MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

MEMORANDUM

DATE: February 19, 2025

TO: Mr. Gil Hilario, Town Planner
Town of North Attleborough
43 South Washington Street
North Attleborough, MA 02760

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Supplemental Response to Comments – Pare**
582 Kelley Boulevard, North Attleborough, Massachusetts

MDM Transportation Consultants, Inc. (MDM) has prepared the following responses to outstanding transportation-related comments as issued in a letter by Pare Corporation (Pare) dated February 6, 2025, and a video-based conference call between MDM and Pare on Wednesday, February 19, 2025. To facilitate review, specific comments are paraphrased with corresponding supplemental responses provided in ***Bold Italics***.

Comment 1: "*Study Area: Based on the size and type of development, the study area included appears to be generally appropriate. However, it appears there may be a significant amount of cut-through traffic along Man-Mar Drive and Wilkins Drive. With improved capacity at the intersection of Kelley Boulevard and Messenger Street, some of the cut-through traffic may stay on Kelley Boulevard and Messenger Street. It may be helpful to understand the scope of this activity when determining traffic signal timings at the Kelley/Messenger intersection.*"

MDM Initial Response: Intersection improvements at the signalized intersection of Route 152 at Route 106 are being developed by BETA. The proponent worked with the Town of North Attleborough to identify mitigation needs and secure funding for the proposed intersection improvements. It is unknown whether improvements at the signalized intersection may or may not result in a reduction in cut-through traffic along Man-Mar Drive and Wilkins Drive. The vehicles along Man-Mar Drive, Wilkins Drive and along the various cut-cuts along Kelley Boulevard are likely to continue to use these patterns if they are traveling to/from a specific location or if this route is more advantageous in terms of travel time, orientation, or preference. The future conditions analysis does build in general background growth that inherently accounts for some level of shift in travel patterns. The traffic signal timings at Kelley Boulevard and Messenger Street should be designed by BETA to accommodate the projected Design Year conditions which in the opinion of MDM should not include a significant shift in travel patterns. That said, no matter the design and potential hypothetical future shift in traffic patterns, the proposed development results in a negligible impact to operations at the signalized intersection and has contributed more than its fair share to the adjacent Town of Plainville.

Pare Further Comment: *"This comment was intended to be implemented in the event that the development's traffic volumes resulted in the need for timing adjustments at the Kelley/Messenger intersection to account for a potential increase beyond mere background growth for northbound left turns and eastbound right turns. If mitigation is not required at this intersection, this comment is not applicable."*

MDM Supplemental Response: Supplemental mitigation is not required at this intersection; improvements are under design as part of the Town's Kelley Boulevard MassWorks project which includes this residential development in future year growth assumptions. Operational analysis (including the updated analysis presented in this response memo) indicates acceptable operating levels at this location of LOS D or better under future year conditions once the MassWorks project is completed. Any minor fine tuning of the Kelley Boulevard at Messenger Street intersection is anticipated in the normal course of the roadway project's construction and closeout process.

Comment 11: "*Capacity Analysis Procedures:*

a. *The use of Synchro software to conduct capacity analyses is acceptable.*

b. *Peak hour factors should be calculated by approach, not by the intersection as a whole. Further, for capacity analysis purposes, the peak hour factors utilized should not exceed the default value of 0.92.*

c. *An adjustment on lost time has been made that is not consistent with default values at signalized intersections. Please explain this adjustment and provide backup material justifying this adjustment.*

d. *Pedestrian phases do not appear to have been included in the signalized analyses. These should be added, and a minimum of five calls per hour should be assumed.*

e. *Based on comments 11.b-d above, all capacity analyses should be revised and the report updated."*

MDM Initial Response:

b. The use of peak hour factors by intersection is appropriate and is an accepted methodology that is in conformance with the Highway Capacity Manual (HCM) procedures. As outlined in the HCM,

"The use of a single peak hour factor for the entire intersection is intended to avoid the likelihood of creating demand scenarios with conflicting volumes that are disproportionate to the actual volumes during the 15-minute analysis period. If peak hour factors for each individual approach or movement are used, they are likely to generate demand volume from one 15-minute period that are in apparent conflict with demand volumes from another 15-minute period, whereas in reality these peak volumes do not occur at the same time."

Additionally, The Highway Capacity Manual (HCM) suggests a design value of 0.92 for congested urban areas and 0.88 for rural areas, if no field measurements are available. In this case the peak hour factors for the study intersections were measured based on the traffic counts conducted. It does not make sense to lower the peak hour factors arbitrarily to 0.92 for future year condition, which would lower the capacity of the intersection when actual field measurements are available.

Accordingly, it is the opinion and experience of MDM that the methodology used in the TIAS and these response to comments document are appropriate for planning purposes and no further analysis is warranted.

c. The adjustment to the lost time was to better represent actual operating conditions at the intersections and the use of all or a portion of the clearance times (yellow and all red) to clear vehicles from the intersection. Field observations and video observations indicate that vehicles generally utilize all of the yellow phase and some of all red phase which was approximately 5 seconds of the lost time to clear the signalized intersection. To remain conservative for planning purposes, the lost time adjustment was held at half of the total clearance period (2.5 seconds).

d. Count data included both pedestrian and bicycles. The pedestrian and bike volumes in the study area even under the summer conditions were nominal; therefore, the pedestrian phase was excluded from the analysis provided in the TIAS. A sensitivity analysis including a conservative 5 hourly pedestrian calls at the signalized Route 152 at Route 106 intersection has been performed (see **Attachments**). Consistent with TIAS findings, operations at the signalized intersection are at LOS D or better overall during each of the analysis periods with no material change in delays as a result of modest project traffic increases.

e. Revised capacity analysis has been conducted and is summarized under **Response 10**.

Pare Further Comment:

b. "This comment has not been adequately addressed. Per Section III.A. of the MassDOT Transportation Impact Assessment Guidelines and Section I.E.1.a. of the MassDOT Traffic and Safety Engineering 25% Design Submission Guidelines:

> *'Peak Hour Factor (PHF) – All intersection approaches shall be evaluated based on the peak 15 minutes of data collected during the peak hour. The PHF shall be applied on an approach-by-approach basis for analysis of base year traffic volumes. For future year traffic volumes, the PHF shall be 0.88 for rural areas and 0.92 for urban areas.'*

As a result, Pare continues to believe these factors should be revised."

c. This comment has not been adequately addressed. Per the Synchro User Guide:

> *'The Total Lost Time Used in calculations is the Y+AR plus the Lost Time Adjustment. The default for both startup lost time and extension of effective green is 2.5 seconds, so the Lost Time Adjustment defaults to zero.'*

Reducing the lost time to 2.5 seconds (equivalent to the startup lost time assumed at the beginning of the green interval) would then assume that ALL vehicles continue entering the intersection throughout the entire yellow interval (as opposed to just the first 2.5-seconds of yellow, also known as the "extension of effective green") AND the entire all-red clearance interval. This is neither a conservative nor an acceptable assumption, and the applicant's engineer has not presented any data or evidence to support this adjustment from the default analysis settings."

d. *This comment has been partially addressed. The applicant's engineer did complete revised analyses that included the dedicated pedestrian phase at the Kelley Boulevard/Messenger Street intersection under no-build and build conditions, but not under existing conditions. Also, it does not appear that any pedestrian phases were included in the analyses at the proposed George Leven Drive signal. It should be noted that the analysis results presented in Tables R1 and R2 in the applicant's response to comments do not include the pedestrian phase in the analyses, and it is recommended that all presented capacity analysis results take into account the pedestrian phase. Adding the pedestrian phase with five calls per hour adds approximately 5-6 seconds of overall vehicular delay to the intersection operation.*

e. *As comments 11b-d have not been adequately addressed, additional adjustments to the analyses are necessary in Pare's opinion.*

MDM Supplemental Response: MDM has prepared supplemental capacity analysis based on the more conservative analysis methodology as requested under b through e above. For reference the Baseline, No-Build and Build traffic volumes networks are included in the Attachments. The Baseline peak hour factors (PHF's) have been applied on an approach-by-approach basis, the future No-Build and build conditions assume the default 0.92 PHF for urban areas, no lost time adjustment has been applied, and while the pedestrian crossing was observed to be nominal, a conservative 5 hourly pedestrian calls at the signalized intersections have been included as requested. MDM notes that future signal timings are optimized under future No-Build and Build conditions; adjustment and fine tuning of signal timings/phasing is subject to the design underway by the Town as part of the MassWorks roadway project. Consistent with originally submitted TIAS findings, the proposed residential development will not result in any material change in delays at the intersection. The revised capacity analysis results are summarized below in Table R1 and Table R2 while the queue results are summarized in Table R3 and Table R4.

TABLE R1
INTERSECTION CAPACITY ANALYSIS RESULTS
ROUTE 106 AT ROUTE 152

		2024 Baseline (Existing Geometry)			2031 No-Build (Future Geometry)			2031 Build (Future Geometry)		
Period	Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS	v/c	Delay	LOS
Weekday Morning	Eastbound	0.85	47	D	0.74	46	D	0.75	46	D
Peak Hour	Westbound	0.85	44	D	0.73	32	C	0.75	33	C
	Northbound	0.96	50	D	0.79	39	D	0.82	40	D
	Southbound	0.71	42	D	0.62	38	D	0.63	38	D
	OVERALL	**0.96**	**46**	**D**	**0.79**	**39**	**D**	**0.82**	**40**	**D**
Weekday Evening	Eastbound	0.99	74	E	0.86	51	D	0.88	52	D
Peak Hour	Westbound	>1.0	79	E	0.84	46	D	0.86	47	D
	Northbound	0.81	38	D	0.71	38	D	0.73	39	D
	Southbound	0.91	54	D	0.78	45	D	0.78	45	D
	OVERALL	**>1.0**	**62**	**E**	**0.86**	**45**	**D**	**0.88**	**46**	**D**

[1] Volume-to-capacity ratio
[2] Average control delay per vehicle (in seconds)
[3] Level of service
[4] n/a = not applicable

TABLE R2
INTERSECTION CAPACITY ANALYSIS RESULTS
ROUTE 152 AT GEORGE LEVEN DRIVE

		2031 No-Build (Future Geometry)			2031 Build (Future Geometry)		
Period	Approach	v/c	Delay	LOS	v/c	Delay	LOS
Weekday Morning	Eastbound	0.25	20	C	0.44	20	B
Peak Hour	Westbound	0.02	<5	A	0.02	<5	A
	Northbound	0.56	13	B	0.62	14	B
	Southbound	0.49	14	B	0.60	18	B
	OVERALL	**0.56**	**14**	**B**	**0.62**	**16**	**B**
Weekday Evening	Eastbound	0.20	13	B	0.24	15	B
Peak Hour	Westbound	0.02	<5	A	0.03	<5	A
	Northbound	0.46	10	A	0.50	11	B
	Southbound	0.86	25	C	0.95	38	D
	OVERALL	**0.86**	**19**	**B**	**0.95**	**26**	**C**

[1] Volume-to-capacity ratio
[2] Average control delay per vehicle (in seconds)
[3] Level of service
[4] n/a = not applicable

TABLE R3
VEHICLE QUEUE ANALYSIS SUMMARY
TAUNTON STREET AT MESSENGER STREET

Approach	Storage Length (feet)	2031 No-Build		2031 Build	
		Average Queue Length	95th Percentile Queue Length	Average Queue Length	95th Percentile Queue Length
Weekday Morning Peak Hour					
Eastbound L	250±	73	213	73	213
Eastbound T/R	>1000	126	240	127	248
Westbound L	450	110	295	111	295
Westbound T/R	>1000	51	118	51	118
Northbound L	200±	64	147	71	161
Northbound T/R	>1000	184	393	200	433
Southbound L	200±	60	175	60	175
Southbound T/R	>1000	94	196	97	199
Weekday Evening Peak Hour					
Eastbound L	250±	88	239	90	239
Eastbound T/R	>1000	133	311	135	311
Westbound L	450	179	445	186	453
Westbound T/R	>1000	173	349	177	349
Northbound L	200±	104	264	112	279
Northbound T/R	>1000	163	297	167	303
Southbound L	200±	64	176	65	176
Southbound T/R	>1000	176	327	182	342

[1] Average and 95th percentile queue lengths are reported in feet per lane.
[2] n/a = not applicable

TABLE R4
VEHICLE QUEUE ANALYSIS SUMMARY
KELLEY BOULEVARD AT GEORGE LEVEN DRIVE

Approach	Storage Length (feet)	2031 No-Build		2031 Build	
		Average Queue Length	95th Percentile Queue Length	Average Queue Length	95th Percentile Queue Length
Weekday Morning Peak Hour					
Eastbound L/T	100±	<25	58	26	100
Eastbound R	>1000	<25	<25	<25	<25
Westbound L/T/R	30±	<25	<25	<25	<25
Northbound L	100±	<25	<25	<25	28
Northbound T/R	>1000	110	670	129	670
Southbound L	100±	<25	<25	<25	<25
Southbound T/R	>1000	140	438	156	459
Weekday Evening Peak Hour					
Eastbound L/T	100±	<25	39	<25	59
Eastbound R	>1000	<25	<25	<25	<25
Westbound L/T/R	30±	<25	<25	<25	<25
Northbound L	100±	<25	<25	<25	39
Northbound T/R	>1000	<25	582	95	583
Southbound L	100±	<25	<25	<25	<25
Southbound T/R	>1000	198	1031	520	1108

[1]Average and 95th percentile queue lengths are reported in feet per lane.

As summarized in Table R1, Table R2, Table R3 and Table R4, under the more conservative analysis methodology the signalized Taunton Street at Messenger Street intersection operations indicate several approaches are approaching capacity with longer delays (in some cases LOS E); of particular note is northbound travel (AM peak) whish is subject to long vehicle queues as the approach is near capacity. Future operations with MassWorks improvements in place greatly enhances capacity, with LOS D or better operations for all intersection approaches and significantly reduced queues at the intersection. Modest trip increases associated with the residential development result in de minimus changes in delay of 4 seconds or less.

Likewise, under future No-Build and Build conditions, the signalized intersection of Kelley Boulevard at George Leven Drive will operate below capacity with an overall LOS C or better during peak hours. Consistent with originally published TIAS findings, the proposed residential development with not result in any material change in delays or queueing at the intersections compared to No-Build conditions.

Comment 12: "*IntersecFtion Capacity Analysis Results:*

a. The information presented in the tables, figures and analysis worksheets appears to be consistent.

b. The existing conditions analyses, particularly at the intersection of Kelley Boulevard at Messenger Street, do not match observed and experienced existing conditions."

MDM Initial Response:

b. The traffic signal setting from the signalized Route 106 at Route 152 signalized intersection used in the TIAS were obtained from field and video observations. As part of this response the capacity settings and timing plans have been adjusted slightly to reflect the traffic signal timing plans prepared by BETA in 2019 (see **Attachments**). That said, MDM agrees that there are inherent limitations to traffic modeling software, specifically, the calculated vs actual queues observed on the northbound Kelley Boulevard approach. The model is limited in its calculations of spill back and blockage of the storage lanes at the intersection. This results in queue spill back which can extend through the Plain Street intersection under Baseline conditions during the weekday morning peak periods. Notwithstanding modeling limitations, the proposed development will result in no material impact at the intersection of Kelley Boulevard at Messenger Street between the No-Build and Build conditions. Furthermore, as part of a development agreement with the Town of North Attleborough, the Proponent has identified the long-term mitigation needs for the Messenger Street at Kelley Boulevard signalized intersection and along Kelley Boulevard between Messenger Street and George Levin Drive, assisted the Town in preparing preliminary design plans and a MassWorks application, secured MassWorks funding, and has an agreement in place to contribute additional funding prior to occupancy. As shown in **Response 10**, with the improvements in place the capacity and operations of the intersection will be significantly enhanced compared to Baseline

conditions. The MassWorks project as currently shown on the BETA plan set will enhance operations with enhanced capacity and queue storage at the Messenger Street intersection with Kelley Boulevard.

Given the timeline of the project and MassWorks funding requirements, it is expected that the proposed intersection improvements will be implemented under the future No-Build and Build 2031 conditions. As shown in **Response 10**, the proposed development results in a negligible impact on operations at the signalized intersection. Furthermore, MDM has conducted a sensitivity analysis under the future 2031 No-Build and Build conditions if the proposed intersection improvements are not in place prior to the buildout of the proposed development. As summarized in **Table R3**, under a condition with the existing geometry in place at the signalized intersection, the proposed development would result in a nominal change in operations between the future No-Build and Build Conditions with the overall intersection level of service remaining at LOS D during the weekday morning and weekday evening peak hours. That said, time of day queue spillback as observed under Baseline conditions would continue to occur with no major increase due to the project. The transportation commitments agreed to by the Proponent as part of the host community agreement go over any above mitigation requirements for the residential project and no further mitigation actions are warranted nor required.

Pare Further Comment*: "Pare agrees that macroscopic analysis tools such as Synchro have certain limitations, especially in the calculation of queue lengths where turn bays overflow or are blocked by other movements. However, there are microscopic modeling tools (e.g., SimTraffic, Vissim) that are better equipped to model these issues if site conditions are such that Synchro is not able to be calibrated to reflect real-world conditions. The applicant's engineer is free to utilize these tools if they deem this necessary to accurately reflect real-world conditions. However, Pare also believes that inadequacies in the analysis execution (see comments 11.b-d above) play a significant role in these issues.*

The sensitivity analysis utilizing the existing conditions with and without the proposed development's traffic is appreciated; however, these analyses suffer from all the same issues with lost time settings, peak hour factors, pedestrian phases, etc. as the analyses in the original study and those presented in Tables R1 and R2.

As volumes approach capacity, the incremental increase in delay per vehicle added to the traffic stream increases. Put in other terms, the incremental increase in delay from adding one vehicle to a movement operating at LOS B will be less than the incremental increase in delay from adding one vehicle to a movement operating at LOS E. For this reason, having a baseline analysis under existing conditions that is calibrated to reasonably correspond to observed and experienced conditions is essential in determining traffic impacts. Until the analyses are revised to where the existing conditions analyses reflect observed conditions, Pare cannot substantiate the report's conclusions."

MDM Supplemental Response: Supplemental analysis has been provided (See Response to Comment 11). While the more conservative analysis methodology results in increases in delays; however, consistent with originally published TIAS findings, the proposed residential development with not result in any material change in delays or queueing at the intersections compared to No-Build conditions. Under Build conditions, the signalized Taunton Street at Messenger Street intersection will operate below capacity at an overall LOS D or better during each of the analysis periods with queue lengths that remain within the anticipated queue storage areas.

Comment 16: *"Conclusions: As the existing conditions capacity analyses do not coincide with observed and experienced conditions, Pare's position is that the analyses need to be revised such that they reflect actual conditions. Until that is true, it is unfortunately difficult to have confidence in the future analysis results and therefore Pare cannot make a statement agreeing or disagreeing with the report's conclusions."*

MDM Initial Response: See **Response 12**. As part of its development agreement with the Town of North Attleborough the Proponent has worked with the Town to secure funding to implement improvements for the Messenger Street at Kelley Boulevard signalized intersection and along Kelley Boulevard between Messenger Street and George Levin Drive. The limitations of the analysis software include the ability for a static model to adequately estimate the queue spill back along the Kelley Boulevard northbound approach. The proposed MassWorks improvements that have been identified through the Proponent working with the Town are being designed by BETA to enhance capacity, queue storage, and operations. The report's conclusions remain valid.

The incremental traffic associated with the proposed development is not expected to materially degrade operating conditions at the study intersections. There will be no degradation in the level of service at any of the study intersections due to the project. However, as outlined under the TIAS's *Planned Area Roadway Improvements*, the Applicant worked with the Town of Plainville and Town of North Attleborough to develop a 10% design and MassWorks application for multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The Town successfully secured funding through a MassWorks grant in October 2022. The project will enhance safety and/or operations through the study area for pedestrians, bicycles, and motorized vehicles along Route 152 including the signalized intersections of Route 152 at Route 106 (Plainville) and Route 152 and George Leven Drive (North Attleborough). Proposed access-related improvements are consistent with long-range corridor improvements outlined in the 2014 SRPEDD Corridor Study.

As outlined in the TIAS, the implementation of access/egress improvements, proposed pedestrian and bicycle accommodations, off-site improvements, and a Transportation Demand Management (TDM) program with formal commitments under the projects Development Agreement will establish a framework of minimizing Site traffic impacts by encouraging non-motorized travel modes and pedestrian/bicycle accommodation that is compatible with other projects in the study area.

Pare Further Comment: *"As stated in Comment 12 above, Pare still cannot substantiate the conclusions in the study due to what we feel are significant shortcomings in the analysis methodology."*

MDM Supplemental Response: Supplemental analysis has been provided (See Response to Comment 11). MDM also reviewed with Pare the VISSIM simulation modeling prepared for the Kelly Boulevard corridor that corroborates long queues that currently exist - particularly during weekday morning peak hours northbound. This modeling was previously prepared for the signalized Taunton Street at Messenger Street intersection that led to a MassWorks grant application and subsequent award of grant for improvements to address long-range needs of the corridor.

As part of its development agreement with the Town of North Attleborough the Proponent has worked with the Town to secure funding to implement improvements for the Messenger Street at Kelley Boulevard signalized intersection and along Kelley Boulevard between Messenger Street and George Levin Drive that will adequately address pre-existing operational deficiencies. The MassWorks improvements will enhance intersection capacity and will eliminate a "pinch point" for the Route 152 northbound approach to Route 106 which currently results in queue spillback along Kelly Boulevard. The MassWorks design plans are currently under design by the Town; final signal timing/phasing adjustments are anticipated in the normal course of the MassWorks project construction and closeout process. No further mitigation is required nor warranted for the residential project, which is accounted for in the MassWorks project future growth assumptions.

ATTACHMENTS

- Traffic Volume Data
- Sensitivity Capacity Analysis

□ Traffic Volume Data

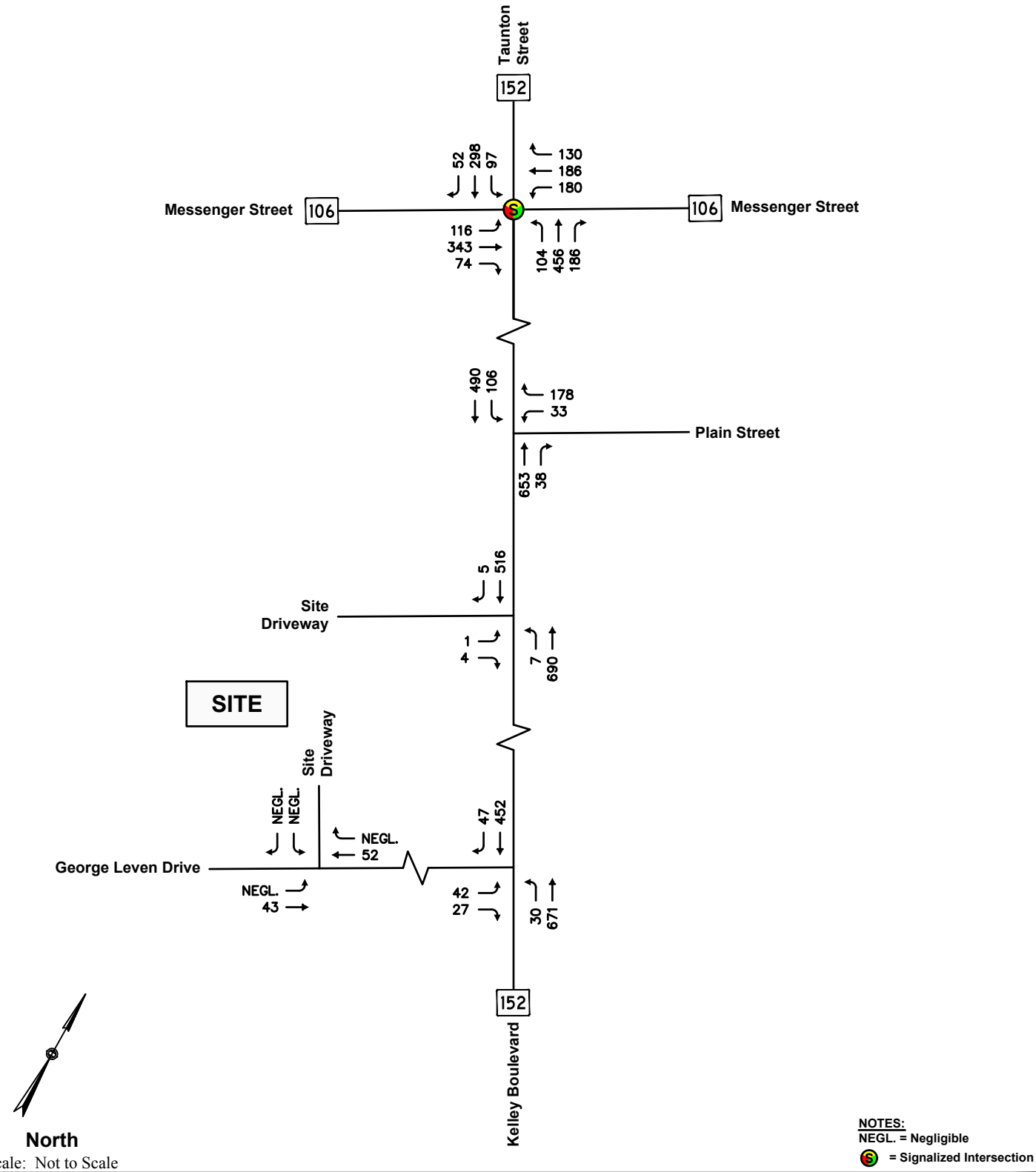

Figure 3 (Revised)

2024 Baseline Condition
Weekday Morning Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: January 2025
Dwg No. 1188 Response to Comments.dwg

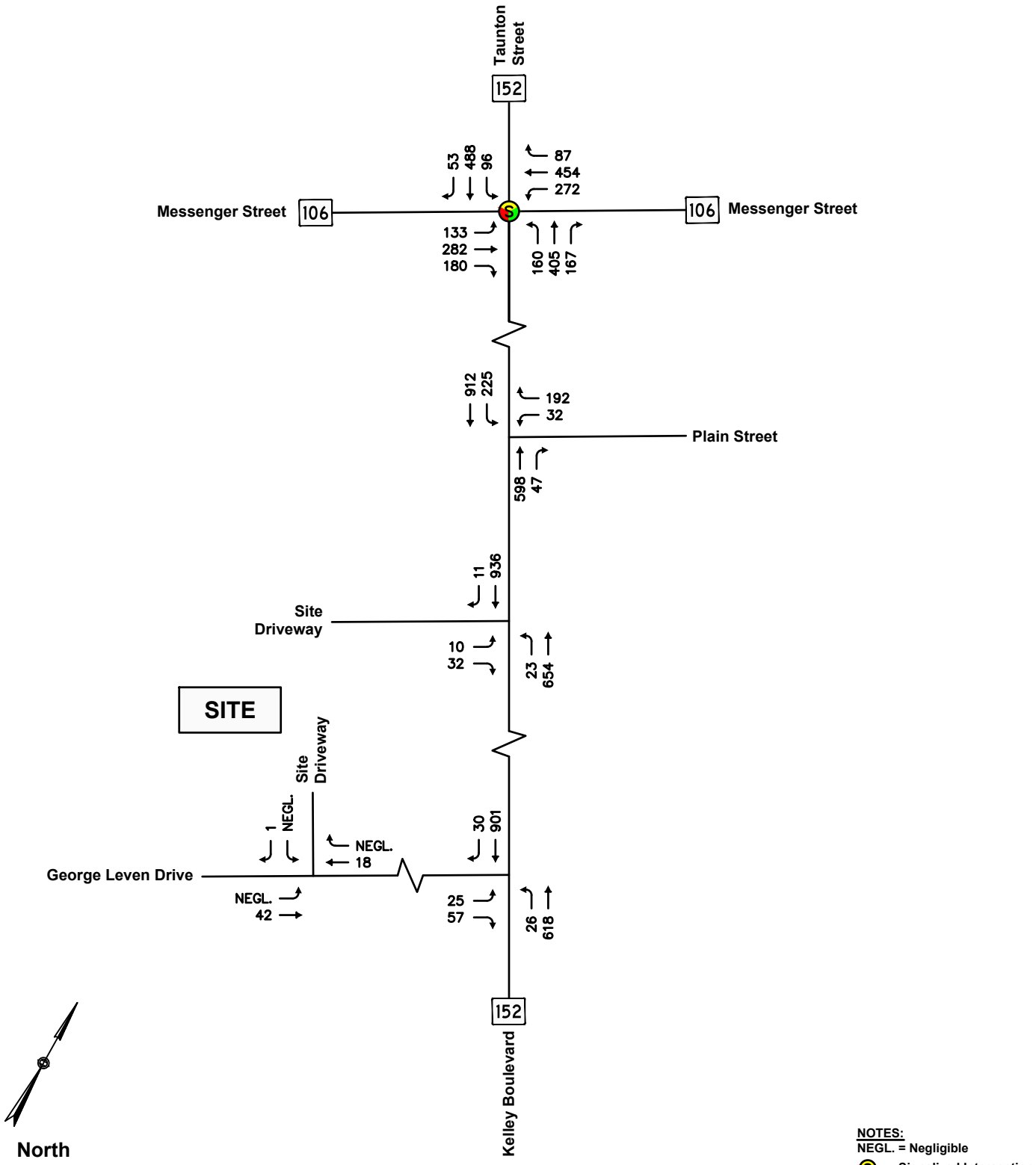

Figure 4 (Revised)

2024 Baseline Condition
Weekday Evening Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: January 2025
Dwg No. 1188 Response to Comments.dwg

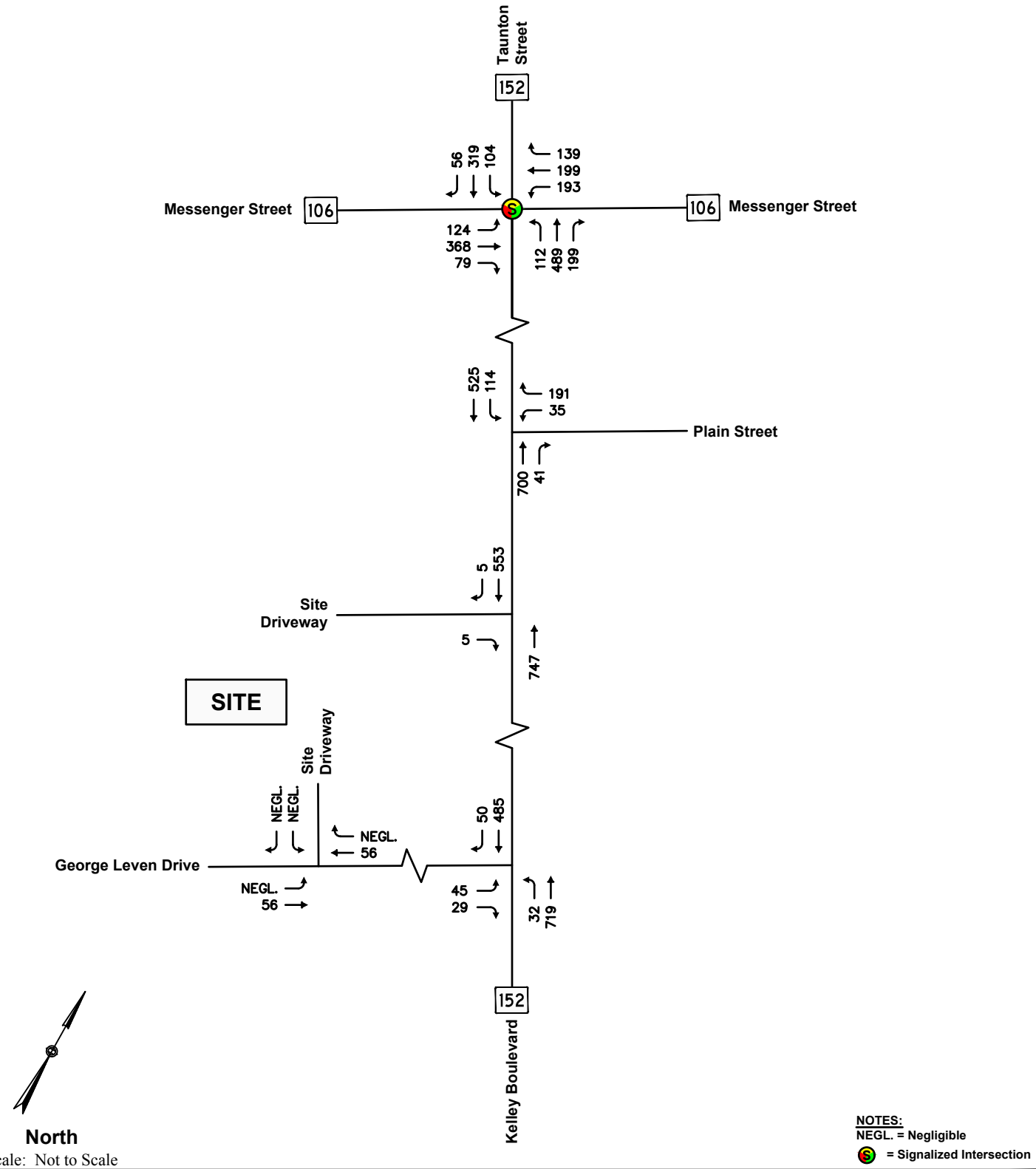

Figure 5 (Revised)

2031 No-Build Condition
Weekday Morning Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: January 2025
Dwg No. 1188 Response to Comments.dwg

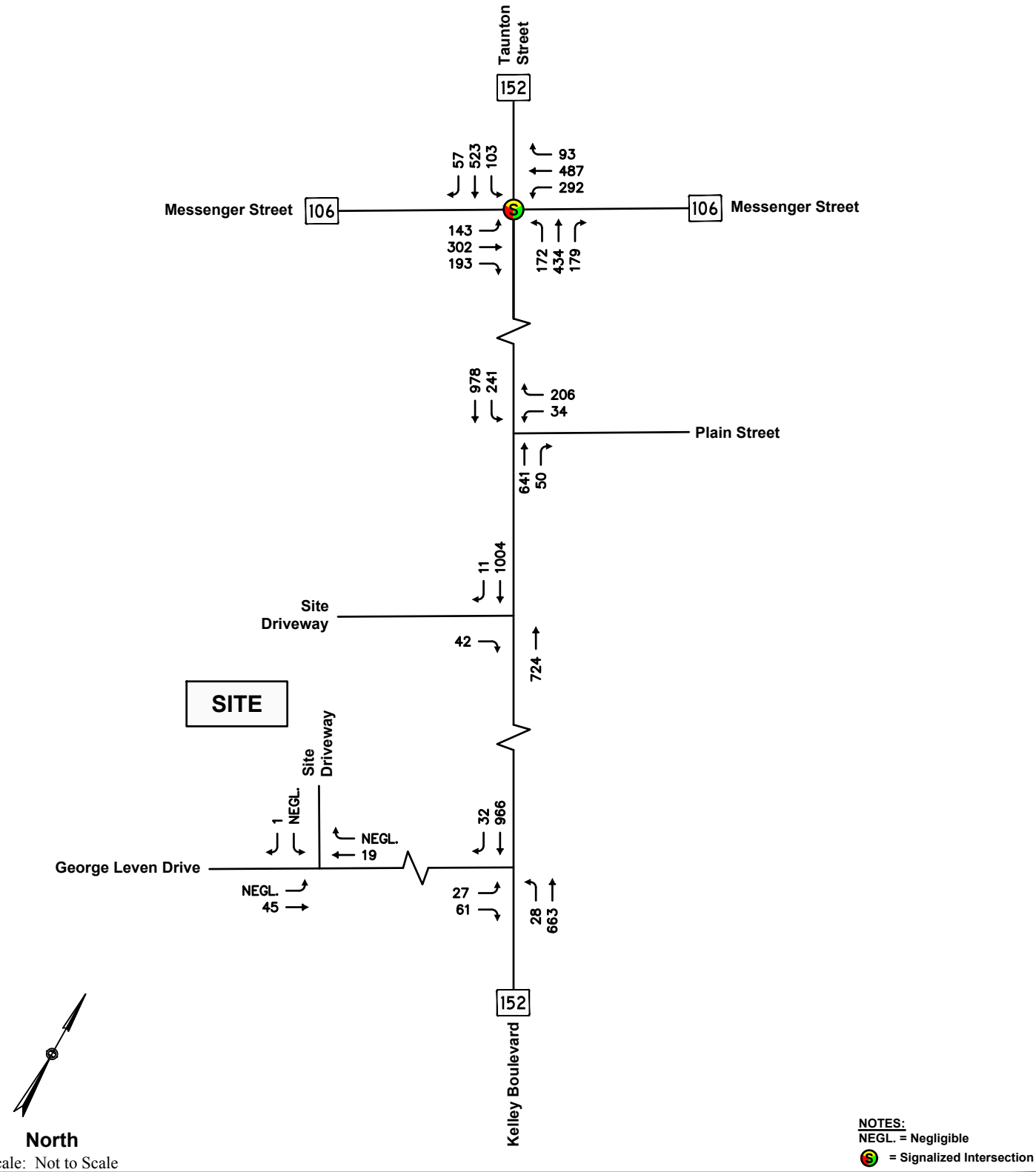

Figure 6 (Revised)

2031 No-Build Condition
Weekday Evening Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: January 2025
Dwg No. 1188 Response to Comments.dwg

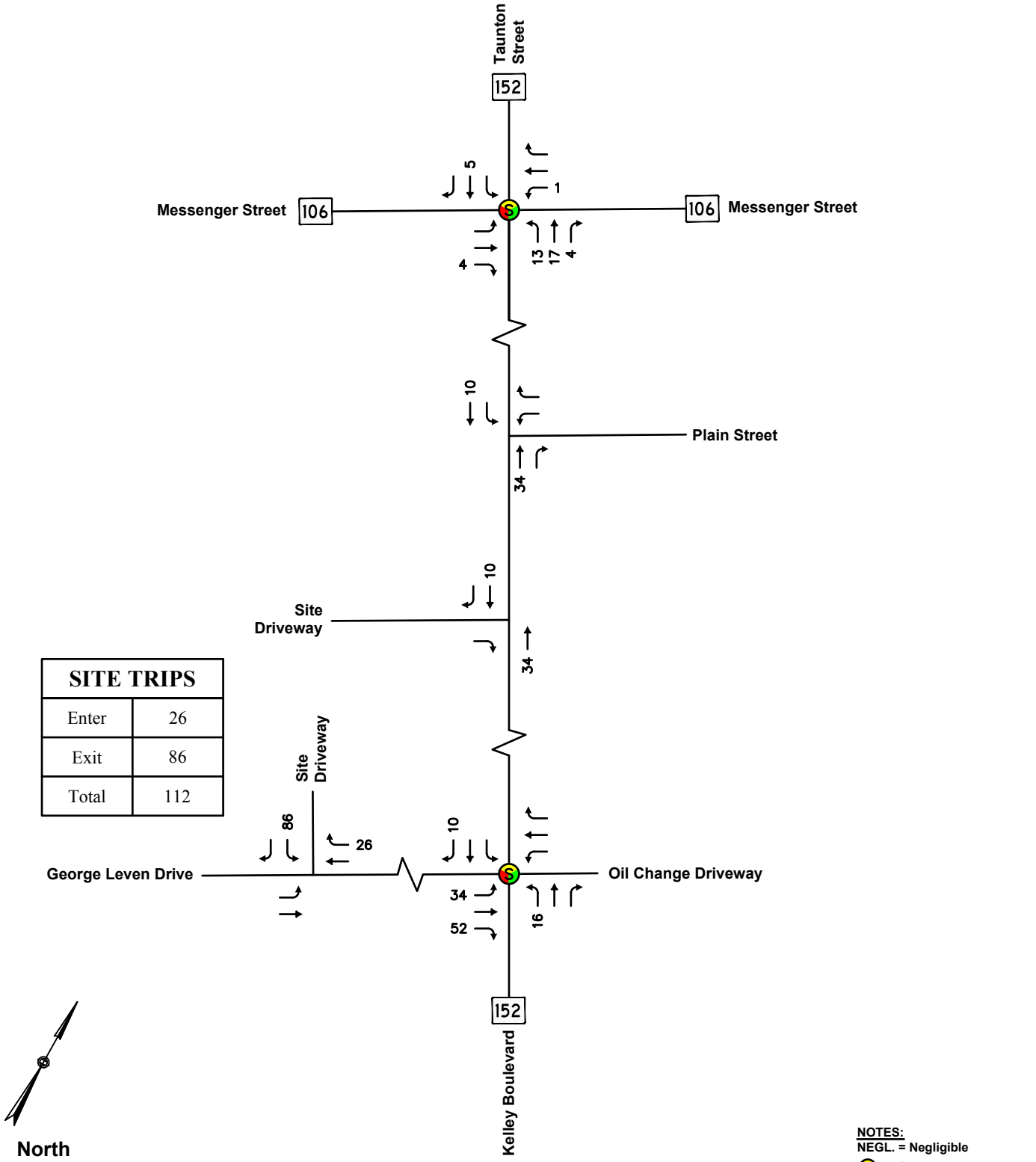

Figure 8 (Revised)

Trip Generation
Weekday Morning Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
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Date: January 2025
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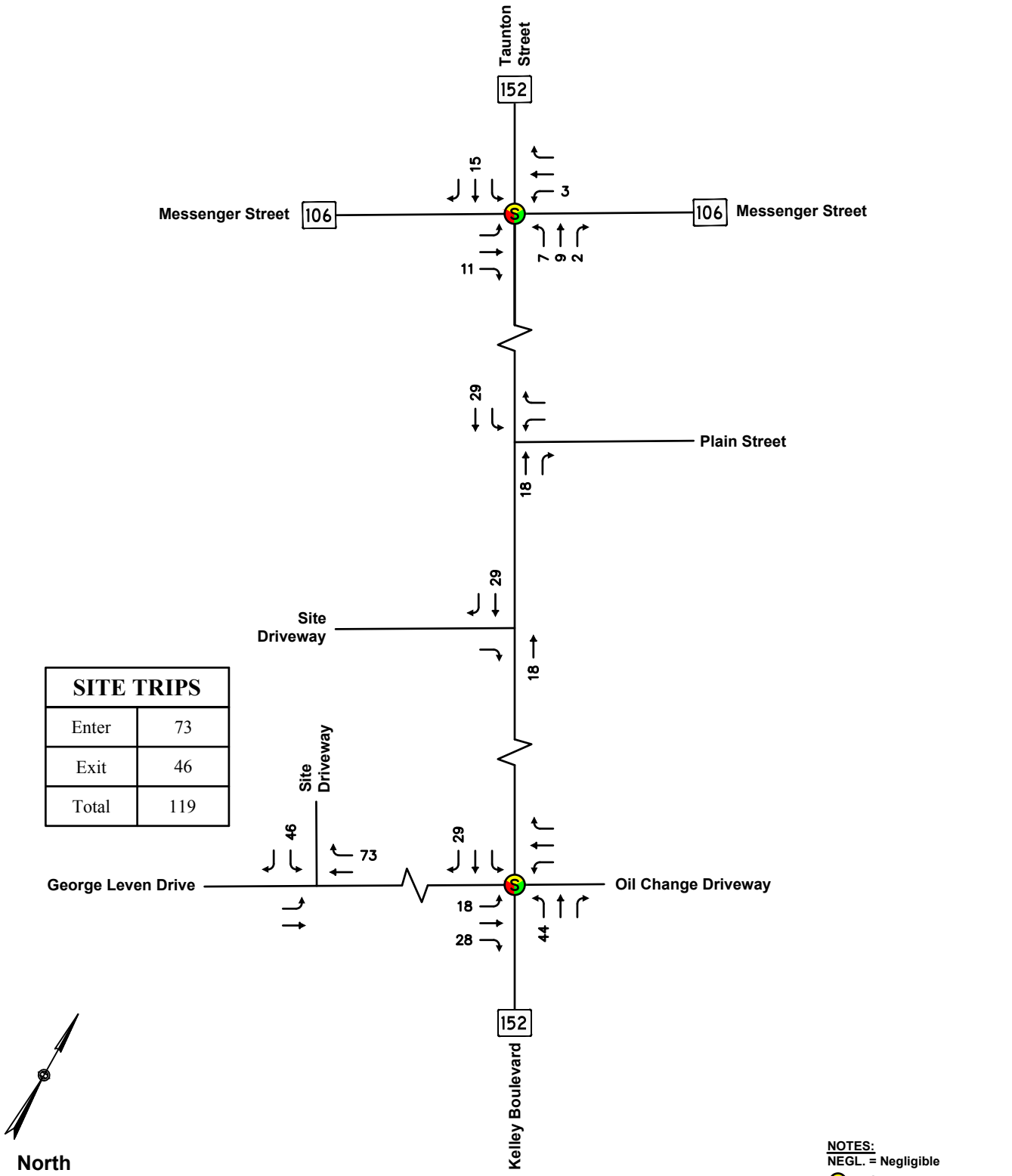

Figure 9 (Revised)

Trip Generation
Weekday Evening Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
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Date: January 2025
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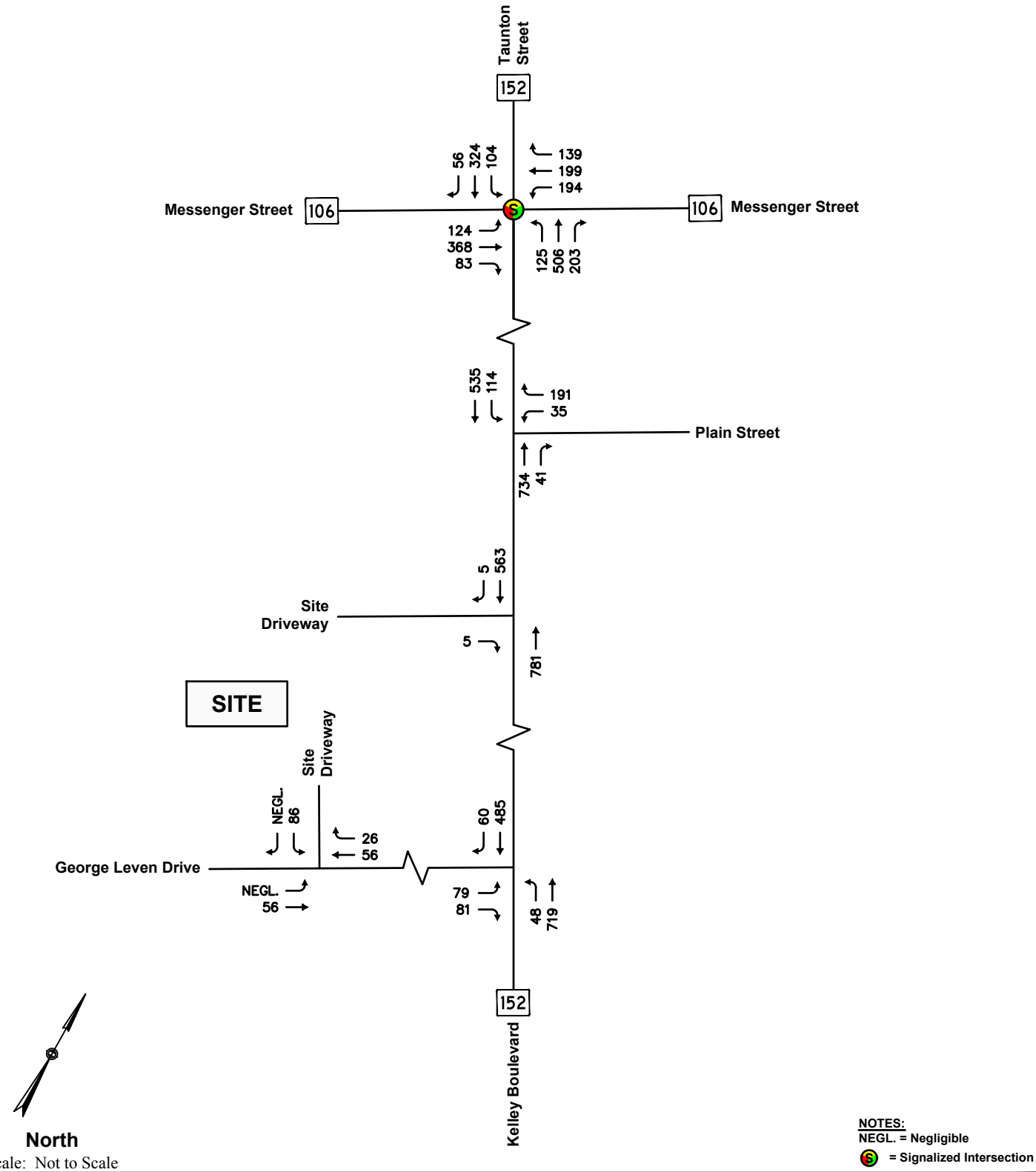

Figure 10 (Revised)

2031 Build Condition
Weekday Morning Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
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Date: January 2025
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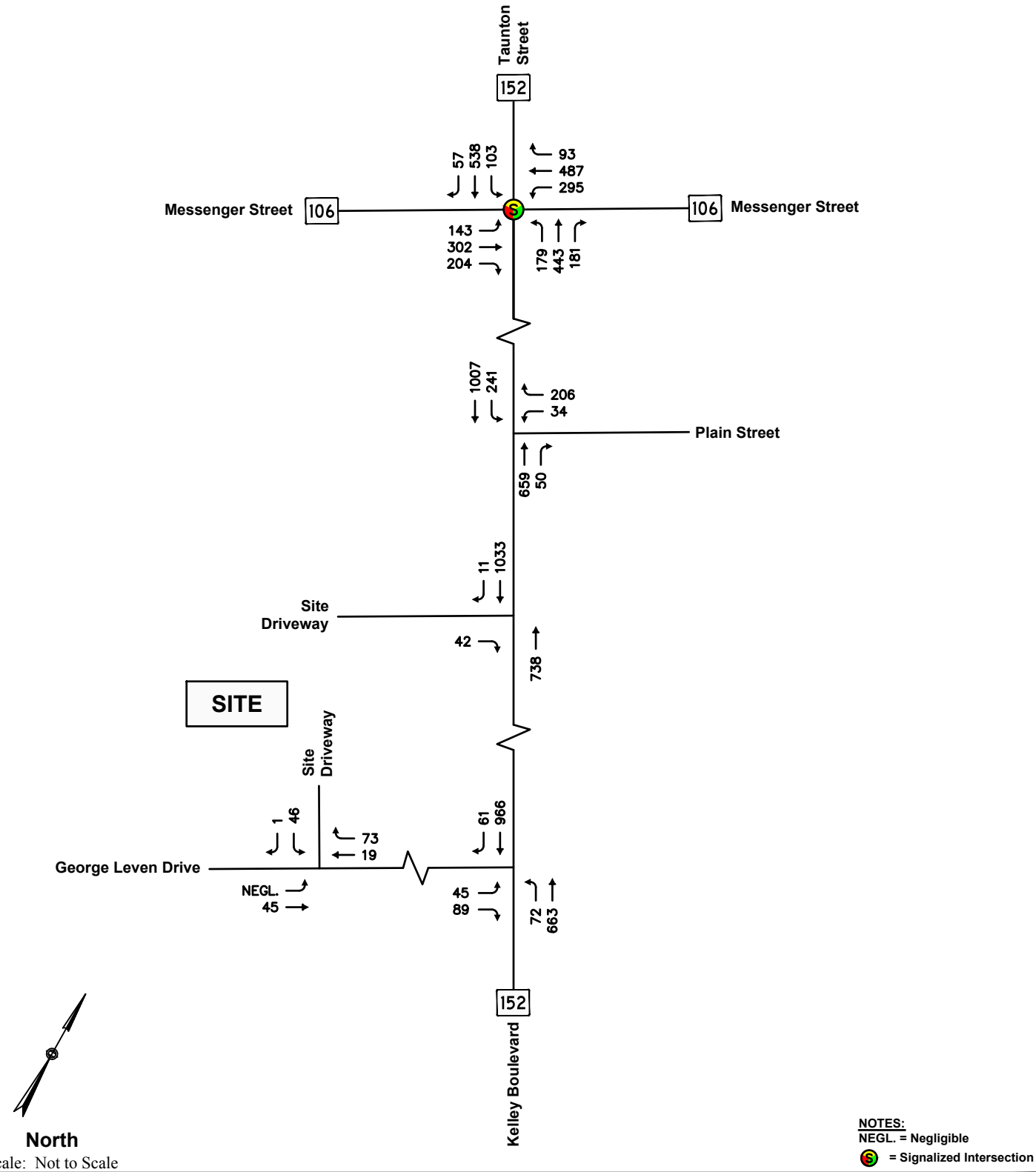


Figure 11 (Revised)

2031 Build Condition
Weekday Evening Peak Hour Volumes

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Date: January 2025
Dwg No. 1188 Response to Comments.dwg

□ Sensitivity Capacity Analysis

- 2024 Baseline

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	343	74	180	186	130	104	456	186	97	298	52
Future Volume (vph)	116	343	74	180	186	130	104	456	186	97	298	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	450		0	200		200	200		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.938				0.850		0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1769	0	1752	1711	0	1752	1863	1524	1703	1777	0
Flt Permitted	0.254			0.154			0.273			0.123		
Satd. Flow (perm)	473	1769	0	284	1711	0	504	1863	1524	220	1777	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			27				130		6	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.93	0.93	0.93	0.70	0.70	0.70	0.87	0.87	0.87	0.93	0.93	0.93
Heavy Vehicles (%)	2%	4%	7%	3%	5%	3%	3%	2%	6%	6%	5%	2%
Adj. Flow (vph)	125	369	80	257	266	186	120	524	214	104	320	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	449	0	257	452	0	120	524	214	104	376	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	1	6		5	2		7	8	8	7	8	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	6			2			8			8		
Detector Phase	1	6		5	2		7	8	8	7	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		1.0	10.0		1.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	10.0	15.0		5.0	15.0		6.0	10.0	10.0	6.0	10.0	
Total Split (s)	14.0	42.0		17.0	45.0		15.0	37.0	37.0	15.0	37.0	
Total Split (%)	10.4%	31.3%		12.7%	33.6%		11.2%	27.6%	27.6%	11.2%	27.6%	
Maximum Green (s)	10.0	37.0		13.0	40.0		10.0	32.0	32.0	10.0	32.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	42.5	32.5		50.2	36.6		41.5	32.4	32.4	41.5	32.4	
Actuated g/C Ratio	0.39	0.29		0.46	0.33		0.38	0.29	0.29	0.38	0.29	
v/c Ratio	0.43	0.85		0.85	0.77		0.41	0.96	0.40	0.51	0.71	
Control Delay	24.0	53.1		47.4	42.3		27.4	69.3	16.8	31.8	45.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	24.0	53.1		47.4	42.3		27.4	69.3	16.8	31.8	45.2	
LOS	C	D		D	D		C	E	B	C	D	
Approach Delay		46.8			44.2			50.3			42.3	
Approach LOS		D			D			D			D	
90th %ile Green (s)	10.0	37.0		13.0	40.0		10.0	32.0	32.0	10.0	32.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max	Max	Max	Max	
70th %ile Green (s)	10.0	37.0		13.0	40.0		10.0	32.0	32.0	10.0	32.0	
70th %ile Term Code	Max	Max		Max	Hold		Max	Max	Max	Max	Max	
50th %ile Green (s)	9.7	34.7		13.0	38.0		10.0	32.0	32.0	10.0	32.0	
50th %ile Term Code	Gap	Gap		Max	Hold		Max	Max	Max	Max	Max	
30th %ile Green (s)	8.6	29.9		13.0	34.3		8.5	32.0	32.0	8.5	32.0	
30th %ile Term Code	Gap	Gap		Max	Hold		Gap	Max	Max	Gap	Max	
10th %ile Green (s)	7.0	23.9		13.0	29.9		6.9	32.0	32.0	6.9	32.0	
10th %ile Term Code	Gap	Gap		Max	Hold		Gap	Max	Max	Gap	Max	
Queue Length 50th (ft)	47	279		105	258		50	358	44	43	230	
Queue Length 95th (ft)	113	#574		#186	342		116	#729	130	108	#490	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200		200	200		
Base Capacity (vph)	306	607		304	646		309	548	540	221	527	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.41	0.74		0.85	0.70		0.39	0.96	0.40	0.47	0.71	

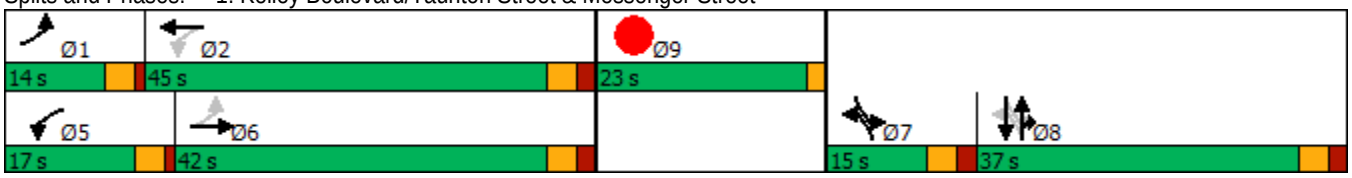
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	17%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 134
Actuated Cycle Length: 110.2
Natural Cycle: 120
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 46.4 Intersection LOS: D
Intersection Capacity Utilization 77.7% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 134
70th %ile Actuated Cycle: 111
50th %ile Actuated Cycle: 108.7
30th %ile Actuated Cycle: 102.4
10th %ile Actuated Cycle: 94.8
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	282	180	272	454	87	160	405	167	96	488	53
Future Volume (vph)	133	282	180	272	454	87	160	405	167	96	488	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	450		0	200		200	200		0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.942			0.976				0.850		0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1776	0	1770	1839	0	1787	1900	1599	1787	1851	0
Flt Permitted	0.128			0.114			0.100			0.243		
Satd. Flow (perm)	238	1776	0	212	1839	0	188	1900	1599	457	1851	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			7				134		4	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.99	0.99	0.99	0.91	0.91	0.91	0.94	0.94	0.94	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	2%	2%	1%	0%	1%	0%	1%	1%	1%	2%
Adj. Flow (vph)	134	285	182	299	499	96	170	431	178	99	503	55
Shared Lane Traffic (%)												
Lane Group Flow (vph)	134	467	0	299	595	0	170	431	178	99	558	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Prot	pm+pt	NA	
Protected Phases	1	6		5	2		7	8	8	7	8	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	6			2			8			8		
Detector Phase	1	6		5	2		7	8	8	7	8	
Switch Phase												
Minimum Initial (s)	5.0	10.0		1.0	10.0		1.0	5.0	5.0	1.0	5.0	
Minimum Split (s)	10.0	15.0		5.0	15.0		6.0	10.0	10.0	6.0	10.0	
Total Split (s)	14.0	36.0		21.0	43.0		15.0	45.0	45.0	15.0	45.0	
Total Split (%)	10.0%	25.7%		15.0%	30.7%		10.7%	32.1%	32.1%	10.7%	32.1%	
Maximum Green (s)	10.0	31.0		17.0	38.0		10.0	40.0	40.0	10.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	2.0		1.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	41.8	31.2		53.3	38.6		50.3	40.2	40.2	50.3	40.2	
Actuated g/C Ratio	0.34	0.26		0.44	0.32		0.41	0.33	0.33	0.41	0.33	
v/c Ratio	0.66	0.99		0.96	1.01		0.81	0.69	0.29	0.33	0.91	
Control Delay	40.7	83.2		74.9	81.4		54.8	43.1	11.0	24.2	59.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	40.7	83.2		74.9	81.4		54.8	43.1	11.0	24.2	59.3	
LOS	D	F		E	F		D	D	B	C	E	
Approach Delay		73.7			79.2			38.3			54.0	
Approach LOS		E			E			D			D	
90th %ile Green (s)	10.0	31.0		17.0	38.0		10.0	40.0	40.0	10.0	40.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max	Max	Max	Max	
70th %ile Green (s)	10.0	31.0		17.0	38.0		10.0	40.0	40.0	10.0	40.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Max	Max	Max	Max	
50th %ile Green (s)	10.0	31.0		17.0	38.0		10.0	40.0	40.0	10.0	40.0	
50th %ile Term Code	Max	Max		Max	Max		Max	Max	Max	Max	Max	
30th %ile Green (s)	10.0	31.0		17.0	38.0		10.0	40.0	40.0	10.0	40.0	
30th %ile Term Code	Max	Max		Max	Max		Max	Max	Max	Max	Max	
10th %ile Green (s)	8.2	31.0		17.0	39.8		10.0	40.0	40.0	10.0	40.0	
10th %ile Term Code	Gap	Max		Max	Hold		Max	Max	Max	Max	Max	
Queue Length 50th (ft)	58	335		171	440		74	275	22	41	391	
Queue Length 95th (ft)	#169	#702		#450	#881		#253	#500	92	99	#784	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200		200	200		
Base Capacity (vph)	209	471		311	588		210	628	618	298	614	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.64	0.99		0.96	1.01		0.81	0.69	0.29	0.33	0.91	

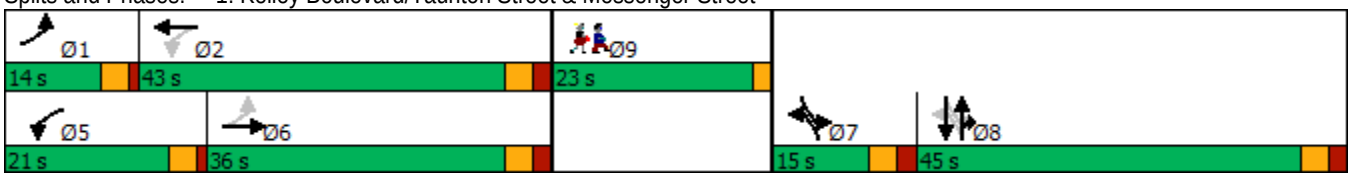
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	16%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 121.6
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 61.6 Intersection LOS: E
Intersection Capacity Utilization 94.5% ICU Level of Service F
Analysis Period (min) 15
90th %ile Actuated Cycle: 140
70th %ile Actuated Cycle: 117
50th %ile Actuated Cycle: 117
30th %ile Actuated Cycle: 117
10th %ile Actuated Cycle: 117
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



- 2031 No-Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	368	79	193	199	139	112	489	199	104	319	56
Future Volume (vph)	124	368	79	193	199	139	112	489	199	104	319	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.973			0.938			0.957			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3360	0	1752	3250	0	1752	3349	0	1703	3377	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3360	0	1752	3250	0	1752	3349	0	1703	3377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			144			50			15	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	7%	3%	5%	3%	3%	2%	6%	6%	5%	2%
Adj. Flow (vph)	135	400	86	210	216	151	122	532	216	113	347	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	486	0	210	367	0	122	748	0	113	408	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	25.0		20.0	30.0		20.0	30.0		15.0	25.0	
Total Split (%)	13.3%	22.1%		17.7%	26.5%		17.7%	26.5%		13.3%	22.1%	
Maximum Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	10.1	17.2		14.7	21.9		11.2	24.5		9.7	23.0	
Actuated g/C Ratio	0.11	0.19		0.16	0.24		0.12	0.27		0.11	0.25	
v/c Ratio	0.69	0.74		0.73	0.41		0.56	0.79		0.62	0.47	
Control Delay	60.4	41.7		54.7	19.5		49.8	37.1		57.5	32.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.4	41.7		54.7	19.5		49.8	37.1		57.5	32.0	
LOS	E	D		D	B		D	D		E	C	
Approach Delay		45.8			32.3			38.9			37.5	
Approach LOS		D			C			D			D	
90th %ile Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
90th %ile Term Code	Max	Max		Max	Hold		Max	Max		Max	Max	
70th %ile Green (s)	10.0	20.0		15.0	25.0		13.0	25.0		10.0	22.0	
70th %ile Term Code	Max	Max		Max	Hold		Gap	Max		Max	Hold	
50th %ile Green (s)	10.0	17.5		15.0	22.5		11.4	25.0		10.0	23.6	
50th %ile Term Code	Max	Gap		Max	Hold		Gap	Max		Max	Hold	
30th %ile Green (s)	10.0	15.7		15.0	20.7		9.8	25.0		10.0	25.2	
30th %ile Term Code	Max	Gap		Max	Hold		Gap	Max		Max	Hold	
10th %ile Green (s)	9.5	12.9		12.8	16.2		7.4	21.1		7.9	21.6	
10th %ile Term Code	Gap	Gap		Gap	Hold		Gap	Gap		Gap	Hold	
Queue Length 50th (ft)	73	126		110	51		64	184		60	94	
Queue Length 95th (ft)	#213	#240		#295	118		147	#393		#175	196	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	199	774		296	1020		296	981		192	871	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.68	0.63		0.71	0.36		0.41	0.76		0.59	0.47	

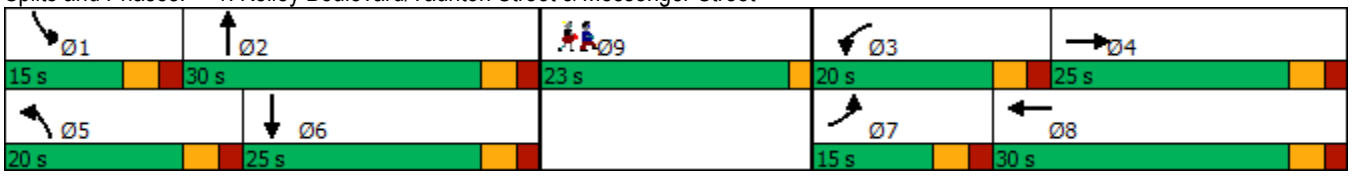
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	20%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 113
Actuated Cycle Length: 90.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 38.8 Intersection LOS: D
Intersection Capacity Utilization 65.8% ICU Level of Service C
Analysis Period (min) 15
90th %ile Actuated Cycle: 113
70th %ile Actuated Cycle: 90
50th %ile Actuated Cycle: 87.5
30th %ile Actuated Cycle: 85.7
10th %ile Actuated Cycle: 74.7
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	0	29	1	0	4	32	719	2	5	485	50
Future Volume (vph)	45	0	29	1	0	4	32	719	2	5	485	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	70		0	70		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.892						0.986	
Flt Protected		0.950			0.990		0.950			0.950		
Satd. Flow (prot)	0	1719	1553	0	1678	0	1752	1845	0	1805	1774	0
Flt Permitted		0.816			0.918		0.327			0.266		
Satd. Flow (perm)	0	1477	1553	0	1556	0	603	1845	0	505	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50		112						7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			232			329			900	
Travel Time (s)		8.0			5.3			7.5			20.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	3%	3%	0%	0%	6%	2%
Adj. Flow (vph)	49	0	32	1	0	4	35	782	2	5	527	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	32	0	5	0	35	784	0	5	581	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	17.0%	17.0%	17.0%	17.0%	17.0%		17.0%	45.5%		17.0%	45.5%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.2	14.4		8.2		44.7	45.9		42.4	40.7	
Actuated g/C Ratio		0.13	0.24		0.13		0.73	0.75		0.70	0.67	
v/c Ratio		0.25	0.08		0.02		0.06	0.56		0.01	0.49	
Control Delay		30.6	3.3		0.0		5.8	12.9		6.4	14.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		30.6	3.3		0.0		5.8	12.9		6.4	14.4	
LOS		C	A		A		A	B		A	B	
Approach Delay		19.8						12.6			14.3	
Approach LOS		B						B			B	
90th %ile Green (s)	10.0	10.0	7.4	10.0	10.0		7.4	35.4		7.0	35.0	
90th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Min	Max	
70th %ile Green (s)	8.8	8.8	7.0	8.8	8.8		7.0	41.2		0.0	29.2	
70th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Gap	
50th %ile Green (s)	7.6	7.6	7.0	7.6	7.6		7.0	35.6		0.0	23.6	
50th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Gap	
30th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	45.7		0.0	45.7	
30th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		14	0		0		3	110		1	140	
Queue Length 95th (ft)		58	9		0		21	#670		6	#438	
Internal Link Dist (ft)		270			152			249			820	
Turn Bay Length (ft)							70			70		
Base Capacity (vph)		251	481		357		641	1391		587	1297	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.20	0.07		0.01		0.05	0.56		0.01	0.45	

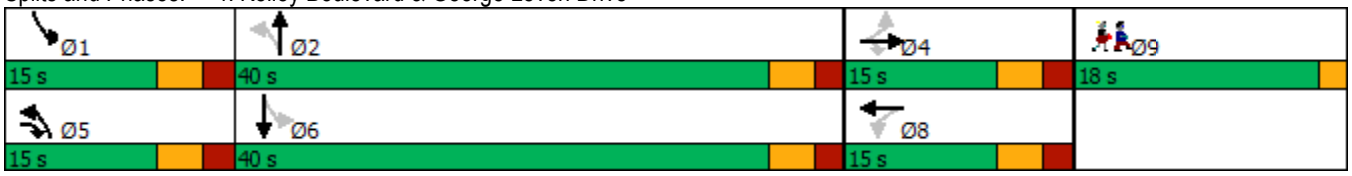
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	9.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	16.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 88
Actuated Cycle Length: 60.9
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 13.6 Intersection LOS: B
Intersection Capacity Utilization 55.5% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 85.4
70th %ile Actuated Cycle: 60
50th %ile Actuated Cycle: 53.2
30th %ile Actuated Cycle: 50.7
10th %ile Actuated Cycle: 55
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	302	193	292	487	93	172	434	179	103	523	57
Future Volume (vph)	143	302	193	292	487	93	172	434	179	103	523	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.941			0.976			0.956			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3371	0	1770	3494	0	1787	3441	0	1787	3517	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3371	0	1770	3494	0	1787	3441	0	1787	3517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		101			17			51			9	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	1%	0%	1%	0%	1%	1%	1%	2%
Adj. Flow (vph)	155	328	210	317	529	101	187	472	195	112	568	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	538	0	317	630	0	187	667	0	112	630	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	17.0	20.0		25.0	28.0		20.0	35.0		15.0	30.0	
Total Split (%)	14.4%	16.9%		21.2%	23.7%		16.9%	29.7%		12.7%	25.4%	
Maximum Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	11.8	15.2		20.3	23.7		14.1	26.3		9.6	21.8	
Actuated g/C Ratio	0.12	0.16		0.21	0.25		0.15	0.28		0.10	0.23	
v/c Ratio	0.71	0.86		0.84	0.71		0.71	0.68		0.62	0.78	
Control Delay	61.4	48.4		59.1	39.1		56.5	33.1		59.9	42.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.4	48.4		59.1	39.1		56.5	33.1		59.9	42.5	
LOS	E	D		E	D		E	C		E	D	
Approach Delay		51.3			45.8			38.2			45.1	
Approach LOS		D			D			D			D	
90th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Max	
50th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	27.6		10.0	22.6	
50th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Gap	
30th %ile Green (s)	12.0	15.0		20.0	23.0		14.2	24.6		10.0	20.4	
30th %ile Term Code	Max	Max		Max	Hold		Gap	Hold		Max	Gap	
10th %ile Green (s)	10.2	15.0		20.0	24.8		10.9	19.2		7.8	16.1	
10th %ile Term Code	Gap	Max		Max	Hold		Gap	Hold		Gap	Gap	
Queue Length 50th (ft)	88	133		179	173		104	163		64	176	
Queue Length 95th (ft)	#239	#311		#445	#349		#264	297		#176	#327	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	226	622		376	882		285	1132		189	941	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.86		0.84	0.71		0.66	0.59		0.59	0.67	

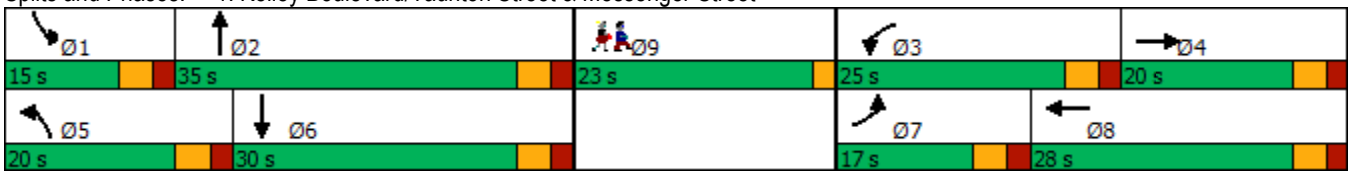
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 118
Actuated Cycle Length: 95.4
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 44.8 Intersection LOS: D
Intersection Capacity Utilization 73.2% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 118
70th %ile Actuated Cycle: 95
50th %ile Actuated Cycle: 92.6
30th %ile Actuated Cycle: 89.6
10th %ile Actuated Cycle: 82
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	61	4	0	3	28	663	1	2	966	32
Future Volume (vph)	27	0	61	4	0	3	28	663	1	2	966	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	70		0	70		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.942						0.995	
Flt Protected		0.950			0.972		0.950			0.950		
Satd. Flow (prot)	0	1805	1583	0	1740	0	1805	1881	0	1805	1871	0
Flt Permitted							0.080			0.338		
Satd. Flow (perm)	0	1900	1583	0	1790	0	152	1881	0	642	1871	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			66		112						2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			238			329			900	
Travel Time (s)		8.0			5.4			7.5			20.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	3%
Adj. Flow (vph)	29	0	66	4	0	3	30	721	1	2	1050	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	66	0	7	0	30	722	0	2	1085	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	17.0%	17.0%	17.0%	17.0%	17.0%		17.0%	45.5%		17.0%	45.5%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		7.7	11.2		7.7		51.3	53.6		48.1	43.7	
Actuated g/C Ratio		0.12	0.17		0.12		0.79	0.83		0.74	0.68	
v/c Ratio		0.13	0.20		0.02		0.10	0.46		0.00	0.86	
Control Delay		30.1	6.1		0.2		5.6	10.2		6.0	24.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		30.1	6.1		0.2		5.6	10.2		6.0	24.9	
LOS		C	A		A		A	B		A	C	
Approach Delay		13.4			0.2			10.0			24.9	
Approach LOS		B			A			B			C	
90th %ile Green (s)	9.6	9.6	7.1	9.6	9.6		7.1	35.1		7.0	35.0	
90th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Min	Max	
70th %ile Green (s)	7.5	7.5	7.0	7.5	7.5		7.0	47.0		0.0	35.0	
70th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Max	
50th %ile Green (s)	0.0	0.0	7.0	0.0	0.0		7.0	47.5		0.0	35.5	
50th %ile Term Code	Skip	Skip	Min	Skip	Skip		Min	Dwell		Skip	Dwell	
30th %ile Green (s)	0.0	0.0	7.0	0.0	0.0		7.0	62.0		0.0	50.0	
30th %ile Term Code	Skip	Skip	Min	Skip	Skip		Min	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		8	0		0		1	0		0	198	
Queue Length 95th (ft)		39	20		0		18	#582		3	#1031	
Internal Link Dist (ft)		270			158			249			820	
Turn Bay Length (ft)							70			70		
Base Capacity (vph)		301	400		378		384	1558		685	1264	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.10	0.17		0.02		0.08	0.46		0.00	0.86	

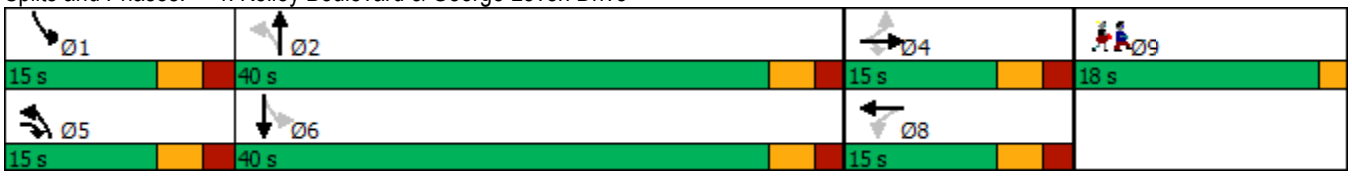
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	9.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	16.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 88
Actuated Cycle Length: 64.7
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 18.5 Intersection LOS: B
Intersection Capacity Utilization 76.9% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 84.7
70th %ile Actuated Cycle: 64.5
50th %ile Actuated Cycle: 52.5
30th %ile Actuated Cycle: 67
10th %ile Actuated Cycle: 55
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



- 2031 Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	368	83	194	199	139	125	506	230	104	324	56
Future Volume (vph)	124	368	83	194	199	139	125	506	230	104	324	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.972			0.938			0.953			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3356	0	1752	3250	0	1752	3332	0	1703	3377	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3356	0	1752	3250	0	1752	3332	0	1703	3377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			144			60			15	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	4%	7%	3%	5%	3%	3%	2%	6%	6%	5%	2%
Adj. Flow (vph)	135	400	90	211	216	151	136	550	250	113	352	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	490	0	211	367	0	136	800	0	113	413	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	25.0		20.0	30.0		20.0	30.0		15.0	25.0	
Total Split (%)	13.3%	22.1%		17.7%	26.5%		17.7%	26.5%		13.3%	22.1%	
Maximum Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	10.0	17.3		14.8	22.0		11.7	25.4		9.7	23.3	
Actuated g/C Ratio	0.11	0.19		0.16	0.24		0.13	0.28		0.11	0.26	
v/c Ratio	0.70	0.75		0.75	0.41		0.60	0.82		0.63	0.47	
Control Delay	61.3	42.3		55.7	19.5		51.2	38.4		58.0	32.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.3	42.3		55.7	19.5		51.2	38.4		58.0	32.4	
LOS	E	D		E	B		D	D		E	C	
Approach Delay		46.4			32.7			40.3			37.9	
Approach LOS		D			C			D			D	
90th %ile Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
90th %ile Term Code	Max	Max		Max	Hold		Max	Max		Max	Max	
70th %ile Green (s)	10.0	20.0		15.0	25.0		13.8	25.0		10.0	21.2	
70th %ile Term Code	Max	Max		Max	Hold		Gap	Max		Max	Hold	
50th %ile Green (s)	10.0	17.7		15.0	22.7		12.1	25.0		10.0	22.9	
50th %ile Term Code	Max	Gap		Max	Hold		Gap	Max		Max	Hold	
30th %ile Green (s)	10.0	15.8		15.0	20.8		10.3	25.0		10.0	24.7	
30th %ile Term Code	Max	Gap		Max	Hold		Gap	Max		Max	Hold	
10th %ile Green (s)	9.5	13.0		13.0	16.5		7.8	25.0		7.9	25.1	
10th %ile Term Code	Gap	Gap		Gap	Hold		Gap	Max		Gap	Hold	
Queue Length 50th (ft)	73	127		111	51		71	200		60	97	
Queue Length 95th (ft)	#213	#248		#295	118		161	#433		#175	199	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	197	764		292	1009		292	970		189	875	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.64		0.72	0.36		0.47	0.82		0.60	0.47	

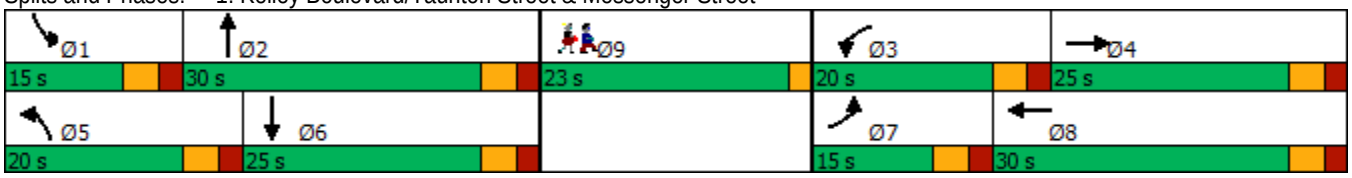
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	20%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 113
Actuated Cycle Length: 91.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 39.6 Intersection LOS: D
Intersection Capacity Utilization 67.4% ICU Level of Service C
Analysis Period (min) 15
90th %ile Actuated Cycle: 113
70th %ile Actuated Cycle: 90
50th %ile Actuated Cycle: 87.7
30th %ile Actuated Cycle: 85.8
10th %ile Actuated Cycle: 78.9
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	0	81	1	0	4	48	719	2	5	485	60
Future Volume (vph)	79	0	81	1	0	4	48	719	2	5	485	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	70		0	70		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.892						0.984	
Flt Protected		0.950			0.990		0.950			0.950		
Satd. Flow (prot)	0	1719	1553	0	1678	0	1752	1845	0	1805	1771	0
Flt Permitted		0.754			0.932		0.274			0.252		
Satd. Flow (perm)	0	1364	1553	0	1580	0	505	1845	0	479	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			88		112						8	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			232			329			900	
Travel Time (s)		8.0			5.3			7.5			20.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	3%	3%	0%	0%	6%	2%
Adj. Flow (vph)	86	0	88	1	0	4	52	782	2	5	527	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	88	0	5	0	52	784	0	5	592	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	17.0%	17.0%	17.0%	17.0%	17.0%		17.0%	45.5%		17.0%	45.5%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		9.0	18.1		9.0		42.8	42.7		39.2	34.7	
Actuated g/C Ratio		0.14	0.29		0.14		0.68	0.68		0.63	0.55	
v/c Ratio		0.44	0.17		0.02		0.11	0.62		0.01	0.60	
Control Delay		35.6	4.8		0.0		6.2	14.6		6.4	18.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		35.6	4.8		0.0		6.2	14.6		6.4	18.2	
LOS		D	A		A		A	B		A	B	
Approach Delay		20.0						14.1			18.1	
Approach LOS		B						B			B	
90th %ile Green (s)	10.0	10.0	8.1	10.0	10.0		8.1	36.1		7.0	35.0	
90th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Min	Max	
70th %ile Green (s)	10.0	10.0	7.0	10.0	10.0		7.0	42.2		0.0	30.2	
70th %ile Term Code	Max	Max	Min	Hold	Hold		Min	Hold		Skip	Gap	
50th %ile Green (s)	9.6	9.6	7.0	9.6	9.6		7.0	37.1		0.0	25.1	
50th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Gap	
30th %ile Green (s)	7.9	7.9	7.0	7.9	7.9		7.0	35.0		0.0	23.0	
30th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Max		Skip	Hold	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		26	0		0		5	129		1	156	
Queue Length 95th (ft)		#100	23		0		28	#670		6	#459	
Internal Link Dist (ft)		270			152			249			820	
Turn Bay Length (ft)							70			70		
Base Capacity (vph)		224	581		353		552	1259		536	1153	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.38	0.15		0.01		0.09	0.62		0.01	0.51	

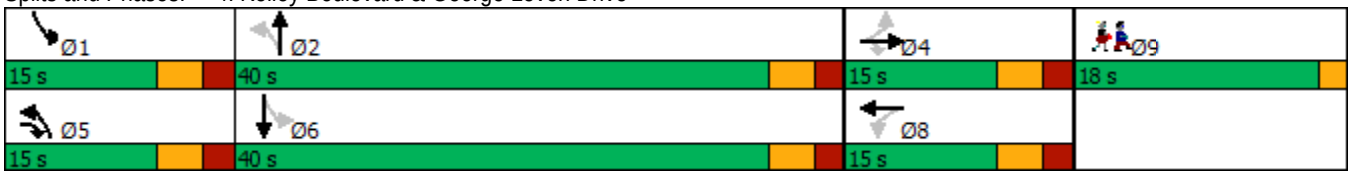
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	9.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	16.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 88
Actuated Cycle Length: 62.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 16.1 Intersection LOS: B
Intersection Capacity Utilization 59.3% ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 86.1
70th %ile Actuated Cycle: 62.2
50th %ile Actuated Cycle: 56.7
30th %ile Actuated Cycle: 52.9
10th %ile Actuated Cycle: 55
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	302	204	295	487	93	179	443	181	103	538	57
Future Volume (vph)	143	302	204	295	487	93	179	443	181	103	538	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.939			0.976			0.956			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3363	0	1770	3494	0	1787	3441	0	1787	3521	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3363	0	1770	3494	0	1787	3441	0	1787	3521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		116			17			50			9	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	1%	0%	1%	0%	1%	1%	1%	2%
Adj. Flow (vph)	155	328	222	321	529	101	195	482	197	112	585	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	550	0	321	630	0	195	679	0	112	647	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	17.0	20.0		25.0	28.0		20.0	35.0		15.0	30.0	
Total Split (%)	14.4%	16.9%		21.2%	23.7%		16.9%	29.7%		12.7%	25.4%	
Maximum Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	11.8	15.2		20.3	23.7		14.4	27.3		9.6	22.5	
Actuated g/C Ratio	0.12	0.16		0.21	0.25		0.15	0.28		0.10	0.23	
v/c Ratio	0.72	0.88		0.86	0.72		0.73	0.67		0.63	0.78	
Control Delay	62.4	48.8		62.0	39.8		58.0	32.9		60.7	42.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	62.4	48.8		62.0	39.8		58.0	32.9		60.7	42.6	
LOS	E	D		E	D		E	C		E	D	
Approach Delay		51.8			47.3			38.5			45.3	
Approach LOS		D			D			D			D	
90th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	30.0		10.0	25.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Max	
50th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	29.3		10.0	24.3	
50th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Gap	
30th %ile Green (s)	12.0	15.0		20.0	23.0		15.0	26.1		10.0	21.1	
30th %ile Term Code	Max	Max		Max	Hold		Max	Hold		Max	Gap	
10th %ile Green (s)	10.3	15.0		20.0	24.7		11.6	20.6		7.8	16.8	
10th %ile Term Code	Gap	Max		Max	Hold		Gap	Hold		Gap	Gap	
Queue Length 50th (ft)	90	135		186	177		112	167		65	182	
Queue Length 95th (ft)	#239	#311		#453	#349		#279	303		#176	#342	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	223	627		372	871		282	1119		188	932	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.70	0.88		0.86	0.72		0.69	0.61		0.60	0.69	

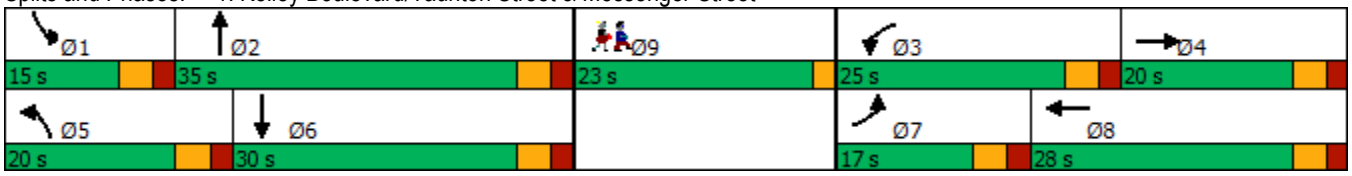
Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	23.0
Total Split (s)	23.0
Total Split (%)	19%
Maximum Green (s)	21.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	14.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	21.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 118
Actuated Cycle Length: 96.4
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 45.5 Intersection LOS: D
Intersection Capacity Utilization 74.5% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 118
70th %ile Actuated Cycle: 95
50th %ile Actuated Cycle: 94.3
30th %ile Actuated Cycle: 91.1
10th %ile Actuated Cycle: 83.4
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	0	89	4	0	3	72	663	1	2	966	61
Future Volume (vph)	45	0	89	4	0	3	72	663	1	2	966	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	70		0	70		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.942						0.991	
Flt Protected		0.950			0.972		0.950			0.950		
Satd. Flow (prot)	0	1805	1583	0	1740	0	1805	1881	0	1805	1862	0
Flt Permitted		0.851			0.796		0.083			0.330		
Satd. Flow (perm)	0	1617	1583	0	1425	0	158	1881	0	627	1862	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			97		112						4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			238			329			900	
Travel Time (s)		8.0			5.4			7.5			20.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	1%	3%
Adj. Flow (vph)	49	0	97	4	0	3	78	721	1	2	1050	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	97	0	7	0	78	722	0	2	1116	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	17.0%	17.0%	17.0%	17.0%	17.0%		17.0%	45.5%		17.0%	45.5%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		8.1	14.5		8.1		49.5	50.6		45.5	41.1	
Actuated g/C Ratio		0.12	0.22		0.12		0.76	0.77		0.70	0.63	
v/c Ratio		0.24	0.23		0.03		0.25	0.50		0.00	0.95	
Control Delay		33.0	5.2		0.2		7.4	11.1		6.5	38.1	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		33.0	5.2		0.2		7.4	11.1		6.5	38.1	
LOS		C	A		A		A	B		A	D	
Approach Delay		14.6			0.2			10.8			38.0	
Approach LOS		B			A			B			D	
90th %ile Green (s)	10.0	10.0	9.1	10.0	10.0		9.1	37.1		7.0	35.0	
90th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Min	Max	
70th %ile Green (s)	8.7	8.7	7.9	8.7	8.7		7.9	47.9		0.0	35.0	
70th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Max	
50th %ile Green (s)	7.6	7.6	7.2	7.6	7.6		7.2	47.2		0.0	35.0	
50th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Max	
30th %ile Green (s)	0.0	0.0	7.0	0.0	0.0		7.0	48.0		0.0	36.0	
30th %ile Term Code	Skip	Skip	Min	Skip	Skip		Min	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		18	0		0		7	95		0	~520	
Queue Length 95th (ft)		59	24		0		39	#583		3	#1108	
Internal Link Dist (ft)		270			158			249			820	
Turn Bay Length (ft)							70			70		
Base Capacity (vph)		255	484		319		380	1457		645	1173	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.19	0.20		0.02		0.21	0.50		0.00	0.95	

Intersection Summary

Lane Group	Ø9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	18.0
Total Split (s)	18.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	9.0
Pedestrian Calls (#/hr)	5
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	16.0
90th %ile Term Code	Ped
70th %ile Green (s)	0.0
70th %ile Term Code	Skip
50th %ile Green (s)	0.0
50th %ile Term Code	Skip
30th %ile Green (s)	0.0
30th %ile Term Code	Skip
10th %ile Green (s)	0.0
10th %ile Term Code	Skip
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Area Type: Other
Cycle Length: 88
Actuated Cycle Length: 65.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 25.7 Intersection LOS: C
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
90th %ile Actuated Cycle: 87.1
70th %ile Actuated Cycle: 66.6
50th %ile Actuated Cycle: 64.8
30th %ile Actuated Cycle: 53
10th %ile Actuated Cycle: 55
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kelley Boulevard & George Leven Drive