	59.1	0.44	3084	18.6	59.2	0.47	2468	24.1	54.9	0.56	643	9.4	72.7	0.31	3181	19.2	59.1	0.48	2719	26.5	54.9	0.62	637	9.3	72.7	0.28
	35	Oakwood Blvd Off-Ramp 2	Diverge		2603	15.6	59.2	0.39	2733	16.5	59.1	0.42	2135	20.8	55.1	0.49	643	9.4	72.7	0.31	2819	17.0	59.2	0.43	2376	23.1	55.0	0.54	637	9.3	72.7	0.28
	36	I-94 WB76	Basic		2330	12.7	65.1	0.36	2447	13.2	65.1	0.37	1861	15.1	64.6	0.42	643	9.4	72.7	0.31	2524	13.7	65.1	0.38	2081	16.9	64.6	0.47	637	9.3	72.7	0.28
	37	Oakwood Blvd On-Ramp	Merge	Access	2402	14.3	60.9	0.37	2538	15.0	60.8	0.39	1861	19.0	58.7	0.48	643	11.6	70.0	0.30	2618	15.4	60.8	0.40	2081	20.8	58.5	0.53	637	11.5	70.1	0.26
	38	I-94 WB77	Basic	Access	2402	13.3	65.6	0.37	2538	13.7	65.6	0.38	1970	16.0	65.4	0.45	736	13.2	69.6	0.33	2618	14.2	65.6	0.40	2214	18.0	65.4	0.50	679	12.3	69.8	0.39
	1	I-94 WB36	Basic		2418	13.2	66.0	0.37	2537	13.6	66.0	0.38	1932	15.5	66.0	0.43	773	11.8	71.1	0.31	2619	14.0	66.0	0.39	2237	18.0	66.0	0.50	655	10.0	71.7	0.23
	2	I-94 WB37	Basic		2418	13.2	66.0	0.37	2537	13.6	66.0	0.38	1927	15.5	66.0	0.43	778	11.5	72.1	0.38	2619	14.0	66.0	0.39	2240	18.0	66.0	0.50	652	9.6	72.6	0.28
	3	US-39 Off Ramp	Diverge		2418	14.2	61.3	0.37	2537	14.6	61.3	0.38	1927	18.5	55.2	0.44	778	11.5	72.1	0.38	2619	15.1	61.2	0.39	2240	21.6	55.1	0.51	652	9.6	72.6	0.28
	4	I-94 WB38	Basic		2201	12.0	65.8	0.34	2310	12.4	65.8	0.35	1701	13.7	65.6	0.38	778	11.5	72.1	0.38	2384	12.8	65.8	0.36	1962	15.8	65.6	0.44	652	9.6	72.6	0.28
	5	US-39 On-Ramp 1	Merge		3490	21.8	59.2	0.55	3662	22.6	59.0	0.57	1701	29.5	56.8	0.71	778	11.5	72.1	0.38	3780	23.4	58.8	0.59	1962	32.8	55.8	0.78	652	9.6	72.6	0.28
	6	I-94 WB39	Basic		3490	18.9	64.4	0.53	3662	19.6	64.3	0.55	3043	24.8	63.8	0.68	778	11.5	72.1	0.38	3780	20.3	64.3	0.57	3337	27.8	63.6	0.75	652	9.6	72.6	0.28
	7	US-39 On-Ramp 2	Merge		4275	17.6	65.6	0.49	4486	18.3	65.6	0.51	3043	20.7	65.5	0.58	778	11.5	72.1	0.38	4630	18.9	65.6	0.53	3337	22.5	65.4	0.63	652	9.6	72.6	0.28
	8	I-94 WB40	Basic		4275	17.0	65.9	0.48	4486	18.0	65.9	0.50	3790	20.3	65.9	0.57	778	11.5	72.1	0.38	4630	18.6	65.9	0.52	4114	22.1	65.9	0.62	652	9.6	72.6	0.28
	9	Pelham Road On-Ramp	Merge	Access	4682	20.3	61.0	0.53	4913	21.5	60.9	0.56	3790	25.2	59.4	0.64	778	16.7	67.5	0.42	5071	22.2	60.7	0.57	4114	27.5	58.9	0.70	652	16.4	66.7	0.38
	10	I-94 WB41	Basic	Access	4682	18.7	65.7	0.52	4913	19.8	65.7	0.55	4121	22.1	65.6	0.62	872	19.4	66.5	0.49	5071	20.4	65.6	0.57	4329	23.4	65.5	0.65	882	22.1	65.1	0.49
	11	I-94 WB42	Basic		4682	14.8	66.0	0.41	4913	15.8	66.0	0.44	4052	16.3	66.0	0.46	941	14.0	71.4	0.46	5071	16.3	66.0	0.46	4132	16.6	66.0	0.46	1079	16.2	70.8	0.47
	12	Telegraph Road Off-Ramp	Diverge		4682	14.1	62.2	0.41	4913	15.2	61.9	0.44	4052	17.4	61.9	0.46	941	14.0	71.4	0.46	5071	15.7	61.9	0.46	4132	17.8	61.6	0.47	1079	16.2	70.8	0.47
	13	I-94 WB43	Basic		3690	19.4	66.0	0.54	3872	20.8	66.0	0.58	3009	24.5	65.2	0.68	941	14.0	71.4	0.46	3997	21.4	66.0	0.60	3026	24.6	65.2	0.68	1079	16.2	70.8	0.47
	14	Telegraph Road On-Ramp	Merge		4478	26.8	58.6	0.67	4698	28.8	58.2	0.71	3009	38.0	53.7	0.87	941	14.0	71.4	0.46	4850	29.9	57.9	0.74	3026	39.1	53.2	0.89	1079	16.2	70.8	0.47
	15	I-94 WB44	Basic		4478	23.7	64.8	0.66	4698	25.7	64.7	0.70	3808	33.6	60.1	0.86	941	14.0	71.4	0.46	4850	26.7	64.3	0.73	3882	34.8	59.3	0.87	1079	16.2	70.8	0.47
	16	I-94 WB45	Basic	Access	4478	23.7	65.5	0.66	4698	25.7	64.8	0.70	3808	33.6	60.1	0.86	941	27.4	63.1	0.68	4850	26.7	64.3	0.73	3882	34.8	59.3	0.87	1079	33.2	61.3	0.72
	17	I-94 WB46	Basic		4478	23.7	65.5	0.66	4698	25.7	64.8	0.70	3338	27.8	63.7	0.75	1411	21.7	69.2	0.68	4850	26.7	64.3	0.73	3435	28.9	63.1	0.77	1526	23.5	69.1	0.66
3	18	Ecorse Road Off-Ramp	Diverge		4478	26.6	59.0	0.67	4698	28.2	58.9	0.71	3338	32.5	54.6	0.75	1411	21.7	69.2	0.68	4850	29.1	58.9	0.73	3435	33.5	54.5	0.78	1526	23.5	69.1	0.66
	19	I-94 WB47	Basic		4019	21.1	65.0	0.59	4217	22.7	65.7	0.63	2878	23.3	65.6	0.65	1411	21.7	69.2	0.68	4353	23.5	65.6	0.65	2964	24.1	65.4	0.67	1526	23.5	69.1	0.66
	20	Ecorse Road On-Ramp	Merge	Access	4232	24.7	59.9	0.63	4441	18.0	66.0	0.50	2878	16.5	66.0	0.46	1411	32.6	62.4	0.77	4584	18.5	66.0	0.52	2964	17.0	66.0	0.48	1526	39.8	59.9	0.82
	21	I-94 WB48	Basic	Access	4232	22.3	64.6	0.62	4441	17.9	66.0	0.50	3351	18.0	66.0	0.50	1119	19.2	68.0	0.48	4584	18.4	66.0	0.52	3388	18.2	66.0	0.51	1280	22.9	66.6	0.50
	22	I-94 WB49	Basic		4232	22.3	65.4	0.62	4441	17.9	66.0	0.50	3419	18.3	66.0	0.51	1051	16.0	70.0	0.40	4584	18.4	66.0	0.52	3364	18.5	66.0	0.52	1218	18.5	70.2	0.53
	23	Auxiliary Off	Diverge		4232	16.9	66.0	0.47	4441	17.9	66.0	0.50	3419	18.3	66.0	0.51	1051	15.8	70.9	0.51	4584	18.4	66.0	0.52	3450	18.5	66.0	0.52	1218	18.5	70.2	0.53
	24	I-94 WB50	Basic		2735	14.4	66.0	0.40	2871	15.4	66.0	0.43	1838	14.8	66.0	0.41	1051	15.8	70.9	0.51	2963	15.9	66.0	0.44	1792	14.4	66.0	0.40	1218	18.5	70.2	0.53
	25	Auxiliary On	Weave		3725	19.8	50.6	0.68	3909	21.4	50.0	0.71	1838	20.3	51.2	0.68	1051	15.8	70.9	0.51	4035	22.3	49.5	0.74	1792	20.2	51.1	0.71	1218	18.5	70.2	0.53
	26	I-94 WB51	Basic		3295	17.3	65.7	0.48	3458	18.5	65.7	0.52	2372	19.1	65.7	0.53	1051	15.8	70.9	0.51	3570	19.1	65.7	0.54	2335	18.8	65.7	0.53	1218	18.5	70.2	0.53
	27	Vining Road On-Ramp	Weave		3341	15.0	58.4	0.40	3507	16.2	57.9	0.43	2372	14.7	58.6	0.40	1051	15.8	70.9	0.51	3620	16.7	57.8	0.44	2335	14.6	58.6	0.39	1218	18.5	70.2	0.53
	28	I-94 WB52	Basic		3004	15.8	65.7	0.44	3153	16.9	65.7	0.47	2091	16.8	65.7	0.47	1051	15.8	70.9	0.51	3255	17.5	65.7	0.49	2067	16.6	65.7	0.47	1218	18.5	70.2	0.53
	29	Wayne Road On-Ramp 1	Merge	Access	3073	12.1	66.0	0.34	3226	13.0	66.0	0.36	2091	11.7	66.0	0.33	1051	16.0	70.0	0.39	3330	13.4	66.0	0.38	2067	11.6	66.0	0.32	1218	18.7	69.2	0.41
	30	Wayne Road On-Ramp 2	Merge	Access	3121	13.1	62.2	0.35	3277	14.0	62.0	0.37	2175	13.3	61.1	0.34	1051	23.8	65.0	0.59	3382	14.5	61.9	0.38	2156	13.3	61.1	0.34	1218	28.4	63.5	0.61
	31	I-94 WB53	Basic	Access	3121	12.3	65.2	0.34	3277	13.2	65.1	0.37	2687	14.4	64.9	0.40	647	11.2	70.4	0.29	3382	13.6	65.1	0.38	2757	14.8	64.9	0.41	742	13.0	69.6	0.30
	32	Auxiliary Off Lane	Diverge		3121	12.5	65.9	0.35	3277	13.2	65.9	0.37	2779	14.9	65.9	0.42	555	8.1	73.0	0.27	3382	13.6	65.9	0.38	2868	15.4	65.9	0.43	631	9.2	72.7	0.27
	33	I-94 WB54	Basic		2203	11.6	66.0	0.32	2314	12.4	66.0	0.35	1800	14.5	66.0	0.40	555	8.1	73.0	0.27	2388	12.8	66.0	0.36	1850	14.9	66.0	0.42	631	9.2	72.7	0.27
	34	I-94 WB55	Basic	Access	2203	11.6	66.0	0.32	2314	12.4	66.0	0.35	1800	14.5	66.0	0.40	555	8.1	72.6	0.21	2388	12.8	66.0	0.36	1850	14.9	66.0	0.42	631	9.3	72.2	0.22
	35	Auxiliary Lane On	Merge	Access	3030	18.3	60.0	0.47	3092	18.9	59.9	0.48	1800	24.6	57.8	0.61	555	16.0	66.3	0.43	3295	20.3	59.7	0.52	1850	25.8	57.6	0.64	631	27.0	61.8	0.65
	36	I-94 WB56	Basic	Access	3030	16.7	64.3	0.47	3092	16.6	64.2	0.46	2204	17.7	63.6	0.50	922	14.5	69.9	0.37	3295	17.7	64.2	0.49	2007	16.2	63.6	0.45	1305	21.0	67.8	0.46
	1	I-94 WB7	Basic		2947	14.8	70.0	0.46	3092	15.8	70.0	0.46	2192	16.8	70.0	0.49	935	16.2	68.6	0.41	3192	16.3	70.0	0.48	1990	15.2	70.0	0.44	1322	24.2	65.7	0.53
	2	Haggerty Rd Off-Ramp	Diverge		2947	16.7	62.1	0.46	3092	17.8	62.0	0.46	2104	19.7	57.2	0.47	1023	15.3	71.0	0.50	3192	18.4	62.0	0.48	1873	17.5	57.2	0.42	1439	22.1	69.3	0.62
	3	I-94 WB8	Basic		2683	13.7	69.3	0.41	2815	14.4	69.3	0.42	1827	14.0	68.9	0.41	1023	15.3	71.0	0.50	2906	14.8	69.3	0.43	1587	12.1	68.9	0.35	1439	22.1	69.3	0.62
	4	Haggerty Rd On-Ramp 1	Merge		2913	16.3	64.0	0.44	3056	17.2	63.9	0.46	1827	17.8	62.0	0.46	1023	15.3	71.0	0.50	3155	17.7	63.8	0.47	1587	15.7	62.2	0.41	1439	22.1	69.3	0.62
	5	I-94 WB9	Basic		2913	14.9	68.7	0.44	3056	15.6	68.7	0.45	2049	15.7	68.2	0.46	1023	15.3	71.0	0.50	3155	16.1	68.6	0.47	1813	13.9	68.3	0.40	1439	22.1	69.3	0.62
	6	Haggerty Rd On-Ramp 2	Merge		3133	17.6	63.9	0.48	3287	18.5	63.9	0.49	2049	20.0	61.9	0.52	1023	15.3	71.0	0.50	3394	19.1	63.7	0.51	1813	17.7	62.2	0.46	1439	22.1	69.3	0.62
	7	I-94 WB10	Basic		3133	16.0	69.6	0.48	3287	16.8	69.6	0.49	2294	17.6	69.5	0.51	1023	15.3	71.0	0.50	3394	17.3	69.6	0.51	2043	15.6	69.5	0.46	1439	22.1	69.3	0.62
	8	I-94 WB11	Basic	Access	3133	16.0	70.0	0.48	3287	16.8	70.0	0.49	2294	17.6	70.0	0.51	1023	22.8	65.5	0.56	3394	17.3	70.0	0.51	2043	15.6	70.0	0.46	1439	31.0	63.4	0.64
	9	I-94 WB12	Basic		3133	16.0	70.0	0.48	3287	16.8	70.0	0.49	2471	19.0	69.8	0.55	846	12.5	71.8	0.41	3394	17.3	70.0	0.51	2275	17.4	70.0	0.51	1207	18.3	70.3	0.52
	10	Belleville Road Off-Ramp	Diverge		3133	18.5	60.6	0.48	3287	19.4	60.4	0.49	2471	23.7	55.8	0.55	846	12.5	71.8	0.41	3394	20.1	60.4	0.51	2275	21.9	55.7	0.51	1207	18.3	70.3	0.52
	11	I-94 WB13	Basic		2415	12.3	69.2	0.37	2534	12.9	69.2	0.38	1718	13.1	68.8	0.38	846	12.5	71.8	0.41	2616	13.3	69.2	0.39	1490	11.4	68.8	0.33	1207	18.3	70.3	0.52
	12	Belleville Road On-Ramp 1	Merge		2573	14.2	64.3	0.39	2700	15.0	64.3	0.40	1718	16.3	62.1	0.42	846	12.5	71.8	0.41	2787	15.5	64.2	0.41	1490	14.4	62.3	0.37	1207	18.3	70.3	0.52
	13	I-94 WB14	Basic		2573	12.9	68.8	0.40	2700	13.8	68.8	0.40	1888	14.5	68.3	0.42	846	12.5	71.8	0.41	2787	14.2	68.8	0.41	1675	12.8	68.4	0.37	1207	18.3	70.3	0.52
	14	Belleville Road On-Ramp 2	Merge		2888	15.9	63.8	0.44	3030	17.0	63.8	0.45	1888	19.6	61.5	0.50	846	12.5	71.8	0.41	3128	17.6	63.7	0.47	1675	18.1	61.8	0.47	1207	18.3	70.3	0.52
	15	I-94 WB15	Basic		2888	14.5	70.0	0.44	3030	15.5	70.0	0.45	2240	17.1	70.0	0.50	846	12.5	71.8	0.41	3128	16.0	70.0	0.47	2071	15.9	70.0	0.46	1207	18.3	70.3	0.52
	16	I-94 WB16	Basic	Access	2888	14.5	70.0	0.44	3030	15.5	70.0	0.45	2240	17.1	70.0	0.50	846	19.0	66.6	0.47	3128	16.0	70.0	0.47	2071	15.9	70.0	0.46	1207	26.8	64.4	0.57
	17	I-94 WB17	Basic		2888	14.5	70.0	0.44	3030	15.5	70.0	0.45	2269	17.4	70.0	0.51	817	12.1	71.9	0.40	3128	16.0	70.0	0.47	2234	17.1	70.0	0.50	1044	15.6	71.0	0.45
	18	Rawsonville Off-Ramp	Diverge		2888	16.5	61.6	0.44	3030	17.6	61.5	0.45	2269	21.4	56.8	0.51	817	12.1	71.9	0.40	3128	18.2	61.5	0.47	2234	21.1	56.7	0.50	1044	15.6	71.0	0.45
	19	I-94 WB18	Basic		2484	12.4	69.0	0.38	2606	13.3	69.0	0.39	1845	14.1	68.4	0.41	817	12.1	71.9	0.40	2691	13.7	69.0	0.40	1782	13.6	68.4	0.40	1044	15.6	71.0	0.45
	20	Rawsonville On-Ramp	Weave		3115	13.9	58.7	0.42	3268	15.3	58.2	0.43	1845	15.8	58.3	0.46	817	12.1	71.9	0.40	3375	15.9	57.9	0.44	1782	15.4	58.3	0.45	1044	15.6	71.0	0.45
	21	I-94 WB19	Basic		2943	14.9	69.9	0.45	3087	15.8	69.8	0.46	2341	17.9	69.8	0.52	817	12.1	71.9	0.40	3188	16.3	69.8	0.47	2286	17.5	69.8	0.51	1044	15.6	71.0	0.45
	22	I-94 WB20	Basic	Access	2943	14.9	70.0	0.45	3087	15.8	70.0	0.46	2341	17.9	70.0	0.52	817	16.8	67.7	0.42	3188	16.3	70.0	0.47	2286	17.5	70.0	0.51	1044	23.4	65.3	0.51
	23	I-94 WB21	Basic		2943	14.9	70.0	0.45	3087	15.8	70.0	0.46	2089	16.0	70.0	0.47	1069	16.0	70.9	0.52	3188	16.3	70.0	0.47	1897	14.5	70.0	0.42	1433	22.0	69.3	0.62
2	24	US-12 On-Ramp	Merge		4461	25.5	61.5	0.67	4680	27.5	61.0	0.70	2089	34.1	58.2	0.83	1069	16.0	70.9	0.52	4833	28.7	60.4	0.72	1897	32.4	59.0	0.80	1433	22.0	69.3	0.62
	25	I-94 WB22	Basic		4461	23.3	67.9	0.67	4680	24.8	67.4	0.70	3683	31.3	63.1	0.82	1069	16.0	70.9	0.52	4833	25.8	66.8	0.72	3543	29.5	64.4	0.79	1433	22.0	69.3	0.62
	26	I-94 WB23	Basic	Access	4461	23.3	67.9	0.67	4680	24.8	67.4	0.70	3683	31.3	63.1	0.82	1069	27.1	63.7	0.66	4833	25.8	66.8	0.72	3543	29.5	64.4	0.79	1433	36.1	61.2	0.75
	27	South Huron Off-Ramp	Diverge		4461	25.9	61.0	0.67	4680	27.4	60.9	0.70	3655	35.1	55.8	0.82	1097	16.5	70.7	0.53	4833	28.3	60.9	0.72	3560	34.2	55.7	0.79	1416	21.7	69.4	0.61
	28	I-94 WB24	Basic		3719	19.0	69.3	0.56	3901	20.0	69.2	0.58	2849	22.2	68.8	0.64	1097	16.5	70.7	0.53	4029	20.8	69.2	0.60	2714	21.0	68.8	0.61	1416	21.7	69.4	0.61
	29	South Huron On-Ramp 1	Merge		4216	23.9	62.7	0.63	4423	25.3	62.5	0.66	2849	30.5	59.3	0.75	1097	16.5	70.7	0.53	4568	26.2	62.3	0.68	2714	29.2	59.8	0.73	1416	21.7	69.4	0.61
	30	I-94 WB25	Basic		4216	21.8	68.6	0.63	4423	23.1	68.3	0.66	3369	27.4	65.8	0.75	1097	16.5	70.7	0.53	4568	24.1	67.8	0.68	3253	26.2	66.6	0.73	1416	21.7	69.4	0.61
	31	South Huron On-Ramp 2	Merge		4524	25.9	61.7	0.68	4746	27.6	61.5	0.71	3369	35.2	56.4	0.83	1097	16.5	70.7	0.53	4901	28.6	61.2	0.73	3253	33.6	57.1	0.80	1416	21.7	69.4	0.61
	32	I-94 WB26	Basic		4524	23.9	67.7	0.67	4746	25.2	67.2	0.71	3700	31.5	62.9	0.83	1097	16.5	70.7	0.53	4901	26.3	66.5	0.73	3583	30.0	64.0	0.80	1416	21.7	69.4	0.61
	33	I-94 WB27	Basic	Access	4524	23.9	67.7	0.67	4746	25.2	67.2	0.71	3700	31.5	62.9	0.83	1097	25.2	64.7	0.61	4901	26.3	66.5	0.73	3583	30.0	64.0	0.80	1416	32.7	62.6	0.68
	34	I-94 WB28	Basic		4524	23.9	67.7	0.67	4746	25.2	67.2	0.71	3769	32.5	62.2	0.84	1028	15.4	71.0	0.50	4901	26.3	66.5	0.73	3651	30.9	63.4	0.82	1348	20.6	69.7	0.58
	35	West Michigan Off-Ramp 1	Diverge		4524	26.4	61.3	0.67	4746	27.7	61.2	0.71	3769	35.9	56.2	0.84	1028	15.4	71.0	0.50	4901	28.6	61.2	0.73	3651	34.8	56.2	0.82	1348	20.6	69.7	0.58
	36	I-94 WB29	Basic		3895	19.9	68.1	0.59	4086	21.1	68.1	0.61	3111	24.7	67.1	0.69	1028	15.4	71.0	0.50	4219	21.9	68.1	0.63	2998	23.6	67.1	0.67	1348	20.6	69.7	0.58
	37	West Michigan Off-Ramp 2	Diverge		3895	22.4	61.6	0.59	4086	23.7	61.6	0.61	3111	29.4	56.7	0.69	1028	15.4	71.0	0.50	4219	24.5	61.6	0.63	2998	28.4	56.6	0.67	1348	20.6	69.7	0.58
	38	I-94 WB30	Basic		3394	17.3	69.4	0.51	3560	18.2	69.4	0.53	2617	20.2	69.1	0.58	1028	15.4	71.0	0.50	3676	18.8	69.4	0.55	2474	19.0	69.1	0.55	1348	20.6	69.7	0.58
	39	West Michigan On-Ramp	Merge	Access	3706	21.0	62.9	0.56	3888	22.2	62.8	0.58	2617	26.3	59.9	0.66	1028	42.6	57.6	1.05	4014	22.9	62.6	0.60	2474	14.3	69.9	0.42	1348	35.1	61.1	0.74
	40	I-94 WB31	Basic	Access	3706	18.8	69.4	0.56	3888	20.0	69.4	0.58	4214	39.6	57.0	0.94	0	10.6	65.2	0.39	4014	20.7	69.4	0.60	3470	17.7	70.0	0.52	680	22.9	63.7	0.76
	41	I-94 WB32	Basic		3706	18.8	69.7	0.56	3888	20.0	69.6	0.58	3963	21.3	69.1	0.61					4014	20.7	69.4	0.60	4149	22.4	68.7	0.64				
	42	US-23 Off-Ramp 1	Diverge		3706	22.1	59.0	0.80	3888	23.1	60.2	0.83	3963	24.5	60.1	0.88					4014	23.9	60.1	0.85	4149	25.7	60.0	0.92				
	43	I-94 WB33	Basic		2478	24.1	53.7	0.79	2600	24.1	57.8	0.77	2647	26.8	54.9	0.82					2684	25.6	56.2	0.80	2782	29.8	51.9	0.86				
	44	US-23 On-Ramp 1	Weave		3382	44.3	24.7	0.87	3549	25.7	51.3	0.91	3602	26.7	51.2	0.90					3663	26.8	50.8	0.94	3777	28.5	50.4	0.95				
	45	I-94 WB34	Basic		2878	73.9	18.5	0.81	3020	29.4	55.1	0.84	3088	33.4	51.4	0.90					3117	31.4	53.2	0.87	3229	37.4	48.1	0.94				
	46	US-23 On-Ramp 2	Merge		3582	29.9	58.1	1.01	3758	21.3	63.1	0.70	3815	22.9	61.5	0.73					3879	22.4	62.1	0.72	4009	24.9	59.5	0.77				
	47	I-94 WB35	Basic		3582	25.8	66.0	0.83	3758	19.2	68.7	0.56	3815	20.4	68.3	0.59					3879	19.9	68.5	0.58	4009	21.6	68.0	0.62				
	1	I-94 WB1	Basic		3444	29.8	62.5	0.79	3613	20.3	66.0	0.57	3669	20.6	66.0	0.58					3731	21.0	66.0	0.59	3820	21.5	66.0	0.60				
	2	State St Off-Ramp	Diverge		3444	35.9	52.0	0.79	3613	20.3	66.0	0.57	3669	20.6	66.0	0.58					3731	21.0	66.0	0.59	3820	21.5	66.0	0.60				
	3	I-94 WB2	Basic		1850	15.6	64.7	0.44	1941	16.4	66.0	0.46	1984	16.7	66.0	0.47					2005	16.9	66.0	0.47	2081	17.5	66.0	0.49				
	4	State St On-Ramp 1	Merge		2036	19.2	58.8	0.48	2136	20.2	58.7	0.50	2179	20.6	58.7	0.51					2206	20.9	58.6	0.52	2282	21.6	58.5	0.54				
	5	I-94 WB3	Basic		2036	17.5	64.4	0.49	2136	18.0	64.4	0.50	2179	18.4	64.4	0.51					2206	18.6	64.4	0.52	2282	19.2	64.4	0.54				
1	6	State St On-Ramp 2	Merge		2258	22.1	57.8	0.54	2369	22.8	57.7	0.56	2413	23.3	57.6	0.57					2446	23.6	57.6	0.58	2517	24.4	57.4	0.60				
	7	I-94 WB4	Basic		2258	19.2	64.3	0.54	2369	20.0	64.3	0.56	2413	20.3	64.3	0.57					2446	20.6	64.3	0.58	2517	21.2	64.3	0.59				
	8	Ann Arbor/Saline Off-Ramp	Diverge		2258	23.3	54.4	0.54	2369	24.2	54.4	0.56	2413	24.7	54.4	0.57					2446	25.1	54.3	0.58	2517	25.8	54.4	0.60				
	9	I-94 WB5	Basic		1719	14.9	65.9	0.42	1803	15.2	65.9	0.43	1849	15.6	65.9	0.44					1862	15.7	65.9	0.44	1942	16.4	65.9	0.46				
	10	Ann Arbor/Saline On-Ramp	Merge		2000	19.4	58.5	0.48	2098	19.9	58.4	0.50	2140	20.4	58.4	0.51					2152	20.5	58.4	0.51	2245	21.4	58.3	0.53				
	11	I-94 WB6	Basic		2000	17.3	64.6	0.48	2098	17.7	64.6	0.49	2140	18.0	64.6	0.50					2152	18.2	64.6	0.51	2245	18.9	64.5	0.53				

Speed (mph)
<20
20-30
30-40
40-50
50-60
>60

Westbound - PM Peak Hour

					PM																											
					2023 Existing				2035 No-Build				2035 Build								2045 No-Build				2045 Build							
													General Purpose Lanes				Managed Lane								General Purpose Lanes				Managed Lane			
Facility	Segment	Segment Name	GP Lanes Segment Type	ML Segment Type	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C	Volume	Density	Speed	V/C
	5	US 96 Off-Ramp	Diverge	Access	4488	31.2	52.5	0.71	4709	31.5	55.6	0.75	4732	31.6	55.7	0.75					4862	32.6	55.5	0.77	3599	42.0	52.1	0.86	1266	19.6	68.9	0.42
	6	I-94 WB60	Basic		2844	16.0	64.3	0.45	2984	16.8	64.7	0.47	3060	17.3	64.7	0.48					3081	17.4	64.7	0.49	2061	20.3	64.3	0.49	1266	19.2	70.0	0.55
	7	Esdel Ford Service Dr On-Ramp	Merge		3025	18.7	60.1	0.48	3174	19.7	59.9	0.50	3251	20.2	59.9	0.51					3277	20.4	59.9	0.52	2061	25.0	57.4	0.53	1266	19.2	70.0	0.55
	8	US 96 On-Ramp	Weave		4310	25.5	47.6	0.66	4522	26.8	47.0	0.69	4580	27.1	47.1	0.68					4669	28.0	46.5	0.71	2241	32.0	46.0	0.72	1266	19.2	70.0	0.55
	9	I-94 WB61	Basic		4170	23.4	62.6	0.65	4375	25.1	62.5	0.69	4435	25.5	62.5	0.70					4517	26.1	62.4	0.71	3504	36.9	57.8	0.83	1266	19.2	70.0	0.55
	10	I-94 WB62	Basic	Access	4170	23.4	65.5	0.65	4375	25.1	65.0	0.69	4435	25.5	64.8	0.70					4517	26.1	64.6	0.71	3504	36.9	57.8	0.83	1266	35.6	60.9	0.75
	11	I-94 WB63	Basic		4170	23.4	65.6	0.65	4375	25.1	65.0	0.69	4435	25.5	64.8	0.70					4517	26.1	64.6	0.71	3545	36.9	57.8	0.84	1225	18.6	70.2	0.53
	12	Livernois Off-Ramp	Weave		4325	21.4	55.8	0.56	4538	22.9	55.3	0.60	4599	23.3	55.2	0.60					4685	23.8	54.9	0.62	3545	27.6	53.8	0.66	1225	18.6	70.2	0.53
	13	I-94 WB64	Basic		4006	22.4	65.3	0.63	4204	23.9	65.3	0.66	4263	24.3	65.3	0.67					4340	24.8	65.1	0.69	3366	34.1	59.8	0.80	1225	18.6	70.2	0.53
	14	Livernois On-Ramp	Weave	Access	4311	21.6	55.3	0.56	4524	23.0	54.8	0.60	4566	23.2	54.8	0.60					4670	24.0	54.4	0.62	3366	26.8	54.2	0.64	1225	26.0	64.9	0.55
	15	I-94 WB65	Basic	Access	4091	23.0	65.4	0.64	4293	24.5	65.2	0.68	4336	24.8	65.1	0.68					4432	25.4	64.9	0.70	3476	34.4	59.6	0.82	1138	22.6	66.1	0.49
	16	Lonyo Street Off-Ramp	Diverge	Access	4091	25.3	59.5	0.64	4293	26.9	59.5	0.68	4336	27.1	59.5	0.69					4432	27.7	59.5	0.70	3580	37.3	55.0	0.85	1034	15.7	70.1	0.34
	17	I-94 WB66	Basic		3833	21.4	64.1	0.60	4023	22.8	64.1	0.64	4057	23.0	64.1	0.64					4153	23.6	64.1	0.66	3259	30.0	62.4	0.77	1034	15.5	71.0	0.45
	18	Addison Street Off-Ramp	Diverge		3833	24.2	58.4	0.60	4023	25.7	58.3	0.64	4057	25.9	58.3	0.64					4153	26.5	58.3	0.66	3259	34.7	53.9	0.77	1034	15.5	71.0	0.45
	19	I-94 WB67	Basic		3106	17.5	65.1	0.49	3260	18.4	65.0	0.51	3292	18.6	65.0	0.52					3366	19.0	65.0	0.53	2490	22.0	64.5	0.59	1034	15.5	71.0	0.45
	20	US-12 Off-Ramp	Diverge		3106	19.6	58.9	0.49	3260	20.6	58.9	0.52	3292	20.8	58.9	0.52					3366	21.3	58.9	0.53	2490	26.5	54.6	0.59	1034	15.5	71.0	0.45
4	21	I-94 WB68	Basic		2649	15.1	65.7	0.42	2781	15.7	65.7	0.44	2813	15.9	65.7	0.44					2871	16.2	65.7	0.45	2021	18.0	65.6	0.48	1034	15.5	71.0	0.45
	22	US-12 On-Ramp	Merge	Access	3428	21.6	59.3	0.55	3598	22.7	59.0	0.57	3633	22.8	59.1	0.57					3715	23.4	58.9	0.59	2021	30.6	55.9	0.70	1034	22.0	65.9	0.49
	23	I-94 WB69	Basic	Access	3428	19.3	64.8	0.54	3598	20.3	64.8	0.57	3633	20.5	64.8	0.57					3715	21.0	64.7	0.59	2966	26.6	64.2	0.70	1032	18.4	67.9	0.41
	24	Rotunda Drive Off-Ramp	Diverge	Access	3428	21.6	59.2	0.54	3598	22.7	59.1	0.57	3633	22.9	59.1	0.58					3715	23.4	59.1	0.59	2967	31.3	54.6	0.71	1031	15.5	71.0	0.45
	25	I-94 WB70	Basic		3029	16.9	65.0	0.47	3179	17.9	65.0	0.50	3215	18.2	65.0	0.51					3282	18.5	65.0	0.52	2513	22.1	64.3	0.59	1031	15.5	71.0	0.45
	26	I-94 WB71	Basic	Access	3029	16.9	65.9	0.47	3179	17.9	65.9	0.50	3215	18.2	65.9	0.51					3282	18.5	65.9	0.52	2513	22.1	65.8	0.59	1031	16.4	69.5	0.35
	27	Schaefer Road Off-Ramp	Diverge	Access	3029	18.6	59.9	0.48	3179	19.8	59.9	0.50	3215	20.0	59.9	0.51					3282	20.4	59.9	0.52	2557	26.3	55.5	0.59	987	14.9	70.4	0.32
	28	I-94 WB72	Basic		2948	16.6	65.2	0.47	3094	17.5	65.2	0.49	3114	17.6	65.2	0.49					3194	18.0	65.2	0.50	2454	21.2	64.6	0.58	987	14.7	71.2	0.43
	29	Schaefer Road On-Ramp	Merge		3121	19.2	60.7	0.50	3276	20.2	60.5	0.52	3318	20.5	60.5	0.53					3382	20.9	60.4	0.54	2454	26.1	58.2	0.63	987	14.7	71.2	0.43
	30	I-94 WB73	Basic		3121	17.4	65.4	0.49	3276	18.5	65.4	0.52	3318	18.7	65.4	0.52					3382	19.1	65.4	0.53	2662	23.1	65.1	0.63	987	14.7	71.2	0.43
	31	Greenfield Road On-Ramp	Merge	Access	3406	20.9	59.9	0.53	3575	22.3	59.6	0.57	3318	37.6	53.9	0.86	0	0.0	72.2	0.00	3691	23.0	59.5	0.58	2662	29.8	56.5	0.71	987	21.1	66.1	0.47
	32	I-94 WB74	Basic	Access	3406	19.0	65.2	0.53	3575	20.2	65.2	0.56	3632	33.9	59.9	0.86	0	14.8	62.4	0.53	3691	20.8	65.2	0.58	2993	26.1	64.6	0.71	963	18.8	67.2	0.42
	33	I-94 WB75	Basic		3406	19.0	65.7	0.53	3575	20.2	65.7	0.56	2762	23.6	63.8	0.65	870	12.9	71.7	0.42	3691	20.8	65.7	0.58	3036	26.1	64.6	0.72	920	13.7	71.5	0.40
	34	Oakwood Blvd Off-Ramp 1	Diverge		3406	21.3	59.0	0.53	3575	22.6	59.0	0.57	2762	28.3	54.6	0.66	870	12.9	71.7	0.42	3691	23.3	58.9	0.59	3036	30.9	54.6	0.72	920	13.7	71.5	0.40
	35	Oakwood Blvd Off-Ramp 2	Diverge		2944	18.4	59.1	0.46	3090	19.5	59.1	0.49	2302	23.5	54.8	0.55	870	12.9	71.7	0.42	3190	20.1	59.1	0.51	2548	25.8	54.8	0.61	920	13.7	71.5	0.40
	36	I-94 WB76	Basic		2568	14.5	65.1	0.41	2695	15.2	65.1	0.43	1935	16.4	64.5	0.46	870	12.9	71.7	0.42	2782	15.7	65.1	0.44	2174	18.3	64.5	0.51	920	13.7	71.5	0.40
	37	Oakwood Blvd On-Ramp	Merge	Access	2835	17.4	60.5	0.45	2975	18.3	60.4	0.47	1935	22.1	58.3	0.55	870	13.0	71.0	0.32	3071	19.0	60.3	0.49	2174	24.3	58.0	0.62	920	17.8	67.7	0.39
	38	I-94 WB77	Basic	Access	2835	16.0	65.6	0.45	2975	16.8	65.5	0.47	2310	19.5	65.4	0.55	870	25.1	63.6	0.64	3071	17.3	65.5	0.48	2420	21.3	65.4	0.57	1035	20.0	67.1	0.61
	1	I-94 WB36	Basic		2835	16.0	66.0	0.45	2975	16.8	66.0	0.47	2136	18.1	66.0	0.51	1044	15.8	70.1	0.40	3071	17.3	66.0	0.48	2393	20.3	66.0	0.57	1059	16.9	69.3	0.38
	2	I-94 WB37	Basic		2835	16.0	66.0	0.45	2975	16.8	66.0	0.47	2136	18.1	66.0	0.51	1044	15.6	71.0	0.51	3071	17.3	66.0	0.48	2397	20.3	66.0	0.57	1055	15.8	70.9	0.46
	3	US-39 Off Ramp	Diverge		2835	17.5	60.3	0.45	2975	18.4	60.2	0.47	2136	21.9	54.5	0.51	1044	15.6	71.0	0.51	3071	19.0	60.1	0.49	2397	24.7	54.2	0.57	1055	15.8	70.9	0.46
	4	I-94 WB38	Basic		2206	12.5	65.8	0.35	2315	13.1	65.8	0.37	1615	13.7	65.6	0.38	1044	15.6	71.0	0.51	2390	13.5	65.8	0.38	1757	14.9	65.6	0.42	1055	15.8	70.9	0.46
	5	US-39 On-Ramp 1	Merge		4031	26.6	57.6	0.65	4140	28.2	57.0	0.68	1615	35.4	54.9	0.83	1044	15.6	71.0	0.51	4215	29.4	56.5	0.71	1757	39.1	53.4	0.89	1055	15.8	70.9	0.46
	6	I-94 WB39	Basic		4031	22.6	64.0	0.63	4140	23.5	63.9	0.65	3440	31.2	61.7	0.81	1044	15.6	71.0	0.51	4215	24.0	63.8	0.67	3582	33.1	60.4	0.85	1055	15.8	70.9	0.46
	7	US-39 On-Ramp 2	Merge		4615	17.0	72.7	0.53	4752	20.1	65.5	0.56	3440	21.9	65.0	0.61	1044	15.6	71.0	0.51	4847	20.5	65.5	0.57	3582	23.1	64.7	0.64	1055	15.8	70.9	0.46
	8	I-94 WB40	Basic		4615	19.2	66.0	0.54	4752	20.1	65.9	0.56	3888	22.0	65.8	0.61	1044	15.6	71.0	0.51	4847	20.5	65.9	0.57	4080	23.1	65.7	0.64	1055	15.8	70.9	0.46
	9	Pelham Road On-Ramp	Merge	Access	4953	22.3	60.7	0.58	5106	23.5	60.5	0.61	3888	26.8	59.1	0.67	1044	15.8	70.1	0.38	5213	24.1	60.4	0.62	4080	28.1	58.9	0.72	1055	23.9	64.9	0.53
	10	I-94 WB41	Basic	Access	4953	20.4	65.6	0.57	5106	21.6	65.6	0.60	4260	24.3	65.3	0.67	1044	33.5	61.0	0.82	5213	22.1	65.6	0.62	4345	24.9	65.1	0.69	1168	28.1	63.6	0.60
	11	I-94 WB42	Basic		4953	16.3	66.0	0.46	5106	17.3	66.0	0.48	4160	17.6	66.0	0.49	1144	17.3	70.5	0.56	5213	17.7	66.0	0.49	4283	18.1	66.0	0.51	1230	18.6	70.2	0.53
	12	Telegraph Road Off-Ramp	Diverge		4953	15.8	61.1	0.46	5106	15.9	60.9	0.49	4160	19.1	60.7	0.49	1144	17.3	70.5	0.56	5213	16.3	60.7	0.50	4283	19.8	60.5	0.51	1230	18.6	70.2	0.53
	13	I-94 WB43	Basic		3680	20.4	66.0	0.57	3771	21.3	66.0	0.60	2802	23.9	65.4	0.66	1144	17.3	70.5	0.56	3835	21.7	65.9	0.61	2863	24.5	65.2	0.68	1230	18.6	70.2	0.53
	14	Telegraph Road On-Ramp	Merge		4283	26.6	58.8	0.67	4404	28.0	58.5	0.70	2802	34.9	54.9	0.82	1144	17.3	70.5	0.56	4488	28.5	58.4	0.71	2863	36.0	54.5	0.84	1230	18.6	70.2	0.53
	15	I-94 WB44	Basic		4283	23.9	64.8	0.66	4404	25.3	64.8	0.70	3444	31.2	61.7	0.82	1144	17.3	70.5	0.56	4488	25.8	64.7	0.71	3526	32.3	61.0	0.83	1230	18.6	70.2	0.53
	16	I-94 WB45	Basic	Access	4283	23.9	65.4	0.66	4404	25.3	64.9	0.70	3444	31.2	61.7	0.82	1144	17.5	69.6	0.41	4488	25.8	64.7	0.71	3526	32.3	61.0	0.83	1230	33.6	61.6	0.71
	17	I-94 WB46	Basic		4283	23.9	65.4	0.66	4404	25.3	64.9	0.70	3444	31.2	61.7	0.82	1144	17.3	70.5	0.56	4488	25.8	64.7	0.71	3287	29.2	62.9	0.78	1469	22.6	69.1	0.64
3	18	Ecorse Road Off-Ramp	Diverge		4283	26.5	59.0	0.67	4404	27.8	58.9	0.70	3444	35.3	54.5	0.82	1144	17.3	70.5	0.56	4488	28.4	58.9	0.71	3287	33.6	54.6	0.78	1469	22.6	69.1	0.64
	19	I-94 WB47	Basic		3815	21.1	65.0	0.59	3913	22.1	65.7	0.62	2960	25.5	64.8	0.70	1144	17.3	70.5	0.56	3981	22.5	65.7	0.63	2831	24.2	65.3	0.67	1469	22.6	69.1	0.64
	20	Ecorse Road On-Ramp	Merge	Access	4023	24.6	59.9	0.63	4131	17.5	66.0	0.49	2960	17.6	66.0	0.49	1144	17.5	69.6	0.42	4206	17.8	66.0	0.50	2831	17.1	66.0	0.49	1469	41.4	59.1	0.86
	21	I-94 WB48	Basic	Access	4023	22.3	64.6	0.62	4131	17.5	66.0	0.49	3123	17.6	66.0	0.49	1144	35.1	58.6	0.86	4206	17.8	66.0	0.50	3278	18.5	66.0	0.52	1222	22.4	66.5	0.50
	22	I-94 WB49	Basic		4023	22.3	65.4	0.62	4131	17.5	66.0	0.49	3498	19.7	66.0	0.55	769	11.3	72.1	0.37	4206	17.8	66.0	0.50	3342	18.9	66.0	0.53	1158	17.5	70.5	0.50
	23	Auxiliary Off	Diverge		4023	16.7	66.0	0.47	4131	17.5	66.0	0.49	3498	19.7	66.0	0.55	769	11.3	72.1	0.37	4206	17.8	66.0	0.50	3342	18.9	66.0	0.53	1158	17.5	70.5	0.50
	24	I-94 WB50	Basic		2490	13.8	66.0	0.39	2523	14.2	66.0	0.40	1940	16.4	66.0	0.46	769	11.3	72.1	0.37	2546	14.4	66.0	0.40	1745	14.8	66.0	0.41	1158	17.5	70.5	0.50
	25	Auxiliary On	Weave		3845	21.8	49.1	0.79	3945	22.9	48.5	0.83	1940	26.1	48.5	0.86	769	11.3	72.1	0.37	4014	23.5	48.2	0.85	1745	24.8	48.8	0.86	1158	17.5	70.5	0.50
	26	I-94 WB51	Basic		3539	19.4	65.7	0.54	3624	20.5	65.7	0.57	2976	25.7	64.8	0.70	769	11.3	72.1	0.37	3682	20.8	65.7	0.58	2868	24.6	65.2	0.68	1158	17.5	70.5	0.50
	27	Vining Road On-Ramp	Weave		3611	17.2	57.3	0.45	3700	18.2	56.9	0.47	2976	19.3	57.7	0.50	769	11.3	72.1	0.37	3760	18.6	56.7	0.48	2868	18.9	57.3	0.50	1158	17.5	70.5	0.50
	28	I-94 WB52	Basic		3223	17.8	65.7	0.50	3293	18.6	65.7	0.52	2623	22.3	65.7	0.62	769	11.3	72.1	0.37	3339	18.8	65.7	0.53	2534	21.5	65.7	0.60	1158	17.5	70.5	0.50
	29	Wayne Road On-Ramp 1	Merge	Access	3323	13.8	65.9	0.39	3398	14.4	65.9	0.40	2623	15.5	66.0	0.43	769	11.4	71.5	0.29	3447	14.6	65.9	0.41	2534	15.0	65.9	0.42	1158	17.7	69.5	0.39
	30	Wayne Road On-Ramp 2	Merge	Access	3391	15.0	61.9	0.40	3469	15.7	61.7	0.41	2741	17.1	60.7	0.44	769	11.4	71.5	0.28	3520	15.9	61.7	0.42	2655	16.7	60.7	0.43	1158	27.7	63.5	0.60
	31	I-94 WB53	Basic	Access	3391	14.1	65.1	0.39	3469	14.7	65.1	0.41	2789	15.7	64.9	0.44	769	21.7	62.5	0.56	3520	14.9	65.1	0.42	3222	18.2	64.9	0.51	660	9.8	72.0	0.22
	32	Auxiliary Off Lane	Diverge		3391	14.1	65.9	0.39	3469	14.7	65.9	0.41	3294	18.6	65.9	0.52	264	3.8	74.3	0.13	3520	14.9	65.9	0.42	3222	18.2	65.9	0.51	660	9.7	72.6	0.29
	33	I-94 WB54	Basic		2371	13.1	66.0	0.37	2399	13.5	66.0	0.38	2245	19.0	66.0	0.53	264	3.8	74.3	0.13	2416	13.6	66.0	0.38	2112	17.9	66.0	0.50	660	9.7	72.6	0.29
	34	I-94 WB55	Basic	Access	2371	13.1	66.0	0.37	2399	13.5	66.0	0.38	2245	19.0	66.0	0.53	264	3.8	74.1	0.10	2416	13.6	66.0	0.38	2112	17.9	66.0	0.50	660	9.8	72.0	0.23
	35	Auxiliary Lane On	Merge	Access	3080	19.0	60.0	0.48	3143	19.7	59.9	0.50	2245	29.9	56.6	0.73	264	30.9	60.0	0.94	3184	20.0	59.8	0.51	2112	28.5	57.0	0.70	660	33.3	59.8	0.80
	36	I-94 WB56	Basic	Access	3080	17.5	64.3	0.49	3143	17.7	64.2	0.50	2320	19.6	63.3	0.55	953	54.2	38.7	1.17	3184	18.0	64.2	0.50	2218	18.8	63.4	0.53	1324	21.3	67.7	0.47
	1	I-94 WB7	Basic		3196	17.2	70.0	0.50	3353	18.2	69.9	0.53	2384	19.5	69.7	0.57	963	14.5	70.5	0.37	3462	18.8	69.9	0.55	2396	19.6	69.7	0.57	1343	25.8	64.7	0.56
	2	Haggerty Rd Off-Ramp	Diverge		3196	19.5	61.6	0.50	3353	20.6	61.7	0.53	2384	23.9	56.8	0.57	963	14.4	71.3	0.47	3462	21.3	61.7	0.55	2283	22.9	56.8	0.54	1456	22.4	69.2	0.63
	3	I-94 WB8	Basic		2776	14.8	69.3	0.43	2912	15.8	69.3	0.46	1955	15.9	68.9	0.46	963	14.4	71.3	0.47	3007	16.3	69.3	0.48	1837	14.9	68.9	0.44	1456	22.4	69.2	0.63
	4	Haggerty Rd On-Ramp 1	Merge		2892	16.8	64.1	0.45	3033	18.0	63.8	0.48	1955	18.7	61.9	0.48	963	14.4	71.3	0.47	3132	18.6	63.8	0.49	1837	17.8	62.0	0.46	1456	22.4	69.2	0.63
	5	I-94 WB9	Basic		2892	15.5	68.7	0.45	3033	16.4	68.6	0.48	2035	16.5	68.2	0.48	963	14.4	71.3	0.47	3132	17.0	68.6	0.50	1938	15.7	68.2	0.46	1456	22.4	69.2	0.63
	6	Haggerty Rd On-Ramp 2	Merge		3003	17.6	64.1	0.47	3150	18.7	63.9	0.50	2035	19.8	61.9	0.51	963	14.4	71.3	0.47	3253	19.3	63.8	0.51	1938	18.9	62.0	0.49	1456	22.4	69.2	0.63
	7	I-94 WB10	Basic		3003	16.0	69.6	0.47	3150	17.1	69.6	0.50	2151	17.5	69.5	0.51	963	14.4	71.3	0.47	3253	17.6	69.6	0.51	2062	16.8	69.5	0.49	1456	22.4	69.2	0.63
	8	I-94 WB11	Basic	Access	3003	16.0	70.0	0.47	3150	17.1	70.0	0.50	2151	17.5	70.0	0.51	963	14.5	70.5	0.35	3253	17.6	70.0	0.51	2062	16.8	70.0	0.49	1456	35.3	61.6	0.73
	9	I-94 WB12	Basic		3003	16.0	70.0	0.47	3150	17.1	70.0	0.50	2151	17.5	70.0	0.51	963	14.4	71.3	0.47	3253	17.6	70.0	0.51	2358	19.2	69.8	0.56	1160	17.5	70.5	0.50
	10	Belleville Road Off-Ramp	Diverge		3003	18.4	60.8	0.47	3150	19.6	60.8	0.50	2151	21.7	56.3	0.51	963	14.4	71.3	0.47	3253	20.3	60.8	0.51	2358	23.9	56.1	0.56	1160	17.5	70.5	0.50
	11	I-94 WB13	Basic		2342	12.6	69.2	0.37	2456	13.3	69.2	0.39	1514	12.3	68.8	0.36	963	14.4	71.3	0.47	2537	13.7	69.2	0.40	1632	13.3	68.8	0.39	1160	17.5	70.5	0.50
	12	Belleville Road On-Ramp 1	Merge		2487	14.5	64.3	0.39	2609	15.4	64.2	0.41	1514	15.2	62.2	0.39	963	14.4	71.3	0.47	2694	15.9	64.1	0.42	1632	16.4	62.1	0.42	1160	17.5	70.5	0.50
	13	I-94 WB14	Basic		2487	13.5	68.8	0.39	2609	14.1	68.8	0.41	1670	13.6	68.3	0.40	963	14.4	71.3	0.47	2694	14.6	68.7	0.43	1797	14.6	68.3	0.43	1160	17.5	70.5	0.50
	14	Belleville Road On-Ramp 2	Merge		2873	17.0	63.8	0.45	3013	17.8	63.7	0.47	1670	19.4	61.6	0.50	963	14.4	71.3	0.47	3112	18.5	63.6	0.49	1797	20.9	61.3	0.53	1160	17.5	70.5	0.50
	15	I-94 WB15	Basic		2873	15.4	70.0	0.45	3013	16.3	70.0	0.48	2117	17.2	70.0	0.50	963	14.4	71.3	0.47	3112	16.9	70.0	0.49	2273	18.5	69.9	0.54	1160	17.5	70.5	0.50
	16	I-94 WB16	Basic	Access	2873	15.4	70.0	0.45	3013	16.3	70.0	0.48	2117	17.2	70.0	0.50	963	14.5	70.5	0.35	3112	16.9	70.0	0.49	2273	18.5	69.9	0.54	1160	29.2	63.1	0.63
	17	I-94 WB17	Basic		2873	15.4	70.0	0.45	3013	16.3	70.0	0.48	2117	17.2	70.0	0.50	963	14.4	71.3	0.47	3112	16.9	70.0	0.49	2551	20.9	69.3	0.60	882	13.1	71.6	0.38
	18	Rawsonville Off-Ramp	Diverge		2873	17.9	60.5	0.45	3013	18.9	60.6	0.48	2117	21.5	56.1	0.50	963	14.4	71.3	0.47	3112	19.5	60.5	0.49	2551	25.9	56.0	0.60	882	13.1	71.6	0.38
	19	I-94 WB18	Basic		2180	11.8	68.8	0.34	2286	12.4	68.9	0.36	1412	11.5	68.3	0.33	963	14.4	71.3	0.47	2361	12.8	68.8	0.37	1815	14.7	68.3	0.43	882	13.1	71.6	0.38
	20	Rawsonville On-Ramp	Weave		2579	11.9	61.1	0.34	2705	12.6	60.6	0.36	1412	11.3	60.9	0.34	963	14.4	71.3	0.47	2793	13.1	60.4	0.37	1815	14.2	60.0	0.41	882	13.1	71.6	0.38
	21	I-94 WB19	Basic		2382	12.9	69.9	0.38	2498	13.5	69.9	0.39	1641	13.3	69.9	0.39	963	14.4	71.3	0.47	2580	14.0	69.9	0.41	2064	16.8	69.9	0.49	882	13.1	71.6	0.38
	22	I-94 WB20	Basic	Access	2382	12.9	70.0	0.38	2498	13.5	70.0	0.39	1641	13.3	70.0	0.39	963	14.5	70.5	0.35	2580	14.0	70.0	0.41	2064	16.8	70.0	0.49	882	17.8	67.5	0.39
	23	I-94 WB21	Basic		2382	12.9	70.0	0.38	2498	13.5	70.0	0.39	1641	13.3	70.0	0.39	963	14.4	71.3	0.47	2580	14.0	70.0	0.41	1818	14.8	70.0	0.43	1128	17.0	70.6	0.49
2	24	US-12 On-Ramp	Merge		3710	22.0	63.0	0.58	3891	23.1	62.7	0.60	1641	27.8	60.7	0.70	963	14.4	71.3	0.47	4018	24.1	62.3	0.62	1818	30.4	59.8	0.76	1128	17.0	70.6	0.49
	25	I-94 WB22	Basic		3710	19.9	69.6	0.58	3891	21.4	69.1	0.61	3035	25.8	66.8	0.72	963	14.4	71.3	0.47	4018	22.2	68.8	0.64	3257	28.5	65.1	0.77	1128	17.0	70.6	0.49
	26	I-94 WB23	Basic	Access	3710	19.9	69.6	0.58	3891	21.4	69.1	0.61	3035	25.8	66.8	0.72	963	14.5	70.5	0.35	4018	22.2	68.8	0.64	3257	28.5	65.1	0.77	1128	27.9	63.6	0.60
	27	South Huron Off-Ramp	Diverge		3710	23.0	60.2	0.58	3891	24.3	60.8	0.61	3035	30.9	55.8	0.72	963	14.4	71.3	0.47	4018	25.1	60.8	0.63	3181	32.4	55.8	0.75	1204	18.2	70.3	0.52
	28	I-94 WB24	Basic		2969	15.9	69.2	0.47	3114	16.9	69.2	0.49	2236	18.2	68.8	0.53	963	14.4	71.3	0.47	3215	17.4	69.2	0.51	2357	19.2	68.8	0.56	1204	18.2	70.3	0.52
	29	South Huron On-Ramp 1	Merge		3396	20.0	63.7	0.53	3562	21.2	63.4	0.56	2236	24.6	61.2	0.63	963	14.4	71.3	0.47	3678	21.9	63.3	0.58	2357	26.0	60.8	0.66	1204	18.2	70.3	0.52
	30	I-94 WB25	Basic		3396	18.1	68.8	0.53	3562	19.4	68.8	0.56	2669	22.1	68.4	0.63	963	14.4	71.3	0.47	3678	20.0	68.8	0.58	2803	23.4	68.2	0.66	1204	18.2	70.3	0.52
	31	South Huron On-Ramp 2	Merge		3838	22.8	62.5	0.59	4025	24.5	62.1	0.63	2669	30.3	58.4	0.74	963	14.4	71.3	0.47	4157	25.3	61.9	0.65	2803	32.2	57.7	0.77	1204	18.2	70.3	0.52
	32	I-94 WB26	Basic		3838	20.6	68.7	0.60	4025	22.2	68.7	0.64	3136	27.0	66.1	0.74	963	14.4	71.3	0.47	4157	23.1	68.4	0.66	3285	28.8	64.8	0.78	1204	18.2	70.3	0.52
	33	I-94 WB27	Basic	Access	3838	20.6	69.4	0.60	4025	22.2	68.8	0.64	3136	27.0	66.1	0.74	963	14.5	70.5	0.35	4157	23.1	68.4	0.66	3285	28.8	64.8	0.78	1204	30.3	62.8	0.65
	34	I-94 WB28	Basic		3838	20.6	69.4	0.60	4025	22.2	68.8	0.64	3136	27.0	66.1	0.74	963	14.4	71.3	0.47	4157	23.1	68.4	0.66	3336	29.5	64.4	0.79	1153	17.4	70.5	0.50
	35	West Michigan Off-Ramp 1	Diverge		3838	23.1	61.9	0.60	4025	24.7	61.9	0.64	3136	31.4	56.9	0.74	963	14.4	71.3	0.47	4157	25.5	61.8	0.66	3336	33.4	56.8	0.79	1153	17.4	70.5	0.50
	36	I-94 WB29	Basic		3440	18.3	68.3	0.53	3607	19.6	68.3	0.57	2711	22.5	67.2	0.64	963	14.4	71.3	0.47	3726	20.3	68.3	0.59	2897	24.3	67.2	0.69	1153	17.4	70.5	0.50
	37	West Michigan Off-Ramp 2	Diverge		3440	20.8	61.7	0.53	3607	22.2	61.7	0.57	2711	27.2	56.7	0.64	963	14.4	71.3	0.47	3726	22.9	61.6	0.59	2897	29.1	56.7	0.69	1153	17.4	70.5	0.50
	38	I-94 WB30	Basic		3000	16.1	69.4	0.47	3145	17.0	69.4	0.50	2232	18.2	69.1	0.53	963	14.4	71.3	0.47	3249	17.6	69.4	0.51	2423	19.8	69.1	0.57	1153	17.4	70.5	0.50
	39	West Michigan On-Ramp	Merge	Access	3400	20.2	63.1	0.53	3564	21.4	62.9	0.56	2232	14.3	69.9	0.42	963	14.5	70.5	0.35	3682	22.2	62.7	0.58	2423	27.0	59.7	0.67	1153	33.9	60.9	0.74
	40	I-94 WB31	Basic	Access	3400	18.1	69.4	0.53	3564	19.4	69.4	0.56	2652	14.4	70.0	0.42	963	33.9	60.4	1.07	3682	20.1	69.4	0.58	3645	33.9	61.2	0.86	364	19.7	63.7	0.72
	41	I-94 WB32	Basic		3400	18.1	69.9	0.53	3564	19.4	69.7	0.56	3614	20.1	69.5	0.58					3682	20.1	69.6	0.58	4010	22.6	68.6	0.65				
	42	US-23 Off-Ramp 1	Diverge		3400	22.1	57.4	0.75	3564	21.8	61.9	0.80	3614	22.5	62.1	0.83					3682	22.6	61.8	0.83	4010	25.1	61.7	0.92				
	43	I-94 WB33	Basic		2508	25.2	56.6	0.79	2628	27.6	54.1	0.83	2712	30.9	50.9	0.87					2716	29.7	52.1	0.86	3033	41.8	42.1	0.98				
	44	US-23 On-Ramp 1	Weave		3093	22.5	52.0	0.89	3241	23.9	51.3	0.94	3326	24.7	51.6	0.89					3349	24.9	50.9	0.97	3658	27.7	50.6	0.94				
	45	I-94 WB34	Basic		2164	18.8	65.6	0.64	2266	20.0	64.4	0.67	2423	22.8	61.6	0.73					2342	21.0	63.4	0.69	2686	27.3	57.1	0.81				
	46	US-23 On-Ramp 2	Merge		2755	26.1	59.6	0.81	2886	27.6	59.2	0.68	3041	29.9	58.4	0.91					2982	28.6	58.9	0.88	3320	33.4	57.1	0.99				
	47	I-94 WB35	Basic		2755	23.2	68.0	0.66	2886	24.3	67.7	0.68	3041	26.6	66.3	0.74					2982	25.2	67.2	0.71	3320	30.1	63.9	0.80				
	1	I-94 WB1	Basic		2755	24.2	65.3	0.67	2890	25.9	64.6	0.71	3041	27.6	63.8	0.75					2984	27.0	64.1	0.73	3320	31.2	61.7	0.82				
	2	State St Off-Ramp	Diverge		2755	28.7	53.6	0.66	2890	31.4	53.4	0.71	3041	33.0	53.4	0.75					2984	32.4	53.4	0.74	3320	36.1	53.4	0.82				
	3	I-94 WB2	Basic		1831	16.4	64.9	0.46	1921	16.9	64.9	0.47	2065	18.2	64.9	0.51					1983	17.4	64.9	0.49	2327	20.5	64.9	0.57				
	4	State St On-Ramp 1	Merge		2304	22.9	58.3	0.57	2418	23.8	58.2	0.59	2562	25.4	57.9	0.62					2496	24.6	58.1	0.61	2840	28.4	57.3	0.69				
	5	I-94 WB3	Basic		2304	20.4	64.3	0.57	2418	21.2	64.3	0.59	2562	22.6	64.2	0.63					2496	22.0	64.3	0.61	2840	25.4	64.1	0.70				
1	6	State St On-Ramp 2	Merge		2990	30.7	56.0	0.73	3138	32.3	55.6	0.76	3288	34.2	55.0	0.80					3239	33.5	55.2	0.79	3587	38.5	53.3	0.87				
	7	I-94 WB4	Basic		2990	26.7	64.0	0.73	3138	28.8	63.1	0.77	3288	30.8	61.9	0.81					3239	30.2	62.3	0.80	3587	35.3	59.0	0.88				
	8	Ann Arbor/Saline Off-Ramp	Diverge		2990	31.7	54.1	0.73	3138	33.6	54.1	0.77	3288	35.2	54.1	0.81					3239	34.8	54.0	0.80	3587	38.5	54.0	0.89				
	9	I-94 WB5	Basic		2318	20.4	65.9	0.57	2433	21.4	65.9	0.60	2582	22.8	65.7	0.63					2511	22.1	65.9	0.62	2854	25.6	64.8	0.70				
	10	Ann Arbor/Saline On-Ramp	Merge		3000	30.3	56.5	0.73	3148	32.1	56.0	0.77	3287	33.9	55.4	0.80					3250	33.4	55.6	0.79	3583	38.2	53.7	0.87				
	11	I-94 WB6	Basic		3000	26.9	64.2	0.73	3148	28.9	63.1	0.77	3287	30.7	62.0	0.81					3250	30.3	62.3	0.80	3583	35.2	59.0	0.88				

Speed (mph)
<20
20-30
30-40
40-50
50-60
>60

Summary

A traffic study was conducted to evaluate the potential effects of the Proposed Project using HCS for the 2023 existing condition and 2035 and 2045 future year conditions.

A comparison of the analysis results for the No Build vs Build conditions shows that travel speeds in the general purpose lanes remain generally consistent with the No Build Alternative for all analyzed peak hours, and no congestion or flow breakdown is projected to occur in the technology-enabled express lane or at any of the access points.

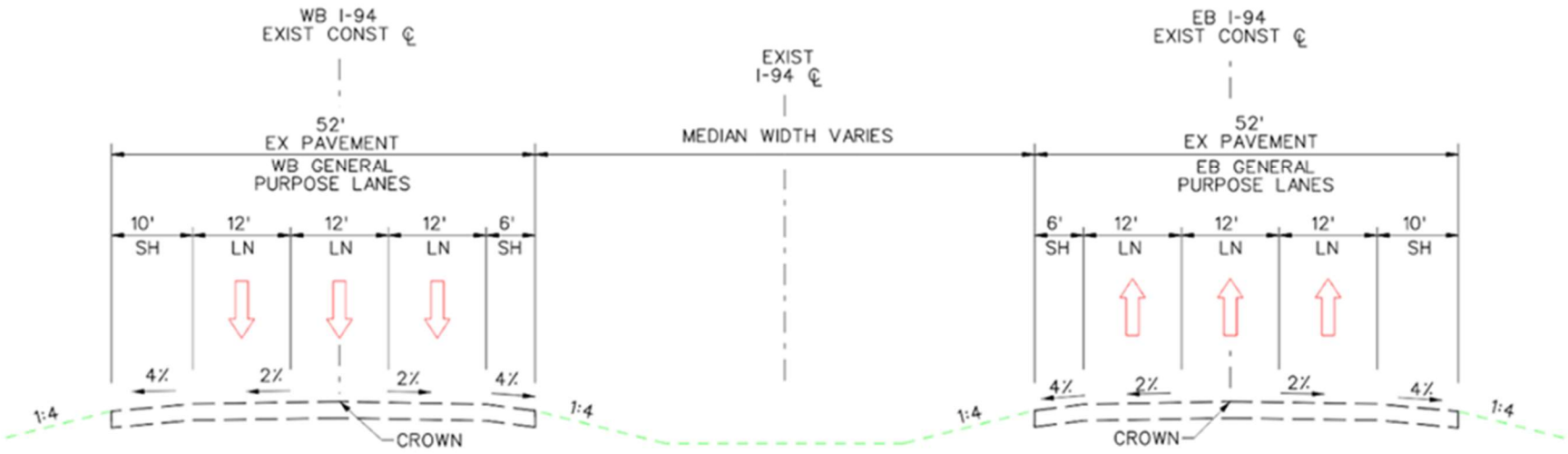
In 2035, one localized section of the eastbound corridor is forecast to experience a speed reduction in the 2035 AM Peak Hour Build condition, between Middlebelt Road and Ecorse Road. However, the analysis shows that this congestion would remain localized only to this section of the corridor and is expected to return to levels consistent with the No Build Alternative some time before 2045, as CAV penetration increases and more vehicles use the technology-enabled express lane.

Potential mitigation measures to improve the performance of the general purpose lanes at this location may include adjustments to the user fees to reduce demand and improve speeds within the general purpose lanes to offset the impacts.

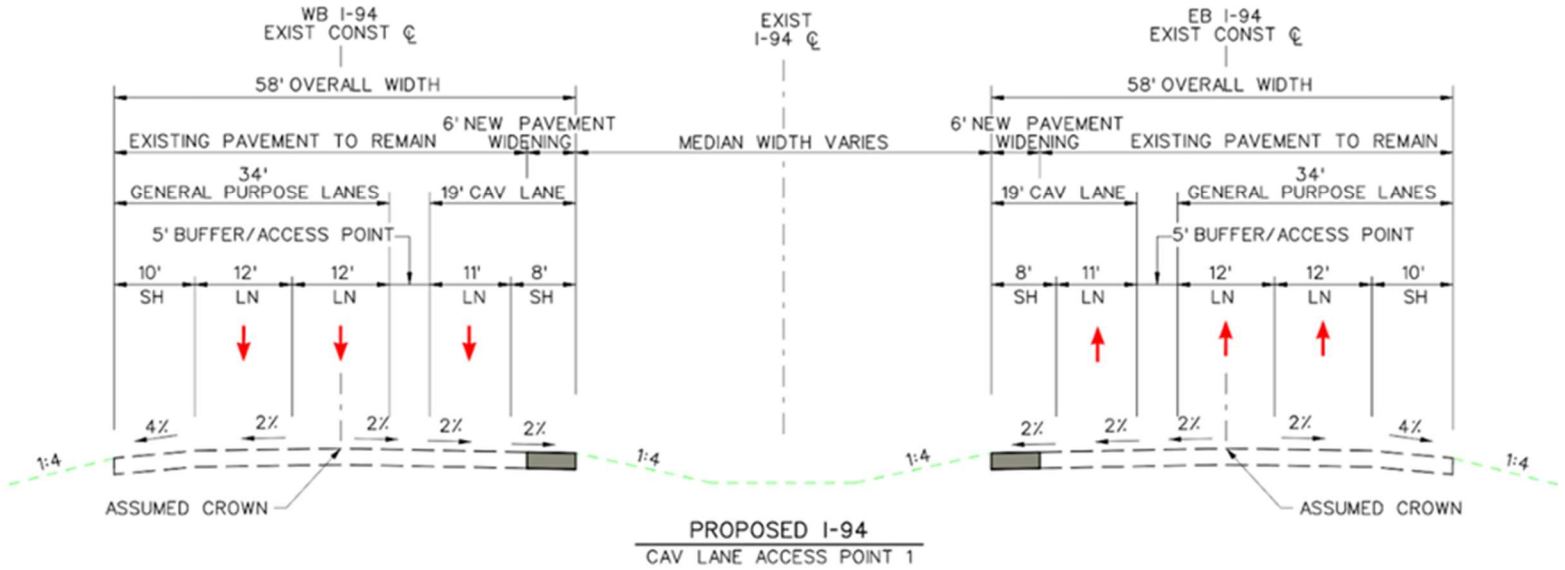
In 2045, average general purpose travel times for the project corridor remain generally consistent with the No Build Alternative for all analyzed peak hours. Very minor travel time increases are predicted for most segments of the corridor however they are well within the day-to-day variation that typically occurs for peak period travel on a freeway facility.

Therefore, the Proposed Project would not create significant adverse transportation impacts on the project corridor.

Appendix A – Typical Section

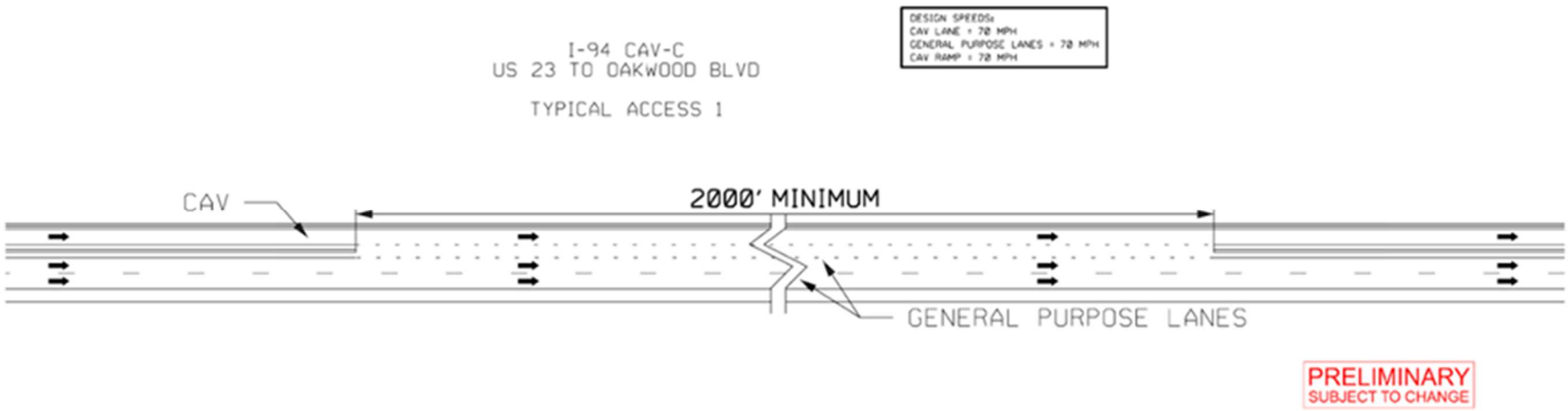


EXISTING I-94

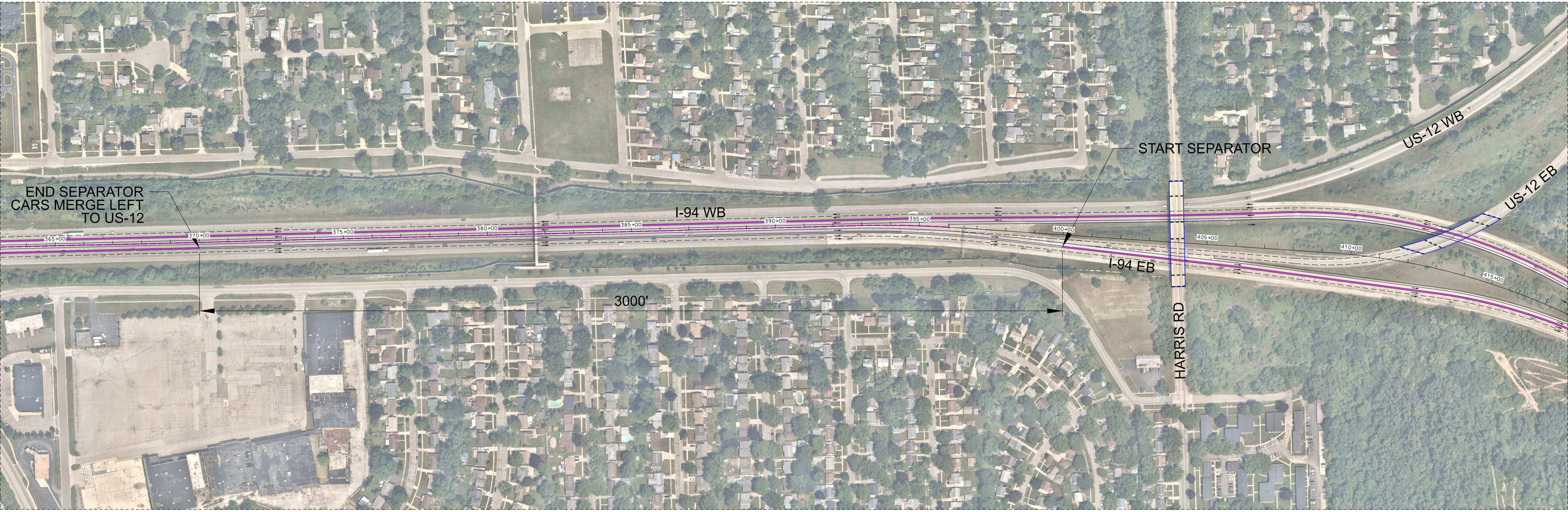


PROPOSED I-94
CAV LANE ACCESS POINT 1

Appendix B – Typical Access Point Plan View



Appendix C - Eastbound I-94 Left Lane Exit to US-12



Appendix D - Westernmost Lane Entrance and Exit

FINAL ROW PLAN REVISIONS				SUBMITTAL DATE:			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

cavnue

MDOT Michigan Department of Transportation

VERT. (FT) 0 HORZ. (FT) 100

FILE:

DATE:
DESIGN UNIT:
TSC:

CS:
JN:

PAVEMENT MARKINGS
CAV CORRIDOR PROJECT

DRAWING 604 PM

SHEET SECT 1

Appendix E - Easternmost Lane Entrance and Exit

FINAL ROW PLAN REVISIONS SUBMITTAL DATE:									
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		

cavnue

MDOT Michigan Department of Transportation

VERT. (FT) 0 HORZ. (FT) 100

FILE:

DATE:

DESIGN UNIT:

TSC:

CS:

JN:

PAVEMENT MARKINGS

CAV CORRIDOR PROJECT

DRAWING: I-94 PM

SHEET: SECT 1

Appendix F – HCS Methodology and Volume Development Memos

Sam Schwartz
322 8th Avenue
New York, NY 10001
(212) 598-9010
samschwartz.com

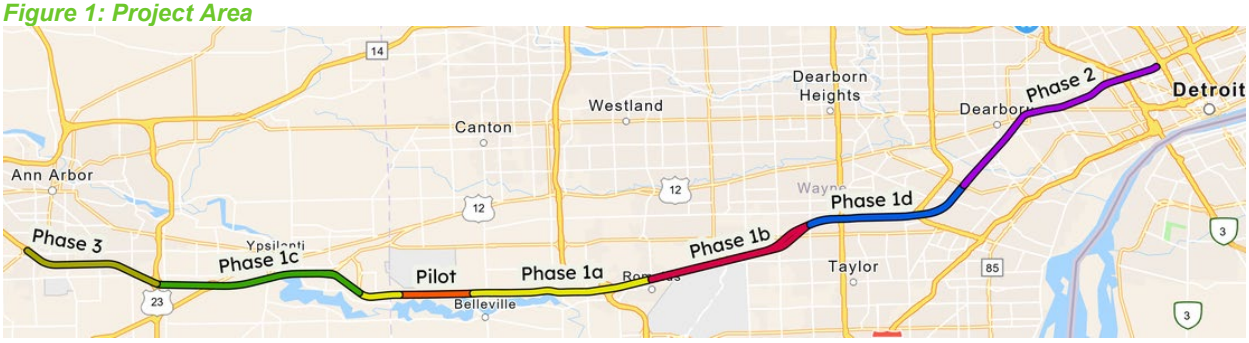
Sam Schwartz
A TYLin Company

Memorandum

To: MDOT
From: Jeff Smithline, PE, PTOE
Date: February 16, 2024
Re: I-94 Advanced Vehicle Lane Corridor: NEPA Traffic Analysis Methodology and Assumptions Memo
Project No: 22-03-0120

Cavnue, LLC (Cavnue) is proposing to convert the inner-most general-purpose (GP) lane in each direction on I-94 into an Express Lane with dense deployment of technology (the lane). The total project corridor is shown in **Figure 1** and is bounded by the Ann Arbor-Saline Road interchange to the west and M-10 John C Lodge Freeway interchange to the east. The proposed action is subject to review under the National Environmental Policy Act (NEPA), and traffic impact analyses will be performed consistent with NEPA guidance and incorporated into the Environmental Assessment (EA) documentation. The purpose of this memorandum is to summarize the proposed traffic analysis methodology and assumptions for the I-94 Advanced Vehicle Lane Corridor EA.

Figure 1: Project Area



Traffic analysis for the NEPA documentation for this project will be conducted in Highway Capacity Software (HCS), which is a deterministic traffic analysis tool which can provide measures of effectiveness (MOEs) such as average vehicle speeds, traffic densities, and Level-of-Service (LOS) by segment. HCS 2023, which implements the latest edition of the Highway Capacity Manual (HCM 7th Edition), will be used for this study. The results of the HCS analysis will be incorporated into the NEPA documentation and into initial public outreach.

The proposed analysis years/scenarios to be included for the HCS analysis are:

- 2023 Existing Condition
- 2035 No Build Condition
- 2035 Build Condition
- 2045 No Build Condition
- 2045 Build Condition

The study would analyze two future horizon years (2035 and 2045). Based on the latest project schedule, only Phase 1 is assumed to be operational in 2035, with remaining phases assumed to be operational by 2045.

Scope of Study

The geographic scope of the HCS analysis will include the entire project corridor (from M-10 in the east to Ann Arbor Saline Road in the west) and scope extends at least one interchange upstream of the eastern and western most lane access points, located at I-96 and US-23 respectively. This scope will therefore capture all new lane change, merge, and diverge movements introduced by the presence of the proposed lane and its access points so that potential impacts can be identified and mitigated where practicable.

A Weekday AM and a Weekday PM peak hour analysis will be conducted for every analysis location.

HCS Methodology

The analyses will be performed using the HCS Freeway Facilities module, which implements the HCM methodology for contiguous segments of roadway of varying types and accounts for the effects that congestion might have on upstream or downstream segments. The entire project corridor will be analyzed using the HCS Freeway Facilities module and will be broken up into the following segments, with each segment being covered by an individual HCS file:

- Ann Arbor – Saline Road to US-23
- US-23 to Belleville Road
- Belleville Road to Southfield Road
- Southfield Road to M-10

The Future Build Condition analysis will utilize the 'Managed Lane' feature of HCS to represent the advanced lane. This allows for specific volumes to be assigned to either the general purpose lane or the advanced lane, based on the outputs of Cavnue's Traffic and Revenue (T&R) demand model, and provides the capability to model proposed access points and the impact of lane changing maneuvers as vehicles enter or exit the lane.

The potential for traffic diversions, both into and away from the I-94 corridor, as a result of the proposed project has been considered by the T&R study demand modeling process and are included in the 2035 and 2045 T&R projections. A discussion of the potential impacts of diversion will be included as part of the NEPA process. All existing and future volumes—including diversions—will be provided to MDOT and FHWA for review.

Impact criteria will be defined in consultation with MDOT and FHWA.

Traffic Volumes

The development of existing and future conditions traffic volumes is outlined in the *I-94 Connected and Automated Vehicle Corridor: Data Verification and Volume Development* memorandum dated February 16, 2024.

Future Projects

The 2035 and 2045 No Build Condition traffic analyses will account for planned roadway improvement projects and associated geometric changes to the study corridor that are scheduled to be completed by the horizon years. The table below summarizes all projects that were considered for inclusion in future Build and No Build scenarios. MDOT provided the most current design information for each project during a project coordination meeting on 9/18/23 so that they could be accounted for in the 2035 and 2045 Build Conditions.

Project	Included in future scenarios?	Comments
WB I-94 to NB US-23 Ramp	Yes, 2035 and 2045	Modification to I-94 Westbound (WB) to provide a two-lane exit ramp from I-94 WB to US 23 Northbound (NB).
US-23 CD lanes between I-94 and US-12	No	Outside study area
I-94 Flex Route west of US-23 to State Street	Yes, 2035 and 2045	Flex lanes along I-94 that utilize the right shoulder during peak periods to add one travel lane: • Eastbound (EB) between Ann Arbor -Saline Road and State Street and between State Street and US-23, in PM Peak • WB between U-23 and State Street in AM Peak.
I-94 Reconstruction- Wayne to Middlebelt & Middlebelt to Beech Daly Rd	Yes, 2035 and 2045	The proposed new diamond interchange at Ecorse Road has been incorporated. This is the only component of the project which affects roadway geometry.
Pelham to Outer Drive and M-39 Interchange	No	No changes to roadway geometry
Gate 10/Ford Rouge	No	No changes to roadway geometry
I-94 Modernization Package 7- Connor to M-10	No	Planned to be implemented after 2045
I-94 Modernization Package 8- M-10 Interchange	No	Planned to be implemented after 2045
I-94 Modernization- Potential Drainage Tunnel Project	No	Planned to be implemented after 2045

MDOT Review

All HCS analysis files, along with documentation of the methodology and assumptions used for the analysis, will be provided to MDOT for review.

Sam Schwartz
322 8th Avenue
New York, NY 10001
(212) 598-9010
samschwartz.com

Sam Schwartz
A TYLin Company

Memorandum

To: Michigan Department of Transportation (MDOT)
From: Jeff Smithline, PE, PTOE
Date: February 16, 2024
Re: I-94 Advanced Vehicle Lane Corridor: Data Verification and Volume Development
SS Project No: 22-03-0120

The purpose of this memo is to document the data verification and volume development process for traffic volumes that will be used for the I-94 Advanced Vehicle Lane Corridor traffic analysis.

Data Verification

24-hour traffic counts were collected for a continuous Tuesday to Thursday period at 78 locations on the study corridor (see Appendix A for detailed list of locations):

- 37 Ramp Segments
- 24 Mainline Freeway Segments
- 1 Auxiliary Freeway Segments
- 16 Non-Freeway Segments

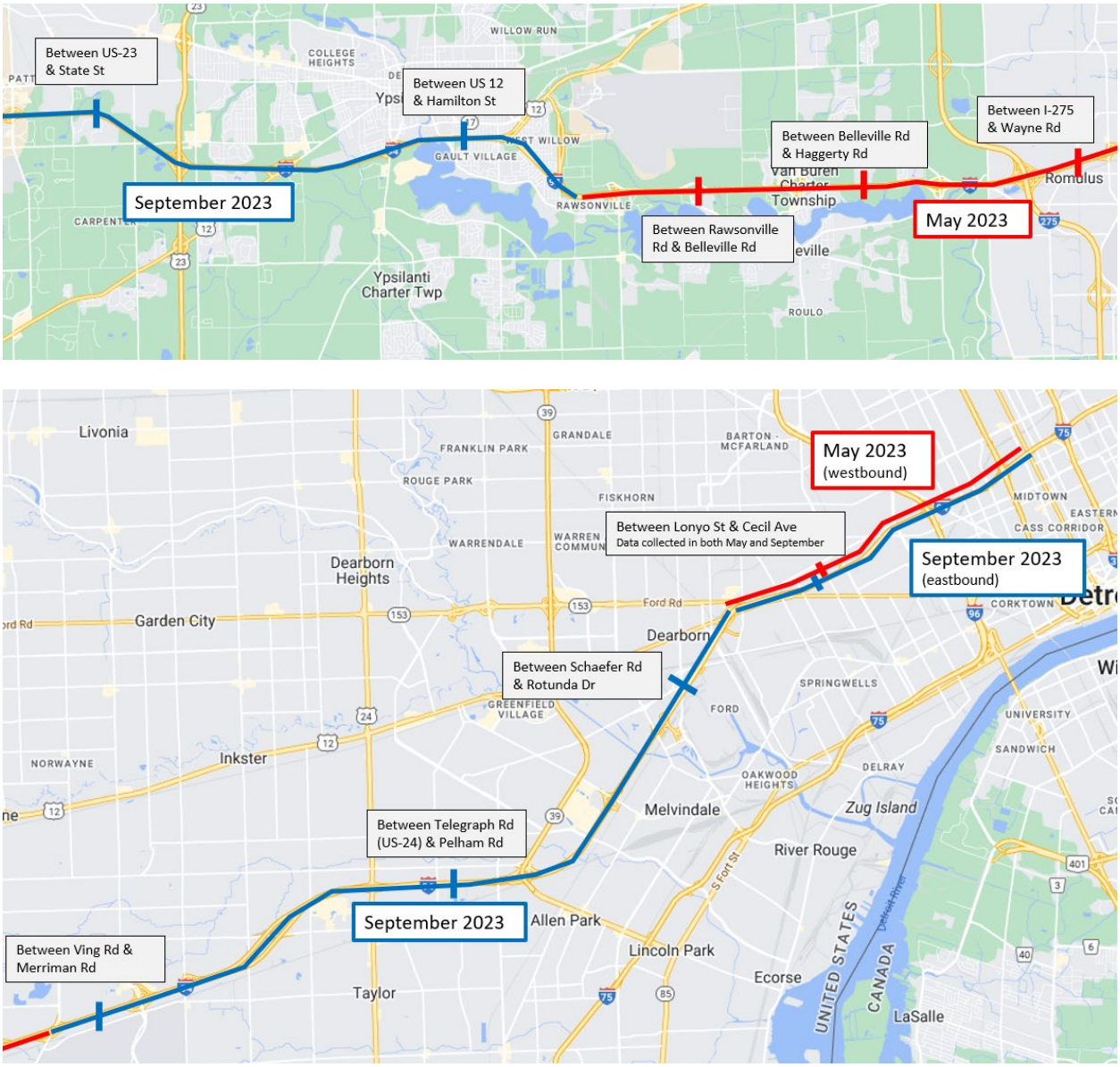
Counts were collected via video. Due to the size of the study area, counts were needed to be split over two separate periods in 2023:

- Tuesday, May 16 to Thursday, May 18, 2023
- Tuesday, September 26 to Thursday, September 28, 2023.

For the purposes of data verification, the study corridor was segmented according to the dates of the data collection. **Figure 1** shows the location and timing (May vs. September) of the mainline counts and the segmentation of the corridor according to the dates of collection within the segment.

Note that counts were collected between Lonyo St and Cecil Ave in both the May and September collection periods, and a different period is being used for each direction. This is because it was found that eastbound speeds in the September collection period more closely aligned with typical conditions, while May was more typical for the westbound direction.

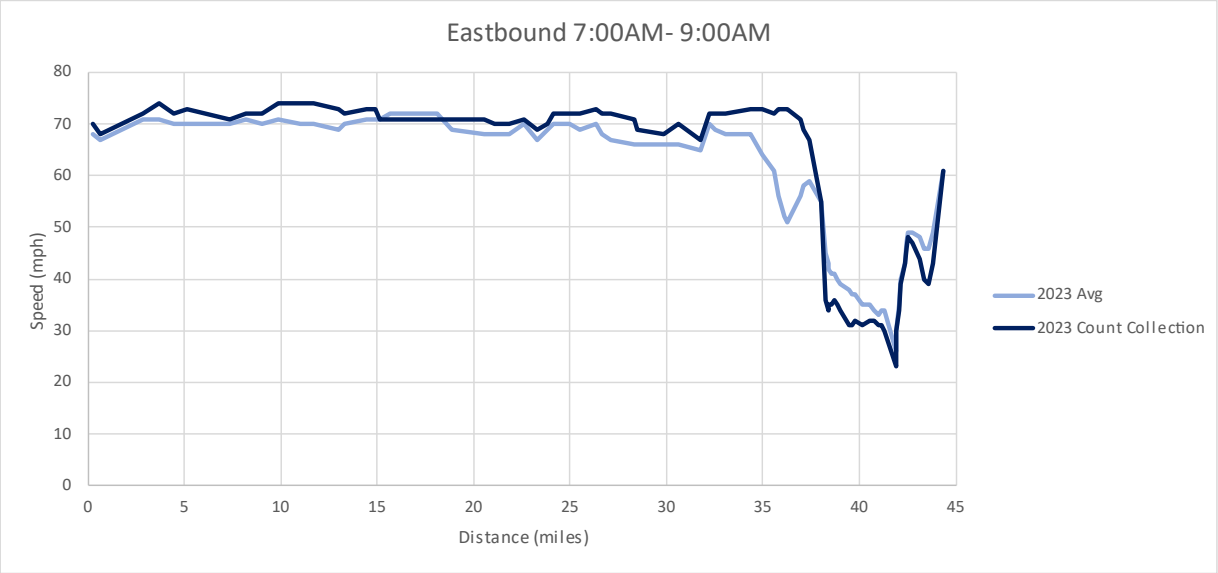
Figure 1: Count location, dates, and corridor segmentation



Average speed data was obtained from RITIS for every Tuesday, Wednesday, and Thursday in 2023. Speeds were averaged for the 7:00 to 9:00AM and 4:00 to 6:00PM period, which corresponded with peak periods of congestion along the corridor. Average speed data was also obtained for the Tuesdays, Wednesdays, and Thursdays that comprised the May and September collection periods. Speed data from the collection periods was compared to the average 2023 speeds to assess whether the data was collected during typical 2023 conditions. The data is shown in **Figure 2** and **Figure 3**.

The "2023 Count Collection" speeds shown below refer to either the May or September collection periods in accordance with the segmentation shown in **Figure 1**.

Figure 2: Eastbound speed verification



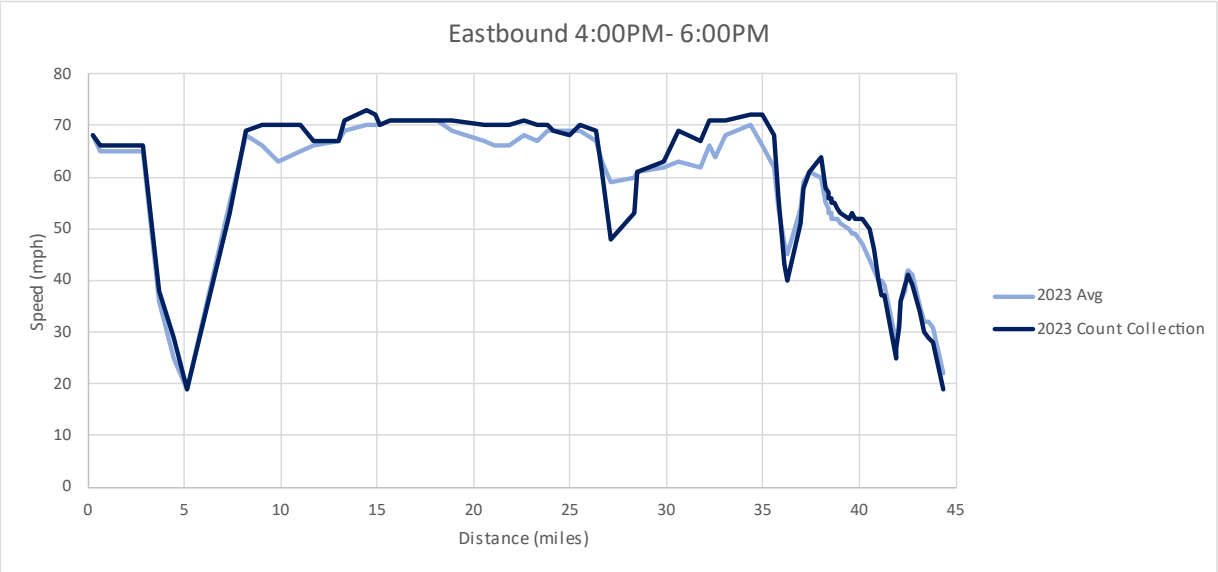
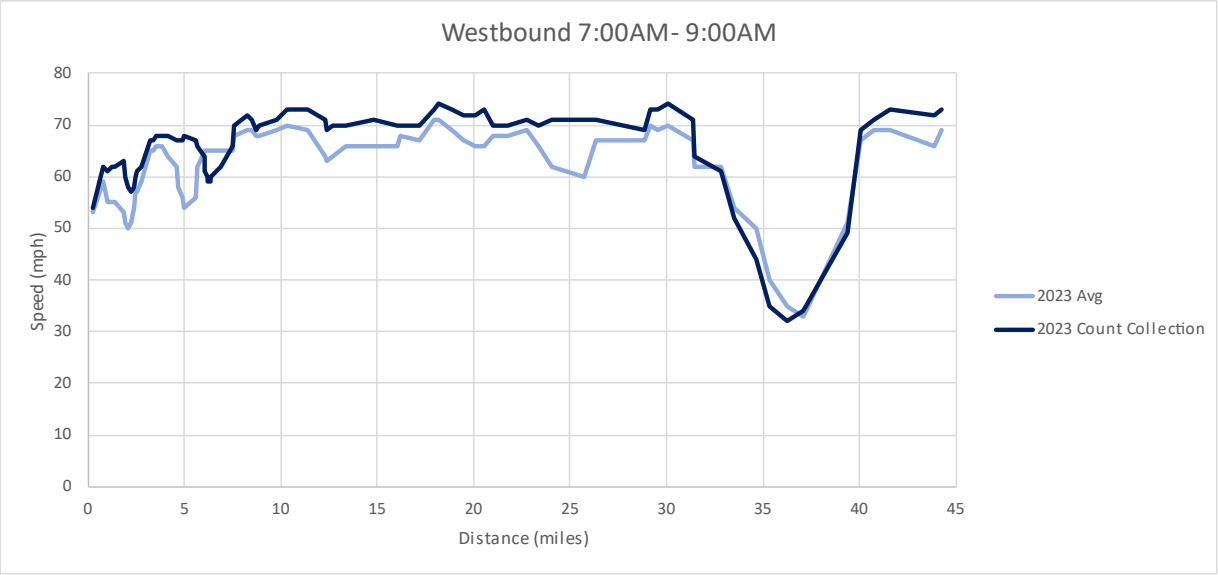
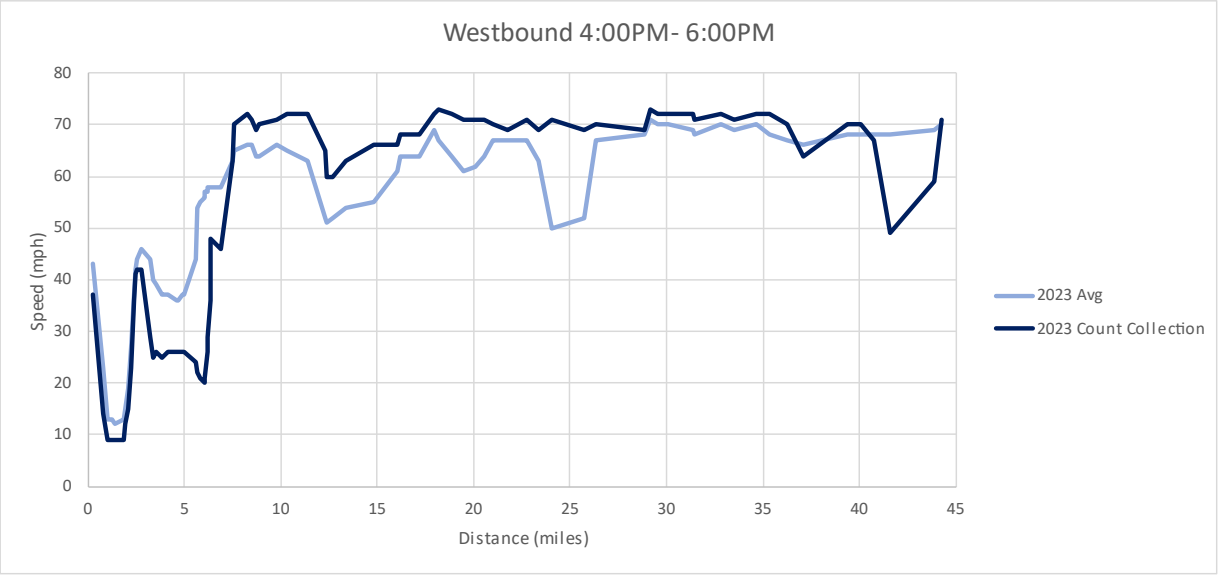


Figure 3: Westbound speed verification





The comparisons show that travel speeds recorded during the May and September data collection periods are generally consistent with the average speeds throughout 2023. Therefore, the traffic count data to be used for the I-94 Connected and Automated Vehicle Corridor traffic analysis is considered valid.

Volume Development

The purpose of this section is to summarize the methodology used to develop a complete set of 2023 traffic volumes for the Existing Condition weekday AM and PM peak hours. Included with this memo is an Excel file named "2023 Volume Development.xls" which includes the calculations used to develop the full set of balanced Existing Conditions volumes from the 2023 traffic counts and other sources.

2023 Existing Conditions Volumes

Several data sources selected in coordination with MDOT were used to develop 2023 volumes:

- Traffic counts collected in May and September 2023
- Previous MDOT traffic studies which used a 2019 analysis year: "*Ann Arbor – Saline Road to US-23*" and "*I-275 to M-39*"
- Volumes from MDOT's Transportation Data Management System (TDMS)
- 2022 Existing Condition volumes from Cavnue's Traffic and Revenue (T&R) Study[1].

The sources were prioritized in the order listed above, with the 2023 traffic count data being used as the source for all mainline volumes and the primary source for ramp volumes. Where necessary, ramp volumes were obtained from the remaining three sources as shown below, and the Excel file uses the same color-coding to tie volumes to their sources.

Source	Description	Ramps	Mainline Segments
2023	New traffic counts collected in May 2023	28	18
MDOT	Previous MDOT traffic studies, "*Ann Arbor – Saline Road to US-23*" and "*I-275 to M-39*"	47	-
TDMS	Volumes from MDOT's Transportation Data Management System (TDMS)	58	-
T&R	2022 Existing Condition volumes from Cavnue's Traffic and Revenue (T&R) Study	10	-

Mainline volumes from the 2023 traffic counts were used as the baseline volume reference, and ramp volumes from the sources listed above were either added to (for on ramps) or subtracted from (for off ramps) a known mainline volume to derive a preliminary mainline volume where needed along the study corridor. These mainline volumes are shown in columns S and T of the accompanying spreadsheet.

The preliminary mainline volumes were then compared to 2023 count data reference points, which are shown in columns U and V of the accompanying spreadsheet. Adjustments were then made to the ramp volumes where necessary in order to create a balanced flow network where resultant mainline volumes matched the reference volumes. These adjustments were performed by factoring all ramps within the section in direct relation to the proportion of their original volume compared to the combined total volume of all ramps in the section. For example, if the preliminarily assumed mainline volume needed to be increased to match a known volume from the 2023 traffic counts, then all entrance ramp volumes along the segment were increased and all exit ramp volumes were decreased in order to balance volumes across that series of adjacent mainline segments. The ramp volume adjustments are shown in columns Z and AA of the accompanying spreadsheet.

[1] Details on the development of these volumes is available in the report produced by Steer, "Traffic & Revenue Study for Alternatives of a CAV Lane in I-94" (February 2023)

Final 2023 volumes to be used for Existing Conditions traffic analysis are shown in columns AD:AE (ramps) and AF:AG (mainline). A final check to confirm mainline volumes match the 2023 count data references is conducted in columns AH:AK.

Future Conditions Volumes

Volumes for future horizon years will be developed by growing the 2023 volumes in accordance with the following annual growth rates provided by MDOT, which are based on the SEMCOG model:

- 0.30% from 2023 to 2025
- 0.42% from 2025 to 2035
- 0.40% from 2035 to 2040
- 0.24% from 2040 to 2045

These growth rates will be applied to the Existing Condition volumes to develop the No Build traffic volumes for each of the two horizon years (assumed to be 2035 and 2045). The volumes for the Build scenarios in each of the two horizon years will be developed in accordance with the diversion analysis undertaken in the T&R study. The T&R model outputs will also be used to determine the volume of vehicles entering/exiting the managed lane at each proposed access point, which in turn provides the lane assignments of vehicles between the general purpose lanes and the managed lane.

APPENDIX A – Traffic Count Locations

Classification counts at the following 78 locations:

- 37 Ramp Segments
- 24 Mainline Freeway Segments
- 1 Auxiliary Freeway Segments
- 16 Non-Freeway Segments

Week 1: May 16, 17 and 18, 2023

Week 2: September 26, 27 and 28, 2023

Segment Type	SSE Ramp Name	Key Map #	Priority
Ramp	S Belleville/E I 94	86	Week 1
Ramp	N Belleville/E I 94	87	Week 1
Ramp	S Haggerty/E I 94	90	Week 1
Ramp	N Haggerty/E I 94	91	Week 1
Ramp	Vining/E I 94	217	Week 1
Ramp	E Oakwood/E I 94	123	Week 1
Ramp	Schaefer/E I 94	127	Week 1
Ramp	Schaefer/W I 94	197	Week 1
Ramp	Greenfield/W I 94	198	Week 1
Ramp	S Wayne/W I 94	29	Week 1
Ramp	N Haggerty/W I 94	37	Week 1
Ramp	S Haggerty/W I 94	38	Week 1
Ramp	N Belleville/W I 94	41	Week 1
Ramp	S Belleville/W I 94	42	Week 1
Ramp	E I 94/M 39 only	118	Week 1
Ramp	E I 94/Pelham	117	Week 1
Ramp	S M 10/W I 94	169	Week 1
Ramp	W I 94/S M 10	168	Week 1
Freeway	EB I-94 between Rawsonville Rd & Belleville Rd	84	Week 1
Freeway	WB I-94 between Belleville Rd & Rawsonville Rd	43	Week 1
Ramp	N Wayne/E I 94	98	Week 1
Ramp	S Wayne/E I 94	99	Week 1
Ramp	N Wayne/W I 94	28	Week 1
Auxiliary Freeway	W I 94/I 275	222	Week 1
Freeway	EB I-94 between I-275 & Wayne Rd	96	Week 1
Freeway	WB I-94 between Wayne Rd & I-275	30	Week 1
Freeway	EB I-94 between Lonyo St & Cecil Ave	138	Both
Freeway	WB I-94 between Cecil Ave & Lonyo St	187	Both
Freeway	EB I-94 between Whittaker Rd & US 12	77	Week 2
Freeway	WB I-94 between US 12 & Hamilton St	50	Week 2
Freeway	WB I-94 between US-23 & State St	63	Week 2
Freeway	EB I-94 between State St & US-23	64	Week 2
Freeway	WB I-94 between Haggerty Rd & Belleville Rd	39	Week 2
Freeway	EB I-94 between Belleville Rd & Haggerty Rd	88	Week 2

Segment Type	SSE Ramp Name	Key Map #	Priority
Freeway	EB I-94 between Vining Rd & Merriman Rd	104	Week 2
Freeway	WB I-94 between Merriman Rd & Vining Rd	23	Week 2
Freeway	WB I-94 between Pelham Rd & Telegraph Rd (US-24)	10	Week 2
Freeway	EB I-94 between Telegraph Rd (US-24) & Pelham Rd	116	Week 2
Freeway	EB I-94 between Schaefer Rd & Rotunda Dr	128	Week 2
Freeway	WB I-94 between Rotunda Dr & Schaefer Rd	195	Week 2
Non-Freeway	US 12 (Michigan Ave) between Sheldon Rd/Geddes Rd & S Corinne St	303	Week 2
Non-Freeway	US 12 (Michigan Ave) between Sheldon Rd/Geddes Rd & S Corinne St	304	Week 2
Non-Freeway	M-153 (Ford Rd) between Oakview Dr & Morton Taylor Rd	305	Week 2
Non-Freeway	M-153 (Ford Rd) between Oakview Dr & Morton Taylor Rd	306	Week 2
Freeway	M-14 between Sheldon Rd & I-275	307	Week 2
Freeway	M-14 between Sheldon Rd & I-275	308	Week 2
Freeway	I-275 between US 12 and M-153	309	Week 2
Freeway	I-275 between US 12 and M-153	310	Week 2
Non-Freeway	US 12 (Michigan Ave) between Merriman Rd & Henry Ruff Rd	311	Week 2
Non-Freeway	US 12 (Michigan Ave) between Merriman Rd & Henry Ruff Rd	312	Week 2
Non-Freeway	M-153 (Ford Rd) between Dillon Rd & Shotka Rd	313	Week 2
Non-Freeway	M-153 (Ford Rd) between Dillon Rd & Shotka Rd	314	Week 2
Freeway	I-96 between Warner Ct & Melvin St	315	Week 2
Non-Freeway	Schoolcraft Rd between Warner Ct & Melvin St	316	Week 2
Freeway	I-96 between Warner Ct & Melvin St	317	Week 2
Non-Freeway	Schoolcraft Rd between Warner Ct & Melvin St	318	Week 2
Ramp	S I 275/E I 94	319	Week 2
Ramp	N I 275/E I 94	320	Week 2
Non-Freeway	US 24 (Telegraph Rd) between Myrtle Ave & Lodge Ln	321	Week 2
Non-Freeway	US 24 (Telegraph Rd) between Myrtle Ave & Lodge Ln	322	Week 2
Ramp	W I 94/N Telegraph Rd (US 24)	323	Week 2
Ramp	W I 94/S Telegraph Rd (US 24)	324	Week 2
Ramp	S Telegraph Rd (US 24)/W I 94	325	Week 2
Ramp	N Telegraph Rd (US 24)/W I 94	326	Week 2
Ramp	E I 94/N Telegraph Rd (US 24)	327	Week 2
Ramp	E I 94/S Telegraph Rd (US 24)	328	Week 2
Ramp	N Telegraph Rd (US 24)/E I 94	329	Week 2
Ramp	S Telegraph Rd (US 24)/E I 94	330	Week 2
Non-Freeway	WB N Interstate 94 Service Dr between Haggerty Rd and Belleville Rd	331	Week 2
Non-Freeway	EB N Interstate 94 Service Dr between Haggerty Rd and Belleville Rd	332	Week 2

Segment Type	SSE Ramp Name	Key Map #	Priority
Non-Freeway	WB S Interstate 94 Service Dr between Haggerty Rd and Belleville Rd	333	Week 2
Non-Freeway	EB S Interstate 94 Service Dr between Haggerty Rd and Belleville Rd	334	Week 2
Ramp	W I 94/N I 275	31	Week 2
Ramp	N I 275/W I 94	32	Week 2
Ramp	W I 94/S I 275	33	Week 2
Ramp	S I 275/W I 94	34	Week 2
Ramp	E I 94/S I 275	93	Week 2
Ramp	E I 94/N I 275	94	Week 2

Appendix G – Traffic and Revenue Methodology Overview

To	MDOT	**Memo**	
Cc	Megan Brock		
From	Steer		
Date	April 2024		
Project	T&R for alternatives of CAV Lanes in I-94	Project No.	24252903

Level 2 Traffic and Revenue Methodology Overview

Overview

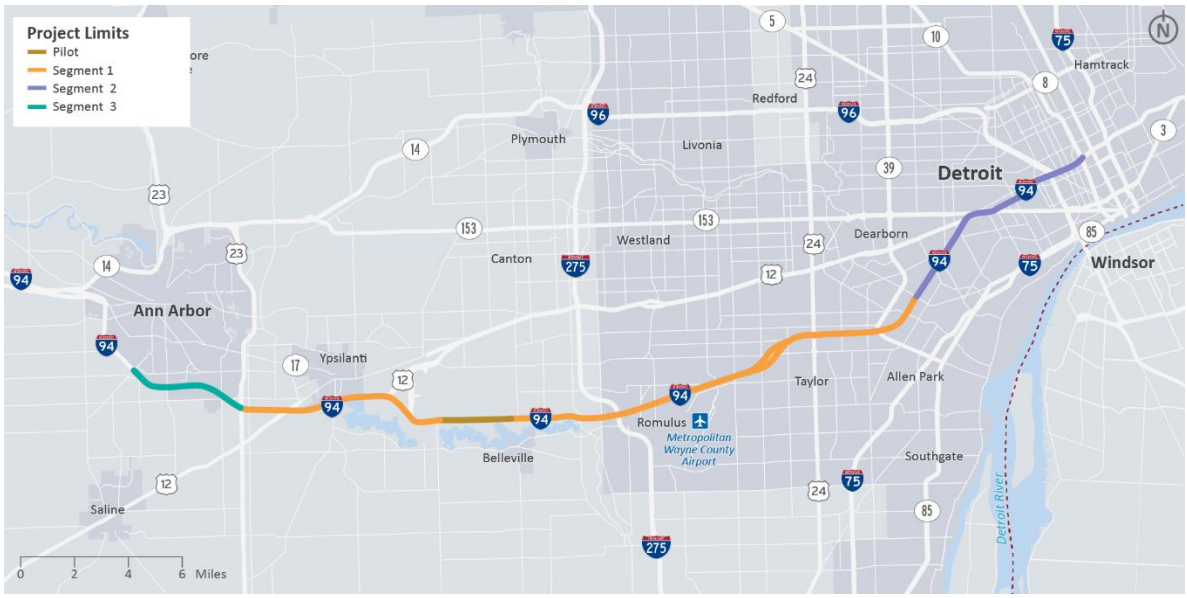
Cavnue commissioned Steer to prepare a Level 2 traffic and revenue study for a first-of-its-kind Express Lane with dense deployment of technology (Express Lane) in southeast Michigan, along I-94 between Allen Park and Ann Arbor. The project envisions connecting these two points with an innovative infrastructure solution that unlocks the full potential of connected and automated vehicles improving safety, congestion, and accessibility, among other benefits.

This document provides a high-level summary of our forecasting approach and the inputs provided for the HCS Traffic Analysis.

The Project

Cavnue will equip the approximately 40-mile segment of I-94 with innovative physical and digital infrastructure to enable a more reliable, coordinated and dedicated Express Lane with dense deployment of technology. The Project considers the following segments, as shown in the figure below.

Figure 1: Project Phasing



Source: Steer

For the scope of our work, we have considered:

- The following operational Segments according to the modeled years:
  - 2035: Segment 1
  - 2045: Segments 1 & 2

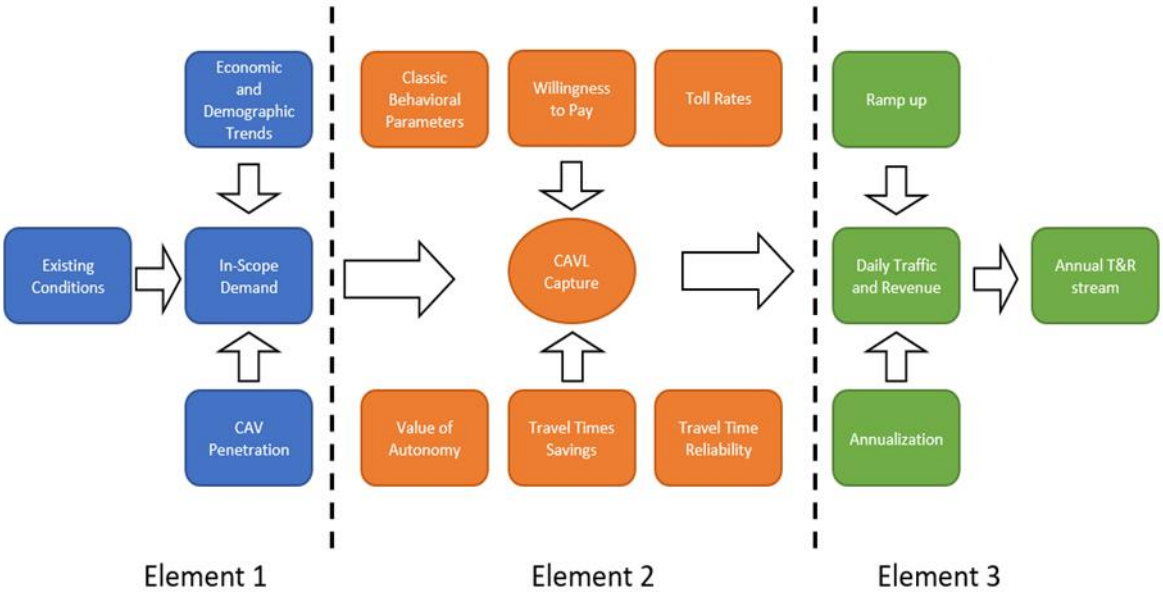
- The Project will operate similar to Managed Lanes with limited access points along the corridor.
- CAVs will pay user fees to use the lane and benefit from the technology offered by the Project.

Forecasting Approach

The general forecasting approach is depicted in Figure 2 and consists of three elements:

- **Element 1**: Definition of the traffic demand that could use the I-94 corridor - this is known as the In-Scope Market and in this case consists of traffic currently using I-94 plus additional traffic that could be attracted by the Project.
- **Element 2**: Estimation of the proportion of the in-scope traffic that will pay and use the lane - this is termed Capture rates, and in this is driven by benefits enabled by connectivity and Autonomy combined with the willingness to pay for those benefits.
- **Element 3**: Conversion of the capture rate outputs into annual forecasts, including the use of future year traffic growth forecasts, assumption about ramp-up and annualization.

Figure 2: General Methodology



Source: Steer

To implement this approach, we developed a custom network model in Cube Voyager based on the Michigan Statewide Passenger and Freight Travel Demand mode (MDOT model), including networks, parameters and matrices, as well as recent traffic data, trip patterns, and our best estimates for regional growth. Key characteristics include:

Table 1: Network Model Assumptions

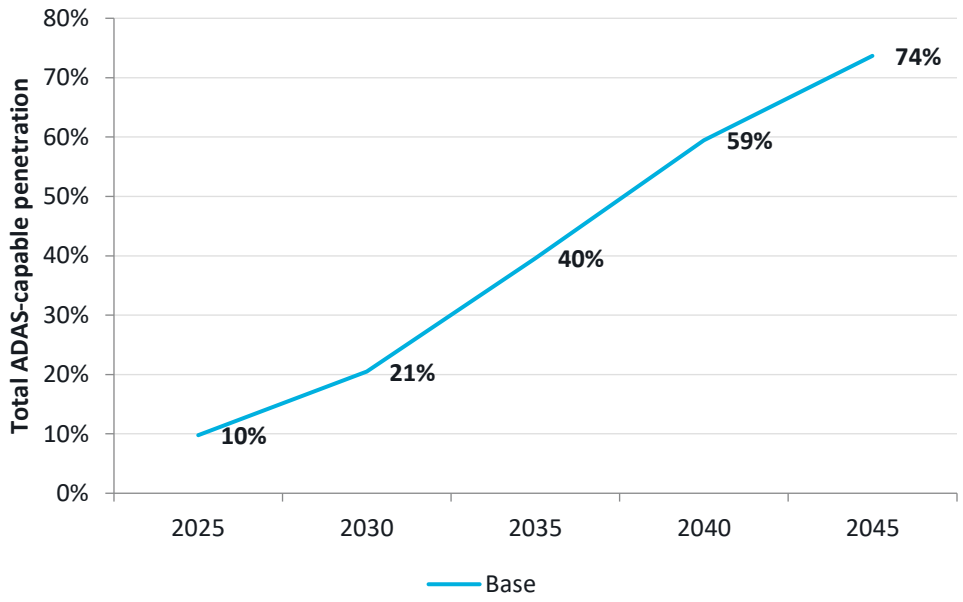
Assumptions	Parameter	Comments
Modeled Years	2035 and 2045	Base year calibrated against traffic volumes, journey times and trip patterns.
Vehicle Types	Legacy vehicles (SOV, HOV, medium trucks, heavy trucks) CAVs (autos, medium trucks, heavy trucks).	CAVs only apply for future years.

Assumptions	Parameter	Comments
Time Periods	• AM: 6:30 am to 9:00 am • MD: 9:00 am to 2:30 pm • PM: 2:30 pm to 6:30 pm • NT: 6:30 pm to 6:30 am	Our model represents the volumes for the time periods from SEMCOG
CAV Penetration Curves	Base, upside and downside as shown in Figure 3.	Provided by Cavnue. Base case used for the case presented in this note.
CAV Lane Access	• CAVs need to pay to use the lane • Legacy vehicles and trucks are not allowed on the lane.	
Assignment Structure	Path based user equilibrium assignment for all vehicle types based on the following generalized cost: $GC = Time + (Tolls - VOA_s) * Dist/VOT$	This approach considers the dynamic relationship between congestion and route choice, simulating different behaviors and vehicle types.
Value of Autonomy (VOA):	VOA is a constant monetary value used to represent the benefits within the lane such as safety, reliability, and autonomy. We defined 20 equally sized CAV auto segments with the VOAs from 0.014 $/mile to 0.30 $/mile.	Parameters estimated from our own behavioral analysis through Stated Preferences. The segments represent a range of willingness to pay for technology benefits.
Value of Time (VOT)	VOT is required to compare monetary costs with time savings. The final VOTs are: • $17 / hr for autos (CAVs and Legacy vehicles) • $34 / hr for medium trucks (CAVs and Legacy vehicles) – 2x auto VOT • $51 / hr for heavy trucks (CAVs and Legacy vehicles) – 3x auto VOT	Parameters estimated from our own behavioral analysis through Stated Preferences.

Source: Steer

The following figure shows the CAV Penetration curves which were provided by Cavnue.

Figure 3: CAV Auto Penetration



Source: Cavnue

We selected a single user fee in $/mi by running revenue optimization scenarios in the base case model for 2030 and 2045, as these years mark the short and the long-term scenarios. 2035 fees were estimated by interpolation. The resulting user fees we selected for 2035 and 2045 are 14c/mi and 20c/mi, respectively. Only CAV Autos are allowed on the CAV Lane. In implementation, toll rates may be able to be modified to manage traffic in the CAV lanes and adjacent lanes. The model seeks the equilibrium situation, whereby user preferences are met within the corridor and across the regional network.

The following table lists the final fees selected for 2035 and 2045.

Table 2: Modeled User Fees[1][2]

Year	CAV Auto ($/mi)
2035	0.14
2045	0.20

Source: Steer

Future demand matrices were estimated based on the trip differences between MDOT demand for 2020 and future years (i.e. 2035, 2045) and added to the Steer base year calibrated demand. A control on total growth was then applied based on socioeconomic analysis for Wayne and Washtenaw counties, including the following sources: SEMCOG, Woods & Poole Economics (2021), and recent forecast study that University of Michigan prepared for MDOT (REMI analysis). The growth controls are shown in Table 3. As the final step, adjustments were made to the 2035 and 2045 matrices to accurately reflect MDOT's traffic growth expectations.

[1] All numbers in $2022

[2] N/A: Legacy Autos and Trucks are not allowed in the Express Lane.

Table 3: Total Sub-Area CAGR

Period	CAGR
2022-2035	0.83%
2035-2045	0.15%

Source: Steer

HCS Inputs

To support the HCS Analysis, we supplied the following elements extracted from the 2035 and 2045 network model results:

- Volumes by access point and associated upstream origins during both the AM and PM periods.
- Volumes by egress point and associated downstream destinations during both the AM and PM periods.
- Detailed ramp volumes by vehicle type during both the AM and PM periods.
- Shapefile containing lane volume information for the network during both the AM and PM periods.
- Shapefile illustrating user diversion and attraction resulting from the operation of the project.

Appendix H – S&P Global Mobility Review

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

17 November 2023

Cavnue LLC
1100 Wilson Blvd, Suite 1100
Arlington, VA, 22209

Dear Cavnue team,

S&P was engaged to conduct a thorough review of the inputs, assumptions, and methodology used by Cavnue in its long-term forecast of connected and automated vehicle (CAV) adoption. The review includes a written assessment of (1) the logical soundness of the inputs, assumptions, and methodology; and (2) the potential alignment of the methodology with S&P's own assumptions.

S&P has reviewed the model and found the **inputs, assumptions, and methodology, to be sound**. The attached brief provides details on the process undertaken by S&P Global to arrive at this conclusion, while including appropriate caveats.

It is important to note that while we have determined the methodology to be logically sound, **S&P does not endorse the specific results of the model**, as this falls outside the scope of our review.

Sincerely,
Colin Bird-Martinez
Principal Consultant
S&P Mobility

S&P Global
Mobility

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

Cavnue CAV Penetration Model: S&P Review

The below brief outlines the inputs and methodology that S&P Global reviewed. Our objective was to thoroughly assess the accuracy and reliability of the data used in the model, as well as the methodology employed to generate the long-term forecast.

Section 1: Inputs and Methodology Reviewed

1.1 Inputs:

Cavnue utilized three S&P Global forecasts as primary inputs to develop its estimates:

1. Total Vehicles in Operation (VIO) (2021-2032): Cavnue relied on S&P's near-term forecast for total U.S. vehicles in operation. This data served as a baseline for estimating near-term vehicle parc, extrapolating vehicle retirements, and projecting the long-term growth profile of the market.

2. S&P Global Autonomy Applications Forecast (2021-2034): Cavnue incorporated S&P's forecast for new vehicle sales by L2+ Advanced Driver Assistance System (ADAS) features (with a specific focus on Interurban Automatic Emergency Breaking, Adaptive Cruise Control, Lane Centering, and Lane Keep Assist) and L4 autonomous driving capabilities, thereby establishing a near-term adoption rate of different autonomy levels in the market. This was used to project continued sales growth for vehicles equipped with these autonomy features, beyond the timeframe of the S&P forecast.

3. S&P Global Telematics Forecast (2021-2028): Another crucial input was S&P's forecast for new vehicle sales by telematics features. By matching telematics features to ADAS and autonomy features, Cavnue narrowed its definition of CAVs to vehicles with minimum L2+ capabilities (as noted above, defining these as Interurban Automatic Emergency Breaking, Adaptive Cruise Control, Lane Centering, and Lane Keep Assist) *and* the ability to receive, at a minimum, high-latency data via 4G connectivity. Cavnue's model assumed that all L4/L5 vehicles will have some connectivity capabilities.

Beyond S&P data, Cavnue has cited the use of the following data sources to establish its long-term total U.S. parc forecast based on vehicle miles traveled (VMT):

- Bureau of Transportation Statistics
- U.S. Congressional Budget Office (CBO)
- Federal Highway Administration (FHWA)
- U.S. Department of Energy (DOE)

Cavnue also cited the use of market CAGR estimates from the following third-party sources to establish starting growth rates for its extrapolation of AV / ADAS sales beyond 2034:

- Grand View Research
- Strategic Market Research
- Transparency Market Research Inc
- Verified Market Research
- McKinsey
- Mordor Intelligence
- Fortune Business Insights
- Research and Markets

S&P Global
Mobility

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

Finally, Cavnue cited the use of market CAGR estimates from the following third-party sources to establish starting growth rates for 5G connectivity adoption:

- Juniper Research
- Future Market Insights
- ABI Research

1.2 Methodology:

Cavnue's methodology:

1. Utilization of the following S&P forecasts (outlined above) to develop a near-term CAV forecast :
    a. S&P Global Total Vehicles in Operation (VIO) (2021-2032), establishing the total U.S. vehicle parc and serving as the denominator for Cavnue's calculation of percent CAV adoption through 2034. VIO was additionally used to establish vehicle retirements through 2034 and for the non-CAV parc.
    b. S&P Global Autonomy Applications Forecast (2021-2034). The forecast of vehicles with a minimum of Cavnue's selected L2+ ADAS features matched with at least 4G connectivity (based on S&P Telematics Forecast below) serves as the numerator for L2-L3 CAV adoption through 2028. The forecast of vehicles with L4 capabilities serves as the numerator for L4 CAV adoption through 2034.
    c. S&P Global Telematics Forecast (2021-2028). As noted, Cavnue matched telematics capabilities to projected sales of vehicles equipped with minimum L2+ ADAS features. This established a minimum 4G connectivity threshold for L2+ vehicles to be counted in the numerator for L2-L3 CAV adoption through 2028. The Telematics Forecast is not matched to L4-L5 vehicles, as all of these autonomous systems are assumed to have minimum connectivity capabilities.

2. Extension of the forecast beyond 2034 by:
    a. **Extrapolating the vehicle parc using Cavnue's VMT methodology.** Cavnue forecasted total U.S. light vehicle parc over the long run by (i) calculating total U.S. light vehicle VMT (based on population, personal travel, and passengers per trip forecasts), (ii) assuming an average number of miles traveled per vehicle (differentiating between L0-L3 vehicles and L4-L5 vehicles), and (iii) dividing the total VMT by the weighted average miles per vehicle to determine total vehicle demand.
    b. **Applying scrappage assumptions for CAV retirements.** Cavnue extended the vehicle retirement forecast from the S&P Global Total VIO data set to estimate retirements of L0/L1, L2/L3, and L4/L5 vehicles. L0/L1 retirements post 2034 were based on historical retirement trends observed in the S&P VIO data (with an implied average retirement age of ~20 years). L2-L5 vehicles are retired on a comparable curve, with an average retirement age of ~17 years for L2/L3 vehicles (based on expected limitations to the battery life of electric vehicles), and an average retirement age of ~13 years for L4/L5 vehicles (based on both limitations to battery life, as well as higher annual mileage assumed for a portion of shared L4/L5 vehicles).
    c. **Applying a delta between vehicle parc and vehicle retirements to imply New Vehicle Sales (NVS).** The difference between (i) the total demand for vehicles in the market, as expressed using Cavnue's VMT-based vehicle parc forecast, and (ii) the number of vehicles retired out of the market based on Cavnue's scrappage forecast implied the total demand for new vehicles every year. This output was scrutinized to ensure that it did not deviate materially from historical year-on-year growth or annual sales trends.

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

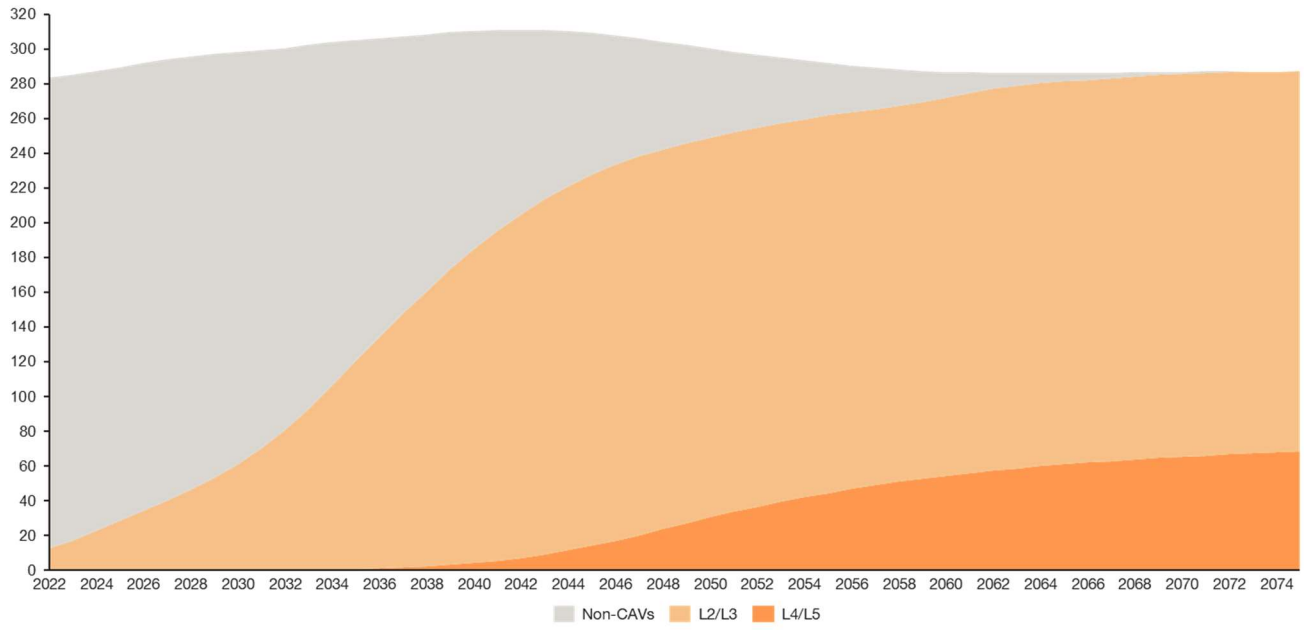
Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

d. **Estimating L2/L3 and L4/L5 sales within the total new vehicle sales.** Cavnue estimated annual L2/L3 and L4/L5 sales beginning with the L2/L3 and L4/L5 sales figures implied in the terminal year of S&P's near-term Global Autonomy Applications Forecast. Cavnue then applied an initial annual growth rate to these sales based on the CAGR benchmarks identified in third-party reports, with an assumed starting growth rate of 13.8% for L2/L3 vehicles and 43.0% for L4/L5 vehicles. Cavnue applied an annual 0.5% step-up in the growth rate of the L2/L3 sales (reflecting accelerating demand and increasing requirements for safety and ADAS features within the market), and an annual 0.5% step-down in the growth rate of the L4/L5 sales (reflecting a normalization of annual sales growth as volumes grow from an extremely low initial base). The combined L2/L3 and L4/L5 sales were then capped each year based on the annual NVS implied under (e) above, such that the total new L2-L5 sales never exceeded the total demand for new vehicles.

1.3 Cavnue Model Outputs:

The outputs of the final model that S&P Global Mobility reviewed – inclusive of the feedback that S&P provided in Section 2 below – are as follows:

Figure 1: Total Vehicle Parc Distribution; Base Case – Minimum ACC & Lane Centering, 4G+



S&P Global Mobility

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

Figure 2: New Vehicle Sales Distribution; Base Case – Minimum ACC & Lane Centering, 4G+

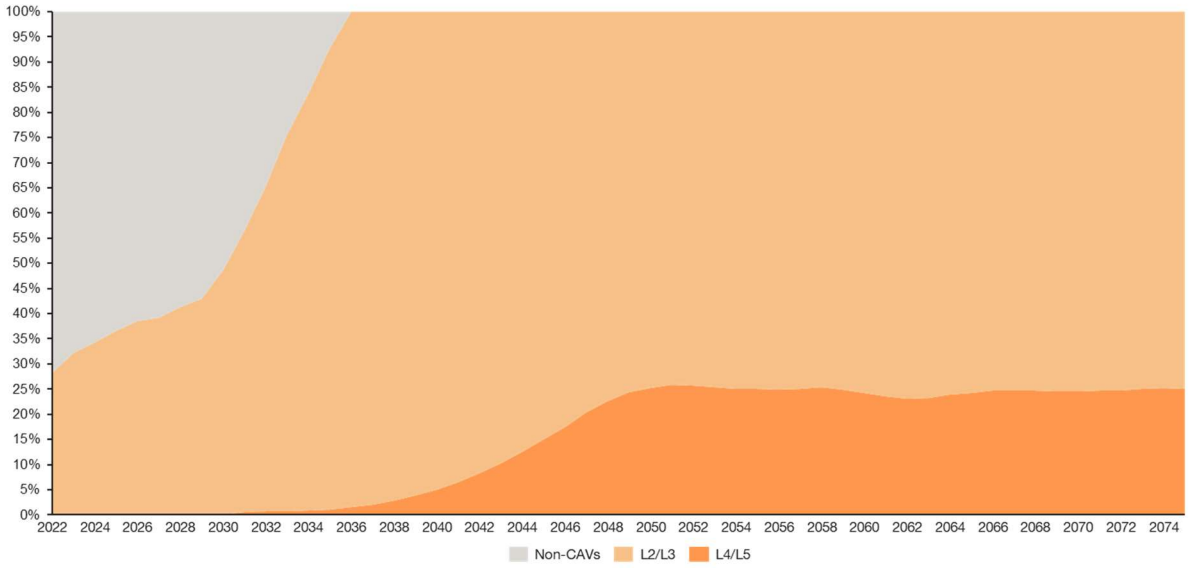
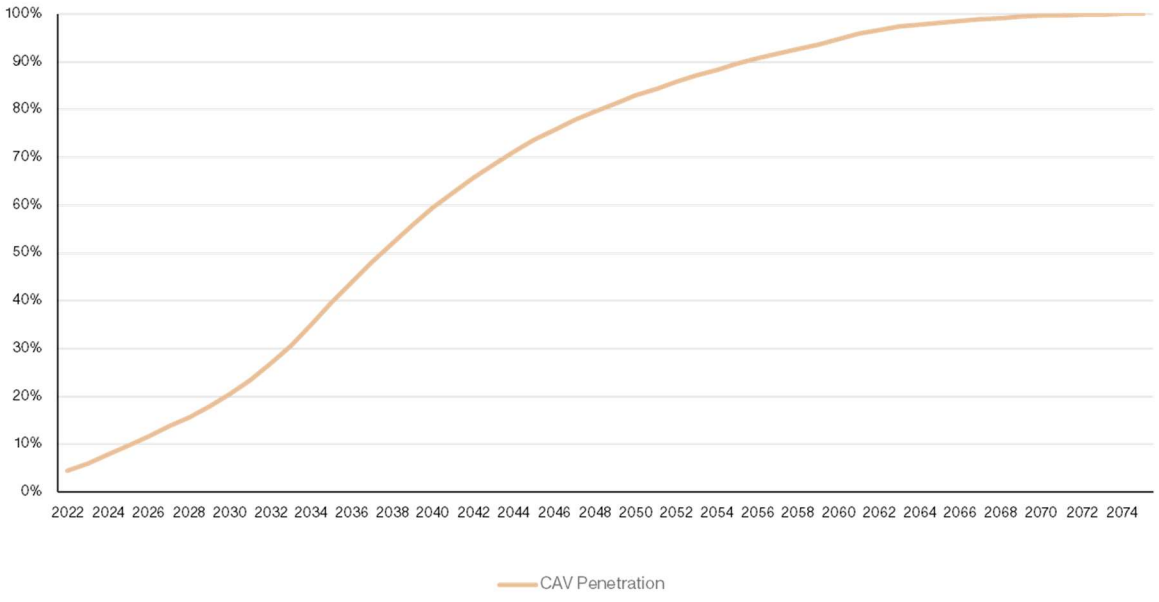


Figure 3: Overall CAV Penetration; Base Case – Minimum ACC & Lane Centering, 4G+



S&P Global Mobility

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

Section 2: Determining the Logical Soundness of the Forecast:

Through a rigorous review of the inputs, methodology, and outputs, S&P Global determined that the forecast generated by Cavnue is logically sound.

The careful analysis of the validation of the model and expert review all contributed to our confidence in the forecast's reliability.

Model Validation and Expert Review:

Our team of experts conducted a comprehensive review of the methodology and outputs of the model.

Over the course of the review, S&P provided several recommendations to further rationalize the underlying assumptions and resulting model outputs, all of which were ultimately incorporated into the Cavnue model:

- *Reducing NVS to a range of 15 to 18 million NVS units for the foreseeable future, followed by a plausible 16 to 20 million NVS range later in the forecast period.* Cavnue reflected this advice by incorporating S&P's proposed changes to its VMT-based vehicle parc calculation, including (i) adjusting the VMT calculation to use workforce age population (20-64 years old), and (ii) adjusting the vehicle miles traveled for personal vehicles (based on S&P Global AftermarketInsight Vehicle Miles Traveled dashboard) and for L4/L5 vehicles (based on benchmarks from Waymo and Cruise, which were incorporated into a weighted average vehicle miles traveled for L4/L5 vehicles).
- *Adjusting scrappage rates of L2/L3 vehicles to align more closely with L0/L1 scrappage rates.* While S&P agreed that new L2/L3 vehicles should have a moderately lower average retirement age than legacy L0/L1 vehicles, the difference should not be substantially different than the historical average of ~20 years. Cavnue accepted these changes and adjusted the L2/L3 retirement curve to more closely match the legacy L0/L1 retirement trend, resulting in Cavnue's revised average L2/L3 retirement age of ~17 years. S&P found this revised L2/L3 retirement age to be rational.

Additional aspects of the model that S&P evaluated included (i) how Cavnue incorporated and interpreted S&P Global's Autonomy Applications Forecast and Telematics Forecast into the model, (ii) how Cavnue merged the Automotive Applications and Telematics Forecasts, and (iii) Cavnue's assumptions regarding overall vehicle connectivity. S&P determined that Cavnue's use of the S&P Global forecasts was correct. Further, the way Cavnue merged the Automotive Applications and Telematics forecasts was rational. S&P agreed with Cavnue's assumption that L4/L5 vehicles will have near universal connectivity hardware.

Finally, S&P examined the resulting CAV sales volumes for L2/L3 vehicles and L4/L5 vehicles. While endorsing the results is not in scope for this report, S&P found that the resulting L2/L3 vehicle sales were rational. The ramp up and volume of sales for L4/L5 vehicles is lower than S&P's more conservative internal scenarios for the technology (as further detailed in the benchmarking below) but are still plausible.

S&P Global Mobility
26533 Evergreen Rd
Southfield, MI, 48076

spglobal.com/mobility

Ram Chandrasekaran
Associate Director
Consulting Services
ram.chandrasekaran@spglobal.com

Colin Bird Martinez
Principal Consultant
Consulting Services
colin.birdmartinez@spglobal.com

Section 3: Benchmarking

The S&P Global Commodity Insights - Mobility and Energy (M&E) Future New Mobility forecast includes NVS estimates for autonomous robotaxis and passenger vehicles that were not incorporated into the Cavnue methodology. This M&E Future New Mobility Forecast goes out to 2050 and serves as a helpful, third-party comparison to the Cavnue forecast.

The M&E Future New Mobility Forecast includes both conservative and aggressive scenarios. Averaging these S&P Global scenarios results in NVS ~9M in L4/L5 autonomous vehicles sales in 2050, reflecting a 2023 to 2050 sales CAGR of 38%. Cavnue's model projects L4/L5 vehicle sales of ~4M in 2050, with a 2023-2050 CAGR of 34%. Both the M&E Future New Mobility Forecast and the Cavnue forecast project growth deceleration to the single digits in the 2040s. However, growth deceleration occurs slightly earlier in Cavnue's model, slowing to the high single digits by 2048 and rationalizing to ~2% annual growth by 2050 – versus continued growth in the high single digits through 2050 under the M&E Future New Mobility Forecast.

S&P Global predicts that robotaxis will dominate L4/L5 autonomy sales until the mid-2030s, after which personal autonomous vehicles will take over. By the end of the forecast period, robotaxi sales are expected to settle in the range of 17%-26% of the new vehicle sales market. Cavnue's model assumes that *total* L4/L5 sales (not limited to robotaxis only) will settle at ~25% of the market in 2050.

However, it is important to note that the purpose of this project was to assess overall CAV adoption. Despite the differences in specific numbers for L4/L5 adoption, the total CAV assessment aligns with S&P Global's overall figures, and the methodology used by Cavnue to extend the S&P forecasts to 2100 is logical.