

Table 20: Vehicular Level of Service Results for 2011 Existing and 2015 Background/Future

Intersection	Approach	Existing Conditions (2011)				Future Background Conditions (2015)				Total Future Conditions (2015)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
M Street & South Capitol Street Southbound	Overall	34.7	C	14.7	B	63.8	E	22.3	C	64.4	E	22.8	C
	Eastbound	89.7	F	11.3	B	97.0	F	19.8	B	97.2	F	20.2	C
	Westbound	0.4	A	1.1	A	0.9	A	1.3	A	1.0	A	1.3	A
	Southbound	35.1	D	35.6	D	103.8	F	48.2	D	105.3	F	49.2	D
M Street & South Capitol Street Northbound	Overall	21.7	C	15.1	B	23.4	C	14.9	B	23.8	C	14.9	B
	Eastbound	1.5	A	0.5	A	3.0	A	0.9	A	3.1	A	1.0	A
	Westbound	56.8	E	36.5	D	78.9	E	29.4	C	80.6	F	29.3	C
	Northbound	24.5	C	36.5	D	26.1	C	38.5	D	26.1	C	38.5	D
Potomac Avenue & South Capitol Street	Overall	48.4	E	237.1	F	84.2	F	286.1	F	86.8	F	286.5	F
	Eastbound	55.2	E	902.2	F	55.2	E	917.1	F	55.2	E	913.8	F
	Westbound	56.4	E	319.5	F	56.4	E	485.2	F	56.4	E	489.7	F
	Northbound	65.6	E	29.2	C	121.2	F	35.8	D	125.3	F	35.7	D
	Southbound	10.4	B	127.9	F	11.2	B	208.3	F	11.7	B	208.3	F
M Street & 1 <sup>st</sup> Street	Overall	13.3	B	11.1	B	13.5	B	21.1	C	14.6	B	21.5	C
	Eastbound	5.0	A	6.6	A	5.4	A	21.8	C	5.4	A	22.1	C
	Westbound	1.7	A	5.7	A	2.9	A	7.1	A	2.9	A	7.1	A
	Northbound	71.9	E	29.6	C	68.4	E	39.7	D	71.1	E	39.9	D
	Southbound	31.7	C	30.4	C	33.0	C	35.5	D	33.1	C	36.4	D
N Street & 1 <sup>st</sup> Street	Overall	19.8	B	18.9	B	20.4	C	21.1	C	20.7	C	21.4	C
	Eastbound	15.0	B	15.5	B	16.8	B	17.5	B	16.8	B	17.5	B
	Westbound	14.7	B	20.2	C	15.5	B	24.4	C	15.5	B	24.6	C
	Northbound	19.4	B	17.1	B	21.2	C	18.1	B	21.6	C	18.3	B
	Southbound	25.9	C	19.1	B	24.5	C	21.4	C	24.2	C	21.9	C
M Street & New Jersey Avenue	Overall	9.9	A	9.3	A	15.9	B	14.8	B	15.9	B	14.7	B
	Eastbound	8.1	A	5.7	A	13.7	B	15.3	B	13.7	B	15.3	B
	Westbound	8.7	A	4.9	A	15.3	B	6.9	A	15.3	B	6.9	A
	Northbound	26.8	C	28.3	C	27.9	C	29.7	C	27.9	C	29.7	C
	Southbound	26.7	C	28.4	C	27.4	C	31.3	C	27.4	C	31.3	C
M Street & 4 <sup>th</sup> Street	Overall	16.7	B	18.7	B	17.8	B	25.3	C	17.7	B	25.4	C
	Eastbound	26.2	C	19.6	B	22.7	C	27.4	C	22.5	C	27.5	C
	Westbound	6.3	A	12.5	B	7.1	A	13.4	B	7.1	A	13.5	B
	Northbound	29.2	C	27.3	C	32.7	C	38.2	D	32.6	C	38.4	D
	Southbound	29.3	C	27.1	C	30.5	C	29.5	C	30.5	C	29.6	C
M Street & 5 <sup>th</sup> Street	Eastbound Left	4.3	A	3.2	A	9.5	A	15.3	C	9.6	A	15.8	C
	Southbound	17.8	C	28.3	D	34.3	D	91.5	F	34.9	D	96.0	F
I Street & 1 <sup>st</sup> Street	Overall	8.0	A	8.2	A	10.5	B	12.4	B	10.6	B	12.7	B
	Eastbound	7.5	A	7.8	A	9.2	A	11.4	B	9.3	A	11.7	B
	Westbound	8.0	A	8.4	A	10.4	B	12.0	B	10.6	B	12.2	B
	Northbound	8.6	A	8.7	A	12.1	B	14.6	B	12.3	B	14.9	B

Intersection	Approach	Existing Conditions (2011)				Future Background Conditions (2015)				Total Future Conditions (2015)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Potomac Avenue & West Driveway	Westbound Left	--	--	--	--	--	--	--	--	0.1	A	0.3	A
	Northbound	--	--	--	--	--	--	--	--	16.7	C	12.1	B
Potomac Avenue & West Driveway as RIRO	Westbound Left	--	--	--	--	--	--	--	--	--	--	--	--
	Northbound	--	--	--	--	--	--	--	--	10.6	B	8.9	A
Potomac Avenue & East Driveway	Westbound Left	--	--	--	--	--	--	--	--	0.9	A	1.3	A
	Northbound	--	--	--	--	--	--	--	--	11.5	B	9.3	B
Potomac Avenue & East Driveway with West Driveway RIRO	Westbound Left	--	--	--	--	--	--	--	--	0.9	A	1.4	A
	Northbound	--	--	--	--	--	--	--	--	15.0	C	11.9	B

Table 21: Roadway Capacity Results Review for 2011 Existing and 2015 Background/Future

Intersection	Locations & Scenarios with LOS F EX = 2011 Existing Conditions BG = 2015 Background (without Phase 1 Dev'l) TF = 2015 Total Future (with Phase 1 Dev'l)	Percent of Future Vehicular Traffic Attributable to Dev'l (in TF scenario)		Discussion & Recommendations
		AM Peak	PM Peak	
		<b>M Street &amp; South Capitol Street Southbound</b>	EB M Street AM Peak: EX, BG, TF SB S Capitol Street AM Peak: BG, TF	
<b>M Street &amp; South Capitol Street Northbound</b>	WB M Street AM Peak: TF	0.33%	0.94%	
<b>Potomac Avenue &amp; South Capitol Street</b>	Overall intersection AM Peak: FB, TF NB S Capitol Street AM Peak: FB, TF  Overall intersection PM Peak: EX, FB, TF EB Potomac Avenue PM Peak: EX, FB, TF WB Potomac Avenue PM Peak: EX, FB, TF SB S Capitol Street PM Peak: EX, FB, TF	0.42%	0.47%	The delays at the intersection are due to the existing lane configurations and signal timings. Southbound operations are much worse in the afternoon peak period due than northbound operations during the morning peak period to the existing configuration of the Frederick Douglas Bridge as two lanes southbound and three lanes northbound. Similar to the intersections at M Street, this intersection carries a significant volume of regional through traffic, so signal timings are programmed in order to favor the South Capitol Street vehicular traffic over that on Potomac Avenue. The addition of the trips generated by the background developments and the site-generated trips exacerbates the existing failing operation during the afternoon peak hour. The addition of the trips generated by the background developments and the site-generated trips also leads to the failing operation of the intersection in the morning peak hour due to the northbound approach. However, no signal timing or infrastructure changes are available to improve the existing operation of the intersection. These issues were directly studied in the South Capitol Street FEIS, including recommendations such as the planned traffic oval. This report recommends that this intersection (and the future Oval) intersection be closely studied in the Stage 2 PUD for the later phases of development (Phases 2-4).
<b>M Street &amp; 5<sup>th</sup> Street</b>	SB 5 <sup>th</sup> Street PM Peak: FB, TF	0.77%	0.84%	The delay along the stop-controlled southbound approach is due to the addition of trips generated along M Street by the background developments during the afternoon peak hour. The addition of the site-generated trips exacerbates this failing operation. Constructing a signal at this intersection allows for it to operate under acceptable conditions during all scenarios. However, based on a preliminary signal warrant, this intersection does not warrant a traffic signal based on the peak hour traffic volumes of the 2015 Background scenario. This report recommends that DDOT consider this change, which should be studied within the Maine Avenue/M Street corridor study currently underway.

Table 22: Vehicular LOS Results with Proposed Improvements for 2011 and 2015 Scenarios

Intersection	Approach	Existing Conditions (2011)				Future Background Conditions (2015)				Total Future Conditions (2015)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
M Street & South Capitol Street Southbound	Overall	34.7	C	14.7	B	63.8	E	22.3	C	64.4	E	22.8	C
	Eastbound	89.7	F	11.3	B	97.0	F	19.8	B	97.2	F	20.2	C
	Westbound	0.4	A	1.1	A	0.9	A	1.3	A	1.0	A	1.3	A
	Southbound	35.1	D	35.6	D	103.8	F	48.2	D	105.3	F	49.2	D
<i>Improvements:</i> <i>AM - Retime signal and adjust offsets</i>	Overall	9.5	A	--	--	19.2	B	--	--	19.3	B	--	--
	Eastbound	9.9	A	--	--	11.6	B	--	--	11.7	B	--	--
	Westbound	0.5	A	--	--	0.7	A	--	--	0.7	A	--	--
	Southbound	27.7	C	--	--	46.5	D	--	--	46.9	D	--	--
M Street & South Capitol Street Northbound	Overall	21.7	C	15.1	B	23.4	C	14.9	B	23.8	C	14.9	B
	Eastbound	1.5	A	0.5	A	3.0	A	0.9	A	3.1	A	1.0	A
	Westbound	56.8	E	36.5	D	78.9	E	29.4	C	80.6	F	29.3	C
	Northbound	24.5	C	36.5	D	26.1	C	38.5	D	26.1	C	38.5	D
<i>Improvements:</i> <i>AM - Retime signal and adjust offsets</i>	Overall	22.9	C	--	--	20.8	C	--	--	20.8	C	--	--
	Eastbound	0.9	A	--	--	2.2	A	--	--	2.2	A	--	--
	Westbound	30.3	C	--	--	32.0	C	--	--	32.1	C	--	--
	Northbound	41.0	D	--	--	47.7	D	--	--	47.7	D	--	--
M Street & 5 <sup>th</sup> Street	Eastbound Left	4.3	A	3.2	A	9.5	A	15.3	C	9.6	A	15.8	C
	Southbound	17.8	C	28.3	D	34.3	D	91.5	F	34.9	D	96.0	F
<i>Improvements:</i> <i>Install signal</i>	Overall	--	--	--	--	4.3	A	6.1	A	2.0	A	6.2	A
	Eastbound	--	--	--	--	4.0	A	4.9	A	1.2	A	5.0	A
	Westbound	--	--	--	--	3.5	A	6.5	A	0.7	A	6.6	A
	Southbound	--	--	--	--	28.8	C	35.3	D	44.4	D	35.3	D

Table 23: Queuing Results for LOS F Conditions During 2011 and 2015 Scenarios

Intersection	Approach	Existing Conditions (2011)				Future Background Conditions (2015)				Total Future Conditions (2015)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %
<b>M Street &amp; South Capitol Street Southbound</b>	Eastbound Thru	101	136	30	72	175	#242	68	116	175	#243	70	117
	Eastbound Right	61	106	1	11	69	123	0	82	69	123	0	84
	Westbound LT	1	0	3	4	1	m4	7	6	1	m4	7	6
	Southbound Left	122	200	100	167	~366	#572	215	#365	~368	#573	218	#372
	Southbound LTR	113	189	144	229	~345	#553	213	#356	~348	#557	218	#368
<b>Improvements:</b>	<i>Eastbound Thru</i>	23	36	--	--	29	54	--	--	29	55	--	--
<i>AM - Retime signal and adjust offsets</i>	<i>Eastbound Right</i>	0	0	--	--	0	0	--	--	0	0	--	--
	<i>Westbound LT</i>	1	1	--	--	2	2	--	--	2	2	--	--
	<i>Southbound Left</i>	109	178	--	--	298	#489	--	--	300	#490	--	--
	<i>Southbound LTR</i>	101	168	--	--	285	#468	--	--	287	#472	--	--
<b>M Street &amp; South Capitol Street Northbound</b>	Eastbound Left	0	0	0	m0	0	m0	0	m0	0	m0	0	m0
	Eastbound Thru	9	11	0	0	53	m35	0	13	52	m34	0	13
	Westbound TR	91	127	49	74	113	#199	131	m170	114	#201	132	m172
	Northbound Left	182	277	72	129	216	324	96	165	216	324	96	165
	Northbound LTR	183	278	67	125	205	311	81	147	205	311	81	147
<b>Improvements:</b>	<i>Eastbound Left</i>	0	0	--	--	0	M0	--	--	0	m0	--	--
<i>AM - Retime signal and adjust offsets</i>	<i>Eastbound Thru</i>	1	4	--	--	26	21	--	--	26	21	--	--
	<i>Westbound TR</i>	52	73	--	--	75	120	--	--	76	122	--	--
	<i>Northbound Left</i>	225	#349	--	--	267	#442	--	--	267	#442	--	--
	<i>Northbound LTR</i>	226	#347	--	--	254	#424	--	--	254	#424	--	--
<b>Potomac Avenue &amp; South Capitol Street</b>	Eastbound Left	31	68	9	152	31	68	89	152	31	68	89	152
	Eastbound Thru	17	44	11	33	20	49	14	38	20	51	16	42
	Eastbound Right	0	46	~859	#1090	0	49	~875	#1106	0	49	~875	#1106
	Westbound Left	76	131	~724	#951	117	181	~972	#1212	126	191	~983	#1225
	Westbound TR	101	142	12	28	99	136	12	28	102	139	13	30
	Northbound Thru	~1303	#1506	492	594	~1593	#1817	605	#782	!1603	#1829	605	#782
	Northbound Right	82	177	5	33	140	298	18	57	144	308	19	60
	Southbound Thru	480	589	~1132	m#1141	497	678	~1412	m#1237	498	679	~1412	m#1237
Southbound Right	0	0	1	m1	0	0	1	m1	0	0	1	m1	
<b>M Street &amp; 5th Street</b>	Eastbound Left	--	5	--	6	--	24	--	56	--	25	--	59
	Southbound	--	9	--	9	--	26	--	57	--	27	--	58
<b>Improvements:</b>	<i>Eastbound</i>	--	--	--	--	22	374	61	81	7	12	62	83
<i>Install signal</i>	<i>Westbound</i>	--	--	--	--	40	30	81	183	12	11	82	187
	<i>Southbound</i>	--	--	--	--	7	35	8	38	9	43	8	38

# - 95<sup>th</sup> percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

m - Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

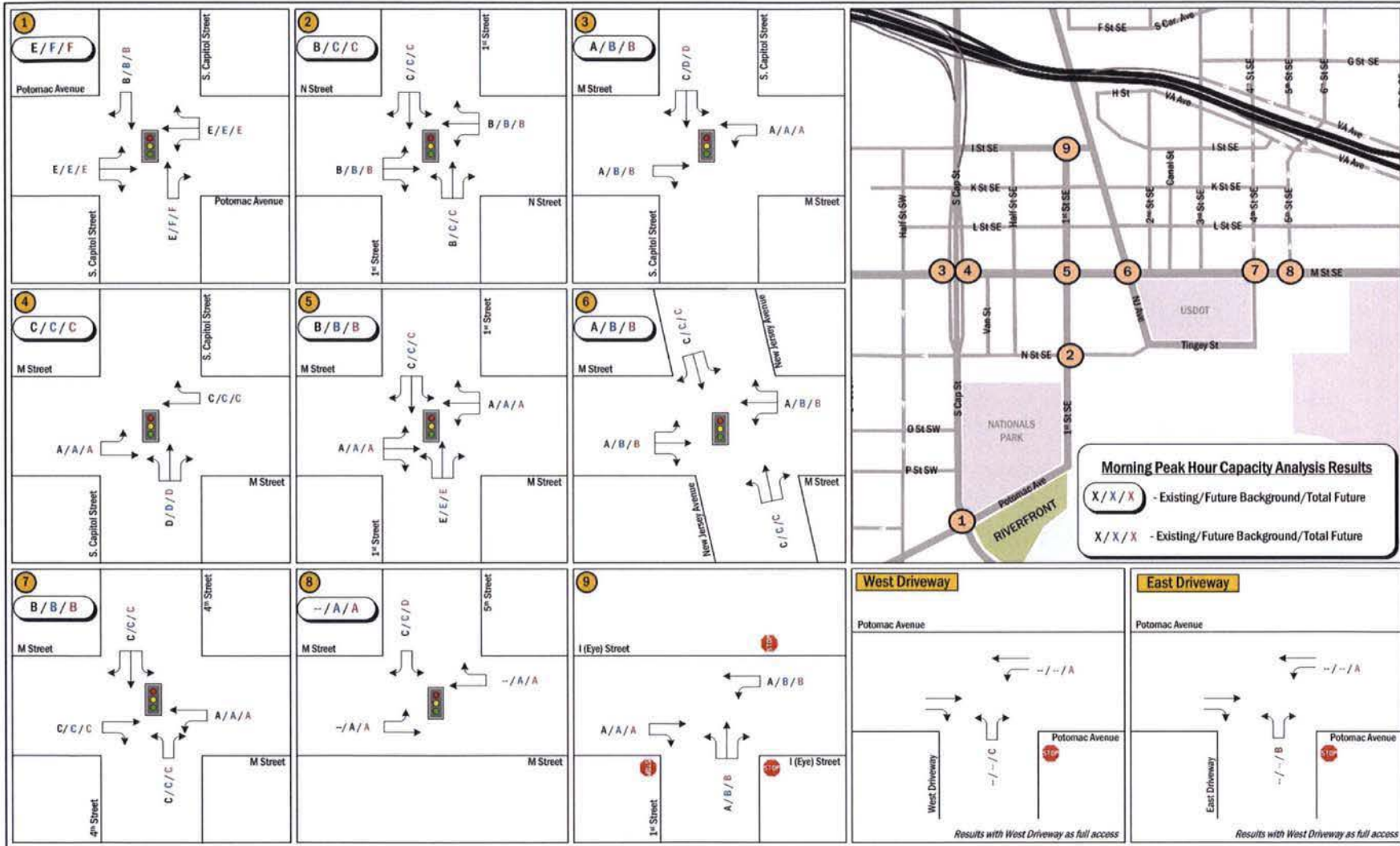


Figure 19: Morning Peak Hour Level of Service Results for 2011 Existing and 2015 Background/Future



Figure 20: Afternoon Peak Hour Level of Service Results for 2011 Existing and 2015 Background/Future

Table 24: Vehicular Level of Service Results for 2020 Background/Future

Intersection	Approach	Future Background Conditions (2020)				Total Future Conditions (2020)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>M Street &amp; South Capitol Street</b>	<b>Overall</b>	<b>291.4</b>	<b>F</b>	<b>149.2</b>	<b>F</b>	<b>298.9</b>	<b>F</b>	<b>153.3</b>	<b>F</b>
	Eastbound	54.4	D	60.6	E	55.8	E	63.5	E
	Westbound	94.9	F	71.6	E	94.1	F	73.4	E
	Northbound	402.8	F	85.7	F	405.8	F	88.4	F
	Southbound	243.6	F	251.9	F	266.5	F	258.9	F
<b>M Street &amp; 1<sup>st</sup> Street</b>	<b>Overall</b>	<b>61.1</b>	<b>E</b>	<b>41.7</b>	<b>D</b>	<b>41.5</b>	<b>D</b>	<b>81.9</b>	<b>F</b>
	Eastbound	134.2	F	56.5	E	60.7	E	67.6	E
	Westbound	6.3	A	6.5	A	18.4	B	6.4	A
	Northbound	66.3	E	55.2	E	70	E	200.2	F
	Southbound	34.5	C	63.3	E	36.5	D	143.7	F
<b>N Street &amp; 1<sup>st</sup> Street</b>	<b>Overall</b>	<b>22.4</b>	<b>C</b>	<b>22.4</b>	<b>C</b>	<b>23.2</b>	<b>C</b>	<b>24.3</b>	<b>C</b>
	Eastbound	18.3	B	19.6	B	18.4	B	19.6	B
	Westbound	17.3	B	31.2	C	18.4	B	32.7	C
	Northbound	22.4	C	18.4	B	25.7	C	22.7	C
	Southbound	27.9	C	20.6	C	24.1	C	22.4	C
<b>M Street &amp; New Jersey Avenue</b>	<b>Overall</b>	<b>25.6</b>	<b>B</b>	<b>16.3</b>	<b>B</b>	<b>28</b>	<b>C</b>	<b>16.5</b>	<b>B</b>
	Eastbound	32.7	B	15.7	B	38.1	D	16.2	B
	Westbound	19.9	B	9.8	A	20.8	C	9.9	A
	Northbound	29.3	C	31.8	C	29.3	C	31.9	C
	Southbound	29.8	C	33.4	C	29.9	C	33.4	C
<b>M Street &amp; 4<sup>th</sup> Street</b>	<b>Overall</b>	<b>25.6</b>	<b>C</b>	<b>47.1</b>	<b>D</b>	<b>26.5</b>	<b>C</b>	<b>48.5</b>	<b>D</b>
	Eastbound	24.6	C	29.7	C	24.3	C	30.4	C
	Westbound	14.4	B	16.4	B	14.9	B	17.2	B
	Northbound	57.7	E	156.7	F	63.6	E	160	F
	Southbound	33.5	C	33.1	C	34	C	33.3	C
<b>M Street &amp; 5<sup>th</sup> Street</b>	Eastbound Left	22.3	C	57.6	F	25.6	D	74.1	F
	Southbound	198.7	F	**	F	276.1	F	**	F
<b>I Street &amp; 1<sup>st</sup> Street</b>	<b>Overall</b>	<b>13.8</b>	<b>B</b>	<b>18.2</b>	<b>C</b>	<b>14.8</b>	<b>B</b>	<b>20.8</b>	<b>C</b>
	Eastbound	11	B	17.2	C	11.6	B	19.3	C
	Westbound	14.4	B	16.7	C	15.3	C	18.3	C
	Northbound	16.1	C	22.1	C	17.5	C	26.4	D
<b>Potomac Avenue &amp; West Driveway</b>	Westbound Left	0.1	A	0.2	A	5.9	A	2	A
	Northbound	22.9	C	17.3	C	45.7	E	47.9	E
<b>Potomac Avenue &amp; West Driveway as RIRO</b>	Westbound Left	--	--	--	--	--	--	--	--
	Northbound	11.2	B	9.5	A	12.4	B	10.4	B
<b>Potomac Avenue &amp; East Driveway</b>	Westbound Left	0.7	A	1.3	A	4.3	A	2.8	A
	Northbound	12.4	B	10.1	B	28.7	D	14.9	B

Intersection	Approach	Future Background Conditions (2020)				Total Future Conditions (2020)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Potomac Avenue & East Driveway with West Driveway <i>RIRO</i>	Westbound Left	0.8	A	1.4	A	8.5	A	4.3	A
	Northbound	18.4	C	14.3	B	254.1	F	229.1	F
Potomac Avenue & S Cap Oval	Overall	18.7	B	25.9	C	21.8	B	29.7	C
	Westbound Right	36.1	D	38.3	D	44.5	D	43.3	D
	Northbound	16.4	B	20.9	C	18.6	C	23.6	C
S Capitol Street & S Cap Oval	Northeastbound Left	49.4	E	24.2	C	56.7	F	25.3	D

Table 25: Roadway Capacity Results Review for 2020 Background/Future

Intersection	Locations & Scenarios with LOS F <i>BG = 2020 Background (with Phase 1 Dev'l Only)</i> <i>TF = 2020 Total Future (with All Phases)</i>	Percent of Future Vehicular Traffic Attributable to Dev'l (in TF scenario)		Discussion & Recommendations
		AM Peak	PM Peak	
M Street & South Capitol Street	Overall intersection AM Peak: BG, TF WB M Street AM Peak: BG, TF NB S Capitol Street AM Peak: BG, TF NB S Capitol Street AM Peak: BG, TF	1.08%	1.25%	The delays at the intersection are due to the future lane configurations, notably the change from a grade separated interchange to an at-grade intersection. The addition of the trips generated by the site-generated trips exacerbates the failing operation during the morning and afternoon peak hour shown in the 2020 Background scenario. These issues were directly studied in the South Capitol Street FEIS, including recommendations such as the planned intersection configuration studied. The Preferred Alternative from the South Capitol Street FEIS was chosen in order to improve the overall safety and mobility of the corridor for all users, including vehicles, transit users, pedestrians, and bicyclists, as stated in Section 1.7.1. This report defers to the conclusions in the FEIS, as trips to and from the RiverFront PUD will have minimal impact at this intersection. However, this report recommends that this intersection be closely studied in the Stage 2 PUD for the later phases of development (Phases 2-4).
M Street & 1 <sup>st</sup> Street	Overall intersection PM Peak: BG, TF WB M Street AM Peak: BG NB S Capitol Street AM Peak: BG, TF NB S Capitol Street AM Peak: BG, TF	6.74%	5.93%	The delays at this intersection during the 2020 Background scenario are due to the addition of trips generated by the background developments during the morning peak hour. This new traffic generated by the background developments makes the old signal timings along the M Street corridor obsolete. Regular updating of the signal timings would prevent these delays from occurring. Allowing an eastbound protected + permitted left-turn along M Street and retiming the signal during the morning peak period alleviates this delay. However, the addition of the site-generated traffic causes the intersection to operate under unacceptable conditions during the afternoon peak period. In order to mitigate the impact of the site-generated traffic, this report recommends that the intersection be retimed during the afternoon peak period.
M Street & 4 <sup>th</sup> Street	EB M Street AM Peak: BG	4.06%	3.08%	The delay along the northbound approach is due to the addition of trips generated by the background developments during the afternoon peak hour. This new traffic generated by the background developments makes the old signal timings along the M Street corridor obsolete. Regular updating of the signal timings would prevent these delays from occurring. The addition of the site-generated trips exacerbates this failing operation. Retiming the signal at this intersection allows for it to operate under acceptable conditions during all scenarios. This report recommends that DDOT consider this change in the future.
M Street & 5 <sup>th</sup> Street	Overall intersection PM Peak: TF NB 1 <sup>st</sup> Street PM Peak: TF SB 1 <sup>st</sup> Street PM Peak: TF	3.34%	3.13%	The delay along the stop-controlled southbound approach is due to the addition of trips generated along M Street by the background developments during the afternoon peak hour. The addition of the site-generated trips exacerbates this failing operation. Constructing a signal at this intersection allows for it to operate under acceptable conditions during all scenarios. However, based on a preliminary signal warrant, this intersection does not warrant a traffic signal based on the peak hour traffic volumes of the 2020 Background scenario. This report recommends that DDOT consider this change, which should be studied within the Maine Avenue/M Street corridor study currently underway.



Intersection	Locations & Scenarios with LOS F <i>BG = 2020 Background (with Phase 1 Dev'l Only)</i> <i>TF = 2020 Total Future (with All Phases)</i>	Percent of Future Vehicular Traffic Attributable to Dev'l (in TF scenario)		Discussion & Recommendations
S Capitol Street & S Cap Oval	NEB Oval AM Peak: FB, TF	2.37%	1.78%	The delays at this intersection are due to future lane configurations, notably the change from a traditional intersection to a traffic oval, including South Capitol Street, Potomac Avenue, R Street, and Q Street. The addition of the trips generated by the site-generated trips exacerbates the failing operation during the afternoon peak hour shown in the 2020 Background scenario. These issues were directly studied in the South Capitol Street FEIS, including recommendations such as the planned configuration studied for the traffic oval. The Preferred Alternative from the South Capitol Street FEIS was chosen in order to improve the overall safety and mobility of the corridor for all users, including vehicles, transit users, pedestrians, and bicyclists, as stated in Section 1.7.1. This report defers to the conclusions in the FEIS, as trips to and from the RiverFront PUD will have minimal impact at this intersection. However, this report recommends that this intersection be closely studied in the Stage 2 PUD for the later phases of development (Phases 2-4).
Potomac Avenue & East Driveway with West Driveway RIRO	NB Driveway AM/PM Peak: TF	18.62%	17.93%	The delays at this intersection are due to the heavy volume of traffic exiting the proposed eastern driveway due to the right-in/right-out configuration of the western driveway. Constructing a signal at this intersection allows for it to operate under acceptable conditions during the morning and afternoon peak hours. Based on a preliminary signal warrant, this intersection does warrant a traffic signal based on the peak hour traffic volumes of the 2020 Future scenario for both the morning and afternoon peak hours. This report recommends that a signal be installed at the eastern driveway if the western driveway is constructed as a right-in/right-out. This intersection should be closely studied in the Stage 2 PUD for the later phases of development (Phases 2-4) to determine if and when a traffic signal is warranted.

Table 26: Vehicular Level of Service Results with Proposed Improvements for 2020 Background/Future

Intersection	Approach	Future Background Conditions (2020)				Total Future Conditions (2020)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>M Street &amp; 1<sup>st</sup> Street</b>	<b>Overall</b>	<b>61.1</b>	<b>E</b>	<b>41.7</b>	<b>D</b>	<b>41.5</b>	<b>D</b>	<b>81.9</b>	<b>F</b>
	Eastbound	134.2	F	56.5	E	60.7	E	67.6	E
	Westbound	6.3	A	6.5	A	18.4	B	6.4	A
	Northbound	66.3	E	55.2	E	70	E	200.2	F
	Southbound	34.5	C	63.3	E	36.5	D	143.7	F
	<b>Improvements:</b>	<b>Overall</b>	<b>27.7</b>	<b>C</b>	<b>29.1</b>	<b>C</b>	<b>30.3</b>	<b>C</b>	<b>44.8</b>
<i>Bkg: Allow EB pm+pt left, retime signal</i>	Eastbound	17.3	B	22.2	C	17.7	B	46.3	D
<i>Future: retime signal PM</i>	Westbound	24.2	C	19.7	B	26.5	C	32.7	C
	Northbound	65.9	E	47.5	D	71.3	E	53.7	D
	Southbound	35.7	D	55.5	E	38	D	56.4	E
<b>M Street &amp; 4<sup>th</sup> Street</b>	<b>Overall</b>	<b>25.6</b>	<b>C</b>	<b>47.1</b>	<b>D</b>	<b>26.5</b>	<b>C</b>	<b>48.5</b>	<b>D</b>
	Eastbound	24.6	C	29.7	C	24.3	C	30.4	C
	Westbound	14.4	B	16.4	B	14.9	B	17.2	B
	Northbound	57.7	E	156.7	F	63.6	E	160	F
	Southbound	33.5	C	33.1	C	34	C	33.3	C
	<b>Improvements:</b>	<b>Overall</b>	--	--	<b>22.8</b>	<b>C</b>	--	--	<b>21.8</b>
<i>Retime signal</i>	Eastbound	--	--	23.9	C	--	--	24.5	C
	Westbound	--	--	19.1	B	--	--	14.1	B
	Northbound	--	--	29.7	C	--	--	30.2	C
	Southbound	--	--	19.4	B	--	--	19.2	B
<b>M Street &amp; 5<sup>th</sup> Street</b>	Eastbound Left	22.3	C	57.6	F	25.6	D	74.1	F
	Southbound	198.7	F	**	F	276.1	F	**	F
<b>Improvements:</b>	<b>Overall</b>	<b>24.2</b>	<b>C</b>	<b>16.6</b>	<b>B</b>	<b>30.1</b>	<b>C</b>	<b>22</b>	<b>C</b>
<i>Install signal</i>	Eastbound	59.1	E	21.4	C	75.3	E	30.1	C
	Westbound	2.5	A	7.5	A	2.6	A	7.9	A
	Southbound	31.2	C	36.8	D	31.3	C	36.9	D
<b>Potomac Avenue &amp; East Dwy RIRO</b>	Westbound Left	0.8	A	1.4	A	8.5	A	4.3	A
	Northbound	18.4	C	14.3	B	254.1	F	229.1	F
<b>Improvements:</b>	<b>Overall</b>	--	--	--	--	<b>9.1</b>	<b>A</b>	<b>11.8</b>	<b>B</b>
<i>Install signal</i>	Eastbound	--	--	--	--	5.4	A	7.9	A
	Westbound	--	--	--	--	8.1	A	8.5	A
	Northbound	--	--	--	--	37.8	D	37.1	D
<b>Potomac Avenue &amp; S Cap Oval</b>	<b>Overall</b>	<b>18.7</b>	<b>B</b>	<b>25.9</b>	<b>C</b>	<b>21.8</b>	<b>B</b>	<b>29.7</b>	<b>C</b>
	Westbound Right	36.1	D	38.3	D	44.5	D	43.3	D
	Northbound	16.4	B	20.9	C	18.6	C	23.6	C

Table 27: Queuing Results for Intersection Operating Under LOS F Conditions During 2020 Background/Future Scenarios

Intersection	Approach	Future Background Conditions (2020)				Total Future Conditions (2020)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %
<b>M Street &amp; South Capitol Street</b>	Eastbound Left	~113	#242	~237	#398	~116	#245	~242	#403
	Eastbound TR	254	308	303	359	261	316	308	364
	Westbound Left	~129	#248	~134	#208	~129	#248	~136	#212
	Westbound TR	165	208	158	198	169	212	164	205
	Northbound Left	298	m207	~185	#282	298	m206	~185	#281
	Northbound TR	~1915	m#1316	327	#594	~1926	m#1318	339	#619
	Southbound Left	~752	#891	~351	m#408	~799	#939	~372	m#427
	Southbound TR	381	#469	~1132	m#1142	383	#472	~1132	m#1142
<b>M Street &amp; 1st Street</b>	Eastbound Left	~203	#219	--	--	~126	m#129	--	--
	Eastbound TR	163	m135	~417	m#476	191	m137	~352	m#408
	Westbound Left	--	--	--	--	139	#361	--	--
	Westbound TR	48	57	63	71	34	40	63	71
	Northbound	125	180	151	#255	158	#225	~276	#400
	Southbound Left	--	--	--	--	--	--	~121	#237
	Southbound TR	45	77	145	#249	65	103	222	#378
	<b>Improvements:</b>	<i>Eastbound Left</i>	88	m91	--	--	89	m85	--
<i>Bkg: Allow EB pm+pt left, retime signal</i>	<i>Eastbound TR</i>	203	m185	219	m261	236	m194	~253	m#313
<i>Future: retime signal PM</i>	<i>Westbound Left</i>	115	#213	69	#235	148	#360	~133	#292
	<i>Westbound TR</i>	184	127	162	186	170	126	92	133
	<i>Northbound</i>	125	181	130	#240	158	#234	193	#325
	<i>Southbound Left</i>	--	--	--	--	--	--	~87	#203
	<i>Southbound TR</i>	46	78	143	#240	66	105	199	303
<b>M Street &amp; 4th Street</b>	Eastbound	91	158	301	358	93	164	315	375
	Westbound	137	179	144	215	146	189	156	220
	Northbound Left	112	#245	~227	#382	114	#251	~230	#385
	Northbound Right	0	49	98	190	0	51	115	215
	Southbound	96	143	141	196	105	154	144	200
<b>Improvements:</b>	<i>Eastbound</i>	--	--	252	332	--	--	278	#371
<i>Retime signal</i>	<i>Westbound Left</i>	--	--	44	#115	--	--	--	--
	<i>Westbound TR</i>	--	--	117	92	--	--	88	74
	<i>Northbound Left</i>	--	--	135	#279	--	--	136	#282
	<i>Northbound Right</i>	--	--	44	107	--	--	54	124
	<i>Southbound</i>	--	--	107	150	--	--	111	154

Intersection	Approach	Future Background Conditions (2020)				Total Future Conditions (2020)			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %	50 <sup>th</sup> %	95 <sup>th</sup> %
<b>M Street &amp; 5th Street</b>	Eastbound Left	--	90	--	214	--	104	--	261
	Southbound	--	138	--	**	--	157	--	**
<i>Improvements: Install signal</i>	Eastbound Left	~192	#331	~246	m#344	~212	#354	~280	m#370
	Eastbound TR	25	32	40	44	26	32	41	m45
	Westbound	32	32	146	225	33	34	162	220
	Southbound	18	57	21	66	21	59	23	67
<b>Potomac Avenue &amp; East Dwy RIRO</b>	Westbound Left	--	1	--	3	--	33	--	14
	Northbound	--	16	--	7	--	235	--	330
<i>Improvements: Install signal</i>	Eastbound	--	--	--	--	94	m125	67	96
	Westbound	--	--	--	--	111	135	165	173
	Northbound	--	--	--	--	55	113	111	187
<b>S Cap Oval &amp; S Capital Street</b>	Westbound Left	--	127	--	823	--	146	--	965
<b>R Street &amp; S Cap Oval</b>	Eastbound Right	--	15	--	947	--	15	--	973
<b>S Capital Street &amp; S Cap Oval</b>	Northeastbound Left	--	42	--	71	--	53	--	76

# - 95<sup>th</sup> percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

~ - Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

m - Volume for 95<sup>th</sup> percentile queue is metered by upstream signal.

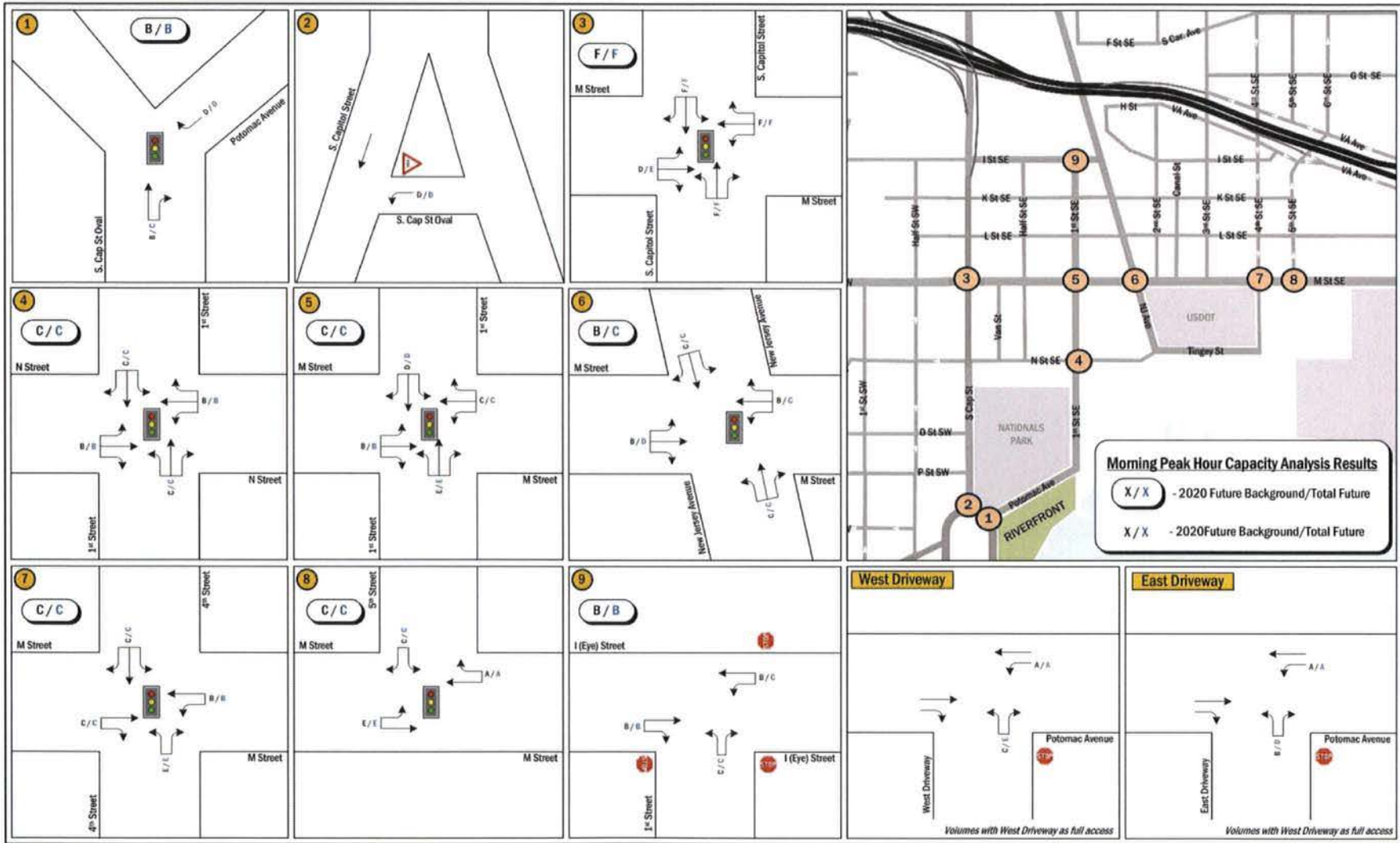


Figure 21: Morning Peak Hour Level of Service Results for 2020 Background/Future



Figure 22: Afternoon Peak Hour Level of Service Results for 2020 Background/Future

### 3.3 Non-Auto Impacts

#### 3.3.1 Transit

The trip generation estimates for the RiverFront PUD show that a significant amount of new transit riders will be generated. Phase 1 is projected to generate over 1,100 transit trips on a weekday, and the complete RiverFront PUD is projected to generate around 4,800 transit trips per weekday.

As stated in Section 1, there is a significant amount of transit service nearby, including the Metrorail green line and several bus routes. The Navy Yard Metrorail station is approximately a 2,300 foot, or 0.4 mile walk from Phase 1 of the RiverFront PUD. A similar distance separates RiverFront from major bus service along M Street. Two routes have frequent service on every day of the week, the DC Circulator Union Station-Navy Yard route, and Metrobus' Minnesota Avenue-M Street line. The bus service in the area near the RiverFront PUD is of high enough quality that census data shows slightly more bus commuters than rail commuters living in the census tract containing the RiverFront PUD site.

The RiverFront PUD will likely generate more transit ridership to rail than bus. Residents at RiverFront will likely split almost evenly between using Metrorail and the nearby bus service, but office workers, who will be coming from over a larger area, will likely be heavily weighted towards Metrorail, possibly in the range of 75% rail versus 25% bus.

WMATA's studied capacity of Metrorail stations in its *Station Access & Capacity Study*<sup>5</sup>. The study analyzed capacity of Metrorail stations for their vertical transportation, for example the capacity of the station at elevators, stairs and escalators to shuttle patrons between the street, mezzanine, and platforms. The study also analyzed stations capacity to process riders at farecard gates. For both analyses, vertical transportation and farecard gates, volume to capacity ratios were calculated for existing data (from 2005) and projections for the year 2030.

Based on findings presented in the *Station Access & Capacity Study*, the Navy Yard station can accommodate the additional riders generated by the RiverFront PUD. The study did not find any high volume to capacity ratios at the station, with the exception of the farecard gates at the eastern end of the Navy Yard mezzanine, which had a volume to capacity ratio of 0.61, which WMATA does not consider a problem worthy of improvement but instead a concern that should be reevaluated in the future. The RiverFront PUD transit riders will likely be using the western Navy Yard farecard gates, so this concern does not affect the project. The WMATA study does note that the capacity analyses were performed prior to the expansion of the western Navy Yard portal in anticipation of National's Park, and thus the concerns noted for 2030 at the eastern farecard gates may not be observed in future studies.

WMATA also studies capacity for its bus routes. *DC's Transit Future System Plan*<sup>6</sup>, lists the bus routes with the highest load factor (a ratio of passenger volume to bus capacity). None of the Metrobus routes that travel near the RiverFront PUD site are cited for having unacceptable load factors. Thus, the local bus service can accommodate the future riders generated by the RiverFront PUD.

#### 3.3.2 Bicycle

Of all of the modes analyzed in this report, the trip generations estimates for cycling are the lowest. For Phase 1, the projected trips are around 150 per weekday, and around 600 per weekday for the entire RiverFront PUD. Although

<sup>5</sup> *Station Access & Capacity Study Final Report*, April 2008, Washington Metropolitan Area Transit Authority

<sup>6</sup> *DC's Transit Future System Plan Final Report*, April 2010, District of Columbia Department of Transportation

bicycling will be an important mode for getting to and from the RiverFront site, with significant bicycle facilities located on site and quality routes to and from the site, the impacts from bicycling will be relatively less than impacts to other modes.

The cyclists traveling to and from the site area expected to take advantage of the existing and planned routes that exist. Cyclists can use the bike lanes on Potomac Avenue and 1<sup>st</sup> Street SE to access M Street and other local destinations. Continuing north past M Street on 1<sup>st</sup> Street SE, cyclists can use K and I Streets to travel east/west to both 4<sup>th</sup> Street SW, and the one-way pair of 4<sup>th</sup> and 6<sup>th</sup> Streets SE. These north-south routes provide quality access to downtown and Capitol Hill. Additional, P Street SW, across South Capitol Street from the site can also be used to access 4<sup>th</sup> Street SW, and via the Anacostia Riverwalk Trail, 15<sup>th</sup> Street and other major facilities near the National Mall.

Based on the trip generation estimates for bicycling, and the quality of the routes near the project's location, the RiverFront PUD will not have a negative impact to bicycle facilities in the study area.

### 3.3.3 Pedestrian

The RiverFront PUD is located in a walkable area, with connections to major existing and future retail locations, employment sites, residential neighborhoods and transit connections. The trip generation estimates project around 450 walking trips per weekday for Phase 1, and around 1,900 per weekday for the entire RiverFront PUD.

The origins and destinations of these trips are likely to be:

- Residential neighborhoods and buildings where office employees can walk to work, such as across South Capitol Street, and apartment/condo buildings at The Yards and north of M Street.
- Employment opportunities where RiverFront residents can walk to work, such as the USDOT headquarters, Navy Yard, and other office buildings on the M Street corridor.
- Retail locations, such the planned restaurants and shops at The Yards, and other retail sites along the M Street corridor.
- Nationals' Park, where many hotel guests, employees residents can walk.

Based on these origins/destinations, most pedestrians generated by the RiverFront PUD will walk along Potomac Avenue and 1<sup>st</sup> Street SE to reach destinations on the M Street corridor. There will also be use of Tingey & N Streets SE to walk to The Yards, USDOT and Navy Yard.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the RiverFront site and nearby transit stops. The vast majority of these transit riders will walk north/south on Potomac Avenue and 1<sup>st</sup> Street SE to reach bus stops and the Navy Yard Metrorail station portal.

Most of the sidewalks surrounding the site are of high quality, although there are significant gaps in the network. A summary of sidewalk availability and quality and is shown on Figure X. The sidewalks closest to the RiverFront PUD such as those along Potomac Avenue SE, and 1<sup>st</sup> Street SE north until N Street SE, and all sidewalks surrounding Nationals' Park are of high quality.

Outside of this area, some sidewalks are narrow or of sub-par quality, including:

- Most streets on Buzzard Point south of Q Street SW
- East side of 1<sup>st</sup> Street NE between N and M Streets
- Tingey/N Streets within The Yards



- Half Street SE between M and N Street

Fortunately, the gaps within the network will be filled in with planned redevelopment projects. The Yards will reconstruct and upgrade Tingey Street, N Street, and the eastern side of 1<sup>st</sup> Street SE. Redevelopment on both sides of Half Street will create a high quality pedestrian experience adjacent to the Navy Yard Metrorail portal. Redevelopment of several sites on Buzzard Point along with improvements from the South Capitol Street EIS preferred alternative will vastly improve sidewalk conditions along Buzzard Point.

The capacity of sidewalks to handle the projected number of pedestrians will not be negatively impacted by this project, as long as future redevelopments build sidewalks to DDOT standards. DDOT requires that all sidewalks are a minimum of 6 feet wide, with sidewalks on arterial streets 8 to 10 feet wide depending on the location. The proposed widths of the sidewalks adjacent to the site property meet the District standard. The *Highway Capacity Manual* (HCM) outlines methodologies for calculating capacity of sidewalks based on the sidewalk widths. According to methodologies contained in the HCM, the LOS grade on a 6 foot wide sidewalk does not reach LOS D until the sidewalk volumes reach 2,000 pedestrians per hour. Similarly, LOS E is not reached until volumes reach 3,000 pedestrians per hour. The existing pedestrian counts adjacent to the site combined with the and projected pedestrian trips associated with the site will not approach these thresholds. Thus, the sidewalk capacity will not be exceeded, and there will be no detrimental impacts.

Based on the trip generation estimates for walking, the quality of the routes near the project's location taking into account the streetscapes that will be redeveloped and improved, the RiverFront PUD will not have a negative impact to pedestrian facilities in the study area.



Figure 23: Sidewalk Condition near Site

### 3.4 Crash Analysis

This section of the report reviews available crash data within the study area, reviews potential impacts of Phase 1 of the proposed PUD on crash rates, and makes recommendations for mitigation measures where needed.

#### 3.4.1 Summary of Available Crash Data

A safety analysis was performed to determine if there was an abnormally high accident rate at any study area intersection. The District Department of Transportation (DDOT) provided the last three years of intersection accident data; from 2008 to 2010. This data set included all signalized intersections adjacent to the site. This data was reviewed and analyzed to determine the accident rate at each location. For intersections, the accident rate is measured in accidents per million-entering vehicles (MEV). The accident rates per intersection are shown in Table 28.

According to the Institute of Transportation Engineer's *Transportation Impact Analysis for Site Development*, an accident rate of 1.0 or higher is an indication that further study is required. Three intersections in the study area meet this criterion (as shown in red in Table 28 and detailed in Table 29). The PUD needs to be developed in a manner to help alleviate, or at minimum not add to, the conflicts at these intersections.

**Table 28: Intersection Crash Rates**

Intersection	Total Crashes	Pedestrian Crashes	Bike Crashes	Rate per MEV*
M Street & South Capitol Street	76	2	0	<b>3.69</b>
Potomac Avenue & South Capitol Street	45	0	0	0.84
M Street & 1st Street	12	1	0	0.75
N Street & 1st Street	2	0	0	0.28
M Street & New Jersey Avenue	16	0	0	<b>1.15</b>
M Street & 4th Street	12	1	0	<b>1.01</b>
M Street & 5th Street	5	0	0	0.34
I Street & 1st Street	2	0	0	0.34

\* - Million Entering Vehicles; volumes estimated based on turning movement count data

The crash summary data in Table 28 shows three intersections with a crash rate over 1.0 crashes per million entering vehicles—the rate which is considered a threshold for further analysis. A rate over 1.0 does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have higher crash rates due to operational, geometric, or other issues.

For these three intersections, the crash type information from the DDOT crash data was reviewed to see if there is a high percentage of certain crash types. Generally, the reasons for why an intersection has a high crash rate cannot be derived from crash data, as the exact details of each crash are not represented. However, some summaries of crash data can be used to develop general trends or eliminate some possible causes.

Table 29 contains a breakdown of crash types reported for the four intersections with a crash rate over 1.0 per MEV.

**Table 29: High Crash Rate Intersections by Crash Type**

Intersection	Rate per MEV	Right Angle	Left Turn	Right Turn	Rear End	Side Swiped	Head On	Parked	Fixed Object	Ran Off Road	Ped. Involved	Backing	Unspecified	Total
M Street & South Capitol Street	<b>3.69</b>	11 14%	12 16%	1 1%	11 14%	25 33%	1 1%	0 0%	2 3%	0 0%	2 3%	5 7%	0 0%	<b>76</b>
M Street & New Jersey Avenue	<b>1.15</b>	0 0%	2 13%	1 6%	5 31%	3 19%	0 0%	1 6%	1 6%	0 0%	0 0%	0 0%	0 0%	<b>16</b>
M Street & 4th Street	<b>1.01</b>	1 8%	0 0%	0 0%	4 33%	2 17%	0 0%	1 8%	0 0%	0 0%	1 8%	2 17%	0 0%	<b>12</b>
		16%	13%	0%	29%	24%	3%	5%	3%	0%	5%	0%	0%	

### 3.4.2 Potential Impacts

This section reviews the three locations with existing crash rates over 1.0 MEV and reviews potential impacts of the proposed development.

- M Street & South Capitol Street

This intersection was found to have a significantly high crash rate, with 3.69 crashes per MEV over the course of the 3-year study period. The majority of the crashes at this intersection were side swiped vehicles, turning vehicles, rear-end crashes, and right-angle crashes. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection in both directions. Additionally, the configuration of this intersection as a grade-separated diamond intersection leads to a high concentration of turning vehicles. However, this report does not recommend mitigation measures at this intersection due to future changes proposed in the South Capitol Street FEIS. Additionally, the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

- M Street & New Jersey Avenue

This intersection is just over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.15 crashes per MEV. The majority of crashes at this intersection were side swiped vehicles and rear-end crashes. Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal. This report does not recommend mitigation measures at this intersection as the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

- M Street & 4<sup>th</sup> Street

- This intersection is barely over the threshold of 1.0 crashes per MEV, with a rate of approximately 1.01 crashes per MEV. The majority of crashes at this intersection were side swiped vehicles and rear-end crashes.

Sideswipe crashes can often occur when a vehicle going straight through an intersection makes a last-second lane change to get around a vehicle waiting for a gap to make a left turn from a shared through/left lane, as is the case in this location since this section of M Street does not have separate turning lanes at this intersection. Elevated rear-end collision rates are typical at intersections controlled by a traffic signal. This report does not recommend mitigation measures at this intersection as the PUD is not projected to make significant changes to the commuting patterns, operations, or geometry of this intersection.

### *3.4.3 Leading Pedestrian Intervals*

The proposed RiverFront PUD will not have a significant effect on many of these intersections, as it will not directly influence commuter traffic patterns or change operations and geometry at most intersections. However, the changes introduced by the proposed development will have a significant impact on pedestrian crossings of North Capitol Street and M Street. As the crash data shows pedestrian crashes at a few of intersections along M Street, this report recommends that DDOT consider adding Leading Pedestrian Intervals (LPI) to the signalized intersections within the study area.

LPIs are a signal-timing-based pedestrian safety measure. Intersections with pedestrian and car traffic often experience conflict between these two groups, with potentially dangerous consequences for the pedestrians. The term LPI refers to when the 'Walk' signal appears approximately three or four seconds before the green traffic signal for vehicles. The 'Walk' signal then remains active for the duration of the green signal. This brief timing adjustment allows pedestrians more time to cross the street and increases their visibility to drivers, especially those making turns<sup>7</sup>.

---

<sup>7</sup> <http://www.walkinginfo.org/engineering/crossings-signals.cfm>