ORDINANCE NO. 1927

AN ORDINANCE TO PROHIBIT THE DRIVER OF A VEHICLE FROM MAKING 1) A RIGHT TURN ON SOUTH BROOKWOOD ROAD NORTHBOUND AT THE UPPER ACCESS TO BROOKWOOD FOREST ELEMENTARY SCHOOL AND 2) A LEFT TURN ON SOUTH BROOKWOOD ROAD SOUTHBOUND AT THE LOWER ACCESS TO BROOKWOOD FOREST ELEMENTARY SCHOOL BOTH BETWEEN THE HOURS OF 2:45 P.M. TO 3:15 P.M.

BE IT ORDAINED by the City Council of the City of Mountain Brook, Alabama, as follows:

1. **Amendatory Provisions**. Pursuant to Sec. 1-10 of the City Code, it shall be unlawful for the driver of a vehicle traveling in a: a) northbound direction on South Brookwood Road to make a right turn at the upper access to Brookwood Forest Elementary School between the hours of 2:45 p.m. to 3:15 p.m. and 2) southbound direction on South Brookwood Road to make a left turn at the lower access to Brookwood Forest Elementary School between the hours of 2:45 p.m. to 3:15 p.m.

2. **Repealer**. All ordinances or parts of ordinances heretofore adopted by the City Council of the City of Mountain Brook, Alabama that are inconsistent with the provisions of this ordinance are hereby expressly repealed.

3. **Severability**. If any part, section or subdivision of this ordinance shall be held unconstitutional or invalid for any reason, such holding shall not be construed to invalidate or impair the remainder of this ordinance, which shall continue in full force and effect notwithstanding such holding.

4. **Effective Date**. This ordinance shall become effective immediately upon adoption, publication as provided by law, and the installation of appropriate traffic signage indicating that such turns are prohibited.

ADOPTED: The 9th day of February, 2015.

Council President

APPROVED: The 9th day of February, 2015.

Mayor

1927

CERTIFICATION

I, Steven Boone, City Clerk of the City of Mountain Brook, Alabama, hereby certify the above to be a true and correct copy of an ordinance adopted by the City Council of the City of Mountain Brook, Alabama, as its meeting held on February 9, 2015, as same appears in the minutes of record of said meeting, and published by posting copies thereof on February 10, 2015, at the following public places, which copies remained posted for five (5) days as required by law.

City Hall, 56 Church Street
Gilchrist Pharmacy, 2850 Cahaba Road
The Invitation Place, 3150 Overton Road
Overton Park, 3020 Overton Road

Steven Boone

City Clerk

RECOMMENDATIONS

Considering the data collected during this study and analysis of alternatives, this study makes the following recommendations:

1. ***Install left and right turn restriction signage on South Brookwood Road.*** Required signs are:

    - No right turn on South Brookwood Road northbound at the Upper Access from 2:45 to 3:15 p.m.
    - No left turn on South Brookwood Road southbound at the Lower Access from 2:45 to 3:15 p.m.

    These signs are illustrated in Figure 17.

Figure 17. Turn Restriction Signs

In order to be effective, these signs must be enforced. These are regulatory signs which can be enforced and ticketed by the Mountain Brook Police Department. Brookwood Forest Elementary School can also employee individuals (staff or volunteers) to remind carpool drivers of the turn restriction signs.

2. ***Install four (4) "Do Not Pass" signs on South Brookwood Road.*** Two signs per approach are recommended. These first signs would need to be erected in advance of the maximum queues on South Brookwood Road – just north of the intersection of Overton Road for South Brookwood Road northbound and approximately 750 feet northwest of the school property for South Brookwood Road southeast-bound. The second set of signs would be placed approximately half-way between the first signs and the edge of the school property, at approximately 375 feet from the edge of the school property. This sign is illustrated in Figure 18.

Figure 18. Do Not Pass Sign

3. ***Letter to parents.*** Brookwood Forest Elementary School should send a letter to all parents concerning the requisite carpool patterns to be used approaching the campus, the turn restrictions and the need to prohibit passing on South Brookwood Road near the school. The letter should also address the need for parents to limit their arrival time for afternoon carpool to no earlier than 2:45 p.m.

4. ***Replace the existing warning signs on South Brookwood Road.*** The existing S1-1 School signs and flashing beacons should be replaced with School Speed Limit signs with flashing beacons, as illustrated in Figure 19. In general, each approach to the school on South Brookwood Road should have an S1-1 School sign (without flashing beacons) and an S5-1 School Speed Limit sign assembly (with flashing beacons).

Sam Gaston

From: Richard Caudle
Sent: Wednesday, January 28, 2015 1:35 PM
To: PITNER, RICHARD (NATHAN); Sam Gaston; CHRISTIAN, CHRISTY; BARLOW, DICKY
Cc: Ted Cook; Charles Clark; Ronald Vaughn
Subject: RE: South Brookwood Road traffic study

See some minor edits below.

From: PITNER, RICHARD (NATHAN) [mailto:PITNERR@mtnbrook.k12.al.us]
Sent: Wednesday, January 28, 2015 1:32 PM
To: Sam Gaston; CHRISTIAN, CHRISTY; BARLOW, DICKY
Cc: Richard Caudle; Ted Cook; Charles Clark; Ronald Vaughn
Subject: RE: South Brookwood Road traffic study

Below is a draft of the communication we are planning to send. You'll note we abbreviated the recommendations. I wasn't sure if you'd prefer we send more. I'd like your feedback on whether this is what everyone had in mind before moving forward.

Recently the Mountain Brook City Council commissioned a traffic study to investigate South Brookwood Road, specifically in regard to our morning and afternoon carpool situations. While the traffic study firm was highly complementary of the steps previously taken to ensure safety and efficiency in regard to current procedures, BWF wants to constantly engage in conversations that lead to continuous improvement in these areas. The logistics associated with our location and the surrounding roads don't lend themselves to any obvious solutions, but the firm was able to make a handful of recommendations that we hope will be beneficial to parents, students, and the community at large. The recommendations reflect the collaborative relationship that the school, community, city, and police have come to enjoy. To that end, this email represents an attempt to ensure that our families are properly informed regarding the recommendations that will be discussed at the City Council meeting on Monday, February 9th at 7:00 p.m. Below you will find a simplified list of those recommendations, but we'd encourage you to attend the public hearing if you'd like to know more.

Recommendations:

1. Install left and right turn restriction signage on South Brookwood Road during carpool times.
    a. No right turn on South Brookwood Road northbound at the Upper Access from 2:45 to 3:15 p.m.
    b. No left turn on South Brookwood Road southbound at the Lower Access from 2:45 to 3:15 p.m.
2. Install four "Do Not Pass" signs on South Brookwood Road.
3. Replace the existing warning signs on South Brookwood Road with School Zone Speed Limit Signs – 15 MPH When Flashing.
4. More strictly enforce the 15 miles per hour speed limit around school.

From: Sam Gaston [gastons@mtnbrook.org]

1927

Sent: Tuesday, January 27, 2015 10:26 AM
To: CHRISTIAN, CHRISTY; PITNER, RICHARD (NATHAN); BARLOW, DICKY
Cc: Richard Caudle; Ted Cook; Charles Clark; Ronald Vaughn
Subject: South Brookwood Road traffic study

The City Council asked if BWF would send out an email blast about the proposed recommendations from the recent traffic study and that the City Council would hold a public hearing on Monday, February 9th at 7pm at their regular meeting on this matter. Please send me a copy of the email so I can place in the City Council's agenda packet.

Sam S.Gaston
City Manager
City of Mountain Brook, AL.
56 Church Street
P.O. Box 130009
Mountain Brook AL. 35213
(205) 802-3803 Phone
(205) 870-3577 Fax

SKIPPER
CONSULTING INC.

South Brookwood Road at Brookwood Forest Elementary School

Mountain Brook, Alabama

Traffic Study

Prepared for:

The City of Mountain Brook
P.O. Box 130009
Mountain Brook, Alabama 35213
Phone (205) 802-2400 Fax (205) 879-6913

Prepared by:

Skipper Consulting, Inc.
3644 Vann Road, Suite 100
Birmingham, Alabama 35235
Phone (205) 655-8855 Fax (205) 655-8825

ALABAMA REGISTERED PROFESSIONAL ENGINEER
DRAFT
RICHARD LYN CAUDLE

SIGNED: _____

DATE: _____

December, 2014

INTRODUCTION

This report documents a traffic study performed for the City of Mountain Brook, Alabama in response to public concerns regarding traffic safety on South Brookwood Road in the vicinity of Brookwood Forest Elementary School. The location of the school with respect to the area roadway network is shown in Figure 1.

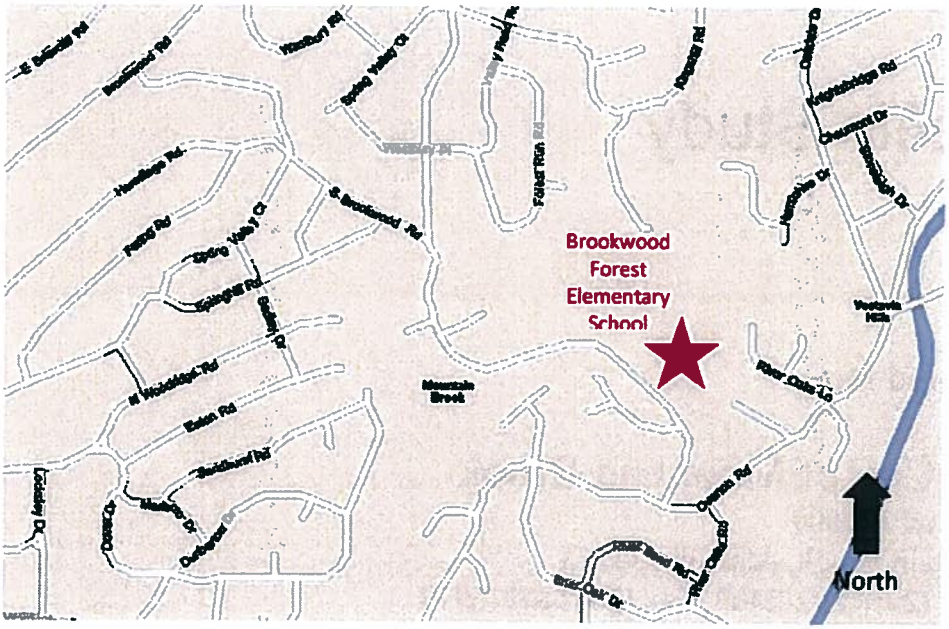


Figure 1. Site Location Map

The existing campus of Brookwood Forest Elementary School is served by three access points to South Brookwood Road. There is a bi-directional access to the school on the south side of the school which lines up with Brookwood Trace. This will be known as the "Lower Access" in this study. And there is a pair of one-way accesses to the school on the northwest side of the school. These will be known collectively as the "Upper Access" in this study. An aerial photograph with access features annotated in included in Figure 2.

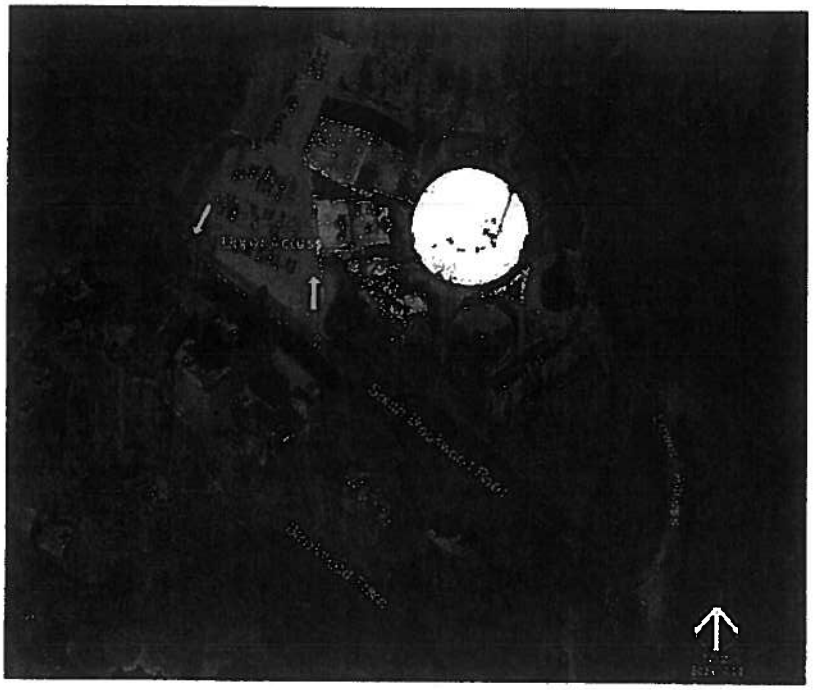


Figure 2. Aerial View – Brookwood Forest Elementary School

A summary of the traffic concerns raised by parents of children at the school was provided to Skipper Consulting, Inc. in the form of notes from a meeting dated October 8, 2014. A copy of these meeting notes is included in Appendix A of this report. The concerns which are addressed in this study are as follows:

- South Brookwood Road southeast-bound is blocked coming from Brookwood Road during the time of the afternoon carpool. The existing on-campus vehicle storage and left turn lane on South Brookwood Road are of insufficient length to store the standing carpool queue. This results in vehicles attempting to pass the standing queue of vehicles waiting in the carpool line, either in the northwest-bound lane of South Brookwood Road or on the shoulder.
- South Brookwood Road northbound is blocked coming from Overton Road during the time of the afternoon carpool. The existing on-campus vehicle storage is of insufficient length to store the standing carpool queue. This results in vehicles attempting to pass the standing queue of vehicles waiting in the carpool line in the southbound lane of South Brookwood Road.
- Erratic and unsafe actions by drivers attempting to go around the standing queues of vehicles results in safety concerns for pedestrians.

There have been several different attempts made to rectify these concerns in the past without apparent success. These attempts were documented in the October 8, 2014 meeting minutes. Some of these efforts have included:

- Changing carpool procedures
- Police presence and enforcement
- Public awareness
- Volunteer traffic control by parents

Previous studies have been performed and solutions have been recommended; however none of the previous recommendations have been implemented. For example:

- In 2006, Skipper Consulting, Inc. produced a document which made the following recommendations concerning the carpool operation at Brookwood Forest Elementary School. A summary of this document is included in Appendix B.
    - Widen the Lower Access to allow two inbound lanes
    - Construct a right turn lane on South Brookwood Road northbound at the Lower Access
    - Modify the on-site circulation at the Upper Access to allow more vehicles to be stored on-site
    - Extend the existing left turn lane on South Brookwood Road southeast-bound at the Upper Access
- In 2005, Sain Associates undertook a safety study for all the schools in the Mountain Brook school system. Regarding Brookwood Forest Elementary School, it was recommended that the parking area at the Upper Access be striped and carpool operations be modified. A sketch from the Sain Associates report is included in Appendix C.

This report addresses recommendations which would normally be considered "low-cost" and "short-term". It is still the opinion of Skipper Consulting, Inc. that long-term improvements which would entail higher costs, such as the improvements included in our 2006 recommendations, are needed to correct existing deficiencies in the carpool operation at Brookwood Forest Elementary School.

BACKGROUND INFORMATION

Roadway Descriptions

In the vicinity of the site, South Brookwood Road is a two lane local roadway with a posted speed limit of 25 miles per hour. A school zone speed limit of 15 miles per hour ("When Children Are Present") has also been established on South Brookwood Road. There is a sidewalk along the west side of South Brookwood Road from Overton Road to Hermitage Road. See Figure 3 for a general representation of South Brookwood Road.

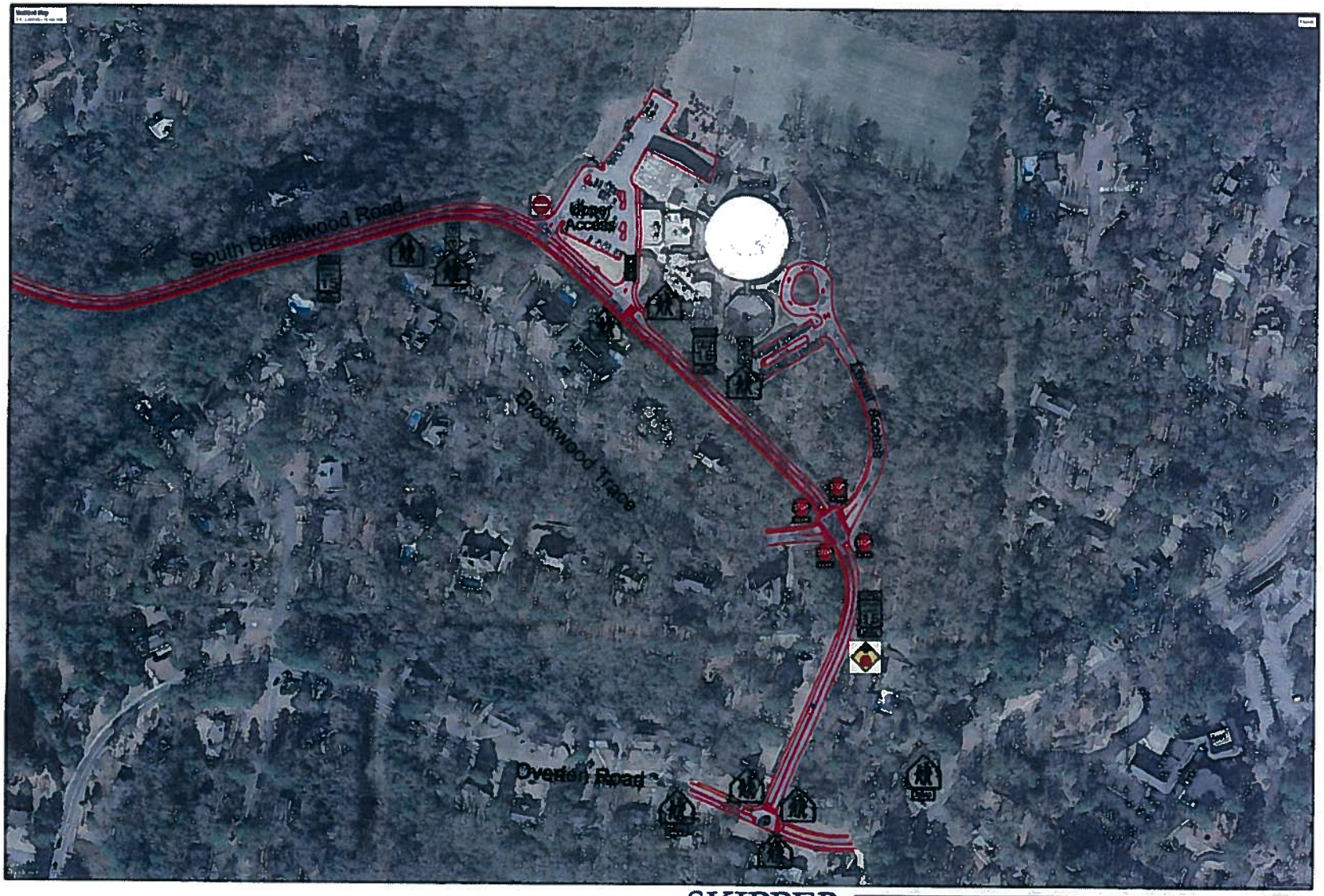
Figure 3. South Brookwood Road

Existing Roadway Geometric Data

Figure 4 provides a depiction of relevant roadway geometric data for South Brookwood Road and Brookwood Forest Elementary School.

Existing Intersection Turning Movement Traffic Counts

Existing intersection turning movement traffic counts were performed at the intersections of South Brookwood Road with the Upper and Lower Accesses on Wednesday to Thursday, October 29 to 30, 2014 from 7:15 to 8:15 a.m. and 2:30 to 3:30 p.m. by Traffic Data, LLC on behalf of Skipper Consulting, Inc. The intersection turning movement traffic count data is included in Appendix D and is summarized in Figures 5 and 6.



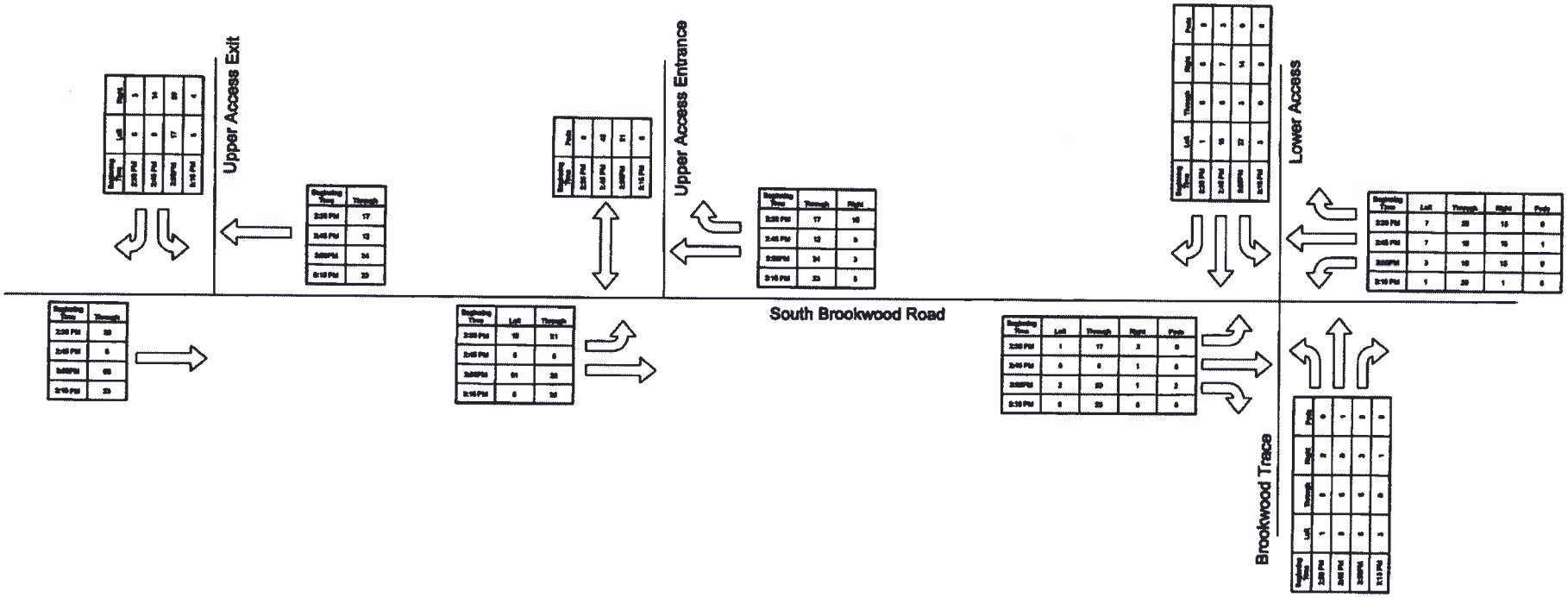
North

SKIPPER CONSULTING INC.

Figure 4 - Roadway Geometric Data

South Brookwood Road - Mountain Brook, Alabama

November 2014

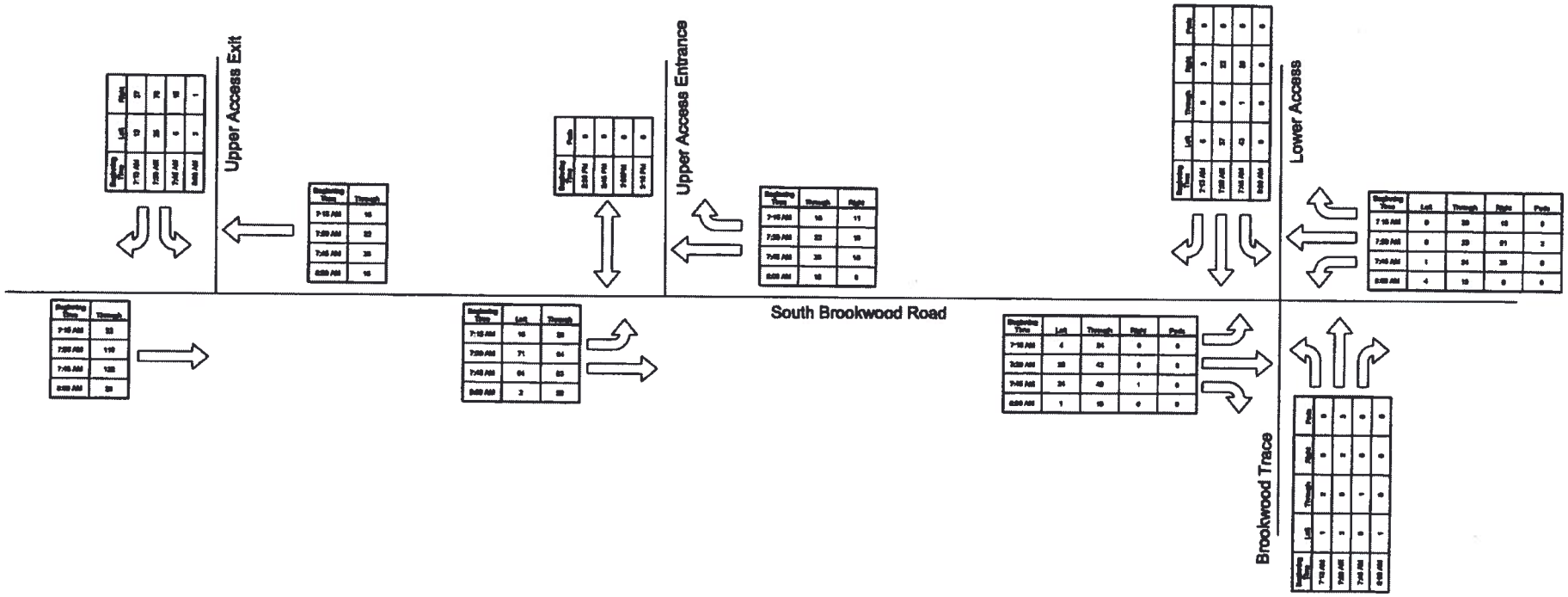


North
Scale: n.t.s

SKIPPER CONSULTING INC.

Figure 5 - Existing Traffic Counts - AM Peak Hour

South Brookwood Road - Mountain Brook, Alabama



North
Scale: n.t.s

SKIPPER CONSULTING INC.

Figure 6 - Existing Traffic Counts - PM Peak Hour

South Brookwood Road - Mountain Brook, Alabama

Existing Machine Traffic Counts

Existing machine traffic counts were performed on South Brookwood Road to the south and to the northwest of Brookwood Forest Elementary School for twenty-four continuous hours on Wednesday, October 29, 2014. The machine counts included speed and vehicle classification. The traffic count data is included in Appendix E and is summarized below:

South Brookwood Road north of Overton Road

Traffic Volume	Northbound	Southbound	Total
Daily	1,261	1,296	2,557
AM Peak	190	188	378
PM Peak	127	154	281

Speed	
Average (Daily)	28 mph
85th Percentile (Daily)	31 mph

Classification	
Heavy Trucks	6
Light Trucks	64
Passenger Vehicles	2,485
Motorcycles	2

South Brookwood Road northwest of Brookwood Forest Elementary School

Traffic Volume	Eastbound	Westbound	Total
Daily	1,272	1,241	2,513
AM Peak	279	211	490
PM Peak	103	174	277

Speed	
Average (Daily)	34 mph
85th Percentile (Daily)	39 mph

Classification	
Heavy Trucks	6
Light Trucks	50
Passenger Vehicles	2,453
Motorcycles	4

The travel speed on South Brookwood Road is of concern. The average speed of all vehicles is almost 10 miles per hour over the posted speed limit, and the 85th percentile travel speed of all vehicles is almost 15 miles per hour over the posted speed limit. A further review of travel speeds by hour of the day was performed, concentrating on the hours when school is beginning and ending. This review is detailed in Table 1.

Table 1. Detailed Speed Study South Brookwood Road Northwest of Brookwood Forest Elementary School

Time	Speed Bin (mph)										
	0-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65
7-8 AM	4	2	62	122	192	88	12	0	0	0	1
8-9 AM	0	0	2	12	48	31	17	0	0	0	0
2-3 PM	2	8	5	45	56	52	10	0	0	0	0
3-4 PM	16	8	15	39	83	62	22	2	1	0	0

As seen in Table 1, a small percentage (12%) of the vehicles on South Brookwood Road are traveling within the posted speed limit. 59% of the vehicles are traveling from 1 to 10 miles per hour over the posted speed limit. The remainder (29%) are traveling greater than 10 miles per hour over the posted speed limit.

Based on this data, a recommendation of this study is for the increased enforcement of the posted speed limit on South Brookwood Road by the Mountain Brook Police Department, particularly during the hours when school is beginning and ending.

Observations

Observations of traffic flow on South Brookwood Road in the vicinity of Brookwood Forest Elementary School were conducted on Wednesday, October 29, 2014 from 7:00 to 8:30 a.m. and 2:15 to 3:30 p.m. by Skipper Consulting, Inc. The review included traffic flows on South Brookwood Road, operation of the carpool pick up and drop off, and pedestrian traffic. During the morning, the observations indicated that there were no traffic patterns or problems which need to be addressed. During the afternoon, the observations indicated that there are standing queues of vehicles on South Brookwood Road southeast-bound at the Upper Access and northbound at the Lower Access. These queues impede traffic flow on South Brookwood Road. The maximum queues observed are as follows:

Upper Access

Vehicles in front of school	10
Vehicles on South Brookwood Road	29

Lower Access

Vehicles in school driveway	32
Vehicles on South Brookwood Road	25
Vehicles on Brookwood Trace	8

Queues begin to form on South Brookwood Road at 2:40 p.m. The maximum observed queues occurred from 2:50-2:55 p.m. South Brookwood Road was cleared by 3:12 p.m.

Crash Data

Crash data for South Brookwood Road from Overton Road to Brookwood Road was provided by the Mountain Brook Police Department for the years 2012, 2013 and 2014 (through October 31). During the period, a total of 18 crashes were reported (6 in 2012, 10 in 2013 and 2 in 2014). Of these crashes, 15 were related to the intersections of Overton Road and Brookwood Road. The remaining three crashes are described as follows. It should be noted that none of these crashes was directly related to the traffic conditions of Brookwood Forest Elementary School.

Crash #1 occurred on Monday, April 12, 2012, at 5:54 p.m. The weather was dry. A vehicle on South Brookwood Road southbound slowed to turn left into a private driveway at 3344 South Brookwood Road. A second vehicle attempted to pass the turning vehicle on the left and was struck by the turning vehicle. This crash was property damage only.

Crash #2 occurred on Tuesday, July 17, 2012, at 6:24 p.m. The weather was dry. A vehicle traveling on South Brookwood Road southbound between Brookwood Road and Hermitage Road lost control and ran off the road. One injury was reported.

Crash #3 occurred on Wednesday, September 26, 2012 at 2:35 p.m. The weather was dry. A vehicle exiting a private driveway at 3330 South Brookwood Road struck a vehicle traveling eastbound on South Brookwood Road. One injury was reported.

ANALYSIS OF ALTERNATIVES

Basis of Analysis

Based on observations, alternatives were developed to mitigate the negative impacts of traffic related to South Brookwood Elementary School on South Brookwood Road. It was evident that the observed problems are limited to the afternoon pick up time, and occur from approximately 2:45 p.m. to 3:15 p.m. The traffic and pedestrian counts performed for this study were refined to this period in order to analyze specific alternatives. The turning movement traffic count for 2:45 to 3:15 p.m. is shown in Figure 7. As shown in Figure 7, the majority of the existing traffic on this section of South Brookwood Road is directly related to the school. During the 30 minute period from 2:45 to 3:15 p.m., there were counted 9 through vehicles (vehicles not directly generated by the school) in the northbound direction and 8 through vehicles in the southbound direction.

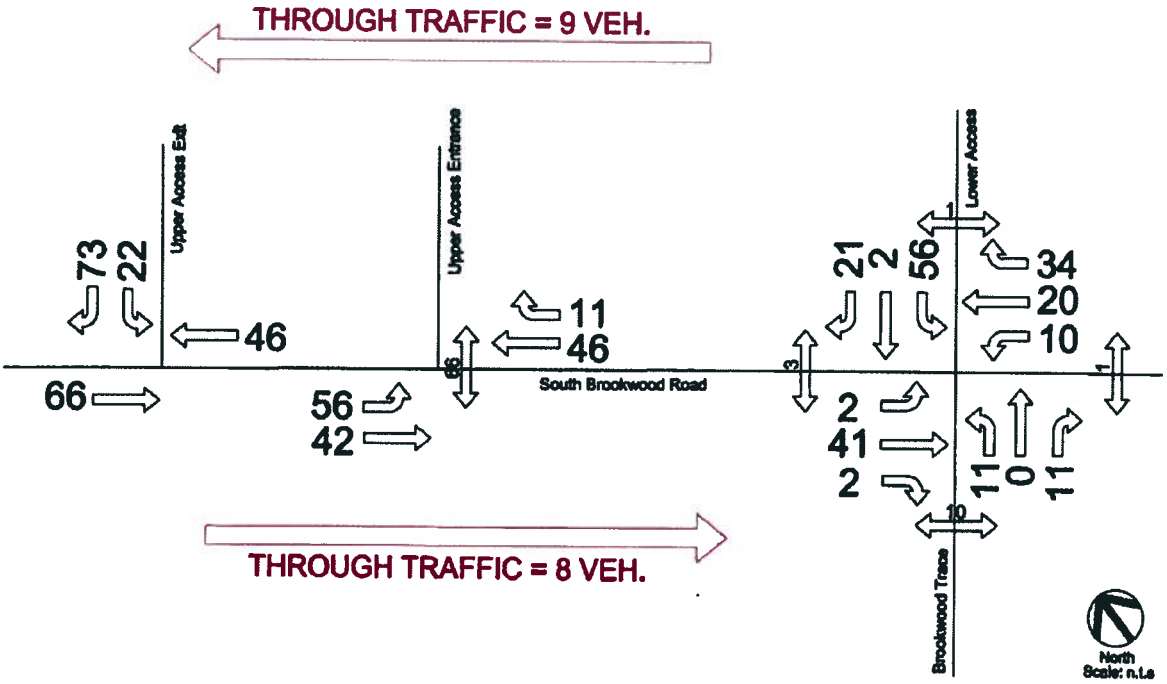


Figure 7. Existing Traffic Counts – 2:45-3:15 PM

Alternative A – Traffic Control Measures

The first alternative considered was the use of traffic control measures to mitigate traffic concerns. Based on the peak 30 minute afternoon traffic count, there was the possibility of up to 20 vehicles in the northbound direction and 12 vehicles in the southbound direction who desire to continue straight through the intersections which have queued vehicles. It is unclear whether those vehicles which are, in fact, crossing the double yellow line to pass are through vehicles or school-related vehicles, or a combination of both. During the observations, no vehicles were seen passing to the left of the double yellow line on South Brookwood Road southbound northwest of the school. There were eight (8) vehicles which were observed to pass on South Brookwood Road northbound south of the school. Some of these turned left onto Brookwood Trace, and some continued north on South Brookwood Road.

Measure #1 – Turn Restrictions. The desire for school-related vehicles to pass to the left of the double yellow line can be removed by restricting turns on South Brookwood Road at the two school accesses, namely:

- No right turn on South Brookwood Road northbound at the Upper Access from 2:45 to 3:15 p.m.
- No left turn on South Brookwood Road southbound at the Lower Access from 2:45 to 3:15 p.m.

These signs are illustrated in Figure 8.

Figure 8. Turn Restriction Signs

The turn restrictions will cause some re-routing of school-related traffic. During the peak 30 minutes, there were 2 vehicles which turned left into the Lower Access and 11 vehicles which turned right into the Upper Access. The turn restrictions, therefore, would have affected 13 vehicles during the 30 minute period. Furthermore, the effect of the turn restrictions would be to force all carpool activity bound for the Upper Access to approach the campus on South Brookwood Road southbound from the northwest, and all carpool activity bound for the Lower Access to approach the campus on South Brookwood Road northbound from Overton Road.

In order to be effective, these signs must be enforced. These are regulatory signs which can be enforced and ticketed by the Mountain Brook Police Department. Brookwood Forest Elementary School can also employee individuals (staff or volunteers) to remind carpool drivers of the turn restriction signs. The school can also disseminate information to families concerning the requisite carpool patterns to be used approaching the campus.

Measure #2 – Passing Restriction. For both the school-related and through traffic, the existing double yellow line on South Brookwood Road can be reinforced with a "Do Not Pass" sign. Two signs per approach are recommended. These first signs would need to be erected in advance of the maximum queues on South Brookwood Road – just north of the intersection of Overton Road for South Brookwood Road northbound and approximately 750 feet northwest of the school property for South Brookwood Road southeast-bound. The second set of signs would be placed approximately half-way between the first signs and the edge of the school property, at approximately 375 feet from the edge of the school property. This sign is illustrated in Figure 9.

Figure 9. Do Not Pass Sign

Alternative B – Carpool Operation Modifications

In our review of the carpool operations on the Brookwood Forest Elementary School campus, we did not note any changes which should be made to the Lower Access which do not involve additional roadway lanes. At the Upper Access, the existing carpool loading and stacking area is shown in red in Figure 10. The operation of the existing carpool could be improved during the afternoon by requesting that the first three vehicles pull all the way to the end of the area designated in red.

An alternative arrangement for extending the carpool operation would be to extend the pickup area alongside of the gym building as shown in blue in Figure 10. The existing parking area would need to be restriped in order to provide a continuous turning path at the end of the parking area. It is estimated that an extra one or two vehicles may be able to be stored on campus with this alternative.

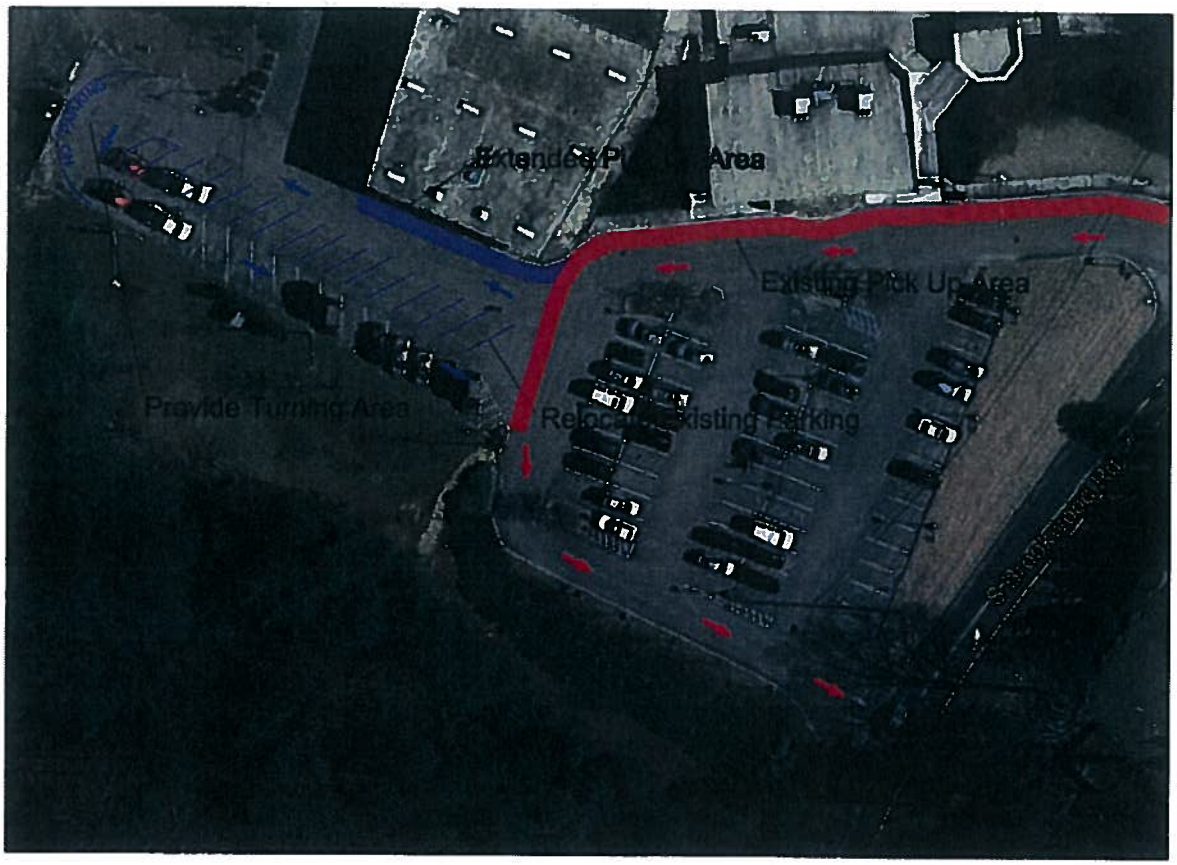


Figure 10. Upper Access Carpool Pick Up Extension

Alternative C – One-Way Treatment of South Brookwood Road: Northbound

The issue of vehicles crossing the double yellow line to pass standing queues of vehicles on South Brookwood Road can be mitigated by establishing a section of South Brookwood Road as a one-way roadway from 2:45 p.m. to 3:15 p.m. Alternative C considers making South Brookwood Road one way northbound. An operational concept for Alternative C is shown in Figure 11.

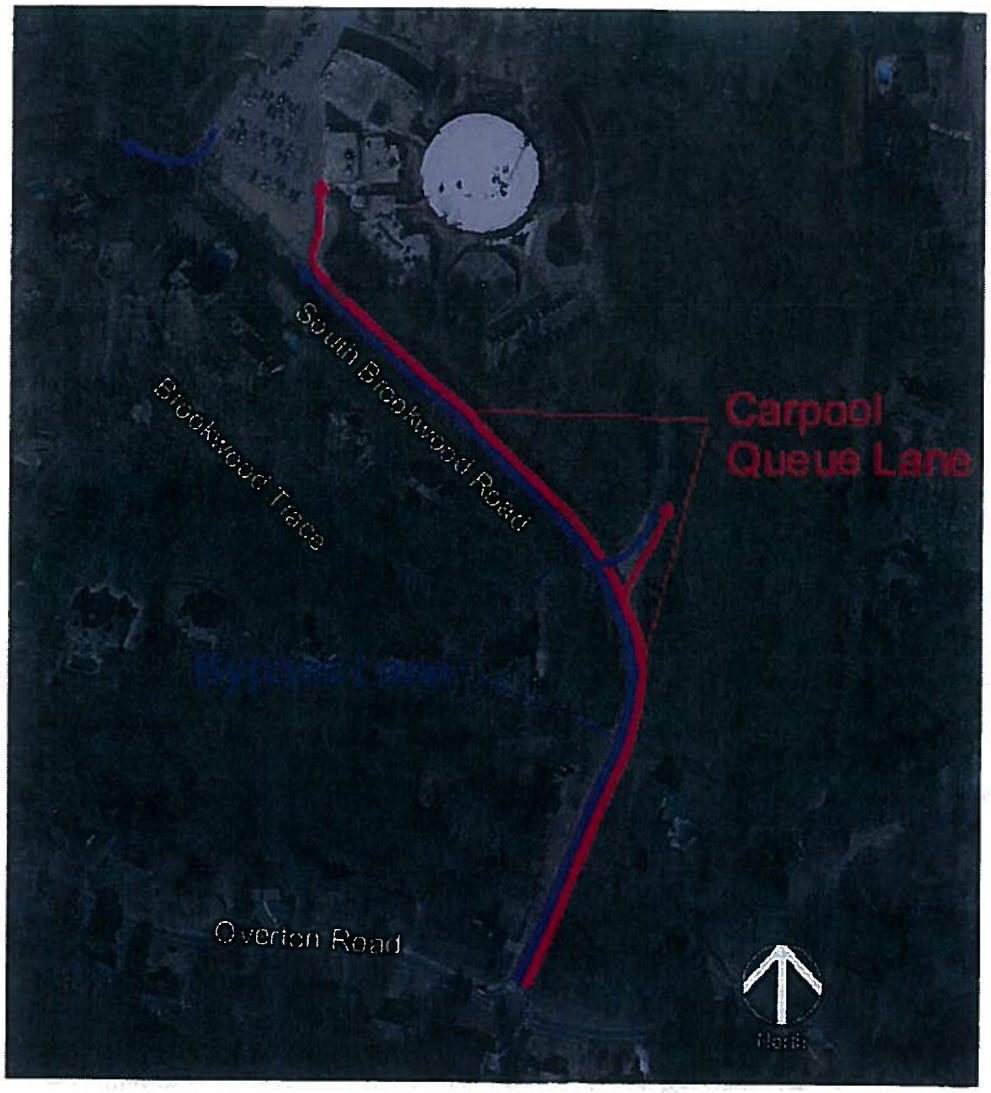


Figure 11. Alternative C – South Brookwood Road One Way Northbound

The traffic reassignment for this alternative is shown in Figure 12.

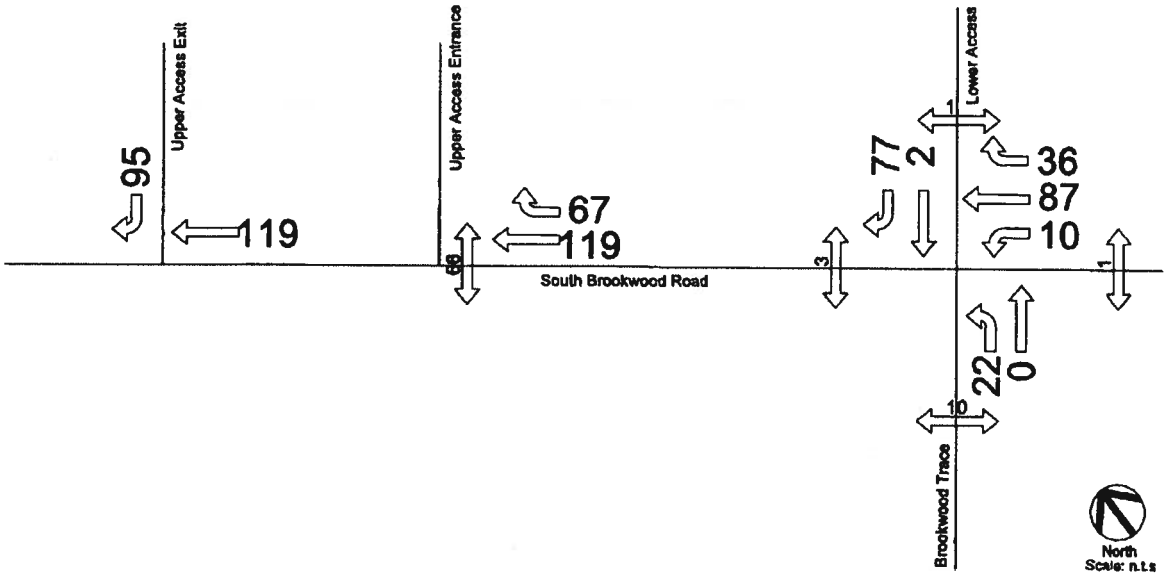


Figure 12. Traffic Reassignment 2:45-3:15 PM – One Way Northbound

In reviewing the potential traffic operations of Alternative C, three immediate concerns are noted:

1. The distance between the Lower Access and the Upper Access is approximately 625 feet, sufficient to stack approximately 25 to 28 vehicles. The anticipated maximum queue, based on observations, for the Upper Access is approximately 30 vehicles. Therefore, traffic queued to enter the Upper Access will conflict with traffic exiting the Lower Access.
2. The one-way treatment northbound would logically begin at Overton Road. However, there is no convenient location to the northwest of the school to end the one-way treatment. The most logical place to end the one way treatment would be at Woodridge Road or Spring Hill Road, but this would affect traffic access to multiple private driveways and two public roadways (South Brookwood Circle and North Woodridge Road).
3. The diversion routes for southbound traffic on South Brookwood Road to reach Overton Road are lengthy and circuitous, and one route would involve mixing with traffic at Mountain Brook High School.

Based on these factors, Alternative C does not appear to be desirable for implementation.

Alternative D – One-Way Treatment of South Brookwood Road: Southbound

Alternative D considers making South Brookwood Road one way southbound from 2:45 to 3:15 p.m. An operational concept for Alternative D is shown in Figure 13.

Figure 13. Alternative D – South Brookwood Road One Way Southbound

The traffic reassignment for this alternative is shown in Figure 14.

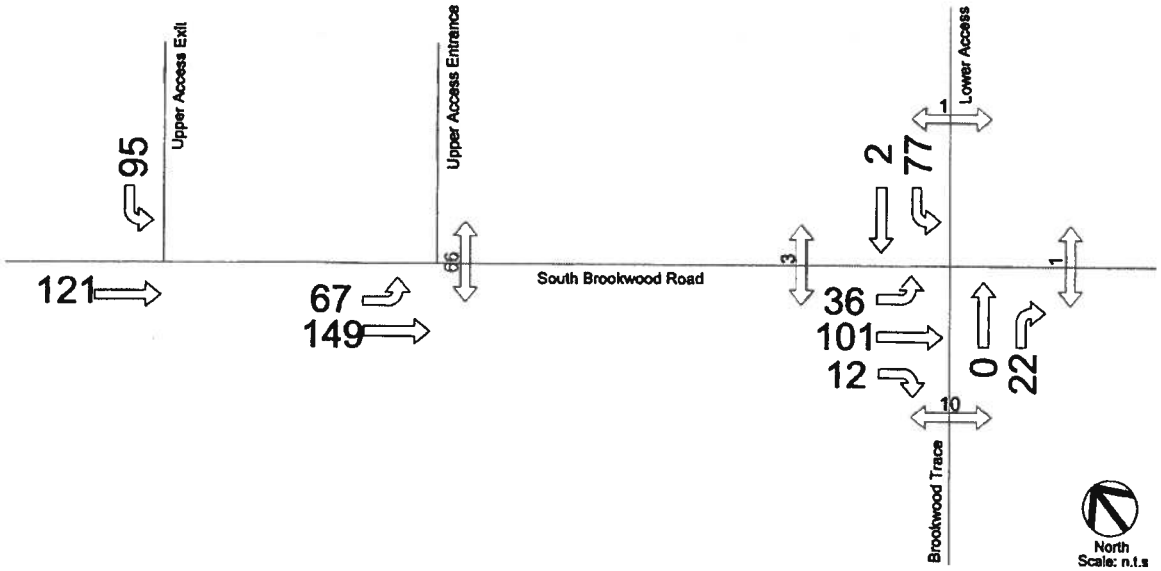


Figure 14. Traffic Reassignment 2:45-3:15 PM – One Way Southbound

In reviewing the potential traffic operations of Alternative D, four immediate concerns are noted:

1. The carpool queue lane is on the side of the road which would be typically driving on the wrong side of the road. The process of getting drivers to move into this lane to stack for carpool would be problematic.
2. The distance between the Lower Access and the Upper Access is approximately 625 feet, sufficient to stack approximately 25 to 28 vehicles. The anticipated maximum queue, based on observations, for the Lower Access is approximately 25 vehicles. Therefore, traffic queued to enter the Lower Access will completely fill the carpool queue lane between the Upper Access and the Lower Access. There would be no room for future growth in traffic at the Lower Access.
3. The one-way treatment northbound would logically end at Overton Road. However, there is no convenient location to the northwest of the school to begin the one-way treatment. The most logical place to begin the one way treatment would be at Woodridge Road or Spring Hill Road, but this would affect traffic access to multiple private driveways and two public roadways (South Brookwood Circle and North Woodridge Road).

4. The diversion routes for northbound traffic on South Brookwood Road to reach Brookwood Road from Overton Road are lengthy and circuitous, and one route would involve mixing with traffic at Mountain Brook High School.

Based on these factors, Alternative D does not appear to be desirable for implementation.

Alternative E –Roadway Closure of South Brookwood Road

Alternative E considers a closure of South Brookwood Road between the Upper Access and the Lower Access from 2:45 to 3:15 p.m. An operational concept for Alternative E is shown in Figure 15.

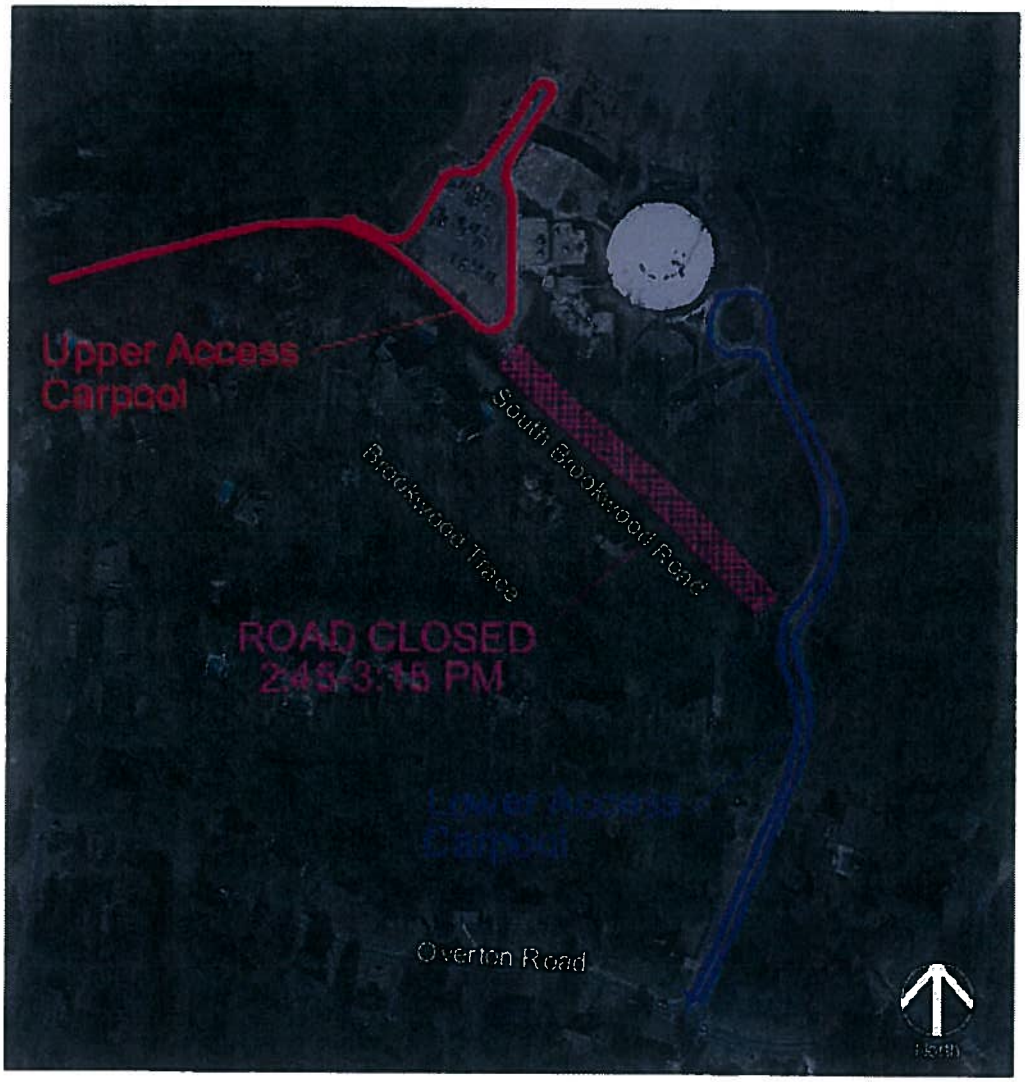


Figure 15. Alternative E – South Brookwood Road Closure

The traffic reassignment for this alternative is shown in Figure 16.

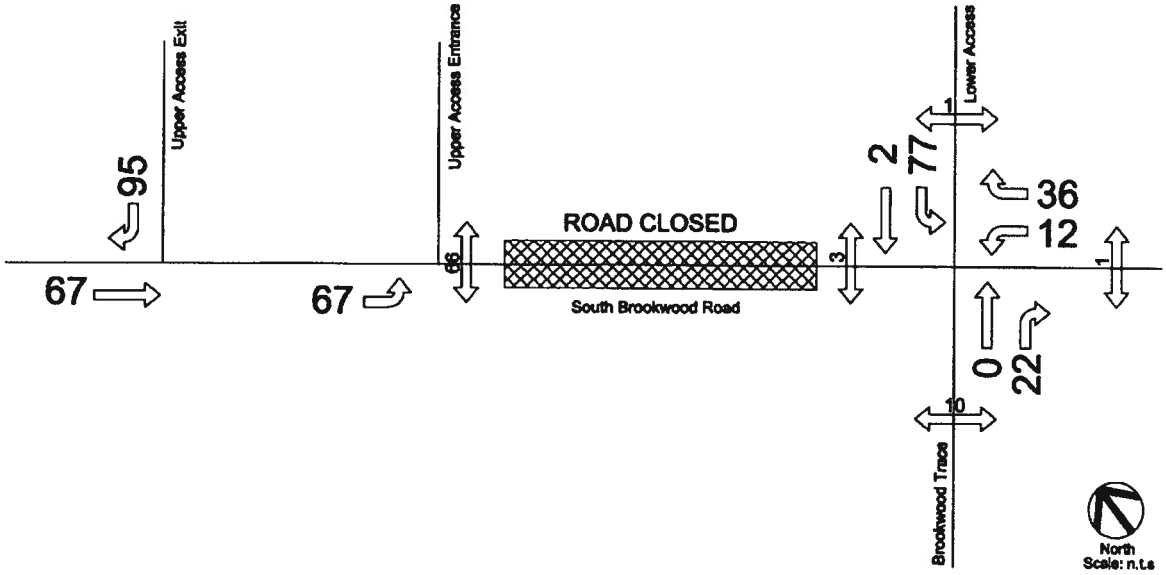


Figure 16. Traffic Reassignment 2:45-3:15 PM – Closure

Alternative E does not have as many negative implications as Alternatives C and D. However, there are certain concerns regarding implementation of Alternative E:

1. The diversion routes for northbound and southbound traffic on South Brookwood Road to reach Brookwood Road and Overton Road are lengthy and circuitous, and one route would involve mixing with traffic at Mountain Brook High School.
2. Complex signing would be required to notify the traveling public of the closed roadway section, and signage would have to be installed far enough in advance to allow diversion.
3. Manual labor will be required to erect traffic control devices each school day at each end of the closed roadway section.

RECOMMENDATIONS

Considering the data collected during this study and analysis of alternatives, this study makes the following recommendations:

1. ***Install left and right turn restriction signage on South Brookwood Road.*** Required signs are:

    - No right turn on South Brookwood Road northbound at the Upper Access from 2:45 to 3:15 p.m.
    - No left turn on South Brookwood Road southbound at the Lower Access from 2:45 to 3:15 p.m.

    These signs are illustrated in Figure 17.

Figure 17. Turn Restriction Signs

In order to be effective, these signs must be enforced. These are regulatory signs which can be enforced and ticketed by the Mountain Brook Police Department. Brookwood Forest Elementary School can also employee individuals (staff or volunteers) to remind carpool drivers of the turn restriction signs.

2. ***Install four (4) "Do Not Pass" signs on South Brookwood Road.*** Two signs per approach are recommended. These first signs would need to be erected in advance of the maximum queues on South Brookwood Road – just north of the intersection of Overton Road for South Brookwood Road northbound and approximately 750 feet northwest of the school property for South Brookwood Road southeast-bound. The second set of signs would be placed approximately half-way between the first signs and the edge of the school property, at approximately 375 feet from the edge of the school property. This sign is illustrated in Figure 18.

Figure 18. Do Not Pass Sign

3. ***Letter to parents.*** Brookwood Forest Elementary School should send a letter to all parents concerning the requisite carpool patterns to be used approaching the campus, the turn restrictions and the need to prohibit passing on South Brookwood Road near the school. The letter should also address the need for parents to limit their arrival time for afternoon carpool to no earlier than 2:45 p.m.

4. ***Replace the existing warning signs on South Brookwood Road.*** The existing S1-1 School signs and flashing beacons should be replaced with School Speed Limit signs with flashing beacons, as illustrated in Figure 19. In general, each approach to the school on South Brookwood Road should have an S1-1 School sign (without flashing beacons) and an S5-1 School Speed Limit sign assembly (with flashing beacons).

Figure 19. School Speed Limit Sign Assembly

5. ***Enforce speed limit on South Brookwood Road.*** The travel speed on South Brookwood Road is of concern. The average speed of all vehicles is almost 10 miles per hour over the posted speed limit, and the 85th percentile travel speed of all vehicles is almost 15 miles per hour over the posted speed limit. During the beginning and ending of school, a small percentage (12%) of the vehicles on South Brookwood Road are traveling within the posted speed limit. 59% of the vehicles are traveling from 1 to 10 miles per hour over the posted speed limit. The remainder (29%) are traveling greater than 10 miles per hour over the posted speed limit. Based on this data, a recommendation of this study is for the increased enforcement of the posted speed limit on South Brookwood Road by the Mountain Brook Police Department, particularly during the hours when school is beginning and ending.

6. **Monitor situation and implement Alternative E if needed.** The traffic should be monitored for the remainder of the 2014-2015 school year. If the problems which were addressed in this study have not been mitigated by implementation of the recommendations in this study, then Alternative E should be considered for implementation for school year 2015-2016.

Appendix A

Brookwood Forest Carpool Meeting Notes
October 8, 2014

BROOKWOOD FOREST ELEMENTARY CARPOOL MEETING 10-8-14

PROBLEMS:

- South Brookwood Road from the direction of Brookwood Road is blocked daily from approximately 2:40-3:10, making it impassible for through traffic. The left-turn lane is too short to accommodate all the waiting cars.
- From the direction of Brookwood Road before reaching the school, through traffic attempts to cross the double yellow line and pass on the left, risking head-on collisions and putting themselves, children and other drivers at risk. (No Passing Zone with Limited Sight Distance)
- Through traffic also attempts to pass on the right, risking striking walking children
- From the direction of Overton Road, cars are also passing (although sight distance is much better), and drivers often pass through the stop sign in their hurry to get around the stopped traffic.

PRIOR ATTEMPTS TO RESOLVE THE PROBLEMS:

1. Carpool Procedures Redesign

Result: Parents are still blocking the road.

Problem with this approach: There's just not enough space on-property to accommodate all of the cars. Additionally, when we are frantically rushing children into cars in an effort to move the line more quickly, we increase the risk of accidents.

2. Police Intervention

Blinking signs were placed, but instructed parents not to block the road, rather than clarifying the area as a No Passing Zone. Parents were threatened with tickets. Uncertain if any drivers passing on the left were ticketed.

Result: Parents are still blocking the road, cars are still passing on the left, and the hazardous situation still exists, posing a continued danger to anyone on this section of South Brookwood Road during carpool hours. Parents are afraid to request police assistance again for fear of being ticketed while trying to pick up their children from school.

Problem with this approach: If parents are not allowed to queue up for the left-turn lane as they would on any other road anywhere but are forced to keep moving, more traffic will be driven through up to 3 intersections where children are crossing on foot: across South Brookwood from the school, at Brookwood Trace, and at South Brookwood and Overton, thereby increasing the risk to the walkers.

3. Public Shaming of Reckless Drivers on Social Media

Result: A lot of uproar, with no discernible reduction in the incidence of offenders.

Problem with this approach: Its only benefit is catharsis. Drivers who break the law and don't get tickets don't change their behaviors. Eventually, the shock value wears off and people become apathetic.

4. Homemade Traffic Delay Signs at the Top of South Brookwood

Result: Unclear.

Problem with this approach: Some drivers who passed on the left stated they did not see the signs. They are not very visible, and have no flashing lights or "official appearance" to draw attention.

5. Volunteer Parent Traffic Control

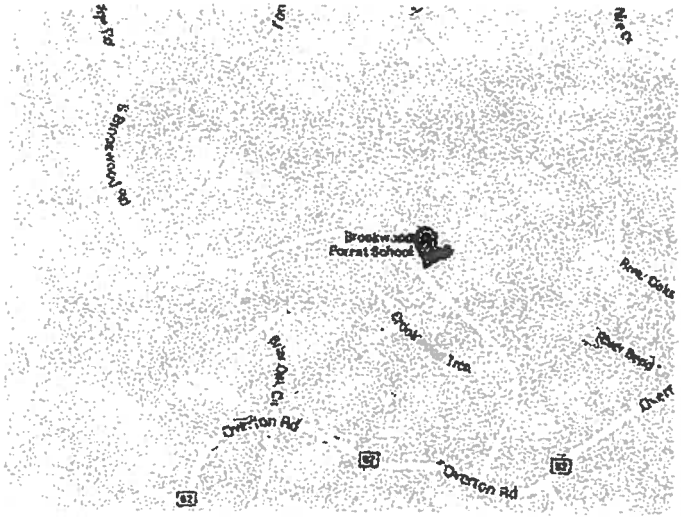
Result: Visible presence seemed to discourage through traffic from attempting to pass.

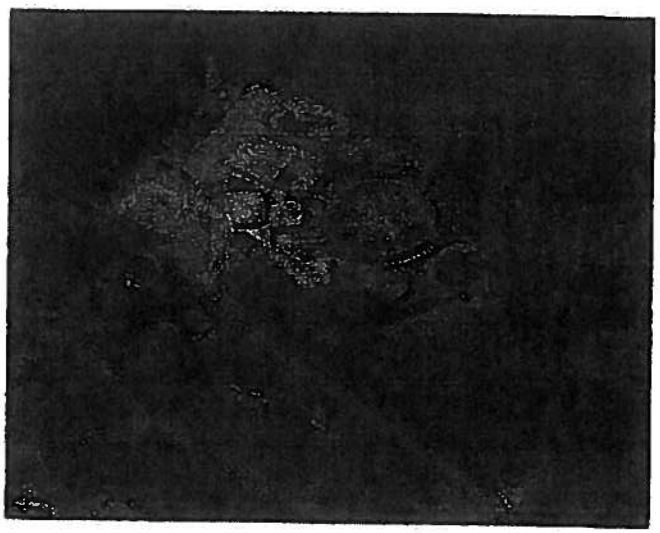
Problem with this approach: Lack of parent volunteers and potential danger to inexperienced volunteers.

BROOKWOOD FOREST ELEMENTARY CARPOOL MEETING 10-8-14

POSSIBLE SOLUTIONS:

- Signage clarifying the area as a No Passing Zone-- include flashing lights.
- Signage requesting no through traffic during carpool hours-- include flashing lights.
- Request parents not to queue up for afternoon carpool until 2:55 or 3:00 if possible.
- Remind parents to not enter front carpool from the direction of Overton Road, which prevents parents from the direction of Brookwood Road from turning in, further increasing the delay on South Brookwood Road. Instruct the crossing guard to enforce this.
- Police patrol to ticket reckless drivers who disregard the safety of our children, families and community members.
- Police patrol (or teachers or parents, if appropriate) to help direct traffic so that through traffic may pass safely.
- A new drive paved somewhere on school property to be used as a carpool lane (and overflow parking for special events) to help alleviate the backup on South Brookwood Road.
- Widen the road to allow for a longer left turn lane.
- Install more guardrails to keep walking children safe.





Appendix B

2006 Skipper Consulting Recommendations
Brookwood Forest Elementary School

Brookwood Forrest Elementary School
Mountain Brook, Alabama

Traffic Circulation Improvement Alternatives – Lower Access

1. Widen lower driveway to school to provide two inbound lanes and one outbound lane. This would allow for all observed storage to occur on the school access and not South Brookwood Road.

   Approximate Cost Range (including engineering): $50,000 - $65,000.

2. Construct a right turn deceleration lane on South Brookwood Road at the approach to the lower school access. This lane is assumed to be 250 feet which would fall short of the peak storage needs for afternoon school pick-up, but would not extend in front of the houses on South Brookwood Road.

   Approximate Cost Range (including engineering): $30,000 - $40,000.

Traffic Circulation Improvement Alternatives – Upper Access

3. Modify on-site traffic circulation for afternoon pick-up at the upper school access via striping and channelization. This would include utilizing the parking lot for additional storage and striping a cul-de-sac north of the gymnasium.

   Approximately Cost Range (including engineering): $1,500 - $2,500.

4. Construct a traffic circle on South Brookwood Road at the lower access and construct a right turn deceleration lane on South Brookwood School approaching the upper school access. This would require traffic to pass the school, u-turn at the traffic circle, and store in the right-turn lane adjacent to the school.

   Approximate Cost Range (including engineering): $90,000 - $120,000.

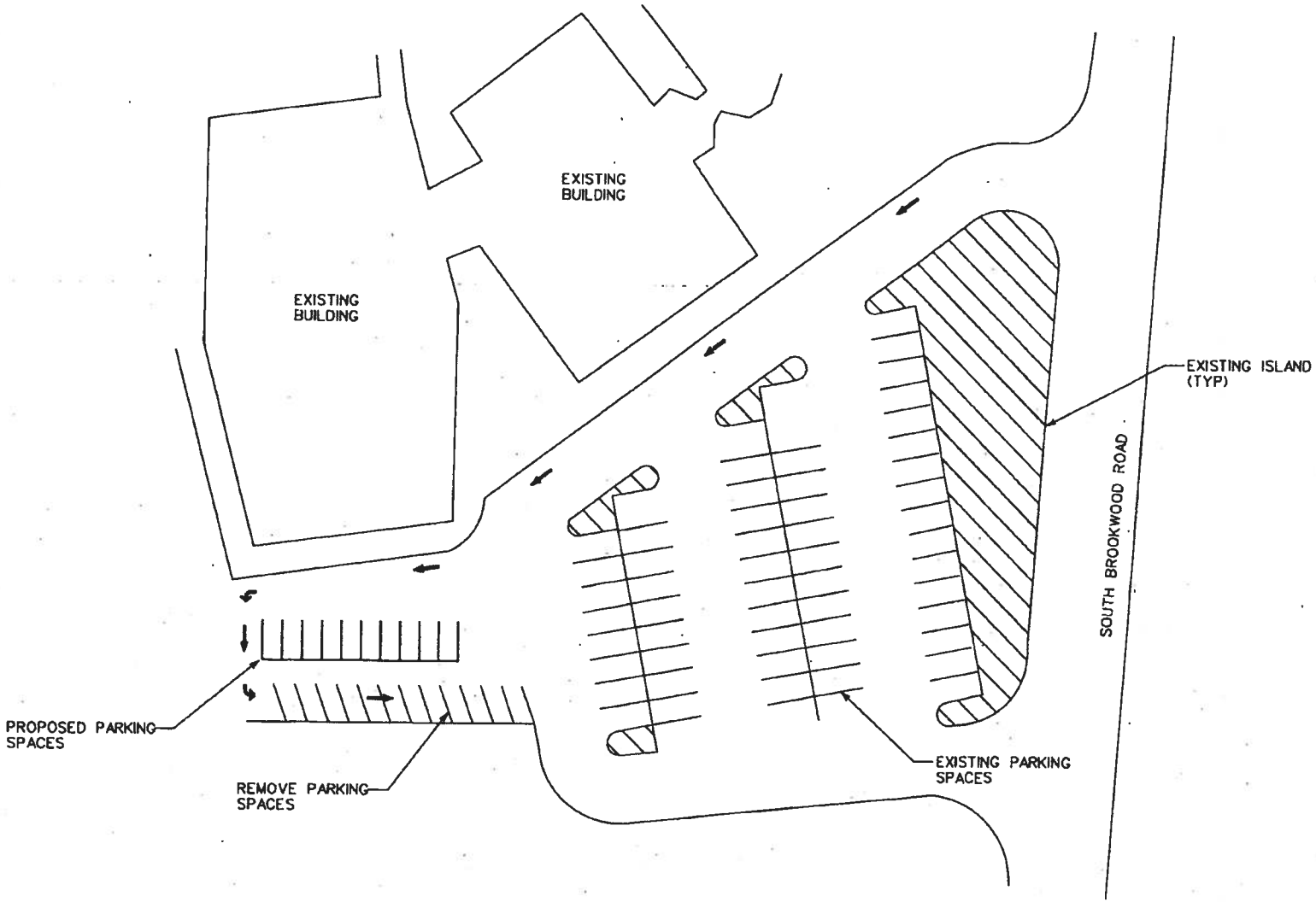
5. Extend the existing left turn lane on South Brookwood Road to the west approximately 500 feet. This would provide off-site storage for the peak queues experienced during the afternoon pick-up period.

   Approximate Cost Range: ????

Note: Observations during the morning peak hour indicate the adequate storage is available at each access. The problems with inadequate storage primarily occur during the afternoon pick-up periods.

Appendix C

2005 Sain Associates Recommendations
Brookwood Forest Elementary School



sain associates
Suite 200, 244 West Valley Avenue • Birmingham, Alabama 35209
Phone: (205) 940-8429

FIGURE 1

BROOKWOOD FOREST PROPOSED RE-STRIPING

Appendix D

Existing Turning Movement Traffic Counts

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mbrook02
Site Code : 00000000
Start Date : 10/29/2014
Page No : 1

Groups Printed- Unshifted

	S BROOKWOOD RD Southbound				LOWER ACCESS RD Westbound				S BROOKWOOD RD Northbound				BROOKWOOD TRACE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
02:30 PM	1	17	2	0	1	0	0	0	7	36	18	0	1	0	2	0	85
02:45 PM	0	8	1	8	19	0	7	3	7	10	19	1	6	0	8	1	98
Total	1	25	3	8	20	0	7	3	14	46	37	1	7	0	10	1	183
03:00 PM	2	33	1	2	37	2	14	0	3	10	16	0	5	0	3	0	128
03:15 PM	0	26	3	0	3	0	8	0	1	20	1	0	2	0	1	0	65
Total	2	59	4	2	40	2	22	0	4	30	17	0	7	0	4	0	193
07:15 AM	4	24	0	0	6	0	3	0	0	30	16	0	1	0	2	0	86
07:30 AM	29	42	0	0	37	0	22	0	0	29	51	2	3	0	3	0	218
07:45 AM	24	49	1	0	43	1	20	0	1	24	36	0	0	1	0	0	200
Total	57	115	1	0	86	1	45	0	1	83	103	2	4	1	5	0	504
08:00 AM	1	19	0	0	0	0	0	0	4	18	0	0	1	0	0	0	43
Grand Total	61	218	8	10	146	3	74	3	23	177	157	3	19	1	19	1	923
Apprch %	20.5	73.4	2.7	3.4	64.6	1.3	32.7	1.3	6.4	49.2	43.6	0.8	47.5	2.5	47.5	2.5	
Total %	6.6	23.6	0.9	1.1	15.8	0.3	8.0	0.3	2.5	19.2	17.0	0.3	2.1	0.1	2.1	0.1	

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mbrook04
Site Code : 00000000
Start Date : 10/29/2014
Page No : 1

Groups Printed- 1 - Unshifted

	BROOKWOOD RD Southbound			(S) BROOKWOOD FOREST ELEM Westbound			BROOKWOOD RD Northbound			
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Int. Total
02:30 PM	10	21	0	0	0	0	17	15	0	63
02:45 PM	5	6	0	0	0	0	12	8	45	76
Total	15	27	0	0	0	0	29	23	45	139
03:00 PM	51	36	0	0	0	0	34	3	21	145
03:15 PM	3	26	0	0	0	0	23	6	0	58
Total	54	62	0	0	0	0	57	9	21	203
07:15 AM	19	26	0	0	0	0	15	11	0	71
07:30 AM	71	64	0	0	0	0	32	16	6	193
07:45 AM	54	83	0	0	0	0	38	16	6	197
Total	144	173	0	0	0	0	85	45	14	461
08:00 AM	2	20	0	0	0	0	15	5	0	42
Grand Total	215	282	0	0	0	0	186	82	80	845
Apprch %	43.3	56.7	0.0	0.0	0.0	0.0	53.4	23.6	23.0	
Total %	25.4	33.4	0.0	0.0	0.0	0.0	22.0	9.7	9.5	

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mbrook03
Site Code : 00000000
Start Date : 10/28/2014
Page No : 1

Groups Printed- 1 - Unshifted

	BROOKWOOD RD Southbound			(N) BROOKWOOD FOREST ELEM Westbound			BROOKWOOD RD Northbound			
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Int. Total
02:30 PM	0	31	0	3	3	0	10	0	1	48
02:45 PM	0	4	0	5	14	0	12	0	0	35
Total	0	35	0	8	17	0	22	0	1	83
03:00 PM	0	53	0	17	59	0	31	0	0	160
03:15 PM	0	22	0	6	4	0	14	0	0	46
Total	0	75	0	23	63	0	45	0	0	206
07:15 AM	0	71	0	13	27	0	26	0	0	137
07:30 AM	0	156	0	25	79	0	40	0	0	300
07:45 AM	0	26	0	6	15	0	17	0	0	64
Total	0	253	0	44	121	0	83	0	0	501
08:00 AM	0	21	0	2	1	0	10	0	0	34
Grand Total	0	384	0	77	202	0	160	0	1	824
Apprch %	0.0	100.0	0.0	27.6	72.4	0.0	99.4	0.0	0.6	
Total %	0.0	46.6	0.0	9.3	24.5	0.0	19.4	0.0	0.1	

Appendix E

Existing Machine Traffic Counts

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

Location: : S BROOKWOOD RD west of SCHOOL ACCESS
City, State: : MOUNTAIN BROOK, AL
Speed Limit: : 25 mph

Date: 10/29/2014
Wednesday

24 Hour Volume

Begin	WB		EB		Combined	
12:00 AM	0	1	0	1	0	2
12:15 AM	0		0		0	
12:30 AM	1		0		1	
12:45 AM	0		1		1	
1:00 AM	0	1	0	0	0	1
1:15 AM	0		0		0	
1:30 AM	1		0		1	
1:45 AM	0		0		0	
2:00 AM	0	0	0	0	0	0
2:15 AM	0		0		0	
2:30 AM	0		0		0	
2:45 AM	0		0		0	
3:00 AM	0	1	0	2	0	3
3:15 AM	0		1		1	
3:30 AM	0		0		0	
3:45 AM	1		1		2	
4:00 AM	1	1	0	1	1	2
4:15 AM	0		0		0	
4:30 AM	0		1		1	
4:45 AM	0		0		0	
5:00 AM	1	5	2	11	3	16
5:15 AM	1		5		6	
5:30 AM	1		1		2	
5:45 AM	2		3		5	
6:00 AM	2	21	0	10	2	31
6:15 AM	6		1		7	
6:30 AM	4		3		7	
6:45 AM	9		6		15	
7:00 AM	10	206	20	277	30	483
7:15 AM	32		43		75	
7:30 AM	86		132		218	
7:45 AM	78		82		160	
8:00 AM	15	53	22	57	37	110
8:15 AM	9		15		24	
8:30 AM	13		8		21	
8:45 AM	16		12		28	
9:00 AM	10	32	16	65	26	97
9:15 AM	6		16		22	
9:30 AM	7		17		24	
9:45 AM	9		16		25	
10:00 AM	9	35	11	49	20	84
10:15 AM	6		13		19	
10:30 AM	9		10		19	
10:45 AM	11		15		26	
11:00 AM	14	61	16	50	30	111
11:15 AM	17		11		28	
11:30 AM	11		7		18	
11:45 AM	19		16		35	

Begin	WB		EB		Combined	
12:00 PM	7	46	9	59	16	105
12:15 PM	9		14		23	
12:30 PM	11		15		26	
12:45 PM	19		21		40	
1:00 PM	12	57	19	59	31	116
1:15 PM	20		13		33	
1:30 PM	13		16		29	
1:45 PM	12		11		23	
2:00 PM	19	84	12	94	31	178
2:15 PM	5		26		31	
2:30 PM	21		44		65	
2:45 PM	39		12		51	
3:00 PM	86	157	29	91	115	248
3:15 PM	28		18		46	
3:30 PM	17		22		39	
3:45 PM	26		22		48	
4:00 PM	25	110	22	109	47	219
4:15 PM	33		19		52	
4:30 PM	30		31		61	
4:45 PM	22		37		59	
5:00 PM	31	109	35	162	66	271
5:15 PM	23		46		69	
5:30 PM	30		30		60	
5:45 PM	25		51		76	
6:00 PM	22	108	23	80	45	188
6:15 PM	30		19		49	
6:30 PM	30		21		51	
6:45 PM	26		17		43	
7:00 PM	22	87	16	50	38	137
7:15 PM	18		16		34	
7:30 PM	20		9		29	
7:45 PM	27		9		36	
8:00 PM	11	37	5	18	16	55
8:15 PM	5		4		9	
8:30 PM	8		6		14	
8:45 PM	13		3		16	
9:00 PM	8	20	3	13	11	33
9:15 PM	3		5		8	
9:30 PM	5		3		8	
9:45 PM	4		2		6	
10:00 PM	3	7	5	9	8	16
10:15 PM	2		0		2	
10:30 PM	1		3		4	
10:45 PM	1		1		2	
11:00 PM	2	2	1	5	3	7
11:15 PM	0		1		1	
11:30 PM	0		2		2	
11:45 PM	0		1		1	

	WB	EB	Combined
24 Hour Volume	1241 (49.4%)	1272 (50.6%)	2513

12:00 AM - 12:00 PM

	WB	EB	Combined
Count	417	523	940
	44.4 %	55.6 %	
Peak Hour	7:15 AM	7:15 AM	7:15 AM
Volume	211	279	490
Factor	0.61	0.53	0.56

12:00 PM - 12:00 AM

WB	EB	Combined
824	749	1573
52.4 %	47.6 %	
2:30 PM	5:00 PM	2:30 PM
174	162	277
0.51	0.79	0.60

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

Location:: S BROOKWOOD RD west of SCHOOL ACCESS
City, State:: MOUNTAIN BROOK, AL
Speed Limit:: 25 mph

Date: 10/29/2014 Wednesday

24 Hour Speed
Combined Channels

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
12:00 AM	2	0	0	0	0	1	1	0	0	0	0	0	0	0
1:00 AM	1	0	0	0	0	0	0	1	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	3	0	0	1	0	1	0	1	0	0	0	0	0	0
4:00 AM	2	0	0	0	0	1	1	0	0	0	0	0	0	0
5:00 AM	16	0	1	0	2	9	3	1	0	0	0	0	0	0
6:00 AM	31	0	0	0	8	11	10	2	0	0	0	0	0	0
7:00 AM	483	4	2	62	122	192	88	12	0	0	0	1	0	0
8:00 AM	110	0	0	2	12	48	31	17	0	0	0	0	0	0
9:00 AM	97	0	1	4	11	36	32	9	4	0	0	0	0	0
10:00 AM	84	0	1	2	14	30	25	7	5	0	0	0	0	0
11:00 AM	111	0	2	2	10	50	34	12	1	0	0	0	0	0
12:00 PM	105	0	0	2	16	29	38	20	0	0	0	0	0	0
1:00 PM	116	0	0	5	10	38	50	9	4	0	0	0	0	0
2:00 PM	178	2	8	5	45	56	52	10	0	0	0	0	0	0
3:00 PM	248	16	8	15	39	83	62	22	2	1	0	0	0	0
4:00 PM	219	0	0	2	28	84	83	19	3	0	0	0	0	0
5:00 PM	271	0	1	3	45	102	89	28	3	0	0	0	0	0
6:00 PM	188	0	0	2	14	71	73	26	2	0	0	0	0	0
7:00 PM	137	0	1	3	13	49	52	16	2	1	0	0	0	0
8:00 PM	55	0	0	2	2	18	19	11	2	1	0	0	0	0
9:00 PM	33	0	0	0	3	8	16	6	0	0	0	0	0	0
10:00 PM	16	0	0	0	6	4	3	3	0	0	0	0	0	0
11:00 PM	7	0	0	1	0	2	3	1	0	0	0	0	0	0
Total	2513	22	25	113	400	923	765	233	28	3	0	1	0	0
%		0.9	1.0	4.5	15.9	36.7	30.4	9.3	1.1	0.1	0.0	0.0	0.0	0.0

Percentile Speeds (mph)	10 %	15 %	50 %	85 %	90 %
	26.6	28.1	33.9	39.2	40.3

10 mph Pace Speed 29.2 - 39.2
Number in Pace 1814 (72.2 %)

Average 33.5 mph
Minimum 5.8 mph
Maximum 64.8 mph

Speeds Exceeded	15 mph	25 mph	35 mph
	99.1 %	93.6 %	41.0 %
Count	2491	2353	1030

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

Location:: S BROOKWOOD RD west of SCHOOL ACCESS
City, State:: MOUNTAIN BROOK, AL
Speed Limit:: 25 mph

Date: 10/29/2014
Wednesday

24 Hour Vehicle Classification
Combined Channels

Time	Total	Bike	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
12:00 AM	2	0	1	1	0	0	0	0	0	0	0	0	0	0
1:00 AM	1	0	1	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	3	0	3	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	2	0	2	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	16	0	12	4	0	0	0	0	0	0	0	0	0	0
6:00 AM	31	0	26	4	0	1	0	0	0	0	0	0	0	0
7:00 AM	483	2	349	121	2	8	0	0	1	0	0	0	0	0
8:00 AM	110	0	79	28	0	3	0	0	0	0	0	0	0	0
9:00 AM	97	0	70	24	0	3	0	0	0	0	0	0	0	0
10:00 AM	84	0	60	17	0	7	0	0	0	0	0	0	0	0
11:00 AM	111	0	79	28	0	4	0	0	0	0	0	0	0	0
12:00 PM	105	0	79	21	0	4	0	0	1	0	0	0	0	0
1:00 PM	116	0	84	26	1	4	0	0	1	0	0	0	0	0
2:00 PM	178	0	125	49	1	1	0	0	2	0	0	0	0	0
3:00 PM	248	1	180	63	2	1	0	0	1	0	0	0	0	0
4:00 PM	219	0	166	51	0	2	0	0	0	0	0	0	0	0
5:00 PM	271	1	218	50	0	2	0	0	0	0	0	0	0	0
6:00 PM	188	0	149	38	0	1	0	0	0	0	0	0	0	0
7:00 PM	137	0	116	20	0	1	0	0	0	0	0	0	0	0
8:00 PM	55	0	50	3	0	2	0	0	0	0	0	0	0	0
9:00 PM	33	0	25	8	0	0	0	0	0	0	0	0	0	0
10:00 PM	16	0	14	2	0	0	0	0	0	0	0	0	0	0
11:00 PM	7	0	7	0	0	0	0	0	0	0	0	0	0	0
Total	2513	4	1895	558	6	44	0	0	6	0	0	0	0	0
%		0.2	75.4	22.2	0.2	1.8	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0

TRAFFIC[illegible]A, LLC
1409 Turnham Lane, Birmingham, AL 35216
205-824-0125

Location:: S BROOKWOOD RD north of OVERTON RD
City, State: : MOUNTAIN BROOK, AL
Speed Limit: : 25 mph

Date: 10/29/2014
Wednesday

24 Hour Volume

Begin	NB		SB		Combined	
12:00 AM	0	1	0	1	0	2
12:15 AM	0		0		0	
12:30 AM	1		0		1	
12:45 AM	0		1		1	
1:00 AM	0	1	0	0	0	1
1:15 AM	0		0		0	
1:30 AM	1		0		1	
1:45 AM	0		0		0	
2:00 AM	0	0	0	0	0	0
2:15 AM	0		0		0	
2:30 AM	0		0		0	
2:45 AM	0		0		0	
3:00 AM	0	1	0	2	0	3
3:15 AM	0		0		0	
3:30 AM	1		1		2	
3:45 AM	0		1		1	
4:00 AM	2	4	0	4	2	8
4:15 AM	0		1		1	
4:30 AM	2		2		4	
4:45 AM	0		1		1	
5:00 AM	2	12	2	7	4	19
5:15 AM	5		2		7	
5:30 AM	3		1		4	
5:45 AM	2		2		4	
6:00 AM	3	20	0	17	3	37
6:15 AM	2		3		5	
6:30 AM	2		9		11	
6:45 AM	13		5		18	
7:00 AM	14	184	18	184	32	368
7:15 AM	49		25		74	
7:30 AM	81		69		150	
7:45 AM	40		72		112	
8:00 AM	20	65	22	67	42	132
8:15 AM	13		16		29	
8:30 AM	17		15		32	
8:45 AM	15		14		29	
9:00 AM	14	34	21	75	35	109
9:15 AM	4		17		21	
9:30 AM	8		20		28	
9:45 AM	8		17		25	
10:00 AM	11	44	14	57	25	101
10:15 AM	8		16		24	
10:30 AM	13		11		24	
10:45 AM	12		16		28	
11:00 AM	15	67	16	53	31	120
11:15 AM	19		13		32	
11:30 AM	15		6		21	
11:45 AM	18		18		36	

Begin	NB		SB		Combined	
12:00 PM	11	60	11	65	22	125
12:15 PM	10		14		24	
12:30 PM	18		17		35	
12:45 PM	21		23		44	
1:00 PM	14	58	20	57	34	115
1:15 PM	19		13		32	
1:30 PM	10		18		28	
1:45 PM	15		6		21	
2:00 PM	24	132	12	87	36	219
2:15 PM	23		21		44	
2:30 PM	63		19		82	
2:45 PM	22		35		57	
3:00 PM	20	86	70	154	90	240
3:15 PM	22		30		52	
3:30 PM	20		28		48	
3:45 PM	24		26		50	
4:00 PM	29	125	23	112	52	237
4:15 PM	29		25		54	
4:30 PM	33		34		67	
4:45 PM	34		30		64	
5:00 PM	32	122	17	125	49	247
5:15 PM	38		30		68	
5:30 PM	27		31		58	
5:45 PM	25		47		72	
6:00 PM	27	97	30	119	57	216
6:15 PM	27		24		51	
6:30 PM	18		35		53	
6:45 PM	25		30		55	
7:00 PM	25	78	16	61	41	139
7:15 PM	16		13		29	
7:30 PM	24		11		35	
7:45 PM	13		21		34	
8:00 PM	10	38	7	21	17	59
8:15 PM	5		4		9	
8:30 PM	10		7		17	
8:45 PM	13		3		16	
9:00 PM	9	23	4	14	13	37
9:15 PM	2		4		6	
9:30 PM	6		3		9	
9:45 PM	6		3		9	
10:00 PM	3	7	5	10	8	17
10:15 PM	1		0		1	
10:30 PM	2		4		6	
10:45 PM	1		1		2	
11:00 PM	2	2	1	4	3	6
11:15 PM	0		1		1	
11:30 PM	0		2		2	
11:45 PM	0		0		0	

	NB	SB	Combined
24 Hour Volume	1261 (49.3%)	1296 (50.7%)	2557

	12:00 AM - 12:00 PM			12:00 PM - 12:00 AM		
	NB	SB	Combined	NB	SB	Combined
Count	433	467	900	828	829	1657
	48.1 %	51.9 %		50.0 %	50.0 %	
Peak Hour	7:15 AM	7:15 AM	7:15 AM	4:30 PM	2:45 PM	2:30 PM
Volume	190	188	378	137	163	281
Factor	0.59	0.65	0.63	0.90	0.58	0.78

TRAFFIC DATA, LLC
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Location: : S BROOKWOOD RD north of OVERTON RD
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Speed Limit: : 25 mph

Date: 10/29/2014
Wednesday

24 Hour Speed
Combined Channels

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
12:00 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	0
1:00 AM	1	0	0	0	1	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	3	0	0	1	0	2	0	0	0	0	0	0	0	0
4:00 AM	8	0	0	4	4	0	0	0	0	0	0	0	0	0
5:00 AM	19	0	0	8	11	0	0	0	0	0	0	0	0	0
6:00 AM	37	0	0	11	20	6	0	0	0	0	0	0	0	0
7:00 AM	368	7	23	107	188	43	0	0	0	0	0	0	0	0
8:00 AM	132	0	2	24	73	32	1	0	0	0	0	0	0	0
9:00 AM	109	0	0	9	55	41	3	1	0	0	0	0	0	0
10:00 AM	101	0	3	6	53	35	3	1	0	0	0	0	0	0
11:00 AM	120	0	4	19	62	30	5	0	0	0	0	0	0	0
12:00 PM	125	0	2	10	67	41	5	0	0	0	0	0	0	0
1:00 PM	115	0	1	20	64	29	1	0	0	0	0	0	0	0
2:00 PM	219	13	12	68	90	33	3	0	0	0	0	0	0	0
3:00 PM	240	0	4	47	119	68	2	0	0	0	0	0	0	0
4:00 PM	237	0	3	34	132	67	1	0	0	0	0	0	0	0
5:00 PM	247	0	0	34	135	74	4	0	0	0	0	0	0	0
6:00 PM	216	0	10	34	109	62	1	0	0	0	0	0	0	0
7:00 PM	139	0	3	23	78	31	4	0	0	0	0	0	0	0
8:00 PM	59	0	1	6	31	18	2	1	0	0	0	0	0	0
9:00 PM	37	0	0	6	21	9	1	0	0	0	0	0	0	0
10:00 PM	17	0	0	2	9	6	0	0	0	0	0	0	0	0
11:00 PM	6	0	0	0	2	4	0	0	0	0	0	0	0	0
Total	2557	20	68	475	1324	631	36	3	0	0	0	0	0	0
%		0.8	2.7	18.6	51.8	24.7	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0

Percentile Speeds (mph)	10 %	15 %	50 %	85 %	90 %
	22.9	24.0	28.1	31.7	32.4

10 mph Pace Speed 23.3 - 33.3
Number in Pace 2159 (84.4 %)

Average 27.6 mph
Minimum 5.6 mph
Maximum 40.3 mph

Speeds Exceeded	15 mph	25 mph	35 mph
	99.2 %	78.0 %	1.5 %
Count	2537	1994	39

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Date: 10/29/2014
Wednesday

24 Hour Vehicle Classification
Combined Channels

Time	Total	Bike	Cars & Trailer	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi
12:00 AM	2	0	1	1	0	0	0	0	0	0	0	0	0	0
1:00 AM	1	0	1	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	3	0	3	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	8	0	4	0	0	0	4	0	0	0	0	0	0	0
5:00 AM	19	0	17	2	0	0	0	0	0	0	0	0	0	0
6:00 AM	37	0	30	6	0	1	0	0	0	0	0	0	0	0
7:00 AM	368	1	270	88	3	4	0	0	1	0	0	1	0	0
8:00 AM	132	0	97	31	0	4	0	0	0	0	0	0	0	0
9:00 AM	109	0	86	18	0	5	0	0	0	0	0	0	0	0
10:00 AM	101	0	79	19	0	3	0	0	0	0	0	0	0	0
11:00 AM	120	0	80	34	1	5	0	0	0	0	0	0	0	0
12:00 PM	125	0	94	26	1	4	0	0	0	0	0	0	0	0
1:00 PM	115	0	81	28	1	4	0	0	1	0	0	0	0	0
2:00 PM	219	1	151	58	3	4	0	0	2	0	0	0	0	0
3:00 PM	240	0	180	58	0	2	0	0	0	0	0	0	0	0
4:00 PM	237	0	176	58	0	3	0	0	0	0	0	0	0	0
5:00 PM	247	0	191	53	0	3	0	0	0	0	0	0	0	0
6:00 PM	216	0	165	47	0	3	0	0	1	0	0	0	0	0
7:00 PM	139	0	109	27	0	3	0	0	0	0	0	0	0	0
8:00 PM	59	0	51	6	0	2	0	0	0	0	0	0	0	0
9:00 PM	37	0	29	7	0	1	0	0	0	0	0	0	0	0
10:00 PM	17	0	14	3	0	0	0	0	0	0	0	0	0	0
11:00 PM	6	0	6	0	0	0	0	0	0	0	0	0	0	0
Total	2557	2	1915	570	9	51	4	0	5	0	0	1	0	0
%		0.1	74.9	22.3	0.4	2.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0