

## J.S. PECHULIS / LAND DEVELOPMENT SERVICES, INC.



- *Site Design*
- *Permitting*
- *Construction Management*
- *Traffic Analysis*

181 Notre Dame Street  
Westfield, MA 01085

Web: [www.jsplds.com](http://www.jsplds.com)

Phone: 413-564-0404  
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July 27, 2015

Robert Levesque  
R. Levesque Associates, Inc.  
& Ecotec Environmental Associates  
29 Broad Street  
Westfield, MA 01086

RE: Proposed Redevelopment Project – Route 9, Haydenville (Williamsburg)

Dear Mr. Levesque:

J.S.Pechulis/Land Development Services, Inc. (JSP/LDS) has been retained to evaluate the traffic access plan for the proposed redevelopment project located at 142 Main Street (Route 9) in Haydenville, Massachusetts. Outlined below is the assessment of traffic access, trip generation, and driveway operations for the proposed project.

### **Project Description**

The project includes the redevelopment of a single 52,200 sf lot located on the southwest corner of the Main Street and Bridge Street intersection in Haydenville. The parcel is located in the Village Mixed zone and currently accommodates a standalone branch bank with drive thru windows and ATM service. The proposed project consists of razing the existing structure to make way for a standalone coffee/donut restaurant with drive-thru window service. The existing driveways along Main Street will be retained and reused with minor adjustments while the driveway along Bridge Street will be relocated to the north. Parking for 17 vehicles will be provided.

### **Existing Traffic Conditions**

Commuter period traffic counts were collected at the intersection of Main Street and Bridge Street as well as each of the three site drives. The counts were conducted between 7-9 AM and 4-6 PM, which reflect the typical peak commuter periods along collector roadways such as Main Street, Bridge Street and High Street which is located opposite Bridge Street to form a four-way intersection.

During the morning commuter period, the peak hour traffic was observed to be between 7:45 and 8:45 AM. Traffic volumes along Main Street were measured at approximately 685 vehicles during this peak hour with 70% of traffic heading in the eastbound direction. During the evening two hour count period, the peak hour was measured between 4:15 and 5:15 PM. The traffic flow during this hour was measured at approximately 760 vehicles with 65% traveling in the eastbound direction.

Site generated traffic activity for the existing bank was relatively low. During each peak hour, site generated traffic was measured at a combined 10 vehicles entering and exiting the property.

Figure 1 presents existing peak hour traffic volumes.

### **Proposed Site Access and Circulation**

The proposed development plan calls for three driveways, two along Main Street and one along Bridge Street. The exit drive along Main Street will be relocated to the west approximately 50 feet and modified to provide tighter radii and delineated left and right turn lanes. The entrance drive on Main Street will be narrowed to 18 feet and the radii will also be tightened to better control entrance speeds.

The existing Bridge Street drive will be relocated approximately 100 feet to the north to better work with the site layout and topography. The drive will be restricted to a single lane for exit vehicles only.

Parking for the restaurant customers will be provided in the front of the building which faces Main Street, as well as parking to the west of the building.

The restaurant is proposed to provide drive-thru service located behind the building. The drive-thru lane will follow a counter clockwise travel flow and starts opposite the Main Street entrance drive and continues to the rear of the building, providing access to the menu order board and the pick-up window. In total, approximately 12 vehicles will be accommodated in the window service storage lane. The industry standard drive thru window stacking lanes is typically 8 vehicles.

A travel lane or bypass lane will be provided adjacent to the drive-thru window lane to provide passage of vehicles to the Bridge Street exit. The drive-thru lane and bypass lane merge to form a single egress lane at Bridge Street.

### **Trip Generation**

Trip generation for the existing use and proposed project was based on data provided in the Institute of Transportation Engineers (ITE) Trip Generation publication 9<sup>th</sup> edition, which serves as the industry standard for forecasting traffic generation. Land use specific rates for daily and peak hour periods were applied to each scenario of the development program to estimate the traffic activity along the project site drives.

In addition to ITE provided data, JSP gathered peak hour trip generation data for seven separate locations of the same land use as proposed. These locations included stand alone restaurants with a drive-thru window. This data yielded the comparable trip generation rates as ITE for all peak hours when average together. Peak hour specific splits for walk-in and drive-thru trips were also identified. During the morning peak 68% of all trips utilize the drive-thru window. During the evening peak hour 58% of site traffic used the drive-thru window.

Existing traffic activity at the project site was measured during the peak commuter periods along the adjacent streets. The data collected was significantly lower than the ITE rates as the existing bank hours were limited during the measured peak hours of the adjacent street traffic.

Table 1 summarizes the weekday trip generation calculations for the existing Bank with Drive-in service (ITE Code 912) and the proposed Coffee/Donut Shop with Drive-Thru Window (ITE Code 937).

**Table 1**  
**Trip Generation Comparison Summary**

		<u>Existing Bank</u>	<u>Proposed Restaurant</u>	<u>Trip Change</u>
Weekday Daily	In	169	983	814
	Out	169	983	814
	Total	338	1966	1628
Weekday Morning	In	16	120	104
	Out	12	121	109
	Total	28	241	213
Weekday Evening	In	27	52	25
	Out	28	52	24
	Total	55	103	48

Based on ITE 9<sup>th</sup> Edition Data. LUC 912: Drive-in Bank, LUC 937: Coffee/Donut shop w Drive-thru.

Convenience uses, such as banks with drive-thru windows, ATMs and fast food restaurants, have been measured to attract a significant amount of pass-by trips. Pass-by trips are trips to specific uses that are drawn from the traffic flow passing a location and are not specific destination trips. Pass-by trips, therefore, are not new or added trips to the adjacent roadway system.

The ITE Handbook database identifies pass-by rates for both bank with drive-thru windows as well as fast food restaurants with drive-thru windows. The bank use as proposed is expected to attract approximately 47% of pass-by trips, while a fast food restaurant use is expected to attract as much as 50% of pass-by trips.

### **Trip Distribution and Assignment**

The projected traffic activity associated with the proposed project was distributed to the surrounding roadway network based on the existing travel patterns measured within the area. Based on the proximity and orientation of the access driveways, convenience, and travel time, the site generated traffic was assigned to the access drives serving the site for the respective morning and evening peak hours.

During the morning peak hour the predominant flow of traffic is in the eastbound direction with approximately 64% of all traffic entering the study area exit along Route 9 eastbound. In the evening, the reverse commute yields 58% percent of all study area traffic traveling in the westbound direction.

Figure 2 represents the 2015 study area volumes with the proposed developments peak hour volumes in place for both the morning and evening peak hours.

### **Traffic Operations**

Traffic operations were measured through the application of HCS2000, Highway Capacity Software version 4.1. The application of HCS2000 is accepted by the Massachusetts Highway Department as the standard tool for measuring traffic operating conditions. HCS2000 uses a report-card style of grading intersection levels of service according to the amount of average delay calculated for the critical movements of each intersection approach. The grades range from the highest level of service, LOS A, to levels of service below acceptable operating capacity, LOS F.

The morning and evening peak hour capacity analyses of site driveways are summarized in Table 2.

**Table 2**  
**LEVEL OF SERVICE SUMMARY**

Intersection	Peak Hour	2015 EXISTING		2015 BUILD	
		Delay	LOS	Delay	LOS
Route 9 at Bridge Street	Weekday AM	15 sec.	C	16 sec.	C
	Weekday PM	18 sec.	C	20 sec.	C
Route 9 at Site Drive In	Weekday AM	9 sec.	A	9 sec.	A
	Weekday PM	8 sec.	A	8 sec.	A
Route 9 at Site Drive Out	Weekday AM	13 sec.	B	13 sec.	B
	Weekday PM	11 sec.	B	13 sec.	B
Bridge Street at Site Drive	Weekday AM	7 sec.	A	9 sec.	A
	Weekday PM	7 sec.	A	9 sec.	A

Note: Delays represent critical movement approach delay conditions

**Summary of Findings**

The proposed project is located along Bridge Street in Haydenville and consists of demolition of an existing single story branch bank with drive-thru teller windows and walk in ATM service. The proposed use includes a coffee/donut restaurant with drive-thru window service. The project will be served by three driveways and onsite parking for 17 vehicles will be provided. The following summarizes findings of the traffic impact assessment.

- The proposed site plan calls for maintaining two curb cuts along Main Street and one along Bridge Street. The Main Street drives will include one entrance and one exit drive, while the Bridge Street drive will be restricted to exit only.
- The project is expected to generate an increase in vehicle activity throughout the day. During the morning peak hour when site traffic is expected to be greatest, the site will generate approximately 240 total vehicle trips (entering and exiting). Traffic levels throughout the day will be significantly less, including evening peak hour volumes which will total approximately 100 vehicle trips.
- Approximately 62% of the site generated traffic is expected to utilize the drive-thru window. This estimate is based on field measured data at a number of similar sites within Western Massachusetts.
- Measured sample data for similar convenience based land uses as the proposed indicate that as much as 50% of the site generated trips are pass-by trips, which are trips drawn from traffic already traveling along the adjacent roadway.
- Calculated traffic operations at the proposed site driveway intersections with Main Street and Bridge Street are within acceptable service levels under the existing traffic demands.
- The proposed redevelopment to include traffic forecasts associated with the coffee/donut shop will not introduce significant delays or impacts to traffic conditions along the adjacent Streets or along the three site drive locations.

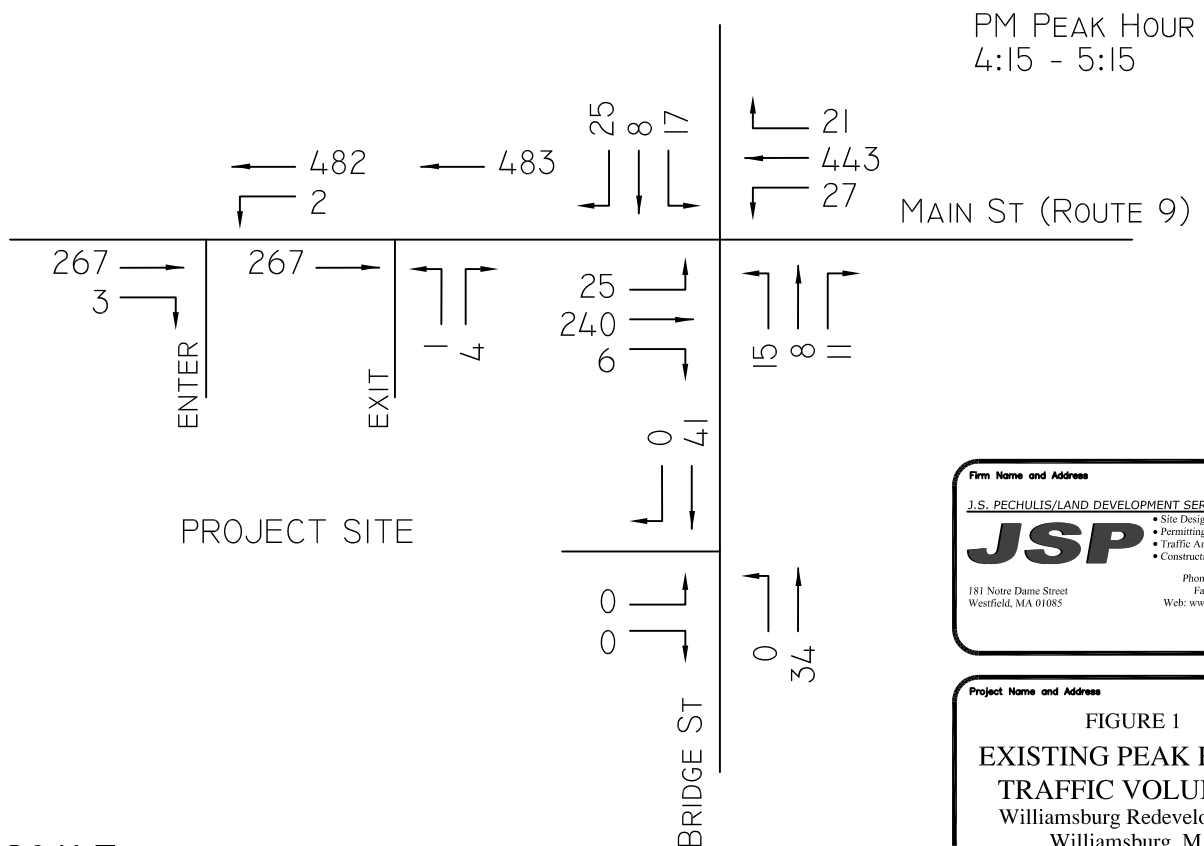
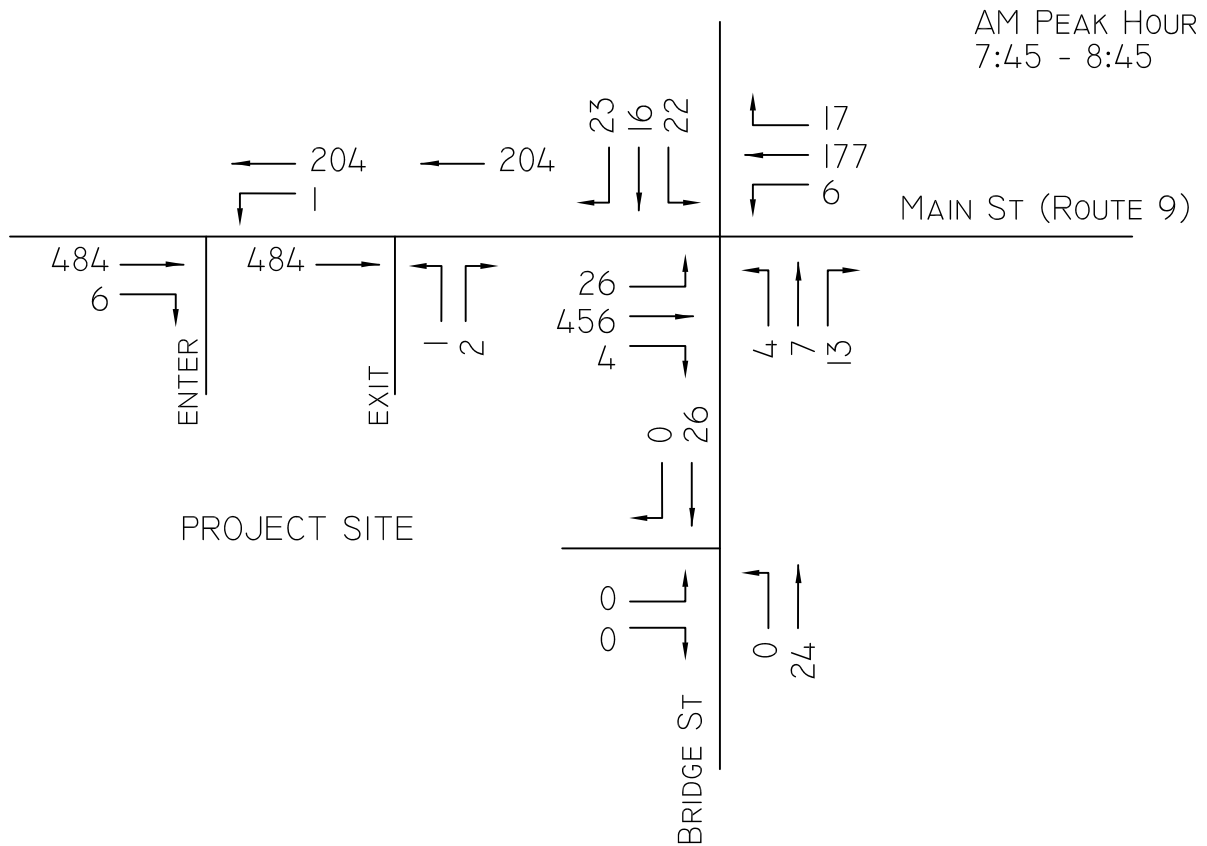
Sincerely,



Jeffrey S. Pechulis  
JSP Land Development

**Attachments:**

Peak Hour Traffic Volumes  
Traffic Counts  
Trip Generation Worksheet  
Capacity Analysis Worksheets



Firm Name and Address

J.S. PECHULTS/LAND DEVELOPMENT SERVICES, INC.

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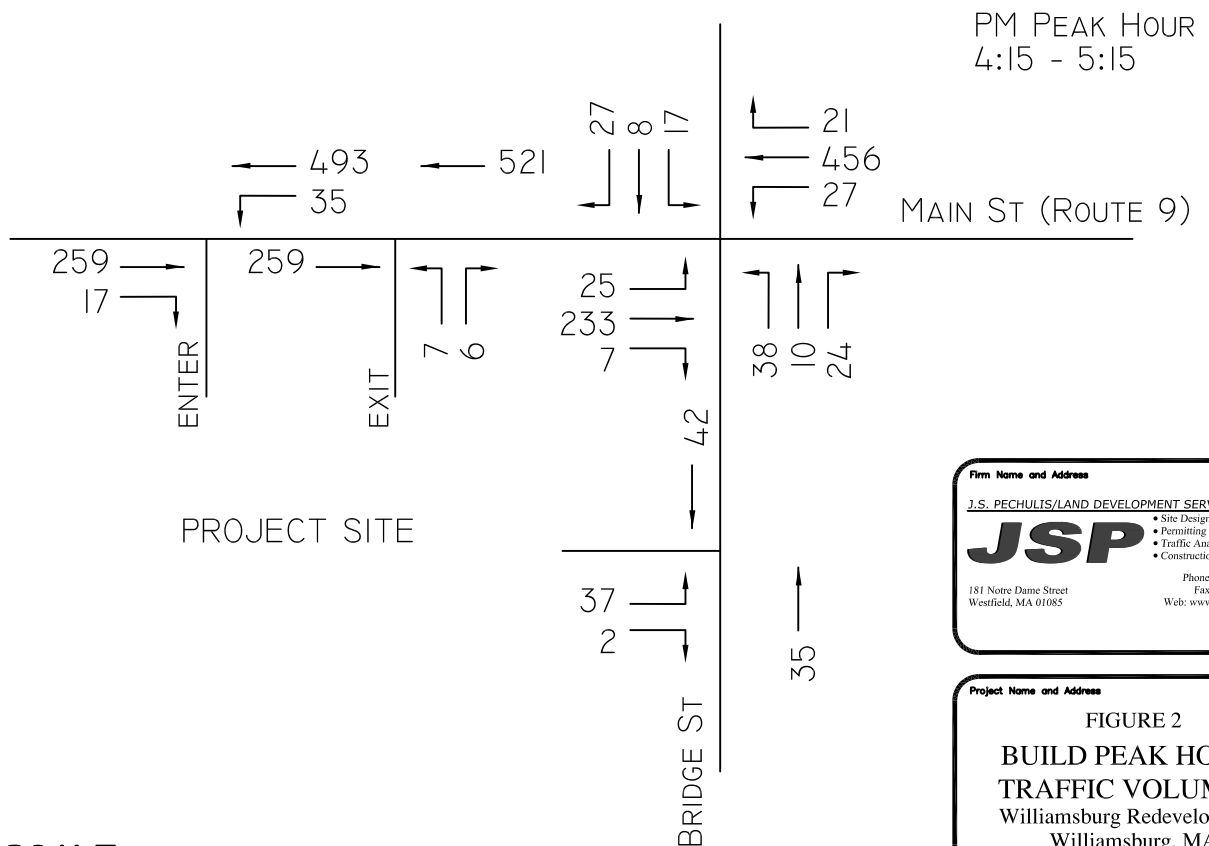
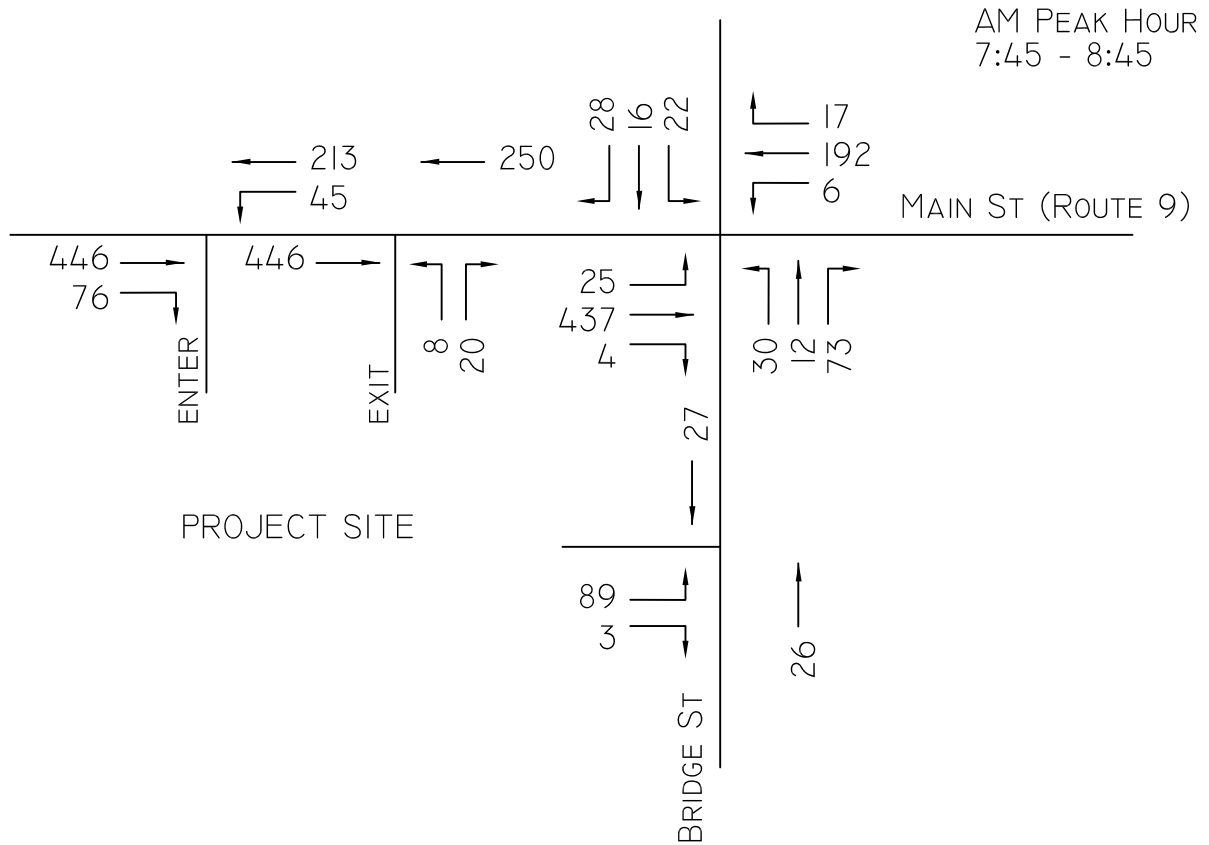
Project Name and Address

FIGURE 1

EXISTING PEAK HOUR  
TRAFFIC VOLUMES

Williamsburg Redevelopment  
Williamsburg, MA

NOT TO SCALE



Firm Name and Address

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Project Name and Address

FIGURE 2  
BUILD PEAK HOUR  
TRAFFIC VOLUMES  
Williamsburg Redevelopment  
Williamsburg, MA

NOT TO SCALE

# Turning Movement Count Summary

## Bridge St at Route 9

Site Code : Williamsburg  
N-S Street : Bridge St  
E-W Street : Route 9  
Weather : overcast

PAGE: 1  
FILE: Rt9BridgeAM

Movements by : Primary

DATE: 7/15/15

Time Begin	.... Truck	From LT	East THRU	.... RT	.... Truck	From LT	West THRU	.... RT	.... Truck	From LT	South THRU	.... RT	.... Truck	From LT	North THRU	.... RT	Vehicle Total	Truck Total
7:00 AM	0	1	31	0	0	3	86	0	0	1	1	7	0	4	0	3	137	0
7:15 AM	0	5	32	0	0	6	87	3	1	4	2	4	1	4	2	2	153	2
7:30 AM	2	2	42	3	2	4	126	1	0	1	5	1	0	6	3	3	201	4
7:45 AM	1	1	37	6	2	8	138	1	0	1	0	2	0	11	3	9	220	3
HR TOTAL	3	9	142	9	4	21	437	5	1	7	8	14	1	25	8	17	711	9
8:00 AM	4	2	53	1	1	8	121	2	0	2	1	6	0	4	5	5	215	5
8:15 AM	1	1	52	10	2	2	113	1	0	1	4	4	0	6	4	6	207	3
8:30 AM	0	2	50	2	2	10	124	0	0	0	3	2	0	3	5	5	208	2
8:45 AM	0	1	46	2	2	12	104	0	0	0	1	3	0	8	1	10	190	2
HR TOTAL	5	6	201	15	7	32	462	3	0	3	9	15	0	21	15	26	820	12
DAY TOTAL	8	15	343	24	11	53	899	8	1	10	17	29	1	46	23	43	1,531	21

## PEAK PERIOD ANALYSIS FOR THE PERIOD 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HOUR FACTOR	.....VOLUMES.....					.....PERCENTS.....			
			Truck	Left	Thru	Right	Total	Truck	Left	Thru	Right
East	8:00 AM	0.89	5	6	201	15	222	2	3	91	7
West	7:45 AM	0.90	7	28	496	4	528	1	5	94	1
South	7:00 AM	0.68	1	7	8	14	29	3	24	28	48
North	7:45 AM	0.72	0	24	17	25	66	0	36	26	38

### Entire Intersection

East	7:45 AM	0.87	6	6	192	19	217	3	3	88	9
West		0.90	7	28	496	4	528	1	5	94	1
South		0.72	0	4	8	14	26	0	15	31	54
North		0.72	0	24	17	25	66	0	36	26	38
Intersection		0.97									

Seasonal Adjustment Factor: 0.92 Seasonally Adjusted Volumes (From MassHighway Factors)

		Truck	Left	Thru	Right	Total
East	7:45 AM	6	6	177	17	200
West		6	26	456	4	486
South		0	4	7	13	24
North		0	22	16	23	61

Forecast Adjustment Factor: 1.00 Annual growth rate: 1.0% Forecast years: 0

		Truck	Left	Thru	Right	Total
East	7:45 AM	6	6	177	17	200
West		6	26	456	4	486
South		0	4	7	13	24
North		0	22	16	23	61

# Turning Movement Count Summary

## Bridge St at Route 9

Site Code : Williamsburg  
N-S Street : Bridge St  
E-W Street : Route 9  
Weather : overcast

PAGE: 1  
FILE: Rt9BridgePM

Movements by : Primary

DATE: 7/14/15

Time Begin	.... Truck	From LT	East THRU	.... RT	.... Truck	From LT	West THRU	.... RT	.... Truck	From LT	South THRU	.... RT	.... Truck	From LT	North THRU	.... RT	Vehicle Total	Truck Total
4:00 PM	1	3	84	6	0	3	54	0	0	0	6	3	0	0	0	6	166	1
4:15 PM	0	7	103	5	0	4	66	2	0	8	1	4	0	6	4	13	223	0
4:30 PM	0	15	125	5	0	11	69	1	0	1	4	3	1	5	2	6	248	1
4:45 PM	0	5	126	4	2	6	76	2	0	3	1	2	0	3	1	8	239	2
HR TOTAL	1	30	438	20	2	24	265	5	0	12	12	12	1	14	7	33	876	4
5:00 PM	0	2	127	9	1	6	50	2	0	4	3	3	1	4	2	0	214	2
5:15 PM	2	4	117	8	0	4	63	6	0	1	1	0	0	3	4	0	213	2
5:30 PM	0	4	123	4	0	1	49	2	0	1	4	1	0	5	3	7	204	0
5:45 PM	1	2	126	4	0	5	86	1	0	2	1	1	0	7	0	1	237	1
HR TOTAL	3	12	493	25	1	16	248	11	0	8	9	5	1	19	9	8	868	5
DAY TOTAL	4	42	931	45	3	40	513	16	0	20	21	17	2	33	16	41	1,744	9

## PEAK PERIOD ANALYSIS FOR THE PERIOD 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HOUR FACTOR	.....VOLUMES.....					.....PERCENTS.....			
			Truck	Left	Thru	Right	Total	Truck	Left	Thru	Right
East	4:30 PM	0.95	2	26	495	26	547	0	5	90	5
West	4:30 PM	0.87	3	27	258	11	296	1	9	87	4
South	4:15 PM	0.71	0	16	9	12	37	0	43	24	32
North	4:15 PM	0.61	2	18	9	27	54	4	33	17	50

### Entire Intersection

East	4:15 PM	0.92	0	29	481	23	533	0	5	90	4
West		0.87	3	27	261	7	295	1	9	88	2
South		0.71	0	16	9	12	37	0	43	24	32
North		0.61	2	18	9	27	54	4	33	17	50
Intersection		0.93									

Seasonal Adjustment Factor: 0.92      Seasonally Adjusted Volumes      (From MassHighway Factors)

		Truck	Left	Thru	Right	Total
East	4:15 PM	0	27	443	21	490
West		3	25	240	6	271
South		0	15	8	11	34
North		2	17	8	25	50

Forecast Adjustment Factor: 1.00      Annual growth rate: 1.0%      Forecast years: 0

		Truck	Left	Thru	Right	Total
East	4:15 PM	0	27	443	21	490
West		3	25	240	6	271
South		0	15	8	11	34
North		2	17	8	25	50



# Turning Movement Count Summary

Site at Route 9

Site Code : Williamsburg  
N-S Street : Site  
E-W Street : Route 9  
Weather : overcast

PAGE: 1  
FILE: Rt9SiteAM  
DATE: 7/15/15

Movements by : Primary

Time Begin	.... Truck	From LT	East THRU	.... RT	.... Truck	From LT	West THRU	.... RT	.... Truck	From LT	South THRU	.... RT	.... Truck	From LT	North THRU	.... RT	Vehicle Total	Truck Total
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HR TOTAL	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0
8:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0
8:45 AM	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	3	0
HR TOTAL	0	1	0	0	0	0	0	6	0	1	0	2	0	0	0	0	10	0
DAY TOTAL	0	1	0	0	0	0	0	7	0	1	0	3	0	0	0	0	12	0

## PEAK PERIOD ANALYSIS FOR THE PERIOD 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HOUR FACTOR	.....VOLUMES.....					.....PERCENTS.....			
			Truck	Left	Thru	Right	Total	Truck	Left	Thru	Right
East	8:00 AM	0.25	0	1	0	0	1	0	100	0	0
West	8:00 AM	0.50	0	0	0	6	6	0	0	0	100
South	8:00 AM	0.75	0	1	0	2	3	0	33	0	67
North	7:00 AM	0.00	0	0	0	0	0	0	0	0	0

### Entire Intersection

East	8:00 AM	0.25	0	1	0	0	1	0	100	0	0
West		0.50	0	0	0	6	6	0	0	0	100
South		0.75	0	1	0	2	3	0	33	0	67
North		0.00	0	0	0	0	0	0	0	0	0
Intersection		0.83									

Seasonal Adjustment Factor: 0.92 (From MassHighway Factors)

Seasonal Adjustment Factor:		0.92	Seasonally Adjusted Volumes					(From MassHighway Factors)
			Truck	Left	Thru	Right	Total	
East	8:00 AM		0	1	0	0	1	
West			0	0	0	6	6	
South			0	1	0	2	3	
North			0	0	0	0	0	

Forecast Adjustment Factor: 1.00 Annual growth rate: 1.0% Forecast years: 0

		0 Year Forecast Volumes				
		Truck	Left	Thru	Right	Total
East	8:00 AM	0	1	0	0	1
West		0	0	0	6	6
South		0	1	0	2	3
North		0	0	0	0	0

# Turning Movement Count Summary

## Bridge St at Route 9

Site Code : Williamsburg  
N-S Street : Bridge St  
E-W Street : Route 9  
Weather : overcast

PAGE: 1  
FILE: Route9SitePM

Movements by : Primary

DATE: 7/14/15

Time Begin	..... Truck	From LT	East THRU	..... RT	..... Truck	From LT	West THRU	..... RT	..... Truck	From LT	South THRU	..... RT	..... Truck	From LT	North THRU	..... RT	Vehicle Total	Truck Total
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0
HR TOTAL	0	1	0	0	0	0	0	2	0	2	0	3	0	0	0	0	8	0
5:00 PM	0	1	0	0	0	0	0	1	0	0	0	2	0	0	0	0	4	0
5:15 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	4	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HR TOTAL	0	1	0	0	0	0	0	3	0	2	0	2	0	0	0	0	8	0
DAY TOTAL	0	2	0	0	0	0	0	5	0	4	0	5	0	0	0	0	16	0

### PEAK PERIOD ANALYSIS FOR THE PERIOD 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HOUR FACTOR	.....VOLUMES.....					.....PERCENTS.....			
			Truck	Left	Thru	Right	Total	Truck	Left	Thru	Right
East	4:15 PM	0.50	0	2	0	0	2	0	100	0	0
West	4:15 PM	0.38	0	0	0	3	3	0	0	0	100
South	4:00 PM	0.63	0	2	0	3	5	0	40	0	60
North	4:00 PM	0.00	0	0	0	0	0	0	0	0	0

#### Entire Intersection

East	4:15 PM	0.50	0	2	0	0	2	0	100	0	0
West		0.38	0	0	0	3	3	0	0	0	100
South		0.63	0	1	0	4	5	0	20	0	80
North		0.00	0	0	0	0	0	0	0	0	0
Intersection		0.63									

Seasonal Adjustment Factor:

0.92

#### Seasonally Adjusted Volumes

(From MassHighway Factors)

		Truck	Left	Thru	Right	Total
East	4:15 PM	0	2	0	0	2
West		0	0	0	3	3
South		0	1	0	4	5
North		0	0	0	0	0

Forecast Adjustment Factor:

1.00

Annual growth rate:

1.0%

Forecast years: 0

#### 0 Year Forecast Volumes

		Truck	Left	Thru	Right	Total
East	4:15 PM	0	2	0	0	2
West		0	0	0	3	3
South		0	1	0	4	5
North		0	0	0	0	0

**TRIP GENERATION WORKSHEET**  
**ITE TRIP GENERATION, 9TH Edition**

Project Name:	Williamsburg Redevelopment	Address:	142 Main Street
Existing Building size:	2.28 ksf		Williamsburg (Haydenville), MA
Proposed Building size:	2.4 ksf		

Based on ITE Trip Generation 9th Edition

**ITE LUC 912: Drive-In Bank**

Trips per 1000 sf

	<u>Ave. Rate</u>	<u>Trip Total</u>
Weekday	148.15	338
AM PH of Street	12.08	28
PM PH of Street	24.3	55
AM PH of Store	17.57	40
PM PH of Store	26.69	61
Saturday	86.32	197
Sat PH of Store	26.31	60
Sunday	31.9	73
Sun PH of Store	4.78	11

**ITE LUC 937: Coffe/Donut Shop with Drive-Through Window**

Trips per 1000 sf

	<u>Ave. Rate</u>	<u>Trip Total</u>
Weekday	818.58	1,965
AM PH of Street	100.58	241
PM PH of Street	42.8	103
AM PH of Store	101.4	243
PM PH of Store	36.16	87
Saturday		0
Sat PH of Store	84.52	203
Sunday		0
Sun PH of Store		0

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information			
Analyst	JSP			Intersection	Route9 at Bridge		
Agency/Co.	JSP			Jurisdiction	Local		
Date Performed	7/20/2015			Analysis Year	2015		
Analysis Time Period	AM Peak						
Project Description Williamsburg Redevelopment							
East/West Street: Route 9				North/South Street: Bridge Street			
Intersection Orientation: East-West				Study Period (hrs): 1.00			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	26	456	4	6	177	17	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate (veh/h)	27	480	4	6	186	17	
Proportion of heavy vehicles, P <sub>HV</sub>	1	--	--	3	--	--	
Median type	Undivided						
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LTR			LTR			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	4	7	13	22	16	23	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly Flow Rate (veh/h)	4	7	13	23	16	24	
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0	
Percent grade (%)	0			0			
Flared approach		N			N		
Storage		0			0		
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Control Delay, Queue Length, Level of Service							
Approach	EB	WB	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LTR	LTR		LTR			LTR
Volume, v (vph)	27	6		24			63
Capacity, c <sub>m</sub> (vph)	1375	1074		423			418
v/c ratio	0.02	0.01		0.06			0.15
Queue length (95%)	0.06	0.02		0.18			0.53
Control Delay (s/veh)	7.7	8.4		14.0			15.1
LOS	A	A		B			C
Approach delay (s/veh)	--	--	14.0			15.1	
Approach LOS	--	--	B			C	

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information			
Analyst	JSP			Intersection	Route9 at Bridge		
Agency/Co.	JSP			Jurisdiction	Local		
Date Performed	7/20/2015			Analysis Year	2015		
Analysis Time Period	PM Peak						
Project Description Williamsburg Redevelopment							
East/West Street: Route 9				North/South Street: Bridge Street			
Intersection Orientation: East-West				Study Period (hrs): 1.00			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	25	240	6	27	443	21	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly Flow Rate (veh/h)	26	258	6	29	476	22	
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	1	--	--	
Median type	Undivided						
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LTR			LTR			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	15	8	11	17	8	25	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly Flow Rate (veh/h)	16	8	11	18	8	26	
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0	
Percent grade (%)	0			0			
Flared approach		N			N		
Storage		0			0		
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration		LTR			LTR		
Control Delay, Queue Length, Level of Service							
Approach	EB	WB	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LTR	LTR		LTR			LTR
Volume, v (vph)	26	29		35			52
Capacity, c <sub>m</sub> (vph)	1076	1306		321			360
v/c ratio	0.02	0.02		0.11			0.14
Queue length (95%)	0.07	0.07		0.37			0.50
Control Delay (s/veh)	8.4	7.8		17.6			16.7
LOS	A	A		C			C
Approach delay (s/veh)	--	--	17.6			16.7	
Approach LOS	--	--	C			C	

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route9 at Bridge			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	AM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Bridge Street				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	27	437	5	6	192	17		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate (veh/h)	28	460	5	6	202	17		
Proportion of heavy vehicles, P <sub>HV</sub>	1	--	--	3	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LTR			LTR				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	30	12	73	22	16	28		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		
Hourly Flow Rate (veh/h)	31	12	76	23	16	29		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
Volume, v (vph)	28	6		119			68	
Capacity, c <sub>m</sub> (vph)	1356	1091		444			397	
v/c ratio	0.02	0.01		0.27			0.17	
Queue length (95%)	0.06	0.02		1.09			0.62	
Control Delay (s/veh)	7.7	8.3		16.1			15.9	
LOS	A	A		C			C	
Approach delay (s/veh)	--	--	16.1			15.9		
Approach LOS	--	--	C			C		

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route9 at Bridge			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	PM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Bridge Street				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
<b>Vehicle Volumes and Adjustments</b>								
<b>Major Street</b>	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	25	233	7	27	456	21		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93		
Hourly Flow Rate (veh/h)	26	250	7	29	490	22		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	1	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LTR			LTR				
Upstream Signal		0			0			
<b>Minor Street</b>	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	38	10	24	17	8	27		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93		
Hourly Flow Rate (veh/h)	40	10	25	18	8	29		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		LTR			LTR			
<b>Control Delay, Queue Length, Level of Service</b>								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
Volume, v (vph)	26	29		75			55	
Capacity, c <sub>m</sub> (vph)	1064	1314		317			357	
v/c ratio	0.02	0.02		0.24			0.15	
Queue length (95%)	0.08	0.07		0.92			0.54	
Control Delay (s/veh)	8.5	7.8		19.9			16.9	
LOS	A	A		C			C	
Approach delay (s/veh)	--	--	19.9			16.9		
Approach LOS	--	--	C			C		

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site In			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	AM Peak							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	484	6	1	203	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	537	6	1	225	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	0	0	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT						
Volume, v (vph)		1						
Capacity, c <sub>m</sub> (vph)		1036						
v/c ratio		0.00						
Queue length (95%)		0.00						
Control Delay (s/veh)		8.5						
LOS		A						
Approach delay (s/veh)	--	--						
Approach LOS	--	--						



## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site In			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	PM Peak							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	267	3	2	481	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	296	3	2	534	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	0	0	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT						
Volume, v (vph)		2						
Capacity, c <sub>m</sub> (vph)		1274						
v/c ratio		0.00						
Queue length (95%)		0.00						
Control Delay (s/veh)		7.8						
LOS		A						
Approach delay (s/veh)	--	--						
Approach LOS	--	--						

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information			
Analyst	JSP			Intersection	Route 9 Site In		
Agency/Co.	JSP			Jurisdiction	Local		
Date Performed	7/20/2015			Analysis Year	2015		
Analysis Time Period	AM Peak Build						
Project Description Williamsburg Redevelopment							
East/West Street: Route 9				North/South Street: Site			
Intersection Orientation: East-West				Study Period (hrs): 1.00			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	0	446	76	45	205	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate (veh/h)	0	495	84	50	227	0	
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--	
Median type	Undivided						
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	0	0	0	0	0	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate (veh/h)	0	0	0	0	0	0	
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0	
Percent grade (%)	0			0			
Flared approach		N			N		
Storage		0			0		
RT Channelized?			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Control Delay, Queue Length, Level of Service							
Approach	EB	WB	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		LT					
Volume, v (vph)		50					
Capacity, c <sub>m</sub> (vph)		1005					
v/c ratio		0.05					
Queue length (95%)		0.16					
Control Delay (s/veh)		8.8					
LOS		A					
Approach delay (s/veh)	--	--					
Approach LOS	--	--					

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information			
Analyst	JSP			Intersection	Route 9 Site In		
Agency/Co.	JSP			Jurisdiction	Local		
Date Performed	7/20/2015			Analysis Year	2015		
Analysis Time Period	PM Peak Build						
Project Description Williamsburg Redevelopment							
East/West Street: Route 9				North/South Street: Site			
Intersection Orientation: East-West				Study Period (hrs): 1.00			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	0	259	17	35	486	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate (veh/h)	0	287	18	38	540	0	
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--	
Median type	Undivided						
RT Channelized?			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	0	0	0	0	0	0	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly Flow Rate (veh/h)	0	0	0	0	0	0	
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0	
Percent grade (%)	0			0			
Flared approach		N			N		
Storage		0			0		
RT Channelized?			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Control Delay, Queue Length, Level of Service							
Approach	EB	WB	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration		LT					
Volume, v (vph)		38					
Capacity, c <sub>m</sub> (vph)		1267					
v/c ratio		0.03					
Queue length (95%)		0.09					
Control Delay (s/veh)		7.9					
LOS		A					
Approach delay (s/veh)	--	--					
Approach LOS	--	--					

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site Out			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	AM Peak							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	484	0	0	203	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	537	0	0	225	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	1	0	2	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	1	0	2	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				LR				
Volume, v (vph)				3				
Capacity, c <sub>m</sub> (vph)				475				
v/c ratio				0.01				
Queue length (95%)				0.02				
Control Delay (s/veh)				12.6				
LOS				B				
Approach delay (s/veh)	--	--	12.6					
Approach LOS	--	--	B					

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site Out			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	PM Peak							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	267	0	0	481	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	296	0	0	534	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	1	0	4	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	1	0	4	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				LR				
Volume, v (vph)				5				
Capacity, c <sub>m</sub> (vph)				605				
v/c ratio				0.01				
Queue length (95%)				0.02				
Control Delay (s/veh)				11.0				
LOS				B				
Approach delay (s/veh)	--	--	11.0					
Approach LOS	--	--	B					

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site Out			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	AM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	446	0	0	205	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	495	0	0	227	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	8	0	20	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	8	0	22	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				LR				
Volume, v (vph)				30				
Capacity, c <sub>m</sub> (vph)				516				
v/c ratio				0.06				
Queue length (95%)				0.19				
Control Delay (s/veh)				12.4				
LOS				B				
Approach delay (s/veh)	--	--	12.4					
Approach LOS	--	--	B					

## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Route 9 Site Out			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2015			
Analysis Time Period	PM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Route 9				North/South Street: Site				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	259	0	0	486	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	0	287	0	0	540	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	7	0	6	0	0	0		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly Flow Rate (veh/h)	7	0	6	0	0	0		
Proportion of heavy vehicles, P <sub>HV</sub>	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration				LR				
Volume, v (vph)				13				
Capacity, c <sub>m</sub> (vph)				460				
v/c ratio				0.03				
Queue length (95%)				0.09				
Control Delay (s/veh)				13.1				
LOS				B				
Approach delay (s/veh)	--	--	13.1					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY							
<b>General Information</b>				<b>Site Information</b>			
Analyst	JSP			Intersection	Bridge at Site		
Agency/Co.	JSP			Jurisdiction	Local		
Date Performed	7/20/2015			Analysis Year	2016		
Analysis Time Period	AM Peak						
Project Description Williamsburg Redevelopment							
East/West Street: Site				North/South Street: Bridge St			
Intersection Orientation: North-South				Study Period (hrs): 1.00			
<b>Vehicle Volumes and Adjustments</b>							
<b>Major Street</b>	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume	0	24	0	0	26	0	
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75	
Hourly Flow Rate, HFR	0	32	0	0	34	0	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
<b>Minor Street</b>	Westbound			Eastbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume	0	0	0	0	0	0	
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75	
Hourly Flow Rate, HFR	0	0	0	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
<b>Delay, Queue Length, and Level of Service</b>							
Approach	NB	SB	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration	LT						LR
v (vph)	0						0
C (m) (vph)	1591						
v/c	0.00						
95% queue length	0.00						
Control Delay	7.3						
LOS	A						
Approach Delay	--	--					
Approach LOS	--	--					



## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Bridge at Site			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2016			
Analysis Time Period	PM Peak							
Project Description Williamsburg Redevelopment								
East/West Street: Site				North/South Street: Bridge St				
Intersection Orientation: North-South				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	34	0	0	41	0		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	45	0	0	54	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	0	0	0		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	0	0	0	0	0		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	0						0	
C (m) (vph)	1564							
v/c	0.00							
95% queue length	0.00							
Control Delay	7.3							
LOS	A							
Approach Delay	--	--						
Approach LOS	--	--						

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## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Bridge at Site			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2016			
Analysis Time Period	AM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Site				North/South Street: Bridge St				
Intersection Orientation: North-South				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	26	0	0	27	0		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	34	0	0	36	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	89	0	3		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	0	0	118	0	4		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	0						122	
C (m) (vph)	1588						942	
v/c	0.00						0.13	
95% queue length	0.00						0.45	
Control Delay	7.3						9.4	
LOS	A						A	
Approach Delay	--	--				9.4		
Approach LOS	--	--				A		

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## TWO-WAY STOP CONTROL SUMMARY

General Information				Site Information				
Analyst	JSP			Intersection	Bridge at Site			
Agency/Co.	JSP			Jurisdiction	Local			
Date Performed	7/20/2015			Analysis Year	2016			
Analysis Time Period	PM Peak Build							
Project Description Williamsburg Redevelopment								
East/West Street: Site				North/South Street: Bridge St				
Intersection Orientation: North-South				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume	0	35	0	0	42	0		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	46	0	0	56	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Westbound			Eastbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume	0	0	0	37	0	2		
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75		
Hourly Flow Rate, HFR	0	0	0	49	0	2		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (vph)	0						51	
C (m) (vph)	1562						905	
v/c	0.00						0.06	
95% queue length	0.00						0.18	
Control Delay	7.3						9.2	
LOS	A						A	
Approach Delay	--	--				9.2		
Approach LOS	--	--				A		

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