

**MOUNTAIN BROOK CITY COUNCIL
PRE-MEETING AGENDA**

**PRE-COUNCIL ROOM (A106) CITY HALL
56 CHURCH STREET
MOUNTAIN BROOK, AL 35213**

May 11, 2015, 6:00 P. M.

1. Piggly Wiggly development update – Jeffrey Brewer with Goodwyn, Mills & Cawood.
2. Paving update – Ronnie Vaughn.
3. Parking recommendations – Dana Hazen:
Long- term (employee parking) for English Village;
Short-term (15-minute) for all three villages;
2-hour parking increase (to 3 and 4 hours) in Crestline and English Villages,
respectively
(See attached. This item may be added to formal agenda.)
4. Finance Committee appointments/recommendations – Lloyd Shelton. (See attached. This item may be added to formal agenda.)
5. Equipment yard behind the Police Station update – Steven Boone.
6. Apple Grant recommendations for the Montevallo Road/Overbrook Road intersection and the Overbrook Road/Mountain Brook Parkway/Pine Ridge Road intersection – Richard Caudle of Skipper Consultants.

**MOUNTAIN BROOK CITY COUNCIL
PRE-MEETING AGENDA**

**PRE-COUNCIL ROOM (A106) CITY HALL
56 CHURCH STREET
MOUNTAIN BROOK, AL 35213**

May 11, 2015, 6:15 P. M.

1. Piggly Wiggly development update – Jeffrey Brewer with Goodwyn, Mills & Cawood.
2. Parking recommendations – Dana Hazen:
Long- term (employee parking) for English Village;
Short-term (15-minute) for all three villages;
2-hour parking increase (to 3 and 4 hours) in Crestline and English Villages,
respectively
(See attached. This item may be added to formal agenda.)
3. Finance Committee appointments/recommendations – Lloyd Shelton. (See attached. This item may be added to formal agenda.)
4. Fencing or sound mitigation for the equipment yard behind the Police Station – Steve Boone.
5. Apple Grant recommendations for the Montevallo Road/Overbrook Road intersection and the Overbrook Road/Mountain Brook Parkway/Pine Ridge Road intersection – Richard Caudle of Skipper Consultants.



CITY OF MOUNTAIN BROOK

Dana O. Hazen, AICP
City Planner
56 Church Street
Mountain Brook, Alabama 35213
Telephone: 205/802-3821
Fax: 205.879.6913
hazend@mtnbrook.org
www.mtnbrook.org

TO: Mayor, City Council & City Manager
DATE: May 7, 2015

FROM: Dana Hazen, City Planner
RE: Long Term Parking in English Village

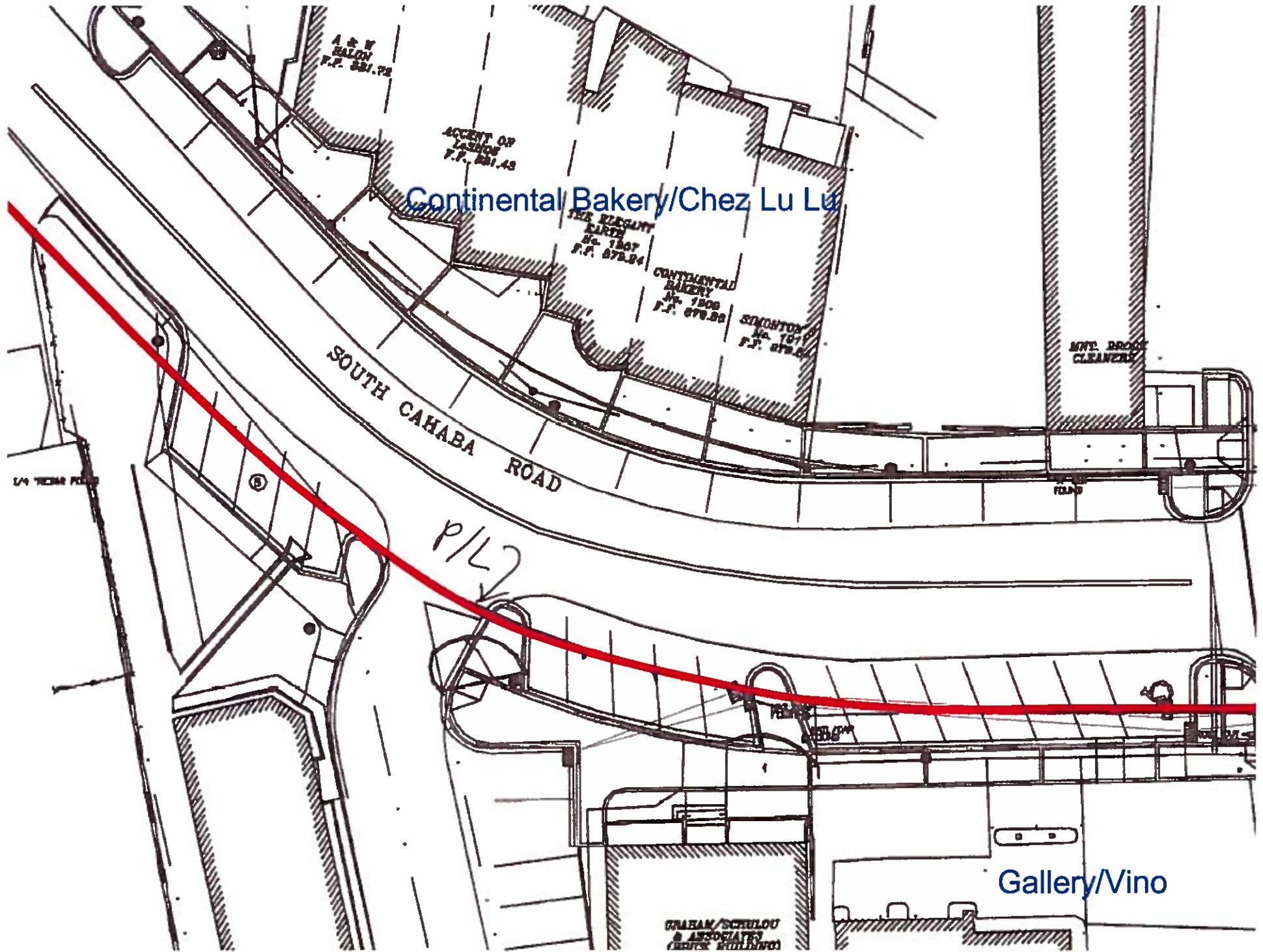
On April 27, 2015, the Council discussed the shortage of long-term parking for the employees of English Village. The discussion was about whether to convert the upper public lot from 2-hour to all-day parking for use by village employees. The council had a concern with the upper lot becoming saturated with employee parking, thereby putting a burden on patron parking. As an alternative, the council suggested returning the 2-hour public parking along Park Lane (south side of Little Hardware) to all-day parking, and asking 11 of the 12-14 Little Hardware employees to park along Park Lane instead of in the lower public lot, which is comprised of 32 all-day spaces.

During these discussions it was noted that the owner of the Little Hardware property (Mike Mouron) had initially asked the council to post 2-hour parking on Park Lane so that there would not be a conflict with over-night/long-term residential parking in the 11 public spaces along the south side of Little Hardware. (Council previously passed ORD 1913 (July 14, 2014) to post said public parking for a 2-hour limit). It was also discussed that, if this parking were returned to all-day parking, signs could perhaps be posted along Park Lane to limit parking to "Employees Only, No Overnight Parking."

Mike Mouron is opposed to such a posting and asks that the City post the 11 public spaces along Park Lane to "Little Hardware Customers and Employees Only," with the commitment that Little Hardware employees park in said spaces instead of the lower public lot. While this proposal might achieve the same goal set forth by the council at the last pre-meeting, it has not traditionally been the practice of the City to designate public street parking for a specific merchant (even when a portion of the public street parking is on private property). Mr. Mouron (in attached email) claims that since the parking spaces are partially on his private property, the City is obligated to obtain his permission for any change to the use of these parking spaces. However, public street parking that utilizes private property is not unique to Park Lane and occurs throughout English Village (see attached maps) and is also prevalent in the other villages.

Mr. Mouron also mentions (in attached email) that the Council had concurred (in previous minutes) that he should be able to control any parking on his property. Staff has reviewed all of the 2014 Council minutes (and listened to all audio recordings of council meetings) pertaining to this property (Tavern Restaurant, Little Hardware rezoning for accessory building, alterations in public r-o-w of Park Lane for LH entrance, and Park Lane public parking posted as 2-hour) and has found no commitment on the part of the Council to this effect. In the audio recording of the pre-meeting of March 3, 2014 (for the proposed Tavern Restaurant) there was some discussion of the Park Lane public parking being partially on the private property. Councilman Carl did concede that, in his opinion, if a survey were to show that the Park Lane public parking was on the private property then the owner might have some control, and specifically mentioned the possibility of the owner having the right to put parallel parking wholly on the private portion of the lot, along the south side of the building. However, in the same meeting it was noted that since a survey had not yet been presented to the council that it was a moot point until one had been proffered.

As may be seen on the attached map of the Little Hardware site, the majority of the public parking along Park Lane resides in the public right-of-way. Staff recommends that this parking be designated for employee use only, with no overnight or residential parking, and that a letter from the City be sent to residents of Park Lane, asking for their cooperation in this matter.



SOUTH CAHABA ROAD

Continental Bakery/Chez Lu Lu

Gallery/Vino

A & V
BALON
P.F. 881.78

ACCENT ON
LASHES
P.F. 881.48

THE ELEGANT
BIRTH
No. 1807
P.F. 878.84

CONTINENTAL
BAKERY
No. 1808
P.F. 878.88

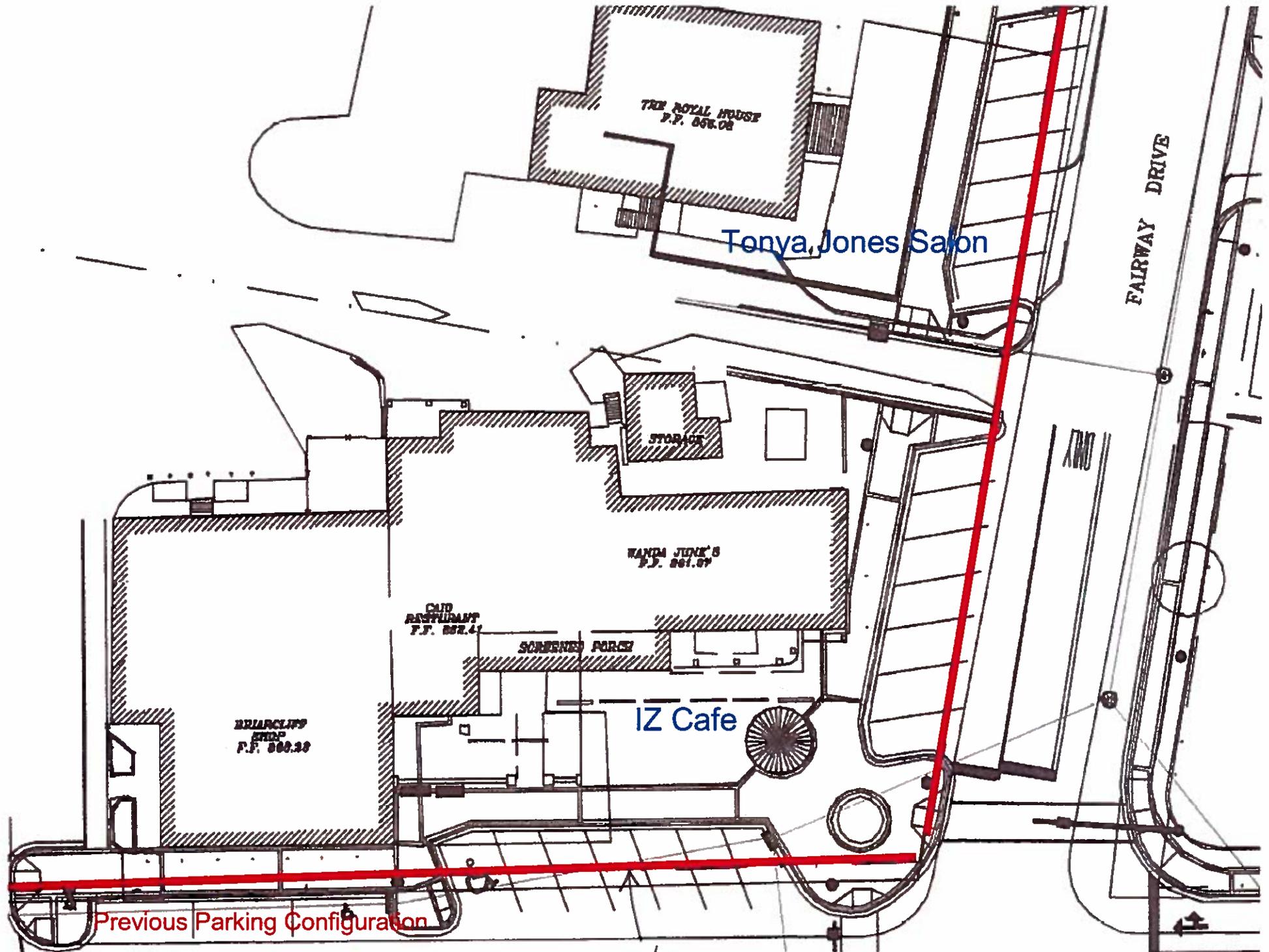
STANTON
No. 1811
P.F. 878.81

MWT. BROOK
CLEANERS

1/4 TRIMM FLOOR

P/L2

GRAHAM/SCHULOU
& ASSOCIATES
(ARCHITECTS)



CAHABA ROAD

6 NEW SPACES

Existing Parking Configuration

7/d

EXISTING SPACES

LP RELOCATED

IZ Cafe

EXISTING JOE MUG'S

EXISTING BAMBINELLI'S

Sherwin Williams

PROPOSED NEW BUILDING

POWER BOX

LP RELOCATED

1

2

3

4

5

6

7

8

9

10

11

12

13

14



Dana Hazen <hazend@mtnbrook.org>

RE: Parking on south side of Little Hardware

1 message

Michael A. Mouron <mmouron@capstonemail.com>

Mon, May 4, 2015 at 2:08 PM

To: Dana Hazen <hazend@mtnbrook.org>

Cc: Frank Davies <littlehdw@gmail.com>

Dana – the change to “Employee Parking” would be a change to the arrangement to which the Council already agreed/adopted and be potentially detrimental to Little Hardware’s business. Labeled as you suggest would serve to prevent LH customers from parking there, and would not prohibit employees of businesses other than LH to park in said spaces which would have -0- benefit to LH.

I do not know about the situations involving other parking in English Village which may be entirely in the right-of-way, but I do clearly recall one or more of the Council stating that if I owned a portion of the parking spaces on the southern side of LH that it was reasonable to label is as “Timed Parking” which if monitored would prevent the neighbors from parking over a long period of time (i.e. overnight).

I will be at the Meeting on the 11th and ask that Frank (copied) do so also. In summary, to make a material change to the parking arrangement to which the City agreed – and is in the minutes – that Frank thinks could harm his business and I think could harm the value of my property is unacceptable. I made an offer in the email attached below that accomplishes the “relocation” of Frank’s employees to the southern side of the building which seems to accomplish the stated objective. Given the number of employees Frank has, however, there will be little to no “additional” parking for employees of other businesses.

I will plan on seeing you on Monday the 11th.

Michael A. Mouron

Chairman

CAPSTONE REAL ESTATE INVESTMENTS, LLC

402 Office Park Drive

Suite 150

Birmingham, AL 35223

205.949.3848 Direct

205.936.6423 Cell

From: Dana Hazen [mailto:hazend@mtnbrook.org]
Sent: Monday, May 04, 2015 10:47 AM
To: Michael A. Mouron
Subject: Re: Parking on south side of Little Hardware

Hi Mike,

I realize that the parking along the south side of Little Hardware is very important to you and to Frank. And I think the only danger we run with making it long term parking is the potential use by residents along Park Lane. In talking to merchants in English Village, it appears that most either don't realize that the parking along Park Lane is public, or they don't know it's there at all.

As far as ownership of a portion of the public parking, it is not unique at all. I have reviewed a survey of the entire village and all of the street parking is about half on private property (some of it is entirely on private property - Fairway Drive in front of IZ all the way to the other side of the salon). This is also not unique to English Village... it occurs in all of the villages.

Due to the fact that much of the street parking in the villages does exist (at least in part) on private property, the City has historically been very reluctant to allow it to be labeled/designated for any one private use; if the City began to do that then it would have to do it for everyone, and the street parking would be eroded.

I think what the council would like to do is perhaps designate the spaces along the south side of Little Hardware for "employee parking

only; no overnight parking" and put the residents of Park Lane on notice (via a letter from the City to each home owner) asking them to respect the designated parking, as they expect to have their designated "residential parking only" sign respected.

I expect the council to discuss this at the pre-meeting on May 11. Start time for the pre-meeting will be set this Friday, so give me a call or send me an email on Monday, and I will let you know what time the pre-meeting will start so that you may attend and be a part of the discussion. Thanks...

On Tue, Apr 21, 2015 at 1:06 PM, Michael A. Mouron <mmouron@capstonemail.com> wrote:

Dana – what are your thoughts on my suggestion below? As stated in my earlier email, I think such an arrangement achieves the objective of “moving” the early arriving Little Hardware employees from the “lower Dreher lot” while not encumbering my property with non-Little Hardware parkers. Might a meeting with the City Council be appropriate? Please advise.

Michael A. Mouron

Chairman

CAPSTONE REAL ESTATE INVESTMENTS, LLC

402 Office Park Drive

Suite 150

Birmingham, AL 35223

205.949.3848 Direct

205.936.6423 Cell

From: Michael A. Mouron
Sent: Wednesday, April 15, 2015 7:14 PM
To: Dana Hazen
Subject: Re: Parking on south side of Little Hardware

Dana – unlike other parking options made available to the public in English Village – either customers and/or employees – I own a portion of the parking spaces in question. I may consider the following which I think

actually achieves the City's objectives while addressing my private ownership rights. I would agree to the parking along the southern side of Little Hardware – including my land – to be limited to "Little Hardware Customers and Employees". With this limitation Frank could "require" his employees to park in the subject spaces – thus eliminating about 12 of his employees from the "lower" parking lot and doing so before others start work – while not subjecting the parking spaces of which I own some of the land to use by persons non-beneficial to Little Hardware. Call me at your convenience to discuss. Mike

Sent from my iPhone

On Apr 15, 2015, at 4:14 PM, Dana Hazen <hazend@mtnbrook.org> wrote:

Mike,

I understand your concerns, and I am happy to discuss and, of course, keep you in the loop. I am unable to meet with you today or tomorrow (I am fully committed both days) and will be out of the office Friday - Wednesday. I will be back in the office Thursday and Friday April 23-24. The council *may* want to discuss this at its pre-meeting on Monday April 27. Not to say than any formal decision will be made that night (I don't think there is a huge rush).

At the last council meeting we discussed changing the upper lot to all-day parking, because we have received many complaints that the lower lot is full early in mornings and stays full all day. There simply is not enough employee parking in EV to meet the need.

There was a concern at the council level that by making the upper lot all-day parking that it would quickly become fully saturated with employees and put a burden on patrons.

Obviously there are a limited number of spaces in English Village and we all need to work together to utilize them as

best we can. The spaces along the south side of Little Hardware are very underutilized (with no more than 2-3 cars parked there on average weekday). The council mentioned returning those to all-day parking and asking the Little Hardware employees to park there instead of taking up 11-14 of the 32 spaces available to all employees in the lower lot. I relayed the original concern of yours to the council that the previous all-day parking along Park Lane may have been saturated with overnight residential parking from those living on Park Lane. It was suggested by the council that maybe we post the public parking along Park Lane for "employee parking only" and send a letter to all residents asking them to cooperate and leave those spaces available for commercial use.

I have to admit that with parking so scarce it is a shame to have those spaces along Park Lane underutilized. Patrons of the core of the village don't seem to know that the parking exists behind LH and are not using it. If we could keep the residents from parking there it would make sense to have the LH employees park there and better-share the all-day parking with others.

I have asked Frank to just make a conscious effort to stick his head outside 3-4 times over the course of the day in the next few weeks and gauge his parking. When I have counted the vacant private parking on the LH site it has averaged 17 vacant spaces. This has been on week days... I am sure it is more full on Saturdays. No one wants to put LH in a bind... we love having it in EV! That is why I have asked Frank to just do some counting and see what his comfort level is.

Let me know your thoughts... and if we are to discuss at the next council meeting I will let you know in advance.

Thanks...

On Wed, Apr 15, 2015 at 3:47 PM, Michael A. Mouron <mmouron@capstonemail.com> wrote:

Dana – I visited with Frank Davies at Little Hardware, and understand from him that there is a good bit of discussion about parking in English Village in general, and the parking on the south side of Little Hardware. As I am sure you recall, the commitment of the City was to “monitor” this parking so as to have it available for Little Hardware’s and other retail customers in English Village – that and the fact that I own a portion of the parking. Therefore, I am requesting if any change to such parking arrangements are being considered that I be notified in advance.

I am not insensitive to the lack of Employee Parking in English Village and fear it will get worse when/if the Dreher's develop the corner lots – and I want to be a good citizen/neighbor. That said, I do not want, however, to wake up one day and learn the City has unilaterally changed a commitment that impacts land I own. I hope you can appreciate my concern and my position.

Call if you would like to speak, or let me know and I will visit with you at City Hall. Thanks!

Michael A. Mouron

Chairman

CAPSTONE REAL ESTATE INVESTMENTS, LLC

402 Office Park Drive

Suite 150

Birmingham, AL 35223

205.949.3848 Direct

205.936.6423 Cell

–

Dana O. Hazen, MPA, AICP

ORDINANCE NO. _____

**AN ORDINANCE ESTABLISHING TIME RESTRICTIONS FOR THE
ON-STREET PUBLIC PARKING LOCATED AT 2117 CAHABA ROAD**

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

Section 1. The eleven (11) parking spaces located on Park Lane along the south side of property located at 2117 Cahaba Road (Little Hardware property) are hereby restricted to employee parking only, Monday through Friday between the hours of 8 a.m. and 5 p.m., with no overnight or residential parking.

Section 2. Any person violating the provisions of Section 1 of this ordinance shall, upon conviction thereof, be punished within the limits and as provided by Section 50-107 of the Code of the City of Mountain Brook.

ADOPTED: This 11th day of May, 2015.

Virginia C. Smith, Council President

APPROVED: This 11th day of May, 2015.

Lawrence T. Oden, Mayor

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 May 11, 2015, as same appears in the minutes of record of said meeting, and published by posting copies thereof on May ____, 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

Overton Park, 3020 Overton Road
The Invitation Place, 3150 Overton Road

Steven Boone, City Clerk



CITY OF MOUNTAIN BROOK

Dana O. Hazen, AICP
City Planner
56 Church Street
Mountain Brook, Alabama 35213
Telephone: 205/802-3821
Fax: 205.879.6913
hazend@mtnbrook.org
www.mtnbrook.org

DATE: May 7, 2015
TO: Mayor, City Council & City Manager
FROM: Dana Hazen, City Planner
RE: 15-minute Parking in Villages

Over the past few years the City has received requests from an increasing number of merchants asking for a 15-minute parking space for those uses whose patrons need a short-term “pick up” parking option. Such short-term spaces have been installed at the request of Ritch’s Pharmacy and Ousler’s (both in MB Village). These spaces are not “enforceable” from a ticketing standpoint, but have proven effective for the two merchants mentioned above. These spaces are not designated for any particular tenant, but are for use by the general public.

Merchants who have requested short-term parking are:

The Cook Store (MB Village)
White Room Bridal (MB Village)
Kay Cleaner (MB Village)
Olexa’s (MB Village)
Mountain Brook Cleaners (Crestline)
IZ Café (English Village)

A list of other potential locations:

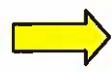
Mountain Brook Creamery (MB Village)
Berthon’s/Sneaky Pete’s (MB Village)
Olio (MB Village)
Green Door Vitamins/Village Framer (MB Village)
Table Matters/Another Broken Egg (MB Village)
Charlotte Woodson/Beverly Ruff 2 (MB Village)
Hassig Chiropractic (Crestline)
Taco Mama/Harbins (Crestline)
City Hall (Hoyt)

Each of the merchants on the second list has been contacted by the City and has indicated a strong desire for such short-term parking options in the vicinity of his/her perspective business. Also, staff has met with representatives from each of the three villages, and has polled others via email with the result of 100% support of those polled.

One short-term space along Hoyt has been added to the list of potential locations for use by those visiting City Hall for permits and licenses.

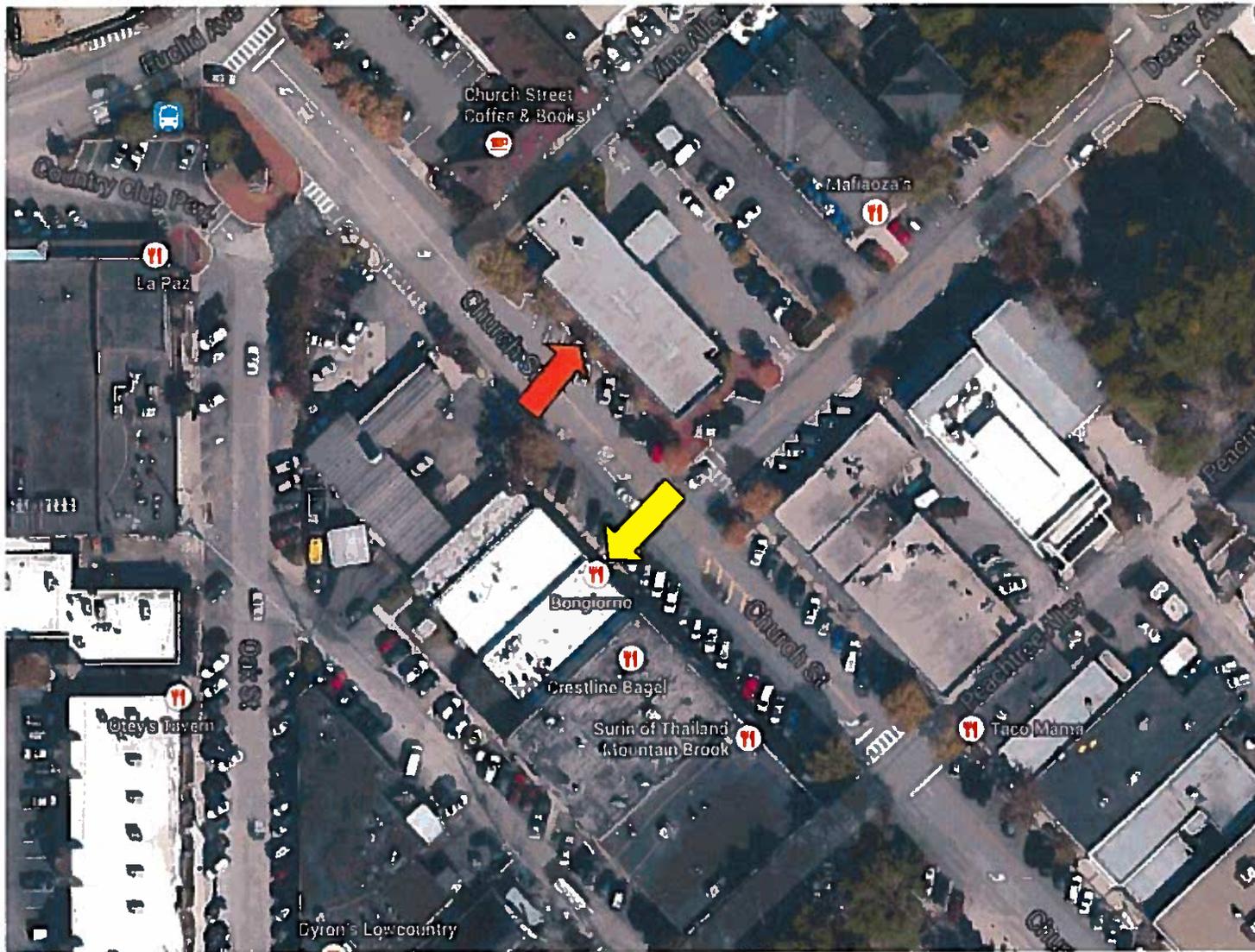
These two lists of 15-minute locations would put one short-term space on most blocks in the villages. Public Works has indicated that the cost of materials and installation for each sign would be \$75.00.



 Proposed

English Village





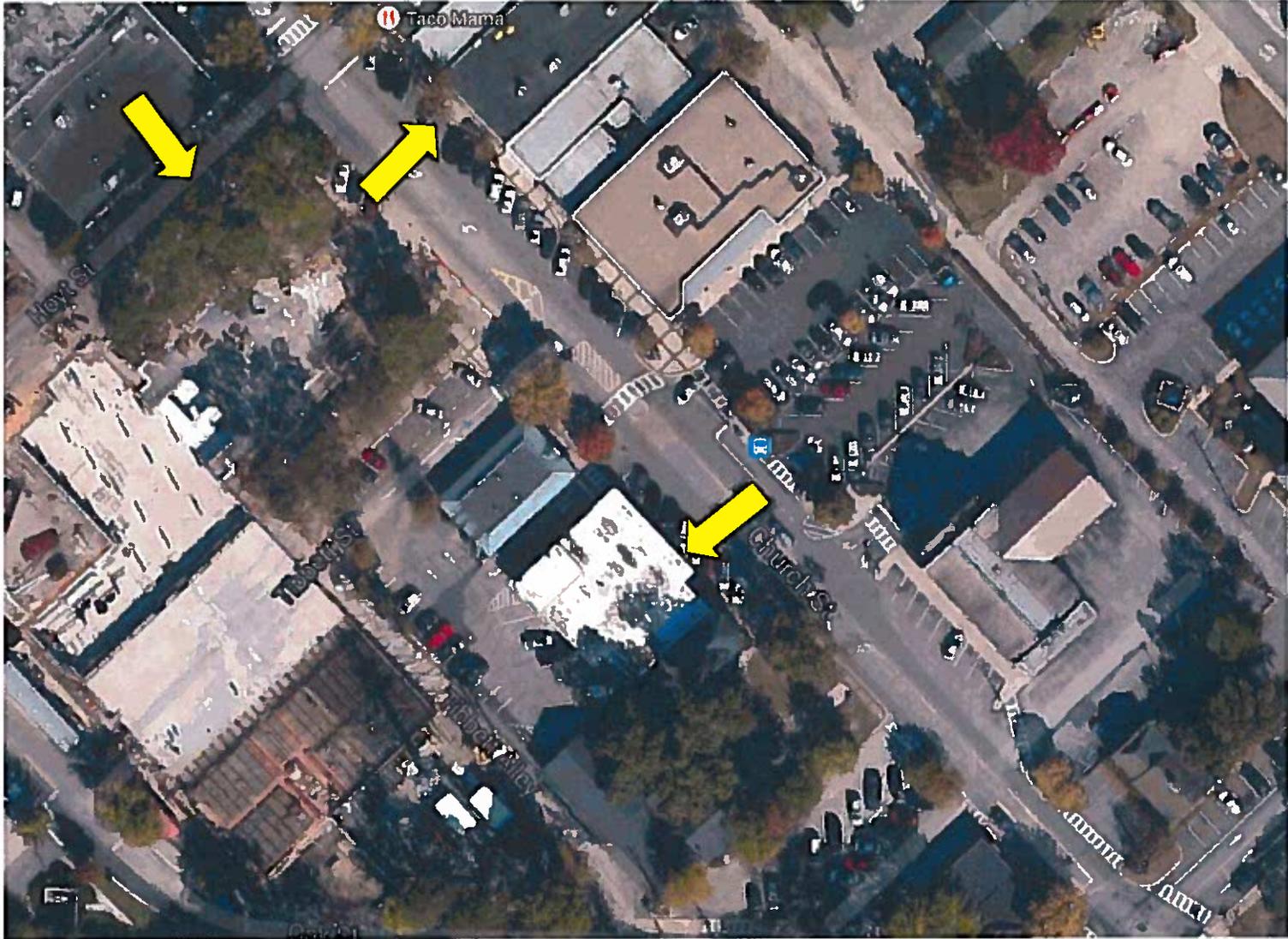
Proposed

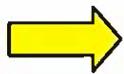


Existing (private for First Commercial)

Crestline (north end)

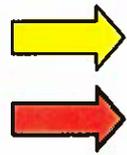
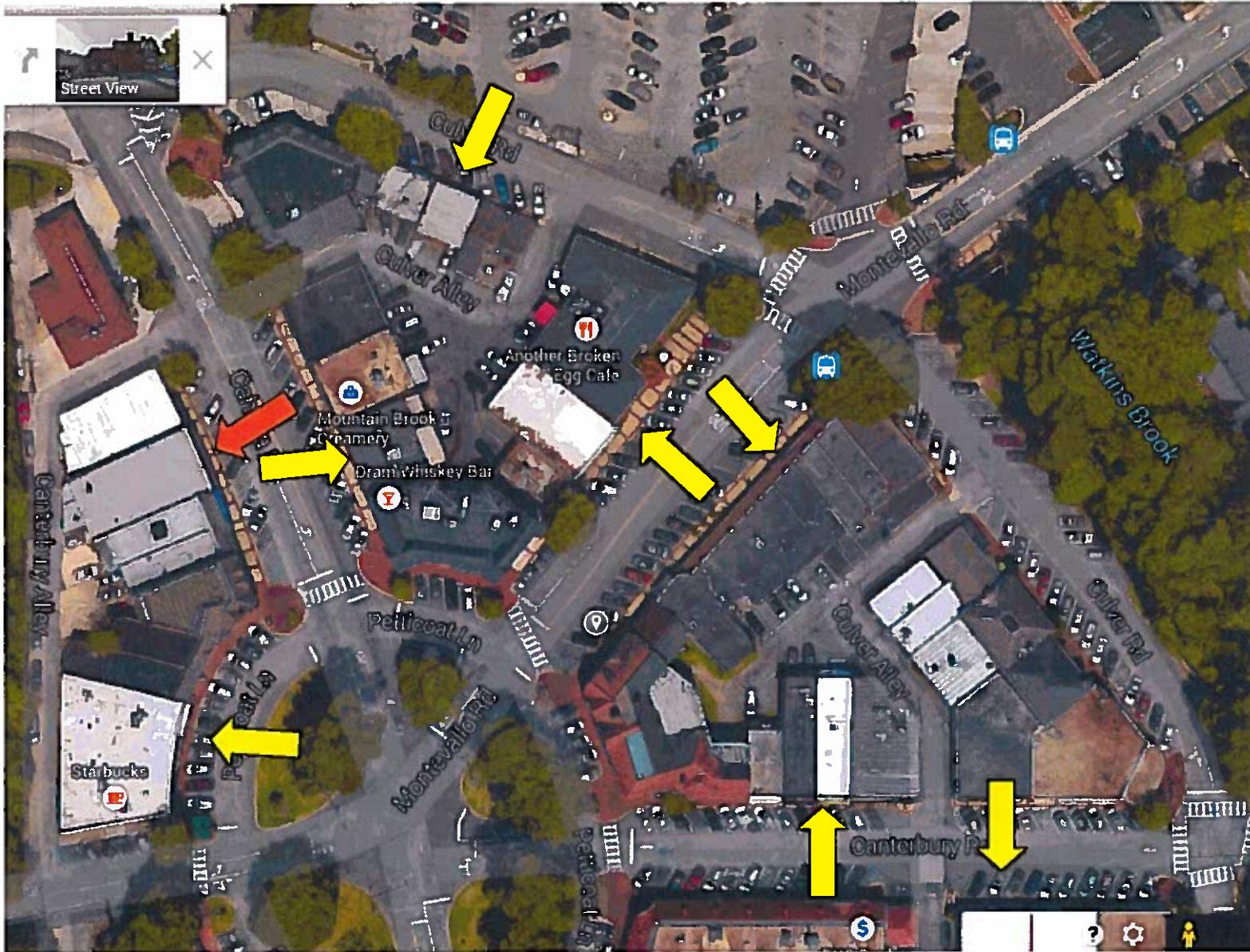




 Proposed

Crestline (south end)



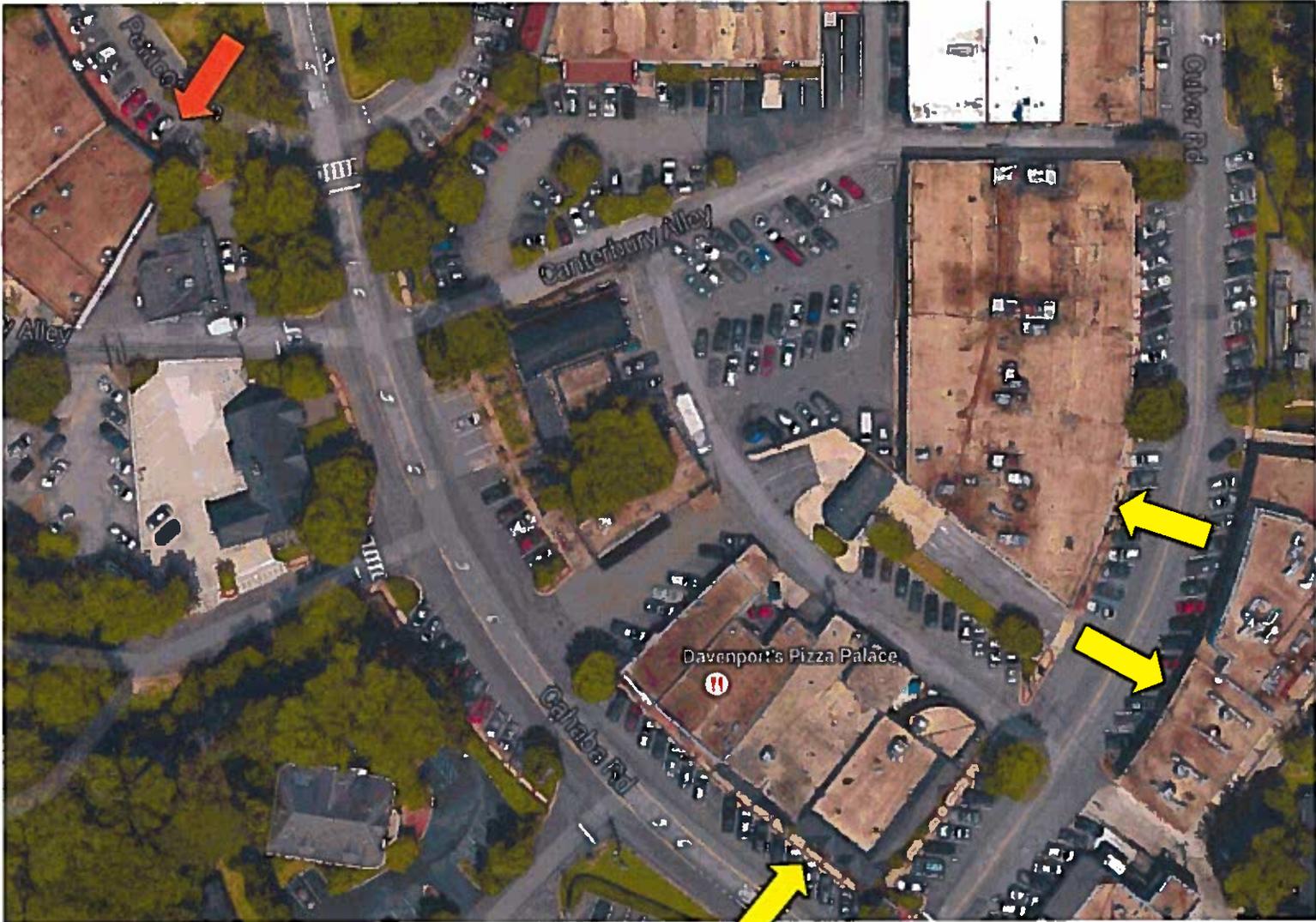


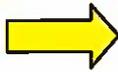
Proposed

Existing

MB Village (north end)





-  Proposed
-  Existing

MB Village (south end)





CITY OF MOUNTAIN BROOK

Dana O. Hazen, AICP
City Planner
56 Church Street
Mountain Brook, Alabama 35213
Telephone: 205/802-3821
Fax: 205.879.6913
hazend@mtnbrook.org
www.mtnbrook.org

DATE: May 7, 2015

TO: Mayor, City Council & City Manager

FROM: Dana Hazen, City Planner

RE: Increasing 2-hour parking to 3-hour and 4-hour parking in Villages

Staff has met with Chamber Representatives from each of the villages regarding time limits on public parking.

Mountain Brook Village is happy with the previous change from 2-hour to 4-hour parking;

English Village has requested 4-hour parking;

Crestline Village has requested 3-hour parking (citing for a reason that a patron could conceivably patronize all of the merchants in Crestline within a 3-hour period...that 4 hours is not needed in order to encourage multiple merchant shopping/dining).

Staff recommends these changes be implemented.

RESOLUTION NO. 2015-

BE IT RESOLVED by the City Council of the City of Mountain Brook, Alabama, that the City Manager is hereby authorized and directed to implement the following parking signage changes pursuant to Sec. 50-107 of the City Code:

1. With respect to Crestline Village, change all existing 2-hour parking signs to 3-hour parking signs.
2. With respect to English Village, change all existing 2-hour parking signs to 4-hour parking signs.

ADOPTED: This 11th day of May, 2015.

Council President

APPROVED: This 11th day of May, 2015.

Mayor

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 a resolution adopted by the City Council of the City of Mountain Brook at its regular meeting held on May 11, 2015, as same appears in the minutes of record of said meeting.

City Clerk

Finance Committee



November 17, 2014

City of Mountain Brook
P.O. Box 130009
Mountain Brook, Alabama 35213

Attention: Mr. Sam Gaston - City Manager

Regarding: Finance Committee Opening

Dear Mr. Gaston,

In reading the City of Mountain Brook website, I see that there is a current opening on the Finance Committee. I would be interested in serving on this committee if the opening has not already been filled.

I have been fortunate to have the opportunity to serve on several non-profit boards in various capacities including Finance and Investments as well as my experience in operating my own company for over 26 years. Hopefully these experiences would be relevant and useful in a public capacity. I have taken the liberty of attaching a copy of my resume' for your review.

I appreciate your consideration and the opportunity to serve my community.

Sincerely

A handwritten signature in black ink that reads "W. Craig Fravert". The signature is written in a cursive, flowing style.

W. Craig Fravert
3227 E. Briarcliff Road
Mountain Brook, Alabama 35223

W. Craig Fravert – Resume' & History

- Born – September 8th, 1956 to William Burton and Warren Auter Fravert, Louisville Kentucky.
- Lived in Columbus, Ohio from 1962 – 1974 graduating from Westland High School
- Attended the University of Alabama in Tuscaloosa and graduated from the University of Alabama in Birmingham (UAB) in 1980 with a degree in Marketing
 - Member of the Pi Kappa Alpha Fraternity - several leadership roles including Chapter President
 - Inducted into the Omicron Delta Kappa (ODK) Academic and Leadership Honor Society
 - Member of Who's Who Among Students in American Universities and Colleges
 - Member of the UAB Chapter of the American Marketing Association – Chapter Vice-President.
- Married - August 11th, 1984 to Cynthia Harlow Fravert, three children, Drew, Evan & Reid
- After working in the power generation field for several years, I began a career in the construction industry as a Project Manager for a Birmingham based electrical contractor. While there, I worked on the Galleria Mall & Winfrey Hotel project, at the time the largest single retail project ever built. After the completion of the Galleria project, I was the Senior Project Manager on the Compass Bank Administrative Office Building. At the time, this was one of the early data processing centers and required a complex power generation, uninterrupted power supply and computer cooling systems to support their operations.
- In 1988 purchased Fluorescent Maintenance & Sign Company in Birmingham, which eventually became Fravert Services, Inc. At the time of purchase Fluorescent Maintenance & Sign Company generated about 1 million dollars in annual sales. Today, Fravert Services is a multi-million dollar company and operates in seven southeastern states.
- Member of the Sunrise Rotary Club of Birmingham, 1989 - 2013, Paul Harris Fellow
- Member of the Rotary Club of Birmingham, 2014 -
- Member of the 1991 Class of the Birmingham Business Journal's Top 40 Under 40
- One of the founding members of the Junior Board at Gateway (formally Family & Child Services) from 1993 – 1995 and served as the first Junior Board President (1993-1994)
- Member of the Board at Gateway (formally Family & Child Service) since 1996 and served on numerous committees including Investment, Property & Grounds, Finance, Audit, Executive and served as Board Chairman from 2000-2002.
- Member of Associated Builders & Contractors, Board of Directors 2013 -

- Member of the Mountain Brook City Schools Foundation (2005 - 2014) and served on several committees including Program & Needs, Investment, Executive as well as Chairman from 2010 to 2012. During this period we oversaw the hiring of the Foundations first Development Director.
- Chosen to the 2014 Class of UAB Excellence in Business Top 25 Award Program. The program identifies and recognizes the success of UAB Alumni owned/operated businesses. Fravert Services, was also recognized as the 3rd fastest growing company in the 2014 class.
- Member of the Birmingham Business Alliance Entrepreneur's Roundtable 2014 -

Hobbies

- Working on old cars
- Playing golf
- Spending time with family and friends at our home at Smith Lake (current Board President of the Stoney Point Homeowners Association)

December 8, 2014

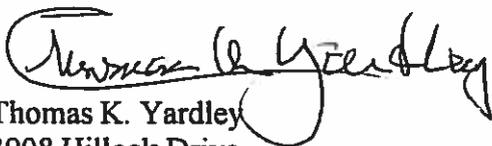
Mr. Sam Gaston
City Manager
City of Mountain Brook
56 Church Street
Mountain Brook, AL 35213

Dear Mr. Gaston

I am interested in serving on the Mountain Brook Finance Committee. I have been a resident of Mountain Brook for over 50 years. I am a retired investment banker and spent the majority of my career in the field of municipal finance, both in the underwriting of municipal bonds and advising municipalities.

If you have any questions, please contact Jack Martin.

Sincerely Yours,

A handwritten signature in black ink, appearing to read "Thomas K. Yardley". The signature is written in a cursive style with a large, looping initial "T".

Thomas K. Yardley
3908 Hillock Drive
Mountain Brook, AL, 35213

December 9, 2014

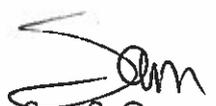
Thomas K. Yardley
3908 Hillock Drive
Mountain Brook, AL 35213

Dear Mr. Yardley:

Thank you for your interest in serving as a member on the Mountain Brook Finance Committee. I have forwarded your letter of interest to the Mayor, City Council and Finance Chairman for their consideration.

Again, thank you for your interest in our City government. If you have any questions, please contact me at 802-3800.

Sincerely,



Sam S. Gaston
City Manager

Cc: Lloyd Shelton – Chairman
Mayor/City Council



November 4, 2014

Sam Gaston
City Manager
City of Mountain Brook
56 Church Street
Mountain Brook, AL 35213

Dear Mr. Gaston,

My name is Paige Daniel and I would like to submit my name for consideration for the Finance Committee for the City of Mountain Brook. I am a lifelong resident of the city and thus I am deeply interested in the continued success of our city.

As you can see from my attached resume, I do have deep experience in the area of finance. I have 20 years of institutional investment expertise and have had the pleasure of serving on several finance and investment committees during my career.

I thank you in advance for the consideration and if I can answer any follow up questions please do not hesitate to contact me at 939-8308 (w) or pdaniel@highlandassoc.com

Sincerely,

Paige B. Daniel

Paige B. Daniel
2880 Hastings Road
Birmingham AL 35223
205-870-5879 (H)

PROFESSIONAL PROFILE

Highland Associates, Birmingham, AL August 2006- Present
Principal Shareholder

AmSouth Asset Management, Birmingham, AL November 2002- August 2006
Director of Alternative Strategies Group
Vice President

- Created current alternative investment platform which includes hedge funds, private equity, real estate and timber offerings
- Developed the equity derivatives platform for high net worth clients of AmSouth's Wealth Management Division
- Responsible for meeting annual goals on products that the Group offers
- Member of AmSouth's Asset Management Strategy Group
- Member of AmSouth's Due Diligence Committee
- Received Chairman's Performance Award in February of 2004

- **AmSouth Asset Management, Birmingham, AL** April 1999- November 2002
- Portfolio Manager
- Managed institutional and high net worth accounts totaling \$850 million
- Advised customers on asset allocation and different investment solutions

- **CIBC Oppenheimer, Atlanta, GA** January 1998- April 1999
- Financial Consultant
- Worked in a partnership within the Private Client Group
- Assisted high net worth clients with their investment needs
- Focused primarily on clients with large low basis equity concentrations and help designed risk management solutions to suit their needs

Quick and Reilly, Chicago IL February 1995- August 1996
Financial Consultant

- Licensed broker servicing the company's client base

- **Quick and Reilly, New York City, NY** June 1994- February 1995
- Completed company training program

Licenses: active Series 7, 63 and 65

EDUCATION

Georgia State University, Atlanta, GA December 1997
Master of Business Administration, Finance

Vanderbilt University, Nashville, TN June 1994
Bachelor of Arts, Economics
Minor concentration in Fine Arts

COMMUNITY INVOLVEMENT

Mountain Brook City Schools Foundation

- Board Member January 2012- present
- Investment Committee January 2012-present
- Investment Committee Chair May 2014-present
- Executive Committee May 2014-present

Rotary Club of Birmingham

- VP New Generations, 2010-2011 August 2009- present

YWCA

- Executive Committee January 2014-present
- VP of Finance January 2014-present
- Board Member January 2012-present
- Foundation Board Member November 2009- present
- Junior Board Member August 2005-May 2010

Symphony 30

- President, 2012 April 2007- October 2012
- Vice President, 2011
- Picnic Chair, 2010
- Picnic Co-Chair, 2009

Girls Scouts of Central Alabama

- Board Member May 2010- June 2013
- Finance Committee Chair May 2010- June 2013
- Finance Committee August 2009- June 2013

Parkinson's Association of Alabama

- Board Member September 2011-present



To: Sam Gaston, City Manager
From: Steven Boone
Subject: City mechanical equipment noise and aesthetics complaints
Date: April 21, 2015 (May 8 update)

As you are aware, 4–6 weeks ago Virginia received a complaint from Albert Tinsley about fan noise from the equipment yard behind the police department and about the unsightly appearance of the black-screened chain link fence around the equipment yard. I attended the on-site meeting with Virginia and Mr. Tinsley.

NOISE

During the meeting, we observed normal fan noise from the City's cooling tower and some metal-on-metal noise at start-up from one of the ATT mobile telephone equipment buildings. I contacted ATT about their fan motor. ATT stated that the noise was "normal" but agreed that the motor may have a bearing issue so they replaced it on March 26.

On April 10, the City's HVAC maintenance contractor reported to me that the one of the fan motors on the cooling tower is making a noise most likely due to a bearing issue. A part was ordered and repair was completed on April 21.

On April 29, Mr. Tinsley reported a loud noise coming from one of the cell tower HVAC fans. Earlier in that same week, he called dispatch to report an alarm noise emanating from the equipment yard. ATT Mobility dispatched a repair crew to tighten a loose fan blade (the same one replaced on March 26). Fan operation and noise level are now normal. The alarm came from the sally port gate. Once reported, police officials silenced the alarm. To date, police officials have been unable to replicate the cause of the alarm. This is the first known occurrence of this alarm since occupying the facility.

On April 30, Mr. Tinsley resent Virginia a June 2013 e-mail where he recorded decibel levels in and around his home. The noise levels recorded by Mr. Tinsley are consistent with noise levels recorded by Fire officials on June 6, 2013. From the tone of his e-mail, Mr. Tinsley is clearly disturbed by the [2013] recordings, however, it appears that such 47–65dB readings are considered "normal". For example, the Pre-Council room (unoccupied with only the air conditioner running) measures 60–65dB.

I am still waiting to hear from the City's HVAC maintenance contractor about the possibility of whether or not there exists any mechanical or other attachment that can be added to the City's chiller towers to reduce noise. However in my opinion, the residential HVAC units used by the cell tower providers are louder than the City's chiller fans (maybe because they are at ear level as opposed to 12-15 feet high).

AESTHETICS

Mr. Tinsely stated that he is displeased with the appearance of the equipment/cell tower compound. He further stated that the City's architect told him during construction that if he was unhappy with the compound, the City would implement corrective measures. He suggested a wooden fence similar to the one constructed along Oak Street.

I have obtained verbal permission from Crown Castle to construct and maintain a wooden fence (to be built in front of the existing chain link fence). I have also obtained a quote in the amount of \$4,462 for the construction of a 28-foot fence 10 to 12 feet tall (equal to the chain link fence).

The area between the chain link fence and curb is very narrow. Within this area is a holly (?) tree and some low bushes. I think a fence can be installed within the area without adversely affecting these plantings but we may need an opinion from the Arborist to confirm should the Council decide to proceed.

OBSERVATIONS/COMMENTS

1. The ATT fan noise at start-up is better (no more metal-on-metal sound)
2. The cooling tower fan noise issue reported April 10 has been resolved.
3. Fan noise from the City's cooling tower is noticeable from Mr. Tinsley's house. I informed Mr. Tinsley that the fan noise sounded normal to me and that relocating the equipment was not possible.
4. I stated that I would research the possibility of constructing a fence for the Council to consider. The stained wooded fence will likely look better than the black-screened chain link. It is also possible that the fence could muffle the fan noise somewhat.
5. Mr. Tinsley's home is largely screened from the equipment yard by a privet hedge. One must strain to see through the hedge row. The density of the hedge row does change with the seasons and is subject to trimming by City and utility workers. The hedge row is denser now than it was 4-6 weeks ago at the initial meeting. I see little value of the fence from an aesthetics view. However, the fence may be worth pursuing in an effort to muffle the noise and as a sign of the City's good faith attempt to address their appearance and noise concerns.
6. I am also researching whether there are any mechanical or attachment options that can be added to the cooling tower to reduce noise.
7. Decibel readings from within and around Mr. Tinsley's home appear to be in the normal range. It is likely that the fan noises are audible from Mr. Tinsley's home. It is obvious that Mr. Tinsley is frustrated (most likely due to the recent equipment malfunctions). His frustration appears to have increased his attentiveness to the compound.
8. Due to Mr. Tinsley's hedge buffer and the lack of complaints from passersby about the appearance of the compound, I do not recommend a wooden fence for aesthetics. However, such fence may still be justified from a noise buffering (or placebo) perspective.

TINSLEY

- 
- 62-63 dB One car drove by (S. BP. O.) and a few people talking and laughing on sidewalk along Oak Street
4. 60-62 dB (S. B. Y.)
60-62 dB One car drove by (S. B. Y.)

Sunday, June 23, 2013, 9:39PM, 77D, 74%H :

1. 47-49 dB (Inside W. C.)
2. 60-63 dB (Inside W. C. O.)
3. 62-64 dB (S. BP. O.)
4. 61-63 dB (S. B. Y.)

Sunday, June 23, 2013, 10:44PM, 76-75D, 74-78% H :

1. 45-49 dB (Inside W. C.)
2. 58-60 dB (Inside W. C. O.)
58-61 dB inside rear of house with back door open and screen door closed.
3. 60-61 dB (S. BP. O.)
4. 59-61 dB (S. B. Y.)

Monday, June 24, 2013, 4:53PM, 87D, 54%H :

1. 47-50 dB (Inside W. C.); Window Closed
2. 62-63 dB (Inside W. C. O.); Window Cracked Open
62-63dB One car drove by (Inside W. C. O.)
3. 61-64 dB (S. BP. O.); Sitting on back porch outside
4. 61-63 dB (S. B. Y.)
54-65 dB two cars drove by (S. B. Y.); Standing in backyard



Monday, June 24, 2013, 6:39PM, 82D, 64%H :

1. 47-49 dB (Inside W. C.)
2. 60-61 dB (Inside W. C. O.)
3. 62-64 dB (S. BP. O.)
4. 60-64 dB (S. B. Y.)
60-61dB One car drove by (S. B. Y.)

Tuesday, 6/25/2013, 10:55PM, 77D, 79%H :

1. 47-49 dB (Inside W. C.)
2. 60-62 dB (Inside W. C. O.)
3. 62-63 dB (S. BP. O.)
4. 62-64 dB (S. B. Y.)

Wednesday, 6/26/2013, 9:15PM, 82D, 62%H :

1. 47-50 dB (Inside W. C.)
2. 60-63 dB (Inside W. C. O.)
60-61 dB one car drove by (Inside W. C. O.)
3. 63-64 dB (S. BP. O.)
4. 61-63 dB (S. B. Y.)

Wednesday, 6/26/2013, 10:23PM, 80D, 68%H :

- 
1. 47-50 dB (Inside W. C.)
 2. 61-62 dB (Inside W. C. O.)
 3. 63-64 dB (S. BP. O.)
 4. 62-63 dB (S. B. Y.)

TINSLEY

62-63 dB One car drove by (S. B. Y.)

Virginia in looking at these numbers its louder sitting on my back porch than in the backyard by one or more dB and the car driving by is a wash in dB since its so loud in the back mechanical yard. Interestingly before they ever started the building of this new project I pre-warned the city & architect that my frame house is from the 1940's with single pane windows and the way they had this new mechanical yard shown my area; yard and house couldn't with stand all this noise. So I asked them to spread this equipment around the whole site like the old buildings had before & on the property like they had before tearing all this down. I even suggested putting some of this under ground since they were digging a huge basement anyway. The architect continued to say that it was going to be better than what was there before and hardly any new change in noise as before. The architect even came by my yard before the new water cooling tower was turned on and said that the four HVAC loud blow torch sound in cooler days was awful sounding from the street at my driveway.

Thank you,
Albert Tinsley, Realtor
[205-586-3180](tel:205-586-3180)
alberttinsley@hotmail.com

FIRE DEPT READINGS

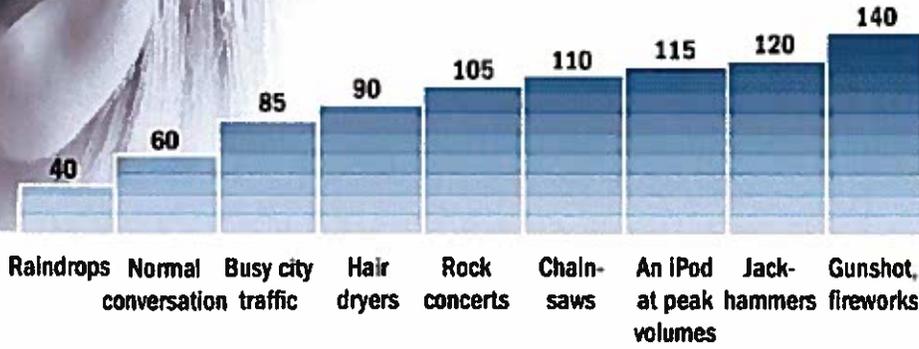
June 6, 2013

dB readings around City Hall

10:00 AM	Front of apparatus bays	50 to 70 dB A
10:03 AM	Oak and Tibbett (Up Tibbett)	50 to 54 dB A
10:04 AM	Oak and Tibbett (Up Oak)	54 dB A (No traffic) 68 dB A (oncoming truck)
10:05 AM	Oak at Parking entrance	51 to 63 dB A
10:07 AM	Oak at Sallyport entrance	63 dB A (2 of 3 fans running)
10:12 AM	3776 Jackson Blvd (Up Jackson)	53 to 56 dB A
10:15 AM	3776 Jackson Blvd (Rear)	58 to 63 dB A (toward equipment yard)
11:06 AM	3776 Jackson Blvd	65 dB A (air conditioner at residence)
11:06 AM	3760 East Fairway Drive	62 dB A (air conditioner next door)
8:30 PM	3776 Jackson Blvd	53 dB A (on street)
8:32 PM	Oak Street	57 dB A (at hedges behind 3776)
8:33 PM	Oak Street	60 dB A (at fence around equip. yard)

How Loud Is Too Loud?

Noise-induced hearing damage is related to the duration and volume of exposure. Government research suggests the safe exposure limit is 85 decibels for eight hours a day. Some common decibel levels:



Sources: dangerousdecibels.org, WSJ research

Overbrook Road at Mountain Brook Parkway/Pine Ridge Road

The intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road was studied to determine the feasibility of both non-widening and widening improvements to alleviate traffic congestion at the intersection. The general layout of the intersection is shown in Figure 1. The intersection is characterized by long queues of vehicles, particularly during the a.m. peak period. Traffic is heavily influenced at the intersection by both traffic generated by Mountain Brook Junior High School, located on Overbrook Road approximately 2,300 feet north of the intersection and the fact that Mountain Brook Parkway serves as a direct connection for commuter traffic to U.S. Highway 280, U.S. Highway 31, and Alabama Highway 149.



Figure 1. Study Area Map

Existing Intersection Turning Movement Traffic Counts

Existing intersection turning movement traffic counts were conducted at the intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road on Thursday to Friday, March 12 to 13, 2015 by Traffic Data, LLC on behalf of Skipper Consulting, Inc. The intersection turning movement traffic count data is included in Appendix. The a.m., afternoon school, and p.m. peak hour traffic counts are depicted in Figure 2.

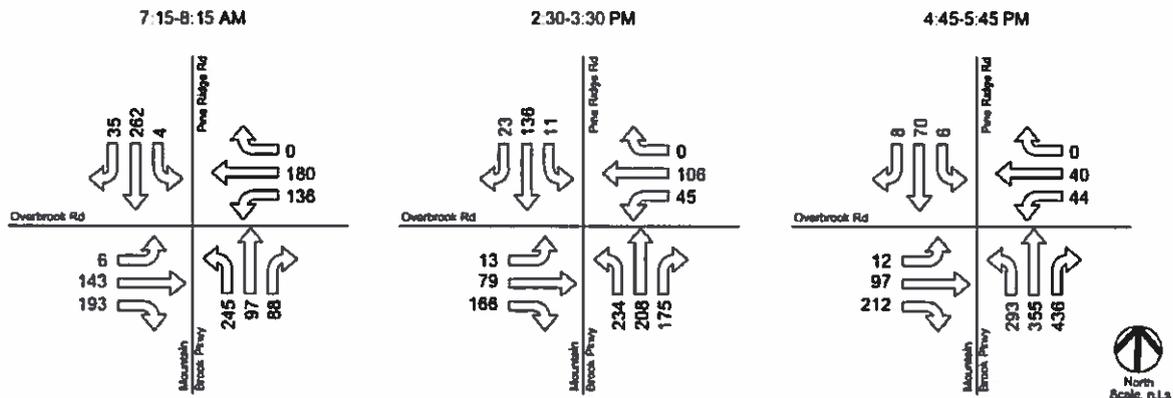


Figure 2. Existing Intersection Turning Movement Traffic Counts

Crash History

Crash information for the intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road was provided by the City of Mountain Brook Police Department for the years 2012, 2013, and 2014. During the three year period, a total of nine crashes were reported at the intersection. Figure 3 presents the crash diagram for the intersection.

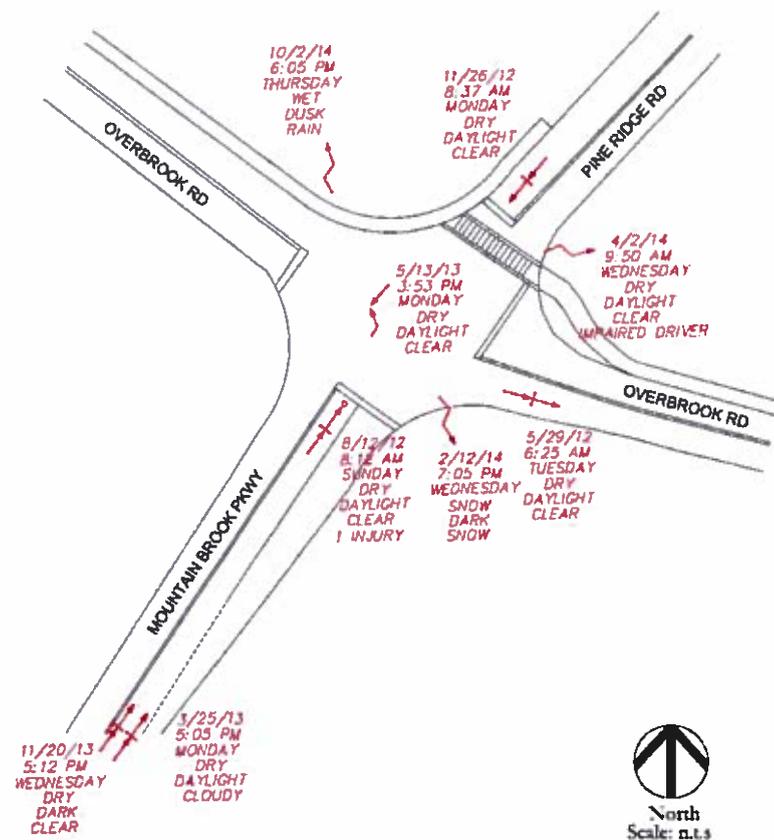


Figure 3. Crash History

Existing Traffic Signal Operating Plan

The existing traffic signal is operated by a four-phase Transyt 1880EL controller. All four phases are active, as are two overlaps. The phasing is as follows:

Phase 1	Mountain Brook Parkway northbound left turn
Phase 2	Pine Ridge Road southbound
Phase 3	Overbrook Road westbound left turn
Phase 4	Overbrook Road eastbound
Overlap-A	Mountain Brook Parkway northbound through (Phases 1+2)
Overlap-B	Overbrook Road westbound through (Phases 3+4)

Phase 3 (Overbrook Road westbound left turn) is omitted by time-of-day, and is only permitted on weekdays from 6:30 a.m. to 9:00 a.m.

The intersection is pre-timed, that is, there is no vehicle detection on any movement, and the controller is programmed for maximum recall on all four phases.

The existing traffic signal operating plan is shown in Figure 4, and the existing traffic signal programming is shown in Table 1.

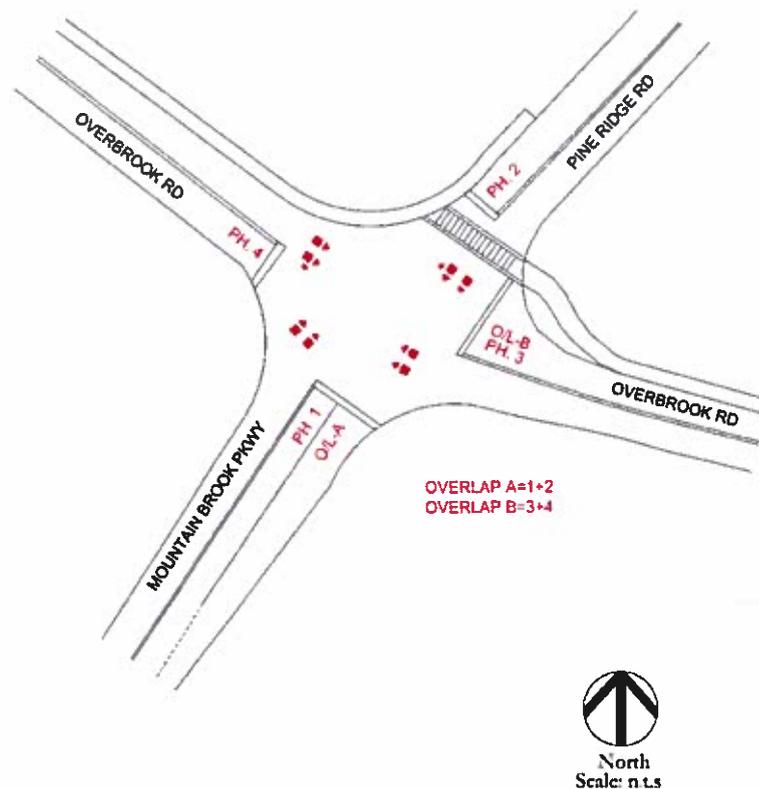


Figure 4. Existing Traffic Signal Operating Plan

Table 1. Existing Traffic Signal Controller Programming

	1	2	3	4
Min Green	4	6	4	6
Passage	4	4	4	4
Yellow	4	4	4	4
All Red	2	2	2	2
Max Green 1	13	35	13	22
Max Green 2	10	35	10	15
Recall	Max	Max	Max	Max

Observations

Observations of traffic flow at the intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road were conducted by Skipper Consulting, Inc. on Thursday, April 30, 2015 from 7:10 a.m. to 8:10 a.m. Specific items noted in the observations were queue lengths, lack of queue clearance on phase green, time of beginning and ending of congestion, and possible improvements to mitigate congestion.

AM Peak Period Observations

Failure of queues to clear on Overbrook Road eastbound began at 7:15 a.m. and extended until 8:09 a.m. Failure of queues to clear on Overbrook Road westbound began at 7:26 a.m. and extended until 7:58 a.m. These two approaches reflect the most severe congestion during the a.m. peak period. Between 7:32 a.m. and 7:52 a.m., the queues on Overbrook Road eastbound and westbound extended beyond the ability to observe; both queues were in excess of 30-35 vehicles in length.

On Mountain Brook Parkway northbound, the queue of vehicles turning left onto Overbrook Road routinely extended beyond the taper for the through/right turn lane. Maximum queues of 13-15 vehicles were noted, and occasional queue failures to clear on green were also noted.

On Pine Ridge Road southbound, the maximum queue of vehicles was 20 vehicles. There was only queue failure to clear on green noted.

Existing Intersection Capacity Analysis

Existing peak 15 minute period intersection capacity analyses were performed for the intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road using the method of analysis included in the 2010 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service "A" (highest quality of service) to a level of service "F" (jammed conditions). As a general rule, operation at a level of service "C" or better is desirable, with a level of service "D" considered as acceptable during peak periods of traffic flow. The existing peak 15 minute period intersection capacity analyses are included in Appendix B and are summarized in Table 2. Measures of effectiveness documented included levels of service, control delay, and 95th percentile queue lengths,

Table 2. Existing Intersection Capacity Analysis and Queue Calculations

Approach	Movement	AM Peak			Aft. School Peak			PM Peak		
		LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Overbrook Rd Eastbound	Left-Through-Right	F	91	480'	D	48	375'	D	39	305'
Overbrook Rd Westbound	Left-Through-Right	F	120	450'	D	40	200'	C	31	105'
Mountain Brook Parkway Northbound	Left	D	43	290'	B	11	100'	B	10	110'
	Through-Right	B	14	100'	A	9	145'	B	17	480'
	Overall approach	C	32		A	9		B	15	
Pine Ridge Rd Southbound	Left-Through-Right	D	42	490'	B	19	145'	B	16	75'
Overall intersection		E	66		C	25		C	22	

Note: Delay is expressed in average seconds per vehicle

Physical Constraints to Construction

It is evident from the results of the peak period intersection capacity analyses and the observations conducted during the a.m. peak period that physical construction improvements are needed at the intersection of Overbrook Road at Mountain Brook Parkway. The improvements which would clearly be beneficial would include:

- Construction of a right turn lane on Overbrook Road eastbound
- Construction of a left turn lane on Overbrook Road westbound
- Extension of the through-right lane on Mountain Brook Parkway northbound

However, existing physical structures and geographic features at the intersection make any of the widening improvements listed above unfeasible. These limiting constraints include:

- Presence of historically significant stone walls in all four quadrants of the intersection;
- A two lane historically significant bridge structure on Overbrook Road westbound; and
- Proximity of the Shades Creek stream bank to the edge of Mountain Brook Parkway northbound

Pictures of these constraints are included on the following page. As a result of these constraints, all recommended improvements for the intersection are non-widening in nature.



Recommended Improvements

The following is a list of recommended improvements for the intersection of Overbrook Road at Mountain Brook Parkway/Pine Ridge Road:

1. Install vehicle detection for all lanes at the intersection. The detection zones should be 6 feet wide by 50 feet long and located at the stop line. A technology which does not involve extensive sawcutting of the pavement and routing multiple wires to controller is recommended, which could include:
 - Video detection cameras;
 - Magnetometer sensors (Sensys); or
 - Radar detection
2. As part of the vehicle detection, implement a queuing detector for Phase 3 (the westbound left turn on Overbrook Road). This queuing detector should be a 6 foot by 20 foot zone located approximately 100 feet in advance of the stop line and should activate Phase 3 after a delay of at least 20 seconds.

3. Install pedestrian signals and pushbuttons for the pedestrian crossing which operates in conjunction with Phase 4.
4. Install a new traffic signal controller which has the capability to implement a Dynamic Maximum Green program. The proposed initial controller programming is shown in Table 3. Timings would need to be adjusted in the field based on observations after implementation.

Table 3. Proposed Traffic Signal Controller Programming

	1	2	3	4
Min Green	4	6	4	6
Passage	2	4	2	4
Yellow	3.5	4	3.5	4
All Red	1	2	1	2
Max Green 1	13	22	13	22
Max Green 2	10	35	10	15
Walk				4
FDW				10
Recall	None	Min	None	None
Dynamic Max Green	25	35	25	35
Dynamic Step	5	5	5	5

Note: changes are highlighted in yellow

Cost Estimate

The cost to implement the recommended improvements is as follows:

Intersection Detection System	\$40,000
Pedestrian Signals and Pushbuttons	\$12,000
New Controller	\$ 2,000
Engineering	<u>\$ 6,000</u>
Total	\$60,000

Funding Sources

The only feasible funding source for the proposed improvements is local funding.

Appendix A

Intersection Turning Movement Traffic Counts

TRAFFIC DATA, LLC

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

Mountain Brook, AL

File Name : mountainbrook03
Site Code : 00000000
Start Date : 03/12/2015
Page No : 1

Groups Printed: 1 - Unshifted

Start Time	PINE RIDGE RD Southbound				OVERBROOK RD Westbound				MOUNTAIN BROOK PKWY Northbound				OVERBROOK RD Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
04:00 PM	0	40	3	0	12	11	0	0	49	64	44	0	0	11	50	0	284
04:15 PM	1	18	0	0	14	6	0	0	85	51	71	0	1	27	70	0	324
04:30 PM	1	44	0	0	14	2	1	0	70	68	104	0	1	15	53	0	373
04:45 PM	1	25	1	20	10	8	0	20	77	79	105	0	4	18	42	0	410
Total	3	127	4	20	50	27	1	20	261	262	324	0	6	71	215	0	1391
05:00 PM	1	20	4	0	10	7	0	0	70	82	98	0	1	20	41	0	352
05:15 PM	1	9	3	0	13	16	0	0	67	84	120	0	3	26	62	0	404
05:30 PM	3	16	0	0	11	9	0	0	79	110	115	0	4	33	67	0	447
05:45 PM	2	14	2	0	13	6	0	0	61	51	61	0	2	19	51	0	282
Total	7	59	9	0	47	38	0	0	277	327	392	0	10	98	221	0	1485
07:00 AM	1	26	3	0	28	19	0	0	53	14	11	0	0	15	47	0	217
07:15 AM	0	35	8	0	30	32	0	0	55	24	23	0	0	29	54	0	290
07:30 AM	0	69	10	0	32	69	0	0	93	24	30	0	1	47	46	0	420
07:45 AM	1	115	13	0	35	60	0	0	57	29	20	0	4	42	38	0	414
Total	2	245	34	0	125	180	0	0	258	91	84	0	5	133	184	0	1341
08:00 AM	3	43	4	0	39	19	0	0	40	20	15	0	1	25	56	0	265
08:15 AM	1	53	3	0	24	8	0	0	55	23	22	0	1	6	62	0	258
08:30 AM	3	44	1	0	30	8	0	0	54	29	20	0	5	8	50	0	250
08:45 AM	1	41	0	0	26	10	0	0	68	26	19	0	3	6	76	0	276
Total	8	181	8	0	119	43	0	0	217	98	76	0	10	45	244	0	1049
02:30 PM	0	24	3	0	10	24	0	0	48	42	33	0	1	9	50	0	244
02:45 PM	0	30	8	0	15	37	0	0	74	51	40	0	1	6	42	0	304
Total	0	54	11	0	25	61	0	0	122	93	73	0	2	15	92	0	548
03:00 PM	3	35	8	0	7	31	0	0	64	52	46	0	3	13	36	0	298
03:15 PM	8	47	4	0	13	14	0	0	48	63	58	0	8	51	38	0	350
Grand Total	31	748	78	20	366	394	1	20	1247	986	1051	0	44	426	1030	0	6462
Apprch %	3.5	85.3	8.9	2.3	48.2	49.2	0.1	2.5	36.0	30.0	32.0	0.0	2.9	28.4	86.7	0.0	
Total %	0.5	11.6	1.2	0.3	6.0	6.1	0.0	0.3	19.3	15.3	16.3	0.0	0.7	6.6	15.9	0.0	

Start Time	PINE RIDGE RD Southbound					OVERBROOK RD Westbound					MOUNTAIN BROOK PKWY Northbound					OVERBROOK RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection																					
04:45 PM																					
Volume	6	70	8	20	104	44	40	0	20	104	293	355	436	0	1084	12	97	212	0	321	1813
Percent	6.8	67.3	7.7	19.2		42.3	38.5	0.0	19.2		27.0	32.7	40.2	0.0		3.7	30.2	66.0	0.0		
05:30 PM																					
Volume	3	16	0	0	19	11	9	0	0	20	79	110	115	0	304	4	33	67	0	104	447
Peak Factor																					0.902
High Int.																					
04:45 PM						04:45 PM					05:30 PM					05:30 PM					
Volume	1	25	1	20	47	10	8	0	20	38	79	110	115	0	304	4	33	67	0	104	
Peak Factor	0.653					0.684					0.891					0.772					

TRAFFIC DATA, LLC

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

File Name : mountainbrook03
Site Code : 00000000
Start Date : 03/12/2015
Page No : 2

Start Time	PINE RIDGE RD Southbound					OVERBROOK RD Westbound					MOUNTAIN BROOK PKWY Northbound					OVERBROOK RD Eastbound					Int. Total
	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
By Approach	04:00 PM					04:45 PM					04:45 PM					05:00 PM					
Volume	3	127	4	20	154	44	40	0	20	104	293	355	438	0	1084	10	98	221	0	329	
Percent	1.9	82.5	2.6	13.0		42.3	38.5	0.0	19.2		27.0	32.7	40.2	0.0		3.0	29.8	67.2	0.0		
High Int. Volume	04:45 PM					04:45 PM					05:30 PM					05:30 PM					
Volume	1	25	1	20	47	10	8	0	20	38	79	110	116	0	304	4	33	67	0	104	
Peak Factor	0.819					0.694					0.891					0.791					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	4	282	35	0	301	138	180	0	0	316	245	97	88	0	430	6	143	193	0	342	1389
Percent	1.3	87.0	11.6	0.0		43.0	57.0	0.0	0.0		57.0	22.6	20.5	0.0		1.8	41.8	56.4	0.0		
07:30 Volume	0	69	10	0	79	32	69	0	0	101	93	24	30	0	147	1	47	45	0	93	420
Peak Factor	0.827																				
High Int. Volume	07:45 AM					07:30 AM					07:30 AM					07:30 AM					
Volume	1	115	13	0	129	32	60	0	0	101	93	24	30	0	147	1	47	45	0	93	
Peak Factor	0.683					0.782					0.731					0.919					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
By Approach	07:30 AM					07:15 AM					07:00 AM					07:15 AM					
Volume	5	280	30	0	315	138	180	0	0	316	258	91	84	0	433	6	143	193	0	342	
Percent	1.6	88.9	9.5	0.0		43.0	57.0	0.0	0.0		59.6	21.0	19.4	0.0		1.8	41.8	56.4	0.0		
High Int. Volume	07:45 AM					07:30 AM					07:30 AM					07:30 AM					
Volume	1	115	13	0	129	32	69	0	0	101	93	24	30	0	147	1	47	45	0	93	
Peak Factor	0.610					0.782					0.736					0.919					

Appendix B

Intersection Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis
1: Overbrook Rd & Pine Ridge Rd

Existing AM
4/30/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.93			1.00		1.00	0.92			0.99	
Flt Protected		1.00			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1762			1866		1805	1755			1872	
Flt Permitted		0.97			0.29		0.26	1.00			0.99	
Satd. Flow (perm)		1720			543		488	1755			1858	
Volume (vph)	16	188	224	156	276	0	372	116	120	12	460	52
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	188	224	156	276	0	372	116	120	12	460	52
RTOR Reduction (vph)	0	37	0	0	0	0	0	35	0	0	4	0
Lane Group Flow (vph)	0	391	0	0	432	0	372	201	0	0	520	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			D.P+P			D.P+P				Perm	
Protected Phases		4		3	3 4		1	1 2				2
Permitted Phases	4			4			2				2	
Actuated Green, G (s)		22.0			35.0		48.0	54.0				35.0
Effective Green, g (s)		24.0			39.0		52.0	56.0				37.0
Actuated g/C Ratio		0.22			0.36		0.49	0.52				0.35
Clearance Time (s)		6.0					6.0					6.0
Lane Grp Cap (vph)		386			383		422	919				642
v/s Ratio Prot					c0.16		c0.12	0.11				
v/s Ratio Perm		0.23			c0.25		c0.31					0.28
v/c Ratio		1.01			1.13		0.88	0.22				0.81
Uniform Delay, d1		41.5			34.0		21.0	13.7				31.8
Progression Factor		1.00			1.00		1.00	1.00				1.00
Incremental Delay, d2		49.0			85.5		22.4	0.5				10.6
Delay (s)		90.5			119.5		43.3	14.3				42.4
Level of Service		F			F		D	B				D
Approach Delay (s)		90.5			119.5			32.1				42.4
Approach LOS		F			F			C				D
Intersection Summary												
HCM Average Control Delay			66.3				HCM Level of Service				E	
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			107.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			109.6%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

Existing AM
4/30/2015

1: Overbrook Rd & Pine Ridge Rd

	→	←	↙	↑	↓
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	428	432	372	236	524
Act Effct Green (s)	24.0	39.0	52.0	56.0	37.0
Actuated g/C Ratio	0.22	0.36	0.49	0.52	0.35
v/c Ratio	1.01	1.13	0.88	0.25	0.81
Control Delay	84.4	112.8	40.7	10.2	43.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	84.4	112.8	40.7	10.2	43.0
LOS	F	F	D	B	D
Approach Delay	84.4	112.8		28.9	43.0
Approach LOS	F	F		C	D
Queue Length 50th (ft)	~273	~253	147	56	320
Queue Length 95th (ft)	#479	#452	#291	102	#491
Internal Link Dist (ft)	2320	2896		2992	2352
Turn Bay Length (ft)			80		
Base Capacity (vph)	423	383	422	954	646
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.01	1.13	0.88	0.25	0.81

Intersection Summary

Cycle Length: 107

Actuated Cycle Length: 107

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 62.7

Intersection LOS: E

Intersection Capacity Utilization 109.6%

ICU Level of Service H

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Overbrook Rd & Pine Ridge Rd

Existing Aft School
4/30/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.94			1.00		1.00	0.93			0.98	
Flt Protected		1.00			0.99		0.95	1.00			0.99	
Satd. Flow (prot)		1776			1873		1805	1766			1856	
Flt Permitted		0.97			0.60		0.55	1.00			0.91	
Satd. Flow (perm)		1725			1133		1047	1766			1700	
Volume (vph)	32	204	200	60	148	0	296	252	224	32	188	32
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	32	204	200	60	148	0	296	252	224	32	188	32
RTOR Reduction (vph)	0	35	0	0	0	0	0	36	0	0	6	0
Lane Group Flow (vph)	0	401	0	0	208	0	296	440	0	0	246	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm			D.P+P		Perm				
Protected Phases		4			4		1	1 2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		22.0			22.0		48.0	54.0			35.0	
Effective Green, g (s)		24.0			24.0		52.0	56.0			37.0	
Actuated g/C Ratio		0.27			0.27		0.59	0.64			0.42	
Clearance Time (s)		6.0			6.0		6.0				6.0	
Lane Grp Cap (vph)		470			309		748	1124			715	
v/s Ratio Prot							0.07	c0.25				
v/s Ratio Perm		c0.23			0.18		0.17				0.14	
v/c Ratio		0.85			0.67		0.40	0.39			0.34	
Uniform Delay, d1		30.3			28.5		9.2	7.7			17.3	
Progression Factor		1.00			1.00		1.00	1.00			1.00	
Incremental Delay, d2		17.6			11.2		1.6	1.0			1.3	
Delay (s)		47.9			39.7		10.7	8.8			18.6	
Level of Service		D			D		B	A			B	
Approach Delay (s)		47.9			39.7			9.5			18.6	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM Average Control Delay			24.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			88.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			77.9%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

Existing Aft School

1: Overbrook Rd & Pine Ridge Rd

4/30/2015

	→	←	↙	↑	↓
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	436	208	296	476	252
Act Effct Green (s)	24.0	24.0	52.0	56.0	37.0
Actuated g/C Ratio	0.27	0.27	0.59	0.64	0.42
v/c Ratio	0.86	0.67	0.40	0.41	0.35
Control Delay	46.0	41.1	8.8	7.2	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	41.1	8.8	7.2	18.3
LOS	D	D	A	A	B
Approach Delay	46.0	41.1		7.9	18.3
Approach LOS	D	D		A	B
Queue Length 50th (ft)	207	103	64	87	88
Queue Length 95th (ft)	#375	#198	102	145	147
Internal Link Dist (ft)	2320	2896		2992	2352
Turn Bay Length (ft)			80		
Base Capacity (vph)	505	309	748	1160	721
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.67	0.40	0.41	0.35

Intersection Summary

Cycle Length: 88

Actuated Cycle Length: 88

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 23.6

Intersection LOS: C

Intersection Capacity Utilization 77.9%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Overbrook Rd & Pine Ridge Rd

Existing PM
 4/30/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+		+	+			+	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.91			1.00		1.00	0.92			0.98	
Flt Protected		1.00			0.98		0.95	1.00			1.00	
Satd. Flow (prot)		1731			1858		1805	1751			1859	
Flt Permitted		0.99			0.54		0.68	1.00			0.91	
Satd. Flow (perm)		1713			1033		1296	1751			1703	
Volume (vph)	16	132	268	52	64	0	316	440	480	12	100	16
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	132	268	52	64	0	316	440	480	12	100	16
RTOR Reduction (vph)	0	74	0	0	0	0	0	45	0	0	6	0
Lane Group Flow (vph)	0	342	0	0	116	0	316	875	0	0	122	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm		D.P+P		Perm					
Protected Phases		4			4		1	12				2
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		22.0			22.0		48.0	54.0				35.0
Effective Green, g (s)		24.0			24.0		52.0	56.0				37.0
Actuated g/C Ratio		0.27			0.27		0.59	0.64				0.42
Clearance Time (s)		6.0			6.0		6.0					6.0
Lane Grp Cap (vph)		467			282		853	1114				716
v/s Ratio Prot							0.06	c0.50				
v/s Ratio Perm		c0.20			0.11		0.16					0.07
v/c Ratio		0.73			0.41		0.37	0.79				0.17
Uniform Delay, d1		29.1			26.2		9.0	11.6				15.9
Progression Factor		1.00			1.00		1.00	1.00				1.00
Incremental Delay, d2		9.7			4.4		1.2	5.6				0.5
Delay (s)		38.8			30.6		10.2	17.2				16.4
Level of Service		D			C		B	B				B
Approach Delay (s)		38.8			30.6			15.4				16.4
Approach LOS		D			C			B				B
Intersection Summary												
HCM Average Control Delay			21.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			88.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			88.4%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

Existing PM

1: Overbrook Rd & Pine Ridge Rd

4/30/2015

	→	←	↙	↑	↓
Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	416	116	316	920	128
Act Effct Green (s)	24.0	24.0	52.0	56.0	37.0
Actuated g/C Ratio	0.27	0.27	0.59	0.64	0.42
v/c Ratio	0.77	0.41	0.37	0.79	0.18
Control Delay	33.1	31.6	8.6	16.4	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	31.6	8.6	16.4	15.5
LOS	C	C	A	B	B
Approach Delay	33.1	31.6		14.4	15.5
Approach LOS	C	C		B	B
Queue Length 50th (ft)	162	53	69	292	40
Queue Length 95th (ft)	#303	104	109	479	76
Internal Link Dist (ft)	2320	2896		2992	2352
Turn Bay Length (ft)			80		
Base Capacity (vph)	541	282	853	1160	722
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.41	0.37	0.79	0.18

Intersection Summary

Cycle Length: 88

Actuated Cycle Length: 88

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green

Control Type: Pretimed

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.6

Intersection LOS: B

Intersection Capacity Utilization 88.4%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Montevallo Road at Overbrook Road

The intersection of Montevallo Road at Overbrook Road was examined to determine the scope of both non-widening and widening projects which could alleviate existing traffic congestion experienced at the intersection. The general study area for the analysis is shown in Figure 1.



Figure 1. Site Location Map

In the vicinity of the intersection, Montevallo Road is a two lane urban minor arterial roadway with a posted speed limit of 30 miles per hour. Overbrook Road is a two lane local roadway with a posted speed limit of 30 miles per hour. The intersection of Montevallo Road at Overbrook Road is controlled by a traffic signal. Traffic conditions at the intersection are significantly influenced by the presence of Mountain Brook Junior High School, located on Overbrook Road approximately 1,100 feet south of Montevallo Road.

Existing Intersection Turning Movement Traffic Counts

An existing intersection turning movement traffic count was performed at the intersection of Montevallo Road at Overbrook Road on Thursday to Friday, March 12 to 13, 2015, during the hours of 7:00 to 9:00 a.m., 2:30 to 3:30 p.m., and 4:00 to 6:00 p.m., by Traffic Data, LLC on behalf of Skipper Consulting, Inc. The traffic count data is included in Appendix A. Peak hour turning movement traffic volumes are illustrated in Figure 2.

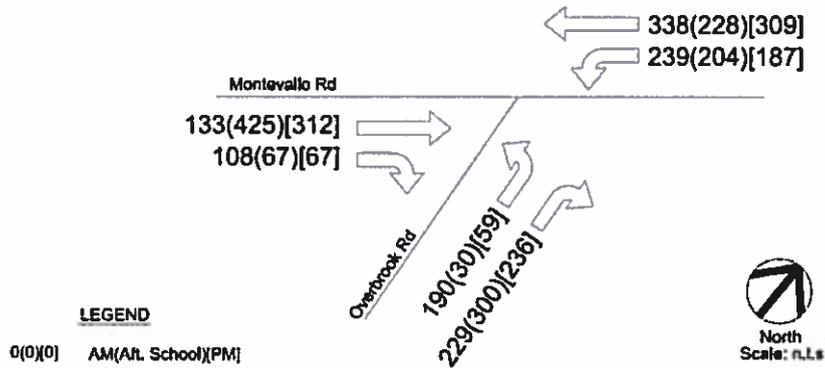


Figure 2. Existing Intersection Turning Movement Traffic Counts

Existing Traffic Signal Phasing and Timing

The existing traffic signal operates with a leading westbound protective-permissive arrow for Montevally Road (Phase 1 + Overlap A), main street through movements on Montevally Road (Phase 2) and the side street movement (Phase 4). There is a pedestrian phase associated with Phase 2 for a pedestrian crossing of Overbrook Road. The existing traffic signal operating plan is shown in Figure 3. The existing traffic signal programming chart is shown in Table 1.

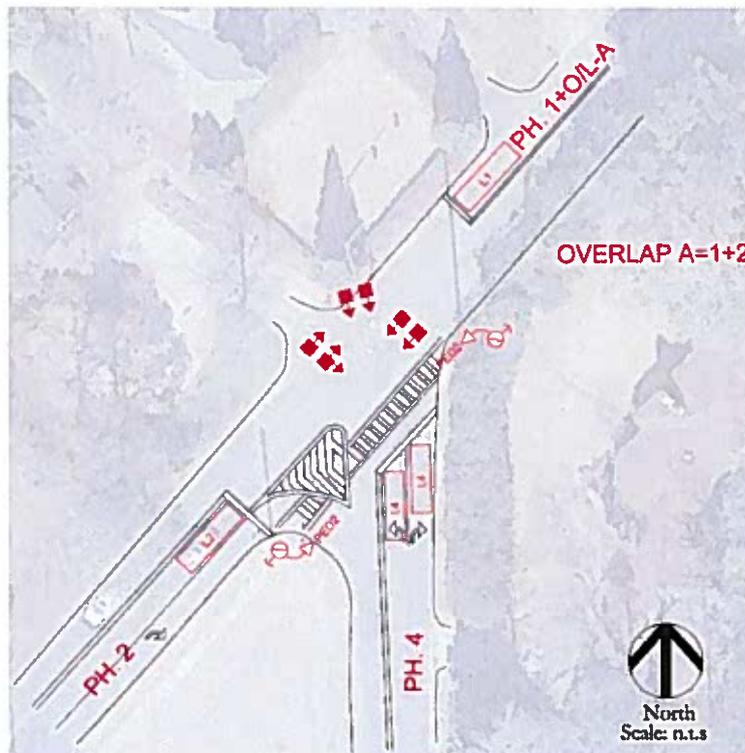


Figure 3. Existing Traffic Signal Operating Plan

Table 1. Existing Traffic Signal Controller Programming

	1	2	3	4
Min. Green	5	20		8
Passage	5	5		5
Max. Green 1	20	40		35
Max. Green 2	20	40		35
Yellow	4	4		4
All Red	1	1		1
Walk		10		
Don't Walk		10		
Recall		Min.		
Non-Lock	X			X
Detector Switch	2			

Existing Intersection Capacity Analysis and Queue Calculations

Existing peak hour intersection capacity analyses and queue calculations were performed for the intersection of Montevallo Road at Overbrook Road using the methods of analysis contained in the 2010 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service "A" (highest quality of service) to a level of service "F" (jammed conditions). As a general rule, operation at a level of service "C" or better is desirable, with a level of service "D" considered acceptable during the peak hours of traffic flow. The results of the intersection capacity analyses and queue calculations are included in Appendix B and are summarized in Table 2.

Table 2. Existing Intersection Capacity Analysis and Queue Calculations

Approach	Movement	AM Peak			Aft. School Peak			PM Peak		
		LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Montevallo Road Eastbound	Through	B	17	150'	B	17	285'	B	14	355'
	Right	B	16	110'	B	14	130'	B	11	120'
	Overall approach	B	17		B	16		B	14	
Montevallo Road Westbound	Left-Through	B	11	430'	B	10	485'	A	7	435'
Overbrook Road Northbound	Left	C	26	550'	C	24	295'	C	30	180'
	Right	C	27	55'	C	26	55'	C	30	55'
	Overall approach	C	26		C	25		C	30	
Overall Intersection		B	18		B	17		B	16	

Note: Delay is expressed in average seconds per vehicle

Crash History

Crash information for the intersection of Montevallo Road at Overbrook was provided by the City of Mountain Brook Police Department for 2012, 2013, and 2014. During the period, there were five crashes related to the intersection of Montevallo Road at Overbrook Road. All five crashes were rear-end crashes, with three of the crashes occurring on Montevallo Road eastbound and the other two crashes on Montevallo Road westbound. A crash diagram is provided in Figure 4.

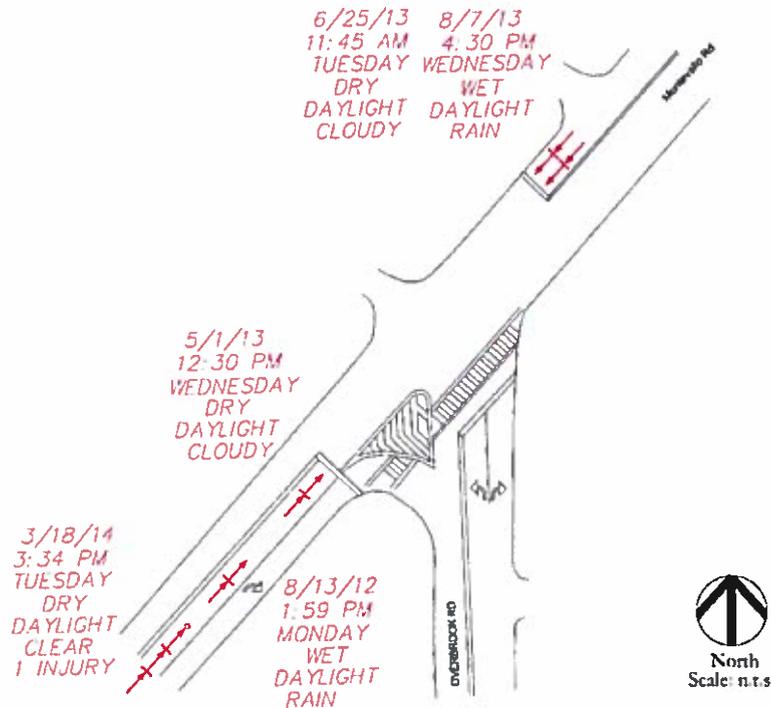


Figure 4. Crash History

Observations

Observations of traffic flow at the intersection of Montevallo Road at Overbrook Road were performed on Thursday, April 9 and Monday April 13, 2015 by Skipper Consulting, Inc. Observations were conducted from 7:15 to 8:00 a.m., 2:55 to 3:35 p.m., and 4:45 to 5:45 p.m. The findings of the observations are discussed below.

AM Peak Period Observations

- The maximum queue of northbound left turning vehicles on Overbrook Road was 9 vehicles, which would require queue storage of approximately 200 feet. There is currently available left turn storage of approximately 50 feet, sufficient for 2 vehicles. Once the third left turning vehicle queues, vehicles desiring to turn right are blocked. This situation prevailed from 7:23 a.m. to 8:00 a.m.
- The maximum queue of eastbound through vehicles Montevallo Road was 6 vehicles. Clearing this queue requires approximately 15 seconds of green time.
- The green time for the westbound left + through movement is short by approximately 10 seconds.

Afternoon School Peak Period Observations

- The maximum queue of northbound left turning vehicles on Overbrook Road was 7 vehicles. The ability for vehicles to turn right onto Montevallo Road was blocked from 2:58 p.m. until 3:22 p.m.
- Vehicles turning left from Montevallo Road westbound onto Overbrook Road conflicted frequently with vehicles turning right from Montevallo Road eastbound. It appears that the left turning drivers may assume that the right turning vehicles have a YIELD sign.
- Traffic operations at the intersection were significantly impacted by vehicles queued on Montevallo Road eastbound, backing up from the signal at Church Street through the intersection of Overbrook Road. This situation prevailed from 3:17 p.m. until 3:32 p.m. It appears that traffic at the intersection of Montevallo Road at Overbrook Road would operate in a satisfactory manner if it was not adversely impacted by traffic backing up from the Church Street intersection.

PM Peak Period Observations

- Phase 1 (the westbound left turn + through movement) has limited demand and needs much less green time than it is allotted.
- Traffic operations at the intersection were significantly impacted by vehicles queued on Montevallo Road eastbound, backing up from the signal at Church Street through the intersection of Overbrook Road. This situation prevailed from 5:09 p.m. until 5:45 p.m. It appears that traffic at the intersection of Montevallo Road at Overbrook Road would operate in a satisfactory manner if it was not adversely impacted by traffic backing up from the Church Street intersection.

Recommended Improvements - Short-Term

During the a.m. peak period, there is an opportunity to provide immediate improvement to the westbound traffic flow on Montevallo Road, which is to use a time-of-day maximum green 2 program to increase the amount of green time on Phase 1 (the westbound left+through movement) by decreasing a corresponding amount of green time on Phase 2 (the eastbound + westbound through movements). Phase 1 is currently programmed with 20 seconds of green time and Phase 2 is currently programmed with 40 seconds of green time. It is recommended that during the a.m. peak period, these values be reprogrammed using a time-of-day control to allow 40 seconds of green time on Phase 1 and 20 seconds of green time on phase 2. The new programming chart is shown in Table 3.

The existing traffic signal equipment at this intersection is capable of implementing the proposed timing changes. There would be no additional costs incurred by the City to implement this recommendation.

The effectiveness of the proposed improvement was tested by capacity analysis and queue analysis techniques. The results of the intersection capacity analyses and queue calculations with short-term improvements are included in Appendix C and are summarized in Table 4.

Table 3. Proposed Traffic Signal Controller Programming

	1	2	3	4
Min. Green	5	20		8
Passage	5	5		5
Max. Green 1	20	40		35
Max. Green 2	40	20		35
Yellow	4	4		4
All Red	1	1		1
Walk		10		
Don't Walk		10		
Recall		Min.		
Non-Lock	X			X
Detector Switch	2			

Max. Green 2 active weekdays from 7:25 a.m. to 8:00 a.m.

Modified values are indicated with a yellow highlight

Table 4. Intersection Capacity Analysis and Queue Calculations for Short-Term Improvements

Approach	Movement	AM Peak - Existing			AM Peak - with Short-Term Improvements		
		LOS	Delay	Queue	LOS	Delay	Queue
Montevallo Road Eastbound	Through	B	17	150'	B	19	190'
	Right	B	16	110'	B	18	100'
	Overall approach	B	17		B	19	
Montevallo Road Westbound	Left-Through	B	11	430'	B	11	395'
Overbrook Road Northbound	Left	C	26	550'	C	27	495'
	Right	C	27	55'	C	27	55'
	Overall approach	C	26		C	27	
Overall intersection		B	18		B	19	

Note: Delay is expressed in average seconds per vehicle

Recommended Improvements - Long-Term

Two potential improvements were examined for long-term widening solutions for the intersection of Montevallo Road at Overbrook Road based on the results of the analyses and observations conducted for this study:

1. Construction of a left turn lane on Montevallo Road westbound
2. Extension of the right turn lane on Overbrook Road northbound

These improvements are discussed in the following sections of this report.

Proposed Left Turn Lane on Montevallo Road

In order to determine if a left turn lane is warranted on Montevallo Road westbound, the existing a.m. peak hour traffic volumes (worst case scenario) were analyzed using the left turn warrant analysis methodology contained in the National Cooperative Highway Research Project (NCHRP) Report 457. The results of this analysis are depicted in Figure 5, and indicate a left turn lane is warranted on Montevallo Road westbound.

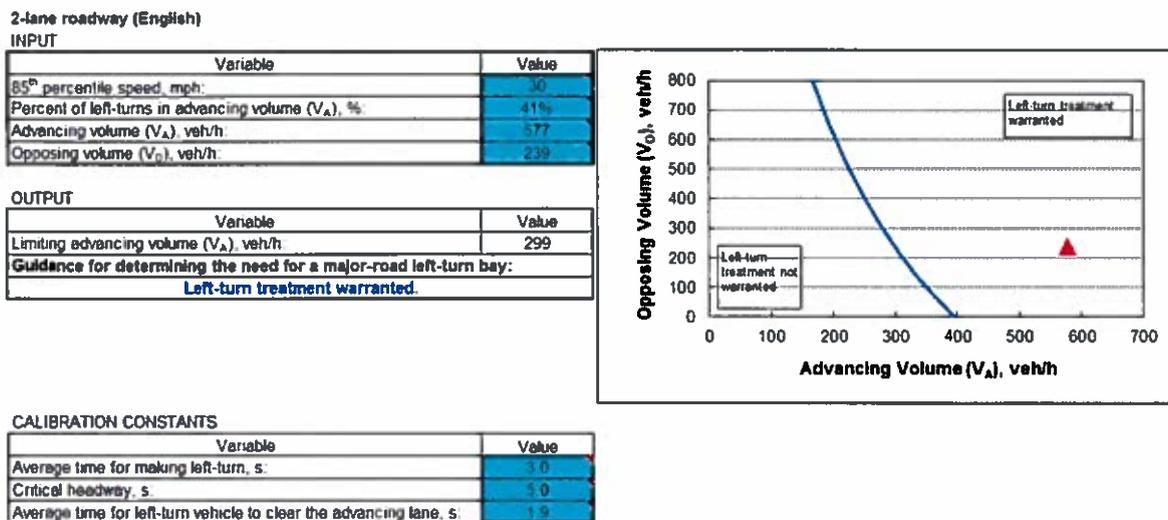


Figure 5. Left Turn Lane Warrant Analysis

Seeing that a left turn lane is warranted, the first consideration given to the construction of a left turn lane on Montevallo Road westbound was the availability of right-of-way and the impact to the adjacent homes. In order to estimate these impacts, a preliminary design was developed assuming symmetrical widening around the centerline using 11 foot wide lanes. A 100 foot long turn bay and 100 foot long taper into the turn bay were used. The preliminary design is shown in Figure 6.

An examination of Figure 6 reveals the following constraints:

1. There are existing improvements which are off the right-of-way in the quadrant of the intersection occupied by Mountain Brook Baptist Church. The proposed widening would encroach farther into the church property in this quadrant.
2. There is an offset in the right-of-way on the northwest side of the Montevallo Road. Beginning at this offset and extending to the north, the required widening would come to within 2 feet of the right-of-way line.
3. The proposed widening would impact the frontage of 9 homes along Montevallo Road.

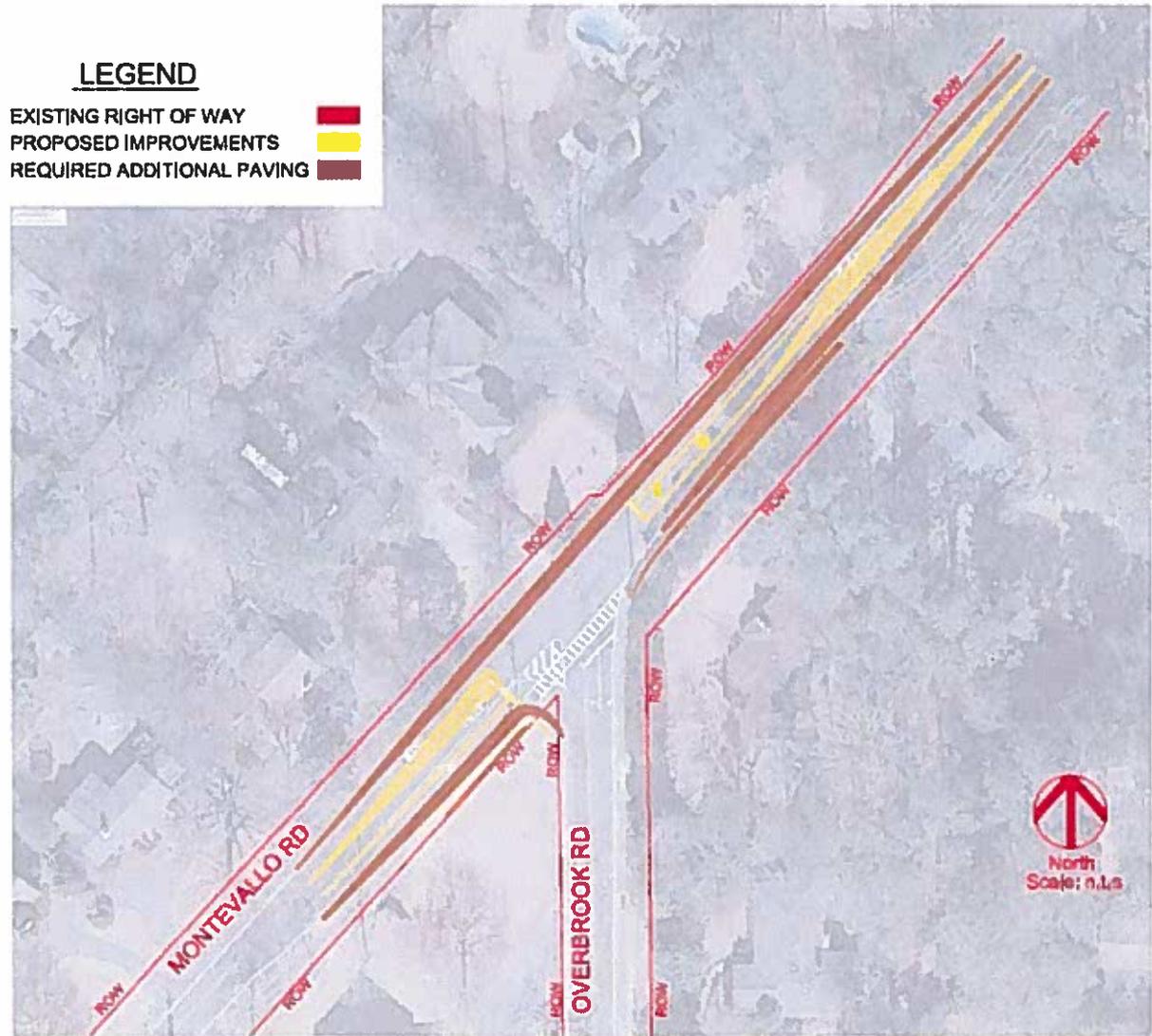
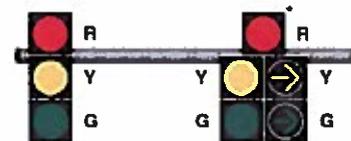


Figure 6. Preliminary Design of Left Turn Lane on Montevallo Road

Proposed Right Turn Lane Extension on Overbrook Road

The need for extension of the right turn lane on Overbrook Road northbound approaching Montevallo Road was noted in observations of traffic flow at the intersection. If the left turn storage on Overbrook Road was capable of stacking the entire left turn demand, then traffic desiring to turn right from Overbrook Road onto Montevallo Road eastbound could turn right during both Phase 4 (Overbrook Road green) and Phase 1 (Montevallo Road westbound left turn). The signal could be modified to have an overlap right turn arrow for Overbrook Road which would show a green arrow during both Phase 4 and Phase 1 (see illustration to the right), and the green time on Overbrook Road could be decreased to the maximum green time required to serve only the left turns from Overbrook Road onto Montevallo Road westbound. This reduction in green time for Phase 4 would help improve traffic on Montevallo Road since the Montevallo Road traffic would experience a decrease in red time each signal cycle.



In order to provide sufficient stacking for the left turning traffic, the left turn lane on Overbrook Road will need to be extended approximately 150 feet to provide a total of 200 feet of storage. In addition, a taper section will be needed to transition from two lanes to three lanes. A 100 foot taper was used for the preliminary design. Lane widths of 10 feet for the left turn lane and 10 feet for the right turn lane were used in the design. The preliminary design for the right turn lane on Overbrook Road is shown in Figure 7. The basis of design to provide the additional width of paving for the proposed extension of the right turn lane can be described as follows:

- The existing 4 foot sidewalk would be shifted to the east 2 feet so that it would be flush against the existing utility poles.
- The proposed valley gutter would be constructed flush with the relocated sidewalk, eliminating the 3 foot wide green space between the sidewalk and the valley gutter.
- Approximately 30 feet of asphalt surface would then be available for use as three 30 foot travel lanes.

The following constraints were noted in developing the conceptual plan shown in Figure 7:

1. There is an existing sewer line with manholes which would need to be relocated.
2. Two residential driveways would need to be reconstructed.

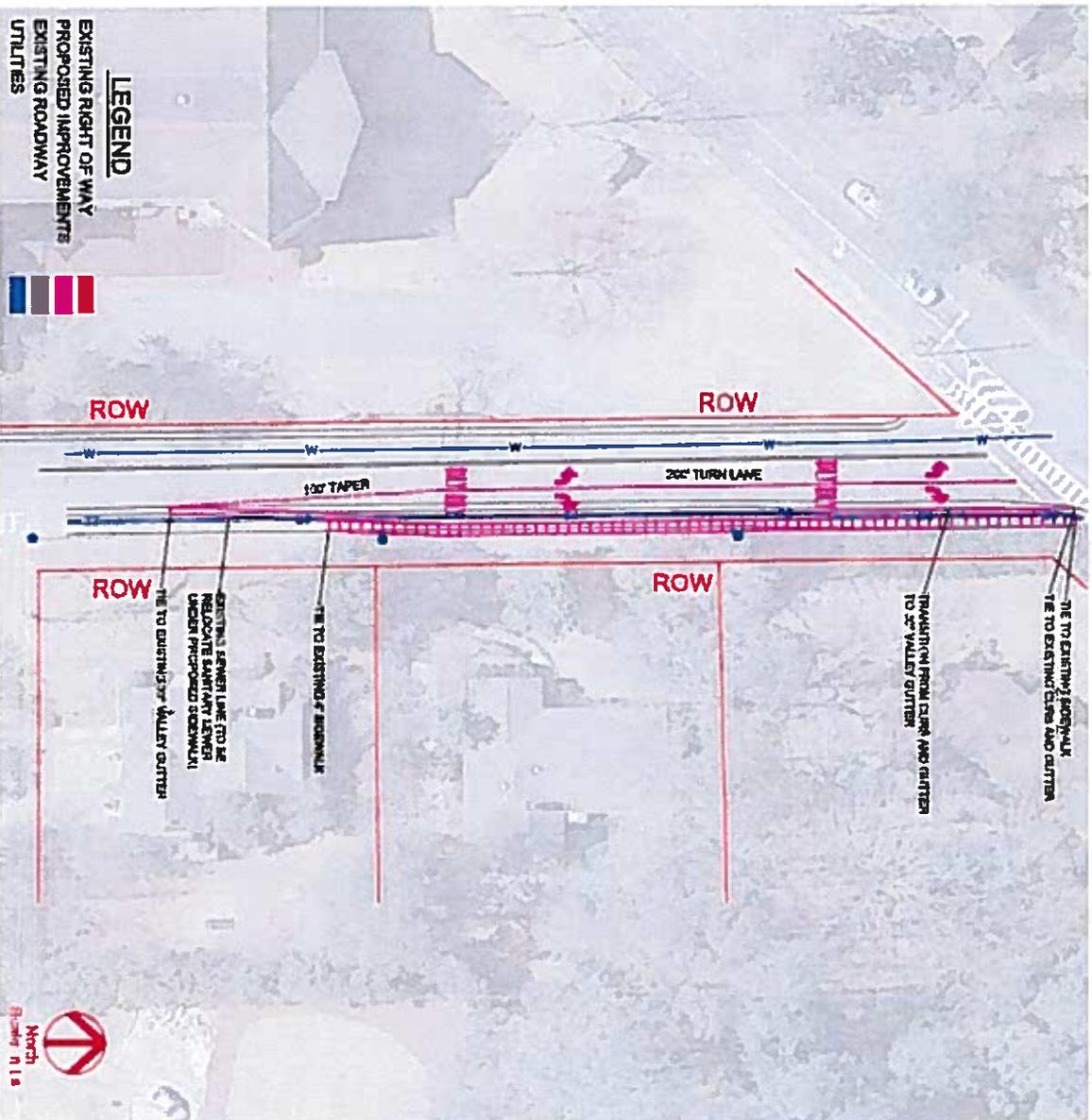


Figure 7. Preliminary Design of Right Turn Lane on Overbrook Road

Operational Analysis of Recommended Long-Term Improvements

An operational assessment of the proposed long-term improvements was performed by determining the resultant levels of service, delay, and queues for the intersection of Montevallo Road at Overbrook Road with the proposed improvements in place. The results of these analyses are included in Appendix D and are summarized in Table 5.

Table 5. Intersection Capacity Analysis and Queue Calculations with Long-Term Improvements

Approach	Movement	AM Peak			Aft. School Peak			PM Peak		
		LOS	Delay	Queue	LOS	Delay	Queue	LOS	Delay	Queue
Montevallo Road Eastbound	Through	B	13	80'	B	13	160'	B	13	205'
	Right	B	12	55'	B	10	100'	A	9	50'
	Overall approach	B	13		B	12		B	13	
Montevallo Road Westbound	Left	A	6	130'	A	5	115'	A	6	125'
	Through	A	6	210'	A	5	170'	A	4	200'
	Overall approach	A	6		A	5		A	5	
Overbrook Road Northbound	Left	C	20	115'	B	19	45'	B	19	20'
	Right	B	17	50'	B	18	75'	B	19	100'
	Overall approach	B	19		B	18		B	19	
Overall intersection		B	12		B	11		B	11	

Note: Delay is expressed in average seconds per vehicle

Cost Estimates

Cost estimates for construction were prepared for the two long-term projects. The cost estimate for construction for the proposed left turn lane on Montevallo Road is shown in Table 6. The cost estimate for construction for the proposed right turn lane extension on Overbrook Road is shown in Table 7. The following is a summary of the estimated construction costs.

Left Turn Lane on Montevallo Road

Construction Cost	\$601,000
Preliminary Engineering	<u>\$ 90,000</u>
Total	\$691,000

Right Turn Lane Extension on Overbrook Road

Construction Cost	\$151,000
Preliminary Engineering	<u>\$ 23,000</u>
Total	\$174,000

Table 6. Cost Estimate – Left Turn Lane on Montevallo Road

	Quantity	Unit	Unit Cost	Extended Cost
REMOVALS/RELOCATIONS				
Removal of existing traffic control markings	835	sq. ft.	\$ 2.60	\$ 2,171.00
Removal of existing grate inlet	1	each	\$ 1,875.00	\$ 1,875.00
Removal of existing drainage pipe	30	lf	\$ 20.00	\$ 600.00
Removal of existing traffic signal (partial)	1	lump sum	\$ 5,000.00	\$ 5,000.00
Removal of curb and gutter	1300	lf	\$ 12.00	\$ 15,600.00
Removal of existing driveway apron	80	sq. yd.	\$ 12.00	\$ 960.00
Removal of existing sidewalk	530	sq. yd.	\$ 12.00	\$ 6,360.00
Relocation of existing utility pole	5	each	\$16,000.00	\$ 80,000.00
				\$ -
			<i>subtotal - removals</i>	\$ 112,566.00
INSTALLATIONS				
Unclassified excavation	310	cu. yd.	\$ 25.00	\$ 7,750.00
Sawcut existing paving	1340	lf	\$ 3.00	\$ 4,020.00
Base and pave	925	sq. yd.	\$ 30.00	\$ 27,750.00
Overlay	1755	sq. yd.	\$ 13.00	\$ 22,815.00
Sidewalk, 4'	170	sq. yd.	\$ 35.00	\$ 5,950.00
Curb and gutter	1340	lf	\$ 25.00	\$ 33,500.00
Storm drain	1340	lf	\$ 70.00	\$ 93,800.00
ADA ramp	8	sq. yd.	\$ 70.00	\$ 560.00
Inlet	6	each	\$ 3,500.00	\$ 21,000.00
Driveway apron	80	sq. yd.	\$ 60.00	\$ 4,800.00
Traffic control markings	1500	sq. ft.	\$ 4.00	\$ 6,000.00
Traffic signal modifications	1	lump sum	\$30,000.00	\$ 30,000.00
Adjust sewer manhole	1	each	\$ 400.00	\$ 400.00
Sewer house connection	1	each	\$ 2,000.00	\$ 2,000.00
Adjust water valve	1	each	\$ 400.00	\$ 400.00
Water meter reset	8	each	\$ 660.00	\$ 5,280.00
			<i>subtotal - installations</i>	\$ 266,025.00
			<i>total construction cost without overhead</i>	\$ 378,591.00
OVERHEAD				
Mobilization (9%)				\$ 34,073.19
Geometric controls (1%)				\$ 3,785.91
Erosion control (2%)				\$ 7,571.82
Traffic handling (5%)				\$ 18,929.55
Clearing and grubbing (2%)				\$ 11,357.73
Landscaping (2%)				\$ 7,571.82
Construction fuel (1%)				\$ 3,785.91
Construction engineering and inspection (15%)				\$ 56,788.65
			<i>total construction cost estimate without contingencies</i>	\$ 522,455.58
Contingencies (15%)				\$ 78,368.34
			<i>total construction cost estimate with contingencies</i>	\$ 600,823.92
PRELIMINARY ENGINEERING				
Survey (5%)				\$ 30,041.20
Preliminary engineering (10%)				\$ 60,082.39
			<i>total - preliminary engineering</i>	\$ 90,123.59
TOTAL PROJECT COST				\$ 690,947.50

Table 7. Cost Estimate – Right Turn Lane Extension on Overbrook Road

	Quantity	Unit	Unit Cost	Extended Cost
REMOVALS				
Removal of existing traffic control markings	32.92	sq.ft.	\$ 2.60	\$ 85.59
Removal of existing traffic stripe	16.5	sq.ft.	\$ 2.60	\$ 42.90
Removal of existing traffic signal head	1	each	\$ 150.00	\$ 150.00
Removal of 30" valley gutter	285	lf	\$ 12.00	\$ 3,420.00
Removal of curb and gutter	50	lf	\$ 12.00	\$ 600.00
Removal of existing sidewalk	125	sq.yd.	\$ 12.00	\$ 1,500.00
Removal of existing driveway apron	10	sq.yd.	\$ 12.00	\$ 120.00
Removal existing sewer manhole	2	each	\$2,000.00	\$ 4,000.00
				<u>\$ 9,918.49</u>
<i>subtotal - removals</i>				
INSTALLATIONS				
Unclassified excavation	345	cu.yd.	\$ 25.00	\$ 8,625.00
Sawcut existing paving	330	lf	\$ 3.00	\$ 990.00
Base and pave	130	sq.yd.	\$ 30.00	\$ 3,900.00
Overlay	900	sq.yd.	\$ 13.00	\$ 11,700.00
Sidewalk, 4'	125	sq.yd.	\$ 35.00	\$ 4,375.00
Curb and gutter	50	lf	\$ 25.00	\$ 1,250.00
Valley gutter	285	lf	\$ 25.00	\$ 7,125.00
Driveway apron	10	sq.yd.	\$ 60.00	\$ 600.00
4" solid white line	870	lf	\$ 3.00	\$ 2,610.00
4" dotted white line	100	lf	\$ 2.00	\$ 200.00
4" double yellow line	335	lf	\$ 6.00	\$ 2,010.00
traffic control markings	65.84	sq.ft.	\$ 4.00	\$ 263.36
traffic control legends	89.64	sq.ft.	\$ 4.00	\$ 358.56
traffic signal head, 5 section	1	each	\$1,200.00	\$ 1,200.00
7c#14 awg traffic signal cable	100	lf	\$ 0.50	\$ 50.00
Sign, 30"x36", mast arm mounted	1	each	\$ 150.00	\$ 150.00
Traffic signal controller cabinet modifications	1	lump sum	\$ 550.00	\$ 550.00
Sewer line relocation	375	lf	\$ 70.00	\$ 26,250.00
Sewer manhole, 48" diameter, 8' deep or less	2	each	\$4,250.00	\$ 8,500.00
Sewer house connection	2	each	\$2,000.00	\$ 4,000.00
Water meter reset	2	each	\$ 660.00	\$ 1,320.00
				<u>\$ 86,026.92</u>
				<i>subtotal - installations</i>
				<i>total construction cost without overhead</i>
				<u>\$ 95,945.41</u>
OVERHEAD				
Mobilization (9%)				\$ 8,635.09
Geometric controls (1%)				\$ 959.45
Erosion control (2%)				\$ 1,918.91
Traffic handling (5%)				\$ 4,797.27
Clearing and grubbing (2%)				\$ 1,918.91
Landscaping (2%)				\$ 1,918.91
Construction fuel (1%)				\$ 959.45
Construction engineering and inspection (15%)				\$ 14,391.81
				<i>total construction cost estimate without contingencies</i>
				<u>\$ 131,445.21</u>
Contingencies (15%)				<u>\$ 19,716.78</u>
				<i>total construction cost estimate with contingencies</i>
				<u>\$ 151,162.00</u>
PRELIMINARY ENGINEERING				
Survey (5%)				\$ 7,558.10
Preliminary engineering (10%)				\$ 15,116.20
				<i>total - preliminary engineering</i>
				<u>\$ 22,674.30</u>
TOTAL PROJECT COST				<u>\$ 173,836.30</u>

Funding Sources

There are two possible funding sources for the proposed long-term projects: federal funding and local funding. Since Montevallo Road is a classified urban minor arterial roadway, it would qualify for the use of Federal transportation funding. The most likely source of Federal transportation would be through the Birmingham area Metropolitan Planning Organization as a Surface Transportation Program (STP) Birmingham Attributable (BH) project. This could include the work just Montevallo Road or all the proposed work at the intersection. But it could not include only the work on Overbrook Road. The only realistic potential funding source for the work on Overbrook Road would be local (City) funding. If the entire project was pursued as an STPBH project, the funding split would be 80% Federal/20% City. The allocation of funds would be:

Preliminary Engineering	
Federal share	\$ 90,400
City share	<u>\$ 22,600</u>
Total	\$113,000
Construction	
Federal share	\$601,600
City share	<u>\$150,400</u>
Total	\$752,000

Appendix A

Intersection Turning Movement Traffic Counts

TRAFFIC DATA, LLC

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

Mountain Brook, AL

File Name : mountainbrook04
Site Code : 00000000
Start Date : 03/12/2015
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	MONTEVALLO RD Westbound			OVERBROOK RD Northbound			MONTEVALLO RD Eastbound			Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	
02:30 PM	46	69	0	8	57	1	84	11	0	274
02:45 PM	57	75	0	7	37	0	77	19	0	272
Total	103	144	0	13	94	1	161	30	0	546
03:00 PM	55	87	0	14	49	0	68	21	0	292
03:15 PM	29	78	0	32	93	1	85	16	0	334
Total	84	165	0	46	142	1	161	37	0	628
04:00 PM	41	70	0	7	68	1	73	11	0	269
04:15 PM	61	76	0	13	65	0	101	11	0	316
04:30 PM	47	69	0	7	68	1	96	9	0	295
04:45 PM	40	62	0	5	78	1	108	16	0	300
Total	179	268	0	32	276	3	378	47	0	1180
05:00 PM	37	55	0	5	71	1	121	13	0	303
05:15 PM	64	55	0	10	80	0	95	21	0	325
05:30 PM	63	66	0	10	71	0	101	17	0	328
05:45 PM	44	64	0	10	60	4	90	16	0	288
Total	208	240	0	35	282	5	407	67	0	1244
07:00 AM	55	68	0	8	34	1	22	9	0	197
07:15 AM	65	76	1	23	59	0	30	21	0	276
07:30 AM	68	77	0	61	70	0	25	38	0	339
07:45 AM	55	93	0	85	60	0	34	38	0	365
Total	243	314	1	177	223	1	111	106	0	1176
08:00 AM	51	92	0	21	40	0	44	11	0	259
08:15 AM	71	88	0	6	51	0	37	14	0	267
08:30 AM	58	91	0	3	36	0	29	9	0	226
08:45 AM	64	97	0	9	34	0	52	13	0	269
Total	244	368	0	39	161	0	162	47	0	1021
Grand Total	1061	1497	1	342	1177	11	1370	334	0	5793
Apprch %	41.5	58.5	0.0	22.4	76.9	0.7	80.4	19.6	0.0	
Total %	18.3	25.8	0.0	5.9	20.3	0.2	23.8	5.8	0.0	

Start Time	App. Total	MONTEVALLO RD Westbound			App. Total	OVERBROOK RD Northbound			App. Total	MONTEVALLO RD Eastbound			App. Total	Int. Total		
		Left	Thru	Peds		Left	Right	Peds		Thru	Right	Peds				
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																
Intersection	04:45 PM															
Volume	0	204	228	0	432	30	300	2	332	425	67	0	492	1256		
Percent		47.2	52.8	0.0		9.0	90.4	0.6		86.4	13.6	0.0				
05:30 Volume	0	83	66	0	129	10	71	0	81	101	17	0	118	328		
Peak Factor														0.957		
High Int. Volume	0	05:30 PM	83	66	0	129	05:15 PM	10	80	0	90	05:00 PM	121	13	0	134
Peak Factor					0.837				0.922					0.918		

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

File Name : mountainbrook04
 Site Code : 00000000
 Start Date : 03/12/2015
 Page No : 2

Start Time	App. Total	MONTEVALLO RD Westbound				OVERBROOK RD Northbound				MONTEVALLO RD Eastbound				Int. Total
		Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1														
By Approach	04:00 PM	05:00 PM				04:45 PM				04:45 PM				
Volume	0	208	240	0	448	30	300	2	332	425	67	0	492	
Percent		46.4	53.6	0.0		9.0	90.4	0.6		86.4	13.6	0.0		
High Int.	-	05:30 PM				05:15 PM				05:00 PM				
Volume	-	63	66	0	129	10	80	0	90	121	13	0	134	
Peak Factor	-	0.868				0.922				0.918				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1														
Intersection	07:15 AM													
Volume	0	239	338	1	578	190	229	0	419	133	108	0	241	1238
Percent		41.3	58.5	0.2		45.3	54.7	0.0		55.2	44.8	0.0		
07:45 Volume	0	55	93	0	148	85	60	0	145	34	38	0	72	365
Peak Factor														0.848
High Int.		07:45 AM				07:45 AM				07:45 AM				
Volume	0	55	93	0	148	85	60	0	145	34	38	0	72	
Peak Factor		0.976				0.722				0.837				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1														
By Approach	07:00 AM	08:00 AM				07:15 AM				07:15 AM				
Volume	0	244	368	0	612	190	229	0	419	133	108	0	241	
Percent		39.9	60.1	0.0		45.3	54.7	0.0		55.2	44.8	0.0		
High Int.	-	08:45 AM				07:45 AM				07:45 AM				
Volume	-	64	97	0	161	85	60	0	145	34	38	0	72	
Peak Factor	-	0.950				0.722				0.837				

Appendix B

Intersection Capacity Analysis Worksheets Existing



HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

AM Peak Existing
4/13/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗		↖	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00
Fr _t	1.00	0.85		1.00	1.00	0.85
Fl _t Protected	1.00	1.00		0.98	0.95	1.00
Satd. Flow (prot)	1837	1507		1799	1745	1507
Fl _t Permitted	1.00	1.00		0.78	0.95	1.00
Satd. Flow (perm)	1837	1507		1429	1745	1507
Volume (vph)	133	108	239	338	190	229
Peak-hour factor, PHF	0.84	0.84	0.98	0.98	0.72	0.72
Adj. Flow (vph)	158	129	244	345	264	318
RTOR Reduction (vph)	0	85	0	0	0	88
Lane Group Flow (vph)	158	44	0	589	264	230
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type		Perm D.P+P			Perm	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Actuated Green, G (s)	23.3	23.3		39.4	16.6	16.6
Effective Green, g (s)	24.3	24.3		41.4	17.6	17.6
Actuated g/C Ratio	0.34	0.34		0.58	0.25	0.25
Clearance Time (s)	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	629	516		922	433	374
v/s Ratio Prot	0.09			c0.15	0.15	
v/s Ratio Perm		0.03		c0.22		c0.15
v/c Ratio	0.25	0.09		0.64	0.61	0.61
Uniform Delay, d ₁	16.8	15.8		9.8	23.7	23.7
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d ₂	0.2	0.1		1.5	2.4	3.0
Delay (s)	17.0	15.9		11.3	26.1	26.7
Level of Service	B	B		B	C	C
Approach Delay (s)	16.5			11.3	26.4	
Approach LOS	B			B	C	
Intersection Summary						
HCM Average Control Delay			18.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			71.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			68.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Queuing and Blocking Report
AM Peak Existing

AM Peak Existing
4/13/2015

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	NE	NE
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	187	180	548	624	51
Average Queue (ft)	80	51	254	305	48
95th Queue (ft)	148	111	429	549	54
Link Distance (ft)	1922		1974	2599	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		155			25
Storage Blk Time (%)	0.01	0.00		0.47	0.10
Queuing Penalty (veh)	1	0		151	26

Network Summary

Network wide Queuing Penalty: 178

HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

Afternoon School Existing
4/13/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗		↖	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.98	0.95	1.00
Satd. Flow (prot)	1837	1507		1801	1745	1507
Flt Permitted	1.00	1.00		0.59	0.95	1.00
Satd. Flow (perm)	1837	1507		1079	1745	1507
Volume (vph)	312	67	187	309	59	236
Peak-hour factor, PHF	0.92	0.80	0.82	0.89	0.46	0.63
Adj. Flow (vph)	339	84	228	347	128	375
RTOR Reduction (vph)	0	52	0	0	0	228
Lane Group Flow (vph)	339	32	0	575	128	147
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type		Perm D,P+P			Perm	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Actuated Green, G (s)	24.8	24.8		40.6	12.6	12.6
Effective Green, g (s)	25.8	25.8		42.6	13.6	13.6
Actuated g/C Ratio	0.38	0.38		0.62	0.20	0.20
Clearance Time (s)	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	695	570		852	348	301
v/s Ratio Prot	0.18			c0.17	0.07	
v/s Ratio Perm		0.02		c0.26		c0.10
v/c Ratio	0.49	0.06		0.67	0.37	0.49
Uniform Delay, d1	16.2	13.5		8.3	23.6	24.2
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0		2.1	0.7	1.2
Delay (s)	16.7	13.5		10.4	24.2	25.5
Level of Service	B	B		B	C	C
Approach Delay (s)	16.1			10.4	25.1	
Approach LOS	B			B	C	
Intersection Summary						
HCM Average Control Delay			17.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			68.2		Sum of lost time (s)	12.0
Intersection Capacity Utilization			59.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	NE	NE
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	332	180	607	390	51
Average Queue (ft)	164	45	285	136	49
95th Queue (ft)	287	132	486	294	54
Link Distance (ft)	1922		1974	2599	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		155			25
Storage Blk Time (%)	0.10	0.00		0.29	0.21
Queuing Penalty (veh)	8	0		110	26

Nework Summary

Network wide Queuing Penalty: 145

HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

PM Peak Existing
4/13/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗		↖	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00
Fr _t	1.00	0.85		1.00	1.00	0.85
Fl _t Protected	1.00	1.00		0.98	0.95	1.00
Satd. Flow (prot)	1837	1507		1794	1745	1507
Fl _t Permitted	1.00	1.00		0.48	0.95	1.00
Satd. Flow (perm)	1837	1507		890	1745	1507
Volume (vph)	425	67	204	228	30	300
Peak-hour factor, PHF	0.92	0.92	0.84	0.84	0.92	0.92
Adj. Flow (vph)	462	73	243	271	33	326
RTOR Reduction (vph)	0	30	0	0	0	280
Lane Group Flow (vph)	462	43	0	514	33	46
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm D.P+P			Perm		
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Actuated Green, G (s)	36.6	36.6		52.9	9.9	9.9
Effective Green, g (s)	37.6	37.6		54.9	10.9	10.9
Actuated g/C Ratio	0.48	0.48		0.71	0.14	0.14
Clearance Time (s)	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	888	728		829	244	211
v/s Ratio Prot	0.25			c0.14	0.02	
v/s Ratio Perm		0.03		c0.30		c0.03
v/c Ratio	0.52	0.06		0.62	0.14	0.22
Uniform Delay, d ₁	13.9	10.7		6.0	29.3	29.7
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d ₂	0.6	0.0		1.4	0.3	0.5
Delay (s)	14.4	10.7		7.4	29.6	30.2
Level of Service	B	B		A	C	C
Approach Delay (s)	13.9			7.4	30.1	
Approach LOS	B			A	C	
Intersection Summary						
HCM Average Control Delay			15.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.55			
Actuated Cycle Length (s)			77.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Queuing and Blocking Report
PM Peak Existing

PM Peak Existing
4/13/2015

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	NE	NE
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	441	181	547	207	51
Average Queue (ft)	195	40	231	80	48
95th Queue (ft)	357	118	434	179	57
Link Distance (ft)	1922		1974	2599	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		155			25
Storage Blk Time (%)	0.10	0.00		0.05	0.25
Queuing Penalty (veh)	7	0		17	8

Network Summary

Network wide Queuing Penalty: 33

Appendix C

**Intersection Capacity Analysis Worksheets
Short-Term**

HCM Signalized Intersection Capacity Analysis
1: Montevall Road & Overbrook Road

AM Peak Short Term
4/27/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗		↖	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		0.98	0.95	1.00
Satd. Flow (prot)	1837	1507		1799	1745	1507
Flt Permitted	1.00	1.00		0.76	0.95	1.00
Satd. Flow (perm)	1837	1507		1404	1745	1507
Volume (vph)	133	108	239	338	190	229
Peak-hour factor, PHF	0.84	0.84	0.98	0.98	0.72	0.72
Adj. Flow (vph)	158	129	244	345	264	318
RTOR Reduction (vph)	0	90	0	0	0	88
Lane Group Flow (vph)	158	39	0	589	264	230
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type		Perm	D.P+P		Perm	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			4
Actuated Green, G (s)	21.1	21.1		40.4	16.9	16.9
Effective Green, g (s)	22.1	22.1		42.4	17.9	17.9
Actuated g/C Ratio	0.31	0.31		0.59	0.25	0.25
Clearance Time (s)	5.0	5.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	562	461		934	432	373
v/s Ratio Prot	0.09			c0.18	0.15	
v/s Ratio Perm		0.03		c0.19		c0.15
v/c Ratio	0.28	0.09		0.63	0.61	0.62
Uniform Delay, d1	19.1	17.9		9.8	24.1	24.2
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.1		1.4	2.6	3.0
Delay (s)	19.3	18.0		11.2	26.7	27.2
Level of Service	B	B		B	C	C
Approach Delay (s)	18.7			11.2	26.9	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
AM Peak Short Term

AM Peak Short Term
4/27/2015

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	NE	NE
Directions Served	T	R	LT	L	R
Maximum Queue (ft)	245	181	485	564	51
Average Queue (ft)	104	49	238	316	49
95th Queue (ft)	191	99	395	496	54
Link Distance (ft)	1922		1974	2599	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		155			25
Storage Blk Time (%)	0.03			0.52	0.08
Queuing Penalty (veh)	4			164	22

Network Summary

Network wide Queuing Penalty: 190

Appendix D

Intersection Capacity Analysis Worksheets Long-Term



HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

AM Peak Long Term
4/29/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗	↖	↑	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1837	1507	1805	1837	1745	1507
Flt Permitted	1.00	1.00	0.55	1.00	0.95	1.00
Satd. Flow (perm)	1837	1507	1051	1837	1745	1507
Volume (vph)	133	108	239	338	190	229
Peak-hour factor, PHF	0.84	0.84	0.98	0.98	0.72	0.72
Adj. Flow (vph)	158	129	244	345	264	318
RTOR Reduction (vph)	0	82	0	0	0	234
Lane Group Flow (vph)	158	47	244	345	264	84
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm		pm+pt		Perm	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			4
Actuated Green, G (s)	20.3	20.3	33.9	33.9	14.4	14.4
Effective Green, g (s)	21.3	21.3	34.9	34.9	15.4	15.4
Actuated g/C Ratio	0.37	0.37	0.60	0.60	0.26	0.26
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	671	551	753	1100	461	398
v/s Ratio Prot	0.09		0.05	c0.19	c0.15	
v/s Ratio Perm		0.03	c0.14			0.06
v/c Ratio	0.24	0.09	0.32	0.31	0.57	0.21
Uniform Delay, d1	12.8	12.1	5.6	5.8	18.6	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.1	0.3	0.2	1.7	0.3
Delay (s)	13.0	12.2	5.9	5.9	20.3	17.0
Level of Service	B	B	A	A	C	B
Approach Delay (s)	12.6			5.9	18.5	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	58.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
 AM Peak Long Term

AM Peak Long Term
 4/29/2015

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	WB	NE	NE
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	75	56	126	218	158	82
Average Queue (ft)	41	32	83	111	61	20
95th Queue (ft)	78	55	132	211	116	50
Link Distance (ft)	1917		1979		2591	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	155		100		200	
Storage Blk Time (%)			0.04		0.05	
Queuing Penalty (veh)			14		12	

Network Summary

Network wide Queuing Penalty: 26

HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

Afternoon School Long Term
4/29/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗	↖	↑	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1837	1507	1805	1837	1745	1507
Flt Permitted	1.00	1.00	0.39	1.00	0.95	1.00
Satd. Flow (perm)	1837	1507	748	1837	1745	1507
Volume (vph)	312	67	187	309	59	236
Peak-hour factor, PHF	0.92	0.80	0.82	0.89	0.46	0.63
Adj. Flow (vph)	339	84	228	347	128	375
RTOR Reduction (vph)	0	50	0	0	0	295
Lane Group Flow (vph)	339	34	228	347	128	80
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Perm pm+pt				Perm	
Protected Phases	2		1	6	4	
Permitted Phases		2	6			4
Actuated Green, G (s)	20.9	20.9	34.0	34.0	10.6	10.6
Effective Green, g (s)	21.9	21.9	35.0	35.0	11.6	11.6
Actuated g/C Ratio	0.40	0.40	0.64	0.64	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	737	604	656	1178	371	320
v/s Ratio Prot	c0.18		c0.06	0.19	c0.07	
v/s Ratio Perm		0.02	0.16			0.05
v/c Ratio	0.46	0.06	0.35	0.29	0.35	0.25
Uniform Delay, d1	12.0	10.0	4.7	4.3	18.3	17.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	0.3	0.1	0.6	0.4
Delay (s)	12.5	10.1	5.0	4.5	18.8	18.3
Level of Service	B	B	A	A	B	B
Approach Delay (s)	12.0			4.7	18.4	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			11.4	HCM Level of Service		B
HCM Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			54.6	Sum of lost time (s)	12.0	
Intersection Capacity Utilization			43.7%	ICU Level of Service	A	
Analysis Period (min)			15			
c Critical Lane Group						

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	WB	NE	NE
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	199	181	126	289	69	122
Average Queue (ft)	87	31	72	85	16	30
95th Queue (ft)	161	101	117	172	47	73
Link Distance (ft)	1917		1979		2591	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	155		100		200	
Storage Blk Time (%)	0.01	0.00	0.02	0.04		
Queuing Penalty (veh)	1	0	7	8		

Nework Summary

Network wide Queuing Penalty: 16

HCM Signalized Intersection Capacity Analysis
1: Montevallo Road & Overbrook Road

PM Peak Long Term
4/29/2015

	→	↗	↖	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑	↗	↖	↑	↘	↙
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	10	12	11	11	10
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	1.00	0.85	1.00	1.00	1.00	0.85
Fl _t Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1837	1507	1805	1837	1745	1507
Fl _t Permitted	1.00	1.00	0.30	1.00	0.95	1.00
Satd. Flow (perm)	1837	1507	568	1837	1745	1507
Volume (vph)	425	67	204	228	30	300
Peak-hour factor, PHF	0.92	0.92	0.84	0.84	0.92	0.92
Adj. Flow (vph)	462	73	243	271	33	326
RTOR Reduction (vph)	0	42	0	0	0	264
Lane Group Flow (vph)	462	31	243	271	33	62
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	4	
Permitted Phases		2	6			4
Actuated Green, G (s)	22.3	22.3	35.4	35.4	9.4	9.4
Effective Green, g (s)	23.3	23.3	36.4	36.4	10.4	10.4
Actuated g/C Ratio	0.43	0.43	0.66	0.66	0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	781	641	583	1220	331	286
v/s Ratio Prot	c0.25		c0.07	0.15	0.02	
v/s Ratio Perm		0.02	0.21			c0.04
v/c Ratio	0.59	0.05	0.42	0.22	0.10	0.22
Uniform Delay, d ₁	12.1	9.2	5.0	3.6	18.3	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d ₂	1.2	0.0	0.5	0.1	0.1	0.4
Delay (s)	13.3	9.3	5.5	3.7	18.5	19.1
Level of Service	B	A	A	A	B	B
Approach Delay (s)	12.8			4.6	19.1	
Approach LOS	B			A	B	
Intersection Summary						
HCM Average Control Delay			11.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			54.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			50.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Intersection: 1: Montevallo Road & Overbrook Road

Movement	EB	EB	WB	WB	NE	NE
Directions Served	T	R	L	T	L	R
Maximum Queue (ft)	289	56	126	259	28	160
Average Queue (ft)	124	20	76	96	5	47
95th Queue (ft)	207	49	126	202	18	103
Link Distance (ft)	1917		1979		2591	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	155		100		200	
Storage Blk Time (%)	0.02		0.03		0.05	
Queuing Penalty (veh)	2		7		10	

Nework Summary

Network wide Queuing Penalty: 19