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To: Tom Leininger, James City County
From: Steve Schmidt, PE, PTOE
RE: Jamestown Beach Event Park Traffic Analysis
Date: March 17, 2022
Revised May 16, 2022
Copy: Scott Dunn AICP, PTP (TG), Megan Lowther (TG)



Timmons Group has prepared a revised traffic assessment for the proposed Jamestown Beach Event Park Master Plan Update in James City County, Virginia. The original assessment was submitted on March 17, 2022 and VDOT issued comments on April 15, 2022. A copy of the response to those comments is included in Appendix A.

The site is located along the north side of Jamestown Road (Route 31) and east of the James River as shown on Figure 1 (all figures are located at the end of this memorandum).

The approximately 95-acre park currently offers swimming, fishing, riverfront access, and trails (among other uses) with access to the site provided via one entrance on Jamestown Road as shown on Figure 2.

The proposed Master Plan will include park improvements (camping, boat launch, performance venue, etc.) as well as renovating the 3,900 S.F. historic Ambler House into a yet to be determined use.

For purposes of this analysis, full buildout of the master plan was assumed to be complete in 2027.

This assessment analyzes the existing and future traffic to the park to determine if any improvements are required at the site entrance and at what point the improvements are needed.

Existing Conditions

Jamestown Road (Route 31) is a two-lane, undivided minor arterial with a posted speed limit of 25 mph. According to the 2019 VDOT count book, Jamestown Road services 7,200 vehicles per day in the vicinity of the site.

Jamestown Road serves as a major east-west roadway connecting Williamsburg to the east with Surry to the west (via the Jamestown-Scotland Ferry).

The existing roadway geometry at the site entrance is shown on Figure 3.

Existing Traffic Volumes

Existing PM and Saturday peak hour traffic counts were conducted on Thursday April 15, 2021 between 4-6 PM (PM peak hour) and Saturday, April 17, 2021 between 12-2 PM (SAT peak hour). The counts included heavy vehicles by movement, pedestrian, and bicycle counts and are included in Appendix B.

The existing PM and SAT peak hour counts are shown on Figure 3 and indicate the PM peak hour occurs from 4:45 PM – 5:45 PM and the SAT peak hour occurs from 12:15 PM – 1:15 PM.

Due to the change in traffic patterns associated with the ongoing pandemic, the counts were compared to 2019 VDOT AADT counts to determine the adjustment factor necessary to bring the 2021 counts to expected levels. After comparison it was determined that the volumes on Jamestown Road are **10% lower** than the expected 2021 volumes. Therefore, the existing traffic counts were increased by 10% along Jamestown Road.

Given the nature of the park, the traffic volumes differ from month to month based on the season. The County provided historic entrance counts for the park which indicate the peak month (July) experiences 98% more traffic than the month the count was completed (April). Therefore, the traffic counts into and out of the park entrance were increased by 98% to accommodate the peak traffic month.

The total adjusted 2021 Existing Volumes are shown on Figure 4.

2027 Background Traffic Volumes

2027 Background traffic volumes were developed based on a 1% annual growth in existing traffic over the six (6) year period for project buildout.

The 1% annual growth rate was compounded annually over the six (6) year period and was applied to all movements from the existing traffic counts. The resulting 2027 background traffic volumes are shown on Figure 5.

2027 Future Traffic Volumes – Master Plan Development

As noted above, the Master Plan calls for park improvements (camping, boat launch, performance venue, etc.) as well as renovating the Ambler House into a yet to be determined use.

The County Parks and Recreation Department intends that any events at the performance venue will be irregular in nature and occur outside the peak hours of the adjacent streets and does not intend to host multi-day events at this time.

Any future renovation of the Ambler House will have to preserve the historic structure (3,900 S.F.) and fit within that structure. Potential uses include a sit-down restaurant or small brewery or similar. Higher trip generating uses (fast-food restaurant with drive-thru, gas station, or similar) will not be permitted as they would require a change in the structure.

The 2027 future analysis was completed in two steps with the first step assuming full buildout of the Master Plan but without renovations to the Ambler House. The first step was completed to determine if any improvements will be required with the Master Plan development.

The second step in the analysis was completed to determine the number of trips generated by the Ambler House renovations which will trigger the need for improvements.

The site-generated traffic volumes generated by the proposed Master Plan are shown in Table 1 and were estimated using the 11th edition of the Institute of Transportation Engineers' (ITE) Trip Generation Manual.

Table 1: Trip Generation for Jamestown Event Park – Master Plan Only

Buildout					Weekday ⁽¹⁾				Saturday ⁽¹⁾			
					PM Peak Hour			Average Daily Trips	Sat Peak Hour			Average Daily Trips
					In	Out	Total		In	Out	Total	
Land Use	Size	Units	Land Use Code									
Proposed Uses												
Public Park	95	Acres	411	6	4	10	74	15	12	27	186	
Total New Trips				6	4	10	74	15	12	27	186	

Notes: (1) Based on the Institute of Transportation Engineers Trip Generation, 11th Edition. Assumes General Urban/Suburban land use category.

As shown on Table 1, development of the Master Plan will generate 10 PM peak hour trips (6 in and 4 out) and 74 average daily trips on a weekday. On a Saturday, the Master Plan development will generate 27 peak hour trips (15 in and 12 out) and 186 average daily trips.

Based on the nature of the use, the existing travel patterns, and the surrounding roadway network, it was assumed that 2/3 of site traffic will be oriented to/from the east on Jamestown Road and the remaining 1/3 to/from the west on Jamestown Road.

The resulting site generated trips for the Master Plan development are shown on Figure 6.

The site generated trips shown on Figure 6 were added to the 2027 background traffic volumes shown on Figure 5 to yield to 2027 future traffic volumes which are shown on Figure 7.

Turn Lane Warrant Analyses

The turn lane warrant analyses for the eastbound left turn and westbound right turn into the site entrance from Jamestown Road was completed in stages as follows:

1. Will buildout of the Master Plan only require improvements at the site entrance;
2. Will the renovations to the Ambler House require improvements at the site entrance and if so, what level of development will trigger those improvements.

Master Plan Only

The turn lane warrant analyses for the Master Plan only development were completed using the volumes shown on Figure 7 and the appropriate nomographs from Appendix F of the VDOT Road Design Manual.

The results are shown in Figures 8 through 10 and indicate that with development of the Master Plan only **no improvements** are required. Figure 8 indicates that while the development of the Master Plan only does not require a right turn taper, any additional development (traffic) will warrant the taper.

With Renovations to Ambler House

As shown on Figure 8, any additional traffic generated to the site will warrant a right turn taper at the site entrance. The renovations to the Ambler House **will** require a right turn taper regardless of the nature of the use and the traffic generated by the renovation.

A sensitivity analysis was completed to determine the number of trips generated by the renovations which would require a full width right turn lane and taper. As shown in Figure 11, in the Saturday peak hour, an additional 40 westbound right turns (for a total of 91) will trigger the need for a full width right turn lane and taper.

As noted above, it was assumed that 2/3 of site traffic will make a right turn into the site. Therefore, any use that generates 60 inbound Saturday peak hour trips **will** warrant a full width right turn lane and taper.

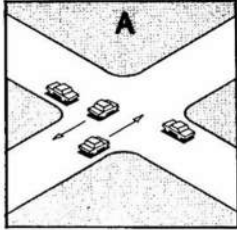
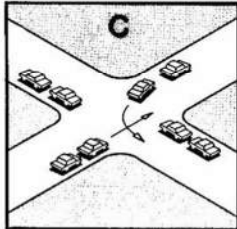
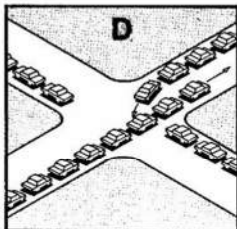
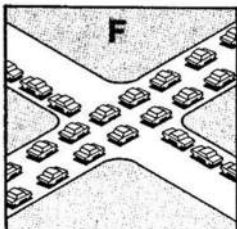
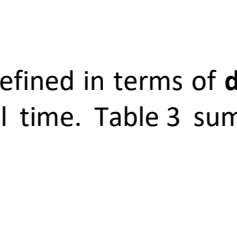
The additional trips were then applied to the left turn lane warrant analysis as shown on Figure 12 and indicate that a left turn lane **will not** be warranted with the additional 60 inbound peak hour trips.

Given the size of the Ambler House (3,900 s.f.) and nature of the building (i.e., a house style structure with no drive-thru or gas pumps or similar) no amount of development will warrant a left turn lane.

Operational and Queuing Analysis

Capacity analysis allows traffic engineers to determine the impacts of traffic on the surrounding roadway network. The Transportation Research Board's (TRB) Highway Capacity Manual (HCM) methodologies govern how the capacity analyses are conducted and how the results are interpreted. There are six letter grades of Levels of Service (LOS) from A to F, with LOS A representing the best operating conditions and LOS F the worst operating conditions. Table 2 shows in detail how each of these levels of service are interpreted.

Table 2: Level of Service Definitions

Level of Service	Roadway Segments or Controlled Access Highways	Intersections	
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.	
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.	
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.	
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive backups.	
E	Actual capacity of the roadway involves delay to all motorists due to congestion.	Very long queues may create lengthy delays, especially for left-turning vehicles.	
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage area during part or all of an hour.	

SOURCE: "A Policy on Design of Design of Urban Highways and Arterial Streets" - AASHTO, 1973 based upon material published in "Highway Capacity Manual", National Academy of Sciences, 1965.

For signalized and unsignalized intersections, level of service is defined in terms of **delay**, a measure of driver discomfort, frustration, fuel consumption and lost travel time. Table 3 summarizes the delay associated with each LOS category:

Table 3: Signalized and Unsignalized Intersection Level of Service Criteria

Signalized Intersections		Unsignalized Intersections	
Level of Service	Control Delay per Vehicle (sec/veh)	Level of Service	Average Control Delay (sec/veh)
A	≤ 10	A	0 to 10
B	> 10 to ≤ 20	B	> 10 to ≤ 15
C	> 20 to ≤ 35	C	> 15 to ≤ 25
D	> 35 to ≤ 55	D	> 25 to ≤ 35
E	> 55 to ≤ 80	E	> 35 to ≤ 50
F	> 80	F	> 50

Source: Exhibit 16-2 and Exhibit 17-2 from TRB's "Highway Capacity Manual 2000"

Capacity analyses were performed to assess existing (2021), background (2027), and future (2027) operational conditions. The signalized and unsignalized intersections were analyzed using SYNCHRO Version 10 based on HCM 2000 methodologies, and VDOT TOSAM requirements with the following assumptions:

- Level terrain;
- 12-foot lane widths;
- No parking activity or bus stops;
- Existing peak hour factor as determined by the traffic counts (by intersection) for existing scenario;
- The higher of the existing peak hour factor as determined by traffic counts (by intersection) or a peak hour factor of 0.92 for all future scenarios; and
- Heavy vehicle percentage as determined by the traffic counts (by movement).

Operational Analysis for 2021 Existing Traffic Volumes

Table 4 summarizes the 2021 existing intersection LOS, delay, 95th percentile queue lengths (Synchro), and maximum queue lengths (SimTraffic) based on the adjusted 2021 existing peak hour traffic volumes shown on Figure 4 and the existing lane geometry shown on Figure 3. The corresponding analysis worksheets are included in Appendix C.

As shown in Table 4, the southbound approach operates at LOS B in both the PM and Saturday peaks with a maximum queue of 41 feet in the PM peak and 54 feet in the Saturday peak. The eastbound approach operates at LOS A in the Saturday peak with a maximum queue of 33 feet.

Table 4: 2021 Existing Conditions Level of Service and Queues

Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	PM PEAK HOUR				SAT PEAK HOUR			
			Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)	Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)
1. Jamestown Road (E-W) at Park Entrance (S) <i>Unsignalized</i>	SB Left-Right		11.3	B	4	41	12.6	B	11	54
	<i>NB Approach</i>		<i>11.3</i>	<i>B</i>	--	--	<i>12.6</i>	<i>B</i>	--	--
	EB Left-Thru		†	†	0	0	0.9	A	1	33
	<i>EB Approach</i>		<i>†</i>	<i>†</i>	--	--	<i>0.9</i>	<i>A</i>	--	--
	WB Thru-Right		†	†	0	0	†	†	0	2
	<i>WB Approach</i>		<i>†</i>	<i>†</i>	--	--	<i>†</i>	<i>†</i>	--	--

¹ Overall intersection LOS and delay reported for signalized intersections and roundabouts only.

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

Operational Analysis for 2027 Background Volume Conditions

Table 5 summarizes the 2027 background intersection LOS, delay, 95th percentile queue lengths (Synchro), and maximum queue lengths (SimTraffic) based on the 2027 background peak hour traffic volumes shown on Figure 5 and the existing lane geometry shown on Figure 3. The corresponding analysis worksheets are included in Appendix D.

As shown in Table 5, the southbound approach continues to operate at LOS B in both the PM and Saturday peaks with a maximum queue of 41 feet in the PM peak and 57 feet in the Saturday peak. The eastbound approach operates at LOS A and has a maximum queue of 39 feet during the Saturday peak.

Table 5: 2027 Background Conditions Level of Service and Queues

Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	PM PEAK HOUR				SAT PEAK HOUR			
			Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)	Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)
1. Jamestown Road (E-W) at Park Entrance (S) <i>Unsignalized</i>	SB Left-Right		10.4	B	3	41	11.2	B	7	57
	<i>NB Approach</i>		<i>10.4</i>	<i>B</i>	--	--	<i>11.2</i>	<i>B</i>	--	--
	EB Left-Thru		†	†	0	0	0.8	A	1	39
	<i>EB Approach</i>		<i>†</i>	<i>†</i>	--	--	<i>0.8</i>	<i>A</i>	--	--
	WB Thru-Right		†	†	0	0	†	†	--	--
	<i>WB Approach</i>		<i>0.0</i>	<i>A</i>	--	--	<i>0.0</i>	<i>A</i>	--	--

¹ Overall intersection LOS and delay reported for signalized intersections and roundabouts only.

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

Operational Analysis for 2027 Future Volume Conditions – Master Plan Only

Table 6 summarizes the 2027 future intersection (with development of the Master Plan Only) LOS, delay, 95th percentile queue lengths (Synchro), and maximum queue lengths (SimTraffic) based on the 2027 future peak hour traffic volumes shown on Figure 7 and the existing lane geometry shown on Figure 3. The corresponding analysis worksheets are included in Appendix E.

As shown in Table 6, the existing intersection geometry can adequately accommodate the additional trips with development of the Master Plan.

The southbound approach will continue to operate at LOS B in the PM and Saturday peaks with a maximum queue in the PM peak of 45 feet and 52 feet in the Saturday peak. The eastbound approach will operate at LOS A with a maximum queue of 46 feet in the Saturday peak.

Table 6: 2027 Total Future Conditions Level of Service and Queues

Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	PM PEAK HOUR				SAT PEAK HOUR			
			Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)	Delay ¹ (sec/veh)	LOS ¹	SYNCHRO 95th Percentile Queue Length (ft)	SimTraffic Maximum Queue Length (ft)
1. Jamestown Road (E-W) at Park Entrance (S) <i>Unsignalized</i>	SB Left-Right		10.4	B	3	45	11.4	B	9	52
	<i>NB Approach</i>		10.4	B	--	--	11.4	B	--	--
	EB Left-Thru		0.1	A	0	0	1.1	A	1	46
	<i>EB Approach</i>		0.1	A	--	--	1.1	A	--	--
	WB Thru-Right		†	†	0	0	†	†	--	0
	<i>WB Approach</i>		0.0	A	--	--	0.0	A	--	--

¹ Overall intersection LOS and delay reported for signalized intersections and roundabouts only.

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

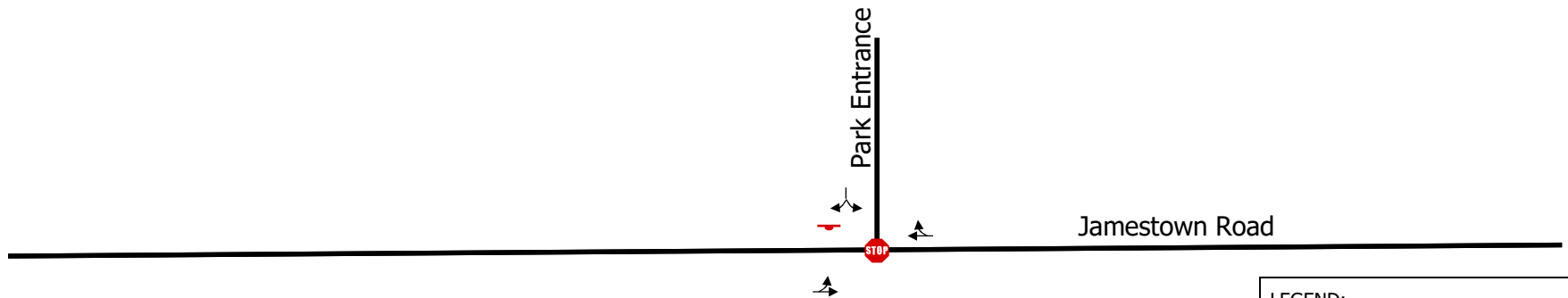
Conclusions

Based on the analysis, the following conclusions are offered:

- The proposed Master Plan development **will not** require any improvements to the existing site entrance along Jamestown Road.
- With any renovations to the Ambler House, a westbound right turn taper **will be** warranted at the site entrance.
- Any use in the Ambler House that generates 60 or more inbound Saturday peak hours trip **will warrant** a westbound full width right turn lane and taper.
- A left turn lane **will not** be warranted under any proposed circumstances.
- Under existing and future conditions, all movements of the intersection of Jamestown Road and the Park Entrance operate at LOS B or better in both the PM and Saturday peaks.





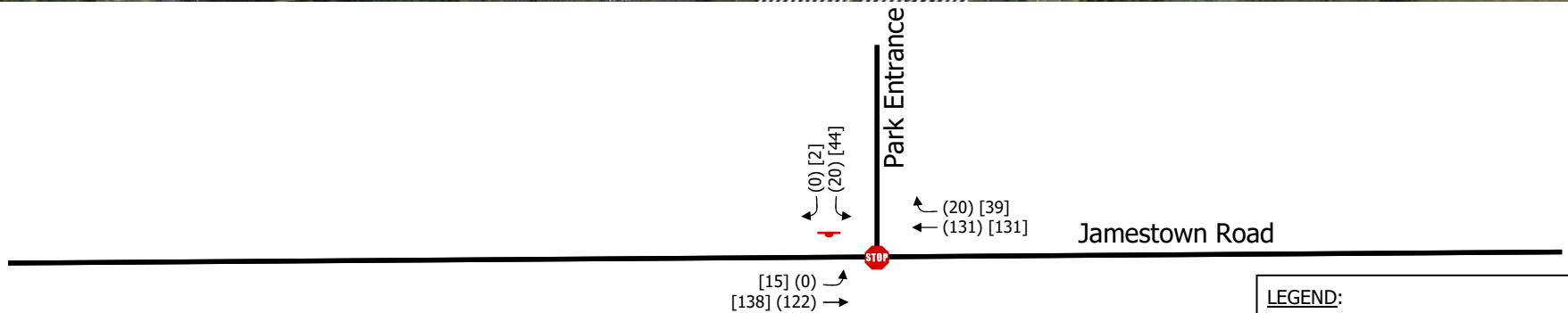


LEGEND:

- Existing Road
- ↩ Lane Configuration
- STOP Stop Controlled Intersection
- ⊥ Stop Sign Location

NOT TO SCALE

	Existing Geometry Jamestown Beach Event Park James City County, Virginia	Figure 3
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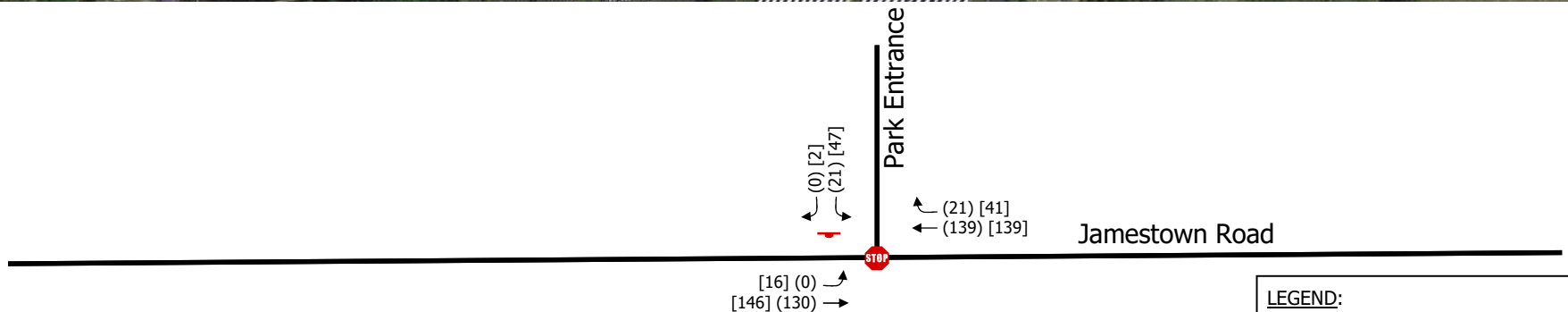


LEGEND:

- Existing Road
- Stop Controlled Intersection
- Stop Sign Location
- (00) PM Peak Hour Volumes
- [00] Sat Peak Hour Volumes

NOT TO SCALE

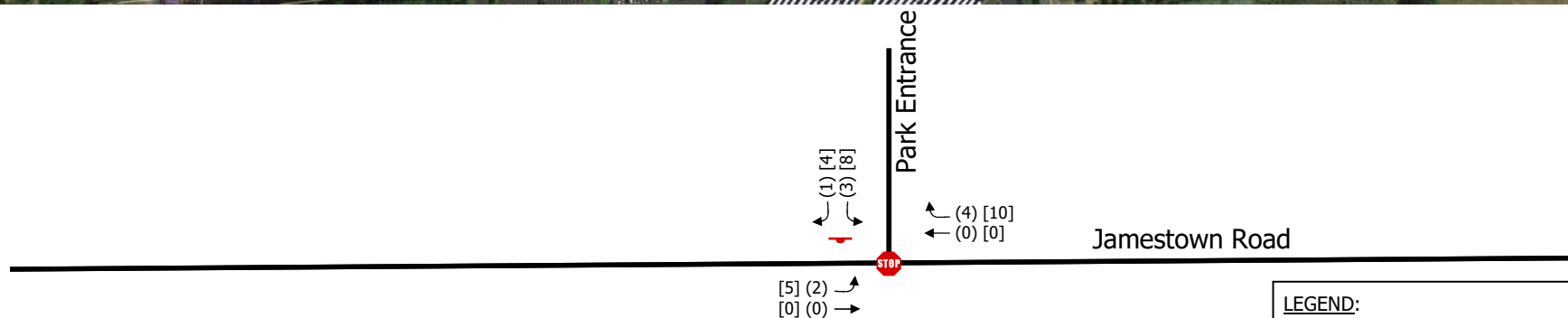
	2021 Existing Volumes – Adjusted Jamestown Beach Event Park James City County, Virginia	Figure 4
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LEGEND:

- Existing Road
- Stop Controlled Intersection
- Stop Sign Location
- (00) PM Peak Hour Volumes
- [00] Sat Peak Hour Volumes

NOT TO SCALE



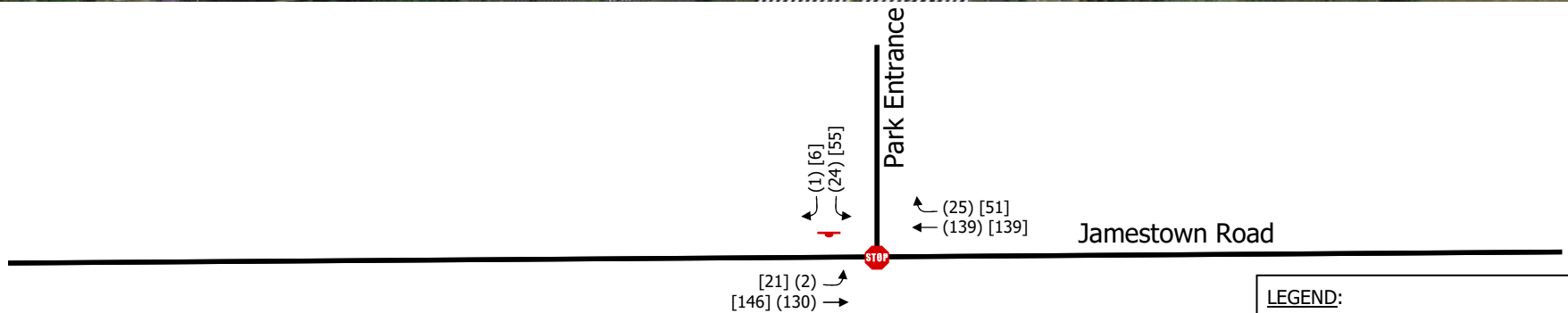
LEGEND:	
	Existing Road
	Stop Controlled Intersection
	Stop Sign Location
(00)	PM Peak Hour Volumes
[00]	Sat Peak Hour Volumes

NOT TO SCALE



Site Generated Trips – Park Only (No Ambler House)
Jamestown Beach Event Park
James City County, Virginia

Figure
6

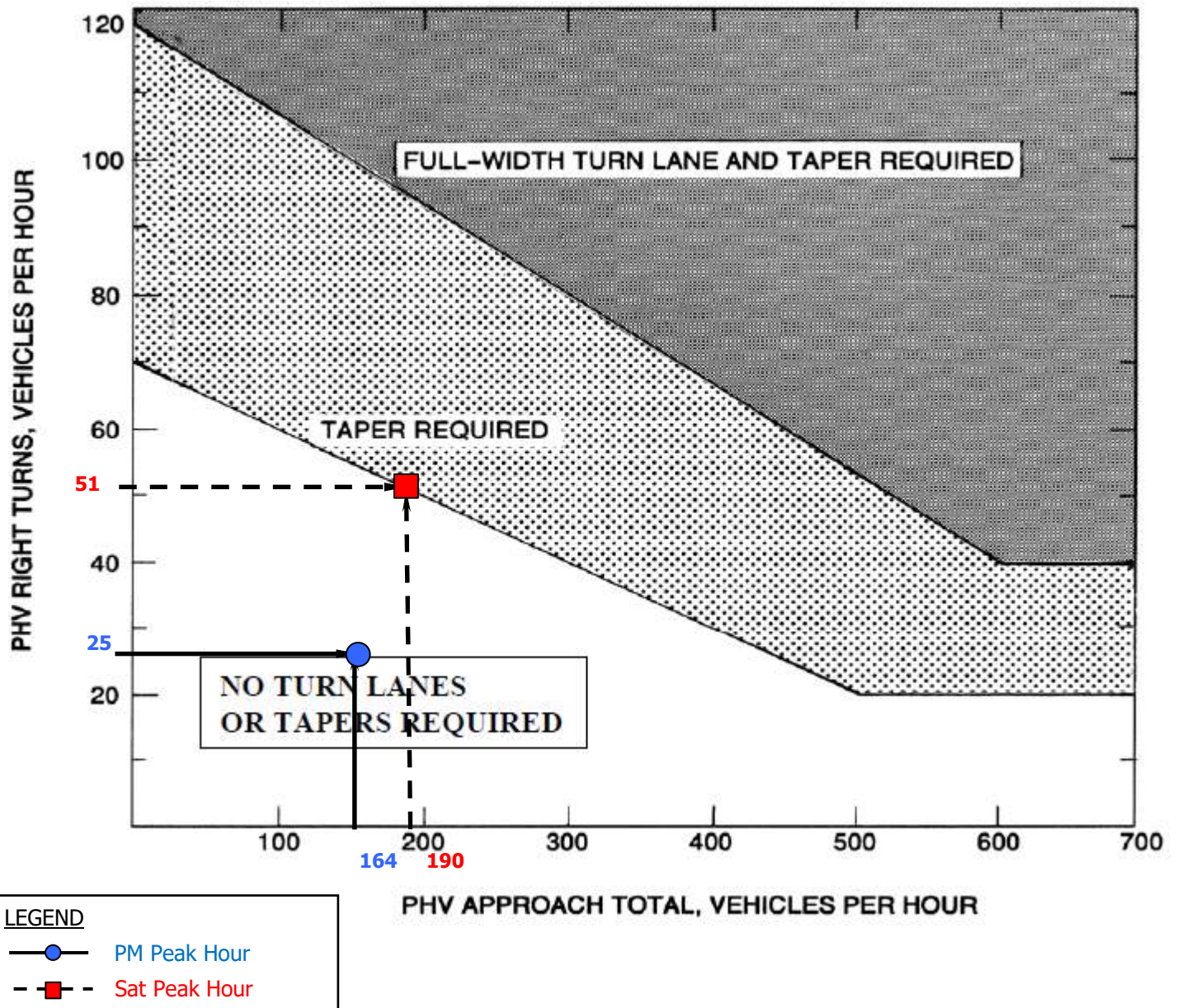


LEGEND:

- Existing Road
- Stop Controlled Intersection
- Stop Sign Location
- (00) PM Peak Hour Volumes
- [00] Sat Peak Hour Volumes

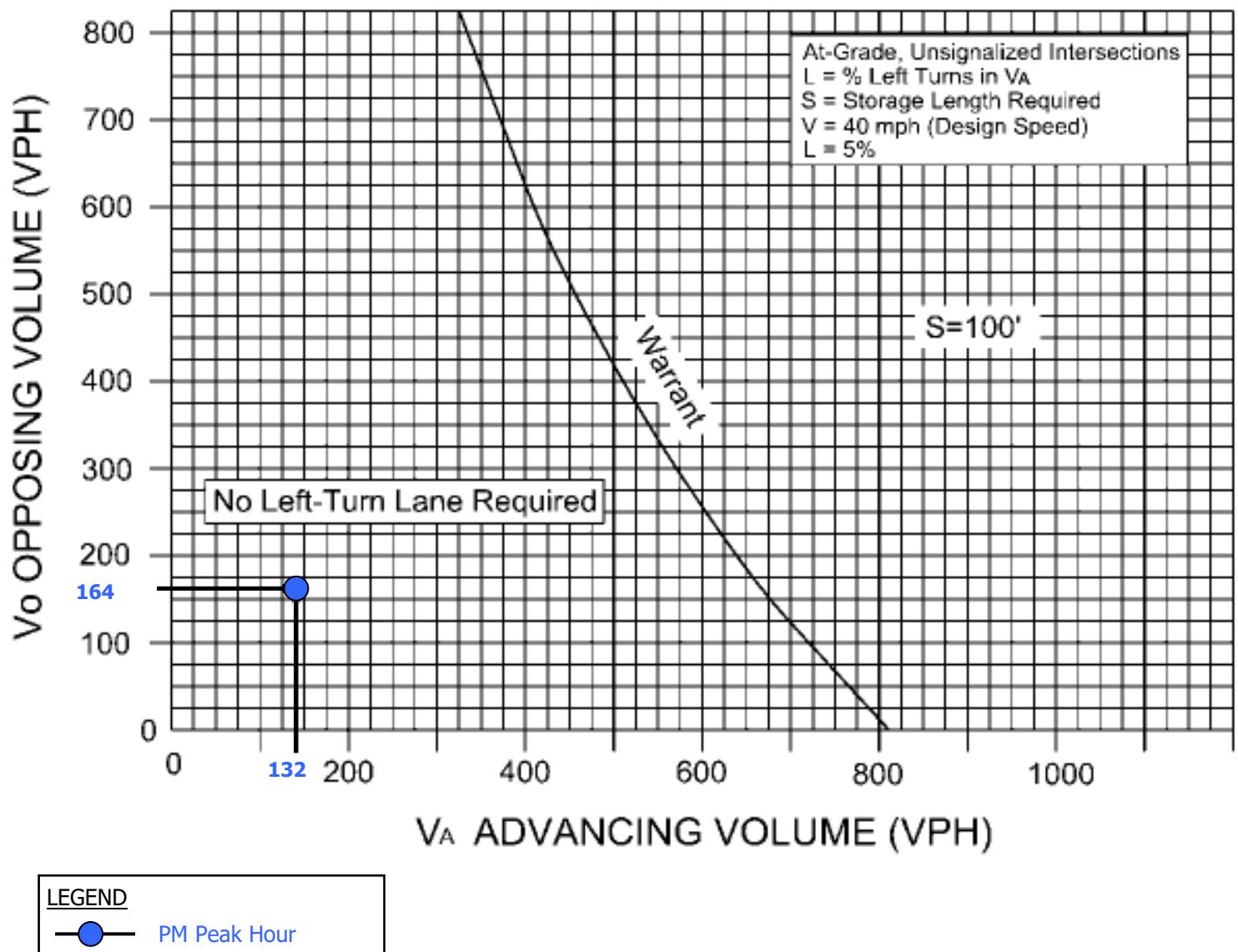
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GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)
FIGURE 3-26 VDOT ROAD DESIGN MANUAL APPENDIX F



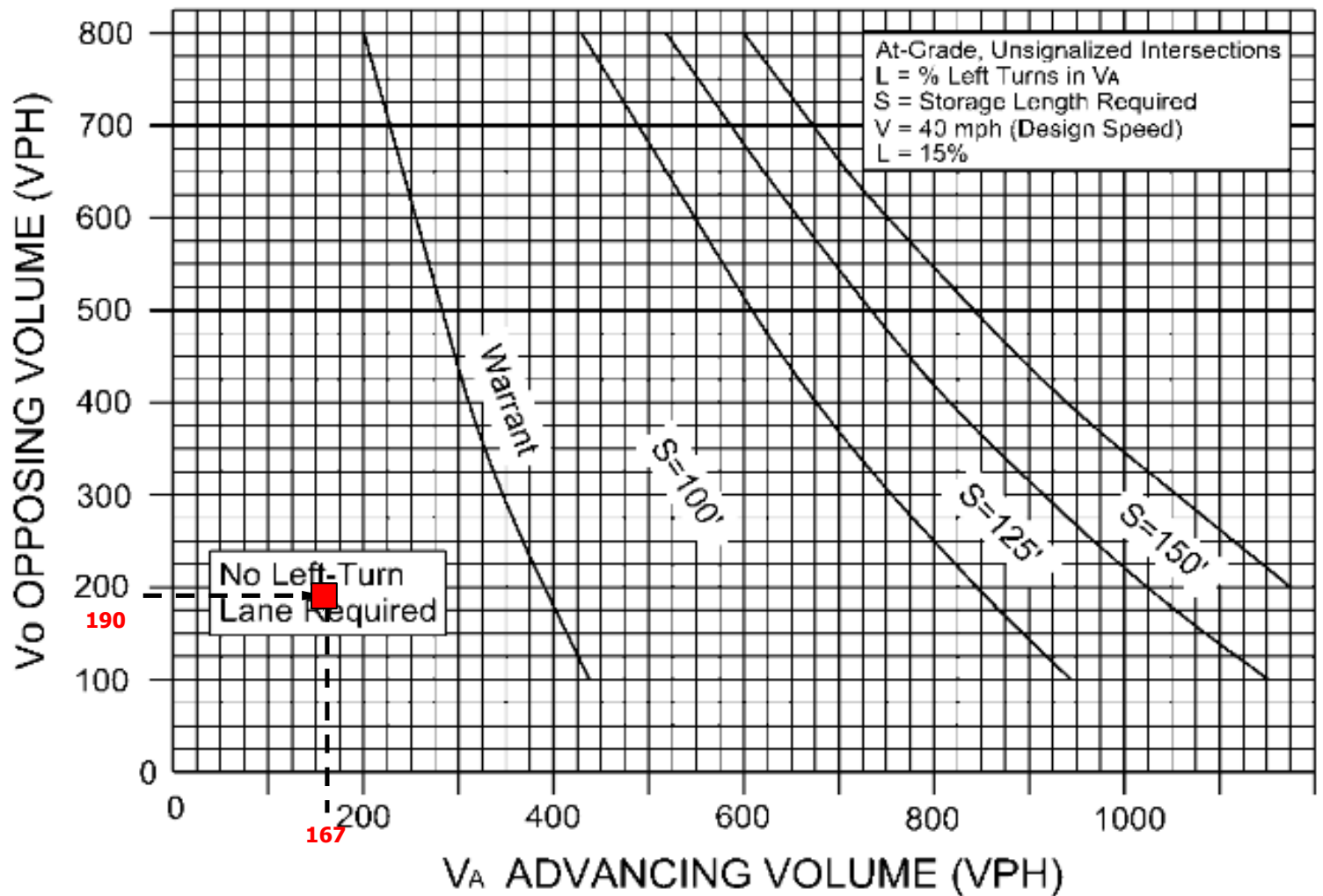
Results:
Westbound Right Turn Lane Not Warranted

WARRANT FOR LEFT-TURN STORAGE LANES
ON TWO-LANE HIGHWAYS (60 MPH)
FIGURE 3-5 VDOT ROAD DESIGN MANUAL APPENDIX F



Results:
Eastbound Left Turn Lane Not Warranted

WARRANT FOR LEFT-TURN STORAGE LANES
ON TWO-LANE HIGHWAYS (60 MPH)
FIGURE 3-7 VDOT ROAD DESIGN MANUAL APPENDIX F



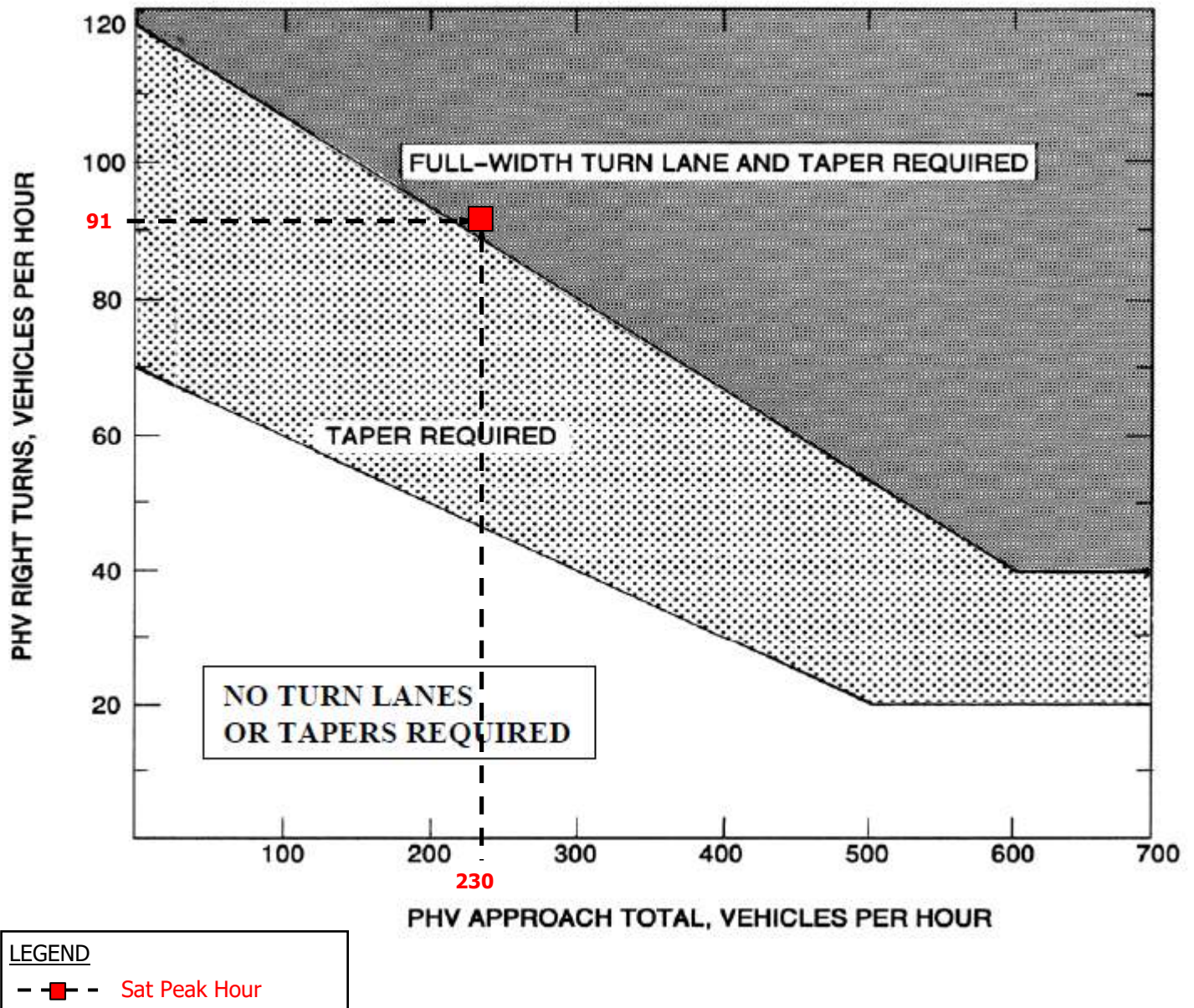
LEGEND

-- ■ -- Sat Peak Hour

Results:

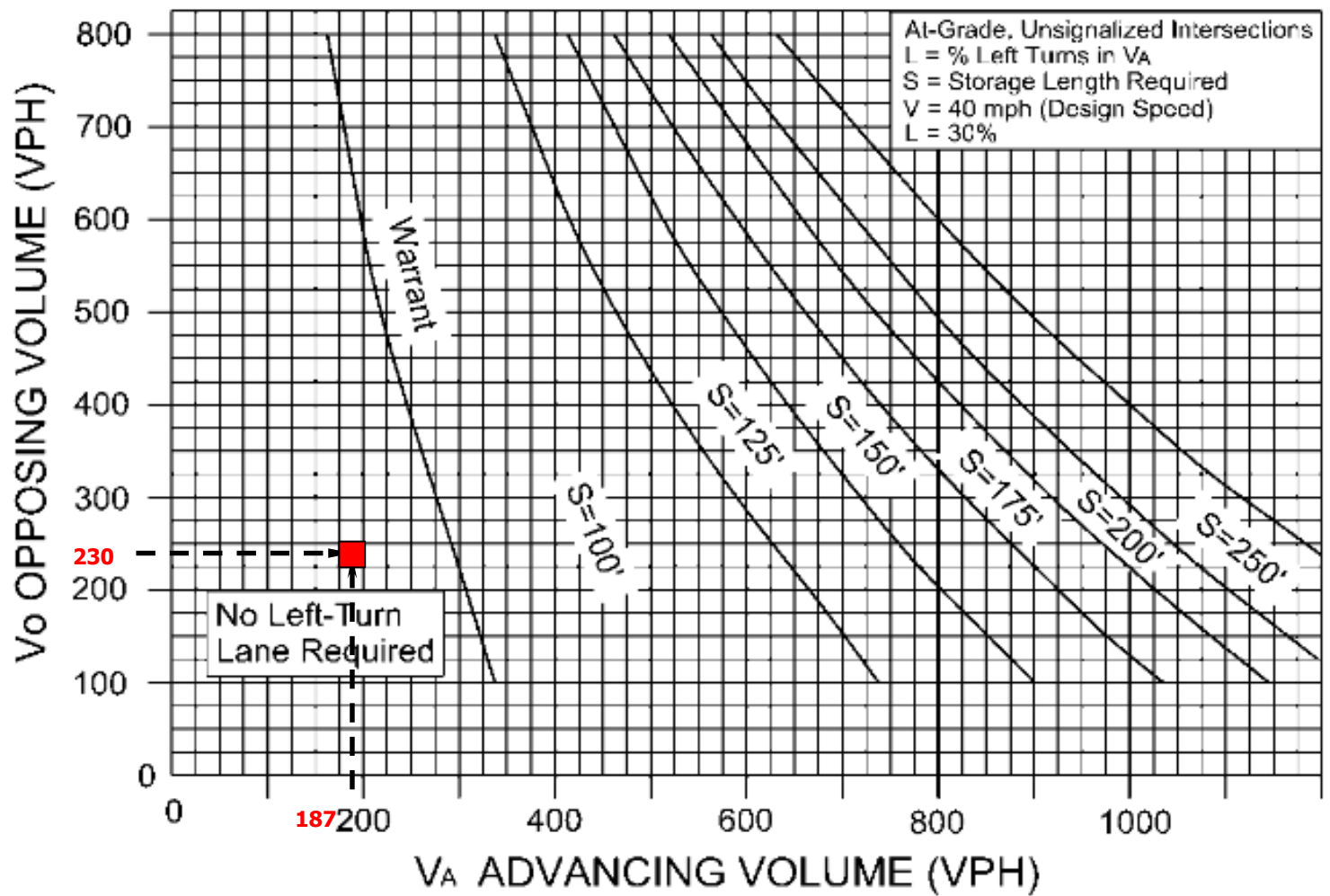
Eastbound Left Turn Lane Not Warranted

GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)
FIGURE 3-26 VDOT ROAD DESIGN MANUAL APPENDIX F



Results:
Westbound Right Turn Lane Not Warranted

**WARRANT FOR LEFT-TURN STORAGE LANES
ON TWO-LANE HIGHWAYS (60 MPH)
FIGURE 3-9 VDOT ROAD DESIGN MANUAL APPENDIX F**



LEGEND

--■-- Sat Peak Hour

Results:

Eastbound Left Turn Lane Not Warranted

APPENDIX A

Response to Comments

To: Andrew Smith, PE (VDOT)
From: Steve Schmidt, PE, PTOE (Timmons Group)
RE: Jamestown Beach Event Park Response to VDOT Comments
Date: May 16, 2022

Timmons Group prepared a traffic assessment dated March 17, 2022 for the Jamestown Beach Event Park master plan update. The Virginia Department of Transportation (VDOT) issued comments on the assessment on April 15, 2022.

Timmons Group (TG) has reviewed VDOT's comments (**in bold below**) and prepared the responses below. As a result of the comments/responses, a revised traffic assessment has been prepared and is submitted with these responses.

Our responses to VDOT comments are as follows:

- 1. The report describes the Master Plan for the park to include a “performance venue.” Even small scale events that only feature local artists can be a significant traffic generator. If it is feasible that 15 or more events, or a single event lasting more than one day may occur, than a scenario of such event should be included in the analysis. Otherwise, there should be a stipulation that less than 15 events and no event lasting longer than one day shall occur at the park.**

TG Response: The County Parks and Recreation Department intends that any events at the performance venue will be irregular in nature and occur outside the peak hours of the adjacent streets. Further, the County has not hosted a multi-day event in more than 15 years and does not intend to host multi-day events at this time.

The text of the assessment has been updated to include a discussion on the intended uses for the performance venue.

- 2. The report indicates that the future of the Amber House is yet to be determined. Since the use of the Amber House is unknown, TOSAM and the TIA Administrative Guidelines require that a “worst case” land use be analyzed.**

TG Response: As detailed on page 2 and 3 of the assessment, a “worst case” analysis was assumed for the Ambler House in the form of the sensitivity analysis. Any redevelopment of the Ambler House will require a right turn taper regardless of the nature of the use and the traffic generated by the renovation.

Any use that generates more than 60 inbound trips during the Saturday peak hour will require improvements in the form of a full width turn lane and taper.

Given the size of the Ambler House (3,900 s.f.) and nature of the building (i.e. a house style structure with no drive-thru or gas pumps or similar) no amount of development will warrant a left turn lane.

Additional text has been added to the assessment to further discuss the nature of any redevelopment of the Ambler House.

- 3. Table 4 reports the delay for southbound left and right turns is 11.3 seconds for existing conditions. Tables 5 and 6, for future no-build and build conditions, reports this delay to be 10.4 seconds. If this is accurate, and no error has been made in entering the traffic volumes and lane configuration, then the report should provide an explanation as to how the delay decreases when traffic increases.**

TG Response: The analysis is correct, and no errors were made.

In accordance with TOSAM, all existing scenarios were analyzed using existing peak hour factors whereas all future scenarios were analyzed using the higher of 0.92 or the existing peak hour factors.

In this case, the existing peak hour factor of the intersection is 0.65 (PM) and 0.66 (Saturday). Therefore, a 0.92 peak hour factor was used in both the 2027 background and 2027 future traffic conditions.

A higher (closer to 1.0) peak hour factor indicates a more even distribution of traffic across the peak hour (less bunching of traffic). Given the relatively low volume of turning traffic at the intersection, a more even distribution (given the higher peak hour factor) indicates most vehicles will arrive in singular fashion and will not have to wait for a vehicle in front to turn. This results in a decrease in delay per vehicle despite an increase in traffic.

No changes were made to the text of the assessment as a result of this comment as the decrease in delay is a function of following VDOT TOSAM standards.

APPENDIX B

Existing Traffic Counts

Peggy Malone & Associates

(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd
 Site Code :
 Start Date : 4/15/2021
 Page No : 1

Groups Printed- Cars

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	2	0	2	2	30	0	0	32	8	0	0	8	42
04:15 PM	0	0	0	0	5	21	0	0	26	36	0	0	36	62
04:30 PM	0	1	0	1	1	22	0	0	23	3	0	0	3	27
04:45 PM	0	7	0	7	1	35	0	0	36	49	0	0	49	92
Total	0	10	0	10	9	108	0	0	117	96	0	0	96	223
05:00 PM	0	0	0	0	1	29	0	0	30	9	0	0	9	39
05:15 PM	0	0	0	0	4	30	1	0	35	45	0	0	45	80
05:30 PM	0	1	0	1	2	22	0	0	24	5	0	0	5	30
05:45 PM	2	3	0	5	0	22	0	0	22	43	0	0	43	70
Total	2	4	0	6	7	103	1	0	111	102	0	0	102	219
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	14	0	16	16	211	1	0	228	198	0	0	198	442
Apprch %	12.5	87.5	0		7	92.5	0.4	0		100	0	0		
Total %	0.5	3.2	0	3.6	3.6	47.7	0.2	0	51.6	44.8	0	0	44.8	

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	App. Total		Right	Thru	Left	App. Total		Thru	Left	App. Total		Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:45 PM														
04:45 PM	0	7	7		1	35	0	36		49	0	49		92
05:00 PM	0	0	0		1	29	0	30		9	0	9		39
05:15 PM	0	0	0		4	30	1	35		45	0	45		80
05:30 PM	0	1	1		2	22	0	24		5	0	5		30
Total Volume	0	8	8		8	116	1	125		108	0	108		241
% App. Total	0	100			6.4	92.8	0.8			100	0			
PHF	.000	.286	.286		.500	.829	.250	.868		.551	.000	.551		.655

Peggy Malone & Associates

(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd
 Site Code :
 Start Date : 4/15/2021
 Page No : 1

Groups Printed- Trucks

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	0	1	2	0	0	2	3
Total	0	0	0	0	0	1	0	0	1	2	0	0	2	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	0	1	1	0	0	1	2
05:30 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	0	2	1	0	0	1	3
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	3	0	0	3	3	0	0	3	6
Apprch %	0	0	0		0	100	0	0		100	0	0		
Total %	0	0	0		0	50	0	0		50	0	0		

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	App. Total		Right	Thru	Left	App. Total		Thru	Left	App. Total		Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:45 PM														
04:45 PM	0	0	0		0	1	0	1		2	0	2		3
05:00 PM	0	0	0		0	0	0	0		0	0	0		0
05:15 PM	0	0	0		0	1	0	1		1	0	1		2
05:30 PM	0	0	0		0	1	0	1		0	0	0		1
Total Volume	0	0	0		0	3	0	3		3	0	3		6
% App. Total	0	0			0	100	0			100	0			
PHF	.000	.000	.000		.000	.750	.000	.750		.375	.000	.375		.500

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(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd
 Site Code :
 Start Date : 4/15/2021
 Page No : 1

Groups Printed- Combined

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	2	0	2	2	30	0	0	32	8	0	0	8	42
04:15 PM	0	0	0	0	5	21	0	0	26	36	0	0	36	62
04:30 PM	0	1	0	1	1	22	0	0	23	3	0	0	3	27
04:45 PM	0	7	0	7	1	36	0	0	37	51	0	0	51	95
Total	0	10	0	10	9	109	0	0	118	98	0	0	98	226
05:00 PM	0	0	0	0	1	29	0	0	30	9	0	0	9	39
05:15 PM	0	0	0	0	4	31	1	0	36	46	0	0	46	82
05:30 PM	0	1	0	1	2	23	0	0	25	5	0	0	5	31
05:45 PM	2	3	0	5	0	22	0	0	22	43	0	0	43	70
Total	2	4	0	6	7	105	1	0	113	103	0	0	103	222
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2	14	0	16	16	214	1	0	231	201	0	0	201	448
Apprch %	12.5	87.5	0		6.9	92.6	0.4	0		100	0	0		
Total %	0.4	3.1	0	3.6	3.6	47.8	0.2	0	51.6	44.9	0	0	44.9	

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	App. Total		Right	Thru	Left	App. Total		Thru	Left	App. Total		Int. Total
Peak Hour Analysis From 04:00 PM to 06:00 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:45 PM														
04:45 PM	0	7	7		1	36	0	37		51	0	51		95
05:00 PM	0	0	0		1	29	0	30		9	0	9		39
05:15 PM	0	0	0		4	31	1	36		46	0	46		82
05:30 PM	0	1	1		2	23	0	25		5	0	5		31
Total Volume	0	8	8		8	119	1	128		111	0	111		247
% App. Total	0	100			6.2	93	0.8			100	0			
PHF	.000	.286	.286		.500	.826	.250	.865		.544	.000	.544		.650

Peggy Malone & Associates

(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd SAT
 Site Code :
 Start Date : 4/17/2021
 Page No : 1

Groups Printed- Cars

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
12:00 PM	1	3	0	4	4	30	0	0	34	3	0	0	3	41
12:15 PM	0	2	0	2	2	26	2	0	30	55	1	0	56	88
12:30 PM	0	2	0	2	2	18	0	0	20	3	2	0	5	27
12:45 PM	1	5	0	6	3	32	1	0	36	52	1	0	53	95
Total	2	12	0	14	11	106	3	0	120	113	4	0	117	251
01:00 PM	0	3	0	3	6	29	0	0	35	3	3	0	6	44
01:15 PM	0	5	0	5	3	30	1	0	34	66	1	0	67	106
01:30 PM	0	5	0	5	4	25	0	2	31	4	1	0	5	41
01:45 PM	0	3	0	3	6	36	2	0	44	5	0	0	5	52
Total	0	16	0	16	19	120	3	2	144	78	5	0	83	243
Grand Total	2	28	0	30	30	226	6	2	264	191	9	0	200	494
Apprch %	6.7	93.3	0		11.4	85.6	2.3	0.8		95.5	4.5	0		
Total %	0.4	5.7	0	6.1	6.1	45.7	1.2	0.4	53.4	38.7	1.8	0	40.5	

	Jamestown Beach Event Southbound			Jamestown Rd Westbound				Jamestown Rd Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	Left	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 12:45 PM											
12:45 PM	1	5	6	3	32	1	36	52	1	53	95
01:00 PM	0	3	3	6	29	0	35	3	3	6	44
01:15 PM	0	5	5	3	30	1	34	66	1	67	106
01:30 PM	0	5	5	4	25	0	29	4	1	5	39
Total Volume	1	18	19	16	116	2	134	125	6	131	284
% App. Total	5.3	94.7		11.9	86.6	1.5		95.4	4.6		
PHF	.250	.900	.792	.667	.906	.500	.931	.473	.500	.489	.670

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(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd SAT
 Site Code :
 Start Date : 4/17/2021
 Page No : 1

Groups Printed- Trucks

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	0	1	2	0	0	2	3
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	2	0	0	2	0	0	0	0	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	3	0	0	3	0	0	0	0	3
Grand Total	0	0	0	0	0	4	0	0	4	2	0	0	2	6
Apprch %	0	0	0		0	100	0	0		100	0	0		
Total %	0	0	0	0	0	66.7	0	0	66.7	33.3	0	0	33.3	

	Jamestown Beach Event Southbound			Jamestown Rd Westbound				Jamestown Rd Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	Left	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 12:00 PM											
12:00 PM	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	2	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	0	1	0	1	2	0	2	3
% App. Total	0	0		0	100	0		100	0		
PHF	.000	.000	.000	.000	.250	.000	.250	.250	.000	.250	.375

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(888) 247-8602

File Name : Jamestown Beach Event & Jamestown Rd SAT
 Site Code :
 Start Date : 4/17/2021
 Page No : 1

Groups Printed- Combined

	Jamestown Beach Event Southbound				Jamestown Rd Westbound					Jamestown Rd Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
12:00 PM	1	3	0	4	4	30	0	0	34	3	0	0	3	41
12:15 PM	0	2	0	2	2	26	2	0	30	57	1	0	58	90
12:30 PM	0	2	0	2	2	18	0	0	20	3	2	0	5	27
12:45 PM	1	5	0	6	3	33	1	0	37	52	1	0	53	96
Total	2	12	0	14	11	107	3	0	121	115	4	0	119	254
01:00 PM	0	3	0	3	6	29	0	0	35	3	3	0	6	44
01:15 PM	0	5	0	5	3	32	1	0	36	66	1	0	67	108
01:30 PM	0	5	0	5	4	25	0	2	31	4	1	0	5	41
01:45 PM	0	3	0	3	6	37	2	0	45	5	0	0	5	53
Total	0	16	0	16	19	123	3	2	147	78	5	0	83	246
Grand Total	2	28	0	30	30	230	6	2	268	193	9	0	202	500
Apprch %	6.7	93.3	0		11.2	85.8	2.2	0.7		95.5	4.5	0		
Total %	0.4	5.6	0	6	6	46	1.2	0.4	53.6	38.6	1.8	0	40.4	

	Jamestown Beach Event Southbound			Jamestown Rd Westbound				Jamestown Rd Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	Left	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 12:45 PM											
12:45 PM	1	5	6	3	33	1	37	52	1	53	96
01:00 PM	0	3	3	6	29	0	35	3	3	6	44
01:15 PM	0	5	5	3	32	1	36	66	1	67	108
01:30 PM	0	5	5	4	25	0	29	4	1	5	39
Total Volume	1	18	19	16	119	2	137	125	6	131	287
% App. Total	5.3	94.7		11.7	86.9	1.5		95.4	4.6		
PHF	.250	.900	.792	.667	.902	.500	.926	.473	.500	.489	.664

APPENDIX C

2021 Existing Conditions Analysis Reports

HCM Unsignalized Intersection Capacity Analysis

3:

02/25/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	0	122	131	20	20	0
Future Volume (Veh/h)	0	122	131	20	20	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.79	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	0	188	202	31	31	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	233				406	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	233				406	218
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1346				605	827
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	188	233	31			
Volume Left	0	0	31			
Volume Right	0	31	0			
cSH	1346	1700	605			
Volume to Capacity	0.00	0.14	0.05			
Queue Length 95th (ft)	0	0	4			
Control Delay (s)	0.0	0.0	11.3			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.3			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			18.1%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

2021 Existing AM Peak

02/25/2022

Intersection: 3:

Movement	SB
Directions Served	LR
Maximum Queue (ft)	41
Average Queue (ft)	16
95th Queue (ft)	42
Link Distance (ft)	387
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

HCM Unsignalized Intersection Capacity Analysis

3: Jamestown Road

02/25/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	138	131	39	44	2
Future Volume (Veh/h)	15	138	131	39	44	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	23	209	198	59	67	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	257				482	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	257				482	228
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				88	100
cM capacity (veh/h)	1320				537	817
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	232	257	70			
Volume Left	23	0	67			
Volume Right	0	59	3			
cSH	1320	1700	545			
Volume to Capacity	0.02	0.15	0.13			
Queue Length 95th (ft)	1	0	11			
Control Delay (s)	0.9	0.0	12.6			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	12.6			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			29.8%		ICU Level of Service	
Analysis Period (min)			15			
			A			

Queuing and Blocking Report
2021 Existing SAT Peak

02/25/2022

Intersection: 3: Jamestown Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	33	2	54
Average Queue (ft)	3	0	25
95th Queue (ft)	18	2	50
Link Distance (ft)	894	798	387
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

APPENDIX D

2027 Background Traffic Conditions Analysis Reports

HCM Unsignalized Intersection Capacity Analysis

3:

02/25/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	0	130	139	21	21	0
Future Volume (Veh/h)	0	130	139	21	21	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	141	151	23	23	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174				304	162
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174				304	162
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	100
cM capacity (veh/h)	1415				692	888
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	141	174	23			
Volume Left	0	0	23			
Volume Right	0	23	0			
cSH	1415	1700	692			
Volume to Capacity	0.00	0.10	0.03			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	10.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			18.6%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

2027 Background PM Peak

02/25/2022

Intersection: 3:

Movement	SB
Directions Served	LR
Maximum Queue (ft)	41
Average Queue (ft)	16
95th Queue (ft)	42
Link Distance (ft)	387
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

HCM Unsignalized Intersection Capacity Analysis

3: Jamestown Road

02/25/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	146	139	41	47	2
Future Volume (Veh/h)	16	146	139	41	47	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	159	151	45	51	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196				366	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				366	174
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				92	100
cM capacity (veh/h)	1389				630	875
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	176	196	53			
Volume Left	17	0	51			
Volume Right	0	45	2			
cSH	1389	1700	636			
Volume to Capacity	0.01	0.12	0.08			
Queue Length 95th (ft)	1	0	7			
Control Delay (s)	0.8	0.0	11.2			
Lane LOS	A		B			
Approach Delay (s)	0.8	0.0	11.2			
Approach LOS			B			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		31.0%		ICU Level of Service		A
Analysis Period (min)		15				

Queuing and Blocking Report
2027 Background SAT Peak

02/25/2022

Intersection: 3: Jamestown Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	39	57
Average Queue (ft)	5	26
95th Queue (ft)	24	49
Link Distance (ft)	894	387
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

APPENDIX E

2027 Total Traffic Conditions Analysis Reports

HCM Unsignalized Intersection Capacity Analysis

3:

03/11/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	2	130	139	25	24	1
Future Volume (Veh/h)	2	130	139	25	24	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	141	151	27	26	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	178				310	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178				310	164
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1410				686	885
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	143	178	27			
Volume Left	2	0	26			
Volume Right	0	27	1			
cSH	1410	1700	692			
Volume to Capacity	0.00	0.10	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.1	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	0.1	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			18.8%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

2027 Total Future PM Peak

03/11/2022

Intersection: 3:

Movement	SB
Directions Served	LR
Maximum Queue (ft)	45
Average Queue (ft)	17
95th Queue (ft)	44
Link Distance (ft)	387
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

HCM Unsignalized Intersection Capacity Analysis

3: Jamestown Road

03/11/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	21	146	139	51	55	6
Future Volume (Veh/h)	21	146	139	51	55	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	159	151	55	60	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	206				384	178
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206				384	178
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	99
cM capacity (veh/h)	1377				613	870
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	182	206	67			
Volume Left	23	0	60			
Volume Right	0	55	7			
cSH	1377	1700	632			
Volume to Capacity	0.02	0.12	0.11			
Queue Length 95th (ft)	1	0	9			
Control Delay (s)	1.1	0.0	11.4			
Lane LOS	A		B			
Approach Delay (s)	1.1	0.0	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			32.7%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report
2027 Total Future SAT Peak

03/11/2022

Intersection: 3: Jamestown Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	46	52
Average Queue (ft)	6	28
95th Queue (ft)	28	50
Link Distance (ft)	894	387
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0
