



**Memorandum**

To: Eric Graye, AICP, PTP  
Montgomery County Department of  
Planning

Date: August 4, 2012

Project No.: 38102.01

From: Dan Goldfarb, P.E.

Re: Clarksburg Traffic Analysis Summary

## Introduction

The purpose of this memorandum is to provide a brief preliminary summary of the traffic analysis for the Clarksburg Sector Plan. The analysis focused on seven intersections that represent gateways into the study area, as well as key internal junctions. The intersections include:

- Interchange ramp terminals for I-270 and Clarksburg Road (MD 121) for both the eastern and western side of the interchange;
- Clarksburg Road (MD 121) & Frederick Road (MD 355);
- Shawnee Lane & Frederick Road (MD 355);
- Stringtown Road (MD 121A) & Frederick Road (MD 355);
- Gateway Center Drive & Clarksburg Road (MD 121)/Stringtown Road;
- New By-pass Road/Observation Drive & Stringtown Road (MD 121A).

There was no data collection effort associated with this analysis effort. The County supplied two lists of intersections to be reviewed. The above intersections are the only intersections that we were able to obtain existing count data. The interchange of I-270 and MD 121 represents a gateway into the study area, as well as the intersection of Shawnee Lane and Frederick Road. The list of intersections requested by the County included Clarksburg Road and Old Baltimore Road as well as West Baltimore and Frederick Road. There were no counts available from SHA for these intersections, but the two gateway intersections above capture traffic just upstream to the intersections on Old Baltimore Road.

The year 2040 forecast were developed using the County's TRAVEL/3 travel demand forecast model and land use supplied by the County for a high land use scenario, denoted as "HI" on the CLV sheets. The Cooperative Land Use totals at the regional level were held

constant for the HI scenario with balancing done in neighboring jurisdictions. A no-build and build alternatives were run with both land use scenarios. Given the localized highway improvement the trip tables were developed using the full TRAVEL/3 model run for both land use scenarios and then assigned to the alternative specific networks. The trip tables were not changed for the different network configurations since the addition of the by-pass was determined to have minimal impact on the trip distribution and mode choice. A subarea for the Clarksburg area was developed from the regional highway network and trips were assigned to the subarea network. The resulting ADT traffic volumes were post-processed using techniques outlined in NCHRP 255. Peak hour volumes were derived from the existing peak to daily and directional ratios for both morning and evening weekday.

Preliminary Traffic Assessment findings:

- With the added development by the year 2040 there will be a need for added capacity for travel north and south in the Clarksburg area.
- Frederick Road (MD 355) with a two lane cross section provides limited capacity for trips traveling north and south.
- The additional by-pass facility provides added capacity for north and south travel along the corridor.
- Even with the new facility there is a need for additional capacity improvements. These could include improved intersection geometrics, added lanes on the by-pass and MD 355, new facilities to the east of MD 355.

The Table 1 provides a summary of the critical lane volume analysis. The critical lane volume worksheets are attached.

**Table 1 - Summary of Preliminary Intersection Analysis Level of Service and Critical Lane Volumes**

Intersection	Existing				2040 No-Build				2040 Build				2040 HI No-Build				2040 HI Build			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
MD 121 & I-270 Western Intersection	A	365	A	250	B	1125	A	675	B	1125	A	675	B	1125	A	675	B	1125	A	700
I-270 & MD 121 Eastern Intersection	A	609	A	480	C	1213	D	1325	C	1200	D	1325	D	1306	D	1325	D	1306	D	1350
MD 355 & MD 121	C	1225	C	1150	D	1425	F	1850	A	875	F	1800	E	1525	F	1850	A	950	F	1800
MD 355 & Shawnee Lane	A	750	A	875	B	1083	B	1117	B	1096	B	1142	C	1183	B	1100	C	1196	C	1225
MD 355 & Stringtown Road	A	914	B	1068	F	1719	F	2431	B	1073	E	1522	F	1970	F	2431	C	1210	F	1657
Gateway Center Dr. & Stringtown Road	A	667	A	846	D	1397	D	1325	E	1540	E	1468	F	1721	D	1325	F	1802	F	1870
Observation Drive & Stringtown Road									D	1386	F	1616					D	1445	F	1801

A secondary analysis effort was done to supplement the preliminary analysis. The objective was to determine what network improvements would be needed in order to accommodate the additional traffic generated from the future development without constructing the new MD 355 by-pass facility. This exercise included intersection level improvements and was performed at a sketch planning level. The modified network with the improved intersection lane configurations was evaluated using the critical lane methodology.

The following list provides an overview of the intersection improvements. Intersection Improvements:

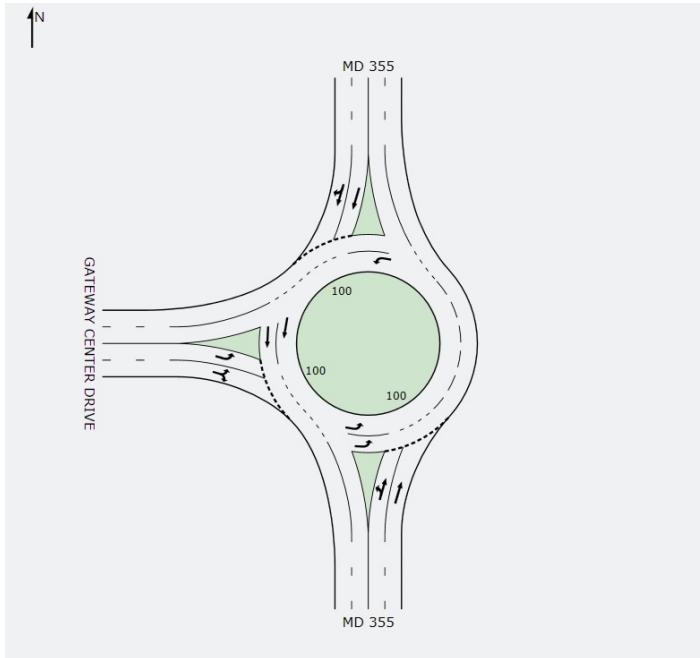
- MD 355 & MD 121 – Addition of a northbound and southbound through lane.
- MD 355 & Stringtown Road – Addition of a northbound and southbound through lane; the addition of an eastbound and westbound through lane as well as an additional eastbound left turn lane to northbound MD 355 and a southbound left turn lane to westbound Stringtown Road.
- Gateway Center Drive & Stringtown Road – Addition of an eastbound and westbound through lane; a dedicated eastbound free flow right turn to southbound Gateway Center Drive; the addition of a free flow right turn lane from northbound Gateway Center Drive to eastbound Stringtown Road.

Summary secondary analysis findings:

- Overall improvements could be made at the key intersections that would address the traffic and result in acceptable levels of service.
- The key intersections included those with LOS “F” which included the intersections along MD 355 as well as the intersection of Gateway Center Drive and Stringtown Road.
- The improvements resulted in LOS “D” or better compared to the previous LOS “F” at those key intersection.
- With the intersection improvements, in order for the roadways to function at acceptable levels MD 355 would have to be increased to a possible three lane section between Stringtown Road and Clarksburg Road (MD 121). The middle lane would have to serve as a contraflow lane during peak periods. At the key intersections along MD 355 there would be a need to include two lanes in each direction making it a four lane cross section. This would be required to address the addition through lanes at the intersections on MD 355.
- The four lane section on MD 355 would have to be tapered down to a three lane cross section. The ability to taper down would present a challenge given the short distance between the two key intersections on MD 355.
- It was determined that the tapering is not very feasible and the by-pass would be required if MD 355 is to remain in the current right of way and not impact the historical district of Clarksburg.
- The ability to build the new by-pass would provide an opportunity to construct a more complete street including the ability to serve non-motorized travel modes. It

would be hard to construct these types of facilities on MD 355 given the restrictions in the historical district.

As part of this analysis the termini for where the MD 355 by-pass rejoins MD 355 north of Clarksburg was evaluated using a roundabout. The following figure provides a schematic for a typical roundabout that would fit this location.



The roundabout would have two circulation lanes and the approaches would all need to have four lane cross sections. Although forecast volumes were not prepared as part of this analysis, a series of test volumes were analyzed using this configuration. This configuration is able to serve the volumes adequately. The roundabout configuration would provide for a more efficient transition for vehicles using the by-pass to enter back onto MD 355 north of Clarksburg. If the demand is too high then a signalized intersection would be required. With a demand based on the surrounding intersection the LOS would be approximately "C" or "D" given different sensitivity tests. The PM peak hour volumes were determined to be the critical volumes, with the northbound through volumes on MD 355 and the eastbound left turning volumes showing the highest demand. The roundabout did function and there is the ability to add an additional lane going northbound around the roundabout, creating a three lane section where the majority of the traffic is staying in those lanes and continuing northbound.

Table 2 provides a summary of the critical lane volume analysis for the secondary analysis. The critical lane volume worksheets follow the tables. Table 3 provides a summary of intersections improvements with the By-pass facility to bring all of the intersections to an acceptable level of service. In table 3 there are two intersections, MD 355 & Stringtown Road and Observation Road/New By-pass & Stringtown Road where improvements were made to bring the intersections to acceptable levels of service. These improvements included additional east-west through lanes, free-flow right turn lanes, and double left turn lanes. The CLV sheets are attached to this memorandum.

Additional analysis was done for the Clarksburg plan update using an alternative methodology and performance measure. The preliminary and secondary traffic analysis for the Clarksburg plan update used the Critical Lane Volume (CLV) methodology. At the request of the Planning Department an alternative analysis methodology was used. This methodology was based on the procedures and performance measures outlined in the Highway Capacity Manual. Synchro software was used to do this analysis. There were Synchro files for areas south of Clarksburg, but the County was unable to provide Synchro files that covered the defined study area that this analysis is focused on. Therefore VHB developed a network in Synchro for the defined study area. The signal times as well as optimization and coordination were based on patterns observed in the Synchro files provided for areas south of our study area.

The original intent of the preliminary traffic analysis was to develop a traffic forecast for year 2040 for both the planned development and a potential higher development plan. Two network scenarios were evaluated - with and without the MD 355 By-pass. The original effort included a preliminary review of the intersection operations in order to evaluate if the by-pass was required given the available network capacity. The approach used for the CLV based analysis was very basic and did no evaluate any complex type of signal phasing. It focused on two phases at each signal. This was determined to be adequate for the purpose of understanding the capacity constraints on the study area network. The HCM based analysis involved a level of greater complexity given the need for signal timings and coordination.

CLV is a planning tool focusing on the lane capacity supplied and the capacity consumed. The CLV analysis tool functions at a high level of coarseness. Earlier applications of the procedure would categorize results as under-capacity, near-capacity, and over-capacity as compared to providing a discrete level of service grade. The 1985 Highway Capacity Manual used such categories with the CLV procedures. Given the need for comparing results many planning and transportation departments, as well as other agencies, have developed level of service standards similar to the Highway Capacity Manual operational analysis. In this framework levels of service are described in terms of a grade, "A" through "F".

Table 4 shows the results comparing the two methodologies. There were some differences, but overall the results were compatible. The greatest difference between the two methodologies was with the interchange terminal intersections. The HCM based analysis incorporates a greater number of attributes and requires more input data. The ramps provide an example of how the HCM based analysis has a greater sensitivity to how the intersection functions. For the interchange ramps the saturation flow rate was increased to reflect the higher speeds. The CLV analysis did not differentiate between entering saturation flows or receiving saturation flows, it only focuses on a capacity of the intersections as a functions of the number of lanes approaching the intersection.

Overall the two methodologies would tend to lead to the same conclusion that there needs to be added capacity in the defined study area. The MD 355 By-pass is important addition to the capacity in the defined study area. The HCM analysis is probably more accurate given the additional data demands.

**Table 2 - Summary of Secondary Intersection Analysis Level of Service and Critical Lane Volumes**

Intersection	Existing				2040 No-Build With Improvements				2040 HI No-Build With Improvements			
	AM		PM		AM		PM		AM		PM	
MD 121 & I-270 Western Intersection	A	365	A	250	B	1125	A	675	B	1125	A	675
I-270 & MD 121 Eastern Intersection	A	609	A	480	C	1213	D	1325	D	1306	D	1325
MD 355 & MD 121	C	1225	C	1150	A	955	C	1157	B	1090	C	1157
MD 355 & Shawnee Lane	A	750	A	875	B	1083	B	1117	C	1183	B	1100
MD 355 & Stringtown Road	A	914	B	1068	B	1125	C	1299	D	1394	D	1416
Gateway Center Dr. & Stringtown Road	A	667	A	846	D	1397	D	1325	C	1204	C	1202
Observation Drive & Stringtown Road												

 Intersection Improvement
**Table 3 - Summary of Intersection Analysis Level of Service and Critical Lane Volumes with Improvements**

Intersection	Existing				2040 Build				2040 Build With Improvements			
	AM		PM		AM		PM		AM		PM	
MD 121 & I-270 Western Intersection	A	365	A	250	B	1125	A	675	B	1125	A	675
I-270 & MD 121 Eastern Intersection	A	609	A	480	C	1200	D	1325	C	1200	D	1325
MD 355 & MD 121	C	1225	C	1150	A	875	F	1800	A	875	D	1409
MD 355 & Shawnee Lane	A	750	A	875	B	1096	B	1142	B	1096	B	1142
MD 355 & Stringtown Road	A	914	B	1068	B	1073	E	1522	B	1073	E	1522
Gateway Center Dr. & Stringtown Road	A	667	A	846	E	1540	E	1468	E	1540	E	1468
Observation Drive & Stringtown Road					D	1386	F	1616	D	1386	D	1430

 Intersection Improvement

Table 4 Level of Service Summary and Comparison

Intersection	2040 No-Build								2040 Build							
	AM Peak				PM Peak				AM Peak				PM Peak			
	Synchro/HCM Delay	CLV LOS	V/C	CLV LOS												
MD 121 & I-270 SB Ramp	14.2	B	0.70	B	16.2	B	0.42	A	11.0	B	0.70	B	15.1	B	0.42	A
MD 121 & I-270 NB Ramp	3.6	A	0.76	C	10.4	B	0.83	D	2.8	A	0.75	C	8.9	A	0.83	D
Clarksburg Rd & Gateway Center	25.8	C	0.87	D	28.1	C	0.83	D	45.2	D	0.96	E	37.0	D	0.92	E
MD 355 & Stringtown Road	198.4	F	1.07	F	201.1	F	1.52	F	27.9	C	0.67	B	78.7	E	0.95	E
MD 355 & MD 121	46.3	D	0.89	D	152.1	F	1.16	F	22.6	C	0.55	A	93.6	F	1.13	F
MD 355 & Shawnee Lane	20.3	C	0.68	B	29.2	C	0.70	B	17.6	B	0.68	B	29.2	C	0.71	B
New Road/Observation Drive & Stringtown Road	--	--	--	--	--	--	--	--	35.0	D	0.87	D	90.9	F	1.01	F

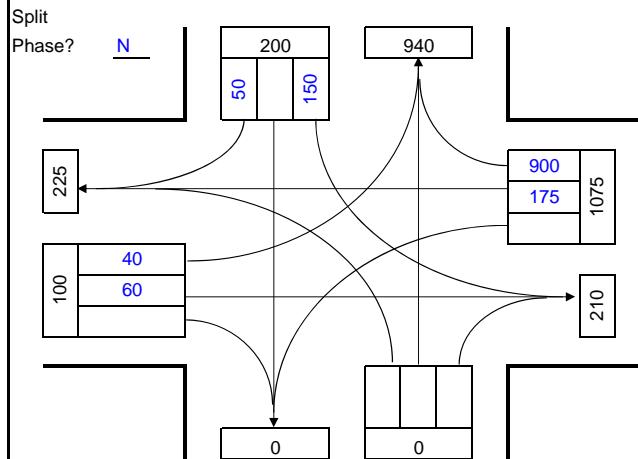
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Western Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: Existing  
Analyst: DSG/VHB

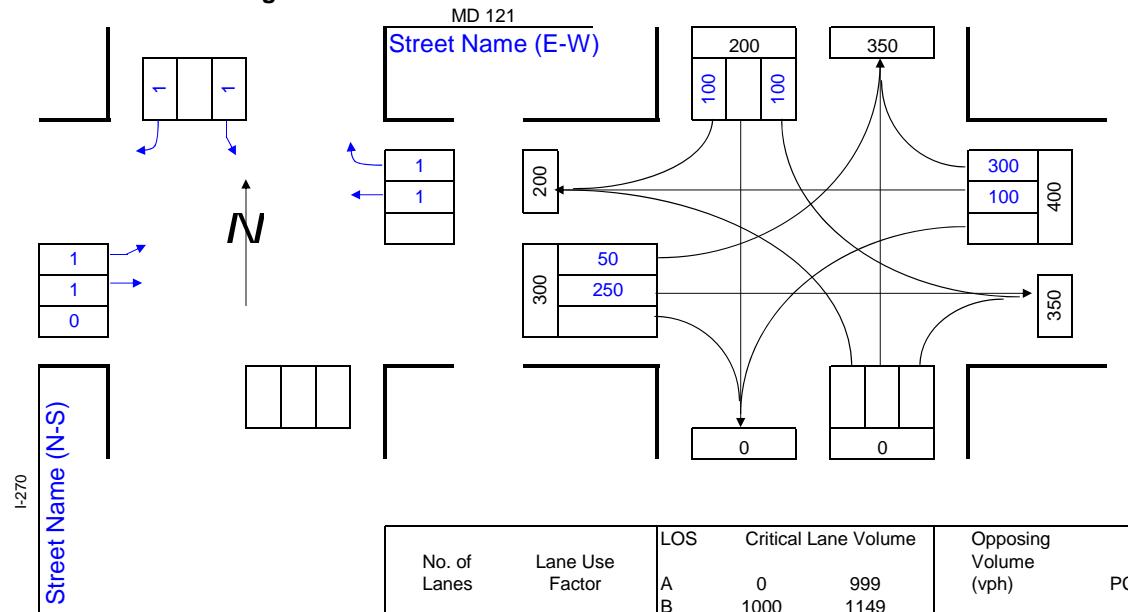


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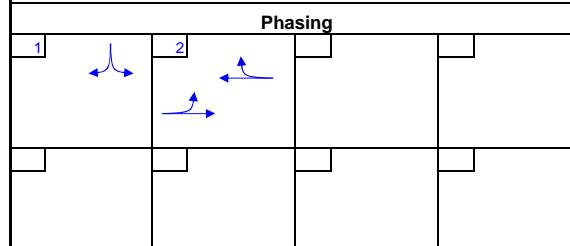
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM				PM							
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor
1	SBL	0	1.00	0	150	1.00	150	150	C	1	SBL	1.00	0
2	EB	60	1.00	60	0	1.00	0	60	C	2	EB	250	1.00
2	WB	175	1.00	175	40	1.00	40	215	C	2	WB	100	1.00
C: Critical Volume							C: Critical Volume						
Total V/C LOS							Total V/C LOS						
365 0.23 A							250 0.16 A						

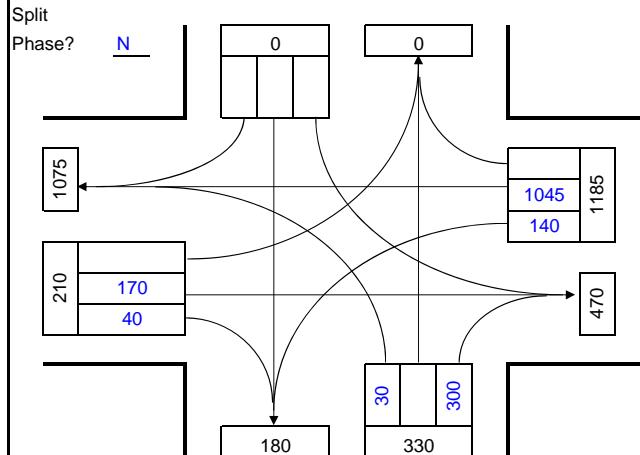
Critical Lane Volume  
Level of Service Worksheet

Intersection: I-270 & MD 121 Eastern Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: Existing  
Analyst: DSG/VHB

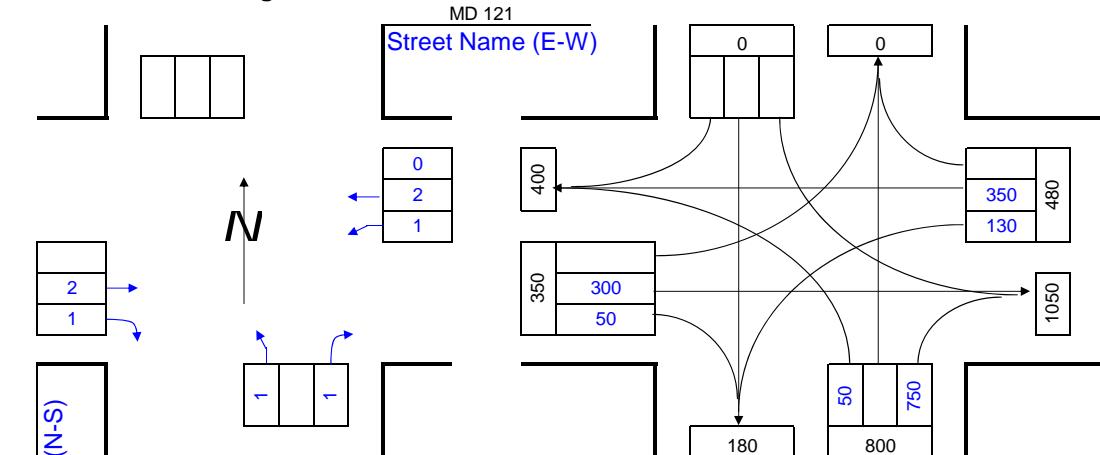


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Morning Peak Hour

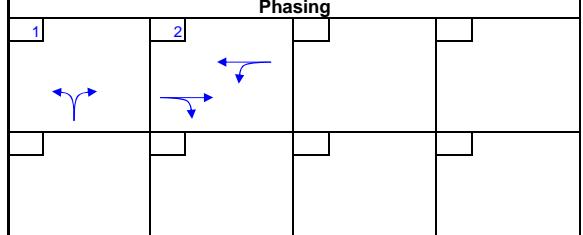


Lane Configuration



Evening Peak Hour

Phasing



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1.00	1149			
C	1150	1299	<= 199	1.1	
D	1300	1449	<= 599	2.0	
E	1450	1600	<= 799	3.0	
F	1601	9999	<= 999	4.0	
Dbl-Lft	0.53		> 1000	5.0	

Phase	Movement	AM					PM				
		(2) Lane Use Factor	(1) Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume	(1) Lane Use Factor	(2) Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume
(1)	(1) x (2)	(1)	(3) x (4)	C	(1)	(1) x (2)	(1)	(3) x (4)	C	(1)	(1) x (2)
1	NBL	30	1.00	30	25	1.00	25	55	C	1	NBL
										50	1.00
2	EB	170	0.53	90	140	1.00	140	230		2	EB
2	WB	1045	0.53	554		1.00	0	554	C	2	WB
										300	1.00
										130	1.00
										130	1.00
C: Critical Volume						C: Critical Volume					
Total V/C LOS						Total V/C LOS					
609						480					
0.38						0.30					
A						A					

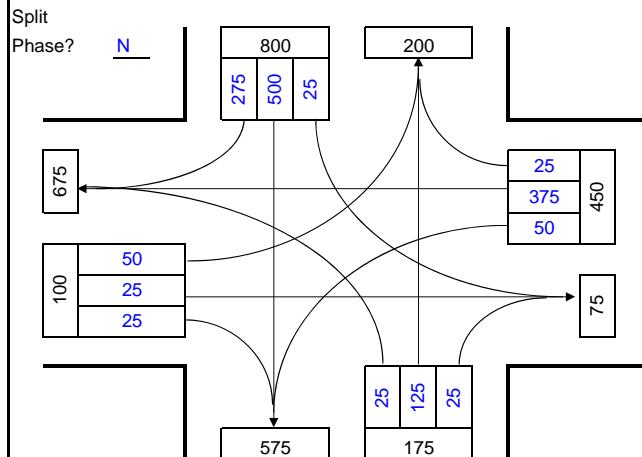
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: Existing  
Analyst: DSG/VHB

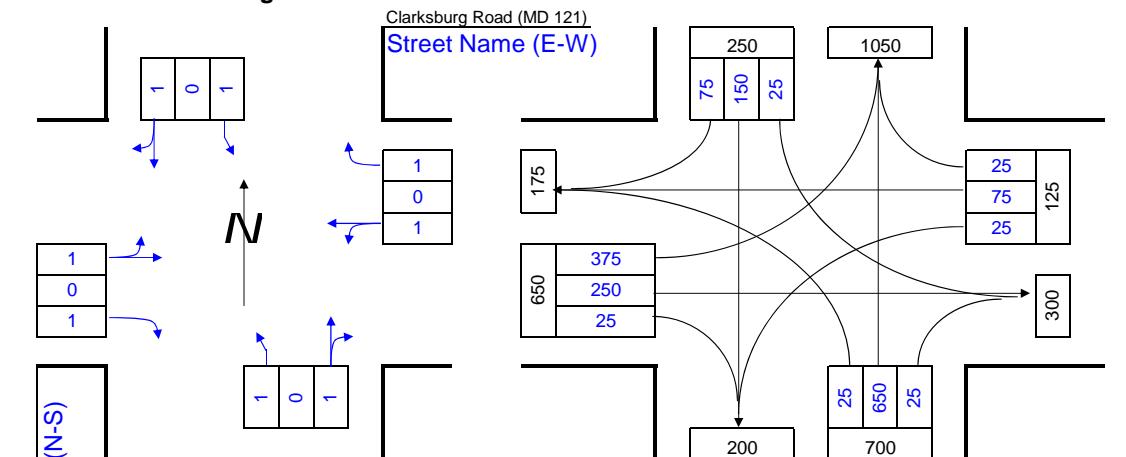


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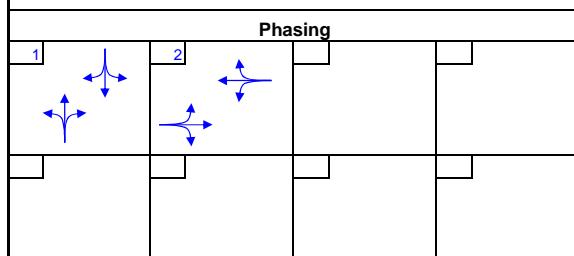
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	999	1149	<= 199	1.1
2	0.53	D	1150	1299	<= 599	2.0
3	0.37	E	1300	1449	<= 799	3.0
4	0.30	F	1450	1600	<= 999	4.0
Dbl-Lft	0.53		1601	9999	> 1000	5.0

Phase	Movement	AM					PM						
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane C	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane C
(1)	(2)	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C	(1)	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C	
1	NB	150	1.00	150	25	1.00	25	175	1	675	1.00	675	25
1	SB	775	1.00	775	25	1.00	25	800	C	1	225	1.00	225
2	EB	375	1.00	375	50	1.00	50	425	C	2	250	1.00	250
2	WB	25	1.00	25	50	1.00	50	75		2	75	1.00	75
C: Critical Volume							C: Critical Volume						
Total V/C LOS							Total V/C LOS						
1225							1150						
0.77							0.72						
C							C						

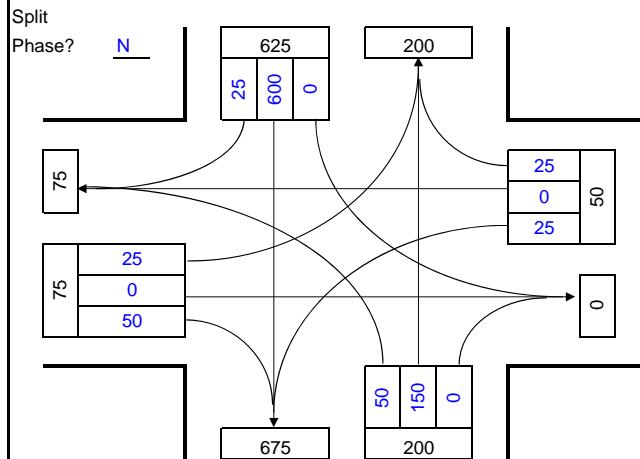
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 355 & Shawnee Lane  
Major Approach: MD 355  
Minor Approach: Shawnee Lane  
County/State: Montgomery County/Maryland  
Scenario: Existing  
Analyst: DSG/VHB

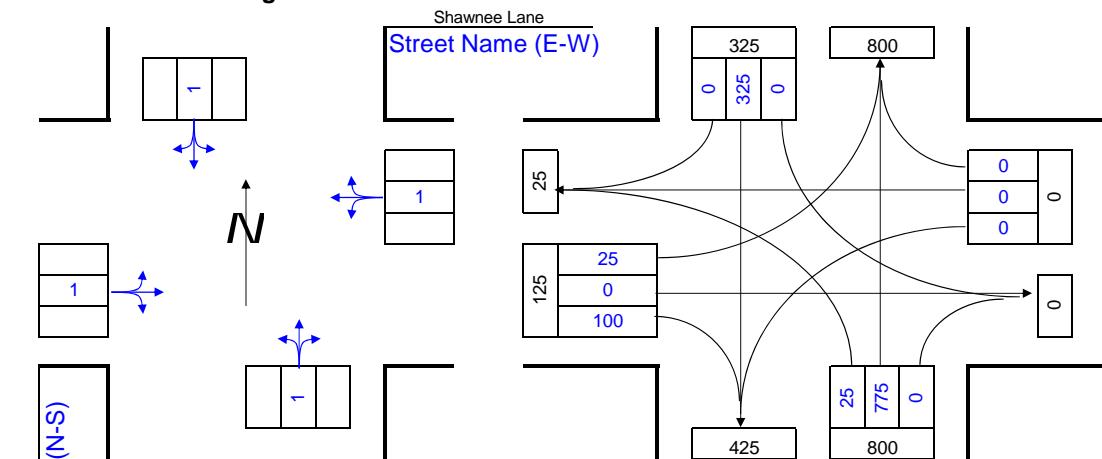


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Morning Peak Hour

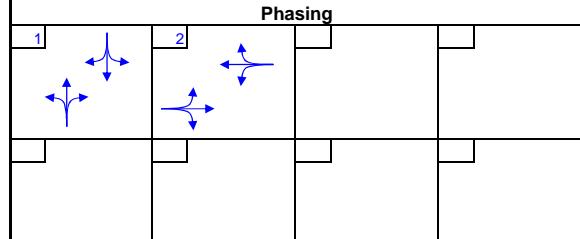


Lane Configuration



Evening Peak Hour

Phasing



MD 355 Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume				
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	
1	NB	150	1.00	150	0	1.00	0	150	150	C	1	NB	775	1.00	775	0	1.00	0	775	C	
1	SB	625	1.00	625	50	1.00	50	675	675	C	1	SB	325	1.00	325	25	1.00	25	350		
2	EB	50	1.00	50	25	1.00	25	75	75	C	2	EB	100	1.00	100	0	1.00	0	100	C	
2	WB	25	1.00	25	25	1.00	25	50	50		2	WB	0	1.00	0	25	1.00	25	25		
C: Critical Volume								Total V/C LOS	750		C: Critical Volume								875		
									0.47										0.55		
									A										A		

Critical Lane Volume  
Level of Service Worksheet

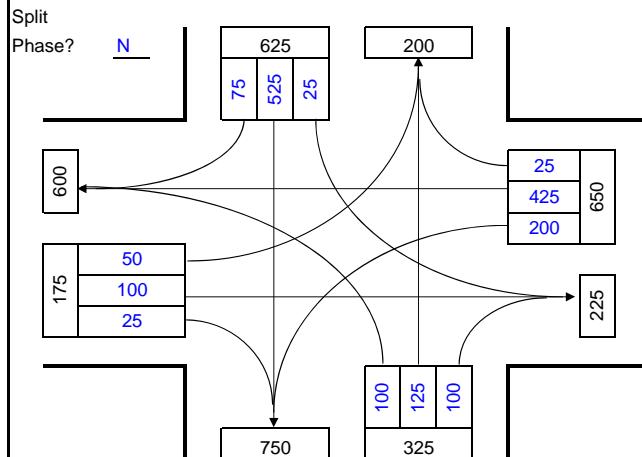
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Stringtown Road  
MD 355  
Stringtown Road  
Montgomery County/Maryland  
Existing  
DSG/VHB

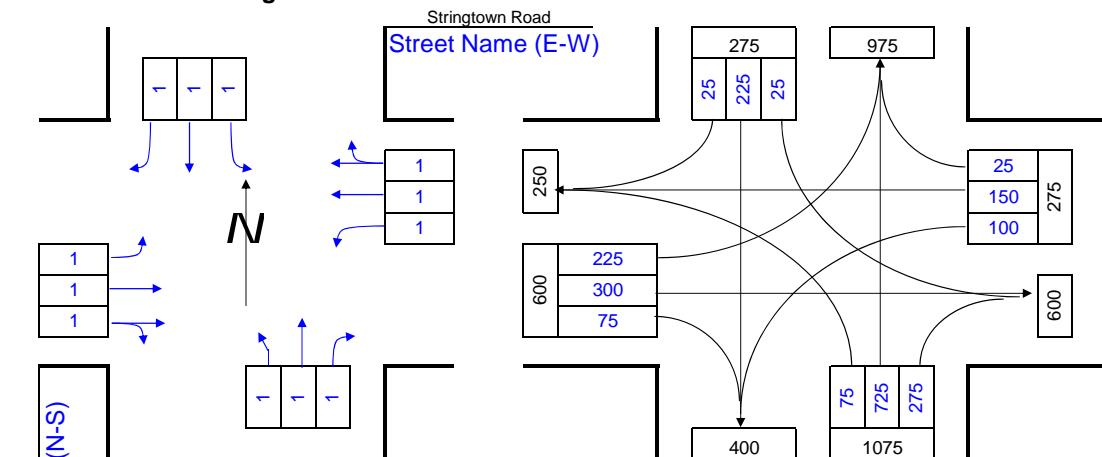


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Morning Peak Hour



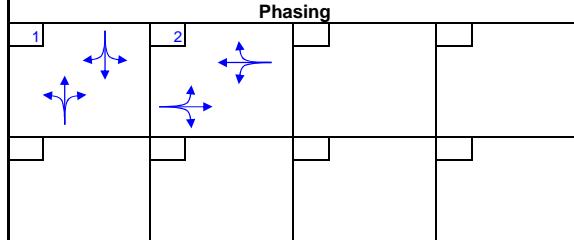
Lane Configuration



Evening Peak Hour

Evening Peak Hour

Phasing



MD 355  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM										
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane					
		(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C		(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C						
1	NB	125	1.00	125	25	1.00	25	150	1	NB	725	1.00	725	25	1.00	25	750	C
1	SB	525	1.00	525	100	1.00	100	625	C	1	SB	225	1.00	225	75	1.00	75	300
2	EB	125	0.53	66	200	1.00	200	266	2	EB	375	0.53	199	100	1.00	100	299	
2	WB	450	0.53	239	50	1.00	50	289	C	2	WB	175	0.53	93	225	1.00	225	318
C: Critical Volume						Total V/C LOS	914	C: Critical Volume						Total V/C LOS	1068			
							0.57								0.67			
							A								B			

## Critical Lane Volume Level of Service Worksheet

Intersection	Gateway Center Dr. & Stringtown Rd
Major Approach:	Gateway Center Dr
Minor Approach:	Stringtown Road
County/State:	Montgomery County/Maryland
Scenario:	Existing
Analyst:	DSG/VHB



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## Morning Peak Hour

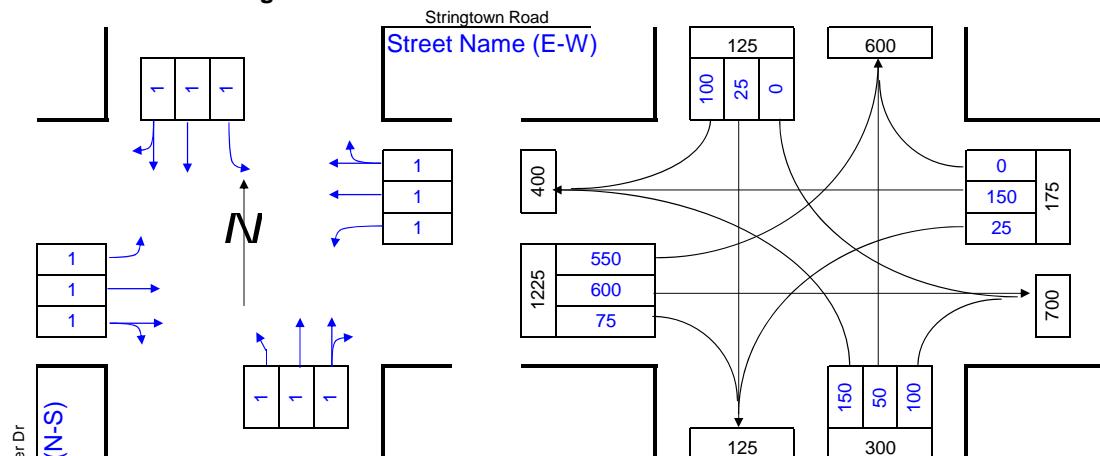
The diagram illustrates a complex signal flow system, likely a network or a processing chain. It consists of several rectangular boxes representing different components or stages, each containing numerical values. The connections between these components are represented by arrows indicating the flow of signals.

- Top Left:** A box labeled "Split Phase?" with a blue letter "N" above it. An arrow points from this box to a vertical line.
- Top Center:** A box labeled "525" with internal values 450, 75, and 0. An arrow points from this box to a box labeled "100".
- Top Right:** A box labeled "100" with an arrow pointing upwards. Another arrow points from this box to a vertical line.
- Middle Left:** A box labeled "975" with an arrow pointing to the left.
- Middle Center:** A box labeled "350" with internal values 75, 125, and 150. An arrow points from this box to a box labeled "275" at the bottom center.
- Middle Right:** A box labeled "150" with an arrow pointing to the right.
- Bottom Center:** A box labeled "275" with an arrow pointing downwards.
- Bottom Right:** A box labeled "125" with internal values 75, 25, and 25. An arrow points from this box to the right.
- Bottom Left:** A box labeled "500" with internal values 0, 450, and 50. An arrow points from this box to the left.

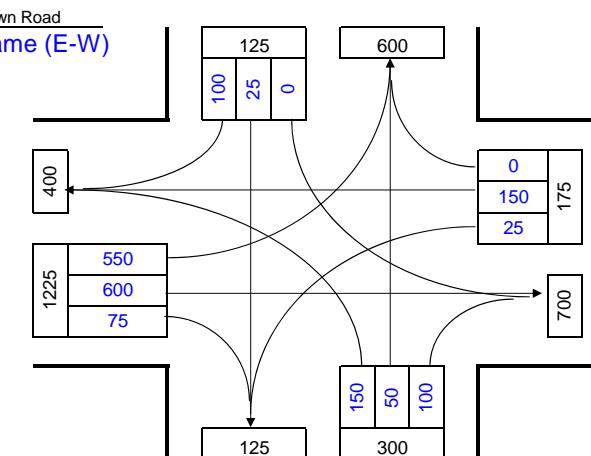
The connections are as follows:

- A curved arrow connects the "Split Phase?" box to the "975" box.
- A curved arrow connects the "525" box to the "100" box.
- A curved arrow connects the "100" box to the "150" box.
- A straight arrow connects the "975" box to the "150" box.
- A straight arrow connects the "350" box to the "275" box.
- A curved arrow connects the "350" box to the "125" box.
- A curved arrow connects the "350" box to the "500" box.
- A curved arrow connects the "500" box to the "125" box.
- A curved arrow connects the "500" box to the "150" box.
- A curved arrow connects the "125" box to the "150" box.

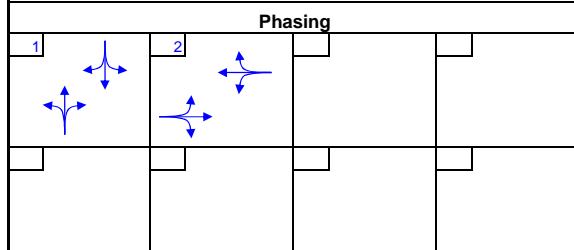
## Lane Configuration



## **Evening Peak Hour**



### Chasing



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
		A	0	999		
		B	1000	1149		
1	1.00	C	1150	1299	<= 199	1.1
2	0.53	D	1300	1449	<= 599	2.0
3	0.37	E	1450	1600	<= 799	3.0
4	0.30	F	1601	9999	<= 999	4.0
Dbl-Itf	0.53				> 1000	5.0

AM			(2)Lane Use	Lane Volume	(3) Opposing Lane Use	(4) Left Turn Lane Use	Lane Volume	Critical Lane	PM			(2)Lane Use	Lane Volume	(3) Opposing Lane Use	(4) Left Turn Lane Use	Lane Volume	Critical Lane		
Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	NB	50	0.53	27	0	1.00	0	27		1	NB	150	0.53	80	0	1.00	0	80	
1	SB	525	0.53	278	75	1.00	75	353	C	1	SB	125	0.53	66	150	1.00	150	216	C
2	EB	275	0.53	146	50	1.00	50	196		2	EB	675	0.53	358	25	1.00	25	383	
2	WB	450	0.53	239	75	1.00	75	314	C	2	WB	150	0.53	80	550	1.00	550	630	C
C: Critical Volume							Total	667		C: Critical Volume							Total	846	
							V/C	0.42								V/C	0.53		
							LOS	A								LOS	A		

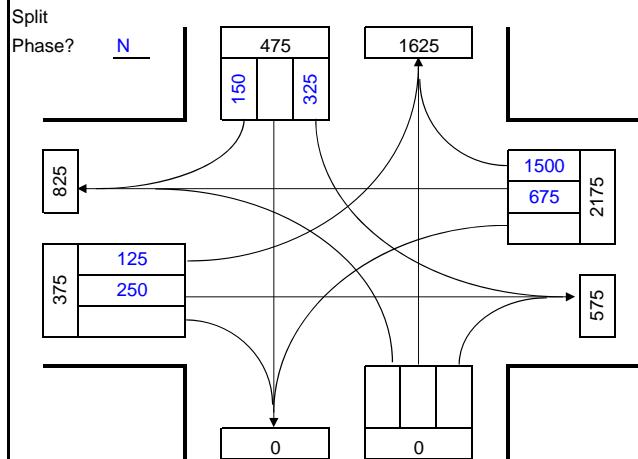
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Western Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 No-Build  
Analyst: DSG/VHB

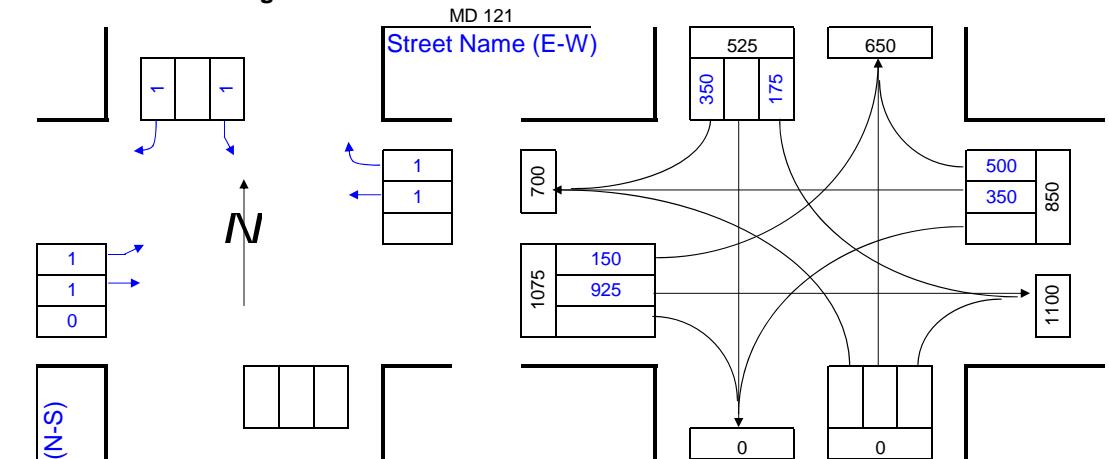


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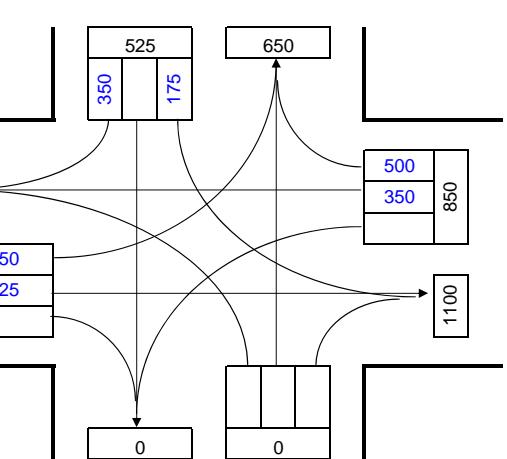
Morning Peak Hour



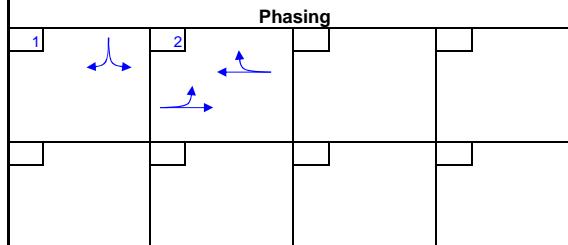
Lane Configuration



Evening Peak Hour



Phasing



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM												
		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Lane	(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Lane	
		Volume	Factor	(1) x (2)		Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	SBL	0	1.00	0	325	1.00	325	325	325	C	1	SBL	1.00	0	175	1.00	175	175	C	
2	EB	250	1.00	250	0	1.00	0	250	250	C	2	EB	925	1.00	925	0	1.00	0	925	
2	WB	675	1.00	675	125	1.00	125	800	350	C	2	WB	350	1.00	350	150	1.00	150	500	C
C: Critical Volume										C: Critical Volume										
Total V/C LOS										Total V/C LOS										
1125										675										
0.70										0.42										
B										A										

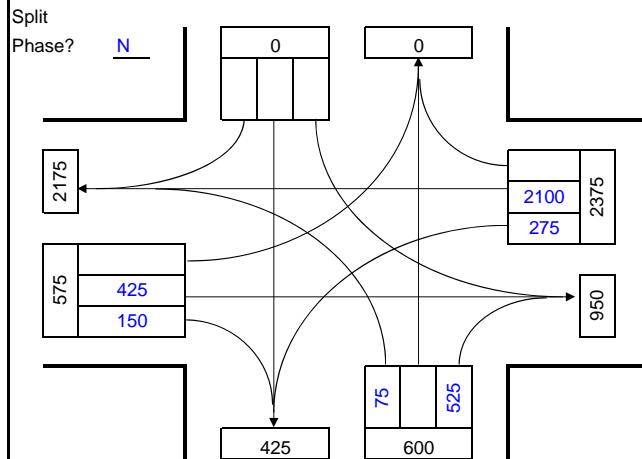
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Eastern Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 No-Build  
Analyst: DSG/VHB

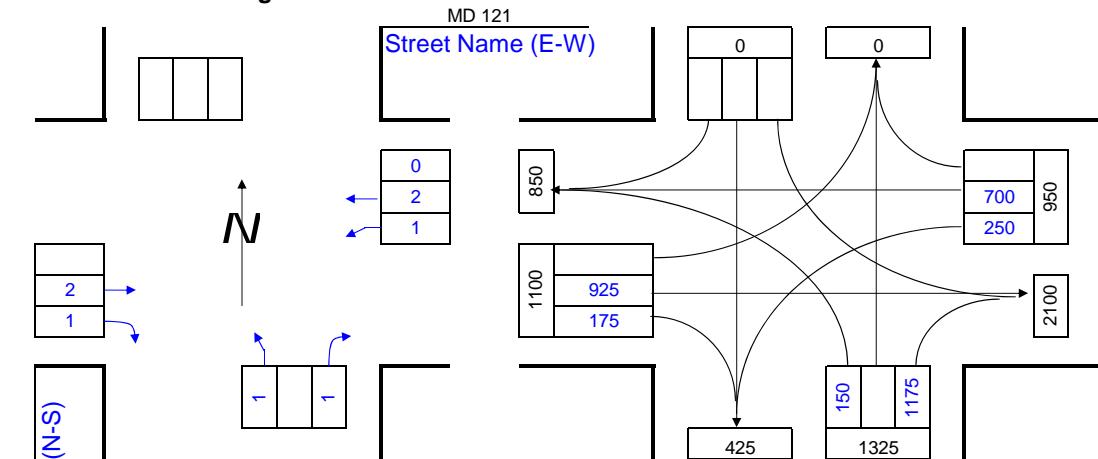


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**Morning Peak Hour**



**Lane Configuration**

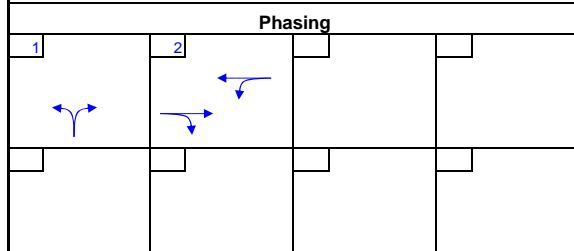


**Evening Peak Hour**

I-270 Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	999	1149	<= 199	1.1
2	0.53	D	1150	1299	<= 599	2.0
3	0.37	E	1300	1449	<= 799	3.0
4	0.30	F	1450	1600	<= 999	4.0
Dbl-Lft	0.53		1601	9999	> 1000	5.0

**Phasing**



Phase	Movement	AM				PM			
		(1) Volume	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	(1) Volume	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor
1	NBL	75	1.00	75	25	1.00	25	100	C
2	EB	425	0.53	225	275	1.00	275	500	2
2	WB	2100	0.53	1113		1.00	0	1113	C
C: Critical Volume					C: Critical Volume				
Total V/C LOS					Total V/C LOS				
1213					1325				
0.76					0.83				
C					D				

Critical Lane Volume  
Level of Service Worksheet

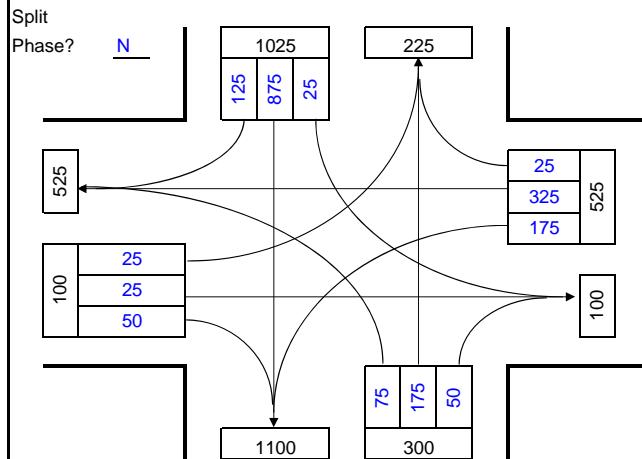
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & MD 121  
MD 355  
Clarksburg Road (MD 121)  
Montgomery County/Maryland  
2040 No-Build  
DSG/VHB

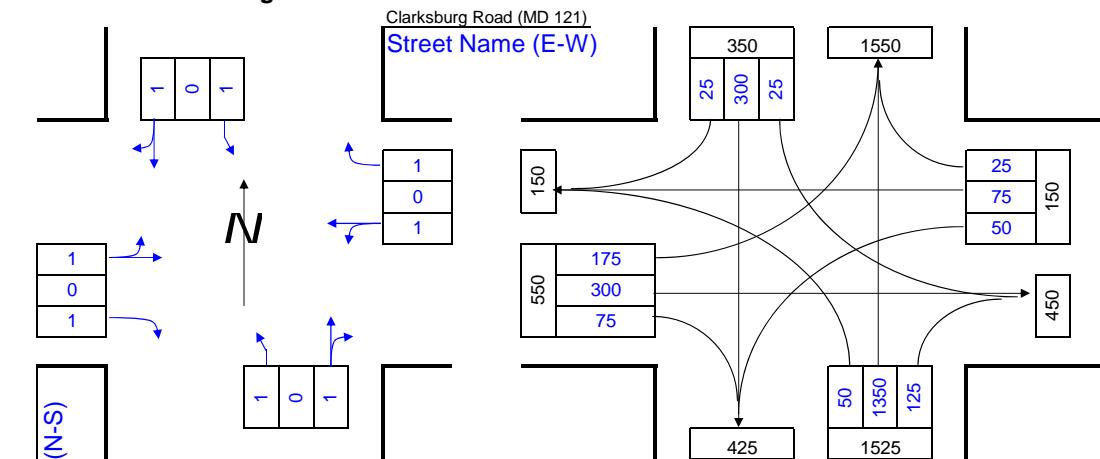


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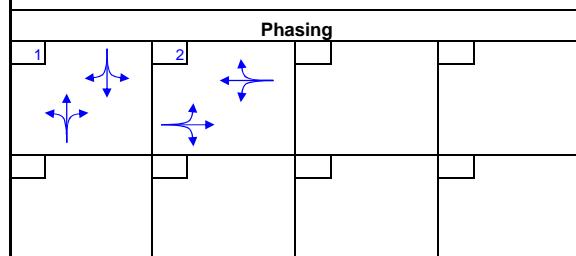
**Morning Peak Hour**



**Lane Configuration**



**Evening Peak Hour**



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM				(2)Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane	PM				(2)Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane		
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)			(3) x (4)		C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	
1	NB	225	1.00	225	25	1.00	25	250	1425		1	NB	1475	1.00	1475	25	1.00	25	1500	C	
1	SB	1000	1.00	1000	75	1.00	75	1075		C	1	SB	325	1.00	325	50	1.00	50	375		
2	EB	325	1.00	325	25	1.00	25	350		C	2	EB	300	1.00	300	50	1.00	50	350	C	
2	WB	25	1.00	25	175	1.00	175	200			2	WB	75	1.00	75	175	1.00	175	250		
C: Critical Volume								Total V/C LOS			C: Critical Volume								Total V/C LOS		
									1425											1850	
																					1.16
																					F

Critical Lane Volume  
Level of Service Worksheet

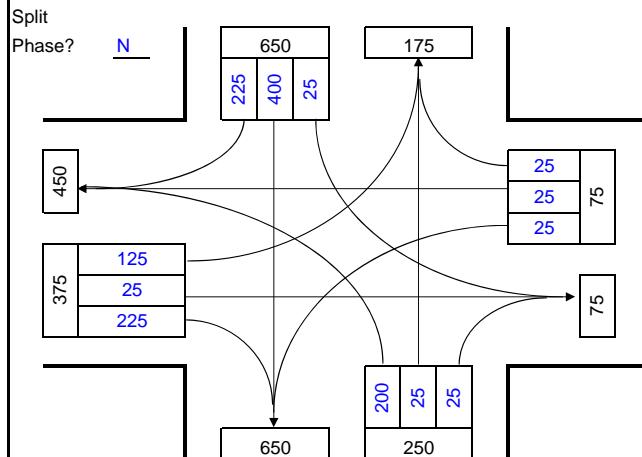
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Shawnee Lane  
MD 355  
Shawnee Lane  
Montgomery County/Maryland  
2040 No-Build  
DSG/VHB

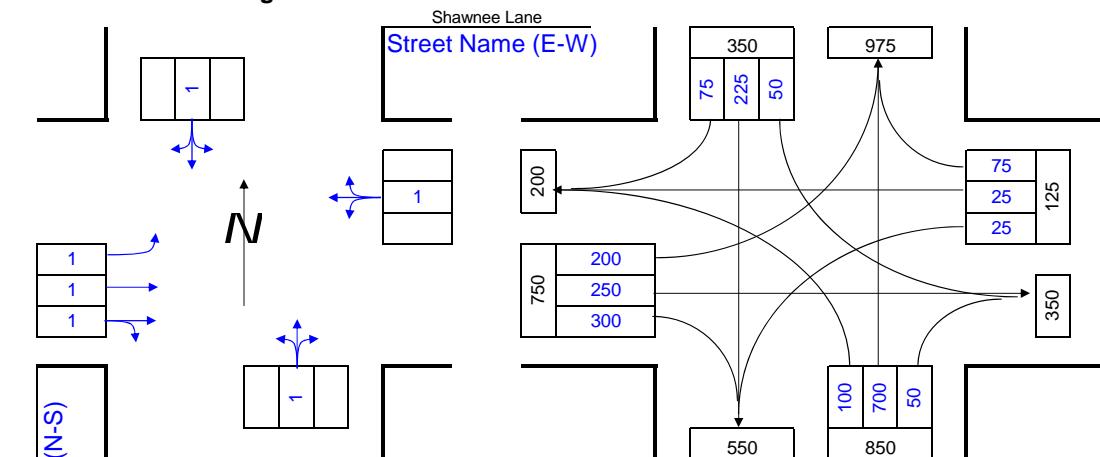


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Morning Peak Hour

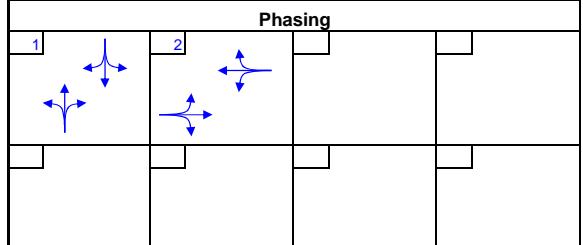


Lane Configuration



Evening Peak Hour

Phasing



MD 355  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999	= 199	1.1
B	0.53	1000	1149	= 599	2.0
C	0.37	1150	1299	= 799	3.0
D	0.30	1300	1449	= 999	4.0
E	0.53	1450	1600	> 1000	5.0
F	0.53	1601	9999		
Dbl-Lft					

Phase	Movement	AM				PM				AM				PM					
		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Lane Use	Lane Volume	Critical Lane	(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Lane Use	Lane Volume	
		(1)	(1) x (2)			(1)	(1) x (2)	C		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Lane Use	Lane Volume		
1	NB	50	1.00	50	25	1.00	25	75	1	NB	750	1.00	750	50	1.00	50	800	C	
1	SB	625	1.00	625	200	1.00	200	825	C	1	SB	300	1.00	300	100	1.00	100	400	
2	EB	250	0.53	133	125	1.00	125	258	C	2	EB	550	0.53	292	25	1.00	25	317	C
2	WB	50	1.00	50	25	1.00	25	75	2	WB	100	1.00	100	200	1.00	200	300		
C: Critical Volume								C: Critical Volume				Total				1117			
V/C								V/C				0.70				0.70			
LOS								LOS				B				B			

Critical Lane Volume  
Level of Service Worksheet

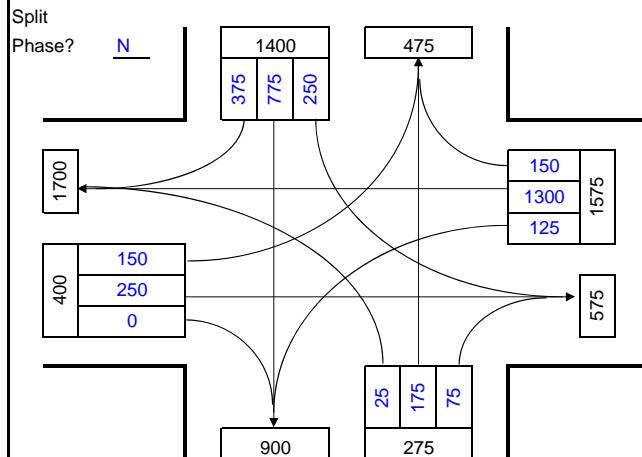
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Stringtown Road  
MD 355  
Stringtown Road  
Montgomery County/Maryland  
2040 No-Build  
DSG/VHB

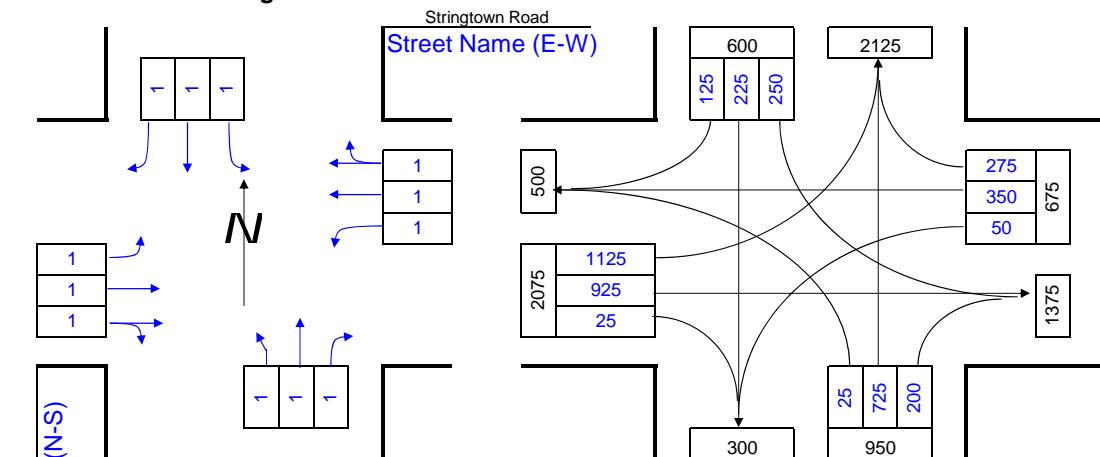


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**Morning Peak Hour**

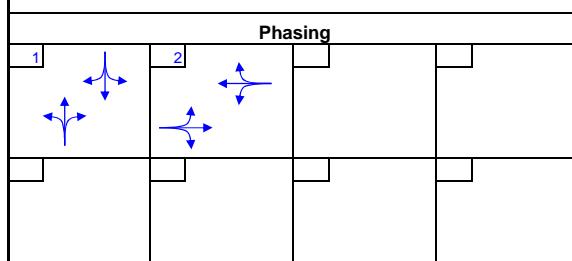


**Lane Configuration**



**Evening Peak Hour**

Phasing		Street Name (E-W)						Street Name (N-S)					
		MD 355			Stringtown Road								
No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE								
1	1.00	A	0	999									
2	0.53	B	1000	1149									
3	0.37	C	1150	1299	<= 199	1.1							
4	0.30	D	1300	1449	<= 599	2.0							
Dbl-Lft	0.53	E	1450	1600	<= 799	3.0							
		F	1601	9999	<= 999	4.0							
					> 1000	5.0							



AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	
Phase	Movement	Volume	Factor	(1) x (2)	(1)	(2)	(1)	(3) x (4)	(3)	C	Phase	Movement	Volume	Factor	(1) x (2)	(1)	(3) x (4)	(3)	(3)	
1	NB	175	1.00	175	250	1.00	250	425	C	1	NB	725	1.00	725	250	1.00	250	975	C	
1	SB	775	1.00	775	25	1.00	25	800	C	1	SB	225	1.00	225	25	1.00	25	250		
2	EB	250	0.53	133	125	1.00	125	258		2	EB	950	0.53	504	50	1.00	50	554		
2	WB	1450	0.53	769	150	1.00	150	919	C	2	WB	625	0.53	331	1125	1.00	1125	1456	C	
C: Critical Volume										Total	C: Critical Volume									
										V/C										
										LOS										

## Critical Lane Volume Level of Service Worksheet

Intersection	Gateway Center Dr & Stringtown Rd
Major Approach:	Gateway Center Dr
Minor Approach:	Stringtown Road
County/State:	Montgomery County/Maryland
Scenario:	2040 No-Build
Analyst:	DSG/VHB



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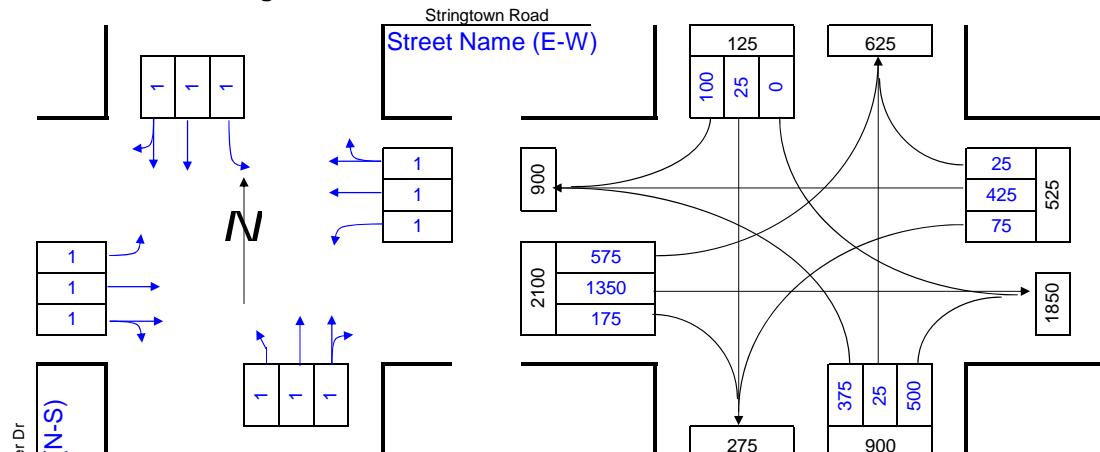
## Morning Peak Hour

The diagram illustrates a complex electrical circuit with the following components and their values:

- Top Left:** A vertical line labeled "Split Phase?" with a blue "N" symbol.
- Top Center:** A box containing three values: 600, 0, and 0.
- Top Right:** A box containing the value 100.
- Middle Left:** A box containing the value 2250.
- Middle Center:** A box containing three values: 925, 75, 275, and 575.
- Middle Right:** A box containing three values: 0, 1375, and 75.
- Bottom Right:** A box containing the value 1450.
- Bottom Center:** A box containing three values: 300, 275, 25, and 25.
- Bottom Left:** A box containing the value 650.
- Bottom Far Left:** A large empty rectangular box.
- Bottom Far Right:** A large empty rectangular box.

Connections are indicated by lines between the boxes, representing parallel and series circuit configurations. The values inside the boxes likely represent component parameters such as resistance or voltage levels.

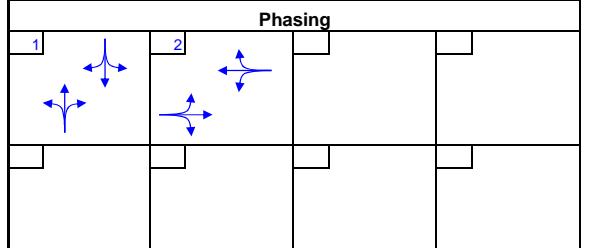
## Lane Configuration



## **Evening Peak Hour**

Gateway C

chasing



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	1150	1299	<= 199	1.1
2	0.53	D	1300	1449	<= 599	2.0
3	0.37	E	1450	1600	<= 799	3.0
4	0.30	F	1601	9999	<= 999	4.0
Dbl-Itf	0.53				> 1000	5.0

AM		(2)Lane Use (1)	Lane Volume (1) x (2)	(3) Opposing Lane Use (1) x (2)	(4) Left Turn Factor Lefts	Lane Volume (3) x (4)	Critical Lane Volume (3) x (4)	PM	(2)Lane Use (1)	Lane Volume (1) x (2)	(3) Opposing Lane Use (1) x (2)	(4) Left Turn Factor Lefts	Lane Volume (3) x (4)	Critical Lane Volume (3) x (4)		
Phase	Movement	Volume	Factor		Factor		C	Phase	Movement	Volume	Factor		Volume	C		
1	NB	50	0.53		27	0	1.00	0	27	1	NB	525	0.53	278		
1	SB	600	0.53		318	275	1.00	275	593	C	1	SB	125	0.53	66	
2	EB	850	0.53		451	75	1.00	75	526		2	EB	1525	0.53	808	
2	WB	1375	0.53		729	75	1.00	75	804	C	2	WB	450	0.53	239	
													575	1.00	575	
															814	
C: Critical Volume								Total	1397	C: Critical Volume						Total
								V/C	0.87							V/C
								LOS	D							LOS
																D

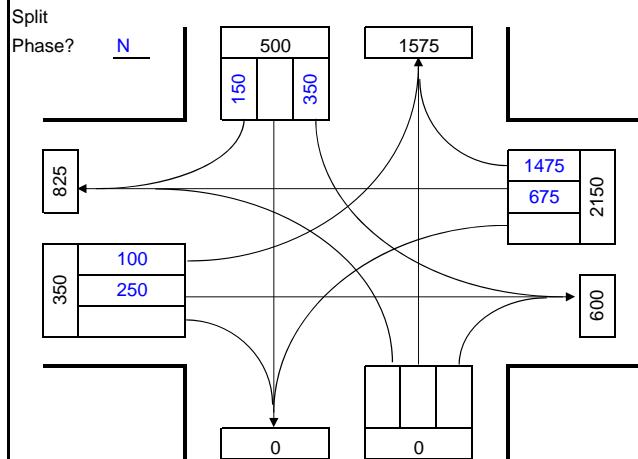
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Western Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 Build  
Analyst: DSG/VHB

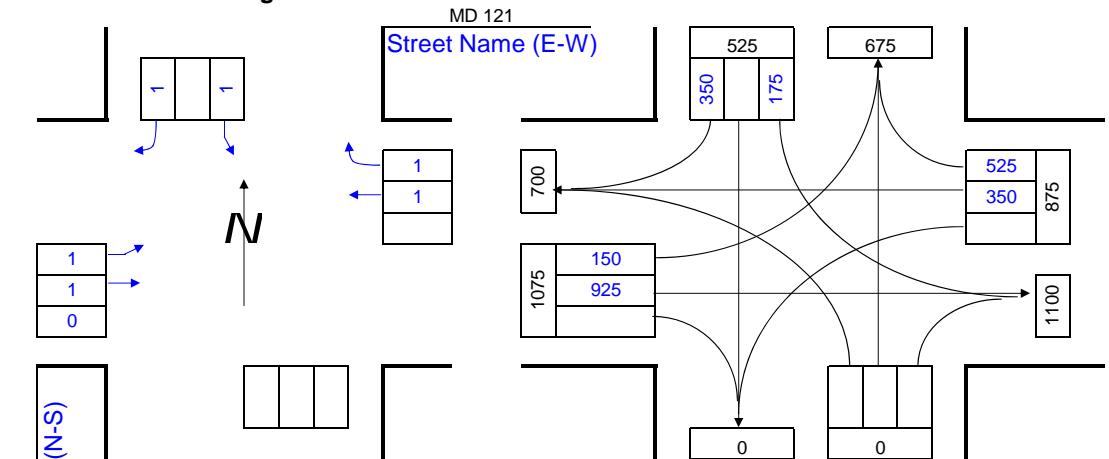


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Morning Peak Hour

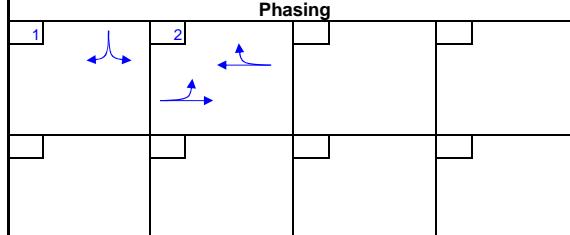


Lane Configuration



Evening Peak Hour

Phasing



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM												
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	C	
		Volume	Factor	(1) x (2)	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	SBL	0	1.00	0	350	1.00	350	350	350	C	1	SBL	1.00	0	175	1.00	175	175	C	
2	EB	250	1.00	250	0	1.00	0	250	250	C	2	EB	925	1.00	925	0	1.00	0	925	
2	WB	675	1.00	675	100	1.00	100	775	775	C	2	WB	350	1.00	350	150	1.00	150	500	C
C: Critical Volume										C: Critical Volume										
Total V/C LOS										Total V/C LOS										
1125										675										
0.70										0.42										
B										A										

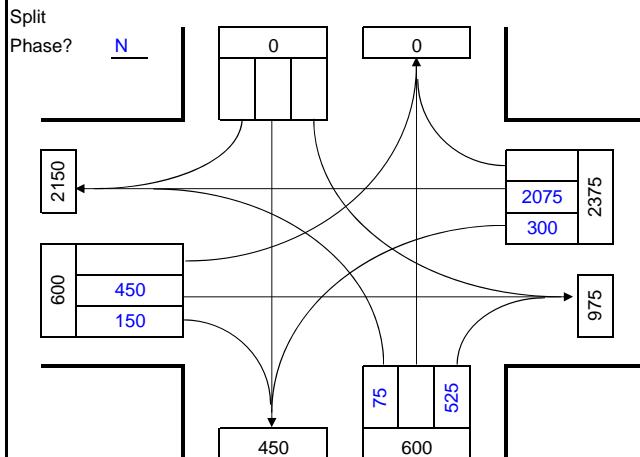
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Eastern Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 Build  
Analyst: DSG/VHB

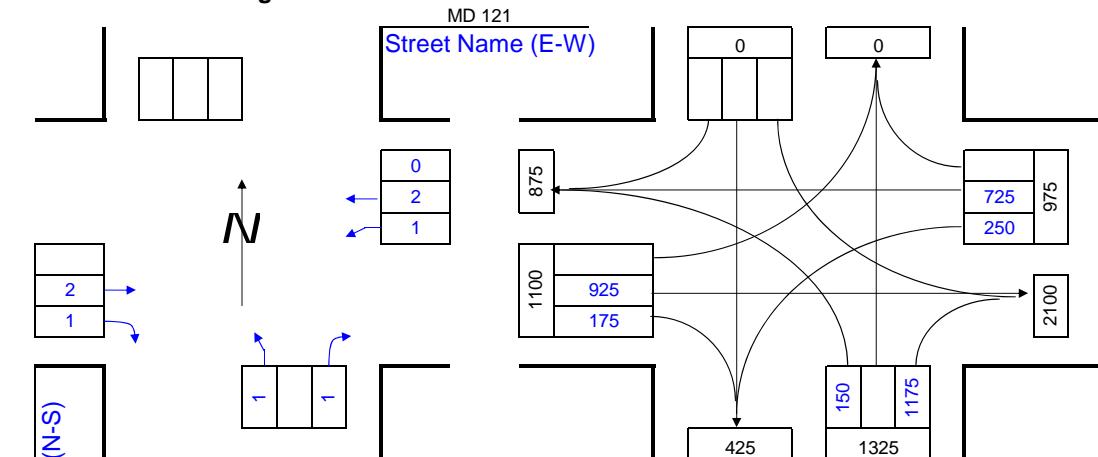


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**Morning Peak Hour**

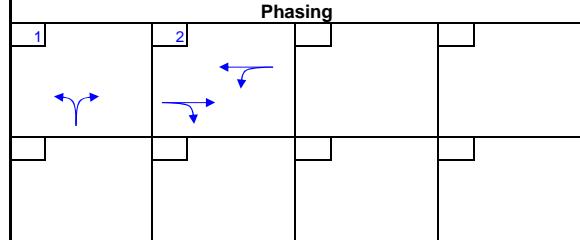


**Lane Configuration**



**Evening Peak Hour**

**Phasing**



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	999	1149	<= 199	1.1
2	0.53	D	1150	1299	<= 599	2.0
3	0.37	E	1300	1449	<= 799	3.0
4	0.30	F	1450	1600	<= 999	4.0
Dbl-Lft	0.53		1601	9999	> 1000	5.0

Phase	Movement	AM					PM						
		(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume	(1)	(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Volume	
		(1) x (2)		(3) x (4)		C		(1) x (2)		(3) x (4)		C	
1	NBL	75	1.00	75	25	1.00	25	100	C	1	NBL	150	1.00
										1			
2	EB	450	0.53	239	300	1.00	300	539		2	EB	725	1.00
2	WB	2075	0.53	1100		1.00	0	1100	C	2	WB	925	1.00
										2			
C: Critical Volume						C: Critical Volume							
Total V/C LOS						Total V/C LOS							
1200						1325							
0.75						0.83							
C						D							

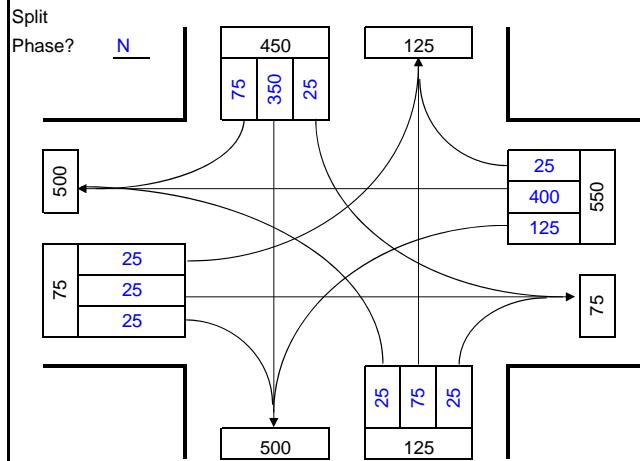
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: Montgomery County/Maryland  
Analyst: 2040 Build  
DSG/VHB

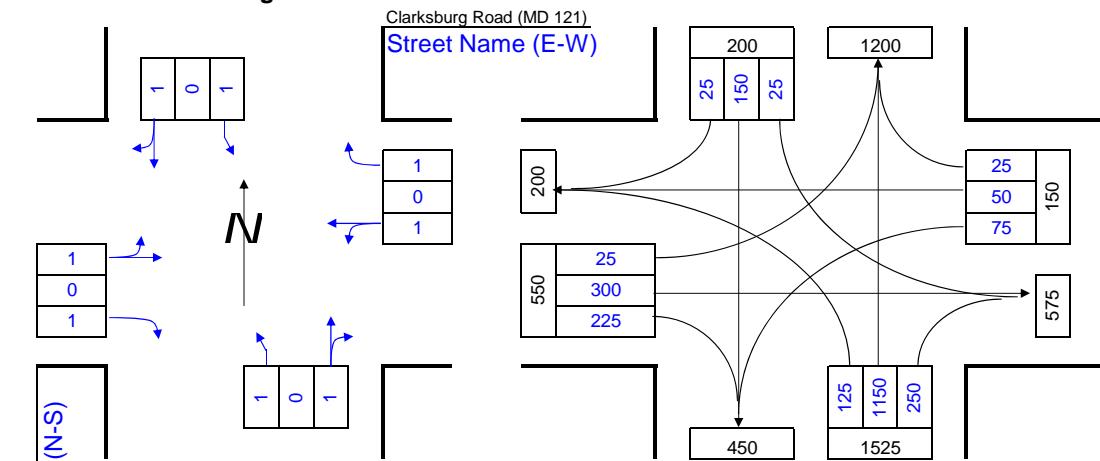


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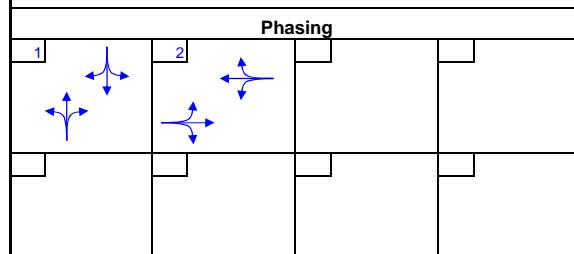
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM												
		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Volume	(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Volume	
				(1) x (2)		Opposing Lefts	Factor	(3) x (4)					Volume	Factor	(1) x (2)	Opposing Lefts	Factor	(3) x (4)	Volume	Factor
1	NB	100	1.00	100	25	1.00	25	125	C	1400	1.00	1400	25	1.00	25	1.00	25	1425	C	
1	SB	425	1.00	425	25	1.00	25	450	C	175	1.00	175	125	1.00	125	1.00	125	300		
2	EB	400	1.00	400	25	1.00	25	425	C	300	1.00	300	75	1.00	75	1.00	75	375	C	
2	WB	25	1.00	25	125	1.00	125	150		50	1.00	50	25	1.00	25	1.00	25	75		
		C: Critical Volume						C: Critical Volume						Total V/C LOS						
														1800						
														1.13						
														F						

Critical Lane Volume  
Level of Service Worksheet

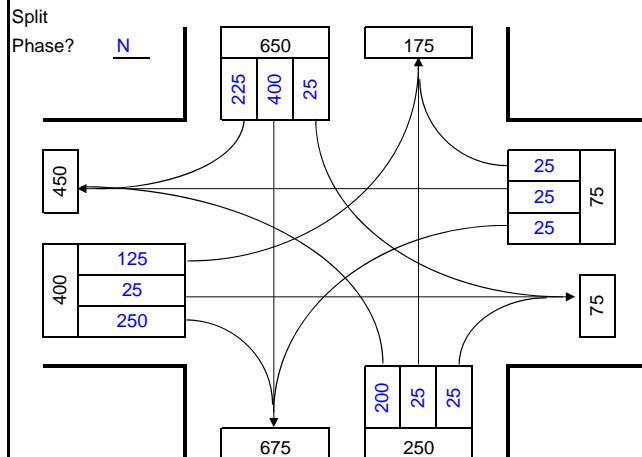
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Shawnee Lane  
MD 355  
Shawnee Lane  
Montgomery County/Maryland  
2040 Build  
DSG/VHB

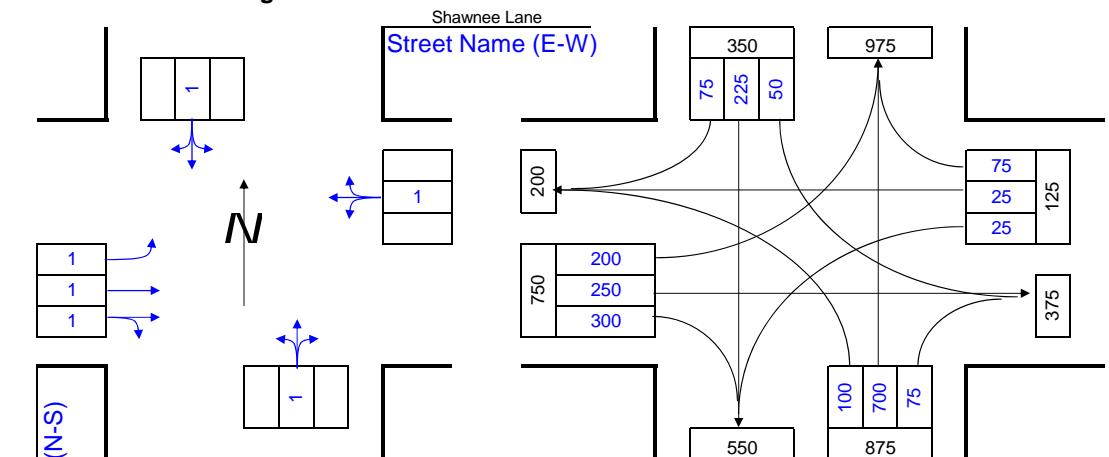


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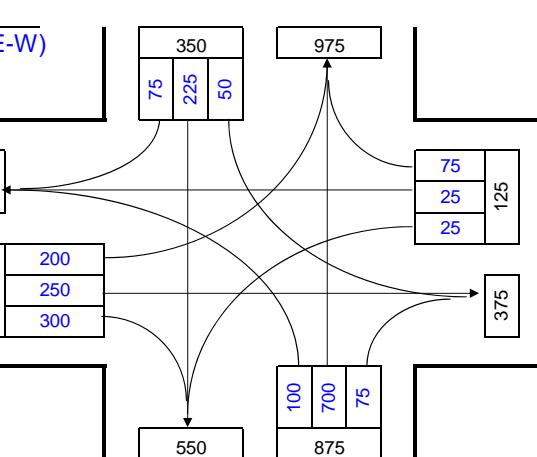
**Morning Peak Hour**



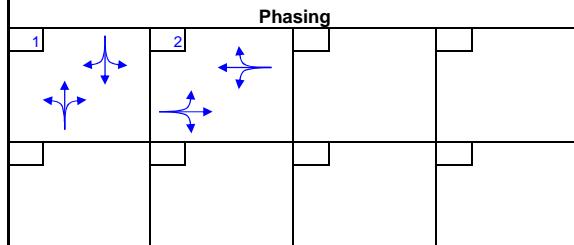
**Lane Configuration**



**Evening Peak Hour**



**Phasing**



MD 355  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999	= 199	1.1
B	1000	1149		= 599	2.0
C	1150	1299		= 799	3.0
D	1300	1449		= 999	4.0
E	1450	1600		> 1000	5.0
F	1601	9999			
Dbl-Lft	0.53				

Phase	Movement	AM						PM					
		(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Factor	Lane Use	Critical Volume	(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Factor	Lane Volume	Critical Lane
		(1) x (2)		(3) x (4)	C		(1) x (2)		(1) x (2)		(3) x (4)	C	
1	NB	50	1.00	50	25	1.00	25	75	1	NB	775	1.00	775
1	SB	625	1.00	625	200	1.00	200	825	C	1	SB	300	1.00
2	EB	275	0.53	146	125	1.00	125	271	C	2	EB	550	0.53
2	WB	50	1.00	50	25	1.00	25	75	2	WB	100	1.00	100
C: Critical Volume						Total V/C	1096	C: Critical Volume					
						LOS	0.68						
							B						

## Critical Lane Volume Level of Service Worksheet

Intersection	MD 355 & Stringtown Road
Major Approach:	MD 355
Minor Approach:	Stringtown Road
County/State:	Montgomery County/Maryland
Scenario:	2040 Build
Analyst:	DSG/VHB



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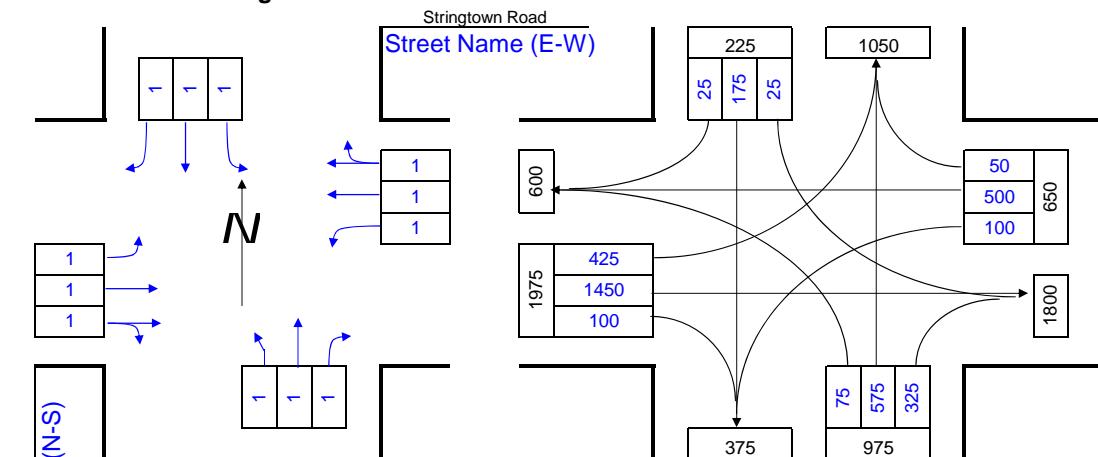
## Morning Peak Hour

The diagram illustrates a complex electrical network with the following key components and connections:

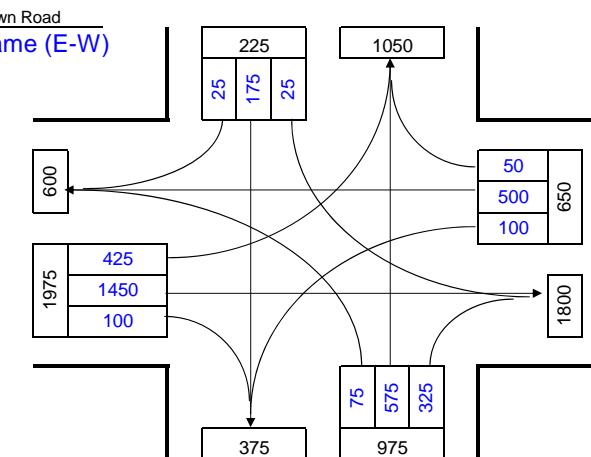
- Phase Inputs:** N, 200, 300, 525, 775.
- Current Sources/Loads:** 1175, 550, 75, 1525, 350, 1100, 25, 250, 25, 100, 175, 300.
- Resistive Components:** 50, 400, 100.

The connections show how these elements interact through various junctions and branches, forming a multi-phase system.

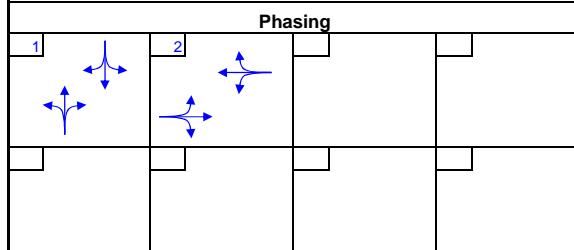
## Lane Configuration



## Evening Peak Hour



### Chasing



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)		PCE
			A	B	C	D	
1	1.00	C	1150	1299	<= 199	1.1	
2	0.53	D	1300	1449	<= 599	2.0	
3	0.37	E	1450	1600	<= 799	3.0	
4	0.30	F	1601	9999	<= 999	4.0	
Dbl-lft	0.53				> 1000	5.0	

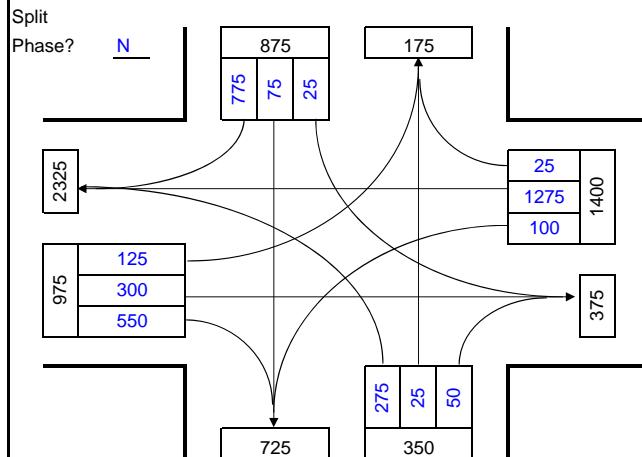
Critical Lane Volume  
Level of Service Worksheet

Intersection: Gateway Center Dr & Stringtown Road  
Major Approach: Gateway Center Dr  
Minor Approach: Stringtown Road  
County/State: Montgomery County/Maryland  
Scenario: 2040 Build  
Analyst: DSG/VHB

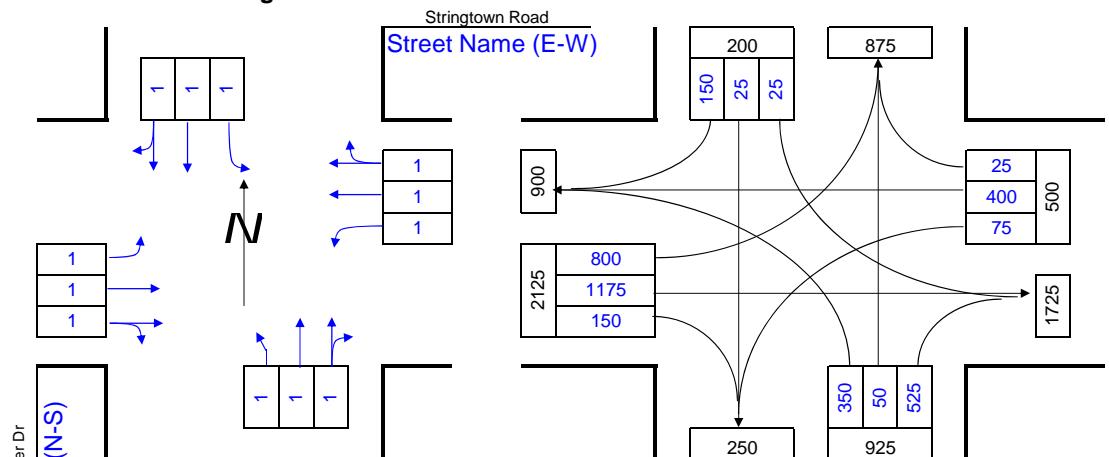


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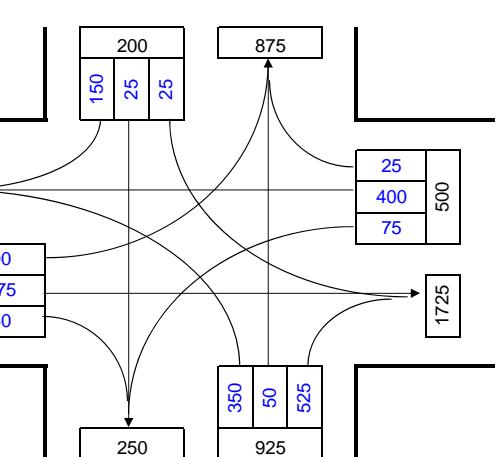
Morning Peak Hour



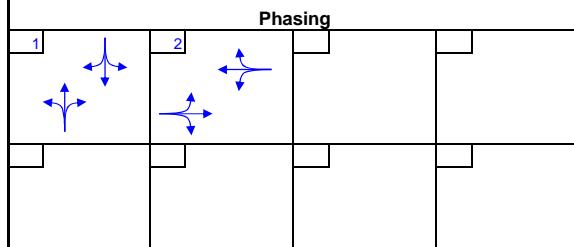
Lane Configuration



Evening Peak Hour



Phasing



Street Name (N-S)

Gateway Center Dr

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM				PM			
		(1) Volume	(2) Lane Use Factor	(3) Opposing Lefts	(4) Left Turn Lane Volume	(1) Volume	(2) Lane Use Factor	(3) Opposing Lefts	(4) Left Turn Lane Volume
1	NB	75	0.53	40	25	1.00	25	65	C
1	SB	850	0.53	451	275	1.00	275	726	C
2	EB	850	0.53	451	100	1.00	100	551	C
2	WB	1300	0.53	689	125	1.00	125	814	C
C: Critical Volume					Total V/C	1540	C: Critical Volume		
					LOS	0.96			
						E			

Critical Lane Volume  
Level of Service Worksheet

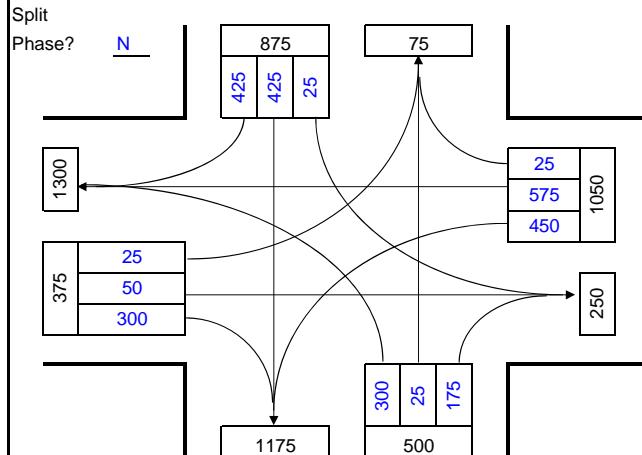
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

New Road & Stringtown Road  
New Road  
Stringtown Road  
Montgomery County/Maryland  
2040 Build  
DSG/VHB

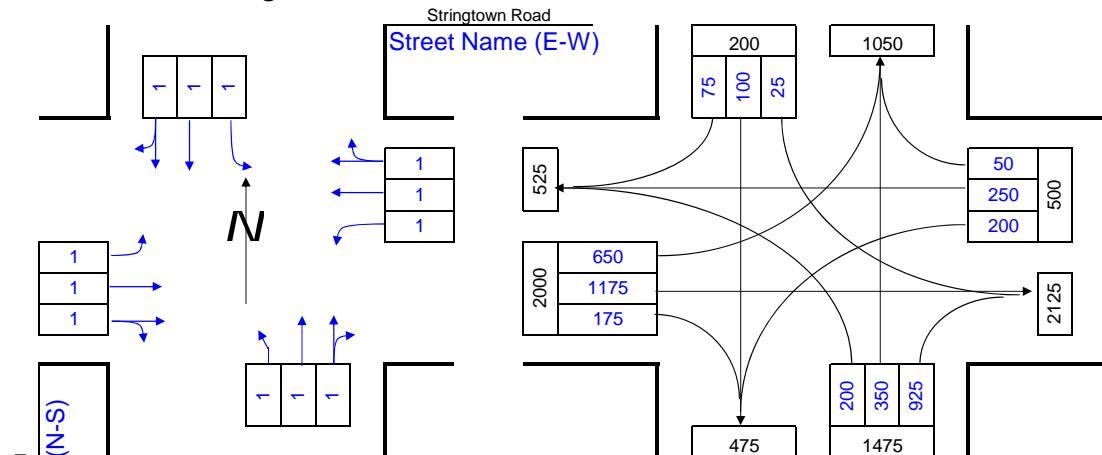


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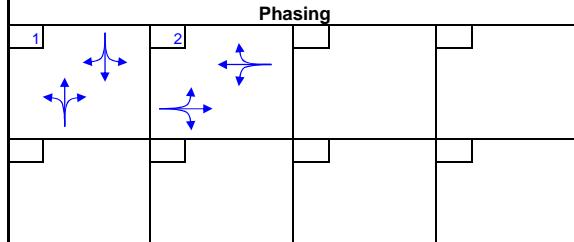
**Morning Peak Hour**



**Lane Configuration**



**Phasing**



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299			
D	1300	1449			
E	1450	1600			
F	1601	9999			
Dbl-Lft	0.53				
				<= 199	1.1
				<= 599	2.0
				<= 799	3.0
				<= 999	4.0
				> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C
1	NB	200	0.53	106	25	1.00	25	131	C	1	NB	1275	0.53	676	25	1.00	25	701	C
1	SB	850	0.53	451	300	1.00	300	751	C	1	SB	175	0.53	93	200	1.00	200	293	
2	EB	350	0.53	186	450	1.00	450	636	C	2	EB	1350	0.53	716	200	1.00	200	916	C
2	WB	600	0.53	318	25	1.00	25	343		2	WB	300	0.53	159	650	1.00	650	809	
C: Critical Volume								Total	1386	C: Critical Volume								1616	F
								V/C	0.87									1.01	
								LOS	D										

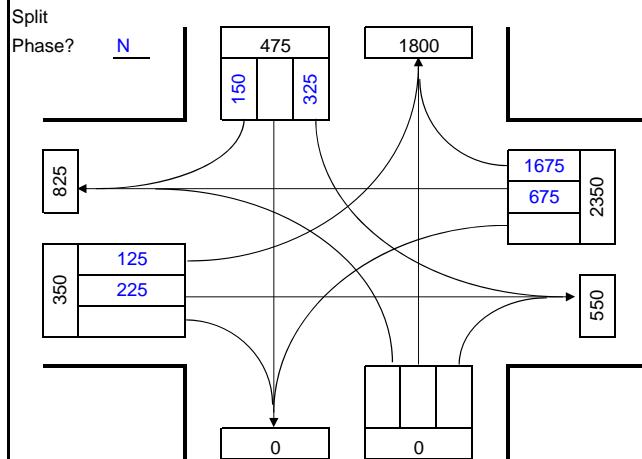
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Western Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI Build  
Analyst: DSG/VHB

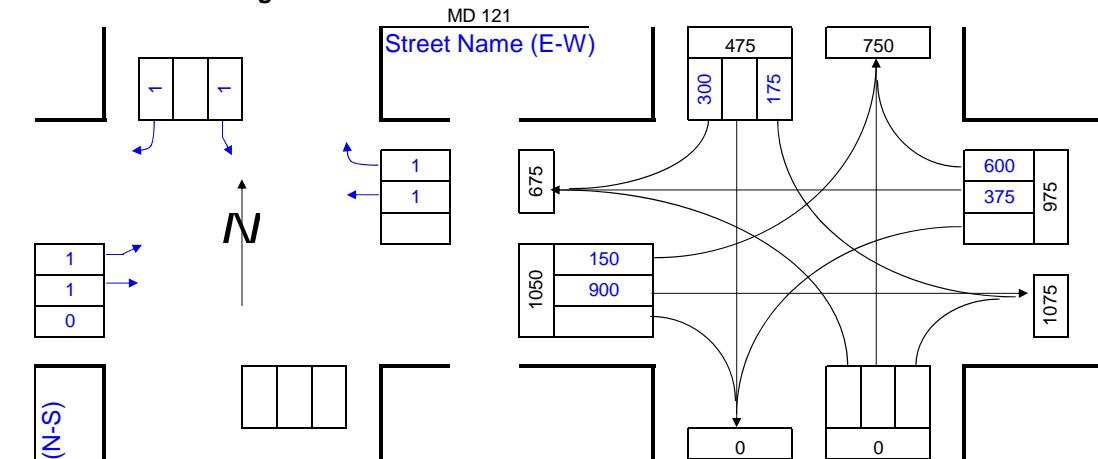


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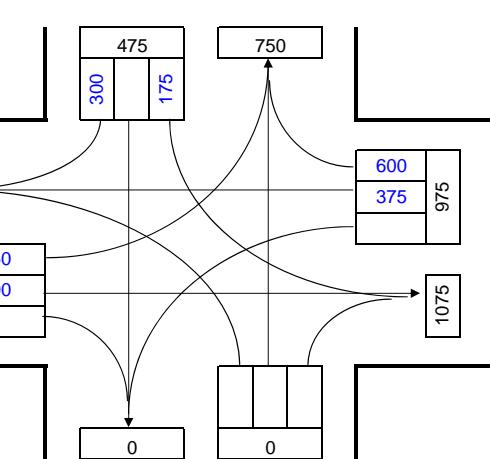
Morning Peak Hour



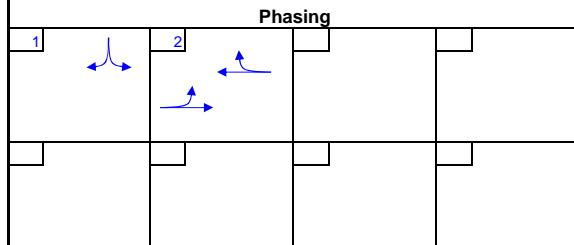
Lane Configuration



Evening Peak Hour



Phasing



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM						
		(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane	(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane	
(1)	(1) x (2)	(1) x (2)	(1)	(3) x (4)	C	(1)	(1) x (2)	(1) x (2)	(1)	(3) x (4)	C			
1	SBL	0	1.00	0	325	1.00	325	325	C	1	SBL	1.00	0	
2	EB	225	1.00	225	0	1.00	0	225	C	2	EB	900	1.00	
2	WB	675	1.00	675	125	1.00	125	800	C	2	WB	375	1.00	
C: Critical Volume						Total V/C	1125		C: Critical Volume					
						LOS	0.70							
							B							

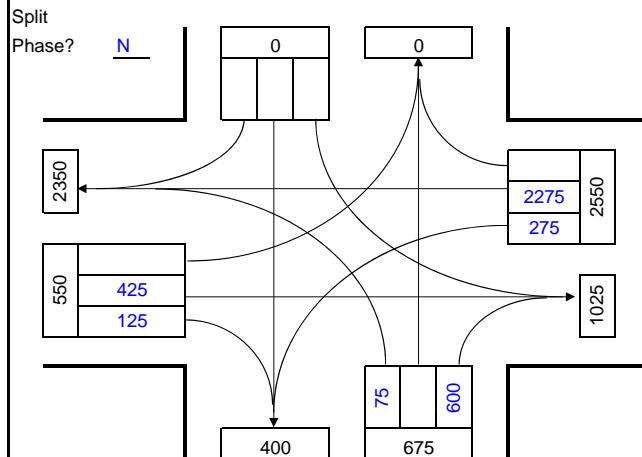
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Eastern Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI Build  
Analyst: DSG/VHB

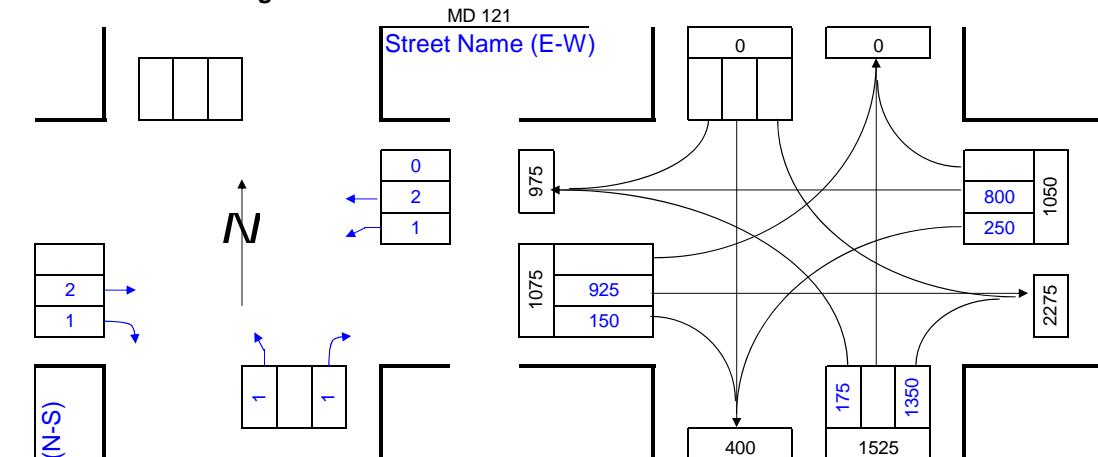


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**Morning Peak Hour**

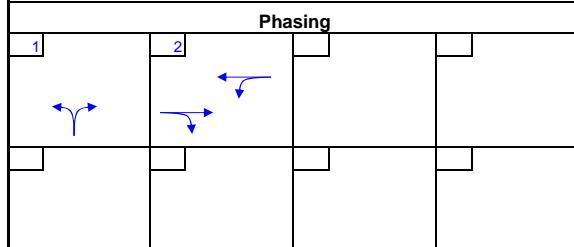


**Lane Configuration**



**Evening Peak Hour**

**Phasing**



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1.00	1149			
C	1150	1299	<= 199	1.1	
D	0.53	1449	<= 599	2.0	
E	0.37	1600	<= 799	3.0	
F	0.30	9999	<= 999	4.0	
Dbl-Lft	0.53		> 1000	5.0	

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C
1	NBL	75	1.00	75	25	1.00	25	100	C	1	NBL	175	1.00	175	0	1.00	0	175	C
2	EB	425	0.53	225	275	1.00	275	500		2	EB	800	1.00	800	0	1.00	0	800	
2	WB	2275	0.53	1206		1.00	0	1206	C	2	WB	925	1.00	925	250	1.00	250	1175	C
C: Critical Volume										C: Critical Volume									
Total V/C LOS										Total V/C LOS									
1306										1350									
0.82										0.84									
D										D									

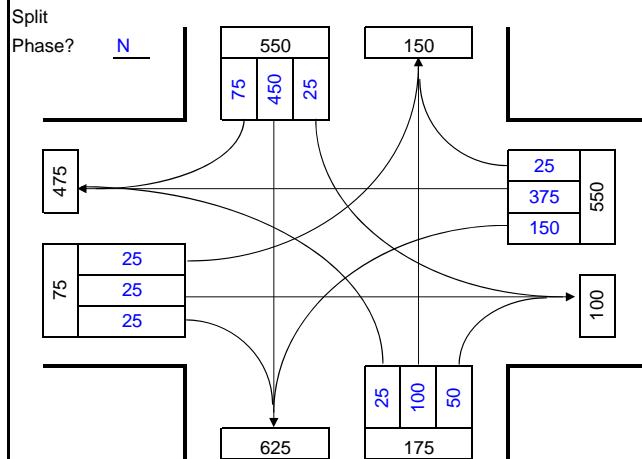
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: 2040 HI Build  
Analyst: DSG/VHB

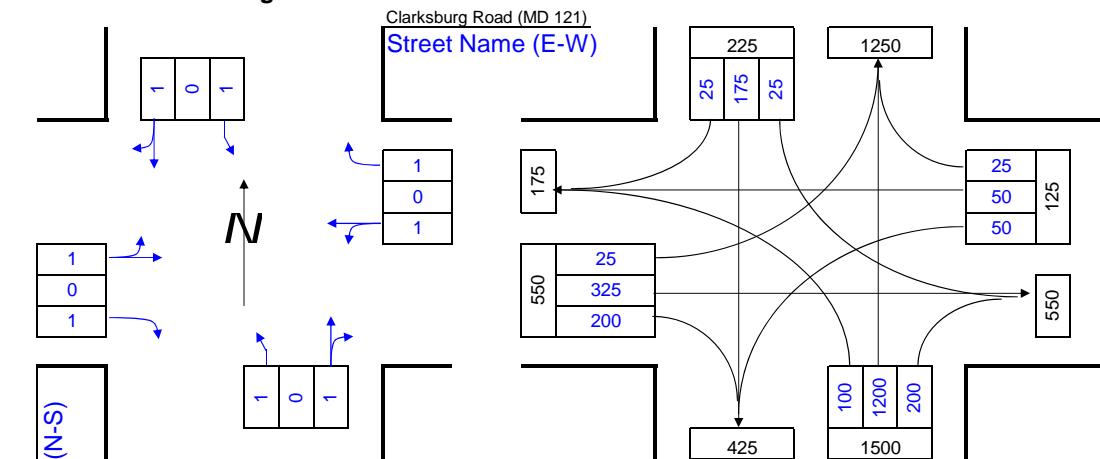


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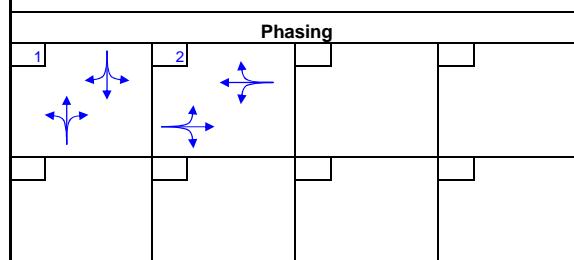
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C
1	NB	150	1.00	150	25	1.00	25	175	C	1	NB	1400	1.00	1400	25	1.00	25	1425	C
1	SB	525	1.00	525	25	1.00	25	550	C	1	SB	200	1.00	200	100	1.00	100	300	
2	EB	375	1.00	375	25	1.00	25	400	C	2	EB	325	1.00	325	50	1.00	50	375	C
2	WB	25	1.00	25	150	1.00	150	175		2	WB	50	1.00	50	25	1.00	25	75	
C: Critical Volume								Total V/C	950	C: Critical Volume								Total V/C	1800
								LOS	0.59									LOS	1.13
									A										F

## Critical Lane Volume Level of Service Worksheet

Intersection	MD 355 & Shawnee Lane
Major Approach:	MD 355
Minor Approach:	Shawnee Lane
County/State:	Montgomery County/Maryland
Scenario:	2040 HI Build
Analyst:	DSG/VHB



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## Morning Peak Hour

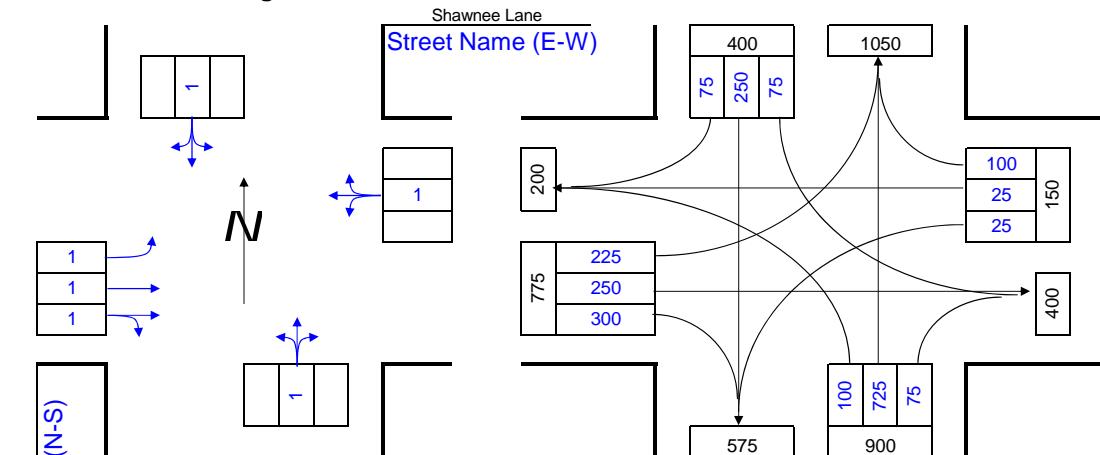
The diagram illustrates a complex electrical circuit with the following components and their values:

- Top Left:** A vertical line labeled "N" at the top.
- Top Center:** A box containing three resistors: 725 ohms (top), 250 ohms (middle), and 450 ohms (bottom).
- Top Right:** A box containing two resistors: 200 ohms (top) and 25 ohms (bottom).
- Middle Left:** A box containing three resistors: 475 ohms (top), 425 ohms (middle), and 150 ohms (bottom).
- Middle Center:** A box containing three resistors: 25 ohms (top), 25 ohms (middle), and 250 ohms (bottom).
- Middle Right:** A box containing three resistors: 25 ohms (top), 25 ohms (middle), and 25 ohms (bottom).
- Bottom Right:** A box containing three resistors: 75 ohms (top), 200 ohms (middle), and 250 ohms (bottom).
- Bottom Center:** A box containing three resistors: 725 ohms (top), 25 ohms (middle), and 25 ohms (bottom).

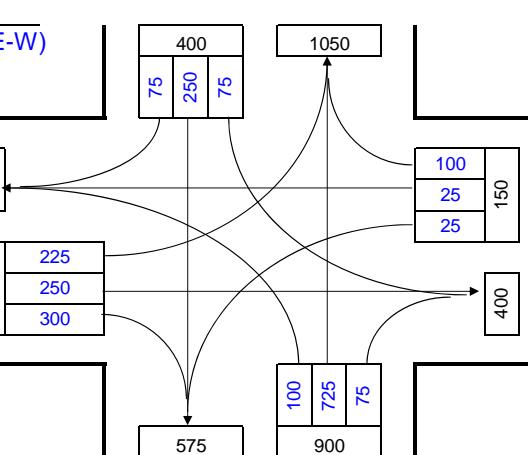
Connections are as follows:

- A vertical line labeled "N" connects to the top of the middle-left resistor box.
- The top resistor of the middle-left box is connected to the bottom resistor of the top-center box.
- The middle resistor of the middle-left box is connected to the top resistor of the middle-center box.
- The bottom resistor of the middle-left box is connected to the top resistor of the bottom-center box.
- The top resistor of the top-center box is connected to the top resistor of the top-right box.
- The middle resistor of the top-center box is connected to the middle resistor of the middle-right box.
- The bottom resistor of the top-center box is connected to the middle resistor of the bottom-center box.
- The top resistor of the top-right box is connected to the middle resistor of the middle-right box.
- The middle resistor of the top-right box is connected to the bottom resistor of the bottom-center box.
- The bottom resistor of the top-right box is connected to the top resistor of the bottom-right box.
- The middle resistor of the middle-right box is connected to the top resistor of the bottom-right box.
- The bottom resistor of the middle-right box is connected to the middle resistor of the bottom-center box.
- The bottom resistor of the bottom-right box is connected to the bottom resistor of the bottom-center box.

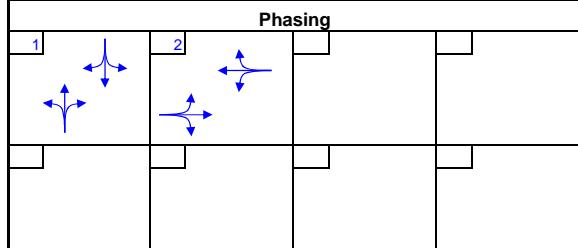
# Lane Configuration



## Evening Peak Hour



### Chasing



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	1150	1299	<= 199	1.1
2	0.53	D	1300	1449	<= 599	2.0
3	0.37	E	1450	1600	<= 799	3.0
4	0.30	F	1601	9999	<= 999	4.0
Dbl-lft	0.53				> 1000	5.0

Critical Lane Volume  
Level of Service Worksheet

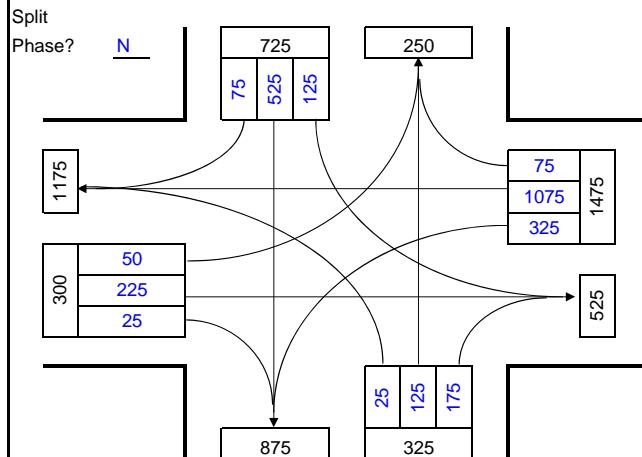
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Stringtown Road  
MD 355  
Stringtown Road  
Montgomery County/Maryland  
2040 HI Build  
DSG/VHB

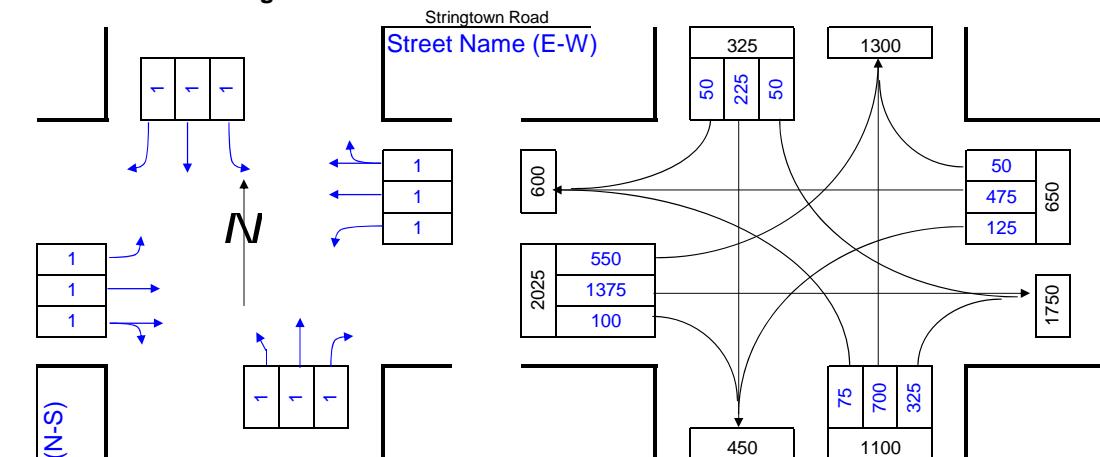


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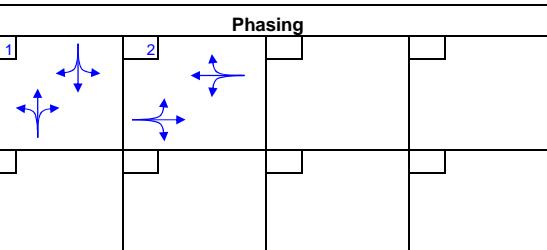
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999		
B	1000	1	1149		
C	1150	2	1299	<= 199	1.1
D	1300	3	1449	<= 599	2.0
E	1450	4	1600	<= 799	3.0
F	1601	5	9999	<= 999	4.0
Dbl-Lft	0.53	6		> 1000	5.0

Phase	Movement	AM						PM											
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	Critical Lane						
		(1) x (2)	(1) x (2)	(3) x (4)	Volume	C		(1) x (2)	(1) x (2)	(3) x (4)	Volume	C							
1	NB	125	1.00	125	125	1.00	125	250	1	NB	700	1.00	700	50	1.00	50	750	C	
1	SB	525	1.00	525	25	1.00	25	550	C	1	SB	225	1.00	225	75	1.00	75	300	
2	EB	250	0.53	133	325	1.00	325	458	2	EB	1475	0.53	782	125	1.00	125	907	C	
2	WB	1150	0.53	610	50	1.00	50	660	C	2	WB	525	0.53	278	550	1.00	550	828	
C: Critical Volume						Total V/C	1210	C: Critical Volume						Total V/C	1657	F			
						LOS	0.76							V/C	1.04				
						C								LOS					

## Critical Lane Volume Level of Service Worksheet

Intersection	Gateway Center Dr & Stringtown Road
Major Approach:	Gateway Center Dr
Minor Approach:	Stringtown Road
County/State:	Montgomery County/Maryland
Scenario:	2040 HI Build
Analyst:	DSG/VHB



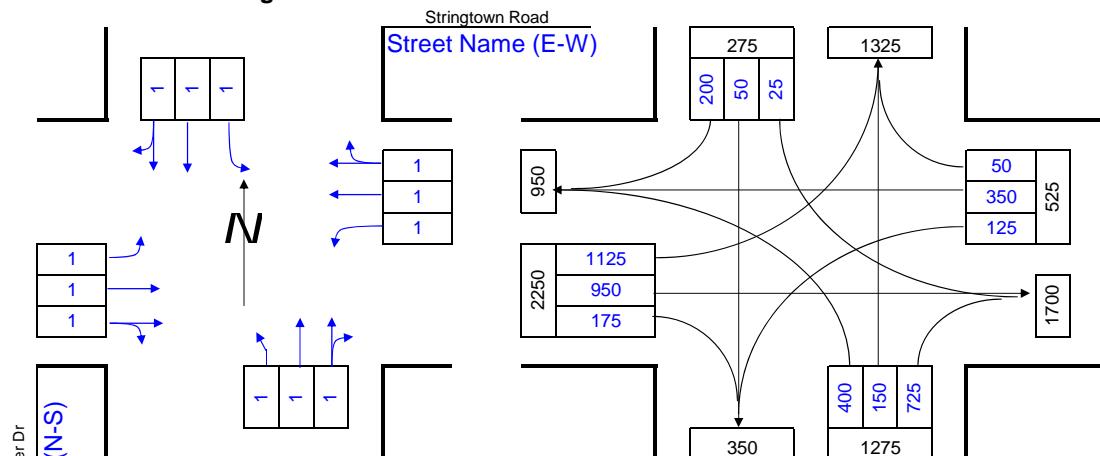
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## Morning Peak Hour

The diagram illustrates a complex network structure with the following connections:

- Phase?** is connected to **N**.
- N** is connected to **1325**.
- 1325** has internal components: **1025**, **275**, and **25**.
- 250** is connected to **1325**.
- 250** is connected to **2550**.
- 2550** is connected to **1000**.
- 1000** has internal components: **150**, **275**, and **575**.
- 1000** is connected to **1325**.
- 1000** is connected to **300**.
- 1000** is connected to **450**.
- 1425** is connected to **250**.
- 1425** is connected to **375**.
- 1225** is connected to **250**.
- 1225** is connected to **175**.
- 175** is connected to **375**.
- 375** is connected to **300**.
- 375** is connected to **450**.
- 300** is connected to **1025**.
- 300** is connected to **75**.
- 75** is connected to **1025**.
- 75** is connected to **450**.
- 450** is connected to **1025**.

## Lane Configuration



## Evening Peak Hour

Gateway C

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
		A	0	999		
		B	1000	1149		
1	1.00	C	1150	1299	<= 199	1.1
2	0.53	D	1300	1449	<= 599	2.0
3	0.37	E	1450	1600	<= 799	3.0
4	0.30	F	1601	9999	<= 999	4.0
Dbl-lft	0.53				> 1000	5.0

AM		(2)Lane		Lane	(3)	(4) Left Turn	Lane	Critical	PM		(2) Lane		Lane	(3)	(4) Left Turn	Lane	Critical		
Phase	Movement	(1)	Use	Volume	Opposing	Lane Use	Volume	Lane	(1)	Use	Volume	Opposing	Lane Use	Volume	Lane				
		Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	NB	150	0.53	80	25	1.00	25	105		1	NB	875	0.53	464	25	1.00	25	489	
1	SB	1300	0.53	689	300	1.00	300	989	C	1	SB	250	0.53	133	400	1.00	400	533	C
2	EB	850	0.53	451	175	1.00	175	626		2	EB	1125	0.53	596	125	1.00	125	721	
2	WB	1250	0.53	663	150	1.00	150	813	C	2	WB	400	0.53	212	1125	1.00	1125	1337	C
C: Critical Volume									Total	1802	C: Critical Volume						Total	1870	
									V/C	1.13							V/C	1.17	
									LOS	F							LOS	F	

Critical Lane Volume  
Level of Service Worksheet

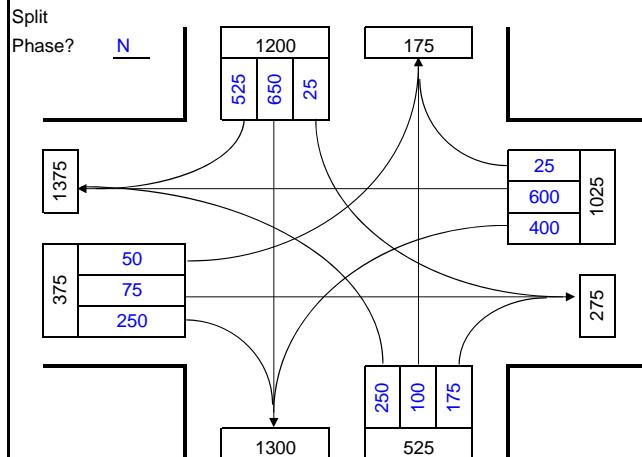
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

New Road & Stringtown Road  
New Road  
Stringtown Road  
Montgomery County/Maryland  
2040 HI Build  
DSG/VHB

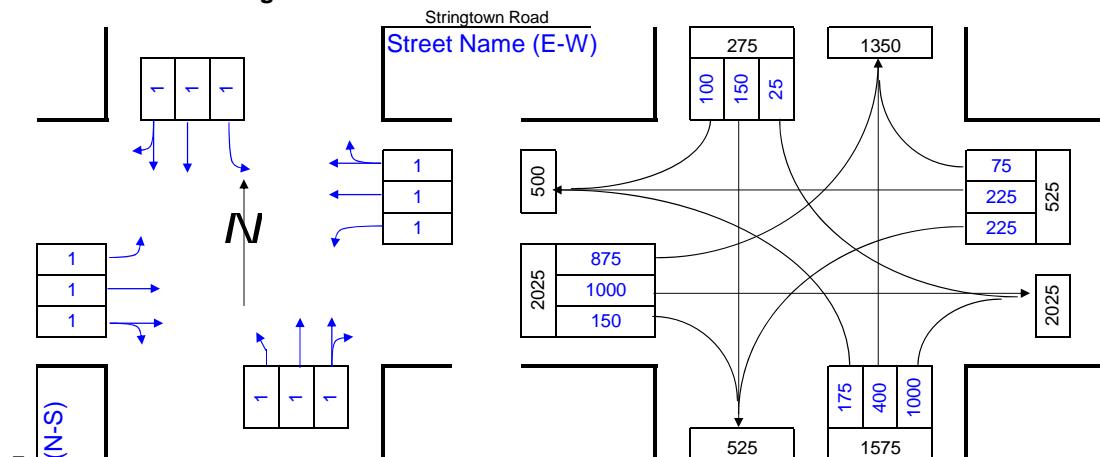


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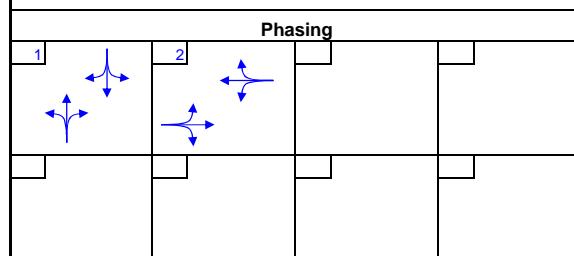
**Morning Peak Hour**



**Lane Configuration**



**Evening Peak Hour**



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299			
D	1300	1449			
E	1450	1600			
F	1601	9999			
Dbl-Lft	0.53				
				<= 199	1.1
				<= 599	2.0
				<= 799	3.0
				<= 999	4.0
				> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C
1	NB	275	0.53	146	25	1.00	25	171	C	1	NB	1400	0.53	742	25	1.00	25	767	C
1	SB	1175	0.53	623	250	1.00	250	873	C	1	SB	250	0.53	133	175	1.00	175	308	
2	EB	325	0.53	172	400	1.00	400	572	C	2	EB	1150	0.53	610	225	1.00	225	835	
2	WB	625	0.53	331	50	1.00	50	381		2	WB	300	0.53	159	875	1.00	875	1034	C
C: Critical Volume										C: Critical Volume									
Total V/C										Total V/C									
LOS										LOS									
1445										1801									
0.90										1.13									
D										F									

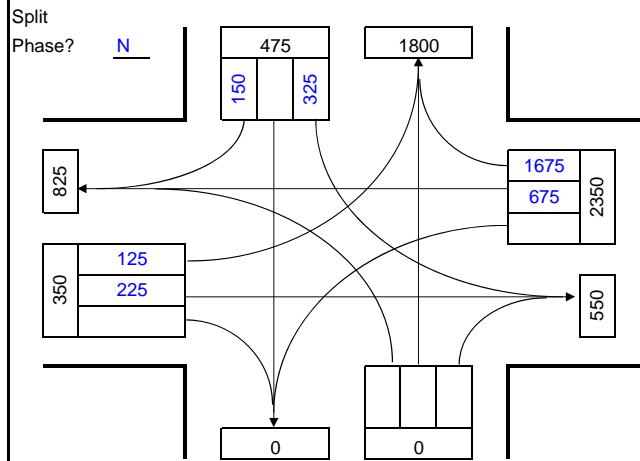
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Western Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI No-Build  
Analyst: DSG/VHB

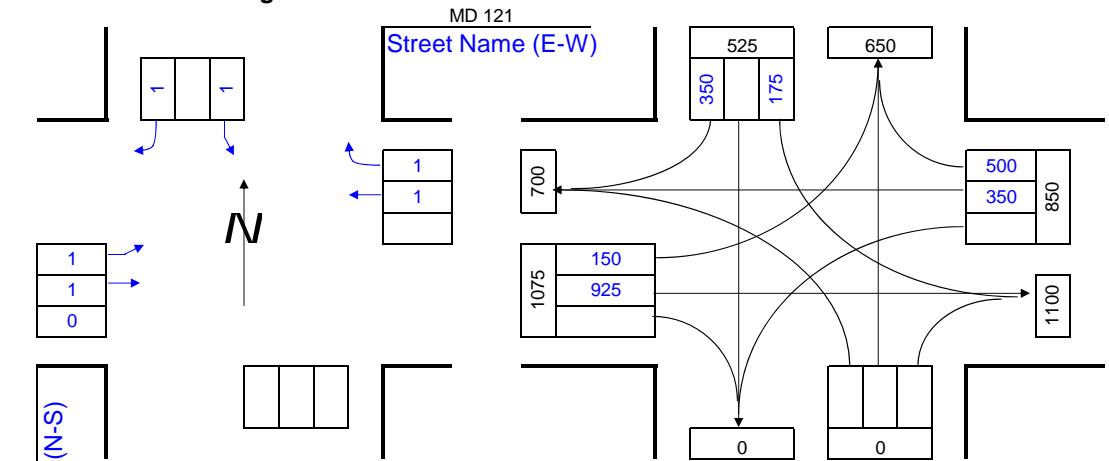


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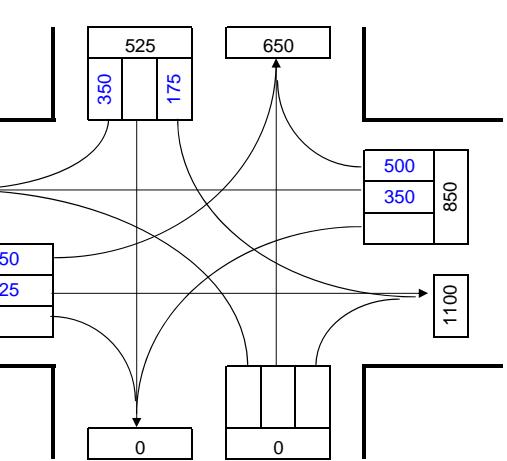
Morning Peak Hour



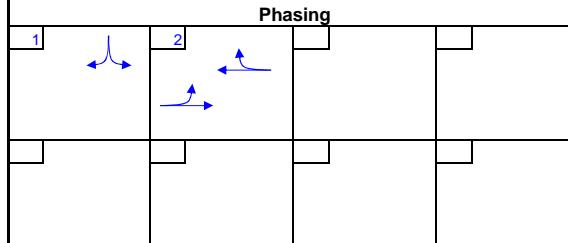
Lane Configuration



Evening Peak Hour



Phasing



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM					
		(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane	(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane
		(1) x (2)			(1) x (4)			(1) x (2)		(1) x (4)			
1	SBL	0	1.00	0	325	1.00	325	325	C	1	SBL	1.00	0
2	EB	225	1.00	225	0	1.00	0	225		2	EB	925	0
2	WB	675	1.00	675	125	1.00	125	800	C	2	WB	350	1.00
C: Critical Volume						Total V/C	1125	C: Critical Volume					
						LOS	0.70						
							B						

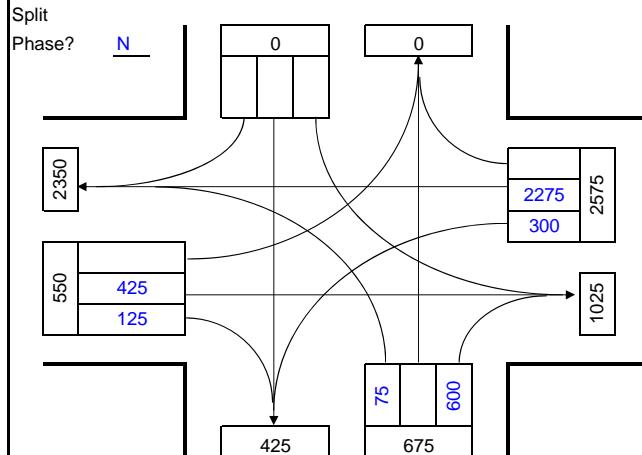
Critical Lane Volume  
Level of Service Worksheet

Intersection: MD 121 & I-270 Eastern Intersection  
Major Approach: I-270  
Minor Approach: MD 121  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI No-Build  
Analyst: DSG/VHB

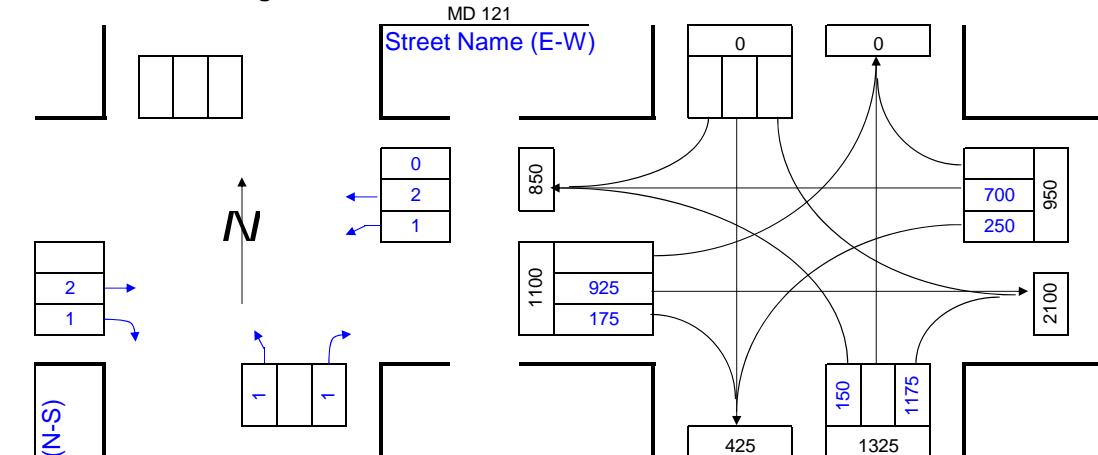


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**Morning Peak Hour**

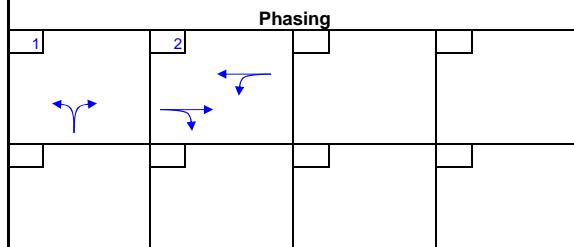


**Lane Configuration**



**Evening Peak Hour**

**Phasing**



I-270  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

Phase	Movement	AM						PM											
		(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Lane Volume	Critical Lane	(1)	(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Left Turn Lane Factor	Critical Lane						
		(1) x (2)		(3) x (4)			C		(1) x (2)		(3) x (4)		C						
1	NBL	75	1.00	75	25	1.00	25	100	C	1	NBL	150	1.00	150	0	1.00	0	150	C
2	EB	425	0.53	225	300	1.00	300	525		2	EB	700	1.00	700	0	1.00	0	700	
2	WB	2275	0.53	1206		1.00	0	1206	C	2	WB	925	1.00	925	250	1.00	250	1175	C
C: Critical Volume						C: Critical Volume						Total V/C		Total V/C					
												1.306		1.325					
												0.82		0.83					
												D		D					

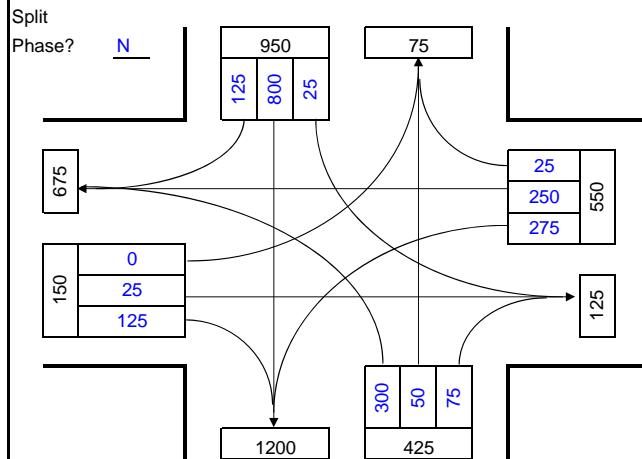
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: 2040 HI No-Build  
Analyst: DSG/VHB

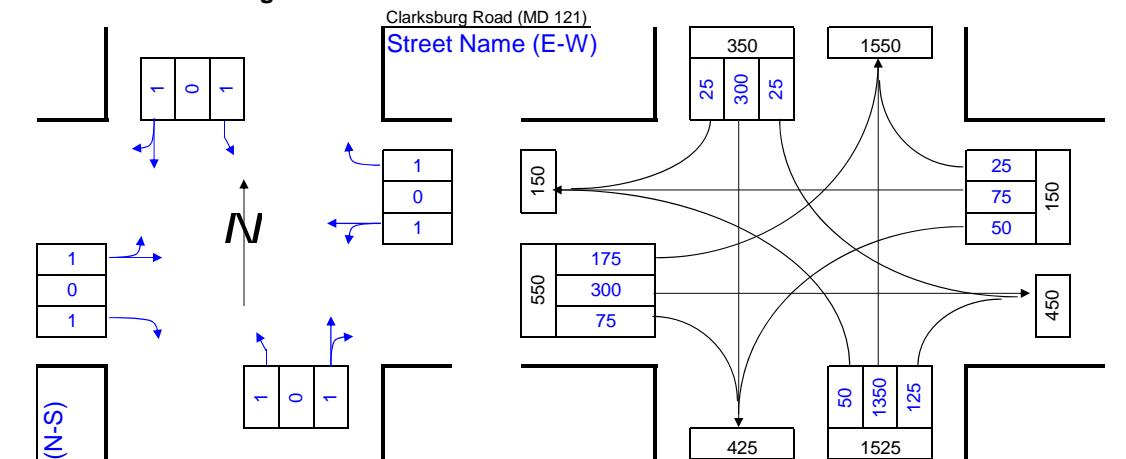


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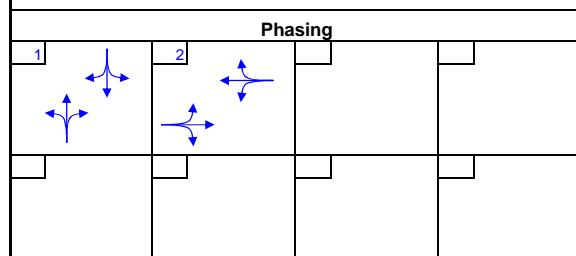
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	999	1149	<= 199	1.1
2	0.53	D	1150	1299	<= 599	2.0
3	0.37	E	1300	1449	<= 799	3.0
4	0.30	F	1450	1600	<= 999	4.0
Dbl-Lft	0.53		1601	9999	> 1000	5.0

Phase	Movement	AM					PM					C	
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	C	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Lane Use Factor	Lane Volume	
		(1) x (2)	(1) x (2)	(3) x (4)	Volume	C		(1) x (2)	(1) x (2)	(3) x (4)	Volume	C	
1	NB	125	1.00	125	25	1.00	25	1475	1.00	1475	25	1.00	25
1	SB	925	1.00	925	300	1.00	300	325	1.00	325	50	1.00	50
2	EB	250	1.00	250	0	1.00	0	300	1.00	300	50	1.00	50
2	WB	25	1.00	25	275	1.00	275	75	1.00	75	175	1.00	175
C: Critical Volume							C: Critical Volume						
Total V/C LOS							Total V/C LOS						
1525							1850						
0.95							1.16						
E							F						

Critical Lane Volume  
Level of Service Worksheet

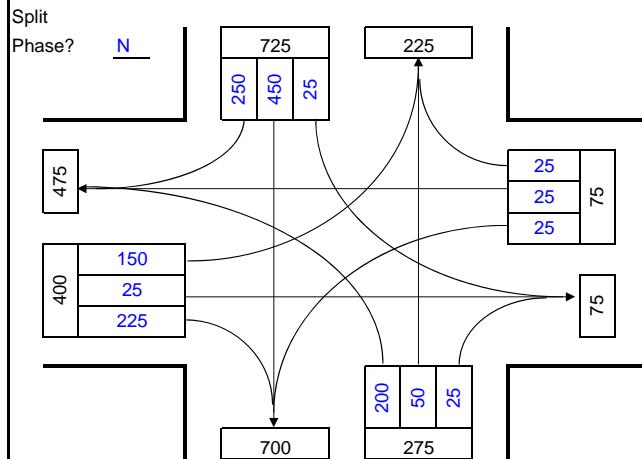
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Shawnee Lane  
MD 355  
Shawnee Lane  
Montgomery County/Maryland  
2040 HI No-Build  
DSG/VHB

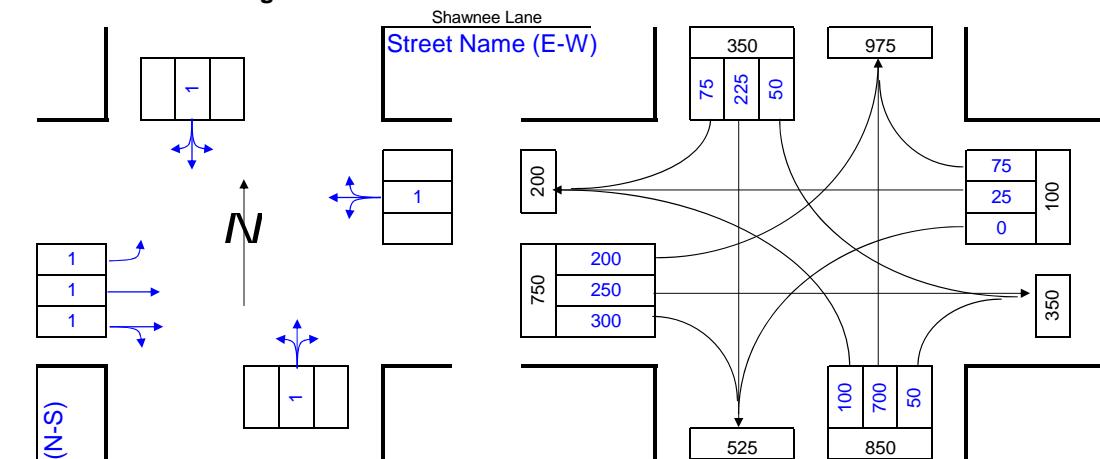


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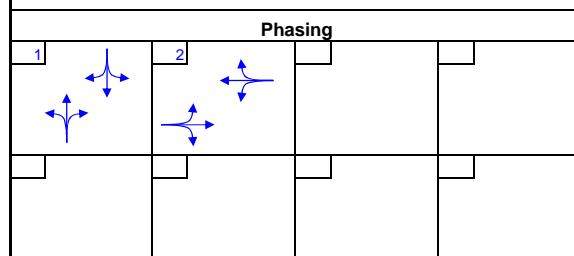
Morning Peak Hour



Lane Configuration



Evening Peak Hour



MD 355  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)		(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	NB	75	1.00	75	25		1.00	25	100	1	NB	750	1.00	750	50	1.00	50	800	C
1	SB	700	1.00	700	200		1.00	200	900	C	1	SB	300	1.00	300	100	1.00	100	400
2	EB	250	0.53	133	150		1.00	150	283	C	2	EB	550	0.53	292	0	1.00	0	292
2	WB	50	1.00	50	25		1.00	25	75	2	WB	100	1.00	100	200	1.00	200	300	C
C: Critical Volume										C: Critical Volume									
Total V/C LOS										Total V/C LOS									
1183										1100									
0.74										0.69									
C										B									

Critical Lane Volume  
Level of Service Worksheet

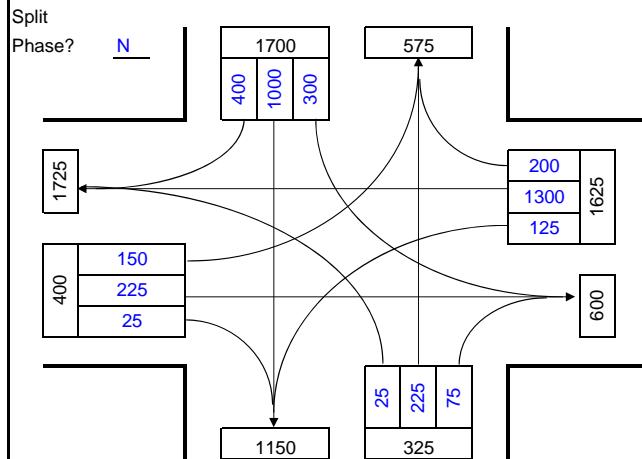
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

MD 355 & Stringtown Road  
MD 355  
Stringtown Road  
Montgomery County/Maryland  
2040 HI No-Build  
DSG/VHB

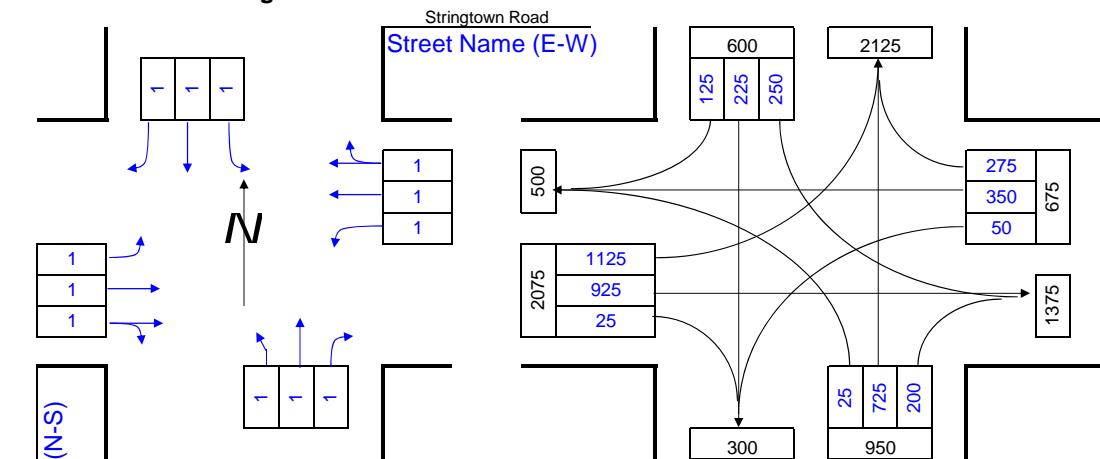


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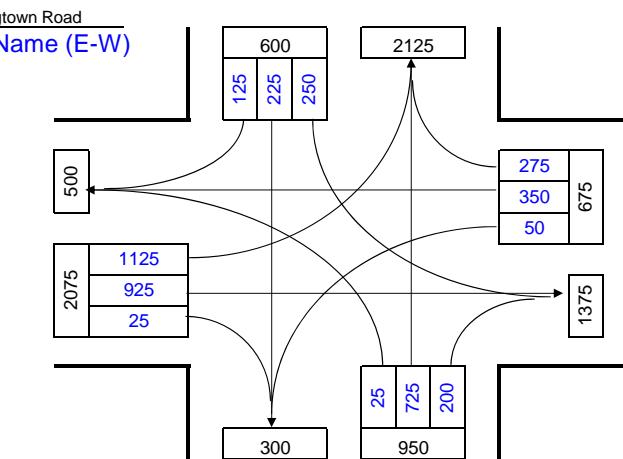
**Morning Peak Hour**



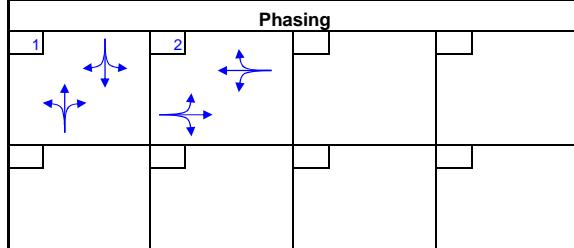
**Lane Configuration**



**Evening Peak Hour**



**Phasing**



MD 355  
Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	999			
B	1000	1149			
C	1150	1299		= 199	1.1
D	1300	1449		= 599	2.0
E	1450	1600		= 799	3.0
F	1601	9999		= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)	(3) x (4)	Volume	C	
1	NB	225	1.00	225	300	1.00	300	525	C	1	NB	725	1.00	725	250	1.00	250	975	C
1	SB	1000	1.00	1000	25	1.00	25	1025	C	1	SB	225	1.00	225	25	1.00	25	250	
2	EB	250	0.53	133	125	1.00	125	258		2	EB	950	0.53	504	50	1.00	50	554	
2	WB	1500	0.53	795	150	1.00	150	945	C	2	WB	625	0.53	331	1125	1.00	1125	1456	C
C: Critical Volume								Total	1970	C: Critical Volume								Total	2431
								V/C	1.23									V/C	1.52
								LOS	F									LOS	F

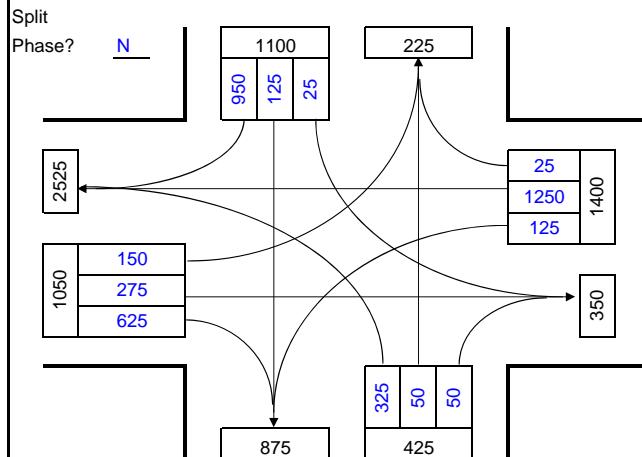
Critical Lane Volume  
Level of Service Worksheet

Intersection: Gateway Center Dr & Stringtown Road  
Major Approach: Gateway Center Dr  
Minor Approach: Stringtown Road  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI No-Build  
Analyst: DSG/VHB

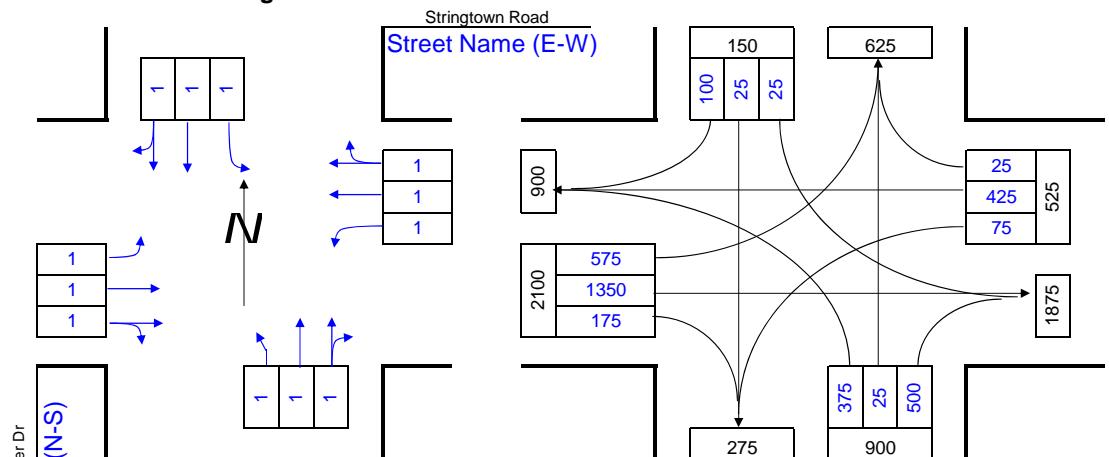


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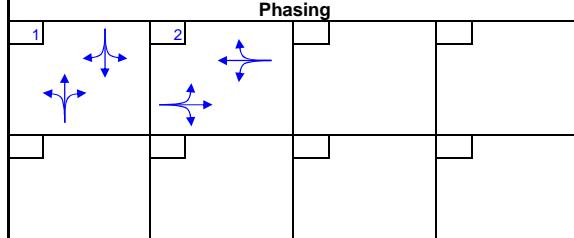
Morning Peak Hour



Lane Configuration



Phasing



Gateway Center Dr  
Street Name (N-S)

Lane Configuration

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999	= 199	1.1
B	0.53	1000	1149	= 599	2.0
C	0.37	1150	1299	= 799	3.0
D	0.30	1300	1449	= 999	4.0
E	0.53	1450	1600	> 1000	5.0
F	0.53	1601	9999		
Dbl-Lft					

Phase	Movement	AM						PM								
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Factor	Lane Use (1) x (2)	Critical Volume (3) x (4)	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Left Turn Opposing Factor	Lane Use (1) x (2)	Critical Volume (3) x (4)			
1	NB	100	0.53	53	25	1.00	25	78	1	525	0.53	278	25	1.00	25	303
1	SB	1075	0.53	570	325	1.00	325	895	C	125	0.53	66	375	1.00	375	441
2	EB	900	0.53	477	125	1.00	125	602	2	1525	0.53	808	75	1.00	75	883
2	WB	1275	0.53	676	150	1.00	150	826	C	450	0.53	239	575	1.00	575	814
C: Critical Volume						C: Critical Volume						Total V/C	1325			
Total LOS						Total LOS						V/C	0.83			
												LOS	D			

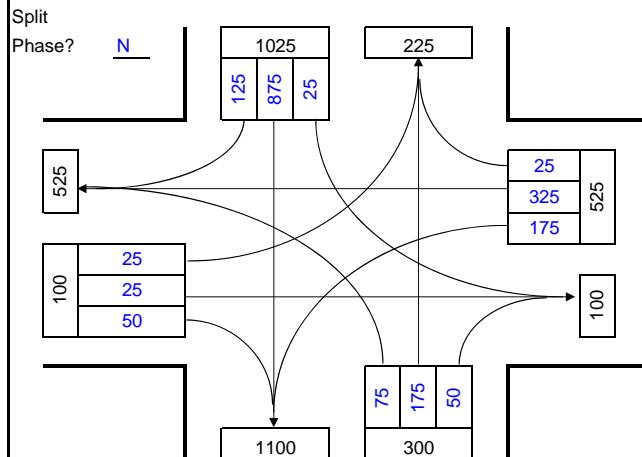
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: Montgomery County/Maryland  
Analyst: 2040 No-Build Mitigation  
DSG/VHB

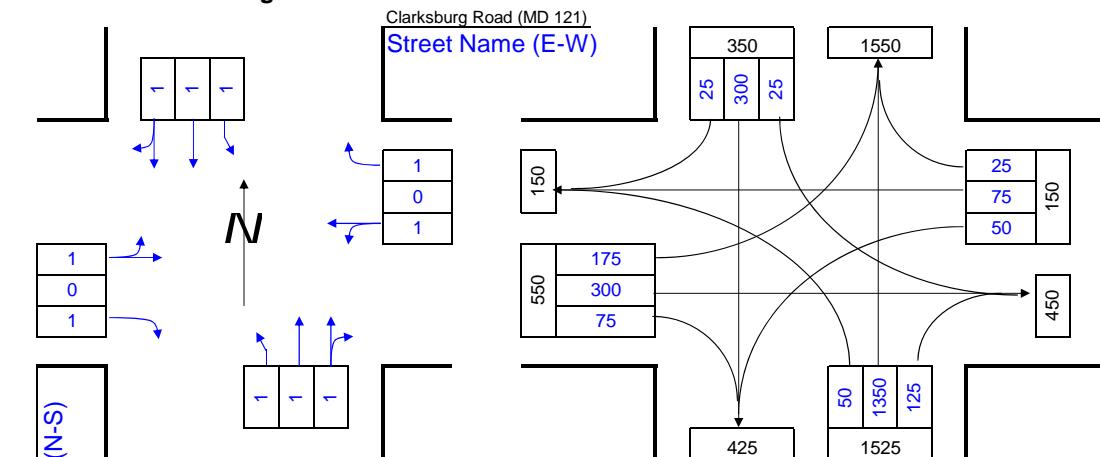


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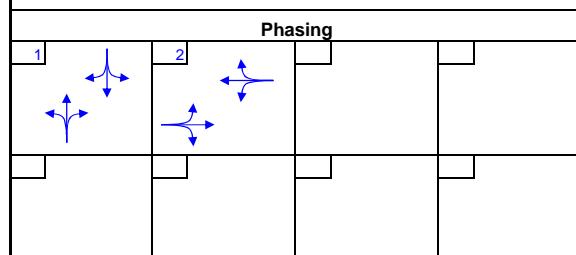
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	0	999			
B	1000	1149			
C	1150	1299		<= 199	1.1
D	1300	1449		<= 599	2.0
E	1450	1600		<= 799	3.0
F	1601	9999		<= 999	4.0
Dbl-Lft	0.53			> 1000	5.0

AM			(2)Lane Use	Lane Volume	(3)Opposing Lefts	(4)Lane Use Factor	Lane Volume	Critical Lane	PM			(2)Lane Use	Lane Volume	(3)Opposing Lefts	(4)Lane Use Factor	Lane Volume	Critical Lane	
Phase	Movement	Volume	(1)	(1) x (2)	(1)	(2)	(3) x (4)	C	Phase	Movement	Volume	(1)	(1) x (2)	(1)	(3) x (4)	C		
1	NB	225	0.53	119	25	1.00	25	144	1	NB	1475	0.53	782	25	1.00	25	807 C	
1	SB	1000	0.53	530	75	1.00	75	605	C	1	SB	325	0.53	172	50	1.00	50	222
2	EB	325	1.00	325	25	1.00	25	350	C	2	EB	300	1.00	300	50	1.00	50	350 C
2	WB	25	1.00	25	175	1.00	175	200	2	WB	75	1.00	75	175	1.00	175	250	
C: Critical Volume									C: Critical Volume									
Total V/C LOS									Total V/C LOS									
955									1157									
0.60									0.72									
A									C									

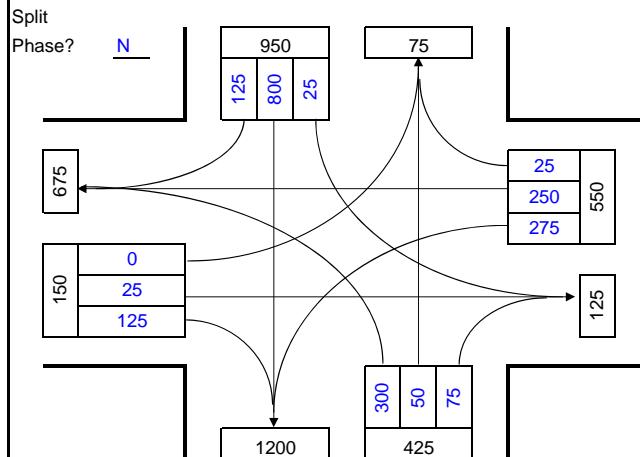
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: Montgomery County/Maryland  
Analyst: 2040 HI No-Build Mitigation  
DSG/VHB

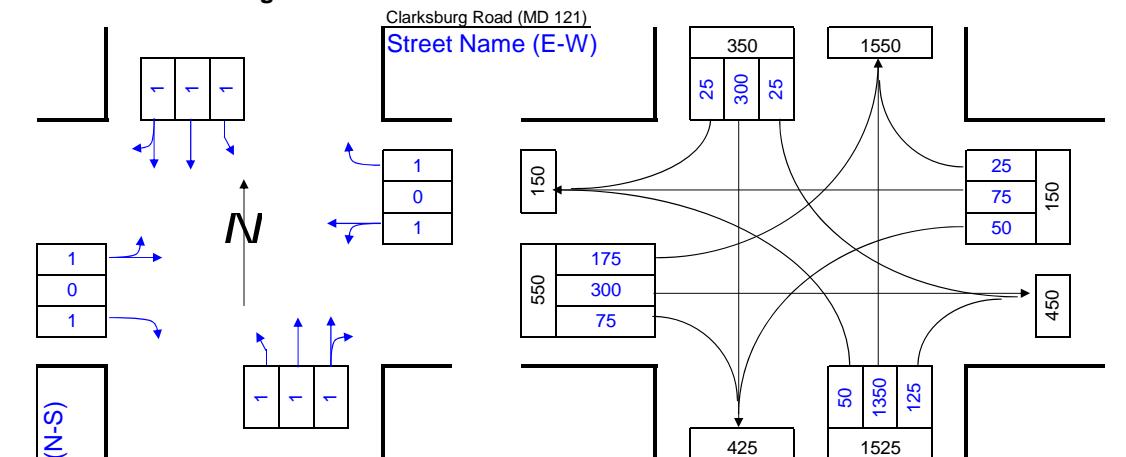


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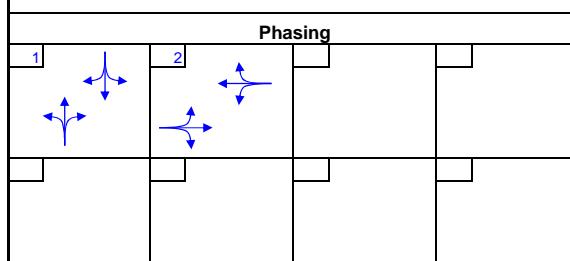
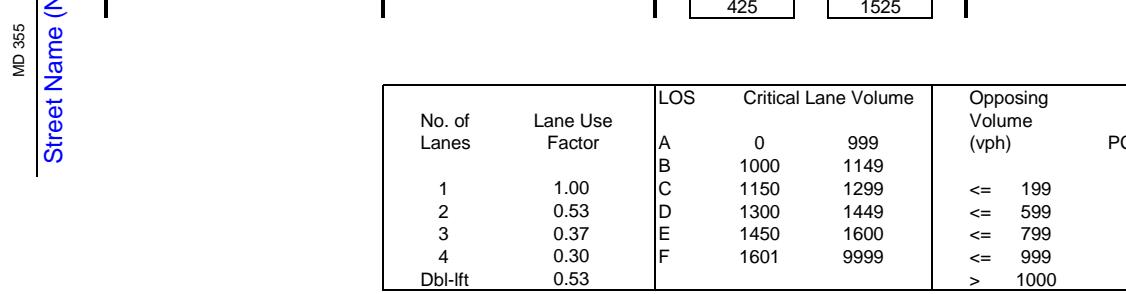
Morning Peak Hour



Lane Configuration



Evening Peak Hour



AM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane	PM				(2) Lane Use	Lane Volume	(3) Opposing Lefts	(4) Lane Use Factor	Lane Volume	Critical Lane
Phase	Movement	Volume	Factor	(1) x (2)	(1) x (2)		(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	NB	125	0.53	66	25	1.00	25	91		1	NB	1475	0.53	782	25	1.00	25	807	C
1	SB	925	0.53	490	300	1.00	300	790	C	1	SB	325	0.53	172	50	1.00	50	222	
2	EB	250	1.00	250	0	1.00	0	250		2	EB	300	1.00	300	50	1.00	50	350	C
2	WB	25	1.00	25	275	1.00	275	300	C	2	WB	75	1.00	75	175	1.00	175	250	
C: Critical Volume										C: Critical Volume									
Total V/C LOS										Total V/C LOS									
1090										1157									
0.68										0.72									
B										C									

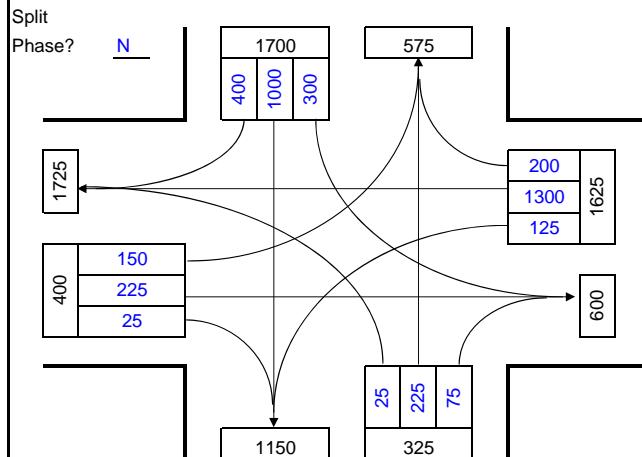
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & Stringtown Road  
Minor Approach: MD 355  
County/State: Stringtown Road  
Scenario: Montgomery County/Maryland  
Analyst: 2040 HI No-Build Mitigation  
DSG/VHB

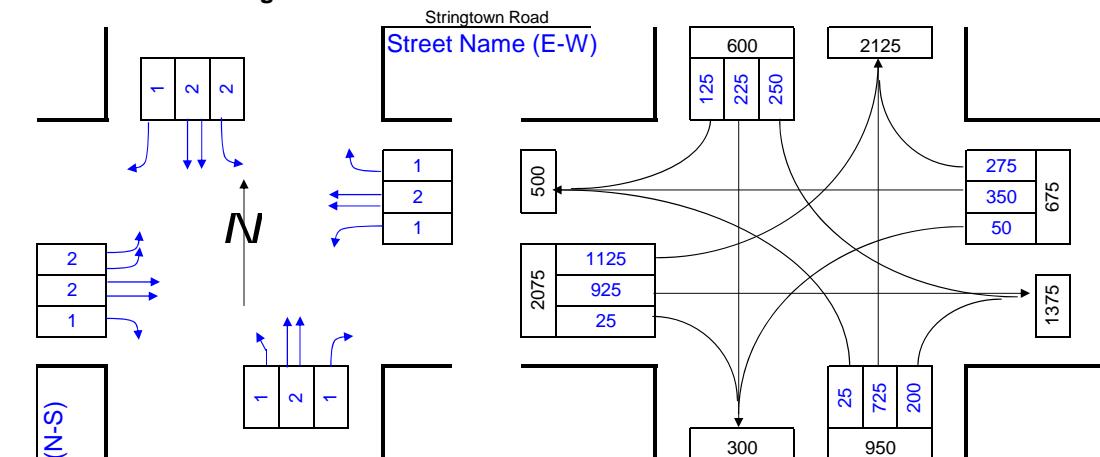


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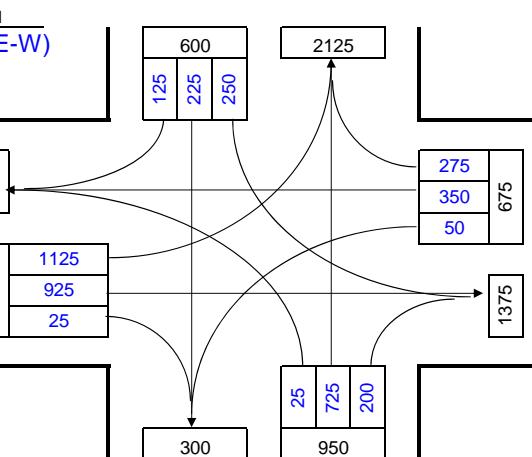
Morning Peak Hour



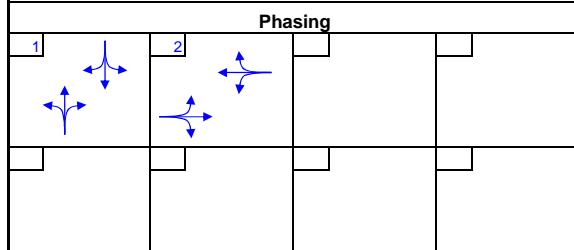
Lane Configuration



Evening Peak Hour



Phasing



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999		
B	0.53	1000	1149		
C	0.37	1150	1299	≤ 199	1.1
D	0.30	1300	1449	≤ 599	2.0
E	0.53	1450	1600	≤ 799	3.0
F	0.53	1601	9999	≤ 999	4.0
Dbl-Lft				> 1000	5.0

Phase	Movement	AM						PM												
		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Lane	(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Left Turn	Lane Use	Critical Lane	
				(1) x (2)		Opposing Lefts				C				(1) x (2)		Opposing Lefts		Volume	C	
1	NB	225	0.53		119	300	1.00		300	419	1	725	0.53		384	250	1.00	250	634	C
1	SB	1000	0.53		530	25	1.00		25	555	C	225	0.53		119	25	1.00	25	144	
2	EB	225	0.53		119	125	1.00		125	244	2	925	0.53		490	50	1.00	50	540	
2	WB	1300	0.53		689	150	1.00		150	839	C	350	0.53		186	1125	0.53	596	782	C
C: Critical Volume						Total V/C		1394			C: Critical Volume						Total V/C	1416		
						LOS		0.87									LOS	0.89		
								D									LOS	D		

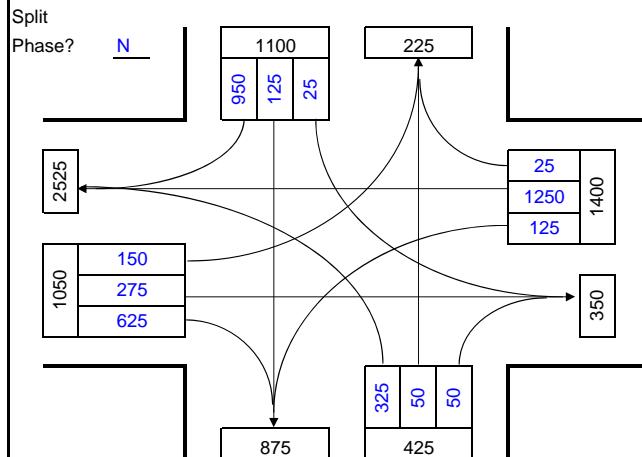
Critical Lane Volume  
Level of Service Worksheet

Intersection: Gateway Center Dr & Stringtown Road  
Major Approach: Gateway Center Dr  
Minor Approach: Stringtown Road  
County/State: Montgomery County/Maryland  
Scenario: 2040 HI No-Build Mitigation  
Analyst: DSG/VHB

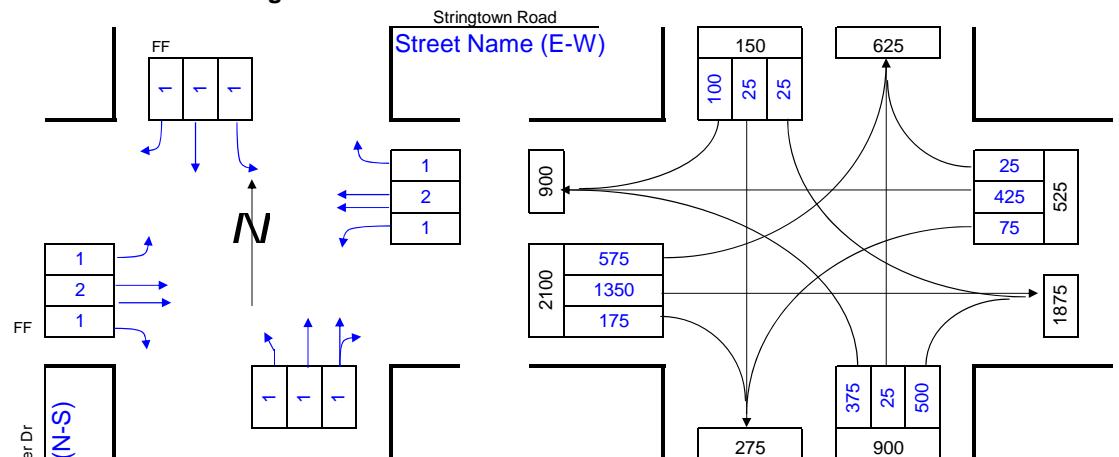


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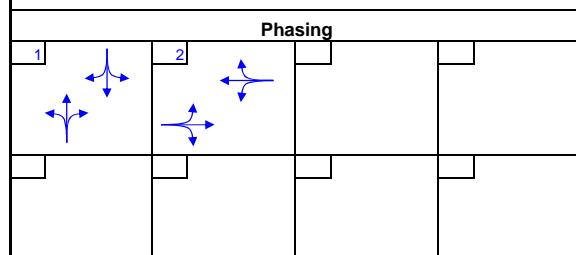
Morning Peak Hour



Lane Configuration



Evening Peak Hour



Street Name (N-S)

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999	= 199	1.1
B	0.53	1000	1149	= 599	2.0
C	0.37	1150	1299	= 799	3.0
D	0.30	1300	1449	= 999	4.0
E	0.53	1450	1600	> 1000	5.0
F	0.53	1601	9999		
Dbl-Lft					

Phase	Movement	AM						PM							
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Opposing Lefts	Lane Use Factor	Critical Volume	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Opposing Lefts	Lane Use Factor	Critical Volume		
		(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C		(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C			
1	NB	100	0.53	53	25	1.00	25	78	525	0.53	278	1.00	25	303	
1	SB	125	0.53	66	325	1.00	325	391	25	0.53	13	375	1.00	375	388
2	EB	275	0.53	146	125	1.00	125	271	1350	0.53	716	75	1.00	75	791
2	WB	1250	0.53	663	150	1.00	150	813	450	0.53	239	575	1.00	575	814
C: Critical Volume						Total V/C LOS	1204		C: Critical Volume						1202
							0.75							0.75	
							C							C	

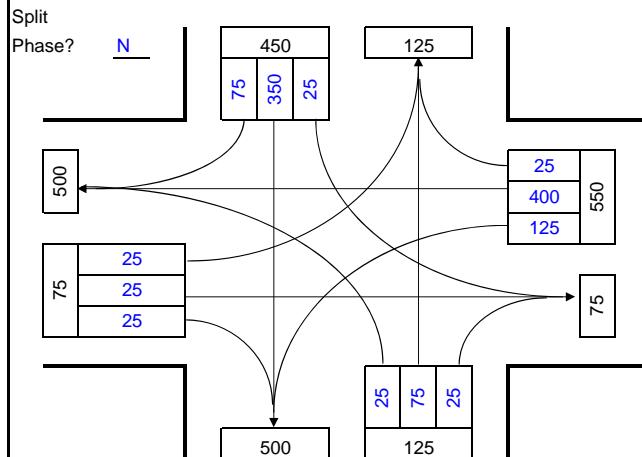
Critical Lane Volume  
Level of Service Worksheet

Intersection  
Major Approach: MD 355 & MD 121  
Minor Approach: MD 355  
County/State: Clarksburg Road (MD 121)  
Scenario: 2040 Build Mitigation  
Analyst: DSG/VHB

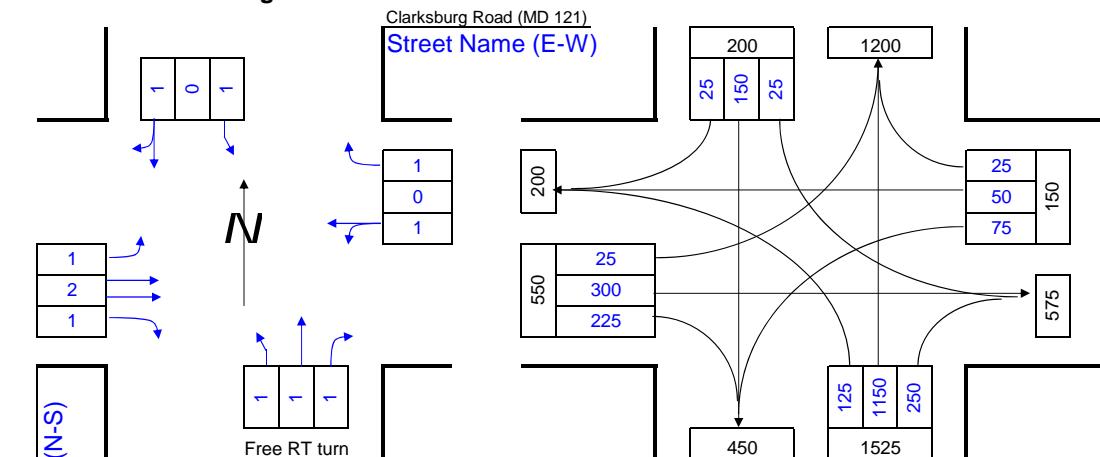


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Morning Peak Hour



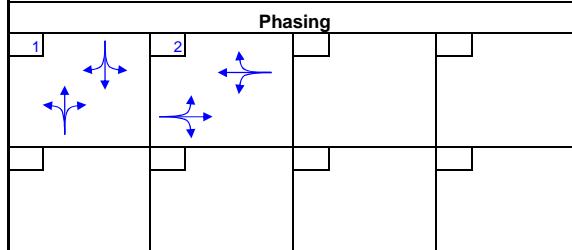
Lane Configuration



Evening Peak Hour

No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume		Opposing Volume (vph)	PCE
			A	B		
1	1.00	C	999	1149	<= 199	1.1
2	0.53	D	1150	1299	<= 599	2.0
3	0.37	E	1300	1449	<= 799	3.0
4	0.30	F	1450	1600	<= 999	4.0
Dbl-Lft	0.53		1601	9999	> 1000	5.0

Phasing



Phase	Movement	AM				PM				AM				PM					
		(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Lane Use	Lane Volume	Critical Lane	(1)	(2)	Lane Use	Lane Volume	(3)	(4)	Lane Use	Lane Volume	
		Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C	Phase	Movement	Volume	Factor	(1) x (2)	Lefts	Factor	(3) x (4)	Volume	C
1	NB	100	1.00	100	25	1.00	25	125	C	1	NB	1150	1.00	1150	25	1.00	25	1175	C
1	SB	425	1.00	425	25	1.00	25	450	C	1	SB	175	1.00	175	125	1.00	125	300	
2	EB	400	1.00	400	25	1.00	25	425	C	2	EB	300	0.53	159	75	1.00	75	234	C
2	WB	25	1.00	25	125	1.00	125	150		2	WB	50	1.00	50	25	1.00	25	75	
C: Critical Volume								C: Critical Volume				Total				C: Critical Volume			
								V/C				Total				V/C			
								LOS				LOS				LOS			
								A				D				D			

Critical Lane Volume  
Level of Service Worksheet

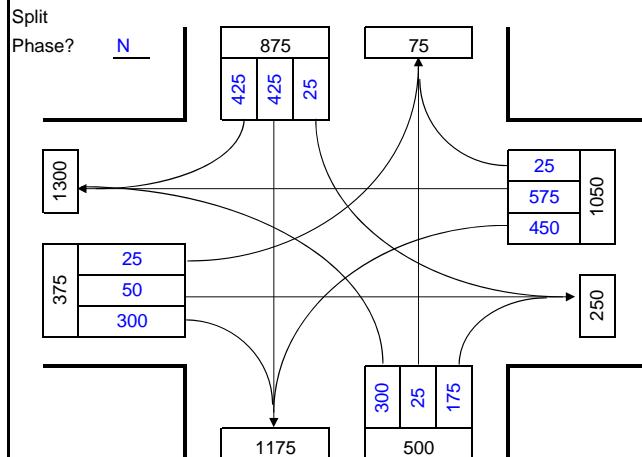
Intersection  
Major Approach:  
Minor Approach:  
County/State:  
Scenario:  
Analyst:

New Road & Stringtown Road  
New Road  
Stringtown Road  
Montgomery County/Maryland  
2040 Build Mitigation  
DSG/VHB

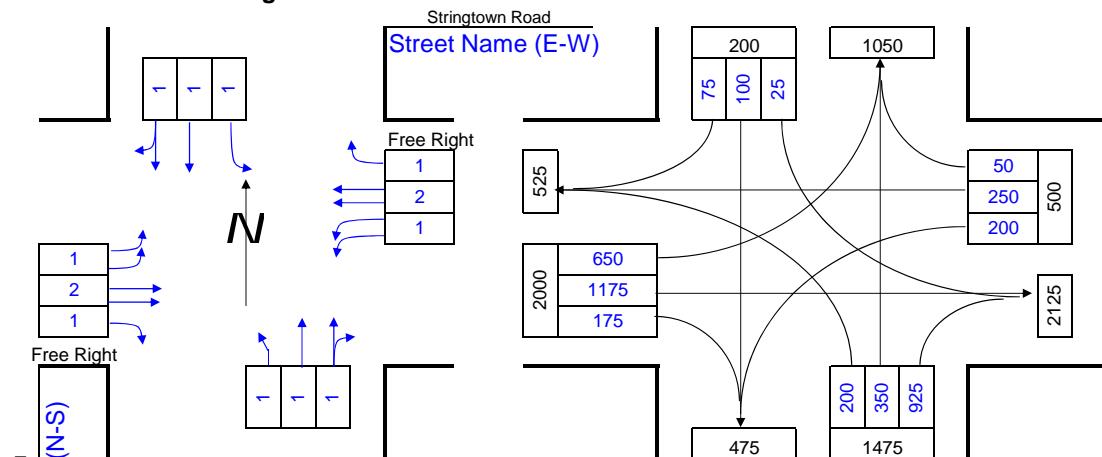


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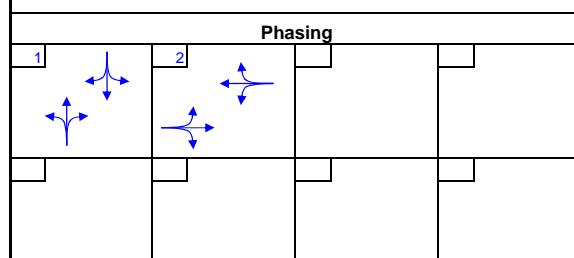
Morning Peak Hour



Lane Configuration



Evening Peak Hour



No. of Lanes	Lane Use Factor	LOS	Critical Lane Volume	Opposing Volume (vph)	PCE
A	1.00	0	999	= 199	1.1
B	0.53	1000	1149	= 599	2.0
C	0.37	1150	1299	= 799	3.0
D	0.30	1300	1449	= 999	4.0
E	0.53	1450	1600	> 1000	5.0
F	0.53	1601	9999		

Phase	Movement	AM						PM						
		(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Opposing Lefts	Lane Use Factor	Critical Volume	(1)	(2) Lane Use Factor	(3) Lane Volume	(4) Opposing Lefts	Lane Use Factor	Critical Volume	
(1)	(1) x (2)	(1) x (2)	(3) x (4)	(3) x (4)	C	(1)	(1) x (2)	(1) x (2)	(1) x (2)	(3) x (4)	C			
1	NB	200	0.53	106	25	1.00	25	131	1	NB	1275	0.53	676	
1	SB	850	0.53	451	300	1.00	300	751	C	1	SB	175	0.53	93
2	EB	350	0.53	186	450	1.00	450	636	C	2	EB	1175	0.53	623
2	WB	600	0.53	318	25	1.00	25	343	2	WB	250	0.53	133	650
C: Critical Volume						Total V/C	1386		C: Critical Volume					
						LOS	0.87							
							D							