XIII. I-264 & Parks Avenue

Deficiencies	Proposed Alternatives
None	**No Improvement Alternative Developed Figure XIII.4**

XIII.1 Existing Conditions

Existing conditions present at the Parks Avenue interchange are described in this chapter focusing on roadway geometry, volumes, capacity analysis, and crash history.

XIII.1.1 Geometry, Speeds, Lanes, Traffic Control

Figure XIII.1 displays a summary of the existing roadway geometry. Parks Avenue is the eastern terminus of the I-264 freeway. The terminal points are the signalized intersections of Parks Avenue and 21st Street, and Parks Avenue and 22nd Street. Access spacing is non-compliant at one location; there is an entrance too close to the signalized intersection of Parks Avenue and 21st Street which is immediately adjacent to the terminus of the interstate facility.

Additional details on the existing conditions geometry at Parks Avenue can be found in the Technical Appendix.

XIII.1.2 Volumes & Operations

Figure XIII.2: Existing Volumes displays the existing weekday peak hour volumes at I-264 and Parks Avenue for the year 2014. Traffic counts were conducted during early December 2014, with counts conducted on Tuesdays, Wednesdays and/or Thursdays. The peak hour counts document the typical commuter pattern on I-264, with heavier volumes in the westbound direction during the AM peak period and in the eastbound direction during the PM peak period.

Table 13.1 displays a summary of the results of the capacity analysis of existing conditions at I-264 and Parks Avenue using the Highway Capacity Manual software (HCS) package. No major deficiencies are present, and both directions of the mainline operate with LOS A conditions in both peak hours.

Table 13.1
Summary of 2014 Existing Conditions HCS Capacity Analysis
I-264 & Parks Avenue

Movement (Type)	AM Peak Hour		PM Peak Hour	
	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
EB I-264 between Birdneck Rd and Parks Ave (Freeway)	4.6	A	5.6	A
WB I-264 between Birdneck Rd and Parks Ave (Freeway)	5.4	A	5.3	A

Capacity Analysis indicates that all movements at I-264 and Parks Avenue are currently operating with adequate capacity.

I-264 Corridor Evaluation Study

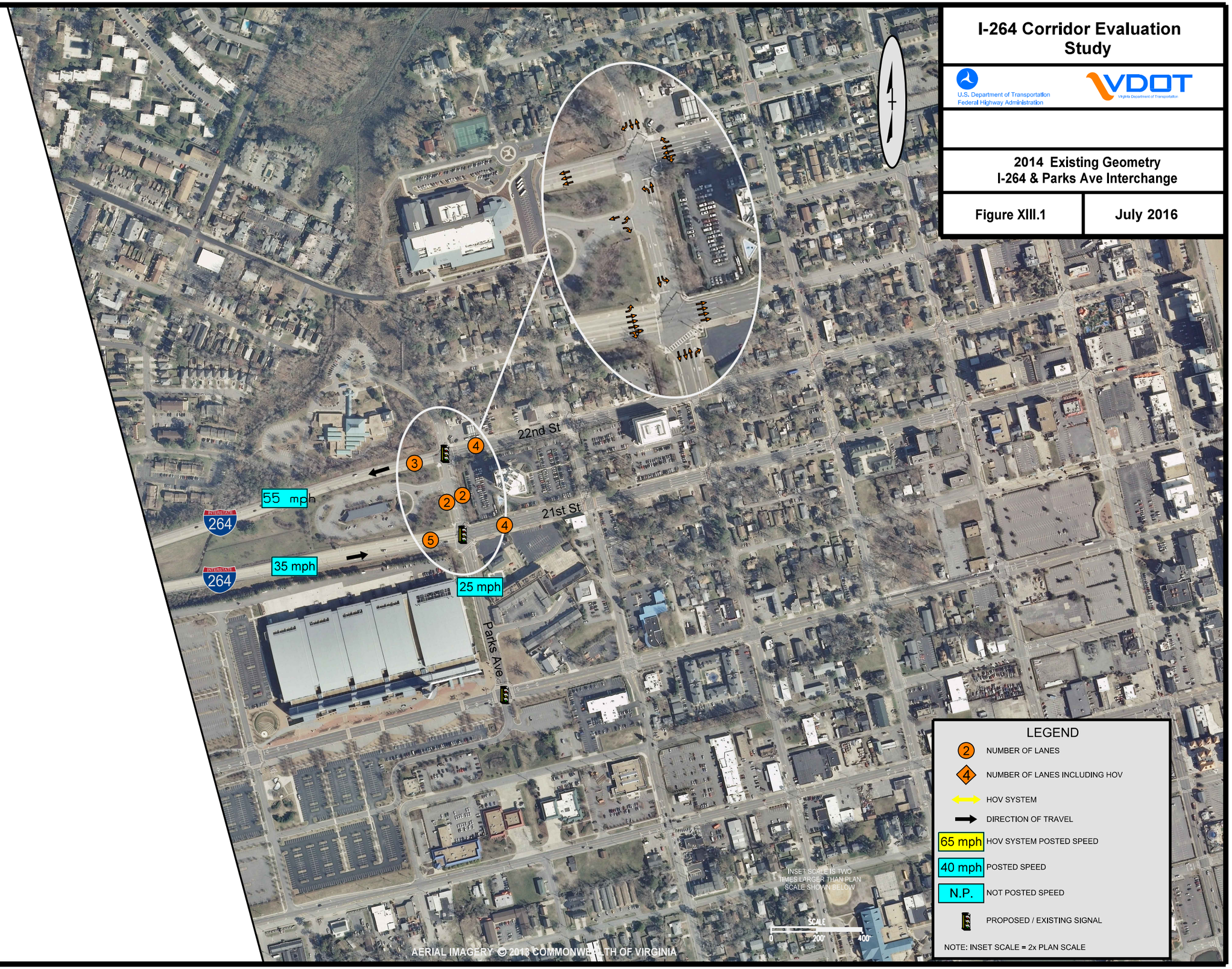
U.S. Department of Transportation
Federal Highway Administration

VDOT
Virginia Department of Transportation

2014 Existing Geometry
I-264 & Parks Ave Interchange

Figure XIII.1

July 2016



I-264 Corridor Evaluation Study

U.S. Department of Transportation
Federal Highway Administration

VDOT
Virginia Department of Transportation

AECOM

2014 Peak Hour Volumes
I-264 & Parks Ave Interchange

Figure XIII.2

July 2016

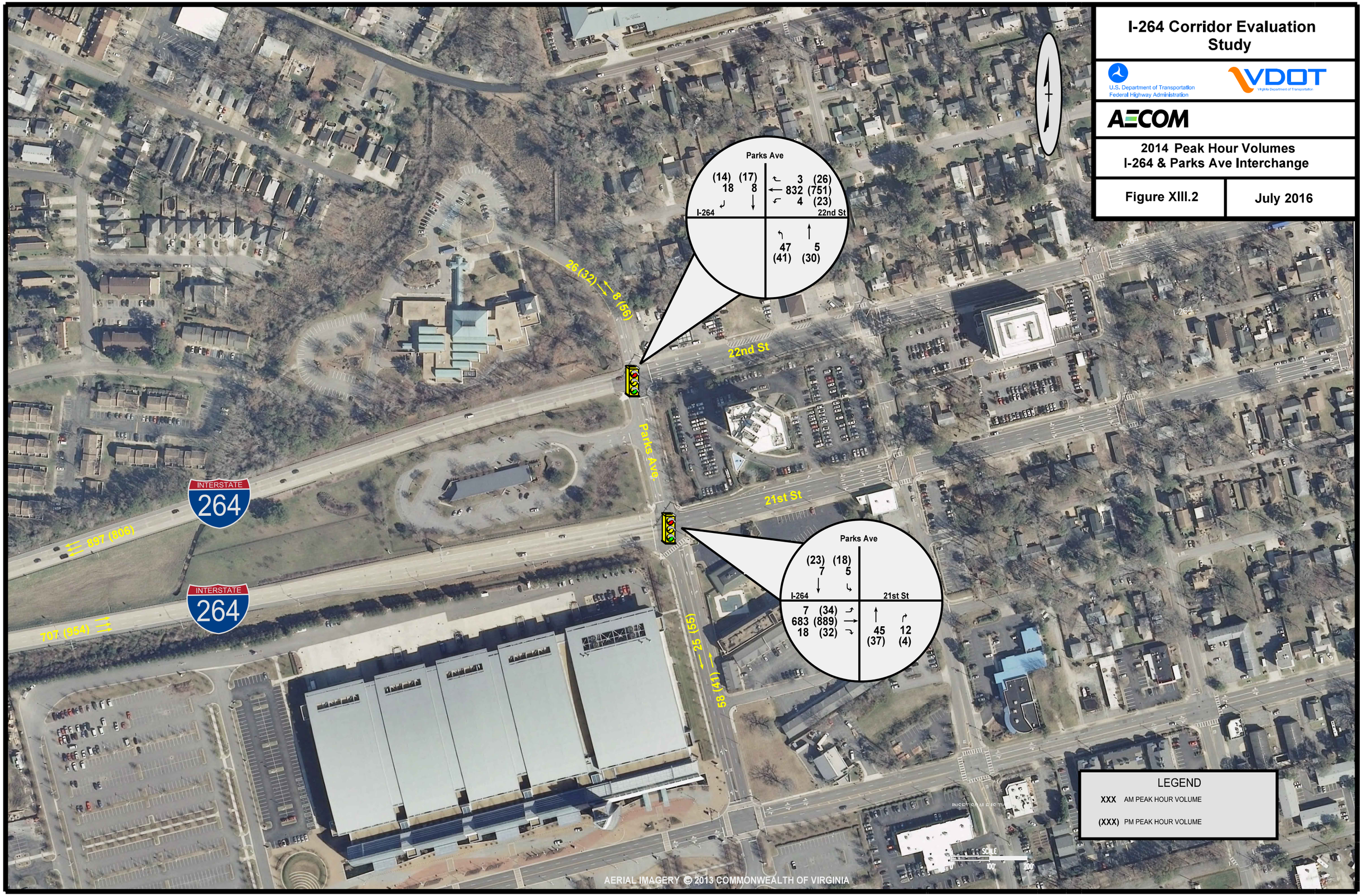


Table 13.2 summarizes the existing conditions SimTraffic capacity analysis of the Parks Avenue study corridor with I-264. The analysis shows no major deficiencies are present, and both intersections operate with overall LOS B or better conditions.

Table 13.2
Summary of 2014 Existing Conditions SimTraffic Capacity Analysis
I-264 at Parks Avenue

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
22nd Street/I-264 WB	4.9	A	7.0	A
21st Street/I-264 EB	16.4	B	16.8	B

Table 13.3 presents a summary of the existing conditions SimTraffic queueing analysis, and the results show that vehicle queues extending from the traffic signal are relatively short and do not impact interstate operations.

Table 13.3
Summary of 2014 Existing Conditions SimTraffic Queue Analysis
I-264 at Parks Avenue

Intersection	Ramp Length (feet)	AM Peak Hour		PM Peak Hour	
		Average (feet)	95th % (feet)	Average (feet)	95th % (feet)
EB I-264 Off-Ramp to 21st Street/Parks Avenue	750*	127	183	147	200

*Ramp length is theoretically unlimited; 750 feet is the length of the right turn storage bay

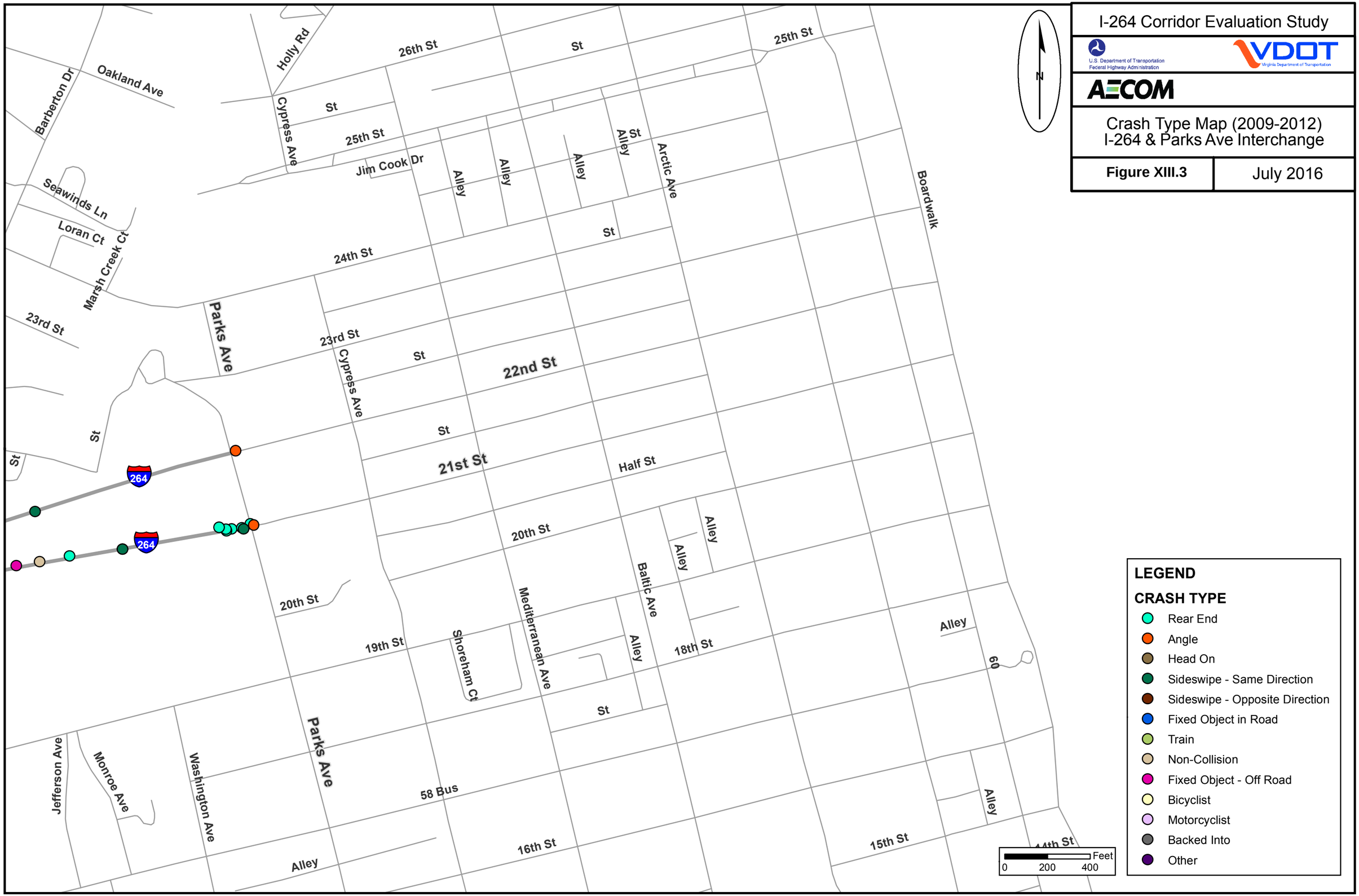
XIII.1.3 Crashes

Figure XIII.3 displays the 4-year crash history at I-264 and Parks Avenue for the years 2009-2012. It illustrates a small amount of crashes on the mainline, heavier on the eastbound direction of I-264. The intersection of 21st Street and I-264 eastbound shows a larger density of crashes compared to the intersection of 22nd Street and I-264. Most of the crashes occurring at the intersection are rear end crashes.

Table 13.4 summarizes the crash history by direction and type of facility (intersection or freeway mainline) at I-264 and Parks Avenue for the period 2009-2012. A total of 14 crashes occurred within the study area and a majority of the crashes (9) involved rear end crashes that occurred mostly (12) on the mainline of eastbound I-264 and at the intersection of 21st Street and eastbound I-264. There were 7 injury crashes and 0 fatal crashes. Rear End, Fixed Object Off-Road, and Sideswipe – Same Direction crashes, the three most frequent types of crashes, made up 93% of the total number of crashes.

Table 13.4
Summary of Crash History at I-264 and Parks Avenue
2009-2012

Location	Type of Crash					Severity		
	Rear End	Sideswipe - Same Dir.	Non-Collision	Fixed Object Off Road	**Total**	Property Damage Only	Injury	Fatal
EB ML	3	1	1	1	**6**	3	3	0
WB ML	1	0	0	1	**2**	0	2	0
EB Intersection	5	1	0	0	**6**	4	2	0
WB Intersection	0	0	0	0	**0**	0	0	0
Total	**9**	**2**	**1**	**2**	**14**	7	7	0



I-264 Corridor Evaluation Study

U.S. Department of Transportation
Federal Highway Administration

VDOT
Virginia Department of Transportation

AECOM

Crash Type Map (2009-2012)
I-264 & Parks Ave Interchange

Figure XIII.3

July 2016

XIII.2 Forecasted Conditions

The analysis of forecasted conditions includes the development and evaluation of future volumes and operations for the year 2040. The forecasted conditions include the No Build Alternative and improvement alternative.

XIII.2.1 Forecasted Volumes & Operations

Table 13.5 displays the forecasted conditions volumes for the No Build (regular font) and Build (**bold font**) Alternative at the Parks Avenue interchange for the year 2040. Existing volumes are also listed *(in italics)* in order to provide for comparison. In general, the volumes show moderate change in growth entering and exiting I-264. The roadway geometry for the No Build Alternative at I-264 and Parks Avenue is the same as the geometry found in the existing conditions. No improvements are currently funded in the *Six-Year Improvement Program* for I-264 and Parks Avenue.

Table 13.8 displays a summary of the results of the HCS capacity analysis of the No Build Alternative. Since moderate traffic volume growth is forecasted, densities have remained the same or increased slightly from what is currently experienced in the existing conditions. All movements experience LOS A.

Table 13.5
Forecasted Conditions Volumes for Build Alternative
I-264 & Parks Avenue

Interstate & Direction	Movement		2014 Existing Volumes		2040 No Build Alternative		2040 Build Alternative	
	From	To	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
I-264 EB	Mainline before Parks		*707*	*954*	784	1058	**784**	**1058**
	21st Street after Parks		*700*	*911*	773	1008	**773**	**1007**
I-264 WB	22nd Street before Parks		*839*	*800*	931	889	**933**	**880**
	Mainline after Parks		*897*	*806*	996	896	**998**	**891**

The results of the HCS capacity analysis indicate the forecasted year 2040 volumes will be adequately accommodated on both freeway segments at I-264 and Parks Avenue.

Table 13.6 summarizes the No Build SimTraffic capacity analysis of the Parks Avenue study corridor. The analysis shows adequate service levels for the two intersections with LOS A conditions.

Table 13.6
Summary of 2040 No Build SimTraffic Capacity Analysis
I-264 at Parks Avenue Improvement Alternatives

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
22nd Street/I-264 WB	5.7	A	6.7	A
21st Street/I-264 EB	9.1	A	8.8	A

Table 13.7 presents a summary of the existing conditions SimTraffic queueing analysis, and the results show that vehicle queues extending from the traffic signal are relatively short and do not impact interstate operations.

Table 13.7
Summary of 2040 No Build SimTraffic Queue Analysis
I-264 at Parks Avenue Improvement Alternatives

Intersection	Ramp Length (feet)	AM Peak Hour		PM Peak Hour	
		Average (feet)	95th % (feet)	Average (feet)	95th % (feet)
EB I-264 Off-Ramp to 21st Street/Parks Avenue	750*	94	139	106	153

Capacity Analysis indicates that all movements at I-264 and Parks Avenue will continue to operate with adequate capacity through 2040.

*Ramp length is theoretically unlimited; 750 feet is the length of the right turn storage bay

XIII.2.2 Improvement Alternatives

Capacity analysis at I-264 and Parks Avenue indicates no major deficiencies are forecasted to occur specifically on I-264. However, the interchange still exhibits few geometry deficiencies. Consequently, any major maintenance activities (such as bridge replacement) should be designed to incorporate consideration of a plan for future improvements. No improvement alternatives were developed and analyzed for the Parks Avenue section of I-264. The existing geometry at I-264 and Parks Avenue is shown in **Figure XIII.4.** The Build Alternative for Parks Avenue does not include any geometric improvements, however it does include slightly different design year peak hour volumes in comparison to the No Build Alternative.

The build conditions volumes were analyzed using the same procedure – HCS – used in the analysis of existing conditions and No Build Alternative. The results of the capacity analysis for the forecasted year 2040 alternative (including the No Build Alternative) are shown in **Table 13.8.** The results show that all of the movements associated with I-264 and Parks Avenue exhibit adequate LOS A conditions. The Build and No Build Alternative capacity results are the same due to the fact that the no build volumes and build volumes differ only slightly.

Table 13.8
Summary of HCS Capacity Analysis Results
Year 2040 Alternatives: Parks Avenue & I-264

Year 2040 Alternative		No Build Alternative				Build Alternative			
Time of Day		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
Dir	Movement (Type)	Density	LOS	Density	LOS	Density	LOS	Density	LOS
East-bound I-264	EB I-264 between Birdneck Rd and Parks Ave (Freeway)	4.8	A	6.2	A	4.8	A	6.2	A
West-bound I-264	WB I-264 between Birdneck Rd and Parks Ave (Freeway)	6.0	A	5.5	A	6.0	A	5.5	A

In addition, SimTraffic simulation software capacity and queue analysis was conducted for the Build Alternative at signalized intersections and the results for the year 2040 Build Alternative are shown in **Table 13.9** and **Table 13.10.** The results show that the two signalized intersections along the Parks Avenue study area exhibit LOS A conditions in both peak hours. **Table 13.10** presents a summary of the Build Alternative SimTraffic queueing analysis, and the results show that vehicle queues extending from the traffic signal are relatively short and do not impact interstate operations.

Table 13.9
Summary of 2040 Build SimTraffic Capacity Analysis
I-264 at Parks Avenue Build Alternative

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Parks Avenue Build Alternative (Figure XIII.4)				
22nd Street/I-264 WB	5.6	A	6.6	A
21st Street/I-264 EB	9.3	A	9.0	A

Table 13.10
Summary of 2040 Build SimTraffic Queue Analysis
I-264 at Parks Avenue Build Alternative

Intersection	Ramp Length (feet)	AM Peak Hour		PM Peak Hour	
		Average (feet)	95th % (feet)	Average (feet)	95th % (feet)
Parks Avenue Build Alternative (Figure XIII.4)					
EB I-264 Off-Ramp to 21st Street/Parks Avenue	750*	95	146	105	154

*Ramp length is theoretically unlimited; 750 feet is the length of the right turn storage bay

I-264 Corridor Evaluation Study

U.S. Department of Transportation
Federal Highway Administration

VDOT
Virginia Department of Transportation

AECOM

2040 Build Alternative
I-264 & Parks Intersection

Figure XIII.4

July 2016

Existing Geometry (NO Improvements)

LEGEND

- NUMBER OF LANES
- NUMBER OF LANES INCLUDING HOV
- HOV SYSTEM
- DIRECTION OF TRAVEL
- 65 mph — HOV SYSTEM POSTED SPEED
- 40 mph — POSTED SPEED
- N.P. — NOT POSTED SPEED
- PROPOSED / EXISTING SIGNAL

NOTE: INSET SCALE = 2x PLAN SCALE

XIII.2.3 Alternative: Cost

No planning level cost estimates were developed at I-264 and Parks Avenue since no improvements were developed.

XIII.2.4 Stakeholder Coordination

A series of coordination meetings were held with staff from the City of Virginia Beach. In general, representatives from the City were supportive of the evaluation process and the selection of the preferred alternative (no improvements).

XIII.2.5 Impacts

Identification of potential impacts on key resources from construction of the improvement alternative was evaluated using desktop GIS mapping analysis. Detailed exhibits are in the Technical Appendix. Since no improvements were developed at I-264 and Parks Avenue, the results in **Table 13.11** show no impacts.

Table 13.11
Parks Avenue Interchange Improvement Alternative Impacts

Improvement Alternative	WATER	BUILDINGS	RESIDENTIAL	POTENTIAL SECTION 4F
Parks Avenue Existing Conditions – No Improvement Alternative	N	0	0	N

XIII.3 Recommendation

This study makes no recommendations for geometric improvements because there was no identified need from a capacity or safety perspective.