

APPENDIX A
Scoping Documents & Correspondence

DDOT - Gorove/Slade Traffic Impact Study Scoping Form

Project Name: 8th and H Streets NE PUD Site Location: South Side of H St., between 8th & 10th Sts.

Purpose of Study: Traffic Impact Assessment Estimated date of Study Completion: 07/13/2007

Brief Description of Project: Mixed Use Development

Attendee Name:	Representing:	Phone:	E-Mail:

Summary of Draft Trip Generation Impact (Reductions for synergy between uses or transit is NOT applied):

Daily: 2425 IN 2425 OUT AM: 127 IN 111 OUT PM: 191 IN 181 OUT

Attachments:

- DDOT ADT and Classification Maps
- Site location map, including initial traffic distribution thoughts
- Draft Trip Generation Table

DDOT Guideline	Gorove/Slade Comments & Recommendations	Clarifications/Notes
<p>1. Scenarios and Planning Horizons</p> <p>“Each traffic impact study shall present an analysis of the traffic conditions without and with the proposed project at two planning year’s horizons: short term and long term... ..The short-term horizon year is defined as one year after occupancy of the project. If the project is proposed to occur over multiple phases, each phase shall be evaluated one year after phase occupancy. The second planning horizon shall be based on the 20-year planning horizon. ”</p>	<p>Due to the limited site trip generation (less than 500 peak hour trips), we propose to evaluate the short-term traffic impacts only, considering a 5-year planning horizon (2013). This is in keeping with ITE recommendations (see attached Table 3-1 at page 13 extracted from “Transportation Impact Analyses for Site Development,” (2005).</p>	
<p>2. Peak Hours of Analysis</p> <p>None specified, although AM and PM only is implied.</p>	<p>Since this project concerns residential and community-oriented retail we think that weekday AM and PM peak hours will suffice.</p>	
<p>3. Capacity Analyses</p> <p>“... peak hour intersection levels of service shall be determined for signalized and un-signalized intersections within the study area based on procedures described in the latest edition of the Highway Capacity Manual (or equivalent approved by DDOT). The existing arterials shall also be analyzed based on a daily volume/capacity ratio analysis where the threshold capacities are defined by arterial designation per the following table. Volume/capacity ratios that exceed 1.00 shall be identified.”</p>	<p>We will analyze all intersections in the study area using the Synchro 6.0 or Synchro 7.0 software program with HCM methodology (full detailed worksheets will be included in the appendix).</p> <p>A project of this size will have a negligible impact on arterial level of service, and thus roadway v/c ratios will not be calculated.</p>	
<p>4. Study Area</p> <p>“At a minimum, the study area shall contain:</p> <ol style="list-style-type: none"> 1. Adjacent and boundary streets and/or natural barriers 1. Nearest arterial/arterial intersection(s) 2. Access roads 3. Internal roads 4. All major signalized or potentially future signalized intersections, either current or future years, where: <ul style="list-style-type: none"> - the project contributes a 10 percent impact (during either the a.m. or p.m. peak hour) to any approach leg of the intersection where the intersection is operating at an acceptable level of service, or - the project contributes a 5 percent impact (during either the a.m. or p.m. peak hour) to any approach leg of the intersection where the intersection is operating at an unacceptable level of service.” 	<p>Due to the location of the site along a principal arterial (H Street), its proximity to the DC Downtown, its projected limited site trip generation impacts, and the location of several collector facilities separating the site from other principal arterials to the east and west along H Street, we propose to include all street and alleyway intersections providing immediate access to the block enclosing the site. A figure showing the study intersections is attached.</p>	

DDOT Guideline	Gorove/Slade Thoughts	Clarifications/Notes
<p>5. Site Description</p> <p>“A brief description of the site shall be provided. This should include, as a minimum, a description of its size, general terrain features, existing zoning and use, and proposed zoning and use. A map shall be included showing build-out conditions of the subject property of the following: the street system, roadway classifications, number of travel lanes, street width, existing and proposed ROW dimensions, and, existing and proposed driveways and accesses (with turning movements).”</p>	<p>The study will note the acreage, existing zoning and land uses, as well as the proposed zoning and land uses. A copy of the site plan and other figures will be included to illustrate the build-out conditions.</p>	
<p>6. Trip Generation</p> <p>“Trip generation must be calculated from the latest data contained within ITE Trip Generation or other industry publications.... Data limitations, data age, choice of peak hour of adjacent street traffic, choice of independent variable and choice of average rate versus statistical significant modification shall be presented and discussed. In the event that data is not available for a proposed land use, the applicant must conduct a local trip generation study following procedures prescribed in the ITE Trip Generation manual and provide sufficient justification for the proposed generation rate. This rate must be acceptable to DDOT.”</p>	<p>We propose to base residential and retail trip generation on the ITE Trip Generation rates and equations.</p> <p>The independent variable will be the number of units (residential) and per 1000 sq.ft area (retail), based on the final project program.</p> <p>Since ITE rates are based on single use suburban development where virtually all access to the development is by private car, mixed land use synergy and transit usage reductions will be applied to the ITE trip estimates. The WMATA Ridership Survey II will be the basis for transit reductions, and ITE for synergy.</p>	
<p>7. Background Forecast – Short Term</p> <p>“The short term traffic forecast shall be the sum of existing traffic volumes plus cumulative development traffic plus ambient growth. The cumulative development traffic shall be based, in part, on the approved project’s a.m. and p.m. peak hour and ADT summary sheets. The short term planning horizon year ambient growth rate traffic forecasts shall be based on:</p> <ul style="list-style-type: none"> - proportion between existing traffic volumes and build-out regional model forecasts - extrapolation from historical traffic counts to current counts, and/or - planning analysis that considers trends in the areas circulation system through either a proportion of extrapolation estimate.” 	<p>The Background Traffic Forecast will be based on the following factors:</p> <ol style="list-style-type: none"> a) The projected trip generation and traffic assignment for all planned land use developments likely to impact the study area roadway network, and b) Annual growth in regional/through traffic along H Street by a factor of two percent (2%) per year unto the year following the full occupancy of the proposed development. 	

DDOT Guideline	Gorove/Slade Thoughts	Clarifications/Notes
<p>8. Background Forecast – Long Term</p> <p>“Long term a.m. and p.m. peak hour planning horizon traffic forecasts shall be based on the most recent COG traffic forecasts. Requests for forecast shall comply with current COG protocol. It should be noted that the COG forecasts are based on future year population and employment projections that reflect a regional perspective on growth and development. The applicant and consultant shall investigate those land use assumptions as they apply to their project study area and make forecast adjustments as necessary.”</p>	<p>Due to the limited site trip generation (less than 500 peak hour trips), we propose to evaluate the short-term traffic impacts only, considering a 5-year planning horizon (2013). This is in keeping with ITE recommendations (see attached Table 3-1 at page 13 extracted from “Transportation Impact Analyses for Site Development,” (2005).</p>	
<p>9. Background Transportation Improvements</p> <p>“The baseline surface transportation network (without the proposed project improvements) assumed for the first planning horizon should reflect existing facilities plus any firmly committed improvements by the District and other developments within the study area. All planned surface transportation facilities within the study area may be included for the baseline assumptions for the long term planning horizon network analysis.”</p>	<p>The study will include all planned and programmed transportation improvements which will impact travel patterns within the immediate study area.</p>	
<p>10. Trip Distribution</p> <p>“Trip distribution may be based on COG traffic forecasts, market Analysis, existing traffic flows, applied census data, and professional judgment.”</p>	<p>Our trip distribution assumptions will consider all relevant and available factors, as well as our professional judgment.</p>	
<p>11. Project Impacts</p> <p>“The key elements of the project impact analysis include:</p> <ol style="list-style-type: none"> 1. generalized daily traffic volume level of service\ 2. a peak hour intersection level of service <i>The principal objective of the intersection LOS analysis is to identify whether the traffic from the proposed project when added to the existing plus short and long term planning horizon traffic will result in a significant impact and an unacceptable LOS. Significance is defined as: (a) When the added project traffic causes LOS to exceed the established threshold, (b) When the short term or long term horizon year traffic with the project exceeds the established threshold, and the project traffic causes a 2% increase in the v/c ratio or delay.</i> 3. the appropriateness of access locations and the need for future traffic signals 4. turn lane storage requirements 5. sight distance 6. appropriateness of acceleration or deceleration lanes” 	<p>As mentioned previously, we do not anticipate performing a roadway v/c ratio, and thus will not be including analysis under category 1.</p> <p>For the intersection LOS analysis, we will assume a threshold of LOS E. We will also list the approach/movement delays where appropriate.</p> <p>We will provide queuing analysis results for all access turn lanes, where appropriate. We do not anticipate the need/desire for a traffic signal.</p> <p>We will perform a sight distance review in the field, but do not plan on incorporating sight triangles onto a CAD drawing to submit with the report, unless specifically requested.</p>	

DDOT Guideline	Gorove/Slade Thoughts	Clarifications/Notes
<p>12. Special Analysis/Issues</p> <p>“This section provides the District with opportunities to request specific focused traffic analyses germane to the proposed development. These could included access control, access spacing, accident/safety concerns, cut through traffic and residential quality of life, truck estimates and pavement design, accident statistics, pedestrian safety, bicycle safety, safe routes to schools, emergency routes, etc.”</p>	<p>No comments</p>	

Project Scope agreed to by: _____

Date: _____

DDOT Project Contact: _____

Gorove/Slade Project Contact: [Leon Anderson/ Cullen Elias](#) _____

Date of Request: _____ Date Needed by: [ASAP](#) _____

Request:

DDOT Contact:

Existing Turning Movement Counts within 1 Year

Intersections: _____

Signal Timings for Intersections within Study Area

CAD Drawing of Study Area (ROW, signing, marking, etc.)

ADTs from last ten years in Study Area

Approved Development Details (preferably TIS)

Developments: _____
[Planned developments to be included as background. Copies of the traffic studies preferred.](#) _____

Funded Transportation Improvement Details

Improvements/Studies: _____
[Any roadway improvements that might affect traffic patterns within the study area.](#) _____

Crash/Accident Data within Study Area

Other: _____

APPENDIX B
Levels of Service Description

LEVEL OF SERVICE DEFINITIONS

All capacity analyses are based on the procedures specified by the Transportation Research Board, Special Report 209: *Highway Capacity Manual (HCM)*, 2000. Levels of service (LOS) range from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below:

{ **Signalized Intersections:** Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

v Level of Service A describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.

v Level of Service B describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

v Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.

v Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.

v Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.

v Level of Service F describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

{ **Unsignalized Intersections:** At an unsignalized intersection, the major street through traffic and right turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn. The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicates worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

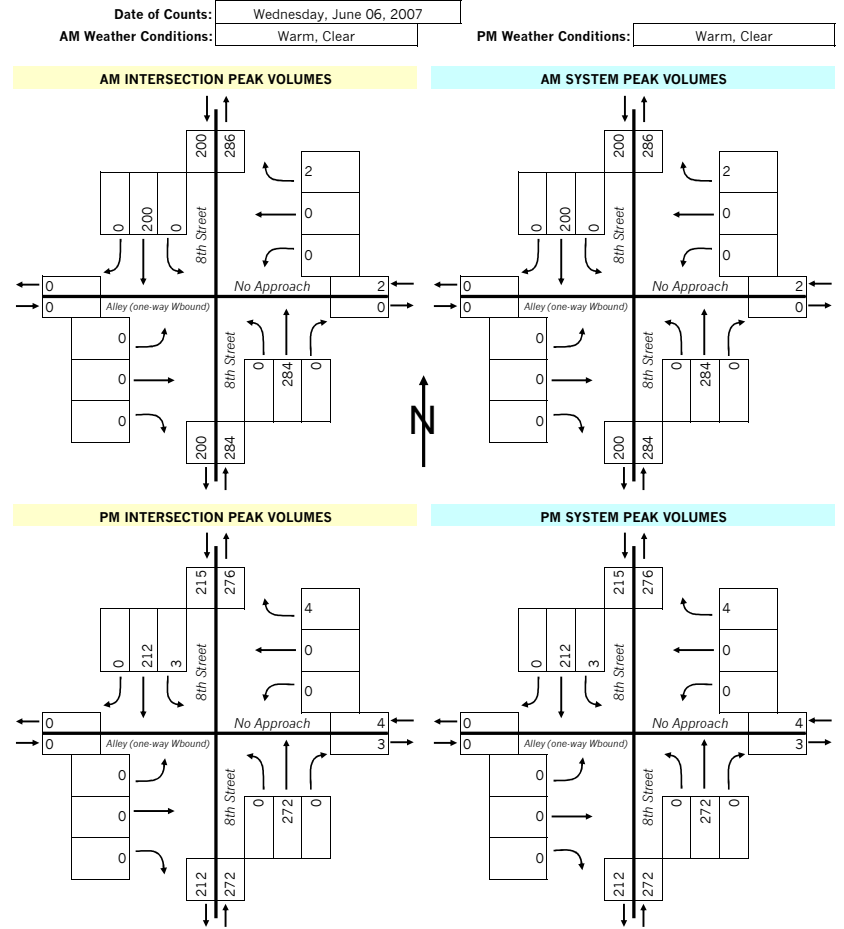
- v Level of Service A. Describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- v Level of Service B. Describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- v Level of Service C. Describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- v Level of Service D. Describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- v Level of Service E. Describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- v Level of Service F. Describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

APPENDIX C
Existing Traffic Counts

Gorove/Slade Associates

Project Name :
 Project # :
 Location :
 Data Source :

Intersection: The Alley behind the Plaza on H Street Northeast at 8th Street Northeast																	
AM PEAK		Southbound 8th Street				Westbound No Approach				Northbound 8th Street				Eastbound Alley (one-way Wbound)			
Direction: Roadway: Movement:		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
6:00 AM to 6:15 AM		0	12	0	1	1	0	0	0	0	23	0	0	0	0	0	0
6:15 AM to 6:30 AM		0	18	0	0	0	0	0	0	0	24	0	0	0	0	0	0
6:30 AM to 6:45 AM		0	29	0	0	0	0	0	0	0	33	0	6	0	0	0	0
6:45 AM to 7:00 AM		0	35	0	0	0	0	0	0	0	34	0	2	0	0	0	0
7:00 AM to 7:15 AM		0	32	1	0	0	0	0	0	0	58	0	10	0	0	0	0
7:15 AM to 7:30 AM		0	38	1	0	0	0	0	0	0	59	0	9	0	0	0	0
7:30 AM to 7:45 AM		0	36	1	0	0	0	0	0	0	67	0	4	0	0	0	0
7:45 AM to 8:00 AM		0	42	0	0	0	0	0	0	0	57	0	2	0	0	0	0
8:00 AM to 8:15 AM		0	47	0	0	1	0	0	0	0	57	0	5	0	0	0	0
8:15 AM to 8:30 AM		0	57	0	0	0	0	0	0	0	75	0	1	0	0	0	0
8:30 AM to 8:45 AM		0	53	0	0	1	0	0	0	0	83	0	7	0	0	0	0
8:45 AM to 9:00 AM		0	43	0	0	0	0	0	0	0	69	0	8	0	0	0	0
PM PEAK		Southbound 8th Street				Westbound No Approach				Northbound 8th Street				Eastbound Alley (one-way Wbound)			
Direction: Roadway: Movement:		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
4:00 PM to 4:15 PM		0	54	0	0	1	0	0	0	0	76	0	4	0	0	0	0
4:15 PM to 4:30 PM		0	57	1	0	1	0	0	0	0	69	0	8	0	0	0	0
4:30 PM to 4:45 PM		0	41	1	0	0	0	0	0	0	54	0	11	0	0	0	0
4:45 PM to 5:00 PM		0	60	1	0	2	0	0	0	0	73	0	7	0	0	0	0
5:00 PM to 5:15 PM		0	61	0	0	0	0	0	0	1	56	0	9	1	0	1	0
5:15 PM to 5:30 PM		0	53	0	0	0	0	0	0	0	45	0	8	0	0	0	0
5:30 PM to 5:45 PM		1	54	0	0	0	0	0	0	1	52	0	8	1	0	0	0
5:45 PM to 6:00 PM		0	59	0	0	0	0	0	0	0	53	0	7	0	0	1	0
6:00 PM to 6:15 PM		0	43	0	0	0	1	0	0	0	41	0	8	0	0	0	0
6:15 PM to 6:30 PM		0	59	1	0	1	0	0	0	0	50	1	8	0	0	0	0
6:30 PM to 6:45 PM		0	35	0	0	0	0	0	0	0	50	0	4	0	0	0	0
6:45 PM to 7:00 PM		0	43	0	0	0	0	0	0	0	37	0	8	0	0	0	0
PEAK HOURS		Southbound 8th Street				Westbound No Approach				Northbound 8th Street				Eastbound Alley (one-way Wbound)			
Direction: Roadway: Movement:		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
AM INTERSECTION PEAK HOUR																	
8:00 AM to 9:00 AM		0	200	0	0	2	0	0	0	0	284	0	21	0	0	0	0
PM INTERSECTION PEAK HOUR																	
4:00 PM to 5:00 PM		0	212	3	0	4	0	0	0	0	272	0	30	0	0	0	0
AM SYSTEM PEAK HOUR																	
8:00 AM to 9:00 AM		0	200	0	0	2	0	0	0	0	284	0	21	0	0	0	0
PM SYSTEM PEAK HOUR																	
4:00 PM to 5:00 PM		0	212	3	0	4	0	0	0	0	272	0	30	0	0	0	0
PEAK HOUR FACTORS		8th Street				No Approach				8th Street				Alley (one-way Wbound)			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
AM PEAK HOUR		0.00	0.88	0.00	N/A	0.50	0.00	0.00	N/A	0.00	0.86	0.00	N/A	0.00	0.00	0.00	N/A
PM PEAK HOUR		0.00	0.88	0.75	N/A	0.50	0.00	0.00	N/A	0.00	0.89	0.00	N/A	0.00	0.00	0.00	N/A
Overall AM PEAK HOUR FACTOR = 0.89																	
Overall PM PEAK HOUR FACTOR = 0.90																	
AM Period Intersection Volume: 1087																	
PM Period Intersection Volume: 1293																	

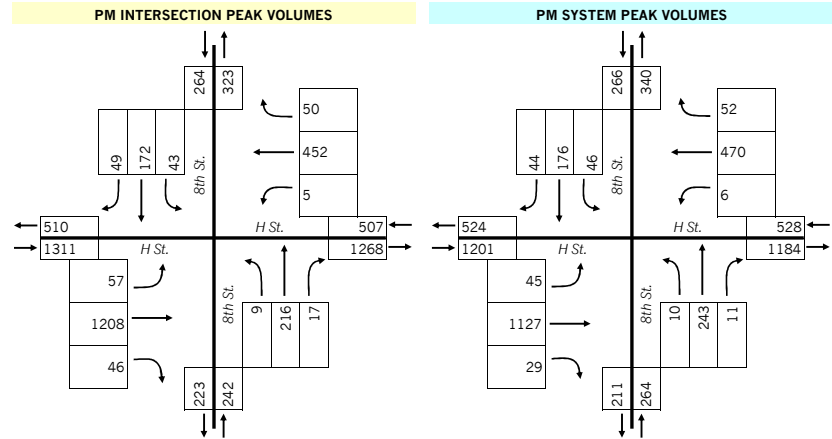
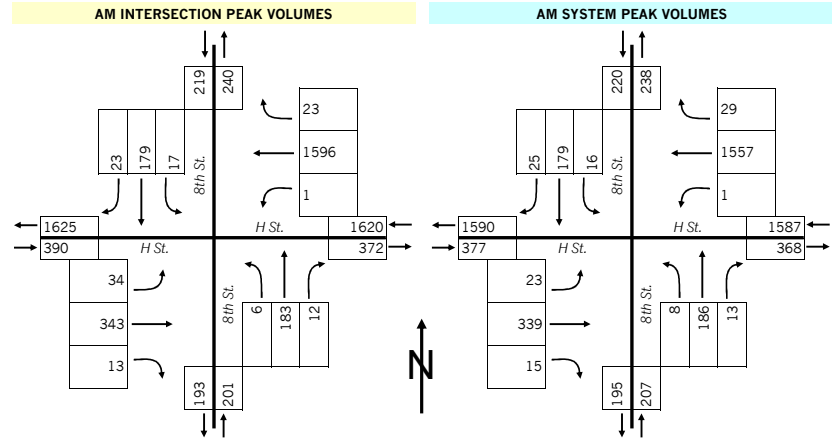


Gorove/Slade Associates

Project Name :	8th Street at H Street
Project # :	2117-001
Location :	DC
Data Source :	Gorove/Slade Associates

Intersection:		8th Street Northeast at H Street Northeast																							
AM PEAK	Direction: Roadway: Movement:	Southbound 8th St.				Westbound H St.				Northbound 8th St.				Eastbound H St.											
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds								
6:00 AM to 6:15 AM										1	16	4	6	1	20	6	0								
6:15 AM to 6:30 AM		2	10	0	13	19	179	2	3	3	12	3	11	1	28	5	6								
6:30 AM to 6:45 AM		2	16	0	15	2	263	3	10	3	27	1	6	7	36	2	25								
6:45 AM to 7:00 AM		8	25	0	7	5	310	1	10	0	21	2	9	3	33	0	13								
7:00 AM to 7:15 AM		3	25	2	12	1	322	1	15	0	24	4	12	5	58	6	25								
7:15 AM to 7:30 AM		3	39	0	2	4	372	1	21	1	25	5	26	3	73	1	24								
7:30 AM to 7:45 AM		2	28	3	21	2	294	0	14	1	43	3	12	6	64	2	28								
7:45 AM to 8:00 AM		4	45	4	30	5	400	0	18	3	54	2	5	4	83	12	10								
8:00 AM to 8:15 AM		7	38	2	26	5	416	0	23	0	24	2	12	1	99	7	16								
8:15 AM to 8:30 AM		4	44	5	48	6	386	1	33	3	53	1	8	1	78	10	77								
8:30 AM to 8:45 AM		8	52	6	38	7	394	0	21	6	52	1	19	7	83	5	69								
8:45 AM to 9:00 AM		6	45	3	27	4	361	0	30	4	57	4	17	6	79	1	41								
PM PEAK	Direction: Roadway: Movement:	Southbound 8th St.				Westbound H St.				Northbound 8th St.				Eastbound H St.											
4:00 PM to 4:15 PM		8	57	13	43	17	111	2	48	2	73	2	52	5	281	7	111								
4:15 PM to 4:30 PM		14	40	10	59	12	106	3	69	4	54	6	54	13	288	14	93								
4:30 PM to 4:45 PM		14	31	14	83	6	133	1	70	1	50	2	40	9	282	9	103								
4:45 PM to 5:00 PM		8	48	9	56	17	120	0	60	4	66	0	66	2	276	15	77								
5:00 PM to 5:15 PM		13	53	10	34	15	93	1	36	8	46	1	42	22	362	19	20								
5:15 PM to 5:30 PM		8	42	11	45	15	97	0	54	8	18	1	52	4	245	25	46								
5:30 PM to 5:45 PM		4	50	10	68	13	106	10	47	1	28	2	25	3	210	27	21								
5:45 PM to 6:00 PM		10	51	7	44	7	86	1	47	0	46	0	16	21	268	5	35								
6:00 PM to 6:15 PM		6	44	16	48	14	80	3	40	6	43	1	10	6	303	10	20								
6:15 PM to 6:30 PM		9	43	7	38	12	90	2	34	0	26	2	19	1	236	9	32								
6:30 PM to 6:45 PM		11	31	9	43	8	81	2	32	0	40	5	25	0	163	3	28								
6:45 PM to 7:00 PM		8	31	6	36	7	84	7	35	1	20	6	14	4	253	3	48								
PEAK HOURS	Direction: Roadway: Movement:	Southbound 8th St.				Westbound H St.				Northbound 8th St.				Eastbound H St.											
AM INTERSECTION PEAK HOUR 7:45 AM to 8:45 AM		23	179	17	142	23	1596	1	95	12	183	6	44	13	343	34	172								
PM INTERSECTION PEAK HOUR 4:15 PM to 5:15 PM		49	172	43	232	50	452	5	235	17	216	9	202	46	1208	57	293								
AM SYSTEM PEAK HOUR 8:00 AM to 9:00 AM		25	179	16	139	29	1557	1	107	13	186	8	56	15	339	23	203								
PM SYSTEM PEAK HOUR 4:00 PM to 5:00 PM		44	176	46	241	52	470	6	247	11	243	10	212	29	1127	45	384								
PEAK HOUR FACTORS		Southbound 8th St.				Westbound H St.				Northbound 8th St.				Eastbound H St.											
AM PEAK HOUR		0.78	0.86	0.67	N/A	1.04	0.94	0.25	N/A	0.54	0.82	0.50	N/A	0.54	0.86	0.58	N/A								
PM PEAK HOUR		0.79	0.77	0.82	N/A	0.76	0.88	0.50	N/A	0.69	0.83	0.42	N/A	0.56	0.98	0.75	N/A								
Overall AM PEAK HOUR FACTOR		= 0.96								Overall PM PEAK HOUR FACTOR								= 0.98							
AM Period Intersection Volume:		5508				PM Period Intersection Volume:				6094															

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear
 PM Weather Conditions: Warm, Clear

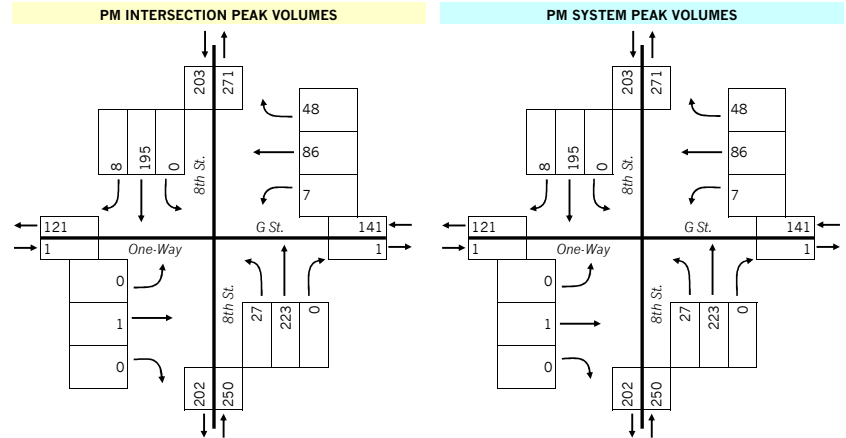
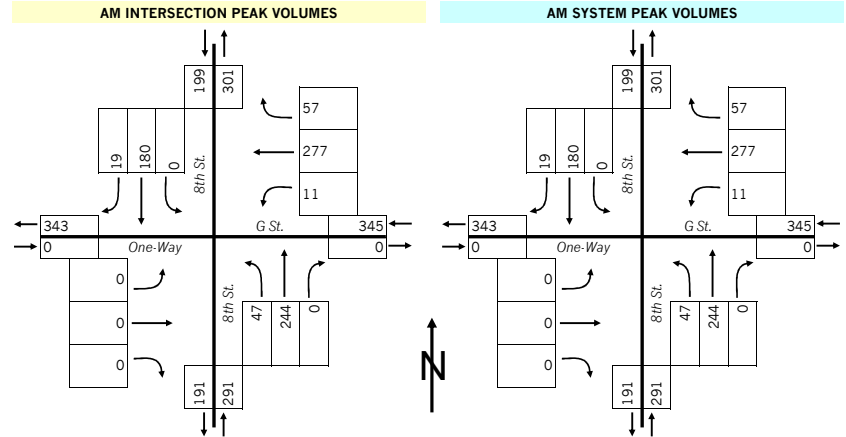


Gorove/Slade Associates

Project Name :	8th Street at H Street
Project Number:	2117-001
Location:	DC
Data Source:	Gorove/Slade Associates

Intersection:		8th Street Northeast at G Street Northeast																		
AM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound						
	Roadway:	8th St.				G St.				8th St.				One-Way						
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds			
6:00 AM to 6:15 AM		2	10	0	1	2	12	1	3	0	24	0	2	0	0	0	1			
6:15 AM to 6:30 AM		0	17	0	2	5	7	1	1	0	18	0	3	0	0	0	0			
6:30 AM to 6:45 AM		1	29	0	2	7	16	1	1	0	29	1	9	0	0	0	2			
6:45 AM to 7:00 AM		0	32	0	1	6	8	0	1	0	24	5	3	0	0	0	4			
7:00 AM to 7:15 AM		3	27	0	1	7	20	2	3	0	53	9	4	0	0	0	3			
7:15 AM to 7:30 AM		0	44	0	1	9	34	5	6	0	50	6	3	0	0	0	1			
7:30 AM to 7:45 AM		2	33	0	0	12	31	6	7	8	50	7	2	0	0	0	0			
7:45 AM to 8:00 AM		1	43	0	2	8	53	3	15	0	46	3	7	0	0	0	3			
8:00 AM to 8:15 AM		5	36	0	3	10	72	7	6	0	47	13	4	0	0	0	4			
8:15 AM to 8:30 AM		3	52	0	4	16	73	3	6	0	64	15	1	0	0	0	3			
8:30 AM to 8:45 AM		7	47	0	12	15	70	0	13	0	66	9	2	0	0	0	2			
8:45 AM to 9:00 AM		4	45	0	2	16	62	1	9	0	67	10	4	0	0	0	1			
PM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound						
	Roadway:	8th St.				G St.				8th St.				One-Way						
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds			
4:00 PM to 4:15 PM		1	52	0	5	17	29	0	6	0	55	9	1	0	0	0	2			
4:15 PM to 4:30 PM		2	50	0	5	11	20	3	3	0	59	8	0	0	0	0	0			
4:30 PM to 4:45 PM		0	39	0	0	11	19	1	2	0	51	3	5	0	0	0	0			
4:45 PM to 5:00 PM		5	54	0	4	9	18	3	7	0	58	7	3	0	1	0	5			
5:00 PM to 5:15 PM		4	62	0	2	10	19	5	5	0	43	9	5	0	1	0	1			
5:15 PM to 5:30 PM		2	50	0	1	8	16	2	7	0	40	7	5	0	0	0	4			
5:30 PM to 5:45 PM		4	54	0	6	6	17	2	6	0	47	6	7	0	0	0	2			
5:45 PM to 6:00 PM		2	59	0	5	7	15	4	3	0	49	5	3	0	0	0	6			
6:00 PM to 6:15 PM		1	50	0	3	6	11	2	7	0	47	9	5	0	0	0	4			
6:15 PM to 6:30 PM		1	53	0	7	12	10	4	2	0	43	5	8	0	0	0	5			
6:30 PM to 6:45 PM		3	41	0	5	10	11	3	6	0	46	2	9	0	0	0	7			
6:45 PM to 7:00 PM		3	40	2	6	6	18	0	2	0	35	9	9	0	0	0	0			
PEAK HOURS	Direction:	Southbound				Westbound				Northbound				Eastbound						
Roadway:	8th St.	G St.				8th St.				One-Way										
Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds				
AM INTERSECTION PEAK HOUR																				
8:00 AM to 9:00 AM		19	180	0	21	57	277	11	34	0	244	47	11	0	0	0	10			
PM INTERSECTION PEAK HOUR																				
4:00 PM to 5:00 PM		8	195	0	14	48	86	7	18	0	223	27	9	0	1	0	7			
AM SYSTEM PEAK HOUR																				
8:00 AM to 9:00 AM		19	180	0	21	57	277	11	34	0	244	47	11	0	0	0	10			
PM SYSTEM PEAK HOUR																				
4:00 PM to 5:00 PM		8	195	0	14	48	86	7	18	0	223	27	9	0	1	0	7			
PEAK HOUR	Southbound	Westbound				Northbound				Eastbound										
FACTORS	8th St.	G St.				8th St.				One-Way										
AM PEAK HOUR	0.68	0.87	0.00	N/A	0.89	0.95	0.39	N/A	0.00	0.91	0.78	N/A	0.00	0.00	0.00	N/A				
PM PEAK HOUR	0.40	0.90	0.00	N/A	0.71	0.74	0.58	N/A	0.00	0.94	0.75	N/A	0.00	0.25	0.00	N/A				
Overall AM PEAK HOUR FACTOR	= 0.92								Overall PM PEAK HOUR FACTOR								= 0.91			
AM Period Intersection Volume:	1668								PM Period Intersection Volume:								1633			

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear
 PM Weather Conditions: Warm, Clear

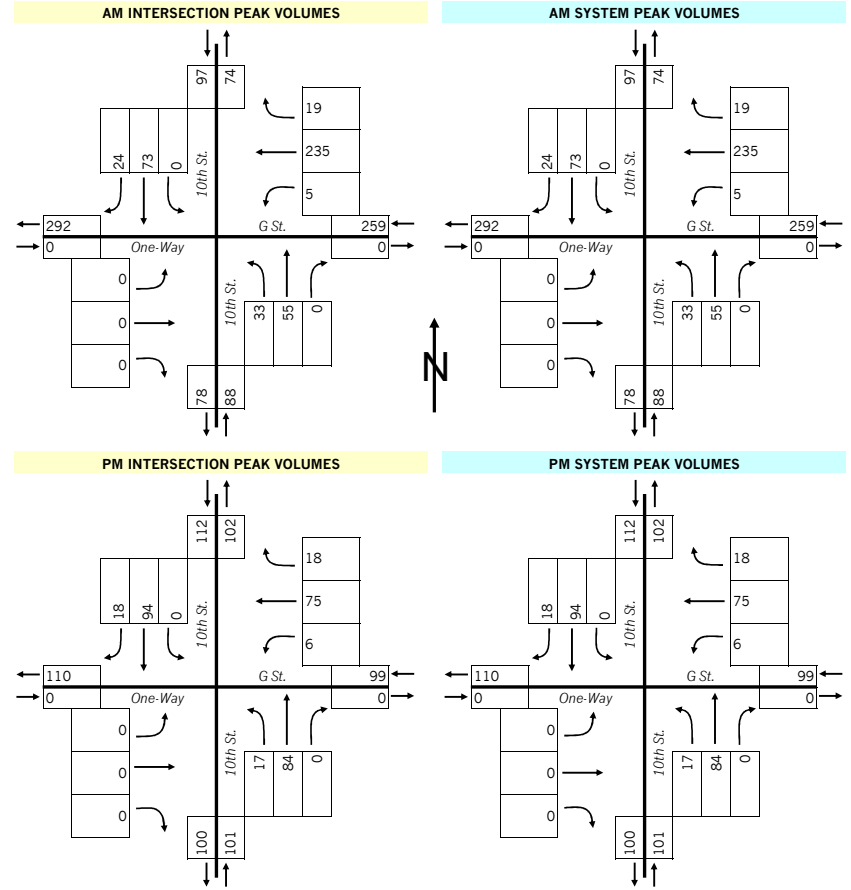


Gorove/Slade Associates

Project Name :	8th Street at H Street
Project Number:	2117-001
Location:	DC
Data Source:	Gorove/Slade Associates

Intersection:		10th Street Northeast at G Street Northeast															
AM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound			
	Roadway:	10th St.				G St.				10th St.				One-Way			
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
6:00 AM to 6:15 AM		3	4	0	3	2	10	0	0	0	1	1	2	0	1	0	2
6:15 AM to 6:30 AM		1	2	0	2	2	8	0	2	0	2	1	0	0	0	0	0
6:30 AM to 6:45 AM		3	3	0	0	1	16	0	2	0	4	1	5	0	0	0	3
6:45 AM to 7:00 AM		3	11	0	4	1	6	0	3	0	6	3	4	0	0	0	3
7:00 AM to 7:15 AM		6	8	0	1	1	20	1	0	0	5	1	3	0	0	0	1
7:15 AM to 7:30 AM		1	9	0	7	3	29	4	8	0	2	11	0	0	0	0	1
7:30 AM to 7:45 AM		7	7	0	3	7	32	1	4	0	10	4	6	0	0	0	3
7:45 AM to 8:00 AM		2	18	0	6	9	63	1	8	0	4	3	8	0	0	0	1
8:00 AM to 8:15 AM		8	11	0	8	2	56	2	10	0	10	6	5	0	0	0	6
8:15 AM to 8:30 AM		8	23	0	5	5	64	1	9	0	22	10	3	0	0	0	8
8:30 AM to 8:45 AM		5	23	0	11	7	59	1	10	0	10	7	6	0	0	0	2
8:45 AM to 9:00 AM		3	16	0	4	5	56	1	1	0	13	10	5	0	0	0	5
PM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound			
	Roadway:	10th St.				G St.				10th St.				One-Way			
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
4:00 PM to 4:15 PM		5	24	0	9	6	24	0	2	0	26	6	3	0	0	0	10
4:15 PM to 4:30 PM		5	21	0	1	4	23	0	10	0	23	4	6	0	0	0	4
4:30 PM to 4:45 PM		3	23	0	4	5	14	2	9	0	15	4	7	0	0	0	3
4:45 PM to 5:00 PM		5	26	0	4	3	14	4	7	0	20	3	10	0	0	0	7
5:00 PM to 5:15 PM		3	23	0	6	5	14	2	12	0	11	7	1	0	0	0	8
5:15 PM to 5:30 PM		6	27	0	6	4	13	1	3	1	13	8	5	0	0	0	4
5:30 PM to 5:45 PM		3	23	0	13	4	14	1	3	0	11	5	2	0	0	0	4
5:45 PM to 6:00 PM		5	20	0	10	8	14	0	3	0	14	3	5	0	0	0	8
6:00 PM to 6:15 PM		3	24	0	3	5	11	3	10	0	22	5	6	0	0	0	12
6:15 PM to 6:30 PM		1	21	0	6	3	16	4	3	0	5	6	8	0	0	0	8
6:30 PM to 6:45 PM		7	18	0	3	5	9	2	6	0	13	2	4	0	0	0	20
6:45 PM to 7:00 PM		4	17	0	3	4	15	1	10	0	12	5	8	0	0	0	6
PEAK HOURS	Direction:	Southbound				Westbound				Northbound				Eastbound			
	Roadway:	10th St.				G St.				10th St.				One-Way			
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
AM INTERSECTION PEAK HOUR																	
8:00 AM to 9:00 AM		24	73	0	28	19	235	5	30	0	55	33	19	0	0	0	21
PM INTERSECTION PEAK HOUR																	
4:00 PM to 5:00 PM		18	94	0	18	18	75	6	28	0	84	17	26	0	0	0	24
AM SYSTEM PEAK HOUR																	
8:00 AM to 9:00 AM		24	73	0	28	19	235	5	30	0	55	33	19	0	0	0	21
PM SYSTEM PEAK HOUR																	
4:00 PM to 5:00 PM		18	94	0	18	18	75	6	28	0	84	17	26	0	0	0	24
PEAK HOUR	Direction:	Southbound				Westbound				Northbound				Eastbound			
FACTORS	Roadway:	10th St.				G St.				10th St.				One-Way			
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
	AM PEAK HOUR	0.75	0.79	0.00	N/A	0.68	0.92	0.63	N/A	0.00	0.63	0.83	N/A	0.00	0.00	0.00	N/A
	PM PEAK HOUR	0.90	0.90	0.00	N/A	0.75	0.78	0.38	N/A	0.00	0.81	0.71	N/A	0.00	0.00	0.00	N/A
	Overall AM PEAK HOUR FACTOR	= 0.83								Overall PM PEAK HOUR FACTOR							
		= 0.86															
AM Period Intersection Volume:		809				PM Period Intersection Volume:				818							

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear
 PM Weather Conditions: Warm, Clear

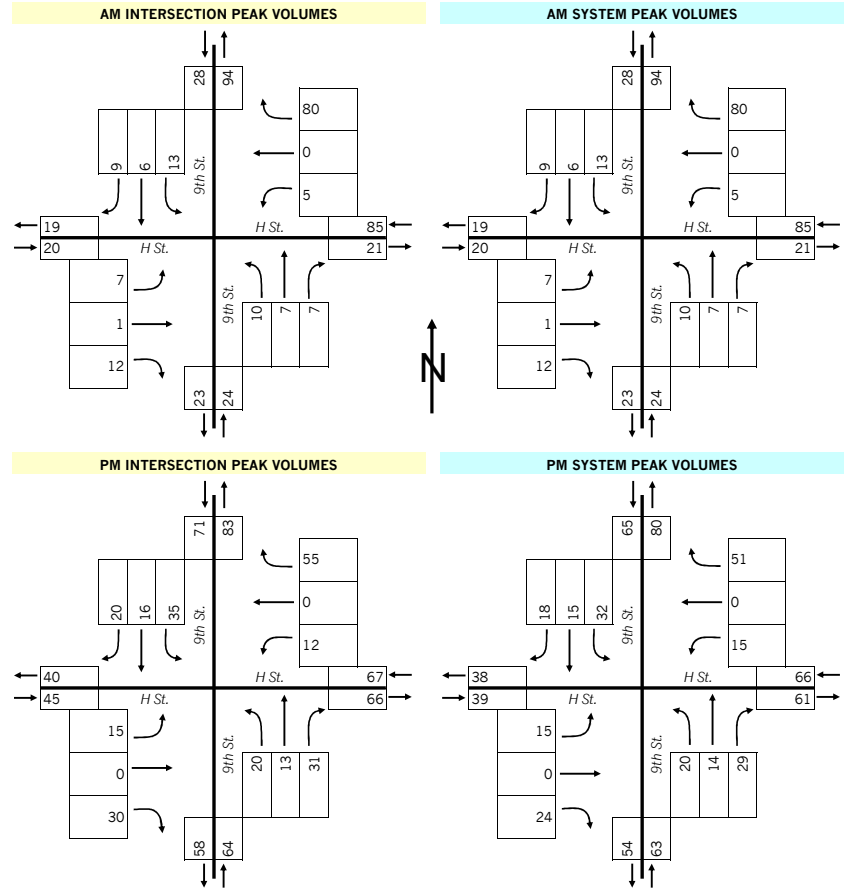


Gorove/Slade Associates

Project Name : 8th Street at H Street
 Project Number: 2117-001
 Location: DC
 Data Source: Gorove/Slade Associates

Intersection:		9th Street Northeast at H Street Northeast															
AM PEAK	Direction: Roadway: Movement:	Southbound 9th St.				Westbound H St.				Northbound 9th St.				Eastbound H St.			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
6:00 AM to 6:15 AM		2	0	0	3	1	0	1	1	0	0	0	1	0	0	0	0
6:15 AM to 6:30 AM		5	2	0	2	3	0	1	4	1	0	1	1	1	0	0	3
6:30 AM to 6:45 AM		5	0	2	3	2	0	1	2	0	1	1	2	1	0	2	5
6:45 AM to 7:00 AM		3	0	3	1	5	0	0	3	0	0	0	5	3	0	0	5
7:00 AM to 7:15 AM		4	1	0	3	2	0	1	2	0	1	1	2	0	0	3	8
7:15 AM to 7:30 AM		6	1	2	7	5	0	0	5	1	1	0	3	1	0	2	3
7:30 AM to 7:45 AM		5	0	1	6	12	0	2	3	3	0	1	5	3	0	1	13
7:45 AM to 8:00 AM		6	1	3	5	18	0	1	5	0	1	3	7	0	0	0	4
8:00 AM to 8:15 AM		3	1	3	3	19	0	0	10	1	0	1	9	4	0	1	8
8:15 AM to 8:30 AM		2	2	4	6	21	0	3	13	2	2	3	4	2	0	1	6
8:30 AM to 8:45 AM		2	0	4	10	15	0	2	5	1	2	2	12	3	0	1	20
8:45 AM to 9:00 AM		2	3	2	9	25	0	0	9	3	3	4	12	3	1	4	8
PM PEAK	Direction: Roadway: Movement:	Southbound 9th St.				Westbound H St.				Northbound 9th St.				Eastbound H St.			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
4:00 PM to 4:15 PM		3	3	7	22	8	0	3	12	2	4	4	7	5	0	4	21
4:15 PM to 4:30 PM		8	5	9	18	19	0	2	22	8	6	1	19	4	0	1	39
4:30 PM to 4:45 PM		4	3	8	30	10	0	6	24	11	2	9	20	9	0	7	41
4:45 PM to 5:00 PM		3	4	8	31	14	0	4	24	8	2	6	7	6	0	3	27
5:00 PM to 5:15 PM		5	4	10	31	12	0	0	22	4	3	4	17	11	0	4	14
5:15 PM to 5:30 PM		4	2	8	28	6	0	3	16	10	2	2	19	6	0	8	22
5:30 PM to 5:45 PM		4	3	7	15	13	0	4	11	5	5	8	7	8	0	4	28
5:45 PM to 6:00 PM		2	2	6	21	9	0	4	8	7	2	3	17	9	0	6	34
6:00 PM to 6:15 PM		6	3	7	21	11	0	4	17	9	3	8	6	13	0	3	19
6:15 PM to 6:30 PM		6	3	6	14	8	0	2	10	5	5	6	6	5	0	2	28
6:30 PM to 6:45 PM		4	1	8	20	10	0	4	8	7	7	5	5	6	0	1	7
6:45 PM to 7:00 PM		1	0	5	14	8	0	4	12	4	2	5	6	10	0	2	10
PEAK HOURS	Direction: Roadway: Movement:	Southbound 9th St.				Westbound H St.				Northbound 9th St.				Eastbound H St.			
AM INTERSECTION PEAK HOUR	8:00 AM to 9:00 AM	9	6	13	28	80	0	5	37	7	7	10	37	12	1	7	42
PM INTERSECTION PEAK HOUR	4:15 PM to 5:15 PM	20	16	35	110	55	0	12	92	31	13	20	63	30	0	15	121
AM SYSTEM PEAK HOUR	8:00 AM to 9:00 AM	9	6	13	28	80	0	5	37	7	7	10	37	12	1	7	42
PM SYSTEM PEAK HOUR	4:00 PM to 5:00 PM	18	15	32	101	51	0	15	82	29	14	20	53	24	0	15	128
PEAK HOUR FACTORS		9th St.				H St.				9th St.				H St.			
AM PEAK HOUR		0.75	0.50	0.81	N/A	0.80	0.00	0.42	N/A	0.58	0.58	0.63	N/A	0.75	0.25	0.44	N/A
PM PEAK HOUR		0.56	0.75	0.89	N/A	0.67	0.00	0.63	N/A	0.66	0.58	0.56	N/A	0.67	0.00	0.54	N/A
Overall AM PEAK HOUR FACTOR =		0.79				Overall PM PEAK HOUR FACTOR =				0.84							
AM Period Intersection Volume:		297				PM Period Intersection Volume:				661							

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear
 PM Weather Conditions: Warm, Clear

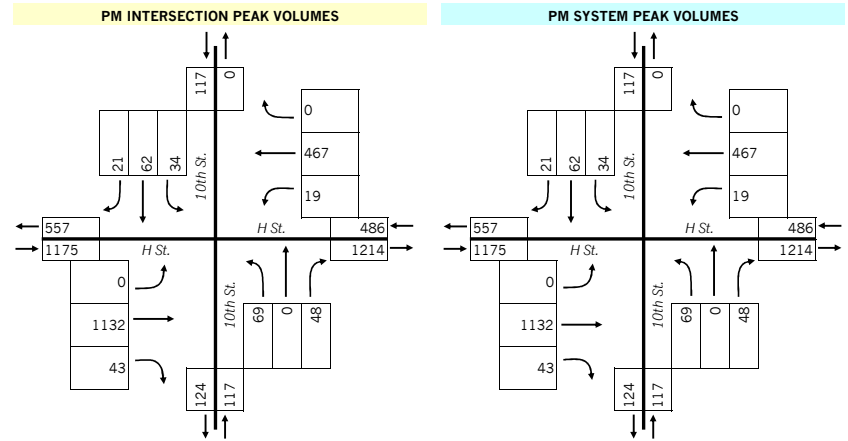
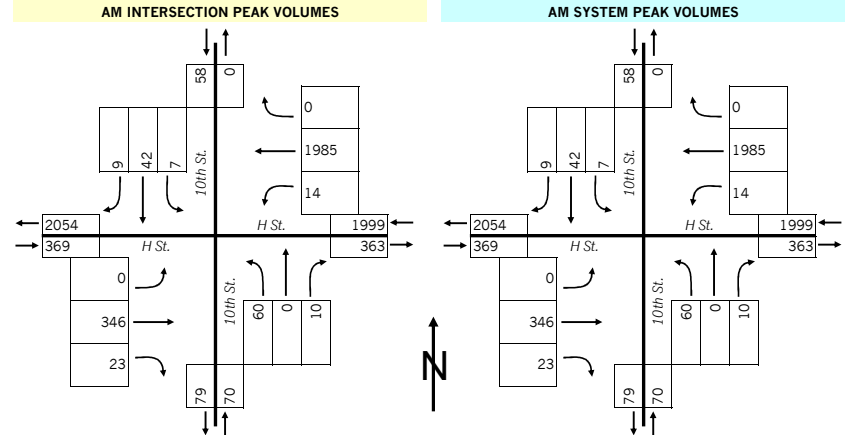


Gorove/Slade Associates

Project Name :	8th Street at H Street
Project Number:	2117-001
Location:	DC
Data Source:	Gorove/Slade Associates

Intersection:		10th Street Northeast at H Street Northeast															
AM PEAK	Direction: Roadway: Movement:	Southbound 10th St.				Westbound H St.				Northbound 10th St.				Eastbound H St.			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
		6:00 AM to 6:15 AM	3	5	1	0	0	170	1	1	4	0	0	3	2	27	0
6:15 AM to 6:30 AM	3	2	1	0	0	203	2	1	2	0	3	2	2	34	0	3	
6:30 AM to 6:45 AM	0	5	0	1	0	305	1	1	2	0	4	4	2	33	0	4	
6:45 AM to 7:00 AM	2	7	2	0	0	331	6	1	2	0	7	3	2	38	0	3	
7:00 AM to 7:15 AM	3	2	2	0	0	351	8	1	5	0	6	1	4	64	0	2	
7:15 AM to 7:30 AM	1	4	2	0	0	405	4	1	3	0	3	2	7	64	0	9	
7:30 AM to 7:45 AM	3	8	3	0	0	394	4	1	5	0	17	3	2	75	0	8	
7:45 AM to 8:00 AM	1	13	3	0	0	474	0	0	4	0	10	3	5	71	0	9	
8:00 AM to 8:15 AM	3	9	1	0	0	489	4	3	4	0	9	5	4	94	0	9	
8:15 AM to 8:30 AM	2	11	2	3	0	450	3	13	1	0	23	5	9	90	0	7	
8:30 AM to 8:45 AM	0	12	3	1	0	514	6	0	1	0	12	3	3	81	0	12	
8:45 AM to 9:00 AM	4	10	1	0	0	532	1	2	4	0	16	2	7	81	0	11	
PM PEAK	Direction: Roadway: Movement:	Southbound 10th St.				Westbound H St.				Northbound 10th St.				Eastbound H St.			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
		4:00 PM to 4:15 PM	4	20	7	0	0	125	3	18	19	0	17	3	7	285	0
4:15 PM to 4:30 PM	6	14	9	1	0	119	8	14	13	0	21	2	11	296	0	35	
4:30 PM to 4:45 PM	8	13	11	0	0	96	3	32	7	0	15	1	13	261	0	37	
4:45 PM to 5:00 PM	3	15	7	0	0	127	5	27	9	0	16	3	12	290	0	21	
5:00 PM to 5:15 PM	9	19	7	9	1	106	2	22	14	0	5	7	5	297	0	22	
5:15 PM to 5:30 PM	5	16	4	5	0	97	3	15	10	0	10	4	9	279	0	23	
5:30 PM to 5:45 PM	8	15	11	6	0	90	3	16	11	0	11	5	5	260	0	16	
5:45 PM to 6:00 PM	4	13	5	1	0	95	2	10	8	0	12	4	9	302	0	30	
6:00 PM to 6:15 PM	8	12	4	5	0	111	3	10	10	0	12	1	10	310	0	27	
6:15 PM to 6:30 PM	3	11	4	3	0	85	6	9	6	0	7	3	13	282	0	25	
6:30 PM to 6:45 PM	7	8	8	1	0	91	7	15	11	0	8	1	10	236	0	19	
6:45 PM to 7:00 PM	5	6	6	5	0	84	5	9	14	0	7	0	10	199	0	9	
PEAK HOURS	Direction: Roadway: Movement:	Southbound 10th St.				Westbound H St.				Northbound 10th St.				Eastbound H St.			
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
		AM INTERSECTION PEAK HOUR 8:00 AM to 9:00 AM	9	42	7	4	0	1985	14	18	10	0	60	15	23	346	0
PM INTERSECTION PEAK HOUR 4:00 PM to 5:00 PM	21	62	34	1	0	467	19	91	48	0	69	9	43	1132	0	125	
AM SYSTEM PEAK HOUR 8:00 AM to 9:00 AM	9	42	7	4	0	1985	14	18	10	0	60	15	23	346	0	39	
PM SYSTEM PEAK HOUR 4:00 PM to 5:00 PM	21	62	34	1	0	467	19	91	48	0	69	9	43	1132	0	125	
PEAK HOUR	Southbound 10th St.		Westbound H St.		Northbound 10th St.		Eastbound H St.										
FACTORS	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
AM PEAK HOUR	0.56	0.88	0.58	N/A	0.00	0.93	0.58	N/A	0.63	0.00	0.65	N/A	0.64	0.92	0.00	N/A	
PM PEAK HOUR	0.66	0.78	0.77	N/A	0.00	0.92	0.59	N/A	0.63	0.00	0.82	N/A	0.83	0.96	0.00	N/A	
Overall AM PEAK HOUR FACTOR	= 0.95								Overall PM PEAK HOUR FACTOR	= 0.95							
AM Period Intersection Volume:	5740								PM Period Intersection Volume:	5276							

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear
 PM Weather Conditions: Warm, Clear

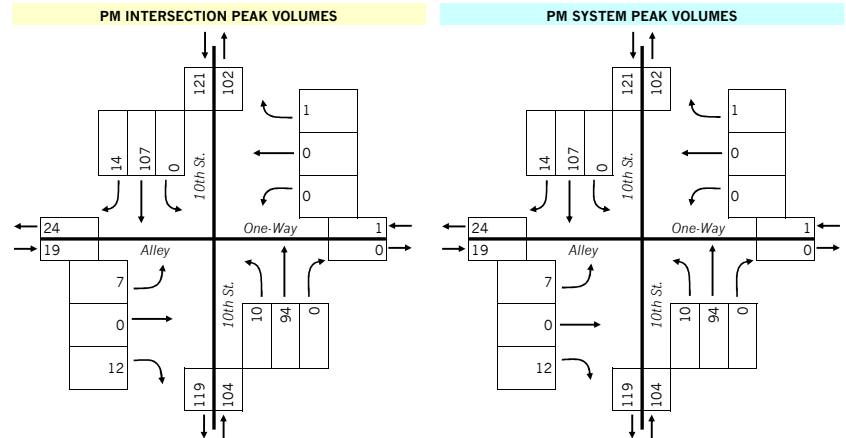
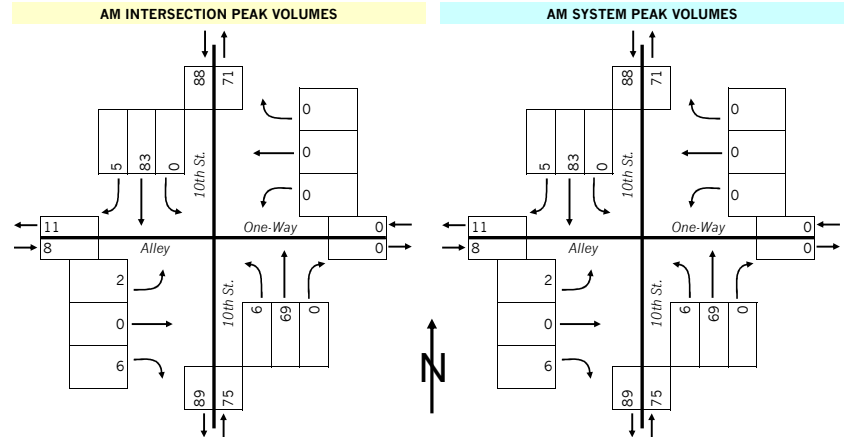


Gorove/Slade Associates

Project Name	8th Street at H Street
Project Number	2117-001
Project Location	DC
Data Source	Gorove/Slade Associates

Intersection:		10th Street Northeast at the alley behind the plaza on H St. between 8th and 10th St.'s Northeast																
AM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound				
	Roadway:	10th St.				One-Way				10th St.				Alley				
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
6:00 AM to 6:15 AM		0	7	0	1	0	0	0	0	0	3	0	0	0	0	0	1	0
6:15 AM to 6:30 AM		0	5	0	3	0	0	0	2	0	5	0	0	0	0	0	0	3
6:30 AM to 6:45 AM		0	9	0	1	0	0	0	8	0	6	0	1	1	0	0	4	
6:45 AM to 7:00 AM		2	13	0	2	0	0	0	1	0	10	0	0	0	0	1	2	
7:00 AM to 7:15 AM		0	10	0	0	0	0	0	2	0	6	0	0	0	0	0	1	
7:15 AM to 7:30 AM		1	11	0	0	0	0	0	4	0	6	0	0	0	0	0	4	
7:30 AM to 7:45 AM		0	10	0	0	0	0	0	1	0	17	1	2	2	0	1	6	
7:45 AM to 8:00 AM		1	15	0	0	0	0	0	2	0	14	0	3	2	0	0	6	
8:00 AM to 8:15 AM		0	15	0	0	0	0	0	5	0	13	1	3	2	0	1	17	
8:15 AM to 8:30 AM		0	29	0	0	0	0	0	4	0	24	2	3	2	0	1	10	
8:30 AM to 8:45 AM		2	23	0	0	0	0	0	3	0	16	1	0	0	0	0	21	
8:45 AM to 9:00 AM		3	16	0	1	0	0	0	3	0	16	2	3	2	0	0	14	
PM PEAK	Direction:	Southbound				Westbound				Northbound				Eastbound				
	Roadway:	10th St.				One-Way				10th St.				Alley				
	Movement:	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
4:00 PM to 4:15 PM		3	26	0	0	1	0	0	1	0	24	5	1	3	0	1	20	
4:15 PM to 4:30 PM		4	29	0	0	0	0	0	10	0	29	2	2	3	0	5	16	
4:30 PM to 4:45 PM		5	25	0	0	0	0	0	7	0	22	3	5	3	0	1	9	
4:45 PM to 5:00 PM		2	27	0	2	0	0	0	5	0	19	0	1	3	0	0	18	
5:00 PM to 5:15 PM		0	24	0	0	0	0	0	9	0	15	5	5	2	0	2	10	
5:15 PM to 5:30 PM		1	24	0	0	0	0	0	3	0	14	0	2	4	0	3	7	
5:30 PM to 5:45 PM		0	26	0	1	0	0	0	4	0	18	2	3	1	0	0	10	
5:45 PM to 6:00 PM		1	25	0	3	0	0	0	3	0	17	1	0	0	0	0	12	
6:00 PM to 6:15 PM		0	22	0	3	0	0	0	8	0	19	3	1	3	0	1	24	
6:15 PM to 6:30 PM		1	26	0	1	0	0	0	5	0	6	2	4	3	0	3	15	
6:30 PM to 6:45 PM		0	25	0	4	0	0	0	6	0	15	2	3	0	0	0	26	
6:45 PM to 7:00 PM		4	11	0	1	0	0	0	6	0	15	0	2	3	0	2	10	
PEAK HOURS		Southbound				Westbound				Northbound				Eastbound				
Direction:		10th St.				One-Way				10th St.				Alley				
Roadway:		10th St.				One-Way				10th St.				Alley				
Movement:		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
AM INTERSECTION PEAK HOUR																		
8:00 AM to 9:00 AM		5	83	0	1	0	0	0	15	0	69	6	9	6	0	2	62	
PM INTERSECTION PEAK HOUR																		
4:00 PM to 5:00 PM		14	107	0	2	1	0	0	23	0	94	10	9	12	0	7	63	
AM SYSTEM PEAK HOUR																		
8:00 AM to 9:00 AM		5	83	0	1	0	0	0	15	0	69	6	9	6	0	2	62	
PM SYSTEM PEAK HOUR																		
4:00 PM to 5:00 PM		14	107	0	2	1	0	0	23	0	94	10	9	12	0	7	63	
PEAK HOUR		Southbound				Westbound				Northbound				Eastbound				
FACTORS		10th St.				One-Way				10th St.				Alley				
		Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
	AM PEAK HOUR	0.42	0.72	0.00	N/A	0.00	0.00	0.00	N/A	0.00	0.72	0.75	N/A	0.75	0.00	0.50	N/A	
	PM PEAK HOUR	0.70	0.92	0.00	N/A	0.25	0.00	0.00	N/A	0.00	0.81	0.50	N/A	1.00	0.00	0.35	N/A	
	Overall AM PEAK HOUR FACTOR	= 0.74																
	Overall PM PEAK HOUR FACTOR	= 0.85																
AM Period Intersection Volume:		331				PM Period Intersection Volume:				596								

Date of Counts: Wednesday, June 06, 2007
 AM Weather Conditions: Warm, Clear PM Weather Conditions: Warm, Clear



APPENDIX D
Capacity Analysis Worksheet

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

AM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.99			0.98	
Fl _t Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		3504			3530			1839			1824	
Fl _t Permitted		1.00			1.00			1.00			0.88	
Satd. Flow (perm)		3504			3530			1839			1620	
Volume (vph)	0	339	15	0	1557	29	0	186	13	16	179	25
Peak-hour factor, PHF	0.58	0.86	0.54	0.25	0.94	1.00	0.50	0.82	0.54	0.67	0.86	0.78
Adj. Flow (vph)	0	394	28	0	1656	29	0	227	24	24	208	32
RTOR Reduction (vph)	0	5	0	0	1	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	417	0	0	1684	0	0	247	0	0	259	0
Turn Type											Perm	
Protected Phases		4			8			2			6	
Permitted Phases										6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2418			2436			423			373	
v/s Ratio Prot		0.12			0.48			0.13				
v/s Ratio Perm											0.16	
v/c Ratio		0.17			0.69			0.58			0.70	
Uniform Delay, d ₁		5.5			9.2			34.2			35.3	
Progression Factor		1.00			0.26			1.00			1.00	
Incremental Delay, d ₂		0.2			0.9			5.8			10.3	
Delay (s)		5.6			3.3			40.0			45.5	
Level of Service		A			A			D			D	
Approach Delay (s)		5.6			3.3			40.0			45.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: H STREET & 9th STREET

AM Peak - Existing
7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			0.99			0.96			0.96	
Fl _t Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		3511			3510			1752			1752	
Fl _t Permitted		0.85			0.95			0.91			0.91	
Satd. Flow (perm)		2974			3342			1632			1632	
Volume (vph)	7	342	12	5	1571	80	10	7	7	13	6	9
Peak-hour factor, PHF	0.44	0.93	0.75	0.42	0.89	0.80	0.63	0.58	0.58	0.81	0.50	0.75
Adj. Flow (vph)	16	368	16	12	1765	100	16	12	12	16	12	12
RTOR Reduction (vph)	0	3	0	0	4	0	0	9	0	0	9	0
Lane Group Flow (vph)	0	397	0	0	1873	0	0	31	0	0	31	0
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		65.0			65.0			24.0			24.0	
Effective Green, g (s)		67.0			67.0			25.0			25.0	
Actuated g/C Ratio		0.67			0.67			0.25			0.25	
Clearance Time (s)		6.0			6.0			5.0			5.0	
Lane Grp Cap (vph)		1993			2239			408			408	
v/s Ratio Prot												
v/s Ratio Perm		0.13			c0.56			c0.02			0.02	
v/c Ratio		0.20			0.84			0.08			0.08	
Uniform Delay, d ₁		6.3			12.4			28.7			28.7	
Progression Factor		0.58			0.39			1.00			1.00	
Incremental Delay, d ₂		0.2			2.8			0.4			0.4	
Delay (s)		3.9			7.6			29.0			29.0	
Level of Service		A			A			C			C	
Approach Delay (s)		3.9			7.6			29.0			29.0	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

AM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.98			0.97	
Fl _t Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		3493			3537			1751			1795	
Fl _t Permitted		1.00			0.95			0.72			0.94	
Satd. Flow (perm)		3493			3345			1323			1701	
Volume (vph)	0	346	23	14	1585	0	60	0	10	9	42	9
Peak-hour factor, PHF	0.90	0.92	0.64	0.58	0.93	0.92	0.65	0.90	0.63	0.58	0.88	0.56
Adj. Flow (vph)	0	376	36	24	1704	0	92	0	16	16	48	16
RTOR Reduction (vph)	0	7	0	0	0	0	0	6	0	0	9	0
Lane Group Flow (vph)	0	405	0	0	1728	0	0	102	0	0	71	0
Turn Type				Perm		Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2410			2308			304			391	
v/s Ratio Prot		0.12										
v/s Ratio Perm					c0.52			c0.08			0.04	
v/c Ratio		0.17			0.75			0.34			0.18	
Uniform Delay, d ₁		5.4			9.9			32.1			30.9	
Progression Factor		0.47			1.00			1.00			1.00	
Incremental Delay, d ₂		0.1			2.3			3.0			1.0	
Delay (s)		2.7			12.2			35.1			31.9	
Level of Service		A			B			D			C	
Approach Delay (s)		2.7			12.2			35.1			31.9	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

AM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	5	235	19	33	55	0	0	73	24
Peak Hour Factor	0.90	0.90	0.90	0.63	0.92	0.68	0.83	0.63	0.90	0.90	0.79	0.75
Hourly flow rate (vph)	0	0	0	8	255	28	40	87	0	0	92	32
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	291	127	124									
Volume Left (vph)	8	40	0									
Volume Right (vph)	28	0	32									
Hadj (s)	-0.02	0.10	-0.12									
Departure Headway (s)	4.5	4.9	4.7									
Degree Utilization, x	0.36	0.17	0.16									
Capacity (veh/h)	761	694	718									
Control Delay (s)	10.1	8.9	8.5									
Approach Delay (s)	10.1	8.9	8.5									
Approach LOS	B	A	A									
Intersection Summary												
Delay			9.4									
HCM Level of Service			A									
Intersection Capacity Utilization			31.8%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

AM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	11	277	57	47	244	0	0	180	19
Peak Hour Factor	0.90	0.90	0.90	0.39	0.95	0.89	0.78	0.91	0.92	0.92	0.87	0.68
Hourly flow rate (vph)	0	0	0	28	292	64	60	268	0	0	207	28
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	384	328	235									
Volume Left (vph)	28	60	0									
Volume Right (vph)	64	0	28									
Hadj (s)	-0.05	0.07	-0.04									
Departure Headway (s)	5.4	5.5	5.5									
Degree Utilization, x	0.57	0.50	0.36									
Capacity (veh/h)	635	620	609									
Control Delay (s)	15.3	13.8	11.6									
Approach Delay (s)	15.3	13.8	11.6									
Approach LOS	C	B	B									
Intersection Summary												
Delay			13.9									
HCM Level of Service			B									
Intersection Capacity Utilization			54.7%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Alley Access East & 10th STREET

AM Peak - Existing
7/17/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T	T	
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	6	69	83	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	7	75	90	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					199	
pX, platoon unblocked						
vC, conflicting volume	181	93	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	93	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	805	964	1498			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	82	96			
Volume Left	2	7	0			
Volume Right	7	0	5			
cSH	919	1498	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.0	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			18.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 7: Alley Access West & 8th STREET

AM Peak - Existing
 7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	2	284	0	0	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	309	0	0	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						221
pX, platoon unblocked	0.90					
vC, conflicting volume	526	309			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	309			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	494	731			1252	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	309	217
Volume Left	0	0	0
Volume Right	2	0	0
cSH	731	1700	1700
Volume to Capacity	0.00	0.18	0.13
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		24.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

PM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			0.98			0.99			0.98	
Fl _t Protected		1.00			1.00			1.00			0.99	
Satd. Flow (prot)		3509			3479			1850			1807	
Fl _t Permitted		0.89			1.00			1.00			0.69	
Satd. Flow (perm)		3119			3479			1850			1251	
Volume (vph)	45	1127	29	0	470	52	0	243	11	46	176	44
Peak-hour factor, PHF	0.75	0.98	0.56	0.50	0.88	0.76	0.42	0.83	0.69	0.82	0.77	0.79
Adj. Flow (vph)	60	1150	52	0	534	68	0	293	16	56	229	56
RTOR Reduction (vph)	0	3	0	0	10	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	1259	0	0	592	0	0	307	0	0	334	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		63.0			63.0			26.0			26.0	
Effective Green, g (s)		64.0			64.0			28.0			28.0	
Actuated g/C Ratio		0.64			0.64			0.28			0.28	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		1996			2227			518			350	
v/s Ratio Prot					0.17			0.17				
v/s Ratio Perm		c0.40									c0.27	
v/c Ratio		0.63			0.27			0.59			0.95	
Uniform Delay, d ₁		10.9			7.8			31.1			35.4	
Progression Factor		1.00			0.47			1.00			1.00	
Incremental Delay, d ₂		1.5			0.3			4.9			37.7	
Delay (s)		12.4			3.9			36.0			73.1	
Level of Service		B			A			D			E	
Approach Delay (s)		12.4			3.9			36.0			73.1	
Approach LOS		B			A			D			E	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: H STREET & 9th STREET

PM Peak - Existing
7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		1.00			0.98			0.94			0.95	
Fl _t Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		3521			3470			1726			1736	
Fl _t Permitted		0.93			0.87			0.88			0.86	
Satd. Flow (perm)		3278			3039			1553			1526	
Volume (vph)	15	1148	24	15	491	51	20	14	29	32	15	18
Peak-hour factor, PHF	0.54	0.93	0.67	0.63	0.90	0.67	0.56	0.58	0.66	0.89	0.75	0.56
Adj. Flow (vph)	28	1234	36	24	546	76	36	24	44	36	20	32
RTOR Reduction (vph)	0	2	0	0	10	0	0	26	0	0	20	0
Lane Group Flow (vph)	0	1296	0	0	636	0	0	78	0	0	68	0
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		66.0			66.0			23.0			23.0	
Effective Green, g (s)		67.0			67.0			25.0			25.0	
Actuated g/C Ratio		0.67			0.67			0.25			0.25	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2196			2036			388			382	
v/s Ratio Prot												
v/s Ratio Perm		c0.40			0.21			c0.05			0.04	
v/c Ratio		0.59			0.31			0.20			0.18	
Uniform Delay, d ₁		9.0			6.9			29.6			29.4	
Progression Factor		0.35			0.69			1.00			1.00	
Incremental Delay, d ₂		0.9			0.4			1.2			1.0	
Delay (s)		4.1			5.2			30.8			30.4	
Level of Service		A			A			C			C	
Approach Delay (s)		4.1			5.2			30.8			30.4	
Approach LOS		A			A			C			C	

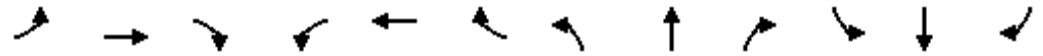
Intersection Summary

HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

PM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.99			1.00			0.94			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		3517			3529			1699			1785	
Flt Permitted		1.00			0.83			0.70			0.88	
Satd. Flow (perm)		3517			2950			1228			1589	
Volume (vph)	0	1132	43	19	467	0	69	0	48	34	62	21
Peak-hour factor, PHF	0.25	0.96	0.83	0.59	0.92	0.25	0.82	0.25	0.63	0.77	0.78	0.66
Adj. Flow (vph)	0	1179	52	32	508	0	84	0	76	44	79	32
RTOR Reduction (vph)	0	3	0	0	0	0	0	33	0	0	9	0
Lane Group Flow (vph)	0	1228	0	0	540	0	0	127	0	0	146	0
Turn Type				Perm		Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		69.0			69.0			20.0			20.0	
Effective Green, g (s)		70.0			70.0			22.0			22.0	
Actuated g/C Ratio		0.70			0.70			0.22			0.22	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2462			2065			270			350	
v/s Ratio Prot		c0.35										
v/s Ratio Perm					0.18			c0.10			0.09	
v/c Ratio		0.50			0.26			0.47			0.42	
Uniform Delay, d1		6.9			5.5			33.9			33.5	
Progression Factor		0.36			1.00			1.00			1.00	
Incremental Delay, d2		0.6			0.3			5.8			3.6	
Delay (s)		3.1			5.8			39.7			37.1	
Level of Service		A			A			D			D	
Approach Delay (s)		3.1			5.8			39.7			37.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	9.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

PM Peak - Existing
 7/17/2007



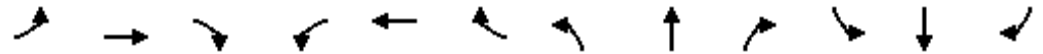
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	6	75	18	17	84	0	0	94	18
Peak Hour Factor	0.25	0.25	0.25	0.38	0.78	0.75	0.71	0.81	0.25	0.25	0.90	0.90
Hourly flow rate (vph)	0	0	0	16	96	24	24	104	0	0	104	20

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	136	128	124
Volume Left (vph)	16	24	0
Volume Right (vph)	24	0	20
Hadj (s)	-0.05	0.07	-0.06
Departure Headway (s)	4.4	4.4	4.3
Degree Utilization, x	0.17	0.16	0.15
Capacity (veh/h)	763	780	797
Control Delay (s)	8.3	8.3	8.1
Approach Delay (s)	8.3	8.3	8.1
Approach LOS	A	A	A

Intersection Summary		
Delay		8.2
HCM Level of Service		A
Intersection Capacity Utilization	24.1%	ICU Level of Service
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

PM Peak - Existing
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	7	86	48	27	223	0	0	195	8
Peak Hour Factor	0.25	0.25	0.25	0.58	0.74	0.71	0.75	0.94	0.25	0.25	0.90	0.40
Hourly flow rate (vph)	0	0	0	12	116	68	36	237	0	0	217	20

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	196	273	237
Volume Left (vph)	12	36	0
Volume Right (vph)	68	0	20
Hadj (s)	-0.16	0.06	-0.02
Departure Headway (s)	5.0	4.8	4.7
Degree Utilization, x	0.27	0.36	0.31
Capacity (veh/h)	669	722	720
Control Delay (s)	9.8	10.5	9.9
Approach Delay (s)	9.8	10.5	9.9
Approach LOS	A	B	A

Intersection Summary		
Delay		10.1
HCM Level of Service		B
Intersection Capacity Utilization	41.8%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 6: Alley Access East & 10th STREET

PM Peak - Existing
 7/17/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	6	69	83	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	7	75	90	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	199					
pX, platoon unblocked						
vC, conflicting volume	181	93	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	93	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	805	964	1498			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	82	96			
Volume Left	2	7	0			
Volume Right	7	0	5			
cSH	919	1498	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.0	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			18.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 7: Alley Access West & 8th STREET

PM Peak - Existing
 7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	4	272	0	0	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	296	0	0	230
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						221
pX, platoon unblocked						
vC, conflicting volume	526	296			296	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	526	296			296	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	512	744			1266	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	296	230
Volume Left	0	0	0
Volume Right	4	0	0
cSH	744	1700	1700
Volume to Capacity	0.01	0.17	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

AM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.99			1.00			0.99			0.98	
Flt Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		3510			3531			1839			1824	
Flt Permitted		1.00			1.00			1.00			0.88	
Satd. Flow (perm)		3510			3531			1839			1620	
Volume (vph)	0	420	15	0	1766	29	0	186	13	16	179	25
Peak-hour factor, PHF	0.58	0.86	0.54	0.25	0.94	1.00	0.50	0.82	0.54	0.67	0.86	0.78
Adj. Flow (vph)	0	488	28	0	1879	29	0	227	24	24	208	32
RTOR Reduction (vph)	0	4	0	0	1	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	512	0	0	1907	0	0	247	0	0	259	0
Turn Type											Perm	
Protected Phases		4			8			2			6	
Permitted Phases										6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2422			2436			423			373	
v/s Ratio Prot		0.15			c0.54			0.13				
v/s Ratio Perm											c0.16	
v/c Ratio		0.21			0.78			0.58			0.70	
Uniform Delay, d1		5.6			10.4			34.2			35.3	
Progression Factor		1.00			0.26			1.00			1.00	
Incremental Delay, d2		0.2			1.0			5.8			10.3	
Delay (s)		5.8			3.7			40.0			45.5	
Level of Service		A			A			D			D	
Approach Delay (s)		5.8			3.7			40.0			45.5	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: H STREET & 9th STREET

AM Peak - Background
7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.99			0.96			0.96	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		3516			3513			1752			1752	
Flt Permitted		0.79			0.95			0.91			0.91	
Satd. Flow (perm)		2779			3344			1632			1632	
Volume (vph)	7	423	12	5	1782	80	10	7	7	13	6	9
Peak-hour factor, PHF	0.44	0.93	0.75	0.42	0.89	0.80	0.63	0.58	0.58	0.81	0.50	0.75
Adj. Flow (vph)	16	455	16	12	2002	100	16	12	12	16	12	12
RTOR Reduction (vph)	0	2	0	0	4	0	0	9	0	0	9	0
Lane Group Flow (vph)	0	485	0	0	2110	0	0	31	0	0	31	0
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		65.0			65.0			24.0			24.0	
Effective Green, g (s)		67.0			67.0			25.0			25.0	
Actuated g/C Ratio		0.67			0.67			0.25			0.25	
Clearance Time (s)		6.0			6.0			5.0			5.0	
Lane Grp Cap (vph)		1862			2240			408			408	
v/s Ratio Prot												
v/s Ratio Perm		0.17			0.63			0.02			0.02	
v/c Ratio		0.26			0.94			0.08			0.08	
Uniform Delay, d1		6.6			14.8			28.7			28.7	
Progression Factor		0.53			0.38			1.00			1.00	
Incremental Delay, d2		0.3			6.2			0.4			0.4	
Delay (s)		3.8			11.8			29.0			29.0	
Level of Service		A			B			C			C	
Approach Delay (s)		3.8			11.8			29.0			29.0	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

AM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.98			0.97	
Fl _t Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		3501			3537			1751			1796	
Fl _t Permitted		1.00			0.94			0.73			0.95	
Satd. Flow (perm)		3501			3343			1337			1727	
Volume (vph)	0	428	23	14	1798	0	60	0	10	7	42	9
Peak-hour factor, PHF	0.92	0.92	0.64	0.58	0.93	0.92	0.65	0.90	0.63	0.58	0.88	0.56
Adj. Flow (vph)	0	465	36	24	1933	0	92	0	16	12	48	16
RTOR Reduction (vph)	0	6	0	0	0	0	0	6	0	0	9	0
Lane Group Flow (vph)	0	495	0	0	1957	0	0	102	0	0	67	0
Turn Type				Perm		Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2416			2307			308			397	
v/s Ratio Prot		0.14										
v/s Ratio Perm					c0.59			c0.08			0.04	
v/c Ratio		0.21			0.85			0.33			0.17	
Uniform Delay, d ₁		5.6			11.6			32.1			30.8	
Progression Factor		0.45			1.00			1.00			1.00	
Incremental Delay, d ₂		0.2			4.1			2.9			0.9	
Delay (s)		2.7			15.7			34.9			31.8	
Level of Service		A			B			C			C	
Approach Delay (s)		2.7			15.7			34.9			31.8	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

AM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	5	235	19	33	55	0	0	73	24
Peak Hour Factor	0.92	0.92	0.92	0.63	0.92	0.68	0.83	0.63	0.92	0.92	0.79	0.75
Hourly flow rate (vph)	0	0	0	8	255	28	40	87	0	0	92	32
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	291	127	124									
Volume Left (vph)	8	40	0									
Volume Right (vph)	28	0	32									
Hadj (s)	-0.02	0.10	-0.12									
Departure Headway (s)	4.5	4.9	4.7									
Degree Utilization, x	0.36	0.17	0.16									
Capacity (veh/h)	761	694	718									
Control Delay (s)	10.1	8.9	8.5									
Approach Delay (s)	10.1	8.9	8.5									
Approach LOS	B	A	A									
Intersection Summary												
Delay			9.4									
HCM Level of Service			A									
Intersection Capacity Utilization			31.8%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

AM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	11	277	57	47	244	0	0	180	19
Peak Hour Factor	0.92	0.92	0.92	0.39	0.95	0.89	0.78	0.91	0.92	0.92	0.87	0.68
Hourly flow rate (vph)	0	0	0	28	292	64	60	268	0	0	207	28
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	384	328	235									
Volume Left (vph)	28	60	0									
Volume Right (vph)	64	0	28									
Hadj (s)	-0.05	0.07	-0.04									
Departure Headway (s)	5.4	5.5	5.5									
Degree Utilization, x	0.57	0.50	0.36									
Capacity (veh/h)	635	620	609									
Control Delay (s)	15.3	13.8	11.6									
Approach Delay (s)	15.3	13.8	11.6									
Approach LOS	C	B	B									
Intersection Summary												
Delay			13.9									
HCM Level of Service			B									
Intersection Capacity Utilization			54.7%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Alley Access East & 10th STREET

AM Peak - Background
7/17/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	6	69	83	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	7	75	90	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	199					
pX, platoon unblocked						
vC, conflicting volume	181	93	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	93	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	805	964	1498			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	82	96			
Volume Left	2	7	0			
Volume Right	7	0	5			
cSH	919	1498	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.0	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization	18.6%		ICU Level of Service	A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 7: Alley Access West & 8th STREET

AM Peak - Background
 7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	2	284	0	0	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2	309	0	0	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	221					
pX, platoon unblocked	0.90					
vC, conflicting volume	526	309			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	472	309			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	494	731			1252	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	309	217			
Volume Left	0	0	0			
Volume Right	2	0	0			
cSH	731	1700	1700			
Volume to Capacity	0.00	0.18	0.13			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	9.9	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.9	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			24.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

PM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			0.98			0.99			0.98	
Fl _t Protected		1.00			1.00			1.00			0.99	
Satd. Flow (prot)		3512			3485			1850			1807	
Fl _t Permitted		0.89			1.00			1.00			0.69	
Satd. Flow (perm)		3116			3485			1850			1251	
Volume (vph)	45	1269	29	0	529	52	0	243	11	46	176	44
Peak-hour factor, PHF	0.75	0.98	0.56	0.50	0.88	0.76	0.42	0.83	0.69	0.82	0.77	0.79
Adj. Flow (vph)	60	1295	52	0	601	68	0	293	16	56	229	56
RTOR Reduction (vph)	0	3	0	0	9	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	1404	0	0	660	0	0	307	0	0	334	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		63.0			63.0			26.0			26.0	
Effective Green, g (s)		64.0			64.0			28.0			28.0	
Actuated g/C Ratio		0.64			0.64			0.28			0.28	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		1994			2230			518			350	
v/s Ratio Prot					0.19			0.17				
v/s Ratio Perm		c0.45									c0.27	
v/c Ratio		0.70			0.30			0.59			0.95	
Uniform Delay, d ₁		11.8			8.0			31.1			35.4	
Progression Factor		1.00			0.42			1.00			1.00	
Incremental Delay, d ₂		2.1			0.3			4.9			37.7	
Delay (s)		13.9			3.7			36.0			73.1	
Level of Service		B			A			D			E	
Approach Delay (s)		13.9			3.7			36.0			73.1	
Approach LOS		B			A			D			E	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: H STREET & 9th STREET

PM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		1.00			0.99			0.94			0.95	
Flt Protected		1.00			1.00			0.98			0.98	
Satd. Flow (prot)		3523			3483			1726			1736	
Flt Permitted		0.93			0.87			0.88			0.86	
Satd. Flow (perm)		3273			3032			1553			1526	
Volume (vph)	15	1358	24	15	625	51	20	14	29	32	15	18
Peak-hour factor, PHF	0.54	0.93	0.67	0.63	0.90	0.67	0.56	0.58	0.66	0.89	0.75	0.56
Adj. Flow (vph)	28	1460	36	24	694	76	36	24	44	36	20	32
RTOR Reduction (vph)	0	2	0	0	8	0	0	26	0	0	20	0
Lane Group Flow (vph)	0	1522	0	0	786	0	0	78	0	0	68	0
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		66.0			66.0			23.0			23.0	
Effective Green, g (s)		67.0			67.0			25.0			25.0	
Actuated g/C Ratio		0.67			0.67			0.25			0.25	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2193			2031			388			382	
v/s Ratio Prot												
v/s Ratio Perm		c0.47			0.26			c0.05			0.04	
v/c Ratio		0.69			0.39			0.20			0.18	
Uniform Delay, d1		10.2			7.4			29.6			29.4	
Progression Factor		0.32			0.61			1.00			1.00	
Incremental Delay, d2		1.4			0.5			1.2			1.0	
Delay (s)		4.7			5.0			30.8			30.4	
Level of Service		A			A			C			C	
Approach Delay (s)		4.7			5.0			30.8			30.4	
Approach LOS		A			A			C			C	

Intersection Summary

HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

PM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.99			1.00			0.94			0.97	
Flt Protected		1.00			1.00			0.97			0.99	
Satd. Flow (prot)		3520			3531			1699			1785	
Flt Permitted		1.00			0.83			0.70			0.88	
Satd. Flow (perm)		3520			2935			1228			1589	
Volume (vph)	0	1340	43	19	598	0	69	0	48	34	62	21
Peak-hour factor, PHF	0.25	0.96	0.83	0.59	0.92	0.25	0.82	0.25	0.63	0.77	0.78	0.66
Adj. Flow (vph)	0	1396	52	32	650	0	84	0	76	44	79	32
RTOR Reduction (vph)	0	3	0	0	0	0	0	33	0	0	9	0
Lane Group Flow (vph)	0	1445	0	0	682	0	0	127	0	0	146	0
Turn Type				Perm			Perm				Perm	
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		69.0			69.0			20.0			20.0	
Effective Green, g (s)		70.0			70.0			22.0			22.0	
Actuated g/C Ratio		0.70			0.70			0.22			0.22	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2464			2055			270			350	
v/s Ratio Prot		c0.41										
v/s Ratio Perm					0.23			c0.10			0.09	
v/c Ratio		0.59			0.33			0.47			0.42	
Uniform Delay, d1		7.6			5.9			33.9			33.5	
Progression Factor		0.32			1.00			1.00			1.00	
Incremental Delay, d2		0.8			0.4			5.8			3.6	
Delay (s)		3.2			6.3			39.7			37.1	
Level of Service		A			A			D			D	
Approach Delay (s)		3.2			6.3			39.7			37.1	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

PM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	6	75	18	17	84	0	0	94	18
Peak Hour Factor	0.25	0.25	0.25	0.38	0.78	0.75	0.71	0.81	0.25	0.25	0.90	0.90
Hourly flow rate (vph)	0	0	0	16	96	24	24	104	0	0	104	20

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	136	128	124
Volume Left (vph)	16	24	0
Volume Right (vph)	24	0	20
Hadj (s)	-0.05	0.07	-0.06
Departure Headway (s)	4.4	4.4	4.3
Degree Utilization, x	0.17	0.16	0.15
Capacity (veh/h)	763	780	797
Control Delay (s)	8.3	8.3	8.1
Approach Delay (s)	8.3	8.3	8.1
Approach LOS	A	A	A

Intersection Summary		
Delay		8.2
HCM Level of Service		A
Intersection Capacity Utilization	24.1%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

PM Peak - Background
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	7	86	48	27	223	0	0	195	8
Peak Hour Factor	0.25	0.25	0.25	0.58	0.74	0.71	0.75	0.94	0.25	0.25	0.90	0.40
Hourly flow rate (vph)	0	0	0	12	116	68	36	237	0	0	217	20

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	196	273	237
Volume Left (vph)	12	36	0
Volume Right (vph)	68	0	20
Hadj (s)	-0.16	0.06	-0.02
Departure Headway (s)	5.0	4.8	4.7
Degree Utilization, x	0.27	0.36	0.31
Capacity (veh/h)	669	722	720
Control Delay (s)	9.8	10.5	9.9
Approach Delay (s)	9.8	10.5	9.9
Approach LOS	A	B	A

Intersection Summary		
Delay		10.1
HCM Level of Service		B
Intersection Capacity Utilization	41.8%	ICU Level of Service A
Analysis Period (min)		15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	6	69	83	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	7	75	90	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	199					
pX, platoon unblocked						
vC, conflicting volume	181	93	96			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	93	96			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	805	964	1498			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	82	96			
Volume Left	2	7	0			
Volume Right	7	0	5			
cSH	919	1498	1700			
Volume to Capacity	0.01	0.00	0.06			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.0	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization	18.6%		ICU Level of Service	A		
Analysis Period (min)	15					



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑			↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	4	272	0	0	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	4	296	0	0	230
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						221
pX, platoon unblocked						
vC, conflicting volume	526	296			296	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	526	296			296	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	512	744			1266	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	296	230
Volume Left	0	0	0
Volume Right	4	0	0
cSH	744	1700	1700
Volume to Capacity	0.01	0.17	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.9	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.9	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.97			1.00			0.98			0.98	
Fl _t Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		3439			3531			1823			1827	
Fl _t Permitted		0.70			1.00			1.00			0.79	
Satd. Flow (perm)		2415			3531			1823			1455	
Volume (vph)	23	417	57	0	1767	29	0	207	26	14	192	25
Peak-hour factor, PHF	0.58	0.86	0.54	0.25	0.94	1.00	0.50	0.82	0.54	0.67	0.86	0.78
Adj. Flow (vph)	40	485	106	0	1880	29	0	252	48	21	223	32
RTOR Reduction (vph)	0	17	0	0	1	0	0	7	0	0	5	0
Lane Group Flow (vph)	0	614	0	0	1908	0	0	293	0	0	271	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		1666			2436			419			335	
v/s Ratio Prot					c0.54			0.16				
v/s Ratio Perm		0.25									c0.19	
v/c Ratio		0.37			0.78			0.70			0.81	
Uniform Delay, d ₁		6.4			10.5			35.3			36.4	
Progression Factor		1.00			0.26			1.00			1.00	
Incremental Delay, d ₂		0.6			1.4			9.4			18.8	
Delay (s)		7.1			4.1			44.7			55.2	
Level of Service		A			A			D			E	
Approach Delay (s)		7.1			4.1			44.7			55.2	
Approach LOS		A			A			D			E	

Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: H STREET & 9th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	0.99		0.95	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3534	3513		1715	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2993	3513		1715	
Volume (vph)	7	452	1786	83	16	9
Peak-hour factor, PHF	0.44	0.93	0.89	0.80	0.81	0.75
Adj. Flow (vph)	16	486	2007	104	20	12
RTOR Reduction (vph)	0	0	4	0	10	0
Lane Group Flow (vph)	0	502	2107	0	22	0
Turn Type		Perm				
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)		71.0	71.0		18.0	
Effective Green, g (s)		73.0	73.0		19.0	
Actuated g/C Ratio		0.73	0.73		0.19	
Clearance Time (s)		6.0	6.0		5.0	
Lane Grp Cap (vph)		2185	2564		326	
v/s Ratio Prot			c0.60			
v/s Ratio Perm		0.17			c0.01	
v/c Ratio		0.23	0.82		0.07	
Uniform Delay, d1		4.4	9.1		33.2	
Progression Factor		0.64	0.30		1.00	
Incremental Delay, d2		0.2	1.7		0.4	
Delay (s)		3.0	4.4		33.6	
Level of Service		A	A		C	
Approach Delay (s)		3.0	4.4		33.6	
Approach LOS		A	A		C	

Intersection Summary

HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.97			0.98	
Fl _t Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		3487			3534			1744			1813	
Fl _t Permitted		1.00			0.91			0.71			0.95	
Satd. Flow (perm)		3487			3236			1297			1743	
Volume (vph)	0	438	33	35	1793	0	68	0	16	7	51	7
Peak-hour factor, PHF	0.92	0.92	0.64	0.58	0.93	0.92	0.65	0.92	0.63	0.58	0.88	0.56
Adj. Flow (vph)	0	476	52	60	1928	0	105	0	25	12	58	12
RTOR Reduction (vph)	0	8	0	0	0	0	0	8	0	0	6	0
Lane Group Flow (vph)	0	520	0	0	1988	0	0	122	0	0	76	0
Turn Type				Perm		Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		67.0			67.0			21.0			21.0	
Effective Green, g (s)		69.0			69.0			23.0			23.0	
Actuated g/C Ratio		0.69			0.69			0.23			0.23	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2406			2233			298			401	
v/s Ratio Prot		0.15										
v/s Ratio Perm					c0.61			c0.09			0.04	
v/c Ratio		0.22			0.89			0.41			0.19	
Uniform Delay, d ₁		5.6			12.5			32.7			31.0	
Progression Factor		0.38			1.00			1.00			1.00	
Incremental Delay, d ₂		0.2			5.8			4.1			1.0	
Delay (s)		2.4			18.3			36.8			32.0	
Level of Service		A			B			D			C	
Approach Delay (s)		2.4			18.3			36.8			32.0	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	5	234	25	33	67	0	0	76	26
Peak Hour Factor	0.90	0.90	0.90	0.63	0.92	0.68	0.83	0.63	0.92	0.92	0.79	0.75
Hourly flow rate (vph)	0	0	0	8	254	37	40	106	0	0	96	35
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	299	146	131									
Volume Left (vph)	8	40	0									
Volume Right (vph)	37	0	35									
Hadj (s)	-0.03	0.09	-0.12									
Departure Headway (s)	4.5	4.9	4.7									
Degree Utilization, x	0.38	0.20	0.17									
Capacity (veh/h)	751	690	710									
Control Delay (s)	10.3	9.1	8.7									
Approach Delay (s)	10.3	9.1	8.7									
Approach LOS	B	A	A									
Intersection Summary												
Delay			9.6									
HCM Level of Service			A									
Intersection Capacity Utilization			32.8%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	11	279	57	47	260	0	0	191	43
Peak Hour Factor	0.92	0.92	0.92	0.39	0.95	0.89	0.78	0.91	0.92	0.92	0.87	0.68
Hourly flow rate (vph)	0	0	0	28	294	64	60	286	0	0	220	63
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	386	346	283									
Volume Left (vph)	28	60	0									
Volume Right (vph)	64	0	63									
Hadj (s)	-0.05	0.07	-0.10									
Departure Headway (s)	5.6	5.6	5.5									
Degree Utilization, x	0.60	0.54	0.44									
Capacity (veh/h)	615	606	610									
Control Delay (s)	16.4	14.9	12.7									
Approach Delay (s)	16.4	14.9	12.7									
Approach LOS	C	B	B									
Intersection Summary												
Delay			14.9									
HCM Level of Service			B									
Intersection Capacity Utilization			57.7%	ICU Level of Service								B
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 6: Alley Access East & 10th STREET

AM Peak - Total Future
 7/17/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	17	11	24	69	83	44
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	12	26	75	90	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					199	
pX, platoon unblocked						
vC, conflicting volume	241	114	138			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	241	114	138			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	98			
cM capacity (veh/h)	734	938	1446			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	30	101	138			
Volume Left	18	26	0			
Volume Right	12	0	48			
cSH	802	1446	1700			
Volume to Capacity	0.04	0.02	0.08			
Queue Length 95th (ft)	3	1	0			
Control Delay (s)	9.7	2.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.7	2.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		25.3%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Alley Access West & 8th STREET

AM Peak - Total Future
7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	35	39	284	0	55	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	42	309	0	60	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	221					
pX, platoon unblocked	0.90					
vC, conflicting volume	646	309			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606	309			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	94			95	
cM capacity (veh/h)	394	731			1252	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	80	309	277			
Volume Left	38	0	60			
Volume Right	42	0	0			
cSH	521	1700	1252			
Volume to Capacity	0.15	0.18	0.05			
Queue Length 95th (ft)	14	0	4			
Control Delay (s)	13.2	0.0	2.1			
Lane LOS	B		A			
Approach Delay (s)	13.2	0.0	2.1			
Approach LOS	B					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			42.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
1: H STREET & 8th STREET

PM Peak - Total Future
3/13/2009



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.98			0.99			0.97			0.98	
Fl _t Protected		1.00			1.00			1.00			0.99	
Satd. Flow (prot)		3468			3493			1802			1812	
Fl _t Permitted		0.89			1.00			1.00			0.46	
Satd. Flow (perm)		3080			3493			1802			838	
Volume (vph)	45	1314	110	0	583	48	0	295	78	41	200	44
Peak-hour factor, PHF	0.75	0.98	0.56	0.50	0.88	0.76	0.42	0.83	0.69	0.82	0.77	0.79
Adj. Flow (vph)	60	1341	196	0	662	63	0	355	113	50	260	56
RTOR Reduction (vph)	0	11	0	0	7	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	1586	0	0	718	0	0	457	0	0	360	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		61.0			61.0			28.0			28.0	
Effective Green, g (s)		62.0			62.0			30.0			30.0	
Actuated g/C Ratio		0.62			0.62			0.30			0.30	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		1910			2166			541			251	
v/s Ratio Prot					0.21			0.25				
v/s Ratio Perm		c0.51									c0.43	
v/c Ratio		0.83			0.33			0.84			1.43	
Uniform Delay, d ₁		14.9			9.1			32.8			35.0	
Progression Factor		1.00			0.46			1.00			1.00	
Incremental Delay, d ₂		4.4			0.4			14.9			216.3	
Delay (s)		19.2			4.6			47.7			251.3	
Level of Service		B			A			D			F	
Approach Delay (s)		19.2			4.6			47.7			251.3	
Approach LOS		B			A			D			F	

Intersection Summary

HCM Average Control Delay	47.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: H STREET & 9th STREET

PM Peak - Total Future
7/17/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	0.98		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3536	3484		1703	
Flt Permitted		0.93	1.00		0.97	
Satd. Flow (perm)		3290	3484		1703	
Volume (vph)	15	1421	623	54	35	18
Peak-hour factor, PHF	0.54	0.93	0.90	0.67	0.89	0.56
Adj. Flow (vph)	28	1528	692	81	39	32
RTOR Reduction (vph)	0	0	9	0	26	0
Lane Group Flow (vph)	0	1556	764	0	45	0
Turn Type	Perm					
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)		73.0	73.0		16.0	
Effective Green, g (s)		74.0	74.0		18.0	
Actuated g/C Ratio		0.74	0.74		0.18	
Clearance Time (s)		5.0	5.0		6.0	
Lane Grp Cap (vph)		2435	2578		307	
v/s Ratio Prot			0.22			
v/s Ratio Perm		c0.47			c0.03	
v/c Ratio		0.64	0.30		0.15	
Uniform Delay, d1		6.4	4.3		34.5	
Progression Factor		0.39	0.66		1.00	
Incremental Delay, d2		0.7	0.2		1.0	
Delay (s)		3.2	3.1		35.5	
Level of Service		A	A		D	
Approach Delay (s)		3.2	3.1		35.5	
Approach LOS		A	A		D	

Intersection Summary

HCM Average Control Delay	4.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

PM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.94			0.98	
Fl _t Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		3516			3510			1698			1798	
Fl _t Permitted		1.00			0.55			0.66			0.88	
Satd. Flow (perm)		3516			1941			1146			1600	
Volume (vph)	0	1366	53	73	577	0	78	0	55	34	79	19
Peak-hour factor, PHF	0.25	0.96	0.83	0.59	0.92	0.25	0.82	0.25	0.63	0.77	0.78	0.66
Adj. Flow (vph)	0	1423	64	124	627	0	95	0	87	44	101	29
RTOR Reduction (vph)	0	3	0	0	0	0	0	33	0	0	7	0
Lane Group Flow (vph)	0	1484	0	0	751	0	0	149	0	0	167	0
Turn Type				Perm		Perm			Perm			
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		69.0			69.0			20.0			20.0	
Effective Green, g (s)		70.0			70.0			22.0			22.0	
Actuated g/C Ratio		0.70			0.70			0.22			0.22	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2461			1359			252			352	
v/s Ratio Prot		c0.42										
v/s Ratio Perm					0.39			c0.13			0.10	
v/c Ratio		0.60			0.55			0.59			0.47	
Uniform Delay, d ₁		7.8			7.3			35.0			34.0	
Progression Factor		0.31			1.00			1.00			1.00	
Incremental Delay, d ₂		0.9			1.6			9.8			4.5	
Delay (s)		3.2			9.0			44.8			38.5	
Level of Service		A			A			D			D	
Approach Delay (s)		3.2			9.0			44.8			38.5	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

PM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	6	73	29	17	105	0	0	97	21
Peak Hour Factor	0.25	0.25	0.25	0.38	0.78	0.75	0.71	0.81	0.25	0.25	0.90	0.90
Hourly flow rate (vph)	0	0	0	16	94	39	24	130	0	0	108	23
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	148	154	131									
Volume Left (vph)	16	24	0									
Volume Right (vph)	39	0	23									
Hadj (s)	-0.10	0.07	-0.07									
Departure Headway (s)	4.4	4.5	4.4									
Degree Utilization, x	0.18	0.19	0.16									
Capacity (veh/h)	757	773	785									
Control Delay (s)	8.4	8.5	8.2									
Approach Delay (s)	8.4	8.5	8.2									
Approach LOS	A	A	A									
Intersection Summary												
Delay			8.4									
HCM Level of Service			A									
Intersection Capacity Utilization			25.7%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

PM Peak - Total Future
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	7	87	48	27	250	0	0	237	81
Peak Hour Factor	0.25	0.25	0.25	0.58	0.74	0.71	0.75	0.94	0.25	0.25	0.90	0.40
Hourly flow rate (vph)	0	0	0	12	118	68	36	266	0	0	263	202
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	197	302	466									
Volume Left (vph)	12	36	0									
Volume Right (vph)	68	0	203									
Hadj (s)	-0.16	0.06	-0.23									
Departure Headway (s)	5.6	5.1	4.7									
Degree Utilization, x	0.30	0.43	0.61									
Capacity (veh/h)	586	673	746									
Control Delay (s)	11.0	12.0	14.6									
Approach Delay (s)	11.0	12.0	14.6									
Approach LOS	B	B	B									
Intersection Summary												
Delay			13.0									
HCM Level of Service			B									
Intersection Capacity Utilization			49.9%	ICU Level of Service								A
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Alley Access East & 10th STREET

PM Peak - Total Future
7/17/2007



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	18	13	39	69	83	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	14	42	75	90	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	199					
pX, platoon unblocked						
vC, conflicting volume	296	136	183			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	136	183			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	97			
cM capacity (veh/h)	674	912	1392			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	34	117	183			
Volume Left	20	42	0			
Volume Right	14	0	92			
cSH	757	1392	1700			
Volume to Capacity	0.04	0.03	0.11			
Queue Length 95th (ft)	3	2	0			
Control Delay (s)	10.0	2.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	10.0	2.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			28.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 7: Alley Access West & 8th STREET

PM Peak - Total Future
 7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	105	126	271	28	109	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	137	295	30	118	230
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						221
pX, platoon unblocked						
vC, conflicting volume	777	310			325	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	777	310			325	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	81			90	
cM capacity (veh/h)	330	730			1235	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	251	325	349
Volume Left	114	0	118
Volume Right	137	30	0
cSH	471	1700	1235
Volume to Capacity	0.53	0.19	0.10
Queue Length 95th (ft)	77	0	8
Control Delay (s)	21.0	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	21.0	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

AM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.97			1.00			0.98			0.98	
Fl _t Protected		1.00			1.00			1.00			1.00	
Satd. Flow (prot)		3439			3531			1823			1827	
Fl _t Permitted		0.68			1.00			1.00			0.92	
Satd. Flow (perm)		2338			3531			1823			1692	
Volume (vph)	23	417	57	0	1767	29	0	207	26	14	192	25
Peak-hour factor, PHF	0.58	0.86	0.54	0.25	0.94	1.00	0.50	0.82	0.54	0.67	0.86	0.78
Adj. Flow (vph)	40	485	106	0	1880	29	0	252	48	21	223	32
RTOR Reduction (vph)	0	17	0	0	1	0	0	7	0	0	4	0
Lane Group Flow (vph)	0	614	0	0	1908	0	0	293	0	0	272	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		63.0			63.0			25.0			25.0	
Effective Green, g (s)		65.0			65.0			27.0			27.0	
Actuated g/C Ratio		0.65			0.65			0.27			0.27	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		1520			2295			492			457	
v/s Ratio Prot					c0.54			c0.16				
v/s Ratio Perm		0.26									0.16	
v/c Ratio		0.40			0.83			0.60			0.59	
Uniform Delay, d ₁		8.3			13.3			31.8			31.7	
Progression Factor		1.00			0.31			1.00			1.00	
Incremental Delay, d ₂		0.8			2.1			5.3			5.6	
Delay (s)		9.1			6.2			37.0			37.3	
Level of Service		A			A			D			D	
Approach Delay (s)		9.1			6.2			37.0			37.3	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2: H STREET & 9th STREET

AM Peak - Total Future_IMP
7/17/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	0.99		0.95	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3534	3513		1715	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2993	3513		1715	
Volume (vph)	7	452	1786	83	16	9
Peak-hour factor, PHF	0.44	0.93	0.89	0.80	0.81	0.75
Adj. Flow (vph)	16	486	2007	104	20	12
RTOR Reduction (vph)	0	0	4	0	10	0
Lane Group Flow (vph)	0	502	2107	0	22	0
Turn Type	Perm					
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)		71.0	71.0		18.0	
Effective Green, g (s)		73.0	73.0		19.0	
Actuated g/C Ratio		0.73	0.73		0.19	
Clearance Time (s)		6.0	6.0		5.0	
Lane Grp Cap (vph)		2185	2564		326	
v/s Ratio Prot			c0.60			
v/s Ratio Perm		0.17			c0.01	
v/c Ratio		0.23	0.82		0.07	
Uniform Delay, d1		4.4	9.1		33.2	
Progression Factor		0.67	0.29		1.00	
Incremental Delay, d2		0.2	1.9		0.4	
Delay (s)		3.1	4.5		33.6	
Level of Service		A	A		C	
Approach Delay (s)		3.1	4.5		33.6	
Approach LOS		A	A		C	

Intersection Summary

HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: H STREET & 10th STREET

AM Peak - Total Future_IMP
7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Fr _t		0.99			1.00			0.97			0.98	
Fl _t Protected		1.00			1.00			0.96			0.99	
Satd. Flow (prot)		3487			3534			1744			1813	
Fl _t Permitted		1.00			0.91			0.70			0.95	
Satd. Flow (perm)		3487			3237			1272			1739	
Volume (vph)	0	438	33	35	1793	0	68	0	16	7	51	7
Peak-hour factor, PHF	0.92	0.92	0.64	0.58	0.93	0.92	0.65	0.92	0.63	0.58	0.88	0.56
Adj. Flow (vph)	0	476	52	60	1928	0	105	0	25	12	58	12
RTOR Reduction (vph)	0	8	0	0	0	0	0	8	0	0	7	0
Lane Group Flow (vph)	0	520	0	0	1988	0	0	122	0	0	75	0
Turn Type				Perm		Perm				Perm		
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		72.0			72.0			16.0			16.0	
Effective Green, g (s)		74.0			74.0			18.0			18.0	
Actuated g/C Ratio		0.74			0.74			0.18			0.18	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		2580			2395			229			313	
v/s Ratio Prot		0.15										
v/s Ratio Perm					c0.61			c0.10			0.04	
v/c Ratio		0.20			0.83			0.53			0.24	
Uniform Delay, d ₁		4.0			8.8			37.2			35.1	
Progression Factor		0.60			1.00			1.00			1.00	
Incremental Delay, d ₂		0.2			3.5			8.6			1.8	
Delay (s)		2.6			12.3			45.8			37.0	
Level of Service		A			B			D			D	
Approach Delay (s)		2.6			12.3			45.8			37.0	
Approach LOS		A			B			D			D	

Intersection Summary

HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

AM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	5	234	25	33	67	0	0	76	26
Peak Hour Factor	0.90	0.90	0.90	0.63	0.92	0.68	0.83	0.63	0.92	0.92	0.79	0.75
Hourly flow rate (vph)	0	0	0	8	254	37	40	106	0	0	96	35

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	299	146	131
Volume Left (vph)	8	40	0
Volume Right (vph)	37	0	35
Hadj (s)	-0.03	0.09	-0.12
Departure Headway (s)	4.5	4.9	4.7
Degree Utilization, x	0.38	0.20	0.17
Capacity (veh/h)	751	690	710
Control Delay (s)	10.3	9.1	8.7
Approach Delay (s)	10.3	9.1	8.7
Approach LOS	B	A	A

Intersection Summary		
Delay		9.6
HCM Level of Service		A
Intersection Capacity Utilization	32.8%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

AM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	11	279	57	47	260	0	0	191	43
Peak Hour Factor	0.92	0.92	0.92	0.39	0.95	0.89	0.78	0.91	0.92	0.92	0.87	0.68
Hourly flow rate (vph)	0	0	0	28	294	64	60	286	0	0	220	63
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total (vph)	386	346	283									
Volume Left (vph)	28	60	0									
Volume Right (vph)	64	0	63									
Hadj (s)	-0.05	0.07	-0.10									
Departure Headway (s)	5.6	5.6	5.5									
Degree Utilization, x	0.60	0.54	0.44									
Capacity (veh/h)	615	606	610									
Control Delay (s)	16.4	14.9	12.7									
Approach Delay (s)	16.4	14.9	12.7									
Approach LOS	C	B	B									
Intersection Summary												
Delay			14.9									
HCM Level of Service			B									
Intersection Capacity Utilization			57.7%	ICU Level of Service								B
Analysis Period (min)			15									



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	17	11	24	69	83	44
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	12	26	75	90	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					199	
pX, platoon unblocked						
vC, conflicting volume	241	114	138			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	241	114	138			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	98			
cM capacity (veh/h)	734	938	1446			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	30	101	138			
Volume Left	18	26	0			
Volume Right	12	0	48			
cSH	802	1446	1700			
Volume to Capacity	0.04	0.02	0.08			
Queue Length 95th (ft)	3	1	0			
Control Delay (s)	9.7	2.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.7	2.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization		25.3%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Alley Access West & 8th STREET

AM Peak - Total Future_IMP
7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	35	39	284	0	55	200
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	42	309	0	60	217
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	221					
pX, platoon unblocked	0.91					
vC, conflicting volume	646	309			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	609	309			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	94			95	
cM capacity (veh/h)	395	731			1252	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	80	309	277			
Volume Left	38	0	60			
Volume Right	42	0	0			
cSH	522	1700	1252			
Volume to Capacity	0.15	0.18	0.05			
Queue Length 95th (ft)	14	0	4			
Control Delay (s)	13.2	0.0	2.1			
Lane LOS	B		A			
Approach Delay (s)	13.2	0.0	2.1			
Approach LOS	B					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			42.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis
 1: H STREET & 8th STREET

PM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕			↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.98			0.99			0.97			0.98	
Flt Protected		1.00			1.00			1.00			0.99	
Satd. Flow (prot)		3468			3493			1802			1812	
Flt Permitted		0.89			1.00			1.00			0.66	
Satd. Flow (perm)		3078			3493			1802			1199	
Volume (vph)	45	1314	110	0	583	48	0	295	78	41	200	44
Peak-hour factor, PHF	0.75	0.98	0.56	0.50	0.88	0.76	0.42	0.83	0.69	0.82	0.77	0.79
Adj. Flow (vph)	60	1341	196	0	662	63	0	355	113	50	260	56
RTOR Reduction (vph)	0	11	0	0	7	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	1586	0	0	718	0	0	457	0	0	360	0
Turn Type	Perm						Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4									6		
Actuated Green, G (s)		54.0			54.0			35.0			35.0	
Effective Green, g (s)		55.0			55.0			37.0			37.0	
Actuated g/C Ratio		0.55			0.55			0.37			0.37	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		1693			1921			667			444	
v/s Ratio Prot					0.21			0.25				
v/s Ratio Perm		c0.52									c0.30	
v/c Ratio		0.94			0.37			0.68			0.81	
Uniform Delay, d1		20.9			12.7			26.6			28.3	
Progression Factor		1.00			0.52			1.00			1.00	
Incremental Delay, d2		11.3			0.5			5.6			14.8	
Delay (s)		32.2			7.2			32.2			43.1	
Level of Service		C			A			C			D	
Approach Delay (s)		32.2			7.2			32.2			43.1	
Approach LOS		C			A			C			D	

Intersection Summary

HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: H STREET & 9th STREET

PM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕↕	↕↕		↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	0.98		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3536	3484		1703	
Flt Permitted		0.93	1.00		0.97	
Satd. Flow (perm)		3289	3484		1703	
Volume (vph)	15	1421	623	54	35	18
Peak-hour factor, PHF	0.54	0.93	0.90	0.67	0.89	0.56
Adj. Flow (vph)	28	1528	692	81	39	32
RTOR Reduction (vph)	0	0	9	0	24	0
Lane Group Flow (vph)	0	1556	764	0	47	0
Turn Type	Perm					
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)		66.0	66.0		23.0	
Effective Green, g (s)		67.0	67.0		25.0	
Actuated g/C Ratio		0.67	0.67		0.25	
Clearance Time (s)		5.0	5.0		6.0	
Lane Grp Cap (vph)		2204	2334		426	
v/s Ratio Prot			0.22			
v/s Ratio Perm		c0.47			c0.03	
v/c Ratio		0.71	0.33		0.11	
Uniform Delay, d1		10.3	7.0		28.9	
Progression Factor		0.20	0.70		1.00	
Incremental Delay, d2		0.9	0.3		0.5	
Delay (s)		2.9	5.2		29.4	
Level of Service		A	A		C	
Approach Delay (s)		2.9	5.2		29.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	4.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: H STREET & 10th STREET

PM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑			↑↓			↑↓	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frt		0.99			1.00			0.94			0.98	
Flt Protected		1.00			0.99			0.97			0.99	
Satd. Flow (prot)		3516			3510			1698			1798	
Flt Permitted		1.00			0.53			0.74			0.90	
Satd. Flow (perm)		3516			1874			1285			1632	
Volume (vph)	0	1366	53	73	577	0	78	0	55	34	79	19
Peak-hour factor, PHF	0.25	0.96	0.83	0.59	0.92	0.25	0.82	0.25	0.63	0.77	0.78	0.66
Adj. Flow (vph)	0	1423	64	124	627	0	95	0	87	44	101	29
RTOR Reduction (vph)	0	3	0	0	0	0	0	33	0	0	7	0
Lane Group Flow (vph)	0	1484	0	0	751	0	0	149	0	0	167	0
Turn Type				Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases				8			2			6		
Actuated Green, G (s)		61.0			61.0			28.0			28.0	
Effective Green, g (s)		62.0			62.0			30.0			30.0	
Actuated g/C Ratio		0.62			0.62			0.30			0.30	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Lane Grp Cap (vph)		2180			1162			386			490	
v/s Ratio Prot		c0.42										
v/s Ratio Perm					0.40			c0.12			0.10	
v/c Ratio		0.68			1.03dl			0.39			0.34	
Uniform Delay, d1		12.5			12.0			27.7			27.3	
Progression Factor		0.08			1.00			1.00			1.00	
Incremental Delay, d2		1.2			2.8			2.9			1.9	
Delay (s)		2.2			14.8			30.6			29.2	
Level of Service		A			B			C			C	
Approach Delay (s)		2.2			14.8			30.6			29.2	
Approach LOS		A			B			C			C	

Intersection Summary

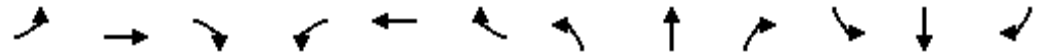
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: G STREET & 10th STREET

PM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	0	0	0	6	73	29	17	105	0	0	97	21
Peak Hour Factor	0.25	0.25	0.25	0.38	0.78	0.75	0.71	0.81	0.25	0.25	0.90	0.90
Hourly flow rate (vph)	0	0	0	16	94	39	24	130	0	0	108	23

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	148	154	131
Volume Left (vph)	16	24	0
Volume Right (vph)	39	0	23
Hadj (s)	-0.10	0.07	-0.07
Departure Headway (s)	4.4	4.5	4.4
Degree Utilization, x	0.18	0.19	0.16
Capacity (veh/h)	757	773	785
Control Delay (s)	8.4	8.5	8.2
Approach Delay (s)	8.4	8.5	8.2
Approach LOS	A	A	A

Intersection Summary		
Delay		8.4
HCM Level of Service		A
Intersection Capacity Utilization	25.7%	ICU Level of Service A
Analysis Period (min)		15

HCM Unsignalized Intersection Capacity Analysis
 5: G STREET & 8th STREET

PM Peak - Total Future_IMP
 7/17/2007



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	0	0	7	87	48	27	250	0	0	237	81
Peak Hour Factor	0.25	0.25	0.25	0.58	0.74	0.71	0.75	0.94	0.25	0.25	0.90	0.40
Hourly flow rate (vph)	0	0	0	12	118	68	36	266	0	0	263	202

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	197	302	466
Volume Left (vph)	12	36	0
Volume Right (vph)	68	0	203
Hadj (s)	-0.16	0.06	-0.23
Departure Headway (s)	5.6	5.1	4.7
Degree Utilization, x	0.30	0.43	0.61
Capacity (veh/h)	586	673	746
Control Delay (s)	11.0	12.0	14.6
Approach Delay (s)	11.0	12.0	14.6
Approach LOS	B	B	B

Intersection Summary		
Delay		13.0
HCM Level of Service		B
Intersection Capacity Utilization	49.9%	ICU Level of Service A
Analysis Period (min)		15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	18	13	39	69	83	85
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	14	42	75	90	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)					199	
pX, platoon unblocked						
vC, conflicting volume	296	136	183			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	136	183			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	97			
cM capacity (veh/h)	674	912	1392			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	34	117	183			
Volume Left	20	42	0			
Volume Right	14	0	92			
cSH	757	1392	1700			
Volume to Capacity	0.04	0.03	0.11			
Queue Length 95th (ft)	3	2	0			
Control Delay (s)	10.0	2.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	10.0	2.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization		28.7%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Alley Access West & 8th STREET

PM Peak - Total Future _IMP
7/17/2007



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	105	126	271	28	109	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	114	137	295	30	118	230
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	221					
pX, platoon unblocked						
vC, conflicting volume	777	310			325	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	777	310			325	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	81			90	
cM capacity (veh/h)	330	730			1235	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	251	325	349
Volume Left	114	0	118
Volume Right	137	30	0
cSH	471	1700	1235
Volume to Capacity	0.53	0.19	0.10
Queue Length 95th (ft)	77	0	8
Control Delay (s)	21.0	0.0	3.4
Lane LOS	C		A
Approach Delay (s)	21.0	0.0	3.4
Approach LOS	C		

Intersection Summary			
Average Delay			7.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)			15

APPENDIX E
Transportation Management Plan

Transportation Management Plan for 8th and H Street Planned Unit Development

INTRODUCTION

This document presents a proposed Transportation Management Plan (TMP) for the 8th and H Street Planned Unit Development. The development site is situated south of H Street between 8th and 10th Streets in Northeast Washington, D.C. The site is occupied by a shopping center, and would be redeveloped with mixed residential and retail uses supported by underground parking.

The primary goal of this TMP is to reduce traffic congestion and related pollution problems in the local and regional areas of the site by influencing traveling choices and patterns towards the use of transportation modes other than single-occupant motor vehicles. The primary objective is to minimize the potential traffic and parking impacts of the proposed development on internal and external roadways, and within the adjacent residential communities. The TMP therefore applies to the peak hour and daily trips that would be generated by all users of the development, including employees, residents, visitors and retail patrons.

This TMP document is in keeping with the requirements of the District Department of Transportation (DDOT), and the City's transit oriented development policies and strategies described in "*Trans-Formation: Recreating Transit-Oriented Neighborhood Centers in Washington, DC*" September 2002. The TMP also follows the guidelines presented in the GSA/MWCOG/NCPC Transportation Management Program Handbook¹. The key components of the TMP are presented below.

POTENTIAL TMP MEASURES

As indicated above, the primary objective of the TMP would be to reduce the potential impacts of the proposed development by managing traffic and parking demand. Towards this end, the following potential measures have been identified for consideration by the Development Team, DDOT and WMATA.

- **Transportation Services Coordinator**. This task will be the responsibility of the property management group. Responsibilities will include administering the TMP strategies, including the development and distribution of informational and promotional brochures regarding ridesharing and various transit services, and the administration of a ridesharing database and information matching system.

¹ "*Implementing a Successful Transportation Management Program, 2008*", General Services Administration (GSA), Metropolitan Washington Council of Governments (MWCOG), National Capital Planning Commission (NCPC).

- **Transit Services.**
 - **Continuation/Enhancement of Metrobus Services.** The Developer will work with DDOT and WMATA to enhance transit accessibility and ridership amenities (including improved bus shelters) along H and 8th Streets. These streets are used by several Metrobus routes which provide connections to several Metro stations and other areas of the District and adjacent jurisdictions. The District also plans to provide streetcar services along the site on both H and 8th Streets. The H Street Streetcar line would run between Union Station and the Benning Road Metro Station. The 8th Street streetcar line would run from H Street NE to M Street SE, with connections to additional streetcar lines serving the Anacostia waterfront and corridors east of the Anacostia River.
 - **Transit Subsidy.** At the commencement of the employment of a new employee, the property management group will request that retailers provide that employee with a SmarTrip Card with the value of \$20.00 to encourage the use of transit.
- **Shared Vehicles.** The Developer will reserve two (2) parking spaces within the proposed garages, for use by shared vehicles (such as Zipcars).
- **Pedestrian and Bicycle Linkages.** The developer will encourage all alternative transportation modes including walking and bicycling to reduce the roadway traffic congestion and related environmental impacts. Wide sidewalks with good pedestrian lighting and tree shade will be provided along the site frontage. These improvements would create a pleasant walking and bicycling experience along the site and enhance access to and use of existing and future transit facilities and services. The proposed development will include an appropriate number of bicycle parking spaces in the garages, in keeping with the DDOT requirement (i.e., five percent of the required off-street automobile parking spaces). All bicycle parking spaces will comply with the Zoning Regulations.
- **Ride-matching/Ridesharing Program.** Employees and residents who wish to carpool would be provided a list of like-minded persons, and will also be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments. Three (3) carpool parking spaces will be provided within the parking garage.
- **Guaranteed Ride Home Program.** Sponsored by the Metropolitan Washington Council of Governments and coordinated by the on-site Transportation Services Coordinator, this program ensures employee commuters who regularly carpool, vanpool, bike, walk or take transit to work with a reliable ride home when they need to work overtime, or another unexpected reason to leave arises. The ride, using a taxi or other transit, is free to the user.