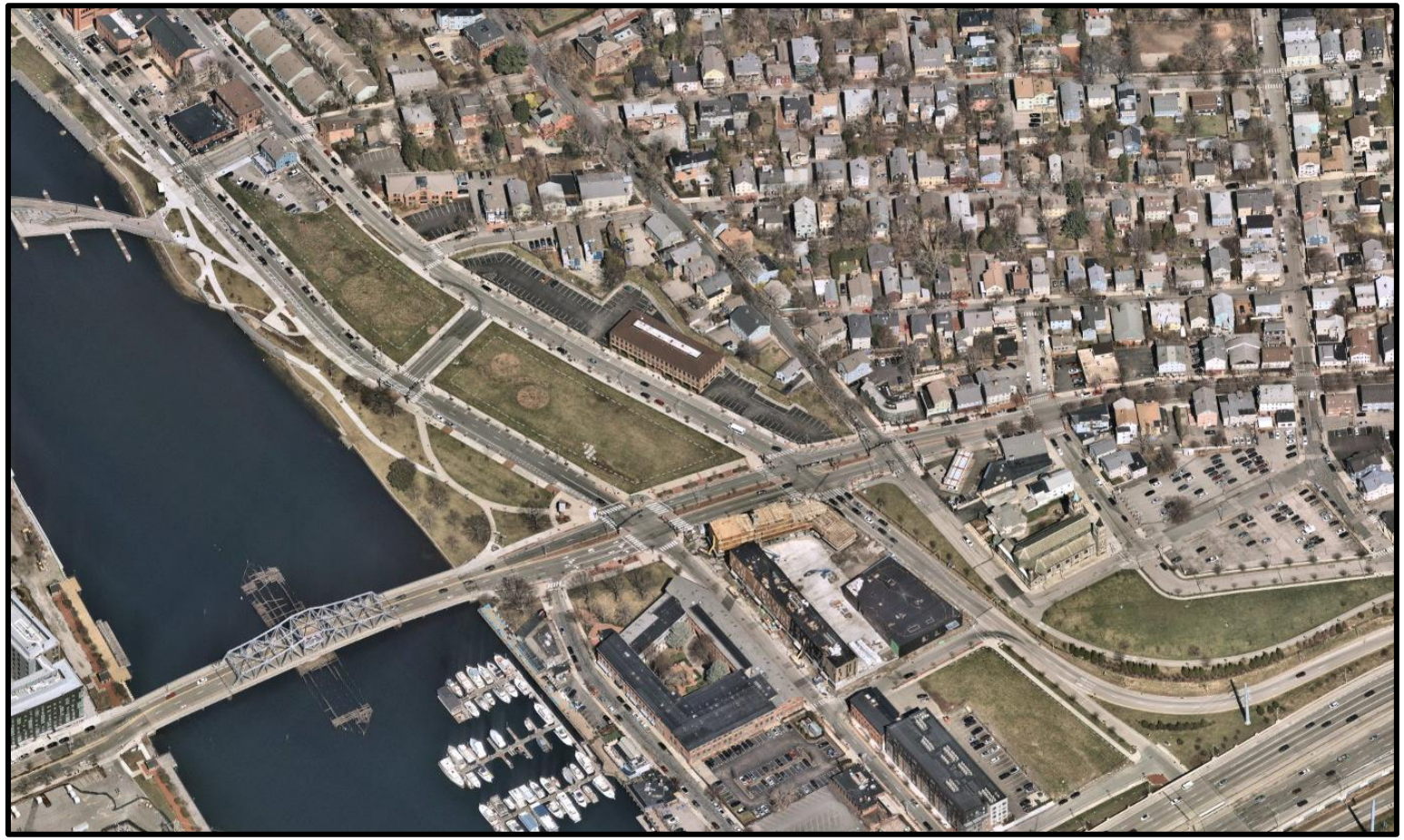
I-195 Redevelopment District
East Side Parcels
Traffic Impact Study

July 20, 2022



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Purpose

- Collect data on existing traffic conditions on roadways and surrounding parcels
- Assess the impact of the proposed development and projected future development of the east side parcels on existing traffic operations in the study area
- Make recommendations to mitigate development impact to the existing roadway network

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Scope

- Original Study area was confined to streets immediately abutting the parcels

- Scope was revised in response to feedback from the community
  - Counts on Benefit Street in response to community concern about increased volumes and speeds
  - Counts at the Crawford Street bridge in response to community desire to expand the study area north
  - Counts during WaterFire in response to community concern with capturing peak seasonal demand

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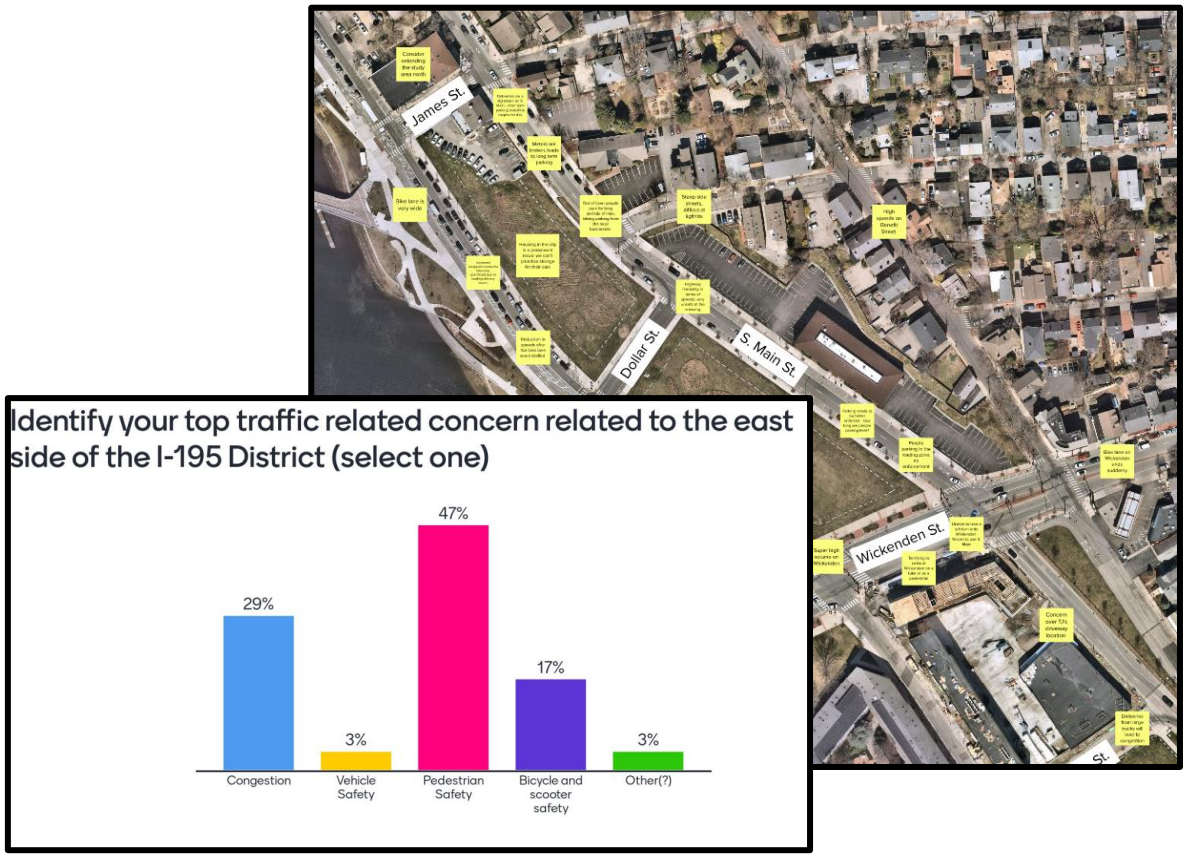
Community Engagement

Listening Session – May 11, 2022



Community Site Walk – June 9, 2022

Data Collection

Traffic Volumes: South Water Street

	Location A	Location B	Location C			Location C	Location C		
	Average Weekday (3/30/2021-4/1/2021)	10/13/2021	Average Weekday (5/17/2022 – 5/18/2022)			ADT Peak (6/24/2022)	WaterFire (6/25/2022)		
	Vehicles	Vehicles	Vehicles	Bicycles	Pedestrians	Vehicles	Vehicles	Bicycles	Pedestrians
ADT	7,810	5,001	6,019	259	1,932	6,699	5,997	275	2,510
AM Peak	405	271	304	14	81	312	336	14	47
PM Peak	927	465	664	33	196	617	482	35	320

Data collected in 2021 was provided by the City of Providence

- Peak ADT is approximately 10% higher than the average weekday, but AM and PM peak are substantially similar
- WaterFire increase in foot traffic is 30 percent higher than the average weekday

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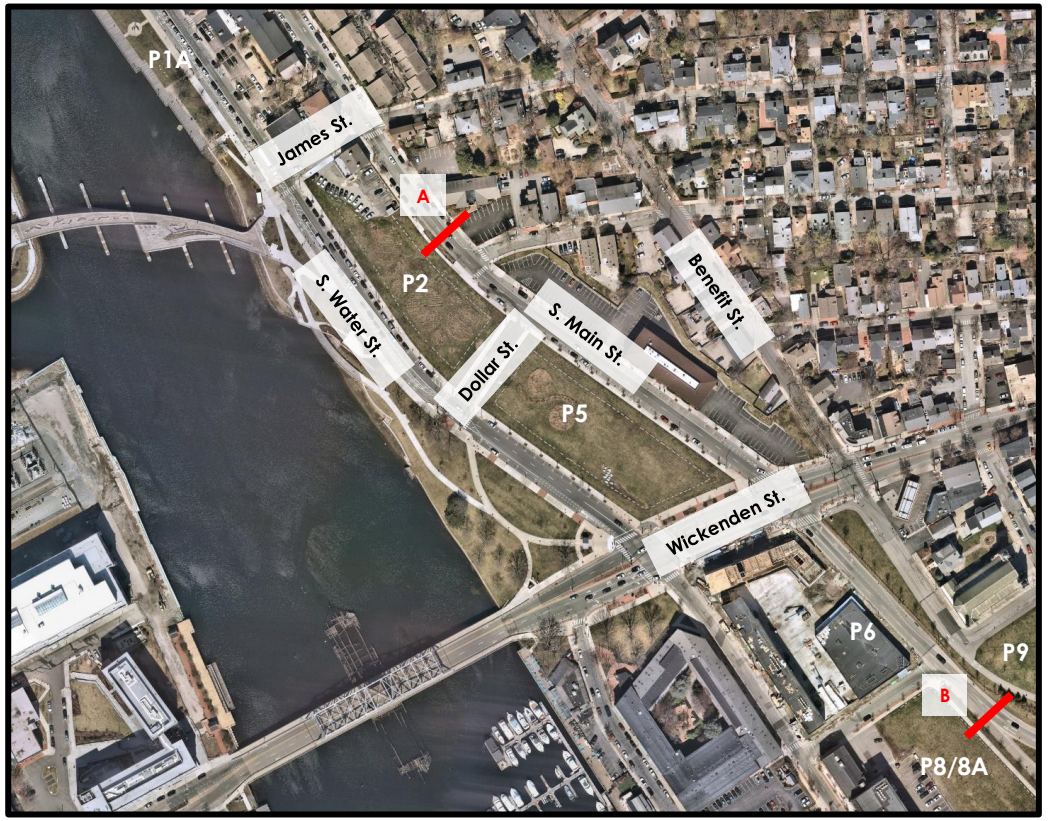
Traffic Volumes: South Main Street

	Location A	Location B	Location A	Location A
	Average Weekday (2/10/2021 – 2/11/2021)	Average Weekday (3/30/2021-4/1/2021)	Average Weekday (5/17/2022 – 5/18/2022)	WaterFire Peak (6/24/2022)
	Vehicles	Vehicles	Vehicles	Vehicles
ADT	6,073	6,289	8,185	9,604
AM Peak	439	540	713	561
PM Peak	653	547	668	681

Data collected in 2021 was provided by the City of Providence

- Peak ADT is approximately 17% higher than the average weekday, but AM and PM peak are substantially similar



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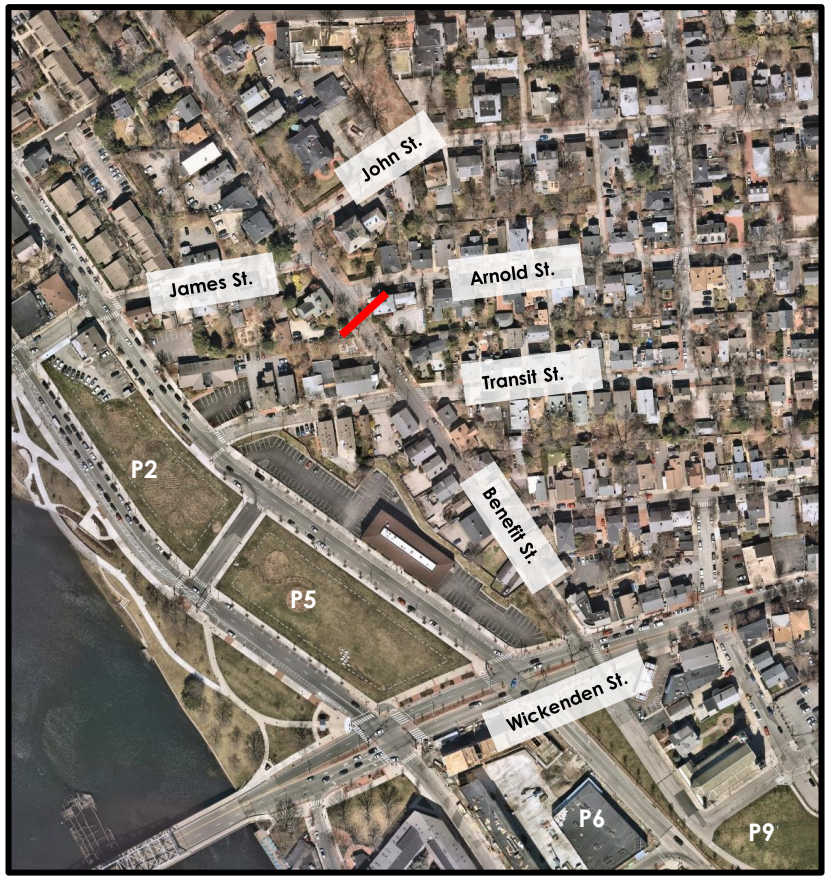
Traffic Volumes: Benefit Street

	Average Weekday (6/1/2022-6/2/2022)
	Vehicles
ADT	3,839
AM Peak	273
PM Peak	343

- Recorded ADT significantly lower than South Water and South Main, even though Benefit carries two-way traffic
- Future traffic calming measures to be implemented by the City



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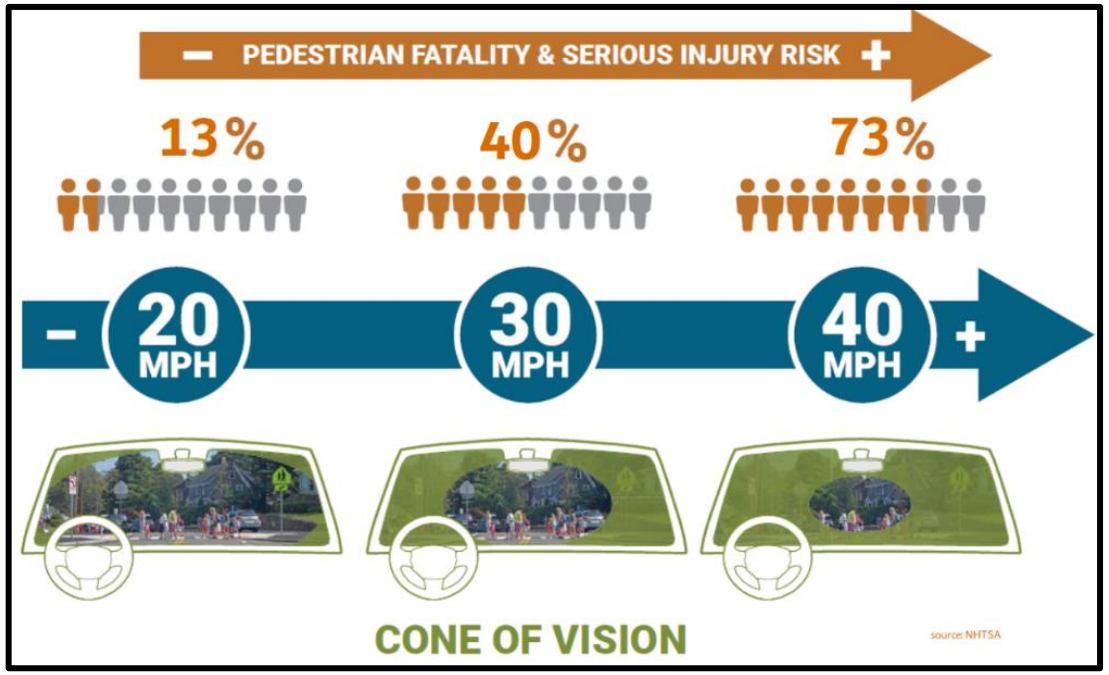
Traffic Safety

Traffic Speeds

	Benefit Street	South Water Street	South Main Street
85th Percentile Speed	23 mph	25 mph	30 mph
Maximum Recorded Speed	43 mph	40 mph	48 mph
Percentage of Vehicles greater than 30 mph	<1%	<2%	17%

- Significantly lower percentage of drivers traveling at high vehicle speeds improves pedestrian safety by reducing the likelihood of serious injury and fatality.



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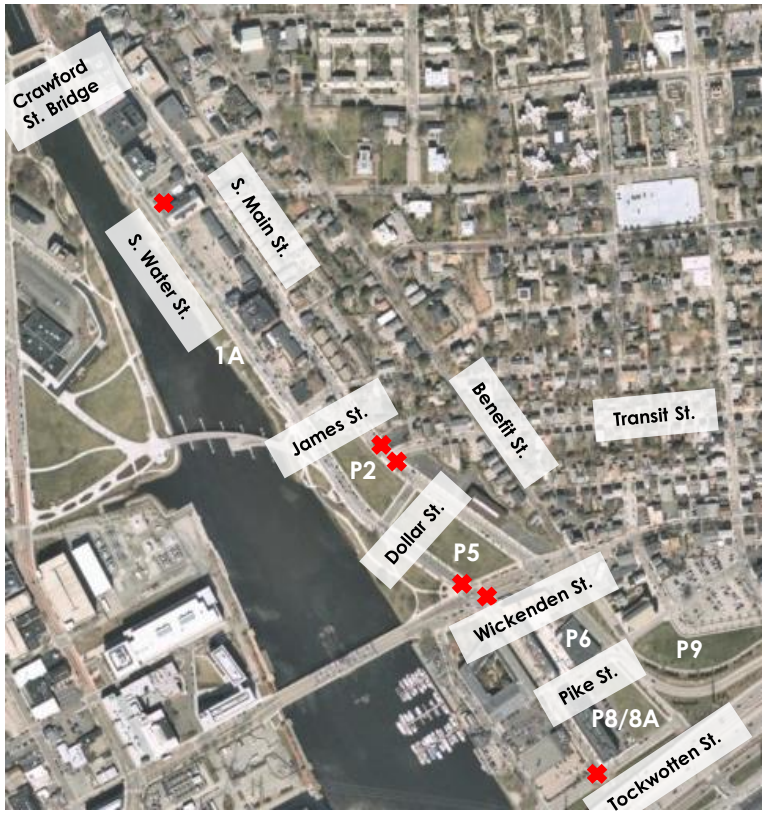
Crash Data

Crashes on South Water Street

	Total Collisions	Number of Injuries
November 2021- June 2022	7	1
November 2020- June 2021	15	1
November 2019- June 2020	8	1
November 2018- June 2019	13	5
November 2017- June 2018	15	1

Crashes since the installation of the cycle track on South Water Street

Pedestrian Collisions Locations (2017-2021)



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Traffic Analysis

Traffic Study Methodology

Assess Existing Conditions

- Site Visit
  - Observe existing traffic patterns and operations
- Traffic Counts
  - Counts are conducted during AM and PM peak periods to determine AM and PM peak hours. Traffic impacts are most significant during the peak hours.
- Crash Data Assessment
  - Obtain crash records through the City of Providence at study area intersections

Develop the No-Build Condition

- Volume Adjustments
  - Traffic growth from other developments
- Future roadway improvements
- Capacity Analysis
  - Perform capacity analysis at the study area intersections for a future year without accounting for development traffic
  - Capacity analysis provides approximate vehicle delay and queueing at intersections

Develop the Combined Condition

- ITE Trip Generation
  - Utilize ITE Trip Generation Manual to estimate the number of site generated trips
- Capacity Analysis
  - Perform capacity analysis for the future year with the additional traffic
- Determine if mitigation is appropriate

An assessment of traffic impact is made through a comparison of the background and combined condition.

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Trip Generation

Total Trips			
AM Peak Hour Trips	**532**	**PM Peak Hour Trips**	**698**
Entering	*317*	*Entering*	*301*
Exiting	*215*	*Exiting*	*397*

***Development programs for Parcels 1, 5, and 8/8A represent a conservative estimate (i.e. more trips) based on maximum build-out scenarios and land uses with high trip generation rates**

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Intersection Level of Service (LOS)

Delay: additional travel time experienced by a driver beyond that required to travel at the desired vehicle speed

- **Control Delay:** delay caused by the presence of a traffic control device (stop sign, traffic signal)

Level of Service: measure of control delay experienced by stopped vehicles at an intersection; measures driver discomfort and frustration

Typically, LOS D or better is considered acceptable in urban settings

	Unsignalized	Signalized
LOS	**Control Delay**	**Control Delay**
A	< 10 s	< 10 s
B	10 s – 15 s	10 s – 20 s
C	15 s – 25 s	20 s – 35 s
D	25 s – 35 s	35 s – 55 s
E	35 s – 50 s	55 s – 80 s
F	> 50 s	> 80 s

Capacity Analysis: Morning Peak Hour

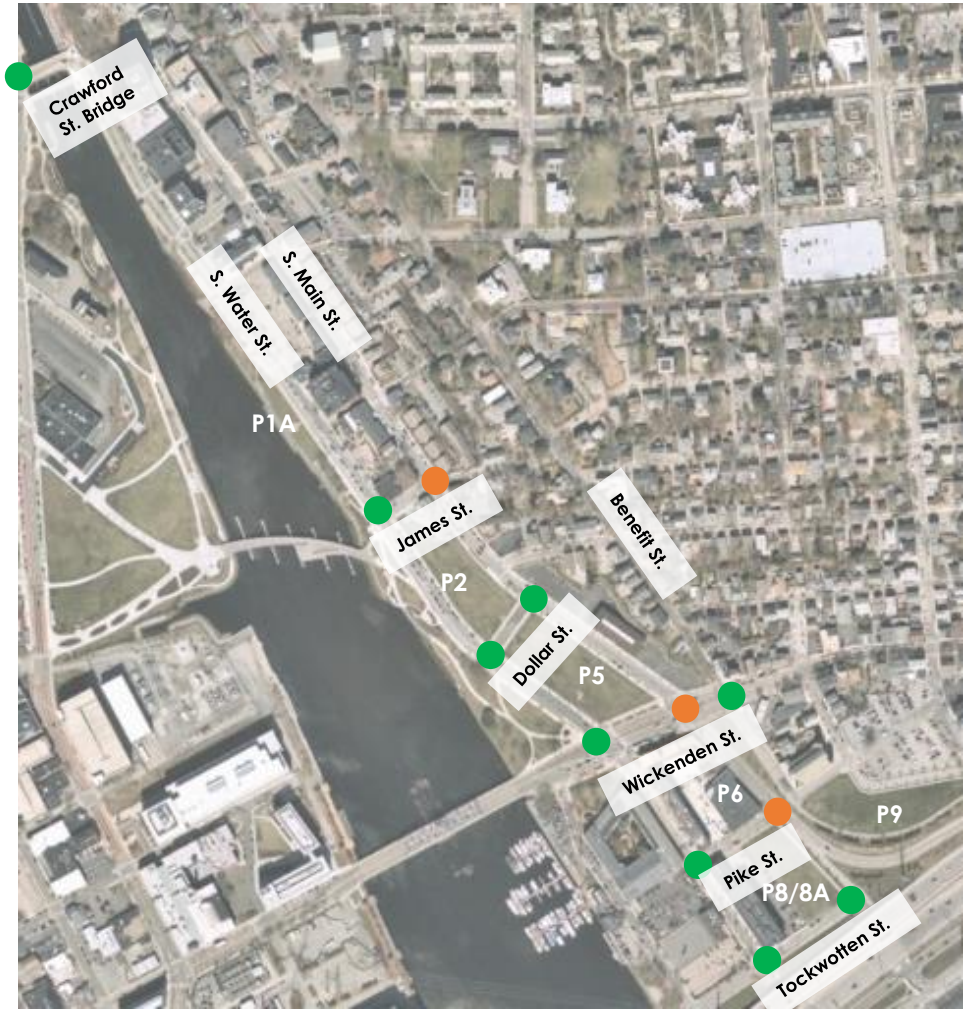
Legend

LOS A - LOS B

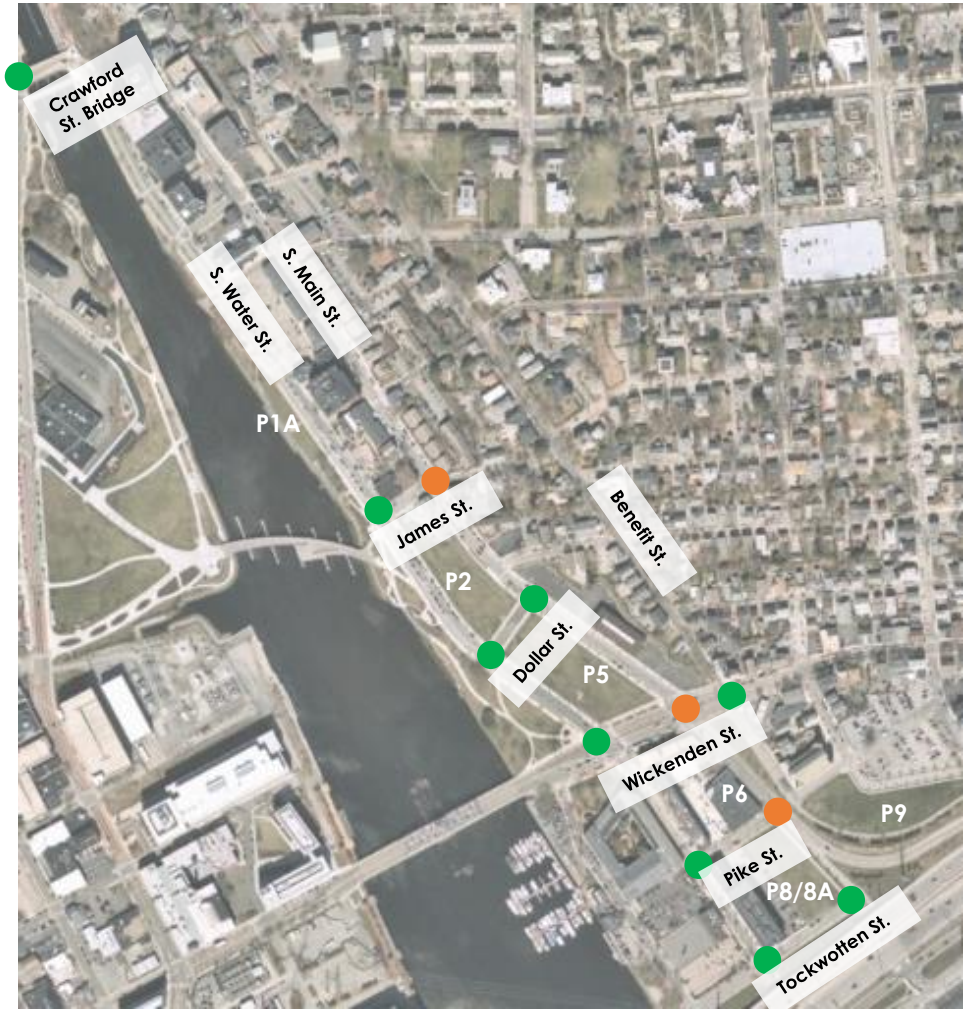
LOS C - LOS D

LOS E - LOS F

2032 No-Build



2032 Build



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Capacity Analysis: Afternoon Peak Hour

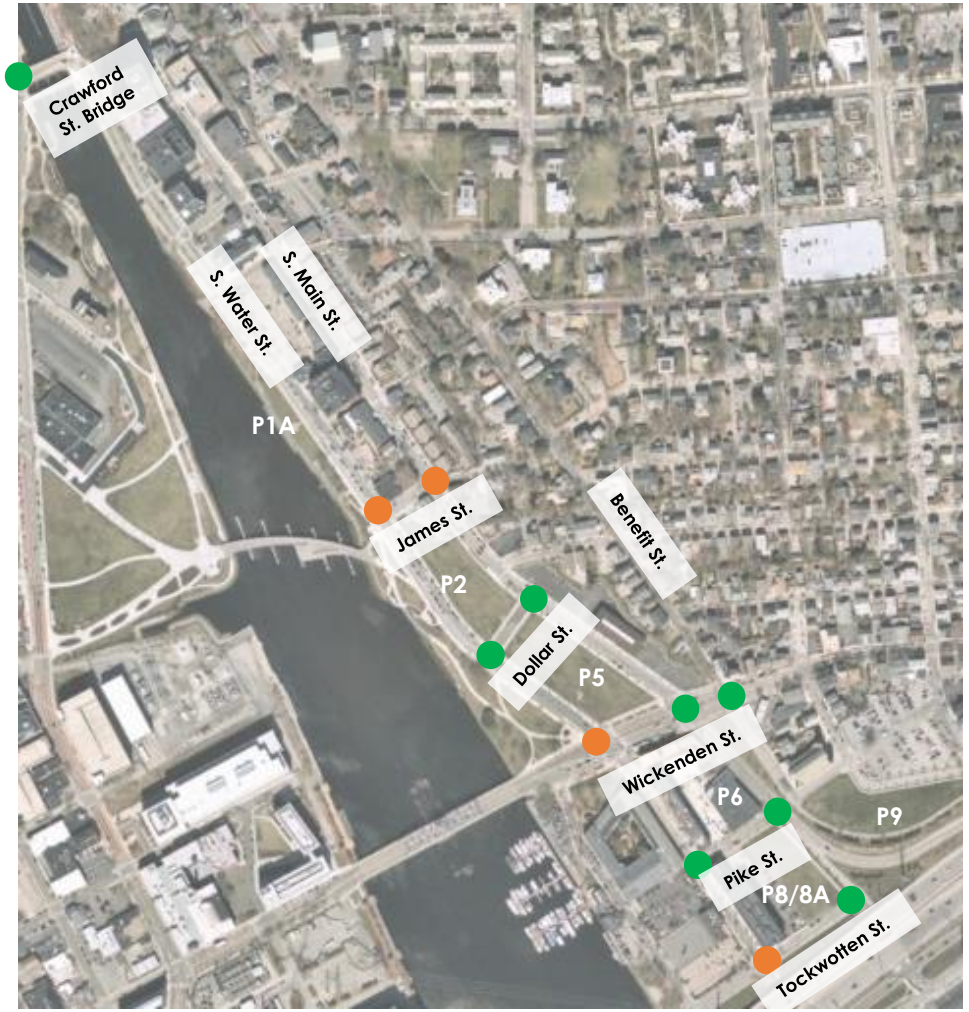
Legend

LOS A - LOS B

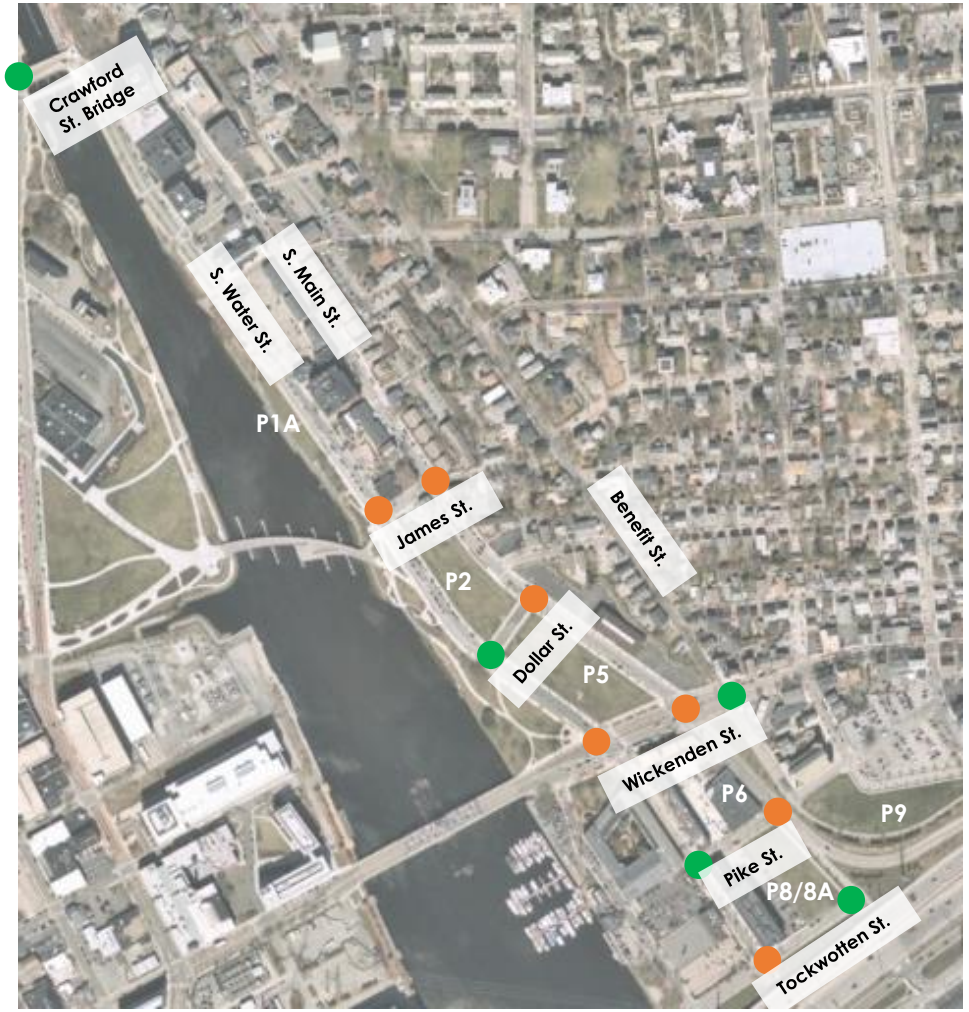
LOS C - LOS D

LOS E - LOS F

2032 No-Build



2032 Build



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Roadway Improvements

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Pedestrian Safety at Pike Street

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Pedestrian Safety at Pike Street

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Pedestrian Safety at Pike Street

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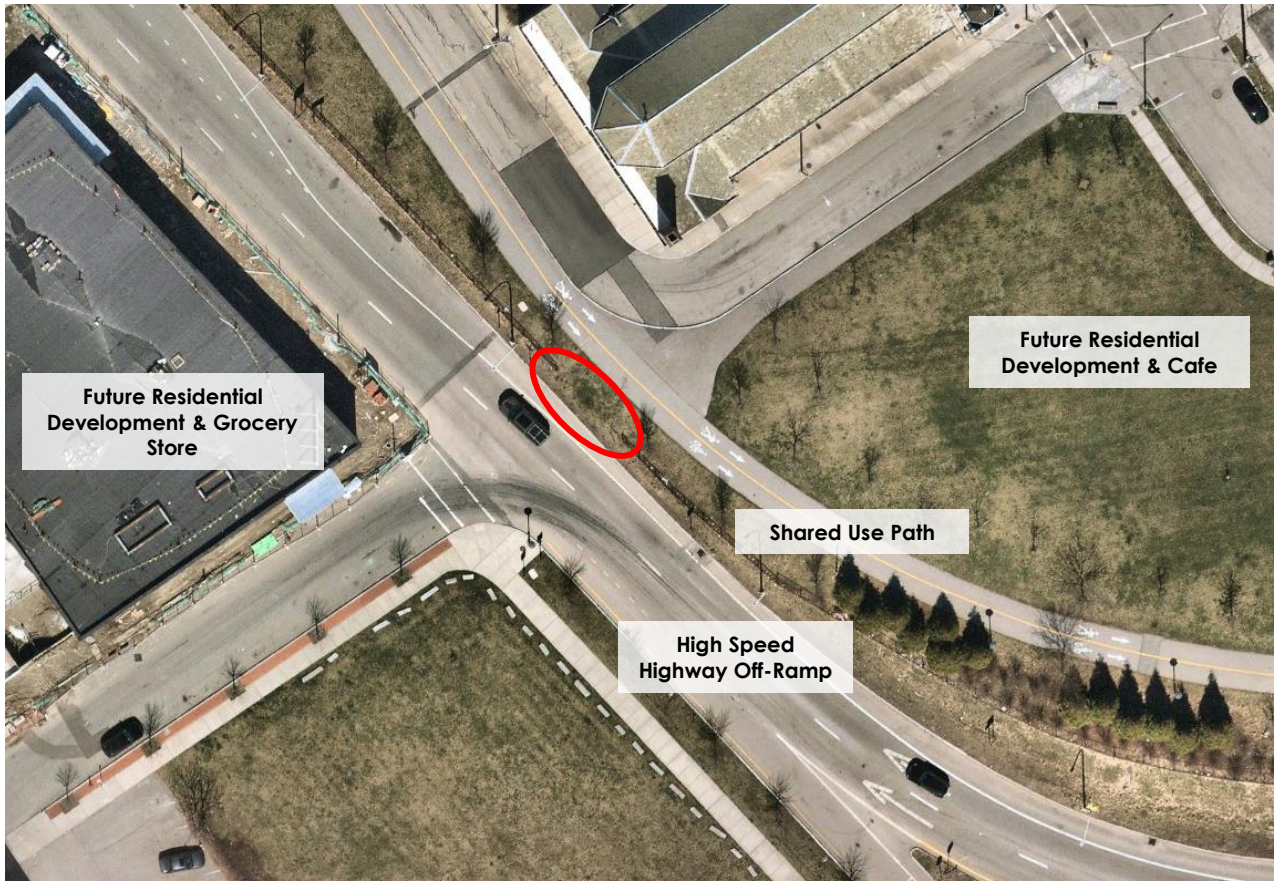
Pedestrian Safety at Pike Street

2015

2017

2021



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I-195 Ramp Relocation

- Speed Management: vehicles exiting the highway will have to come to a complete stop before turning right onto South Main Street
- Direct Access to Parcel 8
- Allows for the extension of Pike Street and Alves Way

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Pike Street Extension

- Pedestrian Safety: safe connection to South Main Street and all of the east side Parcels from Parcel 9

- Vehicular Connectivity: additional westbound connection for vehicles to divert some traffic from Wickenden Street

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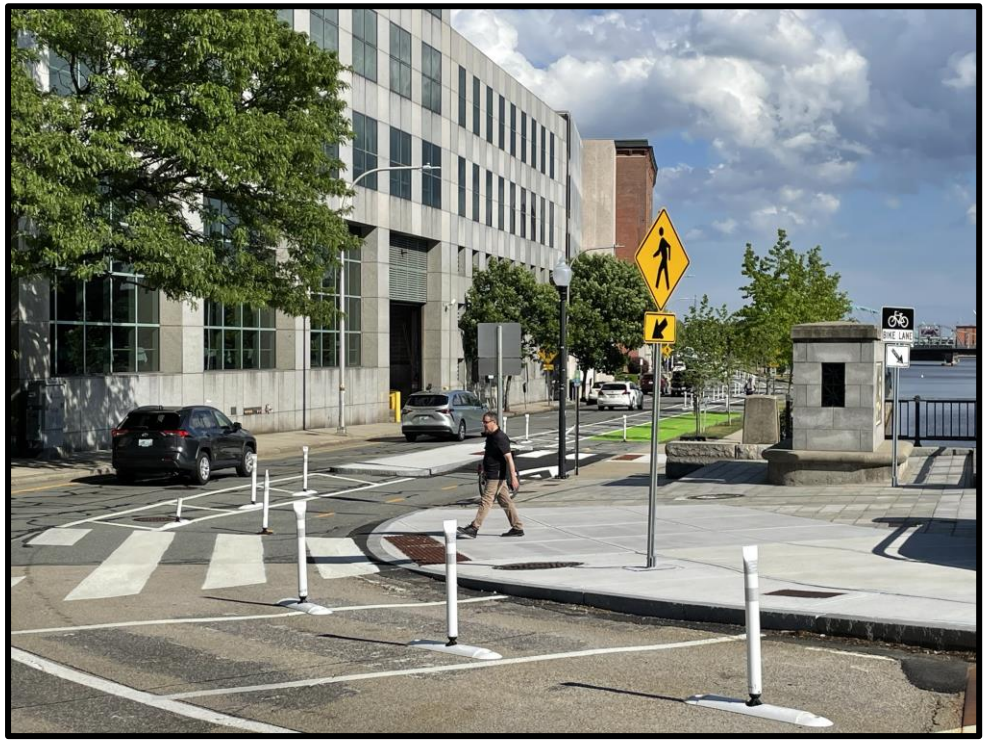
Conclusions

- Primary community concerns with existing conditions:
  - Vehicle and pedestrian safety
  - Increased traffic due to WaterFire and other events
  - Congestion
  - Driving in the area feels uncomfortable with the addition of the bike lane

- Most significant increase in delay between the No-Build and Build condition is 30 seconds. This occurs on the southbound approach of South Water and Wickenden.

- No-Build and Build LOS are acceptable for urban environments and do not include any changes to signal timing

- The removal of the westbound left turn lane at the intersection of South Water Street and Wickenden Street is not recommended at this time. However, the Pike Street/Alves Way connection should alleviate the desire to make this movement.



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Conclusions

- Congestion primarily related to obstructions of the travel lane (parking, loading, deliveries)
- Count data does not indicate significant increases in peak hour vehicle volumes during WaterFire. Off-peak volumes are slightly higher
- Crash data indicates a significant decrease in crash frequency attributed to the cycle track (small sample size).
- Planned traffic calming improvements on Benefit Street will improve safety, reduce vehicle speeds and limit traffic diversion

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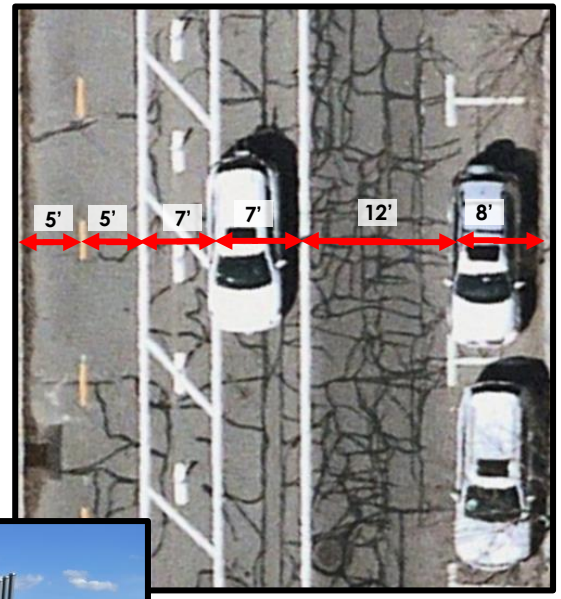
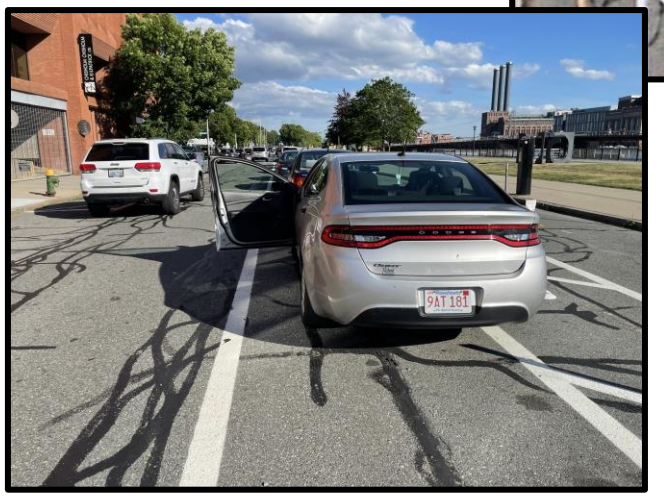
Recommendations

- Implement 195 District review process of Construction/Traffic Management Plans with recommendations for the City to consider in their review/approval
- Businesses should be encouraged to schedule deliveries to occur off-peak.
- Signal timing and signal offset changes if necessary, as the area continues to develop.
- Consider reducing the bike lane buffer width to 6 feet at next roadway resurfacing
- Relocation of Off-Ramp and Pike Street extension
  - Alves Way: one-way westbound
  - Benefit Street: one-way NB





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