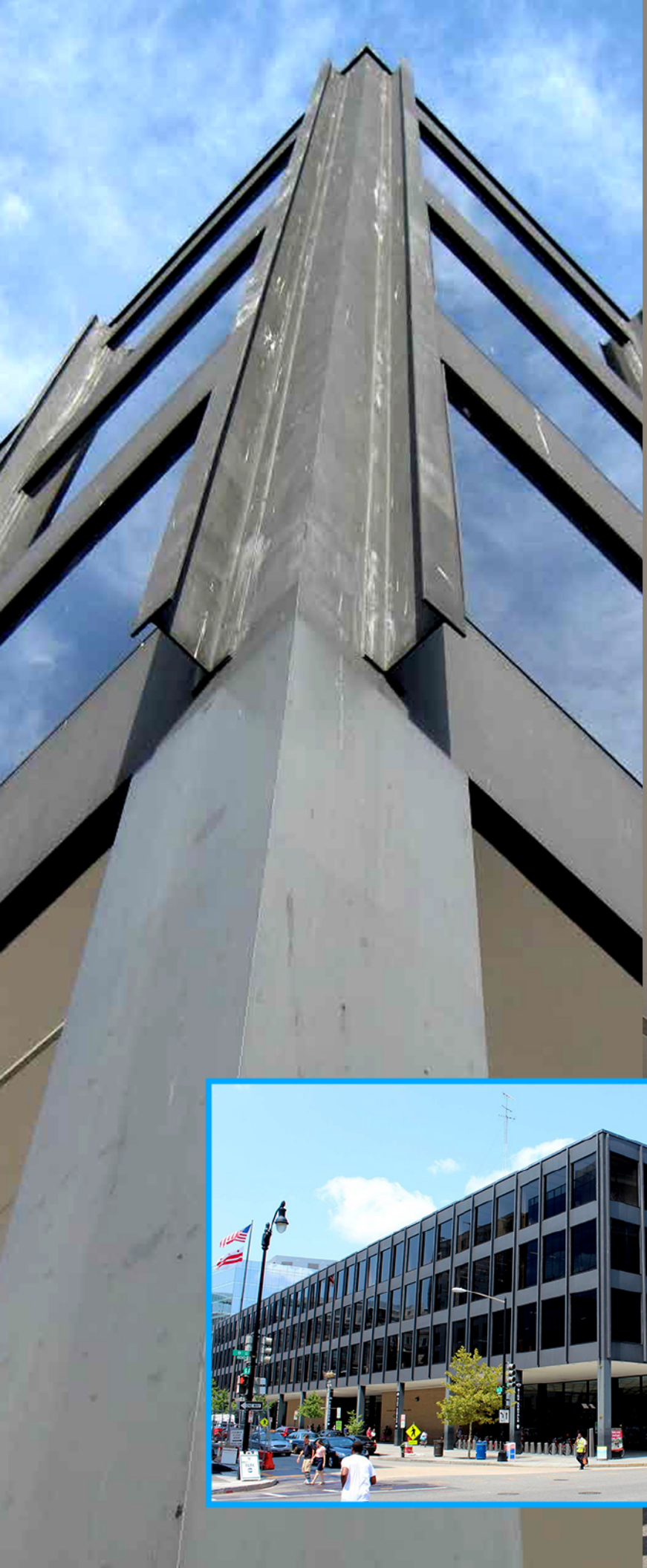

MARTIN LUTHER KING JR. MEMORIAL LIBRARY RENOVATION PROJECT

TRAFFIC IMPACT STUDY

Prepared for:
District of Columbia Public Library

July 2016

Stantec

EXECUTIVE SUMMARY

This report represents the Traffic Impact Study (TIS) for the proposed expansion project at the Martin Luther King Jr. Memorial Library (MLK Jr. Library). The report identifies existing and future traffic operation conditions in the immediate vicinity of the site. The MLK Jr. Library also has a functioning loading dock. No improvements to the loading dock are proposed in conjunction with the renovation/expansion, with the exception of the reduction of the curb radius at the entrance to the loading dock. This curb modification will shorten the pedestrian crossing distance in front of the loading dock, enhancing safety, but may necessitate the removal of parking spaces along G Place, NW. The potential traffic impacts associated with the library expansion include vehicular and pedestrian decline of level of service due to additional employees and visitors added by the proposed expansion.

The proposed project includes the renovation of the existing building (first to fourth floors), as well as the expansion that adds fifth floor event space. The purpose of the renovation project is to rehabilitate and modernize the MLK Jr. Library to provide a world-class and sustainable central city library. In addition, the fifth floor space will add approximately 30,600 square feet of assembly / event area to the building.

The TIS is developed using the District Department of Transportation (DDOT) – Design and Engineering Manual, and the DDOT Guidelines for Comprehensive Transportation Review Requirements. The completed traffic study will be incorporated into the Environmental Assessment (EA) for this project.

Based on the information obtained, the MLK Jr. Library expansion is not anticipated to result in adverse traffic impacts to the surrounding roadway network. The study area intersections are anticipated to experience increased traffic volumes, but these volumes can be accommodated without any geometric improvements or signal timing adjustments.

The added pedestrian and bicycle trips will not necessitate additional accommodations and existing bicycle stations are anticipated to meet the demand. Trips associated with transit will not necessitate improvements /enhancements to existing transit facilities. No additional buses or expansion of bus routes is necessary as a result of the expansion of the MLK Jr. Library. Additional motorist trips will be accommodated by existing parking garages in proximity to the MLK Jr. Library and no additional or alternate parking accommodations are needed for library staff.

Finally, it should be noted that the MLK Jr. Library renovation includes modifications to the existing loading dock and garage ingress/egress areas. The loading dock improvements result in the dock area being compliant with city code. Modifications to the MLK Jr. Library garage access includes the removal of the garage exit ramp, changing the current garage entrance ramp to accommodate bi-directional traffic and the addition of traffic signals inside the garage and along G Place, NW on MLK Jr. Library property. As part of these garage access improvements, G Place, NW will be modified to accommodate two-way traffic from 10th Street, NW to the Alley/MLK Jr. Library garage entrance.

Overall, the proposed expansion and renovation will have a minimal impact on the surrounding pedestrian and roadway network.

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Table of Contents

1. INTRODUCTION 1
2. STUDY AREA 2
3. Existing Conditions 6
3.1 Vehicular Traffic 6
3.2 Traffic Capacity Analysis 6
3.3 Public Transportation Facilities 10
3.4 Pedestrian and Bicycle Facilities 13
3.5 Parking Facilities 18
3.6 Crash Analysis 19
4. BACKGROUND CONDITIONS 22
4.1 Vehicular Traffic 24
4.2 Traffic Capacity Analysis 24
5. FUTURE CONDITIONS 28
5.1 Alternatives 28
No Action Alternative – Existing Library 28
Action Alternatives 29
Alternative A: Renovation with 5th Floor Event Space 29
Alternative B: Fifth-Floor Trapezoidal Addition 30
Alternative C: Fifth-Floor Extruded Addition 31
5.2 Trip Generation and Trip Distribution 31
5.3 Vehicular Traffic 33
5.4 Pedestrian Traffic 33
5.5 Parking Facilities 34
5.6 Traffic Capacity Analysis 39
5.7 Traffic Signal Warrant Analysis 41
6. SITE ACCESS AND LOADING 41
7. TRANSPORTATION DEMAND MANAGEMENT 47
8. CONCLUSION 48
9. REFERENCES 50

Appendix A DDOT Traffic Signal Timings
Appendix B Existing LOS / Delay Synchro Report
Appendix C DDOT Crash Data & AADT Growth Data
Appendix D Background Traffic and Adjacent Development Site Trip Figures
Appendix E Background LOS / Delay Synchro Report
Appendix F Total LOS / Delay Synchro Report
Appendix G Traffic Signal Warrant Analysis HCS Report
Appendix H Loading Dock and Parking Garage Access
Appendix I Site Access Letters/White Papers

1. INTRODUCTION

This Traffic Impact Study (TIS) analyzes the potential traffic impacts of the proposed expansion project at the Martin Luther King Jr. Memorial Library (MLK Jr. Library). The project includes the renovation of the existing building (first to fourth floors), as well as the expansion that adds fifth floor event space. The purpose of the proposed project is to rehabilitate and modernize the MLK Jr. Library to provide a world-class and sustainable central City library. The project is needed because deferred maintenance has resulted in deficient building systems that do not meet current standards, the library does not meet the expectations of modern day library users, and the DC Public Library (DCPL) needs to ensure the long-term viability of the MLK Jr. Library.

This TIS is developed using the District Department of Transportation (DDOT) – Design and Engineering Manual, and DDOT Guidelines for Comprehensive Transportation Review Requirements. This study will be incorporated into the Environmental Assessment (EA) that is also being completed for this project. Included in the analysis are the impacts associated with the addition of a fifth floor event/meeting space. The proposed additional area is approximately 30,628 square feet and includes the following:

- Flexible event space, featuring an assembly area;
- Pre-function space for people to gather before events;
- Catering kitchen; and
- Roof terrace.

Evening and daytime events are expected to occur once per week and once per weekend. The events are categorized as Informal Performances for 100 to 150 attendees and Receptions for 300 to 500 people. It should be noted these events are already occurring at the MLK Jr. Library. With the additional space proposed for the fifth floor, some of these events will take place in the new space.

As part of the renovations to the MLK Jr. Library, the ramp used by traffic exiting the garage to 9th Street, NW will be closed and the current garage entrance will be modified to accommodate bi-directional traffic flow. The closure of the exiting ramp allows for the addition of a café on the east portion of the MLK Jr. Library property. These modified traffic operations will be accommodated by signalizing the ingress and egress of the MLK Jr. Library garage.

2. STUDY AREA

The MLK Jr. Library is located at 901 G Street, NW, Washington, DC. It is encompassed by 10th Street, NW, 9th Street, NW, G Place, NW and G Street, NW. Figure 1 depicts the MLK Jr. Library location.

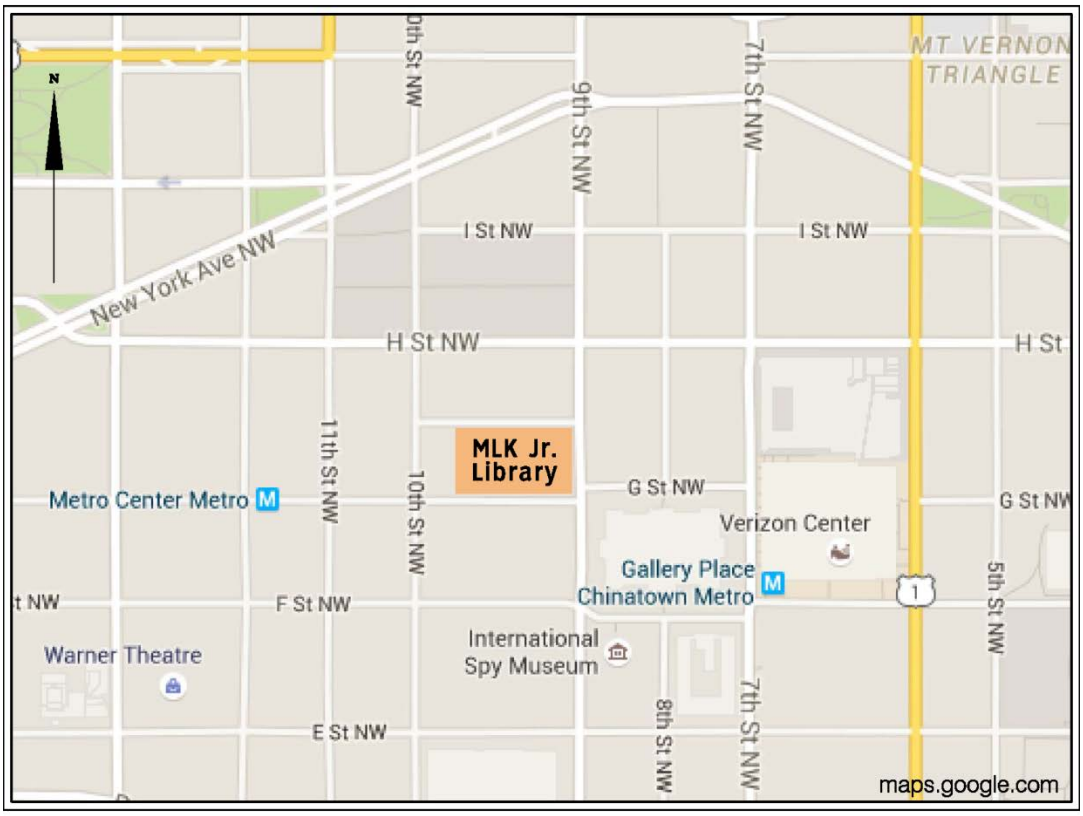


Figure 1: Project Location and Area Map

The MLK Jr. Library is located in the Downtown Development (DD) Overlay and C-4 Commercial (DD/C-4) Zoning District. The DD/C-4 District is designed for the downtown core that comprises the retail and office centers of the District of Columbia. The DD Overlay is intended to create a balanced mixture of uses by means of incentives and requirements for critically important land uses and to guide and regulate office development to further the land use objectives for retail, hotel, residential, entertainment, arts, and cultural uses (DCOZ 2014).

Roadways within the study area that would be directly impacted by the proposed project are listed below.

- 9th Street, NW – 9th Street, NW is classified as a minor arterial road. In the vicinity of the site, 9th Street, NW is a three-lane, one-way southbound roadway, with a marked parking lane along the east side of the road and a marked bike lane between the right lane and center lane. The right lane is marked as a "bus-only" lane. The curb parking lane is restricted to two-hour parking from 7:00 AM to 6:30 PM, Monday through Friday. 9th Street, NW carries approximately 16,700 vehicles per day according to the DDOT 2013 Traffic Volume Map and has a posted speed limit of 25 mph.

- 10th Street, NW – 10th Street, NW is classified as a collector road. In the vicinity of the site, 10th Street, NW is a two-lane, one-way southbound roadway, with marked parking lanes along both sides of the road and a marked bike lane between the west side parking lane and right travel lane. The curb parking lane is restricted to two-hour parking from 7:00 AM to 6:30 PM, Monday through Friday. 10th Street, NW carries approximately 2,800 vehicles per day according to the DDOT 2013 Traffic Volume Map and the posted speed limit is 25 mph.

- G Street, NW – G Street, NW is classified as a collector road. In the vicinity of the site, G Street, NW is a two-lane, two-way roadway, with unmarked parking lanes along both sides of the road. The curb parking lane is time restricted and varies from 15-minute parking, 2-hour parking, and 4-hour handicap parking between 7:00 AM to 6:30 PM, Monday through Friday. G Street, NW carries approximately 6,000 vehicles per day, according to the DDOT 2013 Traffic Volume Map, and the posted speed limit is 25 mph.

- G Place, NW – G Place, NW is classified as a local street. G Place, NW is a one-lane, one-way eastbound roadway, with unmarked parking lanes along north side of the road. Non-metered curb parking has no time restriction and seven of these parking spaces are reserved for law enforcement. Metered curb parking is restricted to two-hour parking.

- F Street, NW – F Street, NW is classified as a collector road. In the vicinity of the site, F Street, NW is a four-lane, undivided roadway, with unmarked parking lanes along both sides of the road. The curb parking lane is time restricted to 2-hour parking between 7:00 AM to 6:30 PM, Monday through Friday. F Street, NW carries approximately 7,900 vehicles per day, according to the DDOT 2013 Traffic Volume Map, and the posted speed limit is 25 mph.

- H Street, NW – H Street, NW is classified as a minor arterial road. In the vicinity of the site, H Street, NW is a four-lane, undivided roadway, with marked parking lanes along both sides of the road. The curb parking lane is time restricted to 2-hour parking between 9:30 AM to 4:00 PM, Monday through Friday. During the peak hours, 7:00 AM to 9:30 AM and 4:00 PM to 6:30 PM, Monday through Friday, curb parking is prohibited along H Street, NW. During the peak periods of weekday traffic this roadway provides three lanes on each direction. H Street, NW carries approximately 15,600 vehicles per day, according to the DDOT 2013 Traffic Volume Map, and the posted speed limit is 25 mph.

- 8th Street, NW – 8th Street, NW is classified as a collector road. In the vicinity of the site, 8th Street, NW is a two-lane, two-way roadway, with unmarked parking lanes along both sides of the road. The curb parking lane is restricted to two-hour parking from 7:00 AM to 6:30 PM, Monday through Friday. 8th Street, NW carries approximately 2,000 vehicles per day, according to the DDOT 2013 Traffic Volume Map, and the posted speed limit is 25 mph.

The proposed study area for this TIS includes the footprint of the MLK Jr. Library and the following neighboring intersections:

- 9th Street, NW at G Street, NW
- 9th Street, NW at G Place, NW
- 9th Street, NW at H Street, NW
- 9th Street, NW at F Street, NW
- 10th Street, NW at G Street, NW
- 10th Street, NW at G Place, NW
- 10th Street, NW at H Street, NW

- 10th Street, NW at F Street, NW
- 8th Street, NW at G Street, NW
- 8th Street, NW at H Street, NW

The site adjacent intersections are described below. General lane use and traffic control of the study area intersections are shown in Figure 2.

9th Street, NW at G Street, NW is a signalized intersection. The one-way southbound approach has three approaching lanes (one shared left turn/through lane, one through lane, and one shared right turn/through lane) with no receiving lanes. The one-way northbound approach has three receiving lanes only. The westbound approach has one left turn lane, one through lane and one receiving lane. The eastbound approach has one shared right turn/through lane and one receiving lane. Pedestrian ramps and countdown pedestrian signals are provided at all corners of this intersection. Marked pedestrian crosswalks are provided at both legs along 9th Street, NW, with raised pedestrian crosswalks provided at both legs along G Street, NW.

9th Street, NW at G Place, NW is an unsignalized "T" intersection with stop control for the eastbound approach. The one-way southbound approach has three through lanes with no receiving lanes. The one-way northbound approach has three receiving lanes only. The one-way eastbound approach has one right turn lane. There is a garage exit located right next to the eastbound approach. A marked pedestrian crosswalk is provided on the west leg.

10th Street, NW at G Street, NW is a signalized intersection. The one-way southbound approach has two approaching lanes (one shared left turn/through lane and one shared right turn/through lane) with no receiving lanes. The one-way northbound approach has two receiving lanes and the westbound approach has one shared left turn/through lane and one receiving lane. The eastbound approach has one shared right turn/through lane and one receiving lane. Pedestrian ramps and countdown pedestrian signal are provided at all corners of this intersection. Marked pedestrian crosswalks are provided on the north, south and west legs. Raised pedestrian crosswalks are provided on the east leg.

10th Street, NW at G Place, NW is an unsignalized "T" intersection with no traffic control for vehicle or pedestrian movements. The one-way southbound approach has two approaching lanes (one through lane and one shared left turn/through lane) with no receiving lanes. The one-way northbound approach has two receiving lanes and the one-way westbound approach has one receiving lane. Marked pedestrian crosswalks and ramps are provided on the east leg.

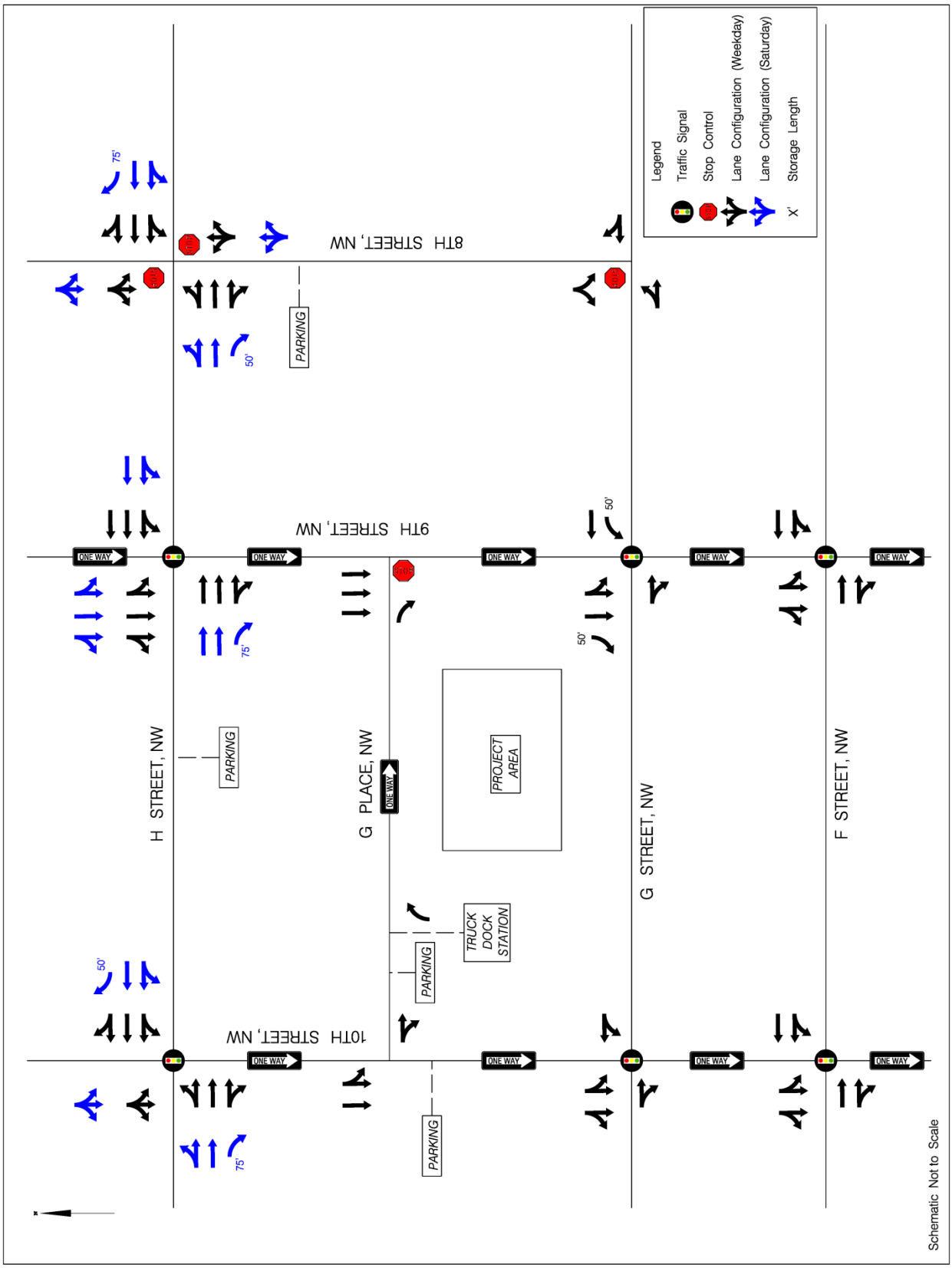


Figure 2: Lane Use and Traffic Control

3. EXISTING CONDITIONS

3.1 Vehicular Traffic

To determine traffic volumes on the roadway network in the vicinity of the MLK Jr. Library, traffic counts were performed at each of the ten study area intersections listed previously on Tuesday, October 28, 2014, Wednesday, October 29, 2014, Tuesday, April 21, 2015, Wednesday, April 22, 2015, Saturday, September 26, 2015 and Saturday, October 3, 2015 for each of the following time periods:

- Weekday AM peak period (6:30 am – 9:30 am)
- Weekday PM peak period (3:30 pm – 6:30 pm)
- Saturday peak period (10:30 am – 3:30 pm)

Weekday AM and PM peak periods on-street parking counts were also conducted during the same period on the adjacent streets around the MLK Jr. Library. The peak hour traffic volumes were balanced and adjusted to account for the normal variations due to the fact that the traffic counts were not collected on the same day. The existing traffic volumes are shown in Figure 3.

3.2 Traffic Capacity Analysis

The intersections were analyzed using the Highway Capacity Manual (HCM) 2010 module of the Synchro traffic simulation modeling program to determine Level of Service (LOS) for existing conditions. Existing traffic signal timings (Appendix A) used in the analysis were provided by the DDOT on August 25, 2015.

The LOS is described in HCM as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers." The HCM defines six LOS ranging from A to F, with A presenting optimal operating conditions with minimal delays and F representing congestion. Generally a LOS E or better (v/c ratio <1.0) is considered acceptable in Washington D.C.

The HCM analysis determines the overall operational LOS for an entire signalized intersection. In the case of stop control on minor street intersections, the average delay for the worst approach is considered to represent the intersection LOS. For non-controlled intersections, the HCM analysis is not applicable.

Peak hour factors used in the analysis are actual values calculated from the traffic volume counts. The HCM LOS and delay results of the analysis are presented in Table 1 below. HCM output reports are contained in Appendix B.

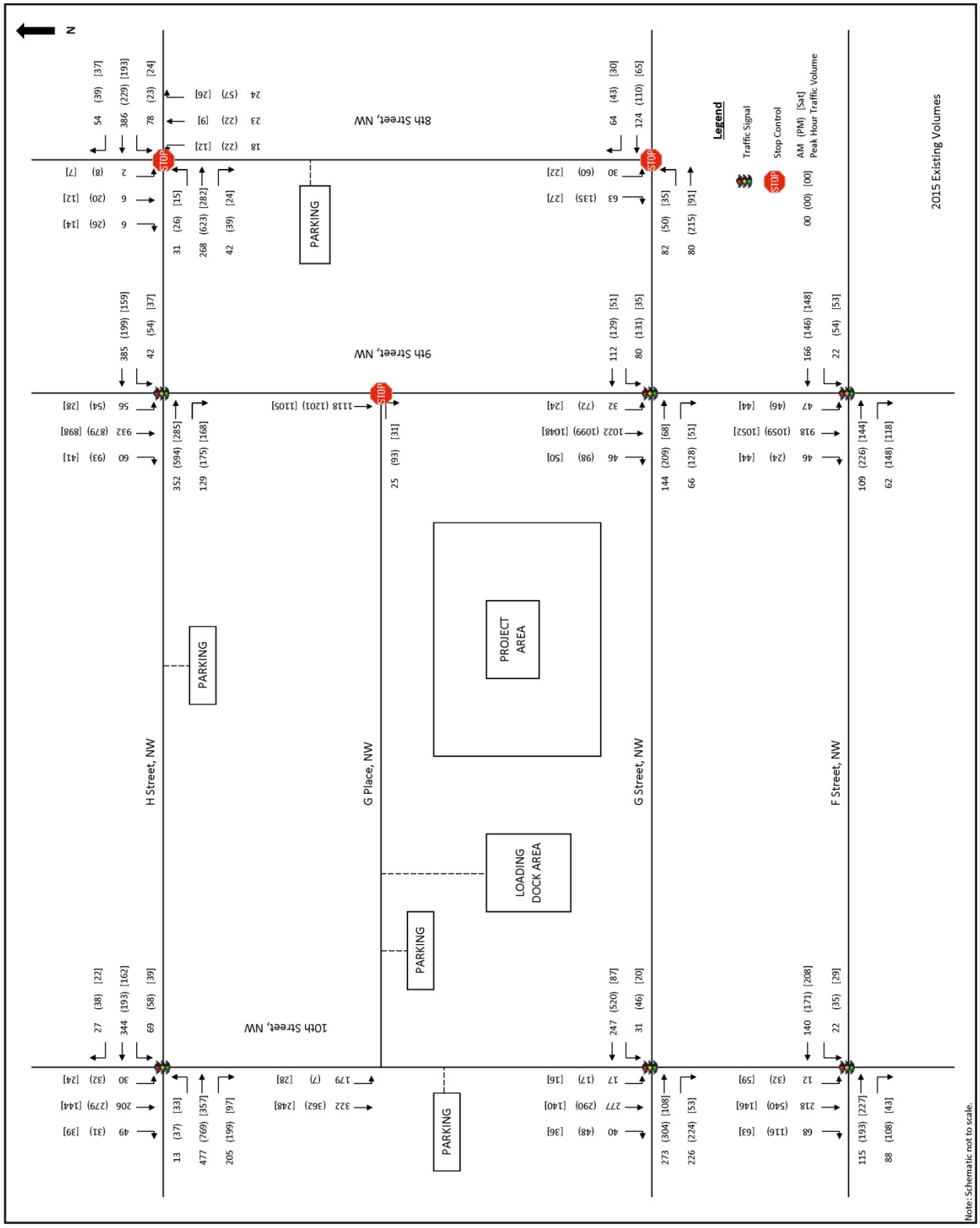


Figure 3: Peak Hour Traffic Counts – Existing Condition

Table 1: Existing Levels of Service

Intersection Approach / Movement	Traffic Control	AM Peak		PM Peak		SAT Peak	
		LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]
9th Street, NW at F Street, NW	Signalized	C	30.2	C	33.0	C	27.1
10th Street, NW at F Street, NW	Signalized	C	29.1	C	28.8	C	29.6
9th Street, NW at G Street, NW[2]	Signalized	C	33.8	E	72.9	D	54.0
10th Street, NW at G Street, NW	Signalized	C	32.5	C	34.4	C	26.9
9th Street, NW at H Street, NW[2]	Signalized	C	21.5	C	27.7	C	24.1
10th Street, NW at H Street, NW[2]	Signalized	D	43.4	C	33.9	C	29.4
8th Street, NW at H Street, NW	Stop Control on NB and SB Approaches						
Northbound		F	612.7	-	-	F	96.1
Southbound		-	-	-	-	F	85
Eastbound / Left		B	14.0	C	22.3	A	9.7
Westbound / Left		B	14.2	D	31.3	B	10.3
8th Street, NW at G Street, NW	Stop Control on SB Approach						
Southbound		B	14.9	F	204.2	E	47.4
Eastbound / Left		A	8.2	A	9.4	A	9.4
9th Street, NW at G Place, NW	Stop Control on EB Approach						
Eastbound		E	39.5	F	50.9	C	23.6
10th Street, NW at G Place, NW	No Control[3]						

[1] HCM 2010 Output
[2] HCM 2000 Output
[3] For non-controlled intersections, the HCM analysis is not applicable

Three intersections were analyzed using HCM 2010 module of the Synchro software because the HCM 2010 methodology does not support exclusive pedestrian or hold phases, which occurs at intersections along H Street, or phasing that is not strict NEMA phasing, such as occurs at the intersection of 9th Street, NW and G Street, NW.

From the analysis results, the signalized intersection of 9th Street, NW and G Street, NW, is currently operating at LOS E during the PM peak hour. All other signalized study intersections are operating at LOS D or better.

The unsignalized intersection at 8th Street, NW and H Street, NW is currently operating at LOS F on its NB approach during the AM peak hour. The same LOS F is observed at the intersection of 8th Street, NW and G Street, NW on its SB approach during the PM peak hour. The intersection of 9th Street, NW and G Place, NW is operating at LOS E on its EB approach during the AM peak and at LOS F during the PM peak hour.

The queue lengths for existing conditions are presented below in Table 2.

Table 2: Existing Queues

Existing Traffic 2015			
Intersection Approach / Movement	AM Peak	PM Peak	SAT Peak
	Queue (feet)[1]	Queue (feet)[1]	Queue (feet)[1]
9th Street, NW at F Street, NW			
Southbound	22	m51	m18
Eastbound	86	195	47
Westbound	100	104	95
10th Street, NW at F Street, NW			
Southbound	30	57	17
Eastbound	84	146	121
Westbound	100	40	130
9th Street, NW at G Street, NW			
Southbound	457	#605	#539
Eastbound	#266	#505	129
Westbound / Left	97	151	48
Westbound / Through	131	151	64
10th Street, NW at G Street, NW			
Southbound	177	173	41
Eastbound	282	294	137
Westbound	82	244	136
10th Street, NW at G Place, NW[3]			
9th Street, NW at H Street, NW			
Southbound	134	181	168
Eastbound	156	258	153
Westbound	147	82	90
10th Street, NW at H Street, NW			
Southbound	150	250	107
Eastbound	188	284	177
Westbound	160	89	112
8th Street, NW at H Street, NW[2]			
Northbound	208	-	83
Southbound	-	-	65
Eastbound / Left	8	10	3
Westbound / Left	15	18	3
8th Street, NW at G Street, NW[2]			
Southbound	28	320	55
Eastbound / Left	8	5	5
9th Street, NW at G Place, NW[2]			
Eastbound	25	100	20

[1] Synchro 9 - 95% Queue Length
[2] HCM 2010 - 95% Queue Length, assuming vehicle length of 25 feet
[3] Intersection configuration is not allowed in HCM analysis
m - Volume for 95th percentile queue is metered by upstream signal
- 95th percentile volumes exceed capacity. Queue may be longer. Queue shown is maximum after two cycles.

Signalized intersection queue lengths shown in Table 2 are the 95 percentile queue length output from the Synchro modeling software. The unsignalized intersection queue lengths shown in Table 2 are the 95 percentile queue vehicles output from the HCM 2010 module. In general, there are no issues with the queues observed in the study area. The intersection of 9th Street, NW and G Street, NW shows long queues on the EB and SB approaches during the PM peak hour. While the SB queue length of approximately 605 feet seems to extend beyond its intersection with H Street, NW, in reality it does not. A number of vehicles come from two mid-block sources of traffic, the intersection with G Place, NW, and the MLK Jr. Library parking garage, which account for portion of the queue length shown in Table 2.

3.3 Public Transportation Facilities

The following public transportation facilities are available in the vicinity of the MLK Jr. Library:

- Metro Rail - The MLK Jr. Library is easily accessed by both Metro Center and Gallery Place Chinatown stations. The Metro Center Station is on the Blue, Orange, Red, and Silver Lines, and is a transfer station between the Red Line and the already-joined Blue, Orange and Silver Lines. The closest Metro entrance to the MLK Jr. Library at the Metro Center stop is located at the intersection of 11th Street, NW at G Street, NW. The Metro Rail is within a 0.1-mile walking distance from the MLK Jr. Library.

  The Gallery Place Chinatown Station serves the Green, Red and Yellow Lines. It is a transfer station between the Red Line and the Green/Yellow Lines. The closest Metro entrance to the MLK Jr. Library at the Gallery Place Chinatown station is located at the southeast corner of the intersection of 9th Street, NW at G Street, NW and has a walking distance of 260 feet from the MLK Jr. Library.

  An assessment of the capacity of these two stations was done based on the review of three reports prepared by the Washington Metropolitan Area Transit Authority (WMATA). "Metrorail Station Access and Capacity Study", 2008, "Transit Ridership Trends and Markets", 2009, and the "2011 – 2020 Capital Needs Inventory", 2010. As presented in these documents, these stations were identified among the stations with the highest current and future ridership and peak-hour transfers. Furthermore, one of the reports found that "preset demand (2008) at Metro Center already exceeds its capacity".

  Recommendations to improve capacity at each of these stations and to improve transfer activities between the two stations were provided in the reports. The proposed improvements included the following: adding platform-to-platform vertical capacity (vertical circulation), widening the platforms, extending mezzanines, and a pedestrian interconnection between the two stations. The implementation of these improvements will enhance accessibility of the Metrorail system at these two stations and will provide adequate capacity for future needs. It should be noted that the anticipated trips generated by the MLK Jr. Library will not significantly add to station capacities.

- Bus Routes – The MLK Jr. Library is accessed by several bus routes. A field visit was conducted on Wednesday, September 2, 2015 to assess existing conditions of all transit stops in the study area. The stops were evaluated based on ADA compliance, and the presence of a bus shelter and bench at each location. The bus stops, distance to the library, assessment results and routes are shown in the Table 3. The headway and span of service from Monday to Friday of each bus route are shown in the Table 4.

Table 3: Bus Stops and Routes

Bus Stops	Walking Distance	Bus Shelter/Bench/ ADA Compliant	Bus Routes
9th Street, NW at G Street, NW	On-Site	Yes/No/Yes	42, 79
11th Street, NW at G Street, NW	0.1 mile	Yes/Yes/Yes	42, 63, 64, P6, P17, S2, S4
7th Street, NW at G Street, NW	0.2 mile	No/No/Yes	70, 74
11th Street, NW at H Street, NW	0.2 mile	Yes/Yes/Yes	42, 63, 64, 80, 610, 620, 640, 650, 705, 715, MC, RS, G8, P6, P17, P19, W13, S2, S4, X2, X9
11th Street, NW at F Street, NW	0.2 mile	Yes/No/Yes	54
7th Street, NW at E Street, NW	0.3 mile	Yes/Yes/Yes	70, 74
7th Street, NW at F Street, NW	0.2 mile	Yes/Yes/Yes	70, 74
7th Street, NW at H Street, NW	0.25 mile	Yes/Yes/Yes	70, 74
H Street, NW at 7th Street, NW	0.25 mile	Yes/Yes/Yes	80, P6, X2
9th Street, NW at H Street, NW	0.2 mile	Yes/Yes/Yes	42
9th Street, NW at F Street, NW	0.1 mile	Yes/Yes/Yes	42
E Street, NW at 9th Street, NW	0.2 mile	Yes/Yes/Yes	D3, D6, 13Y
E Street, NW at 8th Street, NW	0.25 mile	No/No/Yes	D3, D6, 13Y
E Street, NW at 10th Street, NW	0.20 mile	Yes/Yes/Yes	D3, D6, 13Y
F Street, NW at 11th Street, NW	0.20 mile	Yes/Yes/Yes	54
G Street, NW at 13th Street, NW	0.25 mile	Yes/Yes/Yes	P17, P19, W13, D1, D3, D6
13th Street, NW at G Street, NW	0.25 mile	Yes/Yes/Yes	D1, D3, D6
I Street, NW at New York Ave	0.32 mile	No/No/Yes	X9
9th Street, NW at New York Ave	0.32 mile	No/No/Yes	74, D4
9th Street, NW at G Street, NW	On-Site	Yes/Yes/Yes	X2
New York Avenue, NW at 9th Street NW	.21 mile	No/No/Yes	7Y, D4
E Street NW, at 7th Street NW	.23 mile	Yes/Yes/Yes	D3, D6, 13Y
7th Street NW, at E Street NW	.23 mile	No/No/Yes	70, 74

Table 4: Bus Route Headway and Service Span

Route No	Operated by	Route Name	Headway during Peak Period	Span of Service for Weekdays	
				SB/WB	NB/EB
7Y	WMATA	Linconia-North Fairlington Line	16-25 min	3:01 PM - 5:16 PM	5:09 AM - 9:48 AM
13Y*	WMATA	Arlington-Union Station Line	30 min	5:25 AM - 7:29 AM	5:45 AM - 7:19 AM
42	WMATA[1]	Mount Pleasant Line	8-12 min	4:20 AM – 2:25 AM	4:44 AM – 2:55 AM
54	WMATA	14th Street Line	9-19 min	4:20 AM – 2: 32 AM	4:46 AM – 3:06 AM
63	WMATA	Takoma-Petworth Line	8-15 min	4:30 AM – 8:55 AM, 3:12 PM – 5: 40 PM	5:17 AM – 8:48 AM, 2:58 PM - 6:36 PM
64	WMATA	Fort Totten-Petworth Line	11-16min	5:09 AM – 1:18 AM	5:55 AM – 1: 55 AM
70	WMATA	Georgia Ave.-7th St. Line	12 min	4:00 AM – 2: 26 AM	4:01 AM – 3:03 AM
74	WMATA	Convention Center-Southwest Waterfront Line	12-16 min	4:45 AM - 11:56 PM	5:03 AM - 12:14 AM
79	WMATA	Georgia Avenue Limited Line	6-10 min	6:00 AM – 7:04 PM	6:03 AM – 7:06 PM
80	WMATA	North Capitol Street Line	7-20 min	4:56 AM – 12:30 AM	5: 22 AM – 1:25 AM
610	MTA[2]	Waldorf -DC Commuter Bus	15-20min	2:45 PM – 6:15 PM	4:45 AM – 8:05 AM
620	MTA	Waldorf -DC Commuter Bus	15-20min	12:20 PM – 6:20 PM	4:50 AM – 8:10 AM
640	MTA	Waldorf / Accokeek-DC Commuter Bus	20-25 min	3:10 PM – 5:30 PM	4:40 AM – 7:35 AM
650	MTA	La Plata / Waldorf / Accokeek-DC Commuter Bus	20-25 min	12:30 PM – 6:10 PM	4:30 AM – 10:40 AM
705	MTA	Charlotte Hall / Waldorf-DC Commuter Bus	12-15 min	12:15 PM – 6:05 PM	4:15 AM – 7:35 AM
715	MTA	Charlotte Hall / Waldorf-DC Commuter Bus	15-25 min	12:15 PM – 6:05 PM	4:20 AM – 7:35 AM
D1	WMATA	Glover Park-Federal Triangle Line	6-11 min	4:30 PM - 7:43 PM	7:10:00 AM - 9:49 AM
D3	WMATA	Ivy City - Dupont Circle Line	15-20min	4:11 AM - 12:39 AM	3:02 PM - 6:45 PM
D4	WMATA	Ivy City - Franklin Square Line	16-20min	6:05 AM - 10:03 AM	4:37 AM - 1:36 AM
D6	WMATA	Sibley Hospital - Stadium - Armory Line	12-18 min	4:10 AM - 1:43 AM	5:18 AM - 2:42 AM
G8	WMATA	Rhode Island Avenue Line	8-15 min	4:40 AM – 12:25 AM	5:29 AM – 1: 15 AM
MC	PRTC[3]	Montclair	6-40 min	12:04 PM – 7:27 PM	4:29 AM – 7:37 AM
P6	WMATA	Anacostia-Eckington Line	5-20 min	5:05 AM – 1:04 AM	5:28 AM – 11: 45 PM
P17	WMATA	Oxon Hill-Fort Washington Line	14-33 min	2:57 PM – 6: 54 PM	4:47 AM – 8:35 AM
P19	WMATA	Oxon Hill-Fort Washington Line	9-23 min	3:42 PM – 6: 04 PM	5: 35 AM – 8:00 AM
RS	PRTC	Route 1/South Route 1	About 40 min	12:04 PM – 7: 27 PM	5:13 AM – 7:23 AM
S2	WMATA	16th Street Line	14-20 min	4:09 AM – 2: 20 AM	4:42 AM – 3:04 AM
S4	WMATA	16th Street Line	14-22 min	4:26 AM – 11:52 PM	4:58 AM – 12:35 AM
X2	WMATA	Benning Road–H Street Line	8 min	4:10 AM – 2: 30 AM	4: 00 AM – 3: 00 AM
X9	WMATA	Benning Road-H Street Limited Line	15-20 min	6:15 AM – 9: 00 AM 3:43 PM – 6: 19 PM	6:30 AM – 8:50 AM 3:30 PM – 6:30 PM
W13	WMATA	Bock Road Line	14-30 min	3:35 PM – 6:43 PM	4:52 AM – 7:47 AM

Note:
1. WMATA: Washington Metropolitan Area Transit Authority
2. MTA: Maryland Transportation Authority
3. PRTC: Potomac and Rappahannock Transportation Commission

3.4 Pedestrian and Bicycle Facilities

The MLK Jr. Library is located in a highly urbanized area. Sidewalks are provided along all roadways surrounding the library, including 9th Street, NW, 10th Street, NW, G Place, NW, G Street, NW, H Street, NW and F Street, NW.

A field visit was conducted on Wednesday, September 2, 2015 to assess existing conditions of all sidewalks, ramps, and crosswalks within the study area. Crosswalks are provided on G Place, NW only for the west leg at the intersection with 9th Street, NW and only for the east leg at the intersection with 10th Street, NW. At the other study intersections, crosswalks are provided for all legs. In addition, a crosswalk is also provided in front of the main entrance of the MLK Jr. Library, at the mid-block of G Street, NW.

Figure 4 shows the peak hour pedestrian volumes at each of the intersections within the study area and pedestrian volumes crossing the MLK Jr. Library main entrance crosswalk, based on the traffic data collected on October 28th and 29th, 2014 and pedestrian counts conducted on November 13, 2014 and Saturday, September 26, 2015 and Saturday, October 3, 2015.

The sidewalk and ramp assessment conducted within ¼-mile radius showed that approximately 28 percent of the total sidewalk consists of brick /pavers sidewalk and 72 percent is made of concrete sidewalk. From the evaluation, approximately four percent of the total sidewalk is in need of repairs or is deficient. The deficiencies were classified into the following two categories:

- General deficiencies – the sidewalk is accessible but is uneven;
- Difference in elevation – the sidewalk shows difference in elevations of ¼-inch or greater.

The ramp assessment showed that approximately 11 percent of the ramps do not have a detectable warning surface and only two percent are deficient and are not accessible. Ramps were evaluated based on the following categories:

- Curb ramp with detectable warning surface;
- Inaccessible or deficient curb ramp.

Figure 5 presents the assessment results of the field visit.

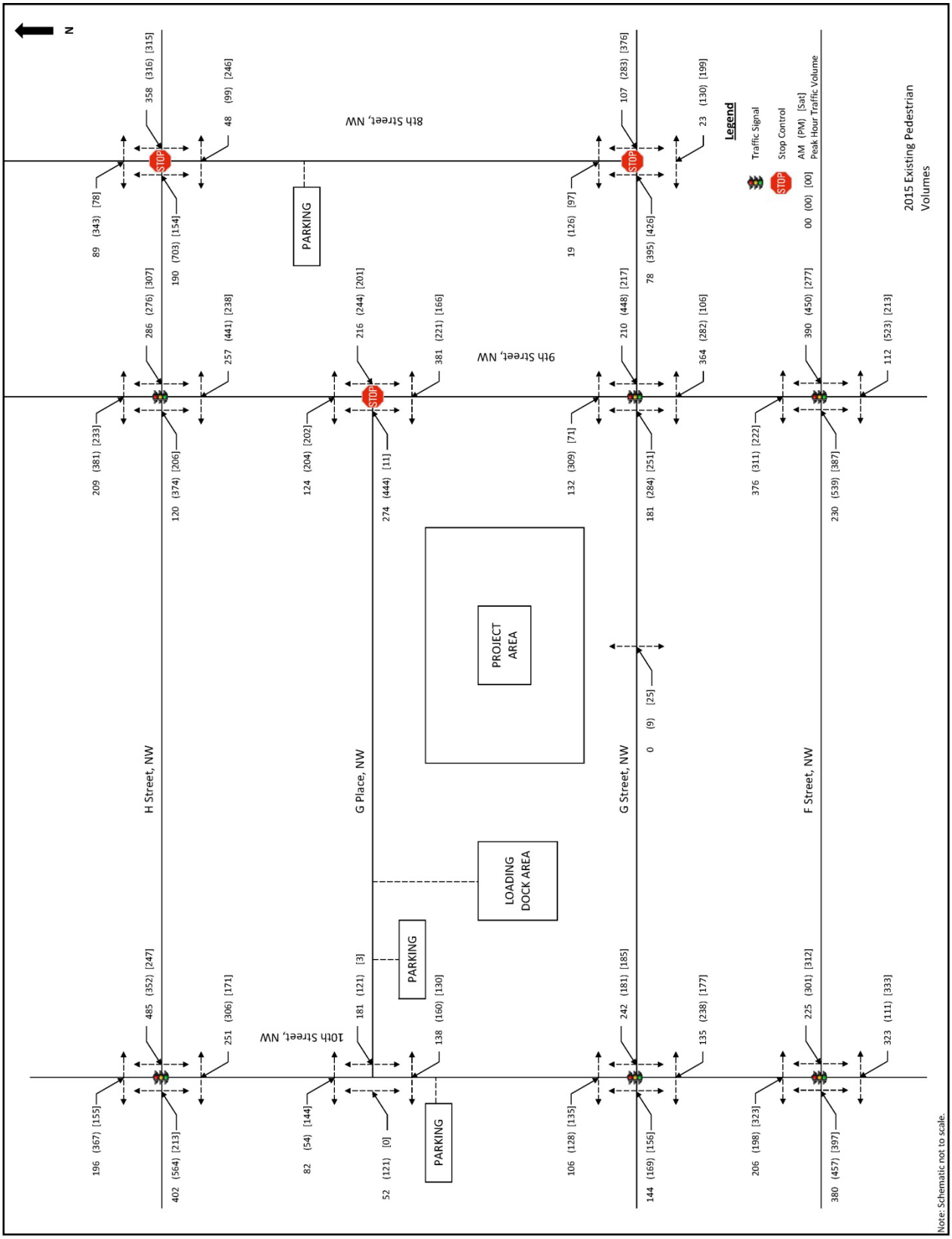


Figure 4: Existing Peak Hour Pedestrian Volumes

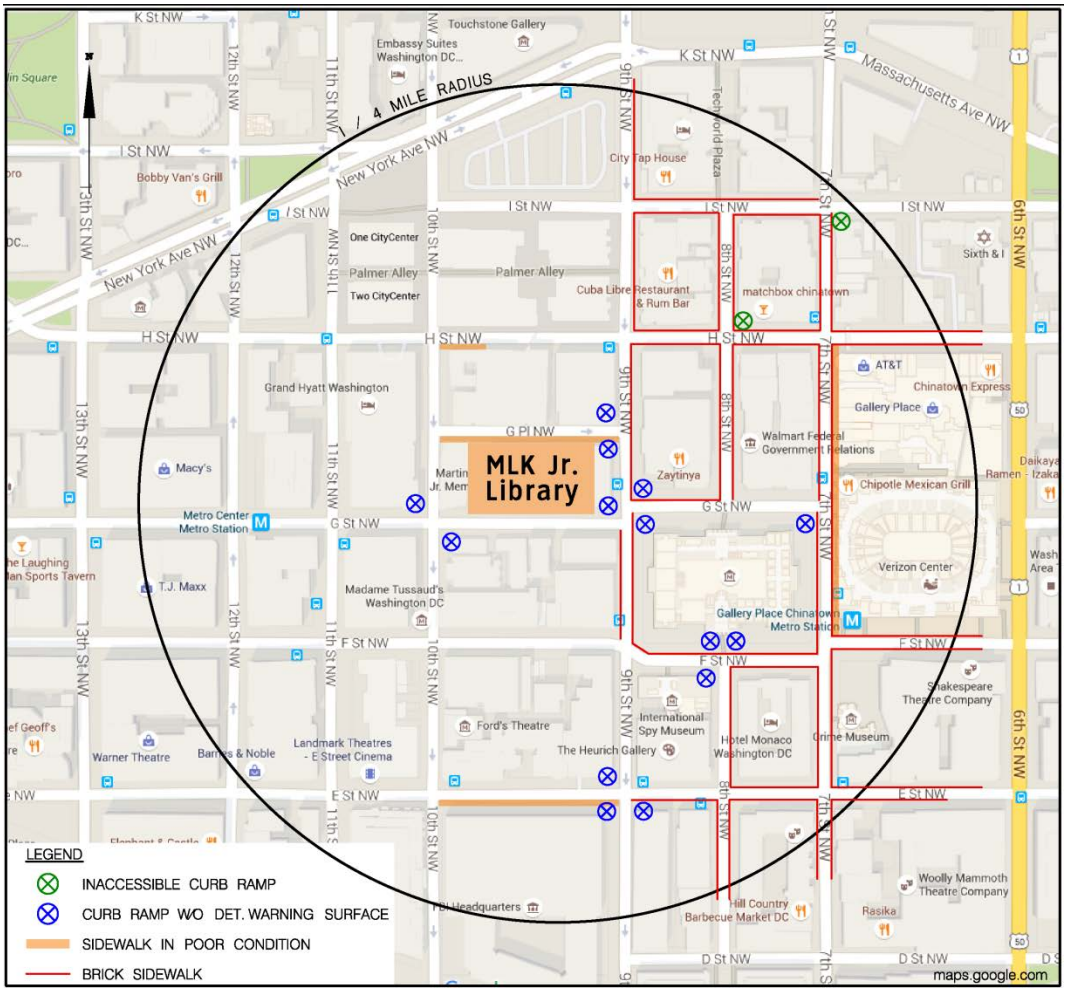


Figure 5: Sidewalk Facilities around the MLK Jr. Library

A ½-mile bicycle facility assessment was also conducted on September 2, 2015. It included an analysis of connectivity between the MLK Jr. Library, the transit stops and the Metrorail stations. In addition, the location of bike racks was also surveyed.

Bike racks are installed at the main entrance of the MLK Jr. Library to provide bike parking for cyclists. A "Bike and Roll" bike rental station is located at the main entrance of the MLK Jr. Library, which operates from April to October. The Capital Bikeshare station is located at the southeast side of the building, which is a 365-day DC bike sharing program. Other nearby Capital Bikeshare stations are shown in the Figure 6.

Marked bike lanes are located along the west side of both 9th Street, NW and 10th Street, NW. The G Street, NW segment with no marked bike lanes between 9th Street, NW and 10th Street, NW is recognized as a bicycle-friendly road. In general, there is good connectivity between the Metrorail stations and the MLK Jr. Library. Likewise, most of the bus transit stops are connected to the library through bicycle lanes. Bicycle routes in the surrounding area of the MLK Jr. Library are shown in the Figure 6.

Figure 6: Bike Facilities around the MLK Jr. Library

Figure 6A shows the peak hour bicycle volumes at each of the intersections within the study area, based on the traffic data collected on October 28th and 29th, 2014, and Saturday, September 26, 2015 and Saturday, October 3, 2015.

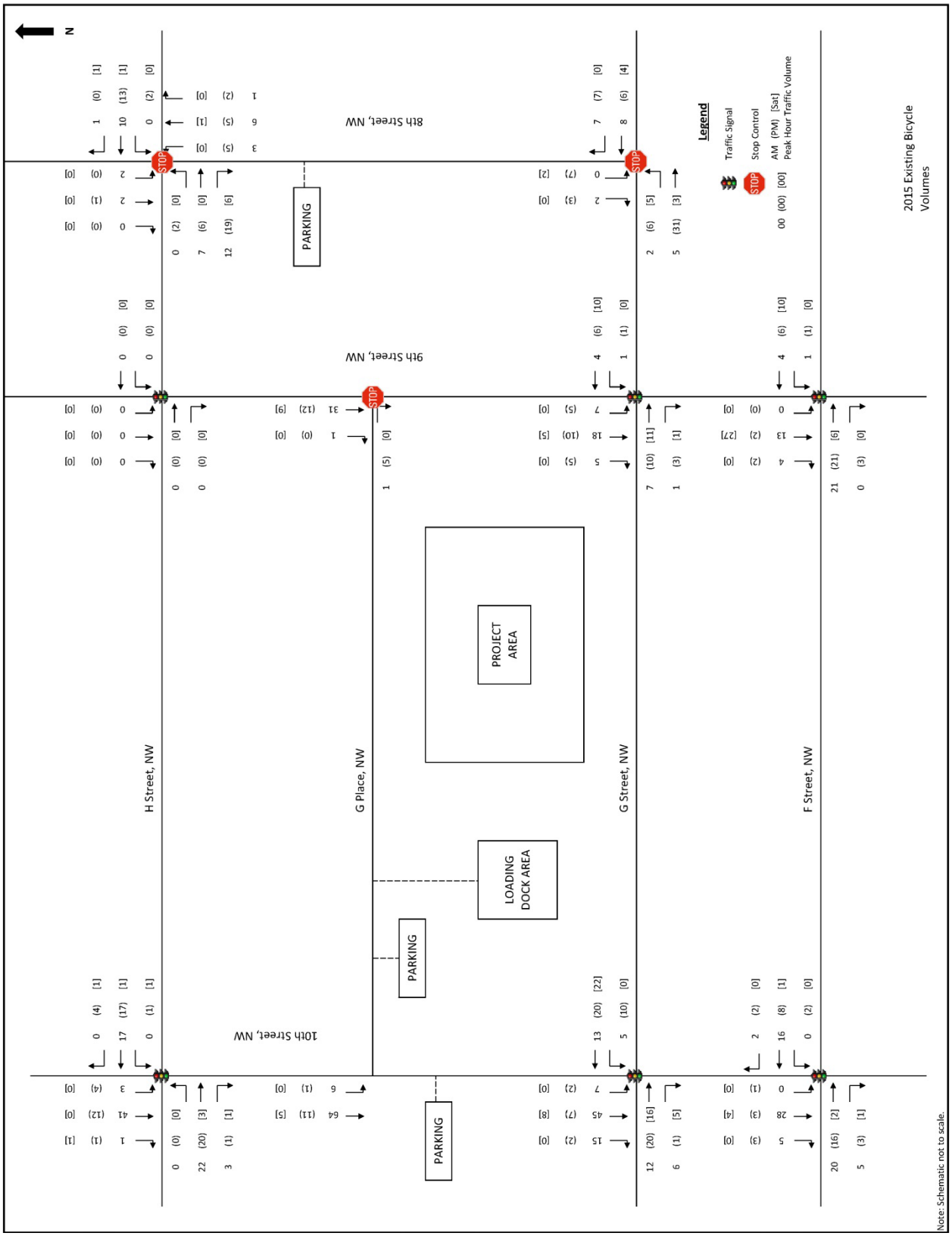


Figure 6A: Existing Peak Hour Bicycle Volumes

3.5 Parking Facilities

The MLK Jr. Library does not accommodate public parking in its underground garage. The 90-space garage is accessible for employees and vendors only. According to the MLK Jr. Library Facilities Maintenance crew, the garage parking spaces are utilized before 9:00 AM when the library opens and remains almost at capacity all day. Library visitors may either use the metered parking spaces on streets near the library or park in any of the approximately 54 paid parking garages located within the ¼-mile radius.

A review of the availability of off-street parking for MLK Jr. Library events was conducted based on the existing paid parking garages and the obligations those garages may have with the Verizon Center. It was observed that Verizon Center uses an internet-based application called Parking Panda, which identifies all of the nearby parking availability and provides the user with information on all of the available parking garages, prices and distance to the venue. MLK Jr. Library patrons have the same opportunity to find parking as the Verizon Center patrons.

Figure 7 shows the location of the off-street parking garages open to the public within ¼-mile around the site.

Figure 7: Off-Street Parking Facility Map

3.6 Crash Analysis

A crash analysis was performed to get a better understanding of the safety needs for the study area intersections. Specific areas of concern were identified and alternatives were developed to address the problems.

Crash Data Summary

DDOT provided crash information for the MLK Jr. Library study area from their crash report database for the most recent three-year period from January 1, 2012 to December 31, 2014. The study area encompasses the region from F Street, NW at the southern limit, to H Street, NW at the northern limit, and from 8th Street, NW at the eastern limit to 10th Street, NW at the western limit. There are ten closely spaced intersections within the study area, including six signalized and four unsignalized intersections. All of the intersections reported crashes during the analysis period.

During the three-year period there were a total of 236 reported crashes in the study area. Table 5 summarizes the locations studied, the number of crashes at these locations, and the intersection crash rate expressed in millions of entering vehicles (MEV).

Table 5: Crash Rates from 2012 to 2014

Intersection	Total Number of Accidents	Volume ADT	Crash Rate (MEV)
8th Street, NW and G Street, NW*	14	8000	1.60
8th Street, NW and H Street, NW*	40	17600	2.08
9th Street, NW and F Street, NW	39	26400	1.35
9th Street, NW and G Street, NW	31	22700	1.25
9th Street, NW and G Place, NW*	7	17200	0.37
9th Sreet, NW and H Street, NW	40	32300	1.13
10th Street, NW and F Street, NW	23	10700	1.96
10 Street, NW and G Street, NW	11	8800	1.14
10th Street, NW and G Place, NW*	1	2800	0.33
10th Street, NW and H Street, NW	30	18400	1.49

* Denotes an unsignalized intersection

From the ten intersections analyzed, eight intersections show a crash rate above the DDOT's threshold of 1.0 MEV. In summary, 90 percent of the total crashes are vehicle-related crashes, eight percent of the total crashes involved pedestrians and only two percent of the crashes involved bicycles and motorcycles. Injuries were reported in 20 percent of the total crashes, with no fatalities.

The results of the analyses for each study area intersection are discussed below. The DDOT crash data reports are included in Appendix C.

8th Street, NW and G Street, NW

There were a total of 14 reported crashes at the intersection of 8th Street, NW and G Street, NW during the three-year period. Five of these crashes occurred in 2012, five in 2013, and four in 2014. 57 percent of these crashes were side-swipe collisions and 14 percent were right- turn collisions. Out of the 14 total crashes, 12 (86 percent) involved property damage only and 2 involved injury. Thirteen of the crashes occurred during clear weather conditions. All 14 crashes occurred during dry surface conditions. Of the total of 14 crashes, there were two bicycles involved, no pedestrians, and no motorcycles involved.

8th Street, NW and H Street, NW

There were a total of 40 crashes reported at the intersection of 8th Street, NW and H Street, NW during the three-year period. Sixteen of these crashes occurred in 2012, 12 in 2013, and 12 in 2014. 58 percent of these crashes were side swiped collisions, 18 percent were right-angle collisions, and 10 percent were parked collisions. Out of the 40 total crashes, 37 (93 percent percent) involved property damage only and three involved injury. Thirty-two (32) of the crashes occurred during clear weather and dry surfaces, five occurred during rainy weather, and one occurred during snowy weather. Of the total of 40 crashes, there were two pedestrians, no bicycles, and no motorcycles involved.

9th Street, NW and F Street, NW

There were a total of 39 crashes reported at the intersection of 9th Street, NW and F Street, NW during the three-year period. Seventeen of these crashes occurred in 2012, 8 in 2013, and 14 in 2014. Thirty-nine percent of these crashes were side-swipe collisions, and 18 percent were rear-end collisions. Out of the 39 total crashes, 31 (80 percent) involved property damage only and the rest involved injury. Thirty-five of the crashes occurred during clear weather and three occurred during rainy weather. Of the total of 39 crashes, there were four pedestrians, no bicycles, and one motorcycle involved.

9th Street, NW and G Street, NW

There were a total of 31 crashes reported at the intersection of 9th Street, NW and G Street, NW during the three-year period. Twelve of these crashes occurred in 2012, seven in 2013, and 12 in 2014. Thirty-two percent (32 percent) of these crashes were side-swipe collisions, 29 percent were rear-end collisions, and 10 percent were left-turn collisions. Out of the 31 total crashes, 25 (81 percent) involved property damage only and the rest involved injury. Thirty of the crashes occurred during clear weather and dry surface conditions, and one occurred in rainy weather and wet surface conditions. Of the total of 31 crashes, there were two pedestrians, no bicycles, and no motorcycles involved.

9th Street, NW and H Street, NW

There were a total of 40 crashes at the intersection of 9th Street, NW and H Street, NW during the three-year period. Twelve of these crashes were in 2012, 15 in 2013, and 13 in 2014. Forty-five percent of these crashes were side-swipe collisions, 13 percent were rear-end collisions, and 10 percent were left-turn collisions. Out of the 40 total crashes, 33 (83 percent) involved property damage only and the rest involved injury. Thirty-four of the crashes occurred during clear weather and dry surface conditions, and one occurred during rainy weather and wet surface conditions. Of the total of 40 crashes, there were four pedestrians, one bicycle, and no motorcycles involved.

10th Street, NW and F Street, NW

There were a total of 23 crashes at the intersection of 10th Street, NW and F Street, NW during the three-year period. Nine of these crashes were in 2012, five were in 2013, and nine were in 2014. Twenty-six percent of these crashes were side-swipe collisions, and 13 percent were backing collisions. Out of the 23 total crashes, 17 (74 percent) involved property damage only and the rest involved injury. Sixteen of the crashes occurred during clear weather, three occurred during rainy weather, and one occurred during snowy weather. Of the total of 23 crashes, there were four pedestrians, no bicycles, and one motorcycle involved.

10th Street, NW and G Street, NW

There were a total of 11 crashes at the intersection of 10th Street, NW and G Street, NW during the three-year period. Four of these crashes were in 2012, five were in 2013, and two were in 2014. Eighteen percent of these crashes were side-swipe collisions, 18 percent were right-turn collisions, and 18 percent were parked collisions. Out of the 11 total crashes, nine (82 percent) involved property damage only and the rest involved injury. Nine of the crashes occurred during clear weather and one occurred during rainy weather. Of the total of 11 crashes, there was one pedestrian, one bicycle, and no motorcycles involved.

10th Street, NW and H Street, NW

There were a total of 30 crashes at the intersection of 10th Street, NW and H Street, NW during the three-year period. Eight of these crashes were in 2012, 11 were in 2013, and 11 were in 2014. Thirty-seven percent of these crashes were side-swipe collisions, 20 percent were rear-end collisions, and 17 percent were right-turn collisions. Out of the 30 total crashes, 25 (83 percent) involved property damage only and the rest involved injury. Nineteen of the crashes occurred during clear weather, six occurred during rainy weather, and one occurred during snowy weather. Of the total of 30 crashes, there was one pedestrian, no bicycles, and no motorcycles involved.

Recommendations and Expected Improvements

Based on the review of the crash data, the following improvements and the potential crash reductions are listed below:

- Improve pavement markings at the intersections. From the field visit, it was observed that portions of crosswalk pavement markings, stop lines, and line extensions through intersections were missing at some of the intersections (See the graphic of 8th Street, NW and H Street, NW intersection in Appendix C). By providing a consistent set of pavement markings at the intersections, a reduction in vehicular crashes could be observed, particularly rear-end and side-swiped crashes. In addition, crashes involving pedestrians could be reduced by maintaining a reliable and uniform set of crosswalks at all of the study intersections. These improvements are outside the purview of the DCPL Library.

4. BACKGROUND CONDITIONS

The TIS process typically requires an examination of existing conditions, followed by an assessment of a future horizon year conditions at which time the site would be constructed. Typically, the background situation represents conditions by that horizon year, but without including trip generation and site access requirements generated by the subject site. The MLK Jr. Library renovation and expansion is scheduled to be completed in 2020. For the purposes of this study, the year 2020 was considered the "horizon year." This section projects the background traffic situation likely to occur by the horizon year.

The projected year 2020 background traffic situation was derived by combining the following:

- Year 2020 "Base" traffic situation (i.e., existing traffic factored by an annual growth rate to reflect the potential growth in the local traffic);
- Background traffic from approved developments, likely to be built-out within the immediate study area by year 2020; and
- Planned infrastructure improvements in the vicinity of the site.

Growth Rate

Historical Annual Average Daily Traffic (AADT) - levels in the area were obtained from the DDOT AADT maps to determine background growth rates. Based on the area AADT volumes from 2002 through 2013 the following growth per year was observed. It should be noted that data from 2003 through 2005 was missing from the DDOT maps. For the purpose of this analysis, it was assumed that no growth was observed from 2003 to 2005. Along 10th Street, NW, data was available from 2008 to 2013 for traffic volumes G Street, NW and F Street, NW.

Table 6 presents the average annual growth rate for each roadway. The DDOT AADT information is included in Appendix C.

Table 6: Growth Rate from 2002 to 2013

Roadway	From	To	Average Growth Rate (%)
8th Street, NW	I Street, NW	G Street, NW	0.1
9th Street, NW	F Street, NW	E Street, NW	0.3
10th Street, NW	G Street, NW	F Street, NW	8.0
F Street, NW	10th Street, NW	11th Street, NW	5.3
G Street, NW	12th Street, NW	13th Street, NW	1.6
H Street, NW	12th Street, NW	13th Street, NW	4.9

The average growth rates were compounded to 2020 and the resulting increase was applied accordingly to through and turning volumes along the study roadways.

A figure depicting the normal growth, background traffic without approved developments, is included in Appendix D.

Adjacent Approved Development

A list of approved planned developments was obtained from the DDOT and the DC Office of Planning. The developments include the following:

- 11 M Street Residential
- Morrison - Clark Hotel Expansion
- 655 New York Avenue Office
- 900 New York Avenue Office
- 450 K Street Residential
- 440 K Street Residential
- 601 Massachusetts Avenue Office
- 600 Massachusetts Avenue Office
- 1000 F Street Office

A further review of these developments indicated that some are outside of the study area or the expected vehicular trips generated by those developments will not utilize the study area roadway network. Only two developments were included in the analysis; 900 New York Avenue Office and 1000 F Street Office.

As directed by DDOT, trip generation tables were developed for these developments based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, peak hour of adjacent traffic, assuming 40 percent non-auto mode spilt. The results are shown in Table 7.

Table 7: Trip Generation – Approved Developments

Project: 1000 F St, NW

Alternatives	Quantity	Unit	AM			PM			Saturday		
			In	Out	Total	In	Out	Total	In	Out	Total
Office, ITE 710	85	1,000 SF	117	16	133	22	105	127	20	17	37
Retail, ITE 820	7	1,000 SF	4	3	7	12	14	26	18	16	34
Total Trips			121	19	140	34	119	153	38	33	71
Total Vehicle Trips			72	12	84	20	71	91	22	20	42

Project: 900 New York Avenue

Alternatives	Quantity	Unit	AM			PM			Saturday		
			In	Out	Total	In	Out	Total	In	Out	Total
Office, ITE 710	553.5	1,000 SF	760	104	863	140	685	825	129	109	238
Retail, ITE 820	29.3	1,000 SF	17	11	28	52	57	109	73	68	141
Total Trips			777	115	891	192	742	934	202	177	379
Total Vehicle Trips			466	69	535	115	445	560	121	107	228

The trips generated by the 1000 F Street development were distributed based on the trip distribution diagram shown in Section 5.2 of this report. The trips generated by the 900 New York Avenue development were distributed based on the traffic patterns observed in the latest DDOT ADT Map. Figures depicting approved developments' site trip distribution are included in Appendix D.

Planned Infrastructure Improvements

There are no known planned roadway improvement projects in the vicinity of the MLK Jr. Library that would be impacted by the MLK Jr. Library renovation and expansion.

4.1 Vehicular Traffic

The peak hour traffic volumes in the background condition, including the trips from approved developments are shown on Figure 8.

4.2 Traffic Capacity Analysis

The intersections were then analyzed using HCM methodology and the results are summarized in Table 8. Existing traffic signal timings were used in the background traffic analysis to allow a direct comparison with the existing traffic condition. The HCM reports are contained in Appendix E.

Without the renovation of the MLK Jr. Library, the LOS at the signalized intersection of 9th Street, NW and G Street, NW, would degrade from LOS E to LOS F with an additional delay of 12.2 seconds during the PM peak hour. The LOS at the signalized intersection of 10th Street, NW and G Street, NW, would degrade from LOS C to LOS E with an additional delay of 29.4 seconds during the PM peak hour. The LOS at the signalized intersection of 10th Street, NW and H Street, NW, would degrade from LOS D to LOS E with an additional delay of 30.5 seconds during the AM peak hour and from LOS C to LOS F with an additional delay of 222.2 seconds during the PM peak hour. All other signalized study intersections operate at LOS D or better during both peak periods.

The unsignalized intersection at 8th Street, NW and H Street, NW would operate at LOS F on its NB approach during the AM peak hour; a delay increase of 802.7 seconds would be experienced. A LOS F would be observed at the intersection of 8th Street, NW and G Street, NW on its SB approach during the PM peak hour; a delay increase of 13.9 seconds is shown. The intersection of 9th Street, NW and G Place, NW would continue to operate at LOS E on its EB approach during the AM peak hour and at LOS F during the PM peak hour.

The queue lengths for the background conditions are presented in Table 9. Minor increases in queue lengths are observed throughout the study area when compared to the existing condition.

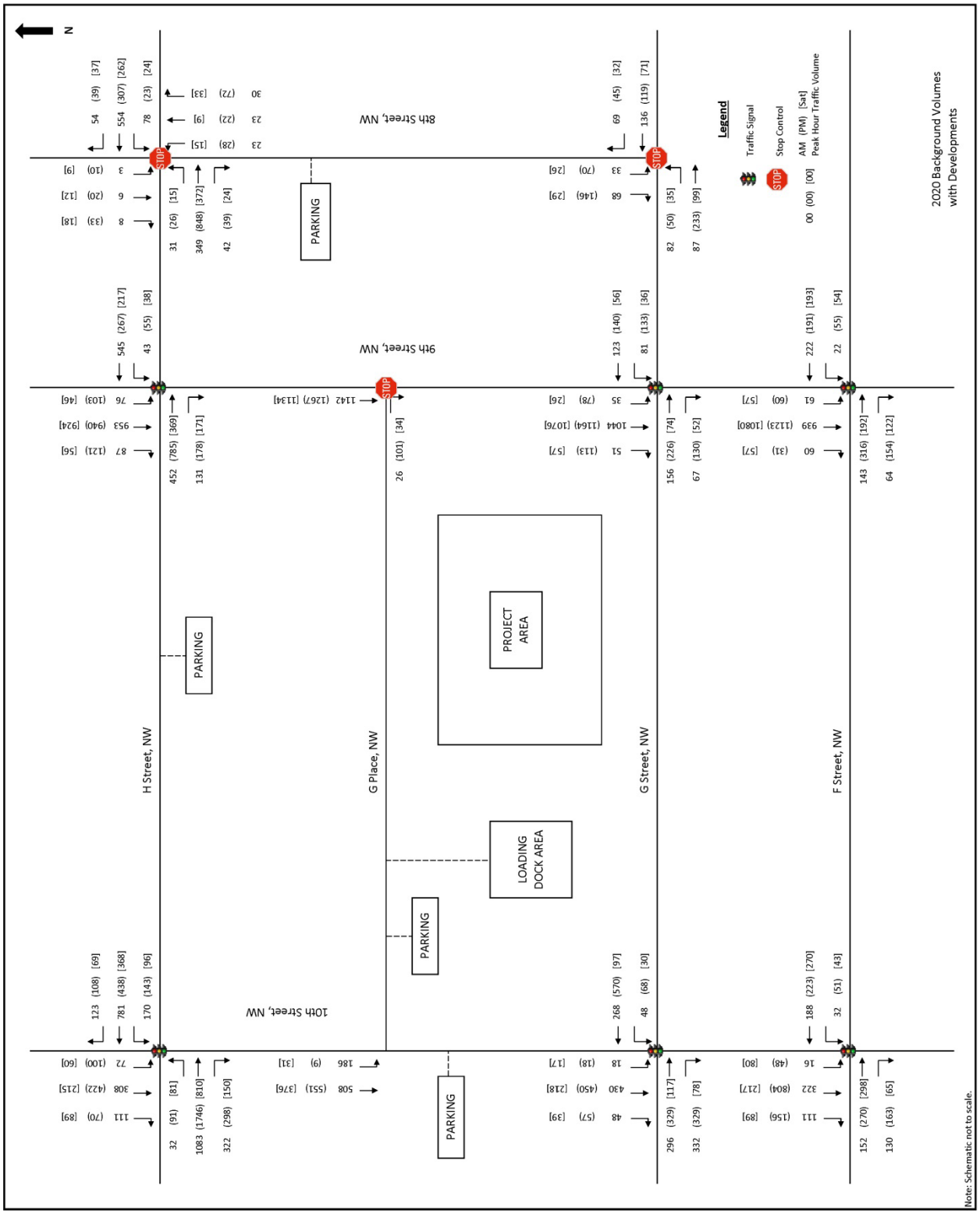


Figure 8: Peak Hour Traffic Volumes – Background Condition

Table 8: Background Level of Service (No–Build Year 2020)

Intersection Approach / Movement	Traffic Control	AM Peak		PM Peak		SAT Peak	
		LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]
9th Street, NW at F Street, NW	Signalized	C	31.4	C	34.8	C	27.7
10th Street, NW at F Street, NW	Signalized	C	30.2	C	31.3	C	28.9
9th Street, NW at G Street, NW[2]	Signalized	C	34.8	F	85.1	E	59.4
10th Street, NW at G Street, NW	Signalized	D	52.5	E	63.8	C	24.9
9th Street, NW at H Street, NW[2]	Signalized	C	21.7	C	27.7	C	22.3
10th Street, NW at H Street, NW[2]	Signalized	E	73.9	F	256.1	D	37.0
8th Street, NW at H Street, NW	Stop Control on NB and SB Approaches						
Northbound		F	1415.4	-	-	F	218.6
Southbound		-	-	-	-	F	166.1
Eastbound / Left		C	16.1	D	25.1	B	10.1
Westbound / Left		C	15.5	E	42.0	B	10.8
8th Street, NW at G Street, NW	Stop Control on SB Approach						
Southbound		C	15.6	F	281.1	F	56.7
Eastbound / Left		A	8.3	A	9.4	A	9.5
9th Street, NW at G Place, NW	Stop Control on EB Approach						
Eastbound		E	40.6	F	64.2	C	24.7
10th Street, NW at G Place, NW	No Control[3]						

[1] HCM 2010 Output
[2] HCM 2000 Output
[3] For non-controlled intersections, the HCM analysis is not applicable

Table 9: Background Queues

Background Traffic 2020			
Intersection Approach / Movement	AM Peak	PM Peak	SAT Peak
	Queue (feet)[1]	Queue (feet)[1]	Queue (feet)[1]
9th Street, NW at F Street, NW			
Southbound	23	m51	m16
Eastbound	109	221	62
Westbound	127	121	116
10th Street, NW at F Street, NW			
Southbound	m35	143	61
Eastbound	131	200	149
Westbound	131	46	127
9th Street, NW at G Street, NW			
Southbound	474	#667	#562
Eastbound	m#203	m#494	136
Westbound / Left	98	153	49
Westbound / Through	142	163	69
10th Street, NW at G Street, NW			
Southbound	m222	m170	67
Eastbound	480	506	158
Westbound	100	577	155
9th Street, NW at H Street, NW			
Southbound	172	232	184
Eastbound	m73	m158	m163
Westbound	190	98	115
10th Street, NW at H Street, NW			
Southbound	411	#637	305
Eastbound	#511	#988	#432
Westbound	#396	202	217
8th Street, NW at H Street, NW[2]			
Northbound	285	-	143
Southbound	-	-	105
Eastbound / Left	10	10	3
Westbound / Left	17.5	25	3
8th Street, NW at G Street, NW[2]			
Southbound	30	400	70
Eastbound / Left	7.5	5	5
9th Street, NW at G Place, NW[2]			
Eastbound	25	125	23
10th Street, NW at G Place, NW[3]			

[1] Synchro 9 - 95% Queue Length
[2] HCM 2010 - 95% Queue Length, assuming vehicle length of 25 feet
[3] Intersection configuration is not allowed in HCM analysis
m - Volume for 95th percentile queue is metered by upstream signal
- 95th percentile volumes exceed capacity. Queue may be longer. Queue shown is maximum after two cycles.

5. FUTURE CONDITIONS

Impacts to the local roadway networks were assessed by adding traffic that would be generated by the additional fifth floor event/meeting space of the MLK Jr. Library to the background traffic.

The proposed square footage of the MLK Jr. Library is 33,228 (MLK Jr. Library 2014). The following spaces and services for the fifth floor event space/roof terrace are proposed:

- Flexible event space, featuring an assembly area;
- Pre-function space for people to gather before events;
- Catering kitchen; and
- Roof terrace.

Evening and daytime events are expected to occur once per week and once per weekend. The events are categorized as Informal Performances for 100 to 150 attendees and Receptions for 300 to 500 people. It should be noted these types of events are already occurring in the MLK Jr. Library. Approximately twelve additional events per year (on average one per month) are anticipated for the Fifth floor event space.

5.1 Alternatives

The MLK Jr. Library considered one action alternative with three alternatives for expanding the rooftop to create an events space and roof terrace. The MLK Jr. Library also considered the No-Action Alternative. All of the alternatives are discussed below.

NO-ACTION ALTERNATIVE – EXISTING LIBRARY

The No-Action Alternative describes the action of continuing present management operations, conditions, and use of the MLK Jr. Library. It does not imply the restriction of regular use and maintenance of the facility. Under the No-Action Alternative, the DCPL would continue its existing use of MLK Jr. Library and its current management and maintenance routines. This alternative proposes no addition to the building or reconfiguration of the library's interior or exterior features. Although the DCPL would address necessary repairs as they arise, including remediating hazardous materials, there would be no general or comprehensive improvements made to the property (see Figure 9).

Figure 9: No Action Alternative

ACTION ALTERNATIVES

The proposed action analyzed in this document is the rehabilitation and modernization of the MLK Jr. Library, which includes the construction of a fifth floor addition. The DCPL would utilize the Leadership in Energy and Environmental Design (LEED®) Rating system to apply principles of sustainable design and development to this project.

ALTERNATIVE A: RENOVATION WITH FIFTH-FLOOR EVENT SPACE

With Alternative A, a fifth-floor addition will be constructed on the existing roof. This would require the removal of the existing screen walls and penthouse enclosure. Alternative A limits the addition's size to the existing footprint of the screen and core penthouse enclosures. The addition would generally have the same volume and visibility of the existing elements, although would be clad in a more transparent material. A glass railing would be installed along the perimeter of the roof, with a setback of five feet along each elevation from the existing parapet. The existing roof membrane and ballast would be removed and replaced. The new terrace would be paved and would feature a mix of raised planting beds, seating areas, and open space. The roof terrace would be lit to allow for use at night, but uplighting and spotlighting would be minimal. On the roof of the new addition, a vegetative roof would be installed to capture rainwater. This alternative would result in the smallest addition and the largest area of roof terrace (see Figure 10).

Figure 10: Alternative A: Fifth-Floor Existing Screen Addition

ALTERNATIVE B: FIFTH-FLOOR TRAPEZOIDAL ADDITION

A fifth-floor addition will be constructed on the existing roof. This would require the removal of the existing screen walls and penthouse enclosure. The fifth-floor addition would have an expanded footprint as compared to the existing screens and penthouses. The addition would have a trapezoidal form with curved corners. A glass railing would be installed along the perimeter of the roof, with a setback of five feet along each elevation from the existing parapet. The existing roof membrane and ballast would be removed and replaced. The new terrace would be paved and would feature a mix of raised planting beds, seating areas, and open space. The roof terrace would be lit to allow for use at night, but uplighting and spotlighting would be minimal. On the roof of the new addition, a vegetative roof would be installed to capture rainwater (see Figure 11).

Figure 11: Alternative B: Fifth-Floor Trapezoidal Addition

ALTERNATIVE C: FIFTH-FLOOR EXTRUDED ADDITION

Alternative C proposes a fifth-floor addition that extends directly upward from the existing wall plane, creating a continuous surface along the outer building elevations. All existing architectural elements would be repeated across the uppermost floor. This alternative would not create a perimeter plaza or garden, but would include the integration of interior courtyards into the fifth floor that would provide outer space. This alternative would create the largest amount of enclosed interior space and would be the most visible from the surrounding streetscape (see Figure 12).

Figure 12: Alternative C: Fifth-Floor Extruded Addition

5.2 Trip Generation and Trip Distribution

In order to forecast the traffic impacts of land development, proposed land uses are converted into vehicular trips. For a multimodal study, land uses are also translated in terms of walking, bicycle, and transit trips. The ITE Trip Generation Manual (9th Edition) provides trip generation rates, equations, and data plots based on data collected across the country.

The ITE Manual categorizes land uses by type and provides a means to calculate vehicular trips entering and exiting sites, and is the industry standard for transportation professionals analyzing the site impact of proposed new development or infill projects. Study calculations were based on the number of dwelling units, square footage, gross floor area, and other variables. In this TIS, site trip generation is performed using ITE's Trip Generation.

Based upon discussions with DDOT, this study uses the ITE Manual Code 590 – Library to analyze impacts to the roadway network. The Code 590 – Library is defined as a private or public facility that consists of shelved books, reading rooms or areas, and meeting rooms. The use of the 5th floor library space is consistent with the ITE library description. Therefore, trip generation for library is applied in calculation. The site trip generation for weekday AM and PM peak periods and weekend peak periods are shown in Table 10.

Table 10: Trip Generation

Alternatives	Quantity	Unit	AM			PM			Saturday		
			In	Out	Total	In	Out	Total	In	Out	Total
Proposed (7/2016)	33.228	1,000 SF	25	10	35	116	126	243	119	105	224

The ITE trip generation rates are primarily based on studies in areas with limited transit service, where vehicle trips would be equivalent to person trips. In a downtown environment where transit is readily available, a portion of vehicle trips are converted to transit and other non-vehicular trips.

An Auto Mode Share of 21 percent is used for the AM Peak Hour, when the site traffic consists of library employees commuting to work. The library opens at 9:30AM during weekdays, after the AM peak hour (WMATA 2005). The Development Related Ridership Survey does not separate pedestrian and bicycle trips. The 2013 American Community Survey provided by the U.S. Census Bureau, provides telecommuting percentages and was used to determine the mode share breakdowns for pedestrians, bicycles and telecommuters.

An Auto Mode Share of 38 percent is used for PM Peak Hour and weekend Peak Hour, when the site traffic consists of library visitors and employees commuting trips. WMATA's Development Related Ridership Survey does not adequately show commuter trips plus library visitor trips for the PM and weekend peak conditions, which would have been more reflective of the trips. Additionally, the Survey does not provide mode share breakdowns for pedestrians and bicyclists. It is assumed that total bicycle trips to the MLK Jr. Library equal the total percentage of motorcycle, taxi and bicycle trips – a total of six percent (U.S. Census Bureau 2013).

Table 11: Mode Share Percentages

Mode	AM Peak (%)	PM and Saturday Peak (%)
Auto	21	38
Transit	74	38
Pedestrian	1	14
Bicycle	0	6
Telecommute	4	4

After applying mode share percentages to the trip generation, the MLK Jr. Library trips generated by the proposed project are shown in Table 12.

Table 12: Site Trips by Mode

Alternatives	Quantity	Unit	AM			PM			Saturday		
			In	Out	Total	In	Out	Total	In	Out	Total
Vehicle Trips	33.228	1,000 SF	5	2	7	44	48	92	45	40	85
Transit Trips	33.228	1,000 SF	18	7	26	44	48	92	45	40	85
Walk, Bike and Other	33.228	1,000 SF	1	1	2	28	30	58	29	25	54

It is also assumed that all vehicles will park at the garages nearest to (within 0.3 mile) the MLK Jr. Library. These are located at 10th Street, NW between G Place, NW and G Street, NW; G Place, NW between 9th and 10th Streets, NW; 8th Street, NW between G and H streets, NW (PEPCO building), and H Street, NW between 9th and 10th streets.

Trip distribution and route assignment are estimated based on the existing traffic count patterns and is shown in the Figure 1413

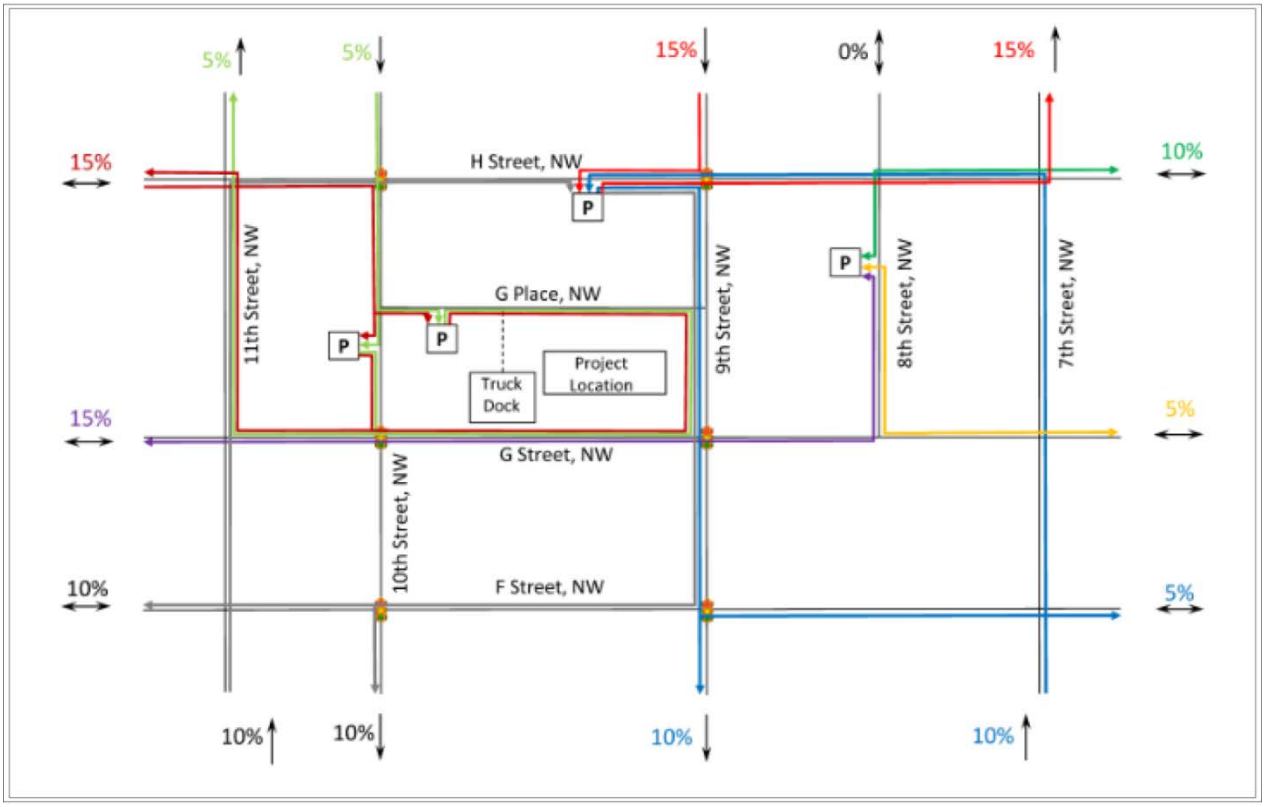


Figure 13: Trip Distribution

5.3 Vehicular Traffic

The peak hour vehicular site trips from Table 12 have been distributed on the roadway network based on the percentages shown in Figure 13. The MLK Jr. Library site vehicle trips are shown in Figure 14.

To generate the future vehicular traffic volumes in the roadway network, the MLK Jr. Library site vehicular trips were added to the background traffic volumes shown in Figure 8. The future vehicular traffic volumes are shown in Figure 15.

5.4 Pedestrian Traffic

The peak hour transit, pedestrian, bicycle, and other site trips from Table 12 have been distributed on the sidewalk network, based on the location of the Metrorail stations, the bus stops and the general trip distribution shown in Figure 13. The MLK Jr. Library site pedestrian trips are shown in Figure 16.

To generate the future pedestrian traffic volumes on the sidewalk network, the MLK Jr. Library pedestrian site trips were added to the existing pedestrian volumes shown in Figure 4. The future pedestrian traffic volumes are shown in Figure 17.

Based on the analysis of existing pedestrian and bicycle facilities within the study area, the added pedestrian and bicycle trips will not necessitate additional accommodations. Existing

sidewalks, bicycle lanes and bicycle rental stations are anticipated to meet the demand. Trips associated with transit will not necessitate improvements /enhancements to existing transit facilities. No additional buses or expansion of bus routes is necessary as a result of the expansion of the MLK Jr. Library.

5.5 Parking Facilities

The MLK Jr. Library underground parking only accommodates employees and vendors. Based on the latest library expansion plan, there will be four to six new positions added, but the MLK Jr. Library will be eliminating some positions and relocating some staff to the operations center, another property in a different location. There should be no net change in the number of staff at the MLK Jr. Library after the expansion project.

A review of future parking needs for employees was conducted. Peak hour counts of traffic entering and exiting the library parking garage was accomplished. During the AM peak hour 26 vehicles entered the underground parking. During the PM peak hour 18 vehicles exited the garage. These numbers seem to be consistent with the trip generation information shown in Table 10 and the MLK Jr. Library opening hours shown in Table 13.

Table 13: Library Opening Hours

Day of Week	Opening Hours
Monday to Thursday	9:30 AM – 9:00 PM
Friday, Saturday	9:30 AM – 5:30 PM
Sunday	1: 00 PM to 5:00 PM

Based on the latest expansion plan for the MLK Jr. Library, no additional parking spaces will be needed for library staff. As it was mentioned earlier, the existing library garage has approximately 90 parking spaces, which accommodates staff and vendors only. The garage is almost at capacity throughout the weekday (9:30AM – 5:30PM) and could only provide additional parking to a limited number of employee vehicles. With no additional staff anticipated after the library expansion project, it is expected that the parking garage spaces will be adequate to accommodate staff.

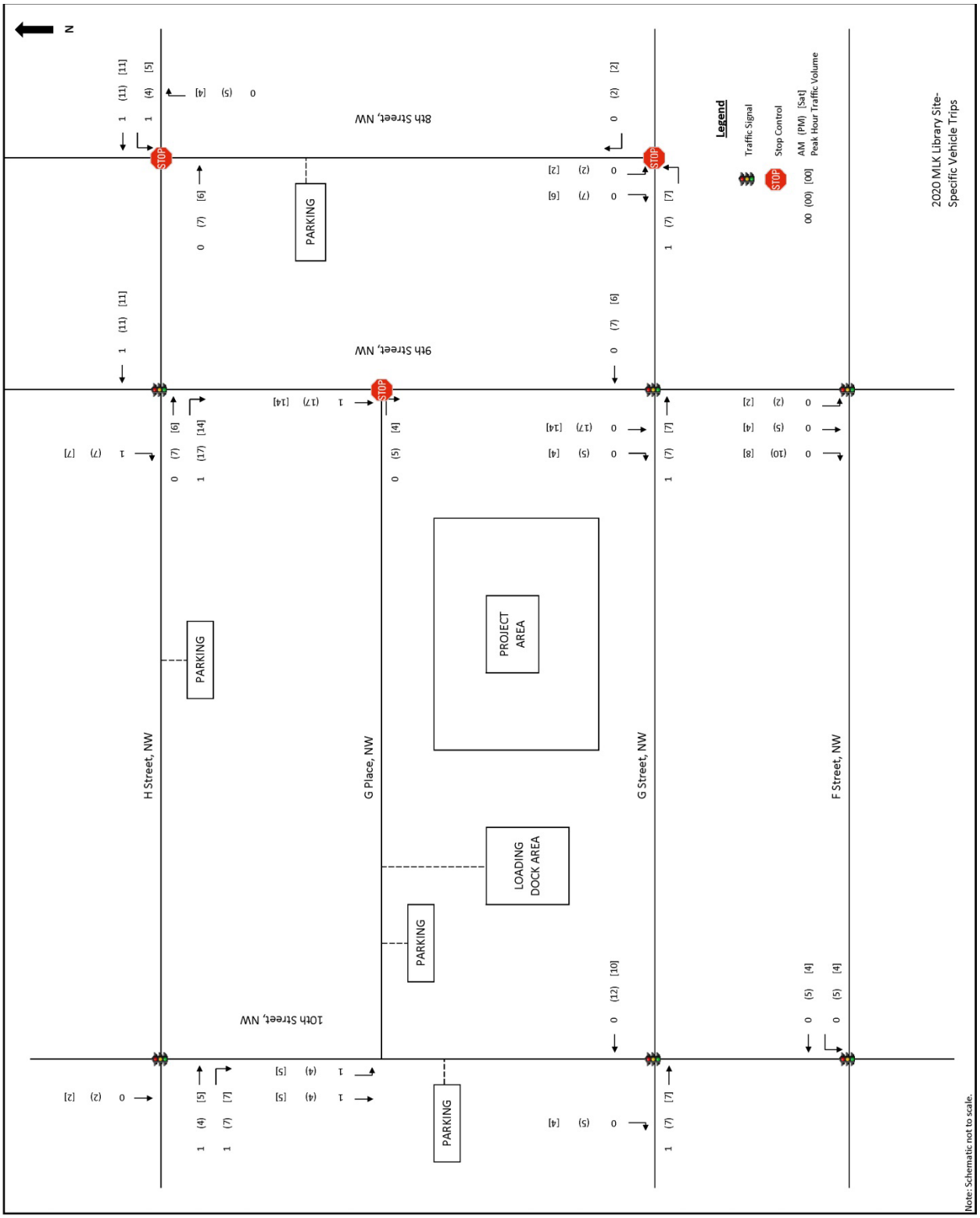


Figure 14: Site Peak Hour Vehicular Traffic

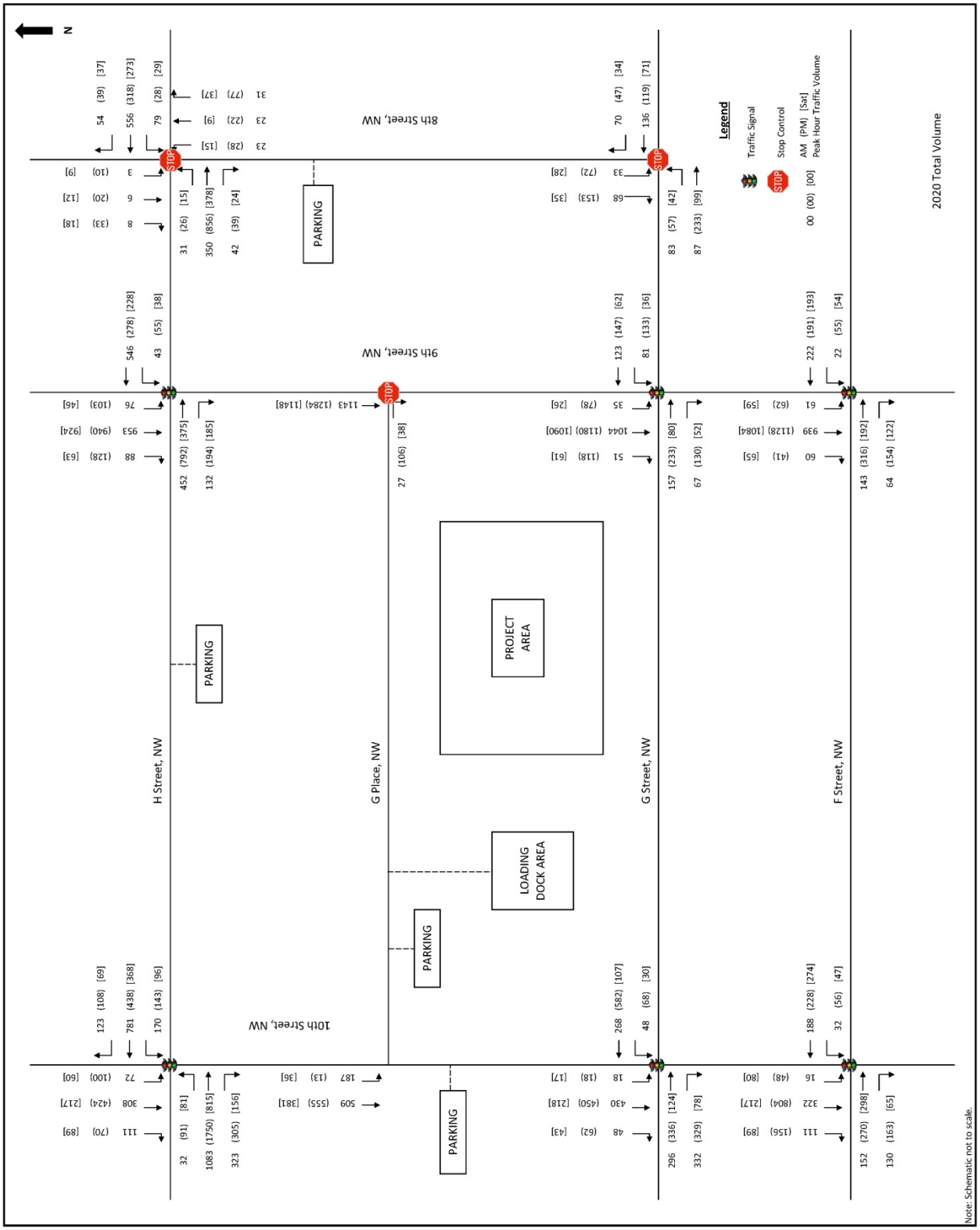


Figure 15: Future Peak Hour Vehicular Traffic Volumes

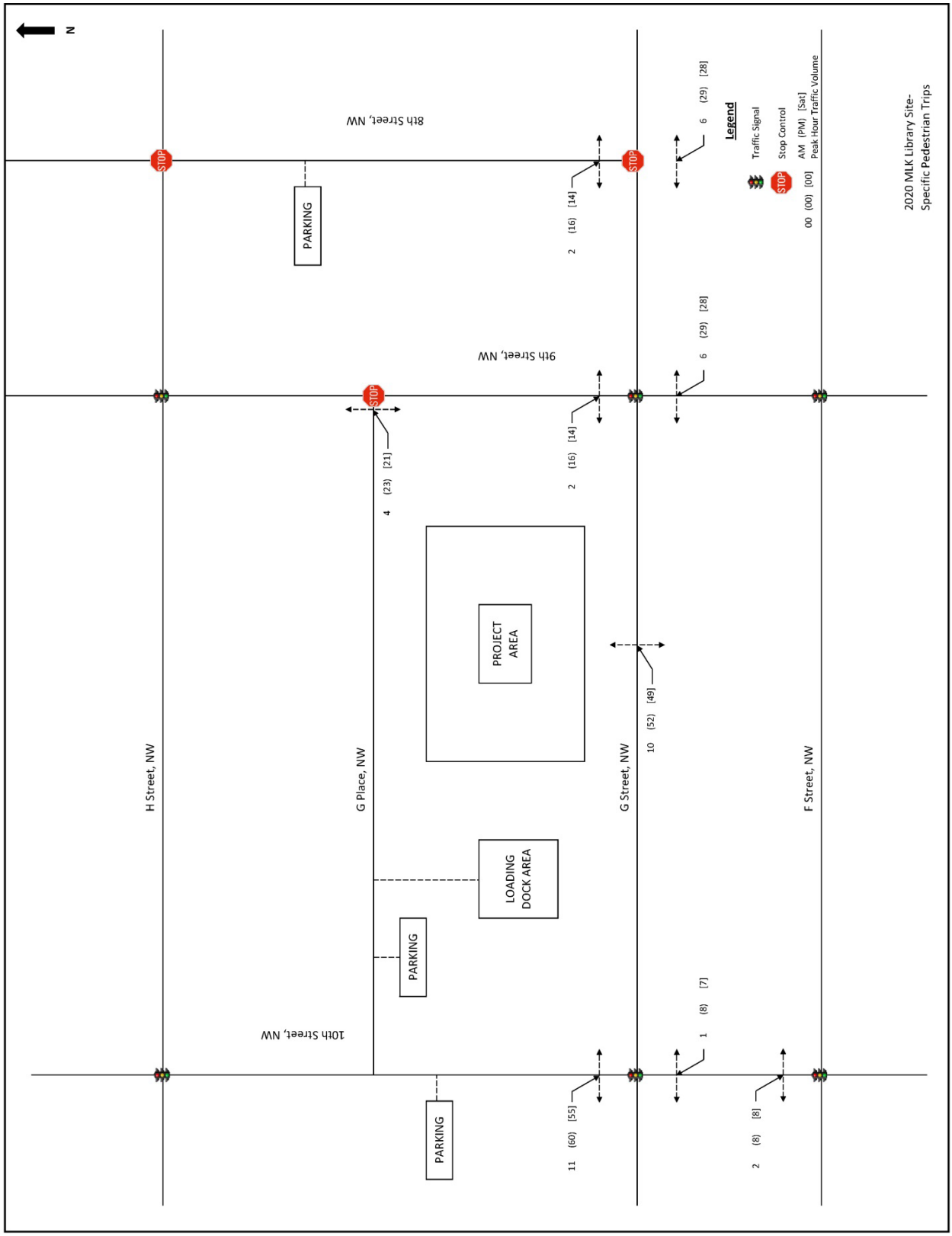


Figure 16: Site Peak Hour Pedestrian Traffic

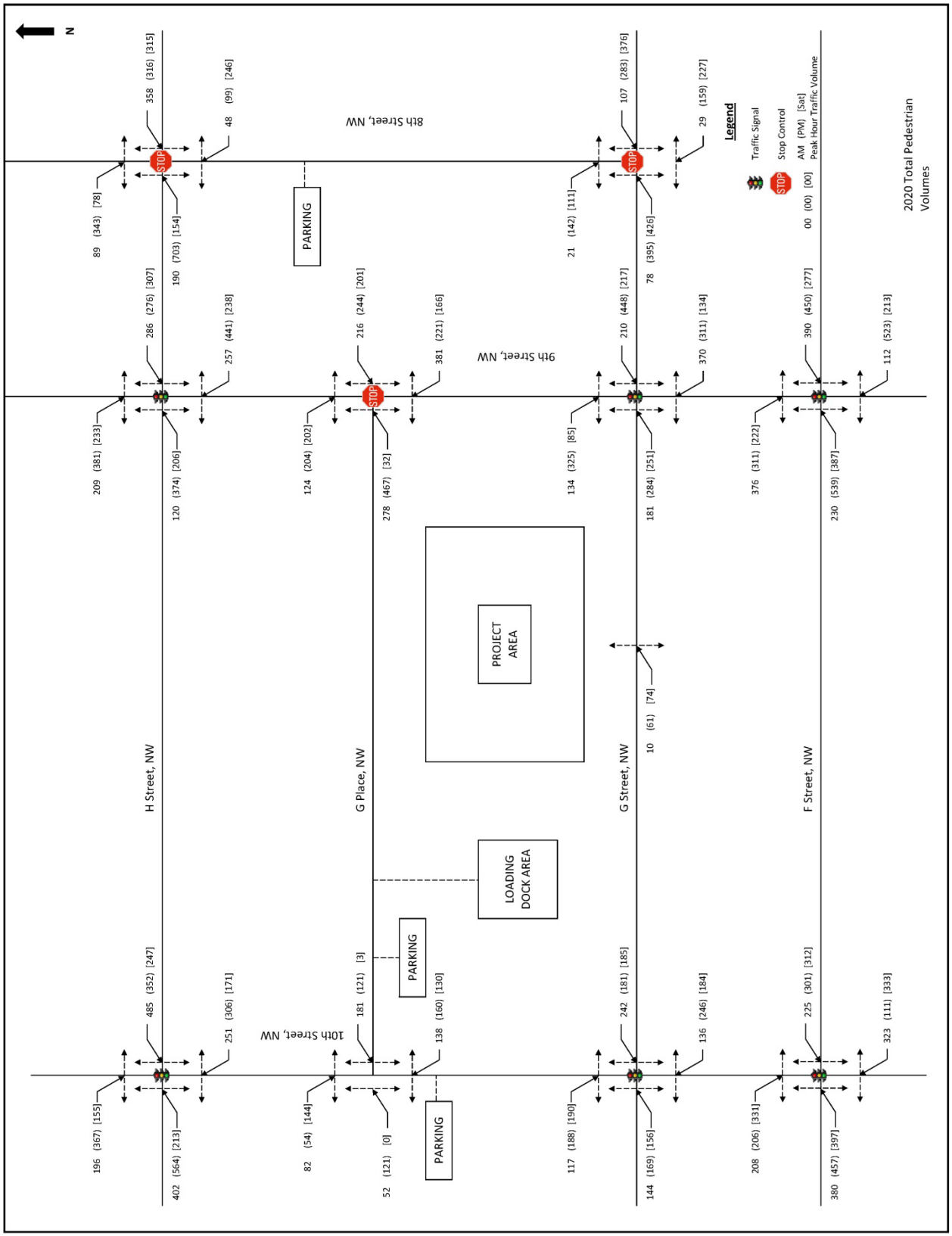


Figure 17: Future Peak Hour Pedestrian Traffic Volumes

5.6 Traffic Capacity Analysis

The intersections were then analyzed using HCM methodology and the results are summarized in Table 14. Existing traffic signal timings were used in the future traffic analysis to allow a direct comparison with the background traffic condition. The HCM reports are contained in Appendix F.

Table 14: Future Level of Service (Build-Out Year 2020)

Intersection Approach / Movement	Traffic Control	AM Peak		PM Peak		SAT Peak	
		LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]	LOS[1]	Control Delay (sec)[1]
9th Street, NW at F Street, NW	Signalized	C	31.4	C	34.9	C	27.8
10th Street, NW at F Street, NW	Signalized	C	30.2	C	31.4	C	28.7
9th Street, NW at G Street, NW[2]	Signalized	C	34.9	F	91.2	E	62.2
10th Street, NW at G Street, NW	Signalized	D	52.6	E	70.5	C	25.1
9th Street, NW at H Street, NW[2]	Signalized	C	21.9	C	28.1	C	22.7
10th Street, NW at H Street, NW[2]	Signalized	E	74.0	F	259.9	D	37.4
8th Street, NW at H Street, NW	Stop Control on NB and SB Approaches						
Northbound		F	1435.5	-	-	F	249.5
Southbound		-	-	-	-	F	198.0
Eastbound / Left		C	16.2	D	25.4	B	10.2
Westbound / Left		C	15.5	E	45.3	B	10.9
8th Street, NW at G Street, NW	Stop Control on SB Approach						
Southbound		C	15.7	F	329.8	F	67.6
Eastbound / Left		A	8.3	A	9.5	A	9.6
9th Street, NW at G Place, NW	Stop Control on EB Approach						
Eastbound		E	41.1	F	72.4	D	25.8
10th Street, NW at G Place, NW	No Control[3]						

[1] HCM 2010 Output
[2] HCM 2000 Output
[3] For non-controlled intersections, the HCM analysis is not applicable

When the renovation is expected to be complete, signalized intersection of 9th Street, NW and G Street, NW, would operate at LOS F with an additional delay of 6.1 seconds during the PM peak hour. The signalized intersection of 10th Street, NW and G Street, NW would continue to operate at LOS E during the PM peak hour. The signalized intersection of 10th Street, NW and H Street, NW would continue to operate at LOS E during the AM peak hour and LOS F during the PM peak hour. All other signalized study intersections operate at LOS D or better during both peak hour periods.

The unsignalized intersection at 8th Street, NW and H Street, NW would continue to operate at LOS F on its NB approach during the AM peak hour; a delay increase of 20.1 seconds would be observed. A LOS F would be observed at the intersection of 8th Street, NW and G Street, NW on its SB approach during the PM peak hour; a delay increase of 48.7 seconds is shown. The intersection of 9th Street, NW and G Place, NW would operate at LOS E on its EB approach during the AM peak and at LOS F during the PM peak hour with a delay increase of 8.2 seconds.

The queue lengths for the future conditions are presented in Table 15. Slight increases in queue lengths are shown throughout the study area when compared to the background condition. The longest added queue length is observed on the SB approach at the intersection of 8th Street, NW and G Street, NW. An additional length of 45 feet, equivalent to nearly 2 vehicles, would be observed.

Table 15: Future Queues (Build-Out Year 2020)

Intersection Approach / Movement	AM Peak	PM Peak	SAT Peak
	Queue (feet)[1]	Queue (feet)[1]	Queue (feet)[1]
9th Street, NW at F Street, NW			
Southbound	23	m50	m150
Eastbound	127	221	82
Westbound	109	121	116
10th Street, NW at F Street, NW			
Southbound	m35	143	62
Eastbound	131	200	147
Westbound	131	52	126
9th Street, NW at G Street, NW			
Southbound	474	#681	#574
Eastbound	m#204	m#506	145
Westbound / Left	98	153	49
Westbound / Through	142	170	75
10th Street, NW at G Street, NW			
Southbound	m222	m171	71
Eastbound	481	519	162
Westbound	99	#602	164
9th Street, NW at H Street, NW			
Southbound	172	234	117
Eastbound	m73	m161	153
Westbound	191	101	96
10th Street, NW at H Street, NW			
Southbound	411	#638	307
Eastbound	#512	#995	#436
Westbound	#396	203	215
8th Street, NW at H Street, NW[2]			
Northbound	290	-	158
Southbound	-	-	115
Eastbound / Left	10	10	3
Westbound / Left	18	33	5
8th Street, NW at G Street, NW[2]			
Southbound	33	445	88
Eastbound / Left	8	5	8
9th Street, NW at G Place, NW[2]			
Eastbound	28	140	25
10th Street, NW at G Place, NW[3]			

[1] Synchro 9 - 95% Queue Length
[2] HCM 2010 - 95% Queue Length, assuming vehicle length of 25 feet
[3] Intersection configuration is not allowed in HCM analysis
m - Volume for 95th percentile queue is metered by upstream signal
- 95th percentile volumes exceed capacity. Queue may be longer. Queue shown is maximum after two cycles.

5.7 Traffic Signal Warrant Analysis

A traffic signal warrant analysis was performed for the existing, background and future traffic volume conditions using the warrants module of the Highway Capacity Software (HCS) 2010. The HCS 2010 Warrants module follows the guidance provided in the latest version of the Manual of Uniform Traffic Control Devices (MUTCD).

Three unsignalized intersections in the study area were analyzed; 8th Street, NW and H Street, NW; 8th Street, NW and G Street, NW; and 9th Street, NW and G Place, NW.

The signal warrant analysis indicated that none of the intersections would warrant traffic signals, based on vehicular traffic volumes on any of the conditions evaluated. All of the unsignalized intersections met Warrant 6, Coordinated Signal System, under all of the scenarios. The intersection of 8th Street, NW and G Street, NW met Warrant 4, Pedestrian Volume, under the background and future conditions. The signal warrant analysis software output is included in Appendix G.

6. SITE ACCESS AND LOADING

LOADING

The MLK Jr. Library includes an existing loading dock, accessible from G Place, NW. The loading dock provides truck access for trash removal, mail delivery, work supply delivery and DCPL book and materials deliveries/removal. The deliveries are varied based on particular need at the MLK Jr. Library. Table 16 shows the type of vehicles anticipated to use the loading dock and the number of daily trips anticipated.

Table 16: Vehicle Types and Trips Utilizing the Loading Dock

Vehicle Type	Vehicle Size	Daily Trips
Trash Truck	30’	1
Mail Truck	22-25’	3
Work Supply	30’ (SU-30)	3
DCPL	40’ (SU-40)	2
Total Trips	-	9

In conjunction with the currently proposed MLK Jr. Library renovation/expansion, no significant improvements are planned for the loading dock. The loading dock improvements result in the dock area maintaining its compliant status with city codes. The curb approach radii to the loading dock will be reduced, providing a 90-dgree entry/exit curb for the loading dock. This modification will result in a shorter pedestrian crossing that will enhance pedestrian safety in the

area of the loading dock. A site plan showing the proposed loading dock configuration is included as Figure 18.

The loading docks are currently accessed by backing movements along G Place, NW with loading or unloading during the AM or PM peak hours. It is recognized that no vehicle backing movements are permitted by DDOT for new or modified/improved loading dock facilities. However, based upon discussion with DDOT, the improvements in the area of the loading dock are not substantive and will not trigger the "no backing" restriction for improved loading facilities.

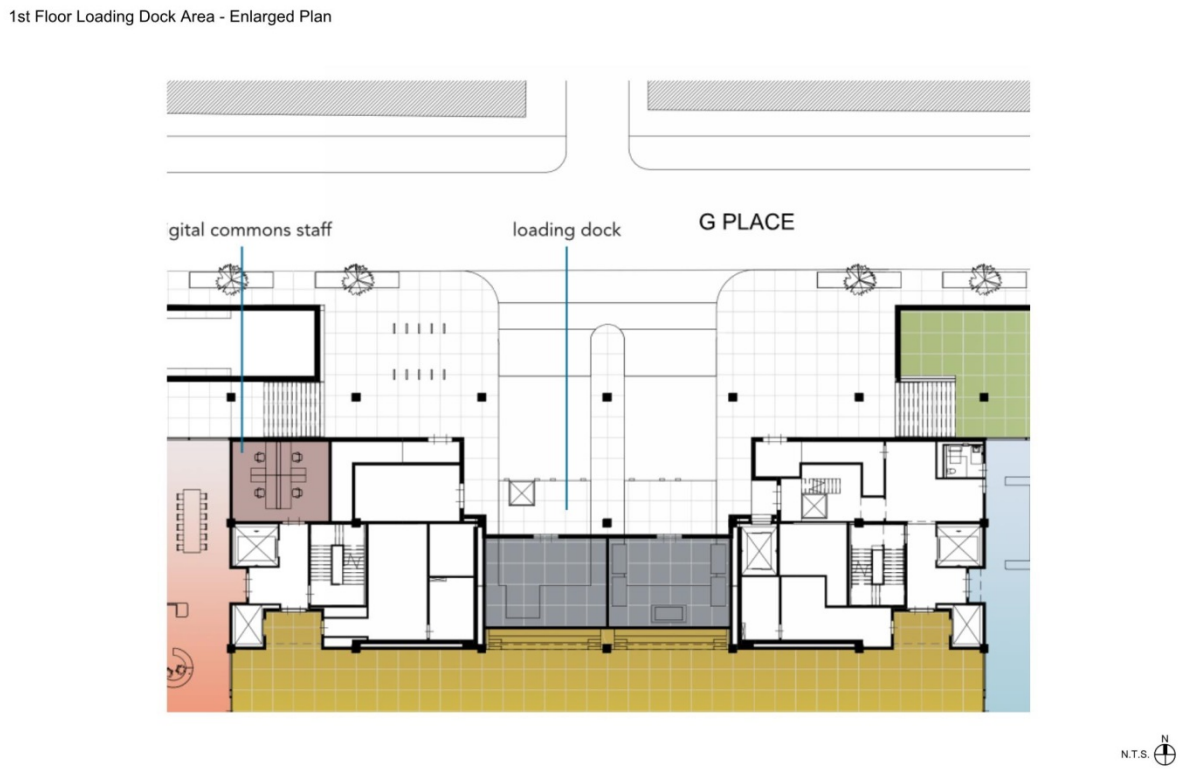


Figure 18: Diagram of Proposed Loading Dock

No loading dock activities are anticipated during the AM or PM peak and no additional uses of the loading dock are anticipated in conjunction with the expansion/ renovation. Trash trucks, single-unit vehicles and mail delivery vehicles anticipated to access the loading dock are included in loading dock schematics and truck turning diagrams that are included in Appendix H. It must be noted that, as a result of the change in the curb radii at the loading dock ingress/egress, the elimination of one metered parking space along G Place, NW is necessary. Additionally, due to the dimensions of the loading bays, SU-40 vehicles will only use the westernmost bay in the loading dock area.

No valet parking, motor coach or tour bus staging is anticipated at the MLK Jr. Library site. Approximately, twelve additional events per year (on average one per month) are anticipated for the fifth floor event space. Additionally, any catering for these events would utilize a vehicle that falls within the size/dimension range for trucks accessing the loading dock area. The number of catering/café vehicles anticipated is variable, but could number two vehicles per week that are anticipated to arrive after 5pm. DCPL would be relocating the operations functions offsite once the rehabilitation and modernization is complete. This would significantly

reduce the loading dock usage and thereby create even more flexibility in having event loading and unloading out of the public right of way.

SITE ACCESS

Several options were considered for the ingress and egress of the MLK Jr. Library parking garage. A description of these alternatives is included below and graphic depictions of vehicle movements that are anticipated in conjunction with these alternatives are included in Appendix H.

Alternative 1 (No-Build)
Alternative 1 includes the proposal to make no changes to the current access to the MLK Jr. Library garage. Currently, access to the MLK Jr. Library garage is accomplished by an ingress ramp along eastbound G Place, NW and egress from the garage by a ramp that intersects with 9th Street, NW. Traffic along G Place, NW would continue to be accommodated by traveling one way in the eastbound direction. Alternative 1 would require no changes to curbs or traffic patterns, but retain a constrained turn/curb radius entering the MLK Jr. Library garage from G Place, NW.

Alternative 2: Two-Way Ramp into Garage
Alternative 2 includes the proposal to eliminate the MLK Jr. Library garage egress ramp to 9th Street, NW and modify the existing ingress ramp to accommodate two-way, one-lane traffic. This configuration would allow vehicles to enter and exit the MLK Jr. Library garage using the single ramp along G Place, NW. Along with the bi-directional traffic flow on the existing ramp, variations include the use of the right lane for exiting traffic or reversing traffic operations on the ramp to accommodate a left-lane exit. In either case, the existing wall along the north side of the ramp would likely need to be modified to accommodate the proposed traffic movements and ramp grade modifications may also be necessary. While no operational changes to G Place, NW are proposed in conjunction with Alternative 2, which requires a U-turn movement for vehicles exiting the MLK Jr. Library garage as they access eastbound G Place, NW, some metered parking spaces along G Place, NW would be eliminated to accommodate U-turning traffic. Additionally, the removal of curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage.

Alternative 2 allows for expanded use of the MLK Jr. Library space at the existing 9th Street ramp location for a new café plaza. At the same time, it is possible that the bi-directional traffic flow could result in increased queues along G Place during peak hours, as a result of the proximity of three garage ramps within 20 feet of each other.

Alternative 3: Two-Way Ramp into Garage/Westbound G Place, NW Traffic
Alternative 3 includes the proposal to eliminate the MLK Jr. Library garage egress ramp to 9th Street, NW and modify the existing ingress ramp to accommodate two-way, one-lane traffic. This configuration would allow vehicles to enter and exit the MLK Jr. Library garage using the single ramp along G Place, NW. The existing wall along the north side of the ramp would likely need to be modified to accommodate the proposed traffic movements and ramp grade modifications may also be necessary.

Implementing Alternative 3 would require a change in the operation of G Place, NW from one-way eastbound flow to one-way westbound flow and include a change in parking orientation along G Place, NW. This change in traffic patterns would include the removal of some spaces along G Place, NW to enhance traffic operations. Additionally, the removal of

curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage.

Alternative 3 allows for expanded use of the MLK Jr. Library space at the existing 9th Street, NW ramp location for a new café plaza. It is also possible that the bi-directional traffic flow could result in increased queues along G Place during peak hours, as a result of the proximity of three garage ramps within 20 feet of each other.

Alternative 4: Two-Way Ramp into Garage/Partial Two-Way Traffic along G Place, NW
Alternative 4 includes the proposal to eliminate the MLK Jr. Library garage egress ramp to 9th Street, NW and modify the existing ingress ramp to accommodate two-way, one-lane traffic. This configuration would allow vehicles to enter and exit the MLK Jr. Library garage using the single ramp along G Place, NW. The existing wall along the north side of the ramp would require modification to accommodate the proposed traffic movements and ramp grade modifications may also be necessary.

Implementing Alternative 4 would require a change in the operation of G Place, NW from one-way eastbound flow to two-way flow between 10th Street, NW and the Alley (adjacent to the MLK Jr. Library garage ingress/egress ramp). This change in operation would introduce a weave conflict between vehicles exiting the MLK Jr. Library garage traveling westbound and those proceeding eastbound along G Place, NW. The removal of curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage. This includes improved sight lines associated with eastbound, G Place, NW traffic.

Additionally, Alternative 4 includes a change in parking orientation along the affected segment of westbound G Place, NW to enhance traffic operations. G Place, NW traffic operation from the Alley eastbound to 9th Street, NW would not be modified and would allow for expanded use of the MLK Jr. Library space at the existing 9th Street, NW ramp location for a new café plaza.

Alternative 5: Two-Way Ramp into Garage/Alley Access
Alternative 5 includes the proposal to eliminate the MLK Jr. Library garage egress ramp to 9th Street, NW and modify the existing ingress ramp to accommodate two-way, one-lane traffic. This configuration would allow vehicles to enter and exit the MLK Jr. Library garage using the single ramp along G Place, NW. The existing wall along the north side of the ramp would likely need to be modified to accommodate the proposed traffic movements and ramp grade modifications may also be necessary.

Vehicles exiting the MLK Jr. Library garage would complete a U-turn to access westbound G Place, NW or turn left into the Alley and access G Street, NW. Removing curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage. In order for traffic to utilize the Alley, the existing wall at the south end of the Alley, along the addition of curb and pedestrian improvements at the Alley/G Street, NW intersection would be required. This new intersection adds a pedestrian conflict at the Alley and G Street, NW intersection. Variations to this alternative include the consideration of one-way northbound or one-way southbound traffic flow along the Alley.

While no operational changes to G Place, NW are proposed in conjunction with Alternative 5, which requires a U-turn movement for vehicles exiting the MLK Jr. Library garage as they access eastbound G Place, NW, some metered parking spaces along G Place, NW would be eliminated to accommodate U-turning traffic.

Alternative 6: Zoning Variance – Signal-Controlled, Existing Width, Two-Way Garage Ramp
Alternative 6 includes the proposal to eliminate the MLK Jr. Library garage egress ramp to 9th Street, NW and modify the existing ingress ramp to accommodate two-way, one-lane traffic. This configuration would allow vehicles to enter and exit the MLK Jr. Library garage using the single ramp along G Place, NW. The existing wall along the north side of the ramp would likely need to be modified to accommodate the proposed traffic movements and ramp grade modifications may also be necessary. Additionally, the removal of curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage.

Implementing Alternative 6 would require a slight change in the operation of G Place, NW, by removing parking along G Place, NW from 10th Street, NW to the Alley to accommodate the change in traffic flow. The traffic flow change is a result of the introduction of a traffic signal along G Place, NW, in the vicinity of the Alley and the MLK Jr. Library ingress/egress ramp. G Place, NW traffic operation from the Alley eastbound to 9th Street, NW would not be modified and would allow for expanded use of the MLK Jr. Library space at the existing 9th Street, NW ramp location for a new café plaza. It is also possible that the signalized traffic flow could result in increased queues along G Place during peak hours, as a result of the proximity of three garage ramps within 20 feet of each other. Therefore, a review of traffic signal timing should be reviewed to optimize clearance times, balancing these times with traffic demand during the peak hours.

Alternative 7: Signal-Controlled, Two-Way Garage Ramp/Partial Two-Way Traffic along G Place, NW
Alternative 7 includes the proposal to eliminate the MLK Jr. Library garage egress (east) ramp to 9th Street, NW and make the existing ingress (west) ramp to accommodate vehicles entering and exiting the garage. The existing wall along the north side of the ramp would likely need to be modified to accommodate the proposed traffic movements and ramp grade modifications may also be necessary. Additionally, the removal of curb islands in proximity to the MLK Jr. Library garage and the First Congregational Church garage (just west of the MLK Jr. Library garage entrance) would provide enhanced mobility and access for vehicle ingress and egress associated with the MLK Jr. Library garage.

Implementing Alternative 7 would require a change in the operation of G Place, NW from one-way eastbound flow to two-way flow between 10th Street, NW and the Alley (adjacent to the MLK Jr. Library garage ingress/egress ramp). The change in traffic operation is a result of the introduction of a traffic signal on MLK Jr. Library property, which would control vehicles exiting the library. Additionally, Alternative 7 includes a change in parking orientation along the affected segment of westbound G Place, NW. G Place, NW traffic operation from the Alley eastbound to 9th Street, NW would not be modified and would allow for expanded use of the MLK Jr. Library space at the existing 9th Street, NW ramp location for a new café plaza.

In conjunction with Alternative 7, 24-hour traffic counts were collected at the entrance First Congregational Church, U. S. Secret Service, and the MLK Jr. Library garage ramps on April 5, 2016. Tube counters were also installed along G Place, NW and placed perpendicular to curbs/driveways to minimize the occurrence of double hits by turning vehicles.

To ensure that the counts at the MLK Jr. Library garage ramps recorded vehicle entry and exit trends over the course of several days, Stantec was directed to conduct additional seven (7)-day, 24-hour traffic volume counts from May 2, 2016 through May 9, 2016 along both the MLK Jr. Library garage ingress and egress ramps. These seven (7)-day counts referenced above were evaluated in concert with the April 5, 2016 tube counts obtained from along G Place, NW, and the First Congregational Church and the U. S. Secret Service garages. The data collected is included in Appendix H and observations and a general summary of the traffic analysis are included below.

These volumes were considered in the context of Alternates 7 that proposed modifications to the roadway network in the vicinity of the MLK Jr. Library and primarily including 10th Street, NW and G Place, NW. The modifications under consideration include closing the eastbound egress ramp from the MLK Jr. Library Garage leading to 9th Street, NW and converting the existing entrance to a one-lane, two-way (ingress/egress) ramp; installing traffic signals for vehicles entering and exiting the MLK Jr. Library Garage; and converting G Place, NW from 10th Street, NW to the Alley (adjacent to the existing MLK Jr. Library Garage entrance), to two-lane, two-way traffic flow. Other improvements include the removal of the "bump out" between the alley and the First Congregational Church garage, moving the north wall (while not impacting utilities) to provide better alignment for ingress and egress of MLK Jr. Library garage and modifying the concrete nose to the MLK Jr. Library garage to provide better ingress and egress.

AM and PM peak traffic times are determined by the four consecutive 15-minute periods where the traffic volumes are the highest recorded. According to the data collected, the AM and PM peak traffic times varied slightly. For each day of the week, AM peak times generally occurred from 7:45am-08:45am, 8:00am-9:00am, 8:15am-9:15am, 8:30am-9:30am, or 8:45am-9:45am. Similarly, the PM peak times occurred from 4:15pm-5:15pm, 4:45pm-5:45pm, 5:00pm-6:00pm, or 5:15pm-6:15pm. For the purpose of this paper, the highest volume and the correlating AM or PM peak time was used to assess the potential impacts on the road network in the identified area. The target peak times and volumes used were 8:00am-9:00am for the AM peak and 4:15pm-5:15pm for the PM peak.

Based on the observations, it was determined that the traffic operations for vehicles entering and exiting the MLK Jr. Library garage on to G Place, NW would be acceptable.

Mitigation for Alternative 7

A traffic signal system would be installed that would include signals and directional/operational modifications within the MLK Jr. Library garage. In order to minimize potential conflicts between the MLK Jr. Library, First Congregational Church, and U. S. Secret Service garage movements along G Place, NW, it may be necessary to install queue detection along westbound G Place, NW to ensure that the traffic signal in the MLK Jr. Library garage releases vehicles when queue storage along G Place, NW is available. Also, other operational controls may be necessary to stop traffic from the U. S. Secret Service and Church garages from exiting and traveling eastbound along G Place, NW during the period when MLK Jr. Library garage traffic has a green indication.

Tube Count Variances Associated with Alternative 7

Finally, a margin of data error is assumed with regard to vehicles entering and exiting the First Congregational Church and U. S. Secret Service parking garages. This margin of error is associated with the tube count methodology and the location/orientation of the garage accesses. Installation of the tube counts parallel to G Place, NW and at the mouth of the

First Congregational Church and U. S. Secret Service garages resulted in multiple "hits", due to vehicle movements and turns. The margin of error count means that higher volumes were recorded by the tube count machines than actually occurred.

An indication of this variance can be seen from the April 5, 2016 AM peak (8:00am-9:00am) counts. The investigation recorded 93 vehicles accessing G Place, NW from 10th Street, NW. However the entry counts for the First Congregational Church, U. S. Secret Service and MLK Jr. Library garages were recorded as 78, 112, and 38, respectively.

The case also exists for exiting traffic from the MLK Jr. Library garage, based on counts obtained on May 4, 2016. The tube count recorded 43 vehicles exiting the MLK Jr. Library garage during peak hour times between 4:45pm-5:45pm. However, a manual count was conducted between 4:45pm-5:45pm on 5-4-2016 that showed 16 vehicles leaving the MLK Jr. Library garage. This deviation is an indication of "multiple" hits on the tube placed at the MLK Jr. Library garage exit.

Summary of Alternative 7 Impacts

Evaluating both the April 5, 2016 and May 2, 2016 through May 9, 2016 data shows that the volumes recorded by tube counts are, in many cases, higher than what exists on the roadway network. Although the volumes obtained are higher than those volumes anticipated (due to the data variance), these higher volumes have been incorporated into the analysis model and show acceptable network operation.

Because vehicles using westbound G Place, NW would have to wait for gaps in order to travel south along 10 Street, NW, queuing may occur along westbound G Place, NW, beginning at 10th Street, NW. The queues would result from vehicle stacking along G Place, NW at the stop-controlled intersection. The resulting queue if it occurs could inhibit the First Congregational Church, U. S. Secret Service, and MLK Jr. Library garage traffic from exiting their respective garages.

SUMMARY

Based on the completed analysis, the Alternatives 1 through 7 appear to be reasonable and able to be implemented. Mitigation measures that include adjustments to the curb along the north side of the ingress/egress ramp, the removal of parking at strategic locations along G Place, NW, the removal of concrete islands at the MLK Jr. Library and First Congregational Church garage entrances and the determination of optimal signal clearance times for traffic entering and exiting the garage are anticipated to positively impact traffic operations along G Place, NW.

7. TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) programs are established to reduce single occupancy vehicle trips and increase the use of alternative modes. These programs use various strategies and services to help achieve highly efficient and sustainable use of existing transportation facilities without investing in new capacity.

Access to the MLK Jr. Library can be accomplished in a number of ways. Popular forms of alternative modes of transportation include using transit (bus and rail), walking and bicycle riding. It is clear that the preferred method of transportation in the proximity of the MLK Jr. Library is walking due to the close proximity to good transit service and limited parking.

Current strategies utilized by the MLK Jr. Library are essential and very critical TDM strategies. It includes limiting library underground parking to employees, including DC Government officials only, offering bike rentals on site through the "Capital Bikeshare" or "Bike and Roll" bike rental station, and providing routing information by mode of travel via the MLK Jr. Library website.

Existing MLK Jr. Library TDM strategies apply to both employees and visitors:

- The parking garage provides a limited number of parking spaces for employees.
- The library does not provide parking for visitors.
- The MLK Jr. Library provides transit commuter benefits to its employees, which can save up to 40 percent on commuting expenses.
- On site, visitors and employees can rent bicycles from two different providers.
- Routing information is available to visitors and employees. From the MLK Jr. Library website, users can get directions to the library by using different modes of transportation, including public transportation, private vehicle, walking, and riding a bike.

With the proposed expansion, it is anticipated that the number of library staff will not change. It is expected that library staff will continue using and benefiting from existing strategies to limit the use of the private vehicle to go to and from the MLK Jr. Library.

For patrons, the proposed expansion includes an event space which is expected to bring a number of visitors willing to drive to the MLK Jr. Library due to the nature and timing of the events. With that in mind, potential TDM recommended strategies for special events include the following:

- The MLK Jr. Library may include marketing material providing information on available public parking in the vicinity of the library.
- Add parking information to the MLK Jr. Library's website through an internet link that provides public parking information to library's users.

These recommended strategies will help to reduce congestion and emissions by routing visitors directly to the public parking of their choice.

8. CONCLUSION

Traffic analysis including roadway capacity and level of service was conducted for all of the study intersections. Based on the information obtained, the MLK Jr. Library expansion is not anticipated to result in adverse traffic impacts to the surrounding roadway network. The study area intersections are anticipated to see increased traffic volumes, but these volumes can be accommodated without any geometric improvements or signal timing adjustments.

The DDOT threshold for mitigation based on level of service and delay calls for signal timing or roadway geometric improvements if there is a degradation of LOS to "E" or worse or an increase in delay greater than five (5) seconds is observed at any intersection operating at Los "E" of "F". In addition, mitigation may be needed if there is an increase of 150 feet on the observed 95% queue length at any of the study intersections.

The results show that queue lengths will not increase in excess of 150 feet at any of the intersections studied. The level of service and delays at the signalized study intersections do not meet the threshold for mitigation. The unsignalized intersections of 8th Street, NW / G Street, NW and 8th Street, NW / H Street, NW show an increase in delay at their minor approaches larger than five seconds with the implementation of the MLK Jr. Library expansion project.

The potential mitigation for increased delay at unsignalized intersections could be signalization. A signal warrant analysis was conducted for the three unsignalized intersections within the study area. The intersections do not meet the vehicular traffic signal warrants with the future traffic. At the intersection of 8th Street, NW / G Street, NW the warrants for pedestrian volumes are met with the background (without the MLK Jr. Library) traffic volumes. A review of the crash data at this intersection showed that no pedestrians were involved in a crash during the three-year period analyzed. Based on this information, signalization is not recommended at the intersection of 8th Street, NW / G Street, NW due to the pedestrian traffic added by the MLK Jr. Library expansion project.

Additionally, the added pedestrian and bicycle trips will not necessitate additional accommodations. Existing bicycle stations are anticipated to meet the demand. Trips associated with transit will not necessitate improvements /enhancements to existing transit facilities. No additional buses or expansion of bus routes is necessary as a result of the expansion of the MLK Jr. Library. Additional motorist trips will be accommodated by existing parking garages in proximity to the MLK Jr. Library and no additional or alternate parking accommodations are needed for library staff.

It should be noted, the MLK Jr. Library renovation includes modifications to the existing loading dock and garage ingress areas. The loading dock improvements result in the dock area being compliant with city code. Modifications to the loading dock area enhance the safety of pedestrians though the reduction of the pedestrian crossing distance at the loading dock entrance, but will necessitate the elimination of one metered parking space along G Place, NW, across from the loading dock entrance.

The improvements to the MLK Jr. Library garage ingress/egress include the closure of the eastbound garage exit ramp and improvements to the westbound exit ramp that allow the conversion of the ramp to a bi-directional, ingress/egress ramp, but will necessitate the elimination of two, unmetered parking spaces along G Place, NW. Associated improvements include curb removal at the MLK Jr. Library garage entrance and at the First Congregational Church garage, along the Alley, and modifications to the existing wall located along the north side of the garage ingress ramp. These operational and physical improvements are also planned in conjunction with the installation of a traffic signal system that includes signal heads and a signal controller inside the MLK Jr. Library garage, and a modification to G Place, NW operation, with includes the conversion of the one-way roadway to bi-directional (eastbound and westbound) traffic flow from 10th Street, NW to the MLK Jr. Library garage entrance/Alley. An operational management plan is also necessary to discourage contraflow traffic operation (ingress and egress occurring simultaneously) on the MLK Jr. Library garage ramp.

Overall, the expansion and renovation will have only a minimal impact on the surrounding roadway and pedestrian network. Therefore, mitigation is not recommended for the MLK Jr. Library renovation and expansion project.

9. REFERENCES

1) DC Office of Zoning, District of Columbia Municipal Regulations
http://dcoz.dc.gov/chapnand/seventeen/chapter_17.pdf
2) MLK Memorial Library Renovation Library Program November 2014
3) 2005 Development Related Ridership Survey by WMATA
4) 2013 American Community Survey by US Census Bureau
5) WMATA Transit Ridership and Market Trends Report
6) WMATA Capacity Need Inventory 2010
7) WMATA Station Access and Capacity Study 2008

Appendix A – DDOT Traffic Signal Timings

d. - DC DEPARTMENT OF TRANSPORTATION, TRAFFIC SERVICES ADMINISTRATION 05/10/13

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION

ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 99 LOCATION:9TH ST AND F ST, NW

REV: 09 PAGE 1 OF 4

TS # 487-L AREA COMPUTER 2 ACISA 70 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	Y	W		R	W

LS7	LS8	LS9	LS10	LS11	LS12
				R	W

R = RED Y = YELLOW W = WHITE
*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06I

COMM CHANNEL 14 COMM SWITCH 4
PAIR IN 1
PAIR OUT 2
VOICE COMM PAIR 12
MODEM 228

2.NOTES: REV 08: INSTALL NEW TIMING AND OPERATION
REV 09: INSTALL 233 OPERATION USING MC1 CHIP

DOCUMENT PREPARED BY: RAY ROBINSON 05/10/13

REVIEWED BY: Joel R. Wood 5/10/13

DATABASE REVISED BY: Ray Robinson 5/10/13

FIELD REVISION INSTALLED BY: _____

SHOP ORDER NUMBER: S-05-13-24

P H A S E C O N T R O L L E R O U T P U T F I L E T E R M I N A T I O N

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
02 03 05	101	Ø4R	12 13 16 17	113	Ø2DW		125	Ø1R
02 03 05	102	Ø4Y		114	SF		126	Ø1Y
02 03 05	103	Ø4G	12 13 16 17	115	Ø2W		127	Ø1G
10 11	104	Ø4DW		116	Ø3R	01 06 07	128	Ø2R
	105	SF		117	Ø3Y	01 06 07	129	Ø2Y
10 11	106	Ø4W		118	Ø3G	01 06 07	130	Ø2G
04 08 09 18	107	Ø8R		119	Ø6DW		131	Ø5R
04 08 09 18	108	Ø8Y		120	SF		132	Ø5Y
04 08 09 18	109	Ø8G		121	Ø6W		133	Ø5G
14 15	110	Ø8DW		122	Ø7R		134	Ø6R
	111	SF		123	Ø7Y		135	Ø6Y
14 15	112	Ø8W		124	Ø7G		136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

218 PROGRAM CARD

8- 9	7- 8	6- 7	(5- 6)	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	4- 6	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	6-10	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	(6-11)	5-10	4- 9	3- 8	2- 7	1- 6
8-14	7-13	(6-12)	(5-11)	4-10	3- 9	2- 8	1- 7
8-15	7-14	6-13	(5-12)	4-11	3-10	2- 9	1- 8
8-16	7-15	6-14	5-13	4-12	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
9-14	10-15	11-16	12-17	13-18	3-18	2-17	1-16
9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	(11-12)	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

9	8	7	X	5	4	X	2	1
18	17	16	15	14	13	XX	11	10

PROGRAMMED BY: P. HOGAN DATE: 06/11/87

P H A S E C O N T R O L L E R I N P U T F I L E T E R M I N A T I O N

F R O N T V I E W

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

B A C K V I E W

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D 14-E	13-D 13-E	12-D 12-E	11-D 11-E	10-D 10-E	9-D 9-E	8-D 8-E	7-D 7-E	6-D 6-E	5-D 5-E	4-D 4-E	3-D 3-E	2-D 2-E	1-D 1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J 14-K	13-J 13-K	12-J 12-K	11-J 11-K	10-J 10-K	9-J 9-K	8-J 8-K	7-J 7-K	6-J 6-K	5-J 5-K	4-J 4-K	3-J 3-K	2-J 2-K	1-J 1-K
LOOP NUMBER														

D E T E C T O R A S S I G N M E N T S

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/
FILE I___/
SLOT 8__/

LOWER L
UPPER U

INTERSECTION: 2070-9TH ST & F ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **323**

N/S Street Name: **9TH ST**
E/W Street Name: **F ST**

Last Database Change: **4/21/2015 12:10**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	4	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	70	<C/0+0+3>
QuicNet Channel	IP:8026:172.16.2	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	10	0	10	0	0	0	10
1	Ped FDW	0	17	0	14	0	0	0	14
2	Min Green	0	10	0	7	0	0	0	7
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
6	Max Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
7	Min Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
8	Max Limit	0	85	0	65	0	0	0	65
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	4.0	0.0	4.0	0.0	0.0	0.0	4.0
F	Red Clear	0.0	2.5	0.0	2.0	0.0	0.0	0.0	2.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_2_4___8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_2_4___8
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_2_4___8
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2_____

Phase Functions <C+0+F=1>

		Overlap							
	Column Numbers ---->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Row	*Overlap Name ---->*								
0	Load Switch Number	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1	Veh Set 1 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
2	Veh Set 2 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
3	Veh Set 3 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
4	Neg Veh Phases	_____	_____	_____	_____	_____	_____	_____	_____
5	Neg Ped Phases	_____	_____	_____	_____	_____	_____	_____	_____
6	Green Omit Phases	_____	_____	_____	_____	_____	_____	_____	_____
7	Green Clear Omit Phs.	_____	_____	_____	_____	_____	_____	_____	_____
8	Overlap Recall	**N**	**N**	**N**	**N**	**N**	**N**	**N**	**N**
9	Queue Jump Phase	_____	_____	_____	_____	_____	_____	_____	_____
A	Queue Jump Time	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
B	Minimum Green	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
C	Maximum Green	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
D	Green Clear	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
E	Yellow Change	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
F	Red Clear	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	**0**	0
EV-B	**0**	1
EV-C	**0**	2
EV-D	**0**	3
RR-1 *	**- - -**	4
RR-2 *	**- - -**	5
SE-1	**0**	6
SE-2	**0**	7

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	*Column Numbers ---->*	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Flash to PE Circuits	_____
6	Flash Entry Phases	_____
7	Disable Yellow Range	_____
8	Disable Ovp Yel Range	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_____
B	EV-B Phases	_____
C	EV-C Phases	_____
D	EV-D Phases	_____
E	Extra 1 Config. Bits	**1_3_5___**
F	IC Select (Interconnect)	**_2_____**

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	_____
Ext. Permit 2 Phases	_____
Exclusive Ped Assign	_____
Preempt Non-Lock	_____
Ped for 2P Output	**_2_____**
Ped for 6P Output	_____
Ped for 4P Output	**___4____**
Ped for 8P Output	**_____8**
Yellow Flash Phases	**_2_____**
Low Priority A Phases	_____
Low Priority B Phases	_____
Low Priority C Phases	_____
Low Priority D Phases	_____
Restricted Phases	_____
Extra 2 Config. Bits	**___4____**

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	_____
Green Flash Phases	_____
Flashing Walk Phases	_____
Guaranteed Passage	_____
Simultaneous Gap Term	_____
Sequential Timing	_____
Advance Walk Phases	_____
Delay Walk Phases	_____
External Recall	_____
Start-up Overlap Green	_____
Max Extension	_____
Inhibit Ped Reservice	_____
Semi-Actuated	_____
Start-up Overlap Yellow	_____
Start-up Vehicle Calls	**_2_4___8**
Start-up Ped Calls	**_2_4___8**

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	**0**	1
Phase 2	**0**	2
Phase 3	**0**	3
Phase 4	**0**	4
Phase 5	**0**	5
Phase 6	**0**	6
Phase 7	**0**	7
Phase 8	**0**	8

Coordination Transition Minimums
<C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9
	Plan Name ----->									
0	Cycle Length	80	100	80	100	110	110	120	120	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	38	48	38	48	52	38	58	58	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	38	48	38	48	52	38	58	58	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	26	29	15	29	31	13	14	25	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	7	7	7	7	7	7	7	7	0
E	Hold Release	255	255	255	255	255	255	255	255	0
F	Reserved	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row		E
0		
1	Plan 1 - Sync	_2_____
2	Plan 2 - Sync	_2_____
3	Plan 3 - Sync	_2_____
4	Plan 4 - Sync	_2_____
5	Plan 5 - Sync	_2_____
6	Plan 6 - Sync	_2_____
7	Plan 7 - Sync	_2_____
8	Plan 8 - Sync	_2_____
9	Plan 9 - Sync	_____
A	NEMA Sync	_____
B	NEMA Hold	_____
C		
D		
E	Coord Extra	_____
F		

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____
7										
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
9	Max Recall	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_____
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____

Coordination - Bank 2 <C+0+C=2>

Row		F
0	Free Lag	_2_4___8
1	Plan 1 - Lag	_2_4___8
2	Plan 2 - Lag	_2_4___8
3	Plan 3 - Lag	_2_4___8
4	Plan 4 - Lag	_2_4___8
5	Plan 5 - Lag	_2_4___8
6	Plan 6 - Lag	_2_4___8
7	Plan 7 - Lag	_2_4___8
8	Plan 8 - Lag	_2_4___8
9	Plan 9 - Lag	_____
A	External Lag	_____
B	Lag Hold	_____
C		
D		
E		
F		

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	36	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	36	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	36	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	36	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	36	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	36	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	36	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	36	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Column Numbers ---->		0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123____	0.0	0.0
1		40	___45_7_	_____6__	123____	0.0	0.0
2		41	___45_7_	___4____	123____	0.0	0.0
3		42	___45_7_	_______8	123____	0.0	0.0
4		43	___45_7_	_2_____	123____	0.0	0.0
5		44	___45_7_	_____6__	123____	0.0	0.0
6		45	___45_7_	___4____	123____	0.0	0.0
7		46	___45_7_	_______8	123____	0.0	0.0
8		47	_____67_	_2_____	123____	0.0	0.0
9		48	_____67_	_____6__	123____	0.0	0.0
A		49	_____67_	___4____	123____	0.0	0.0
B		50	_____67_	_______8	123____	0.0	0.0
C		55	___45_7_	____5___	123____	0.0	0.0
D		56	___45_7_	1_____	123____	0.0	0.0
E		57	___45_7_	_____7_	123____	0.0	0.0
F		58	___45_7_	__3____	123____	0.0	0.0

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123____	0.0	0.0
1		60	___45_7_	1_____	123____	0.0	0.0
2		61	___45_7_	_____7_	123____	0.0	0.0
3		62	___45_7_	__3____	123____	0.0	0.0
4		63	___45_7_	_2_____	123____	0.0	0.0
5		64	___45_7_	_____6__	123____	0.0	0.0
6		65	___45_7_	___4____	123____	0.0	0.0
7		66	___45_7_	_______8	123____	0.0	0.0
8		67	_2_____	_2_____	123____	0.0	0.0
9		68	_2_____	_____6__	123____	0.0	0.0
A		69	_2_____	___4____	123____	0.0	0.0
B		70	_2_____	_______8	123____	0.0	0.0
C		76	___45_7_	_2_____	123____	0.0	0.0
D		77	___45_7_	_____6__	123____	0.0	0.0
E		78	___45_7_	___4____	123____	0.0	0.0
F		79	___45_7_	_______8	123____	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	6	A	_234567
5	08 : 00	2	A	1_____7
6	15 : 00	2	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
10 : 00	0	0	_____
10 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>

Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>

Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	**0**	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	**0**	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	**0**	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	**0**
D	Bus Delay	**0**
E	Max Early Grn	**0**
F	Max Grn Ext.	**0**

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	**00 : 00**	**0**	**0**	_____
1	**00 : 00**	**0**	**0**	_____
2	**00 : 00**	**0**	**0**	_____
3	**00 : 00**	**0**	**0**	_____
4	**00 : 00**	**0**	**0**	_____
5	**00 : 00**	**0**	**0**	_____
6	**00 : 00**	**0**	**0**	_____
7	**00 : 00**	**0**	**0**	_____
8	**00 : 00**	**0**	**0**	_____
9	**00 : 00**	**0**	**0**	_____
A	**00 : 00**	**0**	**0**	_____
B	**00 : 00**	**0**	**0**	_____
C	**00 : 00**	**0**	**0**	_____
D	**00 : 00**	**0**	**0**	_____
E	**00 : 00**	**0**	**0**	_____
F	**00 : 00**	**0**	**0**	_____

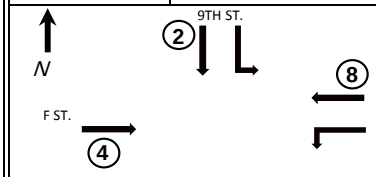
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 06/19/2012	9TH STREET AND F STREET, N.W.		SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATION ADMINISTRATION

ACISA ID	2070	TS-	487-L OPT-1
ISNUM	99	S-	1902-B

C + 0 + F = 1
<F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0		10		10				10
FLASH D/W	1		17		14				14
MIN. GREEN	2		10		7				7
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1				1
MAX GAP	6		1		1				1
MIN GAP	7		1		1				1
MAXIMUM	8		85		65				65
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A								
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				4
RED CLEAR	F		2.5		2				2

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				X
SYNC PHASES (Check by phases)		X						

NOTES:

C+0+C=I ; C + <PLAN> + <FEATURE>

FEATURE		COORDINATION TIMING PLAN 1	2	3	4	5	6	7	8
CYCLE TIME	0	80	100	80	100	110	110	120	120
FORCE OFF 1	1								
FORCE OFF 2	2	0	0	0	0	0	0	0	0
FORCE OFF 3	3								
FORCE OFF 4	4	38	48	38	48	52	38	58	58
FORCE OFF 5	5								
FORCE OFF 6	6								
FORCE OFF 7	7								
FORCE OFF 8	8	38	48	38	48	52	38	58	58
OFFSET A	A	26	29	15	29	31	13	14	25
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7
PRETIMED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
MAX RECALL (PHASES)									
PERM 1 VEH (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
PERM 1 PED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	6	A	234567
EVENT 5	8:00	2	A	1 7
EVENT 6	15:00	2	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

***SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

***VERIZON TOPP TBC TO RUN FROM OCT. TO APRIL.**

C + 0 + E = 29

FUNCTION	OVERLAP CONFIG OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125
E + E + FEATURE

FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125
E + F + FEATURE

FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6								
PED 4P	7				X				
PED 8P	8								X
FLASH YELLOW	9		X						
LOW PRIORITY A	A								
LOW PRIORITY B	B								
LOW PRIORITY C	C								
LOW PRIORITY D	D								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

FEATURE		PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
PERMIT	0		X		X				X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X				X
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

C + 0 + F = 2
F + F + FEATURE

FEATURE	PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
GREEN FLASH								
FLASH WALK								
ADVANCED WALK								
DELAYED WALK								

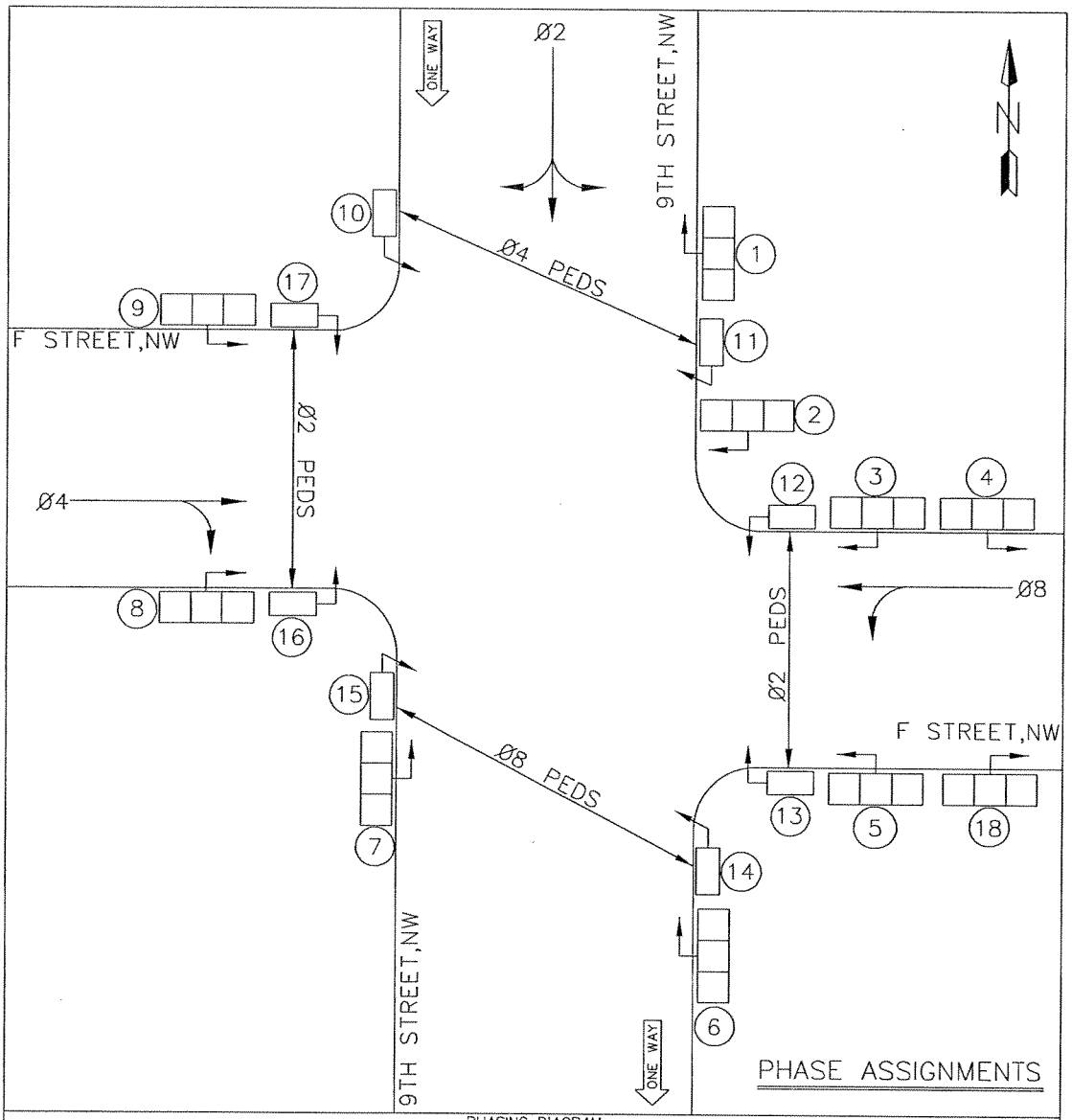
PREPARED BY: **Sabra, Wang & Associates, Inc.**

WORK/SHOP ORDER NO: S-01-15-238

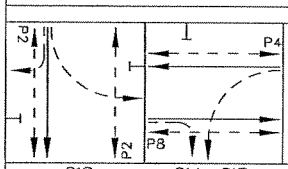
APPROVED BY: Waseem Raja

DATE INSTALLED:

INSTALLED BY:



PHASING DIAGRAM



FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE
Ø2	Ø4+Ø8				

TRAFFIC SIGNAL OPERATION

9TH STREET AND F STREET, N.W.

ACISA 2070

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	C.N.	DATE:	11/13/12
DRAWN BY:	J.M.	DATE:	09/28/12
IN SERVICE:		SCALE:	NONE

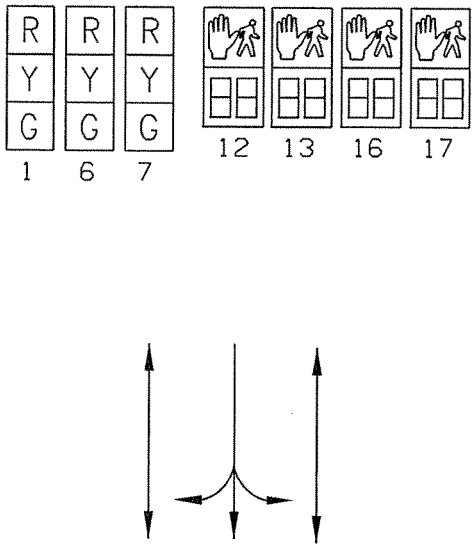
DESIGNED BY:

SUBMITTED BY: PROJECT ENGINEER

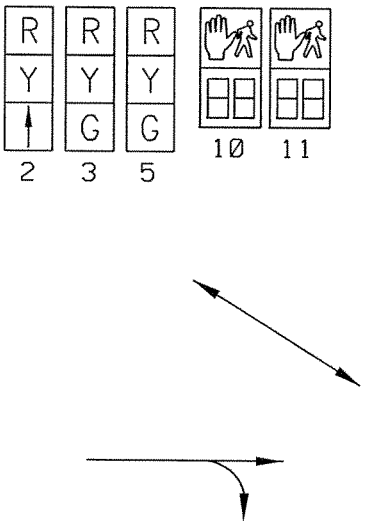
APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 487-L Opt 1

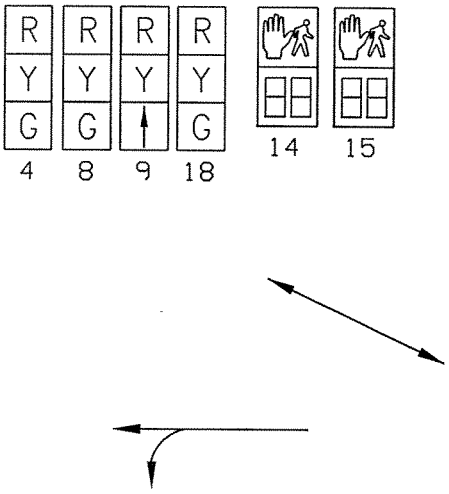
SHEET 1 OF 4



Ø2



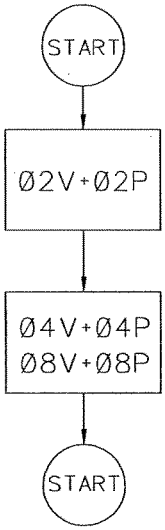
Ø4



Ø8

TRAFFIC SIGNAL OPERATION 9TH STREET AND F STREET, N.W.	ACISA 2070
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: SUBMITTED BY: PROJECT ENGINEER APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS
CHECK BY: C.N. DATE: 11/13/12 DRAWN BY: J.M. DATE: 09/28/12 IN SERVICE: SCALE: NONE	T.S. 487-L OPT 1 SHEET 2 OF 4

...\CADD\2070\2 OF 4.dgn 5/10/2013 11:47:29 AM



PHASE SEQUENCE

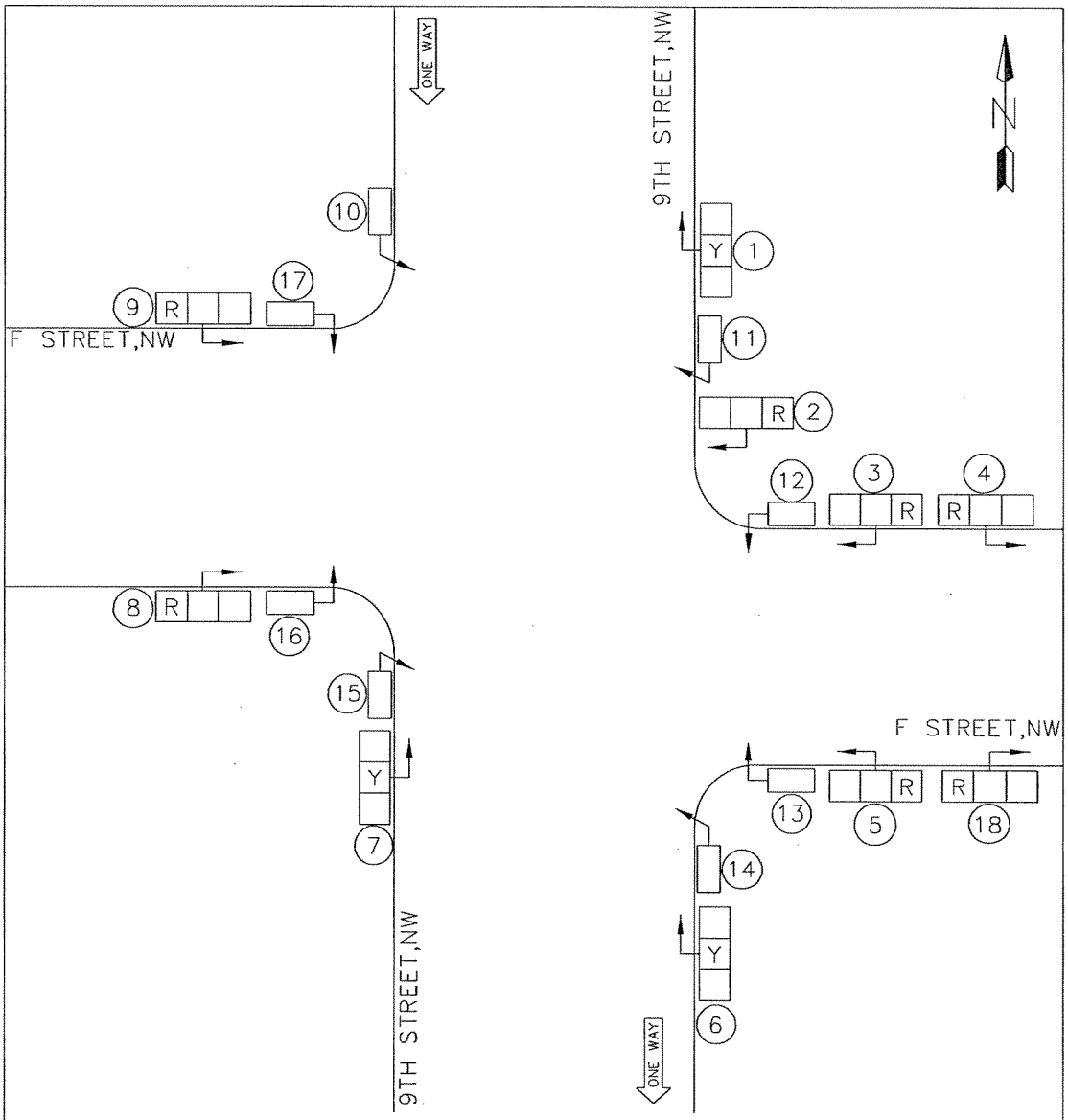
ON RECALL

Ø2V + Ø2P
Ø4V + Ø4P
Ø8V + Ø8P

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION 9TH STREET AND F STREET, N.W.	ACISA 2070
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
CHECK BY: C.N. DATE: 11/13/12 DRAWN BY: J.M. DATE: 09/28/12 IN SERVICE: SCALE: NONE	T.S. 487-L Opt 1 SHEET 3 OF 4



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION 9TH STREET AND F STREET, N.W.			ACISA 2070
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION		DESIGNED BY:	T.S. 487-L Opt 1
CHECK BY: C.N.	DATE: 11/13/12	SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: J.M.	DATE: 09/28/12	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	4 OF 4
IN SERVICE:	SCALE: NONE		

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-238**
ACISA NO: **2070**	INSUM NO: 99	S- DRAWING NO: 1902
TS NO: **487-L OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

9TH STREET AND F STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.9A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 100 LOCATION:9TH ST AND G ST, NW REV: 10 PAGE 1 OF 4

TS # 674-N AREA COMPUTER 2 ACISA 71 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	Y	W	R	R	W

LS7	LS8	LS9	LS10	LS11	LS12
		W	W		W

R = RED Y = YELLOW W = WHITE
*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06I

COMM CHANNEL 14 COMM SWITCH 5
PAIR IN 1
PAIR OUT 2
VOICE COMM PAIR 12
MODEM 228

2.NOTES: REV 09: INSTALL ADDITIONAL 5 TIMING PLANS
REV 10: INSTALL 233 PROGRAM (MC1) AND OPERATION

DOCUMENT PREPARED BY: JOSE R. WOOD 05/06/14

REVIEWED BY: Ray Robinson 5/7/14

DATABASE REVISED BY: Jose R. Wood 5/8/14

FIELD REVISION INSTALLED BY: _____ _____

SHOP ORDER NUMBER: S04-14-120

P H A S E C O N T R O L L E R O U T P U T F I L E T E R M I N A T I O N

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
05 10 13	101	Ø4R	08 09	113	Ø2DW		125	Ø1R
05 10 13	102	Ø4Y	08 09	114	SF		126	Ø1Y
05 10 13	103	Ø4G	08 09	115	Ø2W		127	Ø1G
01 02	104	Ø4DW	12 14 17	116	Ø3R	11 15 16	128	Ø2R
01 02	105	SF	12 14 17	117	Ø3Y	11 15 16	129	Ø2Y
01 02	106	Ø4W	12 14 17	118	Ø3G	11 15 16	130	Ø2G
	107	Ø8R	03 04	119	Ø6DW		131	Ø5R
	108	Ø8Y	03 04	120	SF		132	Ø5Y
	109	Ø8G	03 04	121	Ø6W		133	Ø5G
06 07	110	Ø8DW		122	Ø7R		134	Ø6R
06 07	111	SF		123	Ø7Y		135	Ø6Y
06 07	112	Ø8W	05 10 <-	124	Ø7G		136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

218 PROGRAM CARD

8- 9	7- 8	6- 7	(5- 6)	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	(4- 6)	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	(6-10)	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	6-11	(5-10)	4- 9	3- 8	2- 7	1- 6
8-14	7-13	6-12	5-11	4-10	(3- 9)	2- 8	1- 7
8-15	7-14	6-13	5-12	4-11	3-10	(2- 9)	1- 8
8-16	7-15	6-14	5-13	(4-12)	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
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9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

X	8	7	X	5	4	X	2	1
18	17	16	15	14	13	XX	11	10

PROGRAMMED BY: P. HOGAN DATE: 06/10/87

P H A S E C O N T R O L L E R I N P U T F I L E T E R M I N A T I O N

F R O N T V I E W

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

B A C K V I E W

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D	13-D	12-D	11-D	10-D	9-D	8-D	7-D	6-D	5-D	4-D	3-D	2-D	1-D
	14-E	13-E	12-E	11-E	10-E	9-E	8-E	7-E	6-E	5-E	4-E	3-E	2-E	1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J	13-J	12-J	11-J	10-J	9-J	8-J	7-J	6-J	5-J	4-J	3-J	2-J	1-J
	14-K	13-K	12-K	11-K	10-K	9-K	8-K	7-K	6-K	5-K	4-K	3-K	2-K	1-K
LOOP NUMBER														

D Ê T E C T O R A S S I G N M E N T S

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/
FILE I___/
SLOT 8__/

LOWER L
UPPER U

INTERSECTION: 2071-9TH ST & G ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **324**

N/S Street Name: **9TH ST**
E/W Street Name: **G ST**

Last Database Change: **4/15/2015 14:34**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	5	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	71	<C/0+0+3>
QuicNet Channel	IP:8026:172.16.2	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	7	7	0	0	7	0	7
1	Ped FDW	0	10	11	0	0	14	0	14
2	Min Green	0	10	7	7	0	10	0	7
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0
6	Max Gap	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0
7	Min Gap	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0
8	Max Limit	0	90	40	25	0	90	0	65
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	4.0	4.0	4.0	0.0	4.0	0.0	4.0
F	Red Clear	0.0	2.5	2.5	2.5	0.0	2.5	0.0	2.5

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_234_6_8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_23__6_8
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_234_6_8
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2___6__

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ----->								
0	Load Switch Number	7	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	4							
2	Veh Set 2 - Phases								
3	Veh Set 3 - Phases								
4	Neg Veh Phases								
5	Neg Ped Phases								
6	Green Omit Phases								
7	Green Clear Omit Phs.								
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase								
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C
EV-A	0
EV-B	0
EV-C	0
EV-D	0
RR-1 *	- - -
RR-2 *	- - -
SE-1	0
SE-2	0

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	
1	RR-1 Clear Phases	
2	RR-2 Clear Phases	
3	RR-2 Limited Service	
4	Prot / Perm Phases	
5	Flash to PE Circuits	
6	Flash Entry Phases	
7	Disable Yellow Range	
8	Disable Ovp Yel Range	
9	Overlap Yellow Flash	
A	EV-A Phases	
B	EV-B Phases	
C	EV-C Phases	
D	EV-D Phases	
E	Extra 1 Config. Bits	1_3_5
F	IC Select (Interconnect)	2

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	
Ext. Permit 2 Phases	
Exclusive Ped Assign	
Preempt Non-Lock	
Ped for 2P Output	2
Ped for 6P Output	6
Ped for 4P Output	8
Ped for 8P Output	3
Yellow Flash Phases	2
Low Priority A Phases	
Low Priority B Phases	
Low Priority C Phases	
Low Priority D Phases	
Restricted Phases	
Extra 2 Config. Bits	4

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	
Green Flash Phases	
Flashing Walk Phases	
Guaranteed Passage	
Simultaneous Gap Term	
Sequential Timing	
Advance Walk Phases	
Delay Walk Phases	
External Recall	
Start-up Overlap Green	
Max Extension	
Inhibit Ped Reservice	
Semi-Actuated	
Start-up Overlap Yellow	
Start-up Vehicle Calls	234_6_8
Start-up Ped Calls	23_6_8

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2
Phase 1	0
Phase 2	0
Phase 3	0
Phase 4	0
Phase 5	0
Phase 6	0
Phase 7	0
Phase 8	0

Coordination Transition Minimums
<C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ----->										
0	Cycle Length	80	100	80	100	110	110	120	120	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	43	50	43	50	49	55	43	45	0	3
4	Phase 4 - ForceOff	18	24	18	24	21	20	18	20	0	4
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	43	50	43	50	49	55	43	45	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	13	17	4	17	24	3	25	34	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	7	7	7	7	7	7	7	7	0	D
E	Hold Release	255	255	255	255	255	255	255	255	0	E
F	Reserved	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Row		E	Row
			0
1	Plan 1 - Sync	_2___6__	1
2	Plan 2 - Sync	_2___6__	2
3	Plan 3 - Sync	_2___6__	3
4	Plan 4 - Sync	_2___6__	4
5	Plan 5 - Sync	_2___6__	5
6	Plan 6 - Sync	_2___6__	6
7	Plan 7 - Sync	_2___6__	7
8	Plan 8 - Sync	_2___6__	8
9	Plan 9 - Sync	_____	9
A	NEMA Sync	_____	A
B	NEMA Hold	_____	B
C			C
D			D
E	Coord Extra	_____	E
F			F

Sync Phases <C+0+C=1>

Row											Row
0	Ped Adjustment	0	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____	6
7											7
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____	8
9	Max Recall	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____	B
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	C
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	D
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	E
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	F

Coordination - Bank 2 <C+0+C=2>

Row		F	Row
0	Free Lag	_23__6_8	0
1	Plan 1 - Lag	_23__6_8	1
2	Plan 2 - Lag	_23__6_8	2
3	Plan 3 - Lag	_23__6_8	3
4	Plan 4 - Lag	_23__6_8	4
5	Plan 5 - Lag	_23__6_8	5
6	Plan 6 - Lag	_23__6_8	6
7	Plan 7 - Lag	_23__6_8	7
8	Plan 8 - Lag	_23__6_8	8
9	Plan 9 - Lag	_____	9
A	External Lag	_____	A
B	Lag Hold	_____	B
C			C
D			D
E			E
F			F

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	37	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	37	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	37	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	37	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	37	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	37	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	37	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	37	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Column Numbers ---->		0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123____	0.0	0.0
1		40	___45_7_	_____6__	123____	0.0	0.0
2		41	___45_7_	___4____	123____	0.0	0.0
3		42	___45_7_	_______8	123____	0.0	0.0
4		43	___45_7_	_2_____	123____	0.0	0.0
5		44	___45_7_	_____6__	123____	0.0	0.0
6		45	___45_7_	___4____	123____	0.0	0.0
7		46	___45_7_	_______8	123____	0.0	0.0
8		47	_____67_	_2_____	123____	0.0	0.0
9		48	_____67_	_____6__	123____	0.0	0.0
A		49	_____67_	___4____	123____	0.0	0.0
B		50	_____67_	_______8	123____	0.0	0.0
C		55	___45_7_	____5___	123____	0.0	0.0
D		56	___45_7_	1_____	123____	0.0	0.0
E		57	___45_7_	_____7_	123____	0.0	0.0
F		58	___45_7_	__3____	123____	0.0	0.0

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123____	0.0	0.0
1		60	___45_7_	1_____	123____	0.0	0.0
2		61	___45_7_	_____7_	123____	0.0	0.0
3		62	___45_7_	__3____	123____	0.0	0.0
4		63	___45_7_	_2_____	123____	0.0	0.0
5		64	___45_7_	_____6__	123____	0.0	0.0
6		65	___45_7_	___4____	123____	0.0	0.0
7		66	___45_7_	_______8	123____	0.0	0.0
8		67	_2_____	_2_____	123____	0.0	0.0
9		68	_2_____	_____6__	123____	0.0	0.0
A		69	_2_____	___4____	123____	0.0	0.0
B		70	_2_____	_______8	123____	0.0	0.0
C		76	___45_7_	_2_____	123____	0.0	0.0
D		77	___45_7_	_____6__	123____	0.0	0.0
E		78	___45_7_	___4____	123____	0.0	0.0
F		79	___45_7_	_______8	123____	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	6	A	_234567
5	08 : 00	2	A	1_____7
6	15 : 00	2	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
10 : 00	0	0	_____
10 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>

Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>

Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	**0**	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	**0**	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	**0**	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	**0**
D	Bus Delay	**0**
E	Max Early Grn	**0**
F	Max Grn Ext.	**0**

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	**00 : 00**	**0**	**0**	_____
1	**00 : 00**	**0**	**0**	_____
2	**00 : 00**	**0**	**0**	_____
3	**00 : 00**	**0**	**0**	_____
4	**00 : 00**	**0**	**0**	_____
5	**00 : 00**	**0**	**0**	_____
6	**00 : 00**	**0**	**0**	_____
7	**00 : 00**	**0**	**0**	_____
8	**00 : 00**	**0**	**0**	_____
9	**00 : 00**	**0**	**0**	_____
A	**00 : 00**	**0**	**0**	_____
B	**00 : 00**	**0**	**0**	_____
C	**00 : 00**	**0**	**0**	_____
D	**00 : 00**	**0**	**0**	_____
E	**00 : 00**	**0**	**0**	_____
F	**00 : 00**	**0**	**0**	_____

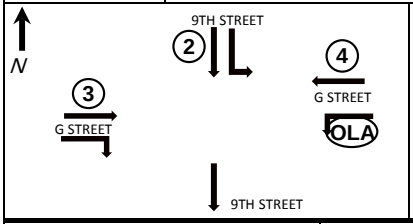
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 08/09/2013	9TH STREET AND G STREET, NW	SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATIONS ADMINISTRATION

ACISA ID	2071	TS-	674-N OPT-1
ISNUM	100	S-	1591-D

C + 0 + F = 1 <F + PHASE + INTVL>		PHASE TIMING BANK PHASE 1	2	3	4	5	6	7	8	PREEMPT TIMING	
INTERVAL										< F/1 + E + row >	
WALK	0		7	7			7		7	EVA DELAY	2
FLASH D/W	1		10	11			14		14	EVA CLEAR	3
MIN. GREEN	2		10	7	7		10		7	EVB DELAY	4
TYPE 3 LIMIT	3									EVB CLEAR	5
ADD/ VEH	4									EVC DELAY	6
VEH EXTENSION	5		1	1	1		1		1	EVC CLEAR	7
MAX GAP	6		1	1	1		1		1	EVD DELAY	8
MIN GAP	7		1	1	1		1		1	EVD CLEAR	9
MAXIMUM	8		90	40	25		90		65	BUS PRIORITY PARAMETERS	
MAXIMUM 2	9									< F/1 + A + row >	
ADVANCE / DELAY WALK	A									BUS HEADWAY	C
PREEMPT PED. CLEARENCE	B									BUS DELAY	D
CONDITIONAL SERVICE MINIMUM	C									MAX EARLY GREEN	E
REDUCE EVERY	D									MAX GREEN EXTN	F
YELLOW	E		4	4	4		4		4	Min Grn Bef PE Forceoff	
RED CLEAR	F		2.5	2.5	2.5		2.5		2.5	MAX PREEMPT TIME	
										Min Time Btwn Same PE	

COORDINATION FUNCTIONS	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X	X			X		X
SYNC PHASES (Check by phases)		X				X		

NOTES:

C+0+C=1; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN FEATURE		1	2	3	4	5	6	7	8	9
CYCLE TIME	0	80	100	80	100	110	110	120	120	
FORCE OFF 1	1									
FORCE OFF 2	2	0	0	0	0	0	0	0	0	
FORCE OFF 3	3	43	50	43	50	49	55	43	45	
FORCE OFF 4	4	18	24	18	24	21	20	18	20	
FORCE OFF 5	5									
FORCE OFF 6	6	0	0	0	0	0	0	0	0	
FORCE OFF 7	7									
FORCE OFF 8	8	43	50	43	50	49	55	43	45	
OFFSET A	A	13	17	4	17	24	3	25	34	
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
MAX RECALL (Phases)										
PERM 1 VEH (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	6	A	234567
EVENT 5	8:00	2	A	1 7
EVENT 6	15:00	2	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

***4P OPERATES WITH DUMMY PHASE 8 TO ALLOW IT TO RUN DURING PHASES 3 & 4.**

***PHASE 6 IS A PEDESTRIAN ONLY PHASE. 6V IS A DUMMY.**

***SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

***VERIZON TOPP TBC TO RUN FROM OCT. TO APRIL.**

C + 0 + E = 29 FUNCTION	OVERLAP CONFIG OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)	4			
NEG V				
NEG P				
GREEN EXTENSION	0			
YELLOW EXTENSION	4			
RED EXTENSION	2.5			

C + 0 + E = 125 E + E + FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125 E + F + FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6						X		
PED 4P	7								X
PED 8P	8			X					
PED #P (C1 REDIRECT)									
PED #P (C1 REDIRECT)									
FLASH YELLOW	9		X						
LOW PRIORITY A	A								
LOW PRIORITY B	B								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1 F + F + FEATURE		PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
PERMIT	0		X	X	X		X		X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X	X			X		X
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X	X	X		X		X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X				X		

C + 0 + F = 2 F + F + FEATURE	PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
GREEN FLASH								
FLASH WALK								
ADVANCED WALK								
DELAYED WALK								

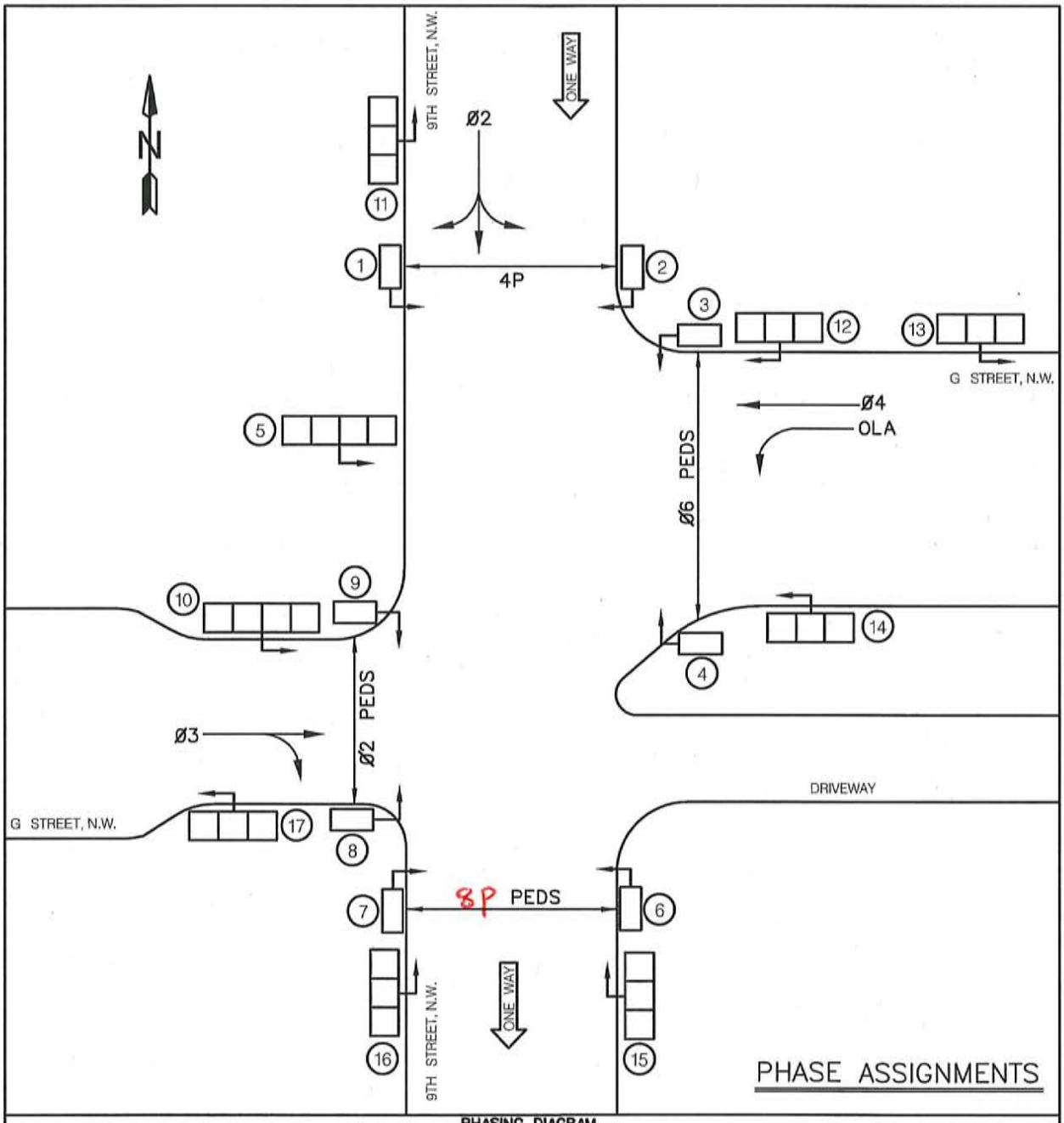
PREPARED BY: **Sabra, Wang & Associates, Inc.**

WORK/SHOP ORDER NO: S-01-15-239

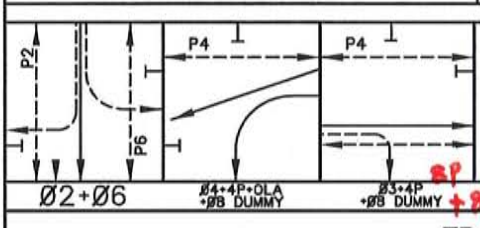
APPROVED BY: Wasim Raja

DATE INSTALLED:

INSTALLED BY:



PHASING DIAGRAM



FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

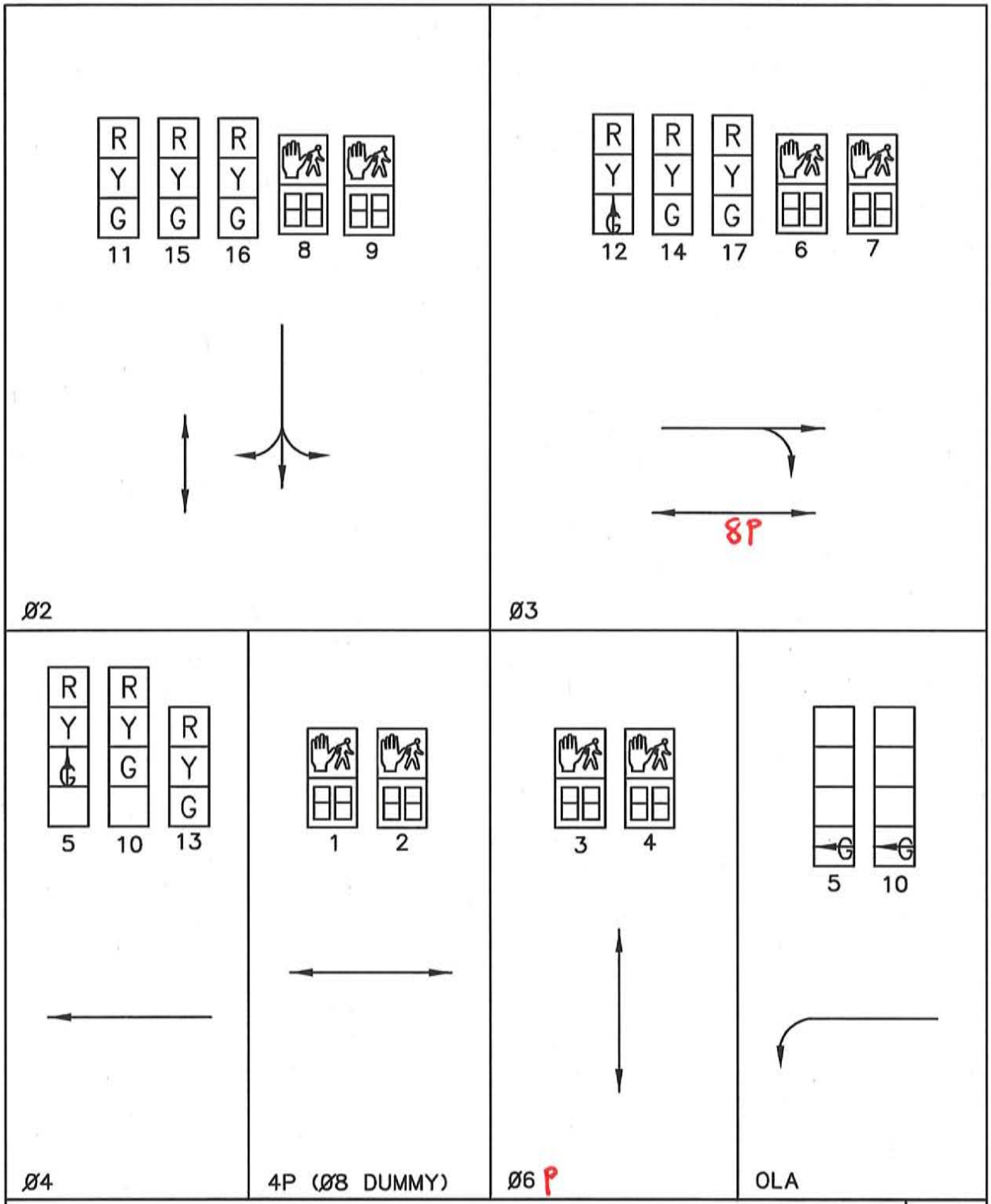
TRAFFIC SIGNAL OPERATION

9TH STREET AND G STREET, N.W.

ACISA 2071

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECKED BY: AYY	DATE: 06/13	DESIGNED BY:	T.S. 674-N OPT-1
DRAWN BY: SG	DATE: 06/13	SUBMITTED BY: PROJECT ENGINEER	SHEET
IN SERVICE:	SCALE: NONE	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	1 OF 4



TRAFFIC SIGNAL OPERATION

9TH STREET AND G STREET, N.W.

ACISA 2071

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECKED BY: AYY	DATE: 06/13	DESIGNED BY:	T.S. 674-N OPT-1
DRAWN BY: SG	DATE: 06/13	SUBMITTED BY: PROJECT ENGINEER	SHEET
IN SERVICE:	SCALE: NONE	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	2 OF 4

PHASE SEQUENCE

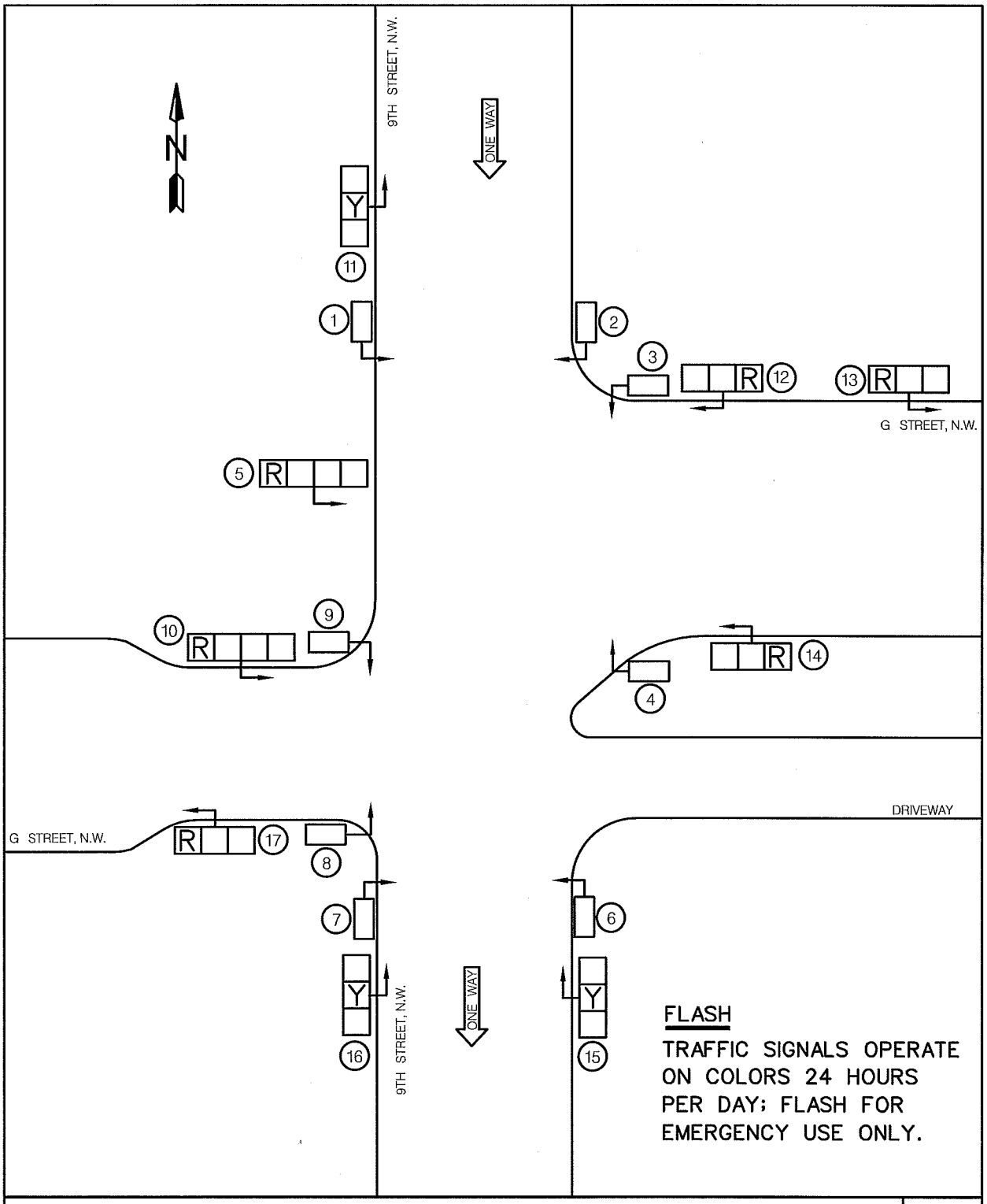
ON RECALL

Ø2V + Ø2P
Ø3V + 8P
Ø4V
4P (Ø8 DUMMY)
Ø6P
OLA

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION 9TH STREET AND G STREET, N.W.		ACISA 2071
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY:	T.S. 674-N OPT-1
CHECKED BY: AYY DATE: 06/13	SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: SG DATE: 06/13	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	
IN SERVICE: SCALE: NONE		3 OF 4



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION

9TH STREET AND G STREET, N.W.

ACISA 2071

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECKED BY: AYY	DATE: 06/13	DESIGNED BY:	T.S. 674-N OPT-1
DRAWN BY: SG	DATE: 06/13	SUBMITTED BY: PROJECT ENGINEER	SHEET
IN SERVICE:	SCALE: NONE	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	4 OF 4

REWIRE

OUTPUT FILE TERMINATION

INTERVAL CONTROLLER

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
05 10 13 (04)	101	5R	08 09 (2P)	113	3DW		125	1R
05 10 13	102	5Y	08 09	114	SF		126	1Y
05 10 13	103	5G	08 09	115	3W		127	1G
01 02 (4P)	104	6DW	(03)	116	4R	11 15 16 (02)	128	2R
01 02	105	SF		117	4Y	11 15 16	129	2Y
01 02	106	6W	05 10 <-	118	4G	11 15 16	130	2G
12 14 17 (MOVE)	107	11R	03 04	119	9DW		131	7R
12 14 17	108	11Y	03 04 (6P)	120	SF		132	7Y
12 14 17	109	11G	03 04	121	9W		133	7G
06 07	110	12DW		122	10R		134	8R
06 07 (3P)	111	SF	(04A)	123	10Y		135	8Y
06 07	112	12W		124	10G		136	8G

MOVE

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

NOTE: RL IS FOR RED LIGHT CAMERA SENSING CIRCUIT, ONLY RED AND AMBER ARE USED
REMOVE RL CONNECTIONS FOR TROUBLESHOOTING OR IF CIRCUIT IS FOUND TO CAUSE FLASH
CONTACT CONTROL CENTER IF RL CIRCUIT IS REMOVED TO RETURN TO COLORS

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-239**
ACISA NO: **2071**	INSUM NO: 100	S- DRAWING NO: 1591
TS NO: **674-N OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

9TH STREET AND G STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.10A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

d. - DC DEPARTMENT OF TRANSPORTATION, TRAFFIC SERVICES ADMINISTRATION 11/20/13

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 101 LOCATION:9TH ST AND H ST, NW REV: 11 PAGE 1 OF 4

TS # 822-F AREA COMPUTER 2 ACISA 72 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	R	W		R	W
LS7	**LS8**	**LS9**	**LS10**	**LS11**	**LS12**
				R	W

R = RED Y = YELLOW W = WHITE

*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06I

COMM CHANNEL 14 COMM SWITCH 6

PAIR IN 1

PAIR OUT 2

VOICE COMM PAIR 12

MODEM 228

2.NOTES: REV 10: INSTALL NEW TIMING PLAN AND TS OPERATION (822-E)
REV 11: INSTALL 233 PROGRAM (MC1) AND OPERATION

DOCUMENT PREPARED BY: JOSE R. WOOD 11/20/13

REVIEWED BY: Ray Robinson 11/20/13

DATABASE REVISED BY: Jose R. Wood 11/21/13

FIELD REVISION INSTALLED BY: _____ _____

SHOP ORDER NUMBER: S-11-13-41

PHASE CONTROLLER OUTPUT FILE TERMINATION

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
01 02 2A	101	Ø4R	08 09 12 13	113	Ø2DW		125	Ø1R
01 02 2A	102	Ø4Y		114	SF		126	Ø1Y
01 02 2A	103	Ø4G	08 09 12 13	115	Ø2W		127	Ø1G
10 11	104	Ø4DW		116	Ø3R	03 04 4A	128	Ø2R
	105	SF		117	Ø3Y	03 04 4A	129	Ø2Y
10 11	106	Ø4W		118	Ø3G	03 04 4A	130	Ø2G
05 06 6A	107	Ø8R		119	Ø6DW		131	Ø5R
05 06 6A	108	Ø8Y		120	SF		132	Ø5Y
05 06 6A	109	Ø8G		121	Ø6W		133	Ø5G
07 14	110	Ø8DW		122	Ø7R		134	Ø6R
	111	SF		123	Ø7Y		135	Ø6Y
07 14	112	Ø8W		124	Ø7G		136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

218 PROGRAM CARD

8- 9	7- 8	6- 7	(5- 6)	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	4- 6	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	6-10	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	(6-11)	5-10	4- 9	3- 8	2- 7	1- 6
8-14	7-13	(6-12)	(5-11)	4-10	3- 9	2- 8	1- 7
8-15	7-14	6-13	(5-12)	4-11	3-10	2- 9	1- 8
8-16	7-15	6-14	5-13	4-12	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
9-14	10-15	11-16	12-17	13-18	3-18	2-17	1-16
9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	(11-12)	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

9	8	7	X	5	4	X	2	1
18	17	16	15	14	13	XX	11	10

PROGRAMMED BY: P. HOGAN DATE: 06/11/87

P H A S E C O N T R O L L E R I N P U T F I L E T E R M I N A T I O N

F R O N T V I E W

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

B A C K V I E W

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D 14-E	13-D 13-E	12-D 12-E	11-D 11-E	10-D 10-E	9-D 9-E	8-D 8-E	7-D 7-E	6-D 6-E	5-D 5-E	4-D 4-E	3-D 3-E	2-D 2-E	1-D 1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J 14-K	13-J 13-K	12-J 12-K	11-J 11-K	10-J 10-K	9-J 9-K	8-J 8-K	7-J 7-K	6-J 6-K	5-J 5-K	4-J 4-K	3-J 3-K	2-J 2-K	1-J 1-K
LOOP NUMBER														

D E T E C T O R A S S I G N M E N T S

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/
FILE I__/
SLOT 8__/
LOWER L
UPPER U

INTERSECTION: 2072-9TH ST & H ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **325**

N/S Street Name: **9TH ST**
E/W Street Name: **H ST**

Last Database Change: **4/15/2015 14:49**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	6	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	72	<C/0+0+3>
QuicNet Channel	P:8026:172.16.2	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	7	0	7	0	0	0	7
1	Ped FDW	0	12	0	11	0	0	0	10
2	Min Green	0	10	0	7	0	0	0	7
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
6	Max Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
7	Min Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
8	Max Limit	0	65	0	80	0	0	0	80
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	3	0	3	0	0	0	3
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	4.0	0.0	4.0	0.0	0.0	0.0	4.0
F	Red Clear	0.0	1.5	0.0	2.0	0.0	0.0	0.0	2.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_2_4___8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_2_4___8
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_2_4___8
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2_____

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ----->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
2	Veh Set 2 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
3	Veh Set 3 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
4	Neg Veh Phases	_____	_____	_____	_____	_____	_____	_____	_____
5	Neg Ped Phases	_____	_____	_____	_____	_____	_____	_____	_____
6	Green Omit Phases	_____	_____	_____	_____	_____	_____	_____	_____
7	Green Clear Omit Phs.	_____	_____	_____	_____	_____	_____	_____	_____
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase	_____	_____	_____	_____	_____	_____	_____	_____
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7
		8
		9
		A
		B
		C
		D
		E
		F

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Flash to PE Circuits	_____
6	Flash Entry Phases	_____
7	Disable Yellow Range	_____
8	Disable Ovp Yel Range	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_____
B	EV-B Phases	_____
C	EV-C Phases	_____
D	EV-D Phases	_____
E	Extra 1 Config. Bits	1_3_5___
F	IC Select (Interconnect)	_2_____

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	_____
Ext. Permit 2 Phases	_____
Exclusive Ped Assign	_____
Preempt Non-Lock	_____
Ped for 2P Output	_2_____
Ped for 6P Output	_____
Ped for 4P Output	___4____
Ped for 8P Output	_____8
Yellow Flash Phases	_____
Low Priority A Phases	_____
Low Priority B Phases	_____
Low Priority C Phases	_____
Low Priority D Phases	_____
Restricted Phases	_____
Extra 2 Config. Bits	___4____

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	_____
Green Flash Phases	_____
Flashing Walk Phases	_____
Guaranteed Passage	_____
Simultaneous Gap Term	_____
Sequential Timing	_____
Advance Walk Phases	_2_4___8
Delay Walk Phases	_____
External Recall	_____
Start-up Overlap Green	_____
Max Extension	_____
Inhibit Ped Reservice	_____
Semi-Actuated	_____
Start-up Overlap Yellow	_____
Start-up Vehicle Calls	_2_4___8
Start-up Ped Calls	_2_4___8

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	0	1
Phase 2	0	2
Phase 3	0	3
Phase 4	0	4
Phase 5	0	5
Phase 6	0	6
Phase 7	0	7
Phase 8	0	8
		9
		A
		B
		C
		D
		E
		F

Coordination Transition Minimums
<C+0+C=5>

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9	Row
	Plan Name ----->										
0	Cycle Length	80	100	80	100	110	110	120	120	0	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0	1
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0	2
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0	3
4	Phase 4 - ForceOff	38	44	43	44	53	64	66	65	0	4
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0	5
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0	6
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0	7
8	Phase 8 - ForceOff	38	44	43	44	53	64	66	65	0	8
9	Ring Offset	0	0	0	0	0	0	0	0	0	9
A	Offset 1	79	7	62	7	5	95	108	0	0	A
B	Offset 2	0	0	0	0	0	0	0	0	0	B
C	Offset 3	0	0	0	0	0	0	0	0	0	C
D	Perm 1 - End	7	7	7	7	7	7	7	7	0	D
E	Hold Release	255	255	255	255	255	255	255	255	0	E
F	Reserved	0	0	0	0	0	0	0	0	0	F

Coordination - Bank 1 <C+0+C=1>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

	E	Row
		0
Plan 1 - Sync	_2_____	1
Plan 2 - Sync	_2_____	2
Plan 3 - Sync	_2_____	3
Plan 4 - Sync	_2_____	4
Plan 5 - Sync	_2_____	5
Plan 6 - Sync	_2_____	6
Plan 7 - Sync	_2_____	7
Plan 8 - Sync	_2_____	8
Plan 9 - Sync	_2_____	9
NEMA Sync	_____	A
NEMA Hold	_____	B
		C
		D
Coord Extra	_____	E
		F

Sync Phases <C+0+C=1>

Row											Row
0	Ped Adjustment	0	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0	1
2	Perm 2 - End	0	0	0	0	0	0	0	0	0	2
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0	3
4	Perm 3 - End	0	0	0	0	0	0	0	0	0	4
5	Reservice Time	0	0	0	0	0	0	0	0	0	5
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____	6
7											7
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	8
9	Max Recall	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	A
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	B
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	C
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	D
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	E
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____	F

Coordination - Bank 2 <C+0+C=2>

	F	Row
Free Lag	_2_4___8	0
Plan 1 - Lag	_2_4___8	1
Plan 2 - Lag	_2_4___8	2
Plan 3 - Lag	_2_4___8	3
Plan 4 - Lag	_2_4___8	4
Plan 5 - Lag	_2_4___8	5
Plan 6 - Lag	_2_4___8	6
Plan 7 - Lag	_2_4___8	7
Plan 8 - Lag	_2_4___8	8
Plan 9 - Lag	_2_4___8	9
External Lag	_____	A
Lag Hold	_____	B
		C
		D
		E
		F

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	37	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	37	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	37	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	37	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	37	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	37	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	37	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	37	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Column Numbers ---->		0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123____	0.0	0.0
1		40	___45_7_	_____6__	123____	0.0	0.0
2		41	___45_7_	___4____	123____	0.0	0.0
3		42	___45_7_	_______8	123____	0.0	0.0
4		43	___45_7_	_2_____	123____	0.0	0.0
5		44	___45_7_	_____6__	123____	0.0	0.0
6		45	___45_7_	___4____	123____	0.0	0.0
7		46	___45_7_	_______8	123____	0.0	0.0
8		47	_____67_	_2_____	123____	0.0	0.0
9		48	_____67_	_____6__	123____	0.0	0.0
A		49	_____67_	___4____	123____	0.0	0.0
B		50	_____67_	_______8	123____	0.0	0.0
C		55	___45_7_	____5___	123____	0.0	0.0
D		56	___45_7_	1_____	123____	0.0	0.0
E		57	___45_7_	_____7_	123____	0.0	0.0
F		58	___45_7_	__3____	123____	0.0	0.0

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123____	0.0	0.0
1		60	___45_7_	1_____	123____	0.0	0.0
2		61	___45_7_	_____7_	123____	0.0	0.0
3		62	___45_7_	__3____	123____	0.0	0.0
4		63	___45_7_	_2_____	123____	0.0	0.0
5		64	___45_7_	_____6__	123____	0.0	0.0
6		65	___45_7_	___4____	123____	0.0	0.0
7		66	___45_7_	_______8	123____	0.0	0.0
8		67	_2_____	_2_____	123____	0.0	0.0
9		68	_2_____	_____6__	123____	0.0	0.0
A		69	_2_____	___4____	123____	0.0	0.0
B		70	_2_____	_______8	123____	0.0	0.0
C		76	___45_7_	_2_____	123____	0.0	0.0
D		77	___45_7_	_____6__	123____	0.0	0.0
E		78	___45_7_	___4____	123____	0.0	0.0
F		79	___45_7_	_______8	123____	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	6	A	_234567
5	08 : 00	2	A	1_____7
6	15 : 00	2	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
10 : 00	0	0	_____
10 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>
Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>
Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	**0**	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	**0**	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	**0**	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	**0**
D	Bus Delay	**0**
E	Max Early Grn	**0**
F	Max Grn Ext.	**0**

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	**00 : 00**	**0**	**0**	_____
1	**00 : 00**	**0**	**0**	_____
2	**00 : 00**	**0**	**0**	_____
3	**00 : 00**	**0**	**0**	_____
4	**00 : 00**	**0**	**0**	_____
5	**00 : 00**	**0**	**0**	_____
6	**00 : 00**	**0**	**0**	_____
7	**00 : 00**	**0**	**0**	_____
8	**00 : 00**	**0**	**0**	_____
9	**00 : 00**	**0**	**0**	_____
A	**00 : 00**	**0**	**0**	_____
B	**00 : 00**	**0**	**0**	_____
C	**00 : 00**	**0**	**0**	_____
D	**00 : 00**	**0**	**0**	_____
E	**00 : 00**	**0**	**0**	_____
F	**00 : 00**	**0**	**0**	_____

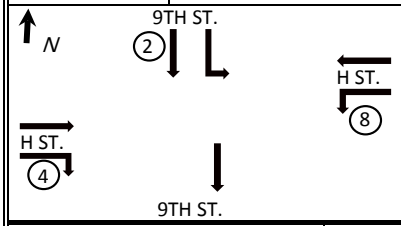
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 08/09/2013	9TH STREET AND H STREET, N.W.	SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATIONS ADMINISTRATION

ACISA ID	2072	TS-	822-F OPT-1
ISNUM	101	S-	1446-B

C + 0 + F = 1 <F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0		7		7				7
FLASH D/W	1		12		11				10
MIN. GREEN	2		10		7				7
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENTION	5		1		1				1
MAX GAP	6		1		1				1
MIN GAP	7		1		1				1
MAXIMUM	8		65		80				80
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A		3		3				3
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				4
RED CLEAR	F		1.5		2				2

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS HEADWAY	C	
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				X
SYNC PHASES (Check by phases)		X						

NOTES:

C+0+C=1; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8	9
CYCLE TIME	0	80	100	80	100	110	110	120	120	
FORCE OFF 1	1									
FORCE OFF 2	2	0	0	0	0	0	0	0	0	
FORCE OFF 3	3									
FORCE OFF 4	4	38	44	43	44	53	64	66	65	
FORCE OFF 5	5									
FORCE OFF 6	6									
FORCE OFF 7	7									
FORCE OFF 8	8	38	44	43	44	53	64	66	65	
OFFSET A	A	79	7	62	7	5	95	108	0	
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
MAX RECALL (Phases)										
PERM 1 VEH (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	6	A	234567
EVENT 5	8:00	2	A	1 7
EVENT 6	15:00	2	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

*** PHASES 2, 4 AND 8 LPI.**

*** SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

***VERIZON TOPP TBC TO RUN FROM OCT. TO APRIL.**

C + 0 + E = 29 — OVERLAP CONFIG

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125 E + E + FEATURE — CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125 E + F + FEATURE — CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6								
PED 4P	7				X				
PED 8P	8								X
PED #P (C1 REDIRECT)									
PED #P (C1 REDIRECT)									
FLASH YELLOW	9								
LOW PRIORITY A	A								
LOW PRIORITY B	B								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1 F + F + FEATURE — PHASE FUNCTIONS PHASE

FEATURE		1	2	3	4	5	6	7	8
PERMIT	0		X		X				X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X				X
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

C + 0 + F = 2 F + F + FEATURE — PHASE FUNCTIONS PHASE

FEATURE	1	2	3	4	5	6	7	8
GREEN FLASH								
FLASH WALK								
ADVANCED WALK		X		X				X
DELAYED WALK								

PREPARED BY: **Sabra, Wang & Associates, Inc.**

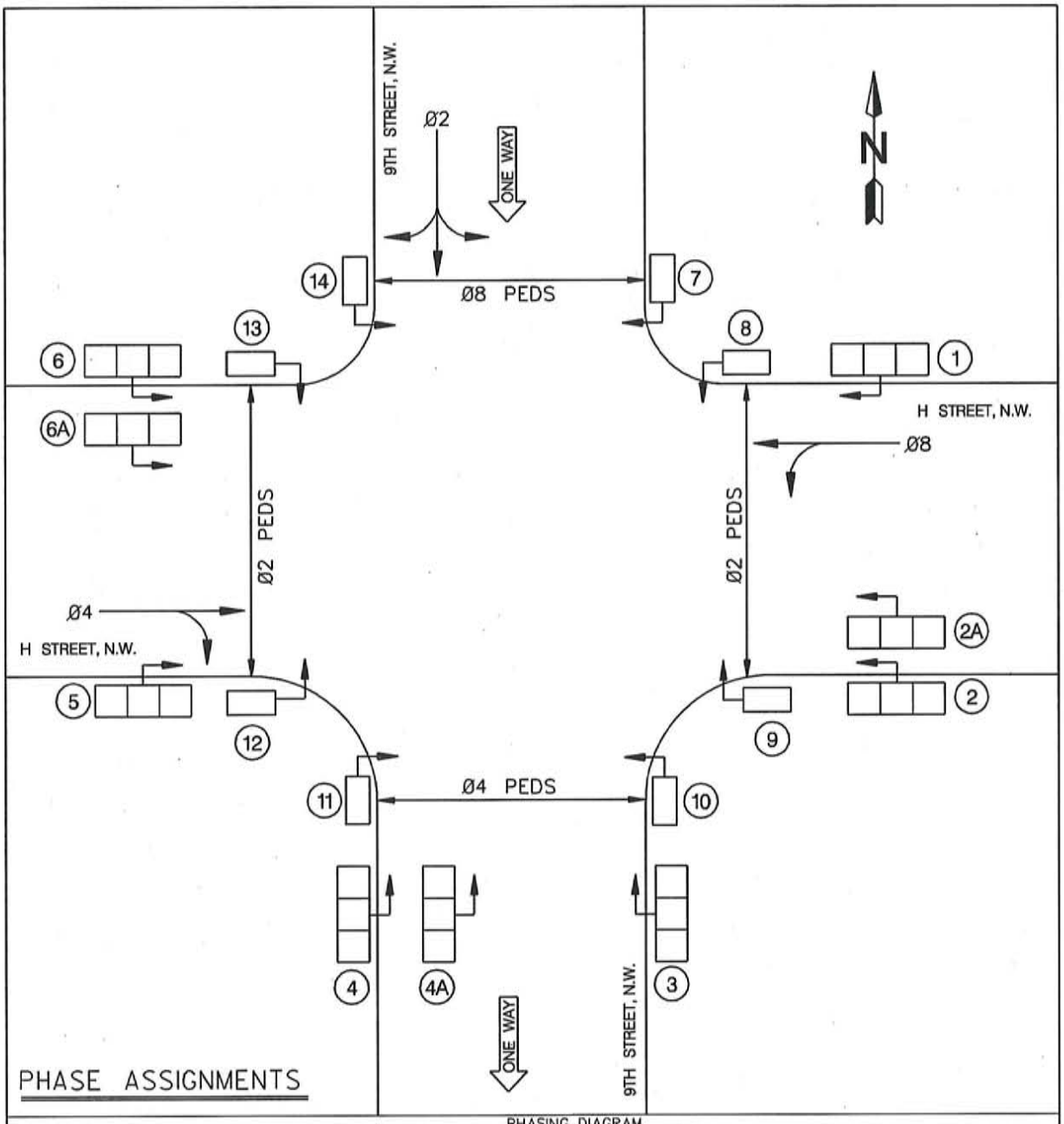
WORK/SHOP ORDER NO: S-01-15-240

APPROVED BY: Warren Raja

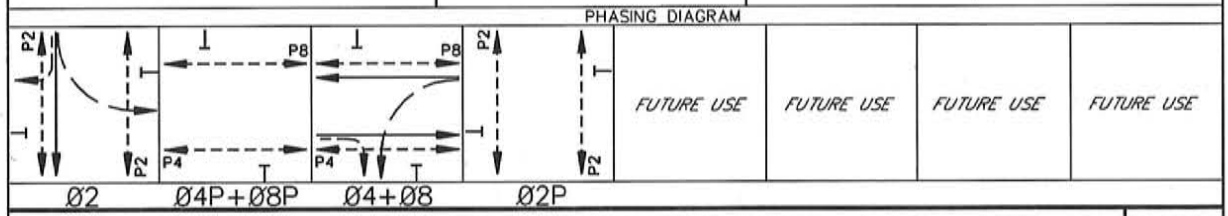
DATE INSTALLED:

INSTALLED BY:

TRAFFIC SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8-FOOT LONG MAST ARMS.



PHASING DIAGRAM



TRAFFIC SIGNAL OPERATION

9TH STREET AND H STREET, N.W.

ACISA 2072

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECKED BY:	AYY	DATE:	06/13
DRAWN BY:	SG/SH	DATE:	06/13
IN SERVICE:		SCALE:	NONE

DESIGNED BY: _____

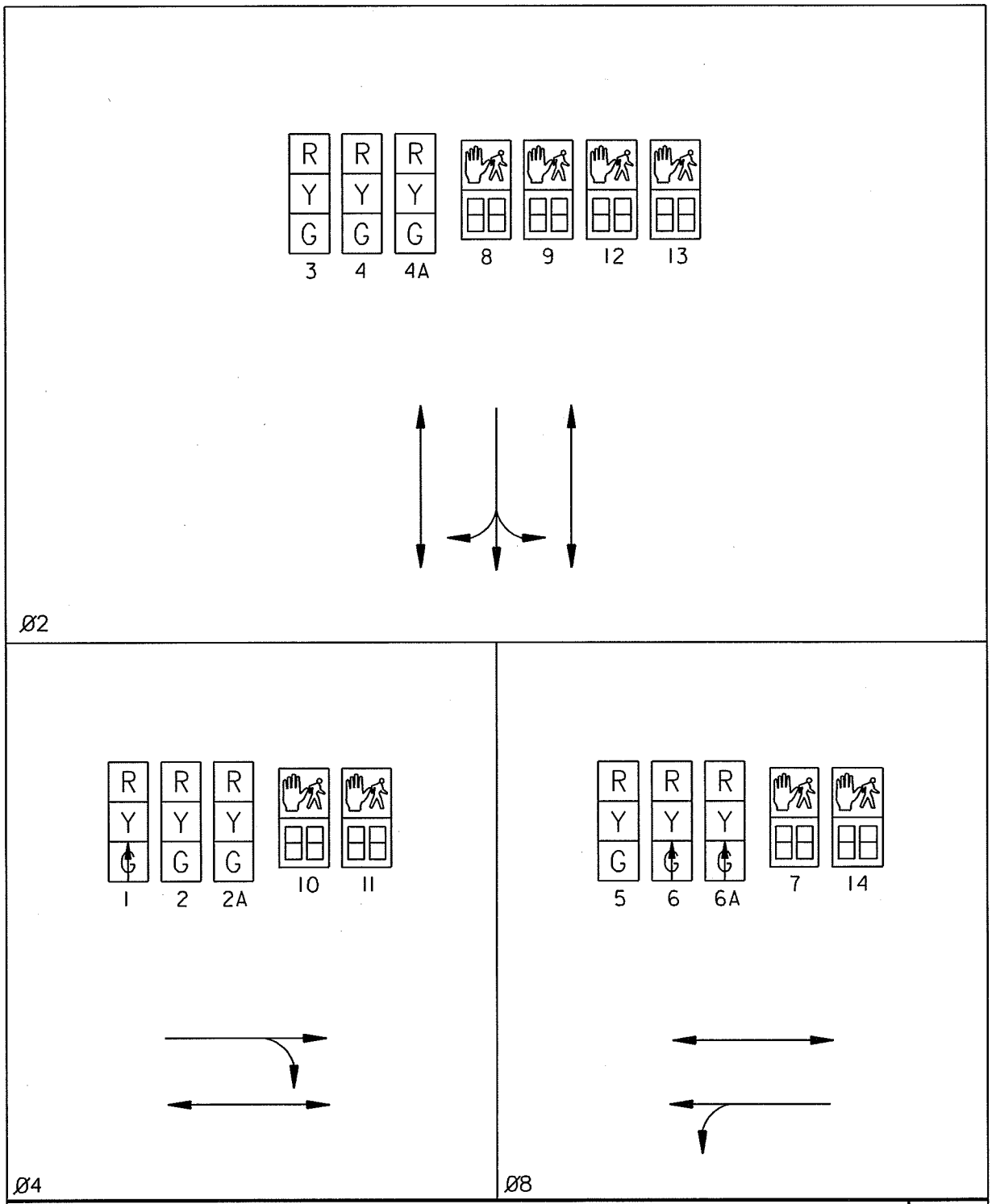
SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 822-F OPT-1

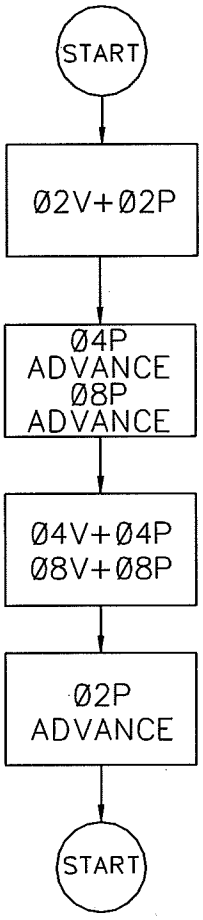
SHEET 1 OF 4

TRAFFIC SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8-FOOT LONG MAST ARMS.



TRAFFIC SIGNAL OPERATION 9TH STREET AND H STREET, N.W.			ACISA 2072
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY:		T.S. 822-F OPT-1
CHECKED BY: AYY DATE: 06/13	SUBMITTED BY: PROJECT ENGINEER		SHEET
DRAWN BY: SG/SH DATE: 06/13	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS		
IN SERVICE: SCALE: NONE			2 OF 4

TRAFFIC SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8-FOOT LONG MAST ARMS.



PHASE SEQUENCE

ON RECALL

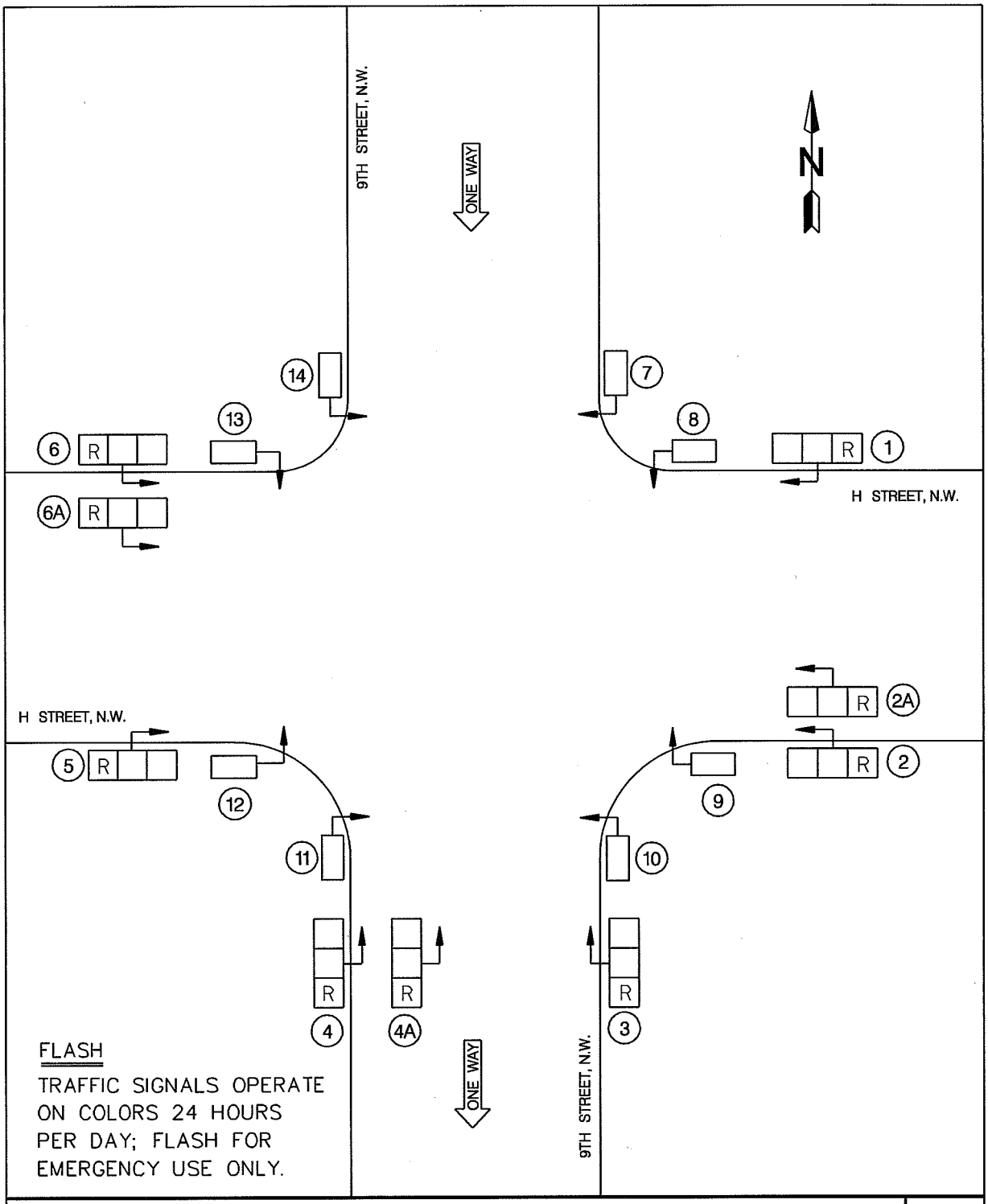
Ø2V + Ø2P
Ø4V + Ø4P
Ø8V + Ø8P

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION **9TH STREET AND H STREET, N.W.**		ACISA 2072
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS	T.S. 822-F OPT-1
CHECKED BY: AYY DATE: 06/13 DRAWN BY: SG/SH DATE: 06/13 IN SERVICE: SCALE: NONE		SHEET 3 OF 4

TRAFFIC SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8-FOOT LONG MAST ARMS.



TRAFFIC SIGNAL OPERATION

9TH STREET AND H STREET, N.W.

ACISA 2072

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECKED BY: AYY		DATE: 06/13	
DRAWN BY: SG/SH		DATE: 06/13	
IN SERVICE:		SCALE: NONE	

DESIGNED BY: _____

SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 822-F OPT-1

SHEET 4 OF 4

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-240**
ACISA NO: **2072**	INSUM NO: 101	S- DRAWING NO: 1446
TS NO: **822-F OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

9TH STREET AND H STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.11A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 118 LOCATION:10TH ST AND F ST, NW REV: 09 PAGE 1 OF 4

TS # 264-H AREA COMPUTER 2 ACISA 88 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	R	W		R	

LS7	LS8	LS9	LS10	LS11	LS12
				R	W

R = RED Y = YELLOW W = WHITE

*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06G

COMM CHANNEL 12 COMM SWITCH 1
PAIR IN 1
PAIR OUT 2
VOICE COMM PAIR 12
MODEM 226

2.NOTES: REV 08: INSTALL NEW TIMING OPERATION TS-264-G, (Q-3445-B) FINAL PHASE
REV 09: INSTALL 233 PROGRAM (MC1) AND OPERATION

DOCUMENT PREPARED BY: JOSE R. WOOD 05/14/13

REVIEWED BY: Kay Robinson 5/14/13

DATABASE REVISED BY: Jose R. Wood 5/16/13

FIELD REVISION INSTALLED BY: _____ _____

SHOP ORDER NUMBER: S-05-13-28

PHASE CONTROLLER OUTPUT FILE TERMINATION

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
01 02 2A	101	Ø4R	09 10 13 14	113	Ø2DW		125	Ø1R
01 02 2A	102	Ø4Y		114	SF		126	Ø1Y
01 02 2A	103	Ø4G	09 10 13 14	115	Ø2W		127	Ø1G
	104	Ø4DW		116	Ø3R	03 04 4A	128	Ø2R
	105	SF		117	Ø3Y	03 04 4A	129	Ø2Y
	106	Ø4W		118	Ø3G	03 04 4A	130	Ø2G
05 06 6A	107	Ø8R		119	Ø6DW		131	Ø5R
05 06 6A	108	Ø8Y		120	SF		132	Ø5Y
05 06 6A	109	Ø8G		121	Ø6W		133	Ø5G
07 08 11 12	110	Ø8DW		122	Ø7R		134	Ø6R
	111	SF		123	Ø7Y		135	Ø6Y
07 08 11 12	112	Ø8W		124	Ø7G		136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

2 1 8 P R O G R A M C A R D

8- 9	7- 8	6- 7	5- 6	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	4- 6	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	6-10	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	6-11	5-10	4- 9	3- 8	2- 7	1- 6
8-14	7-13	6-12	(5-11)	4-10	3- 9	2- 8	1- 7
8-15	7-14	6-13	(5-12)	4-11	3-10	2- 9	1- 8
8-16	7-15	6-14	5-13	4-12	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
9-14	10-15	11-16	12-17	13-18	3-18	2-17	1-16
9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	(11-12)	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

9	8	7	6	5	4	X	2	1
18	17	16	15	14	13	XX	11	10

PROGRAMMED BY: _____ DATE: / /

PHASE CONTROLLER INPUT FILE TERMINATION

FRONT VIEW

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

BACK VIEW

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D 14-E	13-D 13-E	12-D 12-E	11-D 11-E	10-D 10-E	9-D 9-E	8-D 8-E	7-D 7-E	6-D 6-E	5-D 5-E	4-D 4-E	3-D 3-E	2-D 2-E	1-D 1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J 14-K	13-J 13-K	12-J 12-K	11-J 11-K	10-J 10-K	9-J 9-K	8-J 8-K	7-J 7-K	6-J 6-K	5-J 5-K	4-J 4-K	3-J 3-K	2-J 2-K	1-J 1-K
LOOP NUMBER														

DETECTOR ASSIGNMENTS

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/

FILE I___/

SLOT 8__/

LOWER L
UPPER U

INTERSECTION: 2088-10TH ST & F ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **341**

N/S Street Name: **10TH ST**
E/W Street Name: **F ST**

Last Database Change: **4/25/2015 4:39**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	1	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	88	<C/0+0+3>
QuicNet Channel	P:8023:172.16.1.	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	10	0	0	0	0	0	10
1	Ped FDW	0	13	0	0	0	0	0	9
2	Min Green	0	10	0	7	0	0	0	7
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
6	Max Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
7	Min Gap	0.0	1.0	0.0	1.0	0.0	0.0	0.0	1.0
8	Max Limit	0	95	0	70	0	0	0	70
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	4.0	0.0	4.0	0.0	0.0	0.0	4.0
F	Red Clear	0.0	2.0	0.0	1.5	0.0	0.0	0.0	1.5

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_2_4___8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_2_____8
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_2_4___8
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2_____

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ----->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
2	Veh Set 2 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
3	Veh Set 3 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
4	Neg Veh Phases	_____	_____	_____	_____	_____	_____	_____	_____
5	Neg Ped Phases	_____	_____	_____	_____	_____	_____	_____	_____
6	Green Omit Phases	_____	_____	_____	_____	_____	_____	_____	_____
7	Green Clear Omit Phs.	_____	_____	_____	_____	_____	_____	_____	_____
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase	_____	_____	_____	_____	_____	_____	_____	_____
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Flash to PE Circuits	_____
6	Flash Entry Phases	_____
7	Disable Yellow Range	_____
8	Disable Ovp Yel Range	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_____
B	EV-B Phases	_____
C	EV-C Phases	_____
D	EV-D Phases	_____
E	Extra 1 Config. Bits	1_3_5___
F	IC Select (Interconnect)	_2_____

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	_____
Ext. Permit 2 Phases	_____
Exclusive Ped Assign	_____
Preempt Non-Lock	_____
Ped for 2P Output	_2_____
Ped for 6P Output	_____
Ped for 4P Output	_____
Ped for 8P Output	_____8
Yellow Flash Phases	_____
Low Priority A Phases	_____
Low Priority B Phases	_____
Low Priority C Phases	_____
Low Priority D Phases	_____
Restricted Phases	_____
Extra 2 Config. Bits	___4____

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	_____
Green Flash Phases	_____
Flashing Walk Phases	_____
Guaranteed Passage	_____
Simultaneous Gap Term	_____
Sequential Timing	_____
Advance Walk Phases	_____
Delay Walk Phases	_____
External Recall	_____
Start-up Overlap Green	_____
Max Extension	_____
Inhibit Ped Reservice	_____
Semi-Actuated	_____
Start-up Overlap Yellow	_____
Start-up Vehicle Calls	_2_4___8
Start-up Ped Calls	_2_____8

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	0	1
Phase 2	0	2
Phase 3	0	3
Phase 4	0	4
Phase 5	0	5
Phase 6	0	6
Phase 7	0	7
Phase 8	0	8

Coordination Transition Minimums
<C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9
	Plan Name ----->									
0	Cycle Length	80	100	80	100	110	110	120	120	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	32	52	35	52	55	61	42	48	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	32	52	35	52	55	61	42	48	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	29	36	32	36	16	39	25	31	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	7	7	7	7	7	7	7	7	0
E	Hold Release	255	255	255	255	255	255	255	255	0
F	Reserved	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row		E
0		
1	Plan 1 - Sync	_2_____
2	Plan 2 - Sync	_2_____
3	Plan 3 - Sync	_2_____
4	Plan 4 - Sync	_2_____
5	Plan 5 - Sync	_2_____
6	Plan 6 - Sync	_2_____
7	Plan 7 - Sync	_2_____
8	Plan 8 - Sync	_2_____
9	Plan 9 - Sync	_2_____
A	NEMA Sync	_____
B	NEMA Hold	_____
C		
D		
E	Coord Extra	_____
F		

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____
7										
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
9	Max Recall	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_2_4___8	_____
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____

Coordination - Bank 2 <C+0+C=2>

Row		F
0	Free Lag	_2_4___8
1	Plan 1 - Lag	_2_4___8
2	Plan 2 - Lag	_2_4___8
3	Plan 3 - Lag	_2_4___8
4	Plan 4 - Lag	_2_4___8
5	Plan 5 - Lag	_2_4___8
6	Plan 6 - Lag	_2_4___8
7	Plan 7 - Lag	_2_4___8
8	Plan 8 - Lag	_2_4___8
9	Plan 9 - Lag	_2_4___8
A	External Lag	_____
B	Lag Hold	_____
C		
D		
E		
F		

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	36	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	36	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	36	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	36	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	36	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	36	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	36	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	36	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.0	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Row	Detector Name	C1 Pin Number (0)	Attributes (1)	Phase(s) (2)	Assign (3)	Delay (1)	Carry-over (3)
0		39	___45_7_	_2_____	123____	0.0	0.0
1		40	___45_7_	_____6__	123____	0.0	0.0
2		41	___45_7_	___4____	123____	0.0	0.0
3		42	___45_7_	_______8	123____	0.0	0.0
4		43	___45_7_	_2_____	123____	0.0	0.0
5		44	___45_7_	_____6__	123____	0.0	0.0
6		45	___45_7_	___4____	123____	0.0	0.0
7		46	___45_7_	_______8	123____	0.0	0.0
8		47	_____67_	_2_____	123____	0.0	0.0
9		48	_____67_	_____6__	123____	0.0	0.0
A		49	_____67_	___4____	123____	0.0	0.0
B		50	_____67_	_______8	123____	0.0	0.0
C		55	___45_7_	____5___	123____	0.0	0.0
D		56	___45_7_	1_____	123____	0.0	0.0
E		57	___45_7_	_____7_	123____	0.0	0.0
F		58	___45_7_	__3____	123____	0.0	0.0

Row	Detector Name	C1 Pin Number (4)	Attributes (5)	Phase(s) (6)	Assign (7)	Delay (2)	Carry-over (4)
0		59	___45_7_	____5___	123____	0.0	0.0
1		60	___45_7_	1_____	123____	0.0	0.0
2		61	___45_7_	_____7_	123____	0.0	0.0
3		62	___45_7_	__3____	123____	0.0	0.0
4		63	___45_7_	_2_____	123____	0.0	0.0
5		64	___45_7_	_____6__	123____	0.0	0.0
6		65	___45_7_	___4____	123____	0.0	0.0
7		66	___45_7_	_______8	123____	0.0	0.0
8		67	_2_____	_2_____	123____	0.0	0.0
9		68	_2_____	_____6__	123____	0.0	0.0
A		69	_2_____	___4____	123____	0.0	0.0
B		70	_2_____	_______8	123____	0.0	0.0
C		76	___45_7_	_2_____	123____	0.0	0.0
D		77	___45_7_	_____6__	123____	0.0	0.0
E		78	___45_7_	___4____	123____	0.0	0.0
F		79	___45_7_	_______8	123____	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

Column Numbers ---->	Ped / Phase / Overlap 1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	4	A	_23456_
5	08 : 00	2	A	1_____7
6	18 : 00	1	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
10 : 00	0	0	_____
10 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>

Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>

Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	0	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	0	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	0	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	0
D	Bus Delay	0
E	Max Early Grn	0
F	Max Grn Ext.	0

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

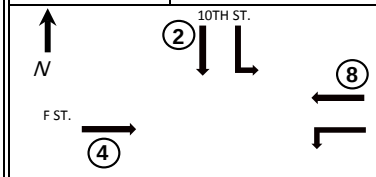
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 06/19/2012	10TH STREET AND F STREET, N.W.	SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATION ADMINISTRATION

ACISA ID	2088	TS-	264-H OPT-1
ISNUM	118	S-	1553-F

C + 0 + F = 1
<F + PHASE + INTVL>

		PHASE TIMING BANK – PHASE 1	2	3	4	5	6	7	8
INTERVAL									
WALK	0		10						10
FLASH D/W	1		13						9
MIN. GREEN	2		10		7				7
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1				1
MAX GAP	6		1		1				1
MIN GAP	7		1		1				1
MAXIMUM	8		95		70				70
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A								
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				4
RED CLEAR	F		2		1.5				1.5

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				X
SYNC PHASES (Check by phases)		X						

NOTES:

C+0+C=I ; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8
CYCLE TIME	0	80	100	80	100	110	110	120	120
FORCE OFF 1	1								
FORCE OFF 2	2	0	0	0	0	0	0	0	0
FORCE OFF 3	3								
FORCE OFF 4	4	32	52	35	52	55	61	42	48
FORCE OFF 5	5								
FORCE OFF 6	6								
FORCE OFF 7	7								
FORCE OFF 8	8	32	52	35	52	55	61	42	48
OFFSET A	A	29	36	32	36	16	39	25	31
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7
PRETIMED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
MAX RECALL (PHASES)									
PERM 1 VEH (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
PERM 1 PED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

*** SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

C + 0 + E = 29

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125
E + E + FEATURE

FEATURE		1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125
E + F + FEATURE

FEATURE		1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6								
PED 4P	7								
PED 8P	8								X
FLASH YELLOW	9								
LOW PRIORITY A	A								
LOW PRIORITY B	B								
LOW PRIORITY C	C								
LOW PRIORITY D	D								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

FEATURE		1	2	3	4	5	6	7	8
PERMIT	0		X		X				X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X						X
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

C + 0 + F = 2
F + F + FEATURE

FEATURE	1	2	3	4	5	6	7	8
GREEN FLASH								
FLASH WALK								
ADVANCED WALK								
DELAYED WALK								

PREPARED BY: **Sabra, Wang & Associates, Inc.**

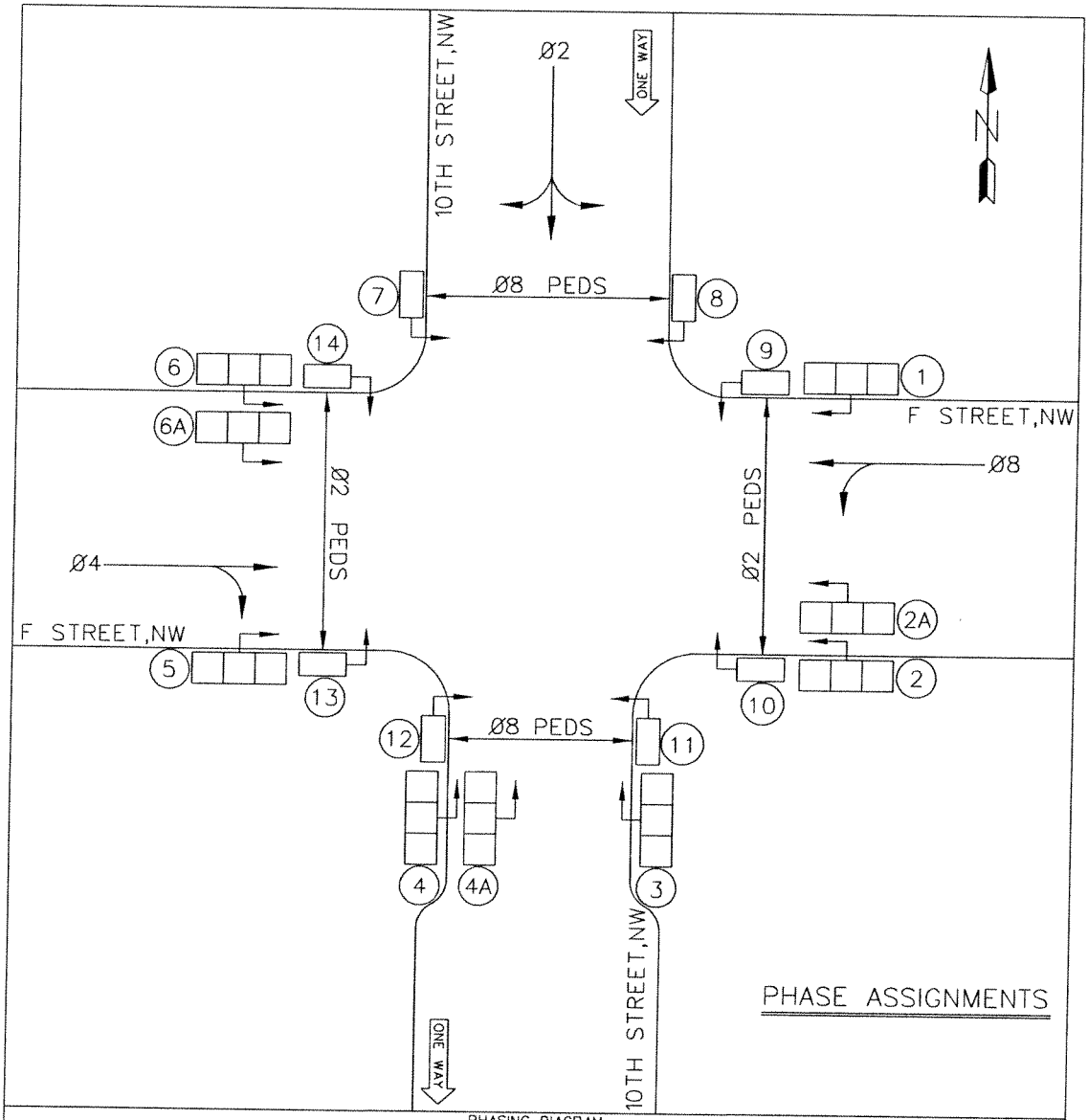
WORK/SHOP ORDER NO: S-01-15-256

APPROVED BY: Darius Rejai

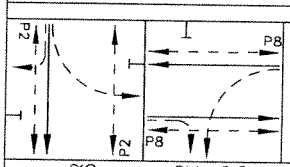
DATE INSTALLED:

INSTALLED BY:

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASING DIAGRAM

	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE
Ø2	Ø4+Ø8					

TRAFFIC SIGNAL OPERATION

10TH STREET AND F STREET, N.W.

ACISA 2088

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

DESIGNED BY:

SUBMITTED BY: PROJECT ENGINEER

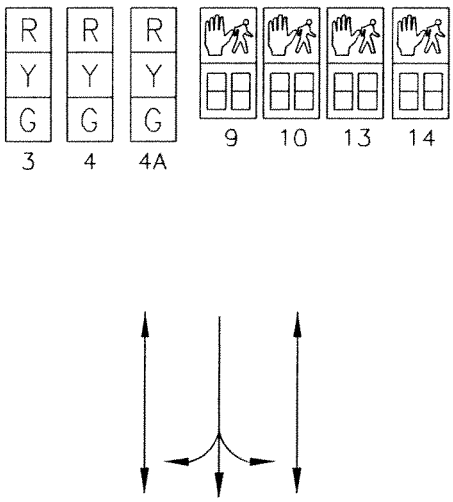
APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 264-H Opt 1

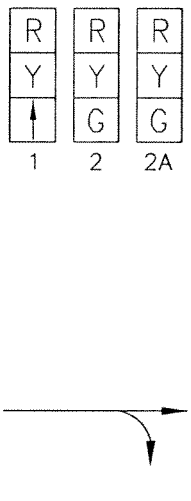
SHEET 1 OF 4

CHECK BY:	A.R.	DATE:	11/01/12
DRAWN BY:	C.N.	DATE:	09/26/12
IN SERVICE:		SCALE:	NONE

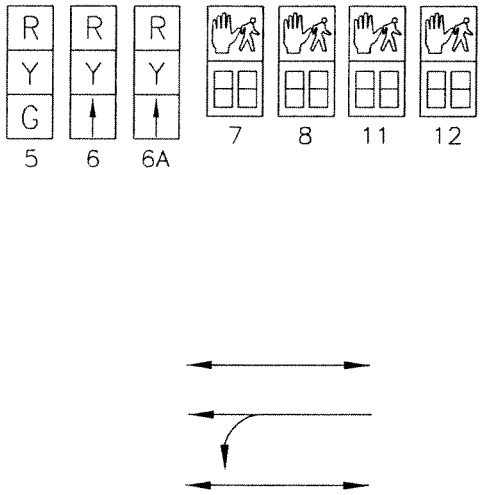
SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



Ø2



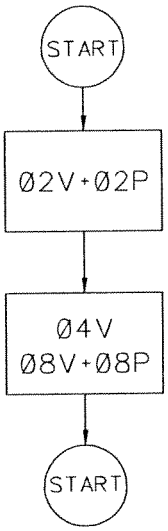
Ø4



Ø8

TRAFFIC SIGNAL OPERATION 10TH STREET AND F STREET, N.W.	ACISA 2088
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
CHECK BY: A.R. DATE: 11/01/12 DRAWN BY: C.N. DATE: 09/26/12 IN SERVICE: SCALE: NONE	T.S. 264-H Opt 1 SHEET 2 OF 4

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASE SEQUENCE

ON RECALL

Ø2V + Ø2P

Ø4V

Ø8V + 08P

BY DEMAND ONLY

NONE

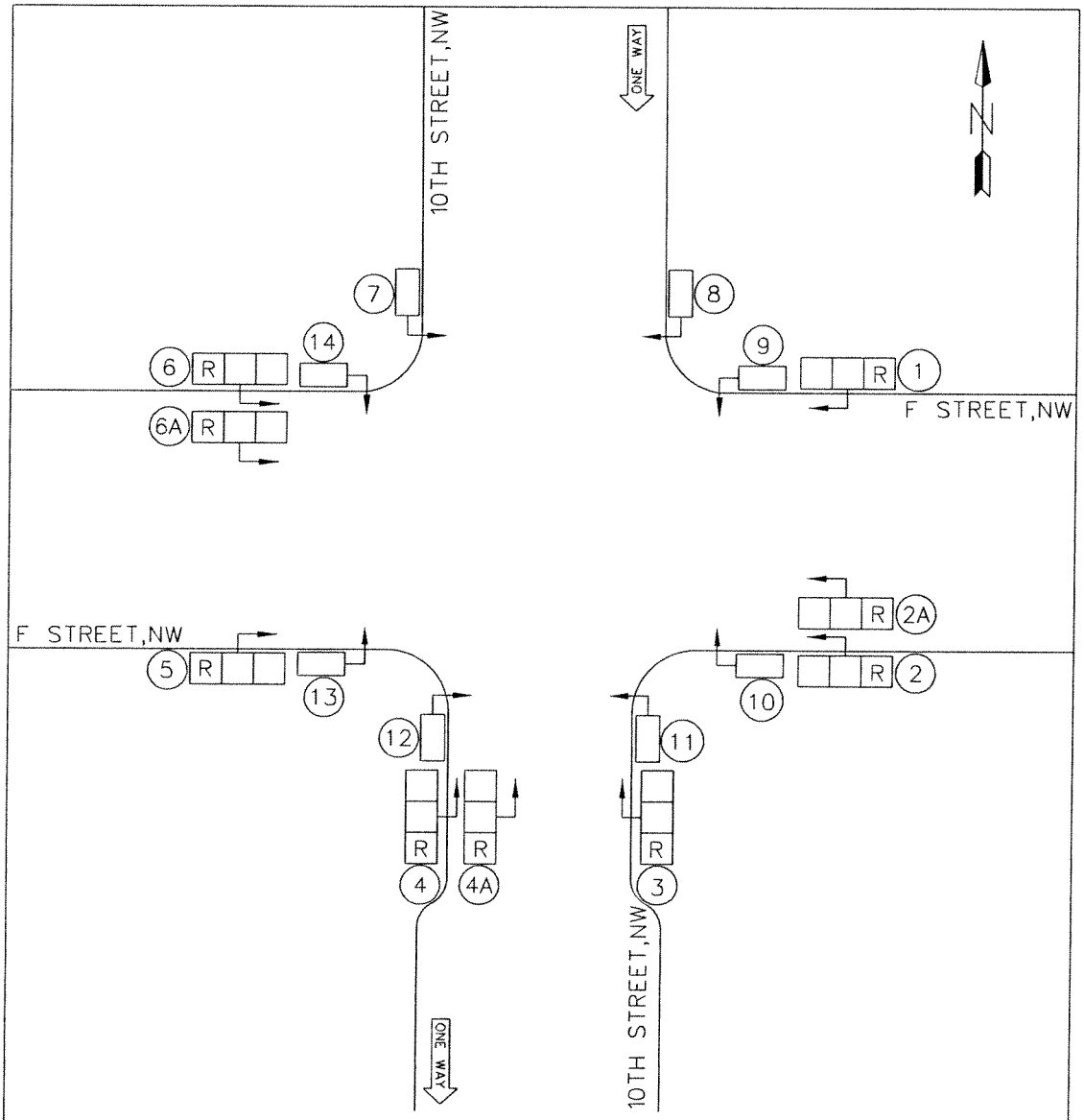
TRAFFIC SIGNAL OPERATION

10TH STREET AND F STREET, N.W.

ACISA 2088

D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION		DESIGNED BY:	T.S. 264-H Opt 1
CHECK BY: A.R.	DATE: 11/01/12	SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: C.N.	DATE: 09/26/12	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	3 OF 4
IN SERVICE:	SCALE: NONE		

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION 10TH STREET AND F STREET, N.W.	ACISA 2088
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
T.S. 264-H Opt 1	
CHECK BY: A.R. DATE: 11/01/12	
DRAWN BY: C.N. DATE: 09/26/12	
IN SERVICE: SCALE: NONE	
SHEET 4 OF 4	

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-256**
ACISA NO: **2088**	INSUM NO: 118	S- DRAWING NO: 1553
TS NO: **264-H OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

10TH STREET AND F STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.9A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

d. - DC DEPARTMENT OF TRANSPORTATION, TRAFFIC SERVICES ADMINISTRATION 05/29/13

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 119 LOCATION:10TH ST AND G ST, NW REV: 11 PAGE 1 OF 4

TS # 262-M AREA COMPUTER 2 ACISA 89 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	R	W		R	W

LS7	LS8	LS9	LS10	LS11	LS12
		W		R	

R = RED Y = YELLOW W = WHITE
*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06G

COMM CHANNEL 12 COMM SWITCH 2
PAIR IN 1
PAIR OUT 2
VOICE COMM PAIR 12
MODEM 226

2.NOTES: REV 10: INSTALL NEW TIMING OPERATION TS-262-L, (Q-3443-B) FINAL PHASE.
REV 11: INSTALL 233 PROGRAM (MC1) AND OPERATION

C-0-0 = 2
C-0-2 = 2
C-0-3 = 89

DOCUMENT PREPARED BY: JOSE R. WOOD 05/29/13

REVIEWED BY: Ray Robinson 5/30/13

DATABASE REVISED BY: Jose R. Wood 5/31/13

FIELD REVISION INSTALLED BY: _____ _____

SHOP ORDER NUMBER: S-05-13-75

P H A S E C O N T R O L L E R O U T P U T F I L E T E R M I N A T I O N

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
01 02 2A	101	Ø4R	13 14	113	Ø2DW		125	Ø1R
01 02 2A	102	Ø4Y		114	SF		126	Ø1Y
01 02 2A	103	Ø4G	13 14	115	Ø2W		127	Ø1G
07 08 11 12	104	Ø4DW		116	Ø3R	03 04 4A	128	Ø2R
	105	SF		117	Ø3Y	03 04 4A	129	Ø2Y
07 08 11 12	106	Ø4W		118	Ø3G	03 04 4A	130	Ø2G
05 06 6A	107	Ø8R	09 10	119	Ø6DW		131	Ø5R
05 06 6A	108	Ø8Y		120	SF		132	Ø5Y
05 06 6A	109	Ø8G	09 10	121	Ø6W		133	Ø5G
	110	Ø8DW		122	Ø7R		134	Ø6R
	111	SF		123	Ø7Y		135	Ø6Y
	112	Ø8W		124	Ø7G		136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

2 1 8 P R O G R A M C A R D

8- 9	7- 8	6- 7	(5- 6)	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	4- 6	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	6-10	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	(6-11)	5-10	4- 9	3- 8	2- 7	1- 6
8-14	7-13	6-12	(5-11)	4-10	(3- 9)	2- 8	1- 7
8-15	7-14	6-13	5-12	4-11	3-10	(2- 9)	1- 8
8-16	7-15	6-14	5-13	4-12	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
9-14	10-15	11-16	12-17	13-18	3-18	2-17	1-16
9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

X	8	7	X	5	4	X	2	1
18	17	16	15	14	13	12	11	10

PROGRAMMED BY: _____ DATE: ___/___/___

P H A S E C O N T R O L L E R I N P U T F I L E T E R M I N A T I O N

F R O N T V I E W

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

B A C K V I E W

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D 14-E	13-D 13-E	12-D 12-E	11-D 11-E	10-D 10-E	9-D 9-E	8-D 8-E	7-D 7-E	6-D 6-E	5-D 5-E	4-D 4-E	3-D 3-E	2-D 2-E	1-D 1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J 14-K	13-J 13-K	12-J 12-K	11-J 11-K	10-J 10-K	9-J 9-K	8-J 8-K	7-J 7-K	6-J 6-K	5-J 5-K	4-J 4-K	3-J 3-K	2-J 2-K	1-J 1-K
LOOP NUMBER														

D E T E C T O R A S S I G N M E N T S

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/

FILE I___/

SLOT 8__/

LOWER L

UPPER U

INTERSECTION: 2089-10TH ST & G ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **342**

N/S Street Name: **10TH ST**
E/W Street Name: **G ST**

Last Database Change: **4/25/2015 4:41**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	2	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	89	<C/0+0+3>
QuicNet Channel	P:8023:172.16.1..	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

Row	Column Numbers ---->	Phase 1	2	3	4	5	6	7	8
	Phase Names ----->								
0	Ped Walk	0	10	0	10	0	10	0	0
1	Ped FDW	0	8	0	9	0	6	0	0
2	Min Green	0	10	0	7	0	10	0	7
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
6	Max Gap	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
7	Min Gap	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
8	Max Limit	0	90	0	90	0	90	0	90
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	4.0	0.0	4.0	0.0	4.0	0.0	4.0
F	Red Clear	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_2_4_6_8
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_2_4_6__
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_2_4_6_8
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2_____

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ----->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
2	Veh Set 2 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
3	Veh Set 3 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
4	Neg Veh Phases	_____	_____	_____	_____	_____	_____	_____	_____
5	Neg Ped Phases	_____	_____	_____	_____	_____	_____	_____	_____
6	Green Omit Phases	_____	_____	_____	_____	_____	_____	_____	_____
7	Green Clear Omit Phs.	_____	_____	_____	_____	_____	_____	_____	_____
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase	_____	_____	_____	_____	_____	_____	_____	_____
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Flash to PE Circuits	_____
6	Flash Entry Phases	_____
7	Disable Yellow Range	_____
8	Disable Ovp Yel Range	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_____
B	EV-B Phases	_____
C	EV-C Phases	_____
D	EV-D Phases	_____
E	Extra 1 Config. Bits	1_3_5___
F	IC Select (Interconnect)	_2_____

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	_____
Ext. Permit 2 Phases	_____
Exclusive Ped Assign	_____
Preempt Non-Lock	_____
Ped for 2P Output	_2_____
Ped for 6P Output	_____6__
Ped for 4P Output	___4____
Ped for 8P Output	_____
Yellow Flash Phases	_____
Low Priority A Phases	_____
Low Priority B Phases	_____
Low Priority C Phases	_____
Low Priority D Phases	_____
Restricted Phases	_____
Extra 2 Config. Bits	___4____

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	_____
Green Flash Phases	_____
Flashing Walk Phases	_____
Guaranteed Passage	_____
Simultaneous Gap Term	_____
Sequential Timing	_____
Advance Walk Phases	_____
Delay Walk Phases	_____
External Recall	_____
Start-up Overlap Green	_____
Max Extension	_____
Inhibit Ped Reservice	_____
Semi-Actuated	_____
Start-up Overlap Yellow	_____
Start-up Vehicle Calls	_2_4_6_8
Start-up Ped Calls	_2_4_6__

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	0	1
Phase 2	0	2
Phase 3	0	3
Phase 4	0	4
Phase 5	0	5
Phase 6	0	6
Phase 7	0	7
Phase 8	0	8

Coordination Transition Minimums
<C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9
	Plan Name ----->									
0	Cycle Length	80	100	80	100	110	110	120	120	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	34	49	34	49	54	77	44	47	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	34	49	34	49	54	77	44	47	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	17	72	17	72	15	15	32	48	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	7	7	7	7	7	7	7	7	0
E	Hold Release	255	255	255	255	255	255	255	255	0
F	Reserved	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row		E
0		
1	Plan 1 - Sync	_2___6__
2	Plan 2 - Sync	_2___6__
3	Plan 3 - Sync	_2___6__
4	Plan 4 - Sync	_2___6__
5	Plan 5 - Sync	_2___6__
6	Plan 6 - Sync	_2___6__
7	Plan 7 - Sync	_2___6__
8	Plan 8 - Sync	_2___6__
9	Plan 9 - Sync	_2___6__
A	NEMA Sync	_____
B	NEMA Hold	_____
C		
D		
E	Coord Extra	_____
F		

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____
7										
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
9	Max Recall	_____	_____	_____	_____	_____	_____	_____	_____	_____
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____

Coordination - Bank 2 <C+0+C=2>

Row		F
0	Free Lag	_2_4_6_8
1	Plan 1 - Lag	_2_4_6_8
2	Plan 2 - Lag	_2_4_6_8
3	Plan 3 - Lag	_2_4_6_8
4	Plan 4 - Lag	_2_4_6_8
5	Plan 5 - Lag	_2_4_6_8
6	Plan 6 - Lag	_2_4_6_8
7	Plan 7 - Lag	_2_4_6_8
8	Plan 8 - Lag	_2_4_6_8
9	Plan 9 - Lag	_2_4_6_8
A	External Lag	_____
B	Lag Hold	_____
C		
D		
E		
F		

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	36	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	36	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	36	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	36	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	36	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	36	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	36	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	36	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Column Numbers ---->		0	1	2	3	1	3
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		39	___45_7_	_2_____	123____	0.0	0.0
1		40	___45_7_	_____6__	123____	0.0	0.0
2		41	___45_7_	___4____	123____	0.0	0.0
3		42	___45_7_	_______8	123____	0.0	0.0
4		43	___45_7_	_2_____	123____	0.0	0.0
5		44	___45_7_	_____6__	123____	0.0	0.0
6		45	___45_7_	___4____	123____	0.0	0.0
7		46	___45_7_	_______8	123____	0.0	0.0
8		47	_____67_	_2_____	123____	0.0	0.0
9		48	_____67_	_____6__	123____	0.0	0.0
A		49	_____67_	___4____	123____	0.0	0.0
B		50	_____67_	_______8	123____	0.0	0.0
C		55	___45_7_	____5___	123____	0.0	0.0
D		56	___45_7_	1_____	123____	0.0	0.0
E		57	___45_7_	_____7_	123____	0.0	0.0
F		58	___45_7_	__3____	123____	0.0	0.0

		4	5	6	7	2	4
Row	Detector Name	C1 Pin Number	Attributes	Phase(s)	Assign	Delay	Carry-over
0		59	___45_7_	____5___	123____	0.0	0.0
1		60	___45_7_	1_____	123____	0.0	0.0
2		61	___45_7_	_____7_	123____	0.0	0.0
3		62	___45_7_	__3____	123____	0.0	0.0
4		63	___45_7_	_2_____	123____	0.0	0.0
5		64	___45_7_	_____6__	123____	0.0	0.0
6		65	___45_7_	___4____	123____	0.0	0.0
7		66	___45_7_	_______8	123____	0.0	0.0
8		67	_2_____	_2_____	123____	0.0	0.0
9		68	_2_____	_____6__	123____	0.0	0.0
A		69	_2_____	___4____	123____	0.0	0.0
B		70	_2_____	_______8	123____	0.0	0.0
C		76	___45_7_	_2_____	123____	0.0	0.0
D		77	___45_7_	_____6__	123____	0.0	0.0
E		78	___45_7_	___4____	123____	0.0	0.0
F		79	___45_7_	_______8	123____	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	4	A	_23456_
5	08 : 00	2	A	1_____7
6	18 : 00	1	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
10 : 00	0	0	_____
10 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>

Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>

Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	**0**	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	**0**	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	**0**	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	**0**
D	Bus Delay	**0**
E	Max Early Grn	**0**
F	Max Grn Ext.	**0**

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	**00 : 00**	**0**	**0**	_____
1	**00 : 00**	**0**	**0**	_____
2	**00 : 00**	**0**	**0**	_____
3	**00 : 00**	**0**	**0**	_____
4	**00 : 00**	**0**	**0**	_____
5	**00 : 00**	**0**	**0**	_____
6	**00 : 00**	**0**	**0**	_____
7	**00 : 00**	**0**	**0**	_____
8	**00 : 00**	**0**	**0**	_____
9	**00 : 00**	**0**	**0**	_____
A	**00 : 00**	**0**	**0**	_____
B	**00 : 00**	**0**	**0**	_____
C	**00 : 00**	**0**	**0**	_____
D	**00 : 00**	**0**	**0**	_____
E	**00 : 00**	**0**	**0**	_____
F	**00 : 00**	**0**	**0**	_____

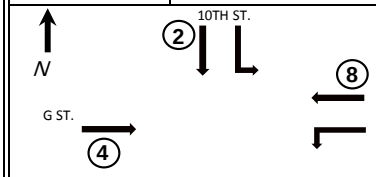
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 06/19/2012	10TH STREET AND G STREET, N.W.		SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATION ADMINISTRATION

ACISA ID	2089	TS-	262-M OPT-1
ISNUM	119	S-	1551-F

C + 0 + E = 29	OVERLAP CONFIG			
FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125 E + E + FEATURE		CONFIG DATA PHASE							
FEATURE		1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125 E + F + FEATURE		CONFIG DATA PHASE							
FEATURE		1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6						X		
PED 4P	7				X				
PED 8P	8								
FLASH YELLOW	9								
LOW PRIORITY A	A								
LOW PRIORITY B	B								
LOW PRIORITY C	C								
LOW PRIORITY D	D								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1 F + F + FEATURE		PHASE FUNCTIONS PHASE							
FEATURE		1	2	3	4	5	6	7	8
PERMIT	0		X		X		X		X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X		X		
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X		X		X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

C + 0 + F = 2 F + F + FEATURE		PHASE FUNCTIONS PHASE							
FEATURE		1	2	3	4	5	6	7	8
GREEN FLASH									
FLASH WALK									
ADVANCED WALK									
DELAYED WALK									

C + 0 + F = 1 <F + PHASE + INTVL>		PHASE TIMING BANK PHASE								PREEMPT TIMING		
INTERVAL		1	2	3	4	5	6	7	8	< F/1 + E + row >		
WALK	0		10		10		10			EVA DELAY	2	
FLASH D/W	1		8		9		6			EVA CLEAR	3	
MIN. GREEN	2		10		7		10		7	EVB DELAY	4	
TYPE 3 LIMIT	3									EVB CLEAR	5	
ADD/ VEH	4									EVC DELAY	6	
VEH EXTENSION	5		1		1		1		1	EVC CLEAR	7	
MAX GAP	6		1		1		1		1	EVD DELAY	8	
MIN GAP	7		1		1		1		1	EVD CLEAR	9	
MAXIMUM	8		90		90		90		90	BUS PRIORITY PARAMETERS		
MAXIMUM 2	9									< F/1 + A + row >		
ADVANCE / DELAY WALK	A									BUS DELAY	D	
PREEMPT PED. CLEARENCE	B									MAX EARLY GREEN	E	
CONDITIONAL SERVICE MINIMUM	C									MAX GREEN EXTN	F	
REDUCE EVERY	D									Min Grn Bef PE Forceoff		
YELLOW	E		4		4		4		4	MAX PREEMPT TIME		
RED CLEAR	F		1.5		1.5		1.5		1.5	Min Time Btwn Same PE		

COORDINATION FUNCTIONS	PHASE							
FUNCTION	1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X		X		X
SYNC PHASES (Check by phases)		X				X		

NOTES:

C+0+C=I ; C + <PLAN> + <FEATURE>		COORDINATION TIMING PLAN								
FEATURE		1	2	3	4	5	6	7	8	
CYCLE TIME	0	80	100	80	100	110	110	120	120	
FORCE OFF 1	1									
FORCE OFF 2	2	0	0	0	0	0	0	0	0	
FORCE OFF 3	3									
FORCE OFF 4	4	34	49	34	49	54	77	44	47	
FORCE OFF 5	5									
FORCE OFF 6	6	0	0	0	0	0	0	0	0	
FORCE OFF 7	7									
FORCE OFF 8	8	34	49	34	49	54	77	44	47	
OFFSET A	A	17	72	17	72	15	15	32	48	
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
MAX RECALL (PHASES)										
PERM 1 VEH (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

*** SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

PREPARED BY: **Sabra, Wang & Associates, Inc.**

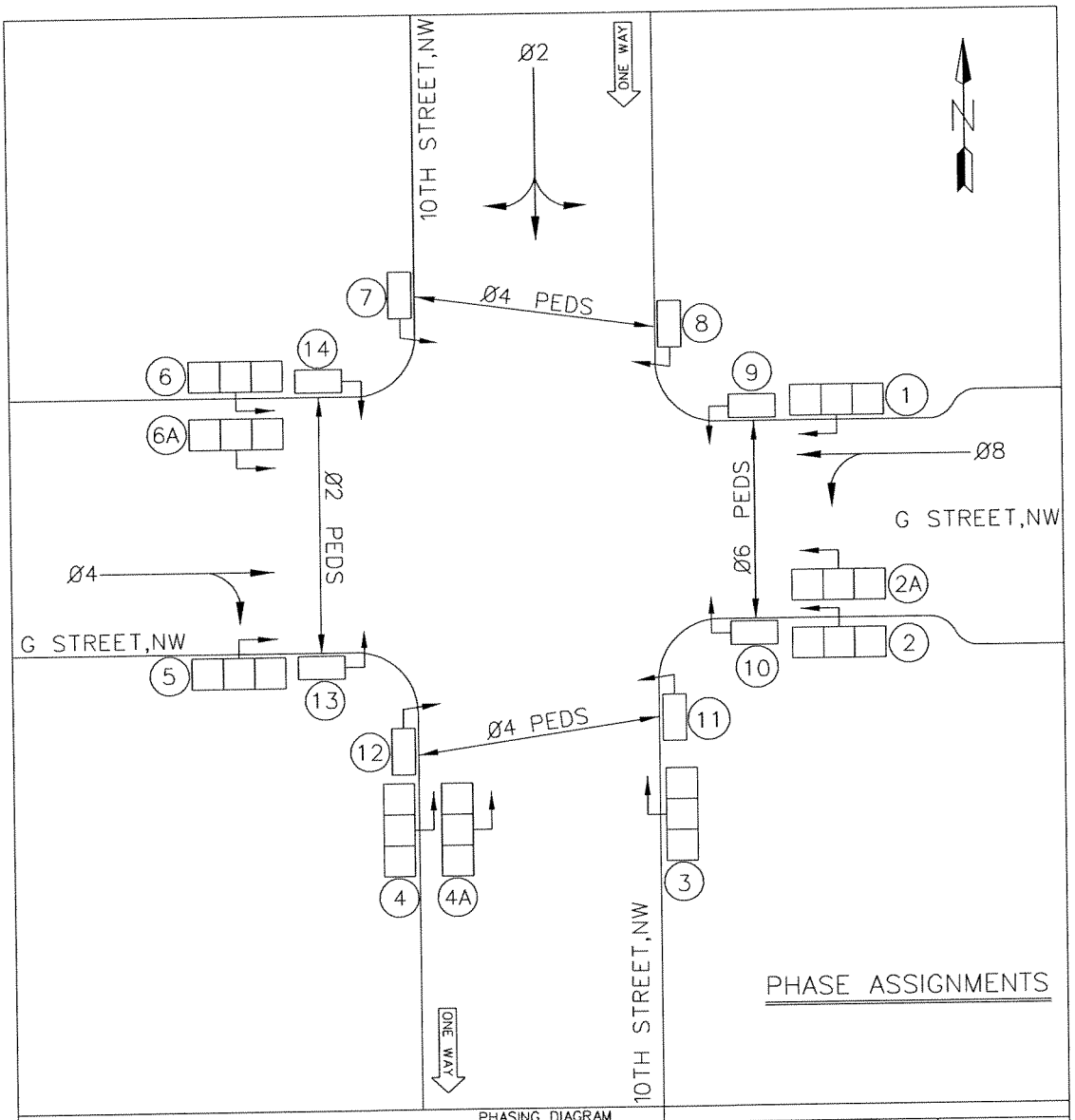
WORK/SHOP ORDER NO: S-01-15-257

APPROVED BY: Waseem Raja

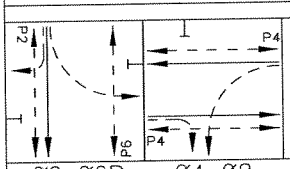
DATE INSTALLED:

INSTALLED BY:

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASING DIAGRAM



FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

Ø2+Ø6P Ø4+Ø8

TRAFFIC SIGNAL OPERATION

10TH STREET AND G STREET, N.W.

ACISA 2089

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	A.R.	DATE:	11/01/12
DRAWN BY:	C.N.	DATE:	09/26/12
IN SERVICE:		SCALE:	NONE

DESIGNED BY:

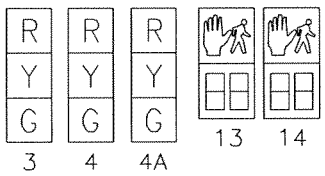
SUBMITTED BY: PROJECT ENGINEER

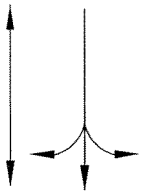
APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 262-M Opt 1

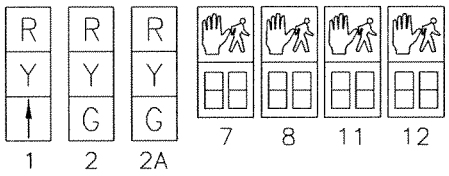
SHEET 1 OF 4

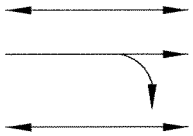
SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



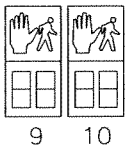


Ø2

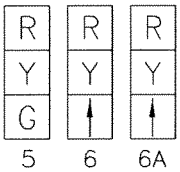




Ø4



Ø6



Ø8

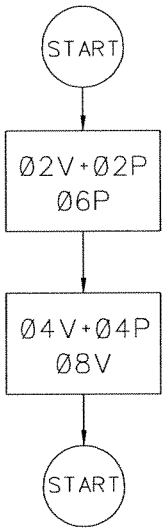
TRAFFIC SIGNAL OPERATION

10TH STREET AND G STREET, N.W.

ACISA 2089

D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION		DESIGNED BY:	T.S. 262-M Opt 1
CHECK BY: A.R.	DATE: 11/01/12	SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: C.N.	DATE: 09/26/12	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	2 OF 4
IN SERVICE:	SCALE: NONE		

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASE SEQUENCE

ON RECALL

Ø2V + Ø2P
Ø4V + Ø4P
Ø6P
Ø8V

BY DEMAND ONLY

NONE

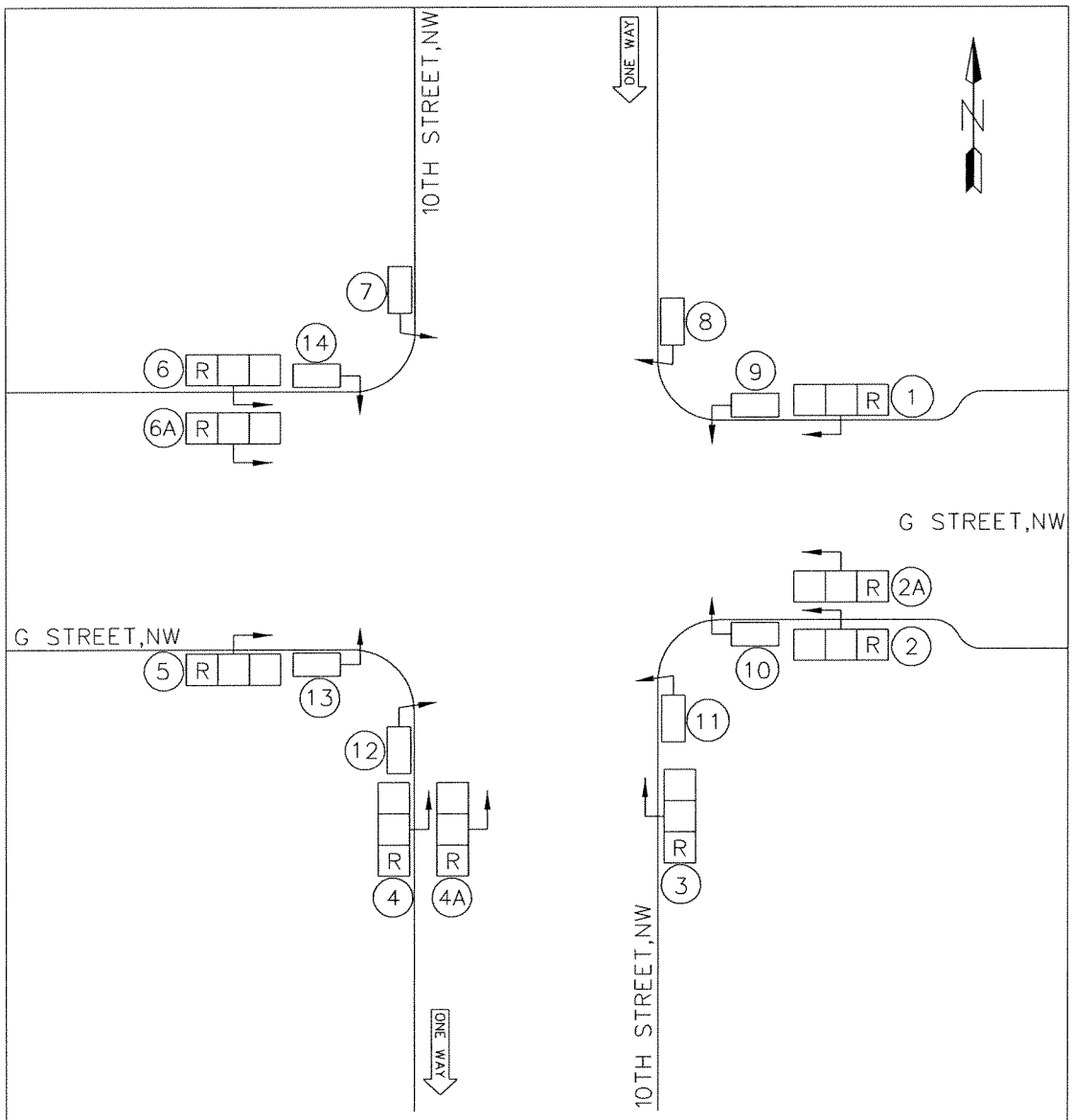
TRAFFIC SIGNAL OPERATION

10TH STREET AND G STREET, N.W.

ACISA 2089

D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION		DESIGNED BY:	T.S. 262-M Opt 1
CHECK BY: A.R.	DATE: 11/01/12	SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: C.N.	DATE: 09/26/12	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	3 OF 4
IN SERVICE:	SCALE: NONE		

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION 10TH STREET AND G STREET, N.W.	ACISA 2089
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
T.S. 262-M Opt 1	
CHECK BY: A.R. DATE: 11/01/12 DRAWN BY: C.N. DATE: 09/26/12 IN SERVICE: SCALE: NONE	SHEET 4 OF 4

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-257**
ACISA NO: **2089**	INSUM NO: 119	S- DRAWING NO: 1551
TS NO: **262-M OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

10TH STREET AND G STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.11A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

d. - DC DEPARTMENT OF TRANSPORTATION, TRAFFIC SERVICES ADMINISTRATION 05/30/13

MODEL 170 TRAFFIC SIGNAL CONTROLLER CABINET CONFIGURATION

ACTUATED SOFTWARE (233)

SOFTWARE VERSION: 2332V2.7B

ACTUATED PROGRAM 233

ISNUM: 120 LOCATION:10TH ST AND H ST, NW

REV: 10 PAGE 1 OF 4

TS # 827-E AREA COMPUTER 2 ACISA 90 SECTION 217

1.FLASH PROGRAMMING:

LS1	LS2	LS3	LS4	LS5	LS6
	Y	W		R	W

LS7	LS8	LS9	LS10	LS11	LS12
	Y				

R = RED Y = YELLOW W = WHITE
*****MUST BE 170E TYPE CONTROLLER****

2.COORDINATION:

CABLE # 12-F06G

COMM CHANNEL 12 COMM SWITCH 3
PAIR IN 1
PAIR OUT 2
VOICE COMM PAIR 12
MODEM 226

2.NOTES: REV 09: INSTALL NEW TIMING PLAN AND TS OPERATION (827-D)
REV 10: INSTALL 233 PROGRAM (MC1) AND OPERATION

C-0-0=3
C-0-2=2
C-0-3=90

DOCUMENT PREPARED BY: JOSE R. WOOD 05/30/13

REVIEWED BY: Ray Robinson 5/31/13

DATABASE REVISED BY: Jose R. Wood 5/31/13

FIELD REVISION INSTALLED BY:

SHOP ORDER NUMBER: S-05-13-76

P H A S E C O N T R O L L E R O U T P U T F I L E T E R M I N A T I O N

SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS		SIGNAL HEADS	TERMINALS	
01 02 2A	101	Ø4R	07 08 11 12	113	Ø2DW		125	Ø1R
01 02 2A	102	Ø4Y		114	SF		126	Ø1Y
01 02 2A	103	Ø4G	07 08 11 12	115	Ø2W		127	Ø1G
09 10 13 14	104	Ø4DW		116	Ø3R	03 04 4A	128	Ø2R
	105	SF		117	Ø3Y	03 04 4A	129	Ø2Y
09 10 13 14	106	Ø4W		118	Ø3G	03 04 4A	130	Ø2G
	107	Ø8R		119	Ø6DW		131	Ø5R
	108	Ø8Y		120	SF		132	Ø5Y
	109	Ø8G		121	Ø6W		133	Ø5G
	110	Ø8DW		122	Ø7R	05 06 6A	134	Ø6R
	111	SF		123	Ø7Y	05 06 6A	135	Ø6Y
	112	Ø8W		124	Ø7G	05 06 6A	136	Ø6G

SF1 ->
SF2 ->
SF3 ->
SF4 ->
SF5 ->
SF6 ->
SF7 ->
SF8 ->

2 1 8 P R O G R A M C A R D

8- 9	7- 8	6- 7	(5- 6)	4- 5	3- 4	(2- 3)	1- 2
8-10	7- 9	6- 8	5- 7	4- 6	3- 5	2- 4	1- 3
8-11	7-10	6- 9	5- 8	4- 7	3- 6	2- 5	1- 4
8-12	7-11	6-10	5- 9	4- 8	3- 7	2- 6	1- 5
8-13	7-12	6-11	5-10	4- 9	(3- 8)	2- 7	1- 6
8-14	7-13	6-12	5-11	4-10	3- 9	(2- 8)	1- 7
8-15	7-14	6-13	5-12	4-11	3-10	2- 9	1- 8
8-16	7-15	6-14	5-13	4-12	3-11	2-10	1- 9
8-17	7-16	6-15	5-14	4-13	3-12	2-11	1-10
8-18	7-17	6-16	5-15	4-14	3-13	2-12	1-11
9-18	7-18	6-17	5-16	4-15	3-14	2-13	1-12
9-17	10-18	6-18	5-17	4-16	3-15	2-14	1-13
9-16	10-17	11-18	5-18	4-17	3-16	2-15	1-14
9-15	10-16	11-17	12-18	4-18	3-17	2-16	1-15
9-14	10-15	11-16	12-17	13-18	3-18	2-17	1-16
9-13	10-14	11-15	12-16	13-17	14-18	2-18	1-17
9-12	10-13	11-14	12-15	13-16	14-17	15-18	1-18
9-11	10-12	11-13	12-14	13-15	14-16	15-17	16-18
9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
							17-18

YELLOW DISABLE

9	8	7	X	5	4	X	2	1
18	17	16	15	14	13	12	11	10

PROGRAMMED BY: P. HOGAN DATE: 06/09/87

P H A S E C O N T R O L L E R I N P U T F I L E T E R M I N A T I O N

F R O N T V I E W

SLOT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
C1-PIN	56	39	58	41	55	40	57	42	67	68	47	49	51	53
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø2P	Ø6P	EV A	EV C	RR 1	SYS 1
LOOP NUMBER														
C1-PIN	60	43	62	45	59	44	61	46	69	70	48	50	52	54
PHASE/CT/PED	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø4P	Ø8P	EV B	EV D	RR 2	SYS 2
LOOP NUMBER														
MODULE TYPE														

B A C K V I E W

TERMINAL	14	13	12	11	10	9	8	7	6	5	4	3	2	1
PHASE/CT/PED	SYS 1	RR 1	EV C	EV A	Ø6P	Ø2P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
UPPER TERM	14-D 14-E	13-D 13-E	12-D 12-E	11-D 11-E	10-D 10-E	9-D 9-E	8-D 8-E	7-D 7-E	6-D 6-E	5-D 5-E	4-D 4-E	3-D 3-E	2-D 2-E	1-D 1-E
LOOP NUMBER														
PHASE/CT/PED	SYS 2	RR 2	EV D	EV B	Ø8P	Ø4P	Ø8	Ø7	Ø6	Ø5	Ø4	Ø3	Ø2	Ø1
LOWER TERM	14-J 14-K	13-J 13-K	12-J 12-K	11-J 11-K	10-J 10-K	9-J 9-K	8-J 8-K	7-J 7-K	6-J 6-K	5-J 5-K	4-J 4-K	3-J 3-K	2-J 2-K	1-J 1-K
LOOP NUMBER														

D E T E C T O R A S S I G N M E N T S

APP	LANES	DESCRIPTION	INPUT FILE SLOT	C1 PIN
			1I1U	56
			1I1L	60
			2I2U	39
			2I2L	43
			3I3U	58
			3I3L	62
			4I4U	41
			4I4L	45
			5I5U	55
			5I5L	59
			6I6U	40
			6I6L	44
			7I7U	57
			7I7L	61
			8I8U	42
			8I8L	46

PHASE 8__/
FILE I___/
SLOT 8__/

LOWER L
UPPER U

INTERSECTION: 2090-10TH ST & H ST NW

Group Assignment: **217Long**
Field Master Assignment: **NONE**
System Reference Number: **343**

N/S Street Name: **10TH ST**
E/W Street Name: **H ST**

Last Database Change: **4/25/2015 4:47**

Change Record					
Change	By	Date	Change	By	Date

Notes:

Manual Plan
0 = Automatic
1-9 = Plan 1-9
14 = Free
15 = Flash

Manual Offset
0 = Automatic
1 = Offset A
2 = Offset B
3 = Offset C

Drop Number	3	<C/0+0+0>
Zone Number	0	<C/0+0+1>
Area Number	2	<C/0+0+2>
Area Address	90	<C/0+0+3>
QuicNet Channel	P:8023:172.16.4.	(QuicNet)

Communication Addresses

Manual Plan		<C/0+A+1>
Manual Offset		<C/0+B+1>

Manual Selection

Flash Start	0	<F/1+0+E>
Red Revert	0.0	<F/1+0+F>
All Red Start	0.0	<F/1+C+0>
FYA Red Revert	0.0	<F/1+0+5>
OVLP CHG Red	6.0	<F/1+0+3>

Start / Revert Times

Exclusive Walk	0	<F/1+0+0>
Exclusive FDW	0	<F/1+0+1>
All Red Clear	0.0	<F/1+0+2>

Exclusive Ped Phase
(Outputs specified in Assignable Outputs at E/127+A+E & F)

	Phase							
Column Numbers ----->	1	2	3	4	5	6	7	8
Row *Phase Names ----->*								
0 Ped Walk	0	10	0	10	0	10	0	0
1 Ped FDW	0	9	0	13	0	9	0	0
2 Min Green	0	10	0	7	0	10	0	0
3 Type 3 Disconnect	0	0	0	0	0	0	0	0
4 Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 Veh Extension	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0
6 Max Gap	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0
7 Min Gap	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0
8 Max Limit	0	105	0	40	0	105	0	0
9 Max Limit 2	0	0	0	0	0	0	0	0
A Adv. / Delay Walk	0	3	0	3	0	3	0	0
B PE Min Ped FDW	0	0	0	0	0	0	0	0
C Cond Serv Check	0	0	0	0	0	0	0	0
D Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E Yellow Change	0.0	4.0	0.0	4.0	0.0	4.0	0.0	0.0
F Red Clear	0.0	1.5	0.0	2.0	0.0	1.5	0.0	0.0

Phase Timing - Bank 1 <C+0+F=1>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing <C+0+F=1>

	E
RR-1 Delay	0
RR-1 Clear	0
EV-A Delay	0
EV-A Clear	0
EV-B Delay	0
EV-B Clear	0
EV-C Delay	0
EV-C Clear	0
EV-D Delay	0
EV-D Clear	0
RR-2 Delay	0
RR-2 Clear	0
View EV Delay	- - -
View EV Clear	- - -
View RR Delay	- - -
View RR Clear	- - -

Preempt Timing

Row		F
0	Permit	_2_4_6__
1	Red Lock	_____
2	Yellow Lock	_____
3	Min Recall	_____
4	Ped Recall	_2_4_6__
5	*View Set Peds*	- - - - -
6	Rest In Walk	_____
7	Red Rest	_____
8	Dual Entry	_____
9	Max Recall	_2_4_6__
A	Soft Recall	_____
B	Max 2	_____
C	Cond. Service	_____
D	Man Cntrl Calls	_____
E	Yellow Start	_____
F	First Phases	_2___6__

Phase Functions <C+0+F=1>

Row	Column Numbers ---->	Overlap 1	2	3	4	5	6	7	8
	Overlap Name ----->								
0	Load Switch Number	0	0	0	0	0	0	0	0
1	Veh Set 1 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
2	Veh Set 2 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
3	Veh Set 3 - Phases	_____	_____	_____	_____	_____	_____	_____	_____
4	Neg Veh Phases	_____	_____	_____	_____	_____	_____	_____	_____
5	Neg Ped Phases	_____	_____	_____	_____	_____	_____	_____	_____
6	Green Omit Phases	_____	_____	_____	_____	_____	_____	_____	_____
7	Green Clear Omit Phs.	_____	_____	_____	_____	_____	_____	_____	_____
8	Overlap Recall	N	N	N	N	N	N	N	N
9	Queue Jump Phase	_____	_____	_____	_____	_____	_____	_____	_____
A	Queue Jump Time	0	0	0	0	0	0	0	0
B	Minimum Green	0	0	0	0	0	0	0	0
C	Maximum Green	0	0	0	0	0	0	0	0
D	Green Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Overlap Assignments <C+0+E=29>

Extra 1 Flags
1 = TBC Type 1
2 = NEMA Ext. Coord
3 = Auto Daylight Savings
4 = Solid FDW on EV
5 = Extended Status
6 = International Ped
7 = Flash - Clear Outputs
8 = Split Ring

Extra 2 Flags
1 = AWB During Initial
2 = Reserved
3 = Disable Min Walk
4 = QuicNet System
5 = Ignore P/P on EV
6 = Manual Hold in FDW
7 = Allow QuicNet PE
8 = Flash Grn B4 Yellow

	C	Row
EV-A	0	0
EV-B	0	1
EV-C	0	2
EV-D	0	3
RR-1 *	- - -	4
RR-2 *	- - -	5
SE-1	0	6
SE-2	0	7

Preempt Priority
<C+0+E=125>
(* RR-1 is always Highest, and RR-2 is always Second Highest)

Row	Column Numbers ---->	E
0	Exclusive Phases	_____
1	RR-1 Clear Phases	_____
2	RR-2 Clear Phases	_____
3	RR-2 Limited Service	_____
4	Prot / Perm Phases	_____
5	Flash to PE Circuits	_____
6	Flash Entry Phases	_____
7	Disable Yellow Range	_____
8	Disable Ovp Yel Range	_____
9	Overlap Yellow Flash	_____
A	EV-A Phases	_____
B	EV-B Phases	_____
C	EV-C Phases	_____
D	EV-D Phases	_____
E	Extra 1 Config. Bits	1_3_5___
F	IC Select (Interconnect)	_2_____

Configuration <C+0+E=125>

	F
Ext. Permit 1 Phases	_____
Ext. Permit 2 Phases	_____
Exclusive Ped Assign	_____
Preempt Non-Lock	_____
Ped for 2P Output	_2_____
Ped for 6P Output	_____6__
Ped for 4P Output	___4____
Ped for 8P Output	_____
Yellow Flash Phases	_2___6__
Low Priority A Phases	_____
Low Priority B Phases	_____
Low Priority C Phases	_____
Low Priority D Phases	_____
Restricted Phases	_____
Extra 2 Config. Bits	___4____

Configuration <C+0+E=125>

	F
Fast Green Flash Phase	_____
Green Flash Phases	_____
Flashing Walk Phases	_____
Guaranteed Passage	_____
Simultaneous Gap Term	_____
Sequential Timing	_____
Advance Walk Phases	_2_4_6__
Delay Walk Phases	_____
External Recall	_____
Start-up Overlap Green	_____
Max Extension	_____
Inhibit Ped Reservice	_____
Semi-Actuated	_____
Start-up Overlap Yellow	_____
Start-up Vehicle Calls	_2_4_6__
Start-up Ped Calls	_2_4____

Specials <C+0+F=2>

Flash to PE & PE Non-Lock
1 = EV A 5 = RR 1
2 = EV B 6 = RR 2
3 = EV C 7 = SE 1
4 = EV D 8 = SE 2

IC Select Flags
1 =
2 = Modem
3 = 7-Wire Slave
4 =
5 =
6 = Simplex Master
7 =
8 = Offset Interrupter

	2	Row
		0
Phase 1	0	1
Phase 2	0	2
Phase 3	0	3
Phase 4	0	4
Phase 5	0	5
Phase 6	0	6
Phase 7	0	7
Phase 8	0	8

Coordination Transition Minimums
<C+0+C=5>

Coord Extra
1 = Programmed WALK Time for Sync Phases
2 = Always Terminate Sync Phase Peds

Row	Column Numbers ---->	Plan 1	2	3	4	5	6	7	8	9
	Plan Name ----->									
0	Cycle Length	80	100	80	100	110	110	120	120	0
1	Phase 1 - ForceOff	0	0	0	0	0	0	0	0	0
2	Phase 2 - ForceOff	0	0	0	0	0	0	0	0	0
3	Phase 3 - ForceOff	0	0	0	0	0	0	0	0	0
4	Phase 4 - ForceOff	30	35	30	35	33	35	36	33	0
5	Phase 5 - ForceOff	0	0	0	0	0	0	0	0	0
6	Phase 6 - ForceOff	0	0	0	0	0	0	0	0	0
7	Phase 7 - ForceOff	0	0	0	0	0	0	0	0	0
8	Phase 8 - ForceOff	0	0	0	0	0	0	0	0	0
9	Ring Offset	0	0	0	0	0	0	0	0	0
A	Offset 1	21	52	21	52	86	36	74	71	0
B	Offset 2	0	0	0	0	0	0	0	0	0
C	Offset 3	0	0	0	0	0	0	0	0	0
D	Perm 1 - End	7	7	7	7	7	7	7	7	0
E	Hold Release	255	255	255	255	255	255	255	255	0
F	Reserved	0	0	0	0	0	0	0	0	0

Coordination - Bank 1 <C+0+C=1>

Row		E
0		
1	Plan 1 - Sync	_2___6__
2	Plan 2 - Sync	_2___6__
3	Plan 3 - Sync	_2___6__
4	Plan 4 - Sync	_2___6__
5	Plan 5 - Sync	_2___6__
6	Plan 6 - Sync	_2___6__
7	Plan 7 - Sync	_2___6__
8	Plan 8 - Sync	_2___6__
9	Plan 9 - Sync	_2___6__
A	NEMA Sync	_____
B	NEMA Hold	_____
C		
D		
E	Coord Extra	_____
F		

Sync Phases <C+0+C=1>

Row		1	2	3	4	5	6	7	8	9
0	Ped Adjustment	0	0	0	0	0	0	0	0	0
1	Perm 2 - Start	0	0	0	0	0	0	0	0	0
2	Perm 2 - End	0	0	0	0	0	0	0	0	0
3	Perm 3 - Start	0	0	0	0	0	0	0	0	0
4	Perm 3 - End	0	0	0	0	0	0	0	0	0
5	Reservice Time	0	0	0	0	0	0	0	0	0
6	Reservice Phases	_____	_____	_____	_____	_____	_____	_____	_____	_____
7										
8	Pretimed Phases	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
9	Max Recall	_____	_____	_____	_____	_____	_____	_____	_____	_____
A	Perm 1 Veh Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
B	Perm 1 Ped Phase	12345678	12345678	12345678	12345678	12345678	12345678	12345678	12345678	_____
C	Perm 2 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
D	Perm 2 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
E	Perm 3 Veh Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____
F	Perm 3 Ped Phase	_____	_____	_____	_____	_____	_____	_____	_____	_____

Coordination - Bank 2 <C+0+C=2>

Row		F
0	Free Lag	_2_4_6__
1	Plan 1 - Lag	_2_4_6__
2	Plan 2 - Lag	_2_4_6__
3	Plan 3 - Lag	_2_4_6__
4	Plan 4 - Lag	_2_4_6__
5	Plan 5 - Lag	_2_4_6__
6	Plan 6 - Lag	_2_4_6__
7	Plan 7 - Lag	_2_4_6__
8	Plan 8 - Lag	_2_4_6__
9	Plan 9 - Lag	_2_4_6__
A	External Lag	_____
B	Lag Hold	_____
C		
D		
E		
F		

Lag Phases <C+0+C=1>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	One-Shot Timer	0	Latch 1 Set	0	NOT-3	0	Max 2	0	Pretimed	0	Set Monday	0	Dial 2 (7-Wire)	0	Sim Term	0	0
1	AND-5 (a)	0	Latch 1 Reset	0	NOT-4	0	Reserved	36	Plan 1	0	Ext. Perm 1	0	Dial 3 (7-Wire)	0	EV-A	0	1
2	AND-5 (b)	0	Latch 2 Set	0	OR-4 (a)	0	Reserved	36	Plan 2	0	Ext. Perm 2	0	Offset 1 (7-Wire)	0	EV-B	0	2
3	AND-6 (a)	0	Latch 2 Reset	0	OR-4 (b)	0	Reserved	36	Plan 3	0	Gate Down	0	Offset 2 (7-Wire)	0	EV-C	0	3
4	AND-6 (b)	0	NAND-3 (a)	0	OR-5 (a)	0	Reserved	36	Plan 4	0	Set Clock	0	Offset 3 (7-Wire)	0	EV-D	0	4
5	Reserved		NAND-3 (b)	0	OR-5 (b)	0	Reserved	36	Plan 5	0	Stop Time	82	Free (7-Wire)	0	RR-1	0	5
6	Reserved		NAND-4 (a)	0	OR-6 (a)	0	Reserved	36	Plan 6	0	Flash Sense	81	Flash (7-Wire)	0	RR-2	0	6
7	Reserved		NAND-4 (b)	0	OR-6 (b)	0	Reserved	36	Plan 7	0	Manual Enable	0	Excl. Ped Omit	0	Spec. Event 1	0	7
8	Spec. Funct. 1	0	OR-7 (a)	0	EXTMR	0	Reserved	36	Plan 8	0	Man. Advance	0	NOT-1	0	Spec. Event 2	0	8
9	Spec. Funct. 2	0	OR-7 (b)	0	Reserved		Max Inhibit (nema)	0	Plan 9	0	External Alarm	0	NOT-2	0	External Lag	0	9
A	Spec. Funct. 3	0	OR-7 (c)	0	AND-4 (a)	0	Force A (nema)	0	DELAY-A	0	Phase Bank 2	0	OR-1 (a)	0	AND-1 (a)	0	A
B	Spec. Funct. 4	0	OR-7 (d)	0	AND-4 (b)	0	Force B (nema)	0	DELAY-B	0	Phase Bank 3	0	OR-1 (b)	0	AND-1 (b)	0	B
C	Reserved		OR-8 (a)	0	NAND-1 (a)	0	C.N.A. (nema)	0	DELAY-C	0	Overlap Set 2	0	OR-2 (a)	0	AND-2 (a)	0	C
D	Reserved		OR-8 (b)	0	NAND-1 (b)	0	Hold (nema)	0	DELAY-D	0	Overlap Set 3	0	OR-2 (b)	0	AND-2 (b)	0	D
E	Reserved		OR-8 (c)	0	NAND-2 (a)	0	Max Recall	0	DELAY-E	0	Detector Set 2	0	OR-3 (a)	0	AND-3 (a)	0	E
F	Reserved		OR-8 (d)	0	NAND-2 (b)	0	Min Recall	0	DELAY-F	0	Detector Set 3	0	OR-3 (b)	0	AND-3 (b)	0	F

Assignable Inputs <C+0+E=126>

Row	Column 8		Column 9		Column A		Column B		Column C		Column D		Column E		Column F		Row
0	Reserved		Phase ON - 1	0	Preempt Fail	0	Flasher 0	0	Free	0	NOT-1	0	TOD Out 1	0	Dial 2 (7-Wire)	0	0
1	Reserved		Phase ON - 2	0	Sp Evnt Out 1	0	Flasher 1	0	Plan 1	0	OR-1	0	TOD Out 2	0	Dial 3 (7-Wire)	0	1
2	Reserved		Phase ON - 3	0	Sp Evnt Out 2	0	Fast Flasher	0	Plan 2	0	OR-2	0	TOD Out 3	0	Offset 1 (7-Wire)	0	2
3	Reserved		Phase ON - 4	0	Sp Evnt Out 3	0	EXTMR	0	Plan 3	0	OR-3	0	TOD Out 4	0	Offset 2 (7-Wire)	0	3
4	Reserved		Phase ON - 5	0	Sp Evnt Out 4	0	One-Shot Timer	0	Plan 4	0	AND-1	0	TOD Out 5	0	Offset 3 (7-Wire)	0	4
5	Reserved		Phase ON - 6	0	Sp Evnt Out 5	0	Reserved		Plan 5	0	AND-2	0	TOD Out 6	0	Free (7-Wire)	0	5
6	Reserved		Phase ON - 7	0	Sp Evnt Out 6	0	Latch 1	0	Plan 6	0	AND-3	0	TOD Out 7	0	Flash (7-Wire)	0	6
7	Reserved		Phase ON - 8	0	Sp Evnt Out 7	0	Latch 2	0	Plan 7	0	NOT-2	0	TOD Out 8	0	Preempt	0	7
8	Flh Yell Arrow 1	0	Ph. Check - 1	0	Sp Evnt Out 8	0	NOT-3	0	Plan 8	0	EV-A	0	Adv. Warn - 1	0	Low Priority A	0	8
9	Green 1	0	Ph. Check - 2	0	Coord On	0	NOT-4	0	Plan 9	0	EV-B	0	Adv. Warn - 2	0	Low Priority B	0	9
A	Flh Yell Arrow 3	0	Ph. Check - 3	0	Detector Fail	0	OR-4	0	Spec. Funct. 3	0	EV-C	0	DELAY-A	0	Low Priority C	0	A
B	Green 3	0	Ph. Check - 4	0	Spec. Funct. 1	0	OR-5	0	Spec. Funct. 4	0	EV-D	0	DELAY-B	0	Low Priority D	0	B
C	Flh Yell Arrow 5	0	Ph. Check - 5	0	Spec. Funct. 2	0	OR-6	0	NAND-3	0	RR-1	0	DELAY-C	0	AND-5	0	C
D	Green 5	0	Ph. Check - 6	0	Central Control	0	AND-4	0	NAND-4	0	RR-2	0	DELAY-D	0	AND-6	0	D
E	Flh Yell Arrow 7	0	Ph. Check - 7	0	Excl. Ped DW	0	NAND-1	0	OR-7	0	Spec. Event 1	0	DELAY-E	0	Reserved		E
F	Green 7	0	Ph. Check - 8	0	Excl. Ped WK	0	NAND-2	0	OR-8	0	Spec. Event 2	0	DELAY-F	0	Reserved		F

Assignable Outputs <C+0+E=127>

Row	Column Numbers ----> / Phase Names ---->	Phase 1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 2 <C+0+F=2>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Transition Type
0.X = Shortway
1.X = Lengthen
X.1 thru X.4 = Number of cycles when lengthing

Transition Type	0.3	<C/5+1+9>

TBC Transition

Hawk Select	0	F/1+0+4>

Hawk Select 200 = Mid-Block, 201 = Hawk

Address	0	<C/1+0+6>
Select Parity	0	<C/1+0+5>

AB3418 Comm 2 0 = No Parity, 1 = Even

Daylight Savings Date
If set to all zeros, standard dates will be used.

Begin Month	0	<C/5+2+A>
Begin Week	0	<C/5+2+B>
End Month	0	<C/5+2+C>
End Week	0	<C/5+2+D>

Daylight Savings Time

Time B4 Yellow	0.0	<F/1+C+E>
Phase Number	0	<F/1+C+F>

Advance Warning Beacon - Sign 1

Time B4 Yellow	0.0	`
Phase Number	0	<F/1+D+F>

Advance Warning Beacon - Sign 2

Offset Time	0	<C/5+2+E>
Max Cycle Time	0	<C/5+2+F>

Yellow Yield Coordination

	12345678
Omit Alarm	_____

Local Alarm Disable <C/5+F+0>

IEN Status	0	<C/5+1+B>
Synch Time	0.0	<C/5+1+C>

Other Parameters

Row		1	2	3	4	5	6	7	8
0	Ped Walk	0	0	0	0	0	0	0	0
1	Ped FDW	0	0	0	0	0	0	0	0
2	Min Green	0	0	0	0	0	0	0	0
3	Type 3 Disconnect	0	0	0	0	0	0	0	0
4	Added per Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	Veh Extension	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	Max Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Max Limit	0	0	0	0	0	0	0	0
9	Max Limit 2	0	0	0	0	0	0	0	0
A	Adv. / Delay Walk	0	0	0	0	0	0	0	0
B	PE Min Ped FDW	0	0	0	0	0	0	0	0
C	Cond Serv Check	0	0	0	0	0	0	0	0
D	Reduce Every	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	Yellow Change	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	Red Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Phase Timing - Bank 3 <C+0+F=3>

	9	A	B	C	D
	- - -	- - -	- - -	- - -	- - -
Phase 1	0	0	0	0	0.0
Phase 2	0	0	0	0	0.0
Phase 3	0	0	0	0	0.0
Phase 4	0	0	0	0	0.0
Phase 5	0	0	0	0	0.0
Phase 6	0	0	0	0	0.0
Phase 7	0	0	0	0	0.0
Phase 8	0	0	0	0	0.0
Max Initial					
Alternate Walk					
Alternate FDW					
Alternate Initial					
Alternate Extension					

Alternate Timing

Row	Detector Name	C1 Pin Number (0)	Attributes (1)	Phase(s) (2)	Assign (3)	Delay (1)	Carry-over (3)
0		39	45_7_	2	123	0.0	0.0
1		40	45_7_	6	123	0.0	0.0
2		41	45_7_	4	123	0.0	0.0
3		42	45_7_	8	123	0.0	0.0
4		43	45_7_	2	123	0.0	0.0
5		44	45_7_	6	123	0.0	0.0
6		45	45_7_	4	123	0.0	0.0
7		46	45_7_	8	123	0.0	0.0
8		47	67	2	123	0.0	0.0
9		48	67	6	123	0.0	0.0
A		49	67	4	123	0.0	0.0
B		50	67	8	123	0.0	0.0
C		55	45_7_	5	123	0.0	0.0
D		56	45_7_	1	123	0.0	0.0
E		57	45_7_	7	123	0.0	0.0
F		58	45_7_	3	123	0.0	0.0

Row	Detector Name	C1 Pin Number (4)	Attributes (5)	Phase(s) (6)	Assign (7)	Delay (2)	Carry-over (4)
0		59	45_7_	5	123	0.0	0.0
1		60	45_7_	1	123	0.0	0.0
2		61	45_7_	7	123	0.0	0.0
3		62	45_7_	3	123	0.0	0.0
4		63	45_7_	2	123	0.0	0.0
5		64	45_7_	6	123	0.0	0.0
6		65	45_7_	4	123	0.0	0.0
7		66	45_7_	8	123	0.0	0.0
8		67	2	2	123	0.0	0.0
9		68	2	6	123	0.0	0.0
A		69	2	4	123	0.0	0.0
B		70	2	8	123	0.0	0.0
C		76	45_7_	2	123	0.0	0.0
D		77	45_7_	6	123	0.0	0.0
E		78	45_7_	4	123	0.0	0.0
F		79	45_7_	8	123	0.0	0.0

Detector Assignments <C+0+E=126> <C+0+D=0>

Detector Attributes
1 = Full Time Delay
2 = Ped Call
3 = Overlap
4 = Count
5 = Extension
6 = Type 3
7 = Calling
8 = Alternate

Det. Assignments
1 = Det. Set 1
2 = Det. Set 2
3 = Det. Set 3
4 =
5 =
6 = Failure - Min Recall
7 = Failure - Max Recall
8 = Report on Failure

	Ped / Phase / Overlap								
Column Numbers ---->	1	2	3	4	5	6	7	8	Row
Walk	0	0	0	0	0	0	0	0	0
Don't Walk	0	0	0	0	0	0	0	0	1
Phase Green	0	0	0	0	0	0	0	0	2
Phase Yellow	0	0	0	0	0	0	0	0	3
Phase Red	0	0	0	0	0	0	0	0	4
Overlap Green	0	0	0	0	0	0	0	0	5
Overlap Yellow	0	0	0	0	0	0	0	0	6
Overlap Red	0	0	0	0	0	0	0	0	7

Redirect Phase Outputs <C+0+E=127>

Cabinet Type	0	<E/125+D+0>

Enable Redirection
(Enable Redirection = 30)

Max OFF (minutes)	0	<D/0+0+1>
Max ON (minutes)	0	<D/0+0+2>
Chatter Fail Time	0	<D/0+0+4>

Detector Failure Monitor

	B	Row
One-Shot	0	8
Ext. Timer	0	9
DELAY-A	0	A
DELAY-B	0	B
DELAY-C	0	C
DELAY-D	0	D
DELAY-E	0	E
DELAY-F	0	F

Delay Logic Times
<C+0+D=0> (seconds)

Row	Time	Plan	Offset	Day of Week
0	00 : 00	1	A	1234567
1	05 : 00	5	A	_23456_
2	10 : 00	4	A	_23456_
3	14 : 00	6	A	_23456_
4	20 : 00	4	A	_23456_
5	08 : 00	2	A	1_____7
6	18 : 00	1	A	1_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.1>
(Bank 1)

Time	Funct.	Day of Week	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

TOD Function <C+0+7=0.1> <C+0+E=27>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.1>
(Bank 1)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.1>
(Bank 1)

T.O.D. Functions
0 =
1 = Red Lock
2 = Yellow Lock
3 = Veh Min Recall
4 = Ped Recall
5 =
6 = Rest In Walk
7 = Red Rest
8 = Double Entry
9 = Veh Max Recall
A = Veh Soft Recall
B = Maximum 2
C = Conditional Service
D = Free Lag Phases
E = Bit 1 - Local Override
Bit 4 - Disable Detector OFF Monitor
Bit 5 - Disable Low Priority Preempt
Bit 6 - FYA Inhibit
Bit 7 - Detector Count Monitor
Bit 8 - Real Time Split Monitor
F = Output Bits 1 thru 8

Plan Select
1 thru 9 = Coordination Plan 1 thru 9
14 or E = Free
15 or F = Flash

Offset Select
A = Offset A
B = Offset B
C = Offset C

Row	Time	Plan	Offset	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

TOD Coordination <C+0+9=0.2>
(Bank 2)

Time	Funct.	Holiday Type	Column 4 Phases/Bits
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____
00 : 00	0	_____	_____

Holiday TOD Function <C+0+7=0.2> <C+0+E=28>

Day	Year	Month	Holiday Type
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____
00	00	0	_____

Holiday Dates <C+0+8=1.2>
(Bank 2)

Time	Plan	Offset	Holiday Type
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____
00 : 00	0	0	_____

Holiday Events <C+0+9=1.2>
(Bank 2)

Month Select: October = A, November = B, Decmber = C

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/27+5+F>

Limited Service Interval

Special Event Schedule -- Table 1 <C+0+E=27>

Row	6 Clear	7 Time	8 Ped Call	9 Hold	A Advance	B Force Off	C Vehicle Call	D Permit Phases	E Ped Omit	F Output
0		0								
1		0								
2		0								
3		0								
4		0								
5		0								
6		0								
7		0								
8		0								
9		0								
A		0								
B		0								
C		0								
D		0								
E		0								
F		0								

Notes:

0 <E/28+5+F>

Limited Service Interval

Special Event Schedule -- Table 2 <C+0+E=28>

Min Time (seconds)	0	<F/1+0+8>

Min Green Before PE Force Off

Max Time (minutes)	0	<F/1+0+9>

Max Preempt Time Before Failure

Min Time (seconds)	0	<F/1+0+A>

Min Time Between Same Preempts
(Does Not Apply To Railroad Preempt)

Low Pri. Channel	_____	<E/125+C+8>

Disable Low Priority Channel

Low Priority
1 = Channel A
2 = Channel B
3 = Channel C
4 = Channel D

Row		
C	Bus Headway	0
D	Bus Delay	0
E	Max Early Grn	0
F	Max Grn Ext.	0

Priority Parameters
<F/1 +A+Row>

Row	Time	Headway	Direction	Day of Week
0	00 : 00	0	0	_____
1	00 : 00	0	0	_____
2	00 : 00	0	0	_____
3	00 : 00	0	0	_____
4	00 : 00	0	0	_____
5	00 : 00	0	0	_____
6	00 : 00	0	0	_____
7	00 : 00	0	0	_____
8	00 : 00	0	0	_____
9	00 : 00	0	0	_____
A	00 : 00	0	0	_____
B	00 : 00	0	0	_____
C	00 : 00	0	0	_____
D	00 : 00	0	0	_____
E	00 : 00	0	0	_____
F	00 : 00	0	0	_____

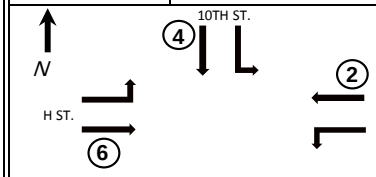
Headway Schedule <C+0+9=2.1>

Headway Time
(minutes)
1 thru 9 = 1 thru 9
A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

Low Priority Preemption (Bus Priority)

Note: Also see "Time of Day Functions", Function E, Bit 5 (Disable Low Priority)

233 Rev - 06/19/2012	10TH STREET AND H STREET, N.W.	SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATION ADMINISTRATION

ACISA ID	2090	TS-	827-E OPT-1
ISNUM	120	S-	1565-C

C + 0 + F = 1
<F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0		10		10		10		
FLASH D/W	1		9		13		9		
MIN. GREEN	2		10		7		10		
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1		1		
MAX GAP	6		1		1		1		
MIN GAP	7		1		1		1		
MAXIMUM	8		105		40		105		
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A		3		3		3		
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4		4		
RED CLEAR	F		1.5		2		1.5		

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X		X		
SYNC PHASES (Check by phases)		X				X		

NOTES: PHASES 2 & 4 LPI

C+0+C=I ; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8
CYCLE TIME	0	80	100	80	100	110	110	120	120
FORCE OFF 1	1								
FORCE OFF 2	2	0	0	0	0	0	0	0	0
FORCE OFF 3	3								
FORCE OFF 4	4	30	35	30	35	33	35	36	33
FORCE OFF 5	5								
FORCE OFF 6	6	0	0	0	0	0	0	0	0
FORCE OFF 7	7								
FORCE OFF 8	8								
OFFSET A	A	21	52	21	52	86	36	74	71
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7
PRETIMED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
MAX RECALL (PHASES)									
PERM 1 VEH (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
PERM 1 PED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

NOTES:

NOTES:

*** SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

*** PHASE 6 PED IS DUMMY FOR LPI.**

C + 0 + E = 29

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125
E + E + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125
E + F + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6						X		
PED 4P	7				X				
PED 8P	8								
FLASH YELLOW	9		X				X		
LOW PRIORITY A	A								
LOW PRIORITY B	B								
LOW PRIORITY C	C								
LOW PRIORITY D	D								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
PERMIT	0		X		X		X		
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X		X		
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X		X		
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X				X		

C + 0 + F = 2
F + F + FEATURE

FEATURE	PHASE 1	2	3	4	5	6	7	8
GREEN FLASH								
FLASH WALK								
ADVANCED WALK		X		X		X		
DELAYED WALK								

PREPARED BY: **Sabra, Wang & Associates, Inc.**

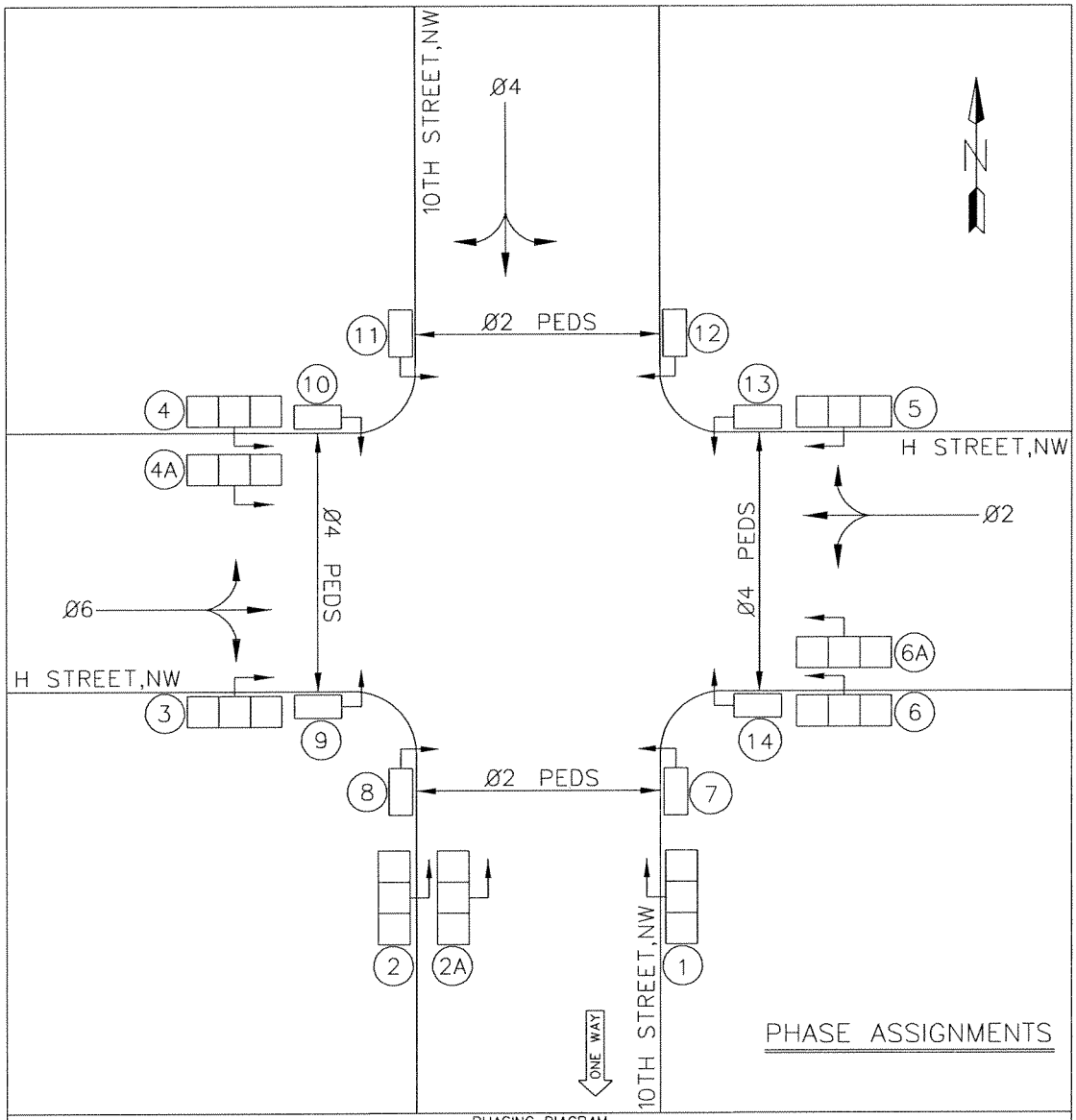
WORK/SHOP ORDER NO: S-01-15-258

APPROVED BY: Darius Rejai

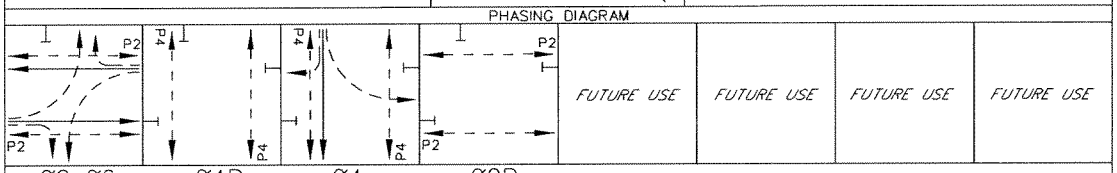
DATE INSTALLED:

INSTALLED BY:

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASING DIAGRAM



TRAFFIC SIGNAL OPERATION

10TH STREET AND H STREET, N.W.

ACISA 2090

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	A.R.	DATE:	11/01/12
DRAWN BY:	C.N.	DATE:	09/26/12
IN SERVICE:		SCALE:	NONE

DESIGNED BY:

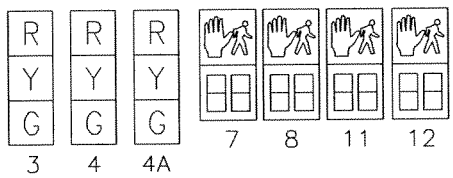
SUBMITTED BY: PROJECT ENGINEER

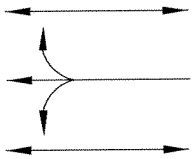
APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 827-E Opt 1

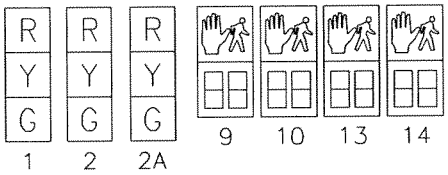
SHEET 1 OF 4

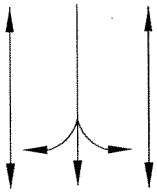
SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS





Ø2





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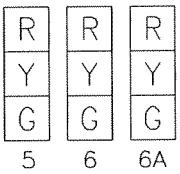
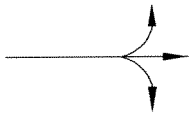
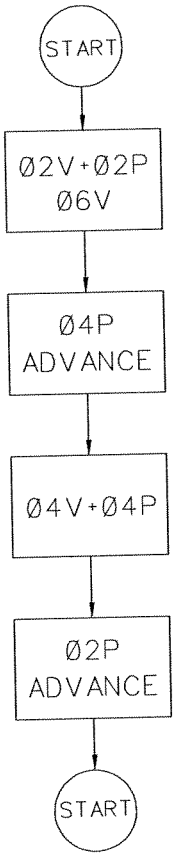




Ø6

TRAFFIC SIGNAL OPERATION 10TH STREET AND H STREET, N.W.	ACISA 2090
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
CHECK BY: A.R. DATE: 11/01/12 DRAWN BY: C.N. DATE: 09/26/12 IN SERVICE: SCALE: NONE	T.S. 827-E Opt 1 SHEET 2 OF 4

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



PHASE SEQUENCE

ON RECALL

Ø2V + Ø2P
Ø4V + Ø4P
Ø6V

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION

10TH STREET AND H STREET, N.W.

ACISA 2090

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	A.R.	DATE:	11/01/12
DRAWN BY:	C.N.	DATE:	09/26/12
IN SERVICE:		SCALE:	NONE

DESIGNED BY: _____

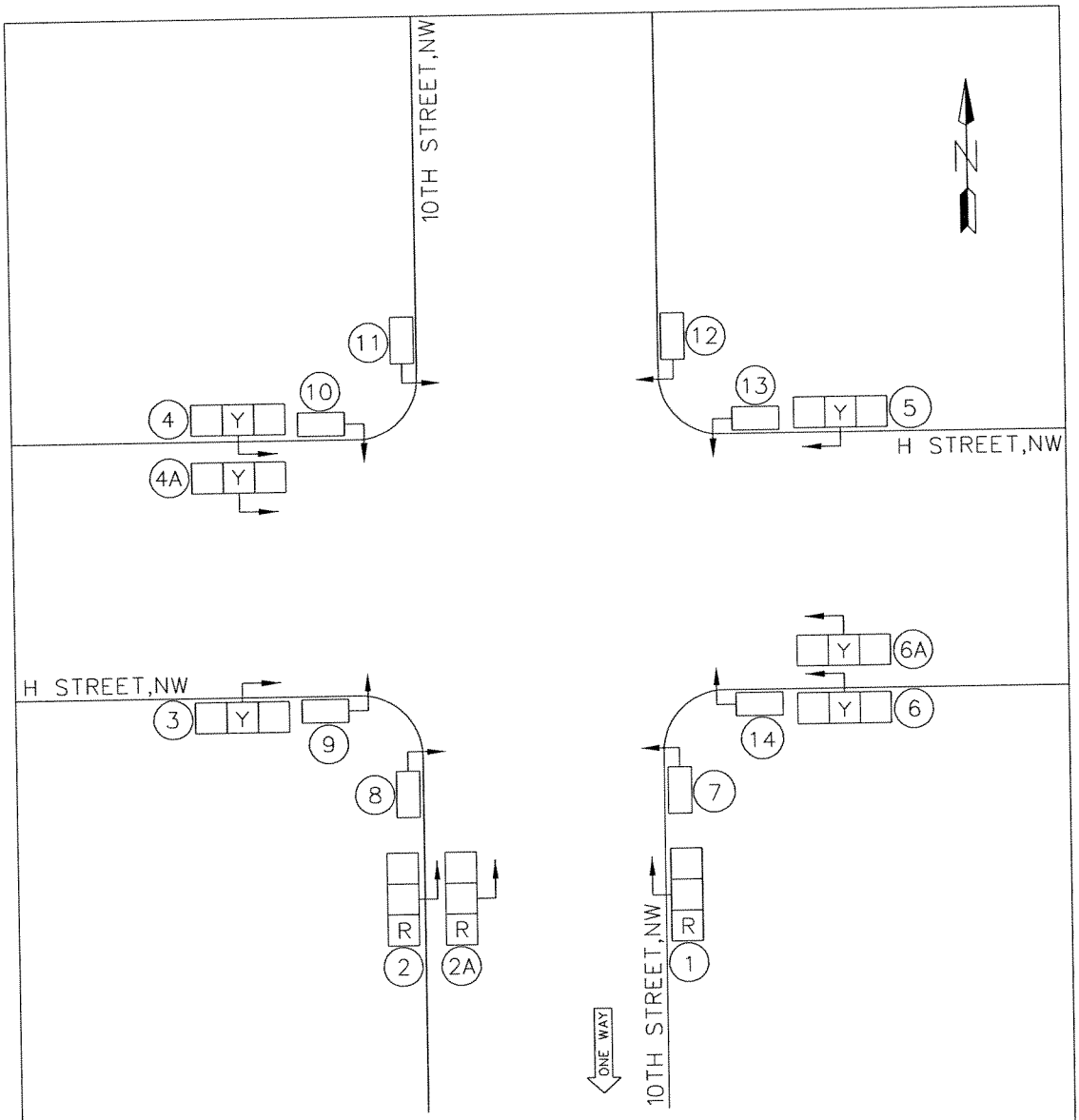
SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 827-E Opt 1

SHEET 3 OF 4

SIGNAL HEADS NO. 2A, 4A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION 10TH STREET AND H STREET, N.W.	ACISA 2090
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: SUBMITTED BY: PROJECT ENGINEER APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS
T.S. 827-E Opt 1	
SHEET 4 OF 4	

CHECK BY:	A.R.	DATE:	11/01/12
DRAWN BY:	C.N.	DATE:	09/26/12
IN SERVICE:		SCALE:	NONE

REQUEST FOR SERVICES

DISTRICT DEPARTMENT OF TRANSPORTATION

TRANSPORTATION OPERATIONS ADMINISTRATION

TO: **TRAFFIC SIGNALS / ITS TEAM** **FIELD OPERATIONS DIVISION**	DATE OF REQUEST January 09, 2015	SHOP ORDER NO. **S-01-15-258**
ACISA NO: **2090**	INSUM NO: 120	S- DRAWING NO: 1565
TS NO: **827-E OPT-1**	TASK NO: 4 (Downtown Core)	WARD NO: 6

Perform the work described and/or illustrated below:

10TH STREET AND H STREET, NW

Traffic Signals / ITS Division to implement new signal timing plan as part of the Zone 4 network (639 Intersections and 572 traffic Controllers in Downtown core) Optimization Project. This does not require any hardware changes and therefore, dBase portion of the previous configuration package (Revision NO.10A) will remain unchanged.

CC: ITS Support & Maintenance Division
Project File

PREPARED BY:	APPROVED BY:	INSTALLED BY:	DATE INSTALLED:
Ogechi Elekwachi Project Engineer (202-671-4631)	Wasim Raja Traffic Signal Chief (202-671-2656)		

Revised - 12/16/ 2014

Appendix B – Existing LOS / Delay Synchro Report

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	82	80	124	64	30	63
Future Vol, veh/h	82	80	124	64	30	63
Conflicting Peds, #/hr	19	0	0	19	107	78
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	89	89	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	108	139	72	43	90

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	318	0	-	0	612	301
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1242	-	-	-	456	739
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1220	-	-	-	332	652
Mov Cap-2 Maneuver	-	-	-	-	332	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	590	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1220	-	-	-	497
HCM Lane V/C Ratio	0.091	-	-	-	0.267
HCM Control Delay (s)	8.2	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Intersection	
Int Delay, s/veh	48.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	31	268	42	78	386	54	18	23	24	2	6	6
Future Vol, veh/h	31	268	42	78	386	54	18	23	24	2	6	6
Conflicting Peds, #/hr	89	0	48	48	0	89	190	0	358	358	0	190
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	96	96	96	81	81	81	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	335	53	81	402	56	22	28	30	3	9	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	816	0	0	746	0	0	1483	1776	641	1535	1774	676
Stage 1	-	-	-	-	-	-	797	797	-	951	951	-
Stage 2	-	-	-	-	-	-	686	979	-	584	823	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	480	-	-	518	-	-	132	82	358	123	82	339
Stage 1	-	-	-	-	-	-	275	397	-	215	336	-
Stage 2	-	-	-	-	-	-	367	326	-	424	386	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	439	-	-	474	-	-	42	~ 24	216	-	24	204
Mov Cap-2 Maneuver	-	-	-	-	-	-	42	~ 24	-	-	24	-
Stage 1	-	-	-	-	-	-	161	232	-	126	170	-
Stage 2	-	-	-	-	-	-	235	165	-	260	225	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	2.7	$ 612.7	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	43	439	-	-	474	-	-	-
HCM Lane V/C Ratio	1.866	0.088	-	-	0.171	-	-	-
HCM Control Delay (s)	$ 612.7	14	0.4	-	14.2	0.7	-	-
HCM Lane LOS	F	B	A	-	B	A	-	-
HCM 95th %tile Q(veh)	8.3	0.3	-	-	0.6	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	109	62	22	166	0	0	0	0	47	918	46
Future Volume (veh/h)	0	109	62	22	166	0	0	0	0	47	918	46
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	0.90		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	120	68	24	182	0				52	1009	51
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	459	229	94	650	0				103	2095	111
Arrive On Green	0.00	0.07	0.07	0.21	0.21	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	2237	1067	251	3120	0				153	3117	165
Grp Volume(v), veh/h	0	96	92	109	97	0				554	0	558
Grp Sat Flow(s),veh/h/ln	0	1770	1441	1676	1610	0				1632	0	1804
Q Serve(g_s), s	0.0	5.7	6.7	0.0	5.5	0.0				32.7	0.0	29.5
Cycle Q Clear(g_c), s	0.0	5.7	6.7	5.4	5.5	0.0				32.7	0.0	29.5
Prop In Lane	0.00		0.74	0.22		0.00				0.09		0.09
Lane Grp Cap(c), veh/h	0	379	309	399	345	0				1097	0	1213
V/C Ratio(X)	0.00	0.25	0.30	0.27	0.28	0.00				0.51	0.00	0.46
Avail Cap(c_a), veh/h	0	467	380	478	425	0				1097	0	1213
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.92	0.92	1.00	1.00	0.00				0.54	0.00	0.54
Uniform Delay (d), s/veh	0.0	42.8	43.3	36.1	36.1	0.0				26.8	0.0	25.5
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.1	0.2	0.0				0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.8	2.7	2.8	2.5	0.0				15.1	0.0	15.0
LnGrp Delay(d),s/veh	0.0	42.9	43.4	36.2	36.3	0.0				27.7	0.0	26.2
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		188			206						1112	
Approach Delay, s/veh		43.2			36.3						26.9	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				29.6		80.4		29.6
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				8.7		34.7		7.5
Green Ext Time (p_c), s				0.9		3.1		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	109	62	22	166	0	0	0	0	47	918	46
Future Volume (vph)	0	109	62	22	166	0	0	0	0	47	918	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.94			0.99						0.97	
Frt		0.946									0.993	
Flt Protected					0.994						0.998	
Satd. Flow (prot)	0	2962	0	0	3307	0	0	0	0	0	3461	0
Flt Permitted					0.899						0.998	
Satd. Flow (perm)	0	2962	0	0	2950	0	0	0	0	0	3407	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46									8	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		562			586			355			357	
Travel Time (s)		15.3			16.0			9.7			9.7	
Confl. Peds. (#/hr)			112	112						390		230
Confl. Bikes (#/hr)												4
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Parking (#/hr)		4			4					4		
Adj. Flow (vph)	0	120	68	24	182	0	0	0	0	52	1009	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	188	0	0	206	0	0	0	0	0	1112	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		35.0		35.0	35.0					75.0	75.0	
Total Lost Time (s)		6.0			6.0						6.5	
Act Effct Green (s)		24.0			24.0						73.5	
Actuated g/C Ratio		0.22			0.22						0.67	
v/c Ratio		0.28			0.32						0.49	
Control Delay		18.8			37.8						1.3	
Queue Delay		0.0			0.0						0.5	
Total Delay		18.8			37.8						1.8	
LOS		B			D						A	
Approach Delay		18.8			37.8						1.8	
Approach LOS		B			D						A	
Queue Length 50th (ft)		49			64						18	
Queue Length 95th (ft)		86			100						22	
Internal Link Dist (ft)		482			506			275			277	
Turn Bay Length (ft)												
Base Capacity (vph)		814			777						2279	
Starvation Cap Reductn		0			0						684	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.23			0.27						0.70	

Intersection Summary	
Area Type:	Other

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 31 (28%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: F St, NW & 9th St, NW

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	25	0	0	1118	0
Future Vol, veh/h	0	25	0	0	1118	0
Conflicting Peds, #/hr	0	381	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	36	0	0	1165	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1546	962	-	0
Stage 1	1546	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	121	220	-	-
Stage 1	82	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	49	140	-	-
Mov Cap-2 Maneuver	49	-	-	-
Stage 1	52	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	39.5	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	140	-	-
HCM Lane V/C Ratio	0.259	-	-
HCM Control Delay (s)	39.5	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	144	66	80	112	0	0	0	0	32	1022	46
Future Volume (vph)	0	144	66	80	112	0	0	0	0	32	1022	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.88		1.00	1.00						1.00	0.47
Flpb, ped/bikes		1.00		1.00	1.00						0.98	1.00
Frt		0.96		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1414		1593	1475						2942	672
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1414		1593	1475						2942	672
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	150	69	83	117	0	0	0	0	33	1065	48
RTOR Reduction (vph)	0	15	0	0	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	204	0	83	117	0	0	0	0	0	1098	22
Confl. Peds. (#/hr)			364	364						210		181
Confl. Bikes (#/hr)			1									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.1		21.0	21.0						50.4	50.4
Effective Green, g (s)		19.1		21.0	21.0						50.4	50.4
Actuated g/C Ratio		0.17		0.19	0.19						0.46	0.46
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		245		304	281						1347	307
v/s Ratio Prot		c0.14		0.05	c0.08							
v/s Ratio Perm											0.37	0.03
v/c Ratio		0.83		0.27	0.42						0.82	0.07
Uniform Delay, d1		43.9		38.0	39.1						25.8	16.7
Progression Factor		0.75		1.00	1.00						0.98	1.00
Incremental Delay, d2		16.4		0.2	0.4						5.3	0.4
Delay (s)		49.1		38.2	39.5						30.5	17.1
Level of Service		D		D	D						C	B
Approach Delay (s)		49.1			38.9			0.0			30.0	
Approach LOS		D			D			A			C	

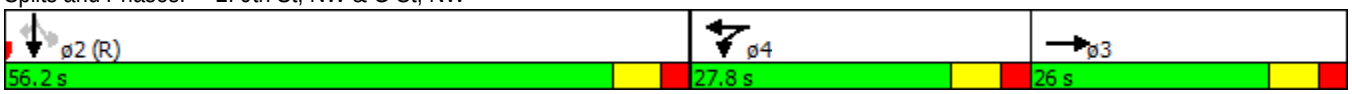
Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	144	66	80	112	0	0	0	0	32	1022	46
Future Volume (vph)	0	144	66	80	112	0	0	0	0	32	1022	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		0	0		0	0		50
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.88		0.72							0.98	0.47
Frt		0.957										0.850
Flt Protected				0.950							0.998	
Satd. Flow (prot)	0	1413	0	1593	1475	0	0	0	0	0	2988	1425
Flt Permitted				0.950							0.998	
Satd. Flow (perm)	0	1413	0	1154	1475	0	0	0	0	0	2940	672
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)		18										99
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		558			302			357			263	
Travel Time (s)		15.2			8.2			9.7			7.2	
Confl. Peds. (#/hr)			364	364						210		181
Confl. Bikes (#/hr)			1									5
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Parking (#/hr)			4		4						4	
Adj. Flow (vph)	0	150	69	83	117	0	0	0	0	33	1065	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	219	0	83	117	0	0	0	0	0	1098	48
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Total Split (s)		26.0		27.8	27.8					56.2	56.2	56.2
Total Lost Time (s)		6.5		6.5	6.5						6.5	6.5
Act Effct Green (s)		19.1		21.0	21.0						50.4	50.4
Actuated g/C Ratio		0.17		0.19	0.19						0.46	0.46
v/c Ratio		0.84		0.27	0.42						0.82	0.13
Control Delay		53.7		40.9	44.4						31.2	3.1
Queue Delay		0.0		0.0	0.0						0.1	0.0
Total Delay		53.7		40.9	44.4						31.3	3.1
LOS		D		D	D						C	A
Approach Delay		53.7			42.9						30.1	
Approach LOS		D			D						C	
Queue Length 50th (ft)		148		51	73						365	2
Queue Length 95th (ft)		#266		97	131						457	16
Internal Link Dist (ft)		478			222			277			183	
Turn Bay Length (ft)				175								50
Base Capacity (vph)		267		308	285						1347	361
Starvation Cap Reductn		0		0	0						14	0
Spillback Cap Reductn		0		0	0						0	0
Storage Cap Reductn		0		0	0						0	0
Reduced v/c Ratio		0.82		0.27	0.41						0.82	0.13

Intersection Summary	
Area Type: CBD	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 24 (22%), Referenced to phase 2:SBTL and 6:, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 70.2%	ICU Level of Service C
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: 9th St, NW & G St, NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	352	129	42	385	0	0	0	0	56	932	60
Future Volume (vph)	0	352	129	42	385	0	0	0	0	56	932	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.91			1.00						0.99	
Flpb, ped/bikes		1.00			0.99						0.98	
Frt		0.96			1.00						0.99	
Flt Protected		1.00			1.00						1.00	
Satd. Flow (prot)		4438			4988						4680	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		4438			3744						4680	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	367	134	44	401	0	0	0	0	58	971	62
RTOR Reduction (vph)	0	74	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	427	0	0	445	0	0	0	0	0	1088	0
Confl. Peds. (#/hr)			257	257						286		120
Confl. Bikes (#/hr)												4
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		15.3			15.3						77.2	
Effective Green, g (s)		15.3			15.3						77.2	
Actuated g/C Ratio		0.14			0.14						0.70	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		617			520						3284	
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.12						0.23	
v/c Ratio		0.69			0.86						0.33	
Uniform Delay, d1		45.1			46.3						6.4	
Progression Factor		0.40			1.00						1.00	
Incremental Delay, d2		2.4			12.6						0.3	
Delay (s)		20.6			58.8						6.6	
Level of Service		C			E						A	
Approach Delay (s)		20.6			58.8			0.0			6.6	
Approach LOS		C			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	352	129	42	385	0	0	0	0	56	932	60
Future Volume (vph)	0	352	129	42	385	0	0	0	0	56	932	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor		0.91			0.98						0.97	
Frt		0.960									0.991	
Flt Protected					0.995						0.997	
Satd. Flow (prot)	0	4439	0	0	5060	0	0	0	0	0	4763	0
Flt Permitted					0.747						0.997	
Satd. Flow (perm)	0	4439	0	0	3741	0	0	0	0	0	4677	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		86									13	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		561			299			282			220	
Travel Time (s)		15.3			8.2			7.7			6.0	
Confl. Peds. (#/hr)			257	257						286		120
Confl. Bikes (#/hr)												4
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Parking (#/hr)											4	
Adj. Flow (vph)	0	367	134	44	401	0	0	0	0	58	971	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	501	0	0	445	0	0	0	0	0	1092	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		39.0		39.0	39.0					65.0	65.0	
Total Lost Time (s)		6.0			6.0						5.5	
Act Effct Green (s)		15.3			15.3						77.2	
Actuated g/C Ratio		0.14			0.14						0.70	
v/c Ratio		0.73			0.86						0.33	
Control Delay		20.8			62.3						6.9	
Queue Delay		0.0			0.0						0.0	
Total Delay		20.8			62.3						6.9	
LOS		C			E						A	
Approach Delay		20.8			62.3						6.9	
Approach LOS		C			E						A	
Queue Length 50th (ft)		117			113						95	
Queue Length 95th (ft)		156			147						134	
Internal Link Dist (ft)		481			219			202			140	
Turn Bay Length (ft)												
Base Capacity (vph)		1391			1122						3286	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						138	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.36			0.40						0.35	

Lane Group	ø5	ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	9
Permitted Phases		
Total Split (s)	3.0	3.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	
Area Type: Other	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 5 (5%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 22.4	Intersection LOS: C
Intersection Capacity Utilization 58.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 12: 9th St, NW & H St, NW

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	115	88	22	140	0	0	0	0	12	218	68
Future Volume (veh/h)	0	115	88	22	140	0	0	0	0	12	218	68
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.64	0.80		1.00				1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	122	94	23	149	0				13	232	72
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	309	173	76	457	0				101	1821	577
Arrive On Green	0.00	0.17	0.17	0.17	0.17	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	1880	1004	202	2733	0				140	2520	799
Grp Volume(v), veh/h	0	120	96	85	87	0				172	0	145
Grp Sat Flow(s),veh/h/ln	0	1770	1022	1239	1610	0				1856	0	1603
Q Serve(g_s), s	0.0	6.6	9.4	0.3	5.2	0.0				8.0	0.0	7.8
Cycle Q Clear(g_c), s	0.0	6.6	9.4	9.7	5.2	0.0				8.0	0.0	7.8
Prop In Lane	0.00		0.98	0.27		0.00				0.08		0.50
Lane Grp Cap(c), veh/h	0	306	176	256	278	0				1341	0	1159
V/C Ratio(X)	0.00	0.39	0.54	0.33	0.31	0.00				0.13	0.00	0.12
Avail Cap(c_a), veh/h	0	716	413	595	651	0				1341	0	1159
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.96	0.96	0.00				0.94	0.00	0.94
Uniform Delay (d), s/veh	0.0	40.4	41.5	39.5	39.8	0.0				14.7	0.0	14.6
Incr Delay (d2), s/veh	0.0	0.3	1.0	0.3	0.2	0.0				0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	2.7	2.2	2.4	0.0				4.2	0.0	3.5
LnGrp Delay(d),s/veh	0.0	40.7	42.5	39.8	40.0	0.0				14.9	0.0	14.8
LnGrp LOS		D	D	D	D					B		B
Approach Vol, veh/h		216			172						317	
Approach Delay, s/veh		41.5			39.9						14.8	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				24.5		85.5		24.5
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				11.4		10.0		11.7
Green Ext Time (p_c), s				1.2		0.8		1.2

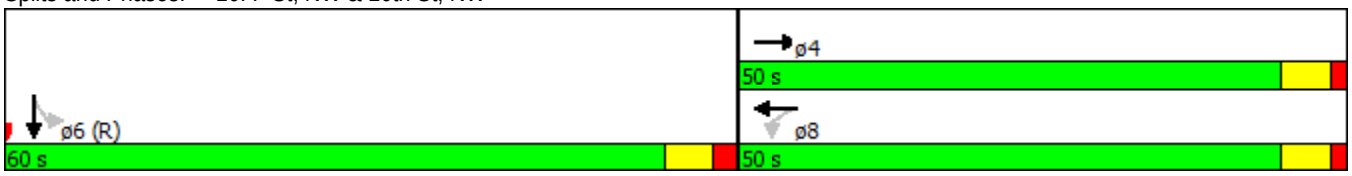
Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	115	88	22	140	0	0	0	0	12	218	68
Future Volume (vph)	0	115	88	22	140	0	0	0	0	12	218	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.89			0.96						0.91	
Frt		0.935									0.966	
Flt Protected					0.993						0.998	
Satd. Flow (prot)	0	2774	0	0	3304	0	0	0	0	0	2949	0
Flt Permitted					0.886						0.998	
Satd. Flow (perm)	0	2774	0	0	2815	0	0	0	0	0	2912	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74									49	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		382			562			329			360	
Travel Time (s)		10.4			15.3			9.0			9.8	
Confl. Peds. (#/hr)			323	323						225		380
Confl. Bikes (#/hr)			5									5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Parking (#/hr)		4			4						4	
Adj. Flow (vph)	0	122	94	23	149	0	0	0	0	13	232	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	172	0	0	0	0	0	317	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		50.0		50.0	50.0					60.0	60.0	
Total Lost Time (s)		5.5			5.5						6.0	
Act Effct Green (s)		19.0			19.0						79.5	
Actuated g/C Ratio		0.17			0.17						0.72	
v/c Ratio		0.40			0.35						0.15	
Control Delay		28.7			55.7						3.8	
Queue Delay		0.0			0.0						0.0	
Total Delay		28.7			55.7						3.8	
LOS		C			E						A	
Approach Delay		28.7			55.7						3.8	
Approach LOS		C			E						A	
Queue Length 50th (ft)		46			65						24	
Queue Length 95th (ft)		84			100						30	
Internal Link Dist (ft)		302			482			249			280	
Turn Bay Length (ft)												
Base Capacity (vph)		1166			1138						2118	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.19			0.15						0.15	

Intersection Summary	
Area Type:	Other

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 16 (15%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 49.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: F St, NW & 10th St, NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	273	226	31	247	0	0	0	0	17	277	40
Future Volume (veh/h)	0	273	226	31	247	0	0	0	0	17	277	40
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.85	1.00		1.00				1.00		0.73
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	325	269	37	294	0				20	330	48
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	363	301	54	373	0				50	843	126
Arrive On Green	0.00	0.53	0.53	0.17	0.17	0.00				0.37	0.37	0.37
Sat Flow, veh/h	0	688	569	33	706	0				135	2265	339
Grp Volume(v), veh/h	0	0	594	331	0	0				218	0	180
Grp Sat Flow(s),veh/h/ln	0	0	1258	739	0	0				1469	0	1270
Q Serve(g_s), s	0.0	0.0	46.5	6.9	0.0	0.0				12.0	0.0	11.4
Cycle Q Clear(g_c), s	0.0	0.0	46.5	53.3	0.0	0.0				12.0	0.0	11.4
Prop In Lane	0.00		0.45	0.11		0.00				0.09		0.27
Lane Grp Cap(c), veh/h	0	0	664	426	0	0				546	0	473
V/C Ratio(X)	0.00	0.00	0.89	0.78	0.00	0.00				0.40	0.00	0.38
Avail Cap(c_a), veh/h	0	0	829	619	0	0				546	0	473
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.95	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	23.2	36.5	0.0	0.0				25.5	0.0	25.3
Incr Delay (d2), s/veh	0.0	0.0	9.2	2.0	0.0	0.0				2.2	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.7	10.2	0.0	0.0				5.2	0.0	4.3
LnGrp Delay(d),s/veh	0.0	0.0	32.5	38.4	0.0	0.0				27.6	0.0	27.6
LnGrp LOS			C	D						C		C
Approach Vol, veh/h		594			331						398	
Approach Delay, s/veh		32.5			38.4						27.6	
Approach LOS		C			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		46.4		63.6				63.6
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		14.0		48.5				55.3
Green Ext Time (p_c), s		0.8		2.9				2.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	273	226	31	247	0	0	0	0	17	277	40
Future Volume (vph)	0	273	226	31	247	0	0	0	0	17	277	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.89			0.99						0.92	
Frt		0.939									0.982	
Flt Protected					0.994						0.997	
Satd. Flow (prot)	0	1401	0	0	1666	0	0	0	0	0	2944	0
Flt Permitted					0.863						0.997	
Satd. Flow (perm)	0	1401	0	0	1436	0	0	0	0	0	2863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34									13	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		410			558			360			262	
Travel Time (s)		11.2			15.2			9.8			7.1	
Confl. Peds. (#/hr)			135	135						242		144
Confl. Bikes (#/hr)			6									15
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Parking (#/hr)			4	4						4		4
Adj. Flow (vph)	0	325	269	37	294	0	0	0	0	20	330	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	594	0	0	331	0	0	0	0	0	398	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						2	
Permitted Phases				8						2		
Total Split (s)		78.0		78.0	78.0					32.0	32.0	
Total Lost Time (s)		5.5			5.5						5.5	
Act Effct Green (s)		58.3			58.3						40.7	
Actuated g/C Ratio		0.53			0.53						0.37	
v/c Ratio		0.78			0.44						0.37	
Control Delay		26.2			16.2						39.0	
Queue Delay		0.0			0.0						0.0	
Total Delay		26.2			16.2						39.0	
LOS		C			B						D	
Approach Delay		26.2			16.2						39.0	
Approach LOS		C			B						D	
Queue Length 50th (ft)		296			90						127	
Queue Length 95th (ft)		282			82						177	
Internal Link Dist (ft)		330			478			280			182	
Turn Bay Length (ft)												
Base Capacity (vph)		934			946						1068	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.64			0.35						0.37	

Intersection Summary	
Area Type:	CBD

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 15 (14%), Referenced to phase 2:SBTL and 6:, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 27.6	Intersection LOS: C
Intersection Capacity Utilization 67.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: 10th St, NW & G St, NW

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	477	205	69	344	27	0	0	0	30	206	49
Future Volume (vph)	13	477	205	69	344	27	0	0	0	30	206	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.90			0.97						0.94	
Flpb, ped/bikes		1.00			0.99						0.96	
Frt		0.96			0.99						0.98	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		4358			4769						1433	
Flt Permitted		0.92			0.67						0.99	
Satd. Flow (perm)		4035			3222						1433	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	13	492	211	71	355	28	0	0	0	31	212	51
RTOR Reduction (vph)	0	84	0	0	8	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	632	0	0	446	0	0	0	0	0	289	0
Confl. Peds. (#/hr)	196		251	251		196				485		402
Confl. Bikes (#/hr)			3									1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		22.2			22.2						70.3	
Effective Green, g (s)		22.2			22.2						70.3	
Actuated g/C Ratio		0.20			0.20						0.64	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		814			650						915	
v/s Ratio Prot												
v/s Ratio Perm		c0.16			0.14						0.20	
v/c Ratio		0.78			0.86dl						0.32	
Uniform Delay, d1		41.6			40.7						9.0	
Progression Factor		1.00			1.45						1.00	
Incremental Delay, d2		4.3			2.3						0.9	
Delay (s)		45.8			61.2						9.9	
Level of Service		D			E						A	
Approach Delay (s)		45.8			61.2			0.0			9.9	
Approach LOS		D			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	477	205	69	344	27	0	0	0	30	206	49
Future Volume (vph)	13	477	205	69	344	27	0	0	0	30	206	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.90			0.95						0.90	
Frt		0.956			0.991						0.977	
Flt Protected		0.999			0.992						0.995	
Satd. Flow (prot)	0	4379	0	0	4838	0	0	0	0	0	1494	0
Flt Permitted		0.925			0.670						0.995	
Satd. Flow (perm)	0	4036	0	0	3217	0	0	0	0	0	1434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		105			10						13	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		441			561			282			228	
Travel Time (s)		12.0			15.3			7.7			6.2	
Confl. Peds. (#/hr)	196		251	251		196				485		402
Confl. Bikes (#/hr)			3									1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Parking (#/hr)											4	
Adj. Flow (vph)	13	492	211	71	355	28	0	0	0	31	212	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	716	0	0	454	0	0	0	0	0	294	0
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Total Split (s)	44.0	44.0		44.0	44.0					60.0	60.0	
Total Lost Time (s)		5.5			5.5						6.0	
Act Effct Green (s)		22.2			22.2						70.3	
Actuated g/C Ratio		0.20			0.20						0.64	
v/c Ratio		0.80			0.86dl						0.32	
Control Delay		42.4			62.7						10.3	
Queue Delay		0.0			0.0						0.0	
Total Delay		42.4			62.7						10.3	
LOS		D			E						B	
Approach Delay		42.4			62.7						10.3	
Approach LOS		D			E						B	
Queue Length 50th (ft)		153			123						81	
Queue Length 95th (ft)		188			160						150	
Internal Link Dist (ft)		361			481			202			148	
Turn Bay Length (ft)												
Base Capacity (vph)		1480			1132						920	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.48			0.40						0.32	

Intersection Summary	
Area Type:	Other

Lane Group	ø5	ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	9
Permitted Phases		
Total Split (s)	3.0	3.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 86 (78%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 42.3	Intersection LOS: D
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 11: 10th St, NW & H St, NW

Intersection	
Int Delay, s/veh	69.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	50	215	110	43	60	135
Future Vol, veh/h	50	215	110	43	60	135
Conflicting Peds, #/hr	126	0	0	126	283	395
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	89	89	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	229	124	48	71	161

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	567	0	-	0	878	669
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1005	-	-	-	318	458
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	884	-	-	-	115	251
Mov Cap-2 Maneuver	-	-	-	-	115	-
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	204.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	884	-	-	-	184
HCM Lane V/C Ratio	0.06	-	-	-	1.262
HCM Control Delay (s)	9.3	0	-	-	204.2
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12.8

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	26	623	39	23	229	39	22	22	57	8	20	26
Future Vol, veh/h	26	623	39	23	229	39	22	22	57	8	20	26
Conflicting Peds, #/hr	343	0	99	99	0	343	703	0	316	316	0	703
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	67	67	67	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	642	40	34	342	58	26	26	68	10	24	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1103	0	0	1385	0	0	2339	2591	1387	2170	2582	1246
Stage 1	-	-	-	-	-	-	1419	1419	-	1143	1143	-
Stage 2	-	-	-	-	-	-	920	1172	-	1027	1439	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	349	-	-	254	-	-	39	~ 25	114	50	25	142
Stage 1	-	-	-	-	-	-	101	201	-	158	273	-
Stage 2	-	-	-	-	-	-	264	264	-	226	197	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	235	-	-	171	-	-	-	~ 2	~ 25	-	~ 2	32
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 2	-	-	~ 2	-
Stage 1	-	-	-	-	-	-	27	54	-	43	67	-
Stage 2	-	-	-	-	-	-	~ 3	65	-	-	53	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	4.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	235	-	-	171	-	-	-
HCM Lane V/C Ratio	-	0.114	-	-	0.201	-	-	-
HCM Control Delay (s)	-	22.3	1.2	-	31.3	2.1	-	-
HCM Lane LOS	-	C	A	-	D	A	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-	0.7	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	226	148	54	146	0	0	0	0	46	1059	24
Future Volume (veh/h)	0	226	148	54	146	0	0	0	0	46	1059	24
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.64	0.88		1.00				1.00		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	235	154	56	152	0				48	1103	25
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	421	232	116	424	0				88	2123	50
Arrive On Green	0.00	0.16	0.16	0.23	0.23	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	1893	990	264	1900	0				135	3254	77
Grp Volume(v), veh/h	0	230	159	84	124	0				581	0	595
Grp Sat Flow(s),veh/h/ln	0	1770	1021	468	1610	0				1632	0	1833
Q Serve(g_s), s	0.0	13.2	16.1	6.7	7.0	0.0				34.8	0.0	31.3
Cycle Q Clear(g_c), s	0.0	13.2	16.1	22.8	7.0	0.0				34.8	0.0	31.3
Prop In Lane	0.00		0.97	0.67		0.00				0.08		0.04
Lane Grp Cap(c), veh/h	0	414	239	164	377	0				1065	0	1196
V/C Ratio(X)	0.00	0.56	0.66	0.51	0.33	0.00				0.55	0.00	0.50
Avail Cap(c_a), veh/h	0	467	269	196	425	0				1065	0	1196
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.80	0.80	1.00	1.00	0.00				0.28	0.00	0.28
Uniform Delay (d), s/veh	0.0	41.1	42.3	45.1	35.0	0.0				28.7	0.0	27.3
Incr Delay (d2), s/veh	0.0	0.3	2.9	0.9	0.2	0.0				0.6	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.5	4.7	2.5	3.2	0.0				16.0	0.0	16.1
LnGrp Delay(d),s/veh	0.0	41.5	45.2	46.0	35.2	0.0				29.2	0.0	27.7
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		389			208						1176	
Approach Delay, s/veh		43.0			39.5						28.5	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				31.7		78.3		31.7
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				18.1		36.8		24.8
Green Ext Time (p_c), s				1.6		3.3		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	226	148	54	146	0	0	0	0	46	1059	24
Future Volume (vph)	0	226	148	54	146	0	0	0	0	46	1059	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.85			0.95						0.98	
Frt		0.941									0.997	
Flt Protected					0.987						0.998	
Satd. Flow (prot)	0	2648	0	0	3284	0	0	0	0	0	3493	0
Flt Permitted					0.688						0.998	
Satd. Flow (perm)	0	2648	0	0	2164	0	0	0	0	0	3443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9									4	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		562			586			355			357	
Travel Time (s)		15.3			16.0			9.7			9.7	
Confl. Peds. (#/hr)			523	523						450		539
Confl. Bikes (#/hr)			3									2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Parking (#/hr)		4			4					4		
Adj. Flow (vph)	0	235	154	56	152	0	0	0	0	48	1103	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	389	0	0	208	0	0	0	0	0	1176	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		35.0		35.0	35.0					75.0	75.0	
Total Lost Time (s)		6.0			6.0						6.5	
Act Effct Green (s)		24.3			24.3						73.2	
Actuated g/C Ratio		0.22			0.22						0.67	
v/c Ratio		0.66			0.44						0.51	
Control Delay		66.3			40.2						1.9	
Queue Delay		0.0			0.0						1.2	
Total Delay		66.3			40.2						3.1	
LOS		E			D						A	
Approach Delay		66.3			40.2						3.1	
Approach LOS		E			D						A	
Queue Length 50th (ft)		142			67						43	
Queue Length 95th (ft)		195			104						m51	
Internal Link Dist (ft)		482			506			275			277	
Turn Bay Length (ft)												
Base Capacity (vph)		704			570						2292	
Starvation Cap Reductn		0			0						823	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.55			0.36						0.80	

Intersection Summary	
Area Type:	Other

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 13 (12%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 21.3	Intersection LOS: C
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: F St, NW & 9th St, NW

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	93	0	0	1201	0
Future Vol, veh/h	0	93	0	0	1201	0
Conflicting Peds, #/hr	0	221	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	137	0	0	1251	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1472	846	-	0
Stage 1	1472	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	134	262	-	-
Stage 1	93	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	84	207	-	-
Mov Cap-2 Maneuver	84	-	-	-
Stage 1	73	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	50.9	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	207	-	-
HCM Lane V/C Ratio	0.661	-	-
HCM Control Delay (s)	50.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	209	128	131	129	0	0	0	0	72	1099	98
Future Volume (vph)	0	209	128	131	129	0	0	0	0	72	1099	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.87		1.00	1.00						1.00	0.41
Flpb, ped/bikes		1.00		1.00	1.00						0.96	1.00
Frt		0.95		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1379		1593	1475						2858	579
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1379		1593	1475						2858	579
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	222	136	139	137	0	0	0	0	77	1169	104
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	338	0	139	137	0	0	0	0	0	1246	50
Confl. Peds. (#/hr)			282	282						448		284
Confl. Bikes (#/hr)			3									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.8		21.0	21.0						49.7	49.7
Effective Green, g (s)		19.8		21.0	21.0						49.7	49.7
Actuated g/C Ratio		0.18		0.19	0.19						0.45	0.45
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		248		304	281						1291	261
v/s Ratio Prot		c0.25		0.09	c0.09							
v/s Ratio Perm											0.44	0.09
v/c Ratio		1.36		0.46	0.49						0.97	0.19
Uniform Delay, d1		45.1		39.4	39.7						29.3	18.1
Progression Factor		0.61		1.00	1.00						0.95	0.65
Incremental Delay, d2		184.2		0.4	0.5						17.4	1.5
Delay (s)		211.8		39.8	40.2						45.3	13.3
Level of Service		F		D	D						D	B
Approach Delay (s)		211.8			40.0			0.0			42.8	
Approach LOS		F			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	209	128	131	129	0	0	0	0	72	1099	98
Future Volume (vph)	0	209	128	131	129	0	0	0	0	72	1099	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		0	0		0	0		50
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		0.87		0.79							0.96	0.41
Frt		0.949										0.850
Flt Protected				0.950							0.997	
Satd. Flow (prot)	0	1379	0	1593	1475	0	0	0	0	0	2985	1425
Flt Permitted				0.950							0.997	
Satd. Flow (perm)	0	1379	0	1260	1475	0	0	0	0	0	2858	579
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)		24										99
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		558			302			357			263	
Travel Time (s)		15.2			8.2			9.7			7.2	
Confl. Peds. (#/hr)			282	282						448		284
Confl. Bikes (#/hr)			3									5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Parking (#/hr)			4		4						4	
Adj. Flow (vph)	0	222	136	139	137	0	0	0	0	77	1169	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	358	0	139	137	0	0	0	0	0	1246	104
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Total Split (s)		26.0		27.8	27.8					56.2	56.2	56.2
Total Lost Time (s)		6.5		6.5	6.5						6.5	6.5
Act Effct Green (s)		19.8		21.0	21.0						49.7	49.7
Actuated g/C Ratio		0.18		0.19	0.19						0.45	0.45
v/c Ratio		1.34		0.46	0.49						0.97	0.33
Control Delay		199.0		45.1	46.4						46.1	5.5
Queue Delay		0.0		0.0	0.5						0.0	0.0
Total Delay		199.0		45.1	46.9						46.1	5.6
LOS		F		D	D						D	A
Approach Delay		199.0			46.0						43.0	
Approach LOS		F			D						D	
Queue Length 50th (ft)		~319		88	87						455	14
Queue Length 95th (ft)		#505		151	151						#605	m10
Internal Link Dist (ft)		478			222			277			183	
Turn Bay Length (ft)				175								50
Base Capacity (vph)		267		308	285						1291	315
Starvation Cap Reductn		0		0	0						0	0
Spillback Cap Reductn		0		0	22						0	1
Storage Cap Reductn		0		0	0						0	0
Reduced v/c Ratio		1.34		0.45	0.52						0.97	0.33

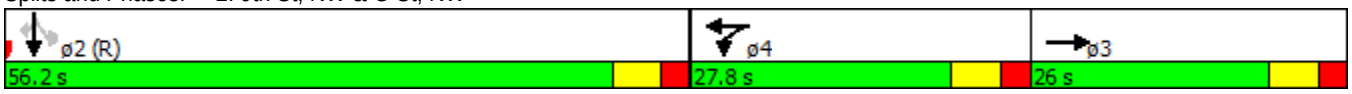
Intersection Summary	
Area Type: CBD	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 3 (3%), Referenced to phase 2:SBTL and 6:, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.34	
Intersection Signal Delay: 71.6	Intersection LOS: E
Intersection Capacity Utilization 84.5%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: 9th St, NW & G St, NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	594	175	54	199	0	0	0	0	54	879	93
Future Volume (vph)	0	594	175	54	199	0	0	0	0	54	879	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.91			1.00						0.97	
Flpb, ped/bikes		1.00			0.98						0.98	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		4458			4938						4558	
Flt Permitted		1.00			0.68						1.00	
Satd. Flow (perm)		4458			3372						4558	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	639	188	58	214	0	0	0	0	58	945	100
RTOR Reduction (vph)	0	39	0	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	788	0	0	272	0	0	0	0	0	1094	0
Confl. Peds. (#/hr)			441	441						276		374
Confl. Bikes (#/hr)			3									2
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		23.8			23.8						68.7	
Effective Green, g (s)		23.8			23.8						68.7	
Actuated g/C Ratio		0.22			0.22						0.62	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		964			729						2846	
v/s Ratio Prot		c0.18										
v/s Ratio Perm					0.08						0.24	
v/c Ratio		0.82			0.87dl						0.38	
Uniform Delay, d1		41.0			36.7						10.2	
Progression Factor		1.07			1.00						1.00	
Incremental Delay, d2		3.6			0.1						0.4	
Delay (s)		47.6			36.9						10.6	
Level of Service		D			D						B	
Approach Delay (s)		47.6			36.9			0.0			10.6	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	594	175	54	199	0	0	0	0	54	879	93
Future Volume (vph)	0	594	175	54	199	0	0	0	0	54	879	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor		0.91			0.98						0.95	
Frt		0.966									0.986	
Flt Protected					0.989						0.997	
Satd. Flow (prot)	0	4459	0	0	5029	0	0	0	0	0	4636	0
Flt Permitted					0.676						0.997	
Satd. Flow (perm)	0	4459	0	0	3369	0	0	0	0	0	4554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50									23	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		561			299			282			220	
Travel Time (s)		15.3			8.2			7.7			6.0	
Confl. Peds. (#/hr)			441	441						276		374
Confl. Bikes (#/hr)			3									2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Parking (#/hr)											4	
Adj. Flow (vph)	0	639	188	58	214	0	0	0	0	58	945	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	827	0	0	272	0	0	0	0	0	1103	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		39.0		39.0	39.0					65.0	65.0	
Total Lost Time (s)		6.0			6.0						5.5	
Act Effct Green (s)		23.8			23.8						68.7	
Actuated g/C Ratio		0.22			0.22						0.62	
v/c Ratio		0.82			0.87dl						0.39	
Control Delay		46.2			37.4						11.0	
Queue Delay		0.0			0.0						0.1	
Total Delay		46.2			37.4						11.0	
LOS		D			D						B	
Approach Delay		46.2			37.4						11.0	
Approach LOS		D			D						B	
Queue Length 50th (ft)		213			60						127	
Queue Length 95th (ft)		258			82						181	
Internal Link Dist (ft)		481			219			202			140	
Turn Bay Length (ft)												
Base Capacity (vph)		1372			1010						2851	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		1			0						418	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.60			0.27						0.45	

Lane Group	ø5	ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	9
Permitted Phases		
Total Split (s)	3.0	3.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	
Area Type: Other	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 95 (86%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 12: 9th St, NW & H St, NW

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	193	108	35	171	0	0	0	0	32	540	116
Future Volume (veh/h)	0	193	108	35	171	0	0	0	0	32	540	116
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.80	0.91		1.00				1.00		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	197	110	36	174	0				33	551	118
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	360	180	83	399	0				115	1978	447
Arrive On Green	0.00	0.17	0.17	0.17	0.17	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	2183	1043	223	2404	0				159	2734	618
Grp Volume(v), veh/h	0	163	144	97	113	0				386	0	316
Grp Sat Flow(s),veh/h/ln	0	1770	1364	932	1610	0				1855	0	1656
Q Serve(g_s), s	0.0	9.3	10.7	2.8	6.9	0.0				18.7	0.0	17.1
Cycle Q Clear(g_c), s	0.0	9.3	10.7	13.6	6.9	0.0				18.7	0.0	17.1
Prop In Lane	0.00		0.76	0.37		0.00				0.09		0.37
Lane Grp Cap(c), veh/h	0	305	235	205	277	0				1342	0	1198
V/C Ratio(X)	0.00	0.54	0.61	0.47	0.41	0.00				0.29	0.00	0.26
Avail Cap(c_a), veh/h	0	716	552	528	651	0				1342	0	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.90	0.90	0.00				0.95	0.00	0.95
Uniform Delay (d), s/veh	0.0	41.5	42.1	42.3	40.5	0.0				18.7	0.0	18.1
Incr Delay (d2), s/veh	0.0	0.5	1.0	0.6	0.3	0.0				0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.6	4.1	2.8	3.1	0.0				9.8	0.0	8.0
LnGrp Delay(d),s/veh	0.0	42.1	43.1	42.9	40.9	0.0				19.2	0.0	18.6
LnGrp LOS		D	D	D	D					B		B
Approach Vol, veh/h		307			210						702	
Approach Delay, s/veh		42.6			41.8						18.9	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				24.4		85.6		24.4
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				12.7		20.7		15.6
Green Ext Time (p_c), s				1.4		1.8		1.4

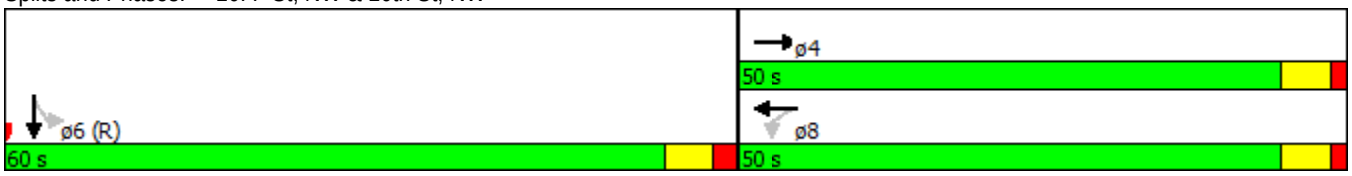
Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	193	108	35	171	0	0	0	0	32	540	116
Future Volume (vph)	0	193	108	35	171	0	0	0	0	32	540	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.97			0.97						0.92	
Frt		0.946									0.975	
Flt Protected					0.992						0.998	
Satd. Flow (prot)	0	3041	0	0	3300	0	0	0	0	0	3032	0
Flt Permitted					0.803						0.998	
Satd. Flow (perm)	0	3041	0	0	2582	0	0	0	0	0	2986	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19									30	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		382			562			329			360	
Travel Time (s)		10.4			15.3			9.0			9.8	
Confl. Peds. (#/hr)			111	111						301		457
Confl. Bikes (#/hr)			3									3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Parking (#/hr)		4			4						4	
Adj. Flow (vph)	0	197	110	36	174	0	0	0	0	33	551	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	307	0	0	210	0	0	0	0	0	702	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Total Split (s)		50.0		50.0	50.0					60.0	60.0	
Total Lost Time (s)		5.5			5.5						6.0	
Act Effct Green (s)		19.0			19.0						79.5	
Actuated g/C Ratio		0.17			0.17						0.72	
v/c Ratio		0.57			0.47						0.32	
Control Delay		43.7			20.9						4.6	
Queue Delay		0.0			0.0						0.5	
Total Delay		43.7			20.9						5.1	
LOS		D			C						A	
Approach Delay		43.7			20.9						5.1	
Approach LOS		D			C						A	
Queue Length 50th (ft)		98			25						92	
Queue Length 95th (ft)		146			40						57	
Internal Link Dist (ft)		302			482			249			280	
Turn Bay Length (ft)												
Base Capacity (vph)		1241			1044						2166	
Starvation Cap Reductn		0			0						965	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.25			0.20						0.58	

Intersection Summary	
Area Type:	Other

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 39 (35%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 52.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 10: F St, NW & 10th St, NW



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	304	224	46	520	0	0	0	0	17	290	48
Future Volume (veh/h)	0	304	224	46	520	0	0	0	0	17	290	48
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.82	1.00		1.00				1.00		0.73
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	317	233	48	542	0				18	302	50
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	412	303	65	623	0				42	723	122
Arrive On Green	0.00	0.57	0.57	0.19	0.19	0.00				0.33	0.33	0.33
Sat Flow, veh/h	0	718	528	51	1086	0				130	2210	374
Grp Volume(v), veh/h	0	0	550	590	0	0				203	0	167
Grp Sat Flow(s),veh/h/ln	0	0	1246	1138	0	0				1469	0	1245
Q Serve(g_s), s	0.0	0.0	37.1	20.8	0.0	0.0				11.9	0.0	11.4
Cycle Q Clear(g_c), s	0.0	0.0	37.1	57.9	0.0	0.0				11.9	0.0	11.4
Prop In Lane	0.00		0.42	0.08		0.00				0.09		0.30
Lane Grp Cap(c), veh/h	0	0	714	687	0	0				480	0	407
V/C Ratio(X)	0.00	0.00	0.77	0.86	0.00	0.00				0.42	0.00	0.41
Avail Cap(c_a), veh/h	0	0	821	819	0	0				480	0	407
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.91	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	17.9	42.1	0.0	0.0				28.9	0.0	28.8
Incr Delay (d2), s/veh	0.0	0.0	3.2	6.4	0.0	0.0				2.7	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.3	18.9	0.0	0.0				5.2	0.0	4.3
LnGrp Delay(d),s/veh	0.0	0.0	21.1	48.4	0.0	0.0				31.6	0.0	31.8
LnGrp LOS			C	D						C		C
Approach Vol, veh/h		550			590						370	
Approach Delay, s/veh		21.1			48.4						31.7	
Approach LOS		C			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		41.5		68.5				68.5
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		13.9		39.1				59.9
Green Ext Time (p_c), s		0.8		3.8				3.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.4
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	304	224	46	520	0	0	0	0	17	290	48
Future Volume (vph)	0	304	224	46	520	0	0	0	0	17	290	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		0.86			0.99						0.91	
Frt		0.943									0.980	
Flt Protected					0.996						0.998	
Satd. Flow (prot)	0	1361	0	0	1670	0	0	0	0	0	2899	0
Flt Permitted					0.844						0.998	
Satd. Flow (perm)	0	1361	0	0	1403	0	0	0	0	0	2827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30									15	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		410			558			360			262	
Travel Time (s)		11.2			15.2			9.8			7.1	
Confl. Peds. (#/hr)			238	238						181		169
Confl. Bikes (#/hr)			1									2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Parking (#/hr)			4	4						4		4
Adj. Flow (vph)	0	317	233	48	542	0	0	0	0	18	302	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	550	0	0	590	0	0	0	0	0	370	0
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						2	
Permitted Phases				8						2		
Total Split (s)		78.0		78.0	78.0					32.0	32.0	
Total Lost Time (s)		5.5			5.5						5.5	
Act Effct Green (s)		56.2			56.2						42.8	
Actuated g/C Ratio		0.51			0.51						0.39	
v/c Ratio		0.78			0.82						0.33	
Control Delay		27.3			26.5						27.8	
Queue Delay		0.0			0.7						0.0	
Total Delay		27.3			27.2						27.8	
LOS		C			C						C	
Approach Delay		27.3			27.2						27.8	
Approach LOS		C			C						C	
Queue Length 50th (ft)		284			228						76	
Queue Length 95th (ft)		294			244						173	
Internal Link Dist (ft)		330			478			280			182	
Turn Bay Length (ft)												
Base Capacity (vph)		907			924						1110	
Starvation Cap Reductn		0			113						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.61			0.73						0.33	

Intersection Summary	
Area Type:	CBD

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 15 (14%), Referenced to phase 2:SBTL and 6:, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 27.4	Intersection LOS: C
Intersection Capacity Utilization 96.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: 10th St, NW & G St, NW

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	769	199	58	193	38	0	0	0	32	279	31
Future Volume (vph)	37	769	199	58	193	38	0	0	0	32	279	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.93			0.92						0.96	
Flpb, ped/bikes		0.99			0.99						0.97	
Frt		0.97			0.98						0.99	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		4515			4491						1504	
Flt Permitted		0.91			0.66						1.00	
Satd. Flow (perm)		4109			3002						1504	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	40	827	214	62	208	41	0	0	0	34	300	33
RTOR Reduction (vph)	0	41	0	0	20	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	1040	0	0	291	0	0	0	0	0	364	0
Confl. Peds. (#/hr)	367		306	306		367				352		564
Confl. Bikes (#/hr)			1			4						1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		32.9			32.9						59.6	
Effective Green, g (s)		32.9			32.9						59.6	
Actuated g/C Ratio		0.30			0.30						0.54	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1228			897						814	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.10						0.24	
v/c Ratio		0.85			0.32						0.45	
Uniform Delay, d1		36.2			29.9						15.2	
Progression Factor		1.00			0.92						1.00	
Incremental Delay, d2		5.3			0.1						1.8	
Delay (s)		41.5			27.6						17.0	
Level of Service		D			C						B	
Approach Delay (s)		41.5			27.6			0.0			17.0	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	769	199	58	193	38	0	0	0	32	279	31
Future Volume (vph)	37	769	199	58	193	38	0	0	0	32	279	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.92			0.91						0.93	
Frt		0.970			0.980						0.988	
Flt Protected		0.998			0.990						0.995	
Satd. Flow (prot)	0	4580	0	0	4529	0	0	0	0	0	1553	0
Flt Permitted		0.909			0.662						0.995	
Satd. Flow (perm)	0	4110	0	0	3000	0	0	0	0	0	1504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		59			28						6	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		441			561			282			228	
Travel Time (s)		12.0			15.3			7.7			6.2	
Confl. Peds. (#/hr)	367		306	306		367				352		564
Confl. Bikes (#/hr)			1			4						1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Parking (#/hr)											4	
Adj. Flow (vph)	40	827	214	62	208	41	0	0	0	34	300	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1081	0	0	311	0	0	0	0	0	367	0
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Total Split (s)	44.0	44.0		44.0	44.0					60.0	60.0	
Total Lost Time (s)		5.5			5.5						6.0	
Act Effct Green (s)		32.9			32.9						59.6	
Actuated g/C Ratio		0.30			0.30						0.54	
v/c Ratio		0.85			0.34						0.45	
Control Delay		41.1			25.3						18.2	
Queue Delay		0.0			0.0						0.0	
Total Delay		41.1			25.3						18.2	
LOS		D			C						B	
Approach Delay		41.1			25.3						18.2	
Approach LOS		D			C						B	
Queue Length 50th (ft)		248			64						148	
Queue Length 95th (ft)		284			89						250	
Internal Link Dist (ft)		361			481			202			148	
Turn Bay Length (ft)												
Base Capacity (vph)		1476			1068						817	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.73			0.29						0.45	

Intersection Summary	
Area Type:	Other

Lane Group	ø5	ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Parking (#/hr)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	5	9
Permitted Phases		
Total Split (s)	3.0	3.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 36 (33%), Referenced to phase 2: and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 33.6	Intersection LOS: C
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: 10th St, NW & H St, NW

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	35	91	65	30	22	27
Future Vol, veh/h	35	91	65	30	22	27
Conflicting Peds, #/hr	97	0	0	97	376	426
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	157	130	60	32	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	616	0	-	0	864	683
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	964	-	-	-	325	449
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	769	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	875	-	-	-	106	242
Mov Cap-2 Maneuver	-	-	-	-	106	-
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	423	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	47.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	875	-	-	-	154
HCM Lane V/C Ratio	0.069	-	-	-	0.468
HCM Control Delay (s)	9.4	0	-	-	47.4
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	2.2

Intersection	
Int Delay, s/veh	13.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	15	282	24	24	193	37	12	9	26	7	12	14
Future Vol, veh/h	15	282	24	24	193	37	12	9	26	7	12	14
Conflicting Peds, #/hr	78	0	246	246	0	78	154	0	315	315	0	154
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	-	-	75	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	82	82	82	73	73	73	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	336	29	29	235	45	16	12	36	11	19	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	550	0	0	651	0	0	1187	1295	729	1134	1295	679
Stage 1	-	-	-	-	-	-	686	686	-	609	609	-
Stage 2	-	-	-	-	-	-	501	609	-	525	686	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1016	-	-	931	-	-	144	161	365	157	161	394
Stage 1	-	-	-	-	-	-	404	446	-	449	484	-
Stage 2	-	-	-	-	-	-	521	484	-	504	446	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	778	-	-	713	-	-	52	73	196	57	73	211
Mov Cap-2 Maneuver	-	-	-	-	-	-	52	73	-	57	73	-
Stage 1	-	-	-	-	-	-	275	303	-	305	323	-
Stage 2	-	-	-	-	-	-	320	323	-	294	303	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1	96.1	85
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	97	778	-	-	713	-	-	93
HCM Lane V/C Ratio	0.664	0.023	-	-	0.041	-	-	0.563
HCM Control Delay (s)	96.1	9.7	0.1	-	10.3	0.1	-	85
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	3.3	0.1	-	-	0.1	-	-	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	357	97	39	162	22	0	0	0	24	144	39
Future Volume (vph)	33	357	97	39	162	22	0	0	0	24	144	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		5.5	5.5					6.0	
Lane Util. Factor		0.95	1.00		0.95	1.00					1.00	
Frpb, ped/bikes		1.00	0.72		1.00	0.58					0.95	
Flpb, ped/bikes		0.98	1.00		0.98	1.00					0.96	
Frt		1.00	0.85		1.00	0.85					0.97	
Flt Protected		1.00	1.00		0.99	1.00					0.99	
Satd. Flow (prot)		3436	1144		3423	917					1450	
Flt Permitted		0.90	1.00		0.70	1.00					0.99	
Satd. Flow (perm)		3105	1144		2432	917					1450	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	38	410	111	45	186	25	0	0	0	28	166	45
RTOR Reduction (vph)	0	0	88	0	0	20	0	0	0	0	5	0
Lane Group Flow (vph)	0	448	23	0	231	5	0	0	0	0	234	0
Confl. Peds. (#/hr)	155		171	171		155				247		213
Confl. Bikes (#/hr)			1			1						1
Parking (#/hr)											4	
Turn Type	Perm	NA	Perm	Perm	NA	Perm				Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		20.3	20.3		20.3	20.3					62.2	
Effective Green, g (s)		20.3	20.3		20.3	20.3					62.2	
Actuated g/C Ratio		0.20	0.20		0.20	0.20					0.62	
Clearance Time (s)		5.5	5.5		5.5	5.5					6.0	
Vehicle Extension (s)		1.0	1.0		1.0	1.0					1.0	
Lane Grp Cap (vph)		630	232		493	186					901	
v/s Ratio Prot												
v/s Ratio Perm		c0.14	0.02		0.09	0.01					0.16	
v/c Ratio		0.71	0.10		0.47	0.03					0.26	
Uniform Delay, d1		37.1	32.4		35.1	31.9					8.5	
Progression Factor		1.00	1.00		0.78	1.00					1.00	
Incremental Delay, d2		3.2	0.1		0.3	0.0					0.7	
Delay (s)		40.3	32.5		27.6	32.0					9.2	
Level of Service		D	C		C	C					A	
Approach Delay (s)		38.7			28.0			0.0			9.2	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	357	97	39	162	22	0	0	0	24	144	39
Future Volume (vph)	33	357	97	39	162	22	0	0	0	24	144	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		50	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		441			561			282			228	
Travel Time (s)		12.0			15.3			7.7			6.2	
Confl. Peds. (#/hr)	155		171	171		155				247		213
Confl. Bikes (#/hr)			1			1						1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Parking (#/hr)											4	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	448	111	0	231	25	0	0	0	0	239	0
v/c Ratio		0.71	0.35		0.47	0.10					0.26	
Control Delay		43.8	9.4		30.4	8.6					9.3	
Queue Delay		0.0	0.0		0.0	0.0					0.0	
Total Delay		43.8	9.4		30.4	8.6					9.3	
Queue Length 50th (ft)		143	0		75	2					56	
Queue Length 95th (ft)		177	39		112	15					107	
Internal Link Dist (ft)		361			481			202			148	
Turn Bay Length (ft)			75			50						
Base Capacity (vph)		1257	529		983	417					906	
Starvation Cap Reductn		0	0		0	0					0	
Spillback Cap Reductn		0	0		0	0					0	
Storage Cap Reductn		0	0		0	0					0	
Reduced v/c Ratio		0.36	0.21		0.23	0.06					0.26	

Intersection Summary	
Area Type:	Other

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	108	53	20	87	0	0	0	0	16	140	36
Future Volume (veh/h)	0	108	53	20	87	0	0	0	0	16	140	36
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.56	0.91		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	130	64	24	105	0				19	169	43
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83				0.83	0.83	0.83
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	149	74	52	169	0				153	1374	355
Arrive On Green	0.00	0.21	0.21	0.07	0.07	0.00				0.68	0.68	0.68
Sat Flow, veh/h	0	722	356	44	815	0				224	2011	519
Grp Volume(v), veh/h	0	0	194	129	0	0				124	0	107
Grp Sat Flow(s),veh/h/ln	0	0	1078	859	0	0				1464	0	1290
Q Serve(g_s), s	0.0	0.0	17.4	0.3	0.0	0.0				2.9	0.0	2.9
Cycle Q Clear(g_c), s	0.0	0.0	17.4	17.7	0.0	0.0				2.9	0.0	2.9
Prop In Lane	0.00		0.33	0.19		0.00				0.15		0.40
Lane Grp Cap(c), veh/h	0	0	223	220	0	0				1000	0	881
V/C Ratio(X)	0.00	0.00	0.87	0.59	0.00	0.00				0.12	0.00	0.12
Avail Cap(c_a), veh/h	0	0	685	852	0	0				1000	0	881
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.99	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	38.3	40.5	0.0	0.0				5.5	0.0	5.5
Incr Delay (d2), s/veh	0.0	0.0	4.0	0.9	0.0	0.0				0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.4	3.5	0.0	0.0				1.2	0.0	1.1
LnGrp Delay(d),s/veh	0.0	0.0	42.4	41.4	0.0	0.0				5.7	0.0	5.8
LnGrp LOS			D	D						A		A
Approach Vol, veh/h		194			129						231	
Approach Delay, s/veh		42.4			41.4						5.7	
Approach LOS		D			D						A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		73.8		26.2				26.2
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		25.5		63.5				63.5
Max Q Clear Time (g_c+I1), s		4.9		19.4				19.7
Green Ext Time (p_c), s		0.5		1.0				1.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	108	53	20	87	0	0	0	0	16	140	36
Future Volume (vph)	0	108	53	20	87	0	0	0	0	16	140	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		410			558			360			262	
Travel Time (s)		11.2			15.2			9.8			7.1	
Confl. Peds. (#/hr)			177	177						185		156
Confl. Bikes (#/hr)			5									
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Parking (#/hr)			4	4						4		4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	194	0	0	129	0	0	0	0	0	231	0
v/c Ratio		0.60			0.45						0.12	
Control Delay		35.6			40.9						4.8	
Queue Delay		0.0			0.0						0.0	
Total Delay		35.6			40.9						4.8	
Queue Length 50th (ft)		85			85						21	
Queue Length 95th (ft)		137			136						41	
Internal Link Dist (ft)		330			478			280			182	
Turn Bay Length (ft)												
Base Capacity (vph)		938			933						1891	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.21			0.14						0.12	

Intersection Summary

Area Type: CBD

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	227	43	29	208	0	0	0	0	59	146	63
Future Volume (veh/h)	0	227	43	29	208	0	0	0	0	59	146	63
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.65	0.85		1.00				1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	295	56	38	270	0				77	190	82
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77				0.77	0.77	0.77
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	521	93	76	503	0				514	1291	571
Arrive On Green	0.00	0.19	0.19	0.19	0.19	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	2835	491	164	2731	0				740	1858	822
Grp Volume(v), veh/h	0	184	167	151	157	0				190	0	159
Grp Sat Flow(s),veh/h/ln	0	1770	1464	1200	1610	0				1826	0	1594
Q Serve(g_s), s	0.0	9.4	10.4	2.7	8.7	0.0				8.3	0.0	8.0
Cycle Q Clear(g_c), s	0.0	9.4	10.4	13.1	8.7	0.0				8.3	0.0	8.0
Prop In Lane	0.00		0.34	0.25		0.00				0.41		0.52
Lane Grp Cap(c), veh/h	0	336	278	273	306	0				1269	0	1108
V/C Ratio(X)	0.00	0.55	0.60	0.55	0.51	0.00				0.15	0.00	0.14
Avail Cap(c_a), veh/h	0	699	578	570	636	0				1269	0	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.94	0.94	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	36.6	37.0	36.8	36.3	0.0				15.0	0.0	14.8
Incr Delay (d2), s/veh	0.0	0.5	0.8	0.6	0.5	0.0				0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.7	4.3	4.0	3.9	0.0				4.3	0.0	3.6
LnGrp Delay(d),s/veh	0.0	37.1	37.8	37.5	36.8	0.0				15.2	0.0	15.1
LnGrp LOS		D	D	D	D					B		B
Approach Vol, veh/h		351			308						349	
Approach Delay, s/veh		37.4			37.1						15.1	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				24.5		75.5		24.5
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				39.5		49.0		39.5
Max Q Clear Time (g_c+I1), s				12.4		10.3		15.1
Green Ext Time (p_c), s				1.7		0.9		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	227	43	29	208	0	0	0	0	59	146	63
Future Volume (vph)	0	227	43	29	208	0	0	0	0	59	146	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		382			562			329			360	
Travel Time (s)		10.4			15.3			9.0			9.8	
Confl. Peds. (#/hr)			333	333						312		397
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Parking (#/hr)		4			4						4	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	351	0	0	308	0	0	0	0	0	349	0
v/c Ratio		0.57			0.61						0.18	
Control Delay		38.2			65.3						3.1	
Queue Delay		0.0			0.0						0.0	
Total Delay		38.2			65.3						3.1	
Queue Length 50th (ft)		100			107						16	
Queue Length 95th (ft)		121			130						17	
Internal Link Dist (ft)		302			482			249			280	
Turn Bay Length (ft)												
Base Capacity (vph)		1244			1042						1898	
Starvation Cap Reductn		0			0						0	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.28			0.30						0.18	

Intersection Summary

Area Type: Other

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	285	168	37	159	0	0	0	0	28	898	41
Future Volume (vph)	0	285	168	37	159	0	0	0	0	28	898	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0						5.5	
Lane Util. Factor		0.95	1.00		0.95						0.91	
Frpb, ped/bikes		1.00	0.68		1.00						0.99	
Flpb, ped/bikes		1.00	1.00		0.96						0.99	
Frt		1.00	0.85		1.00						0.99	
Flt Protected		1.00	1.00		0.99						1.00	
Satd. Flow (prot)		3539	1069		3381						4734	
Flt Permitted		1.00	1.00		0.75						1.00	
Satd. Flow (perm)		3539	1069		2547						4734	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	328	193	43	183	0	0	0	0	32	1032	47
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	328	134	0	226	0	0	0	0	0	1108	0
Confl. Peds. (#/hr)			238	238						307		206
Parking (#/hr)											4	
Turn Type		NA	Perm	Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases			4	8						6		
Actuated Green, G (s)		16.8	16.8		16.8						65.7	
Effective Green, g (s)		16.8	16.8		16.8						65.7	
Actuated g/C Ratio		0.17	0.17		0.17						0.66	
Clearance Time (s)		6.0	6.0		6.0						5.5	
Vehicle Extension (s)		1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)		594	179		427						3110	
v/s Ratio Prot		0.09										
v/s Ratio Perm			c0.13		0.09						0.23	
v/c Ratio		0.55	0.75		0.53						0.36	
Uniform Delay, d1		38.2	39.6		38.0						7.7	
Progression Factor		1.10	1.39		1.00						1.00	
Incremental Delay, d2		0.6	13.5		0.5						0.3	
Delay (s)		42.4	68.5		38.5						8.0	
Level of Service		D	E		D						A	
Approach Delay (s)		52.1			38.5			0.0			8.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	285	168	37	159	0	0	0	0	28	898	41
Future Volume (vph)	0	285	168	37	159	0	0	0	0	28	898	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		75	0		0	0		0	0		0
Storage Lanes	0		1	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		561			299			282			220	
Travel Time (s)		15.3			8.2			7.7			6.0	
Confl. Peds. (#/hr)			238	238						307		206
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Parking (#/hr)											4	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	328	193	0	226	0	0	0	0	0	1111	0
v/c Ratio		0.55	0.81		0.53						0.36	
Control Delay		43.9	57.3		41.0						8.9	
Queue Delay		0.0	0.0		0.0						0.0	
Total Delay		43.9	57.3		41.0						9.0	
Queue Length 50th (ft)		116	102		71						100	
Queue Length 95th (ft)		153	160		90						168	
Internal Link Dist (ft)		481			219			202			140	
Turn Bay Length (ft)			75									
Base Capacity (vph)		1238	420		889						3114	
Starvation Cap Reductn		0	0		0						0	
Spillback Cap Reductn		0	4		0						303	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.26	0.46		0.25						0.40	

Intersection Summary

Area Type: Other

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	68	51	35	51	0	0	0	0	24	1048	50
Future Volume (vph)	0	68	51	35	51	0	0	0	0	24	1048	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.92		1.00	1.00						1.00	0.44
Flpb, ped/bikes		1.00		1.00	1.00						0.99	1.00
Frt		0.94		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1454		1593	1475						2955	632
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1454		1593	1475						2955	632
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	0	79	59	41	59	0	0	0	0	28	1219	58
RTOR Reduction (vph)	0	27	0	0	0	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	111	0	41	59	0	0	0	0	0	1247	24
Confl. Peds. (#/hr)			106	106						217		251
Confl. Bikes (#/hr)			1									
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		18.0		21.0	21.0						41.5	41.5
Effective Green, g (s)		18.0		21.0	21.0						41.5	41.5
Actuated g/C Ratio		0.18		0.21	0.21						0.42	0.42
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		261		334	309						1226	262
v/s Ratio Prot		c0.08		0.03	c0.04							
v/s Ratio Perm											0.42	0.04
v/c Ratio		0.43		0.12	0.19						1.02	0.09
Uniform Delay, d1		36.4		32.0	32.5						29.2	17.8
Progression Factor		1.80		1.00	1.00						0.90	1.35
Incremental Delay, d2		0.4		0.1	0.1						29.5	0.7
Delay (s)		66.0		32.1	32.6						55.7	24.6
Level of Service		E		C	C						E	C
Approach Delay (s)		66.0			32.4			0.0			54.3	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	68	51	35	51	0	0	0	0	24	1048	50
Future Volume (vph)	0	68	51	35	51	0	0	0	0	24	1048	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	175		0	0		0	0		50
Storage Lanes	0		0	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			No			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		558			302			357			263	
Travel Time (s)		15.2			8.2			9.7			7.2	
Confl. Peds. (#/hr)			106	106						217		251
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Parking (#/hr)			4		4						4	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	138	0	41	59	0	0	0	0	0	1247	58
v/c Ratio		0.48		0.12	0.19						1.02	0.18
Control Delay		56.8		33.3	34.5						56.9	1.8
Queue Delay		0.0		0.0	0.0						0.0	0.0
Total Delay		56.8		33.3	34.5						56.9	1.8
Queue Length 50th (ft)		72		21	31						~435	3
Queue Length 95th (ft)		129		48	64						#539	0
Internal Link Dist (ft)		478			222			277			183	
Turn Bay Length (ft)				175								50
Base Capacity (vph)		288		334	309						1226	326
Starvation Cap Reductn		0		0	0						0	0
Spillback Cap Reductn		0		0	0						0	0
Storage Cap Reductn		0		0	0						0	0
Reduced v/c Ratio		0.48		0.12	0.19						1.02	0.18

Intersection Summary	
Area Type:	CBD

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	31	0	0	1105	0
Future Vol, veh/h	0	31	0	0	1105	0
Conflicting Peds, #/hr	0	166	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	92	92	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	0	0	1228	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1394	779	-	0
Stage 1	1394	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	149	291	-	-
Stage 1	105	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	106	245	-	-
Mov Cap-2 Maneuver	106	-	-	-
Stage 1	88	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	23.6	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	245	-	-
HCM Lane V/C Ratio	0.211	-	-
HCM Control Delay (s)	23.6	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	144	118	53	148	0	0	0	0	44	1052	44
Future Volume (veh/h)	0	144	118	53	148	0	0	0	0	44	1052	44
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.73	0.85		1.00				1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	155	127	57	159	0				47	1131	47
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	424	279	167	505	0				80	2020	88
Arrive On Green	0.00	0.48	0.48	0.24	0.24	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	1863	1161	461	2189	0				126	3181	138
Grp Volume(v), veh/h	0	155	127	103	113	0				609	0	616
Grp Sat Flow(s),veh/h/ln	0	1770	1161	955	1610	0				1633	0	1812
Q Serve(g_s), s	0.0	5.5	7.3	5.1	5.8	0.0				33.6	0.0	30.3
Cycle Q Clear(g_c), s	0.0	5.5	7.3	12.4	5.8	0.0				33.6	0.0	30.3
Prop In Lane	0.00		1.00	0.56		0.00				0.08		0.08
Lane Grp Cap(c), veh/h	0	424	279	285	386	0				1037	0	1151
V/C Ratio(X)	0.00	0.37	0.46	0.36	0.29	0.00				0.59	0.00	0.54
Avail Cap(c_a), veh/h	0	495	325	333	451	0				1037	0	1151
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.80	0.80	1.00	1.00	0.00				0.12	0.00	0.12
Uniform Delay (d), s/veh	0.0	21.2	21.7	34.2	31.1	0.0				27.7	0.0	26.4
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.3	0.2	0.0				0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	2.4	2.5	2.6	0.0				15.3	0.0	15.3
LnGrp Delay(d),s/veh	0.0	21.4	22.0	34.5	31.2	0.0				28.0	0.0	26.6
LnGrp LOS		C	C	C	C					C		C
Approach Vol, veh/h		282			216						1225	
Approach Delay, s/veh		21.7			32.8						27.3	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.0		70.0		30.0
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				28.0		59.5		28.0
Max Q Clear Time (g_c+I1), s				9.3		35.6		14.4
Green Ext Time (p_c), s				1.4		3.5		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	144	118	53	148	0	0	0	0	44	1052	44
Future Volume (vph)	0	144	118	53	148	0	0	0	0	44	1052	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		562			586			355			357	
Travel Time (s)		15.3			16.0			9.7			9.7	
Confl. Peds. (#/hr)			213	213						277		387
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Parking (#/hr)		4			4					4		
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	282	0	0	216	0	0	0	0	0	1225	0
v/c Ratio		0.43			0.36						0.56	
Control Delay		15.6			33.7						1.1	
Queue Delay		0.0			0.0						2.6	
Total Delay		15.6			33.7						3.6	
Queue Length 50th (ft)		24			60						16	
Queue Length 95th (ft)		47			95						m18	
Internal Link Dist (ft)		482			506			275			277	
Turn Bay Length (ft)												
Base Capacity (vph)		771			697						2178	
Starvation Cap Reductn		0			0						796	
Spillback Cap Reductn		0			0						0	
Storage Cap Reductn		0			0						0	
Reduced v/c Ratio		0.37			0.31						0.89	

Intersection Summary	
Area Type:	Other

m Volume for 95th percentile queue is metered by upstream signal.

Appendix C – DDOT Crash Data & AADT Growth Data

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 8TH ST and G ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	14
Total Number of Fatalities:	0
Total Number of Injuries:	2
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	1
Total Number of Pedestrians Involved:	0
Total Number of Bicycles Involved:	2
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	0	0.0%	Fixed Object:	0	0.0%
Left Turn:	0	0.0%	Ran Off Road:	0	0.0%
Right Turn:	2	14.3%	Ped. Involved:	0	0.0%
Rear End:	1	7.1%	Backing:	1	7.1%
Side Swiped:	8	57.1%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	1	7.1%	Unspecified:	1	7.1%

Time of Day	#ACC	%
07:30 ~ 09:30:	1	7.1%
09:30 ~ 11:30:	3	21.4%
11:30 ~ 13:30:	1	7.1%
13:30 ~ 16:00:	1	7.1%
16:00 ~18:30:	4	28.6%
18:30 ~ 07:30:	4	28.6%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	3	21.4%
Monday:	1	7.1%
Tuesday:	2	14.3%
Wednesday:	1	7.1%
Thursday:	3	21.4%
Friday:	1	7.1%
Saturday:	3	21.4%

Weather Condition	#ACC	%
Clear:	13	92.9%
Rain:	0	0.0%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	1	7.1%
Unspecified:	0	0.0%

Surface Condition	#ACC	%
Dry:	14	100.0%
Wet:	0	0.0%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	16	57.1%
Bus:	1	3.6%
Truck:	2	7.1%
Taxi:	3	10.7%
Minivan:	0	0.0%
Police/Emergency Vehicle:	1	3.6%
Motorcycle/Moped:	0	0.0%
Bicycle:	2	7.1%
Fixed Object:	0	0.0%
Unspecified:	3	10.7%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	2	14.3%
PDO Collision:	12	85.7%

Light Condition	#ACC	%
Daylight:	9	64.3%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	5	35.7%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	0	0.0%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	3	10.7%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	25	89.3%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	0	0.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	5	0	1	0	0	1	0
2013	5	0	0	0	0	0	0
2014	4	0	1	1	0	1	0

0 Records are not approved as of 9/30/2015 10:26:28 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 10TH ST and H ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	30
Total Number of Fatalities:	0
Total Number of Injuries:	5
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	1
Total Number of Pedestrians Involved:	1
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	1	3.3%	Fixed Object:	0	0.0%
Left Turn:	1	3.3%	Ran Off Road:	0	0.0%
Right Turn:	5	16.7%	Ped. Involved:	0	0.0%
Rear End:	6	20.0%	Backing:	2	6.7%
Side Swiped:	11	36.7%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	2	6.7%	Unspecified:	2	6.7%

Time of Day	#ACC	%
07:30 ~ 09:30:	2	6.7%
09:30 ~ 11:30:	7	23.3%
11:30 ~ 13:30:	3	10.0%
13:30 ~ 16:00:	3	10.0%
16:00 ~18:30:	6	20.0%
18:30 ~ 07:30:	9	30.0%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	2	6.7%
Monday:	5	16.7%
Tuesday:	4	13.3%
Wednesday:	7	23.3%
Thursday:	4	13.3%
Friday:	3	10.0%
Saturday:	5	16.7%

Weather Condition	#ACC	%
Clear:	19	63.3%
Rain:	6	20.0%
Snow:	1	3.3%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	4	13.3%

Surface Condition	#ACC	%
Dry:	20	66.7%
Wet:	6	20.0%
Snow/Ice:	0	0.0%
Slush:	1	3.3%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	3	10.0%

Type of Vehicle	#VEH	%
Passenger Car:	30	52.6%
Bus:	8	14.0%
Truck:	4	7.0%
Taxi:	12	21.1%
Minivan:	0	0.0%
Police/Emergency Vehicle:	0	0.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	3	5.3%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	5	16.7%
PDO Collision:	25	83.3%

Light Condition	#ACC	%
Daylight:	19	63.3%
Dawn/Dusk:	1	3.3%
Dark(Lighted):	8	26.7%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	2	6.7%

Contributing Factor	#VEH	%
Driver: Speed:	1	1.8%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	15	26.3%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	41	71.9%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	1	100.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	8	0	2	0	0	0	0
2013	11	0	2	1	1	0	0
2014	11	0	1	0	0	0	0

2 Records are not approved as of 9/30/2015 10:29:03 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 10TH ST and G ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	11
Total Number of Fatalities:	0
Total Number of Injuries:	3
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	1
Total Number of Bicycles Involved:	1
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	0	0.0%	Fixed Object:	0	0.0%
Left Turn:	1	9.1%	Ran Off Road:	0	0.0%
Right Turn:	2	18.2%	Ped. Involved:	0	0.0%
Rear End:	1	9.1%	Backing:	1	9.1%
Side Swiped:	2	18.2%	Non Collision:	0	0.0%
Head On:	1	9.1%	Under/Over Ride:	0	0.0%
Parked:	2	18.2%	Unspecified:	1	9.1%

Time of Day	#ACC	%
07:30 ~ 09:30:	3	27.3%
09:30 ~ 11:30:	2	18.2%
11:30 ~ 13:30:	0	0.0%
13:30 ~ 16:00:	1	9.1%
16:00 ~18:30:	4	36.4%
18:30 ~ 07:30:	1	9.1%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	0	0.0%
Monday:	2	18.2%
Tuesday:	2	18.2%
Wednesday:	3	27.3%
Thursday:	1	9.1%
Friday:	3	27.3%
Saturday:	0	0.0%

Weather Condition	#ACC	%
Clear:	9	81.8%
Rain:	1	9.1%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	1	9.1%

Surface Condition	#ACC	%
Dry:	10	90.9%
Wet:	1	9.1%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	9	42.9%
Bus:	2	9.5%
Truck:	3	14.3%
Taxi:	4	19.0%
Minivan:	0	0.0%
Police/Emergency Vehicle:	1	4.8%
Motorcycle/Moped:	0	0.0%
Bicycle:	1	4.8%
Fixed Object:	0	0.0%
Unspecified:	1	4.8%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	2	18.2%
PDO Collision:	9	81.8%

Light Condition	#ACC	%
Daylight:	9	81.8%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	1	9.1%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	1	9.1%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	6	28.6%
Vehicle:	0	0.0%
Roadway:	1	4.8%
Unspecified:	14	66.7%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	1	100.0%
Unspecified:	0	0.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	4	0	1	0	1	0	0
2013	5	0	2	0	0	1	0
2014	2	0	0	0	0	0	0

1 Records are not approved as of 9/30/2015 10:28:22 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 10TH ST and G PL, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	1
Total Number of Fatalities:	0
Total Number of Injuries:	0
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	0
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	0	0.0%	Fixed Object:	0	0.0%
Left Turn:	0	0.0%	Ran Off Road:	0	0.0%
Right Turn:	0	0.0%	Ped. Involved:	0	0.0%
Rear End:	0	0.0%	Backing:	0	0.0%
Side Swiped:	0	0.0%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	1	100.0%	Unspecified:	0	0.0%

Time of Day	#ACC	%
07:30 ~ 09:30:	0	0.0%
09:30 ~ 11:30:	0	0.0%
11:30 ~ 13:30:	0	0.0%
13:30 ~ 16:00:	0	0.0%
16:00 ~18:30:	0	0.0%
18:30 ~ 07:30:	1	100.0%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	1	100.0%
Monday:	0	0.0%
Tuesday:	0	0.0%
Wednesday:	0	0.0%
Thursday:	0	0.0%
Friday:	0	0.0%
Saturday:	0	0.0%

Weather Condition	#ACC	%
Clear:	1	100.0%
Rain:	0	0.0%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	0	0.0%

Surface Condition	#ACC	%
Dry:	1	100.0%
Wet:	0	0.0%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	1	50.0%
Bus:	0	0.0%
Truck:	0	0.0%
Taxi:	0	0.0%
Minivan:	0	0.0%
Police/Emergency Vehicle:	0	0.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	1	50.0%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	0	0.0%
PDO Collision:	1	100.0%

Light Condition	#ACC	%
Daylight:	0	0.0%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	1	100.0%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	0	0.0%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	0	0.0%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	2	100.0%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	0	0.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2013	1	0	0	0	0	0	0

0 Records are not approved as of 9/30/2015 10:29:35 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 10TH ST and F ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	23
Total Number of Fatalities:	0
Total Number of Injuries:	6
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	4
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	1

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	1	4.3%	Fixed Object:	1	4.3%
Left Turn:	2	8.7%	Ran Off Road:	0	0.0%
Right Turn:	0	0.0%	Ped. Involved:	4	17.4%
Rear End:	1	4.3%	Backing:	3	13.0%
Side Swiped:	6	26.1%	Non Collision:	0	0.0%
Head On:	2	8.7%	Under/Over Ride:	0	0.0%
Parked:	2	8.7%	Unspecified:	1	4.3%

Time of Day	#ACC	%
07:30 ~ 09:30:	3	13.0%
09:30 ~ 11:30:	3	13.0%
11:30 ~ 13:30:	2	8.7%
13:30 ~ 16:00:	2	8.7%
16:00 ~18:30:	4	17.4%
18:30 ~ 07:30:	9	39.1%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	8	34.8%
Monday:	4	17.4%
Tuesday:	6	26.1%
Wednesday:	1	4.3%
Thursday:	2	8.7%
Friday:	1	4.3%
Saturday:	1	4.3%

Weather Condition	#ACC	%
Clear:	16	69.6%
Rain:	3	13.0%
Snow:	1	4.3%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	3	13.0%

Surface Condition	#ACC	%
Dry:	17	73.9%
Wet:	5	21.7%
Snow/Ice:	1	4.3%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	26	61.9%
Bus:	2	4.8%
Truck:	1	2.4%
Taxi:	7	16.7%
Minivan:	0	0.0%
Police/Emergency Vehicle:	2	4.8%
Motorcycle/Moped:	1	2.4%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	3	7.1%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	6	26.1%
PDO Collision:	17	73.9%

Light Condition	#ACC	%
Daylight:	15	65.2%
Dawn/Dusk:	2	8.7%
Dark(Lighted):	4	17.4%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	2	8.7%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	11	26.2%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	31	73.8%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	1	25.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	1	25.0%
From Between Parked Cars:	0	0.0%
Unspecified:	2	50.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	9	0	2	0	2	0	0
2013	5	0	2	0	1	0	1
2014	9	0	2	0	1	0	0

0 Records are not approved as of 9/30/2015 10:27:51 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 9TH ST and H ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	40
Total Number of Fatalities:	0
Total Number of Injuries:	7
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	1
Total Number of Pedestrians Involved:	4
Total Number of Bicycles Involved:	1
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	3	7.5%	Fixed Object:	0	0.0%
Left Turn:	4	10.0%	Ran Off Road:	0	0.0%
Right Turn:	3	7.5%	Ped. Involved:	3	7.5%
Rear End:	5	12.5%	Backing:	0	0.0%
Side Swiped:	18	45.0%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	1	2.5%
Parked:	1	2.5%	Unspecified:	2	5.0%

Time of Day	#ACC	%
07:30 ~ 09:30:	6	15.0%
09:30 ~ 11:30:	4	10.0%
11:30 ~ 13:30:	4	10.0%
13:30 ~ 16:00:	3	7.5%
16:00 ~18:30:	8	20.0%
18:30 ~ 07:30:	15	37.5%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	0	0.0%
Monday:	5	12.5%
Tuesday:	6	15.0%
Wednesday:	6	15.0%
Thursday:	11	27.5%
Friday:	6	15.0%
Saturday:	6	15.0%

Weather Condition	#ACC	%
Clear:	34	85.0%
Rain:	1	2.5%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	5	12.5%

Surface Condition	#ACC	%
Dry:	34	85.0%
Wet:	1	2.5%
Snow/Ice:	0	0.0%
Slush:	1	2.5%
Water/Sand:	0	0.0%
Repairing:	1	2.5%
Unspecified:	3	7.5%

Type of Vehicle	#VEH	%
Passenger Car:	42	54.5%
Bus:	18	23.4%
Truck:	6	7.8%
Taxi:	6	7.8%
Minivan:	0	0.0%
Police/Emergency Vehicle:	0	0.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	1	1.3%
Fixed Object:	0	0.0%
Unspecified:	4	5.2%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	7	17.5%
PDO Collision:	33	82.5%

Light Condition	#ACC	%
Daylight:	28	70.0%
Dawn/Dusk:	1	2.5%
Dark(Lighted):	10	25.0%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	1	2.5%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	13	16.9%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	64	83.1%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	2	50.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	2	50.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	12	0	2	0	1	0	0
2013	15	0	2	1	2	0	0
2014	13	0	3	0	1	1	0

0 Records are not approved as of 9/30/2015 10:25:36 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 9TH ST and G ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	31
Total Number of Fatalities:	0
Total Number of Injuries:	9
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	2
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	1	3.2%	Fixed Object:	0	0.0%
Left Turn:	3	9.7%	Ran Off Road:	0	0.0%
Right Turn:	2	6.5%	Ped. Involved:	2	6.5%
Rear End:	9	29.0%	Backing:	2	6.5%
Side Swiped:	10	32.3%	Non Collision:	0	0.0%
Head On:	1	3.2%	Under/Over Ride:	0	0.0%
Parked:	0	0.0%	Unspecified:	1	3.2%

Time of Day	#ACC	%
07:30 ~ 09:30:	0	0.0%
09:30 ~ 11:30:	5	16.1%
11:30 ~ 13:30:	5	16.1%
13:30 ~ 16:00:	2	6.5%
16:00 ~18:30:	5	16.1%
18:30 ~ 07:30:	14	45.2%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	5	16.1%
Monday:	3	9.7%
Tuesday:	1	3.2%
Wednesday:	6	19.4%
Thursday:	6	19.4%
Friday:	7	22.6%
Saturday:	3	9.7%

Weather Condition	#ACC	%
Clear:	30	96.8%
Rain:	1	3.2%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	0	0.0%

Surface Condition	#ACC	%
Dry:	30	96.8%
Wet:	1	3.2%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	32	53.3%
Bus:	2	3.3%
Truck:	5	8.3%
Taxi:	16	26.7%
Minivan:	0	0.0%
Police/Emergency Vehicle:	3	5.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	2	3.3%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	6	19.4%
PDO Collision:	25	80.6%

Light Condition	#ACC	%
Daylight:	17	54.8%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	13	41.9%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	1	3.2%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	13	21.7%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	47	78.3%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	2	100.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	12	0	3	0	2	0	0
2013	7	0	2	0	0	0	0
2014	12	0	4	0	0	0	0

1 Records are not approved as of 9/30/2015 10:22:46 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 9TH ST and G PL, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	7
Total Number of Fatalities:	0
Total Number of Injuries:	0
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	0
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	0	0.0%	Fixed Object:	1	14.3%
Left Turn:	0	0.0%	Ran Off Road:	0	0.0%
Right Turn:	2	28.6%	Ped. Involved:	0	0.0%
Rear End:	1	14.3%	Backing:	1	14.3%
Side Swiped:	2	28.6%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	0	0.0%	Unspecified:	0	0.0%

Time of Day	#ACC	%
07:30 ~ 09:30:	0	0.0%
09:30 ~ 11:30:	1	14.3%
11:30 ~ 13:30:	1	14.3%
13:30 ~ 16:00:	1	14.3%
16:00 ~18:30:	1	14.3%
18:30 ~ 07:30:	3	42.9%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	0	0.0%
Monday:	0	0.0%
Tuesday:	2	28.6%
Wednesday:	1	14.3%
Thursday:	2	28.6%
Friday:	0	0.0%
Saturday:	2	28.6%

Weather Condition	#ACC	%
Clear:	5	71.4%
Rain:	1	14.3%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	1	14.3%

Surface Condition	#ACC	%
Dry:	5	71.4%
Wet:	1	14.3%
Snow/Ice:	1	14.3%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	9	69.2%
Bus:	1	7.7%
Truck:	2	15.4%
Taxi:	1	7.7%
Minivan:	0	0.0%
Police/Emergency Vehicle:	0	0.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	0	0.0%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	0	0.0%
PDO Collision:	7	100.0%

Light Condition	#ACC	%
Daylight:	5	71.4%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	2	28.6%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	0	0.0%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	3	23.1%
Vehicle:	0	0.0%
Roadway:	1	7.7%
Unspecified:	9	69.2%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	0	0.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	1	0	0	0	0	0	0
2013	2	0	0	0	0	0	0
2014	4	0	0	0	0	0	0

0 Records are not approved as of 9/30/2015 10:24:14 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 9TH ST and F ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	39
Total Number of Fatalities:	0
Total Number of Injuries:	9
Total Number of Disabling Injuries:	1
Total Number of NonDisabling Injuries:	1
Total Number of Pedestrians Involved:	4
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	1

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	2	5.1%	Fixed Object:	0	0.0%
Left Turn:	2	5.1%	Ran Off Road:	0	0.0%
Right Turn:	3	7.7%	Ped. Involved:	4	10.3%
Rear End:	7	17.9%	Backing:	3	7.7%
Side Swiped:	15	38.5%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	0	0.0%	Unspecified:	3	7.7%

Time of Day	#ACC	%
07:30 ~ 09:30:	1	2.6%
09:30 ~ 11:30:	4	10.3%
11:30 ~ 13:30:	8	20.5%
13:30 ~ 16:00:	6	15.4%
16:00 ~18:30:	10	25.6%
18:30 ~ 07:30:	10	25.6%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	7	17.9%
Monday:	1	2.6%
Tuesday:	8	20.5%
Wednesday:	3	7.7%
Thursday:	5	12.8%
Friday:	10	25.6%
Saturday:	5	12.8%

Weather Condition	#ACC	%
Clear:	35	89.7%
Rain:	3	7.7%
Snow:	0	0.0%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	1	2.6%

Surface Condition	#ACC	%
Dry:	36	92.3%
Wet:	3	7.7%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	40	53.3%
Bus:	7	9.3%
Truck:	7	9.3%
Taxi:	18	24.0%
Minivan:	0	0.0%
Police/Emergency Vehicle:	1	1.3%
Motorcycle/Moped:	1	1.3%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	1	1.3%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	8	20.5%
PDO Collision:	31	79.5%

Light Condition	#ACC	%
Daylight:	27	69.2%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	12	30.8%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	0	0.0%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	17	22.7%
Vehicle:	0	0.0%
Roadway:	0	0.0%
Unspecified:	58	77.3%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	0	0.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	2	50.0%
From Between Parked Cars:	1	25.0%
Unspecified:	1	25.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	17	0	4	1	3	0	1
2013	8	0	2	0	0	0	0
2014	14	0	3	0	1	0	0

1 Records are not approved as of 9/30/2015 10:25:02 AM

DC Department of Transportation - Traffic Accident Reporting and Analysis System

Accident Summary Report (R-7)

Intersection: 8TH ST and H ST, NW

Time Period Covered: From 01/01/2012 To 12/31/2014 **Prepared By:** admin TARAS **Prepared Date:** 9/30/2015

Total Number of Accident:	40
Total Number of Fatalities:	0
Total Number of Injuries:	3
Total Number of Disabling Injuries:	0
Total Number of NonDisabling Injuries:	0
Total Number of Pedestrians Involved:	2
Total Number of Bicycles Involved:	0
Total Number of Motorcycles Involved:	0

Collision Type	#ACC	%	Collision Type	#ACC	%
Right Angle:	7	17.5%	Fixed Object:	0	0.0%
Left Turn:	1	2.5%	Ran Off Road:	0	0.0%
Right Turn:	0	0.0%	Ped. Involved:	2	5.0%
Rear End:	1	2.5%	Backing:	0	0.0%
Side Swiped:	23	57.5%	Non Collision:	0	0.0%
Head On:	0	0.0%	Under/Over Ride:	0	0.0%
Parked:	4	10.0%	Unspecified:	2	5.0%

Time of Day	#ACC	%
07:30 ~ 09:30:	2	5.0%
09:30 ~ 11:30:	2	5.0%
11:30 ~ 13:30:	2	5.0%
13:30 ~ 16:00:	10	25.0%
16:00 ~18:30:	8	20.0%
18:30 ~ 07:30:	16	40.0%
Unspecified:	0	0.0%

Day o fweek	#ACC	%
Sunday:	6	15.0%
Monday:	2	5.0%
Tuesday:	7	17.5%
Wednesday:	8	20.0%
Thursday:	5	12.5%
Friday:	7	17.5%
Saturday:	5	12.5%

Weather Condition	#ACC	%
Clear:	32	80.0%
Rain:	5	12.5%
Snow:	1	2.5%
Sleet/Hail:	0	0.0%
Fog/Mist:	0	0.0%
Crosswind/Blowing Sand:	0	0.0%
Unspecified:	2	5.0%

Surface Condition	#ACC	%
Dry:	32	80.0%
Wet:	8	20.0%
Snow/Ice:	0	0.0%
Slush:	0	0.0%
Water/Sand:	0	0.0%
Repairing:	0	0.0%
Unspecified:	0	0.0%

Type of Vehicle	#VEH	%
Passenger Car:	46	59.0%
Bus:	14	17.9%
Truck:	5	6.4%
Taxi:	6	7.7%
Minivan:	0	0.0%
Police/Emergency Vehicle:	0	0.0%
Motorcycle/Moped:	0	0.0%
Bicycle:	0	0.0%
Fixed Object:	0	0.0%
Unspecified:	7	9.0%

Accident Severity Type	#ACC	%
Fatal Collision:	0	0.0%
Injury Collision:	3	7.5%
PDO Collision:	37	92.5%

Light Condition	#ACC	%
Daylight:	26	65.0%
Dawn/Dusk:	0	0.0%
Dark(Lighted):	12	30.0%
Dark(Not Lighted):	0	0.0%
Dark(Unknown Lighting):	0	0.0%
Unspecified:	2	5.0%

Contributing Factor	#VEH	%
Driver: Speed:	0	0.0%
Driver: Alcohol/Drug:	0	0.0%
Driver: Electronic Device:	0	0.0%
Driver: Others:	9	11.5%
Vehicle:	0	0.0%
Roadway:	2	2.6%
Unspecified:	67	85.9%

Pedestrian Actions	#ACC	%
In Crosswalk with Signal:	1	50.0%
In Crosswalk against Signal:	0	0.0%
In Crosswalk no Signal:	0	0.0%
In Unmarked Crosswalk:	0	0.0%
Not in Crosswalk:	0	0.0%
From Between Parked Cars:	0	0.0%
Unspecified:	1	50.0%

Year	Accidents	Fatalities	Injuries	Disabling Injuries	Pedestrians	Bicycles	Motorcycles
2012	16	0	1	0	0	0	0
2013	12	0	0	0	0	0	0
2014	12	0	2	0	2	0	0

2 Records are not approved as of 9/30/2015 10:27:05 AM

YAHO
8th Street, NW &
H Street, NW
Facing Northwest

AADT Map from DDOT

Location	9th St, NW between F St, NW and E St, NW (Two Blocks South of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002	16.5	
2003	16.5	0.0%
2004	16.5	0.0%
2005	16.5	0.0%
2006	14.4	-12.7%
2007	14.2	-1.4%
2008	14.2	0.0%
2009	15	5.6%
2010	14.5	-3.3%
2011	16.8	15.9%
2012	16.7	-0.6%
2013	16.7	0.0%
Growth Rate	Total	3.5%
	Average	**0.3%**

Location	10th St, NW between G St, NW and F St, NW (One Block South of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002		
2003		
2004		
2005		
2006		
2007		
2008	2	
2009	2	0.0%
2010	2	0.0%
2011	2	0.0%
2012	2	0.0%
2013	2.8	40.0%
Growth Rate	Total	40.0%
	Average	**8.0%**

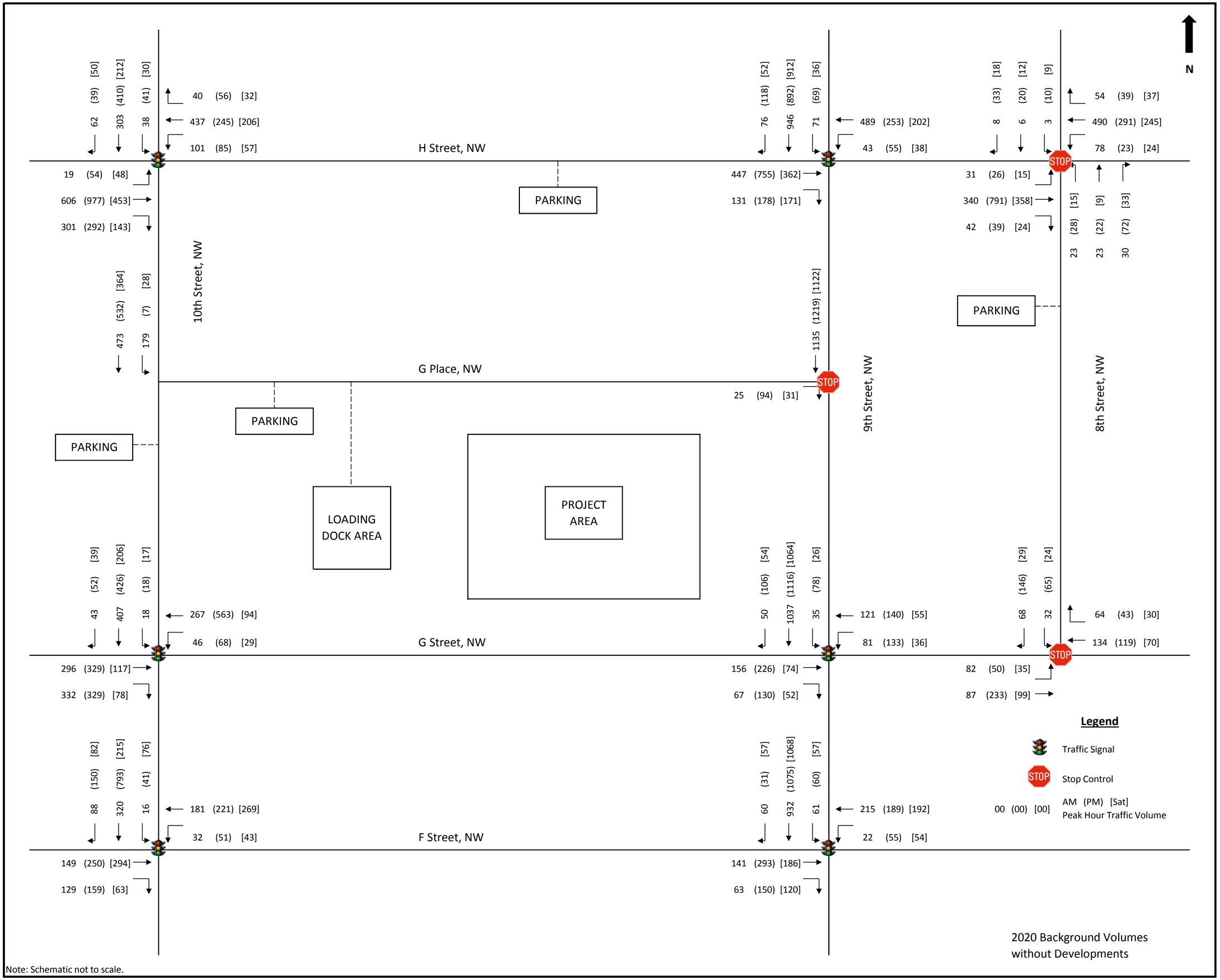
Location	G St, NW between 12 St, NW and 13 St, NW (Three Blocks West of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002	5.2	
2003	5.2	0.0%
2004	5.2	0.0%
2005	5.2	0.0%
2006	5.4	3.8%
2007	5.5	1.9%
2008	6.7	21.8%
2009	6.7	0.0%
2010	6.7	0.0%
2011	6.7	0.0%
2012	6.7	0.0%
2013	6	-10.4%
Growth Rate	Total	17.1%
	Average	**1.6%**

Location	8th St, NW between I St, NW and G St, NW (One Block East of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002	2	
2003	2	0.0%
2004	2	0.0%
2005	2	0.0%
2006	2.1	5.0%
2007	2.2	4.8%
2008	2.2	0.0%
2009	2.2	0.0%
2010	2	-9.1%
2011	2	0.0%
2012	2	0.0%
2013	2	0.0%
Growth Rate	Total	0.7%
	Average	**0.1%**

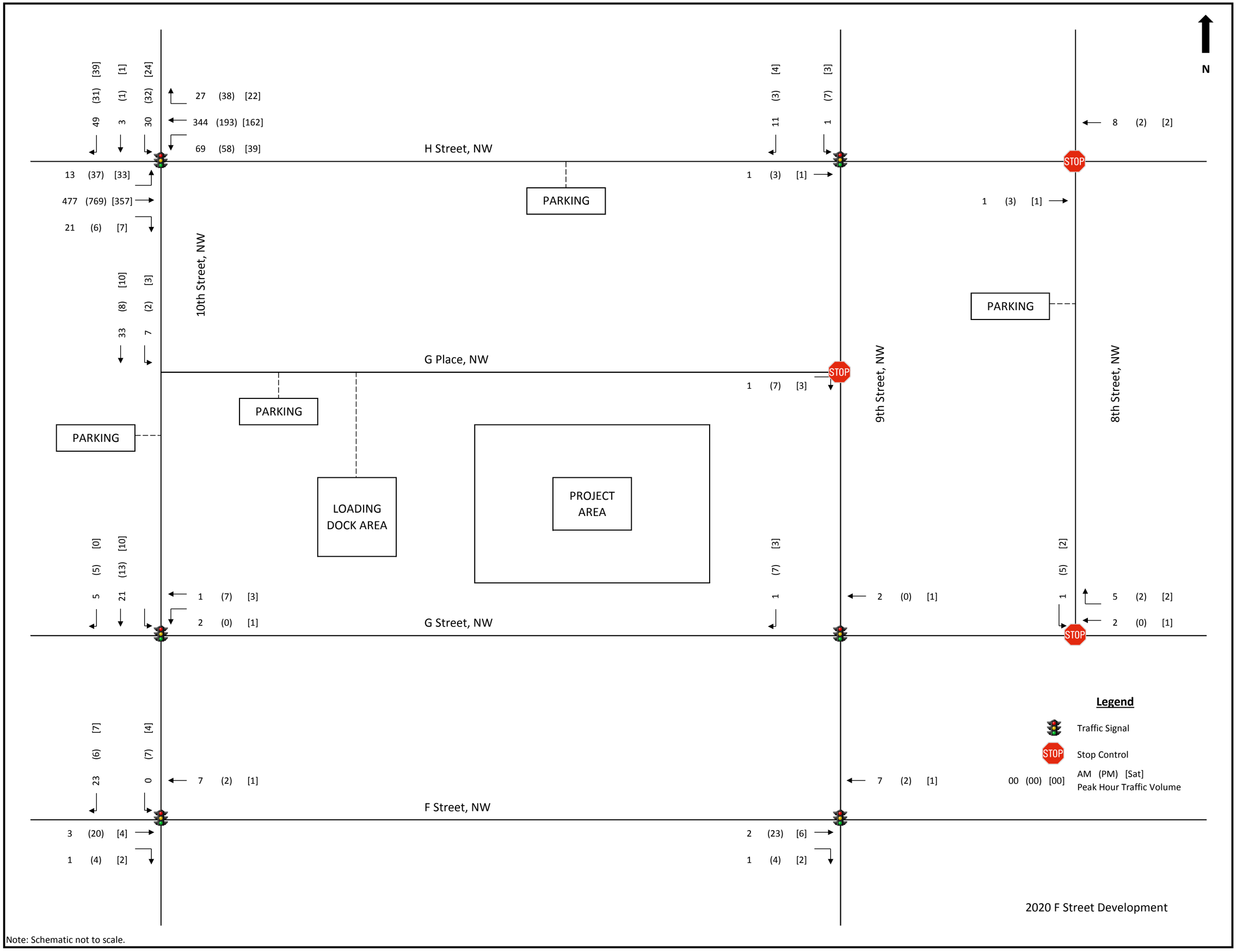
Location	F St, NW between 10th St, NW and 11th St, NW (One Block South of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002	5	
2003	5	0.0%
2004	5	0.0%
2005	5	0.0%
2006	5.2	4.0%
2007	5.3	1.9%
2008	8.3	56.6%
2009	8.3	0.0%
2010	7.8	-6.0%
2011	7.9	1.3%
2012	7.8	-1.3%
2013	7.9	1.3%
Growth Rate	Total	57.8%
	Average	**5.3%**

Location	H St, NW between 12th St, NW and 13th St, NW (Three Blocks West of MLK Library)	
Year	**AADT in 1,000**	**Difference %**
2002	10	
2003	10	0.0%
2004	10	0.0%
2005	10	0.0%
2006	10.4	4.0%
2007	10.5	1.0%
2008	10.4	-1.0%
2009	10.5	1.0%
2010	15.6	48.6%
2011	15.7	0.6%
2012	15.6	-0.6%
2013	15.6	0.0%
Growth Rate	Total	53.5%
	Average	**4.9%**

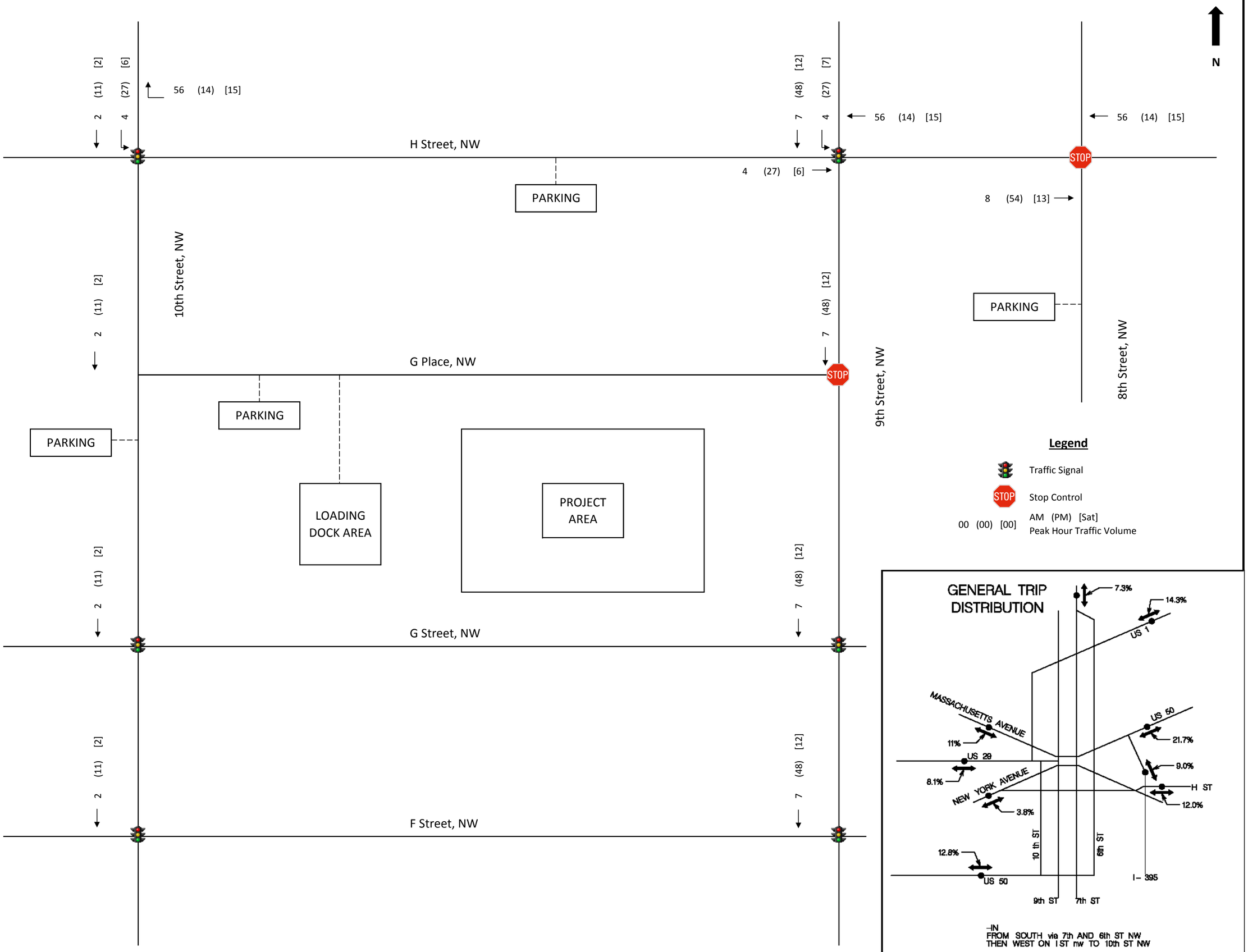
Appendix D – Background Traffic and Adjacent Development Site Trip Figures



Note: Schematic not to scale.



Note: Schematic not to scale.



Note: Schematic not to scale.

Appendix E – Background LOS / Delay Synchro Report

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	82	87	136	69	33	68
Future Vol, veh/h	82	87	136	69	33	68
Conflicting Peds, #/hr	19	0	0	19	107	78
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	89	89	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	118	153	78	47	97

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	337	0	-	0	638	318
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	339	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	441	723
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1200	-	-	-	320	638
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1200	-	-	-	482
HCM Lane V/C Ratio	0.092	-	-	-	0.299
HCM Control Delay (s)	8.3	0	-	-	15.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.2

Intersection	
Int Delay, s/veh	99.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	31	349	42	78	554	54	23	23	30	3	6	8
Future Vol, veh/h	31	349	42	78	554	54	23	23	30	3	6	8
Conflicting Peds, #/hr	89	0	48	48	0	89	190	0	358	358	0	190
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	96	96	96	81	81	81	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	436	53	81	577	56	28	28	37	4	9	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	991	0	0	847	0	0	1654	2052	691	1750	2050	764
Stage 1	-	-	-	-	-	-	898	898	-	1126	1126	-
Stage 2	-	-	-	-	-	-	756	1154	-	624	924	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	395	-	-	464	-	-	104	55	332	91	55	297
Stage 1	-	-	-	-	-	-	234	356	-	163	278	-
Stage 2	-	-	-	-	-	-	333	270	-	401	346	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	362	-	-	425	-	-	~ 22	~ 14	200	-	14	179
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 22	~ 14	-	-	14	-
Stage 1	-	-	-	-	-	-	131	200	-	91	129	-
Stage 2	-	-	-	-	-	-	187	125	-	218	194	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	2.6	$ 1415.4	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	27	362	-	-	425	-	-	-
HCM Lane V/C Ratio	3.475	0.107	-	-	0.191	-	-	-
HCM Control Delay (s)	$ 1415.4	16.1	0.6	-	15.5	1.1	-	-
HCM Lane LOS	F	C	A	-	C	A	-	-
HCM 95th %tile Q(veh)	11.4	0.4	-	-	0.7	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1083	322	170	781	123	0	0	0	72	308	111
Future Volume (vph)	32	1083	322	170	781	123	0	0	0	72	308	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.93			0.94						0.92	
Flpb, ped/bikes		1.00			1.00						0.94	
Frt		0.97			0.98						0.97	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		4535			4661						1369	
Flt Permitted		0.84			0.66						0.99	
Satd. Flow (perm)		3816			3104						1369	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	1116	332	175	805	127	0	0	0	74	318	114
RTOR Reduction (vph)	0	47	0	0	15	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1434	0	0	1092	0	0	0	0	0	496	0
Confl. Peds. (#/hr)	196		251	251		196				485		402
Confl. Bikes (#/hr)			3									1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		38.5			38.5						54.0	
Effective Green, g (s)		38.5			38.5						54.0	
Actuated g/C Ratio		0.35			0.35						0.49	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1335			1086						672	
v/s Ratio Prot												
v/s Ratio Perm		c0.38			0.35						0.36	
v/c Ratio		1.07			2.24dl						0.74	
Uniform Delay, d1		35.8			35.8						22.4	
Progression Factor		1.00			1.51						1.00	
Incremental Delay, d2		47.1			28.2						7.1	
Delay (s)		82.8			82.2						29.5	
Level of Service		F			F						C	
Approach Delay (s)		82.8			82.2			0.0			29.5	
Approach LOS		F			F			A			C	

Intersection Summary			
HCM 2000 Control Delay	73.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	1481	1107	506
v/c Ratio	1.07	2.24dl	0.74
Control Delay	79.1	79.4	29.6
Queue Delay	0.0	0.0	0.0
Total Delay	79.1	79.4	29.6
Queue Length 50th (ft)	~413	~297	267
Queue Length 95th (ft)	#511	#396	411
Internal Link Dist (ft)	361	481	148
Turn Bay Length (ft)			
Base Capacity (vph)	1383	1102	682
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.07	1.00	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	296	332	48	268	0	0	0	0	18	430	48
Future Volume (veh/h)	0	296	332	48	268	0	0	0	0	18	430	48
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.88	1.00		1.00				1.00		0.60
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	352	395	57	319	0				21	512	57
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	388	435	69	344	0				22	560	65
Arrive On Green	0.00	0.66	0.66	0.22	0.22	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	589	661	47	522	0				93	2325	270
Grp Volume(v), veh/h	0	0	747	376	0	0				333	0	257
Grp Sat Flow(s),veh/h/ln	0	0	1249	569	0	0				1471	0	1217
Q Serve(g_s), s	0.0	0.0	55.8	16.7	0.0	0.0				24.4	0.0	22.4
Cycle Q Clear(g_c), s	0.0	0.0	55.8	72.5	0.0	0.0				24.4	0.0	22.4
Prop In Lane	0.00		0.53	0.15		0.00				0.06		0.22
Lane Grp Cap(c), veh/h	0	0	823	413	0	0				354	0	293
V/C Ratio(X)	0.00	0.00	0.91	0.91	0.00	0.00				0.94	0.00	0.88
Avail Cap(c_a), veh/h	0	0	823	413	0	0				354	0	293
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.94	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	15.9	44.4	0.0	0.0				41.0	0.0	40.2
Incr Delay (d2), s/veh	0.0	0.0	13.4	22.5	0.0	0.0				34.6	0.0	28.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	22.0	14.0	0.0	0.0				13.3	0.0	9.9
LnGrp Delay(d),s/veh	0.0	0.0	29.3	67.0	0.0	0.0				75.5	0.0	69.1
LnGrp LOS			C	E						E		E
Approach Vol, veh/h		747			376						590	
Approach Delay, s/veh		29.3			67.0						72.7	
Approach LOS		C			E						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		32.0		78.0				78.0
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		26.4		57.8				74.5
Green Ext Time (p_c), s		0.0		3.6				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	747	376	590
v/c Ratio	0.87	0.49	0.74
Control Delay	28.4	9.2	47.0
Queue Delay	0.0	0.0	0.0
Total Delay	28.4	9.2	47.0
Queue Length 50th (ft)	357	75	223
Queue Length 95th (ft)	480	100	m222
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	898	806	797
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.83	0.47	0.74

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	152	130	32	188	0	0	0	0	16	322	111
Future Volume (veh/h)	0	152	130	32	188	0	0	0	0	16	322	111
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.65	0.85		1.00				1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	162	138	34	200	0				17	343	118
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	324	188	69	416	0				85	1738	622
Arrive On Green	0.00	0.18	0.18	0.18	0.18	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	1863	1024	139	2356	0				119	2441	873
Grp Volume(v), veh/h	0	162	138	104	130	0				265	0	213
Grp Sat Flow(s),veh/h/ln	0	1770	1024	800	1610	0				1857	0	1577
Q Serve(g_s), s	0.0	9.1	14.0	2.5	7.9	0.0				12.6	0.0	11.9
Cycle Q Clear(g_c), s	0.0	9.1	14.0	16.5	7.9	0.0				12.6	0.0	11.9
Prop In Lane	0.00		1.00	0.33		0.00				0.06		0.55
Lane Grp Cap(c), veh/h	0	324	188	190	295	0				1322	0	1123
V/C Ratio(X)	0.00	0.50	0.74	0.55	0.44	0.00				0.20	0.00	0.19
Avail Cap(c_a), veh/h	0	716	414	498	651	0				1322	0	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.92	0.92	0.00				0.59	0.00	0.59
Uniform Delay (d), s/veh	0.0	40.4	42.4	41.5	39.9	0.0				16.9	0.0	16.7
Incr Delay (d2), s/veh	0.0	0.4	2.1	0.8	0.4	0.0				0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.4	4.1	3.1	3.5	0.0				6.6	0.0	5.3
LnGrp Delay(d),s/veh	0.0	40.8	44.5	42.3	40.3	0.0				17.1	0.0	16.9
LnGrp LOS		D	D	D	D					B		B
Approach Vol, veh/h		300			234						478	
Approach Delay, s/veh		42.5			41.2						17.0	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				25.7		84.3		25.7
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				16.0		14.6		18.5
Green Ext Time (p_c), s				1.6		1.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	300	234	478
v/c Ratio	0.58	0.51	0.23
Control Delay	39.1	58.6	3.3
Queue Delay	0.0	0.0	0.0
Total Delay	39.1	58.6	3.3
Queue Length 50th (ft)	84	90	32
Queue Length 95th (ft)	131	131	m35
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1141	1070	2101
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.22	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	452	131	43	545	0	0	0	0	76	953	87
Future Volume (vph)	0	452	131	43	545	0	0	0	0	76	953	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.92			1.00						0.98	
Flpb, ped/bikes		1.00			0.99						0.98	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			1.00						1.00	
Satd. Flow (prot)		4541			5023						4618	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		4541			3792						4618	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	471	136	45	568	0	0	0	0	79	993	91
RTOR Reduction (vph)	0	56	0	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	551	0	0	613	0	0	0	0	0	1157	0
Confl. Peds. (#/hr)			257	257						286		120
Confl. Bikes (#/hr)												4
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		20.0			20.0						72.5	
Effective Green, g (s)		20.0			20.0						72.5	
Actuated g/C Ratio		0.18			0.18						0.66	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		825			689						3043	
v/s Ratio Prot		0.12										
v/s Ratio Perm					c0.16						0.25	
v/c Ratio		0.67			0.89						0.38	
Uniform Delay, d1		41.9			43.9						8.5	
Progression Factor		0.25			1.00						1.00	
Incremental Delay, d2		0.1			13.1						0.4	
Delay (s)		10.8			57.0						8.9	
Level of Service		B			E						A	
Approach Delay (s)		10.8			57.0			0.0			8.9	
Approach LOS		B			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	607	613	1163
v/c Ratio	0.69	0.89	0.38
Control Delay	9.7	59.8	9.2
Queue Delay	0.0	0.0	0.0
Total Delay	9.7	59.8	9.2
Queue Length 50th (ft)	79	156	121
Queue Length 95th (ft)	m73	190	172
Internal Link Dist (ft)	481	219	140
Turn Bay Length (ft)			
Base Capacity (vph)	1409	1136	3051
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	172
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.54	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	156	67	81	123	0	0	0	0	35	1044	51
Future Volume (vph)	0	156	67	81	123	0	0	0	0	35	1044	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.89		1.00	1.00						1.00	0.47
Flpb, ped/bikes		1.00		1.00	1.00						0.98	1.00
Frt		0.96		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1426		1593	1475						2938	672
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1426		1593	1475						2938	672
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	162	70	84	128	0	0	0	0	36	1088	53
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	29
Lane Group Flow (vph)	0	219	0	84	128	0	0	0	0	0	1124	24
Confl. Peds. (#/hr)			364	364						210		181
Confl. Bikes (#/hr)			1									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.3		21.0	21.0						50.2	50.2
Effective Green, g (s)		19.3		21.0	21.0						50.2	50.2
Actuated g/C Ratio		0.18		0.19	0.19						0.46	0.46
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		250		304	281						1340	306
v/s Ratio Prot		c0.15		0.05	c0.09							
v/s Ratio Perm											0.38	0.04
v/c Ratio		0.88		0.28	0.46						0.84	0.08
Uniform Delay, d1		44.2		38.0	39.4						26.3	16.9
Progression Factor		0.70		1.00	1.00						0.91	3.66
Incremental Delay, d2		16.1		0.2	0.4						6.1	0.5
Delay (s)		47.2		38.2	39.9						30.1	62.3
Level of Service		D		D	D						C	E
Approach Delay (s)		47.2			39.2			0.0			31.5	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	233	84	128	1124	53
v/c Ratio	0.89	0.28	0.46	0.84	0.15
Control Delay	50.9	40.9	45.5	30.8	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	40.9	45.5	30.8	2.4
Queue Length 50th (ft)	151	51	81	380	4
Queue Length 95th (ft)	m#203	98	142	474	m12
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	268	308	285	1340	360
Starvation Cap Reductn	0	0	0	4	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.27	0.45	0.84	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	26	0	0	1142	0
Future Vol, veh/h	0	26	0	0	1142	0
Conflicting Peds, #/hr	0	381	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	0	0	1190	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1571	975	-	0
Stage 1	1571	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	117	216	-	-
Stage 1	79	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	47	138	-	-
Mov Cap-2 Maneuver	47	-	-	-
Stage 1	50	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	40.6	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	138	-	-
HCM Lane V/C Ratio	0.273	-	-
HCM Control Delay (s)	40.6	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	143	64	22	222	0	0	0	0	61	939	60
Future Volume (veh/h)	0	143	64	22	222	0	0	0	0	61	939	60
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	0.90		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	157	70	24	244	0				67	1032	66
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	498	202	76	678	0				126	2035	136
Arrive On Green	0.00	0.07	0.07	0.21	0.21	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	2412	941	174	3245	0				188	3030	203
Grp Volume(v), veh/h	0	116	111	142	126	0				582	0	583
Grp Sat Flow(s),veh/h/ln	0	1770	1491	1725	1610	0				1630	0	1790
Q Serve(g_s), s	0.0	6.9	7.8	0.0	7.3	0.0				34.7	0.0	31.2
Cycle Q Clear(g_c), s	0.0	6.9	7.8	7.1	7.3	0.0				34.7	0.0	31.2
Prop In Lane	0.00		0.63	0.17		0.00				0.12		0.11
Lane Grp Cap(c), veh/h	0	380	320	408	346	0				1095	0	1203
V/C Ratio(X)	0.00	0.31	0.35	0.35	0.36	0.00				0.53	0.00	0.48
Avail Cap(c_a), veh/h	0	467	393	489	425	0				1095	0	1203
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.79	0.79	1.00	1.00	0.00				0.50	0.00	0.50
Uniform Delay (d), s/veh	0.0	43.3	43.8	36.7	36.8	0.0				27.5	0.0	26.2
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.2	0.2	0.0				0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.2	3.7	3.3	0.0				16.0	0.0	15.8
LnGrp Delay(d),s/veh	0.0	43.5	43.9	36.9	37.0	0.0				28.5	0.0	26.9
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		227			268						1165	
Approach Delay, s/veh		43.7			37.0						27.7	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				29.6		80.4		29.6
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				9.8		36.7		9.3
Green Ext Time (p_c), s				1.2		3.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	227	268	1165
v/c Ratio	0.33	0.41	0.52
Control Delay	16.9	39.2	1.3
Queue Delay	0.0	0.0	0.6
Total Delay	16.9	39.2	1.9
Queue Length 50th (ft)	66	86	23
Queue Length 95th (ft)	109	127	23
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	827	786	2259
Starvation Cap Reductn	0	0	648
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.34	0.72

Intersection Summary

Intersection	
Int Delay, s/veh	98

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	50	233	119	45	70	146
Future Vol, veh/h	50	233	119	45	70	146
Conflicting Peds, #/hr	126	0	0	126	283	395
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	89	89	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	248	134	51	83	174

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	579	0	-	0	908	680
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	995	-	-	-	306	451
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	876	-	-	-	111	248
Mov Cap-2 Maneuver	-	-	-	-	111	-
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	412	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	281.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	876	-	-	-	177
HCM Lane V/C Ratio	0.061	-	-	-	1.453
HCM Control Delay (s)	9.4	0	-	-	281.1
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	16

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	26	848	39	23	307	39	28	22	72	10	20	33
Future Vol, veh/h	26	848	39	23	307	39	28	22	72	10	20	33
Conflicting Peds, #/hr	343	0	99	99	0	343	703	0	316	316	0	703
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	67	67	67	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	874	40	34	458	58	33	26	86	12	24	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1219	0	0	1617	0	0	2618	2939	1503	2378	2930	1304
Stage 1	-	-	-	-	-	-	1651	1651	-	1259	1259	-
Stage 2	-	-	-	-	-	-	967	1288	-	1119	1671	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	306	-	-	195	-	-	~ 26	~ 15	95	37	~ 15	129
Stage 1	-	-	-	-	-	-	69	155	-	131	240	-
Stage 2	-	-	-	-	-	-	247	233	-	198	151	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	206	-	-	131	-	-	-	~ 1	~ 21	-	~ 1	~ 29
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 1	-	-	~ 1	-
Stage 1	-	-	-	-	-	-	~ 17	37	-	32	50	-
Stage 2	-	-	-	-	-	-	-	49	-	-	36	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	6.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	206	-	-	131	-	-	-
HCM Lane V/C Ratio	-	0.13	-	-	0.262	-	-	-
HCM Control Delay (s)	-	25.1	2.1	-	42	4.2	-	-
HCM Lane LOS	-	D	A	-	E	A	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	1746	298	143	438	108	0	0	0	100	422	70
Future Volume (vph)	91	1746	298	143	438	108	0	0	0	100	422	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.95			0.90						0.95	
Flpb, ped/bikes		0.99			1.00						0.94	
Frt		0.98			0.98						0.98	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		4689			4436						1435	
Flt Permitted		0.78			0.69						0.99	
Satd. Flow (perm)		3660			3106						1435	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	1877	320	154	471	116	0	0	0	108	454	75
RTOR Reduction (vph)	0	20	0	0	25	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	2275	0	0	716	0	0	0	0	0	632	0
Confl. Peds. (#/hr)	367		306	306		367				352		564
Confl. Bikes (#/hr)			1			4						1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		38.5			38.5						54.0	
Effective Green, g (s)		38.5			38.5						54.0	
Actuated g/C Ratio		0.35			0.35						0.49	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1281			1087						704	
v/s Ratio Prot												
v/s Ratio Perm		c0.62			0.23						0.44	
v/c Ratio		1.78			1.81dl						0.90	
Uniform Delay, d1		35.8			30.2						25.5	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		352.3			1.1						16.6	
Delay (s)		388.1			31.2						42.1	
Level of Service		F			C						D	
Approach Delay (s)		388.1			31.2			0.0			42.1	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	256.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	2295	741	637
v/c Ratio	1.76	1.81dl	0.90
Control Delay	372.9	32.0	42.9
Queue Delay	0.0	0.0	0.0
Total Delay	372.9	32.0	42.9
Queue Length 50th (ft)	~891	160	392
Queue Length 95th (ft)	#988	202	#637
Internal Link Dist (ft)	361	481	148
Turn Bay Length (ft)			
Base Capacity (vph)	1301	1112	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.76	0.67	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	329	329	68	570	0	0	0	0	18	450	57
Future Volume (veh/h)	0	329	329	68	570	0	0	0	0	18	450	57
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00				1.00		0.64
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	343	343	71	594	0				19	469	59
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	405	405	72	539	0				22	554	72
Arrive On Green	0.00	0.66	0.66	0.22	0.22	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	615	615	54	818	0				91	2301	300
Grp Volume(v), veh/h	0	0	686	665	0	0				307	0	240
Grp Sat Flow(s),veh/h/ln	0	0	1230	872	0	0				1471	0	1222
Q Serve(g_s), s	0.0	0.0	47.3	25.2	0.0	0.0				22.0	0.0	20.4
Cycle Q Clear(g_c), s	0.0	0.0	47.3	72.5	0.0	0.0				22.0	0.0	20.4
Prop In Lane	0.00		0.50	0.11		0.00				0.06		0.25
Lane Grp Cap(c), veh/h	0	0	811	611	0	0				354	0	294
V/C Ratio(X)	0.00	0.00	0.85	1.09	0.00	0.00				0.87	0.00	0.82
Avail Cap(c_a), veh/h	0	0	811	611	0	0				354	0	294
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.88	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	14.4	46.8	0.0	0.0				40.1	0.0	39.4
Incr Delay (d2), s/veh	0.0	0.0	7.8	61.0	0.0	0.0				23.7	0.0	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.6	29.0	0.0	0.0				11.3	0.0	8.6
LnGrp Delay(d),s/veh	0.0	0.0	22.3	107.8	0.0	0.0				63.7	0.0	60.9
LnGrp LOS			C	F						E		E
Approach Vol, veh/h		686			665						547	
Approach Delay, s/veh		22.3			107.8						62.5	
Approach LOS		C			F						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		32.0		78.0				78.0
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		24.0		49.3				74.5
Green Ext Time (p_c), s		0.5		4.9				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	63.8
HCM 2010 LOS	E

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	686	665	547
v/c Ratio	0.85	0.86	0.66
Control Delay	27.4	26.8	30.9
Queue Delay	0.0	6.9	0.3
Total Delay	27.4	33.7	31.1
Queue Length 50th (ft)	310	389	190
Queue Length 95th (ft)	506	577	m170
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	864	827	829
Starvation Cap Reductn	0	123	0
Spillback Cap Reductn	0	0	38
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.79	0.94	0.69

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	270	163	51	223	0	0	0	0	48	804	156
Future Volume (veh/h)	0	270	163	51	223	0	0	0	0	48	804	156
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	0.94		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	276	166	52	228	0				49	820	159
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	456	257	96	477	0				108	1869	384
Arrive On Green	0.00	0.22	0.22	0.22	0.22	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	2124	1144	222	2210	0				161	2786	573
Grp Volume(v), veh/h	0	238	204	124	156	0				566	0	462
Grp Sat Flow(s),veh/h/ln	0	1770	1405	737	1610	0				1855	0	1664
Q Serve(g_s), s	0.0	13.3	14.5	6.3	9.2	0.0				29.1	0.0	26.2
Cycle Q Clear(g_c), s	0.0	13.3	14.5	20.7	9.2	0.0				29.1	0.0	26.2
Prop In Lane	0.00		0.81	0.42		0.00				0.09		0.34
Lane Grp Cap(c), veh/h	0	397	316	212	362	0				1244	0	1117
V/C Ratio(X)	0.00	0.60	0.65	0.58	0.43	0.00				0.45	0.00	0.41
Avail Cap(c_a), veh/h	0	716	569	442	651	0				1244	0	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.83	0.83	0.00				0.70	0.00	0.70
Uniform Delay (d), s/veh	0.0	38.2	38.7	42.0	36.6	0.0				25.4	0.0	24.3
Incr Delay (d2), s/veh	0.0	0.5	0.8	0.8	0.3	0.0				0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.5	5.7	3.7	4.1	0.0				15.3	0.0	12.4
LnGrp Delay(d),s/veh	0.0	38.7	39.5	42.7	36.9	0.0				26.2	0.0	25.1
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		442			280						1028	
Approach Delay, s/veh		39.1			39.5						25.7	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.2		79.8		30.2
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				16.5		31.1		22.7
Green Ext Time (p_c), s				2.0		2.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	442	280	1028
v/c Ratio	0.76	0.69	0.48
Control Delay	50.1	25.5	5.7
Queue Delay	0.0	0.0	1.5
Total Delay	50.1	25.5	7.2
Queue Length 50th (ft)	157	35	67
Queue Length 95th (ft)	200	46	143
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1230	866	2128
Starvation Cap Reductn	0	0	854
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.36	0.32	0.81

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	785	178	55	267	0	0	0	0	103	940	121
Future Volume (vph)	0	785	178	55	267	0	0	0	0	103	940	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.92			1.00						0.96	
Flpb, ped/bikes		1.00			0.99						0.97	
Frt		0.97			1.00						0.98	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		4574			4996						4461	
Flt Permitted		1.00			0.66						1.00	
Satd. Flow (perm)		4574			3326						4461	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	844	191	59	287	0	0	0	0	111	1011	130
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	1000	0	0	346	0	0	0	0	0	1240	0
Confl. Peds. (#/hr)			441	441						276		374
Confl. Bikes (#/hr)			3									2
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		28.6			28.6						63.9	
Effective Green, g (s)		28.6			28.6						63.9	
Actuated g/C Ratio		0.26			0.26						0.58	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1189			864						2591	
v/s Ratio Prot		c0.22										
v/s Ratio Perm					0.10						0.28	
v/c Ratio		0.84			0.88dl						0.48	
Uniform Delay, d1		38.5			33.6						13.4	
Progression Factor		1.08			1.00						1.00	
Incremental Delay, d2		0.5			0.1						0.6	
Delay (s)		42.2			33.7						14.0	
Level of Service		D			C						B	
Approach Delay (s)		42.2			33.7			0.0			14.0	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	1035	346	1252
v/c Ratio	0.85	0.88dl	0.48
Control Delay	40.2	34.5	14.3
Queue Delay	0.0	0.0	0.3
Total Delay	40.2	34.5	14.6
Queue Length 50th (ft)	272	73	175
Queue Length 95th (ft)	m158	98	232
Internal Link Dist (ft)	481	219	140
Turn Bay Length (ft)			
Base Capacity (vph)	1404	997	2602
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	1	0	617
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.74	0.35	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	226	130	133	140	0	0	0	0	78	1164	113
Future Volume (vph)	0	226	130	133	140	0	0	0	0	78	1164	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.87		1.00	1.00						1.00	0.41
Flpb, ped/bikes		1.00		1.00	1.00						0.96	1.00
Frt		0.95		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1390		1593	1475						2855	579
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1390		1593	1475						2855	579
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	240	138	141	149	0	0	0	0	83	1238	120
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	359	0	141	149	0	0	0	0	0	1321	66
Confl. Peds. (#/hr)			282	282						448		284
Confl. Bikes (#/hr)			3									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.8		21.0	21.0						49.7	49.7
Effective Green, g (s)		19.8		21.0	21.0						49.7	49.7
Actuated g/C Ratio		0.18		0.19	0.19						0.45	0.45
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		250		304	281						1289	261
v/s Ratio Prot		c0.26		0.09	c0.10							
v/s Ratio Perm											0.46	0.11
v/c Ratio		1.44		0.46	0.53						1.02	0.25
Uniform Delay, d1		45.1		39.5	40.1						30.1	18.6
Progression Factor		0.74		1.00	1.00						0.86	0.32
Incremental Delay, d2		210.5		0.4	1.0						30.5	2.1
Delay (s)		244.0		39.9	41.0						56.4	8.1
Level of Service		F		D	D						E	A
Approach Delay (s)		244.0			40.5			0.0			52.4	
Approach LOS		F			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	85.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	378	141	149	1321	120
v/c Ratio	1.41	0.46	0.53	1.02	0.38
Control Delay	225.0	45.2	47.8	57.2	5.0
Queue Delay	0.0	0.0	1.3	2.4	0.0
Total Delay	225.0	45.2	49.1	59.6	5.1
Queue Length 50th (ft)	~347	89	96	~527	2
Queue Length 95th (ft)	m#494	153	163	#667	m10
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	269	308	285	1290	315
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	40	9	4
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.41	0.46	0.61	1.03	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	101	0	0	1267	0
Future Vol, veh/h	0	101	0	0	1267	0
Conflicting Peds, #/hr	0	221	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	149	0	0	1320	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1541	880	-	0
Stage 1	1541	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	122	249	-	-
Stage 1	83	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	76	197	-	-
Mov Cap-2 Maneuver	76	-	-	-
Stage 1	66	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	64.2	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	197	-	-
HCM Lane V/C Ratio	0.754	-	-
HCM Control Delay (s)	64.2	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	316	154	55	191	0	0	0	0	60	1123	31
Future Volume (veh/h)	0	316	154	55	191	0	0	0	0	60	1123	31
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.66	0.93		1.00				1.00		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	329	160	57	199	0				62	1170	32
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	516	231	105	482	0				102	2025	58
Arrive On Green	0.00	0.17	0.17	0.25	0.25	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2121	906	212	1980	0				162	3205	92
Grp Volume(v), veh/h	0	283	206	104	152	0				626	0	638
Grp Sat Flow(s),veh/h/ln	0	1770	1164	497	1610	0				1631	0	1827
Q Serve(g_s), s	0.0	16.4	18.3	7.3	8.5	0.0				38.2	0.0	34.4
Cycle Q Clear(g_c), s	0.0	16.4	18.3	25.5	8.5	0.0				38.2	0.0	34.4
Prop In Lane	0.00		0.78	0.55		0.00				0.10		0.05
Lane Grp Cap(c), veh/h	0	450	296	177	410	0				1031	0	1154
V/C Ratio(X)	0.00	0.63	0.69	0.59	0.37	0.00				0.61	0.00	0.55
Avail Cap(c_a), veh/h	0	467	307	187	425	0				1031	0	1154
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.57	0.57	1.00	1.00	0.00				0.16	0.00	0.16
Uniform Delay (d), s/veh	0.0	40.8	41.6	43.4	33.8	0.0				31.2	0.0	29.6
Incr Delay (d2), s/veh	0.0	1.1	3.0	2.6	0.2	0.0				0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.2	6.1	3.2	3.8	0.0				17.4	0.0	17.5
LnGrp Delay(d),s/veh	0.0	41.9	44.6	45.9	34.0	0.0				31.6	0.0	29.9
LnGrp LOS		D	D	D	C					C		C
Approach Vol, veh/h		489			256						1264	
Approach Delay, s/veh		43.0			38.8						30.8	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				34.0		76.0		34.0
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				20.3		40.2		27.5
Green Ext Time (p_c), s				1.7		3.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	489	256	1265
v/c Ratio	0.77	0.54	0.56
Control Delay	70.7	41.5	2.1
Queue Delay	0.0	0.0	1.9
Total Delay	70.7	41.5	4.0
Queue Length 50th (ft)	186	85	45
Queue Length 95th (ft)	221	121	m51
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	733	548	2249
Starvation Cap Reductn	0	0	783
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.47	0.86

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	35	99	71	32	26	29
Future Vol, veh/h	35	99	71	32	26	29
Conflicting Peds, #/hr	97	0	0	97	376	426
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	171	142	64	38	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	632	0	-	0	891	697
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	291	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	951	-	-	-	313	441
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	759	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	863	-	-	-	102	238
Mov Cap-2 Maneuver	-	-	-	-	102	-
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	56.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	863	-	-	-	146
HCM Lane V/C Ratio	0.07	-	-	-	0.554
HCM Control Delay (s)	9.5	0	-	-	56.7
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	2.8

Intersection	
Int Delay, s/veh	27.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	15	372	24	24	262	37	15	9	33	9	12	18
Future Vol, veh/h	15	372	24	24	262	37	15	9	33	9	12	18
Conflicting Peds, #/hr	78	0	246	246	0	78	154	0	315	315	0	154
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	-	-	75	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	82	82	82	73	73	73	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	443	29	29	320	45	21	12	45	14	19	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	635	0	0	758	0	0	1337	1487	782	1271	1487	721
Stage 1	-	-	-	-	-	-	794	794	-	693	693	-
Stage 2	-	-	-	-	-	-	543	693	-	578	794	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	944	-	-	849	-	-	111	123	337	125	123	370
Stage 1	-	-	-	-	-	-	348	398	-	400	443	-
Stage 2	-	-	-	-	-	-	492	443	-	468	398	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	723	-	-	650	-	-	35	55	181	39	55	198
Mov Cap-2 Maneuver	-	-	-	-	-	-	35	55	-	39	55	-
Stage 1	-	-	-	-	-	-	235	269	-	270	293	-
Stage 2	-	-	-	-	-	-	285	293	-	248	269	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1	218.6	166.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	74	723	-	-	650	-	-	72
HCM Lane V/C Ratio	1.055	0.025	-	-	0.045	-	-	0.86
HCM Control Delay (s)	218.6	10.1	0.1	-	10.8	0.2	-	166.1
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	5.7	0.1	-	-	0.1	-	-	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	810	150	96	368	69	0	0	0	60	215	89
Future Volume (vph)	81	810	150	96	368	69	0	0	0	60	215	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		5.5	5.5					6.0	
Lane Util. Factor		0.95	1.00		0.95	1.00					1.00	
Frpb, ped/bikes		1.00	0.72		1.00	0.58					0.93	
Flpb, ped/bikes		0.98	1.00		1.00	1.00					0.95	
Frt		1.00	0.85		1.00	0.85					0.97	
Flt Protected		1.00	1.00		0.99	1.00					0.99	
Satd. Flow (prot)		3470	1145		3503	918					1390	
Flt Permitted		0.78	1.00		0.51	1.00					0.99	
Satd. Flow (perm)		2718	1145		1809	918					1390	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	93	931	172	110	423	79	0	0	0	69	247	102
RTOR Reduction (vph)	0	0	47	0	0	46	0	0	0	0	11	0
Lane Group Flow (vph)	0	1024	125	0	533	33	0	0	0	0	407	0
Confl. Peds. (#/hr)	155		171	171		155				247		213
Confl. Bikes (#/hr)			1			1						1
Parking (#/hr)											4	
Turn Type	Perm	NA	Perm	Perm	NA	Perm				Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		39.5	39.5		39.5	39.5					43.0	
Effective Green, g (s)		39.5	39.5		39.5	39.5					43.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40					0.43	
Clearance Time (s)		5.5	5.5		5.5	5.5					6.0	
Vehicle Extension (s)		1.0	1.0		1.0	1.0					1.0	
Lane Grp Cap (vph)		1073	452		714	362					597	
v/s Ratio Prot												
v/s Ratio Perm		c0.38	0.11		0.29	0.04					0.29	
v/c Ratio		0.95	0.28		1.11dl	0.09					0.68	
Uniform Delay, d1		29.4	20.6		26.0	19.0					23.0	
Progression Factor		1.00	1.00		1.07	1.42					1.00	
Incremental Delay, d2		17.3	0.1		3.7	0.0					6.2	
Delay (s)		46.7	20.7		31.5	26.9					29.1	
Level of Service		D	C		C	C					C	
Approach Delay (s)		42.9			30.9			0.0			29.1	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	76.7%	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

Lane Group	EBT	EBR	WBT	WBR	SBT
Lane Group Flow (vph)	1024	172	533	79	418
v/c Ratio	0.95	0.35	1.11dl	0.19	0.69
Control Delay	48.4	13.4	35.2	8.2	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	13.4	35.2	8.2	29.3
Queue Length 50th (ft)	321	39	171	12	204
Queue Length 95th (ft)	#432	85	217	41	305
Internal Link Dist (ft)	361		481		148
Turn Bay Length (ft)		75		50	
Base Capacity (vph)	1101	509	732	417	609
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.93	0.34	0.73	0.19	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	117	78	30	97	0	0	0	0	17	218	39
Future Volume (veh/h)	0	117	78	30	97	0	0	0	0	17	218	39
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.64	1.00		1.00				1.00		0.86
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	141	94	36	117	0				20	263	47
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83				0.83	0.83	0.83
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	174	116	66	176	0				104	1393	256
Arrive On Green	0.00	0.26	0.26	0.09	0.09	0.00				0.63	0.63	0.63
Sat Flow, veh/h	0	665	443	83	673	0				165	2217	408
Grp Volume(v), veh/h	0	0	235	153	0	0				178	0	152
Grp Sat Flow(s),veh/h/ln	0	0	1109	756	0	0				1467	0	1323
Q Serve(g_s), s	0.0	0.0	19.9	3.1	0.0	0.0				5.1	0.0	4.8
Cycle Q Clear(g_c), s	0.0	0.0	19.9	23.0	0.0	0.0				5.1	0.0	4.8
Prop In Lane	0.00		0.40	0.24		0.00				0.11		0.31
Lane Grp Cap(c), veh/h	0	0	290	242	0	0				922	0	831
V/C Ratio(X)	0.00	0.00	0.81	0.63	0.00	0.00				0.19	0.00	0.18
Avail Cap(c_a), veh/h	0	0	704	787	0	0				922	0	831
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.99	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	34.6	41.4	0.0	0.0				7.9	0.0	7.8
Incr Delay (d2), s/veh	0.0	0.0	2.1	1.0	0.0	0.0				0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	6.2	4.3	0.0	0.0				2.2	0.0	1.8
LnGrp Delay(d),s/veh	0.0	0.0	36.7	42.4	0.0	0.0				8.3	0.0	8.3
LnGrp LOS			D	D						A		A
Approach Vol, veh/h		235			153						330	
Approach Delay, s/veh		36.7			42.4						8.3	
Approach LOS		D			D						A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		68.3		31.7				31.7
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		25.5		63.5				63.5
Max Q Clear Time (g_c+I1), s		7.1		21.9				25.0
Green Ext Time (p_c), s		0.7		1.2				1.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	235	153	330
v/c Ratio	0.70	0.61	0.17
Control Delay	39.5	47.9	5.9
Queue Delay	0.0	0.0	0.0
Total Delay	39.5	47.9	5.9
Queue Length 50th (ft)	111	102	33
Queue Length 95th (ft)	158	155	67
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	910	762	1926
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.20	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	298	65	43	270	0	0	0	0	80	217	89
Future Volume (veh/h)	0	298	65	43	270	0	0	0	0	80	217	89
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.67	0.88		1.00				1.00		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	387	84	56	351	0				104	282	116
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77				0.77	0.77	0.77
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	659	137	91	596	0				438	1217	520
Arrive On Green	0.00	0.25	0.25	0.25	0.25	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2755	555	180	2493	0				687	1909	816
Grp Volume(v), veh/h	0	252	219	192	215	0				277	0	225
Grp Sat Flow(s),veh/h/ln	0	1770	1448	978	1610	0				1828	0	1583
Q Serve(g_s), s	0.0	12.5	13.4	7.0	11.6	0.0				12.6	0.0	11.8
Cycle Q Clear(g_c), s	0.0	12.5	13.4	20.4	11.6	0.0				12.6	0.0	11.8
Prop In Lane	0.00		0.38	0.29		0.00				0.38		0.52
Lane Grp Cap(c), veh/h	0	438	358	289	399	0				1166	0	1009
V/C Ratio(X)	0.00	0.58	0.61	0.67	0.54	0.00				0.24	0.00	0.22
Avail Cap(c_a), veh/h	0	699	572	487	636	0				1166	0	1009
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.89	0.89	0.00				0.99	0.00	0.99
Uniform Delay (d), s/veh	0.0	33.0	33.4	35.7	32.7	0.0				19.3	0.0	19.0
Incr Delay (d2), s/veh	0.0	0.4	0.6	0.9	0.4	0.0				0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	5.4	5.1	5.2	0.0				6.5	0.0	5.3
LnGrp Delay(d),s/veh	0.0	33.5	34.0	36.6	33.1	0.0				19.8	0.0	19.5
LnGrp LOS		C	C	D	C					B		B
Approach Vol, veh/h		471			407						502	
Approach Delay, s/veh		33.7			34.7						19.6	
Approach LOS		C			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.2		69.8		30.2
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				39.5		49.0		39.5
Max Q Clear Time (g_c+I1), s				15.4		14.6		22.4
Green Ext Time (p_c), s				2.4		1.3		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	471	407	502
v/c Ratio	0.71	0.88	0.27
Control Delay	40.6	74.8	5.8
Queue Delay	0.0	0.0	0.0
Total Delay	40.6	74.8	5.8
Queue Length 50th (ft)	141	145	39
Queue Length 95th (ft)	149	127	61
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1237	880	1866
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.46	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	369	171	38	217	0	0	0	0	46	924	56
Future Volume (vph)	0	369	171	38	217	0	0	0	0	46	924	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0						5.5	
Lane Util. Factor		0.95	1.00		0.95						0.91	
Frpb, ped/bikes		1.00	0.68		1.00						0.98	
Flpb, ped/bikes		1.00	1.00		0.98						0.98	
Frt		1.00	0.85		1.00						0.99	
Flt Protected		1.00	1.00		0.99						1.00	
Satd. Flow (prot)		3539	1069		3434						4678	
Flt Permitted		1.00	1.00		0.70						1.00	
Satd. Flow (perm)		3539	1069		2438						4678	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	424	197	44	249	0	0	0	0	53	1062	64
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	424	139	0	293	0	0	0	0	0	1175	0
Confl. Peds. (#/hr)			238	238						307		206
Parking (#/hr)											4	
Turn Type		NA	Perm	Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases			4	8						6		
Actuated Green, G (s)		18.2	18.2		18.2						64.3	
Effective Green, g (s)		18.2	18.2		18.2						64.3	
Actuated g/C Ratio		0.18	0.18		0.18						0.64	
Clearance Time (s)		6.0	6.0		6.0						5.5	
Vehicle Extension (s)		1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)		644	194		443						3007	
v/s Ratio Prot		0.12										
v/s Ratio Perm			c0.13		0.12						0.25	
v/c Ratio		0.66	0.72		0.66						0.39	
Uniform Delay, d1		38.0	38.5		38.0						8.5	
Progression Factor		0.89	1.15		1.00						1.00	
Incremental Delay, d2		0.7	4.1		2.9						0.4	
Delay (s)		34.7	48.4		40.9						8.9	
Level of Service		C	D		D						A	
Approach Delay (s)		39.0			40.9			0.0			8.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	424	197	293	1179
v/c Ratio	0.66	0.78	0.66	0.39
Control Delay	35.1	36.2	44.3	9.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.1	36.3	44.3	9.8
Queue Length 50th (ft)	151	108	94	110
Queue Length 95th (ft)	m163	m121	115	184
Internal Link Dist (ft)	481		219	140
Turn Bay Length (ft)		75		
Base Capacity (vph)	1238	420	852	3011
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	5	0	335
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.47	0.34	0.44

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	74	52	36	56	0	0	0	0	26	1076	57
Future Volume (vph)	0	74	52	36	56	0	0	0	0	26	1076	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.92		1.00	1.00						1.00	0.44
Flpb, ped/bikes		1.00		1.00	1.00						0.99	1.00
Frt		0.94		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1462		1593	1475						2954	632
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1462		1593	1475						2954	632
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	0	86	60	42	65	0	0	0	0	30	1251	66
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	121	0	42	65	0	0	0	0	0	1281	27
Confl. Peds. (#/hr)			106	106						217		251
Confl. Bikes (#/hr)			1									
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		18.0		21.0	21.0						41.5	41.5
Effective Green, g (s)		18.0		21.0	21.0						41.5	41.5
Actuated g/C Ratio		0.18		0.21	0.21						0.42	0.42
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		263		334	309						1225	262
v/s Ratio Prot		c0.08		0.03	c0.04							
v/s Ratio Perm											0.43	0.04
v/c Ratio		0.46		0.13	0.21						1.05	0.10
Uniform Delay, d1		36.6		32.1	32.6						29.2	17.9
Progression Factor		1.75		1.00	1.00						0.88	0.58
Incremental Delay, d2		0.5		0.1	0.1						37.8	0.8
Delay (s)		64.5		32.1	32.8						63.6	11.1
Level of Service		E		C	C						E	B
Approach Delay (s)		64.5			32.5			0.0			61.0	
Approach LOS		E			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	59.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	146	42	65	1281	66
v/c Ratio	0.51	0.13	0.21	1.05	0.20
Control Delay	57.9	33.3	34.8	64.7	1.9
Queue Delay	0.0	0.0	0.0	1.6	0.0
Total Delay	57.9	33.3	34.8	66.3	1.9
Queue Length 50th (ft)	78	22	35	~473	4
Queue Length 95th (ft)	136	49	69	#562	0
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	288	334	309	1225	326
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	5	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.13	0.21	1.05	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	34	0	0	1134	0
Future Vol, veh/h	0	34	0	0	1134	0
Conflicting Peds, #/hr	0	166	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	92	92	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	57	0	0	1260	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1426	795	-	0
Stage 1	1426	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	143	284	-	-
Stage 1	100	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	101	239	-	-
Mov Cap-2 Maneuver	101	-	-	-
Stage 1	84	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	24.7	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	239	-	-
HCM Lane V/C Ratio	0.237	-	-
HCM Control Delay (s)	24.7	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.9	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	192	122	54	193	0	0	0	0	57	1080	57
Future Volume (veh/h)	0	192	122	54	193	0	0	0	0	57	1080	57
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.73	0.86		1.00				1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	206	131	58	208	0				61	1161	61
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	463	255	141	533	0				99	1972	108
Arrive On Green	0.00	0.48	0.48	0.24	0.24	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2023	1062	370	2307	0				156	3106	171
Grp Volume(v), veh/h	0	186	151	125	141	0				639	0	644
Grp Sat Flow(s),veh/h/ln	0	1770	1222	982	1610	0				1631	0	1800
Q Serve(g_s), s	0.0	6.9	8.5	5.6	7.3	0.0				35.6	0.0	32.0
Cycle Q Clear(g_c), s	0.0	6.9	8.5	14.1	7.3	0.0				35.6	0.0	32.0
Prop In Lane	0.00		0.87	0.46		0.00				0.10		0.09
Lane Grp Cap(c), veh/h	0	424	293	288	386	0				1036	0	1144
V/C Ratio(X)	0.00	0.44	0.51	0.44	0.36	0.00				0.62	0.00	0.56
Avail Cap(c_a), veh/h	0	495	342	338	451	0				1036	0	1144
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.64	0.64	1.00	1.00	0.00				0.09	0.00	0.09
Uniform Delay (d), s/veh	0.0	21.6	22.0	34.6	31.7	0.0				28.5	0.0	27.1
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.4	0.2	0.0				0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	2.9	3.2	3.3	0.0				16.1	0.0	16.1
LnGrp Delay(d),s/veh	0.0	21.7	22.3	35.0	31.9	0.0				28.7	0.0	27.3
LnGrp LOS		C	C	C	C					C		C
Approach Vol, veh/h		337			266						1283	
Approach Delay, s/veh		22.0			33.3						28.0	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.0		70.0		30.0
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				28.0		59.5		28.0
Max Q Clear Time (g_c+I1), s				10.5		37.6		16.1
Green Ext Time (p_c), s				1.7		3.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	337	266	1283
v/c Ratio	0.49	0.45	0.59
Control Delay	22.9	35.3	1.2
Queue Delay	0.0	0.0	3.8
Total Delay	22.9	35.3	5.0
Queue Length 50th (ft)	34	76	17
Queue Length 95th (ft)	82	116	m16
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	793	690	2164
Starvation Cap Reductn	0	0	774
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.39	0.92

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Appendix F – Future LOS / Delay Synchro Report

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	83	87	136	70	33	68
Future Vol, veh/h	83	87	136	70	33	68
Conflicting Peds, #/hr	21	0	0	21	107	78
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	74	74	89	89	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	118	153	79	47	97

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	338	0	-	0	641	320
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1221	-	-	-	439	721
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	719	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1197	-	-	-	319	635
Mov Cap-2 Maneuver	-	-	-	-	319	-
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1197	-	-	-	480
HCM Lane V/C Ratio	0.094	-	-	-	0.301
HCM Control Delay (s)	8.3	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.3

Intersection	
Int Delay, s/veh	102

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	31	350	42	79	556	54	23	23	31	3	6	8
Future Vol, veh/h	31	350	42	79	556	54	23	23	31	3	6	8
Conflicting Peds, #/hr	89	0	48	48	0	89	190	0	358	358	0	190
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	96	96	96	81	81	81	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	438	53	82	579	56	28	28	38	4	9	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	993	0	0	848	0	0	1658	2057	692	1755	2056	765
Stage 1	-	-	-	-	-	-	899	899	-	1130	1130	-
Stage 2	-	-	-	-	-	-	759	1158	-	625	926	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	394	-	-	463	-	-	103	54	331	90	55	297
Stage 1	-	-	-	-	-	-	234	356	-	162	277	-
Stage 2	-	-	-	-	-	-	331	269	-	400	346	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	361	-	-	424	-	-	~ 21	~ 14	200	-	14	179
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 21	~ 14	-	-	14	-
Stage 1	-	-	-	-	-	-	131	199	-	91	127	-
Stage 2	-	-	-	-	-	-	185	124	-	216	194	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	2.7	$ 1435.5	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	27	361	-	-	424	-	-	-
HCM Lane V/C Ratio	3.521	0.107	-	-	0.194	-	-	-
HCM Control Delay (s)	$ 1435.5	16.2	0.6	-	15.5	1.1	-	-
HCM Lane LOS	F	C	A	-	C	A	-	-
HCM 95th %tile Q(veh)	11.6	0.4	-	-	0.7	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1083	323	170	781	123	0	0	0	72	308	111
Future Volume (vph)	32	1083	323	170	781	123	0	0	0	72	308	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.93			0.94						0.92	
Flpb, ped/bikes		1.00			1.00						0.94	
Frt		0.97			0.98						0.97	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		4534			4661						1369	
Flt Permitted		0.84			0.66						0.99	
Satd. Flow (perm)		3816			3104						1369	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	1116	333	175	805	127	0	0	0	74	318	114
RTOR Reduction (vph)	0	47	0	0	15	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	1435	0	0	1092	0	0	0	0	0	496	0
Confl. Peds. (#/hr)	196		251	251		196				485		402
Confl. Bikes (#/hr)			3									1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		38.5			38.5						54.0	
Effective Green, g (s)		38.5			38.5						54.0	
Actuated g/C Ratio		0.35			0.35						0.49	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1335			1086						672	
v/s Ratio Prot												
v/s Ratio Perm		c0.38			0.35						0.36	
v/c Ratio		1.07			2.24dl						0.74	
Uniform Delay, d1		35.8			35.8						22.4	
Progression Factor		1.00			1.51						1.00	
Incremental Delay, d2		47.3			28.2						7.1	
Delay (s)		83.1			82.2						29.5	
Level of Service		F			F						C	
Approach Delay (s)		83.1			82.2			0.0			29.5	
Approach LOS		F			F			A			C	

Intersection Summary			
HCM 2000 Control Delay	74.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	1482	1107	506
v/c Ratio	1.07	2.24dl	0.74
Control Delay	79.3	79.4	29.6
Queue Delay	0.0	0.0	0.0
Total Delay	79.3	79.4	29.6
Queue Length 50th (ft)	~414	~298	267
Queue Length 95th (ft)	#512	#396	411
Internal Link Dist (ft)	361	481	148
Turn Bay Length (ft)			
Base Capacity (vph)	1383	1102	682
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.07	1.00	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	296	332	48	268	0	0	0	0	18	430	48
Future Volume (veh/h)	0	296	332	48	268	0	0	0	0	18	430	48
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.88	1.00		1.00				1.00		0.60
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	352	395	57	319	0				21	512	57
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	388	435	69	343	0				22	560	65
Arrive On Green	0.00	0.66	0.66	0.22	0.22	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	588	660	47	521	0				93	2325	270
Grp Volume(v), veh/h	0	0	747	376	0	0				333	0	257
Grp Sat Flow(s),veh/h/ln	0	0	1249	568	0	0				1471	0	1217
Q Serve(g_s), s	0.0	0.0	55.8	16.7	0.0	0.0				24.4	0.0	22.4
Cycle Q Clear(g_c), s	0.0	0.0	55.8	72.5	0.0	0.0				24.4	0.0	22.4
Prop In Lane	0.00		0.53	0.15		0.00				0.06		0.22
Lane Grp Cap(c), veh/h	0	0	823	412	0	0				354	0	293
V/C Ratio(X)	0.00	0.00	0.91	0.91	0.00	0.00				0.94	0.00	0.88
Avail Cap(c_a), veh/h	0	0	823	412	0	0				354	0	293
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.94	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	15.9	44.5	0.0	0.0				41.0	0.0	40.2
Incr Delay (d2), s/veh	0.0	0.0	13.5	22.9	0.0	0.0				34.6	0.0	28.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	22.0	14.1	0.0	0.0				13.3	0.0	9.9
LnGrp Delay(d),s/veh	0.0	0.0	29.4	67.4	0.0	0.0				75.5	0.0	69.1
LnGrp LOS			C	E						E		E
Approach Vol, veh/h		747			376						590	
Approach Delay, s/veh		29.4			67.4						72.7	
Approach LOS		C			E						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		32.0		78.0				78.0
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		26.4		57.8				74.5
Green Ext Time (p_c), s		0.0		3.6				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.6
HCM 2010 LOS	D

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	747	376	590
v/c Ratio	0.87	0.49	0.74
Control Delay	28.5	9.2	47.0
Queue Delay	0.0	0.0	0.0
Total Delay	28.5	9.2	47.0
Queue Length 50th (ft)	358	75	223
Queue Length 95th (ft)	481	99	m222
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	897	806	796
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.83	0.47	0.74

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	152	130	32	188	0	0	0	0	16	322	111
Future Volume (veh/h)	0	152	130	32	188	0	0	0	0	16	322	111
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.65	0.85		1.00				1.00		0.89
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	162	138	34	200	0				17	343	118
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	324	188	69	416	0				85	1738	622
Arrive On Green	0.00	0.18	0.18	0.18	0.18	0.00				0.23	0.23	0.23
Sat Flow, veh/h	0	1863	1024	139	2356	0				119	2441	873
Grp Volume(v), veh/h	0	162	138	104	130	0				265	0	213
Grp Sat Flow(s),veh/h/ln	0	1770	1024	800	1610	0				1857	0	1577
Q Serve(g_s), s	0.0	9.1	14.0	2.5	7.9	0.0				12.6	0.0	11.9
Cycle Q Clear(g_c), s	0.0	9.1	14.0	16.5	7.9	0.0				12.6	0.0	11.9
Prop In Lane	0.00		1.00	0.33		0.00				0.06		0.55
Lane Grp Cap(c), veh/h	0	324	188	190	295	0				1322	0	1123
V/C Ratio(X)	0.00	0.50	0.74	0.55	0.44	0.00				0.20	0.00	0.19
Avail Cap(c_a), veh/h	0	716	414	498	651	0				1322	0	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.92	0.92	0.00				0.59	0.00	0.59
Uniform Delay (d), s/veh	0.0	40.4	42.4	41.5	39.9	0.0				16.9	0.0	16.7
Incr Delay (d2), s/veh	0.0	0.4	2.1	0.8	0.4	0.0				0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.4	4.1	3.1	3.5	0.0				6.6	0.0	5.3
LnGrp Delay(d),s/veh	0.0	40.8	44.5	42.3	40.3	0.0				17.1	0.0	16.9
LnGrp LOS		D	D	D	D					B		B
Approach Vol, veh/h		300			234						478	
Approach Delay, s/veh		42.5			41.2						17.0	
Approach LOS		D			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				25.7		84.3		25.7
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				16.0		14.6		18.5
Green Ext Time (p_c), s				1.6		1.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	300	234	478
v/c Ratio	0.58	0.51	0.23
Control Delay	39.1	58.6	3.3
Queue Delay	0.0	0.0	0.0
Total Delay	39.1	58.6	3.3
Queue Length 50th (ft)	84	90	32
Queue Length 95th (ft)	131	131	m35
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1141	1070	2101
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.22	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	452	132	43	546	0	0	0	0	76	953	88
Future Volume (vph)	0	452	132	43	546	0	0	0	0	76	953	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.92			1.00						0.98	
Flpb, ped/bikes		1.00			0.99						0.98	
Frt		0.97			1.00						0.99	
Flt Protected		1.00			1.00						1.00	
Satd. Flow (prot)		4534			5023						4616	
Flt Permitted		1.00			0.75						1.00	
Satd. Flow (perm)		4534			3788						4616	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	471	138	45	569	0	0	0	0	79	993	92
RTOR Reduction (vph)	0	56	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	553	0	0	614	0	0	0	0	0	1157	0
Confl. Peds. (#/hr)			257	257						286		120
Confl. Bikes (#/hr)												4
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		20.0			20.0						72.5	
Effective Green, g (s)		20.0			20.0						72.5	
Actuated g/C Ratio		0.18			0.18						0.66	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		824			688						3042	
v/s Ratio Prot		0.12										
v/s Ratio Perm					c0.16						0.25	
v/c Ratio		0.67			0.89						0.38	
Uniform Delay, d1		41.9			43.9						8.5	
Progression Factor		0.25			1.00						1.00	
Incremental Delay, d2		0.2			13.6						0.4	
Delay (s)		10.8			57.5						8.9	
Level of Service		B			E						A	
Approach Delay (s)		10.8			57.5			0.0			8.9	
Approach LOS		B			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	609	614	1164
v/c Ratio	0.69	0.90	0.38
Control Delay	9.7	60.2	9.2
Queue Delay	0.0	0.0	0.0
Total Delay	9.7	60.2	9.2
Queue Length 50th (ft)	80	157	121
Queue Length 95th (ft)	m73	191	172
Internal Link Dist (ft)	481	219	140
Turn Bay Length (ft)			
Base Capacity (vph)	1408	1135	3051
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	172
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.54	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	157	67	81	123	0	0	0	0	35	1044	51
Future Volume (vph)	0	157	67	81	123	0	0	0	0	35	1044	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.89		1.00	1.00						1.00	0.47
Flpb, ped/bikes		1.00		1.00	1.00						0.98	1.00
Frt		0.96		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1426		1593	1475						2938	672
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1426		1593	1475						2938	672
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	164	70	84	128	0	0	0	0	36	1088	53
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	29
Lane Group Flow (vph)	0	220	0	84	128	0	0	0	0	0	1124	24
Confl. Peds. (#/hr)			370	370						210		181
Confl. Bikes (#/hr)			1									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.3		21.0	21.0						50.2	50.2
Effective Green, g (s)		19.3		21.0	21.0						50.2	50.2
Actuated g/C Ratio		0.18		0.19	0.19						0.46	0.46
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		250		304	281						1340	306
v/s Ratio Prot		c0.15		0.05	c0.09							
v/s Ratio Perm											0.38	0.04
v/c Ratio		0.88		0.28	0.46						0.84	0.08
Uniform Delay, d1		44.2		38.0	39.4						26.3	16.9
Progression Factor		0.70		1.00	1.00						0.91	3.64
Incremental Delay, d2		16.5		0.2	0.4						6.1	0.5
Delay (s)		47.6		38.2	39.9						30.1	61.9
Level of Service		D		D	D						C	E
Approach Delay (s)		47.6			39.2			0.0			31.6	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	234	84	128	1124	53
v/c Ratio	0.89	0.28	0.46	0.84	0.15
Control Delay	51.3	40.9	45.5	30.9	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	40.9	45.5	30.9	2.4
Queue Length 50th (ft)	152	51	81	380	4
Queue Length 95th (ft)	m#204	98	142	474	m12
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	268	308	285	1340	360
Starvation Cap Reductn	0	0	0	4	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.27	0.45	0.84	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	27	0	0	1143	0
Future Vol, veh/h	0	27	0	0	1143	0
Conflicting Peds, #/hr	0	381	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	0	0	1191	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1572	975	-	0
Stage 1	1572	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	116	216	-	-
Stage 1	79	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	47	138	-	-
Mov Cap-2 Maneuver	47	-	-	-
Stage 1	50	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	41.1	0
HCM LOS	E	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	138	-	-
HCM Lane V/C Ratio	0.284	-	-
HCM Control Delay (s)	41.1	-	-
HCM Lane LOS	E	-	-
HCM 95th %tile Q(veh)	1.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	143	64	22	222	0	0	0	0	61	939	60
Future Volume (veh/h)	0	143	64	22	222	0	0	0	0	61	939	60
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	0.90		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	157	70	24	244	0				67	1032	66
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	498	202	76	678	0				126	2035	136
Arrive On Green	0.00	0.07	0.07	0.21	0.21	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	2412	941	174	3245	0				188	3030	203
Grp Volume(v), veh/h	0	116	111	142	126	0				582	0	583
Grp Sat Flow(s),veh/h/ln	0	1770	1491	1725	1610	0				1630	0	1790
Q Serve(g_s), s	0.0	6.9	7.8	0.0	7.3	0.0				34.7	0.0	31.2
Cycle Q Clear(g_c), s	0.0	6.9	7.8	7.1	7.3	0.0				34.7	0.0	31.2
Prop In Lane	0.00		0.63	0.17		0.00				0.12		0.11
Lane Grp Cap(c), veh/h	0	380	320	408	346	0				1095	0	1203
V/C Ratio(X)	0.00	0.31	0.35	0.35	0.36	0.00				0.53	0.00	0.48
Avail Cap(c_a), veh/h	0	467	393	489	425	0				1095	0	1203
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.79	0.79	1.00	1.00	0.00				0.50	0.00	0.50
Uniform Delay (d), s/veh	0.0	43.3	43.8	36.7	36.8	0.0				27.5	0.0	26.2
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.2	0.2	0.0				0.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	3.2	3.7	3.3	0.0				16.0	0.0	15.8
LnGrp Delay(d),s/veh	0.0	43.5	43.9	36.9	37.0	0.0				28.5	0.0	26.9
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		227			268						1165	
Approach Delay, s/veh		43.7			37.0						27.7	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				29.6		80.4		29.6
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				9.8		36.7		9.3
Green Ext Time (p_c), s				1.2		3.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	227	268	1165
v/c Ratio	0.33	0.41	0.52
Control Delay	16.9	39.2	1.3
Queue Delay	0.0	0.0	0.6
Total Delay	16.9	39.2	1.9
Queue Length 50th (ft)	66	86	23
Queue Length 95th (ft)	109	127	23
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	827	786	2259
Starvation Cap Reductn	0	0	648
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.34	0.72

Intersection Summary

Intersection	
Int Delay, s/veh	116.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	57	233	119	47	72	153
Future Vol, veh/h	57	233	119	47	72	153
Conflicting Peds, #/hr	142	0	0	142	283	395
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	89	89	84	84
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	248	134	53	86	182

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	582	0	-	0	924	697
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	992	-	-	-	299	441
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	858	-	-	-	107	238
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	359	-
Stage 2	-	-	-	-	400	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	$ 329.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	858	-	-	-	171
HCM Lane V/C Ratio	0.071	-	-	-	1.566
HCM Control Delay (s)	9.5	0	-	-	$ 329.8
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	17.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	26	856	39	28	318	39	28	22	77	10	20	33
Future Vol, veh/h	26	856	39	28	318	39	28	22	77	10	20	33
Conflicting Peds, #/hr	343	0	99	99	0	343	703	0	316	316	0	703
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	67	67	67	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	882	40	42	475	58	33	26	92	12	24	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1236	0	0	1626	0	0	2647	2978	1507	2413	2969	1312
Stage 1	-	-	-	-	-	-	1659	1659	-	1290	1290	-
Stage 2	-	-	-	-	-	-	988	1319	-	1123	1679	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	301	-	-	193	-	-	~ 25	~ 14	94	35	~ 14	128
Stage 1	-	-	-	-	-	-	68	153	-	125	232	-
Stage 2	-	-	-	-	-	-	239	225	-	197	150	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	203	-	-	130	-	-	-	~ 1	~ 21	-	~ 1	~ 28
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 1	-	-	~ 1	-
Stage 1	-	-	-	-	-	-	~ 16	37	-	30	41	-
Stage 2	-	-	-	-	-	-	-	40	-	-	36	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.7	7.8		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	203	-	-	130	-	-	-
HCM Lane V/C Ratio	-	0.132	-	-	0.321	-	-	-
HCM Control Delay (s)	-	25.4	2.1	-	45.3	5.5	-	-
HCM Lane LOS	-	D	A	-	E	A	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-	1.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	1750	305	143	438	108	0	0	0	100	424	70
Future Volume (vph)	91	1750	305	143	438	108	0	0	0	100	424	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5			5.5						6.0	
Lane Util. Factor		0.91			0.91						1.00	
Frpb, ped/bikes		0.95			0.90						0.95	
Flpb, ped/bikes		0.99			1.00						0.94	
Frt		0.98			0.98						0.98	
Flt Protected		1.00			0.99						0.99	
Satd. Flow (prot)		4683			4436						1436	
Flt Permitted		0.78			0.69						0.99	
Satd. Flow (perm)		3656			3106						1436	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	1882	328	154	471	116	0	0	0	108	456	75
RTOR Reduction (vph)	0	21	0	0	25	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	2287	0	0	716	0	0	0	0	0	634	0
Confl. Peds. (#/hr)	367		306	306		367				352		564
Confl. Bikes (#/hr)			1			4						1
Parking (#/hr)											4	
Turn Type	Perm	NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		38.5			38.5						54.0	
Effective Green, g (s)		38.5			38.5						54.0	
Actuated g/C Ratio		0.35			0.35						0.49	
Clearance Time (s)		5.5			5.5						6.0	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1279			1087						704	
v/s Ratio Prot												
v/s Ratio Perm		c0.63			0.23						0.44	
v/c Ratio		1.79			1.81dl						0.90	
Uniform Delay, d1		35.8			30.2						25.6	
Progression Factor		1.00			0.99						1.00	
Incremental Delay, d2		357.9			1.1						16.9	
Delay (s)		393.6			31.0						42.5	
Level of Service		F			C						D	
Approach Delay (s)		393.6			31.0			0.0			42.5	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	259.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	2308	741	639
v/c Ratio	1.78	1.81dl	0.90
Control Delay	377.9	31.8	43.3
Queue Delay	0.0	0.0	0.0
Total Delay	377.9	31.8	43.3
Queue Length 50th (ft)	~898	159	393
Queue Length 95th (ft)	#995	203	#638
Internal Link Dist (ft)	361	481	148
Turn Bay Length (ft)			
Base Capacity (vph)	1300	1112	709
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.78	0.67	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	336	329	68	582	0	0	0	0	18	450	62
Future Volume (veh/h)	0	336	329	68	582	0	0	0	0	18	450	62
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	1.00		1.00				1.00		0.64
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	350	343	71	606	0				19	469	65
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	410	402	70	528	0				22	544	78
Arrive On Green	0.00	0.66	0.66	0.22	0.22	0.00				0.24	0.24	0.24
Sat Flow, veh/h	0	622	609	51	801	0				89	2258	325
Grp Volume(v), veh/h	0	0	693	677	0	0				313	0	240
Grp Sat Flow(s),veh/h/ln	0	0	1231	852	0	0				1471	0	1201
Q Serve(g_s), s	0.0	0.0	48.3	24.2	0.0	0.0				22.5	0.0	20.9
Cycle Q Clear(g_c), s	0.0	0.0	48.3	72.5	0.0	0.0				22.5	0.0	20.9
Prop In Lane	0.00		0.49	0.10		0.00				0.06		0.27
Lane Grp Cap(c), veh/h	0	0	812	598	0	0				354	0	289
V/C Ratio(X)	0.00	0.00	0.85	1.13	0.00	0.00				0.88	0.00	0.83
Avail Cap(c_a), veh/h	0	0	812	598	0	0				354	0	289
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.87	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	14.6	46.7	0.0	0.0				40.2	0.0	39.6
Incr Delay (d2), s/veh	0.0	0.0	8.4	77.1	0.0	0.0				25.6	0.0	23.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	18.1	31.0	0.0	0.0				11.6	0.0	8.8
LnGrp Delay(d),s/veh	0.0	0.0	23.0	123.8	0.0	0.0				65.9	0.0	63.0
LnGrp LOS			C	F						E		E
Approach Vol, veh/h		693			677						553	
Approach Delay, s/veh		23.0			123.8						64.6	
Approach LOS		C			F						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		32.0		78.0				78.0
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		26.5		72.5				72.5
Max Q Clear Time (g_c+I1), s		24.5		50.3				74.5
Green Ext Time (p_c), s		0.4		4.9				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.5
HCM 2010 LOS	E

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	693	677	553
v/c Ratio	0.85	0.87	0.68
Control Delay	27.6	28.1	31.0
Queue Delay	0.0	8.6	0.3
Total Delay	27.6	36.7	31.3
Queue Length 50th (ft)	317	405	192
Queue Length 95th (ft)	519	#602	m171
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	865	825	816
Starvation Cap Reductn	0	121	0
Spillback Cap Reductn	0	0	38
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.96	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	270	163	56	228	0	0	0	0	48	804	156
Future Volume (veh/h)	0	270	163	56	228	0	0	0	0	48	804	156
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.84	0.94		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	276	166	57	233	0				49	820	159
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98				0.98	0.98	0.98
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	470	265	104	485	0				107	1850	380
Arrive On Green	0.00	0.23	0.23	0.23	0.23	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	2128	1147	244	2184	0				161	2785	572
Grp Volume(v), veh/h	0	238	204	128	162	0				566	0	462
Grp Sat Flow(s),veh/h/ln	0	1770	1412	732	1610	0				1855	0	1663
Q Serve(g_s), s	0.0	13.1	14.3	7.1	9.4	0.0				29.1	0.0	26.3
Cycle Q Clear(g_c), s	0.0	13.1	14.3	21.4	9.4	0.0				29.1	0.0	26.3
Prop In Lane	0.00		0.81	0.44		0.00				0.09		0.34
Lane Grp Cap(c), veh/h	0	409	326	217	372	0				1232	0	1105
V/C Ratio(X)	0.00	0.58	0.63	0.59	0.43	0.00				0.46	0.00	0.42
Avail Cap(c_a), veh/h	0	716	571	434	651	0				1232	0	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.83	0.83	0.00				0.68	0.00	0.68
Uniform Delay (d), s/veh	0.0	37.6	38.0	42.2	36.1	0.0				25.8	0.0	24.7
Incr Delay (d2), s/veh	0.0	0.5	0.7	0.8	0.2	0.0				0.8	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.5	5.6	3.8	4.2	0.0				15.3	0.0	12.4
LnGrp Delay(d),s/veh	0.0	38.0	38.7	43.0	36.4	0.0				26.6	0.0	25.5
LnGrp LOS		D	D	D	D					C		C
Approach Vol, veh/h		442			290						1028	
Approach Delay, s/veh		38.4			39.3						26.1	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.9		79.1		30.9
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				44.5		54.0		44.5
Max Q Clear Time (g_c+I1), s				16.3		31.1		23.4
Green Ext Time (p_c), s				2.0		2.9		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	442	290	1028
v/c Ratio	0.76	0.73	0.48
Control Delay	50.1	29.0	5.7
Queue Delay	0.0	0.0	1.6
Total Delay	50.1	29.0	7.3
Queue Length 50th (ft)	157	40	69
Queue Length 95th (ft)	200	52	143
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1230	841	2128
Starvation Cap Reductn	0	0	860
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.36	0.34	0.81

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	792	194	55	278	0	0	0	0	103	940	128
Future Volume (vph)	0	792	194	55	278	0	0	0	0	103	940	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0						5.5	
Lane Util. Factor		0.91			0.91						0.91	
Frpb, ped/bikes		0.92			1.00						0.96	
Flpb, ped/bikes		1.00			0.99						0.97	
Frt		0.97			1.00						0.98	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		4540			5002						4449	
Flt Permitted		1.00			0.66						1.00	
Satd. Flow (perm)		4540			3318						4449	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	852	209	59	299	0	0	0	0	111	1011	138
RTOR Reduction (vph)	0	35	0	0	0	0	0	0	0	0	13	0
Lane Group Flow (vph)	0	1026	0	0	358	0	0	0	0	0	1247	0
Confl. Peds. (#/hr)			441	441						276		374
Confl. Bikes (#/hr)			3									2
Parking (#/hr)											4	
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases				8						6		
Actuated Green, G (s)		29.3			29.3						63.2	
Effective Green, g (s)		29.3			29.3						63.2	
Actuated g/C Ratio		0.27			0.27						0.57	
Clearance Time (s)		6.0			6.0						5.5	
Vehicle Extension (s)		1.0			1.0						1.0	
Lane Grp Cap (vph)		1209			883						2556	
v/s Ratio Prot		c0.23										
v/s Ratio Perm					0.11						0.28	
v/c Ratio		0.85			0.88dl						0.49	
Uniform Delay, d1		38.2			33.2						13.8	
Progression Factor		1.10			1.00						1.00	
Incremental Delay, d2		0.5			0.1						0.7	
Delay (s)		42.5			33.3						14.5	
Level of Service		D			C						B	
Approach Delay (s)		42.5			33.3			0.0			14.5	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

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

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	1061	358	1260
v/c Ratio	0.85	0.88dl	0.49
Control Delay	40.5	34.1	14.8
Queue Delay	0.0	0.0	0.4
Total Delay	40.5	34.1	15.1
Queue Length 50th (ft)	280	75	180
Queue Length 95th (ft)	m161	101	234
Internal Link Dist (ft)	481	219	140
Turn Bay Length (ft)			
Base Capacity (vph)	1395	995	2568
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	1	0	664
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.36	0.66

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	233	130	133	147	0	0	0	0	78	1180	118
Future Volume (vph)	0	233	130	133	147	0	0	0	0	78	1180	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.87		1.00	1.00						1.00	0.41
Flpb, ped/bikes		1.00		1.00	1.00						0.96	1.00
Frt		0.95		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1390		1593	1475						2857	579
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1390		1593	1475						2857	579
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	248	138	141	156	0	0	0	0	83	1255	126
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	0	54
Lane Group Flow (vph)	0	368	0	141	156	0	0	0	0	0	1338	72
Confl. Peds. (#/hr)			311	311						448		284
Confl. Bikes (#/hr)			3									5
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		19.7		21.1	21.1						49.7	49.7
Effective Green, g (s)		19.7		21.1	21.1						49.7	49.7
Actuated g/C Ratio		0.18		0.19	0.19						0.45	0.45
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		248		305	282						1290	261
v/s Ratio Prot		c0.26		0.09	c0.11							
v/s Ratio Perm											0.47	0.12
v/c Ratio		1.48		0.46	0.55						1.04	0.27
Uniform Delay, d1		45.1		39.4	40.2						30.1	18.9
Progression Factor		0.75		1.00	1.00						0.86	0.35
Incremental Delay, d2		230.8		0.4	1.3						34.1	2.4
Delay (s)		264.5		39.8	41.5						60.2	9.0
Level of Service		F		D	D						E	A
Approach Delay (s)		264.5			40.7			0.0			55.8	
Approach LOS		F			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	91.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	386	141	156	1338	126
v/c Ratio	1.45	0.46	0.55	1.04	0.40
Control Delay	240.8	45.1	48.7	61.1	5.6
Queue Delay	0.0	0.0	1.6	3.8	0.0
Total Delay	240.8	45.1	50.3	64.9	5.7
Queue Length 50th (ft)	~359	89	101	~541	3
Queue Length 95th (ft)	m#506	153	170	#681	m13
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	267	308	285	1290	315
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	42	13	4
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.45	0.46	0.64	1.05	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	106	0	0	1284	0
Future Vol, veh/h	0	106	0	0	1284	0
Conflicting Peds, #/hr	0	221	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	92	92	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	156	0	0	1338	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1559	889	-	0
Stage 1	1559	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	119	246	-	-
Stage 1	80	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	74	194	-	-
Mov Cap-2 Maneuver	74	-	-	-
Stage 1	63	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	72.4	0
HCM LOS	F	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	194	-	-
HCM Lane V/C Ratio	0.804	-	-
HCM Control Delay (s)	72.4	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	5.6	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	316	154	55	191	0	0	0	0	62	1128	41
Future Volume (veh/h)	0	316	154	55	191	0	0	0	0	62	1128	41
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.66	0.93		1.00				1.00		0.85
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	329	160	57	199	0				65	1175	43
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	516	231	105	482	0				105	1996	76
Arrive On Green	0.00	0.17	0.17	0.25	0.25	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2121	906	212	1980	0				166	3159	121
Grp Volume(v), veh/h	0	283	206	104	152	0				637	0	646
Grp Sat Flow(s),veh/h/ln	0	1770	1164	497	1610	0				1631	0	1816
Q Serve(g_s), s	0.0	16.4	18.3	7.3	8.5	0.0				39.0	0.0	35.1
Cycle Q Clear(g_c), s	0.0	16.4	18.3	25.5	8.5	0.0				39.0	0.0	35.1
Prop In Lane	0.00		0.78	0.55		0.00				0.10		0.07
Lane Grp Cap(c), veh/h	0	450	296	177	410	0				1031	0	1147
V/C Ratio(X)	0.00	0.63	0.69	0.59	0.37	0.00				0.62	0.00	0.56
Avail Cap(c_a), veh/h	0	467	307	187	425	0				1031	0	1147
HCM Platoon Ratio	1.00	0.67	0.67	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.57	0.57	1.00	1.00	0.00				0.13	0.00	0.13
Uniform Delay (d), s/veh	0.0	40.8	41.6	43.4	33.8	0.0				31.5	0.0	29.9
Incr Delay (d2), s/veh	0.0	1.1	3.0	2.6	0.2	0.0				0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.2	6.1	3.2	3.8	0.0				17.8	0.0	17.8
LnGrp Delay(d),s/veh	0.0	41.9	44.6	45.9	34.0	0.0				31.8	0.0	30.2
LnGrp LOS		D	D	D	C					C		C
Approach Vol, veh/h		489			256						1283	
Approach Delay, s/veh		43.0			38.8						31.0	
Approach LOS		D			D						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				34.0		76.0		34.0
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				29.0		68.5		29.0
Max Q Clear Time (g_c+I1), s				20.3		41.0		27.5
Green Ext Time (p_c), s				1.7		3.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	489	256	1283
v/c Ratio	0.77	0.54	0.57
Control Delay	70.7	41.5	2.1
Queue Delay	0.0	0.0	2.1
Total Delay	70.7	41.5	4.2
Queue Length 50th (ft)	186	85	45
Queue Length 95th (ft)	221	121	m50
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	733	548	2237
Starvation Cap Reductn	0	0	769
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.47	0.87

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	42	99	71	34	28	35
Future Vol, veh/h	42	99	71	34	28	35
Conflicting Peds, #/hr	111	0	0	111	376	426
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	58	58	50	50	68	68
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	171	142	68	41	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	636	0	-	0	918	713
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	316	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	947	-	-	-	302	432
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	847	-	-	-	97	230
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	398	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	67.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	847	-	-	-	143
HCM Lane V/C Ratio	0.085	-	-	-	0.648
HCM Control Delay (s)	9.6	0	-	-	67.6
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	3.5

Intersection	
Int Delay, s/veh	32

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	15	378	24	29	273	37	15	9	37	9	12	18
Future Vol, veh/h	15	378	24	29	273	37	15	9	37	9	12	18
Conflicting Peds, #/hr	78	0	246	246	0	78	154	0	315	315	0	154
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	-	-	75	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	82	82	82	73	73	73	63	63	63
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	450	29	35	333	45	21	12	51	14	19	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	648	0	0	765	0	0	1363	1520	786	1301	1520	727
Stage 1	-	-	-	-	-	-	801	801	-	719	719	-
Stage 2	-	-	-	-	-	-	562	719	-	582	801	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	934	-	-	844	-	-	107	118	335	118	118	366
Stage 1	-	-	-	-	-	-	344	395	-	386	431	-
Stage 2	-	-	-	-	-	-	479	431	-	466	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	715	-	-	646	-	-	33	52	180	34	52	196
Mov Cap-2 Maneuver	-	-	-	-	-	-	33	52	-	34	52	-
Stage 1	-	-	-	-	-	-	233	267	-	261	281	-
Stage 2	-	-	-	-	-	-	272	281	-	236	267	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.1	249.5	198
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	73	715	-	-	646	-	-	66
HCM Lane V/C Ratio	1.145	0.025	-	-	0.055	-	-	0.938
HCM Control Delay (s)	249.5	10.2	0.1	-	10.9	0.2	-	198
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	6.3	0.1	-	-	0.2	-	-	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	815	156	96	368	69	0	0	0	60	217	89
Future Volume (vph)	81	815	156	96	368	69	0	0	0	60	217	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		5.5	5.5					6.0	
Lane Util. Factor		0.95	1.00		0.95	1.00					1.00	
Frpb, ped/bikes		1.00	0.72		1.00	0.58					0.93	
Flpb, ped/bikes		0.99	1.00		1.00	1.00					0.95	
Frt		1.00	0.85		1.00	0.85					0.97	
Flt Protected		1.00	1.00		0.99	1.00					0.99	
Satd. Flow (prot)		3471	1145		3503	918					1391	
Flt Permitted		0.78	1.00		0.51	1.00					0.99	
Satd. Flow (perm)		2720	1145		1805	918					1391	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	93	937	179	110	423	79	0	0	0	69	249	102
RTOR Reduction (vph)	0	0	48	0	0	46	0	0	0	0	11	0
Lane Group Flow (vph)	0	1030	131	0	533	33	0	0	0	0	409	0
Confl. Peds. (#/hr)	155		171	171		155				247		212
Confl. Bikes (#/hr)			1			1						1
Parking (#/hr)											4	
Turn Type	Perm	NA	Perm	Perm	NA	Perm				Perm	NA	
Protected Phases		4			8						6	
Permitted Phases	4		4	8		8				6		
Actuated Green, G (s)		39.5	39.5		39.5	39.5					43.0	
Effective Green, g (s)		39.5	39.5		39.5	39.5					43.0	
Actuated g/C Ratio		0.40	0.40		0.40	0.40					0.43	
Clearance Time (s)		5.5	5.5		5.5	5.5					6.0	
Vehicle Extension (s)		1.0	1.0		1.0	1.0					1.0	
Lane Grp Cap (vph)		1074	452		712	362					598	
v/s Ratio Prot												
v/s Ratio Perm		c0.38	0.11		0.30	0.04					0.29	
v/c Ratio		0.96	0.29		1.12dl	0.09					0.68	
Uniform Delay, d1		29.5	20.7		26.0	19.0					23.0	
Progression Factor		1.00	1.00		1.07	1.43					1.00	
Incremental Delay, d2		18.0	0.1		3.8	0.0					6.2	
Delay (s)		47.5	20.8		31.4	27.1					29.2	
Level of Service		D	C		C	C					C	
Approach Delay (s)		43.5			30.9			0.0			29.2	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	77.0%	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

Lane Group	EBT	EBR	WBT	WBR	SBT
Lane Group Flow (vph)	1030	179	533	79	420
v/c Ratio	0.96	0.36	1.12dl	0.19	0.69
Control Delay	49.1	13.5	35.1	8.2	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	13.5	35.1	8.2	29.5
Queue Length 50th (ft)	324	40	172	12	206
Queue Length 95th (ft)	#436	89	215	40	307
Internal Link Dist (ft)	361		481		148
Turn Bay Length (ft)		75		50	
Base Capacity (vph)	1101	511	731	417	608
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.94	0.35	0.73	0.19	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	124	78	30	107	0	0	0	0	17	218	43
Future Volume (veh/h)	0	124	78	30	107	0	0	0	0	17	218	43
Number	7	4	14	3	8	18				5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.64	1.00		1.00				1.00		0.85
Parking Bus, Adj	1.00	1.00	0.88	1.00	1.00	1.00				0.88	1.00	0.88
Adj Sat Flow, veh/h/ln	0	1676	1710	1710	1676	0				1710	1676	1710
Adj Flow Rate, veh/h	0	149	94	36	129	0				20	263	52
Adj No. of Lanes	0	1	0	0	1	0				0	2	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83				0.83	0.83	0.83
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	184	116	65	190	0				101	1349	275
Arrive On Green	0.00	0.27	0.27	0.09	0.09	0.00				0.62	0.62	0.62
Sat Flow, veh/h	0	683	431	77	707	0				162	2172	442
Grp Volume(v), veh/h	0	0	243	165	0	0				181	0	154
Grp Sat Flow(s),veh/h/ln	0	0	1114	784	0	0				1467	0	1309
Q Serve(g_s), s	0.0	0.0	20.4	3.2	0.0	0.0				5.3	0.0	5.1
Cycle Q Clear(g_c), s	0.0	0.0	20.4	23.6	0.0	0.0				5.3	0.0	5.1
Prop In Lane	0.00		0.39	0.22		0.00				0.11		0.34
Lane Grp Cap(c), veh/h	0	0	299	255	0	0				912	0	813
V/C Ratio(X)	0.00	0.00	0.81	0.65	0.00	0.00				0.20	0.00	0.19
Avail Cap(c_a), veh/h	0	0	707	793	0	0				912	0	813
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.98	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	34.2	41.2	0.0	0.0				8.2	0.0	8.1
Incr Delay (d2), s/veh	0.0	0.0	2.0	1.0	0.0	0.0				0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	6.4	4.6	0.0	0.0				2.3	0.0	1.9
LnGrp Delay(d),s/veh	0.0	0.0	36.2	42.2	0.0	0.0				8.7	0.0	8.6
LnGrp LOS			D	D						A		A
Approach Vol, veh/h		243			165						335	
Approach Delay, s/veh		36.2			42.2						8.7	
Approach LOS		D			D						A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		67.6		32.4				32.4
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green Setting (Gmax), s		25.5		63.5				63.5
Max Q Clear Time (g_c+I1), s		7.3		22.4				25.6
Green Ext Time (p_c), s		0.7		1.2				1.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	243	165	335
v/c Ratio	0.71	0.65	0.18
Control Delay	40.0	49.4	6.1
Queue Delay	0.0	0.0	0.0
Total Delay	40.0	49.4	6.1
Queue Length 50th (ft)	117	111	33
Queue Length 95th (ft)	162	164	71
Internal Link Dist (ft)	330	478	182
Turn Bay Length (ft)			
Base Capacity (vph)	912	760	1902
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.27	0.22	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	298	65	47	274	0	0	0	0	80	217	89
Future Volume (veh/h)	0	298	65	47	274	0	0	0	0	80	217	89
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.68	0.88		1.00				1.00		0.87
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	387	84	61	356	0				104	282	116
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.77	0.77	0.77	0.77	0.77	0.77				0.77	0.77	0.77
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	681	142	98	605	0				432	1201	513
Arrive On Green	0.00	0.26	0.26	0.26	0.26	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2758	556	199	2452	0				687	1908	815
Grp Volume(v), veh/h	0	252	219	195	222	0				277	0	225
Grp Sat Flow(s),veh/h/ln	0	1770	1451	955	1610	0				1828	0	1581
Q Serve(g_s), s	0.0	12.3	13.3	8.0	11.9	0.0				12.6	0.0	11.8
Cycle Q Clear(g_c), s	0.0	12.3	13.3	21.2	11.9	0.0				12.6	0.0	11.8
Prop In Lane	0.00		0.38	0.31		0.00				0.38		0.52
Lane Grp Cap(c), veh/h	0	452	371	292	412	0				1151	0	995
V/C Ratio(X)	0.00	0.56	0.59	0.67	0.54	0.00				0.24	0.00	0.23
Avail Cap(c_a), veh/h	0	699	573	476	636	0				1151	0	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	1.00	1.00	0.89	0.89	0.00				0.99	0.00	0.99
Uniform Delay (d), s/veh	0.0	32.3	32.6	35.7	32.1	0.0				19.7	0.0	19.4
Incr Delay (d2), s/veh	0.0	0.4	0.6	0.9	0.4	0.0				0.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.1	5.4	5.2	5.3	0.0				6.6	0.0	5.3
LnGrp Delay(d),s/veh	0.0	32.7	33.2	36.6	32.5	0.0				20.2	0.0	19.9
LnGrp LOS		C	C	D	C					C		B
Approach Vol, veh/h		471			417						502	
Approach Delay, s/veh		32.9			34.4						20.1	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				31.1		68.9		31.1
Change Period (Y+Rc), s				5.5		6.0		5.5
Max Green Setting (Gmax), s				39.5		49.0		39.5
Max Q Clear Time (g_c+I1), s				15.3		14.6		23.2
Green Ext Time (p_c), s				2.5		1.3		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	471	417	502
v/c Ratio	0.70	0.90	0.27
Control Delay	39.8	76.3	5.9
Queue Delay	0.0	0.0	0.0
Total Delay	39.8	76.3	5.9
Queue Length 50th (ft)	141	148	40
Queue Length 95th (ft)	147	126	62
Internal Link Dist (ft)	302	482	280
Turn Bay Length (ft)			
Base Capacity (vph)	1237	863	1856
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.48	0.27

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	375	185	38	228	0	0	0	0	46	924	63
Future Volume (vph)	0	375	185	38	228	0	0	0	0	46	924	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0						5.5	
Lane Util. Factor		0.95	1.00		0.95						0.91	
Frpb, ped/bikes		1.00	0.68		1.00						0.98	
Flpb, ped/bikes		1.00	1.00		0.98						0.98	
Frt		1.00	0.85		1.00						0.99	
Flt Protected		1.00	1.00		0.99						1.00	
Satd. Flow (prot)		3539	1069		3439						4664	
Flt Permitted		1.00	1.00		0.72						1.00	
Satd. Flow (perm)		3539	1069		2507						4664	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	431	213	44	262	0	0	0	0	53	1062	72
RTOR Reduction (vph)	0	0	57	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	431	156	0	306	0	0	0	0	0	1182	0
Confl. Peds. (#/hr)			238	238						307		206
Parking (#/hr)											4	
Turn Type		NA	Perm	Perm	NA					Perm	NA	
Protected Phases		4			8						6	
Permitted Phases			4	8						6		
Actuated Green, G (s)		19.4	19.4		19.4						63.1	
Effective Green, g (s)		19.4	19.4		19.4						63.1	
Actuated g/C Ratio		0.19	0.19		0.19						0.63	
Clearance Time (s)		6.0	6.0		6.0						5.5	
Vehicle Extension (s)		1.0	1.0		1.0						1.0	
Lane Grp Cap (vph)		686	207		486						2942	
v/s Ratio Prot		0.12										
v/s Ratio Perm			c0.15		0.12						0.25	
v/c Ratio		0.63	0.75		0.63						0.40	
Uniform Delay, d1		37.0	38.0		37.0						9.1	
Progression Factor		0.92	1.16		1.00						1.00	
Incremental Delay, d2		0.5	5.2		1.8						0.4	
Delay (s)		34.4	49.3		38.8						9.5	
Level of Service		C	D		D						A	
Approach Delay (s)		39.3			38.8			0.0			9.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	SBT
Lane Group Flow (vph)	431	213	306	1187
v/c Ratio	0.63	0.81	0.63	0.40
Control Delay	34.5	37.9	41.8	10.5
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	34.5	37.9	41.8	10.6
Queue Length 50th (ft)	153	118	96	117
Queue Length 95th (ft)	m164	m131	116	194
Internal Link Dist (ft)	481		219	140
Turn Bay Length (ft)		75		
Base Capacity (vph)	1238	420	876	2950
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	5	0	417
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.51	0.35	0.47

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	80	52	36	62	0	0	0	0	26	1090	61
Future Volume (vph)	0	80	52	36	62	0	0	0	0	26	1090	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5		6.5	6.5						6.5	6.5
Lane Util. Factor		1.00		1.00	1.00						0.95	1.00
Frpb, ped/bikes		0.91		1.00	1.00						1.00	0.44
Flpb, ped/bikes		1.00		1.00	1.00						0.99	1.00
Frt		0.95		1.00	1.00						1.00	0.85
Flt Protected		1.00		0.95	1.00						1.00	1.00
Satd. Flow (prot)		1443		1593	1475						2954	632
Flt Permitted		1.00		0.95	1.00						1.00	1.00
Satd. Flow (perm)		1443		1593	1475						2954	632
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	0	93	60	42	72	0	0	0	0	30	1267	71
RTOR Reduction (vph)	0	23	0	0	0	0	0	0	0	0	0	42
Lane Group Flow (vph)	0	130	0	42	72	0	0	0	0	0	1297	29
Confl. Peds. (#/hr)			134	134						217		251
Confl. Bikes (#/hr)			1									
Parking (#/hr)			4		4						4	
Turn Type		NA		Split	NA					Perm	NA	Perm
Protected Phases		3		4	4						2	
Permitted Phases										2		2
Actuated Green, G (s)		18.0		21.0	21.0						41.5	41.5
Effective Green, g (s)		18.0		21.0	21.0						41.5	41.5
Actuated g/C Ratio		0.18		0.21	0.21						0.42	0.42
Clearance Time (s)		6.5		6.5	6.5						6.5	6.5
Vehicle Extension (s)		1.0		1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		259		334	309						1225	262
v/s Ratio Prot		c0.09		0.03	c0.05							
v/s Ratio Perm											0.44	0.05
v/c Ratio		0.50		0.13	0.23						1.06	0.11
Uniform Delay, d1		37.0		32.1	32.8						29.2	17.9
Progression Factor		1.72		1.00	1.00						0.87	0.35
Incremental Delay, d2		0.5		0.1	0.1						42.1	0.8
Delay (s)		64.2		32.1	33.0						67.6	7.1
Level of Service		E		C	C						E	A
Approach Delay (s)		64.2			32.6			0.0			64.5	
Approach LOS		E			C			A			E	

Intersection Summary			
HCM 2000 Control Delay	62.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	153	42	72	1297	71
v/c Ratio	0.54	0.13	0.23	1.06	0.22
Control Delay	60.5	33.3	35.2	68.4	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	33.3	35.2	68.4	1.9
Queue Length 50th (ft)	85	22	38	~484	5
Queue Length 95th (ft)	145	49	75	#574	0
Internal Link Dist (ft)	478		222	183	
Turn Bay Length (ft)		175			50
Base Capacity (vph)	282	334	309	1226	326
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.54	0.13	0.23	1.06	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	0	38	0	0	1148	0
Future Vol, veh/h	0	38	0	0	1148	0
Conflicting Peds, #/hr	0	166	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	90	90	90	60
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	0	0	1276	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	1442	803	-	0
Stage 1	1442	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.44	7.14	-	-
Critical Hdwy Stg 1	7.34	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.82	3.92	-	-
Pot Cap-1 Maneuver	140	280	-	-
Stage 1	97	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	99	236	-	-
Mov Cap-2 Maneuver	99	-	-	-
Stage 1	82	-	-	-
Stage 2	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	25.8	0
HCM LOS	D	

Minor Lane/Major Mvmt	EBLn1	SBT	SBR
Capacity (veh/h)	236	-	-
HCM Lane V/C Ratio	0.268	-	-
HCM Control Delay (s)	25.8	-	-
HCM Lane LOS	D	-	-
HCM 95th %tile Q(veh)	1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	192	122	54	193	0	0	0	0	59	1084	65
Future Volume (veh/h)	0	192	122	54	193	0	0	0	0	59	1084	65
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.73	0.86		1.00				1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				0.88	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0				1900	1863	1900
Adj Flow Rate, veh/h	0	206	131	58	208	0				63	1166	70
Adj No. of Lanes	0	2	0	0	2	0				0	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	463	255	141	533	0				101	1951	122
Arrive On Green	0.00	0.48	0.48	0.24	0.24	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	2023	1062	370	2307	0				159	3072	193
Grp Volume(v), veh/h	0	186	151	125	141	0				648	0	651
Grp Sat Flow(s),veh/h/ln	0	1770	1222	982	1610	0				1631	0	1792
Q Serve(g_s), s	0.0	6.9	8.5	5.6	7.3	0.0				36.2	0.0	32.6
Cycle Q Clear(g_c), s	0.0	6.9	8.5	14.1	7.3	0.0				36.2	0.0	32.6
Prop In Lane	0.00		0.87	0.46		0.00				0.10		0.11
Lane Grp Cap(c), veh/h	0	424	293	288	386	0				1036	0	1138
V/C Ratio(X)	0.00	0.44	0.51	0.44	0.36	0.00				0.63	0.00	0.57
Avail Cap(c_a), veh/h	0	495	342	338	451	0				1036	0	1138
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				0.33	0.33	0.33
Upstream Filter(I)	0.00	0.65	0.65	1.00	1.00	0.00				0.09	0.00	0.09
Uniform Delay (d), s/veh	0.0	21.6	22.0	34.6	31.7	0.0				28.7	0.0	27.3
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.4	0.2	0.0				0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	2.9	3.2	3.3	0.0				16.4	0.0	16.2
LnGrp Delay(d),s/veh	0.0	21.8	22.3	35.0	31.9	0.0				29.0	0.0	27.5
LnGrp LOS		C	C	C	C					C		C
Approach Vol, veh/h		337			266						1299	
Approach Delay, s/veh		22.0			33.3						28.2	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.0		70.0		30.0
Change Period (Y+Rc), s				6.0		6.5		6.0
Max Green Setting (Gmax), s				28.0		59.5		28.0
Max Q Clear Time (g_c+I1), s				10.5		38.2		16.1
Green Ext Time (p_c), s				1.7		3.8		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	337	266	1299
v/c Ratio	0.49	0.45	0.60
Control Delay	22.8	35.3	1.1
Queue Delay	0.0	0.0	4.5
Total Delay	22.8	35.3	5.6
Queue Length 50th (ft)	35	76	17
Queue Length 95th (ft)	82	116	m15
Internal Link Dist (ft)	482	506	277
Turn Bay Length (ft)			
Base Capacity (vph)	793	690	2156
Starvation Cap Reductn	0	0	769
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.39	0.94

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Appendix G – Traffic Signal Warrant Analysis HCS Report

Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / G Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Street NW	North/South Street	8th Street NW
File Name	EX AM_8-G	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	300	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	0	0	0	0	0
Lane usage		LT			TR						LR	
Vehicle Volume Averages (vph)	19	49	0	0	36	24	0	0	0	21	0	34
Peds (ped/h) / Gaps (gaps/h)	--	90 / 0	--	--	79 / 0	--	--	33 / 0	--	--	28 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / G Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Street NW	North/South Street	8th Street NW
File Name	BACK_8-G	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	300	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	0	0	0	0	0
Lane usage		LT			TR						LR	
Vehicle Volume Averages (vph)	19	53	0	0	40	25	0	0	0	23	0	37
Peds (ped/h) / Gaps (gaps/h)	--	90 / 0	--	--	79 / 0	--	--	33 / 0	--	--	28 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / G Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Street NW	North/South Street	8th Street NW
File Name	TOTAL_8-G	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	300	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	0	0	0	0	0
Lane usage		LT			TR						LR	
Vehicle Volume Averages (vph)	20	53	0	0	40	25	0	0	0	23	0	37
Peds (ped/h) / Gaps (gaps/h)	--	90 / 0	--	--	79 / 0	--	--	33 / 0	--	--	28 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / H Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	H Street NW	North/South Street	8th Street NW
File Name	EX AM_8-H	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	290	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	3	0	0	3	0	0	1	0	0	1	0
Lane usage		LTR			LTR			LTR			LTR	
Vehicle Volume Averages (vph)	13	188	19	22	125	15	8	9	17	3	7	9
Peds (ped/h) / Gaps (gaps/h)	--	174 / 0	--	--	128 / 0	--	--	29 / 0	--	--	81 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / H Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	H Street NW	North/South Street	8th Street NW
File Name	BACK AM_8-H	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	290	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	3	0	0	3	0	0	1	0	0	1	0
Lane usage		LTR			LTR			LTR			LTR	
Vehicle Volume Averages (vph)	13	245	19	22	165	15	11	9	22	4	7	11
Peds (ped/h) / Gaps (gaps/h)	--	174 / 0	--	--	128 / 0	--	--	29 / 0	--	--	81 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	8th Street NW / H Street NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	H Street NW	North/South Street	8th Street NW
File Name	TOTAL_8-H	Major Street	East-West

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	290	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	3	0	0	3	0	0	1	0	0	1	0
Lane usage		LTR			LTR			LTR			LTR	
Vehicle Volume Averages (vph)	13	245	19	22	166	15	11	9	22	4	7	11
Peds (ped/h) / Gaps (gaps/h)	--	174 / 0	--	--	128 / 0	--	--	29 / 0	--	--	81 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	9th Street NW / G Pl NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Pl NW	North/South Street	9th Street NW
File Name	EX_9-G Pl	Major Street	North-South

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	270	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	0	1	0	0	0	0	0	0	0	3	0
Lane usage			R								T	
Vehicle Volume Averages (vph)	0	0	26	0	0	0	0	0	0	0	515	0
Peds (ped/h) / Gaps (gaps/h)	--	91 / 0	--	--	152 / 0	--	--	127 / 0	--	--	90 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	9th Street NW / G Pl NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Pl NW	North/South Street	9th Street NW
File Name	BACK_9-G Pl	Major Street	North-South

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	270	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	0	1	0	0	0	0	0	0	0	3	0
Lane usage			R								T	
Vehicle Volume Averages (vph)	0	0	26	0	0	0	0	0	0	0	527	0
Peds (ped/h) / Gaps (gaps/h)	--	91 / 0	--	--	152 / 0	--	--	127 / 0	--	--	90 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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Warrants Summary

Information			
Analyst	Stantec	Intersection	9th Street NW / G Pl NW
Agency/Co	DDOT	Jurisdiction	
Date Performed	9/10/2015	Units	U.S. Customary
Project ID		Time Period Analyzed	6 Hour Period
East/West Street	G Pl NW	North/South Street	9th Street NW
File Name	TOTAL_9-G Pl	Major Street	North-South

Project Description

General				Roadway Network	
Major Street Speed (mph)	25	☐	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	270	☑	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	0	1	0	0	0	0	0	0	0	3	0
Lane usage			R								T	
Vehicle Volume Averages (vph)	0	0	26	0	0	0	0	0	0	0	528	0
Peds (ped/h) / Gaps (gaps/h)	--	91 / 0	--	--	152 / 0	--	--	127 / 0	--	--	90 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☐
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☐
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 2: Four-Hour Vehicular Volume	☐
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 3: Peak Hour	☐
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☐
Warrant 4: Pedestrian Volume	☐
4 A. Pedestrian Volumes (Four hours --or-- one hour) --and--	☐
4 B. Gaps Same Period (Four hours --or-- one hour)	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☑
6. Degree of Platooning (Predominant direction or both directions)	☑
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. 80% Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐

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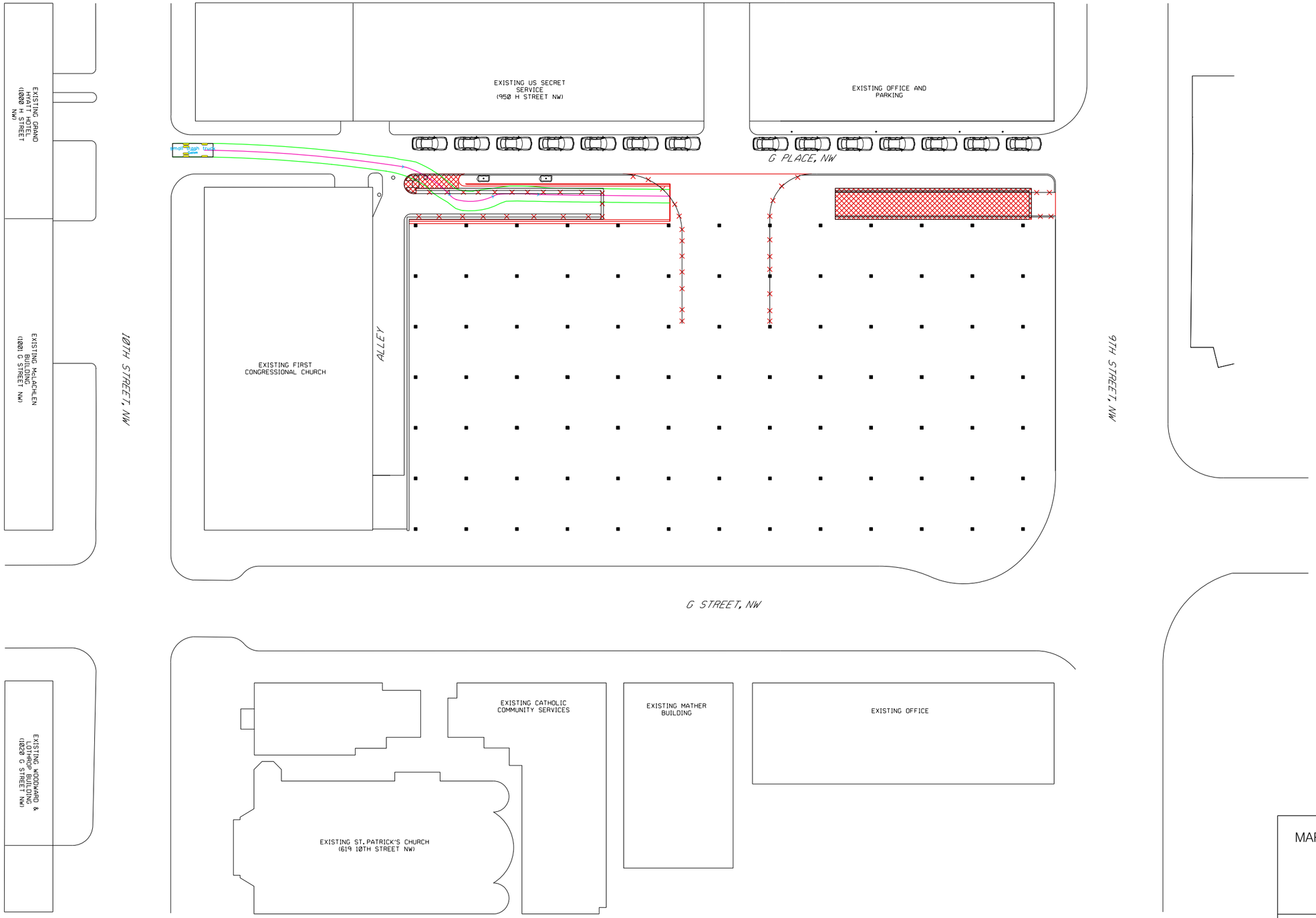
Appendix H – Loading Dock and Parking Garage Access

ALTERNATIVE 2



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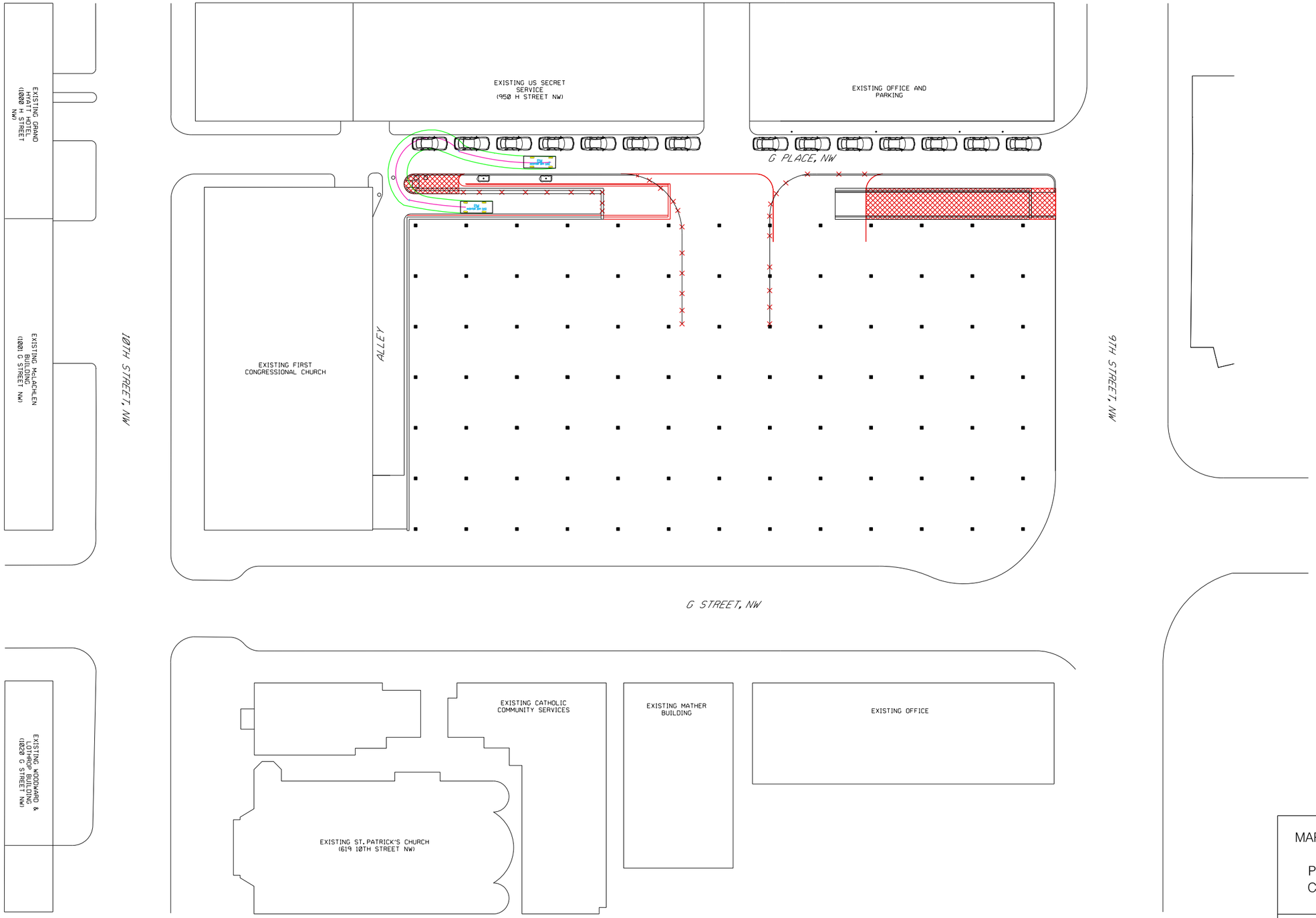

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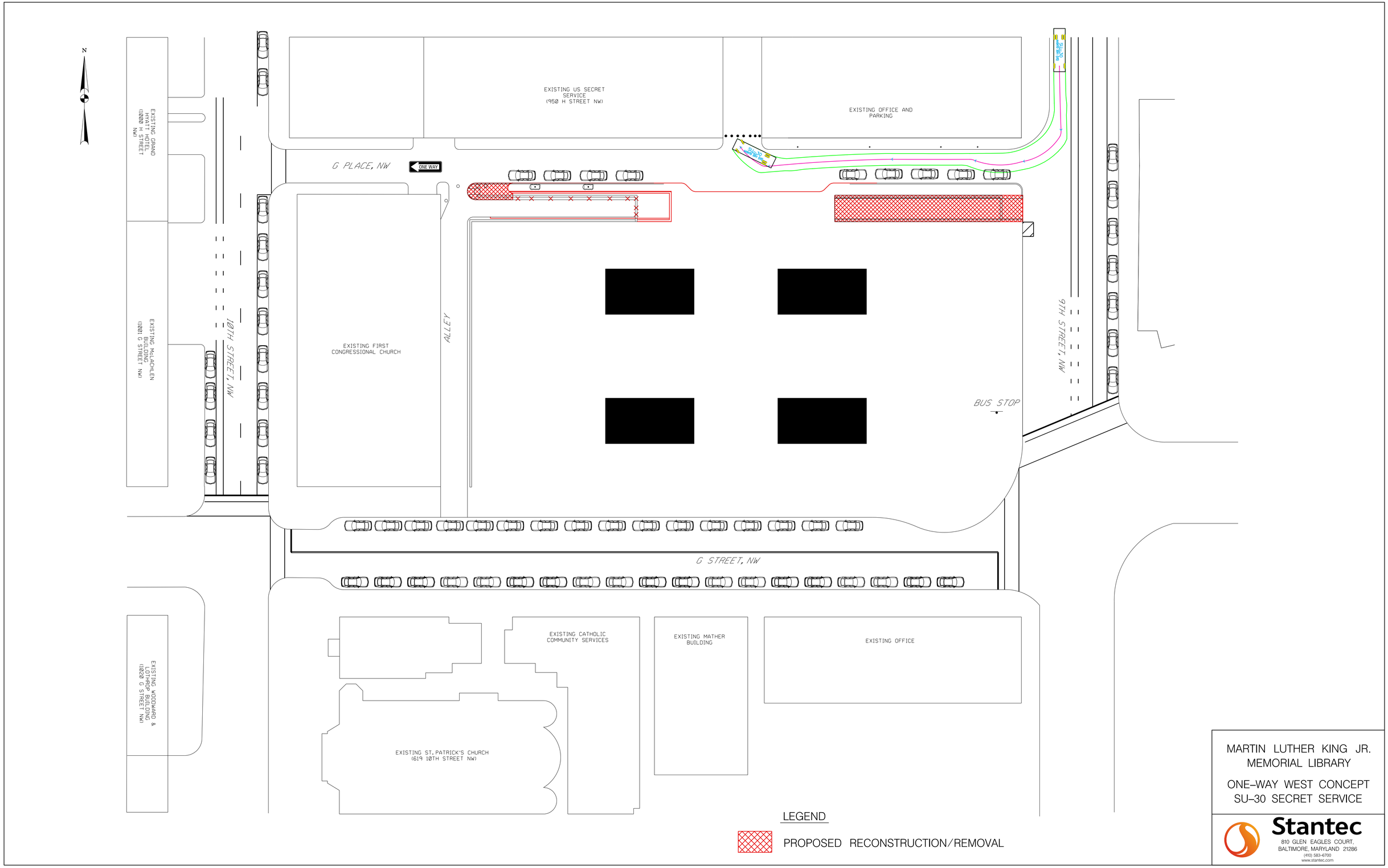
ALTERNATIVE 3



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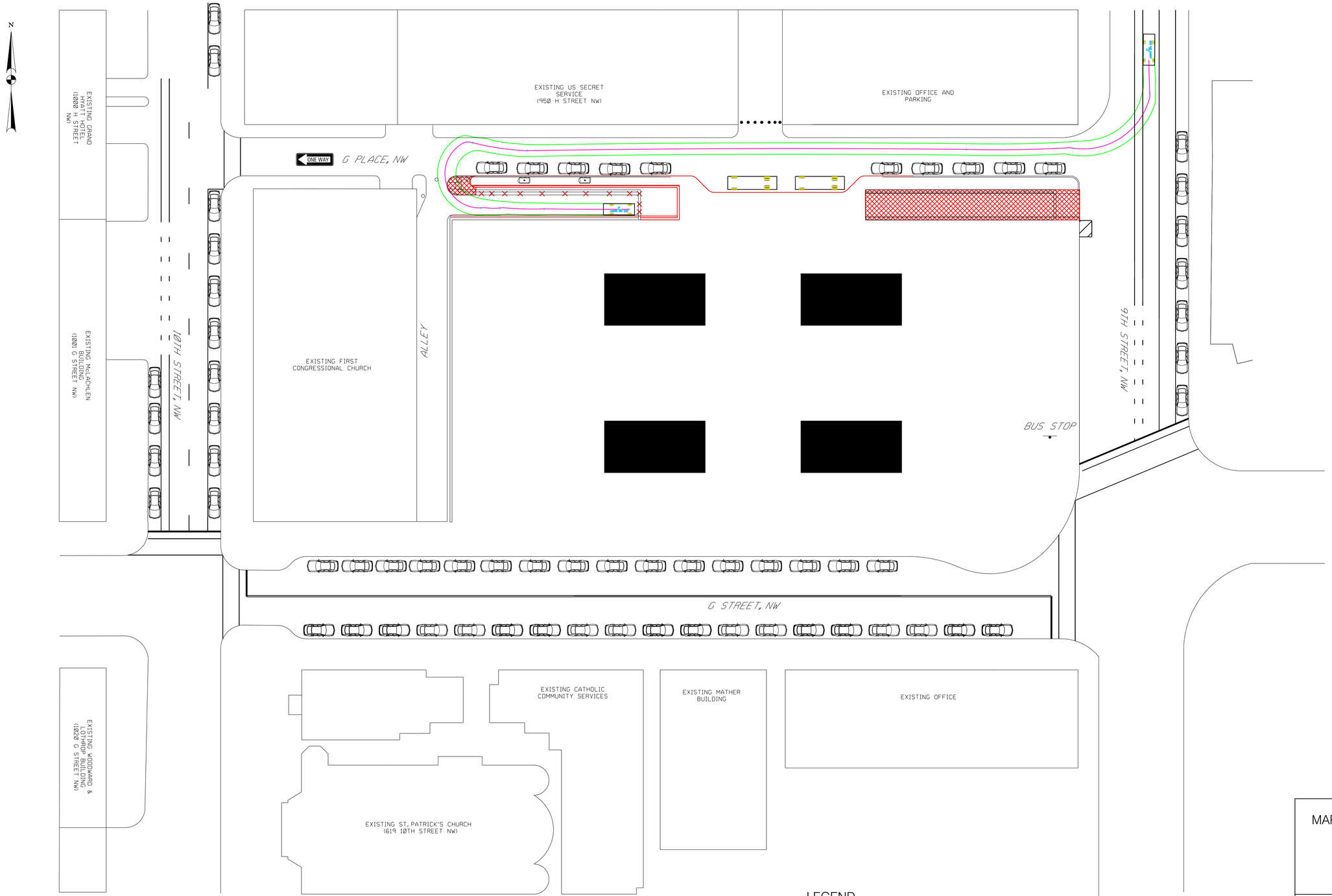

LEGEND

PROPOSED RECONSTRUCTION/REMOVAL

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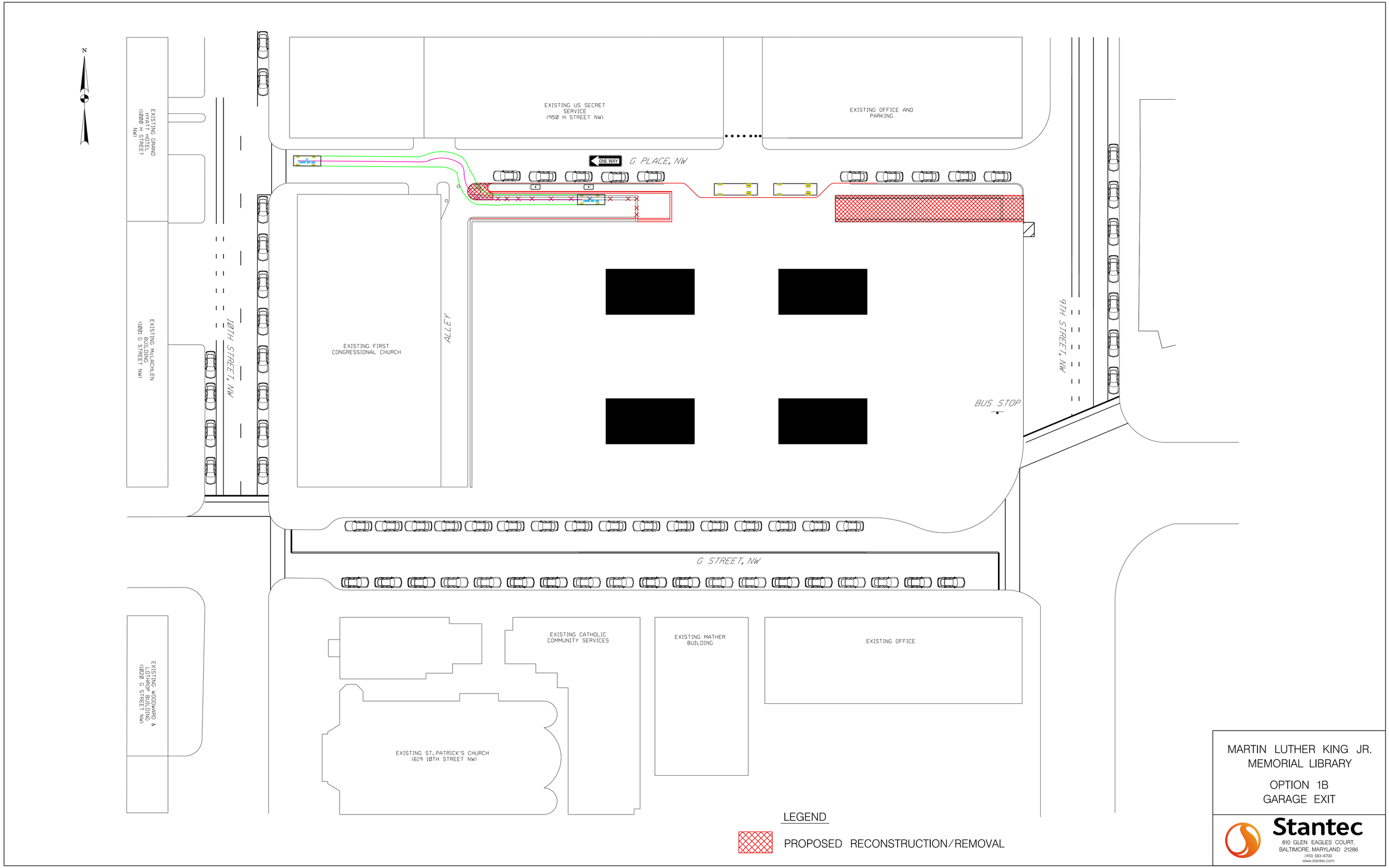

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OPTION 1B
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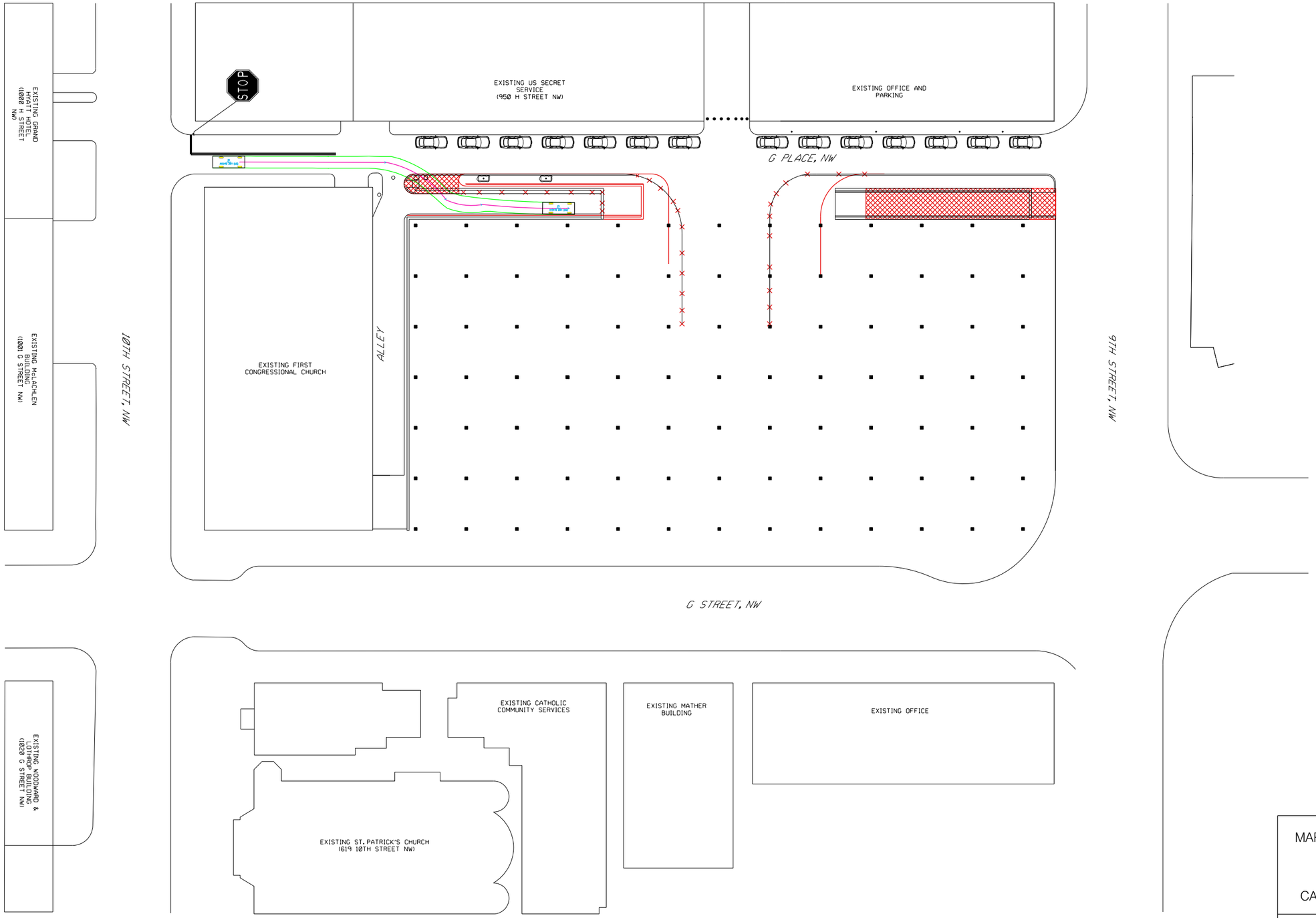

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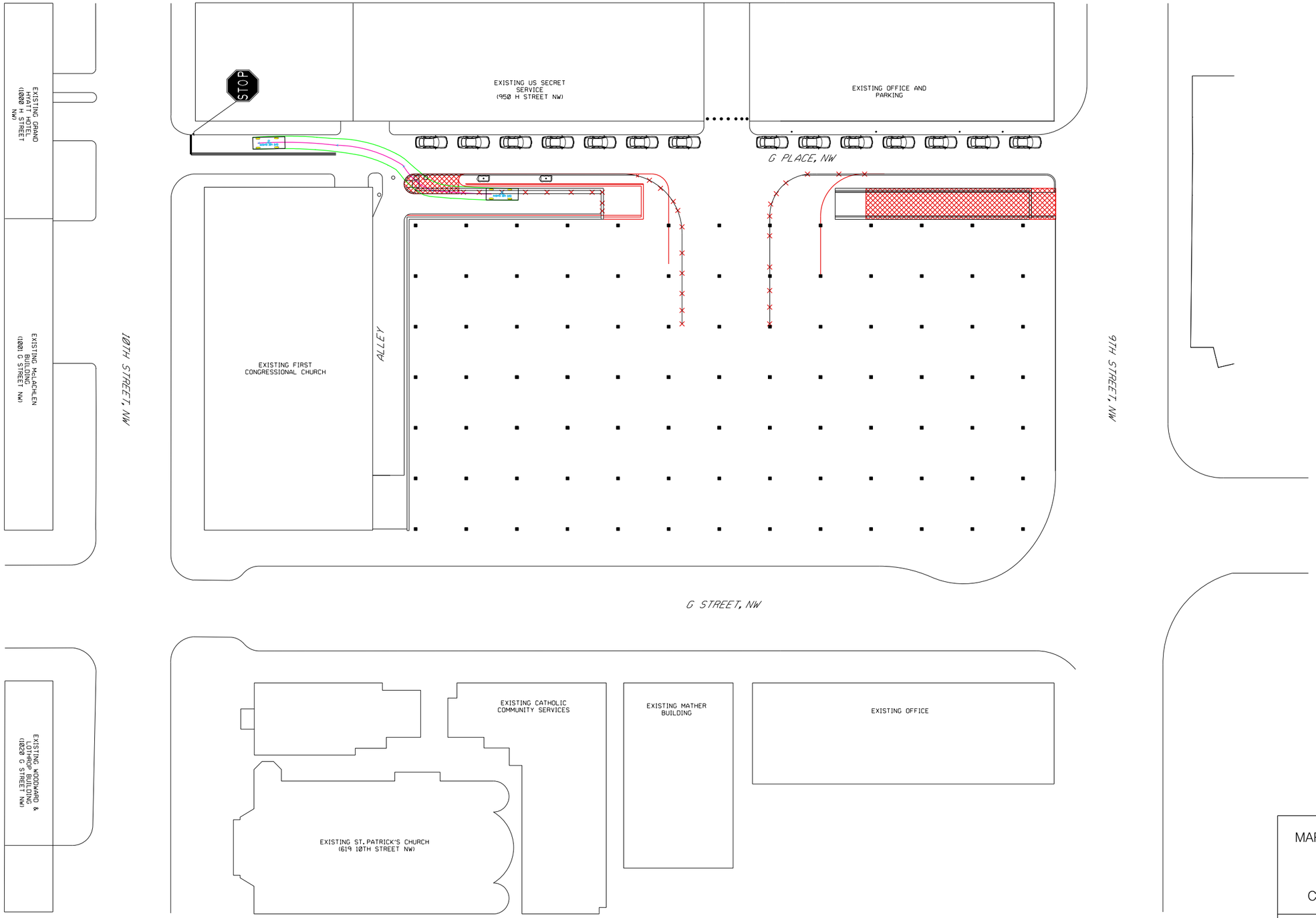
ALTERNATIVE 4



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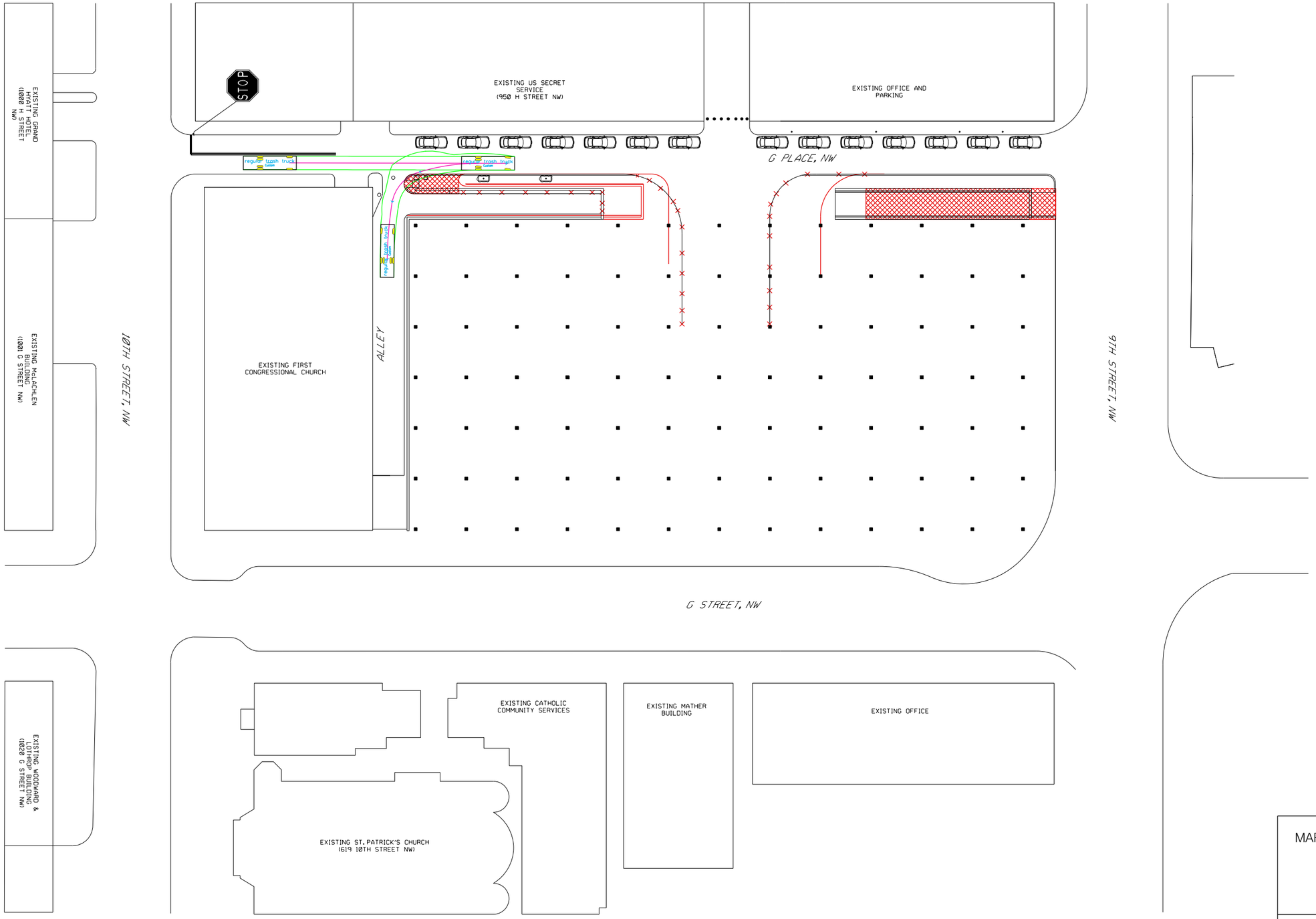

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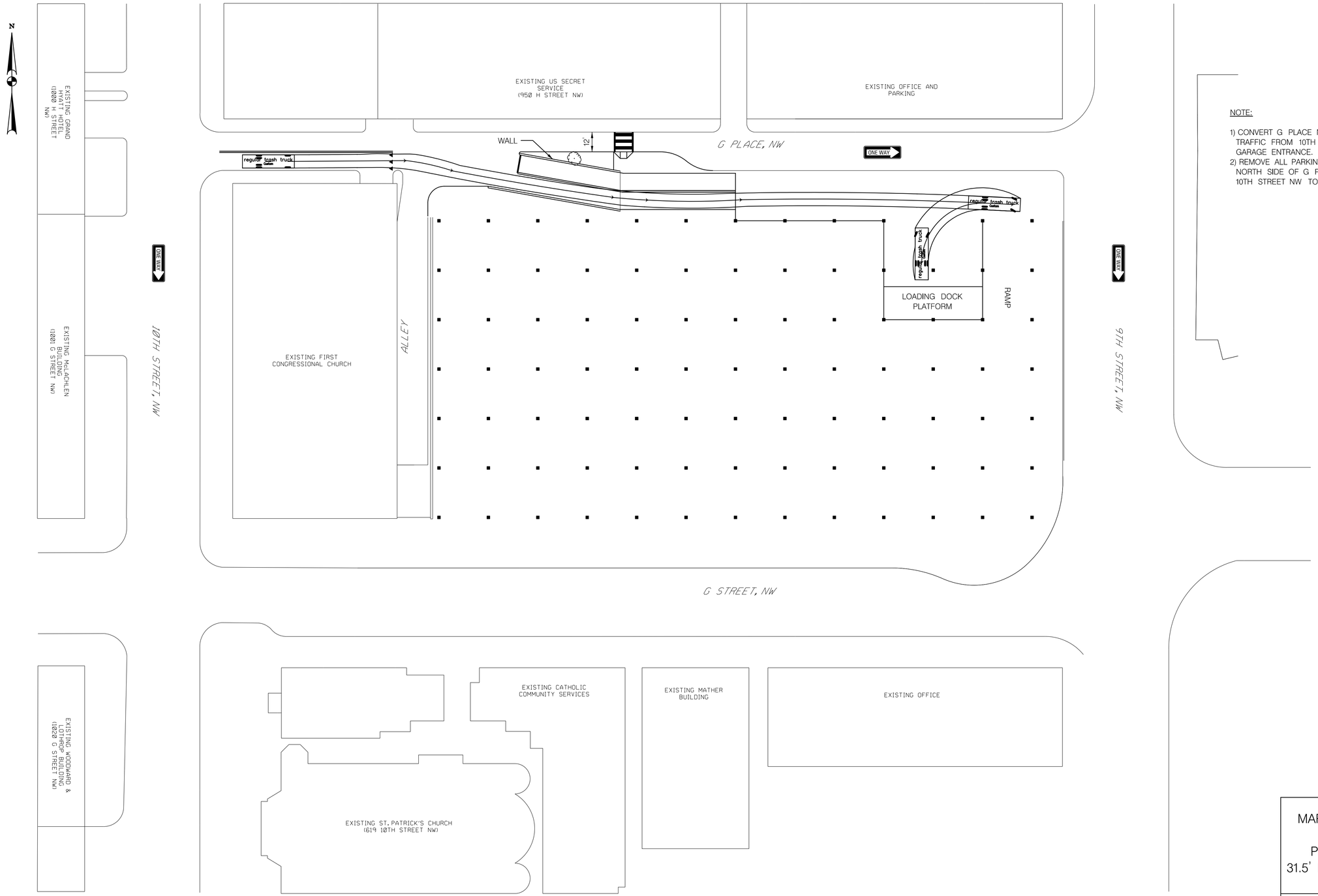

NOTE:

1) CONVERT G PLACE NW TO TWO-WAY TRAFFIC FROM 10TH STREET NW TO GARAGE ENTRANCE.
2) REMOVE ALL PARKING ALONG THE NORTH SIDE OF G PLACE NW FROM 10TH STREET NW TO 300 FEET EAST.

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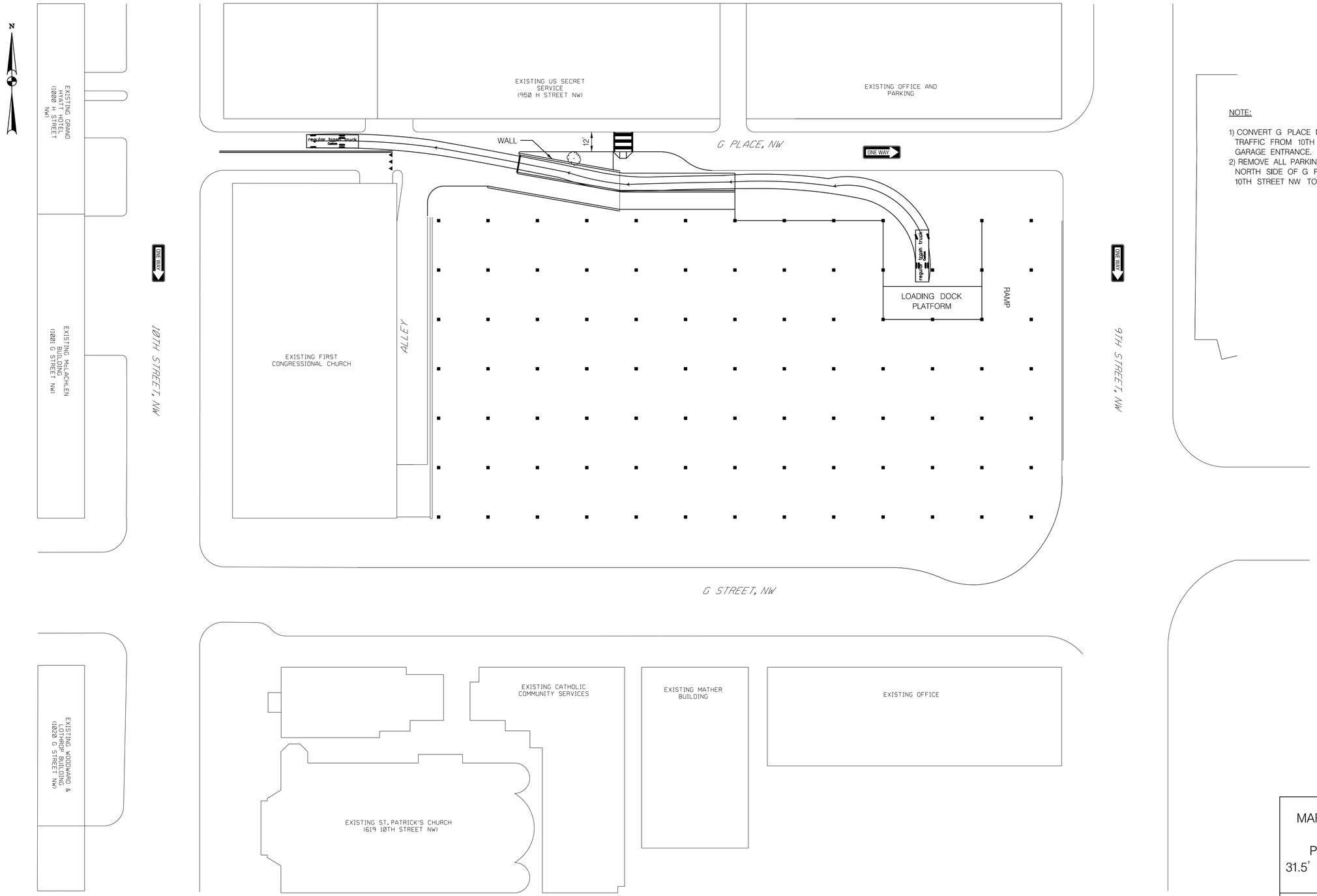

NOTE:

1) CONVERT G PLACE NW TO TWO-WAY TRAFFIC FROM 10TH STREET NW TO GARAGE ENTRANCE.
2) REMOVE ALL PARKING ALONG THE NORTH SIDE OF G PLACE NW FROM 10TH STREET NW TO 300 FEET EAST.

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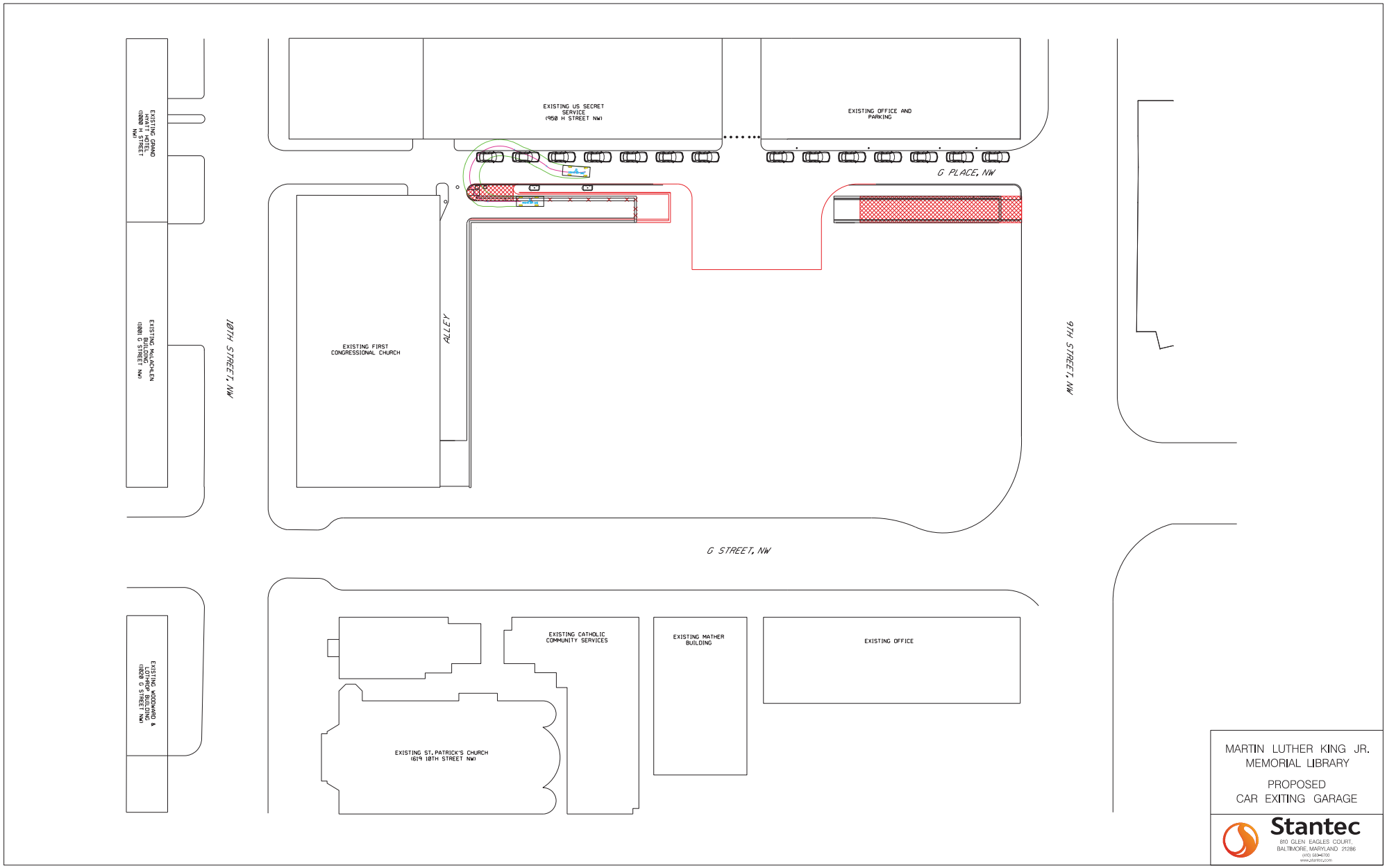

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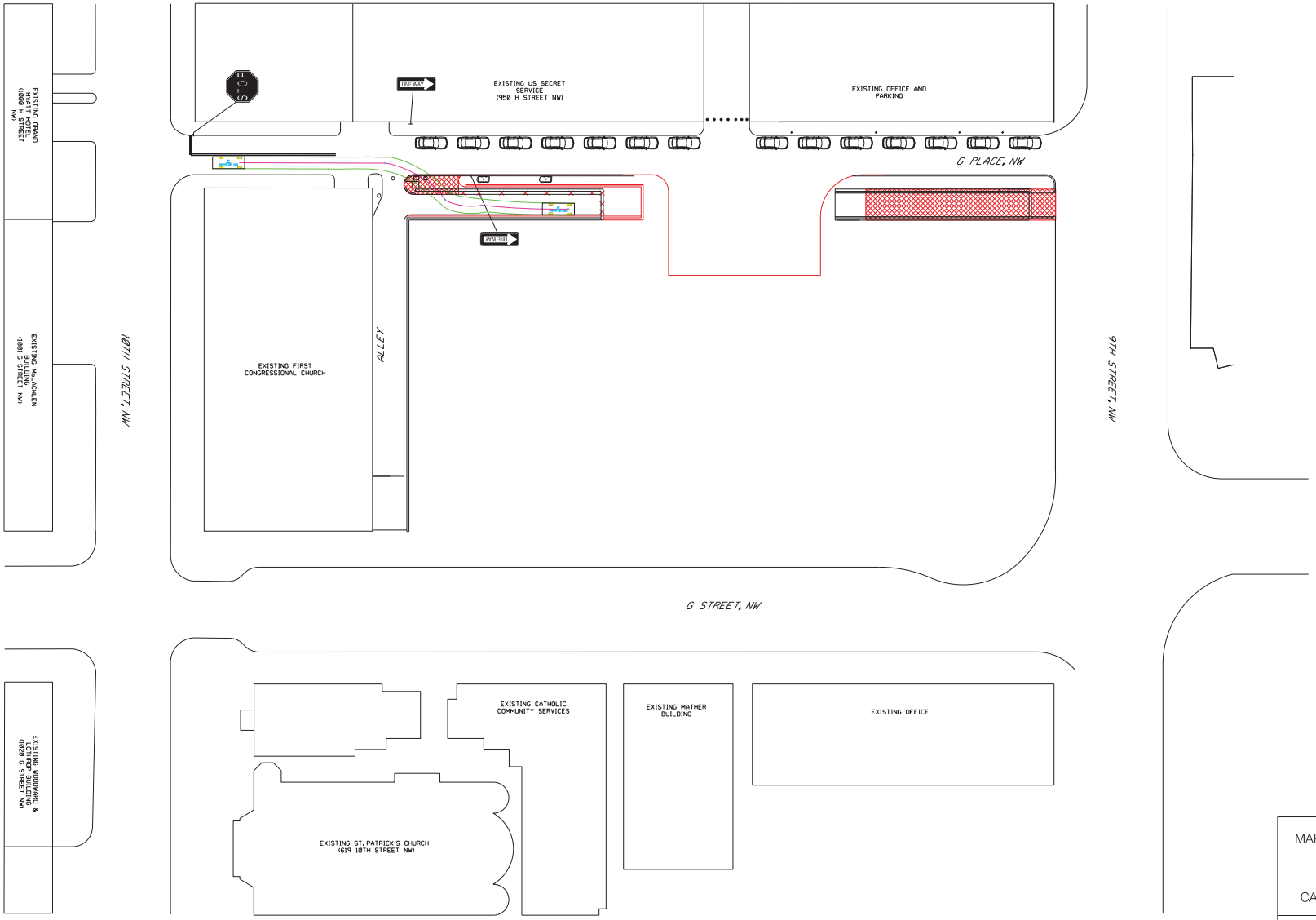

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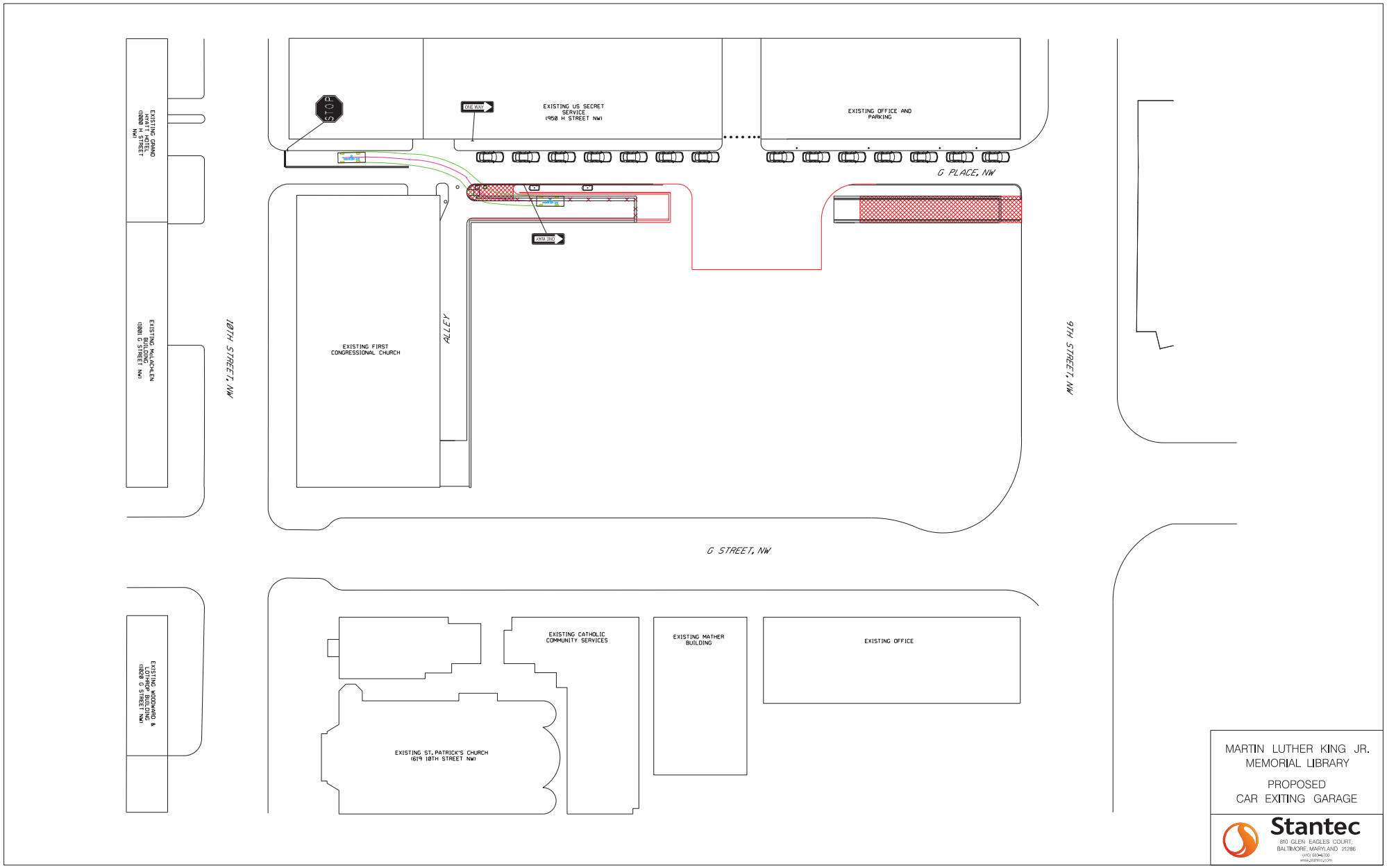

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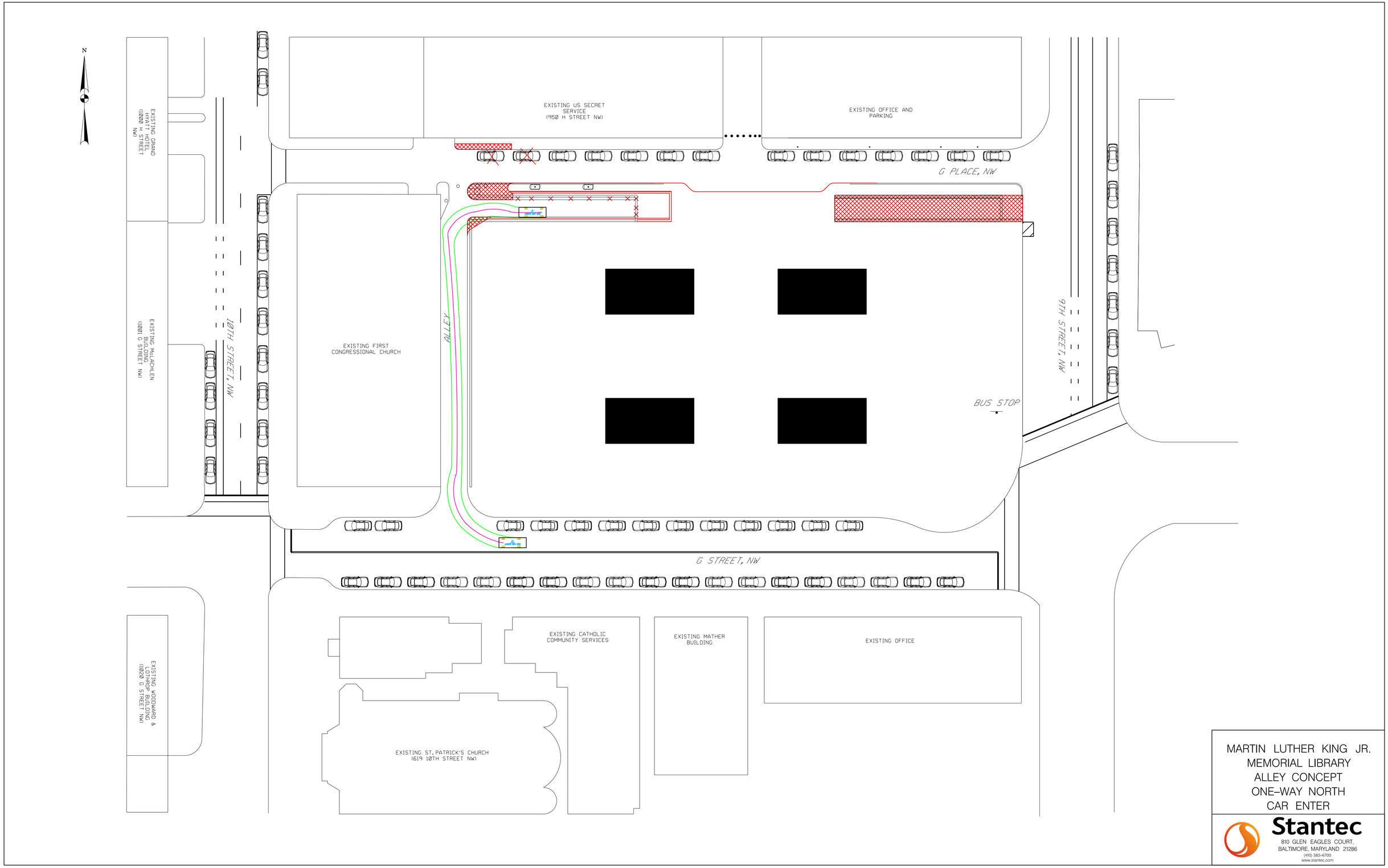

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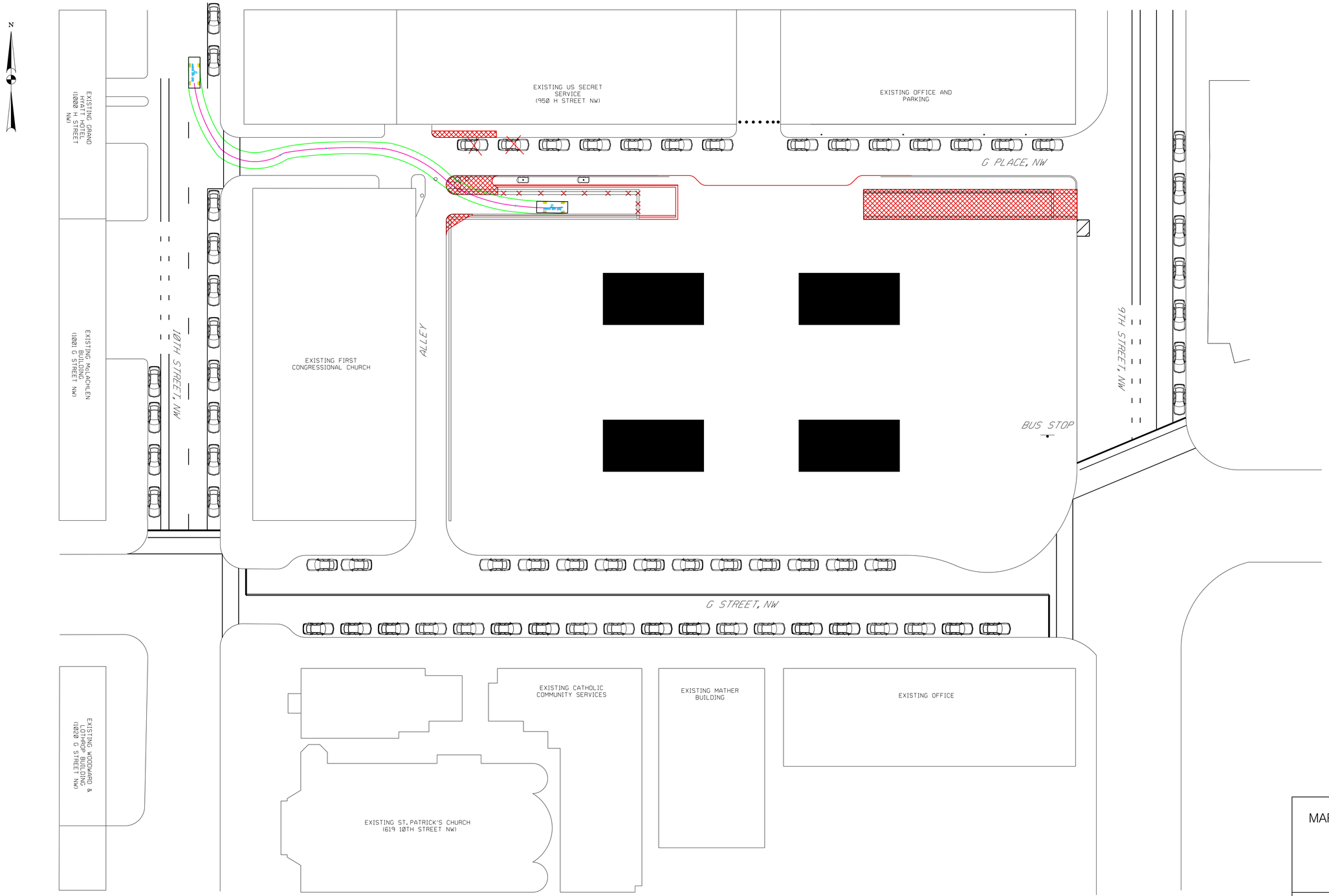

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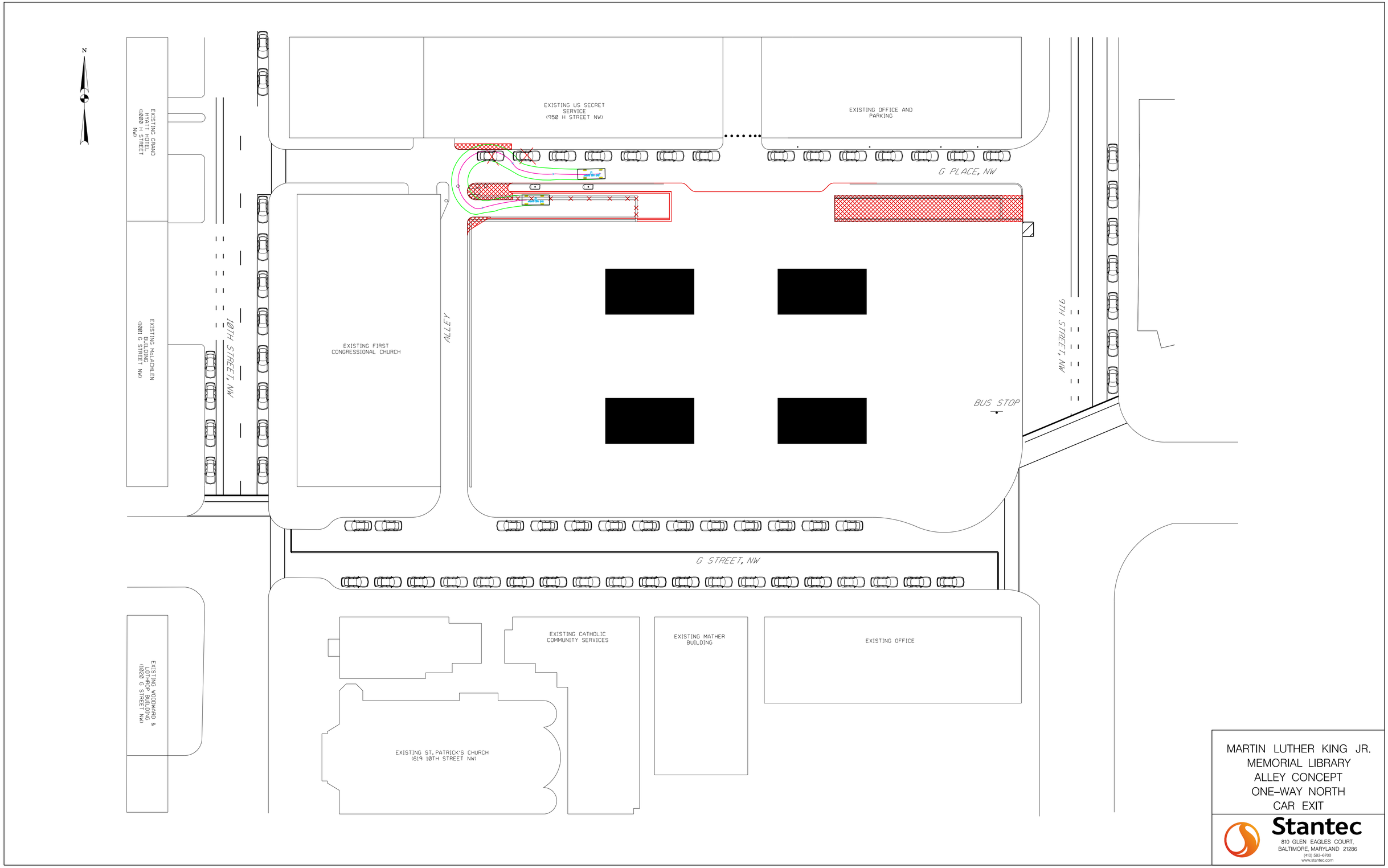

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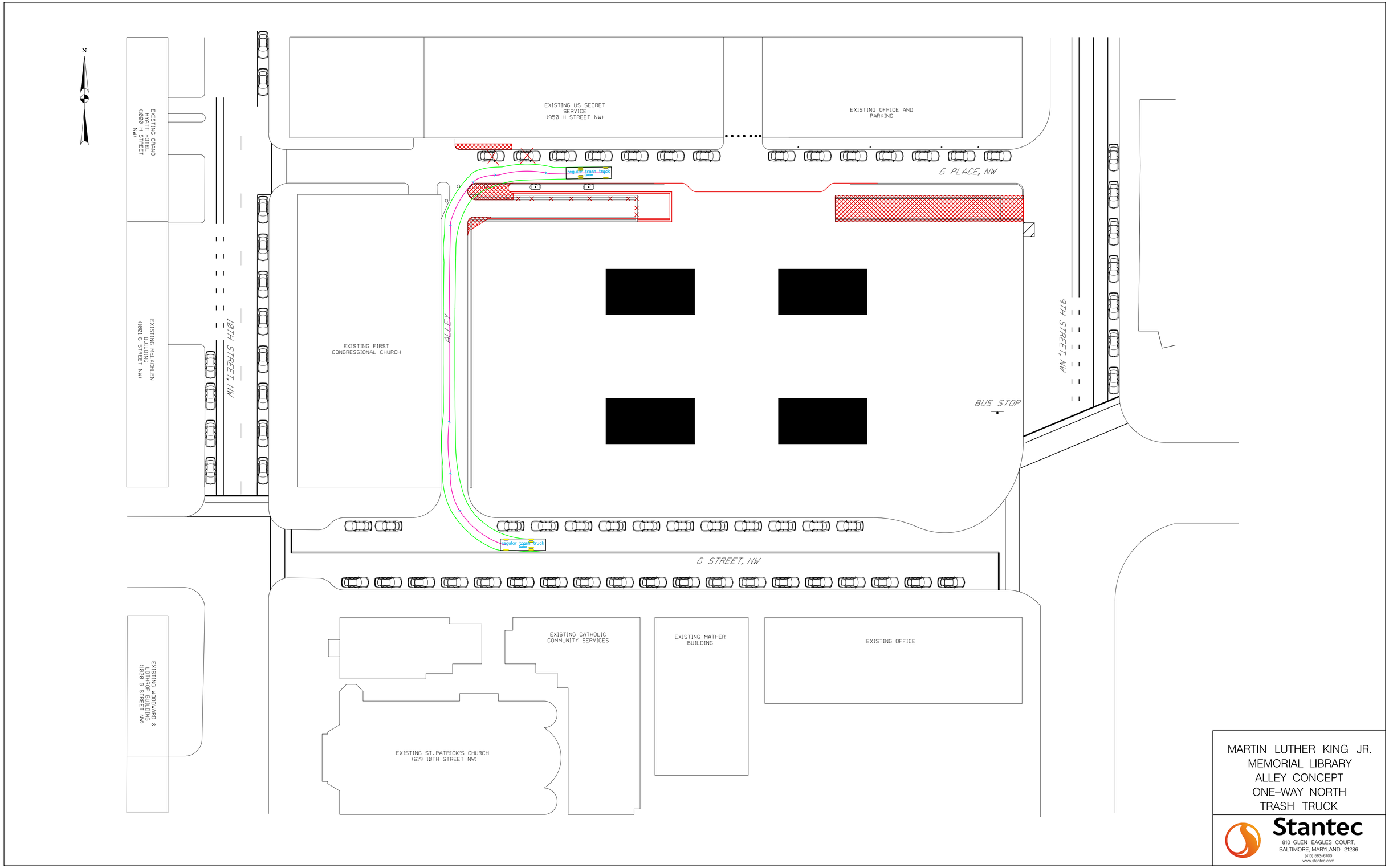

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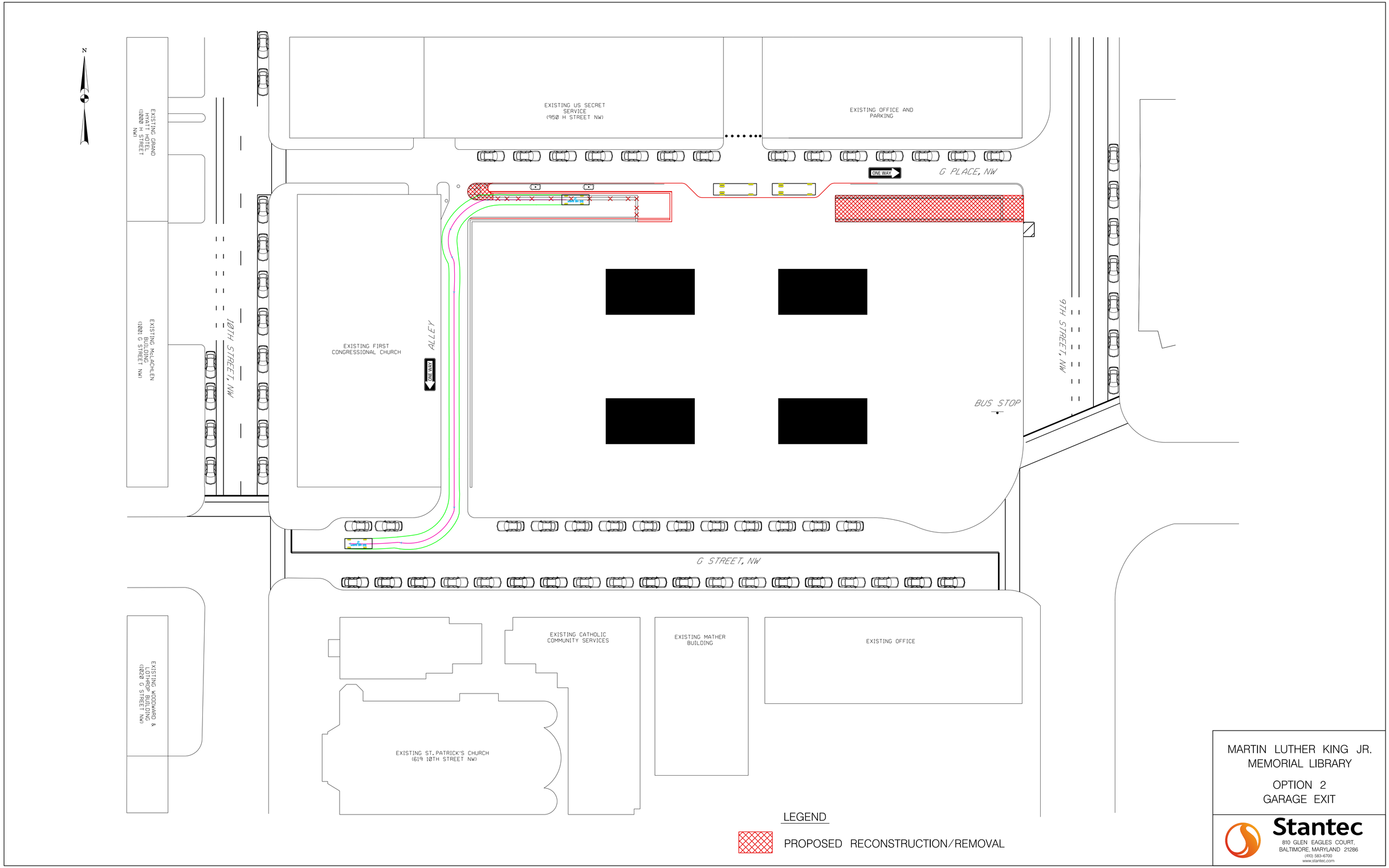

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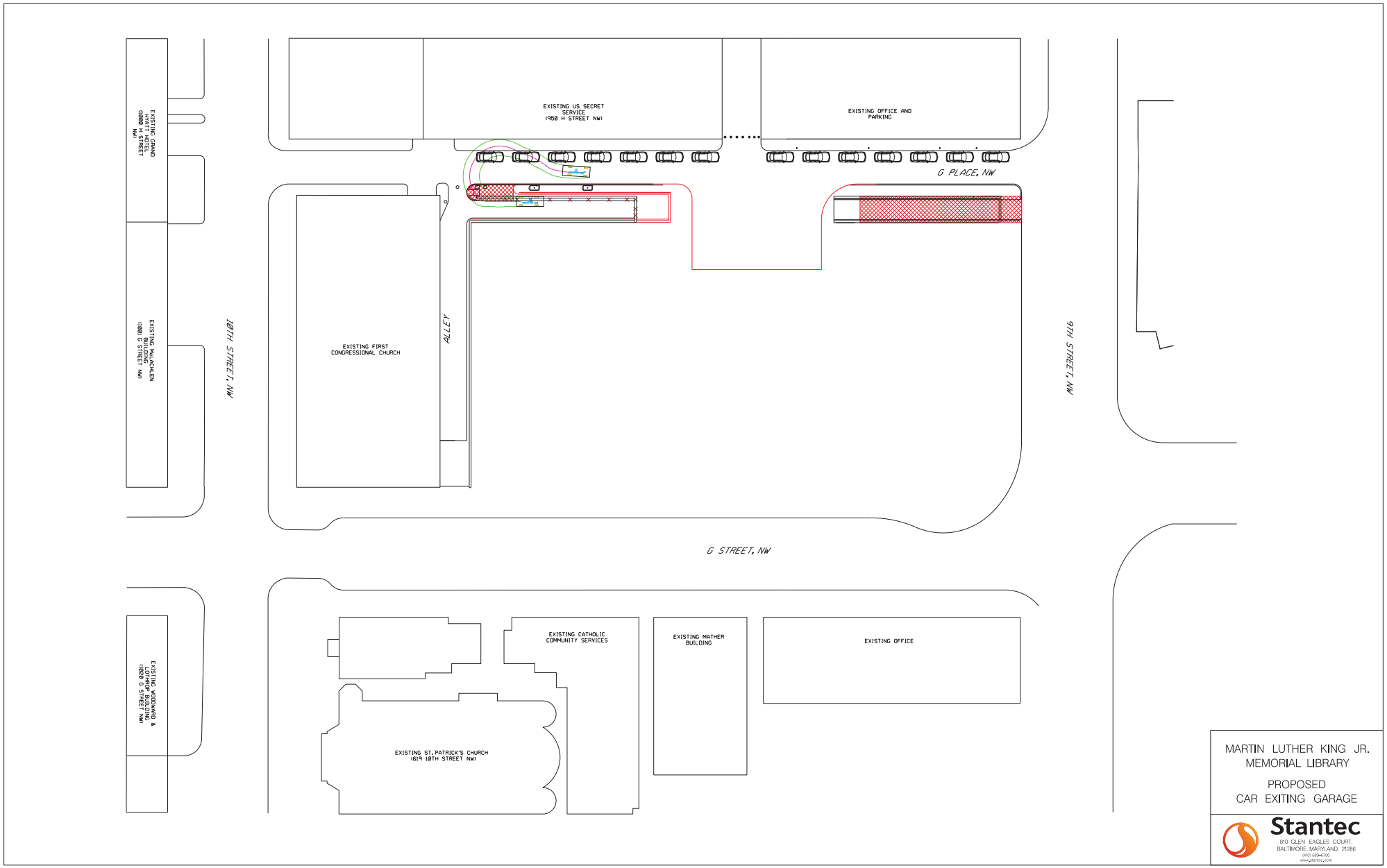

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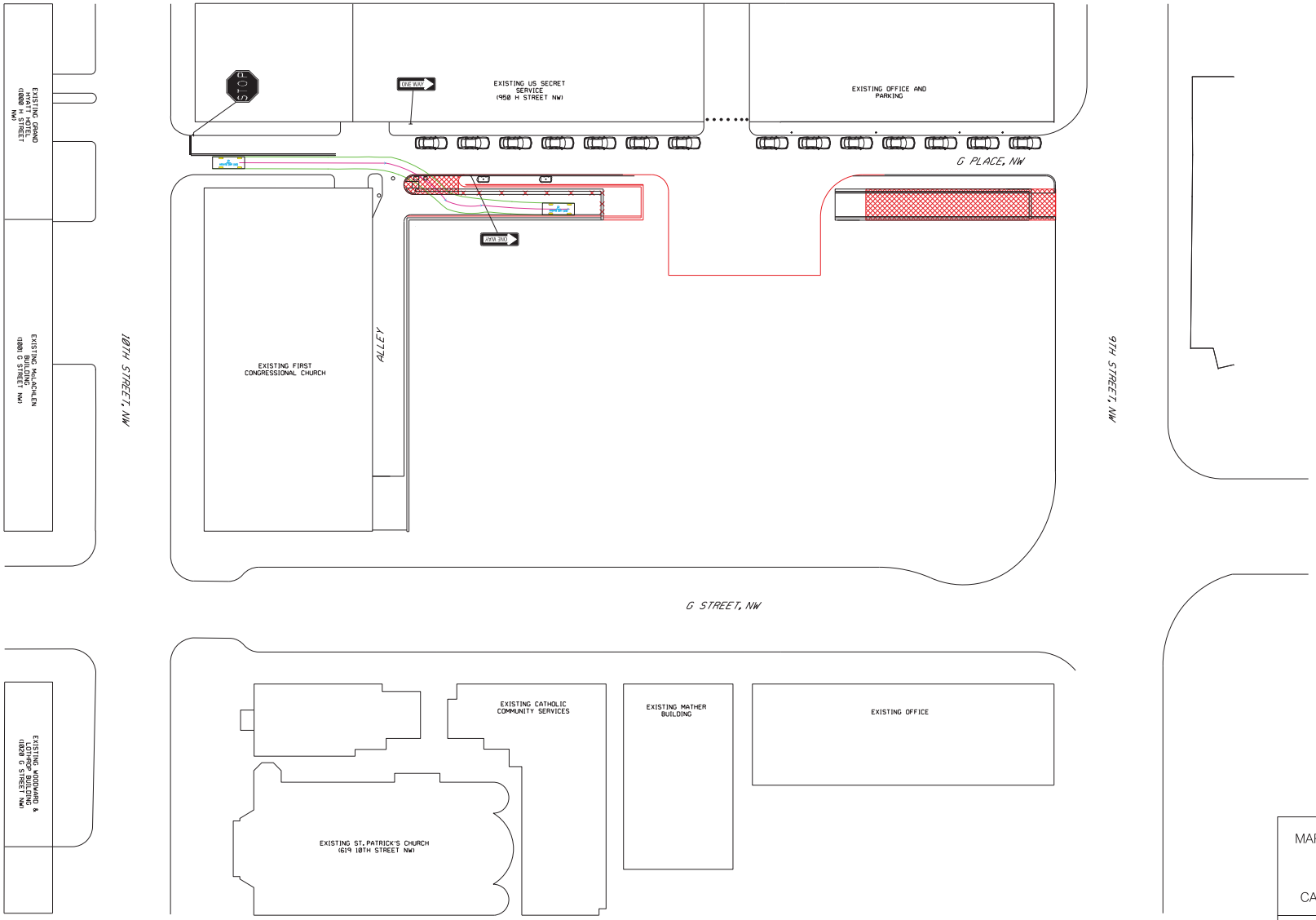

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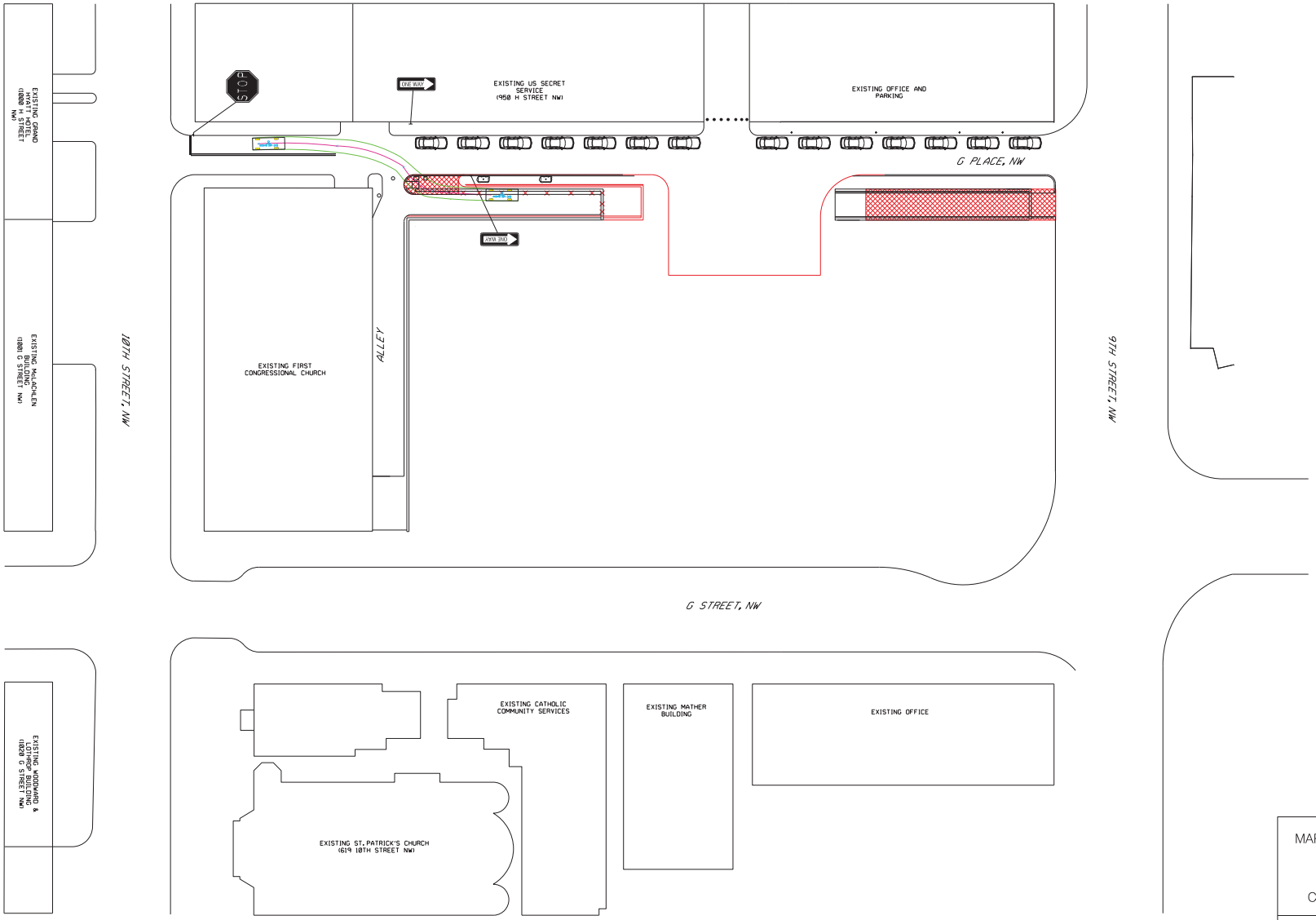

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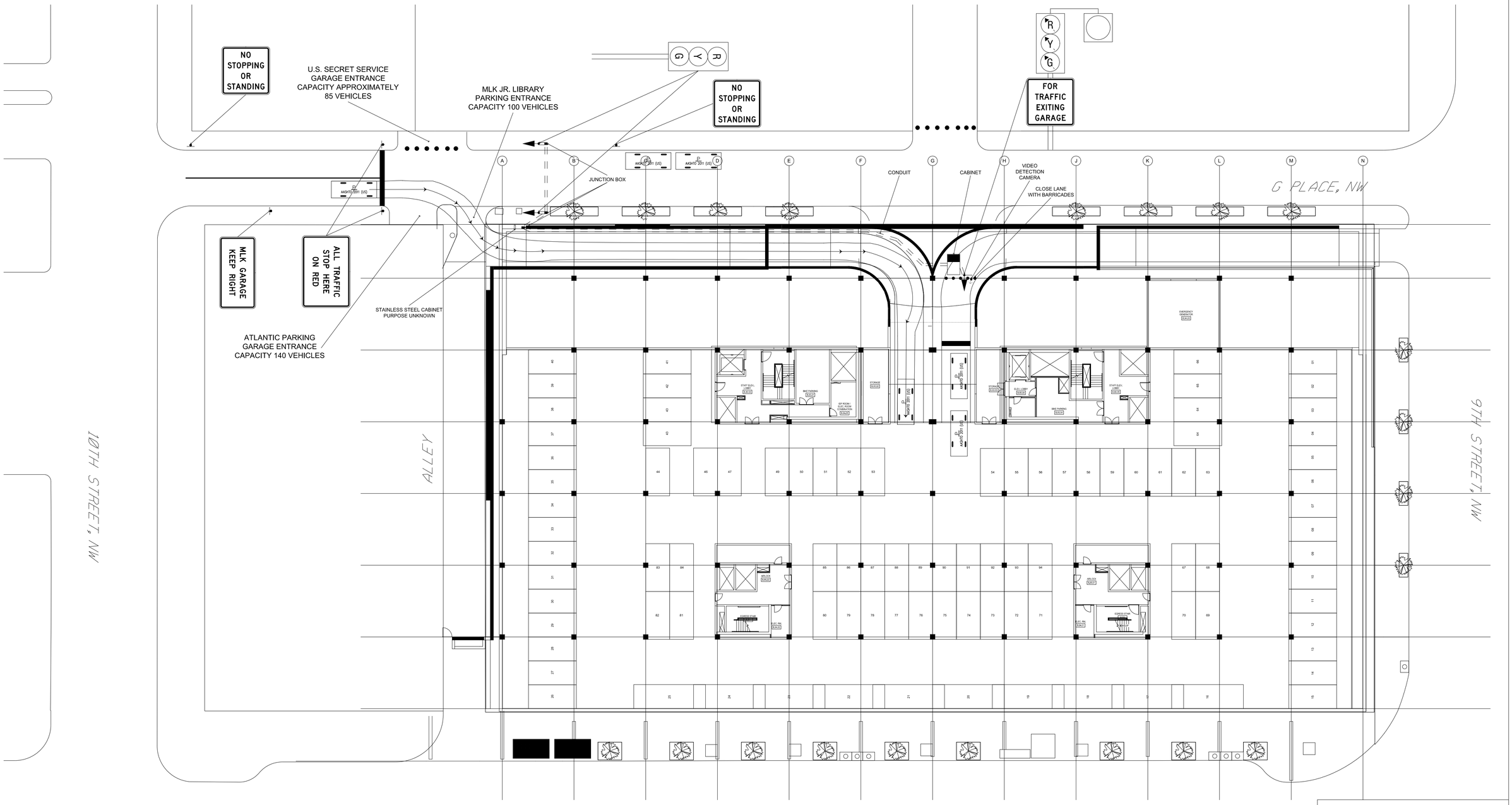
ALTERNATE 6



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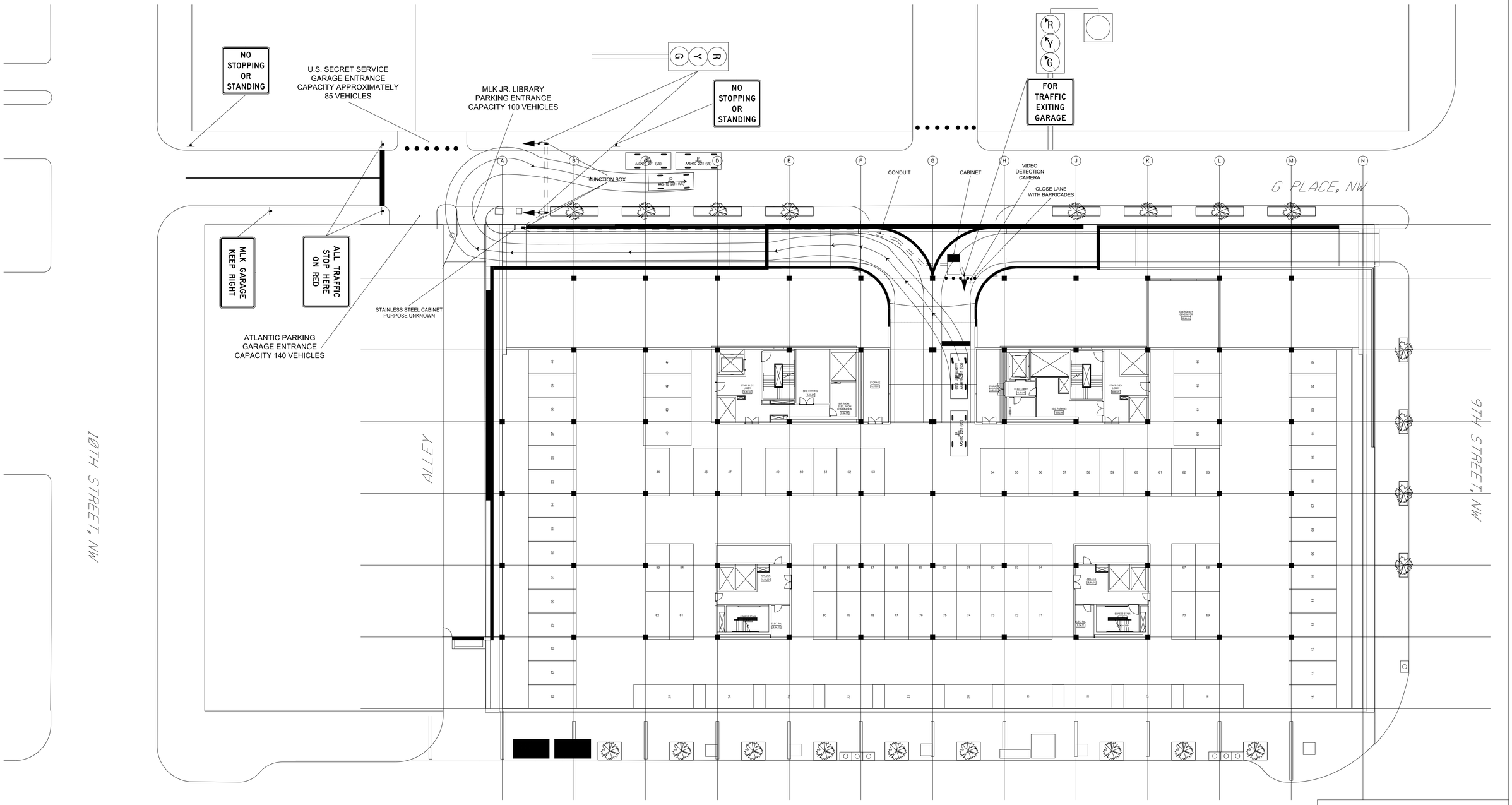

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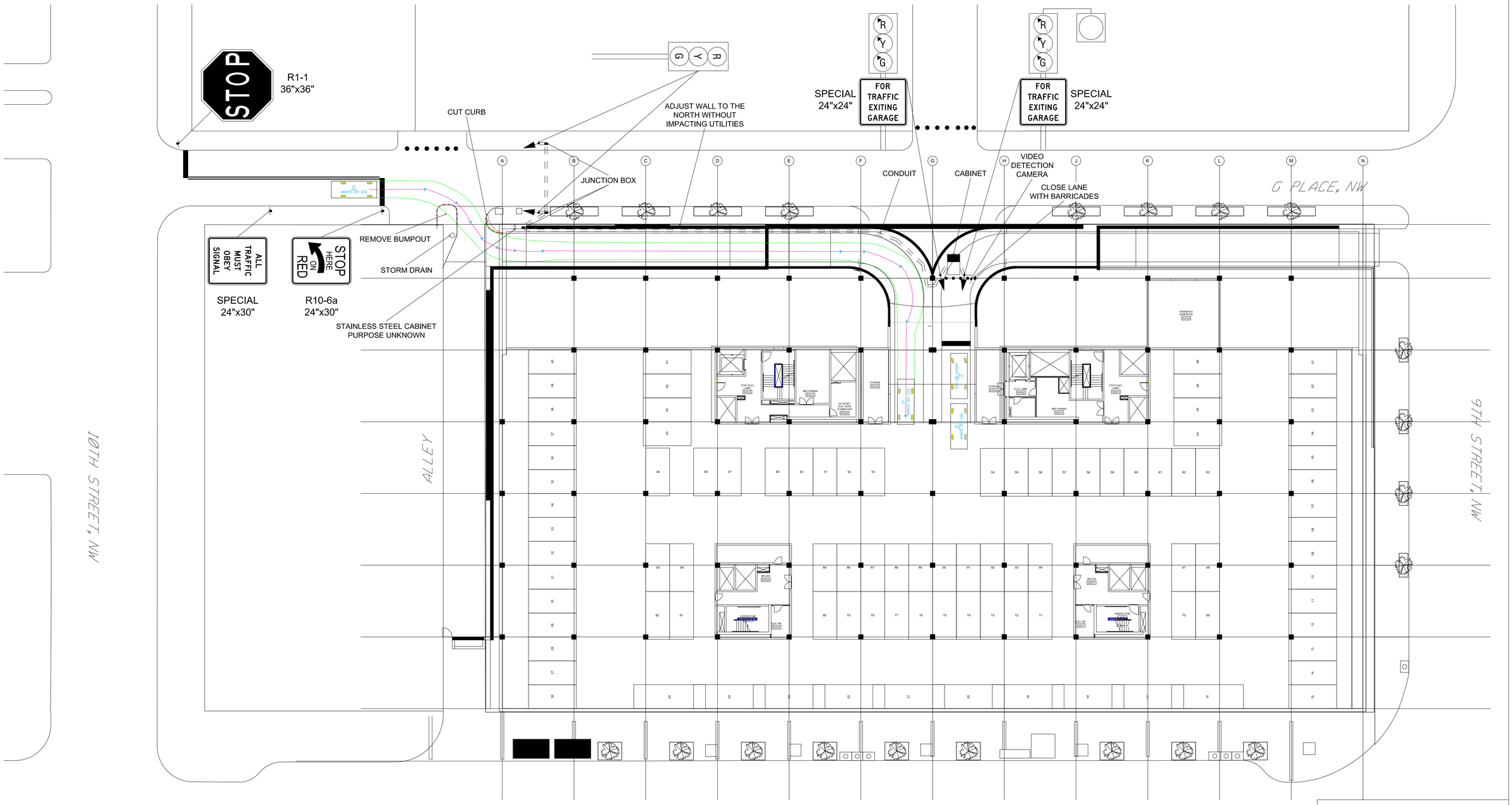

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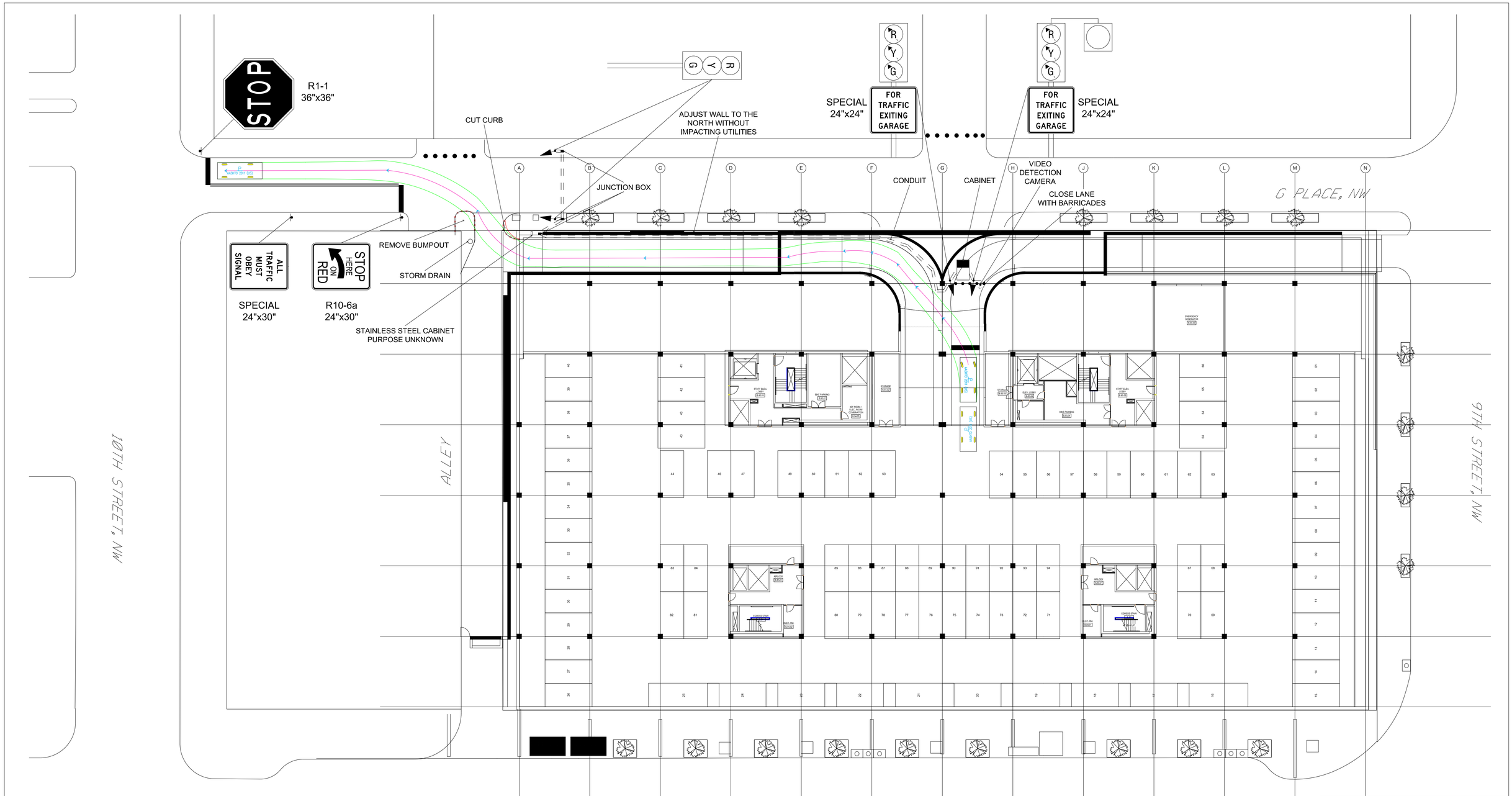

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Appendix I – Site Access Letters/White Papers

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Laurel, Maryland 20707

Traffic Data Review - MLK Library Garage Inbound/Outbound Traffic – Alternate 7A

May 13, 2016

The District of Columbia Public Library (DCPL) is planning improvements to the Martin Luther King, Jr. (MLK) Library. As part of the transportation planning for these improvements, Stantec Consulting Services, Inc. (Stantec) was directed to collect 24-hour traffic counts at the Church Garage, Secret Service Garage, and the MLK Library Garage ramps on April 5, 2016. Tube counters were also installed along G Place, NW and placed perpendicular to curbs/driveways to minimize the occurrence of double hits by turning vehicles.

To ensure that the counts at the MLK Library Garage ramps recorded vehicle entry and exit trends over the course of several days, Stantec was directed to conduct additional seven (7)-day, 24-hour traffic volume counts from May 2, 2016 through May 9, 2016 along both the MLK Library Garage ingress and egress ramps. These seven (7)-day counts referenced above were evaluated in concert with the April 5, 2016 tube counts obtained from along G Place, NW, the Church Garage and the Secret Service Garage, with one reference to the MLK Library Garage counts (in the Tube Counts Variance section).

These volumes were considered in the context of an alternate (Alternate 7A) that considers modifications to the roadway network in the vicinity of the MLK, Jr. Library and primarily including 10th Street, NW and G Place, NW. The modifications under consideration include closing the eastbound egress ramp from the MLK Library Garage leading to 9th Street, NW and converting the existing entrance to a one-lane, two-way (ingress/egress) ramp; installing traffic signals for vehicles exiting the MLK Library Garage; installing traffic signals along eastbound G Place, NW; and converting G Place, NW from 10th Street, NW to the Alley (adjacent to the existing MLK Library Garage entrance), to two-lane, two-way traffic flow. Other improvements include the removal of the "bump out" between the alley and the Church garage, moving the north wall (while not impacting utilities) to provide better alignment for ingress and egress of MLK Library garage and modifying the concrete nose to the MLK garage to provide better ingress and egress.

To collect the volume data, road tube count machines were used. Tubes were installed within the MLK Library Garage, along the ingress and egress ramps. An analysis using traffic software (Synchro) was performed to determine potential impacts associated with change in traffic movements at the MLK Library Garage access. The data collected is included as an attachment to this white paper. Observations and a general summary of the traffic analysis are included below.

AM and PM peak traffic times are determined by the four consecutive 15-minute periods where the traffic volumes are the highest recorded. According to the data collected, the AM and PM peak traffic times varied slightly. For each day of the week, AM peak times generally occurred from 7:45am-08:45am, 8:00am-9:00am, 8:15am-9:15am, 8:30am-9:30am, or 8:45am-9:45am. Similarly, the PM peak times occurred from 4:15pm-5:15pm, 4:45pm-5:45pm, 5:00pm-6:00pm, or 5:15pm-6:15pm. For the purpose of this paper, the highest volume and the correlating AM or PM peak time was used to assess the potential impacts on the road network in the identified area.

The target peak times and volumes used were 8:00am-9:00am for the AM peak and 4:15pm-5:15pm (44 vehicles) for the PM peak.

AM Peak Observations

During the AM peak (8:00am-9:00am), twenty-four (24) vehicles (six vehicles every 15 minutes) were recorded entering the MLK Library Garage and four (4) vehicles were recorded exiting the MLK Library Garage. According to the previous count data collected on April 5, 2016, 93 vehicles access G Place, NW during the AM peak, with 2 vehicles exiting the Church Garage and 10 vehicles exiting the Secret Service Garage during the AM peak. Consideration of the volumes exiting the MLK Library, Church, and Secret Service Garages is important because it represents the approach volumes that could affect roadway network operations adjacent to the MLK Library, due to the introduction of the traffic signal associated with vehicles exiting the MLK Library Garage under Alternate 7A.

Based on the volumes collected on April 5, 2016, it appears that there will be a low number of vehicle conflicts associated with the signal during the AM peak. The Synchro analysis shows a reasonable operation along G Place, NW, but software limitations do not allow the factoring in of the few vehicles entering G Place, NW from the Church Garage or Secret Service Garage. This is due to the fact that those garage-related movements are not signal controlled and cannot be programed into the Synchro program.

PM Peak Observations

During the PM peak (4:15pm-5:15pm), forty-four (44) vehicles (11 vehicles every 15 minutes) and no vehicles were recorded entering the MLK Library Garage, as part of the May 2, 2016 PM counts. According to the previous count data collected on April 5, 2016, 23 vehicles accessed G Place, NW during the PM peak, 31 vehicles accessed G Place, NW, with 30 vehicles exiting the Church Garage and 188 exiting the Secret Service Garage. From the April 5, 2016 counts, it was noted that three (3) vehicles from the Secret Service garage proceeded westbound (the wrong way) along G Place from 4:15pm to 5:15pm.

The existing geometry of G Place, NW, between 10th Street, NW and Church/Secret Service garages, allows for the storage of approximately four (4) vehicles. If the egress ramp of the MLK Library Garage was closed, the queuing of vehicles beyond this number would block the Church and Secret Service garages and result in queuing within these facilities, especially considering the fact that G Place, NW and 10th Street, NW is stop-controlled. With this control, vehicles would have to rely on gaps in traffic along 10th Street, NW to exit G Place, NW.

During the PM peak, some traffic from the Church and Secret Service garages is anticipated to exit their respective garages and travel westbound along G Place. These turning vehicles from the Church and Secret Service Garages could add to the queues along eastbound and westbound G Place, NW and preclude the exiting MLK Library garage traffic from accessing G Place, NW This would create queues and delays in the MLK Library Garage. It should be noted that the traffic model showed acceptable operation with no queuing. Again, software limitations

do not allow consideration of traffic exiting the Church and Secret Service Garages in determining the signal operations.

Mitigation

In order to minimize conflicts between the MLK Library, Church, and Secret Service Garages movements, it may be necessary to install queue detection along westbound G Place, NW to ensure that the traffic signal in the MLK Library Garage does not release additional vehicles until queue storage is available. Also, other operational controls may be necessary to stop traffic from the Secret Service and Church Garages from exiting and traveling eastbound along G Place, NW during the period when MLK Library Garage traffic has a green indication.

To reduce queuing impacts during the PM peak period, particularly for vehicles exiting the Secret Service Garage, time must be allocated in the signal programming to allow the vehicles from the Church and Secret Service Garages to exit their respective garages.

Tube Count Variances

Finally, a margin of data error is assumed with regard to vehicles entering and exiting the Church and Secret Service parking garages. This margin of error is associated with the tube count methodology and the location/orientation of the garage accesses. Installation of the tube counts parallel to G Place, NW and at the mouth of Church and Secret Service Garages resulted in multiple "hits", due to vehicle movements and turns. The margin of error count means that higher volumes were recorded by the tube count machines than actually occurred.

An indication of this variance can be seen from the April 5, 2016 AM peak (8:00am-9:00am) counts. The investigation recorded 93 vehicles accessing G Place, NW from 10th Street, NW. However the entry counts for the Church, Secret Service and MLK Library Garages were recorded as 78, 112, and 38, respectively.

The case also exists for exiting traffic from the MLK Library Garage, based on counts obtained on May 4, 2016. The tube count recorded 43 vehicles exiting the MLK Library Garage during peak hour times between 4:45pm-5:45pm. However, a manual count was conducted between 4:45pm-5:45pm on 5-4-2016 that showed 16 vehicles leaving the MLK Library Garage. This deviation is an indication of "multiple" hits on the exiting tube.

Summary

Evaluating both the April 5, 2016 and May 2, 2016 through May 9, 2016 data shows that the volumes recorded by tube counts are, in many cases, higher than what exists on the roadway network. Although the volumes obtained are higher than those volumes anticipated (due to the data variance), these higher volumes have been incorporated into the analysis model and show acceptable network operation. This acceptable operation demonstrated by the analysis model does not include the potential effect of the signalization on the exiting vehicles from the Church or

Secret Service Garages, especially during the PM peak. This is due to the software's inability to simultaneously evaluate signalized and unsignalized approaches.

Controlling traffic at the MLK Library Garage egress to G Place, NW would operate similar to an intersection with driveway connections. However, the additional consideration of the two garages/entrances adds complexity to traffic operations, especially considering the volumes expected during the PM peak. Adding signal time to ensure that all vehicles clear the MLK Library Garage exit (are flushed out of that approach) may be considered to address this queuing.

While the traffic analysis indicates an acceptable operation, the length of the signal clearance (flush) time for MLK Library Garage ingress/egress traffic results in an inefficient signal. This means that an inordinate amount of clearance time will be given for a signal and long-duration movement, while vehicles on other approaches are stopped and queues are potentially increasing along G Place, NW and within the Church and Secret Service Garages. .

Additionally, queuing may occur along westbound G Place, NW, beginning at 10th Street, NW. The queues would result from vehicle stacking along G Place, NW at the stop controlled intersection. These vehicles would have to wait for gaps in southbound 10th Street, NW traffic and the resulting queues could inhibit MLK Library Garage traffic from exiting the garage.

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Traffic Data Review Related to MLK Library Garage Outbound Traffic – Alternate 7A

April 13, 2016

The District of Columbia Public Library (DCPL) is planning improvements to the Martin Luther King, Jr. (MLK) Library. As part of the transportation planning for these improvements, Stantec Consulting Services, Inc. (Stantec) was directed to collect 24-hour traffic volume counts on 4-5-2016 along G Place, along the MLK Library Garage ingress and egress ramps, and outside the "Church" parking garage and the Secret Service garage, located immediately west and north of the MLK Library garage entrance, respectively.

Additionally, these volumes were considered in the context of an alternate (Alternate 7A) that considers modifications to the roadway network. The modifications include closing the eastbound egress ramp from the MLK garage, installing traffic signals for vehicle exiting the garage, installing traffic signals along eastbound G Place, and converting G Place, from 10th Street to the Alley, to two-lane, two-way traffic flow. Other improvements include the removal of the "bump out" between the alley and the Church garage, moving the north wall (while not impacting utilities) to provide better alignment for ingress and egress of MLK Library garage and modifying the concrete nose to the MLK garage to provide better ingress and egress.

To collect the volume data, road tube count machines were used. Tubes were installed across G Place, to the west of the MLK Library, Secret Service and Church garages, at the Secret Service and Church garages, and within the MLK garage, along the ingress and egress ramps. It must be noted that a comprehensive analysis using traffic software was not performed to determine the impacts associated with the traffic from the three garages mentioned. However, a review of the volumes as it relates to the roadway network anticipated to be affected by the change in operations was conducted.

AM Peak Observations

During the AM peak (7:00am-8:00am), ten (10) vehicles (three vehicles every 15 minutes) were recorded exiting the MLK Library garage. This figure is important because it shows that a conflict exists between vehicles exiting the MLK Library garage and the vehicles accessing G Place from 9th Street and the Church and Secret Services garages. According to the count data, 136 vehicles access G Place during the AM peak, with 3 vehicles per hour exiting the Church garage and 5 vehicles per hour exiting the Secret Service garage.

It must be noted that 30 vehicles enter the MLK Garage, which means that 106 vehicles are going to the Church garage, Secret Service garage or to some point after the subject intersection.

Based on these volumes, it is difficult to assess the operational impacts associated with Alternate 7A. This is due to the fact that it is difficult to speculate on how many vehicles exiting the Church or Secret Service garages will choose to use westbound G Place. This vehicle choice could lead to queuing along westbound G Place that impacts the ability of motorists exiting the MLK Library garage to use G Place, resulting in queues within the MLK Library garage and on the outbound

ramp. These queues would also inhibit vehicles from entering the MLK Library garage, causing gridlock to the roadway network in this area.

PM Peak Observations

It has been determined that the critical assessment of operations must occur during the PM peak, when it is anticipated that the majority of motorists will exit the MLK Library garage. During the PM peak, 36 vehicles (or nine vehicles every 15 minutes) will travel eastbound along G place. Fifteen of these vehicles will enter the Church garage (12), the Secret Service garage (1), or the MLK Library garage. The remaining 21 vehicles have a destination beyond the Alley. Based on the volume count information collected, the peak hour for traffic exiting the MLK Library garage is from 4:45pm to 5:45pm and 43 vehicles were recorded exiting the MLK Library garage during this time. This amounts to approximately 11 vehicles every 15 minutes.

The existing geometry of G Place, between 10th Street and Church/Secret Service garages, allows for the storage of approximately four (4) vehicles. The queuing of vehicles beyond this number would block the Church and Secret Service garages and result in queuing within these facilities, especially considering the fact that G Place and 10th Street is stop-controlled. With this control, vehicles must rely on gaps in traffic along 10th Street to exit G Place.

During the PM peak, some traffic from the Church and Secret Service garages is anticipated to exit their respective garages and travel westbound along G Place. These turning vehicles could add to the queues along eastbound and westbound G Place and preclude exiting MLK Library garage traffic from accessing G Place, creating queues and delays in the MLK Library parking garage.

Traffic volumes were also collected at the Church/Secret Service garages. Tube counters were installed along G Place, perpendicular to curbs/driveways. It was noted that nine (9) vehicles (2 every 15 minutes) from the Secret Service garage proceeded westbound (the wrong way) along G Place from 4:45pm to 5:45pm. Additionally, during the afternoon peak period, it is anticipated that approximately 4 vehicles will exit the Church garage and 58 vehicles will exit the Secret Service garage every 15 minutes. To reduce queuing impacts during this peak period, particularly for vehicles exiting the Secret Service, time must be allocated in the signal programming to allow to the Church and Secret Service vehicles to exit their respective garages.

In order to minimize conflicts between these movements, it may be necessary to install queue detection along westbound G Place to ensure that the traffic signal in the MLK garage does not release additional vehicles until queue storage is available. Also, other operational controls may be necessary to stop Secret Service and Church garage traffic from exiting and traveling eastbound along G Place during the period when MLK Library garage traffic has a green indication.

Tube Count Variances

Finally, a margin of data error is assumed with regard to vehicles entering and exiting the Church and Secret Service parking garages. This margin of error is associated with the tube count methodology and the location/orientation of the garage accesses. Installation of the tube counts parallel to G Place and at the mouth of Church and Secret Service garages resulted in multiple "hits", due to vehicle movements and turns. The margin of error count means that higher volumes were recorded by the tube count machines than actually occurred.

An indication of this variance can be seen from the AM counts. The investigation recorded 91 vehicles accessing G Place from 10th Street. However the entry counts for the Church garage, Secret Service Garage and MLK Library Garage were recorded as 91, 119, and 40, respectively.

Considering the confidence in the volumes recorded for the MLK Library garage, with the tubes placed parallel to traffic with a minimal expectation of error, it can be inferred that approximately 51 vehicles accessed either the Church garage, the Secret Service garage, or proceeded with a destination beyond the confluence of these garage entrances.

Summary

A review of the data collected indicates that traffic operational impacts during the AM peak could be significant, based on the fact that queuing along westbound G Place could result in the inability of exiting MLK Library garage traffic from accessing G Place. These queues on the outbound MLK Library ramp would restrict the ability of inbound MLK Library traffic from accessing the garage, creating a gridlock situation on this part of the roadway network.

Controlling traffic at the MLK Library egress to G Place only would operate similar to an intersection with a side street. However, the additional consideration of the two garages adds complexity to traffic controls. Because of the added volume of traffic exiting the garages, additional controls that include signing or signalization for the Church and Secret Service garages, as well as the inclusion of signing controls along eastbound G Place to eliminate queue-related obstructions (garage blocking) at the Church and Secret Service garages, should be considered. These controls have not been evaluated.

There are operational challenges associated with clearing the MLK Library garage during the peak period, while allowing egress for the Church and Secret Service garages. These challenges include queue storage along G Place, exit controls for the Church and Secret Service garages, signal timing that allows MLK Library garage traffic appropriate egress, while not introducing queues/delays along eastbound G Place that extend beyond the 10th Street intersection, and reduces the queuing of traffic within the MLK Library garage for vehicles seeking to exit the garage during the peak time. This operation is compounded by the fact that a "flush" for traffic exiting the MLK Library garage ramp is required to ensure the ramp is clear of all exiting traffic so that traffic entering the MLK Library garage can be accommodated. It must be noted that his traffic flush could be ineffective if queues exist along westbound G Place. As noted earlier,

queuing along G Place could lead to queuing on the outbound ramp from the MLK Library garage, potentially causing gridlock on the subject roadway network.

The impacts associated with these challenges may be able to be reduced through signal timing adjustments, but the primary issues revolve around the fact that the alternate design does not support the anticipated traffic demand during the PM peak and may be problematic for the AM peak, as well.

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Stantec

6110 Frost Place
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March 25, 2016

Mr. Steve Jensen
Martinez + Johnson Architecture
1412 Eye Street, NW
Washington, DC 20005

Dear Mr. Jensen,

Reference: Site Access Alternatives for the Martin Luther King Jr. Memorial Library Rehabilitation and Modernization Project

Stantec Consulting Services Inc (Stantec) has analyzed several different alternatives for access to the Martin Luther King, Jr. Memorial Library. Each alternative is presented below and, with the exception of Alternate 1: No-Build, is diagrammed in the attachments accompanying this letter. The alternatives that have been considered are:

1. **No-Build**
   - Ingress ramp at G Place
   - Egress Ramp at 9th Street
   - One way, eastbound traffic on G Place

   Pros
   - Requires no changes to curbs or traffic patterns
   - Works with the City's funding and budget constraints

   Cons
   - Constrained turn/curb radius entering the garage from G Place and Alley

2. **Alternate 2: Two-way Ramp into Garage**
   - Eliminates egress ramp to 9th Street
   - One way, eastbound traffic on G Place
   - U-turn movement for exiting vehicles from garage to eastbound G Place
     - Variations include
       - "Right-lane" exit
       - "Left-lane" exit
   - Egress Ramp modifications
     - Wall cut-back
     - Ramp grade modifications may be necessary
   - Metered parking space removal on G Place (to accommodate U-turns)

   Pros
   - Allows for expanded use of 9th Street MLK Jr. Library space for Café Plaza

Cons

- U-turn traffic egress movement that requires parking space relocations or traffic direction changes on the garage ramp
- May require construction to ramp wall near entrance/exit and ramp grade modifications
- Three garage ramps are within 20-foot proximity. Reconfiguring the garage entry bi-directional traffic flow would likely increase queues along G Place during peak hours.

Reasons for Dismissal

- Considered to be a cost prohibitive alternative. The ramps do not meet current code requirements and widening, regrading and restructuring of the west ramp to facilitate a two-way ramp has significant costs associated with it. Costs associated with the curb-cut back to improve ingress and egress, necessitate the removal and relocation of utility boxes and vaults. It also requires work in the public space to get grading to work for pedestrians and meet ADA accessibility requirements. Closing of the east ramp has significant costs associated with it for structure and materials.
- There were concerns that the sightlines for vehicles egressing the garage were not great
- There were concerns about potential conflict between vehicles turning in and those turning out
- There was concern that having a third garage entrance ramp that accommodates both ingress and egress would add to the congestion where Secret Service and the Church garage entrances are located. This could result in back up onto 10th Street
- To make U-turn secret service would lose one parking space
- The reconfigured, regraded ramp to meet code requirements and clearances necessitates the loading dock shifting one bay over to the east. Also that the dock would not be ramped down but be at grade level. Lack of symmetry has a ripple effect on the Miesian symmetry and impact on overall planning and programming of spaces on the interior. The at grade loading proposed as part of this alternative did not meet DCPL requirements, they prefer a covered, ramped loading bays.

3. Alternate 3: Two-way Ramp into Garage/WB G Place Traffic

- Eliminate egress ramp to 9th Street
- One way, westbound traffic on G Place
- Traffic/parking reorientation
- Parking on opposite side of street
- New, permanent traffic pattern

Pros

- Allows for the expanded use of 9th Street MLK Jr. Library space for Café Plaza

Cons

- Change in traffic pattern along G Place, impacting 9th and 10th Street (until traffic adjusts)
- Change in parking pattern along G Place, that includes the elimination of spaces
- U-turn traffic ingress movement that requires parking space relocations or traffic direction changes on the garage ramp
- May require construction to ramp wall near entrance/exit and ramp grade modifications
- Three garage ramps are within 20-foot proximity. Reconfiguring the garage entry bi-directional traffic flow would likely increase queues along G Place during peak hours.

Reasons for Dismissal

- Considered to be a cost prohibitive alternative. The ramps do not meet current code requirements and widening, regrading and restructuring of the west ramp to facilitate a two-way ramp has significant costs associated with it. Costs associated with the curb-cut back to improve ingress and egress, necessitate the removal and relocation of utility boxes and vaults. It also requires work in the public space to get grading to work for pedestrians and meet ADA accessibility requirements. Closing of the east ramp has significant costs associated with it for structure and materials.
- Reversing the parking from north side to south side of G Place results in loss of 5 parking spaces and or negotiation with the US Secret Service and daily enforcement of parking reduction
- To meet DCPL loading dock requirements for a covered, sloped ramp and to avoid the potential for triggering zoning waivers and BZA approval there is a time and zoning attorney impact. DCPL direction to retain footprint of existing loading dock with minor modifications.

4. **Alternate 4: Two-way Ramp into Garage/Partial Two-way Traffic on G Place**

- Eliminate egress ramp to 9th Street
- Two way traffic on G Place, from 10th Street to Alley
- One way, eastbound traffic on G Place, from Alley to 9th Street
- Traffic reorientation from 10th Street to Alley (Secret Service mods)

Pros

- Allows for the expanded use of 9th Street, MLK Jr. Library space for Café Plaza
- Eliminates the need for U-turn onto G Place from garage

Cons

- Change in traffic pattern along G Place (until traffic adjusts)
- Creates traffic weave/conflict at garage ingress/egress
- Eliminates parking spaces used by Secret Service
- May require construction to ramp wall near entrance/exit and ramp grade modifications

Reasons for Dismissal

- Considered to be a cost prohibitive alternative. The ramps do not meet current code requirements and widening, regrading and restructuring of the west ramp to facilitate a two-way ramp has significant costs associated with it. Costs associated with the curb-cut back to improve ingress and egress, necessitate the removal and relocation of utility boxes and vaults. It also requires work in the public space to get grading to work for pedestrians and meet ADA accessibility requirements. Closing of the east ramp has significant costs associated with it for structure and materials.
- The reconfigured, regraded ramp to meet code requirements and clearances necessitates the loading dock shifting one bay over to the east. Lack of symmetry has a ripple effect on the Miesian symmetry and impact on overall planning and programming of spaces on the interior.
- This alternative explored below grade loading. Below grade loading dock scheme did not meet DCPL operational requirements. Requested return to above grade, covered loading at the first floor level. DCPL had concerns about congestion with truck and cars using the one ramp in and out.
- The below grade loading was also considered cost prohibitive – restructured ramp and reconfigured Level B.
- DCPL direction following these studies was to maintaining the existing loading footprint so as not to potentially trigger the necessity for zoning waivers and having to get BZA approval.

5. **Alternate 5: Two-way Ramp into Garage/Alley Access**

- Garage egress variations:
- U-turning vehicles to G Place
- Left into Alley, leading to G Street
- Garage egress improvements for turning vehicles
- Demo wall at south end of Alley
- Variations include:
  - One-way, southbound Alley traffic flow
  - One-way, northbound Alley traffic flow
- Curb/pedestrian improvements to Alley/G Street intersection

Pros

- Allows use of 9th Street MLK Jr. Library space for Café Plaza
- Provides access to (southbound Alley) or from (northbound Alley) G Street
- Removal of wall at south end of Alley that segregates MLK Jr. Library space

Cons

- Requires use agreement with First Congregational UCC
- Adds pedestrian conflict at Alley and G Street intersection
- May require U-turn traffic ingress movement that requires parking space relocations or traffic direction changes on the garage ramp
- May require construction to ramp wall near entrance/exit and ramp grade modifications

Reasons for Dismissal

- Considered to be a cost prohibitive alternative. The ramps do not meet current code requirements and widening, regrading and restructuring of the west ramp to facilitate a two-way ramp has significant costs associated with it. Costs associated with the curb-cut back to improve ingress and egress, necessitate the removal and relocation of utility boxes and vaults. It also requires work in the public space to get grading to work for pedestrians and meet ADA accessibility requirements. Closing of the east ramp has significant costs associated with it for structure and materials.
- The reconfigured, regraded ramp to meet code requirements and clearances, necessitates the loading dock shifting one bay over to the east. Lack of symmetry has a ripple effect on the Miesian symmetry and impact on overall planning and programming of spaces on the interior.
- Alley access alleviated the U-turn sightline issues and the congestion on G Place. The church shares the alley with DCPL and was not in favor of opening up the alley. The church believes opening up the alley will have an impact on how they access their loading area. The church also expressed concerns that opening up the alley would create security issues and concerns with people loitering in the alley.

6. Alternate 6: Archives Addition to Parking Garage

- Garage egress variations:
  - U-turning vehicles to G Place
- Garage egress improvements for turning vehicles

Pros

- Allows use of 9th Street MLK Jr. Library space for Café Plaza

Cons

- U-turn traffic egress movement that requires parking space relocations or traffic direction changes on the garage ramp
- May require construction to ramp wall near entrance/exit and ramp grade modifications
- Three garage ramps are within 20-foot proximity. Reconfiguring the garage entry bi-directional traffic flow would likely increase queues along G Place during peak hours.

Reasons for Dismissal

- The addition of the Archives to Level B necessitates the elimination of all parking at that level with the exception of 15 DCPL fleet vehicles. The team studied keeping the west ramp, as currently configured, and utilizing it for ingress and egress for the fleet vehicles. DCPL was not concerned about congestion or sightlines due to the limited number of fleet vehicles using the ramp and that the drivers would have knowledge of how the ramp worked. This scheme had minimal costs associated with it, which was also deemed favorable by DCPL and Archives.
- When DCPL was given notice that the DC Archives was not going to be collocating at the library, Level B reverted to being a parking level for the library. The narrow, single ingress and egress ramp was deemed unacceptable to accommodate approximately 100 cars parking on that level. Due to cost considerations and the explorations undertaken in Alternates 2 through 5 DCPL elected to maintain the two existing ramps. DCPL believes that maintaining the current vehicular circulation will have the least impact on the adjacent buildings and streets, and will provide a safer and more efficient approach for DCPL staff and fleet parking at the building.

7. Alternate 7: Zoning Variance – Signal-Controlled, Existing Width Garage Ramp Ingress/Egress

- Eliminate egress ramp to 9th Street
- One way traffic on G Place, from 10th Street to Alley
- One way, eastbound traffic on G Place, from Alley to 9th Street
- Traffic reorientation from 10th Street to Alley (Secret Service mods)

Pros

- Allows for the expanded use of 9th Street, MLK Jr. Library space for Café Plaza
- Allows single vehicle on ramp during ingress/egress
- Potentially lower cost option to control traffic

Cons

- Potential for significant vehicle queues along G Place and in garage due to proximity to two other existing parking garage entrance / exits
- Would require a U-turn movement onto G Place from the garage
- Signal/signing may create confusion for eastbound thru traffic and pose safety hazards regarding the signal presence and driver expectation along G Place
- Eliminates parking spaces used by Secret Service, requires DCPL to police use of those spaces
- May require construction of ramp wall near entrance/exit and ramp grade modification at the G Place intersection with the Alley for garage ingress/egress

Reasons for Dismissal

- Functionality - since the garage is remaining at full capacity (100 vehicles) rather than being reduced to the 12 to 15 anticipated when the DC Archives was to be collocate at the Library, there is a need to widen the ramp so that vehicles can come and go all day without being queued, either out to 10th street (as they try to get in), or into the garage (as people try to get out). There are currently two other entrances / exits to parking garages within ~20' of the western ramp entrance (the Church building across the alley (733 10th St NW) and the Secret Service across G Place (950 H Street)). The combined parking capacity of these three garages totals approximately 325 parking spots, lack of functionality and vehicle queuing is already a concern.
- Concern that even if the ramp be left its existing width, it would still need to be modified to meet code and improved ingress from and egress to G Place due to inability for vehicles exiting western ramp make the turn on G Place to go east.
- Concerns that the signal and signing may create confusion and cause problems for eastbound through traffic on G Place

During the course of alternate development, it was also determined that the use of the Alley between the MLK Jr. Library and the First Congregational UCC was not feasible. This variation is no longer under consideration for garage ingress/egress movements associated with the project. Stantec has coordinated the development of some of the alternatives shown with the District Department of Transportation (DDOT). Stantec understands that additional coordination with the DDOT and the National Capital Planning Commission (NCPC) is anticipated following the submission of these alternates.

Regards,
Stantec Consulting Service Inc.

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