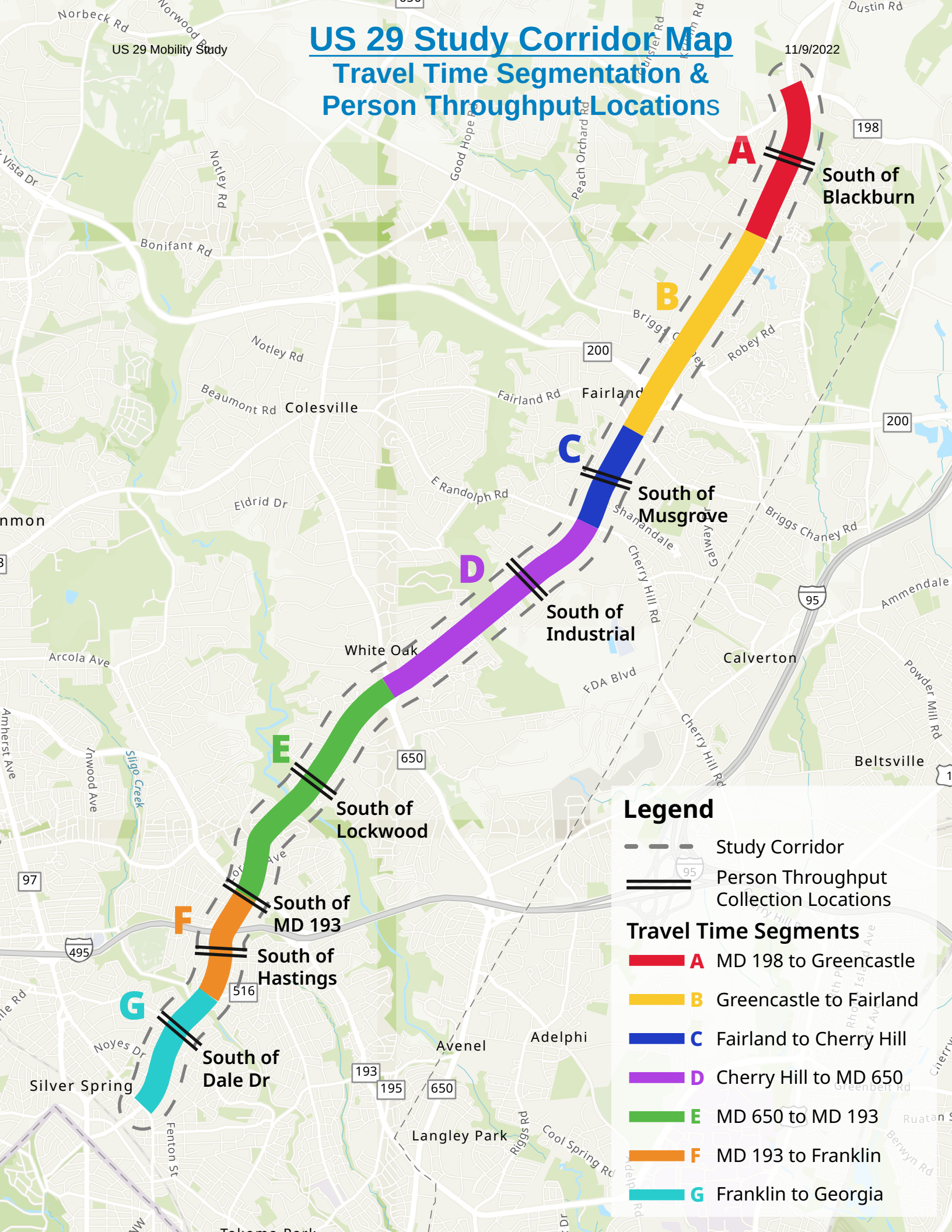
Appendix I: Traffic Operations Analysis

VISSIM MOE Summary Tables

BRT Speed Heat Maps

HCM Summary Tables


US 29 Mobility Study
US 29 Study Corridor Map
Travel Time Segmentation &
Person Throughput Locations
11/9/2022
A
South of Blackburn
B
C
South of Musgrove
D
South of Industrial
E
South of Lockwood
F
South of MD 193
South of Hastings
G
South of Dale Dr
Legend
Study Corridor
Person Throughput Collection Locations
Travel Time Segments
A MD 198 to Greencastle
B Greencastle to Fairland
C Fairland to Cherry Hill
D Cherry Hill to MD 650
E MD 650 to MD 193
F MD 193 to Franklin
G Franklin to Georgia
Norbeck Rd
Norwood Rd
Dustin Rd
Vista Dr
Notley Rd
Good Hope Rd
Peach Orchard Rd
Bonifant Rd
198
Briggs Chaney Rd
Robey Rd
200
Beaumont Rd
Colesville
Fairland Rd
Fairland
E Randolph Rd
Eldrid Dr
Sharandale
Galway
Cherry Hill Rd
95
Ammendale
White Oak
Arcola Ave
FDA Blvd
Calverton
Powder Mill Rd
Beltsville
Amherst Ave
Inwood Ave
Sligo Creek
650
97
495
516
Noyes Dr
Silver Spring
Fenton St
Avenel
Adelphi
193
195
Langley Park
Riggs Rd
Cool Spring Rd
Greenbelt Rd
Berwyn Rd

Person Throughput and Network MOEs

AM Peak Hour

Direction	Location	Person Throughput						
		No Build	Managed Lane[1]	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
Southbound	South of Blackburn	4600	5100	4575	4675	4700	4700	4700
	South of Musgrove	4025	5050	4175	4350	4300	4100	4150
	South of Industrial	3850	4575	3850	3975	3925	3825	3850
	South of Lockwood	4800	5325	4825	4775	4775	4775	4800
	South of MD 193	5125	5325	5175	5150	5175	5150	5125
	South of Hastings	4125	4275	4150	4125	4100	4100	4050
	South of Dale	4250	4550	4350	4425	4225	4200	4200
Northbound	South of Blackburn	3175	3225	3175	3175	3175	3150	3150
	South of Musgrove	2550	2575	2550	2550	2525	2525	2550
	South of Industrial	2850	2925	2875	2875	2875	2875	2850
	South of Lockwood	2975	3025	3025	3025	3000	3000	3000
	South of MD 193	2525	2650	2525	2525	2525	2525	2525
	South of Hastings	2550	2700	2575	2600	2550	2550	2550
	South of Dale	2100	2125	2075	2075	2075	2075	2075

Network Performance							
Measure of Effectiveness	No Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
Average Delay (min/veh)	4.9	4.1	4.7	4.6	4.7	4.8	4.8
Total Travel Time (hrs)	10700	9500	10500	10400	10600	10700	10700
Network Delay (hrs)	6200	5000	6000	5900	6000	6100	6100
Latent Delay (hrs)	4300	2600	4000	3900	4100	4100	4100
Total Delay (hrs)	10500	7600	10000	9800	10100	10200	10200
Latent Demand (vehs)	6150	4050	5700	5600	5850	5850	5850

[1]The Managed Lane scenario assumes a 10% mode shift to HOV from SOV, increasing total HOV rate to 25%

Average Delay (min/veh):	The network delay divided by the total number of vehicles that have entered the network
Total Travel Time (All vehicles) (hrs):	The total amount of time spent by vehicles within the network
Network Delay (hrs):	The difference between the time vehicles would spend in the network at their desired speeds and the actual time spent in the network
Latent Delay (hrs):	The total amount of time spent by vehicles waiting to get into the network
Total Delay (hrs):	Network delay plus latent delay
Latent Demand (vehs):	The number of vehicles waiting to enter the network at the end of the simulation period

Person Throughput and Network MOEs

PM Peak Hour

Direction	Location	Person Throughput						
		No Build	Managed Lane[1]	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
Southbound	South of Blackburn	3500	3625	3500	3500	3500	3500	3500
	South of Musgrove	2800	2925	2800	2800	2800	2800	2800
	South of Industrial	3400	3475	3400	3275	3275	3250	3250
	South of Lockwood	3525	3700	3250	3450	3275	3450	3450
	South of MD 193	2800	3325	2625	3025	2800	2925	2950
	South of Hastings	2450	2750	2125	2525	2425	2500	2500
	South of Dale	2275	2425	1925	2300	2225	2275	2250
Northbound	South of Blackburn	3750	4275	3750	3825	3850	3925	3925
	South of Musgrove	4375	4850	4200	4100	4125	4300	4325
	South of Industrial	4225	4750	3975	3800	3775	4200	4250
	South of Lockwood	4675	5350	4075	4350	4400	4625	4750
	South of MD 193	4475	4900	3775	4125	4125	4275	4450
	South of Hastings	4550	4875	4050	4325	3925	4000	4575
	South of Dale	3975	4200	3525	3750	3725	3700	4050

Network Performance

Measure of Effectiveness	No Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
Average Delay (min/veh)	4.5	2.4	5.6	4.6	4.6	4.5	4.3
Total Travel Time (hrs)	10700	7800	11400	10700	10800	10700	10500
Network Delay (hrs)	5900	3100	7000	6000	6100	6000	5700
Latent Delay (hrs)	800	300	3800	1200	1600	1600	1300
Total Delay (hrs)	6700	3400	10800	7200	7700	7600	7000
Latent Demand (vehs)	2050	400	8100	3250	3300	3150	2700

[1]The Managed Lane scenario assumes a 10% mode shift to HOV from SOV, increasing total HOV rate to 25%

Average Delay (min/veh): The network delay divided by the total number of vehicles that have entered the network

Total Travel Time (All vehicles) (hrs): The total amount of time spent by vehicles within the network

Network Delay (hrs): The difference between the time vehicles would spend in the network at their desired speeds and the actual time spent in the network

Latent Delay (hrs): The total amount of time spent by vehicles waiting to get into the network

Total Delay (hrs): Network delay plus latent delay

Latent Demand (vehs): The number of vehicles waiting to enter the network at the end of the simulation period

Passenger Vehicle and BRT Travel Times

Passenger Vehicle Travel Times (min) - AM Peak Hour

US 29 - Southbound - Peak Direction									US 29 - Northbound								
Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid	Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
-	Time to Enter[1]	9.2	3.1	9.3	8.2	8.1	8.1	8.1	A	Greencastle to MD 198	1.4	1.4	1.4	1.5	1.5	1.4	1.5
A	MD 198 to Greencastle	2.9	1.5	3.1	1.5	1.5	1.6	1.5	B	Fairland to Greencastle	2.4	2.1	2.4	2.1	2.1	2.1	2.1
B	Greencastle to Fairland	3.1	2.3	3.0	2.5	2.7	3.2	3.1	C	Cherry Hill to Fairland	1.7	1.7	1.7	1.8	1.7	1.7	1.7
C	Fairland to Cherry Hill	4.9	1.5	4.3	3.9	4.0	5.3	5.2	D	MD 650 to Cherry Hill	3.4	3.2	3.8	3.5	3.5	3.7	3.7
D	Cherry Hill to MD 650	15.1	9.8	13.5	12.4	12.6	14.1	13.8	E	MD 193 to MD 650	3.5	3.4	4.3	4.3	4.4	4.2	4.2
E	MD 650 to MD 193	14.9	10.2	14.2	15.2	14.8	14.7	14.3	F	Franklin to MD 193	1.7	1.6	2.0	1.9	2.0	2.0	2.0
F	MD 193 to Franklin	1.7	1.8	2.8	2.9	4.3	4.0	4.7	G	Georgia to Franklin	4.8	4.6	5.1	5.0	5.7	5.9	6.5
G	Franklin to Georgia	2.8	2.9	3.0	3.0	4.0	3.6	4.2	-	Time to Enter[1]	5.0	4.8	5.2	5.2	5.4	5.3	5.3
Total		54.6	33.2	53.2	49.6	52.1	54.6	54.8	Total		23.9	22.7	25.9	25.2	26.3	26.4	26.9

[1]Time to Enter includes the delay experienced by vehicles waiting to enter the US 29 study corridor.

Passenger Vehicle Travel Times (min) - PM Peak Hour

US 29 - Southbound									US 29 - Northbound - Peak Direction								
Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid	Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
-	Time to Enter[1]	0.9	0.9	1.0	1.0	0.9	0.9	0.9	A	Greencastle to MD 198	1.1	1.2	1.1	1.2	1.2	1.2	1.2
A	MD 198 to Greencastle	1.7	1.4	1.7	1.4	1.4	1.4	1.4	B	Fairland to Greencastle	7.8	2.2	4.8	2.3	2.6	2.4	2.4
B	Greencastle to Fairland	2.6	2.7	2.6	2.7	2.7	2.7	2.7	C	Cherry Hill to Fairland	1.4	1.5	1.4	1.5	1.5	1.4	1.4
C	Fairland to Cherry Hill	1.7	1.7	1.7	1.7	1.7	1.7	1.7	D	MD 650 to Cherry Hill	5.1	3.5	4.2	4.1	4.2	5.0	5.0
D	Cherry Hill to MD 650	3.3	3.3	3.4	3.5	3.6	3.4	3.4	E	MD 193 to MD 650	6.3	3.6	8.2	6.0	3.5	5.7	5.5
E	MD 650 to MD 193	6.7	4.1	7.2	5.8	8.5	8.4	7.6	F	Franklin to MD 193	2.2	1.9	6.6	4.0	2.1	2.3	3.1
F	MD 193 to Franklin	2.9	2.1	1.9	2.4	2.2	1.9	2.4	G	Georgia to Franklin	7.6	5.3	13.4	11.1	9.3	9.3	7.5
G	Franklin to Georgia	5.6	5.5	5.0	5.7	6.0	5.8	5.1	-	Time to Enter[1]	15.2	9.9	25.3	17.6	27.6	27.3	15.3
Total		25.3	21.6	24.4	24.1	27.0	26.3	25.2	Total		46.7	28.9	64.8	47.8	52.0	54.4	41.5

[1]Time to Enter includes the delay experienced by vehicles waiting to enter the US 29 study corridor.

BRT Travel Times (min) - AM Peak Hour

US 29 - Southbound - Peak Direction									US 29 - Northbound								
Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid	Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
A	MD 198 to Greencastle	2.3	0.9	2.4	2.2	2.2	2.2	2.2	A	Greencastle to MD 198	1.2	1.1	1.5	1.8	1.7	1.5	1.5
B	Greencastle to Fairland	5.8	2.0	5.4	4.4	4.6	6.3	5.7	B	Fairland to Greencastle	3.0	2.5	2.6	2.0	2.0	2.1	2.3
C	Fairland to Cherry Hill	3.4	1.3	2.8	2.7	2.7	3.3	3.1	C	Cherry Hill to Fairland	1.5	1.0	1.9	1.8	1.8	1.8	1.8
D	Cherry Hill to MD 650	12.4	6.4	5.6	5.3	5.4	5.4	5.4	D	MD 650 to Cherry Hill	3.8	5.6	6.4	6.6	6.1	5.9	6.1
E	MD 650 to MD 193	18.2	6.5	6.6	6.7	4.1	4.2	4.1	E	MD 193 to MD 650	4.0	5.7	6.7	7.0	5.6	4.8	4.7
F	MD 193 to Franklin	1.7	2.6	1.9	2.0	2.4	2.3	2.8	F	Franklin to MD 193	2.3	2.4	2.4	2.7	2.5	2.8	2.5
G	Franklin to Georgia	3.5	3.6	3.8	3.8	4.3	4.0	4.4	G	Georgia to Franklin	5.6	5.3	6.0	5.9	7.2	6.6	7.6
Total		47.3	23.4	28.5	27.1	25.7	27.6	27.7	Total		21.3	23.5	27.4	27.7	27.0	25.5	26.4

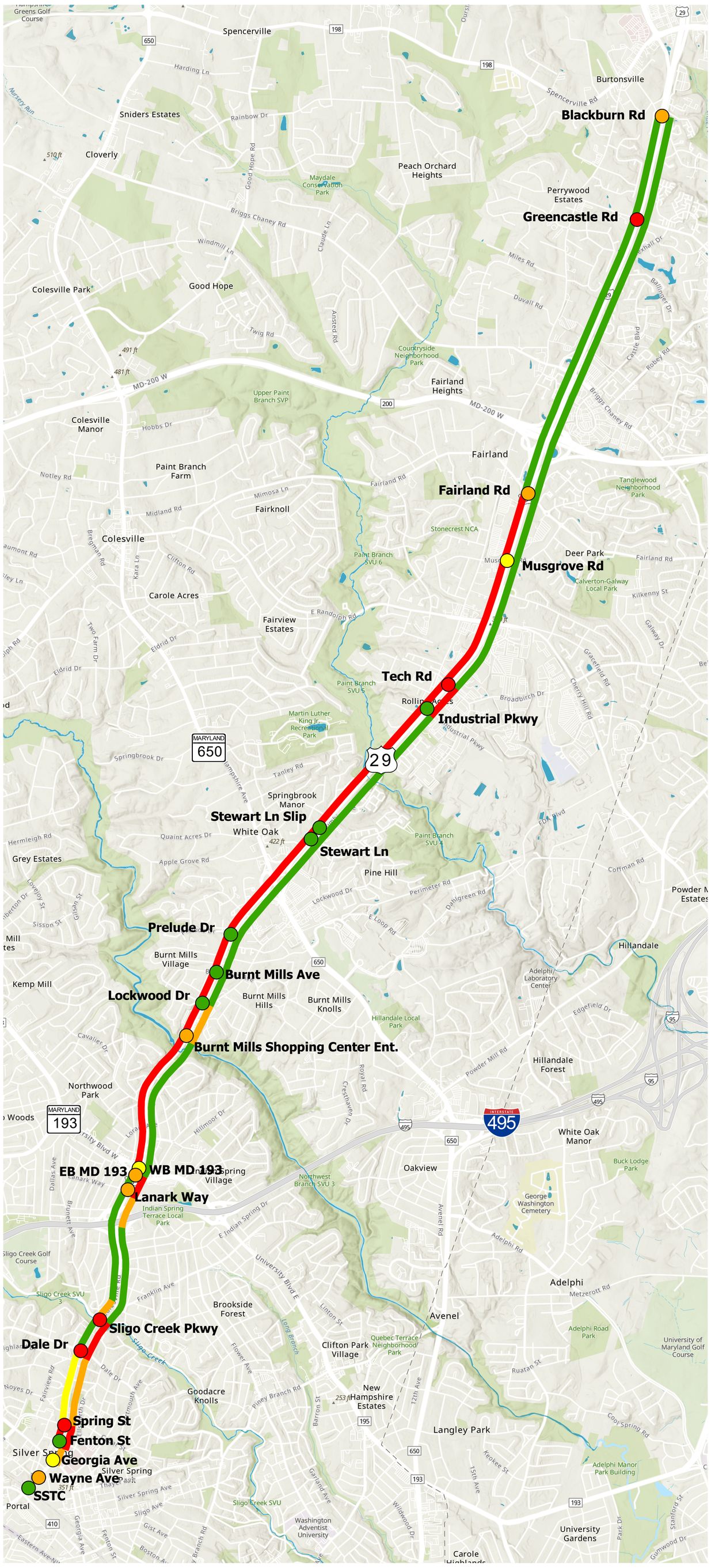
BRT Travel Times (min) - PM Peak Hour

US 29 - Southbound									US 29 - Northbound - Peak Direction								
Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid	Segment		No-Build	Managed Lane	Median Bus Lane Baseline	Median Bus Lane with Intersection Improvements	Median Bus Lane Optimized	Median Bus Lane with Cost Reductions	Median Bus Lane Hybrid
A	MD 198 to Greencastle	1.9	1.4	1.8	1.6	1.6	1.6	1.5	A	Greencastle to MD 198	2.0	1.2	2.1	2.1	2.0	2.2	2.0
B	Greencastle to Fairland	2.1	2.3	2.1	2.3	2.3	2.3	2.3	B	Fairland to Greencastle	7.7	2.0	4.2	4.0	4.0	4.0	3.9
C	Fairland to Cherry Hill	1.8	1.8	1.8	1.7	1.8	1.8	1.7	C	Cherry Hill to Fairland	2.0	2.1	1.9	2.0	2.0	2.0	1.9
D	Cherry Hill to MD 650	3.6	7.2	4.8	5.0	4.7	4.8	4.6	D	MD 650 to Cherry Hill	5.7	6.8	5.7	5.5	5.3	5.2	4.5
E	MD 650 to MD 193	8.3	6.2	7.9	6.8	9.6	10.7	8.2	E	MD 193 to MD 650	7.2	4.7	5.7	6.6	3.9	7.0	7.0
F	MD 193 to Franklin	4.5	3.0	2.5	3.1	4.0	2.4	4.2	F	Franklin to MD 193	2.5	2.6	2.6	2.6	2.7	2.4	2.8
G	Franklin to Georgia	6.9	6.6	6.1	7.1	6.8	7.0	6.7	G	Georgia to Franklin	8.5	6.1	15.3	13.6	3.9	3.5	9.2
Total		29.0	28.5	27.1	27.5	30.7	30.5	29.2	Total		35.7	25.5	37.5	36.3	23.8	26.3	31.4

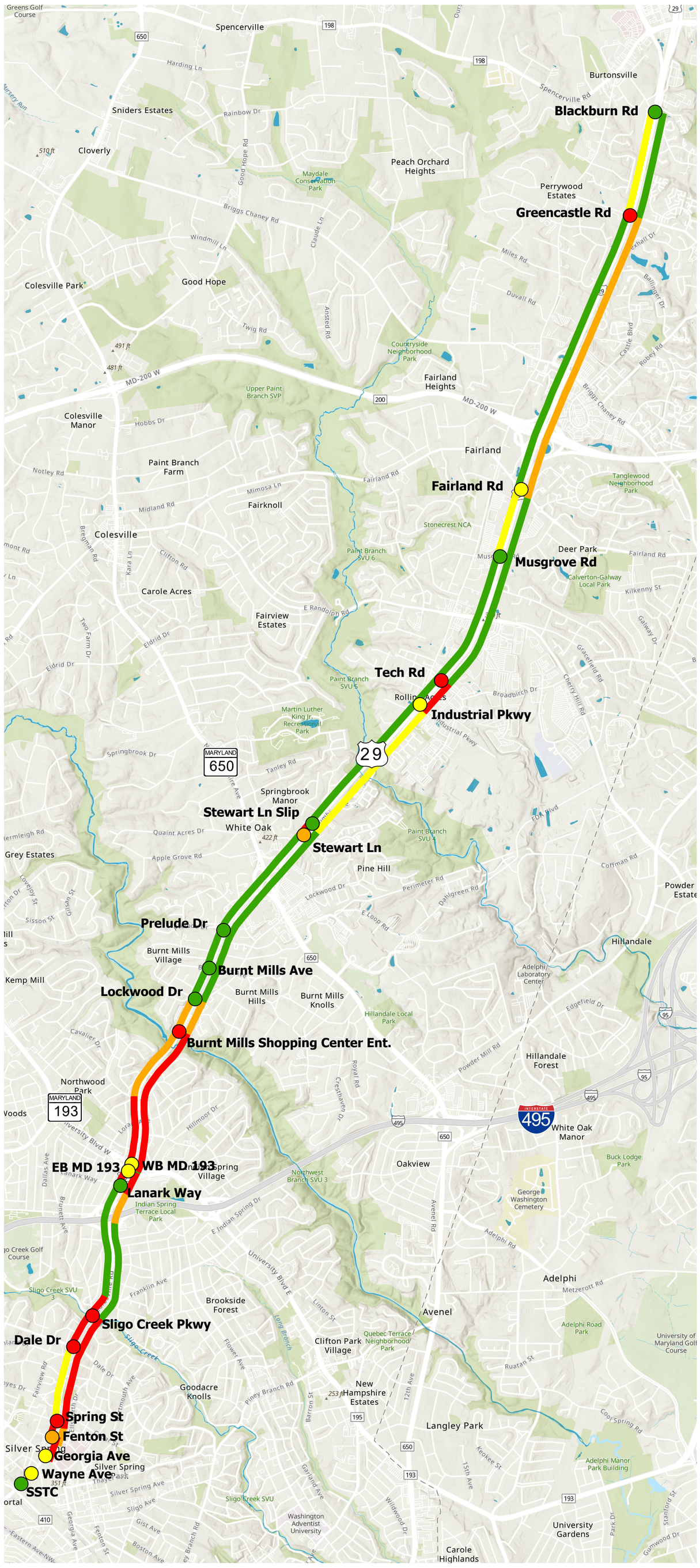
US 29 Mobility & Reliability Study

Overall Intersection and Bus Rapid Transit Arterial Level of Service
No Build

AM



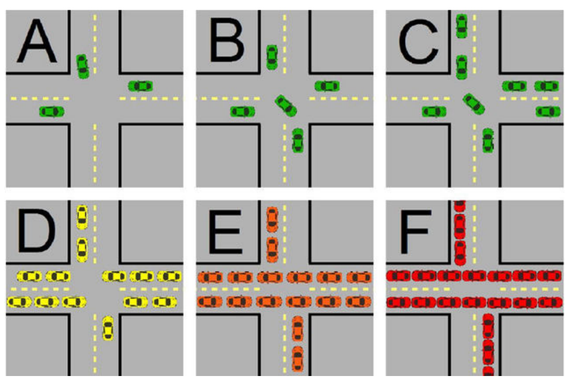
PM



0 1.5 3 Miles

N

Level of Service (LOS)

Intersection*	Diagram
A, B, C	
D	
E	
F	

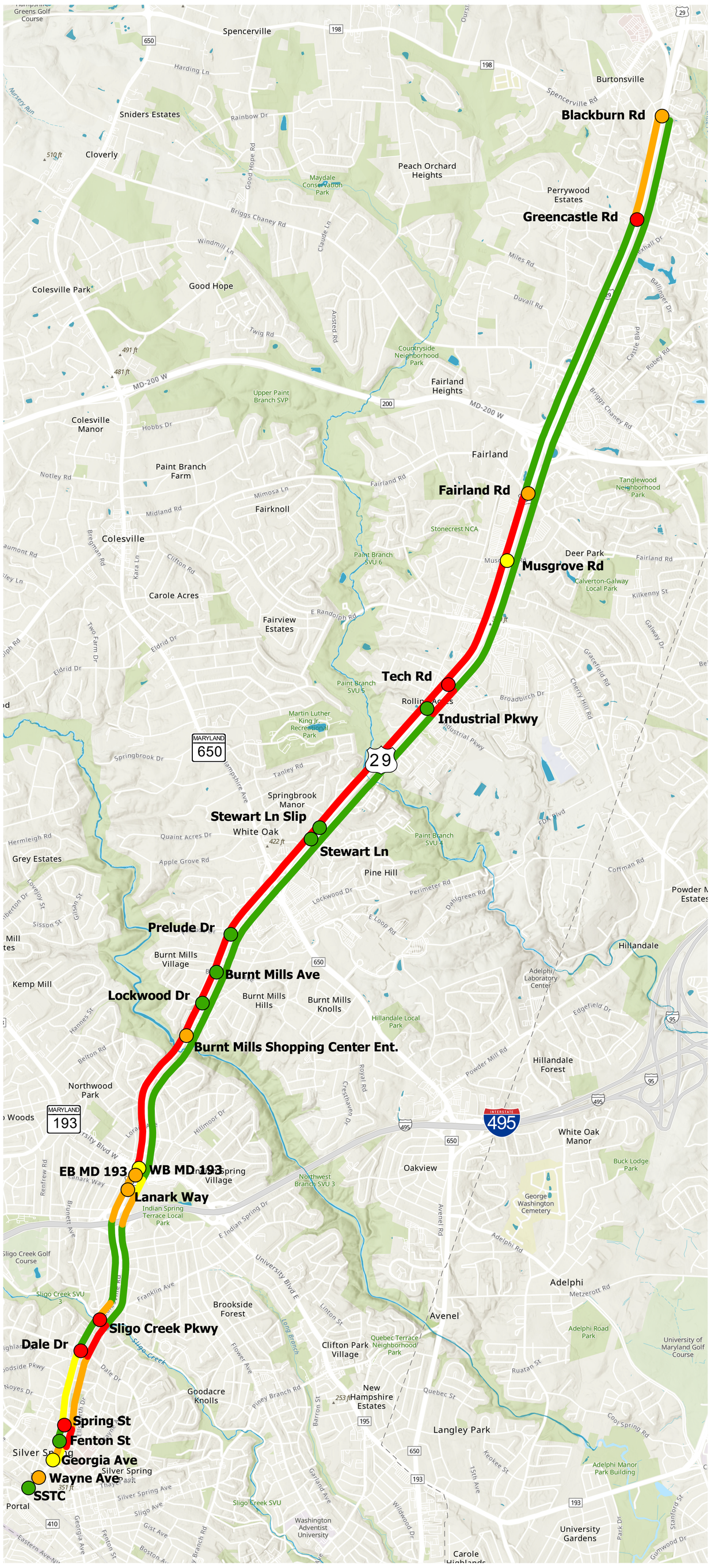
*Overall intersection LOS based on average delay for all vehicles.

Arterial Link	Percent of Base Free-Flow Speed
A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

US 29 Mobility & Reliability Study

Overall Intersection and Passenger Vehicle Arterial Level of Service
No Build

AM



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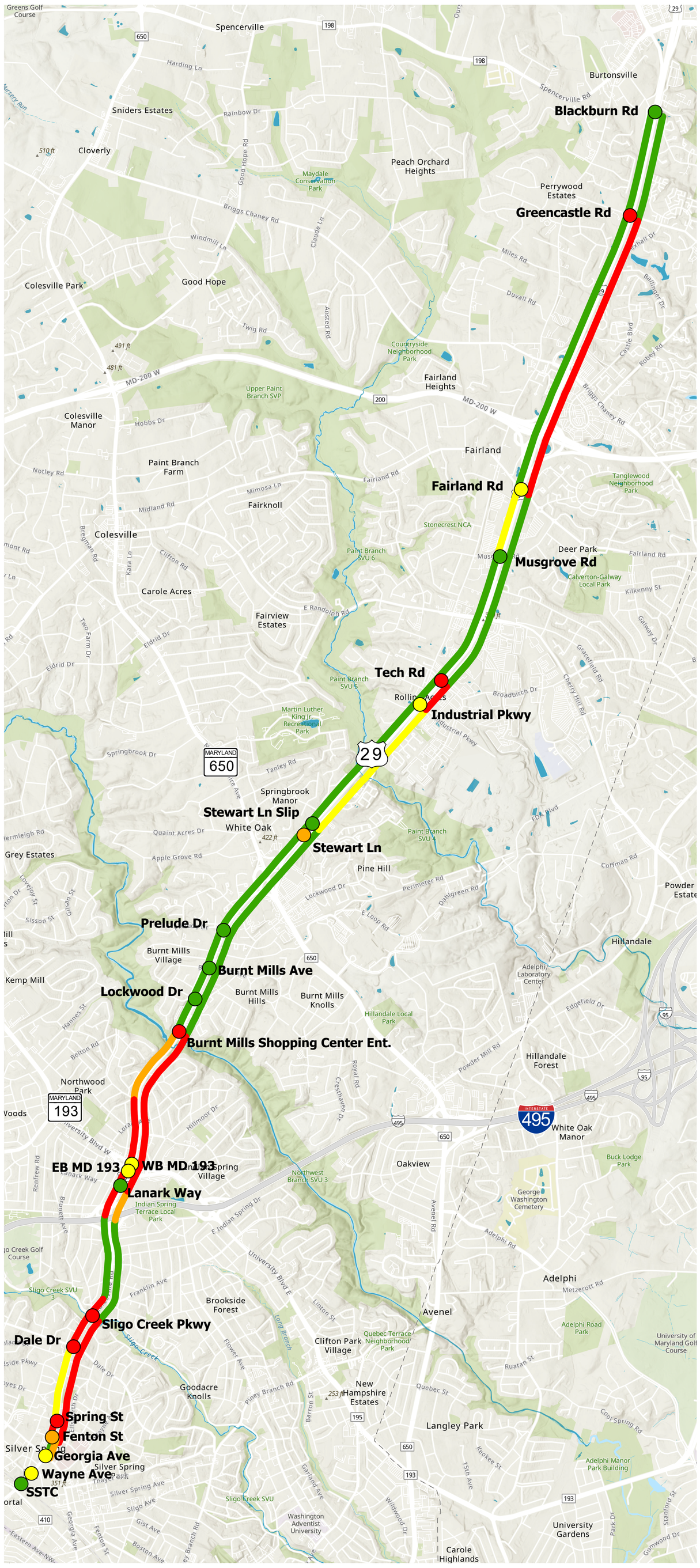
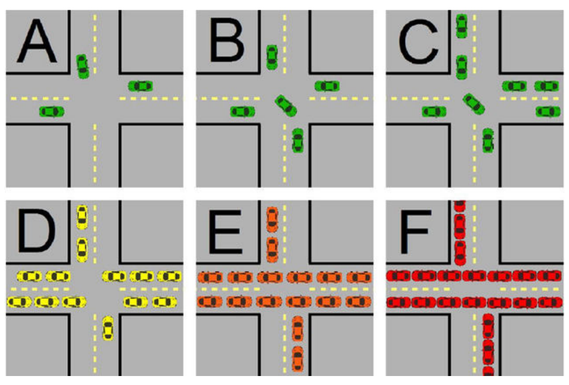


0 1.5 3
Miles

N

Level of Service (LOS)

Intersection*	Diagram
A, B, C	
D	
E	
F	

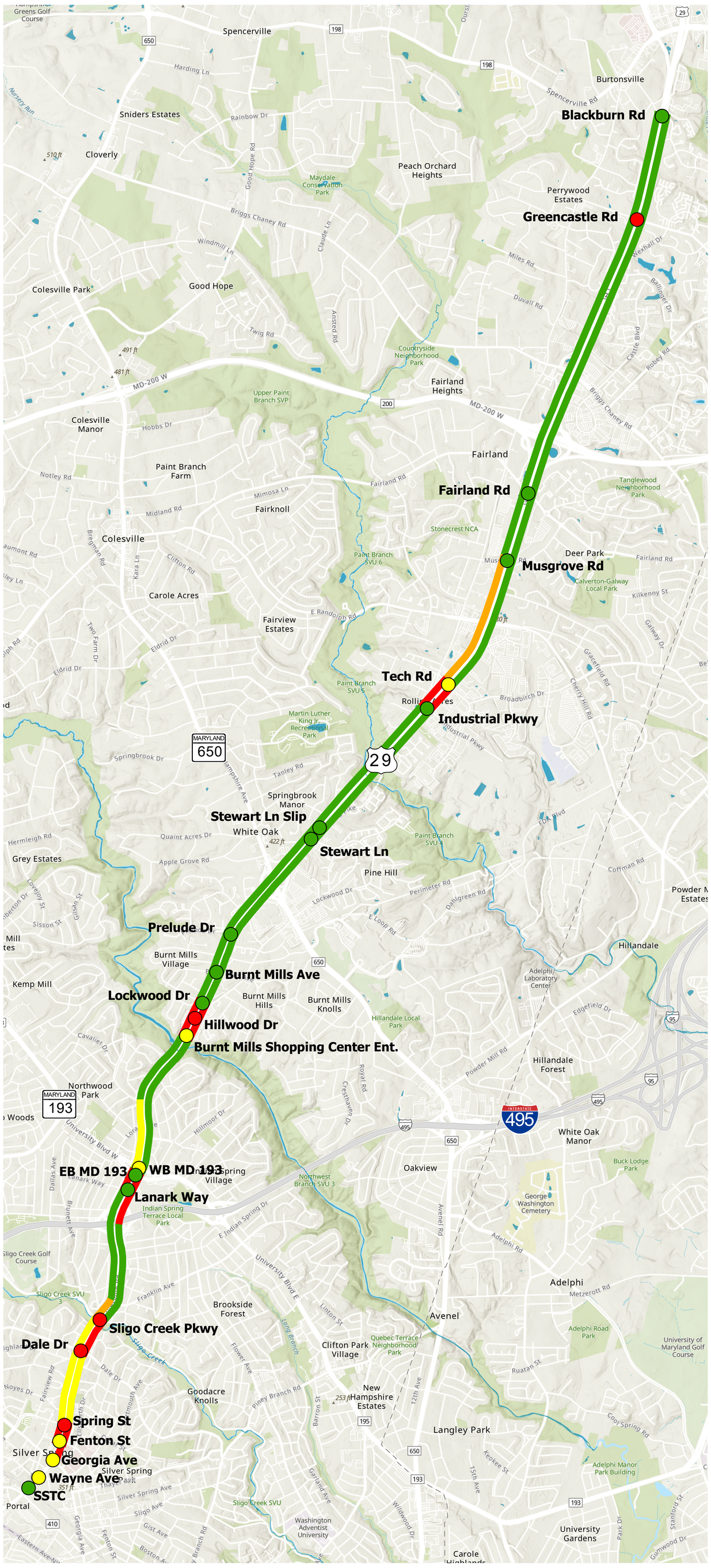
*Overall intersection LOS based on average delay for all vehicles.

Arterial Link	Percent of Base Free-Flow Speed
A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

US 29 Mobility & Reliability Study

Overall Intersection and Bus Rapid Transit Arterial Level of Service
Managed Lane

AM



PM

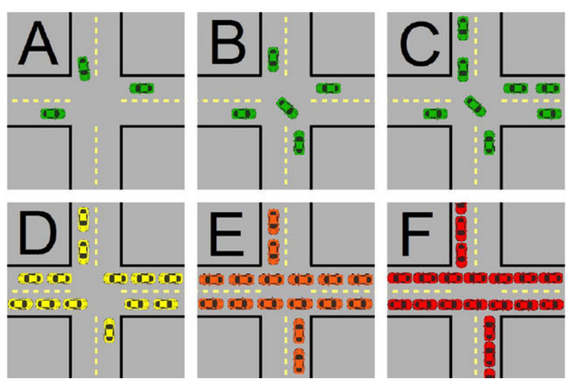


Level of Service (LOS)

Intersection*

	A, B, C
	D
	E
	F

Diagram



*Overall intersection LOS based on average delay for all vehicles.

0 1.5 3
Miles

N

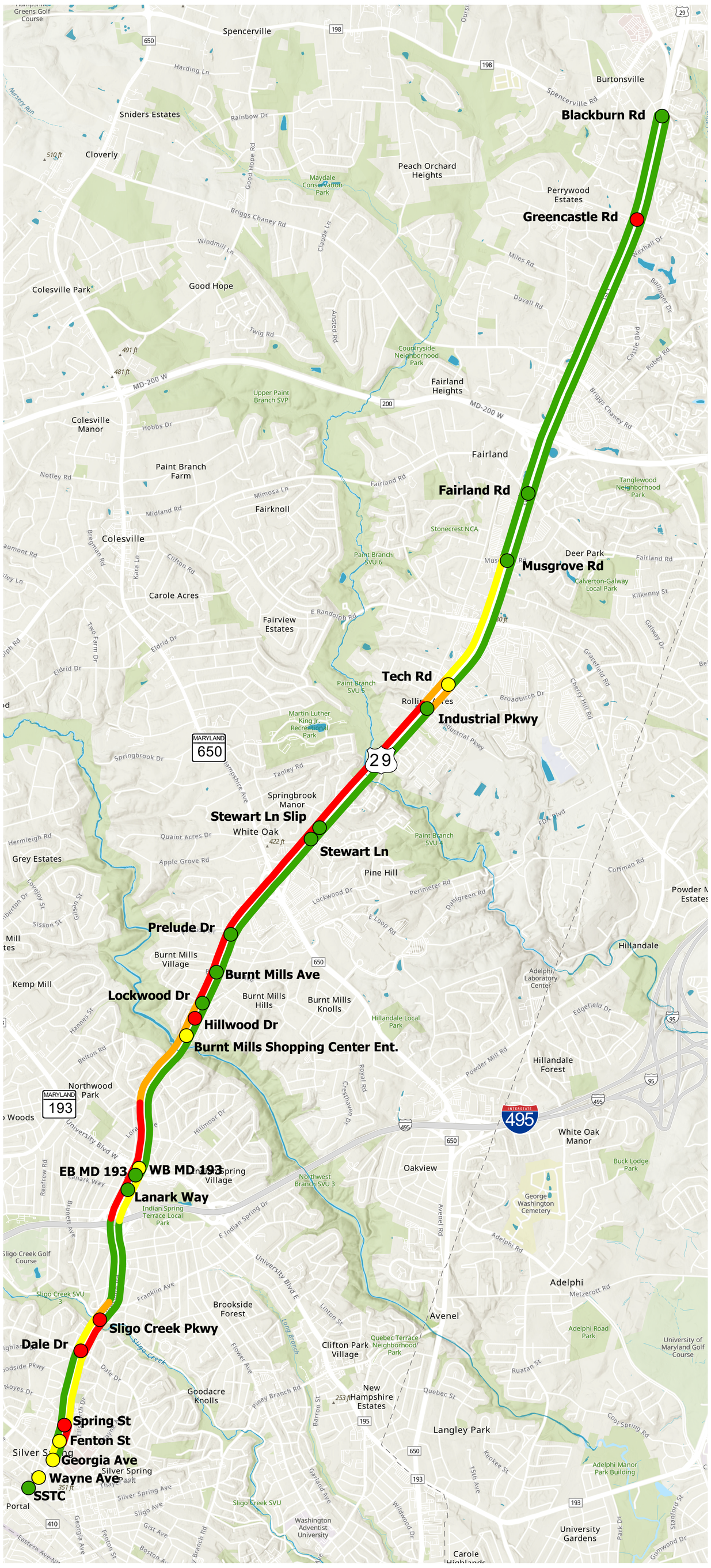
Arterial Link — Percent of Base Free-Flow Speed

A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

US 29 Mobility & Reliability Study

Overall Intersection and Passenger Vehicle Arterial Level of Service
Managed Lane

AM



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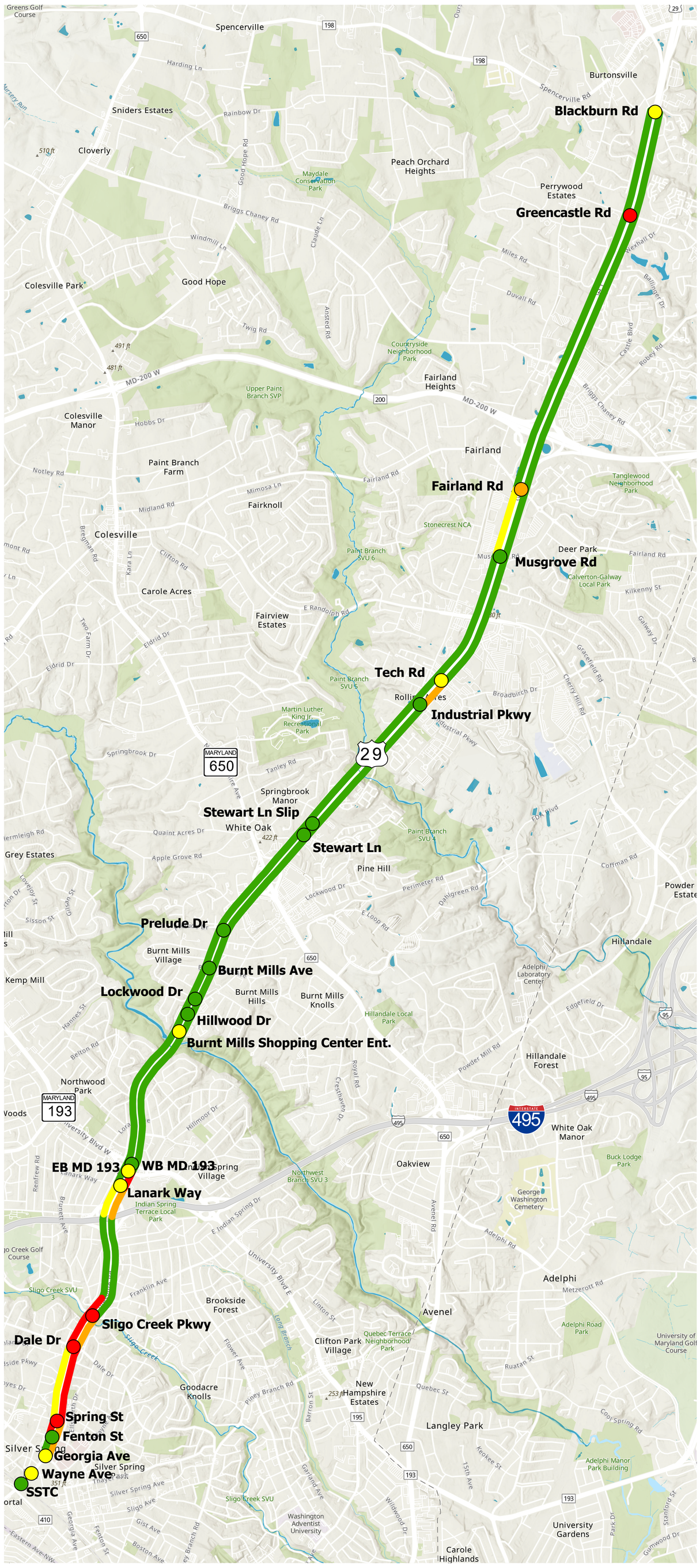


Level of Service (LOS)

Intersection*

- A, B, C
- D
- E
- F

Diagram

*Overall intersection LOS based on average delay for all vehicles.

0 — 1.5 — 3 Miles

N

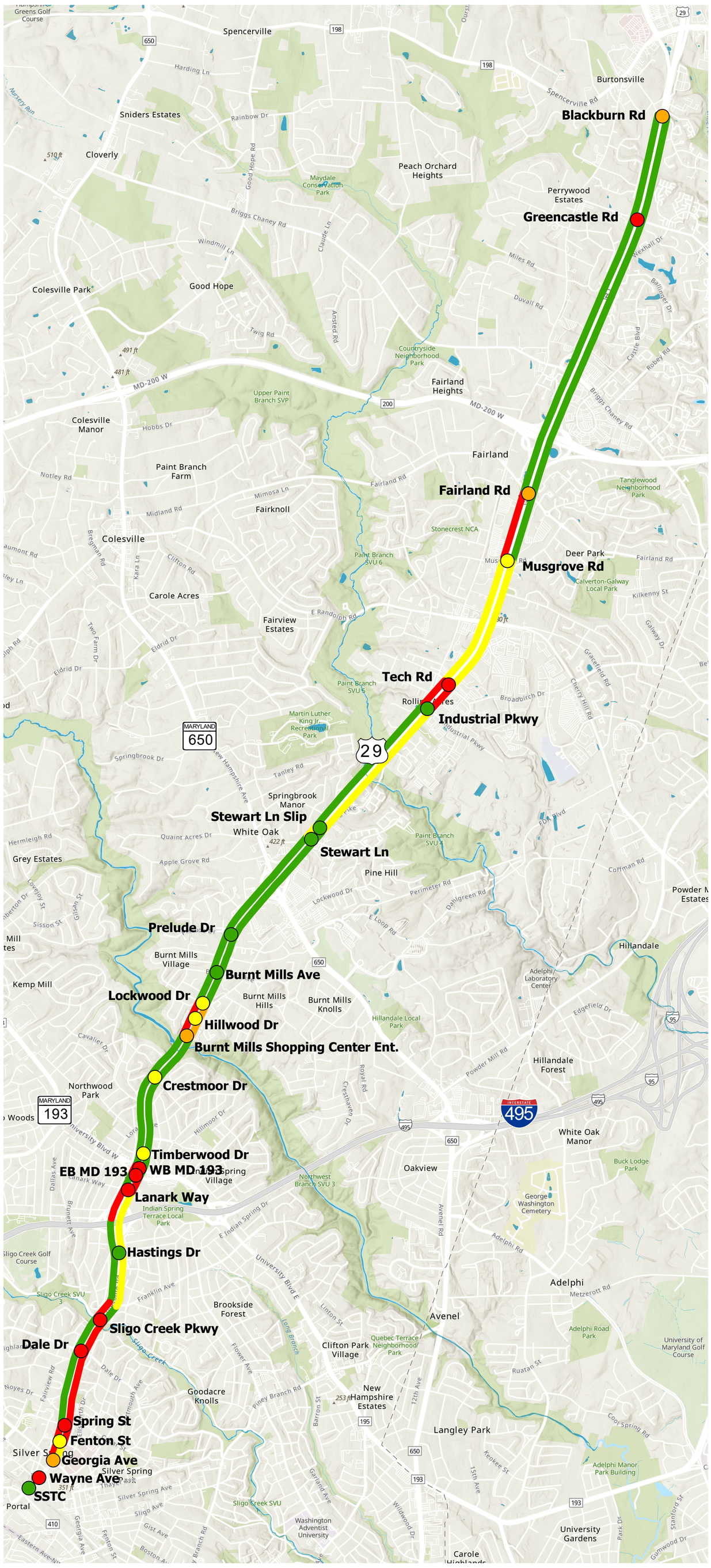
Arterial Link — Percent of Base Free-Flow Speed

Arterial Link	Percent of Base Free-Flow Speed
A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

US 29 Mobility & Reliability Study

Overall Intersection and Bus Rapid Transit Arterial Level of Service
Median Bus Lane Hybrid

AM



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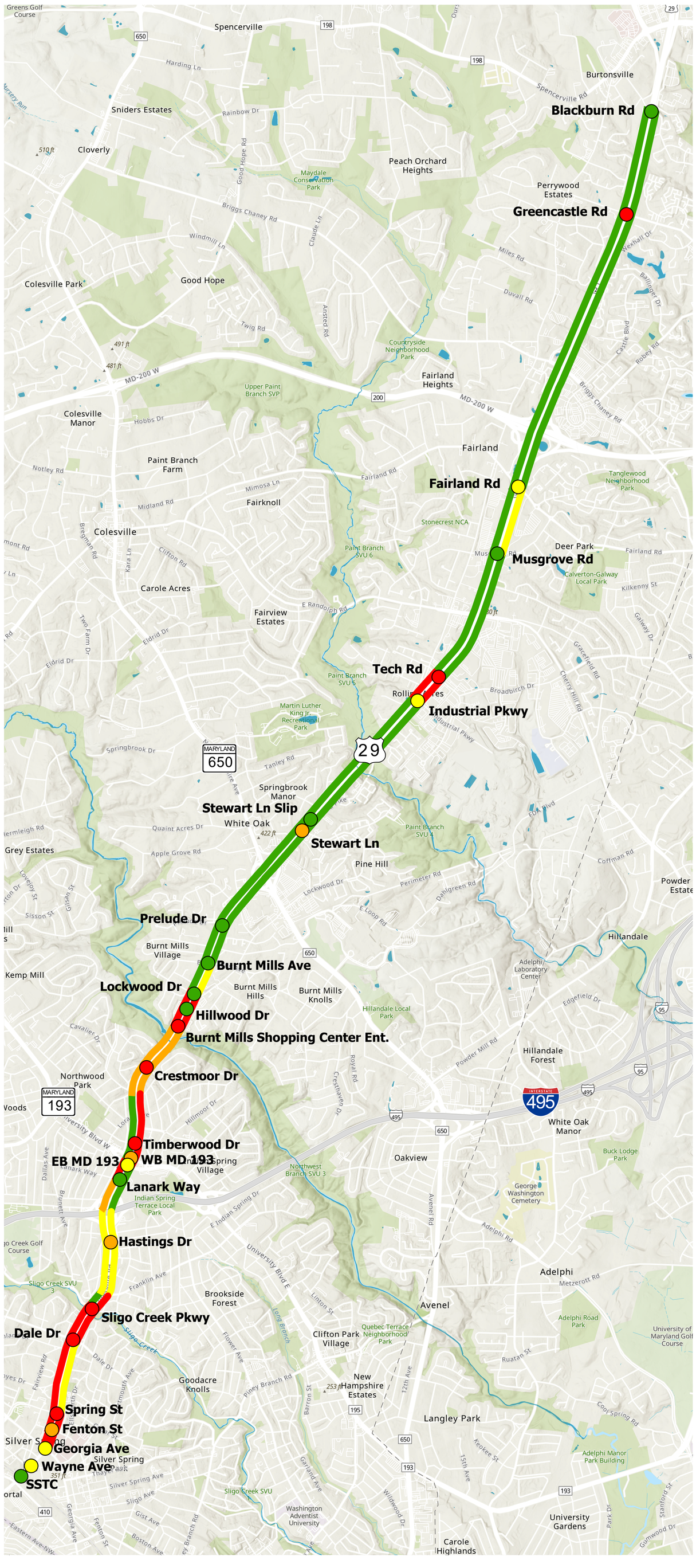
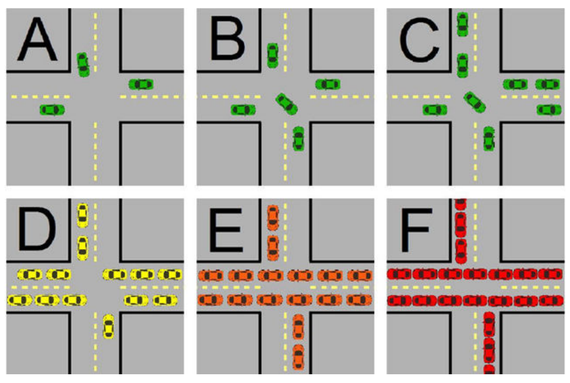


Level of Service (LOS)

Intersection*

- A, B, C
- D
- E
- F

Diagram



*Overall intersection LOS based on average delay for all vehicles.

0 1.5 3 Miles

N

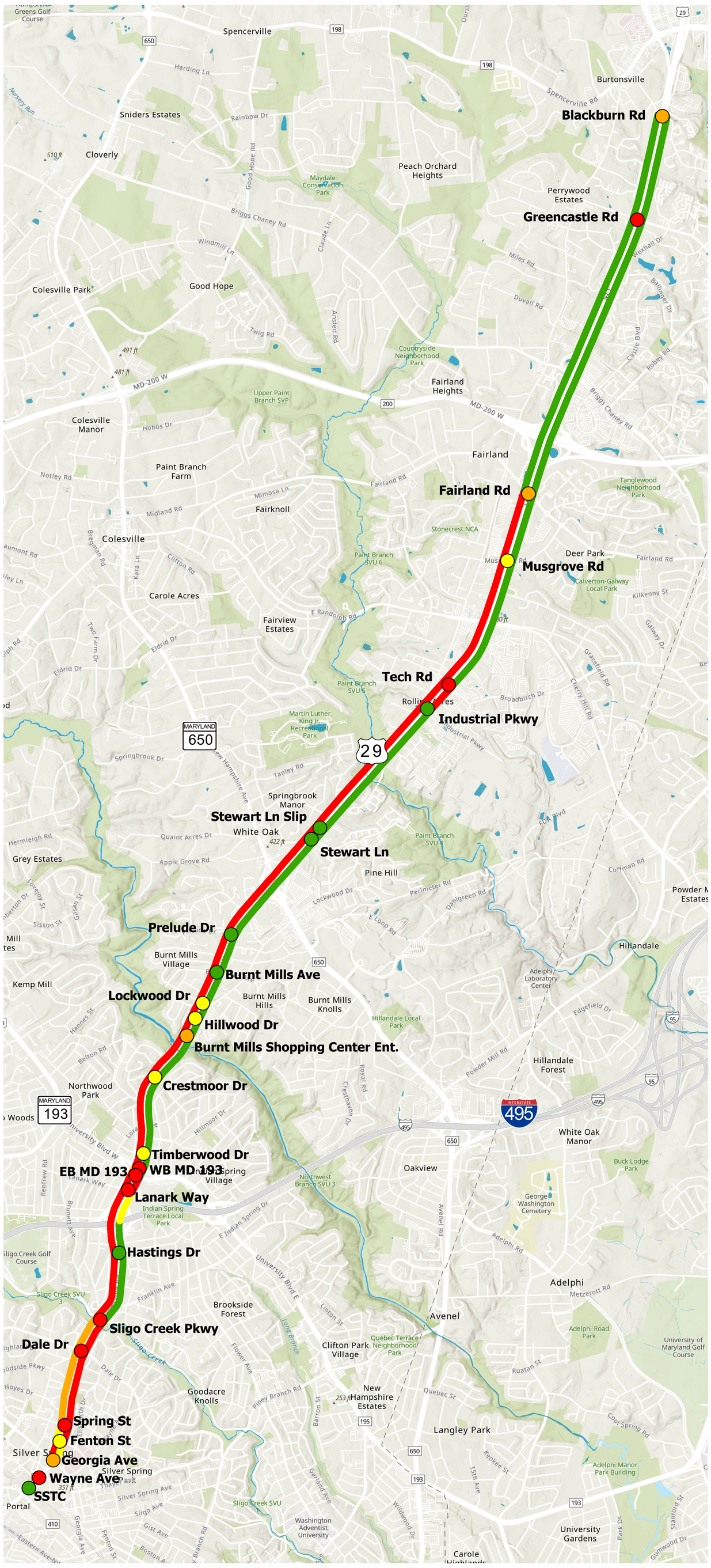
Arterial Link — Percent of Base Free-Flow Speed

Arterial Link	Percent of Base Free-Flow Speed
A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

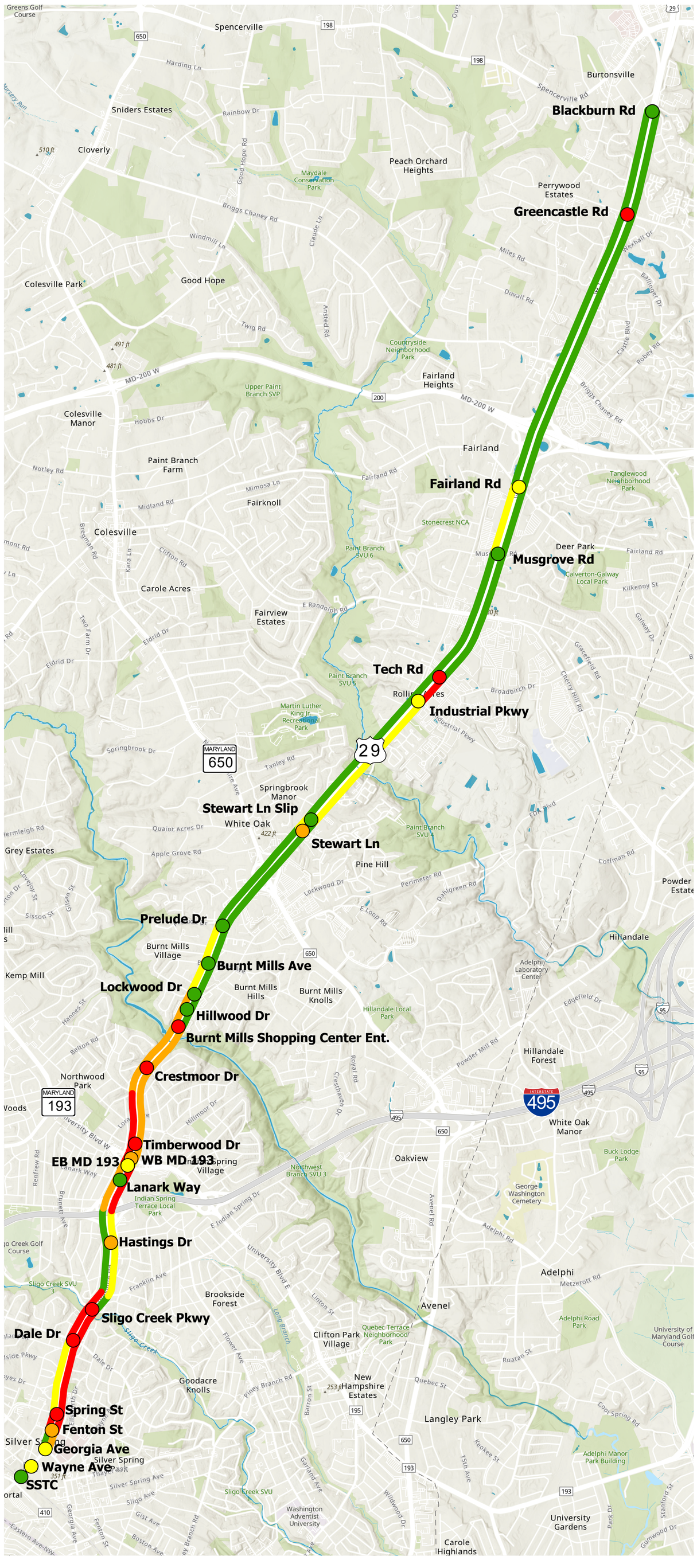
US 29 Mobility & Reliability Study

Overall Intersection and Passenger Vehicle Arterial Level of Service
Median Bus Lane Hybrid

AM



PM

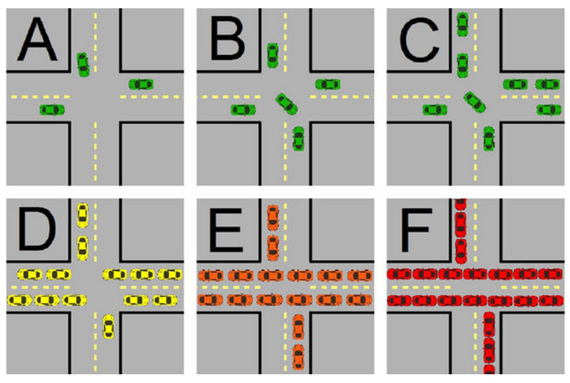


Level of Service (LOS)

Intersection*

A, B, C	
D	
E	
F	

Diagram



0 1.5 3 Miles

N

Arterial Link — Percent of Base Free-Flow Speed

A, B, C	50% - 100%
D	40% - 50%
E	30% - 40%
F	≤ 30%

*Overall intersection LOS based on average delay for all vehicles.

Failing Intersection Levels of Service

Intersection	No Build		Managed Lane		Median Bus Lane Baseline		Median Bus Lane with Intersection Improvements		Median Bus Lane Optimized		Median Bus Lane with Cost Reductions		Median Bus Lane Hybrid	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
US 29 & Blackburn Rd	E	-	-	-	E	-	E	-	E	-	E	-	E	-
US 29 & Greencastle Rd	F	F	F	F	F	F	F	F	F	F	F	F	F	F
US 29 & Fairland Rd	E	-	E	-	E	-	E	-	E	-	E	-	E	-
US 29 & Musgrove Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Tech Rd	F	F	-	-	F	F	F	F	F	F	F	F	F	F
US 29 & Industrial Parkway	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Stewart Lane Slip Ramp	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Milestone Drive/Stewart Lane	-	E	-	-	-	E	-	-	-	-	-	E	-	E
US 29 & Oak Leaf Dr	N/A[1]	N/A[1]	N/A[1]	N/A[1]	-	-	-	-	-	-	N/A[1]	N/A[1]	N/A[1]	N/A[1]
US 29 & Prelude Dr	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Burnt Mills Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Lockwood Dr	-	-	-	-	-	-	-	-	-	-	-	-	-	-
US 29 & Hillwood Dr	-	F	F	-	-	-	-	-	-	-	-	-	-	-
US 29 & Burnt Mills Shopping Ctr	E	F	-	-	E	F	E	F	E	F	E	F	E	F
US 29 & Crestmoor Dr	N/A[1]	N/A[1]	N/A[1]	N/A[1]	-	E	-	E	-	E	-	F	-	F
US 29 & Southwood Ave	F	-	F	-	F	-	F	-	F	-	F	-	F	-
US 29 & Timberwood Ave	N/A[1]	N/A[1]	N/A[1]	N/A[1]	-	-	-	-	-	-	N/A[1]	N/A[1]	-	-
US 29 & MD 193 Westbound	-	-	-	-	F	F	F	F	F	F	F	E	F	E
US 29 & MD 193 Eastbound	E	-	-	-	F	F	F	F	F	F	F	-	F	-
US 29 & Lanark Way	E	-	-	-	F	E	F	E	F	E	F	-	F	-
US 29 & Hastings Dr	-	-	N/A[1]	N/A[1]	-	E	-	E	-	E	-	E	-	E
US 29 & Franklin Ave	-	F	-	E	-	F	-	F	-	F	-	F	-	F
US 29 & Sligo Creek Pkwy & St Andrews Way	F	F	F	F	F	F	F	F	F	F	F	F	F	F
US 29 & Dale Dr	F	F	F	F	F	F	-	F	F	F	F	F	F	F
US 29 & Spring St	F	F	F	F	F	F	F	F	F	F	F	F	F	F
US 29 & Fenton St	-	E	-	-	-	E	-	E	-	E	-	E	-	E
US 29 & Georgia Ave	-	-	-	-	E	-	-	-	E	-	E	-	E	-
US 29 & 2nd Ave/Wayne Ave	E	-	-	-	-	-	E	-	F	-	F	-	F	-

[1]-Unsignalized under scenario

Intersection LOS based on average delay for all vehicles

Detailed Intersection Capacity Analysis

ID	Intersection	Approach	Movement	No Build			Managed Lane			Median Bus Lane Baseline			Median Bus Lane with Intersection Improvements			Median Bus Lane Optimized			Median Bus Lane with Cost Reductions			Median Bus Lane Hybrid		
				AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)		
				Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
1	US 29 & Blackburn Rd	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**68.6 (33.4)**	**E (C)**	**1.08 (0.99)**	**49.6 (28.9)**	**D (C)**	**1.03 (0.94)**	**68.6 (33.4)**	**E (C)**	**1.08 (0.99)**	**66.7 (29.6)**	**E (C)**	**1.08 (0.99)**	**66.7 (29.6)**	**E (C)**	**1.08 (0.99)**	**66.7 (29.6)**	**E (C)**	**1.08 (0.99)**	**66.7 (29.6)**	**E (C)**	**1.08 (0.99)**
		Eastbound	Left-Through	64.4 (66.9)	E (E)	0.3 (0.5)	65.5 (68.0)	E (E)	0.3 (0.5)	64.4 (66.9)	E (E)	0.3 (0.5)	64.4 (66.9)	E (E)	0.3 (0.5)	64.4 (66.9)	E (E)	0.3 (0.5)	64.4 (66.9)	E (E)	0.3 (0.5)	64.4 (66.9)	E (E)	0.3 (0.5)
			Right	60.4 (58.0)	E (E)	0.0 (0.0)	61.6 (59.3)	E (E)	0.0 (0.0)	60.4 (58.0)	E (E)	0.0 (0.0)	60.4 (58.0)	E (E)	0.0 (0.0)	60.4 (58.0)	E (E)	0.0 (0.0)	60.4 (58.0)	E (E)	0.0 (0.0)	60.4 (58.0)	E (E)	0.0 (0.0)
		Westbound	Left-Through	86.4 (110.1)	F (F)	0.8 (0.9)	86.3 (106.8)	F (F)	0.8 (0.9)	86.4 (110.1)	F (F)	0.8 (0.9)	86.4 (110.1)	F (F)	0.8 (0.9)	86.4 (110.1)	F (F)	0.8 (0.9)	86.4 (110.1)	F (F)	0.8 (0.9)	86.4 (110.1)	F (F)	0.8 (0.9)
			Right	66.3 (63.0)	E (E)	0.4 (0.3)	67.4 (64.1)	E (E)	0.4 (0.3)	66.3 (63.0)	E (E)	0.4 (0.3)	66.3 (63.0)	E (E)	0.4 (0.3)	66.3 (63.0)	E (E)	0.4 (0.3)	66.3 (63.0)	E (E)	0.4 (0.3)	66.3 (63.0)	E (E)	0.4 (0.3)
		Northbound	Through	26.7 (38.0)	C (D)	0.8 (1.0)	18.5 (31.5)	B (C)	0.7 (1.0)	26.7 (38.0)	C (D)	0.8 (1.0)	21.5 (30.0)	C (C)	0.8 (1.0)	21.5 (30.0)	C (C)	0.8 (1.0)	21.5 (30.0)	C (C)	0.8 (1.0)	21.5 (30.0)	C (C)	0.8 (1.0)
			Right	13.1 (1.1)	B (A)	0.1 (0.1)	10.1 (7.8)	B (A)	0.1 (0.1)	13.1 (1.1)	B (A)	0.1 (0.1)	11.1 (7.3)	B (A)	0.1 (0.1)	11.1 (7.3)	B (A)	0.1 (0.1)	11.1 (7.3)	B (A)	0.1 (0.1)	11.1 (7.3)	B (A)	0.1 (0.1)
		Southbound	Through	97.1 (21.2)	F (C)	1.2 (0.9)	68.4 (17.9)	E (B)	1.1 (0.8)	97.1 (21.2)	F (C)	1.2 (0.9)	97.1 (21.2)	F (C)	1.2 (0.9)	97.1 (21.2)	F (C)	1.2 (0.9)	97.1 (21.2)	F (C)	1.2 (0.9)	97.1 (21.2)	F (C)	1.2 (0.9)
2	US 29 & Greencastle Rd	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**162.7 (172.1)**	**F (F)**	**1.26 (1.17)**	**84.4 (123.0)**	**F (F)**	**1.17 (1.09)**	**162.7 (172.1)**	**F (F)**	**1.26 (1.17)**	**102.8 (103.5)**	**F (F)**	**1.23 (1.03)**	**102.8 (103.5)**	**F (F)**	**1.23 (1.03)**	**102.8 (103.5)**	**F (F)**	**1.23 (1.03)**	**102.8 (103.5)**	**F (F)**	**1.23 (1.03)**
		Eastbound	Left	72.9 (85.5)	E (F)	0.3 (0.6)	82.4 (89.1)	F (F)	0.4 (0.6)	72.9 (85.5)	E (F)	0.3 (0.6)	82.3 (88.9)	F (F)	0.4 (0.6)	82.3 (88.9)	F (F)	0.4 (0.6)	82.3 (88.9)	F (F)	0.4 (0.6)	82.3 (88.9)	F (F)	0.4 (0.6)
			Through	- (-)	- (-)	- (-)	85.1 (81.2)	F (F)	0.6 (0.5)	- (-)	- (-)	- (-)	85.1 (80.8)	F (F)	0.6 (0.5)	85.1 (80.8)	F (F)	0.6 (0.5)	85.1 (80.8)	F (F)	0.6 (0.5)	85.1 (80.8)	F (F)	0.6 (0.5)
			Through-Right	86.6 (85.9)	F (F)	0.7 (0.6)	- (-)	- (-)	- (-)	86.6 (85.9)	F (F)	0.7 (0.6)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	- (-)	- (-)	- (-)	75.3 (72.9)	E (E)	0.1 (0.0)	- (-)	- (-)	- (-)	75.0 (72.3)	E (E)	0.1 (0.0)	75.0 (72.3)	E (E)	0.1 (0.0)	75.0 (72.3)	E (E)	0.1 (0.0)	75.0 (72.3)	E (E)	0.1 (0.0)
		Westbound	Left	84.2 (62.8)	F (E)	0.8 (0.4)	171.4 (76.5)	F (E)	1.1 (0.6)	84.2 (62.8)	F (E)	0.8 (0.4)	187.9 (77.5)	F (E)	1.1 (0.6)	187.9 (77.5)	F (E)	1.1 (0.6)	187.9 (77.5)	F (E)	1.1 (0.6)	187.9 (77.5)	F (E)	1.1 (0.6)
			Through	58.3 (60.5)	E (E)	0.3 (0.3)	73.2 (69.2)	E (E)	0.5 (0.4)	58.3 (60.5)	E (E)	0.3 (0.3)	73.2 (68.8)	E (E)	0.5 (0.4)	73.2 (68.8)	E (E)	0.5 (0.4)	73.2 (68.8)	E (E)	0.5 (0.4)	73.2 (68.8)	E (E)	0.5 (0.4)
			Right	54.6 (57.5)	D (E)	0.1 (0.1)	70.5 (66.5)	E (E)	0.3 (0.2)	54.6 (57.5)	D (E)	0.1 (0.1)	70.6 (66.3)	E (E)	0.3 (0.2)	70.6 (66.3)	E (E)	0.3 (0.2)	70.6 (66.3)	E (E)	0.3 (0.2)	70.6 (66.3)	E (E)	0.3 (0.2)
		Northbound	Left	89.0 (86.7)	F (F)	0.5 (0.6)	82.6 (74.4)	F (E)	0.3 (0.5)	89.0 (86.7)	F (F)	0.5 (0.6)	82.2 (73.2)	F (E)	0.4 (0.5)	82.2 (73.2)	F (E)	0.4 (0.5)	82.2 (73.2)	F (E)	0.4 (0.5)	82.2 (73.2)	F (E)	0.4 (0.5)
			Through	99.8 (293.4)	F (F)	1.1 (1.5)	28.9 (215.2)	C (F)	0.9 (1.4)	99.8 (293.4)	F (F)	1.1 (1.5)	33.5 (160.2)	C (F)	0.9 (1.3)	33.5 (160.2)	C (F)	0.9 (1.3)	33.5 (160.2)	C (F)	0.9 (1.3)	33.5 (160.2)	C (F)	0.9 (1.3)
			Right	21.4 (27.5)	C (C)	0.0 (0.2)	11.8 (23.7)	B (C)	0.0 (0.1)	21.4 (27.5)	C (C)	0.0 (0.2)	12.4 (17.7)	B (B)	0.0 (0.1)	12.4 (17.7)	B (B)	0.0 (0.1)	12.4 (17.7)	B (B)	0.0 (0.1)	12.4 (17.7)	B (B)	0.0 (0.1)
		Southbound	Left	91.8 (57.8)	F (E)	0.7 (0.7)	90.5 (65.6)	F (E)	0.4 (0.6)	91.8 (57.8)	F (E)	0.7 (0.7)	89.8 (61.7)	F (E)	0.4 (0.5)	89.8 (61.7)	F (E)	0.4 (0.5)	89.8 (61.7)	F (E)	0.4 (0.5)	89.8 (61.7)	F (E)	0.4 (0.5)
			Through	223.8 (67.4)	F (E)	1.4 (1.0)	119.3 (33.9)	F (C)	1.2 (1.0)	223.8 (67.4)	F (E)	1.4 (1.0)	150.1 (51.0)	F (D)	1.3 (1.0)	150.1 (51.0)	F (D)	1.3 (1.0)	150.1 (51.0)	F (D)	1.3 (1.0)	150.1 (51.0)	F (D)	1.3 (1.0)
			Right	14.4 (16.5)	B (B)	0.0 (0.0)	9.8 (15.0)	A (B)	0.0 (0.0)	14.4 (16.5)	B (B)	0.0 (0.0)	10.1 (15.8)	B (B)	0.0 (0.0)	10.1 (15.8)	B (B)	0.0 (0.0)	10.1 (15.8)	B (B)	0.0 (0.0)	10.1 (15.8)	B (B)	0.0 (0.0)
3	US 29 & Fairland Rd	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**60.0 (37.9)**	**E (D)**	**0.98 (0.95)**	**55.0 (34.2)**	**E (C)**	**0.94 (0.91)**	**60.0 (37.9)**	**E (D)**	**0.98 (0.95)**	**61.7 (37.6)**	**E (D)**	**0.98 (0.95)**	**61.7 (37.6)**	**E (D)**	**0.98 (0.95)**	**60.0 (37.9)**	**E (D)**	**0.98 (0.95)**	**60.0 (37.9)**	**E (D)**	**0.98 (0.95)**
		Eastbound	Left	206.1 (87.8)	F (F)	1.2 (0.8)	185.0 (86.3)	F (F)	1.1 (0.8)	206.1 (87.8)	F (F)	1.2 (0.8)	206.1 (87.8)	F (F)	1.2 (0.8)	206.1 (87.8)	F (F)	1.2 (0.8)	206.1 (87.8)	F (F)	1.2 (0.8)	206.1 (87.8)	F (F)	1.2 (0.8)
			Left-Through	187.9 (78.7)	F (E)	1.2 (0.8)	167.1 (78.2)	F (E)	1.1 (0.8)	187.9 (78.7)	F (E)	1.2 (0.8)	187.9 (78.7)	F (E)	1.2 (0.8)	187.9 (78.7)	F (E)	1.2 (0.8)	187.9 (78.7)	F (E)	1.2 (0.8)	187.9 (78.7)	F (E)	1.2 (0.8)
			Right	70.4 (60.9)	E (E)	0.1 (0.1)	70.4 (61.6)	E (E)	0.1 (0.1)	70.4 (60.9)	E (E)	0.1 (0.1)	70.4 (60.9)	E (E)	0.1 (0.1)	70.4 (60.9)	E (E)	0.1 (0.1)	70.4 (60.9)	E (E)	0.1 (0.1)	70.4 (60.9)	E (E)	0.1 (0.1)
		Westbound	Left	99.4 (86.5)	F (F)	0.8 (0.6)	96.1 (85.7)	F (F)	0.7 (0.6)	99.4 (86.5)	F (F)	0.8 (0.6)	99.4 (86.5)	F (F)	0.8 (0.6)	99.4 (86.5)	F (F)	0.8 (0.6)	99.4 (86.5)	F (F)	0.8 (0.6)	99.4 (86.5)	F (F)	0.8 (0.6)
			Left-Through	90.1 (83.9)	F (F)	0.8 (0.6)	88.2 (83.8)	F (F)	0.7 (0.6)	90.1 (83.9)	F (F)	0.8 (0.6)	90.1 (83.9)	F (F)	0.8 (0.6)	90.1 (83.9)	F (F)	0.8 (0.6)	90.1 (83.9)	F (F)	0.8 (0.6)	90.1 (83.9)	F (F)	0.8 (0.6)
			Right	78.7 (76.5)	E (E)	0.4 (0.1)	77.9 (76.7)	E (E)	0.3 (0.1)	78.7 (76.5)	E (E)	0.4 (0.1)	78.7 (76.5)	E (E)	0.4 (0.1)	78.7 (76.5)	E (E)	0.4 (0.1)	78.7 (76.5)	E (E)	0.4 (0.1)	78.7 (76.5)	E (E)	0.4 (0.1)
		Northbound	Left	79.4 (105.9)	E (F)	0.4 (0.7)	73.2 (106.1)	E (F)	0.4 (0.7)	79.4 (105.9)	E (F)	0.4 (0.7)	73.7 (105.4)	E (F)	0.4 (0.7)	73.7 (105.4)	E (F)	0.4 (0.7)	79.4 (105.9)	E (F)	0.4 (0.7)	79.4 (105.9)	E (F)	0.4 (0.7)
			Through-Right	25.4 (21.6)	C (C)	0.5 (1.0)	31.0 (15.8)	C (B)	0.5 (0.9)	25.3 (21.6)	C (C)	0.5 (1.0)	31.3 (21.1)	C (C)	0.5 (1.0)	31.3 (21.1)	C (C)	0.5 (1.0)	25.3 (21.6)	C (C)	0.5 (1.0)	25.3 (21.6)	C (C)	0.5 (1.0)
		Southbound	Through	51.5 (38.5)	D (D)	1.0 (0.7)	43.1 (36.5)	D (D)	0.9 (0.6)	51.5 (38.5)	D (D)	1.0 (0.7)	51.5 (38.5)	D (D)	1.0 (0.7)	51.5 (38.5)	D (D)	1.0 (0.7)	51.5 (38.5)	D (D)	1.0 (0.7)	51.5 (38.5)	D (D)	1.0 (0.7)
4	US 29 & Musgrove Road	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**36.8 (26.7)**	**D (C)**	**0.92 (0.87)**	**26.6 (27.0)**	**C (C)**	**0.88 (0.82)**	**36.8 (26.7)**	**D (C)**	**0.92 (0.87)**	**34.9 (28.9)**	**C (C)**	**0.92 (0.87)**	**34.9 (28.9)**	**C (C)**	**0.92 (0.87)**	**36.8 (26.7)**	**D (C)**	**0.92 (0.87)**	**36.8 (26.7)**	**D (C)**	**0.92 (0.87)**
		Eastbound	Left	71.3 (93.6)	E (F)	0.2 (0.7)	71.8 (93.2)	E (F)	0.2 (0.7)	71.3 (93.6)	E (F)	0.2 (0.7)	71.3 (93.6)	E (F)	0.2 (0.7)	71.3 (93.6)	E (F)	0.2 (0.7)	71.3 (93.6)	E (F)	0.2 (0.7)	71.3 (93.6)	E (F)	0.2 (0.7)
			Through	70.1 (76.2)	E (E)	0.1 (0.2)	70.7 (76.5)	E (E)	0.1 (0.2)	70.1 (76.2)	E (E)	0.1 (0.2)	70.1 (76.2)	E (E)	0.1 (0.2)	70.1 (76.2)	E (E)	0.1 (0.2)	70.1 (76.2)	E (E)	0.1 (0.2)	70.1 (76.2)	E (E)	0.1 (0.2)
			Right	69.5 (74.7)	E (E)	0.0 (0.1)	70.1 (75.1)	E (E)	0.0 (0.1)	69.5 (74.7)	E (E)	0.0 (0.1)	69.5 (74.7)	E (E)	0.0 (0.1)	69.5 (74.7)	E (E)	0.0 (0.1)	69.5 (74.7)	E (E)	0.0 (0.1)	69.5 (74.7)	E (E)	0.0 (0.1)
		Westbound	Left	94.1 (86.0)	F (F)	0.8 (0.6)	94.0 (85.8)	F (F)	0.8 (0.6)	94.1 (86.0)	F (F)	0.8 (0.6)	94.1 (86.0)	F (F)	0.8 (0.6)	94.1 (86.0)	F (F)	0.8 (0.6)	94.1 (86.0)	F (F)	0.8 (0.6)	94.1 (86.0)	F (F)	0.8 (0.6)
			Through-Right	74.5 (74.8)	E (E)	0.4 (0.1)	74.9 (75.2)	E (E)	0.4 (0.1)	74.5 (74.8)	E (E)	0.4 (0.1)	74.5 (74.8)	E (E)	0.4 (0.1)	74.5 (74.8)	E (E)	0.4 (0.1)	74.5 (74.8)	E (E)	0.4 (0.1)	74.5 (74.8)	E (E)	0.4 (0.1)
		Northbound	Left	65.7 (66.2)	E (E)	0.2 (0.2)	52.8 (71.3)	D (E)	0.2 (0.2)	65.6 (66.2)	E (E)	0.2 (0.2)	54.3 (70.2)	D (E)	0.2 (0.2)	54.3 (70.2)	D (E)	0.2 (0.2)	65.6 (66.2)	E (E)	0.2 (0.2)	65.6 (66.2)	E (E)	0.2 (0.2)
			Through-Right	14.0 (11.8)	B (B)	0.5 (0.9)	7.3 (14.1)	A (B)	0.4 (0.8)	14.0 (11.8)	B (B)	0.5 (0.9)	8.3 (15.5)	A (B)	0.5 (0.9)	8.3 (15.5)	A (B)	0.5 (0.9)	14.0 (11.8)	B (B)	0.5 (0.9)	14.0 (11.8)	B (B)	0.5 (0.9)
		Southbound	Left	95.9 (59.4)	F (E)	0.4 (0.5)	95.9 (60.5)	F (E)	0.3 (0.5)	95.9 (59.4)	F (E)	0.4 (0.5)	95.9 (59.4)	F (E)	0.4 (0.5)	95.9 (59.4)	F (E)	0.4 (0.5)	95.9 (59.4)	F (E)	0.4 (0.5)	95.9 (59.4)	F (E)	0.4 (0.5)
			Through-Right	44.7 (42.2)	D (D)	1.0 (0.6)	31.9 (39.0)	C (D)	1.0 (0.6)	44.7 (42.2)	D (D)	1.0 (0.6)	44.7 (42.2)	D (D)	1.0 (0.6)	44.7 (42.2)	D (D)	1.0 (0.6)	44.7 (42.2)	D (D)	1.0 (0.6)	44.7 (42.2)	D (D)	1.0 (0.6)
5	US 29 & Tech Rd	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**106.8 (156.3)**	**F (F)**	**1.13 (1.23)**	**47.0 (53.9)**	**D (D)**	**0.89 (0.95)**	**107.3 (152.9)**	**F (F)**	**1.13 (1.23)**	**88.9 (97.6)**	**F (F)**	**1.06 (1.10)**	**88.9 (97.6)**	**F (F)**	**1.06 (1.10)**	**107.5 (153.3)**	**F (F)**	**1.13 (1.23)**	**107.5 (153.3)**	**F (F)**	**1.13 (1.23)**
		Eastbound	Left	72.5 (79.0)	E (E)	0.1 (0.1)	73.0 (79.4)	E (E)	0.1 (0.1)	72.5 (79.0)	E (E)	0.1 (0.1)	72.9 (79.3)	E (E)	0.1 (0.1)	72.9 (79.3)	E (E)	0.1 (0.1)	72.5 (79.0)	E (E)	0.1 (0.1)	72.5 (79.0)	E (E)	0.1 (0.1)
			Through	180.3 (192.9)	F (F)	1.1 (1.1)	- (-)	- (-)	- (-)	180.3 (192.9)	F (F)	1.1 (1.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	180.3 (192.9)	F (F)	1.1 (1.1)	180.3 (192.9)	F (F)	1.1 (1.1)
			Through-Right	- (-)	- (-)	- (-)	95.4 (93.9)	F (F)	0.8 (0.7)	- (-)	- (-)	- (-)	100.6 (98.6)	F (F)	0.9 (0.8)	100.6 (98.6)	F (F)	0.9 (0.8)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	60.9 (54.1)	E (D)	0.1 (0.1)	- (-)	- (-)	- (-)	60.9 (54.1)	E (D)	0.1 (0.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	72.1 (78.3)	E (E)	0.1 (0.1)	72.1 (78.3)	E (E)	0.1 (0.1)
		Westbound	Left	87.9 (81.0)	F (F)	0.7 (0.8)	87.3 (79.0)	F (E)	0.7 (0.7)	87.9 (81.0)	F (F)	0.7 (0.8)	87.4 (78.7)	F (E)	0.7 (0.7)	87.4 (78.7)	F (E)	0.7 (0.7)	87.9 (81.0)	F (F)	0.7 (0.8)	87.9 (81.0)	F (F)	0.7 (0.8)
			Left-Through	- (-)	- (-)	- (-)	77.7 (70.7)	E (E)	0.5 (0.7)	- (-)	- (-)	- (-)	77.4 (70.2)	E (E)	0.5 (0.7)	77.4 (70.2)	E (E)	0.5 (0.7)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Left-Through-Right	74.4 (68.2)	E (E)	0.4 (0.7)	- (-)	- (-)	- (-)	74.4 (68.2)	E (E)	0.4 (0.7)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	74.4 (68.2)	E (E)	0.4 (0.7)	74.4 (68.2)	E (E)	0.4 (0.7)
			Right	- (-)	- (-)	- (-)	73.2 (61.6)	E (E)	0.1 (0.2)	- (-)	- (-)	- (-)	72.7 (60.8)	E (E)	0.1 (0.2)	72.7 (60.8)	E (E)	0.1 (0.2)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Northbound	Left	71.3 (56.6)	E (E)	0.7 (0.5)	71.4 (51.5)	E (D)	0.6 (0.5)	69.9 (49.6)	E (D)	0.7 (0.5)	69.9 (49.6)	E (D)	0.7 (0.5)	69.9 (49.6)	E (D)	0.7 (0.5)	69.9 (49.6)	E (D)	0.7 (0.5)	69.9 (49.6)	E (D)	0.7 (0.5)
			Through	44.3 (233.9)	D (F)	0.9 (1.4)	21.3 (44.6)	C (D)	0.7 (1.0)	42.4 (227.6)	D (F)	0.9 (1.4)	21.0 (136.6)	C (F)	0.7 (1.3)	21.0 (136.6)	C (F)	0.7 (1.3)	42.4 (227.6)	D (F)	0.9 (1.4)	42.4 (227.6)	D (F)	0.9 (1.4)
			Right	11.6 (20.5)	B (C)	0.3 (0.3)	6.5 (-)	A (-)	0.3 (-)	29.6 (10.8)	C (B)	0.3 (0.3)	7.5 (7.9)	A (A)	0.3 (0.3)	7.5 (7.9)	A (A)	0.3 (0.3)	29.6 (10.8)	C (B)	0.3 (0.3)	29.6 (10.8)	C (B)	0.3 (0.3)
		Southbound	Left	85.8 (86.3)	F (F)	0.8 (0.8)	73.7 (66.9)	E (E)	0.7 (0.5)	85.8 (86.3)	F (F)	0.8 (0.8)	74.1 (64.9)	E (E)	0.7 (0.5)	74.1 (64.9)	E (E)	0.7 (0.5)	85.8 (86.3)	F (F)	0.8 (0.8)	85.8 (86.3)	F (F)	0.8 (0.8)
			Through	158.9 (119.5)	F (F)	1.2 (1.1)	- (-)	- (-)	- (-)	158.9 (119.5)	F (F)	1.2 (1.1)	139.7 (74.1)	F (E)	1.2 (1.0)	139.7 (74.1)	F (E)	1.2 (1.0)	158.9 (119.5)	F (F)	1.2 (1.1)	158.9 (119.5)	F (F)	1.2 (1.1)
			Through-Right	- (-)	- (-)	- (-)	52.1 (56.8)	D (E)	1.0 (1.0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	46.4 (35.4)	D (D)	0.1 (0.0)	- (30.2)	- (C)	- (0.0)	46.4 (35.4)	D (D)	0.1 (0.0)	43.6 (31.1)	D (C)	0.1 (0.0)	43.6 (31.1)	D (C)	0.1 (0.0)	46.4 (35.4)	D (D)	0.1 (0.0)	46.4 (35.4)	D (D)	0.1 (0.0)
6	US 29 & Industrial Parkway	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**17.0 (42.7)**	**B (D)**	**0.85 (0.99)**	**12.2 (18.8)**	**B (B)**	**0.66 (0.82)**	**18.4 (42.1)**	**B (D)**	**0.91 (1.06)**	**16.8 (41.7)**	**B (D)**	**0.91 (1.06)**	**16.8 (41.7)**	**B (D)**	**0.91 (1.06)**	**18.4 (42.1)**	**B (D)**	**0.91 (1.06)**	**18.4 (42.1)**	**B (D)**	**0.91 (1.06)**
		Westbound	Left	82.3 (78.7)	F (E)	0.7 (0.7)	82.6 (79.1)	F (E)	0.6 (0.7)	82.3 (78.7)	F (E)	0.7 (0.7)	82.3 (78.7)	F (E)	0.7 (0.7)	82.3 (78.7)	F (E)	0.7 (0.7)	82.3 (78.7)	F (E)	0.7 (0.7)	82.3 (78.7)	F (E)	0.7 (0.7)
			Right	60.3 (62.4)	E (E)	0.2 (0.4)	61.1 (61.9)	E (E)	0.2 (0.4)	55.9 (57.2)	E (E)	0.1 (0.1)	55.9 (57.2)	E (E)	0.1 (0.1)	55.9 (57.2)	E (E)	0.1 (0.1)	55.9 (57.2)	E (E)	0.1 (0.1)	55.9 (57.2)	E (E)	0.1 (0.1)
		Northbound	Through	17.0 (68.4)	B (E)	0.6 (1.1)	15.7 (22.2)	B (C)	0.6 (0.8)	18.2 (68.4)	B (E)	0.7 (1.1)	18.2 (68.4)	B (E)	0.7 (1.1)	18.2 (68.4)	B (E)	0.7 (1.1)	18.2 (68.4)	B (E)	0.7 (1.1)	18.2 (68.4)	B (E)	0.7 (1.1)
			Right	2.9 (2.4)	A (A)	0.1 (0.1)	2.8 (2.7)	A (A)	0.1 (0.2)	3.3 (2.4)	A (A)	0.1 (0.1)	3.3 (2.4)	A (A)	0.1 (0.1)	3.3 (2.4)	A (A)	0.1 (0.1)	3.3 (2.4)	A (A)	0.1 (0.1)	3.3 (2.4)	A (A)	0.1 (0.1)
		Southbound	Left	112.8 (102.5)	F (F)	0.6 (0.5)	112.2 (101.0)	F (F)	0.6 (0.5)	95.0 (99.9)	F (F)	0.6 (0.5)	93.4 (98.2)	F (F)	0.6 (0.5)	93.4 (98.2)	F (F)	0.6 (0.5)	94.8 (100.4)	F (F)	0.6 (0.5)	94.8 (100.4)	F (F)	0.6 (0.5)
			Through	9.4 (6.4)	A (A)	0.8 (0.7)	1.4 (4.5)	A (A)	0.6 (0.7)	11.8 (5.2)	B (A)	0.8 (0.7)	9.0 (4.2)	A (A)	0.8 (0.7)	9.0 (4.2)	A (A)	0.8 (0.7)	11.8 (5.3)	B (A)	0.8 (0.7)	11.8 (5.3)	B (A)	0.8 (0.7)
7	US 29 & Stewart Lane Slip Ramp	Control Type			Signal			Signal			Signal			Signal			Signal			Signal			Signal	
		Overall		**13.9 (19.9)**	**B (B)**	**0.83 (1.00)**	**12.5 (14.9)**	**B (B)**	**0.79 (0.80)**	**26.5 (21.7)**	**C (C)**	**1.01 (1.00)**	**26.5 (22.6)**	**C (C)**	**1.01 (1.00)**	**26.5 (22.6)**	**C (C)**	**1.01 (1.00)**	**26.5 (21.7)**	**C (C)**	**1.01 (1.00)**	**26.5 (21.7)**	**C (C)**	**1.01 (1.00)**
		Westbound	Left	58.8 (51.3)	E (D)	0.2 (0.1)	57.6 (47.1)	E (D)	0.2 (0.1)	60.1 (51.7)	E (D)	0.2 (0.1)	60.4 (47.6)	E (D)	0.2 (0.1)	60.4 (47.6)	E (D)	0.2 (0.1)	60.1 (51.7)	E (D)	0.2 (0.1)	60.1 (51.7)	E (D)	0.2 (0.1)
			Right	139.4 (111.7)	F (F)	1.0 (1.0)	116.7 (96.3)	F (F)	1.0 (1.0)	141.4 (111.9)	F (F)	1.0 (1.0)	141.6 (107.8)	F (F)	1.0 (1.0)	141.6 (107.8)	F (F)	1.0 (1.0)	141.4 (111.9)	F (F)	1.0 (1.0)	141.4 (111.9)	F (F)	1.0 (1.0)
		Northbound	Through	3.7 (17.6)	A (B)	0.6 (1.0)	3.6 (9.9)	A (A)	0.6 (0.8)	3.6 (17.0)	A (B)	0.6 (1.0)	3.7 (19.2)	A (B)	0.6 (1.0)	3.7 (19.2)	A (B)	0.6 (1.0)	3.6 (17.0)	A (B)	0.6 (1.0)	3.6 (17.0)	A (B)	0.6 (1.0)
		Southbound	Through	11.5 (12.4)	B (B)	0.8 (0.7)	10.5 (11.7)	B (B)	0.8 (0.6)	32.3 (17.5)	C (B)	1.0 (0.8)	32.3 (17.5)	C (B)	1.0 (0.8)	32.3 (17.5)	C (B)	1.0 (0.8)	32.3 (17.5)	C (B)	1.0 (0.8)	32.3 (17.5)	C (B)	1.0 (0.8)

Intersection LOS based on average delay for all vehicles

Detailed Intersection Capacity Analysis, continued

ID	Intersection	Approach	Movement	No Build			Managed Lane			Median Bus Lane Baseline			Median Bus Lane with Intersection Improvements			Median Bus Lane Optimized			Median Bus Lane with Cost Reductions			Median Bus Lane Hybrid		
				AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)		
				Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
8	US 29 & Milestone Drive/Stewart Lane	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**11.0 (64.0)**	**B (E)**	**0.83 (1.06)**	**8.9 (17.9)**	**A (B)**	**0.78 (0.80)**	**17.1 (74.8)**	**B (E)**	**1.03 (1.08)**	**16.4 (41.7)**	**B (D)**	**1.01 (0.99)**	**16.4 (41.7)**	**B (D)**	**1.01 (0.99)**	**17.1 (74.8)**	**B (E)**	**1.03 (1.08)**	**17.1 (74.8)**	**B (E)**	**1.03 (1.08)**
		Eastbound	Left	67.5 (75.2)	E (E)	0.4 (0.6)	66.9 (74.1)	E (E)	0.3 (0.6)	67.5 (75.2)	E (E)	0.4 (0.6)	67.5 (75.2)	E (E)	0.4 (0.6)	67.5 (75.2)	E (E)	0.4 (0.6)	67.5 (75.2)	E (E)	0.4 (0.6)	67.5 (75.2)	E (E)	0.4 (0.6)
			Through-Right	64.1 (70.1)	E (E)	0.1 (0.5)	64.0 (69.9)	E (E)	0.1 (0.5)	64.1 (70.1)	E (E)	0.1 (0.5)	64.1 (70.1)	E (E)	0.1 (0.5)	64.1 (70.1)	E (E)	0.1 (0.5)	64.1 (70.1)	E (E)	0.1 (0.5)	64.1 (70.1)	E (E)	0.1 (0.5)
		Westbound	Left-Through	144.3 (77.1)	F (E)	1.0 (0.6)	132.2 (75.0)	F (E)	0.9 (0.6)	144.3 (77.1)	F (E)	1.0 (0.6)	144.3 (77.1)	F (E)	1.0 (0.6)	144.3 (77.1)	F (E)	1.0 (0.6)	144.3 (77.1)	F (E)	1.0 (0.6)	144.3 (77.1)	F (E)	1.0 (0.6)
			Right	63.1 (64.7)	E (E)	0.0 (0.0)	63.1 (64.9)	E (E)	0.0 (0.0)	63.1 (64.7)	E (E)	0.0 (0.0)	63.1 (64.7)	E (E)	0.0 (0.0)	63.1 (64.7)	E (E)	0.0 (0.0)	63.1 (64.7)	E (E)	0.0 (0.0)	63.1 (64.7)	E (E)	0.0 (0.0)
		Northbound	Left	11.7 (22.2)	B (C)	0.1 (0.4)	10.3 (8.4)	B (A)	0.1 (0.3)	87.9 (73.3)	F (E)	0.4 (0.4)	87.9 (73.3)	F (E)	0.4 (0.4)	87.9 (73.3)	F (E)	0.4 (0.4)	87.9 (73.3)	F (E)	0.4 (0.4)	87.9 (73.3)	F (E)	0.4 (0.4)
			Through	13.2 (109.8)	B (F)	0.6 (1.2)	10.4 (19.4)	B (B)	0.6 (0.8)	15.3 (129.7)	B (F)	0.7 (1.2)	13.3 (65.6)	B (E)	0.6 (1.1)	13.3 (65.6)	B (E)	0.6 (1.1)	15.3 (129.7)	B (F)	0.7 (1.2)	15.3 (129.7)	B (F)	0.7 (1.2)
			Right	7.3 (15.0)	A (B)	0.1 (0.3)	6.0 (-)	A (-)	0.1 (-)	8.4 (16.5)	A (B)	0.1 (0.3)	7.4 (11.3)	A (B)	0.1 (0.2)	7.4 (11.3)	A (B)	0.1 (0.2)	8.4 (16.5)	A (B)	0.1 (0.3)	8.4 (16.5)	A (B)	0.1 (0.3)
		Southbound	Left	50.9 (84.3)	D (F)	0.6 (0.9)	10.1 (62.7)	B (E)	0.4 (0.7)	86.2 (81.9)	F (F)	0.8 (0.9)	82.4 (63.5)	F (E)	0.5 (0.7)	82.4 (63.5)	F (E)	0.5 (0.7)	86.2 (81.9)	F (F)	0.8 (0.9)	86.2 (81.9)	F (F)	0.8 (0.9)
			Through-Right	3.3 (6.4)	A (A)	0.8 (0.6)	3.1 (6.2)	A (A)	0.8 (0.5)	11.1 (7.9)	B (A)	1.0 (0.7)	11.1 (7.9)	B (A)	1.0 (0.7)	11.1 (7.9)	B (A)	1.0 (0.7)	11.1 (7.9)	B (A)	1.0 (0.7)	11.1 (7.9)	B (A)	1.0 (0.7)
9	US 29 & Oak Leaf Dr	Control Type		Stop (2 - Way)			Stop (2 - Way)			Signal			Signal			Signal			Stop (2 - Way)			Stop (2 - Way)		
		Overall		**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**7.9 (7.8)**	**A (A)**	**0.88 (0.88)**	**7.6 (7.6)**	**A (A)**	**0.87 (0.88)**	**7.5 (7.5)**	**A (A)**	**0.87 (0.88)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**
		Eastbound	Right	36.9 (20.5)	E (C)	0.30 (0.20)	31.8 (18.2)	D (C)	0.25 (0.17)	81.4 (84.2)	F (F)	0.0 (0.0)	81.4 (84.2)	F (F)	0.0 (0.0)	81.4 (84.2)	F (F)	0.0 (0.0)	36.9 (20.5)	E (C)	0.30 (0.20)	36.9 (20.5)	E (C)	0.30 (0.20)
		Westbound	Right	11.3 (32.9)	B (D)	0.13 (0.27)	11.4 (34.8)	B (D)	0.12 (0.27)	85.4 (103.0)	F (F)	0.4 (0.0)	85.4 (103.0)	F (F)	0.4 (0.0)	85.4 (103.0)	F (F)	0.4 (0.0)	11.3 (33.0)	B (D)	0.13 (0.27)	11.3 (33.0)	B (D)	0.13 (0.27)
		Northbound	Left	0.0 (31.8)	A (D)	0.00 (0.23)	0.0 (28.1)	A (D)	0.00 (0.20)	- (83.7)	- (F)	- (0.5)	- (83.7)	- (F)	- (0.5)	- (83.2)	- (F)	- (0.5)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	0.0 (0.0)	A (A)	0.50 (0.87)	0.0 (0.0)	A (A)	0.47 (0.83)	2.3 (5.0)	A (A)	0.5 (0.9)	2.3 (5.0)	A (A)	0.5 (0.9)	1.9 (4.8)	A (A)	0.5 (0.9)	0.0 (0.0)	A (A)	0.50 (0.87)	0.0 (0.0)	A (A)	0.50 (0.87)
		Southbound	Through	- (-)	- (-)	- (-)	0.0 (0.0)	A (A)	0.69 (0.45)	- (-)	- (-)	- (-)	8.1 (6.8)	A (A)	0.9 (0.6)	8.1 (6.8)	A (A)	0.9 (0.6)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	0.0 (0.0)	A (A)	0.86 (0.57)	- (-)	- (-)	- (-)	8.5 (7.1)	A (A)	0.9 (0.6)	- (-)	- (-)	- (-)	- (-)	A (A)	0.9 (0.6)	0.0 (0.0)	A (A)	0.86 (0.57)	0.0 (0.0)	A (A)	0.86 (0.57)
			Right	- (-)	- (-)	- (-)	0.0 (0.0)	A (A)	0.02 (0.05)	- (-)	- (-)	- (-)	1.3 (3.3)	A (A)	0.0 (0.1)	1.3 (3.3)	A (A)	0.0 (0.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
10	US 29 & Prelude Dr	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**19.9 (8.0)**	**B (A)**	**0.92 (0.88)**	**16.6 (6.8)**	**B (A)**	**0.88 (0.84)**	**17.8 (8.5)**	**B (A)**	**0.93 (0.88)**	**18.1 (8.7)**	**B (A)**	**0.93 (0.88)**	**18.1 (7.5)**	**B (A)**	**0.93 (0.88)**	**24.8 (13.2)**	**C (B)**	**0.93 (0.87)**	**24.8 (13.2)**	**C (B)**	**0.93 (0.87)**
		Eastbound	Left	86.3 (84.9)	F (F)	0.6 (0.5)	86.1 (90.0)	F (F)	0.6 (0.6)	86.3 (84.9)	F (F)	0.6 (0.5)	86.3 (84.9)	F (F)	0.6 (0.5)	86.3 (84.9)	F (F)	0.6 (0.5)	86.3 (84.9)	F (F)	0.6 (0.5)	86.3 (84.9)	F (F)	0.6 (0.5)
			Right	76.3 (78.1)	E (E)	0.1 (0.0)	76.4 (79.9)	E (E)	0.1 (0.0)	76.3 (78.1)	E (E)	0.1 (0.0)	76.3 (78.1)	E (E)	0.1 (0.0)	76.3 (78.1)	E (E)	0.1 (0.0)	76.3 (78.1)	E (E)	0.1 (0.0)	76.3 (78.1)	E (E)	0.1 (0.0)
		Northbound	Left	73.6 (22.5)	E (C)	0.4 (0.4)	53.2 (23.1)	D (C)	0.4 (0.4)	80.1 (101.4)	F (F)	0.5 (0.5)	80.1 (101.4)	F (F)	0.5 (0.5)	79.0 (103.0)	E (F)	0.5 (0.5)	77.8 (98.0)	E (F)	0.5 (0.7)	77.8 (98.0)	E (F)	0.5 (0.7)
			Through	3.7 (4.9)	A (A)	0.5 (0.9)	5.1 (4.0)	A (A)	0.5 (0.8)	7.1 (6.3)	A (A)	0.5 (0.9)	7.1 (6.3)	A (A)	0.5 (0.9)	7.1 (4.3)	A (A)	0.5 (0.9)	7.1 (8.8)	A (A)	0.5 (0.9)	7.1 (8.8)	A (A)	0.5 (0.9)
		Southbound	Through-Right	25.7 (9.7)	C (A)	1.0 (0.6)	19.8 (7.8)	B (A)	0.9 (0.6)	20.4 (7.1)	C (A)	1.0 (0.7)	20.8 (7.3)	C (A)	1.0 (0.7)	20.8 (7.3)	C (A)	1.0 (0.7)	31.6 (13.8)	C (B)	1.0 (0.7)	31.6 (13.8)	C (B)	1.0 (0.7)
11	US 29 & Burnt Mills Ave	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**15.9 (8.1)**	**B (A)**	**0.95 (0.91)**	**11.3 (7.1)**	**B (A)**	**0.90 (0.86)**	**11.9 (7.6)**	**B (A)**	**0.94 (0.93)**	**11.9 (7.6)**	**B (A)**	**0.94 (0.93)**	**18.5 (9.8)**	**B (A)**	**0.95 (0.92)**	**17.2 (11.0)**	**B (B)**	**0.95 (0.92)**	**17.2 (11.0)**	**B (B)**	**0.95 (0.92)**
		Eastbound	Left-Through-Right	91.9 (87.7)	F (F)	0.7 (0.6)	91.1 (95.0)	F (F)	0.7 (0.6)	91.9 (87.7)	F (F)	0.7 (0.6)	91.9 (87.7)	F (F)	0.7 (0.6)	91.9 (87.7)	F (F)	0.7 (0.6)	91.9 (87.7)	F (F)	0.7 (0.6)	91.9 (87.7)	F (F)	0.7 (0.6)
		Westbound	Left-Through-Right	84.1 (101.8)	F (F)	0.6 (0.3)	82.8 (102.4)	F (F)	0.6 (0.3)	87.7 (100.1)	F (F)	0.6 (0.3)	87.7 (100.1)	F (F)	0.6 (0.3)	88.7 (100.0)	F (F)	0.6 (0.3)	88.1 (100.1)	F (F)	0.6 (0.3)	88.1 (100.1)	F (F)	0.6 (0.3)
		Northbound	Left	103.5 (16.2)	F (B)	0.3 (0.3)	69.9 (4.4)	E (A)	0.3 (0.3)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	71.6 (98.6)	E (F)	0.4 (0.5)	95.5 (106.7)	F (F)	0.4 (0.5)	95.5 (106.7)	F (F)	0.4 (0.5)
			Through-Right	9.1 (5.2)	A (A)	0.5 (0.9)	8.9 (4.3)	A (A)	0.5 (0.9)	12.9 (7.1)	B (A)	0.5 (1.0)	12.9 (7.1)	B (A)	0.5 (1.0)	13.3 (6.5)	B (A)	0.5 (1.0)	9.3 (7.9)	A (A)	0.5 (1.0)	9.3 (7.9)	A (A)	0.5 (1.0)
		Southbound	Left	4.3 (26.6)	A (C)	0.0 (0.1)	3.9 (17.7)	A (B)	0.0 (0.1)	111.7 (90.9)	F (F)	0.4 (0.4)	111.7 (90.9)	F (F)	0.4 (0.4)	102.4 (78.3)	F (E)	0.4 (0.4)	102.4 (78.5)	F (E)	0.4 (0.4)	102.4 (78.5)	F (E)	0.4 (0.4)
			Through-Right	15.2 (8.7)	B (A)	1.0 (0.6)	8.3 (7.7)	A (A)	1.0 (0.6)	7.3 (4.8)	A (A)	0.9 (0.6)	7.3 (4.8)	A (A)	0.9 (0.6)	17.0 (9.6)	B (A)	1.0 (0.6)	17.0 (10.4)	B (B)	1.0 (0.6)	17.0 (10.4)	B (B)	1.0 (0.6)
12	US 29 & Lockwood Dr	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**32.3 (12.5)**	**C (B)**	**1.03 (0.94)**	**28.1 (16.9)**	**C (B)**	**0.99 (0.90)**	**34.4 (17.2)**	**C (B)**	**1.03 (0.94)**	**34.4 (17.2)**	**C (B)**	**1.03 (0.94)**	**33.8 (16.4)**	**C (B)**	**1.03 (0.94)**	**47.6 (16.7)**	**D (B)**	**1.10 (1.00)**	**47.6 (16.7)**	**D (B)**	**1.10 (1.00)**
		Eastbound	Left	69.6 (74.7)	E (E)	0.2 (0.3)	68.6 (74.3)	E (E)	0.1 (0.3)	69.6 (74.7)	E (E)	0.2 (0.3)	69.6 (74.7)	E (E)	0.2 (0.3)	69.6 (74.7)	E (E)	0.2 (0.3)	57.2 (72.4)	E (E)	0.1 (0.3)	57.2 (72.4)	E (E)	0.1 (0.3)
			Right	64.3 (67.2)	E (E)	0.0 (0.0)	64.3 (67.1)	E (E)	0.0 (0.0)	64.3 (67.2)	E (E)	0.0 (0.0)	64.3 (67.2)	E (E)	0.0 (0.0)	64.3 (67.2)	E (E)	0.0 (0.0)	56.2 (66.1)	E (E)	0.0 (0.0)	56.2 (66.1)	E (E)	0.0 (0.0)
		Westbound	Left	145.9 (87.0)	F (F)	1.1 (0.8)	149.5 (87.1)	F (F)	1.1 (0.8)	145.9 (87.0)	F (F)	1.1 (0.8)	145.9 (87.0)	F (F)	1.1 (0.8)	145.9 (87.0)	F (F)	1.1 (0.8)	74.8 (82.5)	E (F)	0.8 (0.8)	74.8 (82.5)	E (F)	0.8 (0.8)
			Left-Through-Right	165.6 (95.2)	F (F)	1.1 (0.8)	166.1 (96.5)	F (F)	1.1 (0.8)	165.6 (95.2)	F (F)	1.1 (0.8)	165.6 (95.2)	F (F)	1.1 (0.8)	165.6 (95.2)	F (F)	1.1 (0.8)	81.9 (88.1)	F (F)	0.8 (0.8)	81.9 (88.1)	F (F)	0.8 (0.8)
		Northbound	Through-Right	3.0 (5.2)	A (A)	0.5 (1.0)	3.0 (12.5)	A (B)	0.5 (0.9)	5.3 (12.4)	A (B)	0.5 (1.0)	5.3 (12.4)	A (B)	0.5 (1.0)	7.4 (11.6)	A (B)	0.5 (1.0)	18.7 (8.2)	B (A)	0.6 (1.0)	18.7 (8.2)	B (A)	0.6 (1.0)
		Southbound	Left	1.0 (11.0)	A (B)	0.1 (0.2)	1.3 (18.4)	A (B)	0.1 (0.3)	1.4 (12.6)	A (B)	0.1 (0.2)	1.4 (12.6)	A (B)	0.1 (0.2)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	22.0 (6.0)	C (A)	1.0 (0.6)	12.5 (5.8)	B (A)	1.0 (0.6)	24.4 (8.0)	C (A)	1.0 (0.6)	24.4 (8.0)	C (A)	1.0 (0.6)	22.2 (7.1)	C (A)	1.0 (0.6)	56.6 (14.2)	E (B)	1.1 (0.6)	56.6 (14.2)	E (B)	1.1 (0.6)
13	US 29 & Hillwood Dr	Control Type		Stop (2 - Way)			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**- (-)**	**- (-)**	**- (-)**	**82.4 (0.4)**	**F (A)**	**1.03 (0.98)**	**33.0 (42.0)**	**C (D)**	**1.09 (1.06)**	**33.0 (42.0)**	**C (D)**	**1.09 (1.06)**	**36.4 (39.3)**	**D (D)**	**1.13 (1.07)**	**33.6 (40.1)**	**C (D)**	**1.06 (1.02)**	**34.0 (40.1)**	**C (D)**	**1.06 (1.02)**
		Westbound	Left	20.4 (>300)	C (F)	0.13 (>2)	- (-)	- (-)	- (-)	88.3 (89.4)	F (F)	0.5 (0.3)	88.3 (89.4)	F (F)	0.5 (0.3)	88.4 (76.8)	F (E)	0.5 (0.1)	88.4 (77.2)	F (E)	0.5 (0.2)	88.4 (77.2)	F (E)	0.5 (0.2)
			Right	9.5 (16.4)	A (C)	0.01 (0.05)	- (-)	- (-)	- (-)	82.3 (85.6)	F (F)	0.0 (0.0)	82.3 (85.6)	F (F)	0.0 (0.0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Northbound	Through	- (-)	- (-)	- (-)	2.4 (0.3)	A (A)	0.6 (0.9)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	0.0 (0.0)	A (A)	0.57 (1.03)	- (-)	- (-)	- (-)	3.7 (67.7)	A (E)	0.6 (1.1)	3.7 (67.7)	A (E)	0.6 (1.1)	2.5 (59.8)	A (E)	0.6 (1.1)	1.0 (61.9)	A (E)	0.6 (1.1)	2.2 (61.9)	A (E)	0.6 (1.1)
		Southbound	Left	19.3 (>300)	C (F)	0.02 (0.52)	- (-)	- (-)	- (-)	86.0 (102.6)	F (F)	0.2 (0.1)	86.0 (102.6)	F (F)	0.2 (0.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through	0.0 (0.0)	A (A)	0.91 (0.58)	124.1 (0.4)	F (A)	1.2 (0.6)	47.8 (3.2)	D (A)	1.1 (0.7)	47.8 (3.2)	D (A)	1.1 (0.7)	53.8 (8.5)	D (A)	1.1 (0.7)	50.2 (7.4)	D (A)	1.1 (0.7)	50.2 (7.4)	D (A)	1.1 (0.7)
14	US 29 & Burnt Mills Shopping Ctr	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**68.5 (94.2)**	**E (F)**	**1.13 (1.20)**	**44.6 (48.1)**	**D (D)**	**1.07 (1.13)**	**70.0 (100.8)**	**E (F)**	**1.14 (1.22)**	**70.0 (100.8)**	**E (F)**	**1.14 (1.22)**	**70.2 (99.5)**	**E (F)**	**1.14 (1.22)**	**70.1 (95.8)**	**E (F)**	**1.14 (1.22)**	**70.0 (95.8)**	**E (F)**	**1.14 (1.22)**
		Eastbound	Left-Through-Right	74.7 (70.7)	E (E)	0.0 (0.1)	75.2 (79.1)	E (E)	0.0 (0.1)	74.7 (70.7)	E (E)	0.0 (0.1)	74.7 (70.7)	E (E)	0.0 (0.1)	74.7 (70.7)	E (E)	0.0 (0.1)	74.7 (70.7)	E (E)	0.0 (0.1)	74.7 (70.7)	E (E)	0.0 (0.1)
		Westbound	Left-Through-Right	89.2 (100.5)	F (F)	0.6 (0.8)	89.0 (245.3)	F (F)	0.6 (1.2)	89.2 (100.5)	F (F)	0.6 (0.8)	89.2 (100.5)	F (F)	0.6 (0.8)	89.2 (100.5)	F (F)	0.6 (0.8)	89.2 (100.5)	F (F)	0.6 (0.8)	89.2 (100.5)	F (F)	0.6 (0.8)
		Northbound	Left	77.3 (-)	E (-)	0.2 (-)	78.8 (-)	E (-)	0.2 (-)	84.6 (-)	F (-)	0.4 (-)	84.6 (-)	F (-)	0.4 (-)	84.6 (-)	F (-)	0.4 (-)	79.1 (-)	E (-)	0.4 (-)	79.2 (-)	E (-)	0.4 (-)
			Through-Right	9.2 (145.1)	A (F)	0.7 (1.3)	8.3 (63.4)	A (E)	0.6 (1.1)	7.9 (158.2)	A (F)	0.7 (1.3)	7.9 (158.2)	A (F)	0.7 (1.3)	7.9 (158.2)	A (F)	0.7 (1.3)	8.1 (152.7)	A (F)	0.7 (1.3)	7.9 (152.7)	A (F)	0.7 (1.3)
		Southbound	Left	13.1 (85.1)	B (F)	0.5 (0.8)	19.8 (123.5)	B (F)	0.4 (0.9)	89.7 (108.7)	F (F)	0.6 (0.8)	89.7 (108.7)	F (F)	0.6 (0.8)	90.7 (109.4)	F (F)	0.6 (0.8)	91.1 (112.2)	F (F)	0.6 (0.8)	91.1 (112.2)	F (F)	0.6 (0.8)
			Through-Right	100.9 (14.6)	F (B)	1.2 (0.7)	63.4 (7.3)	E (A)	1.1 (0.6)	102.7 (11.1)	F (B)	1.2 (0.7)	102.7 (11.1)	F (B)	1.2 (0.7)	103.0 (7.4)	F (A)	1.2 (0.7)	102.7 (6.2)	F (A)	1.2 (0.7)	102.7 (6.2)	F (A)	1.2 (0.7)
15	US 29 & Crestmoor Dr	Control Type		Stop (2 - Way)			Stop (2 - Way)			Signal			Signal			Signal			Signal			Signal		
		Overall		**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**46.3 (78.9)**	**D (E)**	**1.12 (1.18)**	**46.3 (78.9)**	**D (E)**	**1.12 (1.18)**	**46.3 (79.5)**	**D (E)**	**1.12 (1.18)**	**45.0 (132.0)**	**D (F)**	**1.10 (1.25)**	**44.5 (132.0)**	**D (F)**	**1.10 (1.25)**
		Westbound	Left	>300 (>300)	F (F)	>2 (>2)	>300 (>300)	F (F)	>2 (>2)	83.8 (85.5)	F (F)	0.1 (0.1)	83.8 (85.5)	F (F)	0.1 (0.1)	83.8 (85.5)	F (F)	0.1 (0.1)	83.8 (85.5)	F (F)	0.1 (0.1)	83.8 (85.5)	F (F)	0.1 (0.1)
			Right	9.4 (22.5)	A (C)	0.07 (0.19)	9.6 (22.6)	A (C)	0.07 (0.18)	83.4 (84.6)	F (F)	0.0 (0.0)	83.4 (84.6)	F (F)	0.0 (0.0)	83.4 (84.6)	F (F)	0.0 (0.0)	83.4 (84.6)	F (F)	0.0 (0.0)	83.4 (84.6)	F (F)	0.0 (0.0)
		Northbound	Through-Right	0.0 (0.0)	A (A)	0.57 (1.04)	0.0 (0.0)	A (A)	0.55 (0.99)	14.4 (127.4)	B (F)	0.6 (1.3)	14.4 (127.4)	B (F)	0.6 (1.3)	14.4 (127.4)	B (F)	0.6 (1.3)	22.0 (215.3)	C (F)	0.7 (1.4)	20.4 (215.2)	C (F)	0.7 (1.4)
		Southbound	Left	24.0 (>300)	C (F)	0.18 (>2)	21.8 (>300)	C (F)	0.15 (>2)	79.9 (68.9)	E (E)	0.5 (0.5)	79.9 (68.9)	E (E)	0.5 (0.5)	79.9 (70.2)	E (E)	0.5 (0.5)	81.9 (55.8)	F (E)	0.6 (0.5)	81.9 (55.8)	F (E)	0.6 (0.5)
			Through	0.0 (0.0)	A (A)	0.91 (0.57)	0.0 (0.0)	A (A)	0.86 (0.54)	62.4 (4.5)	E (A)	1.1 (0.7)	62.4 (4.5)	E (A)	1.1 (0.7)	62.4 (5.9)	E (A)	1.1 (0.7)	56.0 (5.6)	E (A)	1.1 (0.7)	56.0 (5.6)	E (A)	1.1 (0.7)
16	US 29 & Southwood Ave	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		**110.9 (43.1)**	**F (D)**	**1.24 (1.09)**	**90.2 (32.6)**	**F (C)**	**1.19 (1.04)**	**120.1 (38.7)**	**F (D)**	**1.25 (1.09)**	**120.1 (38.7)**	**F (D)**	**1.25 (1.09)**	**120.1 (38.9)**	**F (D)**	**1.25 (1.09)**	**115.4 (44.8)**	**F (D)**	**1.24 (1.09)**	**114.7 (41.5)**	**F (D)**	**1.24 (1.09)**
		Eastbound	Left	96.3 (91.8)	F (F)	0.8 (0.8)	94.3 (90.2)	F (F)	0.8 (0.8)	96.3 (91.8)	F (F)	0.8 (0.8)	96.3 (91.8)	F (F)	0.8 (0.8)	96.3 (91.8)	F (F)	0.8 (0.8)	96.3 (91.8)	F (F)	0.8 (0.8)	96.3 (91.8)	F (F)	0.8 (0.8)
			Right	64.6 (65.7)	E (E)	0.1 (0.0)	65.0 (66.1)	E (E)	0.1 (0.0)	64.6 (65.7)	E (E)	0.1 (0.0)	64.6 (65.7)	E (E)	0.1 (0.0)	64.6 (65.7)	E (E)	0.1 (0.0)	64.6 (65.7)	E (E)	0.1 (0.0)	64.6 (65.7)	E (E)	0.1 (0.0)
		Northbound	Left	155.7 (81.7)	F (F)	0.3 (0.6)	151.6 (77.8)	F (E)	0.3 (0.6)	68.1 (96.4)	E (F)	0.4 (0.6)	68.1 (96.4)	E (F)	0.4 (0.6)	68.1 (96.4)	E (F)	0.4 (0.6)	74.5 (105.8)	E (F)	0.4 (0.6)	68.7 (105.6)	E (F)	0.4 (0.6)
			Through	8.8 (57.7)	A (E)	0.6 (1.1)	7.8 (35.7)	A (D)	0.5 (1.0)	12.7 (46.6)	B (D)	0.6 (1.1)	12.7 (46.6)	B (D)	0.6 (1.1)	12.7 (46.6)	B (D)	0.6 (1.1)	14.9 (57.7)	B (E)	0.6 (1.1)	12.7 (51.9)	B (D)	0.6 (1.1)
		Southbound	Through	161.1 (16.7)	F (B)	1.3 (0.8)	129.6 (22.0)	F (C)	1.3 (0.8)	174.0 (21.2)	F (C)	1.4 (0.9)	174.0 (21.2)	F (C)	1.4 (0.9)	174.0 (21.6)	F (C)	1.4 (0.9)	166.2 (20.9)	F (C)	1.3 (0.9)	166.2 (20.9)	F (C)	1.3 (0.9)
17	US 29 & Lorain Ave	Control Type		Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)		
		Overall		**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**	**- (-)**
		Eastbound	Left-Through-Right	>300 (>300)	F (F)	>2 (>2)	>300 (>300)	F (F)	>2 (>2)	>300 (13.1)	F (B)	>2 (0.10)	>300 (13.1)	F (B)	>2 (0.10)	>300 (13.1)	F (B)	>2 (0.10)	>300 (>300)	F (F)	>2 (>2)	>300 (12.4)	F (B)	>2 (0.09)
		Westbound	Left-Through-Right	>300 (>300)	F (F)	>2 (>2)	>300 (>300)	F (F)	>2 (>2)	>300 (20.6)	F (C)	>2 (0.20)	>300 (20.6)	F (C)	>2 (0.20)	>300 (20.6)	F (C)	>2 (0.20)	>300 (>300)	F (F)	>2 (>2)	>300 (15.8)	F (C)	>2 (0.15)
		Northbound	Left	>300 (20.4)	F (C)	>2 (0.17)	>300 (19.7)	F (C)	1.51 (0.16)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	0.0 (0.0)	A (A)	0.51 (1.00)	0.0 (0.0)	A (A)	0.48 (0.95)	0.0 (0.0)	A (A)	0.51 (1.00)	0.0 (0.0)	A (A)	0.51 (1.00)	0.0 (0.0)	A (A)	0.51 (1.00)	0.0 (0.0)	A (A)	0.51 (1.00)	0.0 (0.0)	A (A)	0.51 (1.00)
		Southbound	Left	21.7 (242.4)	C (F)	0.10 (0.70)	20.0 (173.9)	C (F)	0.08 (0.55)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	0.0 (0.0)	A (A)	1.08 (0.64)	0.0 (0.0)	A (A)	1.03 (0.61)	0.0 (0.0)	A (A)	1.08 (0.64)	0.0 (0.0)	A (A)	1.08 (0.64)	0.0 (0.0)	A (A)	1.08 (0.64)	0.0 (0.0)	A (A)	1.07 (0.65)	0.0 (0.0)	A (A)	1.07 (0.65)

Intersection LOS based on average delay for all vehicles

Detailed Intersection Capacity Analysis, continued

ID	Intersection	Approach	Movement	No Build			Managed Lane			Median Bus Lane Baseline			Median Bus Lane with Intersection Improvements			Median Bus Lane Optimized			Median Bus Lane with Cost Reductions			Median Bus Lane Hybrid		
				AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)		
				Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
18	US 29 & Timberwood Ave	Control Type		Stop (2 - Way)			Stop (2 - Way)			Signal			Signal			Signal			Stop (2 - Way)			Signal		
		Overall		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	29.0 (53.4)	C (D)	1.03 (1.04)	29.0 (53.4)	C (D)	1.03 (1.04)	29.0 (53.3)	C (D)	1.03 (1.04)	- (-)	- (-)	- (-)	37.0 (89.4)	D (F)	1.09 (1.15)
		Eastbound	Right	62.8 (19.1)	F (C)	0.40 (0.07)	52.4 (18.1)	F (C)	0.34 (0.06)	83.8 (81.9)	F (F)	0.0 (0.0)	83.8 (81.9)	F (F)	0.0 (0.0)	83.8 (81.9)	F (F)	0.0 (0.0)	64.7 (19.4)	F (C)	0.41 (0.07)	84.7 (80.8)	F (F)	0.0 (0.0)
		Westbound	Right	10.0 (17.1)	B (C)	0.12 (0.30)	10.0 (16.9)	B (C)	0.12 (0.29)	84.2 (84.0)	F (F)	0.1 (0.2)	84.2 (84.0)	F (F)	0.1 (0.2)	84.2 (84.0)	F (F)	0.1 (0.2)	9.6 (17.1)	A (C)	0.11 (0.30)	85.1 (85.2)	F (F)	0.1 (0.4)
		Northbound	Through	0.0 (0.0)	A (A)	0.41 (0.82)	0.0 (0.0)	A (A)	0.39 (0.78)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.0 (0.0)	A (A)	0.41 (0.82)	- (-)	- (-)	- (-)
			Through-Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	2.0 (80.9)	A (F)	0.6 (1.1)	2.0 (80.9)	A (F)	0.6 (1.1)	2.0 (80.9)	A (F)	0.6 (1.1)	- (-)	- (-)	- (-)	1.9 (141.0)	A (F)	0.5 (1.3)
			Right	0.0 (0.0)	A (A)	0.03 (0.04)	0.0 (0.0)	A (A)	0.03 (0.04)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.0 (0.0)	A (A)	0.03 (0.04)	- (-)	- (-)	- (-)
		Southbound	Left	21.1 (>300)	C (F)	0.25 (>2)	19.2 (>300)	C (F)	0.22 (>2)	81.7 (60.9)	F (E)	0.7 (0.7)	81.7 (60.9)	F (E)	0.7 (0.7)	81.7 (61.4)	F (E)	0.7 (0.7)	- (-)	- (-)	- (-)	79.9 (48.9)	E (D)	0.4 (0.5)
			Through-Right	0.0 (0.0)	A (A)	1.03 (0.58)	0.0 (0.0)	A (A)	0.98 (0.55)	38.8 (6.8)	D (A)	1.0 (0.6)	38.8 (6.8)	D (A)	1.0 (0.6)	38.8 (6.7)	D (A)	1.0 (0.6)	0.0 (0.0)	A (A)	1.04 (0.59)	51.6 (9.9)	D (A)	1.1 (0.6)
19	US 29 & MD 193 Westbound	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		45.2 (51.4)	D (D)	1.04 (1.04)	32.0 (41.1)	C (D)	0.99 (0.99)	228.6 (114.8)	F (F)	1.30 (1.24)	228.6 (114.8)	F (F)	1.30 (1.24)	228.6 (114.8)	F (F)	1.30 (1.24)	231.3 (57.6)	F (E)	1.30 (1.04)	233.5 (114.9)	F (F)	1.31 (1.24)
		Westbound	Left	91.9 (39.3)	F (D)	1.0 (0.4)	84.2 (39.9)	F (D)	0.9 (0.4)	43.6 (39.3)	D (D)	0.6 (0.4)	43.6 (39.3)	D (D)	0.6 (0.4)	43.6 (39.3)	D (D)	0.6 (0.4)	43.6 (39.3)	D (D)	0.6 (0.4)	43.6 (39.3)	D (D)	0.6 (0.4)
			Through	87.7 (56.5)	F (E)	1.0 (0.9)	79.0 (55.1)	E (E)	1.0 (0.8)	45.1 (56.5)	D (E)	0.7 (0.9)	45.1 (56.5)	D (E)	0.7 (0.9)	45.1 (56.5)	D (E)	0.7 (0.9)	45.1 (56.5)	D (E)	0.7 (0.9)	45.1 (56.6)	D (E)	0.7 (0.9)
			Right	43.3 (48.5)	D (D)	0.2 (0.6)	45.7 (48.2)	D (D)	0.2 (0.5)	25.1 (48.5)	C (D)	0.1 (0.6)	25.1 (48.5)	C (D)	0.1 (0.6)	25.1 (48.5)	C (D)	0.1 (0.6)	25.0 (48.5)	C (D)	0.1 (0.6)	25.1 (48.5)	C (D)	0.1 (0.6)
		Northbound	Through	4.5 (50.9)	A (D)	0.4 (1.1)	4.5 (31.9)	A (C)	0.4 (1.0)	9.2 (182.3)	A (F)	0.7 (1.4)	9.2 (182.3)	A (F)	0.7 (1.4)	9.2 (182.3)	A (F)	0.7 (1.4)	7.3 (50.9)	A (D)	0.5 (1.1)	9.2 (182.3)	A (F)	0.7 (1.4)
		Southbound	Through-Right	45.8 (50.0)	D (D)	1.1 (0.8)	24.2 (45.4)	C (D)	1.0 (0.7)	Err >300 (61.8)	F (E)	1.8 (1.0)	Err >300 (61.8)	F (E)	1.8 (1.0)	Err >300 (61.8)	F (E)	1.8 (1.0)	Err >300 (71.3)	F (E)	1.8 (1.0)	Err >300 (63.2)	F (E)	1.8 (1.0)
20	US 29 & MD 193 Eastbound	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		60.2 (37.0)	E (D)	1.15 (0.98)	46.2 (31.4)	D (C)	1.09 (0.93)	175.0 (87.2)	F (F)	1.37 (1.15)	175.0 (87.2)	F (F)	1.37 (1.15)	175.0 (87.2)	F (F)	1.37 (1.15)	174.5 (38.3)	F (D)	1.38 (1.00)	175.2 (88.0)	F (F)	1.38 (1.16)
		Eastbound	Left	74.0 (65.8)	E (E)	0.7 (0.8)	72.5 (63.7)	E (E)	0.6 (0.7)	52.1 (65.8)	D (E)	0.4 (0.8)	52.1 (65.8)	D (E)	0.4 (0.8)	52.1 (65.8)	D (E)	0.4 (0.8)	52.9 (66.8)	D (E)	0.4 (0.8)	52.9 (66.8)	D (E)	0.4 (0.8)
			Through	197.5 (71.5)	F (E)	1.3 (0.9)	173.0 (67.7)	F (E)	1.2 (0.9)	63.8 (71.5)	E (E)	0.8 (0.9)	63.8 (71.5)	E (E)	0.8 (0.9)	63.8 (71.5)	E (E)	0.8 (0.9)	66.3 (76.0)	E (E)	0.9 (0.9)	66.3 (76.0)	E (E)	0.9 (0.9)
			Right	86.7 (54.1)	F (D)	0.8 (0.4)	83.1 (53.9)	F (D)	0.7 (0.4)	56.8 (54.1)	E (D)	0.5 (0.4)	56.8 (54.1)	E (D)	0.5 (0.4)	56.8 (54.1)	E (D)	0.5 (0.4)	57.5 (55.4)	E (E)	0.5 (0.4)	57.5 (55.4)	E (E)	0.5 (0.4)
		Northbound	Through	8.8 (41.3)	A (D)	0.4 (1.0)	8.8 (30.1)	A (C)	0.4 (1.0)	26.7 (159.5)	C (F)	0.7 (1.3)	26.7 (159.5)	C (F)	0.7 (1.3)	26.7 (159.5)	C (F)	0.7 (1.3)	23.9 (41.3)	C (D)	0.6 (1.0)	26.8 (159.5)	C (F)	0.7 (1.3)
			Right	3.9 (10.7)	A (B)	0.1 (0.4)	3.8 (9.4)	A (A)	0.1 (0.3)	15.0 (15.3)	B (B)	0.1 (0.4)	15.0 (15.3)	B (B)	0.1 (0.4)	15.0 (15.3)	B (B)	0.1 (0.4)	13.6 (10.7)	B (B)	0.1 (0.4)	15.0 (15.3)	B (B)	0.1 (0.4)
		Southbound	Through	39.4 (5.5)	D (A)	1.1 (0.6)	21.4 (5.4)	C (A)	1.0 (0.6)	283.8 (6.2)	F (A)	1.6 (0.8)	283.8 (6.2)	F (A)	1.6 (0.8)	283.8 (6.2)	F (A)	1.6 (0.8)	284.3 (6.2)	F (A)	1.6 (0.8)	284.4 (6.2)	F (A)	1.6 (0.8)
21	US 29 & Lanark Way	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		68.1 (19.0)	E (B)	0.98 (0.76)	51.9 (17.3)	D (B)	0.94 (0.72)	189.4 (58.9)	F (E)	1.20 (0.95)	189.4 (58.9)	F (E)	1.20 (0.95)	189.4 (58.9)	F (E)	1.20 (0.95)	188.9 (20.6)	F (C)	1.19 (0.76)	189.4 (58.8)	F (E)	1.20 (0.95)
		Eastbound	Left	63.0 (59.9)	E (E)	0.3 (0.2)	62.6 (59.7)	E (E)	0.3 (0.2)	59.1 (59.9)	E (E)	0.2 (0.2)	59.1 (59.9)	E (E)	0.2 (0.2)	59.1 (59.9)	E (E)	0.2 (0.2)	59.1 (59.9)	E (E)	0.2 (0.2)	59.1 (59.9)	E (E)	0.2 (0.2)
		Northbound	Left	Err >300 (94.7)	F (F)	1.2 (0.7)	293.6 (93.3)	F (F)	1.2 (0.7)	109.6 (94.7)	F (F)	0.7 (0.7)	109.6 (94.7)	F (F)	0.7 (0.7)	109.6 (94.7)	F (F)	0.7 (0.7)	109.6 (94.7)	F (F)	0.7 (0.7)	109.6 (94.7)	F (F)	0.7 (0.7)
			Through	10.0 (21.9)	B (C)	0.4 (0.9)	9.8 (19.6)	A (B)	0.4 (0.9)	12.7 (88.1)	B (F)	0.6 (1.1)	12.7 (88.1)	B (F)	0.6 (1.1)	12.7 (88.1)	B (F)	0.6 (1.1)	10.9 (21.9)	B (C)	0.4 (0.9)	12.7 (88.1)	B (F)	0.6 (1.1)
		Southbound	Through-Right	88.8 (9.5)	F (A)	1.2 (0.7)	65.9 (8.8)	E (A)	1.1 (0.7)	264.2 (14.0)	F (B)	1.6 (0.9)	264.2 (14.0)	F (B)	1.6 (0.9)	264.2 (14.0)	F (B)	1.6 (0.9)	264.2 (13.8)	F (B)	1.6 (0.9)	264.1 (13.8)	F (B)	1.6 (0.9)
22	US 29 & Hastings Dr	Control Type		Signal			Stop (2 - Way)			Signal			Signal			Signal			Signal			Signal		
		Overall		7.1 (51.3)	A (D)	0.83 (1.06)	- (-)	- (-)	- (-)	11.1 (66.2)	B (E)	0.85 (1.07)	11.1 (66.2)	B (E)	0.85 (1.07)	11.0 (66.2)	B (E)	0.85 (1.07)	11.1 (66.2)	B (E)	0.85 (1.07)	11.1 (66.2)	B (E)	0.85 (1.07)
		Eastbound	Left-Through-Right	66.7 (61.0)	E (E)	0.0 (0.0)	>300 (14.4)	F (B)	>2 (0.04)	66.8 (61.2)	E (E)	0.0 (0.0)	66.8 (61.2)	E (E)	0.0 (0.0)	66.8 (61.2)	E (E)	0.0 (0.0)	66.8 (61.2)	E (E)	0.0 (0.0)	66.8 (61.2)	E (E)	0.0 (0.0)
		Westbound	Left-Through	68.4 (61.4)	E (E)	0.2 (0.0)	>300 (>300)	F (F)	>2 (>2)	68.5 (61.6)	E (E)	0.2 (0.1)	68.5 (61.6)	E (E)	0.2 (0.1)	68.5 (61.6)	E (E)	0.2 (0.1)	68.5 (61.6)	E (E)	0.2 (0.1)	68.5 (61.6)	E (E)	0.2 (0.1)
			Right	67.8 (70.8)	E (E)	0.1 (0.6)	16.7 (114.8)	C (F)	0.27 (0.94)	67.6 (70.7)	E (E)	0.1 (0.6)	67.6 (70.7)	E (E)	0.1 (0.6)	67.6 (70.7)	E (E)	0.1 (0.6)	67.6 (70.7)	E (E)	0.1 (0.6)	67.6 (70.7)	E (E)	0.1 (0.6)
		Northbound	Left	5.8 (1.3)	A (A)	0.1 (0.1)	50.9 (17.7)	F (C)	0.07 (0.02)	100.1 (80.0)	F (E)	0.4 (0.4)	100.1 (78.6)	F (E)	0.4 (0.4)	99.7 (80.0)	F (E)	0.4 (0.4)	100.1 (80.0)	F (E)	0.4 (0.4)	100.1 (80.0)	F (E)	0.4 (0.4)
			Through-Right	1.9 (75.0)	A (E)	0.5 (1.2)	0.0 (0.0)	A (A)	0.42 (0.87)	2.0 (97.2)	A (F)	0.5 (1.2)	2.0 (97.2)	A (F)	0.5 (1.2)	1.9 (97.2)	A (F)	0.5 (1.2)	2.0 (97.2)	A (F)	0.5 (1.2)	2.0 (97.2)	A (F)	0.5 (1.2)
		Southbound	Left	5.1 (55.0)	A (D)	0.4 (0.6)	18.9 (>300)	C (F)	0.22 (1.38)	71.8 (70.6)	E (E)	0.6 (0.6)	71.8 (70.6)	E (E)	0.6 (0.6)	71.8 (70.6)	E (E)	0.6 (0.6)	71.8 (70.6)	E (E)	0.6 (0.6)	71.8 (70.6)	E (E)	0.6 (0.6)
			Through-Right	7.4 (4.6)	A (A)	0.8 (0.5)	0.0 (0.0)	A (A)	0.77 (0.45)	12.2 (6.8)	B (A)	0.9 (0.6)	12.2 (6.8)	B (A)	0.9 (0.6)	12.2 (6.8)	B (A)	0.9 (0.6)	12.2 (6.8)	B (A)	0.9 (0.6)	12.2 (6.8)	B (A)	0.9 (0.6)
23	US 29 & Franklin Ave	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		16.7 (80.2)	B (F)	0.90 (1.09)	17.8 (59.5)	B (E)	0.86 (1.04)	21.1 (87.9)	C (F)	0.90 (1.12)	21.2 (88.1)	C (F)	0.90 (1.12)	20.9 (88.3)	C (F)	0.90 (1.12)	21.1 (87.8)	C (F)	0.90 (1.12)	21.1 (87.9)	C (F)	0.90 (1.12)
		Westbound	Left	80.1 (68.3)	F (E)	0.9 (0.7)	75.7 (68.6)	E (E)	0.9 (0.7)	62.6 (68.3)	E (E)	0.8 (0.7)	62.6 (68.3)	E (E)	0.8 (0.7)	62.6 (68.3)	E (E)	0.8 (0.7)	62.6 (68.3)	E (E)	0.8 (0.7)	62.6 (68.3)	E (E)	0.8 (0.7)
		Northbound	Through-Right	3.4 (117.9)	A (F)	0.6 (1.2)	4.6 (84.1)	A (F)	0.5 (1.2)	9.2 (129.4)	A (F)	0.6 (1.3)	9.6 (129.8)	A (F)	0.6 (1.3)	8.6 (130.2)	A (F)	0.6 (1.3)	9.2 (129.4)	A (F)	0.6 (1.3)	9.2 (129.4)	A (F)	0.6 (1.3)
		Southbound	Left	10.9 (66.9)	B (E)	0.4 (0.8)	9.5 (69.1)	A (E)	0.3 (0.8)	64.6 (84.9)	E (F)	0.6 (0.9)	64.6 (84.9)	E (F)	0.6 (0.9)	64.6 (84.9)	E (F)	0.6 (0.9)	64.6 (84.9)	E (F)	0.6 (0.9)	64.6 (84.9)	E (F)	0.6 (0.9)
			Through	13.0 (5.2)	B (A)	0.9 (0.4)	15.0 (4.8)	B (A)	0.8 (0.4)	19.5 (5.3)	B (A)	0.9 (0.4)	19.5 (5.3)	B (A)	0.9 (0.4)	19.5 (5.3)	B (A)	0.9 (0.4)	19.5 (5.3)	B (A)	0.9 (0.4)	19.5 (5.3)	B (A)	0.9 (0.4)
24	US 29 & Sligo Creek Parkway & St. Andrews Way	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		151.8 (196.1)	F (F)	1.34 (1.69)	86.6 (162.0)	F (F)	1.17 (1.31)	151.1 (196.7)	F (F)	1.34 (1.69)	143.5 (182.0)	F (F)	1.22 (1.38)	139.7 (184.3)	F (F)	1.22 (1.40)	151.1 (196.7)	F (F)	1.34 (1.69)	151.1 (196.7)	F (F)	1.34 (1.69)
		Eastbound	Left	292.3 (Err >300)	F (F)	1.3 (1.9)	54.2 (68.1)	D (E)	0.4 (0.7)	292.3 (Err >300)	F (F)	1.3 (1.9)	61.3 (75.3)	E (E)	0.5 (0.7)	74.4 (93.7)	E (F)	0.7 (0.8)	292.3 (Err >300)	F (F)	1.3 (1.9)	292.3 (Err >300)	F (F)	1.3 (1.9)
			Through	70.6 (65.0)	E (E)	0.8 (0.8)	61.3 (65.8)	E (E)	0.7 (0.8)	70.6 (65.0)	E (E)	0.8 (0.8)	73.1 (67.9)	E (E)	0.8 (0.8)	73.1 (65.0)	E (E)	0.8 (0.8)	70.6 (65.0)	E (E)	0.8 (0.8)	70.6 (65.0)	E (E)	0.8 (0.8)
			Right	65.9 (46.0)	E (D)	0.7 (0.1)	53.6 (47.0)	D (D)	0.4 (0.1)	65.9 (46.0)	E (D)	0.7 (0.1)	67.6 (46.8)	E (D)	0.7 (0.1)	67.6 (46.0)	E (D)	0.7 (0.1)	65.9 (46.0)	E (D)	0.7 (0.1)	65.9 (46.0)	E (D)	0.7 (0.1)
		Westbound	Left	59.0 (48.4)	E (D)	0.4 (0.2)	52.8 (49.2)	D (D)	0.3 (0.2)	59.0 (48.4)	E (D)	0.4 (0.2)	60.8 (49.5)	E (D)	0.4 (0.2)	60.8 (48.4)	E (D)	0.4 (0.2)	59.0 (48.4)	E (D)	0.4 (0.2)	59.0 (48.4)	E (D)	0.4 (0.2)
			Through	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	73.1 (65.0)	E (E)	0.8 (0.8)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Through-Right	153.5 (159.8)	F (F)	1.1 (1.2)	53.7 (54.7)	D (D)	0.5 (0.6)	153.5 (159.8)	F (F)	1.1 (1.2)	58.1 (55.1)	E (E)	0.6 (0.6)	- (-)	- (-)	- (-)	153.5 (159.8)	F (F)	1.1 (1.2)	153.5 (159.8)	F (F)	1.1 (1.2)
			Right-Right(2)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	50.6 (46.3)	D (D)	0.1 (0.1)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Northbound	Left	115.3 (166.9)	F (F)	0.9 (1.2)	97.8 (101.5)	F (F)	0.9 (1.0)	115.3 (166.9)	F (F)	0.9 (1.2)	114.9 (144.7)	F (F)	0.9 (1.2)	116.0 (178.3)	F (F)	0.9 (1.2)	115.3 (166.9)	F (F)	0.9 (1.2)	115.3 (166.9)	F (F)	0.9 (1.2)
			Through-Right	28.5 (Err >300)	C (F)	0.7 (1.6)	27.0 (266.9)	C (F)	0.6 (1.6)	28.5 (Err >300)	C (F)	0.7 (1.6)	28.0 (Err >300)	C (F)	0.7 (1.6)	29.1 (Err >300)	C (F)	0.7 (1.6)	28.5 (Err >300)	C (F)	0.7 (1.6)	28.5 (Err >300)	C (F)	0.7 (1.6)
		Southbound	Left	37.7 (87.7)	D (F)	0.7 (0.9)	30.7 (71.3)	C (E)	0.6 (0.8)	39.2 (89.3)	D (F)	0.7 (0.9)	38.3 (79.9)	D (E)	0.7 (0.9)	40.8 (94.6)	D (F)	0.7 (0.9)	39.2 (89.3)	D (F)	0.7 (0.9)	39.2 (89.3)	D (F)	0.7 (0.9)
			Through-Right	225.3 (31.1)	F (C)	1.4 (0.8)	124.5 (32.0)	F (C)	1.2 (0.8)	223.9 (33.2)	F (C)	1.4 (0.8)	223.9 (33.2)	F (C)	1.4 (0.8)	215.1 (33.2)	F (C)	1.4 (0.8)	223.9 (33.2)	F (C)	1.4 (0.8)	223.9 (33.2)	F (C)	1.4 (0.8)
		Southeast	Left	111.4 (76.2)	F (E)	0.8 (0.5)	101.3 (75.8)	F (E)	0.7 (0.4)	111.4 (76.2)	F (E)	0.8 (0.5)	111.4 (76.2)	F (E)	0.8 (0.5)	126.9 (82.3)	F (F)	0.8 (0.6)	111.4 (76.2)	F (E)	0.8 (0.5)	111.4 (76.2)	F (E)	0.8 (0.5)
			Right	68.7 (69.7)	E (E)	0.0 (0.0)	68.5 (69.7)	E (E)	0.0 (0.0)	68.7 (69.7)	E (E)	0.0 (0.0)	68.6 (69.7)	E (E)	0.0 (0.0)	66.9 (69.3)	E (E)	0.0 (0.0)	68.7 (69.7)	E (E)	0.0 (0.0)	68.7 (69.7)	E (E)	0.0 (0.0)
25	US 29 & Church Entrance	Control Type		Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)		
		Overall		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Eastbound	Left	12.8 (9.9)	B (A)	0.05 (0.02)	14.2 (9.7)	B (A)	0.05 (0.01)	12.8 (9.9)	B (A)	0.05 (0.02)	12.8 (9.9)	B (A)	0.05 (0.02)	12.9 (9.9)	B (A)	0.05 (0.02)	12.8 (9.9)	B (A)	0.05 (0.02)	12.8 (9.9)	B (A)	0.05 (0.02)
		Northbound	Left-Through	95.4 (1.0)	A (A)	0.68 (0.66)	29.7 (0.9)	A (A)	0.65 (0.63)	95.4 (1.0)	A (A)	0.68 (0.66)	95.4 (1.0)	A (A)	0.68 (0.66)	95.4 (1.0)	A (A)	0.68 (0.66)	95.4 (1.0)	A (A)	0.68 (0.66)	95.4 (1.0)	A (A)	0.68 (0.66)
		Southbound	Through-Right	0.0 (0.0)	A (A)	0.95 (0.44)	0.0 (0.0)	A (A)	0.90 (0.41)	0.0 (0.0)	A (A)	0.95 (0.44)	0.0 (0.0)	A (A)	0.95 (0.44)	0.0 (0.0)	A (A)	0.95 (0.44)	0.0 (0.0)	A (A)	0.95 (0.44)	0.0 (0.0)	A (A)	0.95 (0.44)
26	US 29 & Dale Dr	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		158.0 (200.8)	F (F)	1.32 (1.33)	135.0 (175.6)	F (F)	1.25 (1.26)	158.0 (201.1)	F (F)	1.32 (1.33)	158.0 (201.1)	F (F)	1.32 (1.33)	239.4 (276.5)	F (F)	1.58 (1.48)	239.4 (276.5)	F (F)	1.58 (1.48)	239.4 (201.1)	F (F)	1.58 (1.33)
		Eastbound	Left	54.0 (107.4)	D (F)	0.7 (1.0)	51.3 (92.8)	D (F)	0.7 (1.0)	54.0 (107.4)	D (F)	0.7 (1.0)	54.0 (107.4)	D (F)	0.7 (1.0)	54.0 (107.4)	D (F)	0.7 (1.0)	54.0 (107.4)	D (F)	0.7 (1.0)	54.0 (107.4)	D (F)	0.7 (1.0)
			Through-Right	49.6 (51.7)	D (D)	0.3 (0.5)	50.1 (51.9)	D (D)	0.3 (0.5)	49.6 (51.7)	D (D)	0.3 (0.5)	49.6 (51.7)	D (D)	0.3 (0.5)	49.6 (51.7)	D (D)	0.3 (0.5)	49.6 (51.7)	D (D)	0.3 (0.5)	49.6 (51.7)	D (D)	0.3 (0.5)
		Westbound	Left	47.5 (52.2)	D (D)	0.1 (0.1)	48.0 (52.7)	D (D)	0.1 (0.1)	47.5 (52.2)	D (D)	0.1 (0.1)	47.5 (52.2)	D (D)	0.1 (0.1)	47.5 (52.2)	D (D)	0.1 (0.1)	47.5 (52.2)	D (D)	0.1 (0.1)	47.5 (52.2)	D (D)	0.1 (0.1)
			Through	65.1 (63.8)	E (E)	0.7 (0.6)	65.0 (63.6)	E (E)	0.7 (0.6)	65.1 (63.8)	E (E)	0.7 (0.6)	65.1 (63.8)	E (E)	0.7 (0.6)	65.1 (63.8)	E (E)	0.7 (0.6)	65.1 (63.8)	E (E)	0.7 (0.6)	65.1 (63.8)	E (E)	0.7 (0.6)
			Right	68.4 (118.3)	E (F)	0.8 (1.1)	66.3 (100.9)	E (F)	0.8 (1.0)	68.4 (118.3)	E (F)	0.8 (1.1)	68.4 (118.3)	E (F)	0.8 (1.1)	68.4 (118.3)	E (F)	0.8 (1.1)	68.4 (118.3)	E (F)	0.8 (1.1)	68.4 (118.3)	E (F)	0.8 (1.1)
		Northbound	Left-Through-Right	27.8 (213.5)	C (F)	0.7 (1.4)	25.8 (185.1)	C (F)	0.6 (1.3)	27.8 (213.5)	C (F)	0.7 (1.4)	27.8 (213.5)	C (F)	0.7 (1.4)	27.8 (Err >300)	C (F)	0.7 (1.7)	27.8 (Err >300)	C (F)	0.7 (1.7)	27.8 (213.5)	C (F)	0.7 (1.4)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (27.7)	- (C)	- (0.1)	- (27.7)	- (-)	- (-)	- (-)	- (-)	- (-)
		Southbound	Left-Through	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	Err >300 (251.6)	F (F)	0.0 (1.4)	Err >300 (251.6)	F (F)	0.0 (1.4)	Err >300 (251.6)	F (F)	0.0 (1.4)
			Left-Through-Right	220.0 (250.7)	F (F)	0.0 (1.4)	185.6 (221.4)	F (F)	0.0 (1.3)	220.0 (251.6)	F (F)	0.0 (1.4)	220.0 (251.6)	F (F)	0.0 (1.4)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	1.3 (-)	A (-)	0.4 (-)	1.3 (-)	A (-)	0.4 (-)	1.3 (-)	A (-)	0.4 (-)

Intersection LOS based on average delay for all vehicles

Detailed Intersection Capacity Analysis, continued

ID	Intersection	Approach	Movement	No Build			Managed Lane			Median Bus Lane Baseline			Median Bus Lane with Intersection Improvements			Median Bus Lane Optimized			Median Bus Lane with Cost Reductions			Median Bus Lane Hybrid		
				AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)			AM (PM)		
				Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
28	US 29 & S Noyes Dr/Private Dr	Control Type		Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)			Stop (2 - Way)		
		Overall		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Eastbound	Left-Through-Right	17.0 (16.4)	C (C)	0.02 (0.04)	16.3 (15.7)	C (C)	0.02 (0.03)	17.0 (16.4)	C (C)	0.02 (0.04)	17.0 (16.4)	C (C)	0.02 (0.04)	22.5 (16.4)	C (C)	0.03 (0.04)	22.5 (16.4)	C (C)	0.03 (0.04)	22.5 (16.4)	C (C)	0.03 (0.04)
		Westbound	Left-Through-Right	119.3 (10.4)	F (B)	0.37 (0.02)	85.9 (10.1)	F (B)	0.28 (0.02)	119.3 (10.4)	F (B)	0.37 (0.02)	119.3 (10.4)	F (B)	0.37 (0.02)	>300 (10.6)	F (B)	0.74 (0.02)	>300 (10.6)	F (B)	0.74 (0.02)	>300 (10.4)	F (B)	0.74 (0.02)
		Northbound	Left-Through-Right	5.9 (1.3)	A (A)	0.38 (0.60)	4.4 (1.2)	A (A)	0.36 (0.58)	5.9 (1.3)	A (A)	0.38 (0.60)	5.9 (1.3)	A (A)	0.38 (0.60)	5.9 (1.4)	A (A)	0.38 (0.72)	5.9 (1.4)	A (A)	0.38 (0.72)	5.9 (1.3)	A (A)	0.38 (0.60)
		Southbound	Left-Through	0.7 (2.7)	A (A)	0.63 (0.46)	0.7 (2.2)	A (A)	0.60 (0.44)	0.7 (2.7)	A (A)	0.63 (0.46)	0.7 (2.7)	A (A)	0.63 (0.46)	0.7 (9.8)	A (A)	0.75 (0.46)	0.7 (9.8)	A (A)	0.75 (0.46)	0.7 (2.7)	A (A)	0.75 (0.46)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.0 (-)	A (-)	0.03 (-)	0.0 (-)	A (-)	0.03 (-)	0.0 (-)	A (-)	0.03 (-)
29	US 29 & Spring St	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		150.9 (139.8)	F (F)	1.10 (1.42)	126.7 (121.7)	F (F)	1.04 (1.34)	150.9 (139.8)	F (F)	1.10 (1.42)	150.9 (139.8)	F (F)	1.10 (1.42)	167.3 (179.9)	F (F)	1.19 (1.44)	167.3 (179.9)	F (F)	1.19 (1.44)	167.3 (138.3)	F (F)	1.19 (1.42)
		Eastbound	Left	46.5 (65.8)	D (E)	0.3 (0.9)	46.3 (61.1)	D (E)	0.3 (0.9)	46.5 (65.8)	D (E)	0.3 (0.9)	46.5 (65.8)	D (E)	0.3 (0.9)	46.5 (65.8)	D (E)	0.3 (0.9)	46.5 (65.8)	D (E)	0.3 (0.9)	46.5 (65.8)	D (E)	0.3 (0.9)
			Through-Right	51.1 (51.9)	D (D)	0.5 (0.6)	50.5 (50.7)	D (D)	0.4 (0.6)	51.1 (51.9)	D (D)	0.5 (0.6)	51.1 (51.9)	D (D)	0.5 (0.6)	51.1 (51.9)	D (D)	0.5 (0.6)	51.1 (51.9)	D (D)	0.5 (0.6)	51.1 (51.9)	D (D)	0.5 (0.6)
		Westbound	Left	59.7 (64.7)	E (E)	0.4 (0.5)	59.2 (63.8)	E (E)	0.3 (0.5)	59.7 (64.7)	E (E)	0.4 (0.5)	59.7 (64.7)	E (E)	0.4 (0.5)	59.7 (64.7)	E (E)	0.4 (0.5)	59.7 (64.7)	E (E)	0.4 (0.5)	59.7 (64.7)	E (E)	0.4 (0.5)
			Through	89.1 (85.1)	F (F)	0.8 (0.8)	84.5 (81.0)	F (F)	0.8 (0.8)	89.1 (85.1)	F (F)	0.8 (0.8)	89.1 (85.1)	F (F)	0.8 (0.8)	89.1 (85.1)	F (F)	0.8 (0.8)	89.1 (85.1)	F (F)	0.8 (0.8)	89.1 (85.1)	F (F)	0.8 (0.8)
			Right	39.0 (121.1)	D (F)	0.3 (1.1)	38.7 (108.1)	D (F)	0.3 (1.0)	39.0 (121.1)	D (F)	0.3 (1.1)	39.0 (121.1)	D (F)	0.3 (1.1)	39.0 (121.1)	D (F)	0.3 (1.1)	39.0 (121.1)	D (F)	0.3 (1.1)	39.0 (121.1)	D (F)	0.3 (1.1)
		Northbound	Left-Through-Right	91.5 (30.4)	F (C)	1.1 (1.0)	71.6 (23.9)	E (C)	1.0 (0.9)	91.5 (30.4)	F (C)	1.1 (1.0)	91.5 (30.4)	F (C)	1.1 (1.0)	92.4 (121.1)	F (F)	1.1 (1.2)	92.4 (121.1)	F (F)	1.1 (1.2)	92.4 (26.6)	F (C)	1.1 (1.0)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (24.7)	- (C)	- (0.2)	- (24.7)	- (C)	- (0.2)	- (-)	- (-)	- (-)
		Southbound	Left-Through	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	252.4 (Err >300	F (F)	1.5 (1.7)	252.4 (Err >300	F (F)	1.5 (1.7)	252.4 (Err >300	F (F)	1.5 (1.7)
			Left-Through-Right	189.2 (Err >300	F (F)	1.4 (1.7)	158.9 (Err >300	F (F)	1.3 (1.6)	189.2 (Err >300	F (F)	1.4 (1.7)	189.2 (Err >300	F (F)	1.4 (1.7)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	25.8 (-)	C (-)	0.7 (-)	25.8 (-)	C (-)	0.7 (-)	25.8 (-)	C (-)	0.7 (-)
30	US 29 & Fenton St.	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		18.3 (70.9)	B (E)	0.90 (1.23)	15.6 (54.5)	B (D)	0.84 (1.15)	18.3 (70.9)	B (E)	0.90 (1.23)	18.3 (70.9)	B (E)	0.90 (1.23)	54.1 (73.0)	D (E)	1.08 (1.23)	54.1 (73.0)	D (E)	1.08 (1.23)	54.1 (70.2)	D (E)	1.08 (1.23)
		Eastbound	Left-Through	50.7 (123.2)	D (F)	0.4 (1.0)	49.2 (102.4)	D (F)	0.4 (1.0)	50.7 (123.2)	D (F)	0.4 (1.0)	50.7 (123.2)	D (F)	0.4 (1.0)	50.7 (123.2)	D (F)	0.4 (1.0)	50.7 (123.2)	D (F)	0.4 (1.0)	50.7 (123.2)	D (F)	0.4 (1.0)
			Right	44.0 (44.7)	D (D)	0.1 (0.1)	44.0 (44.6)	D (D)	0.1 (0.1)	44.0 (44.7)	D (D)	0.1 (0.1)	44.0 (44.7)	D (D)	0.1 (0.1)	44.0 (44.7)	D (D)	0.1 (0.1)	44.0 (44.7)	D (D)	0.1 (0.1)	44.0 (44.7)	D (D)	0.1 (0.1)
		Westbound	Left-Through	78.4 (114.6)	E (F)	0.9 (1.0)	71.4 (92.0)	E (F)	0.8 (0.9)	78.4 (114.6)	E (F)	0.9 (1.0)	78.4 (114.6)	E (F)	0.9 (1.0)	78.4 (114.6)	E (F)	0.9 (1.0)	78.4 (114.6)	E (F)	0.9 (1.0)	78.4 (114.6)	E (F)	0.9 (1.0)
			Right	49.4 (51.9)	D (D)	0.3 (0.4)	49.0 (51.3)	D (D)	0.3 (0.4)	49.4 (51.9)	D (D)	0.3 (0.4)	49.4 (51.9)	D (D)	0.3 (0.4)	49.4 (51.9)	D (D)	0.3 (0.4)	49.4 (51.9)	D (D)	0.3 (0.4)	49.4 (51.9)	D (D)	0.3 (0.4)
		Northbound	Left-Through-Right	25.7 (8.4)	C (A)	0.9 (0.7)	21.6 (8.0)	C (A)	0.9 (0.7)	25.7 (8.4)	C (A)	0.9 (0.7)	25.7 (8.4)	C (A)	0.9 (0.7)	23.7 (12.6)	C (B)	0.9 (0.9)	23.7 (12.6)	C (B)	0.9 (0.9)	23.7 (6.9)	C (A)	0.9 (0.7)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (6.8)	- (A)	- (0.2)	- (6.8)	- (A)	- (0.2)	- (-)	- (-)	- (-)
		Southbound	Left-Through	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	65.8 (147.3)	E (F)	1.1 (1.3)	65.8 (147.3)	E (F)	1.1 (1.3)	65.8 (146.5)	E (F)	1.1 (1.3)
			Left-Through-Right	6.8 (147.1)	A (F)	0.9 (1.3)	5.0 (108.2)	A (F)	0.8 (1.2)	6.8 (147.1)	A (F)	0.9 (1.3)	6.8 (147.1)	A (F)	0.9 (1.3)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	0.8 (-)	A (-)	0.1 (-)	0.8 (-)	A (-)	0.1 (-)	0.8 (-)	A (-)	0.1 (-)
31	US 29 & Georgia Ave	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		50.4 (46.0)	D (D)	1.26 (0.98)	44.4 (40.4)	D (D)	1.19 (0.93)	50.4 (46.0)	D (D)	1.26 (0.98)	50.4 (46.0)	D (D)	1.26 (0.98)	56.9 (46.0)	E (D)	1.26 (0.98)	56.9 (46.0)	E (D)	1.26 (0.98)	56.9 (46.0)	E (D)	1.26 (0.98)
		Eastbound	Through-Right	37.2 (32.5)	D (C)	0.8 (0.6)	36.0 (31.9)	D (C)	0.7 (0.6)	37.2 (32.5)	D (C)	0.8 (0.6)	37.2 (32.5)	D (C)	0.8 (0.6)	37.2 (32.5)	D (C)	0.8 (0.6)	37.2 (32.5)	D (C)	0.8 (0.6)	37.2 (32.5)	D (C)	0.8 (0.6)
		Westbound	Through	5.3 (7.4)	A (A)	0.5 (0.6)	5.3 (7.0)	A (A)	0.5 (0.6)	5.3 (7.4)	A (A)	0.5 (0.6)	5.3 (7.4)	A (A)	0.5 (0.6)	5.3 (7.4)	A (A)	0.5 (0.6)	5.3 (7.4)	A (A)	0.5 (0.6)	5.3 (7.4)	A (A)	0.5 (0.6)
			Right	45.1 (69.2)	D (E)	0.3 (0.9)	43.4 (62.0)	D (E)	0.3 (0.9)	45.1 (69.2)	D (E)	0.3 (0.9)	45.1 (69.2)	D (E)	0.3 (0.9)	45.1 (69.2)	D (E)	0.3 (0.9)	45.1 (69.2)	D (E)	0.3 (0.9)	45.1 (69.2)	D (E)	0.3 (0.9)
		Northbound	Through-Right	59.0 (94.1)	E (F)	0.9 (1.1)	56.5 (77.8)	E (E)	0.8 (1.0)	59.0 (94.1)	E (F)	0.9 (1.1)	59.0 (94.1)	E (F)	0.9 (1.1)	59.0 (94.1)	E (F)	0.9 (1.1)	59.0 (94.1)	E (F)	0.9 (1.1)	59.0 (94.1)	E (F)	0.9 (1.1)
		Southbound	Left	231.2 (43.2)	F (D)	1.4 (0.9)	191.5 (40.6)	F (D)	1.4 (0.9)	231.2 (43.2)	F (D)	1.4 (0.9)	231.2 (43.2)	F (D)	1.4 (0.9)	231.8 (43.2)	F (D)	1.4 (0.9)	231.8 (43.2)	F (D)	1.4 (0.9)	231.8 (43.2)	F (D)	1.4 (0.9)
			Through	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	34.0 (17.2)	C (B)	1.0 (0.6)	34.0 (17.2)	C (B)	1.0 (0.6)	34.0 (17.2)	C (B)	1.0 (0.6)
			Through-Right	11.9 (17.2)	B (B)	0.8 (0.6)	9.6 (16.9)	A (B)	0.7 (0.6)	11.9 (17.2)	B (B)	0.8 (0.6)	11.9 (17.2)	B (B)	0.8 (0.6)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	13.5 (-)	B (-)	0.2 (-)	13.5 (-)	B (-)	0.2 (-)	13.5 (-)	B (-)	0.2 (-)
32	US 29 & 2nd Avenue/Wayne Ave.	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		55.8 (44.8)	E (D)	0.63 (0.66)	49.2 (42.2)	D (D)	0.60 (0.63)	55.8 (44.8)	E (D)	0.63 (0.66)	55.8 (44.8)	E (D)	0.63 (0.66)	121.8 (44.8)	F (D)	0.76 (0.66)	121.8 (44.8)	F (D)	0.76 (0.66)	121.8 (44.8)	F (D)	0.76 (0.66)
		Eastbound	Left	39.1 (39.2)	D (D)	0.2 (0.2)	38.9 (39.1)	D (D)	0.2 (0.2)	39.1 (39.2)	D (D)	0.2 (0.2)	39.1 (39.2)	D (D)	0.2 (0.2)	39.1 (39.2)	D (D)	0.2 (0.2)	39.1 (39.2)	D (D)	0.2 (0.2)	39.1 (39.2)	D (D)	0.2 (0.2)
			Through	37.9 (38.8)	D (D)	0.1 (0.1)	37.9 (38.7)	D (D)	0.1 (0.1)	37.9 (38.8)	D (D)	0.1 (0.1)	37.9 (38.8)	D (D)	0.1 (0.1)	37.9 (38.8)	D (D)	0.1 (0.1)	37.9 (38.8)	D (D)	0.1 (0.1)	37.9 (38.8)	D (D)	0.1 (0.1)
			Right	40.7 (41.8)	D (D)	0.3 (0.3)	40.5 (41.6)	D (D)	0.3 (0.3)	40.7 (41.8)	D (D)	0.3 (0.3)	40.7 (41.8)	D (D)	0.3 (0.3)	40.7 (41.8)	D (D)	0.3 (0.3)	40.7 (41.8)	D (D)	0.3 (0.3)	40.7 (41.8)	D (D)	0.3 (0.3)
		Westbound	Left	36.9 (49.5)	D (D)	0.4 (0.6)	36.3 (48.3)	D (D)	0.3 (0.6)	36.9 (49.5)	D (D)	0.4 (0.6)	36.9 (49.5)	D (D)	0.4 (0.6)	36.9 (49.5)	D (D)	0.4 (0.6)	36.9 (49.5)	D (D)	0.4 (0.6)	36.9 (49.5)	D (D)	0.4 (0.6)
			Left-Through-Right	36.6 (48.6)	D (D)	0.4 (0.7)	36.1 (47.6)	D (D)	0.3 (0.6)	36.6 (48.6)	D (D)	0.4 (0.7)	36.6 (48.6)	D (D)	0.4 (0.7)	36.6 (48.6)	D (D)	0.4 (0.7)	36.6 (48.6)	D (D)	0.4 (0.7)	36.6 (48.6)	D (D)	0.4 (0.7)
		Northbound	Through	33.0 (49.3)	C (D)	0.5 (1.0)	32.7 (43.8)	C (D)	0.5 (0.9)	33.0 (49.3)	C (D)	0.5 (1.0)	33.0 (49.3)	C (D)	0.5 (1.0)	33.0 (49.3)	C (D)	0.5 (1.0)	33.0 (49.3)	C (D)	0.5 (1.0)	33.0 (49.3)	C (D)	0.5 (1.0)
			Right	19.7 (36.3)	B (D)	0.4 (0.7)	18.7 (33.8)	B (C)	0.4 (0.7)	19.7 (36.3)	B (D)	0.4 (0.7)	19.7 (36.3)	B (D)	0.4 (0.7)	19.7 (36.3)	B (D)	0.4 (0.7)	19.7 (36.3)	B (D)	0.4 (0.7)	19.7 (36.3)	B (D)	0.4 (0.7)
		Southbound	Left	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)	70.8 (70.8)	E (E)	0.2 (0.2)
			Through	78.8 (40.9)	E (D)	1.0 (0.6)	66.1 (40.1)	E (D)	1.0 (0.6)	78.8 (40.9)	E (D)	1.0 (0.6)	78.8 (40.9)	E (D)	1.0 (0.6)	220.1 (40.9)	F (D)	1.4 (0.6)	220.1 (40.9)	F (D)	1.4 (0.6)	220.1 (40.9)	F (D)	1.4 (0.6)
			Right	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	37.6 (-)	D (-)	0.3 (-)	37.6 (-)	D (-)	0.3 (-)	37.6 (-)	D (-)	0.3 (-)
33	US 29 & SSTC	Control Type		Signal			Signal			Signal			Signal			Signal			Signal			Signal		
		Overall		9.0 (11.1)	A (B)	0.52 (0.51)	8.6 (10.7)	A (B)	0.49 (0.49)	9.0 (11.1)	A (B)	0.52 (0.51)	9.0 (11.1)	A (B)	0.52 (0.51)	8.8 (11.1)	A (B)	0.52 (0.51)	8.8 (11.1)	A (B)	0.52 (0.51)	8.8 (11.1)	A (B)	0.52 (0.51)
		Westbound	Left	49.2 (48.9)	D (D)	0.2 (0.1)	49.1 (48.8)	D (D)	0.2 (0.1)	49.2 (48.9)	D (D)	0.2 (0.1)	49.2 (48.9)	D (D)	0.2 (0.1)	49.2 (48.9)	D (D)	0.2 (0.1)	49.2 (48.9)	D (D)	0.2 (0.1)	49.2 (48.9)	D (D)	0.2 (0.1)
			Right	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)	43.5 (43.4)	D (D)	0.1 (0.1)
		Northbound	Through-Right	12.8 (17.0)	B (B)	0.4 (0.6)	12.6 (16.3)	B (B)	0.4 (0.6)	12.8 (17.0)	B (B)	0.4 (0.6)	12.8 (17.0)	B (B)	0.4 (0.6)	12.8 (17.0)	B (B)	0.4 (0.6)	12.8 (17.0)	B (B)	0.4 (0.6)	12.8 (17.0)	B (B)	0.4 (0.6)
		Southbound	Left	3.8 (5.7)	A (A)	0.1 (0.3)	3.8 (3.9)	A (A)	0.1 (0.2)	3.8 (5.7)	A (A)	0.1 (0.3)	3.8 (5.7)	A (A)	0.1 (0.3)	3.8 (5.7)	A (A)	0.1 (0.3)	3.8 (5.7)	A (A)	0.1 (0.3)	3.8 (5.7)	A (A)	0.1 (0.3)
			Through	5.3 (1.8)	A (A)	0.6 (0.4)	4.8 (1.7)	A (A)	0.6 (0.4)	5.3 (1.8)	A (A)	0.6 (0.4)	5.3 (1.8)	A (A)	0.6 (0.4)	5.1 (1.8)	A (A)	0.6 (0.4)	5.1 (1.8)	A (A)	0.6 (0.4)	5.1 (1.8)	A (A)	0.6 (0.4)

Intersection LOS based on average delay for all vehicles

Appendix II: Travel Forecasting and Ridership

To:	Corey Pitts, Montgomery County Department of Transportation
From:	James Bunch, Paul Silberman, Mead & Hunt
Subject:	US 29 Mobility Study Additional Alternatives Travel Demand Forecasting
Date:	November 4, 2022

This memorandum summarizes the Travel Demand Forecasting for the US 29 Mobility Study Additional Alternatives (process and results). This effort built from the model/process developed for the original US 29 Mobility and Reliability Study carried out in 2019 (See: US 29 Mobility & Reliability Study Technical Report (MCDOT & Mead & Hunt, June 2020)). The original effort focused on adding detail (zone and network) to the Metropolitan Washington Council of Governments adopted models/networks and post mode choice traffic assignments required to provide the inputs for the corridor traffic operational analyses of study alternatives (No-Build, Median Bus Lane Baseline, and Managed Lane). It assumed that the transit, High Occupancy Vehicle (HOV), and other mode shares remained the same as found in the No-Build with the differences in alternatives being accounted for in the post-processing for the operational analyses.

For the additional analysis and forecasts, MCDOT requested that the forecasts and processes be updated to include:

- Forecasts for updated alternatives
- Incorporation of mode shift analysis in the model process and the shifts in mode shares between alternatives (ridership, person through-put…)
- Incorporation of the currently adopted regional long range plan networks and assumptions, including the approved BRT System for Montgomery County.

The updated travel forecasts therefore:

- Incorporated the adopted MWCOG Regional Model and networks at the start of the additional analysis (MWCOG 2.3.78 updated from MWCOG 2.3.70)
- Kept the land use assumptions used in the original US 29 Mobility Study for consistency of results (Round 9.1 cooperative forecasts within Montgomery County and Round 9.0 elsewhere versus Round 9.1a cooperative forecasts used in the MWCOG 2.3.78 model).
- Updated the No-Build alternative to include all permanent transit service changes since 2019 (e.g. Ride On 129 removed, MT203 rerouted, WMATA Z line adjustments…).
- Included the Montgomery County approved BRT system (CCT, Maryland 355, North Bethesda, Randolph Road, Viers Mill Road, and New Hampshire Avenue)
- Updated the BRT and Express transit travel times to reflect future congestion and differences between the alternatives as estimated in the detailed operational analysis.
- Carried out detailed Post Mode Choice Assignment network review, update, and assignments.

The sections that follow provide a brief process overview, a summary of the network changes and coding for each alternative, and highlights of the forecasting results.

1 Process Overview

1.1 Process Flow

For consistency with the original study, the overall travel demand forecasting process remained the same as that used previously and documented in the US 29 Mobility & Reliability Study Technical Report (MCDOT & Mead & Hunt, June 2020). The corridor/subarea forecasting is based upon the MWCOG Regional Model and adopted long range land use, networks, and other assumptions and is carried out at two levels (phases). First, the adopted regional model developed at the level of detail to support the regional constrained long range plan is utilized to obtain the person trip tables by purpose and mode (this includes trip generation, trip distribution, and mode split). Second, since the regional model does not include zone and network detail to capture local travel patterns, access locations, and operational characteristics (e.g. turn restrictions by time of day) a more detailed road network is created (zone splits, and additional network coding) and a post mode choice assignment is carried out (the Sub Area Model). This process is shown in Figure 1.

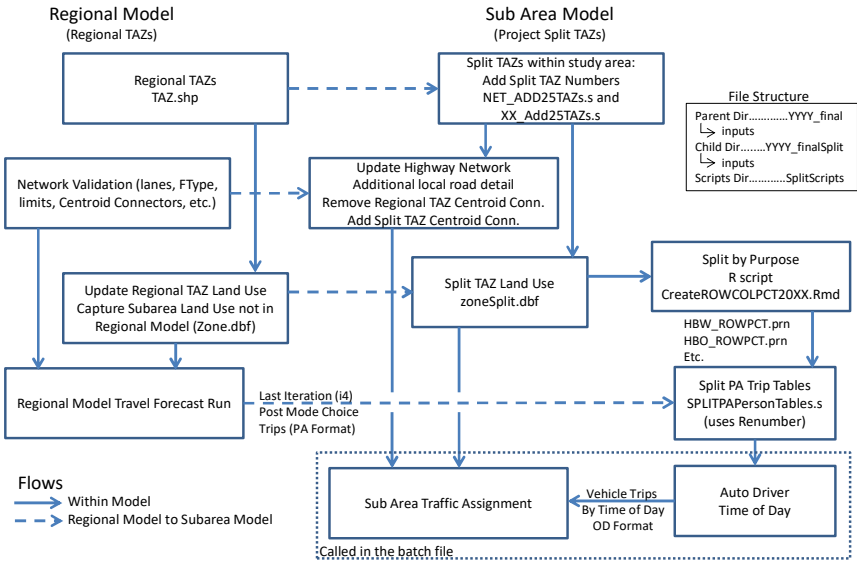


Figure 1 US 29 Corridor Study Travel Forecasting Process

The adopted MWCOG Travel Forecasting Model 2.3.70 along with its associated Regional Round 9.0 Cooperative land use forecasts were used as the foundation regional model for the initial study. At the time, the Round 9.1 land use forecasts for Montgomery County had been developed and therefore the land use within Montgomery County was updated to Round 9.1 values for the initial study's analysis and base model forecasts.

For the current US 29 Mobility Study Additional Alternatives analysis effort the base model used was updated to the MWCOG 2.3.78 and adopted networks. However, as discussed in the next section the original study's land use was used for consistency and comparability with the initial results. The updated model includes a number of significant enhancements from the previous version including a 2019 revalidation to 2014 conditions, updates to the HOT lane modeling, and the transit capacity restrictions within the CBD Core, Inclusion of the Montgomery County Adopted BRT Plan, and the State Highway HOT Lanes System, along with other additional network coding processes.

Also, the initial study used the same base model forecasts for the alternatives analyzed with adjustments made in post processing to capture shifts in HOV and transit use. As discussed later, this current effort carried out separate base model forecasts for each alternative considered. Note, that no predetermined mode split percentages or occupancy values are set, and the mode splits for transit, HOV, and Single Occupancy Vehicle (SOV) come from the MWCOG Base Model calculations based upon the characteristics of the alternatives and routes

that travelers see going from their origins to destinations. More details on the MWCOG 2.3.78 model can be found in the "User's Guide For the COG/TPB Travel Demand Forecasting Model, Version 2.3.78" (MWCOG, 2020).

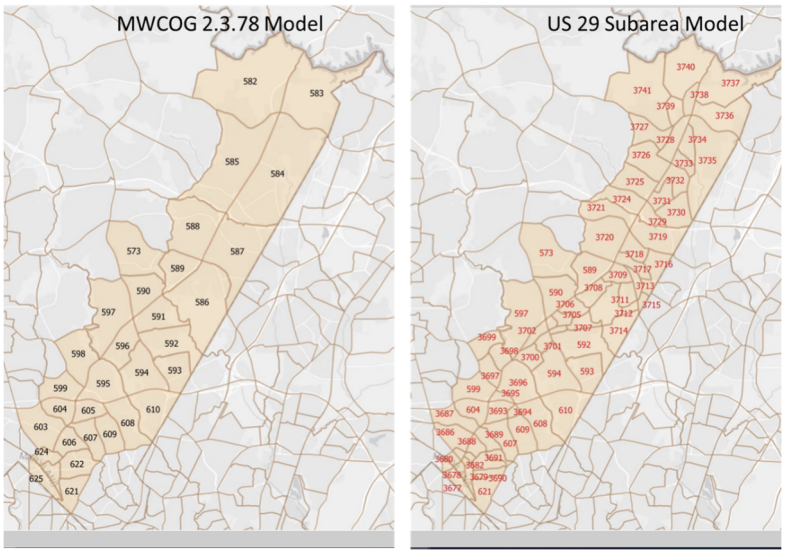


Figure 2 MWCOG versus US 29 Subarea Model TAZs

In the Subarea Model used for corridor planning and providing inputs to the operational simulations, additional detail is added in the corridor to properly represent local area route choices that are not provided in the regional base model. This includes additional zone detail to support desired network and demographic details, local roads not represented in the regional model, and operational characteristics. Figure 2 shows the MWCOG base model Traffic Analysis Zones (TAZs) (32) and the detailed US 29 Subarea Model TAZs (76) created in the US 29 corridor to better capture where travelers live and work and how they access the transportation networks. For example, the large MWCOG TAZ 589, in Figure 2 limits how and where vehicles will access the road network and US 29. In the subarea model this zone is broken into 5 smaller TAZs that provide for better geographic representation of where the land use, households, and employment exist within the area and how they will travel to and from where their trips occur. This improves the assignments to the US 29 Intersections and crossing roads.



Figure 3 Subarea Network Detail Examples

Additional network detail and operational characteristics are also added to the coded networks to provide realistic access patterns and network loadings. This includes micro coding intersections and divided highways such as US 29, turn penalties by time of day, and link/intersection level penalties, speeds, and capacities to capture local conditions not represented in the regional model. Examples of the detail added are shown in Figure 3 for White Oak and inside I-495 (detail is added throughout the corridor). The additional network detail also drove many of the TAZ splits.

The subarea network and assignments were validated to levels equal or better than the regional model assignments. They were also reviewed and checked based upon the new base model input tables as part of this effort.

1.2 Updates to the MWCOG 2.3.78 Base Model

This section summarizes the changes made to the MWCOG 2.3.78 base model and scenarios for the US 29 additional analysis forecasts. First, to maintain consistency and comparability with the initial US 29 Mobility Study the initial study's land use files were imported into the new base 2.3.78 Base Model. Again, the initial study used the regional round 9.1 cooperative forecasts for Montgomery County and the original base MWCOG 2.3.70 forecasts (round 9.0) for the rest of the region. These same land use assumptions were used for the current analysis of the additional alternatives. Details of these forecasts and their growth are fully illustrated in the US 29 Mobility & Reliability Study Technical Report (MCDOT & Mead & Hunt, June 2020). The adopted MWCOG 2.3.78 uses the regional 9.1a Cooperative forecasts.

The comparison of the MWCOG 2.3.78 and US 29 Mobility Study 2040 land use forecasts is shown in Table 1. The households, population and employment forecasts for the US 29 subarea and Montgomery County overall are the same (with some round off differences). The county compared to the rest of the region has a slightly smaller share of households (-.1%) and employment (- 0.26%), but for all intents and purposes the distributions are the same. This implies no significant change in travel patterns caused by using the US 29 Mobility Plan land use within Montgomery County versus those in the currently adopted model (even with a very small drop in the region wide land use from the earlier rounds to the round 9.1a used in the MWCOG 2.378 model: of -.77% in households, -.29 % in population, and -2.07% in Employment). This indicates that even if the most recent Round 9.1a land use from the MWCOG 2.3.78 model was used throughout the results would be similar, particularly for Montgomery County trips, mode splits, and assignments.

Table 1 2040 Land Use Forecast Comparison

	2040 MWCOG 2.3.78 LANDUSE (9.1A)			2040 US 29 Mobility Plan Land Use (9.1 in Montgomery County, 9.0 in rest of regon)			Difference		
District	Households	Population	Employment	Households	Population	Employment	Households	Population	Employment
US 29 Subarea	64,893	163,003	89,404	64,893	163,006	89,403	-1	3	-1
Montgomery County (all	450,916	1,197,147	653,865	450,905	1,197,147	653,856	-11	0	-9
Model Region	3,330,862	8,763,359	5,144,493	3,356,633	8,788,447	5,253,244	25,771	25,088	108,751
% of Montgomery Co.	13.54%	13.66%	12.71%	13.43%	13.62%	12.45%	-0.10%	-0.04%	-0.26%

Second, the MWCOG 2.3.78 adopted future transit networks were updated to account for all permanent transit service changes since 2019, which MWCOG used as its service base. These adjustments included:

The Ride on Route 129 that was replaced by the US 29 Flash BRT service was removed.

The MTA Route 203 that goes from Howard County to Bethesda was re-routed from its previous route (US 29 to the ICC (MD 200) to Georgia Ave. to Connecticut Ave. to Jones Bridge Road to Bethesda) to its current route (US 29 to New Hampshire Ave (New stop at the Food and Drug Administration) to I-495 to Connecticut Ave. to Jones Bridge Road to Bethesda).

The MTA Route 202 was removed (stopped service in February 2019).

The WMATA Z11 was removed (stopped service in March 2020) and the other WMATA Z lines were adjusted to reflect current future service plans.

The Montgomery County Flash BRT Line from the adopted Montgomery County BRT system was included in the future networks.

Adjustments to US 29 Flash BRT run times to reflect running in mixed traffic and its future congestion. The MWCOG default process does not change future run times for express bus or rail modes (implying that they are operating in dedicated lanes). Consequently, in the MWCOG 2.3.78 future networks (as provided) the US 29 Flash BRT run times were coded to remain at 30 minutes inbound and 30 minutes outbound. These were adjusted to reflect the future congestion and times found in the operational analysis to 44 minutes inbound and 30 minutes outbound for to/from Burtonsville, and 42 minutes inbound and 35 minutes outbound for the White Oak/Briggs Chaney line. The connection to the Federal Drug Administration (FDA) was also included.

Both the updated land use and network adjustments were incorporated into the new base model forecasts for the 2017, 2025 No-Build, and 2040 No-Build forecasts. Note that the Managed Lane and Median Busway Hybrid concepts were also coded and forecasts prepared to obtain the shifts in transit, HOV, and SOV trips and trip tables (This differs from the approach used in the initial study where the mode split results from the No-Build alternative were adjusted in post processing).

2 Future Build Alternative Assumptions

The future alternatives included the No-Build, Managed Lane, and Median Bus Lane Hybrid concepts (for 2025 and 2040). Each of these were coded in the updated base model to produce the trips from origin to destination, and their mode shares (transit, HOV, and SOV), and in the subarea post process assignment model for detailed traffic assignments. The coding captured the detailed descriptions of each alternative as provided for in the main body of this report. These are summarized in Table 2. Slight variations of 1 to 2 minutes in the Off Peak/Midday travel times over the No-Build were also included. Note that in the Managed Lane alternative, the HOV 2 and HOV 3+ vehicles are not required to only travel in the HOV lanes provided but can choose which lane to use based upon their travel paths. Therefore, the results show some HOV vehicles still are assigned to the general purpose lanes.

Table 2 Built Alternative Modeling Assumptions

	Base Updated MWCOG 2.3.78 Model		
	No Build	**Managed Lane**	**Median Bus Lane Hybrid**
Base MWCOG 2.3.78 Model			
Highway Network	No Changes to the MWCOG 2.3.78 networks	Coded Lane new HOV Lane and General Purpose Lane Changes along Managed Lane Segments: 1. Musgrove to Stewart: Add HOV Lane Southbound in AM, Northbound in PM. No change to GP lanes 2. Stewart Lane to Southwood/Burnt Mills. Add HOV Lane and remove GP Lane Southbound in AM. Add HOV Lane starting at Burnt Mills and remove GP lane Northbound in PM. 3. Dale Dr to Spring St: Add HOV Southbound in AM and remove GP in AM Southbound. Add HOV Northbound in PM and remove GP lane in PM.	Coded Southbound Bus Only Lane from Sligo Creek south to Georgia Ave. Reduced Southbound and Northbound General Purpose Lanes from 4/4 to 3/3 from the south side I-495 Beltway ramps to Four Corners. Other lanes remain the same
US 29 Flash BRT*	Coded Peak: From Burtonsville Southbound = 44 min. To Burtonsvill Northbound = 30 min. From Briggs Chaney Southbound = 42 min. To Briggs Chaney Northbound = 35 min.	Coded Peak: From Burtonsville Southbound = 24 min. To Burtonsvill Northbound = 25 min. From Briggs Chaney Southbound = 33 min. To Briggs Chaney Northbound = 29 min.	Coded Peak: From Burtonsville Southbound = 25 min. To Burtonsvill Northbound = 27 min. From Briggs Chaney Southbound = 34 min. To Briggs Chaney Northbound = 31 min.
Other Transit Service	See base model updates	Allow WMATA Z7 and MTA Commuter buses (express) to use Managed Lane. Coded same travel time savings as seen by the Flash BRT	Same as No Build (other service does not use Median Bus). Potential conflicts at stations preclude other services.
Subarea Model			
Highway Network	Performed network check and corrected errors found (free flow speeds, functional class). Updated turn penalties	Added turn penaties along manged lane sections Changed lane configuration along Managed Lanes (see above)	Added turn penalties along Median Busway sections. Changed lane configuration from I-495 Betway to Four Corners (see above) Changed lane configuration south of Sligo Creek (see above)

* Travel times adjusted to account for peak period versus peak hour and starting and ending station times required by MWCOG model. The operational analysis only provides the peak hour travel times on US 29 road segments.

3 Results

The results for the changes in Flash BRT boardings by alternative, 2040 person through-put by mode at select locations, and sub-area vehicle assignments are shown below.

3.1 US 29 BRT Flash Ridership

The US 29 Flash BRT average weekday boarding forecasts by alternative based upon the assumptions provided in the previous section are shown in Table 3[1]. Note that these are produced by the updated base MWCOG 2.3.78 model based upon the MWCOG process and model coefficients for trip generation, trip distribution, and mode share calculations, along with the MWCOG transit assignment procedures. As shown, there is substantial growth in the No-Build from the current post covid ridership of 2,500 average weekday boardings of 158 % by 2025, and 226.0% by 2040 (since the MWCOG 2.3.78 model is validated to pre-covid conditions, this assumes recovery to pre-covid levels for both land use and travel behavior). The Managed Lane alternative is forecast to attract 8,500 boardings (31.8% over No-Build) by 2025, and 11,200 boardings (37.5% over No-Build) by 2040. The Median Busway Hybrid increases

[1] These results are very similar to the boardings from the adopted regional MWCOG and Montgomery County MNCPPC Travel 4 forecasting models/processes of around 11,000 and an assumed 30-minute travel time in both directions for both the service from Burtonsville, and Briggs Chaney.

the boardings slightly to 8,650 (34.1% over No-Build), and 11,500 (41.1% over No-Build). The Managed Lane has slightly lower boardings on the BRT Line since the corridor's express services are allowed to use the Managed Lane. As an aside, it was also observed that when the New Hampshire BRT line is included in the 2040 transit service forecasts around 200 to 300 boardings a day switch from the US 29 service to the New Hampshire service.

Table 3 US 29 Flash Future Average Weekday Boardings

	No Build		Managed Lane		Median Bus Lane Hybrid	
	Weekday Boardings	% Growth from Current	Weekday Boardings	% Growth from No Build	Weekday Boardings	% Growth from No Build
Current (April 2022)	2,500	--	--	--	--	--
2025	6,450	158.0%	8,500	31.8%	8,650	34.1%
2040	8,150	226.0%	11,200	37.4%	11,500	41.1%

3.2 Person Through-put and Modal Shares.

Another key result is the person through-put and modal share at key locations along the corridor. This is one way of capturing the overall mobility benefits of each alternative. Table 4 shows the 2040 average weekday person through-put and modal share at 4 key locations along US 29 at: Paint Branch, Northwest Branch, North of Lanark Way, and North of Spring Street. As shown, the person trip through-put increases in the No-Build moving Southbound until the I-495 crossing (just south of the North of Lanark Way location), then reduces inside I-495. The HOV 2+ share (which includes all vehicles with 2 or more occupants) is highest in the Managed Lane, varying outside I-495 from 28% to 32%. The Managed Lane alternative also has the highest overall person through-put of approximately 20,500 to 21,000 outside I-495 and 19,000 inside I-495. While the Median Bus Lane Hybrid has the highest transit modal share of the alternatives, it has lower person through-put, given its lack of incentive to carpool beyond the No-Build (It also has slightly lower overall transit ridership than the managed lane alternative). Note that these are person trips not vehicle trip percentages. The MWCOG model estimates SOV, HOV 2, and HOV 3+ person trip modal shares in the mode split calculations and converts them to vehicle trips and assigns them separately as part of the overall assignment process. HOV 3+ vehicles are assumed to have an average occupancy of approximately 3.5 persons.

Table 4 Person Through-put and Modal Share at Key Locations

		2040 AM Peak Period Southbound No Build				2040 AM Peak Period Southbound Managed Lane				2040 AM Peak Period Southbound Median Bus Lane Hybrid			
		Person Trips	% Mode Share			Person Trips	% Mode Share			Person Trips	% Mode Share		
	Location	Total	SOV	HOV2+	Transit	Total	SOV	HOV2+	Transit	Total	SOV	HOV2+	Transit
1	Paint Branch Crossing	16230	45.3%	15.0%	39.7%	20493	33.8%	28.8%	37.4%	16543	43.9%	14.2%	41.8%
2	North West Branch Crossing	17155	40.2%	17.4%	42.3%	20812	25.9%	32.0%	42.1%	17531	39.0%	15.7%	45.3%
3	North of Lanark Way	18029	39.3%	19.0%	41.6%	20979	28.7%	28.4%	43.0%	17118	37.3%	14.8%	47.9%
4	North of Spring Street.	16277	38.3%	14.7%	47.0%	19037	27.8%	24.2%	48.0%	15159	33.1%	12.0%	54.9%

Assume 1/3 of airport trips are SOV and 2/3 are HOV2+. Overall average occupancy is assumed in model as 1.6

3.3 Subarea Auto Assignments

As stated, after the base model forecasts are carried out for each alternative, the trips are converted from the MWCOG TAZ zones (32 TAZs in the US 29 subarea) to the more detailed subarea model TAZs (76 TAZs in the US 29 subarea) and the subarea vehicle trip assignments are carried out. The results of these assignments are used to provide growth rates and other inputs to the operations simulations.

The model process assigns different vehicle trip tables that represent SOV, HOV2, HOV 3+, Commercial Vehicles, Trucks, and trips to and from the regional airports to produce the 24 hour vehicle assignments on the road networks (The vehicle trips to and from the regional airports are generated by a special airport model and have different occupancy, time of day, and trip

length characteristics and therefore have their own trip tables). The assigned volumes along US 29 from the Howard County Line to Georgia Ave (at select locations) are shown in Table 5[2]. The daily HOV share is fairly constant at around 19 to 20 % in the 2017 base year to 20 to 21 % in 2040 for both the No-Build and Median Busway Hybrid concepts. The growth from 2017 to 2040 varies from 9.3 % to slightly negative or no growth in areas with constraints due to congestion and other factors.

The Managed Lane alternative increased the daily HOV Share of vehicles by 3 to 5 %[3]. It shows an overall growth that ranges from 4% to 13% with no negative growth from 2017 at the locations shown.

These volumes and growths were further refined in post processing to balance turning movements and account for capacity constraints and local path options that may not be properly accounted for even in the more detailed subarea models.

[2] Note that Table 4 and Table 5 provide different information for different purposes. Table 4 provides the AM inbound person trip mode shares from the regional base model that capture the mode shifts during the commute time periods when the HOV lanes are operating and where the mode shifts due to the alternatives are most noticeable. Table 5 provides the 24-hour directional vehicle volumes from the sub area post mode choice assignment results. These are used as inputs into the traffic operations simulations that analyze where delays occur in the road network.

[3] Note that the HOV Share represents the total of all vehicle trips over a 24-hr period and is not the same as the HOV mode shift from SOV that was considered in the peak hour/direction of the Managed Lane. Also, since these are 24-hour volumes % shift of HOV trips in the peak periods is dampened.

Table 5 2040 Average Weekday Subarea Assigned Volumes along US 29

2017 Base Average Weekday Assigned Volumes

Location Order	Direction (1=SB, 2=NB)	Location Name	SOV	HOV2	HOV3+	Commercial Veh.	Truck	Daily Airport	Total Volume	HOV Share
1	1	Howard County Line	33090	7687	2776	2510	2363	42	48469	21.6%
1	2	Howard County Line	28094	6695	2398	2155	2017	33	41392	22.0%
2	1	Briggs Chaney to Greencastle	30990	7396	2513	2290	1939	36	45164	21.9%
2	2	Briggs Chaney to Greencastle	28877	6729	2192	2063	1867	43	41772	21.4%
3	1	Cherry Hill Rd to Musgrove	31264	7764	2823	2454	2161	79	46546	22.7%
3	2	Cherry Hill Rd to Musgrove	30902	7020	2480	2407	1850	82	44741	21.2%
4	1	Paint Branch Crossing	31855	7347	2533	2682	1805	81	46303	21.3%
4	2	Paint Branch Crossing	31567	7107	2517	2674	1806	87	45758	21.0%
5	1	N. Branch Crossing	30247	7199	2608	2218	1726	84	44082	22.2%
5	2	N. Branch Crossing	30909	7182	2618	2279	1750	94	44831	21.9%
6	1	Lanark Way to University Blvd	30477	6905	2340	2147	1736	90	43695	21.2%
6	2	Lanark Way to University Blvd	29711	6457	2183	2063	1698	93	42205	20.5%
7	1	Franklin to Indian Springs	26892	6319	1913	2250	1505	193	39072	21.1%
7	2	Franklin to Indian Springs	26666	6090	1767	2396	1502	198	38619	20.3%
8	1	Elseworth Park	24024	5239	1406	2093	1338	174	34275	19.4%
8	2	Elseworth Park	25371	5520	1568	2302	1425	186	36372	19.5%
9	1	Georgia Ave. to Spring	19992	4376	1125	1690	994	144	28321	19.4%
9	2	Georgia Ave. to Spring	20959	4549	1294	1753	1044	159	29758	19.6%

2040 No Build Average Weekday Assigned Volumes

Location Order	Direction (1=SB, 2=NB)	Location Name	SOV	HOV2	HOV3+	Commercial Veh.	Truck	Daily Airport	Total Volume	HOV Share	Growth from 2017
1	1	Howard County Line	35114	8218	3277	2956	2707	157	52429	21.9%	8.2%
1	2	Howard County Line	29803	7098	2862	2489	2502	62	44816	22.2%	8.3%
2	1	Briggs Chaney to Greencastle	30909	7283	2816	2655	2003	57	45724	22.1%	1.2%
2	2	Briggs Chaney to Greencastle	29001	6618	2470	2333	2207	87	42716	21.3%	2.3%
3	1	Cherry Hill Rd to Musgrove	30595	7883	3069	3250	1684	138	46619	23.5%	0.2%
3	2	Cherry Hill Rd to Musgrove	30479	7713	2845	3167	2039	143	46385	22.8%	3.7%
4	1	Paint Branch Crossing	29952	7271	2626	3036	1619	132	44636	22.2%	-3.6%
4	2	Paint Branch Crossing	30572	7336	2630	2968	2020	142	45668	21.8%	-0.2%
5	1	N. Branch Crossing	29512	7373	2924	2748	1590	139	44287	23.3%	0.5%
5	2	N. Branch Crossing	30525	7579	2921	2734	1936	147	45843	22.9%	2.3%
6	1	Lanark Way to University Blvd	30842	7294	2788	2700	1621	141	45385	22.2%	3.9%
6	2	Lanark Way to University Blvd	30094	7048	2608	2499	1895	144	44287	21.8%	4.9%
7	1	Franklin to Indian Springs	28706	7113	2236	2728	1752	269	42804	21.8%	9.6%
7	2	Franklin to Indian Springs	28165	6920	2104	2751	1981	275	42195	21.4%	9.3%
8	1	Elseworth Park	24738	5712	1600	2440	1518	242	36251	20.2%	5.8%
8	2	Elseworth Park	26525	6177	1852	2592	1862	256	39263	20.4%	7.9%
9	1	Georgia Ave. to Spring	20754	4819	1274	1976	1132	198	30154	20.2%	6.5%
9	2	Georgia Ave. to Spring	22032	5099	1497	2000	1418	212	32258	20.4%	8.4%

2040 Median Buslane Hybrid Average Weekday Assigned Volumes

Location Order	Direction (1=SB, 2=NB)	Location Name	SOV	HOV2	HOV3+	Commercial Veh.	Truck	Daily Airport	Total Volume	HOV Share	Growth from 2017
1	1	Howard County Line	35113	8217	3274	2951	2716	158	52429	21.9%	8.2%
1	2	Howard County Line	29927	7118	2866	2501	2575	62	45049	22.2%	8.8%
2	1	Briggs Chaney to Greencastle	30942	7279	2808	2654	2010	57	45749	22.0%	1.3%
2	2	Briggs Chaney to Greencastle	29022	6618	2491	2330	2293	84	42838	21.3%	2.6%
3	1	Cherry Hill Rd to Musgrove	30533	7928	3090	3206	1721	139	46618	23.6%	0.2%
3	2	Cherry Hill Rd to Musgrove	30564	7706	2864	3199	2118	141	46591	22.7%	4.1%
4	1	Paint Branch Crossing	29852	7303	2596	3006	1659	134	44549	22.2%	-3.8%
4	2	Paint Branch Crossing	30614	7318	2625	2996	2097	139	45790	21.7%	0.1%
5	1	N. Branch Crossing	29317	7398	2904	2716	1628	140	44104	23.4%	0.0%
5	2	N. Branch Crossing	30462	7555	2930	2751	1994	144	45836	22.9%	2.2%
6	1	Lanark Way to University Blvd	29290	6935	2590	2562	1606	138	43122	22.1%	-1.3%
6	2	Lanark Way to University Blvd	28795	6658	2374	2410	1906	139	42282	21.4%	0.2%
7	1	Franklin to Indian Springs	28076	6987	2148	2666	1724	266	41867	21.8%	7.2%
7	2	Franklin to Indian Springs	27730	6852	2020	2777	2025	277	41682	21.3%	7.9%
8	1	Elseworth Park	23348	5488	1549	2337	1468	236	34427	20.4%	0.4%
8	2	Elseworth Park	26165	6137	1829	2628	1909	259	38926	20.5%	7.0%
9	1	Georgia Ave. to Spring	19651	4657	1179	1905	1100	193	28685	20.3%	1.3%
9	2	Georgia Ave. to Spring	21756	5062	1505	2022	1460	215	32020	20.5%	7.6%

2040 Managed Lane Average Weekday Assigned Volumes

Location Order	Direction (1=SB, 2=NB)	Location Name	SOV	HOV2	HOV3+	Commercial Veh.	Truck	Daily Airport	Total Volume	HOV Share	Growth from 2017
1	1	Howard County Line	33669	10132	3571	2830	2511	250	52962	25.9%	9.3%
1	2	Howard County Line	29214	8398	3034	2459	2487	79	45671	25.0%	10.3%
2	1	Briggs Chaney to Greencastle	30914	10431	3657	2647	2021	410	50079	28.1%	10.9%
2	2	Briggs Chaney to Greencastle	29283	9716	3253	2391	2278	342	47264	27.4%	13.1%
3	1	Cherry Hill Rd to Musgrove	30438	12012	3588	3229	1646	500	51414	30.3%	10.5%
3	2	Cherry Hill Rd to Musgrove	30985	12065	3342	3161	2087	377	52017	29.6%	16.3%
4	1	Paint Branch Crossing	29185	11218	3012	2926	1579	496	48416	29.4%	4.6%
4	2	Paint Branch Crossing	30554	11674	3066	3019	2054	378	50745	29.0%	10.9%
5	1	N. Branch Crossing	27131	11140	3173	2517	1498	495	45954	31.1%	4.2%
5	2	N. Branch Crossing	28563	12136	3266	2552	1898	377	48793	31.6%	8.8%
6	1	Lanark Way to University Blvd	27905	10493	2983	2433	1509	469	45792	29.4%	4.8%
6	2	Lanark Way to University Blvd	27335	10714	2668	2230	1836	352	45135	29.6%	6.9%
7	1	Franklin to Indian Springs	26926	9166	2377	2596	1690	362	43117	26.8%	10.4%
7	2	Franklin to Indian Springs	26133	9481	2151	2584	1948	368	42665	27.3%	10.5%
8	1	Elseworth Park	23206	8733	1804	2340	1477	359	37918	27.8%	10.6%
8	2	Elseworth Park	24873	9561	2080	2502	1859	365	41239	28.2%	13.4%
9	1	Georgia Ave. to Spring	19320	6663	1337	1880	1097	263	30559	26.2%	7.9%
9	2	Georgia Ave. to Spring	20376	7274	1655	1880	1396	276	32857	27.2%	10.4%

Appendix III: Geometric Concepts and Costs

Concept Design and Cost Estimates

The previous Median Bus Lane Alternative Concept Design was updated to incorporate minimum State Highway Administration (SHA) design criteria and to incorporate several of the spot intersection improvements. It was further Value Engineered to balance Transit and Traffic operations against construction costs and impacts.

As a state highway, the concept design for US 29 was developed to satisfy the minimum SHA requirements for the specific roadway classifications along the corridor;

- "Urban Principal Arterial - Other" on the State Primary System from the southern limits up to MD 650
- "Urban Principal Arterial - Other Freeway" on the State Primary System from MD 650 to the northern limits

Specially, the proposed lane widths were held either as existing or designed to 11 feet minimum south of MD 650, or designed to 12 feet minimum north of MD 650. Additionally:

- The median busway lane width was set at 12 feet,
- The existing right-of-way (ROW) was established using GIS while the proposed ROW was offset 5 feet from the outermost proposed feature, and
- The design speeds were set at the current posted speed limits.

ROW impacts identified are based on a concept design and will be refined as part of subsequent final design efforts. They generally include strip takes where base widening of the roadway is required to accommodate the median busway, as well the potential requirements for stormwater management (SWM). The following outlines the total number of additional acres required, including the amount necessary for SWM.

Right-of-Way Required		
Alternative	Total Acres	For SWM
Median Bus Lane Optimized	6.5	3.4
Median Bus Lane with Cost Reductions	6.1	3.2
Median Bus Lane Hybrid	5.5	3.2

The additional ROW necessary for roadway widening is illustrated on the concept plans. The number of acres necessary for SWM is based on the formulas prescribed by the SHA's Cost Estimating Manual for the amount of new and reconstructed pavement, but the specific locations are undefined and are not shown on the concept plans. Locations for SWM will be determined as the design is advanced and drainage patterns are analyzed. It is assumed that some of the SWM requirement can be accommodated within the existing ROW, so the number of acres shown in the table above only represents the additional ROW to be acquired. It should be noted that of the acres identified for base widening, less than an acre is defined as residential, some of which is Homeowners Association property, not necessarily individual front or back yards. There is only one full acquisition assumed for the purposes of cost estimating, located at 10753 Columbia Pike. The Burnt Mills General Repairs Auto Body building is immediately behind the existing sidewalk, so any roadway widening in this area will impact this building. Each design concept avoids widening opposite the body shop to the west so as not to impact the retaining wall supporting the

parking lot for the various businesses on that side of the roadway. The Concept Design Roll Maps are provided in Appendix III.B.

Cost estimates for the various alternatives were based on the *MDOT SHA 2022 Highway Construction Cost Estimating Manual* and the most recent *MDOT SHA Price Index.* Earlier estimates used the 2018 versions of these two documents. As a result of the various unit cost increases between 2018 and 2022, the overall project costs also increased. For example, the cost for the original Median Bus Lane increased from $106M to $133M. The cost for the subsequent Median Bus Lane alternatives as shown below:

- $152.4M for Median Bus Lane Optimized
- $126.0M for Median Bus Lane with Cost Reductions
- $128.4M for Median Bus Lane Hybrid

Specific assumptions for cost estimating purposes include the following:

- The Franklin Avenue Station is included in Median Bus Lane Optimized & Median Bus Lane Hybrid at $4M
- $1.25M/acre was assumed for ROW costs
- Proposed Full Depth Pavement Depths
    - US 29 & Median Busway
        - 2 Inch Asphalt Surface
        - 13 Inch Asphalt Base
        - 12 Inch Graded Aggregate Base Course
    - County Roadways
        - 2 Inch Asphalt Surface
        - 6 Inch Asphalt Base
        - 12 Inch Graded Aggregate Base Course
    - Shared Use/Bike Paths
        - 2 Inch Asphalt Surface
        - 2 Inch Asphalt Base
        - 6 Inch Graded Aggregate Base Course
- Realignment of lanes:
    - Assumes fine milling/resurfacing of the existing roadway surface to remove existing and establish proposed pavement markings.
- Impacted Overhead Sign Structures assumed to be removed and replaced.
- Traffic signal modifications assumed at all signalized intersections with proposed lane reconfigurations/modifications.
- Lighting improvements are assumed wherever widening is proposed along the outside of the roadway.
- Replace existing southbound overhead lane use signals south of Sligo Creek Parkway
- Install mast arm structures and associated lane use signals south of Sligo Creek Parkway – Northbound (Median Bus Lane Optimized & Median Bus Lane with Cost Reductions only)
- Existing US 29 shoulders are not traffic bearing
    - Reconstruction of the median shoulder will require lanes to be temporarily narrowed during construction for temporary concrete traffic barriers which will require fine

milling/resurfacing of the existing roadway to remove existing and establish proposed pavement markings.

- Assumes existing bridge over Paint Branch can accommodate loads of four travel lanes (Median Bus Lane Optimized & Median Bus Lane with Cost Reductions only).
- Assumes the Paint Branch bridge deck will be replaced to accommodate lane shifts
- Includes a 40% Contingency and 12.3% Overhead and Administration cost

The cost estimate worksheets for each Alternatives are provided in Appendix III.A.

Appendix III.A: Cost Estimates

Median Bus Lane Alternatives

			Median Bus Lane with Intersection Improvements			Median Bus Lane Optimized			Median Bus Lane with Cost Reductions			Median Bus Lane Hybrid			
Location ID	Intersection	Recommended Improvements	Common Intersection Improvements	Bus Lane Location and Bus Stop Impacts	**Cost**	Optimized Scenario	Bus Lane Location and Bus Stop Impacts	**Cost**	Value Engineering	Bus Lane Location and Bus Stop Impacts	**Cost**	Optimized Scenario	Bus Lane Location and Bus Stop Impacts	**Cost**	**Notes**
L1	Greencastle Road	Construct additional EB right-turn lane Construct 2nd SB left-turn lane and EB receiving lane	☑ ☑		**$4.3M**	☑ ☑		**$4.3M**	☑ ☑		**$4.3M**	☑ ☑		**$4.3M**	
L2	Tech Road	Construct additional WB right-turn lane Construct 2nd SB left-turn lane	☑ ☑	No impact to Tech Road station	**$2.3M**	☑ ☑	No impact to Tech Road station	**$2.3M**	☐ ☐	No impact to Tech Road station	**$0.0M**	☐ ☐	No impact to Tech Road station	**$0.0M**	
M1	Industrial Parkway to Stewart Lane	Separate median busway alignment Bus on inside shoulder with reduced lane widths	☑ ☐		**$35.2M**	☑ ☐		**$35.5M**	☐ ☑		**$23.6M**	☐ ☑		**$23.6M**	-The separate median busway would require a new bridge over the Paint Branch -The bus on inside shoulder option would avoid a new bridge structure over the Paint Branch
L3	Stewart Lane/Milestone Drive	Construct 2nd SB left-turn lane	☑		**$9.4M**	☑		**$9.2M**	☐		**$8.9M**	☐		**$8.9M**	
L4	New Hampshire Avenue (MD 650)	Construct 3rd SB lane on US-29 through interchange	☑		**$19.2M**	☑		**$20.5M**	☐		**$14.7M**	☐		**$14.7M**	
	Oak Leaf Drive	Signalization Remain unsignalized; Remove NB left-turn lane and prohibit movement	☑ ☐			☑ ☐			☐ ☑			☐ ☑			-Only left-turn movement permitted under existing conditions is NBL. NB left-turns would be permitted under signalized alternatives. NB left-turn lane would be removed and movement would be prohibited under the unsignalized alternatives.
L5	Northwest Drive	Signalization; Prohibit SBL Remain unsignalized. Remove mainline left-turn lanes and implement left-turn prohibitions	☑ ☐		**$8.3M**	☐ ☑		**$4.3M**	☐ ☑		**$4.3M**	☐ ☑		**$4.3M**	-Full movement intersection under existing conditions. Under signalized alternatives, SBL movement would be prohibited. Mainline left-turn lanes would be removed and all left-turn movements would be prohibited in unsignalized alternatives.
L6	Burnt Mills Avenue	Remove NB left-turn lane and prohibit movement	☑		**$9.8M**	☐		**$7.9M**	☐		**$7.9M**	☐		**$7.9M**	-Alternative 2B and Alternative 2C would keep existing traffic signal and full access at this intersection.
L7	Burnt Mills BRT Station	BRT station relocated to Lockwood median BRT station relocated to US 29 median at Hillwood BRT stations on US 29 near Hillwood (SB in median, NB in outer lane)	☑ ☐ ☐	Burnt Mills station on Lockwood	**$17.4M**	☐ ☑ ☐	Burnt Mills station in median at Hillwood Drive	**$15.9M**	☐ ☐ ☑	Burnt Mills station on US 29 near Hillwood (SB station in median and NB station in outer lane)	**$14.3M**	☐ ☐ ☑	Burnt Mills station on US 29 near Hillwood (SB station in median and NB station in outer lane)	**$14.3M**	-Alternative 2B would provide full-time median stations for both directions at Hillwood Drive. -Alternative 2C would provide a full-time SB median station and NB station in outer lane on US 29. NB station access would require queue jumps at Burnt Mills Shopping Center and Lockwood Drive signals to allow BRT access to the curbside bus stop from the median busway.
	Hillwood Drive	Signalization Remove SB left-turn lane and prohibit movement	☑ ☐			☑ ☑			☑ ☑			☑ ☑			-Full movement intersection under existing conditions and Alternative 2A. SB left-turn lane removed and movement prohibited in Alternative 2B and 2C. -Prohibited SB left-turn vehicles would use Burnt Mills Avenue.
L8	Crestmoor Drive	Signalization Remain unsignalized; Remove SB left-turn lane and prohibit SB & WB left-turns	☑ ☐		**$5.8M**	☑ ☐		**$5.8M**	☑ ☐		**$5.8M**	☑ ☐		**$5.8M**	-Full movement intersection under existing conditions and signalized alternatives. -Signalizing the intersection would maintain access to and from the Woodmor neighborhood, which would be necessary with the prohibition of left turns at Lorain Ave and Timberwood Ave.
L9	Lorain Ave	Remove mainline left-turn lanes and prohibit left-turns for all movements	☑		**$4.6M**	☑		**$4.6M**	☑		**$4.6M**	☑		**$4.6M**	-Full movement intersection under existing conditions. -Neighborhood access from Crestmoor Drive and Timberwood Avenue in Alternative 2A and 2B -Neighborhood access from Crestmoor Drive and University Boulevard in Alternative 2C
L10	Timberwood Avenue	Signalization Remain unsignalized; Remove SB left-turn lane and prohibit movement.	☑ ☐		**$15.8M**	☑ ☐		**$20.2M**	☐ ☑	Median Station at Lanark Way	**$19.8M**	☑ ☐		**$20.2M**	-Only left-turn movement permitted under existing conditions is SBL. Same left-turns would be permitted under signalized alternatives. SB left-turn lane would be removed and movement prohibited under the unsignalized alternatives.
	Four Corners Area	Dual Lane Busway Single Lane Reversible Busway Maintain 4 northbound travel lanes Maintain 4 southbound travel lanes	☑ ☐ ☐ ☐	Four Corners stations on US 29 at MD 193 EB (nearside both directions)		☑ ☐ ☐ ☐	Four Corners stations on US 29 at MD 193 EB (nearside both directions)		☐ ☑ ☑ ☐			☑ ☐ ☐ ☐	Four Corners stations on US 29 at MD 193 EB (nearside both directions)		-In Alternative 2A and 2B, the station design would be consistent with the previous dedicated median bus lane concept.
	Lanark Way	Four Corners Station Relocated to Lanark Way	☐			☐			☑			☐			-In Alternative 2C, a median station would be located at Lanark Way. -The station would be located in the median full-time, widening at the station to provide service in both directions and narrowing to a single median bus lane upstream and downstream of the station.
	Capital Beltway (I-495) Interchange	Southbound choice lane with 2-lane to 1-lane on-ramp Maintain 3 SB travel lanes	☑ ☐			☑ ☐			☑ ☐			☑ ☐			-Pedestrian safety needs to be considered carefully with adding a second, uncontrolled exit lane from SB US 29 to I-495 OL. Some options could include a pedestrian bridge (similar to that at the MD 97/I-495 interchange), rerouting the sidewalk to avoid this particular ramp, and/or installing beacons that could be activated by pedestrians when they are present and wish to cross the ramp.
L11	Hastings Drive	Signalization	☑		**$6.7M**	☑		**$7.3M**	☑		**$7.3M**	☑		**$7.3M**	- Full movement intersection - Current SHA project
	Brewster Avenue	Remove SB left-turn lane and prohibit all left-turn movements	☑			☑			☑			☑			-Full movement intersection under existing conditions.
L12	Leighton Avenue	Remove mainline left-turn lanes and prohibit all left-turn movements	☑		**$1.6M**	☑		**$1.6M**	☑		**$1.6M**	☑		**$1.6M**	-Full movement intersection under existing conditions.
L13	Franklin Ave Station	New Station in this Area	☐		**$10.9M**	☑	New station at Franklin Avenue (SB station in median and NB station in outer lane)	**$10.7M**	☐		**$6.6M**	☑	New station at Franklin Avenue (SB station in median and NB station in outer lane)	**$10.7M**	-Alternative 2B would include a station at Franklin Avenue. A station in this vicnity has been requested during previous outreach. -The SB station would be located in the median and NB station on the outside lane full-time.
	Sligo Creek Parkway	Construct additional westbound through and receiving lane Construct additional westbound right turn only lane	☑ ☐			☐ ☑			☐ ☐			☐ ☑			-Both options provide similar improvement to the operation of the westbound approach. Either option may be selected based upon cost and/or impact to adjacent residential properties.
M2	Sligo Creek Parkway to Silver Spring Transit Center	Repurpose outer lanes as bus only lanes	☐	No change	**$0.0M**	☑		**$2.3M**	☑		**$2.3M**	☑		**$0.2M**	-Buses would use outer lanes south of Sligo Creek Parkway. This would allow them to avoid conflicts with left-turning vehicles and provide service to Fenton Street station, which is located on the outer curb.
				TOTAL =	**$151.3M**			**TOTAL =**	**$152.4M**		**TOTAL =**	**$126.0M**		**TOTAL =**	**$128.4M**	

Legend:

- Bus on outside shoulder
- Bus on inside shoulder
- Dual median busway
- Single median busway
- Bus only lane
- Bus only lane - AM SB

Median Bus Lane Optimized

US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L1 - US 29 AT GREENCASTLE ROAD - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 400,000.00
	CATEGORY 1=				**$ 400,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 363,000.00
	CATEGORY 3=				**$ 363,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,300	TON	$ 105.00	$ 136,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	200	TON	$ 115.00	$ 23,000.00
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	900	TON	$ 115.00	$ 103,500.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	4,800	EA	$ 1.00	$ 4,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	4,800	EA	$ 1.00	$ 4,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	6,400	SY	$ 8.00	$ 51,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,400	SY	$ 21.50	$ 137,600.00
	CATEGORY 5=				**$ 461,400.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,900	LF	$ 40.00	$ 76,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	1,300	SF	$ 10.00	$ 13,000.00
6004	TRAFFIC BARRIER W BEAM	63	LF	$ 25.00	$ 1,575.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	63	LF	$ 4.00	$ 252.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 92,227.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 51,000.00
	CATEGORY 7=				**$ 51,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 380,000.00**
SUBTOTAL					**$ 1,919,627.00**
CONTINGENGY				40.0%	$ 767,850.80
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 287,944.05
SUBTOTAL (NEAT CONSTRUCTION)					**$ 2,975,421.85**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 365,977.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 4,341,398.85**

Prepared by STV Incorporated
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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L2 - US 29 AT TECH ROAD - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 193,000.00
	CATEGORY 1=				**$ 193,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	2,000	CY	$ 43.00	$ 86,000.00
	CATEGORY 2=				**$ 86,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 175,000.00
	CATEGORY 3=				**$ 175,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	500	TON	$ 105.00	$ 52,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	200	TON	$ 115.00	$ 23,000.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	500	TON	$ 115.00	$ 57,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	3,900	EA	$ 1.00	$ 3,900.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	3,900	EA	$ 1.00	$ 3,900.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,700	SY	$ 8.00	$ 21,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	2,100	SY	$ 21.50	$ 45,150.00
	CATEGORY 5=				**$ 207,550.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	400	LF	$ 40.00	$ 16,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	1,800	SF	$ 10.00	$ 18,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	300	LF	$ 35.00	$ 10,500.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	1	EA	$ 10,000.00	$ 10,000.00
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	300	LF	$ 4.00	$ 1,200.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 55,700.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 25,000.00
	CATEGORY 7=				**$ 25,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 30,000.00	$ 30,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 300,000.00**
SUBTOTAL					**$ 1,042,250.00**
CONTINGENGY				40.0%	$ 416,900.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 156,337.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 1,615,487.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 198,705.00**
RIGHT OF WAY		**0.4**	**ACRE**	**$ 1,250,000.00**	**$ 500,000.00**
TOTAL PROJECT COST					**$ 2,314,192.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L3 - US 29 AT STEWART LANE - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,220,000.00
	CATEGORY 1=				**$ 1,220,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	7,000	CY	$ 43.00	$ 301,000.00
	CATEGORY 2=				**$ 301,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,109,000.00
	CATEGORY 3=				**$ 1,109,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,800	TON	$ 105.00	$ 294,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,800	TON	$ 115.00	$ 437,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	25,600	EA	$ 1.00	$ 25,600.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	25,600	EA	$ 1.00	$ 25,600.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	17,100	SY	$ 8.00	$ 136,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	15,200	SY	$ 21.50	$ 326,800.00
	CATEGORY 5=				**$ 1,245,800.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,100	LF	$ 40.00	$ 124,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	4,400	LF	$ 120.00	$ 528,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	465	LF	$ 25.00	$ 11,625.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	515	LF	$ 4.00	$ 2,060.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 670,285.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 156,000.00
	CATEGORY 7=				**$ 156,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 30,000.00	$ 30,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 600,000.00**
SUBTOTAL					**$ 5,302,085.00**
CONTINGENGY				40.0%	$ 2,120,834.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 795,312.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 8,218,231.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,010,843.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 9,229,074.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L4 - US 29 AT MD 650 (NEW HAMPSHIRE AVENUE) & OAK LEAF DRIVE - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,895,000.00
	CATEGORY 1=				**$ 2,895,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	9,000	CY	$ 43.00	$ 387,000.00
	CATEGORY 2=				**$ 387,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 2,631,000.00
	CATEGORY 3=				**$ 2,631,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	18,900	SF	$ 75.00	$ 1,417,500.00
4003	RETAINING WALL	2,400	SF	$ 420.00	$ 1,008,000.00
	CATEGORY 4=				**$ 2,425,500.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	3,500	TON	$ 105.00	$ 367,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	4,900	TON	$ 115.00	$ 563,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	32,600	EA	$ 1.00	$ 32,600.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	32,600	EA	$ 1.00	$ 32,600.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	20,900	SY	$ 8.00	$ 167,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	19,200	SY	$ 21.50	$ 412,800.00
	CATEGORY 5=				**$ 1,576,200.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,200	LF	$ 40.00	$ 128,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	5,500	LF	$ 120.00	$ 660,000.00
6003	5 INCH CONCRETE SIDEWALK	3,900	SF	$ 10.00	$ 39,000.00
6004	TRAFFIC BARRIER W BEAM	1,150	LF	$ 25.00	$ 28,750.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	105	LF	$ 35.00	$ 3,675.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	4	EA	$ 1,000.00	$ 4,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	1,305	LF	$ 4.00	$ 5,220.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 873,245.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 369,000.00
	CATEGORY 7=				**$ 369,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 20,000.00	$ 20,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 170,000.00	$ 170,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 460,000.00**
SUBTOTAL					**$ 11,616,945.00**
CONTINGENGY				40.0%	$ 4,646,778.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,742,541.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 18,006,264.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 2,214,771.00**
RIGHT OF WAY		**0.2**	**ACRE**	**$ 1,250,000.00**	**$ 250,000.00**
TOTAL PROJECT COST					**$ 20,471,035.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L5 - US 29 AT NORTHWEST - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 562,000.00
	CATEGORY 1=				**$ 562,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	2,000	CY	$ 43.00	$ 86,000.00
	CATEGORY 2=				**$ 86,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 511,000.00
	CATEGORY 3=				**$ 511,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,000	SF	$ 420.00	$ 420,000.00
	CATEGORY 4=				**$ 420,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	500	TON	$ 105.00	$ 52,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	800	TON	$ 115.00	$ 92,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	5,100	EA	$ 1.00	$ 5,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	5,100	EA	$ 1.00	$ 5,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,500	SY	$ 8.00	$ 20,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	3,900	SY	$ 21.50	$ 83,850.00
	CATEGORY 5=				**$ 258,550.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	700	LF	$ 40.00	$ 28,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,700	LF	$ 120.00	$ 204,000.00
6003	5 INCH CONCRETE SIDEWALK	2,500	SF	$ 10.00	$ 25,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 257,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 72,000.00
	CATEGORY 7=				**$ 72,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 260,000.00**
SUBTOTAL					**$ 2,426,550.00**
CONTINGENGY				40.0%	$ 970,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 363,982.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,761,152.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 462,622.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 4,348,774.50**

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MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L6 - US 29 AT BURNT MILLS AVENUE - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 963,000.00
	CATEGORY 1=				**$ 963,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 875,000.00
	CATEGORY 3=				**$ 875,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,900	SF	$ 420.00	$ 798,000.00
	CATEGORY 4=				**$ 798,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	10,200	EA	$ 1.00	$ 10,200.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	10,200	EA	$ 1.00	$ 10,200.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	4,300	SY	$ 8.00	$ 34,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,600	SY	$ 21.50	$ 141,900.00
	CATEGORY 5=				**$ 486,700.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,200	LF	$ 40.00	$ 48,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,000	LF	$ 120.00	$ 240,000.00
6003	5 INCH CONCRETE SIDEWALK	4,800	SF	$ 10.00	$ 48,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 336,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 123,000.00
	CATEGORY 7=				**$ 123,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 330,000.00**
SUBTOTAL					**$ 4,040,700.00**
CONTINGENGY				40.0%	$ 1,616,280.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 606,105.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,263,085.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 770,359.00**
RIGHT OF WAY		**0.7**	**ACRE**	**$ 1,250,000.00**	**$ 875,000.00**
TOTAL PROJECT COST					**$ 7,908,444.00**

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MONTGOMERY COUNTY
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LOCATION L7 - US 29 AT BURNT MILLS BRT STATION / BURNT MILLS SHOPPING CENTER - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,720,000.00
	CATEGORY 1=				**$ 1,720,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	7,000	CY	$ 43.00	$ 301,000.00
	CATEGORY 2=				**$ 301,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,563,000.00
	CATEGORY 3=				**$ 1,563,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,200	TON	$ 105.00	$ 231,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	4,200	TON	$ 115.00	$ 483,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	25,000	EA	$ 1.00	$ 25,000.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	25,000	EA	$ 1.00	$ 25,000.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,700	SY	$ 8.00	$ 93,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	14,800	SY	$ 21.50	$ 318,200.00
	CATEGORY 5=				**$ 1,175,800.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	4,100	LF	$ 40.00	$ 164,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,700	LF	$ 120.00	$ 324,000.00
6003	5 INCH CONCRETE SIDEWALK	16,100	SF	$ 10.00	$ 161,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,649,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 219,000.00
	CATEGORY 7=				**$ 219,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 130,000.00	$ 130,000.00
8007	TRAFFIC SIGNAL*	3	EA	$ 250,000.00	$ 750,000.00
	CATEGORY 8=				**$ 910,000.00**
SUBTOTAL					**$ 7,537,800.00**
CONTINGENGY				40.0%	$ 3,015,120.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,130,670.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 11,683,590.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,437,082.00**
RIGHT OF WAY		**2.2**	**ACRE**	**$ 1,250,000.00**	**$ 2,750,000.00**
TOTAL PROJECT COST					**$ 15,870,672.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L8 - US 29 AT CRESTMOOR - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 752,000.00
	CATEGORY 1=				**$ 752,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 684,000.00
	CATEGORY 3=				**$ 684,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	800	SF	$ 75.00	$ 60,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 60,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	2,100	TON	$ 115.00	$ 241,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	11,800	EA	$ 1.00	$ 11,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	11,800	EA	$ 1.00	$ 11,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	3,900	SY	$ 8.00	$ 31,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,500	SY	$ 21.50	$ 204,250.00
	CATEGORY 5=				**$ 595,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,100	LF	$ 40.00	$ 44,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,700	LF	$ 120.00	$ 444,000.00
6003	5 INCH CONCRETE SIDEWALK	5,200	SF	$ 10.00	$ 52,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 540,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 96,000.00
	CATEGORY 7=				**$ 96,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 3,239,050.00**
CONTINGENGY				40.0%	$ 1,295,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 485,857.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 5,020,527.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 617,525.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 5,763,052.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L9 - US 29 AT LORAIN - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 504,000.00
	CATEGORY 1=				**$ 504,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 458,000.00
	CATEGORY 3=				**$ 458,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	600	TON	$ 105.00	$ 63,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	9,100	EA	$ 1.00	$ 9,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	9,100	EA	$ 1.00	$ 9,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,300	SY	$ 8.00	$ 18,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,800	SY	$ 21.50	$ 146,200.00
	CATEGORY 5=				**$ 441,300.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,200	LF	$ 40.00	$ 128,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,300	LF	$ 120.00	$ 156,000.00
6003	5 INCH CONCRETE SIDEWALK	6,100	SF	$ 10.00	$ 61,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 345,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 65,000.00
	CATEGORY 7=				**$ 65,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 2,282,300.00**
CONTINGENGY				40.0%	$ 912,920.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 342,345.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,537,565.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 435,120.00**
RIGHT OF WAY		**0.5**	**ACRE**	**$ 1,250,000.00**	**$ 625,000.00**
TOTAL PROJECT COST					**$ 4,597,685.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L10 - US 29 FROM TIMBERWOOD TO I-495 - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,552,000.00
	CATEGORY 1=				**$ 2,552,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	11,000	CY	$ 43.00	$ 473,000.00
	CATEGORY 2=				**$ 473,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 2,320,000.00
	CATEGORY 3=				**$ 2,320,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	1,000	SF	$ 75.00	$ 75,000.00
4003	RETAINING WALL	500	SF	$ 420.00	$ 210,000.00
	CATEGORY 4=				**$ 285,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	4,100	TON	$ 105.00	$ 430,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	6,000	TON	$ 115.00	$ 690,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	39,300	EA	$ 1.00	$ 39,300.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	39,300	EA	$ 1.00	$ 39,300.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	24,100	SY	$ 8.00	$ 192,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	21,800	SY	$ 21.50	$ 468,700.00
	CATEGORY 5=				**$ 1,860,600.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	8,500	LF	$ 40.00	$ 340,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,400	LF	$ 120.00	$ 408,000.00
6003	5 INCH CONCRETE SIDEWALK	26,400	SF	$ 10.00	$ 264,000.00
6004	TRAFFIC BARRIER W BEAM	240	LF	$ 25.00	$ 6,000.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	240	LF	$ 4.00	$ 960.00
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 2,020,960.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 325,000.00
	CATEGORY 7=				**$ 325,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 20,000.00	$ 20,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 40,000.00	$ 40,000.00
8006	LIGHTING	1	LS	$ 190,000.00	$ 190,000.00
8007	TRAFFIC SIGNAL*	4	EA	$ 250,000.00	$ 1,000,000.00
	CATEGORY 8=				**$ 1,250,000.00**
SUBTOTAL					**$ 11,086,560.00**
CONTINGENGY				40.0%	$ 4,434,624.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,662,984.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 17,184,168.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 2,113,653.00**
RIGHT OF WAY		**0.7**	**ACRE**	**$ 1,250,000.00**	**$ 875,000.00**
TOTAL PROJECT COST					**$ 20,172,821.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L11 - HASTINGS TO BREWSTER - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 974,000.00
	CATEGORY 1=				**$ 974,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 885,000.00
	CATEGORY 3=				**$ 885,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	3,400	SF	$ 75.00	$ 255,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 255,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,800	TON	$ 105.00	$ 189,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,900	TON	$ 115.00	$ 218,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	14,300	EA	$ 1.00	$ 14,300.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	14,300	EA	$ 1.00	$ 14,300.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,000	SY	$ 8.00	$ 88,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,300	SY	$ 21.50	$ 199,950.00
	CATEGORY 5=				**$ 724,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,600	LF	$ 40.00	$ 104,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,300	LF	$ 120.00	$ 396,000.00
6003	5 INCH CONCRETE SIDEWALK	11,300	SF	$ 10.00	$ 113,000.00
6004	TRAFFIC BARRIER W BEAM	115	LF	$ 25.00	$ 2,875.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	115	LF	$ 4.00	$ 460.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 618,335.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 124,000.00
	CATEGORY 7=				**$ 124,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 80,000.00	$ 80,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 350,000.00**
SUBTOTAL					**$ 4,102,385.00**
CONTINGENGY				40.0%	$ 1,640,954.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 615,357.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,358,696.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 782,120.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 7,265,816.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L12 - US 29 AT LEIGHTON - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 157,000.00
	CATEGORY 1=				**$ 157,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	1,000	CY	$ 43.00	$ 43,000.00
	CATEGORY 2=				**$ 43,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 143,000.00
	CATEGORY 3=				**$ 143,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	100	TON	$ 105.00	$ 10,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	500	TON	$ 115.00	$ 57,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	2,400	EA	$ 1.00	$ 2,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	2,400	EA	$ 1.00	$ 2,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	2,300	SY	$ 21.50	$ 49,450.00
	CATEGORY 5=				**$ 122,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,000	LF	$ 120.00	$ 120,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 120,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 20,000.00
	CATEGORY 7=				**$ 20,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ -	$ -
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 250,000.00**
SUBTOTAL					**$ 855,250.00**
CONTINGENGY				40.0%	$ 342,100.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 128,287.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 1,325,637.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 163,053.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 1,613,690.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L13 - FRANKLIN TO SLIGO CREEK PARKWAY - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,296,000.00
	CATEGORY 1=				**$ 1,296,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,178,000.00
	CATEGORY 3=				**$ 1,178,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,700	TON	$ 105.00	$ 178,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	100	TON	$ 115.00	$ 11,500.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,600	TON	$ 115.00	$ 184,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	12,700	EA	$ 1.00	$ 12,700.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	12,700	EA	$ 1.00	$ 12,700.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,100	SY	$ 8.00	$ 88,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	7,900	SY	$ 21.50	$ 169,850.00
	CATEGORY 5=				**$ 658,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,100	LF	$ 40.00	$ 124,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,100	LF	$ 120.00	$ 252,000.00
6003	5 INCH CONCRETE SIDEWALK	14,900	SF	$ 10.00	$ 149,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,525,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 165,000.00
	CATEGORY 7=				**$ 165,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 590,000.00**
SUBTOTAL					**$ 5,584,050.00**
CONTINGENGY				40.0%	$ 2,233,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 837,607.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 8,655,277.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,064,599.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 10,719,876.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M1 - US 29 FROM TECH TO STEWART - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 5,152,000.00
	CATEGORY 1=				**$ 5,152,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	14,000	CY	$ 43.00	$ 602,000.00
	CATEGORY 2=				**$ 602,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 4,684,000.00
	CATEGORY 3=				**$ 4,684,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	13,400	SF	$ 405.00	$ 5,427,000.00
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 5,427,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,500	TON	$ 105.00	$ 157,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	8,400	TON	$ 115.00	$ 966,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	39,400	EA	$ 1.00	$ 39,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	39,400	EA	$ 1.00	$ 39,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	1,600	SY	$ 8.00	$ 12,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	27,700	SY	$ 21.50	$ 595,550.00
	CATEGORY 5=				**$ 1,810,650.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	16,200	LF	$ 40.00	$ 648,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	53,500	SF	$ 10.00	$ 535,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	8,090	LF	$ 35.00	$ 283,150.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	8	EA	$ 1,000.00	$ 8,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	2	EA	$ 10,000.00	$ 20,000.00
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	8,090	LF	$ 4.00	$ 32,360.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 1,526,510.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 656,000.00
	CATEGORY 7=				**$ 656,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 30,000.00	$ 30,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 530,000.00**
SUBTOTAL					**$ 20,388,160.00**
CONTINGENGY				40.0%	$ 8,155,264.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 3,058,224.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 31,601,648.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 3,887,003.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 35,488,651.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M2 - US 29 FROM SLIGO CREEK PARKWAY TO SILVER SPRING TRANSIT CENTER - MEDIAN BUS LANE OPTIMIZED

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ -
	CATEGORY 1=				**$ -**
CATEGORY 2 - GRADING					
2001	EARTHWORK	0	CY	$ 43.00	$ -
	CATEGORY 2=				**$ -**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ -
	CATEGORY 3=				**$ -**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	0	TON	$ 105.00	$ -
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	0	EA	$ 1.00	$ -
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	0	EA	$ 1.00	$ -
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	0	SY	$ 21.50	$ -
	CATEGORY 5=				**$ -**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ -**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ -
	CATEGORY 7=				**$ -**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 50,000.00	$ 50,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	8	EA	$ 160,000.00	$ 1,280,000.00
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 1,340,000.00**
SUBTOTAL					**$ 1,340,000.00**
CONTINGENGY				40.0%	$ 536,000.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 201,000.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 2,077,000.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 255,471.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 2,332,471.00**

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Median Bus Lane With Cost Reductions

US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L1 - US 29 AT GREENCASTLE ROAD - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 400,000.00
	CATEGORY 1=				**$ 400,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 363,000.00
	CATEGORY 3=				**$ 363,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,300	TON	$ 105.00	$ 136,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	200	TON	$ 115.00	$ 23,000.00
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	900	TON	$ 115.00	$ 103,500.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	4,800	EA	$ 1.00	$ 4,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	4,800	EA	$ 1.00	$ 4,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	6,400	SY	$ 8.00	$ 51,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,400	SY	$ 21.50	$ 137,600.00
	CATEGORY 5=				**$ 461,400.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,900	LF	$ 40.00	$ 76,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	1,300	SF	$ 10.00	$ 13,000.00
6004	TRAFFIC BARRIER W BEAM	63	LF	$ 25.00	$ 1,575.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	63	LF	$ 4.00	$ 252.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 92,227.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 51,000.00
	CATEGORY 7=				**$ 51,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 380,000.00**
SUBTOTAL					**$ 1,919,627.00**
CONTINGENGY				40.0%	$ 767,850.80
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 287,944.05
SUBTOTAL (NEAT CONSTRUCTION)					**$ 2,975,421.85**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 365,977.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 4,341,398.85**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L3 - US 29 AT STEWART LANE - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,177,000.00
	CATEGORY 1=				**$ 1,177,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	6,000	CY	$ 43.00	$ 258,000.00
	CATEGORY 2=				**$ 258,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,070,000.00
	CATEGORY 3=				**$ 1,070,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	3,500	TON	$ 105.00	$ 367,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,600	TON	$ 115.00	$ 414,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	27,400	EA	$ 1.00	$ 27,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	27,400	EA	$ 1.00	$ 27,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	22,300	SY	$ 8.00	$ 178,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	13,800	SY	$ 21.50	$ 296,700.00
	CATEGORY 5=				**$ 1,311,400.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,400	LF	$ 40.00	$ 96,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,800	LF	$ 120.00	$ 456,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	462	LF	$ 25.00	$ 11,550.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	512	LF	$ 4.00	$ 2,048.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 568,798.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 150,000.00
	CATEGORY 7=				**$ 150,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 30,000.00	$ 30,000.00
8006	LIGHTING	1	LS	$ 40,000.00	$ 40,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 580,000.00**
SUBTOTAL					**$ 5,115,198.00**
CONTINGENGY				40.0%	$ 2,046,079.20
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 767,279.70
SUBTOTAL (NEAT CONSTRUCTION)					**$ 7,928,556.90**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 975,212.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 8,903,768.90**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L4 - US 29 AT MD 650 (NEW HAMPSHIRE AVENUE) & OAK LEAF DRIVE - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,141,000.00
	CATEGORY 1=				**$ 2,141,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	7,000	CY	$ 43.00	$ 301,000.00
	CATEGORY 2=				**$ 301,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,946,000.00
	CATEGORY 3=				**$ 1,946,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	18,900	SF	$ 75.00	$ 1,417,500.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 1,417,500.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,800	TON	$ 105.00	$ 294,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,600	TON	$ 115.00	$ 414,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	24,800	EA	$ 1.00	$ 24,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	24,800	EA	$ 1.00	$ 24,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	17,400	SY	$ 8.00	$ 139,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	16,300	SY	$ 21.50	$ 350,450.00
	CATEGORY 5=				**$ 1,247,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,400	LF	$ 40.00	$ 136,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	5,600	LF	$ 120.00	$ 672,000.00
6003	5 INCH CONCRETE SIDEWALK	7,200	SF	$ 10.00	$ 72,000.00
6004	TRAFFIC BARRIER W BEAM	1,150	LF	$ 25.00	$ 28,750.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	105	LF	$ 35.00	$ 3,675.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	4	EA	$ 1,000.00	$ 4,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	1,305	LF	$ 4.00	$ 5,220.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 926,245.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 273,000.00
	CATEGORY 7=				**$ 273,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 20,000.00	$ 20,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 140,000.00	$ 140,000.00
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 180,000.00**
SUBTOTAL					**$ 8,431,995.00**
CONTINGENGY				40.0%	$ 3,372,798.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,264,799.25
SUBTOTAL (NEAT CONSTRUCTION)					**$ 13,069,592.25**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,607,560.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 14,677,152.25**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L5 - US 29 AT NORTHWEST - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 562,000.00
	CATEGORY 1=				**$ 562,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	2,000	CY	$ 43.00	$ 86,000.00
	CATEGORY 2=				**$ 86,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 511,000.00
	CATEGORY 3=				**$ 511,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,000	SF	$ 420.00	$ 420,000.00
	CATEGORY 4=				**$ 420,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	500	TON	$ 105.00	$ 52,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	800	TON	$ 115.00	$ 92,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	5,100	EA	$ 1.00	$ 5,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	5,100	EA	$ 1.00	$ 5,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,500	SY	$ 8.00	$ 20,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	3,900	SY	$ 21.50	$ 83,850.00
	CATEGORY 5=				**$ 258,550.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	700	LF	$ 40.00	$ 28,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,700	LF	$ 120.00	$ 204,000.00
6003	5 INCH CONCRETE SIDEWALK	2,500	SF	$ 10.00	$ 25,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 257,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 72,000.00
	CATEGORY 7=				**$ 72,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 260,000.00**
SUBTOTAL					**$ 2,426,550.00**
CONTINGENGY				40.0%	$ 970,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 363,982.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,761,152.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 462,622.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 4,348,774.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L6 - US 29 AT BURNT MILLS AVENUE - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 963,000.00
	CATEGORY 1=				**$ 963,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 875,000.00
	CATEGORY 3=				**$ 875,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,900	SF	$ 420.00	$ 798,000.00
	CATEGORY 4=				**$ 798,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	10,200	EA	$ 1.00	$ 10,200.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	10,200	EA	$ 1.00	$ 10,200.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	4,300	SY	$ 8.00	$ 34,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,600	SY	$ 21.50	$ 141,900.00
	CATEGORY 5=				**$ 486,700.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,200	LF	$ 40.00	$ 48,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,000	LF	$ 120.00	$ 240,000.00
6003	5 INCH CONCRETE SIDEWALK	4,800	SF	$ 10.00	$ 48,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 336,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 123,000.00
	CATEGORY 7=				**$ 123,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 330,000.00**
SUBTOTAL					**$ 4,040,700.00**
CONTINGENGY				40.0%	$ 1,616,280.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 606,105.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,263,085.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 770,359.00**
RIGHT OF WAY		**0.7**	**ACRE**	**$ 1,250,000.00**	**$ 875,000.00**
TOTAL PROJECT COST					**$ 7,908,444.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L7 - US 29 AT BURNT MILLS BRT STATION / BURNT MILLS SHOPPING CENTER - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,601,000.00
	CATEGORY 1=				**$ 1,601,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	6,000	CY	$ 43.00	$ 258,000.00
	CATEGORY 2=				**$ 258,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,455,000.00
	CATEGORY 3=				**$ 1,455,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,000	TON	$ 105.00	$ 210,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,500	TON	$ 115.00	$ 402,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	21,500	EA	$ 1.00	$ 21,500.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	21,500	EA	$ 1.00	$ 21,500.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,200	SY	$ 8.00	$ 89,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	13,100	SY	$ 21.50	$ 281,650.00
	CATEGORY 5=				**$ 1,026,750.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,900	LF	$ 40.00	$ 116,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,200	LF	$ 120.00	$ 384,000.00
6003	5 INCH CONCRETE SIDEWALK	12,500	SF	$ 10.00	$ 125,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,625,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 204,000.00
	CATEGORY 7=				**$ 204,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 130,000.00	$ 130,000.00
8007	TRAFFIC SIGNAL*	3	EA	$ 250,000.00	$ 750,000.00
	CATEGORY 8=				**$ 910,000.00**
SUBTOTAL					**$ 7,079,750.00**
CONTINGENGY				40.0%	$ 2,831,900.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,061,962.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 10,973,612.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,349,754.00**
RIGHT OF WAY		**1.6**	**ACRE**	**$ 1,250,000.00**	**$ 2,000,000.00**
TOTAL PROJECT COST					**$ 14,323,366.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L8 - US 29 AT CRESTMOOR - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 752,000.00
	CATEGORY 1=				**$ 752,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 684,000.00
	CATEGORY 3=				**$ 684,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	800	SF	$ 75.00	$ 60,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 60,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	2,100	TON	$ 115.00	$ 241,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	11,800	EA	$ 1.00	$ 11,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	11,800	EA	$ 1.00	$ 11,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	3,900	SY	$ 8.00	$ 31,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,500	SY	$ 21.50	$ 204,250.00
	CATEGORY 5=				**$ 595,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,100	LF	$ 40.00	$ 44,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,700	LF	$ 120.00	$ 444,000.00
6003	5 INCH CONCRETE SIDEWALK	5,200	SF	$ 10.00	$ 52,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 540,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 96,000.00
	CATEGORY 7=				**$ 96,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 3,239,050.00**
CONTINGENGY				40.0%	$ 1,295,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 485,857.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 5,020,527.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 617,525.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 5,763,052.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L9 - US 29 AT LORAIN - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 504,000.00
	CATEGORY 1=				**$ 504,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 458,000.00
	CATEGORY 3=				**$ 458,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	600	TON	$ 105.00	$ 63,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	9,100	EA	$ 1.00	$ 9,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	9,100	EA	$ 1.00	$ 9,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,300	SY	$ 8.00	$ 18,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,800	SY	$ 21.50	$ 146,200.00
	CATEGORY 5=				**$ 441,300.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,200	LF	$ 40.00	$ 128,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,300	LF	$ 120.00	$ 156,000.00
6003	5 INCH CONCRETE SIDEWALK	6,100	SF	$ 10.00	$ 61,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 345,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 65,000.00
	CATEGORY 7=				**$ 65,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 2,282,300.00**
CONTINGENGY				40.0%	$ 912,920.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 342,345.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,537,565.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 435,120.00**
RIGHT OF WAY		**0.5**	**ACRE**	**$ 1,250,000.00**	**$ 625,000.00**
TOTAL PROJECT COST					**$ 4,597,685.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L10 - US 29 FROM TIMBERWOOD TO I-495 - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,420,000.00
	CATEGORY 1=				**$ 2,420,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	9,000	CY	$ 43.00	$ 387,000.00
	CATEGORY 2=				**$ 387,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 2,200,000.00
	CATEGORY 3=				**$ 2,200,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	1,000	SF	$ 75.00	$ 75,000.00
4003	RETAINING WALL	500	SF	$ 420.00	$ 210,000.00
	CATEGORY 4=				**$ 285,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	4,200	TON	$ 105.00	$ 441,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	5,200	TON	$ 115.00	$ 598,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	36,400	EA	$ 1.00	$ 36,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	36,400	EA	$ 1.00	$ 36,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	25,700	SY	$ 8.00	$ 205,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	19,100	SY	$ 21.50	$ 410,650.00
	CATEGORY 5=				**$ 1,728,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	14,100	LF	$ 40.00	$ 564,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	42,600	SF	$ 10.00	$ 426,000.00
6004	TRAFFIC BARRIER W BEAM	240	LF	$ 25.00	$ 6,000.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	240	LF	$ 4.00	$ 960.00
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,998,960.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 308,000.00
	CATEGORY 7=				**$ 308,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 40,000.00	$ 40,000.00
8006	LIGHTING	1	LS	$ 90,000.00	$ 90,000.00
8007	TRAFFIC SIGNAL*	3	EA	$ 250,000.00	$ 750,000.00
	CATEGORY 8=				**$ 1,140,000.00**
SUBTOTAL					**$ 10,467,010.00**
CONTINGENGY				40.0%	$ 4,186,804.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,570,051.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 16,223,865.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,995,535.00**
RIGHT OF WAY		**1.3**	**ACRE**	**$ 1,250,000.00**	**$ 1,625,000.00**
TOTAL PROJECT COST					**$ 19,844,400.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L11 - HASTINGS TO BREWSTER - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 974,000.00
	CATEGORY 1=				**$ 974,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 885,000.00
	CATEGORY 3=				**$ 885,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	3,400	SF	$ 75.00	$ 255,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 255,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,800	TON	$ 105.00	$ 189,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,900	TON	$ 115.00	$ 218,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	14,300	EA	$ 1.00	$ 14,300.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	14,300	EA	$ 1.00	$ 14,300.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,000	SY	$ 8.00	$ 88,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,300	SY	$ 21.50	$ 199,950.00
	CATEGORY 5=				**$ 724,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,600	LF	$ 40.00	$ 104,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,300	LF	$ 120.00	$ 396,000.00
6003	5 INCH CONCRETE SIDEWALK	11,300	SF	$ 10.00	$ 113,000.00
6004	TRAFFIC BARRIER W BEAM	115	LF	$ 25.00	$ 2,875.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	115	LF	$ 4.00	$ 460.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 618,335.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 124,000.00
	CATEGORY 7=				**$ 124,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 80,000.00	$ 80,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 350,000.00**
SUBTOTAL					**$ 4,102,385.00**
CONTINGENGY				40.0%	$ 1,640,954.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 615,357.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,358,696.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 782,120.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 7,265,816.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L12 - US 29 AT LEIGHTON - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 157,000.00
	CATEGORY 1=				**$ 157,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	1,000	CY	$ 43.00	$ 43,000.00
	CATEGORY 2=				**$ 43,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 143,000.00
	CATEGORY 3=				**$ 143,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	100	TON	$ 105.00	$ 10,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	500	TON	$ 115.00	$ 57,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	2,400	EA	$ 1.00	$ 2,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	2,400	EA	$ 1.00	$ 2,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	2,300	SY	$ 21.50	$ 49,450.00
	CATEGORY 5=				**$ 122,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,000	LF	$ 120.00	$ 120,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 120,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 20,000.00
	CATEGORY 7=				**$ 20,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ -	$ -
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 250,000.00**
SUBTOTAL					**$ 855,250.00**
CONTINGENGY				40.0%	$ 342,100.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 128,287.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 1,325,637.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 163,053.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 1,613,690.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L13 - FRANKLIN TO SLIGO CREEK PARKWAY - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 673,000.00
	CATEGORY 1=				**$ 673,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 612,000.00
	CATEGORY 3=				**$ 612,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,300	TON	$ 105.00	$ 136,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	11,700	EA	$ 1.00	$ 11,700.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	11,700	EA	$ 1.00	$ 11,700.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	7,700	SY	$ 8.00	$ 61,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	7,500	SY	$ 21.50	$ 161,250.00
	CATEGORY 5=				**$ 578,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,500	LF	$ 40.00	$ 100,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,200	LF	$ 120.00	$ 264,000.00
6003	5 INCH CONCRETE SIDEWALK	10,800	SF	$ 10.00	$ 108,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 472,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 86,000.00
	CATEGORY 7=				**$ 86,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 600,000.00**
SUBTOTAL					**$ 3,193,250.00**
CONTINGENGY				40.0%	$ 1,277,300.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 478,987.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 4,949,537.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 608,793.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 6,558,330.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M1 - US 29 FROM TECH TO STEWART - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 3,379,000.00
	CATEGORY 1=				**$ 3,379,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	16,000	CY	$ 43.00	$ 688,000.00
	CATEGORY 2=				**$ 688,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 3,072,000.00
	CATEGORY 3=				**$ 3,072,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	35,100	SF	$ 75.00	$ 2,632,500.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 2,632,500.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,900	TON	$ 105.00	$ 304,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	11,500	TON	$ 115.00	$ 1,322,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	57,000	EA	$ 1.00	$ 57,000.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	57,000	EA	$ 1.00	$ 57,000.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	8,100	SY	$ 8.00	$ 64,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	29,300	SY	$ 21.50	$ 629,950.00
	CATEGORY 5=				**$ 2,435,750.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	4,100	LF	$ 40.00	$ 164,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	4,785	LF	$ 35.00	$ 167,475.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	4	EA	$ 1,000.00	$ 4,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	3	EA	$ 10,000.00	$ 30,000.00
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	4,785	LF	$ 4.00	$ 19,140.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 386,015.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 430,000.00
	CATEGORY 7=				**$ 430,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 50,000.00	$ 50,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 550,000.00**
SUBTOTAL					**$ 13,573,265.00**
CONTINGENGY				40.0%	$ 5,429,306.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 2,035,989.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 21,038,560.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 2,587,743.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 23,626,303.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M2 - US 29 FROM SLIGO CREEK PARKWAY TO SILVER SPRING TRANSIT CENTER - MEDIAN BUS LANE WITH COST REDUCTIONS

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ -
	CATEGORY 1=				**$ -**
CATEGORY 2 - GRADING					
2001	EARTHWORK	0	CY	$ 43.00	$ -
	CATEGORY 2=				**$ -**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ -
	CATEGORY 3=				**$ -**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	0	TON	$ 105.00	$ -
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	0	EA	$ 1.00	$ -
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	0	EA	$ 1.00	$ -
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	0	SY	$ 21.50	$ -
	CATEGORY 5=				**$ -**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ -**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ -
	CATEGORY 7=				**$ -**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 50,000.00	$ 50,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	8	EA	$ 160,000.00	$ 1,280,000.00
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 1,340,000.00**
SUBTOTAL					**$ 1,340,000.00**
CONTINGENGY				40.0%	$ 536,000.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 201,000.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 2,077,000.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 255,471.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 2,332,471.00**

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Median Bus Lane Hybrid

US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L1 - US 29 AT GREENCASTLE ROAD - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 400,000.00
	CATEGORY 1=				**$ 400,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 363,000.00
	CATEGORY 3=				**$ 363,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,300	TON	$ 105.00	$ 136,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	200	TON	$ 115.00	$ 23,000.00
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	900	TON	$ 115.00	$ 103,500.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	4,800	EA	$ 1.00	$ 4,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	4,800	EA	$ 1.00	$ 4,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	6,400	SY	$ 8.00	$ 51,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,400	SY	$ 21.50	$ 137,600.00
	CATEGORY 5=				**$ 461,400.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,900	LF	$ 40.00	$ 76,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	1,300	SF	$ 10.00	$ 13,000.00
6004	TRAFFIC BARRIER W BEAM	63	LF	$ 25.00	$ 1,575.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	63	LF	$ 4.00	$ 252.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 92,227.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 51,000.00
	CATEGORY 7=				**$ 51,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 100,000.00	$ 100,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 380,000.00**
SUBTOTAL					**$ 1,919,627.00**
CONTINGENGY				40.0%	$ 767,850.80
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 287,944.05
SUBTOTAL (NEAT CONSTRUCTION)					**$ 2,975,421.85**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 365,977.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 4,341,398.85**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L3 - US 29 AT STEWART LANE - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,177,000.00
	CATEGORY 1=				**$ 1,177,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	6,000	CY	$ 43.00	$ 258,000.00
	CATEGORY 2=				**$ 258,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,070,000.00
	CATEGORY 3=				**$ 1,070,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	3,500	TON	$ 105.00	$ 367,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,600	TON	$ 115.00	$ 414,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	27,400	EA	$ 1.00	$ 27,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	27,400	EA	$ 1.00	$ 27,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	22,300	SY	$ 8.00	$ 178,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	13,800	SY	$ 21.50	$ 296,700.00
	CATEGORY 5=				**$ 1,311,400.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,400	LF	$ 40.00	$ 96,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,800	LF	$ 120.00	$ 456,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	462	LF	$ 25.00	$ 11,550.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	512	LF	$ 4.00	$ 2,048.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 568,798.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 150,000.00
	CATEGORY 7=				**$ 150,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 30,000.00	$ 30,000.00
8006	LIGHTING	1	LS	$ 40,000.00	$ 40,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 580,000.00**
SUBTOTAL					**$ 5,115,198.00**
CONTINGENGY				40.0%	$ 2,046,079.20
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 767,279.70
SUBTOTAL (NEAT CONSTRUCTION)					**$ 7,928,556.90**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 975,212.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 8,903,768.90**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L4 - US 29 AT MD 650 (NEW HAMPSHIRE AVENUE) & OAK LEAF DRIVE - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,141,000.00
	CATEGORY 1=				**$ 2,141,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	7,000	CY	$ 43.00	$ 301,000.00
	CATEGORY 2=				**$ 301,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,946,000.00
	CATEGORY 3=				**$ 1,946,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	18,900	SF	$ 75.00	$ 1,417,500.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 1,417,500.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,800	TON	$ 105.00	$ 294,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,600	TON	$ 115.00	$ 414,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	24,800	EA	$ 1.00	$ 24,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	24,800	EA	$ 1.00	$ 24,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	17,400	SY	$ 8.00	$ 139,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	16,300	SY	$ 21.50	$ 350,450.00
	CATEGORY 5=				**$ 1,247,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,400	LF	$ 40.00	$ 136,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	5,600	LF	$ 120.00	$ 672,000.00
6003	5 INCH CONCRETE SIDEWALK	7,200	SF	$ 10.00	$ 72,000.00
6004	TRAFFIC BARRIER W BEAM	1,150	LF	$ 25.00	$ 28,750.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	105	LF	$ 35.00	$ 3,675.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	1	EA	$ 3,200.00	$ 3,200.00
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	4	EA	$ 1,000.00	$ 4,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	1,305	LF	$ 4.00	$ 5,220.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 926,245.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 273,000.00
	CATEGORY 7=				**$ 273,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 20,000.00	$ 20,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 140,000.00	$ 140,000.00
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 180,000.00**
SUBTOTAL					**$ 8,431,995.00**
CONTINGENGY				40.0%	$ 3,372,798.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,264,799.25
SUBTOTAL (NEAT CONSTRUCTION)					**$ 13,069,592.25**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,607,560.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 14,677,152.25**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L5 - US 29 AT NORTHWEST - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 562,000.00
	CATEGORY 1=				**$ 562,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	2,000	CY	$ 43.00	$ 86,000.00
	CATEGORY 2=				**$ 86,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 511,000.00
	CATEGORY 3=				**$ 511,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,000	SF	$ 420.00	$ 420,000.00
	CATEGORY 4=				**$ 420,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	500	TON	$ 105.00	$ 52,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	800	TON	$ 115.00	$ 92,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	5,100	EA	$ 1.00	$ 5,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	5,100	EA	$ 1.00	$ 5,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,500	SY	$ 8.00	$ 20,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	3,900	SY	$ 21.50	$ 83,850.00
	CATEGORY 5=				**$ 258,550.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	700	LF	$ 40.00	$ 28,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,700	LF	$ 120.00	$ 204,000.00
6003	5 INCH CONCRETE SIDEWALK	2,500	SF	$ 10.00	$ 25,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 257,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 72,000.00
	CATEGORY 7=				**$ 72,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 260,000.00**
SUBTOTAL					**$ 2,426,550.00**
CONTINGENGY				40.0%	$ 970,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 363,982.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,761,152.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 462,622.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 4,348,774.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L6 - US 29 AT BURNT MILLS AVENUE - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 963,000.00
	CATEGORY 1=				**$ 963,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 875,000.00
	CATEGORY 3=				**$ 875,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	1,900	SF	$ 420.00	$ 798,000.00
	CATEGORY 4=				**$ 798,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	10,200	EA	$ 1.00	$ 10,200.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	10,200	EA	$ 1.00	$ 10,200.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	4,300	SY	$ 8.00	$ 34,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,600	SY	$ 21.50	$ 141,900.00
	CATEGORY 5=				**$ 486,700.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,200	LF	$ 40.00	$ 48,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,000	LF	$ 120.00	$ 240,000.00
6003	5 INCH CONCRETE SIDEWALK	4,800	SF	$ 10.00	$ 48,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 336,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 123,000.00
	CATEGORY 7=				**$ 123,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 330,000.00**
SUBTOTAL					**$ 4,040,700.00**
CONTINGENGY				40.0%	$ 1,616,280.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 606,105.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,263,085.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 770,359.00**
RIGHT OF WAY		**0.7**	**ACRE**	**$ 1,250,000.00**	**$ 875,000.00**
TOTAL PROJECT COST					**$ 7,908,444.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L7 - US 29 AT BURNT MILLS BRT STATION / BURNT MILLS SHOPPING CENTER - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,601,000.00
	CATEGORY 1=				**$ 1,601,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	6,000	CY	$ 43.00	$ 258,000.00
	CATEGORY 2=				**$ 258,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,455,000.00
	CATEGORY 3=				**$ 1,455,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,000	TON	$ 105.00	$ 210,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	3,500	TON	$ 115.00	$ 402,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	21,500	EA	$ 1.00	$ 21,500.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	21,500	EA	$ 1.00	$ 21,500.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,200	SY	$ 8.00	$ 89,600.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	13,100	SY	$ 21.50	$ 281,650.00
	CATEGORY 5=				**$ 1,026,750.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,900	LF	$ 40.00	$ 116,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,200	LF	$ 120.00	$ 384,000.00
6003	5 INCH CONCRETE SIDEWALK	12,500	SF	$ 10.00	$ 125,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,625,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 204,000.00
	CATEGORY 7=				**$ 204,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 130,000.00	$ 130,000.00
8007	TRAFFIC SIGNAL*	3	EA	$ 250,000.00	$ 750,000.00
	CATEGORY 8=				**$ 910,000.00**
SUBTOTAL					**$ 7,079,750.00**
CONTINGENGY				40.0%	$ 2,831,900.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,061,962.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 10,973,612.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,349,754.00**
RIGHT OF WAY		**1.6**	**ACRE**	**$ 1,250,000.00**	**$ 2,000,000.00**
TOTAL PROJECT COST					**$ 14,323,366.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L8 - US 29 AT CRESTMOOR - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 752,000.00
	CATEGORY 1=				**$ 752,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 684,000.00
	CATEGORY 3=				**$ 684,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	800	SF	$ 75.00	$ 60,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 60,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	900	TON	$ 105.00	$ 94,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	2,100	TON	$ 115.00	$ 241,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	11,800	EA	$ 1.00	$ 11,800.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	11,800	EA	$ 1.00	$ 11,800.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	3,900	SY	$ 8.00	$ 31,200.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,500	SY	$ 21.50	$ 204,250.00
	CATEGORY 5=				**$ 595,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	1,100	LF	$ 40.00	$ 44,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,700	LF	$ 120.00	$ 444,000.00
6003	5 INCH CONCRETE SIDEWALK	5,200	SF	$ 10.00	$ 52,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 540,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 96,000.00
	CATEGORY 7=				**$ 96,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 3,239,050.00**
CONTINGENGY				40.0%	$ 1,295,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 485,857.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 5,020,527.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 617,525.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 5,763,052.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L9 - US 29 AT LORAIN - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 504,000.00
	CATEGORY 1=				**$ 504,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	3,000	CY	$ 43.00	$ 129,000.00
	CATEGORY 2=				**$ 129,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 458,000.00
	CATEGORY 3=				**$ 458,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	600	TON	$ 105.00	$ 63,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,700	TON	$ 115.00	$ 195,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	9,100	EA	$ 1.00	$ 9,100.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	9,100	EA	$ 1.00	$ 9,100.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	2,300	SY	$ 8.00	$ 18,400.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	6,800	SY	$ 21.50	$ 146,200.00
	CATEGORY 5=				**$ 441,300.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,200	LF	$ 40.00	$ 128,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,300	LF	$ 120.00	$ 156,000.00
6003	5 INCH CONCRETE SIDEWALK	6,100	SF	$ 10.00	$ 61,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 345,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 65,000.00
	CATEGORY 7=				**$ 65,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 70,000.00	$ 70,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 340,000.00**
SUBTOTAL					**$ 2,282,300.00**
CONTINGENGY				40.0%	$ 912,920.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 342,345.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 3,537,565.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 435,120.00**
RIGHT OF WAY		**0.5**	**ACRE**	**$ 1,250,000.00**	**$ 625,000.00**
TOTAL PROJECT COST					**$ 4,597,685.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L10 - US 29 FROM TIMBERWOOD TO I-495 - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 2,552,000.00
	CATEGORY 1=				**$ 2,552,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	11,000	CY	$ 43.00	$ 473,000.00
	CATEGORY 2=				**$ 473,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 2,320,000.00
	CATEGORY 3=				**$ 2,320,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	1,000	SF	$ 75.00	$ 75,000.00
4003	RETAINING WALL	500	SF	$ 420.00	$ 210,000.00
	CATEGORY 4=				**$ 285,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	4,100	TON	$ 105.00	$ 430,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	6,000	TON	$ 115.00	$ 690,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	39,300	EA	$ 1.00	$ 39,300.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	39,300	EA	$ 1.00	$ 39,300.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	24,100	SY	$ 8.00	$ 192,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	21,800	SY	$ 21.50	$ 468,700.00
	CATEGORY 5=				**$ 1,860,600.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	8,500	LF	$ 40.00	$ 340,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,400	LF	$ 120.00	$ 408,000.00
6003	5 INCH CONCRETE SIDEWALK	26,400	SF	$ 10.00	$ 264,000.00
6004	TRAFFIC BARRIER W BEAM	240	LF	$ 25.00	$ 6,000.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	240	LF	$ 4.00	$ 960.00
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 2,020,960.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 325,000.00
	CATEGORY 7=				**$ 325,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 20,000.00	$ 20,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 40,000.00	$ 40,000.00
8006	LIGHTING	1	LS	$ 190,000.00	$ 190,000.00
8007	TRAFFIC SIGNAL*	4	EA	$ 250,000.00	$ 1,000,000.00
	CATEGORY 8=				**$ 1,250,000.00**
SUBTOTAL					**$ 11,086,560.00**
CONTINGENGY				40.0%	$ 4,434,624.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 1,662,984.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 17,184,168.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 2,113,653.00**
RIGHT OF WAY		**0.7**	**ACRE**	**$ 1,250,000.00**	**$ 875,000.00**
TOTAL PROJECT COST					**$ 20,172,821.00**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L11 - HASTINGS TO BREWSTER - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 974,000.00
	CATEGORY 1=				**$ 974,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 885,000.00
	CATEGORY 3=				**$ 885,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	3,400	SF	$ 75.00	$ 255,000.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 255,000.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,800	TON	$ 105.00	$ 189,000.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,900	TON	$ 115.00	$ 218,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	14,300	EA	$ 1.00	$ 14,300.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	14,300	EA	$ 1.00	$ 14,300.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,000	SY	$ 8.00	$ 88,000.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	9,300	SY	$ 21.50	$ 199,950.00
	CATEGORY 5=				**$ 724,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	2,600	LF	$ 40.00	$ 104,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	3,300	LF	$ 120.00	$ 396,000.00
6003	5 INCH CONCRETE SIDEWALK	11,300	SF	$ 10.00	$ 113,000.00
6004	TRAFFIC BARRIER W BEAM	115	LF	$ 25.00	$ 2,875.00
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	2	EA	$ 1,000.00	$ 2,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	115	LF	$ 4.00	$ 460.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 618,335.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 124,000.00
	CATEGORY 7=				**$ 124,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ 80,000.00	$ 80,000.00
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 350,000.00**
SUBTOTAL					**$ 4,102,385.00**
CONTINGENGY				40.0%	$ 1,640,954.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 615,357.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 6,358,696.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 782,120.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 7,265,816.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L12 - US 29 AT LEIGHTON - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 157,000.00
	CATEGORY 1=				**$ 157,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	1,000	CY	$ 43.00	$ 43,000.00
	CATEGORY 2=				**$ 43,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 143,000.00
	CATEGORY 3=				**$ 143,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	100	TON	$ 105.00	$ 10,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	500	TON	$ 115.00	$ 57,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	2,400	EA	$ 1.00	$ 2,400.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	2,400	EA	$ 1.00	$ 2,400.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	2,300	SY	$ 21.50	$ 49,450.00
	CATEGORY 5=				**$ 122,250.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	1,000	LF	$ 120.00	$ 120,000.00
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 120,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 20,000.00
	CATEGORY 7=				**$ 20,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ -	$ -
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 250,000.00**
SUBTOTAL					**$ 855,250.00**
CONTINGENGY				40.0%	$ 342,100.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 128,287.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 1,325,637.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 163,053.00**
RIGHT OF WAY		**0.1**	**ACRE**	**$ 1,250,000.00**	**$ 125,000.00**
TOTAL PROJECT COST					**$ 1,613,690.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION L13 - FRANKLIN TO SLIGO CREEK PARKWAY - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 1,296,000.00
	CATEGORY 1=				**$ 1,296,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	4,000	CY	$ 43.00	$ 172,000.00
	CATEGORY 2=				**$ 172,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 1,178,000.00
	CATEGORY 3=				**$ 1,178,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	1,700	TON	$ 105.00	$ 178,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	100	TON	$ 115.00	$ 11,500.00
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	1,600	TON	$ 115.00	$ 184,000.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	12,700	EA	$ 1.00	$ 12,700.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	12,700	EA	$ 1.00	$ 12,700.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	11,100	SY	$ 8.00	$ 88,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	7,900	SY	$ 21.50	$ 169,850.00
	CATEGORY 5=				**$ 658,050.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	3,100	LF	$ 40.00	$ 124,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	2,100	LF	$ 120.00	$ 252,000.00
6003	5 INCH CONCRETE SIDEWALK	14,900	SF	$ 10.00	$ 149,000.00
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	2	EA	$ 500,000.00	$ 1,000,000.00
	CATEGORY 6=				**$ 1,525,000.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 165,000.00
	CATEGORY 7=				**$ 165,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 10,000.00	$ 10,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 20,000.00	$ 20,000.00
8006	LIGHTING	1	LS	$ 60,000.00	$ 60,000.00
8007	TRAFFIC SIGNAL*	2	EA	$ 250,000.00	$ 500,000.00
	CATEGORY 8=				**$ 590,000.00**
SUBTOTAL					**$ 5,584,050.00**
CONTINGENGY				40.0%	$ 2,233,620.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 837,607.50
SUBTOTAL (NEAT CONSTRUCTION)					**$ 8,655,277.50**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 1,064,599.00**
RIGHT OF WAY		**0.8**	**ACRE**	**$ 1,250,000.00**	**$ 1,000,000.00**
TOTAL PROJECT COST					**$ 10,719,876.50**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M1 - US 29 FROM TECH TO STEWART - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ 3,379,000.00
	CATEGORY 1=				**$ 3,379,000.00**
CATEGORY 2 - GRADING					
2001	EARTHWORK	16,000	CY	$ 43.00	$ 688,000.00
	CATEGORY 2=				**$ 688,000.00**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ 3,072,000.00
	CATEGORY 3=				**$ 3,072,000.00**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	35,100	SF	$ 75.00	$ 2,632,500.00
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ 2,632,500.00**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	2,900	TON	$ 105.00	$ 304,500.00
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	11,500	TON	$ 115.00	$ 1,322,500.00
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	57,000	EA	$ 1.00	$ 57,000.00
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	57,000	EA	$ 1.00	$ 57,000.00
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	8,100	SY	$ 8.00	$ 64,800.00
5008	6 INCH GRADED AGGREGATE BASE COURSE	29,300	SY	$ 21.50	$ 629,950.00
	CATEGORY 5=				**$ 2,435,750.00**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	4,100	LF	$ 40.00	$ 164,000.00
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	4,785	LF	$ 35.00	$ 167,475.00
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	4	EA	$ 1,000.00	$ 4,000.00
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	1	EA	$ 1,400.00	$ 1,400.00
6009	TYPE E TRAFFIC BARRIER END TREATMENT	3	EA	$ 10,000.00	$ 30,000.00
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	4,785	LF	$ 4.00	$ 19,140.00
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ 386,015.00**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ 430,000.00
	CATEGORY 7=				**$ 430,000.00**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ -	$ -
8002	OVERHEAD SIGN STRUCTURES	1	EA	$ 250,000.00	$ 250,000.00
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	0	EA	$ 5,000.00	$ -
8005	PAVEMENT MARKINGS	1	LS	$ 50,000.00	$ 50,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	1	EA	$ 250,000.00	$ 250,000.00
	CATEGORY 8=				**$ 550,000.00**
SUBTOTAL					**$ 13,573,265.00**
CONTINGENGY				40.0%	$ 5,429,306.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 2,035,989.75
SUBTOTAL (NEAT CONSTRUCTION)					**$ 21,038,560.75**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 2,587,743.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 23,626,303.75**

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US 29 MOBILITY STUDY
MONTGOMERY COUNTY
Concept Construction Cost Estimate

LOCATION M2 - US 29 FROM SLIGO CREEK PARKWAY TO SILVER SPRING TRANSIT CENTER - MEDIAN BUS LANE HYBRID

ITEM NO.	DESCRIPTION	QTY.	UNIT	UNIT COST	TOTAL COST
CATEGORY 1 - PRELIMINARY					
1001	*CATEGORY 1= 55% OF CATEGORIES 2, 4, 5, & 6*	1	LS	55%	$ -
	CATEGORY 1=				**$ -**
CATEGORY 2 - GRADING					
2001	EARTHWORK	0	CY	$ 43.00	$ -
	CATEGORY 2=				**$ -**
CATEGORY 3 - DRAINAGE					
3001	*CATEGORY 3= 50% OF CATEGORIES 2, 4, 5, & 6*	1	LS	50%	$ -
	CATEGORY 3=				**$ -**
CATEGORY 4 -STRUCTURES					
4001	NEW BRIDGE CONSTRUCTION	0	SF	$ 405.00	$ -
4002	BRIDGE DECK REPLACEMENT	0	SF	$ 75.00	$ -
4003	RETAINING WALL	0	SF	$ 420.00	$ -
	CATEGORY 4=				**$ -**
CATEGORY 5 - PAVING					
5001	ASPHALT FOR 2 INCH SURFACE COURSE	0	TON	$ 105.00	$ -
5002	ASPHALT FOR 2 INCH BASE COURSE (SHARED USE PATH)	0	TON	$ 115.00	$ -
5003	ASPHALT FOR 6 INCH BASE COURSE (COUNTY ROAD)	0	TON	$ 115.00	$ -
5004	ASPHALT FOR 13 INCH BASE COURSE (STATE ROAD)	0	TON	$ 115.00	$ -
5005	PAYMENT ADJUSTMENT FOR PAVEMENT DENSITY	0	EA	$ 1.00	$ -
5006	PAYMENT ADJUSTMENT FOR ASPHALT MIXTURE	0	EA	$ 1.00	$ -
5007	FINE MILLING ASPHALT PAVEMENT 0 INCH TO 2 INCH DEPTH	0	SY	$ 8.00	$ -
5008	6 INCH GRADED AGGREGATE BASE COURSE	0	SY	$ 21.50	$ -
	CATEGORY 5=				**$ -**
CATEGORY 6 - SHOULDERS					
6001	TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	0	LF	$ 40.00	$ -
6002	MONOLITHIC CONCRETE MEDIAN VARIABLE WIDTH - TYPE A1	0	LF	$ 120.00	$ -
6003	5 INCH CONCRETE SIDEWALK	0	SF	$ 10.00	$ -
6004	TRAFFIC BARRIER W BEAM	0	LF	$ 25.00	$ -
6005	TRAFFIC BARRIER W BEAM MEDIAN BARRIER	0	LF	$ 35.00	$ -
6006	TYPE C TRAFFIC BARRIER END TREATMENT	0	EA	$ 3,200.00	$ -
6007	TRAFFIC BARRIER W BEAM ANCHORAGE AT STRUCTURE	0	EA	$ 1,000.00	$ -
6008	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	0	EA	$ 1,400.00	$ -
6009	TYPE E TRAFFIC BARRIER END TREATMENT	0	EA	$ 10,000.00	$ -
6010	REMOVAL AND DISPOSAL OF EXISTING TRAFFIC BARRIER W BEAM	0	LF	$ 4.00	$ -
6011	BUS STATIONS	0	EA	$ 500,000.00	$ -
	CATEGORY 6=				**$ -**
CATEGORY 7 - LANDSCAPING					
7001	*CATEGORY 7= 7% OF CATEGORIES 2, 4, 5, & 6*	1	LS	7%	$ -
	CATEGORY 7=				**$ -**
CATEGORY 8 -TRAFFIC					
8001	SIGNING	1	LS	$ 30,000.00	$ 30,000.00
8002	OVERHEAD SIGN STRUCTURES	0	EA	$ 250,000.00	$ -
8003	OVERHEAD LANE MANAGEMENT SIGNAL	0	EA	$ 160,000.00	$ -
8004	OVERHEAD LED BLACKOUT SIGN REPLACEMENT	8	EA	$ 5,000.00	$ 40,000.00
8005	PAVEMENT MARKINGS	1	LS	$ 10,000.00	$ 10,000.00
8006	LIGHTING	1	LS	$ -	$ -
8007	TRAFFIC SIGNAL*	0	EA	$ 250,000.00	$ -
	CATEGORY 8=				**$ 80,000.00**
SUBTOTAL					**$ 80,000.00**
CONTINGENGY				40.0%	$ 32,000.00
UTILITIES = 15% OF SUBTOTAL				15.0%	$ 12,000.00
SUBTOTAL (NEAT CONSTRUCTION)					**$ 124,000.00**
OVERHEAD & ADMINISTRATION				**12.3%**	**$ 15,252.00**
RIGHT OF WAY		**0.0**	**ACRE**	**$ 1,250,000.00**	**$ -**
TOTAL PROJECT COST					**$ 139,252.00**

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Appendix III.B: Roll Maps

Median Bus Lane Optimized



US 29 (Colesville Road)
NO OPERATION



US 29 (Colesville Road)
NO OPERATION

LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED CURB / MEDIAN
- PROPOSED CONCRETE / SIDEWALK
- PROPOSED BRIDGE / BRIDGE REDECKING
- PROPOSED BUS STATION
- PROPOSED RETAINING WALL
- PROPOSED MILLING AND RESURFACING
- PROPOSED FULL DEPTH PAVEMENT
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

RP-1

US 29 (COLUMBIA PIKE)

SLIGO CREEK PARKWAY
TO CRESTMOOR DRIVE
MEDIAN BUS LANE OPTIMIZED

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 1 OF 6



LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED CURB / MEDIAN
- PROPOSED CONCRETE / SIDEWALK
- PROPOSED BRIDGE / BRIDGE REDECKING
- PROPOSED BUS STATION
- PROPOSED RETAINING WALL
- PROPOSED MILLING AND RESURFACING
- PROPOSED FULL DEPTH PAVEMENT
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

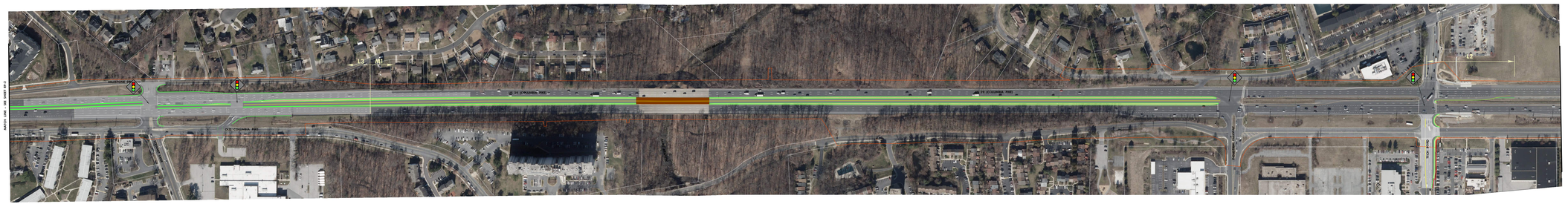
RP-2

US 29 (COLUMBIA PIKE)

CRESTMOOR DRIVE TO
MD 650 (NEW HAMPSHIRE AVENUE)
MEDIAN BUS LANE OPTIMIZED

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 2 OF 6



LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
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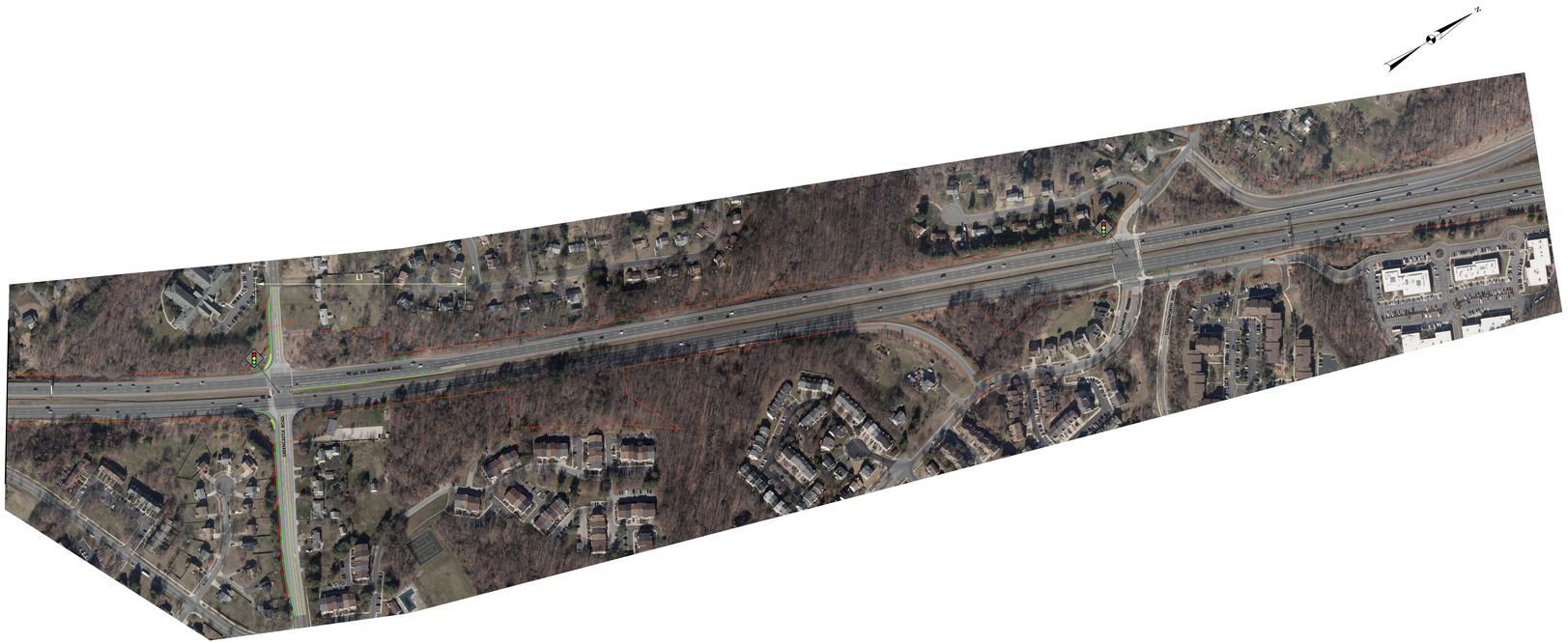
- PROPOSED MILLING AND RESURFACING
- PROPOSED FULL DEPTH PAVEMENT
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

RP-3

US 29 (COLUMBIA PIKE)
MD 650
(NEW HAMPSHIRE AVENUE)
TO TECH ROAD
MEDIAN BUS LANE OPTIMIZED

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 3 OF 6



LEGEND

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RP-6

US 29 (COLUMBIA PIKE)

GREENCASTLE ROAD
TO BLACKBURN ROAD
MEDIAN BUS LANE OPTIMIZED

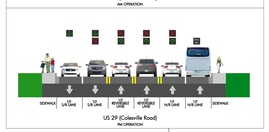
SCALE : 1" =100' DATE : NOVEMBER 2022

SHEET 6 OF 6

Median Bus Lane With Cost Reductions



US 29 (Colesville Road)
PM OPERATION



US 29 (Colesville Road)
PM OPERATION

LEGEND

- EXISTING RIGHT-OF-WAY
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- PROPOSED FULL DEPTH PAVEMENT
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- PROPOSED TRAFFIC SIGNAL

RP-1

US 29 (COLUMBIA PIKE)

SLIGO CREEK PARKWAY
TO CRESTMOOR DRIVE
MEDIAN BUS LANE
WITH COST REDUCTIONS

SCALE : 1" = 100' DATE : NOVEMBER 2022

SHEET 1 OF 6



LEGEND

- EXISTING RIGHT-OF-WAY
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- PROPOSED RIGHT-OF-WAY
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- PROPOSED MILLING AND RESURFACING
- PROPOSED FULL DEPTH PAVEMENT
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

RP-2

US 29 (COLUMBIA PIKE)

CRESTMOOR DRIVE TO
MD 650 (NEW HAMPSHIRE AVENUE)
MEDIAN BUS LANE
WITH COST REDUCTIONS

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

sheet 2 of 6



LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
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- PROPOSED FULL DEPTH PAVEMENT
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

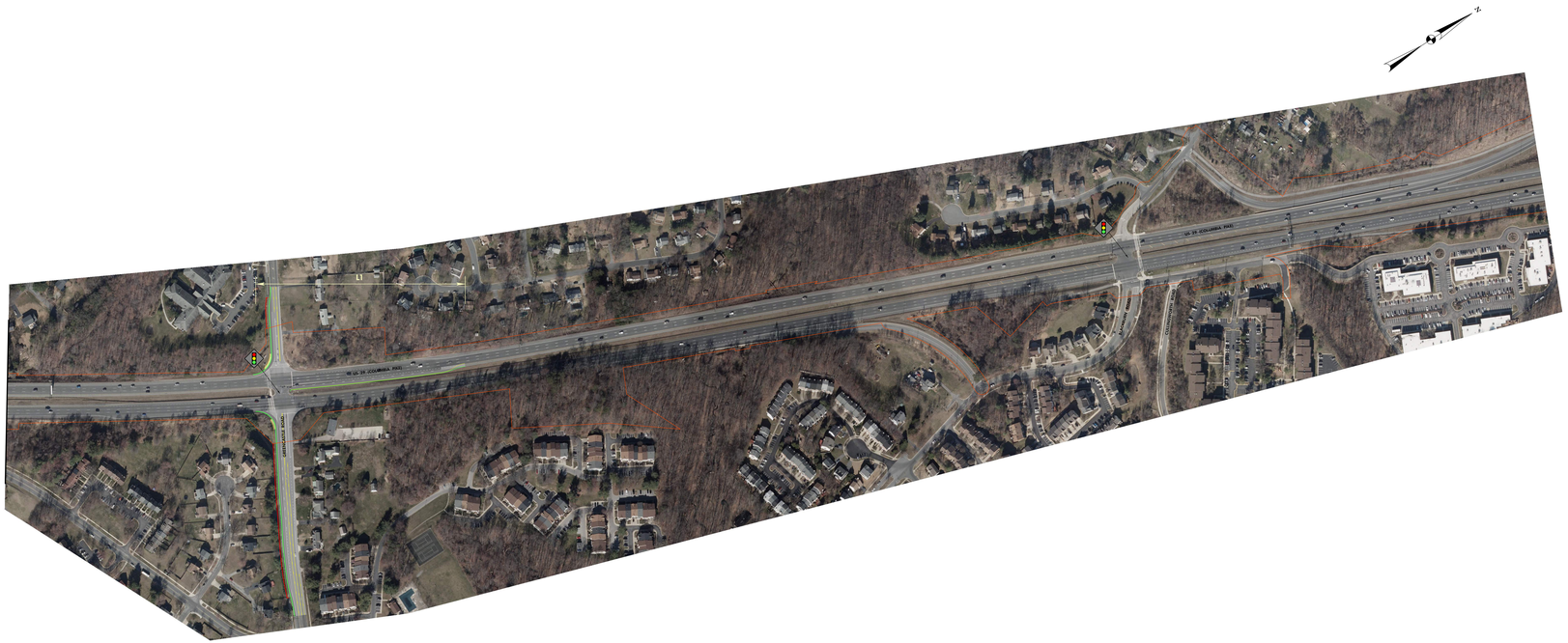
RP-3

US 29 (COLUMBIA PIKE)
MD 650
(NEW HAMPSHIRE AVENUE)
TO TECH ROAD
MEDIAN BUS LANE
WITH COST REDUCTIONS

SCALE : 1" = 100'

DATE : NOVEMBER 2022

SHEET 3 OF 6



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- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

RP-6

US 29 (COLUMBIA PIKE)

GREENCASTLE ROAD
TO BLACKBURN ROAD
MEDIAN BUS LANE
WITH COST REDUCTIONS

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 6 OF 6

Median Bus Lane Hybrid





LEGEND

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- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL

RP-1

US 29 (COLUMBIA PIKE)

SLIGO CREEK PARKWAY
TO CRESTMOOR DRIVE
MEDIAN BUS LANE HYBRID

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 1 OF 6



LEGEND

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- EXISTING TRAFFIC SIGNAL
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RP-2

US 29 (COLUMBIA PIKE)

CRESTMOOR DRIVE TO
MD 650 (NEW HAMPSHIRE AVENUE)
MEDIAN BUS LANE HYBRID

SCALE : 1" = 100' DATE : **NOVEMBER 2022**

SHEET 2 OF 6



LEGEND

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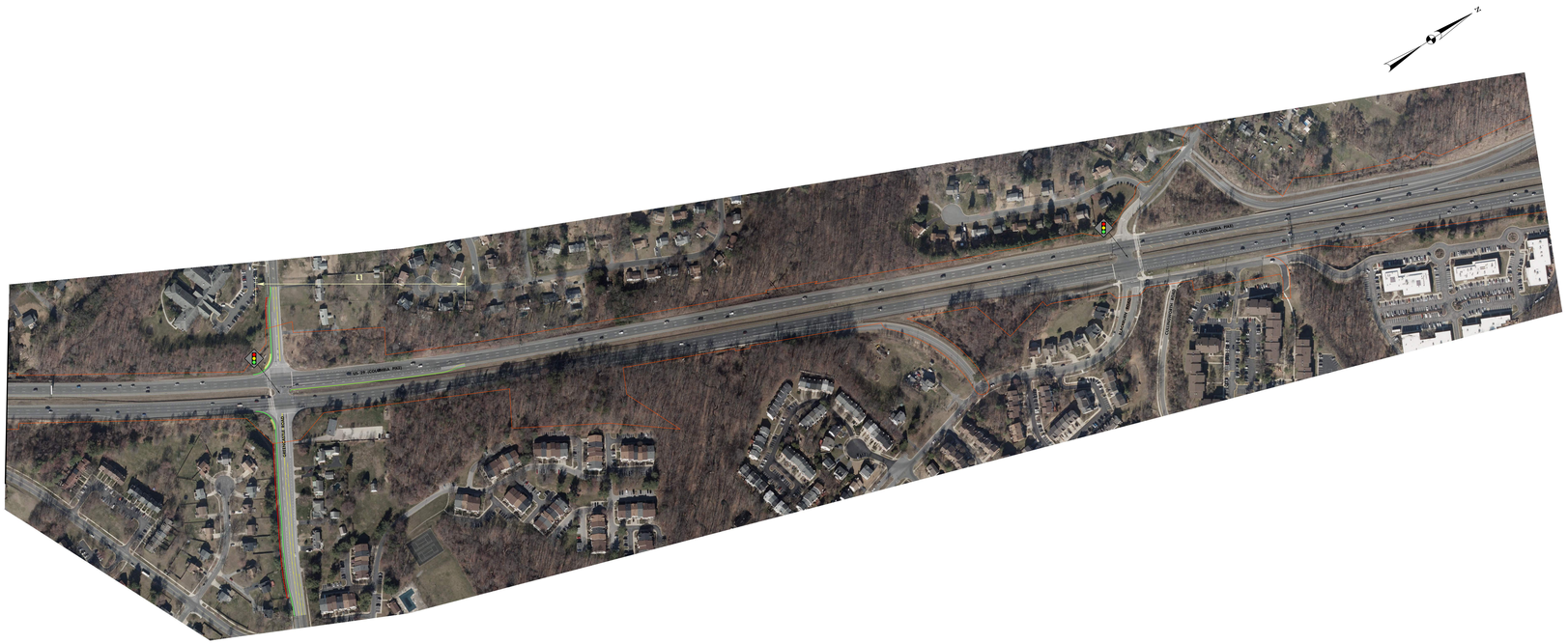
RP-3

US 29 (COLUMBIA PIKE)
MD 650
(NEW HAMPSHIRE AVENUE)
TO TECH ROAD
MEDIAN BUS LANE HYBRID

SCALE : 1" = 100' DATE : NOVEMBER 2022

SHEET 3 OF 6



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RP-6

US 29 (COLUMBIA PIKE)

GREENCASTLE ROAD
TO BLACKBURN ROAD
MEDIAN BUS LANE HYBRID

SCALE : 1" =100' DATE : NOVEMBER 2022

SHEET 4 OF 6