

**Technical Memorandum Update**

**Appendix 3**

**Traffic and Transportation Effects**

**Technical Memorandum Update**

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# Technical Memorandum Update

## Appendix 3

# Transportation Effects

### Table of Contents

1. INTRODUCTION.....	3
2. TRANSIT OPERATIONS AND PROJECT TRANSIT SERVICE .....	3
2.1 No Build and Build Scenarios.....	4
2.2 Assumed Physical Improvements for Build Scenario .....	5
2.3 Transit Effects of the Build Scenarios .....	11
3. TRAFFIC ANALYSIS .....	11
3.1 Existing Conditions.....	11
3.2 Projected Traffic Conditions .....	12
3.3 No Build Scenarios.....	13
3.4 Build Scenario .....	13
3.5 Traffic Effects .....	13
4. PEDESTRIAN EFFECTS.....	14
5. PARKING AND ACCESS EFFECTS .....	15

### List of Figures

Figure 1: No Build Transit Routes

Figure 2: Build Transit Routes

### List of Tables

Table 1: Existing Bus Routes to be included in the 2015 & 2030 No-Build & Build Scenarios

Table 2: No Build and Build Scenarios: 9A, 9E and 9X Operations

Table 3: Operational Analysis Results for Existing Conditions (PM Peak Hour)

Table 4: Operational Analysis Results for Build & No Build Conditions in 2015 & 2030

### List of Attachments

Attachment A: Synchro Outputs

Attachment B: Intersection Turning Movement Counts

## **Technical Memorandum Update**

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## **Technical Memorandum Update**

### **1. INTRODUCTION**

This technical memorandum provides an update for transportation effects resulting from implementation of Section B of the Crystal City-Potomac Yard (CCPY) transitway. A Transportation Effects Technical Memorandum for the 5-mile transit corridor (including Section B) was previously completed in December 2006 (see Appendix 3 of the 2007 Documented Categorical Exclusion on attached CD). The City of Alexandria updated North Potomac Yard Small Area Plan in 2009. The updated plan establishes new guidelines for development in the study area and includes recommendations to increase allowable densities, concentrate retail, encourage mixed uses, limit parking and provide additional open spaces, see Part D in the Documented Categorical Exclusion (DCE) for Section B of the CCPY transitway corridor and Appendix 1, Figure 2: Zoning Map.

Although these changes are applicable to the entire Potomac Yard corridor within the City of Alexandria, this update is limited to the section of US Route 1 extending from the Monroe Avenue Bridge to East Glebe Road, known as Section B of the CCPY transitway. This update serves as an Appendix to the DCE for Section B of the transitway corridor. It documents the existing and future transit services, traffic conditions, pedestrian effects and parking and access effects within the Section B of the transitway alignment.

### **2. TRANSIT OPERATIONS AND PROJECT TRANSIT SERVICE**

A number of bus routes are operated along the Potomac Yard corridor by the Washington Metropolitan Area transit Authority (WMATA) and the Alexandria Transit Company's DASH service. Metrobus routes 9A and 9E are the main existing services that operate along Section B. Table 1 lists the existing transit services in the corridor.

**Table 1: Existing Bus Routes to be included in the 2015 & 2030 No-Build & Build Scenarios**

Route	Portion of Corridor Served	Weekdays Headways AM/Mid/PM
9A	North Old Town to the Pentagon via US Route 1 and South Eads Street	30/30/30
9E	Braddock Road Metro to the Pentagon Metro	5 trips in AM – SB only 6 trips in PM – NB only
10A	Braddock Road Metro to the Pentagon Metro	30/30/30
10B	Braddock Road Metro to Ballston-MU Metro	30/30/30
10E	Braddock Road Metrorail Station, Del Ray, & Pentagon	8 trips in AM – NB only 8 trips in PM – SB only
DASH 3	Braddock Road and Pentagon Metro	20/--/20
DASH 3/4	Braddock Road Metrorail Station	--/60/60
DASH 4	North Old Town, Braddock Road and Pentagon Metro	20/--/20
DASH 10	Potomac Yard Shopping Center	30/60/30
DASH AT 12	Alexandria Town Center and Potomac Yard Shopping Center	15/30/15
DASH AT 14	Monroe Ave. Bridge, Main Street, Alexandria Town Center, Potomac Yard Shopping Center	15/30/15
DASH Potomac Yard Circulator	Monroe Ave., Main Street, Alexandria Town Center, Potomac Yard Shopping Center, South Glebe Rd. in Arlington	15/15/15

The Metrobus 9S does not serve Section B of the proposed transitway corridor and is not included in Table 1 above. Currently 9S runs southbound on Potomac Avenue to South Glebe Road where it turns on to US Route 1 to go north. After the completion of the Potomac Avenue Bridge, the 9S route is expected to go further south to the Potomac Yard Shopping Center. This proposed route is depicted in the No Build conditions on Figure 1. Arlington Transit (ART) buses do not serve Section B of the proposed transitway corridor and are not included in Table 1 above. However ART buses serve the CCPY corridor and are depicted in Figures 1 & 2, which show the entire CCPY corridor.

**2.1 No Build and Build Scenarios**

The design for the reconstruction and improvement of US Route 1, a separate ongoing project, is nearly 100% complete. This project involves the construction of a wide landscaped median in the place of existing northbound lanes and relocating the northbound lanes further east. These improvements, including the intersections at Howell, Custis and Potomac Avenues, will be constructed in mid-2011. Swann Avenue will be constructed after 2015. Low-impact design techniques that reduce runoff and provide water quality treatment are required to be incorporated as part of the street design. These

improvements will promote a pedestrian-friendly environment and stormwater improvements as recommended by the North Potomac Yard Small Area Plan. The dedicated transitway will be accommodated within this newly created landscaped median. However, these improvements predate the transitway project and are considered a part of the No Build conditions.

The transit operations plan for the 2015 No Build scenario assumes continuation of 9A and 9E services and addition of a new 9X service, all operating in mixed traffic along the corridor. The net service frequency in 2015 would be six buses per hour during peak periods and four buses in off-peak. For the 2030 No Build scenario, the 9X service is assumed to be split into two separate routes, 9X1 serving the Pentagon and 9X2 serving Pentagon City. The net service frequency in 2030 would be 22 buses per hour in the peak and 14 buses in the off-peak.

In the Build scenario (2015 and 2030), the 9A and 9E services continue operation as in the No Build scenario, except that these services use dedicated transit lanes in Section B. For the 2015 Build scenario, the 9X service is replaced by a CCPY “Red Line” route that uses the dedicated transit lanes. The resulting net service frequency for 2015 in Section B is six buses per hour during peak periods and four buses in off-peak. In the 2030 Build scenario, the 9X1 is replaced by CCPY “Blue Line” service at five-minute peak headways; the 9X2 is replaced by CCPY “Red Line” service, also at five-minute headways. The net service frequency for 2030 in Section B is 26 buses per hour during peak periods and 18 buses in off-peak.

Table 2 summarizes the No Build and Build scenarios in 2015 and 2030 whereas Figures 1 and 2 show these scenarios graphically.

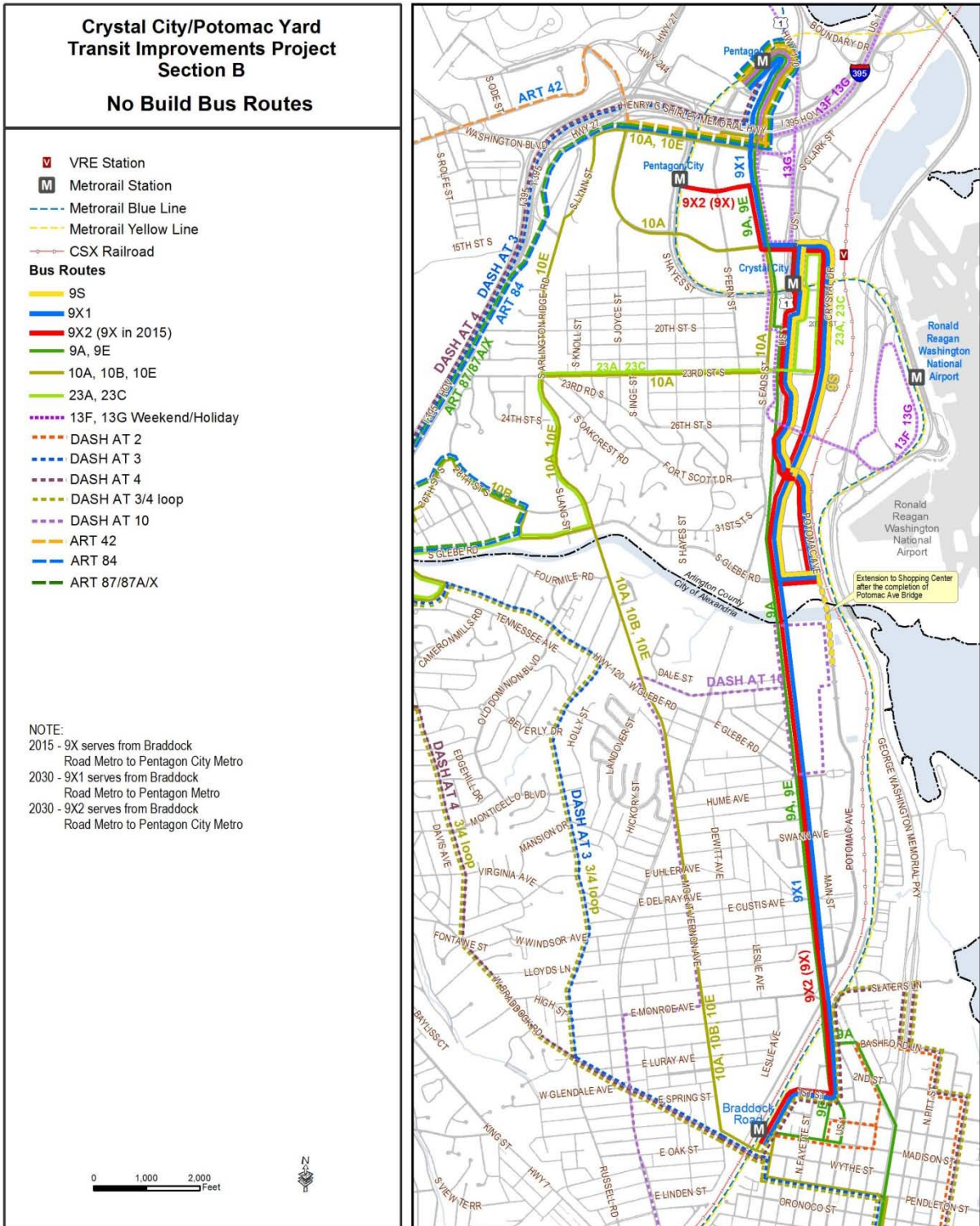
## **2.2 Assumed Physical Improvements for Build Scenario**

Several physical changes will be undertaken as part of the transit improvements in the Build scenario. The transitway project work also involves adjustments to lane configurations and intersection geometries, and upgrades to pedestrian and passenger facilities. Appendix 11 includes a set of general plans that details improvements associated with the transitway project.

**Table 2: No Build and Build Scenarios: 9A, 9E and 9X Operations**

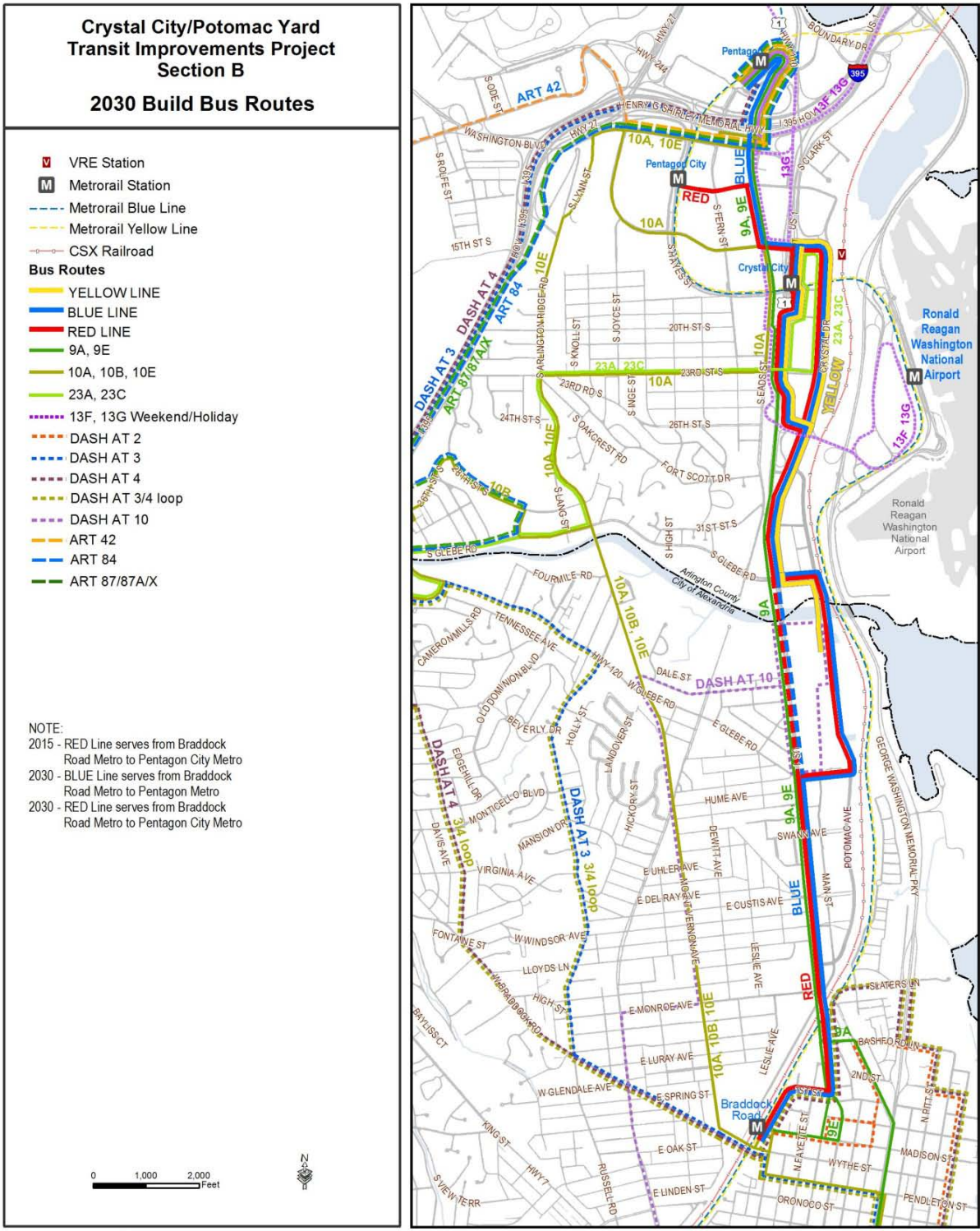
	Descriptions	No Build	Build (Proposed Action)
<b>2015</b>			
<b>9A</b>	Serves downtown Alexandria, Crystal City providing connection between the Metrorail stations of Huntington and Pentagon	<ul style="list-style-type: none"> <li>• Same frequency as today.</li> <li>• Runs in mixed operations only.</li> <li>• Operates at peak/off-peak headway of 30 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> <li>• Runs in dedicated transit lanes</li> </ul>
<b>9E</b>	Serves Alexandria and Potomac Yard providing connection between the Metrorail stations of Braddock Road and Pentagon	<ul style="list-style-type: none"> <li>• Same frequency as today.</li> <li>• Runs in mixed operations only.</li> <li>• Operates 5 buses in the AM peak SB only; 6 buses in the PM peak NB only</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> <li>• Runs in dedicated transit lanes</li> </ul>
<b>9X</b>	Serves as the core service of the entire CCPY transitway between Braddock and Pentagon City. X is the designation for Metrobus Priority Corridor.	<ul style="list-style-type: none"> <li>• Operates at peak/off-peak headways of 15/30 minutes.</li> <li>• Runs from Braddock Station to Pentagon City following through the entire corridor in mixed operations</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> <li>• 9X to be replaced by Red Line, running in dedicated transit lanes</li> </ul>
<b>Net</b>	Combined headways in Section B	<ul style="list-style-type: none"> <li>• Overall peak/off-peak headways of 10/15 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> </ul>
Other existing Metrobus services will continue with current frequency and routing			
<b>2030</b>			
<b>9A</b>	Serves Old Town Alexandria, Crystal City providing connection between the Metrorail stations of Huntington and Pentagon	<ul style="list-style-type: none"> <li>• Same frequency as today</li> <li>• Runs in mixed traffic</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> <li>• Runs in dedicated transit lanes</li> </ul>
<b>9E</b>	Serves Alexandria and Potomac Yard providing connection between the Metrorail stations of Braddock Road and Pentagon	<ul style="list-style-type: none"> <li>• Same frequency as today</li> <li>• Runs in mixed traffic</li> </ul>	<ul style="list-style-type: none"> <li>• Same frequency as No Build.</li> <li>• Runs in dedicated transit lanes</li> </ul>
<b>9X</b>	In No Build Scenario only –9X will be split into 2 routes: 9X1 and 9X2, with 9X1 terminating at Pentagon and 9X2 at Pentagon City	<ul style="list-style-type: none"> <li>• 9X1 to Pentagon with peak/off-peak headways of 6/10 minutes.</li> <li>• 9X2 to Pentagon City with peak/off-peak headways of 6/10 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• 9X1 to be replaced by the Blue Line at peak/off-peak headways of 5/7minutes.</li> <li>• 9X2 to be replaced by Red Line with headways of 5 minutes</li> </ul>
<b>Net</b>	Combined headways in Section B	<ul style="list-style-type: none"> <li>• Overall headways of just under 3 minutes for peak periods and just over 4 minutes for off-peak</li> </ul>	<ul style="list-style-type: none"> <li>• Overall headways of just over 2 minutes for peak periods and just over 3 minutes for off-peak</li> </ul>
Other existing Metrobus services will continue with current frequency and routing			

Figure 1: No Build Bus Routes



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Figure 2: Build Bus Routes



Crystal City/Potomac Yard Transit Improvements Project - Section B

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## **2.3 Transit Effects of the Build Scenarios**

The buses will operate in dedicated transitway located in the median of US Route 1. This will streamline the transit flow, improve travel time savings and improve the reliability of the service. A faster and a reliable transit system is likely to attract choice riders. Traffic flow is also likely to improve since motorists would not vie with drivers of transit vehicles for the same right-of-way. These factors combine to improve air quality in the region by encouraging transit and improving the speeds of other vehicles.

The proposed transit stops are located ¼ mile apart at the following major intersections:

- US Route 1 and East Glebe Road
- US Route 1 and Swann Avenue
- US Route 1 and East Custis Avenue
- US Route 1 and Potomac Avenue

The proposed stops have generous boarding areas with shelters and passenger amenities such as real-time bus arrival information.

## **3. TRAFFIC ANALYSIS**

An updated traffic analysis was performed to reflect the changes and updates since 2006. This section documents the build and no-build traffic conditions for the years 2015 and 2030 in Section B of the Potomac Yard transit corridor. The future year analyses include level of service (LOS) and delays for four study intersections in the AM and PM peaks. The study intersections are as follows:

- US Route 1 and East Glebe Road
- US Route 1 and Swann Avenue
- US Route 1 and East Custis Avenue
- US Route 1 and Howell Avenue
- US Route 1 and Potomac Avenue

### **3.1 Existing Conditions**

The City of Alexandria provided 2009 turning movement counts at the study intersections for AM and PM peak hours. Synchro software was used to develop existing conditions analysis based on these turning movement counts, existing lanes, and existing traffic control at the study intersections. The analysis shows that existing vehicular traffic conditions along US Route 1 and at most intersections adjacent to Potomac Yard are acceptable.

**Table 3: Operational Analysis Results for Existing Conditions**

Intersections	Measures	Existing AM	Existing PM
US 1/E. Glebe Road	Delay	23	29
	LOS	C	C
US 1/Swann Avenue	Delay	3	3
	LOS	A	A
US 1/E. Custis Avenue	Delay	11	5
	LOS	B	A
US 1/Howell Avenue	Delay	11	11
	LOS	B	B
US 1/Potomac Avenue	Delay	11	6
	LOS	B	A

### 3.2 Projected Traffic Conditions

2030 PM peak hour traffic volumes were obtained from the Potomac Yard Multimodal Transportation Study dated June 2010 by Kimley-Horn & Associates. This study uses the most recent land use projections that were documented in the 2007 Wells and Associates Potomac Yard Traffic Impact Assessment and approved by the City for all landbays in Potomac Yard as well as adjacent properties.

These study results and land use assumptions were used in the current analysis to develop 2015 AM, PM and 2030 AM peak hour traffic volumes at the study intersections. Other key assumptions are as follows:

#### 2015

- 2009 existing volumes provided by the City of Alexandria were used as base.
- Diversion for completed Potomac Avenue is assumed to be equal to 20 percent of the existing PM volume on US Route 1 at the Potomac Avenue intersection (approved methodology from the Wells & Associates Potomac Yard Traffic Impact Assessment (2007) and used for the Potomac Yard Landbay F/L transportation study).
- Annual growth of 2.4 percent for the US Route 1 through movements, of which 70 percent is applied along US Route 1 and 30 percent is applied along Potomac Avenue.
- Addition of two-thirds of the approved and unbuilt traffic volumes from the (2007) Wells & Associates Potomac Yard Traffic Impact Assessment.
- Addition of one-third of the Potomac Yard (south) traffic volumes from the (2007) Wells & Associates Potomac Yard Traffic Impact Assessment (with small adjustments to distribute turning volumes to and from various US Route 1 intersections).

## 2030

- 2009 existing volumes provided by the City of Alexandria were used as base.
- Diversion for completed Potomac Avenue is assumed to be equal to 20 percent of the existing PM volume on US Route 1 at the Potomac Avenue intersection.
- Growth of 10 percent for the US Route 1 through movements, of which 70 percent is applied along US Route 1 and 30 percent is applied along Potomac Avenue.
- Addition of approved and unbuilt traffic volumes from the (2007) Wells & Associates Potomac Yard Traffic Impact Assessment.
- Addition of Potomac Yard (south) traffic volumes from the (2007) Wells & Associates Potomac Yard Traffic Impact Assessment (with small adjustments to distribute turning volumes to various US Route 1 intersections).
- Removal of existing traffic volumes associated with retail at Potomac Yard Landbay F.
- Addition of traffic volumes related to the redevelopment of Landbay F and development of Landbay L, according to the Potomac Yard Multimodal transportation Study, completed in June 2010.

### 3.3 No Build Scenarios

No Build conditions represent the baseline conditions for comparison with and without the proposed transitway.

### 3.4 Build Scenario

Dedicated transit lanes would be created along US Route 1 from the Monroe Avenue Bridge to the intersection with East Glebe Road. The Build conditions also include Queue Jump for the transit vehicles along southbound US Route 1 at Potomac Avenue. All left turns from southbound US Route 1 at this intersection have been reassigned to Howell Avenue to accommodate the station stop. The Build scenario was evaluated in the AM and PM peak periods for 2015 and 2030 forecast years using Synchro traffic analysis software.

### 3.5 Traffic Effects

In most cases, the delays and LOS are comparable between No Build and Build conditions, showing that the proposed transitway has minimal effects on traffic, see Table 4. Specific impacts at each of the study intersections are discussed in detail.

**US Route 1/East Glebe Road** - In 2015, there are no changes to the LOS at this intersection. The dedicated transit lanes not only improve the flow of transit vehicles but also have a positive impact on the flow of traffic, regardless of the background traffic growth. In 2030, there is an increase in delays at this intersection. This is due to the turning movement of the transit vehicles from northbound US Route 1 to East Glebe Road. This movement would require the northbound traffic to wait longer causing the delay. This is more pronounced in the AM peak (LOS decline from D to E) because northbound is the peak direction and this traffic has to stop more frequently to allow for the transit vehicles to turn from

**Crystal City Potomac Yard Transitway Section B | Documented CE | March 2011**

northbound US Route 1 on to East Glebe Road. In the PM peak the delay increase is only five seconds because southbound traffic, which is the peak direction, is not impacted by the turning movement of the transit vehicles.

**Table 4: Operational Analysis Results for No-Build and Build in 2015 & 2030**

Intersections	Measures	2015 AM Peak		2015 PM Peak		2030 AM Peak		2030 PM Peak	
		No Build	Build	No Build	Build	No Build	Build	No Build	Build
US 1/E. Glebe Road	Delay	23	23	29	27	42	74	75	80
	LOS	C	C	C	C	D	E	E	E
US 1/Swann Avenue	Delay	5	13	4	11	8	8	8	11
	LOS	A	B	A	B	A	A	A	B
US 1/E. Custis Avenue	Delay	8	14	9	15	16	18	17	11
	LOS	A	B	A	B	B	B	B	B
US 1/Howell Avenue	Delay	16	16	15	18	26	33	40	36
	LOS	B	B	B	B	C	C	D	D
US 1 / Potomac Ave.	Delay	17	15	18	20	28	23	34	48
	LOS	B	B	B	B	C	C	C	D

**US Route1/Swann Avenue and US Route1/Custis Avenue** - In both 2015 and 2030, the delays and LOS at these intersections show only a marginal decline. This is because the transit vehicles travel straight and have no impact on the flow of traffic.

**US Route 1/Howell Avenue** – The 2030 Build conditions show a slightly longer delay at this intersection. This is due to the left turning movement from southbound US Route 1. All left turning movements from Potomac Avenue have been reassigned to this intersection.

**US Route 1/Potomac Avenue** - In 2015, the Build conditions show a slight decrease in delays, although there is no change in LOS. All southbound left turns from US Route 1 have been reassigned to Howell Avenue. In 2030 AM peak, the results are similar – reduced delays. However, in the PM peak, the delays are longer and LOS declines from D to E. This is due to the number of transit vehicles per hour and the proposed queue jump in the southbound direction. There are 24 transit vehicles per hour in 2030 and southbound is the peak direction in the PM. The queue jump requires the peak direction traffic to stop frequently leading to the longer delays and the decline in LOS.

#### 4. PEDESTRIAN EFFECTS

Sidewalks exist along the western side of US Route 1 throughout the length of Section B. Marked crosswalks are located at intersections with East Glebe Road, Howell Avenue and Potomac Avenue. Other pedestrian amenities include countdown timers at signalized intersections.

The conditions for pedestrians will improve with the planned improvements. Planned reconstruction of

US Route 1 (part of a separate project) will include expanded sidewalks and crosswalks. The new configuration will provide for improved amenities including pedestrian refuge areas. The signal phases are adjusted to accommodate pedestrian clearance times to ensure the safety and convenience of users.

The Build scenario includes passenger station stops and facilities which will draw attention to pedestrian activity along US Route 1, whereas for the No-Build alternative, transit service would be comparable in intensity, but would lack the physical facilities to increase comfort and visibility for transit users. With the median location of transit lanes, transit riders boarding and alighting in Section B would cross north- or southbound lanes of US Route 1. The trade-offs between median and curbside transit lanes were discussed at length in stakeholder and public forums in 2007 and 2008; results of the forums are described in Appendix 10 of this DCE for Section B of the CCPY transitway corridor.

## **5. PARKING AND ACCESS EFFECTS**

There is no existing or planned on-street parking along US Route 1 in Section B of the Potomac Yard transit corridor. The transitway will be constructed within an established median; therefore there will be no impacts on access to businesses. However, in the build scenarios, all non-signalized intersections along Section B of the proposed transitway permit right in and right out movements only. Northbound left turns are permitted only at signalized intersections. This will eliminate certain left turning movements at two intersections in the Build scenario. These are described as follows:

US Route 1 & Hume Avenue – Motorists will be unable to make a left turn from the eastbound Hume Avenue to the northbound US Route 1. Residents along Hume Avenue must now go west to Dewitt Avenue to turn east on East Randolph Avenue before getting to Custis Avenue to make the left turn on to northbound US Route 1. Alternatively, they can go north along Montrose Avenue or Turner Avenue to Clifford Avenue to get to East Glebe Road to make the left turn on to northbound US Route 1.

US Route 1 & Potomac Avenue – The proposed configuration eliminates southbound left turns to provide a larger cross section for transit stops. Southbound motorists along US Route 1 will be unable to make a left turn on to Potomac Avenue. The projected low volumes of left turns (46 and 11 vehicles per hour during AM & PM peak hours respectively, in 2030) would be accommodated at Howell Avenue. Southbound motorists who miss the left turn at Howell Avenue must turn right on to East Monroe Avenue to go north along Dewitt Avenue to Custis or Howell Avenue where they can go through to the Potomac Yard or turn left to go northbound on US Route 1. Similarly residents along Windsor, Howell and Bellefonte Avenues desirous of making a left turn from southbound US Route 1 to go to the Potomac Yard Center would have to first get to Custis Avenue, via one of the north-south streets (Leslie Avenue or La Grande Avenue), where they can go straight through the intersection to get to the Potomac Yard Center.













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**Attachment A  
Synchro Outputs**

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HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011












												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	145	1	34	13	2	12	28	1748	9	14	990	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757			1710		1770	3419		1770	3387	
Flt Permitted		0.78			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1422			1539		1770	3419		1770	3387	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	1	34	13	2	12	28	1748	9	14	990	28
RTOR Reduction (vph)	0	7	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	173	0	0	17	0	28	1757	0	14	1017	0
Confl. Peds. (#/hr)			2				9					9
Heavy Vehicles (%)	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		22.6			22.6		3.4	97.4		2.0	96.0	
Effective Green, g (s)		25.6			25.6		6.4	100.4		5.0	99.0	
Actuated g/C Ratio		0.18			0.18		0.05	0.72		0.04	0.71	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		260			281		81	2452		63	2395	
v/s Ratio Prot							c0.02	c0.51		0.01	0.30	
v/s Ratio Perm		c0.12			0.01							
v/c Ratio		0.67			0.06		0.35	0.72		0.22	0.42	
Uniform Delay, d1		53.2			47.3		64.8	11.5		65.6	8.6	
Progression Factor		1.00			1.00		1.36	0.07		1.05	0.36	
Incremental Delay, d2		4.9			0.0		0.7	1.3		0.6	0.5	
Delay (s)		58.2			47.3		88.7	2.2		69.8	3.6	
Level of Service		E			D		F	A		E	A	
Approach Delay (s)		58.2			47.3			3.5			4.5	
Approach LOS		E			D			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.5				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			72.5%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Swann Ave & Jefferson Davis Highway

2/15/2011

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	28	12	20	1872	1023	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	*0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1967	1553	1770	3539	4000	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1967	1553	1770	3539	3260	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	12	20	1872	1023	20
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	28	1	20	1872	1043	0
Confl. Peds. (#/hr)			10			10
Heavy Vehicles (%)	4%	4%	2%	2%	7%	7%
Bus Blockages (#/hr)	0	0	0	0	15	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	9.8	9.8	4.0	118.2	108.2	
Effective Green, g (s)	12.8	12.8	7.0	121.2	111.2	
Actuated g/C Ratio	0.09	0.09	0.05	0.87	0.79	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	2.0	2.0	3.0	2.0	0.2	
Lane Grp Cap (vph)	180	142	89	3064	3177	
v/s Ratio Prot	c0.01		0.01	c0.53	0.26	
v/s Ratio Perm		0.00				
v/c Ratio	0.16	0.01	0.22	0.61	0.33	
Uniform Delay, d1	58.6	57.8	63.9	2.7	4.0	
Progression Factor	1.00	1.00	0.76	1.42	0.46	
Incremental Delay, d2	0.1	0.0	0.9	0.7	0.3	
Delay (s)	58.8	57.8	49.6	4.5	2.1	
Level of Service	E	E	D	A	A	
Approach Delay (s)	58.5			5.0	2.1	
Approach LOS	E			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			4.7	HCM Level of Service		A
HCM Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization			62.6%	ICU Level of Service		B
Analysis Period (min)			15			
c Critical Lane Group						




















HCM Signalized Intersection Capacity Analysis  
 3: Hume Ave. & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↕	↕	
Volume (vph)	80	32	20	1859	1039	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	13	12	12
Total Lost time (s)	3.0			3.0	3.0	
Lane Util. Factor	1.00			0.95	*0.95	
Frbp, ped/bikes	1.00			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.96			1.00	1.00	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1881			3655	4000	
Flt Permitted	0.97			0.93	1.00	
Satd. Flow (perm)	1881			3409	3346	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	32	20	1859	1039	20
RTOR Reduction (vph)	11	0	0	0	1	0
Lane Group Flow (vph)	101	0	0	1879	1058	0
Confl. Peds. (#/hr)			5			5
Heavy Vehicles (%)	0%	0%	2%	2%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	7	0
Turn Type			Perm			
Protected Phases	2			1	1	
Permitted Phases			1			
Actuated Green, G (s)	13.5			114.5	114.5	
Effective Green, g (s)	16.5			117.5	117.5	
Actuated g/C Ratio	0.12			0.84	0.84	
Clearance Time (s)	6.0			6.0	6.0	
Vehicle Extension (s)	2.0			0.2	0.2	
Lane Grp Cap (vph)	222			2861	3357	
v/s Ratio Prot	c0.05				0.26	
v/s Ratio Perm				c0.55		
v/c Ratio	0.45			0.66	0.32	
Uniform Delay, d1	57.5			4.0	2.5	
Progression Factor	1.00			0.96	0.36	
Incremental Delay, d2	0.5			1.0	0.2	
Delay (s)	58.1			4.8	1.1	
Level of Service	E			A	A	
Approach Delay (s)	58.1			4.8	1.1	
Approach LOS	E			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			5.5	HCM Level of Service		A
HCM Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)		6.0
Intersection Capacity Utilization			78.5%	ICU Level of Service		D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	240	26	266	13	13	29	4	240	1680	12	4	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0			3.0			3.0	3.0	3.0		3.0
Lane Util. Factor	1.00	1.00			1.00			1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	0.98			0.99			1.00	1.00	0.96		1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00	1.00	1.00		1.00
Frt	1.00	0.86			0.93			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00			0.99			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1722	1759			1098			1770	4000	1571		1703
Flt Permitted	0.71	1.00			0.83			0.95	1.00	1.00		0.95
Satd. Flow (perm)	1287	1759			920			1770	3539	1571		1703
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	26	266	13	13	29	4	240	1680	12	4	43
RTOR Reduction (vph)	0	202	0	0	22	0	0	0	0	3	0	0
Lane Group Flow (vph)	240	90	0	0	33	0	0	244	1680	9	0	47
Confl. Peds. (#/hr)	8		5	5		8				7		
Heavy Vehicles (%)	4%	4%	4%	57%	57%	57%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot	Prot		Perm	Prot	Prot
Protected Phases		4			4		1	1	6		5	5
Permitted Phases	4			4						6		
Actuated Green, G (s)	30.7	30.7			30.7			30.2	84.5	84.5		6.8
Effective Green, g (s)	33.7	33.7			33.7			33.2	87.5	87.5		9.8
Actuated g/C Ratio	0.24	0.24			0.24			0.24	0.62	0.62		0.07
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0	6.0		6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	0.2	0.2		3.0
Lane Grp Cap (vph)	310	423			221			420	2500	982		119
v/s Ratio Prot		0.05						0.14	c0.42			0.03
v/s Ratio Perm	c0.19				0.04					0.01		
v/c Ratio	0.77	0.21			0.15			0.58	0.67	0.01		0.39
Uniform Delay, d1	49.6	42.5			41.9			47.2	17.0	9.9		62.3
Progression Factor	1.00	1.00			1.00			0.71	0.45	0.14		1.00
Incremental Delay, d2	11.4	0.3			0.3			1.6	1.1	0.0		2.2
Delay (s)	61.0	42.8			42.2			35.3	8.8	1.4		64.4
Level of Service	E	D			D			D	A	A		E
Approach Delay (s)		51.0			42.2				12.1			
Approach LOS		D			D				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			23.0									HCM Level of Service C
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0									Sum of lost time (s) 9.0
Intersection Capacity Utilization			83.9%									ICU Level of Service E
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	802	28
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3383	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	802	28
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	828	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	61.1	
Effective Green, g (s)	64.1	
Actuated g/C Ratio	0.46	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1831	
v/s Ratio Prot	c0.21	
v/s Ratio Perm		
v/c Ratio	0.45	
Uniform Delay, d1	25.9	
Progression Factor	1.00	
Incremental Delay, d2	0.8	
Delay (s)	26.8	
Level of Service	C	
Approach Delay (s)	28.8	
Approach LOS	C	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↖	↙	↑↑
Volume (vph)	431	225	1652	862	18	912
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	14
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.5	3.5	3.5	3.5	3.0	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2798	1361	4000	1538	1604	4000
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2798	1361	3557	1538	1604	3667
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	431	225	1652	862	18	912
RTOR Reduction (vph)	0	65	0	64	0	0
Lane Group Flow (vph)	431	160	1652	798	18	912
Confl. Peds. (#/hr)		1		9		
Heavy Vehicles (%)	21%	21%	2%	2%	5%	5%
Turn Type		Perm		pt+ov	Prot	
Protected Phases	4		2	2 4	1	6
Permitted Phases		4				
Actuated Green, G (s)	30.0	30.0	88.3	124.8	2.7	97.0
Effective Green, g (s)	33.0	33.0	91.3	127.8	5.7	100.0
Actuated g/C Ratio	0.24	0.24	0.65	0.91	0.04	0.71
Clearance Time (s)	6.5	6.5	6.5		6.0	6.5
Vehicle Extension (s)	2.0	2.0	3.0		2.0	3.0
Lane Grp Cap (vph)	660	321	2609	1404	65	2857
v/s Ratio Prot	c0.15		c0.41	0.52	0.01	c0.23
v/s Ratio Perm		0.12				
v/c Ratio	0.65	0.50	0.63	0.57	0.28	0.32
Uniform Delay, d1	48.3	46.3	14.4	1.1	65.2	7.4
Progression Factor	1.00	1.00	1.00	1.00	0.88	1.23
Incremental Delay, d2	1.8	0.4	1.2	0.3	0.8	0.3
Delay (s)	50.1	46.8	15.6	1.4	58.2	9.4
Level of Service	D	D	B	A	E	A
Approach Delay (s)	49.0		10.7			10.3
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			16.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	10.5
Intersection Capacity Utilization			67.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕			↕			↕	↕			↕
Volume (vph)	30	5	25	95	9	23	8	103	1700	27	12	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0			3.0			3.0	3.0			3.0
Lane Util. Factor		1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes		1.00			1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00			1.00
Frt		0.94			0.98			1.00	1.00			1.00
Flt Protected		0.98			0.96			0.95	1.00			0.95
Satd. Flow (prot)		1698			1702			1736	3462			1589
Flt Permitted		0.85			0.73			0.95	1.00			0.95
Satd. Flow (perm)		1473			1287			1736	3462			1589
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	5	25	95	9	23	8	103	1700	27	12	57
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	39	0	0	120	0	0	111	1726	0	0	69
Confl. Peds. (#/hr)										2		
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	4%	6%	6%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		8			4		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)		19.7			19.7			12.2	94.4			7.9
Effective Green, g (s)		22.7			22.7			15.2	97.4			10.9
Actuated g/C Ratio		0.16			0.16			0.11	0.70			0.08
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		4.0			3.0			2.0	0.2			2.0
Lane Grp Cap (vph)		239			209			188	2409			124
v/s Ratio Prot								c0.06	c0.50			0.04
v/s Ratio Perm		0.03			c0.09							
v/c Ratio		0.16			0.58			0.59	0.72			0.56
Uniform Delay, d1		50.5			54.2			59.4	12.9			62.2
Progression Factor		1.00			1.00			1.35	0.38			0.86
Incremental Delay, d2		0.4			3.8			2.7	1.5			2.8
Delay (s)		50.9			58.0			83.1	6.4			56.1
Level of Service		D			E			F	A			E
Approach Delay (s)		50.9			58.0				11.1			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			15.6			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			73.6%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	976	25
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3389	
Flt Permitted	1.00	
Satd. Flow (perm)	3389	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	976	25
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1000	0
Confl. Peds. (#/hr)		7
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	90.1	
Effective Green, g (s)	93.1	
Actuated g/C Ratio	0.66	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2254	
v/s Ratio Prot	0.30	
v/s Ratio Perm		
v/c Ratio	0.44	
Uniform Delay, d1	11.1	
Progression Factor	1.18	
Incremental Delay, d2	0.6	
Delay (s)	13.7	
Level of Service	B	
Approach Delay (s)	16.4	
Approach LOS	B	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	145	1	34	13	2	12	28	1748	9	14	990	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	1.00		1.00	1.00	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1757			1710		1770	3419		1770	3387	
Flt Permitted		0.78			0.88		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1422			1539		1770	3419		1770	3387	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	1	34	13	2	12	28	1748	9	14	990	28
RTOR Reduction (vph)	0	7	0	0	10	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	173	0	0	17	0	28	1757	0	14	1017	0
Confl. Peds. (#/hr)			2				9					9
Heavy Vehicles (%)	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		22.6			22.6		3.4	97.3		2.1	96.0	
Effective Green, g (s)		25.6			25.6		6.4	100.3		5.1	99.0	
Actuated g/C Ratio		0.18			0.18		0.05	0.72		0.04	0.71	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		0.2	0.2		0.2	0.2	
Lane Grp Cap (vph)		260			281		81	2449		64	2395	
v/s Ratio Prot							c0.02	c0.51		0.01	0.30	
v/s Ratio Perm		c0.12			0.01							
v/c Ratio		0.67			0.06		0.35	0.72		0.22	0.42	
Uniform Delay, d1		53.2			47.3		64.8	11.6		65.5	8.6	
Progression Factor		1.00			1.00		1.27	0.21		0.60	2.47	
Incremental Delay, d2		4.9			0.0		0.6	1.3		0.6	0.5	
Delay (s)		58.2			47.3		83.1	3.7		39.9	21.7	
Level of Service		E			D		F	A		D	C	
Approach Delay (s)		58.2			47.3			4.9			22.0	
Approach LOS		E			D			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			14.3				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			72.5%				ICU Level of Service				C	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis




















## 2: Swann Ave & Jefferson Davis Highway

2/15/2011

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	28	12	34	1872	1023	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	*0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1967	1553	1770	3539	4000	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1967	1553	1770	3539	3260	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	12	34	1872	1023	20
RTOR Reduction (vph)	0	11	0	0	0	0
Lane Group Flow (vph)	28	1	34	1872	1043	0
Confl. Peds. (#/hr)			10			10
Heavy Vehicles (%)	4%	4%	2%	2%	7%	7%
Bus Blockages (#/hr)	0	0	0	0	15	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	9.8	9.8	4.5	79.6	107.7	
Effective Green, g (s)	12.8	12.8	7.5	82.6	110.7	
Actuated g/C Ratio	0.09	0.09	0.05	0.59	0.79	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	2.0	2.0	3.0	2.0	0.2	
Lane Grp Cap (vph)	180	142	95	2088	3163	
v/s Ratio Prot	c0.01		c0.02	c0.53	c0.26	
v/s Ratio Perm		0.00				
v/c Ratio	0.16	0.01	0.36	0.90	0.33	
Uniform Delay, d1	58.6	57.8	63.9	25.0	4.1	
Progression Factor	1.00	1.00	1.15	0.48	0.52	
Incremental Delay, d2	0.1	0.0	1.7	5.0	0.3	
Delay (s)	58.8	57.8	75.3	17.0	2.4	
Level of Service	E	E	E	B	A	
Approach Delay (s)	58.5			18.0	2.4	
Approach LOS	E			B	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			13.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	240	26	266	13	13	29	4	246	1680	12	4	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0			3.0			3.0	3.0			3.0
Lane Util. Factor	1.00	1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes	1.00	0.98			0.99			1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00	1.00			1.00
Frt	1.00	0.86			0.93			1.00	1.00			1.00
Flt Protected	0.95	1.00			0.99			0.95	1.00			0.95
Satd. Flow (prot)	1722	1759			1098			1770	4000			1703
Flt Permitted	0.71	1.00			0.82			0.95	1.00			0.95
Satd. Flow (perm)	1286	1759			910			1770	3534			1703
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	26	266	13	13	29	4	246	1680	12	4	43
RTOR Reduction (vph)	0	203	0	0	22	0	0	0	0	0	0	0
Lane Group Flow (vph)	240	89	0	0	33	0	0	250	1692	0	0	47
Confl. Peds. (#/hr)	8		5	5		8				7		
Heavy Vehicles (%)	4%	4%	4%	57%	57%	57%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			4		1	1	6		5	5
Permitted Phases	4			4								
Actuated Green, G (s)	30.3	30.3			30.3			29.2	69.4			5.6
Effective Green, g (s)	33.3	33.3			33.3			32.2	72.4			8.6
Actuated g/C Ratio	0.24	0.24			0.24			0.23	0.52			0.06
Clearance Time (s)	6.0	6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	0.2			3.0
Lane Grp Cap (vph)	306	418			216			407	2069			105
v/s Ratio Prot		0.05						0.14	c0.42			0.03
v/s Ratio Perm	c0.19				0.04							
v/c Ratio	0.78	0.21			0.15			0.61	0.82			0.45
Uniform Delay, d1	50.0	42.8			42.2			48.3	28.3			63.4
Progression Factor	1.00	1.00			1.00			0.57	0.26			1.00
Incremental Delay, d2	12.4	0.3			0.3			1.5	2.1			3.0
Delay (s)	62.4	43.1			42.5			29.0	9.4			66.4
Level of Service	E	D			D			C	A			E
Approach Delay (s)		51.8			42.5				11.9			
Approach LOS		D			D				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			22.8						HCM Level of Service		C	
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			140.0						Sum of lost time (s)		9.0	
Intersection Capacity Utilization			84.3%						ICU Level of Service		E	
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	802	28
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3383	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	802	28
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	828	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	62.5	
Effective Green, g (s)	65.5	
Actuated g/C Ratio	0.47	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	1871	
v/s Ratio Prot	c0.21	
v/s Ratio Perm		
v/c Ratio	0.44	
Uniform Delay, d1	25.0	
Progression Factor	1.00	
Incremental Delay, d2	0.8	
Delay (s)	25.8	
Level of Service	C	
Approach Delay (s)	27.9	
Approach LOS	C	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis


















## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗		↑↑
Volume (vph)	431	225	1652	862	0	912
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	14
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	1.00		0.95
Frbp, ped/bikes	1.00	0.99	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	2798	1361	4000	1538		4000
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	2798	1361	3557	1538		3667
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	431	225	1652	862	0	912
RTOR Reduction (vph)	0	18	0	0	0	0
Lane Group Flow (vph)	431	207	1652	862	0	912
Confl. Peds. (#/hr)		1		9		
Heavy Vehicles (%)	21%	21%	2%	2%	5%	5%
Turn Type		Perm		pt+ov		
Protected Phases	4		2	2 4		6
Permitted Phases		4				
Actuated Green, G (s)	30.3	30.3	96.7	140.0		71.5
Effective Green, g (s)	33.3	33.3	99.7	140.0		74.5
Actuated g/C Ratio	0.24	0.24	0.71	1.00		0.53
Clearance Time (s)	6.5	6.5	6.5			6.5
Vehicle Extension (s)	2.0	2.0	3.0			3.0
Lane Grp Cap (vph)	666	324	2849	1538		2129
v/s Ratio Prot	c0.15		c0.41	c0.56		0.23
v/s Ratio Perm		0.15				
v/c Ratio	0.65	0.64	0.58	0.56		0.43
Uniform Delay, d1	48.1	48.0	9.9	0.0		19.8
Progression Factor	1.00	1.00	1.00	1.00		0.59
Incremental Delay, d2	1.6	3.2	0.9	0.3		0.6
Delay (s)	49.7	51.2	10.7	0.3		12.3
Level of Service	D	D	B	A		B
Approach Delay (s)	50.2		7.2			12.3
Approach LOS	D		A			B
<b>Intersection Summary</b>						
HCM Average Control Delay			15.2		HCM Level of Service	B
HCM Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	3.5
Intersection Capacity Utilization			67.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	30	5	25	95	9	23	8	103	1700	27	12	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0			3.0			3.0	3.0			3.0
Lane Util. Factor		1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes		1.00			1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00			1.00
Frt		0.94			0.98			1.00	1.00			1.00
Flt Protected		0.98			0.96			0.95	1.00			0.95
Satd. Flow (prot)		1698			1702			1736	3462			1589
Flt Permitted		0.85			0.73			0.95	1.00			0.95
Satd. Flow (perm)		1473			1287			1736	3462			1589
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	5	25	95	9	23	8	103	1700	27	12	75
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	39	0	0	120	0	0	111	1726	0	0	87
Confl. Peds. (#/hr)										2		
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	4%	6%	6%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		8			4		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)		19.7			19.7			12.2	91.1			11.2
Effective Green, g (s)		22.7			22.7			15.2	94.1			14.2
Actuated g/C Ratio		0.16			0.16			0.11	0.67			0.10
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		4.0			3.0			2.0	0.2			2.0
Lane Grp Cap (vph)		239			209			188	2327			161
v/s Ratio Prot								c0.06	c0.50			0.05
v/s Ratio Perm		0.03			c0.09							
v/c Ratio		0.16			0.58			0.59	0.74			0.54
Uniform Delay, d1		50.5			54.2			59.4	15.0			59.8
Progression Factor		1.00			1.00			1.03	0.62			1.30
Incremental Delay, d2		0.4			3.8			2.7	1.8			1.9
Delay (s)		50.9			58.0			64.1	11.2			79.8
Level of Service		D			E			E	B			E
Approach Delay (s)		50.9			58.0				14.4			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			15.5			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			6.0			
Intersection Capacity Utilization			73.6%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	976	25
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3389	
Flt Permitted	1.00	
Satd. Flow (perm)	3389	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	976	25
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1000	0
Confl. Peds. (#/hr)		7
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	90.1	
Effective Green, g (s)	93.1	
Actuated g/C Ratio	0.66	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2254	
v/s Ratio Prot	0.30	
v/s Ratio Perm		
v/c Ratio	0.44	
Uniform Delay, d1	11.1	
Progression Factor	0.36	
Incremental Delay, d2	0.6	
Delay (s)	4.6	
Level of Service	A	
Approach Delay (s)	10.6	
Approach LOS	B	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway












2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	40	2	45	22	3	5	41	1409	2	8	1934	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1756		1787	3454		1770	3548	
Flt Permitted		0.87			0.77		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1519			1402		1787	3454		1770	3548	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	2	45	22	3	5	41	1409	2	8	1934	73
RTOR Reduction (vph)	0	33	0	0	4	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	54	0	0	26	0	41	1411	0	8	2006	0
Confl. Peds. (#/hr)			2				10					10
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	1%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		13.9			13.9		6.2	82.0		26.1	101.9	
Effective Green, g (s)		16.9			16.9		9.2	85.0		29.1	104.9	
Actuated g/C Ratio		0.12			0.12		0.07	0.61		0.21	0.75	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		3.0	0.2		0.2	0.2	
Lane Grp Cap (vph)		183			169		117	2097		368	2658	
v/s Ratio Prot							c0.02	0.41		0.00	c0.57	
v/s Ratio Perm		c0.04			0.02							
v/c Ratio		0.29			0.15		0.35	0.67		0.02	0.75	
Uniform Delay, d1		56.1			55.1		62.5	18.3		44.1	10.1	
Progression Factor		1.00			1.00		1.16	0.39		1.38	0.30	
Incremental Delay, d2		0.3			0.2		1.6	1.5		0.1	1.7	
Delay (s)		56.4			55.3		74.0	8.7		61.1	4.7	
Level of Service		E			E		E	A		E	A	
Approach Delay (s)		56.4			55.3			10.5			4.9	
Approach LOS		E			E			B			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			69.8%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

## HCM Signalized Intersection Capacity Analysis 2: Swann Ave. & Jefferson Davis Highway











2/15/2011

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	20	20	1434	1957	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	*0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1986	1568	1787	3574	4000	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1986	1568	1787	3574	3522	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	20	20	1434	1957	44
RTOR Reduction (vph)	0	18	0	0	1	0
Lane Group Flow (vph)	40	2	20	1434	2000	0
Confl. Peds. (#/hr)	1		15			15
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	5	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	11.3	11.3	4.0	116.7	106.7	
Effective Green, g (s)	14.3	14.3	7.0	119.7	109.7	
Actuated g/C Ratio	0.10	0.10	0.05	0.86	0.78	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	2.0	2.0	3.0	0.2	0.2	
Lane Grp Cap (vph)	203	160	89	3056	3134	
v/s Ratio Prot	c0.02		0.01	c0.40	c0.50	
v/s Ratio Perm		0.00				
v/c Ratio	0.20	0.01	0.22	0.47	0.64	
Uniform Delay, d1	57.6	56.5	63.9	2.5	6.6	
Progression Factor	1.00	1.00	0.93	1.28	0.23	
Incremental Delay, d2	0.2	0.0	1.0	0.4	0.7	
Delay (s)	57.8	56.5	60.1	3.5	2.2	
Level of Service	E	E	E	A	A	
Approach Delay (s)	57.3			4.3	2.2	
Approach LOS	E			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			4.0	HCM Level of Service		A
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			140.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization			66.4%	ICU Level of Service		C
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

## 3: Hume Ave. & Jefferson Davis Highway




















2/15/2011

							
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Volume (vph)	36	24	52	1427	4	1995	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	13	12	12	12
Total Lost time (s)	3.0			3.0		3.0	
Lane Util. Factor	1.00			0.95		*0.95	
Frbp, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.95			1.00		1.00	
Flt Protected	0.97			1.00		1.00	
Satd. Flow (prot)	1861			3687		4000	
Flt Permitted	0.97			0.71		0.95	
Satd. Flow (perm)	1861			2617		3341	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	24	52	1427	4	1995	40
RTOR Reduction (vph)	18	0	0	0	0	0	0
Lane Group Flow (vph)	42	0	0	1479	0	2039	0
Confl. Peds. (#/hr)	1		13				13
Heavy Vehicles (%)	0%	0%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	7	0
Turn Type			Perm		Perm		
Protected Phases	2			1		1	
Permitted Phases			1		1		
Actuated Green, G (s)	11.7			116.3		116.3	
Effective Green, g (s)	14.7			119.3		119.3	
Actuated g/C Ratio	0.10			0.85		0.85	
Clearance Time (s)	6.0			6.0		6.0	
Vehicle Extension (s)	2.0			0.2		0.2	
Lane Grp Cap (vph)	195			2230		2847	
v/s Ratio Prot	c0.02						
v/s Ratio Perm				0.57		c0.61	
v/c Ratio	0.22			0.66		0.72	
Uniform Delay, d1	57.4			3.5		3.9	
Progression Factor	1.00			1.22		0.73	
Incremental Delay, d2	0.2			1.4		1.0	
Delay (s)	57.6			5.7		3.8	
Level of Service	E			A		A	
Approach Delay (s)	57.6			5.7		3.8	
Approach LOS	E			A		A	
<b>Intersection Summary</b>							
HCM Average Control Delay			5.5		HCM Level of Service		A
HCM Volume to Capacity ratio			0.66				
Actuated Cycle Length (s)			140.0		Sum of lost time (s)		6.0
Intersection Capacity Utilization			89.8%		ICU Level of Service		E
Analysis Period (min)			15				
c Critical Lane Group							

# HCM Signalized Intersection Capacity Analysis

## 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	144	26	264	24	29	69	8	230	1210	16	8	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0			3.0			3.0	4.0	4.0		3.0
Lane Util. Factor	1.00	1.00			1.00			1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	0.98			0.99			1.00	1.00	0.96		1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00	1.00	1.00		1.00
Frt	1.00	0.86			0.92			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00			0.99			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1739	1774			1715			1787	4000	1581		1787
Flt Permitted	0.54	1.00			0.56			0.95	1.00	1.00		0.95
Satd. Flow (perm)	993	1774			967			1787	3574	1581		1787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	26	264	24	29	69	8	230	1210	16	8	50
RTOR Reduction (vph)	0	184	0	0	38	0	0	0	0	5	0	0
Lane Group Flow (vph)	144	106	0	0	84	0	0	238	1210	11	0	58
Confl. Peds. (#/hr)	9		6	6		9				8		
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Prot	Prot		Perm	Prot	Prot
Protected Phases		4			4		1	1	6		5	5
Permitted Phases	4			4						6		
Actuated Green, G (s)	24.5	24.5			24.5			19.2	89.1	89.1		7.4
Effective Green, g (s)	27.5	27.5			27.5			22.2	92.1	92.1		10.4
Actuated g/C Ratio	0.20	0.20			0.20			0.16	0.66	0.66		0.07
Clearance Time (s)	6.0	6.0			6.0			6.0	7.0	7.0		6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	0.2	0.2		3.0
Lane Grp Cap (vph)	195	348			190			283	2631	1040		133
v/s Ratio Prot		0.06						c0.13	0.30			0.03
v/s Ratio Perm	c0.14				0.09					0.01		
v/c Ratio	0.74	0.30			0.44			0.84	0.46	0.01		0.44
Uniform Delay, d1	52.9	48.1			49.5			57.2	11.7	8.3		62.0
Progression Factor	1.00	1.00			1.00			1.04	0.61	0.43		1.00
Incremental Delay, d2	13.6	0.5			1.6			15.7	0.4	0.0		2.3
Delay (s)	66.5	48.6			51.2			75.0	7.6	3.5		64.3
Level of Service	E	D			D			E	A	A		E
Approach Delay (s)		54.5			51.2				18.5			
Approach LOS		D			D				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			28.8									HCM Level of Service C
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			140.0									Sum of lost time (s) 9.0
Intersection Capacity Utilization			108.1%									ICU Level of Service G
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1757	216
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3496	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1757	216
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	1967	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	78.3	
Effective Green, g (s)	81.3	
Actuated g/C Ratio	0.58	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2323	
v/s Ratio Prot	c0.49	
v/s Ratio Perm		
v/c Ratio	0.85	
Uniform Delay, d1	24.2	
Progression Factor	1.00	
Incremental Delay, d2	4.0	
Delay (s)	28.3	
Level of Service	C	
Approach Delay (s)	29.3	
Approach LOS	C	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis


















## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗	↘	↑↑
Volume (vph)	866	189	1315	582	6	1834
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.5	3.5	3.5	3.5	3.0	3.5
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3193	1554	4000	1538	1668	4000
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3193	1554	3557	1538	1668	3574
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	866	189	1315	582	6	1834
RTOR Reduction (vph)	0	113	0	45	0	0
Lane Group Flow (vph)	866	76	1315	537	6	1834
Confl. Peds. (#/hr)		1		12		
Heavy Vehicles (%)	6%	6%	2%	2%	1%	1%
Turn Type		Perm		pt+ov	Prot	
Protected Phases	4		2	2 4	1	6
Permitted Phases		4				
Actuated Green, G (s)	44.1	44.1	75.6	126.2	1.3	82.9
Effective Green, g (s)	47.1	47.1	78.6	129.2	4.3	85.9
Actuated g/C Ratio	0.34	0.34	0.56	0.92	0.03	0.61
Clearance Time (s)	6.5	6.5	6.5		6.0	6.5
Vehicle Extension (s)	2.0	2.0	3.0		2.0	3.0
Lane Grp Cap (vph)	1074	523	2246	1419	51	2454
v/s Ratio Prot	c0.27		0.33	0.35	0.00	c0.46
v/s Ratio Perm		0.05				
v/c Ratio	0.81	0.15	0.59	0.38	0.12	0.75
Uniform Delay, d1	42.3	32.4	20.1	0.6	66.0	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.31	0.23
Incremental Delay, d2	4.3	0.0	1.1	0.1	0.2	1.1
Delay (s)	46.6	32.5	21.2	0.7	86.7	5.6
Level of Service	D	C	C	A	F	A
Approach Delay (s)	44.0		14.9			5.8
Approach LOS	D		B			A
<b>Intersection Summary</b>						
HCM Average Control Delay			17.8		HCM Level of Service	B
HCM Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	7.0
Intersection Capacity Utilization			82.4%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	26	9	28	114	14	45	8	104	1339	43	16	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0			3.0			3.0	3.0			3.0
Lane Util. Factor		1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes		0.99			1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00			1.00
Frt		0.94			0.96			1.00	1.00			1.00
Flt Protected		0.98			0.97			0.95	1.00			0.95
Satd. Flow (prot)		1739			1716			1770	3520			1668
Flt Permitted		0.85			0.74			0.95	1.00			0.95
Satd. Flow (perm)		1517			1320			1770	3520			1668
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	9	28	114	14	45	8	104	1339	43	16	15
RTOR Reduction (vph)	0	23	0	0	10	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	40	0	0	163	0	0	112	1381	0	0	31
Confl. Peds. (#/hr)	1		1	1		1				2		
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	2%	2%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		8			4		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)		22.8			22.8			12.4	94.9			4.3
Effective Green, g (s)		25.8			25.8			15.4	97.9			7.3
Actuated g/C Ratio		0.18			0.18			0.11	0.70			0.05
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		4.0			3.0			2.0	0.2			2.0
Lane Grp Cap (vph)		280			243			195	2461			87
v/s Ratio Prot								c0.06	0.39			0.02
v/s Ratio Perm		0.03			c0.12							
v/c Ratio		0.14			0.67			0.57	0.56			0.36
Uniform Delay, d1		47.8			53.2			59.2	10.4			64.1
Progression Factor		1.00			1.00			0.89	1.03			1.09
Incremental Delay, d2		0.3			7.1			2.2	0.8			0.6
Delay (s)		48.2			60.3			54.6	11.5			70.5
Level of Service		D			E			D	B			E
Approach Delay (s)		48.2			60.3				14.8			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			15.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			87.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway













2/15/2011

Movement	↓	↙
	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1949	43
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3559	
Flt Permitted	1.00	
Satd. Flow (perm)	3559	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1949	43
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1991	0
Confl. Peds. (#/hr)		9
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	86.8	
Effective Green, g (s)	89.8	
Actuated g/C Ratio	0.64	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2283	
v/s Ratio Prot	c0.56	
v/s Ratio Perm		
v/c Ratio	0.87	
Uniform Delay, d1	20.4	
Progression Factor	0.32	
Incremental Delay, d2	3.4	
Delay (s)	10.1	
Level of Service	B	
Approach Delay (s)	11.0	
Approach LOS	B	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Volume (vph)	40	2	45	22	3	5	41	1409	2	8	1934	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	*0.95	
Frb, ped/bikes		0.99			1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1756		1787	3454		1770	3548	
Flt Permitted		0.87			0.77		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1519			1402		1787	3454		1770	3548	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	2	45	22	3	5	41	1409	2	8	1934	73
RTOR Reduction (vph)	0	33	0	0	4	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	54	0	0	26	0	41	1411	0	8	2006	0
Confl. Peds. (#/hr)			2				10					10
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	1%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4			4								
Actuated Green, G (s)		13.9			13.9		6.2	82.0		26.1	101.9	
Effective Green, g (s)		16.9			16.9		9.2	85.0		29.1	104.9	
Actuated g/C Ratio		0.12			0.12		0.07	0.61		0.21	0.75	
Clearance Time (s)		6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.0			2.0		3.0	0.2		0.2	0.2	
Lane Grp Cap (vph)		183			169		117	2097		368	2658	
v/s Ratio Prot							c0.02	0.41		0.00	c0.57	
v/s Ratio Perm		c0.04			0.02							
v/c Ratio		0.29			0.15		0.35	0.67		0.02	0.75	
Uniform Delay, d1		56.1			55.1		62.5	18.3		44.1	10.1	
Progression Factor		1.00			1.00		1.26	0.42		0.71	1.44	
Incremental Delay, d2		0.3			0.2		1.5	1.5		0.1	1.3	
Delay (s)		56.4			55.3		80.4	9.2		31.3	15.9	
Level of Service		E			E		F	A		C	B	
Approach Delay (s)		56.4			55.3			11.2			16.0	
Approach LOS		E			E			B			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			15.4				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			69.8%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis



















## 2: Swann Ave. & Jefferson Davis Highway

2/15/2011

							
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Volume (vph)	40	20	56	1434	4	1957	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12
Total Lost time (s)	3.0	3.0	3.0	3.0		3.0	
Lane Util. Factor	1.00	1.00	1.00	0.95		*0.95	
Frbp, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.85	1.00	1.00		1.00	
Flt Protected	0.95	1.00	0.95	1.00		1.00	
Satd. Flow (prot)	1986	1568	1787	3574		4000	
Flt Permitted	0.95	1.00	0.95	1.00		0.95	
Satd. Flow (perm)	1986	1568	1787	3574		3353	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	20	56	1434	4	1957	44
RTOR Reduction (vph)	0	18	0	0	0	1	0
Lane Group Flow (vph)	40	2	56	1434	0	2004	0
Confl. Peds. (#/hr)	1		15				15
Heavy Vehicles (%)	3%	3%	1%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	5	0
Turn Type		Perm	Prot		Perm		
Protected Phases	4		5	2		6	
Permitted Phases		4			6		
Actuated Green, G (s)	11.3	11.3	6.9	80.8		103.8	
Effective Green, g (s)	14.3	14.3	9.9	83.8		106.8	
Actuated g/C Ratio	0.10	0.10	0.07	0.60		0.76	
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	
Vehicle Extension (s)	2.0	2.0	3.0	0.2		0.2	
Lane Grp Cap (vph)	203	160	126	2139		2558	
v/s Ratio Prot	c0.02		c0.03	0.40			
v/s Ratio Perm		0.00				c0.60	
v/c Ratio	0.20	0.01	0.44	0.67		0.78	
Uniform Delay, d1	57.6	56.5	62.4	18.8		9.8	
Progression Factor	1.00	1.00	1.06	0.17		1.08	
Incremental Delay, d2	0.2	0.0	1.9	1.3		1.6	
Delay (s)	57.8	56.5	67.8	4.5		12.1	
Level of Service	E	E	E	A		B	
Approach Delay (s)	57.3			6.9		12.1	
Approach LOS	E			A		B	
<b>Intersection Summary</b>							
HCM Average Control Delay			10.7		HCM Level of Service		B
HCM Volume to Capacity ratio			0.69				
Actuated Cycle Length (s)			140.0		Sum of lost time (s)		9.0
Intersection Capacity Utilization			69.1%		ICU Level of Service		C
Analysis Period (min)			15				
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	144	26	264	24	29	69	8	246	1210	16	8	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0			3.0			3.0	4.0			3.0
Lane Util. Factor	1.00	1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes	1.00	0.98			0.99			1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00	1.00			1.00
Frt	1.00	0.86			0.92			1.00	1.00			1.00
Flt Protected	0.95	1.00			0.99			0.95	1.00			0.95
Satd. Flow (prot)	1739	1774			1715			1787	4000			1787
Flt Permitted	0.54	1.00			0.56			0.95	1.00			0.95
Satd. Flow (perm)	993	1774			967			1787	3565			1787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	26	264	24	29	69	8	246	1210	16	8	50
RTOR Reduction (vph)	0	198	0	0	38	0	0	0	0	0	0	0
Lane Group Flow (vph)	144	92	0	0	84	0	0	254	1226	0	0	58
Confl. Peds. (#/hr)	9		6	6		9				8		
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			4		1	1	6		5	5
Permitted Phases	4			4								
Actuated Green, G (s)	24.5	24.5			24.5			19.2	68.4			5.6
Effective Green, g (s)	27.5	27.5			27.5			22.2	71.4			8.6
Actuated g/C Ratio	0.20	0.20			0.20			0.16	0.51			0.06
Clearance Time (s)	6.0	6.0			6.0			6.0	7.0			6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0	0.2			3.0
Lane Grp Cap (vph)	195	348			190			283	2040			110
v/s Ratio Prot		0.05						c0.14	0.31			0.03
v/s Ratio Perm	c0.14				0.09							
v/c Ratio	0.74	0.26			0.44			0.90	0.60			0.53
Uniform Delay, d1	52.9	47.7			49.5			57.8	24.2			63.7
Progression Factor	1.00	1.00			1.00			0.60	0.19			1.00
Incremental Delay, d2	13.6	0.4			1.6			23.8	1.0			4.5
Delay (s)	66.5	48.1			51.2			58.7	5.7			68.2
Level of Service	E	D			D			E	A			E
Approach Delay (s)		54.2			51.2				14.8			
Approach LOS		D			D				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			27.4						HCM Level of Service			C
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			140.0						Sum of lost time (s)			9.0
Intersection Capacity Utilization			109.0%						ICU Level of Service			G
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1757	216
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3496	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1757	216
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	1967	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	2	
Permitted Phases		
Actuated Green, G (s)	78.3	
Effective Green, g (s)	81.3	
Actuated g/C Ratio	0.58	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2323	
v/s Ratio Prot	c0.49	
v/s Ratio Perm		
v/c Ratio	0.85	
Uniform Delay, d1	24.2	
Progression Factor	1.00	
Incremental Delay, d2	4.0	
Delay (s)	28.3	
Level of Service	C	
Approach Delay (s)	29.4	
Approach LOS	C	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis













## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗		↑↑
Volume (vph)	866	189	1315	582	0	1834
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.5	3.5	3.5	3.5		3.5
Lane Util. Factor	0.97	1.00	0.95	1.00		0.95
Frbp, ped/bikes	1.00	0.99	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3193	1554	4000	1538		4000
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3193	1554	3557	1538		3574
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	866	189	1315	582	0	1834
RTOR Reduction (vph)	0	38	0	0	0	0
Lane Group Flow (vph)	866	151	1315	582	0	1834
Confl. Peds. (#/hr)		1		12		
Heavy Vehicles (%)	6%	6%	2%	2%	1%	1%
Turn Type		Perm		pt+ov		
Protected Phases	4		2	2 4		6
Permitted Phases		4				
Actuated Green, G (s)	42.7	42.7	84.3	140.0		73.5
Effective Green, g (s)	45.7	45.7	87.3	140.0		76.5
Actuated g/C Ratio	0.33	0.33	0.62	1.00		0.55
Clearance Time (s)	6.5	6.5	6.5			6.5
Vehicle Extension (s)	2.0	2.0	3.0			3.0
Lane Grp Cap (vph)	1042	507	2494	1538		2186
v/s Ratio Prot	c0.27		c0.33	0.38		c0.46
v/s Ratio Perm		0.10				
v/c Ratio	0.83	0.30	0.53	0.38		0.84
Uniform Delay, d1	43.6	35.2	14.8	0.0		26.6
Progression Factor	1.00	1.00	1.00	1.00		0.42
Incremental Delay, d2	5.5	0.1	0.8	0.1		2.2
Delay (s)	49.1	35.3	15.6	0.1		13.3
Level of Service	D	D	B	A		B
Approach Delay (s)	46.6		10.8			13.3
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			19.6		HCM Level of Service	B
HCM Volume to Capacity ratio			0.82			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	10.5
Intersection Capacity Utilization			82.4%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕			↕			↕	↕			↕
Volume (vph)	26	9	28	114	14	45	8	104	1339	43	16	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0			3.0			3.0	3.0			3.0
Lane Util. Factor		1.00			1.00			1.00	0.95			1.00
Frbp, ped/bikes		0.99			1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00			1.00
Frt		0.94			0.96			1.00	1.00			1.00
Flt Protected		0.98			0.97			0.95	1.00			0.95
Satd. Flow (prot)		1739			1716			1770	3520			1668
Flt Permitted		0.85			0.74			0.95	1.00			0.95
Satd. Flow (perm)		1517			1320			1770	3520			1668
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	26	9	28	114	14	45	8	104	1339	43	16	21
RTOR Reduction (vph)	0	23	0	0	10	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	40	0	0	163	0	0	112	1381	0	0	37
Confl. Peds. (#/hr)	1		1	1		1				2		
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	2%	2%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		8			4		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)		22.8			22.8			12.4	93.2			6.0
Effective Green, g (s)		25.8			25.8			15.4	96.2			9.0
Actuated g/C Ratio		0.18			0.18			0.11	0.69			0.06
Clearance Time (s)		6.0			6.0			6.0	6.0			6.0
Vehicle Extension (s)		4.0			3.0			2.0	0.2			2.0
Lane Grp Cap (vph)		280			243			195	2419			107
v/s Ratio Prot								c0.06	0.39			0.02
v/s Ratio Perm		0.03			c0.12							
v/c Ratio		0.14			0.67			0.57	0.57			0.35
Uniform Delay, d1		47.8			53.2			59.2	11.3			62.7
Progression Factor		1.00			1.00			0.92	0.75			0.95
Incremental Delay, d2		0.3			7.1			2.2	0.9			0.5
Delay (s)		48.2			60.3			56.7	9.3			60.1
Level of Service		D			E			E	A			E
Approach Delay (s)		48.2			60.3				12.8			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			17.7			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			87.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1949	43
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	3.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3559	
Flt Permitted	1.00	
Satd. Flow (perm)	3559	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1949	43
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1991	0
Confl. Peds. (#/hr)		9
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	86.8	
Effective Green, g (s)	89.8	
Actuated g/C Ratio	0.64	
Clearance Time (s)	6.0	
Vehicle Extension (s)	0.2	
Lane Grp Cap (vph)	2283	
v/s Ratio Prot	c0.56	
v/s Ratio Perm		
v/c Ratio	0.87	
Uniform Delay, d1	20.4	
Progression Factor	0.61	
Incremental Delay, d2	3.5	
Delay (s)	16.0	
Level of Service	B	
Approach Delay (s)	16.8	
Approach LOS	B	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘		↗	↕		↗	↕	
Volume (vph)	147	3	37	40	5	36	28	2136	27	43	1385	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.96		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1617		1770	3415		1770	3392	
Flt Permitted		0.74		0.72	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1359		1340	1617		1770	3415		1770	3392	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	3	37	40	5	36	28	2136	27	43	1385	28
RTOR Reduction (vph)	0	7	0	0	29	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	180	0	40	12	0	28	2162	0	43	1412	0
Confl. Peds. (#/hr)			2				9					9
Heavy Vehicles (%)	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.3		24.3	24.3		4.1	90.6		6.1	92.6	
Effective Green, g (s)		27.3		27.3	27.3		7.1	93.6		9.1	95.6	
Actuated g/C Ratio		0.20		0.20	0.20		0.05	0.67		0.06	0.68	
Clearance Time (s)		6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		265		261	315		90	2283		115	2316	
v/s Ratio Prot					0.01		0.02	c0.63		c0.02	0.42	
v/s Ratio Perm		c0.13		0.03								
v/c Ratio		0.68		0.15	0.04		0.31	0.95		0.37	0.61	
Uniform Delay, d1		52.3		46.8	45.7		64.1	21.0		62.7	12.1	
Progression Factor		1.00		1.00	1.00		1.26	0.12		0.60	1.79	
Incremental Delay, d2		6.7		0.3	0.0		0.6	3.5		1.9	1.1	
Delay (s)		59.0		47.0	45.8		81.2	6.0		39.8	22.7	
Level of Service		E		D	D		F	A		D	C	
Approach Delay (s)		59.0			46.4			7.0			23.2	
Approach LOS		E			D			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.3				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			84.6%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Swann Ave. & Jefferson Davis Highway










2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	0	12	3	0	32	20	2286	12	109	1447	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1967	1553		1770	1583		1770	3536		1770	4000	
Flt Permitted	0.74	1.00		0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1525	1553		1397	1583		1770	3536		1770	3264	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	0	12	3	0	32	20	2286	12	109	1447	20
RTOR Reduction (vph)	0	11	0	0	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	1	0	3	3	0	20	2298	0	109	1467	0
Confl. Peds. (#/hr)								10				10
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	2%	2%	2%	7%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	15	0
Turn Type	Perm		Perm		Prot		Prot					
Protected Phases	4		8		5		2		1		6	
Permitted Phases	4		8									
Actuated Green, G (s)	10.5	10.5		10.5	10.5		3.8	96.0		14.5	106.7	
Effective Green, g (s)	13.5	13.5		13.5	13.5		6.8	99.0		17.5	109.7	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.05	0.71		0.12	0.78	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	147	150		135	153		86	2500		221	3134	
v/s Ratio Prot		0.00			0.00		0.01	c0.65		c0.06	0.37	
v/s Ratio Perm	c0.02			0.00								
v/c Ratio	0.19	0.01		0.02	0.02		0.23	0.92		0.49	0.47	
Uniform Delay, d1	58.2	57.2		57.3	57.3		64.1	17.1		57.1	5.2	
Progression Factor	1.00	1.00		1.00	1.00		1.17	0.24		1.22	0.04	
Incremental Delay, d2	0.6	0.0		0.1	0.1		0.6	3.2		1.6	0.5	
Delay (s)	58.9	57.2		57.3	57.3		75.3	7.4		71.3	0.7	
Level of Service	E	E		E	E		E	A		E	A	
Approach Delay (s)		58.4			57.3			8.0			5.6	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.9		HCM Level of Service				A			
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				10.0			
Intersection Capacity Utilization			87.8%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis






















## 3: Hume Ave. & Jefferson Davis Highway

2/15/2011

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	80	32	20	2271	1495	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	13	12	12
Total Lost time (s)	3.0			3.0	4.0	
Lane Util. Factor	1.00			0.95	*0.95	
Frb, ped/bikes	1.00			1.00	1.00	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.96			1.00	1.00	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1881			3656	4000	
Flt Permitted	0.97			0.92	1.00	
Satd. Flow (perm)	1881			3371	3350	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	32	20	2271	1495	20
RTOR Reduction (vph)	12	0	0	0	0	0
Lane Group Flow (vph)	100	0	0	2291	1515	0
Confl. Peds. (#/hr)			5			5
Heavy Vehicles (%)	0%	0%	2%	2%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	7	0
Turn Type			Perm			
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	16.2			111.8	110.8	
Effective Green, g (s)	19.2			114.8	113.8	
Actuated g/C Ratio	0.14			0.82	0.81	
Clearance Time (s)	6.0			6.0	7.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	258			2764	3251	
v/s Ratio Prot	c0.05				0.38	
v/s Ratio Perm				c0.68		
v/c Ratio	0.39			0.83	0.47	
Uniform Delay, d1	55.0			7.1	3.9	
Progression Factor	1.00			0.38	0.61	
Incremental Delay, d2	1.0			1.4	0.3	
Delay (s)	56.0			4.1	2.7	
Level of Service	E			A	A	
Approach Delay (s)	56.0			4.1	2.7	
Approach LOS	E			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			5.0		HCM Level of Service	A
HCM Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			89.9%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	248	159	312	28	125	79	4	263	2001	68	4	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	4.0	4.0		3.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00	1.00	0.96		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00		1.00
Frt	1.00	0.90		1.00	0.94			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1732	1843		1147	1130			1770	4000	1564		1703
Flt Permitted	0.36	1.00		0.13	1.00			0.95	1.00	1.00		0.95
Satd. Flow (perm)	661	1843		160	1130			1770	3539	1564		1703
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	248	159	312	28	125	79	4	263	2001	68	4	155
RTOR Reduction (vph)	0	54	0	0	17	0	0	0	0	15	0	0
Lane Group Flow (vph)	248	417	0	28	187	0	0	267	2001	53	0	159
Confl. Peds. (#/hr)	8		5	5		8				7		
Heavy Vehicles (%)	4%	4%	4%	57%	57%	57%	2%	2%	2%	2%	6%	6%
Turn Type	pm+pt			Perm			Prot	Prot		Perm	Prot	Prot
Protected Phases	7	4			8		5	5	2		1	1
Permitted Phases	4			8						2		
Actuated Green, G (s)	37.1	37.1		27.1	27.1			23.0	68.7	68.7		15.2
Effective Green, g (s)	40.1	40.1		30.1	30.1			26.0	71.7	71.7		18.2
Actuated g/C Ratio	0.29	0.29		0.22	0.22			0.19	0.51	0.51		0.13
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	7.0	7.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	243	528		34	243			329	2049	801		221
v/s Ratio Prot	c0.05	0.23			0.17			0.15	c0.50			c0.09
v/s Ratio Perm	c0.24			0.17						0.03		
v/c Ratio	1.02	0.79		0.82	0.77			0.81	0.98	0.07		0.72
Uniform Delay, d1	50.8	46.1		52.4	51.7			54.7	33.3	17.2		58.4
Progression Factor	1.00	1.00		1.00	1.00			0.74	0.58	0.38		1.00
Incremental Delay, d2	63.1	7.7		85.0	13.6			8.4	10.4	0.1		10.7
Delay (s)	114.0	53.8		137.4	65.2			49.0	29.6	6.7		69.1
Level of Service	F	D		F	E			D	C	A		E
Approach Delay (s)		74.5			74.0				31.1			
Approach LOS		E			E				C			
<b>Intersection Summary</b>												
HCM Average Control Delay			41.5							HCM Level of Service		D
HCM Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			140.0							Sum of lost time (s)		10.0
Intersection Capacity Utilization			109.1%							ICU Level of Service		H
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1237	24
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3392	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1237	24
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1260	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	60.9	
Effective Green, g (s)	63.9	
Actuated g/C Ratio	0.46	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1826	
v/s Ratio Prot	0.31	
v/s Ratio Perm		
v/c Ratio	0.69	
Uniform Delay, d1	30.2	
Progression Factor	1.00	
Incremental Delay, d2	2.2	
Delay (s)	32.4	
Level of Service	C	
Approach Delay (s)	36.5	
Approach LOS	D	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗	↘	↑↑
Volume (vph)	674	301	2002	1235	46	1177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.0	3.0	4.0	3.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	2798	1379	4000	1505	1604	4000
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	2798	1379	3557	1505	1604	3438
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	674	301	2002	1235	46	1177
RTOR Reduction (vph)	0	42	0	39	0	0
Lane Group Flow (vph)	674	259	2002	1196	46	1177
Confl. Peds. (#/hr)		1		9		
Heavy Vehicles (%)	21%	21%	2%	2%	5%	5%
Turn Type		Prot		pm+ov	Prot	
Protected Phases	8	8	2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	44.0	44.0	73.5	117.5	3.5	83.0
Effective Green, g (s)	47.0	47.0	76.5	123.5	6.5	86.0
Actuated g/C Ratio	0.34	0.34	0.55	0.88	0.05	0.61
Clearance Time (s)	6.0	6.0	7.0	6.0	6.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	939	463	2186	1328	74	2457
v/s Ratio Prot	0.24	0.19	c0.50	c0.30	c0.03	0.29
v/s Ratio Perm				0.49		
v/c Ratio	0.72	0.56	0.92	0.90	0.62	0.48
Uniform Delay, d1	40.7	38.0	28.8	4.7	65.5	14.8
Progression Factor	1.00	1.00	1.00	1.00	1.03	1.01
Incremental Delay, d2	2.6	1.5	7.5	8.7	12.3	0.5
Delay (s)	43.3	39.5	36.3	13.4	79.9	15.4
Level of Service	D	D	D	B	E	B
Approach Delay (s)	42.2		27.6			17.9
Approach LOS	D		C			B
<b>Intersection Summary</b>						
HCM Average Control Delay			28.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.90			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	10.0
Intersection Capacity Utilization			87.4%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕		↖	↗			↘	↕			↘
Volume (vph)	33	7	26	132	11	30	8	103	2093	72	12	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0		3.0	3.0			3.0	4.0			3.0
Lane Util. Factor		1.00		1.00	1.00			1.00	0.95			1.00
Frbp, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Frt		0.95		1.00	0.89			1.00	1.00			1.00
Flt Protected		0.98		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)		1704		1719	1611			1736	3451			1589
Flt Permitted		0.86		0.69	1.00			0.95	1.00			0.95
Satd. Flow (perm)		1495		1245	1611			1736	3451			1589
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	7	26	132	11	30	8	103	2093	72	12	107
RTOR Reduction (vph)	0	19	0	0	25	0	0	0	2	0	0	0
Lane Group Flow (vph)	0	47	0	132	16	0	0	111	2163	0	0	119
Confl. Peds. (#/hr)										2		
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	4%	6%	6%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)		21.3		21.3	21.3			13.0	83.6			16.1
Effective Green, g (s)		24.3		24.3	24.3			16.0	86.6			19.1
Actuated g/C Ratio		0.17		0.17	0.17			0.11	0.62			0.14
Clearance Time (s)		6.0		6.0	6.0			6.0	7.0			6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		259		216	280			198	2135			217
v/s Ratio Prot					0.01			0.06	c0.63			c0.07
v/s Ratio Perm		0.03		c0.11								
v/c Ratio		0.18		0.61	0.06			0.56	1.01			0.55
Uniform Delay, d1		49.4		53.5	48.3			58.7	26.7			56.4
Progression Factor		1.00		1.00	1.00			1.23	0.28			1.15
Incremental Delay, d2		0.3		5.0	0.1			1.8	17.0			2.4
Delay (s)		49.7		58.5	48.4			73.8	24.6			67.1
Level of Service		D		E	D			E	C			E
Approach Delay (s)		49.7			56.1				27.0			
Approach LOS		D			E				C			
<b>Intersection Summary</b>												
HCM Average Control Delay			25.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			89.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	↓	↙
Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1350	27
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3393	
Flt Permitted	1.00	
Satd. Flow (perm)	3393	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1350	27
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1376	0
Confl. Peds. (#/hr)		7
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	86.7	
Effective Green, g (s)	89.7	
Actuated g/C Ratio	0.64	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	2174	
v/s Ratio Prot	0.41	
v/s Ratio Perm		
v/c Ratio	0.63	
Uniform Delay, d1	15.2	
Progression Factor	0.95	
Incremental Delay, d2	1.2	
Delay (s)	15.6	
Level of Service	B	
Approach Delay (s)	19.7	
Approach LOS	B	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗		↖	↗	
Volume (vph)	147	3	37	40	5	36	28	2136	27	43	1385	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.87		1.00	1.00		1.00	1.00	
Flt Protected		0.96		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1756		1770	1617		1770	3415		1770	3392	
Flt Permitted		0.74		0.72	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1359		1340	1617		1770	3415		1770	3392	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	147	3	37	40	5	36	28	2136	27	43	1385	28
RTOR Reduction (vph)	0	7	0	0	29	0	0	1	0	0	1	0
Lane Group Flow (vph)	0	180	0	40	12	0	28	2162	0	43	1412	0
Confl. Peds. (#/hr)			2				9					9
Heavy Vehicles (%)	1%	2%	1%	2%	2%	2%	2%	2%	2%	2%	6%	6%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.3		24.3	24.3		4.1	90.6		6.1	92.6	
Effective Green, g (s)		27.3		27.3	27.3		7.1	93.6		9.1	95.6	
Actuated g/C Ratio		0.20		0.20	0.20		0.05	0.67		0.06	0.68	
Clearance Time (s)		6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		265		261	315		90	2283		115	2316	
v/s Ratio Prot					0.01		0.02	c0.63		c0.02	0.42	
v/s Ratio Perm		c0.13		0.03								
v/c Ratio		0.68		0.15	0.04		0.31	0.95		0.37	0.61	
Uniform Delay, d1		52.3		46.8	45.7		64.1	21.0		62.7	12.1	
Progression Factor		1.00		1.00	1.00		1.26	0.24		0.62	2.05	
Incremental Delay, d2		6.7		0.3	0.0		0.2	1.2		1.9	1.1	
Delay (s)		59.0		47.0	45.8		81.2	6.2		40.9	25.8	
Level of Service		E		D	D		F	A		D	C	
Approach Delay (s)		59.0			46.4			7.1			26.2	
Approach LOS		E			D			A			C	
<b>Intersection Summary</b>												
HCM Average Control Delay			17.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			84.6%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis



















## 2: Swann Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	0	12	3	0	32	34	2286	12	109	1447	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1967	1553		1770	1583		1770	3536		1770	4000	
Flt Permitted	0.74	1.00		0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1525	1553		1397	1583		1770	3536		1770	3264	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	0	12	3	0	32	34	2286	12	109	1447	20
RTOR Reduction (vph)	0	11	0	0	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	28	1	0	3	3	0	34	2298	0	109	1467	0
Confl. Peds. (#/hr)							10					10
Heavy Vehicles (%)	4%	2%	4%	2%	2%	2%	2%	2%	2%	2%	7%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	15	0
Turn Type	Perm		Perm		Prot		Prot					
Protected Phases	4		8		5		2		1		6	
Permitted Phases	4		8									
Actuated Green, G (s)	10.5	10.5		10.5	10.5		4.5	96.0		14.5	106.0	
Effective Green, g (s)	13.5	13.5		13.5	13.5		7.5	99.0		17.5	109.0	
Actuated g/C Ratio	0.10	0.10		0.10	0.10		0.05	0.71		0.12	0.78	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	147	150		135	153		95	2500		221	3114	
v/s Ratio Prot		0.00			0.00		0.02	c0.65		c0.06	0.37	
v/s Ratio Perm	c0.02			0.00								
v/c Ratio	0.19	0.01		0.02	0.02		0.36	0.92		0.49	0.47	
Uniform Delay, d1	58.2	57.2		57.3	57.3		63.9	17.1		57.1	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.13	0.20		1.01	0.41	
Incremental Delay, d2	0.6	0.0		0.1	0.1		1.0	3.2		1.3	0.4	
Delay (s)	58.9	57.2		57.3	57.3		73.4	6.8		59.3	2.6	
Level of Service	E	E		E	E		E	A		E	A	
Approach Delay (s)		58.4			57.3			7.7			6.5	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			8.2	HCM Level of Service				A				
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			140.0	Sum of lost time (s)				10.0				
Intersection Capacity Utilization			87.8%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
4: East Glebe Road & Jefferson Davis Highway

2/15/2011

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	
Lane Configurations													
Volume (vph)	248	159	312	28	125	79	4	269	2001	68	4	155	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12	
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	4.0			3.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00	
Frt	1.00	0.90		1.00	0.94			1.00	1.00			1.00	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95	
Satd. Flow (prot)	1732	1843		1147	1130			1770	4000			1703	
Flt Permitted	0.36	1.00		0.13	1.00			0.95	1.00			0.95	
Satd. Flow (perm)	661	1843		160	1130			1770	3517			1703	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	248	159	312	28	125	79	4	269	2001	68	4	155	
RTOR Reduction (vph)	0	54	0	0	17	0	0	0	2	0	0	0	
Lane Group Flow (vph)	248	417	0	28	187	0	0	273	2067	0	0	159	
Confl. Peds. (#/hr)	8		5	5		8				7			
Heavy Vehicles (%)	4%	4%	4%	57%	57%	57%	2%	2%	2%	2%	6%	6%	
Turn Type	pm+pt			Perm			Prot	Prot			Prot	Prot	
Protected Phases	7	4			8		5	5	2		1	1	
Permitted Phases	4			8									
Actuated Green, G (s)	37.1	37.1		27.1	27.1			23.0	60.0			7.0	
Effective Green, g (s)	40.1	40.1		30.1	30.1			26.0	63.0			10.0	
Actuated g/C Ratio	0.29	0.29		0.22	0.22			0.19	0.45			0.07	
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	7.0			6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0	
Lane Grp Cap (vph)	243	528		34	243			329	1800			122	
v/s Ratio Prot	c0.05	0.23			0.17			0.15	c0.52			c0.09	
v/s Ratio Perm	c0.24			0.17									
v/c Ratio	1.02	0.79		0.82	0.77			0.83	1.15			1.30	
Uniform Delay, d1	50.8	46.1		52.4	51.7			54.9	38.5			65.0	
Progression Factor	1.00	1.00		1.00	1.00			0.66	0.52			1.00	
Incremental Delay, d2	63.1	7.7		85.0	13.6			8.5	70.5			183.6	
Delay (s)	114.0	53.8		137.4	65.2			44.7	90.3			248.6	
Level of Service	F	D		F	E			D	F			F	
Approach Delay (s)		74.5			74.0				85.0				
Approach LOS		E			E				F				
<b>Intersection Summary</b>													
HCM Average Control Delay			74.3									HCM Level of Service	E
HCM Volume to Capacity ratio			1.08										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	14.0
Intersection Capacity Utilization			111.3%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1237	24
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frbp, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3392	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1237	24
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1260	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	60.9	
Effective Green, g (s)	63.9	
Actuated g/C Ratio	0.46	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1826	
v/s Ratio Prot	c0.31	
v/s Ratio Perm		
v/c Ratio	0.69	
Uniform Delay, d1	30.2	
Progression Factor	1.00	
Incremental Delay, d2	2.2	
Delay (s)	32.4	
Level of Service	C	
Approach Delay (s)	56.6	
Approach LOS	E	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis



















## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗		↑↑
Volume (vph)	674	301	2002	1235	0	1177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.0	3.0	4.0	3.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00		0.95
Frbp, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	2798	1379	4000	1506		4000
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	2798	1379	3557	1506		3438
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	674	301	2002	1235	0	1177
RTOR Reduction (vph)	0	4	0	0	0	0
Lane Group Flow (vph)	674	297	2002	1235	0	1177
Confl. Peds. (#/hr)		1		9		
Heavy Vehicles (%)	21%	21%	2%	2%	5%	5%
Turn Type		Prot		pm+ov		
Protected Phases	8	8	2	8		6
Permitted Phases				2		
Actuated Green, G (s)	48.4	48.4	78.6	127.0		65.0
Effective Green, g (s)	51.4	51.4	81.6	133.0		68.0
Actuated g/C Ratio	0.37	0.37	0.58	0.95		0.49
Clearance Time (s)	6.0	6.0	7.0	6.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1027	506	2331	1463		1943
v/s Ratio Prot	0.24	0.22	c0.50	c0.31		0.29
v/s Ratio Perm				0.51		
v/c Ratio	0.66	0.59	0.86	0.84		0.61
Uniform Delay, d1	36.9	35.7	24.4	0.9		26.2
Progression Factor	1.00	1.00	1.00	1.00		0.66
Incremental Delay, d2	1.5	1.7	4.4	4.6		1.1
Delay (s)	38.5	37.5	28.8	5.5		18.4
Level of Service	D	D	C	A		B
Approach Delay (s)	38.2		19.9			18.4
Approach LOS	D		B			B
<b>Intersection Summary</b>						
HCM Average Control Delay			22.9		HCM Level of Service	C
HCM Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	3.0
Intersection Capacity Utilization			81.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	33	7	26	132	11	30	8	103	2093	72	12	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0		3.0	3.0			3.0	4.0			3.0
Lane Util. Factor		1.00		1.00	1.00			1.00	0.95			1.00
Frbp, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Frt		0.95		1.00	0.89			1.00	1.00			1.00
Flt Protected		0.98		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)		1704		1719	1611			1736	3451			1589
Flt Permitted		0.86		0.69	1.00			0.95	1.00			0.95
Satd. Flow (perm)		1495		1245	1611			1736	3451			1589
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	7	26	132	11	30	8	103	2093	72	12	153
RTOR Reduction (vph)	0	19	0	0	25	0	0	0	2	0	0	0
Lane Group Flow (vph)	0	47	0	132	16	0	0	111	2163	0	0	165
Confl. Peds. (#/hr)										2		
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	4%	4%	4%	4%	6%	6%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)		21.3		21.3	21.3			13.0	80.9			18.8
Effective Green, g (s)		24.3		24.3	24.3			16.0	83.9			21.8
Actuated g/C Ratio		0.17		0.17	0.17			0.11	0.60			0.16
Clearance Time (s)		6.0		6.0	6.0			6.0	7.0			6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		259		216	280			198	2068			247
v/s Ratio Prot					0.01			0.06	c0.63			c0.10
v/s Ratio Perm		0.03		c0.11								
v/c Ratio		0.18		0.61	0.06			0.56	1.05			0.67
Uniform Delay, d1		49.4		53.5	48.3			58.7	28.0			55.7
Progression Factor		1.00		1.00	1.00			1.05	0.49			1.29
Incremental Delay, d2		0.3		5.0	0.1			2.0	28.6			5.7
Delay (s)		49.7		58.5	48.4			63.6	42.3			77.5
Level of Service		D		E	D			E	D			E
Approach Delay (s)		49.7			56.1				43.3			
Approach LOS		D			E				D			
<b>Intersection Summary</b>												
HCM Average Control Delay			33.4			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			92.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group













HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1350	27
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3393	
Flt Permitted	1.00	
Satd. Flow (perm)	3393	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1350	27
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	1376	0
Confl. Peds. (#/hr)		7
Heavy Vehicles (%)	6%	6%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	86.7	
Effective Green, g (s)	89.7	
Actuated g/C Ratio	0.64	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	2174	
v/s Ratio Prot	0.41	
v/s Ratio Perm		
v/c Ratio	0.63	
Uniform Delay, d1	15.2	
Progression Factor	0.45	
Incremental Delay, d2	1.2	
Delay (s)	8.1	
Level of Service	A	
Approach Delay (s)	15.5	
Approach LOS	B	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘		↗	↕		↗	↕	
Volume (vph)	34	6	46	65	10	15	42	1650	6	23	2222	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.93		1.00	0.91		1.00	1.00		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713		1770	1695		1787	3453		1770	3553	
Flt Permitted		0.88		0.61	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1537		1128	1695		1787	3453		1770	3553	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	6	46	65	10	15	42	1650	6	23	2222	68
RTOR Reduction (vph)	0	35	0	0	13	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	51	0	65	12	0	42	1656	0	23	2289	0
Confl. Peds. (#/hr)			2				10					10
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	1%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		16.0		16.0	16.0		6.0	101.1		3.9	99.0	
Effective Green, g (s)		19.0		19.0	19.0		9.0	104.1		6.9	102.0	
Actuated g/C Ratio		0.14		0.14	0.14		0.06	0.74		0.05	0.73	
Clearance Time (s)		6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		209		153	230		115	2568		87	2589	
v/s Ratio Prot					0.01		c0.02	0.48		0.01	c0.64	
v/s Ratio Perm		0.03		c0.06								
v/c Ratio		0.24		0.42	0.05		0.37	0.64		0.26	0.88	
Uniform Delay, d1		54.1		55.5	52.7		62.8	8.8		64.1	14.5	
Progression Factor		1.00		1.00	1.00		0.99	0.69		0.77	1.11	
Incremental Delay, d2		0.6		1.9	0.1		1.5	1.0		1.2	3.5	
Delay (s)		54.7		57.4	52.8		63.5	7.0		50.5	19.7	
Level of Service		D		E	D		E	A		D	B	
Approach Delay (s)		54.7			56.1			8.4			20.0	
Approach LOS		D			E			A			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			16.8				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			83.2%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Swann Ave. & Jefferson Davis Highway











2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	0	20	53	0	37	20	1674	10	55	2221	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1984	1568		1770	1583		1787	3571		1770	4000	
Flt Permitted	0.73	1.00		0.74	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1531	1568		1386	1583		1787	3571		1770	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	0	20	53	0	37	20	1674	10	55	2221	44
RTOR Reduction (vph)	0	18	0	0	33	0	0	0	0	0	1	0
Lane Group Flow (vph)	40	2	0	53	4	0	20	1684	0	55	2264	0
Confl. Peds. (#/hr)	1						15					15
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	1%	1%	2%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	5	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	13.5	13.5		13.5	13.5		3.8	100.2		7.3	103.7	
Effective Green, g (s)	16.5	16.5		16.5	16.5		6.8	103.2		10.3	106.7	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.05	0.74		0.07	0.76	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	185		163	187		87	2632		130	3049	
v/s Ratio Prot		0.00			0.00		0.01	0.47		c0.03	c0.57	
v/s Ratio Perm	0.03			c0.04								
v/c Ratio	0.22	0.01		0.33	0.02		0.23	0.64		0.42	0.74	
Uniform Delay, d1	55.9	54.6		56.6	54.6		64.1	9.2		62.0	9.1	
Progression Factor	1.00	1.00		1.00	1.00		1.20	0.34		1.14	0.46	
Incremental Delay, d2	0.6	0.0		1.2	0.1		1.1	1.0		1.2	0.9	
Delay (s)	56.6	54.6		57.8	54.7		77.8	4.1		71.7	5.1	
Level of Service	E	D		E	D		E	A		E	A	
Approach Delay (s)		55.9			56.5			5.0			6.7	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			7.8				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			79.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 3: Hume Ave. & Jefferson Davis Highway

2/15/2011

							
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Volume (vph)	36	24	52	1699	4	2297	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	13	12	12	12
Total Lost time (s)	3.0			3.0		4.0	
Lane Util. Factor	1.00			0.95		*0.95	
Frbp, ped/bikes	1.00			1.00		1.00	
Flpb, ped/bikes	1.00			1.00		1.00	
Frt	0.95			1.00		1.00	
Flt Protected	0.97			1.00		1.00	
Satd. Flow (prot)	1861			3688		4000	
Flt Permitted	0.97			0.66		0.95	
Satd. Flow (perm)	1861			2444		3341	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	24	52	1699	4	2297	40
RTOR Reduction (vph)	9	0	0	0	0	0	0
Lane Group Flow (vph)	51	0	0	1751	0	2341	0
Confl. Peds. (#/hr)	1		13				13
Heavy Vehicles (%)	0%	0%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	7	0
Turn Type			Perm		Perm		
Protected Phases	4			2		6	
Permitted Phases			2		6		
Actuated Green, G (s)	12.6			115.4		114.4	
Effective Green, g (s)	15.6			118.4		117.4	
Actuated g/C Ratio	0.11			0.85		0.84	
Clearance Time (s)	6.0			6.0		7.0	
Vehicle Extension (s)	3.0			3.0		3.0	
Lane Grp Cap (vph)	207			2067		2802	
v/s Ratio Prot	c0.03						
v/s Ratio Perm				c0.72		0.70	
v/c Ratio	0.25			0.85		0.84	
Uniform Delay, d1	56.8			5.9		6.1	
Progression Factor	1.00			1.69		1.26	
Incremental Delay, d2	0.6			3.7		0.3	
Delay (s)	57.5			13.6		8.0	
Level of Service	E			B		A	
Approach Delay (s)	57.5			13.6		8.0	
Approach LOS	E			B		A	
<b>Intersection Summary</b>							
HCM Average Control Delay			11.1		HCM Level of Service		B
HCM Volume to Capacity ratio			0.78				
Actuated Cycle Length (s)			140.0		Sum of lost time (s)		6.0
Intersection Capacity Utilization			94.7%		ICU Level of Service		F
Analysis Period (min)			15				
c Critical Lane Group							

# HCM Signalized Intersection Capacity Analysis

## 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	124	142	288	82	198	178	8	290	1407	21	8	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	4.0	4.0		3.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95	1.00		1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00	1.00	0.95		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00		1.00
Frt	1.00	0.90		1.00	0.93			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1857		1800	1746			1787	4000	1574		1787
Flt Permitted	0.13	1.00		0.25	1.00			0.95	1.00	1.00		0.95
Satd. Flow (perm)	239	1857		479	1746			1787	3574	1574		1787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	124	142	288	82	198	178	8	290	1407	21	8	146
RTOR Reduction (vph)	0	54	0	0	23	0	0	0	0	6	0	0
Lane Group Flow (vph)	124	376	0	82	353	0	0	298	1407	15	0	154
Confl. Peds. (#/hr)	9		6	6		9				8		
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Prot	Prot		Perm	Prot	Prot
Protected Phases	7	4			8		5	5	2		1	1
Permitted Phases	4			8						2		
Actuated Green, G (s)	40.9	40.9		30.9	30.9			17.0	65.2	65.2		14.9
Effective Green, g (s)	43.9	43.9		33.9	33.9			20.0	68.2	68.2		17.9
Actuated g/C Ratio	0.31	0.31		0.24	0.24			0.14	0.49	0.49		0.13
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	7.0	7.0		6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	151	582		116	423			255	1949	767		228
v/s Ratio Prot	c0.04	0.20			0.20			c0.17	0.35			0.09
v/s Ratio Perm	c0.22			0.17						0.01		
v/c Ratio	0.82	0.65		0.71	0.83			1.17	0.72	0.02		0.68
Uniform Delay, d1	39.7	41.4		48.5	50.4			60.0	28.4	18.6		58.3
Progression Factor	1.00	1.00		1.00	1.00			0.82	0.66	0.51		1.00
Incremental Delay, d2	28.7	2.5		17.8	13.2			96.9	1.3	0.0		7.7
Delay (s)	68.4	43.8		66.3	63.5			146.1	20.1	9.5		66.0
Level of Service	E	D		E	E			F	C	A		E
Approach Delay (s)		49.3			64.0				41.7			
Approach LOS		D			E				D			
<b>Intersection Summary</b>												
HCM Average Control Delay			75.3			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			122.0%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1991	188
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3510	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1991	188
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	2174	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	63.1	
Effective Green, g (s)	66.1	
Actuated g/C Ratio	0.47	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1889	
v/s Ratio Prot	c0.54	
v/s Ratio Perm		
v/c Ratio	1.15	
Uniform Delay, d1	37.0	
Progression Factor	1.00	
Incremental Delay, d2	74.6	
Delay (s)	111.5	
Level of Service	F	
Approach Delay (s)	108.5	
Approach LOS	F	
<b>Intersection Summary</b>		

# HCM Signalized Intersection Capacity Analysis

## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↖	↙	↑↑
Volume (vph)	1414	320	1405	960	11	2094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.0	3.0	4.0	3.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3193	1574	4000	1507	1668	4000
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3193	1574	3557	1507	1668	3574
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1414	320	1405	960	11	2094
RTOR Reduction (vph)	0	46	0	86	0	0
Lane Group Flow (vph)	1414	274	1405	874	11	2094
Confl. Peds. (#/hr)		1		12		
Heavy Vehicles (%)	6%	6%	2%	2%	1%	1%
Turn Type		Prot		pm+ov	Prot	
Protected Phases	8	8	2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	58.0	58.0	61.4	119.4	1.6	69.0
Effective Green, g (s)	61.0	61.0	64.4	125.4	4.6	72.0
Actuated g/C Ratio	0.44	0.44	0.46	0.90	0.03	0.51
Clearance Time (s)	6.0	6.0	7.0	6.0	6.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1391	686	1840	1350	55	2057
v/s Ratio Prot	c0.44	0.17	0.35	0.28	0.01	c0.52
v/s Ratio Perm				0.30		
v/c Ratio	1.02	0.40	0.76	0.65	0.20	1.02
Uniform Delay, d1	39.5	27.0	31.5	1.8	65.9	34.0
Progression Factor	1.00	1.00	1.00	1.00	1.24	0.44
Incremental Delay, d2	28.3	0.4	3.1	1.1	0.2	11.3
Delay (s)	67.8	27.4	34.5	2.9	81.9	26.4
Level of Service	E	C	C	A	F	C
Approach Delay (s)	60.4		21.7			26.7
Approach LOS	E		C			C
<b>Intersection Summary</b>						
HCM Average Control Delay			34.2		HCM Level of Service	C
HCM Volume to Capacity ratio			1.02			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	7.0
Intersection Capacity Utilization			104.9%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕		↖	↗			↘	↕			↘
Volume (vph)	30	10	29	197	19	95	8	104	1531	49	16	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0		3.0	3.0			3.0	4.0			3.0
Lane Util. Factor		1.00		1.00	1.00			1.00	0.95			1.00
Frbp, ped/bikes		0.99		1.00	0.99			1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Frt		0.94		1.00	0.88			1.00	1.00			1.00
Flt Protected		0.98		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)		1744		1751	1596			1770	3520			1668
Flt Permitted		0.85		0.69	1.00			0.95	1.00			0.95
Satd. Flow (perm)		1522		1265	1596			1770	3520			1668
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	10	29	197	19	95	8	104	1531	49	16	30
RTOR Reduction (vph)	0	21	0	0	68	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	48	0	197	46	0	0	112	1579	0	0	46
Confl. Peds. (#/hr)	1		1	1		1				2		
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	2%	2%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)		26.5		26.5	26.5			12.0	87.8			6.7
Effective Green, g (s)		29.5		29.5	29.5			15.0	90.8			9.7
Actuated g/C Ratio		0.21		0.21	0.21			0.11	0.65			0.07
Clearance Time (s)		6.0		6.0	6.0			6.0	7.0			6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		321		267	336			190	2283			116
v/s Ratio Prot					0.03			c0.06	0.45			0.03
v/s Ratio Perm		0.03		c0.16								
v/c Ratio		0.15		0.74	0.14			0.59	0.69			0.40
Uniform Delay, d1		45.0		51.6	44.9			59.6	15.7			62.3
Progression Factor		1.00		1.00	1.00			0.84	1.01			1.27
Incremental Delay, d2		0.2		10.2	0.2			3.4	1.3			1.2
Delay (s)		45.3		61.8	45.1			53.5	17.1			80.2
Level of Service		D		E	D			D	B			F
Approach Delay (s)		45.3			55.7				19.5			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			39.8			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			98.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↓	↔
Volume (vph)	2261	48
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3559	
Flt Permitted	1.00	
Satd. Flow (perm)	3559	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	2261	48
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	2308	0
Confl. Peds. (#/hr)		9
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	82.5	
Effective Green, g (s)	85.5	
Actuated g/C Ratio	0.61	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	2174	
v/s Ratio Prot	c0.65	
v/s Ratio Perm		
v/c Ratio	1.06	
Uniform Delay, d1	27.2	
Progression Factor	0.65	
Incremental Delay, d2	33.8	
Delay (s)	51.6	
Level of Service	D	
Approach Delay (s)	52.2	
Approach LOS	D	
<b>Intersection Summary</b>		

HCM Signalized Intersection Capacity Analysis  
 1: E Custis Ave. & Jefferson Davis Highway

2/15/2011





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↗		↖	↗	
Volume (vph)	34	6	46	65	10	15	42	1650	6	23	2222	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	14	12	12	12	12	12	12	11	12	12	12	12
Total Lost time (s)		3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Lane Util. Factor		1.00		1.00	1.00		1.00	0.95		1.00	*0.95	
Frbp, ped/bikes		0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.93		1.00	0.91		1.00	1.00		1.00	1.00	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713		1770	1695		1787	3453		1770	3553	
Flt Permitted		0.88		0.61	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1537		1128	1695		1787	3453		1770	3553	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	34	6	46	65	10	15	42	1650	6	23	2222	68
RTOR Reduction (vph)	0	35	0	0	13	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	51	0	65	12	0	42	1656	0	23	2289	0
Confl. Peds. (#/hr)			2				10					10
Heavy Vehicles (%)	0%	2%	0%	2%	2%	2%	1%	1%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		16.0		16.0	16.0		6.0	101.1		3.9	99.0	
Effective Green, g (s)		19.0		19.0	19.0		9.0	104.1		6.9	102.0	
Actuated g/C Ratio		0.14		0.14	0.14		0.06	0.74		0.05	0.73	
Clearance Time (s)		6.0		6.0	6.0		6.0	7.0		6.0	7.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		209		153	230		115	2568		87	2589	
v/s Ratio Prot					0.01		c0.02	0.48		0.01	c0.64	
v/s Ratio Perm		0.03		c0.06								
v/c Ratio		0.24		0.42	0.05		0.37	0.64		0.26	0.88	
Uniform Delay, d1		54.1		55.5	52.7		62.8	8.8		64.1	14.5	
Progression Factor		1.00		1.00	1.00		0.83	0.83		1.24	0.27	
Incremental Delay, d2		0.6		1.9	0.1		1.5	1.0		1.1	3.4	
Delay (s)		54.7		57.4	52.8		53.9	8.3		80.8	7.4	
Level of Service		D		E	D		D	A		F	A	
Approach Delay (s)		54.7			56.1			9.4			8.1	
Approach LOS		D			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			10.6				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			10.0		
Intersection Capacity Utilization			83.2%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Swann Ave. & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	40	0	20	53	0	37	56	1674	10	4	55	2221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	4.0			3.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			1.00	*0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00			1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1984	1568		1770	1583		1787	3571			1770	4000
Flt Permitted	0.73	1.00		0.74	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	1531	1568		1386	1583		1787	3571			1770	3523
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	0	20	53	0	37	56	1674	10	4	55	2221
RTOR Reduction (vph)	0	18	0	0	33	0	0	0	0	0	0	1
Lane Group Flow (vph)	40	2	0	53	4	0	56	1684	0	0	59	2264
Confl. Peds. (#/hr)	1						15					
Heavy Vehicles (%)	3%	2%	3%	2%	2%	2%	1%	1%	2%	2%	2%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	5
Turn Type	Perm			Perm			Prot			Prot	Prot	
Protected Phases		4			8		5	2		1	1	6
Permitted Phases	4			8								
Actuated Green, G (s)	13.5	13.5		13.5	13.5		7.2	100.0			7.5	100.3
Effective Green, g (s)	16.5	16.5		16.5	16.5		10.2	103.0			10.5	103.3
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.07	0.74			0.08	0.74
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	7.0			6.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	180	185		163	187		130	2627			133	2951
v/s Ratio Prot		0.00			0.00		0.03	0.47			c0.03	c0.57
v/s Ratio Perm	0.03			c0.04								
v/c Ratio	0.22	0.01		0.33	0.02		0.43	0.64			0.44	0.77
Uniform Delay, d1	55.9	54.6		56.6	54.6		62.1	9.3			62.0	11.1
Progression Factor	1.00	1.00		1.00	1.00		0.86	1.51			1.10	0.26
Incremental Delay, d2	0.6	0.0		1.2	0.1		1.8	1.0			0.2	0.2
Delay (s)	56.6	54.6		57.8	54.7		55.1	14.9			68.4	3.1
Level of Service	E	D		E	D		E	B			E	A
Approach Delay (s)		55.9			56.5			16.2				4.7
Approach LOS		E			E			B				A
<b>Intersection Summary</b>												
HCM Average Control Delay			11.3				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			6.0		
Intersection Capacity Utilization			79.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
 2: Swann Ave. & Jefferson Davis Highway




















2/15/2011



Movement	SBR
Lane Configurations	
Volume (vph)	44
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	44
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	15
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis  
4: East Glebe Road & Jefferson Davis Highway

2/15/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	124	142	288	82	198	178	8	306	1407	21	8	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	13	12	12
Total Lost time (s)	3.0	3.0		3.0	3.0			3.0	4.0			3.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.95			1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.90		1.00	0.93			1.00	1.00			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1752	1857		1800	1746			1787	4000			1787
Flt Permitted	0.13	1.00		0.25	1.00			0.95	1.00			0.95
Satd. Flow (perm)	239	1857		479	1746			1787	3564			1787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	124	142	288	82	198	178	8	306	1407	21	8	146
RTOR Reduction (vph)	0	54	0	0	23	0	0	0	1	0	0	0
Lane Group Flow (vph)	124	376	0	82	353	0	0	314	1427	0	0	154
Confl. Peds. (#/hr)	9		6	6		9				8		
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Turn Type	pm+pt			Perm			Prot	Prot			Prot	Prot
Protected Phases	7	4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)	40.9	40.9		30.9	30.9			16.0	55.0			12.0
Effective Green, g (s)	43.9	43.9		33.9	33.9			19.0	58.0			15.0
Actuated g/C Ratio	0.31	0.31		0.24	0.24			0.14	0.41			0.11
Clearance Time (s)	6.0	6.0		6.0	6.0			6.0	7.0			6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)	151	582		116	423			243	1657			191
v/s Ratio Prot	c0.04	0.20			0.20			c0.18	0.36			0.09
v/s Ratio Perm	c0.22			0.17								
v/c Ratio	0.82	0.65		0.71	0.83			1.29	0.86			0.81
Uniform Delay, d1	39.7	41.4		48.5	50.4			60.5	37.3			61.1
Progression Factor	1.00	1.00		1.00	1.00			0.83	0.71			1.00
Incremental Delay, d2	28.7	2.5		17.8	13.2			154.3	5.1			21.4
Delay (s)	68.4	43.8		66.3	63.5			204.4	31.7			82.5
Level of Service	E	D		E	E			F	C			F
Approach Delay (s)		49.3			64.0				62.8			
Approach LOS		D			E				E			
<b>Intersection Summary</b>												
HCM Average Control Delay			79.7			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			122.9%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: East Glebe Road & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↑	
Volume (vph)	1991	188
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4000	
Flt Permitted	1.00	
Satd. Flow (perm)	3510	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1991	188
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	2174	0
Confl. Peds. (#/hr)		11
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	64.1	
Effective Green, g (s)	67.1	
Actuated g/C Ratio	0.48	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	1917	
v/s Ratio Prot	c0.54	
v/s Ratio Perm		
v/c Ratio	1.13	
Uniform Delay, d1	36.5	
Progression Factor	1.00	
Incremental Delay, d2	67.5	
Delay (s)	104.0	
Level of Service	F	
Approach Delay (s)	102.5	
Approach LOS	F	
Intersection Summary		

# HCM Signalized Intersection Capacity Analysis

## 60: Potomac & Jefferson Davis Highway

2/15/2011

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗		↑↑
Volume (vph)	1414	320	1405	960	0	2094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	13	12	11	10	12
Grade (%)	0%		-1%			0%
Total Lost time (s)	3.0	3.0	4.0	3.0		4.0
Lane Util. Factor	0.97	1.00	0.95	1.00		0.95
Frbp, ped/bikes	1.00	1.00	1.00	0.98		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	3193	1574	4000	1504		4000
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	3193	1574	3557	1504		3574
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1414	320	1405	960	0	2094
RTOR Reduction (vph)	0	18	0	0	0	0
Lane Group Flow (vph)	1414	302	1405	960	0	2094
Confl. Peds. (#/hr)		1		12		
Heavy Vehicles (%)	6%	6%	2%	2%	1%	1%
Turn Type		Prot		pm+ov		
Protected Phases	8	8	2	8		6
Permitted Phases				2		
Actuated Green, G (s)	54.0	54.0	73.0	127.0		65.0
Effective Green, g (s)	57.0	57.0	76.0	133.0		68.0
Actuated g/C Ratio	0.41	0.41	0.54	0.95		0.49
Clearance Time (s)	6.0	6.0	7.0	6.0		7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	1300	641	2171	1461		1943
v/s Ratio Prot	c0.44	0.19	0.35	c0.27		c0.52
v/s Ratio Perm				0.37		
v/c Ratio	1.09	0.47	0.65	0.66		1.08
Uniform Delay, d1	41.5	30.4	22.6	0.5		36.0
Progression Factor	1.00	1.00	1.00	1.00		0.56
Incremental Delay, d2	52.4	0.5	1.5	1.1		36.1
Delay (s)	93.9	31.0	24.1	1.5		56.4
Level of Service	F	C	C	A		E
Approach Delay (s)	82.3		14.9			56.4
Approach LOS	F		B			E
<b>Intersection Summary</b>						
HCM Average Control Delay			47.8		HCM Level of Service	D
HCM Volume to Capacity ratio			1.06			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	7.0
Intersection Capacity Utilization			104.9%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations		↕		↖	↗			↘	↕			↘
Volume (vph)	30	10	29	197	19	95	8	104	1531	49	16	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	10
Total Lost time (s)		3.0		3.0	3.0			3.0	4.0			3.0
Lane Util. Factor		1.00		1.00	1.00			1.00	0.95			1.00
Frbp, ped/bikes		0.99		1.00	0.99			1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00			1.00	1.00			1.00
Frt		0.94		1.00	0.88			1.00	1.00			1.00
Flt Protected		0.98		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)		1744		1751	1596			1770	3520			1668
Flt Permitted		0.85		0.69	1.00			0.95	1.00			0.95
Satd. Flow (perm)		1522		1265	1596			1770	3520			1668
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	10	29	197	19	95	8	104	1531	49	16	41
RTOR Reduction (vph)	0	21	0	0	68	0	0	0	1	0	0	0
Lane Group Flow (vph)	0	48	0	197	46	0	0	112	1579	0	0	57
Confl. Peds. (#/hr)	1		1	1		1				2		
Heavy Vehicles (%)	0%	0%	0%	3%	3%	3%	2%	2%	2%	2%	1%	1%
Turn Type	Perm			Perm			Prot	Prot			Prot	Prot
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)		26.5		26.5	26.5			12.0	87.5			7.0
Effective Green, g (s)		29.5		29.5	29.5			15.0	90.5			10.0
Actuated g/C Ratio		0.21		0.21	0.21			0.11	0.65			0.07
Clearance Time (s)		6.0		6.0	6.0			6.0	7.0			6.0
Vehicle Extension (s)		3.0		3.0	3.0			3.0	3.0			3.0
Lane Grp Cap (vph)		321		267	336			190	2275			119
v/s Ratio Prot					0.03			c0.06	0.45			0.03
v/s Ratio Perm		0.03		c0.16								
v/c Ratio		0.15		0.74	0.14			0.59	0.69			0.48
Uniform Delay, d1		45.0		51.6	44.9			59.6	15.9			62.5
Progression Factor		1.00		1.00	1.00			1.03	0.55			1.24
Incremental Delay, d2		0.2		10.2	0.2			3.7	1.4			1.6
Delay (s)		45.3		61.8	45.1			65.1	10.2			78.8
Level of Service		D		E	D			E	B			E
Approach Delay (s)		45.3			55.7				13.8			
Approach LOS		D			E				B			
<b>Intersection Summary</b>												
HCM Average Control Delay			35.7			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			98.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 134: E Howell Ave. & Jefferson Davis Highway

2/15/2011

Movement	SBT	SBR
Lane Configurations	↑↓	↔
Volume (vph)	2261	48
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Total Lost time (s)	4.0	
Lane Util. Factor	*0.95	
Frb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	3559	
Flt Permitted	1.00	
Satd. Flow (perm)	3559	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	2261	48
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	2308	0
Confl. Peds. (#/hr)		9
Heavy Vehicles (%)	1%	1%
Turn Type		
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	82.5	
Effective Green, g (s)	85.5	
Actuated g/C Ratio	0.61	
Clearance Time (s)	7.0	
Vehicle Extension (s)	3.0	
Lane Grp Cap (vph)	2174	
v/s Ratio Prot	c0.65	
v/s Ratio Perm		
v/c Ratio	1.06	
Uniform Delay, d1	27.2	
Progression Factor	0.51	
Incremental Delay, d2	33.9	
Delay (s)	47.7	
Level of Service	D	
Approach Delay (s)	48.5	
Approach LOS	D	
Intersection Summary		

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**Attachment B**  
**Intersection Turning Movement Counts**

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**VEHICLE TURNING MOVEMENT COUNT - SUMMARY - TOTALS**

Intersection of: Jefferson Davis Hwy.  
and: E.Glebe Rd.  
Location: Alexandria, VA

Counted by: VCU  
Date: November 17, 2009  
Weather: Cool, Overcast  
Entered by: SB

Day: Tuesday



TIME	TRAFFIC FROM NORTH on: Jefferson Davis Hwy.					TRAFFIC FROM SOUTH on: Jefferson Davis Hwy.					TRAFFIC FROM EAST on: E.Glebe Rd.					TRAFFIC FROM WEST on: E.Glebe Rd.					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
45-00	5	132	1	0	138	1	453	62	0	516	0	0	0	0	0	41	0	26	0	67	721
07:0-15	5	162	0	1	168	0	461	55	0	516	0	1	0	0	1	31	1	39	0	71	756
15-30	9	152	0	1	162	0	552	72	0	624	1	0	0	0	1	45	2	28	0	75	862
30-45	7	189	0	1	197	0	463	50	1	514	0	0	2	0	2	47	0	47	0	94	807
45-00	7	206	1	0	214	0	500	41	0	541	1	1	1	0	3	42	0	51	0	93	851
08:0-15	17	188	0	0	205	0	463	42	0	505	1	0	0	0	1	56	0	60	0	116	827
15-30	6	235	0	0	241	0	485	32	0	517	0	0	1	0	1	61	1	58	0	120	879
30-45	9	225	0	0	234	1	425	43	0	469	1	0	0	0	1	65	0	45	0	110	814
<b>2 Hr Totals</b>	65	1489	2	3	1559	2	3802	397	1	4202	4	2	4	0	10	388	4	354	0	746	6517
<b>1 Hr Totals</b>																					
645-745	26	635	1	3	665	1	1929	239	1	2170	1	1	2	0	4	164	3	140	0	307	3146
07-08	28	709	1	3	741	0	1976	218	1	2195	2	2	3	0	7	165	3	165	0	333	3276
715-815	40	735	1	2	778	0	1978	205	1	2184	3	1	3	0	7	190	2	186	0	378	3347
730-830	37	818	1	1	857	0	1911	165	1	2077	2	1	4	0	7	206	1	216	0	423	3364
745-845	39	854	1	0	894	1	1873	158	0	2032	3	1	2	0	6	224	1	214	0	439	3371
<b>PEAK HOUR</b>																					
<b>745-845</b>	39	854	1	0	894	1	1873	158	0	2032	3	1	2	0	6	224	1	214	0	439	3371
<b>MIDDAY</b>																					
30-45	20	255	1	0	276	0	264	29	1	294	0	1	0	0	1	44	0	42	0	86	657
45-00	19	231	0	0	250	0	273	36	0	309	1	0	0	0	1	29	0	29	0	58	618
12:0-15	23	267	1	1	292	1	287	39	1	328	2	0	1	0	3	32	1	27	0	60	683
15-30	29	285	0	1	315	1	298	29	1	329	2	0	0	0	2	34	0	44	0	78	724
30-45	21	272	0	1	294	0	275	46	0	321	1	0	0	0	1	47	0	44	0	91	707
45-00	24	331	1	1	357	0	288	32	0	320	1	0	0	0	1	30	0	39	0	69	747
01:0-15	23	320	1	0	344	0	290	45	0	335	1	0	1	0	2	41	1	29	0	71	752
15-30	24	288	0	0	312	0	251	43	0	294	0	0	1	0	1	30	2	44	0	76	683
<b>2 Hr Totals</b>	183	2249	4	4	2440	2	2226	299	3	2530	8	1	3	0	12	287	4	298	0	589	5571
<b>1 Hr Totals</b>																					
1130-1230	91	1038	2	2	1133	2	1122	133	3	1260	5	1	1	0	7	139	1	142	0	282	2682
1145-1245	92	1055	1	3	1151	2	1133	150	2	1287	6	0	1	0	7	142	1	144	0	287	2732
12-01	97	1155	2	4	1258	2	1148	146	2	1298	6	0	1	0	7	143	1	154	0	298	2861
1215-0115	97	1208	2	3	1310	1	1151	152	1	1305	5	0	1	0	6	152	1	156	0	309	2930
1230-0130	92	1211	2	2	1307	0	1104	166	0	1270	3	0	2	0	5	148	3	156	0	307	2889
<b>PEAK HOUR</b>																					
<b>1215-0115</b>	97	1208	2	3	1310	1	1151	152	1	1305	5	0	1	0	6	152	1	156	0	309	2930
<b>PM</b>																					
04:0-15	37	413	0	1	451	1	269	42	0	312	0	0	0	0	0	49	0	31	0	80	843
15-30	32	487	0	0	519	0	277	32	0	309	0	0	0	0	0	48	0	22	0	70	898
30-45	23	464	0	2	489	1	290	50	0	341	1	0	0	0	1	63	1	35	0	99	930
45-00	41	494	0	1	536	3	290	41	2	336	2	0	1	0	3	47	1	36	0	84	959
05:0-15	37	447	1	1	486	0	318	48	0	366	0	0	0	0	0	58	0	31	0	89	941
15-30	30	503	0	1	534	3	344	48	0	395	2	0	0	0	2	45	0	36	0	81	1012
30-45	50	431	0	0	481	4	303	51	0	358	4	1	0	0	5	46	0	36	0	82	926
45-00	54	448	0	0	502	2	312	54	1	369	2	1	0	0	3	41	0	27	0	68	942
<b>2 Hr Totals</b>	304	3687	1	6	3998	14	2403	366	3	2786	11	2	1	0	14	397	2	254	0	653	7451
<b>1 Hr Totals</b>																					
04-05	133	1858	0	4	1995	5	1126	165	2	1298	3	0	1	0	4	207	2	124	0	333	3630
415-515	133	1892	1	4	2030	4	1175	171	2	1352	3	0	1	0	4	216	2	124	0	342	3728
430-530	131	1908	1	5	2045	7	1242	187	2	1438	5	0	1	0	6	213	2	138	0	353	3842
445-545	158	1875	1	3	2037	10	1255	188	2	1455	8	1	1	0	10	196	1	139	0	336	3838
05-06	171	1829	1	2	2003	9	1277	201	1	1488	8	2	0	0	10	190	0	130	0	320	3821
<b>PEAK HOUR</b>																					
<b>430-530</b>	131	1908	1	5	2045	7	1242	187	2	1438	5	0	1	0	6	213	2	138	0	353	3842
<b>PM</b>																					
07:0-15	54	445	2	3	504	0	251	20	0	271	0	0	0	0	0	36	0	27	0	63	838
15-30	30	390	0	1	421	1	216	46	0	263	3	0	0	0	3	30	0	28	0	58	745
30-45	36	347	0	1	384	1	183	32	0	216	1	0	0	0	1	27	0	24	0	51	652
45-00	32	274	0	1	307	0	162	23	0	185	1	0	1	0	2	29	2	20	0	51	545
08:0-15	17	237	1	2	257	1	174	27	0	202	2	0	0	0	2	18	0	21	0	39	500
15-30	16	231	1	0	248	0	163	30	0	193	0	0	0	0	0	20	1	19	0	40	481
30-45	18	246	2	0	266	0	126	23	0	149	2	0	1	0	3	24	0	21	0	45	463
45-00	16	217	0	1	234	0	139	19	0	158	0	0	0	0	0	22	0	17	0	39	431
<b>2 Hr Totals</b>	219	2387	6	9	2621	3	1414	220	0	1637	9	0	2	0	11	206	3	177	0	386	4655
<b>1 Hr Totals</b>																					
07-08	152	1456	2	6	1616	2	812	121	0	935	5	0	1	0	6	122	2	99	0	223	2780
715-815	115	1248	1	5	1369	3	735	128	0	866	7	0	1	0	8	104	2	93	0	199	2442
730-830	101	1089	2	4	1196	2	682	112	0	796	4	0	1	0	5	94	3	84	0	181	2178
745-845	83	988	4	3	1078	1	625	103	0	729	5	0	2	0	7	91	3	81	0	175	1989
08-09	67	931	4	3	1005	1	602	99	0	702	4	0	1	0	5	84	1	78	0	163	1875
<b>PEAK HOUR</b>																					
<b>07-08</b>	152	1456	2	6	1616	2	812	121	0	935	5	0	1	0	6	122	2	99	0	223	2780



**VEHICLE TURNING MOVEMENT COUNT - SUMMARY - TOTALS**

Intersection of: Jefferson Davis Hwy.  
and: E.Custis Ave.  
Location: Alexandria, VA

Counted by: VCU  
Date: November 17, 2009  
Weather: Cool, Overcast  
Entered by: SB

Day: Tuesday



TIME	TRAFFIC FROM NORTH on: Jefferson Davis Hwy.					TRAFFIC FROM SOUTH on: Jefferson Davis Hwy.					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: E.Custis Ave.					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
45-00	6	174	0	180		504	4	0	508						0	2	10	0	12		700
07:0-15	3	185	0	188		513	2	0	515						0	3	14	0	17		720
15-30	4	173	1	178		596	2	0	598						0	8	17	0	25		801
30-45	7	231	1	239		500	3	0	503						0	4	25	0	29		771
45-00	6	244	0	250		510	7	0	517						0	8	20	0	28		795
08:0-15	7	256	0	263		466	7	0	473						0	8	36	0	44		780
15-30	4	283	0	287		506	1	0	507						0	6	24	0	30		824
30-45	7	276	0	283		420	8	0	428						0	7	25	0	32		743
<b>2 Hr Totals</b>	44	1822	0	2	1868	0	4015	34	0	4049	0	0	0	0	0	46	0	171	0	217	6134
<b>1 Hr Totals</b>																					
645-745	20	763	0	2	785	0	2113	11	0	2124	0	0	0	0	0	17	0	66	0	83	2992
07-08	20	833	0	2	855	0	2119	14	0	2133	0	0	0	0	0	23	0	76	0	99	3087
715-815	24	904	0	2	930	0	2072	19	0	2091	0	0	0	0	0	28	0	98	0	126	3147
730-830	24	1014	0	1	1039	0	1982	18	0	2000	0	0	0	0	0	26	0	105	0	131	3170
745-845	24	1059	0	0	1083	0	1902	23	0	1925	0	0	0	0	0	29	0	105	0	134	3142
<b>PEAK HOUR</b>																					
<b>730-830</b>	24	1014	0	1	1039	0	1982	18	0	2000	0	0	0	0	0	26	0	105	0	131	3170
<b>MIDDAY</b>																					
30-45	6	251	0	257		268	5	0	273					0	8	14	0	22		552	
45-00	9	268	0	277		294	5	0	299					0	3	5	0	8		584	
12:0-15	5	263	0	268		301	6	0	307					0	7	12	0	19		594	
15-30	13	282	0	295		313	8	0	321					0	7	9	0	16		632	
30-45	12	299	0	311		297	10	0	307					0	3	8	0	11		629	
45-00	11	327	0	338		310	4	0	314					0	6	10	0	16		668	
01:0-15	21	352	0	373		315	3	0	318					0	7	9	0	16		707	
15-30	9	302	0	311		280	8	0	288					0	9	4	0	13		612	
<b>2 Hr Totals</b>	86	2344	0	0	2430	0	2378	49	0	2427	0	0	0	0	0	50	0	71	0	121	4978
<b>1 Hr Totals</b>																					
1130-1230	33	1064	0	0	1097	0	1176	24	0	1200	0	0	0	0	0	25	0	40	0	65	2362
1145-1245	39	1112	0	0	1151	0	1205	29	0	1234	0	0	0	0	0	20	0	34	0	54	2439
12-01	41	1171	0	0	1212	0	1221	28	0	1249	0	0	0	0	0	23	0	39	0	62	2523
1215-0115	57	1260	0	0	1317	0	1235	25	0	1260	0	0	0	0	0	23	0	36	0	59	2636
1230-0130	53	1280	0	0	1333	0	1202	25	0	1227	0	0	0	0	0	25	0	31	0	56	2616
<b>PEAK HOUR</b>																					
<b>1215-0115</b>	57	1260	0	0	1317	0	1235	25	0	1260	0	0	0	0	0	23	0	36	0	59	2636
<b>PM</b>																					
04:0-15	7	489	0	496		292	2	1	295					0	3	11	0	14		805	
15-30	11	542	0	553		304	6	0	310					0	8	11	0	19		882	
30-45	15	598	1	614		327	3	0	330					0	8	3	0	11		955	
45-00	6	535	0	541		316	4	0	320					0	7	10	0	17		878	
05:0-15	18	498	0	516		335	2	0	337					0	6	8	0	14		867	
15-30	15	529	0	544		397	10	0	407					0	11	7	0	18		969	
30-45	18	478	0	496		400	5	0	405					0	6	6	0	12		913	
45-00	19	459	0	478		357	1	0	358					0	7	4	0	11		847	
<b>2 Hr Totals</b>	109	4128	0	1	4238	0	2728	33	1	2762	0	0	0	0	0	56	0	60	0	116	7116
<b>1 Hr Totals</b>																					
04-05	39	2164	0	1	2204	0	1239	15	1	1255	0	0	0	0	0	26	0	35	0	61	3520
415-515	50	2173	0	1	2224	0	1282	15	0	1297	0	0	0	0	0	29	0	32	0	61	3582
430-530	54	2160	0	1	2215	0	1375	19	0	1394	0	0	0	0	0	32	0	28	0	60	3669
445-545	57	2040	0	0	2097	0	1448	21	0	1469	0	0	0	0	0	30	0	31	0	61	3627
05-06	70	1964	0	0	2034	0	1489	18	0	1507	0	0	0	0	0	30	0	25	0	55	3596
<b>PEAK HOUR</b>																					
<b>430-530</b>	54	2160	0	1	2215	0	1375	19	0	1394	0	0	0	0	0	32	0	28	0	60	3669
<b>PM</b>																					
07:0-15	14	451	0	465		247	0	0	247					0	5	15	0	20		732	
15-30	9	443	0	452		253	2	0	255					0	3	6	0	9		716	
30-45	7	333	0	340		205	5	0	210					0	6	7	0	13		563	
45-00	15	308	0	323		160	4	0	164					0	3	8	0	11		498	
08:0-15	5	254	1	260		174	0	0	174					0	8	6	0	14		448	
15-30	7	250	0	257		176	6	0	182					0	1	5	0	6		445	
30-45	9	275	0	284		138	3	1	142					0	1	3	0	4		430	
45-00	3	227	0	230		150	3	0	153					0	5	5	0	10		393	
<b>2 Hr Totals</b>	69	2541	0	1	2611	0	1503	23	1	1527	0	0	0	0	0	32	0	55	0	87	4225
<b>1 Hr Totals</b>																					
07-08	45	1535	0	0	1580	0	865	11	0	876	0	0	0	0	0	17	0	36	0	53	2509
715-815	36	1338	0	1	1375	0	792	11	0	803	0	0	0	0	0	20	0	27	0	47	2225
730-830	34	1145	0	1	1180	0	715	15	0	730	0	0	0	0	0	18	0	26	0	44	1954
745-845	36	1087	0	1	1124	0	648	13	1	662	0	0	0	0	0	13	0	22	0	35	1821
08-09	24	1006	0	1	1031	0	638	12	1	651	0	0	0	0	0	15	0	19	0	34	1716
<b>PEAK HOUR</b>																					
<b>07-08</b>	45	1535	0	0	1580	0	865	11	0	876	0	0	0	0	0	17	0	36	0	53	2509

**VEHICLE TURNING MOVEMENT COUNT - SUMMARY - TOTALS**

Intersection of: Jefferson Davis Hwy.  
and: Swann Ave.  
Location: Alexandria, VA

Counted by: VCU  
Date: November 17, 2009  
Weather: Cool, Overcast  
Entered by: SB

Day: Tuesday



TIME	TRAFFIC FROM NORTH on: Jefferson Davis Hwy.					TRAFFIC FROM SOUTH on: Jefferson Davis Hwy.					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Swann Ave.					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
45-00	3	182	0	185		528	5	0	533						0	2	3	0	5		723
07:0-15	3	196	0	199		535	3	0	538						0	3	2	0	5		742
15-30	5	196	0	201		603	1	0	604						0	1	1	1	3		808
30-45	3	250	0	253		507	2	0	509						0	0	5	0	5		767
45-00	5	257	0	262		526	2	0	528						0	1	1	0	2		792
08:0-15	10	257	0	267		499	2	0	501						0	3	7	0	10		778
15-30	5	299	0	304		488	3	0	491						0	2	4	0	6		801
30-45	5	336	0	341		448	2	0	450						0	1	3	0	4		795
<b>2 Hr Totals</b>	39	1973	0	2012		4134	20	0	4154		0	0	0	0	0	13	0	26	1	40	6206
<b>1 Hr Totals</b>																					
645-745	14	824	0	838		2173	11	0	2184		0	0	0	0	0	6	0	11	1	18	3040
07-08	16	899	0	915		2171	8	0	2179		0	0	0	0	0	5	0	9	1	15	3109
715-815	23	960	0	983		2135	7	0	2142		0	0	0	0	0	5	0	14	1	20	3145
730-830	23	1063	0	1086		2020	9	0	2029		0	0	0	0	0	6	0	17	0	23	3138
745-845	25	1149	0	1174		1961	9	0	1970		0	0	0	0	0	7	0	15	0	22	3166
<b>PEAK HOUR</b>																					
<b>715-815</b>	23	960	0	983		2135	7	0	2142		0	0	0	0	0	5	0	14	1	20	3145
<b>MIDDAY</b>																					
30-45	10	260	0	270		277	3	0	280						0	5	5	0	10		560
45-00	5	267	0	272		287	1	0	288						0	1	4	0	5		565
12:0-15	3	269	0	272		323	1	0	324						0	5	9	0	14		610
15-30	5	306	0	311		314	1	0	315						0	4	6	0	10		636
30-45	8	313	0	321		306	5	1	312						0	1	6	0	7		640
45-00	7	347	0	354		314	1	0	315						0	2	5	0	7		676
01:0-15	8	356	0	364		320	4	0	324						0	7	6	0	13		701
15-30	6	296	0	302		274	1	1	276						0	2	6	0	8		586
<b>2 Hr Totals</b>	52	2414	0	2466		2415	17	2	2434		0	0	0	0	0	27	0	47	0	74	4974
<b>1 Hr Totals</b>																					
1130-1230	23	1102	0	1125		1201	6	0	1207		0	0	0	0	0	15	0	24	0	39	2371
1145-1245	21	1155	0	1176		1230	8	1	1239		0	0	0	0	0	11	0	25	0	36	2451
12-01	23	1235	0	1258		1257	8	1	1266		0	0	0	0	0	12	0	26	0	38	2562
1215-0115	28	1322	0	1350		1254	11	1	1266		0	0	0	0	0	14	0	23	0	37	2653
1230-0130	29	1312	0	1341		1214	11	2	1227		0	0	0	0	0	12	0	23	0	35	2603
<b>PEAK HOUR</b>																					
<b>1215-0115</b>	28	1322	0	1350		1254	11	1	1266		0	0	0	0	0	14	0	23	0	37	2653
<b>PM</b>																					
04:0-15	4	459	0	463		299	4	0	303						0	5	1	0	6		772
15-30	5	538	0	543		316	3	1	320						0	5	5	0	10		873
30-45	11	535	0	546		323	3	0	326						0	3	2	0	5		877
45-00	5	515	0	520		347	2	0	349						0	4	4	0	8		877
05:0-15	6	529	0	535		335	1	0	336						0	2	10	0	12		883
15-30	2	513	0	515		389	4	1	394						0	2	3	0	5		914
30-45	3	493	0	496		371	3	0	374						0	2	3	0	5		875
45-00	3	468	0	471		330	0	0	330						0	2	6	0	8		809
<b>2 Hr Totals</b>	39	4050	0	4089		2710	20	2	2732		0	0	0	0	0	25	0	34	0	59	6880
<b>1 Hr Totals</b>																					
04-05	25	2047	0	2072		1285	12	1	1298		0	0	0	0	0	17	0	12	0	29	3399
415-515	27	2117	0	2144		1321	9	1	1331		0	0	0	0	0	14	0	21	0	35	3510
430-530	24	2092	0	2116		1394	10	1	1405		0	0	0	0	0	11	0	19	0	30	3551
445-545	16	2050	0	2066		1442	10	1	1453		0	0	0	0	0	10	0	20	0	30	3549
05-06	14	2003	0	2017		1425	8	1	1434		0	0	0	0	0	8	0	22	0	30	3481
<b>PEAK HOUR</b>																					
<b>430-530</b>	24	2092	0	2116		1394	10	1	1405		0	0	0	0	0	11	0	19	0	30	3551
<b>PM</b>																					
07:0-15	5	504	0	509		258	2	0	260						0	3	11	0	14		783
15-30	2	473	0	475		251	0	0	251						0	4	4	0	8		734
30-45	0	354	0	354		211	0	0	211						0	1	1	0	2		567
45-00	2	320	0	322		175	0	0	175						0	4	5	0	9		506
08:0-15	0	265	0	265		183	1	0	184						0	9	13	0	22		471
15-30	0	231	0	231		176	0	0	176						0	7	5	0	12		419
30-45	1	272	1	274		135	0	0	135						0	1	3	0	4		413
45-00	1	267	0	268		158	0	0	158						0	0	2	0	2		428
<b>2 Hr Totals</b>	11	2686	0	2698		1547	3	0	1550		0	0	0	0	0	29	0	44	0	73	4321
<b>1 Hr Totals</b>																					
07-08	9	1651	0	1660		895	2	0	897		0	0	0	0	0	12	0	21	0	33	2590
715-815	4	1412	0	1416		820	1	0	821		0	0	0	0	0	18	0	23	0	41	2278
730-830	2	1170	0	1172		745	1	0	746		0	0	0	0	0	21	0	24	0	45	1963
745-845	3	1088	0	1092		669	1	0	670		0	0	0	0	0	21	0	26	0	47	1809
08-09	2	1035	0	1038		652	1	0	653		0	0	0	0	0	17	0	23	0	40	1731
<b>PEAK HOUR</b>																					
<b>07-08</b>	9	1651	0	1660		895	2	0	897		0	0	0	0	0	12	0	21	0	33	2590