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Suite 2600

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Livonia, MI 48152

Date: October 31, 2025
To: Madison Heights City Council Members
From: Lauren Warren, PE, PTOE, PMP - Director of Traffic Engineering, Cincar Consulting Group, LLC
Subject: Executive Summary – Traffic Review for Proposed Bubba's 33 Restaurant

Dear Council Members,

C2G was retained by the property owner (Najor Companies) to review traffic operations related to the proposed Bubba's 33 restaurant on 12 Mile Road, west of Dartmouth Street. The purpose of this study was to understand current traffic conditions, review potential impacts from the proposed redevelopment, and identify ways to keep traffic moving safely and efficiently. A complete traffic impact assessment was performed and is provided for your review. Below is a summary of the findings.

Existing Conditions

The intersection of Dartmouth Street and 12 Mile Road is signalized and currently provides one northbound lane for all turning movements. Residents have noted that traffic on northbound Dartmouth often backs up during busy hours, especially in the morning when many drivers turn left toward I-75.

Our staff observed traffic in the area on Monday evening, October 20, 2026 and Tuesday morning, October 21, 2026. During these times, queues were short—typically about three to four vehicles per signal cycle—and cleared with each green light. It was observed that a steady stream of southbound right turn vehicles left small gaps for the northbound left vehicles to turn.

The traffic signal is operated by the Road Commission for Oakland County and uses an adaptive control system called SCATS, which adjusts green times based on traffic demand. Because signal timing changes throughout the day, our analysis used a fixed set of timings to evaluate performance using industry-standard methods.

Overall, the data and observations show that the current single-lane northbound configuration is functioning adequately, and the queueing is a **pre-existing condition**.

Trip Generation and Access

The former Marinelli's restaurant was about 6,500 square feet. The new Bubba's 33 will be slightly larger at 7,000 square feet. Both are full-service restaurants with similar traffic patterns. Based on national trip generation data (ITE Manual), the new restaurant would generate about **four additional vehicle trips** during the busiest evening hour compared to the previous restaurant. This equates to about one additional vehicle every fifteen minutes, a minor increase from prior site. The restaurant is not open in the morning for business and thus would not impact the morning peak.

Because of recent changes made when the I-75 Diverging Diamond Interchange (DDI) was built, the 12 Mile Road driveway can now only be used for **right turns in and out** of the restaurant site. Left turns into or out of this driveway are no longer practical due to nearby lane configurations.

To provide safe and effective full access to the site, vehicles will also use the existing one-lane public alley connection to Dartmouth Street. Patrons of the Marinelli's site also used this alleyway to complete left turns onto 12 Mile Road. The existing alley is only wide enough for a single vehicle which creates a conflict if a car leaves the restaurant and a vehicle enters the alley from Dartmouth. The single lane alley may also encourage patrons leaving the restaurant to attempt a left-out at the 12 Mile Road entrance, which is a concern of the Road Commission for Oakland County (RCOC).

The developer has purchased the adjacent residential property south of the alley and proposes widening the alley to a **two-lane driveway**, allowing for safe two-way access to and from Dartmouth Street. The Bubba's 33 development can occur with existing zoning on the parcel today. No regulatory changes are required for the site. However, without improved access, the development, or any alternative development on this site, may not occur due to the constrained directional access. The alley must be widened to two lanes for traffic to access the site safely and effectively. **The approval of the Special Land Use for this property will achieve this.**

Operational Improvements

Hearing the concerns of the residents along Dartmouth, Najor Companies and C2G are actively working with Madison Heights planning and engineering as well as RCOC to discuss options for changes to the Dartmouth at 12 Mile Road traffic signal that address the complaints the residents. While the intersection works reasonably well today, several alternatives were explored to improve the northbound Dartmouth delay. A full description of each alternative, sketches and operational analysis is provided.

The recommended improvement changes the southbound lane configuration on Dartmouth Street so that the existing left lane serves both through and left-turn traffic, while the right lane becomes a dedicated right-turn lane. The signal would also be adjusted so that southbound right turns can move at the same time as eastbound left turns.

This change allows more vehicles to pass through each signal cycle, reduces the number of turning conflicts, and helps ease congestion for northbound Dartmouth traffic. It's an efficient and affordable solution that benefits both the existing intersection and future site operations.

Conclusion

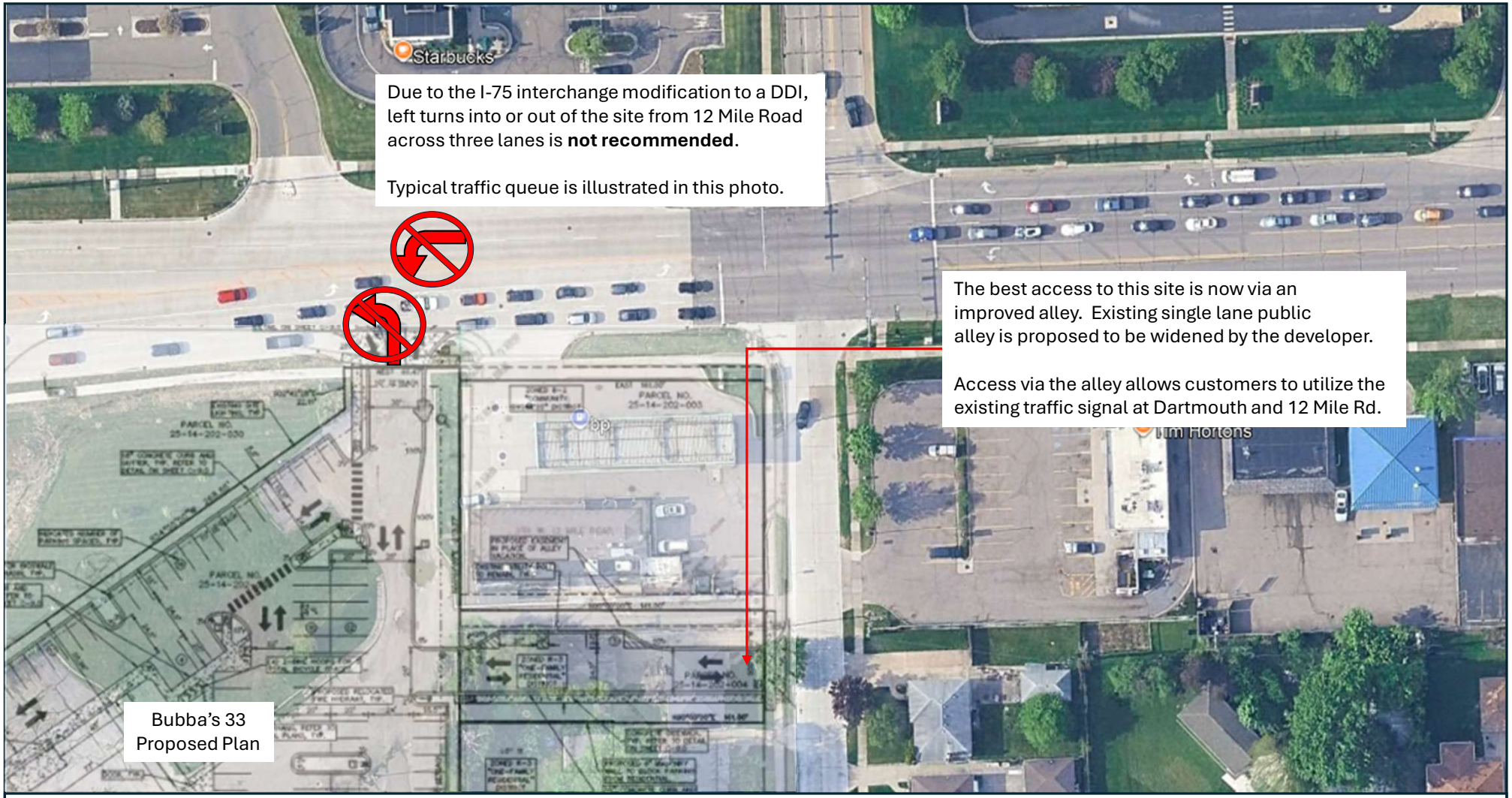
Our review shows that the proposed Bubba's 33 restaurant will have **no meaningful increase in traffic** compared to the former restaurant. The access plan, which includes widening the alley (via the SLU), will ensure safe and convenient access for customers, employees, and delivery vehicles.

No regulatory changes are required for the site and the proposed improvement to the southbound approach will provide a noticeable benefit to drivers at Dartmouth Street and 12 Mile Road.

We appreciate the City's consideration of this report and are confident that this redevelopment will make productive use of a long-vacant site while maintaining safe and efficient traffic flow for the community.

Lauren a Warren

Lauren Warren, PE, PTOE, PMP
Director of Traffic Engineering and ITS
Cincar Consulting Group, LLC



Proposed Site with Existing Conditions

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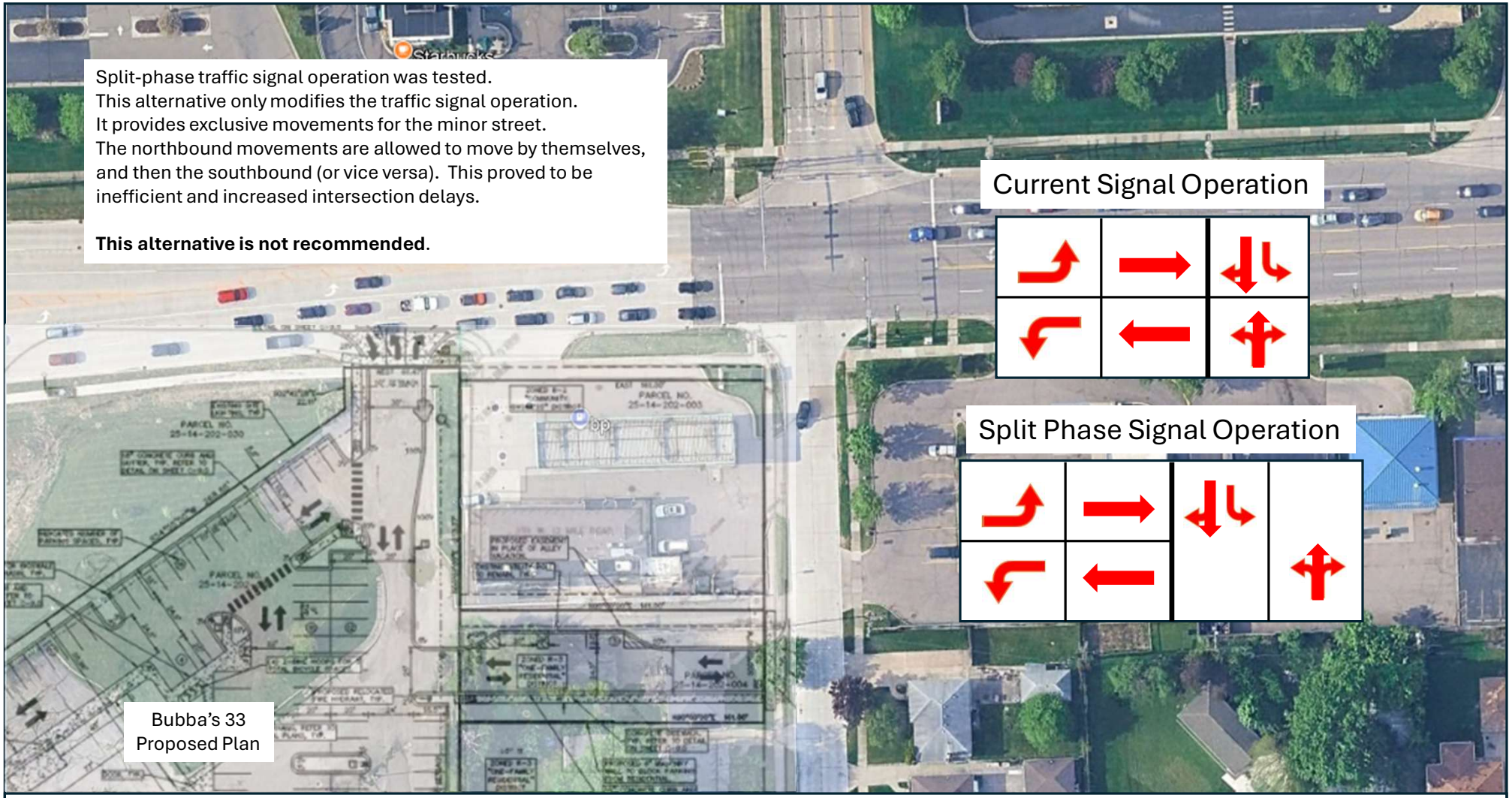
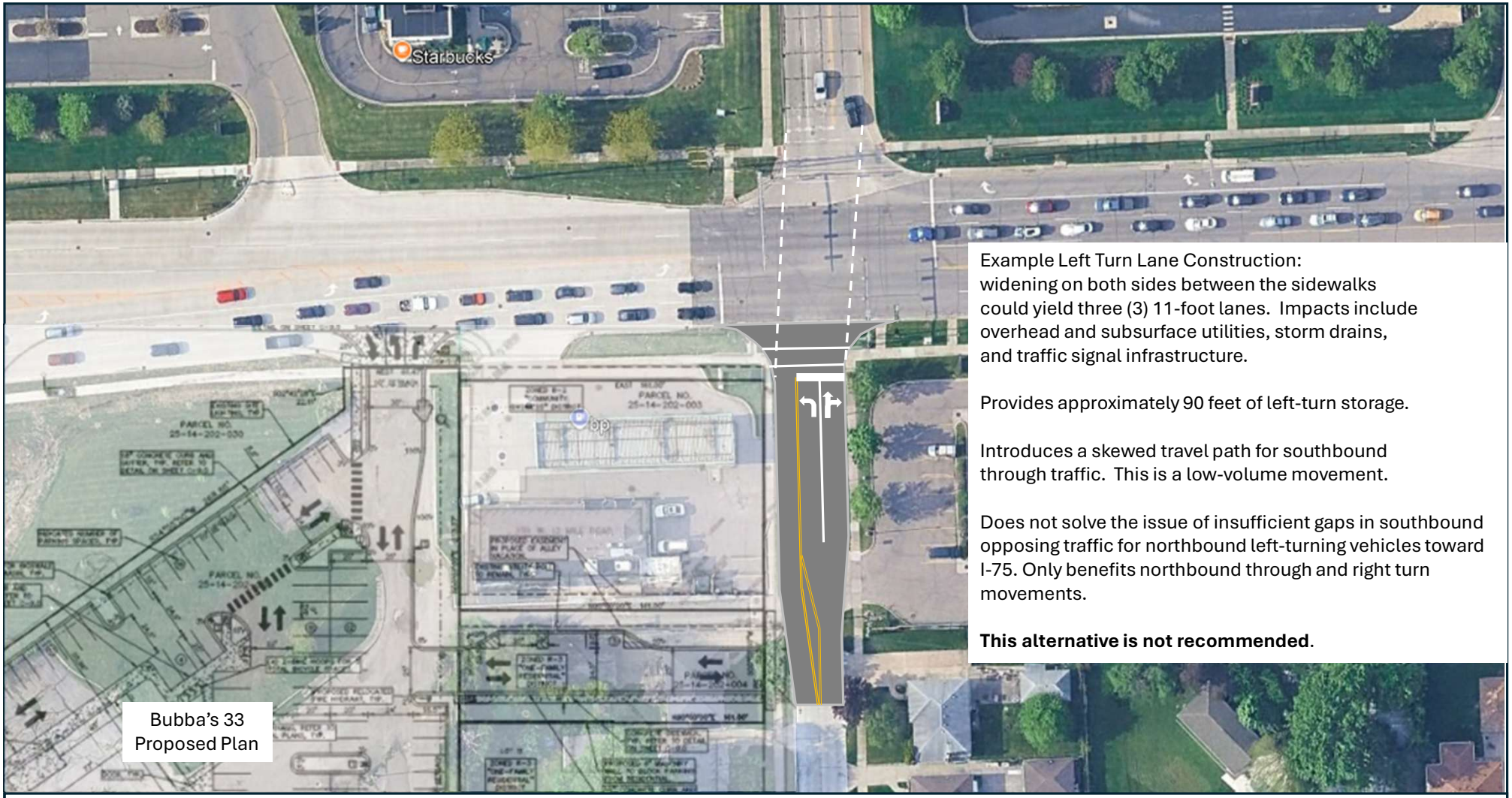


Split Phase Operation



Example Left Turn Lane Construction:
widening on both sides between the sidewalks could yield three (3) 11-foot lanes. Impacts include overhead and subsurface utilities, storm drains, and traffic signal infrastructure.

Provides approximately 90 feet of left-turn storage.

Introduces a skewed travel path for southbound through traffic. This is a low-volume movement.

Does not solve the issue of insufficient gaps in southbound opposing traffic for northbound left-turning vehicles toward I-75. Only benefits northbound through and right turn movements.

This alternative is not recommended.

Added Northbound Left Turn Lane (NOT TO SCALE)

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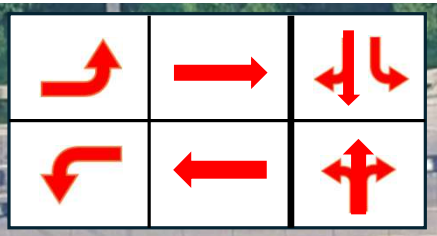
Recommended solution changes how the lanes are used on the southbound side of the intersection. The left lane would handle both through and left-turn traffic, while the right lane would become a dedicated right-turn lane. The traffic signal would also be adjusted so that southbound right turns move at the same time as eastbound left turns. These small changes let more southbound cars move through each light cycle, reduce conflicts with northbound left-turning traffic, and help ease the congestion that drivers on Dartmouth Road are seeing today. This is a simple, highly effective fix that should noticeably improve the intersection.

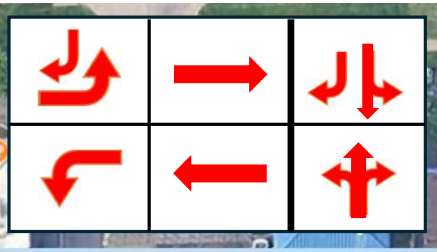
This solution helps the neighborhood today, without the Bubba's 33 development. Below is a table of the existing traffic conditions, the existing conditions plus this improvement, and the estimated opening year conditions of Bubba's 33 with this improvement.

This is the recommended alternative.

Current Signal Operation



Proposed Signal Operation



Right Turn Overlapped With Non-Conflicting Left Turn Phase

Example of Right Turn Overlap Signal indication. From John R Rd

Bubba's 33 Proposed Plan

Operational Improvements – Updated Southbound Lane Assignments and Right Turn Overlap

C2G CINCAR CONSULTING GROUP

October 31, 2025

Major Companies
Attn: Brian F. Najor, President
600 N. Old Woodward
Suite 100
Birmingham, MI 48009

Re: DRAFT TRAFFIC ASSESSMENT - TECHNICAL MEMORANDUM

The purpose of this memorandum is to provide a concise evaluation of traffic conditions related to the redevelopment of the former Marinelli's restaurant site into a new Bubba's 33 restaurant. This analysis addresses the topics identified in the City's scope of review, including:

- Existing Conditions and Queues,
- Driveway versus Alley Access,
- Trip Generation Comparison, and
- Summary of Mitigation Alternatives

The findings are intended to support the zoning modification request associated with the acquisition and incorporation of an adjacent residential parcel and to demonstrate that the proposed development can be reasonably accommodated within the existing roadway network with targeted improvements primarily related to existing operational issues.

Existing Conditions / Queues

The project site is located along 12 Mile Road west of Dartmouth Street. Dartmouth Street at 12 Mile Road is a signalized intersection that currently provides a single northbound travel lane that serves both through and left-turn movements. Resident feedback indicates that traffic queues frequently form on northbound Dartmouth during peak hours, particularly in the morning when a significant proportion of vehicles are turning left toward I-75. The single-lane configuration results in left-turning vehicles yielding to opposing traffic, blocking through and right turn movements, and contributing to longer queues that often cannot clear within the allotted green time.

A C2G staff member directly observed this movement on the evening of Monday, October 20th, and the morning of Tuesday, October 21st. At neither time was an extensive northbound queue observed. A few motorists were streaking through the yellow and one red violation, but the street was clear after each observed cycle of the traffic signal.

The traffic signal at Dartmouth St and 12 Mile Rd is operated by the Road Commission for Oakland County (RCOC) using SCATS. This adaptive signal control system prioritizes progression along 12 Mile Rd as part of a coordinated corridor. SCATS can allocate green time dynamically based on detected demand. This introduces variability from one signal cycle to the next. To perform this analysis, a fixed set of phase timings (obtained from the RCOC traffic signal timing permit provided) was used in the

Synchro Suite software to obtain Level of Service (LOS) according to the Highway Capacity Manual (HCM) methodologies.

The current queueing issue is a pre-existing condition, independent of the proposed redevelopment. Preliminary analysis indicates that the existing single-lane northbound configuration works adequately. The 50th percentile queue length for the northbound Dartmouth St movement during the AM peak period (the critical peak period for the day) is approximately three (3) vehicles long. This was also observed in the field with queues of around 3-4 vehicles per cycle.

Trip Generation Comparison

The previous land use, Marinelli's restaurant, occupied approximately 6,500 square feet and operated as a full-service dining establishment. The proposed Bubba's 33 restaurant is anticipated to occupy approximately 7,000 square feet, also functioning as a full-service dining venue. Based on the ITE Trip Generation Manual (12th Edition), land use code 932 (Sit-Down Restaurant) will be used to evaluate both uses for consistency and comparability.

A trip generation comparison table will be provided to summarize peak hour trips associated with both the existing and proposed uses. Only the PM Peak Hour trips are estimated due to Bubba's 33 hours of operation. The restaurant does not open until 11 am.

Land Use	Size (GSF)	AM Peak Hour Trips	PM Peak Hour Trips
Previous Marinelli's	6,500 SF	N/A - Closed	60
Proposed Bubba's 33	7,000 SF	N/A - Closed	64
Net Increase		N/A	+4

Given the similar land use type, operational style, and modest increase in square footage, preliminary expectations indicate that the proposed redevelopment will result in little to no meaningful net increase in peak-hour traffic relative to the former restaurant.

12 Mile Driveway and the Public Alley

Two access points are proposed for the site, utilizing an existing 12 Mile Rd access point for right-in and right-out access, and via Dartmouth using an existing single-lane alley. Due to the recently completed DDI interchange at I-75, the existing driveway on 12 Mile Rd can no longer serve as a full access point. There is not enough width on 12 Mile Rd at the driveway to form a left turn lane into the site. Any left turn from 12 Mile Rd into the site will conflict with the beginning of the left turn lane on 12 Mile Rd to Southbound I-75.

It is important to note that the DDI interchange was constructed after the closure of the Marinelli's restaurant. During the previous restaurant's operation, left turns in and out of the 12 Mile Rd driveway were easier to perform because there was previously a two-way left turn lane at the entrance. With the DDI in place, creating a left turn lane on 12 Mile Rd is not practical.

The existing single-lane alley served as an alternative access for Marinelli's patrons to use the Dartmouth signal to turn left. It is believed that the alley predominantly served exiting traffic to the signal. With no left turns at the 12 Mile Rd driveway, the alley is the only other access point to the proposed site.

To replace the mobility that would be lost in this change, the developer has acquired the adjacent residential parcel to the south of the existing alley, which is the focus of zoning modification request. Owning this parcel allows for the widening and improvement of the alley to a full-width two-way driveway to the proposed restaurant. This enables traffic turning left into and out of the site to use the Dartmouth St traffic signal (Figure 1).

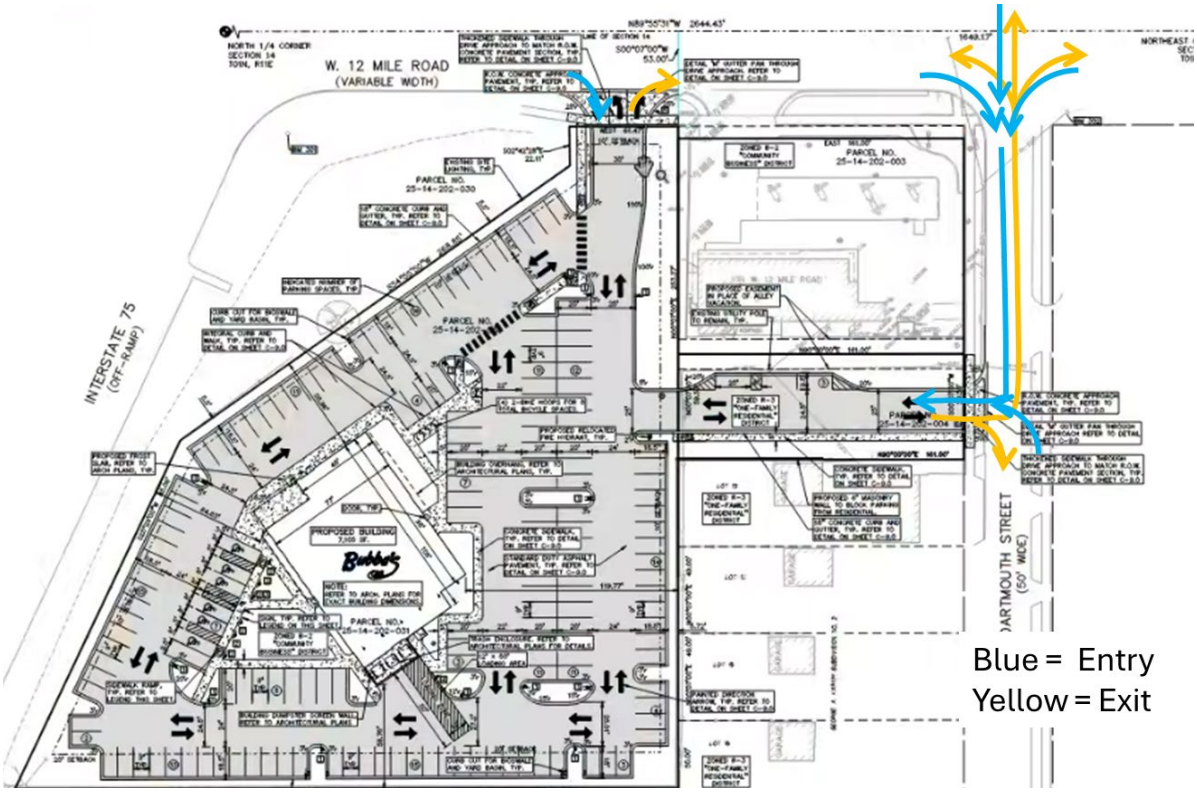


Figure 1. Site Map with Directions of Access

The Bubba's 33 development can occur with existing zoning on the parcel today. No regulatory changes are required for the site. Without the access plan above, the development, or any alternative development on this site, may not occur due to the constrained directional access. The alley must be widened to two lanes for traffic to access the site safely and effectively. Without the widening, it would be very difficult for two-way traffic to use the alley.

Existing Traffic and Future Trip Distribution

A future trip distribution analysis illustrates the proportional use of Dartmouth St versus the alley for project-generated traffic (Figure 2). Traffic counts at 12 Mile Road and Dartmouth St were taken on Tuesday, October 14, 2025, and are attached to this memo.

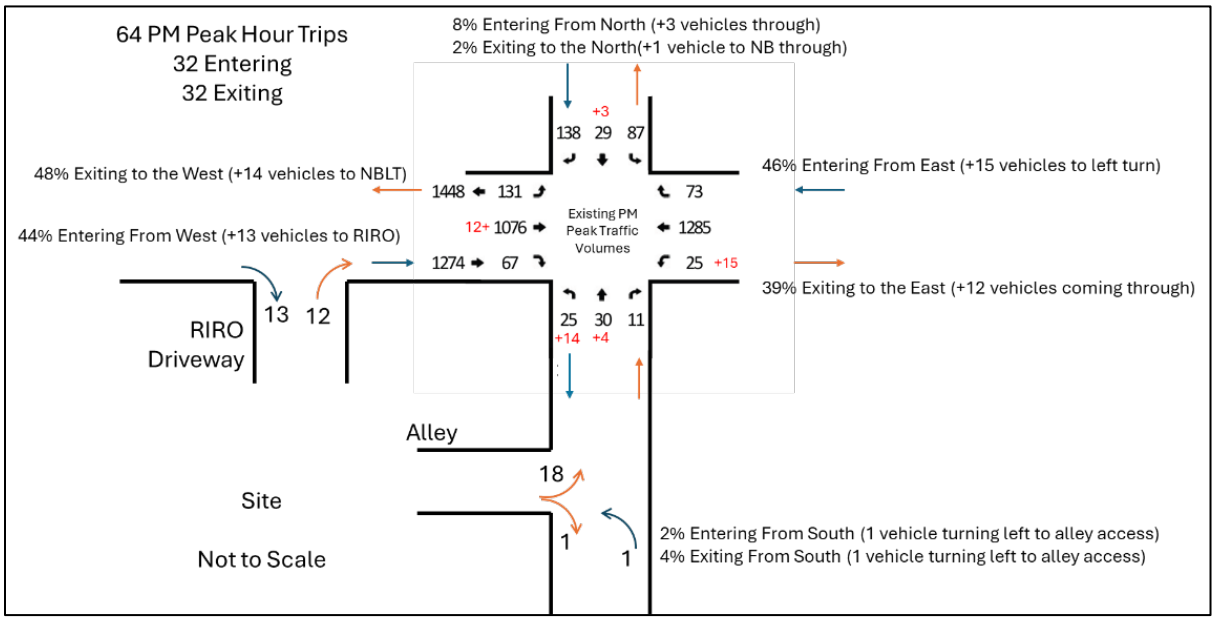


Figure 2. Existing PM Peak Hour Turning Movements with Added Project Trips

Summary of Mitigation Alternatives

Since existing queueing and delay conditions on Dartmouth St are currently present and constrained by roadway geometrics and signal timing, an operational improvement analysis was performed on the current traffic conditions. Multiple alternatives were evaluated through traffic modeling to assess potential mitigation strategies, including:

- Split phasing the minor street approaches to provide protected left-turn movements.
- Constructing a dedicated northbound left-turn lane to isolate turning traffic.
- A package of operational improvements, including lane reassignments and signal modifications.

Alternatives were developed primarily to provide quickly implementable, affordable, high-impact solutions for the existing conditions on northbound Dartmouth. In all alternatives tested the intersection retained the 100-second cycle length and offset that runs under existing conditions, keeping mitigations isolated from the 12 Mile Rd corridor.

- **Split phasing** the minor street approaches did not achieve any objectives. This makes the current conditions much worse because the traffic signal's cycle is further divided to create time for an additional phase. This alternative is **not recommended.**
- **Constructing a northbound left-turn lane** increases the intersection skew for through traffic across the street. While it separates the northbound left-turning traffic, it does not create gaps in opposing southbound right traffic. Therefore, this alternative will not reduce northbound left turn queueing or delays and is **not recommended.**
- Lastly, a package of **operational improvements** was tested. This includes reversing the current lane assignments on the southbound approach to a shared through-left lane and introduces a right-turn overlap (eastbound left turn coupled with the southbound right turn). The reversed lane assignments create a dedicated right-turn lane, and the right-turn overlap will clear more vehicles, thus reducing the number of conflicting vehicles for the northbound left-turn movement. This is a simple solution that will help solve the existing Dartmouth Rd northbound congestion and the rest of the intersection.

Each of these alternatives is illustrated in the Appendix.

Proposed Alternative

A schematic of the proposed alternative is shown below, including the addition of a "skip-hop" line through the intersection for the southbound through traffic. This skew would mimic the northbound through movement as well, creating a better aligned transition through the intersection. The existing southbound through signal would be revised to a 5-section "doghouse" signal head to provide the right-turn overlap indication.

This alternative was tested with a future growth rate of 1% per year for 2 years, with the proposed development traffic included. The proposed alternative still operates at acceptable LOS and delay under future conditions as shown in Table 1.

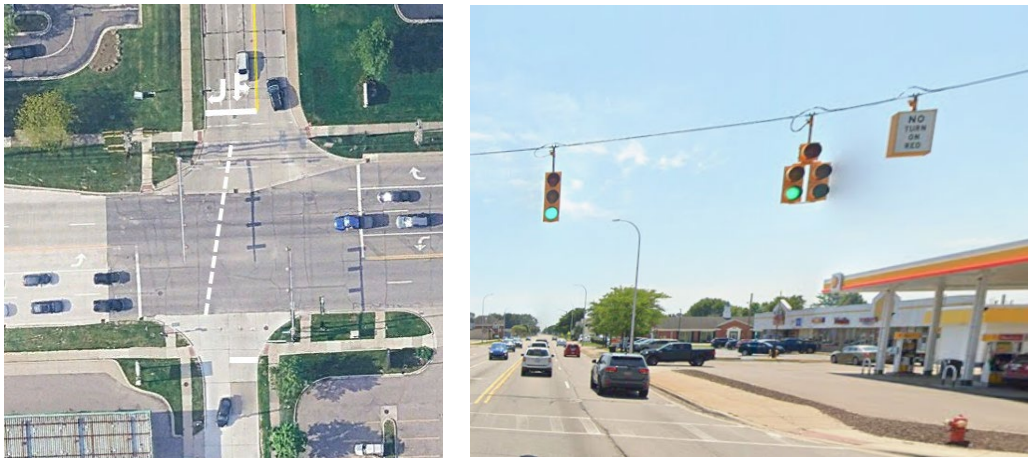
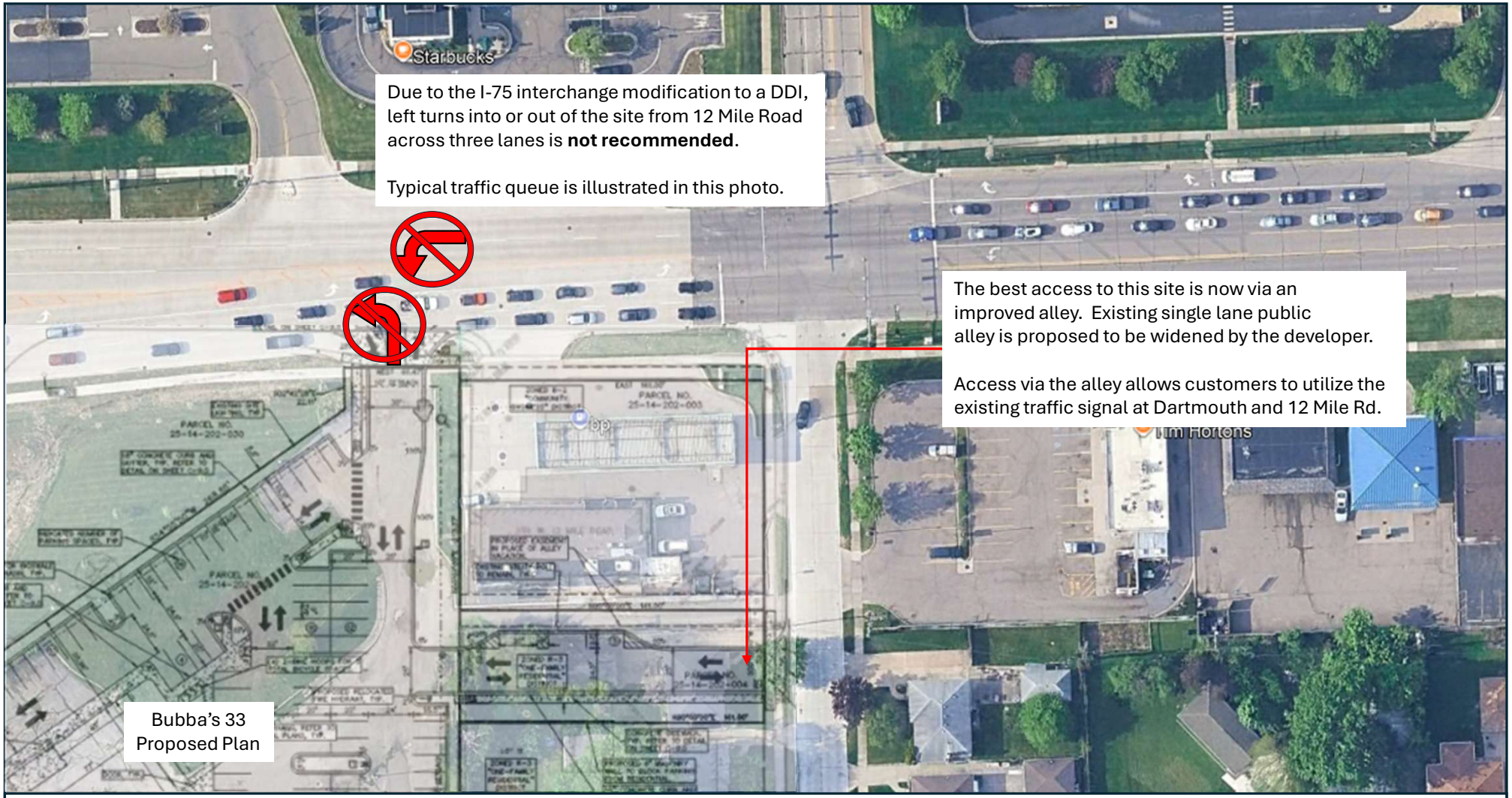


Figure 3. Illustration of Supplemental Intersection Marking and Traffic Signal Modification

Table 1. Intersection Performance Measures

Dartmouth At 12 Mile Intersection Scenarios		Key Metrics				HCM LOS				
		NB Queue Length (veh)	NB Capacity	SB Queue Length (veh)	SB Capacity	EB	WB	NB	SB	Overall
PM Peak Period	Existing	1.6	45%	2 LT/5 TH&RT	42%/80%	9/A	10/B	42/D	47/D	13/B
	Existing + Split Phase	2	77%	3 LT/6 TH&RT	71%/99%	13/B	15/B	60/E	90/F	22/C
	Existing + NB Left Turn Lane	1LT/1TH&RT	21%/16%	2 LT/5 TH&RT	36%/73%	10/B	12/B	42/D	45/D	14/B
	Existing + SB Lane Assignments & RTOL	1.6	45%	3 LT&TH / 3 RT	54%/51%	9/B	10/B	42/D	41/D	13/B
	Build + SB Lane Assignments & RTOL	2.2	48%	3 LT&TH / 3 RT	50%/47%	11/B	11/B	44/D	39/D	14/B
AM Peak Period	Existing	3	56%	1 LT/3 TH&RT	14%/48%	9/A	13/B	45/D	40/D	14/B
	Build + SB Lane Assignments & RTOL	3	56%	1 LT&TH / 3 RT	21%/41%	7/B	11/B	46/D	39/D	12/B



Proposed Site with Existing Conditions

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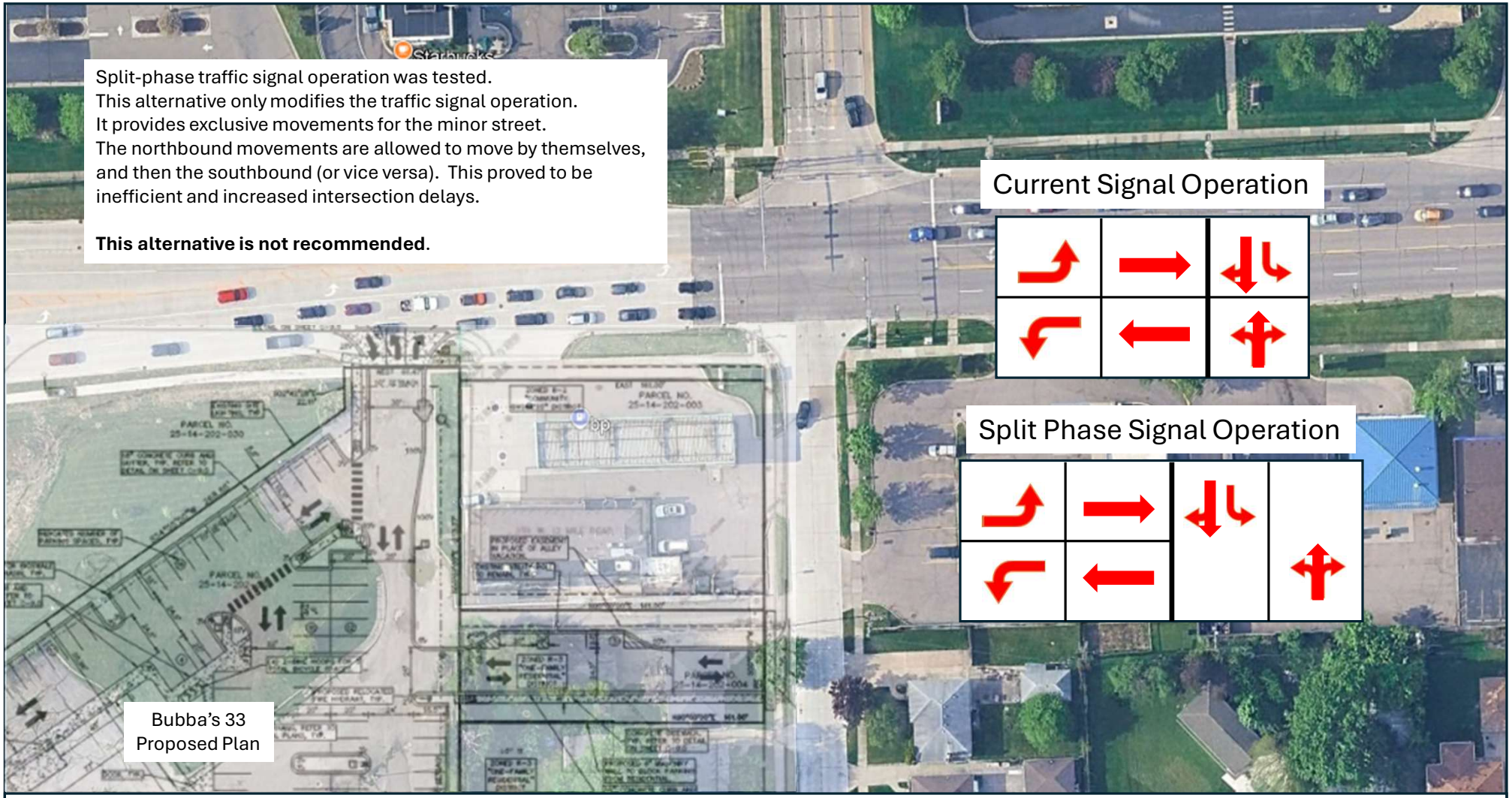
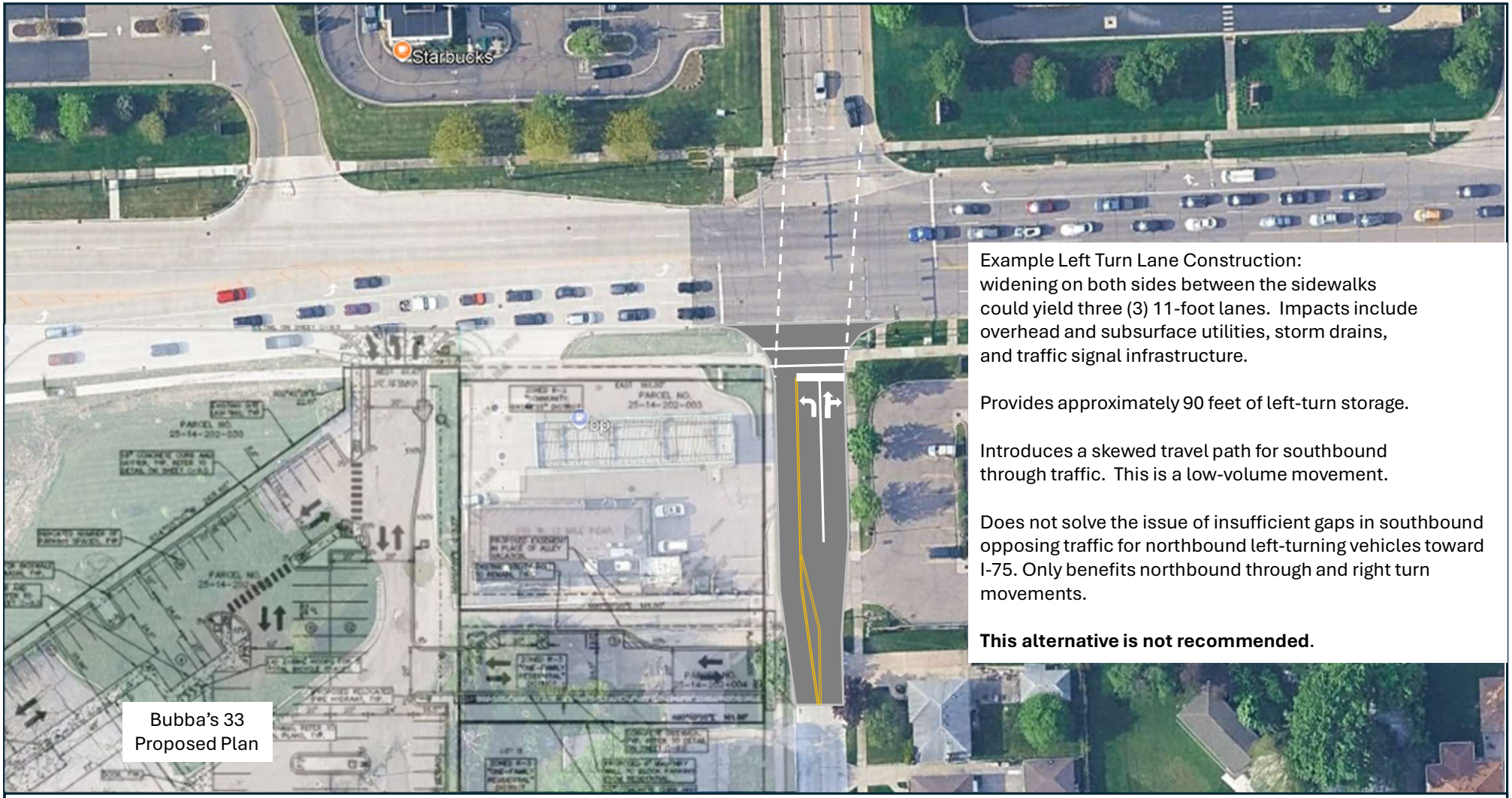


Split Phase Operation



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Added Northbound Left Turn Lane (NOT TO SCALE)

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Recommended solution changes how the lanes are used on the southbound side of the intersection. The left lane would handle both through and left-turn traffic, while the right lane would become a dedicated right-turn lane. The traffic signal would also be adjusted so that southbound right turns move at the same time as eastbound left turns. These small changes let more southbound cars move through each light cycle, reduce conflicts with northbound left-turning traffic, and help ease the congestion that drivers on Dartmouth Road are seeing today. This is a simple, highly effective fix that should noticeably improve the intersection.

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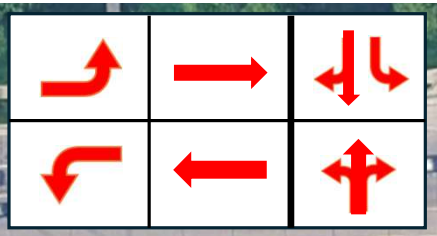

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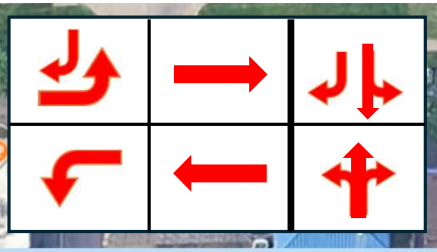

Right Turn Overlapped With Non-Conflicting Left Turn Phase

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Bubba's 33 Proposed Plan

Operational Improvements – Updated Southbound Lane Assignments and Right Turn Overlap

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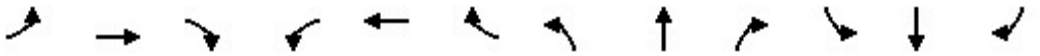


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Future Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1900	1885	1900	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	135	1109	69	26	1325	75	26	31	11	87	30	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	1
Cap, veh/h	332	2316	144	371	2339	1052	67	68	16	206	38	178
Arrive On Green	0.05	0.68	0.68	0.03	0.65	0.65	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1781	3425	213	1810	3582	1610	131	524	127	1386	289	1366
Grp Volume(v), veh/h	135	580	598	26	1325	75	68	0	0	87	0	172
Grp Sat Flow(s),veh/h/ln	1781	1791	1847	1810	1791	1610	783	0	0	1386	0	1654
Q Serve(g_s), s	2.4	15.5	15.5	0.5	20.4	1.7	0.6	0.0	0.0	0.0	0.0	10.1
Cycle Q Clear(g_c), s	2.4	15.5	15.5	0.5	20.4	1.7	10.7	0.0	0.0	8.7	0.0	10.1
Prop In Lane	1.00		0.12	1.00		1.00	0.38		0.16	1.00		0.83
Lane Grp Cap(c), veh/h	332	1211	1249	371	2339	1052	152	0	0	206	0	215
V/C Ratio(X)	0.41	0.48	0.48	0.07	0.57	0.07	0.45	0.00	0.00	0.42	0.00	0.80
Avail Cap(c_a), veh/h	430	1211	1249	512	2339	1052	305	0	0	345	0	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	7.7	7.8	6.2	9.5	6.3	40.0	0.0	0.0	41.6	0.0	42.2
Incr Delay (d2), s/veh	0.8	1.4	1.3	0.1	1.0	0.1	2.1	0.0	0.0	1.4	0.0	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.7	5.9	0.2	7.4	0.6	1.6	0.0	0.0	2.1	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	9.1	9.1	6.2	10.5	6.4	42.1	0.0	0.0	43.0	0.0	48.9
LnGrp LOS	A	A	A	A	B	A	D	A	A	D	A	D
Approach Vol, veh/h		1313			1426			68			259	
Approach Delay, s/veh		9.1			10.3			42.1			46.9	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	72.8		19.0	10.5	70.5		19.0				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 50		23.0	* 10	* 50		23.0				
Max Q Clear Time (g_c+I1), s	2.5	17.5		12.1	4.4	22.4		12.7				
Green Ext Time (p_c), s	0.0	9.9		0.9	0.2	12.3		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	13.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Future Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1900	1885	1900	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	135	1109	69	26	1325	75	26	31	11	87	30	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	1
Cap, veh/h	292	2080	129	321	2087	938	34	40	14	123	42	144
Arrive On Green	0.05	0.61	0.61	0.03	0.58	0.58	0.05	0.05	0.05	0.09	0.09	0.09
Sat Flow, veh/h	1781	3425	213	1810	3582	1610	693	826	293	1362	470	1598
Grp Volume(v), veh/h	135	580	598	26	1325	75	68	0	0	117	0	142
Grp Sat Flow(s),veh/h/ln	1781	1791	1847	1810	1791	1610	1813	0	0	1832	0	1598
Q Serve(g_s), s	3.0	18.8	18.8	0.6	24.5	2.0	3.7	0.0	0.0	6.2	0.0	8.9
Cycle Q Clear(g_c), s	3.0	18.8	18.8	0.6	24.5	2.0	3.7	0.0	0.0	6.2	0.0	8.9
Prop In Lane	1.00		0.12	1.00		1.00	0.38		0.16	0.74		1.00
Lane Grp Cap(c), veh/h	292	1088	1122	321	2087	938	89	0	0	165	0	144
V/C Ratio(X)	0.46	0.53	0.53	0.08	0.63	0.08	0.77	0.00	0.00	0.71	0.00	0.99
Avail Cap(c_a), veh/h	387	1088	1122	463	2087	938	163	0	0	165	0	144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	11.4	11.4	9.2	13.8	9.1	47.0	0.0	0.0	44.2	0.0	45.4
Incr Delay (d2), s/veh	1.1	1.9	1.8	0.1	1.5	0.2	12.8	0.0	0.0	13.2	0.0	71.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	7.4	7.7	0.2	9.6	0.7	2.0	0.0	0.0	3.4	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	13.3	13.2	9.3	15.3	9.3	59.8	0.0	0.0	57.4	0.0	116.6
LnGrp LOS	B	B	B	A	B	A	E	A	A	E	A	F
Approach Vol, veh/h		1313			1426			68			259	
Approach Delay, s/veh		13.2			14.9			59.8			89.9	
Approach LOS		B			B			E			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	65.9		15.0	10.6	63.5		10.9				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 49		9.0	* 10	* 49		9.0				
Max Q Clear Time (g_c+I1), s	2.6	20.8		10.9	5.0	26.5		5.7				
Green Ext Time (p_c), s	0.0	9.4		0.0	0.1	11.1		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Future Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1900	1885	1900	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	135	1109	69	26	1325	75	26	31	11	87	30	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	1
Cap, veh/h	325	2277	142	362	2298	1033	124	189	67	240	41	193
Arrive On Green	0.05	0.66	0.66	0.03	0.64	0.64	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	3425	213	1810	3582	1610	1232	1339	475	1386	289	1366
Grp Volume(v), veh/h	135	580	598	26	1325	75	26	0	42	87	0	172
Grp Sat Flow(s),veh/h/ln	1781	1791	1847	1810	1791	1610	1232	0	1814	1386	0	1654
Q Serve(g_s), s	2.5	16.0	16.1	0.5	21.0	1.8	2.1	0.0	2.0	5.9	0.0	10.0
Cycle Q Clear(g_c), s	2.5	16.0	16.1	0.5	21.0	1.8	12.0	0.0	2.0	7.9	0.0	10.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.26	1.00		0.83
Lane Grp Cap(c), veh/h	325	1191	1228	362	2298	1033	124	0	257	240	0	234
V/C Ratio(X)	0.42	0.49	0.49	0.07	0.58	0.07	0.21	0.00	0.16	0.36	0.00	0.73
Avail Cap(c_a), veh/h	423	1191	1228	504	2298	1033	233	0	417	363	0	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	8.3	8.3	6.6	10.2	6.7	46.9	0.0	37.7	41.2	0.0	41.1
Incr Delay (d2), s/veh	0.8	1.4	1.4	0.1	1.1	0.1	0.8	0.0	0.3	0.9	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	6.0	6.2	0.2	7.8	0.6	0.7	0.0	0.9	2.1	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	9.7	9.7	6.7	11.2	6.9	47.7	0.0	38.0	42.1	0.0	45.6
LnGrp LOS	A	A	A	A	B	A	D	A	D	D	A	D
Approach Vol, veh/h		1313			1426			68			259	
Approach Delay, s/veh		9.7			10.9			41.7			44.4	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	71.7		20.1	10.5	69.4		20.1				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 50		23.0	* 10	* 50		23.0				
Max Q Clear Time (g_c+I1), s	2.5	18.1		12.0	4.5	23.0		14.0				
Green Ext Time (p_c), s	0.0	9.8		0.9	0.2	12.1		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Future Volume (veh/h)	131	1076	67	25	1285	73	25	30	11	84	29	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1900	1885	1900	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	135	1109	69	26	1325	75	26	31	11	87	30	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	1
Cap, veh/h	334	2327	145	373	2351	1057	66	67	16	171	45	281
Arrive On Green	0.05	0.68	0.68	0.03	0.66	0.66	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1781	3425	213	1810	3582	1610	130	531	128	853	355	1598
Grp Volume(v), veh/h	135	580	598	26	1325	75	68	0	0	117	0	142
Grp Sat Flow(s),veh/h/ln	1781	1791	1847	1810	1791	1610	788	0	0	1208	0	1598
Q Serve(g_s), s	2.4	15.3	15.4	0.5	20.2	1.7	0.6	0.0	0.0	0.0	0.0	8.0
Cycle Q Clear(g_c), s	2.4	15.3	15.4	0.5	20.2	1.7	10.5	0.0	0.0	9.9	0.0	8.0
Prop In Lane	1.00		0.12	1.00		1.00	0.38		0.16	0.74		1.00
Lane Grp Cap(c), veh/h	334	1217	1255	373	2351	1057	150	0	0	216	0	281
V/C Ratio(X)	0.40	0.48	0.48	0.07	0.56	0.07	0.45	0.00	0.00	0.54	0.00	0.51
Avail Cap(c_a), veh/h	432	1217	1255	515	2351	1057	308	0	0	370	0	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	7.6	7.6	6.0	9.4	6.2	40.3	0.0	0.0	42.3	0.0	37.3
Incr Delay (d2), s/veh	0.8	1.3	1.3	0.1	1.0	0.1	2.1	0.0	0.0	2.1	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.6	5.8	0.2	7.3	0.6	1.6	0.0	0.0	2.9	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.6	8.9	8.9	6.1	10.4	6.3	42.5	0.0	0.0	44.4	0.0	38.7
LnGrp LOS	A	A	A	A	B	A	D	A	A	D	A	D
Approach Vol, veh/h		1313			1426			68			259	
Approach Delay, s/veh		8.9			10.1			42.5			41.3	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	73.1		18.7	10.5	70.8		18.7				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 50		23.0	* 10	* 50		23.0				
Max Q Clear Time (g_c+I1), s	2.5	17.4		11.9	4.4	22.2		12.5				
Green Ext Time (p_c), s	0.0	9.9		0.8	0.2	12.3		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	12.9	
HCM 6th LOS	B	

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	1120	69	41	1324	75	40	31	12	86	33	142
Future Volume (veh/h)	135	1120	69	41	1324	75	40	31	12	86	33	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1885	1900	1900	1885	1900	1900	1900	1900	1900	1900	1885
Adj Flow Rate, veh/h	139	1155	71	42	1365	77	41	32	12	89	34	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	1	0	0	1	0	0	0	0	0	0	1
Cap, veh/h	312	2234	137	354	2283	1026	90	63	16	186	61	311
Arrive On Green	0.05	0.65	0.65	0.03	0.64	0.64	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1781	3428	211	1810	3582	1610	252	429	112	852	416	1598
Grp Volume(v), veh/h	139	603	623	42	1365	77	85	0	0	123	0	146
Grp Sat Flow(s),veh/h/ln	1781	1791	1847	1810	1791	1610	793	0	0	1269	0	1598
Q Serve(g_s), s	2.7	17.7	17.7	0.8	22.3	1.8	3.0	0.0	0.0	0.0	0.0	8.1
Cycle Q Clear(g_c), s	2.7	17.7	17.7	0.8	22.3	1.8	12.4	0.0	0.0	9.4	0.0	8.1
Prop In Lane	1.00		0.11	1.00		1.00	0.48		0.14	0.72		1.00
Lane Grp Cap(c), veh/h	312	1167	1204	354	2283	1026	169	0	0	247	0	311
V/C Ratio(X)	0.45	0.52	0.52	0.12	0.60	0.08	0.50	0.00	0.00	0.50	0.00	0.47
Avail Cap(c_a), veh/h	410	1167	1204	479	2283	1026	293	0	0	373	0	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.3	9.1	9.1	7.0	10.6	6.9	41.8	0.0	0.0	40.3	0.0	35.7
Incr Delay (d2), s/veh	1.0	1.6	1.6	0.1	1.2	0.1	2.3	0.0	0.0	1.6	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	6.7	6.9	0.3	8.3	0.6	2.2	0.0	0.0	3.0	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	10.8	10.7	7.1	11.8	7.1	44.1	0.0	0.0	41.9	0.0	36.8
LnGrp LOS	B	B	B	A	B	A	D	A	A	D	A	D
Approach Vol, veh/h		1365			1484			85			269	
Approach Delay, s/veh		10.7			11.4			44.1			39.1	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	70.4		20.6	10.5	68.9		20.6				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 50		23.0	* 10	* 50		23.0				
Max Q Clear Time (g_c+I1), s	2.8	19.7		11.4	4.7	24.3		14.4				
Green Ext Time (p_c), s	0.0	10.2		0.9	0.2	12.3		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		14.3
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	850	37	17	1392	83	68	23	21	33	10	99
Future Volume (veh/h)	79	850	37	17	1392	83	68	23	21	33	10	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1856	1856	1811	1841	1811	1870	1900	1826	1811	1752	1796
Adj Flow Rate, veh/h	81	876	38	18	1435	86	70	24	22	34	10	102
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	3	3	6	4	6	2	0	5	6	10	7
Cap, veh/h	275	2267	98	426	2216	972	133	45	28	251	21	211
Arrive On Green	0.04	0.66	0.66	0.02	0.63	0.63	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1725	3442	149	1725	3497	1535	487	294	183	1317	134	1371
Grp Volume(v), veh/h	81	449	465	18	1435	86	116	0	0	34	0	112
Grp Sat Flow(s),veh/h/ln	1725	1763	1829	1725	1749	1535	964	0	0	1317	0	1505
Q Serve(g_s), s	1.6	11.7	11.7	0.4	25.5	2.2	6.1	0.0	0.0	0.0	0.0	6.8
Cycle Q Clear(g_c), s	1.6	11.7	11.7	0.4	25.5	2.2	13.0	0.0	0.0	2.6	0.0	6.8
Prop In Lane	1.00		0.08	1.00		1.00	0.60		0.19	1.00		0.91
Lane Grp Cap(c), veh/h	275	1161	1204	426	2216	972	206	0	0	251	0	231
V/C Ratio(X)	0.29	0.39	0.39	0.04	0.65	0.09	0.56	0.00	0.00	0.14	0.00	0.48
Avail Cap(c_a), veh/h	377	1161	1204	572	2216	972	389	0	0	417	0	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.7	7.8	7.8	6.5	11.4	7.1	42.7	0.0	0.0	36.9	0.0	38.7
Incr Delay (d2), s/veh	0.6	1.0	0.9	0.0	1.5	0.2	2.4	0.0	0.0	0.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.3	4.4	0.1	9.3	0.7	2.9	0.0	0.0	0.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.3	8.8	8.8	6.6	12.9	7.3	45.1	0.0	0.0	37.2	0.0	40.2
LnGrp LOS	B	A	A	A	B	A	D	A	A	D	A	D
Approach Vol, veh/h		995			1539			116			146	
Approach Delay, s/veh		8.9			12.5			45.1			39.5	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	71.1		21.4	10.1	68.5		21.4				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 45		28.0	* 10	* 45		28.0				
Max Q Clear Time (g_c+I1), s	2.4	13.7		8.8	3.6	27.5		15.0				
Green Ext Time (p_c), s	0.0	6.8		0.7	0.1	10.4		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary

3: 10/27/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	850	37	17	1392	83	68	23	21	33	10	99
Future Volume (veh/h)	79	850	37	17	1392	83	68	23	21	33	10	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1856	1856	1811	1841	1811	1870	1900	1826	1811	1752	1796
Adj Flow Rate, veh/h	83	894	39	18	1464	87	72	24	22	35	11	104
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	6	3	3	6	4	6	2	0	5	6	10	7
Cap, veh/h	287	2382	104	445	2332	1023	137	44	28	176	46	251
Arrive On Green	0.05	0.69	0.69	0.02	0.67	0.67	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1725	3441	150	1725	3497	1535	658	366	235	939	387	1522
Grp Volume(v), veh/h	83	458	475	18	1464	87	118	0	0	46	0	104
Grp Sat Flow(s),veh/h/ln	1725	1763	1829	1725	1749	1535	1259	0	0	1325	0	1522
Q Serve(g_s), s	1.5	10.8	10.8	0.3	24.0	2.0	6.5	0.0	0.0	0.0	0.0	6.1
Cycle Q Clear(g_c), s	1.5	10.8	10.8	0.3	24.0	2.0	9.5	0.0	0.0	3.0	0.0	6.1
Prop In Lane	1.00		0.08	1.00		1.00	0.61		0.19	0.76		1.00
Lane Grp Cap(c), veh/h	287	1220	1266	445	2332	1023	209	0	0	223	0	251
V/C Ratio(X)	0.29	0.38	0.38	0.04	0.63	0.09	0.56	0.00	0.00	0.21	0.00	0.41
Avail Cap(c_a), veh/h	389	1220	1266	591	2332	1023	440	0	0	440	0	495
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	6.4	6.4	5.3	9.5	5.9	43.3	0.0	0.0	40.0	0.0	37.4
Incr Delay (d2), s/veh	0.5	0.9	0.9	0.0	1.3	0.2	2.4	0.0	0.0	0.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.8	3.9	0.1	8.4	0.6	3.0	0.0	0.0	1.1	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	7.3	7.3	5.4	10.8	6.0	45.7	0.0	0.0	40.4	0.0	38.5
LnGrp LOS	A	A	A	A	B	A	D	A	A	D	A	D
Approach Vol, veh/h		1016			1569			118			150	
Approach Delay, s/veh		7.4			10.5			45.7			39.1	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	74.4		18.0	10.1	71.9		18.0				
Change Period (Y+Rc), s	* 5.6	* 5.2		6.0	* 5.6	* 5.2		6.0				
Max Green Setting (Gmax), s	* 10	* 45		28.0	* 10	* 45		28.0				
Max Q Clear Time (g_c+I1), s	2.3	12.8		8.1	3.5	26.0		11.5				
Green Ext Time (p_c), s	0.0	7.1		0.5	0.1	11.2		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Notes

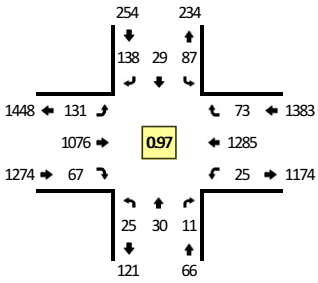
User approved pedestrian interval to be less than phase max green.

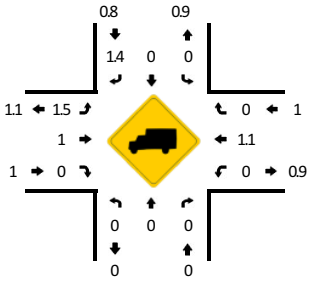
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

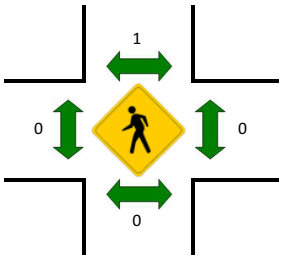
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

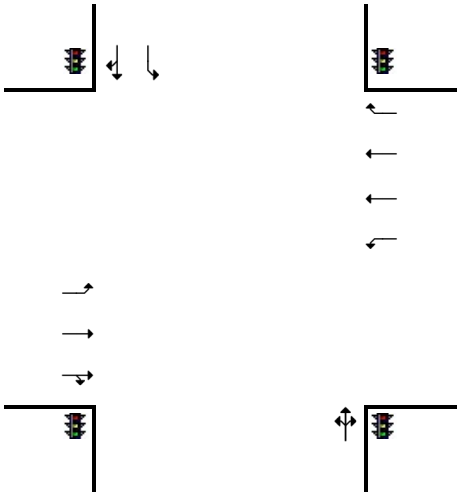
LOCATION: Dartmouth St -- 12 Mile Rd | **QC JOB #:** 17285308
CITY/STATE: Madison Heights, MI | **DATE:** Tue, Oct 14 2025

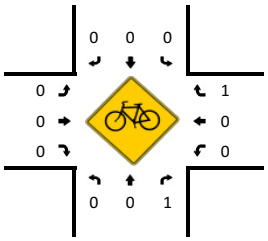
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

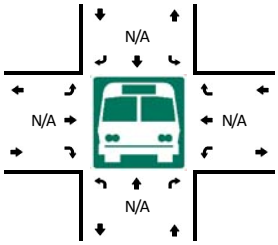


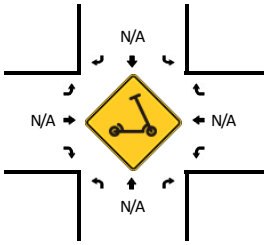












15-Min Count Period Beginning At	Dartmouth St (Northbound)				Dartmouth St (Southbound)				12 Mile Rd (Eastbound)				12 Mile Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	7	2	0	23	9	30	0	34	271	12	0	9	337	13	0	753	
4:15 PM	5	7	3	0	20	2	35	0	38	281	19	0	6	334	18	0	768	
4:30 PM	11	10	0	0	27	5	43	0	40	241	21	0	8	323	18	0	747	
4:45 PM	3	6	6	0	17	13	30	0	19	283	15	0	2	291	24	0	709	2977
5:00 PM	5	5	3	0	16	5	25	0	29	274	24	0	6	349	10	0	751	2975
5:15 PM	6	7	6	0	21	6	25	0	40	281	13	0	6	327	16	0	754	2961
5:30 PM	9	12	4	0	17	5	26	0	46	242	13	0	14	282	24	0	694	2908
5:45 PM	8	5	4	0	23	3	29	0	27	248	12	0	8	260	19	0	646	2845

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	28	12	0	80	8	140	0	152	1124	76	0	24	1336	72	0	3072
Heavy Trucks	0	0	0		0	0	4		0	4	0		0	16	0		24
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 10/16/2025 10:28 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212