

**Intersection Study
Cahaba Heights Road and White Oak Drive
Vestavia Hills, Alabama
November 17, 2017**



A Traffic Signal Warrant Study and an All-Way Stop Warrant Study were performed for the intersection of Cahaba Heights Road and White Oak Drive to determine if a traffic signal or all-way stop condition is currently warranted for the intersection.

Existing Roadways

Cahaba Heights Road is a two-lane roadway running generally east to west with a posted speed limit of 25 mph. White Oak Drive is a two-lane roadway running north to south with a posted speed limit of 25 mph. Currently the intersection is controlled by side street stop signs on White Oak Drive.

Existing Traffic Volumes

Hourly approach volumes were collected by Traffic Data, LLC on Tuesday, November 7, 2017, and Wednesday, November 8, 2017 for all four intersection approaches for a full 24-hour period. Count data is provided in Appendix A.

Crash Analysis

Crash data was reviewed for years 2014, 2015, and 2016. During that timeframe, six total crashes were recorded. Five of the crashes were angle crashes that occurred when a vehicle on White Oak Drive was attempting to make a turn onto Cahaba Heights Road and collided with a vehicle already traveling along Cahaba Heights Road. One was a rear-end crash on Cahaba Heights Road, resulting from one vehicle rear-ending another that was attempting to make a left-turn onto White Oak Drive. There were no injuries documented in the crash reports for the six crashes.

Traffic Signal Warrant Evaluation

Traffic signals, when appropriate and properly designed, can provide many operational benefits that may include: improved intersection efficiency, improved intersection safety, and reduced delays. However, unwarranted traffic signals can negatively impact traffic operations, impede traffic progression, and ultimately cause further delays and problems. Therefore, traffic signals should be installed only when justified and only after other reasonable alternatives have been considered. Using methods outlined in the 2009 Manual of Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration (FHWA), the intersection of Cahaba Heights Road and White Oak Drive was evaluated to determine if traffic

signalization is warranted and appropriate for this particular intersection based on existing traffic volume data collected.

Based on the existing traffic volumes, the intersection did not meet either of the applicable warrants for the site condition, Warrant 1 or Warrant 2; therefore the volumes do not justify a traffic signal. The signal warrant worksheets are provided in Appendix B.

All-Way Stop Warrant Evaluation

Stop signs can help to improve safety and operations at intersections by assigning an orderly right-of-way for vehicles upon approach. However, studies have shown that when a motorist does not believe that a stop sign appropriately reflects the actual traffic conditions, the signage is often disregarded. As such, this can have a detrimental impact on an intersection's overall safety. Additionally, studies show that stop signs are relatively ineffective at controlling vehicle speeds. To ensure safety and efficient traffic operations as number 1 and number 2 priorities respectively, it is critical that all-way stops be incorporated only where conditions warrant that type of control. Using methods outlined in the 2009 MUTCD, the intersection of Cahaba Heights Road and White Oak Drive was evaluated to determine if an all-way stop condition is warranted and appropriate for this particular intersection based on existing traffic volumes collected.

The following criteria are provided in the MUTCD for an intersection to be considered for a multi-way stop sign installation:

- A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*

Since a traffic signal is not warranted for this intersection, this is not applicable.

- B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*

Criteria not met.

- C. *Minimum volumes:*
 - a. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*

- b. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*
- c. If the 85th percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*

Criteria not met due to minor street volumes not meeting minimum requirements in b.

Other Observations

Based on observations performed during morning and afternoon peak times, sight distance for the southbound White Oak Drive approach is limited at times due to parked vehicles being located within the line of sight. During morning and afternoon peak observations, vehicles in front of business establishments obstructed sight distance when looking toward the east (left) and west (right). This has also been observed during some non-peak times as well.

Additionally there is a wide area of open pavement where the parking lot for adjacent commercial establishments adjoins the intersection. Rather than having designated points for ingress/egress, vehicles can come and go from any location, which introduces additional potential traffic conflicts at and near the intersection. During peak hour observations, vehicles were also observed cutting across the parking area to avoid the intersection altogether.

Results and Conclusions

Based on all of the data collected and reviewed, neither traffic signalization nor implementation of an all-way stop condition is warranted at the current time based on traffic volumes or crash history. Since this is the case, it is recommended that other reasonable improvement alternatives be explored to improve safety and operations at the intersection. The traffic volumes at the intersection should be monitored every 3-5 years as growth in the area continues. The City plans to initiate discussions with impacted property owners to see if there is cooperation and coordination that would allow implementation of the improvements as described below:

- 1. Restrict Driveway Access*

A more channelized ingress/egress design could aid in reducing the number of conflict points and thus, improve the overall safety of the intersection. This could

also help in improving the operational performance of the intersection. Driveway access can be restricted with raised medians, signing, channelizing islands, or a combination of these treatments. Impacted stakeholders would need to be involved in early planning meetings.

2. *Clear the Intersection*

Inadequate sight distance was noted at the intersection due to parked vehicles located within the sight triangle. Some of the parked vehicles were on private property and others appear to have been within the City's right-of-way. Removal of these obstructions would improve the safety of the intersection. Lack of sight distance was specifically mentioned as a factor in one crash report. Removal of the parked vehicles would need to be coordinated with property owners as it can impact overall business operations as well as parking counts per zoning code.

APPENDIX A

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

Location: WHITE OAK DR south of CAHABA HEIGHTS RD
 City, State: VESTAVIA HILLS, AL
 Speed Limit: 25 mph

Date: 11/7/2017
 Tuesday

24 Hour Volume, per Channel

Channel: NB

| Interval Begin | | | Interval Begin | | |
|----------------|---|----|--------------------|---|----|
| 9:00 AM | 1 | 6 | 9:00 PM | 0 | 1 |
| 9:15 AM | 0 | | 9:15 PM | 1 | |
| 9:30 AM | 3 | | 9:30 PM | 0 | |
| 9:45 AM | 2 | | 9:45 PM | 0 | |
| 10:00 AM | 1 | 3 | 10:00 PM | 1 | 2 |
| 10:15 AM | 0 | | 10:15 PM | 1 | |
| 10:30 AM | 2 | | 10:30 PM | 0 | |
| 10:45 AM | 0 | | 10:45 PM | 0 | |
| 11:00 AM | 3 | 15 | 11:00 PM | 0 | 0 |
| 11:15 AM | 5 | | 11:15 PM | 0 | |
| 11:30 AM | 4 | | 11:30 PM | 0 | |
| 11:45 AM | 3 | | 11:45 PM | 0 | |
| 12:00 PM | 2 | 8 | 11/8/2017 12:00 AM | 0 | 0 |
| 12:15 PM | 1 | | 12:15 AM | 0 | |
| 12:30 PM | 1 | | 12:30 AM | 0 | |
| 12:45 PM | 4 | | 12:45 AM | 0 | |
| 1:00 PM | 4 | 10 | 1:00 AM | 0 | 0 |
| 1:15 PM | 4 | | 1:15 AM | 0 | |
| 1:30 PM | 1 | | 1:30 AM | 0 | |
| 1:45 PM | 1 | | 1:45 AM | 0 | |
| 2:00 PM | 5 | 10 | 2:00 AM | 0 | 0 |
| 2:15 PM | 1 | | 2:15 AM | 0 | |
| 2:30 PM | 1 | | 2:30 AM | 0 | |
| 2:45 PM | 3 | | 2:45 AM | 0 | |
| 3:00 PM | 0 | 5 | 3:00 AM | 0 | 0 |
| 3:15 PM | 2 | | 3:15 AM | 0 | |
| 3:30 PM | 2 | | 3:30 AM | 0 | |
| 3:45 PM | 1 | | 3:45 AM | 0 | |
| 4:00 PM | 0 | 4 | 4:00 AM | 0 | 0 |
| 4:15 PM | 2 | | 4:15 AM | 0 | |
| 4:30 PM | 1 | | 4:30 AM | 0 | |
| 4:45 PM | 1 | | 4:45 AM | 0 | |
| 5:00 PM | 2 | 5 | 5:00 AM | 0 | 1 |
| 5:15 PM | 1 | | 5:15 AM | 0 | |
| 5:30 PM | 1 | | 5:30 AM | 1 | |
| 5:45 PM | 1 | | 5:45 AM | 0 | |
| 6:00 PM | 5 | 9 | 6:00 AM | 1 | 5 |
| 6:15 PM | 1 | | 6:15 AM | 0 | |
| 6:30 PM | 2 | | 6:30 AM | 2 | |
| 6:45 PM | 1 | | 6:45 AM | 2 | |
| 7:00 PM | 0 | 3 | 7:00 AM | 3 | 14 |
| 7:15 PM | 0 | | 7:15 AM | 6 | |
| 7:30 PM | 1 | | 7:30 AM | 0 | |
| 7:45 PM | 2 | | 7:45 AM | 5 | |
| 8:00 PM | 0 | 3 | 8:00 AM | 1 | 6 |
| 8:15 PM | 1 | | 8:15 AM | 2 | |
| 8:30 PM | 1 | | 8:30 AM | 1 | |
| 8:45 PM | 1 | | 8:45 AM | 2 | |

24 Hour Volume NB
 110

12:00 AM - 12:00 PM
 NB
 Count 50
Peak Hour 11:00 AM
 Volume 15
 Factor 0.75

12:00 PM - 12:00 AM
 NB
 60
 12:30 PM
 13
 0.81

Location: :
 City, State: :
 Speed Limit: :

WHITE OAK DR south of CAHABA HEIGHTS RD
 VESTAVIA HILLS, AL
 25 mph

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

24 Hour Speed
 Channel: NB

Date:

11/7/2017
 Tuesday

| mph | Total | 0 - <15 | 15 - <20 | 20 - <25 | 25 - <30 | 30 - <35 | 35 - <40 | 40 - <45 | 45 - <50 | 50 - <55 | 55 - <60 | 60 - <65 | 65 - <70 | 70 - <200 |
|-----------|-------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| 9:00 AM | 6 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 AM | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 AM | 15 | 6 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 PM | 8 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 PM | 10 | 2 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 PM | 10 | 1 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 5 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 5 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 9 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 PM | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 PM | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 PM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 PM | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/8/2017 | | | | | | | | | | | | | | |
| 12:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 AM | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 AM | 5 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 14 | 6 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 6 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 110 | 41 | 63 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % | | 37.3 | 57.3 | 4.5 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Percentile Speeds (mph)
 10% 11.2
 15% 11.9
 50% 16.0
 85% 19.3
 90% 19.3

10 mph Pace Speed
 Number In Pace
 10.7 - 20.7
 100 (90.9%)
 Average Minimum Maximum
 15.6 mph 6.2 mph 25.4 mph

Speeds Exceeded
 15 mph 62.7%
 25 mph 0.9%
 35 mph 0.0%
 Count 69 1 0

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

Location: WHITE OAK DR north of CAHABA HEIGHTS RD
 City, State: VESTAVIA HILLS, AL
 Speed Limit: 25 mph

Date: 11/7/2017
 Tuesday

24 Hour Volume, per Channel
 Channel: SB

| Interval Begin | | | Interval Begin | | |
|----------------|----|-----|--------------------|----|----|
| 9:00 AM | 23 | 84 | 9:00 PM | 1 | 8 |
| 9:15 AM | 20 | | 9:15 PM | 2 | |
| 9:30 AM | 21 | | 9:30 PM | 2 | |
| 9:45 AM | 20 | | 9:45 PM | 3 | |
| 10:00 AM | 17 | 76 | 10:00 PM | 0 | 2 |
| 10:15 AM | 20 | | 10:15 PM | 0 | |
| 10:30 AM | 14 | | 10:30 PM | 0 | |
| 10:45 AM | 25 | | 10:45 PM | 2 | |
| 11:00 AM | 15 | 78 | 11:00 PM | 0 | 7 |
| 11:15 AM | 21 | | 11:15 PM | 2 | |
| 11:30 AM | 14 | | 11:30 PM | 3 | |
| 11:45 AM | 28 | | 11:45 PM | 2 | |
| 12:00 PM | 29 | 106 | 11/8/2017 12:00 AM | 0 | 0 |
| 12:15 PM | 31 | | 12:15 AM | 0 | |
| 12:30 PM | 17 | | 12:30 AM | 0 | |
| 12:45 PM | 29 | | 12:45 AM | 0 | |
| 1:00 PM | 27 | 93 | 1:00 AM | 0 | 0 |
| 1:15 PM | 23 | | 1:15 AM | 0 | |
| 1:30 PM | 25 | | 1:30 AM | 0 | |
| 1:45 PM | 18 | | 1:45 AM | 0 | |
| 2:00 PM | 10 | 62 | 2:00 AM | 1 | 1 |
| 2:15 PM | 18 | | 2:15 AM | 0 | |
| 2:30 PM | 20 | | 2:30 AM | 0 | |
| 2:45 PM | 14 | | 2:45 AM | 0 | |
| 3:00 PM | 20 | 82 | 3:00 AM | 0 | 2 |
| 3:15 PM | 14 | | 3:15 AM | 0 | |
| 3:30 PM | 23 | | 3:30 AM | 1 | |
| 3:45 PM | 25 | | 3:45 AM | 1 | |
| 4:00 PM | 26 | 103 | 4:00 AM | 1 | 5 |
| 4:15 PM | 19 | | 4:15 AM | 0 | |
| 4:30 PM | 26 | | 4:30 AM | 2 | |
| 4:45 PM | 32 | | 4:45 AM | 2 | |
| 5:00 PM | 26 | 88 | 5:00 AM | 1 | 9 |
| 5:15 PM | 25 | | 5:15 AM | 0 | |
| 5:30 PM | 16 | | 5:30 AM | 6 | |
| 5:45 PM | 21 | | 5:45 AM | 2 | |
| 6:00 PM | 21 | 87 | 6:00 AM | 8 | 34 |
| 6:15 PM | 19 | | 6:15 AM | 3 | |
| 6:30 PM | 26 | | 6:30 AM | 12 | |
| 6:45 PM | 21 | | 6:45 AM | 11 | |
| 7:00 PM | 15 | 48 | 7:00 AM | 15 | 81 |
| 7:15 PM | 11 | | 7:15 AM | 17 | |
| 7:30 PM | 11 | | 7:30 AM | 24 | |
| 7:45 PM | 11 | | 7:45 AM | 25 | |
| 8:00 PM | 9 | 34 | 8:00 AM | 19 | 82 |
| 8:15 PM | 13 | | 8:15 AM | 14 | |
| 8:30 PM | 7 | | 8:30 AM | 19 | |
| 8:45 PM | 5 | | 8:45 AM | 30 | |

24 Hour Volume SB
 1172

12:00 AM - 12:00 PM

Count SB 452
Peak Hour 7:15 AM
 Volume 85
 Factor 0.85

12:00 PM - 12:00 AM

Count SB 720
Peak Hour 4:30 PM
 Volume 109
 Factor 0.85

Location: :
 City, State: :
 Speed Limit: :

WHITE OAK DR north of CAHABA HEIGHTS RD
 VESTAVIA HILLS, AL
 25 mph

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

Date: :

11/7/2017
 Tuesday

24 Hour Speed
 Channel: SB

| mph | Total | 0 - | 15 - | 20 - | 25 - | 30 - | 35 - | 40 - | 45 - | 50 - | 55 - | 60 - | 65 - | 70 - |
|-----------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 9:00 AM | 84 | 9 | 14 | 39 | 21 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 AM | 76 | 22 | 17 | 21 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 AM | 78 | 11 | 18 | 27 | 21 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 PM | 106 | 29 | 15 | 30 | 31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 PM | 93 | 16 | 19 | 26 | 31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 PM | 62 | 4 | 9 | 24 | 22 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 82 | 10 | 9 | 40 | 22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 103 | 14 | 23 | 37 | 27 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 88 | 18 | 29 | 28 | 12 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 87 | 2 | 15 | 47 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 PM | 48 | 0 | 7 | 26 | 14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 PM | 34 | 1 | 10 | 15 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 PM | 8 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 PM | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 PM | 7 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/8/2017 | | | | | | | | | | | | | | |
| 12:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 AM | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 AM | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 AM | 5 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 AM | 9 | 0 | 1 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 AM | 34 | 1 | 2 | 10 | 18 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 81 | 11 | 12 | 27 | 28 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 82 | 13 | 15 | 28 | 22 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1172 | 163 | 216 | 447 | 324 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % | | 13.9 | 18.4 | 38.1 | 27.6 | 1.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Percentile Speeds (mph)
 10% 13.3
 15% 15.5
 50% 22.3
 85% 26.6
 90% 27.9

10 mph Pace Speed Number in Pace
 18.0 - 28.0
 865 (73.8%)
 Average Minimum Maximum
 21.6 mph 5.1 mph 34.9 mph

Speeds Exceeded
 15 mph 86.1%
 25 mph 29.5%
 35 mph 0.0%
 Count 1009 346 0

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

Location: CAHABA HEIGHTS RD west of WHITE OAK DR
 City, State: VESTAVIA HILLS, AL
 Speed Limit: 25 mph

Date: 11/7/2017
 Tuesday

24 Hour Volume, per Channel
 Channel: EB

| Interval Begin | | | Interval Begin | | |
|----------------|-----|-----|--------------------|----|-----|
| 9:00 AM | 52 | 182 | 9:00 PM | 30 | 77 |
| 9:15 AM | 46 | | 9:15 PM | 19 | |
| 9:30 AM | 48 | | 9:30 PM | 15 | |
| 9:45 AM | 36 | | 9:45 PM | 13 | |
| 10:00 AM | 53 | 187 | 10:00 PM | 11 | 26 |
| 10:15 AM | 47 | | 10:15 PM | 4 | |
| 10:30 AM | 41 | | 10:30 PM | 4 | |
| 10:45 AM | 46 | | 10:45 PM | 7 | |
| 11:00 AM | 47 | 224 | 11:00 PM | 7 | 16 |
| 11:15 AM | 50 | | 11:15 PM | 3 | |
| 11:30 AM | 59 | | 11:30 PM | 4 | |
| 11:45 AM | 68 | | 11:45 PM | 2 | |
| 12:00 PM | 72 | 278 | 11/8/2017 12:00 AM | 2 | 2 |
| 12:15 PM | 75 | | 12:15 AM | 0 | |
| 12:30 PM | 73 | | 12:30 AM | 0 | |
| 12:45 PM | 58 | | 12:45 AM | 0 | |
| 1:00 PM | 68 | 241 | 1:00 AM | 3 | 7 |
| 1:15 PM | 58 | | 1:15 AM | 1 | |
| 1:30 PM | 57 | | 1:30 AM | 2 | |
| 1:45 PM | 58 | | 1:45 AM | 1 | |
| 2:00 PM | 65 | 269 | 2:00 AM | 1 | 3 |
| 2:15 PM | 66 | | 2:15 AM | 0 | |
| 2:30 PM | 46 | | 2:30 AM | 1 | |
| 2:45 PM | 92 | | 2:45 AM | 1 | |
| 3:00 PM | 79 | 329 | 3:00 AM | 2 | 5 |
| 3:15 PM | 75 | | 3:15 AM | 0 | |
| 3:30 PM | 76 | | 3:30 AM | 2 | |
| 3:45 PM | 99 | | 3:45 AM | 1 | |
| 4:00 PM | 106 | 433 | 4:00 AM | 0 | 5 |
| 4:15 PM | 112 | | 4:15 AM | 2 | |
| 4:30 PM | 106 | | 4:30 AM | 1 | |
| 4:45 PM | 109 | | 4:45 AM | 2 | |
| 5:00 PM | 132 | 483 | 5:00 AM | 3 | 17 |
| 5:15 PM | 125 | | 5:15 AM | 3 | |
| 5:30 PM | 107 | | 5:30 AM | 5 | |
| 5:45 PM | 119 | | 5:45 AM | 6 | |
| 6:00 PM | 115 | 357 | 6:00 AM | 6 | 59 |
| 6:15 PM | 100 | | 6:15 AM | 13 | |
| 6:30 PM | 82 | | 6:30 AM | 18 | |
| 6:45 PM | 60 | | 6:45 AM | 22 | |
| 7:00 PM | 58 | 194 | 7:00 AM | 31 | 247 |
| 7:15 PM | 52 | | 7:15 AM | 54 | |
| 7:30 PM | 51 | | 7:30 AM | 80 | |
| 7:45 PM | 33 | | 7:45 AM | 82 | |
| 8:00 PM | 34 | 98 | 8:00 AM | 55 | 182 |
| 8:15 PM | 29 | | 8:15 AM | 38 | |
| 8:30 PM | 8 | | 8:30 AM | 51 | |
| 8:45 PM | 27 | | 8:45 AM | 38 | |

24 Hour Volume EB
 3921

12:00 AM - 12:00 PM
EB
 Count 1120
Peak Hour 7:15 AM
 Volume 271
 Factor 0.83

12:00 PM - 12:00 AM
EB
 2801
 5:00 PM
 483
 0.91

Location:: CAHABA HEIGHTS RD west of WHITE OAK DR
 City, State:: VESTAVIA HILLS, AL
 Speed Limit:: 25 mph

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

24 Hour Speed
 Channel: EB

Date:

11/7/2017
 Tuesday

| mph | Total | 0 - < 15 | 15 - < 20 | 20 - < 25 | 25 - < 30 | 30 - < 35 | 35 - < 40 | 40 - < 45 | 45 - < 50 | 50 - < 55 | 55 - < 60 | 60 - < 65 | 65 - < 70 | 70 - < 200 |
|-----------|-------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| 9:00 AM | 182 | 9 | 15 | 21 | 69 | 56 | 10 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 10:00 AM | 187 | 1 | 11 | 28 | 66 | 69 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 AM | 224 | 0 | 11 | 38 | 96 | 61 | 17 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12:00 PM | 278 | 9 | 18 | 47 | 117 | 72 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 PM | 241 | 3 | 9 | 53 | 87 | 64 | 24 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 PM | 269 | 2 | 4 | 61 | 107 | 71 | 20 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 329 | 3 | 18 | 52 | 145 | 89 | 20 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 433 | 21 | 35 | 60 | 169 | 123 | 22 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 483 | 31 | 52 | 83 | 214 | 96 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 357 | 6 | 10 | 85 | 141 | 98 | 16 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 PM | 194 | 0 | 6 | 27 | 82 | 68 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 PM | 98 | 0 | 3 | 11 | 38 | 38 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 PM | 77 | 0 | 5 | 10 | 19 | 34 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 PM | 26 | 0 | 2 | 3 | 9 | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 PM | 16 | 1 | 0 | 2 | 6 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/8/2017 | | | | | | | | | | | | | | |
| 12:00 AM | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 AM | 7 | 0 | 0 | 1 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 AM | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 AM | 5 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 AM | 5 | 0 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 AM | 17 | 0 | 0 | 0 | 3 | 7 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6:00 AM | 59 | 1 | 0 | 6 | 22 | 18 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 247 | 24 | 21 | 41 | 66 | 77 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 182 | 6 | 14 | 23 | 51 | 69 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 3921 | 117 | 236 | 654 | 1515 | 1131 | 244 | 19 | 5 | 0 | 0 | 0 | 0 | 0 |
| % | | 3.0 | 6.0 | 16.7 | 38.6 | 28.8 | 6.2 | 0.5 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Percentile Speeds (mph)
 10% 20.7
 15% 22.3
 50% 27.9
 85% 32.9
 90% 34.9

10 mph Pace Speed Number in Pace
 2723 (69.4%)
 Average Minimum Maximum
 23.3 - 33.3
 5.0 mph
 46.5 mph

Speeds Exceeded
 15 mph 97.0% 3804
 25 mph 74.3% 2914
 35 mph 6.8% 268

Count

TRAFFIC DATA, LLC
1409 Turnham Lane, Birmingham, AL 35216
205-824-0125

Location: CAHABA HEIGHTS RD east of WHITE OAK DR
City, State: VESTAVIA HILLS, AL
Speed Limit: 25 mph

Date: 11/7/2017
Tuesday

24 Hour Volume, per Channel

Channel: WB

| Interval Begin | | | Interval Begin | | |
|----------------|-----|-----|--------------------|-----|-----|
| 9:00 AM | 80 | 312 | 9:00 PM | 22 | 74 |
| 9:15 AM | 77 | | 9:15 PM | 24 | |
| 9:30 AM | 68 | | 9:30 PM | 12 | |
| 9:45 AM | 87 | | 9:45 PM | 16 | |
| 10:00 AM | 59 | 253 | 10:00 PM | 8 | 30 |
| 10:15 AM | 60 | | 10:15 PM | 6 | |
| 10:30 AM | 75 | | 10:30 PM | 10 | |
| 10:45 AM | 59 | | 10:45 PM | 6 | |
| 11:00 AM | 79 | 342 | 11:00 PM | 5 | 12 |
| 11:15 AM | 82 | | 11:15 PM | 2 | |
| 11:30 AM | 88 | | 11:30 PM | 2 | |
| 11:45 AM | 93 | | 11:45 PM | 3 | |
| 12:00 PM | 64 | 359 | 11/8/2017 12:00 AM | 4 | 10 |
| 12:15 PM | 92 | | 12:15 AM | 4 | |
| 12:30 PM | 113 | | 12:30 AM | 0 | |
| 12:45 PM | 90 | | 12:45 AM | 2 | |
| 1:00 PM | 81 | 299 | 1:00 AM | 0 | 2 |
| 1:15 PM | 67 | | 1:15 AM | 0 | |
| 1:30 PM | 81 | | 1:30 AM | 2 | |
| 1:45 PM | 70 | | 1:45 AM | 0 | |
| 2:00 PM | 63 | 256 | 2:00 AM | 0 | 2 |
| 2:15 PM | 66 | | 2:15 AM | 1 | |
| 2:30 PM | 62 | | 2:30 AM | 0 | |
| 2:45 PM | 65 | | 2:45 AM | 1 | |
| 3:00 PM | 75 | 338 | 3:00 AM | 0 | 5 |
| 3:15 PM | 100 | | 3:15 AM | 1 | |
| 3:30 PM | 88 | | 3:30 AM | 1 | |
| 3:45 PM | 75 | | 3:45 AM | 3 | |
| 4:00 PM | 80 | 460 | 4:00 AM | 0 | 6 |
| 4:15 PM | 111 | | 4:15 AM | 3 | |
| 4:30 PM | 128 | | 4:30 AM | 2 | |
| 4:45 PM | 141 | | 4:45 AM | 1 | |
| 5:00 PM | 149 | 603 | 5:00 AM | 6 | 31 |
| 5:15 PM | 172 | | 5:15 AM | 5 | |
| 5:30 PM | 166 | | 5:30 AM | 8 | |
| 5:45 PM | 116 | | 5:45 AM | 12 | |
| 6:00 PM | 65 | 293 | 6:00 AM | 20 | 183 |
| 6:15 PM | 87 | | 6:15 AM | 22 | |
| 6:30 PM | 72 | | 6:30 AM | 56 | |
| 6:45 PM | 69 | | 6:45 AM | 85 | |
| 7:00 PM | 60 | 235 | 7:00 AM | 119 | 846 |
| 7:15 PM | 68 | | 7:15 AM | 227 | |
| 7:30 PM | 51 | | 7:30 AM | 245 | |
| 7:45 PM | 56 | | 7:45 AM | 255 | |
| 8:00 PM | 46 | 131 | 8:00 AM | 205 | 631 |
| 8:15 PM | 32 | | 8:15 AM | 200 | |
| 8:30 PM | 31 | | 8:30 AM | 129 | |
| 8:45 PM | 22 | | 8:45 AM | 97 | |

24 Hour Volume WB
5713

12:00 AM - 12:00 PM

WB
Count 2623
Peak Hour 7:15 AM
Volume 932
Factor 0.91

12:00 PM - 12:00 AM

WB
3090
4:45 PM
628
0.91

TRAFFIC DATA, LLC
 1409 Turnham Lane, Birmingham, AL 35216
 205-824-0125

Location: : CAHABA HEIGHTS RD east of WHITE OAK DR
 City/ State: : VESTAVIA HILLS, AL
 Speed Limit: : 25 mph

Date: 11/7/2017
 Tuesday

24 Hour Speed
 Channel: WB

| mph | Total | 0 - < 15 | 15 - < 20 | 20 - < 25 | 25 - < 30 | 30 - < 35 | 35 - < 40 | 40 - < 45 | 45 - < 50 | 50 - < 55 | 55 - < 60 | 60 - < 65 | 65 - < 70 | 70 - < 200 |
|-----------|-------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| 9:00 AM | 312 | 4 | 7 | 18 | 110 | 140 | 30 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 AM | 253 | 3 | 5 | 30 | 82 | 99 | 31 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 AM | 342 | 4 | 4 | 30 | 119 | 153 | 30 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 PM | 359 | 8 | 6 | 33 | 116 | 168 | 26 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 1:00 PM | 299 | 6 | 7 | 41 | 119 | 111 | 14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 PM | 256 | 3 | 10 | 28 | 79 | 110 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 PM | 338 | 7 | 6 | 31 | 134 | 137 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 PM | 460 | 3 | 2 | 55 | 217 | 167 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 603 | 14 | 17 | 126 | 298 | 143 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 293 | 1 | 3 | 26 | 144 | 116 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 PM | 235 | 0 | 0 | 17 | 107 | 88 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 PM | 131 | 0 | 2 | 8 | 48 | 58 | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 PM | 74 | 1 | 1 | 4 | 30 | 30 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 PM | 30 | 0 | 0 | 2 | 13 | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 PM | 12 | 0 | 0 | 0 | 4 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/8/2017 | | | | | | | | | | | | | | |
| 12:00 AM | 10 | 0 | 0 | 0 | 5 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1:00 AM | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:00 AM | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:00 AM | 5 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:00 AM | 6 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 AM | 31 | 0 | 0 | 1 | 12 | 12 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 AM | 183 | 0 | 2 | 10 | 55 | 79 | 35 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 846 | 25 | 104 | 183 | 360 | 162 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 631 | 20 | 40 | 96 | 243 | 205 | 24 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 5713 | 100 | 217 | 742 | 2300 | 2003 | 327 | 22 | 2 | 0 | 0 | 0 | 0 | 0 |
| % | | 1.8 | 3.8 | 13.0 | 40.3 | 35.1 | 5.7 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Percentile Speeds (mph)
 10% 22.3
 15% 24.3
 50% 29.4
 85% 32.9
 90% 34.9

10 mph Pace Speed
 Number in Pace 4303 (75.3%)
 Average 28.8 mph
 Minimum 5.0 mph
 Maximum 46.5 mph

Speeds Exceeded
 15 mph 98.2%
 25 mph 81.5%
 35 mph 6.1%
 Count 5613 4654 351

APPENDIX B

TRAFFIC SIGNAL WARRANT SUMMARY

City/Town: Vestavia Hills, Alabama
County: Jefferson
Division: _____
Data Date: 11/7/17 and 11/8/17

Analysis Performed By: LBK
Date Analysis Performed: 11/13/2017
Project Number if Applicable: _____
Weather Conditions: _____

Major Route: Cahaba Heights Road
Minor Route: White Oak Drive

Appr. Lanes: 1 Critical Approach Speed (mph): 25
Appr. Lanes: 1

Warrant #1: Eight-Hour Vehicular Volume **SATISFIED**
 Yes No

1A - Minimum Vehicular Volume: Yes No **80% Satisfied** Yes No
1B - Interruption of Continuous Traffic: Yes No **100% Satisfied** Yes No

Any Remedial Measures Tried and their Outcome.

Warrant #2: Four-Hour Vehicular Volume Yes No

Warrant #3: Peak Hour Yes No

The Unusual Case(s) that Justifies the use of this Warrant.

Warrant #4: Pedestrian Volume Yes No

Warrant #5: School Crossing Yes No

Any Remedial Measures Implemented to improve the Safety of the Students.

Warrant #6: Coordinated Signal System Yes No

Warrant #7: Crash Experience Yes No

Other Alternatives that have failed to reduce crashes.

Alternatives have not been tried to date.

Warrant #8: Roadway Network Yes No

Warrant #9: Intersection Near a Grade Crossing Yes No

CONCLUSIONS

Warrants Satisfied:

Remarks:

TRAFFIC SIGNAL WARRANTS

City/Town: **Vestavia Hills, Alabama**
 County: **Jefferson**
 Division:
 Data Date: **11/7/17 and 11/8/17**
 Major Route: **Cahaba Heights Road**
 Minor Route: **White Oak Drive**

Analysis Performed By: **LBK**
 Date Analysis Performed: **11/13/2017**
 Project Number if Applicable:
 Weather Conditions:
 Apr. Lanes: **1** Critical Approach Speed (mph): **25**
 Apr. Lanes: **1**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
 2. Is the intersection in a built-up area or isolated community of <10,000 population? Yes No
 If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied. Satisfied: Yes No

Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied, given adequate trials of other remedial measures have been tried.

Adequate trial(s) of other remedial measures tried: Yes No

List Remedial Measures Tried (Required for 80% Combination of A & B)

Condition A - Minimum Vehicular Volume & Condition B - Interruption of Continuous Traffic

100% Satisfied: Yes No

(Used if neither Condition A or B is satisfied) 80% Satisfied: Yes No

| | | (volumes in veh/hr) | | Minimum Requirements | | | | Eight Highest Hours | | | | | | | |
|---------------|-------------|----------------------------------|--|----------------------|-----------|------|-----|---------------------|--------|------------|---------|--------|--------|--------|--------|
| | | | | | | | | 7-8 am | 8-9 am | 11-12 noon | 12-1 pm | 3-4 pm | 4-5 pm | 5-6 pm | 6-7 pm |
| | | Approach Lanes | | 1 | 2 or more | | | | | | | | | | |
| | | Volume Level | | 100% | 70% | 100% | 70% | | | | | | | | |
| W - 1A | 100% | Both Approaches on Major Street | | 500 | 350 | 600 | 420 | 1,093 | 813 | 566 | 637 | 667 | 893 | 1,086 | 650 |
| | | Highest Approach on Minor Street | | 150 | 105 | 200 | 140 | 81 | 82 | 78 | 106 | 82 | 103 | 88 | 87 |
| W - 1B | 100% | Both Approaches on Major Street | | 750 | 525 | 900 | 630 | 1,093 | 813 | 566 | 637 | 667 | 893 | 1,086 | 650 |
| | | Highest Approach on Minor Street | | 75 | 53 | 100 | 70 | 81 | 82 | 78 | 106 | 82 | 103 | 88 | 87 |
| W - 1A | 80% | Both Approaches on Major Street | | 400 | 280 | 480 | 336 | 1,093 | 813 | 566 | 637 | 667 | 893 | 1,086 | 650 |
| | | Highest Approach on Minor Street | | 120 | 84 | 160 | 112 | 81 | 82 | 78 | 106 | 82 | 103 | 88 | 87 |
| W - 1B | 80% | Both Approaches on Major Street | | 600 | 420 | 720 | 504 | 1,093 | 813 | 566 | 637 | 667 | 893 | 1,086 | 650 |
| | | Highest Approach on Minor Street | | 60 | 42 | 80 | 56 | 81 | 82 | 78 | 106 | 82 | 103 | 88 | 87 |

TRAFFIC SIGNAL WARRANTS

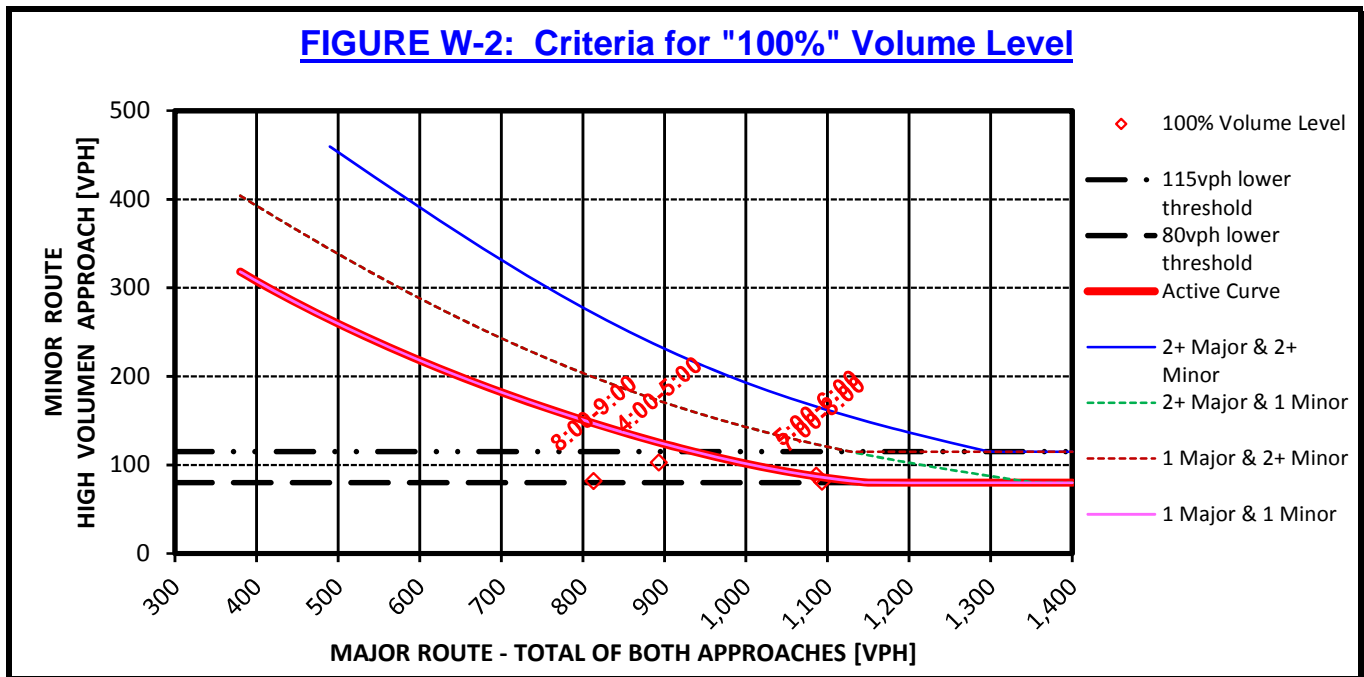
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

Satisfied: Yes No

If all four points lie above the appropriate line, then this warrant is satisfied.

| | Four Highest Hours | | | |
|--|--------------------|-----------|-----------|-----------|
| | 7:00-8:00 | 8:00-9:00 | 4:00-5:00 | 5:00-6:00 |
| (Volumes in veh/hr) | | | | |
| SUM of Both Approaches on Major Street | 1,093 | 813 | 893 | 1,086 |
| Highest Minor Street Approach | 81 | 82 | 103 | 88 |

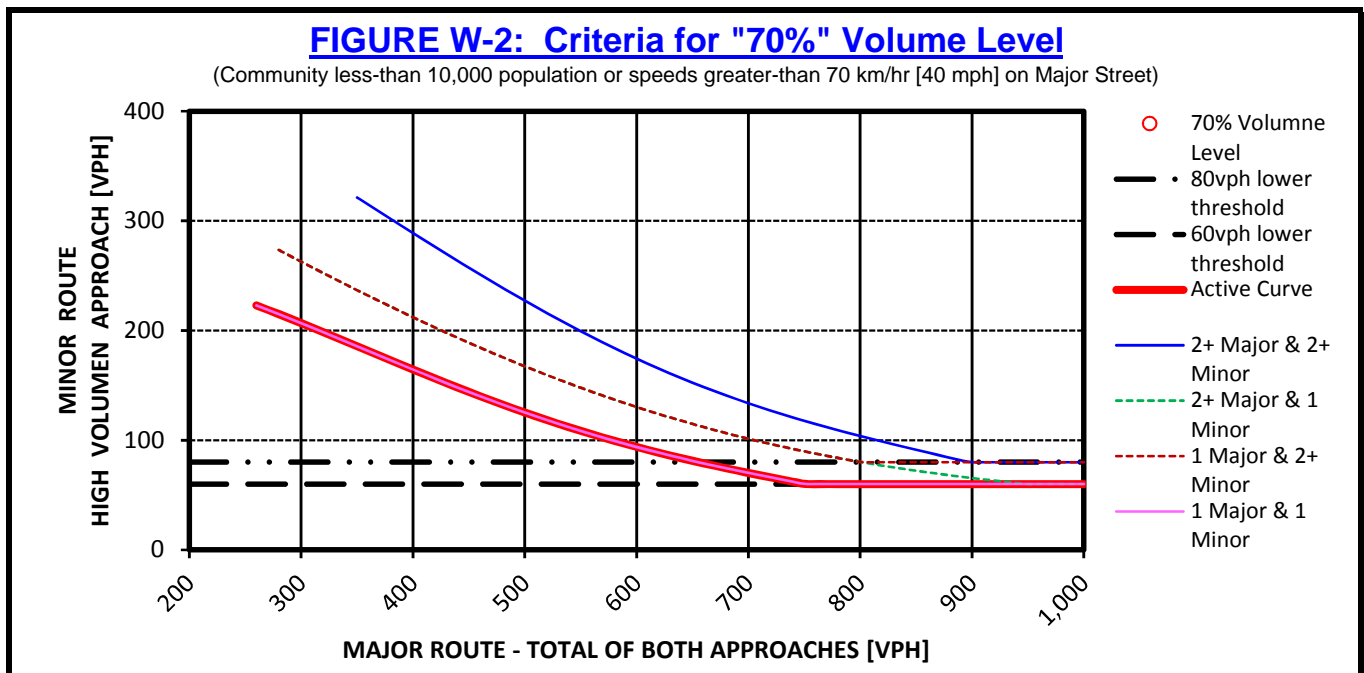
FIGURE W-2: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*

FIGURE W-2: Criteria for "70%" Volume Level

(Community less-than 10,000 population or speeds greater-than 70 km/hr [40 mph] on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor route approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor route approach with one lane.*