10.0 Recommendations

To accommodate the projected growth of the I-526 corridor, this report has summarized potential improvement strategies that were separated into four categories, TDM, Modal, Traffic Operations, and Capacity Improvement. The I-26 & I-526 system-to-system interchange was also evaluated in detail for future capacity needs.

This chapter describes the overall measures of effectiveness (MOE) utilized for the strategies in each of the improvement categories. The measures utilized for the TDM and Modal strategies include the overall traffic reduction due to the strategies to reduce, or push back, the need for large-scale improvements. The measures utilized for the Traffic Operations and Capacity Improvement strategies, including the I-26 & I-526 interchange, were based upon the results of the *VISSIM* Build analyses. These MOEs are summarized herein.

Finally, an evaluation of the benefits of all the potential improvement strategies for the four improvement categories versus suitability and costs was conducted and is summarized herein.

10.1 *VISSIM* Build Analyses

As summarized in Chapters 7, 8, and 9, a number of traffic operations, capacity improvement, and I-26 & I-526 interchange scenarios were modeled for the Build alternates by adding proposed improvements to the 2020 and 2035 No-Build *VISSIM* models. Multiple scenarios at each problem interchange were evaluated individually and then compared against each other. Based on the results of this comparison, a recommended alternate was chosen and loaded into the overall build model. Once major improvements were made at key interchanges, minor arterial improvements were evaluated to determine their effect on the network performance.

The results of *VISSIM* analyses indicated that the improvements outlined in Chapters 7, 8, and 9 would mitigate the congestion deficiencies for the I-526 study corridor. This chapter summarizes the results of the *VISSIM* Build analyses, including the MOEs for the freeway, interchanges, and surface street intersections.

10.1.1 Modeling Approach

The modeling approach detailed in the *VISSIM Model Development and Calibration Report* was also used for the build scenario *VISSIM* models. The origin-destination matrices for the 2020 and 2035 no-build models were also used for the 2020 and 2035 build models. However, due to the creation of alternate paths due to improvements in certain areas in the build model, it was possible that drivers may now opt to take a different route to reach their destination. To account for this, new cost and path files were generated for the build models in *VISSIM* using dynamic traffic assignment (DTA). This allows for vehicles to choose their route based on travel time and distance. No further adjustment of the travel patterns was required.

Where needed, link driver behaviors and lane change distances were adjusted to account for an increase in traffic and/or modifications to the network geometry which may result in a need for advanced warning of exits.

10.1.2 Methodology Assumptions

Several modifications to the *VISSIM* model roadway geometry outside of the project limits were required to preserve the integrity of the study itself. Congestion was noted in the future years near the I-526 interchanges with Rhett Avenue and Virginia Avenue, due to the demand volumes and the short weaving distances between the interchanges. This congestion was preventing through traffic from entering into the I-526 corridor study area.

Therefore, improvements outside the scope of this study were considered for these areas, so that the actual traffic demand would be able to enter the I-526 study area. Future improvements to Rhett Avenue and Virginia Avenue are recommended to be considered in long term.

10.1.3 Future-Year 2035 Build Conditions

The following sections show the *VISSIM* simulation results for the future-year 2035 AM and PM peak hours. These results include the traffic conditions for the I-526 and I-26 corridors and the cross-street arterials. The MOE data were calculated by the *VISSIM* modeling software, any further calculations were done using conventional HCM methodology.

As previously noted, these analyses consider Alternate G for the MCE project, as the traffic volumes for the study corridor are greater than the MCE project No Build scenario. However, due to its potential impact on future geometry, analyses were conducted at the I-526 & US 17/Sam Rittenberg Boulevard interchange and for the I-526 segment between US 17 and Paul Cantrell Boulevard for both MCE project scenarios.

10.1.3.1 Network Performance

AM Peak Hour

Table 10-1 shows a summary of the average delay time per vehicle, average speed, total emissions, and total fuel consumption for the AM peak hour, on a network-wide basis.

Table 10-1: 2035 Build AM Peak Hour Network Performance Summary

PARAMETER	NO BUILD	BUILD
Average speed [mph]	24.61	39.25
Average delay time per vehicle [s]	309.96	98.76
CO Emissions [grams/hr]	814,702	619,608
NOx Emissions [grams/hr]	158,511	120,553
VOC Emissions [grams/hr]	188,815	143,600
Fuel Consumption [gallons/hr]	11,655	8,864

As table 10-1 shows, the average speed and delay are improved in the 2035 AM peak hour with the recommended improvements in place. The average speed increases by approximately 15 mph and the average delay decreases by more than 200 seconds. Similarly, emissions and fuel consumption are reduced by allowing vehicles to reach their destination more quickly and reducing the amount of time they are stopped on the freeway or at traffic signals.

PM Peak Hour

Table 10-2 shows a summary of the average delay time per vehicle, average speed, total emissions, and total fuel consumption for the PM peak hour, on a network-wide basis.

Table 10-2: 2035 Build PM Peak Hour Network Performance Summary

PARAMETER	NO BUILD	BUILD
Average speed [mph]	15.54	36.60
Average delay time per vehicle [s]	516.10	117.79
CO Emissions [grams/hr]	1,520,393	805,462
NOx Emissions [grams/hr]	295,813	156,714
VOC Emissions [grams/hr]	352,366	186,674
Fuel Consumption [gallons/hr]	21,751	11,523

As with the 2035 AM peak hour, speeds and delay in the PM peak hour were also improved. Table 10-2 shows that the average network speed is more than doubled in the Build scenario, increasing by approximately 20 mph. The average network delay also saw tremendous improvement, decreasing by nearly 400 seconds.

10.1.3.2 Freeway Analysis

AM Peak Hour

Tables 10-3 and 10-4 show the freeway density and speed output data provided by the *VISSIM* modeling software for the AM peak hour. The two tables also display the data for both potential MCE scenarios for the I-526 segment between US 17 and Paul Cantrell Boulevard.

Table 10-3: 2035 Build AM Peak Hour Eastbound Freeway LOS

INTERSTATE	SEGMENT	NO BUILD			BUILD		
		DENSITY	AVG. SPEED	LOS	DENSITY	AVG. SPEED	LOS
I-526	US a17 to Paul Cantrell Blvd	16.3	61.9	B	17.4	61.1	B
	Paul Cantrell Blvd to Leeds Ave	30.8	58.4	D	25.3	59.8	C
	Leeds Ave to Paramount Dr	16.9	61.4	B	18.0	60.7	C
	Paramount Dr to Montague Ave	18.5	60.2	C	12.5	63.0	B
	Montague Ave to International Blvd	19.6	61.2	C	11.3	61.0	B
	International Blvd to I-26	57.6	30.0	F	11.9	61.8	B
	I-26 to Rivers Ave	54.2	30.5	F	10.0	57.8	A
	Rivers Ave to Rhett Ave	35.2	49.1	E	16.3	60.9	B
	Rhett Ave to Virginia Ave	20.1	57.4	C	37.4	38.7	E
	Virginia Ave to East End	14.8	62.6	B	18.1	61.9	C
I-26	South End to Montague Ave	17.1	62.0	B	23.9	53.4	C
	Montague Ave to I-526	21.2	54.4	C	22.7	52.8	C
	I-526 to Remount Rd.	52.5	28.4	F	10.4	62.4	A
	Remount Rd. to North End	28.5	54.2	D	21.8	61.4	C
I-526 (MCE Alt. G)	US 17 to Paul Cantrell Blvd	16.4	61.7	B	28.6	41.4	D

Table 10-4: 2035 Build AM Peak Hour Westbound Freeway LOS

Interstate	Segment	No Build			Build		
		Density	Avg. Speed	LOS	Density	Avg. Speed	LOS
I-526	US 17 to Paul Cantrell Blvd	10.6	62.6	A	15.4	60.1	B
	Paul Cantrell Blvd to Leeds Ave	22.7	58.3	C	22.4	49.7	C
	Leeds Ave to Paramount Dr	17.6	60.2	B	21.0	54.3	C
	Paramount Dr to Montague Ave	19.2	58.0	C	21.6	58.1	C
	Montague Ave to International Blvd	14.4	58.0	B	18.0	61.0	B
	International Blvd to I-26	18.2	57.7	C	11.8	51.2	B
	I-26 to Rivers Ave	102.6	9.3	F	19.5	47.3	C
	Rivers Ave to Rhett Ave	88.9	16.5	F	12.5	56.4	B
	Rhett Ave to Virginia Ave	99.3	10.4	F	23.6	58.7	C
	Virginia Ave to East End	108.6	10.0	F	31.8	53.6	D
I-26	South End to Montague Ave	16.0	58.5	B	20.9	46.2	C
	Montague Ave to I-526	13.0	55.9	B	2.2	64.2	A
	I-526 to Remount Rd.	24.6	47.1	C	8.1	61.0	A
	Remount Rd. to North End	6.1	64.3	A	10.3	60.4	A
I-526 (MCE Alt. G)	US 17 to Paul Cantrell Blvd	10.6	62.6	A	31.1	38.1	D

The freeway LOS is greatly improved during the AM peak hour for the Build scenario, being at LOS E or better for both the eastbound and westbound directions.

The main congestion deficiency along I-526 eastbound is between International Boulevard and Rhett Avenue. The braided ramps between I-26 and International Boulevard and the CD system between I-26 and Rivers Avenue greatly improved the traffic flow. As previously noted, future improvements to Rhett Avenue and Virginia Avenue are outside the scope of this project but are recommended to be considered.

The main congestion deficiency along I-526 westbound is from I-26 extending back to the east end of the study area. The model showed excessive queuing from vehicles trying to exit from I-526 westbound to I-26 westbound. The advanced off-ramp and collector-distributor system between Rivers Avenue and I-26 helped this issue tremendously.

It should be noted that the decline in LOS for the MCE Alternate G Build scenario is due to the fact that much of the upstream congestion was relieved due to the recommendations resulting from this study and more traffic was able to make its way downstream to this location. The LOS is still acceptable at a D during the 2035 design year with the proposed improvements in place.

Tables 10-5 and 10-6 show the comparison between Build and No-Build travel times in the eastbound and westbound directions, respectively, for the 2035 AM peak hour. The travel times reflect the improvement in traffic conditions just as the levels of service did.

Table 10-5: 2035 Build AM Peak Hour Eastbound Travel Times

Interstate	Segment	No Build		Build	
		Travel Time (s)	Average Speed (mph)	Travel Time (s)	Average Speed (mph)
I-526	Paul Cantrell to Leeds	182.8	56.7	173.8	59.6
	Leeds to Dorchester	61.0	57.0	58.3	59.7
	Dorchester to Montague	32.1	60.5	31.9	60.8
	Montague to International	32.3	60.9	31.6	62.4
	International to I-26	113.8	29.7	56.3	60.0
	I-26 to Rivers	113.6	30.2	59.3	57.8
	Rivers to Rhett	122.9	36.8	76.4	59.2
	Rhett to Virginia	30.2	58.5	31.3	56.4
	Total Travel Time (s)	**688.8**		**518.9**	
	Total Travel Time (min.)	**11.5**		**8.6**	
	Total Travel Time (hrs.)	**0.19**		**0.14**	
I-26	North End to Remount	318.3	23.4	121.6	61.1
	Remount to I-526	102.4	46.4	80.7	58.9
	I-526 to Montague	88.4	58.3	121.4	42.5
	Total Travel Time (s)	**509.2**		**323.7**	
	Total Travel Time (min.)	**8.5**		**5.4**	
	Total Travel Time (hrs.)	**0.14**		**0.09**	

Table 10-6: 2035 Build AM Peak Hour Westbound Travel Times

Interstate	Segment	No Build		Build	
		Travel Time (s)	Average Speed (mph)	Travel Time (s)	Average Speed (mph)
I-526	Virginia to Rhett	210.7	8.4	30.5	58.0
	Rhett to Rivers	445.0	10.2	79.2	57.5
	Rivers to I-26	270.9	12.8	61.6	56.3
	I-26 to International	152.9	22.4	59.4	57.6
	International to Montague	128.1	15.4	33.8	58.4
	Montague to Dorchester	34.6	56.0	38.9	49.9
	Dorchester to Leeds	59.0	57.9	61.6	55.4
	Leeds to Paul Cantrell	173.1	60.2	193.1	53.9
	Total Travel Time (s)	**1474.2**		**558.1**	
	Total Travel Time (min.)	**24.6**		**9.3**	
	Total Travel Time (hrs.)	**0.41**		**0.16**	
I-26	Montague to I-526	85.8	59.7	102.1	50.2
	I-526 to Remount	74.8	63.3	73.7	64.3
	Remount to North End	115.8	64.3	121.9	61.1
	Total Travel Time (s)	**276.5**		**297.7**	
	Total Travel Time (min.)	**4.6**		**5.0**	
	Total Travel Time (hrs.)	**0.08**		**0.08**	

The travel time for eastbound traffic between International Boulevard and Virginia Avenue fell from 380.5 seconds in the No-Build scenario to 223.3 seconds in the Build scenario. Similar reductions were noted for the westbound direction between Virginia Avenue and I-26 where travel time decreased dramatically from 840.6 seconds to 171.3 seconds with the Build improvements.

Exhibits 10-1 and 10-2 provide a graphical representation of the travel times along the I-526 corridor for the 2035 AM peak hour of the eastbound and westbound directions, respectively, as calculated by the microsimulation model. Exhibits 10-3 and 10-4 provide a graphical representation of the speeds of the No Build versus the Build scenarios along the I-526 corridor for the 2035 AM peak hour of the eastbound and westbound directions, respectively.

Exhibit 10-1: 2035 Build AM Peak Hour I-526 Eastbound Travel Time Graph

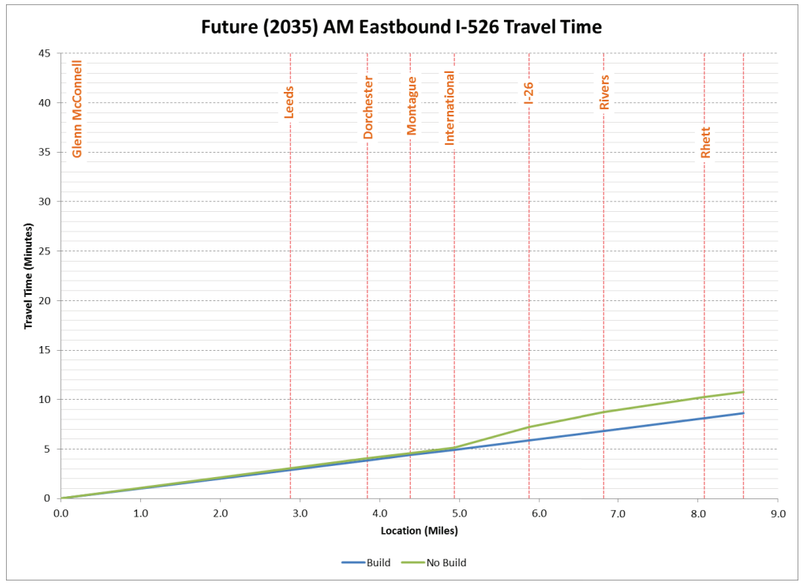


Exhibit 10-2: 2035 Build AM Peak Hour I-526 Westbound Travel Time Graph

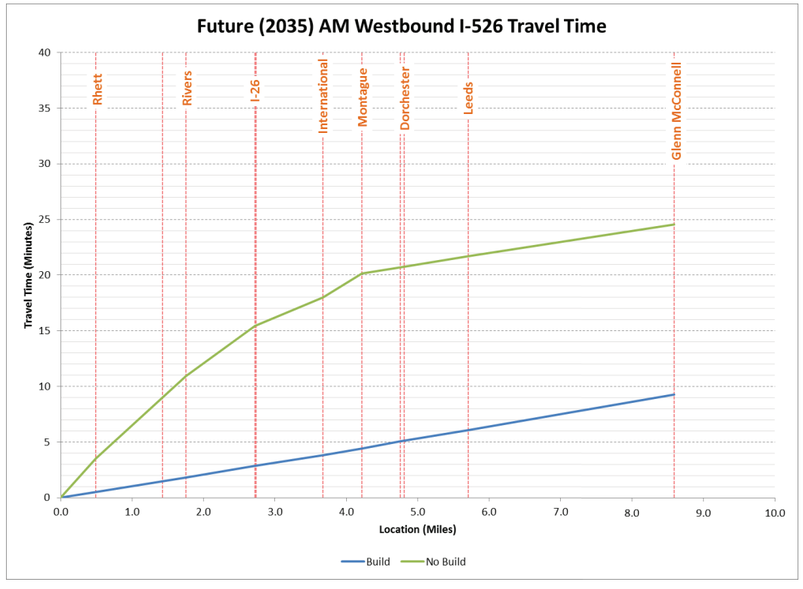


Exhibit 10-3: 2035 Build AM Peak Hour Eastbound Speed Graph

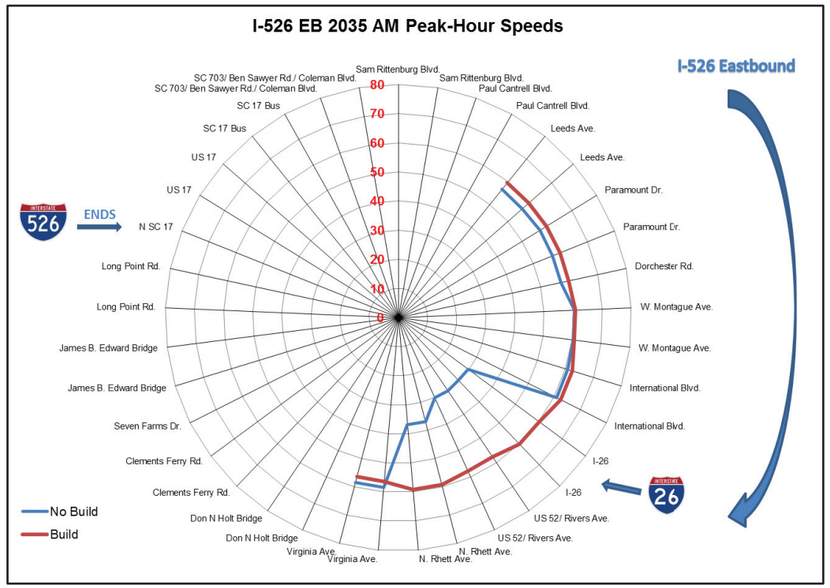
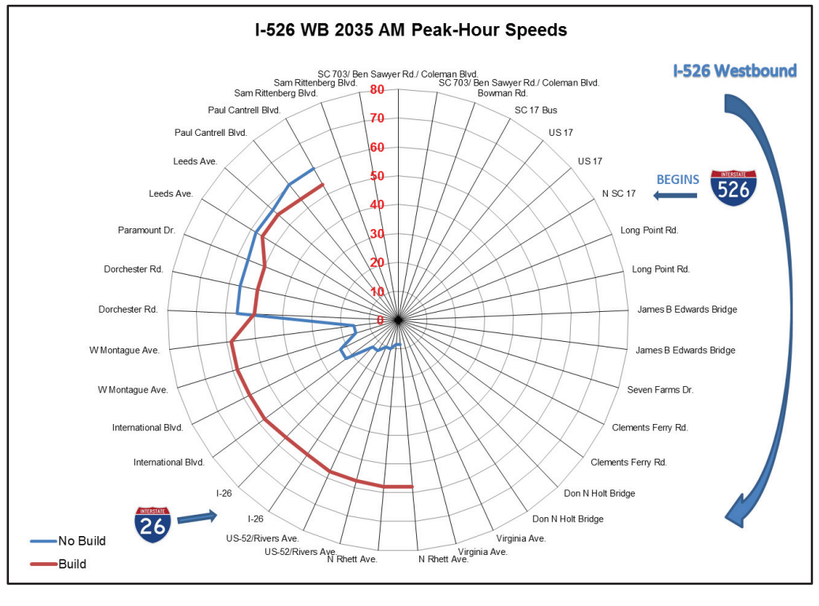


Exhibit 10-4: 2035 Build AM Peak Hour Westbound Speed Graph



PM Peak Hour

Tables 10-7 and 10-8 show the freeway density and speed output data provided by the *VISSIM* modeling software for the PM peak hour. The two tables also display the data for both potential MCE scenarios for the I-526 segment between US 17 and Paul Cantrell Boulevard.

Table 10-7: 2035 Build PM Peak Hour Eastbound Freeway LOS

Interstate	Segment	No Build			Build		
		Density	Avg. Speed	LOS	Density	Avg. Speed	LOS
I-526	US 17 to Paul Cantrell Blvd	79.1	31.4	F	39.6	43.2	E
	Paul Cantrell Blvd to Leeds Ave	106.2	28.0	F	22.0	60.8	C
	Leeds Ave to Paramount Dr	158.0	5.5	F	19.8	60.0	C
	Paramount Dr to Montague Ave	28.0	50.9	D	17.7	62.3	B
	Montague Ave to International Blvd	28.0	55.0	D	19.1	58.7	C
	International Blvd to I-26	48.9	39.3	F	23.0	54.9	C
	I-26 to Rivers Ave	63.8	26.2	F	19.6	57.0	C
	Rivers Ave to Rhett Ave	44.6	39.1	E	22.2	56.4	C
	Rhett Ave to Virginia Ave	56.8	25.4	F	22.2	59.0	C
	Virginia Ave to East End	17.9	61.7	B	28.1	59.4	D
I-26	South End to Montague Ave	10.7	63.4	A	16.2	58.5	B
	Montague Ave to I-526	42.6	33.9	E	16.1	53.6	B
	I-526 to Remount Rd.	48.7	22.5	F	7.5	63.3	A
	Remount Rd. to North End	18.3	52.7	C	14.5	62.9	B
I-526 (MCE Alt. G)	US 17 to Paul Cantrell Blvd.	79.1	31.4	F	39.8	40.2	E

Table 10-8: 2035 Build PM Peak Hour Westbound Freeway LOS

Interstate	Segment	No Build			Build		
		Density	Avg. Speed	LOS	Density	Avg. Speed	LOS
I-526	US 17 to Paul Cantrell Blvd	23.8	42.3	C	19.7	59.6	C
	Paul Cantrell Blvd to Leeds Ave	118.7	13.1	F	30.1	49.5	D
	Leeds Ave to Paramount Dr	48.9	39.3	F	17.1	57.8	B
	Paramount Dr to Montague Ave	12.0	62.2	B	17.0	61.7	B
	Montague Ave to International Blvd	8.1	60.5	A	13.5	62.2	B
	International Blvd to I-26	95.2	9.4	F	9.4	53.3	A
	I-26 to Rivers Ave	145.6	5.5	F	14.7	50.9	B
	Rivers Ave to Rhett Ave	101.6	18.3	F	10.8	57.0	A
	Rhett Ave to Virginia Ave	110.9	9.6	F	24.6	55.1	C
	Virginia Ave to East End	123.7	7.2	F	28.5	54.3	D
I-26	South End to Montague Ave	92.9	19.6	F	39.9	48.6	E
	Montague Ave to I-526	101.0	14.4	F	15.8	62.9	B
	I-526 to Remount Rd.	66.7	31.2	F	33.7	54.1	D
	Remount Rd. to North End	17.2	63.0	B	33.4	53.3	D
I-526 (MCE Alt. G)	US 17 to Paul Cantrell Blvd.	23.8	42.3	C	11.5	57.2	B

The freeway LOS is greatly improved during the PM peak hour for the Build scenario, operating at LOS D or better for both the eastbound and westbound directions, with the exception of one segment operating at LOS E.

There are multiple congestion deficiencies along both the I-526 and I-26 corridors in the eastbound direction. Along I-526 eastbound, weaving issues were noted beginning at the Dorchester Road/Paramount Drive interchange. The traffic signal phasing and splits were evaluated and adjusted, leading to improved flow in the area around the interchange. In addition, the braided ramps between Dorchester Road and Montague Avenue addressed the weaving issues. Once the issues at Dorchester Road and Montague Avenue were resolved, the congestion progressed downstream, resulting in the need for braided ramps between Montague Avenue and International Boulevard and I-26. Additionally, the CD systems around the I-26 & I-526 interchange alleviated congestion considerably on both Interstates around the interchange.

Along I-526 westbound, congestion deficiencies were noted from International Boulevard extending back to the east end of the study area and from Paul Cantrell Boulevard through the Dorchester Road interchange. The improvements around the I-526 interchanges with International boulevard and I-26 previously discussed alleviated the congestion in these areas.

The I-526 westbound exit ramp to Paul Cantrell Boulevard westbound was widened to two lanes, helping to facilitate the heavy traffic demand at the interchange and to minimize mainline backups. In addition, the intersection of Paul Cantrell Boulevard & Magwood Drive was upgraded to a tight urban diamond interchange due to heavy turning movements, which helped keep traffic constantly flowing through on Paul Cantrell Boulevard.

Tables 10-9 and 10-10 show the comparison between Build and No-Build travel times in the eastbound and westbound directions, respectively, for the 2035 PM peak hour. The travel times reflect the improvement in traffic conditions just as the levels of service did.

Table 10-9: 2035 Build PM Peak Hour Eastbound Travel Times

Interstate	Segment	No Build		Build	
		Travel Time (s)	Average Speed (mph)	Travel Time (s)	Average Speed (mph)
I-526	Paul Cantrell to Leeds	802.4	12.9	179.4	57.7
	Leeds to Dorchester	478.4	7.3	58.9	59.1
	Dorchester to Montague	40.7	47.6	33.1	58.6
	Montague to International	53.8	36.6	32.6	60.5
	International to I-26	122.3	27.6	63.1	53.5
	I-26 to Rivers	156.9	21.8	61.8	55.5
	Rivers to Rhett	159.2	28.4	78.3	57.8
	Rhett to Virginia	76.9	23.0	34.5	51.3
	Total Travel Time (s)	**1890.7**		**541.6**	
	Total Travel Time (min)	**31.5**		**9.0**	
	Total Travel Time (hr	**0.53**		**0.15**	
I-26	North End to Remount	196.4	37.9	118.2	62.9
	Remount to I-526	103.2	46.0	77.2	61.5
	I-526 to Montague	106.8	48.3	112.9	45.7
	Total Travel Time (s)	**406.4**		**308.2**	
	Total Travel Time (min)	**6.8**		**5.1**	
	Total Travel Time (hr	**0.11**		**0.09**	

Table 10-10: 2035 Build PM Peak Hour Westbound Travel Times

Interstate	Segment	No Build		Build	
		Travel Time (s)	Average Speed (mph)	Travel Time (s)	Average Speed (mph)
I-526	Virginia to Rhett	185.3	9.6	31.6	56.0
	Rhett to Rivers	389.5	11.7	80.3	56.7
	Rivers to I-26	321.6	10.8	60.2	57.5
	I-26 to International	233.9	14.6	57.7	59.3
	International to Montague	32.6	60.6	33.2	59.5
	Montague to Dorchester	43.5	44.6	34.1	56.9
	Dorchester to Leeds	240.5	14.2	60.3	56.6
	Leeds to Paul Cantrell	761.8	13.7	195.1	53.4
	Total Travel Time (s)	**2208.8**		**552.5**	
	Total Travel Time (min)	**36.8**		**9.2**	
	Total Travel Time (hr)	**0.61**		**0.15**	
I-26	Montague to I-526	363.4	14.1	138.3	37.1
	I-526 to Remount	185.6	25.5	79.7	59.4
	Remount to North End	119.6	62.3	136.0	54.7
	Total Travel Time (s)	**668.5**		**353.9**	
	Total Travel Time (min)	**11.1**		**5.9**	
	Total Travel Time (hr)	**0.19**		**0.10**	

The travel time for I-526 eastbound decreased from approximately 30 minutes to nine minutes. Similar reductions were noted for the westbound direction, as travel times decreased from approximately 37 minutes to nine minutes with the Build improvements.

Exhibits 10-5 and 10-6 provide a graphical representation of the travel times along the I-526 corridor for the 2035 PM peak hour of the eastbound and westbound directions, respectively, as calculated by the microsimulation model. Exhibits 10-7 and 10-8 provide a graphical representation of the speeds of the No Build versus the Build scenarios along the I-526 corridor for the 2035 PM peak hour of the eastbound and westbound directions, respectively.

Exhibit 10-5: 2035 Build PM Peak Hour I-526 Eastbound Travel Time Graph

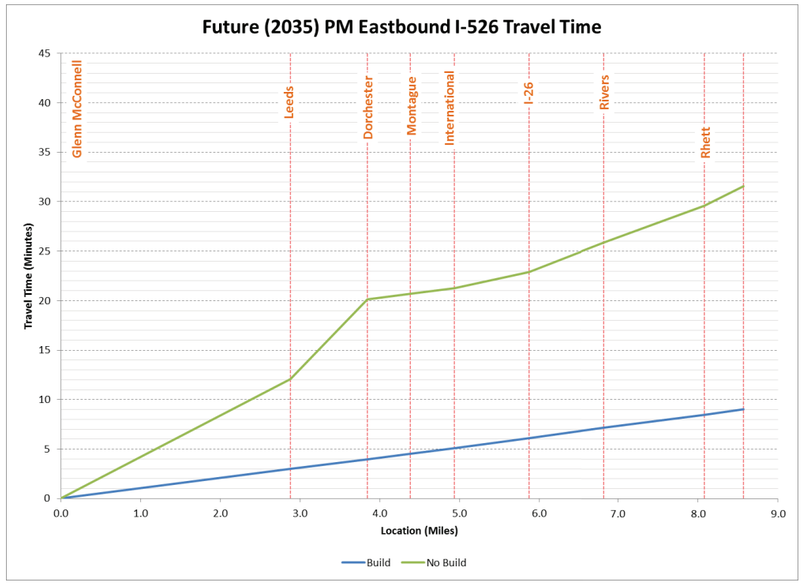


Exhibit 10-6: 2035 Build PM Peak Hour I-526 Westbound Travel Time Graph

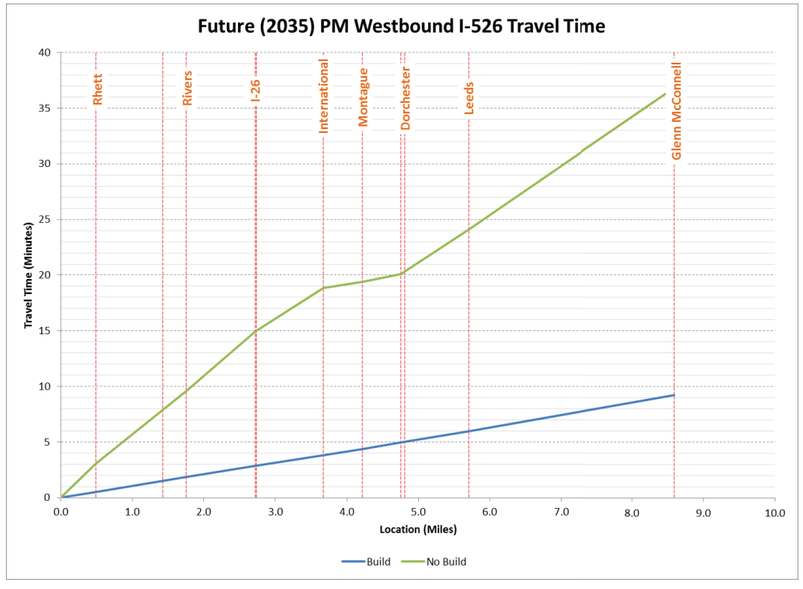


Exhibit 10-7: 2035 Build PM Peak Hour Eastbound Speed Graph

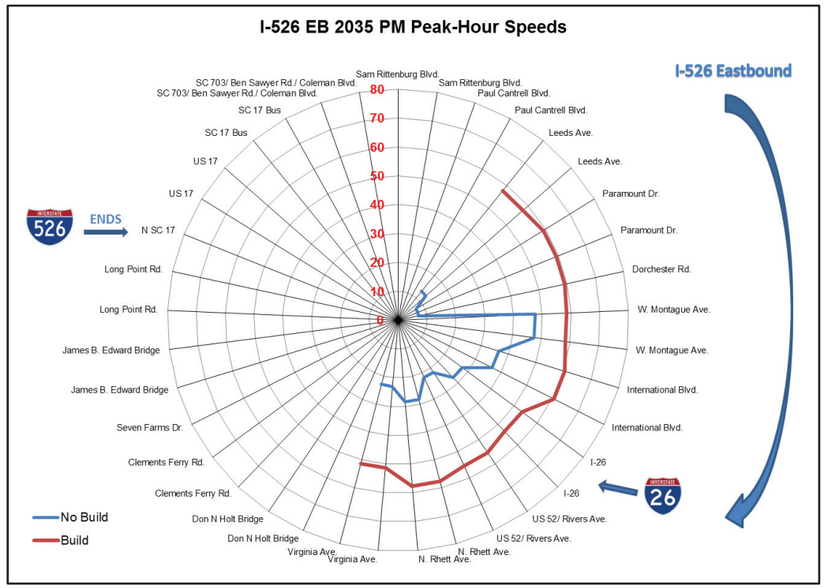
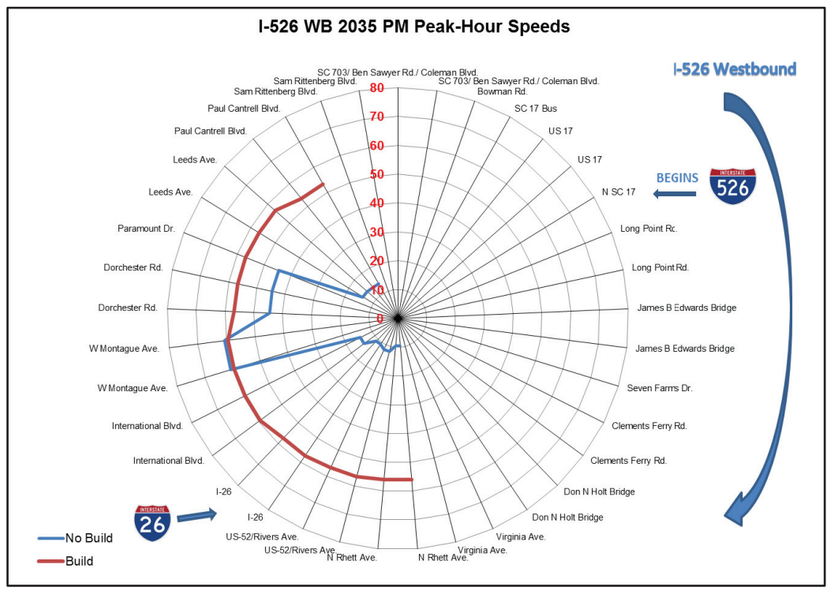


Exhibit 10-8: 2035 Build PM Peak Hour Westbound Speed Graph



10.1.3.3 Intersection Analysis

The following tables summarize the intersection delay, LOS, and simulated queue lengths for the intersections in the study area for both the AM and PM peak hours.

AM Peak Hour

Table 10-11 shows the intersection delay and LOS for the 2035 AM peak hour of the signalized study intersections. The table includes the MOE data for both potential MCE scenarios for the five study intersections along US 17 and Sam Rittenberg Boulevard that would be impacted by the MCE project.

Table 10-11: 2035 Build AM Peak Hour Signalized Intersection LOS

Intersection	No Build			Build		
	Volume	Avg. Delay	LOS	Volume	Avg. Delay	LOS
US 17 @ Ashley Town Center Dr	5059	31.9	C	5456	16.9	B
US 17 @ Sam Rittenberg	4876	18.6	B	5231	19.4	B
US 17 @ Skylark Dr	3830	9.3	A	4186	7.4	A
US 17 @ Orleans Rd.	3451	2.9	A	3638	3.8	A
Sam Rittenberg @ Mark Clark WB	1905	13.5	B	2407	11.3	B
Sam Rittenberg @ Skylark	1822	12.4	B	1941	11.5	B
Paul Cantrell @ Magwood	5091	123.4	F			
Magwood @ Paul Cantrell WB Ramps				2938	19.9	B
Magwood @ Paul Cantrell EB Ramps				2480	13.1	B
Paul Cantrell @ I-526	9903	53.6	D	5739	33.6	C
Paul Cantrell @ Tobias Gadson	3323	43.1	D	4259	27.8	C
Leeds @ I-526 WB	3971	6.4	A			
Leeds @ I-526 EB	4637	4.2	A			
Leeds @ Bridge View	1701	5.1	A	1922	5.5	A
Paramount @ I-526 WB	1404	25.7	C	920	11.5	B
Paramount @ I-526 EB	1213	10.6	B	1369	30.2	C
Dorchester @ I-526 WB	2623	21.3	C	2320	9.7	A
Dorchester @ I-526 EB	2321	8.6	A	3934	6.7	A
Dorchester @ Paramount / Oscar Johnson	2392	9.5	A	2586	13.1	B
Montague @ Dorchester	2780	100.4	F	2994	59.6	E
Montague @ I-526 WB	2150	41.4	D	2098	18.6	B
Montague @ I-526 EB	2518	20.6	C	2753	22.2	C
Montague @ International	3477	48.2	D	3506	44.4	D
International @ Tanger Outlet	2290	20.8	C	2570	24.3	C
International @ Centre Pointe	2133	20.3	C	2766	14.4	B
International @ I-526 EB	5274	38.9	D	4913	19.0	B
International @ I-526 WB	6207	39.1	D	4575	17.8	B
International @ Aviation	3700	58.8	E	4896	14.8	B
Montague @ I-26 WB	10836	8.8	A	4217	16.4	B
Montague @ Mall / Goer	2718	13.7	B	3285	23.1	C
Remount @ Core	799	2.7	A	912	2.4	A
Remount @ I-26 EB Off-Ramp / Vector	1171	26.3	C	1136	13.4	B
Remount @ I-26 WB Off-Ramp	4166	29.2	C	1520	10.9	B
Remount @ Rivers	5078	101.3	F	5505	48.3	D
Aviation @ Core / Fain	1558	10.5	B	1721	12.2	B
Aviation @ I-26 WB	1830	28.3	C	1191	4.2	A
Aviation @ I-26 EB	1122	9.0	A	2010	8.8	A
Aviation @ Rivers	4554	55.4	E	5362	20.9	C
Rivers @ Harley	3465	27.3	C	3981	5.8	A
Rivers @ I-526 WB	1885	20.0	C	1807	5.1	A
Rivers @ I-526 EB	1174	9.8	A	5369	2.2	A
Rivers @ Mall	2211	9.8	A	2485	12.3	B
Rhett @ Remount	2892	149.4	F	4399	69.1	E
Rhett @ I-526 WB	2386	63.7	E	4130	33.8	C
Rhett @ I-526 EB	1536	9.9	A	1978	15.5	B
Rhett @ Braddock	1055	5.3	A	1386	5.0	A
Montague @ Tanger Outlet Extension	2003	8.8	A	2394	11.6	B
US 17 @ Ashley Town Center Dr (MCE Alt. G)	5072	28.5	C	5216	46.6	D
US 17 @ Sam Rittenberg (MCE Alt. G)	4888	18.4	B	5353	28.4	C
US 17 @ Skylark Dr (MCE Alt. G)				7171	30.2	C
US 17 @ Orleans Rd. (MCE Alt. G)	3843	10.0	A	4705	10.5	B
Sam Rittenberg @ Mark Clark WB (MCE Alt. G)	3458	3.0	A	4282	5.9	A
Sam Rittenberg @ Skylark (MCE Alt. G)	1881	13.3	B	3251	10.8	B

The signalized intersection operations were substantially improved with consideration of the recommended improvements.

Table 10-12 shows the intersection delay and LOS for the 2035 AM peak hour of the unsignalized study intersections, which show that the proposed recommended improvements had minimal impact on the unsignalized study intersections.

Table 10-12: 2035 Build AM Peak Hour Unsignalized Intersection LOS

Intersection	No Build		Build	
	Avg. Delay	LOS	Avg. Delay	LOS
Leeds @ Faber Place	7.7	A	8.1	A
	4.0		5.1	
Leeds @ I-526 WB Ramps			2.5	D
			13.7	
			34.0	
Leeds @ I-526 EB Ramps			4.5	C
			16.9	
			3.4	
Paramount @ Faber Place / Lysa	5.6	A	4.8	A
	3.4		3.4	
Virginia @ I-526 WB	3.6	A	4.2	A
Virginia @ I-526 EB	36.5	E	68.7	F

Table 10-13 shows the average queue length calculated by the *VISSIM* modeling software for the 2035 AM peak hour.

Table 10-13: 2035 Build AM Peak Hour Average Queue Length

Intersection	Approach	Average Queue (ft)	
		No Build	Build
US 17 @ Ashley Town Center Dr	SB Ashley Town Center	216.3	79.6
	WB US 17	28.6	42.0
	NB Ashley Town Center	41.7	37.1
	EB US 17	492.4	139.9
US 17 @ Sam Rittenberg	SB Sam Rittenberg	15.4	142.5
	WB US 17	31.5	33.6
	NB Sam Rittenberg	2.5	2.7
	EB US 17	494.4	271.8
US 17 @ Skylark Dr	SB Skylark	65.3	23.6
	WB US 17	7.0	6.4
	EB US 17	83.5	128.6
US 17 @ Orleans Rd.	SB Orleans	27.9	31.4
	WB US 17	8.5	8.8
	EB US 17	4.0	0.0
Sam Rittenberg @ Mark Clark WB	SB Mark Clark	51.1	0.0
	WB Sam Rittenberg	12.7	12.6
	EB Sam Rittenberg	11.3	10.5
Sam Rittenberg @ Skylark	SB Skylark	1.3	2.9
	WB Sam Rittenberg	16.9	17.8
	NB Skylark	49.4	45.5
	EB Sam Rittenberg	17.0	21.9
Paul Cantrell @ Magwood	SB Magwood	899.1	86.0
	WB Paul Cantrell	173.5	0.0
	NB Magwood	216.6	0.0
	EB Paul Cantrell	747.8	0.0
Paul Cantrell @ I-526	WB Paul Cantrell	782.8	224.7
	EBL Paul Cantrell	917.1	291.4
Paul Cantrell @ Tobias Gadson	SB Tobias Gadson	340.3	105.6
	WB Paul Cantrell	92.7	118.7
	NB Tobias Gadson	62.5	141.3
	EB Paul Cantrell	61.2	94.8
Leeds @ Faber Place	SB Faber Place	0.0	0.0
	WB Leeds	0.0	0.0
	NB Faber Place	0.0	0.0
	EB Leeds	0.0	0.0
Leeds @ I-526 WB	SB I-526 WB Off-Ramp	98.4	0.0
	WB Leeds	26.7	0.0
	EB Leeds	14.1	0.1
Leeds @ I-526 EB	WB Leeds	20.4	0.0
	NB I-526 EB Off-Ramp	45.4	0.0
	EB Leeds	10.0	0.0
Leeds @ Bridge View	SB Leeds	5.1	5.9
	WB Bridge View	12.7	11.5
	NB Leeds	4.6	5.6
Paramount @ Faber Place / Lysa	SB Lysa	0.0	0.0
	WB Paramount	0.0	0.0
	NB Faber Place	0.0	0.0
	EB Paramount	0.0	0.0
Paramount @ I-526 WB	SB I-526 WB Off-Ramp	285.4	32.7
	WB Paramount	12.9	5.9
	EB Paramount	8.1	6.3
Paramount @ I-526 EB	WB Paramount	8.0	6.1
	NB I-526 EB Off-Ramp	39.6	545.8
	EB Paramount	17.8	13.0
Dorchester @ I-526 WB	SB I-526 WB Off-Ramp	77.2	33.2
	WB Dorchester	18.0	12.2
	EB Dorchester	223.5	28.6
Dorchester @ I-526 EB	WB Dorchester	6.2	4.8
	NB I-526 EB Off-Ramp	67.2	45.8
	EB Dorchester	11.6	30.0
Dorchester @ Paramount	SB Oscar Johnson	5.7	10.1
	WB Dorchester	11.7	20.8
	NB Paramount	87.5	200.0
	EB Dorchester	3.6	28.0
Montague @ Dorchester	SB Montague	978.6	125.2
	WB Dorchester	259.5	80.1
	NB Montague	3.6	6.1
	EB Dorchester	793.1	830.7
Montague @ I-526 WB	SB I-526 WB Off-Ramp	555.7	33.3
	WB Montague	98.1	46.2
	EB Montague	68.6	121.2
Montague @ I-526 EB	WB Montague	147.5	89.2
	NB I-526 EB Off-Ramp	86.1	139.4
	EB Montague	46.2	50.0
Montague @ International	SB Montague	507.8	182.3
	WB International	81.5	88.4
	NB Montague	143.6	186.4
	EB International	192.2	459.2
International @ Tanger Outlet	SB Tanger Outlet	61.6	68.4
	WB International	52.6	35.3
	EB International	23.4	40.8
	NB Tanger Outlet Ext	24.5	0.0
International @ Centre Pointe	SB Centre Pointe	59.2	23.2
	WB International	50.5	35.8
	NB Centre Pointe	4.1	4.0
	EB International	46.5	0.0
International @ I-526 EB	WB International	274.1	0.0
	NB I-526 EB Off-Ramp	214.9	0.0
	EB International	803.8	0.0
International @ I-526 WB	SB I-526 WB Off-Ramp	493.8	48.1
	WB International	202.5	0.0
	EB International	457.7	0.0
International @ Aviation	SB Aviation	83.1	68.1
	WB International	120.4	0.0
	EB International	875.8	0.0
Montague @ I-26 WB	SB Montague	42.0	41.3
	WB I-26 WB Off-Ramp	41.3	146.5
	NB Montague	56.5	69.2
Montague @ Mall / Goer	SB Montague	36.1	37.3
	WB Goer	19.0	19.9
	NB Montague	50.5	279.7
	EB Mall	5.7	12.2
Remount @ Core	SB Core	0.0	0.1
	WB Remount	0.0	0.0
	EB Remount	0.0	0.0
Remount @ I-26 EB Off-Ramp / Vector	SB I-26 EB Off-Ramp	66.1	30.6
	WB Remount	776.7	30.2
	NB Vector	4.9	2.7
	EB Remount	14.6	8.7
Remount @ I-26 WB Off-Ramp	WB Remount	536.9	27.4
	NB I-26 WB Off-Ramp	415.7	54.2
	EB Remount	28.9	0.0
Remount @ Rivers	SB Rivers	446.6	181.8
	WB Remount	516.8	259.0
	NB Rivers	752.9	86.5
	EB Remount	283.1	146.1
Aviation @ Core / Fain	SB Fain	7.4	8.5
	WB Aviation	17.2	25.4
	NB Core	23.7	24.9
	EB Aviation	14.5	17.5
Aviation @ I-26 WB	SB I-26 EB Off-Ramp	29.2	17.1
	WB Aviation	3.3	2.7
	EB Aviation	2.0	1.3
Aviation @ I-26 EB	WB Aviation	263.0	19.3
	NB I-26 WB Off-Ramp	389.9	40.9
	EB Aviation	25.7	3.3
Aviation @ Rivers	SB Rivers	412.5	94.0
	NB Rivers	883.5	108.9
	EB Aviation	410.5	83.0
Rivers @ Harley	SB Rivers	352.8	20.0
	WB Harley	15.1	16.3
	NB Rivers	22.8	23.2
Rivers @ I-526 WB	SB Rivers	469.5	0.0
	NB Rivers/WB On-Ramp	80.5	24.5
Rivers @ I-526 EB	NB Rivers	27.1	19.8
	SB Rivers/EB On-Ramp	38.8	0.0
Rivers @ Mall	SB Rivers	55.2	74.9
	NB Rivers	5.4	5.2
	EB Mall	21.7	22.6
Rhett @ Remount	SB Rhett	910.3	581.2
	WB Remount	81.8	116.7
	NB Rhett	82.2	92.2
	EB Remount	1005.7	975.0
Rhett @ I-526 WB	SB Rhett	949.9	416.6
	NB Rhett	39.1	65.1
	EB I-526 WB Off-Ramp	148.4	232.3
Rhett @ I-526 EB	SB Rhett	15.3	275.1
	NB Rhett	15.7	32.5
	EB I-526 EB Off-Ramp	28.2	52.2
Rhett @ Braddock	SB Rhett	3.0	6.3
	WB Braddock	0.6	0.7
	NB Rhett	3.8	3.5
	EB Braddock	15.2	16.2
Virginia @ I-526 WB	SB Virginia	0.0	0.0
	NB Virginia	0.0	0.0
Virginia @ I-526 EB	SB Virginia	0.0	0.0
	NB Virginia	0.0	0.0
	EB I-526 EB Off-Ramp	342.1	754.9
Montague @ Tanger Outlet Ext	SB Tanger Outlet Ext	46.8	57.9
	WB Montague	9.1	11.0
	EB Montague	21.7	42.5

PM Peak Hour

Table 10-14 shows the intersection delay and LOS for the PM peak hour of the signalized study intersections. The table includes the MOE data for both potential MCE scenarios for the five study intersections along US 17 and Sam Rittenberg Boulevard that would be impacted by the MCE project.

Table 10-14: 2035 Build PM Peak Hour Signalized Intersection LOS

Intersection	No Build			Build		
	Volume	Avg. Delay	LOS	Volume	Avg. Delay	LOS
US 17 @ Ashley Town Center Dr	5486	28.1	C	6282	24.1	C
US 17 @ Sam Rittenberg	5238	18.8	B	6223	25.3	C
US 17 @ Skylark Dr	4066	53.9	D	4721	29.9	C
US 17 @ Orleans Rd.	3900	35.9	D	4667	21.8	C
Sam Rittenberg @ Mark Clark WB	2726	38.9	D	3824	27.8	C
Sam Rittenberg @ Skylark	2989	49.7	D	3683	28.8	C
Paul Cantrell @ Magwood	5706	104.3	F			
Magwood @ Paul Cantrell WB Ramps				3430	20.0	C
Magwood @ Paul Cantrell EB Ramps				2482	24.6	C
Paul Cantrell @ I-526	3320	64.5	E	5473	36.0	D
Paul Cantrell @ Tobias Gadson	3317	102.7	F	4869	76.1	E
Leeds @ I-526 WB	2995	47.3	D			
Leeds @ I-526 EB	2643	76.3	E			
Leeds @ Bridge View	1002	181.6	F	2136	12.9	B
Paramount @ I-526 WB	1234	64.4	E	1282	17.7	B
Paramount @ I-526 EB	1297	131.7	F	1484	13.9	B
Dorchester @ I-526 WB	3596	23.1	C	3692	14.3	B
Dorchester @ I-526 EB	3815	44.3	D	5192	15.9	B
Dorchester @ Paramount / Oscar Johnson	3179	34.6	C	3448	16.7	B
Montague @ Dorchester	3816	60.6	E	4436	26.7	C
Montague @ I-526 WB	2238	55.6	E	2330	18.7	B
Montague @ I-526 EB	2793	39.4	D	2918	27.4	C
Montague @ International	3926	84.2	F	4659	51.6	D
International @ Tanger Outlet	2931	105.5	F	3825	38.3	D
International @ Centre Pointe	3059	88.6	F	4675	44.5	D
International @ I-526 EB	5126	71.1	E	6605	27.5	C
International @ I-526 WB	5435	71.5	E	6159	23.0	C
International @ Aviation	3651	121.8	F	6192	21.5	C
Montague @ I-26 WB	3556	52.7	D	5204	23.7	C
Montague @ Mall / Goer	2522	109.8	F	4188	30.8	C
Remount @ Core	694	113.8	F	1261	4.7	A
Remount @ I-26 EB Off-Ramp / Vector	919	191.2	F	1535	15.8	B
Remount @ I-26 WB Off-Ramp	5873	42.6	D	2033	5.0	A
Remount @ Rivers	3481	246.1	F	5673	47.6	D
Aviation @ Core / Fain	2128	30.6	C	2498	14.7	B
Aviation @ I-26 WB	1774	12.5	B	2007	4.2	A
Aviation @ I-26 EB	1455	37.4	D	2025	6.8	A
Aviation @ Rivers	3825	63.9	E	5514	31.0	C
Rivers @ Harley	2766	128.7	F	4539	20.6	C
Rivers @ I-526 WB	984	84.2	F	1087	2.1	A
Rivers @ I-526 EB	1754	44.3	D	5176	4.3	A
Rivers @ Mall	2661	18.0	B	3246	8.5	A
Rhett @ Remount	3521	178.2	F	5219	67.5	E
Rhett @ I-526 WB	2626	61.6	E	4566	22.4	C
Rhett @ I-526 EB	1887	10.1	B	2596	16.9	B
Rhett @ Braddock	1471	4.8	A	1830	4.9	A
Montague @ Tanger Outlet Extension	2919	45.4	D	2564	10.1	B
US 17 @ Ashley Town Center Dr (MCE Alt. G)	5501	26.1	C	6211	49.0	D
US 17 @ Sam Rittenberg (MCE Alt. G)	5258	17.0	B	6365	28.2	C
US 17 @ I-526 (MCE Alt. G)				7957	36.9	D
US 17 @ Skylark Dr (MCE Alt. G)	4097	52.4	D	5046	32.3	C
US 17 @ Orleans Rd. (MCE Alt. G)	3923	35.7	D	4795	22.8	C
Sam Rittenberg @ Mark Clark WB (MCE Alt. G)	2715	47.1	D	3613	19.5	B
Sam Rittenberg @ Skylark (MCE Alt. G)	3062	38.5	D	3505	24.3	C

The signalized intersection operations were substantially improved with consideration of the recommended improvements.

Table 10-15 shows the intersection delay and LOS for the 2035 PM peak hour of the unsignalized study intersections, which show that the proposed recommended improvements had minimal impact on the unsignalized study intersections.

Table 10-15: 2035 Build PM Peak Hour Unsignalized Intersection LOS

Intersection	No Build		Build	
	Avg. Delay	LOS	Avg. Delay	LOS
Leeds @ Faber Place	397.4	F	37.9	E
	152.1		33.5	
Leeds @ I-526 WB			3.2	E
			6.1	
			43.2	
Leeds @ I-526 EB			7.2	A
			7.5	
			8.2	
Paramount @ Faber Place / Lysa	46.9	E	9.9	A
	24.0		9.8	
Virginia @ I-526 WB	6.2	A	6.5	A
Virginia @ I-526 EB	6.8	A	7.0	A

Table 10-16 shows the average queue length calculated by the *VISSIM* modeling software for the 2035 PM peak hour.

Table 10-16: 2035 Build PM Peak Hour Average Queue Length

Intersection	Approach	Average Queue (ft)	
		No Build	Build
US 17 @ Ashley Town Center Dr	SB Ashley Town Center	486.1	521.9
	WB US 17	71.0	97.9
	NB Ashley Town Center	24.2	27.5
	EB US 17	127.7	54.1
US 17 @ Sam Rittenberg	SB Sam Rittenberg	219.4	474.6
	WB US 17	41.3	246.5
	NB Sam Rittenberg	21.5	17.8
	EB US 17	311.7	125.4
US 17 @ Skylark Dr	SB Skylark	675.7	480.1
	WB US 17	628.4	145.1
	EB US 17	323.9	105.1
US 17 @ Orleans Rd.	SB Orleans	463.3	335.2
	WB US 17	773.8	491.0
	EB US 17	21.4	0.0
Sam Rittenberg @ Mark Clark WB	SB Mark Clark	446.7	0.0
	WB Sam Rittenberg	235.7	35.0
	EB Sam Rittenberg	24.6	23.3
Sam Rittenberg @ Skylark	SB Skylark	556.8	267.4
	WB Sam Rittenberg	611.2	86.2
	NB Skylark	43.6	41.4
	EB Sam Rittenberg	104.6	147.7
Paul Cantrell @ Magwood	SB Magwood	911.5	126.5
	WB Paul Cantrell	954.6	0.0
	NB Magwood	235.1	0.0
	EB Paul Cantrell	592.7	0.0
Paul Cantrell @ I-526	WB Paul Cantrell	995.3	290.0
	EBL Paul Cantrell	994.4	194.6
Paul Cantrell @ Tobias Gadson	SB Tobias Gadson	477.6	257.9
	WB Paul Cantrell	1006.0	824.2
	NB Tobias Gadson	238.9	221.0
	EB Paul Cantrell	130.1	454.4
Leeds @ Faber Place	SB Faber Place	437.8	29.6
	WB Leeds	0.0	0.0
	NB Faber Place	484.7	15.8
	EB Leeds	155.5	0.0
Leeds @ I-526 WB	SB I-526 WB Off-Ramp	235.1	0.0
	WB Leeds	41.7	0.0
	EB Leeds	993.2	228.0
Leeds @ I-526 EB	WB Leeds	1010.2	0.0
	NB I-526 EB Off-Ramp	10.5	0.0
	EB Leeds	508.4	0.4
Leeds @ Bridge View	SB Leeds	776.3	24.3
	WB Bridge View	584.6	47.4
	NB Leeds	10.2	23.0
Paramount @ Faber Place / Lysa	SB Lysa	0.0	0.0
	WB Paramount	0.0	0.0
	NB Faber Place	64.7	0.9
	EB Paramount	87.1	0.0
Paramount @ I-526 WB	SB I-526 WB Off-Ramp	336.2	68.4
	WB Paramount	27.8	4.9
	EB Paramount	424.0	51.4
Paramount @ I-526 EB	WB Paramount	250.5	4.9
	NB I-526 EB Off-Ramp	1009.8	58.3
	EB Paramount	289.2	60.5
Dorchester @ I-526 WB	SB I-526 WB Off-Ramp	36.5	75.1
	WB Dorchester	20.4	22.5
	EB Dorchester	504.2	97.1
Dorchester @ I-526 EB	WB Dorchester	41.6	50.4
	NB I-526 EB Off-Ramp	538.8	144.2
	EB Dorchester	261.5	175.1
Dorchester @ Paramount	SB Oscar Johnson	13.7	10.8
	WB Dorchester	519.4	230.4
	NB Paramount	250.7	114.6
	EB Dorchester	106.3	15.0
Montague @ Dorchester	SB Montague	1005.3	112.5
	WB Dorchester	167.9	250.8
	NB Montague	9.6	16.8
	EB Dorchester	97.9	125.9
Montague @ I-526 WB	SB I-526 WB Off-Ramp	834.6	127.6
	WB Montague	214.1	45.6
	EB Montague	74.5	61.9
Montague @ I-526 EB	WB Montague	886.1	145.2
	NB I-526 EB Off-Ramp	83.8	77.0
	EB Montague	35.4	144.3
Montague @ International	SB Montague	966.6	131.3
	WB International	693.8	151.1
	NB Montague	244.7	304.0
	EB International	197.6	349.8
International @ Tanger Outlet	SB Tanger Outlet	681.6	222.1
	WB International	428.9	449.3
	EB International	591.3	73.6
	NB Tanger Outlet Ext	0.0	0.0
International @ Centre Pointe	SB Centre Pointe	670.5	473.2
	WB International	232.3	123.6
	NB Centre Pointe	23.8	29.8
	EB International	223.1	0.0
International @ I-526 EB	WB International	660.2	0.0
	NB I-526 EB Off-Ramp	243.2	0.0
	EB International	884.3	0.0
International @ I-526 WB	SB I-526 WB Off-Ramp	729.8	311.2
	WB International	975.8	0.0
	EB International	600.9	0.0
International @ Aviation	SB Aviation	947.8	144.5
	WB International	164.8	0.0
	EB International	900.6	0.0
Montague @ I-26 WB	SB Montague	624.8	112.3
	WB I-26 WB Off-Ramp	90.0	257.2
	NB Montague	496.0	152.4
Montague @ Mall / Goer	SB Montague	769.1	82.1
	WB Goer	141.5	26.1
	NB Montague	115.4	479.8
	EB Mall	570.1	30.7
Remount @ Core	SB Core	346.2	3.9
	WB Remount	7.5	0.0
	EB Remount	601.4	0.0
Remount @ I-26 EB Off-Ramp / Vector	SB I-26 EB Off-Ramp	1008.3	29.4
	WB Remount	22.6	39.7
	NB Vector	14.0	2.0
	EB Remount	692.9	30.6
Remount @ I-26 WB Off-Ramp	WB Remount	4.4	10.4
	NB I-26 WB Off-Ramp	1008.3	18.8
	EB Remount	1013.0	0.0
Remount @ Rivers	SB Rivers	830.8	140.2
	WB Remount	843.1	122.3
	NB Rivers	979.5	333.8
	EB Remount	914.4	110.8
Aviation @ Core / Fain	SB Fain	40.9	47.1
	WB Aviation	17.1	26.7
	NB Core	19.0	17.8
	EB Aviation	332.6	44.7
Aviation @ I-26 WB	SB I-26 EB Off-Ramp	46.7	28.2
	WB Aviation	4.4	2.5
	EB Aviation	108.1	13.3
Aviation @ I-26 EB	WB Aviation	1004.8	12.1
	NB I-26 WB Off-Ramp	102.4	19.8
	EB Aviation	189.6	9.2
Aviation @ Rivers	SB Rivers	997.6	143.3
	NB Rivers	989.7	735.2
	EB Aviation	231.3	119.8
Rivers @ Harley	SB Rivers	1010.7	53.7
	WB Harley	476.8	165.0
	NB Rivers	813.0	190.3
Rivers @ I-526 WB	SB Rivers	807.1	0.0
	NB Rivers/WB On-Ramp	920.0	2.3
Rivers @ I-526 EB	NB Rivers	896.2	30.5
	SB Rivers/EB On-Ramp	62.6	0.0
Rivers @ Mall	SB Rivers	26.2	39.0
	NB Rivers	141.9	10.5
	EB Mall	194.4	55.4
Rhett @ Remount	SB Rhett	925.9	111.1
	WB Remount	973.5	932.6
	NB Rhett	364.2	231.3
	EB Remount	960.2	179.4
Rhett @ I-526 WB	SB Rhett	976.5	110.7
	NB Rhett	75.7	139.9
	EB I-526 WB Off-Ramp	177.5	141.1
Rhett @ I-526 EB	SB Rhett	17.9	79.7
	NB Rhett	24.4	59.8
	EB I-526 EB Off-Ramp	27.3	65.3
Rhett @ Braddock	SB Rhett	2.9	5.8
	WB Braddock	0.8	2.0
	NB Rhett	6.0	6.4
	EB Braddock	13.4	19.5
Virginia @ I-526 WB	SB Virginia	0.0	0.0
	NB Virginia	0.1	0.8
Virginia @ I-526 EB	SB Virginia	0.0	0.0
	NB Virginia	0.0	0.0
	EB I-526 EB Off-Ramp	0.5	0.6
Montague @ Tanger Outlet Ext	SB Tanger Outlet Ext	602.2	56.1
	WB Montague	252.0	7.8
	EB Montague	78.1	28.0

10.1.4 *VISSIM* Build Analysis Summary

Based on the analysis presented in this report as well as observations of the *VISSIM* simulation, it is clear that the proposed improvements along the I-526 corridor will have a very positive impact on traffic operations in the area. Thorough evaluations were completed to identify specific areas where various improvements may help. From there, multiple variations and iterations of possible designs were analyzed in *VISSIM* to ensure that the most beneficial design was recommended.

Freeway level of service is significantly improved in the Build scenario. Similarly, travel times during the PM peak hour are reduced from more than 30 minutes to less than 10 minutes. Finally, isolated intersection improvements also worked to improve arterial conditions, which in some cases also aided the freeway operations.

10.2 Traffic Volume Reduction Potential

As described in Chapter 5, a reduction of 5.2% of total overall traffic can be expected with the implementation of all of the TDM programs, and as described in Chapter 6, a reduction of 7.3% of total overall traffic can be expected with the implementation of rm transit (2.6% reduction) and freight improvement (4.8% reduction) Modal strategies. The combined potential reduction in traffic volumes for the TDM and Modal strategies is 12.6%.

With this potential reduction of traffic volumes due to the TDM and Modal strategies, the needs for the capacity improvement strategies, including the I-26 & I-526 interchange improvements, can be expected to be pushed back from **5 to 10 years**. The timing of the capacity improvements with consideration of the TDM and Modal strategies is summarized in Table 10-17. The improvements to the I-526 interchanges with International Boulevard, Paul Cantrell Boulevard, and US 17/Sam Rittenberg Boulevard would likely be pushed back at least 5 years, while the other capacity improvement projects would likely be pushed back at least 10 years, including the widening of the I-526 mainline and improvements to the I-26 & I-526 interchange.

In addition, as noted in Chapter 6, if the long-term transit strategies are implemented, an additional traffic reduction of 3.4% may be expected, further pushing out the requirements for capacity improvements to the I-526 study corridor. Furthermore, it is likely that this reduction in traffic volumes would also push back the majority of the geometric traffic operations improvements by 5 to 10 years as well.

Table 10-17: Capacity Improvement Timing Considering TDM & Modal Impacts

Capacity Improvement #	Strategy	Timing	Timing with TDM/Modal Reduction
1	Improve I-26 & I-526 Interchange (Alternate 7)	2020	**2030+**
2	Widen I-526 to a six-lane section between Paul Cantrell Boulevard to Rivers Avenue	2020	**2030+**
3	Construct braided ramps along I-526 eastbound between Montague Avenue and International Boulevard	2020	**2030+**
4	Construct triple left-turn lanes to I-526 eastbound from Paul Cantrell Boulevard eastbound Extend I-526 eastbound acceleration lanes from Paul Cantrell Boulevard to the Ashley River Bridge	2020	**2030+**
5	Construct Two-lane exit ramp from I-526 westbound to Paul Cantrell Boulevard westbound	2020	**2030+**
6	Improve I-526 & US 17/Sam Rittenberg Boulevard Interchange (MCE Alternate G) Improve I-526 & US 17/Sam Rittenberg Boulevard Interchange (MCE No Build)	2025	**2030+**
7	Improve I-526 & International Boulevard Interchange Construct Braided ramps along I-526 eastbound and westbound between I-26 and Dorchester Road	2025	**2030+**
8	Improve I-526 & Paul Cantrell Boulevard Interchange	2030	**2035+**
9	Improve Paul Cantrell Boulevard & Magwood Drive Interchange	2030	**2035+**

10.3 Suitability Analysis

All of the improvement strategies were evaluated for suitability for the I-526 study corridor versus their respective benefits. Suitability is a consideration of the cost, time, environmental impacts, potential obstacles to implementation, and compatibility within the study; each improvement is assigned a suitability grade from A to D, with A being the most suitable. Benefits include the considerations of traffic reduction, safety, support for other modes of transportation, and environmental friendliness, and are assigned a rank from 1 to 3, with 1 being the most beneficial.

Tables 10-18 through 10-21 document the suitability/benefit analyses for the TDM, Modal, Traffic Operations, and Capacity Improvement strategies, respectively. The tables are divided into zones of priority based on the combination of suitability and benefits. The zones define priority of implementation, with the green zone indicating a high priority, the blue zone indicating a medium priority, the white zone indicating a low priority, and the red zone indicating a potentially unsuitable improvement.

10.4 Cost/Benefit Analysis

The improvement strategies were also evaluated for cost versus their respective benefits to the I-526 corridor, based on level of impact. Tables 10-22 through 10-24 document the cost versus benefit analyses for the High Impact, Moderate Impact, and Low Impact congestion-reduction strategies, respectively. The costs were separated into three ranges, improvements that cost less than $10 million, improvements that cost between $10 million and $100 million, and improvements that cost more than $100 million.

10.5 Construction Contract Groups

The improvement strategies for all four improvement categories have been grouped together by year, which are shown in Tables 10-25 through 10-28. The improvement strategies for the traffic operations and capacity improvement categories have also been grouped into potential contract groups based upon the year that the improvements are projected to be needed. The preliminary contract grouping and associated costs are shown in Tables 10-29 through 10-31.

Table 10-18: Suitability Table – TDM Strategies

BENEFIT	SUITABILITY			
	A	B	C	D
1	**(TDM 1) - Carpools/Rideshare Matching** Programs to encourage and match multiple workers with similar commutes to share trips to/from the workplace (funds for Marketing and Promotion).	**(TDM 3) - Transit Pass Incentives** Employer-provided passes that cover a portion (or all) the cost for travel to/from the workplace via transit (funds for developing programs). **(TDM 4) - Financial Incentives** Employer-based payments to travel to work via a different mode than a single-occupant vehicle (funds for Marketing and Promotion). **(TDM 10) - Education, Promotion, Marketing** Public outreach programs designed to inform commuters of the available options other than single-occupant vehicles.		
2	**(TDM 2) - Vanpools** Programs that provide multiple workers with similar commutes (usually 6 and greater) a van to share trips to/from the workplace (funds for Marketing and Promotion). **(TDM 7) - Work Flex Time** Work schedules allowing employees to arrive and/or depart work from away from the peak hours.	**(TDM 8) - Staggered Work Hours** Work schedules to minimize the number of employees arriving or departing work at the same time.		
3		**(TDM 5) - Telecommuting** Use of mobile telecommunications instead of physically commuting to a place of work. **(TDM 6) - Compressed Work Week** Work schedules allowing employees to work longer hours for fewer weekdays. **(TDM 9) - Bike/Walk Enhancements** Improving the bike lane and sidewalk connections along the arterials crossing I-526.		

Legend

HIGH PRIORITY TO IMPLEMENT	MEDIUM PRIORITY TO IMPLEMENT	LOW PRIORITY TO IMPLEMENT	DIFFICULT TO IMPLEMENT

Suitability: A = High to D = Low
Benefits: 1 = High to 3 = Low

Table 10-19: Suitability Table – Modal Strategies

BENEFIT	SUITABILITY			
	A	B	C	D
1		**(M 2) - New Transit Routes** Add new route between West Ashley (Citadel Mall) and North Charleston (Tanger Outlet Mall) Add new express service from Summerville to Charleston. Add new Aiport/Tanger Outlet Mall shuttle.	**(M 8) - Increase Intermodal Split to Rail** Ship additional shipments via train versus truck. Inland Port construction. Construct new intermodal facilities (at the MacAlloy site or Navy Yard site). **(M 12) - Truck Routes Away from I-526** Harbor drayage, or direct heavy vehicles to utilize surface streets rather than I-526 and I-26.	**(M 6) - BRT, Commuter Rail, Light Rail** Construct Bus Rapid Transit or rail-based transit modes.
2	**(M 1) - Improve Existing Transit Routes** Modify existing routes to better serve ridership and increase public awareness **(M 5) - Public/Private Partnerships** Develop Adopt-a-Shelter programs, private shuttles, commuter choice, capital projects.	**(M 3) - Improved Connectivity to/from Transit Stops** Add shuttle service and sidewalks. Construct Park and Ride facilities. **(M 4) - Improve Transit Facilities and Equipment** Add shelters, digital signs, and benches.	**(M 9) - Expand Port Operating Hours** Longer hours would shift truck traffic away from commuter peaks. **(M 11) - Peak-Hour Incentives/Disincentives** Implement fee for truck traffic during peak hours.	
3	**(M 10) - Construct Near-Terminal Staging Areas** Trucks arriving overnight could park near the port terminals.		**(M 7) - Zoning / Transit Oriented Developments** Encourage dense developments centered along transit routes and stops.	

Legend

HIGH PRIORITY TO IMPLEMENT	MEDIUM PRIORITY TO IMPLEMENT	LOW PRIORITY TO IMPLEMENT	DIFFICULT TO IMPLEMENT

Suitability: A = High to D = Low
Benefits: 1 = High to 3 = Low

Table 10-20: Suitability Table – Traffic Operations Strategies

BENEFIT	SUITABILITY			
	A	B	C	D
1	**Geometric Improvements** (OPS 15) - Extend acceleration lane from Leeds Ave to I-526 WB **Pavement Marking Improvements** (OPS 27) - End the outside I-526 EB to I-26 WB ramp lane 500 feet prior to the current merge area (OPS 29) - Restriping the mainline shoulders over the Ashley River Bridge for 3 lanes in each direction (OPS 30) - Restriping the mainline shoulders Rivers Avenue and east for 3 lanes in each direction **ITS Improvements** (OPS 41) - Prepare signal retiming plans for US 17 / Sam Rittenberg Blvd near I-526 (OPS 42) - Prepare signal retiming plans for Paul Cantrell Blvd near I-526 (OPS 43) - Prepare signal retiming plans for Leeds Ave near I-526 (OPS 44) - Prepare signal retiming plans for Dorchester Rd near I-526 (OPS 45) - Prepare signal retiming plans for Montague Ave near I-526	**Geometric Improvements** (OPS 1) - Remove the south leg of the Sam Rittenberg Blvd & I-526 WB intersection, direct all traffic to Sam Rittenberg Blvd (OPS 2) - Restripe SB approach to consist of dual left-turn and dual right-turn lanes at I-526 WB & Sam Rittenberg Blvd (OPS 8) - Lengthen deceleration lane along I-526 WB to Paul Cantrell Blvd EB loop (OPS 9) - Lengthen deceleration lane along I-526 WB to Paul Cantrell Blvd WB (OPS 10) - Lengthen deceleration lane along I-526 EB to Paul Cantrell Blvd WB loop (OPS 11) - Lengthen acceleration lane along I-526 EB from Paul Cantrell Blvd		**ITS Improvements** (OPS 49) - ATM plan for I-526 between Rivers Ave & Clements Ferry Rd
2		**Geometric Improvements** (OPS 3) - Extend the I-526 WB right-turn lane approaching Sam Rittenberg Blvd (OPS 4) - Construct SB triple right-turn lanes on Sam Rittenberg Blvd approaching US 17 (OPS 5) - Prepare access management plan along US 17 through the I-526 interchange (OPS 14) - Improve ramps to I-526 to allow dual left-turn lanes from Leeds Ave EB & WB (OPS 21) - Provide dual left-turn lanes from International Blvd to I-526 WB (OPS 25) - Construct a WB right-turn lane at International Blvd & Tanger Outlet Blvd **Signing Improvements** (OPS 33) - Provide updated signing for the interchange of I-526 & US 17 / Sam Rittenberg Boulevard (OPS 34) - Provide updated signing for the interchange of I-526 & Paul Cantrell Boulevard (OPS 35) - Provide updated signing for the interchange of I-526 & Leeds Avenue (OPS 36) - Provide updated signing for the interchange of I-526 & Paramount Drive / Dorchester Road (OPS 37) - Provide updated signing for the interchange of I-526 & Montague Avenue International Boulevard (OPS 38) - Provide updated signs for the interchange of I-526 & I-26 (OPS 39) - Provide updated signs for the interchange of I-526 & Rivers Avenue (OPS 40) - Provide updated signs for eastbound I-26, west of I-526 **ITS Improvements** (OPS 46) - Enhanced traffic camera coverage (OPS 47) - Enhanced SHEP (OPS 48) - Provide 1 accident investigation area along I-526	**Geometric Improvements** (OPS 6) - Construct 2nd SB approach lane to US 17 from Skylark Dr (OPS 7) - Construct a NB right-turn lane on Skylark Dr approaching Sam Rittenberg Blvd (OPS 12) - Construct EB dual left-turn lanes from Paul Cantrell Blvd to Tobias Gadson Blvd (OPS 16) - Provide ramp metering for the I-526 WB entrance ramp from Leeds Ave (OPS 17) - Remove the north leg of the Paramount Dr & I-526 EB intersection (OPS 20) - Extend accel. lane from I-526 EB loop ramp to International through the I-526 WB intersection (OPS 22) - Construct EB dual left-turn lanes at International Blvd & S Aviation Ave (OPS 23) - Construct EB triple left-turn lanes at International Blvd & Centre Pointe Dr (OPS 24) - Construct SB dual right-turn lanes at International Blvd & Centre Pointe Dr (OPS 26) - Construct SB dual right-turn lanes at Montague Ave & International Blvd (OPS 28) - Extend acceleration lanes from I-526 loop ramps to Rivers Ave	
3	**Geometric Improvements** (OPS 18) - Provide near-side signal heads along Paramount Rd at I-526 (OPS 19) - Restrict right-turn on red movements at the Dorchester Rd & Paramount Dr exit ramps from I-526 **Pavement Marking Improvements** (OPS 31) - Provide "To I-526" markings on the eastbound I-26 approach to I-526 (OPS 32) - Provide 45-degree arrows & mini-skip markings on Paul Cantrell Blvd acceleration lane from I-526 EB and on the I-526 WB acceleration lane from International Blvd	**Geometric Improvements** (OPS 13) - Provide Signage for Paul Cantrell EB Right Lane Approach		**Managed Lanes** (OPS 50) - Managed Lanes (HOV, HOT, Truck Lanes)

Legend

HIGH PRIORITY TO IMPLEMENT	MEDIUM PRIORITY TO IMPLEMENT	LOW PRIORITY TO IMPLEMENT	DIFFICULT TO IMPLEMENT

Suitability: A = High to D = Low

Benefits: 1 = High to 3 = Low

Table 10-21: Suitability Table – Capacity Improvement Strategies

BENEFIT	SUITABILITY			
	A	B	C	D
1	**Interchange Configuration** (CAP 1) - Improve I-26 & I-526 Interchange (Alternate 7) **Mainline Widening** (CAP 2) - Widen I-526 to a six-lane section between Paul Cantrell Blvd to Rivers Ave	**Interchange Configuration** (CAP 6A) - Improve I-526/US 17/Sam Rittenberg Blvd Interchange (MCE Build) (CAP 6B) - Improve I-526/US 17/Sam Rittenberg Blvd Interchange (MCE No Build) (CAP 7) - Improve I-526 & International Blvd Interchange & braided ramps along I-526 from Dorchester Rd to the interchange (CAP 8) - Improve I-526 & Paul Cantrell Blvd Interchange (CAP 9) - Improve Paul Cantrell Blvd & Magwood Dr Interchange		
2	**Interchange Configuration** (CAP 4) - Construct triple left turns to I-526 EB from Paul Cantrell Blvd & extend acceleration lanes to Ashley River Bridge (CAP 5) - Construct two lane exit ramp from I-526 WB to Paul Cantrell Blvd WB	**Interchange Configuration** (CAP 3) - Construct braided ramps on I-526 EB between Montague Ave & International Blvd		
3				

Legend

HIGH PRIORITY TO IMPLEMENT	MEDIUM PRIORITY TO IMPLEMENT	LOW PRIORITY TO IMPLEMENT	DIFFICULT TO IMPLEMENT

Suitability: A = High to D = Low
Benefits: 1 = High to 3 = Low

Table 10-22: Cost/Benefit Table – Significant Impact on Reducing Congestion

Benefit	Estimates Cost					
	Year	$0.00 - $10.00 Million	Year	$10.00 - $100.00 Million	Year	Above $100.00 Million
Significant Impact on Reducing Congestion	2013	(TDM 10) - Education, Promotion, Marketing (OPS 27) - End the outside I-526 EB to I-26 WB ramp lane 500 feet prior to the current merge area (OPS 41) - Prepare signal retiming plans for US 17 / Sam Rittenberg Blvd near I-526 (OPS 42) - Prepare signal retiming plans for Paul Cantrell Blvd near I-526 (OPS 43) - Prepare signal retiming plans for Leeds Ave near I-526 (OPS 44) - Prepare signal retiming plans for Dorchester Rd near I-526 (OPS 45) - Prepare signal retiming plans for Montague Ave near I-526	2013	(M 2) - New Transit Routes	2013	
	2015	(TDM 1) - Carpools/Rideshare Matching (TDM 3) - Transit Pass Incentives (TDM 4) - Financial Incentives (OPS 8) - Lengthen deceleration lane along I-526 WB to Paul Cantrell Blvd EB loop (OPS 9) - Lengthen deceleration lane along I-526 WB to Paul Cantrell Blvd WB (OPS 10) - Lengthen deceleration lane along I-526 EB to Paul Cantrell Blvd WB loop (OPS 15) - Extend acceleration lane from Leeds Ave to I-526 WB	2015		2015	
	2018	(M 12) - Truck Routes Away from I-526	2018		2018	
	2020	(OPS 1) - Remove the south leg of the Sam Rittenberg Blvd & I-526 WB intersection, direct all traffic to Sam Rittenberg Blvd (OPS 11) - Lengthen acceleration lane along I-526 EB from Paul Cantrell Blvd (OPS 29) - Restriping the mainline shoulders over the Ashley River Bridge for 3 lanes in each direction (OPS 30) - Restriping the mainline shoulders Rivers Avenue and east for 3 lanes in each direction (OPS 49) - ATM plan for I-526 between Rivers Ave & Clements Ferry Rd	2020	(CAP 2) - Widen I-526 to a six-lane section between Paul Cantrell Blvd to Rivers Ave	2020	(M 8) - Increase Intermodal Split to Rail (CAP 1) -Improve I-26 & I-526 Interchange (Alternate 7)
	2025	(OPS 2) - Restripe SB approach to consist of dual left-turn and dual right-turn lanes at I-526 WB & Sam Rittenberg Blvd (CAP 6B) - Improve I-526/US 17/Sam Rittenberg Blvd Interchange (MCE No Build)	2025	(CAP 6A) - Improve I-526/US 17/Sam Rittenberg Blvd Interchange (MCE Build) (CAP 7) - Improve I-526 & International Blvd Interchange & braided ramps along I-526 from Dorchester Rd to the interchange	2025	
	2030		2030	(CAP 8) - Improve I-526 & Paul Cantrell Blvd Interchange (CAP 9) - Improve Paul Cantrell Blvd & Magwood Dr Interchange	2030	
	2035		2035		2035	(M 6) - BRT, Commuter Rail, Light Rail

Table 10-23: Cost/Benefit Table – Moderate Impact on Reducing Congestion

Benefit	Estimates Cost					
	Year	$0.00 - $10.00 Million	Year	$10.00 - $100.00 Million	Year	Above $100.00 Million
Moderate Impact on Reducing Congestion	2013	(OPS 5) - Prepare access management plan along US 17 through the I-526 interchange (OPS 33) - Provide updated signing for the interchange of I-526 & US 17 / Sam Rittenberg Boulevard (OPS 34) - Provide updated signing for the interchange of I-526 & Paul Cantrell Boulevard (OPS 35) - Provide updated signing for the interchange of I-526 & Leeds (OPS 36) - Provide updated signing for the interchange of I-526 & Paramount Drive / Dorchester Road (OPS 37) - Provide updated signing for the interchange of I-526 & Montague Avenue International Boulevard (OPS 38) - Provide updated signs for the interchange of I-526 & I-26 (OPS 39) - Provide updated signs for the interchange of I-526 & Rivers Avenue (OPS 40) - Provide updated signs eastbound I-26, west of I-526	2013		2013	
	2015	(TDM 2) - Vanpools (TDM 7) - Work Flex Time (TDM 8) - Staggered Work Hours (M 1) - Improve Existing Transit Routes (M 9) - Expand Port Operating Hours (OPS 3) - Extend the I-526 WB right-turn lane approaching Sam Rittenberg (OPS 17) - Remove the north leg of the Paramount Dr & I-526 EB intersection, direct all traffic to Paramount Dr (OPS 28) - Extend acceleration lanes from I-526 loop ramps to Rivers Ave (OPS 46) - Enhanced traffic camera coverage (OPS 47) - Enhanced SHEP (OPS 48) - Provide 1 accident investigation area along I-526	2015		2015	
	2018		2018	(M 3) - Improved Connectivity to/from Transit Stops	2018	
	2020	(M 5) - Public/Private Partnerships (M 11) - Peak-Hour Incentives/Disincentives (OPS 6) - Construct 2nd SB approach lane to US 17 from Skylark Dr (CAP 3) - Construct braided ramps on I-526 EB between Montague Ave & International Blvd	2020	(M 4) - Improve Transit Facilities and Equipment (CAP 4) - Construct triple left turns to I-526 EB from Paul Cantrell Blvd & extend acceleration lanes to Ashley River Bridge (CAP 5) - Construct two lane exit ramp from I-526 WB to Paul Cantrell Blvd WB	2020	
	2025	(OPS 4) - Construct SB triple right-turn lanes on Sam Rittenberg Blvd approaching US 17 (OPS 7) - Construct a NB right-turn lane on Skylark Dr approaching Sam Rittenberg Blvd (OPS 12) - Construct EB dual left-turn lanes from Paul Cantrell Blvd to Tobias Gadson Blvd (OPS 16) - Provide ramp metering for the I-526 WB entrance ramp from Leeds Ave (OPS 20) - Extend acceleration lane from I-526 EB loop ramp to International Blvd through the intersection with the I-526 WB ramps (OPS 21) - Provide dual left-turn lanes from International Blvd to I-526 WB (OPS 22) - Construct EB dual left-turn lanes at International Blvd & S Aviation Ave (OPS 25) - Construct a WB right-turn lane at International Blvd & Tanger Outlet Blvd (OPS 26) - Construct SB dual right-turn lanes at Montague Ave & International Blvd	2025		2025	
	2030	(OPS 14) - Improve ramps to I-526 to allow dual left-turn lanes from Leeds Ave EB & WB	2030		2030	
	2035	(OPS 23) - Construct EB triple left-turn lanes at International Blvd & Centre Pointe Dr (OPS 24) - Construct SB dual right-turn lanes at International Blvd & Centre Pointe Dr	2035		2035	

Table 10-24: Cost/Benefit Table – Little Impact on Reducing Congestion

Benefit	Estimates Cost					
	Year	$0.00 - $10.00 Million	Year	$10.00 - $100.00 Million	Year	Above $100.00 Million
Little Impact on Reducing Congestion	2013	(OPS 13) - Provide Signage for Paul Cantrell EB Right Lane Approach (OPS 18) - Provide near-side signal heads along Paramount Rd at I-526 (OPS 19) - Restrict right-turn on red movements at the Dorchester Rd & Paramount Dr exit ramps from I-526 (OPS 31) - Provide "To I-526" markings on the eastbound I-26 approach to I-526 (OPS 32) - Provide 45-degree arrows & mini-skip markings on Paul Cantrell Blvd acceleration lane from I-526 EB and on the I-526 WB acceleration lane from International Blvd	2013		2013	
	2015	(TDM 5) - Telecommuting (TDM 6) - Compressed Work Week	2015		2015	
	2018	(TDM 9) - Bike/Walk Enhancements	2018		2018	
	2020		2020		2020	
	2025		2025	(M 7) - Zoning/Transit Oriented Developments (M 10) - Construct Near-Terminal Staging Areas	2025	
	2030		2030		2030	
	2035		2035	(OPS 50) - Managed Lanes (HOV, HOT, Truck Lanes)	2035	

Table 10-25: Project Grouping Strategies

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2013		TDM 10	Education, Promotion, Marketing	$50,000			
		M 2B	Add new express service from Summerville to Charleston		$480,000/year		
		M 8A	Ship additional shipments via train versus truck		--		
		M 9	Longer hours would shift truck traffic away from commuter peaks		--		
		M 10	Trucks arriving overnight could park near the port terminals		--		
		OPS 5	Prepare Access Management Plan along US 17 through the I-526 Interchange			$700,000	
		OPS 13	Provide Signage for Paul Cantrell EB Right Lane Approach			$2,000	
		OPS 19	Restrict Right-Turn On Red Movements at the Paramount Drive and Dorchester Road exit ramps from I-526			$500	
		OPS 33	Provide updated signing for the interchange of I-526 & US 17 / Sam Rittenberg Boulevard			$31,500	
		OPS 34	Provide updated signing for the interchange of I-526 & Paul Cantrell Boulevard			$622,000	
		OPS 35	Provide updated signing for the interchange of I-526 & Leeds Avenue			$576,000	
		OPS 36	Provide updated signing for the interchange of I-526 & Paramount Drive / Dorchester Road			$425,000	
		OPS 37	Provide updated signing for the interchange of I-526 & Montague Avenue International Boulevard			$456,000	
		OPS 38	Provide updated signs for the interchange of I-526 & I-26			$273,000	
		OPS 39	Provide updated signs for the interchange of I-526 & Rivers Avenue			$328,000	
		OPS 40	Provide updated signs for eastbound I-26, west of I-526			$106,000	
		OPS 18	Provide Near-Side Signal Heads along Paramount Road at I-526			$5,000	
		OPS 41	I-526 & US 17/Sam Rittenberg Boulevard: Prepare Signal Retiming Plans			$25,000	
		OPS 42	I-526 & Paul Cantrell Boulevard: Prepare Signal Retiming Plans			$25,000	
		OPS 43	I-526 & Leeds Avenue: Prepare Signal Retiming Plans			$25,000	
		OPS 44	I-526 & Dorchester Road: Prepare Signal Retiming Plans			$25,000	
		OPS 45	I-526 & Montague Avenue: Prepare Signal Retiming Plans			$25,000	
		OPS 27	End the outside I-526 EB to I-26 WB ramp lane 500 feet prior to the current merge area			$10,000	
		OPS 31	Provide "To I-526" markings on the eastbound I-26 approach to I-526			$5,000	
		OPS 32	Provide 45-degree Arrows & Mini-Skip Markings on Paul Cantrell Boulevard acceleration lane from I-526 EB and on the I-526 WB acceleration lane from International Boulevard			$5,000	
			Improvement Strategy Total:	$50,000	$0 $480,000/year	$3,670,000	$0
			Total Cost (2013):	**$3,720,000 $480,000/year**			

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2014		M 2A	Add new route between West Ashley (Citadel Mall) and North Charleston (Tanger Outlet Mall)		$600,000 $550,000/year		
		M 2C	Add new Airport/Tanger Outlet Mall shuttle		$900,000/year		
			Improvement Strategy Total:	$0	$600,000 $1,450,000/year	$0	$0
			Total Cost (2014):	**$600,000 $1,450,000/year**			

Table 10-26: Project Grouping Strategies Continued

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2015		TDM 1	Carpools/Rideshare Matching	$100,000			
		TDM 2	Vanpools	$25,000			
		TDM 3	Transit Pass Incentives	$250,000			
		TDM 4	Financial Incentives	$50,000			
		TDM 5	Telecommuting	$75,000			
		TDM 6	Compressed Work Week	$25,000			
		TDM 7	Work Flex Time	$25,000			
		TDM 8	Staggered Work Hours	$25,000			
		M 1	Modify existing routes to better serve ridership and increase public awareness		$450,000/year		
		M 3B	Construct Park-and-Ride facilities		$75,000		
		OPS 3	Extend the I-526 WB Right-Turn Lane approaching Sam Rittenberg Boulevard			$312,000	
		OPS 8	Lengthen deceleration lane along I-526 WB to Paul Cantrell Boulevard EB loop			$819,000	
		OPS 9	Lengthen deceleration lane along I-526 WB to Paul Cantrell Boulevard WB			$830,000	
		OPS 10	Lengthen deceleration lane along I-526 EB to Paul Cantrell Boulevard WB loop			$341,000	
		OPS 15	Extend acceleration lane from Leeds Avenue to I-526 WB			$790,000	
		OPS 17	Remove the north leg of the Paramount Drive & I-526 EB intersection, direct all traffic to Paramount Drive			$105,000	
		OPS 28	Extend the acceleration lanes from the I-526 EB loop ramp and I-526 WB loop ramp at Rivers Avenue			$1,576,000	
		OPS 46	Enhanced Traffic Camera Coverage			$30,000/camera	
		OPS 47	Enhanced SHEP			--	
		OPS 48	Provide 1 accident investigation area along I-526			$340,000	
			Improvement Strategy Total:	$575,000	$75,000 $450,000/year	$5,113,000	$0
			Total Cost (2015):	**$5,763,000 $450,000/year**			

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2018		TDM 9	Bike/Walk Enhancements	$150,000			
		M 3A	Add shuttle service and sidewalks		$10,600,000		
		M 8B	Inland Port construction		$26,000,000		
		M 12	Harbor drayage, or direct heavy vehicles to utilize surface streets rather than I-525 and I-26		$500,000		
			Improvement Strategy Total:	$150,000	$37,100,000	$0	$0
			Total Cost (2018):	**$37,250,000**			

Table 10-27: Project Grouping Strategies Continued

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2020		M 4	Add shelters, digital signs, and benches		$10,800,000		
		M 5	Develop Adopt-a-Shelter programs, private shuttles, commuter choice, capital projects		$10,000,000		
		M 8C	Construct new intermodal facilities (at the MacAlloy site or Navy Yard site)		$100,000,000		
		M 11	Implement fee for truck traffic during peak hours		$5,000,000/year		
		OPS 1	Remove the south leg of the Sam Rittenberg Boulevard & I-526 WB intersection, direct all traffic to Sam Rittenberg Boulevard			$95,000	
		OPS 6	Construct second SB approach lane to US 17 from Skylark Drive			$1,144,000	
		OPS 11	Lengthen acceleration lane along I-526 EB from Paul Cantrell Boulevard			$830,000	
		CAP 2	Widen I-526 to a six-lane section between Paul Cantrell Boulevard to Rivers Avenue				$100,900,000
		CAP 4A	Construct triple left-turn lanes to I-526 eastbound from Paul Cantrell Boulevard eastbound				$15,700,000
		CAP 4B	Extend I-526 eastbound acceleration lanes from Paul Cantrell Boulevard to the Ashley River Bridge				
		CAP 5	Construct Two-lane exit ramp from I-526 westbound to Paul Cantrell Boulevard westbound				$16,000,000
		CAP 1	Improve I-26 & I-526 Interchange (Alternate 7)				$256,500,000
		CAP 3	Construct braided ramps along I-526 eastbound between Montague Avenue and International Boulevard				$5,800,000
		OPS 29	Restriping the Mainline Shoulders over the Ashley River Bridge for 3 lanes in each direction			$55,000	
		OPS 30	Restriping the Mainline Shoulders Rivers Avenue and east for 3 lanes in each direction			$4,300,000	
		OPS 49	Active Traffic Management			$3,200,000	
			Improvement Strategy Total:	$0	$120,800,000 $5,000,000/year	$9,624,000	$394,900,000
			Total Cost (2020):	**$525,324,000 $5,000,000/year**			

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2025		M 7	Encourage dense developments centered along transit routes and stops		Varies by Development		
		OPS 2	Restripe SB approach to consist of dual left-turn and dual right-turn lanes at I-526 WB & Sam Rittenberg Boulevard			$5,000	
		OPS 4	Construct SB triple right-turn lanes on Sam Rittenberg Boulevard approaching US 17			$472,000	
		OPS 7	Construct a Northbound Right-Turn Lane on Skylark Drive approaching Sam Rittenberg Boulevard			$320,000	
		CAP 6B	Improve I-526 & US 17/Sam Rittenberg Boulevard Interchange (MCE No Build)				$7,500,000
		OPS 12	Construct EB dual left-turn lanes from Paul Cantrell Boulevard to Tobias Gadson Boulevard			$795,000	
		OPS 16	Provide Ramp Metering for the I-526 WB entrance ramp from Leeds Avenue			$95,000	
		OPS 20	Extend the acceleration lane from the I-526 EB loop ramp through the intersection with the I-526 WB ramps & International Boulevard			$1,350,000	
		OPS 21	Provide dual Left-Turn Lane from International Boulevard to I-526 WB			$710,000	
		OPS 22	Construct EB dual left-turn lanes at International Boulevard & S. Aviation Avenue			$300,000	
		OPS 25	Construct a WB right-turn lane at International Boulevard & Tanger Outlet Boulevard			$394,000	
		OPS 26	Construct SB dual right-turn lanes at Montague Avenue & International Boulevard			$394,000	
		CAP 7A	Improve I-526 & International Boulevard Interchange				$109,300,000
		CAP 7B	Construct Braided ramps along I-526 eastbound and westbound between I-26 and Dorchester Road				
			Improvement Strategy Total:	$0	$0	$4,835,000	$116,800,000
			Total Cost (2025):	**$121,635,000**			

Table 10-28: Project Grouping Strategies Continued

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2030		OPS 14	I-526 & Leeds Avenue: Improve Ramps to I-526 to allow Dual Left-Turn Lanes from Leeds Avenue EB and WB			$750,000	
		CAP 8	Improve I-526 & Paul Cantrell Boulevard Interchange				$16,800,000
		CAP 9	Improve Paul Cantrell Boulevard & Magwood Drive Interchange				$27,800,000
			Improvement Strategy Total:	$0	$0	$750,000	$44,600,000
			Total Cost (2030):	**$45,350,000**			

Year		Strategy #	Description	TDM	Modal	Traffic Operations	Capacity
2035		M 6	Construct Bus Rapid Transit or rail-based transit modes		$205,700,000 $14,000,000/year		
		OPS 23	International Boulevard & Centre Pointe Drive: Construct EB triple left-turn lanes at International Boulevard & Centre Pointe Drive			$751,000	
		OPS 24	International Boulevard & Centre Pointe Drive: Construct SB dual right-turn lanes at International Boulevard & Centre Pointe Drive			$394,000	
			Improvement Strategy Total:	$0	$205,700,000 $14,000,000/year	$1,145,000	$0
			Total Cost (2035):	**$206,845,000 $14,000,000/year**			

Table 10-29: Construction Contract Group Cost

Contract Grouping	Strategy #	Description	Cost	Total Cost
2013				
Contract 1	OPS 5	Prepare Access Management Plan along US 17 through the I-526 Interchange	$700,000	
Contract 1 Cost				**$700,000**
Contract 2	OPS 13	Provide Signage for Paul Cantrell EB Right Lane Approach	$2,000	
	OPS 19	Restrict Right-Turn On Red Movements at the Paramount Drive and Dorchester Road Exit ramps from I-526	$500	
	OPS 33	Provide updated signing for the interchange of I-526 & US 17 / Sam Rittenberg Boulevard	$31,500	
	OPS 34	Provide updated signing for the interchange of I-526 & Paul Cantrell Boulevard	$622,000	
	OPS 35	Provide updated signing for the interchange of I-526 & Leeds Avenue	$576,000	
	OPS 36	Provide updated signing for the interchange of I-526 & Paramount Drive / Dorchester Road	$425,000	
	OPS 37	Provide updated signing for the interchange of I-526 & Montague Avenue International Boulevard	$456,000	
	OPS 38	Provide updated signs for the interchange of I-526 & I-26	$273,000	
	OPS 39	Provide updated signs for the interchange of I-526 & Rivers Avenue	$328,000	
	OPS 40	Provide updated signs for eastbound I-26, west of I-526	$106,000	
Contract 2 Cost				**$2,820,000**
Contract 3	OPS 18	Provide Near-Side Signal Heads along Paramount Road at I-526	$5,000	
	OPS 41	I-526 & US 17/Sam Rittenberg Boulevard: Prepare Signal Retiming Plans	$25,000	
	OPS 42	I-526 & Paul Cantrell Boulevard: Prepare Signal Retiming Plans	$25,000	
	OPS 43	I-526 & Leeds Avenue: Prepare Signal Retiming Plans	$25,000	
	OPS 44	I-526 & Dorchester Road: Prepare Signal Retiming Plans	$25,000	
	OPS 45	I-526 & Montague Avenue: Prepare Signal Retiming Plans	$25,000	
Contract 3 Cost				**$130,000**
Contract 4	OPS 27	End the outside I-526 EB to I-26 WB ramp lane 500 feet prior to the current merge area	$10,000	
	OPS 31	Provide "To I-526" markings on the eastbound I-26 approach to I-526	$5,000	
	OPS 32	Provide 45-degree Arrows & Mini-Skip Markings on Paul Cantrell Boulevard acceleration lane from I-526 EB and on the I-526 WB acceleration lane from International Boulevard	$5,000	
Contract 4 Cost				**$20,000**
Total Cost - 2013				**$3,670,000**
2015				
Contract 1	OPS 3	Extend the I-526 WB Right-Turn Lane approaching Sam Rittenberg Boulevard	$312,000	
	OPS 8	Lengthen deceleration lane along I-526 WB to Paul Cantrell Boulevard EB loop	$819,000	
	OPS 9	Lengthen deceleration lane along I-526 WB to Paul Cantrell Boulevard WB	$830,000	
	OPS 10	Lengthen deceleration lane along I-526 EB to Paul Cantrell Boulevard WB loop	$341,000	
Contract 1 Cost				**$2,302,000**
Contract 2	OPS 15	Extend acceleration lane from Leeds Avenue to I-526 WB	$790,000	
	OPS 17	Remove the north leg of the Paramount Drive & I-526 EB intersection, direct all traffic to Paramount Drive	$105,000	
	OPS 28	Extend the acceleration lanes from the I-526 EB loop ramp and I-526 WB loop ramp at Rivers Avenue	$1,576,000	
Contract 2 Cost				**$2,471,000**
Contract 3	OPS 46	Enhanced Traffic Camera Coverage	$30,000/camera	
	OPS 47	Enhanced SHEP	--	
	OPS 48	Provide 1 accident investigation area along I-526	$340,000	
Contract 3 Cost				**$340,000**
Total Cost - 2015				**$5,113,000**

Table 10-30: Construction Contract Group Cost Continued

Contract Grouping	Strategy #	Description	Cost	Total Cost
2020				
Contract 1	OPS 1	Remove the south leg of the Sam Rittenberg Boulevard & I-526 WB intersection, direct all traffic to Sam Rittenberg Boulevard	$95,000	
	OPS 6	Construct second SB approach lane to US 17 from Skylark Drive	$1,144,000	
Contract 1 Cost				**$1,239,000**
Contract 2	OPS 11	Lengthen acceleration lane along I-526 EB from Paul Cantrell Boulevard	$830,000	
	CAP 2	Widen I-526 to a six-lane section between Paul Cantrell Boulevard to Rivers Avenue	$100,900,000	
	CAP 4A	Construct triple left-turn lanes to I-526 eastbound from Paul Cantrell Boulevard eastbound	$15,700,000	
	CAP 4B	Extend I-526 eastbound acceleration lanes from Paul Cantrell Boulevard to the Ashley River Bridge		
	CAP 5	Construct Two-lane exit ramp from I-526 westbound to Paul Cantrell Boulevard westbound	$16,000,000	
Contract 2 Cost				**$133,430,000**
Contract 3	CAP 1	Improve I-26 & I-526 Interchange (Alternate 7)	$256,500,000	
	CAP 3	Construct braided ramps along I-526 eastbound between Montague Avenue and International Boulevard	$5,800,000	
Contract 3 Cost				**$262,300,000**
Contract 4	OPS 29	Restriping the Mainline Shoulders over the Ashley River Bridge for 3 lanes in each direction	$55,000	
	OPS 30	Restriping the Mainline Shoulders Rivers Avenue and east for 3 lanes in each direction	$4,300,000	
	OPS 49	Active Traffic Management	$3,200,000	
Contract 4 Cost				**$7,555,000**
Total Cost - 2020				**$404,524,000**
2025				
Contract 1	OPS 2	Restripe SB approach to consist of dual left-turn and dual right-turn lanes at I-526 WB & Sam Rittenberg Boulevard	$5,000	
	OPS 4	Construct SB triple right-turn lanes on Sam Rittenberg Boulevard approaching US 17	$472,000	
	OPS 7	Construct a Northbound Right-Turn Lane on Skylark Drive approaching Sam Rittenberg Boulevard	$320,000	
	CAP 6B	Improve I-526 & US 17/Sam Rittenberg Boulevard Interchange (MCE No Build)	$7,500,000	
Contract 1 Cost				**$8,297,000**
Contract 2	OPS 12	Construct EB dual left-turn lanes from Paul Cantrell Boulevard to Tobias Gadson Boulevard	$795,000	
	OPS 16	Provide Ramp Metering for the I-526 WB entrance ramp from Leeds Avenue	$95,000	
Contract 2 Cost				**$890,000**
Contract 3	OPS 20	Extend the acceleration lane from the I-526 EB loop ramp through the intersection with the I-526 WB ramps & International Boulevard	$1,350,000	
	OPS 21	Provide dual Left-Turn Lane from International Boulevard to I-526 WB	$710,000	
	OPS 22	Construct EB dual left-turn lanes at International Boulevard & S. Aviation Avenue	$300,000	
	OPS 25	Construct a WB right-turn lane at International Boulevard & Tanger Outlet Boulevard	$394,000	
	OPS 26	Construct SB dual right-turn lanes at Montague Avenue & International Boulevard	$394,000	
	CAP 7A	Improve I-526 & International Boulevard Interchange	$109,300,000	
	CAP 7B	Construct Braided ramps along I-526 eastbound and westbound between I-26 and Dorchester Road		
Contract 3 Cost				**$112,448,000**
Total Cost - 2025				**$121,635,000**

Table 10-31: Construction Contract Group Cost Continued

Contract Grouping	Strategy #	Description	Cost	Total Cost
2030				
Contract 1	OPS 14	I-526 & Leeds Avenue: Improve Ramps to I-526 to allow Dual Left-Turn Lanes from Leeds Avenue EB and WB	$750,000	
	CAP 8	Improve I-526 & Paul Cantrell Boulevard Interchange	$16,800,000	
	CAP 9	Improve Paul Cantrell Boulevard & Magwood Drive Interchange	$27,800,000	
Contract 1 Cost				**$45,350,000**
Total Cost - 2030				**$45,350,000**
2035				
Contract 1	OPS 23	International Boulevard& Centre Pointe Drive: Construct EB triple left-turn lanes at International Boulevard & Centre Pointe Drive	$751,000	
	OPS 24	International Boulevard & Centre Pointe Drive: Construct SB dual right-turn lanes at International Boulevard & Centre Pointe Drive	$394,000	
Contract 1 Cost				**$1,145,000**
Total Cost - 2035				**$1,145,000**