Former Petersburg Harbor Transformed for Festivals

History - Petersburg Harbor

Petersburg Harbor, situated on the Appomattox River, played a vital role in the settlement and development of the city. The presence of the river falls marked the furthest point upriver accessible to waterborne transportation, making it an ideal location for trade beginning in the mid-1600s. Oceangoing ships docked at Petersburg harbor, carrying cargo from surrounding regions, primarily local tobacco.

The Petersburg Harbor continued to thrive well into the 1930s, boasting factories, wharves, barges, and leisure craft. These activities added vitality to the harbor's operations.

Little physical evidence remains today to reflect the once-bustling commercial activity that centered around Petersburg's harbor. The harbor's strategic position and access to waterborne transportation played a pivotal role in shaping Petersburg's development and economic growth for over three centuries.

The Harbor - A Thriving Economic Destination

Waukeshaw sees big opportunities in this undeveloped stretch of land at the edge of Old Towne Petersburg. Without any sizeable outdoor venue for festivals or community events, Petersburg has historically been overlooked by musical acts and festival organizers. Waukeshaw is working with local stakeholders to reposition The Harbor as an attractive venue for Petersburg and Southside Virginia.

> We like to find opportunity in quirky places. Places that other people aren't paying that much attention to, but obviously have a lot of potential.
>
> Dave McCormack
> President, Waukeshaw

This event and festival space will play a significant role in enhancing the vitality and cultural fabric of Petersburg and Central Virginia. Bringing communities together, fostering a sense of unity, and promoting local pride will grow the economy, and attract visitors who spend money on accommodations, dining, shopping, and other services, thereby supporting Petersburg businesses.

The Harbor will contribute to the preservation and promotion of cultural heritage and diversity. It will become a platform for local artists, performers, and creators to showcase their talents and traditions, enriching the community's cultural landscape. Additionally, this venue will position Petersburg as a tourist destination, drawing thousands of visitors who are interested in experiencing cultural offerings and generating additional revenue.

Traffic Impact Analysis

Harbor Redevelopment

Petersburg, Virginia

September 2022

Prepared for:
Waukeshaw Development, Inc.
245 E. Bank Street
Petersburg, Virginia 23802

GOROVE SLADE
Transportation Planners and Engineers

Introduction

Waukeshaw Development, Inc. is proposing to establish a festival / special event site on property they own on the north side of River Street / Joseph Jenkins Roberts Street across from 3rd Street. They envision holding several events throughout the year, such as concerts, wine festivals, and fireworks shows. As part of the development plan, they are proposing to remove River Street between 3rd Street and 5th Street to make the property more suitable for events. This Traffic Impact Analysis (TIA) is based on our meeting with the City on July 14.

We are assuming the largest events will draw approximately 2,500 people, but most events will be much smaller. To be conservative, we analyzed the traffic impact of 2,500 people leaving the site on a Saturday evening at approximately 10:00 PM after a concert or fireworks show.

Assuming an average occupancy of 2.5 people per vehicle, we expect approximately 1,000 vehicles to be parked near the site for the largest events. The team has identified four large parking areas that can be used:

- Grass / gravel lot on the west side of Sapony Street
- Grass / gravel lot between Joseph Jenkins Roberts Street and the U.S. 301 overpass
- Asphalt lot on the north side of River Street west of U.S. 301
- Paved lots on both sides of Bank Street between N. Sycamore Street and U.S. 301

These four lots combined have a capacity of approximately 1,160 spaces, which will accommodate even the largest events. Many people will also choose to parallel park on the streets in the area.

Scope of the Traffic Analysis

Based on our traffic study scope meeting with the City on July 14, the study area includes the following intersections:

- U.S. 301 at Bridge Street
- Bollingbrook Street at 3rd Street
- River Street at 3rd Street
- River Street at Joseph Jenkins Roberts Street

Figure 1 shows the site location and study intersections.

Figure 1: Site Location and Study Intersections

Existing (2022) Conditions

Existing Roadway Network

U.S. 301 (Boulevard) is a four-lane Principal Arterial with a current average daily traffic (ADT) volume of 15,000 vehicles per day (vpd) and a posted speed limit of 25 mph.

Bollingbrook Street is a two-lane Minor Arterial with a current ADT volume of 4,100 vpd and an unposted speed limit.

3rd Street is a two-lane Major Collector with a current ADT volume of 410 vpd and an unposted speed limit.

River Street is a two-lane roadway that includes segments that are classified as Minor Collector and Major Collector with a current ADT volume of 200 vpd and a posted speed limit of 25 mph.

The existing lane configuration is shown in Figure 2.

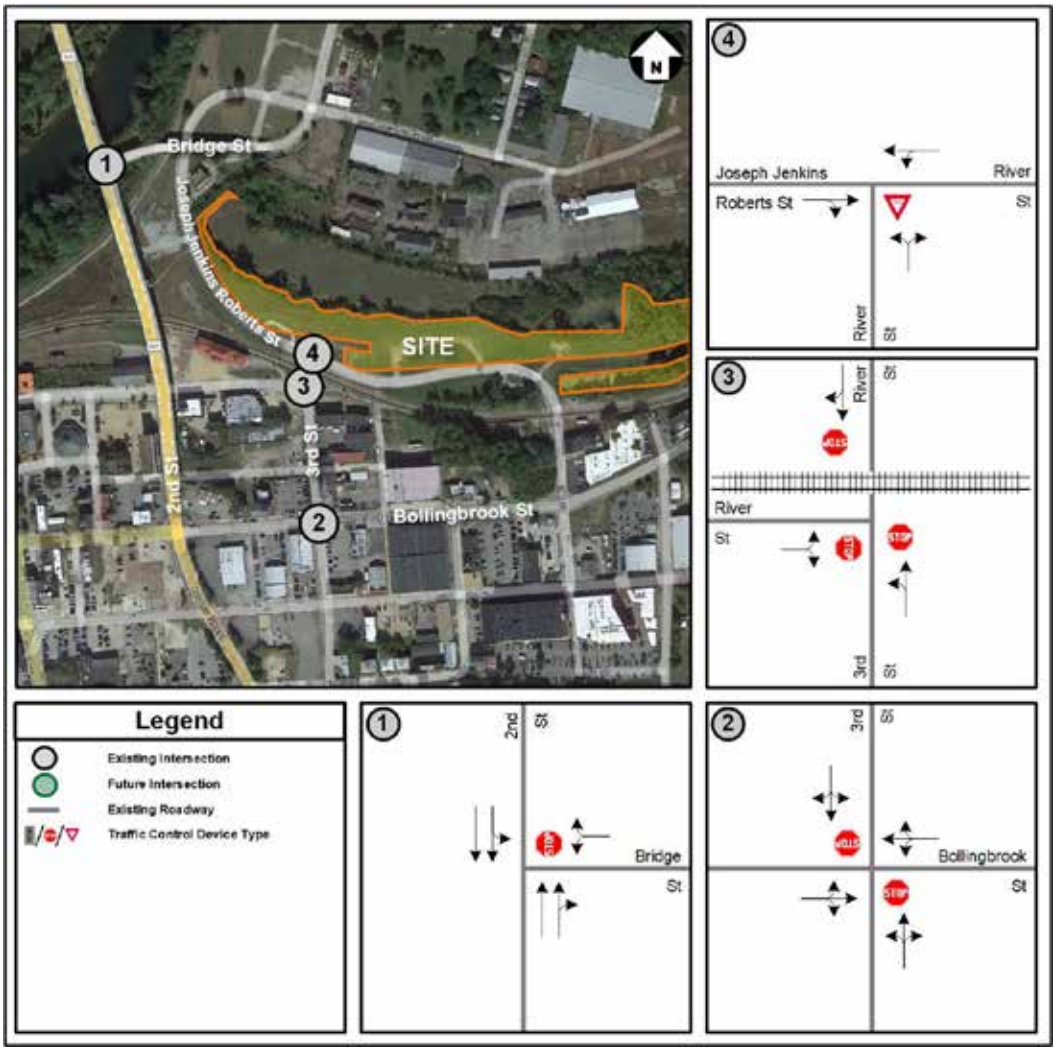


Figure 2: Existing Lane Configuration

Existing Pedestrian and Bicycle Accommodations

There are currently no bus stops of bicycle lanes in the vicinity of the site. Sidewalks are present along all roadways in the study area except Joseph Jenkins Roberts Road.

Existing (2022) Traffic Volumes

Turning movement counts for the Saturday evening peak hour (9:30 to 11:30 PM) were conducted by Burns Services, Inc. on June 30, 2022 at the following intersections:

- U.S. 301 at Bridge Street
- Bollingbrook Street at 3rd Street
- 3rd Street at River Street
- Joseph Jenkins Roberts Street at River Street

The existing Saturday evening peak hour volumes are shown in Figure 3.

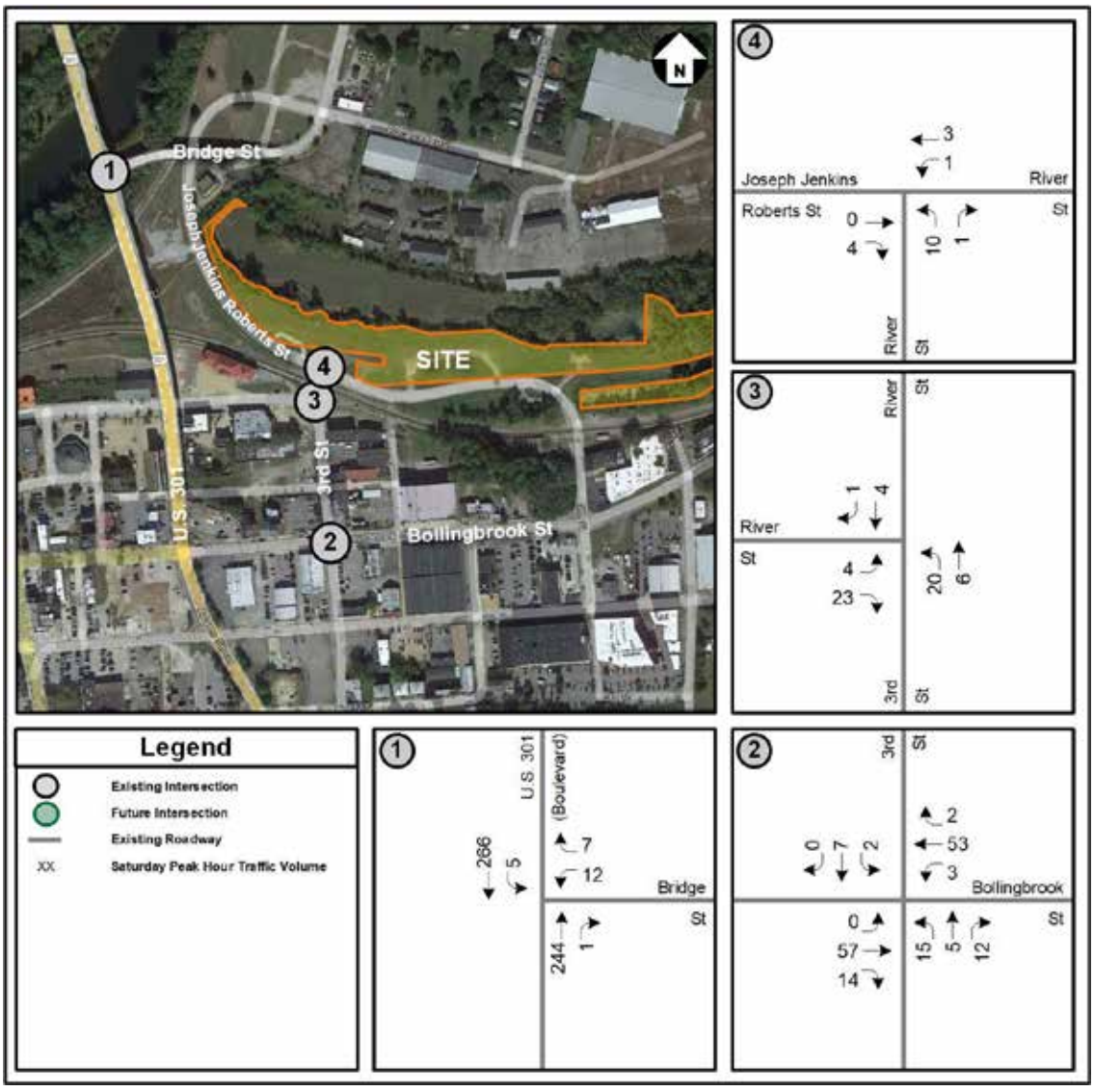


Figure 3: Existing 2022 Saturday Evening Peak Hour Traffic Volumes

Build (2025) Conditions

Regional Growth

To be conservative, the existing traffic volumes were increased by 1.0% per year for three years to estimate the projected 2025 traffic volumes.

Event Trips

Since the festival space will be used for a variety of events, the site generated trips were considered based on the available parking spaces associated with the site. Figure 4 shows the four large parking areas that will be used for large events.

Figure 4: Parking Areas and Capacities

Each parking area was evaluated on a conceptual level to determine an approximate amount of parking spaces that would be available in each section. It was assumed that one acre can accommodate approximately 120 parked vehicles.

Event Traffic Distribution

For the purposes of this analysis, only the outbound trips were included in the analysis. Patrons are expected to arrive in a staggered manner, however once the event ends, it is assumed that all patrons will attempt to leave around the same time.

Then, each area was given a separate trip distribution to disperse the vehicles throughout downtown based on Google Map directions and some engineering judgement accounting for potential alternate routes through the grid network. In order to create a more comprehensive depiction of the site trips, the exiting vehicle pathways are included in the Appendix. The trip distributions for Areas 1 – 4 are shown in Figure 5 through Figure 6. The trip assignments are shown in Figure 9 through Figure 12. The total trips are shown in Figure 13.

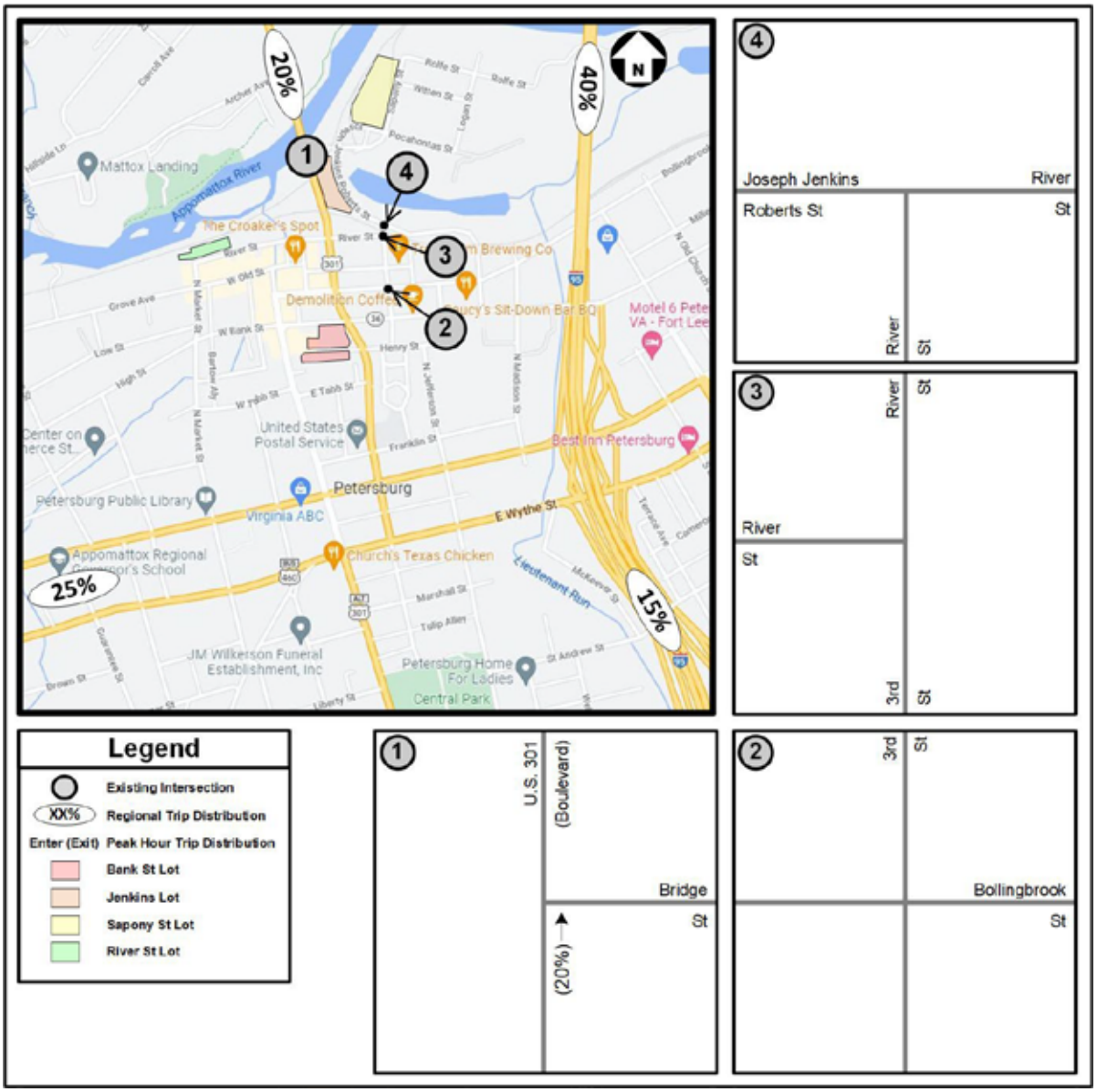


Figure 5: Bank Street Lot Vehicle Distribution

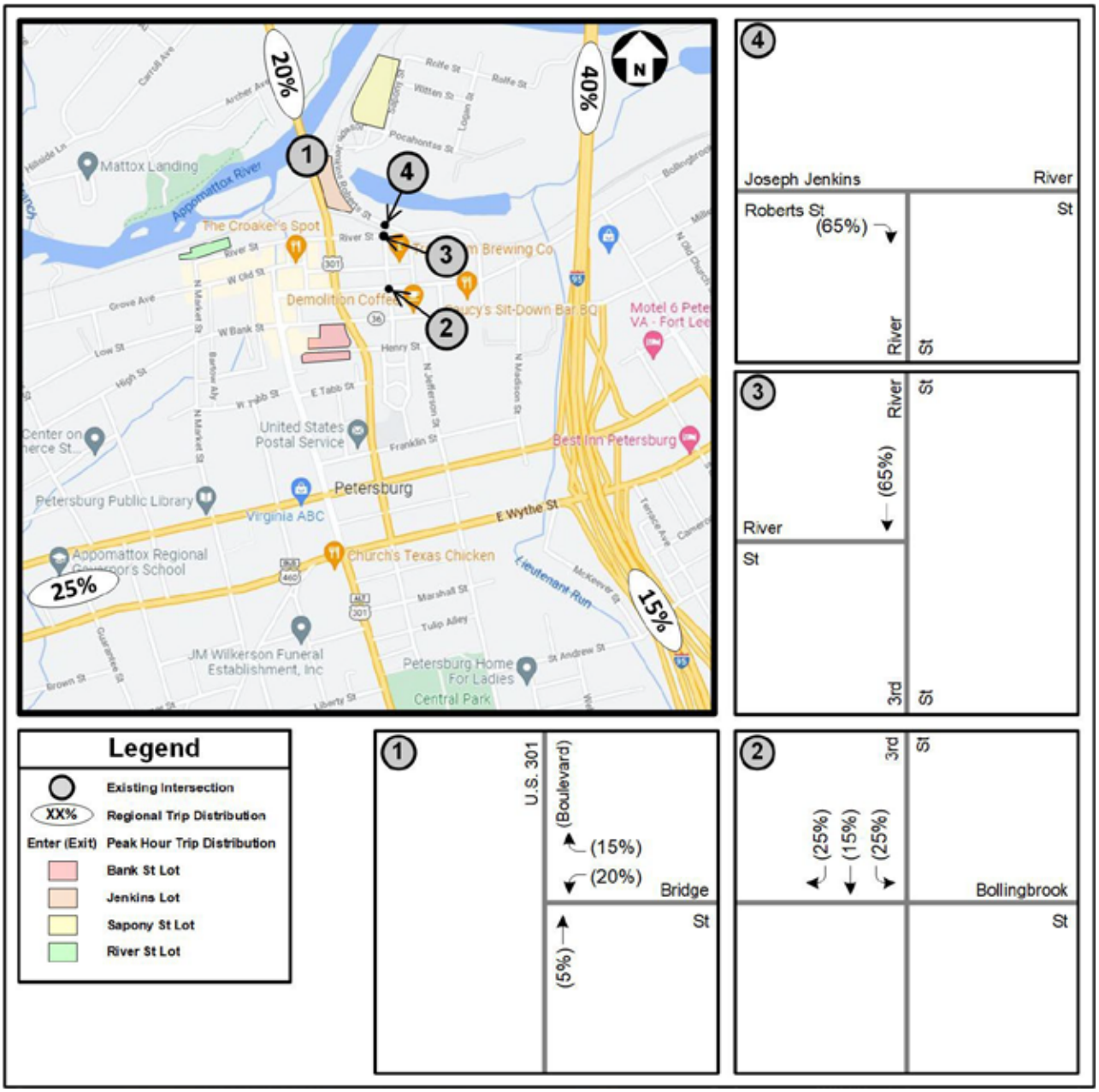


Figure 6: Joseph Jenkins Roberts Street Lot Vehicle Distribution

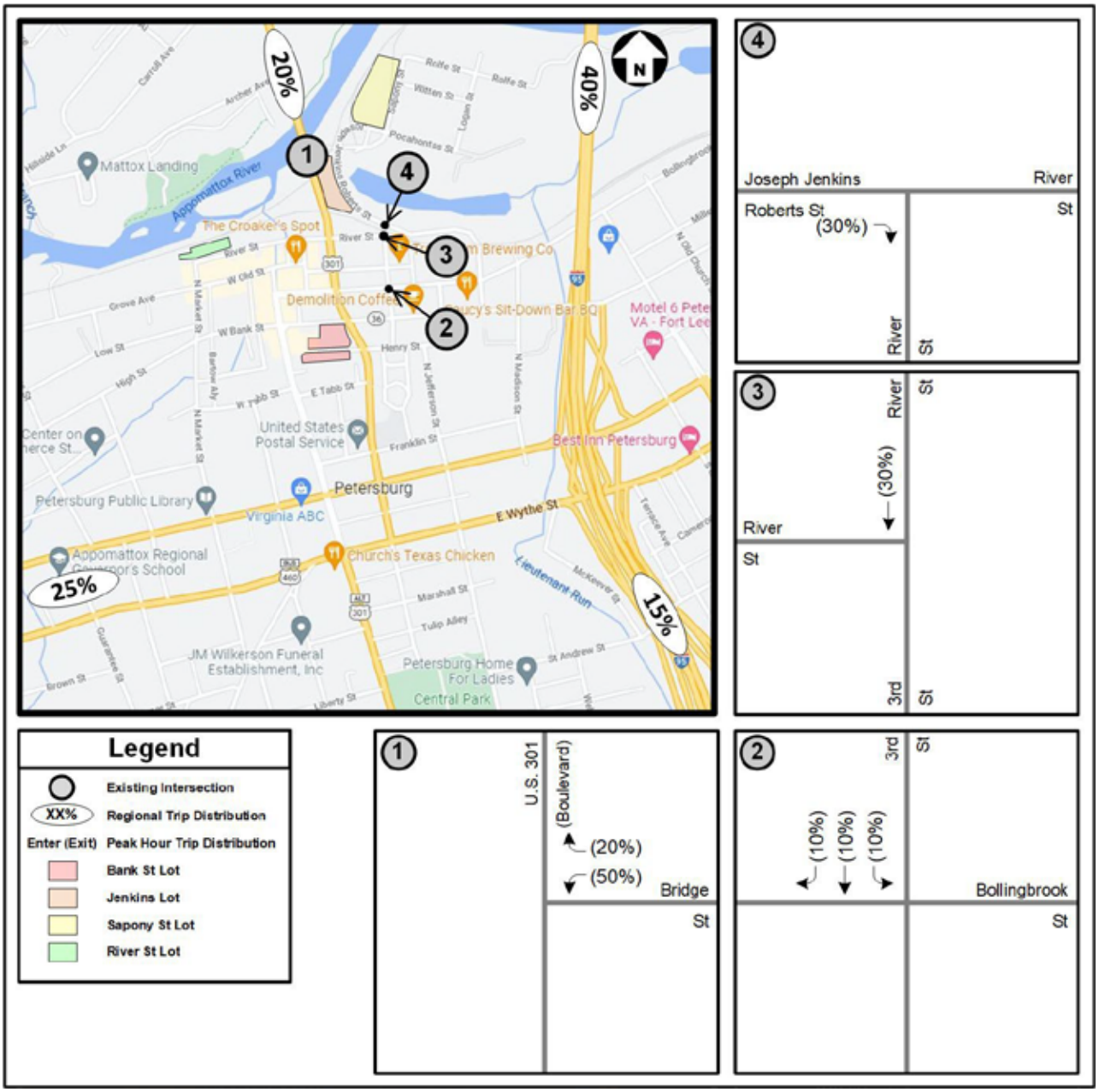


Figure 7: Sapony Street Lot Vehicle Distribution

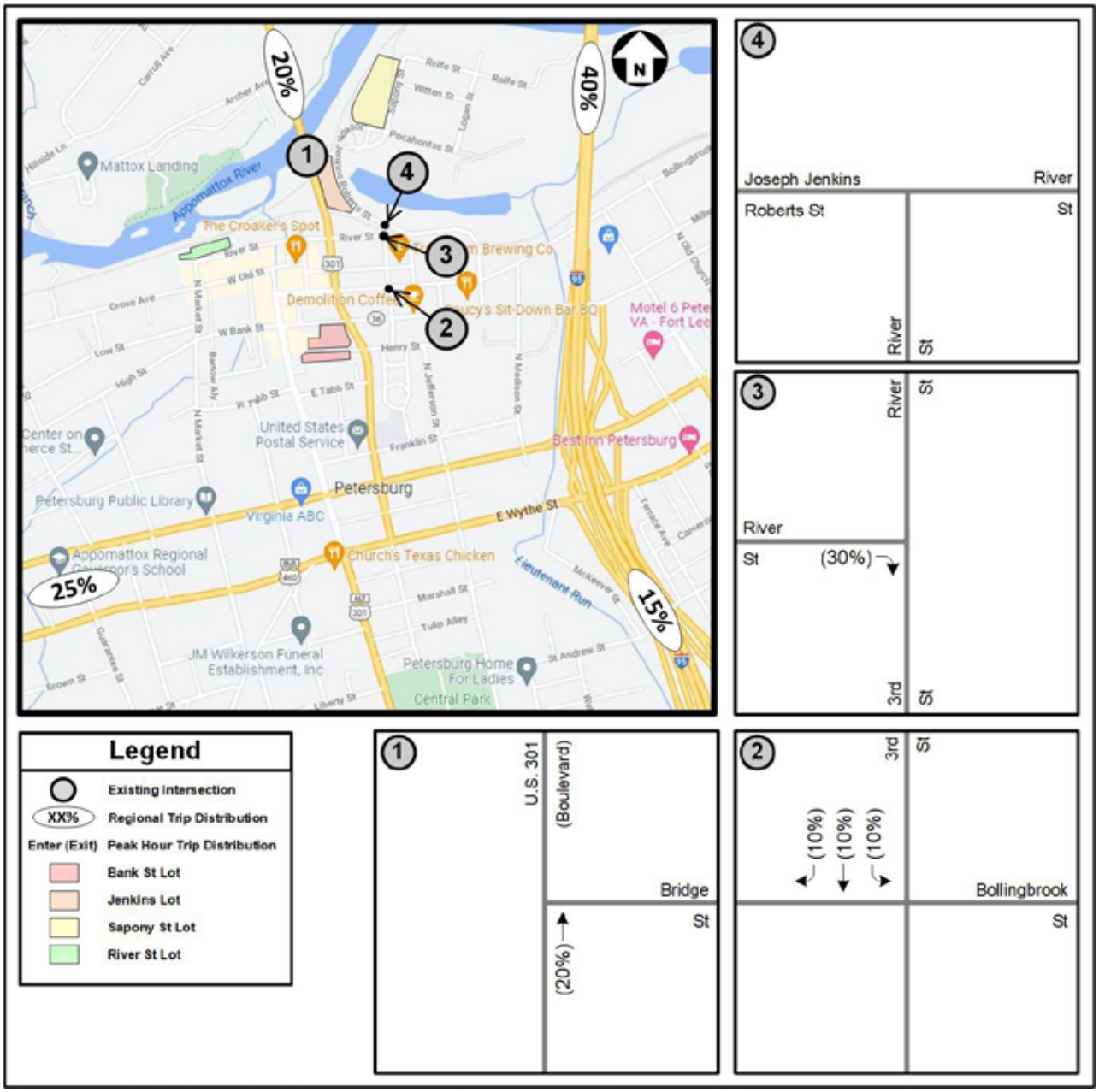


Figure 8: River Street Lot Vehicle Distribution

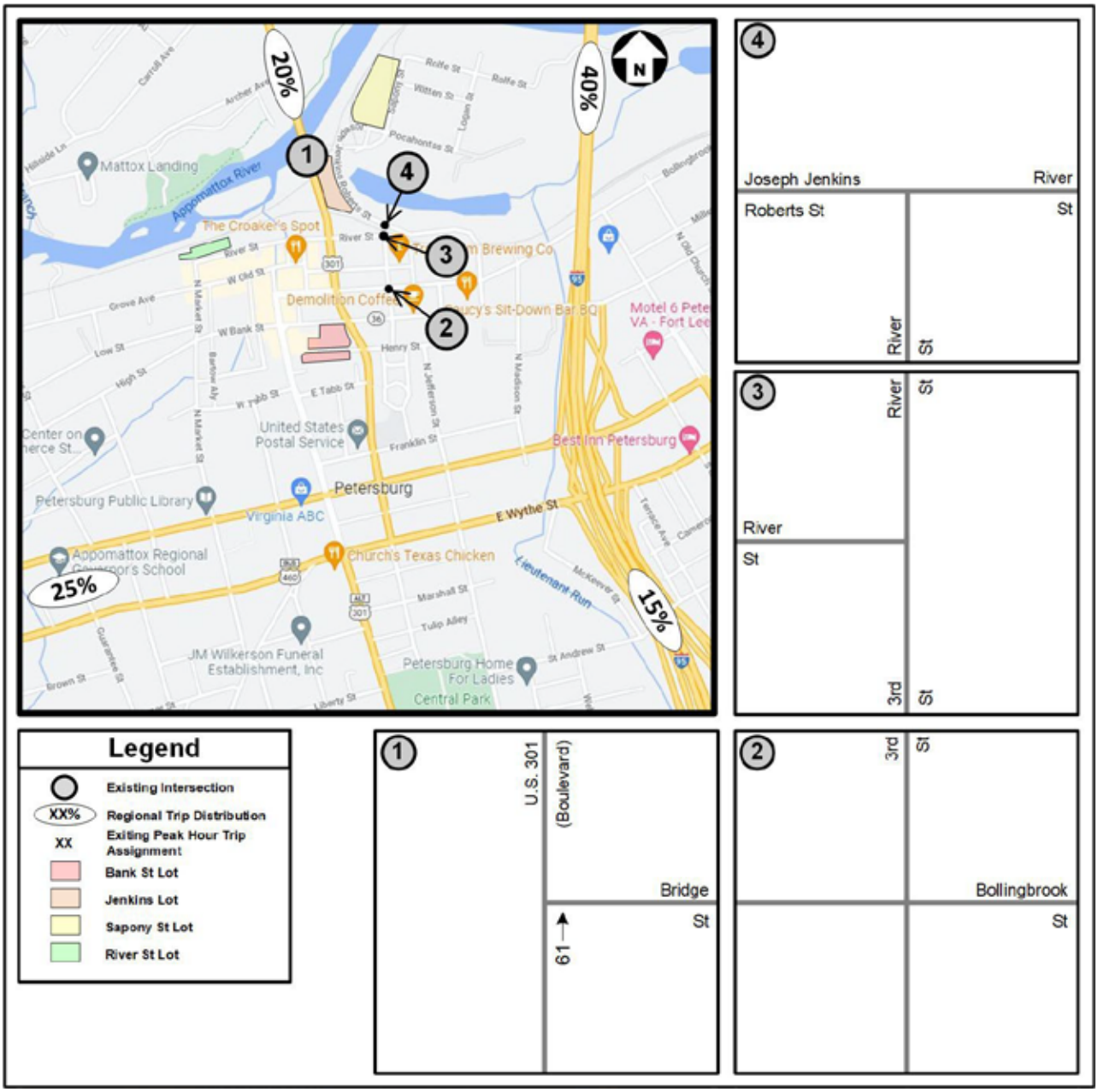


Figure 9: Bank Street Lot Vehicle Assignment

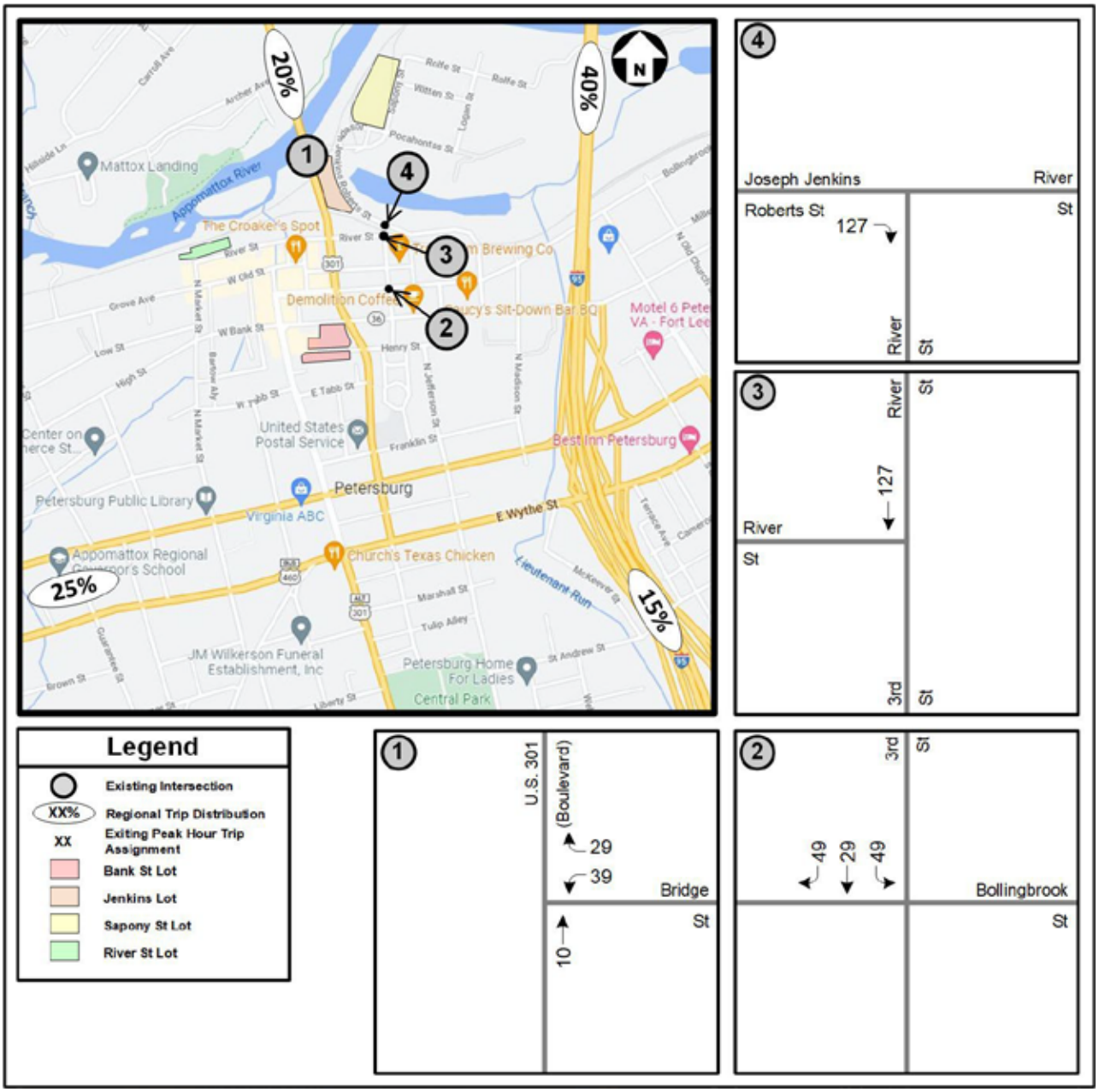


Figure 10: Joseph Jenkins Roberts Street Lot Vehicle Assignment

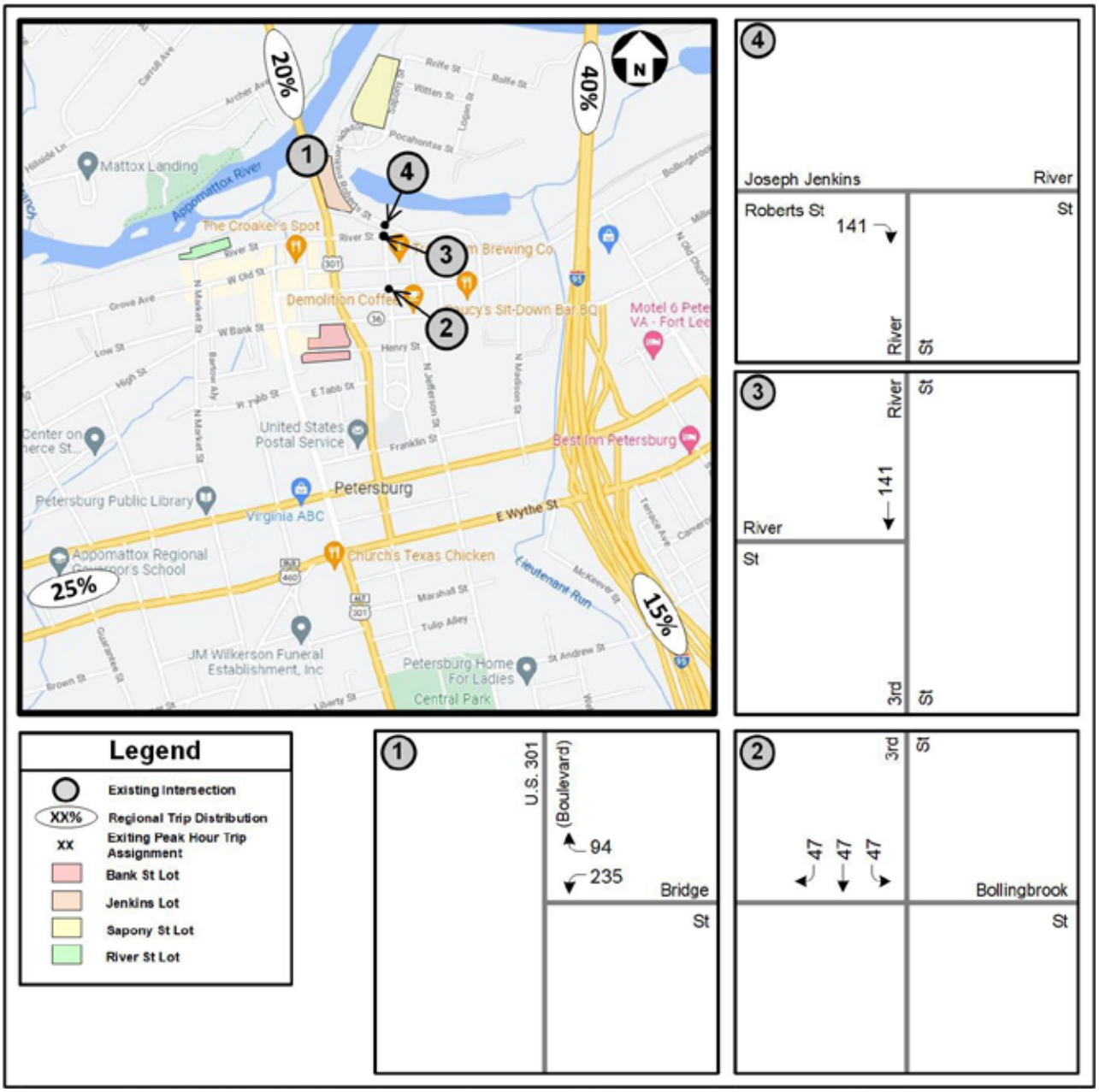


Figure 11: Sapony Street Lot Vehicle Assignment

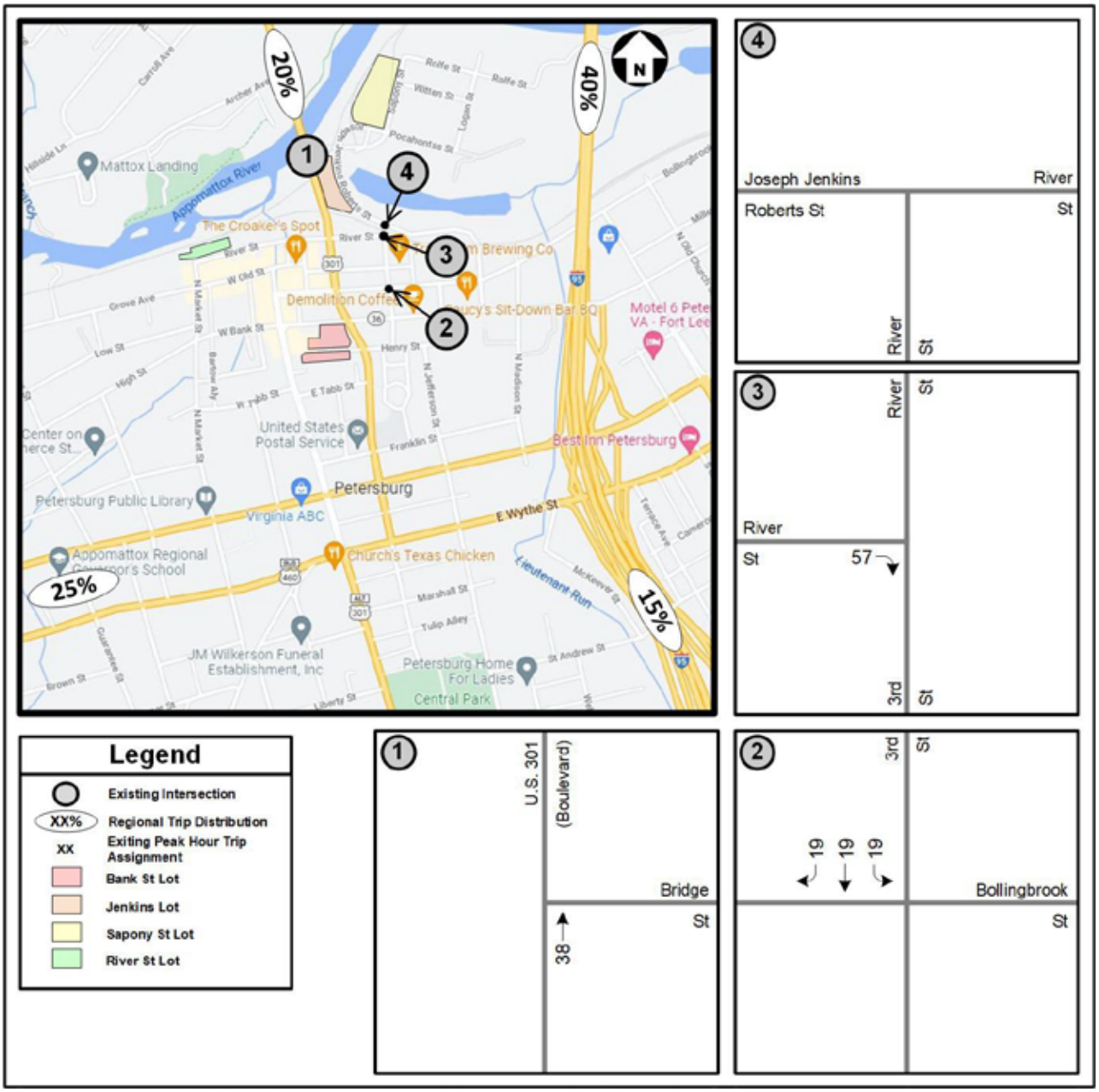


Figure 12: River Street Lot Vehicle Assignment

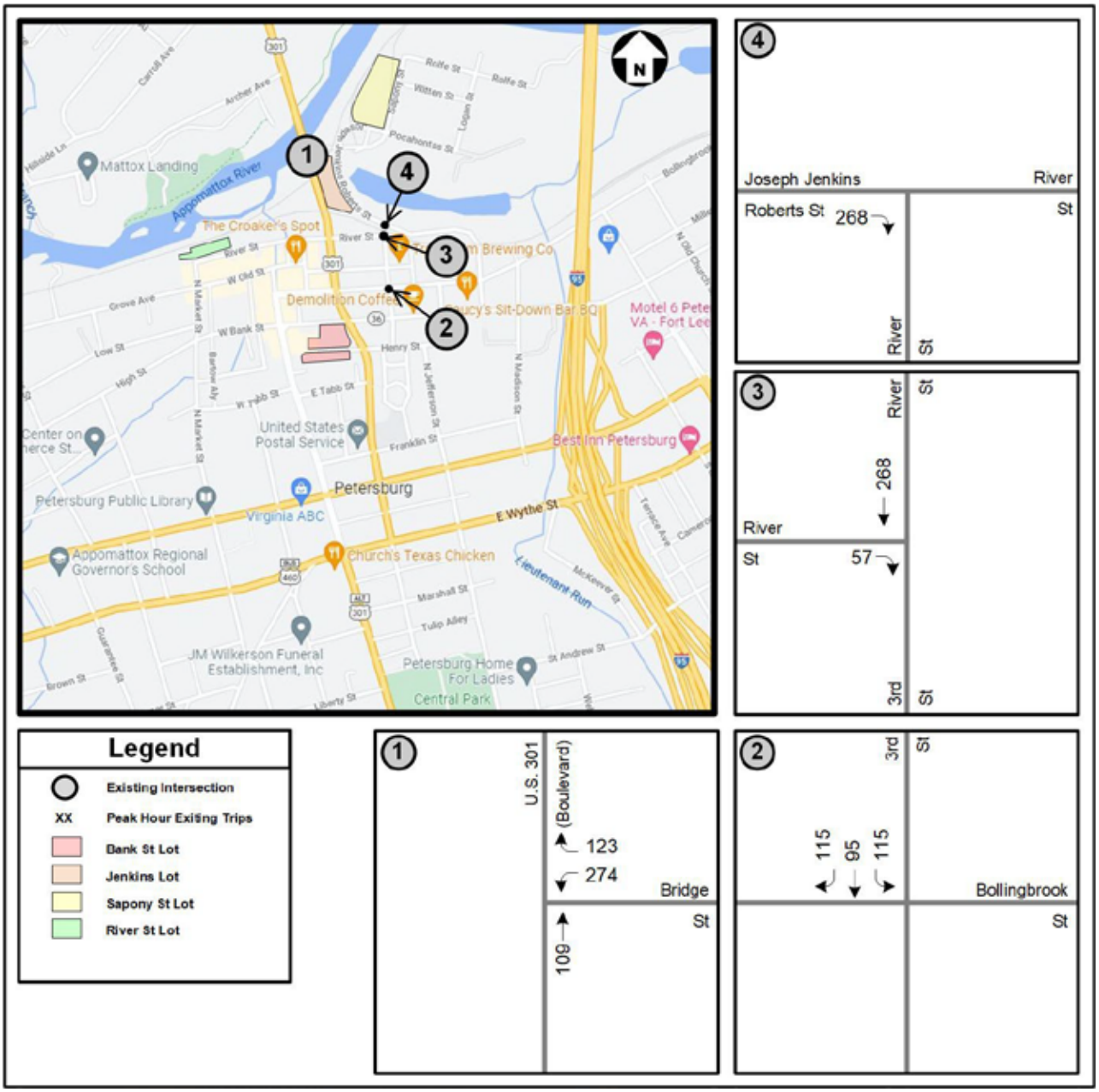


Figure 13: Total Event Vehicle Trips

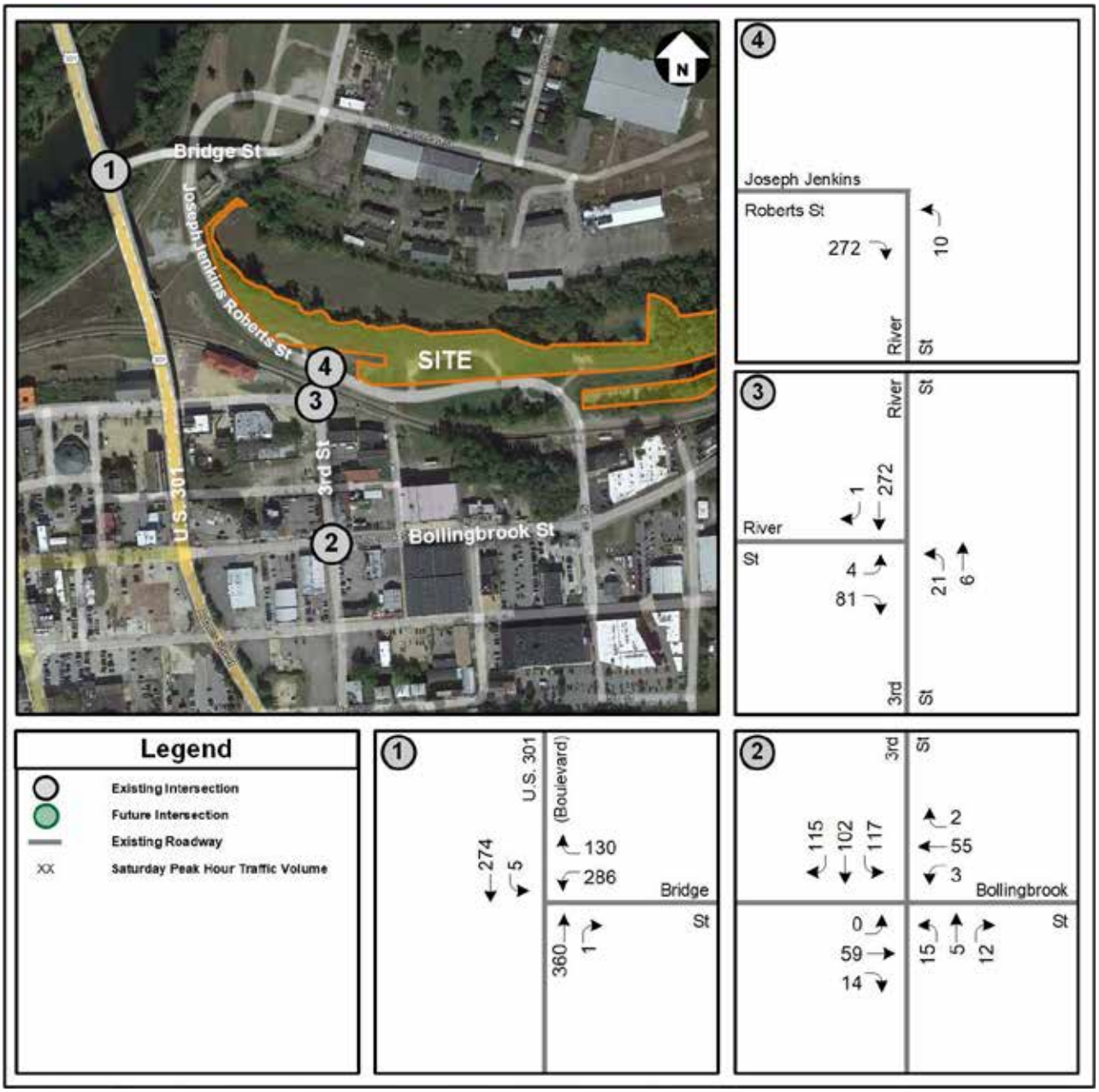


Figure 14: Build (2025) Saturday Evening Peak Hour Traffic Volumes

Capacity Analysis

Capacity analysis was performed at the study intersections during the Saturday Evening Peak Hour. Synchro, Version 11 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) methodology and includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed. The capacity analysis results are summarized in the tables below and the Synchro output is included in the Appendix.

For unsignalized intersections, the average delays for the minor street turn movements are described as short delays (less than 25 seconds), moderate delays (between 25 and 50 seconds), and long delays (greater than 50 seconds). It is common for side street movements to experience long delays during the peak hours at intersections with major thoroughfares.

To be conservative, we assumed a peak hour factor (PHF) of 0.50, which is equivalent to all vehicles leaving the parking areas within a 30-minute period after a large event.

Table 1 shows the traffic capacity results for the intersection of U.S. 301 at Bridge Street for the existing and 2025 conditions.

Table 1: Level-of-Service Summary for U.S. 301 at Bridge Street

Condition	Lane Group	Lane Storage (ft.)	Saturday Evening Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	Overall LOS
Existing (2022) Traffic Conditions	WBL/R NBT/R SBL/T	- - -	B - A	11.0 - 7.8	3 - 0	N/A
Build (2025) Traffic Conditions	WBL/R NBT/R SBL/T	- - -	F - A	890.8 - 9.2	1,810 - 0	N/A
Build (2025) Traffic Conditions ***Officer Control***	WBL/R NBT/R SBL/T	- - -	C C B	29.5 21.1 18.8	136 84 66	C (23.8 sec)

Based on the capacity analysis, the minor street left-turn movement currently operates with short delays during the Saturday Evening peak hour. Under build conditions, the minor street left-turn movement is expected to operate with long delays during the Saturday Evening peak hour with very long queues on Bridge Street. The intersection was modeled as a two-phase traffic signal in Synchro to simulate officer control. With officer control, the intersection is expected to operate at LOS C during the Saturday Evening peak hour with a queue of six vehicles on Bridge Street.

Table 2 shows the traffic capacity results for the intersection of Bollingbrook Street at 3rd Street for the existing and 2025 conditions.

Table 2: Level-of-Service Summary for Bollingbrook Street at 3rd Street

Condition	Lane Group	Lane Storage (ft.)	Saturday Evening Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	Overall LOS
Existing (2022) Traffic Conditions	EBL/T/R WBL/T/R NBL/T/R SBL/T/R	- - - -	A A A B	7.4 7.4 9.6 10.0	0 0 5 3	N/A
Build (2025) Traffic Conditions	EBL/T/R WBL/T/R NBL/T/R SBL/T/R	- - - -	A A B E	7.4 7.5 14.8 42.8	0 0 13 325	N/A

Capacity analysis indicates that the minor street left-turn movement currently operates with short delays during the Saturday Evening peak hour. Under build conditions, the minor street left-turn movement is expected to operate with moderate delays

during the Saturday Evening peak hour. The queue length on southbound 3rd Street is projected to be approximately 13 vehicles, but it clears relatively quickly because there is light cross traffic on Bollingbrook Street.

Table 3 shows the traffic capacity results for the intersection of 3rd Street at River Street for the existing and 2025 conditions.

Table 3: Level-of-Service Summary for 3rd Street at River Street

Condition	Lane Group	Lane Storage (ft.)	Saturday Evening Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	Overall LOS
Existing (2022) Traffic Conditions	EBL/R NBL/T SBT/R	- - -	A A A	6.8 7.4 7.0	5 5 0	A (7.1 sec)
Build (2025) Traffic Conditions	EBL/R NBL/T SBT/R	- - -	A A C	8.6 9.2 15.9	5 23 130	C (24.2 sec)

Capacity analysis indicates that this intersection currently operates at LOS A during the Saturday Evening peak hour with queue lengths of one vehicle or less. Under build conditions, the intersection is expected to operate at LOS C with queue lengths of six vehicles or less. This intersection has Stop signs on the northbound 3rd Street and eastbound River Street approaches, but was modeled as a three-way Stop intersection in Synchro to be conservative.

Table 4 shows the traffic capacity results for the intersection of Joseph Jenkins Roberts Street at River Street for the existing and 2025 conditions.

Table 4: Level-of-Service Summary for Joseph Jenkins Roberts Street at River Street

Condition	Lane Group	Lane Storage (ft.)	Saturday Evening Peak Hour			
			LOS	Delay (sec)	Queue (ft.)	Overall LOS
Existing (2022) Traffic Conditions	EBT/R WBL/T NBL/R	- - -	- A A	- 1.8 8.7	- 0 2	N/A
Build (2025) Traffic Conditions	EBT/R WBL/T NBL/R	- - -	- A B	- 2.1 10.2	- 0 2	N/A

Capacity analysis indicates that the minor street left-turn movement currently operates with short delays during the Saturday Evening peak hour. Under build conditions, the minor street left-turn movement is expected to continue to operate with short delays during the Saturday Evening peak hour with queue lengths of one vehicle or less.

Table 5 shows the average daily traffic (ADT) volumes we counted on Bollingbrook Street and River Street from September 1 through September 4. The tube count data are enclosed for reference.

Table 5: Average Daily Traffic (ADT) Volumes

Street Segment	Thursday Sept 1	Friday Sept 2	Saturday Sept 3	Sunday Sept 4
Bollingbrook Street between 3rd Street and 5th Street	4,148 vpd	4,115 vpd	3,286 vpd	2,538 vpd
River Street between 3rd Street and 5th Street	204 vpd	227 vpd	157 vpd	132 vpd

Summary and Recommendations

Based on the results of the capacity analysis, all four study intersections will operate acceptably after a large event with the following recommendations:

U.S. 301 at Bridge Street

- Utilize officer control to help drivers exit from Bridge Street onto U.S. 301

The segment of River Street between 3rd Street and 5th Street carries just 200 vpd, and just 5 vehicles during the Saturday Evening peak hour. Bollingbrook Street has a capacity of approximately 10,000 vpd, and is only carrying 4,100 vpd, so Bollingbrook Street can easily handle 200 additional vpd if River Street is removed.

Figure 15 shows the existing lane configuration and recommended traffic control measures.

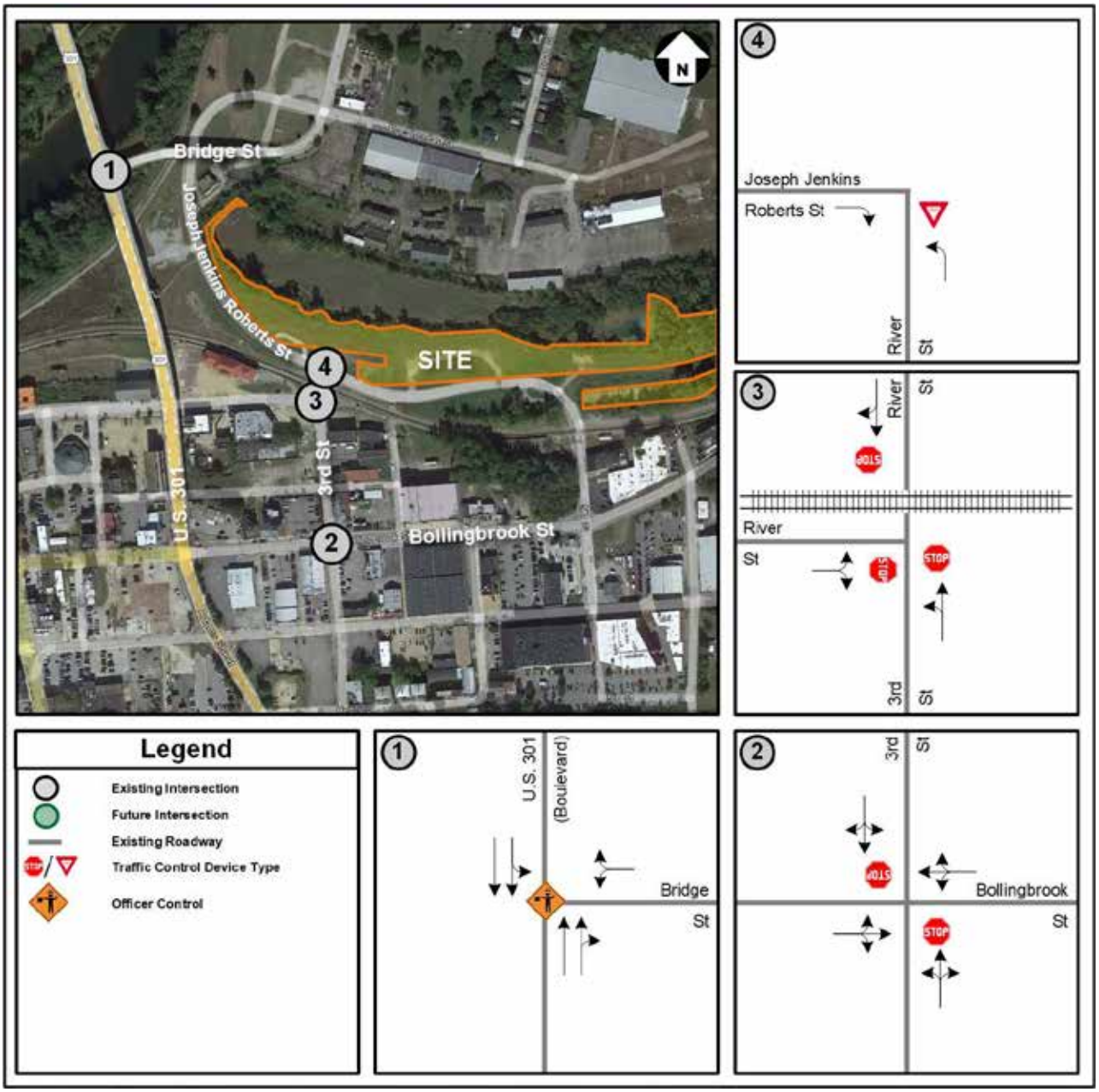


Figure 15: Recommended Lane Configuration and Traffic Control

File Name : Petersburg(Bridge St and Dr Martin Luther King Jr Memorial Bric
Site Code :
Start Date : 1/27/2022
Page No : 1

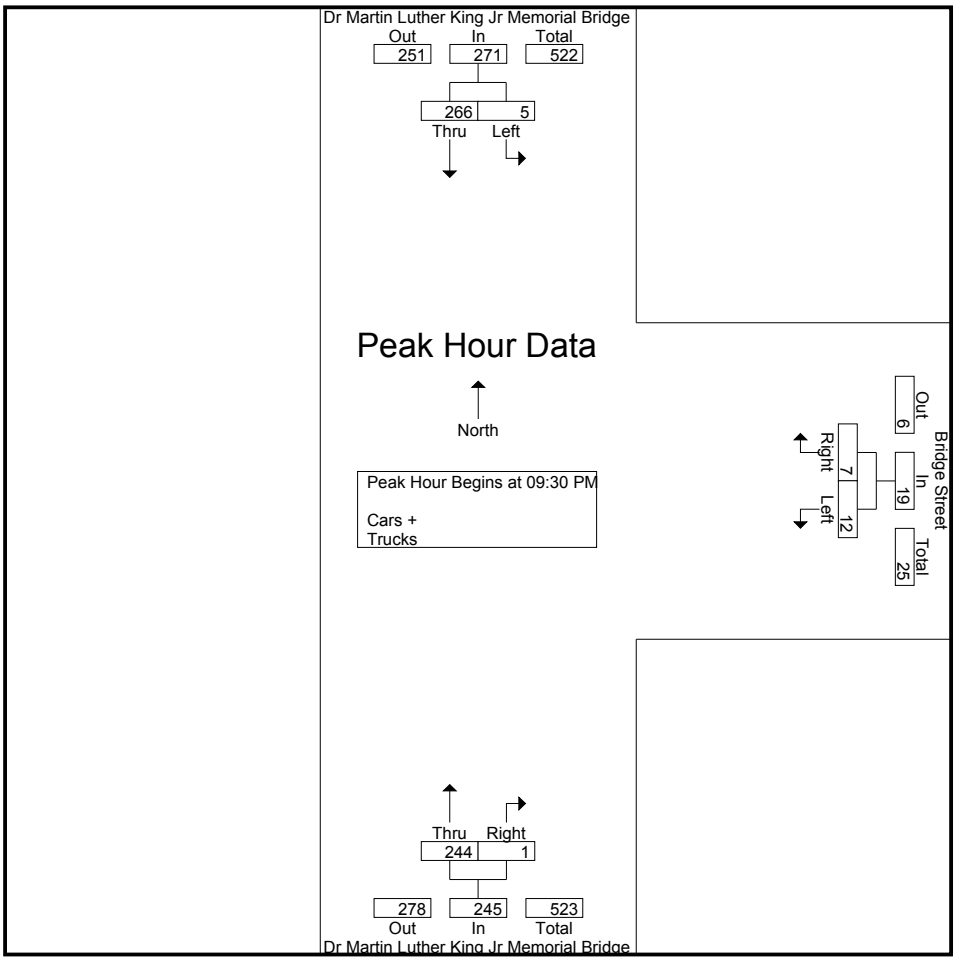
Groups Printed- Cars + - Trucks

	Dr Martin Luther King Jr Memorial Bridge Southbound			Bridge Street Westbound			Dr Martin Luther King Jr Memorial Bridge Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. To
09:30 PM	72	0	72	3	3	6	1	76	77	1
09:45 PM	59	2	61	2	3	5	0	59	59	1
Total	131	2	133	5	6	11	1	135	136	2
10:00 PM	75	1	76	2	3	5	0	50	50	1
10:15 PM	60	2	62	0	3	3	0	59	59	1
10:30 PM	79	0	79	0	3	3	0	56	56	1
10:45 PM	83	1	84	2	1	3	0	45	45	1
Total	297	4	301	4	10	14	0	210	210	5
11:00 PM	72	1	73	0	1	1	0	58	58	1
11:15 PM	57	2	59	0	0	0	0	49	49	1
Grand Total	557	9	566	9	17	26	1	452	453	10
Apprch %	98.4	1.6		34.6	65.4		0.2	99.8		
Total %	53.3	0.9	54.2	0.9	1.6	2.5	0.1	43.3	43.3	
Cars +	557	9	566	9	17	26	1	452	453	10
% Cars +	100	100	100	100	100	100	100	100	100	1
Trucks	0	0	0	0	0	0	0	0	0	
% Trucks	0	0	0	0	0	0	0	0	0	

TRAFFIC DATA COLLECTION

File Name : Petersburg(Bridge St and Dr Martin Luther King Jr Memorial Bric
Site Code :
Start Date : 1/27/2022
Page No : 2

	Dr Martin Luther King Jr Memorial Bridge Southbound			Bridge Street Westbound			Dr Martin Luther King Jr Memorial Bridge Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. To
Peak Hour Analysis From 09:30 PM to 11:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 09:30 PM										
09:30 PM	72	0	72	**3**	**3**	**6**	**1**	**76**	**77**	
09:45 PM	59	**2**	61	2	3	5	0	59	59	1
10:00 PM	**75**	1	**76**	2	3	5	0	50	50	1
10:15 PM	60	2	62	0	3	3	0	59	59	1
Total Volume	266	5	271	7	12	19	1	244	245	5
% App. Total	98.2	1.8		36.8	63.2		0.4	99.6		
PHF	.887	.625	.891	.583	1.00	.792	.250	.803	.795	.8



BSI
TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(Third St and Bollingbrook
Site Code :
Start Date : 7/30/2022
Page No : 1

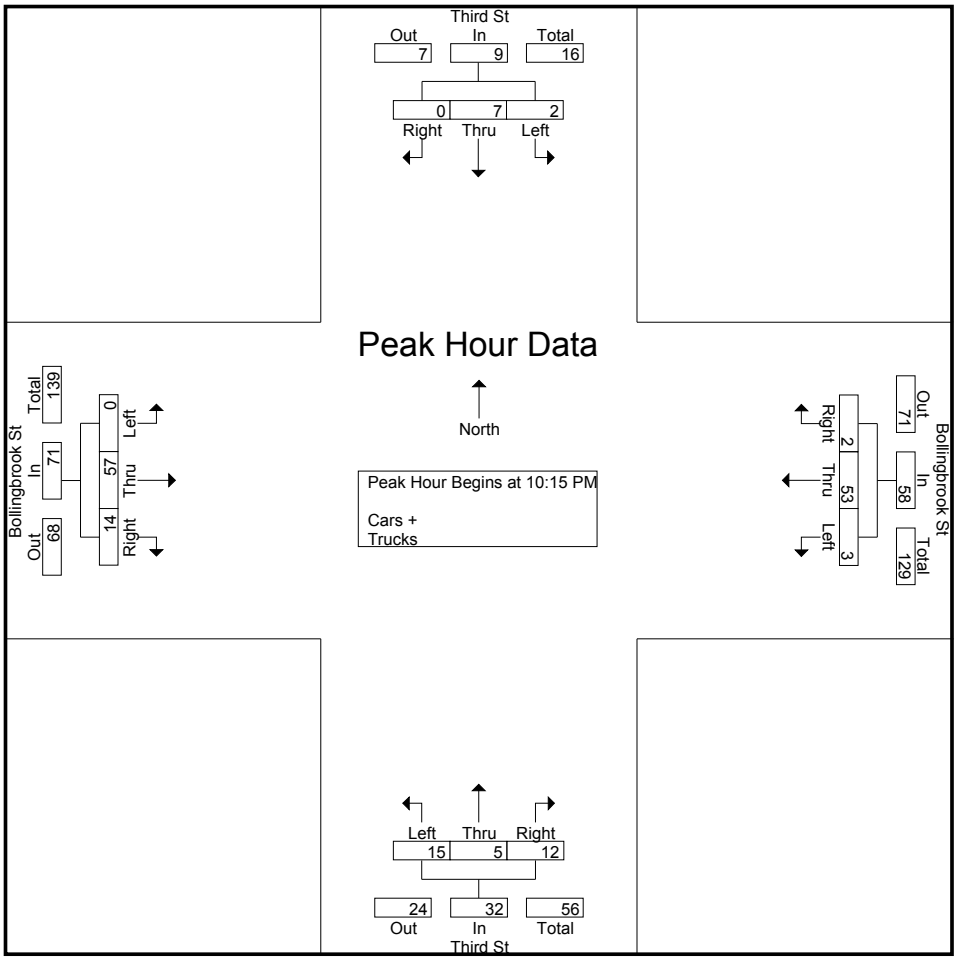
Groups Printed- Cars + - Trucks

	Third St Southbound				Bollingbrook St Westbound				Third St Northbound				Bollingbrook St Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. T
09:30 PM	1	1	0	2	1	17	1	19	7	2	3	12	0	17	0	17	
09:45 PM	0	2	1	3	0	17	0	17	1	2	5	8	0	7	0	7	
Total	1	3	1	5	1	34	1	36	8	4	8	20	0	24	0	24	
10:00 PM	0	1	1	2	2	7	3	12	3	0	3	6	3	14	0	17	
10:15 PM	0	0	0	0	0	13	0	13	3	1	6	10	3	12	0	15	
10:30 PM	0	6	0	6	0	15	1	16	8	2	4	14	7	15	0	22	
10:45 PM	0	0	2	2	1	12	0	13	1	0	4	5	3	13	0	16	
Total	0	7	3	10	3	47	4	54	15	3	17	35	16	54	0	70	1
11:00 PM	0	1	0	1	1	13	2	16	0	2	1	3	1	17	0	18	
11:15 PM	0	1	4	5	0	12	1	13	1	2	0	3	5	12	0	17	
11:30 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	
Grand Total	1	12	8	21	5	107	8	120	24	11	27	62	22	107	0	129	3
Apprch %	4.8	57.1	38.1		4.2	89.2	6.7		38.7	17.7	43.5		17.1	82.9	0		
Total %	0.3	3.6	2.4	6.3	1.5	32.2	2.4	36.1	7.2	3.3	8.1	18.7	6.6	32.2	0	38.9	
Cars +	1	12	8	21	5	107	8	120	24	11	27	62	22	107	0	129	3
% Cars +	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	1
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

BSI
TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(Third St and Bollingbrook
Site Code :
Start Date : 7/30/2022
Page No : 2

	Third St Southbound				Bollingbrook St Westbound				Third St Northbound				Bollingbrook St Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. T
Peak Hour Analysis From 09:30 PM to 11:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:15 PM																	
10:15 PM	0	0	0	0	0	13	0	13	3	1	**6**	10	3	12	0	15	
10:30 PM	0	**6**	0	**6**	0	**15**	1	**16**	**8**	**2**	4	**14**	**7**	15	0	**22**	
10:45 PM	0	0	**2**	2	**1**	12	0	13	1	0	4	5	3	13	0	16	
11:00 PM	0	1	0	1	1	13	**2**	16	0	2	1	3	1	**17**	0	18	
Total Volume	0	7	2	9	2	53	3	58	12	5	15	32	14	57	0	71	1
% App. Total	0	77.8	22.2		3.4	91.4	5.2		37.5	15.6	46.9		19.7	80.3	0		
PHF	.000	.292	.250	.375	.500	.883	.375	.906	.375	.625	.625	.571	.500	.838	.000	.807	.7



BSI TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(3rd Street and River Str
Site Code :
Start Date : 7/30/2022
Page No : 1

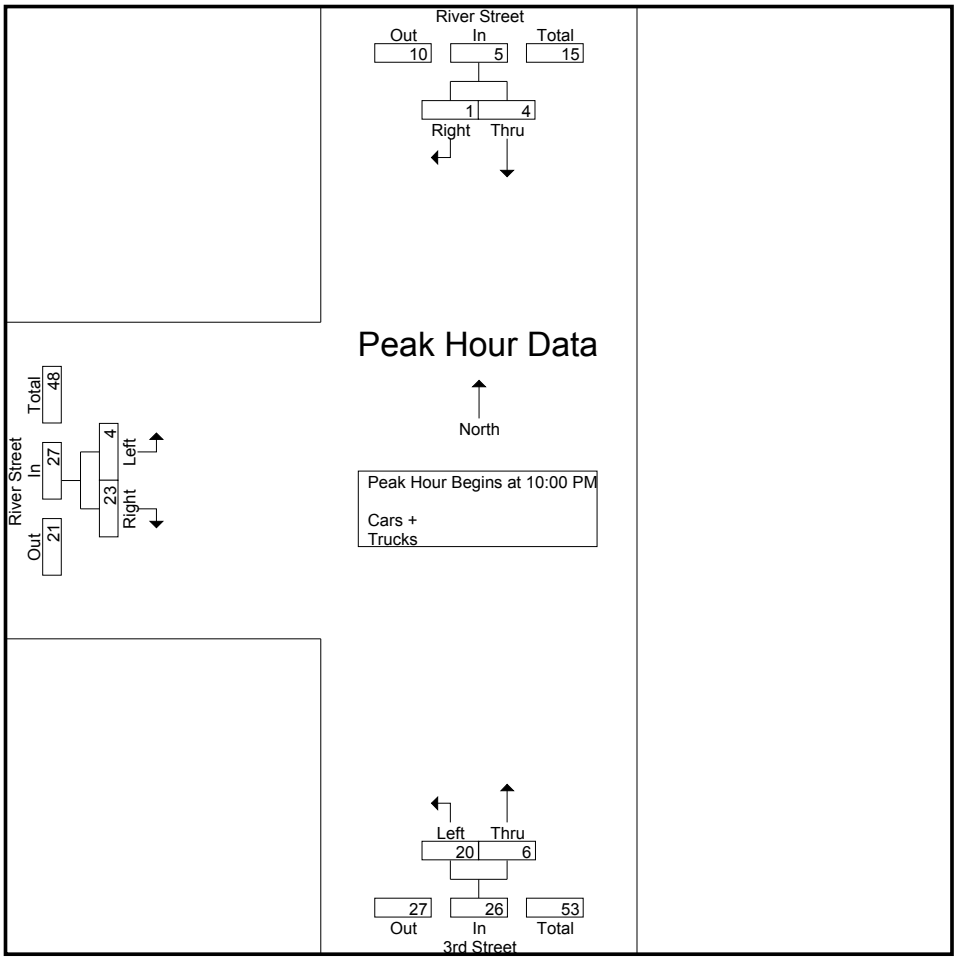
Groups Printed- Cars + - Trucks

	River Street Southbound			3rd Street Northbound			River Street Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. T
09:30 PM	0	2	2	2	3	5	8	2	10	
09:45 PM	0	1	1	1	2	3	4	0	4	
Total	0	3	3	3	5	8	12	2	14	
10:00 PM	0	0	0	1	7	8	2	1	3	
10:15 PM	0	0	0	0	2	2	7	1	8	
10:30 PM	0	0	0	4	9	13	12	1	13	
10:45 PM	1	4	5	1	2	3	2	1	3	
Total	1	4	5	6	20	26	23	4	27	
11:00 PM	0	0	0	0	3	3	2	0	2	
11:15 PM	1	0	1	0	2	2	1	0	1	
11:30 PM	0	0	0	0	0	0	1	0	1	
Grand Total	2	7	9	9	30	39	39	6	45	
Apprch %	22.2	77.8		23.1	76.9		86.7	13.3		
Total %	2.2	7.5	9.7	9.7	32.3	41.9	41.9	6.5	48.4	
Cars +	2	7	9	9	30	39	39	6	45	
% Cars +	100	100	100	100	100	100	100	100	100	
Trucks	0	0	0	0	0	0	0	0	0	
% Trucks	0	0	0	0	0	0	0	0	0	

TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(3rd Street and River Str
Site Code :
Start Date : 7/30/2022
Page No : 2

	River Street Southbound			3rd Street Northbound			River Street Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. T
Peak Hour Analysis From 09:30 PM to 11:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 PM										
10:00 PM	0	0	0	1	7	8	2	**1**	3	
10:15 PM	0	0	0	0	2	2	7	1	8	
10:30 PM	0	0	0	**4**	**9**	**13**	**12**	1	**13**	
10:45 PM	**1**	**4**	**5**	1	2	3	2	1	3	
Total Volume	1	4	5	6	20	26	23	4	27	
% App. Total	20	80		23.1	76.9		85.2	14.8		
PHF	.250	.250	.250	.375	.556	.500	.479	1.00	.519	



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TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(River Street and Joseph Jenkins Roberts
Site Code :
Start Date : 7/30/2022
Page No : 1

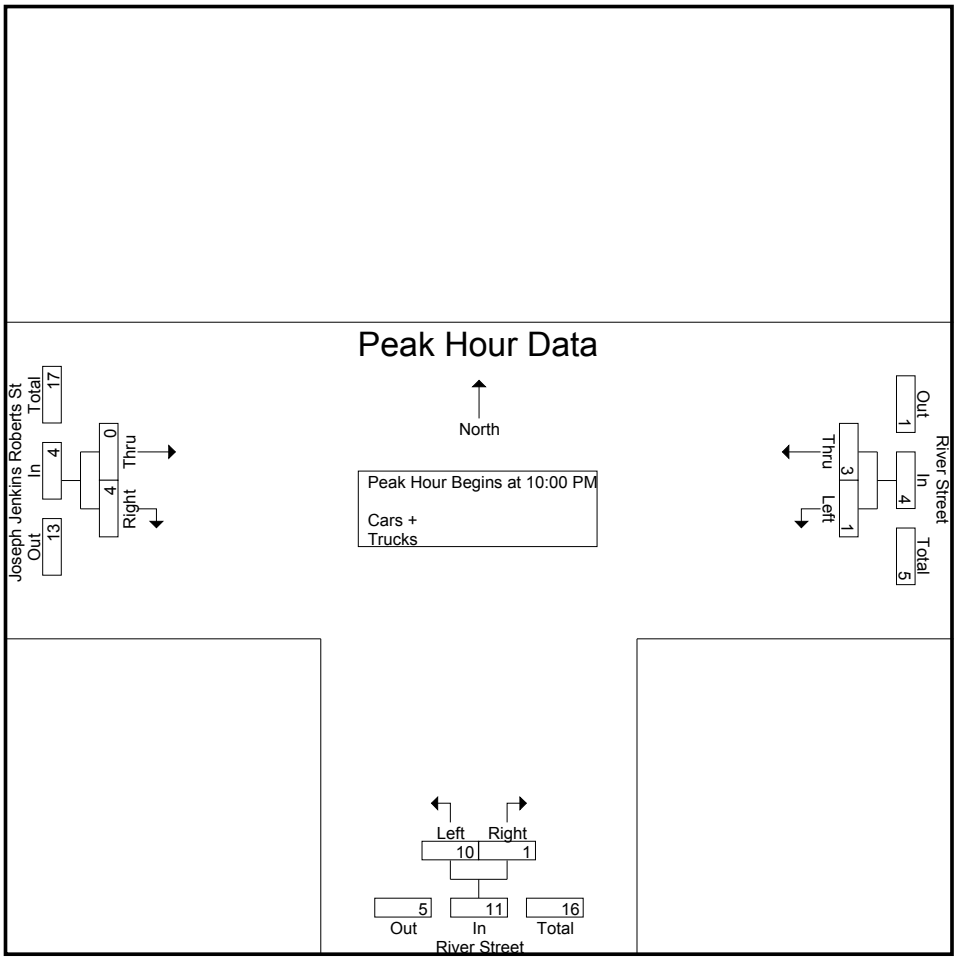
Groups Printed- Cars + - Trucks

	River Street Westbound			River Street Northbound			Joseph Jenkins Roberts St Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. T
09:30 PM	0	0	0	0	4	4	2	0	2	
09:45 PM	0	0	0	0	1	1	1	0	1	
Total	0	0	0	0	5	5	3	0	3	
10:00 PM	0	0	0	0	2	2	0	0	0	
10:15 PM	0	0	0	0	1	1	0	0	0	
10:30 PM	1	0	1	1	4	5	0	0	0	
10:45 PM	2	1	3	0	3	3	4	0	4	
Total	3	1	4	1	10	11	4	0	4	
11:00 PM	0	0	0	0	0	0	0	1	1	
11:15 PM	0	1	1	0	0	0	0	0	0	
Grand Total	3	2	5	1	15	16	7	1	8	
Apprch %	60	40		6.2	93.8		87.5	12.5		
Total %	10.3	6.9	17.2	3.4	51.7	55.2	24.1	3.4	27.6	
Cars +	3	2	5	1	15	16	7	1	8	
% Cars +	100	100	100	100	100	100	100	100	100	
Trucks	0	0	0	0	0	0	0	0	0	
% Trucks	0	0	0	0	0	0	0	0	0	

TRAFFIC DATA COLLECTION

File Name : Petersburg-Petersburg(River Street and Joseph Jenkins Roberts
Site Code :
Start Date : 7/30/2022
Page No : 2

	River Street Westbound			River Street Northbound			Joseph Jenkins Roberts St Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. T
Peak Hour Analysis From 09:30 PM to 11:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 10:00 PM										
10:00 PM	0	0	0	0	2	2	0	0	0	
10:15 PM	0	0	0	0	1	1	0	0	0	
10:30 PM	1	0	1	**1**	**4**	**5**	0	0	0	
10:45 PM	**2**	**1**	**3**	0	3	3	**4**	0	**4**	
Total Volume	3	1	4	1	10	11	4	0	4	
% App. Total	75	25		9.1	90.9		100	0		
PHF	.375	.250	.333	.250	.625	.550	.250	.000	.250	



:Viewer Pro v1.6.4.124

Daily Vehicle Volume Report

Study Date: Thursday, 09/01/2022
Unit ID: Joseph Jenkins Roberts St
Location: Joseph Jenkins Roberts Street

	Westbound Volume	Eastbound Volume	Total Volume
00 - 00:59	0	0	**0**
00 - 01:59	0	0	**0**
00 - 02:59	0	0	**0**
00 - 03:59	0	0	**0**
00 - 04:59	3	1	**4**
00 - 05:59	0	0	**0**
00 - 06:59	7	2	**9**
00 - 07:59	5	7	**12**
00 - 08:59	6	5	**11**
00 - 09:59	7	6	**13**
00 - 10:59	3	7	**10**
00 - 11:59	12	6	**18**
00 - 12:59	6	9	**15**
00 - 13:59	8	1	**9**
00 - 14:59	8	6	**14**
00 - 15:59	6	16	**22**
00 - 16:59	7	6	**13**
00 - 17:59	6	6	**12**
00 - 18:59	4	6	**10**
00 - 19:59	9	0	**9**
00 - 20:59	6	4	**10**
00 - 21:59	3	6	**9**
00 - 22:59	1	0	**1**
00 - 23:59	0	3	**3**
Totals	**107**	**97**	**204**
Peak Time	**10:44 - 11:43**	**07:23 - 08:22**	**10:52 - 11:51**
eak Volume	**13**	**10**	**18**
Peak Time	**19:15 - 20:14**	**14:58 - 15:57**	**14:36 - 15:35**
eak Volume	**12**	**17**	**26**

:Viewer Pro v1.6.4.124

Daily Vehicle Volume Report

Study Date: Friday, 09/02/2022
Unit ID: Joseph Jenkins Roberts St
Location: Joseph Jenkins Roberts Street

	Westbound Volume	Eastbound Volume	Total Volume
00 - 00:59	1	1	**2**
00 - 01:59	1	0	**1**
00 - 02:59	1	3	**4**
00 - 03:59	0	0	**0**
00 - 04:59	0	1	**1**
00 - 05:59	2	0	**2**
00 - 06:59	6	2	**8**
00 - 07:59	3	5	**8**
00 - 08:59	6	6	**12**
00 - 09:59	8	6	**14**
00 - 10:59	6	6	**12**
00 - 11:59	6	7	**13**
00 - 12:59	9	9	**18**
00 - 13:59	8	10	**18**
00 - 14:59	9	6	**15**
00 - 15:59	8	12	**20**
00 - 16:59	6	6	**12**
00 - 17:59	8	6	**14**
00 - 18:59	4	9	**13**
00 - 19:59	5	6	**11**
00 - 20:59	6	5	**11**
00 - 21:59	2	0	**2**
00 - 22:59	3	6	**9**
00 - 23:59	5	2	**7**
Totals	**113**	**114**	**227**
Peak Time	**09:05 - 10:04**	**07:36 - 08:35**	**07:36 - 08:35**
eak Volume	**9**	**9**	**16**
Peak Time	**14:32 - 15:31**	**13:09 - 14:08**	**14:33 - 15:32**
eak Volume	**13**	**12**	**25**

:Viewer Pro v1.6.4.124

Daily Vehicle Volume Report

Study Date: Saturday, 09/03/2022
Unit ID: Joseph Jenkins Roberts St
Location: Joseph Jenkins Roberts Street

	Westbound Volume	Eastbound Volume	Total Volume
00 - 00:59	2	1	**3**
00 - 01:59	1	3	**4**
00 - 02:59	2	0	**2**
00 - 03:59	0	0	**0**
00 - 04:59	0	1	**1**
00 - 05:59	2	0	**2**
00 - 06:59	2	2	**4**
00 - 07:59	5	2	**7**
00 - 08:59	2	1	**3**
00 - 09:59	4	4	**8**
00 - 10:59	4	2	**6**
00 - 11:59	8	1	**9**
00 - 12:59	4	7	**11**
00 - 13:59	5	4	**9**
00 - 14:59	1	8	**9**
00 - 15:59	3	6	**9**
00 - 16:59	2	4	**6**
00 - 17:59	6	5	**11**
00 - 18:59	10	7	**17**
00 - 19:59	6	5	**11**
00 - 20:59	1	3	**4**
00 - 21:59	3	3	**6**
00 - 22:59	3	6	**9**
00 - 23:59	5	1	**6**
Totals	**81**	**76**	**157**
Peak Time	**10:49 - 11:48**	**09:08 - 10:07**	**09:08 - 10:07**
eak Volume	**8**	**6**	**11**
Peak Time	**18:04 - 19:03**	**14:20 - 15:19**	**17:25 - 18:24**
eak Volume	**11**	**9**	**18**

Daily Vehicle Volume Report

Study Date: Sunday, 09/04/2022
Unit ID: Joseph Jenkins Roberts St
Location: Joseph Jenkins Roberts Street

	Westbound Volume	Eastbound Volume	Total Volume
00 - 00:59	4	5	**9**
00 - 01:59	0	1	**1**
00 - 02:59	0	0	**0**
00 - 03:59	0	0	**0**
00 - 04:59	0	0	**0**
00 - 05:59	3	2	**5**
00 - 06:59	0	1	**1**
00 - 07:59	1	1	**2**
00 - 08:59	3	1	**4**
00 - 09:59	3	4	**7**
00 - 10:59	3	0	**3**
00 - 11:59	3	5	**8**
00 - 12:59	5	6	**11**
00 - 13:59	5	3	**8**
00 - 14:59	2	6	**8**
00 - 15:59	5	7	**12**
00 - 16:59	9	2	**11**
00 - 17:59	5	5	**10**
00 - 18:59	5	11	**16**
00 - 19:59	2	4	**6**
00 - 20:59	3	2	**5**
00 - 21:59	1	1	**2**
00 - 22:59	0	0	**0**
00 - 23:59	3	0	**3**
Totals	**65**	**67**	**132**
Peak Time	**09:47 - 10:46**	**00:09 - 01:08**	**00:00 - 00:59**
eak Volume	**5**	**6**	**9**
Peak Time	**15:27 - 16:26**	**18:00 - 18:59**	**15:20 - 16:19**
eak Volume	**11**	**11**	**18**

Harbor Redevelopment
1: 2nd St & Bridge St

Existing (2022) Conditions
Timing Plan: Sat Peak Hour

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	7	244	1	5	266
Future Vol, veh/h	12	7	244	1	5	266
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	8	284	1	6	309

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	452	143	0	0	285	0
Stage 1	285	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	536	879	-	-	1274	-
Stage 1	738	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	533	879	-	-	1274	-
Mov Cap-2 Maneuver	533	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1274	-
HCM Lane V/C Ratio	-	-	0.035	0.005	-
HCM Control Delay (s)	-	-	11	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	57	14	3	53	2	15	5	12	2	7	1
Future Vol, veh/h	1	57	14	3	53	2	15	5	12	2	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	78	19	4	73	3	21	7	16	3	10	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	76	0	0	97	0	0	178	174	88	184	182	75
Stage 1	-	-	-	-	-	-	90	90	-	83	83	-
Stage 2	-	-	-	-	-	-	88	84	-	101	99	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1523	-	-	1496	-	-	784	719	970	777	712	986
Stage 1	-	-	-	-	-	-	917	820	-	925	826	-
Stage 2	-	-	-	-	-	-	920	825	-	905	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1523	-	-	1496	-	-	772	716	970	756	709	986
Mov Cap-2 Maneuver	-	-	-	-	-	-	772	716	-	756	709	-
Stage 1	-	-	-	-	-	-	916	819	-	924	824	-
Stage 2	-	-	-	-	-	-	905	823	-	881	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	9.6	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	825	1523	-	-	1496	-	-	739
HCM Lane V/C Ratio	0.053	0.001	-	-	0.003	-	-	0.019
HCM Control Delay (s)	9.6	7.4	0	-	7.4	0	-	10
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1

Harbor Redevelopment
3: 3rd St & River St

Existing (2022) Conditions
Timing Plan: Sat Peak Hour

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	23	20	6	4	1
Future Vol, veh/h	4	23	20	6	4	1
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	41	36	11	7	2
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	6.8	7.4	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	77%	15%	0%
Vol Thru, %	23%	0%	80%
Vol Right, %	0%	85%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	26	27	5
LT Vol	20	4	0
Through Vol	6	0	4
RT Vol	0	23	1
Lane Flow Rate	46	48	9
Geometry Grp	1	1	1
Degree of Util (X)	0.054	0.048	0.01
Departure Headway (Hd)	4.18	3.548	3.934
Convergence, Y/N	Yes	Yes	Yes
Cap	860	1007	910
Service Time	2.191	1.577	1.955
HCM Lane V/C Ratio	0.053	0.048	0.01
HCM Control Delay	7.4	6.8	7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.2	0

Harbor Redevelopment — Existing (2022) Conditions
4: River St & Joseph Jenkins Roberts St — Timing Plan: Sat Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	1	3	10	1
Future Volume (Veh/h)	1	4	1	3	10	1
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.48	0.48	0.48	0.48	0.48	0.48
Hourly flow rate (vph)	2	8	2	6	21	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			10		16	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			10		16	6
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		98	100
cM capacity (veh/h)			1610		1001	1077

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	10	8	23
Volume Left	0	2	21
Volume Right	8	0	2
cSH	1700	1610	1007
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	1.8	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	8.7
Approach LOS			A

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Harbor Redevelopment
1: 2nd St & Bridge St

Build (2025) Conditions
Timing Plan: Sat Peak Hour

Intersection						
Int Delay, s/veh	351					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	286	130	360	1	5	274
Future Vol, veh/h	286	130	360	1	5	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	572	260	720	2	10	548

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1015	361	0	0	722	0
Stage 1	721	-	-	-	-	-
Stage 2	294	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 234	636	-	-	876	-
Stage 1	~ 443	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 230	636	-	-	876	-
Mov Cap-2 Maneuver	~ 230	-	-	-	-	-
Stage 1	~ 443	-	-	-	-	-
Stage 2	718	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 890.8	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	287	876	-
HCM Lane V/C Ratio	-	-	2.899	0.011	-
HCM Control Delay (s)	-	-	$ 890.8	9.2	0.1
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	72.4	0	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Harbor Redevelopment
1: 2nd St & Bridge St

Build (2025) Conditions - Officer Control
Timing Plan: Sat Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	286	130	360	1	5	274
Future Volume (vph)	286	130	360	1	5	274
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		0.95			0.95
Frt	0.96		1.00			1.00
Flt Protected	0.97		1.00			1.00
Satd. Flow (prot)	1725		3538			3536
Flt Permitted	0.97		1.00			0.93
Satd. Flow (perm)	1725		3538			3308
Peak-hour factor, PHF	0.50	0.50	0.50	0.50	0.50	0.50
Adj. Flow (vph)	572	260	720	2	10	548
RTOR Reduction (vph)	17	0	0	0	0	0
Lane Group Flow (vph)	815	0	722	0	0	558
Turn Type	Prot		NA		Perm	NA
Protected Phases	3		2			2
Permitted Phases					2	
Actuated Green, G (s)	29.3		16.4			16.4
Effective Green, g (s)	29.3		16.4			16.4
Actuated g/C Ratio	0.51		0.28			0.28
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	875		1005			940
v/s Ratio Prot	c0.47		c0.20			
v/s Ratio Perm						0.17
v/c Ratio	0.93		0.72			0.59
Uniform Delay, d1	13.3		18.6			17.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	16.2		2.5			1.0
Delay (s)	29.5		21.1			18.8
Level of Service	C		C			B
Approach Delay (s)	29.5		21.1			18.8
Approach LOS	C		C			B

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	57.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Harbor Redevelopment
1: 2nd St & Bridge St

Build (2025) Conditions - Officer Control
Timing Plan: Sat Peak Hour

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	832	722	558
v/c Ratio	0.93	0.72	0.59
Control Delay	33.2	23.7	21.3
Queue Delay	0.0	0.0	0.0
Total Delay	33.2	23.7	21.3
Queue Length 50th (ft)	243	122	91
Queue Length 95th (ft)	136	84	66
Internal Link Dist (ft)	441	435	437
Turn Bay Length (ft)			
Base Capacity (vph)	948	1048	980
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	0.69	0.57

Intersection Summary

Intersection												
Int Delay, s/veh	29.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	59	14	3	55	2	15	5	12	117	102	115
Future Vol, veh/h	1	59	14	3	55	2	15	5	12	117	102	115
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	50	50	50	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	118	28	6	110	4	30	10	24	234	204	230

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	114	0	0	146	0	0	477	262	132	277	274	112
Stage 1	-	-	-	-	-	-	136	136	-	124	124	-
Stage 2	-	-	-	-	-	-	341	126	-	153	150	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1475	-	-	1436	-	-	498	643	917	675	633	941
Stage 1	-	-	-	-	-	-	867	784	-	880	793	-
Stage 2	-	-	-	-	-	-	674	792	-	849	773	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1475	-	-	1436	-	-	281	640	917	647	630	941
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	640	-	647	630	-
Stage 1	-	-	-	-	-	-	866	783	-	879	790	-
Stage 2	-	-	-	-	-	-	376	789	-	815	772	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	14.8	42.8
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	431	1475	-	-	1436	-	-	718
HCM Lane V/C Ratio	0.148	0.001	-	-	0.004	-	-	0.93
HCM Control Delay (s)	14.8	7.4	0	-	7.5	0	-	42.8
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	13

Harbor Redevelopment
3: 3rd St & River St

Build (2025) Conditions
Timing Plan: Sat Peak Hour

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	81	21	6	272	1
Future Vol, veh/h	4	81	21	6	272	1
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	162	42	12	544	2
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.2	8.6	15.9
HCM LOS	A	A	C

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	78%	5%	0%
Vol Thru, %	22%	0%	100%
Vol Right, %	0%	95%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	27	85	273
LT Vol	21	4	0
Through Vol	6	0	272
RT Vol	0	81	1
Lane Flow Rate	54	170	546
Geometry Grp	1	1	1
Degree of Util (X)	0.076	0.224	0.668
Departure Headway (Hd)	5.096	4.74	4.407
Convergence, Y/N	Yes	Yes	Yes
Cap	699	755	819
Service Time	3.153	2.784	2.444
HCM Lane V/C Ratio	0.077	0.225	0.667
HCM Control Delay	8.6	9.2	15.9
HCM Lane LOS	A	A	C
HCM 95th-tile Q	0.2	0.9	5.2

Harbor Redevelopment — Build (2025) Conditions
4: River St & Joseph Jenkins Roberts St — Timing Plan: Sat Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	272	1	3	10	1
Future Volume (Veh/h)	1	272	1	3	10	1
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	544	2	6	20	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			546		284	274
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			546		284	274
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)			1023		705	765

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	546	8	22
Volume Left	0	2	20
Volume Right	544	0	2
cSH	1700	1023	710
Volume to Capacity	0.32	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	2.1	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	2.1	10.2
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		