TYSONS CORNER

Neighborhood Traffic Impact Study

Traffic Analysis Report

Task Order No. 07-077-03

Prepared by:

RK&K

Prepared for:

FCDOT
Serving Fairfax County for 25 Years and More

DRAFT August 5, 2009

TABLE OF CONTENTS

Page

SUMMARY I
INTRODUCTION 3
EXISTING CONDITIONS 4
DATA COLLECTION 4
STUDY AREA CORRIDORS 4
EXISTING (2008) TRAFFIC VOLUMES 5
EXISTING INTERSECTION CAPACITY ANALYSIS 7
TRAFFIC FORECASTING 13
COMPREHENSIVE PLAN MODEL 13
GMU HIGH PLAN MODEL 13
TECHNICAL APPROACH: 13
FUTURE INTERSECTION CAPACITY ANALYSIS 16
MITIGATION MEASURES 17
METHODOLOGY: 17
CONCEPTUAL COST ESTIMATES 35

LIST OF TABLES

Page

Table S-1 : Summary of Intersection Capacity Analyses - Synchro Results ii
Table 1: Intersection Capacity Analyses - Synchro Results 7
Table 2: 2008 Study Intersections Performance 12
Table 3: Summary of Study Intersections in all Scenarios 16
Table 4: Intersection Mitigation Measures 17
Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results 18
Table 6: Intersection Lane Configuration 25
Table 7: Intersection Storage Lengths – Existing and Proposed 28
Table 8: Cost Estimation for Proposed Mitigation 38

LIST OF FIGURES

Figure 1: Study Intersections - Location Map
Figures 1A through 1D: 2008 Existing Traffic Volumes

LIST OF APPENDICES

Appendix A – Intersection Data
Appendix B - Traffic Volumes
Appendix C – Synchro Worksheets – 2008 Existing Conditions
Appendix D – Synchro Worksheets – 2030 Future Conditions
Appendix E – Synchro Worksheets – 2030 Future Mitigation Measures
Appendix F – Cost Estimates

SUMMARY

In the process of assessing the impacts of the four planned Metrorail stations, the Fairfax County Board of Supervisors, along with the Tysons Land Use Task Force are performing this neighborhood traffic impact study. RK&K is supporting the Fairfax County Department of Transportation (FCDOT) in assessing the operational differences between the Comprehensive Plan and the GMU High land use alternative for the year 2030, for neighborhoods on the periphery of the Tysons Corner area.

Working with the local communities, FCDOT selected nineteen (19) intersections for assessment in this study. The major corridors in the study area are Leesburg Pike (Route 7, Lewinsville Road/Great Falls Road, Gallows Road, Maple Avenue/Chain Bridge Road/Dolley Madison Blvd (Route 123), and Georgetown Pike. Data provided by FCDOT for each intersection included 2008 AM & PM turning movement counts, Synchro network files for the signalized intersections (13 total), aerial images, and 2005 and 2030 link volumes from the FCDOT traffic forecasting model for both the Comprehensive Plan land use and the GMU High land use.

Two study scenarios were considered for this project; Comprehensive (Comp) Plan Scenario and GMU High Plan Scenario. RK&K utilized both Comp Plan and GMU High Land Use traffic model volumes from FCDOT and determined the annual average growth rates for each roadway link, applied the NCHRP refinement method and processed the volumes using WinTurns software program to achieve year 2030 turning movement counts at all the intersections under both study scenarios. Overall, the GMU high plan projects 0 to 100 percent more traffic when compared to Comp Plan volumes. However, at a few locations during AM and/or PM peak hours, the Comp Plan volumes are between 0 and 100 percent higher than GMU high plan volumes.

Currently, eight (8) intersections in the study area operate at acceptable levels of service (defined in this report as LOS D or better) under existing year 2008 conditions (AM and/or PM peak hours). Under future conditions, five (5) existing intersections are projected to operate at acceptable levels of service under both Comp Plan and GMU High Scenarios. For the failing intersections (operating at LOS E and LOS F), the required mitigation measures such as changes in lane configurations and signal timing /traffic control to achieve acceptable levels of service, were identified for each applicable scenario.

The mitigation measures for the applicable intersections are presented graphically on intersection aerial images and a cost estimate was developed to present the cost involved in implementing the proposed improvements. Based on the results and proposed improvements presented in the previous sections, same set of intersections are failing (LOS E or LOS F) under both future Comp Plan and GMU High Plan scenarios. In addition, the proposed mitigation measures are very close for both scenarios.

The cost involved in implementing the Comp Plan proposed improvements was estimated to be $11,781,000.00 whereas; GMU High Plan proposed improvements were estimated to be $13,942,000.00.

In conclusion, revising the existing Comprehensive Plan by considering the GMU High Land Use Alternative will not cause any significant traffic impacts in the study area.

Table S-1 presents a comparison of results of existing and future intersection capacity analysis under both scenarios.

Table S-1 : Summary of Intersection Capacity Analyses - Synchro Results

Intersection	2008 Existing		2030 Comp Plan - No Imp.		2030 Comp Plan - Pro. Imp.		2030 GMU High Plan - No Imp.		2030 GMU High Plan - Pro. Imp	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Int 1: Great Falls & Dolley Madison Blvd	D	E	D	E	D	D	D	E	D	D
Int 2: Old Dominion Dr & Dolley Madison Blvd	E	D	E	D	E	D	E	D	E	D
Int 3: Leesburg Pike & Lewinsville Road	C	E	C	F	C	D	D	F	C	D
Int 4: Spring Hill Rd & Lewinsville Road	D	E	F	F	D	D	E	F	D	D
Int 5: Swinks Mill Rd & Lewinsville Road *	-	-	-	-	-	-	-	-	-	-
Int 6: Great Falls St & Balls Hill Road	B	A	B	A	-	-	B	A	-	-
Int 7: Great Falls St & Chain Bridge Road	D	E	D	F	C	D	D	E	C	D
Int 8: Great Falls St & Magarity Road	B	C	B	B	-	-	B	C	-	-
Int 9: Leesburg Pike & Lisle Avenue	D	D	E	F	D	D	F	F	D	D
Int 10: Leesburg Pike & Idylwood Rd	E	D	F	F	D	D	F	F	D	D
Int 11: Gallows Rd & Idylwood Rd	D	C	F	D	D	D	F	E	D	D
Int 12: Georgetown Pk & Swinks Mill Rd *	-	F	F	F	D	D	F	F	C	D
Int 13: Georgetown Pk & Balls Hill Rd	C	C	C	C	-	-	C	C	-	-
Int 14: Gallows Rd & Cedar Lane	D	C	F	C	D	C	F	C	D	C
Int 15: Old Courthouse Rd & Chain Bridge Rd	F	E	E	F	E	E	F	F	E	D
Int 16: Beulah Rd & Maple Ave	C	F	C	F	C	D	C	F	C	D
Int 17: Lawyers Rd & Maple Ave	F	F	F	F	E	D	F	F	E	E
Int 18: Westbriar Dr & Old Courthouse Rd *	-	F	F	F	C	D	-	F	B	B
Int 19: Creek Crossing Rd & Old Courthouse Rd *	-	-	-	-			-	-		
Operating at LOS E or F	4	9	10	11	3	1	9	12	3	1
Operating at LOS E or F during AM and/or PM Peak	11		14		3		14		3	
Operating at LOS D during both AM and PM Peak	8		5		16		5		16	
Total No. of Intersections	19		19		19		19		19	

Note: * - Existing Unsignalized Intersections. Due to limitations of Synchro software, overall intersection level of service for unsignalized intersections could not be determined. Intersection 12 and 18 were considered as failing intersections during the 2030 conditions due to high delays along one or more intersection approach.

INTRODUCTION

Background and Purpose of the Study

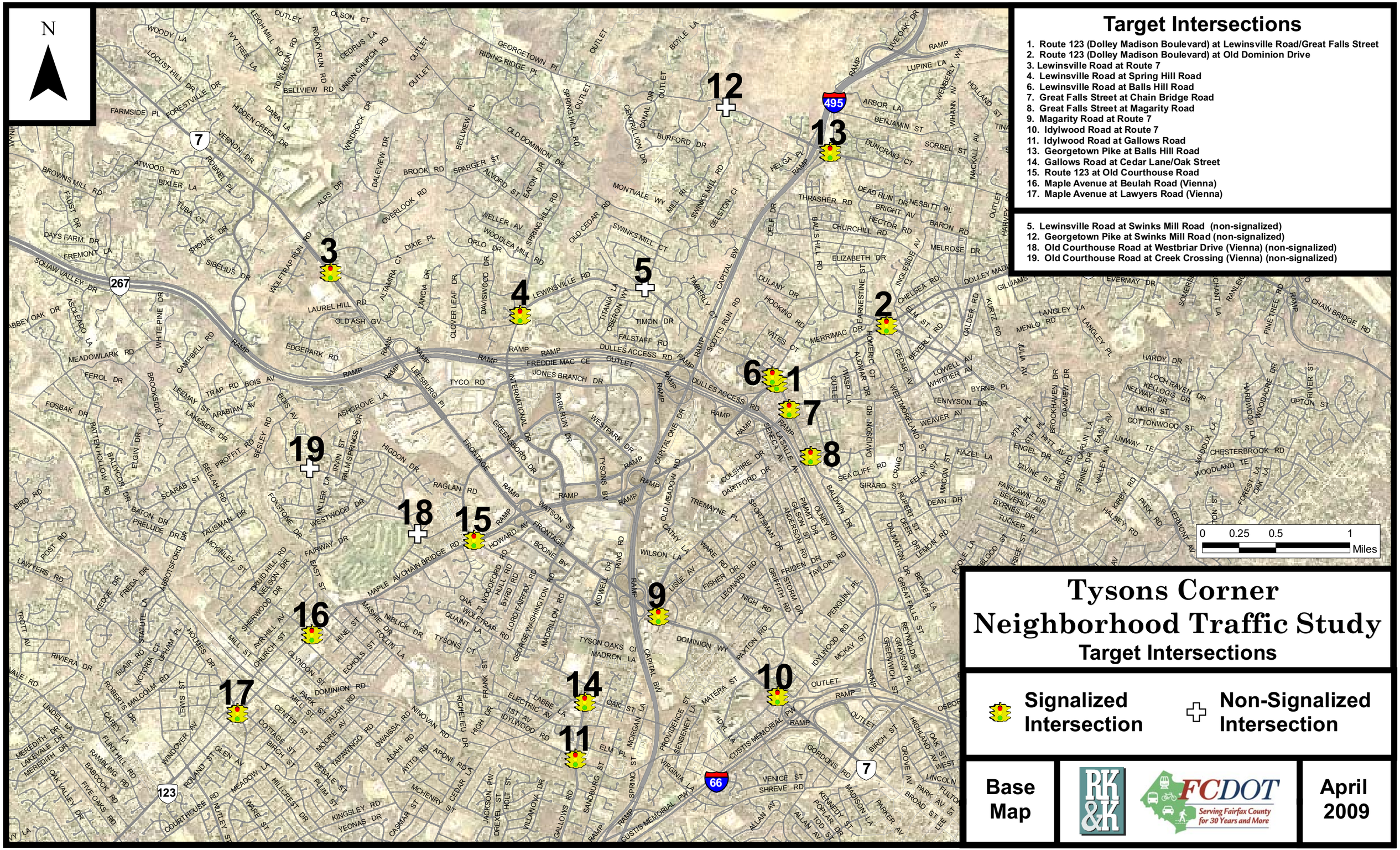
Fairfax County's current Comprehensive Plan provides a vision for substantial change in Tysons (becoming more pedestrian oriented with rail). County is considering revising the Plan to develop a cohesive pedestrian and mass transit system along with various mixed use development. GMU High Land Use Plan is considered as an alternative to the existing Comprehensive Plan. RK&K is supporting the Fairfax County Department of Transportation (FCDOT) in assessing the traffic operational differences between the Comprehensive Plan and the GMU High land use alternative for the year 2030, for areas on the periphery of Tysons Corner area.

Study Process

To evaluate the impacts of the two land use plans/ scenarios, nineteen (19) key intersections were considered. The existing traffic data provided by FCDOT was analyzed to determine the capacity. FCDOT provided the Fairfax County Sub-Area Model output which is based on the regional model developed by the Metropolitan Washington Council of Governments (COG). These model outputs under Comp Plan and GMU High Plan land use scenarios to project 2030 traffic at the study intersections and to determine the future capacity under no-build condition.

In each case, the intersections which are projected to operate unacceptably were identified and potential mitigation measures to improve the future intersection operations were developed. A cost estimate was also developed for each intersection to implement the proposed improvements.

This report details the existing conditions, traffic forecasts and analyses, and presents a comparison of projected traffic impacts under Comp plan and GMU high Plan scenarios. This report is intended to assist FCDOT and Tysons Land Use Task Force as they plan to revise the existing Comprehensive Plan.



Target Intersections

1. Route 123 (Dolley Madison Boulevard) at Lewinsville Road/Great Falls Street
2. Route 123 (Dolley Madison Boulevard) at Old Dominion Drive
3. Lewinsville Road at Route 7
4. Lewinsville Road at Spring Hill Road
6. Lewinsville Road at Balls Hill Road
7. Great Falls Street at Chain Bridge Road
8. Great Falls Street at Magarity Road
9. Magarity Road at Route 7
10. Idylwood Road at Route 7
11. Idylwood Road at Gallows Road
13. Georgetown Pike at Balls Hill Road
14. Gallows Road at Cedar Lane/Oak Street
15. Route 123 at Old Courthouse Road
16. Maple Avenue at Beulah Road (Vienna)
17. Maple Avenue at Lawyers Road (Vienna)

5. Lewinsville Road at Swinks Mill Road (non-signalized)
12. Georgetown Pike at Swinks Mill Road (non-signalized)
18. Old Courthouse Road at Westbriar Drive (Vienna) (non-signalized)
19. Old Courthouse Road at Creek Crossing (Vienna) (non-signalized)

Tysons Corner Neighborhood Traffic Study

Target Intersections

Signalized Intersection

Non-Signalized Intersection

Base Map

April 2009

EXISTING CONDITIONS

Data Collection

Nineteen (19) key intersections within the study area were selected by FCDOT for this analysis. RK&K was provided peak hour turning movement counts by FCDOT for these intersections between the hours of 7-9 AM and 4-6 PM, collected during the Spring and Fall of 2008. In addition, RK&K performed field reconnaissance at these intersections during the peak and off-peak hours from April 13th, 2009 to April 17th, 2009. Out of the nineteen (19) key intersections, fifteen (15) intersections are signalized and four (4) are unsignalized. The study intersections are listed below and Figure 1 presents the location map. The intersection field data is included in Appendix A.

- Intersection 1: Route 123 (Dolley Madison Boulevard) at Lewinsville Road/Great Falls Street
- Intersection 2: Route 123 (Dolley Madison Boulevard) at Old Dominion Drive
- Intersection 3: Lewinsville Road at Route 7
- Intersection 4: Lewinsville Road at Spring Hill Road
- Intersection 5: Lewinsville Road at Swinks Mill Road (Un-signalized)
- Intersection 6: Lewinsville Road at Balls Hill Road
- Intersection 7: Great Falls Street at Chain Bridge Road
- Intersection 8: Great Falls Street at Magarity Road
- Intersection 9: Magarity Road at Route 7
- Intersection 10: Idylwood Road at Route 7
- Intersection 11: Idylwood Road at Gallows Road
- Intersection 12: Georgetown Pike at Swinks Mill Road (Un-signalized)
- Intersection 13: Georgetown Pike at Balls Hill Road
- Intersection 14: Gallows Road at Cedar Lane/Oak Street
- Intersection 15: Route 123 (Chain Bridge Road) at Old Courthouse Road
- Intersection 16: Route 123 (Maple Avenue) at Beulah Road
- Intersection 17: Route 123 (Maple Avenue) at Lawyers Road
- Intersection 18: Old Courthouse Road at Westbriar Drive (Un-signalized)
- Intersection 19: Old Courthouse Road at Creek Crossing Road (Un-signalized)

Study Area Corridors

Leesburg Pike (Route 7)

The Leesburg Pike (Route 7) corridor within the study area is between Magarity Road and Idylwood Road, located just southwest of Tysons Corner. This area is located between the Capital Beltway (I-495) and I-66. The land use type of this area is primarily low-medium residential, although there is also some commercial presence as well. In addition, there are

also two local high schools within the vicinity of the corridor. Because of these factors, this corridor experiences regular high traffic and congestion.

Lewinsville Road/Great Falls Road

The Lewinsville Road/Great Falls Road corridor within the study area is between Leesburg Pike (Route 7) and Magarity Road/Davis Court, located primarily north and east of Tysons Corner. This area is located on either side of the Capital Beltway (I-495). Lewinsville Road/Great Falls Road intersects with several major intersections including Spring Hill Road and Dolley Madison Blvd (Route 123). The land use type of this area is primarily low density residential, with some commercial presence as well. This corridor is used as a cut-through route around Tysons Corner.

Gallows Road

Gallows Road corridor within the study area is between Idylwood Road and Cedar Lane/Oak Street, located south of Tysons Corner. This area is located west of the Capital Beltway (I-495). The land use type of this area is primarily low-medium density residential, with some commercial presence as well.

Maple Avenue/Chain Bridge Road/Dolley Madison Blvd (Route 123)

Route 123 corridor within the study area is between Lawyers Road and Old Dominion Drive, located through Tysons Corner. This area is located on either side of the Capital Beltway (I-495). Route 123 intersects with several major intersections including Gosnell Road/Old Courthouse Road. The land use type of this area varies greatly. At the southern-end of the corridor through the Town of Vienna, Route 123 is a low-speed arterial with low-density commercial and residential within the vicinity. At the northern-end of the corridor, Route 123 is a high-speed arterial with low-medium density residential and commercial adjacent land use. This corridor is used heavily by commuters to access and pass-through Tysons Corner.

Georgetown Pike

Georgetown Pike corridor within the study area is between Swinks Mill Road and Balls Hill Road, located north of Tysons Corner. This area is located on either side of the Capital Beltway (I-495). The land use type of this area is low-density residential. This corridor is primarily a two-lane road through this section, and is often used by Commuters to access arterials outside of the corridor.

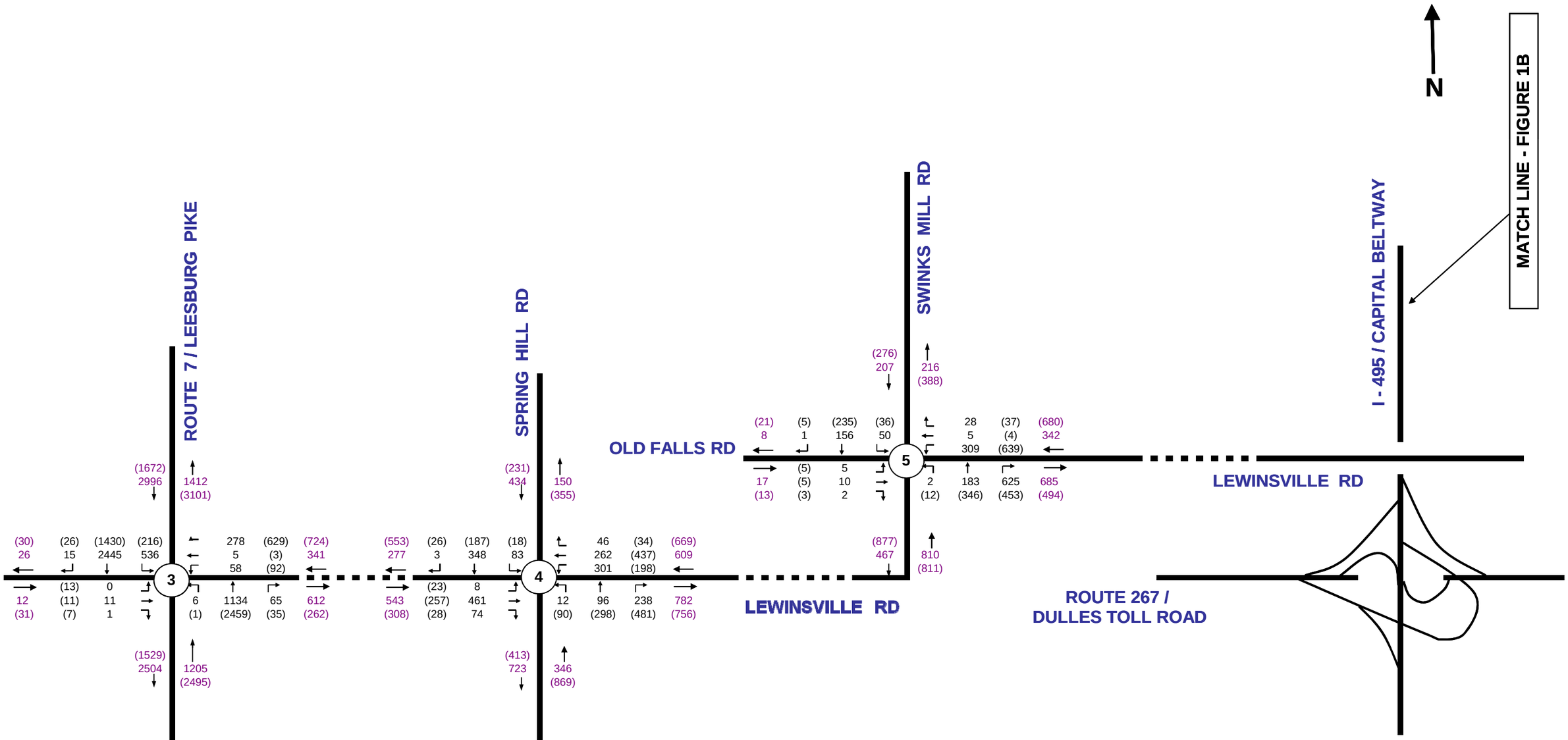
Existing (2008) Traffic Volumes

2008 turning movement counts were used to develop a line diagram of the study intersections by RK&K. Based on the proximity, the study intersections were divided into 4 groups in order to display the network line diagram with the traffic volumes using Excel spreadsheets 1 through 4.

- Sheet 1 included Intersections 3, 4 and 5;
- Sheet 2 includes Intersections 1, 2, 6, 7, and 8;

- Sheet 3 includes Intersections 9, 10, 11, 12, 13, and 14;
- Sheet 4 includes Intersections 15, 16, 17, 18, and 19.

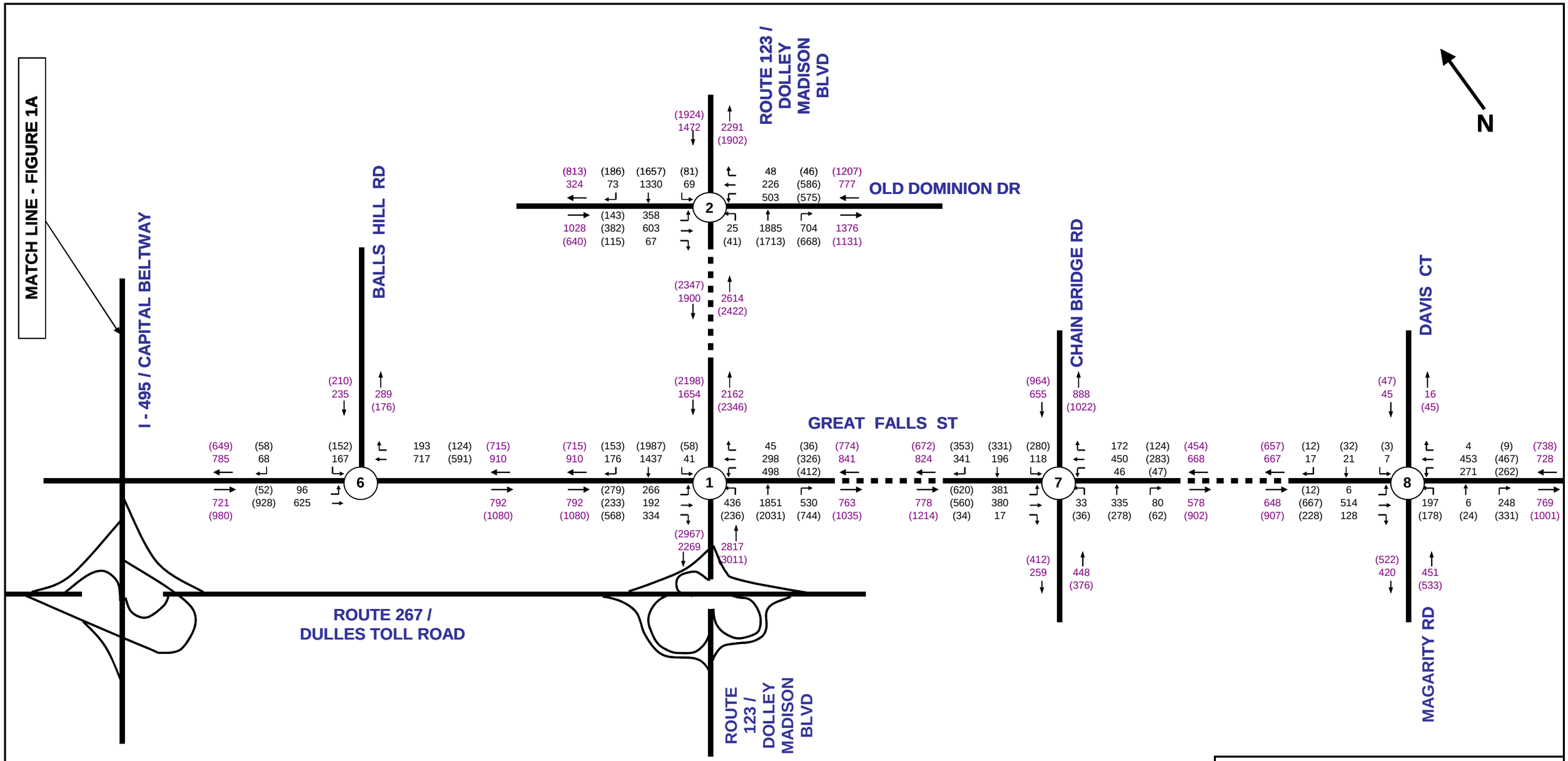
Figures 1A through 1D present the network line diagrams with 2008 traffic volumes.



LEGEND

XX (XX) - AM (PM) Peak Hour Traffic Volumes

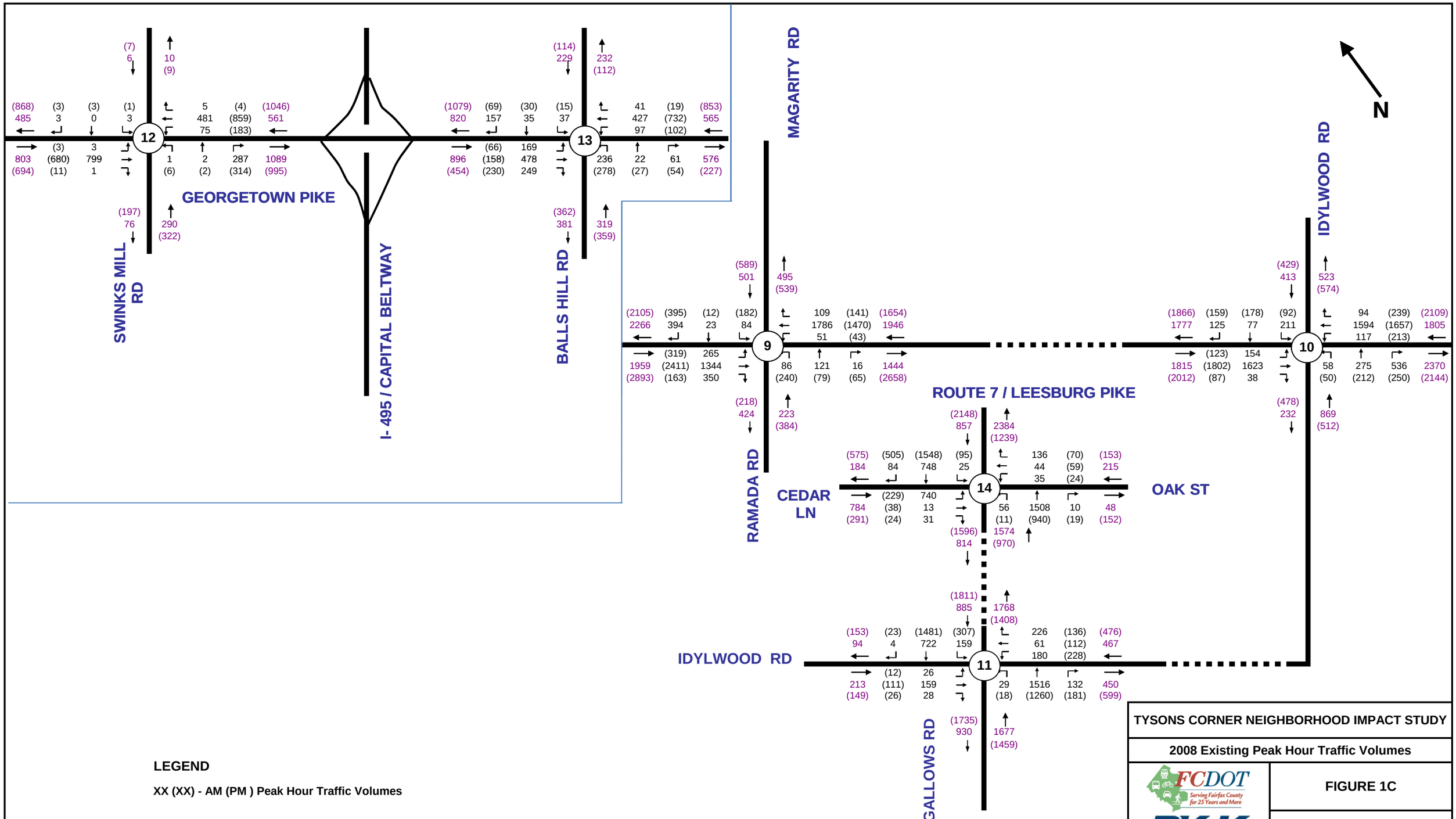
TYSONS CORNER NEIGHBORHOOD IMPACT STUDY	
2008 Existing Peak Hour Traffic Volumes	
FCDOT Serving Fairfax County for 25 Years and More / RK&K	**FIGURE 1A**
	Jul 2009



LEGEND

XX (XX) - AM (PM) Peak Hour Traffic Volumes

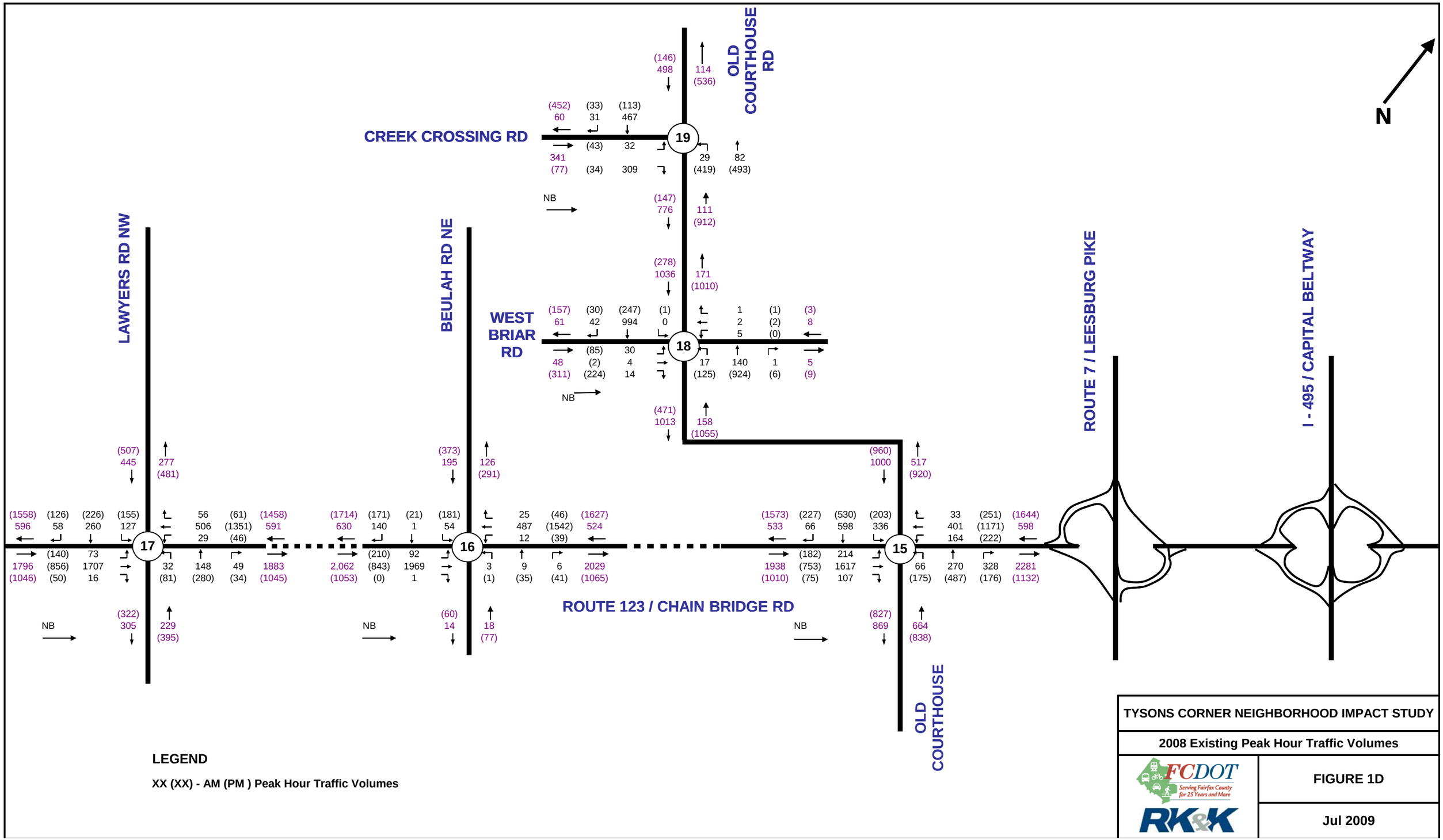
TYSONS CORNER NEIGHBORHOOD IMPACT STUDY	
2008 Existing Peak Hour Traffic Volumes	
FCDOT Serving Fairfax County for 25 Years and More / RK&K	FIGURE 1B
	Jul 2009



LEGEND

XX (XX) - AM (PM) Peak Hour Traffic Volumes

TYSONS CORNER NEIGHBORHOOD IMPACT STUDY	
2008 Existing Peak Hour Traffic Volumes	
FCDOT Serving Fairfax County for 25 Years and More / RK&K	**FIGURE 1C**
	Jul 2009



LEGEND

XX (XX) - AM (PM) Peak Hour Traffic Volumes

TYSONS CORNER NEIGHBORHOOD IMPACT STUDY

2008 Existing Peak Hour Traffic Volumes

FIGURE 1D

Jul 2009

EXISTING INTERSECTION CAPACITY ANALYSIS

Traffic software Synchro version 7.0 was used to analyze the study intersections under 2008 existing conditions. FCDOT provided Synchro networks for all the intersections except the following 6 intersections.

Intersection 5 - Lewinsville Road at Swinks Mill Road (Un-signalized)
Intersection 12 - Georgetown Pike at Swinks Mill Road (Un-signalized)
Intersection 16 - Route 123 (Maple Avenue) at Beulah Road
Intersection 17 - Route 123 (Maple Avenue) at Lawyers Road
Intersection 18 - Old Courthouse Road at Westbriar Drive (Un-signalized)
Intersection 19 - Old Courthouse Road at Creek Crossing Road (Un-signalized)

RK&K performed a quality control on the Synchro network files to coincide with the field investigation data and built Synchro networks for the above six (6) intersections based on the field investigation data. The signal timing and phasing information was kept unchanged for the existing intersection analysis.

The results of the existing intersection capacity analysis are presented in Table 1 and the Synchro worksheets are included in Appendix C.

Table 1: Intersection Capacity Analyses - Synchro Results

Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 1: Route 123 (Dolley Madison Boulevard) at Lewinsville Road/Great Falls Street										
AM PEAK										
2008 Existing	67.6	E	105.3	F	44.4	D	41.5	D	54.6	D
2030 Comp Plan - Existing Geo.	66.0	E	87.2	F	43.9	D	43.3	D	51.1	D
2030 GMU High Plan - Existing Geo.	62.3	E	81.2	F	39.8	D	46.0	D	48.3	D
PM PEAK										
2008 Existing	120.7	F	105.3	F	58.5	E	27.9	C	63.5	E
2030 Comp Plan - Existing Geo.	75.4	E	108.7	F	73.2	E	35.1	D	65.7	E
2030 GMU High Plan - Existing Geo.	69.8	E	98.0	F	81.4	F	32.4	C	66.9	E

Table 1: Intersection Capacity Analyses - Synchro Results

Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 2: Route 123 (Dolley Madison Boulevard) at Old Dominion Drive										
AM PEAK										
2008 Existing	80.5	F	60.7	E	76.3	E	33.3	C	64.2	E
2030 Comp Plan - Existing Geo.	70.8	E	56.8	E	106.9	F	40.5	D	75.1	E
2030 GMU High Plan - Existing Geo.	73.4	E	60.6	E	88.9	F	56.6	E	73.0	E
PM PEAK										
2008 Existing	82.8	F	83.1	F	16.6	B	38.7	D	43.3	D
2030 Comp Plan - Existing Geo.	84.9	F	78.8	E	18.5	B	37.6	D	40.7	D
2030 GMU High Plan - Existing Geo.	81.7	F	79.4	E	16.6	B	39.2	D	40.5	D
Int 3: Lewinsville Road at Route 7										
AM PEAK										
2008 Existing	17.7	B	46.0	D	88.1	F	32.2	C	26.4	C
2030 Comp Plan - Existing Geo.	21.4	C	27.9	C	81.8	F	54.7	D	26.5	C
2030 GMU High Plan - Existing Geo.	21.1	C	75.3	E	78.7	E	37.4	D	37.0	D
PM PEAK										
2008 Existing	25.9	C	39.5	D	88.7	F	178.4	F	55.6	E
2030 Comp Plan - Existing Geo.	20.8	C	64.0	E	98.1	F	279.3	F	86.9	F
2030 GMU High Plan - Existing Geo.	127.5	F	35.8	D	98.1	F	594.5	F	210.0	F
Int 4: Lewinsville Road at Spring Hill Road										
AM PEAK										
2008 Existing	45.5	D	20.7	C	39.8	D	124.4	F	54.7	D
2030 Comp Plan - Existing Geo.	43.0	D	16.3	B	44.5	D	205.4	F	83.1	F
2030 GMU High Plan - Existing Geo.	43.6	D	19.9	B	34.6	C	187.5	F	77	E
PM PEAK										
2008 Existing	36.2	D	16.9	B	140.2	F	36.4	D	74.0	E
2030 Comp Plan - Existing Geo.	36.0	D	19.1	B	260.7	F	34.7	C	135.4	F
2030 GMU High Plan - Existing Geo.	40.3	D	21.9	C	425.0	F	40.4	D	196.3	F
Int 5: Lewinsville Road at Swinks Mill Road (Un-signalized)										
AM PEAK										
2008 Existing	1.5	A	-	-	0.0	-	22.0	C	4.4	-
2030 Comp Plan - Existing Geo.	3.1	A	-	-	0.0	-	55.2	F	10.2	-
2030 GMU High Plan - Existing Geo.	2.0	A	-	-	0.0	-	15.2	C	3.1	-
PM PEAK										
2008 Existing	3.1	A	-	-	0.0	-	41.5	E	8.0	-
2030 Comp Plan - Existing Geo.	3.7	A	-	-	0.0	-	91.2	F	13.2	-
2030 GMU High Plan - Existing Geo.	3.1	A	-	-	0.0	-	18.1	C	5.0	-

Table 1: Intersection Capacity Analyses - Synchro Results

Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 6: Lewinsville Road at Balls Hill Road										
AM PEAK										
2008 Existing	3.7	A	6.8	A	-	-	63.3	E	12.7	B
2030 Comp Plan - Existing Geo.	4.8	A	8.9	A	-	-	64.1	E	17.7	B
2030 GMU High Plan - Existing Geo.	4.8	A	8.0	A	-	-	64.1	E	16.7	B
PM PEAK										
2008 Existing	3.4	A	3.8	A	-	-	31.9	C	6.3	A
2030 Comp Plan - Existing Geo.	3.6	A	2.6	A	-	-	33.5	C	6.7	A
2030 GMU High Plan - Existing Geo.	3.8	A	4.7	A	-	-	33.8	C	7.5	A
Int 7: Great Falls Street at Chain Bridge Road										
AM PEAK										
2008 Existing	58.6	E	24.9	C	58.1	E	47.4	D	46.4	D
2030 Comp Plan - Existing Geo.	54.8	D	22.6	C	50.5	D	78.2	E	53.7	D
2030 GMU High Plan - Existing Geo.	47.4	D	23.4	C	40.4	D	59.6	E	44.2	D
PM PEAK										
2008 Existing	46.4	D	30.1	C	45.0	D	83.5	F	128.6	E
2030 Comp Plan - Existing Geo.	47.7	D	32.0	C	42.4	D	140.3	F	80.9	F
2030 GMU High Plan - Existing Geo.	45.7	D	42.7	D	37.6	D	121.4	F	76.5	E
Int 8: Great Falls Street at Magarity Road										
AM PEAK										
2008 Existing	21.0	C	21.8	C	9.1	A	26.7	C	18.4	B
2030 Comp Plan - Existing Geo.	19.6	B	21.6	C	7.5	A	23.8	C	16.9	B
2030 GMU High Plan - Existing Geo.	18.6	B	28.3	C	9.4	A	28.2	C	18.7	B
PM PEAK										
2008 Existing	21.2	C	28.0	C	9.5	A	29.9	C	21.0	C
2030 Comp Plan - Existing Geo.	22.7	C	28.2	C	7.8	A	25.3	C	18.4	B
2030 GMU High Plan - Existing Geo.	20.0	C	36.1	D	17.4	B	31.1	C	23.8	C
Int 9: Magarity Road at Route 7										
AM PEAK										
2008 Existing	26.4	C	51.9	D	108.7	F	52.8	D	43.9	D
2030 Comp Plan - Existing Geo.	33.8	C	129.2	F	111.2	F	67.0	E	78.3	E
2030 GMU High Plan - Existing Geo.	50.3	D	124.5	F	111.2	F	244.8	F	102.6	F
PM PEAK										
2008 Existing	44.0	D	52.8	D	110.5	F	59.0	E	52.9	D
2030 Comp Plan - Existing Geo.	88.4	F	78.3	E	105.5	F	90.3	F	86.3	F
2030 GMU High Plan - Existing Geo.	49.3	D	160.7	F	110.6	F	254.5	F	116.3	F

Table 1: Intersection Capacity Analyses - Synchro Results

Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 10: Idylwood Road at Route 7										
AM PEAK										
2008 Existing	47.5	D	48.1	D	97.9	F	95.7	F	60.7	E
2030 Comp Plan - Existing Geo.	95.6	F	63.1	E	86.0	F	119.6	F	84.3	F
2030 GMU High Plan - Existing Geo.	86.4	F	66.6	E	110.6	F	100.6	F	84.1	F
PM PEAK										
2008 Existing	48.4	D	41.3	E	72.9	E	89.0	F	51.4	D
2030 Comp Plan - Existing Geo.	90.4	F	176.0	F	231.5	F	125.5	F	142.7	F
2030 GMU High Plan - Existing Geo.	103.2	F	59.3	E	125.7	F	115.0	F	87.9	F
Int 11: Idylwood Road at Gallows Road										
AM PEAK										
2008 Existing	86.6	F	50.5	D	31.5	C	36.7	D	39.3	D
2030 Comp Plan - Existing Geo.	169.9	F	76.6	E	114.5	F	36.8	D	96.9	F
2030 GMU High Plan - Existing Geo.	123.8	F	76.7	E	133.5	F	35.5	D	102.8	F
PM PEAK										
2008 Existing	92.7	F	64.6	E	34.3	C	17.1	B	32.3	C
2030 Comp Plan - Existing Geo.	84.3	F	103	F	62.4	E	19.1	B	53.0	D
2030 GMU High Plan - Existing Geo.	89.0	F	122.9	E	63.8	E	20.5	C	56.9	E
Int 12: Georgetown Pike at Swinks Mill Road (Un-signalized)										
AM PEAK										
2008 Existing	0.1	A	1.7	A	18.5	C	59.2	F	4.5	-
2030 Comp Plan - Existing Geo.	0.2	A	0.5	A	530.7	F	376.6	F	113.6	-
2030 GMU High Plan - Existing Geo.	0.2	A	0.1	A	747.5	F	153.3	F	-	-
PM PEAK										
2008 Existing	0.1	A	3.1	A	109.7	F	98.5	F	20.7	-
2030 Comp Plan - Existing Geo.	0.3	A	15.3	C	-	F	499.5	F	-	-
2030 GMU High Plan - Existing Geo.	0.1	A	4.2	A	312.0	F	-	F	216.4	-
Int 13: Georgetown Pike at Balls Hill Road										
AM PEAK										
2008 Existing	16.1	B	14.9	B	63.4	E	19.3	B	23.7	C
2030 Comp Plan - Existing Geo.	15.8	B	14.7	B	63.1	E	20.5	0	22.9	C
2030 GMU High Plan - Existing Geo.	11.5	B	15.5	B	62.5	E	19.1	B	21.2	C
PM PEAK										
2008 Existing	7.2	A	16.9	B	45.3	D	15.2	B	20.0	C
2030 Comp Plan - Existing Geo.	8.0	A	19.6	B	43.8	D	15.6	B	21.4	C
2030 GMU High Plan - Existing Geo.	8.1	A	21.5	C	41.5	D	14.6	B	22.1	C

Table 1: Intersection Capacity Analyses - Synchro Results

Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 14: Gallows Road at Cedar Lane/Oak Street										
AM PEAK										
2008 Existing	70.0	E	62.2	E	20.6	C	28.5	C	36.4	D
2030 Comp Plan - Existing Geo.	71.9	E	326.1	F	226.5	F	27.6	C	174.1	F
2030 GMU High Plan - Existing Geo.	77.1	E	415.3	F	211.2	F	27.0	C	173.1	F
PM PEAK										
2008 Existing	76.9	E	55.2	E	17.1	B	24.2	C	28.0	C
2030 Comp Plan - Existing Geo.	78.2	E	61.3	E	28.2	C	18.7	B	30.4	C
2030 GMU High Plan - Existing Geo.	78.2	E	74.9	E	29.8	C	24.7	C	34.8	C
Int 15: Route 123 at Old Courthouse Road										
AM PEAK										
2008 Existing	135.2	F	161.4	F	45.0	D	33.9	C	83.3	F
2030 Comp Plan - Existing Geo.	95.9	F	95.1	F	45.1	D	119.5	F	77.0	E
2030 GMU High Plan - Existing Geo.	216.0	F	361.2	F	42.2	D	65.2	E	149.2	F
PM PEAK										
2008 Existing	175.4	F	76.1	E	33.9	C	34.7	C	72.7	E
2030 Comp Plan - Existing Geo.	74.0	E	328.1	F	52.6	D	36.8	D	133.5	F
2030 GMU High Plan - Existing Geo.	91.5	F	208.5	F	34.2	C	34.4	C	93.4	F
Int 16: Maple Avenue at Beulah Road (Vienna)										
AM PEAK										
2008 Existing	32.8	C	52.0	D	29.0	C	12.9	B	26.3	C
2030 Comp Plan - Existing Geo.	34.3	C	56.9	E	23.5	C	15.3	B	23.5	C
2030 GMU High Plan - Existing Geo.	33.1	C	57.3	E	19.9	B	16.2	B	21.2	C
PM PEAK										
2008 Existing	50.3	D	58	E	31.2	C	203.4	F	124.9	F
2030 Comp Plan - Existing Geo.	128.4	F	64.6	E	31.8	C	221.7	F	149.1	F
2030 GMU High Plan - Existing Geo.	127.6	F	66.1	E	33.5	C	240.3	F	153.6	F
Int 17: Maple Avenue at Lawyers Road (Vienna)										
AM PEAK										
2008 Existing	61.1	E	64.2	E	172.0	F	34.9	C	122.4	F
2030 Comp Plan - Existing Geo.	88.6	F	74.7	E	373.7	F	266.9	F	264.1	F
2030 GMU High Plan - Existing Geo.	71.2	E	70.8	E	357.9	F	46.8	D	213.0	F
PM PEAK										
2008 Existing	76.9	E	80.7	F	48.8	D	213.2	F	124.7	F
2030 Comp Plan - Existing Geo.	215.0	F	47.9	D	39.0	D	139.9	F	123.1	F
2030 GMU High Plan - Existing Geo.	76.8	E	127.4	F	59.7	E	189.8	F	128.0	F

Table 1: Intersection Capacity Analyses - Synchro Results										
Scenario	EASTBOUND		WESTBOUND		NORTHBOUND		SOUTHBOUND		OVERALL	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Int 18: Old Courthouse Road at Westbriar Drive (Vienna) (Un-signalized)										
AM PEAK										
2008 Existing	0.0	A	1.4	A	92.7	F	44.3	E	9.0	-
2030 Comp Plan - Existing Geo.	0.5	A	1.2	A	421.2	F	414.4	F	78.5	-
2030 GMU High Plan - Existing Geo.	0.3	A	1.8	A	27.7	D	24.6	C	3.2	-
PM PEAK										
2008 Existing	0.2	A	3.0	A	391.9	F	32.0	D	98.1	-
2030 Comp Plan - Existing Geo.	1.1	A	6.4	A	-	F	-	F	-	-
2030 GMU High Plan - Existing Geo.	0.6	A	2.7	A	248.6	F	134.4	F	56.5	-
Int 19: Old Courthouse Road at Creek Crossing (Vienna) (Un-signalized)										
AM PEAK										
2008 Existing	0.0	A	2.7	A	39.6	E	-	-	15.5	-
2030 Comp Plan - Existing Geo.	0.0	A	1.9	A	18.4	C	-	-	6.1	-
2030 GMU High Plan - Existing Geo.	0.0	A	1.4	A	12.8	B	-	-	3.6	-
PM PEAK										
2008 Existing	0.0	A	4.1	A	76.6	F	-	-	9.0	-
2030 Comp Plan - Existing Geo.	0.0	A	8.1	A	19.6	C	-	-	4.8	-
2030 GMU High Plan - Existing Geo.	0.0	A	2.7	A	17.3	C	-	-	3.3	-

Based on the results of the existing Synchro analysis, out of fifteen (15) signalized intersections, eleven (11) intersections during AM peak and eight (8) intersections during PM peak operate at acceptable levels of service i.e., LOS D or better for this study. For the four (4) un-signalized intersections, although Synchro reports don't report the overall intersection level of service, the delay for each approach of the intersection is reported. Hence, if the approach with the worst delay reports a delay of 100 sec or more, it was considered as a failing intersection. Based on the above table, under existing conditions, two (2) un-signalized intersections are failing PM Peak. In total, out of 19 intersections, eleven (11) intersections are failing during AM or/and PM peak periods. Table 2 presents a summary of number of study intersections operating under acceptable conditions or failing.

Table 2: 2008 Study Intersections Performance			
Time Period	No. of Intersections		
	LOS D or better	LOS E or F	Total
AM	11 + 4*	4	19
PM	8 + 2*	7 + 2 *	19
Total No. for AM and/or PM	6 + 2*	9 +2 *	19

Note: * - No. of Unsignalized intersection.

TRAFFIC FORECASTING

This part of the report summarizes the assumptions and methodology used in computing the 2030 future traffic volumes at the study intersections. FCDOT provided the model output volumes for years 2005 and 2030 for this study.

The Fairfax County Sub-Area Model is based on the regional model developed by the Metropolitan Washington Council of Governments (COG). The COG model covers a 6,800 square mile area, contains 2,191 traffic analysis zones, and includes approximately 27,000 road segments and about 600 transit routes. The Fairfax County model divides this land area into more numerous, smaller zones, and includes significantly greater detail on the roadway network. For example, in the County's Sub-Area model, Tysons Corner is represented by 117 small zones, compared to only eight (8) large zones in the COG model. The Route 7/Route 123 interchange in the COG model is represented by a single node, whereas the County's Sub-Area model includes a separate roadway link for each individual ramp movement at this interchange.

Two land use scenarios were considered for this study; Fairfax County Comprehensive Plan Model and GMU High Plan Model.

Comprehensive Plan Model

This scenario models the impacts of the County's Comprehensive Plan. The plan provides a vision for substantial change in Tysons (becoming more pedestrian oriented with rail). The main objectives of the current comprehensive plan include but not limited to, creating centralized areas of relatively more intense development, encouraging mixed use developments, developing a cohesive pedestrian system, and mass transit options.

GMU High Plan Model

This scenario models additional growth in the Tysons Corner area, as developed by George Mason University's Center for Regional Analysis. This model was created as an alternative to the current Comprehensive Plan, and incorporates the extension of the Metrorail to Tysons Corner. It was anticipated that the GMU High Model would generate additional traffic within the surrounding communities, or redistribute existing traffic.

Technical Approach:

A series of Excel spreadsheets were developed to develop 2030 turning movement counts at all of the study intersections. 2008 existing traffic volumes and the travel forecasting model outputs for year 2005 and 2030 years under both land use scenarios provided by FCDOT were used to compute 2030 future turning movement volumes at the study intersections.

The following steps were performed for both scenarios – Comp Plan and GMU High Plan:

- Growth Rate: Using the model volumes for years 2005 and 2030, annual average growth rates were determined under each scenario for all the available links in the network. The link volumes along with the growth rates are documented in the network line diagrams. The line diagrams are included in Appendix B.

- Refinement of Computerized Traffic Volume Forecasts: In order to reflect the real-time traffic the link volumes from both forecasting models were refined using the refinement principles stated in Chapter Four, NCHRP Report 255. An Excel spreadsheet was prepared based on Figure A-10: Calculation Form shown on page 51 in the above stated Report 255. The input data for the calculation form include 2005 and 2030 model link volumes (in and out), 2008 Link volumes computed from the turning movement counts and the growth rates calculated from the model link volumes. The calculation forms for each intersection are included in Appendix B.

- 2030 Future Link Volumes: The refined link volumes were documented on another network line diagram to reflect 2030 Future link volumes.

- Future Turning Movement Volumes: The 2030 future link volumes were using to calculate respective turning movement volumes at each intersection. A software program called winTURNS was used for this task. WinTurns is a program written in Visual Basic that is designed to calculate turning movement volumes and create turning movement diagrams. It uses an iterative approach to balance the inflows and outflows of an intersection as described in NCHRP Report 255, "Highway Traffic Data for Urbanized Area Project Planning and Design", Chapter 8. The final result shows the distribution of traffic by individual turning movements through an intersection. The input and output files for WinTurns is included in Appendix B. Due to limitations of winTURNS, the in-traffic should be equal to out-traffic at a given intersection, so the out-traffic link volumes were slightly adjusted to be equal to the in-traffic.

- Manual Adjustments: Few of the turning movements at the study intersections were adjusted manually to maintain minimum difference (+ or – 1%) between the projected growth rate computed from base counts and 2030 refined link volumes; and projected growth rate from the forecasting model in each scenario. The list of manual adjustments under each scenario is presented in a table in Appendix B.

The following list shows the excel spreadsheet tabs used for Comprehensive Plan Scenario. These figures are included in the Appendix B.

Figures 2 A through 2D: 2005-2008 Link Volume Comparison: % Change from 2005 Model Link Volumes and 2008 Field Counts
Figures 3 A through 3D: 2005 Model Link Volumes
Figures 4 A through 4D: 2005-2030 Link Volume Comparison: Growth Rate from forecasting model
Figures 5 A through 5D: 2030 Model Link Values
Figures 6 A through 6D: 2030 Future Link Volumes (Adjusted): NCHRP Report 255 – Chapter 4 Method
Figures 7 A through 7D: 2030 Future Turning Movement Volumes (Adjusted): WinTurns Output including Manual Adjustment
Figures 8 A through 8D: 2030 AM Refinement Worksheets
Figures 9 A through 9D: 2030 PM Refinement Worksheets
Figures 10 A through 10D: 2008-2030 Projected Growth Rate: For comparison with Growth Rate from forecasting Model Volumes.

Similar series of spreadsheets were created for GMU High Plan. The spreadsheets are included in Appendix B.

A comparison was performed between the year 2030 GMU high plan link volumes and Comp Plan link volumes. Similar comparison was performed with FCDOT provided model output volumes under both land use scenarios. Both the results were consistent indicating that; overall, the GMU volumes are slightly higher than the Comp Plan volumes. However, at few locations during AM and/or PM peak hours, the Comp Plan volumes are higher than GMU high plan volumes. These spreadsheets are included in Appendix B.

FUTURE INTERSECTION CAPACITY ANALYSIS

Similar to the existing intersection analysis, the 2030 future intersection capacity analysis was performed under Comp Plan and GMU High Plan Scenarios using Synchro Version 7.0. The lane configurations and the signal timing and phase information were kept unchanged as in existing conditions to determine the level of service for No – build condition. The results of both analyses are presented in Table 1 for easy review.

Based on the results, under both Comp Plan and GMU High Plan Scenario, five (5) intersections are operating at acceptable levels of service LOS D or better during both AM and PM peak periods. So, thirteen (14) intersections are failing (LOS E or F) i.e., three (3) intersections more than existing conditions.

The summary of no. of study intersections' performance under each scenario is presented in Table 3 for easy review.

Table 3: Summary of Study Intersections in all Scenarios

Time Period	2008 Existing Conditions			2030 Comp Plan			2030 GMU High Plan		
	LOS D or better	LOS E or F	Total	LOS D or better	LOS E or F	Total	LOS D or better	LOS E or F	Total
AM	11 + 4*	4	19	7 + 2*	8 + 2*	19	7 + 2*	8 + 2*	19
PM	8 + 2*	7 + 2 *	19	6 + 2*	9 + 2 *	19	6 + 2*	9 + 2 *	19
AM and/or PM	6 + 2*	9 +2 *	19	3 +2*	12 +2 *	10	3 +2*	12 +2 *	10

Note: * -No. of Unsignalized intersection.

The Synchro worksheets are included in Appendix D.

MITIGATION MEASURES

To achieve an acceptable level of service, defined for this study as LOS D or better, signal timing and geometric improvements were considered under Comp Plan and GMU High Plan Scenarios. The purpose of this task is to compare the level of improvements required by the study intersections under GMU High Plan Scenario over the required improvements for Comp Plan Scenario.

Methodology:

Using Synchro version 7.0 and SimTraffic simulation programs, the mitigation measures required by each intersection were determined. The first step in this mitigation was to optimize the signal timing to improve the level of service. However, if this does not help reduce the delay, then depending on the worst movement at the intersection, adding turn-bays were considered. In case if the through volumes are so high that the proposed turn-bays doesn't improve the level of service, then adding through lanes are considered. This approach was adopted for all the failing intersections in the study area. The cycle lengths for each intersection were kept unchanged, only signal timing splits were adjusted / optimized for better operations.

Table 4: Intersection Mitigation Measures.
This table provides the list of improvements required to achieve acceptable levels of service (LOS D or better) during AM peak and PM peak periods separately under each scenario, Comp Plan and GMU high Plan. In addition a consolidated list of both AM and PM peak period improvements is presented under both scenarios.

Table 5 presents the Synchro analysis results for the fourteen (14) failing intersections. In addition, a comparison of lane configuration under existing, 2030 Comp Plan and 2030 GMU High Plan is presented in Table 6. For the proposed lane configurations, any additions to the existing conditions are marked in red text. For GMU high Plan scenario, any differences in lane configuration when compared to Comp Plan scenario are highlighted. In addition, Table 6 also provides information about the "Worst Case" which denotes the higher overall intersection delay between AM and PM peak hours.

Out of the fourteen (14) failing intersections, three (3) intersections, namely, Intersection 2: Route 123 (Dolley Madison Boulevard) at Old Dominion Drive, Route 7, Intersection 15: Route 123 (Chain Bridge Road) at Old Courthouse Road, and Intersection 17: Route 123 (Maple Avenue) at Lawyers Road, even with the addition of substantial improvements, LOS D could not be achieved. For the two unsignalized intersections that are failing under both scenarios, a traffic signal is recommended as a proposed improvement. Prior to the installation of a traffic signal at any of these locations, a comprehensive signal warrant evaluation should be conducted to determine whether a traffic signal is warranted.

Table 4: Intersection Mitigation Measures													
INT #	INTERSECTION	COMP PLAN						GMU HIGH PLAN					
		AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS	AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS
		PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS			PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS		
1	Dolley Madison Blvd & Lewinsville Road	• No Improvements	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• No Improvements	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better
2	Dolley Madison Blvd & Old Dominion Drive	• Optimize the Signal Splits	Overall Intersection LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• No Improvements	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	**AM Peak:** Overall Intersection LOS E Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	Overall Intersection LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• No Improvements	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits	**AM Peak:** Overall Intersection LOS E Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better
3	Lewinsville Road & Route 7	• No Improvements	Overall Intersection LOS C Approach Delay LOS F or better	• Optimize the Signal Splits • Add an additional through lane along NB & SB Route 7.	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add an additional through lane along EB & WB Route 7.	**AM Peak:** Overall Intersection LOS C Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• No Improvements	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along EB & WB Route 7. • Convert SB (Lewinsville Road) shared Through/Right lane into an exclusive Right turn lane with an acceleration lane.	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along EB & WB Route 7. • Convert SB (Lewinsville Road) shared Through/Right lane into an exclusive Right turn lane with an acceleration lane.	**AM Peak:** Overall Intersection LOS C Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better

Table 4: Intersection Mitigation Measures

INT #	INTERSECTION	COMP PLAN						GMU HIGH PLAN					
		AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS	AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS
		PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS			PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS		
4	Lewinsville Road & Springhill Road	• Optimize the Signal Splits	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an exclusive NB(Spring Hill Rd) left-turn lane	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an exclusive NB(Spring Hill Rd) left-turn lane	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better
7	Great Falls Street & Chain Bridge Road	• No Improvements	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an exclusive NBR Turn Lane.	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add an exclusive NBR Turn Lane.	**AM Peak:** Overall Intersection LOS C Approach Delay LOS D or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• No Improvements	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an exclusive NBR Turn Lane.	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add an exclusive NBR Turn Lane.	**AM Peak:** Overall Intersection LOS C Approach Delay LOS D or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better
9	Route 7 & Magarity Road	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm+ov phase	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm+ov phase • Add an exclusive NBR turn lane	Overall Intersection LOS D Approach Delay LOS F or better.	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm+ov phase • Add an exclusive NBR turn lane	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm + ov phase • Add an additional SBL and WBL turn lane	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm + ov phase • Add an additional SBL and WBL turn lanes • Add an exclusive NBR turn lane	Overall Intersection LOS D Approach Delay LOS F or better.	• Optimize the Signal Splits • Add and exclusive WBR turn lane with pm + ov phase • Add an additional SBL and WBL turn lanes • Add an exclusive NBR turn lane	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better

Table 4: Intersection Mitigation Measures													
INT #	**INTERSECTION**	**COMP PLAN**						**GMU HIGH PLAN**					
		AM PEAK		**PM PEAK**		**CONSOLIDATED IMPROVEMENTS**	**RESULTS/ REMARKS**	**AM PEAK**		**PM PEAK**		**CONSOLIDATED IMPROVEMENTS**	**RESULTS/ REMARKS**
		PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS			PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS		
10	Idylwood Road at Route 7	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an additional WBL and EBL turn lanes. • Add an exclusive EBR and WBR turn lanes	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an additional WBL and EBL turn lane. • Add an exclusive EBR and WBR turn lanes • Convert SBR turn lane into free movement.	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an exclusive EBR and WBR turn lanes • Add an additional WBL and EBL turn lane. • Convert SBR turn lane into free movement.	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an exclusive EBR and WBR turn lanes with pm+ov phase • Add an additional WBL and EBL turn lane. • Convert NBT and SBT lanes onto shared NBTR and SBTR, respectively.	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an exclusive EBR and WBR turn lanes	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Phase change for EBL and WBL from Pm+Pt to Prot • Add an exclusive NBL and SBL turn lane with Pm+Pt phase • Add an exclusive EBR and WBR turn lanes with pm+ov phase • Add an additional WBL and EBL turn lane. • Convert NBT and SBT lanes onto shared NBTR and SBTR, respectively.	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better
11	Idylwood Road at Gallows Road	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB.	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better

Table 4: Intersection Mitigation Measures

INT #	INTERSECTION	COMP PLAN						GMU HIGH PLAN					
		AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS	AM PEAK		PM PEAK		CONSOLIDATED IMPROVEMENTS	RESULTS/ REMARKS
		PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS			PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS		
12	Georgetown Road and Swinks Mill Road	• Provide a Signal with optimized cycle length of 90 sec	Overall Intersection LOS D Approach Delay LOS F or better	• Provide a Signal with optimized cycle length of 90 sec • Add an exclusive WBL turn lane with perm phase	Overall Intersection LOS D Approach Delay LOS F or better	• Provide a Signal with optimized cycle length of 90 sec • Add an exclusive WBL turn lane with perm phase	**AM Peak:** Overall Intersection LOS D Approach Delay LOS F or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS F or better	• Provide a Signal with optimized cycle length of 90 sec • Add an exclusive NBR turn lane with perm phase	Overall Intersection LOS C Approach Delay LOS E or better	• Provide a Signal with optimized cycle length of 90 sec • Add an exclusive WBL turn lane with perm phase	Overall Intersection LOS D Approach Delay LOS E or better	• Provide a Signal with optimized cycle length of 90 sec • Add an exclusive NBR turn lane with perm phase • Add an exclusive WBL turn lane with perm phase	**AM Peak:** Overall Intersection LOS C Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS D Approach Delay LOS E or better
14	Gallows Road at Cedar Lane/Oak Street	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS D Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS C Approach Delay LOS E or better.	• Optimize the Signal Splits • Add an additional through lane along NB and SB	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS C Approach Delay LOS E or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS E Approach Delay LOS F or better	• Optimize the Signal Splits • Add an additional through lane along NB and SB	Overall Intersection LOS C Approach Delay LOS E or better.	• Optimize the Signal Splits • Add an additional through lane along NB and SB.	**AM Peak:** Overall Intersection LOS D Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS C Approach Delay LOS E or better
15	Old Courthouse Road and Chain Bridge Road	• Optimize the Signal Splits • Add an additional EBL and SBL turn lane with Prot phase	Overall Intersection LOS E* Approach Delay LOS E or better *- Could not achieve LOS D	• Optimize the Signal Splits • Add an additional NBL and SBL turn lane with Prot phase	Overall Intersection LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• Optimize the Signal Splits • Add an additional EBL, NBL and SBL turn lane with Prot phase	**AM Peak:** Overall Intersection LOS E* Approach Delay LOS E or better **PM Peak:** Overall Intersection LOS E* Approach Delay LOS E or better *- Could not achieve LOS D	• Optimize the Signal Splits • Add an additional EBL, NBL and SBL turn lane with Prot phase	Overall Intersection LOS E* Approach Delay LOS E or better *- Could not achieve LOS D	• Optimize the Signal Splits • Add an additional SBL turn lane with Prot phase	Overall Intersection LOS D Approach Delay LOS F or better	• Optimize the Signal Splits • Add an additional EBL, NBL and SBL turn lane with Prot phase	**AM Peak:** Overall intersection LOS E*, Approach LOS F or better **PM Peak:** Overall intersection LOS D, Approach LOS F or better *- Could not achieve LOS D

Table 4: Intersection Mitigation Measures													
INT #	**INTERSECTION**	**COMP PLAN**						**GMU HIGH PLAN**					
		AM PEAK		**PM PEAK**		**CONSOLIDATED IMPROVEMENTS**	**RESULTS/ REMARKS**	**AM PEAK**		**PM PEAK**		**CONSOLIDATED IMPROVEMENTS**	**RESULTS/ REMARKS**
		PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS			PROPOSED IMPROVEMENTS	RESULTS / REMARKS	PROPOSED IMPROVEMENTS	RESULTS / REMARKS		
16	Beulah Road at Maple Ave (Rte 123)	• No Improvements	Overall Intersection LOS C, Approach LOS E or better	• Change operation to Act-Coord and optimized Signal Splits • Add an exclusive SBR turn lane	Overall Intersection LOS D, Approach LOS F or better	• Change operation to Act-Coord and optimized Signal Splits • Add an exclusive SBR turn lane	**AM Peak:** Overall Intersection LOS C, Approach LOS F or better **PM Peak:** Overall Intersection LOS D, Approach LOS F or better	• No Improvements	Overall Intersection LOS C, Approach LOS E or better	• Change operation to Act-Coord and optimized Signal Splits • Add exclusive EBR, WBR , and SBR turn lane. • Add an additional NBL turn lane with prot phase. • Convert EBT/R shared lane into shared EBL/T lane	Overall Intersectio n LOS D, Approach LOS E or better	• Change operation to Act-Coord and optimized Signal Splits • Add exclusive EBR, WBR and SBR turn lane. • Add an additional NBL turn lane with prot phase • Convert EBT/R shared lane into shared EBL/T lane	**AM Peak:** Overall intersection LOS C, Approach LOS E or better **PM Peak:** Overall intersection LOS D, Approach LOS E or better
17	Lawyers Road at Maple Ave (Rte 123)	• Change operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL and SBL turn lane • Add an exclusive EBR,WBR and SBR turn lane.	Overall Intersection LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• Change operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL turn lane • Add an exclusive WBR and SBR turn lane.	Overall Intersection LOS D, Approach LOS F or better	• Changed operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL and SBL turn lane • Add an exclusive EBR, WBR and SBR turn lane.	**AM Peak:** Overall Intersection LOS E*, Approach LOS F or better **PM Peak:** Overall Intersection LOS D, Approach LOS F or better *- Could not achieve LOS D	• Change operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL and SBL turn lane • Add an exclusive EBR, WBR, NBR and SBR turn lane.	Overall Intersection LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• Change operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL turn lane • Add an exclusive WBR and SBR turn lane.	Overall Intersectio n LOS E* Approach Delay LOS F or better *- Could not achieve LOS D	• Change operation to Act-Coord and optimized Signal Splits with 190 sec cycle length • Add an additional EBL and SBL turn lane • Add an exclusive EBR, WBR, NBR and SBR turn lane.	**AM Peak:** Overall Intersection LOS E*, Approach LOS F or better **PM Peak:** Overall Intersection LOS E*, Approach LOS F or better *- Could not achieve LOS D
18	Old Courthouse Road and Westbriar Drive	• Provide a Signal with optimized cycle length of 120 sec	Overall Intersection LOS C, Approach LOS D or better	• Provide a Signal with optimized cycle length of 120sec • Add and exclusive WBL turn lane with perm phase	Overall Intersection LOS D, Approach LOS E or better	• Provide a Signal with optimized cycle length of 120 sec	**AM Peak:** Overall Intersection LOS B Approach Delay LOS D or better **PM Peak:** Overall Intersection LOS D, Approach LOS E or better	• Provide a Signal with optimized cycle length of 120sec	Overall Intersection LOS B, Approach LOS D or better	• Provide a Signal with optimized cycle length of 120sec • Add and exclusive WBL turn lane with perm phase	Overall Intersectio n LOS D, Approach LOS F or better	• Provide a Signal with optimized cycle length of 120 sec • Add and exclusive WBL turn lane with perm phase	**AM Peak:** Overall Intersection LOS B Approach Delay LOS D or better **PM Peak:** Overall Intersection LOS D, Approach LOS F or better

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results

Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**
Int 1: Route 123 (Dolley Madison Boulevard) at Lewinsville Road/Great Falls Street										
AM PEAK										
2008 Existing	67.6	E	105.3	F	44.4	D	41.5	D	54.6	D
2030 Comp Plan - Existing Geo.	66.0	E	87.2	F	43.9	D	43.3	D	51.1	D
2030 Comp Plan - No. Improvements	66.0	E	87.2	F	43.9	D	43.3	D	51.1	D
2030 Comp Plan - Consolidated Pro. Imp.	**83.3**	**F**	**92.2**	**F**	**42.5**	**D**	**35.8**	**D**	**50.6**	**D**
2030 GMU High Plan - Existing Geo.	62.3	E	81.2	F	39.8	D	46.0	D	48.3	D
2030 GMU High Plan - No. Improvements	62.3	E	81.2	F	39.8	D	46.0	D	48.3	D
2030 GMU High Plan - Consolidated Pro. Imp.	**75.5**	**E**	**88.4**	**F**	**40.3**	**D**	**38.2**	**D**	**48.2**	**D**
PM PEAK										
2008 Existing	120.7	F	105.3	F	58.5	E	27.9	C	63.5	E
2030 Comp Plan - Existing Geo.	75.4	E	108.7	F	73.2	E	35.1	D	65.7	E
2030 Comp Plan - No. Improvements	116.6	F	113.5	F	41.1	D	24.2	C	53.6	D
2030 Comp Plan - Consolidated Pro. Imp.	**116.6**	**F**	**113.5**	**F**	**41.1**	**D**	**24.2**	**C**	**53.6**	**D**
2030 GMU High Plan - Existing Geo.	69.8	E	98.0	F	81.4	F	32.4	C	66.9	E
2030 GMU High Plan - No. Improvements	119.9	F	150.6	F	36.7	D	19.3	B	52.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**119.9**	**F**	**150.6**	**F**	**36.7**	**D**	**19.3**	**B**	**52.4**	**D**
Int 2: Route 123 (Dolley Madison Boulevard) at Old Dominion Drive										
AM PEAK										
2008 Existing	80.5	F	60.7	E	76.3	E	33.3	C	64.2	E
2030 Comp Plan - Existing Geo.	70.8	E	56.8	E	106.9	F	40.5	D	75.1	E
2030 Comp Plan - Pro. Improvements	72.7	E	96.7	F	73.6	E	31.6	C	62.4	E
2030 Comp Plan - Consolidated Pro. Imp.	**72.7**	**E**	**96.7**	**F**	**73.6**	**E**	**31.6**	**C**	**62.4**	**E**
2030 GMU High Plan - Existing Geo.	73.4	E	60.6	E	88.9	F	56.6	E	73.0	E
2030 GMU High Plan - Proposed Imp.	66.7	E	102.3	F	59.9	E	43.8	D	60.8	E
2030 GMU High Plan - Consolidated Pro. Imp.	**66.7**	**E**	**102.3**	**F**	**59.9**	**E**	**43.8**	**D**	**60.8**	**E**
PM PEAK										
2008 Existing	82.8	F	83.1	F	16.6	B	38.7	D	43.3	D
2030 Comp Plan - Existing Geo.	84.9	F	78.8	E	18.5	B	37.6	D	40.7	D
2030 Comp Plan - No. Improvements	84.9	F	78.8	E	18.5	B	37.6	D	40.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**82.5**	**F**	**96.9**	**F**	**18.4**	**B**	**32.3**	**C**	**41.6**	**D**
2030 GMU High Plan - Existing Geo.	81.7	F	79.4	E	16.6	B	39.2	D	40.5	D
2030 GMU High Plan - Proposed Imp.	82.7	F	92.3	F	18.2	B	33.6	C	41.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**82.7**	**F**	**92.3**	**F**	**18.2**	**B**	**33.6**	**C**	**41.4**	**D**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results										
Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Int 3: Lewinsville Road at Route 7 (Leesburg Pike)										
AM PEAK										
2008 Existing	17.7	B	46.0	D	88.1	F	32.2	C	26.4	C
2030 Comp Plan - Existing Geo.	21.4	C	27.9	C	81.8	F	54.7	D	26.5	C
2030 Comp Plan - No. Improvements	21.4	C	27.9	C	81.8	F	54.7	D	26.5	C
2030 Comp Plan - Consolidated Pro. Imp.	**17.3**	**B**	**26.4**	**C**	**71.3**	**E**	**33.5**	**C**	**21.5**	**C**
2030 GMU High Plan - Existing Geo.	21.1	C	75.3	E	78.7	E	37.4	D	37.0	D
2030 GMU High Plan - Proposed Imp.	19.8	B	61.0	E	62.5	E	28.6	C	31.4	C
2030 GMU High Plan - Consolidated Pro. Imp.	**19.8**	**B**	**61.0**	**E**	**62.5**	**E**	**28.6**	**C**	**31.4**	**C**
PM PEAK										
2008 Existing	25.9	C	39.5	D	88.7	F	178.4	F	55.6	E
2030 Comp Plan - Existing Geo.	20.8	C	64.0	E	98.1	F	279.3	F	86.9	F
2030 Comp Plan - Pro. Improvements	25.0	C	44.4	D	79.8	E	83.8	F	45.1	D
2030 Comp Plan - Consolidated Pro. Imp.	**25.0**	**C**	**44.4**	**D**	**79.8**	**E**	**83.8**	**F**	**45.1**	**D**
2030 GMU High Plan - Existing Geo.	127.5	F	35.8	D	98.1	F	594.5	F	210.0	F
2030 GMU High Plan - Proposed Imp.	42.2	D	67.8	E	58.1	E	31.7	C	51.1	D
2030 GMU High Plan - Consolidated Pro. Imp.	**42.2**	**D**	**67.8**	**E**	**58.1**	**E**	**31.7**	**C**	**51.1**	**D**
Int 4: Lewinsville Road at Spring Hill Road										
AM PEAK										
2008 Existing	45.5	D	20.7	C	39.8	D	124.4	F	54.7	D
2030 Comp Plan - Existing Geo.	43.0	D	16.3	B	44.5	D	205.4	F	83.1	F
2030 Comp Plan - Pro. Improvements	57.4	E	23.4	C	71.5	E	59.2	E	50.2	D
2030 Comp Plan - Consolidated Pro. Imp.	**57.4**	**E**	**23.4**	**C**	**71.5**	**E**	**59.2**	**E**	**50.2**	**D**
2030 GMU High Plan - Existing Geo.	43.6	D	19.9	B	34.6	C	187.5	F	77.0	E
2030 GMU High Plan - Proposed Imp.	55.0	D	27.9	C	56.3	E	52.4	D	45.6	D
2030 GMU High Plan - Consolidated Pro. Imp.	**55.0**	**D**	**27.9**	**C**	**55.7**	**E**	**52.4**	**D**	**45.5**	**D**
PM PEAK										
2008 Existing	36.2	D	16.9	B	140.2	F	36.4	D	74.0	E
2030 Comp Plan - Existing Geometry	36.0	D	19.1	B	260.7	F	34.7	C	135.4	F
2030 Comp Plan - Proposed Improvements	54.2	D	41.4	D	39.6	D	59.5	E	44.4	D
2030 Comp Plan - Consolidated Pro. Imp.	**54.2**	**D**	**41.4**	**D**	**39.6**	**D**	**59.5**	**E**	**44.4**	**D**
2030 GMU High Plan - Existing Geometry	40.3	D	21.9	C	425.0	F	40.4	D	196.3	F
2030 GMU High Plan - Proposed Improvements	58.9	E	37.1	D	41.5	D	74.0	E	46.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**58.9**	**E**	**37.1**	**D**	**41.5**	**D**	**74.0**	**E**	**46.4**	**D**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results

Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**
Int 7: Great Falls Street & Chain Bridge Road										
AM PEAK										
2008 Existing	58.6	E	24.9	C	58.1	E	47.4	D	46.4	D
2030 Comp Plan - Existing Geometry	54.8	D	22.6	C	50.5	D	78.2	E	53.7	D
2030 Comp Plan - Proposed Improvements	54.8	D	22.6	C	50.5	D	78.2	E	53.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**43.0**	**D**	**16.0**	**B**	**32.4**	**C**	**29.2**	**C**	**27.9**	**C**
2030 GMU High Plan - Existing Geometry	47.4	D	23.4	C	40.4	D	59.6	E	44.2	D
2030 GMU High Plan - Proposed Improvements	52.6	D	26.1	C	30.9	C	17.3	B	24.9	C
2030 GMU High Plan - Consolidated Pro. Imp.	**52.6**	**D**	**26.1**	**C**	**30.9**	**C**	**17.3**	**B**	**24.9**	**C**
PM PEAK										
2008 Existing	46.4	D	30.1	C	45.0	D	83.5	F	128.6	E
2030 Comp Plan - Existing Geometry	47.7	D	32.0	C	42.4	D	140.3	F	80.9	F
2030 Comp Plan - Proposed Improvements	87.2	F	44.0	D	41.9	D	34.9	C	42.5	D
2030 Comp Plan - Consolidated Pro. Imp.	**87.2**	**F**	**44.0**	**D**	**41.9**	**D**	**34.9**	**C**	**42.5**	**D**
2030 GMU High Plan - Existing Geometry	45.7	D	42.7	D	37.6	D	121.4	F	76.5	E
2030 GMU High Plan - Proposed Improvements	108.6	F	51.9	D	31.7	C	32.0	C	44.0	D
2030 GMU High Plan - Consolidated Pro. Imp.	**108.6**	**F**	**51.9**	**D**	**31.7**	**C**	**32.0**	**C**	**44.0**	**D**
Int 9: Magarity Road at Route 7										
AM PEAK										
2008 Existing	26.4	C	51.9	D	108.7	F	52.8	D	43.9	D
2030 Comp Plan - Existing Geometry	33.8	C	129.2	F	111.2	F	67.0	E	78.3	E
2030 Comp Plan - Proposed Improvements	29.1	C	40.3	D	97.6	F	76.7	E	41.4	D
2030 Comp Plan - Consolidated Pro. Imp.	**28.8**	**C**	**39.5**	**D**	**93.1**	**F**	**77.4**	**E**	**40.8**	**D**
2030 GMU High Plan - Existing Geometry	50.3	D	124.5	F	111.2	F	244.8	F	102.6	F
2030 GMU High Plan - Proposed Improvements	39.6	D	57.1	E	112.9	F	59.7	E	51.6	D
2030 GMU High Plan - Consolidated Pro. Imp.	**37.0**	**D**	**57.1**	**E**	**110.0**	**F**	**60.0**	**E**	**50.3**	**D**
PM PEAK										
2008 Existing	44.0	D	52.8	D	110.5	F	59.0	E	52.9	D
2030 Comp Plan - Existing Geometry	88.4	F	78.3	E	105.5	F	90.3	F	86.3	F
2030 Comp Plan - Proposed Improvements	49.6	D	37.0	D	121.4	F	91.6	F	54.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**49.6**	**D**	**37.0**	**D**	**121.4**	**F**	**91.6**	**F**	**54.7**	**D**
2030 GMU High Plan - Existing Geometry	49.3	D	160.7	F	110.6	F	254.5	F	116.3	F
2030 GMU High Plan - Proposed Improvements	37.5	D	51.8	D	94.5	F	95.5	F	52.9	D
2030 GMU High Plan - Consolidated Pro. Imp.	**37.5**	**D**	**51.8**	**D**	**94.5**	**F**	**95.5**	**F**	**52.9**	**D**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results										
Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Int 10: Idylwood Road at Route 7										
AM PEAK										
2008 Existing	47.5	D	48.1	D	97.9	F	95.7	F	60.7	E
2030 Comp Plan - Existing Geometry	95.6	F	63.1	E	86.0	F	119.6	F	84.3	F
2030 Comp Plan - Proposed Improvements	48.9	D	44.0	D	89.4	F	69.3	E	54.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**48.9**	**D**	**44.0**	**D**	**89.4**	**F**	**63.2**	**E**	**54.3**	**D**
2030 GMU High Plan - Existing Geometry	86.4	F	66.6	E	110.6	F	100.6	F	84.1	F
2030 GMU High Plan - Proposed Improvements	53.2	D	50.1	D	70.5	E	50.2	D	54.8	D
2030 GMU High Plan - Consolidated Pro. Imp.	**53.2**	**D**	**50.1**	**D**	**70.5**	**E**	**50.2**	**D**	**54.8**	**D**
PM PEAK										
2008 Existing	48.4	D	41.3	E	72.9	E	89.0	F	51.4	D
2030 Comp Plan - Existing Geometry	90.4	F	176.0	F	231.5	F	125.5	F	142.7	F
2030 Comp Plan - Proposed Improvements	54.1	D	36.0	D	102.0	F	9.2	A	47.0	D
2030 Comp Plan - Consolidated Pro. Imp.	**54.1**	**D**	**36.0**	**D**	**102.0**	**F**	**9.2**	**A**	**47.0**	**D**
2030 GMU High Plan - Existing Geometry	103.2	F	59.3	E	125.7	F	115.0	F	87.9	F
2030 GMU High Plan - Proposed Improvements	55.7	E	43.3	D	77.0	E	81.1	F	54.5	D
2030 GMU High Plan - Consolidated Pro. Imp.	**41.5**	**D**	**36.0**	**D**	**89.1**	**F**	**87.8**	**F**	**47.3**	**D**
Int 11: Idylwood Road at Gallows Road										
AM PEAK										
2008 Existing	86.6	F	50.5	D	31.5	C	36.7	D	39.3	D
2030 Comp Plan - Existing Geometry	169.9	F	76.6	E	114.5	F	36.8	D	96.9	F
2030 Comp Plan - Proposed Improvements	84.7	F	61.7	E	47.1	D	57.0	D	54.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**84.7**	**F**	**61.7**	**E**	**47.1**	**D**	**57.0**	**D**	**54.7**	**D**
2030 GMU High Plan - Existing Geometry	123.8	F	76.7	E	133.5	F	35.5	D	102.8	F
2030 GMU High Plan - Proposed Improvements	78.8	E	60.6	E	57.4	E	29.6	C	53.6	D
2030 GMU High Plan - Consolidated Pro. Imp.	**78.8**	**E**	**60.6**	**E**	**57.4**	**E**	**29.6**	**C**	**53.6**	**D**
PM PEAK										
2008 Existing	92.7	F	64.6	E	34.3	C	17.1	B	32.3	C
2030 Comp Plan - Existing Geometry	84.3	F	103	F	62.4	E	19.1	B	53.0	D
2030 Comp Plan - Proposed Improvements	74.2	E	60.4	E	43.8	D	26.2	C	40.6	D
2030 Comp Plan - Consolidated Pro. Imp.	**74.2**	**E**	**60.4**	**E**	**43.8**	**D**	**26.2**	**C**	**40.6**	**D**
2030 GMU High Plan - Existing Geometry	89.0	F	122.9	F	63.8	E	20.5	C	56.9	E
2030 GMU High Plan - Proposed Improvements	75.3	E	62.2	E	47.3	D	27.6	C	42.6	D
2030 GMU High Plan - Consolidated Pro. Imp.	**75.3**	**E**	**62.2**	**E**	**47.3**	**D**	**27.6**	**C**	**42.6**	**D**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results

Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**
Int 12: Idylwood Road at Gallows Road										
AM PEAK										
2008 Existing	0.1	A	1.7	A	18.5	C	59.2	F	4.5	-
2030 Comp Plan - Existing Geometry	0.2	A	0.5	A	530.7	F	376.6	F	113.6	-
2030 Comp Plan - Proposed Improvements	60.6	E	27.8	C	89.4	F	22.4	C	54.7	D
2030 Comp Plan - Consolidated Pro. Imp.	**59.9**	**E**	**21.5**	**C**	**89.4**	**F**	**22.4**	**C**	**52.2**	**D**
2030 GMU High Plan - Existing Geometry	0.2	A	0.1	A	747.5	F	153.3	F	-	-
2030 GMU High Plan - Proposed Improvements	38.5	D	14.4	B	56.4	E	27.5	C	34.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**38.5**	**D**	**14.0**	**B**	**56.4**	**E**	**27.5**	**C**	**34.2**	**C**
PM PEAK										
2008 Existing	0.1	A	3.1	A	109.7	F	98.5	F	20.7	-
2030 Comp Plan - Existing Geometry	0.3	A	15.3	C	-	F	499.5	F	-	-
2030 Comp Plan - Proposed Improvements	32.9	C	35.2	D	85.2	F	27.5	C	40.8	D
2030 Comp Plan - Consolidated Pro. Imp.	**32.9**	**C**	**35.2**	**D**	**85.2**	**F**	**27.5**	**C**	**40.8**	**D**
2030 GMU High Plan - Existing Geometry	0.1	A	4.2	A	312.0	F	-	F	216.4	-
2030 GMU High Plan - Proposed Improvements	44.5	D	35.0	C	64.9	E	27.2	C	42.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**39.7**	**D**	**34.1**	**C**	**55.5**	**E**	**26.7**	**C**	**39.0**	**D**
Int 14: Gallows Road at Cedar Lane/Oak Street										
AM PEAK										
2008 Existing	70.0	E	62.2	E	20.6	C	28.5	C	36.4	D
2030 Comp Plan - Existing Geometry	71.9	E	326.1	F	226.5	F	27.6	C	174.1	F
2030 Comp Plan - Proposed Improvements	77.7	E	56.1	E	53.7	D	31.3	C	54.6	D
2030 Comp Plan - Consolidated Pro. Imp.	**77.7**	**E**	**56.1**	**E**	**53.7**	**D**	**31.3**	**C**	**54.6**	**D**
2030 GMU High Plan - Existing Geometry	77.1	E	415.3	F	211.2	F	27.0	C	173.1	F
2030 GMU High Plan - Proposed Improvements	73.0	E	37.2	D	60.3	E	31.8	C	54.9	D
2030 GMU High Plan - Consolidated Pro. Imp.	**73.0**	**E**	**37.2**	**D**	**60.3**	**E**	**31.8**	**C**	**54.9**	**D**
PM PEAK										
2008 Existing	76.9	E	55.2	E	17.1	B	24.2	C	28.0	C
2030 Comp Plan - Existing Geometry	78.2	E	61.3	E	28.2	C	18.7	B	30.4	C
2030 Comp Plan - Proposed Improvements	75.2	E	40.7	D	38.8	D	15.3	B	30.9	C
2030 Comp Plan - Consolidated Pro. Imp.	**75.2**	**E**	**40.7**	**D**	**38.8**	**D**	**15.3**	**B**	**30.9**	**C**
2030 GMU High Plan - Existing Geometry	78.2	E	74.9	E	29.8	C	24.7	C	34.8	C
2030 GMU High Plan - Proposed Improvements	75.1	E	41.4	D	43.9	D	19.9	B	34.4	C
2030 GMU High Plan - Consolidated Pro. Imp.	**75.1**	**E**	**41.4**	**D**	**43.9**	**D**	**19.9**	**B**	**34.4**	**C**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results

Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**
Int 15: Old Courthouse Road and Chain Bridge Road										
AM PEAK										
2008 Existing	135.2	F	161.4	F	45.0	D	33.9	C	83.3	F
2030 Comp Plan - Existing Geometry	95.9	F	95.1	F	45.1	D	119.5	F	77.0	E
2030 Comp Plan - Proposed Improvements	92.1	F	80.7	F	47.5	D	50.5	D	60.4	E
2030 Comp Plan - Consolidated Pro. Imp.	**91.4**	**F**	**76.1**	**E**	**49.0**	**D**	**50.9**	**D**	**60.6**	**E**
2030 GMU High Plan - Existing Geometry	216.0	F	361.2	F	42.2	D	65.2	E	149.2	F
2030 GMU High Plan - Proposed Improvements	95.1	F	101.3	F	72.0	E	45.5	D	78.0	E
2030 GMU High Plan - Consolidated Pro. Imp.	**95.1**	**F**	**101.3**	**F**	**72.0**	**E**	**45.5**	**D**	**78.0**	**E**
PM PEAK										
2008 Existing	175.4	F	76.1	E	33.9	C	34.7	C	72.7	E
2030 Comp Plan - Existing Geometry	74.0	E	328.1	F	52.6	D	36.8	D	133.5	F
2030 Comp Plan - Proposed Improvements	50.4	D	52.2	D	74.9	E	62.2	E	59.7	E
2030 Comp Plan - Consolidated Pro. Imp	**67.3**	**E**	**53.7**	**D**	**79.7**	**F**	**59.7**	**E**	**61.1**	**E**
2030 GMU High Plan - Existing Geometry	91.5	F	208.5	F	34.2	C	34.4	C	93.4	F
2030 GMU High Plan - Proposed Improvements	45.2	D	54.7	D	62.9	E	54.5	D	54.7	D
2030 GMU High Plan - Consolidated Pro. Imp.	**61.3**	**E**	**54.8**	**D**	**67.1**	**E**	**48.1**	**D**	**54.6**	**D**
Int 16: Maple Avenue a Beulah Road (Vienna)										
AM PEAK										
2008 Existing	32.8	C	52.0	D	29.0	C	12.9	B	26.3	C
2030 Comp Plan - Existing Geometry	34.3	C	56.9	E	23.5	C	15.3	B	23.5	C
2030 Comp Plan - No Improvements	34.3	C	56.9	E	23.5	C	15.3	B	23.5	C
2030 Comp Plan - Consolidated Pro. Imp	**50.0**	**D**	**88.3**	**F**	**37.0**	**D**	**11.0**	**B**	**33.8**	**C**
2030 GMU High Plan - Existing Geometry	33.1	C	57.3	E	19.9	B	16.2	B	21.2	C
2030 GMU High Plan - Proposed Improvements	33.1	C	57.3	E	19.9	B	16.2	B	21.2	C
2030 GMU High Plan - Consolidated Pro. Imp.	**37.9**	**D**	**76.4**	**E**	**20.1**	**C**	**14.1**	**B**	**21.7**	**C**
PM PEAK										
2008 Existing	50.3	D	58	E	31.2	C	203.4	F	124.9	F
2030 Comp Plan - Existing Geometry	128.4	F	64.6	E	31.8	C	221.7	F	149.1	F
2030 Comp Plan - Proposed Improvements	76.7	E	91.7	F	67.7	E	40.5	D	55.0	D
2030 Comp Plan - Consolidated Pro. Imp.	**76.7**	**E**	**91.7**	**F**	**67.7**	**E**	**40.5**	**D**	**55.0**	**D**
2030 GMU High Plan - Existing Geometry	127.6	F	66.1	E	33.5	C	240.3	F	153.6	F
2030 GMU High Plan - Proposed Improvements	72.4	E	50.9	D	45.6	D	53.2	D	55.0	D
2030 GMU High Plan - Consolidated Pro. Imp.	**72.4**	**E**	**50.9**	**D**	**45.6**	**D**	**53.2**	**D**	**55.0**	**D**

Table 5: Intersection Capacity Analysis with Proposed Improvements- Synchro Results

Direction	Eastbound		Westbound		Northbound		Southbound		Overall Intersection	
Scenario	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**	**Delay (Sec)**	**LOS**
Int 17: Maple Avenue a Lawyers Road (Vienna)										
AM PEAK										
2008 Existing	61.1	E	64.2	E	172.0	F	34.9	C	122.4	F
2030 Comp Plan - Existing Geometry	88.6	F	74.7	E	373.7	F	266.9	F	264.1	F
2030 Comp Plan - Proposed Improvements	71.7	E	115.9	F	72.2	E	78.7	E	78.6	E
2030 Comp Plan - Consolidated Pro. Imp.	**71.7**	**E**	**115.9**	**F**	**72.2**	**E**	**78.7**	**E**	**78.6**	**E**
2030 GMU High Plan - Existing Geometry	71.2	E	70.8	E	357.9	F	46.8	D	213.0	F
2030 GMU High Plan - Proposed Improvements	109.8	F	77.5	E	71.9	E	52.5	D	76.4	E
2030 GMU High Plan - Consolidated Pro. Imp.	**109.8**	**F**	**77.5**	**E**	**71.9**	**E**	**52.5**	**D**	**76.4**	**E**
PM PEAK										
2008 Existing	76.9	E	80.7	F	48.8	D	213.2	F	124.7	F
2030 Comp Plan - Existing Geometry	215.0	F	47.9	D	39.0	D	139.9	F	123.1	F
2030 Comp Plan - Proposed Improvements	87.8	F	38.5	D	54.0	D	20.1	C	38.6	D
2030 Comp Plan - Consolidated Pro. Imp.	**87.9**	**F**	**38.5**	**D**	**34.4**	**C**	**32.7**	**C**	**42.2**	**D**
2030 GMU High Plan - Existing Geometry	76.8	E	127.4	F	59.7	E	189.8	F	128.0	F
2030 GMU High Plan - Proposed Improvements	84.9	F	93.6	F	37.3	D	59.0	E	64.5	E
2030 GMU High Plan - Consolidated Pro. Imp.	**84.9**	**F**	**93.6**	**F**	**37.3**	**D**	**59.0**	**E**	**64.5**	**E**
Int 18: Old Courthouse Road and Westbriar Drive (Vienna)										
AM PEAK										
2008 Existing	0.0	A	1.4	A	92.7	F	44.3	E	9.0	-
2030 Comp Plan - Existing Geometry	0.5	A	1.2	A	421.2	F	414.4	F	78.5	-
2030 Comp Plan - Proposed Improvements	21.9	C	4.0	A	51.8	D	43.1	D	24.5	C
2030 Comp Plan - Consolidated Pro. Imp.	**21.9**	**C**	**3.7**	**A**	**51.8**	**D**	**43**	**D**	**24.5**	**C**
2030 GMU High Plan - Existing Geometry	0.3	A	1.8	A	27.7	D	24.6	C	3.2	-
2030 GMU High Plan - Proposed Improvements	18.3	B	3.0	A	43	D	33.4	C	18.4	B
2030 GMU High Plan - Consolidated Pro. Imp.	**18.2**	**B**	**2.5**	**A**	**42.9**	**D**	**33.4**	**C**	**18.2**	**B**
PM PEAK										
2008 Existing	0.2	A	3.0	A	391.9	F	32.0	D	98.1	-
2030 Comp Plan - Existing Geometry	1.1	A	6.4	A	-	F	-	F	-	-
2030 Comp Plan - Proposed Improvements	5.9	A	15.9	B	22.5	C	29.3	C	17.3	B
2030 Comp Plan - Consolidated Pro. Imp.	**5.9**	**A**	**15.9**	**B**	**22.5**	**C**	**29.3**	**C**	**17.3**	**B**
2030 GMU High Plan - Existing Geometry	0.6	A	2.7	A	248.6	F	134.4	F	56.5	-
2030 GMU High Plan - Proposed Improvements	12.6	A	36.5	D	64.2	E	25.3	C	38.4	D
2030 GMU High Plan - Consolidated Pro. Imp.	**12.6**	**A**	**36.5**	**D**	**64.2**	**E**	**25.3**	**C**	**38.4**	**D**

Table 6: Intersection Lane Configuration

INT #	INTERSECTION	Direction	Existing (2008)			Comp Plan (2030)			GMU High Plan (2030)		
1	Dolley Madison Blvd and Lewinsville Road	Eastbound	1L	1LT 1T	2R	1L	1LT 1T	2R	1L	1LT 1T	2R
		Westbound	1L	1LT	1TR	1L	1LT	1TR	1L	1LT	1TR
		Northbound	2L	2T	1R	2L	2T	1R	2L	2T	1R
		Southbound	2L	3T	1R	2L	3T	1R	2L	3T	1R
		Worst Case	PM - LOS E - 63.5 Sec			PM - LOS D - 53.6 Sec			PM - LOS D - 52.4 Sec		
2	Dolley Madison Blvd and Old Dominion Drive	Eastbound	2L	2T	1R	2L	2T	1R	2L	2T	1R
		Westbound	2L	2T	1R	2L	2T	1R	2L	2T	1R
		Northbound	1L	2T	1R	1L	2T	1R	1L	2T	1R
		Southbound	1L	2T	1R	1L	2T	1R	1L	2T	1R
		Worst Case	AM - LOS E - 64.2 Sec			AM - LOS E - 62.4 Sec			AM - LOS E - 60.8 Sec		
3	Lewinsville Road & Route 7	Eastbound	1L	2T	1R	1L	3T	1R	1L	3T	1R
		Westbound	2L	2T	1R	2L	3T	1R	2L	3T	1R
		Northbound	1L	1T	1R	1L	1T	1R	1L	1T	1R
		Southbound	1L	1T	1TR	1L	1T	1TR	1L	1T	1TR
		Worst Case	PM - LOS E - 55.6 Sec			PM - LOS D - 45.1 Sec			PM - LOS D - 51.1 Sec		
4	Lewinsville Road and Spring Hill Road	Eastbound	-	1LT	1R	-	1LT	1R	-	1LT	1R
		Westbound	1L	1TR	-	1L	1TR	-	1L	1TR	-
		Northbound	-	1LT	1R	-	1LT	1R	1L	1T	1R
		Southbound	-	1LTR	-	-	1LTR	-	-	1LTR	
		Worst Case	PM - LOS E - 74.0 Sec			AM - LOS D - 50.2 Sec			PM - LOS D - 46.4 Sec		
7	Great Falls Street and Chain Bridge Road	Eastbound	1L	1T	1R	1L	1T	1R	1L	1T	1R
		Westbound	1L	1T	1R	1L	1T	1R	1L	1T	1R
		Northbound	1L	1TR	-	1L	1T	1R	1L	1T	1R
		Southbound	1L	1TR	-	1L	1TR	-	1L	1TR	-
		Worst Case	PM - LOS E - 55.9 Sec			PM - LOS D - 42.5 Sec			PM - LOS D - 44.0 Sec		
9	Route 7 and Magarity Road	Eastbound	2L	3T	1R	2L	3T	1R	2L	3T	1R
		Westbound	1L	1T	1TR	1L	2T	1R	1L	2T	1R
		Northbound	2L	1TR	-	2L	1T	1R	2L	1T	1R
		Southbound	1L	1TR	1R	1L	1TR	1R	2L	1TR	1R
		Worst Case	PM - LOS D - 52.9 Sec			PM - LOS D - 54.7 Sec			PM - LOS D - 52.9 Sec		
10	Idylwood Road at Route 7	Eastbound	1L	2T	1TR	2L	3T	1R	2L	3T	1R
		Westbound	1L	2T	1TR	2L	3T	1R	2L	3T	1R
		Northbound		1LT	1R	1L	1T	1R	1L	1TR	1R
		Southbound		1LT	1R	1L	1T	1R	1L	1TR	1R

Table 6: Intersection Lane Configuration

INT	INTERSECTION	Direction	Existing (2008)			Comp Plan (2030)			GMU High Plan (2030)		
		Worst Case	AM - LOS E - 60.7 Sec			AM - LOS D - 54.3 Sec			AM - LOS D - 54.8Sec		
11	Idylwood Road and Gallows Road	**Eastbound**	1L	1TR		1L	1TR		1L	1TR	
		Westbound	1L	1T	1R	1L	1T	1R	1L	1T	1R
		Northbound	1L	2T	1R	1L	3T	1R	1L	3T	1R
		Southbound	1L	1T	1TR	1L	2T	1TR	1L	2T	1TR
		Worst Case	AM - LOS D - 39.3 Sec			AM - LOS D - 54.7 Sec			AM - LOS D - 53.6 Sec		
12	Georgetown Pike and Swinks Mill Road	**Eastbound**	-	1LTR	-	-	1LTR	-	-	1LTR	-
		Westbound	-	1LTR	-	1L	1TR	-	1L	1TR	-
		Northbound	-	1LTR	-	-	1LTR	-	-	1LT	1R
		Southbound	-	1LTR	-	-	1LTR	-	-	1LTR	-
		Worst Case	PM - * - 20.7 Sec			AM - LOS D - 52.2 Sec			PM - LOS D - 39.0 Sec		
14	Cedar Lane and Gallows Road	**Eastbound**	1L	1LT	1TR	1L	1LT	1TR	1L	1LT	1TR
		Westbound		1LT	1R		1LT	1R		1LT	1R
		Northbound	1L	1T	1TR	1L	2T	1TR	1L	2T	1TR
		Southbound	1L	1T	1TR	1L	2T	1TR	1L	2T	1TR
		Worst Case	AM - LOS D - 36.4 Sec			AM - LOS D - 54.6 Sec			AM - LOS D - 54.9 Sec		
15	Old Courthouse Road and Chain Bridge Road	**Eastbound**	1L	1T	1TR	2L	1T	1TR	2L	1T	1TR
		Westbound	1L	2T	1R	1L	2T	1R	1L	2T	1R
		Northbound	1L	2T	1R	2L	2T	1R	2L	2T	1R
		Southbound	1L	2T	1R	2L	2T	1R	2L	2T	1R
		Worst Case	AM - LOS F - 83.3 Sec			PM - LOS E - 61.1 Sec			AM - LOS E - 78.0 Sec		
16	Beulah road and Maple Avenue	**Eastbound**	1L	1TR	-	1L	1TR	-	1L	1LT	1R
		Westbound	-	1LTR	-	-	1LTR	-	-	1LT	1R
		Northbound	1L	1T	1TR	1L	1T	1TR	2L	1T	1TR
		Southbound	1L	1T	1TR	1L	2T	1R	1L	2T	1R
		Worst Case	PM - LOS F - 124.1 Sec			PM - LOS D - 55.0 Sec			PM - LOS D - 55.0 Sec		
17	Lawyers Road and Maple Avenue	**Eastbound**	1L	1TR	-	2L	1T	1R	2L	1T	1R
		Westbound	1L	1TR	-	1L	1T	1R	1L	1T	1R
		Northbound	1L	1T	1TR	1L	1T	1TR	1L	2T	1R
		Southbound	1L	1T	1TR	2L	2T	1R	2L	2T	1R
		Worst Case	PM - LOS F - 124.7 Sec			AM - LOS E - 78.6 Sec			AM - LOS E - 76.4 Sec		
18	Old Courthouse Rd and Westbriar Drive	**Eastbound**	-	1LTR	-	-	1LTR	-	-	1LTR	-
		Westbound	-	1LTR	-	1L	1TR	-	1L	1TR	-
		Northbound	-	1LTR	-	-	1LTR	-	-	1LTR	-
		Southbound	-	1LTR	-	-	1LTR	-	-	1LTR	-
		Worst Case	PM - LOS F - 98.1 Sec			AM - LOS C - 24.5 Sec			PM - LOS D - 38.4 Sec		

Since this study is considered as a planning effort by FCDOT, the storage lengths for the turn-bays are proposed based on the 95th percentile queue lengths. In cases, where it is not geometrically feasible to provide the 97th queue lengths, 50th percentile queue lengths are used. Table 7 presents the storage length details for fourteen (14) intersections under both scenarios. The proposed physical improvements are presented as intersection diagrams using aerial images provided by FCDOT included in Appendix F and the respective planning level cost estimates are included in Appendix F.

Based on the results and proposed improvements presented above, same set of intersections are failing (LOS E or LOS F) under both future Comp Plan and GMU High Plan scenarios. In addition, the proposed mitigation measures are very close for both scenarios. Even though the GMU High Land Use Plan volumes are higher than the existing Comprehensive Plan, from the standpoint of traffic operations there is no significant difference between the two scenarios. However, there is significant cost involved in implementing the required improvements to accommodate the future traffic under both scenarios in addition to the planned improvements under existing Comprehensive Plan.

In conclusion, revising the existing Comprehensive Plan by considering the GMU High Land Use Alternative will not cause any significant traffic impacts in the study area.

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
1	Dolley Madison Blvd & Lewinsville Road	2008 Existing	Existing	166	144	227	-	832	548	364	308	166	144	227	-	832	548	364	308
		2030 Comp Plan	AM Peak	286	78	482	-	311	53	51	74	159	88	317	-	246	0	26	24
			PM Peak	364	313	601	-	231	206	49	35	193	256	385	-	175	77	39	33
			Pro. Comp Plan	375	325	625	-	325	225	75	75	200	275	400	-	250	100	50	50
		2030 GMU High Plan	AM Peak	274	102	400	-	335	110	51	84	159	96	261	-	269	31	26	32
			PM Peak	359	352	517	-	318	275	41	35	185	302	305	-	253	143	32	32
			Pro. GMU Plan	375	375	525	-	350	300	75	100	200	325	325	-	275	150	50	50
2	Dolley Madison Blvd & Old Dominion Drive	2008 Existing	Existing	269	576	309	48	384	385	250	115	269	576	309	48	384	385	250	115
		2030 Comp Plan	AM Peak	259	27	343	55	17	456	332	74	182	0	231	10	5	335	128	27
			PM Peak	176	58	402	117	8	0	253	171	127	9	285	66	7	0	90	98
			Pro. Comp Plan	275	75	425	125	25	475	350	175	200	25	300	75	25	350	150	100
		2030 GMU High Plan	AM Peak	251	43	415	45	23	447	151	70	191	2	295	8	8	324	51	33
			PM Peak	153	105	402	80	12	41	169	184	107	46	293	42	10	0	59	108
			Pro. GMU Plan	275	125	425	100	25	450	175	200	200	75	300	50	25	325	75	125

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
3	Lewinsville Road & Route 7	2008 Existing	Existing	895	340	436	300	92	92	68	-	895	-	436	300	92	-	68	-
		2030 Comp Plan	AM Peak	574	7	12	39	23	15	214	-	482	-	3	5	6	0	142	-
			PM Peak	400	13	13	28	54	14	258	-	272	-	3	9	19	0	174	-
			Pro. Comp Plan	575	25	25	50	75	25	275	-	500	-	25	25	25	0	175	-
		2030 GMU High Plan	AM Peak	950	11	12	92	21	14	312	-	690	-	3	30	6	0	223	-
			PM Peak	837	11	13	85	42	14	733	-	588	-	3	43	17	0	497	-
			Pro. GMU Plan	950	25	25	100	50	25	750	-	700	-	25	50	25	0	500	-
4	Lewinsville Road & Spring Hill Road	2008 Existing	Existing	-	-	0	-	-	346	-	-	-	-	0	-	-	346	-	-
		2030 Comp Plan	AM Peak	-	-	159	-	-	194	-	-	-	-	106	-	-	122	-	-
			PM Peak	-	-	78	-	-	355	-	-	-	-	40	-	-	227	-	-
			Pro. Comp Plan	-	-	175	-	-	375	-	-	-	-	125	-	-	250	-	-
		2030 GMU High Plan	AM Peak	-	-	153	-	38	300	-	-	-	-	97	-	13	189	-	-
			PM Peak	-	-	165	-	244	400	-	-	-	-	97	-	166	289	-	-
			Pro. GMU Plan	-	-	175	-	250	400	-	-	-	-	100	-	175	300	-	-

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
7	Great Falls Street & Chain Bridge Road	2008 Existing	Existing	168	201	186	384	226	-	-	-	168	201	186	-	226	-	-	-
		2030 Comp Plan	AM Peak	18	32	166	75	20	158	532	-	4	0	88	-	6	67	234	-
			PM Peak	32	33	561	104	24	64	908	-	11	0	325	-	11	0	580	-
			Pro. Comp Plan	50	50	575	125	25	175	925	-	25	0	350	-	25	75	600	-
		2030 GMU High Plan	AM Peak	16	31	265	87	22	76	451	-	3	0	131	-	7	0	231	-
			PM Peak	14	26	725	89	22	72	832	-	3	0	457	-	9	0	546	-
			Pro. GMU Plan	25	50	750	100	25	100	845	-	25	0	475	-	25	25	575	-
9	Route 7 at Magarity Road	2008 Existing	Existing	296	265	131	-	100	-	354	354	296	265	131	-	100	-	354	354
		2030 Comp Plan	AM Peak	311	154	120	693	93	26	377	126	255	61	68	383	59	0	216	17
			PM Peak	41	75	112	483	285	55	427	493	21	33	61	283	180	0	250	404
			Pro. Comp Plan	325	175	125	700	300	75	450	500	275	75	75	400	200	0	250	425
		2030 GMU High Plan	AM Peak	511	156	120	207	109	28	265	77	321	70	68	125	61	0	208	7
			PM Peak	295	35	57	180	222	86	458	160	227	10	31	96	168	28	335	61
			Pro. GMU Plan	525	175	125	225	225	100	475	175	325	75	75	125	175	50	350	75

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
10	Idylwood Road at Route 7	2008 Existing	Existing	336	-	429	-	-	461	-	222	336	-	429	-	-	461	-	222
		2030 Comp Plan	AM Peak	360	68	282	93	103	922	331	0	188	32	150	54	65	680	205	0
			PM Peak	219	47	601	99	438	150	67	0	168	18	479	37	322	95	35	0
			Pro. Comp Plan	375	75	625	100	450	925	350	0	200	50	500	75	325	680	225	0
		2030 GMU High Plan	AM Peak	204	43	209	82	113	942	206	62	157	21	160	47	67	709	140	0
			PM Peak	178	142	296	115	168	330	116	235	132	77	244	60	95	249	66	162
			Pro. GMU Plan	225	150	300	125	175	950	225	250	175	100	250	75	100	725	150	175
11	Idylwood Road at Gallows Road	2008 Existing	Existing	252	-	87	106	210	123	253	-	252	-	87	106	210	123	253	-
		2030 Comp Plan	AM Peak	57	-	290	270	54	84	316	-	24	-	210	155	29	45	151	-
			PM Peak	40	-	515	187	27	133	301	-	15	-	355	87	11	71	173	-
			Pro. Comp Plan	75		525	300	75	150	325	-	25	-	375	175	50	75	175	-
		2030 GMU High Plan	AM Peak	97	-	308	236	46	135	320	-	48	-	229	131	24	81	155	-
			PM Peak	49	-	590	176	23	143	378	-	20	-	399	77	9	80	187	-
			Pro. GMU Plan	100	-	600	250	50	150	400	-	50	-	400	150	25	100	200	-

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
12	Georgetown Pike & Swinks Mill Road	2008 Existing	Existing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		2030 Comp Plan	AM Peak	-	-	16	-	-	-	-	-	-	-	7	-	-	-	-	-
			PM Peak	-	-	304	-	-	-	-	-	-	-	181	-	-	-	-	-
			Pro. Comp Plan	-	-	325	-	-	-	-	-	-	-	200	-	-	-	-	-
		2030 GMU High Plan	AM Peak	-	-	5	-	-	341	-	-	-	-	1	-	-	201	-	-
			PM Peak	-	-	224	-	-	325	-	-	-	-	92	-	-	194	-	-
			Pro. GMU Plan	-	-	225	-	-	350	-	-	-	-	100	-	-	225	-	-
14	Cedar Lane at Gallows Road	2008 Existing	Existing	970	-	-	630	240	-	147	-	970	-	-	630	240	-	147	-
		2030 Comp Plan	AM Peak	759	-	-	323	28	-	57	-	510	-	-	182	14	-	29	-
			PM Peak	185	-	-	75	6	-	198	-	118	-	-	0	4	-	82	-
			Pro. Comp Plan	775	-	-	325	50	-	200	-	525	-	-	200	25	-	100	-
		2030 GMU High Plan	AM Peak	809	-	-	170	24	-	62	-	554	-	-	47	9	-	29	-
			PM Peak	189	-	-	76	13	-	255	-	120	-	-	0	8	-	135	-
			Pro. GMU Plan	825	-	-	200	25	-	275	-	575	-	-	50	25	-	150	-

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
15	Old Courthouse Road & Chain Bridge Road	2008 Existing	Existing	182	-	271	148	253	37	150	198	182	-	271	148	253	37	150	198
		2030 Comp Plan	AM Peak	265	-	87	112	113	87	336	23	195	-	45	61	72	49	241	0
			PM Peak	161	-	140	121	263	52	361	601	91	-	79	69	161	19	291	431
			Pro. Comp Plan	275	-	150	125	275	100	375	625	200	-	100	75	175	50	300	450
		2030 GMU High Plan	AM Peak	483	-	81	830	199	73	263	40	357	-	39	575	146	39	203	0
			PM Peak	164	-	315	273	138	55	251	329	121	-	222	163	78	24	192	193
			Pro. GMU Plan	500	-	325	850	200	75	275	350	375	-	225	575	150	50	225	200
16	Beulah Road & Maple Avenue	2008 Existing	Existing	239	-	-	-	140	-	128	-	239	-	-	-	140	-	128	-
		2030 Comp Plan	AM Peak	160	-	-	-	65	-	9	13	115	-	-	-	52	-	5	0
			PM Peak	579	-	-	-	504	-	44	0	414	-	-	-	291	-	36	0
			Pro. Comp Plan	600	-	-	-	525	-	50	25	425	-	-	-	300	-	50	0
		2030 GMU High Plan	AM Peak	113	82	-	12	100	-	33	4	68	0	-	0	62	-	19	0
			PM Peak	362	418	-	0	323	-	140	7	255	288	-	0	174	-	83	5
			Pro. GMU Plan	375	425	-	25	325	-	150	25	275	300	-	0	175	-	100	25

Table 7: Intersection Storage Lengths – Existing and Proposed

INT #	INTERSECTION	Scenario	Time Period	STORAGE LENGTHS / 95th Percentile Queue Length								STORAGE LENGTHS / 50th Percentile Queue Length							
				EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
17	Lawyers Road & Maple Avenue	2008 Existing	Existing	183	-	118	-	136	-	125	-	183	-	118	-	136	-	125	-
		2030 Comp Plan	AM Peak	185	0	187	81	114	-	291	10	159	0	268	0	87	-	310	0
			PM Peak	310	23	44	110	24	-	336	15	282	0	37	0	7	-	325	0
			Pro. Comp Plan	325	25	200	125	125	-	350	25	300	0	275	0	100	-	325	0
		2030 GMU High Plan	AM Peak	150	29	83	172	67	28	124	16	124	12	94	87	43	11	92	0
			PM Peak	198	53	125	59	148	25	113	57	131	12	154	16	93	0	83	29
			Pro. GMU Plan	200	75	150	175	150	50	125	75	150	25	175	100	100	15	100	50
18	Old Courthouse Road & Westbriar Drive	2008 Existing	Existing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		2030 Comp Plan	AM Peak	-	-	9	-	-	-	-	-	-	-	3	-	-	-	-	-
			PM Peak	-	-	189	-	-	-	-	-	-	-	63	-	-	-	-	-
			Pro. Comp Plan	-	-	200	-	-	-	-	-	-	-	75	-	-	-	-	-
		2030 GMU High Plan	AM Peak	-	-	16	-		-	-	-	-	-	5	-	-	-	-	-
			PM Peak	-	-	97	-		-	-	-	-	-	58	-	-	-	-	-
			Pro. GMU Plan	-	-	100	-		-	-	-	-	-	75	-	-	-	-	-

Conceptual Cost Estimates

For intersections analyzed within the study area that did not meet the operational requirement of LOS D using the Comp Plan traffic volumes and/or the GMU Plan traffic volumes, further analysis was done to determine what physical improvements, such as additional through/turn lanes and/or increased storage lengths for turn lanes, were needed to achieve a LOS D for the intersection. Conceptual cost estimates for these improvements were developed based on the criteria and assumptions outlined below. In developing these estimates, if the County's document entitled Fairfax County Comprehensive Plan, Tysons Corner Urban Center, Transportation had additional lanes identified for a roadway at one of the analyzed intersections, then construction costs for those lanes and the associated physical improvements are not included in the project cost for that intersection.
These conceptual cost estimates reflect the level of detail available at this early phase of project development and, therefore, certain contingencies are applied. The Total Project Cost consists of the following cost items; Total Construction, Final Design, Construction Management/Inspection, and Right of Way Acquisition Costs.

The Total Construction Cost estimate is broken down into the categories of Roadway Construction, Landscaping, Maintenance of Traffic, Project Utility Relocation, Erosion and Sediment Control, Drainage with a General Contingency applied to the summed amount. The following describes each category item used within the Total Construction Cost.

A – Roadway Construction

Category A is a breakdown of construction items that would normally be included in a construction cost estimate. Due to the limited detail available at this level of project development the following items are included:

- Remove Existing Pavement, Median, Sidewalk, & Curb/Gutter - This quantity item is based on the amount of material that would need to be removed to accommodate full depth median widening and/or full depth pavement widening along the outside for each intersection improvement.
- Grading – The grading quantity is based on a one (1) foot depth of earthwork to be removed and or placed within the square yard area of both Asphalt Concrete Pavement and Cement Concrete Sidewalk quantity items.
- Asphalt Concrete Pavement – The Asphalt Concrete Pavement quantity is based on the area of any additional full depth pavement required to accommodate each intersection improvement.
- Miscellaneous – This item includes standard curb and gutter that will be placed along the new edge of roadway, five (5) foot wide cement concrete sidewalk that will be placed along any new roadway pavement widening to the outside, and raised median area required for new left turn bays and reconstruction of intersection islands.

B – Landscaping

Category B is based on 5 percent of the combined cost amount for Grading, Pavement and Miscellaneous items. This includes topsoil, seeding mulching and minor plantings. Due to the nature or location of the improvements it is assumed that the plantings would require more topsoil and mulching items.

C – Maintenance of Traffic

Category B is based on 40 percent of the combined cost amount for Grading, Pavement and Miscellaneous items. This includes temporary traffic channelization devices, signs, and pavement markings.

D - Traffic Items

Category D is a breakdown of typical traffic items that include permanent Signing and Pavement Markings, Roadway Lighting and Signals. The permanent Signing and Pavement marking item cost was developed using a cost per mile amount. The Roadway Lighting item costs were added when an outer pavement edge was moved to accommodate a lane and were developed using a cost per mile amount. The Signal item cost was based on per each signal, were included when a lane or more was added to the intersection and when a signal was added to an intersection that previously did not have a signal.

E – Project Utility Relocation

Category E is based on 30 percent of the combined cost amount for Grading, Pavement and Miscellaneous items. This includes minor utility surface facility adjustments.

F – Erosion and Sediment Control

Category F is based on 5 percent of the combined cost amount for Grading, Pavement and Miscellaneous items and includes and includes silt fence, inlet protection and temporary seeding.

G – Drainage

Category G is based on 25 percent of the combined cost amount for Grading, Pavement and Miscellaneous items and includes minor drainage work such as manhole and inlet adjustments, pipe culvert extensions and inlet relocations within the new pavement area.

H – Construction Costs

Category H is the summation of Categories A through G and is the base construction cost prior to contingencies.

General Contingency

The General Contingency applied to the construction cost is 40 percent at this early phase of project development and accounts for unforeseen conditions and potential changes that may arise.

Total Construction Cost

The Total Construction cost is the base Construction Cost with the General Contingency applied.

Final Design Costs

The Final Design Cost is based on 15 percent of the Total Construction Cost and includes planning work required to prepare any environmental documentation and for the final design of the project.

Construction Management/Inspection

The Construction Management / Inspection cost is based on 15 percent of the Total Construction Cost and includes management and inspection services during construction of the project.

Right Of Way Acquisition Costs

The Right of Way Acquisition Costs are based on the area of take computed to be required to accommodate additional lane widening and sidewalk. Due to the dense commercial nature of the project location a $1,000,000 per acre cost was used.

Total Project Cost

The Total Project Cost is based on the summation of costs that include: Total Construction, Final Design, Construction Management / Inspection, and Right of Way Acquisition. The conceptual cost estimates for improvements on each failing intersection within the study limits can be found in Appendix F.

Table 8 provides the summary of costs involved in implementing the required mitigation for all the appropriate intersections under Comp Plan and GMU High Plan Scenarios. It also presents a comparison of the total cost involved to implement mitigation at all the required intersections within the key study intersections. Based on this information, it is projected that the GMU High plan improvements may cost up to **$2.2 Million** more when compared to the Comp Plan improvements. Considering the number of study intersections and the cost involved, there is no significant difference between the two scenarios.

Table 8: Cost Estimation for Proposed Mitigation

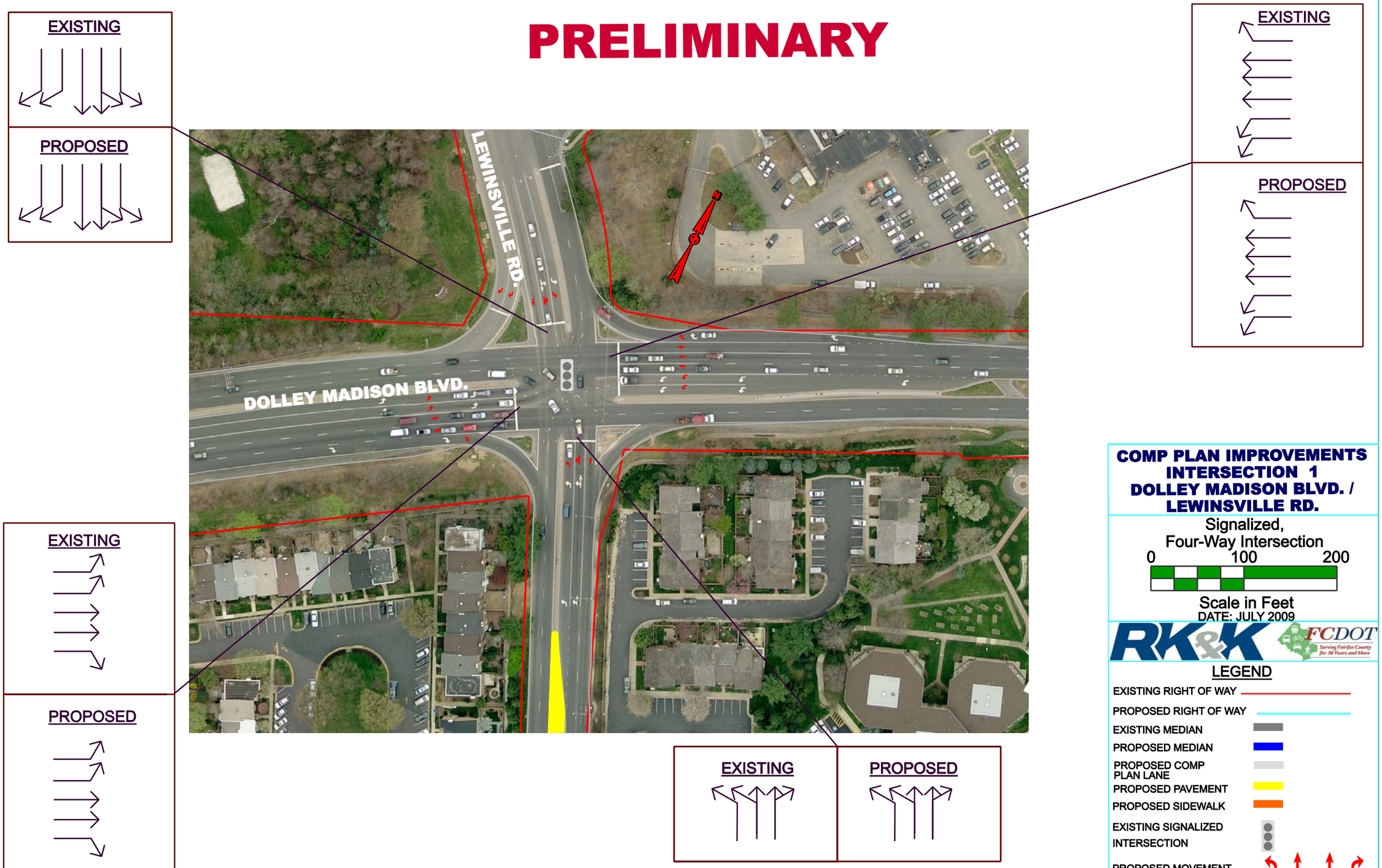
Intersection	Cost For Mitigation		Cost Difference Comp Plan Vs. GMU High Plan
	Comp Plan	GMU High Plan	
Int 1: Dolley Madison Boulevard at Lewinsville Road/Great Falls Street	$110,000.00	$60,000.00	50,000.00
Int 2: Route 123 (Dolley Madison Boulevard) at Old Dominion Drive	$763,000.00	$410,000.00	353,000.00
Int 3: Lewinsville Road at Route 7 (Leesburg Pike)	$0.00	$110,000.00	110,000.00
Int 4: Lewinsville Road at Spring Hill Road	$37,000.00	$581,000.00	544,000.00
Int 7: Great Falls Street & Chain Bridge Road	$654,000.00	$643,000.00	11,000.00
Int 9: Magarity Road at Route 7	$1,462,000.00	$1,245,000.00	217,000.00
Int 10: Idylwood Road at Route 7	$2,765,000.00	$2,894,000.00	129,000.00
Int 11: Idylwood Road at Gallows Road	$1,126,000.00	$1,003,000.00	123,000.00
Int 12: Idylwood Road at Gallows Road	$675,000.00	$925,000.00	250,000.00
Int 14: Gallows Road at Cedar Lane/Oak Street	$10,000.00	$10,000.00	0.00
Int 15: Old Courthouse Road and Chain Bridge Road	$1,369,000.00	$1,973,000.00	604,000.00
Int 16: Maple Avenue a Beulah Road (Vienna)	$568,000.00	$1,913,000.00	1,345,000.00
Int 17: Maple Avenue a Lawyers Road (Vienna)	$1,741,000.00	$1,738,000.00	3,000.00
Int 18: Old Courthouse Road and Westbriar Drive (Vienna)	$501,000.00	$437,000.00	64,000.00
Total Cost of Mitigation	**$11,781,000.00**	**$13,942,000.00**	**2,161,000.00**

Note: The Green text in the table indicates that the GMU High Plan Cost is higher than the Comp Plan improvements and the Red text indicates that the Comp Plan Cost is higher than the GMU High Plan improvements.

The recommended geometric improvements are presented on intersection aerial images (refer following figures) for both Comp Plan and GMU High Plan Scenarios. The improvements are laid out in such a way that the differences in geometry between the existing conditions and each of the future scenarios are clearly noticeable. The following text provides a reference for each of the aerial images presenting the details of proposed physical improvements under both Comp Plan and GMU Plan scenarios.

Tysons Corner Neighborhood Traffic

PRELIMINARY



COMP PLAN IMPROVEMENTS
INTERSECTION 1
DOLLEY MADISON BLVD. / LEWINSVILLE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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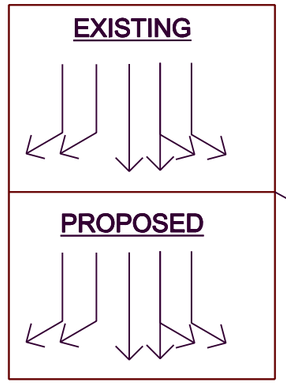
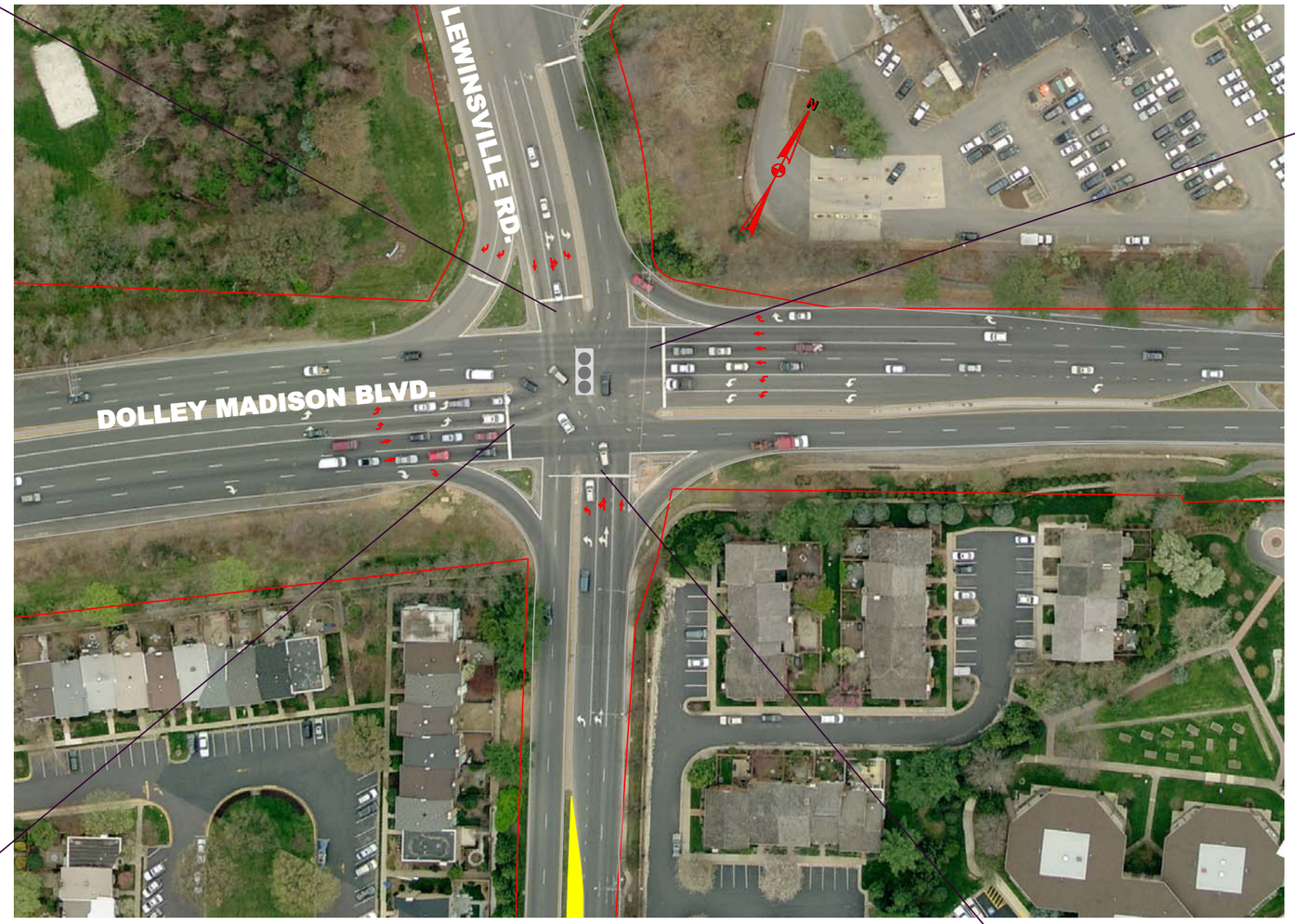
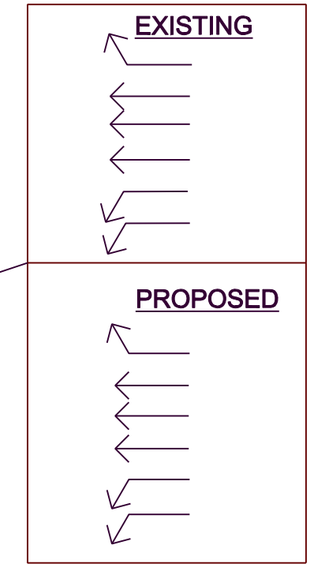
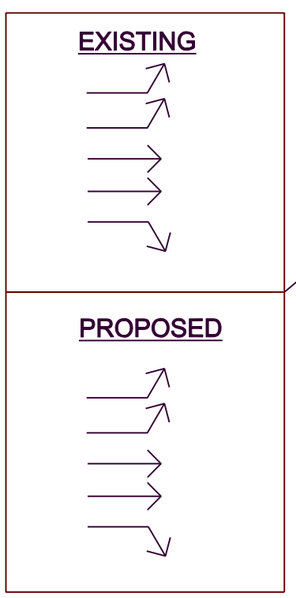
Tysons Corner Neighborhood Traffic

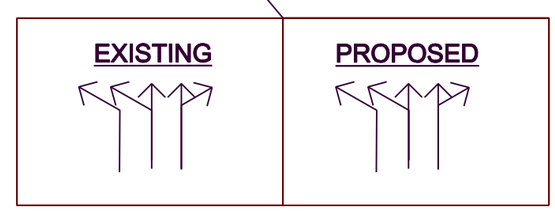
PRELIMINARY











GMU PLAN IMPROVEMENTS
INTERSECTION 1
DOLLEY MADISON BLVD. / LEWINSVILLE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

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LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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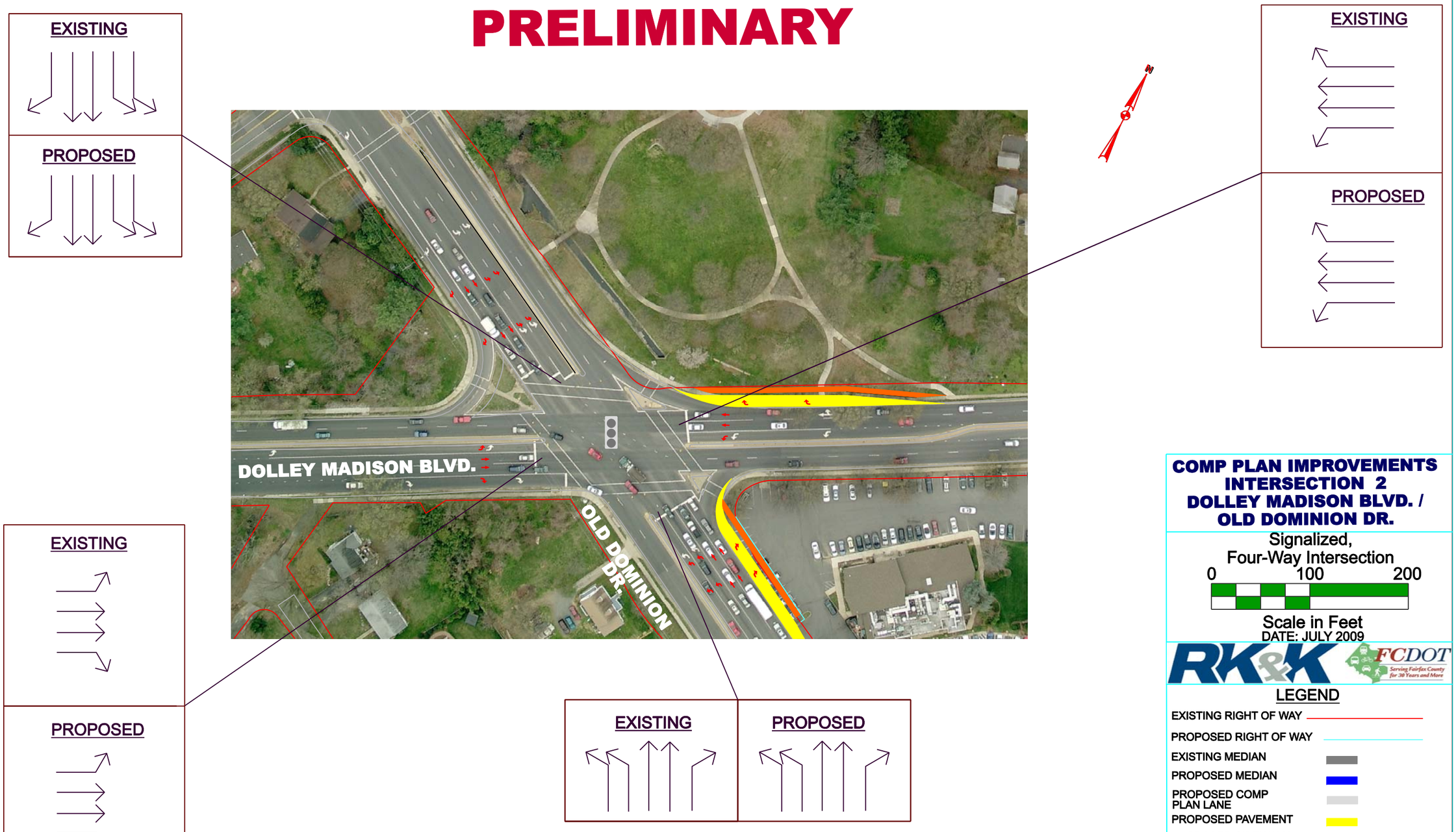
Tysons Corner Neighborhood Traffic

PRELIMINARY



COMP PLAN IMPROVEMENTS
INTERSECTION 2
DOLLEY MADISON BLVD. /
OLD DOMINION DR.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

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LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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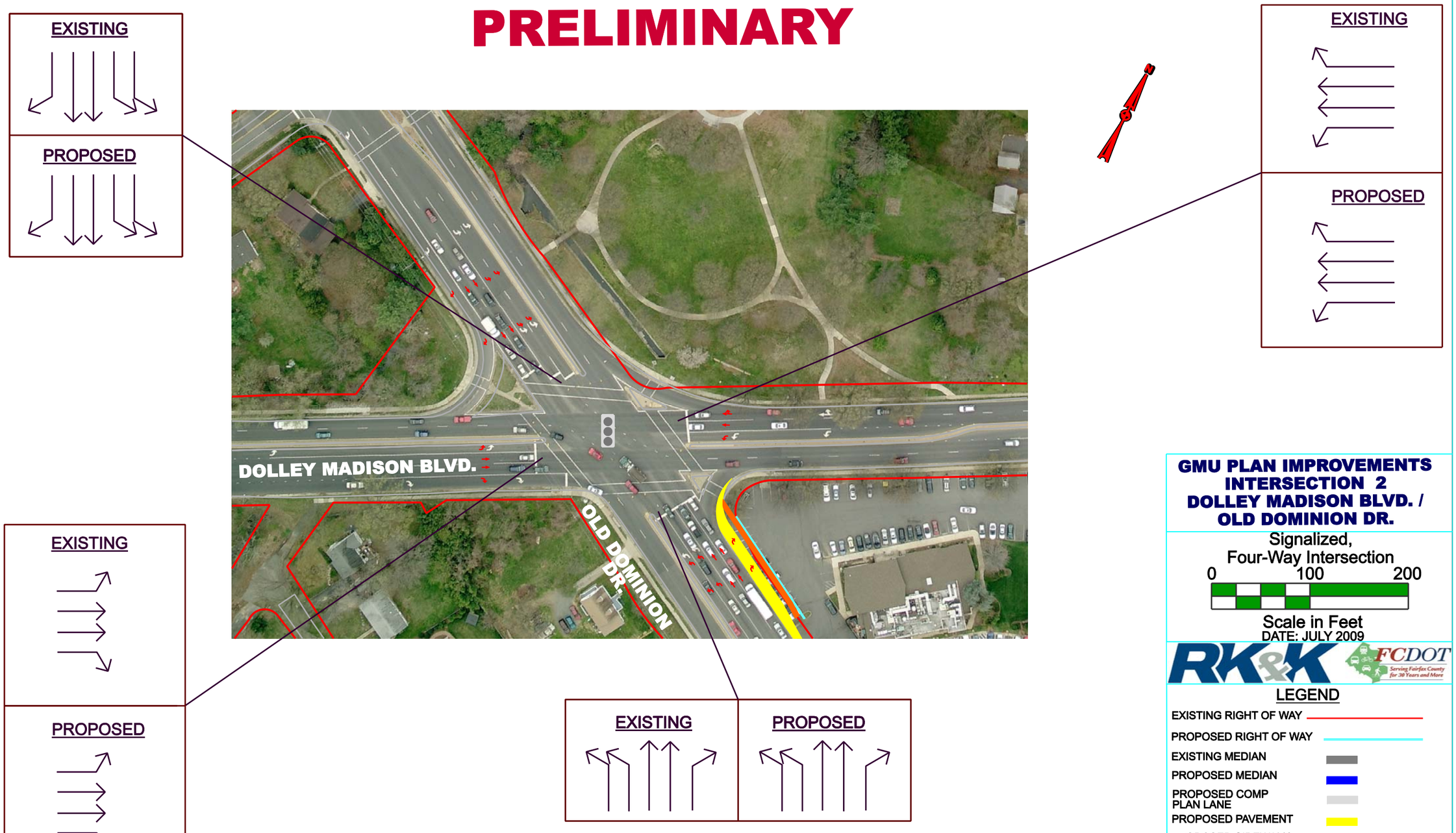
Tysons Corner Neighborhood Traffic

PRELIMINARY



GMU PLAN IMPROVEMENTS
INTERSECTION 2
DOLLEY MADISON BLVD. /
OLD DOMINION DR.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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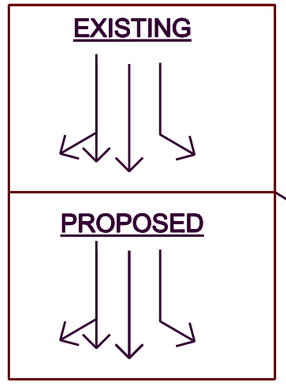
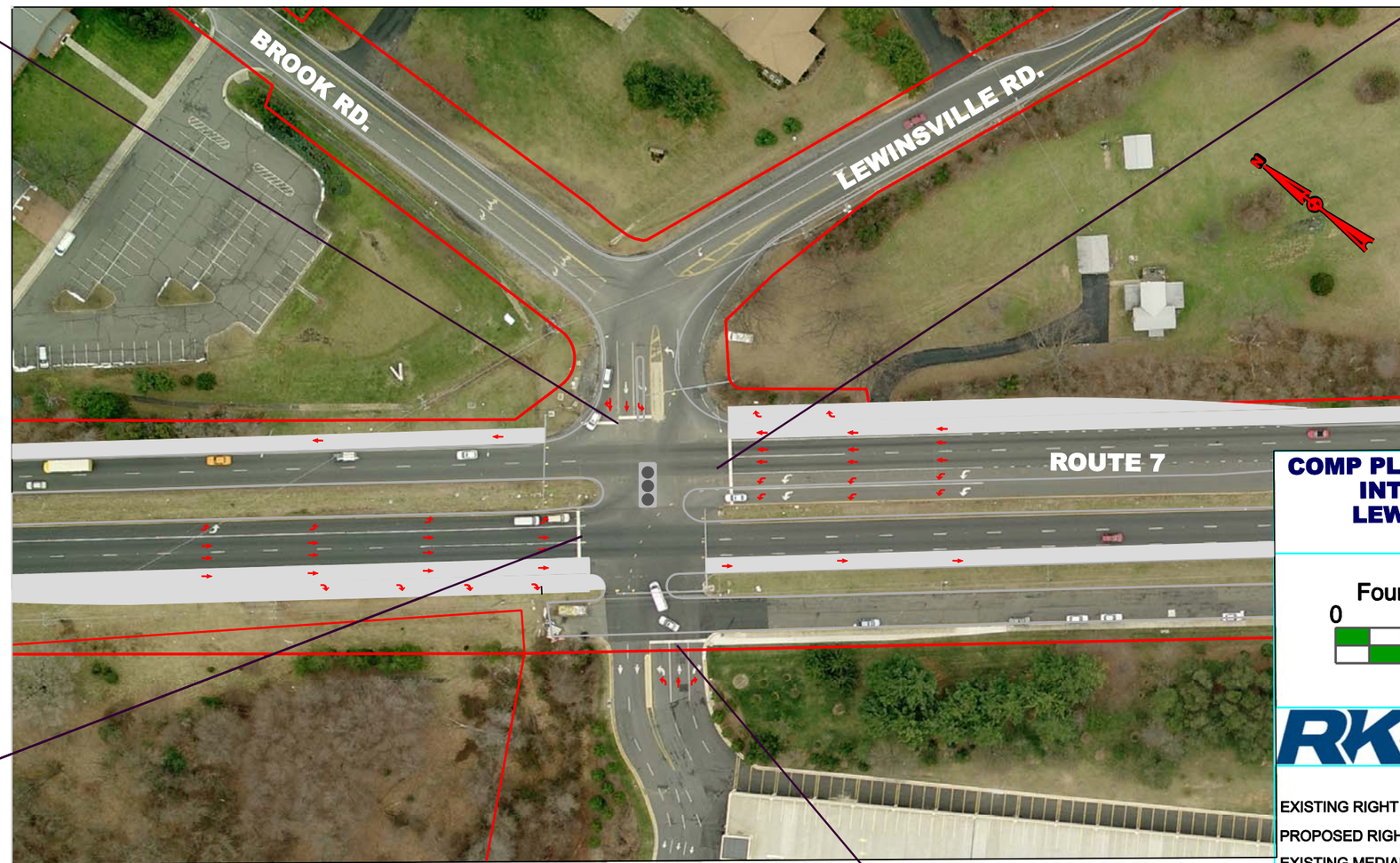
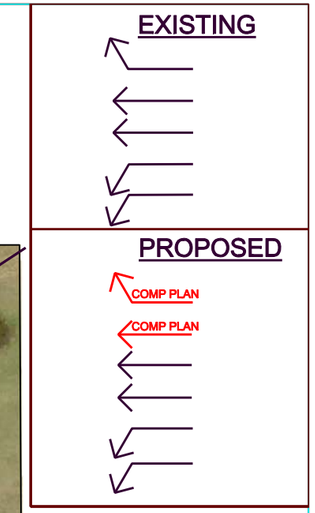
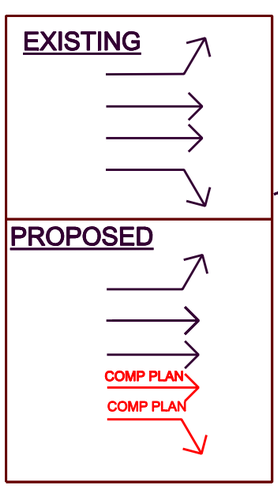
PRELIMINARY

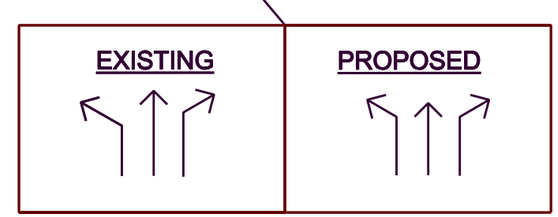
Tysons Corner Neighborhood Traffic











COMP PLAN IMPROVEMENTS
INTERSECTION 3
LEWINSVILLE RD. / ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

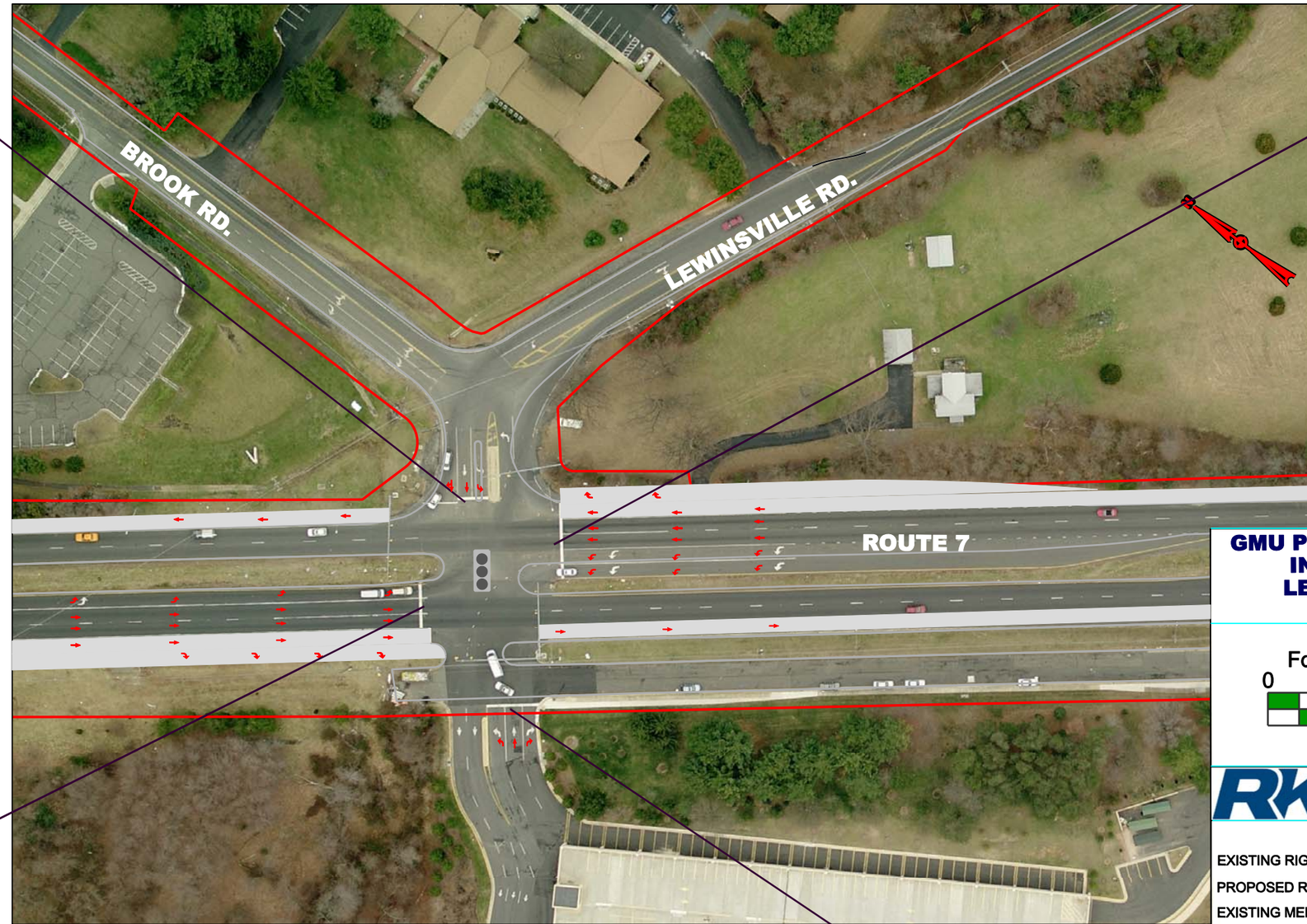
LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#03.dgn 7/15/2009 7:39:27 AM

PRELIMINARY

Tysons Corner Neighborhood Traffic



EXISTING

PROPOSED

EXISTING

PROPOSED

COMP PLAN

COMP PLAN

EXISTING

PROPOSED

COMP PLAN

COMP PLAN

EXISTING

PROPOSED

GMU PLAN IMPROVEMENTS
INTERSECTION 3
LEWINSVILLE RD. / ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

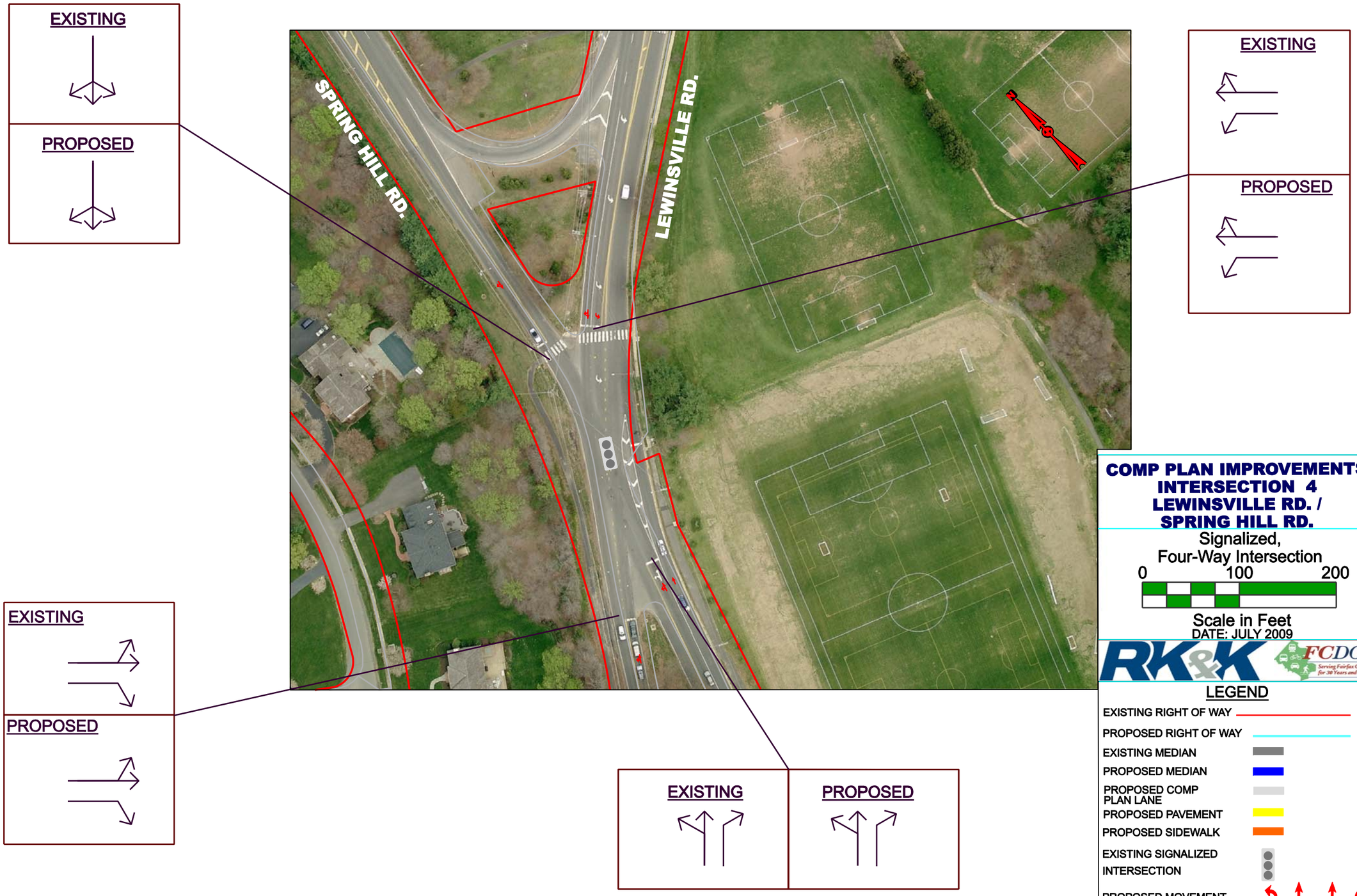
RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#03_GMU.dgn 7/15/2009 8:07:42 AM

Tysons Corner Neighborhood Traffic



COMP PLAN IMPROVEMENTS
INTERSECTION 4
LEWINSVILLE RD. /
SPRING HILL RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY
PROPOSED RIGHT OF WAY
EXISTING MEDIAN
PROPOSED MEDIAN
PROPOSED COMP PLAN LANE
PROPOSED PAVEMENT
PROPOSED SIDEWALK
EXISTING SIGNALIZED INTERSECTION
PROPOSED MOVEMENT

807-077-03_Intrsec#04.dgn 7/15/2009 10:57:16 AM

Tysons Corner Neighborhood Traffic

EXISTING

PROPOSED

EXISTING

PROPOSED

EXISTING

PROPOSED

EXISTING

PROPOSED

EXISTING

PROPOSED

NEW

GMU PLAN IMPROVEMENTS
INTERSECTION 4
LEWINSVILLE RD. /
SPRING HILL RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED COMP PLAN LANE

PROPOSED PAVEMENT

PROPOSED SIDEWALK

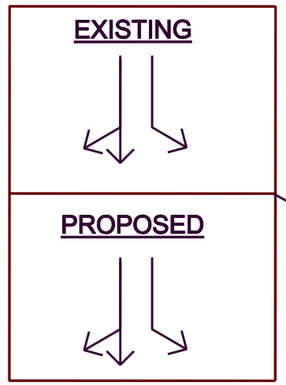
EXISTING SIGNALIZED INTERSECTION

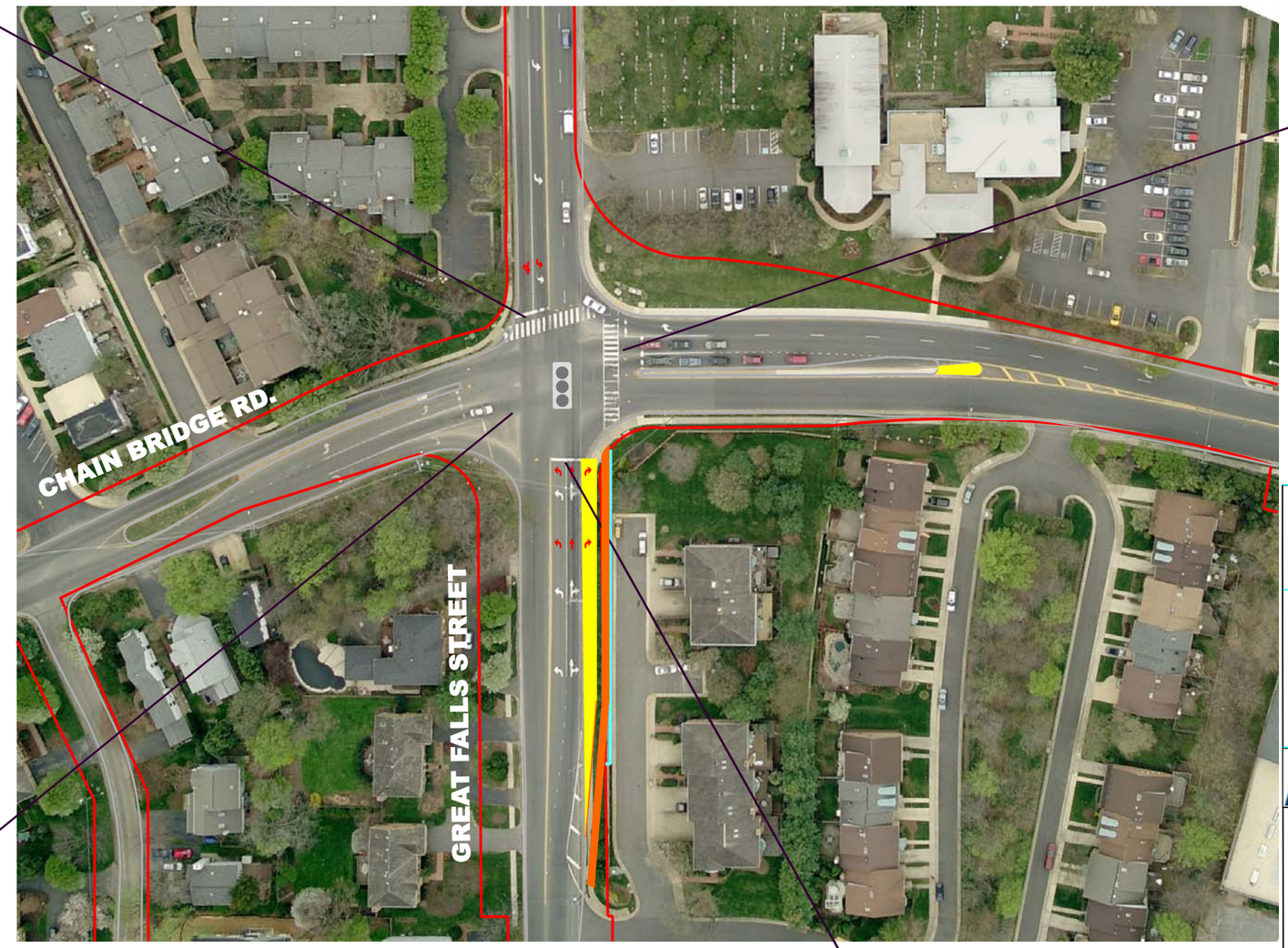
PROPOSED MOVEMENT

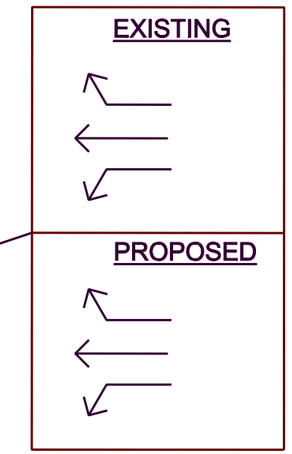
807-077-03_Intrsec#04_GMU.dgn 7/24/2009 3:57:42 PM

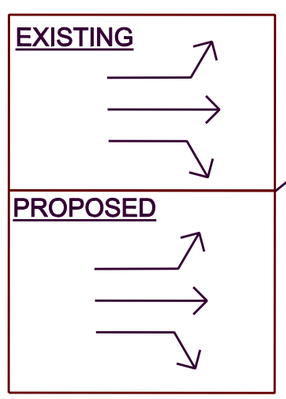
Tysons Corner Neighborhood Traffic

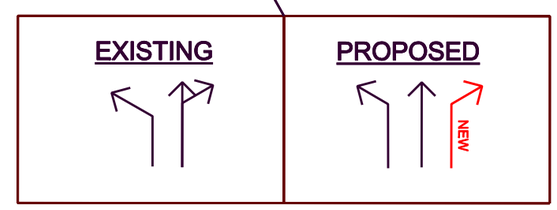
PRELIMINARY











COMP PLAN IMPROVEMENTS
INTERSECTION 7
GREAT FALLS STREET /
CHAIN BRIDGE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

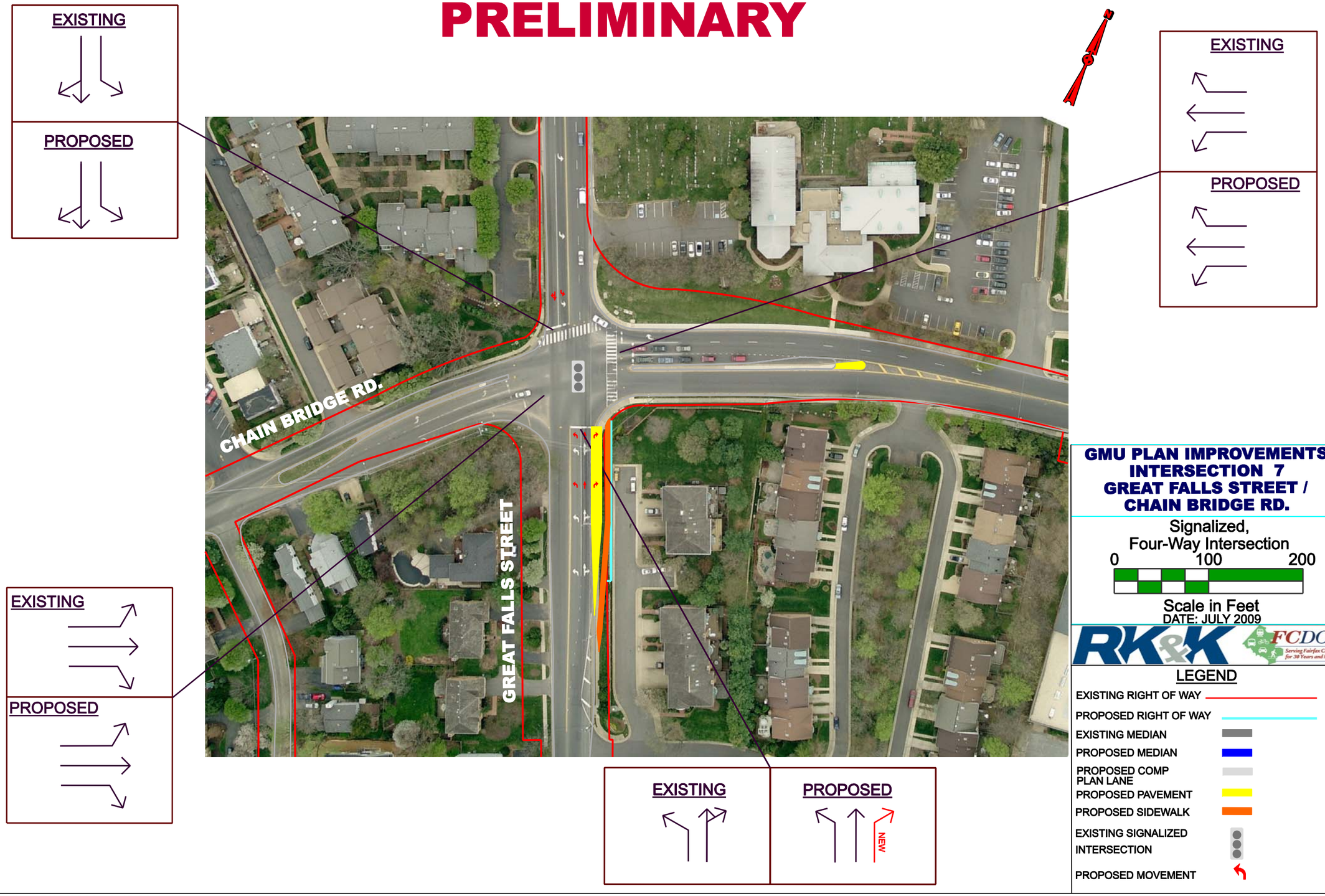
LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#07.dgn 7/16/2009 9:55:46 AM

Tysons Corner Neighborhood Traffic

PRELIMINARY



GMU PLAN IMPROVEMENTS
INTERSECTION 7
GREAT FALLS STREET /
CHAIN BRIDGE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

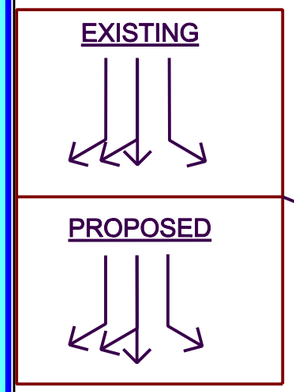
RK&K FCDOT Serving Fairfax County for 30 Years and More

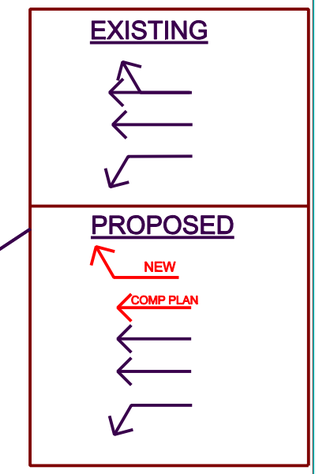
LEGEND

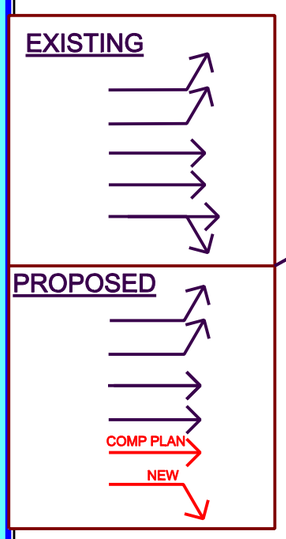
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

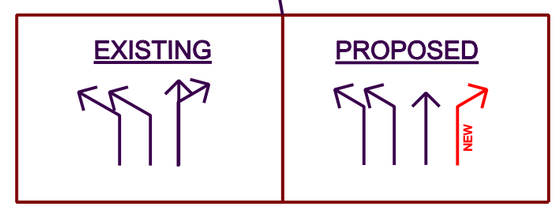
807-077-03_Intrsec#07_GMU.dgn 7/16/2009 10:45:06 AM

Tysons Corner Neighborhood Traffic









COMP PLAN IMPROVEMENTS
INTERSECTION 9
MAGARITY RD. /
ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet
DATE: JUNE 2009

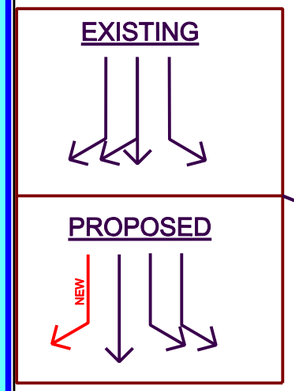
RK&K FCDOT Serving Fairfax County for 30 Years and More

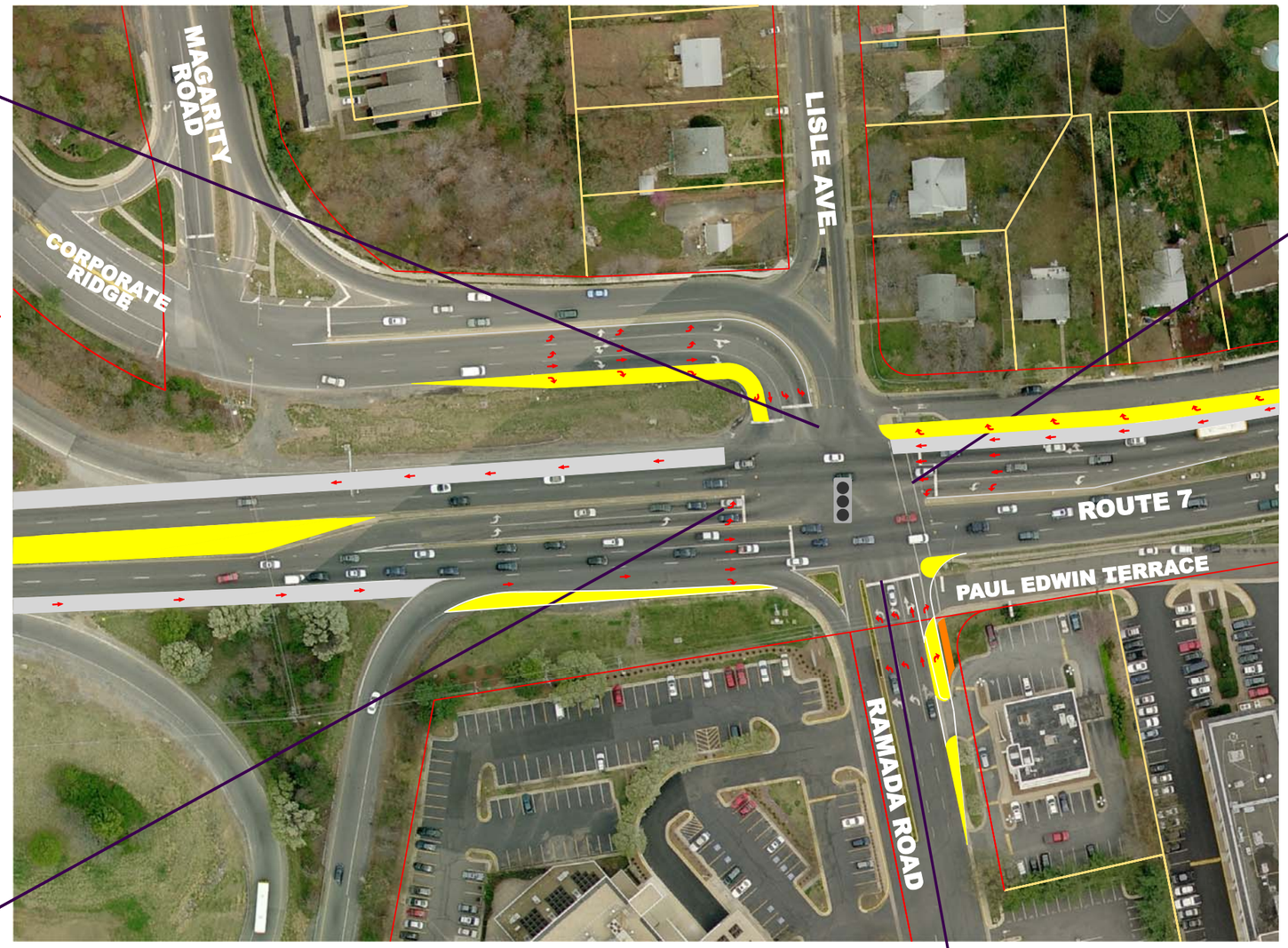
LEGEND

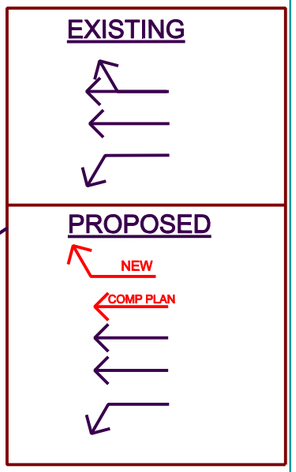
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

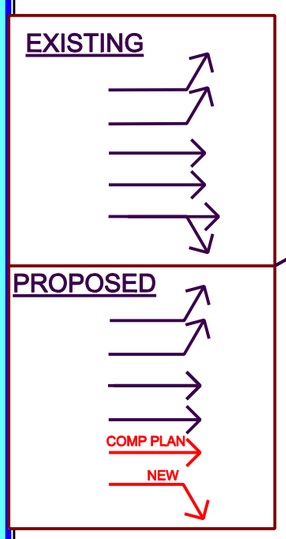
807-077-03_Intrsec#09.dgn 7/9/2009 10:55:30 AM

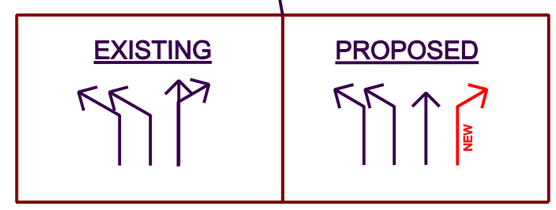
Tysons Corner Neighborhood Traffic











GMU PLAN IMPROVEMENTS
INTERSECTION 9
MAGARITY RD. /
ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

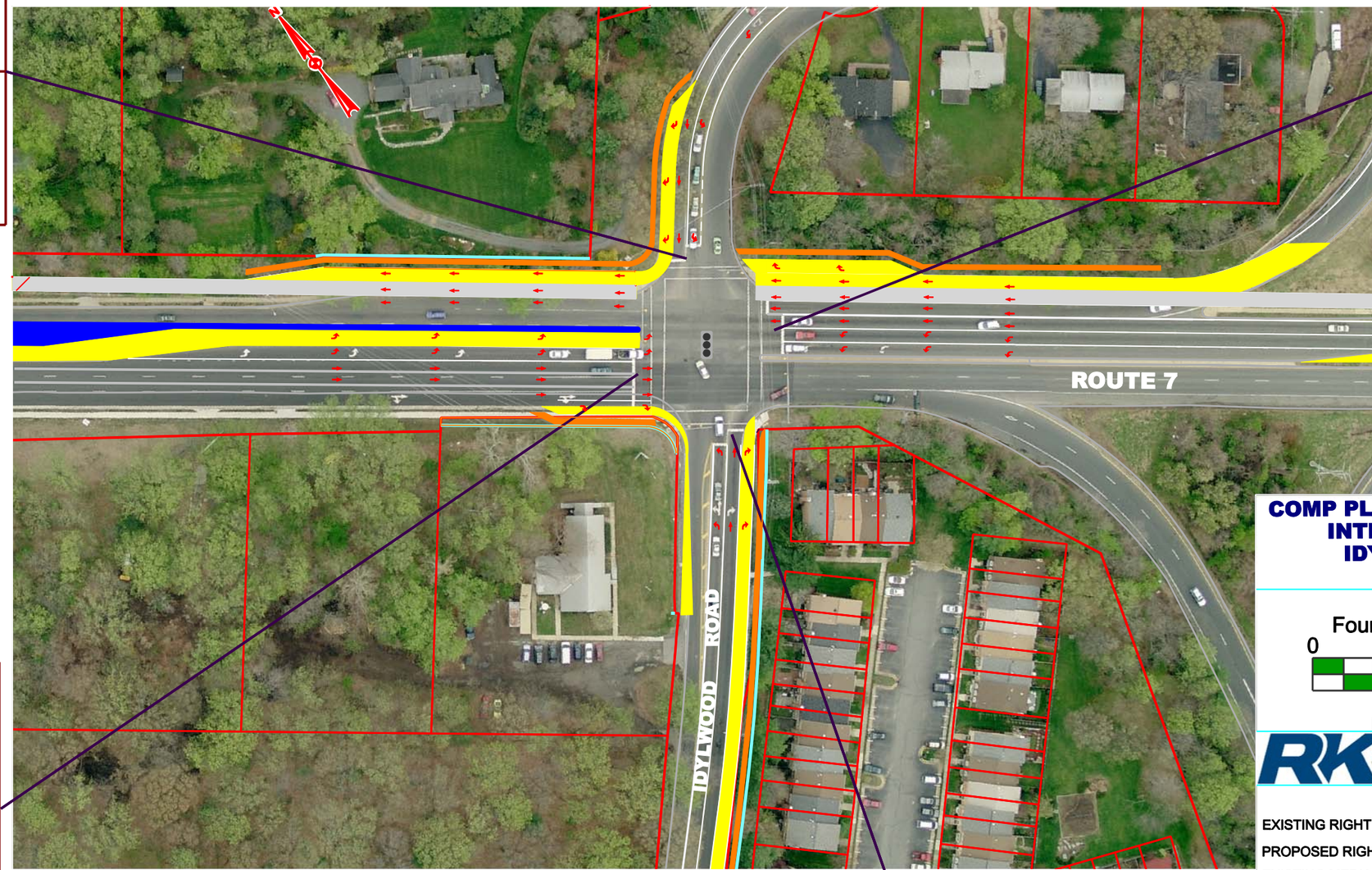
LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#09_GMU.dgn 7/9/2009 4:35:46 PM

PRELIMINARY

Tysons Corner Neighborhood Traffic



EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

NEW

RAMP

COMP PLAN

NEW

EXISTING

PROPOSED

NEW

COMP PLAN

NEW

EXISTING

PROPOSED

NEW

COMP PLAN IMPROVEMENTS
INTERSECTION 10
IDYLWOOD RD. /
ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT
Serving Fairfax County for 30 Years and More

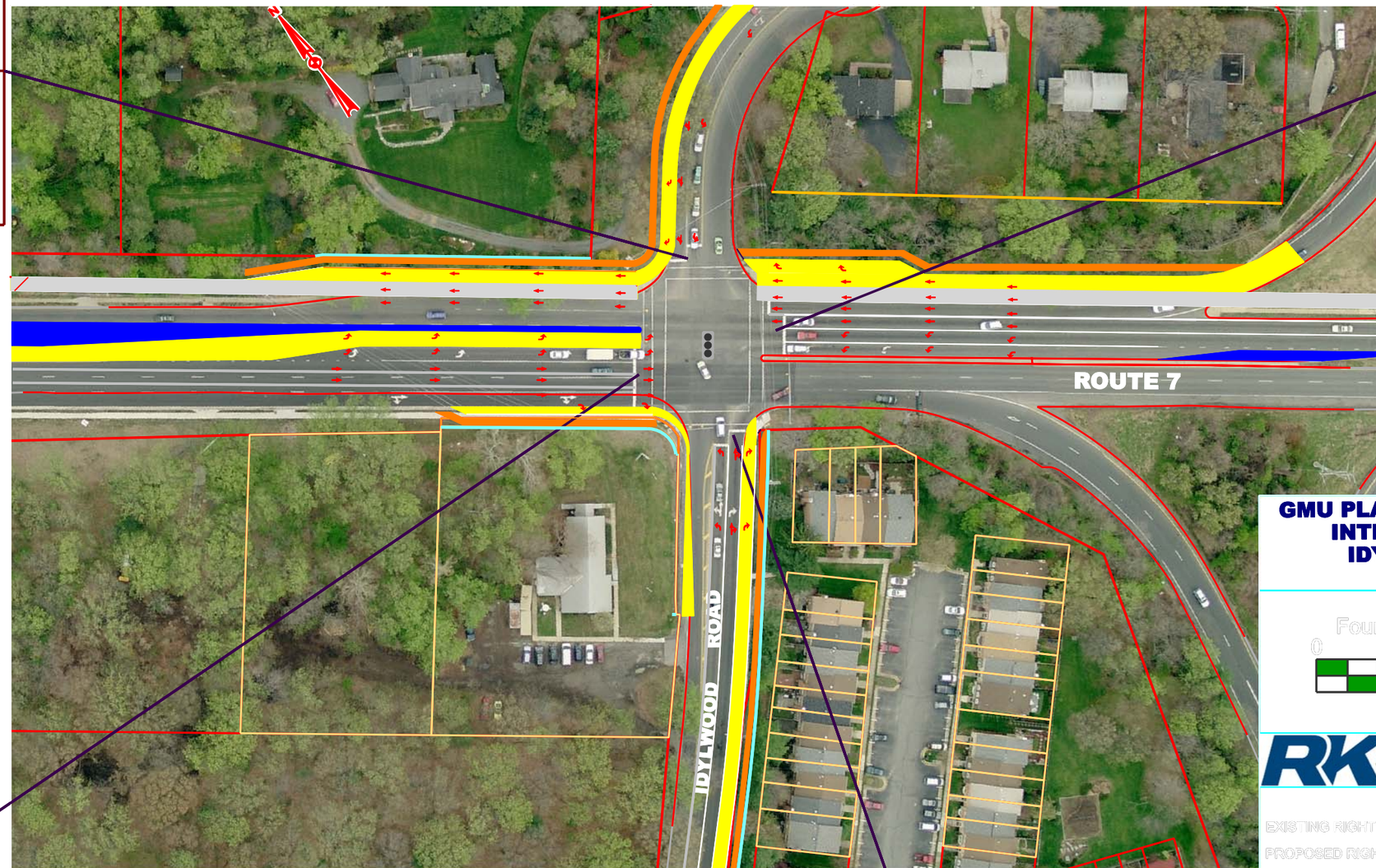
LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#10.dgn 6/29/2009 3:29:42 PM

PRELIMINARY

Tysons Corner Neighborhood Traffic



EXISTING

PROPOSED

NEW

NEW

EXISTING

PROPOSED

NEW

RAMP

COMP PLAN

NEW

EXISTING

PROPOSED

NEW

COMP PLAN

NEW

EXISTING

PROPOSED

NEW

NEW

GMU PLAN IMPROVEMENTS
INTERSECTION 10
IDYLWOOD RD. /
ROUTE 7

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT
Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED GMU PLAN LANE

PROPOSED PAVEMENT

PROPOSED SIDEWALK

EXISTING SIGNALIZED INTERSECTION

PROPOSED MOVEMENT

807-077-03_Intrsec#10_GMU.dgn 7/1/2009 10:54:10 AM

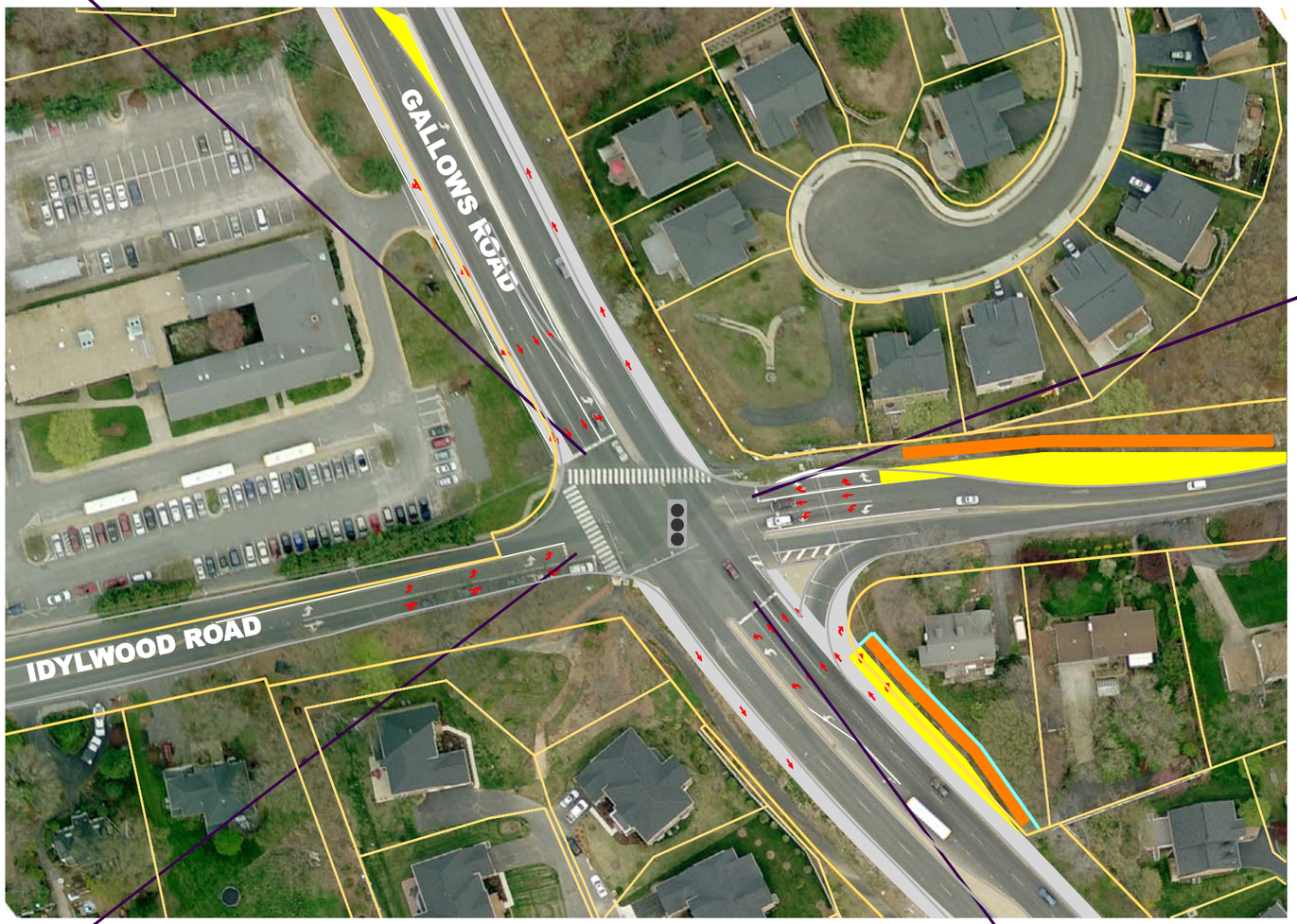
PRELIMINARY

Tysons Corner Neighborhood Traffic

EXISTING

PROPOSED

COMP PLAN



EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

COMP PLAN

NEW

EXISTING

PROPOSED

COMP PLAN IMPROVEMENTS
INTERSECTION 11
IDYLWOOD RD. /
GALLOWS RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT
Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED COMP PLAN LANE

PROPOSED PAVEMENT

PROPOSED SIDEWALK

EXISTING SIGNALIZED INTERSECTION

PROPOSED MOVEMENT

807-077-03_Intrsec#11.dgn 7/6/2009 3:19:44 PM

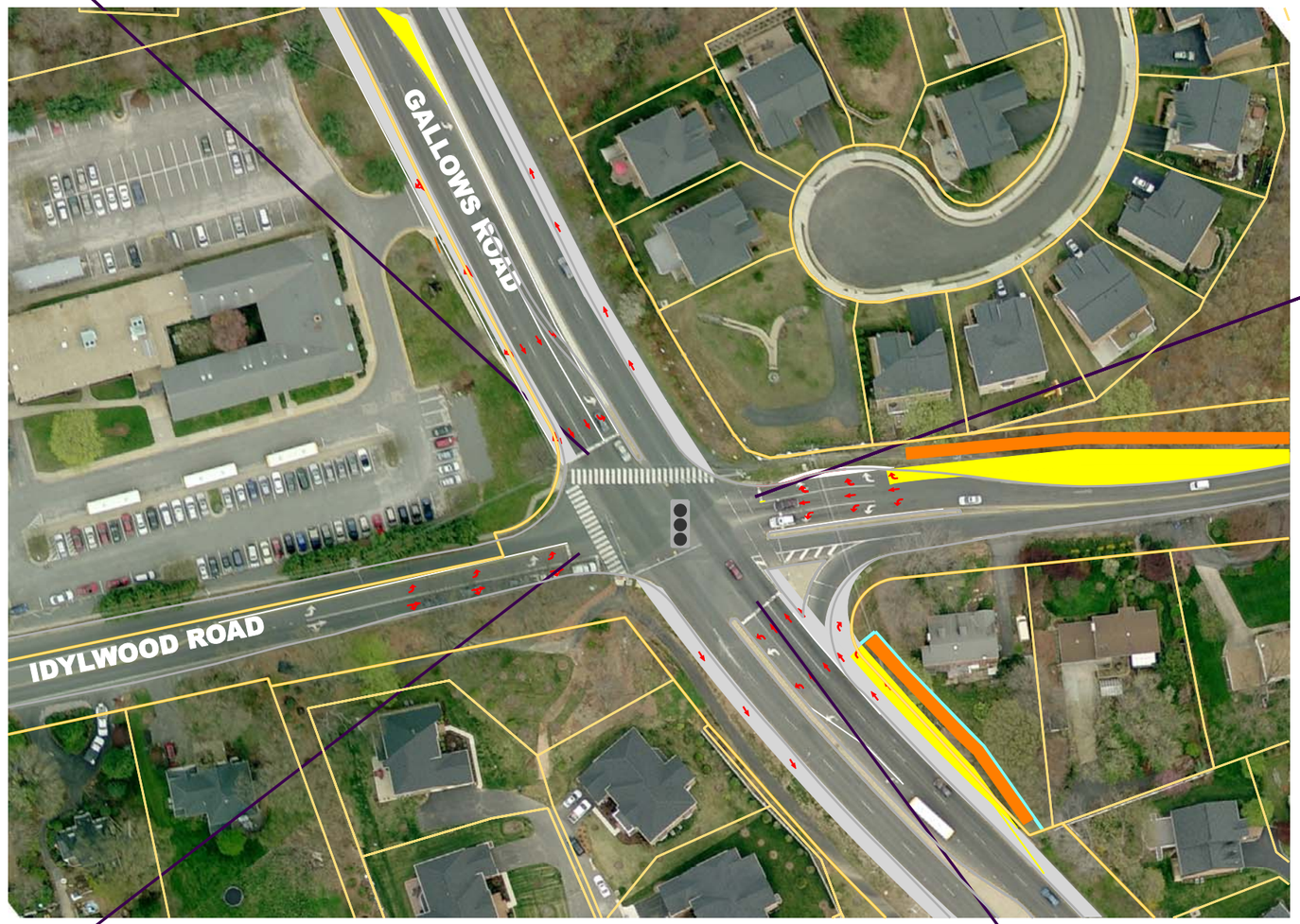
PRELIMINARY

Tysons Corner Neighborhood Traffic

EXISTING

PROPOSED

COMP PLAN



EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

COMP PLAN

NEW

GMU PLAN IMPROVEMENTS
INTERSECTION 11
IDYLWOOD RD. /
GALLOWS RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT

Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED COMP PLAN LANE

PROPOSED PAVEMENT

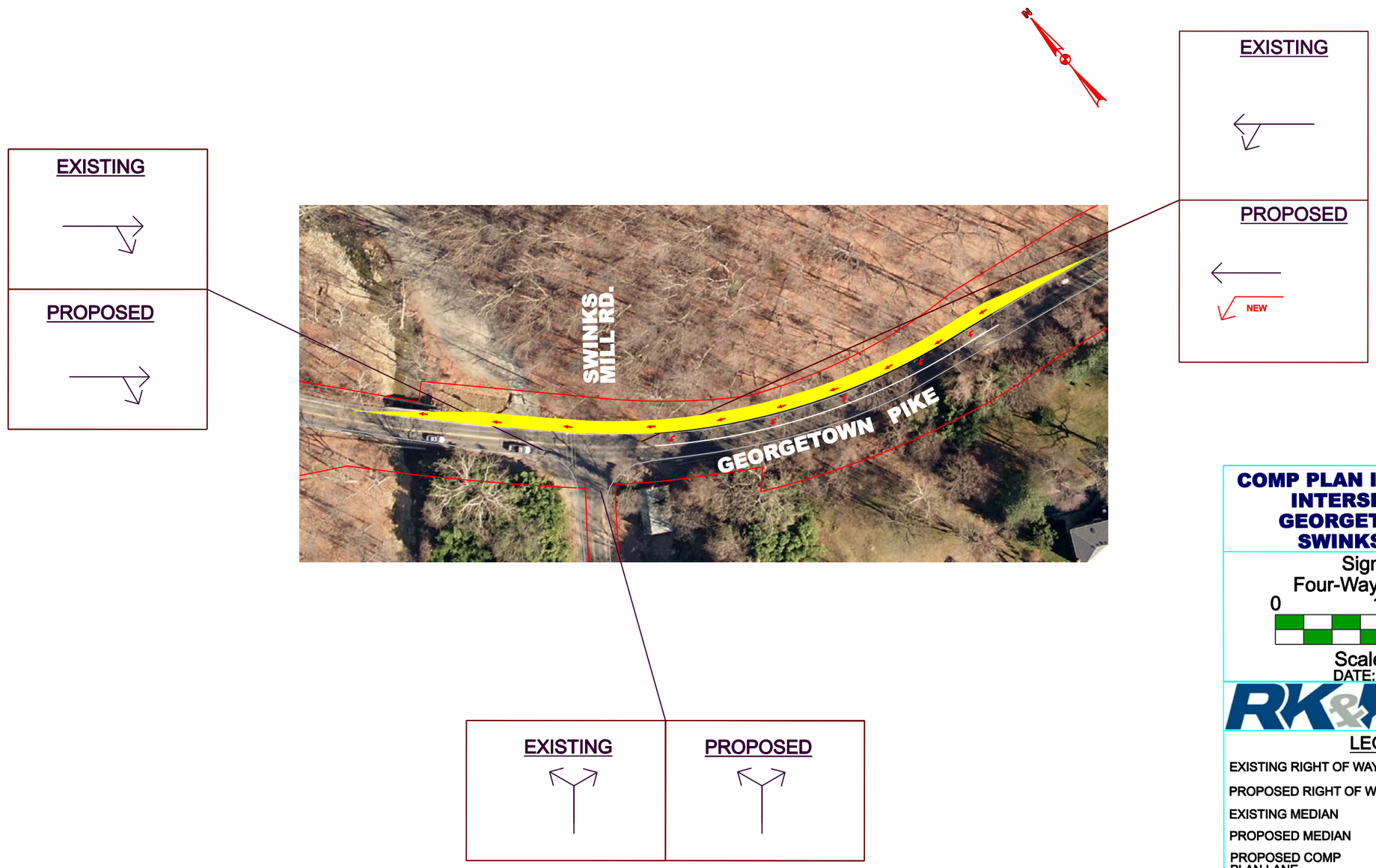
PROPOSED SIDEWALK

EXISTING SIGNALIZED INTERSECTION

PROPOSED MOVEMENT

807-077-03_Intrsec#11_GMU.dgn 7/6/2009 5:17:04 PM

Tysons Corner Neighborhood Traffic



COMP PLAN IMPROVEMENTS
INTERSECTION 12
GEORGETOWN PIKE /
SWINKS MILL RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

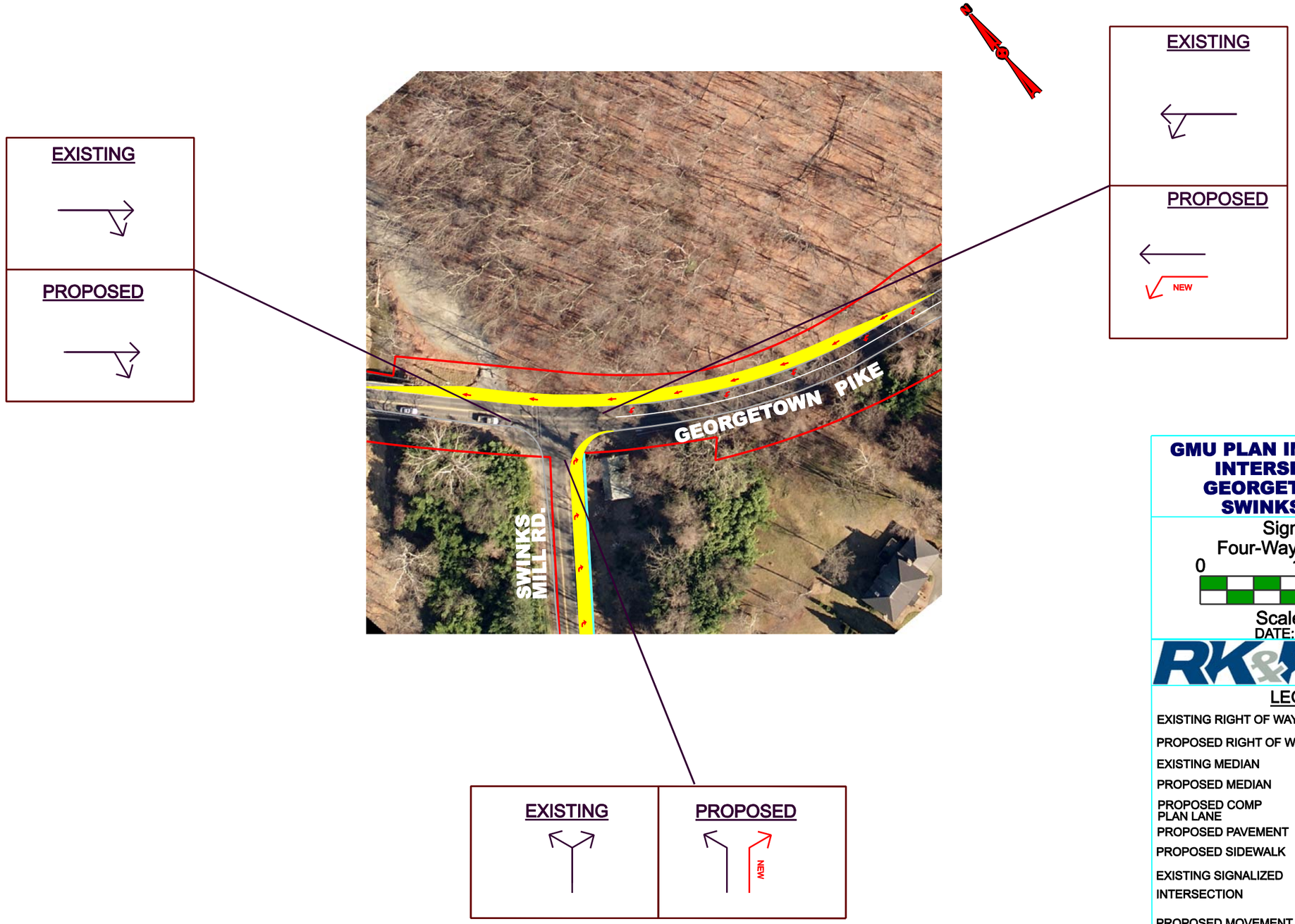
RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#12.dgn 7/16/2009 4:18:36 PM

Tysons Corner Neighborhood Traffic



GMU PLAN IMPROVEMENTS
INTERSECTION 12
GEORGETOWN PIKE /
SWINKS MILL RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY
PROPOSED RIGHT OF WAY
EXISTING MEDIAN
PROPOSED MEDIAN
PROPOSED COMP PLAN LANE
PROPOSED PAVEMENT
PROPOSED SIDEWALK
EXISTING SIGNALIZED INTERSECTION
PROPOSED MOVEMENT

807-077-03_Intrsec#12_GMU.dgn 7/16/2009 4:14:26 PM

PRELIMINARY

Tysons Corner Neighborhood Traffic

EXISTING

PROPOSED

COMP PLAN

EXISTING

PROPOSED

EXISTING

PROPOSED

COMP PLAN

COMP PLAN IMPROVEMENTS
INTERSECTION 14
CEDAR LANE /
GALLOWS RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT

Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#14.dgn 7/8/2009 1:56:17 PM

PRELIMINARY

Tysons Corner Neighborhood Traffic

EXISTING

PROPOSED

COMP PLAN

EXISTING

PROPOSED

EXISTING

PROPOSED

COMP PLAN

EXISTING

PROPOSED

GMU PLAN IMPROVEMENTS
INTERSECTION 14
CEDAR LANE /
GALLOWS RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JUNE 2009

RK&K

FCDOT

Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

807-077-03_Intrsec#14_GMU.dgn 7/8/2009 3:08:48 PM

Tysons Corner Neighborhood Traffic

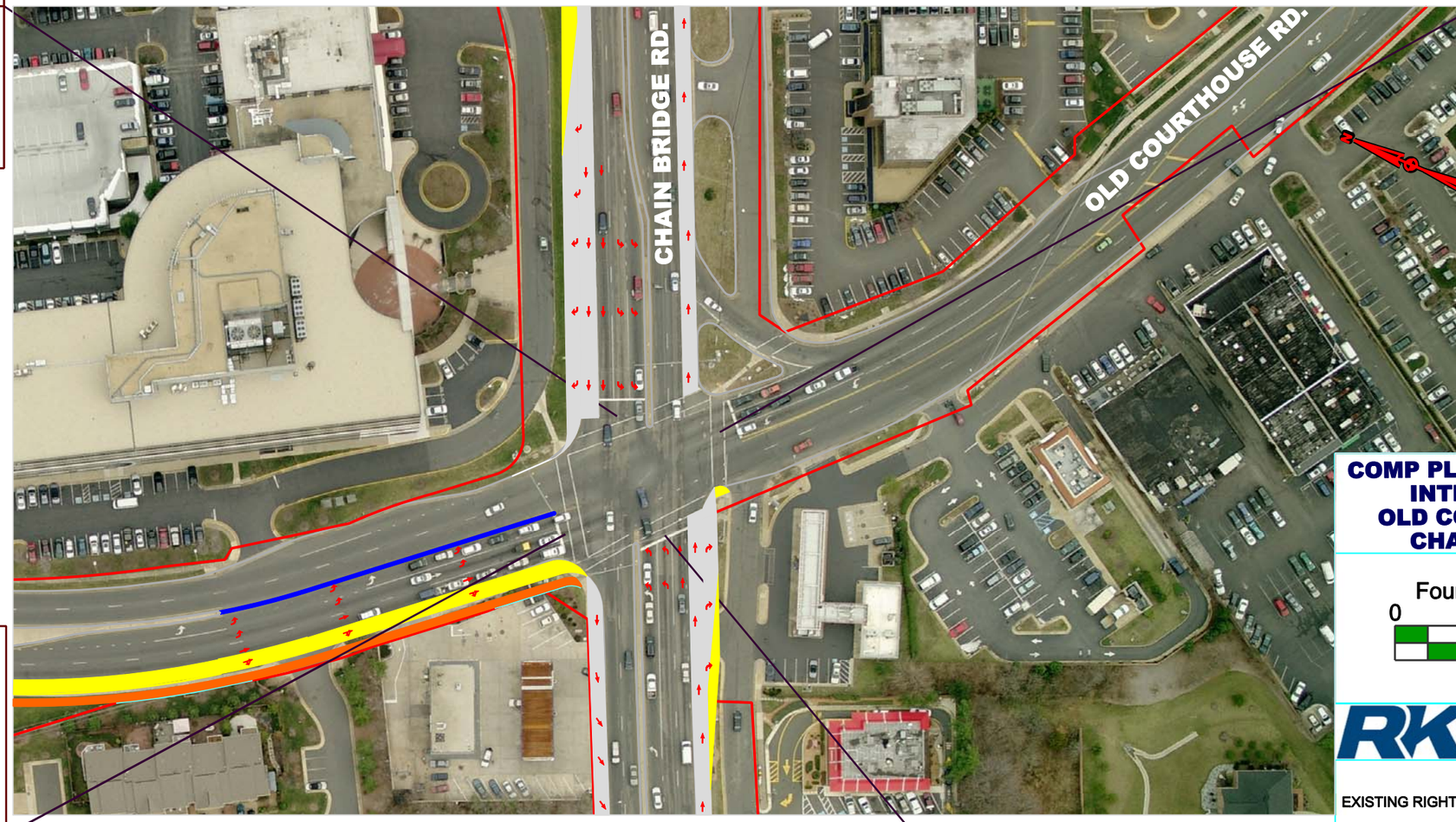
PRELIMINARY

EXISTING

PROPOSED

NEW

COMP



EXISTING

PROPOSED

EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

COMP

NEW

COMP PLAN IMPROVEMENTS
INTERSECTION 15
OLD COURTHOUSE RD. /
CHAIN BRIDGE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K

FCDOT

Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED COMP PLAN LANE

PROPOSED PAVEMENT

PROPOSED SIDEWALK

EXISTING SIGNALIZED INTERSECTION

PROPOSED MOVEMENT

807-077-03_Intrsec#15.dgn 7/28/2009 3:03:21 PM

Tysons Corner Neighborhood Traffic

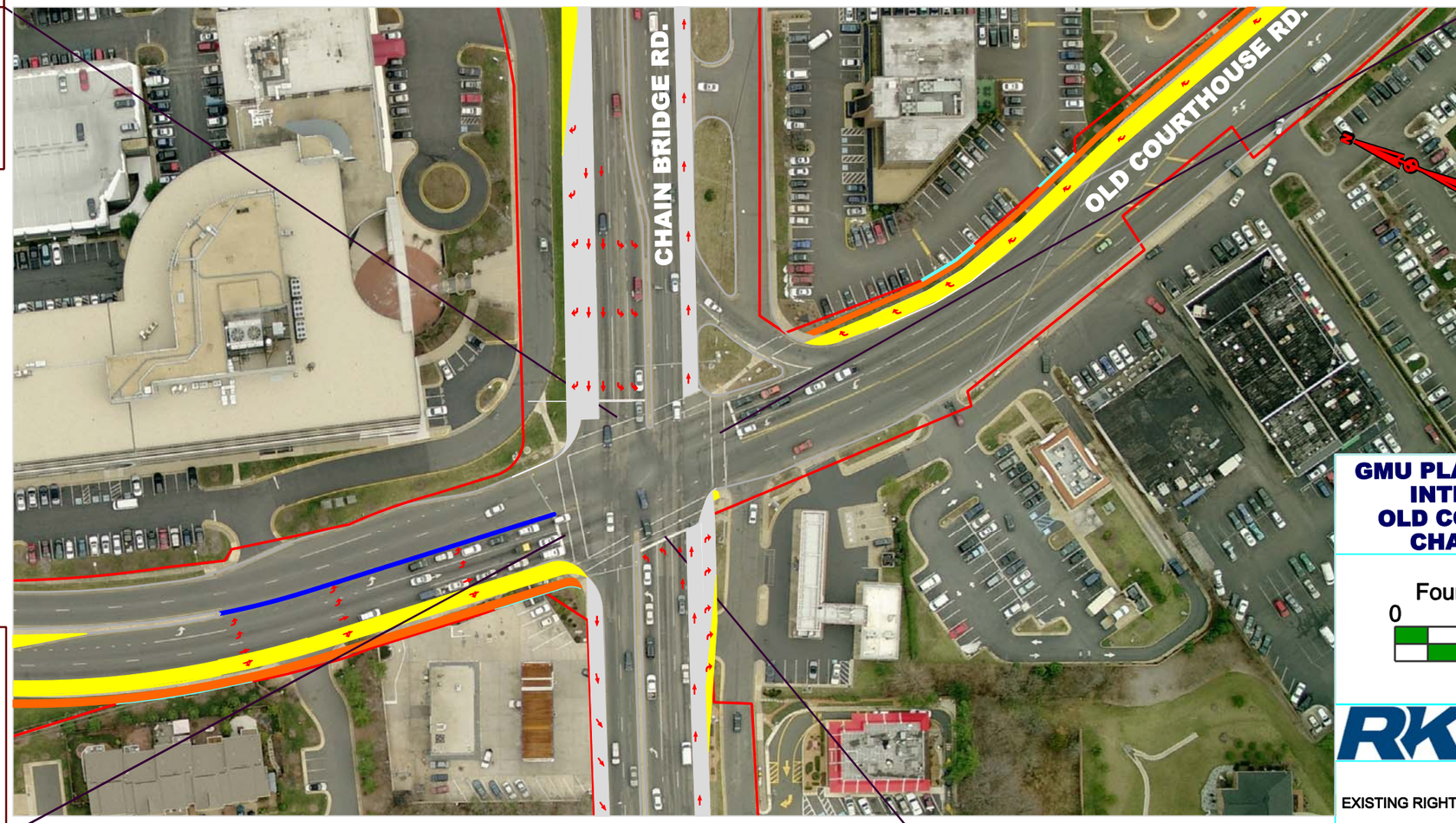
PRELIMINARY

EXISTING

PROPOSED

NEW

COMP



EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

NEW

EXISTING

PROPOSED

COMP

NEW

GMU PLAN IMPROVEMENTS
INTERSECTION 15
OLD COURTHOUSE RD. / CHAIN BRIDGE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K

FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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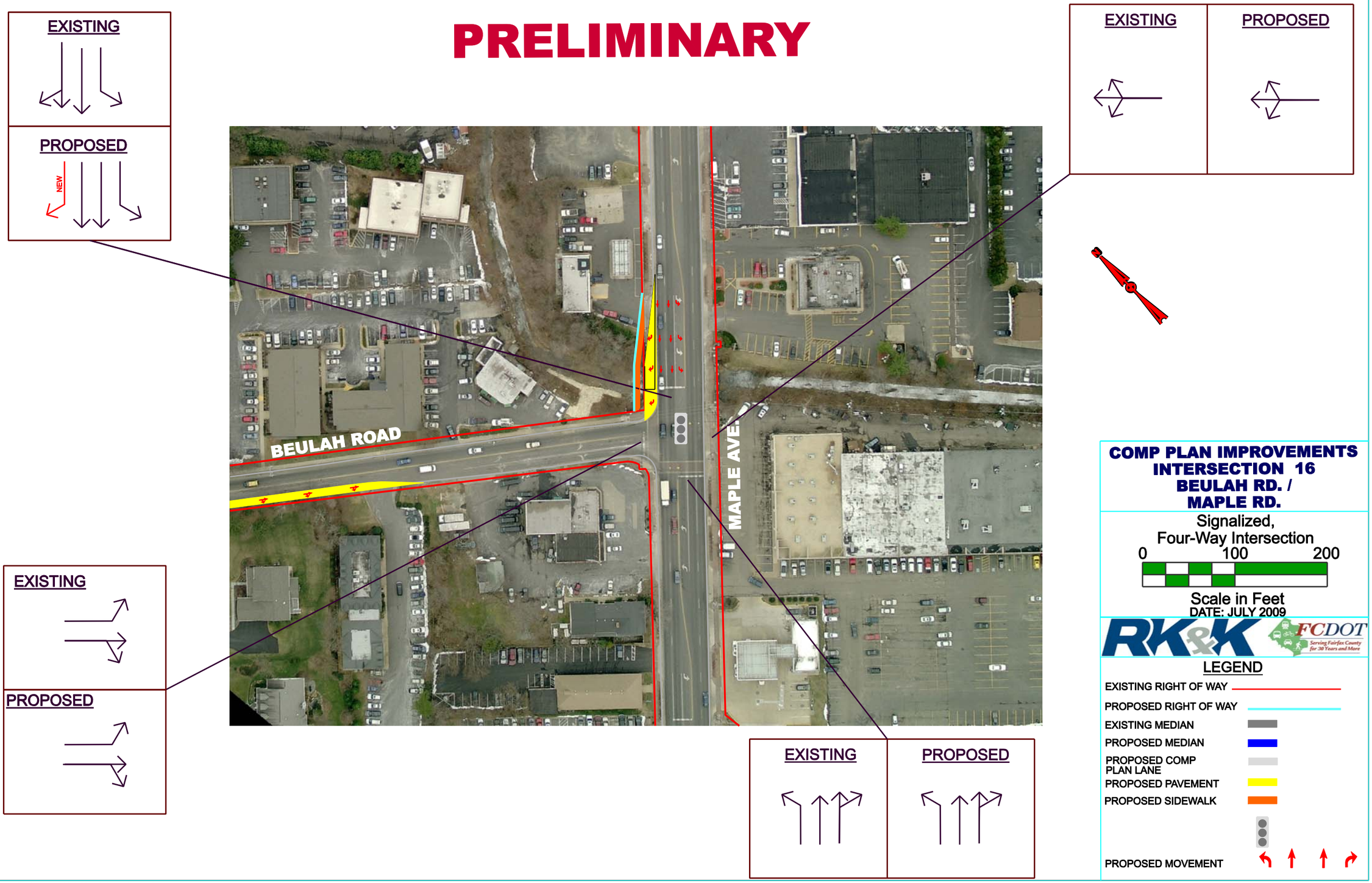
Tysons Corner Neighborhood Traffic

PRELIMINARY



COMP PLAN IMPROVEMENTS
INTERSECTION 16
BEULAH RD. /
MAPLE RD.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- PROPOSED MOVEMENT

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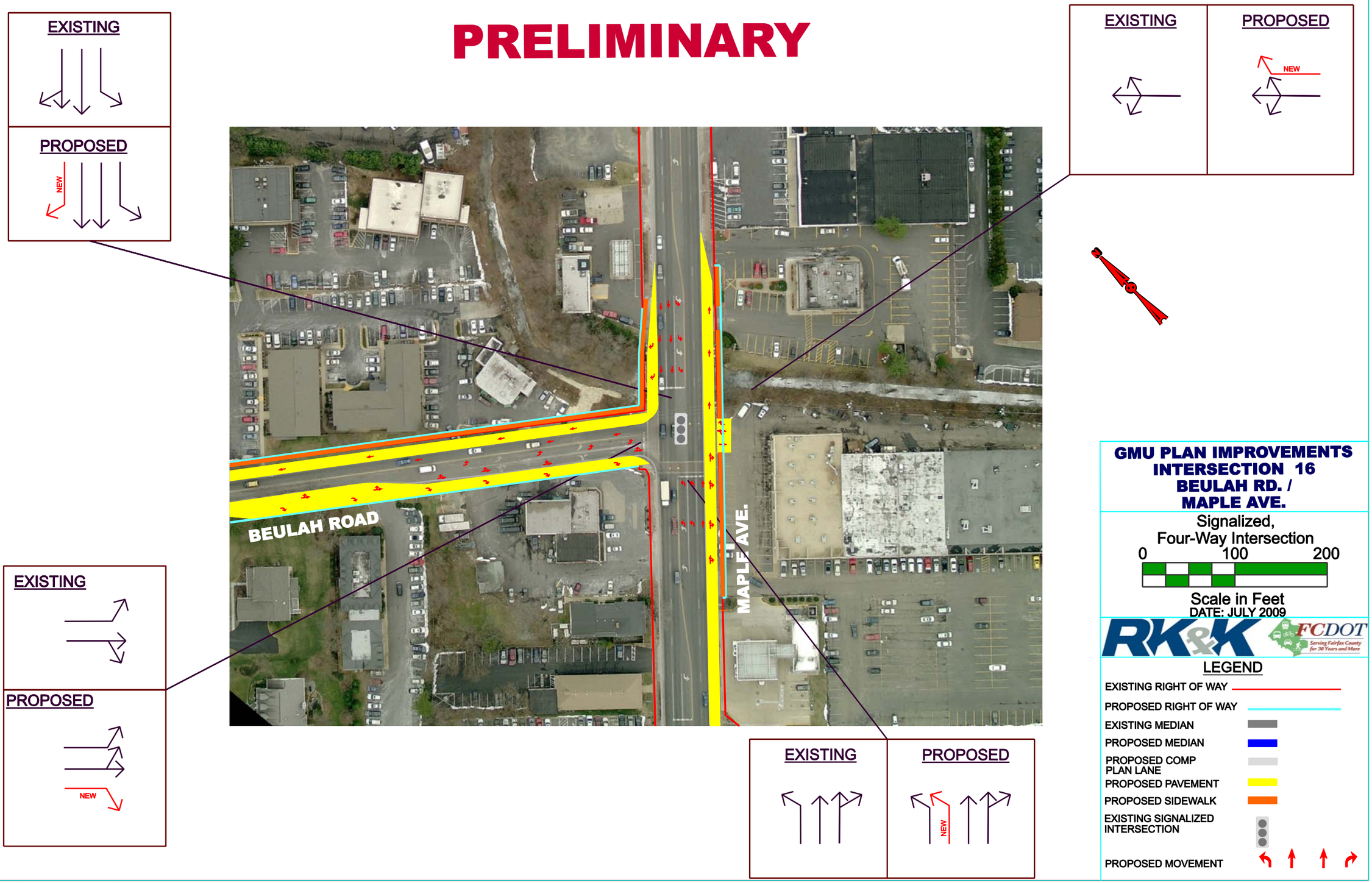
Tysons Corner Neighborhood Traffic

PRELIMINARY



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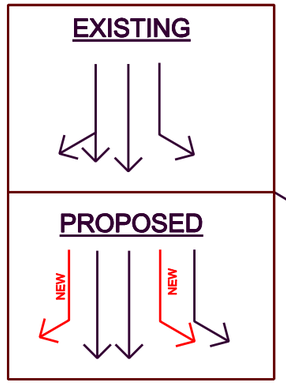
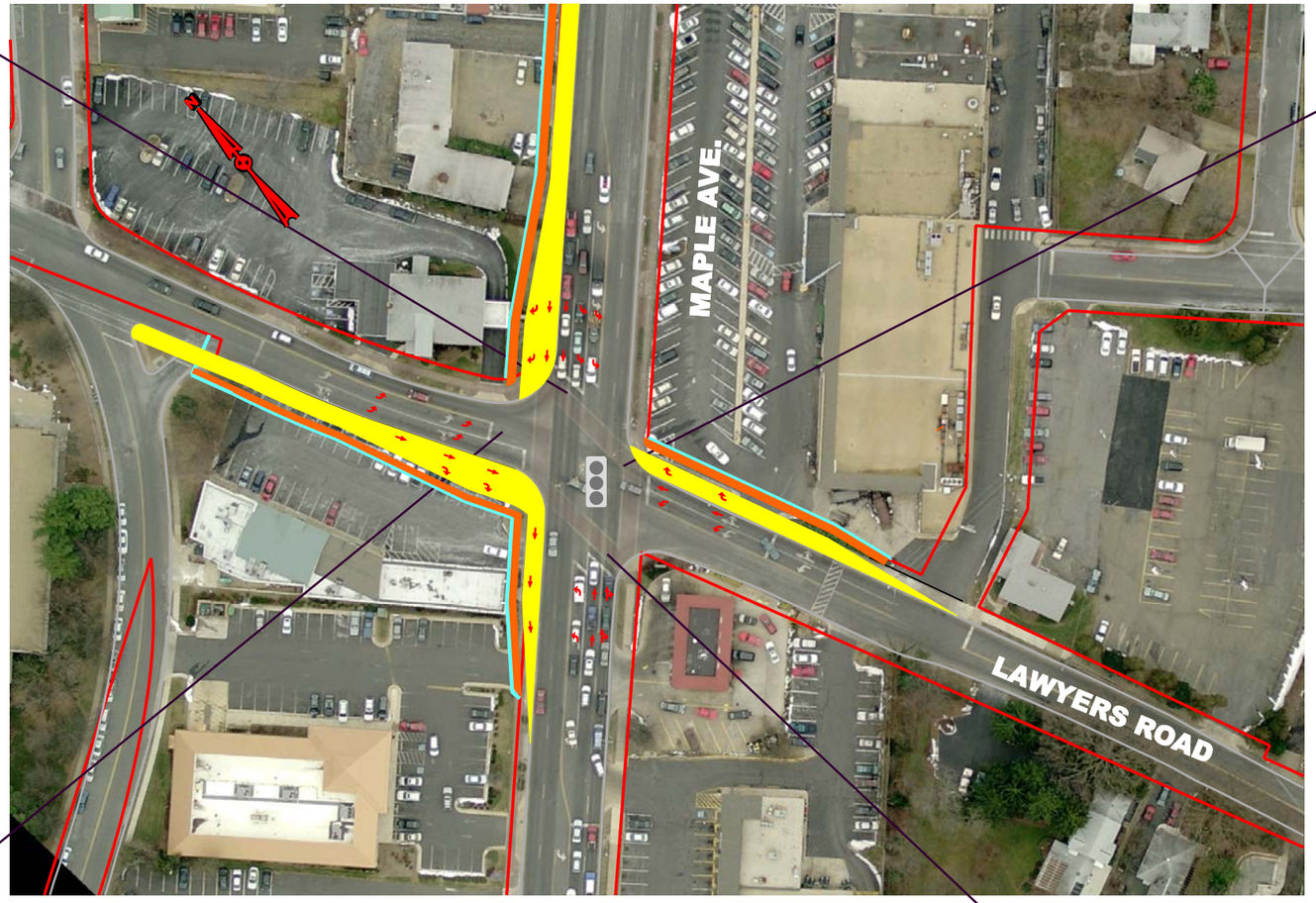
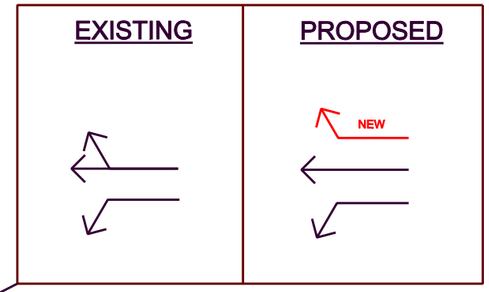
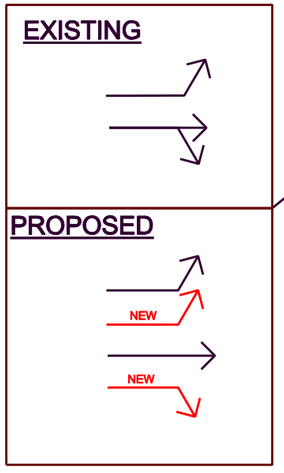
Tysons Corner Neighborhood Traffic

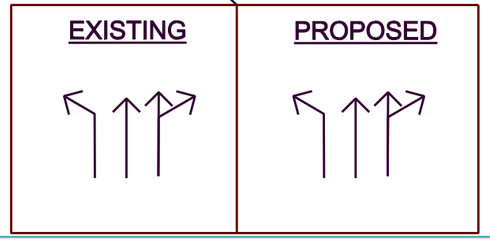
PRELIMINARY











COMP PLAN IMPROVEMENTS
INTERSECTION 17
LAWYERS RD. /
MAPLE AVE.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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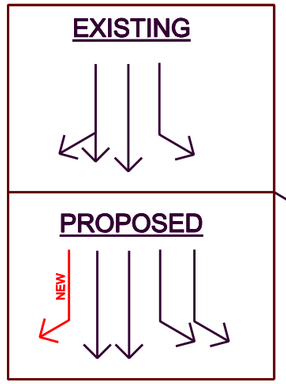
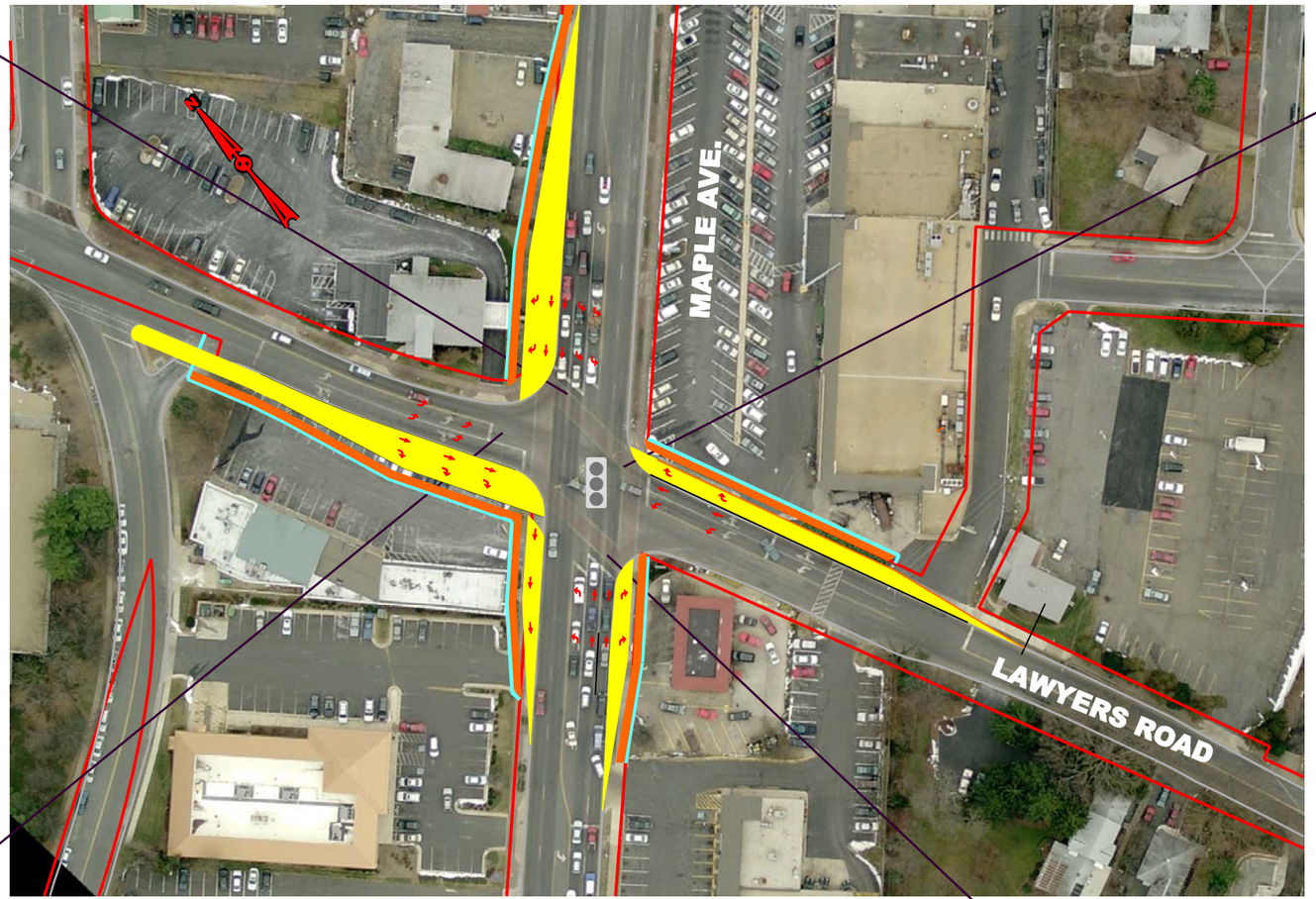
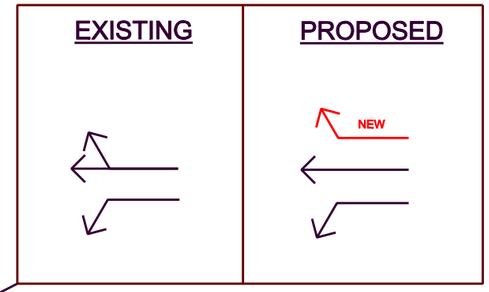
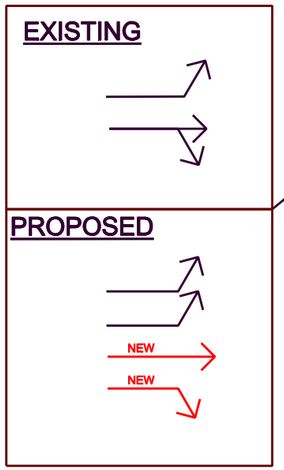
Tysons Corner Neighborhood Traffic

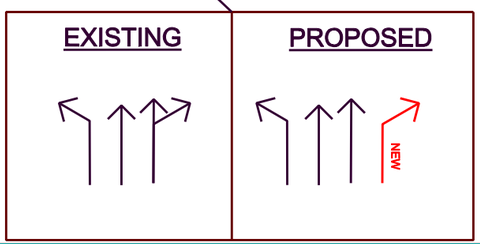
PRELIMINARY











GMU PLAN IMPROVEMENTS
INTERSECTION 17
LAWYERS RD. /
MAPLE AVE.

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING MEDIAN
- PROPOSED MEDIAN
- PROPOSED COMP PLAN LANE
- PROPOSED PAVEMENT
- PROPOSED SIDEWALK
- EXISTING SIGNALIZED INTERSECTION
- PROPOSED MOVEMENT

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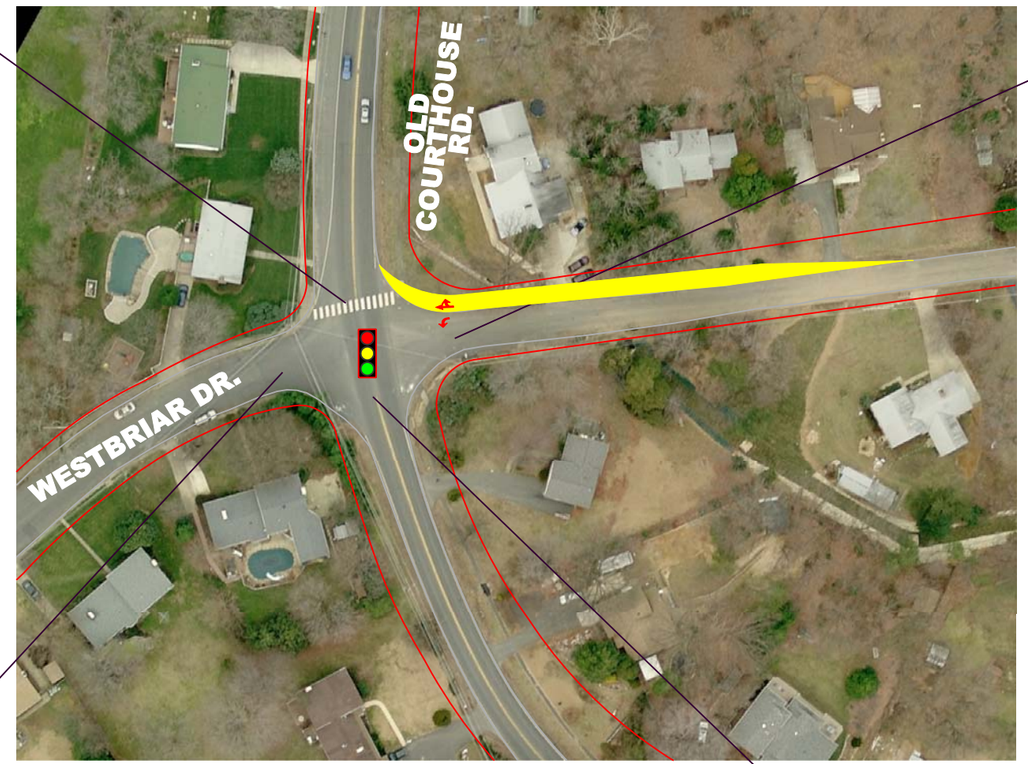
Tysons Corner Neighborhood Traffic

PRELIMINARY

EXISTING

PROPOSED



EXISTING

PROPOSED

EXISTING

PROPOSED

EXISTING

PROPOSED

NEW

COMP PLAN IMPROVEMENTS
INTERSECTION 18
OLD COURTHOUSE RD. /
WESTBRIAR DRIVE

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY

PROPOSED RIGHT OF WAY

EXISTING MEDIAN

PROPOSED MEDIAN

PROPOSED COMP PLAN LANE

PROPOSED PAVEMENT

PROPOSED SIDEWALK

PROPOSED SIGNALIZED INTERSECTION

PROPOSED MOVEMENT

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Tysons Corner Neighborhood Traffic

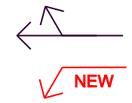
PRELIMINARY

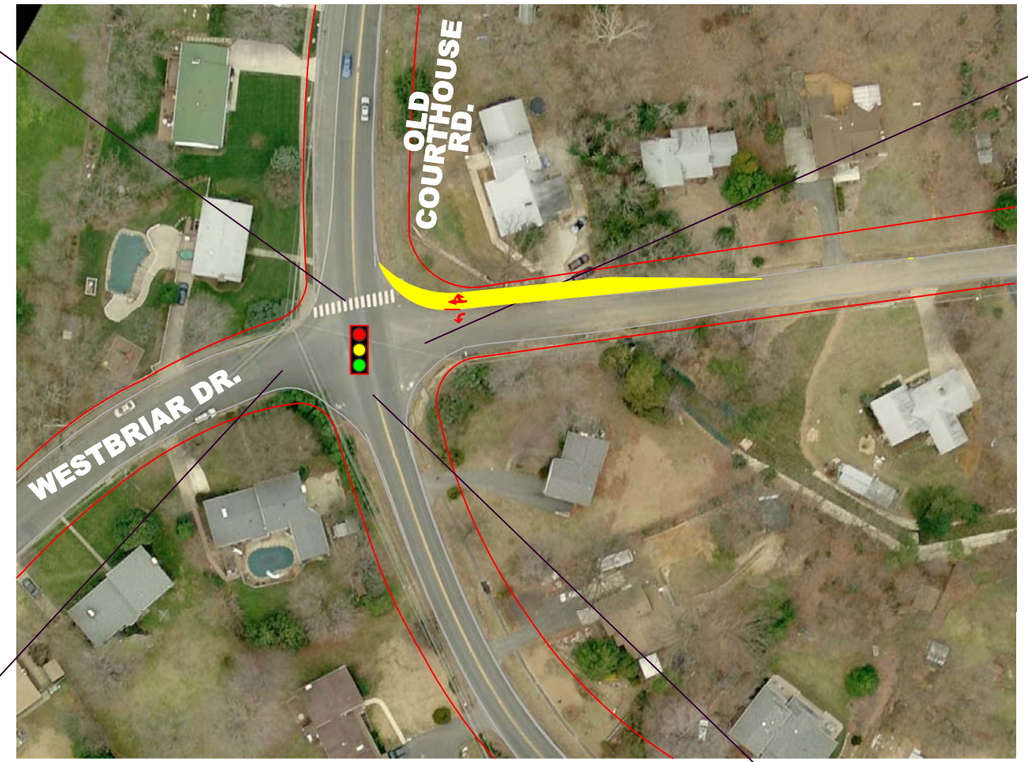
EXISTING

PROPOSED

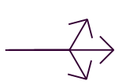
EXISTING

PROPOSED

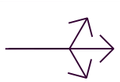




EXISTING



PROPOSED



EXISTING

PROPOSED

GMU PLAN IMPROVEMENTS
INTERSECTION 18
OLD COURTHOUSE RD. /
WESTBRIAR DRIVE

Signalized,
Four-Way Intersection

0 100 200

Scale in Feet

DATE: JULY 2009

RK&K FCDOT Serving Fairfax County for 30 Years and More

LEGEND

EXISTING RIGHT OF WAY
PROPOSED RIGHT OF WAY
EXISTING MEDIAN
PROPOSED MEDIAN
PROPOSED COMP PLAN LANE
PROPOSED PAVEMENT
PROPOSED SIDEWALK
PROPOSED SIGNALIZED INTERSECTION
PROPOSED MOVEMENT

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Intersection 1 – Route 123 (Dolley Madison Blvd) at Lewinsville Road/Great Falls Street

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 shared left/through lane; 1 though lane; 2 right turn lanes

Westbound – 1 left turn lane; 1 shared left/through lane 1 shared through/right turn lane

Northbound – 2 left turn lanes; 2 through lanes; 1 right turn lane

Southbound – 2 left turn lanes; 3 through lanes; 1 right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, landscaping, and other appurtenances. Total estimated cost of improvements is $110,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, landscaping, and other appurtenances. Total estimated cost of improvements is $60,000.00.

Intersection 2 – Route 123 (Dolley Madison Blvd) at Old Dominion Drive

Existing Traffic Movements:

Eastbound – 2 left turn lanes, 2 through lanes, 1 right turn lane

Westbound – 2 left turn lanes; 2 through lanes; 1 right turn lane

Northbound – 1 left turn lane; 2 through lanes; 1 right turn lane

Southbound – 1 left turn lane; 2 through lanes; 1 right turn lane

Proposed Comp Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $763,000.00.

Proposed GMU Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7 there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $410,000.00.

Intersection 3 – Lewinsville Road at Route 7 (Leesburg Pike)

Existing Traffic Movements:

Eastbound – 1 left turn lane; 2 through lanes; 1 right turn lane
Westbound – 2 left turn lanes; 2 through lanes; 1 right turn lane
Northbound – 1 left turn lane; 1 through lane; 1 right turn lane
Southbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

There are no physical additions needed to achieve an overall intersection LOS D and, therefore, no costs for improvements.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, landscaping, and other appurtenances. Total estimated cost of improvements is $110,000.00.

Intersection 4 – Lewinsville Road at Spring Hill Road

Existing Traffic Movements:

Eastbound – 1 shared left turn and through lane; 1 right turn lane
Westbound – 1 left turn lane; 1 shared through and right turn lane
Northbound – 1 shared left turn and through lane; 1 right turn lane
Southbound – 1 shared left turn, through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, additional storage lengths for turning lanes are needed as shown on Table 7. The associated project costs are for grading, paving, drainage, maintenance of traffic, pavement marking, landscaping, and other appurtenances. Total estimated cost of improvements is $37,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for a northbound dedicated left turn lane and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes needed as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, landscaping, and other appurtenances. Total estimated cost of improvements is $581,000.00.

Intersection 7 – Great Falls Street & Chain Bridge Road

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 through lane; 1 right turn lane
Westbound – 1 left turn lane; 1 through lane; 1 right turn lane
Northbound – 1 left turn lane; 1 shared through and right turn lane

Southbound – 1 left turn lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for a northbound dedicated right turn lane and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes needed as shown on Table 7, there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $654,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for a northbound dedicated right turn lane and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes needed as shown on Table 7, there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $565,000.00.

Intersection 9 – Magarity Road at Route 7

Existing Traffic Movements:

Eastbound – 2 left turn lanes; 3 through lanes; 1 right turn lane
Westbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane
Northbound – 2 left turn lane; 1 shared through and right turn lane
Southbound – 1 left turn lane; 1 shared through and right turn lane; 1 right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for northbound and westbound dedicated right turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, and other appurtenances. Total estimated cost of improvements is $1,462,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for northbound and westbound dedicated right turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, and other appurtenances. Total estimated cost of improvements is $1,245,000.00.

Intersection 10 – Idylwood Road at Route 7

Existing Traffic Movements:

Eastbound – 1 left turn lane; 2 through lanes; 1 shared through and right turn lanes
Westbound – 1 left turn lane; 2 through lanes; 1 shared through and right turn lanes
Northbound – 1 shared left turn and through lane; 1 right turn lane
Southbound – 1 shared left turn and through lane; 1 right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for additional dedicated left turn lanes for all four movements and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, raised median, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $2,765,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for additional dedicated left turn lanes for all four movements and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, raised median, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $2,894,000.00.

Intersection 11 – Idylwood Road at Gallows Road

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 shared through and right turn lane
Westbound – 1 left turn lane; 1 through lane; 1 right turn lane
Northbound – 1 left turn lane; 2 through lanes; 1 right turn lane
Southbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,126,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed to accommodate storage lane requirements. Due to the additional storage lengths needed for turning lanes as shown on Table 7, there are associated project costs for grading, drainage, maintenance of traffic, pavement marking, curb and gutter,

sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,003,000.00.

Intersection 12 – Georgetown Pike and Swinks Mill Road

Existing Traffic Movements:

Eastbound – 1 shared left turn, through and right turn lane
Westbound – 1 shared left turn, through and right turn lane
Northbound – 1 shared left turn, through and right turn lane
Southbound – 1 shared left turn, through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is additional pavement needed for a westbound dedicated left turn lane and storage lane requirements. Due to the additional storage length for the turning lane as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, lighting, signals, landscaping, and other appurtenances. Total estimated cost of improvements is $675,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is additional pavement needed for a westbound dedicated left turn lane and a northbound dedicated right turn lane as well as their storage lane requirements. Due to the storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $925,000.00.

Intersection 14 – Gallows Road at Cedar Lane/Oak Street

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 shared left turn and through lane; 1 shared through and left turn lane
Westbound – 1 shared left turn and through lane; 1 right turn lane
Northbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane
Southbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, the only physical improvements needed are signing and pavement marking for the storage lane requirements as shown on Table 7. Total estimated cost of improvements is $10,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, the only physical improvements needed are signing and pavement marking for the storage lane requirements as shown on Table 7. Total estimated cost of improvements is $10,000.00.

Intersection 15 – Old Courthouse Road and Chain Bridge Road

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane
Westbound – 1 left turn lane; 2 through lanes; 1 right turn lane
Northbound – 1 left turn lane; 2 through lanes; 1 right turn lane
Southbound – 1 left turn lane; 2 through lanes; 1 right turn lane

Proposed Comp Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed for additional eastbound, northbound and southbound dedicated left turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, raised median, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,369,000.00.

Proposed GMU Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed for additional eastbound, northbound and southbound dedicated left turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, raised median, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,973,000.00.

Intersection 16 – Maple Avenue at Beulah Road (Vienna)

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 shared through and right turn lane
Westbound – 1 shared left turn, through and right turn lane
Northbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane
Southbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for a southbound dedicated right turn lane and storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $568,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is some removal of existing pavement/concrete and additional pavement needed for additional eastbound (right turn), westbound (right turn),

northbound (left turn) and southbound (right turn) dedicated turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,913,000.00.

Intersection 17 – Maple Avenue at Lawyers Road (Vienna)

Existing Traffic Movements:

Eastbound – 1 left turn lane; 1 shared through and right turn lane
Westbound – 1 left turn lane; 1 shared through and right turn lane
Northbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane
Southbound – 1 left turn lane; 1 through lane; 1 shared through and right turn lane

Proposed Comp Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed for additional eastbound, northbound and southbound dedicated left turn lanes and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,741,000.00.

Proposed GMU Plan Improvements

To achieve an optimum LOS given existing physical constraints, there is some removal of existing pavement/concrete and additional pavement needed for additional eastbound and southbound dedicated left turn lanes; additional eastbound, westbound and southbound dedicated right turn lanes; and to accommodate storage lane requirements. Due to the additional storage lengths for turning lanes as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, curb and gutter, sidewalks, lighting, signals, landscaping, right of way acquisition, and other appurtenances. Total estimated cost of improvements is $1,738,000.00.

Intersection 18 – Old Courthouse Road and Westbriar Drive (Vienna)

Existing Traffic Movements:

Eastbound – 1 shared left turn, through and right turn lane
Westbound – 1 shared left turn, through and right turn lane
Northbound – 1 shared left turn, through and right turn lane
Southbound – 1 shared left turn, through and right turn lane

Proposed Comp Plan Improvements To achieve an overall LOS D, there is additional pavement needed for additional eastbound and southbound dedicated left turn lanes; additional eastbound, westbound and southbound dedicated right turn lanes; and to accommodate storage lane requirements. Due to the additional storage length for the turning lane as shown

on Table 7there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, signals, landscaping, and other appurtenances. Total estimated cost of improvements is $596,000.00.

Proposed GMU Plan Improvements

To achieve an overall LOS D, there is additional pavement needed for a westbound dedicated left turn lane and storage lane requirements. Due to the additional storage length for the turning lane as shown on Table 7 there are associated project costs for grading, paving, drainage, maintenance of traffic, pavement marking, signals, landscaping, and other appurtenances. Total estimated cost of improvements is $437,000.00.