

**LYNCHBURG CITY COUNCIL
PHYSICAL DEVELOPMENT COMMITTEE**

**Tuesday, April 12, 2016
9:00 a.m.**

Information Items

Recent/Pending Contract Awards: -No new contract awards.

Update on priority projects: -See attached report.

General Business

- | | |
|--|--------------------|
| 1. Rives Street Vacation | Rachel Frischeisen |
| 2. Logan's Lane Ramp Solution | Maggie Cossman |
| 3. TIGER Grant Application | Bonnie Svrcek |
| 4. Two-Way Conversion for Main/Church Streets | Kimball Payne |
| 5. Roll Call | |

Pc: Kimball Payne, City Manager
Bonnie Svrcek, Deputy City Manager
Council Members
Gaynelle Hart, Director of Public Works
News & Advance

Next Meeting: May 10, 2016

Lynchburg Capital Projects Greater Than \$1 Million(General Fund)

April 12, 2016

Projects of Interest	Status		Notes
Timberlake / Logan's Lane Intersection	Design	December 2016	Revised layout to PDC
Midtown Connector	Construction	May 2016	Under Construction - Paving Cranking back up for Spring
Greenview Drive Phase 2	Construction	July 2017	Construction Starting in April
Kemper Street Bridge / Interchange	Construction	September 2016	Ramp Work and Bridge Parapets ongoing
One Way Pairs @ 501/221	Preliminary	August 2016	HB2 Submittal - Right of Way Vacation and Rezoning
Memorial - Park - Lakeside Intersection	Construction	September 2017	Construction Underway
Odd Fellows Road - P3	Construction	August 2018	Construction Underway
Juvenile Services Group Home	Construction	April 2016	Winding Down
Downtown Streetscapes	Construction	May 2017	Starting this Month
LU Intramural Field Road - Phase 1	Construction	September 2016	Underway
LU Intramural Field Road - Phase 2	Design	June 2016	Reviewing for Approval - Bid Late Spring

LYNCHBURG CITY COUNCIL

Agenda Item Summary

MEETING DATE: **April 12, 2016 – Physical Development Committee**

AGENDA ITEM NO.:

CONSENT:

REGULAR: X

WORK SESSION:

CLOSED SESSION:

(Confidential)

ACTION: X

INFORMATION:

ITEM TITLE: **Vacate a portion of Rives Street**

RECOMMENDATION: Approval of the right-of-way vacation.

SUMMARY: Spring Hill Cemetery Association, the owner of 3000 Fort Avenue and 1550 James Street, is petitioning to vacate a portion of the right-of-way known as Rives Street, between James Street and Gordon Street. The petitioner is requesting the right-of-way vacation so that the portion of the road separating two large properties can be fenced off, thus creating one contiguous area for the cemetery. The total area of the proposed vacation is approximately four hundred ninety-six thousandths (0.496) of an acre.

The City's Transportation Engineer has reviewed the traffic study and concluded that traffic safety and congestion will not be adversely impacted. In addition, if this portion of Rives Street is vacated, Gordon Street will be converted to two-way traffic to accommodate the change. Staff believes that this street vacation would have a minimal impact on the neighborhood.

City Council amended the *Future Land Use Map (FLUM)* on February 9, 2016 to reflect the intent of the cemetery to expand its current boundaries. A Conditional Use Permit would still be required for any future expansion of the cemetery.

PRIOR ACTION(S):

September 1, 2015: The Technical Review Committee [TRC] reviewed the petition. The TRC comments have been incorporated into the proposed ordinance.

November 11, 2015: The Physical Development Committee reviewed this petition and requested further study on impacts to traffic.

February 9, 2016: The *FLUM* was amended for sixty-seven (67) parcels from Low Density Residential and Medium Density Residential to Institutional use.

FISCAL IMPACT: None

CONTACT(S):

Rachel Frischeisen, Planner I – 455-3900

Tom Martin, City Planner - 455-3900

Kent White, Director of Community Development – 455-3900

ATTACHMENT(S):

- Ordinance
- Application
- Right-of-way vacation plat
- Narrative Letter
- Right-of-way vacation map
- Rives Street Traffic Impact Study

REVIEWED BY:

UNCODIFIED ORDINANCE:

AN ORDINANCE VACATING A PORTION OF RIGHT-OF-WAY KNOWN AS RIVES STREET LOCATED BETWEEN JAMES STREET AND GORDON STREET.

WHEREAS, Spring Hill Cemetery, is petitioning to vacate a portion of right-of-way known as Rives Street located between James Street and Gordon Street; and

WHEREAS, City Council finds that no public inconvenience will result from vacating the right of way;

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Lynchburg, on its own motion, and in accordance with the provisions of Section 15.2-2006 of the Code of Virginia, 1950, as amended, and Sections 35-71 through 35-77 of the City Code, 1981, as amended, the following described right of way be, and the same hereby is, discontinued and vacated, namely:

PARCEL "A":

BEGINNING AT A MONUMENT FOUND AT THE INTERSECTION OF JAMES STREET AND RIVES STREET THENCE N41°27'29"W 20.00' TO A P.K. NAIL SET; THENCE N48°32'31"E 540.00' TO A P.K. NAIL SET; THENCE S41°27'29"E 20.00' TO AN IRON REBAR SET; THENCE S48°32'31"W 540.00' TO THE POINT OF BEGINNING. BEING PARCEL "A" (A PORTION OF RIVES STREET) AND CONTAINING 0.248 ACRES.

PARCEL "B":

BEGINNING AT AN IRON REBAR SET AT THE RIGHT OF WAY OF RIVES STREET AT THE INTERSECTION OF JAMES STREET AND RIVES STREET; THENCE N48°32'31"E 540.00' TO AN IRON REBAR SET; THENCE S41°27'29"E 20.00' TO A P.K. NAIL SET; THENCE S48°32'31"W 540.00' TO AN P.K. NAIL; THENCE N41°27'29"W 20.00' TO THE POINT OF BEGINNING. BEING PARCEL "B" (A PORTION OF RIVES STREET) AND CONTAINING 0.248 ACRES.

Said property contains 0.496 acres more or less.

Said vacation is contingent upon the following: (1) Spring Hill Cemetery shall execute the necessary documents to dedicate utility easements for American Electric Power (AEP) and Verizon; (2) the failure of Spring Hill Cemetery to dedicate utility easements for American Electric Power (AEP) and Verizon within six months of the adoption of this resolution shall render the vacation of the above described portion of Rives Street null and void; (3) that an easement to locate, relocate, repair, replace, maintain and perpetually operate all utilities currently located therein or needed by the City in the future is hereby reserved unto the City of Lynchburg; and (4) the construction of any building or structure or the use of the vacated property in any manner that could interfere with the City's right to locate, relocate, repair, replace, maintain and perpetually operate utilities is prohibited without the prior written approval of the City Manager's Office, City Utilities Division and the City Engineering Division.

BE IT FURTHER ORDAINED that the City of Lynchburg relinquishes any interest it may have in the vacated right of way to Spring Hill Cemetery, that the Clerk of Council is hereby authorized and directed to deliver a duly certified copy of this ordinance to the Clerk of the Circuit Court for the City of Lynchburg so that said certified copy of this ordinance may be recorded as deeds are recorded and indexed in the name of the City of Lynchburg.

Adopted:

Certified:

Clerk of Council

APPLICATION FOR THE VACATION OF A

RIVES STREET

Lynchburg, Virginia

LOCATED BETWEEN

Gordon and James Streets

The undersigned applicant, Spring Hill Cemetery Association, pursuant to the provisions of Section 15.2-2006 of the Code of Virginia, 1950, as amended, and Section 35-71 through Section 35-77 of the City Code, 1981, as amended, respectfully makes application to the Lynchburg City Council for the vacation of that certain Rives Street described as follows:

Portion of Rives Street as follows:

Beginning at a monument found at the intersection of James Street and Rives Street thence N41°27'29"W 20.00' to a p.k. Nail set; thence W48°32'31"E 540.00' to a p.k. Nail set; thence S41°27'29"E 20.00' to an iron rebar set; thence S48°32'31"W 540.00' to the point of beginning. Being parcel "A" (a portion of Rives Street) and containing 0.248 acres.

Beginning at an iron rebar set at the right of way of Rives Street at the intersection of James Street and Rives Street; thence N48°32'31"E 540.00' to an iron rebar set; thence S41°27'29"E 20.00' to a p.k. nail set; thence S48°32'31"W 540.00' to an p.k. nail; thence N41°27'29"W 20.00' to the point of beginning. Being parcel "B" (a portion of Rives Street) and containing 0.248 acres.

The applicant further requests the Lynchburg City Council to hold a public hearing on this application at its meeting to be held in the Council Chambers, City Hall, 900 Church Street, Lynchburg, Virginia, on December 8, 2015, at 7:30 p.m., or as soon thereafter as the matter may be heard, and at the conclusion of which to consider whether or not to vacate the above described Rives Street.

The applicant further requests the Lynchburg City Council to hold a public hearing on this application at its meeting to be held in the Council Chambers, City Hall, 900 Church Street, Lynchburg, Virginia, on December 8, 2015, at 7:30 p.m., or as soon thereafter as the matter may be heard, and at the conclusion of which to consider whether or not to vacate the above described Rives Street.

Given under my hand this 18 day of August, 2015.

Spring Hill Cemetery

Applicant

3000 Fort Avenue, Lynchburg, VA 24501

Address

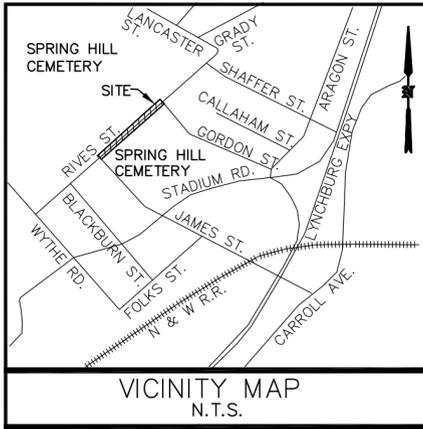
434-846-0801

Telephone Number

WE, THE ADJOINING PROPERTY OWNER(S), ARE IN AGREEMENT TO THE VACATION OF THE ABOVE DESCRIBED PROPERTY:

T. Ashby Watts III
T. Ashby Watts III (President)

8/18/15
Date



LEGAL DESCRIPTION: PARCEL "A"

BEGINNING AT A MONUMENT FOUND AT THE INTERSECTION OF JAMES STREET AND RIVES STREET THENCE N41°27'29"W 20.00' TO A P.K. NAIL SET; THENCE N48°32'31"E 540.00' TO A P.K. NAIL SET; THENCE S41°27'29"E 20.00' TO AN IRON REBAR SET; THENCE S48°32'31"W 540.00' TO THE POINT OF BEGINNING. BEING PARCEL "A" (A PORTION OF RIVES STREET) AND CONTAINING 0.248 ACRES.

LEGAL DESCRIPTION: PARCEL "B"

BEGINNING AT AN IRON REBAR SET AT THE RIGHT OF WAY OF RIVES STREET AT THE INTERSECTION OF JAMES STREET AND RIVES STREET; THENCE N48°32'31"E 540.00' TO AN IRON REBAR SET; THENCE S41°27'29"E 20.00' TO A P.K. NAIL SET; THENCE S48°32'31"W 540.00' TO AN P.K. NAIL; THENCE N41°27'29"W 20.00' TO THE POINT OF BEGINNING. BEING PARCEL "B" (A PORTION OF RIVES STREET) AND CONTAINING 0.248 ACRES.

TM# 01201001
45 ACRES
SPRING HILL CEMETERY ASSOCIATION
D.B. 30 P. 293 S 41°27'29" E 20.00'
D.B. 33 P. 206

TM# 02801001
6.337 ACRES
SPRING HILL CEMETERY ASSOCIATION
D.B. 126 P. 298

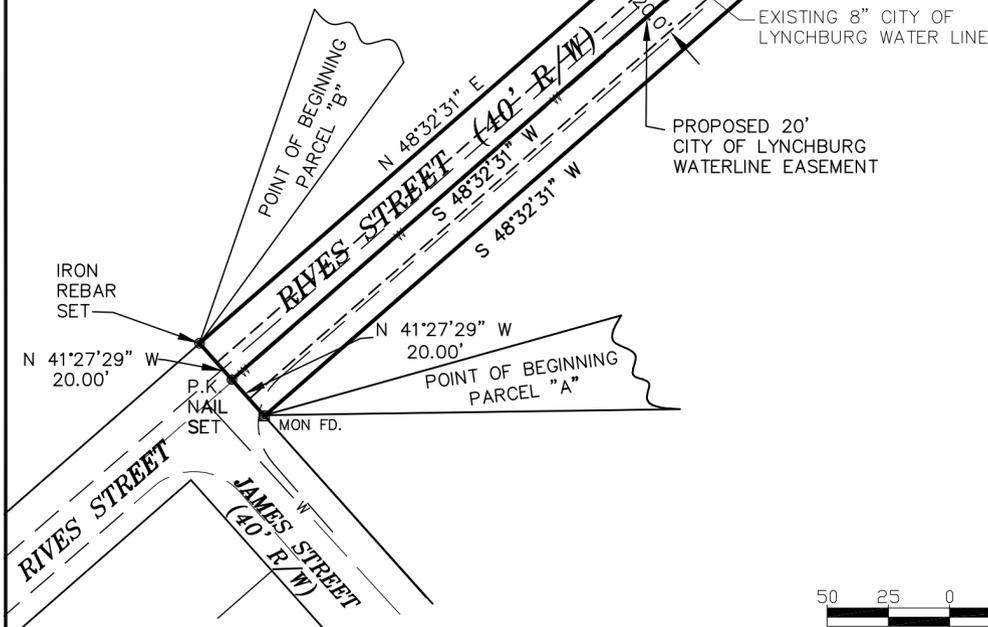
TM# 02736001
SPRING HILL CEMETERY ASSOCIATION
INSTR.NO. 130004747

TM# 02736063
SPRING HILL CEMETERY ASSOCIATION
D.B. 282 P. 462

TM# 02736061
SPRING HILL CEMETERY ASSOCIATION
D.B. 282 P. 462

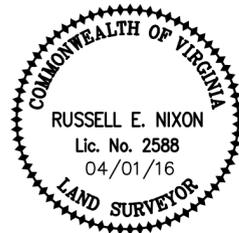
TM# 02736060
SPRING HILL CEMETERY ASSOCIATION
D.B. 282 P. 462

TM# 02738059
SPRING HILL CEMETERY ASSOCIATION
D.B. 282 P. 462



NOTE:

- 1.) CEMETERY GATES SHALL BE LOCATED A MINIMUM OF 25' FROM THE TWO ENDS OF THE REMAINING RIVES STREET RIGHT-OF-WAY.
- 2.) NOTE THAT NO GRAVES AND NO PERMANENT STRUCTURES WILL BE INSTALLED WITHIN WATER LINE EASEMENT.



REV. 04/01/16
REV. 03/31/16

 Nixon Land Surveying, L.L.C. 1063C Airport Road Lynchburg, VA 24502 Phone: (434) 237-3600 Fax: (434) 237-0699 Email: ren@nixonlsec.com www.nixonlsec.com	SURVEYED FOR: SPRING HILL CEMETERY ASSOCIATION PLAT SHOWING PROPOSED STREET VACATION OF A PORTION OF RIVES STREET FOR SPRING HILL CEMETERY ASSOCIATION CITY OF LYNCHBURG, VIRGINIA	
	COMM. NO.: 2015197 SCALE: 1"=50'	REVISED: 10/27/15 DR. BY: VPB SHEET: 1 OF 1

DO NOT MOVE AN ANCIENT BOUNDARY STONE OR ENCRDACH ON THE FIELDS OF THE FATHERLESS. PROVERBS 23:10 (NIV)

Spring Hill
CEMETERY
ESTABLISHED 1852

October 28, 2015

Rachel Frischeisen – Planner 1
Department of Community Development
900 Church Street
Lynchburg, Virginia 24504

Re: Rives Street Vacation

Dear Ms. Fischeisen:

On behalf of the Association, I want to thank you for taking the time to meet yesterday.

As you suggested, I have briefly commented on the history of recent acquisitions of neighboring properties by the Association, past meetings with city employees regarding the CSO work in the area and, lastly, the Association's concerns regarding the traffic on Rives Street. Please note the following comments:

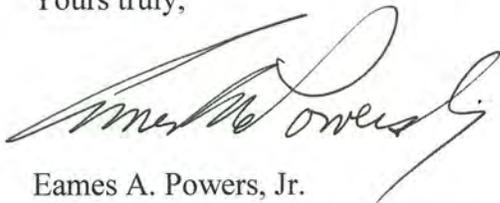
Spring Hill Cemetery Association over the past twenty five years has been actively purchasing the neighboring properties on Callaham Street, Gordon Street, James Street, Blackburn Street and Wythe Road for the purpose of expanding the cemetery. To date, the Association has purchased 33 of these properties leaving 12 properties remaining to be acquired. Currently, of the 31 improved properties purchased in the area, 22 dwellings have been demolished with the remaining 9 rented. It is the Association's intention in the future to demolish all dwellings in the expansion area and convert the land into cemetery.

On May 4, 2009, Eames Powers, Secretary/Treasurer of Spring Hill Cemetery Association, met with Jeff Scarano, P.E., City of Lynchburg and G. Keith Thompson, Jr., P.E., Wiley and Wilson to discuss CSO Project #16.3 and to relay the Association's plans for future expansion. It was agreed that the impact of this knowledge would prompt a review of the proposed design. It would be a cost savings to the City not to have to spend money on infrastructure that, in the near future, would be of no use. On February 7, 2012, Eames Powers met with James S. Talian, P.E., City of Lynchburg to review the Association's plans for expansion and the impact that it might have on the implementation of the CSO project. As a result of the meeting, Mr. Talian indicated that Phase B of the project, which affected the areas of James Street and Blackburn Street, would be reviewed to determine if the proposed work was needed.

Finally, Rives Street from Shaffer Street to Wythe Road is fronted on both sides (east and west) by the property of Spring Hill Cemetery Association, except for the two properties located at the corner of Rives Street and Blackburn Street. A large amount of the vehicular traffic on Rives Street passes up and down the street at a high rate of speed, which poses an unsafe condition for the employees of the Association, who must use the street for access to the existing cemetery grounds, as well as, to the families who are visiting the cemetery and must cross the street to get from the western part to the eastern part of the cemetery. Rives Street does not serve the needs of the immediate neighbors, and by closing it to thru traffic a hazardous condition can be eliminated. The proposed vacation of this portion of Rives Street will benefit the City of Lynchburg by reducing the cost of street maintenance and the elimination of an unsafe traffic pattern; and will benefit Spring Hill Cemetery Association by allowing it to join the divided grounds.

I hope these comments have provided you with some background information on the activities of the Association and our intentions. Please feel free to contact me or Proctor Harvey if we can be of further assistance.

Yours truly,



Eames A. Powers, Jr.
Secretary/Treasurer
Spring Hill Cemetery Association

Cc Proctor S. Harvey



TALBOT ST
MANSFIELD AVE

KENYON ST

REED ST

KIMBALL AVE

BEVERLY ST

THURMAN AVE

STEPHENSON AVE

OAKLEY AVE

FORT AVE

LANCASTER ST

WATTS ST

GRADY ST

SOMMERS ST

SHAFFER ST

ARAGON ST

WYTHE RD

RIVES ST

CALLAHAM ST

GORDON ST

JAMES ST

STADIUM RD

IRG EXPY

BLACKBURN ST

NAVAL RESERVE RD

WYTHE RD

FULKS ST

ENGLEWOOD ST

MEMORANDUM

TO: EAMES A. POWERS, JR.

FROM: BILL WUENSCH, P.E., PTOE

ORGANIZATION: SPRING HILL CEMETERY

DATE: MARCH 21ST, 2016

PHONE NUMBER:

SENDER'S REFERENCE NUMBER:

RE: RIVES ROAD TRAFFIC IMPACT STUDY

YOUR REFERENCE NUMBER:

 URGENT FOR YOUR USE PLEASE COMMENT PLEASE REPLY PLEASE RECYCLE

Rives Road Traffic Impact Study

1. Study Purpose

Spring Hill Cemetery is working with the City to vacate the right-of-way of Rives Street between James Street and Gordon Street such that Spring Hill Cemetery can take ownership of that section of the road and thereby begin to make the cemetery property contiguous across Rives Street. This is the first phase, and eventually, as Spring Hill Cemetery continues to expand, additional sections of Rives Road will be closed. **Figure 1** and **Figure 2** illustrate the vicinity and the location of this first phase of the project

The purpose of this study is to assess the impacts to the existing traffic flow and potential impacts to the adjacent streets that will in the future need to potentially handle additional traffic due to this first section of Rives Road becoming discontinuous.

2. Study Methodology

The methodology of this traffic impact study includes:

- Perform tube counts on Rives Street between James Street and Gordon Street to collect hourly traffic volumes;
- Perform manual observations in morning, mid-day, and afternoon peak hours (6 hours) to analyze the travel pattern;
- Map the travel pattern in peak hours;
- Estimate the traffic reassignment in peak hours;
- Compute the traffic volume changes in peak hours and extrapolate a projection for the daily volume shift (average daily traffic).

3. Hourly Traffic Volumes

Tube counts were performed on Rives Street between James Street and Gordon Street to collect hourly traffic volumes for both directions on March 1st – March 3rd 2016 (Tuesday – Thursday). **Figure 3** illustrates the existing hourly traffic volumes. The tube count summary sheets are included in **Appendix A**.

4. Travel Pattern

A travel pattern analysis for the traffic passing Rives Street between James Street and Gordon Street was performed by manual observations in morning, mid-day, and afternoon peak hours (6 hours) with the fieldwork sheets as attached in **Appendix B**. The fieldwork was performed March 3rd 2016 (Thursday) and the fieldwork results are attached in **Appendix C**. **Figures 4-9** illustrate the travel pattern of the traffic passing Rives Street between James Street and Gordon Street in the peak hours.

5. Traffic Reassignment

When Rives Street is closed between James Street and Gordon Street, the reassignment of the traffic passing Rives Street between James Street and Gordon Street was examined route by route, and the travel pattern as shown in Figures 4-9 was reassigned based on the new road network (note that Gordon Street will be a two-way road in the new road network). **Figures 10-15** illustrate the new travel pattern in the peak hours when Rives Street is closed between James Street and Gordon Street. As a conservative approach, it was assumed that traffic turning onto the sidestreets from Rives Street, or originating from the sidestreets onto Rives Street, actually started at the far end of the side street. (i.e. did not have a destination on the sidestreet). It was not possible to discern which vehicles actually had a destination on the sidestreet, so to estimate a worst case scenario it was assumed that they were all just passing through that sidestreet and not stopping. The final re-assignments reflect this assumption.

6. Peak Hour Traffic Volume Changes

The computation of the traffic volume changes were based on existing and future new travel patterns. The traffic volumes of the existing travel pattern (street directionality) were recorded, and consideration was given to the ability to use Gordon Street as two way travel in the future. **Figures 16-21** illustrate the traffic volume changes in the peak hours.

7. Average Daily Traffic Volume Changes

The changes of the average daily traffic volumes were estimated based on the traffic volume changes in the 6 peak hours and the percentage of the traffic volumes in these 6 peak hours compared to the average daily traffic volumes. **Figure 22** illustrate the traffic volume changes for the average daily traffic volumes.

8. Findings and Conclusions

Based on the analysis performed above in this study, the existing traffic flow passing Rives Street between James Street and Gordon Street will shift primarily to utilize Wythe Road, Stadium Road, Aragon Street, and Gordon Street. Additionally, motorists may choose to remain on Fort Avenue and utilize Lancaster Street to destinations on Grady, Watts, or Shaffer Streets (and vice-a-versa). This potential additional diversion route could further reduce the volumes shown in the reassignment graphics. Estimating that 80 of the 302 trips originate in the Grady / Watts area, then if half of these choose to divert via Lancaster then we could reduce 302 by 40 trips to approximately 260 trips.

Per **Figures 16-21**, we are estimating that the peak hour traffic volumes might increase on Wythe Road, Stadium Road, Aragon Street, and Gordon Street, and decrease on Rives Street, Blackburn Street, James Street, and Shaffer Street. This decrease of sidestreet traffic may be a little overstated per the prior described assumption about future traffic.

Per **Figure 22**, we are estimating that the average daily traffic volumes might increase 156 on Wythe Road between Rives Street and Stadium Road (2% compared to the existing 8,500 average daily traffic volumes on Wythe Road), 180 on Stadium Road between Wythe Road and Blackburn Street (3% compared to the existing 5,700 average daily traffic volumes on Stadium Road), 202 on Stadium Road between Blackburn Street and James Road (4% compared to the existing 5,700 average daily traffic volumes on Stadium Road), 302* on Stadium Road between James Road and Aragon Street Road (5% compared to the existing 5,700 average daily traffic volumes on Stadium Road), 302 on Aragon Street between Stadium Road and Gordon Street, 85 on Aragon Street between Gordon Street and Callaham Street, 83 on Aragon Street between Callaham Street and Shaffer Street, and 192 on Gordon Street between Aragon Street and Rives Street.

*Note: the 302 vehicles on Stadium Road could be further reduced based on an assumption that many of these trips are actually headed towards the expressway. Our data collection effort could not discern trip patterns once on Stadium Road, so to be very conservative in our estimate we assigned the full 302 vehicles onto Stadium Road heading towards Fort Avenue.

The final conclusion of this study is that, overall, these hourly and daily traffic numbers are relatively small. It appears, based on comparison of existing daily traffic counts, that each of the impacted roadways have sufficient capacity to absorb the anticipated shift in traffic volumes without experiencing additional congestion or safety concerns.

End of Memorandum

Attachments –

Figures

Figure 1 Project Vicinity
Figure 2 Project Location
Figure 3 Hourly Traffic Volumes
Figure 4 7AM-8AM Travel Pattern
Figure 5 8AM-9AM Travel Pattern
Figure 6 11AM-12PM Travel Pattern
Figure 7 12PM-1PM Travel Pattern
Figure 8 4PM-5PM Travel Pattern
Figure 9 5PM-6PM Travel Pattern
Figure 10 7AM-8AM Traffic Reassignment
Figure 11 8AM-9AM Traffic Reassignment
Figure 12 11AM-12PM Traffic Reassignment
Figure 13 12PM-1PM Traffic Reassignment
Figure 14 4PM-5PM Traffic Reassignment
Figure 15 5PM-6PM Traffic Reassignment
Figure 16 7AM-8AM Traffic Volume Changes
Figure 17 8AM-9AM Traffic Volume Changes
Figure 18 11AM-12PM Traffic Volume Changes
Figure 19 12PM-1PM Traffic Volume Changes
Figure 20 4PM-5PM Traffic Volume Changes
Figure 21 5PM-6PM Traffic Volume Changes
Figure 22 Average Daily Traffic Volume Changes

Appendix

Appendix A Tube Count Summary Sheets
Appendix B Manual Observation Fieldwork Sheets
Appendix C Manual Observation Fieldwork Results

Figure 1 Project Vicinity



Figure 2 Project Location



Figure 3 Hourly Traffic Volumes



Figure 4 7AM-8AM Travel Pattern

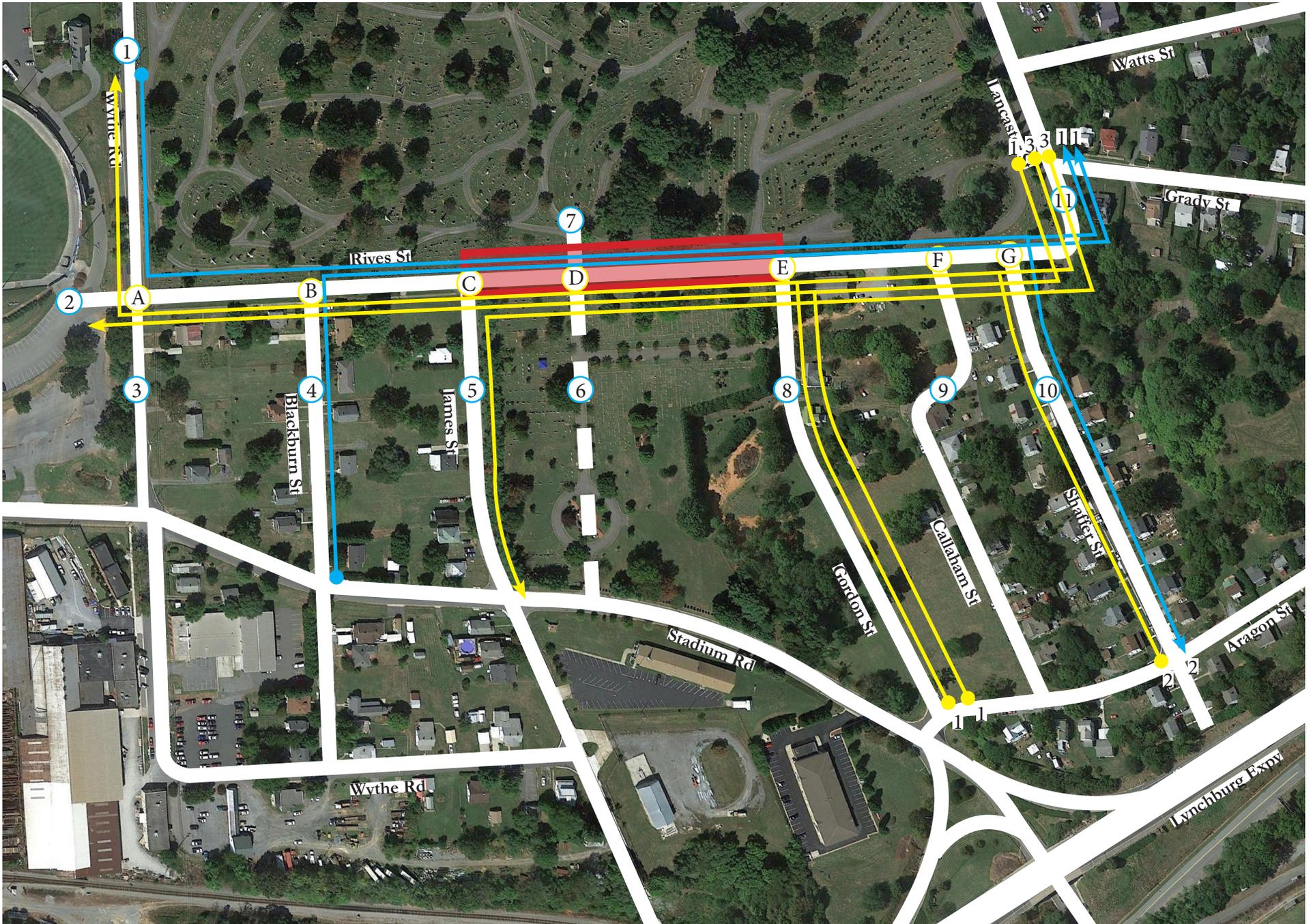


Figure 5 8AM-9AM Travel Pattern

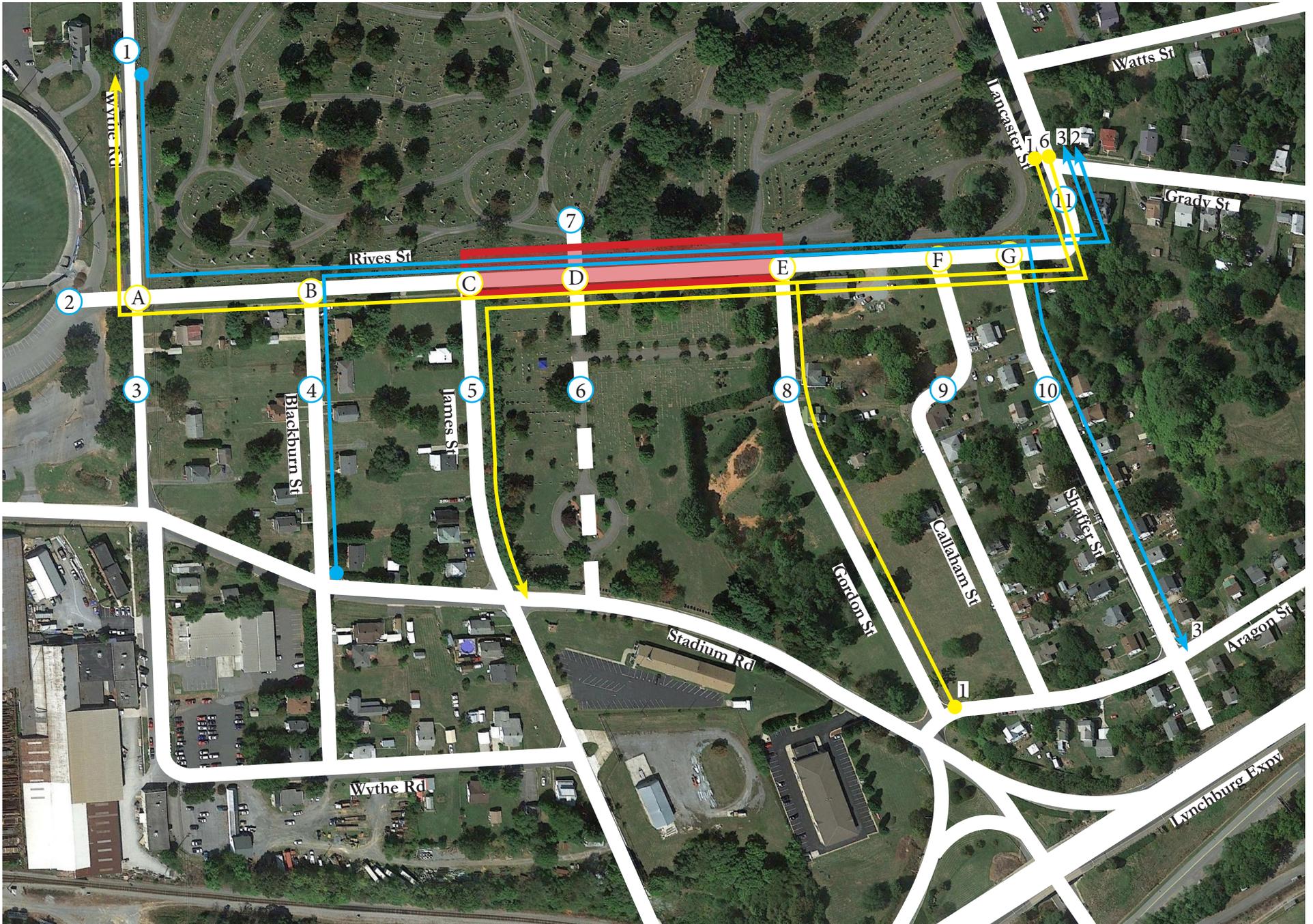


Figure 6 11AM-12PM Travel Pattern

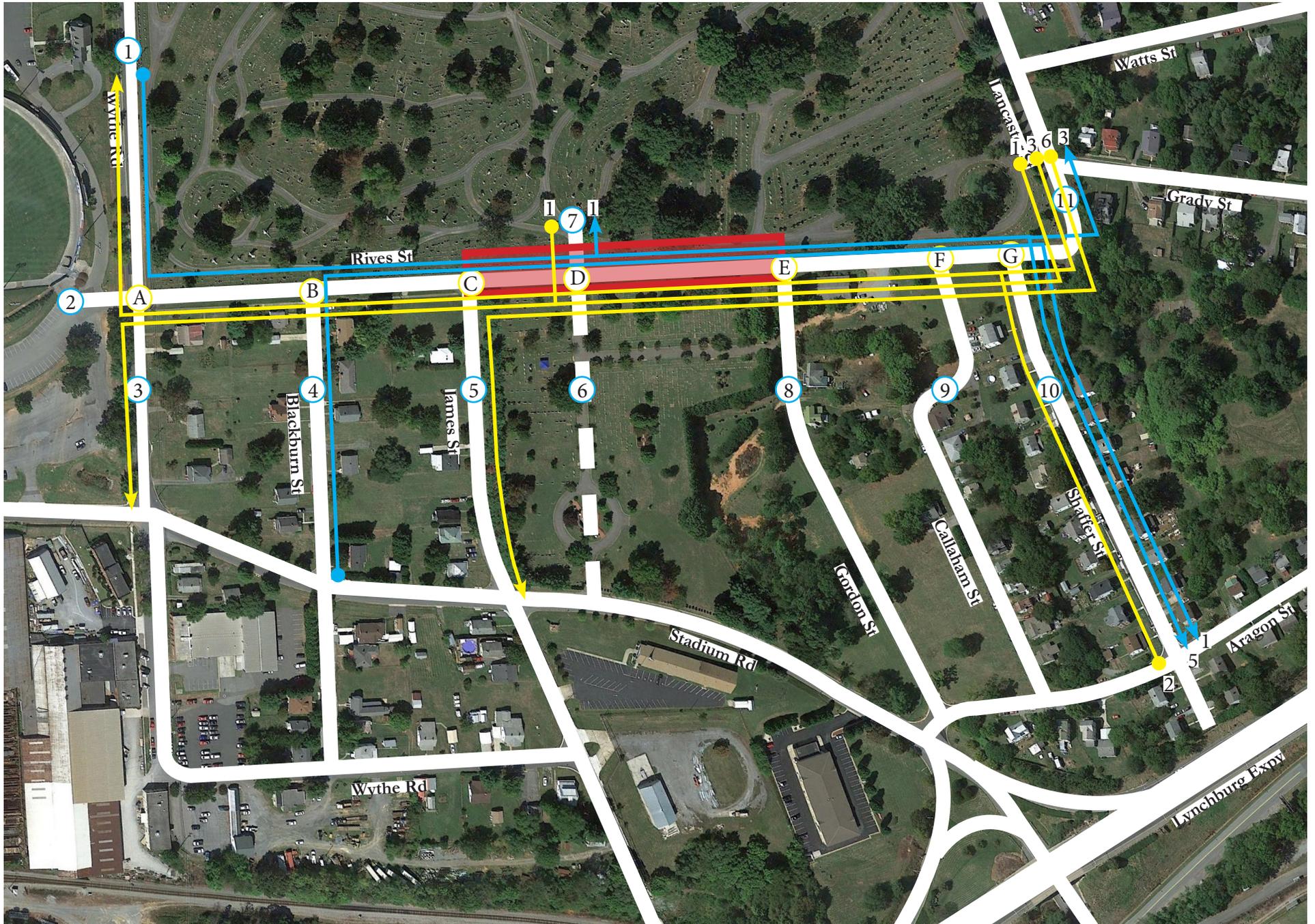


Figure 7 12PM-1PM Travel Pattern

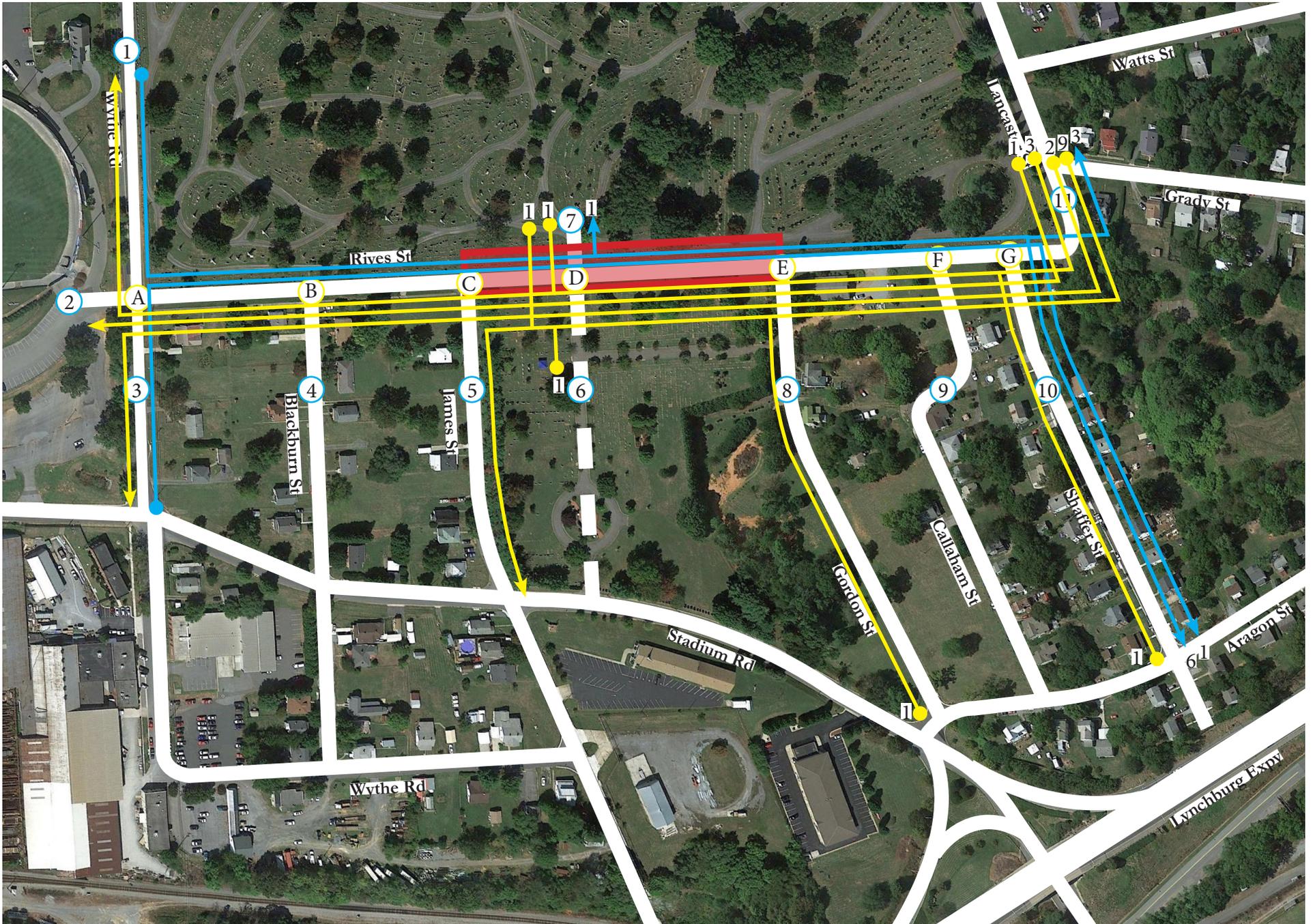


Figure 8 4PM-5PM Travel Pattern

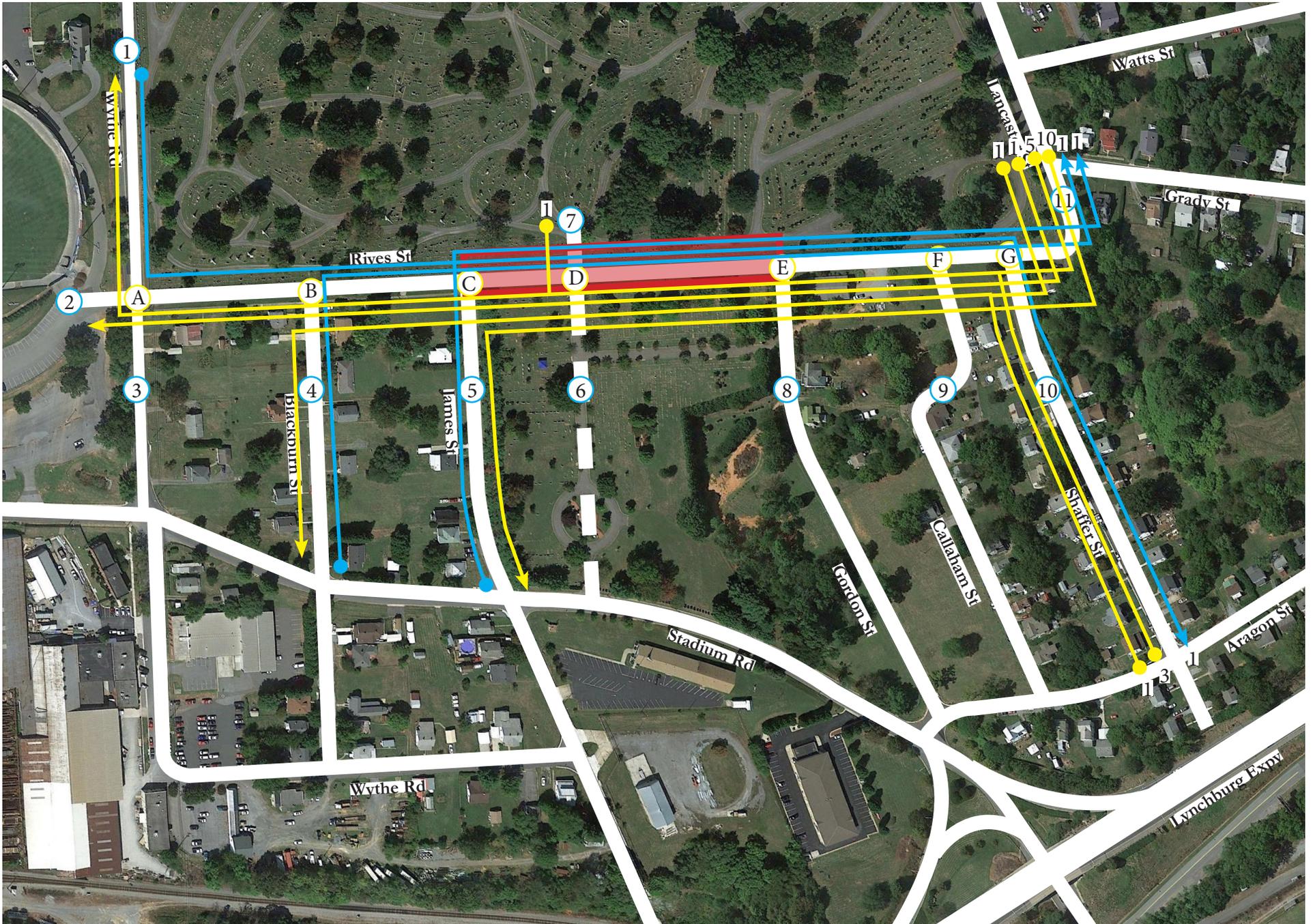


Figure 9 5PM-6PM Travel Pattern

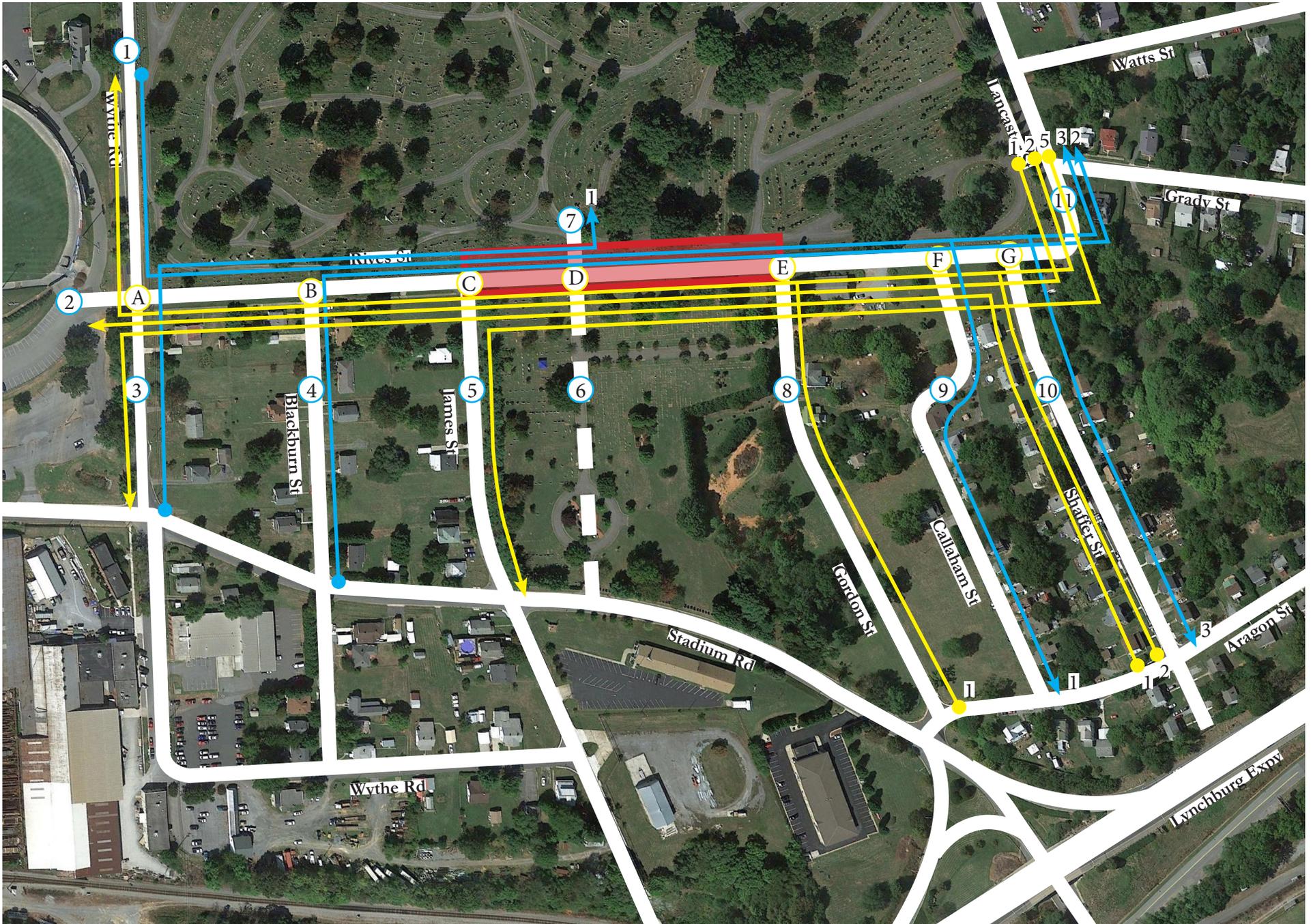


Figure 11 8AM-9AM Traffic Reassignment

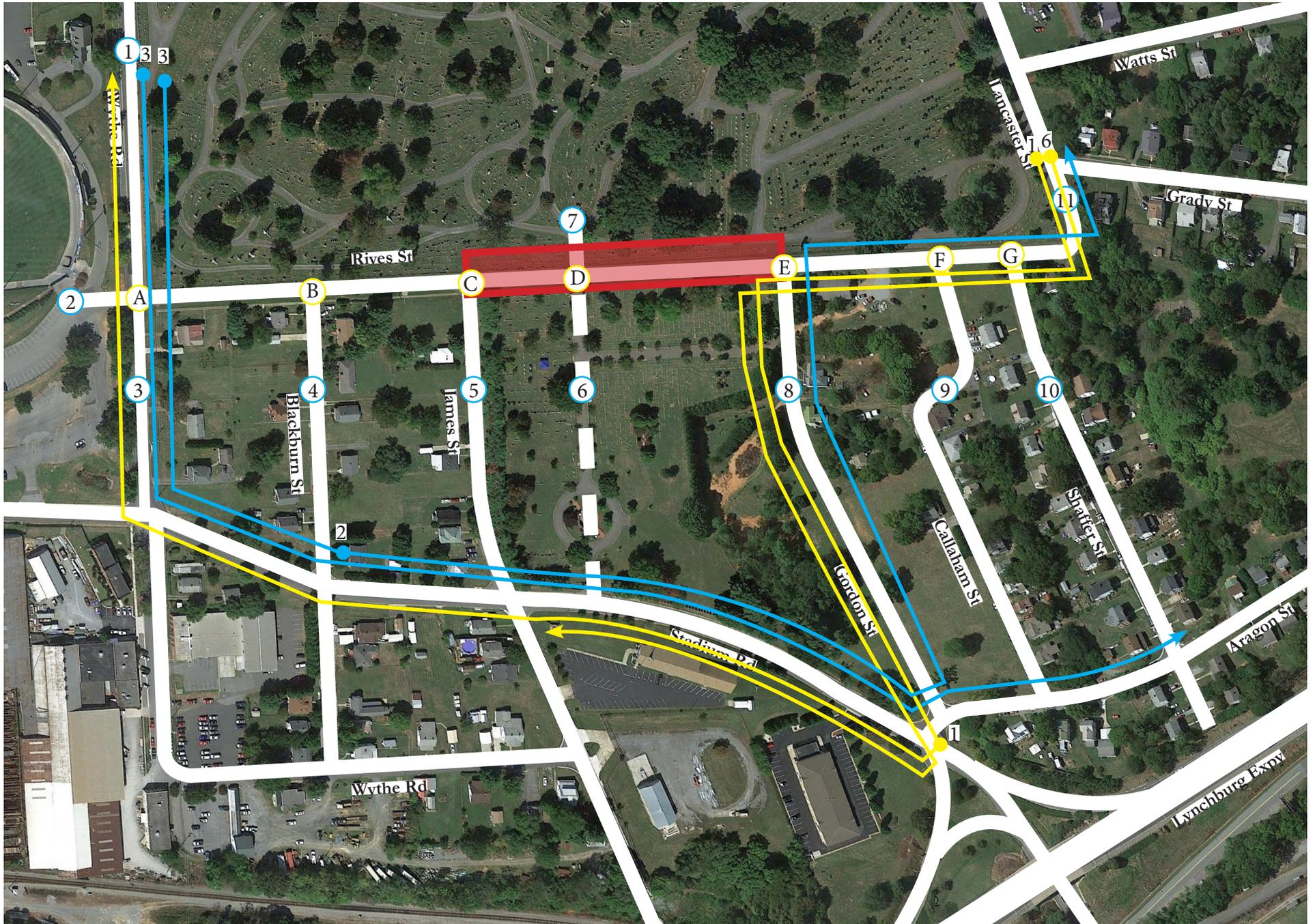


Figure 12 11AM-12PM Traffic Reassignment

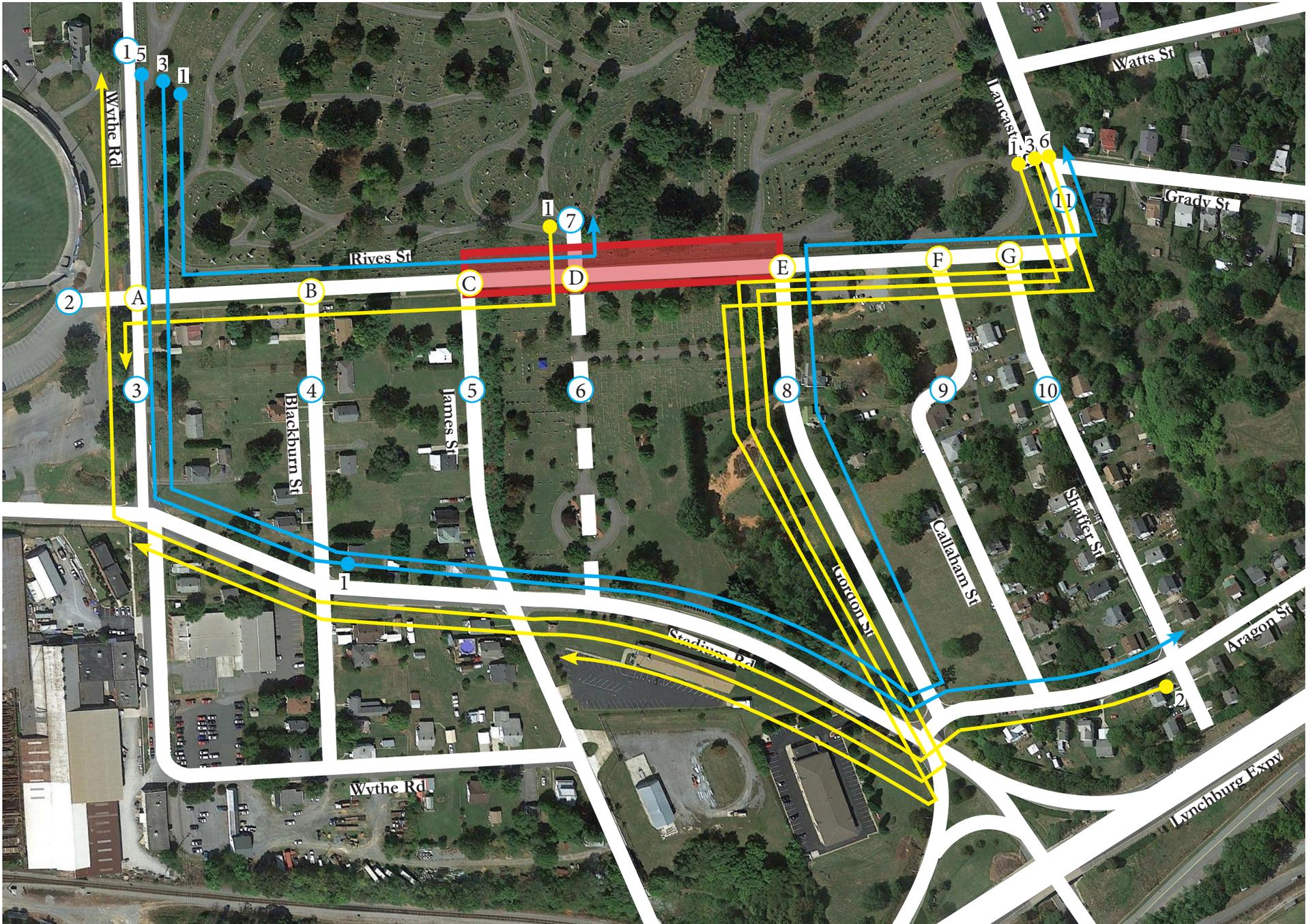


Figure 13 12PM-1PM Traffic Reassignment

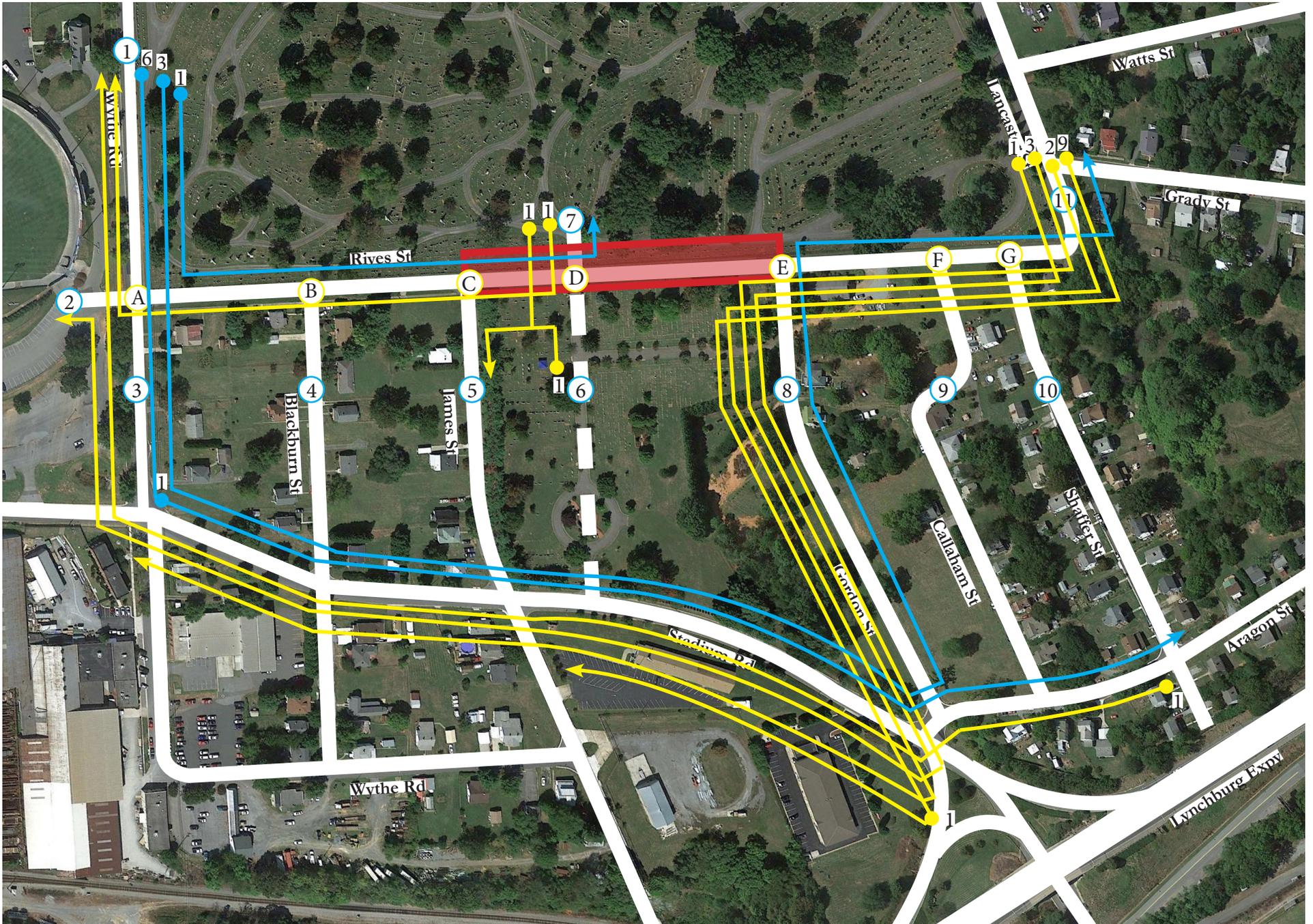


Figure 14 4PM-5PM Traffic Reassignment

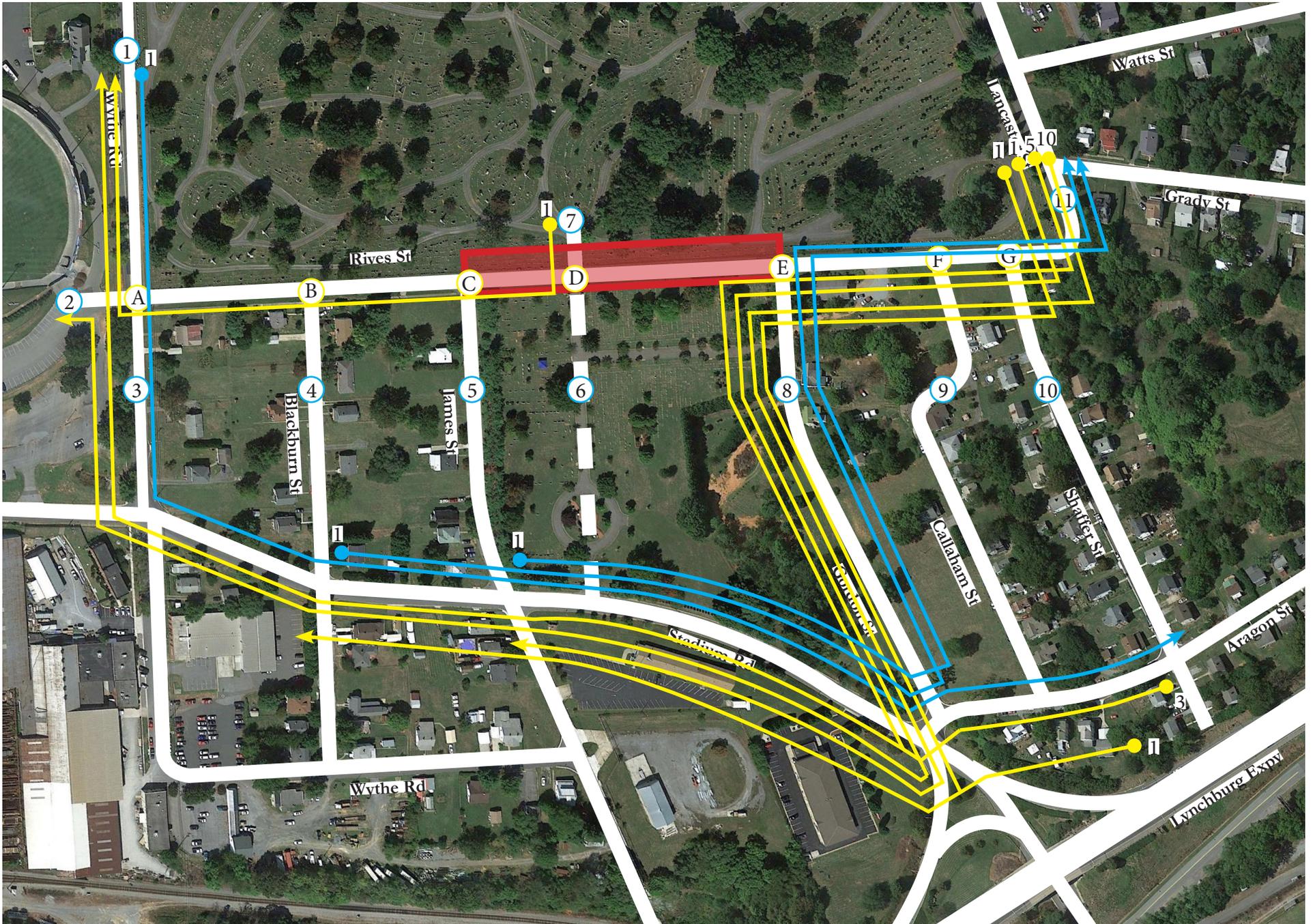


Figure 15 5PM-6PM Traffic Reassignment

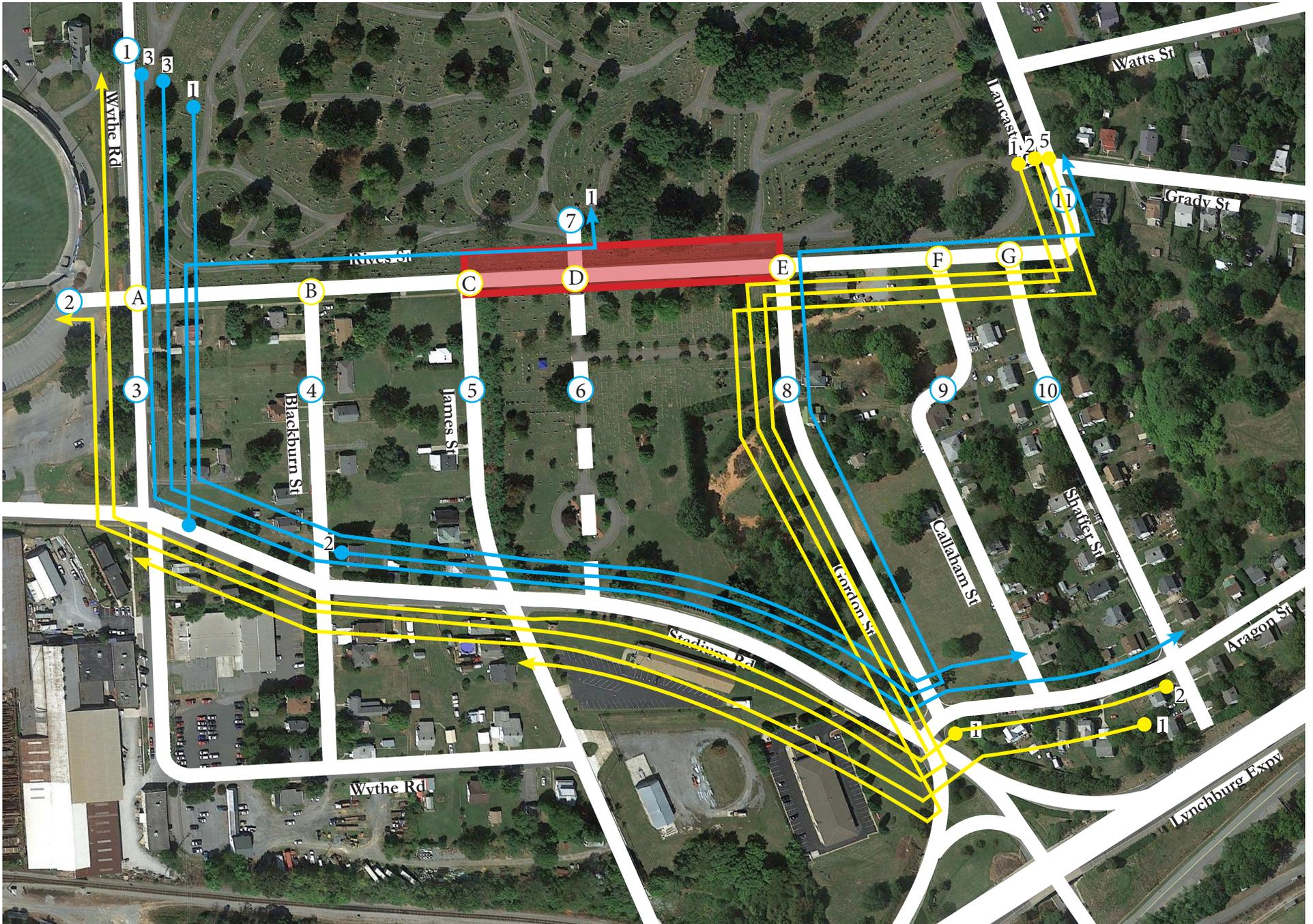


Figure 16 7AM-8AM Traffic Volume Changes



Figure 17 8AM-9AM Traffic Volume Changes



Figure 18 11AM-12PM Traffic Volume Changes

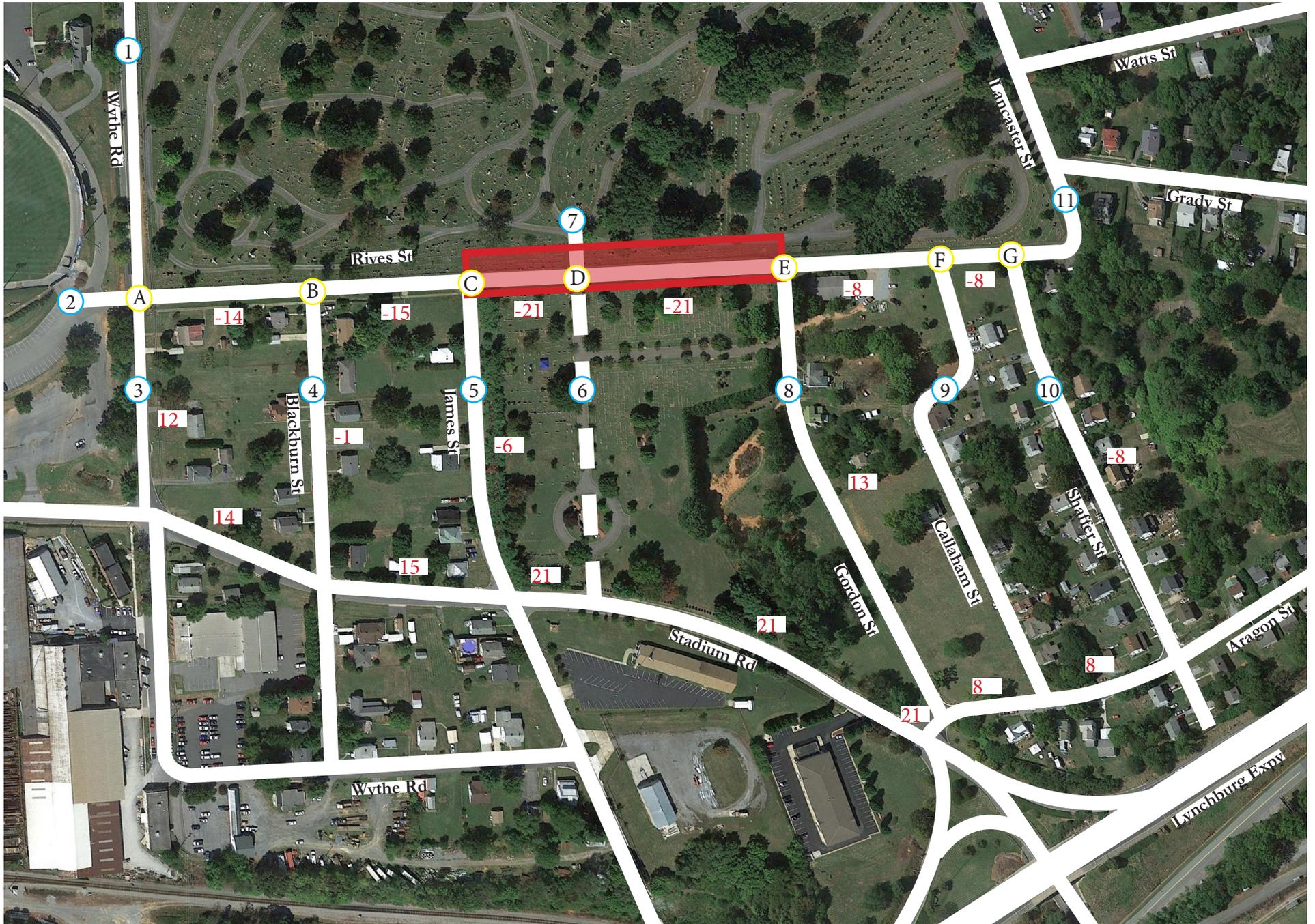


Figure 19 12PM-1PM Traffic Volume Changes

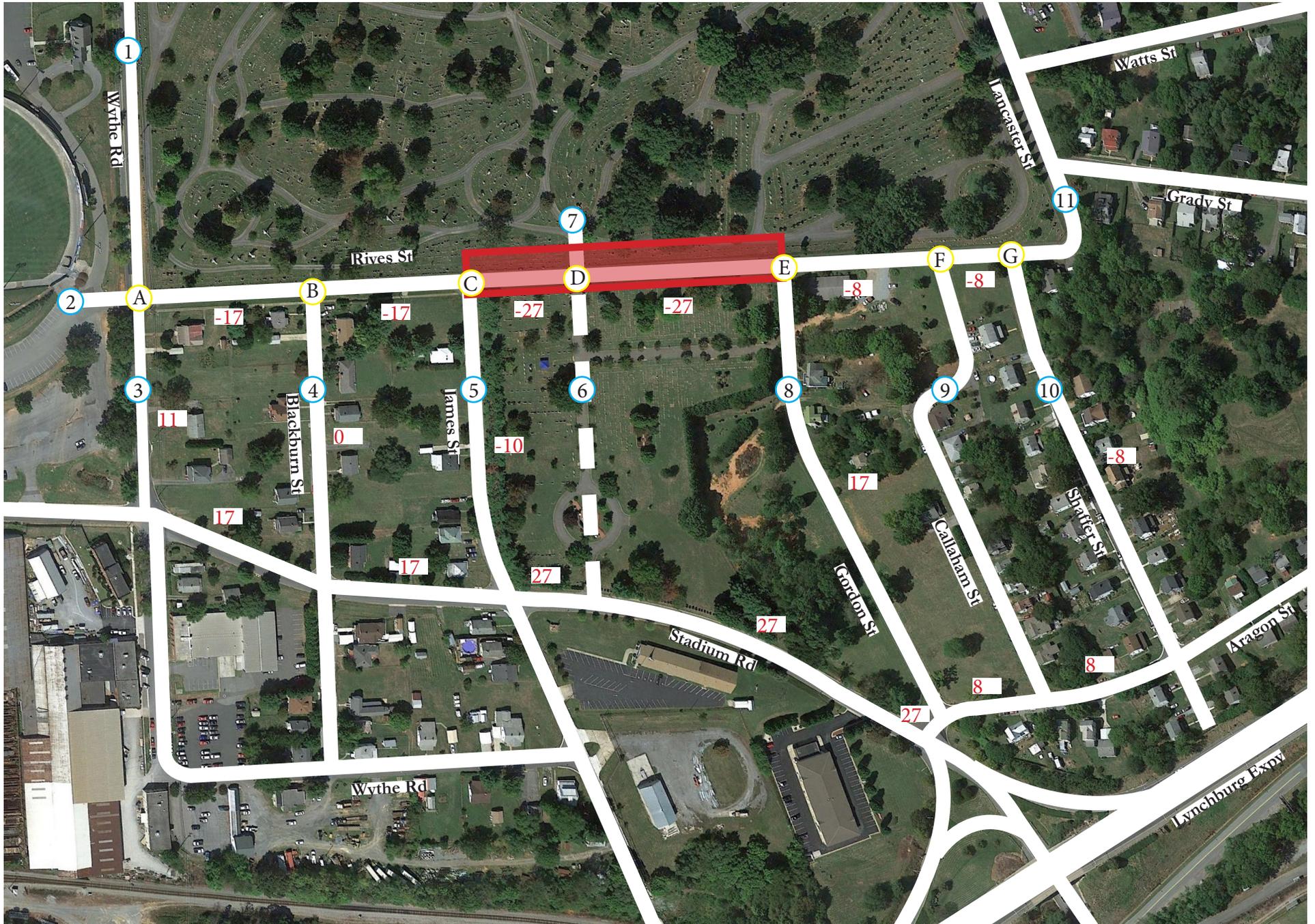


Figure 20 4PM-5PM Traffic Volume Changes

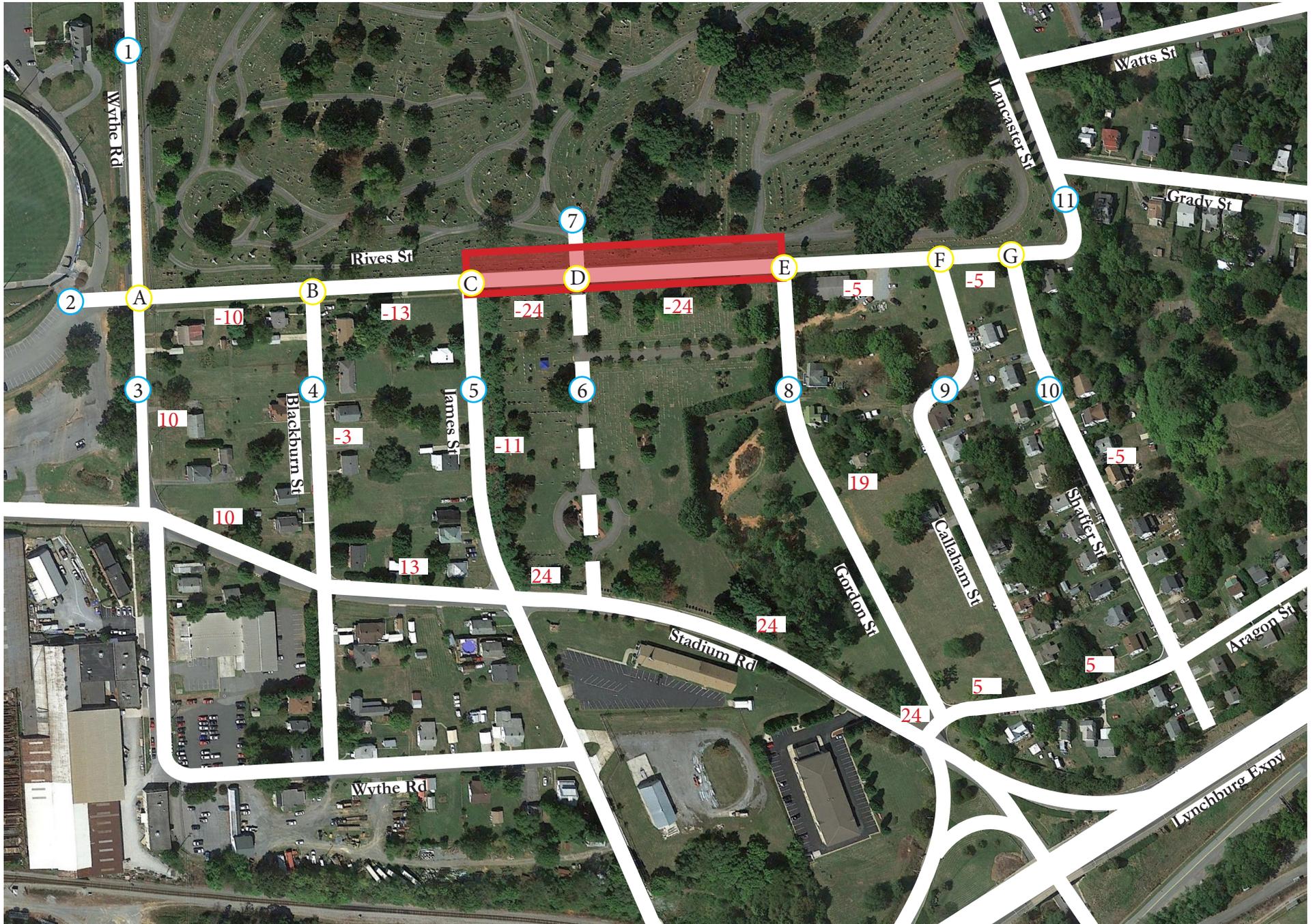
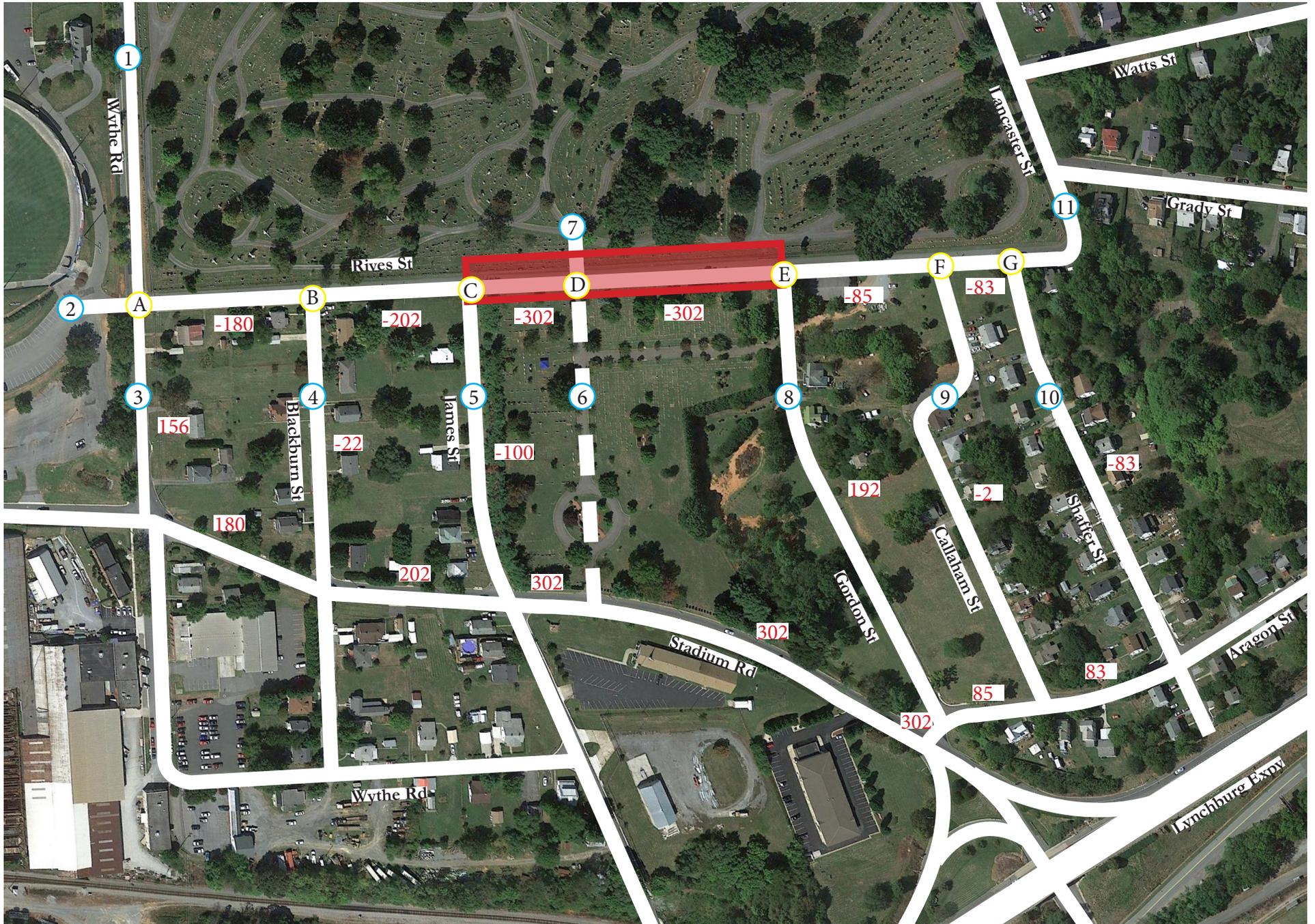


Figure 21 5PM-6PM Traffic Volume Changes



Figure 22 Average Daily Traffic Volume Changes



Appendices

Appendix A
Tube Count Summary Sheets

Site Code: 1
 Station ID:
 Rives, bw James and Cemetery Entrance
 Direction = Away from James
 Latitude: 0' 0.0000 Undefined

Start Time	29-Feb-16		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	NE	Direction	NE	Direction	NE	Direction	NE	Direction	NE	Direction	NE	Direction	NE	Direction	NE	Direction
12:00 AM	*	*	1	0	2	0	4	0	*	*	*	*	*	*	2	0
01:00	*	*	0	0	1	0	1	0	*	*	*	*	*	*	1	0
02:00	*	*	0	0	0	0	1	0	*	*	*	*	*	*	0	0
03:00	*	*	0	0	0	0	1	0	*	*	*	*	*	*	0	0
04:00	*	*	0	0	2	0	1	0	*	*	*	*	*	*	1	0
05:00	*	*	1	0	1	0	1	0	*	*	*	*	*	*	1	0
06:00	*	*	4	0	4	0	6	0	*	*	*	*	*	*	5	0
07:00	*	*	7	0	2	0	4	0	*	*	*	*	*	*	4	0
08:00	*	*	11	0	8	0	8	0	*	*	*	*	*	*	9	0
09:00	*	*	6	0	8	0	4	0	*	*	*	*	*	*	6	0
10:00	*	*	7	0	12	0	12	0	*	*	*	*	*	*	10	0
11:00	8	0	9	0	9	0	10	0	*	*	*	*	*	*	9	0
12:00 PM	10	0	12	0	8	0	11	0	*	*	*	*	*	*	10	0
01:00	7	0	14	0	13	0	16	0	*	*	*	*	*	*	12	0
02:00	11	0	12	0	15	0	11	0	*	*	*	*	*	*	12	0
03:00	8	0	13	0	14	0	11	0	*	*	*	*	*	*	12	0
04:00	13	0	10	0	11	0	3	0	*	*	*	*	*	*	9	0
05:00	12	0	8	0	14	0	10	0	*	*	*	*	*	*	11	0
06:00	10	0	16	0	7	0	*	*	*	*	*	*	*	*	11	0
07:00	9	0	5	0	2	0	*	*	*	*	*	*	*	*	5	0
08:00	6	0	3	0	5	0	*	*	*	*	*	*	*	*	5	0
09:00	8	0	8	0	1	0	*	*	*	*	*	*	*	*	6	0
10:00	1	0	6	0	4	0	*	*	*	*	*	*	*	*	4	0
11:00	0	0	1	0	2	0	*	*	*	*	*	*	*	*	1	0
Lane Day	103	0	154	0	145	0	115	0	0	0	0	0	0	0	146	0
AM Peak	11:00	-	08:00	-	10:00	-	10:00	-	-	-	-	-	-	-	10:00	-
Vol.	8	-	11	-	12	-	12	-	-	-	-	-	-	-	10	-
PM Peak	16:00	-	18:00	-	14:00	-	13:00	-	-	-	-	-	-	-	13:00	-
Vol.	13	-	16	-	15	-	16	-	-	-	-	-	-	-	12	-

Comb. Total 103 154 145 115 0 0 0 146

ADT ADT 150 AADT 150

Site Code: 2
 Station ID:
 Rives bw James and Cemetery Entrance
 Direction = Toward James
 Latitude: 0' 0.0000 Undefined

Start Time	29-Feb-16		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	SW	Direction	SW	Direction	SW	Direction	SW	Direction	SW	Direction	SW	Direction	SW	Direction	SW	Direction
12:00 AM	*	*	1	0	3	0	1	0	*	*	*	*	*	*	2	0
01:00	*	*	0	0	2	0	1	0	*	*	*	*	*	*	1	0
02:00	*	*	0	0	0	0	2	0	*	*	*	*	*	*	1	0
03:00	*	*	0	0	1	0	0	0	*	*	*	*	*	*	0	0
04:00	*	*	1	0	0	0	0	0	*	*	*	*	*	*	0	0
05:00	*	*	3	0	1	0	2	0	*	*	*	*	*	*	2	0
06:00	*	*	0	0	4	0	4	0	*	*	*	*	*	*	3	0
07:00	*	*	12	0	14	0	11	0	*	*	*	*	*	*	12	0
08:00	*	*	9	0	10	0	8	0	*	*	*	*	*	*	9	0
09:00	*	*	10	0	12	0	8	0	*	*	*	*	*	*	10	0
10:00	*	*	12	0	10	0	8	0	*	*	*	*	*	*	10	0
11:00	15	0	9	0	16	0	13	0	*	*	*	*	*	*	13	0
12:00 PM	11	0	18	0	7	0	20	0	*	*	*	*	*	*	14	0
01:00	8	0	12	0	7	0	14	0	*	*	*	*	*	*	10	0
02:00	13	0	18	0	13	0	15	0	*	*	*	*	*	*	15	0
03:00	15	0	19	0	15	0	10	0	*	*	*	*	*	*	15	0
04:00	19	0	16	0	16	0	22	0	*	*	*	*	*	*	18	0
05:00	20	0	15	0	15	0	12	0	*	*	*	*	*	*	16	0
06:00	16	0	14	0	8	0	*	*	*	*	*	*	*	*	13	0
07:00	10	0	3	0	1	0	*	*	*	*	*	*	*	*	5	0
08:00	6	0	4	0	5	0	*	*	*	*	*	*	*	*	5	0
09:00	3	0	4	0	2	0	*	*	*	*	*	*	*	*	3	0
10:00	4	0	2	0	2	0	*	*	*	*	*	*	*	*	3	0
11:00	1	0	0	0	0	0	*	*	*	*	*	*	*	*	0	0
Lane Day	141	0	182	0	164	0	151	0	0	0	0	0	0	0	180	0
AM Peak	11:00	-	07:00	-	11:00	-	11:00	-	-	-	-	-	-	-	11:00	-
Vol.	15	-	12	-	16	-	13	-	-	-	-	-	-	-	13	-
PM Peak	17:00	-	15:00	-	16:00	-	16:00	-	-	-	-	-	-	-	16:00	-
Vol.	20	-	19	-	16	-	22	-	-	-	-	-	-	-	18	-

Comb. Total 141 182 164 151 0 0 0 180

ADT ADT 173 AADT 173

Appendix B
Manual Observation Fieldwork Sheets

Spring Hill Cemetery Fieldwork Sheet Index



	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7			4-B-D-7		
1-A-E-8			4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10			4-B-G-10		
1-A-G-11			4-B-G-11		
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8			5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11			5-C-G-11		
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7			6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10				7 -> (8-11)	(8-11) -> 7
3-A-G-11			7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

Appendix C
Manual Observation Fieldwork Results

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7			4-B-D-7		
1-A-E-8		1	4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10	2	2	4-B-G-10		
1-A-G-11	1	3	4-B-G-11	1	
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8		1	5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11		1	5-C-G-11		3
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7			6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10				7 -> (8-11)	(8-11) -> 7
3-A-G-11			7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7			4-B-D-7		
1-A-E-8		1	4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10	3		4-B-G-10		
1-A-G-11	3	1	4-B-G-11	2	
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8			5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11			5-C-G-11		6
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7			6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10				7 -> (8-11)	(8-11) -> 7
3-A-G-11			7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7	1		4-B-D-7		
1-A-E-8			4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10	5	2	4-B-G-10	1	
1-A-G-11	3	3	4-B-G-11		
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8			5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11			5-C-G-11		6
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7		1	6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10				7 -> (8-11)	(8-11) -> 7
3-A-G-11		1	7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7	1	1	4-B-D-7		
1-A-E-8			4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10	6	1	4-B-G-10		
1-A-G-11	3	3	4-B-G-11		
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		1
2-A-D-7			5-C-D-7		1
2-A-E-8			5-C-E-8		1
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11		1	5-C-G-11		9
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7			6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10	1			7 -> (8-11)	(8-11) -> 7
3-A-G-11		2	7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7		1	4-B-D-7		
1-A-E-8			4-B-E-8		
1-A-F-9			4-B-F-9		
1-A-G-10	1	3	4-B-G-10		1
1-A-G-11		5	4-B-G-11	1	1
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8			5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11		1	5-C-G-11	1	10
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7			6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10				7 -> (8-11)	(8-11) -> 7
3-A-G-11			7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

	1 -> (6-11)	(6-11) -> 1		4 -> (6-11)	(6-11) -> 4
1-A-D-6			4-B-D-6		
1-A-D-7			4-B-D-7		
1-A-E-8		1	4-B-E-8		
1-A-F-9	1		4-B-F-9		
1-A-G-10	3	2	4-B-G-10		
1-A-G-11	3	2	4-B-G-11	2	
	2 -> (6-11)	(6-11) -> 2		5 -> (6-11)	(6-11) -> 5
2-A-D-6			5-C-D-6		
2-A-D-7			5-C-D-7		
2-A-E-8			5-C-E-8		
2-A-F-9			5-C-F-9		
2-A-G-10			5-C-G-10		
2-A-G-11		1	5-C-G-11		5
	3 -> (6-11)	(6-11) -> 3		6 -> (8-11)	(8-11) -> 6
3-A-D-6			6-D-E-8		
3-A-D-7	1		6-D-F-9		
3-A-E-8			6-D-G-10		
3-A-F-9			6-D-G-11		
3-A-G-10		1		7 -> (8-11)	(8-11) -> 7
3-A-G-11			7-D-E-8		
			7-D-F-9		
			7-D-G-10		
			7-D-G-11		

LYNCHBURG CITY COUNCIL

Agenda Item Summary

MEETING DATE: **April 12, 2016 (PDC)**

AGENDA ITEM NO.:

CONSENT:

REGULAR: **X**

WORK SESSION:

CLOSED SESSION:

(Confidential)

ACTION: **X**

INFORMATION:

ITEM TITLE: **Timberlake Rd. - Logan's Lane concept discussion**

RECOMMENDATION:

Approve layout and proceed with design.

SUMMARY:

A traffic analysis of the roundabout configuration for the Timberlake-Logan's Lane-Expressway off-ramp has been performed by AECOM. Per the analysis a standard size roundabout is the preferred alternative as it provides superior traffic flow and safety compared to an all-way stop alternative. An all-way stop condition at the intersection of the off ramp, Logan's Lane at the bank entrance is more economical to construct than the roundabout configuration. However, the all-way stop produces longer delays and poses a greater safety risk as traffic unfamiliar with the intersection could travel the wrong way onto the off ramp. Mini-roundabouts are typically used in urbanized areas with low approach speeds and restrictive right of way conditions, requiring trucks to traverse the center median. Due to the higher approach speeds and location of the ramp, the standard roundabout is the preferred alternative over the mini-roundabout.

VDOT has reviewed the proposed roundabout alternative. The AECOM study addresses VDOT's concerns regarding queue lengths. Per AECOM's study neither the roundabout nor the all-way stop intersection back up traffic onto the Expressway. The queue from the signal at the intersection of Logans Lane and Timberlake does not back into the roundabout.

The roundabout alternative provides the best traffic flow, is safer than the all-way stop option and is more economical than the bridge option. Estimated construction cost is \$3.1M.

PRIOR ACTION(S):

- March 8, 2016-PDC review of revised concept with roundabout.
- January 12, 2016-Council approved purchase of the property at 7001 Timberlake Road with the condition that the conceptual design is brought back to Council for approval.
- March 10, 2015-PDC approved the conceptual bridge layout and authorized pursuing the purchase of the 7001 Timberlake Rd parcel.
- January 26, 2016, November 27, 2012, and May 10, 2011-Council approved applications for revenue sharing funds for this project.

FISCAL IMPACT:

Total project cost is \$5.4M with the new layout including design, land acquisition and construction. Funds for right of way acquisition are available as part of this revenue sharing project.

CONTACT(S):

Maggie Cossman – City Transportation Engineer – 455-3935; Lee Newland – City Engineer – 455-3947
Gaynelle Hart – Public Works Director – 455-4406

ATTACHMENT(S):

AECOM Traffic Analysis Report, dated April 2016

REVIEWED BY:

Traffic Analysis Report Logans Lane Improvements



City of Lynchburg, Virginia

Submitted to:
Maggie Cossman, P.E.
900 Church Street
Lynchburg, Virginia 24504

Prepared by:
AECOM
4840 Cox Road
Glen Allen, Virginia 23060

TRAFFIC ANALYSIS REPORT NARRATIVE

TRAFFIC ANALYSIS DATA APPENDIX 1

DESIGN LAYOUTS APPENDIX 2

TRUCK TURNING MOVEMENTS..... APPENDIX 3

PROJECT OVERVIEW

The City of Lynchburg has requested that AECOM perform traffic analysis of two new Logans Lane ramp termini intersections. AECOM has conducted a variety of work on Logans Lane the past several years including traffic analysis and design work. The genesis of the AECOM work was an Interchange Modification Report (IMR) that began in 2013 and was last revised in May 2014. The basic premise of the IMR was to relocate the existing southeast U.S. Route 501 off-ramp to Timberlake Road so that the reconfigured ramp would align with Logans Lane. The preferred alternative from the May 2014 IMR was a conventional unsignalized 4-way intersection with two-way stop control; the U.S. Route 501 off-ramp would free-flow through this intersection. Following the IMR there were several iterations of the design and an alternative that included a small bridge became the preferred alternative. Because the bridge alternative is a more expensive alternative the City is considering two new alternatives: a three-way, all stop controlled alternative and a roundabout alternative.

The analysis contained in this report is based on traffic data contained in the May 2014 Logans Lane IMR. Specifically, the two alternatives were evaluated under AM and PM weekday peak hours in the 2037 design year. SimTraffic 9 was used to assess the delay and queue lengths for both alternatives. Ten (10) one hour SimTraffic simulations were run for each peak hour, they were then averaged to provide the final results. Sidra 6.1 was also used to assess the roundabout alternative because it is one of VDOT's preferred software tools for analyzing roundabouts. The traffic analysis data can be found in Appendix 1.

AECOM has been working with the City to develop design concepts for the two alternatives. The three-way all stop controlled alternative and the roundabout alternative layouts can be found in Appendix 2.

TRAFFIC ANALYSIS

The traffic analysis of the two proposed alternatives demonstrates that the roundabout alternative will provide shorter delays and shorter queue lengths than the all-way stop-controlled alternative. In particular, delays and queues are shorter on the southbound U.S. Route 501 off-ramp in the roundabout alternative. The all-way stop controlled alternative may cause minor impacts to the operations of U.S. Route 501 in the PM peak hour whereas the roundabout alternative should not have any impacts on operations of U.S. Route 501. Based on operations alone, the roundabout intersection is a better alternative than the all-way stop controlled intersection.

For the ultimate build condition, the IMR provided queue lengths at the signalized intersection of Logans Lane and Timberlake Road. The maximum queue length is 250' in the peak traffic condition (PM peak), shown in Table VII.41 on page 79 of the IMR. The distance from the exit of the proposed roundabout to the stop bar at the intersection of Logans Lane and Timberlake Road is 420'. Based on this data, the queue at the signalized intersection will not back up into the roundabout.

SAFETY

The roundabout alternative provides the safest mode of transportation for the travelling public. The roundabout geometry results in the traffic entering the roundabout with minimal conflict points and circulating at slow speeds. The diameter of the roundabout provides the necessary area for larger

trucks (WB-67) to traverse the roundabout safely. The truck turning movements (produced with the design software Auto-Turn) can be found in Appendix 3.

The all-way stop intersection would create an unfamiliar traffic condition for the general public. The northbound lane of Logans Lane would align with the Route 501 off-ramp, which would be a one-way lane. This could create confusion and result in traffic travelling the wrong direction on the off-ramp. The all-way stop condition does not allow the ability to make a u-turn. The all-way stop condition would also introduce left-turn movements which would decrease intersection safety with additional conflict points.

MINI-ROUNABOUTS

A mini-roundabout was investigated and is not recommended at this location. Mini-roundabouts are typically used in urban environments with tight right-of-way situations with low approach speeds. The traffic volume and approach speed of the Route 501 off-ramp does not fit the typical mini-roundabout scenario. The small diameter of a mini-roundabout requires trucks to utilize the entire mini-roundabout to make left turns, using the traversable center island. The left turns across traffic and the smaller deflection entry angle would reduce driver safety.

AESTHETICS

The roundabout alternative can provide an attractive entry into the area from U.S. Route 501. Landscaping and decorative ornaments can be used to increase the aesthetic quality of the intersection.

CONCLUSION

In conclusion, AECOM recommends the roundabout alternative from both a traffic operations and safety standpoint. The roundabout alternative reduces delays, shortens queues, and increases safety for the travelling public.

APPENDIX 1

Table 1 displays a summary of the SimTraffic delay analysis for the all-way stop alternative. This alternative exhibited moderate delays with longer delays in the PM peak hour particularly on the southbound U.S. 501 off-ramp (22.6 seconds of delay per vehicle).

**Table 1
All-Way Stop Alternative
SimTraffic Delay Analysis**

Scenario	Overall Delay	Delay per Lane Group by Movement (sec/veh)			
		Southbound Rt. 501 Off-Ramp	Southbound Rt. 501 Off-Ramp	Northbound Logans Lane	Eastbound Bank Driveway
		Through	Right	Left	Right
AM Peak Hour					
2037 Build Conditions	10.4	12.0	6.3	4.6	3.8
PM Peak Hour					
2037 Build Conditions	18.6	22.6	19.4	6.0	5.4

Table 2 summarizes the SimTraffic queuing analysis of the all-way stop controlled intersection. Queues were generally short (>100 feet) with the exception of the southbound U.S. 501 off-ramp with 271 feet in the PM peak hour.

**Table 2
All-Way Stop Alternative
SimTraffic Queue Analysis**

Intersection	Movement	95% Queue Length (ft)	Storage Length Available (ft)
AM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	88	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	48	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	57	~200
PM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	271	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	63	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	67	~200

Table 3 displays a summary of the SimTraffic delay analysis for the roundabout alternative. This alternative exhibited short delays with slightly longer delays in the PM peak hour. Delays on the southbound U.S. 501 off-ramp were shorter with the roundabout alternative than they were with the all-way stop alternative.

**Table 3
Roundabout Alternative
SimTraffic Delay Analysis**

Scenario	Overall Delay	Delay per Lane Group by Movement (sec/veh)			
		Southbound Rt. 501 Off-Ramp	Southbound Rt. 501 Off-Ramp	Northbound Logans Lane	Eastbound Bank Driveway
		Through	Right	Left	Right
AM Peak Hour					
2037 Build Conditions	6.1	7.0	3.9	1.8	2.9
PM Peak Hour					
2037 Build Conditions	8.7	10.5	7.3	2.0	4.2

Table 4 summarizes the SimTraffic queuing analysis of the roundabout intersection. Queues were generally short (>100 feet) with the exception of the southbound U.S. 501 off-ramp with 122 feet in the PM peak hour. Queues on the southbound U.S. 501 off-ramp were shorter with the roundabout alternative than they were with the all-way stop alternative.

**Table 4
Roundabout Alternative
SimTraffic Queue Analysis**

Intersection	Movement	95% Queue Length (ft)	Storage Length Available (ft)
AM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	35	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	0	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	44	~200
PM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	122	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	0	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	61	~200

Table 5 displays a summary of the Sidra delay analysis for the roundabout alternative. This alternative exhibited short delays with slightly longer delays in the PM peak hour. All of the delays were less than 10 seconds per vehicle. Delays on the southbound U.S. 501 off-ramp were shorter with the roundabout alternative than they were with the all-way stop alternative.

**Table 5
Roundabout Alternative
Sidra Delay Analysis**

Scenario	Overall Delay (LOS)	Delay per Lane Group by Movement (sec/veh) (Level of Service)			
		Southbound Rt. 501 Off-Ramp	Southbound Rt. 501 Off-Ramp	Northbound Logans Lane	Eastbound Bank Driveway
		Through	Right	Left	Right
AM Peak Hour					
2037 Build Conditions	5.2 (A)	5.5 (A)	5.5 (A)	2.8 (A)	4.8 (A)
PM Peak Hour					
2037 Build Conditions	8.2 (A)	9.1 (A)	9.1 (A)	3.3 (A)	7.6 (A)

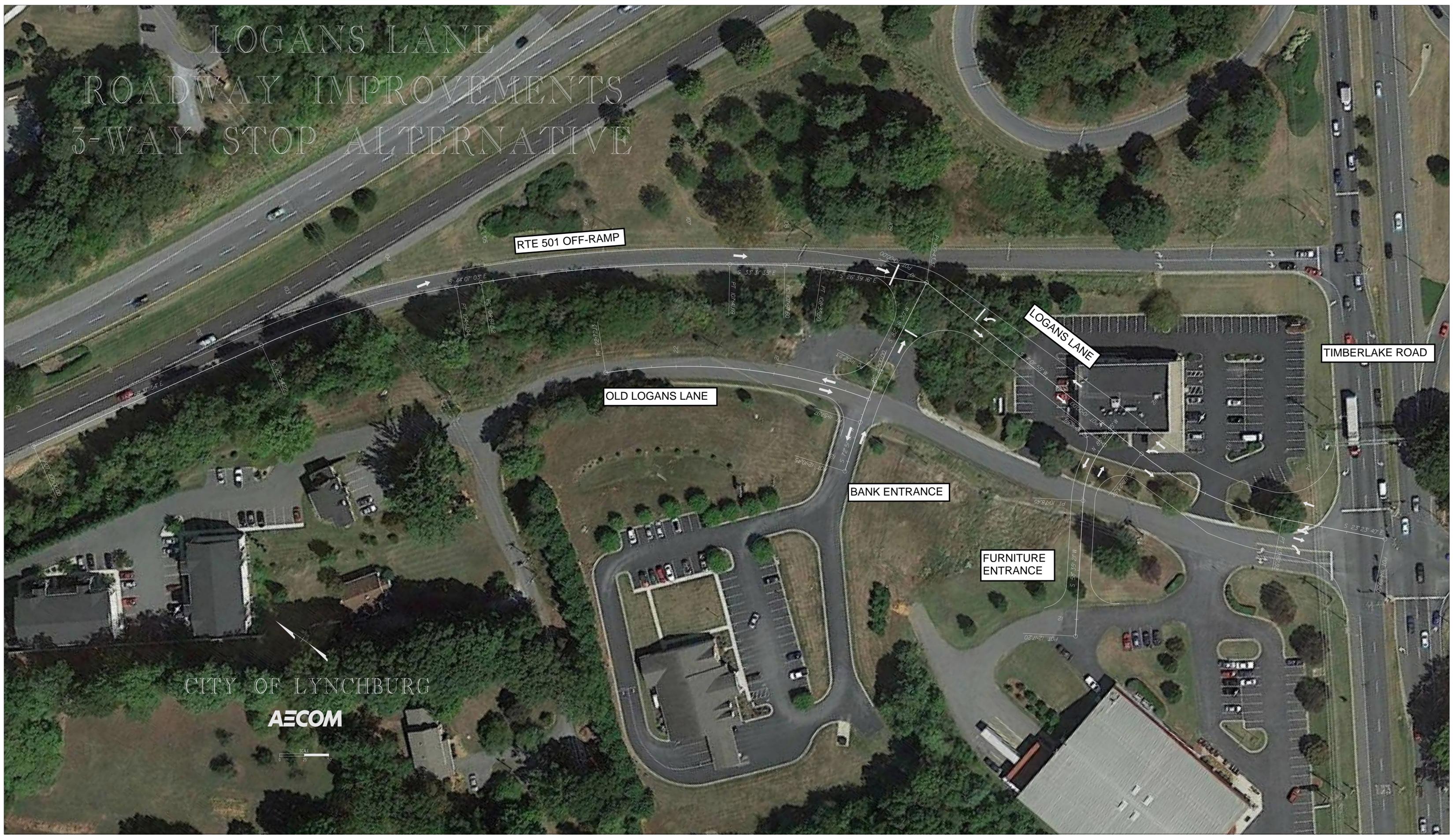
Table 6 summarizes the Sidra queuing analysis of the roundabout intersection. Queues were all shorter than 100 feet with the longest queue on the southbound U.S. 501 off-ramp with 93 feet in the PM peak hour. Queues on the southbound U.S. 501 off-ramp were shorter with the roundabout alternative than they were with the all-way stop alternative.

**Table 6
Roundabout Alternative
Sidra Queue Analysis**

Intersection	Movement	95% Queue Length (ft)	Storage Length Available (ft)
AM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	34	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	0	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	11	~200
PM Peak Hour			
U.S. 501 Off-Ramp/Logans Lane	Southbound Through-Right	93	~700
U.S. 501 Off-Ramp/Logans Lane	Northbound Left	0	~300
U.S. 501 Off-Ramp/Logans Lane	Eastbound Right	28	~200

APPENDIX 2

LOGANS LANE ROADWAY IMPROVEMENTS 3-WAY STOP ALTERNATIVE



RTE 501 OFF-RAMP

OLD LOGANS LANE

BANK ENTRANCE

FURNITURE ENTRANCE

LOGANS LANE

TIMBERLAKE ROAD

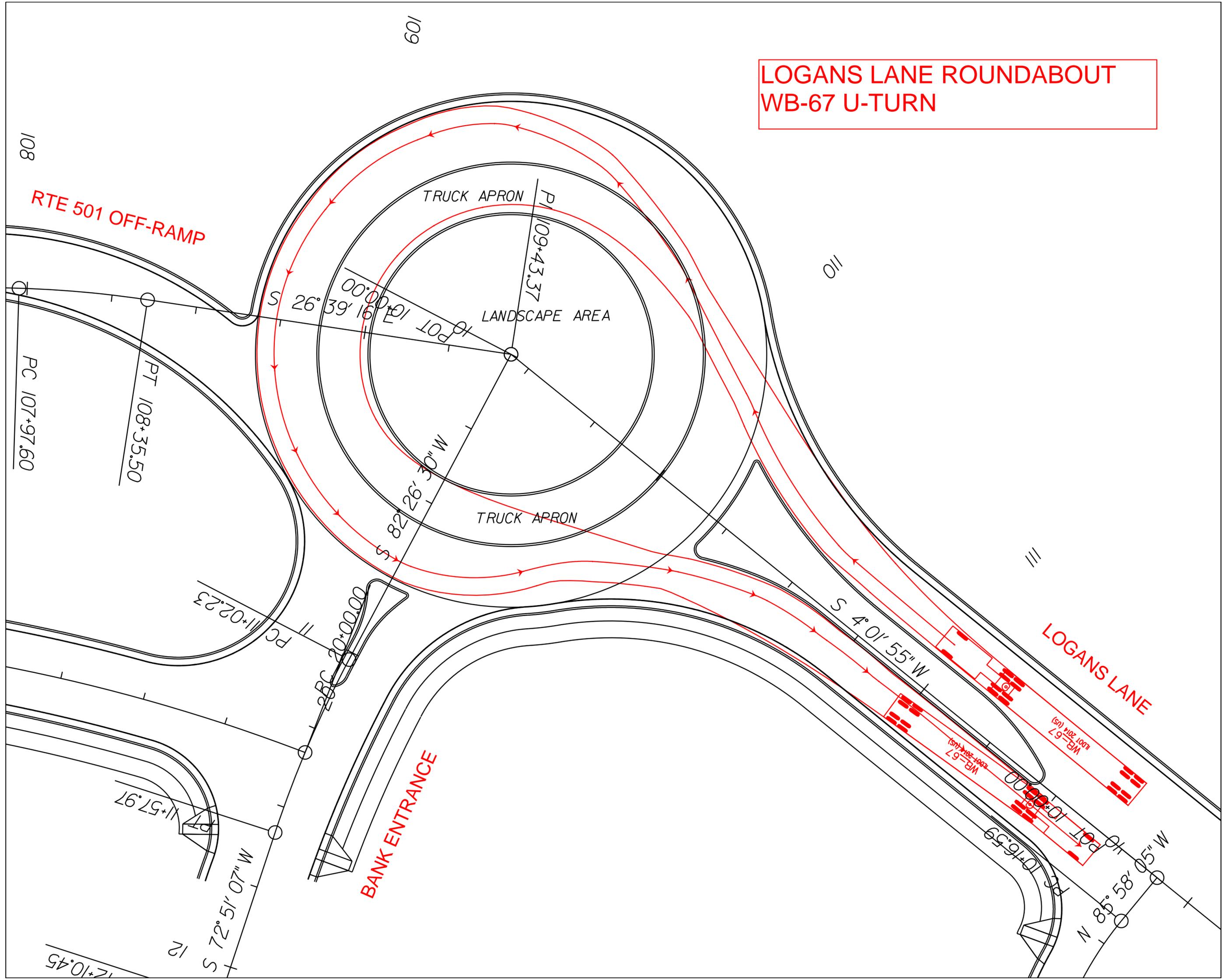
CITY OF LYNCHBURG

AECOM

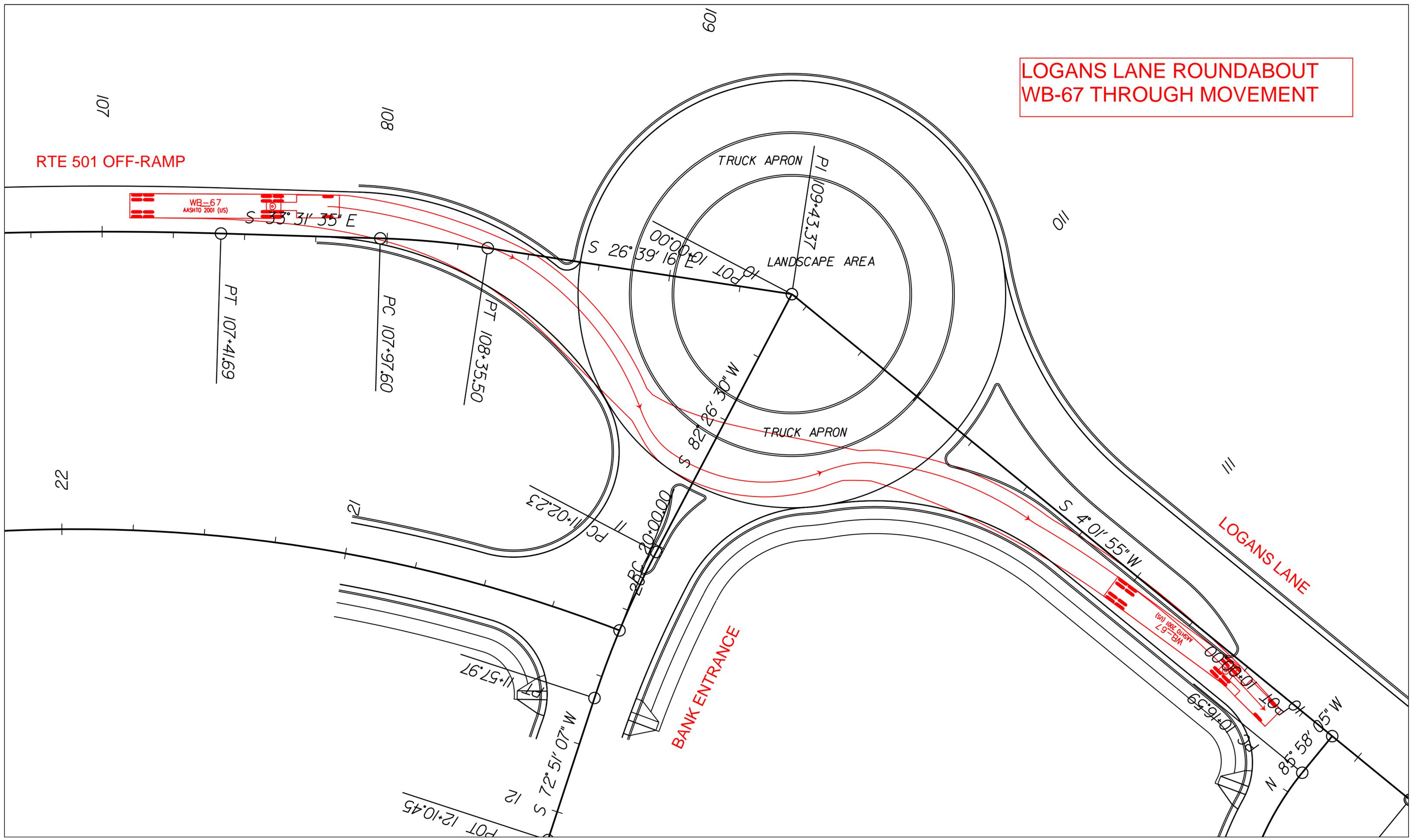


APPENDIX 3

**LOGANS LANE ROUNDABOUT
WB-67 U-TURN**



**LOGANS LANE ROUNDABOUT
WB-67 THROUGH MOVEMENT**



LYNCHBURG CITY COUNCIL

Agenda Item Summary

MEETING DATE: April 12, 2016 PDC		AGENDA ITEM NO.:	
CONSENT:	REGULAR: X	WORK SESSION:	CLOSED SESSION: (Confidential)
ACTION: X		INFORMATION:	
<u>ITEM TITLE:</u> Transportation Investment Generating Economic Recovery (TIGER) Grant Proposal			

RECOMMENDATION: Forward to full Council with recommendation to authorize the City Manager to submit a TIGER grant application and commit to provide matching funds if the grant is received.

SUMMARY: The United States Department of Transportation (USDOT) issued a Notice of Funding Availability (NOFA) for 2016 TIGER funds on Tuesday, February 23, 2016. The TIGER program is a USDOT discretionary grant that funds capital investments in surface transportation infrastructure that generates economic development and improves access to reliable, safe and affordable transportation in communities. Grants are awarded on a competitive basis and must include a minimum of a 20% match from the locality.

City staff, along with some consulting assistance, is working to submit a TIGER grant application that, if approved, would provide funding for multi-modal transportation improvements in conjunction with the Downtown Utility Line replacement and Streetscape improvements. Phase I of the project is under construction and includes the blocks along Church and Main Streets from 5th to 8th Street. Phase II includes the blocks along Main and Commerce Streets from 8th Street to the Main Street Bridge over the Lynchburg Expressway. Phase II also includes a Park & Ride lot and mini-public transit hub for the Greater Lynchburg Transit Company (GLTC) at 351 Court Street, as well as bicycle and pedestrian improvements to the John Lynch Bridge. Phase III includes improvements along Church Street from 8th Street to Pearl Street and Court Street from 7th Street to 11th Street.

If approved, the grant requires construction to start within three years of the grant award and project completion within five years of construction start. The projected budget numbers include a 25% match.

PRIOR ACTION(S):

FISCAL IMPACT: Total Project Cost (Phases II & III) - \$43.2 Million

- Design - Multi-Modal Improvement - \$2.6 Million (pre-grant, not included as match) (potential funding sources - CDBG, FY2019 & FY2020 Downtown Improvement funds)
- Design - Waterline - \$742,000 (pre-grant, not included as match)
- TIGER Grant Request - \$30.1 Million
- City Match from Water Fund - \$9.6 Million
- City Match from General Fund - \$218,000

CONTACT(S): Maggie Cossman, Transportation Engineer – 455-3935
Anna Bentson, Deputy Director of Economic Development – 455-4493
Bonnie Svrcek, Deputy City Manager – 455-3987

ATTACHMENT(S):

- Resolution
- TIGER Grant Overview Map

REVIEWED BY:

RESOLUTION:

A RESOLUTION AUTHORIZING THE CITY MANAGER TO SUBMIT AN APPLICATION TO THE UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT), TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY (TIGER) DISCRETIONARY GRANT PROGRAM AND TO AUTHORIZE THE CITY MANAGER TO SIGN A LETTER OF COMMITMENT TO PROVIDE MATCHING FUNDS IF GRANT FUNDING IS RECEIVED.

WHEREAS, the USDOT issued a Notice of Funding Availability (NOFA) for 2016 TIGER funds on Tuesday, February 23, 2016; and

WHEREAS, the City of Lynchburg has identified a transportation project that meets the goals and requirements of generating economic development and improving access to reliable, safe and affordable transportation as contained within the NOFA; and

WHEREAS, City Council has identified that implementation of the Downtown transportation improvement project will further the Vision of the *Comprehensive Plan 2013-2030* by reinforcing Downtown as the heart of the Region's public, cultural and social life through strategic public and private investment; and

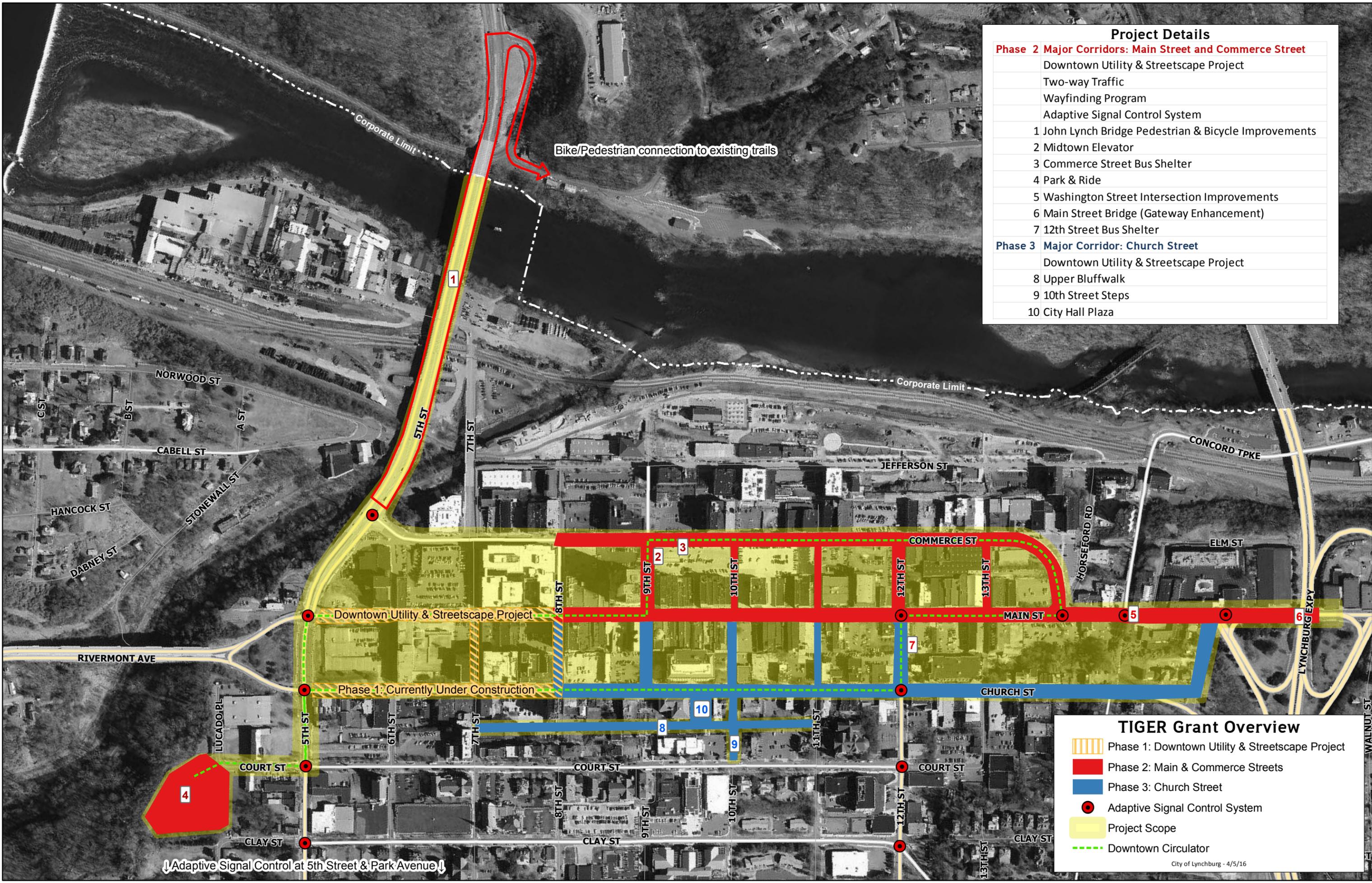
WHEREAS, City Council has identified that implementation of the Downtown transportation improvement project supports City Council's adopted FY 2015 priorities, will strengthen the pillars of Arts & Culture, Citizen Engagement and Social Capital, Economic Development, Healthy & Active Living, Infrastructure, Land Use, Life Long Learning, Natural Resources, Neighborhoods, Safe Community, Social Equity and Transportation of the 2014 Strategic Plan by making the City a Great Place to Live Work & Play; and

WHEREAS, City Council has identified that the Downtown transportation improvement project will further the implementation of the Downtown & Riverfront Master Plan 2000; and

NOW, THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LYNCHBURG THAT the City Manager is hereby authorized to submit a grant application to the USDOT TIGER Program in response to the February 23, 2016 NOFA, and is further authorized to sign a letter indicating the City of Lynchburg's commitment to provide matching funds if grant funding is received.

Adopted:

Certified: _____
Clerk of Council



Project Details

Phase 2 Major Corridors: Main Street and Commerce Street

- Downtown Utility & Streetscape Project
- Two-way Traffic
- Wayfinding Program
- Adaptive Signal Control System
- 1 John Lynch Bridge Pedestrian & Bicycle Improvements
- 2 Midtown Elevator
- 3 Commerce Street Bus Shelter
- 4 Park & Ride
- 5 Washington Street Intersection Improvements
- 6 Main Street Bridge (Gateway Enhancement)
- 7 12th Street Bus Shelter

Phase 3 Major Corridor: Church Street

- Downtown Utility & Streetscape Project
- 8 Upper Bluffwalk
- 9 10th Street Steps
- 10 City Hall Plaza

TIGER Grant Overview

- Phase 1: Downtown Utility & Streetscape Project
- Phase 2: Main & Commerce Streets
- Phase 3: Church Street
- Adaptive Signal Control System
- Project Scope
- Downtown Circulator

Two-Way Conversion as a Downtown Revitalization Tool

Traffic Engineers have evaluated the conversion from one to two-way and it will work on a practical level. Staff and consultants have identified and modeled turning movements, traffic flow, loading zones, and on-street parking on Church and Main Streets.

One way streets allow for greater traffic and higher automobile speeds, while two-way streets provide the same functionality, while also increasing pedestrian safety and business visibility, essentials for successful downtowns.

Economic Vitality

The most important reason for changing the traffic flow of a downtown is to improve the economic well-being of the commercial district and, more specifically, to boost the visibility and accessibility of the retail segment. In this regard making the circulation system more “customer friendly” is a prerequisite in increasing the retail of downtown and appealing to investors and merchants who are interested in coming to main street.

Pedestrian Movement

Changing the downtown environment better serves pedestrian movement for residents and visitors. Two way streets are perceived to be narrower thereby slowing traffic which allows for more visibility to drivers. For instance, at 30 mph, the driver begins to see things at the road’s edge; and at 20 mph the foreground comes into focus. At 15 mph, motorists see pedestrians and other elements on adjacent buildings. This translates into safer streets for pedestrians.

Bicycle Movement

Two-way traffic also reduces conflicts between autos and bicycles as traffic speeds are slower and allow for bicyclists to remain with the flow of traffic. All-way stops further the decrease in conflicts as driver awareness is elevated when they look to the left and right before proceeding.

Safety

Two-way conversion improves the livability of a neighborhood by significantly reducing crime due in part to more “eyes on street”. A study in the City of Louisville found three years after the conversion crime dropped 23%. Auto theft dropped 36% while robberies dropped 42%.

Increased Property Value

Due to overall economic vitality and crime reduction, property values in the downtown area see an increase. Property owners take pride in ownership and neighbors demand property cleanliness and upgrades to building facades. Livable streets equal neighborhood prosperity especially when coupled with proven infrastructure improvements, such as street trees, public art, and street lighting.

Note: According to research, over 100 cities in America have converted to two-way as a method of traffic calming in their downtown core.

Links to articles used in the research of two-way conversion:

<http://www.preservationnation.org/main-street/main-street-news/2002/06/converting-one-way-to-two-way.html>

http://www.centralbaltimore.org/wp-content/uploads/2014/11/Converting-Downtown-Streets-From-One-way-to-Two-way-Yields-Positive-Results_Urban-Transportation-Monitor-2000.pdf

<http://www.planetizen.com/node/69354>

<http://www.governing.com/topics/transportation-infrastructure/The-Return-of-the.html>

http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=1595&context=all_theses



Two-Way Conversion

Date: April 1, 2016

From: David Newberger
Subject: Two-Way Conversion Findings

Work Order Number: 46485-001
Contract Number: 1100000829
Project: Downtown Water Mains Phase 1

The purpose of this memorandum is to present findings of the design impact (AutoTurn, loading/unloading, parking) associated with converting Main Street and Church Street from one-way to two-way between 5th Street and 12th Street. This builds off a previously prepared traffic impact analysis memorandum developed by E&PR, "Comparison of One-way versus Two-way Traffic Operations" (dated 9/30/12).

AutoTurn Design Vehicle:

1. Design Vehicles Tested
 - a. Passenger Vehicle
 - b. SU-30

AutoTurn Movements (Main/Church are assumed to run East/West)

2. Lane Use Configuration 1
 - a. Main Street and Church Street converted to two-way
 - b. Existing lane use on side streets (as of March 2016)
 - 7th Street two-way
 - 8th Street two-way
 - 9th Street two-way
 - 10th Street one-way NB
 - 11th Street one-way SB
 - 12th Street two-way

Results:

- Passenger vehicles adequately maneuver every movement.
- SU-30 shows significant issues navigating right and left turns at intersections with 7th Street, 8th Street, and 9th Street including tracking over existing/proposed curb lines and turning into oncoming traffic.
- During a findings meeting with the City of Lynchburg on 2/23/16, WRA proposed that 7th and 8th street be converted to one-way to accommodate truck movements. City discussed change with the Virginian hotel who agreed to the proposed changes if/when Main and Church Streets are converted to two-way.

3. Lane Configuration 2
 - a. Main Street and Church Street converted to two-way
 - b. Proposed lane use on side streets
 - 7th Street one-way NB
 - 8th Street one-way SB
 - 9th Street two-way
 - 10th Street one-way NB
 - 11th Street one-way SB
 - 12th Street two-way

Results: See Attachment 1 "AutoTurn Exhibits". Wheel paths highlighted in red indicate tracking over existing/proposed curb lines and/or turning into oncoming traffic. Per meeting with City of Lynchburg on 3/21/16 the following mitigations were discussed:

- Main Street & 5th Street
 - Move WB Main Street left turn stop bar 15' away from intersection to allow for overturn of SU-30 from NB Main Street to EB 5th Street.
- Main Street & 7th Street
 - Restrict trucks on 7th Street between Main Street and Court Street.
 - Modify bump-out on NW corner to accommodate SU-30 right turn from SB 7th Street to WB Main Street.
- Main Street & 8th Street
 - Reduce bump out on NW and/or SE corners to accommodate SU-30 left turn from SB 8th Street to EB Main Street.
 - Remove parking along NB 8th Street within 40' of Main Street.
- Main Street & 9th Street
 - No changes to 9th Street. SU-30 will use available road width to navigate turns. City to monitor and determine if movement restrictions are necessary.
- Main Street & 10th Street
 - No conflicts
- Main Street & 11th Street
 - No conflicts
- Main Street & 12th Street
 - No conflicts
- Church Street & 5th Street
 - Remove parking along EB Church Street within 40' of 5th Street.
- Church Street & 6th Street
 - No conflicts
- Church Street & 7th Street
 - Restrict trucks on 7th Street between Main Street and Court Street.
- Church Street & 8th Street
 - Restrict right turns for trucks from SB 8th Street to WB Church
 - Modify bump out in SE corner to accommodate SU-30 left turn from SB 8th Street to EB Church Street
- Church Street & 9th Street
 - No changes to 9th Street. SU-30 will use available road width to navigate turns. City to monitor and determine if movement restrictions are necessary.
- Church Street & 10th Street
 - No conflicts
- Church Street & 11th Street
 - Restrict right turns for trucks from SB 11th Street to WB Church
- Church Street & 12th Street
 - No conflicts



Loading/Unloading

4. Existing and proposed Loading/Unloading zones have been identified and are shown on Attachment 2 "Loading/Unloading Zones". Methodology for developing loading/unloading zones is as follows:
 - a. Provide all-day (7AM – 6PM) loading/unloading zones on each block.
 - b. Combine individual loading/unloading zones into one continuous loading/unloading zone to accommodate larger trucks.
 - c. Provide additional time restricted (9AM – 11AM) loading/unloading along Main Street between 9th Street and 10th Street.
 - d. Locate Loading / Unloading Zones along the North side of Main Street and South side of Church Street (where possible) to minimize need for delivery drivers to modify their delivery routes.
 - e. Provide additional all-day (7AM – 6PM) loading/unloading zones along Commerce Street between 9th Street and 10th Street to accommodate deliveries after 11AM.
- Existing Loading / Unloading Zones (7AM – 6PM): **13** parking spaces
- Proposed Loading / Unloading Zones (7AM – 6PM): **27** parking spaces
- Net Difference: **+14** parking spaces
- Proposed Loading / Unloading Zones (7AM – 11AM): **8** parking spaces

Parking

5. Existing parking spaces were counted and compared to proposed spaces:
 - Main Street: **-8** parking spaces between 5th Streets and 8th Streets
 - Church Street: **-6** parking spaces between 5th Streets and 8th Streets
 - Side Streets: **+18** parking spaces added to 7th Street and 8th Street between Commerce Street and Church Streets.
 - Net Difference: **+4** parking spaces.
 - With additional Loading / Unloading Zones (see below), Net Differences (7AM – 6PM): **-10** parking spaces



Summary of Costs for Two-Way Conversion

Remove eight (8) existing signals including foundations below grade and restoration	\$ 280,000
Remove and replace with modifications for two-way traffic five (5) signals	\$1,000,000
Signage relocation including addition of all-way stops	\$ 25,000
Design fees	\$ 200,000
CEI fees and contingencies	<u>\$ 395,000</u>
Total	\$ 1,900,000



Downtown Lynchburg

Imagery - 2015