

Fellowship Road Lane Diet

Tucker, Georgia

PREPARED FOR

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Table of Contents

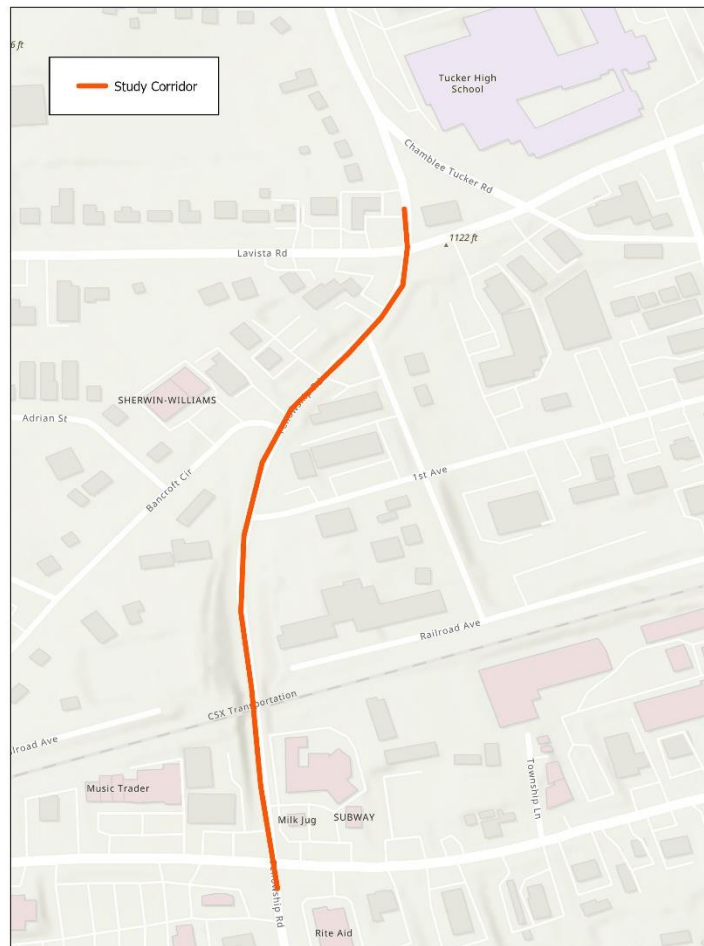
1	Background.....	1
	Intersection Description.....	2
	Existing Conditions.....	2
	Proposed Conditions.....	2
2	Operations	3
	Traffic Volumes.....	3
	Delay.....	3
	Crash History.....	6
	Left Turn Warrant Analysis.....	8
3	Conclusions	9

1

Background

This study analyzes the Fellowship Road corridor in Tucker, Georgia, beginning at Lawrenceville Highway and ending at Lavista Road. The corridor is approximately 0.35 miles, seen below in **Figure 1**. The project is proposing a road diet and pedestrian improvements along the Fellowship Road. The proposed changes include reducing the northbound through lanes on Fellowship Road from two to one and changing lane configuration and signal timing at the Lavista Road intersection. This report presents the proposed changes in more detail and outlines the expected traffic impacts due to the road diet.

Figure 1: Study Corridor



Intersection Description

Existing Conditions

Fellowship Road at Lawrenceville Highway

At this intersection, Fellowship Road is classified as a major collector and Lawrenceville Highway is classified as a principal arterial. The northbound approach of Fellowship Road consists of one shared through-right lane, and one 150-foot left turn bay with protected/permitted signal phasing. The southbound approach of Fellowship Road has one through lane, one dedicated right turn lane, and one 275-foot left turn bay with protected/permissive signal phasing. Both the eastbound and westbound approaches of Lawrenceville Highway consist of two through lanes and one 150-foot left turn bay with protected/permissive phasing. There is lighting in the vicinity of the intersection on all four approaches.

Fellowship Road at Lavista Road

At the intersection, Fellowship Road is classified as a major collector and Lavista Road is classified as a minor arterial. The northbound approach of Fellowship Road consists of one shared through-right lane and one shared through-left lane, with permissive left turn phasing. The southbound approach of Fellowship Road consists of one through lane and one shared through-right lane. Left turns are not permitted from this approach. The eastbound approach of Lavista Road consists of one shared through-right lane, one through lane and one 250-foot left turn bay with protected/permissive phasing. The westbound approach of Lavista Road consists of one shared through-right lane, one through lane, and one left turn lane with protected/permissive phasing. There is lighting in the vicinity of the intersection on all four approaches.

The existing conditions diagram can be seen in **Appendix A**.

Proposed Conditions

Fellowship Road at Lawrenceville Highway

There are no proposed changes to the geometry or signal phasing at the intersection of Fellowship Road and Lawrenceville Highway.

Fellowship Road at Lavista Road

The proposed changes only impact the northbound approach of Fellowship Road. The existing shared through-right lane will remain, while the through-left lane will be changed to a dedicated left turn bay. The signal phasing for the northbound approach will also change from a permissive left to a protected/permissive left, in accordance with the Georgia Department of Transportation's (GDOT) 6785-2 Left Turn Phasing Policy, discussed in the following sections.

The proposed conditions diagram can be seen in **Appendix A**.

2

Operations

Traffic Volumes

Two sources of traffic data were used to estimate the existing traffic volumes at the intersections on and surrounding the corridor. Turning movement counts were collected on Wednesday, March 22, 2023, for the following intersections on the study corridor:

- Fellowship Road and Lavista Road
- Fellowship Road and Lawrenceville Highway

Historical traffic data, collected for previous projects in the area, was used for the following intersections:

- Fellowship Road and Lavista Road
- Fellowship Road and Chamblee Tucker Road
- Lavista Road and Chamblee Tucker Road

Both the new counts and historic counts at the Fellowship Road and Lavista Road intersection were compared to determine a scaling factor for the historical data. The scaling factor was found for both the AM and PM peak hour and applied to all historical count data. The network was then balanced between adjacent intersections; volume changes were only made to the historical data. The final volumes used in the analysis can be seen in **Appendix B**.

Delay

The following intersections were modeled in Synchro 11 to analyze delay and level of service (LOS) for the AM and PM existing conditions:

- Fellowship Road and Lavista Road
- Fellowship Road and Lawrenceville Highway
- Fellowship Road and Chamblee Tucker Road
- Lavista Road and Chamblee Tucker Road

The new geometry does not impact the intersections on Chamblee Tucker Road. The intersections were included in the model to assess queuing impacts. The only change made to the intersections on Chamblee Tucker Road was optimizing the signal phasing in the no build and build scenarios. Because there were no geometry changes proposed to these intersections, their operational results were not included.

The no-build and build delay, level of service, and 95th percentile queues are summarized in **Table 1** and **Table 2** for the AM and PM peak hours, respectively.

The results show a decrease in delay at Lavista Road and Fellowship Road between the no build and build conditions in the AM peak for all approaches, except the southbound approach. The overall intersection delay improves by approximately 6 seconds in the build condition as well. In the PM peak, the northbound approach delay improves from an LOS F to an LOS E in the build scenario. For all other approaches, the delay increases and the LOS worsens. Overall, the intersection gains approximately 3 seconds of delay in the build scenario, dropping the intersection LOS from a D to an E.

Table 1: AM Operations

			AM Peak – No Build					AM Peak – Build				
Intersection	Control Type	Approach	Delay (s/veh)	LOS	95% Queue	Overall Delay	Overall LOS	Delay (s/veh)	LOS	95% Queue	Overall Delay	Overall LOS
Lawrenceville Highway and Fellowship Road	Signalized	NB	46.8	D	455	47.5	D	46.8	D	455	47.5	D
		SB	35.0	D	115			35.0	D	195		
		EB	35.0	D	250			35.0	D	235		
		WB	60.0	E	645			60.0	E	645		
Lavista Road and Fellowship Road	Signalized	NB	97.2	F	485	49.9	D	70.1	E	735	43.6	D
		SB	40.2	D	150			54.9	D	190		
		EB	27.3	C	205			26.3	C	205		
		WB	33.4	C	645			30.5	C	640		

Table 2: PM Operations

			PM Peak – No Build					PM Peak - Build				
Intersection	Control Type	Approach	Delay (s/veh)	LOS	95% Queue	Overall Delay	Overall LOS	Delay (s/veh)	LOS	95% Queue	Overall Delay	Overall LOS
Lawrenceville Highway and Fellowship Road	Signalized	NB	30.3	C	175	60.1	E	30.3	C	175	60.1	E
		SB	49.6	D	580			49.6	D	725		
		EB	78.4	E	655			78.4	E	655		
		WB	54.8	D	445			54.8	D	445		
Lavista Road and Fellowship Road	Signalized	NB	148.0	F	260	53.2	D	48.9	D	430	55.9	E
		SB	79.4	E	475			110.8	F	575		
		EB	32.5	C	740			40.8	D	915		
		WB	8.8	A	255			31.4	C	295		

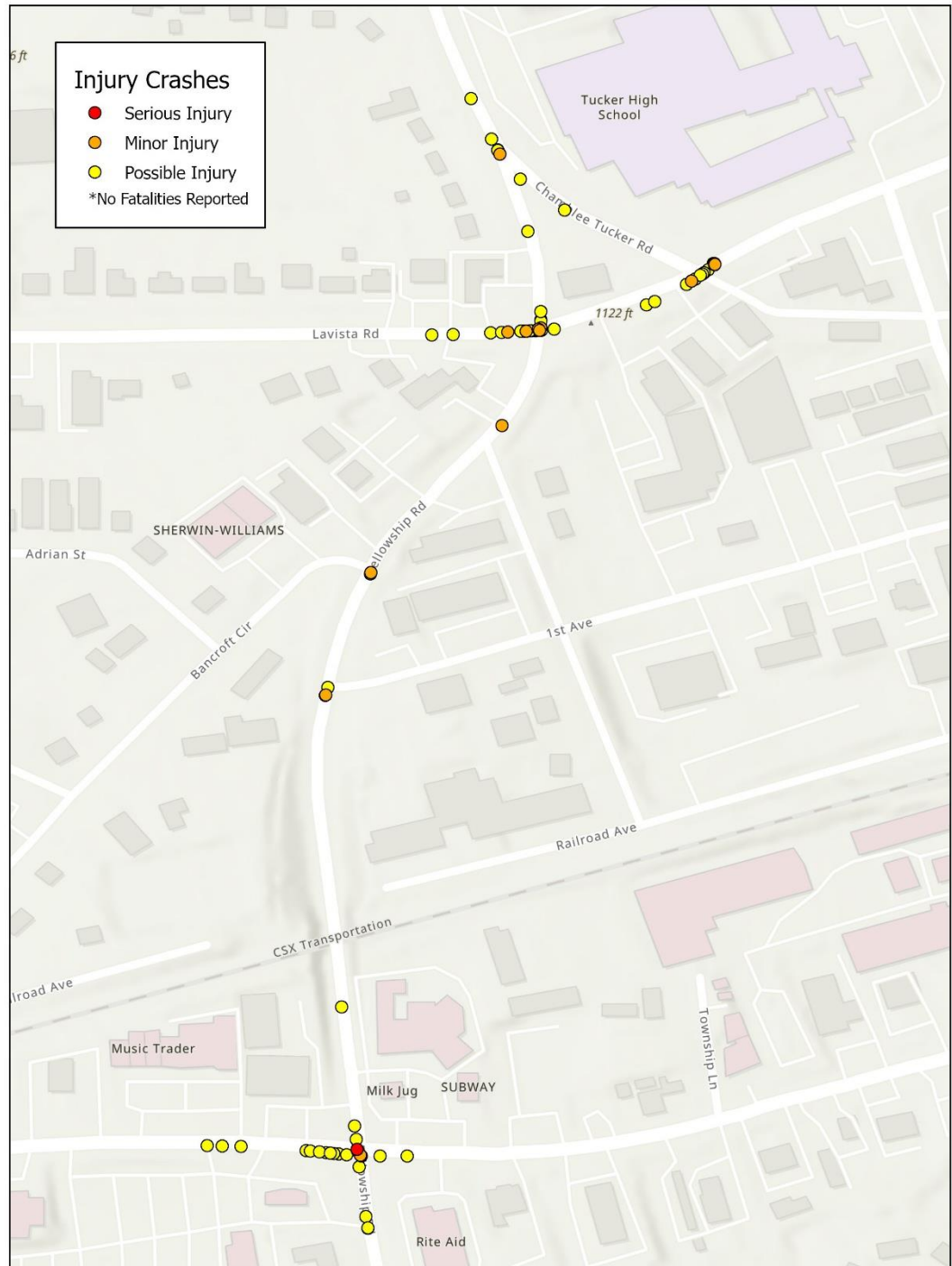
Crash History

Crash data was collected from Numetric for the study area for the years 2018-2022 and is presented below in **Table 3**. A map of the injury crashes on the corridor is provided in **Figure 2**. There were no fatal crashes on the corridor between 2018 and 2022. The majority of the crashes along the study corridor are concentrated at the major intersections with Lavista Road and Lawrenceville Road.

Table 3: Crash History (2018-2022)

Segment Summary		Year				
		2018	2019	2020	2021	2022
Manner of Collision	Angle	42	35	31	45	40
	Rear End	26	35	34	33	22
	Sideswipe-Same Direction	11	20	14	13	13
	Sideswipe-Opposite Direction	3	0	4	3	2
	Not A Collision with Motor Vehicle	2	2	4	3	1
	Head On	3	4	5	3	2
Total Crashes		87	96	92	100	80
Total Non-Fatal Injury Crashes		24	16	24	28	30
Total Injuries		8	5	7	3	9
Bicycle Related Crashes		0	0	0	0	0
Pedestrian Related Crashes		0	1	2	0	0

Figure 2: Injury Crash Map



Left Turn Warrant Analysis

An analysis was done for the Fellowship Road and Lavista Road intersection to determine the appropriate left turn signal phasing in accordance with GDOT Policy 6785-2. Both conditions A2 and A3 were met warranting a protected-permissive left turn phasing.

Condition A2 states a protected-permissive left turn phase is warranted when “the left turn volume is 125 vehicles or greater per hour for a leading left turn phase or is 75 vehicles or greater per hour for a lagging left turn phase.” As seen in **Appendix B** the PM peak hour volume is 190 left turns, warranting a leading left turn phase at the intersection.

Condition A3 states a protected-permissive left turn phase is warranted when “the number of left turn crashes under permissive operation is 4 or more in a 12-month period; or 6 or more in a 24-month period.” Crashes for the intersection were analyzed between 2018 and 2022; police report narratives were used to verify the correct movements for each angle crash. The left angle crashes that occurred when a vehicle was making a northbound left, opposing a southbound through, are shown in **Table 4**, below. The table shows that in 2022, 4 left angle crashes occurred and between 2021 and 2022, 6 left angle crashes occurred, meeting the crash condition outlined in A3.

Table 4: Left Angle Crashes 2018-2022

Year	2018	2019	2020	2021	2022
# of Left Angle Crashes	0	1	0	2	4

With both conditions A2 and A3 met, the intersection of Fellowship Road and Lavista Road warrants a leading left turn phase for the northbound left turn.

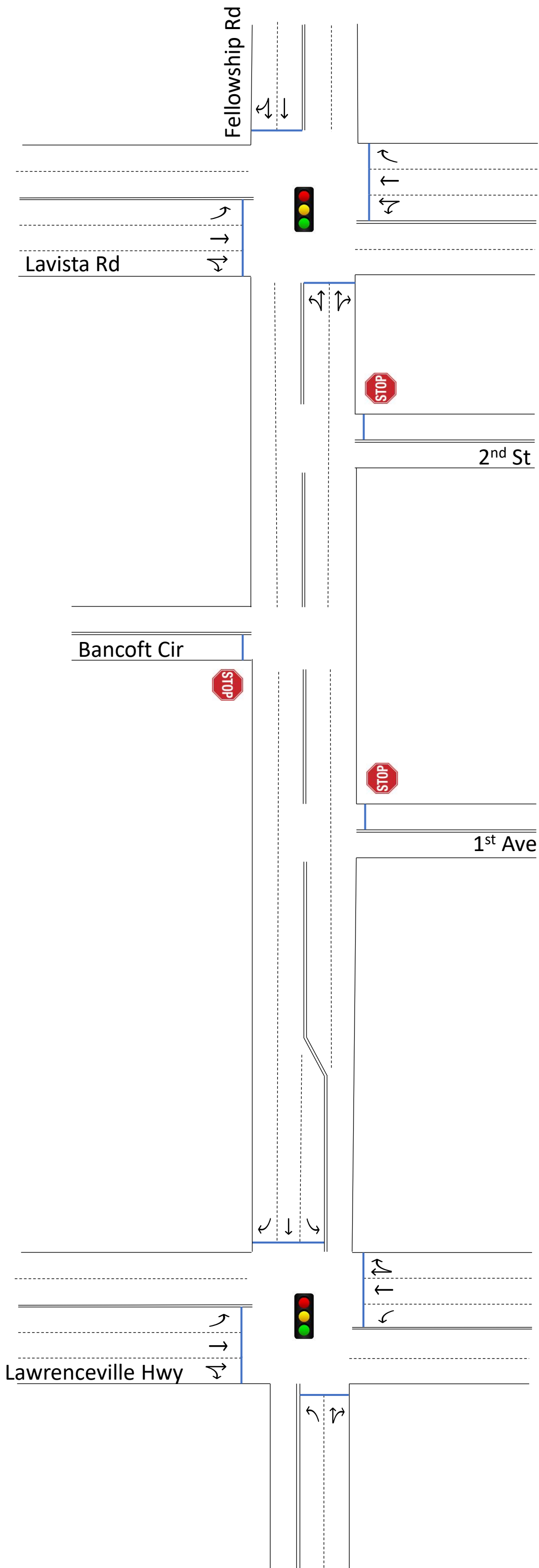
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Conclusions

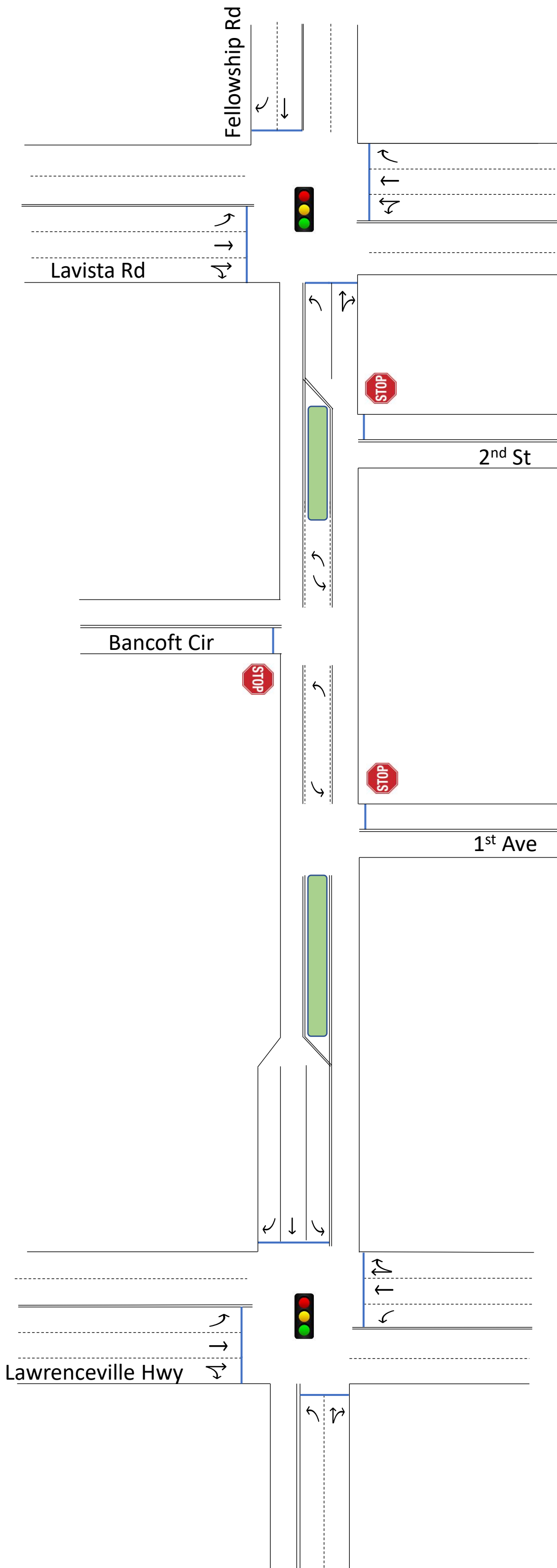
Based on the analysis outlined in this report, removing one northbound through lane on the Fellowship Drive corridor between Lawrenceville Highway and Lavista Road will have little effect on intersection operations. In addition to the road diet, the proposed changes also include the addition of a dedicated left turn lane at the Fellowship Road and Lavista Road intersection with protected-permissive phasing. In the AM peak, the overall intersection delay is anticipated to improve with the changes, and in the PM peak, it is estimated to add approximately three seconds of delay overall due to the signal phasing changes associated with the northbound left turn. The changes are also anticipated to promote safety on the corridor by giving protected time to the northbound left turn at Fellowship Road and Lavista Road and creating space for pedestrian improvements along the corridor.

Appendix A: Existing and Proposed Geometry

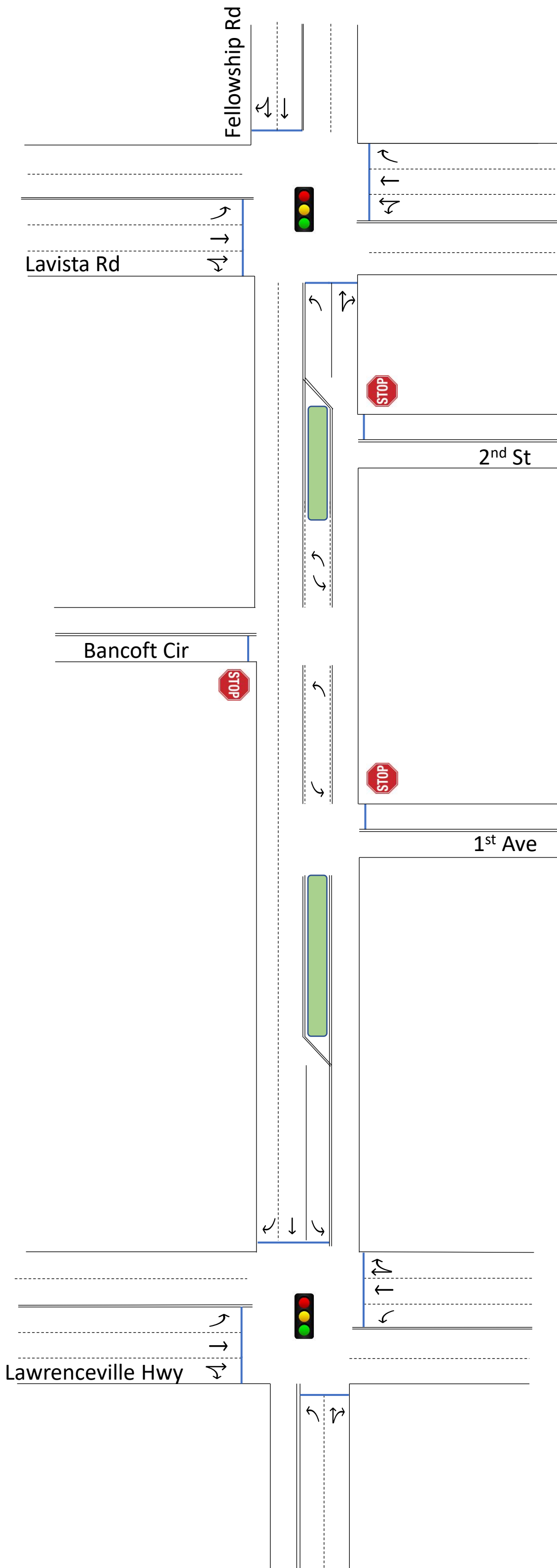
EXISTING
GEOMETRY



ALTERNATIVE ONE



ALTERNATIVE TWO



Appendix B: Traffic Volumes

Legend
AM
(PM)

