NEW CARROLLTON AND LANDOVER YARDS IMPROVEMENTS

TRANSPORTATION TECHNICAL MEMORANDUM

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
OCTOBER 2014

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1.0 INTRODUCTION

The Washington Area Metropolitan Transit Authority (WMATA), in coordination with the Federal Transit Administration (FTA), is preparing an Environmental Assessment (EA) for the proposed New Carrollton Yard and Landover Yard Improvements Project ("the project"). The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) and other federal, state and local laws and regulations.

This technical memorandum identifies the potential transportation effects of the No Build and Build Alternative for the project. The memorandum describes the following:

- Project Alternatives
- Methodology
- Existing Conditions
- Environmental Consequences

The findings of this analysis will be incorporated into the EA.

1.1 Project Purpose and Need

The purpose of the project is to provide additional storage capacity and re-organize certain track maintenance functions at WMATA's rail yards.

1.2 Project Alternatives

The EA for the project will evaluate a No Build Alternative and a single Build Alternative. The Build Alternative includes the same area improvements as the No Build Alternative in addition to construction and operation of the project.

1.2.1 No Build Alternative

The No Build Alternative assumes that operations at New Carrollton Yard would continue, and that no development would occur at the Landover site. In terms of the broader regional transportation network, the No Build Alternative is defined as the existing highway and transit network and committed transportation improvements from the National Capital Region Transportation Planning Board's Financially Constrained Long Range Plan (CLRP). No planned improvements would occur within the project area at New Carrollton Yard or at the Landover site.

Under the No Build Alternative, WMATA would not be able to provide the necessary service and infrastructure improvements as outlined in the Rail Fleet Management Plan (RFMP), Momentum, or the Eight-Car Train Implementation Plan.

1.2.2 Build Alternative

The Build Alternative consists of the expansion of rail car storage capacity at New Carrollton Yard and construction of a new rail yard adjacent to and east of the Landover Metrorail Station along with a new parking structure. The proposed Landover Yard would provide storage and maintenance facilities for WMATA's CTEM division and TRST, which currently operate at New Carrollton Yard. As part of the project, the CTEM and TRST functions would move from New Carrollton Yard to Landover Yard. The construction of CTEM and TRST facilities at Landover Yard would precede the demolition of existing CTEM and TRST facilities at New Carrollton Yard. Once CTEM and TRST functions are moved to Landover Yard, the resulting space at New Carrollton Yard would be used to complete the expansion of facilities for rail car storage and equipment storage. The improvements at each site are described individually below. The EA assumes the project would be operational by 2018 to meet Metrorail system vehicle fleet expansion requirements needed by 2020.

The Build Alternative also assumes the planned regional transportation improvements contained in the CLRP that are part of the No Build Alternative.

New Carrollton Yard Improvements

The existing New Carrollton rail yard ("New Carrollton Yard") is approximately 36.8-acres in size and is located at 4440 Garden City Drive in Landover, Maryland. The Build Alternative proposes to expand capacity at New Carrollton Yard through the construction of an additional 120 rail car storage spaces and support facilities. The existing Service and Inspection (S&I) and Yard Control Tower functions would remain unchanged.

The following facilities would be constructed within and adjacent to the existing New Carrollton Yard if the Build Alternative is implemented:

- Fifteen storage tracks accommodating 120 rail cars:
  - Eight storage tracks accommodating 64 rail cars in the northwest corner of the yard (referred to as the "northwest storage tracks");
  - Seven storage tracks accommodating 56 rail cars in the northeast corner of the yard (referred to as the "northeast storage tracks");
  - Lead service tracks for the storage areas;
- One contractor storage track with access road in the southeast corner of the yard;
- Two maintenance-of-way (MOW) tracks;
- Reconfigured and expanded employee surface parking in the northern and eastern sections of the yard;
- New operations platform and a pedestrian bridge (connecting to the employee parking lot via an elevator/stair tower) serving the northwest storage tracks;
- Relocation of the existing control tower from the center of the yard to the top of the elevator/stair tower at the location of the pedestrian bridge. The relocated tower would be approximately 40 feet high;
- New operations building for the northeast storage tracks;
- Conversion of the existing Engineering Campaign building to a S&I building (building was originally built as a S&I building); and
- Conversion of an existing operations building to an Automatic Train Control (ATC) building and training facility.

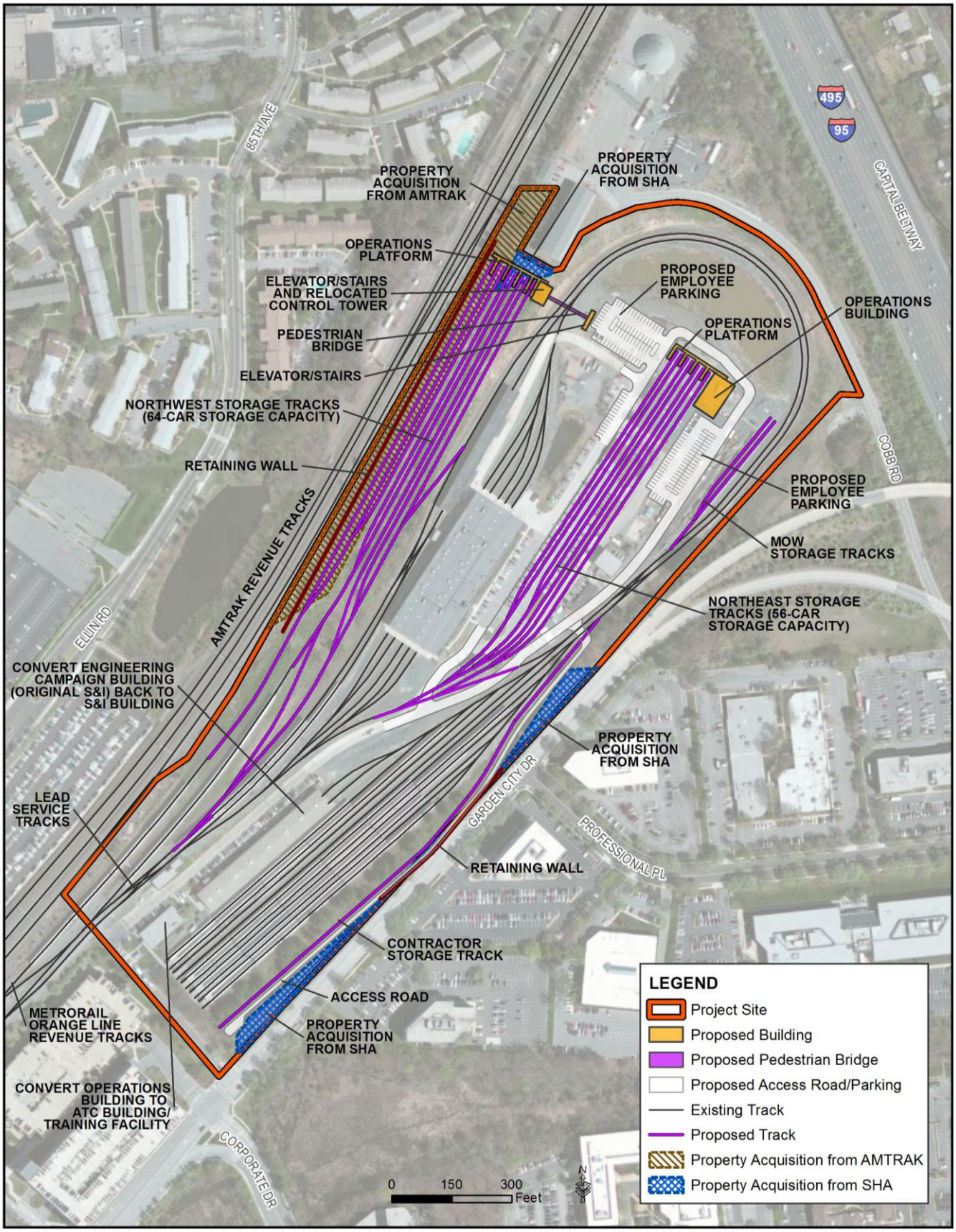
WMATA would acquire adjacent property from Amtrak and Maryland Highway Administration (SHA) to accommodate the rail yard expansion. New storage tracks would be constructed within the existing rail yard, as well as on the Amtrak and SHA properties. The expanded facility would be approximately 39.5-acres in size. A project concept is provided in **Figure 1-1**. The total number of existing and future employees at New Carrollton Yard is summarized in **Table 1-1**.

Table 1-1: Existing and Future New Carrollton Yard Employees

Activity	Existing Employees (2014)[a]	Future Employees (2025)[a]	Hours of Operation[a]
Metrorail Train Operators	83	131	Weekdays: 4:00am-1:00am Weekends: 6:00am-4:00am
S&I[b]	173	251	24-hour operations
Yard Control Tower	6	6	24-hour operations
CTEM	30	0[c]	24-hour operations
TRST	78	0[c]	24-hour operations
Total	370	388	

[a]Employee estimates and hours of operation provided by WMATA Space Needs Program. Hours of operations are assumed to be the same under the existing and future operations.
[b]S&I employee estimates include employees from Car Maintenance (CMNT) and Automatic Train Control (ATC) departments.
[c]Future employees would move to CTEM and TRST facilities at Landover Yard.

Figure 1-1: New Carrollton Yard Project Concept



Proposed Landover Yard

The Landover Yard site, currently owned by WMATA, is approximately 18.7-acres in size and is located at 3000 Pennsy Drive in Hyattsville, Maryland. Currently, the site is undeveloped, except for the two southern tracts, which contain surface Park & Ride lots serving the adjacent Landover Metrorail Station. The Build Alternative consists of the construction of a new rail yard, commuter parking garage, and support facilities for CTEM and TRST at the site. The new commuter parking garage would replace all Metrorail surface Park & Ride spaces removed for the project. Existing CTEM and TRST facilities would be moved from their current location at New Carrollton Yard to the proposed Landover Yard. Track maintenance vehicles of various sizes and function would be stored in and operate from the rail yard. No Metrorail passenger rail cars (revenue vehicles) would be stored at Landover Yard. Approximately 190 employees would be based at Landover Yard.

The following facilities would be constructed at Landover Yard if the Build Alternative is implemented:

- Loop track around the southern portion of the rail yard;
- Lead and tail tracks for the rail yard;
- New CTEM and TRST building and eleven storage tracks for track equipment and maintenance vehicles;
- Six-level commuter Park & Ride facility, consisting of 848-spaces to replace the surface spaces displaced by construction. The structure would be constructed on an existing commuter lot, south of the rail yard and separated from the new yard by the Landover Metro Access Road.
- Employee surface parking lot and delivery area in the southern portion of the proposed yard;
- New track crossover on the Metrorail revenue tracks;
- Retaining wall in the southwest corner would be constructed to accommodate the bypass track; and
- Stormwater management area at the northern end of the rail yard.

No property acquisition would be necessary for the project, as the rail yard would be built on land owned by WMATA.

See **Figure 1-2** for the project concept and **Table 1-2** for a summary of existing and future employees at the proposed rail yard.

Table 1-2: Proposed Landover Yard Employees

Activity	Existing Employees (2014)[a]	Future Employees (2025)[a]	Hours of Operation[a]
CTEM	0 (30 at New Carrollton Yard)[b]	79	24-hour operations
TRST	0 (78 at New Carrollton Yard)[b]	111	24-hour operations
Total	0 (108 at New Carrollton Yard)[b]	190	

[a] Employee estimates and hours of operation provided by WMATA Space Needs Program.
[b] Existing employees at CTEM and TRST facilities at New Carrollton Yard, who would be transferred to the new Landover Yard. Currently no employees are based at the Landover project site.

Figure 1-2: Proposed Landover Yard Project Concept

2.0 METHODOLOGY

The methodology of this traffic impact study is based on the *Transportation Review Guidelines 2012* developed by Prince George's County Planning Department and the Maryland-National Capital Park and Planning Commission (M-NCPCC), as well as traffic impact study scoping meetings with M-NCPPC staff on January 31 and April 21, 2014.

2.1 Data Collection

To evaluate the impact of site generated traffic on the roadway network, traffic field data including turning movement counts and the existing roadway conditions, were gathered and reviewed. Turning movement counts at New Carrollton and Landover were collected on Tuesday, February 25, 2014 and Wednesday April 30, 2014, respectively, during the AM peak period (6:00–10:00 am) and PM peak period (3:00–7:00 pm). The traffic data used for this analysis is provided in **Appendix B-1** of this report.

The study intersections include the access intersections to the New Carrollton and Landover Yards, and adjacent intersections. **Figure 2-1** shows the study area intersections. The seven study area intersections with the traffic control types are listed below:

New Carrollton Yard Study Area Intersections

1. Corporate Drive and Pennsy Drive (signalized)
2. Garden City Drive and Corporate Drive (signalized)
3. Garden City Drive and Metro Entrance (signalized)
4. Garden City Drive and Metro Exit (unsignalized)

Landover Yard Study Area Intersections

1. Pennsy Drive and Metro Access Road East (unsignalized)
2. Pennsy Drive and Metro Access Road West (unsignalized)
3. Landover Road and Old Landover Road (signalized)

The highest hourly volumes within the peak period were used for the traffic impact analysis. The data indicates that AM peak hour is between 7:15-8:15 am for both sites, and PM peak hour is between 5:00-6:00 pm at New Carrollton Yard and between 5:15-6:15 pm at Landover. **Figure 2-2** shows the AM and PM turning movement counts at study area intersections. See **Appendix B-1** for the detailed traffic counts.

For Landover, parking utilization data was gathered from WMATA to evaluate temporary and permanent parking impacts due to the removal and replacement of surface parking spaces.

2.2 Traffic Conditions

Traffic conditions were assessed for both signalized and unsignalized intersections. The Critical Lane Volume (CLV) method was used to measure the Level-of-Service (LOS) at signalized intersections. The CLV method was used to understand the capacity of an intersection by aggregating the critical traffic volumes of critical movements. The basic data required for the analysis includes hourly traffic volumes and intersection geometrics. **Table 2-1** defines the LOS corresponding to the computed CLV.

Figure 2-1: New Carrollton and Landover Yards Study Intersections

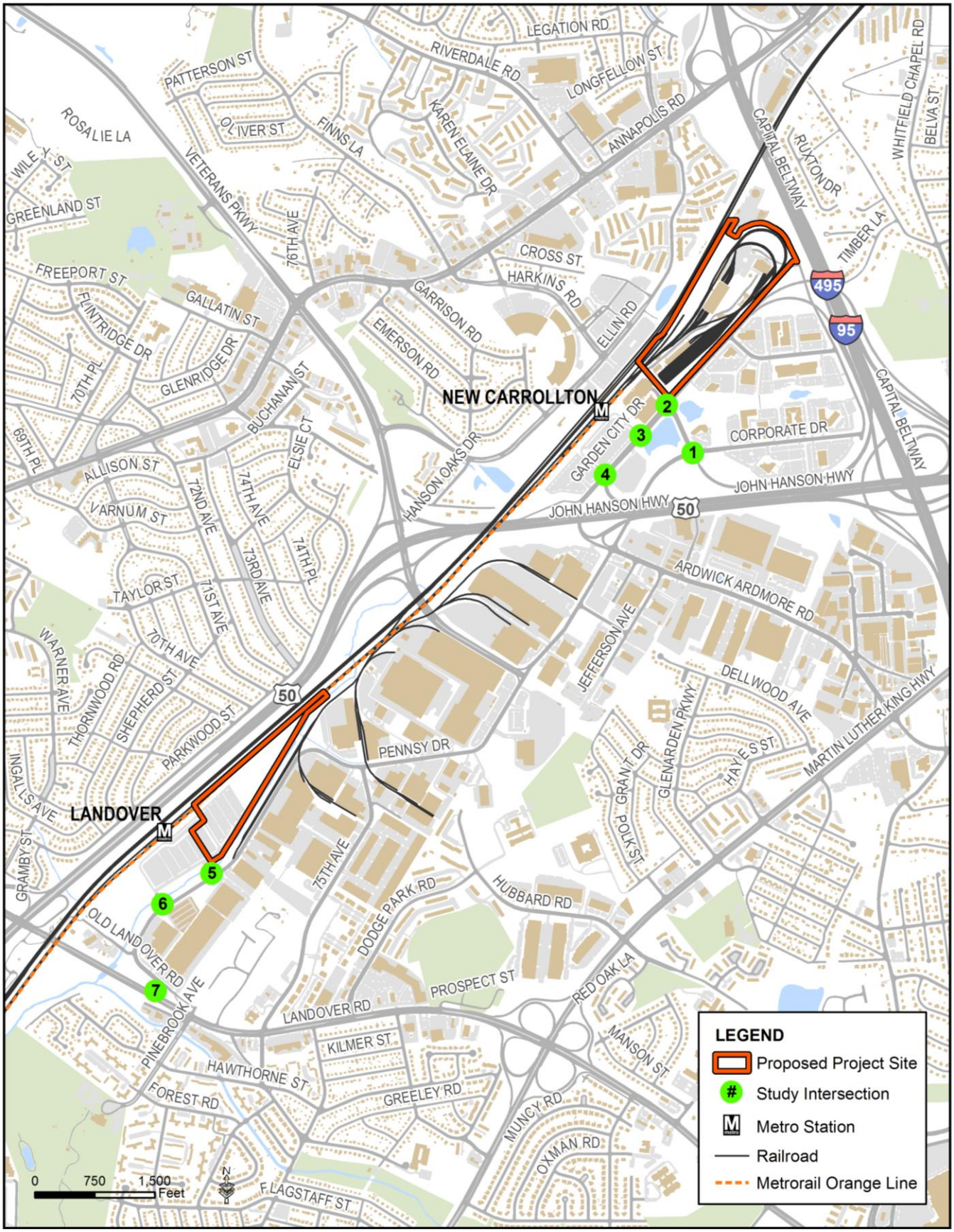


Figure 2-2: Existing AM and PM Peak Hour Traffic Volumes at Study Intersections

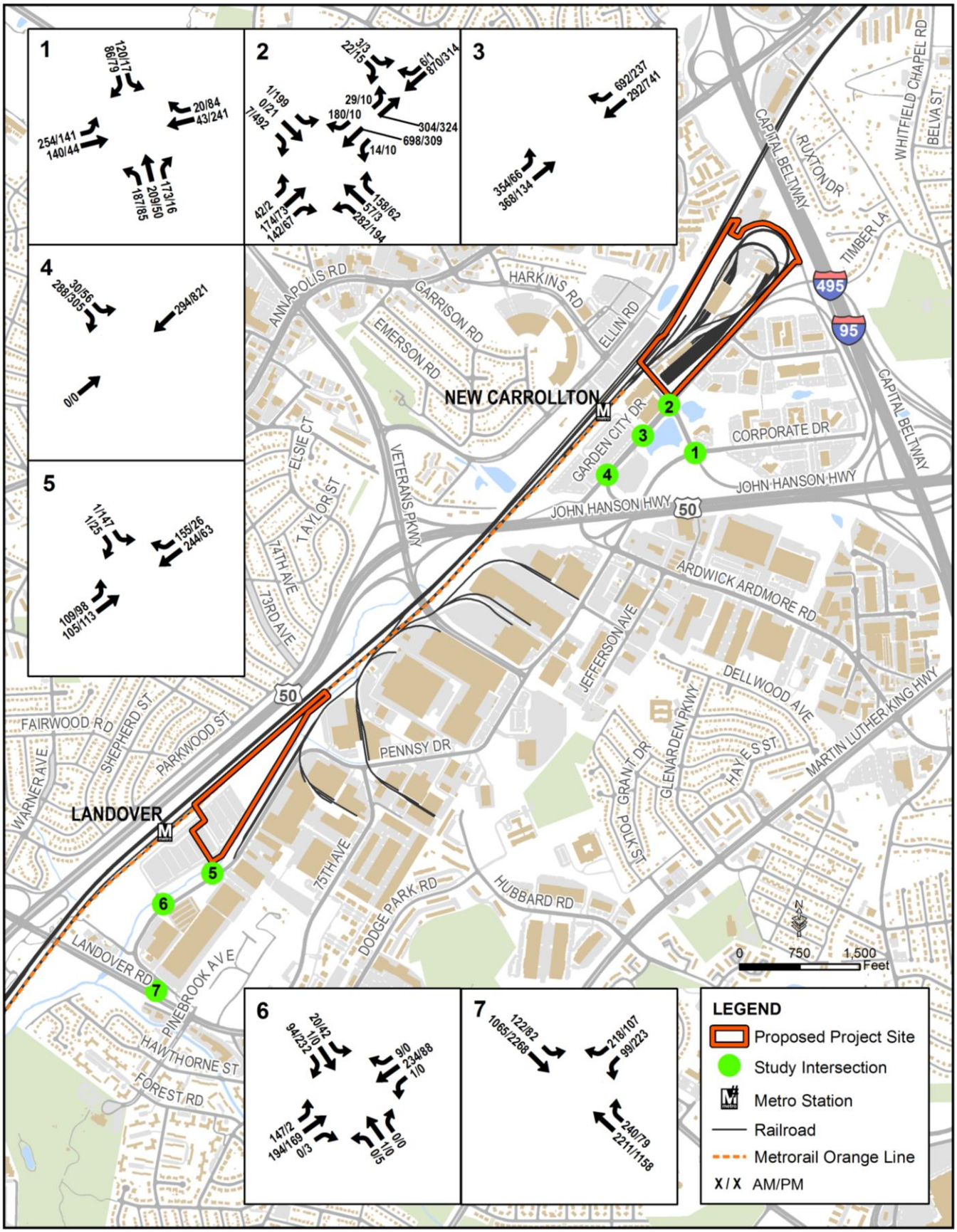


Table 2-1: LOS Criteria for CLV Method

Critical Lane Volume (veh/hr)	Level of Service (LOS)
0 to 1,000	A
1,001 to 1,150	B
1,151 to 1,300	C
1,301 to 1,450	D
1,451 to 1,600	E
1,601 and over	F

Source: Transportation Review Guidelines 2012.

Traffic conditions at two-way stop controlled intersections were evaluated based on procedures in the Highway Capacity Manual (HCM). If any movement exceeds a delay of 50 seconds and has hourly traffic volumes more than 100 vehicles, the CLV method was used to supplement the HCM analysis. **Table 2-2** shows the LOS criteria for unsignalized intersections as defined in the HCM. Synchro was used to calculate the approach and intersection delays in accordance with the HCM methodology.

Table 2-2: LOS Criteria for Unsignalized Intersections (HCM)

Delay (sec/veh)	Level of Service (LOS)
≤ 10	A
> 10 - 15	B
> 15 - 25	C
> 25 - 35	D
> 35 - 50	E
> 50	F

2.3 Relevant Plans

2.3.1 New Carrollton Approved Transit District Development Plan and Transit District Overlay Zoning Map Amendment (May 2010)

The plan proposes a transit-oriented mixed-use joint-development (including residential buildings, office buildings and grocery/retail stores) to the south of the New Carrollton Metrorail Station. The new development is expected to generate hundreds of vehicles on Garden City Drive and other corridors in the vicinity of the New Carrollton Metrorail Station. However, as the joint-development project is still at the planning stage and the available information about this project is limited at this point, this New Carrollton and Landover Yard study did not include the potential new trips from the joint-development as part of 2018 background traffic. Additionally, the Metropolitan Washington Council of Governments (MWCOG) model does not include the potential joint-development at the New Carrollton Metrorail Station.

2.3.2 Landover Metro Area and MD 202 Corridor Adopted Sector Plan and Section Map Amendment (May 2014)

The plan proposes mixed-use developments near the existing Landover Metrorail Station and corridors in the vicinity of the site. Since the traffic impacts from this plan and built year of the developments are unknown at this point, this New Carrollton and Landover Yard study did not include the new trips from this development plan as part of 2018 background traffic. Additionally, the Metropolitan Washington Council of Governments (MWCOG) model does not include the potential developments in the Landover Metro area and MD 202 corridor.

3.0 EXISTING CONDITIONS

3.1 2014 Existing Conditions

The CLV method was used for evaluating the four signalized intersections and the HCM method was used to determine the LOS for the unsignalized intersections. **Table 3-1** shows the summary of the analysis results of existing traffic conditions. Detailed calculation sheets are shown in **Appendix B-2** of this report.

All the intersections operate at LOS C or better in the existing traffic conditions, therefore no further CLV analysis was required for the unsignalized intersections.

Table 3-1: Existing LOS at Study Intersections

Intersection	Control Type	Analysis Method	Existing AM		Existing PM	
			CLV (veh/hr) or Delay (sec/veh)	LOS	CLV (veh/hr) or Delay (sec/veh)	LOS
New Carrollton Yard						
Pennsy Dr and Corporate Dr	Signalized	CLV	765	A	527	A
Garden City Dr and Corporate Dr	Signalized	CLV	1,130	B	931	A
Garden City Dr and Metro Entrance	Signalized	CLV	1,046	B	474	A
Garden City Dr and Metro Exit	Unsignalized	HCM	11.7	B	21.3	C
Landover Yard						
Pennsy Dr and Metro Access East	Unsignalized	HCM	12.3	B	13.1	B
Pennsy Dr and Metro Access West	Unsignalized	HCM	18.2	C	12.0	B
Landover Rd and Old Landover Rd	Signalized	CLV	1,128	B	1,062	B

Table 3-2 shows the existing surface parking utilization at Landover Metrorail Station. Since 2011, parking utilization has decreased every year at Landover Metrorail Station. The 2014 existing parking utilization at Landover Metrorail Station is at 41%, meaning the surface parking has sufficient capacity to handle existing parking demand.

Table 3-2: Landover Metrorail Station Parking Utilization

Year	Number of Surface Parking Spaces	Utilization Rate	Number of Spaces Utilized Per Day
2011	1,866	50%	933
2012	1,866	46%	859
2013	1,866	44%	821
2014 (thru June)	1,866	41%	765

Source: WMATA Office of Parking, 2014

The WMATA standard for providing access lanes is one ingress/egress lane for every 500 parking spots. Based on the existing 1,866 parking spots provided at the Landover Metrorail Station, four entry and four exit lanes are necessary. The current lane configurations for the two access roads at the Landover Metrorail Station are:

- West Access: 1 entry, 1 exit, 1 reversible
- East Access: 1 entry, 1 exit, 1 reversible

The existing configuration meets WMATA's access requirements.

3.2 2018 No Build Alternative

The improvements to New Carrollton and Landover Yards are expected to be completed by 2018. Future traffic conditions were estimated by applying an annual growth rate to existing traffic volumes. The traffic growth rate from 2014 to 2018 was generated from the MWCOG model (Version 2.3.52). The MWCOG model reflects the

regional traffic change from the approved developments included in the National Capital Region's Financially Constrained Long-Range Transportation Plan (CLRP).

From 2014 to 2018, the MWCOG model indicated an annual traffic growth rate of 1.1% during the AM peak period and 1.2% during the PM peak period at New Carrollton Yard. These annual growth rates lead to total growth factors of 4.3% for the AM peak period and 4.7% for the PM peak period from 2014 to 2018. To be conservative, this analysis assumes a total growth factor of 4.7% for both the AM and PM peak hour from 2014 to 2018 for the No Build Alternative traffic volumes at New Carrollton Yard.

At the Landover site, the MWCOG model indicated an annual growth rate of 3.2% during the AM peak period on Pennsy Drive from 2014 to 2018. The growth rates on Pennsy Drive in the PM peak period and growth rates on Landover Road in both AM and PM are negative. A comparison of the 2012 traffic counts to 2014 counts show a similar growth pattern on Pennsy Drive for the past two years: 1) the annual growth rate in the AM peak period is approximately 6.3% between 2012 and 2014; and 2) the annual growth rate in the PM peak period is negative in the past two years. To be conservative, this analysis assumes an annual growth rate of 3.2% on Pennsy Drive during the AM peak period (equivalent to a total growth of 13.3% from 2014 to 2018), and an annual growth rate of 1% on Pennsy Drive during the PM peak period (equivalent to a total growth of 4.1% from 2014 to 2018). The annual growth rate assumed for Landover Road is also 1% in both AM and PM peak periods. **Figure 3-1** shows the projected peak hour traffic volumes for the 2018 No Build Alternative.

Table 3-3 shows the summary of the analysis results for 2018 No Build traffic conditions. Detailed calculation sheets are documented in **Appendix B-1** of this report.

Table 3-3: 2018 No Build LOS at Study Intersections

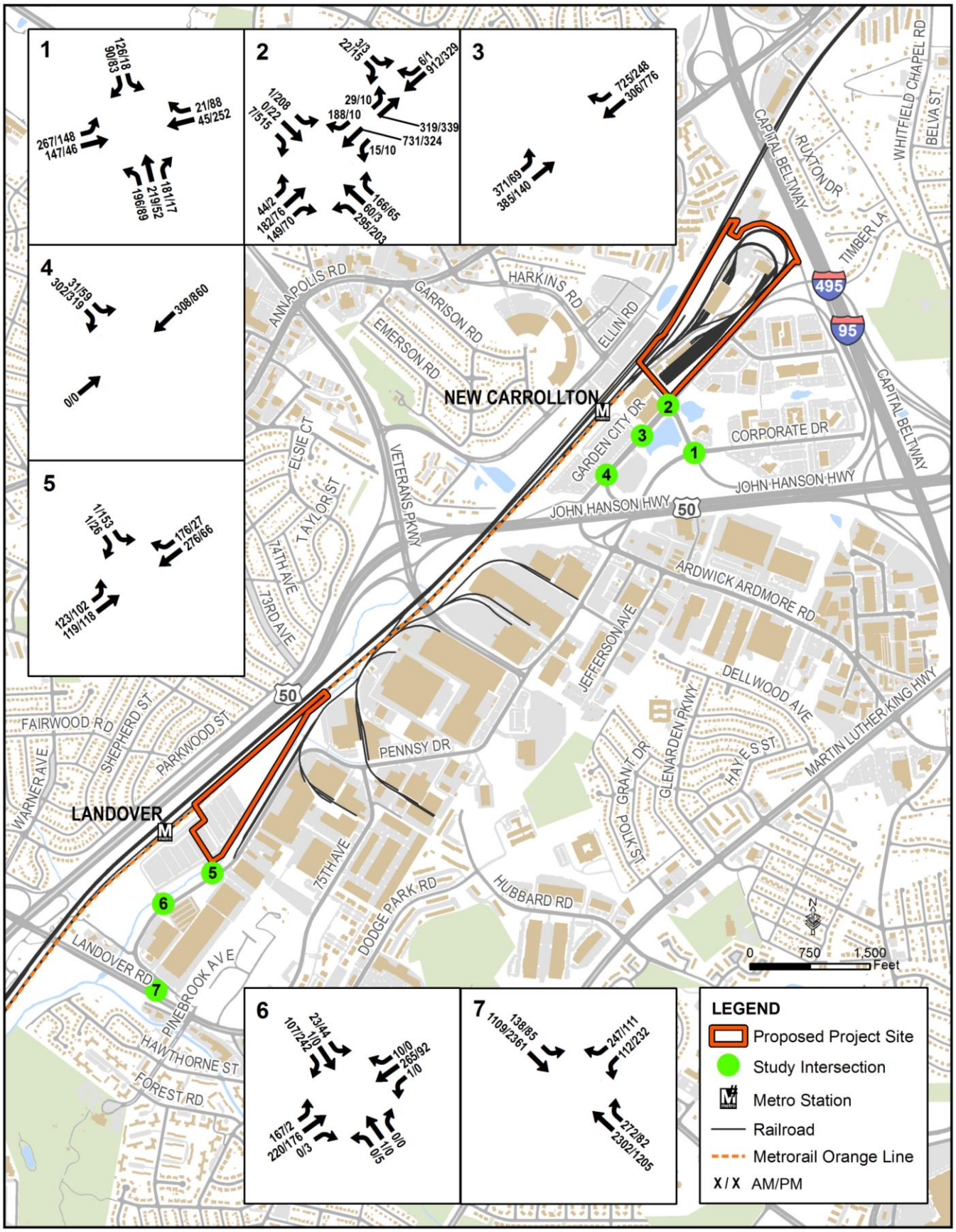
Intersection	Control Type	Analysis Method	2018 No Build AM		2018 No Build PM	
			CLV (veh/hr) or Delay (sec/veh)	LOS	CLV (veh/hr) or Delay (sec/veh)	LOS
New Carrollton Yard						
Pennsy Dr and Corporate Dr	Signalized	CLV	802	A	552	A
Garden City Dr and Corporate Dr	Signalized	CLV	1,183	C	975	A
Garden City Dr and Metro Entrance	Signalized	CLV	1,096	B	496	A
Garden City Dr and Metro Exit	Unsignalized	HCM	12.0	B	23.8	C
Landover Yard						
Pennsy Dr and Metro Access East	Unsignalized	HCM	13.2	B	13.5	B
Pennsy Dr and Metro Access West	Unsignalized	HCM	20.7	C	12.2	B
Landover Rd and Old Landover Rd	Signalized	CLV	1,202	C	1,106	B

For changes to parking utilization at Landover Metrorail Station, the 2018 No Build analysis assumes the maximum conservative annual traffic growth rate of 4.1% from 2014 to 2018. **Table 3-4** shows the summary of the annual increases in parking utilization at Landover Metrorail Station from 2014 to 2018 for the 2018 No Build Alternative.

Table 3-4: Landover Metrorail Station Parking Utilization

Year	Number of Spaces Utilized Per Day	Number of Surface Parking Spaces	Utilization Rate
2014	765	1,866	41%
2015	796	1,866	43%
2016	829	1,866	44%
2017	863	1,866	46%
2018	898	1,866	48%

Figure 3-1: 2018 No Build Peak Hour Traffic Volumes



4.0 ENVIRONMENTAL CONSEQUENCES

4.1 No Build Alternative

All the intersections in the 2018 No Build Alternative operate at LOS C or better. The intersections of Garden City Drive and Corporate Drive and Landover Road and Old Landover Road downgrade from LOS B in the existing condition to LOS C in the 2018 No Build Alternative during the AM peak hour due to growth in background traffic, but the intersections still operate at acceptable LOS. No impact is anticipated to intersection operations under the No Build Alternative since no additional employees are projected to be entering the site. No impacts to parking capacity at Landover Metrorail Station are anticipated due to the low utilization of parking spaces.

4.2 Build Alternative

4.2.1 New Carrollton Yard

The improvements at New Carrollton Yard will increase the number of employees accessing the site; and thus the number of trips entering and exiting the locations during the AM and PM peak hour will increase accordingly. **Table 1-1** provides the current and future number of employees working at New Carrollton Yard.

The existing number of employees working within New Carrollton Yard is 370, growing to 388 by 2025 (growth rate of 4.9%). To be conservative, this analysis assumes the same number of employees within the yards in 2018. The analysis assumes the traffic volumes entering and exiting the yard are proportional to the number of employees. The relation between existing traffic counts and number of employees at the current New Carrollton Yard was used to estimate traffic volumes given the future number of employees. **Table 4-1** shows the traffic volume projection for New Carrollton Yard during the AM and PM peak periods. **Figure 4-1** shows the peak hour traffic volumes for New Carrollton Yard.

Improvements to New Carrollton Yard will generate an additional two entering trips and one exiting trip during the AM peak hour, and one exiting trip during the PM peak hour. **Table 4-2** shows the summary of the analysis results for 2018 Build Alternative traffic conditions. **Table 4-3** provides a comparative summary of traffic results between the 2014 existing conditions, 2018 No Build Alternative, and 2018 Build Alternative. Detailed calculation sheets are included in **Appendix B-2** of this report.

The additional trips in the peak period result in all the intersections operating at LOS C or better in 2018 for the Build Alternative. Overall, the traffic impacts from the development of New Carrollton Yard are minimal and no impact to transportation is anticipated under the Build Alternative.

Table 4-1: Future Traffic Volume Projection

Row		New Carrollton Yard		Landover Yard	
		Entering Volumes	Exiting Volumes	Entering Volumes	Exiting Volumes
[A]	Existing AM	35	25	-	-
[B]	Existing PM	11	18	-	-
[C]	Volume-to-Employee Ratio (AM) (Row [A] / Current Number of Employee)	9.5%	6.8%	9.5%*	6.8%*
[D]	Volume-to-Employee Ratio (PM) (Row [B] / Current Number of Employee)	3.0%	4.9%	3.0%*	4.9%*
[E]	2018 AM (Row [C] * Future Number of Employee)	37	26	18	13
[F]	2018 PM (Row [D] * Future Number of Employee)	11	19	6	9

* Volume-to-Employee Ratio at the proposed Landover Yard is assumed to be the same as the existing New Carrollton Yard.

Figure 4-1: 2018 Build Peak Hour Traffic Volumes

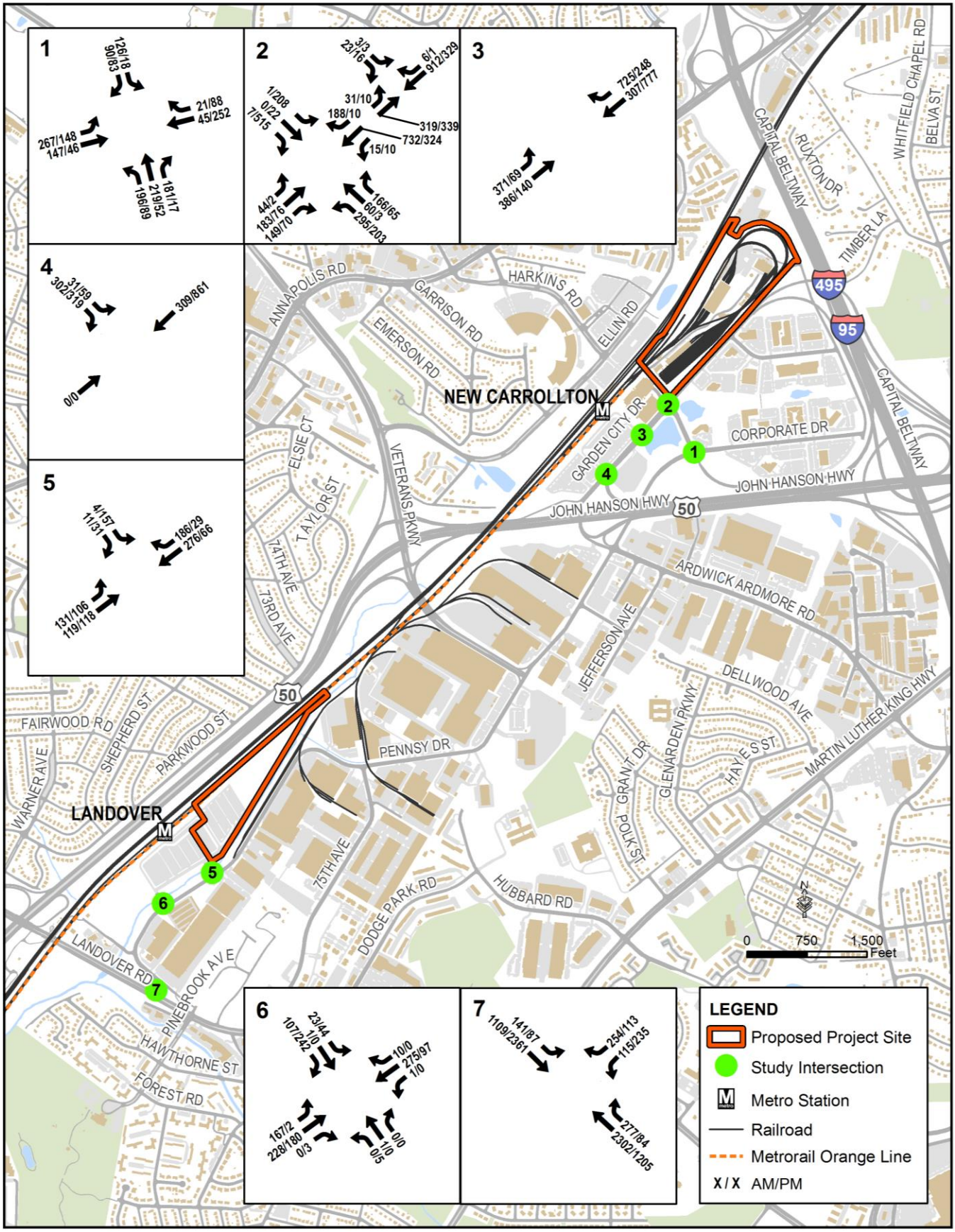


Table 4-2: 2018 Build LOS at Study Intersections

Intersection	Control Type	Analysis Method	2018 Build AM		2018 Build PM	
			CLV (veh/hr) or Delay (sec/veh)	LOS	CLV (veh/hr) or Delay (sec/veh)	LOS
New Carrollton Yard						
Pennsy Dr and Corporate Dr	Signalized	CLV	803	A	552	A
Garden City Dr and Corporate Dr	Signalized	CLV	1,184	C	976	A
Garden City Dr and Metro Entrance	Signalized	CLV	1,096	B	496	A
Garden City Dr and Metro Exit	Unsignalized	HCM	12.0	B	23.8	C
Landover Yard						
Pennsy Dr and Metro Access East	Unsignalized	HCM	12.0	B	13.6	B
Pennsy Dr and Metro Access West	Unsignalized	HCM	21.3	C	12.3	B
Landover Rd and Old Landover Rd	Signalized	CLV	1,210	C	1,109	B

Table 4-3: New Carrollton Traffic Results

Intersection Conditions		AM LOS (Delay*)			PM LOS (Delay*)		
Intersection Name	Traffic Control	Existing LOS	2018 No Build LOS	2018 Build LOS	Existing LOS	2018 No Build LOS	2018 Build LOS
Corporate Dr/Pennsy Dr	Signalized	A	A	A	A	A	A
Garden City Dr/Corporate Dr	Signalized	B	C	C	A	A	A
Garden City Dr/Metro Entrance	Signalized	B	B	B	A	A	A
Garden City Dr/Metro Exit	Unsignalized	B	B	B	C	C	C

*Delay measured in seconds.

4.2.2 Landover Yard

The development of Landover Yard will increase the number of employees accessing the site; and thus the number of trips entering and exiting the locations during the AM and PM peak hour will increase accordingly. **Table 1-2** provides the current and future number of employees working at Landover Yard.

The implementation of the project at Landover Yard will result in 190 employees working at the facility in 2025. To be conservative, this analysis assumes the same number of employees within the yards in 2018. The analysis assumes the traffic volumes entering and exiting the yard are proportional to the number of employees. The relation between existing traffic counts and number of employees at the current New Carrollton Yard was used to estimate traffic volumes given the future number of employees (since no current Landover maintenance related employees exist). **Table 4-1** shows the traffic volume projection for Landover Yard during the AM and PM peak periods. **Figure 4-1** shows the peak hour traffic volumes for Landover Yard.

The development of Landover Yard will generate 18 entering and 6 exiting trips during the AM peak hour, and 13 entering and 9 exiting trips during the PM peak hour. **Table 4-2** shows the summary of the analysis results for 2018 Build Alternative traffic conditions. **Table 4-4** provides a comparative summary of traffic results between the 2014 existing conditions, 2018 No Build Alternative, and 2018 Build Alternative. Detailed calculation sheets are shown in **Appendix B-2** of this report.

The additional trips in the peak period result in all the intersections operating at LOS C or better in 2018 for the Build Alternative. Overall, the traffic impacts from the development of the Landover Yard are minimal and no impact to transportation is anticipated under the Build Alternative.

Table 4-4: Landover Traffic Results

Intersection Conditions		AM LOS (Delay*)			PM LOS (Delay*)		
Intersection Name	Traffic Control	Existing LOS	2018 No Build LOS	2018 Build LOS	Existing LOS	2018 No Build LOS	2018 Build LOS
Pennsy Dr/Metro Access East	Signalized	B	B	B	B	B	B
Pennsy Dr/Metro Access West	Signalized	C	C	C	B	B	B
Landover Rd/Old Landover Rd	Signalized	B	C	C	B	B	B

*Delay measured in seconds.

Under the Build Alternative, no additional access roads into Landover Metrorail Station or Landover Yard are required since the number of parking spaces provided is the same as the No Build Alternative. No additional internal roadways or ingress/egress points are needed. The existing configuration meets WMATA's access requirements by providing 4 entry and 4 exit lanes.

Parking utilization at Landover Metrorail Station is anticipated to be the same as the 2018 No Build Alternative. Under the 2018 Build Alternative, approximately 200 spots would be temporarily removed during the construction of the commuter parking garage from 2016 to 2017. The construction of the commuter garage would replace surface parking spaces removed for the commuter garage and subsequent CTEM and TRST facilities at a 1:1 ratio. Even with a conservative growth in parking and the temporary removal of 200 parking spaces during the construction period, Landover Metrorail Station has over double the parking capacity to meet demand. Therefore, no impacts to commuter parking are anticipated temporarily or permanently by Landover Yard.

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APPENDIX B-1: TRAFFIC COUNTS

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Type of peak hour being reported: Intersection Peak

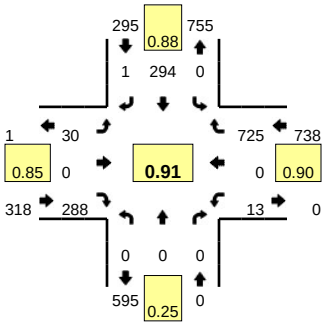
Method for determining peak hour: Total Entering Volume

LOCATION: Garden City Dr -- Hwy 50 Off ramp/Metro Station Exit

QC JOB #: 12424801

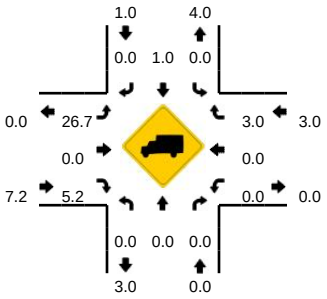
CITY/STATE: Hyattsville, MD

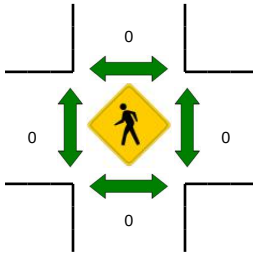
DATE: Tue, Feb 25 2014

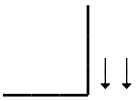


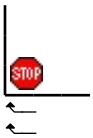
Peak-Hour: 7:15 AM -- 8:15 AM

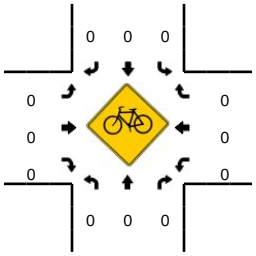
Peak 15-Min: 7:30 AM -- 7:45 AM

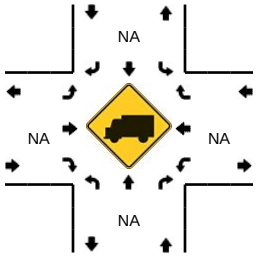


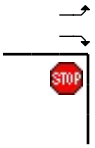


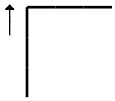


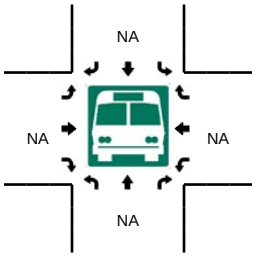












15-Min Count Period Beginning At	Garden City Dr (Northbound)				Garden City Dr (Southbound)				Hwy 50 Off ramp/Metro Station Exit (Eastbound)				Hwy 50 Off ramp/Metro Station Exit (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	31	0	0	8	0	25	0	0	0	75	0	139	
6:15 AM	0	0	0	0	0	38	0	0	6	0	54	0	2	0	124	0	224	
6:30 AM	0	0	0	0	0	45	0	0	1	0	52	0	0	0	121	0	219	
6:45 AM	0	0	0	0	0	35	0	0	7	0	53	0	0	0	118	0	213	795
7:00 AM	0	0	0	0	0	45	0	0	6	0	69	0	4	0	126	0	250	906
7:15 AM	0	0	0	0	0	53	1	0	7	0	65	0	8	0	192	0	326	1008
7:30 AM	0	0	0	0	0	71	0	0	6	0	91	0	1	0	203	0	372	1161
7:45 AM	0	0	0	0	0	82	0	0	11	0	73	0	1	0	166	0	333	1281
8:00 AM	0	0	0	0	0	88	0	0	6	0	59	0	3	0	164	0	320	1351
8:15 AM	0	0	0	0	0	70	0	0	12	0	57	0	1	0	163	0	303	1328
8:30 AM	0	0	0	0	0	65	0	0	18	0	65	0	3	0	145	0	296	1252
8:45 AM	0	0	0	0	0	68	0	1	9	0	45	0	1	0	134	0	258	1177
9:00 AM	0	0	0	0	0	61	0	0	15	0	34	0	1	0	86	0	197	1054
9:15 AM	0	0	0	0	0	37	0	0	4	0	29	0	2	0	61	0	133	884
9:30 AM	0	0	0	0	0	41	0	0	7	0	28	0	2	0	54	0	132	720
9:45 AM	0	1	0	0	0	42	0	0	7	0	21	0	1	0	65	0	137	599

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	284	0	0	24	0	364	0	4	0	812	0	1488
Heavy Trucks	0	0	0		0	4	0		8	0	28		0	0	16		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

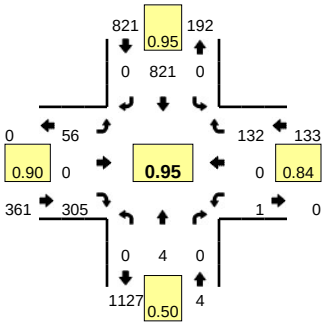
Method for determining peak hour: Total Entering Volume

LOCATION: Garden City Dr -- Hwy 50 Off ramp/Metro Station Exit

CITY/STATE: Hyattsville, MD

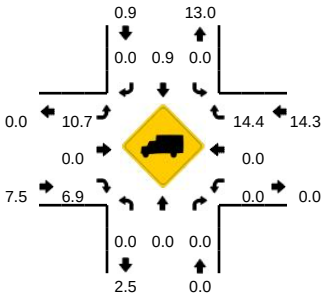
QC JOB #: 12424802

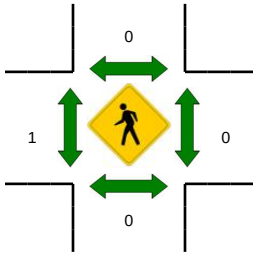
DATE: Tue, Feb 25 2014

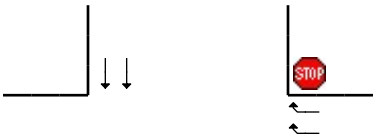


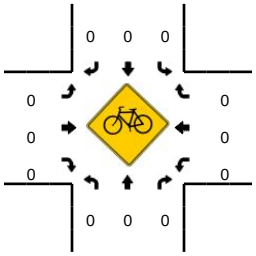
Peak-Hour: 5:00 PM -- 6:00 PM

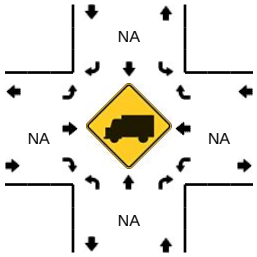
Peak 15-Min: 5:30 PM -- 5:45 PM

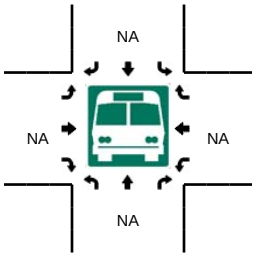












15-Min Count Period Beginning At	Garden City Dr (Northbound)				Garden City Dr (Southbound)				Hwy 50 Off ramp/Metro Station Exit (Eastbound)				Hwy 50 Off ramp/Metro Station Exit (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	2	0	0	0	111	0	0	6	0	40	0	3	0	28	0	190	
3:15 PM	0	0	0	0	0	71	0	0	4	0	42	0	1	0	35	0	153	
3:30 PM	0	0	0	0	0	89	0	0	2	0	48	0	2	0	42	0	183	
3:45 PM	0	0	0	0	0	98	0	0	3	0	48	0	2	0	45	0	196	722
4:00 PM	0	0	0	0	0	182	0	0	4	0	62	0	0	0	26	0	274	806
4:15 PM	0	0	0	0	0	118	0	1	5	0	54	0	0	0	24	0	202	855
4:30 PM	0	0	0	0	0	131	0	0	13	0	61	0	2	0	36	0	243	915
4:45 PM	0	2	0	0	0	154	0	0	7	0	87	0	1	0	40	0	291	1010
5:00 PM	0	0	0	0	0	217	0	0	10	0	71	0	0	0	32	0	330	1066
5:15 PM	0	2	0	0	0	195	0	0	19	0	77	0	1	0	27	0	321	1185
5:30 PM	0	1	0	0	0	207	0	0	12	0	93	0	0	0	35	0	348	1290
5:45 PM	0	1	0	0	0	202	0	0	15	0	64	0	0	0	38	0	320	1319
6:00 PM	0	2	0	0	0	189	0	0	8	0	90	0	0	0	26	0	315	1304
6:15 PM	0	4	0	0	0	168	0	0	10	0	70	0	0	0	34	0	286	1269
6:30 PM	0	0	0	0	0	175	0	0	6	0	74	0	1	0	47	0	303	1224
6:45 PM	0	1	0	0	0	174	0	0	11	0	50	0	0	0	24	0	260	1164

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	4	0	0	0	828	0	0	48	0	372	0	0	0	140	0	1392
Heavy Trucks	0	0	0		0	8	0		0	0	28		0	0	24		60
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Garden City Dr -- New Carrollton Metro Entrance

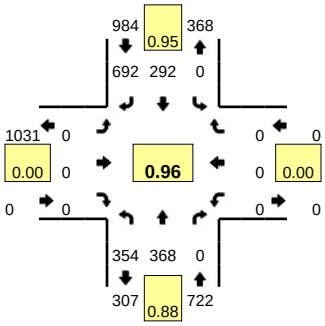
CITY/STATE: Hyattsville, MD

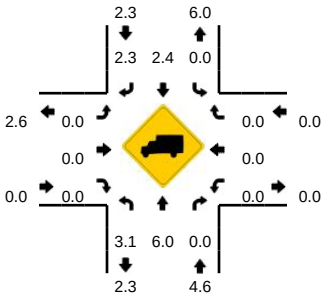
QC JOB #: 12424803

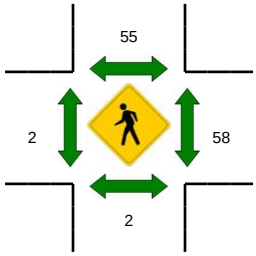
DATE: Tue, Feb 25 2014

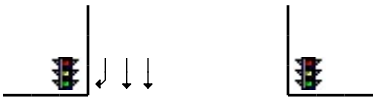
Peak-Hour: 7:15 AM -- 8:15 AM

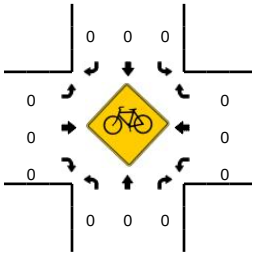
Peak 15-Min: 7:30 AM -- 7:45 AM

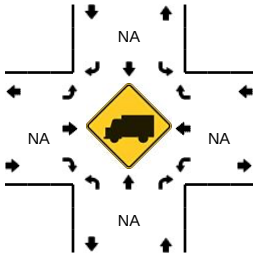


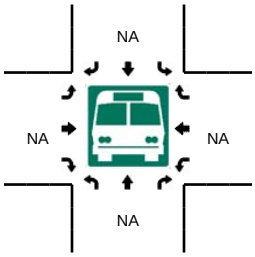












15-Min Count Period Beginning At	Garden City Dr (Northbound)				Garden City Dr (Southbound)				New Carrollton Metro Entrance (Eastbound)				New Carrollton Metro Entrance (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	41	33	0	0	0	28	92	0	0	0	0	0	0	0	0	0	194	
6:15 AM	70	42	0	1	0	38	148	0	0	0	0	0	0	0	0	0	299	
6:30 AM	78	40	0	2	0	42	159	0	0	0	0	0	0	0	0	0	321	
6:45 AM	63	54	0	1	0	40	143	0	0	0	0	0	0	0	0	0	301	1115
7:00 AM	73	51	0	0	0	47	169	0	0	0	0	0	0	0	0	0	340	1261
7:15 AM	77	100	0	3	0	48	189	0	0	0	0	0	0	0	0	0	417	1379
7:30 AM	105	95	0	6	0	66	172	0	0	0	0	0	0	0	0	0	444	1502
7:45 AM	76	88	0	3	0	85	164	0	0	0	0	0	0	0	0	0	416	1617
8:00 AM	81	85	0	3	0	93	167	0	0	0	0	0	0	0	0	0	429	1706
8:15 AM	66	90	0	5	0	70	113	0	0	0	0	0	0	0	0	0	344	1633
8:30 AM	51	84	0	2	0	65	101	0	0	0	0	0	0	0	0	0	303	1492
8:45 AM	38	105	0	0	0	76	79	0	0	0	0	0	0	0	0	0	298	1374
9:00 AM	15	70	0	5	0	67	56	0	0	0	0	0	0	0	0	0	213	1158
9:15 AM	13	53	0	2	0	38	35	0	0	0	0	0	0	0	0	0	141	955
9:30 AM	17	42	0	0	0	44	30	0	0	0	0	0	0	0	0	0	133	785
9:45 AM	20	44	0	4	0	41	35	0	0	0	0	0	0	0	0	0	144	631

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	420	380	0	24	0	264	688	0	0	0	0	0	0	0	0	0	1776
Heavy Trucks	16	12	0		0	8	4		0	0	0		0	0	0		40
Pedestrians		4				24				0				24			52
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

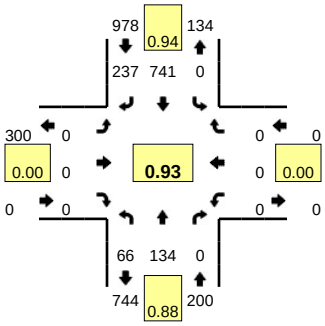
Type of peak hour being reported: Intersection Peak

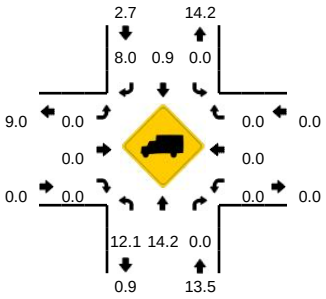
Method for determining peak hour: Total Entering Volume

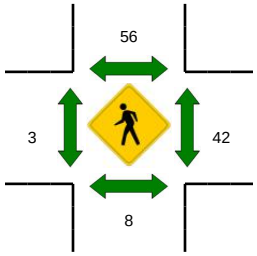
LOCATION: Garden City Dr -- New Carrollton Metro Entrance
CITY/STATE: Hyattsville, MD

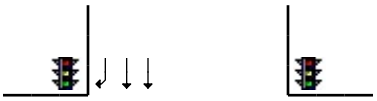
QC JOB #: 12424804
DATE: Tue, Feb 25 2014

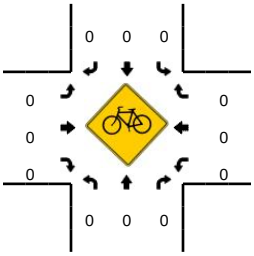
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

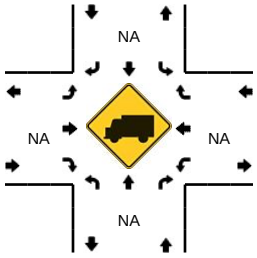


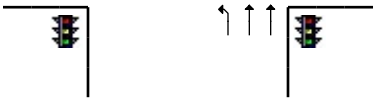


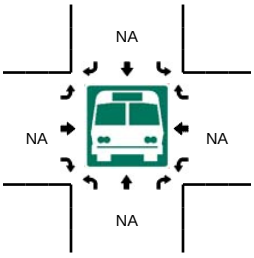












15-Min Count Period Beginning At	Garden City Dr (Northbound)				Garden City Dr (Southbound)				New Carrollton Metro Entrance (Eastbound)				New Carrollton Metro Entrance (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	10	23	0	3	0	104	24	0	0	0	0	0	0	0	0	0	164	
3:15 PM	17	21	0	0	0	68	27	0	0	0	0	0	0	0	0	0	133	
3:30 PM	11	31	0	1	0	81	31	0	0	0	0	0	0	0	0	0	155	
3:45 PM	12	29	0	1	0	93	21	0	0	0	0	0	0	0	0	0	156	608
4:00 PM	5	26	0	0	0	166	40	1	0	0	0	0	0	0	0	0	238	682
4:15 PM	11	17	0	2	0	112	33	0	0	0	0	0	0	0	0	0	175	724
4:30 PM	18	31	0	0	0	121	50	0	0	0	0	0	0	0	0	0	220	789
4:45 PM	23	27	0	1	0	159	52	0	0	0	0	0	0	0	0	0	262	895
5:00 PM	14	30	0	1	0	205	54	0	0	0	0	0	0	0	0	0	304	961
5:15 PM	16	32	0	0	0	155	54	0	0	0	0	0	0	0	0	0	257	1043
5:30 PM	18	31	0	1	0	194	58	0	0	0	0	0	0	0	0	0	302	1125
5:45 PM	15	41	0	1	0	187	71	0	0	0	0	0	0	0	0	0	315	1178
6:00 PM	17	21	0	2	0	172	46	0	0	0	0	0	0	0	0	0	258	1132
6:15 PM	27	30	0	1	0	154	56	0	0	0	0	0	0	0	0	0	268	1143
6:30 PM	20	29	0	1	0	165	37	0	0	0	0	0	0	0	0	0	252	1093
6:45 PM	15	26	0	1	0	158	42	0	0	0	0	0	0	0	0	0	242	1020

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	60	164	0	4	0	748	284	0	0	0	0	0	0	0	0	0	1260
Heavy Trucks	0	28	0		0	4	28		0	0	0		0	0	0		60
Pedestrians		8				56				8				52			124
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Start Date: 2/25/2014
Start Time: 6:00:00 AM
Site Code: 12424805

	Garden City Dr Southbound					Corporate Dr Westbound					Garden City Dr Northbound					Corporate Dr Eastbound					N Dwy				
Start Time	Right to N Dwy	Right	Thru	Left	U-Turns	Right	Thru to N Dwy	Thru	Left	U-Turns	Right	Thru	Left to N Dwy	Left	U-Turns	Right	Thru	Left	Left to N Dwy	U-Turns	Right to Corporate Dr	Right to Garden City Dr	Thru to Corporate Dr	Left to Garden City Dr	U-Turns
06:00	0	14	84	0	0	3	6	7	23	0	17	7	7	4	0	4	1	0	0	0	0	12	0	0	0
06:15	1	13	122	0	0	9	9	12	52	0	21	8	6	7	0	4	0	0	0	0	0	3	0	1	0
06:30	0	19	118	0	0	10	8	9	61	0	20	13	3	4	0	0	0	0	0	0	0	22	1	0	0
06:45	0	26	134	0	0	13	9	7	46	0	24	22	2	6	0	0	0	1	0	1	0	9	0	0	0
07:00	1	41	170	0	0	15	8	10	54	0	23	21	1	6	0	3	0	1	0	0	0	1	1	2	0
07:15	0	40	162	2	0	11	3	16	75	0	38	31	8	18	0	2	0	0	0	0	0	0	0	1	0
07:30	3	40	171	1	0	46	5	14	68	0	26	55	1	9	0	1	0	1	0	0	0	5	0	1	0
07:45	1	54	173	9	0	50	2	14	59	0	35	39	4	8	0	1	0	0	0	0	0	9	0	1	0
08:00	2	46	170	2	0	37	4	13	80	0	43	34	2	7	0	3	0	0	0	0	0	8	0	0	0
08:15	2	41	110	1	0	31	7	14	60	0	37	37	3	14	0	3	0	0	0	0	0	7	1	0	0
08:30	2	40	122	2	0	54	8	25	77	0	70	40	2	20	0	4	0	1	0	0	0	18	1	2	0
08:45	0	30	70	4	0	29	6	14	46	0	59	24	0	14	0	15	0	2	0	0	0	7	0	0	0
09:00	1	14	39	3	0	12	7	5	27	1	18	16	0	8	0	6	0	0	0	0	0	9	0	0	0
09:15	1	13	38	4	0	19	6	8	26	0	28	10	5	9	0	4	0	3	0	0	0	3	1	0	0
09:30	1	10	37	3	0	8	4	11	27	0	21	14	1	5	0	5	2	0	0	1	0	8	1	1	0
09:45	5	9	30	5	0	17	3	3	35	0	27	11	2	6	0	5	0	0	0	0	0	6	0	0	0
Total	20	450	1750	36	0	364	95	182	816	1	507	382	47	145	0	60	3	9	0	2	0	127	6	9	0

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Start Date: 2/25/2014
Start Time: 3:00:00 PM
Site Code: 12424806

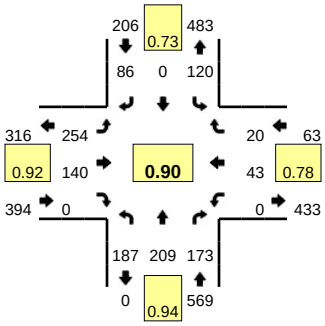
	Garden City Dr Southbound					Corporate Dr Westbound					Garden City Dr Northbound					Corporate Dr Eastbound					N Dwy				
Start Time	Right to N Dwy	Right	Thru	Left	U-Turns	Right	Thru to N Dwy	Thru	Left	U-Turns	Right	Thru	Left to N Dwy	Left	U-Turns	Right	Thru	Left	Left to N Dwy	U-Turns	Right to Corporate Dr	Right to Garden City Dr	Thru to Corporate Dr	Left to Garden City Dr	U-Turns
15:00	0	1	70	6	0	7	4	1	24	0	12	9	1	1	0	25	0	9	0	0	0	10	0	0	0
15:15	1	2	28	3	0	12	2	0	36	0	14	5	1	1	0	24	0	8	0	0	0	10	0	0	0
15:30	0	2	33	3	0	9	3	1	29	0	20	9	1	0	0	30	1	8	0	0	0	12	0	0	0
15:45	0	2	43	3	0	11	1	0	24	0	20	10	0	0	0	41	1	17	0	0	0	13	0	0	1
16:00	0	1	72	2	0	9	3	1	40	0	17	7	0	1	0	72	4	20	0	0	0	16	0	2	0
16:15	1	0	50	2	0	8	2	1	27	0	11	7	0	1	0	58	5	24	0	0	0	6	1	0	0
16:30	0	4	70	1	0	18	2	0	36	0	15	15	0	0	0	68	3	29	0	0	0	1	1	1	0
16:45	0	1	61	3	0	7	1	1	52	0	12	16	0	0	0	95	3	36	0	0	0	5	0	3	0
17:00	0	2	88	2	0	16	3	1	45	0	19	12	0	0	0	127	4	38	0	0	0	3	0	1	0
17:15	0	2	74	3	0	12	1	1	50	0	13	25	1	1	0	114	4	51	0	0	0	4	0	0	0
17:30	0	4	72	2	0	15	3	0	49	0	16	13	0	0	0	114	9	58	0	0	0	2	0	1	0
17:45	1	2	60	3	0	12	0	1	50	0	19	20	2	1	0	137	4	52	0	0	0	6	0	1	0
18:00	0	1	45	2	0	11	4	0	35	0	7	12	0	1	0	130	11	75	0	0	0	2	0	1	0
18:15	0	0	46	4	0	8	0	0	52	0	15	14	0	0	0	99	1	31	0	0	0	5	1	0	0
18:30	1	3	42	1	0	5	1	0	30	0	19	9	0	1	0	133	5	42	0	0	0	2	1	1	1
18:45	0	1	41	3	0	4	1	0	35	0	14	12	0	0	0	115	3	34	0	0	0	3	1	1	0
Total	4	28	895	43	0	164	31	8	614	0	243	195	6	8	0	1382	58	532	0	0	0	100	5	12	2

Type of peak hour being reported: Intersection Peak

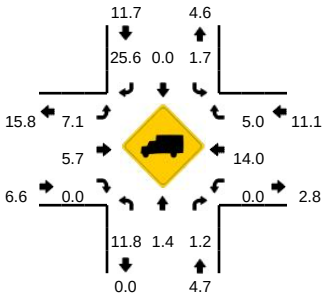
Method for determining peak hour: Total Entering Volume

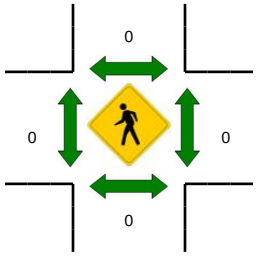
LOCATION: Corporate Dr -- Pennsy Dr
CITY/STATE: Hyattsville, MD

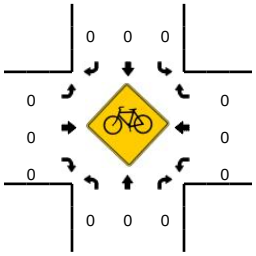
QC JOB #: 12424807
DATE: Tue, Feb 25 2014

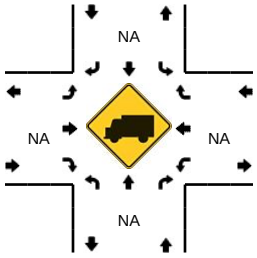


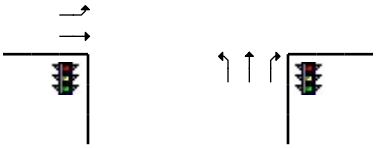
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

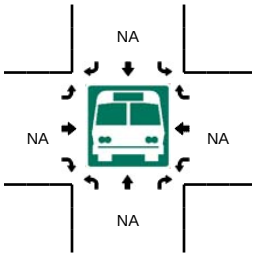












15-Min Count Period Beginning At	Corporate Dr (Northbound)				Corporate Dr (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	31	14	11	0	1	0	15	0	23	2	0	0	0	2	2	0	101	
6:15 AM	34	35	11	0	4	0	15	0	38	6	0	0	0	1	6	0	150	
6:30 AM	47	41	14	0	3	0	19	0	41	4	0	0	0	5	7	0	181	
6:45 AM	46	36	19	0	8	0	18	0	37	10	0	0	0	6	6	0	186	618
7:00 AM	56	34	17	0	9	0	14	0	45	15	0	0	0	7	2	0	199	716
7:15 AM	53	47	20	0	13	0	34	0	55	11	0	0	0	12	6	0	251	817
7:30 AM	49	51	35	0	9	0	21	0	80	17	0	0	0	8	3	0	273	909
7:45 AM	61	51	31	0	20	0	23	0	72	26	0	0	0	11	4	0	299	1022
8:00 AM	42	50	32	0	22	0	21	0	84	13	0	0	0	6	3	0	273	1096
8:15 AM	50	55	46	0	21	0	21	0	58	32	0	0	0	17	3	0	303	1148
8:30 AM	50	54	47	0	28	0	22	0	60	40	0	0	0	6	5	0	312	1187
8:45 AM	45	50	48	0	49	0	22	0	52	55	0	0	0	14	9	0	344	1232
9:00 AM	38	23	53	0	27	0	5	0	50	38	0	0	0	22	8	0	264	1223
9:15 AM	32	20	34	0	18	0	17	0	35	31	0	0	0	19	5	0	211	1131
9:30 AM	28	18	24	0	18	0	10	0	27	17	0	0	0	10	6	0	158	977
9:45 AM	23	19	19	0	9	0	21	0	33	12	0	0	0	17	4	0	157	790

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	180	200	192	0	196	0	88	0	208	220	0	0	0	56	36	0	1376
Heavy Trucks	20	0	4		0	0	32		24	16	0		0	4	4		104
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

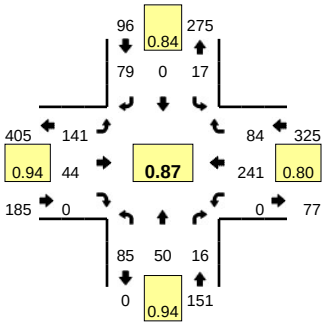
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

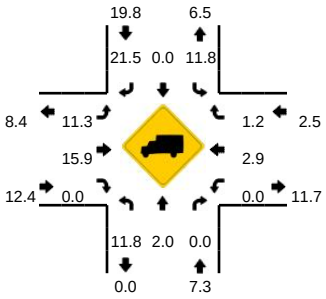
Method for determining peak hour: Total Entering Volume

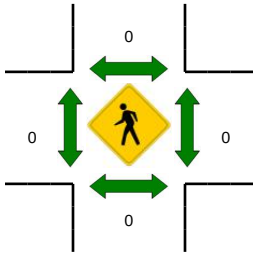
LOCATION: Corporate Dr -- Pennsy Dr
CITY/STATE: Hyattsville, MD

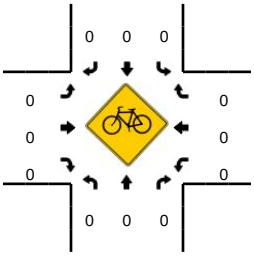
QC JOB #: 12424808
DATE: Tue, Feb 25 2014

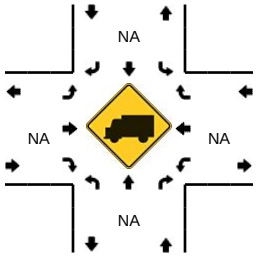


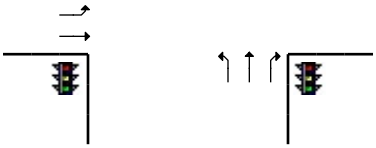
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

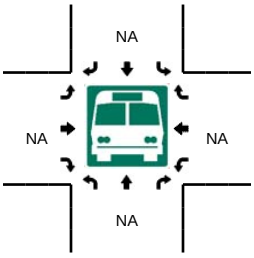












15-Min Count Period Beginning At	Corporate Dr (Northbound)				Corporate Dr (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	31	4	4	0	6	0	13	0	24	12	0	0	0	26	10	0	130	
3:15 PM	30	11	2	0	2	0	14	0	29	6	0	0	0	26	10	0	130	
3:30 PM	28	9	7	0	7	0	16	0	25	10	0	0	0	20	8	0	130	
3:45 PM	30	3	6	0	9	0	17	0	30	13	0	0	0	41	5	0	154	544
4:00 PM	24	7	2	0	7	0	19	0	39	10	0	0	0	48	9	0	165	579
4:15 PM	25	9	7	0	6	0	12	0	20	10	0	0	0	24	8	0	121	570
4:30 PM	20	13	2	0	3	0	17	0	30	13	0	0	0	61	14	0	173	613
4:45 PM	20	12	8	0	5	0	16	0	39	7	0	0	0	35	11	0	153	612
5:00 PM	16	15	5	0	2	0	20	0	34	10	0	0	0	83	18	0	203	650
5:15 PM	17	12	1	0	4	0	17	0	38	13	0	0	0	44	16	0	162	691
5:30 PM	22	11	8	0	7	0	22	0	35	15	0	0	0	69	29	0	218	736
5:45 PM	30	12	2	0	4	0	20	0	34	6	0	0	0	45	21	0	174	757
6:00 PM	20	9	3	0	4	0	18	0	29	12	0	0	0	44	14	0	153	707
6:15 PM	26	13	2	0	3	0	19	0	37	4	0	0	0	37	17	0	158	703
6:30 PM	26	5	0	0	6	0	21	0	15	5	0	0	0	31	11	0	120	605
6:45 PM	31	11	4	0	1	0	19	0	18	2	0	0	0	19	12	0	117	548

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	88	44	32	0	28	0	88	0	140	60	0	0	0	276	116	0	872
Heavy Trucks	12	4	0		0	0	16		4	12	0		0	8	0		56
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/3/2014 10:09 PM

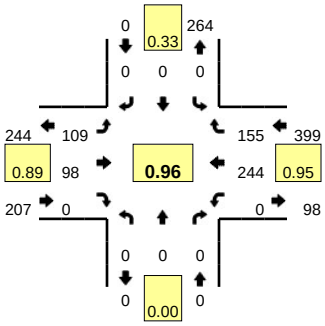
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

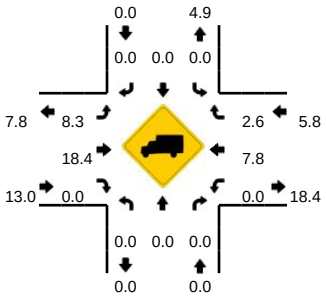
Method for determining peak hour: Total Entering Volume

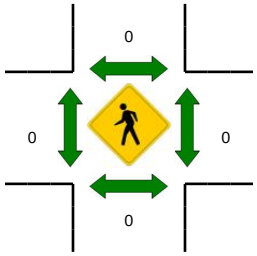
LOCATION: Landover Metro Station E Dwy -- Pennsy Dr
CITY/STATE: Landover, MD

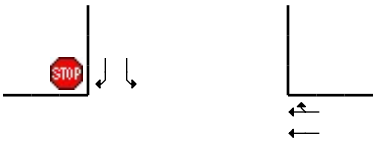
QC JOB #: 12485101
DATE: Wed, Apr 30 2014

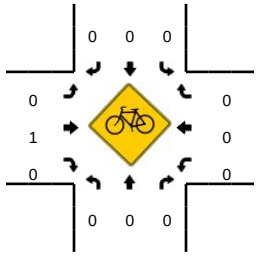


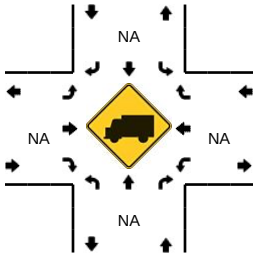
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

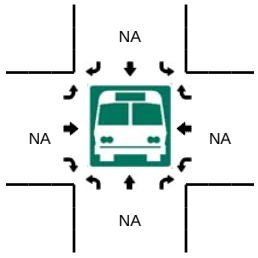












15-Min Count Period Beginning At	Landover Metro Station E Dwy (Northbound)				Landover Metro Station E Dwy (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	0	0	13	16	0	0	0	23	12	0	64	
6:15 AM	0	0	0	0	0	0	0	0	20	10	0	0	0	34	12	0	76	
6:30 AM	0	0	0	0	1	0	1	0	17	28	0	0	0	49	22	0	118	
6:45 AM	0	0	0	0	0	0	0	0	21	26	0	0	0	44	20	0	111	369
7:00 AM	0	0	0	0	0	0	0	0	20	21	0	1	0	54	38	0	134	439
7:15 AM	0	0	0	0	0	0	0	0	23	29	0	0	0	67	38	0	157	520
7:30 AM	0	0	0	0	0	0	0	0	32	20	0	0	0	63	35	0	150	552
7:45 AM	0	0	0	0	0	0	0	0	36	22	0	0	0	57	39	0	154	595
8:00 AM	0	0	0	0	0	0	0	0	18	27	0	0	0	57	43	0	145	606
8:15 AM	0	0	0	0	0	0	0	0	20	26	0	0	0	37	54	0	137	586
8:30 AM	0	0	0	0	0	0	0	0	14	21	0	0	0	35	33	0	103	539
8:45 AM	0	0	0	0	1	0	0	0	17	18	0	0	0	24	31	0	91	476
9:00 AM	0	0	0	0	0	0	3	0	19	22	0	0	0	22	26	0	92	423
9:15 AM	0	0	0	0	0	0	0	0	13	20	0	0	0	22	15	0	70	356
9:30 AM	0	0	0	0	0	0	0	0	10	18	0	1	0	21	13	0	63	316
9:45 AM	0	0	0	0	0	0	0	0	11	22	0	0	0	22	8	0	63	288

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	92	116	0	0	0	268	152	0	628
Heavy Trucks	0	0	0		0	0	0		12	28	0		0	28	4		72
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

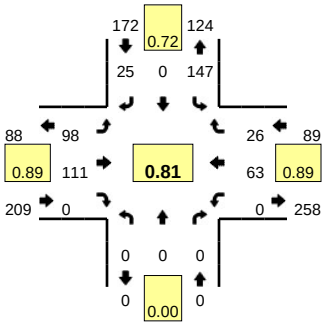
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

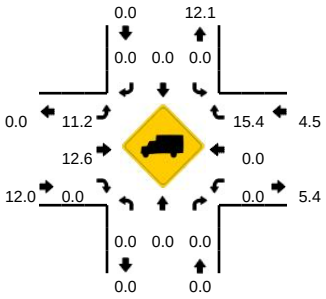
Method for determining peak hour: Total Entering Volume

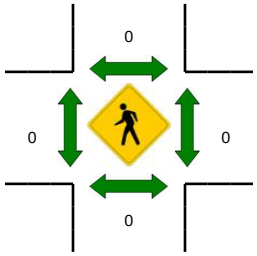
LOCATION: Landover Metro Station E Dwy -- Pennsy Dr
CITY/STATE: Landover, MD

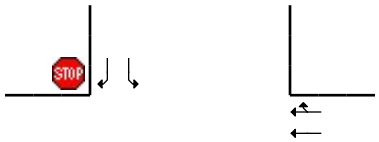
QC JOB #: 12485102
DATE: Wed, Apr 30 2014

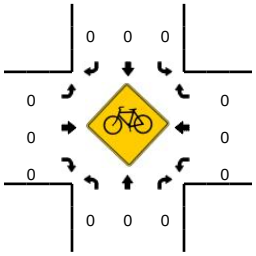


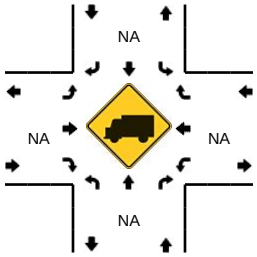
Peak-Hour: 5:15 PM -- 6:15 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

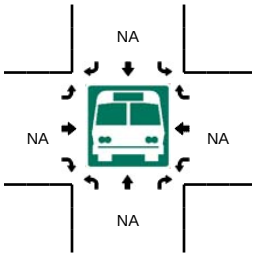












15-Min Count Period Beginning At	Landover Metro Station E Dwy (Northbound)				Landover Metro Station E Dwy (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	8	0	0	0	7	30	0	0	0	33	6	0	84	
3:15 PM	0	0	0	0	3	0	4	0	14	27	0	0	0	27	3	0	78	
3:30 PM	0	0	0	0	2	0	1	0	8	24	0	0	0	29	6	0	70	
3:45 PM	0	0	0	0	13	0	1	0	13	26	0	0	0	27	8	0	88	320
4:00 PM	0	0	0	0	7	0	0	0	12	29	0	0	0	24	5	0	77	313
4:15 PM	0	0	0	0	20	0	2	0	15	28	0	0	0	18	2	0	85	320
4:30 PM	0	0	0	0	7	0	2	0	20	26	0	0	0	16	5	0	76	326
4:45 PM	0	0	0	0	30	0	3	0	11	21	0	0	0	18	5	0	88	326
5:00 PM	0	0	0	0	12	0	1	0	21	27	0	0	0	14	10	0	85	334
5:15 PM	0	0	0	0	33	0	3	0	26	22	0	0	0	21	7	0	112	361
5:30 PM	0	0	0	0	50	0	11	0	26	33	0	0	0	17	8	0	145	430
5:45 PM	0	0	0	0	22	0	4	0	26	27	0	0	0	19	4	0	102	444
6:00 PM	0	0	0	0	42	0	7	0	20	29	0	0	0	6	7	0	111	470
6:15 PM	0	0	0	0	32	0	8	0	12	19	0	0	0	13	3	0	87	445
6:30 PM	0	0	0	0	31	0	4	0	15	24	0	0	0	7	5	0	86	386
6:45 PM	0	0	0	0	19	0	6	0	17	19	0	0	0	12	1	0	74	358

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	200	0	44	0	104	132	0	0	0	68	32	0	580
Heavy Trucks	0	0	0		0	0	0		12	12	0		0	0	8		32
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

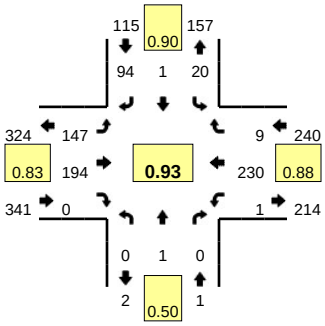
Method for determining peak hour: Total Entering Volume

LOCATION: Landover Metro Station W Dwy -- Pennsy Dr

CITY/STATE: Landover, MD

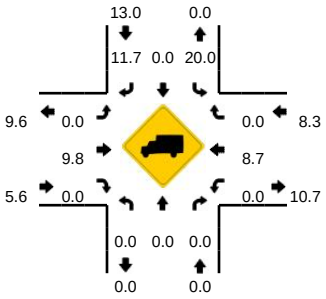
QC JOB #: 12485103

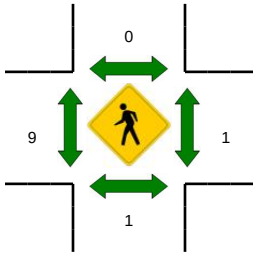
DATE: Wed, Apr 30 2014

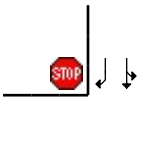


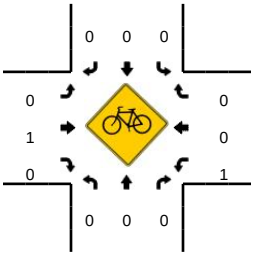
Peak-Hour: 7:15 AM -- 8:15 AM

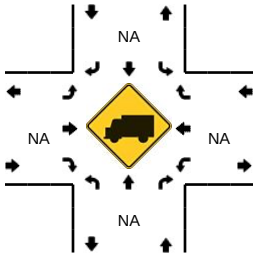
Peak 15-Min: 7:45 AM -- 8:00 AM

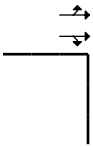


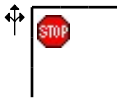


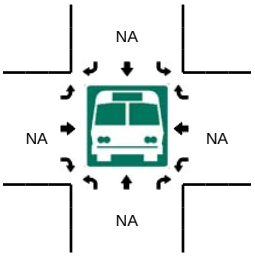












15-Min Count Period Beginning At	Landover Metro Station W Dwy (Northbound)				Landover Metro Station W Dwy (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	4	0	12	0	8	28	0	0	0	23	0	0	75	
6:15 AM	0	0	0	0	3	0	17	0	10	24	0	0	0	34	0	0	88	
6:30 AM	0	0	0	0	11	0	9	0	16	37	0	0	0	46	0	0	119	
6:45 AM	0	0	0	0	5	0	21	0	17	43	0	0	0	48	0	0	134	416
7:00 AM	0	0	0	0	2	0	19	0	20	39	0	0	0	53	1	0	134	475
7:15 AM	0	1	0	0	6	0	22	0	39	47	0	0	0	65	3	0	183	570
7:30 AM	0	0	0	0	5	0	27	0	28	48	0	0	1	57	4	0	170	621
7:45 AM	0	0	0	0	7	0	23	0	46	57	0	0	0	54	1	0	188	675
8:00 AM	0	0	0	0	2	1	22	0	34	42	0	0	0	54	1	0	156	697
8:15 AM	0	0	0	0	9	0	15	0	33	36	0	0	0	34	1	0	128	642
8:30 AM	0	0	2	0	2	0	16	0	20	32	1	0	1	34	0	0	108	580
8:45 AM	0	0	0	0	4	0	15	0	28	32	1	0	0	17	1	0	98	490
9:00 AM	0	0	1	0	5	0	6	0	14	34	0	0	1	24	2	0	87	421
9:15 AM	0	0	0	0	6	0	13	0	14	28	4	0	1	20	0	0	86	379
9:30 AM	2	0	0	0	4	0	8	0	5	26	2	0	0	21	0	0	68	339
9:45 AM	1	0	0	0	2	0	8	0	8	31	9	0	3	18	1	0	81	322

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	92	0	184	228	0	0	0	216	4	0	752
Heavy Trucks	0	0	0		4	0	8		0	20	0		0	20	0		52
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		1	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

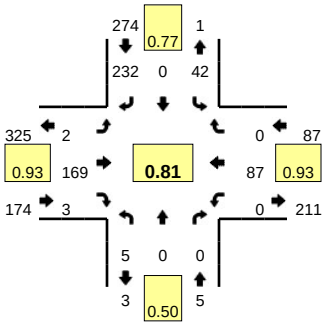
Method for determining peak hour: Total Entering Volume

LOCATION: Landover Metro Station W Dwy -- Pennsy Dr

CITY/STATE: Landover, MD

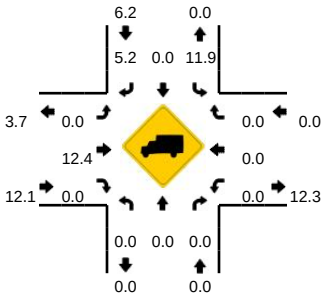
QC JOB #: 12485104

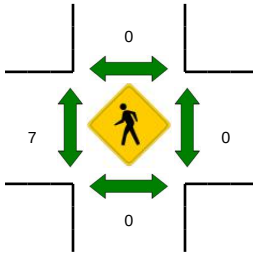
DATE: Wed, Apr 30 2014

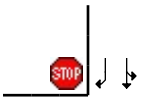


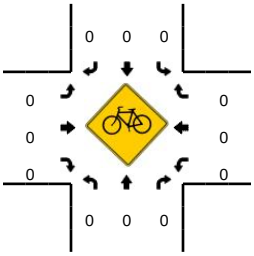
Peak-Hour: 5:15 PM -- 6:15 PM

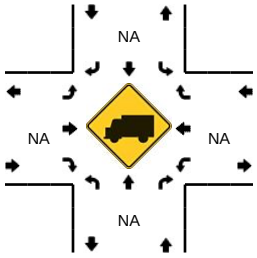
Peak 15-Min: 5:30 PM -- 5:45 PM

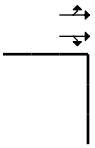


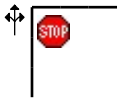


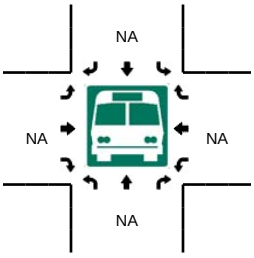












15-Min Count Period Beginning At	Landover Metro Station W Dwy (Northbound)				Landover Metro Station W Dwy (Southbound)				Pennsy Dr (Eastbound)				Pennsy Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	1	0	0	0	5	0	20	0	2	33	0	0	1	30	0	0	92	
3:15 PM	1	0	0	0	3	0	13	0	0	40	3	0	2	32	0	0	94	
3:30 PM	2	0	0	0	1	0	12	0	1	28	0	0	0	32	0	0	76	
3:45 PM	0	0	1	0	8	0	20	0	1	30	2	0	1	27	1	0	91	353
4:00 PM	0	0	0	0	7	0	19	0	0	35	0	0	1	22	0	0	84	345
4:15 PM	2	0	0	0	4	0	21	0	0	37	2	0	1	19	1	0	87	338
4:30 PM	1	0	0	0	6	0	11	0	0	43	2	0	0	18	0	0	81	343
4:45 PM	3	0	1	0	7	0	49	0	2	22	0	0	0	21	0	0	105	357
5:00 PM	0	0	0	0	5	0	18	0	0	42	0	0	0	15	1	0	81	354
5:15 PM	1	0	0	0	10	0	42	0	0	38	1	0	0	23	0	0	115	382
5:30 PM	3	0	0	0	15	0	74	0	0	47	0	0	0	28	0	0	167	468
5:45 PM	0	0	0	0	10	0	43	0	0	40	0	1	0	22	0	0	116	479
6:00 PM	1	0	0	0	7	0	73	0	1	44	2	0	0	14	0	0	142	540
6:15 PM	0	0	1	0	6	1	34	0	1	23	0	0	0	20	0	0	86	511
6:30 PM	1	0	1	0	10	0	36	0	0	28	1	0	0	11	0	0	88	432
6:45 PM	0	0	0	0	4	0	40	0	3	31	0	0	0	18	0	0	96	412

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	0	0	0	60	0	296	0	0	188	0	0	0	112	0	0	668
Heavy Trucks	0	0	0		8	0	16		0	16	0		0	0	0		40
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

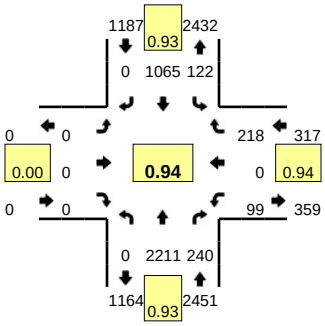
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

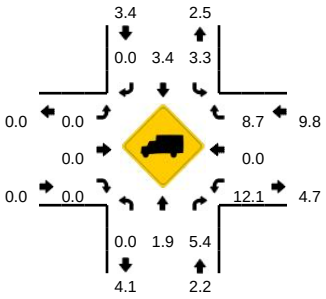
Method for determining peak hour: Total Entering Volume

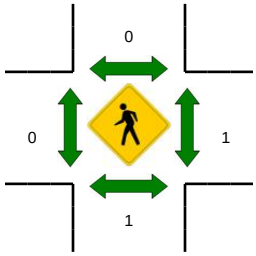
LOCATION: Old Landover Rd -- Landover Rd
CITY/STATE: Landover, MD

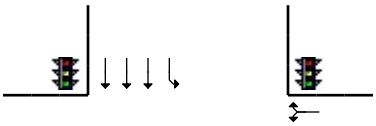
QC JOB #: 12485105
DATE: Wed, Apr 30 2014

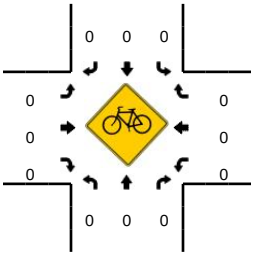


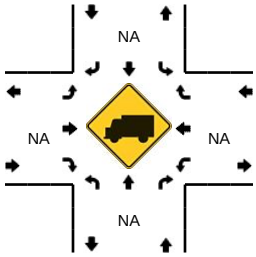
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

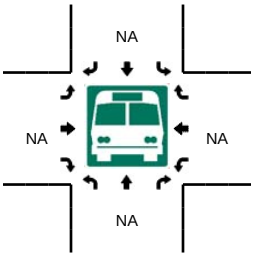












15-Min Count Period Beginning At	Old Landover Rd (Northbound)				Old Landover Rd (Southbound)				Landover Rd (Eastbound)				Landover Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	214	21	0	13	92	0	1	0	0	0	0	16	0	18	0	375	
6:15 AM	0	326	21	0	13	105	0	0	0	0	0	0	19	0	24	0	508	
6:30 AM	0	387	39	0	19	161	0	0	0	0	0	0	13	0	37	0	656	
6:45 AM	0	445	43	0	24	170	0	2	0	0	0	0	19	0	42	0	745	2284
7:00 AM	0	551	40	0	27	186	0	0	0	0	0	0	16	0	54	0	874	2783
7:15 AM	0	616	59	0	27	241	0	0	0	0	0	0	27	0	52	0	1022	3297
7:30 AM	0	536	54	0	31	257	0	3	0	0	0	0	19	0	59	0	959	3600
7:45 AM	0	572	72	0	33	296	0	0	0	0	0	0	23	0	53	0	1049	3904
8:00 AM	0	487	55	0	28	271	0	0	0	0	0	0	30	0	54	0	925	3955
8:15 AM	0	477	46	0	22	341	0	1	0	0	0	0	16	0	37	0	940	3873
8:30 AM	0	399	32	0	21	307	0	2	0	0	0	0	17	0	39	0	817	3731
8:45 AM	0	422	41	0	30	299	0	4	0	0	0	0	11	0	17	0	824	3506
9:00 AM	0	383	35	0	20	299	0	1	0	0	0	0	16	0	17	0	771	3352
9:15 AM	0	340	28	0	13	249	0	1	0	0	0	0	14	0	14	0	659	3071
9:30 AM	0	313	28	0	14	237	0	3	0	0	0	0	14	0	20	0	629	2883
9:45 AM	0	318	23	0	20	230	0	1	0	0	0	0	11	0	16	0	619	2678

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	2288	288	0	132	1184	0	0	0	0	0	0	92	0	212	0	4196
Heavy Trucks	0	56	16		4	52	0		0	0	0		12	0	4		144
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

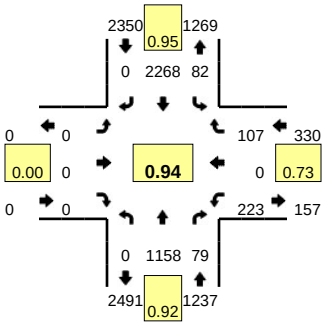
Method for determining peak hour: Total Entering Volume

LOCATION: Old Landover Rd -- Landover Rd

CITY/STATE: Landover, MD

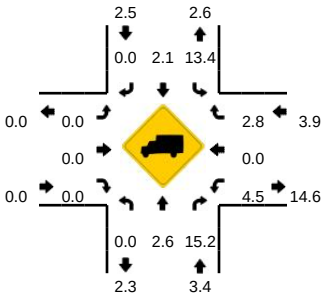
QC JOB #: 12485106

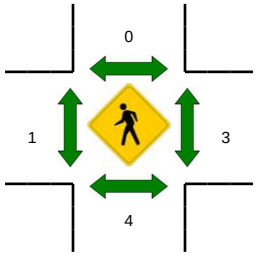
DATE: Wed, Apr 30 2014

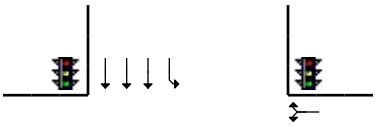


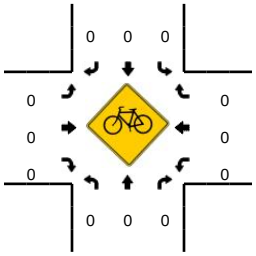
Peak-Hour: 5:30 PM -- 6:30 PM

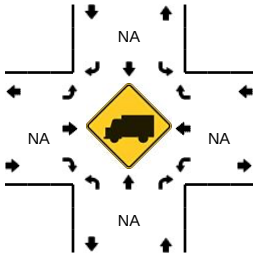
Peak 15-Min: 5:30 PM -- 5:45 PM

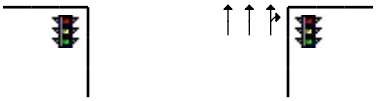


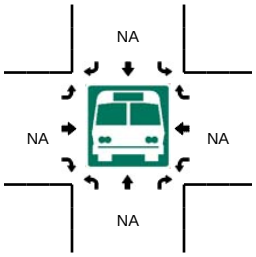












15-Min Count Period Beginning At	Old Landover Rd (Northbound)				Old Landover Rd (Southbound)				Landover Rd (Eastbound)				Landover Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	275	8	0	28	368	0	0	0	0	0	0	24	0	33	0	736	
3:15 PM	0	292	15	0	29	396	0	1	0	0	0	0	21	0	27	0	781	
3:30 PM	0	318	14	0	14	409	0	3	0	0	0	0	26	0	18	0	802	
3:45 PM	0	265	13	0	18	421	0	1	0	0	0	0	28	0	26	0	772	3091
4:00 PM	0	350	13	0	16	463	0	2	0	0	0	0	28	0	20	0	892	3247
4:15 PM	0	296	20	0	21	482	0	2	0	0	0	0	18	0	27	0	866	3332
4:30 PM	0	346	21	0	23	497	0	0	0	0	0	0	23	0	15	0	925	3455
4:45 PM	0	293	15	0	12	314	0	1	0	0	0	0	41	0	33	0	709	3392
5:00 PM	0	310	21	0	20	303	0	1	0	0	0	0	19	0	18	0	692	3192
5:15 PM	0	320	21	0	13	423	0	0	0	0	0	0	35	0	29	0	841	3167
5:30 PM	0	301	26	0	18	577	0	1	0	0	0	0	79	0	37	0	1039	3281
5:45 PM	0	281	18	0	26	595	0	0	0	0	0	0	46	0	24	0	990	3562
6:00 PM	0	286	24	0	20	549	0	1	0	0	0	0	60	0	30	0	970	3840
6:15 PM	0	290	11	0	14	547	0	2	0	0	0	0	38	0	16	0	918	3917
6:30 PM	0	255	19	0	14	432	0	1	0	0	0	0	36	0	16	0	773	3651
6:45 PM	0	220	19	0	14	393	0	1	0	0	0	0	42	0	17	0	706	3367

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1204	104	0	72	2308	0	4	0	0	0	0	316	0	148	0	4156
Heavy Trucks	0	32	12		12	40	0		0	0	0		16	0	4		116
Pedestrians		4				0				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 5/8/2014 5:22 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX B-2: CALCULATION SHEETS

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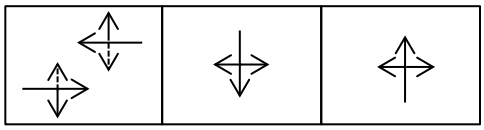
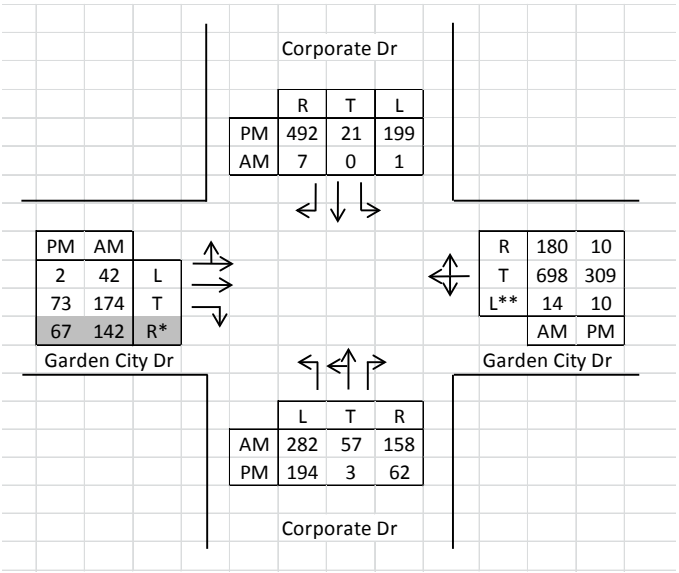
CLV Calculation Sheet

Intersection: Garden City Dr and Corporate Dr

Scenario: Existing

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.
**The approach lane is wide enough for the through traffic to pass around the stopped left turning vehicles.

Existing AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	282	1.00	282	339	0.60	203			203	NO	203
NB-TH	1	57		57								
NB-RT	1	158		158	158	1.00	158			158		
SB-LT	1	1	1.00	1	1	1.00	1			1		7
SB-TH	1	0		0	0	1.00	0			0		
SB-RT	1	7		7	7	1.00	7			7		
EB-LT	SH	42	4.00	168							NO	920
EB-TH	2	174		174	342	0.55	188	14		202		
EB-RT	1	142		142	142	1.00	142		-142	0		
WB-LT	SH	14	1.00	14	14	1.00	14			14	NO	
WB-TH	1	698		698	878	1.00	878	42		920		
WB-RT	SH	180		180								
											CLV Total =	**1,130**
											LOS =	**B**

Existing PM

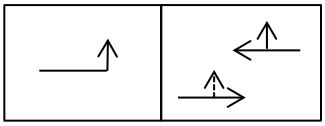
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	194	1.00	194	197	0.60	118			118	NO	118
NB-TH	1	3		3								
NB-RT	1	62		62	62	1.00	62			62		
SB-LT	1	199	1.00	199	199	1.00	199			199		492
SB-TH	1	21		21	21	1.00	21			21		
SB-RT	1	492		492	492	1.00	492			492		
EB-LT	SH	2	4.00	2							NO	321
EB-TH	2	73		73	75	0.55	41	10		51		
EB-RT	1	67		67	67	1.00	67		-67	0		
WB-LT	SH	10	1.00	10	10	1.00	10			10	NO	
WB-TH	1	309		309	319	1.00	319	2		321		
WB-RT	SH	10		10								
											CLV Total =	**931**
											LOS =	**A**

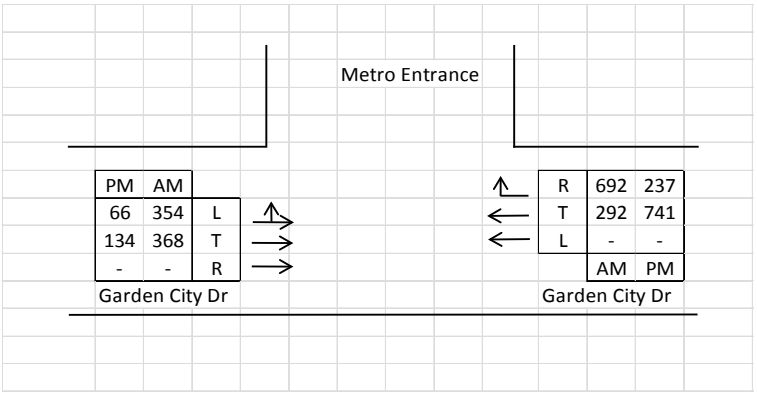
CLV Calculation Sheet

Intersection: Garden City Dr and Metro Entrance

Scenario: Existing

Signal Phase Diagram





Existing AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	354	4.00	1416							YES	
EB-TH	3	368		368	368	0.55	202			202		
EB-RT												1046
WB-LT												
WB-TH	2	292		292	292	0.55	161	354		515		
WB-RT	1	692		692	692	1.00	692	354		1046		
											CLV Total =	**1,046**
											LOS =	**B**

Existing PM

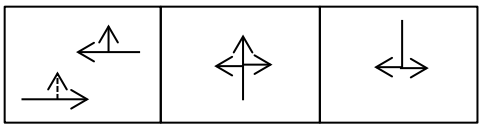
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	66	4.00	264							YES	
EB-TH	3	134		134	134	0.55	74			74		
EB-RT												474
WB-LT												
WB-TH	2	741		741	741	0.55	408	66		474		
WB-RT	1	237		237	237	1.00	237	66		303		
											CLV Total =	**474**
											LOS =	**A**

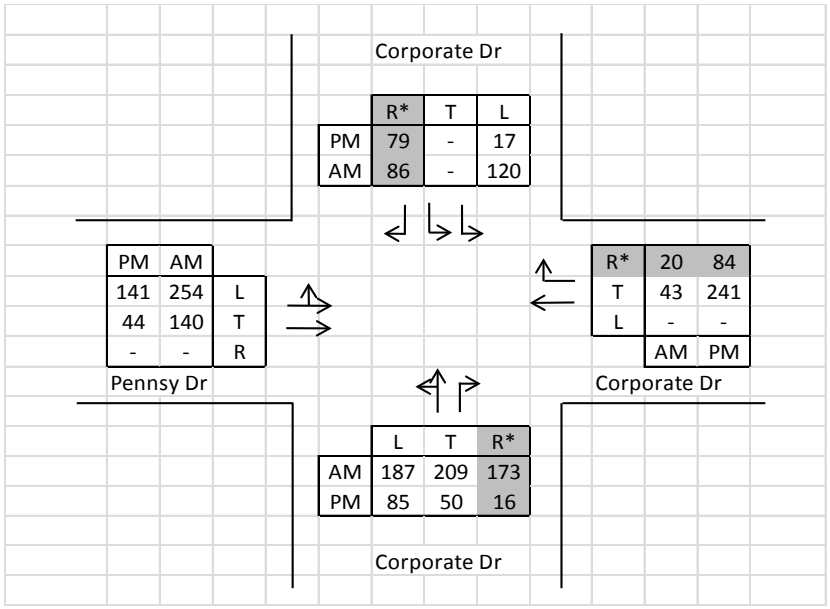
CLV Calculation Sheet

Intersection: Pennsy Dr and Corporate Dr

Scenario: Existing

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.

Existing AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	187	1.00	187	396	1.00	396			396		396
NB-TH	1	209		209								
NB-RT	1	173		173	173	1.00	173		-173	0		
SB-LT	2	120	1.00	120	120	0.60	72			72		72
SB-TH												
SB-RT	1	86		86	86	1.00	86		-86	0		
EB-LT	SH	254	1.10	279							YES	297
EB-TH	2	140		140	140	1.00	140			140		
EB-RT												
WB-LT												
WB-TH	1	43		43	43	1.00	43	254		297		
WB-RT	1	20		20	20				-20			
											CLV Total =	**765**
											LOS =	**A**

Existing PM

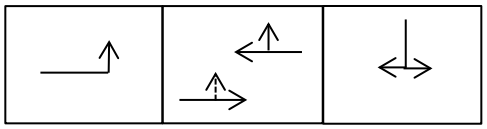
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	85	1.00	85	135	1.00	135			135		135
NB-TH	1	50		50								
NB-RT	1	16		16	16	1.00	16		-16	0		
SB-LT	2	17	1.00	17	17	0.60	10			10		10
SB-TH												
SB-RT	1	79		79	79	1.00	79		-79	0		
EB-LT	SH	141	2.00	282							YES	382
EB-TH	2	44		44	44	1.00	44			44		
EB-RT												
WB-LT												
WB-TH	1	241		241	241	1.00	241	141		382		
WB-RT	1	84		84	84				-84			
											CLV Total =	**527**
											LOS =	**A**

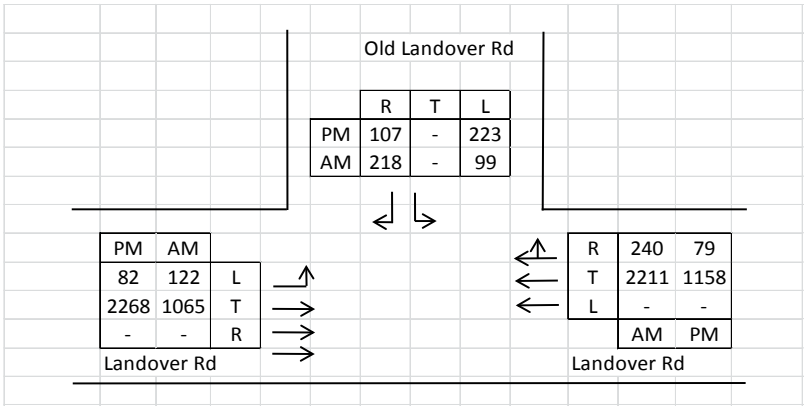
CLV Calculation Sheet

Intersection: Landover Rd and Old Landover Rd

Scenario: Existing

Signal Phase Diagram





Existing AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	99	1.00	99	99	1.00	99			99		99
SB-TH												
SB-RT	1	218		218	218	1.00	218		-122	96		
EB-LT	1	122	1.00	122	122	1.00	122					1029
EB-TH	3	1065		1065	1065	0.37	394			394		
EB-RT												
WB-LT												
WB-TH	3	2211		2211	2451	0.37	907	122		1029		
WB-RT	SH	240		240								
											CLV Total =	**1,128**
											LOS =	**B**

Existing PM

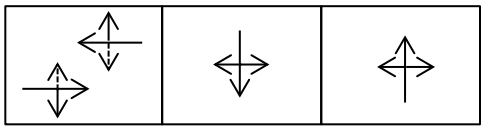
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	223	1.00	223	223	1.00	223			223		223
SB-TH												
SB-RT	1	107		107	107	1.00	107		-82	25		
EB-LT	1	82	1.00	82	82	1.00	82					839
EB-TH	3	2268		2268	2268	0.37	839			839		
EB-RT												
WB-LT												
WB-TH	3	1158		1158	1237	0.37	458	82		540		
WB-RT	SH	79		79								
											CLV Total =	**1,062**
											LOS =	**B**

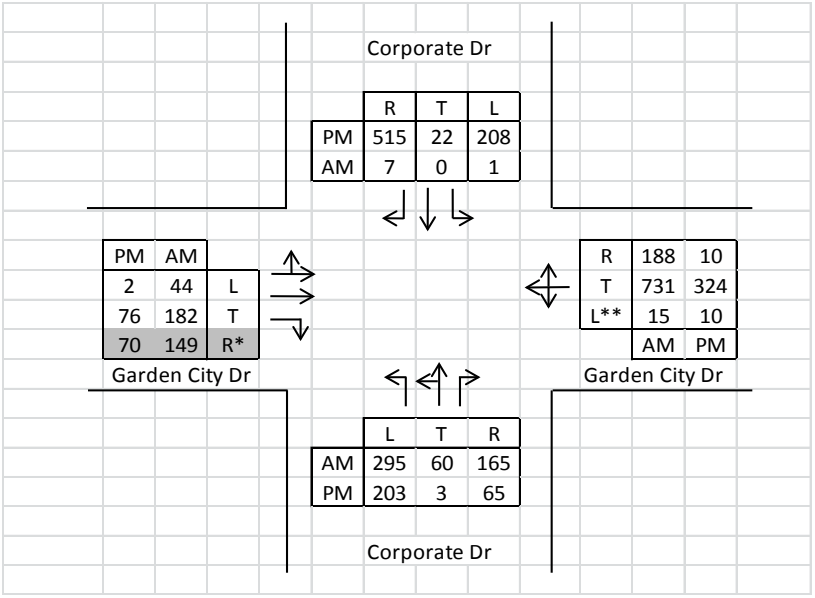
CLV Calculation Sheet

Intersection: Garden City Dr and Corporate Dr

Scenario: 2018 No-Build

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.
**The approach lane is wide enough for the through traffic to pass around the stopped left turning vehicles.

2018 No-Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	295	1.00	295	355	0.60	213			213	NO	
NB-TH	1	60		60								213
NB-RT	1	165		165	165	1.00	165			165		
SB-LT	1	1	1.00	1	1	1.00	1			1		
SB-TH	1	0		0	0	1.00	0			0		7
SB-RT	1	7		7	7	1.00	7			7		
EB-LT	SH	44	4.00	176							NO	
EB-TH	2	182		182	358	0.55	197	15		212		
EB-RT	1	149		149	149	1.00	149		-149	0		963
WB-LT	SH	15	1.00	15	15	1.00	15			15	NO	
WB-TH	1	731		731	919	1.00	919	44		963		
WB-RT	SH	188		188								
											CLV Total =	**1,183**
											LOS =	**C**

2018 No-Build PM

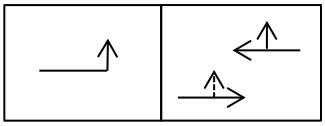
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	203	1.00	203	206	0.60	124			124	NO	
NB-TH	1	3		3								124
NB-RT	1	65		65	65	1.00	65			65		
SB-LT	1	208	1.00	208	208	1.00	208			208		
SB-TH	1	22		22	22	1.00	22			22		515
SB-RT	1	515		515	515	1.00	515			515		
EB-LT	SH	2	4.00	2							NO	
EB-TH	2	76		76	78	0.55	43	10		53		
EB-RT	1	70		70	70	1.00	70		-70	0		336
WB-LT	SH	10	1.00	10	10	1.00	10			10	NO	
WB-TH	1	324		324	334	1.00	334	2		336		
WB-RT	SH	10		10								
											CLV Total =	**975**
											LOS =	**A**

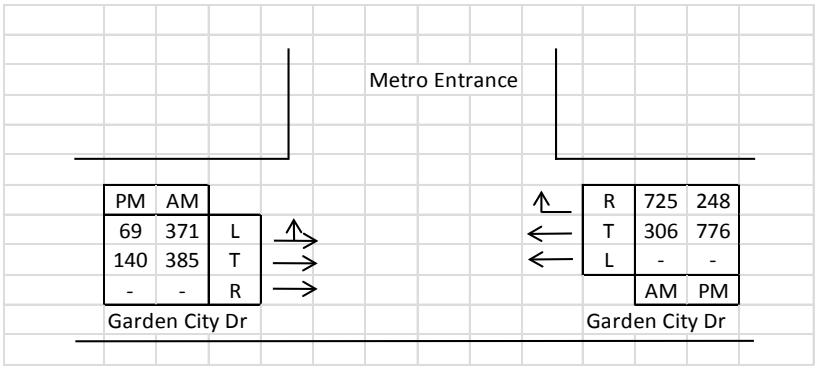
CLV Calculation Sheet

Intersection: Garden City Dr and Metro Entrance

Scenario: 2018 No-Build

Signal Phase Diagram





2018 No-Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	371	4.00	1484							YES	
EB-TH	3	385		385	385	0.55	212			212		
EB-RT												1096
WB-LT												
WB-TH	2	306		306	306	0.55	168	371		539		
WB-RT	1	725		725	725	1.00	725	371		1096		
											CLV Total =	**1,096**
											LOS =	**B**

2018 No-Build PM

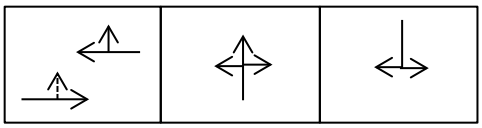
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	69	4.00	276							YES	
EB-TH	3	140		140	140	0.55	77			77		
EB-RT												496
WB-LT												
WB-TH	2	776		776	776	0.55	427	69		496		
WB-RT	1	248		248	248	1.00	248	69		317		
											CLV Total =	**496**
											LOS =	**A**

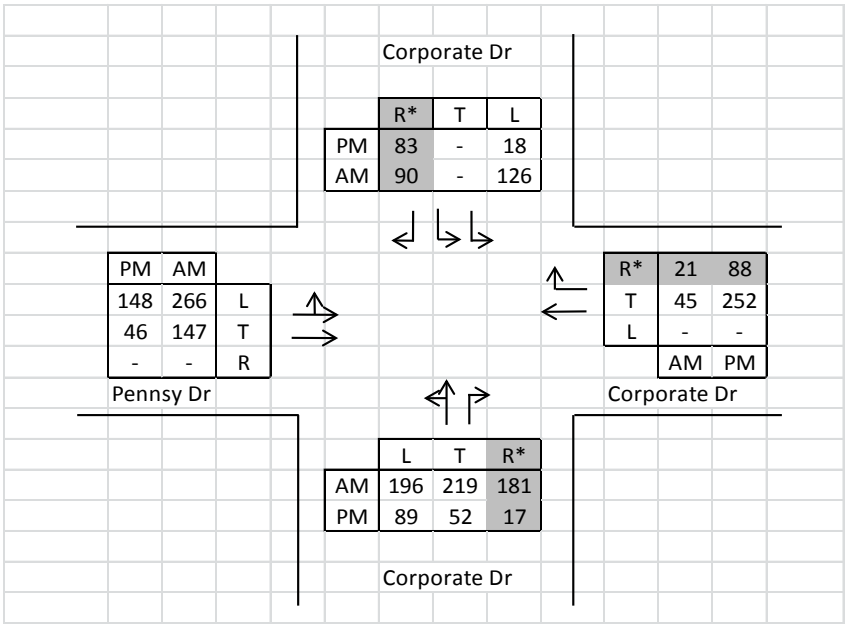
CLV Calculation Sheet

Intersection: Pennsy Dr and Corporate Dr

Scenario: 2018 No-Build

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.

2018 No-Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	196	1.00	196	415	1.00	415			415		415
NB-TH	1	219		219								
NB-RT	1	181		181	181	1.00	181		-181	0		
SB-LT	2	126	1.00	126	126	0.60	76			76		76
SB-TH												
SB-RT	1	90		90	90	1.00	90		-90	0		
EB-LT	SH	266	1.10	293							YES	311
EB-TH	2	147		147	147	1.00	147			147		
EB-RT												
WB-LT												
WB-TH	1	45		45	45	1.00	45	266		311		
WB-RT	1	21		21	21				-21			
											CLV Total =	**802**
											LOS =	**A**

2018 No-Build PM

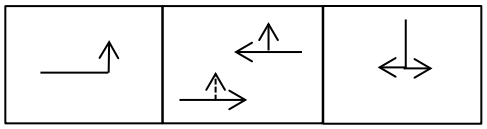
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	89	1.00	89	141	1.00	141			141		141
NB-TH	1	52		52								
NB-RT	1	17		17	17	1.00	17		-17	0		
SB-LT	2	18	1.00	18	18	0.60	11			11		11
SB-TH												
SB-RT	1	83		83	83	1.00	83		-83	0		
EB-LT	SH	148	2.00	296							YES	400
EB-TH	2	46		46	46	1.00	46			46		
EB-RT												
WB-LT												
WB-TH	1	252		252	252	1.00	252	148		400		
WB-RT	1	88		88	88				-88			
											CLV Total =	**552**
											LOS =	**A**

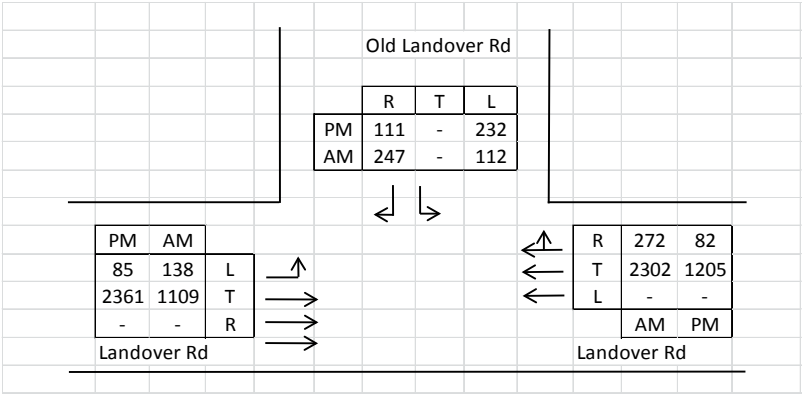
CLV Calculation Sheet

Intersection: Landover Rd and Old Landover Rd

Scenario: 2018 No-Build

Signal Phase Diagram





2018 No-Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	112	1.00	112	112	1.00	112			112		112
SB-TH												
SB-RT	1	247		247	247	1.00	247		-138	109		
EB-LT	1	138	1.00	138	138	1.00	138					1090
EB-TH	3	1109		1109	1109	0.37	410			410		
EB-RT												
WB-LT												
WB-TH	3	2302		2302	2574	0.37	952	138		1090		
WB-RT	SH	272		272								
											CLV Total =	**1,202**
											LOS =	**C**

2018 No-Build PM

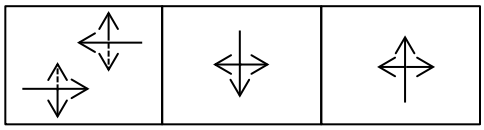
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	232	1.00	232	232	1.00	232			232		232
SB-TH												
SB-RT	1	111		111	111	1.00	111		-85	26		
EB-LT	1	85	1.00	85	85	1.00	85					874
EB-TH	3	2361		2361	2361	0.37	874			874		
EB-RT												
WB-LT												
WB-TH	3	1205		1205	1287	0.37	476	85		561		
WB-RT	SH	82		82								
											CLV Total =	**1,106**
											LOS =	**B**

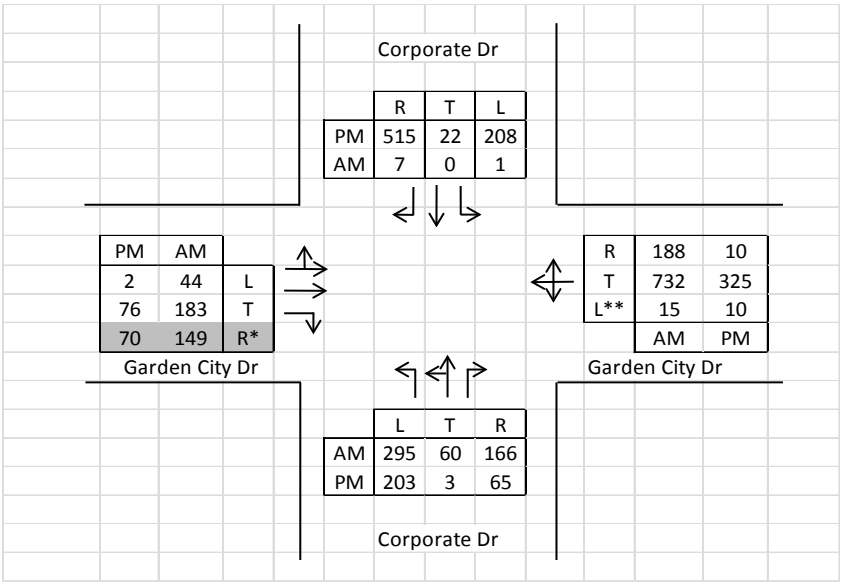
CLV Calculation Sheet

Intersection: Garden City Dr and Corporate Dr

Scenario: 2018 Build

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.
**The approach lane is wide enough for the through traffic to pass around the stopped left turning vehicles.

2018 Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	295	1.00	295	355	0.60	213			213	NO	
NB-TH	1	60		60								213
NB-RT	1	166		166	166	1.00	166			166		
SB-LT	1	1	1.00	1	1	1.00	1			1		
SB-TH	1	0		0	0	1.00	0			0		7
SB-RT	1	7		7	7	1.00	7			7		
EB-LT	SH	44	4.00	176							NO	
EB-TH	2	183		183	359	0.55	197	15		212		
EB-RT	1	149		149	149	1.00	149		-149	0		964
WB-LT	SH	15	1.00	15	15	1.00	15			15	NO	
WB-TH	1	732		732	920	1.00	920	44		964		
WB-RT	SH	188		188								
											CLV Total =	**1,184**
											LOS =	**C**

2018 Build PM

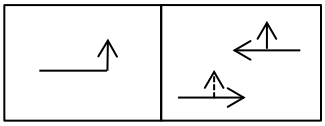
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	1+SH	203	1.00	203	206	0.60	124			124	NO	
NB-TH	1	3		3								124
NB-RT	1	65		65	65	1.00	65			65		
SB-LT	1	208	1.00	208	208	1.00	208			208		
SB-TH	1	22		22	22	1.00	22			22		515
SB-RT	1	515		515	515	1.00	515			515		
EB-LT	SH	2	4.00	2							NO	
EB-TH	2	76		76	78	0.55	43	10		53		
EB-RT	1	70		70	70	1.00	70		-70	0		337
WB-LT	SH	10	1.00	10	10	1.00	10			10	NO	
WB-TH	1	325		325	335	1.00	335	2		337		
WB-RT	SH	10		10								
											CLV Total =	**976**
											LOS =	**A**

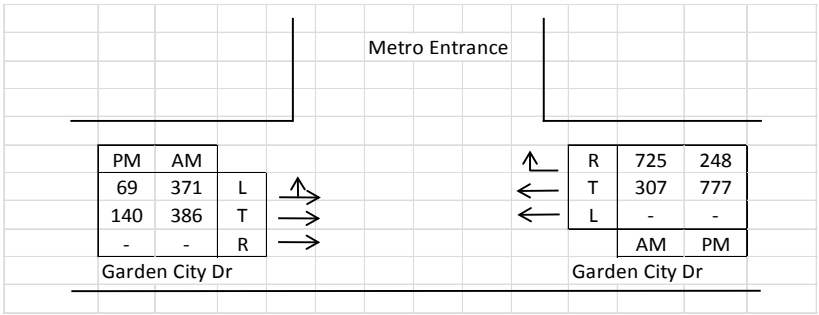
CLV Calculation Sheet

Intersection: Garden City Dr and Metro Entrance

Scenario: 2018 Build

Signal Phase Diagram





2018 Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	371	4.00	1484							YES	
EB-TH	3	386		386	386	0.55	212			212		
EB-RT												1096
WB-LT												
WB-TH	2	307		307	307	0.55	169	371		540		
WB-RT	1	725		725	725	1.00	725	371		1096		
											CLV Total =	**1,096**
											LOS =	**B**

2018 Build PM

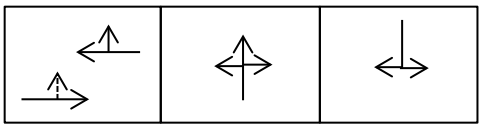
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT												
SB-TH												
SB-RT												
EB-LT	SH	69	4.00	276							YES	
EB-TH	3	140		140	140	0.55	77			77		
EB-RT												496
WB-LT												
WB-TH	2	777		777	777	0.55	427	69		496		
WB-RT	1	248		248	248	1.00	248	69		317		
											CLV Total =	**496**
											LOS =	**A**

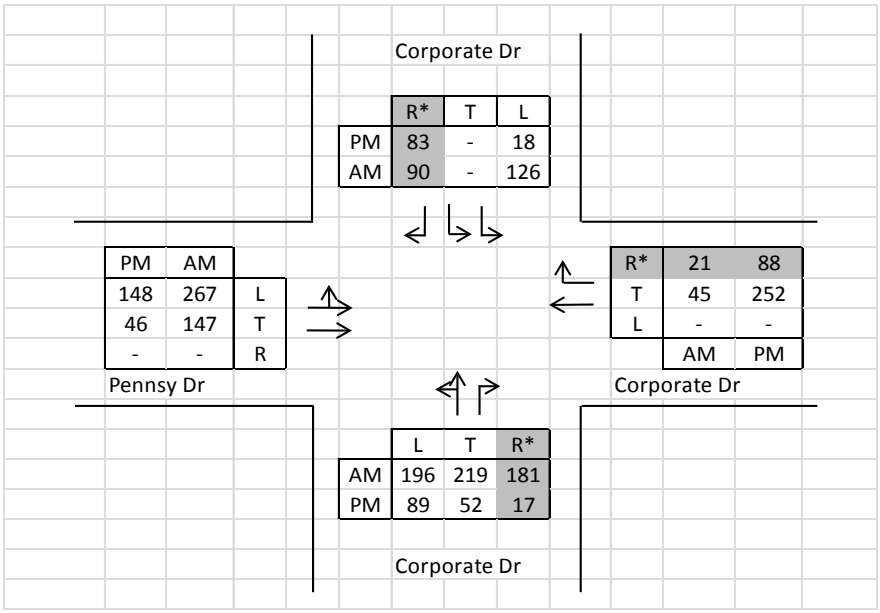
CLV Calculation Sheet

Intersection: Pennsy Dr and Corporate Dr

Scenario: 2018 No-Build

Signal Phase Diagram





*Right-turn is channelized; not included in the CLV analysis.

2018 Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	196	1.00	196	415	1.00	415			415		415
NB-TH	1	219		219								
NB-RT	1	181		181	181	1.00	181		-181	0		
SB-LT	2	126	1.00	126	126	0.60	76			76		76
SB-TH												
SB-RT	1	90		90	90	1.00	90		-90	0		
EB-LT	SH	267	1.10	294							YES	312
EB-TH	2	147		147	147	1.00	147			147		
EB-RT												
WB-LT												
WB-TH	1	45		45	45	1.00	45	267		312		
WB-RT	1	21		21	21				-21			
											CLV Total =	**803**
											LOS =	**A**

2018 Build PM

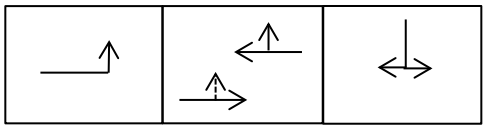
Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT	SH	89	1.00	89	141	1.00	141			141		141
NB-TH	1	52		52								
NB-RT	1	17		17	17	1.00	17		-17	0		
SB-LT	2	18	1.00	18	18	0.60	11			11		11
SB-TH												
SB-RT	1	83		83	83	1.00	83		-83	0		
EB-LT	SH	148	2.00	296							YES	400
EB-TH	2	46		46	46	1.00	46			46		
EB-RT												
WB-LT												
WB-TH	1	252		252	252	1.00	252	148		400		
WB-RT	1	88		88	88				-88			
											CLV Total =	**552**
											LOS =	**A**

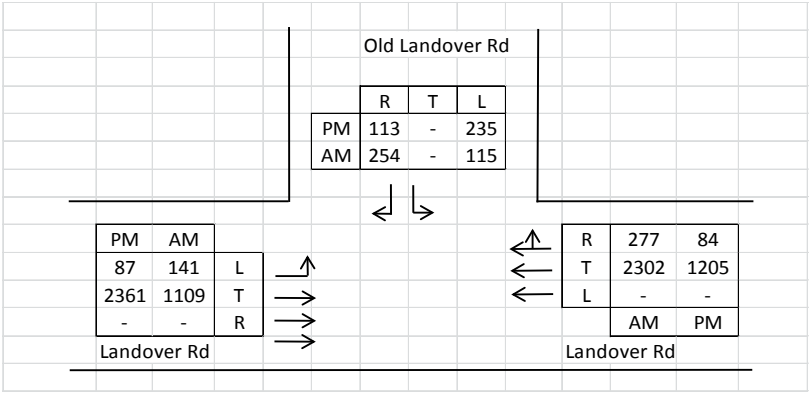
CLV Calculation Sheet

Intersection: Landover Rd and Old Landover Rd

Scenario: 2018 Build

Signal Phase Diagram





2018 Build AM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	115	1.00	115	115	1.00	115			115		
SB-TH												115
SB-RT	1	254		254	254	1.00	254		-141	113		
EB-LT	1	141	1.00	141	141	1.00	141					
EB-TH	3	1109		1109	1109	0.37	410			410		
EB-RT												1095
WB-LT												
WB-TH	3	2302		2302	2579	0.37	954	141		1095		
WB-RT	SH	277		277								
											CLV Total =	**1,210**
											LOS =	**C**

2018 Build PM

Lane	Number of Lanes/Type	Movement Volume	Shared LT Adjustment Factor	Adjusted Volume	Combined Lane Group Volume	Lane Utilization Factor	Lane Volume	Opposing Volume	Adjustment	Critical Lane Sum	Defacto Lane?	Critical Volume
NB-LT												
NB-TH												
NB-RT												
SB-LT	1	235	1.00	235	235	1.00	235			235		
SB-TH												235
SB-RT	1	113		113	113	1.00	113		-87	26		
EB-LT	1	87	1.00	87	87	1.00	87					
EB-TH	3	2361		2361	2361	0.37	874			874		
EB-RT												874
WB-LT												
WB-TH	3	1205		1205	1289	0.37	477	87		564		
WB-RT	SH	84		84								
											CLV Total =	**1,109**
											LOS =	**B**