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# The Cannery

## Transportation Impact Analysis

### Salem, Oregon

Date:  
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RENEWS: 12/31/2025

Executive Summary	3
Project Description	5
Introduction	5
Project Description	5
Transit	9
Site Trips	11
Trip Generation	11
Trip Distribution	13
Traffic Volumes	17
Existing Conditions	17
Background Year 2029 Conditions	17
Buildout Year 2029 Conditions	17
Safety Analysis	24
Crash History Review	24
Sight Distance	27
Vision Clearance Triangles	29
Warrant Analysis	29
Operational Analysis	30
Intersection Capacity Analysis	30
Queuing Analysis	32
Potential Mitigation	36
Operational Mitigation	36
Safety Mitigation	39
Conclusions	40

## List of Appendices

- Appendix A – Site Information
- Appendix B – Volumes
- Appendix C - Safety
- Appendix D - Operations

## List of Figures

Figure 1: Vicinity Map (Image from Google Earth)	6
Figure 2: Vicinity Map	10
Figure 3: Trip Distribution & Assignment – AM Peak Hour	15
Figure 4: Trip Distribution & Assignment – PM Peak Hour	16
Figure 5: 2024 Existing Conditions - AM Peak Hour	18
Figure 6: 2024 Existing Conditions - PM Peak Hour	19
Figure 7: Background Year 2029 Conditions – AM Peak Hour	20
Figure 8: Background Year 2029 Conditions – PM Peak Hour	21
Figure 9: Buildout Year 2029 Conditions – AM Peak Hour	22
Figure 10: Buildout Year 2029 Conditions – PM Peak Hour	23

## List of Tables

Table 1: Estimated Breakdown of Proposed Site Uses	7
Table 2: Vicinity Roadway Descriptions	7
Table 3: Study Intersection Descriptions	9
Table 4: Transit Line Description	9
Table 5: Trip Generation Summary – Proposed Development	12
Table 6: Trip Generation Comparison – Proposed vs. Prior Uses	13
Table 7: Collision Type Summary	24
Table 8: Crash Severity and Rate Summary	25
Table 9: Capacity Analysis Summary	30
Table 10: Queuing Analysis Summary	33
Table 11: Potential Mitigation Options - Market Street NE/Center Access & Front Street NE	36
Table 12: Alternative Performance Measures at Market Street NE/Center Access & Front Street NE	37
Table 13: Simulated Delays at Market Street NE/Center Access & Front Street NE	38

## Executive Summary

1. The property located at 1105 Front Street NE in Salem, Oregon has been proposed for mixed-use development consisting of three new buildings and three repurposed buildings. The three new 6-story buildings will provide 371 multifamily homes with ground floor commercial space. The three repurposed buildings will house a mix of commercial uses that include a food hall, eating/drinking establishments, event space, a winery, and small business incubator and vendor spaces. These buildings will also include covered outdoor spaces and a flexible plaza space. Buildout of the site is anticipated to be completed by the year 2029.
2. Total external trip generation was estimated at 268 morning peak hour, 318 evening peak hour, and 3,764 daily trips. After deducting pass-by traffic, the proposed development is anticipated to generate 256 primary trips during the morning peak hour, 288 primary trips during the evening peak hour, and 3,466 primary trips each weekday.
3. Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections; therefore, no safety mitigation is recommended per the crash data analysis.
4. Adequate sightlines are available at all three proposed sight accesses without obstruction from the proposed buildings; however, vehicles utilizing the on-street parking may be present in the sight triangles. Parked vehicles are considered an acceptable temporary obstruction under the vision clearance standards. Additionally, vehicles approaching on the major roadway have adequate SSD looking towards all three access intersections.
5. The proposed buildings lie within the vision clearance areas at the center (Market Street NE) and south (Belmont Alley NE) accesses. Sight distance is an acceptable alternative standard and adequate sight lines are available at these accesses.
6. The preliminary traffic signal analysis determined that signal warrants are not projected to be met at any of the site access intersections under 2029 buildout conditions.
7. All study intersections are projected to operate within standards under all analysis scenarios, except for Market Street NE/Center Access & Front Street NE. Operations on the westbound approach of Market Street NE are anticipated to exceed LOS E during the evening peak hour under 2029 buildout conditions although the approach is not expected to be over capacity.
8. In general, changes in 95th percentile queuing between the year 2029 background and buildout conditions are anticipated to be small, one vehicle or two vehicles.
9. Only one intersection, Front Street NE & OR 99E, is expected to have queues which pose a safety concern. The queue on the southbound approach of Front Street NE to OR 99E is estimated to have the queues that will extend across the PWRR railroad tracks under both morning and evening peak hours for both background and buildout conditions.

10. The following mitigation is recommended based on the operations and safety analysis:

- Alternative performance measures, such as using average hourly operations, which meet the level of service (LOS) standard and/or traffic simulations of delay, which meet the delay standard are recommended for the Market Street NE/Center Access & Front Street NE intersection. Although traffic control changes were considered, all-way stop control would significantly increase overall intersection delay, traffic signal warrants are not satisfied with the forecast traffic volumes, and a roundabout is not considered feasible because of the PWRR line that runs through the intersection.
- To address existing and future queuing across the Portland & Western Railroad (PWRR) tracks on Front Street NE as it approaches OR 99E, signage, such as "DO NOT STOP ON TRACKS" (Sign R8-8) is recommended per MUTCD guidance. This recommendation is independent of the proposed project.
- The posted speed on Front Street NE is currently 35 mph which is typical for a minor arterial roadway; however, the proposed development and reconfiguration of Front Street NE supports consideration of a lower posted speed more appropriate for the active commercial area. Changing a speed zone is a complex process but should be considered as a long-term option for Front Street NE along the sight frontage.

# Project Description

## Introduction

The property located at 1105 Front Street NE in Salem, Oregon has been proposed for mixed-use development consisting of three new buildings and three repurposed buildings. The three new 6-story buildings will provide 371 multifamily homes with ground floor commercial space. The three repurposed buildings will house a mix of commercial uses that include a food hall, eating/drinking establishments, event space, a winery, and small business incubator and vendor spaces. These buildings will also include covered outdoor spaces and a flexible plaza space. Buildout of the site is anticipated to be completed by the year 2029.

This report examines the traffic impacts of the proposed development on the transportation system in the vicinity of the project site. Based on correspondence with the City of Salem and Oregon Department of Transportation (ODOT) staff, this report conducts safety and capacity/level of service analyses at 13 intersections:

1. Pine Street NE & Front Street NE
2. Pine Street NE & Commercial Street NE (OR 99E)
3. Pine Street NE & Liberty Street NE (OR 99E)
4. Shipping Street NE & Front Street NE
5. Hood Street NE & Front Street NE
6. Gaines Street NE/North Access & Front Street NE
7. Market Street NE/Center Access & Front Street NE
8. Market Street NE & Commercial Street NE (OR 99E)
9. Market Street NE & Liberty Street NE (OR 99E)
10. Market Street NE & Broadway Street
11. Belmont Alley NE/South Access & Front Street NE
12. Front Street NE & OR 99E
13. Union Street NE & Front Street NE (OR 99E)

All supporting data and calculations are included in the appendix of this report.

## Project Description

The site comprises tax lots 073W22AB 900, 600, and 300 outlined in yellow in Figure 1. However, part of lot 900 and all of the two northern lots 600 and 300, shaded in orange, will be developed at a future date. The portion of the site shaded in blue will be adapted for reuse while the portion of the site shaded yellow will be redeveloped. Plans for the site are included in Appendix A.



Figure 1: Vicinity Map (Image from Google Earth)

Three proposed access points, indicated with yellow arrows in Figure 1, will serve the site. The accesses aligned with Gaines Street NE and Market Street NE will have two-way traffic flow. The access aligned with Belmont Alley NE will be one-way outbound.

## Proposed Site Uses

An estimated breakdown of the proposed site uses by building is summarized in Table 1. The uses summarized in the table are for interior spaces only. Some of the outside spaces may host intermittent activities but the spaces are not anticipated to routinely generate peak hour trips independent of other site users.

**Table 1: Estimated Breakdown of Proposed Site Uses**

Site Designation	Residential Multifamily (DU)	Mixed Interior Commercial Tenant Space (SF)*				Total
		Eating/Drinking Establishments	Retail	Office		
<b>New Buildings</b>						
Building 1	138	4,907	3,907	1,000		9,814
Building 2	116	3,685	2,485	1,200		7,370
Building 3	117	3,685	0	3,685		7,370
<b>Subtotal</b>	<b>371</b>	<b>12,277</b>	<b>6,392</b>	<b>5,885</b>		<b>24,554</b>
<b>Repurposed Buildings</b>						
Food Hall	0	14,055	3,340	0		17,395
Winery	0	2,925	0	0		2,925
Market	0	1,618	2,428	0		4,046
<b>Subtotal</b>	<b>0</b>	<b>18,598</b>	<b>5,768</b>	<b>0</b>		<b>24,366</b>
<b>Total Site Development</b>						
<b>Total</b>	<b>371</b>	<b>30,875</b>	<b>12,160</b>	<b>5,885</b>		<b>48,920</b>

\* Mixed interior commercial tenant space composed of a mix of eating/drinking establishments, retail, and office space. The distribution of square footage per use is subject to change.

## Vicinity Streets

The planned development is expected to impact ten (10) roadways near the site. Table 2 describes each of the vicinity roadways under existing conditions.

**Table 2: Vicinity Roadway Descriptions**

Street Name	Functional Classification	Travel Lanes	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
<b>ODOT Jurisdiction</b>						
Commercial St NE (OR 99E)	Regional Highway & Principal Arterial	1-5	25-55	Both Sides	Partially Permitted	Partially Both Sides
Liberty St NE (OR 99E)	Regional Highway & Principal Arterial	2-3	30-35	Both Sides	Prohibited	East Side

**Table 2: Vicinity Roadway Descriptions**

Street Name	Functional Classification	Travel Lanes	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
<b>City of Salem Jurisdiction</b>						
Pine St NE	Minor Arterial	2-3	30	Both Sides	Partially Permitted	Both Sides
Shipping St NE	Local Street	2	25	Partially Both Sides	Permitted	None
Hood St NE	Minor Arterial	2	30	Both Sides	Partially Permitted	Partially Both Sides
Gaines St NE	Local Street	2	25	Both Sides	Permitted	None
Market St NE	Minor Arterial	2-4	25-30	Both Sides	Partially Permitted	Partially Both Sides
Union St NE	Collector	2-4	25	Both Sides	Partially Permitted	Partially Both Sides
Front St NE	Minor Arterial	2-6	35	Partially Both Sides	Partially Permitted	Partially Both Sides
Broadway St	Minor Arterial	2-4	30-35	Both Sides	Partially Permitted	None

*Table Notes: Functional classification based on Salem TSP*

One of the unique characteristics of the study area is the presence of the Portland & Western Railroad (PWRR) line that runs within the Front Street NE right-of-way from just north of the connection to OR 99E/Front Street NE to Norway Street NE. From the Mill Creek crossing north to Market Street NE, northbound traffic travels on the rail line as the roadway is not wide enough for a separate travel lane.

The proposed development will improve Front Street NE from Mill Creek to Shipping Street NE. The improvements were coordinated with the City and railroad and are still subject to rail diagnostic feedback. Channelizing islands from south of Market Street NE to north of Hood Street NE will prevent vehicles from crossing the tracks except at public, controlled crossings. Motorized safety gates will be added at the Market Street NE, Gaines Street NE, and Hood Street NE intersections. Pedestrian crossings are included on the east side of the Market Street NE and Gaines Street NE intersections and the west side of the Hood Street NE intersection. Other improvements include a multi-use path along the site frontage and a northbound bike lane north and sidewalks on the south side from Market Street NE north to Shipping Street NE. Intermittent on-street parking is present on both sides of the street with curb extensions defining the parking areas.

### **Study Intersections**

Through coordination with the City of Salem and ODOT staff, 13 intersections were identified for analysis. A summarized description of the study intersections is provided in Table 3. A map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.

**Table 3: Study Intersection Descriptions**

Intersection		Geometry	Traffic Control	Phasing/Stopped Approaches
1	Pine St NE & Front St NE	4-Leg	Stop-Controlled	EB/WB Stop
2	Pine St NE & Commercial St NE	4-Leg	Signalized	WB Permissive Left
3	Pine St NE & Liberty St NE	4-Leg	Signalized	EB Permissive Left
4	Shipping St NE & Front St NE	4-Leg	Stop-Controlled	EB/WB Stop
5	Hood St NE & Front St NE	4-Leg	Stop-Controlled	EB/WB Stop
6	Gaines St NE/North Access & Front St NE	4-Leg	Stop-Controlled	EB/WB Stop
7	Market St NE/Center Access & Front St NE	4-Leg	Stop-Controlled	EB/WB Stop
8	Market St NE & Commercial St NE	4-Leg	Signalized	WB Permissive Left
9	Market St NE & Liberty St NE	4-Leg	Signalized	EB Permissive Left
10	Market St NE & Broadway St	4-Leg	Signalized	EB/WB/NB/SB Permissive/ Protected Lefts
11	Belmont St NE/South Access & Front St NE	3-Leg	Stop-Controlled	EB Stop
12	Front St NE & OR 99E	3-Leg	Stop-Controlled	SB Stop
13	Union St NE & Front St NE	4-Leg	Signalized	EB/WB Permissive NB/SB Permissive/ Protected Lefts

## Transit

Cherriots is the public transit operator for the Salem Area Mass Transit District. Two local bus lines run north-south along Broadway Street NE through the study area. A summarized description of the transit line is shown in Table 4.

**Table 4: Transit Line Description**

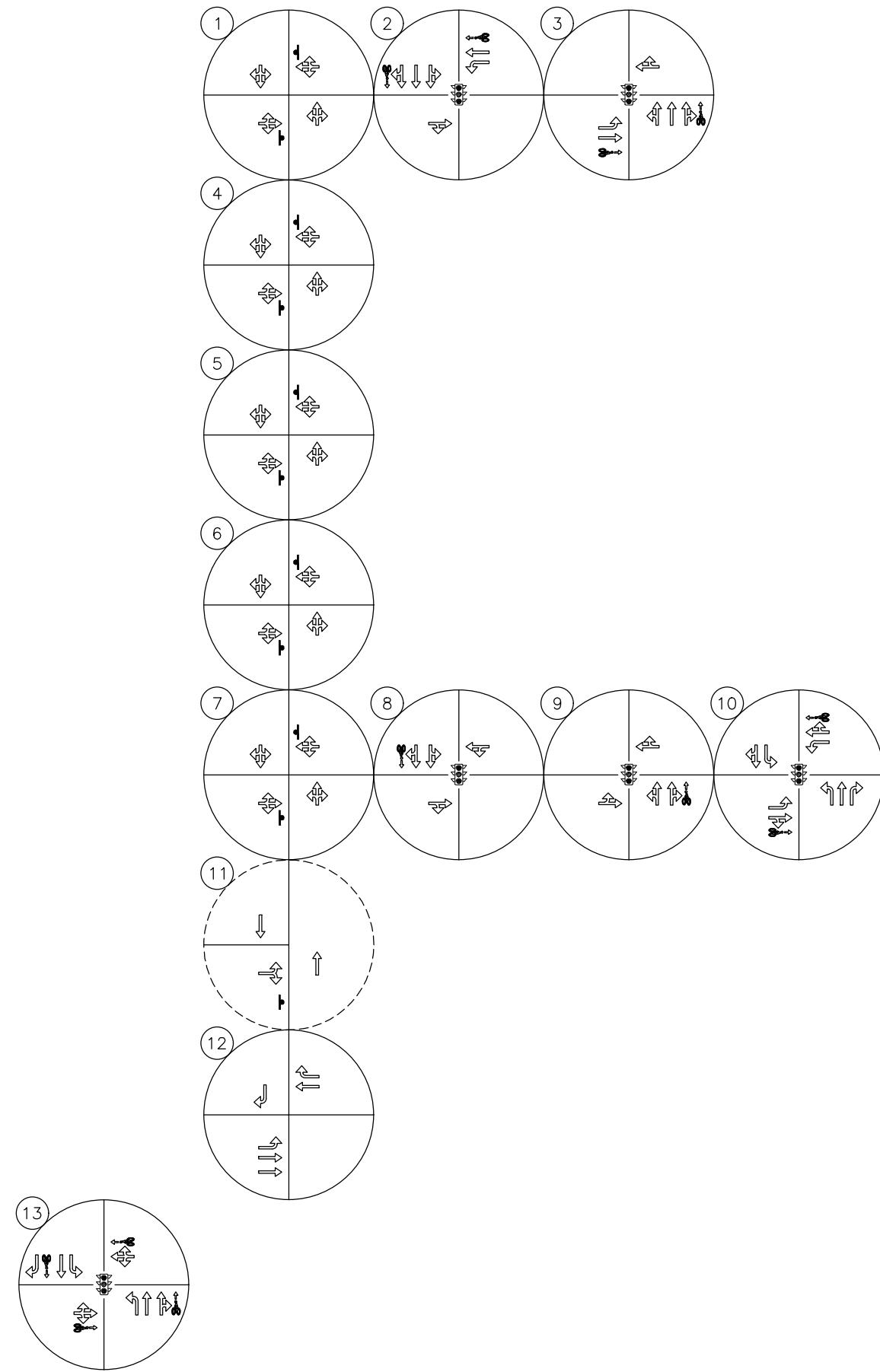
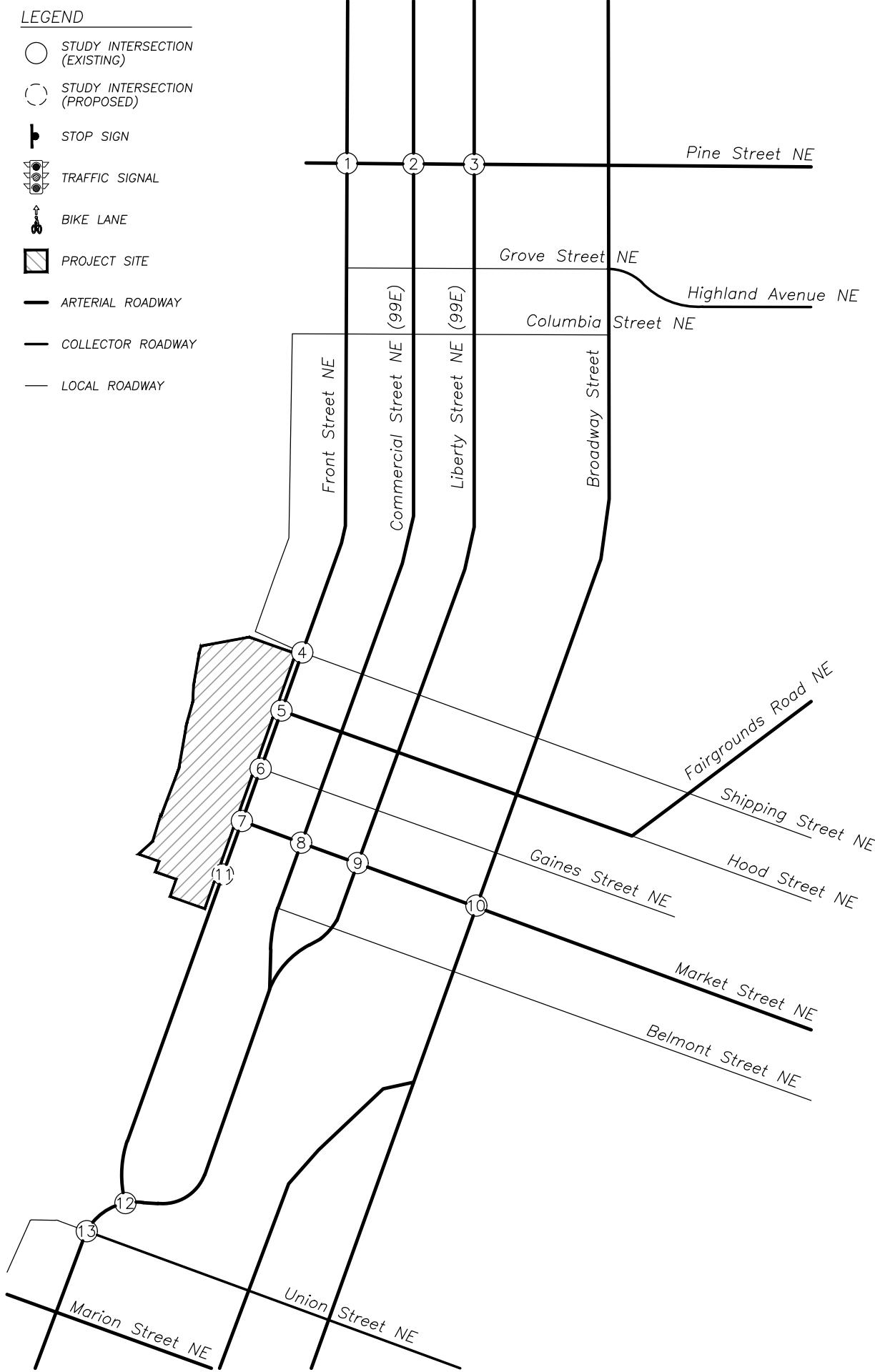
Transit Line (Cherriots)	Service Area	Day of Week	Service Times	Typical Headways (Minutes)	Nearest Stops
Bus Line #9: Cherry / River Road	Between Salem Downtown Transit Center & Keizer Transit Center	Weekday	6:33 AM - 9:03 PM	30	Market Street NE at Broadway Street
		Saturday	7:02 AM - 9:02 PM	60	
		Sunday	8:02 AM - 8:02 PM	60	
Bus Line #19: Broadway / River Road	Between Salem Downtown Transit Center, Keizer Creekside Shopping Center & areas north	Weekday	6:34 AM - 11:03 PM	15 - 60	Market Street NE at Broadway Street
		Saturday	7:04 AM - 9:03 PM	30 - 60	
		Sunday	8:04 AM - 8:03 PM	60	

## VICINITY MAP

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Figure 2  
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## Site Trips

### Trip Generation

To estimate the number of trips that will be generated by the existing and proposed use, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. The following land use codes were applied to estimate trip generation:

- Trip generation for the proposed multifamily housing was estimated using trip generation equations from land use code 221, *Multifamily Housing (Mid-Rise)*, based on the number of dwelling units. The proposal consists of three 6-story mixed-use buildings which have 371 multiple-family residential units.
- Retail space in the new and existing buildings is estimated to total 12,160 SF. Trip generation for the proposed retail space was estimated using rates from land use code 822, *Strip Retail (<40k)*, based on gross floor area.
- Small offices totaling approximately 5,885 SF are included in the new buildings. Trip generation for the proposed office space was estimated using rates from land use code 712, *Small Office Building*, based on gross floor area.
- The floor area for the eating/drinking establishments is estimated at 30,875 SF. Within the broader category four different types of uses are assumed in the trip generation:
  - Approximately 10,715 SF of the food hall will contain 8 cart-style food vendors. Trip generation for the proposed food carts was estimated using rates from land use code 926, *Food Cart Pods*, based on the number of food cart units.
  - For the proposed 2,925-SF winery included in one of the existing buildings, trip generation was estimated using data from land use code 970, *Wine Tasting Room*, based on gross floor area.
  - The remaining types and breakdown of eating/drinking establishments within the site are unknown. For this analysis, approximately 75 percent of the remaining 17,235 SF of eating/drinking establishments was assumed to be dining. Trip generation was estimated using data from land use code 932, *High-Turnover Sit-Down Restaurant*, based on the gross floor area.
  - Approximately 25 percent of the remaining 17,235 SF of eating/drinking establishments was assumed to be drinking. Trip generation was estimated using data from land use code 975, *Drinking Place*, based on the gross floor area.

Given the variety of land uses that could be developed within the project site (including residential, retail, office, and service land uses), some trips generated are likely to be captured internally within the site and won't impact public area intersections or adjoining roadways. Per the *Trip Generation Handbook, 3rd Edition*<sup>2</sup> and referencing the *NCHRP 8-51 Internal Trip Capture Estimation Tool* (NCHRP 684), the internal capture rate for the peak hours was calculated considering the mix of land uses. The daily internal capture rates were estimated as the average of the morning and evening peak hour rates.

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<sup>1</sup> Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021.

<sup>2</sup> Institute of Transportation Engineers (ITE), Trip Generation Handbook, 3rd Edition, 2017.

Additionally, the retail and eating/drinking establishments within the proposed development are expected to attract pass-by trips to the site. Pass-by trips are trips that leave the adjacent roadway to patronize an establishment and then continue in their original direction of travel. They do not add additional vehicles to the surrounding transportation system; however, they do add turning movements at site access intersections.

The ITE Manual estimates pass-by rates at 40 percent for retail and 43 to 55 percent for restaurants. However, considering the internal trip rate reductions and the site location, which is not directly adjacent to the higher-volume corridors, pass-by rates of 10 percent for morning peak hour, 20 percent for the evening peak hour, and 15 percent for the daily volume were applied to the external traffic volumes.

A summary of the trip generation for the proposed development is shown in Table 5.

**Table 5: Trip Generation Summary – Proposed Development**

ITE Code	Intensity		Morning Peak Hour			Evening Peak Hour			Daily Trips		
			In	Out	Total	In	Out	Total			
221 - Multifamily Housing (Mid-Rise)	371	DU	32	105	137	88	57	145	1,684		
	<i>Internal Trips</i>		-3	-16	-19	-24	-18	-42	-360		
712 - Small Office Building	5.885	KSF	8	2	10	4	9	13	84		
	<i>Internal Trips</i>		-1	-1	-2	-4	-2	-6	-28		
822 - Strip Retail Plaza (<40k)	12.160	KSF	17	12	29	40	40	80	662		
	<i>Internal Trips</i>		-2	-3	-5	-26	-23	-49	-260		
	<i>Pass-by Trips</i>		-1	-1	-2	-3	-3	-6	-60		
926 - Food Cart Pods	8	Carts	5	5	10	25	24	49	492		
	<i>Internal Trips</i>		-1	-1	-2	-5	-8	-13	-108		
	<i>Pass-by Trips</i>		0	0	0	-4	-4	-8	-76		
932 - High-Turnover (Sit-Down) Restaurant	12.926	KSF	68	56	124	71	46	117	1,386		
	<i>Internal Trips</i>		-17	-3	-20	-13	-20	-33	-304		
	<i>Pass-by Trips</i>		-5	-5	-10	-8	-8	-16	-162		
970 - Wine Tasting Room	2.925	KSF	4	2	6	11	10	21	134		
	<i>Internal Trips</i>		0	0	0	0	0	0	0		
975 - Drinking Place	4.309	KSF	0	0	0	32	17	49	490		
	<i>Internal Trips</i>		0	0	0	-6	-7	-13	-108		
Total Trips			134	182	316	271	203	474	4,932		
<i>Internal Trips</i>			-24	-24	-48	-78	-78	-156	-1,168		
Total External Trips			110	158	268	193	125	318	3,764		
<i>Pass-by/Diverted Trips</i>			-6	-6	-12	-15	-15	-30	-298		
Total Primary Trips			104	152	256	178	110	288	3,466		

**Notes:**

1. Internal trips calculated following the procedures in NCHRP 684.
  2. Pass-by rates of 10% for morning, 20% for evening, and 15% for daily were applied only to external trips
- DU = dwelling units, KSF = 1,000 square feet of floor area

Total external trip generation was estimated at 268 morning peak hour, 318 evening peak hour, and 3,764 daily trips. After deducting pass-by traffic, the proposed development is anticipated to generate 256 primary trips during the morning peak hour, 288 primary trips during the evening peak hour, and 3,466 primary trips each weekday.

#### **Comparison to Previous Site Uses**

Although the existing buildings on the site are largely unoccupied, for the purpose of examining transportation system development charges, trip generation was also estimated for the existing development. Trip generation for the existing industrial land use was estimated using trip generation rates from land use code 140, *Manufacturing*, based on gross floor area assuming existing buildings total 196,422 SF.

Comparing primary trips from the proposed site with the trips from the existing site yields a net increase of 122 morning peak hour, 143 evening peak hour, and 2,532 weekday trips, as shown in Table 6.

**Table 6: Trip Generation Comparison – Proposed vs. Prior Uses**

General Description	Morning Peak Hour			Evening Peak Hour			Daily Trips
	In	Out	Total	In	Out	Total	
<b>Proposed Development</b>							
6 Mixed-Use Buildings	104	152	256	178	110	288	3,492
<b>Existing Development</b>							
196,422 SF Manufacturing (LUC 140)	102	32	134	45	100	145	934
<b>Net Increase</b>							
Net Increase in Primary Trips	2	120	122	133	10	143	2,532

LUC = Land Use Code

#### **Trip Distribution**

The trip distribution of the proposed development was derived using the Mid-Willamette Valley Council of Governments regional travel demand model known as SKATS. The project site is located in Transportation Analysis Zone (TAZ) 238. A select zone analysis of the SKATS model was run for the morning and evening peak hours for the base year, 2021, and the future year, 2050, to determine the distribution of site trips entering and exiting the zone. The following primary site trip distribution was used for analysis:

- Approximately 27 percent will travel to/from the east along Market Street NE east of Broadway
- Approximately 22 percent will travel to/from the south along Front Street NE south of Union Street NE
- Approximately 16 percent will travel to/from the west along OR 22
- Approximately 16 percent of site trips will travel to/from the north along OR 99E
- Approximately 10 percent of site trips will travel to/from the north along Front Street NE with 7 percent continuing to/from the on Front Street NE and 3 percent turning to/from Pine Street NE
- Approximately 6 percent of site trips will travel to/from the east along Hood Street NE
- Approximately 3 percent of site trips will disperse into the nearby neighborhoods

For the pass-by traffic, approximately 50 percent of the traffic is assumed to come directly from Front Street NE while 50 percent is assumed to divert from OR 99E (Commercial Street NE or Liberty Street NE).

The trip distribution and assignment for the site trips generated during the morning and evening peak hours is shown in Figure 3 and Figure 4, respectively.

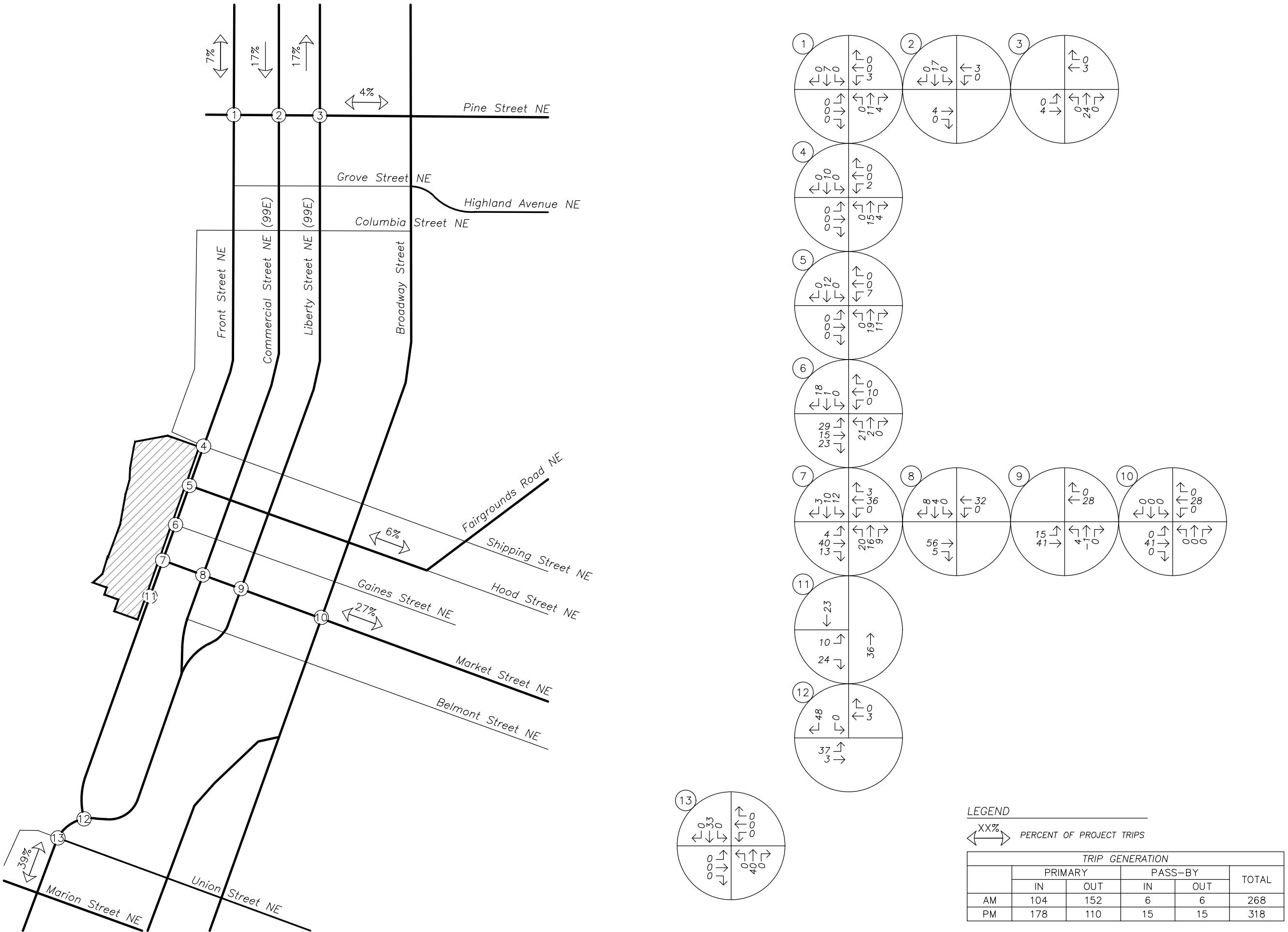
### SITE TRIP DISTRIBUTION & ASSIGNMENT

Proposed Development Plan - Site Trips  
AM Peak Hour

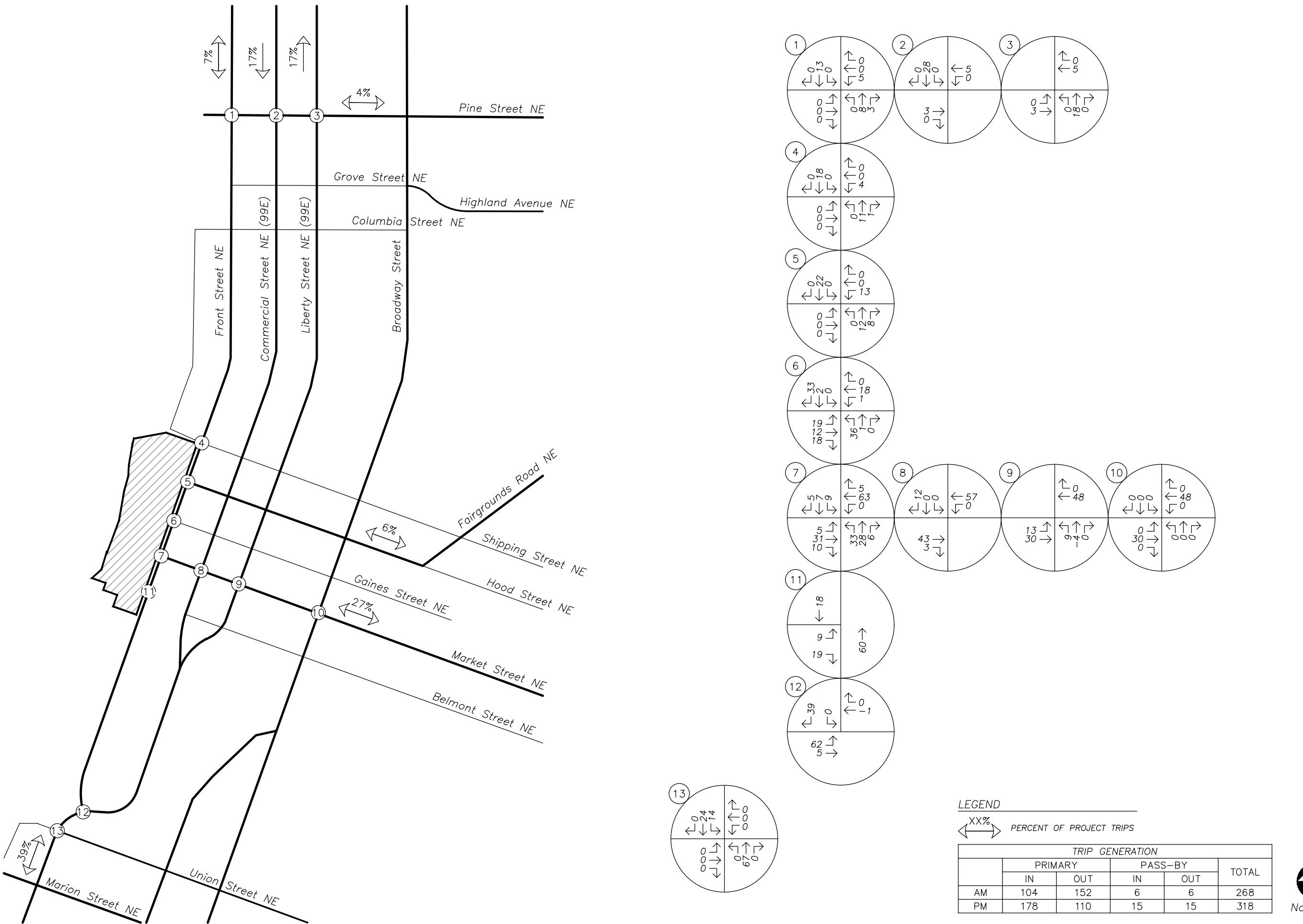
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**SITE TRIP DISTRIBUTION & ASSIGNMENT**  
Proposed Development Plan - Site Trips  
PM Peak Hour



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## Traffic Volumes

### Existing Conditions

Traffic counts were conducted at each of the study intersections on Tuesday, February 6, 2024, from 7:00 AM to 9:00 AM to capture the morning peak hour and from 4:00 PM to 6:00 PM to capture the evening peak hour.

Traffic volumes along OR 99E were seasonally adjusted to reflect the 30<sup>th</sup> highest hour of traffic, per procedures described in ODOT's *Analysis Procedures Manual*. Using the ODOT's 2022 Seasonal Trend Table, a seasonal adjustment factor of 1.12 was calculated based on the Commuter seasonal trend for the traffic counts.

Figure 5 and Figure 6 show the resulting existing conditions traffic volumes at the study intersections during the morning and evening peak hours, respectively.

### Background Year 2029 Conditions

To provide an analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. The background conditions were developed using a general growth rate. No in-process developments are anticipated to affect the study area.

For the general background growth, base year and future year SKATS model forecasts were compared for roadway segments in the study area for the morning peak, evening peak, and daily traffic scenarios. The average growth rates considering all time periods and all roads (highways and local) was 0.6 percent per year (linear). The resulting annual background growth rate was applied to existing traffic count data for a period of 5 years.

Figure 7 and Figure 8 display the year 2029 background volumes during the morning and evening peak hours, respectively.

### Buildout Year 2029 Conditions

To estimate the buildout volumes, the existing traffic measured at the site accesses was subtracted from the 2029 background traffic volumes and the peak hour trips generated by the proposed development, as described in the *Site Trips* section, were then added to obtain the expected year 2029 buildout conditions.

Figure 9 and Figure 10 displays the year 2029 buildout volumes during the morning and evening peak hours, respectively.

**TRAFFIC VOLUMES**  
Year 2024 Existing Conditions  
AM Peak Hour

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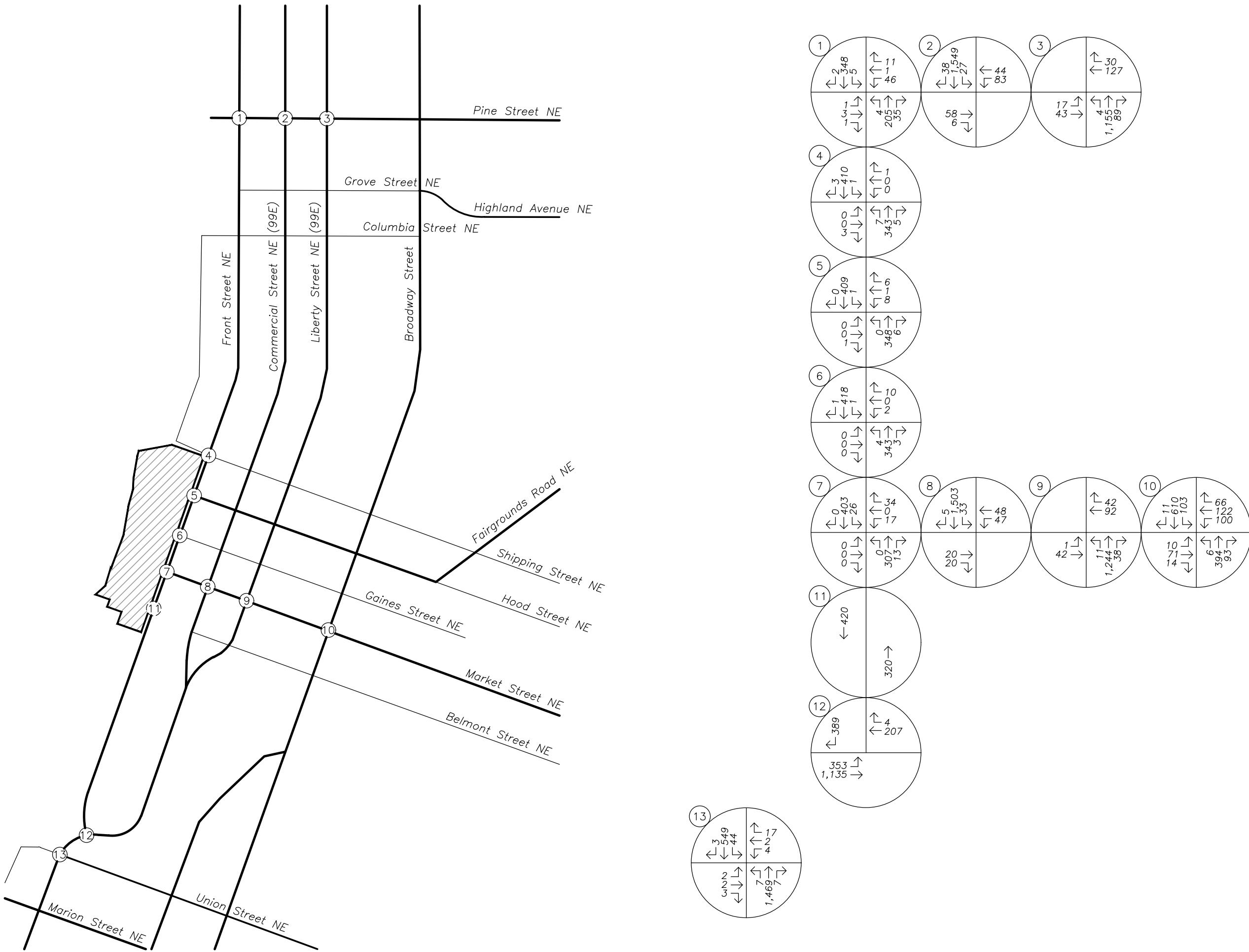


Figure 6  
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**TRAFFIC VOLUMES**  
Year 2024 Existing Conditions  
PM Peak Hour

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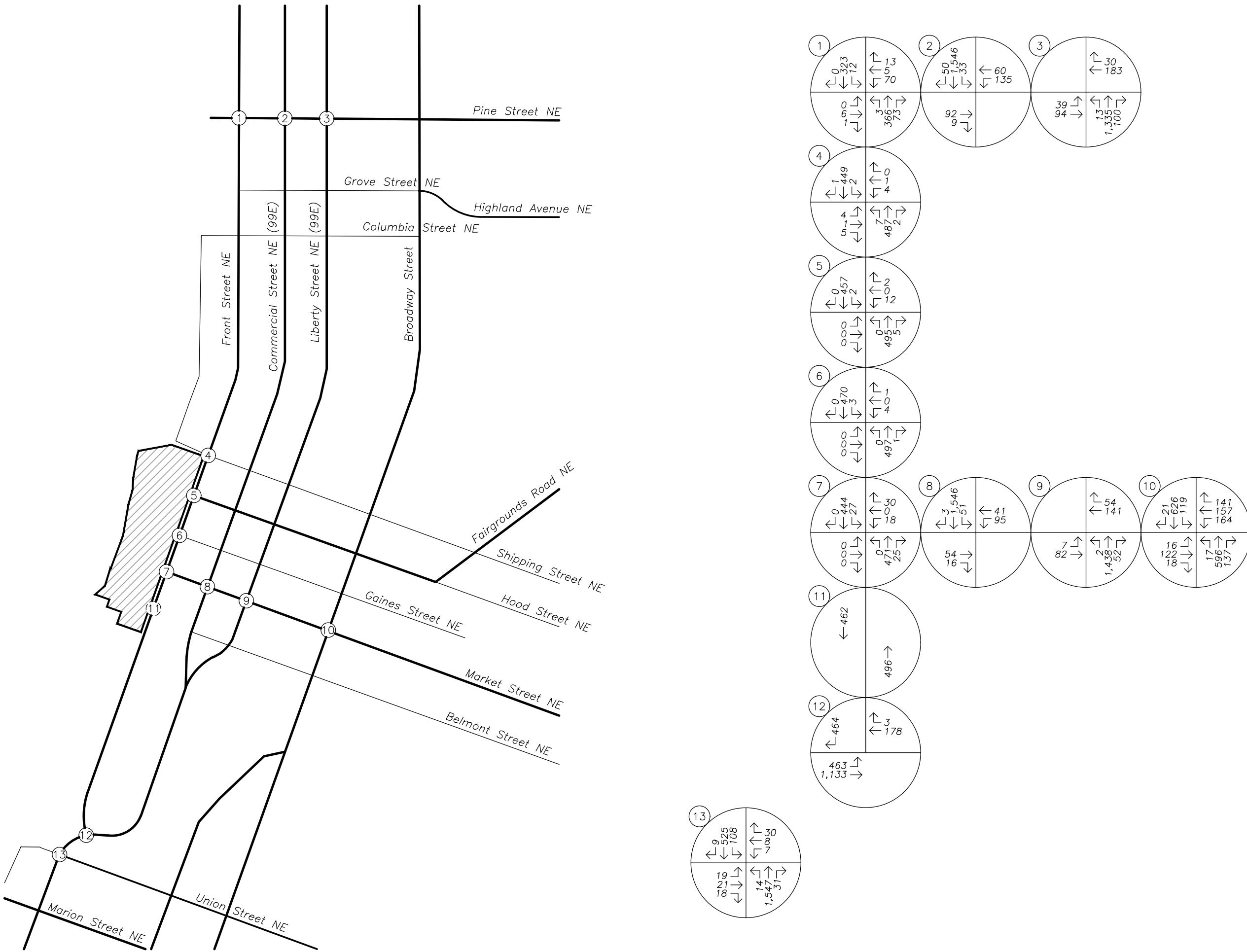


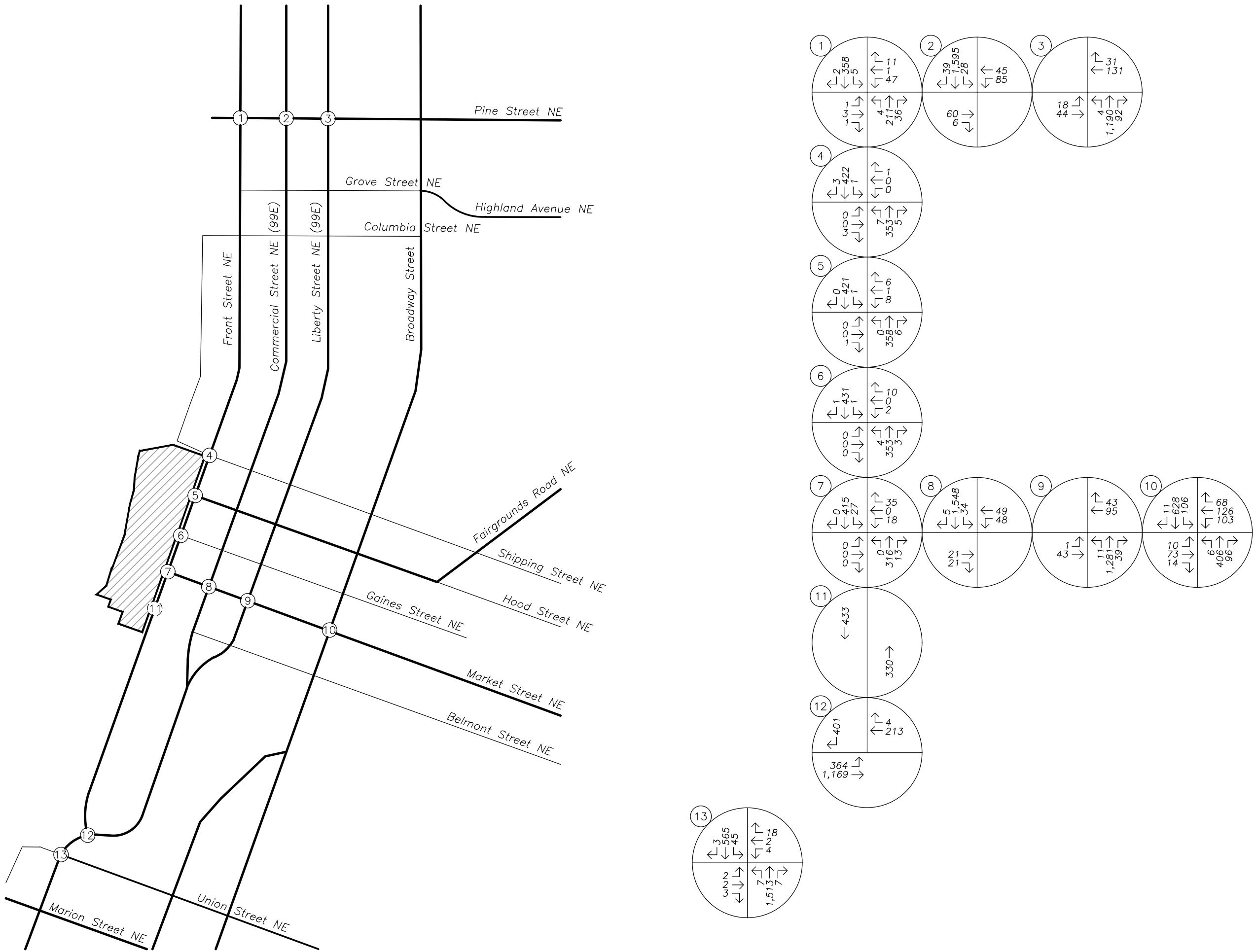
Figure 7  
The Cannery  
5/31/2024

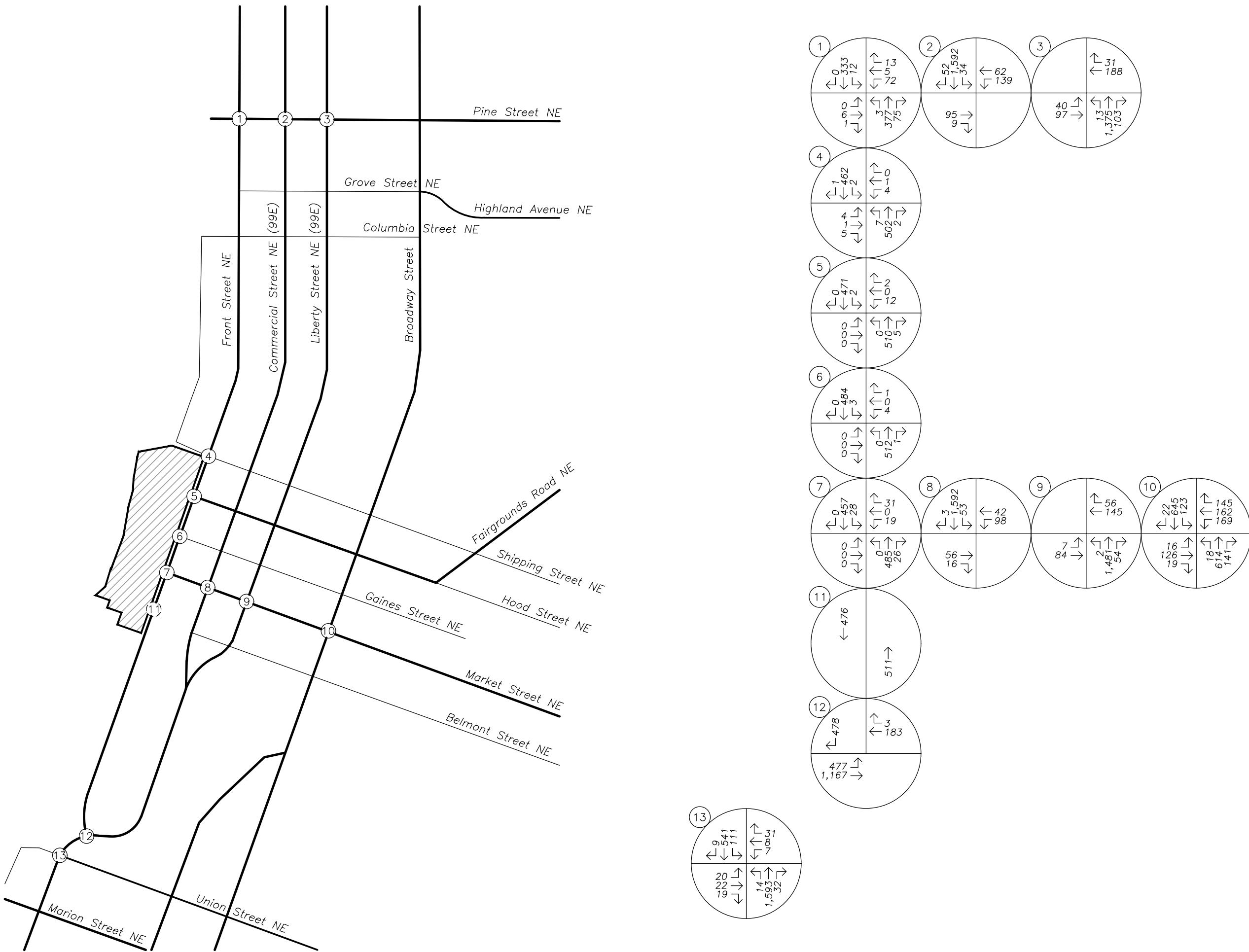
**TRAFFIC VOLUMES**  
Year 2029 Background Conditions  
AM Peak Hour

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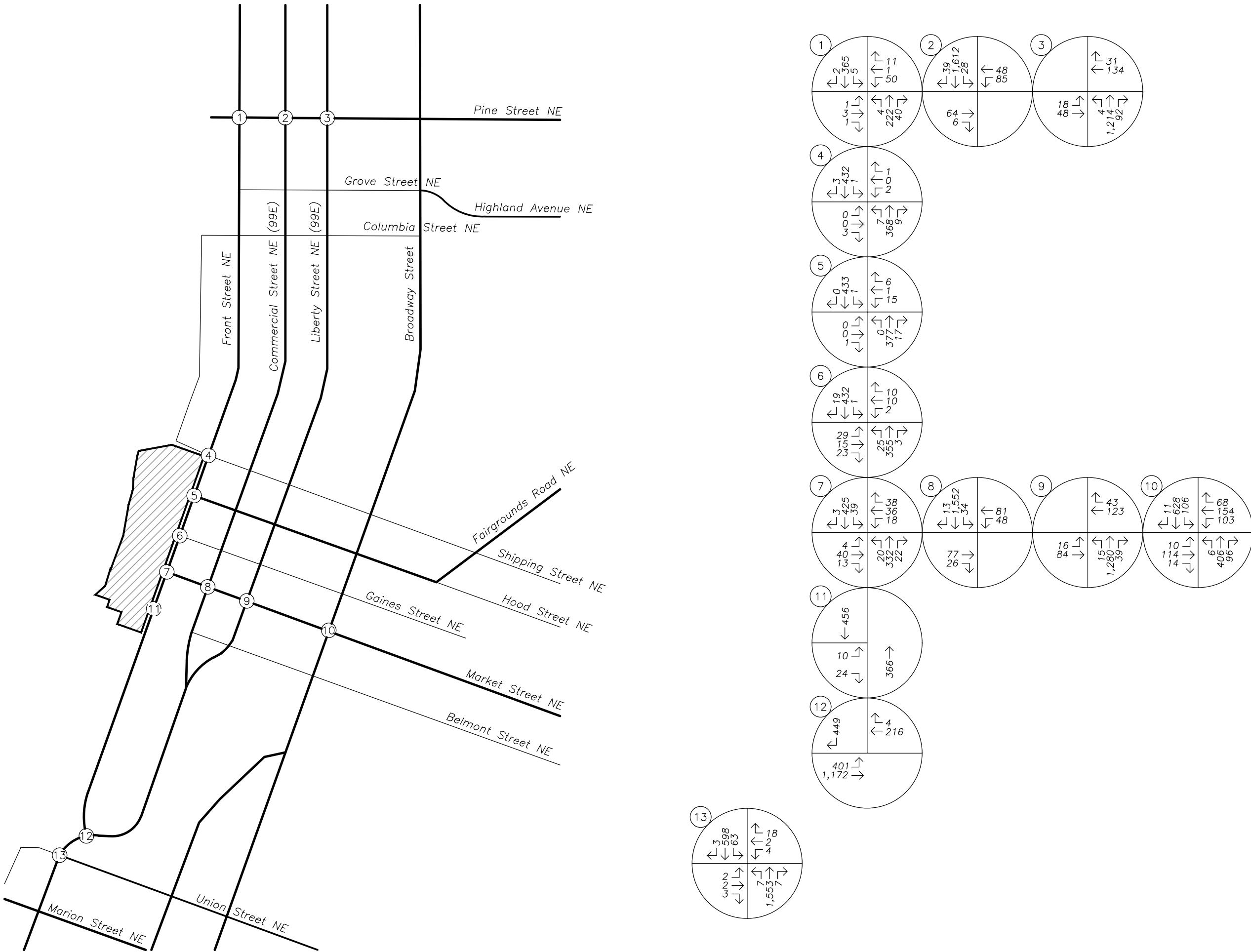


**TRAFFIC VOLUMES**  
Year 2029 Buildout Conditions  
AM Peak Hour

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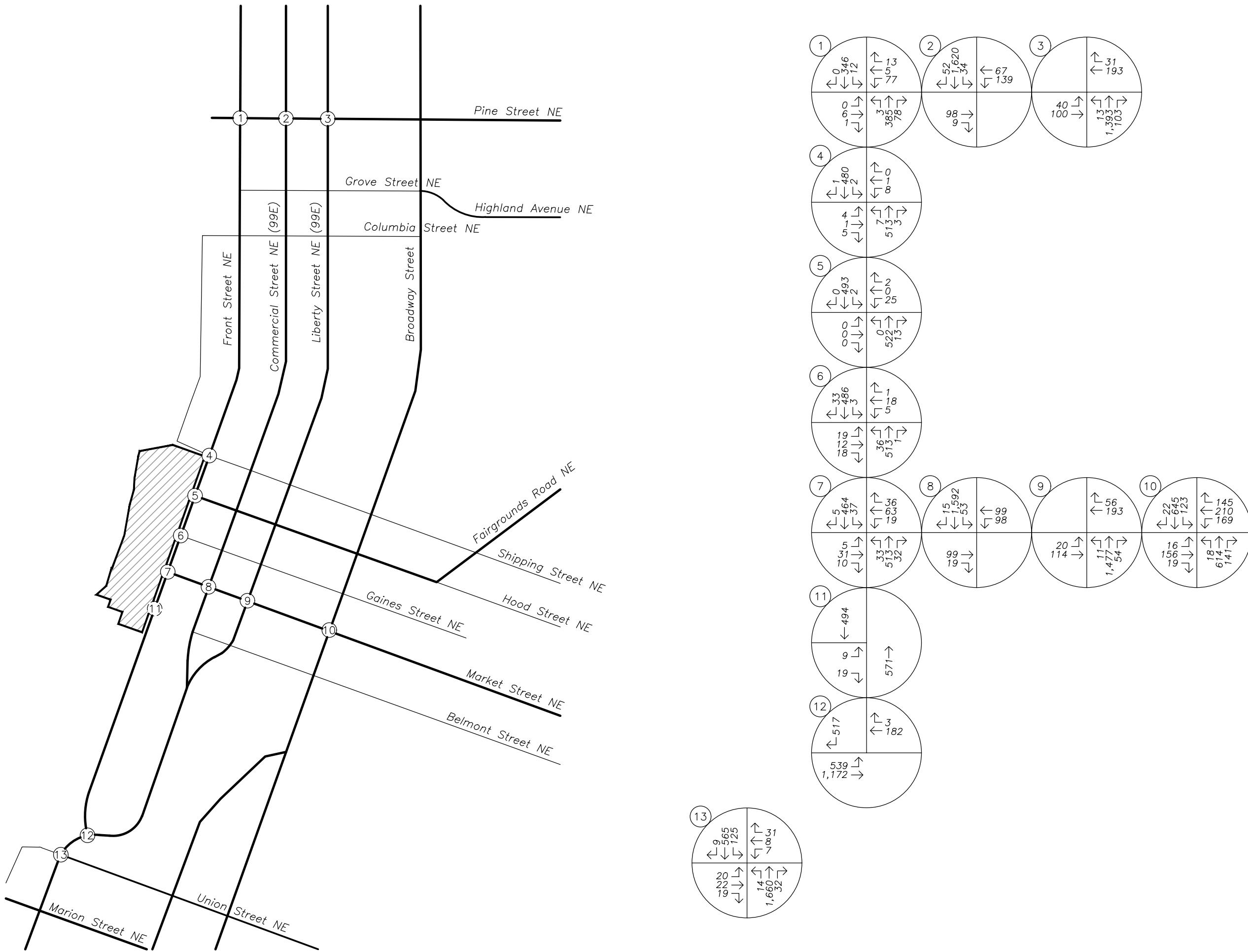


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# Safety Analysis

## Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2018 through December 2022) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the collision, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

The study intersections adhere to the crash analysis methodologies within ODOT's Analysis Procedures Manual (APM). According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of their respective 90<sup>th</sup> percentile crash rates should be "flagged for further analysis." Crash rates in excess of 90<sup>th</sup> percentile crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Table 7 provides a summary of crash types while Table 8 summarizes crash severities and rates for each of the study intersections. Only intersections with reported crashes are included in the summaries. Detailed crash data is provided in Appendix C.

Table 7: Collision Type Summary

Intersection	Collision Type							Total Crashes
	Rear-End	Turning	Angle	Side-swipe	Fixed Object	Other	Ped/Bike	
1 Pine St NE & Front St NE	0	2	6	0	0	0	0	8
2 Pine St NE & Commercial St NE	3	5	9	0	0	0	1 (B)	18
3 Pine St NE & Liberty St NE	2	1	13	0	0	0	1 (P)	17
4 Shipping St NE & Front St NE	1	0	1	0	0	0	0	2
7 Market St NE & Front St NE	0	0	0	0	0	1	1 (B)	2
8 Market St NE & Commercial St NE	5	3	1	1	1	0	2 (B&P)	13
9 Market St NE & Liberty St NE	1	1	6	0	0	0	0	8
10 Market St NE & Broadway St	6	5	2	0	0	1	1 (B)	15
12 Front St NE & OR 99E	0	1	0	0	0	1	0	2
13 Union St NE & Front St NE	5	5	4	1	1	0	1 (B)	17

Table 8: Crash Severity and Rate Summary

Intersection	Severity					Total Crashes	Peak Hour Volume	Crash Rate	ODOT 90 <sup>th</sup> % Rate
	PDO	C	B	A	Fatal				
1 Pine St NE & Front St NE	2	4	2	0	0	8	872	0.503	0.408
2 Pine St NE & Commercial St NE	4	9	5	0	0	18	1,925	0.512	0.860
3 Pine St NE & Liberty St NE	3	11	2	1	0	17	1,794	0.519	0.860
4 Shipping St NE & Front St NE	1	0	1	0	0	2	963	0.114	0.408
7 Market St NE & Front St NE	0	2	0	0	0	2	1,015	0.108	0.293
8 Market St NE & Commercial St NE	5	5	3	0	0	13	1,806	0.394	0.860
9 Market St NE & Liberty St NE	3	3	1	1	0	8	1,776	0.247	0.860
10 Market St NE & Broadway St	3	11	1	0	0	15	2,134	0.385	0.860
12 Front St NE & OR 99E	0	1	1	0	0	2	2,241	0.049	0.293
13 Union St NE & Front St NE	5	5	7	0	0	17	2,337	0.399	0.860

Table Notes: Bold indicates intersection exceeds collision rate threshold.

### Crash Severity

None of the crashes reported in the five-year analysis period resulted in a fatality but two of the crashes resulted in a suspected serious injury (Injury A):

- At the intersection of Pine Street NE & Liberty Street NE (OR 99E), a northbound passenger vehicle on Liberty Street NE struck a pedestrian in the crosswalk crossing from east to west on Pine Street NE. The pedestrian sustained injuries classified as Injury A; no injuries were sustained by individuals in the vehicle. The pedestrian was reported as disregarding the signal and illegally in the roadway. The collision occurred under clear, dry, daytime conditions.
- At the intersection of Market Street NE & Liberty Street NE (OR 99E), a westbound passenger vehicles on Market Street NE struck a northbound passenger vehicle on Liberty Street NE. The driver of the struck vehicles sustained injuries classified as Injury A while the driver of the striking vehicle sustained injuries classified as Injury C. Two other vehicles were involved in the crash but no one sustained injuries. The driver of the striking vehicle was reported as disregarding the signal. The collision occurred under rainy, wet, daytime conditions.

### Pedestrian and Bicycle Collisions

Five of the reported crashes involved a bicyclist and two of the reported crashes involved a pedestrian:

- At the intersection of Pine Street NE & Commercial Street NE (OR 99E), an eastbound passenger vehicle turning right struck a bicyclist traveling southbound on Commercial Street NE. The bicyclist sustained injuries classified as Injury C; no injuries were sustained by individuals in the vehicle. The driver was reported as failing to yield the right of way to the bicyclist. The collision occurred under clear, dry, daytime conditions.

- At the intersection of Pine Street NE & Liberty Street NE (OR 99E), a northbound passenger vehicle on Liberty Street NE struck a pedestrian in the crosswalk crossing from east to west on Pine Street NE. The pedestrian, who was crossing against the light, sustained injuries classified as Injury A; no injuries were sustained by individuals in the vehicle.
- At the intersection of Market Street NE & Front Street NE, a southbound passenger vehicle turning left struck a bicyclist traveling northbound on Front Street NE. The bicyclist sustained injuries classified as Injury C; no injuries were sustained by individuals in the vehicle. The driver was reported as failing to yield the right of way to the bicyclist. The collision occurred under clear, dry, daytime conditions.
- At the intersection of Market Street NE & Commercial Street NE (OR 99E), a westbound passenger vehicle turning left struck a bicyclist traveling eastbound on Market Street NE. The bicyclist sustained injuries classified as Injury C; no injuries were sustained by individuals in the vehicle. The driver was reported as failing to yield the right of way to the bicyclist. The collision occurred under clear, dry, daytime conditions.
- At the intersection of Market Street NE & Commercial Street NE (OR 99E), a westbound passenger vehicle turning left struck a pedestrian crossing eastbound on Market Street NE. The pedestrian sustained injuries classified as Injury B; no injuries were sustained by individuals in the vehicle. The driver was reported as failing to yield the right of way to the pedestrian. The collision occurred under clear, dry, daytime conditions.
- At the intersection of Market Street NE & Broadway Street, a northbound passenger vehicle turning right struck a bicyclist also traveling northbound on Broadway Street. The bicyclist sustained injuries classified as Injury C; no injuries were sustained by individuals in the vehicle. The bicyclist was reported as disregarding the traffic signal. The collision occurred under clear, dry, daytime conditions.
- At the intersection of Union Street NE & Front Street NE, a southbound passenger vehicle struck a bicyclist traveling westbound on Union Street NE. The bicyclist sustained injuries classified as Injury C; no injuries were sustained by individuals in the vehicle. The bicyclist was reported as disregarding the signal and illegally in the roadway. The collision occurred under clear, dry, daytime conditions.

#### **ODOT 90<sup>th</sup> Percentile Crash Rates**

Intersection crash rates were compared to the published statewide 90<sup>th</sup> percentile crash rates within ODOT's APM. According to Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control in the APM, intersections which experience crash rates in excess of 90<sup>th</sup> percentile crash rates should be "flagged for further analysis".

The intersection of Pine Street NE & Front Street NE was calculated to have a crash rate of 0.503, which exceeds the 90<sup>th</sup> percentile crash rate of 0.408 for similar unsignalized intersections. A review of the crashes shows that angle collisions (6) account for 75 percent of the crashes at this intersection and turning collisions (2) account for the other 25 percent. Three of the angle collisions involved westbound vehicles even though the westbound approach carries a very low traffic volume. Clear sight lines appear to be available from Pine Street; therefore, no reason for the pattern is readily discernable. This is the only notable pattern. Based on the available data, no mitigation is recommended.

## **ODOT SPIS Review**

The ODOT 2022 Safety Priority Index System (SPIS) list is based on reported crash data for the years 2019 through 2021. Three of the study area intersections were listed in the worst 15 percent<sup>3</sup> of SPIS list:

- Pine Street NE & Liberty Street (OR 99E) – 90<sup>th</sup> percentile
- Market Street NE & Commercial Street (OR 99E) – 85<sup>th</sup> percentile
- Market Street NE & Broadway Street – 85<sup>th</sup> percentile

All of these signlized intersections had at least one reported collision involving a pedestrian or bicycle and the intersection of Pine Street NE & Liberty Street had a crash that resulted in a Type A injury.

The crash patterns are generally consistent with the geometry and traffic control provided at the intersections and no options for mitigation are readily apparent. The proposed development is not expected to change the crash patterns or contribute to a higher rate of crashes; therefore, no mitigation is recommended.

## **Conclusion**

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections; therefore, no safety mitigation is recommended per the crash data analysis.

## Sight Distance

The proposed development will have three accesses which intersect with Front Street NE. The project will significantly change the landscape of the street; therefore, a preliminary sight distance assessment was performed using the proposed plans for Front Street NE.

Both intersection sight distance (ISD) and stopping sight distance (SSD) are assessed. The ISD is an operational measure, intended to provide sufficient line of sight along the major street so that a driver could turn from the minor street without impeding traffic flow. The SSD is the minimum requirement to ensure safe operation of the roadway. Stopping sight distance allows an oncoming driver to see a hazard in the roadway, react, and come to a complete stop if necessary to avoid a collision. As long as the available intersection sight distance is at least equal to the minimum required stopping sight distance for the design speed of the roadway, adequate sight distance is available for safe operation of the intersection.

Intersection sight distance was measured in accordance with the current AASHTO manual.<sup>4</sup> According to AASHTO, the driver's eye is assumed to be 14.5 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

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<sup>3</sup> Oregon Department of Transportation, Safety Priority Index System, 2020 - On-State, Top 15% Groups - By Score

<sup>4</sup> American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 7th Edition, 2018.

### **South Site Access (Belmont Alley NE) at Front Street NE**

Front Street NE has a posted speed of 35 mph and will have a two-lane cross-section at the south access. Therefore, the required SSD is 250 feet, and the recommended ISD is 390 feet.

- Looking to the north, at least 390 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the sight triangle, even for the 250-foot SSD.
- Looking to the south, at least 390 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the sight triangle, even for the 250-foot SSD.
- Vehicles approaching on Front Street NE can see a vehicle exiting the site from at least 400 feet in either direction with no major obstructions.

### **Center Site Access (Market Street NE) at Front Street NE**

Front Street NE has a posted speed of 35 mph and will have a cross-section equivalent to at least three lanes at the center access. Therefore, the required SSD is 250 feet, and the recommended ISD is 415 feet.

- Looking to the north, at least 415 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the sight triangle, even for the 250-foot SSD.
- Looking to the south, at least 415 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the ISD sight triangle but not the SSD sight triangle.
- Vehicles approaching on Front Street NE can see a vehicle exiting the site from at least 300 feet in either direction with no major obstructions.

### **North Site Access (Gaines Street NE) at Front Street NE**

Front Street NE has a posted speed of 35 mph and will have cross-section equivalent to at least three lanes at the center access. Therefore, the required SSD is 250 feet, and the recommended ISD is 415 feet.

- Looking to the north, at least 415 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the sight triangle, even for the 250-foot SSD.
- Looking to the south, at least 415 feet of sight distance will be available with no obstruction from the proposed buildings. On-street parking will be present in the ISD sight triangle but not the SSD sight triangle.
- Vehicles approaching on Front Street NE can see a vehicle exiting the site from at least 300 feet in either direction with no major obstructions.

## **Conclusions**

Adequate sightlines are available at all three proposed sight accesses without obstruction from the proposed buildings; however, vehicles utilizing the on-street parking may be present in the sight triangles. Parked vehicles are considered an acceptable temporary obstruction under the vision clearance standards. Additionally, vehicles approaching on the major roadway have adequate SSD looking towards all three access intersections.

The posted speed on Front Street NE is currently 35 mph which is typical for a minor arterial roadway; however, the proposed development and reconfiguration of Front Street NE supports consideration of a lower posted

speed more appropriate for the active commercial area. Sight distance requirements with slower speeds would be shorter than with the current posting. Changing a speed zone is a complex process but should be considered as a long-term option for Front Street NE along the sight frontage.

## Vision Clearance Triangles

For controlled intersections like the three proposed site accesses, Section 805.005 of the Salem Revised Code (SRC) requires a vehicle clearance area extending 10 feet along the controlled street and 50 feet along the uncontrolled street as measured along the property line. No obstructions are present at the north access (Gaines Street NE) but the proposed buildings lie within the vision clearance areas at the center (Market Street NE) and south (Belmont Alley NE) accesses.

SRC Section 805.015 allows for alternative vision clearance standards "that are consistent with recognized traffic engineering standards." Sight distance is an acceptable alternative standard. The prior section of this report indicates that sight distance at the three proposed accesses is acceptable.

## Warrant Analysis

### Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants were examined for all unsignalized study intersections. Methodologies were based on the Manual on Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration in 2009. Warrant 1, Eight-Hour Vehicular Volumes, was evaluated based on the common assumption that traffic counted during the evening peak hour represents 10 percent of the average daily traffic (ADT) and that the 8<sup>th</sup> highest hour is 5.65 percent of the daily volume. Detailed analysis worksheets can be found in an appendix to this report.

Preliminary traffic signal warrants were evaluated at the three proposed site accesses. The preliminary traffic signal analysis determined that signal warrants are not projected to be met at any of the site access intersections during buildup conditions. Detailed signal warrant analysis worksheets are provided in Appendix C.

### Turn-Lane Warrants

No turn lane warrants were evaluated at the proposed site accesses because the configuration of Front Street NE with the rail line does not permit the addition of turn lanes.

# Operational Analysis

## Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)<sup>5</sup>. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

### Performance Standards

The following agency performance standards are applicable in the study area:

- The **City of Salem** establishes the following operational standards in Section 6.33 of the Department of Public Works Administrative Rules Design Standards:
  - All signalized intersections shall operate at LOS E or better with a control delay of less than 80 seconds and/or a v/c ratio of 0.90 or less.
  - Unsignalized intersections shall operate at LOS E or better with a control delay of less than 50 seconds.
- ODOT establishes mobility targets in Policy 1F of the *Oregon Highway Plan*<sup>6</sup> which include:
  - For OR 99E, a regional highway within and MPO, the target v/c ratio is 0.95 or less.

### Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 9 for the morning and evening peak hours.

Table 9: Capacity Analysis Summary

Intersection & Condition	Performance Threshold	AM Peak Hour			PM Peak Hour		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
1. Pine Street NE & Front Street NE							
2024 Existing	LOS E <50 s	0.24	C	19	0.32	C	22
2029 Background		0.25	C	20	0.34	C	24
2029 Buildout		0.27	C	21	0.37	D	25

<sup>5</sup> Transportation Research Board, *Highway Capacity Manual* 7th Edition, 2022.

<sup>6</sup> Oregon Department of Transportation, *1999 Oregon Highway Plan*, Including amendments November 1999 through January 2023.

Table 9: Capacity Analysis Summary

Intersection & Condition	Performance Threshold	AM Peak Hour			PM Peak Hour		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
<b>2. Pine Street NE &amp; Commercial Street NE (OR 99E)</b>							
2024 Existing	V/C<0.95	0.57	A	9	0.53	B	10
2029 Background		0.58	A	10	0.54	B	11
2029 Buildout		0.59	B	10	0.55	B	11
<b>3. Pine Street NE &amp; Liberty Street NE (OR 99E)</b>							
2024 Existing	V/C<0.95	0.43	A	9	0.49	B	11
2029 Background		0.45	A	9	0.51	B	11
2029 Buildout		0.46	A	10	0.52	B	11
<b>4. Shipping Street NE &amp; Front Street NE</b>							
2024 Existing	LOS E <50 s	0.01	B	12	0.04	C	24
2029 Background		0.01	B	12	0.03	D	25
2029 Buildout		0.01	C	18	0.55	D	26
<b>5. Hood Street NE &amp; Front Street NE</b>							
2024 Existing	LOS E <50 s	0.06	C	17	0.07	C	22
2029 Background		0.06	C	18	0.07	C	23
2029 Buildout		0.10	C	20	0.16	D	27
<b>6. Gaines Street NE/North Access &amp; Front Street NE</b>							
2024 Existing	LOS E <50 s	0.03	B	13	0.02	C	21
2029 Background		0.06	B	13	0.03	C	22
2029 Buildout		0.36	C	24	0.16	D	31
<b>7. Market Street NE/Center Access &amp; Front Street NE</b>							
2024 Existing	LOS E <50 s	0.14	B	15	0.18	C	20
2029 Background		0.15	C	16	0.19	C	21
2029 Buildout		0.43	D	29	0.76	F	72
<b>8. Market Street NE &amp; Commercial Street NE (OR 99E)</b>							
2024 Existing	V/C<0.95	0.69	A	9	0.70	B	11
2029 Background		0.71	A	9	0.72	B	12
2029 Buildout		0.75	B	12	0.79	B	12

Table 9: Capacity Analysis Summary

Intersection & Condition	Performance Threshold	AM Peak Hour			PM Peak Hour		
		V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
<b>9. Market Street NE &amp; Liberty Street NE (OR 99E)</b>							
2024 Existing	V/C<0.95	0.57	A	9	0.67	B	12
2029 Background		0.59	A	9	0.69	B	12
2029 Buildout		0.61	B	11	0.73	B	15
<b>10. Market Street NE &amp; Broadway Street</b>							
2024 Existing	V/C<0.90 LOS E <80 s	0.66	C	22	0.73	C	31
2029 Background		0.68	C	23	0.75	C	31
2029 Buildout		0.70	C	25	0.79	C	35
<b>11. Belmont Alley NE/South Access &amp; Front Street NE</b>							
2029 Buildout	LOS E <50 s	0.09	B	11	0.09	C	16
<b>12. Front Street NE &amp; OR 99E</b>							
2024 Existing	V/C<0.95	0.55	B	15	0.52	B	13
2029 Background		0.57	C	16	0.59	C	15
2029 Buildout		0.64	C	18	0.64	C	17
<b>13. Union Street NE &amp; Front Street NE (OR 99E)</b>							
2024 Existing	V/C<0.95	0.63	A	6	0.68	A	9
2029 Background		0.65	A	6	0.70	A	10
2029 Buildout		0.67	A	5	0.73	B	10

Table Notes: **BOLDED** text indicates that the intersection exceeds the performance standards.

As shown in Table 9, all study intersections are projected to operate within standards under all analysis scenarios, except for Market Street NE/Center Access & Front Street NE. Operations on the westbound approach of Market Street NE are anticipated to exceed LOS E during the evening peak hour under 2029 buildout conditions although the approach is not expected to be over capacity.

## Queuing Analysis

To determine the expected queuing which may form at critical study area movements, a queuing analysis was conducted based on the average results from five Synchro/SimTraffic simulation runs, with the reported values representing 95<sup>th</sup> percentile queue lengths. The 95<sup>th</sup> percentile queue is a statistical measurement that indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95<sup>th</sup> percentile queue length may theoretically never be met or observed in the field.

Reported queue lengths were rounded to a multiple of 25 feet or the approximate length of one vehicle. All queues more than 5 feet longer than a multiple of 25 were rounded up. Those that were 5 feet or less were rounded down since 5 feet is equivalent to the space between queued vehicles.

A comparison of the queues under background year 2029, and buildout year 2029 conditions is presented in Table 10.

Table 10: Queuing Analysis Summary

Intersection & Movement	Available Storage (ft)	95 <sup>th</sup> Percentile Queue Estimate (ft)			
		2029 Background Condition		2029 Buildout Condition	
		Morning	Evening	Morning	Evening
<b>1. Pine Street NE &amp; Front Street NE</b>					
Eastbound	135	25	25	25	25
Westbound	280	75	100	75	100
Northbound	550	25	25	25	25
Southbound	325	25	25	25	25
<b>2. Pine Street NE &amp; Commercial Street NE (OR 99E)</b>					
Eastbound	280	125	125	125	125
Westbound Left	90	150	175	150	175
Westbound Through	280	125	150	125	175
Southbound	310	275	275	275	275
<b>3. Pine Street NE &amp; Liberty Street NE (OR 99E)</b>					
Eastbound Left	90	50	75	50	75
Eastbound Through	280	75	125	100	125
Westbound	280	200	200	200	225
Northbound	540	200	250	225	250
<b>4. Shipping Street NE &amp; Front Street NE</b>					
Eastbound	210	25	50	25	25
Westbound	290	25	25	25	25
Northbound	200	25	25	25	25
Southbound	280	25	25	-	-
<b>5. Hood Street NE &amp; Front Street NE</b>					
Eastbound	40	25	-	25	-
Westbound	285	50	50	75	50
Northbound	270	-	-	-	-
Southbound	170	-	25	-	25

Table 10: Queuing Analysis Summary

Intersection & Movement	Available Storage (ft)	95 <sup>th</sup> Percentile Queue Estimate (ft)			
		2029 Background Condition		2029 Buildout Condition	
		Morning	Evening	Morning	Evening
<b>6. Gaines Street NE/North Access &amp; Front Street NE</b>					
Eastbound	150	-	-	75	50
Westbound	290	50	25	50	50
Northbound	260	25	-	50	75
Southbound	225	-	25	-	25
<b>7. Market Street NE/Center Access &amp; Front Street NE</b>					
Eastbound	150	-	-	50	50
Westbound	260	100	100	125	150
Northbound	220	25	25	75	75
Southbound	270	50	75	75	75
<b>8. Market Street NE &amp; Commercial Street NE (OR 99E)</b>					
Eastbound	260	75	100	150	125
Westbound	260	150	225	200	275
Southbound	275	275	325	300	350
<b>9. Market Street NE &amp; Liberty Street NE (OR 99E)</b>					
Eastbound	250	75	125	150	150
Westbound	280	175	225	225	300
Northbound	280	225	300	250	350
<b>10. Market Street NE &amp; Broadway Street</b>					
Eastbound Left	150	50	50	25	50
Eastbound Through-Right	280	150	200	200	200
Westbound Left	175	150	225	125	250
Westbound Through-Right	270	225	300	225	375
Northbound Left	110	25	75	50	100
Northbound Through	250	300	525	300	575
Northbound Right	85	125	225	125	250
Southbound Left	120	150	225	150	250
Southbound Through-Right	270	400	475	400	525
<b>11. Belmont Alley NE/South Access &amp; Front Street NE</b>					
Eastbound	150	-	-	50	50

Table 10: Queuing Analysis Summary

Intersection & Movement	Available Storage (ft)	95 <sup>th</sup> Percentile Queue Estimate (ft)			
		2029 Background Condition		2029 Buildout Condition	
		Morning	Evening	Morning	Evening
<b>12. Front Street NE &amp; OR 99E</b>					
Eastbound Left	90	100	150	125	175
Westbound Through	310	25	25	25	25
Westbound Right	130	-	-	25	25
Southbound	100	150	150	200	175
<b>13. Union Street NE &amp; Front Street NE (OR 99E)</b>					
Eastbound	250	25	75	50	75
Westbound	340	50	75	50	75
Northbound Left	170	25	175	25	150
Northbound Through-Right	350	375	650	450	750
Southbound Left	100	75	125	100	175
Southbound Through	185	225	225	225	275
Southbound Right	210	25	25	25	50

Notes:

*BOLDED* text indicates queue length exceeding storage capacity by more than 10 feet.

*BOLDED* text indicates queue length exceeding storage capacity by more than 10 feet that poses a safety concern.

In general, changes in 95<sup>th</sup> percentile queuing between the year 2029 background and 2029 buildout conditions are anticipated to be small, one vehicle or two vehicles.

Only one intersection, Front Street NE & OR 99E, is expected to have queues which pose a safety concern. The southbound approach of Front Street NE to OR 99E is estimated to have queues that will extend across the PWRR railroad tracks under both morning and evening peak hours for both background and buildout conditions. Queuing across the tracks has also been observed under existing conditions.

## Potential Mitigation

Potential mitigation is considered at two intersections where operational or safety concerns have been identified.

### Operational Mitigation

At the intersection of Market Street NE/Center Access & Front Street NE, operations on the westbound approach (Market Street NE) are anticipated to exceed LOS E during the evening peak hour under 2029 buildout conditions; however, the approach is not expected to be over capacity and all other movements will operate acceptably. The 95<sup>th</sup> percentile queue is estimated to grow by one or two vehicles with the proposed development but will not extend close to the next upstream intersection.

Two potential mitigation scenarios are evaluated to determine if changes in traffic control would benefit the system. The first option is all-way stop control. The second option is a traffic signal; however, the preliminary signal warrant evaluation showed traffic volumes are not high enough to warrant a signal. A roundabout was not considered as a third option because of the PWRR line that runs through the intersection. The analysis of these potential options is presented in Table 11.

Table 11: Potential Mitigation Options - Market Street NE/Center Access & Front Street NE

Intersection Approach	Two-Way Stop Control			All-Way Stop Control			Traffic Signal		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
<b>AM Peak Hour</b>									
Eastbound	0.29	D	27	0.13	B	11	0.21	B	13
Westbound	0.43	D	29	0.20	B	11	0.30	B	14
Northbound	-	-	-	0.65	C	17	0.42	A	4
Southbound	-	-	-	0.84	D	31	0.54	A	4
Overall	-	A	5	-	C	23	0.49	A	6
<b>PM Peak Hour</b>									
Eastbound	0.33	E	40	0.10	B	11	0.13	B	11
Westbound	0.76	F	72	0.26	B	13	0.34	B	12
Northbound	-	-	-	0.94	E	45	0.65	A	6
Southbound	-	-	-	0.85	E	31	0.56	A	5
Overall	-	A	9	-	E	35	0.58	A	7

#### All-Way Stop Control

As shown in Table 11, with a change to all-way stop control, the intersection would meet the City's performance thresholds but it would significantly increase the overall delay at the intersection. Therefore, all-way stop control is not recommended as mitigation.

### Traffic Signal

With a traffic signal, the intersection could meet the City's performance thresholds with comparable overall average delays. The analysis assumed a two-phase signal operations with a short cycle length of around 60 seconds. The 95<sup>th</sup> percentile queues will be longer on Front Street NE due to delays from the traffic signal but they may be shorter on Market Street NE. A signal could also benefit the pedestrian crossing by stopping traffic on Front Street NE.

Negatives of a traffic signal include more delay for through traffic and a potential increase in the number of crashes occurring at the intersection. Additionally, signal installation at this location would also require coordination for with the rail safety system to be installed at the PWRR line.

Despite the effectiveness of the traffic signal, preliminary traffic signal warrants at this location are not met. The intersection is not even forecast to meet peak hour warrants. Furthermore, much of the commercial development is speculative and the types of tenants may result in lower trip generation than what was assumed for the development.

For these reasons, a signal is not recommended.

### Alternative Performance Measures

The potential traffic control options that could mitigate operational performance are not recommended, as discussed above. Therefore, we recommend alternative performance measure be considered at this location.

The analysis presented in Table 9 is based on the peak hours with an adjustment known as the peak hour factor (PHF) which modifies results to reflect the worst 15 minutes of the busiest hour. For the existing volumes at the Market Street NE/Center Access & Front Street NE intersection, the PHF is 0.85 in the morning and 0.91 in the evening.

One alternative performance measure would be using the average condition for the peak hour (i.e., peak hour factor = 1.0), rather than the peak 15-minute analysis. Table 12 compares the average conditions for the peak hours with the 15-minute results.

**Table 12: Alternative Performance Measures at Market Street NE/Center Access & Front Street NE**

Intersection Approach	Peak 15-Minute Analysis			Average Hour Analysis		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
<b>AM Peak Hour</b>						
Eastbound	0.29	D	27	0.19	C	20
Westbound	0.43	D	29	0.28	C	20
<b>PM Peak Hour</b>						
Eastbound	0.33	E	40	0.24	D	24
Westbound	0.76	F	72	0.57	E	43

When the average hourly conditions are considered, the intersection would operate with LOS C conditions during the morning peak hour and LOS D/E conditions during the evening peak hour. Average delays would be below 50 seconds on all approaches.

Another alternative performance measure is the traffic simulations of delay. The HCM methodologies for evaluating intersection operations rely on theoretical estimates of capacity to estimate the v/c ratio and delay. While they are an excellent tool for operations evaluation, the HCM does not reflect systemic conditions and the influence of activity upstream or downstream from each intersection. Traffic simulation, which is also used for estimating queuing captures the effects of network interactions on traffic flow.

Five network simulation runs were conducted using the Synchro/SimTraffic software and the average delays were calculated. The results are summarized Table 13 for the intersection of Market Street NE/Center Access & Front Street NE. Detailed delay reports are included in Appendix D.

**Table 13: Simulated Delays at Market Street NE/Center Access & Front Street NE**

Approach/Movement	2029 Buildout Delays	
	Morning	Evening
Westbound	10 s	14 s
Eastbound	14 s	18 s
Northbound	1 s	2 s
Southbound	1 s	2 s

*Note: Simulation are based on random arrival patterns; thus, calculated delays may fluctuate each scenario.*

As shown in Table 13, the delays from the traffic simulations demonstrate that the intersection may not have the long delays on the side streets estimated using the theoretical capacity calculations from the HCM. The average hourly delays for the stopped eastbound and westbound approaches are estimated at under 20 seconds during both time analysis periods. These findings also support consideration of other operational measures, such as the average hourly performance, before potentially costly mitigation that could add time and delay to other traffic is recommended.

### **Recommendation**

Although the intersection of Market Street NE/Center Access & Front Street NE would not meet City of Salem performance thresholds for the 2029 building conditions during the evening peak hour, changes in traffic control are not recommended. All-way stop control would meet the City's performance thresholds but would significantly increase the overall delay at the intersection. A traffic signal would also meet performance thresholds but preliminary traffic signal warrants are not satisfied with the forecast traffic volumes. Therefore, we recommend the City consider alternative performance measures, such as the average hourly operations, which meet the LOS standard and/or traffic simulations of delay, which meet the delay standard.

## Safety Mitigation

Only one intersection, Front Street NE & OR 99E, is expected to have queues which pose a safety concern. The queue on the southbound approach of Front Street NE to OR 99E is estimated to have the queues that will extend across the PWRR railroad tracks under both morning and evening peak hours for both background and buildout conditions.

The skewed configuration of the PWRR rail line at this location makes traditional signage, such as "DO NOT STOP ON TRACKS" (Sign R8-8), more difficult to install. However, signage at this location is recommended per MUTCD guidance. This recommendation is independent of the proposed project as the 95<sup>th</sup> percentile queues under 2029 background conditions and observations under existing conditions show queues sometimes extend across the tracks as well.

## Conclusions

Key findings from this analysis include:

- Total external trip generation was estimated at 268 morning peak hour, 318 evening peak hour, and 3,764 daily trips. After deducting pass-by traffic, the proposed development is anticipated to generate 256 primary trips during the morning peak hour, 288 primary trips during the evening peak hour, and 3,466 primary trips each weekday.
- Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections; therefore, no safety mitigation is recommended per the crash data analysis.
- Adequate sightlines are available at all three proposed sight accesses without obstruction from the proposed buildings; however, vehicles utilizing the on-street parking may be present in the sight triangles. Parked vehicles are considered an acceptable temporary obstruction under the vision clearance standards. Additionally, vehicles approaching on the major roadway have adequate SSD looking towards all three access intersections.
- The proposed buildings lie within the vision clearance areas at the center (Market Street NE) and south (Belmont Alley NE) accesses. Sight distance is an acceptable alternative standard. The prior section of this report indicates that sight distance at the three proposed accesses is acceptable.
- The preliminary traffic signal analysis determined that signal warrants are not projected to be met at any of the site access intersections under 2029 buildout conditions.
- All study intersections are projected to operate within standards under all analysis scenarios, except for Market Street NE/Center Access & Front Street NE. Operations on the westbound approach of Market Street NE are anticipated to exceed LOS E during the evening peak hour under 2029 buildout conditions although the approach is not expected to be over capacity.
- In general, changes in 95<sup>th</sup> percentile queuing between the year 2029 background and buildout conditions are anticipated to be small, one vehicle or two vehicles.
- Only one intersection, Front Street NE & OR 99E, is expected to have queues which pose a safety concern. The queue on the southbound approach of Front Street NE to OR 99E is estimated to have the queues that will extend across the PWRR railroad tracks under both morning and evening peak hours for both background and buildout conditions.
- The following mitigation is recommended based on the operations and safety analysis:
  - Alternative performance measures, such as using average hourly operations, which meet the LOS standard and/or traffic simulations of delay, which meet the delay standard are recommended for the Market Street NE/Center Access & Front Street NE intersection. Although traffic control changes were considered, all-way stop control would significantly increase overall intersection delay, traffic signal warrants are not satisfied with the forecast traffic volumes, and a roundabout is not considered feasible because of the PWRR line that runs through the intersection.

- To address existing and future queuing across the PWRR rail line on Front Street NE as it approaches OR 99E, signage, such as "DO NOT STOP ON TRACKS" (Sign R8-8) is recommended per MUTCD guidance. This recommendation is independent of the proposed project.
- The posted speed on Front Street NE is currently 35 mph which is typical for a minor arterial roadway; however, the proposed development and reconfiguration of Front Street NE supports consideration of a lower posted speed more appropriate for the active commercial area. Changing a speed zone is a complex process but should be considered as a long-term option for Front Street NE along the sight frontage.

## Appendix A – Site Information

Site Plan

Trip Generation Calculations

FUND

**AKS**

ENGINEERING • SURVEYING • NATURAL RESOURCES

FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

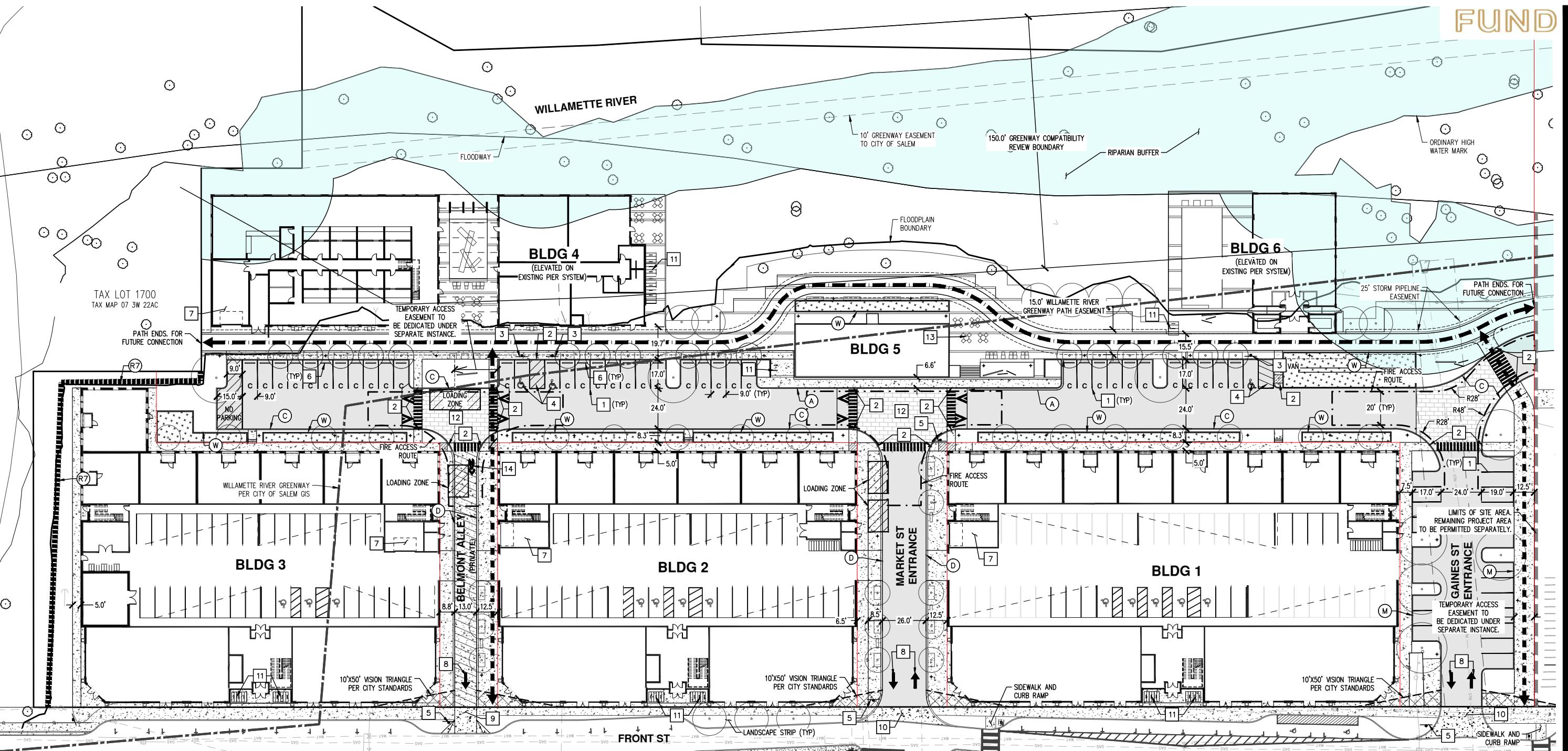
PROPERTY DESCRIPTION  
TAX MAP 07.WM226  
TAX LOTS 300, 300, 900  
CONTRACT PURCHASER:  
FUND  
15017 THOMAS RD,  
CHARLOTTE, NC 28278

## PRELIMINARY SITE PLAN THE CANNERY FUND SALEM, OREGON



REGISTERED PROFESSIONAL  
ENGINEER  
T.D.R.  
T.D.R.  
R.D. ROTH  
RENEWED: DECEMBER 31, 2024  
JOB NUMBER: 5968-01  
DATE: 05/17/2024  
DESIGNED BY: TDR  
DRAWN BY: MJM  
CHECKED BY: TDR

P8



## CURB KEYED NOTES: #

- (A) TYPE 'A' CURB AND GUTTER
- (C) TYPE 'C' CURB
- (D) TYPE 'D' MOUNTABLE CURB
- (M) MONOLITHIC CURB AND SIDEWALK
- (W) PLANTER WALL
- (R7) EXISTING RETAINING WALL. STRUCTURAL IMPROVEMENTS REQUIRED TO BE DETERMINED AT TIME OF BUILDING PERMIT

## SITE KEYED NOTES: #

1. PAINT 4-INCH WIDE WHITE STRIPE PER CITY STANDARDS.
2. ACCESSIBLE CURB RAMP AND DETECTABLE WARNING SURFACE.
3. ACCESSIBLE PARKING SIGN. "VAN" INDICATES VAN ACCESSIBLE SIGN.
4. ACCESSIBLE PARKING STALLS AND AISLE STRIPING.
5. INSTALL 30"X30" STOP SIGN AND STOP BAR. (36"X36" WHEN ENTERING PUBLIC ROW)
6. CONCRETE WHEEL STOP.
7. TRASH ENCLOSURE, SEE ARCHITECTURAL PLANS FOR DETAILS.
8. DIRECTIONAL ARROW STRIPE.
9. COMMERCIAL DRIVEWAY APPROACH PER CITY DETAIL NO.302.
10. COMMERCIAL DRIVEWAY APPROACH PER CITY DETAIL NO.315.
11. BIKE RACK, SEE ARCHITECTURAL PLANS FOR DETAILS.
12. RAISED SPEED TABLE PEDESTRIAN CROSSING.
13. OUTDOOR SEATING. SEE LANDSCAPE PLANS FOR DETAILS.
14. SHARED BIKE LANE TO PROVIDE ACCESS FROM WILLAMETTE GREENWAY PATH TO FRONT STREET. EASEMENT TO BE QUICKECLAIMED UPON CONSTRUCTION OF PATH TO THE SOUTH.

## SITE PLAN DATA:

**ZONING:** MU-R  
**SUBJECT PROPERTY AREA:** ±593,899 SF (±13.6 ACRES)  
**SITE AREA:** ±333,110 SF (±7.6 ACRES)

**DENSITY:**  
MULTI-FAMILY = 371 UNITS  
\*RETAIL = 12,149 SF  
\*OFFICE = 5,880 SF  
\*EATING/DRINKING ESTABLISHMENT = 30,859 SF

\*DISTRIBUTION OF RETAIL, OFFICE, AND EATING/DRINKING ESTABLISHMENTS  
SQUARE FOOTAGE ARE SUBJECT TO CHANGE.

**PARKING SUMMARY:**  
**MAXIMUM VEHICLE PARKING:**  
MULTI-FAMILY = 649 SPACES (1.75/UNIT)  
RETAIL = 61 SPACES (1/200 SF)  
OFFICE = 24 SPACES (1/250 SF)  
EATING/DRINKING ESTABLISHMENT = 176 SPACES (1/175 SF)

**VEHICLE PARKING PROVIDED:**  
• AUTOMATED = 276 SPACES  
• SURFACE = 10 SPACES  
• ACCESSIBLE = 12 SPACES

**OFF-STREET PARKING:**  
• STANDARD = 20 SPACES  
• COMPACT = 35 SPACES  
• ACCESSIBLE = 3 SPACES

**TOTAL PARKING = 356 SPACES**

**BICYCLE PARKING REQUIRED:**  
MULTI-FAMILY = 371 SPACES (1/UNIT)  
RETAIL = 4 SPACES (GREATER OF 4 OR 1/10,000 SF)  
OFFICE = 4 SPACES (GREATER OF 4 OR 1/3,500 SF)

EATING/DRINKING ESTABLISHMENT = 31 SPACES (GREATER OF 4 OR 1/1,000 SF)

**TOTAL REQUIRED = 410 SPACES**

**BICYCLE PARKING PROVIDED:**

SHORT-TERM = 59 SPACES

LONG-TERM = 423 SPACES

**TOTAL = 482 SPACES**

**LOADING ZONE REQUIRED/PROVIDED:**

MULTI-FAMILY REQUIRED = 3 SPACES (12'WX19'L)

RETAIL SALES AND SERVICES REQUIRED = 1 SPACE (12'WX30'L)

OFFICE REQUIRED = 1 SPACE (OFF-STREET PARKING AREA USED FOR LOADING PER SRC 806.075(a))

**TOTAL REQUIRED = 4 SPACES**

**TOTAL PROVIDED = 3 SPACES (12'WX19'L)**

1 SPACE (12'WX30')

**NOTE: SPACES TO BE SCHEDULED AND CONED OFF WITH SITE OPERATOR FOR LOADING AND UNLOADING.**

## SETBACKS:

**ALONG FRONT ST:**  
BUILDINGS = 0 FT OR MAX 10 FT (IF SETBACK AREA IS USED FOR PEDESTRIAN AMENITIES)

**VEHICLE USE AREA = 10 FT**

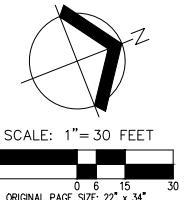
**SIDE/REAR YARD:**  
BUILDINGS = NONE  
VEHICLE USE AREA = 5 FT (NOT REQUIRED ABUTTING AN ALLEY)

## GENERAL NOTES:

1. BUILDINGS 1, 2, AND 3 ARE ON SEPARATE PROPERTIES. REFER TO SHEET P4 FOR THE PROPOSED PROPERTY LINES.
2. THE FRONT STREET NE IMPROVEMENTS SHOWN ARE PRELIMINARY AND BASED ON CONCEPTUAL DESIGN WORK PROVIDED BY THE CITY'S RETAINED RAIL ENGINEER. REFINED FRONT STREET NE IMPROVEMENTS ARE ANTICIPATED AND WILL BE CONSTRUCTED IN ACCORDANCE WITH FEEDBACK RECEIVED FROM THE FINAL RAIL DIAGNOSTIC AND COORDINATION WITH THE CITY.

## EV READY NOTE:

40% OF PARKING STALLS ARE REQUIRED TO BE EV READY PER STATE REQUIREMENTS. FINAL EV READY STALL LOCATION AND CONDUIT PLACEMENT WILL BE COORDINATED WITH PROJECT ELECTRICIAN AT THE TIME OF BUILDING PERMIT SUBMITTAL.



## LEGEND

- 10' WILLAMETTE GREENWAY CONCRETE PATH (WITHIN 15' EASEMENT TO CITY OF SALEM)
- TEMPORARY GREENWAY ACCESS TO FRONT STREET UNTIL MILL CREEK CONNECTION IS CONSTRUCTED, OR THE PARK TO THE NW IS IMPROVED.
- ASPHALT PAVEMENT SECTION
- CONCRETE SIDEWALK (4" MIN THICKNESS)
- CONCRETE PAVEMENT SECTION (8" MIN THICKNESS)
- CONCRETE PAVERS (REFER TO PLANS BY OTHERS)
- STORMWATER FACILITY
- PLANNED TREE (REFER TO LANDSCAPE PLANS BY OTHERS)



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Multifamily Housing (Mid-Rise)

*Land Use Code:* 221

*Land Use Subcategory:* Not Close to Rail Transit

*Setting/Location:* General Urban/Suburban

*Variable:* Dwelling Units

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 371

### AM PEAK HOUR

*Trip Rate:* 0.37

	Enter	Exit	Total
Directional Split	23%	77%	
Trip Ends	32	105	137

### PM PEAK HOUR

*Trip Rate:* 0.39

	Enter	Exit	Total
Directional Split	61%	39%	
Trip Ends	88	57	145

### WEEKDAY

*Trip Rate:* 4.54

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	842	842	1,684

### SATURDAY

*Trip Rate:* 4.57

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	848	848	1,696

Source: Trip Generation Manual, 11th Edition



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Small Office Building

*Land Use Code:* 712

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **5.885**

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 1.67

*Trip Rate:* 2.16

	Enter	Exit	Total
Directional Split	82%	18%	
Trip Ends	<b>8</b>	<b>2</b>	<b>10</b>

	Enter	Exit	Total
Directional Split	34%	66%	
Trip Ends	<b>4</b>	<b>9</b>	<b>13</b>

### WEEKDAY

### SATURDAY

*Trip Rate:* 14.39

*Trip Rate:* 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>42</b>	<b>42</b>	<b>84</b>

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>NA</b>	<b>NA</b>	<b>NA</b>



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Strip Retail Plaza (<40k)

*Land Use Code:* 822

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **12.160**

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 2.36

*Trip Rate:* 6.59

	Enter	Exit	Total
Directional Split	60%	40%	
Trip Ends	17	12	29

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	40	40	80

### WEEKDAY

*Trip Rate:* 54.45

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	331	331	662

### SATURDAY

*Trip Rate:* 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Food Cart Pods

*Land Use Code:* 926

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* Food Carts

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* 8

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 1.232

*Trip Rate:* 6.16

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	5	5	10

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	25	24	49

\* Assumes AM is 20% of PM.

### WEEKDAY

*Trip Rate:* 61.6

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	246	246	492

### SATURDAY

*Trip Rate:* 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA

\* Assumes Daily is 10 x PM.



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* High-Turnover (Sit-Down) Restaurant

*Land Use Code:* 932

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **12.926**

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 9.57

*Trip Rate:* 9.05

	Enter	Exit	Total
Directional Split	55%	45%	
Trip Ends	<b>68</b>	<b>56</b>	<b>124</b>

	Enter	Exit	Total
Directional Split	61%	39%	
Trip Ends	<b>71</b>	<b>46</b>	<b>117</b>

### WEEKDAY

### SATURDAY

*Trip Rate:* 107.2

*Trip Rate:* 122.4

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>693</b>	<b>693</b>	<b>1,386</b>

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>791</b>	<b>791</b>	<b>1,582</b>



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Wine Tasting Room

*Land Use Code:* 970

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **2.925**

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 2.07

*Trip Rate:* 7.31

	Enter	Exit	Total
Directional Split	70%	30%	
Trip Ends	<b>4</b>	<b>2</b>	<b>6</b>

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>11</b>	<b>10</b>	<b>21</b>

### WEEKDAY

### SATURDAY

*Trip Rate:* 45.96

*Trip Rate:* 203.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>67</b>	<b>67</b>	<b>134</b>

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>298</b>	<b>298</b>	<b>596</b>



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Drinking Place

*Land Use Code:* 975

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **4.309**

### AM PEAK HOUR

### PM PEAK HOUR

*Trip Rate:* 0

*Trip Rate:* 11.36

	Enter	Exit	Total
Directional Split	0%	0%	
Trip Ends	<b>0</b>	<b>0</b>	<b>0</b>

	Enter	Exit	Total
Directional Split	66%	34%	
Trip Ends	<b>32</b>	<b>17</b>	<b>49</b>

### WEEKDAY

### SATURDAY

*Trip Rate:* 113.6

*Trip Rate:* 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>245</b>	<b>245</b>	<b>490</b>

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>NA</b>	<b>NA</b>	<b>NA</b>

\* Assumes Daily is 10 x PM.



## TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

*Land Use:* Manufacturing

*Land Use Code:* 140

*Land Use Subcategory:* All Sites

*Setting/Location:* General Urban/Suburban

*Variable:* 1000 SF GFA

*Trip Type:* Vehicle

*Formula Type:* Rate

*Variable Quantity:* **196.422**

### AM PEAK HOUR

*Trip Rate:* 0.68

	Enter	Exit	Total
Directional Split	76%	24%	
Trip Ends	<b>102</b>	<b>32</b>	<b>134</b>

### PM PEAK HOUR

*Trip Rate:* 0.74

	Enter	Exit	Total
Directional Split	31%	69%	
Trip Ends	<b>45</b>	<b>100</b>	<b>145</b>

### WEEKDAY

*Trip Rate:* 4.75

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>467</b>	<b>467</b>	<b>934</b>

### SATURDAY

*Trip Rate:* 1.49

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>146</b>	<b>146</b>	<b>292</b>

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	The Cannery		Organization:	Lancaster Mobley	
Project Location:	Salem, OR		Performed By:	JED	
Scenario Description:			Date:		
Analysis Year:			Checked By:		
Analysis Period:	AM Street Peak Hour		Date:		

**Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)**

Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				10	8	2
Retail				29	17	12
Restaurant				134	73	61
Cinema/Entertainment				0		
Residential				137	32	105
Hotel				0		
All Other Land Uses <sup>2</sup>				0		
Total				310	130	180

**Table 2-A: Mode Split and Vehicle Occupancy Estimates**

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses <sup>2</sup>						

**Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

**Table 4-A: Internal Person-Trip Origin-Destination Matrix\***

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	1	0	0	0
Retail	0		2	0	1	0
Restaurant	1	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	15	0		0
Hotel	0	0	0	0	0	

**Table 5-A: Computations Summary**

	Total	Entering	Exiting
All Person-Trips	310	130	180
Internal Capture Percentage	15%	18%	13%
External Vehicle-Trips <sup>3</sup>	262	106	156
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

**Table 6-A: Internal Trip Capture Percentages by Land Use**

Land Use	Entering Trips	Exiting Trips
Office	13%	50%
Retail	12%	25%
Restaurant	25%	7%
Cinema/Entertainment	N/A	N/A
Residential	9%	15%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

<b>Project Name:</b>	The Cannery
<b>Analysis Period:</b>	AM Street Peak Hour

**Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends**

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	8	8	1.00	2	2
Retail	1.00	17	17	1.00	12	12
Restaurant	1.00	73	73	1.00	61	61
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	32	32	1.00	105	105
Hotel	1.00	0	0	1.00	0	0

**Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	1	0	0	0
Retail	3		2	0	2	0
Restaurant	19	9		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	21	0		0
Hotel	0	0	0	0	0	

**Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		5	17	0	0	0
Retail	0		37	0	1	0
Restaurant	1	1		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	15	0		0
Hotel	0	1	4	0	0	

**Table 9-A (D): Internal and External Trips Summary (Entering Trips)**

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	1	7	8	7	0	0
Retail	2	15	17	15	0	0
Restaurant	18	55	73	55	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	29	32	29	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

**Table 9-A (O): Internal and External Trips Summary (Exiting Trips)**

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	1	1	2	1	0	0
Retail	3	9	12	9	0	0
Restaurant	4	57	61	57	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	16	89	105	89	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool					
Project Name:	The Cannery		Organization:	Lancaster Mobley	
Project Location:	Salem, OR		Performed By:	JED	
Scenario Description:			Date:		
Analysis Year:			Checked By:		
Analysis Period:	PM Street Peak Hour		Date:		

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips		
	ITE LUCs <sup>1</sup>	Quantity	Units	Total	Entering	Exiting
Office				13	4	9
Retail				80	40	40
Restaurant				215	128	87
Cinema/Entertainment				0	0	0
Residential				145	88	57
Hotel				0	0	0
All Other Land Uses <sup>2</sup>				0	0	0
Total				453	260	193

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.00	0%	0%	1.00	0%	0%
Retail	1.00	0%	0%	1.00	0%	0%
Restaurant	1.00	0%	0%	1.00	0%	0%
Cinema/Entertainment	1.00	0%	0%	1.00	0%	0%
Residential	1.00	0%	0%	1.00	0%	0%
Hotel	1.00	0%	0%	1.00	0%	0%
All Other Land Uses <sup>2</sup>						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	1		12	0	10	0
Restaurant	1	20		0	14	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	4	12	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	453	260	193
Internal Capture Percentage	34%	30%	40%
External Vehicle-Trips <sup>3</sup>	297	182	115
External Transit-Trips <sup>4</sup>	0	0	0
External Non-Motorized Trips <sup>4</sup>	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	100%	22%
Retail	65%	58%
Restaurant	19%	40%
Cinema/Entertainment	N/A	N/A
Residential	27%	32%
Hotel	N/A	N/A

<sup>1</sup>Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

<sup>2</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

<sup>3</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>4</sup>Person-Trips

\*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

<b>Project Name:</b>	The Cannery
<b>Analysis Period:</b>	PM Street Peak Hour

**Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends**

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	4	4	1.00	9	9
Retail	1.00	40	40	1.00	40	40
Restaurant	1.00	128	128	1.00	87	87
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	88	88	1.00	57	57
Hotel	1.00	0	0	1.00	0	0

**Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		2	0	0	0	0
Retail	1		12	2	10	2
Restaurant	3	36		7	16	6
Cinema/Entertainment	0	0	0		0	0
Residential	2	24	12	0		2
Hotel	0	0	0	0	0	

**Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)**

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		3	3	0	4	0
Retail	1		37	0	40	0
Restaurant	1	20		0	14	0
Cinema/Entertainment	0	2	4		4	0
Residential	2	4	18	0		0
Hotel	0	1	6	0	0	

**Table 9-P (D): Internal and External Trips Summary (Entering Trips)**

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	4	0	4	0	0	0
Retail	26	14	40	14	0	0
Restaurant	24	104	128	104	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	24	64	88	64	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

**Table 9-P (O): Internal and External Trips Summary (Exiting Trips)**

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles <sup>1</sup>	Transit <sup>2</sup>	Non-Motorized <sup>2</sup>
Office	2	7	9	7	0	0
Retail	23	17	40	17	0	0
Restaurant	35	52	87	52	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	18	39	57	39	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses <sup>3</sup>	0	0	0	0	0	0

<sup>1</sup>Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

<sup>2</sup>Person-Trips

<sup>3</sup>Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

\*Indicates computation that has been rounded to the nearest whole number.

## Appendix B – Volumes

Traffic Counts

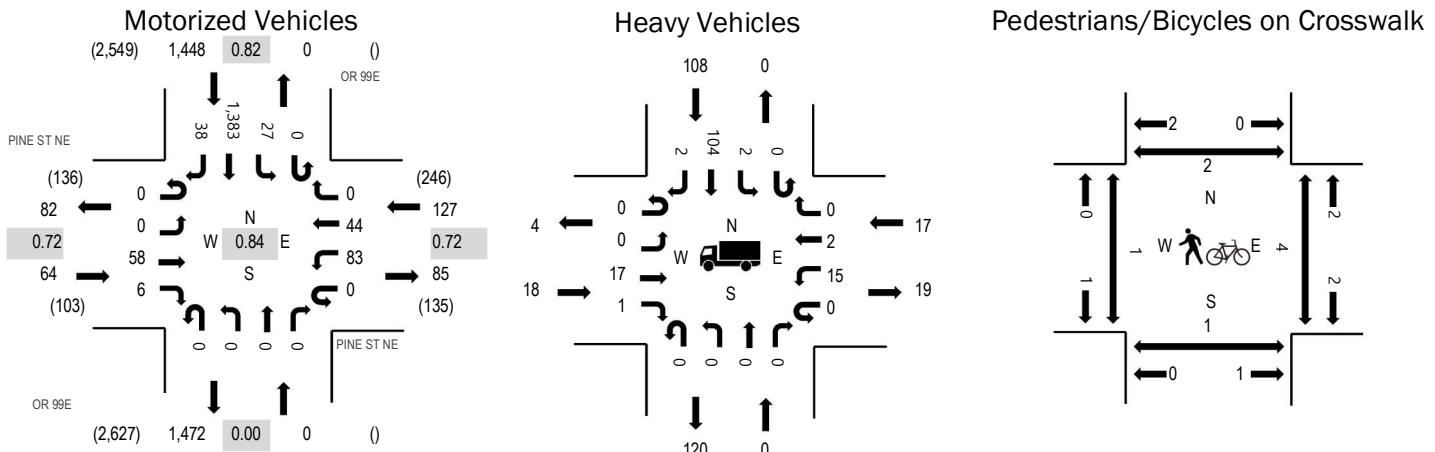
Seasonal Adjustment Factor

Growth Rates

Model Plots

**Location:** 1 OR 99E & PINE ST NE AM  
**Date:** Tuesday, February 6, 2024  
**Peak Hour:** 07:35 AM - 08:35 AM  
**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	28.1%	0.72
WB	13.4%	0.72
NB	0.0%	0.00
SB	7.5%	0.82
All	8.7%	0.84

**Traffic Counts - Motorized Vehicles**

Interval Start Time	PINE ST NE				PINE ST NE				OR 99E				OR 99E				Total	Rolling Hour	
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			
7:00 AM	0	0	3	1	0	9	0	0	0	0	0	0	0	1	66	2	82	1,516	
7:05 AM	0	0	5	0	0	4	0	0	0	0	0	0	0	3	82	1	95	1,576	
7:10 AM	0	0	0	1	0	6	3	0	0	0	0	0	0	1	86	1	98	1,581	
7:15 AM	0	0	3	0	0	7	1	0	0	0	0	0	0	1	98	3	113	1,624	
7:20 AM	0	0	1	0	0	13	3	0	0	0	0	0	0	1	95	2	115	1,633	
7:25 AM	0	0	1	0	0	4	2	0	0	0	0	0	0	1	113	2	123	1,630	
7:30 AM	0	0	1	0	0	7	6	0	0	0	0	0	0	2	96	0	112	1,632	
7:35 AM	0	0	0	1	0	10	5	0	0	0	0	0	0	0	121	1	138	1,639	
7:40 AM	0	0	7	1	0	14	5	0	0	0	0	0	0	2	121	3	153	1,604	
7:45 AM	0	0	5	0	0	5	4	0	0	0	0	0	0	1	137	3	155	1,565	
7:50 AM	0	0	2	0	0	6	3	0	0	0	0	0	0	2	144	3	160	1,515	
7:55 AM	0	0	8	0	0	8	3	0	0	0	0	0	0	2	145	6	172	1,461	
8:00 AM	0	0	0	0	0	6	2	0	0	0	0	0	0	5	126	3	142	1,382	
8:05 AM	0	0	4	1	0	2	5	0	0	0	0	0	0	4	80	4	100		
8:10 AM	0	0	3	1	0	11	4	0	0	0	0	0	0	1	118	3	141		
8:15 AM	0	0	9	1	0	4	2	0	0	0	0	0	0	1	103	2	122		
8:20 AM	0	0	3	0	0	5	6	0	0	0	0	0	0	4	89	5	112		
8:25 AM	0	0	7	0	0	7	4	0	0	0	0	0	0	3	99	5	125		
8:30 AM	0	0	10	1	0	5	1	0	0	0	0	0	0	2	100	0	119		
8:35 AM	0	0	5	1	0	7	3	0	0	0	0	0	0	2	83	2	103		
8:40 AM	0	0	4	0	0	10	7	0	0	0	0	0	0	1	92	0	114		
8:45 AM	0	0	5	1	0	6	2	0	0	0	0	0	0	3	86	2	105		
8:50 AM	0	0	4	1	0	1	1	0	0	0	0	0	0	0	0	96	3	106	
8:55 AM	0	0	2	0	0	10	7	0	0	0	0	0	0	0	0	73	1	93	
Count Total	0	0	92	11	0	167	79	0	0	0	0	0	0	43	2,449	57	2,898		
Peak Hour	0	0	58	6	0	83	44	0	0	0	0	0	0	27	1,383	38	1,639		

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	1	5	7	7:00 AM	0	0	0	0	0
7:05 AM	1	0	1	8	10	7:05 AM	0	0	0	0	0
7:10 AM	0	0	1	8	9	7:10 AM	0	0	0	0	0
7:15 AM	0	0	5	8	13	7:15 AM	0	0	0	0	0
7:20 AM	0	0	5	8	13	7:20 AM	1	0	0	0	1
7:25 AM	0	0	3	5	8	7:25 AM	0	0	0	0	0
7:30 AM	0	0	1	10	11	7:30 AM	0	0	0	0	0
7:35 AM	0	0	5	7	12	7:35 AM	0	0	0	0	0
7:40 AM	0	0	4	11	15	7:40 AM	0	0	0	1	1
7:45 AM	0	0	1	7	8	7:45 AM	0	0	0	0	0
7:50 AM	1	0	1	13	15	7:50 AM	0	0	0	1	1
7:55 AM	4	0	1	13	18	7:55 AM	0	1	1	0	2
8:00 AM	0	0	1	8	9	8:00 AM	0	0	0	0	0
8:05 AM	1	0	1	10	12	8:05 AM	1	0	0	0	1
8:10 AM	0	0	1	9	10	8:10 AM	0	0	0	0	0
8:15 AM	4	0	0	8	12	8:15 AM	0	0	0	0	0
8:20 AM	2	0	0	6	8	8:20 AM	0	0	2	0	2
8:25 AM	1	0	2	5	8	8:25 AM	0	0	1	0	1
8:30 AM	5	0	0	11	16	8:30 AM	0	0	0	0	0
8:35 AM	3	0	2	7	12	8:35 AM	0	0	0	0	0
8:40 AM	1	0	2	1	4	8:40 AM	0	0	0	0	0
8:45 AM	2	0	3	7	12	8:45 AM	3	0	1	3	7
8:50 AM	0	0	0	6	6	8:50 AM	3	0	0	3	6
8:55 AM	1	0	3	6	10	8:55 AM	0	0	0	0	0
Count Total	27	0	44	187	258	Count Total	8	1	5	8	22
Peak Hour	18	0	17	108	143	Peak Hour	1	1	4	2	8

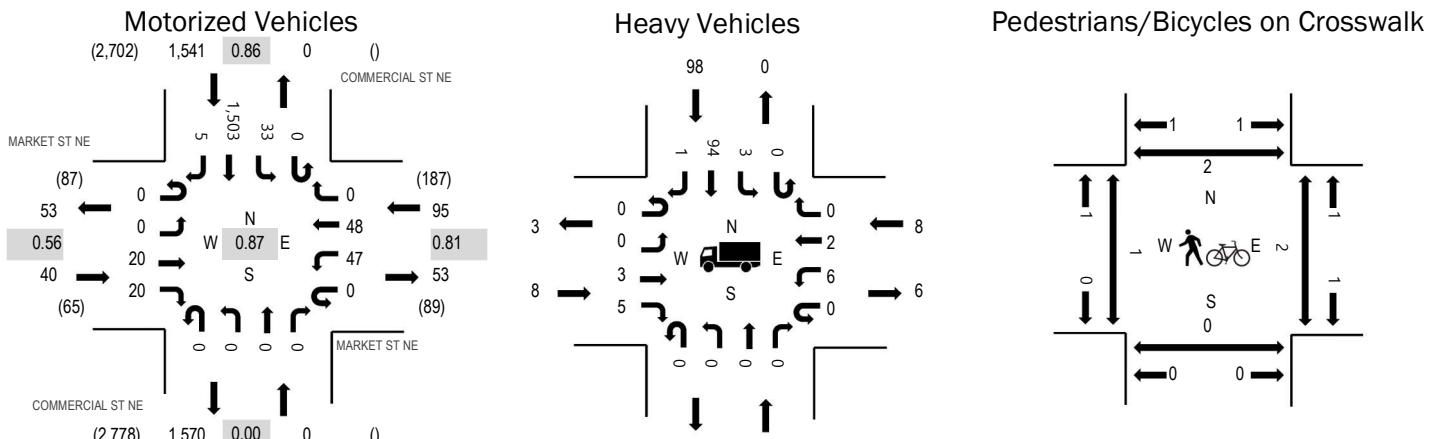
**Location:** 2 COMMERCIAL ST NE & MARKET ST NE AM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:45 AM - 08:00 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	20.0%	0.56
WB	8.4%	0.81
NB	0.0%	0.00
SB	6.4%	0.86
All	6.8%	0.87

**Traffic Counts - Motorized Vehicles**

Interval Start Time	MARKET ST NE				MARKET ST NE				COMMERCIAL ST NE				COMMERCIAL ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
7:00 AM	0	0	1	0	0	8	3	0	0	0	0	0	0	1	85	0	98 1,529
7:05 AM	0	0	0	1	0	5	2	0	0	0	0	0	0	1	68	2	79 1,574
7:10 AM	0	0	0	1	0	2	2	0	0	0	0	0	0	1	83	0	89 1,621
7:15 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	1	110	0	113 1,655
7:20 AM	0	0	1	1	0	6	2	0	0	0	0	0	0	1	106	0	117 1,664
7:25 AM	0	0	0	1	0	5	7	0	0	0	0	0	0	1	101	0	115 1,663
7:30 AM	0	0	1	1	0	6	3	0	0	0	0	0	0	1	129	0	141 1,676
7:35 AM	0	0	5	1	0	5	5	0	0	0	0	0	0	2	118	1	137 1,658
7:40 AM	0	0	0	4	0	1	7	0	0	0	0	0	0	4	140	0	156 1,635
7:45 AM	0	0	3	5	0	4	2	0	0	0	0	0	0	2	136	0	152 1,590
7:50 AM	0	0	0	2	0	4	5	0	0	0	0	0	0	7	138	0	156 1,550
7:55 AM	0	0	2	3	0	5	3	0	0	0	0	0	0	3	158	2	176 1,502
8:00 AM	0	0	1	0	0	5	6	0	0	0	0	0	0	3	127	1	143 1,425
8:05 AM	0	0	2	1	0	6	4	0	0	0	0	0	0	3	109	1	126
8:10 AM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	119	0	123
8:15 AM	0	0	4	1	0	2	4	0	0	0	0	0	0	2	109	0	122
8:20 AM	0	0	0	0	0	4	2	0	0	0	0	0	0	2	108	0	116
8:25 AM	0	0	2	2	0	3	5	0	0	0	0	0	0	4	112	0	128
8:30 AM	0	0	0	2	0	5	6	0	0	0	0	0	0	4	106	0	123
8:35 AM	0	0	4	0	0	4	0	0	0	0	0	0	0	4	102	0	114
8:40 AM	0	0	0	2	0	6	2	0	0	0	0	0	0	2	99	0	111
8:45 AM	0	0	2	2	0	8	2	0	0	0	0	0	0	5	93	0	112
8:50 AM	0	0	2	1	0	6	2	0	0	0	0	0	0	1	95	1	108
8:55 AM	0	0	3	1	0	5	2	0	0	0	0	0	0	1	87	0	99
Count Total	0	0	33	32	0	108	79	0	0	0	0	0	0	56	2,638	8	2,954
Peak Hour	0	0	20	20	0	47	48	0	0	0	0	0	0	33	1,503	5	1,676

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	8	8	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	4	4	7:05 AM	0	0	1	0	1
7:10 AM	0	0	0	7	7	7:10 AM	0	0	1	0	1
7:15 AM	0	0	0	7	7	7:15 AM	1	0	0	0	1
7:20 AM	0	0	0	8	8	7:20 AM	1	0	0	0	1
7:25 AM	0	0	2	8	10	7:25 AM	0	0	0	0	0
7:30 AM	0	0	2	9	11	7:30 AM	0	0	0	0	0
7:35 AM	1	0	2	10	13	7:35 AM	0	0	0	0	0
7:40 AM	0	0	1	13	14	7:40 AM	1	0	0	1	2
7:45 AM	3	0	0	8	11	7:45 AM	0	0	0	0	0
7:50 AM	0	0	1	10	11	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	11	11	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	7	7	8:00 AM	0	0	1	1	2
8:05 AM	0	0	0	7	7	8:05 AM	0	0	0	0	0
8:10 AM	0	0	1	5	6	8:10 AM	0	0	0	0	0
8:15 AM	2	0	1	7	10	8:15 AM	0	0	1	0	1
8:20 AM	0	0	0	4	4	8:20 AM	0	0	0	0	0
8:25 AM	2	0	0	7	9	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	14	14	8:30 AM	0	0	0	0	0
8:35 AM	0	0	1	6	7	8:35 AM	1	0	0	0	1
8:40 AM	0	0	1	6	7	8:40 AM	0	0	1	1	2
8:45 AM	1	0	0	4	5	8:45 AM	2	0	0	1	3
8:50 AM	0	0	0	9	9	8:50 AM	0	0	0	0	0
8:55 AM	1	0	0	8	9	8:55 AM	0	0	0	0	0
Count Total	10	0	12	187	209	Count Total	6	0	5	4	15
Peak Hour	8	0	8	98	114	Peak Hour	1	0	2	2	5

**Location:** 3 FRONT ST NE & PINE ST NE AM

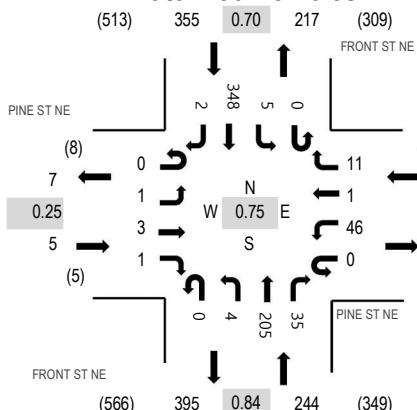
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 08:00 AM - 09:00 AM

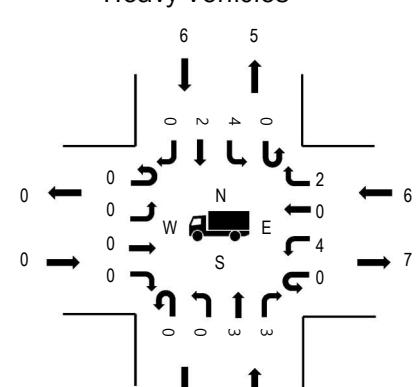
**Peak 15-Minutes:** 08:40 AM - 08:55 AM

### Peak Hour

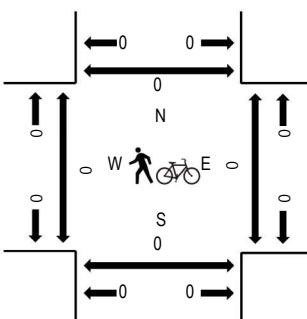
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	10.3%	0.63
NB	2.5%	0.84
SB	1.7%	0.70
All	2.7%	0.75

### Traffic Counts - Motorized Vehicles

Interval Start Time	PINE ST NE				PINE ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
7:05 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4	5
7:10 AM	0	0	0	0	0	0	0	1	0	0	3	2	0	0	0	6	12
7:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	10	14
7:20 AM	0	0	0	0	0	2	0	0	0	0	9	1	0	0	0	12	24
7:25 AM	0	0	0	0	0	2	0	0	0	0	9	3	0	0	0	14	28
7:30 AM	0	0	0	0	0	2	0	0	0	0	6	1	0	0	1	14	24
7:35 AM	0	0	0	0	0	1	0	0	0	0	10	1	0	0	0	14	26
7:40 AM	0	0	0	0	0	1	0	0	0	0	15	0	0	0	0	22	38
7:45 AM	0	0	0	0	0	4	0	1	0	0	13	1	0	0	0	20	39
7:50 AM	0	0	0	0	0	0	0	0	0	0	6	3	0	0	0	18	27
7:55 AM	0	0	0	0	0	2	0	0	0	1	14	3	0	0	0	20	634
8:00 AM	0	0	0	0	0	5	0	0	0	11	6	0	1	15	0	38	662
8:05 AM	0	0	0	0	0	0	0	0	0	14	1	0	0	0	11	0	26
8:10 AM	0	0	0	0	0	3	0	0	0	12	2	0	1	22	1	41	
8:15 AM	0	0	0	0	0	3	0	1	0	14	4	0	0	0	32	0	54
8:20 AM	0	0	0	0	0	2	0	0	0	21	1	0	0	0	30	0	54
8:25 AM	0	0	0	0	0	3	1	1	0	1	19	1	0	0	0	20	46
8:30 AM	0	0	0	0	0	5	0	2	0	2	27	1	0	0	0	27	65
8:35 AM	0	0	1	1	0	2	0	2	0	12	2	0	0	0	29	0	49
8:40 AM	0	1	2	0	0	5	0	0	0	22	5	0	1	38	0	74	
8:45 AM	0	0	0	0	0	6	0	2	0	1	20	3	0	0	0	44	76
8:50 AM	0	0	0	0	0	6	0	2	0	0	18	4	0	1	40	0	71
8:55 AM	0	0	0	0	0	6	0	1	0	0	15	5	0	1	40	0	68
Count Total	0	1	3	1	0	60	1	14	0	5	294	50	0	6	505	2	942
Peak Hour	0	1	3	1	0	46	1	11	0	4	205	35	0	5	348	2	662

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	1	0	1
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	2	0	0	2	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	2	2	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	1	1	3	8:10 AM	0	0	0	0	0
8:15 AM	0	0	2	0	2	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	2	0	2	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	1	0	1	2	8:40 AM	0	0	0	0	0
8:45 AM	0	0	1	0	1	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	1	2	8:50 AM	0	0	0	0	0
8:55 AM	0	3	0	1	4	8:55 AM	0	0	0	0	0
Count Total	0	9	6	7	22	Count Total	0	0	1	0	1
Peak Hour	0	6	6	6	18	Peak Hour	0	0	0	0	0

**Location:** 4 OR 99E & PINE ST NE AM

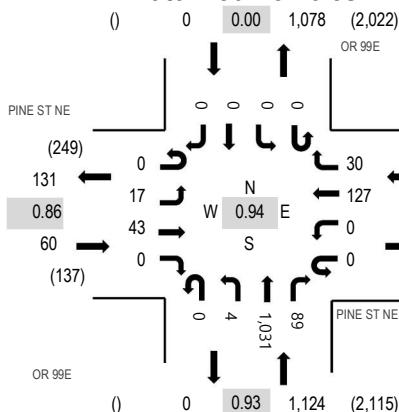
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:15 AM - 08:15 AM

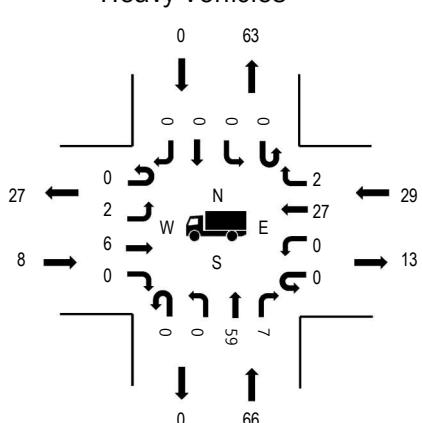
**Peak 15-Minutes:** 07:55 AM - 08:10 AM

### Peak Hour

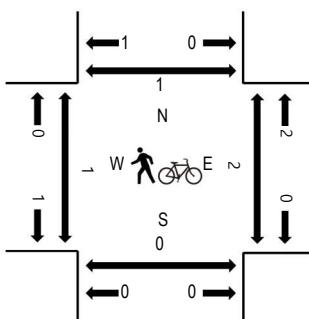
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	13.3%	0.86
WB	18.5%	0.83
NB	5.9%	0.93
SB	0.0%	0.00
All	7.7%	0.94

### Traffic Counts - Motorized Vehicles

Interval Start Time	PINE ST NE				PINE ST NE				OR 99E				OR 99E				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn		Left		Thru		Right		
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
7:00 AM	0	1	3	0	0	0	9	2	0	2	75	5	0	0	0	0	97 1,291
7:05 AM	0	2	4	0	0	0	3	1	0	0	86	5	0	0	0	0	101 1,296
7:10 AM	0	1	2	0	0	0	10	2	0	0	69	3	0	0	0	0	87 1,324
7:15 AM	0	1	3	0	0	0	9	1	0	0	92	11	0	0	0	0	117 1,341
7:20 AM	0	0	1	0	0	0	13	2	0	0	92	2	0	0	0	0	110 1,323
7:25 AM	0	0	2	0	0	0	6	2	0	0	85	5	0	0	0	0	100 1,314
7:30 AM	0	2	0	0	0	0	15	4	0	0	86	9	0	0	0	0	116 1,318
7:35 AM	0	0	3	0	0	0	14	3	0	2	74	5	0	0	0	0	101 1,307
7:40 AM	0	2	6	0	0	0	14	0	0	0	95	9	0	0	0	0	126 1,301
7:45 AM	0	1	6	0	0	0	11	3	0	0	78	6	0	0	0	0	105 1,283
7:50 AM	0	0	5	0	0	0	9	4	0	1	75	10	0	0	0	0	104 1,287
7:55 AM	0	3	7	0	0	0	9	4	0	0	97	7	0	0	0	0	127 1,270
8:00 AM	0	3	3	0	0	0	7	3	0	1	78	7	0	0	0	0	102 1,247
8:05 AM	0	2	5	0	0	0	6	3	0	0	103	10	0	0	0	0	129
8:10 AM	0	3	2	0	0	0	14	1	0	0	76	8	0	0	0	0	104
8:15 AM	0	4	5	0	0	0	9	2	0	1	66	12	0	0	0	0	99
8:20 AM	0	3	3	0	0	0	10	4	0	0	74	7	0	0	0	0	101
8:25 AM	0	3	8	0	0	0	13	3	0	2	68	7	0	0	0	0	104
8:30 AM	0	3	6	0	0	0	3	1	0	1	86	5	0	0	0	0	105
8:35 AM	0	2	4	0	0	0	12	1	0	1	70	5	0	0	0	0	95
8:40 AM	0	5	3	0	0	0	16	3	0	1	72	8	0	0	0	0	108
8:45 AM	0	3	4	0	0	0	4	0	0	1	89	8	0	0	0	0	109
8:50 AM	0	0	5	0	0	0	4	1	0	0	71	6	0	0	0	0	87
8:55 AM	0	0	3	0	0	0	15	1	0	1	70	14	0	0	0	0	104
Count Total	0	44	93	0	0	235	51	0	14	1,927	174	0	0	0	0	0	2,538
Peak Hour	0	17	43	0	0	127	30	0	4	1,031	89	0	0	0	0	0	1,341

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	6	1	0	8	7:00 AM	0	0	0	0	0
7:05 AM	1	5	2	0	8	7:05 AM	0	0	0	0	0
7:10 AM	1	9	3	0	13	7:10 AM	0	0	0	0	0
7:15 AM	0	9	5	0	14	7:15 AM	1	0	0	0	1
7:20 AM	0	5	4	0	9	7:20 AM	0	0	0	0	0
7:25 AM	0	7	2	0	9	7:25 AM	0	0	0	0	0
7:30 AM	0	6	2	0	8	7:30 AM	0	0	0	0	0
7:35 AM	0	3	4	0	7	7:35 AM	0	0	0	0	0
7:40 AM	0	5	4	0	9	7:40 AM	0	0	1	0	1
7:45 AM	0	3	1	0	4	7:45 AM	0	0	1	1	2
7:50 AM	1	3	2	0	6	7:50 AM	0	0	0	0	0
7:55 AM	4	4	2	0	10	7:55 AM	0	0	0	0	0
8:00 AM	2	6	1	0	9	8:00 AM	0	0	0	0	0
8:05 AM	1	8	1	0	10	8:05 AM	0	0	0	0	0
8:10 AM	0	7	1	0	8	8:10 AM	0	0	0	0	0
8:15 AM	4	5	1	0	10	8:15 AM	0	0	0	0	0
8:20 AM	2	10	0	0	12	8:20 AM	0	0	0	0	0
8:25 AM	1	2	3	0	6	8:25 AM	0	0	0	0	0
8:30 AM	4	10	0	0	14	8:30 AM	0	0	0	0	0
8:35 AM	1	1	3	0	5	8:35 AM	0	0	0	0	0
8:40 AM	1	5	2	0	8	8:40 AM	0	0	0	0	0
8:45 AM	1	10	2	0	13	8:45 AM	0	0	0	0	0
8:50 AM	0	9	0	0	9	8:50 AM	1	0	0	0	1
8:55 AM	1	10	4	0	15	8:55 AM	2	0	0	0	2
Count Total	26	148	50	0	224	Count Total	4	0	2	1	7
Peak Hour	8	66	29	0	103	Peak Hour	1	0	2	1	4

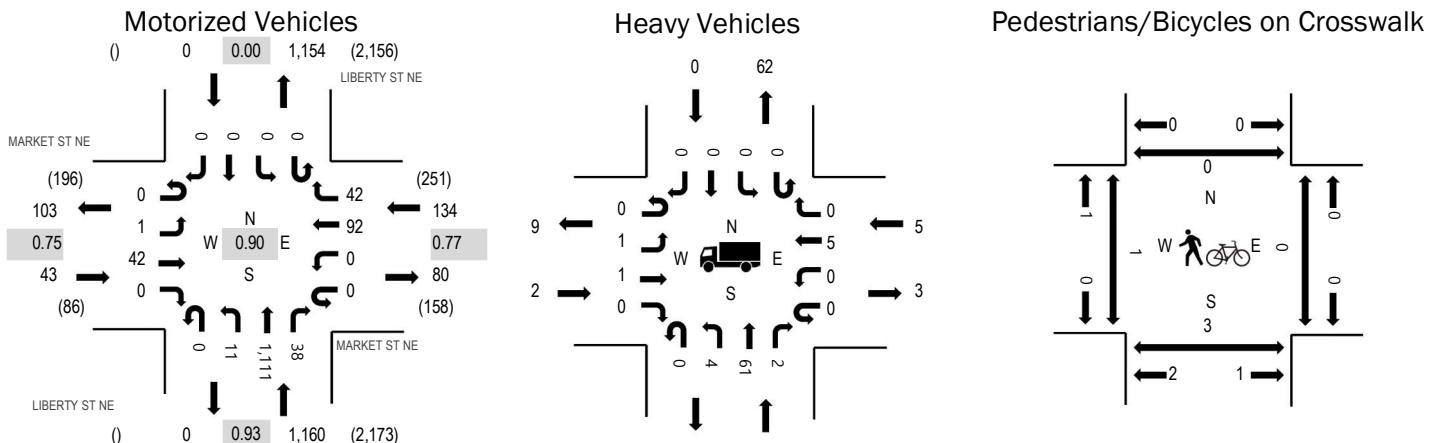
**Location:** 5 LIBERTY ST NE & MARKET ST NE AM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:15 AM - 08:15 AM

**Peak 15-Minutes:** 07:50 AM - 08:05 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.7%	0.75
WB	3.7%	0.77
NB	5.8%	0.93
SB	0.0%	0.00
All	5.5%	0.90

**Traffic Counts - Motorized Vehicles**

Interval Start Time	MARKET ST NE				MARKET ST NE				LIBERTY ST NE				LIBERTY ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
7:00 AM	0	1	1	0	0	0	12	2	0	0	75	1	0	0	0	0	92 1,271
7:05 AM	0	0	1	0	0	0	6	2	0	0	98	3	0	0	0	0	110 1,305
7:10 AM	0	0	1	0	0	0	4	1	0	0	77	2	0	0	0	0	85 1,313
7:15 AM	0	0	1	0	0	0	3	5	0	0	95	2	0	0	0	0	106 1,337
7:20 AM	0	0	1	0	0	0	6	4	0	1	85	5	0	0	0	0	102 1,312
7:25 AM	0	0	3	0	0	0	10	1	0	2	84	2	0	0	0	0	102 1,294
7:30 AM	0	0	2	0	0	0	7	2	0	2	98	3	0	0	0	0	114 1,306
7:35 AM	0	1	4	0	0	0	11	4	0	0	89	0	0	0	0	0	109 1,297
7:40 AM	0	0	4	0	0	0	7	5	0	1	91	6	0	0	0	0	114 1,279
7:45 AM	0	0	4	0	0	0	5	4	0	0	74	3	0	0	0	0	90 1,269
7:50 AM	0	0	7	0	0	0	9	3	0	0	101	4	0	0	0	0	124 1,292
7:55 AM	0	0	7	0	0	0	11	5	0	2	93	5	0	0	0	0	123 1,270
8:00 AM	0	0	4	0	0	0	12	4	0	0	104	2	0	0	0	0	126 1,239
8:05 AM	0	0	4	0	0	0	8	3	0	2	98	3	0	0	0	0	118
8:10 AM	0	0	1	0	0	0	3	2	0	1	99	3	0	0	0	0	109
8:15 AM	0	0	4	0	0	0	6	4	0	0	67	0	0	0	0	0	81
8:20 AM	0	0	3	0	0	0	7	2	0	1	68	3	0	0	0	0	84
8:25 AM	0	0	5	0	0	0	5	0	0	2	99	3	0	0	0	0	114
8:30 AM	0	1	4	0	0	0	9	5	0	2	78	6	0	0	0	0	105
8:35 AM	0	1	3	0	0	0	4	1	0	0	76	6	0	0	0	0	91
8:40 AM	0	0	3	0	0	0	7	4	0	4	83	3	0	0	0	0	104
8:45 AM	0	1	6	0	0	0	9	6	0	2	87	2	0	0	0	0	113
8:50 AM	0	0	3	0	0	0	6	1	0	0	84	8	0	0	0	0	102
8:55 AM	0	0	5	0	0	0	7	7	0	0	71	2	0	0	0	0	92
Count Total	0	5	81	0	0	0	174	77	0	22	2,074	77	0	0	0	0	2,510
Peak Hour	0	1	42	0	0	0	92	42	0	11	1,111	38	0	0	0	0	1,337

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	6	1	0	7	7:00 AM	0	0	0	0	0
7:05 AM	0	6	1	0	7	7:05 AM	0	0	0	0	0
7:10 AM	0	9	0	0	9	7:10 AM	0	0	0	0	0
7:15 AM	0	8	0	0	8	7:15 AM	0	0	0	0	0
7:20 AM	0	6	0	0	6	7:20 AM	0	0	0	0	0
7:25 AM	0	10	1	0	11	7:25 AM	0	0	0	0	0
7:30 AM	0	4	1	0	5	7:30 AM	0	0	0	0	0
7:35 AM	1	2	2	0	5	7:35 AM	0	0	0	0	0
7:40 AM	0	6	0	0	6	7:40 AM	0	0	0	0	0
7:45 AM	0	2	0	0	2	7:45 AM	0	1	0	0	1
7:50 AM	0	3	1	0	4	7:50 AM	0	0	0	0	0
7:55 AM	0	6	0	0	6	7:55 AM	0	0	0	0	0
8:00 AM	1	6	0	0	7	8:00 AM	1	2	0	0	3
8:05 AM	0	6	0	0	6	8:05 AM	0	0	0	0	0
8:10 AM	0	8	0	0	8	8:10 AM	0	0	0	0	0
8:15 AM	2	5	1	0	8	8:15 AM	0	1	0	0	1
8:20 AM	1	8	0	0	9	8:20 AM	0	0	1	0	1
8:25 AM	1	6	0	0	7	8:25 AM	0	0	0	0	0
8:30 AM	1	5	0	0	6	8:30 AM	0	0	0	0	0
8:35 AM	0	2	1	0	3	8:35 AM	0	0	0	0	0
8:40 AM	0	9	1	0	10	8:40 AM	0	0	0	1	1
8:45 AM	1	7	0	0	8	8:45 AM	0	1	0	1	2
8:50 AM	0	9	0	0	9	8:50 AM	0	0	0	0	0
8:55 AM	0	10	0	0	10	8:55 AM	0	0	0	0	0
Count Total	8	149	10	0	167	Count Total	1	5	1	2	9
Peak Hour	2	67	5	0	74	Peak Hour	1	3	0	0	4



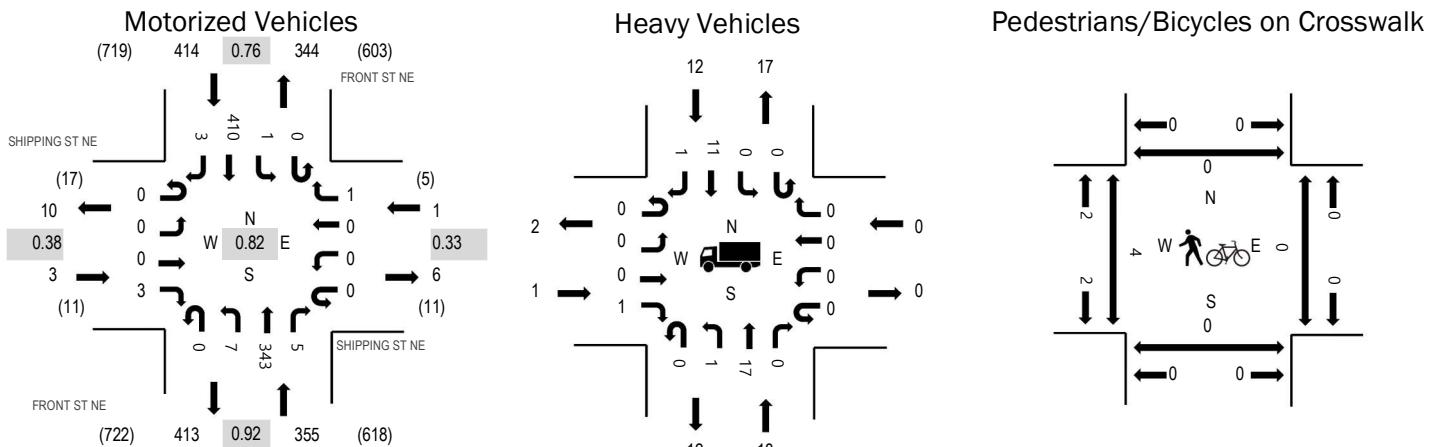
**Location:** 6 FRONT ST NE & SHIPPING ST NE AM

Date: Tuesday, February 6, 2024

**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:40 AM - 07:55 AM

## Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	33.3%	0.38
WB	0.0%	0.33
NB	5.1%	0.92
SB	2.9%	0.76
All	4.0%	0.82

## Traffic Counts - Motorized Vehicles

Interval Start Time	SHIPPING ST NE				SHIPPING ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound				Westbound				Northbound				Southbound					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	0	0	0	0	2	19	0	0	0	18	0	39	
7:05 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	0	28	
7:10 AM	0	0	0	0	0	0	0	0	0	1	20	0	0	0	25	0	46	
7:15 AM	0	0	0	0	0	1	0	0	0	1	23	0	0	0	27	0	52	
7:20 AM	0	0	0	0	0	0	0	0	0	0	19	0	0	0	37	0	56	
7:25 AM	0	0	1	0	0	0	0	0	0	0	26	0	0	1	24	2	54	
7:30 AM	0	0	0	1	0	0	0	0	0	0	26	0	0	0	27	0	54	
7:35 AM	0	0	0	0	0	0	0	0	0	1	20	2	0	1	35	1	60	
7:40 AM	0	0	0	0	0	0	0	0	0	1	38	0	0	0	39	0	78	
7:45 AM	0	0	0	0	0	0	0	0	0	1	23	0	0	0	51	0	75	
7:50 AM	0	0	0	0	0	0	0	0	0	1	30	2	0	0	49	0	82	
7:55 AM	0	0	0	2	0	0	0	0	0	0	35	0	0	0	36	0	73	
8:00 AM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	32	0	59	
8:05 AM	0	0	0	0	0	0	0	0	0	1	32	0	0	0	35	1	69	
8:10 AM	0	0	0	0	0	0	0	0	0	0	28	0	0	0	17	1	46	
8:15 AM	0	0	0	0	0	0	0	1	0	0	30	0	0	0	30	0	61	
8:20 AM	0	0	0	0	0	0	0	0	0	1	26	0	0	0	30	0	57	
8:25 AM	0	0	0	0	0	0	0	0	0	1	28	1	0	0	29	0	59	
8:30 AM	0	0	0	1	0	1	1	1	0	0	21	0	0	0	26	0	51	
8:35 AM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	19	0	40	
8:40 AM	0	0	0	0	0	0	0	0	0	0	24	1	0	0	35	0	60	
8:45 AM	0	0	0	1	0	0	0	0	0	0	20	0	0	0	24	0	45	
8:50 AM	0	1	1	3	0	0	0	0	0	0	22	0	0	0	30	0	57	
8:55 AM	0	0	0	0	0	0	0	0	0	0	28	1	0	0	23	0	52	
Count Total	0	1	2	8	0	2	1	2	0	11	600	7	0	2	712	5	1,353	
Peak Hour	0	0	0	3	0	0	0	1	0	7	343	5	0	1	410	3	773	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	1	1	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	1	0	0	1	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	2	3	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1	7:30 AM	1	0	0	0	1
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	2	2	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	1	1	7:45 AM	0	0	0	0	0
7:50 AM	0	3	0	0	3	7:50 AM	0	0	0	0	0
7:55 AM	1	4	0	0	5	7:55 AM	1	0	0	0	1
8:00 AM	0	1	0	0	1	8:00 AM	0	0	0	0	0
8:05 AM	0	3	0	1	4	8:05 AM	0	0	0	0	0
8:10 AM	0	1	0	0	1	8:10 AM	2	0	0	0	2
8:15 AM	0	3	0	3	6	8:15 AM	0	0	0	0	0
8:20 AM	0	2	0	0	2	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	4	5	8:25 AM	0	0	0	0	0
8:30 AM	0	4	0	1	5	8:30 AM	1	1	0	0	2
8:35 AM	0	1	0	1	2	8:35 AM	0	0	0	0	0
8:40 AM	0	1	0	0	1	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	3	3	8:45 AM	0	0	0	0	0
8:50 AM	2	2	0	1	5	8:50 AM	0	0	0	0	0
8:55 AM	0	2	0	2	4	8:55 AM	0	0	0	0	0
Count Total	3	31	0	23	57	Count Total	5	1	0	0	6
Peak Hour	1	18	0	12	31	Peak Hour	4	0	0	0	4

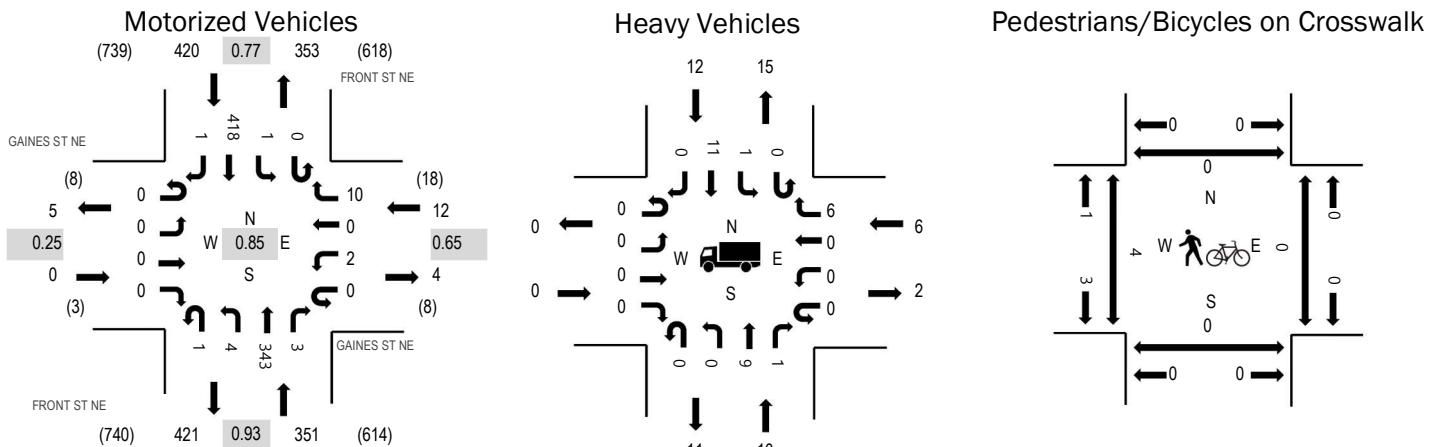
**Location:** 8 FRONT ST NE & GAINES ST NE AM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:40 AM - 07:55 AM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	50.0%	0.65
NB	2.8%	0.93
SB	2.9%	0.77
All	3.6%	0.85

### Traffic Counts - Motorized Vehicles

Interval Start Time	GAINES ST NE				GAINES ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	0	20	0	41 703
7:05 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	14	0	28 723
7:10 AM	0	0	1	0	0	0	0	0	0	0	21	0	0	0	0	23	0	45 766
7:15 AM	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	29	0	54 766
7:20 AM	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	39	0	58 774
7:25 AM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	22	0	49 775
7:30 AM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	1	29	0	57 783
7:35 AM	0	0	0	0	0	0	1	1	0	0	24	0	0	0	0	35	1	62 779
7:40 AM	0	0	0	0	0	0	0	0	0	0	37	0	0	0	0	42	0	79 762
7:45 AM	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	50	0	72 739
7:50 AM	0	0	0	0	0	0	0	2	0	0	33	1	0	0	0	44	0	80 716
7:55 AM	0	0	0	0	0	0	0	2	0	0	32	0	0	0	0	44	0	78 696
8:00 AM	0	0	0	0	0	0	0	1	0	0	26	1	0	0	0	33	0	61 671
8:05 AM	0	0	0	0	0	1	0	1	0	1	34	0	0	0	0	34	0	71
8:10 AM	0	0	0	0	0	0	0	0	0	0	25	1	0	0	0	19	0	45
8:15 AM	0	0	0	0	0	1	0	2	0	1	26	0	0	0	0	32	0	62
8:20 AM	0	0	0	0	0	0	0	0	0	1	27	0	0	0	0	31	0	59
8:25 AM	0	0	0	0	0	0	0	1	0	1	30	0	0	0	0	25	0	57
8:30 AM	0	0	0	0	0	0	0	1	0	1	19	0	0	0	0	31	1	53
8:35 AM	0	0	0	1	0	0	0	0	0	0	25	0	0	0	0	19	0	45
8:40 AM	0	0	0	0	0	0	0	0	0	0	22	0	0	0	0	34	0	56
8:45 AM	0	0	1	0	0	0	0	1	0	1	18	1	0	1	26	0	49	
8:50 AM	0	0	0	0	0	1	0	1	0	0	24	0	0	0	0	34	0	60
8:55 AM	0	0	0	0	0	0	0	2	0	0	25	0	0	0	0	26	0	53
Count Total	0	0	2	1	0	3	0	15	1	6	603	4	0	2	735	2	1,374	
Peak Hour	0	0	0	0	0	2	0	10	1	4	343	3	0	1	418	1	783	

### Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	1	1	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0
7:10 AM	1	0	0	0	1	7:10 AM	0	0	0	0	0
7:15 AM	0	1	0	0	1	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	1	2	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1	7:30 AM	1	0	0	0	1
7:35 AM	0	0	0	1	1	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	2	2	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	1	1	7:45 AM	1	0	0	0	1
7:50 AM	0	3	2	0	5	7:50 AM	0	0	0	0	0
7:55 AM	0	3	0	1	4	7:55 AM	1	0	0	0	1
8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	2	1	1	4	8:05 AM	0	0	0	0	0
8:10 AM	0	1	0	0	1	8:10 AM	1	0	0	0	1
8:15 AM	0	0	2	3	5	8:15 AM	0	0	0	0	0
8:20 AM	0	1	0	0	1	8:20 AM	0	0	0	0	0
8:25 AM	0	0	1	2	3	8:25 AM	0	0	0	0	0
8:30 AM	0	2	1	3	6	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	0	1	8:35 AM	0	0	2	0	2
8:40 AM	0	1	0	2	3	8:40 AM	1	0	0	1	2
8:45 AM	0	0	0	3	3	8:45 AM	0	0	0	0	0
8:50 AM	0	3	0	2	5	8:50 AM	0	0	0	0	0
8:55 AM	0	1	0	2	3	8:55 AM	0	0	0	0	0
Count Total	1	21	7	26	55	Count Total	5	0	2	1	8
Peak Hour	0	10	6	12	28	Peak Hour	4	0	0	0	4



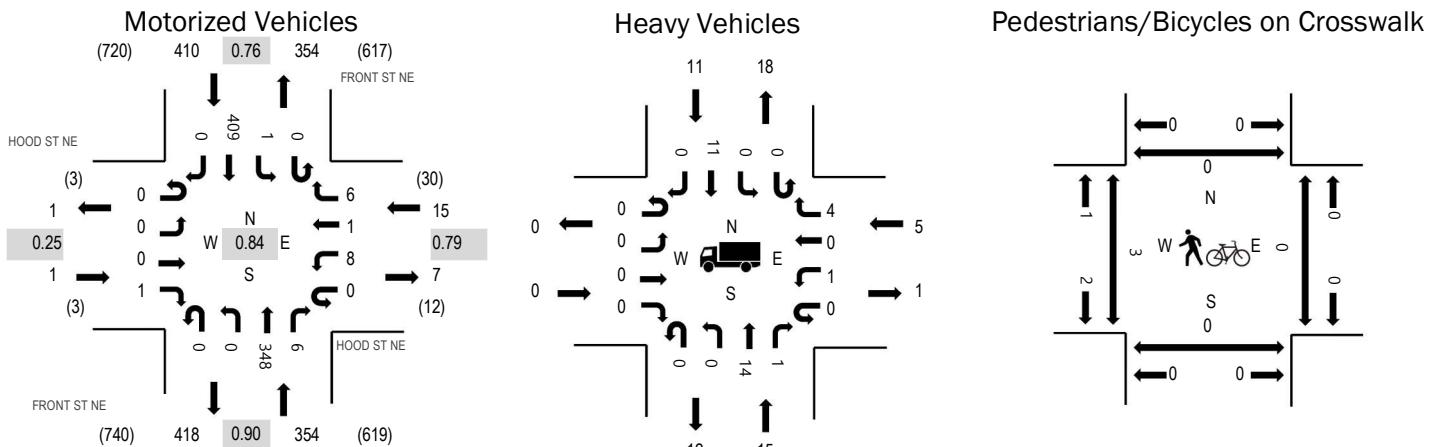
**Location:** 9 FRONT ST NE & HOOD ST NE AM

Date: Tuesday, February 6, 2024

**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:40 AM - 07:55 AM

## Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	33.3%	0.79
NB	4.2%	0.90
SB	2.7%	0.76
All	4.0%	0.84

## Traffic Counts - Motorized Vehicles

Interval Start Time	HOOD ST NE				HOOD ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound				Westbound				Northbound				Southbound					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	1	0	0	0	0	21	0	0	0	19	0	41	704
7:05 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	0	28	724
7:10 AM	0	0	0	0	0	1	0	0	0	0	21	0	0	0	24	0	46	765
7:15 AM	0	0	0	0	0	2	0	0	0	0	24	1	0	1	28	0	56	763
7:20 AM	0	0	0	0	0	1	0	0	0	0	19	0	0	0	36	0	56	769
7:25 AM	0	0	0	0	0	0	0	0	0	0	26	0	0	0	23	0	49	772
7:30 AM	0	0	0	0	0	1	1	0	0	0	27	0	0	1	27	0	57	780
7:35 AM	0	0	0	1	0	1	0	0	0	0	24	0	0	0	34	0	60	777
7:40 AM	0	0	0	0	0	0	0	0	0	0	37	1	0	0	41	0	79	759
7:45 AM	0	0	0	0	0	1	0	0	0	0	23	0	0	0	49	0	73	743
7:50 AM	0	0	0	0	0	0	0	1	0	0	32	1	0	0	46	0	80	716
7:55 AM	0	0	0	0	0	1	0	0	0	0	35	1	0	0	42	0	79	694
8:00 AM	0	0	0	0	0	1	0	1	0	0	26	1	0	0	32	0	61	668
8:05 AM	0	0	0	0	0	1	0	0	0	0	35	0	0	0	33	0	69	
8:10 AM	0	0	0	0	0	1	0	1	0	0	25	0	0	0	17	0	44	
8:15 AM	0	0	0	0	0	1	0	2	0	0	28	0	0	0	31	0	62	
8:20 AM	0	0	0	0	0	0	0	1	0	0	26	1	0	0	31	0	59	
8:25 AM	0	0	0	0	0	0	0	0	0	0	30	1	0	0	26	0	57	
8:30 AM	0	0	0	1	0	1	1	1	0	0	20	0	0	0	30	0	54	
8:35 AM	0	0	0	0	0	1	0	0	0	0	21	1	0	0	19	0	42	
8:40 AM	0	1	0	0	0	2	0	0	0	0	24	1	0	0	34	1	63	
8:45 AM	0	0	0	0	0	1	0	0	0	0	20	0	0	0	25	0	46	
8:50 AM	0	0	0	0	0	2	0	0	0	0	24	1	0	0	31	0	58	
8:55 AM	0	0	0	0	0	1	0	0	0	0	27	0	0	0	25	0	53	
Count Total	0	1	0	2	0	21	2	7	0	0	609	10	0	2	717	1	1,372	
Peak Hour	0	0	0	1	0	8	1	6	0	0	348	6	0	1	409	0	780	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	1	1	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	1	0	0	1	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	1	2	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1	7:30 AM	1	0	0	0	1
7:35 AM	0	0	0	1	1	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	2	2	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	1	1	7:45 AM	0	0	0	0	0
7:50 AM	0	4	0	0	4	7:50 AM	0	0	0	0	0
7:55 AM	0	4	0	1	5	7:55 AM	1	0	0	0	1
8:00 AM	0	0	1	0	1	8:00 AM	0	0	0	0	0
8:05 AM	0	3	1	0	4	8:05 AM	0	0	0	0	0
8:10 AM	0	0	1	0	1	8:10 AM	1	0	0	0	1
8:15 AM	0	2	1	3	6	8:15 AM	0	0	0	0	0
8:20 AM	0	1	1	0	2	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	2	3	8:25 AM	0	0	0	0	0
8:30 AM	0	3	1	3	7	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	1	2	8:35 AM	0	0	0	0	0
8:40 AM	0	1	1	0	2	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	3	3	8:45 AM	0	0	0	0	0
8:50 AM	0	3	0	2	5	8:50 AM	0	0	0	0	0
8:55 AM	0	1	0	2	3	8:55 AM	0	0	0	0	0
Count Total	0	27	7	24	58	Count Total	3	0	0	0	3
Peak Hour	0	15	5	11	31	Peak Hour	3	0	0	0	3

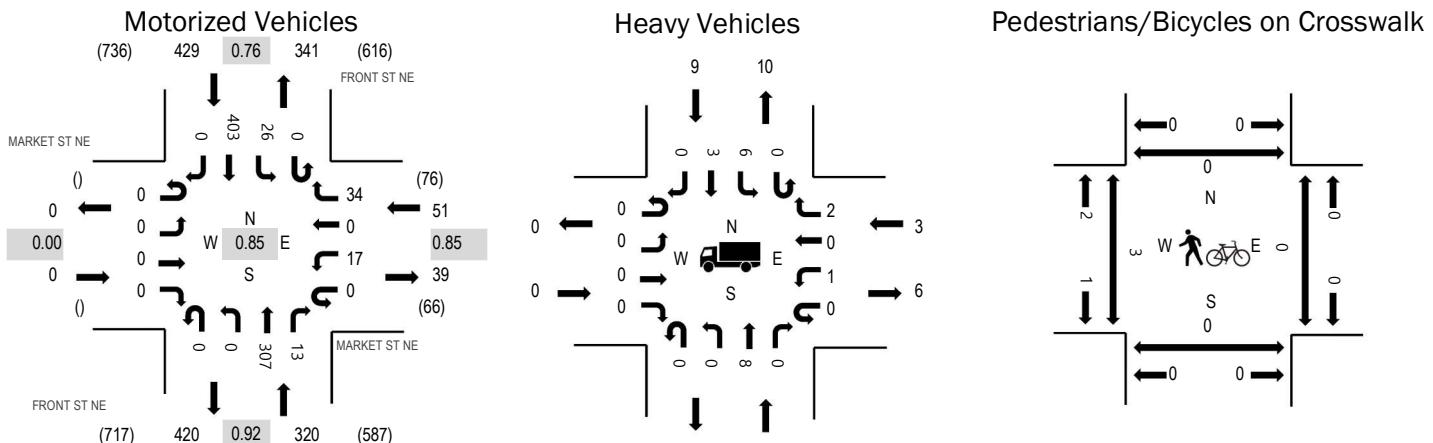
**Location:** 10 FRONT ST NE & MARKET ST NE AM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:20 AM - 08:20 AM

**Peak 15-Minutes:** 07:45 AM - 08:00 AM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	5.9%	0.85
NB	2.5%	0.92
SB	2.1%	0.76
All	2.5%	0.85

### Traffic Counts - Motorized Vehicles

Interval Start Time	MARKET ST NE				MARKET ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour		
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			
7:00 AM	0	0	0	0	0	0	0	1	0	0	19	0	0	0	0	20	0	40	725
7:05 AM	0	0	0	0	0	2	0	0	0	0	15	0	0	0	1	11	0	29	752
7:10 AM	0	0	0	0	0	0	0	1	0	0	20	1	0	1	24	0	47	791	
7:15 AM	0	0	0	0	0	0	0	0	0	0	25	0	0	0	29	0	54	789	
7:20 AM	0	0	0	0	0	2	0	0	0	0	21	1	0	1	38	0	63	800	
7:25 AM	0	0	0	0	0	6	0	1	0	0	27	1	0	1	24	0	60	795	
7:30 AM	0	0	0	0	0	0	0	2	0	0	24	1	0	1	28	0	56	792	
7:35 AM	0	0	0	0	0	1	0	3	0	0	22	3	0	2	31	0	62	791	
7:40 AM	0	0	0	0	0	1	0	8	0	0	28	0	0	4	37	0	78	779	
7:45 AM	0	0	0	0	0	2	0	0	0	0	23	0	0	7	43	0	75	757	
7:50 AM	0	0	0	0	0	0	0	4	0	0	29	0	0	2	45	0	80	727	
7:55 AM	0	0	0	0	0	1	0	3	0	0	29	4	0	3	41	0	81	703	
8:00 AM	0	0	0	0	0	3	0	3	0	0	26	0	0	1	34	0	67	674	
8:05 AM	0	0	0	0	0	0	0	5	0	0	29	0	0	1	33	0	68		
8:10 AM	0	0	0	0	0	0	0	2	0	0	24	0	0	0	19	0	45		
8:15 AM	0	0	0	0	0	1	0	3	0	0	25	3	0	3	30	0	65		
8:20 AM	0	0	0	0	0	0	0	2	0	0	25	1	0	0	30	0	58		
8:25 AM	0	0	0	0	0	1	0	4	0	0	27	0	0	3	22	0	57		
8:30 AM	0	0	0	0	0	3	0	1	0	0	19	1	0	1	30	0	55		
8:35 AM	0	0	0	0	0	1	0	1	0	0	25	2	0	3	18	0	50		
8:40 AM	0	0	0	0	0	0	0	3	0	0	20	0	0	1	32	0	56		
8:45 AM	0	0	0	0	0	0	0	1	0	0	18	1	0	3	22	0	45		
8:50 AM	0	0	0	0	0	1	0	2	0	0	21	2	0	3	27	0	56		
8:55 AM	0	0	0	0	0	0	0	1	0	0	24	1	0	2	24	0	52		
Count Total	0	0	0	0	0	25	0	51	0	0	565	22	0	44	692	0	1,399		
Peak Hour	0	0	0	0	0	17	0	34	0	0	307	13	0	26	403	0	800		

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	1	1	7:00 AM	0	0	0	0	0
7:05 AM	0	1	0	0	1	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	1	0	0	1	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	1	2	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	1	1	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	3	3	7:45 AM	0	0	0	0	0
7:50 AM	0	2	1	0	3	7:50 AM	0	0	0	0	0
7:55 AM	0	3	0	1	4	7:55 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0	8:00 AM	1	0	0	0	1
8:05 AM	0	1	1	0	2	8:05 AM	2	0	0	0	2
8:10 AM	0	1	0	1	2	8:10 AM	0	0	0	0	0
8:15 AM	0	0	1	2	3	8:15 AM	0	0	0	0	0
8:20 AM	0	1	0	1	2	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	2	2	8:25 AM	0	0	0	0	0
8:30 AM	0	2	0	2	4	8:30 AM	0	0	0	0	0
8:35 AM	0	1	0	0	1	8:35 AM	1	1	1	0	3
8:40 AM	0	1	0	2	3	8:40 AM	1	0	0	0	1
8:45 AM	0	1	0	2	3	8:45 AM	0	0	0	0	0
8:50 AM	0	2	1	2	5	8:50 AM	0	0	0	0	0
8:55 AM	0	1	0	2	3	8:55 AM	0	0	0	0	0
Count Total	0	19	4	23	46	Count Total	5	1	1	0	7
Peak Hour	0	8	3	9	20	Peak Hour	3	0	0	0	3



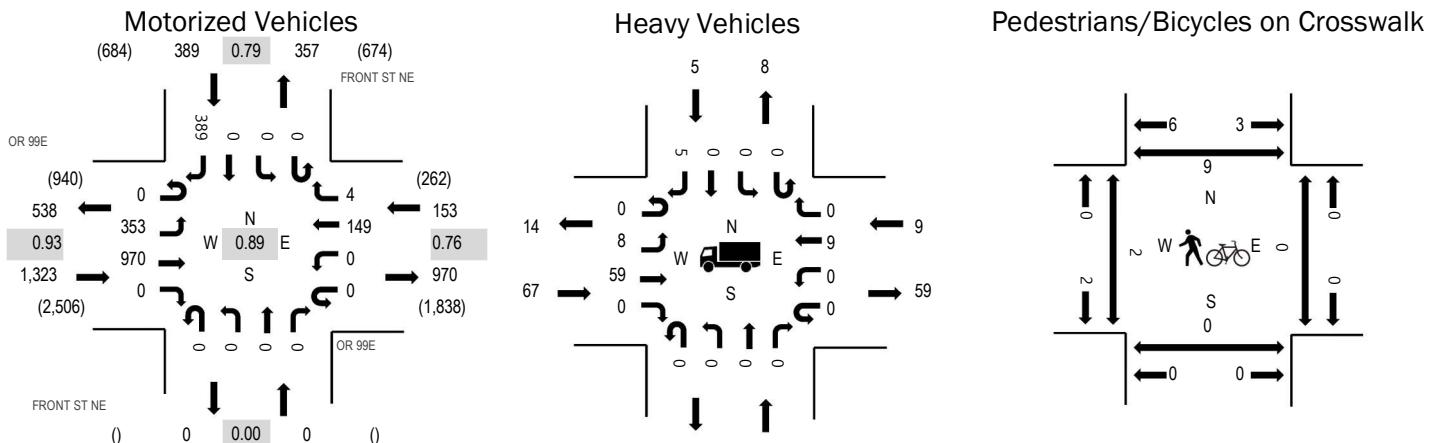
**Location:** 11 FRONT ST NE & OR 99E AM

Date: Tuesday, February 6, 2024

**Peak Hour:** 07:10 AM - 08:10 AM

**Peak 15-Minutes:** 07:50 AM - 08:05 AM

## Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.1%	0.93
WB	5.9%	0.76
NB	0.0%	0.00
SB	1.3%	0.79
All	4.3%	0.89

## Traffic Counts - Motorized Vehicles

Interval Start Time	OR 99E				OR 99E				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound				Westbound				Northbound				Southbound					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	23	74	0	0	0	8	0	0	0	0	0	0	0	0	16	121, 1,762	
7:05 AM	0	24	74	0	0	0	2	1	0	0	0	0	0	0	0	13	114, 1,823	
7:10 AM	0	27	85	0	0	0	11	0	0	0	0	0	0	0	0	21	144, 1,865	
7:15 AM	0	28	80	0	0	0	12	0	0	0	0	0	0	0	0	29	149, 1,851	
7:20 AM	0	20	76	0	0	0	5	0	0	0	0	0	0	0	0	34	135, 1,860	
7:25 AM	0	35	82	0	0	0	12	0	0	0	0	0	0	0	0	18	147, 1,859	
7:30 AM	0	26	73	0	0	0	9	1	0	0	0	0	0	0	0	27	136, 1,842	
7:35 AM	0	31	85	0	0	0	11	0	0	0	0	0	0	0	0	30	157, 1,851	
7:40 AM	0	33	76	0	0	0	5	1	0	0	0	0	0	0	0	40	155, 1,816	
7:45 AM	0	29	71	0	0	0	18	2	0	0	0	0	0	0	0	40	160, 1,793	
7:50 AM	0	32	84	0	0	0	19	0	0	0	0	0	0	0	0	39	174, 1,775	
7:55 AM	0	27	83	0	0	0	15	0	0	0	0	0	0	0	0	45	170, 1,734	
8:00 AM	0	35	96	0	0	0	16	0	0	0	0	0	0	0	0	35	182, 1,690	
8:05 AM	0	30	79	0	0	0	16	0	0	0	0	0	0	0	0	31	156	
8:10 AM	0	23	68	0	0	0	14	0	0	0	0	0	0	0	0	25	130	
8:15 AM	0	38	75	0	0	0	15	0	0	0	0	0	0	0	0	30	158	
8:20 AM	0	30	65	0	0	0	9	1	0	0	0	0	0	0	0	29	134	
8:25 AM	0	27	75	0	0	0	5	0	0	0	0	0	0	0	0	23	130	
8:30 AM	0	26	84	0	0	0	9	0	0	0	0	0	0	0	0	26	145	
8:35 AM	0	23	71	0	0	0	5	0	0	0	0	0	0	0	0	23	122	
8:40 AM	0	21	69	0	0	0	9	0	0	0	0	0	0	0	0	33	132	
8:45 AM	0	25	84	0	0	0	8	0	0	0	0	0	0	0	0	25	142	
8:50 AM	0	23	69	0	0	0	10	0	0	0	0	0	0	0	0	31	133	
8:55 AM	0	32	60	0	0	0	13	0	0	0	0	0	0	0	0	21	126	
Count Total	0	668	1,838	0	0	0	256	6	0	0	0	0	0	0	0	684	3,452	
Peak Hour	0	353	970	0	0	0	149	4	0	0	0	0	0	0	0	389	1,865	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	8	0	0	1	9	7:00 AM	0	0	1	0	1
7:05 AM	6	0	0	0	6	7:05 AM	0	0	0	0	0
7:10 AM	7	0	0	0	7	7:10 AM	0	0	0	0	0
7:15 AM	9	0	1	0	10	7:15 AM	0	0	0	1	1
7:20 AM	6	0	0	0	6	7:20 AM	0	0	0	1	1
7:25 AM	8	0	0	2	10	7:25 AM	0	0	0	0	0
7:30 AM	2	0	0	0	2	7:30 AM	0	0	0	1	1
7:35 AM	3	0	2	1	6	7:35 AM	0	0	0	0	0
7:40 AM	2	0	0	0	2	7:40 AM	0	0	0	1	1
7:45 AM	4	0	1	0	5	7:45 AM	0	0	0	1	1
7:50 AM	6	0	1	0	7	7:50 AM	2	0	0	3	5
7:55 AM	4	0	1	0	5	7:55 AM	0	0	0	0	0
8:00 AM	9	0	2	0	11	8:00 AM	0	0	0	0	0
8:05 AM	7	0	1	2	10	8:05 AM	0	0	0	1	1
8:10 AM	5	0	1	0	6	8:10 AM	0	0	0	0	0
8:15 AM	6	0	0	2	8	8:15 AM	0	0	0	1	1
8:20 AM	7	0	0	1	8	8:20 AM	0	1	0	1	2
8:25 AM	7	0	0	0	7	8:25 AM	0	0	0	1	1
8:30 AM	5	0	2	4	11	8:30 AM	0	0	0	1	1
8:35 AM	5	0	0	1	6	8:35 AM	0	0	0	0	0
8:40 AM	8	0	1	1	10	8:40 AM	0	0	0	0	0
8:45 AM	9	0	0	0	9	8:45 AM	0	1	0	0	1
8:50 AM	8	0	0	0	8	8:50 AM	0	0	0	2	2
8:55 AM	7	0	0	1	8	8:55 AM	0	1	0	2	3
Count Total	148	0	13	16	177	Count Total	2	3	1	17	23
Peak Hour	67	0	9	5	81	Peak Hour	2	0	0	9	11

**Location:** 12 FRONT ST NE & UNION ST NE AM

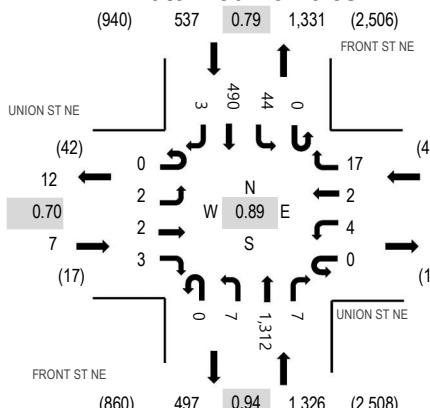
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:10 AM - 08:10 AM

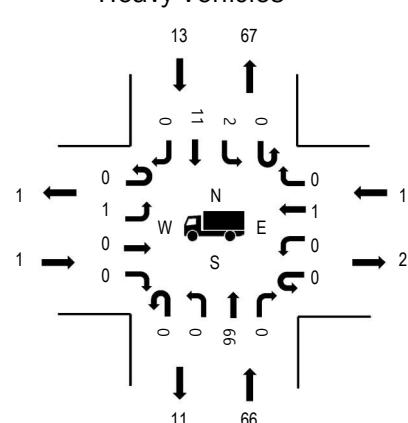
**Peak 15-Minutes:** 07:50 AM - 08:05 AM

### Peak Hour

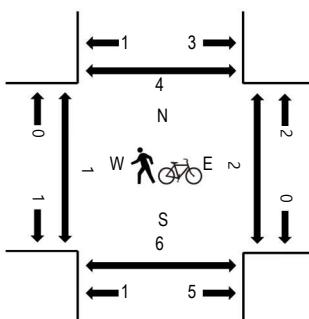
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	14.3%	0.70
WB	4.3%	0.81
NB	5.0%	0.94
SB	2.4%	0.79
All	4.3%	0.89

### Traffic Counts - Motorized Vehicles

Interval Start Time	UNION ST NE				UNION ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour		
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			
7:00 AM	0	0	0	0	0	0	0	0	0	0	99	1	0	0	3	21	0	124	1,786
7:05 AM	0	0	0	0	0	0	0	0	0	0	95	1	0	0	2	12	1	111	1,843
7:10 AM	0	0	0	0	0	1	0	0	0	0	114	2	0	0	2	30	0	149	1,893
7:15 AM	0	0	0	0	0	0	0	1	0	1	108	0	0	0	1	37	0	148	1,882
7:20 AM	0	0	0	0	0	0	0	2	0	1	98	0	0	0	5	36	0	142	1,890
7:25 AM	0	0	0	0	0	1	0	1	0	0	115	0	0	0	3	27	1	148	1,887
7:30 AM	0	0	0	0	0	0	0	0	0	0	101	1	0	0	4	33	0	139	1,863
7:35 AM	0	0	0	2	0	0	0	5	0	0	110	2	0	0	1	40	0	160	1,882
7:40 AM	0	0	0	0	0	0	0	2	0	0	103	0	0	0	6	40	0	151	1,846
7:45 AM	0	0	0	1	0	1	0	0	0	0	110	0	0	0	3	51	0	166	1,831
7:50 AM	0	0	0	0	0	0	0	2	0	2	104	1	0	0	6	46	1	162	1,810
7:55 AM	0	0	0	0	0	1	2	2	0	1	113	0	0	0	4	63	0	186	1,785
8:00 AM	0	1	1	0	0	0	0	1	0	1	129	1	0	0	3	43	1	181	1,727
8:05 AM	0	1	1	0	0	0	0	1	0	1	107	0	0	0	6	44	0	161	
8:10 AM	0	0	0	0	0	1	1	0	0	2	92	1	0	0	4	36	1	138	
8:15 AM	0	0	0	0	0	0	0	2	0	0	108	1	0	0	3	42	0	156	
8:20 AM	0	0	0	0	0	0	0	0	0	4	97	0	0	0	5	33	0	139	
8:25 AM	0	0	0	0	0	0	1	2	0	4	94	0	0	0	3	20	0	124	
8:30 AM	0	0	1	1	0	0	2	3	0	1	109	0	0	0	2	39	0	158	
8:35 AM	0	1	2	0	0	0	0	1	0	0	90	2	0	0	1	26	1	124	
8:40 AM	0	0	0	0	0	0	0	2	0	4	89	0	0	0	3	38	0	136	
8:45 AM	0	0	1	0	0	0	0	3	0	0	105	1	1	4	30	0	0	145	
8:50 AM	0	0	1	0	0	0	2	2	0	2	88	2	0	4	36	0	0	137	
8:55 AM	0	1	2	0	0	0	0	3	0	2	88	0	0	0	2	28	2	128	
Count Total	0	4	9	4	0	5	8	35	0	26	2,466	16	1	80	851	8	3,513		
Peak Hour	0	2	2	3	0	4	2	17	0	7	1,312	7	0	44	490	3	1,893		

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	9	0	1	10	7:00 AM	0	0	0	0	0
7:05 AM	0	6	0	0	6	7:05 AM	1	1	0	3	5
7:10 AM	0	7	0	0	7	7:10 AM	0	0	0	0	0
7:15 AM	0	9	0	0	9	7:15 AM	0	0	0	0	0
7:20 AM	0	6	0	1	7	7:20 AM	0	0	0	0	0
7:25 AM	0	8	0	2	10	7:25 AM	0	0	0	2	2
7:30 AM	0	4	0	0	4	7:30 AM	0	0	0	0	0
7:35 AM	0	1	0	3	4	7:35 AM	0	2	0	0	2
7:40 AM	0	2	0	0	2	7:40 AM	1	1	1	0	3
7:45 AM	0	4	0	1	5	7:45 AM	0	0	0	0	0
7:50 AM	0	6	0	1	7	7:50 AM	0	0	0	1	1
7:55 AM	0	4	1	1	6	7:55 AM	0	0	0	0	0
8:00 AM	1	8	0	2	11	8:00 AM	0	1	1	0	2
8:05 AM	0	7	0	2	9	8:05 AM	0	2	0	1	3
8:10 AM	0	6	0	2	8	8:10 AM	1	2	0	2	5
8:15 AM	0	6	0	2	8	8:15 AM	0	0	0	0	0
8:20 AM	0	8	0	1	9	8:20 AM	0	2	1	0	3
8:25 AM	0	6	1	0	7	8:25 AM	0	2	0	2	4
8:30 AM	0	5	0	6	11	8:30 AM	0	0	0	0	0
8:35 AM	0	5	0	1	6	8:35 AM	0	0	0	2	2
8:40 AM	0	8	0	2	10	8:40 AM	0	0	0	0	0
8:45 AM	0	10	0	0	10	8:45 AM	0	0	0	1	1
8:50 AM	0	8	0	0	8	8:50 AM	0	0	0	0	0
8:55 AM	0	7	0	1	8	8:55 AM	0	1	0	3	4
Count Total	1	150	2	29	182	Count Total	3	14	3	17	37
Peak Hour	1	66	1	13	81	Peak Hour	1	6	2	4	13

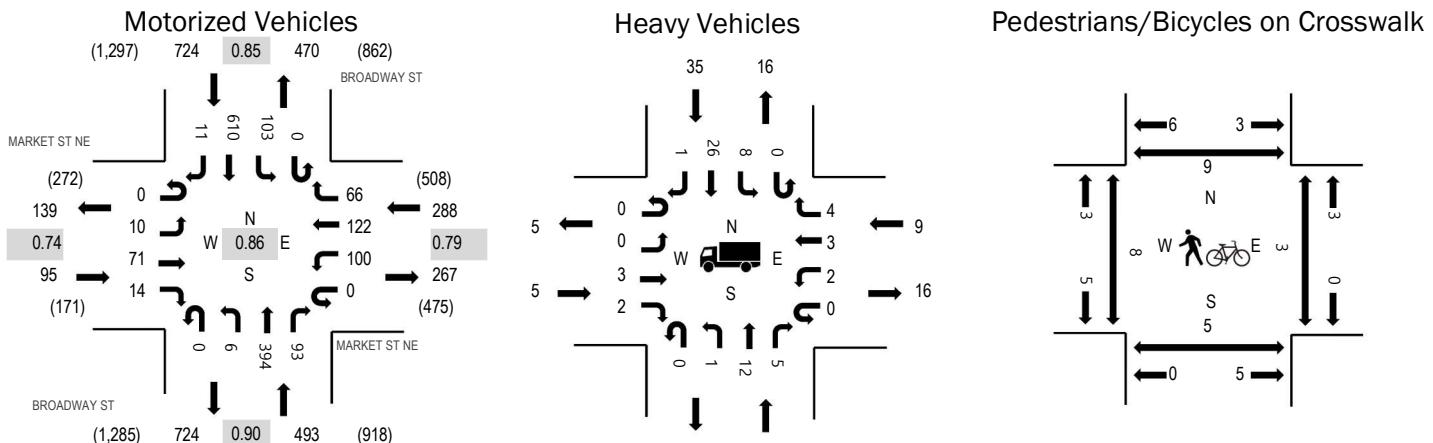
**Location:** 13 BROADWAY ST & MARKET ST NE AM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 07:30 AM - 08:30 AM

**Peak 15-Minutes:** 07:50 AM - 08:05 AM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	5.3%	0.74
WB	3.1%	0.79
NB	3.7%	0.90
SB	4.8%	0.85
All	4.2%	0.86

### Traffic Counts - Motorized Vehicles

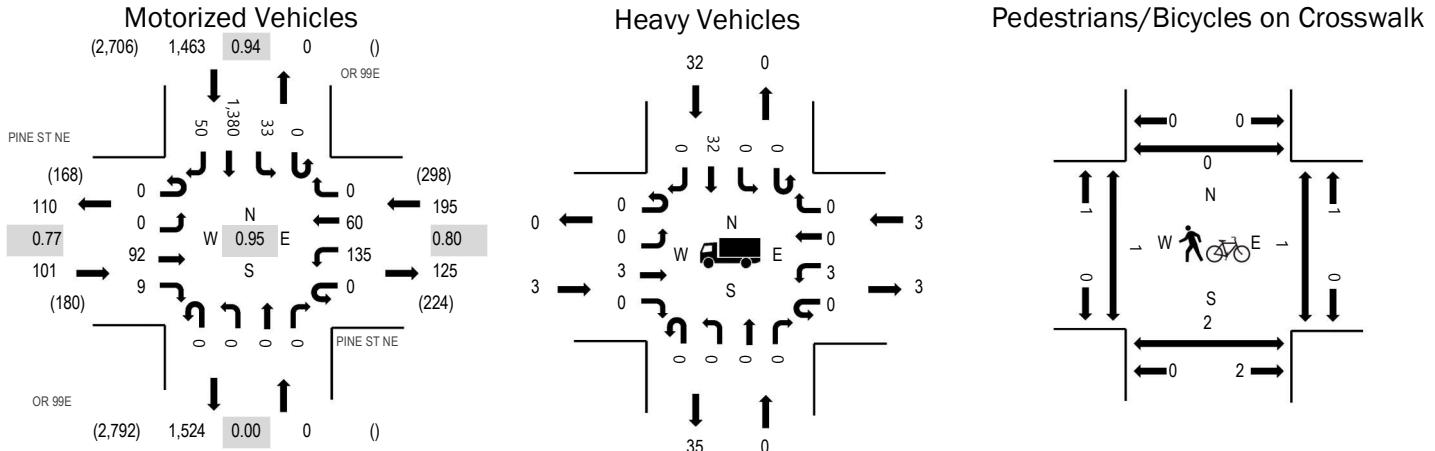
Interval Start Time	MARKET ST NE				MARKET ST NE				BROADWAY ST				BROADWAY ST				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	4	1	0	2	15	4	0	0	28	7	0	1	29	1	92	1,450
7:05 AM	0	1	1	0	0	4	8	7	0	0	30	5	0	4	48	2	110	1,510
7:10 AM	0	1	2	1	0	2	0	0	0	1	19	6	0	7	39	0	78	1,536
7:15 AM	0	0	7	0	0	7	12	0	0	1	22	5	0	3	32	0	89	1,566
7:20 AM	0	0	2	0	0	7	9	3	0	2	37	4	0	5	44	1	114	1,589
7:25 AM	0	0	7	1	0	6	6	6	0	0	27	9	0	7	48	2	119	1,589
7:30 AM	0	3	2	0	0	10	14	8	0	0	28	10	0	13	41	1	130	1,600
7:35 AM	0	0	5	0	0	5	9	8	0	0	35	5	0	4	58	1	130	1,595
7:40 AM	0	1	6	0	0	5	10	7	0	2	29	9	0	7	53	1	130	1,575
7:45 AM	0	0	7	3	0	12	14	10	0	1	28	5	0	9	54	1	144	1,543
7:50 AM	0	2	8	3	0	11	10	8	0	0	40	9	0	11	47	0	149	1,519
7:55 AM	0	0	10	2	0	5	18	3	0	0	37	12	0	9	67	2	165	1,483
8:00 AM	0	1	8	0	0	10	12	7	0	0	30	7	0	11	65	1	152	1,444
8:05 AM	0	1	6	1	0	11	9	3	0	1	44	7	0	10	41	2	136	
8:10 AM	0	0	4	0	0	3	9	1	0	0	30	10	0	8	43	0	108	
8:15 AM	0	2	2	0	0	9	6	1	0	1	32	5	0	7	44	1	112	
8:20 AM	0	0	5	2	0	11	5	7	0	1	27	7	0	5	44	0	114	
8:25 AM	0	0	8	1	0	8	6	3	0	0	34	7	0	9	53	1	130	
8:30 AM	0	0	6	1	0	5	12	4	0	0	36	5	1	9	46	0	125	
8:35 AM	0	0	12	0	0	5	6	4	0	3	23	6	0	6	44	1	110	
8:40 AM	0	0	4	1	0	4	7	7	0	1	22	3	0	7	41	1	98	
8:45 AM	0	0	7	1	0	5	10	7	0	1	29	10	0	3	47	0	120	
8:50 AM	0	0	9	0	0	5	12	4	0	1	31	5	0	7	38	1	113	
8:55 AM	0	1	6	0	0	6	14	5	0	2	33	11	0	6	41	1	126	
Count Total	0	13	138	20	0	158	233	117	0	18	731	169	1	168	1,107	21	2,894	
Peak Hour	0	10	71	14	0	100	122	66	0	6	394	93	0	103	610	11	1,600	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	2	2	2	6	7:00 AM	0	0	0	0	0
7:05 AM	0	2	1	0	3	7:05 AM	0	0	0	0	0
7:10 AM	1	0	0	3	4	7:10 AM	0	0	0	0	0
7:15 AM	1	2	0	2	5	7:15 AM	0	0	0	0	0
7:20 AM	0	5	0	3	8	7:20 AM	0	0	1	0	1
7:25 AM	1	0	1	5	7	7:25 AM	0	0	0	0	0
7:30 AM	0	2	3	3	8	7:30 AM	0	0	0	0	0
7:35 AM	0	1	1	2	4	7:35 AM	0	0	0	2	2
7:40 AM	0	1	0	4	5	7:40 AM	1	0	0	3	4
7:45 AM	0	1	1	1	3	7:45 AM	0	0	0	0	0
7:50 AM	0	0	1	4	5	7:50 AM	1	0	0	1	2
7:55 AM	0	1	0	4	5	7:55 AM	2	0	0	0	2
8:00 AM	1	2	2	3	8	8:00 AM	0	2	0	1	3
8:05 AM	0	1	1	3	5	8:05 AM	0	0	3	1	4
8:10 AM	0	1	0	1	2	8:10 AM	2	1	0	0	3
8:15 AM	2	3	0	3	8	8:15 AM	0	2	0	0	2
8:20 AM	1	2	0	3	6	8:20 AM	2	0	0	1	3
8:25 AM	1	3	0	4	8	8:25 AM	0	0	0	0	0
8:30 AM	1	3	1	3	8	8:30 AM	2	0	0	0	2
8:35 AM	0	1	1	2	4	8:35 AM	0	0	1	0	1
8:40 AM	0	1	0	5	6	8:40 AM	0	0	1	1	2
8:45 AM	1	3	0	5	9	8:45 AM	1	0	0	1	2
8:50 AM	0	1	0	1	2	8:50 AM	1	0	0	2	3
8:55 AM	0	1	0	1	2	8:55 AM	0	0	0	0	0
Count Total	10	39	15	67	131	Count Total	12	5	6	13	36
Peak Hour	5	18	9	35	67	Peak Hour	8	5	3	9	25

**Location:** 1 OR 99E & PINE ST NE PM  
**Date:** Tuesday, February 6, 2024  
**Peak Hour:** 04:00 PM - 05:00 PM  
**Peak 15-Minutes:** 04:35 PM - 04:50 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.0%	0.77
WB	1.5%	0.80
NB	0.0%	0.00
SB	2.2%	0.94
All	2.2%	0.95

### Traffic Counts - Motorized Vehicles

Interval Start Time	PINE ST NE				PINE ST NE				OR 99E				OR 99E				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	8	0	0	10	6	0	0	0	0	0	0	5	120	5	154	1,759
4:05 PM	0	0	17	1	0	12	3	0	0	0	0	0	0	5	116	2	156	1,738
4:10 PM	0	0	4	2	0	13	1	0	0	0	0	0	0	7	118	5	150	1,739
4:15 PM	0	0	6	3	0	15	5	0	0	0	0	0	0	2	104	3	138	1,701
4:20 PM	0	0	8	1	0	4	3	0	0	0	0	0	0	3	142	6	167	1,688
4:25 PM	0	0	5	0	0	16	6	0	0	0	0	0	0	2	89	3	121	1,646
4:30 PM	0	0	8	0	0	8	3	0	0	0	0	0	0	1	106	2	128	1,635
4:35 PM	0	0	6	0	0	6	6	0	0	0	0	0	0	1	141	6	166	1,607
4:40 PM	0	0	5	0	0	25	9	0	0	0	0	0	0	3	117	8	167	1,534
4:45 PM	0	0	6	1	0	10	5	0	0	0	0	0	0	2	104	4	132	1,504
4:50 PM	0	0	3	0	0	7	4	0	0	0	0	0	0	1	133	3	151	1,474
4:55 PM	0	0	16	1	0	9	9	0	0	0	0	0	0	1	90	3	129	1,452
5:00 PM	0	0	7	1	0	4	4	0	0	0	0	0	0	4	110	3	133	1,425
5:05 PM	0	0	9	1	0	9	3	0	0	0	0	0	0	3	126	6	157	
5:10 PM	0	0	7	2	0	4	3	0	0	0	0	0	0	2	91	3	112	
5:15 PM	0	0	6	2	0	15	2	0	0	0	0	0	0	5	94	1	125	
5:20 PM	0	0	6	0	0	8	2	0	0	0	0	0	0	2	102	5	125	
5:25 PM	0	0	5	0	0	6	2	0	0	0	0	0	0	3	91	3	110	
5:30 PM	0	0	6	0	0	7	2	0	0	0	0	0	0	0	84	1	100	
5:35 PM	0	0	5	3	0	2	2	0	0	0	0	0	0	3	77	1	93	
5:40 PM	0	0	4	0	0	8	2	0	0	0	0	0	0	2	119	2	137	
5:45 PM	0	0	4	0	0	5	1	0	0	0	0	0	0	2	89	1	102	
5:50 PM	0	0	9	0	0	5	2	0	0	0	0	0	0	3	106	4	129	
5:55 PM	0	0	2	0	0	4	1	0	0	0	0	0	0	0	93	2	102	
Count Total	0	0	162	18	0	212	86	0	0	0	0	0	0	62	2,562	82	3,184	
Peak Hour	0	0	92	9	0	135	60	0	0	0	0	0	0	33	1,380	50	1,759	

### Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	1	1	4:00 PM	0	0	1	0	1
4:05 PM	0	0	1	3	4	4:05 PM	0	1	0	0	1
4:10 PM	0	0	1	3	4	4:10 PM	0	0	0	0	0
4:15 PM	1	0	0	3	4	4:15 PM	0	0	0	0	0
4:20 PM	1	0	0	3	4	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	3	3	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	4	4	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	2	2	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	3	3	4:45 PM	1	0	0	0	1
4:50 PM	1	0	0	5	6	4:50 PM	0	0	0	0	0
4:55 PM	0	0	1	2	3	4:55 PM	0	1	0	0	1
5:00 PM	0	0	0	9	9	5:00 PM	0	0	1	0	1
5:05 PM	1	0	0	1	2	5:05 PM	0	0	0	0	0
5:10 PM	1	0	0	1	2	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0
5:20 PM	1	0	0	2	3	5:20 PM	0	0	0	0	0
5:25 PM	0	0	1	3	4	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	3	3	5:30 PM	0	0	0	0	0
5:35 PM	0	0	1	2	3	5:35 PM	1	0	0	0	1
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	2	0	0	0	2
5:50 PM	0	0	0	2	2	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	1	1	5:55 PM	1	0	0	0	1
Count Total	6	0	5	58	69	Count Total	5	2	2	0	9
Peak Hour	3	0	3	32	38	Peak Hour	1	2	1	0	4

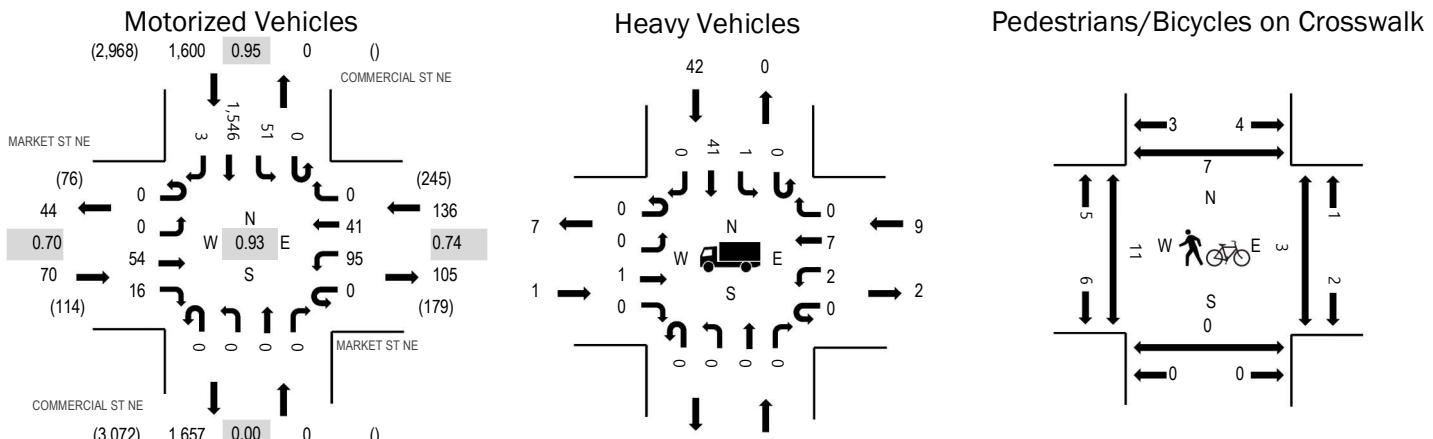
**Location:** 2 COMMERCIAL ST NE & MARKET ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:35 PM - 04:50 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.70
WB	6.6%	0.74
NB	0.0%	0.00
SB	2.6%	0.95
All	2.9%	0.93

### Traffic Counts - Motorized Vehicles

Interval Start Time	MARKET ST NE				MARKET ST NE				COMMERCIAL ST NE				COMMERCIAL ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
4:00 PM	0	0	9	2	0	9	2	0	0	0	0	0	0	9	123	0	154, 1,806
4:05 PM	0	0	5	2	0	5	3	0	0	0	0	0	0	5	129	1	150, 1,803
4:10 PM	0	0	7	0	0	4	2	0	0	0	0	0	0	5	119	0	137, 1,792
4:15 PM	0	0	4	1	0	5	3	0	0	0	0	0	0	7	137	0	157, 1,789
4:20 PM	0	0	4	2	0	11	0	0	0	0	0	0	0	2	141	0	160, 1,774
4:25 PM	0	0	4	2	0	5	3	0	0	0	0	0	0	0	120	1	135, 1,746
4:30 PM	0	0	1	2	0	8	5	0	0	0	0	0	0	10	129	0	155, 1,724
4:35 PM	0	0	6	2	0	8	6	0	0	0	0	0	0	3	128	0	153, 1,674
4:40 PM	0	0	5	1	0	17	6	0	0	0	0	0	0	3	126	0	158, 1,631
4:45 PM	0	0	2	0	0	8	4	0	0	0	0	0	0	1	157	1	173, 1,586
4:50 PM	0	0	6	2	0	4	4	0	0	0	0	0	0	5	132	0	153, 1,536
4:55 PM	0	0	1	0	0	11	3	0	0	0	0	0	0	1	105	0	121, 1,510
5:00 PM	0	0	2	0	0	9	1	0	0	0	0	0	0	7	131	1	151, 1,521
5:05 PM	0	0	3	1	0	5	3	0	0	0	0	0	0	2	125	0	139
5:10 PM	0	0	8	1	0	12	4	0	0	0	0	0	0	4	105	0	134
5:15 PM	0	0	3	1	0	8	2	0	0	0	0	0	0	3	125	0	142
5:20 PM	0	0	4	1	0	3	7	0	0	0	0	0	0	3	114	0	132
5:25 PM	0	0	3	0	0	7	0	0	0	0	0	0	0	3	100	0	113
5:30 PM	0	0	2	0	0	4	2	0	0	0	0	0	0	3	94	0	105
5:35 PM	0	0	2	1	0	12	2	0	0	0	0	0	0	1	92	0	110
5:40 PM	0	0	4	0	0	6	2	0	0	0	0	0	0	2	99	0	113
5:45 PM	0	0	4	0	0	6	4	0	0	0	0	0	0	2	106	1	123
5:50 PM	0	0	4	0	0	4	1	0	0	0	0	0	0	0	117	1	127
5:55 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	5	121	1	132
Count Total	0	0	93	21	0	176	69	0	0	0	0	0	0	86	2,875	7	3,327
Peak Hour	0	0	54	16	0	95	41	0	0	0	0	0	0	51	1,546	3	1,806

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	2	2	4:00 PM	1	0	0	0	1
4:05 PM	0	0	0	5	5	4:05 PM	0	0	0	0	0
4:10 PM	0	0	1	4	5	4:10 PM	0	0	0	1	1
4:15 PM	0	0	1	5	6	4:15 PM	0	0	1	0	1
4:20 PM	1	0	0	5	6	4:20 PM	0	0	0	1	1
4:25 PM	0	0	0	3	3	4:25 PM	0	0	0	1	1
4:30 PM	0	0	2	3	5	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	4	4	4:35 PM	3	0	0	1	4
4:40 PM	0	0	0	4	4	4:40 PM	2	0	1	1	4
4:45 PM	0	0	2	1	3	4:45 PM	2	0	0	1	3
4:50 PM	0	0	1	3	4	4:50 PM	1	0	1	1	3
4:55 PM	0	0	2	3	5	4:55 PM	2	0	0	0	2
5:00 PM	0	0	0	2	2	5:00 PM	1	0	0	1	2
5:05 PM	0	0	0	5	5	5:05 PM	0	0	0	0	0
5:10 PM	0	0	1	2	3	5:10 PM	1	1	0	0	2
5:15 PM	0	0	0	3	3	5:15 PM	1	0	0	0	1
5:20 PM	0	0	0	2	2	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	4	4	5:30 PM	1	0	0	0	1
5:35 PM	0	0	0	3	3	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	1	0	0	0	1
5:50 PM	0	0	0	2	2	5:50 PM	0	2	0	0	2
5:55 PM	0	0	0	1	1	5:55 PM	1	0	0	0	1
Count Total	1	0	10	68	79	Count Total	17	3	3	8	31
Peak Hour	1	0	9	42	52	Peak Hour	11	0	3	7	21

**Location:** 3 FRONT ST NE & PINE ST NE PM

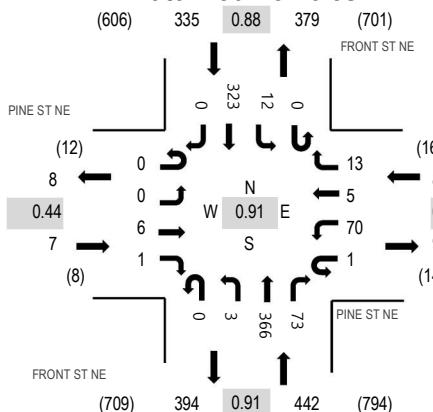
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 05:00 PM - 06:00 PM

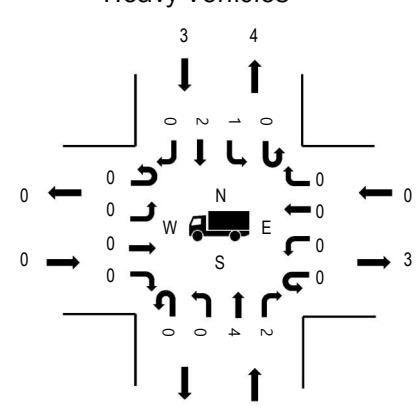
**Peak 15-Minutes:** 05:45 PM - 06:00 PM

### Peak Hour

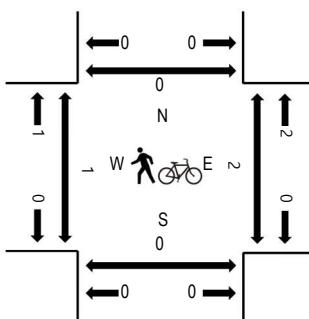
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.44
WB	0.0%	0.67
NB	1.4%	0.91
SB	0.9%	0.88
All	1.0%	0.91

### Traffic Counts - Motorized Vehicles

Interval Start Time	PINE ST NE				PINE ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	3	0	1	0	0	25	2	0	1	20	0	52	696
4:05 PM	0	0	0	0	0	5	0	1	0	0	20	1	0	1	17	0	45	717
4:10 PM	0	0	0	0	0	4	0	1	0	0	22	2	0	2	16	0	47	749
4:15 PM	0	0	0	0	0	8	0	1	0	0	23	5	0	1	22	0	60	775
4:20 PM	0	0	0	0	0	3	0	2	0	0	23	2	0	1	27	0	58	771
4:25 PM	0	0	0	0	0	8	0	1	0	1	27	4	0	0	25	0	66	779
4:30 PM	0	0	0	0	0	3	0	2	0	1	28	4	0	0	16	0	54	787
4:35 PM	0	0	0	0	0	5	0	0	0	0	25	4	0	0	17	0	51	790
4:40 PM	0	0	0	0	0	4	0	1	0	1	25	5	0	0	25	0	61	820
4:45 PM	0	0	1	0	0	5	1	2	0	0	33	5	0	3	27	0	77	836
4:50 PM	0	0	0	0	0	5	0	2	0	0	29	5	0	0	29	0	70	828
4:55 PM	0	0	0	0	0	2	0	2	0	0	26	4	0	2	19	0	55	839
5:00 PM	0	0	0	0	0	4	1	1	0	0	32	8	0	3	24	0	73	873
5:05 PM	0	0	0	0	0	4	0	1	0	0	29	9	0	3	31	0	77	
5:10 PM	0	0	0	0	0	2	0	0	0	0	32	5	0	3	31	0	73	
5:15 PM	0	0	0	1	0	4	0	2	0	1	23	2	0	1	22	0	56	
5:20 PM	0	0	1	0	0	7	0	2	0	0	16	10	0	0	30	0	66	
5:25 PM	0	0	0	0	0	6	0	1	0	0	40	6	0	0	21	0	74	
5:30 PM	0	0	0	0	0	4	1	1	0	0	25	4	0	0	22	0	57	
5:35 PM	0	0	2	0	0	6	1	1	0	0	36	6	0	0	29	0	81	
5:40 PM	0	0	1	0	0	14	1	0	0	1	33	2	0	0	25	0	77	
5:45 PM	0	0	1	0	0	5	0	3	0	0	26	8	0	0	26	0	69	
5:50 PM	0	0	0	0	1	7	1	1	0	1	35	3	0	2	30	0	81	
5:55 PM	0	0	1	0	0	7	0	0	0	0	39	10	0	0	32	0	89	
Count Total	0	0	7	1	1	125	6	29	0	6	672	116	0	23	583	0	1,569	
Peak Hour	0	0	6	1	1	70	5	13	0	3	366	73	0	12	323	0	873	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	1	2	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	2	3	4:10 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	0	1	4:35 PM	1	0	0	0	1
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	1	1	0	2	4:45 PM	0	0	0	0	0
4:50 PM	0	1	0	0	1	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0
5:00 PM	0	2	0	0	2	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0
5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	1	0	0	0	1
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	0	1	5:40 PM	0	0	1	0	1
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	1	0	2	3	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	1	0	1
Count Total	0	11	1	7	19	Count Total	2	0	2	0	4
Peak Hour	0	6	0	3	9	Peak Hour	1	0	2	0	3



ALL TRAFFIC DATA SERVICES  
(303) 216-2439  
[www.alltrafficdata.net](http://www.alltrafficdata.net)

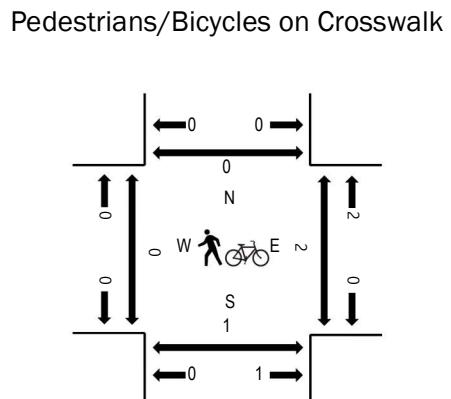
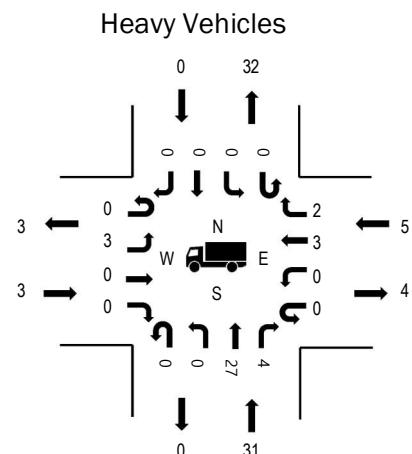
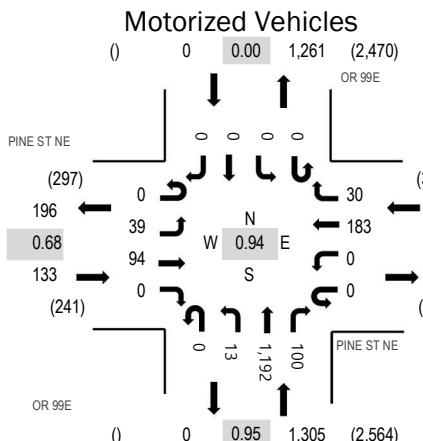
**Location:** 4 OR 99E & PINE ST NE PM

Date: Tuesday, February 6, 2024

**Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:35 PM - 04:50 PM

## Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.3%	0.68
WB	2.3%	0.85
NB	2.4%	0.95
SB	0.0%	0.00
All	2.4%	0.94

## Traffic Counts - Motorized Vehicles

Interval Start Time	PINE ST NE				PINE ST NE				OR 99E				OR 99E				Rolling Hour	
	Eastbound				Westbound				Northbound				Southbound					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	6	7	0	0	0	14	4	0	2	101	10	0	0	0	0	144	1,651
4:05 PM	0	8	16	0	0	0	13	3	0	1	93	5	0	0	0	0	139	1,635
4:10 PM	0	1	11	0	0	0	14	0	0	0	100	6	0	0	0	0	132	1,625
4:15 PM	0	3	6	0	0	0	18	3	0	2	93	9	0	0	0	0	134	1,631
4:20 PM	0	3	7	0	0	0	8	5	0	1	110	12	0	0	0	0	146	1,644
4:25 PM	0	5	4	0	0	0	19	4	0	1	105	10	0	0	0	0	148	1,634
4:30 PM	0	3	8	0	0	0	12	1	0	0	88	3	0	0	0	0	115	1,623
4:35 PM	0	1	6	0	0	0	11	1	0	0	119	6	0	0	0	0	144	1,629
4:40 PM	0	2	6	0	0	0	33	2	0	1	103	7	0	0	0	0	154	1,595
4:45 PM	0	1	7	0	0	0	14	2	0	1	98	17	0	0	0	0	140	1,564
4:50 PM	0	1	3	0	0	0	9	3	0	3	107	4	0	0	0	0	130	1,536
4:55 PM	0	5	13	0	0	0	18	2	0	1	75	11	0	0	0	0	125	1,510
5:00 PM	0	3	9	0	0	0	9	3	0	0	92	12	0	0	0	0	128	1,485
5:05 PM	0	7	9	0	0	0	10	2	0	1	93	7	0	0	0	0	129	
5:10 PM	0	2	9	0	0	0	8	1	0	0	105	13	0	0	0	0	138	
5:15 PM	0	4	6	0	0	0	16	5	0	0	108	8	0	0	0	0	147	
5:20 PM	0	2	6	0	0	0	8	3	0	2	108	7	0	0	0	0	136	
5:25 PM	0	2	7	0	0	0	9	0	0	0	113	6	0	0	0	0	137	
5:30 PM	0	1	1	0	0	0	6	3	0	1	102	7	0	0	0	0	121	
5:35 PM	0	2	8	0	0	0	3	1	0	1	84	11	0	0	0	0	110	
5:40 PM	0	2	7	0	0	0	9	2	0	2	93	8	0	0	0	0	123	
5:45 PM	0	4	1	0	0	0	6	1	0	0	88	12	0	0	0	0	112	
5:50 PM	0	3	11	0	0	0	7	1	0	0	77	5	0	0	0	0	104	
5:55 PM	0	1	1	0	0	0	3	2	0	0	89	4	0	0	0	0	100	
Count Total	0	72	169	0	0	0	277	54	0	20	2,344	200	0	0	0	0	3,136	
Peak Hour	0	39	94	0	0	0	183	30	0	13	1,192	100	0	0	0	0	1,651	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	0	2	4:00 PM	0	0	0	0	0
4:05 PM	0	3	1	0	4	4:05 PM	0	0	0	0	0
4:10 PM	0	3	1	0	4	4:10 PM	0	1	0	0	1
4:15 PM	1	1	1	0	3	4:15 PM	0	0	0	0	0
4:20 PM	0	6	0	0	6	4:20 PM	0	0	0	0	0
4:25 PM	1	3	0	0	4	4:25 PM	0	0	0	0	0
4:30 PM	0	3	0	0	3	4:30 PM	0	0	0	0	0
4:35 PM	0	2	0	0	2	4:35 PM	0	0	0	0	0
4:40 PM	0	1	0	0	1	4:40 PM	0	0	1	0	1
4:45 PM	0	3	1	0	4	4:45 PM	0	0	1	0	1
4:50 PM	1	3	0	0	4	4:50 PM	0	0	0	0	0
4:55 PM	0	1	1	0	2	4:55 PM	0	0	0	0	0
5:00 PM	0	7	0	0	7	5:00 PM	1	0	1	1	3
5:05 PM	0	6	0	0	6	5:05 PM	0	1	0	0	1
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0
5:15 PM	0	5	0	0	5	5:15 PM	0	0	0	0	0
5:20 PM	1	1	1	0	3	5:20 PM	0	0	0	0	0
5:25 PM	0	5	0	0	5	5:25 PM	0	1	0	0	1
5:30 PM	0	3	0	0	3	5:30 PM	0	0	0	0	0
5:35 PM	0	5	0	0	5	5:35 PM	0	0	0	0	0
5:40 PM	0	10	0	0	10	5:40 PM	0	0	0	0	0
5:45 PM	0	2	0	0	2	5:45 PM	0	0	0	0	0
5:50 PM	0	3	0	0	3	5:50 PM	0	0	0	1	1
5:55 PM	0	1	0	0	1	5:55 PM	0	0	0	0	0
Count Total	4	81	6	0	91	Count Total	1	3	3	2	9
Peak Hour	3	31	5	0	39	Peak Hour	0	1	2	0	3

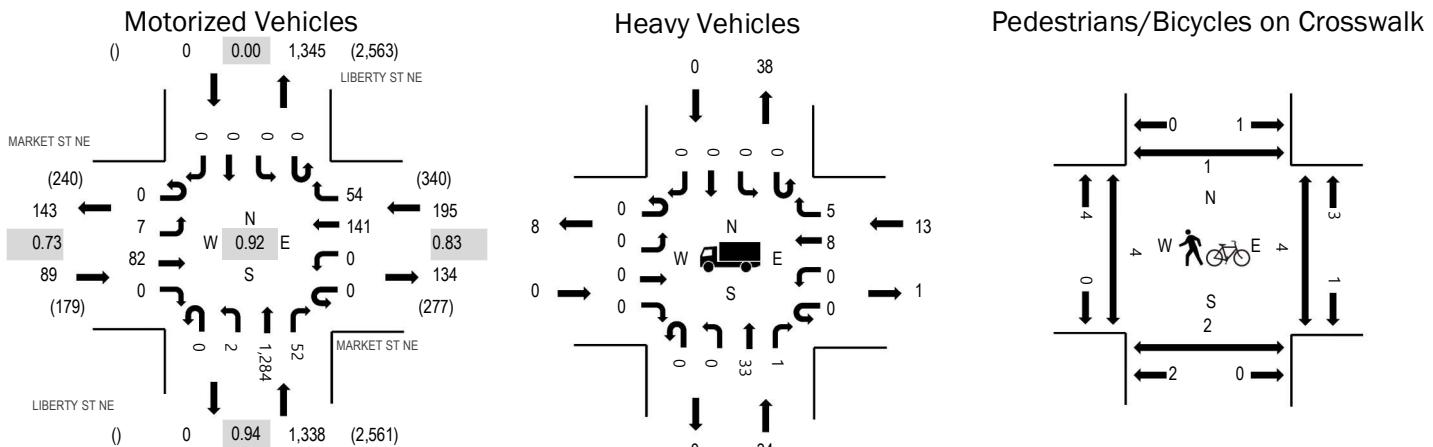
**Location:** 5 LIBERTY ST NE & MARKET ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 04:30 PM - 04:45 PM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.73
WB	6.7%	0.83
NB	2.5%	0.94
SB	0.0%	0.00
All	2.9%	0.92

**Traffic Counts - Motorized Vehicles**

Interval Start Time	MARKET ST NE				MARKET ST NE				LIBERTY ST NE				LIBERTY ST NE				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	1	15	0	0	0	7	4	0	2	102	4	0	0	0	0	135	1,580
4:05 PM	0	2	10	0	0	0	7	4	0	1	92	5	0	0	0	0	121	1,561
4:10 PM	0	0	8	0	0	0	6	4	0	0	89	7	0	0	0	0	114	1,577
4:15 PM	0	2	12	0	0	0	7	5	0	0	111	0	0	0	0	0	137	1,607
4:20 PM	0	1	7	0	0	0	12	4	0	0	103	6	0	0	0	0	133	1,612
4:25 PM	0	0	2	0	0	0	6	4	0	1	111	3	0	0	0	0	127	1,618
4:30 PM	0	0	12	0	0	0	12	8	0	1	102	6	0	0	0	0	141	1,622
4:35 PM	0	0	5	0	0	0	16	1	0	0	115	5	0	0	0	0	142	1,610
4:40 PM	0	2	8	0	0	0	17	5	0	1	120	6	0	0	0	0	159	1,573
4:45 PM	0	0	4	0	0	0	13	6	0	0	89	4	0	0	0	0	116	1,549
4:50 PM	0	1	8	0	0	0	7	6	0	0	115	3	0	0	0	0	140	1,535
4:55 PM	0	0	5	0	0	0	14	4	0	0	88	4	0	0	0	0	115	1,495
5:00 PM	0	0	8	0	0	0	12	4	0	0	92	0	0	0	0	0	116	1,500
5:05 PM	0	1	6	0	0	0	4	3	0	0	118	5	0	0	0	0	137	
5:10 PM	0	2	8	0	0	0	16	4	0	0	109	5	0	0	0	0	144	
5:15 PM	0	1	5	0	0	0	11	4	0	0	118	3	0	0	0	0	142	
5:20 PM	0	0	8	0	0	0	10	6	0	0	111	4	0	0	0	0	139	
5:25 PM	0	0	5	0	0	0	9	3	0	0	107	7	0	0	0	0	131	
5:30 PM	0	1	4	0	0	0	4	4	0	1	110	5	0	0	0	0	129	
5:35 PM	0	0	3	0	0	0	16	5	0	0	75	6	0	0	0	0	105	
5:40 PM	0	0	7	0	0	0	11	6	0	0	102	9	0	0	0	0	135	
5:45 PM	0	0	5	0	0	0	7	3	0	0	83	4	0	0	0	0	102	
5:50 PM	0	0	5	0	0	0	4	5	0	0	81	5	0	0	0	0	100	
5:55 PM	0	0	5	0	0	0	5	5	0	0	99	6	0	0	0	0	120	
Count Total	0	14	165	0	0	233	107	0	7	2,442	112	0	0	0	0	3,080		
Peak Hour	0	7	82	0	0	141	54	0	2	1,284	52	0	0	0	0	1,622		

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	0	1	4:00 PM	1	0	0	2	3
4:05 PM	0	3	0	0	3	4:05 PM	0	0	0	0	0
4:10 PM	0	2	1	0	3	4:10 PM	0	0	0	0	0
4:15 PM	0	5	1	0	6	4:15 PM	0	0	0	1	1
4:20 PM	0	2	2	0	4	4:20 PM	0	0	0	0	0
4:25 PM	1	3	1	0	5	4:25 PM	0	0	0	0	0
4:30 PM	0	2	3	0	5	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	0	1	4:35 PM	2	1	0	0	3
4:40 PM	0	3	0	0	3	4:40 PM	0	0	0	1	1
4:45 PM	0	4	4	0	8	4:45 PM	2	0	1	0	3
4:50 PM	0	4	2	0	6	4:50 PM	0	0	0	0	0
4:55 PM	0	1	3	0	4	4:55 PM	0	0	2	0	2
5:00 PM	0	8	0	0	8	5:00 PM	0	0	0	0	0
5:05 PM	0	4	0	0	4	5:05 PM	0	0	0	0	0
5:10 PM	0	2	1	0	3	5:10 PM	0	1	1	0	2
5:15 PM	0	2	0	0	2	5:15 PM	0	0	0	0	0
5:20 PM	0	1	0	0	1	5:20 PM	0	0	0	0	0
5:25 PM	0	2	0	0	2	5:25 PM	0	0	0	0	0
5:30 PM	0	3	0	0	3	5:30 PM	0	0	0	0	0
5:35 PM	0	3	0	0	3	5:35 PM	0	0	0	0	0
5:40 PM	0	1	0	0	1	5:40 PM	1	0	0	1	2
5:45 PM	0	2	0	0	2	5:45 PM	0	0	0	0	0
5:50 PM	0	3	0	0	3	5:50 PM	0	1	0	0	1
5:55 PM	0	3	0	0	3	5:55 PM	0	0	0	0	0
Count Total	2	64	18	0	84	Count Total	6	3	4	5	18
Peak Hour	0	34	13	0	47	Peak Hour	4	2	4	1	11

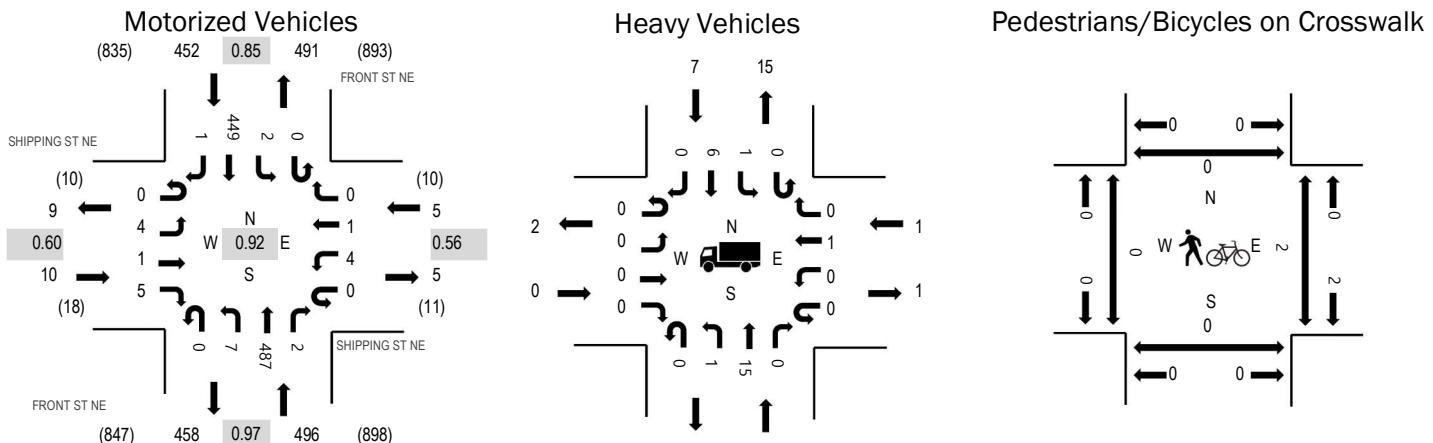
**Location:** 6 FRONT ST NE & SHIPPING ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.60
WB	20.0%	0.56
NB	3.2%	0.97
SB	1.5%	0.85
All	2.5%	0.92

### Traffic Counts - Motorized Vehicles

Interval Start Time	SHIPPING ST NE				SHIPPING ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour		
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			
4:00 PM	0	0	0	1	0	0	0	0	0	0	35	0	0	0	35	0	71	902	
4:05 PM	0	0	1	0	0	1	0	0	0	0	34	0	0	0	1	34	0	71	915
4:10 PM	0	0	0	2	0	1	0	0	0	0	36	1	0	0	44	0	84	930	
4:15 PM	0	0	0	1	0	0	0	1	0	0	34	0	0	0	34	0	70	939	
4:20 PM	0	0	0	0	0	0	0	0	0	0	33	0	0	0	30	0	63	942	
4:25 PM	0	0	0	1	0	0	0	1	0	0	31	0	0	0	1	35	0	69	962
4:30 PM	0	1	1	0	0	1	0	0	1	36	0	0	0	0	32	0	72	963	
4:35 PM	0	0	0	2	0	0	0	0	1	44	0	0	0	1	43	0	91	963	
4:40 PM	0	0	0	0	0	1	0	0	2	40	0	0	0	0	35	0	78	929	
4:45 PM	0	0	0	0	0	1	1	0	0	1	36	0	0	0	30	0	69	923	
4:50 PM	0	0	0	1	0	1	0	0	0	41	1	0	0	0	39	0	83	925	
4:55 PM	0	1	0	0	0	0	0	0	0	43	0	0	0	0	37	0	81	899	
5:00 PM	0	0	0	0	0	0	0	0	1	41	1	0	0	0	41	0	84	859	
5:05 PM	0	1	0	0	0	0	0	0	0	41	0	0	0	0	44	0	86		
5:10 PM	0	1	0	0	0	0	0	0	0	42	0	0	0	0	50	0	93		
5:15 PM	0	0	0	0	0	0	0	0	0	34	0	0	0	0	39	0	73		
5:20 PM	0	0	0	1	0	0	0	0	1	47	0	0	0	1	33	0	83		
5:25 PM	0	0	0	1	0	0	0	0	0	42	0	0	0	0	26	1	70		
5:30 PM	0	0	0	0	0	0	0	0	0	36	0	0	1	35	0	72			
5:35 PM	0	0	0	1	0	0	0	0	1	37	0	0	0	0	18	0	57		
5:40 PM	0	0	0	0	1	0	0	0	0	34	0	0	0	0	37	0	72		
5:45 PM	0	0	0	0	0	0	0	0	0	33	1	0	0	0	37	0	71		
5:50 PM	0	1	0	0	0	0	0	0	0	32	0	0	0	0	24	0	57		
5:55 PM	0	0	0	0	0	0	0	0	0	24	0	0	0	0	17	0	41		
Count Total	0	5	2	11	0	7	1	2	0	8	886	4	0	5	829	1	1,761		
Peak Hour	0	4	1	5	0	4	1	0	0	7	487	2	0	2	449	1	963		

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	1	2	4:05 PM	1	0	0	0	1
4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2	4:15 PM	0	2	0	0	2
4:20 PM	0	1	0	1	2	4:20 PM	1	0	0	0	1
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	2	0	1	3	4:30 PM	0	0	0	0	0
4:35 PM	0	1	0	1	2	4:35 PM	0	0	1	0	1
4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	1	0	1	4:45 PM	0	0	0	0	0
4:50 PM	0	2	0	1	3	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	1	2	4:55 PM	0	0	0	0	0
5:00 PM	0	3	0	0	3	5:00 PM	0	0	1	0	1
5:05 PM	0	3	0	1	4	5:05 PM	0	0	0	0	0
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0
5:25 PM	0	1	0	1	2	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	1	0	1
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	1	0	0	1	5:55 PM	1	0	0	0	1
Count Total	0	22	1	9	32	Count Total	4	2	3	0	9
Peak Hour	0	16	1	7	24	Peak Hour	0	0	2	0	2



(303) 216-2439  
www.alltrafficdata.net

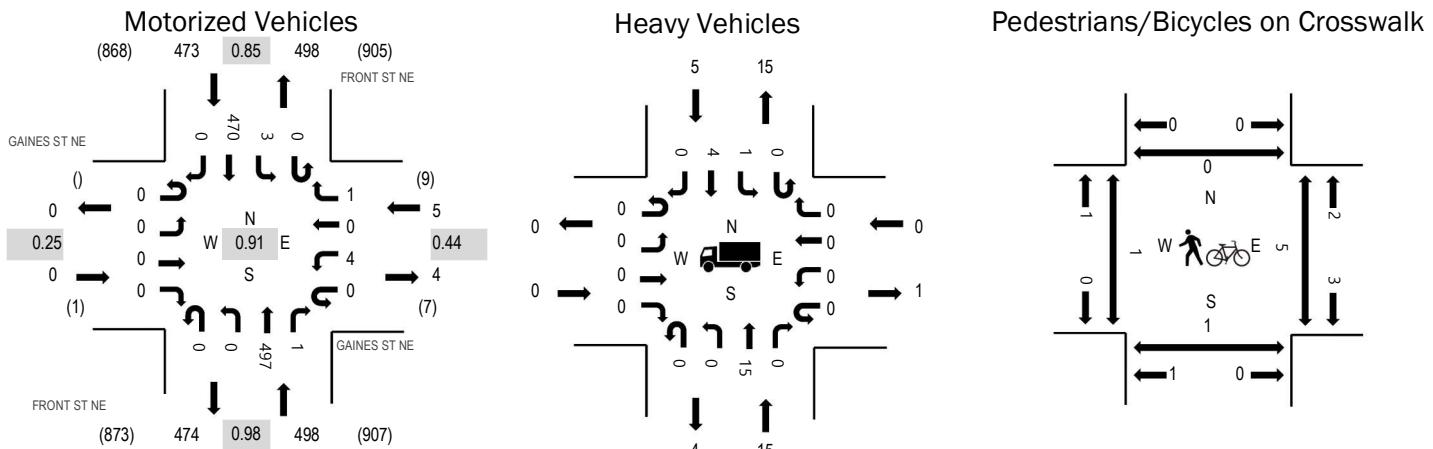
**Location:** 8 FRONT ST NE & GAINES ST NE PM

Date: Tuesday, February 6, 2024

**Peak Hour:** 04:35 PM - 05:35 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

## Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.25
WB	0.0%	0.44
NB	3.0%	0.98
SB	1.1%	0.85
All	2.0%	0.91

## Traffic Counts - Motorized Vehicles

Interval Start Time	GAINES ST NE				GAINES ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound				Westbound				Northbound				Southbound					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	1	0	0	0	0	0	0	34	0	0	0	38	0	73	905
4:05 PM	0	0	0	0	0	1	0	0	0	0	34	1	0	0	33	0	69	919
4:10 PM	0	0	0	0	0	0	0	0	0	0	35	0	0	0	47	0	82	932
4:15 PM	0	0	0	0	0	0	0	0	0	0	34	0	0	0	35	0	69	948
4:20 PM	0	0	0	0	0	0	1	0	0	0	37	1	0	0	34	0	73	951
4:25 PM	0	0	0	0	0	0	0	0	0	0	27	0	0	0	35	0	62	967
4:30 PM	0	0	0	0	0	0	0	0	0	0	38	0	0	0	31	0	69	974
4:35 PM	0	0	0	0	0	0	0	0	0	0	48	1	0	0	44	0	93	976
4:40 PM	0	0	0	0	0	0	0	0	0	0	39	0	0	0	39	0	78	943
4:45 PM	0	0	0	0	0	0	0	0	0	0	37	0	0	0	34	0	71	941
4:50 PM	0	0	0	0	0	1	0	0	0	0	45	0	0	0	38	0	84	942
4:55 PM	0	0	0	0	0	0	0	1	0	0	42	0	0	1	38	0	82	914
5:00 PM	0	0	0	0	0	1	0	0	0	0	40	0	0	0	46	0	87	880
5:05 PM	0	0	0	0	0	2	0	0	0	0	41	0	0	0	39	0	82	
5:10 PM	0	0	0	0	0	0	0	0	0	0	43	0	0	0	55	0	98	
5:15 PM	0	0	0	0	0	0	0	0	0	0	33	0	0	1	38	0	72	
5:20 PM	0	0	0	0	0	0	0	0	0	0	52	0	0	0	37	0	89	
5:25 PM	0	0	0	0	0	0	0	0	0	0	41	0	0	0	28	0	69	
5:30 PM	0	0	0	0	0	0	0	0	0	0	36	0	0	1	34	0	71	
5:35 PM	0	0	0	0	0	0	0	0	0	0	38	0	0	0	22	0	60	
5:40 PM	0	0	0	0	0	1	0	0	0	0	37	0	0	0	38	0	76	
5:45 PM	0	0	0	0	0	1	0	0	0	0	33	0	0	0	38	0	72	
5:50 PM	0	0	0	0	0	0	0	0	0	0	30	1	0	0	25	0	56	
5:55 PM	0	0	0	0	0	0	0	0	0	0	29	0	0	0	19	0	48	
Count Total	0	0	0	1	0	7	0	2	0	0	903	4	0	3	865	0	1,785	
Peak Hour	0	0	0	0	0	4	0	1	0	0	497	1	0	3	470	0	976	

### Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	1	2	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2	4:15 PM	0	0	0	0	0
4:20 PM	0	1	0	1	2	4:20 PM	1	0	0	0	1
4:25 PM	0	0	0	0	0	4:25 PM	1	0	0	0	1
4:30 PM	0	2	0	1	3	4:30 PM	0	0	0	0	0
4:35 PM	0	2	0	1	3	4:35 PM	0	0	1	0	1
4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	2	0	1	3	4:50 PM	0	0	1	0	1
4:55 PM	0	1	0	1	2	4:55 PM	0	0	0	0	0
5:00 PM	0	3	0	0	3	5:00 PM	0	0	0	0	0
5:05 PM	0	3	0	1	4	5:05 PM	0	0	1	0	1
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	1	0	1	0	2
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	1	1	5:30 PM	0	1	1	0	2
5:35 PM	0	0	0	0	0	5:35 PM	1	0	0	0	1
5:40 PM	0	0	0	0	0	5:40 PM	1	0	0	0	1
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	1	1	2
5:55 PM	0	1	0	0	1	5:55 PM	0	0	0	0	0
Count Total	0	23	0	8	31	Count Total	5	1	6	1	13
Peak Hour	0	15	0	5	20	Peak Hour	1	1	5	0	7

**Location:** 9 FRONT ST NE & HOOD ST NE PM

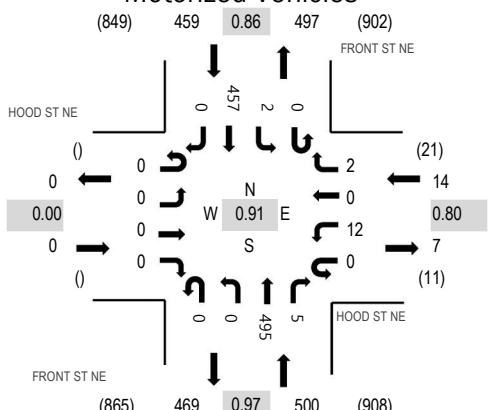
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:30 PM - 05:30 PM

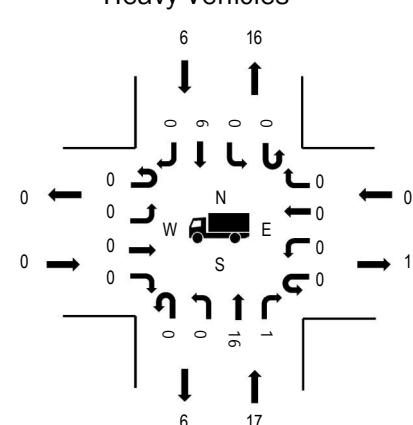
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour

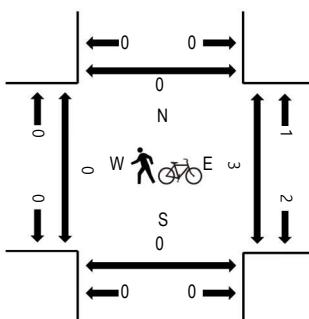
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.0%	0.80
NB	3.4%	0.97
SB	1.3%	0.86
All	2.4%	0.91

### Traffic Counts - Motorized Vehicles

Interval Start Time	HOOD ST NE				HOOD ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour		
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			
4:00 PM	0	0	0	0	0	0	0	0	0	0	36	1	0	0	0	37	0	74	903
4:05 PM	0	0	0	0	0	0	0	0	0	0	32	1	0	0	0	34	0	67	918
4:10 PM	0	0	0	0	0	1	0	0	0	0	37	0	0	0	0	47	0	85	934
4:15 PM	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	34	0	68	944
4:20 PM	0	0	0	0	0	1	0	0	0	0	35	0	0	0	0	33	0	69	949
4:25 PM	0	0	0	0	0	0	0	0	0	0	29	0	0	0	1	35	0	65	967
4:30 PM	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	33	0	72	973
4:35 PM	0	0	0	0	0	0	0	0	0	0	44	1	0	0	0	42	0	87	972
4:40 PM	0	0	0	0	0	2	0	0	0	0	41	0	0	1	0	38	0	82	943
4:45 PM	0	0	0	0	0	2	0	1	0	0	36	0	0	0	0	30	0	69	935
4:50 PM	0	0	0	0	0	0	0	0	0	0	45	0	0	0	0	39	0	84	939
4:55 PM	0	0	0	0	0	0	0	0	0	0	40	1	0	0	0	40	0	81	909
5:00 PM	0	0	0	0	0	4	0	1	0	0	43	0	0	0	0	41	0	89	875
5:05 PM	0	0	0	0	0	0	0	0	0	0	41	0	0	1	0	41	0	83	
5:10 PM	0	0	0	0	0	0	0	0	0	0	42	1	0	0	0	52	0	95	
5:15 PM	0	0	0	0	0	1	0	0	0	0	33	0	0	0	0	39	0	73	
5:20 PM	0	0	0	0	0	3	0	0	0	0	49	1	0	0	0	34	0	87	
5:25 PM	0	0	0	0	0	0	0	0	0	0	42	1	0	0	0	28	0	71	
5:30 PM	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	35	0	71	
5:35 PM	0	0	0	0	0	2	0	0	0	0	38	0	0	0	0	18	0	58	
5:40 PM	0	0	0	0	0	1	0	0	0	0	35	0	0	0	0	38	0	74	
5:45 PM	0	0	0	0	0	0	0	0	0	0	34	1	0	0	0	38	0	73	
5:50 PM	0	0	0	0	0	1	0	0	0	0	30	0	0	0	0	23	0	54	
5:55 PM	0	0	0	0	0	1	0	0	0	0	29	0	0	0	0	17	0	47	
Count Total	0	0	0	0	0	19	0	2	0	0	900	8	0	3	846	0	1,778		
Peak Hour	0	0	0	0	0	12	0	2	0	0	495	5	0	2	457	0	973		

### Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	1	2	4:05 PM	1	0	0	0	1
4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2	4:15 PM	0	0	0	0	0
4:20 PM	0	1	0	1	2	4:20 PM	1	0	0	0	1
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	2	0	1	3	4:30 PM	0	0	0	0	0
4:35 PM	0	2	0	1	3	4:35 PM	0	0	1	0	1
4:40 PM	0	1	0	0	1	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	2	0	1	3	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	1	2	4:55 PM	0	0	0	0	0
5:00 PM	0	3	0	0	3	5:00 PM	0	0	1	0	1
5:05 PM	0	3	0	1	4	5:05 PM	0	0	0	0	0
5:10 PM	0	2	0	0	2	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	1	0	1
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	1	0	1	2	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	1	0	0	0	1
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	1	0	0	1	5:55 PM	1	0	0	0	1
Count Total	0	23	0	8	31	Count Total	4	0	3	0	7
Peak Hour	0	17	0	6	23	Peak Hour	0	0	3	0	3

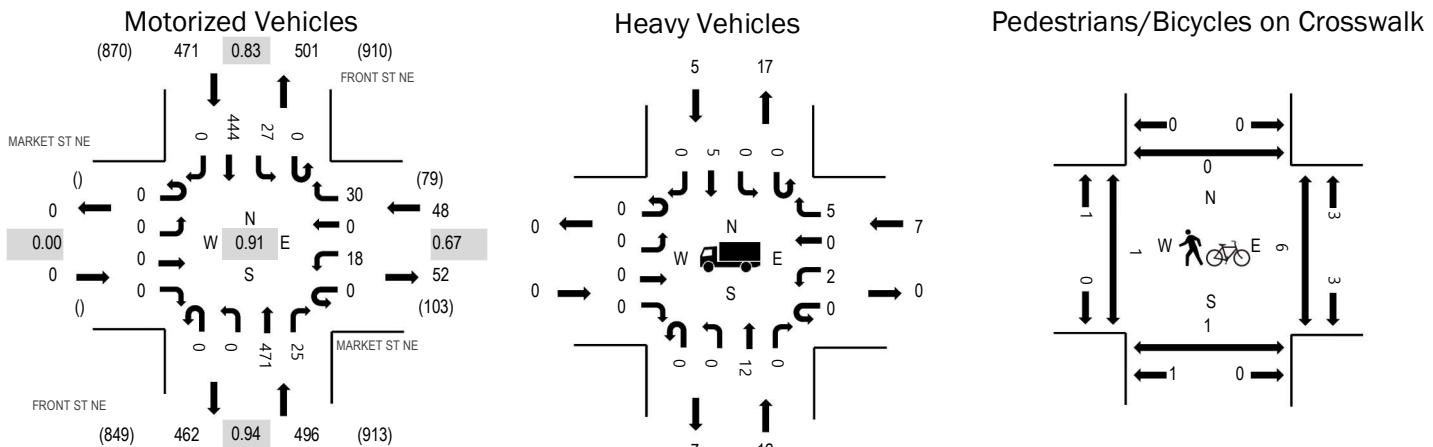
**Location:** 10 FRONT ST NE & MARKET ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	14.6%	0.67
NB	2.4%	0.94
SB	1.1%	0.83
All	2.4%	0.91

### Traffic Counts - Motorized Vehicles

Interval Start Time	MARKET ST NE				MARKET ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	1	0	2	0	0	33	3	0	5	32	0	76	947
4:05 PM	0	0	0	0	0	1	0	3	0	0	33	4	0	2	34	0	77	961
4:10 PM	0	0	0	0	0	1	0	3	0	0	32	3	0	3	44	0	86	969
4:15 PM	0	0	0	0	0	1	0	2	0	0	32	2	0	3	32	0	72	988
4:20 PM	0	0	0	0	0	0	0	0	0	0	39	0	0	3	30	0	72	989
4:25 PM	0	0	0	0	0	2	0	2	0	0	25	3	0	3	31	0	66	1,013
4:30 PM	0	0	0	0	0	2	0	2	0	0	36	1	0	1	30	0	72	1,015
4:35 PM	0	0	0	0	0	1	0	4	0	0	44	5	0	4	39	0	97	1,014
4:40 PM	0	0	0	0	0	4	0	5	0	0	34	2	0	2	38	0	85	980
4:45 PM	0	0	0	0	0	2	0	3	0	0	35	2	0	1	33	0	76	976
4:50 PM	0	0	0	0	0	0	0	3	0	0	40	3	0	5	33	0	84	973
4:55 PM	0	0	0	0	0	1	0	2	0	0	42	0	0	0	39	0	84	950
5:00 PM	0	0	0	0	0	1	0	2	0	0	39	2	0	1	45	0	90	915
5:05 PM	0	0	0	0	0	1	0	2	0	0	38	2	0	2	40	0	85	
5:10 PM	0	0	0	0	0	3	0	1	0	0	42	3	0	5	51	0	105	
5:15 PM	0	0	0	0	0	1	0	1	0	0	31	4	0	1	35	0	73	
5:20 PM	0	0	0	0	0	2	0	4	0	0	51	1	0	3	35	0	96	
5:25 PM	0	0	0	0	0	0	0	1	0	0	39	0	0	2	26	0	68	
5:30 PM	0	0	0	0	0	0	0	2	0	0	33	2	0	1	33	0	71	
5:35 PM	0	0	0	0	0	1	0	1	0	0	38	2	0	0	21	0	63	
5:40 PM	0	0	0	0	0	1	0	1	0	0	36	3	0	1	39	0	81	
5:45 PM	0	0	0	0	0	3	0	2	0	0	29	1	0	3	35	0	73	
5:50 PM	0	0	0	0	0	1	0	0	0	0	32	2	0	1	25	0	61	
5:55 PM	0	0	0	0	0	1	0	0	0	0	29	1	0	0	18	0	49	
Count Total	0	0	0	0	0	31	0	48	0	0	862	51	0	52	818	0	1,862	
Peak Hour	0	0	0	0	0	18	0	30	0	0	471	25	0	27	444	0	1,015	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	1	0	1	2	4:05 PM	1	0	0	0	1
4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2	4:15 PM	0	0	0	0	0
4:20 PM	0	1	0	1	2	4:20 PM	2	1	1	0	4
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	1	1	0	2	4:30 PM	0	0	0	0	0
4:35 PM	0	1	1	1	3	4:35 PM	0	0	1	0	1
4:40 PM	0	1	0	1	2	4:40 PM	0	0	0	0	0
4:45 PM	0	0	2	0	2	4:45 PM	0	0	0	0	0
4:50 PM	0	1	1	1	3	4:50 PM	0	1	1	0	2
4:55 PM	0	0	2	1	3	4:55 PM	0	0	0	0	0
5:00 PM	0	2	0	0	2	5:00 PM	0	0	0	0	0
5:05 PM	0	3	0	1	4	5:05 PM	0	0	1	0	1
5:10 PM	0	2	0	0	2	5:10 PM	0	0	1	0	1
5:15 PM	0	0	0	0	0	5:15 PM	1	0	1	0	2
5:20 PM	0	0	0	0	0	5:20 PM	0	0	1	0	1
5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0
Count Total	0	18	7	7	32	Count Total	7	2	7	0	16
Peak Hour	0	12	7	5	24	Peak Hour	1	1	6	0	8

**Location:** 11 FRONT ST NE & OR 99E PM

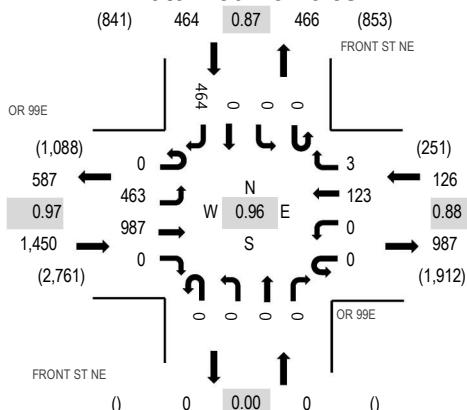
**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:20 PM - 05:20 PM

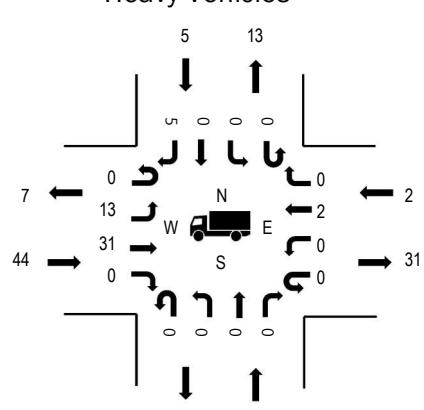
**Peak 15-Minutes:** 05:05 PM - 05:20 PM

### Peak Hour

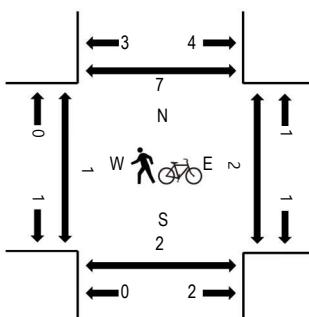
#### Motorized Vehicles



#### Heavy Vehicles



#### Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.0%	0.97
WB	1.6%	0.88
NB	0.0%	0.00
SB	1.1%	0.87
All	2.5%	0.96

### Traffic Counts - Motorized Vehicles

Interval Start Time	OR 99E				OR 99E				FRONT ST NE				FRONT ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn		Left		Thru		Right		
4:00 PM	0	31	75	0	0	0	8	0	0	0	0	0	0	0	0	30	144
4:05 PM	0	35	66	0	0	0	15	0	0	0	0	0	0	0	0	31	147
4:10 PM	0	35	75	0	0	0	9	0	0	0	0	0	0	0	0	45	164
4:15 PM	0	22	95	0	0	0	7	0	0	0	0	0	0	0	0	27	151
4:20 PM	0	44	84	0	0	0	11	0	0	0	0	0	0	0	0	37	176
4:25 PM	0	28	84	0	0	0	11	0	0	0	0	0	0	0	0	29	152
4:30 PM	0	35	85	0	0	0	9	0	0	0	0	0	0	0	0	34	163
4:35 PM	0	44	81	0	0	0	9	0	0	0	0	0	0	0	0	36	170
4:40 PM	0	36	85	0	0	0	13	1	0	0	0	0	0	0	0	42	177
4:45 PM	0	37	88	0	0	0	14	0	0	0	0	0	0	0	0	39	178
4:50 PM	0	48	78	0	0	0	4	2	0	0	0	0	0	0	0	38	170
4:55 PM	0	32	75	0	0	0	9	0	0	0	0	0	0	0	0	38	154
5:00 PM	0	39	77	0	0	0	13	0	0	0	0	0	0	0	0	40	169
5:05 PM	0	39	90	0	0	0	8	0	0	0	0	0	0	0	0	44	181
5:10 PM	0	35	73	0	0	0	10	0	0	0	0	0	0	0	0	50	168
5:15 PM	0	46	87	0	0	0	12	0	0	0	0	0	0	0	0	37	182
5:20 PM	0	39	87	0	0	0	13	0	0	0	0	0	0	0	0	28	167
5:25 PM	0	35	74	0	0	0	10	0	0	0	0	0	0	0	0	27	146
5:30 PM	0	40	81	0	0	0	12	0	0	0	0	0	0	0	0	44	177
5:35 PM	0	31	85	0	0	0	9	0	0	0	0	0	0	0	0	29	154
5:40 PM	0	40	71	0	0	0	8	0	0	0	0	0	0	0	0	23	142
5:45 PM	0	25	63	0	0	0	10	1	0	0	0	0	0	0	0	45	144
5:50 PM	0	26	88	0	0	0	12	0	0	0	0	0	0	0	0	29	155
5:55 PM	0	27	65	0	0	0	11	0	0	0	0	0	0	0	0	19	122
Count Total	0	849	1,912	0	0	0	247	4	0	0	0	0	0	0	0	841	3,853
Peak Hour	0	463	987	0	0	0	123	3	0	0	0	0	0	0	0	464	2,040

### Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	0	1	4:00 PM	0	0	0	1	1
4:05 PM	2	0	1	1	4	4:05 PM	0	0	0	0	0
4:10 PM	2	0	1	0	3	4:10 PM	0	0	0	0	0
4:15 PM	7	0	1	0	8	4:15 PM	0	0	0	0	0
4:20 PM	3	0	0	0	3	4:20 PM	0	0	0	1	1
4:25 PM	1	0	0	0	1	4:25 PM	0	0	1	0	1
4:30 PM	2	0	0	0	2	4:30 PM	0	0	0	1	1
4:35 PM	1	0	0	1	2	4:35 PM	0	1	0	1	2
4:40 PM	6	0	1	0	7	4:40 PM	0	0	0	0	0
4:45 PM	2	0	0	0	2	4:45 PM	0	0	0	0	0
4:50 PM	4	0	0	1	5	4:50 PM	0	1	0	0	1
4:55 PM	3	0	0	1	4	4:55 PM	0	0	0	3	3
5:00 PM	9	0	0	0	9	5:00 PM	0	0	0	0	0
5:05 PM	6	0	1	1	8	5:05 PM	1	0	0	0	1
5:10 PM	6	0	0	0	6	5:10 PM	0	0	0	1	1
5:15 PM	1	0	0	1	2	5:15 PM	0	0	1	0	1
5:20 PM	4	0	0	0	4	5:20 PM	0	0	0	0	0
5:25 PM	3	0	1	0	4	5:25 PM	0	0	0	0	0
5:30 PM	1	0	0	0	1	5:30 PM	0	0	0	0	0
5:35 PM	2	0	2	0	4	5:35 PM	0	1	0	0	1
5:40 PM	2	0	0	0	2	5:40 PM	0	0	1	2	3
5:45 PM	4	0	0	0	4	5:45 PM	0	0	0	2	2
5:50 PM	1	0	0	0	1	5:50 PM	0	3	3	2	8
5:55 PM	3	0	0	0	3	5:55 PM	0	0	0	0	0
Count Total	76	0	8	6	90	Count Total	1	6	6	14	27
Peak Hour	44	0	2	5	51	Peak Hour	1	2	2	7	12

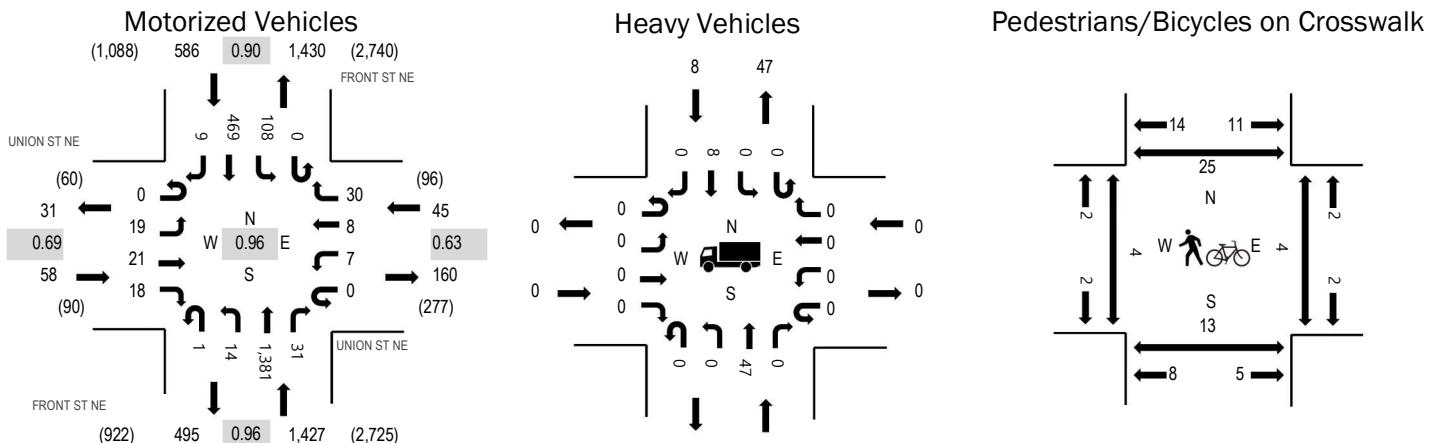
**Location:** 12 FRONT ST NE & UNION ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:35 PM - 05:35 PM

**Peak 15-Minutes:** 05:05 PM - 05:20 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.69
WB	0.0%	0.63
NB	3.3%	0.96
SB	1.4%	0.90
All	2.6%	0.96

### Traffic Counts - Motorized Vehicles

Interval Start Time	UNION ST NE				UNION ST NE				FRONT ST NE				FRONT ST NE				Rolling Hour
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
4:00 PM	0	1	0	3	0	1	2	4	0	0	102	3	0	8	28	1	153 2,023
4:05 PM	0	0	1	1	0	1	1	4	0	0	102	2	0	7	42	1	162 2,046
4:10 PM	0	0	1	2	0	2	1	0	0	0	103	1	0	11	41	1	163 2,064
4:15 PM	0	0	0	1	0	0	0	1	0	2	120	2	0	6	27	4	163 2,085
4:20 PM	0	2	2	2	0	1	1	7	0	1	118	2	0	5	42	0	183 2,110
4:25 PM	0	0	0	1	0	0	1	1	0	0	113	2	0	4	28	0	150 2,096
4:30 PM	0	1	0	1	0	2	2	5	0	2	111	2	0	8	42	2	178 2,109
4:35 PM	0	5	2	2	0	0	2	3	0	0	116	3	0	5	32	1	171 2,116
4:40 PM	0	0	0	1	0	1	2	6	0	1	121	1	0	9	51	1	194 2,096
4:45 PM	0	0	2	1	0	0	0	1	0	4	112	4	0	11	40	0	175 2,050
4:50 PM	0	0	2	2	0	1	0	3	0	0	115	1	0	9	30	0	163 2,024
4:55 PM	0	1	1	1	0	0	0	2	0	1	108	4	0	10	40	0	168 2,025
5:00 PM	0	0	0	0	0	0	1	1	0	0	117	2	0	9	45	1	176 1,976
5:05 PM	0	8	3	1	0	4	0	1	0	0	117	1	0	8	36	1	180
5:10 PM	0	1	5	0	0	1	0	4	0	2	102	6	0	12	50	1	184
5:15 PM	0	0	1	2	0	0	1	1	0	3	127	2	0	11	38	2	188
5:20 PM	0	0	1	2	0	0	1	1	0	0	124	2	0	5	32	1	169
5:25 PM	0	2	3	1	0	0	1	5	1	1	108	3	0	6	32	0	163
5:30 PM	0	2	1	5	0	0	0	2	0	2	114	2	0	13	43	1	185
5:35 PM	0	0	0	0	0	0	2	0	1	110	2	0	7	29	0	151	
5:40 PM	0	2	2	0	0	1	1	3	0	1	105	2	0	8	22	1	148
5:45 PM	0	2	1	0	0	0	0	2	0	0	83	3	0	11	46	1	149
5:50 PM	0	1	0	1	0	1	0	3	0	0	114	2	0	6	34	2	164
5:55 PM	0	2	2	0	0	1	0	0	0	0	86	1	0	3	24	0	119
Count Total	0	30	30	30	0	17	17	62	1	21	2,648	55	0	192	874	22	3,999
Peak Hour	0	19	21	18	0	7	8	30	1	14	1,381	31	0	108	469	9	2,116

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	0	2	4:00 PM	0	1	0	1	2
4:05 PM	0	3	0	2	5	4:05 PM	0	0	0	1	1
4:10 PM	0	1	0	1	2	4:10 PM	0	2	1	1	4
4:15 PM	0	6	0	1	7	4:15 PM	0	0	0	0	0
4:20 PM	0	3	0	0	3	4:20 PM	1	3	1	1	6
4:25 PM	0	1	0	0	1	4:25 PM	0	0	0	0	0
4:30 PM	0	3	0	0	3	4:30 PM	0	1	0	0	1
4:35 PM	0	2	0	0	2	4:35 PM	0	1	0	4	5
4:40 PM	0	4	0	2	6	4:40 PM	0	0	0	0	0
4:45 PM	0	2	0	0	2	4:45 PM	1	0	0	2	3
4:50 PM	0	4	0	1	5	4:50 PM	1	3	0	1	5
4:55 PM	0	4	0	1	5	4:55 PM	0	0	1	4	5
5:00 PM	0	8	0	0	8	5:00 PM	0	0	0	4	4
5:05 PM	0	6	0	2	8	5:05 PM	0	2	0	0	2
5:10 PM	0	7	0	0	7	5:10 PM	0	2	2	3	7
5:15 PM	0	0	0	1	1	5:15 PM	2	2	0	2	6
5:20 PM	0	4	0	0	4	5:20 PM	0	1	1	0	2
5:25 PM	0	3	0	1	4	5:25 PM	0	2	0	3	5
5:30 PM	0	3	0	0	3	5:30 PM	0	0	0	2	2
5:35 PM	0	0	0	2	2	5:35 PM	0	0	1	2	3
5:40 PM	0	2	0	0	2	5:40 PM	0	0	1	1	2
5:45 PM	0	4	0	0	4	5:45 PM	0	1	0	2	3
5:50 PM	0	2	0	0	2	5:50 PM	0	2	1	4	7
5:55 PM	0	3	0	0	3	5:55 PM	0	3	0	1	4
Count Total	0	77	0	14	91	Count Total	5	26	9	39	79
Peak Hour	0	47	0	8	55	Peak Hour	4	13	4	25	46

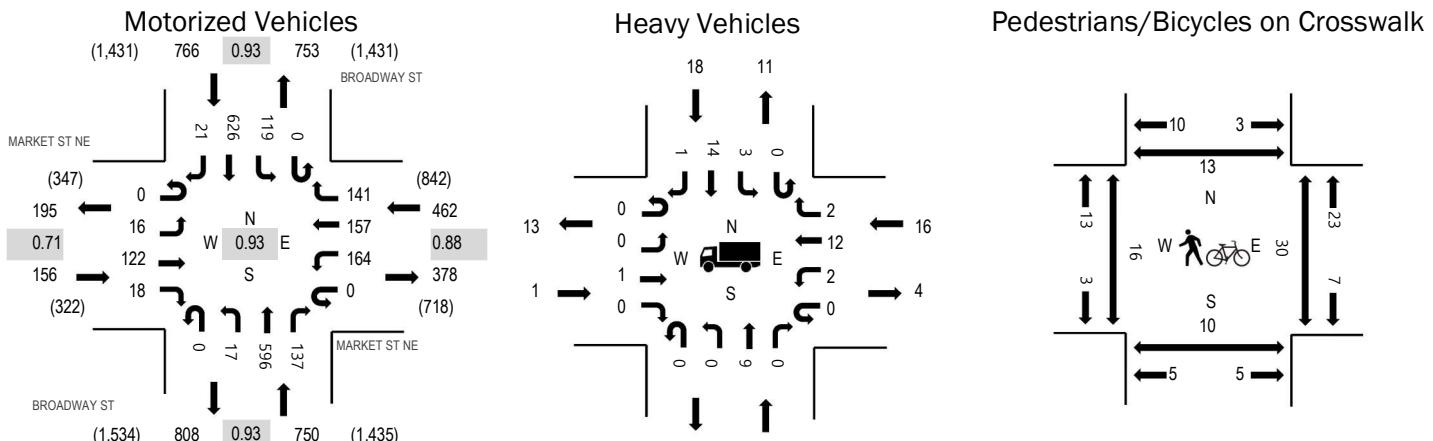
**Location:** 13 BROADWAY ST & MARKET ST NE PM

**Date:** Tuesday, February 6, 2024

**Peak Hour:** 04:30 PM - 05:30 PM

**Peak 15-Minutes:** 05:10 PM - 05:25 PM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.6%	0.71
WB	3.5%	0.88
NB	1.2%	0.93
SB	2.3%	0.93
All	2.1%	0.93

### Traffic Counts - Motorized Vehicles

Interval Start Time	MARKET ST NE				MARKET ST NE				BROADWAY ST				BROADWAY ST				Rolling Hour	
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	2	14	0	0	9	9	8	0	3	46	6	0	10	54	1	162	2,013
4:05 PM	0	0	19	2	0	7	12	7	0	1	53	6	0	6	49	2	164	2,019
4:10 PM	0	2	16	3	0	11	13	8	0	0	39	11	0	10	45	0	158	2,020
4:15 PM	0	0	15	1	0	16	13	14	0	0	53	5	0	5	33	0	155	2,049
4:20 PM	0	4	8	0	0	11	9	5	0	1	53	17	0	7	58	1	174	2,083
4:25 PM	0	2	4	1	0	4	6	8	0	3	44	9	0	10	53	2	146	2,104
4:30 PM	0	4	12	1	0	17	15	11	0	3	41	9	0	12	40	2	167	2,134
4:35 PM	0	0	7	1	0	16	16	7	0	2	57	12	0	8	55	2	183	2,129
4:40 PM	0	3	11	1	0	8	15	11	0	3	55	17	0	12	57	2	195	2,119
4:45 PM	0	2	8	0	0	18	14	8	0	0	47	12	0	11	47	1	168	2,090
4:50 PM	0	1	12	1	0	15	15	10	0	1	39	8	0	8	53	2	165	2,082
4:55 PM	0	0	7	1	0	12	13	11	0	2	42	14	0	9	64	1	176	2,056
5:00 PM	0	0	10	3	0	10	11	10	0	0	55	8	0	9	52	0	168	2,017
5:05 PM	0	1	11	1	0	9	8	11	0	1	55	13	0	8	45	2	165	
5:10 PM	0	0	16	2	0	10	15	13	0	3	54	13	0	7	52	2	187	
5:15 PM	0	0	8	1	0	17	12	16	0	0	58	6	0	8	61	2	189	
5:20 PM	0	1	12	0	0	15	13	15	0	0	53	10	0	14	60	2	195	
5:25 PM	0	4	8	6	0	17	10	18	0	2	40	15	0	13	40	3	176	
5:30 PM	0	2	15	2	0	9	8	12	0	1	53	14	0	5	41	0	162	
5:35 PM	0	0	4	0	0	14	11	14	0	1	39	13	0	13	63	1	173	
5:40 PM	0	2	14	1	0	14	20	13	0	1	46	10	0	3	40	2	166	
5:45 PM	0	2	12	1	0	21	10	15	0	3	39	14	0	4	39	0	160	
5:50 PM	0	1	4	2	0	14	4	6	0	4	38	9	0	3	54	0	139	
5:55 PM	0	0	11	0	0	10	9	6	0	0	42	8	0	6	44	1	137	
Count Total	0	33	258	31	0	304	281	257	0	35	1,141	259	0	201	1,199	31	4,030	
Peak Hour	0	16	122	18	0	164	157	141	0	17	596	137	0	119	626	21	2,134	

## Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	2	1	2	6	4:00 PM	0	0	0	0	0
4:05 PM	0	2	0	1	3	4:05 PM	1	0	0	0	1
4:10 PM	0	1	2	0	3	4:10 PM	2	1	1	1	5
4:15 PM	0	1	1	0	2	4:15 PM	3	1	6	5	15
4:20 PM	0	3	2	3	8	4:20 PM	1	1	1	2	5
4:25 PM	1	1	0	0	2	4:25 PM	1	1	1	0	3
4:30 PM	0	1	3	3	7	4:30 PM	1	1	3	1	6
4:35 PM	0	3	0	1	4	4:35 PM	0	0	1	1	2
4:40 PM	1	0	0	1	2	4:40 PM	1	1	2	0	4
4:45 PM	0	0	5	1	6	4:45 PM	1	2	3	1	7
4:50 PM	0	1	2	3	6	4:50 PM	2	1	3	2	8
4:55 PM	0	0	3	1	4	4:55 PM	2	2	5	3	12
5:00 PM	0	1	0	2	3	5:00 PM	2	0	4	1	7
5:05 PM	0	1	1	2	4	5:05 PM	1	2	4	1	8
5:10 PM	0	1	0	1	2	5:10 PM	1	1	2	1	5
5:15 PM	0	0	1	0	1	5:15 PM	1	0	2	1	4
5:20 PM	0	1	1	2	4	5:20 PM	2	0	1	1	4
5:25 PM	0	0	0	1	1	5:25 PM	2	0	0	0	2
5:30 PM	0	1	0	0	1	5:30 PM	2	2	4	0	8
5:35 PM	0	2	0	5	7	5:35 PM	0	0	3	1	4
5:40 PM	0	2	0	0	2	5:40 PM	0	3	1	0	4
5:45 PM	0	2	0	1	3	5:45 PM	1	1	2	0	4
5:50 PM	0	1	0	2	3	5:50 PM	1	1	3	0	5
5:55 PM	0	0	0	0	0	5:55 PM	0	0	4	0	4
Count Total	3	27	22	32	84	Count Total	28	21	56	22	127
Peak Hour	1	9	16	18	44	Peak Hour	16	10	30	13	69

SEASONAL TREND TABLE (Updated: 11/08/2023 )																								Seasonal Trend Peak Period Factor	
TREND	1-Jan	15-Jan	1-Feb	15-Feb	1-Mar	15-Mar	1-Apr	15-Apr	1-May	15-May	1-Jun	15-Jun	1-Jul	15-Jul	1-Aug	15-Aug	1-Sep	15-Sep	1-Oct	15-Oct	1-Nov	15-Nov	1-Dec	15-Dec	
INTERSTATE URBANIZED	1.0869	1.1041	1.0688	1.0335	1.0182	1.0028	0.9995	0.9962	0.9901	0.9840	0.9641	0.9443	0.9502	0.9562	0.9510	0.9458	0.9575	0.9692	0.9791	0.9891	1.0107	1.0324	1.0532	1.0739	0.9056
INTERSTATE NONURBANIZED	1.2459	1.2915	1.2286	1.1657	1.0907	1.0158	1.0059	0.9960	0.9728	0.9496	0.9128	0.8760	0.8650	0.8540	0.8612	0.8684	0.8905	0.9126	0.9488	0.9850	1.0336	1.0822	1.1717	1.2612	0.8084
COMMUTER	1.0905	1.0986	1.0636	1.0285	1.0162	1.0038	0.9959	0.9879	0.9814	0.9749	0.9631	0.9512	0.9614	0.9717	0.9608	0.9500	0.9548	0.9595	0.9634	0.9673	1.0090	1.0507	1.0733	1.0958	0.9336
COASTAL DESTINATION	1.2064	1.1715	1.1234	1.0753	1.0545	1.0337	1.0372	1.0407	1.0216	1.0024	0.9586	0.9147	0.8760	0.8372	0.8371	0.8370	0.8678	0.8985	0.9578	1.0170	1.0730	1.1290	1.1823	1.2357	0.8130
COASTAL DESTINATION ROUTE	1.3937	1.2897	1.2245	1.1594	1.1247	1.0901	1.0911	1.0921	1.0516	1.0111	0.9493	0.8875	0.8172	0.7469	0.7455	0.7440	0.7916	0.8391	0.9274	1.0158	1.1126	1.2094	1.3193	1.4291	0.7225
AGRICULTURE	1.4537	1.4624	1.3705	1.2786	1.2139	1.1492	1.1207	1.0923	1.0075	0.9226	0.8742	0.8258	0.8348	0.8439	0.8422	0.8405	0.7976	0.7547	0.8073	0.8598	1.0041	1.1484	1.3339	1.5194	0.7960
RECREATIONAL SUMMER	1.6049	1.5814	1.4924	1.4034	1.3208	1.2382	1.2380	1.2377	1.0939	0.9500	0.8669	0.7839	0.7392	0.6945	0.7065	0.7185	0.7404	0.7624	0.8468	0.9311	1.1270	1.3230	1.5054	1.6879	0.7082
RECREATIONAL SUMMER WINTER	1.0075	0.9570	0.9184	0.8799	0.9701	1.0603	1.0675	1.0747	1.0843	1.0939	1.0045	0.9151	0.8244	0.7336	0.7795	0.8254	0.9368	1.0482	1.1794	1.3105	1.4969	1.6833	1.3470	1.0108	0.6767
RECREATIONAL WINTER**	0.8059	0.6710	0.6475	0.6240	0.7462	0.8685	0.9307	0.9928	1.1496	1.3064	1.2173	1.1282	0.9996	0.8709	0.9526	1.0342	1.1225	1.2108	1.4061	1.6013	1.9826	2.3639	1.6332	0.9026	0.5086
SUMMER	1.2374	1.2352	1.1733	1.1114	1.0786	1.0459	1.0330	1.0202	0.9851	0.9500	0.9160	0.8819	0.8660	0.8501	0.8561	0.8620	0.8891	0.9161	0.9430	0.9698	1.0525	1.1352	1.2002	1.2653	0.8279
SUMMER < 2500	1.2836	1.2576	1.1943	1.1310	1.1011	1.0712	1.0448	1.0184	0.9633	0.9082	0.8861	0.8641	0.8609	0.8578	0.8695	0.8813	0.8874	0.8936	0.9165	0.9394	1.0500	1.1607	1.2535	1.3463	0.8434

\* Seasonal Trend Table factors are based on previous year ATR data. The table is updated yearly.

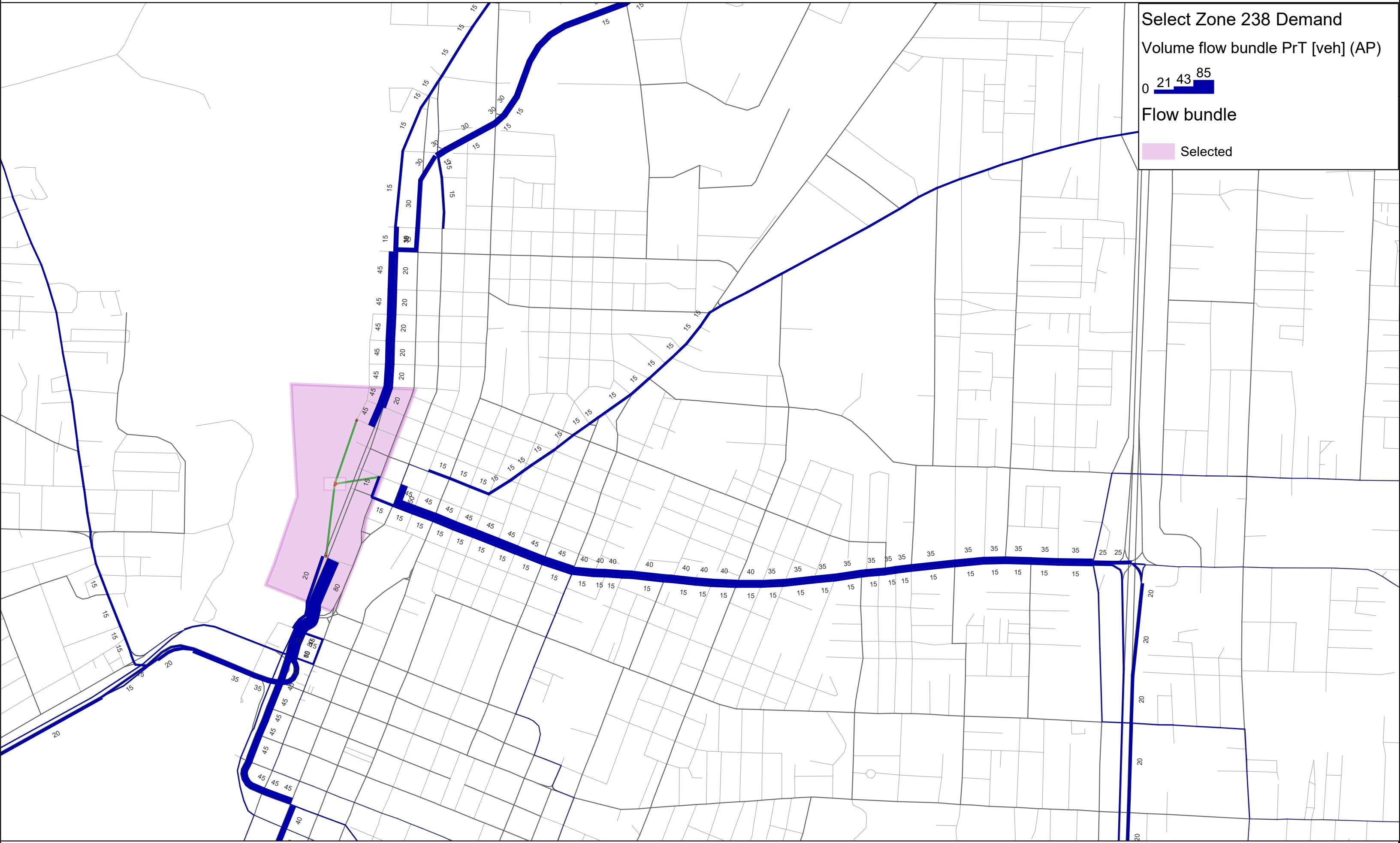
\* Grey shading indicates months where seasonal factor is greater than or less than 30%

\*\*Use Recreation Winter Trend with Caution! ATR site was down for most of 2022 due to loop issues and was estimated while the site was down

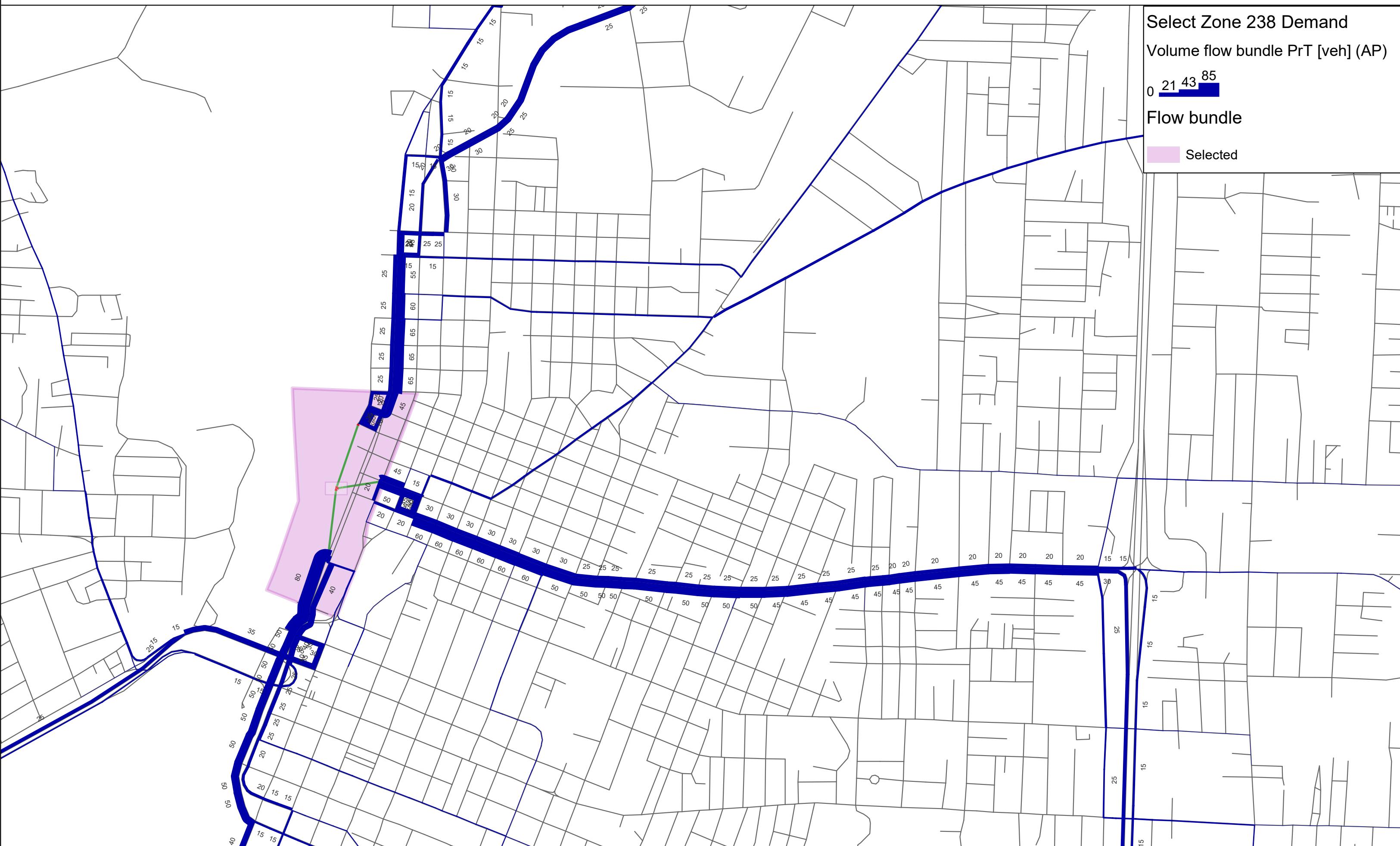
SAF		
Count Date'	2/6/2024	1.0496
	2/1/2023	1.0636
	2/15/2023	1.0285

		2021						2050						2050		
		AM Peak		PM Peak		Daily		AM Peak		PM Peak		Daily		AM Peak	PM Peak	Daily
		NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	NB/EB	SB/WB	Total	Total	Total
Front	North of Pine	64	371	471	507	4763	4833	267	624	446	568	4292	6860	3.6%	0.1%	0.6%
	South of Pine	64	600	558	583	5680	6128	267	624	486	644	4747	6729	1.2%	0.0%	-0.1%
	North of Shipping	88	614	539	616	5673	6378	315	627	667	695	6608	7197	1.2%	0.6%	0.5%
	South of Shipping	88	568	539	589	5673	5988	314	564	667	647	6604	6847	1.2%	0.6%	0.5%
	South of Hood	55	568	507	589	5408	5988	288	564	641	647	6320	6847	1.3%	0.6%	0.5%
	North of Market	55	568	507	589	5408	5988	288	564	641	647	6320	6847	1.3%	0.6%	0.5%
	South of Market	55	568	507	589	5408	5939	288	563	641	643	6320	6801	1.3%	0.6%	0.5%
	North of 99E	134	587	534	670	5973	6306	404	576	641	680	6719	6788	1.2%	0.3%	0.3%
Commercial/ Liberty/99E	North of Pine	1077	1287	1268	1186	12395	13674	1168	1181	1408	1353	14073	14484	0.0%	0.4%	0.3%
	South of Pine	1038	1037	1426	1014	13433	11853	1232	1183	1755	1294	17967	14827	0.6%	0.9%	1.0%
	North of Hood	1014	1055	1506	1389	13100	12267	1193	1187	1484	1281	15453	14425	0.5%	-0.2%	0.6%
	South of Hood	1050	1080	1045	1262	13838	12750	1225	1209	1556	1443	15888	14605	0.5%	1.0%	0.5%
	North of Market	1097	1102	1317	1533	11175	13149	1289	1226	1623	1455	16688	14606	0.5%	0.3%	1.0%
	South of Market	1021	1065	1299	1445	13311	13024	1180	1153	1473	1461	15524	14661	0.4%	0.2%	0.5%
	North of Front	968	994	1306	1402	12241	12790	1145	972	1406	1628	15170	14510	0.3%	0.4%	0.6%
	South of Union	1101	536	1587	527	3983	4824	1463	487	2038	643	7219	5795	0.7%	0.9%	1.6%
Broadway	North of Market	660	673	718	661	7013	6729	580	675	733	663	7290	6813	-0.2%	0.0%	0.1%
	South of Market	548	756	687	746	6487	7610	670	772	680	764	6878	7834	0.4%	0.0%	0.2%
Pine	East of Liberty					3328	883					5824	1768			2.8%
Hood	East of Front						265						284			0.2%
	East of Commercial					395	1143					439	904			-0.4%
	East of Liberty					868	878					629	659			-0.9%
Market	East of Liberty	60	98			296	986	92	129			194	1367	1.4%		0.8%
	East of Broadway	473	488	531	626	4984	5691	470	461	421	634	3898	5315	-0.1%	-0.3%	-0.5%
All Roads														0.8%	0.4%	0.5%
Local														1.1%	0.3%	0.4%
Highway														0.4%	0.5%	0.8%
														Avg	Pk Hr	
														0.6%	0.6%	
														0.6%	0.7%	
														0.6%	0.5%	

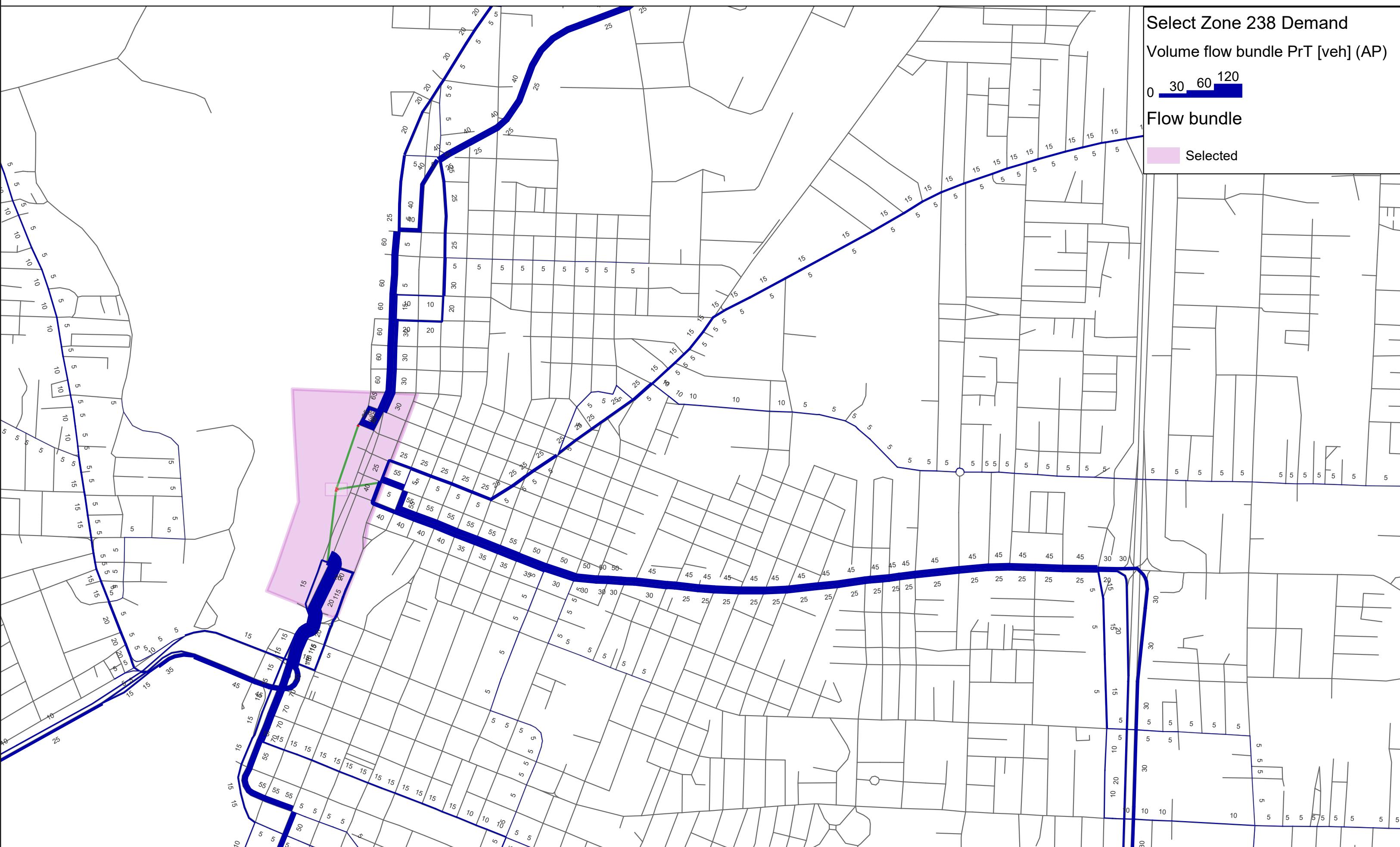
2021 AM Peak Select Zone 238



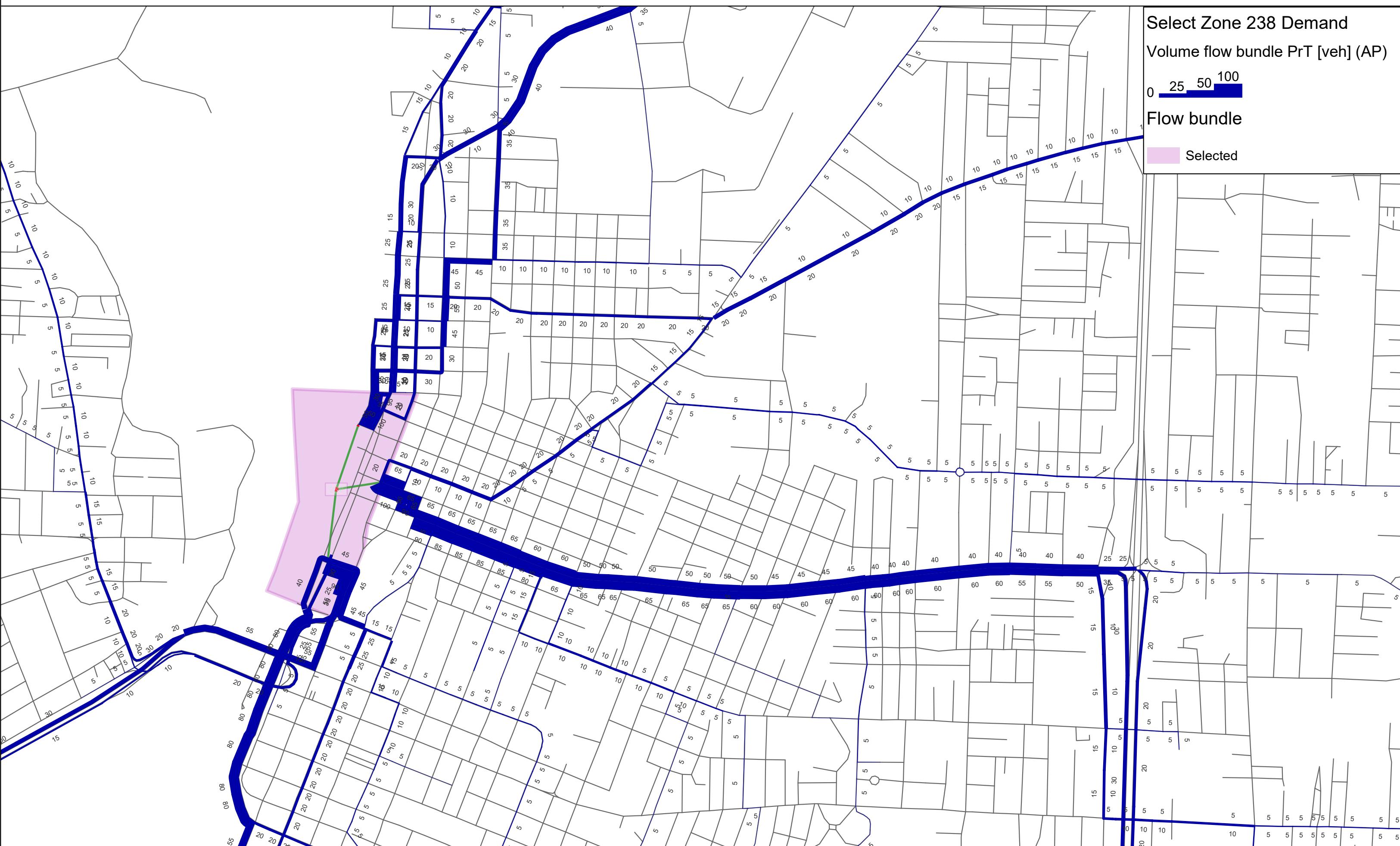
# 2021 PM Peak Select Zone 238



# 2050 AM Peak Select Zone 238



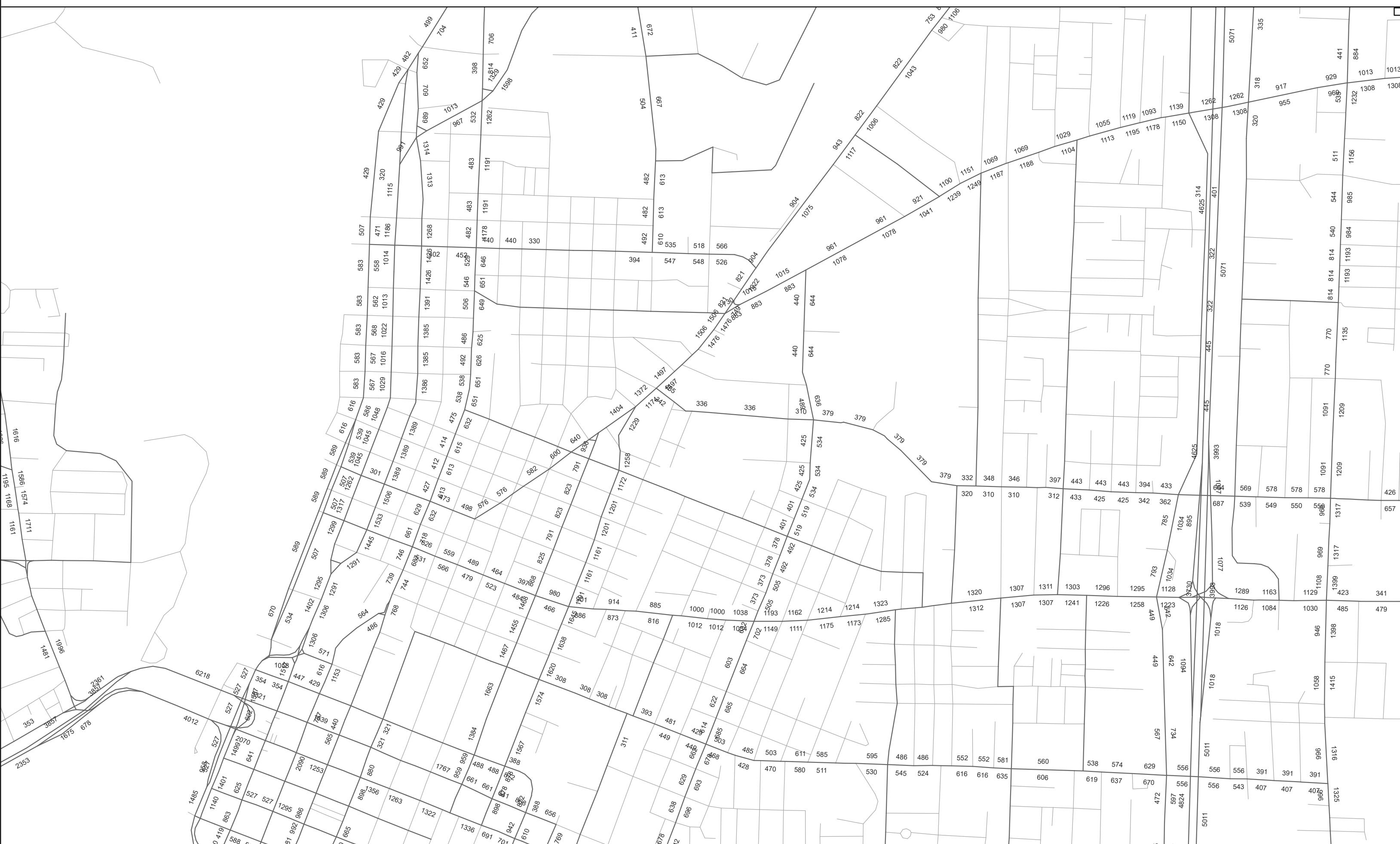
# 2050 PM Peak Select Zone 238



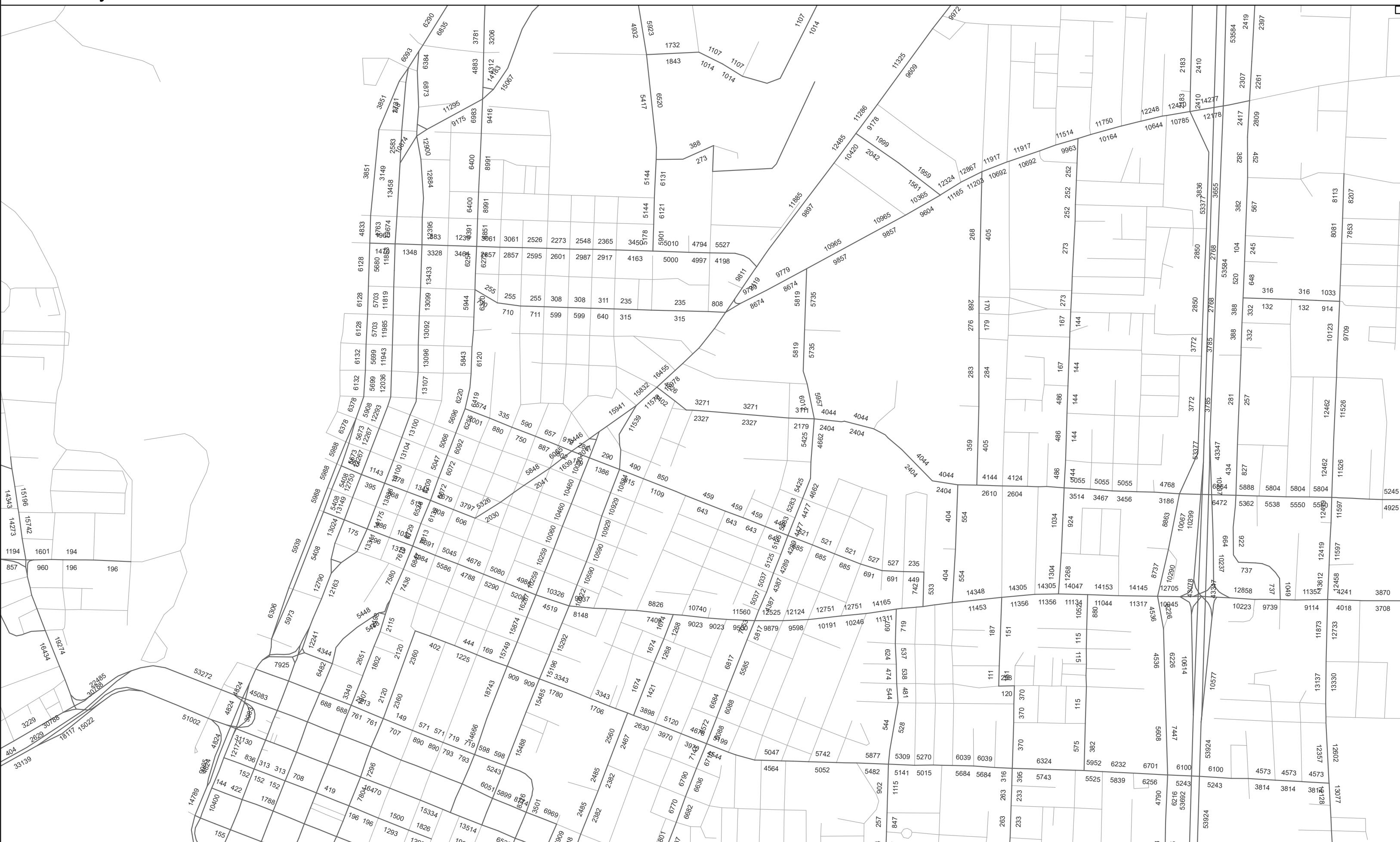
# 2021 AM Peak Demand



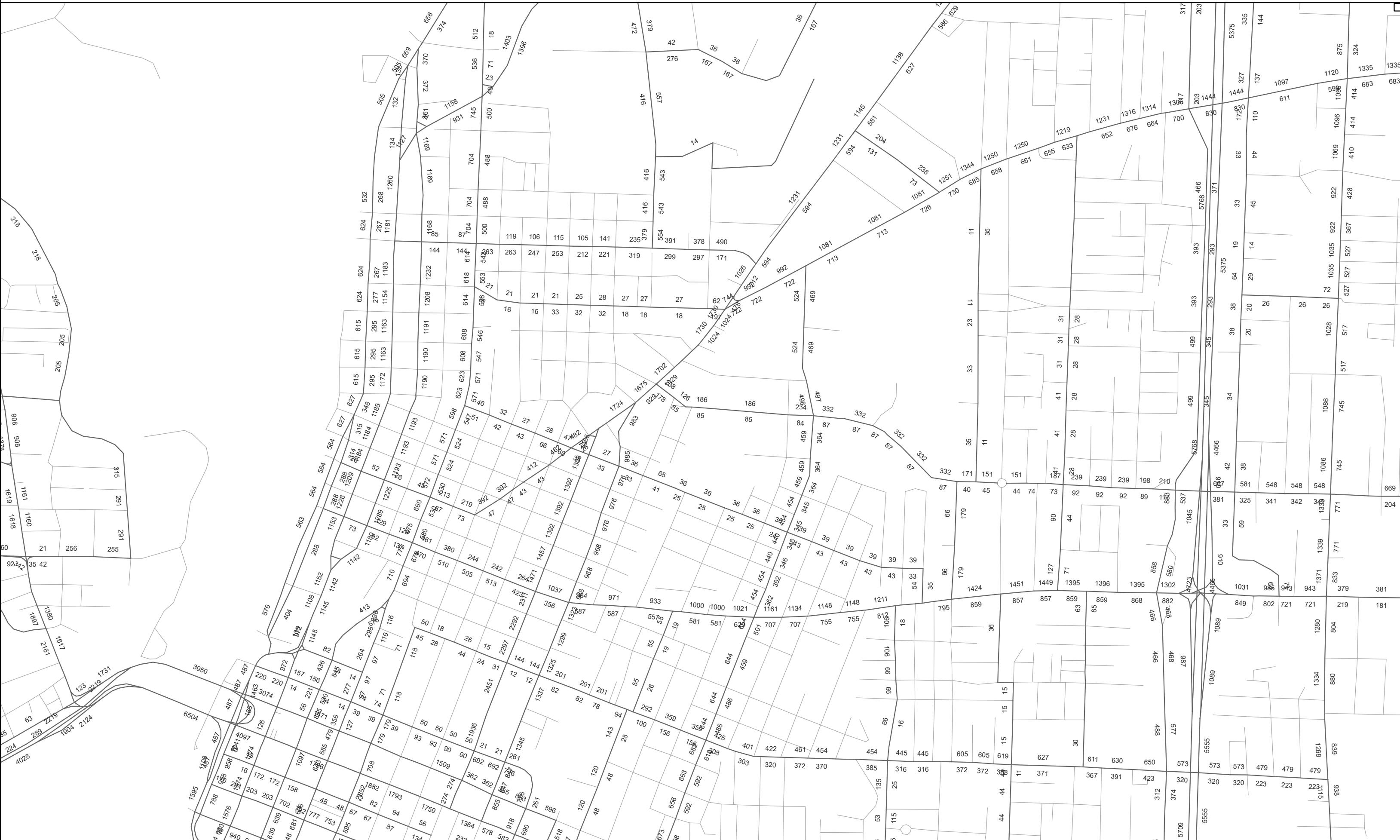
# 2021 PM Peak Demand



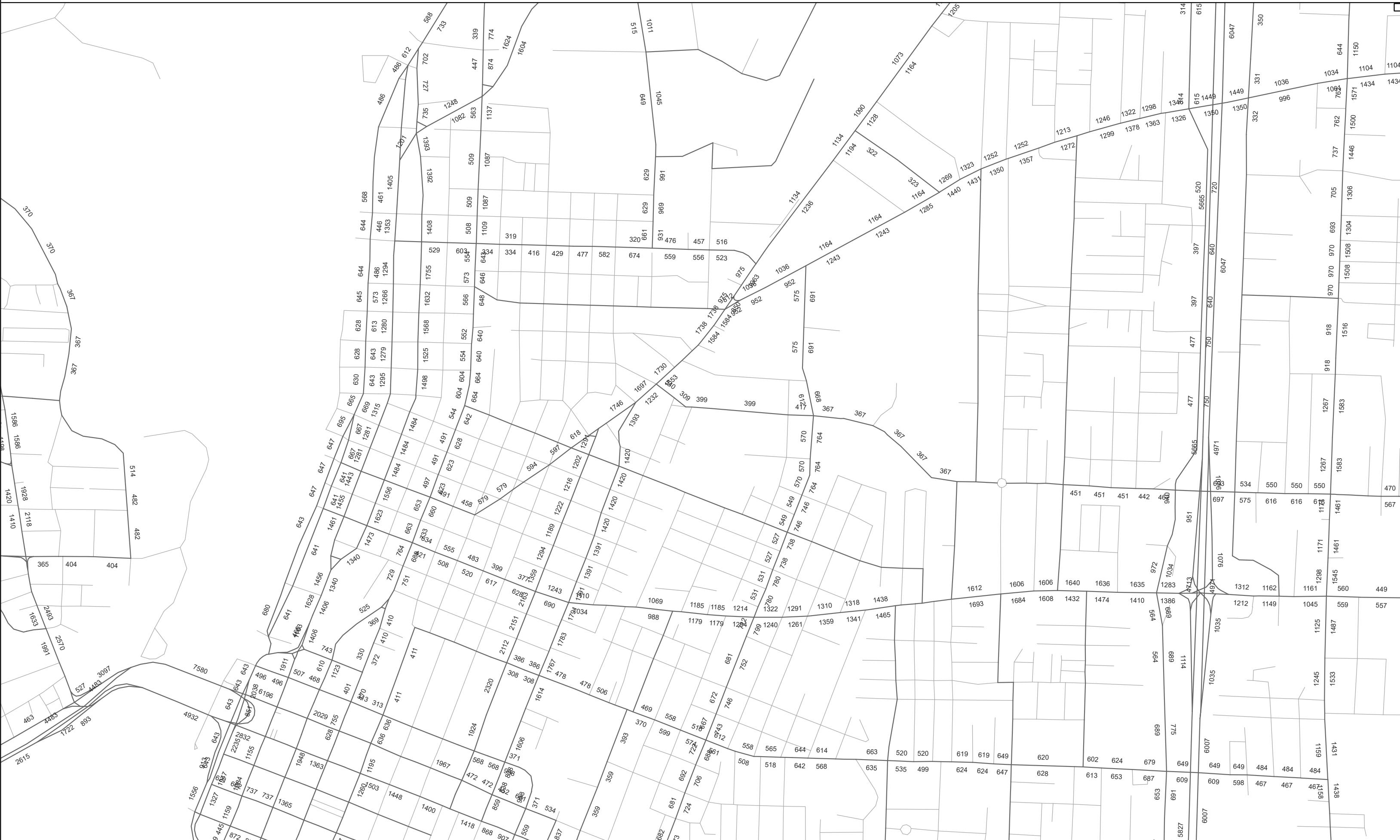
## 2021 Daily Demand



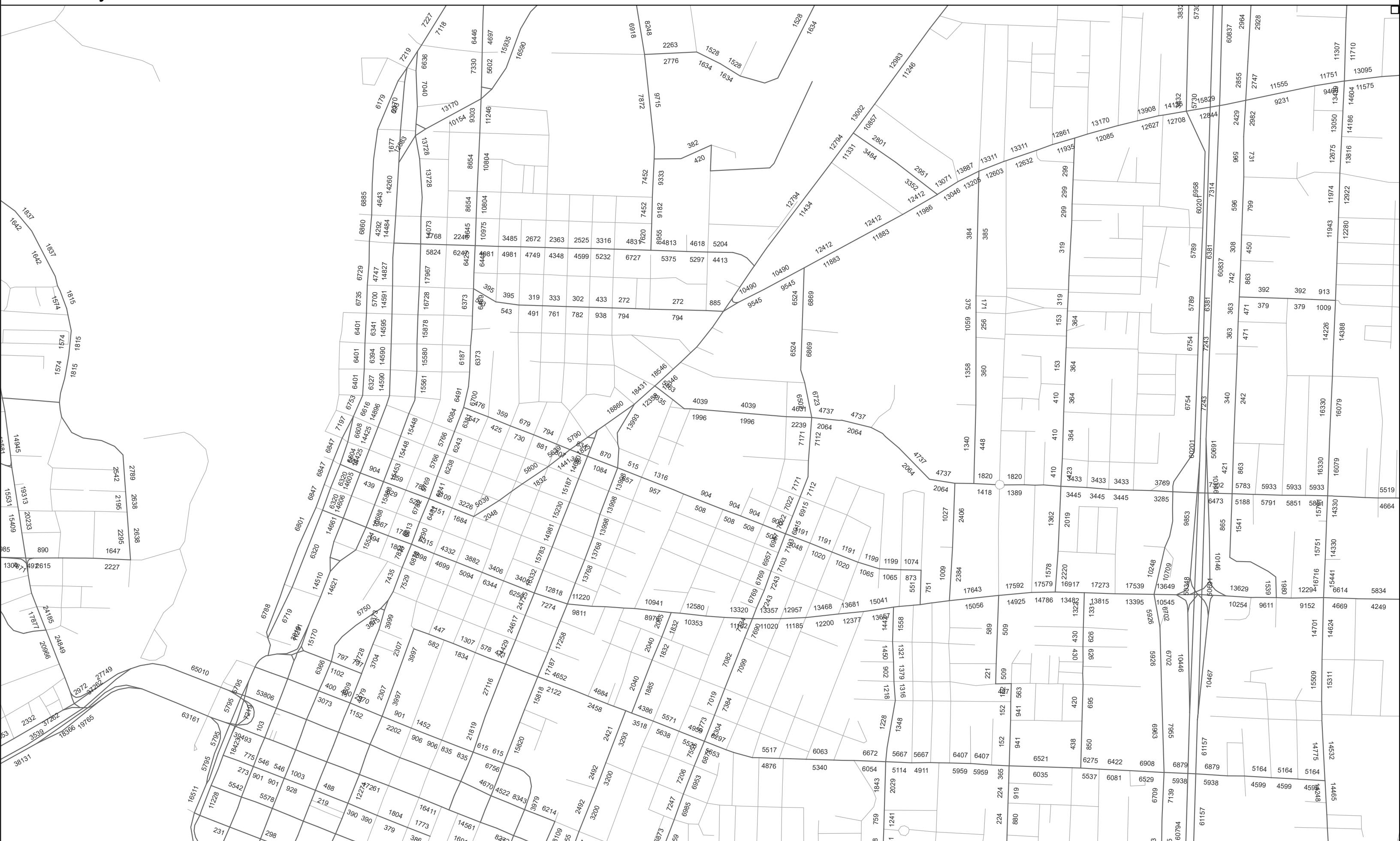
# 2050 AM Peak Demand



# 2050 PM Peak Demand

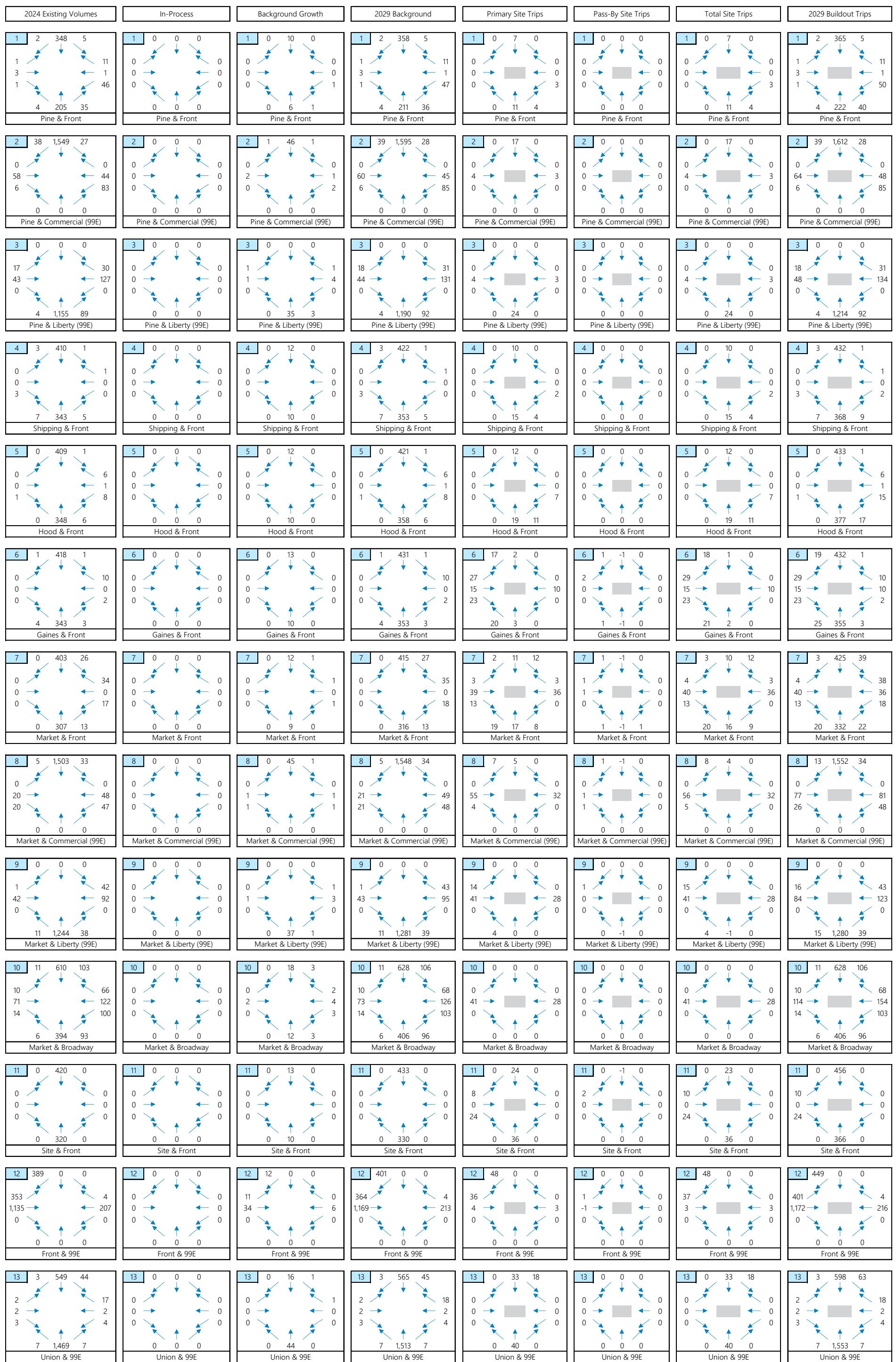


## 2050 Daily Demand



## AM PEAK HOUR

x



PM PEAK HOUR

2024 Existing Volumes	In-Process	Background Growth	2029 Background	Primary Site Trips	Pass-By Site Trips	Total Site Trips	2029 Buildout Trips
 Pine & Front							
 Pine & Commercial (99E)							
 Pine & Liberty (99E)							
 Shipping & Front							
 Hood & Front							
 Gaines & Front							
 Market & Front							
 Market & Commercial (99E)							
 Market & Liberty (99E)							
 Market & Broadway							
 Belmont & Front							
 Front & 99E							
 Union & 99F							

## Appendix C - Safety

Crash History Data

Sight Distance Figures

Preliminary Signal Warrant Analysis

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

PINE ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY								
<b>YEAR: 2022</b>												
ANGLE	0	0	2	1	0	3	0	0	0	2	2	2
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>YEAR: 2021</b>												
ANGLE	0	0	0	1	0	1	0	0	0	0	0	3
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>YEAR: 2019</b>												
TURNING MOVEMENTS	0	0	0	1	1	2	0	0	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>YEAR: 2018</b>												
ANGLE	0	0	0	1	1	2	0	0	0	0	0	1
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>7</b>

CITY OF SALEM, MARION COUNTY

PINE ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 4 of 8 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS																		
02792	N	N	N	N	N	N	07/30/2018	16	FRONT ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										02
CITY		MO	0		PINE ST NE			CN		STOP SIGN	N	DRY	ANGL		PRVTE	S -N										000	00
N		4P						02	0		N	DAY	INJ		PSNGR CAR		01 DRVR	NONE	90 M	OR-Y		000		000	00		
N		44 57 44.17 -123 2 2.67													01 NONE 0	STRGHT									000	00	
															PRVTE	S -N									000	00	
															PSNGR CAR		02 PSNG	INJC	85 F					000	000	00	
															02 NONE 0	STRGHT									000	00	
															PRVTE	E -W									000	00	
															PSNGR CAR		01 DRVR	NONE	74 M	OR-Y		028		000	00		
															OR<25										02		
00934	N	N	N	N	N	N	03/19/2018	16	FRONT ST NE	INTER	CROSS	N	N	FOG	ANGL-OTH	01 NONE 9	STRGHT										02
CITY		MO	0		PINE ST NE			CN		STOP SIGN	N	DRY	ANGL		N/A	N -S									000	00	
N		7A						01	0		N	DAY	PDO		PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000		000	00		
N		44 57 44.17 -123 2 2.67													02 NONE 9	STRGHT								000	00		
															N/A	E -W								000	00		
															PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000		000	00		
															UNK									000	00		
00859	N	N	N	N	N	N	03/08/2019	16	FRONT ST NE	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01 NONE 0	TURN-L										02
CITY		FR	0		PINE ST NE			CN		STOP SIGN	N	WET	TURN		PRVTE	E -S									015	00	
N		5P						02	0		N	DAY	INJ		PSNGR CAR		01 DRVR	INJC	23 F	OR-Y		028		000	02		
N		44 57 44.17 -123 2 2.67													02 NONE 0	STRGHT								000	00		
															S -N									000	00		
															PSNGR CAR		01 DRVR	NONE	42 M	OR-Y		000		000	00		
															OR<25								000	00			
03342	N	N	N	N	N	N	08/30/2019	16	FRONT ST NE	INTER	CROSS	N	N	UNK	O-1 L-TURN	01 NONE 9	TURN-L									02	
NONE		FR	0		PINE ST NE			CN		STOP SIGN	N	UNK	TURN		N/A	W -N								000	00		
N		5A						02	0		N	DAWN	PDO		PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000		000	00		
N		44 57 44.18 -123 2 2.68													02 NONE 9	STRGHT							000	00			
															N/A	E -W							000	00			
															PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000		000	00		
															UNK								000	00			
03658	N	N	N	N	N	N	10/16/2021	16	FRONT ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									02	
CITY		SA	0		PINE ST NE			CN		STOP SIGN	N	DRY	ANGL		PRVTE	N -S								000	00		
N		9P						03	0		N	DLIT	INJ		PSNGR CAR		01 DRVR	INJC	30 F	OR-Y		000		000	00		
N		44 57 44.19 -123 2 2.69													025								000	00			

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CITY OF SALEM, MARION COUNTY

PINE ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

5 - 8 of 8 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ									
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
																01 NONE 0	STRGHT												
																PRVTE	N -S									000	00		
																PSNGR CAR		02 PSNG	INJC	03 M						000	000	00	
																01 NONE 0	STRGHT									000	00		
																PRVTE	N -S									000	00		
																PSNGR CAR		03 PSNG	INJC	01 F						000	000	00	
																02 NONE 0	STRGHT									000	00		
																PRVTE	W -E									000	00		
																PSNGR CAR		01 DRVR	NONE	26 M	OR-Y					028	000	02	
01373	N	N	N	N	N	N	04/27/2022	16	FRONT ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT											02	
CITY																													
	WE	0																											
N	1P																												
N	44 57 44.18 -123 2																												
	2.71																												
02423	N	Y	N	N	N	N	07/19/2022	16	FRONT ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										33,04		
CITY																													
	TU	0																											
N	9P																												
N	44 57 44.17 -123 2																												
	2.67																												
03963	N	N	N	N	N	N	11/04/2022	16	FRONT ST NE	INTER	CROSS	N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT										03		
CITY																													
	FR	0																											
N	1A																												
N	44 57 44.17 -123 2																												
	2.67																												

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

PINE ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY								
<b>YEAR: 2022</b>												
ANGLE	0	0	0	1	0	1	0	0	0	0	0	2
REAR-END	0	0	1	0	0	1	0	0	0	0	1	0
TURNING MOVEMENTS	0	0	0	2	0	2	0	0	0	0	0	2
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>
<b>YEAR: 2021</b>												
ANGLE	0	0	2	1	1	4	0	0	0	2	0	2
REAR-END	0	0	0	0	1	1	0	0	0	0	0	0
TURNING MOVEMENTS	0	0	1	0	0	1	0	0	0	0	1	0
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>
<b>YEAR: 2020</b>												
ANGLE	0	0	0	0	1	1	0	0	0	0	0	0
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2019</b>												
REAR-END	0	0	0	1	0	1	0	0	0	0	0	1
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>YEAR: 2018</b>												
ANGLE	0	0	0	2	1	3	0	0	0	0	0	4
TURNING MOVEMENTS	0	0	1	1	0	2	0	0	0	1	0	3
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>9</b>	<b>4</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>15</b>

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## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

PINE ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 4 of 18 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED						
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC				
01730	N	N	N	N	N	N	05/26/2022	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	S-STRGHT	01 NONE 2	STRGHT											27,29
CITY			TH						PINE ST NE		N			TRF SIGNAL	N	DRY	REAR	PRVTE	N -S								000	00
N			10A								06	0			N	DAY	INJ	SEMI TOW		01 DRVR	NONE	64 M	OR-Y		016,026	038	27,29	
N			44 57 44.13 -123 1															02 NONE 0	STRGHT									
			57.85						007200100S00									PRVTE	N -S							006	00	
																		PSNGR CAR		01 DRVR	INJB	34 M	OR-Y		000	000	00	
01430	N	N	N	N	N	N	04/27/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01 NONE 0	TURN-L											02
CITY			FR						PINE ST NE		CN			TRF SIGNAL	N	WET	TURN	PRVTE	E -S								000	00
N			1P								03	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	18 M	OR-Y		028,004	000	02	
N			44 57 44.13 -123 1						007200100S00									PRVTE	E -S							000	00	
			57.85															PSNGR CAR		02 PSNG	INJB	16 F				000	000	00
01932	N	N	N	N	N	N	05/24/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	TURN-L											02
OTHER			TH						PINE ST NE		CN			TRF SIGNAL	N	DRY	TURN	PRVTE	E -S								000	00
N			7P								03	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	27 M	OR-Y		028,004	000	02	
N			44 57 44.13 -123 1						007200100S00									PRVTE	W -E							000	00	
			57.85															PSNGR CAR		01 DRVR	INJC	23 M	OR-Y		000	000	00	
02785	N	N	N	N	N	N	07/29/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT											04
CITY			SU						PINE ST NE		CN			TRF SIGNAL	N	DRY	ANGL	PRVTE	N -S								000	00
N			8P								01	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	28 M	OR-Y		097	000	00	
N			44 57 44.13 -123 1						007200100S00									PRVTE	E -W							000	00	
			57.85															PSNGR CAR		01 DRVR	INJC	25 F	OR-Y		097	000	00	

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

PINE ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

5 - 9 of 18 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ACT	EVENT	CAUSE		
04132	N	N	N	N	N	10/30/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT										04	
NONE		TU						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		N -S									000	00	
N		1P							03	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	17	M	OR-Y		020	000	04	
N		44 57 44.13 -123 1 57.85						007200100S00								02	NONE	0	STRGHT										
																PRVTE		W -E									000	00	
																PSNGR CAR		01	DRV	INJC	27	F	OR-Y		000	000	00		
																		OR<25											
02626	N	N	N	N	N	07/19/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	9	STRGHT											04
NO RPT		TH						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		N/A		W -E									000	00	
N		10A							03	0			N	DAY	PDO		PSNGR CAR		01	DRV	NONE	00	Unk	UNK		000	000	00	
N		44 57 44.13 -123 1 57.86						007200100S00								02	NONE	9	STRGHT										
																N/A		N -S									000	00	
																PSNGR CAR		01	DRV	NONE	00	Unk	UNK		000	000	00		
																		UNK											
01784	N	N	N	N	N	05/13/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE	0	STRGHT											29
NO RPT		MO						PINE ST NE	CN		TRF SIGNAL	N	DRY	REAR		PRVTE		N -S									000	00	
N		9A							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	20	Unk	OR-Y		042	000	29	
N		44 57 44.14 -123 1 57.87						007200100S00								02	NONE	0	TURN-R										
																PRVTE		N -W									000	00	
																PSNGR CAR		01	DRV	INJC	51	M	OR-Y		000	000	00		
																		OR<25											
02503	N	N	N	N	N	07/03/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	BIKE	01	NONE	0	TURN-R											02
NO RPT		WE						PINE ST NE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE		W -S									000	00	
N		11A							03	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	31	M	OR-Y		027	000	02	
N		44 57 44.14 -123 1 57.83						007200100S00								-	STRGHT		01 BIKE	INJC	67	M	I-BIKE	000	000	00			
																N	S												
02733	N	N	N	N	N	09/08/2020	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE	9	STRGHT											04
CITY		TU						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		N/A		N -S									000	00	
N		4P							01	0			N	DAY	PDO		PSNGR CAR		01	DRV	NONE	00	Unk	UNK		000	000	00	
N		44 57 44.13 -123 1 57.86						007200100S00								02	NONE	9	STRGHT										
																N/A		E -W									000	00	
																PSNGR CAR		01	DRV	NONE	00	Unk	UNK		000	000	00		
																		UNK											

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CITY OF SALEM, MARION COUNTY

PINE ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

10 - 13 of 18 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A	S	G	E	LICNS	PED					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LOC	ERROR	ACT	EVENT	CAUSE		
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC			
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS																			
00814	N	N	N	N	N	N	03/18/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE	0	STRGHT									04
CITY			TH						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		N -S								000	00
N			12P							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	44	F	OR-Y	020	000	04
N			44 57 44.14 -123 1						007200100S00								02	NONE	0	STRGHT								
			57.87														PRVTE	E -W								000	00	
																	PSNGR CAR		01	DRV	INJC	55	M	OR-Y	000	000	00	
																	02	NONE	0	STRGHT						000	00	
																	PRVTE	E -W								000	00	
																	PSNGR CAR		02	PSNG	INJB	19	M			000	000	00
03045	N	N	N	N	N	N	09/04/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT									04
CITY			SA						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		E -W								000	00
N			9P							01	0			N	DLIT	INJ		PSNGR CAR		01	DRV	NONE	41	F	OR-Y	097	000	00
N			44 57 44.12 -123 1						007200100S00								02	NONE	0	STRGHT								
			57.84														PRVTE	N -S								000	00	
																	PSNGR CAR		01	DRV	INJC	36	M	OR-Y	097	000	00	
																	02	NONE	0	TURN-L								
																	PRVTE	E -S								000	00	
																	PSNGR CAR		01	DRV	NONE	44	M	OR-Y	028,004	000	02	
																	02	NONE	0	OR<25								
03428	N	N	N	N	N	N	10/01/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT									02
NO RPT			FR						PINE ST NE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE		W -E								000	00
N			10P							03	0			N	DLIT	INJ		PSNGR CAR		01	DRV	INJB	23	F	OR-Y	000	000	00
N			44 57 44.15 -123 1						007200100S00								02	NONE	0	TURN-L						000	00	
			57.86														PRVTE	E -S								000	02	
																	PSNGR CAR		01	DRV	NONE	44	M	OR-Y	028,004	000	02	
																	02	NONE	0	OR<25								
04300	N	N	N	N	N	N	11/28/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT									04
CITY			SU						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		E -W								000	00
N			8A							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	28	F	SUSP	097	000	00
N			44 57 44.14 -123 1						007200100S00								02	NONE	0	STRGHT								
			57.84														PRVTE	N -S								000	00	
																	PSNGR CAR		01	DRV	INJB	60	F	OR-Y	097	000	00	
																	02	NONE	0	OR<25								
00999	N	N	N	N	N	N	03/26/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	9	STRGHT									04
NO RPT			FR						PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL		N/A		W -E								000	00
N			8A							03	0			N	DAWN	PDO		PSNGR CAR		01	DRV	NONE	00	Unk	UNK	000	000	00
N			44 57 44.15 -123 1						007200100S00								02	NONE	0	UNK								
			57.85														PRVTE	E -S								000	00	

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## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

PINE ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

14 - 18 of 18 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR				
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC						
UNLOC?	D	C	S	V	L	K	LAT									02 NONE 9	STRGHT												
															N/A	N -S								000	00				
															PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00			
02597	N	N	N	N	N	08/02/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-1TURN	01 NONE 9	STRGHT											29		
NONE						MO		PINE ST NE	CN		TRF SIGNAL	N	DRY	REAR	N/A	N -S									000	00			
N						2P			01	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00			
N						44 57 44.15 -123 1 57.87		007200100S00							02 NONE 9	TURN-R								000	00				
															N/A	N -W								000	000	00			
															PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00			
02505	N	N	N	N	N	N	07/25/2022	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-1TURN	01 NONE 0	TURN-L									08			
CITY						MO		PINE ST NE	CN		STOP SIGN	N	DRY	TURN	PRVTE	N -E									000	00			
N						7A			04	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	40	M	OR-Y			006	000	08			
N						44 57 44.13 -123 1 57.85		007200100S00							02 NONE 0	STRGHT								000	000	00			
															PRVTE	N -S							000	000	00				
															PSNGR CAR		01 DRVR	NONE	20	F	OR-Y			000	000	00			
00243	N	N	N	N	N	N	01/23/2022	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									04			
CITY						SU		PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	E -W									000	00			
N						3P			01	0		N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	17	F	OR-Y			000	000	00			
N						44 57 44.13 -123 1 57.85		007200100S00							01 NONE 0	STRGHT								000	000	00			
															E -W								000	000	00				
															PSNGR CAR		02 PSNG	INJC	16	F				000	000	00			
															02 NONE 0	STRGHT								000	000	00			
															PRVTE	N -S								020	000	04			
															PSNGR CAR		01 DRVR	NONE	41	M	OR-Y								
04136	N	N	N	N	N	11/15/2022	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	TURN-L									02				
NONE						TU		PINE ST NE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE	E -S									000	00			
N						5P			03	0		N	DUSK	INJ	PSNGR CAR		01 DRVR	NONE	19	M	OR-Y			028,004	000	02			
N						44 57 44.13 -123 1 57.85		007200100S00							02 NONE 0	STRGHT								000	000	00			
															PRVTE	W -E							01 DRVR	INJC	33	F	OR-Y		
															PSNGR CAR								000	000	00				

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

PINE ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY	CRASHES							
<b>YEAR: 2022</b>												
ANGLE	0	0	1	0	0	1	0	0	0	0	1	0
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>YEAR: 2021</b>												
ANGLE	0	0	1	1	1	3	0	0	0	1	1	1
PEDESTRIAN	0	1	0	0	0	1	0	0	1	0	0	0
<b>2021 TOTAL</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>YEAR: 2020</b>												
ANGLE	0	0	0	4	0	4	0	0	0	0	0	6
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>
<b>YEAR: 2019</b>												
ANGLE	0	0	0	2	0	2	0	0	0	0	0	3
REAR-END	0	0	0	0	1	1	0	0	0	0	0	0
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>YEAR: 2018</b>												
ANGLE	0	0	0	2	1	3	0	0	0	0	0	2
REAR-END	0	0	0	1	0	1	0	0	0	0	0	1
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>11</b>	<b>3</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>14</b>		

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CITY OF SALEM, MARION COUNTY

PINE ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 5 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ									
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
00904	N	N	N	N	N	N	03/25/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLD	PED	01 NONE 0	STRGHT										18,04		
CITY		TH							PINE ST NE		N		TRF SIGNAL	N	DRY	PED	PRVTE	S -N									000	00	
N		7A								06	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	22 M	OR-Y		000	000		000	00	
N		44 57 44.16 -123 1							53.07	007200200S00																			
																	STRGHT	01 PED	INJA	23 M		I XWLK 020		000		18,04			
																	E W												
02925	N	N	N	N	N	N	08/01/2018	16	LIBERTY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT											29	
NONE		WE		0					PINE ST NE		E		TRF SIGNAL	N	DRY	REAR	PRVTE	E -W									000	00	
N		6P								06	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	00 F	UNK		026	000		29		
N		44 57 44.14 -123 1							53.08	007200200S00																			
																	02 NONE 0	STOP									011	00	
																	PRVTE	E -W									000	00	
																	PSNGR CAR		01 DRVR	INJC	60 F	OR-Y		000	000		000	00	
05000	N	N	N	N	N	N	12/12/2019	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	S-STRGHT	01 NONE 9	STRGHT											29	
NONE		TH							PINE ST NE		S		TRF SIGNAL	N	DRY	REAR	N/A	S -N									000	00	
N		5P								06	0			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK UNK		000	000		000	00	
N		44 57 44.15 -123 1						53.09	007200200S00																				
																	02 NONE 9	STRGHT									000	000	
																	N/A	S -N											
																	PSNGR CAR		01 DRVR	NONE	00 Unk	UNK UNK		000	000		000	00	
01658	N	N	N	N	N	N	05/20/2022	16	LIBERTY ST NE	INTER	UNKNOWN	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT											04	
CITY		FR		0					PINE ST NE		S		TRF SIGNAL	N	DRY	ANGL	PRVTE	E -W									000	00	
N		6P								06	0			N	DAY	INJ	MTRZ/EBIKE		01 DRVR	INJB	19 F	OR-Y		020	000		04		
N		44 57 44.14 -123 1						53.08	007200200S00																		000	00	
																	02 NONE 0	STRGHT									000	000	
																	S -N												
																	PSNGR CAR		01 DRVR	NONE	32 F	OR-Y		000	000		000	00	
04676	N	N	N	N	N	N	12/07/2018	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										010,087	04,27	
CITY		FR							PINE ST NE		CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	S -N									000	00	
N		4P								04	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	48 M	NONE		000	000		000	00	
N		44 57 44.14 -123 1						53.08	007200200S00																		010,087	00	
																	02 NONE 0	STRGHT									016,020	038	
																	PRVTE	W -E											
																	PSNGR CAR		01 DRVR	NONE	50 M	OR-Y		016,020	038		04,27		

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CITY OF SALEM, MARION COUNTY

PINE ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

6 - 9 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED						
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LOC	ERROR	ACT	EVENT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC				
04690	N	N	N	N	N	N	12/08/2018	14	LIBERTY ST NE	INTER	CROSS	N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT										04	
CITY			SA						PINE ST NE	CN				TRF SIGNAL	N	WET	ANGL	PRVTE	S -N								000	00
N			6P							04	0					N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	16 M	OR-Y	020	000	00	04
N			44 57 44.14 -123 1						53.08	007200200S00							02 NONE 0	STRGHT										
																	PRVTE	W -E							000 013	00		
																	PSNGR CAR		01 DRVR	NONE	57 M	OR-Y	000	022	00			
																	03 NONE 0	STOP							011	00		
																	PRVTE	UN-UN							000	00		
																	PSNGR CAR		01 DRVR	INJC	72 M	NONE	000	000	00			
																	OR<25											
00223	N	N	N	N	N	N	01/21/2018	14	LIBERTY ST NE	INTER	CROSS	N	N	CLD	ANGL-OTH	01 NONE 9	STRGHT										04	
CITY			SU						PINE ST NE	CN				TRF SIGNAL	N	DRY	ANGL	N/A	S -N								000	00
N			2P							04	0					N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK	000	000	00	
N			44 57 44.14 -123 1						53.08	007200200S00							02 NONE 9	STRGHT							000 000	00		
																	N/A	W -E							000 000	00		
																	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK	000	000	00			
																	03 NONE 0	STOP							011	00		
																	PRVTE	UN-UN							000	00		
																	PSNGR CAR		01 DRVR	INJC	72 M	NONE	000	000	00			
																	OR<25											
01061	N	N	N	N	N	N	03/22/2019	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									058	04	
CITY			FR						PINE ST NE	CN				TRF SIGNAL	N	DRY	ANGL	PRVTE	E -W								000	00
N			7P							02	0					N	DUSK	INJ	PSNGR CAR		01 DRVR	NONE	55 M	OR-Y	097	000	00	
N			44 57 44.14 -123 1						53.06	007200200S00							02 NONE 0	STRGHT							000 058	00		
																	N/A	S -N							000 000	00		
																	PSNGR CAR		01 DRVR	INJC	19 F	OR-Y	097	000	00			
																	03 NONE 0	STRGHT							000 058	00		
																	S -N								000 000	00		
																	PSNGR CAR		02 PSNG	INJC	19 M		000	000	00			
																	OR<25											
01214	N	N	N	N	N	N	04/04/2019	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									04		
CITY			TH						PINE ST NE	CN				TRF SIGNAL	N	DRY	TURN	PRVTE	S -N								000	00
N			6P							04	0					N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	69 F	OR-Y	000	000	00	
N			44 57 44.14 -123 1						53.09	007200200S00							02 NONE 0	TURN-L							000	00		
																	PRVTE	W -N							000	00		
																	PSNGR CAR		01 DRVR	NONE	23 F	OR-Y	020	000	00			
																	OR<25											

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

PINE ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

10 - 13 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED						
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC				
04929	N	N	N	N	N	N	12/09/2019	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										04,27	
CITY			MO						PINE ST NE	CN			TRF SIGNAL	N	DRY	ANGL	PRVTE	E -W								000	00	
N			10A							02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	51 M	OR-Y		020,016	038	04,27		
N			44 57 44.15 -123 1						53.11	007200200S00							02 NONE 0	STRGHT										
																PRVTE	S -N								000	00		
																PSNGR CAR		01 DRVR	INJC	55 F	OR-Y		000	000	00			
																	OR<25											
01146	N	N	N	N	N	N	03/31/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT									099	04,27	
CITY			TU						PINE ST NE	CN			TRF SIGNAL	N	WET	ANGL	PRVTE	S -N								000	00	
N			7A							02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	59 M	OR-Y		000	000	099		
N			44 57 44.13 -123 1						53.11	007200200S00							02 NONE 0	STRGHT										
																PRVTE	E -W								000	00		
																PSNGR CAR		01 DRVR	INJC	33 M	OR-Y		020,016	038	04,27			
																	OR<25											
01453	N	N	N	N	N	N	05/14/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	RAIN	ANGL-OTH	01 NONE 0	STRGHT									087	04,27	
CITY			TH						PINE ST NE	CN			TRF SIGNAL	N	WET	ANGL	PRVTE	S -N								000 087	00	
N			4P							02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	50 F	OR-Y		020,016	038	04,27		
N			44 57 44.16 -123 1						53.09	007200200S00							02 NONE 0	STRGHT										
																PRVTE	E -W								000	00		
																PSNGR CAR		01 DRVR	NONE	81 M	OR-Y		000	000	00			
																	OR<25											
02667	N	N	N	N	N	N	09/02/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										04	
CITY			WE						PINE ST NE	CN			TRF SIGNAL	N	DRY	ANGL	PRVTE	S -N								000	00	
N			11A							04	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	59 M	OR-Y		020	000	04		
N			44 57 44.15 -123 1						53.09	007200200S00							02 NONE 0	STRGHT										
																PRVTE	W -E								000	00		
																PSNGR CAR		01 DRVR	INJC	48 M	OR-Y		000	000	00			
																	OR<25											
02988	N	N	N	N	N	N	10/02/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	UNK	ANGL-OTH	01 NONE 0	STRGHT									013	04	
CITY			FR						PINE ST NE	CN			TRF SIGNAL	N	UNK	ANGL	PRVTE	E -W								000	00	
N			2P							02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	26 M	OR-Y		020	000	04		
N			44 57 44.17 -123 1						53.09	007200200S00							02 NONE 0	STRGHT										
																PRVTE	S -N								000 013	00		
																SEMI TOW		01 DRVR	INJC	29 M	OR-Y		000	022	00			
																	OR<25											

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CITY OF SALEM, MARION COUNTY

PINE ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

14 - 17 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ									
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LAT									03 NONE 0	STRGHT												
01041	N	N	N	N	N	N	04/05/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										000	00	
CITY								MO	PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	S -N									000	00		
N								1P		02	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	58 M	OR-Y		000	000	00				
N								44 57 44.16 -123 1	007200200S00							02 NONE 0	STRGHT												
								53.1								PRVTE	E -W												
																PSNGR CAR		01 DRVR	INJB	48 F	SUSP		020	000	00	04			
																	OR<25												
02684	N	N	N	N	N	N	08/09/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										000	00	
CITY								MO	PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	E -W									000	00		
N								5P		02	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	43 F	OR-Y		020	000	04				
N								44 57 44.14 -123 1	007200200S00							02 NONE 0	STRGHT												
								53.08								PRVTE	S -N												
																PSNGR CAR		01 DRVR	INJC	22 F	OR-Y		000	000	00	00			
																	OR<25												
04821	N	N	N	N	N	N	12/28/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	UNK	ANGL-OTH	01 NONE 9	STRGHT										000	00	
NONE								TU	PINE ST NE	CN		TRF SIGNAL	N	DRY	ANGL	N/A	S -N									000	00		
N								12P		02	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk UNK			000	000	00				
N								44 57 44.15 -123 1	007200200S00							02 NONE 9	STRGHT												
								53.09								N/A	E -W												
																PSNGR CAR		01 DRVR	NONE	00 Unk UNK		000	000	00	00				
																	UNK												

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

SHIPPING ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY								
<b>YEAR: 2018</b>												
ANGLE	0	0	1	0	0	1	0	0	0	0	1	3
REAR-END	0	0	0	0	1	1	0	0	0	0	0	0
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>

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CITY OF SALEM, MARION COUNTY

SHIPPING ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 2 of 2 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ACT	EVENT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS																		
03349	N	N	N	N	N	09/06/2018	16	FRONT ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT											29
NONE		TH	0					SHIPPING ST NE	SW		STOP SIGN	N	DRY	REAR	N/A	SW-NE										000	00
N		1P							06	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00
N		44 57 17.6	-123 2													02 NONE 9	STOP									012	00
		6.17														N/A	SW-NE									000	00
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00
																	UNK										
00421	N	N	N	N	N	02/05/2018	16	FRONT ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT											02
NONE		MO	0					SHIPPING ST NE	CN		STOP SIGN	N	DRY	ANGL	PRVTE	SW-NE										000	00
N		4P							04	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	31 F	OR-Y				028	000	02
N		44 57 17.6	-123 2													01 NONE 0	STRGHT										
		6.17														PRVTE	SW-NE									000	00
																PSNGR CAR		02 PSNG	INJC	27 F					000	000	00
																	000										
																01 NONE 0	STRGHT									000	00
																PRVTE	SW-NE									000	00
																PSNGR CAR		03 PSNG	INJB	05 M					000	000	00
																	000										
																01 NONE 0	STRGHT									000	00
																PRVTE	SW-NE									000	00
																PSNGR CAR		04 PSNG	INJC	11 F					000	000	00
																	000										
																02 NONE 0	STRGHT									000	00
																PRVTE	NW-SE									000	00
																PSNGR CAR		01 DRVR	NONE	40 M	OR-Y				000	000	00
																	OR>25										

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

HOOD ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE		MAJOR	MODERATE	MINOR	PROP			MAJOR	Moderate	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	PEOPLE	KILLED	INJURIES	INJURIES
FINAL TOTAL	CRASHES	CRASHES	CRASHES	CRASHES	ONLY	CRASHES	CRASHES	KILLED	INJURIES	INJURIES

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

GAINES ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE		MAJOR	MODERATE	MINOR	PROP			MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	PEOPLE	KILLED	INJURIES	INJURIES
FINAL TOTAL	CRASHES	CRASHES	CRASHES	CRASHES	ONLY	CRASHES	CRASHES	CRASHES	CRASHES	CRASHES

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MARKET ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY								
<b>YEAR: 2019</b>												
NON-COLLISION	0	0	0	1	0	1	0	0	0	0	0	1
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

CITY OF SALEM, MARION COUNTY

MARKET ST at FRONT ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 2 of 2 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ										
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
01351	N	N	N	N	N	03/22/2019	16	FRONT ST NE	INTER	3-LEG	N	N	RAIN	OVERTURN	01 NONE 0	STRGHT										001,015	10		
NO RPT								FR	0	MARKET ST NE	SW		STOP SIGN	N	WET	NCOL	PRVTE	SW-NE								000	00		
N						10P				06	0			N	DARK	INJ	MTRCYCLE		01 DRVR	INJC	45 M	OR-Y				000	017 001	10	
N			44	57	8.39	-123	2																						
						10.92																							
04655	N	N	N	N	N	N	N	11/21/2019	16	FRONT ST NE	INTER	3-LEG	N	N	CLR	BIKE	01 NONE 0	TURN-L									02		
CITY								TH	0	MARKET ST NE	CN		STOP SIGN	N	DRY	TURN	PRVTE	NE-SE								000	00		
N								6A			04	0			N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	36 M	OR-Y				027	000	02
N			44	57	8.39	-123	2																						
						10.92																							
																		-	STRGHT	01 BIKE	INJC	43 F		I INRD	000	000	00		
																		SW	NE										

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MARKET ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	FATAL	MAJOR	MODERATE	MINOR	PROP	TOTAL CRASHES	PEOPLE KILLED	MAJOR INJURIES	MODERATE INJURIES	MINOR INJURIES
	CRASHES	INJURY	INJURY	INJURY	DAMAGE ONLY					
<b>YEAR: 2022</b>										
SIDESWIPE - OVERTAKING	0	0	0	0	1	1	0	0	0	0
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2021</b>										
FIXED / OTHER OBJECT	0	0	0	1	0	1	0	0	0	1
PEDESTRIAN	0	0	1	0	0	1	0	0	1	0
TURNING MOVEMENTS	0	0	0	0	1	1	0	0	0	0
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>YEAR: 2020</b>										
ANGLE	0	0	1	0	0	1	0	0	1	0
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	1
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>YEAR: 2019</b>										
REAR-END	0	0	0	1	3	4	0	0	0	1
TURNING MOVEMENTS	0	0	1	0	0	1	0	0	1	0
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>YEAR: 2018</b>										
REAR-END	0	0	0	1	0	1	0	0	0	2
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	2
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>7</b>

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## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

MARKET ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 4 of 13 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC			
00231	Y	N	N	N	N	N	01/21/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	S-1STOP	01 NONE 0	STRGHT										32,30,27
CITY		SU							MARKET ST NE	NE			TRF SIGNAL	N	WET	REAR	PRVTE	NE-SW								000	00
N		2P								06	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	47 M	OR-Y		052,050,026	038	32,30,27	
N		44 57 7.21	-123 2				6.26		007200100S00								02 NONE 0	STOP									
																	PRVTE	NE-SW							011	00	
																	PSNGR CAR		01 DRVR	INJC	40 M	OR-Y		000	000	00	
																	02 NONE 0	STOP							011	00	
																	PRVTE	NE-SW							000	000	00
																	PSNGR CAR		02 PSNG	INJC	38 F				000	000	00
01188	N	N	N	N	N	N	04/02/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT										29
NO RPT		TU							MARKET ST NE	NE			TRF SIGNAL	N	DRY	REAR	PRVTE	NE-SW								000	00
N		5P								06	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	00 M	UNK		026	000	29	
N		44 57 7.21	-123 2				6.26		007200100S00								02 NONE 0	STOP							011	00	
																	PRVTE	NE-SW							000	000	00
																	PSNGR CAR		01 DRVR	INJC	33 M	OR-Y		000	000	00	
01861	N	N	N	N	N	N	05/17/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	UNK	S-STRGHT	01 NONE 9	STRGHT										29
NONE		FR							MARKET ST NE	NE			TRF SIGNAL	N	UNK	REAR	N/A	NE-SW								000	00
N		6P								06	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 M	Unk UNK		000	000	00	
N		44 57 7.21	-123 2				6.24		007200100S00								02 NONE 9	STRGHT							000	000	00
																	N/A	NE-SW							000	000	00
																	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK		000	000	00	
02466	N	N	N	N	N	N	06/30/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT										29
NONE		SU							MARKET ST NE	NE			TRF SIGNAL	N	DRY	REAR	N/A	NE-SW								000	00
N		4P								06	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK		000	000	00	
N		44 57 7.22	-123 2				6.29		007200100S00								02 NONE 9	STOP							011	00	
																	N/A	NE-SW							000	000	00
																	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK		000	000	00	
04907	N	N	N	N	N	N	12/07/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 9	STRGHT										29
NONE		SA							MARKET ST NE	NE			TRF SIGNAL	N	WET	REAR	N/A	NE-SW								000	00
N		5P								06	0			N	DLIT	PDO	PSNGR CAR		01 DRVR	NONE	00 Unk UNK	UNK		000	000	00	
N		44 57 7.21	-123 2				6.26		007200100S00																000	000	00

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CITY OF SALEM, MARION COUNTY

MARKET ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

5 - 10 of 13 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR QTY	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAFF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ									
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
															02 NONE 9	STOP												
															N/A	NE-SW									011	00		
															PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000		00	
03819	N	N	N	N	N	10/20/2022	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	S-STRGHT	01 NONE 9	STRGHT												13
NONE								TH	MARKET ST NE	NE			DRY	SS-O	N/A	NE-SW										000	00	
N								12P			05	0		DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000		00
N								44 57 7.21 -123 2 6.26	007200100S00						02 NONE 9	STRGHT									000	000		00
															N/A	NE-SW												
															UNKNOWN		01 DRVR	NONE	00	Unk	UNK			000	000		00	
03167	N	N	N	N	N	N	10/21/2020	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	BIKE	01 NONE 0	TURN-L											02,27
CITY								WE	MARKET ST NE	SW			TRF SIGNAL	N	DRY	TURN	PRVTE	SE-SW								000	00	
N								1P			06	0		DAY	INJ	PSNGR CAR		01 DRVR	NONE	67	M	OR-Y			027,016	038		02,27
N								44 57 7.21 -123 2 6.3	007200100S00																			
00642	N	N	N	N	N	03/02/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLR	PED	01 NONE 0	TURN-L											02	
CITY								TU	MARKET ST NE	SW			TRF SIGNAL	N	DRY	PED	PRVTE	SE-SW								000	00	
N								4P			05	0		DAY	INJ	PSNGR CAR		01 DRVR	NONE	63	F	OR-Y			029	000		02
N								44 57 7.23 -123 2 6.25	007200100S00																			
02296	N	N	N	N	N	N	07/09/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	Y	CLR	FIX OBJ	01 NONE 0	TURN-L									040,055	08	
CITY								FR	MARKET ST NE	SW			TRF SIGNAL	N	DRY	FIX	PRVTE	NE-SE								000	040,055	00
N								4P			06	0		DAY	INJ	PSNGR CAR		01 DRVR	INJC	28	F	OR-Y			001,081	000		08
N								44 57 7.19 -123 2 6.25	007200100S00																			
00358	N	N	Y	N	N	N	01/31/2018	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	O-1 L-TURN	01 NONE 0	TURN-L										02	
CITY								WE	MARKET ST NE	CN			TRF SIGNAL	N	DRY	TURN	PRVTE	SE-SW								000	00	
N								11A			03	0		DAY	INJ	PSNGR CAR		01 DRVR	INJC	75	F	OR-Y			028,004	000		02
N								44 57 7.21 -123 2 6.26	007200100S00																			
															02 NONE 0	STRGHT												
															PRVTE	NW-SE												
															PSNGR CAR		01 DRVR	INJC	48	F	OR-Y			000	000		00	

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CITY OF SALEM, MARION COUNTY

**MARKET ST at COMMERCIAL ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022**

11 - 13 of 13 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE			SPCL USE			A S						PED				ACT EVENT		CAUSE		
INVEST	E	A	U	I	C	O DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE												
RD DPT	E	L	G	N	H	R TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER		FROM	PRTC	INJ	G	E	LICNS	PED						
UNLOC?	D	C	S	V	L	K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
02876	N	N	N	N	N	N	07/30/2019	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	O-1	L-TURN	01	NONE	0	TURN-L						087,082	02		
CITY			TU				MARKET ST NE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE		SE-SW									000	087	00		
N			10A					03	0		N	DAY	INJ	PSNGR	CAR			01	DRVR	NONE	26	F	OTH-Y		028,004	000	082	02	
N			44 57 7.21	-123 2			007200100S00							02	NONE	0	STRGHT									000	087	00	
			6.26											PRVTE		NW-SE										000	000	00	
														PSNGR	CAR			01	DRVR	INJB	46	M	OR-Y		000	000	00		
																									OR<25				
03088	N	N	N	N	N	N	10/12/2020	14	COMMERCIAL ST NE	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE	0	STRGHT									04,27	
CITY			MO				MARKET ST NE	CN		TRF SIGNAL	N	WET	ANGL	PRVTE		NE-SW										000	00		
N			7A					03	0		N	DAY	INJ	PSNGR	CAR			01	DRVR	NONE	46	M	OR-Y		020,016	038	04,27		
N			44 57 7.24	-123 2			007200100S00							02	NONE	0	STRGHT									000	000	00	
			6.28											PRVTE		NW-SE										000	000	00	
														PSNGR	CAR			01	DRVR	INJB	18	F	OR-Y		000	000	00		
																									OR<25				
00690	N	N	N	N	N	N	02/14/2021	14	COMMERCIAL ST NE	INTER	CROSS	N	N	RAIN	O-1	L-TURN	01	NONE	9	TURN-L									02
CITY			SU				MARKET ST NE	CN		TRF SIGNAL	N	WET	TURN	N/A		SE-SW										000	00		
N			1P					03	0		N	DAY	PDO	PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK		000	000	00		
N			44 57 7.23	-123 2			007200100S00							02	NONE	9	STRGHT									000	000	00	
			6.27											N/A		NW-SE										000	000	00	
														PSNGR	CAR			01	DRVR	NONE	00	Unk	UNK		000	000	00		
																									UNK				

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MARKET ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY	CRASHES							
<b>YEAR: 2022</b>												
REAR-END	0	0	0	1	0	1	0	0	0	0	0	1
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>YEAR: 2021</b>												
ANGLE	0	0	1	1	2	4	0	0	0	2	1	
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	
<b>YEAR: 2020</b>												
ANGLE	0	0	0	1	0	1	0	0	0	0	0	3
TURNING MOVEMENTS	0	0	0	0	1	1	0	0	0	0	0	0
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>YEAR: 2019</b>												
ANGLE	0	1	0	0	0	1	0	1	0	0	0	1
<b>2019 TOTAL</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>

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## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

MARKET ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 3 of 8 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
04262	N	N	N	N	N	N	11/22/2022	16	LIBERTY ST NE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 0	STRGHT										29		
CITY		TU		0					MARKET ST NE	SE			TRF SIGNAL	N	WET	REAR	PRVTE	SE-NW									000	00	
N		12P								06	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	24 F	SUSP		026	000	00	29		
N		44 57 6.11	-123 2 2													02 NONE 0	STOP									011	00	00	
																PRVTE	SE-NW									000	00	00	
																PSNGR CAR		01 DRVR	INJC	50 M	OR-Y		000	000	00	00			
																	OR<25												
00050	N	N	N	N	N	N	10/06/2019	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										013	04	
NO RPT		SU							MARKET ST NE	CN			TRF SIGNAL	N	DRY	ANGL	PRVTE	SW-NE									000	00	
N		9A								02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJA	22 M	OR-Y		000	000	00	00		
N		44 57 6.11	-123 2 2						007200200S00							02 NONE 0	STRGHT									022	013	00	
																PRVTE	SE-NW									022	022	04	
																PSNGR CAR		01 DRVR	INJC	81 F	OR-Y		020	000	00	00			
																	OR<25									022	022	00	
																03 NONE 0	STRGHT									022	022	00	
																PRVTE	SW-NE									022	022	00	
																PSNGR CAR		01 DRVR	NONE	28 M	OR-Y		000	000	00	00			
																	OR<25									011	00	00	
																04 NONE 0	STOP									000	000	00	
																PRVTE	NW-SE									011	00	00	
																PSNGR CAR		01 DRVR	NONE	26 F	OR-Y		000	000	00	00			
																	OR<25									011	00	00	
00942	N	N	N	N	N	N	03/07/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										04,27		
CITY		SA							MARKET ST NE	CN			TRF SIGNAL	N	DRY	ANGL	PRVTE	SW-NE									000	00	
N		11A								02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	59 M	OR-Y		000	000	00	00		
N		44 57 6.1	-123 2 2						007200200S00							01 NONE 0	STRGHT									000	00	00	
																PRVTE	SW-NE									000	000	00	
																PSNGR CAR		02 PSNG	INJC	69 F			000	000	00	00			
																	02 NONE 0	STRGHT								000	000	00	
																PRVTE	SE-NW									000	000	00	
																PSNGR CAR		01 DRVR	INJC	19 F	OR-Y		020,016	038	04,27				
																	OR<25									000	000	00	
																02 NONE 0	STRGHT									000	000	00	
																PRVTE	SE-NW									000	000	00	
																PSNGR CAR		02 PSNG	INJC	69 F			000	000	00	00			
01969	N	N	N	N	N	N	07/07/2020	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	S-1TURN	01 NONE 9	TURN-L										08		
NONE		TU							MARKET ST NE	CN			STOP SIGN	N	DRY	TURN	N/A	SW-NW									000	00	00
N		12P								01	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000	000	00	00	00	00
N		44 57 6.1	-123 2 2						007200200S00									UNK								000	000	00	

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## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

MARKET ST at LIBERTY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

4 - 8 of 8 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR QTY	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE			
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ										
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
																02 NONE 9	STRGHT												
																N/A	SW-NE									000	00		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00		
00929	N	N	N	N	N	N	N	03/27/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										04	
CITY										MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		SW-NE								000	00
N											02	0			N	DAY	INJ		PSNGR CAR			01 DRVR	NONE	42	M	OR-Y	097	000	00
N																													
02605	N	N	N	N	N	N	N	08/03/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										04,27	
CITY										MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		SE-NW								000	00
N											02	0			N	DAY	INJ		PSNGR CAR			01 DRVR	INJC	22	F	OR-Y	097	000	00
N																													
00259	N	N	N	N	N	N	N	01/22/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT										04	
NONE										MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL		N/A		SW-NE								000	00
N											04	0			N	DAY	PDO		PSNGR CAR			01 DRVR	NONE	00	Unk	UNK	000	000	00
N																													
02893	N	N	N	N	N	N	N	08/24/2021	14	LIBERTY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT										04	
CITY										MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL		N/A		SW-NE								000	00
N											04	0			N	DLIT	PDO		PSNGR CAR			01 DRVR	NONE	00	Unk	UNK	000	000	00
N																													

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

MARKET ST at BROADWAY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY	CRASHES							
<b>YEAR: 2022</b>												
TURNING MOVEMENTS	0	0	1	1	0	2	0	0	0	1	1	1
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>YEAR: 2021</b>												
TURNING MOVEMENTS	0	0	0	0	1	1	0	0	0	0	0	0
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2020</b>												
ANGLE	0	0	0	0	1	1	0	0	0	0	0	0
BACKING	0	0	0	1	0	1	0	0	0	0	0	2
REAR-END	0	0	0	1	0	1	0	0	0	0	0	2
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	0	0	1
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
<b>YEAR: 2019</b>												
REAR-END	0	0	0	4	0	4	0	0	0	0	0	5
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
<b>YEAR: 2018</b>												
ANGLE	0	0	0	1	0	1	0	0	0	0	0	1
REAR-END	0	0	0	0	1	1	0	0	0	0	0	0
TURNING MOVEMENTS	0	0	0	2	0	2	0	0	0	0	0	2
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>11</b>	<b>3</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>14</b>

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CITY OF SALEM, MARION COUNTY

MARKET ST at BROADWAY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 4 of 15 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE			
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
01579	N	N	N	N	N	04/29/2019	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT										29		
CITY		MO	0					MARKET ST NE	NE			TRF SIGNAL	N	DRY	REAR		PRVTE										000	00		
N		4P							06	0			N	DAY	INJ		PSNGR CAR		01	DRV	INJC	21	F	OR-Y		026	000	29		
N		44 57 3.96	-123 1													02	NONE	0	STRGHT								000	00		
		53.24														PRVTE		NE-SW								000	00			
																PSNGR CAR			01	DRV	INJC	37	F	OTH-Y		000	000	00		
																		OR<25												
01605	N	N	N	N	N	05/01/2019	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	0	STRGHT										29		
NONE		WE	0					MARKET ST NE	NE			TRF SIGNAL	N	DRY	REAR		PRVTE		NE-SW								000	00		
N		8A							06	0			N	DAY	INJ		PSNGR CAR			01	DRV	NONE	55	F	OR-Y		026	000	29	
N		44 57 3.93	-123 1													02	NONE	0	STOP								011	00		
		53.29														PRVTE		NE-SW								000	00			
																PSNGR CAR			01	DRV	INJC	48	F	OR-Y		000	000	00		
																		OR<25												
00511	N	N	N	N	N	02/05/2020	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	O-1STOP	01	NONE	0	BACK										10		
NONE		WE	0					MARKET ST NE	SE			TRF SIGNAL	N	DRY	BACK		PRVTE		NW-SE								000	00		
N		1P							06	0			N	DAY	INJ		TRUCK			01	DRV	NONE	20	M	OR-Y		011	000	10	
N		44 57 3.95	-123 1													02	NONE	0	STOP								012	00		
		53.24														PRVTE		SE-NW								000	00			
																PSNGR CAR			01	DRV	INJC	42	F	OR-Y		000	000	00		
																		OR<25												
																02	NONE	0	STOP								012	00		
																PRVTE		SE-NW								000	000	00		
																PSNGR CAR			02	PSNG	INJC	00	F			000	000	00		
01658	N	N	N	N	N	06/08/2020	16	BROADWAY ST NE	INTER	CROSS	N	N	CLD	BIKE	01	NONE	0	TURN-R										04		
CITY		MO	0					MARKET ST NE	SE			TRF SIGNAL	N	DRY	TURN		PRVTE		SW-SE								000	00		
N		3P							05	0			N	DAY	INJ		PSNGR CAR			01	DRV	NONE	84	F	OR-Y		000	000	00	
N		44 57 3.96	-123 1													02	NONE	0	STRGHT		01	BIKE	INJC	33	M	I XWLK 020		000	00	04
		53.23																	SW NE											
01579	N	N	N	N	N	05/12/2022	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE	0	TURN-L										001	29	
CITY		TH	0					MARKET ST NE	SE			TRF SIGNAL	N	DRY	TURN		PRVTE		NE-SE								000	00		
N		7P							05	0			N	DAY	INJ		MTRCYCLE			01	DRV	INJB	24	M	OR-Y		042	000	001	29
N		44 57 3.95	-123 1																OR<25											

*Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.*

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

MARKET ST at BROADWAY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

5 - 8 of 15 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE		
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ								
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
01347	N	N	N	N	N	04/12/2019	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT											29
NONE		FR	0					MARKET ST NE	SW	TRF SIGNAL	N	DRY	REAR	PRVTE	SW-NE										000	00	
N		5P							06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	50 F	UNK	OR<25	026	000	29			
N		44 57 3.95	-123 1													02 NONE 0	STOP								011	00	
		53.23														PRVTE	SW-NE								022	00	
																PSNGR CAR		01 DRVR	INJC	26 M	OR-Y	OR<25	000	000			
																03 NONE 0	STRGHT								000	00	
																PRVTE	SW-NE								026	000	
																PSNGR CAR		01 DRVR	NONE	18 F	OR-Y	OR<25	000	000	29		
03941	N	N	N	N	N	10/09/2019	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT										29	
NONE		WE	0					MARKET ST NE	SW	TRF SIGNAL	N	DRY	REAR	PRVTE	SW-NE									000	00		
N		2P							06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	29 M	OR-Y	OR<25	026	000	29			
N		44 57 3.96	-123 1													02 NONE 0	STOP								011	00	
		53.24														PRVTE	SW-NE								000	00	
																PSNGR CAR		01 DRVR	INJC	25 M	OR-Y	OR>25	000	000			
02675	N	N	N	N	N	07/22/2018	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT										29	
NONE		SU	0					MARKET ST NE	NW	TRF SIGNAL	N	DRY	REAR	N/A	NW-SE									000	00		
N		6P							06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK	000	000	00		
N		44 57 3.95	-123 1													02 NONE 9	STOP								011	00	
		53.23														N/A	NW-SE								000	00	
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK	000	000		
03578	N	N	N	N	N	09/23/2018	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT										02	
NONE		SU	0					MARKET ST NE	CN	TRF SIGNAL	N	DRY	TURN	PRVTE	SW-NE									000	00		
N		11P							04	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK	000	000	00		
N		44 57 3.94	-123 1													02 NONE 0	TURN-L								000	00	
		53.24														PRVTE	NE-SE								028,004	000	
																PSNGR CAR		01 DRVR	NONE	18 M	OR-Y	OR<25	028,004	000	02		

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

MARKET ST at BROADWAY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

9 - 13 of 15 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC						
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
															02 NONE 0	TURN-L													
															PRVTE	NE-SE										000	00		
															PSNGR CAR		02 PSNG	INJC	17 M						000	000	00		
03792	N	N	N	N	N	N	10/17/2018	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									087	04		
CITY			WE	0					MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	SE-NW								000	087	00		
N			8A							01	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	52 F	OR-Y			020	000	04		
N			44 57 3.95	-123 1												02 NONE 1	STRGHT								000	087	00		
			53.24												PRVTE	NE-SW									000	000	00		
															PSNGR CAR		01 DRVR	INJC	67 M	OR-Y				000	000	00			
																02	NE-SE												
04107	N	N	N	N	N	N	10/28/2018	16	BROADWAY ST NE	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01 NONE 0	TURN-L									02			
CITY			SU	0					MARKET ST NE	CN		TRF SIGNAL	N	WET	TURN	PRVTE	SE-SW								000	00			
N			12P							03	0			N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	26 M	OR-Y			028,004	000	02		
N			44 57 3.94	-123 1												02 NONE 0	STRGHT								000	000	00		
			53.24												PRVTE	NW-SE									000	000	00		
															PSNGR CAR		01 DRVR	NONE	65 M	OTH-Y				000	000	00			
																02	OR>25												
01064	N	N	N	N	N	N	03/16/2020	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT								004	29			
NONE			MO	0					MARKET ST NE	CN		TRF SIGNAL	N	DRY	REAR	PRVTE	SE-NW								000	00			
N			10A							02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	51 M	OR-Y			026	000	29		
N			44 57 3.94	-123 1												02 NONE 0	STOP								011 004	00			
			53.23												PRVTE	SE-NW									000	000	00		
															PSNGR CAR		01 DRVR	INJC	47 F	OR-Y				000	000	00			
																02	OR<25												
01160	N	N	N	N	N	N	04/02/2020	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT								04,16				
NO RPT			TH	0					MARKET ST NE	CN		TRF SIGNAL	N	DRY	ANGL	N/A	NW-SE								000	00			
N			6A							03	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK			000	000	00		
N			44 57 3.94	-123 1												02 NONE 9	STRGHT								000	000	00		
			53.24												N/A	NE-SW									000	000	00		
															PSNGR CAR		01 DRVR	NONE	00	Unk UNK				000	000	00			
																UNK													

CITY OF SALEM, MARION COUNTY

MARKET ST at BROADWAY ST, City of Salem, Marion County, 01/01/2018 to 12/31/2022

14 - 15 of 15 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ										
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS																				
02370	N	N	N	N	N	07/15/2021	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE	9	STRGHT											02	
NONE			TH	0				MARKET ST NE	CN		TRF SIGNAL	N	DRY	TURN	N/A		NW-SE										000	00	
N			5P						03	0			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK				000	000	00	
N			44 57 3.97	-123 1												02 NONE	9	TURN-L									000	000	00
			53.26													N/A	SE-SW										000	000	00
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK				000	000	00	
																	UNK												
02090	N	N	N	N	N	06/24/2022	16	BROADWAY ST NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE	0	STRGHT											04	
NONE			FR	0				MARKET ST NE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE		SW-NE									000	000	00	
N			7A						02	0			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	44 F	OR-Y				097	000	00		
N			44 57 3.94	-123 1												02 NONE	0	TURN-L									000	000	00
			53.24													PRVTE	SE-SW												
																PSNGR CAR		01 DRVR	INJC	37 M	OR-Y				097	000	00		
																	OR<25												

## TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

FRONT ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	MAJOR		MODERATE		MINOR		PROP		PEOPLE	MAJOR	MODERATE	MINOR
	FATAL	INJURY	INJURY	INJURY	DAMAGE	TOTAL	CRASHES	KILLED				
CRASHES	CRASHES	CRASHES	CRASHES	ONLY								
<b>YEAR: 2018</b>												
BACKING	0	0	0	1	0	1	0	0	0	0	0	1
TURNING MOVEMENTS	0	0	1	0	0	1	0	0	0	0	2	1
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

FRONT ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 2 of 2 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN																	
00629	N	N	N	N	N		02/23/2018	16	FRONT ST NE	INTER	3-LEG	N	N	UNK	O-1STOP	01 NONE 0	BACK										10
NONE									FRONT ST PKY		N		STOP SIGN	N	UNK	BACK	PRVTE	S -N									000 00
N											06	0					N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	47 F	UNK	011 000	10
N																			PSNGR CAR		01 DRVR	INJC	61 F	OR-Y	000 000	00	
																			STOP								
																		PRVTE	N -S								
																		PSNGR CAR		01 DRVR	INJC	61 F	OR-Y	000 000	00		
																		OR<25									
01632	N	N	N	N	N		05/13/2018	14	FRONT ST NE	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01 NONE 0	TURN-L										27,02
CITY									FRONT ST PKY		CN		STOP SIGN	N	DRY	TURN	PRVTE	SW-N									000 00
N											02	0					N	DAY	INJ	PSNGR CAR		01 DRVR	INJC	25 F	OR-Y	016,028,004 038	27,02
N																		PSNGR CAR		01 DRVR	INJC	25 F	OR-Y	000 000	00		
																		PRVTE	SW-N								
																		PSNGR CAR		02 PSNG	INJB	08 M		000 000	00		
																		TURN-L									
																		PRVTE	SW-N								
																		PSNGR CAR		03 PSNG	NONE	03 F		000 000	00		
																		STRGHT									
																		NE-SW									
																		PSNGR CAR		01 DRVR	INJB	39 M	OR-Y	000 000	00		
																		OR<25									

## CRASH SUMMARIES BY YEAR BY COLLISION TYPE

UNION ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

COLLISION TYPE	FATAL	MAJOR	MODERATE	MINOR	PROP	TOTAL CRASHES	PEOPLE KILLED	MAJOR INJURIES	MODERATE INJURIES	MINOR INJURIES
	CRASHES	INJURY	INJURY	INJURY	DAMAGE ONLY					
<b>YEAR: 2022</b>										
ANGLE	0	0	1	0	0	1	0	0	2	0
FIXED / OTHER OBJECT	0	0	0	1	0	1	0	0	0	1
REAR-END	0	0	1	0	1	2	0	0	1	0
TURNING MOVEMENTS	0	0	3	0	0	3	0	0	3	2
<b>2022 TOTAL</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>
<b>YEAR: 2021</b>										
TURNING MOVEMENTS	0	0	0	0	1	1	0	0	0	0
<b>2021 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2020</b>										
ANGLE	0	0	0	0	1	1	0	0	0	0
<b>2020 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>YEAR: 2019</b>										
ANGLE	0	0	0	1	0	1	0	0	0	1
REAR-END	0	0	0	0	1	1	0	0	0	0
TURNING MOVEMENTS	0	0	0	1	0	1	0	0	0	2
<b>2019 TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>YEAR: 2018</b>										
ANGLE	0	0	0	1	1	2	0	0	0	1
REAR-END	0	0	2	0	0	2	0	0	2	4
SIDESWIPE - OVERTAKING	0	0	0	1	0	1	0	0	0	1
<b>2018 TOTAL</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>6</b>
<b>FINAL TOTAL</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>12</b>

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CITY OF SALEM, MARION COUNTY

UNION ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

1 - 3 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED								
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	ACT	EVENT	CAUSE				
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE			
02006	N	N	N	N	N	N	05/30/2019	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	BIKE										110	04,18				
CITY		TH							UNION ST NE	NE		TRF SIGNAL	N	DRY	ANGL		-													
N		4P								06	0			N	DAY	INJ		STRGHT	01 BIKE	INJC	42	F		I XWLK	020	000	110	04,18		
N		44 56 47.06 -123 22.14							007200100S00							SE NW														
																01 NONE 0	STRGHT													
																PRVTE NE-SW											000	00		
																PSNGR CAR		01 DRVR	NONE	20	F	OR-Y		000		000		00		
01211	N	N	N	N	N	N	04/11/2018	14	FRONT ST PKY NE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 0	STRGHT										29			
CITY		WE							UNION ST NE	SW		TRF SIGNAL	N	WET	REAR		PRVTE	SW-NE									000	00		
N		6P								06	0			N	DAY	INJ		PSNGR CAR		01 DRVR	NONE	29	F	SUSP		026	000	29		
N		44 56 46.89 -123 22.145							007200200S00								02 NONE 0	STOP SW-NE									011	00		
																PRVTE PSNGR CAR		01 DRVR	INJB	22	F	OR-Y		000		000		00		
04300	N	N	N	N	N	N	11/12/2018	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT									013	29			
CITY		MO							UNION ST NE	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW-NE								000	00			
N		2P								06	0			N	DAY	INJ		PSNGR CAR		01 DRVR	INJC	35	M	OR-Y		026	000	29		
N		44 56 46.89 -123 22.145							007200200S00								01 NONE 0	STOP SW-NE									011	00		
																PRVTE PSNGR CAR		02 PSNG	INJB	07	M			000		000		00		
																02 NONE 0	STOP SW-NE									011 013	00			
																PRVTE PSNGR CAR		01 DRVR	INJC	39	F	OR-Y		000		022		00		
																03 NONE 0	STOP SW-NE													
																PRVTE PSNGR CAR		01 DRVR	INJC	19	F	OR-Y		000		000		00		
																03 NONE 0	STOP SW-NE													
																PRVTE PSNGR CAR		02 PSNG	INJC	52	M			000		000		00		
04789	N	N	N	N	N	N	12/13/2018	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 1	STRGHT									022	10			
CITY		TH							UNION ST NE	SW		TRF SIGNAL	N	DRY	SS-O		PRVTE	SW-NE								000	022	00		
N		5P								06	0			N	DLIT	INJ		PSNGR CAR		01 DRVR	NONE	57	M	OR-Y		017,080	000	10		
N		44 56 46.88 -123 22.145							007200200S00								PRVTE PSNGR CAR		02 PSNG	INJC										

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

UNION ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

4 - 8 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED	ACT	EVENT	CAUSE			
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR			
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	000	000	000		
																02 NONE 0	STOP							012	00			
																PRVTE	SW-NE							000	000	00		
																PSNGR CAR		01 DRVR	NONE	27 M	OR-Y			000	000			
																02 NONE 0	STOP							012	00			
																PRVTE	SW-NE							000	000	00		
																PSNGR CAR		02 PSNG	INJC	27 F				000	000	00		
04771	N	N	N	N	N	11/29/2019	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 9	STRGHT									29			
NONE								FR	UNION ST NE	SW		TRF SIGNAL	N	DRY	REAR	N/A	SW-NE								000	000		
N								1P		06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00	
N								44 56 46.89 -123 2 21.46	007200200S00							02 NONE 9	STOP							011	000	00		
																N/A	SW-NE							000	000	00		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00	
02914	N	N	N	N	N	08/24/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	S-1STOP	01 NONE 0	STRGHT									29			
NONE								WE	UNION ST NE	SW		TRF SIGNAL	N	DRY	REAR	PRVTE	SW-NE								000	000		
N								8P		06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	51 M	OR-Y				026	000	29	
N								44 56 46.89 -123 2 21.45	007200200S00							02 NONE 0	STOP							011	000	00		
																PRVTE	SW-NE							000	000	00		
																PSNGR CAR		01 DRVR	INJB	16 M	OR-Y				000	000	00	
																02 NONE 0	STOP							011	000	00		
																N/A	SW-NE							000	000	00		
																01 DRVR	INJB	16 M	OR-Y					000	000	00		
03801	N	N	N	N	N	10/17/2022	14	FRONT ST PKY NE	INTER	CROSS	N	Y	CLR	FIX OBJ	01 NONE 0	TURN-R									040,053	17,08		
NO RPT								MO	UNION ST NE	SW		TRF SIGNAL	N	DRY	FIX	PRVTE	NW-SW								000	040,053	00	
N								7P		05	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	INJC	52 F	OR-Y				002,081	028	17,08	
N								44 56 47.05 -123 2 22.13	007200100S00							02 NONE 0	STOP							000	028	17,08		
																PRVTE	SW-NE							000	028	17,08		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00	
																02 NONE 0	STOP							000	000	00		
																N/A	SW-NE							000	000	00		
																01 DRVR	NONE	00	Unk	UNK				000	000	00		
01496	N	N	N	N	N	N	05/05/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	RAIN	S-1STOP	01 NONE 9	STRGHT									29		
CITY								TH	UNION ST NE	SW		TRF SIGNAL	N	WET	REAR	N/A	SW-NE								000	000		
N								11P		06	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	INJC	52 F	OR-Y				000	000	00	
N								44 56 46.89 -123 2 21.45	007200200S00							02 NONE 9	STOP							000	000	00		
																PRVTE	SW-NE							000	000	00		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK			000	000	00	
																02 NONE 9	STOP							000	000	00		
																N/A	SW-NE							000	000	00		
																01 DRVR	NONE	00	Unk	UNK				000	000	00		
00356	N	N	N	N	N	N	01/31/2018	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT									04,27		
CITY								WE	UNION ST NE	CN		TRF SIGNAL	N	DRY	ANGL	PRVTE	SE-NW								000	000		
N		</																										

## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

UNION ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

9 - 13 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	G	E	LICNS	PED									
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ												
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
																02 NONE 0	STRGHT														
																PRVTE	NE-SW										000	00			
																PSNGR CAR		01 DRVR	INJC	34 M	OR-Y		000	000	00						
03399	N	N	N	N	N	N	09/10/2018	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT												04		
CITY							MO		UNION ST NE	CN		TRF SIGNAL	N	DRY	ANGL	N/A		SW-NE										000	00		
N							6P			04	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
N							44 56 46.89 -123 2		007200200S00							02 NONE 9	STRGHT														
							21.46									N/A	NW-SE											000	00		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
04654	N	N	N	N	N	N	11/21/2019	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01 NONE 0	STRGHT												02		
CITY							TH		UNION ST NE	CN		TRF SIGNAL	N	DRY	TURN	PRVTE		SW-NE										000	00		
N							5P			04	0		N	DLIT	INJ	PSNGR CAR		01 DRVR	INJC	19 M	OTH-Y		000	000	00						
N							44 56 46.89 -123 2		007200200S00							01 NONE 0	STRGHT														
							21.46									PRVTE	SW-NE										000	00			
																PSNGR CAR		02 PSNG	INJC	16 F									000	000	00
																02 NONE 0	TURN-L												000	00	
																PRVTE	NE-SE												000	00	
																PSNGR CAR		01 DRVR	NONE	31 M	OR-Y		028,004	000	00			02			
03634	N	N	N	N	N	N	12/01/2020	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01 NONE 9	STRGHT												04		
CITY							TU		UNION ST NE	CN		TRF SIGNAL	N	DRY	ANGL	N/A		SE-NW										000	00		
N							10A			02	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
N							44 56 46.89 -123 2		007200200S00							02 NONE 9	STRGHT														
							21.47									N/A	SW-NE											000	00		
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
																02 NONE 9	STRGHT												000	00	
																N/A	NE-SW														
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
00340	N	N	N	N	N	N	02/05/2021	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLD	O-1 L-TURN	01 NONE 9	TURN-L											02			
CITY							FR		UNION ST NE	CN		FLASHBCN-A	N	WET	TURN	N/A		SW-NW										000	00		
N							9A			01	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		
N							44 56 47.06 -123 2		007200100S00							02 NONE 9	STRGHT														
							22.15									N/A	NE-SW											000	000	00	
																PSNGR CAR		01 DRVR	NONE	00	Unk	UNK	UNK				000	000	00		

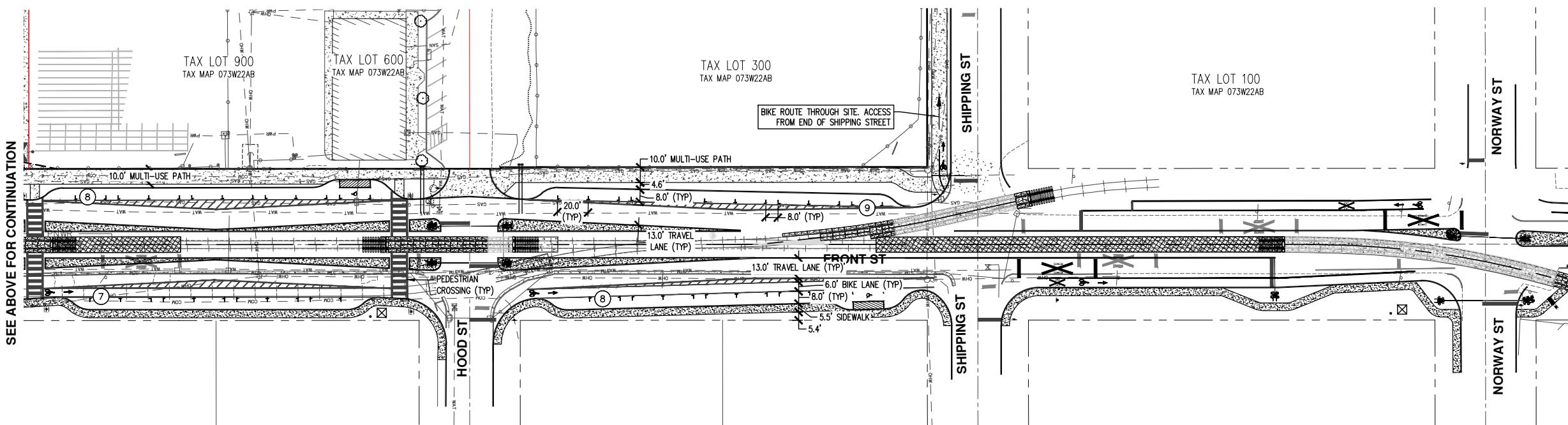
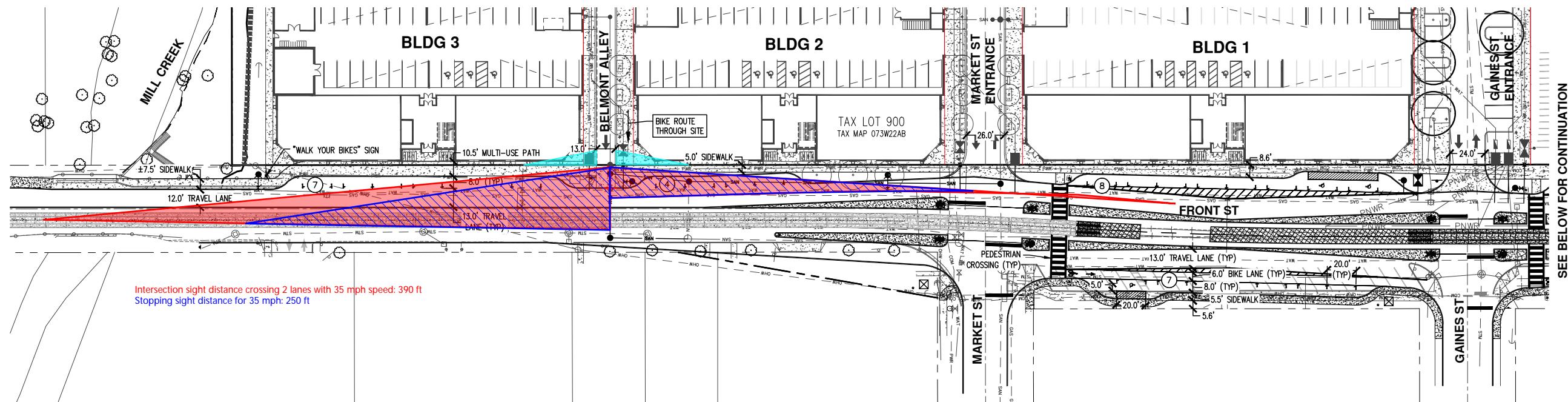
## URBAN NON-SYSTEM CRASH LISTING

CITY OF SALEM, MARION COUNTY

UNION ST at FRONT ST PKY, City of Salem, Marion County, 01/01/2018 to 12/31/2022

14 - 17 of 17 Crash records shown.

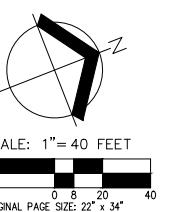
SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE (MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	SPCL USE TRLR QTY	MOVE	A	S	G	E	LICNS	PED							
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE	
RD DPT	E	L	G	N	H	R	TIME	FROM	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E	X	RES	LOC	ACT	EVENT	CAUSE		
00256	N	N	N	N	N	01/25/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE	0	TURN-L										29	
CITY		TU						UNION ST NE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE		NE-SE									000	00	
N		4P							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	INJB	31	F	OTH-Y		042	000	29	
N		44 56 47.05 -123 22.15						007200100S00								02	NONE	0	TURN-L										
																PRVTE		NE-SE									000	00	
																PSNGR CAR		01	DRV	INJC	60	M	OR-Y		000	000	00		
																		OR<25											
00641	N	N	N	N	N	02/27/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT											04
CITY		SU						UNION ST NE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE		SW-NE									000	00	
N		11A							02	0			N	DAY	INJ		PSNGR CAR		01	DRV	INJB	25	F	OR-Y		020	000	04	
N		44 56 46.9 -123 22.47						007200200S00								02	NONE	0	STRGHT										
																PRVTE		SE-NW									000	00	
																PSNGR CAR		01	DRV	INJB	21	F	OR-Y		000	000	00		
																	OR<25												
02468	N	N	N	N	N	07/21/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	0	STRGHT											04
CITY		TH						UNION ST NE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE		NE-SW									000	00	
N		4P							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	NONE	57	M	OR-Y		097	000	00	
N		44 56 47.05 -123 22.13						007200100S00								02	NONE	0	TURN-L										
																PRVTE		SW-NW									000	00	
																PSNGR CAR		01	DRV	NONE	58	F	OR-Y		097	000	00		
																	OR<25												
																02	NONE	0	TURN-L										
																PRVTE		SW-NW											
																PSNGR CAR		02	PSNG	INJB	55	F			000	000	00		
																	OR<25												
03728	N	N	N	N	N	10/20/2022	14	FRONT ST PKY NE	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	0	TURN-L											02
CITY		TH						UNION ST NE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE		SW-NW									000	00	
N		8A							01	0			N	DAY	INJ		PSNGR CAR		01	DRV	INJB	76	F	OR-Y		028,004	000	02	
N		44 56 47.05 -123 22.13						007200100S00								02	NONE	0	STRGHT										
																PRVTE		NE-SW									000	00	
																PSNGR CAR		01	DRV	INJC	33	F	OR-Y		000	000	00		
																	OR>25												

LEGEND:

( # ) NUMBER OF PARKING STALLS IN ROW

GENERAL NOTE:

PROPOSED FRONT STREET IMPROVEMENTS ARE SUBJECT TO CHANGE BASED ON RAIL AND CITY FEEDBACK. INFORMATION SHOWN IS BASED ON LATEST COORDINATION EFFORTS WITH THE CITY OF SALEM AND RAILROAD ENGINEER.



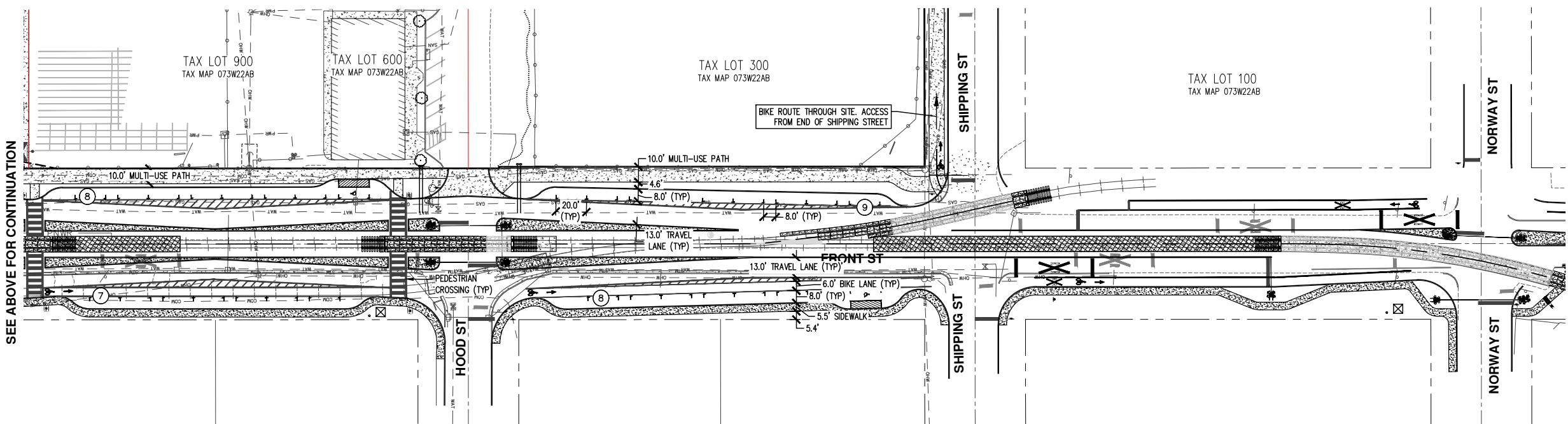
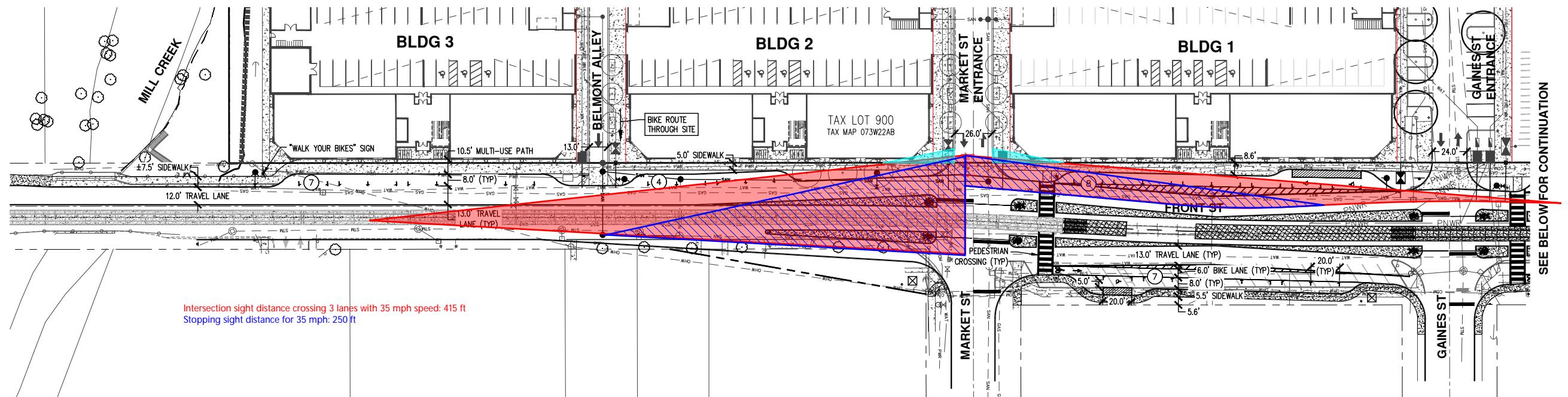
# PRELIMINARY FRONT ST IMPROVEMENTS

## THE CANNERY

### FUND

#### SALEM, OREGON

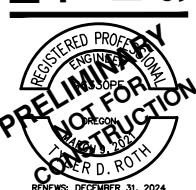
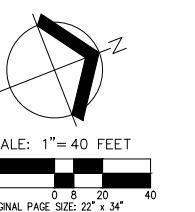
REGISTERED PROFESSIONAL ENGINEER  
NOT FOR CONSTRUCTION  
TDR D. ROTH  
RENEWED DECEMBER 31, 2024  
JOB NUMBER: 5968-01  
DATE: 05/17/2024  
DESIGNED BY: TDR  
DRAWN BY: MJM  
CHECKED BY: TDR

LEGEND:

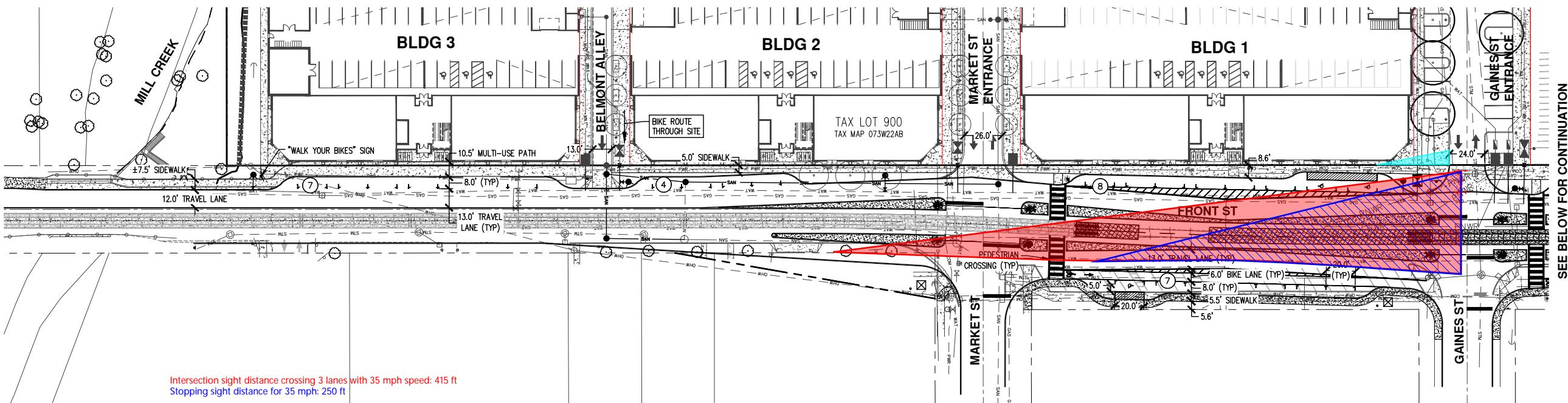
# NUMBER OF PARKING STALLS IN ROW

GENERAL NOTE:

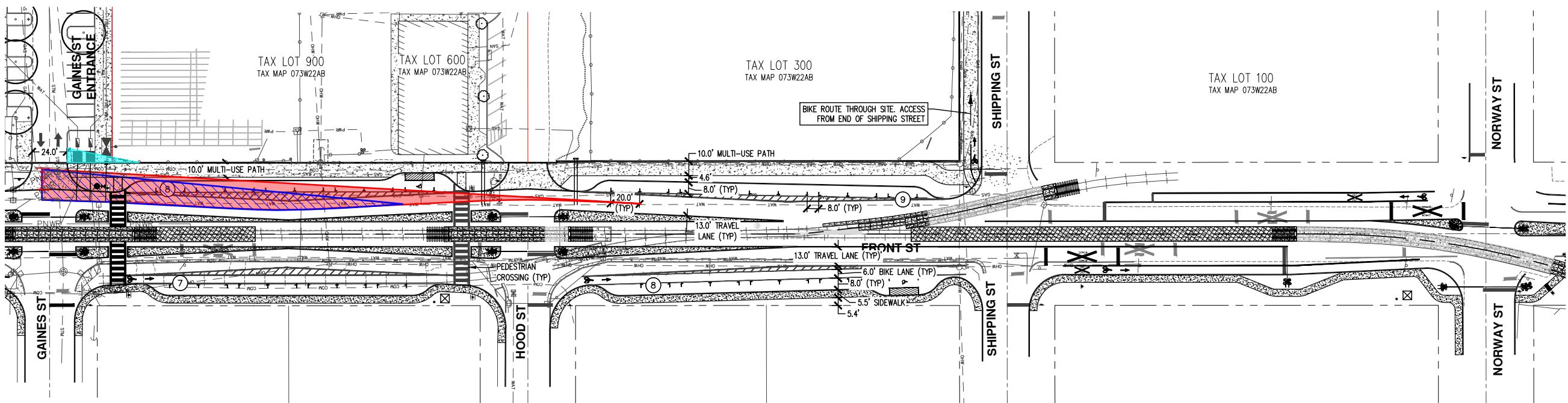
PROPOSED FRONT STREET IMPROVEMENTS ARE SUBJECT TO CHANGE BASED ON RAIL AND CITY FEEDBACK. INFORMATION SHOWN IS BASED ON LATEST COORDINATION EFFORTS WITH THE CITY OF SALEM AND RAILROAD ENGINEER.



RENEWED: DECEMBER 31, 2024  
JOB NUMBER: 5968-01  
DATE: 05/17/2024  
DESIGNED BY: TDR  
DRAWN BY: MJM  
CHECKED BY: TDR



SEE BELOW FOR CONTINUATION

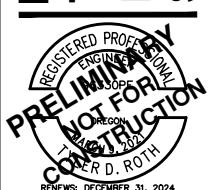
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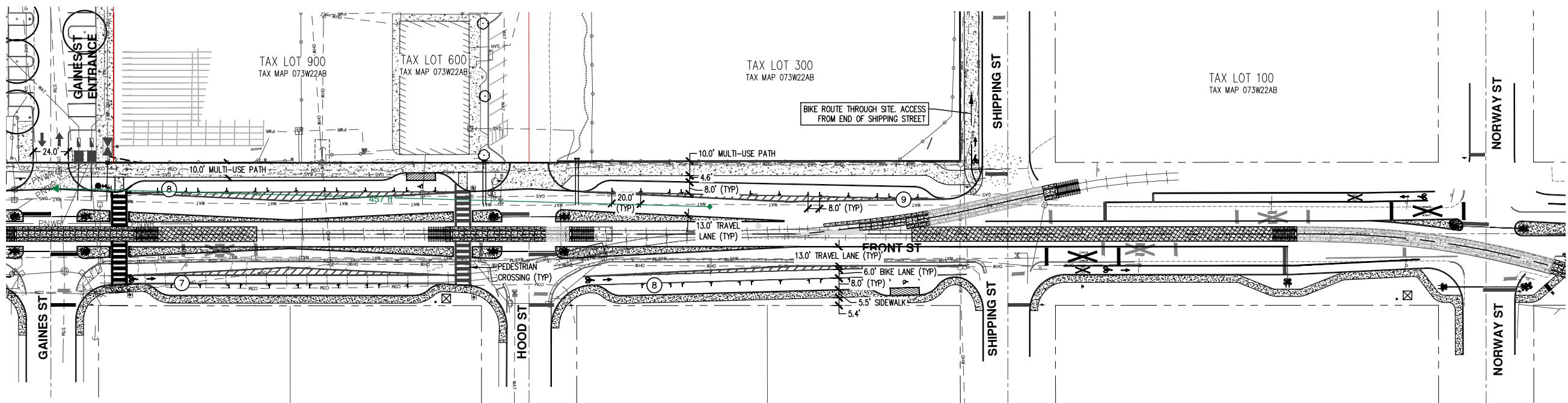
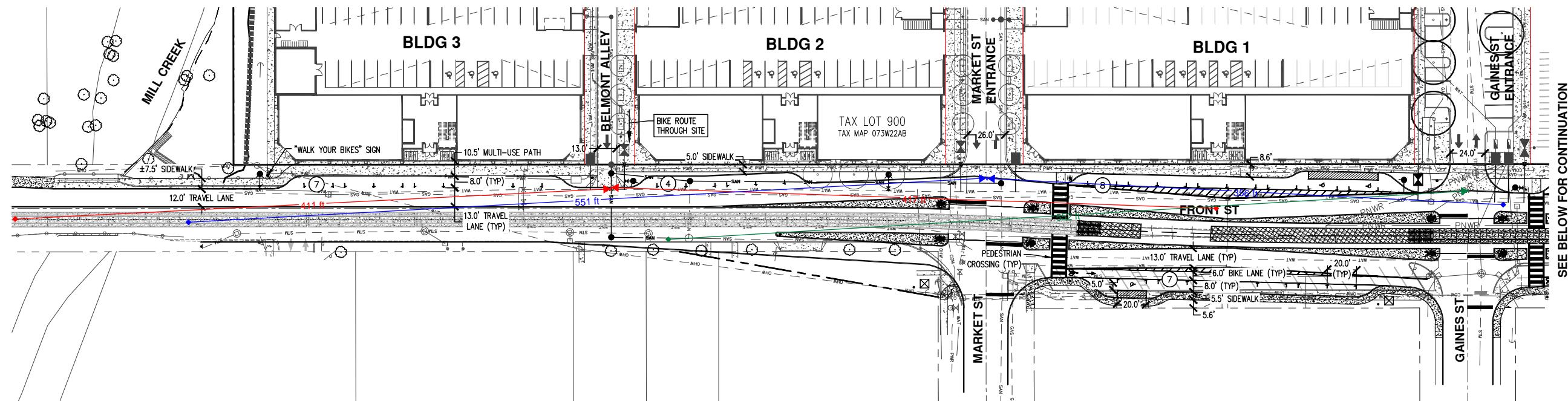
# NUMBER OF PARKING STALLS IN ROW

GENERAL NOTE:

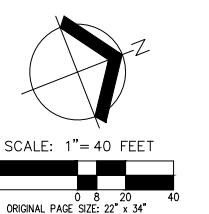
PROPOSED FRONT STREET IMPROVEMENTS ARE SUBJECT TO CHANGE BASED ON RAIL AND CITY FEEDBACK. INFORMATION SHOWN IS BASED ON LATEST COORDINATION EFFORTS WITH THE CITY OF SALEM AND RAILROAD ENGINEER.

SCALE: 1" = 40 FEET  
40 0 8 20 40  
ORIGINAL PAGE SIZE: 22" x 34"



LEGEND:

# NO. OF PARKING STALLS IN ROW



REGISTERED PROFESSIONAL ENGINEER  
NOT FOR CONSTRUCTION  
Preliminary  
CONSTRUCTION  
RENEWED DECEMBER 31, 2024  
R D. ROTH

JOB NUMBER: 5968-01  
DATE: 05/17/2024  
DESIGNED BY: TDR  
DRAWN BY: MJM  
CHECKED BY: TDR



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 AM Peak Hour

Major Street:	Front Street NE	Minor Street:	Gaines Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	835	Peak Hour Volumes:	67

Total Rights RT Discount  
0%

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

### WARRANT 1, CONDITION A

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	8,350	8,850	
Minor Street*	670	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	8,350	13,300	
Minor Street*	670	1,350	No

#### *Combination Warrant*

Major Street	8,350	10,640	
Minor Street*	670	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 PM Peak Hour

Major Street:	Front Street NE	Minor Street:	Gaines Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	1072	Peak Hour Volumes:	49

Total Rights RT Discount

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

### WARRANT 1, CONDITION A

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	10,720	8,850	
Minor Street*	490	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	10,720	13,300	
Minor Street*	490	1,350	No

#### *Combination Warrant*

Major Street	10,720	10,640	
Minor Street*	490	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 AM Peak Hour

Major Street:	Front Street NE	Minor Street:	Market Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	841	Peak Hour Volumes:	92

Total Rights RT Discount

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

### WARRANT 1, CONDITION A

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	8,410	8,850	
Minor Street*	920	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	8,410	13,300	
Minor Street*	920	1,350	No

#### *Combination Warrant*

Major Street	8,410	10,640	
Minor Street*	920	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 PM Peak Hour

Major Street:	Front Street NE	Minor Street:	Market Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	1084	Peak Hour Volumes:	118 63 0%

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:	ADT on Major St. (total of both approaches)	ADT on Minor St. (higher-volume approach)
<u>WARRANT 1, CONDITION A</u>	100%      70%	100%      70%
Major St.	Minor St.	Warrants
1	1	8,850
2 or more	1	10,600
2 or more	2 or more	10,600
1	2 or more	8,850

### WARRANT 1, CONDITION B

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	10,840	8,850	
Minor Street*	1,180	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	10,840	13,300	
Minor Street*	1,180	1,350	No

#### *Combination Warrant*

Major Street	10,840	10,640	
Minor Street*	1,180	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 AM Peak Hour

Major Street:	Front Street NE	Minor Street:	Belmont Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	822	Peak Hour Volumes:	34

Total Rights RT Discount  
0%

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

### WARRANT 1, CONDITION A

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	8,220	8,850	
Minor Street*	340	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	8,220	13,300	
Minor Street*	340	1,350	No

#### *Combination Warrant*

Major Street	8,220	10,640	
Minor Street*	340	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.



## Preliminary Traffic Signal Warrant Analysis

Project: 24009 - The Cannery

Date: 5/31/2024

Scenario: 2029 PM Peak Hour

Major Street:	Front Street NE	Minor Street:	Belmont Street NE
Number of Lanes:	1	Number of Lanes:	1
Peak Hour Volumes:	1065	Peak Hour Volumes:	28 19 0% Total Rights RT Discount

Warrant Used:

100 percent of standard warrants used

70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

### WARRANT 1, CONDITION A

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
------------------	-----------------	------------------------

### *Warrant 1*

#### *Condition A: Minimum Vehicular Volume*

Major Street	10,650	8,850	
Minor Street*	280	2,650	No

#### *Condition B: Interruption of Continuous Traffic*

Major Street	10,650	13,300	
Minor Street*	280	1,350	No

#### *Combination Warrant*

Major Street	10,650	10,640	
Minor Street*	280	2,120	No

\* Minor street right-turning traffic volumes reduced by 0%.

INTERSECTION INFORMATION							
City:	Salem	Condition:		2029 Buildout			
Population:	100000						
Intersection Location: (Rural/Urban)	Urban						
Major Street Name:	Front	Minor Street Name:		Market			
Number of Moving Lanes for Each Approach:	1	Number of Moving Lanes for Each Approach:		1			
Speed:	35 mph	Speed:		25 mph			
Street Width:	35 ft	Street Width:		25 ft			
Direction:	NB	SB	Direction:		EB	WB	
Hour Beginning:			Hour Beginning:				
12:00 AM			12:00 AM				
1:00 AM			1:00 AM				
2:00 AM			2:00 AM				
3:00 AM			3:00 AM				
4:00 AM			4:00 AM				
5:00 AM			5:00 AM				
6:00 AM			6:00 AM				
7:00 AM	374	467	7:00 AM				
8:00 AM			8:00 AM				
9:00 AM			9:00 AM				
10:00 AM			10:00 AM				
11:00 AM			11:00 AM				
12:00 PM			12:00 PM				
1:00 PM			1:00 PM				
2:00 PM			2:00 PM				
3:00 PM			3:00 PM				
4:00 PM			4:00 PM				
5:00 PM	578	506	5:00 PM				
6:00 PM			6:00 PM				
7:00 PM			7:00 PM				
8:00 PM			8:00 PM				
9:00 PM			9:00 PM				
10:00 PM			10:00 PM				
11:00 PM			11:00 PM				
24-hour Total	952	973	24-hour Total	103	210		

**Warrants Evaluated:**

Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A &amp; B

Warrant 2, 4-Hour Vehicular Volume - Evaluated

Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B

Warrant 4, Pedestrian Volume - Not Analyzed

Warrant 5, School Crossing - Not Analyzed

Warrant 6, Coordinated Signal System - Not Analyzed

Warrant 7, Accident Experience - Not Analyzed

Warrant 8, Roadway Network - Not Analyzed

Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

WARRANT 3, PEAK HOUR VEHICULAR VOLUME									
	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
5:00 PM	578	506	1,084	46	118	118	174	Y	N
7:00 AM	374	467	841	57	92	92	251	N	N
11:00 PM	0	0	0	0	0	0	885	N	N
10:00 PM	0	0	0	0	0	0	885	N	N

**Warrant Requirements:**  
Major Street Lanes: 1  
Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**  
Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

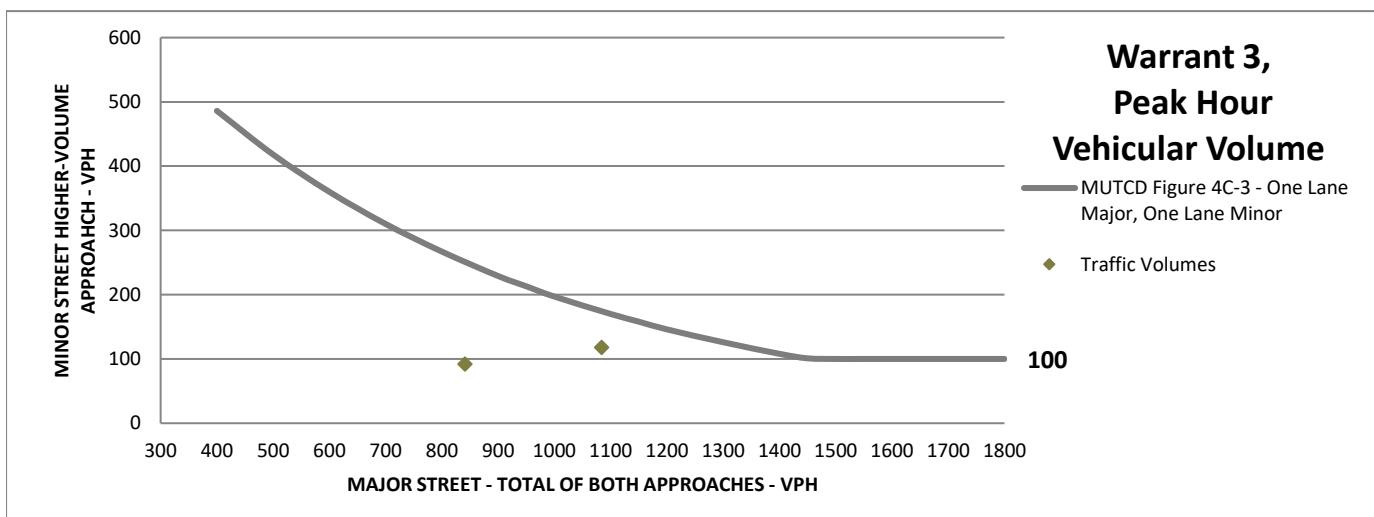
**CONDITION A-2 - Minor Street Volume**  
Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**  
Minimum Volume of Total Approaches: 800

**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

<b>ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET?</b> Note: All 3 subsections of Condition A must be met to warrant signal.	<input checked="" type="checkbox"/> NO <input type="checkbox"/> YES <i>Stopped Delay Needs to be Checked</i>
<b>IS CONDITION B OF SIGNAL WARRANT 3 MET?</b> <input type="checkbox"/> NO <i>Total Stopped Delay is 72 seconds x 118 vehicles = 2.36 vehicles hours of delay. Criteria for Stopped delay is not met. Condition A is not met.</i>	

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



## Appendix D - Operations

Definitions

Synchro Reports

Queuing Reports



## Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



**Level of Service Criteria  
For Signalized Intersections**

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

**Level of Service Criteria  
For Unsignalized Intersections**

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

## Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	1	3	1	46	1	11	4	205	35	5	348	2
Future Vol, veh/h	1	3	1	46	1	11	4	205	35	5	348	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	9	0	18	0	1	9	80	1	0
Mvmt Flow	1	4	1	61	1	15	5	273	47	7	464	3

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	763	809	465	787	787	297	467	0	0	320	0	0
Stage 1	479	479	-	307	307	-	-	-	-	-	-	-
Stage 2	285	331	-	479	480	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.19	6.5	6.38	4.1	-	-	4.9	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.19	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.19	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.581	4	3.462	2.2	-	-	2.92	-	-
Pot Cap-1 Maneuver	323	316	601	301	326	707	1105	-	-	906	-	-
Stage 1	572	559	-	688	664	-	-	-	-	-	-	-
Stage 2	727	649	-	554	558	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	310	311	601	292	321	707	1105	-	-	906	-	-
Mov Cap-2 Maneuver	310	311	-	292	321	-	-	-	-	-	-	-
Stage 1	566	553	-	684	660	-	-	-	-	-	-	-
Stage 2	706	645	-	544	552	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v15.66		19.26			0.14			0.13		
HCM LOS	C	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	29	-	-	344	329	25	-	-		
HCM Lane V/C Ratio	0.005	-	-	0.019	0.235	0.007	-	-		
HCM Control Delay (s/veh)	8.3	0	-	15.7	19.3	9	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0.1	0.9	0	-	-		

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	58	6	83	44	0	0	0	0	27	1549	38
Future Volume (vph)	0	58	6	83	44	0	0	0	0	27	1549	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)												4.0
Lane Util. Factor	1.00	1.00	1.00									0.91
Frpb, ped/bikes	1.00	1.00	1.00									1.00
Flpb, ped/bikes	1.00	1.00	1.00									1.00
Fr <sub>t</sub>	0.99	1.00	1.00									1.00
Flt Protected	1.00	0.95	1.00									1.00
Satd. Flow (prot)	1388		1447	1714								4530
Flt Permitted	1.00	0.71	1.00									1.00
Satd. Flow (perm)	1388		1078	1714								4530
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	69	7	99	52	0	0	0	0	32	1844	45
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	72	0	99	52	0	0	0	0	0	1919	0
Confl. Peds. (#/hr)	2		1	1		2	1		4	4		4
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	29%	17%	18%	5%	0%	0%	0%	0%	7%	8%	5%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4						2		
Actuated Green, G (s)	11.8		11.8	11.8								68.2
Effective Green, g (s)	12.8		12.8	12.8								69.2
Actuated g/C Ratio	0.14		0.14	0.14								0.77
Clearance Time (s)	5.0		5.0	5.0								5.0
Vehicle Extension (s)	2.5		2.5	2.5								2.5
Lane Grp Cap (vph)	197		153	243								3483
v/s Ratio Prot	0.05			0.03								
v/s Ratio Perm		c0.09										0.42
v/c Ratio	0.36		0.65	0.21								0.55
Uniform Delay, d1	34.9		36.5	34.1								4.2
Progression Factor	1.00		0.46	0.39								1.00
Incremental Delay, d2	0.8		7.7	0.3								0.6
Delay (s)	35.8		24.4	13.6								4.8
Level of Service	D		C	B								A
Approach Delay (s/veh)	35.8			20.7			0.0					4.8
Approach LOS	D			C			A					A
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	7.0				HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio	0.57											
Actuated Cycle Length (s)	90.0				Sum of lost time (s)					8.0		
Intersection Capacity Utilization	56.7%				ICU Level of Service					B		
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	58	6	83	44	0	0	0	0	27	1549	38
Future Volume (veh/h)	0	58	6	83	44	0	0	0	0	27	1549	38
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1393	1561	1547	1730	0				1702	1688	1730
Adj Flow Rate, veh/h	0	69	2	99	52	0				32	1844	43
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	29	17	18	5	0				7	8	5
Cap, veh/h	0	221	6	218	284	0				61	3504	82
Arrive On Green	0.00	0.16	0.15	0.16	0.16	0.00				0.74	0.75	0.74
Sat Flow, veh/h	0	1347	39	1159	1730	0				81	4694	109
Grp Volume(v), veh/h	0	0	71	99	52	0				661	603	655
Grp Sat Flow(s), veh/h/ln	0	0	1386	1159	1730	0				1684	1536	1665
Q Serve(g_s), s	0.0	0.0	4.1	7.4	2.3	0.0				14.8	14.7	14.8
Cycle Q Clear(g_c), s	0.0	0.0	4.1	11.5	2.3	0.0				14.8	14.7	14.8
Prop In Lane	0.00		0.03	1.00		0.00				0.05		0.07
Lane Grp Cap(c), veh/h	0	0	228	218	284	0				1257	1147	1243
V/C Ratio(X)	0.00	0.00	0.31	0.45	0.18	0.00				0.53	0.53	0.53
Avail Cap(c_a), veh/h	0	0	308	285	384	0				1257	1147	1243
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.73	0.73	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	33.1	38.2	32.4	0.0				4.8	4.8	4.8
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.8	0.2	0.0				1.6	1.7	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.4	2.1	1.0	0.0				4.3	4.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	33.7	39.0	32.6	0.0				6.3	6.5	6.4
LnGrp LOS			C	D	C					A	A	A
Approach Vol, veh/h		71			151					1919		
Approach Delay, s/veh		33.7			36.8					6.4		
Approach LOS		C			D					A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	71.2		18.8			18.8						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	61.0		19.0			19.0						
Max Q Clear Time (g_c+l1), s	16.8		13.5			6.1						
Green Ext Time (p_c), s	26.1		0.3			0.1						
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh		9.4										
HCM 7th LOS		A										
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	0	1	0	0	2	0	0	0	0
Traffic Volume (vph)	17	43	0	0	127	30	4	1155	89	0	0	0
Future Volume (vph)	17	43	0	0	127	30	4	1155	89	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frpb, ped/bikes	1.00	1.00			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			1.00				
Fr <sub>t</sub>	1.00	1.00			0.97			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1525	1579			1478			4572				
Flt Permitted	0.50	1.00			1.00			1.00				
Satd. Flow (perm)	797	1579			1478			4572				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	18	46	0	0	135	32	4	1229	95	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	6	0	0	0	0
Lane Group Flow (vph)	18	46	0	0	155	0	0	1322	0	0	0	0
Confl. Peds. (#/hr)	1					1			2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	12%	14%	0%	0%	21%	7%	0%	6%	8%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)	14.3	14.3			14.3			65.7				
Effective Green, g (s)	15.3	15.3			15.3			66.7				
Actuated g/C Ratio	0.17	0.17			0.17			0.74				
Clearance Time (s)	5.0	5.0			5.0			5.0				
Vehicle Extension (s)	2.5	2.5			2.5			2.5				
Lane Grp Cap (vph)	135	268			251			3388				
v/s Ratio Prot		0.03			c0.11							
v/s Ratio Perm		0.02						0.29				
v/c Ratio		0.13	0.17		0.62			0.39				
Uniform Delay, d1	31.7	31.9			34.6			4.2				
Progression Factor	1.65	1.63			1.00			1.00				
Incremental Delay, d2	0.3	0.2			3.9			0.3				
Delay (s)	52.8	52.3			38.5			4.6				
Level of Service	D	D			D			A				
Approach Delay (s/veh)		52.4			38.5			4.6		0.0		
Approach LOS		D			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.2			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.43										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		56.7%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (veh/h)	17	43	0	0	127	30	4	1155	89	0	0	0
Future Volume (veh/h)	17	43	0	0	127	30	4	1155	89	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1632	1603	0	0	1505	1702	1800	1716	1688			
Adj Flow Rate, veh/h	18	46	0	0	135	22	4	1229	85			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	12	14	0	0	21	7	0	6	8			
Cap, veh/h	138	245	0	0	193	31	11	3483	241			
Arrive On Green	0.15	0.15	0.00	0.00	0.15	0.14	0.75	0.76	0.75			
Sat Flow, veh/h	1131	1603	0	0	1262	206	15	4594	318			
Grp Volume(v), veh/h	18	46	0	0	0	157	459	418	442			
Grp Sat Flow(s), veh/h/ln	1131	1603	0	0	0	1468	1715	1561	1650			
Q Serve(g_s), s	1.4	2.3	0.0	0.0	0.0	9.1	8.0	7.9	8.0			
Cycle Q Clear(g_c), s	10.5	2.3	0.0	0.0	0.0	9.1	8.0	7.9	8.0			
Prop In Lane	1.00		0.00	0.00		0.14	0.01		0.19			
Lane Grp Cap(c), veh/h	138	245	0	0	0	225	1300	1184	1251			
V/C Ratio(X)	0.13	0.19	0.00	0.00	0.00	0.70	0.35	0.35	0.35			
Avail Cap(c_a), veh/h	317	499	0	0	0	457	1300	1184	1251			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.95	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.1	33.2	0.0	0.0	0.0	36.2	3.6	3.6	3.6			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	2.9	0.8	0.8	0.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.4	0.9	0.0	0.0	0.0	3.4	2.1	1.9	2.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.4	33.5	0.0	0.0	0.0	39.1	4.3	4.4	4.4			
LnGrp LOS	D	C				D	A	A	A			
Approach Vol, veh/h		64			157			1318				
Approach Delay, s/veh		35.7			39.1			4.4				
Approach LOS		D			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s				17.8		72.2		17.8				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				27.0		53.0		27.0				
Max Q Clear Time (g_c+l1), s				11.1		10.0		12.5				
Green Ext Time (p_c), s				0.5		13.6		0.1				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			9.2									
HCM 7th LOS			A									

## Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	3	0	0	1	7	343	5	1	410	3
Future Vol, veh/h	0	0	3	0	0	1	7	343	5	1	410	3
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	33	0	0	0	14	5	0	0	3	33
Mvmt Flow	0	0	4	0	0	1	9	418	6	1	500	4

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	944	950	506	941	949	421	508	0	0	424	0	0
Stage 1	508	508	-	438	438	-	-	-	-	-	-	-
Stage 2	435	441	-	502	510	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.1	6.5	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.5	4	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	244	262	509	245	263	637	998	-	-	1146	-	-
Stage 1	551	542	-	601	582	-	-	-	-	-	-	-
Stage 2	603	580	-	555	541	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	240	258	507	241	258	637	995	-	-	1146	-	-
Mov Cap-2 Maneuver	240	258	-	241	258	-	-	-	-	-	-	-
Stage 1	548	539	-	594	575	-	-	-	-	-	-	-
Stage 2	595	574	-	550	538	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v12.15		10.67			0.17			0.02		
HCM LOS	B	B								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	35	-	-	507	637	4	-	-		
HCM Lane V/C Ratio	0.009	-	-	0.007	0.002	0.001	-	-		
HCM Control Delay (s/veh)	8.7	0	-	12.1	10.7	8.1	0	-		
HCM Lane LOS	A	A	-	B	B	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-		

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	1	8	1	6	0	348	6	1	409	0
Future Vol, veh/h	0	0	1	8	1	6	0	348	6	1	409	0
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	13	0	67	0	4	17	0	3	0
Mvmt Flow	0	0	1	10	1	7	0	414	7	1	487	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	907	914	490	907	910	418	490	0	0	421	0	0
Stage 1	492	492	-	418	418	-	-	-	-	-	-	-
Stage 2	415	421	-	489	492	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.5	6.87	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4	3.903	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	259	275	582	245	277	517	1084	-	-	1149	-	-
Stage 1	562	551	-	591	594	-	-	-	-	-	-	-
Stage 2	619	592	-	540	551	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	253	274	581	244	275	517	1081	-	-	1149	-	-
Mov Cap-2 Maneuver	253	274	-	244	275	-	-	-	-	-	-	-
Stage 1	560	548	-	591	594	-	-	-	-	-	-	-
Stage 2	609	592	-	538	548	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v11.21		17.21	0	0.02
HCM LOS	B	C		
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	1081	-	-	581 313 4
HCM Lane V/C Ratio	-	-	-	0.002 0.057 0.001
HCM Control Delay (s/veh)	0	-	-	11.2 17.2 8.1 0 -
HCM Lane LOS	A	-	-	B C A A -
HCM 95th %tile Q(veh)	0	-	-	0 0.2 0 - -

## Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	2	0	10	4	343	3	1	418	1
Future Vol, veh/h	0	0	0	2	0	10	4	343	3	1	418	1
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	60	0	3	33	100	3	0
Mvmt Flow	0	0	0	2	0	12	5	404	4	1	492	1

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	911	914	495	909	913	405	496	0	0	407	0	0
Stage 1	498	498	-	415	415	-	-	-	-	-	-	-
Stage 2	413	416	-	494	498	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.8	4.1	-	-	5.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.84	2.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	257	275	578	258	276	537	1078	-	-	773	-	-
Stage 1	558	548	-	619	596	-	-	-	-	-	-	-
Stage 2	620	595	-	561	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	249	272	577	256	273	537	1075	-	-	773	-	-
Mov Cap-2 Maneuver	249	272	-	256	273	-	-	-	-	-	-	-
Stage 1	555	545	-	615	593	-	-	-	-	-	-	-
Stage 2	603	592	-	560	545	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	13.18			0.1			0.02		
HCM LOS	A	B								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	21	-	-	-	454	4	-	-		
HCM Lane V/C Ratio	0.004	-	-	-	0.031	0.002	-	-		
HCM Control Delay (s/veh)	8.4	0	-	0	13.2	9.7	0	-		
HCM Lane LOS	A	A	-	A	B	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-		

## Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	17	0	34	0	307	13	26	403	0
Future Vol, veh/h	0	0	0	17	0	34	0	307	13	26	403	0
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	0	6	0	3	0	23	1	0
Mvmt Flow	0	0	0	20	0	40	0	361	15	31	474	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	899	915	477	904	907	369	477	0	0	376	0	0
Stage 1	538	538	-	369	369	-	-	-	-	-	-	-
Stage 2	361	376	-	535	538	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.26	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.354	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	262	275	592	254	278	668	1096	-	-	1076	-	-
Stage 1	531	525	-	643	624	-	-	-	-	-	-	-
Stage 2	661	620	-	522	525	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	236	263	590	244	266	668	1093	-	-	1076	-	-
Mov Cap-2 Maneuver	236	263	-	244	266	-	-	-	-	-	-	-
Stage 1	509	504	-	643	624	-	-	-	-	-	-	-
Stage 2	622	620	-	502	504	-	-	-	-	-	-	-

Approach	EB	WB			NB		SB		
HCM Control Delay, s/v	0	14.92			0		0.51		
HCM LOS	A	B							
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1093	-	-	-	423	109	-	-	
HCM Lane V/C Ratio	-	-	-	-	0.142	0.028	-	-	
HCM Control Delay (s/veh)	0	-	-	0	14.9	8.4	0	-	
HCM Lane LOS	A	-	-	A	B	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0.1	-	-	

# HCM Signalized Intersection Capacity Analysis

## 8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	20	20	47	48	0	0	0	0	33	1503	5
Future Volume (vph)	0	20	20	47	48	0	0	0	0	33	1503	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)						4.0						4.0
Lane Util. Factor		1.00				1.00						0.95
Frpb, ped/bikes		1.00				1.00						1.00
Flpb, ped/bikes		1.00				1.00						1.00
Fr <sub>t</sub>		0.93				1.00						1.00
Flt Protected		1.00				0.98						1.00
Satd. Flow (prot)		1399				1620						3217
Flt Permitted		1.00				0.82						1.00
Satd. Flow (perm)		1399				1360						3217
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	23	23	54	55	0	0	0	0	38	1728	6
RTOR Reduction (vph)	0	20	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	26	0	0	109	0	0	0	0	0	1772	0
Confl. Peds. (#/hr)	2					2	1		2	2		2
Heavy Vehicles (%)	0%	15%	25%	13%	4%	0%	0%	0%	0%	9%	6%	20%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8				4						2
Permitted Phases				4						2		
Actuated Green, G (s)		9.9			9.9							70.1
Effective Green, g (s)		10.9			10.9							71.1
Actuated g/C Ratio		0.12			0.12							0.79
Clearance Time (s)		5.0			5.0							5.0
Vehicle Extension (s)		2.5			2.5							2.5
Lane Grp Cap (vph)		169			164							2541
v/s Ratio Prot		0.02										
v/s Ratio Perm				c0.08								0.55
v/c Ratio		0.15			0.66							0.70
Uniform Delay, d1		35.4			37.8							4.4
Progression Factor		1.00			0.50							1.00
Incremental Delay, d2		0.3			8.4							1.6
Delay (s)		35.7			27.2							6.0
Level of Service		D			C							A
Approach Delay (s/veh)		35.7			27.2			0.0				6.0
Approach LOS		D			C			A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		7.9		HCM 2000 Level of Service						A		
HCM 2000 Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		90.0		Sum of lost time (s)						8.0		
Intersection Capacity Utilization		67.3%		ICU Level of Service						C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	20	20	47	48	0	0	0	0	33	1503	5
Future Volume (veh/h)	0	20	20	47	48	0	0	0	0	33	1503	5
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1589	1449	1617	1744	0				1674	1716	1519
Adj Flow Rate, veh/h	0	23	23	54	55	0				38	1728	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	15	25	13	4	0				9	6	20
Cap, veh/h	0	84	84	122	92	0				58	2660	9
Arrive On Green	0.00	0.12	0.10	0.10	0.12	0.00				0.78	0.80	0.78
Sat Flow, veh/h	0	729	729	542	796	0				73	3341	12
Grp Volume(v), veh/h	0	0	46	109	0	0				886	0	886
Grp Sat Flow(s), veh/h/ln	0	0	1458	1338	0	0				1712	0	1714
Q Serve(g_s), s	0.0	0.0	2.6	4.8	0.0	0.0				19.7	0.0	19.7
Cycle Q Clear(g_c), s	0.0	0.0	2.6	7.4	0.0	0.0				19.7	0.0	19.7
Prop In Lane	0.00		0.50	0.50		0.00				0.04		0.01
Lane Grp Cap(c), veh/h	0	0	168	199	0	0				1363	0	1364
V/C Ratio(X)	0.00	0.00	0.27	0.55	0.00	0.00				0.65	0.00	0.65
Avail Cap(c_a), veh/h	0	0	243	277	0	0				1363	0	1364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.81	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.6	39.0	0.0	0.0				3.9	0.0	3.9
Incr Delay (d2), s/veh	0.0	0.0	0.6	1.4	0.0	0.0				2.4	0.0	2.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.0	2.4	0.0	0.0				5.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	37.3	40.4	0.0	0.0				6.3	0.0	6.3
LnGrp LOS			D	D						A		A
Approach Vol, veh/h		46		109						1772		
Approach Delay, s/veh		37.3		40.4						6.3		
Approach LOS		D		D						A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+R <sub>c</sub> ), s	75.6		14.4			14.4						
Change Period (Y+R <sub>c</sub> ), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	66.0		14.0			14.0						
Max Q Clear Time (g_c+l1), s	21.7		9.4			4.6						
Green Ext Time (p_c), s	26.7		0.1			0.1						
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh		9.0										
HCM 7th LOS		A										
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	42	0	0	92	42	11	1244	38	0	0	0
Future Volume (vph)	1	42	0	0	92	42	11	1244	38	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Fr <sub>t</sub>		1.00			0.96			1.00				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1728			1666			3232				
Flt Permitted		0.99			1.00			1.00				
Satd. Flow (perm)		1720			1666			3232				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	47	0	0	102	47	12	1382	42	0	0	0
RTOR Reduction (vph)	0	0	0	0	21	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	128	0	0	1434	0	0	0	0
Confl. Peds. (#/hr)		1	1				1					
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	100%	2%	0%	0%	5%	0%	36%	5%	5%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		12.2			12.2			67.8				
Effective Green, g (s)		13.2			13.2			68.8				
Actuated g/C Ratio		0.15			0.15			0.76				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		2.5			2.5			2.5				
Lane Grp Cap (vph)		252			244			2470				
v/s Ratio Prot				c0.08								
v/s Ratio Perm		0.03						0.44				
v/c Ratio		0.19			0.52			0.58				
Uniform Delay, d1		33.7			35.5			4.5				
Progression Factor		1.09			1.00			1.00				
Incremental Delay, d2		0.2			1.5			1.0				
Delay (s)		37.1			37.0			5.5				
Level of Service		D			D			A				
Approach Delay (s/veh)		37.1			37.0			5.5		0.0		
Approach LOS		D			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		9.3			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		52.4%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	42	0	0	92	42	11	1244	38	0	0	0
Future Volume (veh/h)	1	42	0	0	92	42	11	1244	38	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	396	1772	0	0	1730	1800	1295	1730	1730			
Adj Flow Rate, veh/h	1	47	0	0	102	47	12	1382	42			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	100	2	0	0	5	0	36	5	5			
Cap, veh/h	42	209	0	0	140	64	23	2601	79			
Arrive On Green	0.11	0.12	0.00	0.00	0.12	0.11	0.78	0.79	0.78			
Sat Flow, veh/h	8	1675	0	0	1121	516	29	3308	100			
Grp Volume(v), veh/h	48	0	0	0	0	149	721	0	715			
Grp Sat Flow(s), veh/h/ln	1683	0	0	0	0	1637	1728	0	1709			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.9	13.8	0.0	13.9			
Cycle Q Clear(g_c), s	7.9	0.0	0.0	0.0	0.0	7.9	13.8	0.0	13.9			
Prop In Lane	0.02		0.00	0.00		0.32	0.02		0.06			
Lane Grp Cap(c), veh/h	232	0	0	0	0	204	1359	0	1344			
V/C Ratio(X)	0.21	0.00	0.00	0.00	0.00	0.73	0.53	0.00	0.53			
Avail Cap(c_a), veh/h	462	0	0	0	0	418	1359	0	1344			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.99	0.00	0.00	0.00	0.00	0.76	1.00	0.00	1.00			
Uniform Delay (d), s/veh	35.4	0.0	0.0	0.0	0.0	38.1	3.5	0.0	3.5			
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.0	2.8	1.5	0.0	1.5			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	1.0	0.0	0.0	0.0	0.0	3.3	3.6	0.0	3.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.8	0.0	0.0	0.0	0.0	40.9	5.0	0.0	5.1			
LnGrp LOS	D					D	A		A			
Approach Vol, veh/h		48			149			1436				
Approach Delay, s/veh		35.8			40.9			5.0				
Approach LOS		D			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s			15.2		74.8		15.2					
Change Period (Y+Rc), s			5.0		5.0		5.0					
Max Green Setting (Gmax), s			22.0		58.0		22.0					
Max Q Clear Time (g_c+l1), s			9.9		15.9		9.9					
Green Ext Time (p_c), s			0.4		18.5		0.1					
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			9.2									
HCM 7th LOS			A									

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	10	71	14	100	122	66	6	394	93	103	610	11
Future Volume (vph)	10	71	14	100	122	66	6	394	93	103	610	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1698	1654		1669	1625		1462	1748	1421	1582	1724	
Flt Permitted	0.55	1.00		0.50	1.00		0.27	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	983	1654		880	1625		409	1748	1421	610	1724	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	12	83	16	116	142	77	7	458	108	120	709	13
RTOR Reduction (vph)	0	6	0	0	16	0	0	0	32	0	0	0
Lane Group Flow (vph)	12	93	0	116	203	0	7	458	76	120	722	0
Confl. Peds. (#/hr)	8		5	5		8	7		3	3		3
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	4%	14%	2%	2%	6%	17%	3%	5%	8%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	19.7	16.5		31.9	23.7		66.3	64.7	75.1	78.1	71.5	
Effective Green, g (s)	21.7	17.5		32.9	24.7		68.3	65.7	77.1	79.1	72.5	
Actuated g/C Ratio	0.18	0.15		0.27	0.21		0.57	0.55	0.64	0.66	0.60	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	202	241		316	334		255	957	960	478	1041	
v/s Ratio Prot	0.00	0.06		c0.03	c0.12		0.00	0.26	0.01	c0.02	c0.42	
v/s Ratio Perm	0.01			0.07			0.01		0.05	0.15		
v/c Ratio	0.06	0.39		0.37	0.61		0.03	0.48	0.08	0.25	0.69	
Uniform Delay, d1	40.6	46.4		34.1	43.3		13.1	16.6	8.1	9.2	16.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.7		0.5	2.6		0.0	1.7	0.0	0.2	3.8	
Delay (s)	40.7	47.1		34.7	45.9		13.1	18.4	8.1	9.4	20.0	
Level of Service	D	D		C	D		B	B	A	A	B	
Approach Delay (s/veh)		46.4			42.0			16.4			18.5	
Approach LOS		D			D			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		23.7										C
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		120.0										16.0
Intersection Capacity Utilization		65.7%										C
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (veh/h)	10	71	14	100	122	66	6	394	93	103	610	11
Future Volume (veh/h)	10	71	14	100	122	66	6	394	93	103	610	11
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98			0.96	0.98		0.95	1.00		0.99	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No		No		No	
Adj Sat Flow, veh/h/ln	1800	1744	1603	1772	1772	1716	1561	1758	1730	1688	1744	1674
Adj Flow Rate, veh/h	12	83	10	116	142	58	7	458	63	120	709	13
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	4	14	2	2	6	17	3	5	8	4	9
Cap, veh/h	156	165	20	260	180	74	363	1071	998	574	1127	21
Arrive On Green	0.03	0.11	0.10	0.08	0.15	0.15	0.02	0.61	0.61	0.07	0.66	0.65
Sat Flow, veh/h	1714	1519	183	1688	1176	480	1487	1758	1458	1607	1706	31
Grp Volume(v), veh/h	12	0	93	116	0	200	7	458	63	120	0	722
Grp Sat Flow(s), veh/h/ln	1714	0	1702	1688	0	1656	1487	1758	1458	1607	0	1737
Q Serve(g_s), s	0.7	0.0	6.2	7.1	0.0	14.0	0.2	16.5	1.7	2.9	0.0	29.0
Cycle Q Clear(g_c), s	0.7	0.0	6.2	7.1	0.0	14.0	0.2	16.5	1.7	2.9	0.0	29.0
Prop In Lane	1.00		0.11	1.00		0.29	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	156	0	185	260	0	254	363	1071	998	574	0	1148
V/C Ratio(X)	0.08	0.00	0.50	0.45	0.00	0.79	0.02	0.43	0.06	0.21	0.00	0.63
Avail Cap(c_a), veh/h	232	0	312	260	0	304	442	1071	998	576	0	1148
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.99	0.00	0.99	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.1	0.0	50.5	41.5	0.0	49.0	10.4	12.4	6.3	7.5	0.0	11.8
Incr Delay (d2), s/veh	0.2	0.0	1.5	0.9	0.0	10.1	0.0	1.3	0.1	0.1	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.3	0.0	2.7	3.0	0.0	6.5	0.1	6.7	0.5	0.9	0.0	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.2	0.0	52.0	42.4	0.0	59.1	10.4	13.6	6.4	7.7	0.0	14.4
LnGrp LOS	D		D	D		E	B	B	A	A		B
Approach Vol, veh/h		105			316			528			842	
Approach Delay, s/veh		51.2			53.0			12.7			13.5	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	83.3	7.6	22.4	12.9	77.1	13.0	17.1				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	63.0	8.0	21.0	8.0	63.0	8.0	21.0				
Max Q Clear Time (g_c+l1), s	2.2	31.0	2.7	16.0	4.9	18.5	9.1	8.2				
Green Ext Time (p_c), s	0.0	7.5	0.0	0.3	0.1	4.2	0.0	0.2				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				22.4								
HCM 7th LOS				C								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	0	0	0	320	420	0
Future Vol, veh/h	0	0	0	320	420	0
Conflicting Peds, #/hr	0	0	3	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	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	0	0	0	376	494	0

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	874	497	497	0	-	0
Stage 1	497	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	323	577	1077	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	321	575	1074	-	-	-
Mov Cap-2 Maneuver	321	-	-	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1074	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑	↑	↑	↑
Traffic Vol, veh/h	353	1135	207	4	0	389
Future Vol, veh/h	353	1135	207	4	0	389
Conflicting Peds, #/hr	8	0	0	8	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	6	6	0	0	1
Mvmt Flow	397	1275	233	4	0	437
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	245	0	-	0	-	241
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	3.3095
Pot Cap-1 Maneuver	1320	-	-	-	0	800
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1310	-	-	-	-	794
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	SB			
HCM Control Delay, s/v	2.12	0	14.93			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1310	-	-	-	794	
HCM Lane V/C Ratio	0.303	-	-	-	0.55	
HCM Control Delay (s/veh)	8.9	-	-	-	14.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	1.3	-	-	-	3.4	

HCM Signalized Intersection Capacity Analysis  
 13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	3	4	2	17	7	1469	7	44	549	3
Future Volume (vph)	2	2	3	4	2	17	7	1469	7	44	549	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)												
	4.0				4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00				1.00			1.00	0.95		1.00	1.00
Frpb, ped/bikes	0.99				0.99			1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00				1.00			1.00	1.00		1.00	1.00
Frt	0.94				0.90			1.00	1.00		1.00	0.85
Flt Protected	0.99				0.99			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1447				1523			1710	3255		1629	1765
Flt Permitted	0.91				0.95			0.40	1.00		0.09	1.00
Satd. Flow (perm)	1329				1451			728	3255		156	1765
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	2	3	4	2	19	8	1651	8	49	617	3
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	7	0	0	8	0	8	1659	0	49	617	2
Confl. Peds. (#/hr)	4		3	3		4	1		2	2		2
Confl. Bikes (#/hr)										1		
Heavy Vehicles (%)	50%	0%	0%	0%	50%	0%	0%	5%	0%	5%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4			6			2		2
Actuated Green, G (s)	5.2			5.2			50.3	49.8		56.7	53.0	53.0
Effective Green, g (s)	6.2			6.2			52.3	50.8		58.7	54.0	54.0
Actuated g/C Ratio	0.08			0.08			0.71	0.69		0.80	0.73	0.73
Clearance Time (s)	5.0			5.0			5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.5			2.5			2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	111			122			536	2243		218	1293	1096
v/s Ratio Prot							0.00	c0.51		c0.01	0.35	
v/s Ratio Perm	c0.01			0.01			0.01			0.17		0.00
v/c Ratio	0.06			0.06			0.01	0.74		0.22	0.48	0.00
Uniform Delay, d1	31.1			31.1			3.2	7.3		5.2	4.0	2.6
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2			0.0	1.2		0.4	0.2	0.0
Delay (s)	31.3			31.2			3.2	8.5		5.6	4.3	2.6
Level of Service	C			C			A	A		A	A	A
Approach Delay (s/veh)	31.3			31.2				8.5			4.3	
Approach LOS	C			C				A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	7.6											A
HCM 2000 Volume to Capacity ratio	0.63											
Actuated Cycle Length (s)	73.7											12.0
Intersection Capacity Utilization	58.5%											B
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	3	4	2	17	7	1469	7	44	549	3
Future Volume (veh/h)	2	2	3	4	2	17	7	1469	7	44	549	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.97		0.98	0.95		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1098	1800	1800	1800	1098	1800	1800	1730	1800	1730	1772	1800
Adj Flow Rate, veh/h	2	2	3	4	2	1	8	1651	8	49	617	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	50	0	0	0	50	0	0	5	0	5	2	0
Cap, veh/h	100	23	35	121	13	7	635	2334	11	325	1284	1105
Arrive On Green	0.03	0.05	0.03	0.03	0.05	0.03	0.02	0.70	0.68	0.05	0.72	0.00
Sat Flow, veh/h	453	453	679	524	262	131	1714	3354	16	1647	1772	1525
Grp Volume(v), veh/h	7	0	0	7	0	0	8	809	850	49	617	0
Grp Sat Flow(s), veh/h/ln	1584	0	0	917	0	0	1714	1643	1726	1647	1772	1525
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.1	17.8	17.8	0.5	8.9	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.4	0.0	0.0	0.1	17.8	17.8	0.5	8.9	0.0
Prop In Lane	0.29		0.43	0.57		0.14	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	132	0	0	126	0	0	635	1144	1201	325	1284	1105
V/C Ratio(X)	0.05	0.00	0.00	0.06	0.00	0.00	0.01	0.71	0.71	0.15	0.48	0.00
Avail Cap(c_a), veh/h	283	0	0	214	0	0	734	1636	1719	483	1882	1620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.6	0.0	0.0	27.7	0.0	0.0	2.8	5.5	5.5	5.1	3.5	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.6	0.2	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	0.0	3.4	3.5	0.1	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.7	0.0	0.0	27.8	0.0	0.0	2.8	6.1	6.1	5.3	3.7	0.0
LnGrp LOS	C			C			A	A	A	A	A	
Approach Vol, veh/h		7			7			1667			666	
Approach Delay, s/veh		27.7			27.8			6.1			3.8	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	47.7		7.1	7.2	45.9		7.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	63.0		8.0	8.0	59.0		8.0				
Max Q Clear Time (g_c+l1), s	2.1	10.9		2.4	2.5	19.8		2.2				
Green Ext Time (p_c), s	0.0	6.3		0.0	0.0	21.1		0.0				

## Intersection Summary

HCM 7th Control Delay, s/veh

5.6

HCM 7th LOS

A

## Notes

User approved pedestrian interval to be less than phase max green.

## Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	6	1	70	5	13	3	366	73	12	323	0
Future Vol, veh/h	0	6	1	70	5	13	3	366	73	12	323	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	3	8	1	0
Mvmt Flow	0	7	1	77	5	14	3	402	80	13	355	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	794	872	356	835	832	443	356	0	0	483	0	0
Stage 1	382	382	-	450	450	-	-	-	-	-	-	-
Stage 2	412	490	-	385	382	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	308	291	693	290	307	619	1214	-	-	1049	-	-
Stage 1	644	616	-	592	575	-	-	-	-	-	-	-
Stage 2	621	552	-	642	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	290	285	692	277	300	618	1213	-	-	1048	-	-
Mov Cap-2 Maneuver	290	285	-	277	300	-	-	-	-	-	-	-
Stage 1	634	606	-	590	572	-	-	-	-	-	-	-
Stage 2	599	549	-	625	606	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v16.87		22.36	0.05	0.3
HCM LOS	C	C		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	12	-	-	311 303
HCM Lane V/C Ratio	0.003	-	-	0.025 0.319
HCM Control Delay (s/veh)	8	0	-	16.9 22.4
HCM Lane LOS	A	A	-	C C
HCM 95th %tile Q(veh)	0	-	-	0.1 1.3

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	92	9	135	60	0	0	0	0	33	1546	50
Future Volume (vph)	0	92	9	135	60	0	0	0	0	33	1546	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor	1.00		1.00	1.00							0.91	
Frpb, ped/bikes	1.00		1.00	1.00							1.00	
Flpb, ped/bikes	1.00		1.00	1.00							1.00	
Fr <sub>t</sub>	0.99		1.00	1.00							1.00	
Flt Protected	1.00		0.95	1.00							1.00	
Satd. Flow (prot)	1730		1673	1800							4792	
Flt Permitted	1.00		0.66	1.00							1.00	
Satd. Flow (perm)	1730		1168	1800							4792	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	97	9	142	63	0	0	0	0	35	1627	53
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	102	0	142	63	0	0	0	0	0	1713	0
Confl. Peds. (#/hr)		2	2			1		1	1		1	
Heavy Vehicles (%)	0%	3%	0%	2%	0%	0%	0%	0%	0%	0%	2%	0%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4								2	
Actuated Green, G (s)	15.4		15.4	15.4							64.6	
Effective Green, g (s)	16.4		16.4	16.4							65.6	
Actuated g/C Ratio	0.18		0.18	0.18							0.73	
Clearance Time (s)	5.0		5.0	5.0							5.0	
Vehicle Extension (s)	2.5		2.5	2.5							2.5	
Lane Grp Cap (vph)	315		212	328							3492	
v/s Ratio Prot	0.06			0.04								
v/s Ratio Perm			c0.12								0.36	
v/c Ratio	0.32		0.67	0.19							0.49	
Uniform Delay, d1	32.0		34.3	31.2							5.1	
Progression Factor	1.00		0.31	0.23							1.00	
Incremental Delay, d2	0.4		6.5	0.2							0.5	
Delay (s)	32.4		17.2	7.3							5.6	
Level of Service	C		B	A							A	
Approach Delay (s/veh)	32.4			14.1				0.0			5.6	
Approach LOS	C			B				A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	7.9		HCM 2000 Level of Service						A			
HCM 2000 Volume to Capacity ratio	0.53											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)					8.0				
Intersection Capacity Utilization	58.6%		ICU Level of Service					B				
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	92	9	135	60	0	0	0	0	33	1546	50
Future Volume (veh/h)	0	92	9	135	60	0	0	0	0	33	1546	50
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1758	1800	1772	1800	0				1800	1772	1800
Adj Flow Rate, veh/h	0	97	6	142	63	0				35	1627	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	2	0	0				0	2	0
Cap, veh/h	0	319	20	266	351	0				75	3487	107
Arrive On Green	0.00	0.19	0.18	0.33	0.33	0.00				0.71	0.72	0.71
Sat Flow, veh/h	0	1638	101	1288	1800	0				105	4870	150
Grp Volume(v), veh/h	0	0	103	142	63	0				590	539	583
Grp Sat Flow(s), veh/h/ln	0	0	1739	1288	1800	0				1767	1612	1745
Q Serve(g_s), s	0.0	0.0	4.6	9.2	2.3	0.0				12.8	12.8	12.9
Cycle Q Clear(g_c), s	0.0	0.0	4.6	13.8	2.3	0.0				12.8	12.8	12.9
Prop In Lane	0.00		0.06	1.00	0.00					0.06		0.09
Lane Grp Cap(c), veh/h	0	0	339	266	351	0				1265	1155	1250
V/C Ratio(X)	0.00	0.00	0.30	0.53	0.18	0.00				0.47	0.47	0.47
Avail Cap(c_a), veh/h	0	0	541	416	560	0				1265	1155	1250
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.69	0.69	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	31.0	31.2	25.2	0.0				5.5	5.4	5.5
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.9	0.1	0.0				1.2	1.4	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.9	2.5	0.9	0.0				4.2	3.8	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	31.4	32.1	25.3	0.0				6.7	6.8	6.7
LnGrp LOS			C	C	C					A	A	A
Approach Vol, veh/h		103			205					1712		
Approach Delay, s/veh		31.4			30.0					6.7		
Approach LOS		C			C					A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	68.5		21.5			21.5						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	53.0		27.0			27.0						
Max Q Clear Time (g_c+l1), s	14.9		15.8			6.6						
Green Ext Time (p_c), s	20.3		0.6			0.3						
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh		10.4										
HCM 7th LOS		B										
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	0	1	0	0	2	0	0	0	0
Traffic Volume (vph)	39	94	0	0	183	30	13	1335	100	0	0	0
Future Volume (vph)	39	94	0	0	183	30	13	1335	100	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frpb, ped/bikes	1.00	1.00			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			1.00				
Fr <sub>t</sub>	1.00	1.00			0.98			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1583	1800			1719			4752				
Flt Permitted	0.39	1.00			1.00			1.00				
Satd. Flow (perm)	642	1800			1719			4752				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	41	100	0	0	195	32	14	1420	106	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	6	0	0	0	0
Lane Group Flow (vph)	41	100	0	0	219	0	0	1534	0	0	0	0
Confl. Peds. (#/hr)			1	1				2	2			2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	8%	0%	0%	0%	2%	7%	0%	2%	4%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)	16.3	16.3			16.3			63.7				
Effective Green, g (s)	17.3	17.3			17.3			64.7				
Actuated g/C Ratio	0.19	0.19			0.19			0.72				
Clearance Time (s)	5.0	5.0			5.0			5.0				
Vehicle Extension (s)	2.5	2.5			2.5			2.5				
Lane Grp Cap (vph)	123	346			330			3416				
v/s Ratio Prot		0.06			c0.13							
v/s Ratio Perm	0.06						0.32					
v/c Ratio	0.33	0.29			0.66			0.45				
Uniform Delay, d1	31.4	31.1			33.7			5.3				
Progression Factor	0.54	0.55			1.00			1.00				
Incremental Delay, d2	1.1	0.3			4.5			0.4				
Delay (s)	18.1	17.3			38.1			5.7				
Level of Service	B	B			D			A				
Approach Delay (s/veh)		17.6			38.1			5.7		0.0		
Approach LOS		B			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.4			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		58.6%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	94	0	0	183	30	13	1335	100	0	0	0
Future Volume (veh/h)	39	94	0	0	183	30	13	1335	100	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1688	1800	0	0	1772	1702	1800	1772	1744			
Adj Flow Rate, veh/h	41	100	0	0	195	26	14	1420	96			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	8	0	0	0	2	7	0	2	4			
Cap, veh/h	159	342	0	0	291	39	34	3406	230			
Arrive On Green	0.38	0.38	0.00	0.00	0.19	0.18	0.71	0.72	0.71			
Sat Flow, veh/h	1105	1800	0	0	1531	204	47	4722	319			
Grp Volume(v), veh/h	41	100	0	0	0	221	532	485	513			
Grp Sat Flow(s), veh/h/ln	1105	1800	0	0	0	1735	1770	1612	1706			
Q Serve(g_s), s	3.1	3.5	0.0	0.0	0.0	10.6	10.8	10.8	10.9			
Cycle Q Clear(g_c), s	13.7	3.5	0.0	0.0	0.0	10.6	10.8	10.8	10.9			
Prop In Lane	1.00		0.00	0.00		0.12	0.03		0.19			
Lane Grp Cap(c), veh/h	159	342	0	0	0	330	1276	1163	1230			
V/C Ratio(X)	0.26	0.29	0.00	0.00	0.00	0.67	0.42	0.42	0.42			
Avail Cap(c_a), veh/h	293	560	0	0	0	540	1276	1163	1230			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.95	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	31.8	23.7	0.0	0.0	0.0	33.9	5.0	5.0	5.0			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	0.0	1.8	1.0	1.1	1.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.7	1.4	0.0	0.0	0.0	4.6	3.3	3.0	3.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.4	24.0	0.0	0.0	0.0	35.7	6.0	6.1	6.1			
LnGrp LOS	C	C				D	A	A	A			
Approach Vol, veh/h		141			221			1530				
Approach Delay, s/veh		26.5			35.7			6.1				
Approach LOS		C			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+R <sub>c</sub> ), s				21.1		68.9		21.1				
Change Period (Y+R <sub>c</sub> ), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				27.0		53.0		27.0				
Max Q Clear Time (g_c+l1), s				12.6		12.9		15.7				
Green Ext Time (p_c), s				0.7		16.6		0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			11.0									
HCM 7th LOS			B									

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	1	5	4	1	0	7	487	2	2	449	1
Future Vol, veh/h	4	1	5	4	1	0	7	487	2	2	449	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	100	0	14	3	0	50	1	0
Mvmt Flow	4	1	5	4	1	0	8	529	2	2	488	1

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1040	1044	491	1041	1043	532	491	0	0	534	0	0
Stage 1	495	495	-	548	548	-	-	-	-	-	-	-
Stage 2	545	549	-	493	495	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	7.5	6.2	4.24	-	-	4.6	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.9	3.3	2.326	-	-	2.65	-	-
Pot Cap-1 Maneuver	210	231	582	210	157	551	1013	-	-	831	-	-
Stage 1	560	549	-	524	388	-	-	-	-	-	-	-
Stage 2	526	520	-	562	413	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	205	227	581	204	154	550	1011	-	-	829	-	-
Mov Cap-2 Maneuver	205	227	-	204	154	-	-	-	-	-	-	-
Stage 1	557	546	-	518	383	-	-	-	-	-	-	-
Stage 2	519	513	-	553	411	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v17.13		24.37	0.12	0.04
HCM LOS	C	C		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	25	-	-	308 191
HCM Lane V/C Ratio	0.008	-	-	0.035 0.028
HCM Control Delay (s/veh)	8.6	0	-	17.1 24.4
HCM Lane LOS	A	A	-	C C
HCM 95th %tile Q(veh)	0	-	-	0.1 0.1

## Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	12	0	2	0	495	5	2	457	0
Future Vol, veh/h	0	0	0	12	0	2	0	495	5	2	457	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	20	0	1	0
Mvmt Flow	0	0	0	13	0	2	0	544	5	2	502	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1054	1062	505	1056	1059	550	505	0	0	552	0	0
Stage 1	510	510	-	550	550	-	-	-	-	-	-	-
Stage 2	544	552	-	507	510	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	206	225	571	205	226	539	1070	-	-	1028	-	-
Stage 1	550	541	-	523	519	-	-	-	-	-	-	-
Stage 2	527	518	-	552	541	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	204	223	569	204	224	537	1067	-	-	1025	-	-
Mov Cap-2 Maneuver	204	223	-	204	224	-	-	-	-	-	-	-
Stage 1	547	538	-	522	518	-	-	-	-	-	-	-
Stage 2	525	516	-	550	538	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	22.29			0			0.04		
HCM LOS	A	C								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1067	-	-	-	224	8	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.069	0.002	-	-		
HCM Control Delay (s/veh)	0	-	-	0	22.3	8.5	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-		

## Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	4	0	1	0	497	1	3	470	0
Future Vol, veh/h	0	0	0	4	0	1	0	497	1	3	470	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	33	1	0
Mvmt Flow	0	0	0	4	0	1	0	546	1	3	516	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1071	1074	518	1072	1074	549	518	0	0	549	0	0
Stage 1	525	525	-	549	549	-	-	-	-	-	-	-
Stage 2	546	549	-	523	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.43	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.497	-	-
Pot Cap-1 Maneuver	200	222	561	200	222	540	1058	-	-	882	-	-
Stage 1	539	533	-	524	520	-	-	-	-	-	-	-
Stage 2	525	520	-	541	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	198	220	560	199	220	539	1056	-	-	880	-	-
Mov Cap-2 Maneuver	198	220	-	199	220	-	-	-	-	-	-	-
Stage 1	536	529	-	523	519	-	-	-	-	-	-	-
Stage 2	524	519	-	538	529	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	21.23			0			0.06		
HCM LOS	A	C								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1056	-	-	-	227	11	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.024	0.004	-	-		
HCM Control Delay (s/veh)	0	-	-	0	21.2	9.1	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-		

## Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	18	0	30	0	471	25	27	444	0
Future Vol, veh/h	0	0	0	18	0	30	0	471	25	27	444	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	11	0	17	0	3	0	0	1	0
Mvmt Flow	0	0	0	20	0	33	0	518	27	30	488	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1070	1102	494	1085	1089	536	493	0	0	550	0	0
Stage 1	552	552	-	536	536	-	-	-	-	-	-	-
Stage 2	518	550	-	548	552	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.21	6.5	6.37	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.599	4	3.453	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	201	213	579	187	217	516	1081	-	-	1030	-	-
Stage 1	521	518	-	512	526	-	-	-	-	-	-	-
Stage 2	545	519	-	505	518	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	179	203	576	178	207	514	1076	-	-	1025	-	-
Mov Cap-2 Maneuver	179	203	-	178	207	-	-	-	-	-	-	-
Stage 1	498	495	-	510	524	-	-	-	-	-	-	-
Stage 2	510	517	-	484	495	-	-	-	-	-	-	-

Approach	EB	WB			NB		SB		
HCM Control Delay, s/v	0	19.47			0		0.49		
HCM LOS	A	C							
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1076	-	-	-	301	103	-	-	
HCM Lane V/C Ratio	-	-	-	-	0.175	0.029	-	-	
HCM Control Delay (s/veh)	0	-	-	0	19.5	8.6	0	-	
HCM Lane LOS	A	-	-	A	C	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	0.1	-	-	

# HCM Signalized Intersection Capacity Analysis

8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	54	16	95	41	0	0	0	0	51	1546	3
Future Volume (vph)	0	54	16	95	41	0	0	0	0	51	1546	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor	1.00			1.00							0.95	
Frpb, ped/bikes	1.00			1.00							1.00	
Flpb, ped/bikes	1.00			1.00							1.00	
Fr <sub>t</sub>	0.97			1.00							1.00	
Flt Protected	1.00			0.97							1.00	
Satd. Flow (prot)	1718			1633							3315	
Flt Permitted	1.00			0.75							1.00	
Satd. Flow (perm)	1718			1259							3315	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	58	17	102	44	0	0	0	0	55	1662	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	63	0	0	146	0	0	0	0	0	1720	0
Confl. Peds. (#/hr)	6				6	8		2	2		2	
Heavy Vehicles (%)	0%	2%	0%	2%	17%	0%	0%	0%	0%	2%	3%	0%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4							2		
Actuated Green, G (s)	14.4			14.4							65.6	
Effective Green, g (s)	15.4			15.4							66.6	
Actuated g/C Ratio	0.17			0.17							0.74	
Clearance Time (s)	5.0			5.0							5.0	
Vehicle Extension (s)	2.5			2.5							2.5	
Lane Grp Cap (vph)	293			215							2453	
v/s Ratio Prot	0.04											
v/s Ratio Perm			c0.12								0.52	
v/c Ratio	0.21			0.68							0.70	
Uniform Delay, d1	32.1			35.0							6.3	
Progression Factor	1.00			0.39							1.00	
Incremental Delay, d2	0.3			6.5							1.7	
Delay (s)	32.4			20.2							8.0	
Level of Service	C			C							A	
Approach Delay (s/veh)	32.4			20.2				0.0			8.0	
Approach LOS	C			C				A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	9.9		HCM 2000 Level of Service								A	
HCM 2000 Volume to Capacity ratio	0.70											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)								8.0	
Intersection Capacity Utilization	71.4%		ICU Level of Service								C	
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	54	16	95	41	0	0	0	0	51	1546	3
Future Volume (veh/h)	0	54	16	95	41	0	0	0	0	51	1546	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1772	1800	1772	1561	0				1772	1758	1800
Adj Flow Rate, veh/h	0	58	5	102	44	0				55	1662	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	2	17	0				2	3	0
Cap, veh/h	0	267	23	186	67	0				84	2527	5
Arrive On Green	0.00	0.17	0.15	0.15	0.17	0.00				0.73	0.75	0.73
Sat Flow, veh/h	0	1608	139	710	403	0				112	3391	6
Grp Volume(v), veh/h	0	0	63	146	0	0				860	0	860
Grp Sat Flow(s), veh/h/ln	0	0	1747	1113	0	0				1752	0	1757
Q Serve(g_s), s	0.0	0.0	2.8	9.0	0.0	0.0				22.1	0.0	22.0
Cycle Q Clear(g_c), s	0.0	0.0	2.8	11.8	0.0	0.0				22.1	0.0	22.0
Prop In Lane	0.00		0.08	0.70		0.00				0.06		0.00
Lane Grp Cap(c), veh/h	0	0	290	240	0	0				1306	0	1309
V/C Ratio(X)	0.00	0.00	0.22	0.61	0.00	0.00				0.66	0.00	0.66
Avail Cap(c_a), veh/h	0	0	369	298	0	0				1306	0	1309
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.67	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	32.5	37.2	0.0	0.0				5.8	0.0	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.3	1.2	0.0	0.0				2.6	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.2	3.2	0.0	0.0				6.9	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	32.8	38.5	0.0	0.0				8.4	0.0	8.3
LnGrp LOS			C	D						A		A
Approach Vol, veh/h		63			146						1720	
Approach Delay, s/veh		32.8			38.5						8.3	
Approach LOS		C			D						A	
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	71.1		18.9			18.9						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	62.0		18.0			18.0						
Max Q Clear Time (g_c+l1), s	24.1		13.8			4.8						
Green Ext Time (p_c), s	23.1		0.2			0.1						

#### Intersection Summary

HCM 7th Control Delay, s/veh 11.4

HCM 7th LOS B

#### Notes

User approved pedestrian interval to be less than phase max green.

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	82	0	0	141	54	2	1438	52	0	0	0
Future Volume (vph)	7	82	0	0	141	54	2	1438	52	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor	1.00				1.00			0.95				
Frpb, ped/bikes	1.00				1.00			1.00				
Flpb, ped/bikes	1.00				1.00			1.00				
Fr <sub>t</sub>	1.00				0.96			0.99				
Flt Protected	1.00				1.00			1.00				
Satd. Flow (prot)		1792				1615			3301			
Flt Permitted		0.97				1.00			1.00			
Satd. Flow (perm)		1744				1615			3301			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	89	0	0	153	59	2	1563	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	97	0	0	196	0	0	1620	0	0	0	0
Confl. Peds. (#/hr)	1		1	1		1	4		3	3		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	6%	9%	0%	3%	2%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)		15.3			15.3			64.7				
Effective Green, g (s)		16.3			16.3			65.7				
Actuated g/C Ratio		0.18			0.18			0.73				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		2.5			2.5			2.5				
Lane Grp Cap (vph)		315			292			2409				
v/s Ratio Prot				c0.12								
v/s Ratio Perm		0.06						0.49				
v/c Ratio		0.31			0.67			0.67				
Uniform Delay, d1		32.0			34.3			6.4				
Progression Factor		0.70			1.00			1.00				
Incremental Delay, d2		0.4			5.2			1.5				
Delay (s)		22.8			39.5			8.0				
Level of Service		C			D			A				
Approach Delay (s/veh)		22.8			39.5			8.0		0.0		
Approach LOS		C			D			A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		12.2			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		63.3%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	82	0	0	141	54	2	1438	52	0	0	0
Future Volume (veh/h)	7	82	0	0	141	54	2	1438	52	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1800	1800	0	0	1716	1674	1800	1758	1772			
Adj Flow Rate, veh/h	8	89	0	0	153	44	2	1563	55			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	6	9	0	3	2			
Cap, veh/h	48	212	0	0	199	57	3	2545	89			
Arrive On Green	0.29	0.31	0.00	0.00	0.16	0.14	0.74	0.76	0.74			
Sat Flow, veh/h	29	1366	0	0	1280	368	4	3368	118			
Grp Volume(v), veh/h	97	0	0	0	0	197	813	0	807			
Grp Sat Flow(s), veh/h/ln	1395	0	0	0	0	1649	1758	0	1733			
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	10.3	18.9	0.0	19.2			
Cycle Q Clear(g_c), s	10.7	0.0	0.0	0.0	0.0	10.3	18.9	0.0	19.2			
Prop In Lane	0.08		0.00	0.00		0.22	0.00		0.07			
Lane Grp Cap(c), veh/h	245	0	0	0	0	256	1328	0	1310			
V/C Ratio(X)	0.40	0.00	0.00	0.00	0.00	0.77	0.61	0.00	0.62			
Avail Cap(c_a), veh/h	399	0	0	0	0	403	1328	0	1310			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.98	0.00	0.00	0.00	0.00	0.60	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.7	0.0	0.0	0.0	0.0	36.6	5.0	0.0	5.0			
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	0.0	2.2	2.1	0.0	2.2			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	1.6	0.0	0.0	0.0	0.0	4.3	5.6	0.0	5.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.4	0.0	0.0	0.0	0.0	38.8	7.1	0.0	7.2			
LnGrp LOS	C					D	A		A			
Approach Vol, veh/h	97				197			1620				
Approach Delay, s/veh	28.4				38.8			7.2				
Approach LOS	C				D			A				
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s				18.0		72.0		18.0				
Change Period (Y+R <sub>c</sub> ), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				21.0		59.0		21.0				
Max Q Clear Time (g_c+l1), s				12.3		21.2		12.7				
Green Ext Time (p_c), s				0.5		21.2		0.2				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				11.5								
HCM 7th LOS				B								

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↑	↑	↑	↓	
Traffic Volume (vph)	16	122	18	164	157	141	17	596	137	119	626	21
Future Volume (vph)	16	122	18	164	157	141	17	596	137	119	626	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1699	1741		1684	1559		1710	1765	1394	1660	1748	
Flt Permitted	0.40	1.00		0.42	1.00		0.23	1.00	1.00	0.21	1.00	
Satd. Flow (perm)	708	1741		740	1559		420	1765	1394	364	1748	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	131	19	176	169	152	18	641	147	128	673	23
RTOR Reduction (vph)	0	4	0	0	26	0	0	0	32	0	1	0
Lane Group Flow (vph)	17	146	0	176	295	0	18	641	115	128	695	0
Confl. Peds. (#/hr)	13		9	9		13	16		30	30		30
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	1%	0%	1%	8%	1%	0%	2%	0%	3%	2%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	22.7	19.5		37.1	28.9		63.0	59.8	72.4	72.8	64.7	
Effective Green, g (s)	24.7	20.5		38.1	29.9		65.0	60.8	74.4	73.9	65.7	
Actuated g/C Ratio	0.21	0.17		0.32	0.25		0.54	0.51	0.62	0.62	0.55	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	180	297		341	388		272	894	910	322	957	
v/s Ratio Prot	0.00	0.08		c0.06	c0.19		0.00	0.36	0.01	c0.03	c0.40	
v/s Ratio Perm	0.02			0.11			0.03		0.07	0.21		
v/c Ratio	0.09	0.49		0.52	0.76		0.07	0.72	0.13	0.40	0.73	
Uniform Delay, d1	38.4	45.0		31.6	41.7		15.5	22.9	9.4	15.0	20.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.9		1.0	7.9		0.1	4.9	0.0	0.6	4.8	
Delay (s)	38.6	46.0		32.6	49.6		15.6	27.8	9.4	15.6	25.2	
Level of Service	D	D		C	D		B	C	A	B	C	
Approach Delay (s/veh)	45.2			43.6			24.2			23.7		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	29.8											C
HCM 2000 Volume to Capacity ratio	0.73											
Actuated Cycle Length (s)	120.0											16.0
Intersection Capacity Utilization	82.2%											E
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↑	↑	↑	↓	
Traffic Volume (veh/h)	16	122	18	164	157	141	17	596	137	119	626	21
Future Volume (veh/h)	16	122	18	164	157	141	17	596	137	119	626	21
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.93	0.98		0.97	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1800	1786	1800	1786	1688	1786	1800	1772	1800	1758	1772	1730
Adj Flow Rate, veh/h	17	131	16	176	169	134	18	641	125	128	673	23
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	1	8	1	0	2	0	3	2	5
Cap, veh/h	153	228	28	328	188	149	348	951	944	375	973	33
Arrive On Green	0.04	0.15	0.14	0.11	0.22	0.21	0.04	0.54	0.54	0.07	0.57	0.56
Sat Flow, veh/h	1714	1547	189	1701	859	681	1714	1772	1452	1674	1700	58
Grp Volume(v), veh/h	17	0	147	176	0	303	18	641	125	128	0	696
Grp Sat Flow(s), veh/h/ln	1714	0	1736	1701	0	1540	1714	1772	1452	1674	0	1758
Q Serve(g_s), s	1.0	0.0	9.5	10.1	0.0	23.0	0.5	31.5	4.0	3.7	0.0	33.7
Cycle Q Clear(g_c), s	1.0	0.0	9.5	10.1	0.0	23.0	0.5	31.5	4.0	3.7	0.0	33.7
Prop In Lane	1.00		0.11	1.00		0.44	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	153	0	256	328	0	337	348	951	944	375	0	1006
V/C Ratio(X)	0.11	0.00	0.57	0.54	0.00	0.90	0.05	0.67	0.13	0.34	0.00	0.69
Avail Cap(c_a), veh/h	218	0	347	328	0	359	411	951	944	376	0	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.96	0.00	0.96	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.1	0.0	47.7	36.0	0.0	45.8	14.6	20.2	8.3	14.8	0.0	18.2
Incr Delay (d2), s/veh	0.2	0.0	1.4	1.4	0.0	23.2	0.0	3.8	0.3	0.4	0.0	3.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	0.0	4.2	4.4	0.0	11.0	0.2	13.6	1.3	1.4	0.0	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.4	0.0	49.1	37.4	0.0	69.0	14.7	24.0	8.6	15.2	0.0	22.1
LnGrp LOS	D		D	D		E	B	C	A	B		C
Approach Vol, veh/h						479			784			824
Approach Delay, s/veh						57.4			21.3			21.0
Approach LOS						E			C			C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	72.7	8.5	30.3	12.9	68.4	17.0	21.7				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	57.0	8.0	27.0	8.0	57.0	12.0	23.0				
Max Q Clear Time (g_c+l1), s	2.5	35.7	3.0	25.0	5.7	33.5	12.1	11.5				
Green Ext Time (p_c), s	0.0	6.2	0.0	0.3	0.1	6.0	0.0	0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh					30.9							
HCM 7th LOS					C							
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	0	0	0	496	462	0
Future Vol, veh/h	0	0	0	496	462	0
Conflicting Peds, #/hr	0	1	0	0	0	5
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	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	0	0	0	545	508	0

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	1058	514	513	0	-	0
Stage 1	513	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	251	565	1063	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	249	561	1058	-	-	-
Mov Cap-2 Maneuver	249	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	582	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	1058	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑↑	↑	↑	↑
Traffic Vol, veh/h	463	1133	178	3	0	464
Future Vol, veh/h	463	1133	178	3	0	464
Conflicting Peds, #/hr	6	0	0	6	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	2	0	0	1
Mvmt Flow	482	1180	185	3	0	483
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	195	0	-	0	-	101
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.23	-	-	-	-	3.31
Pot Cap-1 Maneuver	1369	-	-	-	0	938
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1361	-	-	-	-	931
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	SB			
HCM Control Delay, s/v	2.64	0	12.96			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1361	-	-	-	931	
HCM Lane V/C Ratio	0.354	-	-	-	0.519	
HCM Control Delay (s/veh)	9.1	-	-	-	13	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	1.6	-	-	-	3.1	

HCM Signalized Intersection Capacity Analysis  
 13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	21	18	7	8	30	14	1547	31	108	525	9
Future Volume (vph)	19	21	18	7	8	30	14	1547	31	108	525	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)							4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00						1.00	0.95	1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99						0.98	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00						1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.96						0.91	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.98						0.99	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1667						1593	1707	3311	1710	1765	1493
Flt Permitted	0.88						0.95	0.46	1.00	0.08	1.00	1.00
Satd. Flow (perm)	1491						1520	825	3311	144	1765	1493
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	22	19	7	8	31	15	1611	32	112	547	9
RTOR Reduction (vph)	0	0	0	0	28	0	0	1	0	0	0	3
Lane Group Flow (vph)	0	61	0	0	18	0	15	1642	0	113	547	6
Confl. Peds. (#/hr)	15		11	11		15	4		4	4		4
Confl. Bikes (#/hr)			4			2			2			3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		8				4		1	6		5	2
Permitted Phases	8			4				6			2	2
Actuated Green, G (s)	7.4			7.4			49.7	49.2		60.2	54.7	54.7
Effective Green, g (s)	8.4			8.4			51.7	50.2		61.2	55.7	55.7
Actuated g/C Ratio	0.11			0.11			0.67	0.65		0.79	0.72	0.72
Clearance Time (s)	5.0			5.0			5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.5			2.5			2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	161			164			566	2141		254	1266	1071
v/s Ratio Prot							0.00	c0.50		c0.04	0.31	
v/s Ratio Perm	c0.04			0.01			0.02			0.31		0.00
v/c Ratio	0.38			0.11			0.03	0.77		0.44	0.43	0.01
Uniform Delay, d1	32.2			31.2			4.4	9.6		9.0	4.5	3.1
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1			0.2			0.0	1.6		0.9	0.2	0.0
Delay (s)	33.3			31.5			4.4	11.2		9.9	4.7	3.1
Level of Service	C			C			A	B		A	A	A
Approach Delay (s/veh)	33.3			31.5				11.2			5.5	
Approach LOS	C			C				B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	10.5									B		
HCM 2000 Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	77.6									12.0		
Intersection Capacity Utilization	76.1%									D		
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	21	18	7	8	30	14	1547	31	108	525	9
Future Volume (veh/h)	19	21	18	7	8	30	14	1547	31	108	525	9
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96			0.90	0.94		0.94	1.00		0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1800	1800	1800	1800	1800	1800	1800	1758	1800	1800	1772	1800
Adj Flow Rate, veh/h	20	22	19	7	8	4	15	1611	30	112	547	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	107	85	56	110	105	38	625	2166	40	315	1209	1041
Arrive On Green	0.10	0.12	0.10	0.10	0.12	0.10	0.03	0.65	0.63	0.07	0.68	0.00
Sat Flow, veh/h	326	741	482	338	915	334	1714	3352	62	1714	1772	1525
Grp Volume(v), veh/h	61	0	0	19	0	0	15	801	840	112	547	0
Grp Sat Flow(s), veh/h/ln	1549	0	0	1587	0	0	1714	1670	1745	1714	1772	1525
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	22.6	22.8	1.4	9.8	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.7	0.0	0.0	0.2	22.6	22.8	1.4	9.8	0.0
Prop In Lane	0.33			0.31	0.37		0.21	1.00		0.04	1.00	1.00
Lane Grp Cap(c), veh/h	225	0	0	231	0	0	625	1079	1127	315	1209	1041
V/C Ratio(X)	0.27	0.00	0.00	0.08	0.00	0.00	0.02	0.74	0.75	0.36	0.45	0.00
Avail Cap(c_a), veh/h	269	0	0	275	0	0	700	1423	1487	425	1612	1388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.5	0.0	0.0	27.7	0.0	0.0	4.1	8.3	8.4	9.1	5.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.0	1.3	1.2	0.5	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.0	0.0	0.0	0.3	0.0	0.0	0.0	6.1	6.4	0.7	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	0.0	0.0	27.8	0.0	0.0	4.1	9.6	9.6	9.6	5.2	0.0
LnGrp LOS	C			C			A	A	A	A	A	
Approach Vol, veh/h		61			19			1656			659	
Approach Delay, s/veh		28.9			27.8			9.6			6.0	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	51.3		12.0	8.5	48.7		12.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	62.0		9.0	8.0	58.0		9.0				
Max Q Clear Time (g_c+l1), s	2.2	11.8		2.7	3.4	24.8		4.4				
Green Ext Time (p_c), s	0.0	5.3		0.0	0.1	19.0		0.1				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			9.2									
HCM 7th LOS			A									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

## Intersection

Int Delay, s/veh

2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	1	3	1	47	1	11	4	211	36	5	358	2
Future Vol, veh/h	1	3	1	47	1	11	4	211	36	5	358	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	9	0	18	0	1	9	80	1	0
Mvmt Flow	1	4	1	63	1	15	5	281	48	7	477	3

Major/Minor	Minor2	Minor1			Major1			Major2		
Conflicting Flow All	785	832	479	809	809	305	480	0	0	329
Stage 1	492	492	-	316	316	-	-	-	-	-
Stage 2	293	340	-	493	493	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.19	6.5	6.38	4.1	-	-	4.9
Critical Hdwy Stg 1	6.1	5.5	-	6.19	5.5	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.19	5.5	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.581	4	3.462	2.2	-	-	2.92
Pot Cap-1 Maneuver	313	307	591	291	316	699	1093	-	-	897
Stage 1	562	551	-	680	659	-	-	-	-	-
Stage 2	720	643	-	545	550	-	-	-	-	-
Platoon blocked, %							-	-	-	-
Mov Cap-1 Maneuver	300	302	591	282	311	699	1093	-	-	897
Mov Cap-2 Maneuver	300	302	-	282	311	-	-	-	-	-
Stage 1	557	545	-	676	655	-	-	-	-	-
Stage 2	699	639	-	534	545	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v15.99		20.01			0.13			0.12		
HCM LOS	C	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	28	-	-	334	318	25	-	-		
HCM Lane V/C Ratio	0.005	-	-	0.02	0.248	0.007	-	-		
HCM Control Delay (s/veh)	8.3	0	-	16	20	9	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0.1	1	0	-	-		

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	60	6	85	45	0	0	0	0	28	1595	39
Future Volume (vph)	0	60	6	85	45	0	0	0	0	28	1595	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)												4.0
Lane Util. Factor	1.00			1.00								0.91
Frpb, ped/bikes	1.00			1.00								1.00
Flpb, ped/bikes	1.00			1.00								1.00
Fr <sub>t</sub>	0.99			1.00								1.00
Flt Protected	1.00			0.95	1.00							1.00
Satd. Flow (prot)	1388			1447	1714							4530
Flt Permitted	1.00			0.71	1.00							1.00
Satd. Flow (perm)	1388			1076	1714							4530
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	71	7	101	54	0	0	0	0	33	1899	46
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	74	0	101	54	0	0	0	0	0	1976	0
Confl. Peds. (#/hr)	2		1	1		2	1		4	4		4
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	29%	17%	18%	5%	0%	0%	0%	0%	7%	8%	5%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4							2	
Actuated Green, G (s)	11.9		11.9	11.9								68.1
Effective Green, g (s)	12.9		12.9	12.9								69.1
Actuated g/C Ratio	0.14		0.14	0.14								0.77
Clearance Time (s)	5.0		5.0	5.0								5.0
Vehicle Extension (s)	2.5		2.5	2.5								2.5
Lane Grp Cap (vph)	198		154	245								3478
v/s Ratio Prot	0.05			0.03								
v/s Ratio Perm			c0.09									0.44
v/c Ratio	0.37		0.66	0.22								0.57
Uniform Delay, d1	34.9		36.5	34.1								4.3
Progression Factor	1.00		0.48	0.41								1.00
Incremental Delay, d2	0.9		8.3	0.3								0.7
Delay (s)	35.7		25.7	14.1								5.0
Level of Service	D		C	B								A
Approach Delay (s/veh)	35.7			21.7			0.0					5.0
Approach LOS	D			C			A					A
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	7.2				HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio	0.58											
Actuated Cycle Length (s)	90.0				Sum of lost time (s)					8.0		
Intersection Capacity Utilization	57.7%				ICU Level of Service					B		
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	60	6	85	45	0	0	0	0	28	1595	39
Future Volume (veh/h)	0	60	6	85	45	0	0	0	0	28	1595	39
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1393	1561	1547	1730	0				1702	1688	1730
Adj Flow Rate, veh/h	0	71	2	101	54	0				33	1899	44
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	29	17	18	5	0				7	8	5
Cap, veh/h	0	227	6	221	291	0				61	3487	81
Arrive On Green	0.00	0.17	0.16	0.17	0.17	0.00				0.73	0.74	0.73
Sat Flow, veh/h	0	1348	38	1157	1730	0				82	4694	109
Grp Volume(v), veh/h	0	0	73	101	54	0				681	621	674
Grp Sat Flow(s), veh/h/ln	0	0	1386	1157	1730	0				1684	1536	1665
Q Serve(g_s), s	0.0	0.0	4.2	7.6	2.4	0.0				15.7	15.7	15.8
Cycle Q Clear(g_c), s	0.0	0.0	4.2	11.7	2.4	0.0				15.7	15.7	15.8
Prop In Lane	0.00		0.03	1.00		0.00				0.05		0.07
Lane Grp Cap(c), veh/h	0	0	233	221	291	0				1250	1141	1237
V/C Ratio(X)	0.00	0.00	0.31	0.46	0.19	0.00				0.54	0.54	0.55
Avail Cap(c_a), veh/h	0	0	339	309	423	0				1250	1141	1237
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.72	0.72	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	32.9	38.0	32.1	0.0				5.0	5.0	5.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.8	0.2	0.0				1.7	1.9	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.4	2.2	1.0	0.0				4.7	4.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	33.4	38.8	32.3	0.0				6.7	6.9	6.8
LnGrp LOS			C	D	C					A	A	A
Approach Vol, veh/h		73			155					1976		
Approach Delay, s/veh		33.4			36.5					6.8		
Approach LOS		C			D					A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	70.8		19.2			19.2						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	59.0		21.0			21.0						
Max Q Clear Time (g_c+l1), s	17.8		13.7			6.2						
Green Ext Time (p_c), s	26.0		0.3			0.2						
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh		9.8										
HCM 7th LOS		A										
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	0	0	1	0	0	2	0	0	0	0
Traffic Volume (vph)	18	44	0	0	131	31	4	1190	92	0	0	0
Future Volume (vph)	18	44	0	0	131	31	4	1190	92	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0			4.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			0.91				
Frpb, ped/bikes	1.00	1.00			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			1.00				
Fr <sub>t</sub>	1.00	1.00			0.97			0.99				
Flt Protected	0.95	1.00			1.00			1.00				
Satd. Flow (prot)	1525	1579			1478			4572				
Flt Permitted	0.49	1.00			1.00			1.00				
Satd. Flow (perm)	784	1579			1478			4572				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	47	0	0	139	33	4	1266	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	6	0	0	0	0
Lane Group Flow (vph)	19	47	0	0	160	0	0	1362	0	0	0	0
Confl. Peds. (#/hr)	1					1			2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	12%	14%	0%	0%	21%	7%	0%	6%	8%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)	14.6	14.6			14.6			65.4				
Effective Green, g (s)	15.6	15.6			15.6			66.4				
Actuated g/C Ratio	0.17	0.17			0.17			0.74				
Clearance Time (s)	5.0	5.0			5.0			5.0				
Vehicle Extension (s)	2.5	2.5			2.5			2.5				
Lane Grp Cap (vph)	135	273			256			3373				
v/s Ratio Prot		0.03			c0.11							
v/s Ratio Perm		0.02						0.30				
v/c Ratio		0.14	0.17		0.63			0.40				
Uniform Delay, d1	31.5	31.7			34.5			4.4				
Progression Factor	1.62	1.62			1.00			1.00				
Incremental Delay, d2	0.3	0.2			4.1			0.4				
Delay (s)	51.5	51.5			38.6			4.8				
Level of Service	D	D			D			A				
Approach Delay (s/veh)		51.5			38.6			4.8		0.0		
Approach LOS		D			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		57.7%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	44	0	0	131	31	4	1190	92	0	0	0
Future Volume (veh/h)	18	44	0	0	131	31	4	1190	92	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1632	1603	0	0	1505	1702	1800	1716	1688			
Adj Flow Rate, veh/h	19	47	0	0	139	23	4	1266	88			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	12	14	0	0	21	7	0	6	8			
Cap, veh/h	139	252	0	0	198	33	11	3463	241			
Arrive On Green	0.16	0.16	0.00	0.00	0.16	0.15	0.74	0.75	0.74			
Sat Flow, veh/h	1126	1603	0	0	1259	208	15	4593	319			
Grp Volume(v), veh/h	19	47	0	0	0	162	473	430	455			
Grp Sat Flow(s), veh/h/ln	1126	1603	0	0	0	1467	1715	1561	1650			
Q Serve(g_s), s	1.5	2.3	0.0	0.0	0.0	9.4	8.4	8.4	8.5			
Cycle Q Clear(g_c), s	10.9	2.3	0.0	0.0	0.0	9.4	8.4	8.4	8.5			
Prop In Lane	1.00		0.00	0.00		0.14	0.01		0.19			
Lane Grp Cap(c), veh/h	139	252	0	0	0	231	1293	1177	1244			
V/C Ratio(X)	0.14	0.19	0.00	0.00	0.00	0.70	0.37	0.37	0.37			
Avail Cap(c_a), veh/h	325	517	0	0	0	473	1293	1177	1244			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.95	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.1	32.9	0.0	0.0	0.0	36.0	3.8	3.8	3.8			
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.0	0.0	2.9	0.8	0.9	0.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.4	0.9	0.0	0.0	0.0	3.5	2.3	2.1	2.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.4	33.2	0.0	0.0	0.0	38.9	4.6	4.6	4.6			
LnGrp LOS	D	C				D	A	A	A			
Approach Vol, veh/h		66			162			1358				
Approach Delay, s/veh		35.5			38.9			4.6				
Approach LOS		D			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s				18.1		71.9		18.1				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				28.0		52.0		28.0				
Max Q Clear Time (g_c+l1), s				11.4		10.5		12.9				
Green Ext Time (p_c), s				0.5		14.1		0.2				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			9.4									
HCM 7th LOS			A									

## Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	3	0	0	1	7	353	5	1	422	3
Future Vol, veh/h	0	0	3	0	0	1	7	353	5	1	422	3
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	33	0	0	0	14	5	0	0	3	33
Mvmt Flow	0	0	4	0	0	1	9	430	6	1	515	4

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	970	977	520	968	975	434	522	0	0	437	0	0
Stage 1	523	523	-	451	451	-	-	-	-	-	-	-
Stage 2	448	454	-	517	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.1	6.5	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.5	4	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	234	253	499	235	253	627	986	-	-	1134	-	-
Stage 1	541	534	-	592	575	-	-	-	-	-	-	-
Stage 2	594	573	-	545	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	230	249	497	231	249	627	982	-	-	1134	-	-
Mov Cap-2 Maneuver	230	249	-	231	249	-	-	-	-	-	-	-
Stage 1	538	531	-	585	568	-	-	-	-	-	-	-
Stage 2	586	566	-	540	530	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v12.29		10.76			0.17			0.02		
HCM LOS	B	B								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	34	-	-	497	627	4	-	-		
HCM Lane V/C Ratio	0.009	-	-	0.007	0.002	0.001	-	-		
HCM Control Delay (s/veh)	8.7	0	-	12.3	10.8	8.2	0	-		
HCM Lane LOS	A	A	-	B	B	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-		

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	1	8	1	6	0	358	6	1	421	0
Future Vol, veh/h	0	0	1	8	1	6	0	358	6	1	421	0
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	13	0	67	0	4	17	0	3	0
Mvmt Flow	0	0	1	10	1	7	0	426	7	1	501	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	933	940	504	933	936	430	504	0	0	433	0	0
Stage 1	507	507	-	430	430	-	-	-	-	-	-	-
Stage 2	427	433	-	504	507	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.5	6.87	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4	3.903	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	248	266	572	235	267	508	1071	-	-	1137	-	-
Stage 1	552	543	-	583	587	-	-	-	-	-	-	-
Stage 2	610	585	-	531	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	243	265	570	235	266	508	1068	-	-	1137	-	-
Mov Cap-2 Maneuver	243	265	-	235	266	-	-	-	-	-	-	-
Stage 1	550	540	-	583	587	-	-	-	-	-	-	-
Stage 2	600	585	-	529	540	-	-	-	-	-	-	-

Approach	EB	WB			NB		SB		
HCM Control Delay, s/v11.33		17.67			0		0.02		
HCM LOS	B	C							
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1068	-	-	570	302	4	-	-	
HCM Lane V/C Ratio	-	-	-	0.002	0.059	0.001	-	-	
HCM Control Delay (s/veh)	0	-	-	11.3	17.7	8.2	0	-	
HCM Lane LOS	A	-	-	B	C	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-	

## Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	2	0	10	4	353	3	1	431	1
Future Vol, veh/h	0	0	0	2	0	10	4	353	3	1	431	1
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	60	0	3	33	100	3	0
Mvmt Flow	0	0	0	2	0	12	5	415	4	1	507	1

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	938	941	511	936	940	417	511	0	0	419	0	0
Stage 1	513	513	-	426	426	-	-	-	-	-	-	-
Stage 2	425	428	-	509	514	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.8	4.1	-	-	5.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.84	2.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	247	265	567	247	266	528	1064	-	-	764	-	-
Stage 1	548	539	-	610	589	-	-	-	-	-	-	-
Stage 2	611	588	-	550	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	239	262	565	245	263	528	1061	-	-	764	-	-
Mov Cap-2 Maneuver	239	262	-	245	263	-	-	-	-	-	-	-
Stage 1	545	537	-	606	586	-	-	-	-	-	-	-
Stage 2	594	585	-	549	536	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	13.39			0.09			0.02		
HCM LOS	A	B								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	20	-	-	-	443	4	-	-		
HCM Lane V/C Ratio	0.004	-	-	-	0.032	0.002	-	-		
HCM Control Delay (s/veh)	8.4	0	-	0	13.4	9.7	0	-		
HCM Lane LOS	A	A	-	A	B	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-		

## Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	18	0	35	0	316	13	27	415	0
Future Vol, veh/h	0	0	0	18	0	35	0	316	13	27	415	0
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	0	6	0	3	0	23	1	0
Mvmt Flow	0	0	0	21	0	41	0	372	15	32	488	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	927	942	491	931	934	379	491	0	0	387	0	0
Stage 1	555	555	-	379	379	-	-	-	-	-	-	-
Stage 2	372	387	-	552	555	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.26	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.354	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	251	265	581	243	268	659	1083	-	-	1066	-	-
Stage 1	520	517	-	635	618	-	-	-	-	-	-	-
Stage 2	653	613	-	511	517	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	225	253	580	233	256	659	1080	-	-	1066	-	-
Mov Cap-2 Maneuver	225	253	-	233	256	-	-	-	-	-	-	-
Stage 1	497	494	-	635	618	-	-	-	-	-	-	-
Stage 2	612	613	-	490	494	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	15.45			0			0.52		
HCM LOS	A	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1080	-	-	-	407	110	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.153	0.03	-	-		
HCM Control Delay (s/veh)	0	-	-	0	15.5	8.5	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0.1	-	-		

# HCM Signalized Intersection Capacity Analysis

8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	21	21	48	49	0	0	0	0	34	1548	5
Future Volume (vph)	0	21	21	48	49	0	0	0	0	34	1548	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor	1.00			1.00							0.95	
Frpb, ped/bikes	1.00			1.00							1.00	
Flpb, ped/bikes	1.00			1.00							1.00	
Fr <sub>t</sub>	0.93			1.00							1.00	
Flt Protected	1.00			0.98							1.00	
Satd. Flow (prot)	1399			1619							3217	
Flt Permitted	1.00			0.82							1.00	
Satd. Flow (perm)	1399			1358							3217	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	24	24	55	56	0	0	0	0	39	1779	6
RTOR Reduction (vph)	0	21	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	27	0	0	111	0	0	0	0	0	1824	0
Confl. Peds. (#/hr)	2				2	1		2	2		2	
Heavy Vehicles (%)	0%	15%	25%	13%	4%	0%	0%	0%	0%	9%	6%	20%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4							2		
Actuated Green, G (s)	10.0			10.0							70.0	
Effective Green, g (s)	11.0			11.0							71.0	
Actuated g/C Ratio	0.12			0.12							0.79	
Clearance Time (s)	5.0			5.0							5.0	
Vehicle Extension (s)	2.5			2.5							2.5	
Lane Grp Cap (vph)	170			165							2537	
v/s Ratio Prot	0.02											
v/s Ratio Perm			c0.08								0.57	
v/c Ratio	0.16		0.67								0.72	
Uniform Delay, d1	35.4		37.8								4.6	
Progression Factor	1.00		0.49								1.00	
Incremental Delay, d2	0.3		8.9								1.8	
Delay (s)	35.7		27.4								6.4	
Level of Service	D		C								A	
Approach Delay (s/veh)	35.7		27.4				0.0				6.4	
Approach LOS	D		C				A				A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	8.3		HCM 2000 Level of Service				A					
HCM 2000 Volume to Capacity ratio	0.71											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	68.7%		ICU Level of Service				C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	21	21	48	49	0	0	0	0	34	1548	5
Future Volume (veh/h)	0	21	21	48	49	0	0	0	0	34	1548	5
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1589	1449	1617	1744	0				1674	1716	1519
Adj Flow Rate, veh/h	0	24	2	55	56	0				39	1779	6
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	15	25	13	4	0				9	6	20
Cap, veh/h	0	153	13	127	89	0				59	2692	9
Arrive On Green	0.00	0.11	0.09	0.09	0.11	0.00				0.79	0.81	0.79
Sat Flow, veh/h	0	1447	121	637	848	0				73	3341	11
Grp Volume(v), veh/h	0	0	26	111	0	0				912	0	912
Grp Sat Flow(s), veh/h/ln	0	0	1568	1486	0	0				1712	0	1714
Q Serve(g_s), s	0.0	0.0	1.4	5.3	0.0	0.0				20.0	0.0	19.9
Cycle Q Clear(g_c), s	0.0	0.0	1.4	6.6	0.0	0.0				20.0	0.0	19.9
Prop In Lane	0.00		0.08	0.50		0.00				0.04		0.01
Lane Grp Cap(c), veh/h	0	0	165	200	0	0				1379	0	1381
V/C Ratio(X)	0.00	0.00	0.16	0.55	0.00	0.00				0.66	0.00	0.66
Avail Cap(c_a), veh/h	0	0	261	294	0	0				1379	0	1381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.79	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.7	39.3	0.0	0.0				3.6	0.0	3.6
Incr Delay (d2), s/veh	0.0	0.0	0.3	1.4	0.0	0.0				2.5	0.0	2.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	0.5	2.5	0.0	0.0				4.8	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	37.0	40.7	0.0	0.0				6.2	0.0	6.1
LnGrp LOS			D	D						A		A
Approach Vol, veh/h		26			111						1824	
Approach Delay, s/veh		37.0			40.7						6.1	
Approach LOS		D			D						A	
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+R <sub>c</sub> ), s	76.5		13.5			13.5						
Change Period (Y+R <sub>c</sub> ), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	66.0		14.0			14.0						
Max Q Clear Time (g_c+l1), s	22.0		8.6			3.4						
Green Ext Time (p_c), s	27.8		0.1			0.0						
Intersection Summary												
HCM 7th Control Delay, s/veh			8.5									
HCM 7th LOS			A									
Notes												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	43	0	0	95	43	11	1281	39	0	0	0
Future Volume (vph)	1	43	0	0	95	43	11	1281	39	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Fr <sub>t</sub>		1.00			0.96			1.00				
Flt Protected		1.00			1.00			1.00				
Satd. Flow (prot)		1729			1667			3232				
Flt Permitted		0.99			1.00			1.00				
Satd. Flow (perm)		1721			1667			3232				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	48	0	0	106	48	12	1423	43	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	49	0	0	134	0	0	1476	0	0	0	0
Confl. Peds. (#/hr)		1	1				1					
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	100%	2%	0%	0%	5%	0%	36%	5%	5%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		12.4			12.4			67.6				
Effective Green, g (s)		13.4			13.4			68.6				
Actuated g/C Ratio		0.15			0.15			0.76				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		2.5			2.5			2.5				
Lane Grp Cap (vph)		256			248			2463				
v/s Ratio Prot				c0.08								
v/s Ratio Perm		0.03						0.46				
v/c Ratio		0.19			0.54			0.60				
Uniform Delay, d1		33.6			35.4			4.7				
Progression Factor		1.09			1.00			1.00				
Incremental Delay, d2		0.2			1.7			1.1				
Delay (s)		36.9			37.2			5.8				
Level of Service		D			D			A				
Approach Delay (s/veh)		36.9			37.2			5.8		0.0		
Approach LOS		D			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		9.6			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		53.7%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	43	0	0	95	43	11	1281	39	0	0	0
Future Volume (veh/h)	1	43	0	0	95	43	11	1281	39	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	396	1772	0	0	1730	1800	1295	1730	1730			
Adj Flow Rate, veh/h	1	48	0	0	106	29	12	1423	41			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	100	2	0	0	5	0	36	5	5			
Cap, veh/h	42	190	0	0	150	41	22	2641	76			
Arrive On Green	0.10	0.11	0.00	0.00	0.11	0.10	0.79	0.80	0.79			
Sat Flow, veh/h	9	1665	0	0	1308	358	28	3315	95			
Grp Volume(v), veh/h	49	0	0	0	0	135	741	0	735			
Grp Sat Flow(s), veh/h/ln	1674	0	0	0	0	1665	1728	0	1710			
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.0	13.7	0.0	13.8			
Cycle Q Clear(g_c), s	7.1	0.0	0.0	0.0	0.0	7.0	13.7	0.0	13.8			
Prop In Lane	0.02		0.00	0.00		0.21	0.02		0.06			
Lane Grp Cap(c), veh/h	214	0	0	0	0	191	1377	0	1363			
V/C Ratio(X)	0.23	0.00	0.00	0.00	0.00	0.71	0.54	0.00	0.54			
Avail Cap(c_a), veh/h	442	0	0	0	0	407	1377	0	1363			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.98	0.00	0.00	0.00	0.00	0.74	1.00	0.00	1.00			
Uniform Delay (d), s/veh	36.3	0.0	0.0	0.0	0.0	38.5	3.3	0.0	3.3			
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	0.0	2.7	1.5	0.0	1.5			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	1.0	0.0	0.0	0.0	0.0	3.0	3.4	0.0	3.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.7	0.0	0.0	0.0	0.0	41.2	4.8	0.0	4.8			
LnGrp LOS	D					D	A		A			
Approach Vol, veh/h		49			135			1476				
Approach Delay, s/veh		36.7			41.2			4.8				
Approach LOS		D			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s			14.3		75.7		14.3					
Change Period (Y+Rc), s			5.0		5.0		5.0					
Max Green Setting (Gmax), s			21.0		59.0		21.0					
Max Q Clear Time (g_c+l1), s			9.0		15.8		9.1					
Green Ext Time (p_c), s			0.4		19.6		0.1					
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			8.7									
HCM 7th LOS			A									

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (vph)	10	73	14	103	126	68	6	406	96	106	628	11
Future Volume (vph)	10	73	14	103	126	68	6	406	96	106	628	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1698	1656		1669	1626		1462	1748	1421	1582	1724	
Flt Permitted	0.53	1.00		0.50	1.00		0.25	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	954	1656		871	1626		386	1748	1421	593	1724	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	12	85	16	120	147	79	7	472	112	123	730	13
RTOR Reduction (vph)	0	6	0	0	16	0	0	0	33	0	0	0
Lane Group Flow (vph)	12	95	0	120	210	0	7	472	79	123	743	0
Confl. Peds. (#/hr)	8		5	5		8	7		3	3		3
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	4%	14%	2%	2%	6%	17%	3%	5%	8%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	19.7	16.5		32.0	23.8		66.2	64.6	75.1	78.0	71.4	
Effective Green, g (s)	21.7	17.5		33.0	24.8		68.2	65.6	77.1	79.0	72.4	
Actuated g/C Ratio	0.18	0.15		0.28	0.21		0.57	0.55	0.64	0.66	0.60	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	198	241		316	336		242	955	960	467	1040	
v/s Ratio Prot	0.00	0.06		c0.04	c0.13		0.00	0.27	0.01	c0.02	c0.43	
v/s Ratio Perm	0.01			0.07			0.02		0.05	0.15		
v/c Ratio	0.06	0.39		0.38	0.63		0.03	0.49	0.08	0.26	0.71	
Uniform Delay, d1	40.6	46.4		34.2	43.4		13.4	16.9	8.1	9.4	16.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.8		0.6	3.1		0.0	1.8	0.0	0.2	4.2	
Delay (s)	40.7	47.2		34.7	46.5		13.4	18.7	8.1	9.6	20.8	
Level of Service	D	D		C	D		B	B	A	A	C	
Approach Delay (s/veh)	46.5			42.4			16.7			19.2		
Approach LOS	D			D			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	24.2											C
HCM 2000 Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	120.0											16.0
Intersection Capacity Utilization	66.9%											C
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (veh/h)	10	73	14	103	126	68	6	406	96	106	628	11
Future Volume (veh/h)	10	73	14	103	126	68	6	406	96	106	628	11
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98			0.96	0.98		0.95	1.00		0.99	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No		No		No	
Adj Sat Flow, veh/h/ln	1800	1744	1603	1772	1772	1716	1561	1758	1730	1688	1744	1674
Adj Flow Rate, veh/h	12	85	9	120	147	60	7	472	65	123	730	13
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	4	14	2	2	6	17	3	5	8	4	9
Cap, veh/h	151	169	18	260	182	74	349	1069	996	562	1126	20
Arrive On Green	0.03	0.11	0.10	0.08	0.15	0.15	0.02	0.61	0.61	0.07	0.66	0.65
Sat Flow, veh/h	1714	1543	163	1688	1176	480	1487	1758	1457	1607	1707	30
Grp Volume(v), veh/h	12	0	94	120	0	207	7	472	65	123	0	743
Grp Sat Flow(s), veh/h/ln	1714	0	1707	1688	0	1656	1487	1758	1457	1607	0	1738
Q Serve(g_s), s	0.7	0.0	6.2	7.3	0.0	14.5	0.2	17.3	1.8	3.0	0.0	30.5
Cycle Q Clear(g_c), s	0.7	0.0	6.2	7.3	0.0	14.5	0.2	17.3	1.8	3.0	0.0	30.5
Prop In Lane	1.00		0.10	1.00		0.29	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	151	0	187	260	0	256	349	1069	996	562	0	1146
V/C Ratio(X)	0.08	0.00	0.50	0.46	0.00	0.81	0.02	0.44	0.07	0.22	0.00	0.65
Avail Cap(c_a), veh/h	228	0	299	260	0	290	428	1069	996	564	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.99	0.00	0.99	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	50.4	41.5	0.0	49.2	10.7	12.6	6.3	7.7	0.0	12.1
Incr Delay (d2), s/veh	0.2	0.0	1.5	0.9	0.0	13.4	0.0	1.3	0.1	0.1	0.0	2.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.3	0.0	2.8	3.2	0.0	7.0	0.1	7.0	0.6	1.0	0.0	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.2	0.0	51.9	42.4	0.0	62.6	10.8	13.9	6.4	7.9	0.0	15.0
LnGrp LOS	D		D	D		E	B	B	A	A		B
Approach Vol, veh/h			106			327			544			866
Approach Delay, s/veh			51.1			55.2			13.0			14.0
Approach LOS			D			E			B			B
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	83.2	7.6	22.5	12.9	77.0	13.0	17.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	64.0	8.0	20.0	8.0	64.0	8.0	20.0				
Max Q Clear Time (g_c+l1), s	2.2	32.5	2.7	16.5	5.0	19.3	9.3	8.2				
Green Ext Time (p_c), s	0.0	7.8	0.0	0.3	0.1	4.4	0.0	0.2				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			23.1									
HCM 7th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

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Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
Traffic Vol, veh/h	0	0	0	330	433	0
Future Vol, veh/h	0	0	0	330	433	0
Conflicting Peds, #/hr	0	0	3	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	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	0	0	0	388	509	0

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	901	512	512	0	-	0
Stage 1	512	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	311	566	1063	-	-	-
Stage 1	606	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	310	564	1060	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	604	-	-	-	-	-
Stage 2	688	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s/v 0 0 0

HCM LOS A

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1060	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection						
Int Delay, s/veh	4.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑	↑	↑	↑
Traffic Vol, veh/h	364	1169	213	4	0	401
Future Vol, veh/h	364	1169	213	4	0	401
Conflicting Peds, #/hr	8	0	0	8	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	6	6	0	0	1
Mvmt Flow	409	1313	239	4	0	451
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	252	0	-	0	-	247
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	3.3095
Pot Cap-1 Maneuver	1312	-	-	-	0	793
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1302	-	-	-	-	787
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	SB			
HCM Control Delay, s/v	2.14	0	15.5			
HCM LOS			C			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1302	-	-	-	787	
HCM Lane V/C Ratio	0.314	-	-	-	0.572	
HCM Control Delay (s/veh)	9	-	-	-	15.5	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	1.4	-	-	-	3.7	

HCM Signalized Intersection Capacity Analysis  
 13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	3	4	2	18	7	1513	7	45	565	3
Future Volume (vph)	2	2	3	4	2	18	7	1513	7	45	565	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)							4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00				1.00		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	0.99				0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00				1.00		1.00	1.00		1.00	1.00	1.00
Fr <sub>t</sub>	0.94				0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.99				0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1447				1523		1710	3255		1629	1765	1497
Flt Permitted	0.91				0.95		0.40	1.00		0.08	1.00	1.00
Satd. Flow (perm)	1330				1455		711	3255		143	1765	1497
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	2	3	4	2	20	8	1700	8	51	635	3
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	7	0	0	8	0	8	1708	0	51	635	2
Confl. Peds. (#/hr)	4		3	3		4	1		2	2		2
Confl. Bikes (#/hr)										1		
Heavy Vehicles (%)	50%	0%	0%	0%	50%	0%	0%	5%	0%	5%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		8				4		1	6		5	2
Permitted Phases	8			4				6			2	2
Actuated Green, G (s)	5.3			5.3		51.3	50.8		57.9	54.1	54.1	
Effective Green, g (s)	6.3			6.3		53.3	51.8		59.9	55.1	55.1	
Actuated g/C Ratio	0.08			0.08		0.71	0.69		0.80	0.74	0.74	
Clearance Time (s)	5.0			5.0		5.0	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	2.5			2.5		2.5	2.5		2.5	2.5	2.5	
Lane Grp Cap (vph)	111			122		525	2251		209	1298	1101	
v/s Ratio Prot						0.00	c0.52		c0.02	0.36		
v/s Ratio Perm	0.01			c0.01		0.01			0.18		0.00	
v/c Ratio	0.06			0.06		0.02	0.76		0.24	0.49	0.00	
Uniform Delay, d1	31.6			31.6		3.2	7.5		5.8	4.1	2.6	
Progression Factor	1.00			1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.2			0.2		0.0	1.4		0.4	0.2	0.0	
Delay (s)	31.8			31.7		3.2	8.9		6.2	4.3	2.6	
Level of Service	C			C		A	A		A	A	A	
Approach Delay (s/veh)	31.8			31.7			8.9			4.4		
Approach LOS	C			C			A			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	8.0				HCM 2000 Level of Service				A			
HCM 2000 Volume to Capacity ratio	0.65											
Actuated Cycle Length (s)	74.9				Sum of lost time (s)				12.0			
Intersection Capacity Utilization	59.8%				ICU Level of Service				B			
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	3	4	2	18	7	1513	7	45	565	3
Future Volume (veh/h)	2	2	3	4	2	18	7	1513	7	45	565	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.97		0.98	0.95		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1098	1800	1800	1800	1098	1800	1800	1730	1800	1730	1772	1800
Adj Flow Rate, veh/h	2	2	3	4	2	1	8	1700	8	51	635	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	50	0	0	0	50	0	0	5	0	5	2	0
Cap, veh/h	97	23	34	117	13	7	626	2358	11	315	1298	1117
Arrive On Green	0.03	0.05	0.03	0.03	0.05	0.03	0.02	0.70	0.69	0.05	0.73	0.00
Sat Flow, veh/h	452	453	679	524	262	131	1714	3354	16	1647	1772	1525
Grp Volume(v), veh/h	7	0	0	7	0	0	8	832	876	51	635	0
Grp Sat Flow(s), veh/h/ln	1584	0	0	917	0	0	1714	1643	1727	1647	1772	1525
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.1	19.0	19.0	0.5	9.3	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.4	0.0	0.0	0.1	19.0	19.0	0.5	9.3	0.0
Prop In Lane	0.29		0.43	0.57		0.14	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	129	0	0	123	0	0	626	1155	1214	315	1298	1117
V/C Ratio(X)	0.05	0.00	0.00	0.06	0.00	0.00	0.01	0.72	0.72	0.16	0.49	0.00
Avail Cap(c_a), veh/h	274	0	0	207	0	0	722	1584	1664	465	1821	1568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.5	0.0	0.0	28.6	0.0	0.0	2.8	5.6	5.6	5.5	3.5	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.8	0.8	0.2	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	0.0	3.7	3.9	0.2	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.6	0.0	0.0	28.7	0.0	0.0	2.8	6.4	6.4	5.6	3.7	0.0
LnGrp LOS	C			C			A	A	A	A	A	
Approach Vol, veh/h		7			7			1716			686	
Approach Delay, s/veh		28.6			28.7			6.3			3.8	
Approach LOS		C			C			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	49.6		7.1	7.3	47.8		7.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	63.0		8.0	8.0	59.0		8.0				
Max Q Clear Time (g_c+l1), s	2.1	11.3		2.4	2.5	21.0		2.2				
Green Ext Time (p_c), s	0.0	6.6		0.0	0.0	21.7		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			5.8									
HCM 7th LOS			A									
Notes												
User approved pedestrian interval to be less than phase max green.												

## Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	6	1	72	5	13	3	377	75	12	333	0
Future Vol, veh/h	0	6	1	72	5	13	3	377	75	12	333	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	3	8	1	0
Mvmt Flow	0	7	1	79	5	14	3	414	82	13	366	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	817	898	367	859	856	456	367	0	0	498	0	0
Stage 1	393	393	-	463	463	-	-	-	-	-	-	-
Stage 2	424	504	-	396	393	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	298	281	683	279	297	608	1203	-	-	1036	-	-
Stage 1	636	609	-	583	567	-	-	-	-	-	-	-
Stage 2	612	544	-	634	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	279	275	682	266	291	608	1202	-	-	1035	-	-
Mov Cap-2 Maneuver	279	275	-	266	291	-	-	-	-	-	-	-
Stage 1	625	599	-	580	565	-	-	-	-	-	-	-
Stage 2	590	541	-	616	599	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	17.28	23.58			0.05			0.3		
HCM LOS	C	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	11	-	-	301	291	63	-	-		
HCM Lane V/C Ratio	0.003	-	-	0.026	0.34	0.013	-	-		
HCM Control Delay (s/veh)	8	0	-	17.3	23.6	8.5	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0.1	1.5	0	-	-		

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	95	9	139	62	0	0	0	0	34	1592	52
Future Volume (vph)	0	95	9	139	62	0	0	0	0	34	1592	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor	1.00		1.00	1.00							0.91	
Frpb, ped/bikes	1.00		1.00	1.00							1.00	
Flpb, ped/bikes	1.00		1.00	1.00							1.00	
Fr <sub>t</sub>	0.99		1.00	1.00							1.00	
Flt Protected	1.00		0.95	1.00							1.00	
Satd. Flow (prot)	1730		1673	1800							4792	
Flt Permitted	1.00		0.66	1.00							1.00	
Satd. Flow (perm)	1730		1157	1800							4792	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	100	9	146	65	0	0	0	0	36	1676	55
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	105	0	146	65	0	0	0	0	0	1764	0
Confl. Peds. (#/hr)		2	2			1		1	1		1	
Heavy Vehicles (%)	0%	3%	0%	2%	0%	0%	0%	0%	0%	0%	2%	0%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases		4								2		
Actuated Green, G (s)	15.7		15.7	15.7							64.3	
Effective Green, g (s)	16.7		16.7	16.7							65.3	
Actuated g/C Ratio	0.19		0.19	0.19							0.73	
Clearance Time (s)	5.0		5.0	5.0							5.0	
Vehicle Extension (s)	2.5		2.5	2.5							2.5	
Lane Grp Cap (vph)	321		214	334							3476	
v/s Ratio Prot	0.06			0.04								
v/s Ratio Perm		c0.13									0.37	
v/c Ratio	0.33		0.68	0.19							0.51	
Uniform Delay, d1	31.8		34.2	31.0							5.4	
Progression Factor	1.00		0.27	0.19							1.00	
Incremental Delay, d2	0.4		7.4	0.2							0.5	
Delay (s)	32.2		16.8	6.1							5.9	
Level of Service	C		B	A							A	
Approach Delay (s/veh)	32.2			13.5				0.0			5.9	
Approach LOS	C			B				A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	8.0		HCM 2000 Level of Service							A		
HCM 2000 Volume to Capacity ratio	0.54											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)							8.0		
Intersection Capacity Utilization	59.9%		ICU Level of Service							B		
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	95	9	139	62	0	0	0	0	34	1592	52
Future Volume (veh/h)	0	95	9	139	62	0	0	0	0	34	1592	52
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1758	1800	1772	1800	0				1800	1772	1800
Adj Flow Rate, veh/h	0	100	6	146	65	0				36	1676	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	2	0	0				0	2	0
Cap, veh/h	0	327	20	269	358	0				74	3466	108
Arrive On Green	0.00	0.20	0.19	0.33	0.33	0.00				0.70	0.71	0.70
Sat Flow, veh/h	0	1641	98	1285	1800	0				105	4868	151
Grp Volume(v), veh/h	0	0	106	146	65	0				608	555	601
Grp Sat Flow(s), veh/h/ln	0	0	1740	1285	1800	0				1767	1612	1745
Q Serve(g_s), s	0.0	0.0	4.7	9.5	2.3	0.0				13.6	13.6	13.6
Cycle Q Clear(g_c), s	0.0	0.0	4.7	14.2	2.3	0.0				13.6	13.6	13.6
Prop In Lane	0.00		0.06	1.00		0.00				0.06		0.09
Lane Grp Cap(c), veh/h	0	0	346	269	358	0				1258	1148	1242
V/C Ratio(X)	0.00	0.00	0.31	0.54	0.18	0.00				0.48	0.48	0.48
Avail Cap(c_a), veh/h	0	0	522	399	540	0				1258	1148	1242
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.68	0.68	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	30.8	31.0	24.8	0.0				5.7	5.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.9	0.1	0.0				1.3	1.5	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	2.0	2.6	1.0	0.0				4.5	4.1	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	31.1	31.8	25.0	0.0				7.0	7.1	7.1
LnGrp LOS			C	C	C					A	A	A
Approach Vol, veh/h		106			211					1764		
Approach Delay, s/veh		31.1			29.7					7.1		
Approach LOS		C			C					A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	68.1		21.9			21.9						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	54.0		26.0			26.0						
Max Q Clear Time (g_c+l1), s	15.6		16.2			6.7						
Green Ext Time (p_c), s	21.3		0.6			0.3						

## Intersection Summary

HCM 7th Control Delay, s/veh

10.6

HCM 7th LOS

B

## Notes

User approved pedestrian interval to be less than phase max green.

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (vph)	40	97	0	0	188	31	13	1375	103	0	0	0
Future Volume (vph)	40	97	0	0	188	31	13	1375	103	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0				4.0			4.0			
Lane Util. Factor	1.00	1.00				1.00			0.91			
Frpb, ped/bikes	1.00	1.00				1.00			1.00			
Flpb, ped/bikes	1.00	1.00				1.00			1.00			
Fr <sub>t</sub>	1.00	1.00				0.98			0.99			
Flt Protected	0.95	1.00				1.00			1.00			
Satd. Flow (prot)	1583	1800				1719			4752			
Flt Permitted	0.38	1.00				1.00			1.00			
Satd. Flow (perm)	629	1800				1719			4752			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	103	0	0	200	33	14	1463	110	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	7	0	0	0	0
Lane Group Flow (vph)	43	103	0	0	225	0	0	1580	0	0	0	0
Confl. Peds. (#/hr)			1	1					2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	8%	0%	0%	0%	2%	7%	0%	2%	4%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8					6					
Actuated Green, G (s)	16.6	16.6			16.6			63.4				
Effective Green, g (s)	17.6	17.6			17.6			64.4				
Actuated g/C Ratio	0.20	0.20			0.20			0.72				
Clearance Time (s)	5.0	5.0			5.0			5.0				
Vehicle Extension (s)	2.5	2.5			2.5			2.5				
Lane Grp Cap (vph)	123	352			336			3400				
v/s Ratio Prot		0.06			c0.13							
v/s Ratio Perm		0.07						0.33				
v/c Ratio		0.35	0.29		0.67			0.46				
Uniform Delay, d1	31.3	30.9			33.5			5.5				
Progression Factor	0.55	0.55			1.00			1.00				
Incremental Delay, d2	1.2	0.3			4.5			0.5				
Delay (s)	18.3	17.3			38.0			5.9				
Level of Service	B	B			D			A				
Approach Delay (s/veh)		17.6			38.0			5.9		0.0		
Approach LOS		B			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.6			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.51										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		59.9%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	97	0	0	188	31	13	1375	103	0	0	0
Future Volume (veh/h)	40	97	0	0	188	31	13	1375	103	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1688	1800	0	0	1772	1702	1800	1772	1744			
Adj Flow Rate, veh/h	43	103	0	0	200	27	14	1463	101			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	8	0	0	0	2	7	0	2	4			
Cap, veh/h	161	351	0	0	298	40	32	3377	233			
Arrive On Green	0.39	0.39	0.00	0.00	0.20	0.18	0.70	0.72	0.70			
Sat Flow, veh/h	1099	1800	0	0	1528	206	45	4716	326			
Grp Volume(v), veh/h	43	103	0	0	0	227	549	500	529			
Grp Sat Flow(s), veh/h/ln	1099	1800	0	0	0	1735	1770	1612	1705			
Q Serve(g_s), s	3.3	3.5	0.0	0.0	0.0	10.9	11.5	11.5	11.6			
Cycle Q Clear(g_c), s	14.2	3.5	0.0	0.0	0.0	10.9	11.5	11.5	11.6			
Prop In Lane	1.00		0.00	0.00		0.12	0.03		0.19			
Lane Grp Cap(c), veh/h	161	351	0	0	0	338	1267	1155	1221			
V/C Ratio(X)	0.27	0.29	0.00	0.00	0.00	0.67	0.43	0.43	0.43			
Avail Cap(c_a), veh/h	301	580	0	0	0	559	1267	1155	1221			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.95	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	31.5	23.2	0.0	0.0	0.0	33.6	5.3	5.3	5.3			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	0.0	1.7	1.1	1.2	1.1			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.8	1.4	0.0	0.0	0.0	4.7	3.6	3.3	3.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.1	23.5	0.0	0.0	0.0	35.3	6.3	6.4	6.4			
LnGrp LOS	C	C				D	A	A	A			
Approach Vol, veh/h	146				227			1578				
Approach Delay, s/veh	26.0				35.3			6.4				
Approach LOS	C				D			A				
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				21.6		68.4		21.6				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				28.0		52.0		28.0				
Max Q Clear Time (g_c+l1), s				12.9		13.6		16.2				
Green Ext Time (p_c), s				0.7		17.1		0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				11.2								
HCM 7th LOS				B								

## Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	1	5	4	1	0	7	502	2	2	462	1
Future Vol, veh/h	4	1	5	4	1	0	7	502	2	2	462	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	100	0	14	3	0	50	1	0
Mvmt Flow	4	1	5	4	1	0	8	546	2	2	502	1

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1070	1074	505	1071	1074	549	505	0	0	550	0	0
Stage 1	509	509	-	564	564	-	-	-	-	-	-	-
Stage 2	561	565	-	507	510	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	7.5	6.2	4.24	-	-	4.6	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.9	3.3	2.326	-	-	2.65	-	-
Pot Cap-1 Maneuver	200	222	571	200	149	540	1000	-	-	818	-	-
Stage 1	550	541	-	514	380	-	-	-	-	-	-	-
Stage 2	516	511	-	552	406	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	196	218	570	194	147	539	999	-	-	817	-	-
Mov Cap-2 Maneuver	196	218	-	194	147	-	-	-	-	-	-	-
Stage 1	547	538	-	507	375	-	-	-	-	-	-	-
Stage 2	508	505	-	543	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	17.63	25.36	0.12	0.04
HCM LOS	C	D		
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	25	-	-	296 182
HCM Lane V/C Ratio	0.008	-	-	0.037 0.03
HCM Control Delay (s/veh)	8.6	0	-	17.6 25.4
HCM Lane LOS	A	A	-	C D
HCM 95th %tile Q(veh)	0	-	-	0.1 0.1

## Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	12	0	2	0	510	5	2	471	0
Future Vol, veh/h	0	0	0	12	0	2	0	510	5	2	471	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	20	0	1	0
Mvmt Flow	0	0	0	13	0	2	0	560	5	2	518	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1085	1094	521	1088	1091	566	521	0	0	569	0	0
Stage 1	525	525	-	566	566	-	-	-	-	-	-	-
Stage 2	560	569	-	522	525	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	196	216	560	195	217	527	1056	-	-	1013	-	-
Stage 1	540	533	-	512	511	-	-	-	-	-	-	-
Stage 2	516	509	-	542	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	194	214	558	194	215	526	1053	-	-	1011	-	-
Mov Cap-2 Maneuver	194	214	-	194	215	-	-	-	-	-	-	-
Stage 1	536	530	-	511	509	-	-	-	-	-	-	-
Stage 2	514	508	-	540	530	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	23.21			0			0.04		
HCM LOS	A	C								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1053	-	-	-	213	8	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.072	0.002	-	-		
HCM Control Delay (s/veh)	0	-	-	0	23.2	8.6	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-	-		

## Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	4	0	1	0	512	1	3	484	0
Future Vol, veh/h	0	0	0	4	0	1	0	512	1	3	484	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	33	1	0
Mvmt Flow	0	0	0	4	0	1	0	563	1	3	532	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1103	1106	534	1104	1106	565	534	0	0	566	0	0
Stage 1	540	540	-	565	565	-	-	-	-	-	-	-
Stage 2	563	566	-	538	540	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.43	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.497	-	-
Pot Cap-1 Maneuver	190	212	550	190	212	528	1044	-	-	869	-	-
Stage 1	529	524	-	513	511	-	-	-	-	-	-	-
Stage 2	515	511	-	531	524	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	189	210	549	189	210	527	1042	-	-	867	-	-
Mov Cap-2 Maneuver	189	210	-	189	210	-	-	-	-	-	-	-
Stage 1	525	520	-	512	510	-	-	-	-	-	-	-
Stage 2	514	510	-	528	520	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	22.05			0			0.06		
HCM LOS	A	C								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1042	-	-	-	217	11	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.025	0.004	-	-		
HCM Control Delay (s/veh)	0	-	-	0	22	9.2	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-		

## Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	19	0	31	0	485	26	28	457	0
Future Vol, veh/h	0	0	0	19	0	31	0	485	26	28	457	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	11	0	17	0	3	0	0	1	0
Mvmt Flow	0	0	0	21	0	34	0	533	29	31	502	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1102	1135	508	1117	1121	552	507	0	0	567	0	0
Stage 1	569	569	-	552	552	-	-	-	-	-	-	-
Stage 2	533	567	-	565	569	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.21	6.5	6.37	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.599	4	3.453	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	191	204	569	177	208	505	1068	-	-	1015	-	-
Stage 1	511	509	-	502	518	-	-	-	-	-	-	-
Stage 2	534	510	-	494	509	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	170	193	565	169	197	503	1063	-	-	1011	-	-
Mov Cap-2 Maneuver	170	193	-	169	197	-	-	-	-	-	-	-
Stage 1	487	485	-	500	515	-	-	-	-	-	-	-
Stage 2	498	508	-	473	485	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	0	20.48			0			0.5		
HCM LOS	A	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1063	-	-	-	287	104	-	-		
HCM Lane V/C Ratio	-	-	-	-	0.191	0.03	-	-		
HCM Control Delay (s/veh)	0	-	-	0	20.5	8.7	0	-		
HCM Lane LOS	A	-	-	A	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	-	0.7	0.1	-	-		

# HCM Signalized Intersection Capacity Analysis

## 8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	56	16	98	42	0	0	0	0	53	1592	3
Future Volume (vph)	0	56	16	98	42	0	0	0	0	53	1592	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor	1.00			1.00							0.95	
Frpb, ped/bikes	1.00			1.00							1.00	
Flpb, ped/bikes	1.00			1.00							1.00	
Fr <sub>t</sub>	0.97			1.00							1.00	
Flt Protected	1.00			0.97							1.00	
Satd. Flow (prot)	1720			1633							3315	
Flt Permitted	1.00			0.74							1.00	
Satd. Flow (perm)	1720			1256							3315	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	60	17	105	45	0	0	0	0	57	1712	3
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	65	0	0	150	0	0	0	0	0	1772	0
Confl. Peds. (#/hr)	6				6	8		2	2		2	
Heavy Vehicles (%)	0%	2%	0%	2%	17%	0%	0%	0%	0%	2%	3%	0%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4							2		
Actuated Green, G (s)	14.8			14.8							65.2	
Effective Green, g (s)	15.8			15.8							66.2	
Actuated g/C Ratio	0.18			0.18							0.74	
Clearance Time (s)	5.0			5.0							5.0	
Vehicle Extension (s)	2.5			2.5							2.5	
Lane Grp Cap (vph)	301			220							2438	
v/s Ratio Prot	0.04											
v/s Ratio Perm			c0.12								0.53	
v/c Ratio	0.21			0.68							0.73	
Uniform Delay, d1	31.8			34.7							6.8	
Progression Factor	1.00			0.44							1.00	
Incremental Delay, d2	0.3			6.5							1.9	
Delay (s)	32.0			21.9							8.7	
Level of Service	C			C							A	
Approach Delay (s/veh)	32.0			21.9			0.0				8.7	
Approach LOS	C			C			A				A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	10.6		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.72											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	72.9%		ICU Level of Service				C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	16	98	42	0	0	0	0	53	1592	3
Future Volume (veh/h)	0	56	16	98	42	0	0	0	0	53	1592	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1772	1800	1772	1561	0				1772	1758	1800
Adj Flow Rate, veh/h	0	60	5	105	45	0				57	1712	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	2	17	0				2	3	0
Cap, veh/h	0	275	23	189	68	0				84	2511	4
Arrive On Green	0.00	0.17	0.16	0.16	0.17	0.00				0.73	0.74	0.73
Sat Flow, veh/h	0	1613	134	711	398	0				113	3390	6
Grp Volume(v), veh/h	0	0	65	150	0	0				886	0	886
Grp Sat Flow(s), veh/h/ln	0	0	1748	1109	0	0				1752	0	1757
Q Serve(g_s), s	0.0	0.0	2.9	9.3	0.0	0.0				23.9	0.0	23.8
Cycle Q Clear(g_c), s	0.0	0.0	2.9	12.2	0.0	0.0				23.9	0.0	23.8
Prop In Lane	0.00		0.08	0.70		0.00				0.06		0.00
Lane Grp Cap(c), veh/h	0	0	298	245	0	0				1298	0	1301
V/C Ratio(X)	0.00	0.00	0.22	0.61	0.00	0.00				0.68	0.00	0.68
Avail Cap(c_a), veh/h	0	0	388	311	0	0				1298	0	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.64	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	32.2	37.1	0.0	0.0				6.1	0.0	6.1
Incr Delay (d2), s/veh	0.0	0.0	0.3	1.2	0.0	0.0				2.9	0.0	2.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.2	3.3	0.0	0.0				7.5	0.0	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	32.5	38.3	0.0	0.0				9.1	0.0	9.0
LnGrp LOS			C	D						A		A
Approach Vol, veh/h		65			150						1772	
Approach Delay, s/veh		32.5			38.3						9.0	
Approach LOS		C			D						A	
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	70.7		19.3			19.3						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	61.0		19.0			19.0						
Max Q Clear Time (g_c+l1), s	25.9		14.2			4.9						
Green Ext Time (p_c), s	23.0		0.2			0.1						
Intersection Summary												
HCM 7th Control Delay, s/veh		12.0										
HCM 7th LOS		B										
Notes												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	84	0	0	145	56	2	1481	54	0	0	0
Future Volume (vph)	7	84	0	0	145	56	2	1481	54	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor	1.00				1.00			0.95				
Frpb, ped/bikes	1.00				1.00			1.00				
Flpb, ped/bikes	1.00				1.00			1.00				
Fr <sub>t</sub>	1.00				0.96			0.99				
Flt Protected	1.00				1.00			1.00				
Satd. Flow (prot)	1793				1615			3301				
Flt Permitted	0.97				1.00			1.00				
Satd. Flow (perm)	1744				1615			3301				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	91	0	0	158	61	2	1610	59	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	99	0	0	203	0	0	1669	0	0	0	0
Confl. Peds. (#/hr)	1		1	1		1	4		3	3	3	3
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	0%	0%	6%	9%	0%	3%	2%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)	15.4				15.4			64.6				
Effective Green, g (s)	16.4				16.4			65.6				
Actuated g/C Ratio	0.18				0.18			0.73				
Clearance Time (s)	5.0				5.0			5.0				
Vehicle Extension (s)	2.5				2.5			2.5				
Lane Grp Cap (vph)	317				294			2406				
v/s Ratio Prot					c0.13							
v/s Ratio Perm	0.06							0.51				
v/c Ratio	0.31				0.69			0.69				
Uniform Delay, d1	31.9				34.4			6.7				
Progression Factor	0.69				1.00			1.00				
Incremental Delay, d2	0.4				6.0			1.7				
Delay (s)	22.5				40.5			8.4				
Level of Service	C				D			A				
Approach Delay (s/veh)	22.5				40.5			8.4		0.0		
Approach LOS	C				D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	12.6				HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio	0.69											
Actuated Cycle Length (s)	90.0				Sum of lost time (s)			8.0				
Intersection Capacity Utilization	65.0%				ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	84	0	0	145	56	2	1481	54	0	0	0
Future Volume (veh/h)	7	84	0	0	145	56	2	1481	54	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1800	1800	0	0	1716	1674	1800	1758	1772			
Adj Flow Rate, veh/h	8	91	0	0	158	46	2	1610	56			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	6	9	0	3	2			
Cap, veh/h	48	218	0	0	204	59	3	2533	88			
Arrive On Green	0.30	0.32	0.00	0.00	0.16	0.15	0.74	0.75	0.74			
Sat Flow, veh/h	28	1365	0	0	1276	372	4	3370	117			
Grp Volume(v), veh/h	99	0	0	0	0	204	837	0	831			
Grp Sat Flow(s), veh/h/ln	1393	0	0	0	0	1648	1758	0	1734			
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	10.7	20.3	0.0	20.6			
Cycle Q Clear(g_c), s	11.1	0.0	0.0	0.0	0.0	10.7	20.3	0.0	20.6			
Prop In Lane	0.08		0.00	0.00		0.23	0.00		0.07			
Lane Grp Cap(c), veh/h	250	0	0	0	0	263	1321	0	1303			
V/C Ratio(X)	0.40	0.00	0.00	0.00	0.00	0.78	0.63	0.00	0.64			
Avail Cap(c_a), veh/h	378	0	0	0	0	385	1321	0	1303			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.98	0.00	0.00	0.00	0.00	0.58	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.2	0.0	0.0	0.0	0.0	36.4	5.3	0.0	5.4			
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.0	0.0	2.8	2.3	0.0	2.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	1.6	0.0	0.0	0.0	0.0	4.5	6.2	0.0	6.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.0	0.0	0.0	0.0	0.0	39.2	7.6	0.0	7.8			
LnGrp LOS	C					D	A		A			
Approach Vol, veh/h	99			204			1668					
Approach Delay, s/veh	28.0			39.2			7.7					
Approach LOS	C			D			A					
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s			18.4		71.6		18.4					
Change Period (Y+Rc), s			5.0		5.0		5.0					
Max Green Setting (Gmax), s			20.0		60.0		20.0					
Max Q Clear Time (g_c+l1), s			12.7		22.6		13.1					
Green Ext Time (p_c), s			0.4		22.0		0.1					
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			12.0									
HCM 7th LOS			B									

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↓	
Traffic Volume (vph)	16	126	19	169	162	145	18	614	141	123	645	22
Future Volume (vph)	16	126	19	169	162	145	18	614	141	123	645	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1700	1740		1684	1559		1710	1765	1395	1660	1748	
Flt Permitted	0.38	1.00		0.41	1.00		0.22	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	685	1740		723	1559		388	1765	1395	336	1748	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	135	20	182	174	156	19	660	152	132	694	24
RTOR Reduction (vph)	0	5	0	0	26	0	0	0	32	0	1	0
Lane Group Flow (vph)	17	150	0	182	304	0	19	660	120	132	717	0
Confl. Peds. (#/hr)	13		9	9		13	16		30	30		30
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	1%	0%	1%	8%	1%	0%	2%	0%	3%	2%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	22.8	19.6		37.4	29.2		62.6	59.4	72.2	72.6	64.4	
Effective Green, g (s)	24.8	20.6		38.4	30.2		64.6	60.4	74.2	73.6	65.4	
Actuated g/C Ratio	0.21	0.17		0.32	0.25		0.54	0.50	0.62	0.61	0.55	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	177	298		341	392		255	888	909	307	952	
v/s Ratio Prot	0.00	0.09		c0.06	c0.19		0.00	0.37	0.02	c0.03	c0.41	
v/s Ratio Perm	0.02			0.11			0.04		0.07	0.23		
v/c Ratio	0.10	0.50		0.53	0.78		0.07	0.74	0.13	0.43	0.75	
Uniform Delay, d1	38.3	45.1		31.5	41.7		16.1	23.6	9.5	15.8	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	1.0		1.2	8.9		0.1	5.6	0.0	0.7	5.5	
Delay (s)	38.5	46.0		32.8	50.6		16.2	29.2	9.6	16.5	26.6	
Level of Service	D	D		C	D		B	C	A	B	C	
Approach Delay (s/veh)	45.3			44.3			25.3			25.0		
Approach LOS	D			D			C			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	30.8											C
HCM 2000 Volume to Capacity ratio	0.75											
Actuated Cycle Length (s)	120.0											16.0
Intersection Capacity Utilization	83.6%											E
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (veh/h)	16	126	19	169	162	145	18	614	141	123	645	22
Future Volume (veh/h)	16	126	19	169	162	145	18	614	141	123	645	22
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.93	0.98		0.97	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1800	1786	1800	1786	1688	1786	1800	1772	1800	1758	1772	1730
Adj Flow Rate, veh/h	17	135	16	182	174	128	19	660	108	132	694	23
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	1	8	1	0	2	0	3	2	5
Cap, veh/h	153	228	27	324	194	143	335	953	946	367	974	32
Arrive On Green	0.04	0.15	0.14	0.11	0.22	0.21	0.04	0.54	0.54	0.07	0.57	0.56
Sat Flow, veh/h	1714	1553	184	1701	890	655	1714	1772	1452	1674	1702	56
Grp Volume(v), veh/h	17	0	151	182	0	302	19	660	108	132	0	717
Grp Sat Flow(s), veh/h/ln	1714	0	1737	1701	0	1545	1714	1772	1452	1674	0	1759
Q Serve(g_s), s	1.0	0.0	9.8	10.5	0.0	22.8	0.6	32.9	3.4	3.8	0.0	35.4
Cycle Q Clear(g_c), s	1.0	0.0	9.8	10.5	0.0	22.8	0.6	32.9	3.4	3.8	0.0	35.4
Prop In Lane	1.00		0.11	1.00		0.42	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	153	0	254	324	0	336	335	953	946	367	0	1006
V/C Ratio(X)	0.11	0.00	0.59	0.56	0.00	0.90	0.06	0.69	0.11	0.36	0.00	0.71
Avail Cap(c_a), veh/h	218	0	347	324	0	361	396	953	946	368	0	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.96	0.00	0.96	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.2	0.0	47.9	36.3	0.0	45.9	15.0	20.4	8.1	15.3	0.0	18.6
Incr Delay (d2), s/veh	0.2	0.0	1.6	1.9	0.0	22.9	0.1	4.1	0.2	0.4	0.0	4.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	0.0	4.4	4.6	0.0	10.9	0.2	14.3	1.1	1.4	0.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.5	0.0	49.5	38.2	0.0	68.7	15.1	24.6	8.4	15.7	0.0	22.8
LnGrp LOS	D		D	D		E	B	C	A	B		C
Approach Vol, veh/h			168			484			787			849
Approach Delay, s/veh			48.7			57.2			22.1			21.7
Approach LOS			D			E			C			C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	72.7	8.5	30.1	12.9	68.5	17.0	21.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	57.0	8.0	27.0	8.0	57.0	12.0	23.0				
Max Q Clear Time (g_c+l1), s	2.6	37.4	3.0	24.8	5.8	34.9	12.5	11.8				
Green Ext Time (p_c), s	0.0	6.2	0.0	0.3	0.1	6.0	0.0	0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			31.4									
HCM 7th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

## Intersection

Int Delay, s/veh 0

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations



Traffic Vol, veh/h 0 0 0 511 476 0

Future Vol, veh/h 0 0 0 511 476 0

Conflicting Peds, #/hr 0 1 0 0 0 5

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 91 91 91 91 91 91

Heavy Vehicles, % 0 0 0 3 1 0

Mvmt Flow 0 0 0 562 523 0

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 1090 529 528 0 - 0

Stage 1 528 - - - - -

Stage 2 562 - - - - -

Critical Hdwy 6.4 6.2 4.1 - - -

Critical Hdwy Stg 1 5.4 - - - - -

Critical Hdwy Stg 2 5.4 - - - - -

Follow-up Hdwy 3.5 3.3 2.2 - - -

Pot Cap-1 Maneuver 240 554 1049 - - -

Stage 1 596 - - - - -

Stage 2 575 - - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 238 550 1044 - - -

Mov Cap-2 Maneuver 238 - - - - -

Stage 1 593 - - - - -

Stage 2 572 - - - - -

Approach EB NB SB

HCM Control Delay, s/v 0 0 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1044 - - - -

HCM Lane V/C Ratio - - - - -

HCM Control Delay (s/veh) 0 - 0 - -

HCM Lane LOS A - A - -

HCM 95th %tile Q(veh) 0 - - - -

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑	↑	↑	↑
Traffic Vol, veh/h	477	1167	183	3	0	478
Future Vol, veh/h	477	1167	183	3	0	478
Conflicting Peds, #/hr	6	0	0	6	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	2	0	0	1
Mvmt Flow	497	1216	191	3	0	498
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	200	0	-	0	-	199
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.145	-	-	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2285	-	-	-	-	3.3095
Pot Cap-1 Maneuver	1365	-	-	-	0	845
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1357	-	-	-	-	838
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	SB			
HCM Control Delay, s/v	2.66	0	15.38			
HCM LOS			C			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1357	-	-	-	838	
HCM Lane V/C Ratio	0.366	-	-	-	0.594	
HCM Control Delay (s/veh)	9.2	-	-	-	15.4	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	1.7	-	-	-	4	

HCM Signalized Intersection Capacity Analysis  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	22	19	7	8	31	14	1593	32	111	541	9
Future Volume (vph)	20	22	19	7	8	31	14	1593	32	111	541	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)							4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00						1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	0.99						1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00						1.00	1.00		1.00	1.00	1.00
Fr <sub>t</sub>	0.96						0.91	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.98						0.99	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1666						1590	1707	3311	1710	1765	1493
Flt Permitted	0.89						0.95	0.45	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1503						1519	813	3311	131	1765	1493
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	23	20	7	8	32	15	1659	33	116	564	9
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	2
Lane Group Flow (vph)	0	64	0	0	18	0	15	1691	0	116	564	7
Confl. Peds. (#/hr)	15		11	11		15	4		4	4		4
Confl. Bikes (#/hr)			4			2			2			3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		8				4		1	6		5	2
Permitted Phases	8			4				6			2	2
Actuated Green, G (s)	7.5			7.5			51.6	51.1		62.6	57.1	57.1
Effective Green, g (s)	8.5			8.5			53.6	52.1		63.6	58.1	58.1
Actuated g/C Ratio	0.11			0.11			0.67	0.65		0.79	0.73	0.73
Clearance Time (s)	5.0			5.0			5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.5			2.5			2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	159			161			560	2153		251	1280	1082
v/s Ratio Prot							0.00	c0.51		c0.04	0.32	
v/s Ratio Perm	c0.04			0.01			0.02			0.32		0.00
v/c Ratio	0.40			0.11			0.03	0.79		0.46	0.44	0.01
Uniform Delay, d1	33.4			32.4			4.4	10.0		10.4	4.4	3.0
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2			0.2			0.0	1.9		1.0	0.2	0.0
Delay (s)	34.6			32.6			4.4	11.9		11.4	4.6	3.0
Level of Service	C			C			A	B		B	A	A
Approach Delay (s/veh)	34.6			32.6				11.8			5.7	
Approach LOS	C			C				B			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	11.1									B		
HCM 2000 Volume to Capacity ratio	0.70											
Actuated Cycle Length (s)	80.1									12.0		
Intersection Capacity Utilization	77.7%									D		
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	22	19	7	8	31	14	1593	32	111	541	9
Future Volume (veh/h)	20	22	19	7	8	31	14	1593	32	111	541	9
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96			0.90	0.94		0.94	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1800	1800	1800	1800	1800	1800	1800	1758	1800	1800	1772	1800
Adj Flow Rate, veh/h	21	23	20	7	8	3	15	1659	32	116	564	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	105	84	55	113	109	30	616	2183	42	304	1219	1049
Arrive On Green	0.10	0.11	0.10	0.10	0.11	0.10	0.03	0.65	0.64	0.06	0.69	0.00
Sat Flow, veh/h	331	733	483	373	953	265	1714	3350	64	1714	1772	1525
Grp Volume(v), veh/h	64	0	0	18	0	0	15	825	866	116	564	0
Grp Sat Flow(s), veh/h/ln	1546	0	0	1591	0	0	1714	1670	1744	1714	1772	1525
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.2	24.1	24.3	1.4	10.3	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.7	0.0	0.0	0.2	24.1	24.3	1.4	10.3	0.0
Prop In Lane	0.33			0.31	0.39		0.17	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	222	0	0	230	0	0	616	1088	1137	304	1219	1049
V/C Ratio(X)	0.29	0.00	0.00	0.08	0.00	0.00	0.02	0.76	0.76	0.38	0.46	0.00
Avail Cap(c_a), veh/h	263	0	0	271	0	0	688	1367	1428	435	1576	1357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.2	0.0	0.0	28.3	0.0	0.0	4.1	8.5	8.5	10.1	5.1	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.0	1.7	1.7	0.6	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.0	0.0	0.0	0.3	0.0	0.0	0.0	6.6	7.0	0.8	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.8	0.0	0.0	28.4	0.0	0.0	4.1	10.2	10.2	10.7	5.3	0.0
LnGrp LOS	C			C			A	B	B	B	A	
Approach Vol, veh/h		64			18			1706			680	
Approach Delay, s/veh		29.8			28.4			10.2			6.2	
Approach LOS		C			C			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	52.7		12.1	8.6	50.2		12.1				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	62.0		9.0	9.0	57.0		9.0				
Max Q Clear Time (g_c+l1), s	2.2	12.3		2.7	3.4	26.3		4.6				
Green Ext Time (p_c), s	0.0	5.5		0.0	0.2	18.8		0.1				

## Intersection Summary

HCM 7th Control Delay, s/veh

9.7

HCM 7th LOS

A

## Notes

User approved pedestrian interval to be less than phase max green.

## Intersection

Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	1	3	1	50	1	11	4	222	40	5	365	2
Future Vol, veh/h	1	3	1	50	1	11	4	222	40	5	365	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	9	0	18	0	1	9	80	1	0
Mvmt Flow	1	4	1	67	1	15	5	296	53	7	487	3

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	809	861	488	835	836	323	489	0	0	349	0	0
Stage 1	501	501	-	333	333	-	-	-	-	-	-	-
Stage 2	307	360	-	502	503	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.19	6.5	6.38	4.1	-	-	4.9	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.19	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.19	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.581	4	3.462	2.2	-	-	2.92	-	-
Pot Cap-1 Maneuver	301	295	584	279	305	683	1084	-	-	880	-	-
Stage 1	556	546	-	666	647	-	-	-	-	-	-	-
Stage 2	707	630	-	539	545	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	289	290	584	270	300	683	1084	-	-	880	-	-
Mov Cap-2 Maneuver	289	290	-	270	300	-	-	-	-	-	-	-
Stage 1	550	540	-	662	643	-	-	-	-	-	-	-
Stage 2	686	626	-	528	539	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	16.4	21.27			0.13			0.12		
HCM LOS	C	C								
<hr/>										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	26	-	-	322	303	24	-	-		
HCM Lane V/C Ratio	0.005	-	-	0.021	0.273	0.008	-	-		
HCM Control Delay (s/veh)	8.3	0	-	16.4	21.3	9.1	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q(veh)	0	-	-	0.1	1.1	0	-	-		

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	64	6	85	48	0	0	0	0	28	1612	39
Future Volume (vph)	0	64	6	85	48	0	0	0	0	28	1612	39
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)												4.0
Lane Util. Factor	1.00			1.00								0.91
Frpb, ped/bikes	1.00			1.00								1.00
Flpb, ped/bikes	1.00			1.00								1.00
Fr <sub>t</sub>	0.99			1.00								1.00
Flt Protected	1.00			0.95	1.00							1.00
Satd. Flow (prot)	1389			1447	1714							4530
Flt Permitted	1.00			0.70	1.00							1.00
Satd. Flow (perm)	1389			1071	1714							4530
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	76	7	101	57	0	0	0	0	33	1919	46
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	79	0	101	57	0	0	0	0	0	1996	0
Confl. Peds. (#/hr)	2		1	1		2	1		4	4		4
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	29%	17%	18%	5%	0%	0%	0%	0%	7%	8%	5%
Turn Type		NA		Perm	NA					Perm	NA	
Protected Phases		8			4						2	
Permitted Phases				4							2	
Actuated Green, G (s)	12.0		12.0	12.0								68.0
Effective Green, g (s)	13.0		13.0	13.0								69.0
Actuated g/C Ratio	0.14		0.14	0.14								0.77
Clearance Time (s)	5.0		5.0	5.0								5.0
Vehicle Extension (s)	2.5		2.5	2.5								2.5
Lane Grp Cap (vph)	200		154	247								3473
v/s Ratio Prot	0.06			0.03								
v/s Ratio Perm			c0.09									0.44
v/c Ratio	0.39		0.66	0.23								0.57
Uniform Delay, d1	34.9		36.4	34.1								4.4
Progression Factor	1.00		0.45	0.37								1.00
Incremental Delay, d2	0.9		8.3	0.3								0.7
Delay (s)	35.9		24.7	12.9								5.1
Level of Service	D		C	B								A
Approach Delay (s/veh)	35.9			20.4			0.0					5.1
Approach LOS	D			C			A					A
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	7.3		HCM 2000 Level of Service									A
HCM 2000 Volume to Capacity ratio	0.59											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)									8.0
Intersection Capacity Utilization	58.1%		ICU Level of Service									B
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	64	6	85	48	0	0	0	0	28	1612	39
Future Volume (veh/h)	0	64	6	85	48	0	0	0	0	28	1612	39
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1393	1561	1547	1730	0				1702	1688	1730
Adj Flow Rate, veh/h	0	76	2	101	57	0				33	1919	42
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	29	17	18	5	0				7	8	5
Cap, veh/h	0	235	6	223	300	0				60	3468	76
Arrive On Green	0.00	0.17	0.16	0.17	0.17	0.00				0.73	0.74	0.73
Sat Flow, veh/h	0	1351	36	1152	1730	0				81	4702	103
Grp Volume(v), veh/h	0	0	78	101	57	0				687	626	681
Grp Sat Flow(s), veh/h/ln	0	0	1386	1152	1730	0				1684	1536	1666
Q Serve(g_s), s	0.0	0.0	4.4	7.6	2.5	0.0				16.3	16.3	16.4
Cycle Q Clear(g_c), s	0.0	0.0	4.4	12.0	2.5	0.0				16.3	16.3	16.4
Prop In Lane	0.00		0.03	1.00	0.00					0.05		0.06
Lane Grp Cap(c), veh/h	0	0	241	223	300	0				1242	1133	1229
V/C Ratio(X)	0.00	0.00	0.32	0.45	0.19	0.00				0.55	0.55	0.55
Avail Cap(c_a), veh/h	0	0	447	394	557	0				1242	1133	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.72	0.72	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	32.6	37.8	31.8	0.0				5.3	5.2	5.3
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.8	0.2	0.0				1.8	1.9	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	1.5	2.2	1.1	0.0				4.9	4.5	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	33.1	38.6	31.9	0.0				7.0	7.2	7.1
LnGrp LOS			C	D	C					A	A	A
Approach Vol, veh/h		78			158					1994		
Approach Delay, s/veh		33.1			36.2					7.1		
Approach LOS		C			D					A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	70.4		19.6			19.6						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	52.0		28.0			28.0						
Max Q Clear Time (g_c+l1), s	18.4		14.0			6.4						
Green Ext Time (p_c), s	23.0		0.5			0.2						

## Intersection Summary

HCM 7th Control Delay, s/veh

10.1

HCM 7th LOS

B

## Notes

User approved pedestrian interval to be less than phase max green.

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE (99E) & Pine St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (vph)	18	48	0	0	134	31	4	1214	92	0	0	0
Future Volume (vph)	18	48	0	0	134	31	4	1214	92	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0				4.0			4.0			
Lane Util. Factor	1.00	1.00				1.00			0.91			
Frpb, ped/bikes	1.00	1.00				1.00			1.00			
Flpb, ped/bikes	1.00	1.00				1.00			1.00			
Fr <sub>t</sub>	1.00	1.00				0.97			0.99			
Flt Protected	0.95	1.00				1.00			1.00			
Satd. Flow (prot)	1525	1579				1478			4573			
Flt Permitted	0.48	1.00				1.00			1.00			
Satd. Flow (perm)	774	1579				1478			4573			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	19	51	0	0	143	33	4	1291	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	6	0	0	0	0
Lane Group Flow (vph)	19	51	0	0	164	0	0	1387	0	0	0	0
Confl. Peds. (#/hr)	1					1			2	2		2
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	12%	14%	0%	0%	21%	7%	0%	6%	8%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)	14.9	14.9				14.9			65.1			
Effective Green, g (s)	15.9	15.9				15.9			66.1			
Actuated g/C Ratio	0.18	0.18				0.18			0.73			
Clearance Time (s)	5.0	5.0				5.0			5.0			
Vehicle Extension (s)	2.5	2.5				2.5			2.5			
Lane Grp Cap (vph)	136	278				261			3358			
v/s Ratio Prot		0.03				c0.11						
v/s Ratio Perm		0.02							0.30			
v/c Ratio		0.14	0.18			0.63			0.41			
Uniform Delay, d1	31.3	31.5				34.3			4.6			
Progression Factor	1.68	1.68				1.00			1.00			
Incremental Delay, d2	0.3	0.2				4.3			0.4			
Delay (s)	52.9	53.2				38.6			4.9			
Level of Service	D	D				D			A			
Approach Delay (s/veh)		53.1				38.6			4.9		0.0	
Approach LOS		D				D			A		A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.6				HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		90.0				Sum of lost time (s)			8.0			
Intersection Capacity Utilization		58.1%				ICU Level of Service			B			
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE (99E) &amp; Pine St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (veh/h)	18	48	0	0	134	31	4	1214	92	0	0	0
Future Volume (veh/h)	18	48	0	0	134	31	4	1214	92	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00		1.00	1.00		0.98		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1632	1603	0	0	1505	1702	1800	1716	1688			
Adj Flow Rate, veh/h	19	51	0	0	143	27	4	1291	88			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	12	14	0	0	21	7	0	6	8			
Cap, veh/h	139	261	0	0	200	38	11	3442	235			
Arrive On Green	0.16	0.16	0.00	0.00	0.16	0.15	0.74	0.75	0.74			
Sat Flow, veh/h	1118	1603	0	0	1230	232	14	4600	314			
Grp Volume(v), veh/h	19	51	0	0	0	170	481	438	463			
Grp Sat Flow(s), veh/h/ln	1118	1603	0	0	0	1463	1715	1561	1651			
Q Serve(g_s), s	1.5	2.5	0.0	0.0	0.0	9.9	8.8	8.8	8.9			
Cycle Q Clear(g_c), s	11.4	2.5	0.0	0.0	0.0	9.9	8.8	8.8	8.9			
Prop In Lane	1.00		0.00	0.00		0.16	0.01		0.19			
Lane Grp Cap(c), veh/h	139	261	0	0	0	238	1283	1168	1235			
V/C Ratio(X)	0.14	0.20	0.00	0.00	0.00	0.71	0.38	0.38	0.38			
Avail Cap(c_a), veh/h	329	534	0	0	0	488	1283	1168	1235			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.94	0.94	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.1	32.6	0.0	0.0	0.0	35.8	4.0	4.0	4.0			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	2.9	0.8	0.9	0.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.4	1.0	0.0	0.0	0.0	3.7	2.4	2.2	2.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.4	32.8	0.0	0.0	0.0	38.7	4.8	4.9	4.9			
LnGrp LOS	D	C				D	A	A	A			
Approach Vol, veh/h		70			170			1383				
Approach Delay, s/veh		35.1			38.7			4.9				
Approach LOS		D			D			A				
Timer - Assigned Phs			4		6		8					
Phs Duration (G+Y+Rc), s				18.7		71.3		18.7				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				29.0		51.0		29.0				
Max Q Clear Time (g_c+l1), s				11.9		10.9		13.4				
Green Ext Time (p_c), s				0.6		14.3		0.2				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			9.7									
HCM 7th LOS			A									

## Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	3	2	0	1	7	368	9	1	432	3
Future Vol, veh/h	0	0	3	2	0	1	7	368	9	1	432	3
Conflicting Peds, #/hr	0	0	0	0	0	0	4	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	33	0	0	0	14	5	0	0	3	33
Mvmt Flow	0	0	4	2	0	1	9	449	11	1	527	4

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1001	1012	533	1001	1008	454	534	0	0	460	0	0
Stage 1	535	535	-	471	471	-	-	-	-	-	-	-
Stage 2	466	477	-	529	537	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.53	7.1	6.5	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.597	3.5	4	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	223	241	491	224	242	610	975	-	-	1112	-	-
Stage 1	533	527	-	577	563	-	-	-	-	-	-	-
Stage 2	581	560	-	537	526	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	219	237	489	219	238	610	972	-	-	1112	-	-
Mov Cap-2 Maneuver	219	237	-	219	238	-	-	-	-	-	-	-
Stage 1	530	524	-	570	556	-	-	-	-	-	-	-
Stage 2	573	553	-	532	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v12.41		18.1	0.16	0.02
HCM LOS	B	C		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	33	-	-	489 278
HCM Lane V/C Ratio	0.009	-	-	0.007 0.013 0.001
HCM Control Delay (s/veh)	8.7	0	-	12.4 18.1 8.2 0
HCM Lane LOS	A	A	-	B C A A
HCM 95th %tile Q(veh)	0	-	-	0 0 0 -

## Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	1	15	1	6	0	377	17	1	433	0
Future Vol, veh/h	0	0	1	15	1	6	0	377	17	1	433	0
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	13	0	67	0	4	17	0	3	0
Mvmt Flow	0	0	1	18	1	7	0	449	20	1	515	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	970	990	518	977	980	459	518	0	0	469	0	0
Stage 1	521	521	-	459	459	-	-	-	-	-	-	-
Stage 2	449	469	-	518	521	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.23	6.5	6.87	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.23	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.617	4	3.903	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	234	248	561	220	252	488	1058	-	-	1103	-	-
Stage 1	542	535	-	561	570	-	-	-	-	-	-	-
Stage 2	593	564	-	521	535	-	-	-	-	-	-	-
Platoon blocked, %							-	-	-	-	-	-
Mov Cap-1 Maneuver	229	247	560	219	251	488	1055	-	-	1103	-	-
Mov Cap-2 Maneuver	229	247	-	219	251	-	-	-	-	-	-	-
Stage 1	540	533	-	561	570	-	-	-	-	-	-	-
Stage 2	583	564	-	519	533	-	-	-	-	-	-	-

Approach	EB	WB			NB		SB		
HCM Control Delay, s/v11.45		20.43			0		0.02		
HCM LOS	B	C							
<hr/>									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1055	-	-	560	259	4	-	-	
HCM Lane V/C Ratio	-	-	-	0.002	0.101	0.001	-	-	
HCM Control Delay (s/veh)	0	-	-	11.4	20.4	8.3	0	-	
HCM Lane LOS	A	-	-	B	C	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-	

## Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	29	15	23	2	10	10	25	355	3	1	432	19
Future Vol, veh/h	29	15	23	2	10	10	25	355	3	1	432	19
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	60	0	3	33	100	3	0
Mvmt Flow	34	18	27	2	12	12	29	418	4	1	508	22

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1007	1005	522	998	1014	419	534	0	0	421	0	0
Stage 1	525	525	-	478	478	-	-	-	-	-	-	-
Stage 2	482	480	-	519	536	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.8	4.1	-	-	5.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.84	2.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	221	243	558	225	240	527	1044	-	-	762	-	-
Stage 1	540	533	-	572	559	-	-	-	-	-	-	-
Stage 2	569	558	-	543	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	197	233	557	190	230	527	1041	-	-	762	-	-
Mov Cap-2 Maneuver	197	233	-	190	230	-	-	-	-	-	-	-
Stage 1	537	530	-	551	538	-	-	-	-	-	-	-
Stage 2	524	537	-	499	524	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB				
HCM Control Delay, s/v24.22		18.05			0.56			0.02				
HCM LOS	C	C										
<hr/>												
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	117	-	-	265	302	4	-	-				
HCM Lane V/C Ratio	0.028	-	-	0.297	0.086	0.002	-	-				
HCM Control Delay (s/veh)	8.6	0	-	24.2	18	9.7	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.3	0	-	-				

## Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Future Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	6	0	6	0	3	0	23	1	0
Mvmt Flow	5	47	15	21	42	45	24	391	26	46	500	4

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1055	1060	505	1066	1049	404	507	0	0	416	0	0
Stage 1	597	597	-	451	451	-	-	-	-	-	-	-
Stage 2	459	464	-	615	598	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.26	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.354	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	205	226	571	197	229	638	1069	-	-	1038	-	-
Stage 1	493	495	-	580	575	-	-	-	-	-	-	-
Stage 2	586	567	-	472	494	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	141	205	570	137	208	638	1066	-	-	1038	-	-
Mov Cap-2 Maneuver	141	205	-	137	208	-	-	-	-	-	-	-
Stage 1	462	463	-	564	558	-	-	-	-	-	-	-
Stage 2	489	551	-	387	462	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB				
HCM Control Delay, s/v	26.75	29.43			0.45			0.72				
HCM LOS	D	D										
<hr/>												
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	95	-	-	232	253	150	-	-				
HCM Lane V/C Ratio	0.022	-	-	0.289	0.428	0.044	-	-				
HCM Control Delay (s/veh)	8.5	0	-	26.7	29.4	8.6	0	-				
HCM Lane LOS	A	A	-	D	D	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.2	2	0.1	-	-				

# HCM Signalized Intersection Capacity Analysis

## 8: Commercial St NE (99E) & Market St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	77	26	48	81	0	0	0	0	34	1552	13
Future Volume (vph)	0	77	26	48	81	0	0	0	0	34	1552	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor	1.00			1.00							0.95	
Frpb, ped/bikes	1.00			1.00							1.00	
Flpb, ped/bikes	1.00			1.00							1.00	
Fr <sub>t</sub>	0.97			1.00							1.00	
Flt Protected	1.00			0.98							1.00	
Satd. Flow (prot)	1480			1646							3213	
Flt Permitted	1.00			0.79							1.00	
Satd. Flow (perm)	1480			1332							3213	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	89	30	55	93	0	0	0	0	39	1784	15
RTOR Reduction (vph)	0	14	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	105	0	0	148	0	0	0	0	0	1838	0
Confl. Peds. (#/hr)	2				2	1		2	2		2	
Heavy Vehicles (%)	0%	15%	25%	13%	4%	0%	0%	0%	0%	9%	6%	20%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4							2		
Actuated Green, G (s)	13.3			13.3							66.7	
Effective Green, g (s)	14.3			14.3							67.7	
Actuated g/C Ratio	0.16			0.16							0.75	
Clearance Time (s)	5.0			5.0							5.0	
Vehicle Extension (s)	2.5			2.5							2.5	
Lane Grp Cap (vph)	235			211							2416	
v/s Ratio Prot	0.07											
v/s Ratio Perm			c0.11								0.57	
v/c Ratio	0.45		0.70								0.76	
Uniform Delay, d1	34.3		35.8								6.5	
Progression Factor	1.00		0.41								1.00	
Incremental Delay, d2	1.0		8.4								2.3	
Delay (s)	35.2		23.1								8.8	
Level of Service	D		C								A	
Approach Delay (s/veh)	35.2		23.1				0.0				8.8	
Approach LOS	D		C				A				A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	11.3		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.75											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	70.8%		ICU Level of Service				C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	77	26	48	81	0	0	0	0	34	1552	13
Future Volume (veh/h)	0	77	26	48	81	0	0	0	0	34	1552	13
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1589	1449	1617	1744	0				1674	1716	1519
Adj Flow Rate, veh/h	0	89	16	55	93	0				39	1784	15
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87				0.87	0.87	0.87
Percent Heavy Veh, %	0	15	25	13	4	0				9	6	20
Cap, veh/h	0	204	37	106	139	0				55	2509	21
Arrive On Green	0.00	0.16	0.14	0.29	0.31	0.00				0.74	0.76	0.74
Sat Flow, veh/h	0	1311	236	327	895	0				73	3322	28
Grp Volume(v), veh/h	0	0	105	148	0	0				919	0	919
Grp Sat Flow(s), veh/h/ln	0	0	1547	1222	0	0				1712	0	1711
Q Serve(g_s), s	0.0	0.0	5.5	5.4	0.0	0.0				25.6	0.0	25.6
Cycle Q Clear(g_c), s	0.0	0.0	5.5	10.9	0.0	0.0				25.6	0.0	25.6
Prop In Lane	0.00		0.15	0.37		0.00				0.04		0.02
Lane Grp Cap(c), veh/h	0	0	241	232	0	0				1293	0	1292
V/C Ratio(X)	0.00	0.00	0.44	0.64	0.00	0.00				0.71	0.00	0.71
Avail Cap(c_a), veh/h	0	0	292	282	0	0				1293	0	1292
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.73	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	34.5	30.6	0.0	0.0				5.8	0.0	5.8
Incr Delay (d2), s/veh	0.0	0.0	0.9	2.0	0.0	0.0				3.3	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	2.1	2.7	0.0	0.0				7.7	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	35.4	32.6	0.0	0.0				9.2	0.0	9.2
LnGrp LOS			D	C						A		A
Approach Vol, veh/h	105			148						1838		
Approach Delay, s/veh	35.4			32.6						9.2		
Approach LOS		D		C						A		
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	72.0		18.0			18.0						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	64.0		16.0			16.0						
Max Q Clear Time (g_c+l1), s	27.6		12.9			7.5						
Green Ext Time (p_c), s	24.8		0.1			0.2						
Intersection Summary												
HCM 7th Control Delay, s/veh	12.1											
HCM 7th LOS	B											
Notes												
User approved pedestrian interval to be less than phase max green.												

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	84	0	0	123	43	15	1280	39	0	0	0
Future Volume (vph)	16	84	0	0	123	43	15	1280	39	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Fr <sub>t</sub>		1.00			0.96			1.00				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1515			1675			3228				
Flt Permitted		0.90			1.00			1.00				
Satd. Flow (perm)		1381			1675			3228				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	93	0	0	137	48	17	1422	43	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	111	0	0	170	0	0	1480	0	0	0	0
Confl. Peds. (#/hr)			1	1			1					
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	100%	2%	0%	0%	5%	0%	36%	5%	5%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		13.8			13.8			66.2				
Effective Green, g (s)		14.8			14.8			67.2				
Actuated g/C Ratio		0.16			0.16			0.75				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		2.5			2.5			2.5				
Lane Grp Cap (vph)		227			275			2410				
v/s Ratio Prot				c0.10								
v/s Ratio Perm		0.08						0.46				
v/c Ratio		0.49			0.62			0.61				
Uniform Delay, d1		34.2			35.0			5.3				
Progression Factor		1.51			1.00			1.00				
Incremental Delay, d2		1.1			3.5			1.2				
Delay (s)		52.7			38.5			6.5				
Level of Service		D			D			A				
Approach Delay (s/veh)		52.7			38.5			6.5			0.0	
Approach LOS		D			D			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		12.7			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		64.9%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/31/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	84	0	0	123	43	15	1280	39	0	0	0
Future Volume (veh/h)	16	84	0	0	123	43	15	1280	39	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	396	1772	0	0	1730	1800	1295	1730	1730			
Adj Flow Rate, veh/h	18	93	0	0	137	32	17	1422	40			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	100	2	0	0	5	0	36	5	5			
Cap, veh/h	56	152	0	0	189	44	31	2551	72			
Arrive On Green	0.26	0.28	0.00	0.00	0.14	0.13	0.76	0.77	0.76			
Sat Flow, veh/h	66	1087	0	0	1356	317	40	3306	93			
Grp Volume(v), veh/h	111	0	0	0	0	169	742	0	737			
Grp Sat Flow(s), veh/h/ln	1153	0	0	0	0	1673	1728	0	1711			
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	8.7	15.5	0.0	15.6			
Cycle Q Clear(g_c), s	9.4	0.0	0.0	0.0	0.0	8.7	15.5	0.0	15.6			
Prop In Lane	0.16		0.00	0.00		0.19	0.02		0.05			
Lane Grp Cap(c), veh/h	195	0	0	0	0	233	1333	0	1320			
V/C Ratio(X)	0.57	0.00	0.00	0.00	0.00	0.72	0.56	0.00	0.56			
Avail Cap(c_a), veh/h	349	0	0	0	0	390	1333	0	1320			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.87	0.00	0.00	0.00	0.00	0.73	1.00	0.00	1.00			
Uniform Delay (d), s/veh	30.0	0.0	0.0	0.0	0.0	37.2	4.1	0.0	4.1			
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.0	0.0	2.3	1.7	0.0	1.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	2.0	0.0	0.0	0.0	0.0	3.7	4.3	0.0	4.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.7	0.0	0.0	0.0	0.0	39.5	5.8	0.0	5.8			
LnGrp LOS	C					D	A		A			
Approach Vol, veh/h	111				169				1479			
Approach Delay, s/veh	31.7				39.5				5.8			
Approach LOS	C				D				A			
Timer - Assigned Phs				4		6			8			
Phs Duration (G+Y+Rc), s				16.6		73.4			16.6			
Change Period (Y+Rc), s				5.0		5.0			5.0			
Max Green Setting (Gmax), s				20.0		60.0			20.0			
Max Q Clear Time (g_c+l1), s				10.7		17.6			11.4			
Green Ext Time (p_c), s				0.4		19.5			0.2			
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				10.7								
HCM 7th LOS				B								

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↑	↑	↑	↓	
Traffic Volume (vph)	10	114	14	103	154	68	6	406	96	106	628	11
Future Volume (vph)	10	114	14	103	154	68	6	406	96	106	628	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1700	1680		1671	1643		1462	1748	1422	1583	1724	
Flt Permitted	0.51	1.00		0.41	1.00		0.23	1.00	1.00	0.34	1.00	
Satd. Flow (perm)	905	1680		713	1643		357	1748	1422	569	1724	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	12	133	16	120	179	79	7	472	112	123	730	13
RTOR Reduction (vph)	0	3	0	0	13	0	0	0	36	0	0	0
Lane Group Flow (vph)	12	146	0	120	245	0	7	472	76	123	743	0
Confl. Peds. (#/hr)	8		5	5		8	7		3	3		3
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	0%	4%	14%	2%	2%	6%	17%	3%	5%	8%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	21.6	18.4		35.0	26.8		63.1	61.5	73.1	75.0	68.4	
Effective Green, g (s)	23.6	19.4		36.0	27.8		65.1	62.5	75.1	76.0	69.4	
Actuated g/C Ratio	0.20	0.16		0.30	0.23		0.54	0.52	0.63	0.63	0.58	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	205	271		314	380		217	910	937	440	997	
v/s Ratio Prot	0.00	0.09		c0.04	c0.15		0.00	0.27	0.01	c0.02	c0.43	
v/s Ratio Perm	0.01			0.07			0.02		0.05	0.15		
v/c Ratio	0.06	0.54		0.38	0.64		0.03	0.52	0.08	0.28	0.74	
Uniform Delay, d1	39.0	46.2		32.1	41.6		15.2	18.9	8.9	10.8	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	1.6		0.6	3.3		0.0	2.1	0.0	0.3	5.0	
Delay (s)	39.1	47.8		32.6	44.9		15.2	21.0	8.9	11.0	23.8	
Level of Service	D	D		C	D		B	C	A	B	C	
Approach Delay (s/veh)		47.1			41.0			18.6			22.0	
Approach LOS		D			D			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		26.6										C
HCM 2000 Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		120.0										16.0
Intersection Capacity Utilization		77.2%										D
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (veh/h)	10	114	14	103	154	68	6	406	96	106	628	11
Future Volume (veh/h)	10	114	14	103	154	68	6	406	96	106	628	11
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.95	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No		No		No	
Adj Sat Flow, veh/h/ln	1800	1744	1603	1772	1772	1716	1561	1758	1730	1688	1744	1674
Adj Flow Rate, veh/h	12	133	11	120	179	49	7	472	62	123	730	12
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	4	14	2	2	6	17	3	5	8	4	9
Cap, veh/h	166	193	16	253	233	64	326	1031	978	539	1091	18
Arrive On Green	0.03	0.12	0.11	0.08	0.18	0.17	0.02	0.59	0.59	0.07	0.64	0.63
Sat Flow, veh/h	1714	1584	131	1688	1324	362	1487	1758	1457	1607	1710	28
Grp Volume(v), veh/h	12	0	144	120	0	228	7	472	62	123	0	742
Grp Sat Flow(s), veh/h/ln	1714	0	1715	1688	0	1686	1487	1758	1457	1607	0	1738
Q Serve(g_s), s	0.7	0.0	9.7	7.1	0.0	15.5	0.2	18.2	1.8	3.2	0.0	32.3
Cycle Q Clear(g_c), s	0.7	0.0	9.7	7.1	0.0	15.5	0.2	18.2	1.8	3.2	0.0	32.3
Prop In Lane	1.00		0.08	1.00		0.21	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	166	0	209	253	0	297	326	1031	978	539	0	1109
V/C Ratio(X)	0.07	0.00	0.69	0.47	0.00	0.77	0.02	0.46	0.06	0.23	0.00	0.67
Avail Cap(c_a), veh/h	243	0	286	322	0	365	405	1031	978	541	0	1109
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.87	0.00	0.87	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	50.6	39.6	0.0	47.2	12.1	14.0	6.8	8.8	0.0	13.7
Incr Delay (d2), s/veh	0.1	0.0	2.7	1.0	0.0	7.0	0.0	1.5	0.1	0.2	0.0	3.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.3	0.0	4.3	3.1	0.0	7.1	0.1	7.5	0.6	1.1	0.0	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.9	0.0	53.3	40.7	0.0	54.2	12.1	15.5	6.9	8.9	0.0	16.9
LnGrp LOS	D		D	D		D	B	B	A	A		B
Approach Vol, veh/h		156			348			541			865	
Approach Delay, s/veh		52.6			49.5			14.5			15.8	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	80.6	7.6	25.1	12.9	74.4	14.1	18.6				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	59.0	8.0	25.0	8.0	59.0	14.0	19.0				
Max Q Clear Time (g_c+l1), s	2.2	34.3	2.7	17.5	5.2	20.2	9.1	11.7				
Green Ext Time (p_c), s	0.0	7.1	0.0	0.5	0.1	4.4	0.2	0.3				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			24.6									
HCM 7th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations



Traffic Vol, veh/h	10	24	0	366	456	0
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Future Vol, veh/h	10	24	0	366	456	0
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Conflicting Peds, #/hr	0	0	3	0	0	0
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Sign Control	Stop	Stop	Free	Free	Free	Free
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RT Channelized	-	None	-	None	-	None
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Storage Length	0	-	-	-	-	-
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Veh in Median Storage, #	0	-	-	0	0	-
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Grade, %	0	-	-	0	0	-
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Peak Hour Factor	85	85	85	85	85	85
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Heavy Vehicles, %	0	0	0	3	1	0
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Mvmt Flow	12	28	0	431	536	0
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Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	970	539	539	0	-	0
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Stage 1	539	-	-	-	-	-
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Stage 2	431	-	-	-	-	-
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Critical Hdwy	6.4	6.2	4.1	-	-	-
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Critical Hdwy Stg 1	5.4	-	-	-	-	-
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Critical Hdwy Stg 2	5.4	-	-	-	-	-
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Follow-up Hdwy	3.5	3.3	2.2	-	-	-
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Pot Cap-1 Maneuver	283	546	1039	-	-	-
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Stage 1	588	-	-	-	-	-
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Stage 2	660	-	-	-	-	-
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Platoon blocked, %	-	-	-	-	-	-
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Mov Cap-1 Maneuver	282	545	1036	-	-	-
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Mov Cap-2 Maneuver	282	-	-	-	-	-
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Stage 1	587	-	-	-	-	-
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Stage 2	658	-	-	-	-	-
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Approach	EB	NB	SB
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HCM Control Delay, s/v	14.3	0	0
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HCM LOS	B		
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	1036	-	427	-	-
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HCM Lane V/C Ratio	-	-	0.094	-	-
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HCM Control Delay (s/veh)	0	-	14.3	-	-
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HCM Lane LOS	A	-	B	-	-
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HCM 95th %tile Q(veh)	0	-	0.3	-	-
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Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑	↑	↑	↑
Traffic Vol, veh/h	401	1172	216	4	0	449
Future Vol, veh/h	401	1172	216	4	0	449
Conflicting Peds, #/hr	8	0	0	8	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	6	6	0	0	1
Mvmt Flow	451	1317	243	4	0	504

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	255	0	-	0	-	251
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	-	-	3.3095
Pot Cap-1 Maneuver	1308	-	-	-	0	790
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1298	-	-	-	-	784
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB			
HCM Control Delay, s/v	2.36	0	17.49			
HCM LOS			C			

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1298	-	-	-	784	
HCM Lane V/C Ratio	0.347	-	-	-	0.643	
HCM Control Delay (s/veh)	9.2	-	-	-	17.5	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	1.6	-	-	-	4.8	

HCM Signalized Intersection Capacity Analysis  
 13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	2	3	4	2	18	7	1553	7	63	598	3
Future Volume (vph)	2	2	3	4	2	18	7	1553	7	63	598	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)							4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00				1.00		1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	0.99				0.99		1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00				1.00		1.00	1.00		1.00	1.00	1.00
Fr <sub>t</sub>	0.94				0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.99				0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1447				1523		1710	3255		1629	1765	1497
Flt Permitted	0.91				0.95		0.39	1.00		0.07	1.00	1.00
Satd. Flow (perm)	1335				1457		699	3255		125	1765	1497
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	2	2	3	4	2	20	8	1745	8	71	672	3
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	7	0	0	8	0	8	1753	0	71	672	2
Confl. Peds. (#/hr)	4		3	3		4	1		2	2		2
Confl. Bikes (#/hr)										1		
Heavy Vehicles (%)	50%	0%	0%	0%	50%	0%	0%	5%	0%	5%	2%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		8				4		1	6		5	2
Permitted Phases	8			4				6			2	2
Actuated Green, G (s)	5.6			5.6			53.9	53.4		64.1	58.6	58.6
Effective Green, g (s)	6.6			6.6			55.9	54.4		65.1	59.6	59.6
Actuated g/C Ratio	0.08			0.08			0.70	0.68		0.82	0.75	0.75
Clearance Time (s)	5.0			5.0			5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	2.5			2.5			2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	110			120			509	2221		228	1319	1119
v/s Ratio Prot							0.00	c0.54		c0.03	c0.38	
v/s Ratio Perm	0.01			c0.01			0.01			0.23		0.00
v/c Ratio	0.06			0.06			0.02	0.79		0.31	0.51	0.00
Uniform Delay, d1	33.7			33.7			3.6	8.7		7.8	4.1	2.5
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2			0.0	1.9		0.6	0.2	0.0
Delay (s)	33.9			33.9			3.6	10.6		8.4	4.3	2.5
Level of Service	C			C			A	B		A	A	A
Approach Delay (s/veh)	33.9			33.9				10.5			4.7	
Approach LOS	C			C				B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)	9.1				HCM 2000 Level of Service					A		
HCM 2000 Volume to Capacity ratio	0.67											
Actuated Cycle Length (s)	79.7				Sum of lost time (s)					12.0		
Intersection Capacity Utilization	68.0%				ICU Level of Service					C		
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	3	4	2	18	7	1553	7	63	598	3
Future Volume (veh/h)	2	2	3	4	2	18	7	1553	7	63	598	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.73		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1098	1800	1800	1800	1098	1800	1800	1730	1800	1730	1772	1800
Adj Flow Rate, veh/h	2	2	3	4	2	-15	8	1745	7	71	672	-7
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	50	0	0	0	50	0	0	5	0	5	2	0
Cap, veh/h	84	8	12	0	46	92	638	2423	10	332	1345	1158
Arrive On Green	0.00	0.02	0.00	0.00	0.02	0.00	0.02	0.72	0.71	0.06	0.76	0.00
Sat Flow, veh/h	399	399	599	-499	-250	1872	1714	3357	13	1647	1772	1525
Grp Volume(v), veh/h	7	0	0	0	0	0	8	854	898	71	672	-7
Grp Sat Flow(s), veh/h/ln	1398	0	0	0	0	0	1714	1643	1727	1647	1772	1525
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	18.5	18.5	0.6	9.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.0	0.0	0.0	0.1	18.5	18.5	0.6	9.0	0.0
Prop In Lane	0.29		0.43	-0.44		1.67	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	82	0	0	0	0	0	638	1186	1246	332	1345	1158
V/C Ratio(X)	0.09	0.00	0.00	0.00	0.00	0.00	0.01	0.72	0.72	0.21	0.50	-0.01
Avail Cap(c_a), veh/h	258	0	0	0	0	0	736	1606	1688	471	1847	1590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.9	0.0	0.0	0.0	0.0	0.0	2.4	4.9	5.0	5.4	2.9	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.2	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.3	0.2	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.3	0.0	0.0	0.0	0.0	0.0	2.4	5.8	5.8	5.6	3.1	0.0
LnGrp LOS	C						A	A	A	A	A	
Approach Vol, veh/h		7			0			1760			736	
Approach Delay, s/veh		30.3			0.0			5.7			3.4	
Approach LOS		C						A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	50.6		5.3	7.8	48.3		5.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	63.0		8.0	8.0	59.0		8.0				
Max Q Clear Time (g_c+l1), s	2.1	11.0		0.0	2.6	20.5		2.3				
Green Ext Time (p_c), s	0.0	7.2		0.0	0.1	22.8		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			5.1									
HCM 7th LOS			A									
Notes												
User approved pedestrian interval to be less than phase max green.												

## Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	6	1	77	5	13	3	385	78	12	346	0
Future Vol, veh/h	0	6	1	77	5	13	3	385	78	12	346	0
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	1	3	8	1	0
Mvmt Flow	0	7	1	85	5	14	3	423	86	13	380	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	840	924	381	883	881	467	381	0	0	510	0	0
Stage 1	408	408	-	474	474	-	-	-	-	-	-	-
Stage 2	432	516	-	410	408	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	287	271	670	268	288	600	1188	-	-	1025	-	-
Stage 1	624	600	-	575	561	-	-	-	-	-	-	-
Stage 2	606	537	-	623	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	269	265	670	256	281	599	1187	-	-	1024	-	-
Mov Cap-2 Maneuver	269	265	-	256	281	-	-	-	-	-	-	-
Stage 1	614	590	-	573	559	-	-	-	-	-	-	-
Stage 2	583	535	-	605	590	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	17.73	25.4	0.05	0.29
HCM LOS	C	D		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	11	-	-	291 279
HCM Lane V/C Ratio	0.003	-	-	0.026 0.374
HCM Control Delay (s/veh)	8	0	-	17.7 25.4
HCM Lane LOS	A	A	-	C D
HCM 95th %tile Q(veh)	0	-	-	0.1 1.7

# HCM Signalized Intersection Capacity Analysis

## 2: Commercial St NE (99E) & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	98	9	139	67	0	0	0	0	34	1620	52
Future Volume (vph)	0	98	9	139	67	0	0	0	0	34	1620	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0		4.0	4.0						4.0	
Lane Util. Factor	1.00		1.00	1.00							0.91	
Frpb, ped/bikes	1.00		1.00	1.00							1.00	
Flpb, ped/bikes	1.00		1.00	1.00							1.00	
Fr <sub>t</sub>	0.99		1.00	1.00							1.00	
Flt Protected	1.00		0.95	1.00							1.00	
Satd. Flow (prot)	1731		1673	1800							4792	
Flt Permitted	1.00		0.65	1.00							1.00	
Satd. Flow (perm)	1731		1144	1800							4792	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	103	9	146	71	0	0	0	0	36	1705	55
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	108	0	146	71	0	0	0	0	0	1794	0
Confl. Peds. (#/hr)		2	2			1		1	1		1	
Heavy Vehicles (%)	0%	3%	0%	2%	0%	0%	0%	0%	0%	0%	2%	0%
Turn Type	NA		Perm	NA						Perm	NA	
Protected Phases	8			4							2	
Permitted Phases			4								2	
Actuated Green, G (s)	15.8		15.8	15.8							64.2	
Effective Green, g (s)	16.8		16.8	16.8							65.2	
Actuated g/C Ratio	0.19		0.19	0.19							0.72	
Clearance Time (s)	5.0		5.0	5.0							5.0	
Vehicle Extension (s)	2.5		2.5	2.5							2.5	
Lane Grp Cap (vph)	323		213	336							3471	
v/s Ratio Prot	0.06			0.04								
v/s Ratio Perm			c0.13								0.37	
v/c Ratio	0.33		0.69	0.21							0.52	
Uniform Delay, d1	31.7		34.1	31.0							5.5	
Progression Factor	1.00		0.27	0.19							1.00	
Incremental Delay, d2	0.4		7.5	0.2							0.6	
Delay (s)	32.2		16.6	6.0							6.0	
Level of Service	C		B	A							A	
Approach Delay (s/veh)	32.2			13.1				0.0			6.0	
Approach LOS	C			B				A			A	
Intersection Summary												
HCM 2000 Control Delay (s/veh)	8.1		HCM 2000 Level of Service							A		
HCM 2000 Volume to Capacity ratio	0.55											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)							8.0		
Intersection Capacity Utilization	60.5%		ICU Level of Service							B		
Analysis Period (min)	15											
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

2: Commercial St NE (99E) &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	98	9	139	67	0	0	0	0	34	1620	52
Future Volume (veh/h)	0	98	9	139	67	0	0	0	0	34	1620	52
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1758	1800	1772	1800	0				1800	1772	1800
Adj Flow Rate, veh/h	0	103	6	146	71	0				36	1705	50
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	2	0	0				0	2	0
Cap, veh/h	0	331	19	269	362	0				73	3464	102
Arrive On Green	0.00	0.20	0.19	0.34	0.34	0.00				0.70	0.71	0.70
Sat Flow, veh/h	0	1644	96	1282	1800	0				103	4879	143
Grp Volume(v), veh/h	0	0	109	146	71	0				617	563	610
Grp Sat Flow(s), veh/h/ln	0	0	1740	1282	1800	0				1767	1612	1746
Q Serve(g_s), s	0.0	0.0	4.8	9.5	2.5	0.0				14.0	14.0	14.1
Cycle Q Clear(g_c), s	0.0	0.0	4.8	14.3	2.5	0.0				14.0	14.0	14.1
Prop In Lane	0.00		0.06	1.00	0.00					0.06		0.08
Lane Grp Cap(c), veh/h	0	0	350	269	362	0				1254	1145	1240
V/C Ratio(X)	0.00	0.00	0.31	0.54	0.20	0.00				0.49	0.49	0.49
Avail Cap(c_a), veh/h	0	0	541	410	560	0				1254	1145	1240
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	1.00	0.67	0.67	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	30.7	30.9	24.7	0.0				5.8	5.8	5.8
Incr Delay (d2), s/veh	0.0	0.0	0.4	0.8	0.1	0.0				1.4	1.5	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	2.0	2.6	1.1	0.0				4.7	4.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	31.0	31.7	24.8	0.0				7.2	7.3	7.2
LnGrp LOS			C	C	C					A	A	A
Approach Vol, veh/h	109			217						1791		
Approach Delay, s/veh	31.0			29.5						7.3		
Approach LOS			C		C						A	
Timer - Assigned Phs	2		4			8						
Phs Duration (G+Y+Rc), s	67.9		22.1			22.1						
Change Period (Y+Rc), s	5.0		5.0			5.0						
Max Green Setting (Gmax), s	53.0		27.0			27.0						
Max Q Clear Time (g_c+l1), s	16.1		16.3			6.8						
Green Ext Time (p_c), s	21.2		0.6			0.3						

## Intersection Summary

HCM 7th Control Delay, s/veh

10.8

HCM 7th LOS

B

## Notes

User approved pedestrian interval to be less than phase max green.

# HCM Signalized Intersection Capacity Analysis

3: Liberty St NE & Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (vph)	40	100	0	0	193	31	13	1393	103	0	0	0
Future Volume (vph)	40	100	0	0	193	31	13	1393	103	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0				4.0			4.0			
Lane Util. Factor	1.00	1.00				1.00			0.91			
Frpb, ped/bikes	1.00	1.00				1.00			1.00			
Flpb, ped/bikes	1.00	1.00				1.00			1.00			
Fr <sub>t</sub>	1.00	1.00				0.98			0.99			
Flt Protected	0.95	1.00				1.00			1.00			
Satd. Flow (prot)	1583	1800				1720			4752			
Flt Permitted	0.37	1.00				1.00			1.00			
Satd. Flow (perm)	621	1800				1720			4752			
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	43	106	0	0	205	33	14	1482	110	0	0	0
RTOR Reduction (vph)	0	0	0	0	8	0	0	6	0	0	0	0
Lane Group Flow (vph)	43	106	0	0	230	0	0	1600	0	0	0	0
Confl. Peds. (#/hr)			1	1					2	2	2	
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	8%	0%	0%	0%	2%	7%	0%	2%	4%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8				4			6			
Permitted Phases		8						6				
Actuated Green, G (s)	16.9	16.9			16.9			63.1				
Effective Green, g (s)	17.9	17.9			17.9			64.1				
Actuated g/C Ratio	0.20	0.20			0.20			0.71				
Clearance Time (s)	5.0	5.0			5.0			5.0				
Vehicle Extension (s)	2.5	2.5			2.5			2.5				
Lane Grp Cap (vph)	123	358			342			3384				
v/s Ratio Prot		0.06			c0.13							
v/s Ratio Perm		0.07						0.34				
v/c Ratio		0.35	0.30		0.67			0.47				
Uniform Delay, d1	31.0	30.7			33.3			5.6				
Progression Factor	0.58	0.58			1.00			1.00				
Incremental Delay, d2	1.2	0.3			4.7			0.5				
Delay (s)	19.1	18.1			38.0			6.1				
Level of Service	B	B			D			A				
Approach Delay (s/veh)		18.4			38.0			6.1		0.0		
Approach LOS		B			D			A		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		10.8			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		60.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

3: Liberty St NE &amp; Pine St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑			↑↑				
Traffic Volume (veh/h)	40	100	0	0	193	31	13	1393	103	0	0	0
Future Volume (veh/h)	40	100	0	0	193	31	13	1393	103	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1688	1800	0	0	1772	1702	1800	1772	1744			
Adj Flow Rate, veh/h	43	106	0	0	205	27	14	1482	101			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	8	0	0	0	2	7	0	2	4			
Cap, veh/h	161	356	0	0	303	40	32	3367	229			
Arrive On Green	0.40	0.40	0.00	0.00	0.20	0.19	0.70	0.71	0.70			
Sat Flow, veh/h	1094	1800	0	0	1534	202	45	4721	322			
Grp Volume(v), veh/h	43	106	0	0	0	232	555	506	535			
Grp Sat Flow(s), veh/h/ln	1094	1800	0	0	0	1736	1770	1612	1706			
Q Serve(g_s), s	3.3	3.6	0.0	0.0	0.0	11.1	11.8	11.8	11.9			
Cycle Q Clear(g_c), s	14.4	3.6	0.0	0.0	0.0	11.1	11.8	11.8	11.9			
Prop In Lane	1.00		0.00	0.00		0.12	0.03		0.19			
Lane Grp Cap(c), veh/h	161	356	0	0	0	343	1262	1150	1216			
V/C Ratio(X)	0.27	0.30	0.00	0.00	0.00	0.68	0.44	0.44	0.44			
Avail Cap(c_a), veh/h	297	580	0	0	0	559	1262	1150	1216			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.95	0.00	0.00	0.00	1.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	31.3	22.9	0.0	0.0	0.0	33.5	5.4	5.4	5.4			
Incr Delay (d2), s/veh	0.6	0.3	0.0	0.0	0.0	1.7	1.1	1.2	1.2			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	0.8	1.5	0.0	0.0	0.0	4.8	3.7	3.4	3.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.9	23.2	0.0	0.0	0.0	35.2	6.5	6.6	6.6			
LnGrp LOS	C	C				D	A	A	A			
Approach Vol, veh/h	149				232			1597				
Approach Delay, s/veh	25.7				35.2			6.6				
Approach LOS	C				D			A				
Timer - Assigned Phs			4			6		8				
Phs Duration (G+Y+Rc), s				21.8		68.2		21.8				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				28.0		52.0		28.0				
Max Q Clear Time (g_c+l1), s				13.1		13.9		16.4				
Green Ext Time (p_c), s				0.7		17.3		0.4				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh			11.4									
HCM 7th LOS			B									

## Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	1	5	8	1	0	7	513	3	2	480	1
Future Vol, veh/h	4	1	5	8	1	0	7	513	3	2	480	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	100	0	14	3	0	50	1	0
Mvmt Flow	4	1	5	9	1	0	8	558	3	2	522	1

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1102	1107	524	1103	1106	561	525	0	0	563	0	0
Stage 1	529	529	-	576	576	-	-	-	-	-	-	-
Stage 2	573	578	-	527	529	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	7.5	6.2	4.24	-	-	4.6	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4.9	3.3	2.326	-	-	2.65	-	-
Pot Cap-1 Maneuver	191	212	557	190	142	531	984	-	-	808	-	-
Stage 1	537	531	-	506	374	-	-	-	-	-	-	-
Stage 2	508	504	-	538	396	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	186	208	556	184	139	530	982	-	-	807	-	-
Mov Cap-2 Maneuver	186	208	-	184	139	-	-	-	-	-	-	-
Stage 1	534	528	-	499	370	-	-	-	-	-	-	-
Stage 2	501	498	-	530	394	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v18.21		26.4	0.12	0.04
HCM LOS	C	D		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	24	-	-	283 178
HCM Lane V/C Ratio	0.008	-	-	0.038 0.055
HCM Control Delay (s/veh)	8.7	0	-	18.2 26.4
HCM Lane LOS	A	A	-	C D
HCM 95th %tile Q(veh)	0	-	-	0.1 0.2

## Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	0	0	0	25	0	2	0	522	13	2	493	0
Future Vol, veh/h	0	0	0	25	0	2	0	522	13	2	493	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	20	0	1	0
Mvmt Flow	0	0	0	27	0	2	0	574	14	2	542	0

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1123	1140	545	1130	1133	584	545	0	0	591	0	0
Stage 1	549	549	-	584	584	-	-	-	-	-	-	-
Stage 2	574	591	-	546	549	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	185	203	542	183	205	515	1034	-	-	995	-	-
Stage 1	523	520	-	501	501	-	-	-	-	-	-	-
Stage 2	508	498	-	525	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	183	201	541	181	203	514	1032	-	-	992	-	-
Mov Cap-2 Maneuver	183	201	-	181	203	-	-	-	-	-	-	-
Stage 1	520	516	-	500	500	-	-	-	-	-	-	-
Stage 2	506	496	-	524	516	-	-	-	-	-	-	-

Approach	EB	WB			NB		SB		
HCM Control Delay, s/v	0	27.34			0		0.03		
HCM LOS	A	D							
<hr/>									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	1032	-	-	-	191	7	-	-	
HCM Lane V/C Ratio	-	-	-	-	0.156	0.002	-	-	
HCM Control Delay (s/veh)	0	-	-	0	27.3	8.6	0	-	
HCM Lane LOS	A	-	-	A	D	A	A	-	
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0	-	-	

## Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	19	12	18	5	18	1	36	513	1	3	486	33
Future Vol, veh/h	19	12	18	5	18	1	36	513	1	3	486	33
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	3	0	33	1	0
Mvmt Flow	21	13	20	5	20	1	40	564	1	3	534	36

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1214	1207	554	1193	1224	566	572	0	0	567	0	0
Stage 1	561	561	-	645	645	-	-	-	-	-	-	-
Stage 2	653	646	-	547	579	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.43	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.497	-	-
Pot Cap-1 Maneuver	160	185	536	165	181	527	1010	-	-	868	-	-
Stage 1	516	513	-	464	470	-	-	-	-	-	-	-
Stage 2	460	470	-	525	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	133	173	535	138	169	526	1009	-	-	866	-	-
Mov Cap-2 Maneuver	133	173	-	138	169	-	-	-	-	-	-	-
Stage 1	512	510	-	437	443	-	-	-	-	-	-	-
Stage 2	413	442	-	489	500	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v29.66		30.79	0.57	0.05
HCM LOS	D	D		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	118	-	-	199 166
HCM Lane V/C Ratio	0.039	-	-	0.27 0.159
HCM Control Delay (s/veh)	8.7	0	-	29.7 30.8
HCM Lane LOS	A	A	-	D D
HCM 95th %tile Q(veh)	0.1	-	-	1.1 0.6

## Intersection

Int Delay, s/veh 8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Future Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	11	0	17	0	3	0	0	1	0
Mvmt Flow	5	34	11	21	69	40	36	564	35	41	510	5

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1270	1275	519	1268	1261	586	520	0	0	604	0	0
Stage 1	599	599	-	659	659	-	-	-	-	-	-	-
Stage 2	671	676	-	609	602	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.21	6.5	6.37	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.599	4	3.453	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	146	168	561	139	172	483	1056	-	-	984	-	-
Stage 1	492	494	-	438	464	-	-	-	-	-	-	-
Stage 2	449	455	-	467	492	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	68	149	558	96	152	481	1051	-	-	979	-	-
Mov Cap-2 Maneuver	68	149	-	96	152	-	-	-	-	-	-	-
Stage 1	461	463	-	414	438	-	-	-	-	-	-	-
Stage 2	329	430	-	399	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v39.52		71.86	0.49	0.65
HCM LOS	E	F		
<hr/>				
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1
Capacity (veh/h)	102	-	-	154 172 131
HCM Lane V/C Ratio	0.035	-	-	0.329 0.756 0.042
HCM Control Delay (s/veh)	8.5	0	-	39.5 71.9 8.8
HCM Lane LOS	A	A	-	E F A A
HCM 95th %tile Q(veh)	0.1	-	-	1.3 4.8 0.1

# HCM Signalized Intersection Capacity Analysis

8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	99	19	98	99	0	0	0	0	53	1592	15
Future Volume (vph)	0	99	19	98	99	0	0	0	0	53	1592	15
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor	1.00			1.00						0.95		
Frpb, ped/bikes	1.00			1.00						1.00		
Flpb, ped/bikes	1.00			1.00						1.00		
Fr <sub>t</sub>	0.98			1.00						1.00		
Flt Protected	1.00			0.98						1.00		
Satd. Flow (prot)	1732			1603						3311		
Flt Permitted	1.00			0.73						1.00		
Satd. Flow (perm)	1732			1192						3311		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	106	20	105	106	0	0	0	0	57	1712	16
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	118	0	0	211	0	0	0	0	0	1784	0
Confl. Peds. (#/hr)	6				6	8		2	2		2	
Heavy Vehicles (%)	0%	2%	0%	2%	17%	0%	0%	0%	0%	2%	3%	0%
Turn Type	NA		Perm	NA					Perm	NA		
Protected Phases	8			4						2		
Permitted Phases			4						2			
Actuated Green, G (s)	18.4			18.4						61.6		
Effective Green, g (s)	19.4			19.4						62.6		
Actuated g/C Ratio	0.22			0.22						0.70		
Clearance Time (s)	5.0			5.0						5.0		
Vehicle Extension (s)	2.5			2.5						2.5		
Lane Grp Cap (vph)	373			256						2302		
v/s Ratio Prot	0.07											
v/s Ratio Perm			c0.18							0.54		
v/c Ratio	0.32		0.82							0.78		
Uniform Delay, d1	29.7		33.7							9.1		
Progression Factor	1.00		0.32							1.00		
Incremental Delay, d2	0.4		15.2							2.6		
Delay (s)	30.1		26.0							11.7		
Level of Service	C		C							B		
Approach Delay (s/veh)	30.1		26.0				0.0			11.7		
Approach LOS	C		C				A			B		
Intersection Summary												
HCM 2000 Control Delay (s/veh)	14.2		HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				8.0					
Intersection Capacity Utilization	76.5%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
8: Commercial St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	99	19	98	99	0	0	0	0	53	1592	15
Future Volume (veh/h)	0	99	19	98	99	0	0	0	0	53	1592	15
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00					1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach	No			No						No		
Adj Sat Flow, veh/h/ln	0	1772	1800	1772	1561	0				1772	1758	1800
Adj Flow Rate, veh/h	0	106	-9	105	106	0				57	1712	16
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	2	0	2	17	0				2	3	0
Cap, veh/h	0	503	0	173	137	0				81	2436	23
Arrive On Green	0.00	0.19	0.00	0.35	0.37	0.00				0.71	0.72	0.71
Sat Flow, veh/h	0	1969	-167	605	735	0				112	3361	31
Grp Volume(v), veh/h	0	0	0	211	0	0				893	0	892
Grp Sat Flow(s), veh/h/ln	0	0	0	1341	0	0				1752	0	1752
Q Serve(g_s), s	0.0	0.0	0.0	12.1	0.0	0.0				25.8	0.0	25.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.3	0.0	0.0				25.8	0.0	25.7
Prop In Lane	0.00		-0.09	0.50		0.00				0.06		0.02
Lane Grp Cap(c), veh/h	0	0	0	295	0	0				1270	0	1270
V/C Ratio(X)	0.00	0.00	0.00	0.72	0.00	0.00				0.70	0.00	0.70
Avail Cap(c_a), veh/h	0	0	0	386	0	0				1270	0	1270
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	0.00	0.58	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	27.5	0.0	0.0				7.0	0.0	7.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.1	0.0	0.0				3.3	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.0	0.0	0.0	3.6	0.0	0.0				8.5	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	29.6	0.0	0.0				10.3	0.0	10.2
LnGrp LOS				C						B		B
Approach Vol, veh/h	0			211							1785	
Approach Delay, s/veh	0.0			29.6							10.2	
Approach LOS				C							B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	69.2	20.8	20.8
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	58.0	22.0	22.0
Max Q Clear Time (g_c+l1), s	27.8	15.3	0.0
Green Ext Time (p_c), s	20.9	0.5	0.0

Intersection Summary
HCM 7th Control Delay, s/veh
12.3

HCM 7th LOS
B

Notes
User approved pedestrian interval to be less than phase max green.

# HCM Signalized Intersection Capacity Analysis

9: Liberty St NE (99E) & Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	114	0	0	193	56	11	1477	54	0	0	0
Future Volume (vph)	20	114	0	0	193	56	11	1477	54	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0			4.0				
Lane Util. Factor		1.00			1.00			0.95				
Frpb, ped/bikes		1.00			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Fr <sub>t</sub>		1.00			0.97			0.99				
Flt Protected		0.99			1.00			1.00				
Satd. Flow (prot)		1786			1631			3300				
Flt Permitted		0.81			1.00			1.00				
Satd. Flow (perm)		1458			1631			3300				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	124	0	0	210	61	12	1605	59	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	146	0	0	258	0	0	1674	0	0	0	0
Confl. Peds. (#/hr)	1		1	1		1	4		3	3	3	
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	0%	6%	9%	0%	3%	2%	0%	0%	0%
Turn Type	Perm	NA			NA		Perm	NA				
Protected Phases		8			4			6				
Permitted Phases	8						6					
Actuated Green, G (s)		18.2			18.2			61.8				
Effective Green, g (s)		19.2			19.2			62.8				
Actuated g/C Ratio		0.21			0.21			0.70				
Clearance Time (s)		5.0			5.0			5.0				
Vehicle Extension (s)		2.5			2.5			2.5				
Lane Grp Cap (vph)		311			347			2302				
v/s Ratio Prot				c0.16								
v/s Ratio Perm		0.10						0.51				
v/c Ratio		0.47			0.74			0.73				
Uniform Delay, d1		30.9			33.1			8.3				
Progression Factor		0.67			1.00			1.00				
Incremental Delay, d2		0.7			8.0			2.0				
Delay (s)		21.4			41.1			10.4				
Level of Service		C			D			B				
Approach Delay (s/veh)		21.4			41.1			10.4		0.0		
Approach LOS		C			D			B		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		15.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.73										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		79.5%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

9: Liberty St NE (99E) &amp; Market St NE

05/29/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	114	0	0	193	56	11	1477	54	0	0	0
Future Volume (veh/h)	20	114	0	0	193	56	11	1477	54	0	0	0
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No		No		No		No		No			
Adj Sat Flow, veh/h/ln	1800	1800	0	0	1716	1674	1800	1758	1772			
Adj Flow Rate, veh/h	22	124	0	0	210	49	12	1605	57			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	6	9	0	3	2			
Cap, veh/h	57	217	0	0	268	63	18	2381	84			
Arrive On Green	0.38	0.40	0.00	0.00	0.20	0.19	0.70	0.71	0.70			
Sat Flow, veh/h	53	1086	0	0	1345	314	25	3346	118			
Grp Volume(v), veh/h	146	0	0	0	0	259	840	0	834			
Grp Sat Flow(s), veh/h/ln	1139	0	0	0	0	1659	1757	0	1733			
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	13.3	23.8	0.0	24.1			
Cycle Q Clear(g_c), s	14.7	0.0	0.0	0.0	0.0	13.3	23.8	0.0	24.1			
Prop In Lane	0.15		0.00	0.00		0.19	0.01		0.07			
Lane Grp Cap(c), veh/h	261	0	0	0	0	331	1250	0	1233			
V/C Ratio(X)	0.56	0.00	0.00	0.00	0.00	0.78	0.67	0.00	0.68			
Avail Cap(c_a), veh/h	372	0	0	0	0	442	1250	0	1233			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	0.95	0.00	0.00	0.00	0.00	0.44	1.00	0.00	1.00			
Uniform Delay (d), s/veh	23.9	0.0	0.0	0.0	0.0	34.3	7.2	0.0	7.2			
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.0	0.0	2.5	2.9	0.0	3.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%), veh/ln	2.2	0.0	0.0	0.0	0.0	5.6	8.0	0.0	8.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.2	0.0	0.0	0.0	0.0	36.8	10.1	0.0	10.2			
LnGrp LOS	C					D	B		B			
Approach Vol, veh/h	146				259			1674				
Approach Delay, s/veh	25.2				36.8			10.2				
Approach LOS	C				D			B				
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s				22.0		68.0		22.0				
Change Period (Y+R <sub>c</sub> ), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				23.0		57.0		23.0				
Max Q Clear Time (g_c+l1), s				15.3		26.1		16.7				
Green Ext Time (p_c), s				0.6		19.6		0.3				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				14.5								
HCM 7th LOS				B								

# HCM Signalized Intersection Capacity Analysis

10: Broadway St & Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↓	
Traffic Volume (vph)	16	156	19	169	210	145	18	614	141	123	645	22
Future Volume (vph)	16	156	19	169	210	145	18	614	141	123	645	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.91	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	1.00	0.98		1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1704	1748		1686	1574		1710	1765	1395	1660	1748	
Flt Permitted	0.29	1.00		0.36	1.00		0.20	1.00	1.00	0.18	1.00	
Satd. Flow (perm)	521	1748		640	1574		366	1765	1395	315	1748	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	168	20	182	226	156	19	660	152	132	694	24
RTOR Reduction (vph)	0	4	0	0	21	0	0	0	33	0	1	0
Lane Group Flow (vph)	17	184	0	182	361	0	19	660	119	132	717	0
Confl. Peds. (#/hr)	13		9	9		13	16		30	30		30
Confl. Bikes (#/hr)			1						1			1
Heavy Vehicles (%)	0%	1%	0%	1%	8%	1%	0%	2%	0%	3%	2%	5%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	3	8		7	4		1	6	7	5	2	
Permitted Phases	8			4			6		6	2		
Actuated Green, G (s)	24.4	21.2		39.0	30.8		61.0	57.8	70.6	71.0	62.8	
Effective Green, g (s)	26.4	22.2		40.0	31.8		63.0	58.8	72.6	72.0	63.8	
Actuated g/C Ratio	0.22	0.19		0.33	0.27		0.53	0.49	0.61	0.60	0.53	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5	2.5	2.5	2.5	
Lane Grp Cap (vph)	156	323		333	417		239	864	890	292	929	
v/s Ratio Prot	0.00	0.11		c0.06	c0.23		0.00	0.37	0.02	c0.03	c0.41	
v/s Ratio Perm	0.02			0.12			0.04		0.07	0.24		
v/c Ratio	0.11	0.57		0.55	0.87		0.08	0.76	0.13	0.45	0.77	
Uniform Delay, d1	37.3	44.5		30.5	42.1		17.1	24.9	10.2	16.8	22.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	1.9		1.4	16.8		0.1	6.4	0.1	0.8	6.2	
Delay (s)	37.5	46.4		32.0	58.9		17.2	31.3	10.2	17.6	28.5	
Level of Service	D	D		C	E		B	C	B	B	C	
Approach Delay (s/veh)		45.7			50.2			27.1			26.8	
Approach LOS		D			D			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		33.9										C
HCM 2000 Volume to Capacity ratio		0.79										
Actuated Cycle Length (s)		120.0										16.0
Intersection Capacity Utilization		85.5%										E
Analysis Period (min)		15										
c Critical Lane Group												

## HCM 7th Signalized Intersection Summary

10: Broadway St &amp; Market St NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑	↑	↑	↑	
Traffic Volume (veh/h)	16	156	19	169	210	145	18	614	141	123	645	22
Future Volume (veh/h)	16	156	19	169	210	145	18	614	141	123	645	22
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.99		0.94	0.98		0.97	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1800	1786	1800	1786	1688	1786	1800	1772	1800	1758	1772	1730
Adj Flow Rate, veh/h	17	168	17	182	226	133	19	660	107	132	694	23
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	0	1	8	1	0	2	0	3	2	5
Cap, veh/h	150	281	28	340	245	144	296	897	900	333	921	31
Arrive On Green	0.04	0.18	0.17	0.11	0.25	0.24	0.04	0.51	0.51	0.07	0.54	0.53
Sat Flow, veh/h	1714	1585	160	1701	985	580	1714	1772	1450	1674	1702	56
Grp Volume(v), veh/h	17	0	185	182	0	359	19	660	107	132	0	717
Grp Sat Flow(s), veh/h/ln	1714	0	1745	1701	0	1564	1714	1772	1450	1674	0	1758
Q Serve(g_s), s	0.9	0.0	11.7	10.0	0.0	26.9	0.6	35.2	3.7	4.1	0.0	37.9
Cycle Q Clear(g_c), s	0.9	0.0	11.7	10.0	0.0	26.9	0.6	35.2	3.7	4.1	0.0	37.9
Prop In Lane	1.00		0.09	1.00		0.37	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	150	0	309	340	0	390	296	897	900	333	0	951
V/C Ratio(X)	0.11	0.00	0.60	0.54	0.00	0.92	0.06	0.74	0.12	0.40	0.00	0.75
Avail Cap(c_a), veh/h	214	0	364	353	0	391	356	897	900	334	0	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.88	0.00	0.88	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	45.5	33.6	0.0	44.1	17.4	23.3	9.6	17.7	0.0	21.4
Incr Delay (d2), s/veh	0.2	0.0	1.3	1.1	0.0	26.7	0.1	5.3	0.3	0.6	0.0	5.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.4	0.0	5.2	4.3	0.0	13.3	0.2	15.6	1.2	1.6	0.0	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.0	0.0	46.8	34.7	0.0	70.8	17.5	28.6	9.9	18.2	0.0	26.9
LnGrp LOS	D		D	C		E	B	C	A	B		C
Approach Vol, veh/h		202			541			786			849	
Approach Delay, s/veh		46.1			58.6			25.8			25.5	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	68.9	8.5	33.9	12.9	64.8	17.1	25.3				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	8.0	55.0	8.0	29.0	8.0	55.0	13.0	24.0				
Max Q Clear Time (g_c+l1), s	2.6	39.9	2.9	28.9	6.1	37.2	12.0	13.7				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.0	0.1	5.5	0.1	0.5				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				34.9								
HCM 7th LOS				C								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	19	0	571	494	0
Future Vol, veh/h	9	19	0	571	494	0
Conflicting Peds, #/hr	0	1	0	0	0	5
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	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	3	1	0
Mvmt Flow	10	21	0	627	543	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1175	549	548	0	-	0
Stage 1	548	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	214	539	1032	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	536	1027	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	581	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v15.96		0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1027	-	359	-	-
HCM Lane V/C Ratio	-	-	0.086	-	-
HCM Control Delay (s/veh)	0	-	16	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↑	↑↑	↑	↑	↑	↑
Traffic Vol, veh/h	539	1172	182	3	0	517
Future Vol, veh/h	539	1172	182	3	0	517
Conflicting Peds, #/hr	6	0	0	6	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	150	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	2	0	0	1
Mvmt Flow	561	1221	190	3	0	539
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	199	0	-	0	-	198
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.145	-	-	-	-	6.215
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2285	-	-	-	-	3.3095
Pot Cap-1 Maneuver	1366	-	-	-	0	846
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1358	-	-	-	-	839
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	SB			
HCM Control Delay, s/v	2.99	0	16.63			
HCM LOS			C			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1358	-	-	-	839	
HCM Lane V/C Ratio	0.413	-	-	-	0.642	
HCM Control Delay (s/veh)	9.5	-	-	-	16.6	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	2.1	-	-	-	4.8	

HCM Signalized Intersection Capacity Analysis  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	20	22	19	7	8	31	14	1660	32	125	565	9	
Future Volume (vph)	20	22	19	7	8	31	14	1660	32	125	565	9	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Total Lost time (s)							4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00						1.00	0.95	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	0.99						0.98	1.00	1.00	1.00	1.00	0.98	
Flpb, ped/bikes	1.00						1.00	1.00	1.00	1.00	1.00	1.00	
Fr <sub>t</sub>	0.96						0.91	1.00	1.00	1.00	1.00	0.85	
Flt Protected	0.98						0.99	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)							1666	1590	1707	3311	1710	1765	1493
Flt Permitted							0.90	0.95	0.43	1.00	0.07	1.00	1.00
Satd. Flow (perm)							1518	1526	779	3311	123	1765	1493
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	21	23	20	7	8	32	15	1729	33	130	589	9	
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	2	
Lane Group Flow (vph)	0	64	0	0	18	0	15	1761	0	130	589	7	
Confl. Peds. (#/hr)	15		11	11		15	4		4	4		4	
Confl. Bikes (#/hr)			4			2			2			3	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	2%	0%	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm	
Protected Phases		8			4		1	6		5	2		
Permitted Phases	8			4			6			2		2	
Actuated Green, G (s)	7.4			7.4			53.9	53.4		64.5	59.0	59.0	
Effective Green, g (s)	8.4			8.4			55.9	54.4		65.5	60.0	60.0	
Actuated g/C Ratio	0.10			0.10			0.68	0.66		0.80	0.73	0.73	
Clearance Time (s)	5.0			5.0			5.0	5.0		5.0	5.0	5.0	
Vehicle Extension (s)	2.5			2.5			2.5	2.5		2.5	2.5	2.5	
Lane Grp Cap (vph)	155			156			548	2199		235	1293	1093	
v/s Ratio Prot							0.00	c0.53		c0.05	0.33		
v/s Ratio Perm	c0.04			0.01			0.02			0.39		0.00	
v/c Ratio	0.41			0.12			0.03	0.80		0.55	0.46	0.01	
Uniform Delay, d1	34.4			33.4			4.2	9.9		13.4	4.4	2.9	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.3			0.2			0.0	2.1		2.3	0.2	0.0	
Delay (s)	35.7			33.6			4.2	12.0		15.6	4.6	2.9	
Level of Service	D			C			A	B		B	A	A	
Approach Delay (s/veh)	35.7			33.6				11.9			6.5		
Approach LOS	D			C				B			A		
Intersection Summary													
HCM 2000 Control Delay (s/veh)	11.4										B		
HCM 2000 Volume to Capacity ratio	0.73												
Actuated Cycle Length (s)	81.9										12.0		
Intersection Capacity Utilization	80.5%										D		
Analysis Period (min)				15									
c Critical Lane Group													

HCM 7th Signalized Intersection Summary  
13: Front Street NE (99E)/Front St NE (99E) & Union Street NE

05/29/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	22	19	7	8	31	14	1660	32	125	565	9
Future Volume (veh/h)	20	22	19	7	8	31	14	1660	32	125	565	9
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96			0.90	0.94		0.94	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1800	1800	1800	1800	1800	1800	1800	1758	1800	1800	1772	1800
Adj Flow Rate, veh/h	21	23	20	7	8	3	15	1729	32	130	589	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	0	0	2	0
Cap, veh/h	101	77	52	107	103	28	611	2235	41	293	1245	1072
Arrive On Green	0.09	0.11	0.09	0.09	0.11	0.09	0.03	0.67	0.65	0.06	0.70	0.00
Sat Flow, veh/h	337	723	482	371	959	266	1714	3353	62	1714	1772	1525
Grp Volume(v), veh/h	64	0	0	18	0	0	15	859	902	130	589	0
Grp Sat Flow(s), veh/h/ln	1541	0	0	1596	0	0	1714	1670	1745	1714	1772	1525
Q Serve(g_s), s	0.6	0.0	0.0	0.0	0.0	0.0	0.2	26.1	26.4	1.6	10.9	0.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	0.7	0.0	0.0	0.2	26.1	26.4	1.6	10.9	0.0
Prop In Lane	0.33			0.31	0.39		0.17	1.00		0.04	1.00	
Lane Grp Cap(c), veh/h	209	0	0	217	0	0	611	1113	1163	293	1245	1072
V/C Ratio(X)	0.31	0.00	0.00	0.08	0.00	0.00	0.02	0.77	0.78	0.44	0.47	0.00
Avail Cap(c_a), veh/h	231	0	0	239	0	0	679	1356	1417	392	1535	1321
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	31.0	0.0	0.0	30.0	0.0	0.0	4.0	8.5	8.5	12.1	4.9	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.1	0.0	0.0	0.0	2.1	2.0	0.8	0.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.1	0.0	0.0	0.3	0.0	0.0	0.0	7.3	7.7	1.2	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.6	0.0	0.0	30.1	0.0	0.0	4.0	10.5	10.6	12.8	5.1	0.0
LnGrp LOS	C			C			A	B	B	B	A	
Approach Vol, veh/h					64		18					719
Approach Delay, s/veh				31.6			30.1		10.5			6.5
Approach LOS				C			C		B			A
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	55.9		11.9	8.7	53.2		11.9				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	4.0	63.0		8.0	8.0	59.0		8.0				
Max Q Clear Time (g_c+l1), s	2.2	12.9		2.7	3.6	28.4		4.8				
Green Ext Time (p_c), s	0.0	5.9		0.0	0.2	19.9		0.0				
<b>Intersection Summary</b>												
HCM 7th Control Delay, s/veh				10.0								
HCM 7th LOS				B								
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												

**Intersection: 1: Front St NE & Pine St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	100	17	48
Average Queue (ft)	5	37	1	3
95th Queue (ft)	22	71	7	27
Link Distance (ft)	149	287	1087	640
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Commercial St NE (99E) & Pine St NE**

Movement	EB	WB	WB	SB	SB	SB
Directions Served	TR	L	T	LT	T	TR
Maximum Queue (ft)	156	170	156	308	249	163
Average Queue (ft)	57	60	34	148	104	50
95th Queue (ft)	124	137	113	257	200	123
Link Distance (ft)	287		299	643	643	643
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		7	2			
Queuing Penalty (veh)		3	2			

**Intersection: 3: Liberty St NE & Pine St NE**

Movement	EB	EB	WB	NB	NB	NB
Directions Served	L	T	TR	LT	T	TR
Maximum Queue (ft)	70	101	225	230	196	88
Average Queue (ft)	13	32	104	112	68	26
95th Queue (ft)	46	80	186	194	155	65
Link Distance (ft)		299	320	431	431	431
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		0	1			
Queuing Penalty (veh)		0	0			

**Intersection: 4: Front St NE & Shipping St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	18	28	6
Average Queue (ft)	4	1	1	0
95th Queue (ft)	24	9	12	4
Link Distance (ft)	251	274	286	587
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 5: Front St NE & Hood St NE**

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	18	68
Average Queue (ft)	1	16
95th Queue (ft)	10	52
Link Distance (ft)	221	256
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 6: Front St NE & North Access/Gaines St NE**

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	68	17
Average Queue (ft)	15	1
95th Queue (ft)	51	10
Link Distance (ft)	255	291
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

## Intersection: 7: Front St NE &amp; Center Access/Market St NE

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	113	4	82
Average Queue (ft)	35	0	10
95th Queue (ft)	81	3	47
Link Distance (ft)	288	254	291
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

## Intersection: 8: Commercial St NE (99E) &amp; Market St NE

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	TR
Maximum Queue (ft)	98	180	338	306
Average Queue (ft)	34	59	150	106
95th Queue (ft)	79	133	263	226
Link Distance (ft)	288	306	619	619
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 9: Liberty St NE (99E) &amp; Market St NE

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	TR
Maximum Queue (ft)	78	215	257	224
Average Queue (ft)	31	93	132	86
95th Queue (ft)	71	176	228	183
Link Distance (ft)	306	596	488	488
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 10: Broadway St &amp; Market St NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	35	164	168	246	36	393	200	196	556
Average Queue (ft)	10	74	70	107	5	143	31	62	204
95th Queue (ft)	33	138	135	209	25	287	113	155	403
Link Distance (ft)		596		358		671		612	
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								0	
Storage Bay Dist (ft)	170		180		130		100	115	
Storage Blk Time (%)		1	0	2		15		0	16
Queuing Penalty (veh)		0	0	3		15		3	17

## Intersection: 11: Front St NE &amp; South Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

## Intersection: 12: Front St NE (99E)

Movement	EB	WB	WB	SB	B18
Directions Served	L	T	R	R	T
Maximum Queue (ft)	128	16	4	145	19
Average Queue (ft)	50	1	0	78	1
95th Queue (ft)	98	9	3	124	9
Link Distance (ft)		378		110	1544
Upstream Blk Time (%)				2	
Queuing Penalty (veh)				8	
Storage Bay Dist (ft)	125		150		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	1				

## Intersection: 13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	R
Maximum Queue (ft)	50	43	34	433	404	117	267	20
Average Queue (ft)	6	18	4	180	132	27	87	1
95th Queue (ft)	27	44	22	374	316	79	210	11
Link Distance (ft)	188	364		856	856		260	260
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							1	
Storage Bay Dist (ft)			300			125		
Storage Blk Time (%)				3			4	
Queuing Penalty (veh)				0			2	

## Network Summary

Network wide Queuing Penalty: 56

**Intersection: 1: Front St NE & Pine St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	107	28	30
Average Queue (ft)	6	46	1	4
95th Queue (ft)	26	82	11	21
Link Distance (ft)	149	287	1087	640
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Commercial St NE (99E) & Pine St NE**

Movement	EB	WB	WB	SB	SB	SB
Directions Served	TR	L	T	LT	T	TR
Maximum Queue (ft)	136	183	191	322	320	218
Average Queue (ft)	60	86	50	169	131	70
95th Queue (ft)	110	168	140	276	250	163
Link Distance (ft)	287		299	643	643	643
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		14	3			
Queuing Penalty (veh)		9	4			

**Intersection: 3: Liberty St NE & Pine St NE**

Movement	EB	EB	WB	NB	NB	NB
Directions Served	L	T	TR	LT	T	TR
Maximum Queue (ft)	88	137	249	262	228	127
Average Queue (ft)	34	57	117	145	92	41
95th Queue (ft)	76	116	192	237	190	91
Link Distance (ft)	299	320	431	431	431	431
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		1	5			
Queuing Penalty (veh)		1	2			

**Intersection: 4: Front St NE & Shipping St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	36	50	54	19
Average Queue (ft)	9	4	4	1
95th Queue (ft)	32	25	29	14
Link Distance (ft)	251	274	286	587
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 5: Front St NE & Hood St NE**

Movement	WB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	36	19
Average Queue (ft)	11	1
95th Queue (ft)	35	11
Link Distance (ft)	256	286
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 6: Front St NE & North Access/Gaines St NE**

Movement	WB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	22
Average Queue (ft)	4	1
95th Queue (ft)	20	12
Link Distance (ft)	255	279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 7: Front St NE & Center Access/Market St NE**

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	117	16	96
Average Queue (ft)	34	1	17
95th Queue (ft)	83	9	62
Link Distance (ft)	288	254	291
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 8: Commercial St NE (99E) & Market St NE**

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	TR
Maximum Queue (ft)	106	285	373	335
Average Queue (ft)	46	98	182	136
95th Queue (ft)	91	207	306	272
Link Distance (ft)	288	306	619	619
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 9: Liberty St NE (99E) & Market St NE**

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	TR
Maximum Queue (ft)	125	268	304	311
Average Queue (ft)	54	127	168	125
95th Queue (ft)	106	229	281	249
Link Distance (ft)	306	596	488	488
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 10: Broadway St &amp; Market St NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	52	236	279	338	75	626	200	214	583
Average Queue (ft)	15	104	109	167	16	304	83	97	261
95th Queue (ft)	44	192	207	288	65	516	222	213	471
Link Distance (ft)		596		358		671		612	
Upstream Blk Time (%)				0		0		0	
Queuing Penalty (veh)				0		0		0	
Storage Bay Dist (ft)	170		180		130		100	115	
Storage Blk Time (%)		4	1	10		33		2	24
Queuing Penalty (veh)		1	4	16		52		16	30

## Intersection: 11: Front St NE &amp; South Access

Movement	NB
Directions Served	LT
Maximum Queue (ft)	21
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	1544
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

## Intersection: 12: Front St NE (99E)

Movement	EB	EB	EB	WB	SB	B18
Directions Served	L	T	T	T	R	T
Maximum Queue (ft)	182	114	50	32	153	11
Average Queue (ft)	74	6	3	1	90	1
95th Queue (ft)	148	58	25	13	146	7
Link Distance (ft)		260	260	378	110	1544
Upstream Blk Time (%)		0			4	
Queuing Penalty (veh)		0			20	
Storage Bay Dist (ft)	125					
Storage Blk Time (%)	1					
Queuing Penalty (veh)	8					

## Intersection: 13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	R
Maximum Queue (ft)	97	81	326	669	605	165	253	28
Average Queue (ft)	33	32	27	368	298	66	126	3
95th Queue (ft)	73	68	167	629	548	123	228	16
Link Distance (ft)	188	364		856	856		260	260
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							1	
Storage Bay Dist (ft)			300			125		
Storage Blk Time (%)				17		0	7	
Queuing Penalty (veh)				2		2	7	

## Network Summary

Network wide Queuing Penalty: 174

**Intersection: 1: Front St NE & Pine St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	36	74	39	20
Average Queue (ft)	4	34	2	1
95th Queue (ft)	23	67	15	10
Link Distance (ft)	149	287	1087	640
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Commercial St NE (99E) & Pine St NE**

Movement	EB	WB	WB	SB	SB	SB
Directions Served	TR	L	T	LT	T	TR
Maximum Queue (ft)	154	178	190	294	281	180
Average Queue (ft)	62	69	35	161	126	61
95th Queue (ft)	125	148	118	267	237	143
Link Distance (ft)	287		299	643	643	643
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		10		0		
Queuing Penalty (veh)		5		0		

**Intersection: 3: Liberty St NE (99E) & Pine St NE**

Movement	EB	EB	WB	NB	NB	NB
Directions Served	L	T	TR	LT	T	TR
Maximum Queue (ft)	58	124	203	262	232	120
Average Queue (ft)	15	39	109	124	75	35
95th Queue (ft)	46	97	190	220	166	89
Link Distance (ft)		299	320	431	431	431
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		0	3			
Queuing Penalty (veh)		0		1		

**Intersection: 4: Front St NE & Shipping St NE**

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	37	30	45
Average Queue (ft)	3	3	3
95th Queue (ft)	22	19	25
Link Distance (ft)	251	274	286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 5: Front St NE & Hood St NE**

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	18	67
Average Queue (ft)	1	21
95th Queue (ft)	8	57
Link Distance (ft)	221	256
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 6: Front St NE & North Access/Gaines St NE**

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	67	61	80
Average Queue (ft)	33	20	11
95th Queue (ft)	56	55	45
Link Distance (ft)	218	255	291
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 7: Front St NE & Center Access/Market St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	132	89	102
Average Queue (ft)	28	59	13	14
95th Queue (ft)	53	117	59	57
Link Distance (ft)	178	288	254	291
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 8: Commercial St NE (99E) & Market St NE**

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	TR
Maximum Queue (ft)	187	262	354	329
Average Queue (ft)	73	90	177	136
95th Queue (ft)	140	199	292	266
Link Distance (ft)	288	306	619	619
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 9: Liberty St NE (99E) & Market St NE**

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	TR
Maximum Queue (ft)	208	242	289	227
Average Queue (ft)	76	112	146	96
95th Queue (ft)	155	220	245	200
Link Distance (ft)	306	596	488	488
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 10: Broadway St &amp; Market St NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	44	228	137	237	82	352	176	214	469
Average Queue (ft)	7	102	60	123	7	147	34	58	202
95th Queue (ft)	29	192	112	208	43	286	122	146	380
Link Distance (ft)		596		358		671			612
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	170		180		130		100	115	
Storage Blk Time (%)		3	0	3		15	0	0	15
Queuing Penalty (veh)		0	0	3		16	0	2	16

## Intersection: 11: Front St NE &amp; South Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	48
Average Queue (ft)	23
95th Queue (ft)	47
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

## Intersection: 12: Front St NE (99E)

Movement	EB	WB	WB	SB	B18
Directions Served	L	T	R	R	T
Maximum Queue (ft)	149	22	4	178	94
Average Queue (ft)	55	1	0	92	6
95th Queue (ft)	108	10	3	151	50
Link Distance (ft)		378		110	1544
Upstream Blk Time (%)				5	
Queuing Penalty (veh)				27	
Storage Bay Dist (ft)	125		150		
Storage Blk Time (%)	0				
Queuing Penalty (veh)	2				

## Intersection: 13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	R
Maximum Queue (ft)	60	59	30	554	510	153	265	11
Average Queue (ft)	7	17	5	207	161	39	91	1
95th Queue (ft)	33	48	23	443	391	101	229	8
Link Distance (ft)	188	364		856	856		260	260
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							1	
Storage Bay Dist (ft)			300			125		
Storage Blk Time (%)				4		0	5	
Queuing Penalty (veh)				0		0	3	

## Network Summary

Network wide Queuing Penalty: 77

**Intersection: 1: Front St NE & Pine St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	136	27	46
Average Queue (ft)	6	48	1	5
95th Queue (ft)	27	95	13	26
Link Distance (ft)	149	287	1087	640
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 2: Commercial St NE (99E) & Pine St NE**

Movement	EB	WB	WB	SB	SB	SB
Directions Served	TR	L	T	LT	T	TR
Maximum Queue (ft)	153	184	218	328	286	168
Average Queue (ft)	61	87	56	167	121	61
95th Queue (ft)	115	171	159	274	228	135
Link Distance (ft)	287		299	643	643	643
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		15	3			
Queuing Penalty (veh)		10	5			

**Intersection: 3: Liberty St NE & Pine St NE**

Movement	EB	EB	WB	NB	NB	NB
Directions Served	L	T	TR	LT	T	TR
Maximum Queue (ft)	116	146	251	287	265	133
Average Queue (ft)	36	59	127	153	106	47
95th Queue (ft)	77	117	218	252	207	98
Link Distance (ft)		299	320	431	431	431
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		95				
Storage Blk Time (%)		1	6			
Queuing Penalty (veh)		1	2			

**Intersection: 4: Front St NE & Shipping St NE**

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	39	55
Average Queue (ft)	8	7	4
95th Queue (ft)	30	29	27
Link Distance (ft)	251	274	286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

**Intersection: 5: Front St NE & Hood St NE**

Movement	WB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	44	16
Average Queue (ft)	19	1
95th Queue (ft)	45	10
Link Distance (ft)	256	286
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

**Intersection: 6: Front St NE & North Access/Gaines St NE**

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	57	44	100	20
Average Queue (ft)	28	17	23	1
95th Queue (ft)	53	44	76	12
Link Distance (ft)	218	255	291	279
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 7: Front St NE &amp; Center Access/Market St NE

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	172	120	132
Average Queue (ft)	28	69	20	21
95th Queue (ft)	55	139	77	74
Link Distance (ft)	178	288	254	291
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 8: Commercial St NE (99E) &amp; Market St NE

Movement	EB	WB	SB	SB
Directions Served	TR	LT	LT	TR
Maximum Queue (ft)	155	294	413	386
Average Queue (ft)	71	136	210	176
95th Queue (ft)	121	266	339	318
Link Distance (ft)	288	306	619	619
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	1			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 9: Liberty St NE (99E) &amp; Market St NE

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LT	TR
Maximum Queue (ft)	156	338	418	362
Average Queue (ft)	73	165	214	167
95th Queue (ft)	137	284	356	310
Link Distance (ft)	306	596	488	488
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

## Intersection: 10: Broadway St &amp; Market St NE

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	49	227	280	373	229	659	200	215	620
Average Queue (ft)	14	115	120	213	25	343	102	111	297
95th Queue (ft)	42	196	253	365	121	580	246	234	516
Link Distance (ft)		596		358		671		612	
Upstream Blk Time (%)				3		0		1	
Queuing Penalty (veh)				0		0		0	
Storage Bay Dist (ft)	170		180		130		100	115	
Storage Blk Time (%)		3	1	19		35		3	25
Queuing Penalty (veh)		0	2	33		56		18	31

## Intersection: 11: Front St NE &amp; South Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	48
Average Queue (ft)	19
95th Queue (ft)	45
Link Distance (ft)	157
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

## Intersection: 12: Front St NE (99E)

Movement	EB	EB	EB	WB	WB	SB	B18
Directions Served	L	T	T	T	R	R	T
Maximum Queue (ft)	205	134	100	17	5	165	51
Average Queue (ft)	83	11	6	1	0	103	3
95th Queue (ft)	165	88	61	10	3	158	23
Link Distance (ft)		260	260	378		110	1544
Upstream Blk Time (%)		0	0			8	
Queuing Penalty (veh)		0	0			39	
Storage Bay Dist (ft)	125			150			
Storage Blk Time (%)	2	0					
Queuing Penalty (veh)	13	0					

## Intersection: 13: Front Street NE (99E)/Front St NE (99E) &amp; Union Street NE

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	R
Maximum Queue (ft)	86	86	330	827	767	216	266	61
Average Queue (ft)	31	31	24	433	362	83	141	3
95th Queue (ft)	68	66	155	744	689	170	267	35
Link Distance (ft)	188	364		856	856		260	260
Upstream Blk Time (%)				2	1		1	
Queuing Penalty (veh)				0	0		2	
Storage Bay Dist (ft)		300			125			
Storage Blk Time (%)				22		1	9	
Queuing Penalty (veh)				3		4	11	

## Network Summary

Network wide Queuing Penalty: 233

**Intersection**

Intersection Delay, s/veh 22.8

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Future Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	6	0	6	0	3	0	23	1	0
Mvmt Flow	5	47	15	21	42	45	24	391	26	46	500	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
<b>Approach</b>												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	10.6			11.2			17.4			31		
HCM LOS	B			B			C			D		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	7%	20%	8%
Vol Thru, %	89%	70%	39%	91%
Vol Right, %	6%	23%	41%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	374	57	92	467
LT Vol	20	4	18	39
Through Vol	332	40	36	425
RT Vol	22	13	38	3
Lane Flow Rate	440	67	108	549
Geometry Grp	1	1	1	1
Degree of Util (X)	0.644	0.123	0.195	0.842
Departure Headway (Hd)	5.272	6.618	6.498	5.515
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	682	538	549	654
Service Time	3.319	4.702	4.575	3.556
HCM Lane V/C Ratio	0.645	0.125	0.197	0.839
HCM Control Delay, s/veh	17.4	10.6	11.2	31
HCM Lane LOS	C	B	B	D
HCM 95th-tile Q	4.7	0.4	0.7	9.3

**Intersection**

Intersection Delay, s/veh 35.2

Intersection LOS E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		+			+			+			+	
Traffic Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Future Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	11	0	17	0	3	0	0	1	0
Mvmt Flow	5	34	11	21	69	40	36	564	35	41	510	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay, s/veh	11.2			12.6			45.1			31.3		
HCM LOS	B			B			E			D		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	11%	16%	7%
Vol Thru, %	89%	67%	53%	92%
Vol Right, %	6%	22%	31%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	578	46	118	506
LT Vol	33	5	19	37
Through Vol	513	31	63	464
RT Vol	32	10	36	5
Lane Flow Rate	635	51	130	556
Geometry Grp	1	1	1	1
Degree of Util (X)	0.942	0.103	0.257	0.844
Departure Headway (Hd)	5.34	7.34	7.129	5.467
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	673	491	507	656
Service Time	3.422	5.349	5.134	3.552
HCM Lane V/C Ratio	0.944	0.104	0.256	0.848
HCM Control Delay, s/veh	45.1	11.2	12.6	31.3
HCM Lane LOS	E	B	B	D
HCM 95th-tile Q	13.1	0.3	1	9.3

# HCM Signalized Intersection Capacity Analysis

## 7: Front St NE & Center Access/Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	40	13	18	36	38	20	332	22	39	425	3
Future Volume (vph)	4	40	13	18	36	38	20	332	22	39	425	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor		1.00				1.00			1.00		1.00	
Frpb, ped/bikes		1.00				1.00			1.00		1.00	
Flpb, ped/bikes		1.00				1.00			1.00		1.00	
Fr <sub>t</sub>		0.97				0.94			0.99		1.00	
Flt Protected		1.00				0.99			1.00		1.00	
Satd. Flow (prot)		1739				1623			1735		1741	
Flt Permitted		0.97				0.92			0.97		0.95	
Satd. Flow (perm)		1688				1500			1680		1657	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	5	47	15	21	42	45	24	391	26	46	500	4
RTOR Reduction (vph)	0	13	0	0	38	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	70	0	0	438	0	0	550	0
Confl. Peds. (#/hr)								3				
Confl. Bikes (#/hr)												3
Heavy Vehicles (%)	0%	0%	0%	6%	0%	6%	0%	3%	0%	23%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8				4			6			2
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		5.5			5.5			21.8			21.8	
Effective Green, g (s)		5.5			5.5			21.8			21.8	
Actuated g/C Ratio		0.16			0.16			0.62			0.62	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		2.5			2.5			2.5			2.5	
Lane Grp Cap (vph)		263			233			1037			1023	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.05			0.26		c0.33		
v/c Ratio		0.21			0.30			0.42		0.54		
Uniform Delay, d1		13.0			13.2			3.5			3.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.5			0.2			0.4	
Delay (s)		13.3			13.7			3.7			4.3	
Level of Service		B			B			A			A	
Approach Delay (s/veh)		13.3			13.7			3.7			4.3	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		5.5			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		35.3			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		55.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
7: Front St NE & Center Access/Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	40	13	18	36	38	20	332	22	39	425	3
Future Volume (veh/h)	4	40	13	18	36	38	20	332	22	39	425	3
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No		No		No	
Adj Sat Flow, veh/h/ln	1800	1800	1800	1716	1800	1716	1800	1758	1800	1477	1786	1800
Adj Flow Rate, veh/h	5	47	15	21	42	45	24	391	26	46	500	4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	0	0	0	6	0	6	0	3	0	23	1	0
Cap, veh/h	204	152	48	250	79	84	205	756	49	226	793	6
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	114	1230	388	318	638	683	38	1564	100	71	1640	13
Grp Volume(v), veh/h	67	0	0	108	0	0	441	0	0	550	0	0
Grp Sat Flow(s), veh/h/ln	1731	0	0	1638	0	0	1702	0	0	1724	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.0	1.2	0.0	0.0	3.6	0.0	0.0	4.7	0.0	0.0
Prop In Lane	0.07		0.22	0.19		0.42	0.05		0.06	0.08		0.01
Lane Grp Cap(c), veh/h	404	0	0	413	0	0	1010	0	0	1025	0	0
V/C Ratio(X)	0.17	0.00	0.00	0.26	0.00	0.00	0.44	0.00	0.00	0.54	0.00	0.00
Avail Cap(c_a), veh/h	1688	0	0	1617	0	0	2970	0	0	3004	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	0.0	0.0	8.3	0.0	0.0	3.6	0.0	0.0	3.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.3	0.0	0.0	8.6	0.0	0.0	3.9	0.0	0.0	4.3	0.0	0.0
LnGrp LOS	A			A			A			A		
Approach Vol, veh/h	67			108			441			550		
Approach Delay, s/veh	8.3			8.6			3.9			4.3		
Approach LOS	A			A			A			A		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+R <sub>c</sub> ), s	13.8		6.5		13.8		6.5					
Change Period (Y+R <sub>c</sub> ), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	34.0		18.0		34.0		18.0					
Max Q Clear Time (g_c+l1), s	6.7		3.2		5.6		2.7					
Green Ext Time (p_c), s	3.1		0.4		2.3		0.2					
Intersection Summary												
HCM 7th Control Delay, s/veh			4.7									
HCM 7th LOS			A									

# HCM Signalized Intersection Capacity Analysis

## 7: Front St NE & Center Access/Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	31	10	19	63	36	33	513	32	37	464	5
Future Volume (vph)	5	31	10	19	63	36	33	513	32	37	464	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Fr <sub>t</sub>		0.97			0.96			0.99			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1730			1599			1733			1774	
Flt Permitted		0.96			0.94			0.96			0.93	
Satd. Flow (perm)		1665			1509			1660			1662	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	5	34	11	21	69	40	36	564	35	41	510	5
RTOR Reduction (vph)	0	9	0	0	33	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	41	0	0	97	0	0	632	0	0	556	0
Confl. Peds. (#/hr)			1	1					5	5		5
Confl. Bikes (#/hr)									2			1
Heavy Vehicles (%)	0%	0%	0%	11%	0%	17%	0%	3%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		7.8			7.8			24.5			24.5	
Effective Green, g (s)		7.8			7.8			24.5			24.5	
Actuated g/C Ratio		0.18			0.18			0.58			0.58	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		2.5			2.5			2.5			2.5	
Lane Grp Cap (vph)		307			278			961			962	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.06			c0.38			0.33	
v/c Ratio		0.13			0.35			0.66			0.58	
Uniform Delay, d1		14.4			15.0			6.0			5.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.1			0.6			1.5			0.7	
Delay (s)		14.6			15.6			7.5			6.3	
Level of Service		B			B			A			A	
Approach Delay (s/veh)		14.6			15.6			7.5			6.3	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay (s/veh)		8.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		42.3			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		58.8%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM 7th Signalized Intersection Summary  
7: Front St NE & Center Access/Market St NE

05/31/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	31	10	19	63	36	33	513	32	37	464	5
Future Volume (veh/h)	5	31	10	19	63	36	33	513	32	37	464	5
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No											
Adj Sat Flow, veh/h/ln	1800	1800	1800	1646	1800	1561	1800	1758	1800	1800	1786	1800
Adj Flow Rate, veh/h	5	34	11	21	69	40	36	564	35	41	510	5
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	11	0	17	0	3	0	0	1	0
Cap, veh/h	158	173	53	179	132	71	159	776	46	169	821	8
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	105	1228	376	198	942	507	43	1558	93	59	1649	16
Grp Volume(v), veh/h	50	0	0	130	0	0	635	0	0	556	0	0
Grp Sat Flow(s), veh/h/ln	1709	0	0	1647	0	0	1695	0	0	1724	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.0	2.0	0.0	0.0	8.1	0.0	0.0	6.3	0.0	0.0
Prop In Lane	0.10		0.22	0.16		0.31	0.06		0.06	0.07		0.01
Lane Grp Cap(c), veh/h	383	0	0	383	0	0	981	0	0	998	0	0
V/C Ratio(X)	0.13	0.00	0.00	0.34	0.00	0.00	0.65	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	1476	0	0	1449	0	0	1828	0	0	1843	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	0.0	11.1	0.0	0.0	5.5	0.0	0.0	5.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	0.2	0.0	0.0	0.6	0.0	0.0	0.9	0.0	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.6	0.0	0.0	11.5	0.0	0.0	6.0	0.0	0.0	5.4	0.0	0.0
LnGrp LOS	B			B			A			A		
Approach Vol, veh/h		50			130			635			556	
Approach Delay, s/veh	10.6			11.5			6.0			5.4		
Approach LOS	B			B			A			A		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+R <sub>c</sub> ), s	18.8		8.9		18.8		8.9					
Change Period (Y+R <sub>c</sub> ), s	5.0		5.0		5.0		5.0					
Max Green Setting (Gmax), s	28.0		22.0		28.0		22.0					
Max Q Clear Time (g_c+l1), s	8.3		4.0		10.1		2.7					
Green Ext Time (p_c), s	3.0		0.5		3.4		0.1					
Intersection Summary												
HCM 7th Control Delay, s/veh			6.5									
HCM 7th LOS			A									

## Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Future Vol, veh/h	4	40	13	18	36	38	20	332	22	39	425	3
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	6	0	6	0	3	0	23	1	0
Mvmt Flow	4	40	13	18	36	38	20	332	22	39	425	3

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	898	902	430	906	892	343	431	0	0	354	0	0
Stage 1	508	508	-	383	383	-	-	-	-	-	-	-
Stage 2	390	394	-	523	509	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.5	6.26	4.1	-	-	4.33	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4	3.354	2.2	-	-	2.407	-	-
Pot Cap-1 Maneuver	263	280	630	253	283	691	1139	-	-	1097	-	-
Stage 1	551	542	-	632	616	-	-	-	-	-	-	-
Stage 2	638	609	-	530	541	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	201	260	628	197	263	691	1136	-	-	1097	-	-
Mov Cap-2 Maneuver	201	260	-	197	263	-	-	-	-	-	-	-
Stage 1	524	516	-	618	602	-	-	-	-	-	-	-
Stage 2	555	595	-	456	515	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v20.21		20.37			0.44			0.7		
HCM LOS	C	C								
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	95	-	-	293	325	150	-	-		
HCM Lane V/C Ratio	0.018	-	-	0.194	0.283	0.036	-	-		
HCM Control Delay (s/veh)	8.2	0	-	20.2	20.4	8.4	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.7	1.1	0.1	-	-		

## Intersection

Int Delay, s/veh 5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Future Vol, veh/h	5	31	10	19	63	36	33	513	32	37	464	5
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	11	0	17	0	3	0	0	1	0
Mvmt Flow	5	31	10	19	63	36	33	513	32	37	464	5

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1156	1162	473	1155	1148	534	474	0	0	550	0	0
Stage 1	546	546	-	600	600	-	-	-	-	-	-	-
Stage 2	611	616	-	555	548	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.21	6.5	6.37	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.21	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.599	4	3.453	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	175	197	596	167	200	518	1099	-	-	1030	-	-
Stage 1	526	522	-	472	493	-	-	-	-	-	-	-
Stage 2	485	485	-	501	520	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	99	177	592	125	181	515	1093	-	-	1025	-	-
Mov Cap-2 Maneuver	99	177	-	125	181	-	-	-	-	-	-	-
Stage 1	498	494	-	450	469	-	-	-	-	-	-	-
Stage 2	373	462	-	438	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB				
HCM Control Delay, s/v	29.9	43.37	0.48	0.63				
HCM LOS	D	E						
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Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR	
Capacity (veh/h)	102	-	-	190	207	131	-	-
HCM Lane V/C Ratio	0.03	-	-	0.242	0.571	0.036	-	-
HCM Control Delay (s/veh)	8.4	0	-	29.9	43.4	8.6	0	-
HCM Lane LOS	A	A	-	D	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	3.1	0.1	-	-

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7: Front St NE & Center Access/Market St NE Performance by approach

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Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.2	14.1	1.2	1.2	2.9

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7: Front St NE & Center Access/Market St NE Performance by approach

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Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	13.9	17.5	1.8	1.5	3.7