



Welcome!

Rourke Bridge Replacement Project
Lowell, MA
MassDOT #607887

Public Information Meeting

December 9, 2020

Design Team

MassDOT's Highway Division

Project Sponsor - Responsible for oversight of Project Permitting, Design, and Construction

HNTB Design Lead

McMahon Associates Traffic

Urban Idea Lab Bridge Architect & Urban Design

Crosby Schlessinger Smallridge Landscape Design

Domingo Gonzalez Associates Lighting Design

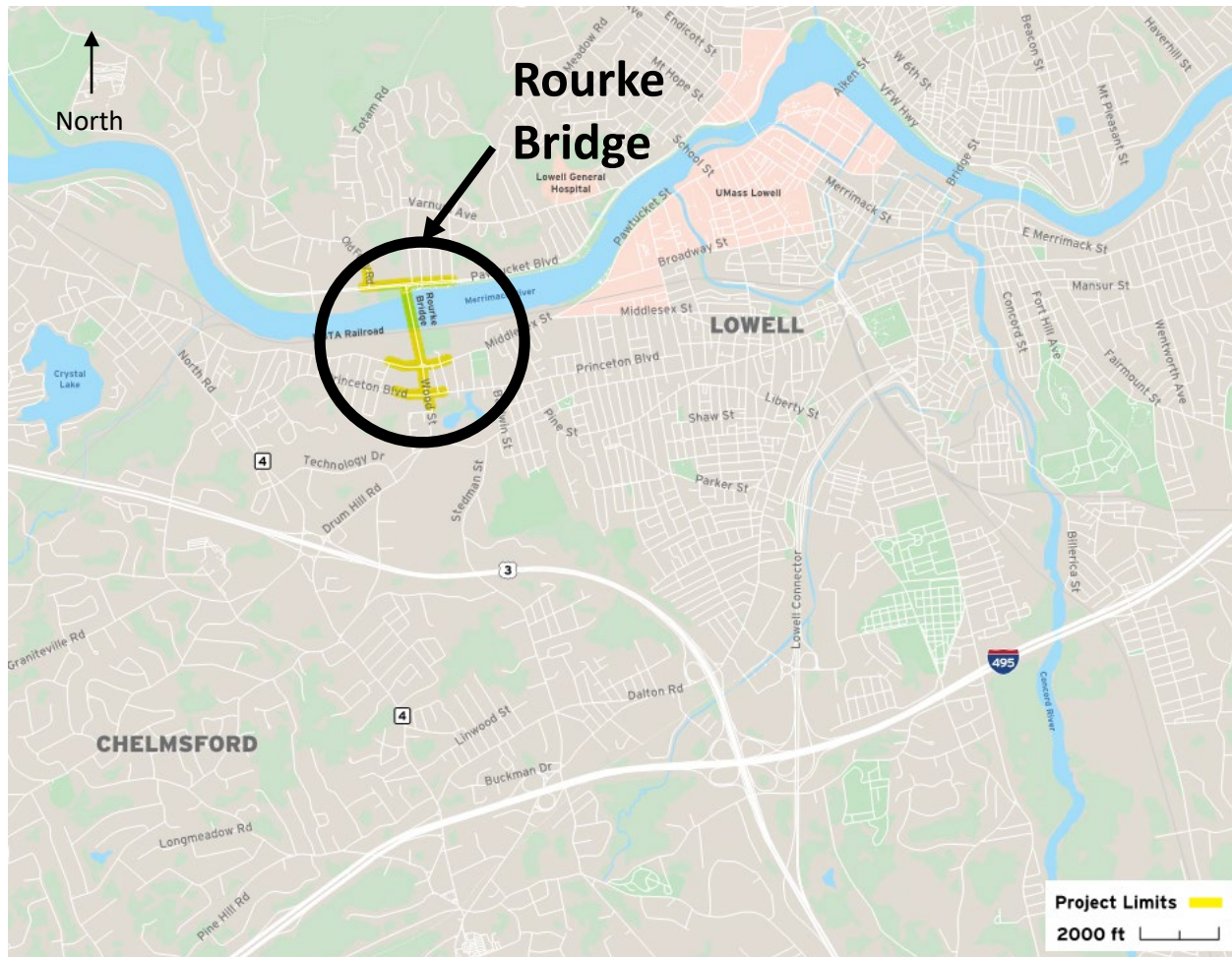
Regina Villa Associates Public Involvement

Epsilon Associates Environmental Services

Welch Associates Survey



Project Location



Project Limits



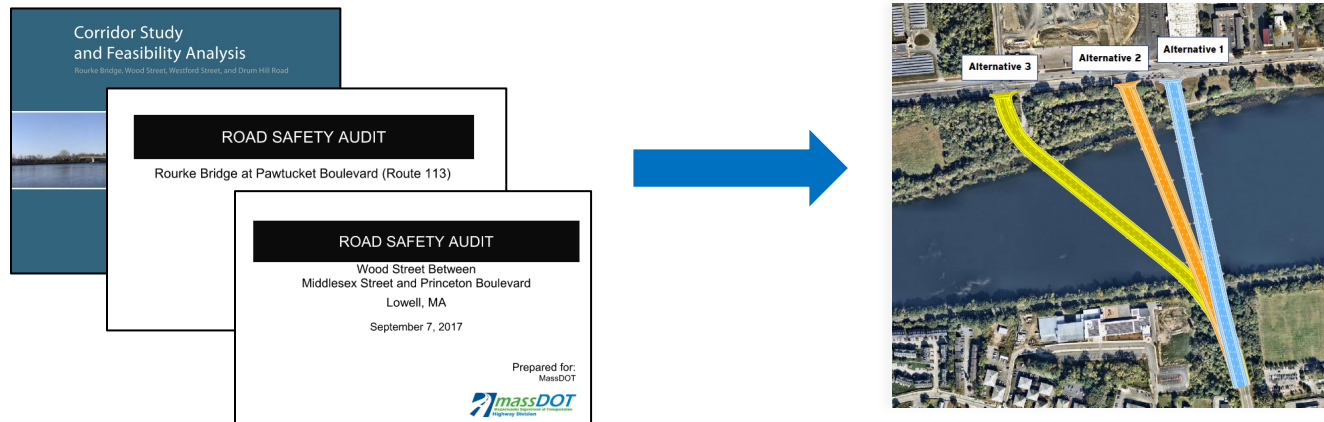
North



Design Scope



- **Identify Preferred Bridge Alignment**



- **Identify Preferred Bridge Type, Cross Section (bike/ped/emergency), Intersection Design**
- **25% Design & Bridge Sketch Plans**
- **Environmental Permitting**
- **Final Design or Design Build RFP**

Completed Work



Survey

Wetland Delineation

Geophysical Evaluation

Preliminary Hydraulic Analysis

Public Involvement & Outreach Plan

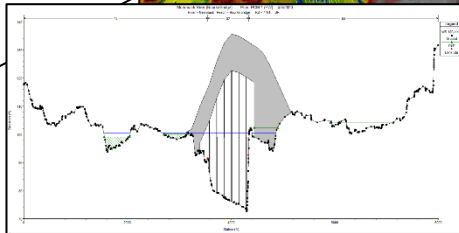
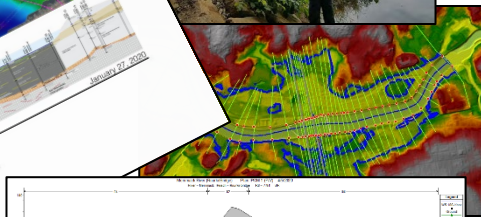
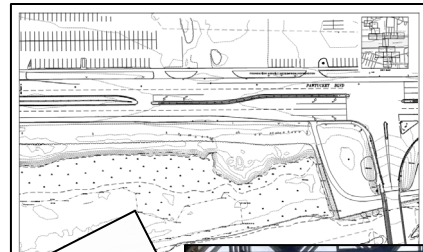
Urban/Landscape Concept Evaluation

Environmental Concept Evaluation

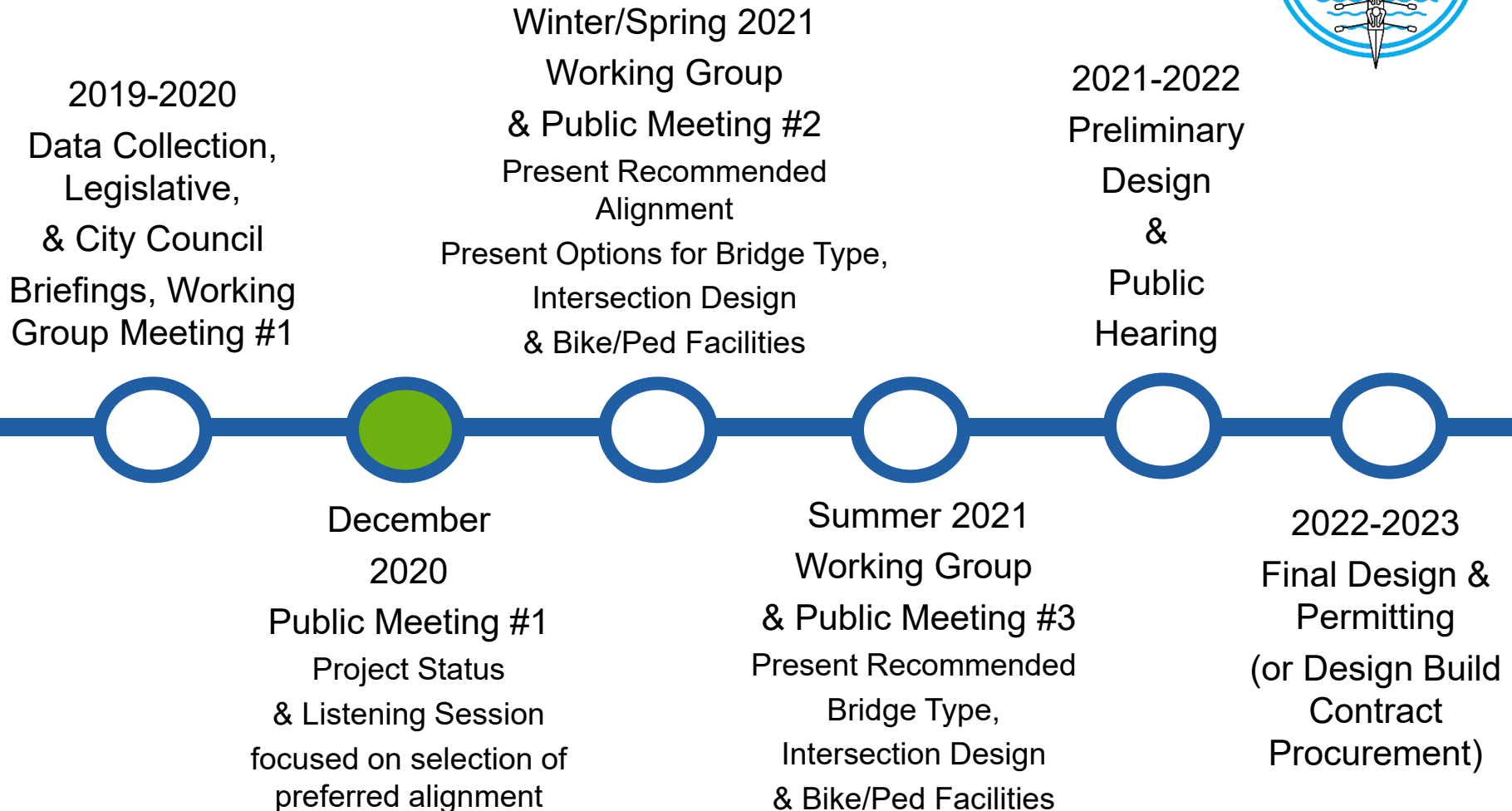
Traffic Counts (veh/ped/bike/truck)

Safety Analysis

Traffic Modeling



Schedule



Project Purpose



Bridge Replacement



Enhance safety and connectivity for Pedestrians, Bicycles, Emergency Vehicles and Watercraft



Improve Traffic Operations at the Wood Street intersections with Pawtucket Boulevard, Middlesex Street, and Princeton Boulevard

Project Need



Functionally Obsolete

Substandard Pedestrian Walkway

No Shoulders for Emergency Vehicles

No Bicycle Accommodations

Inadequate Approach Intersection Capacity



Maintenance Issues

Deck Patching

Replacement Parts

Project Need



Safety & Operations

Lack of Bike/Ped Accommodation

Wood Street & Pawtucket Boulevard



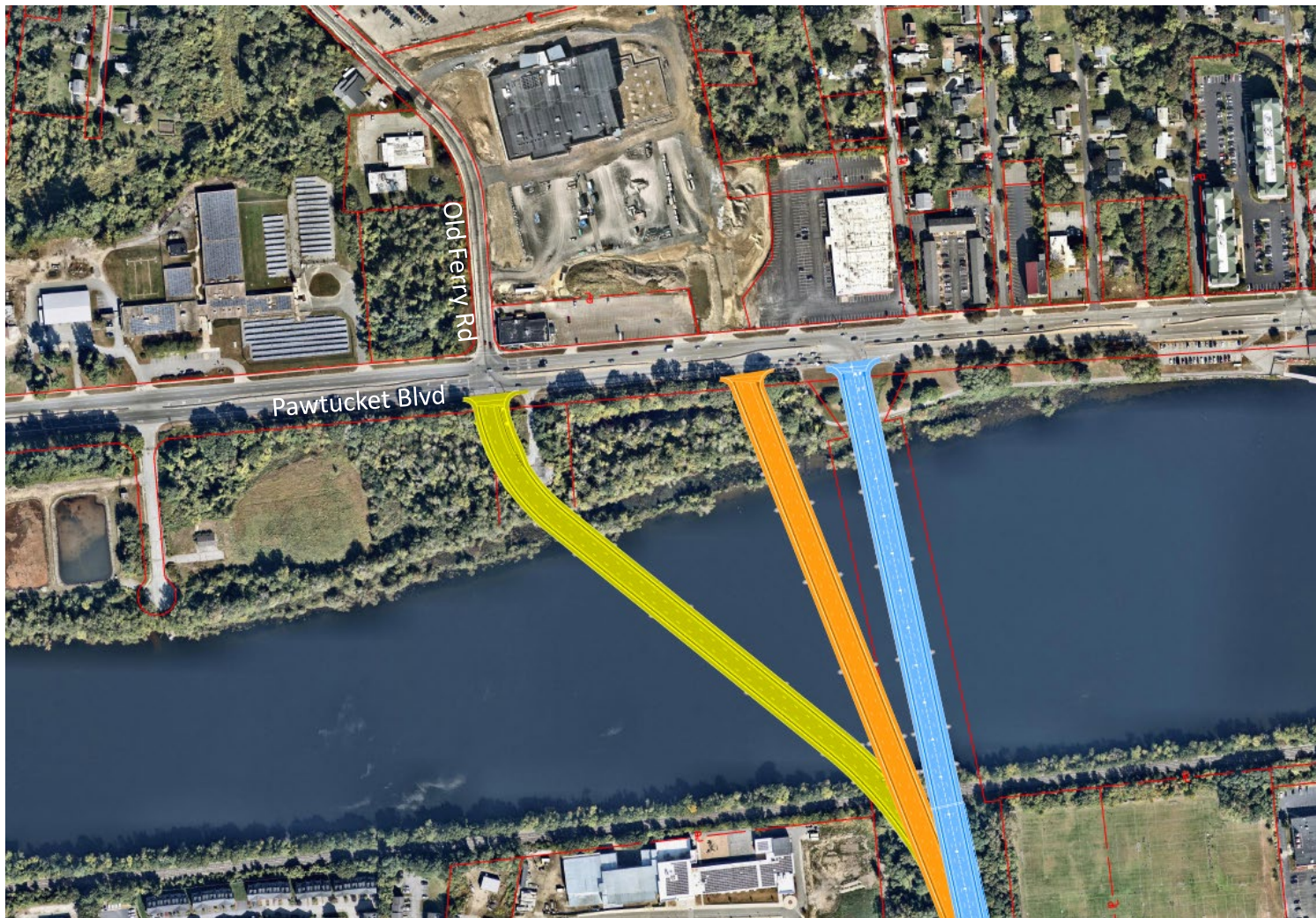
Wood Street & Middlesex Street



Wood Street & Princeton Boulevard



3 Alternative Alignments



Alternative 1



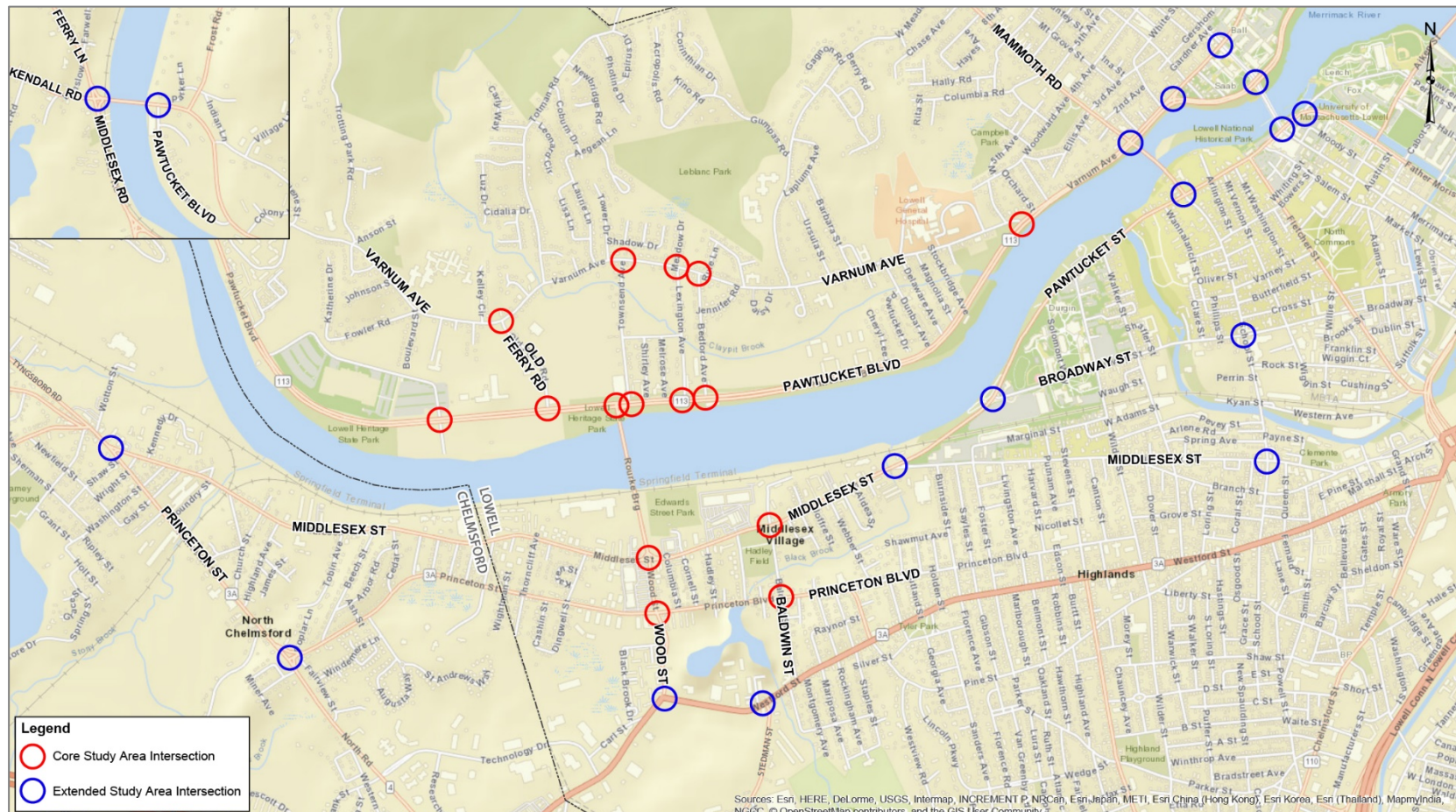
Alternative 2



Alternative 3



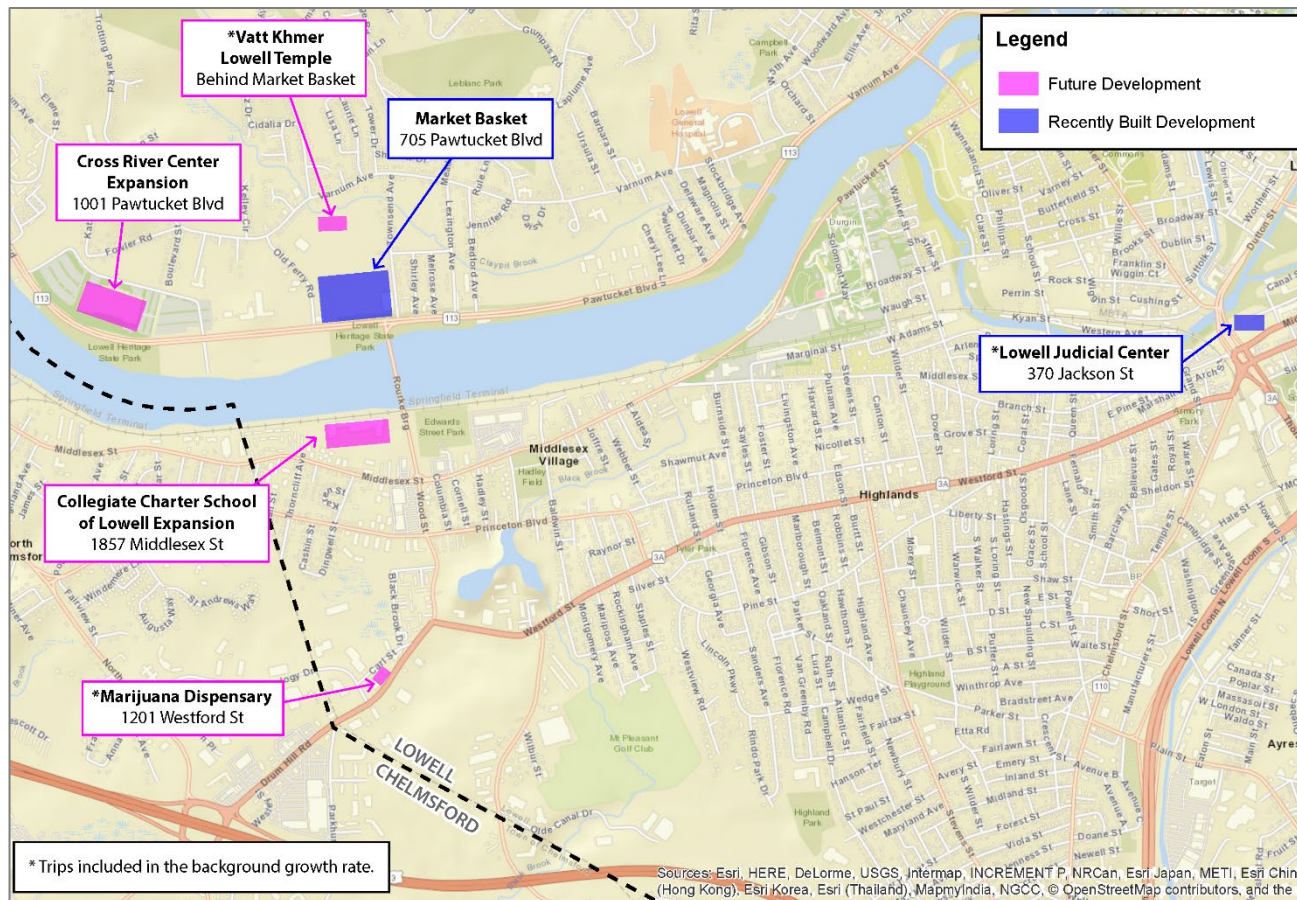
Traffic Study Area





Traffic Volumes

Identified site traffic generators



Traffic Counts

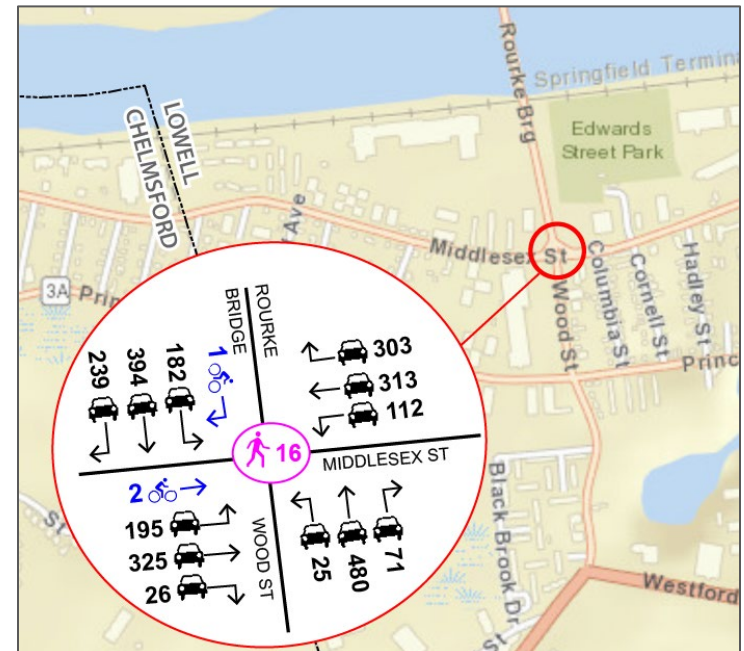


Conducted May 2019

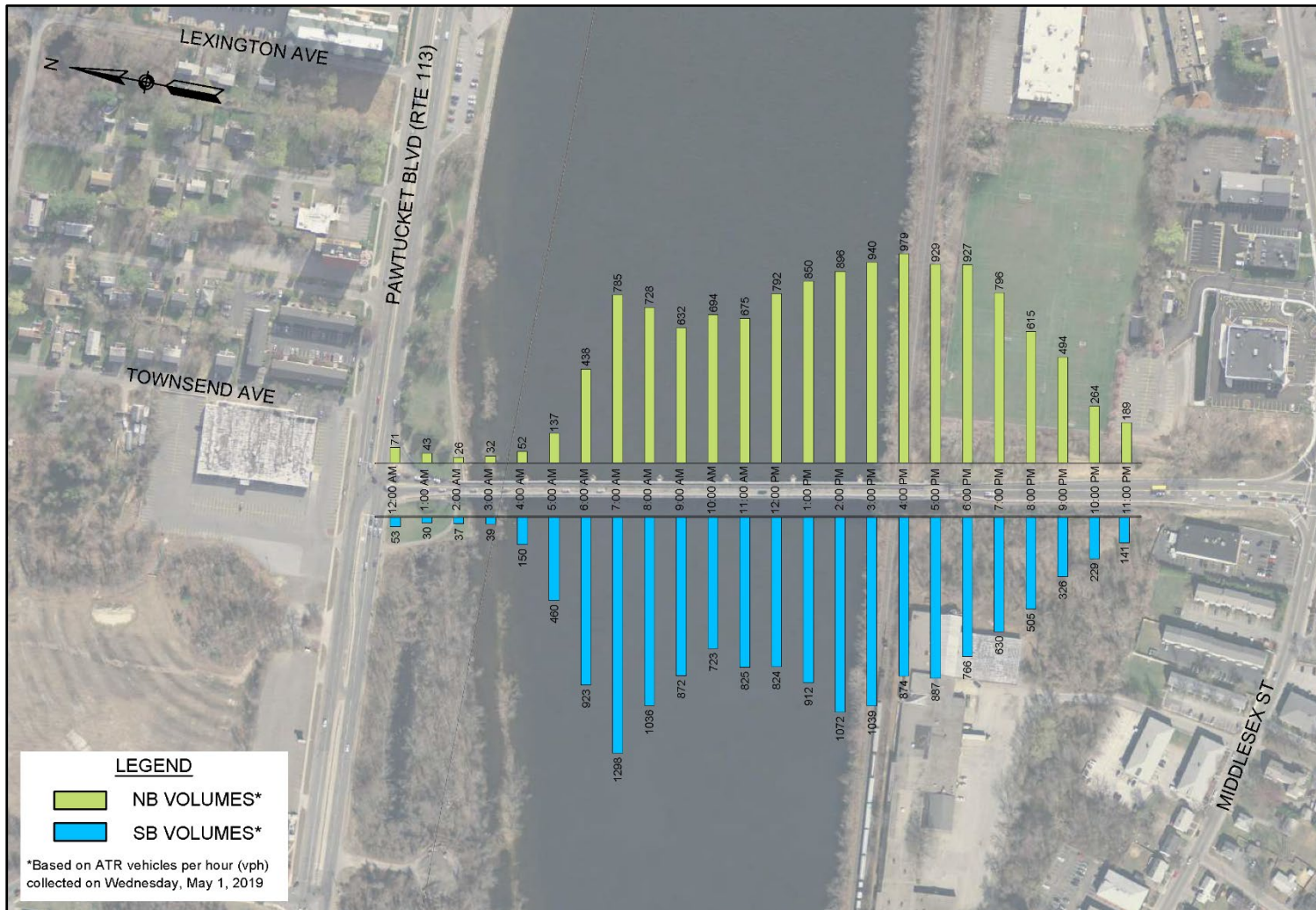
Include Bicycles, Pedestrians, Heavy Trucks

**Post-development counts Include Bicycles, Pedestrians,
Heavy Trucks**

**Post-development counts for the
new Market Basket were
obtained on Wednesday,
November 18, 2020**



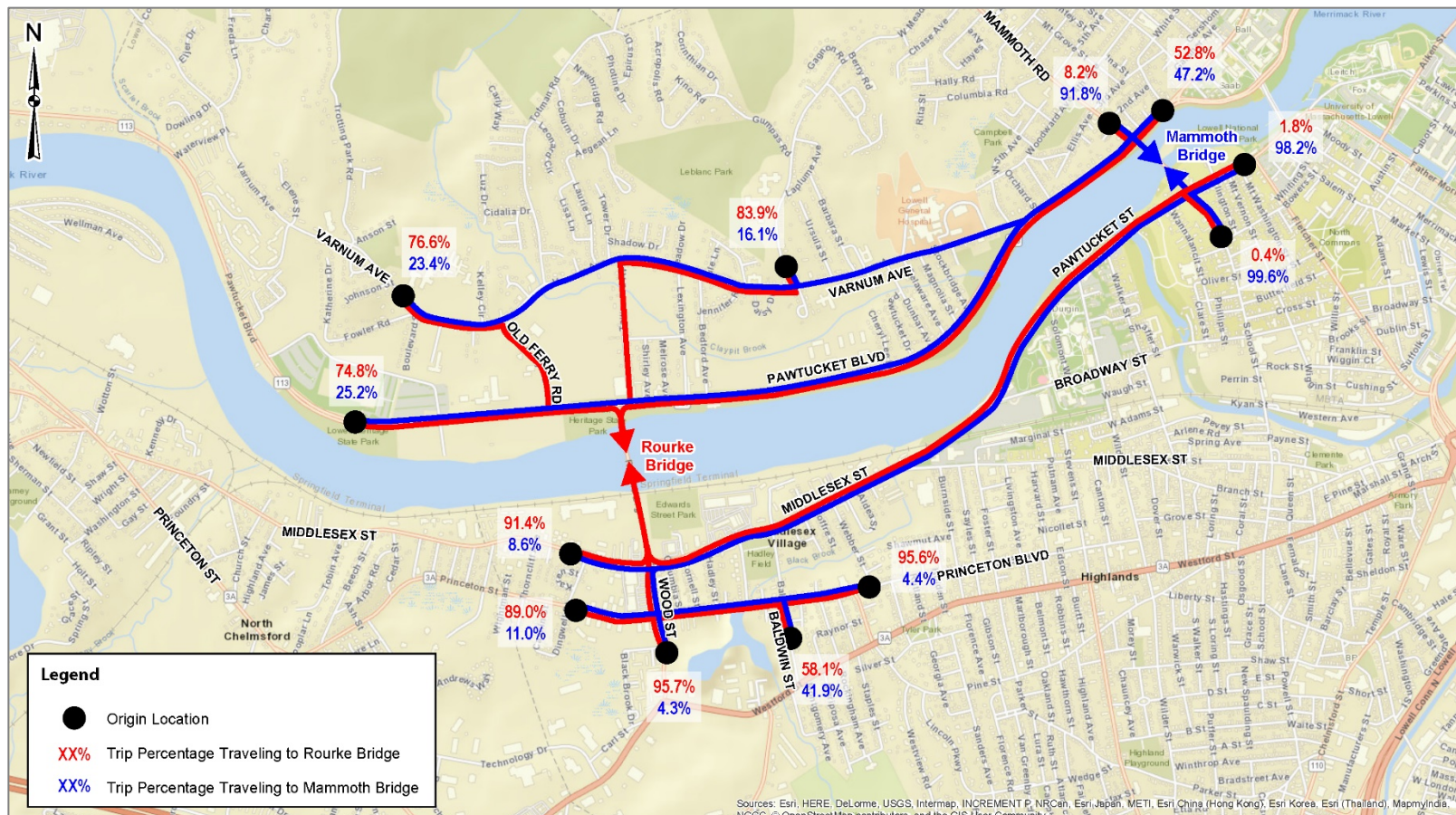
Bridge Traffic Volumes



Origin/Destination Study



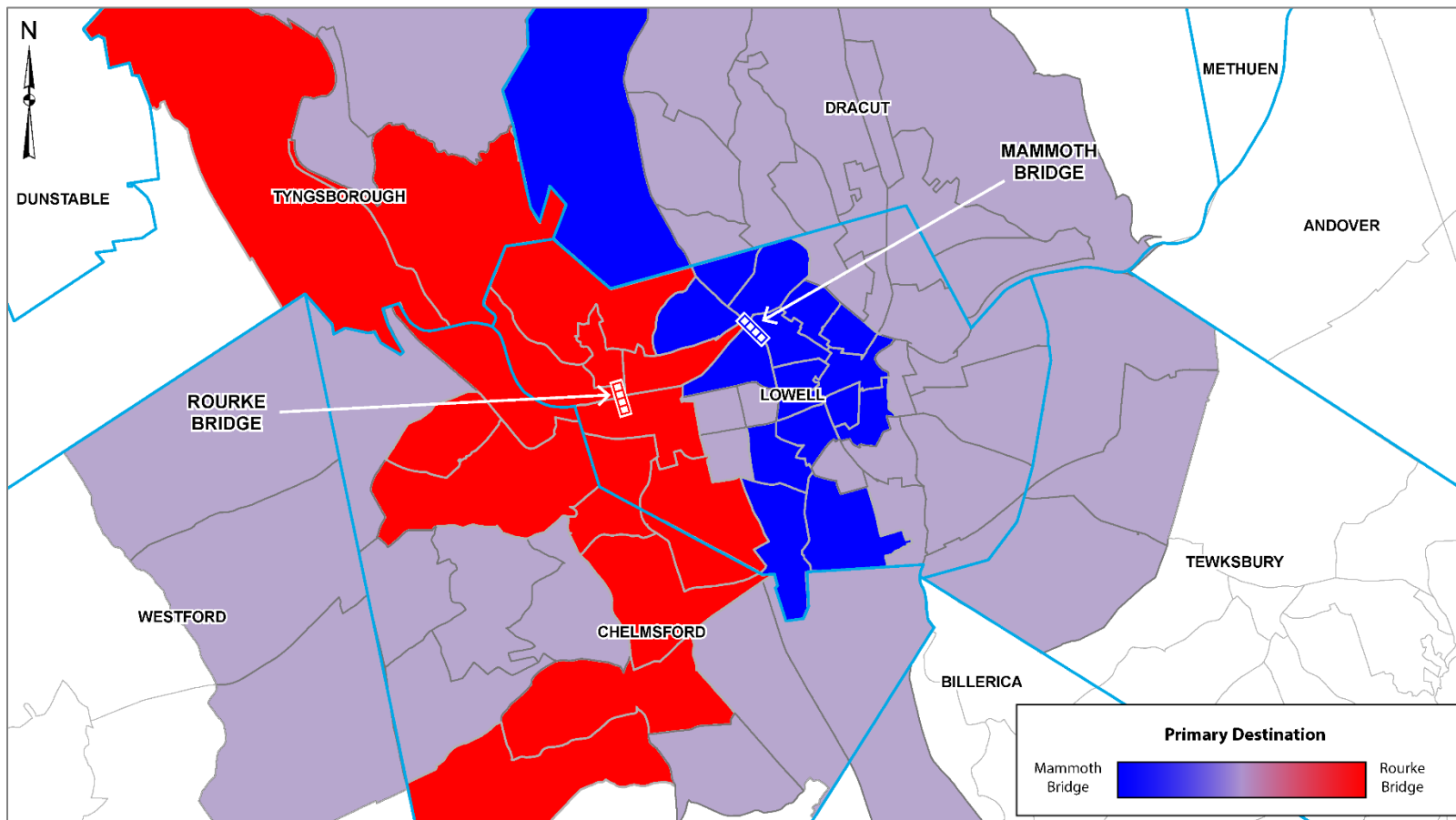
PM Origin-Destination map



Origin/Destination Study



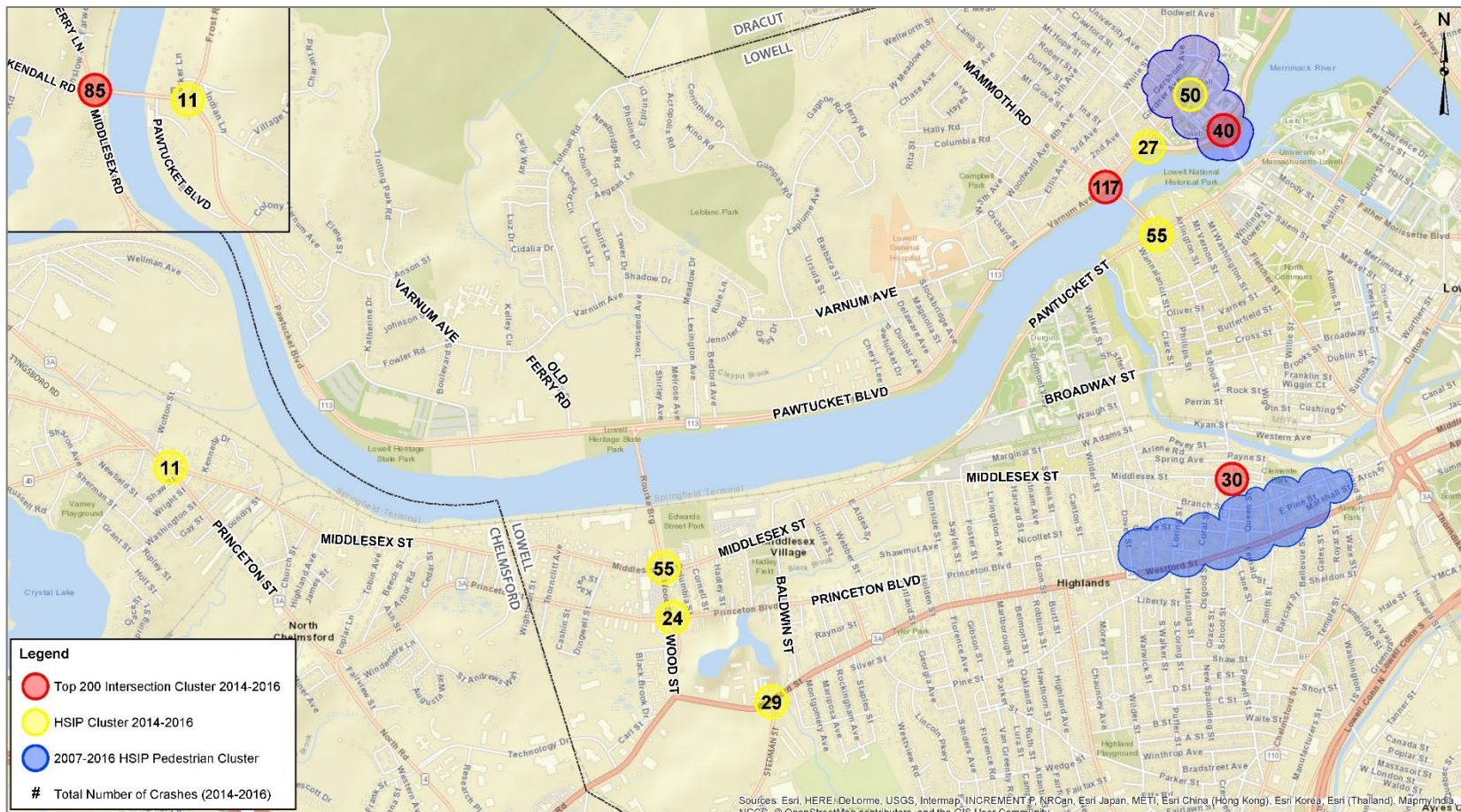
PM Bridge Traffic Zones



Safety Analysis



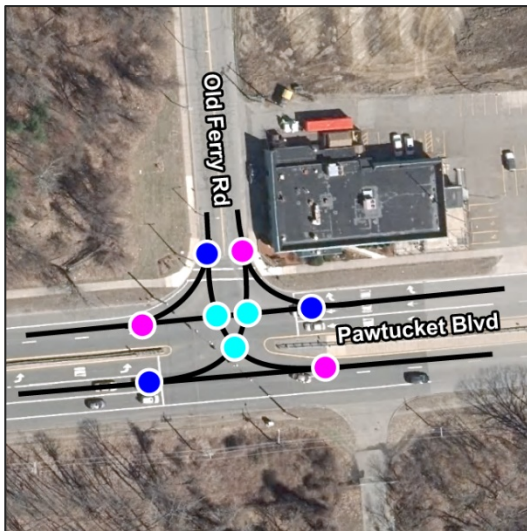
Highway Safety Improvement Data



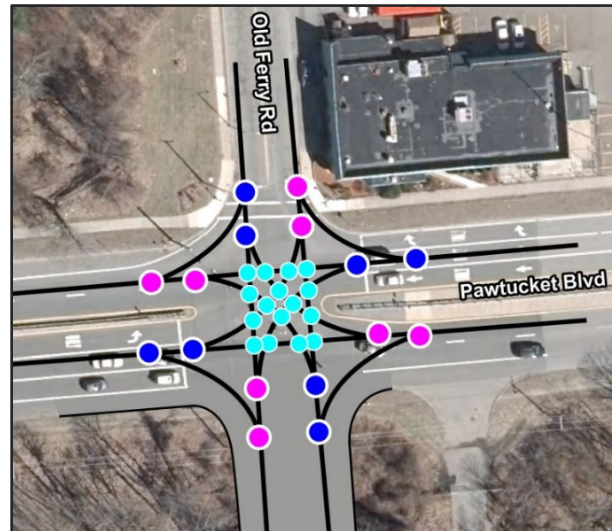


Safety Analysis

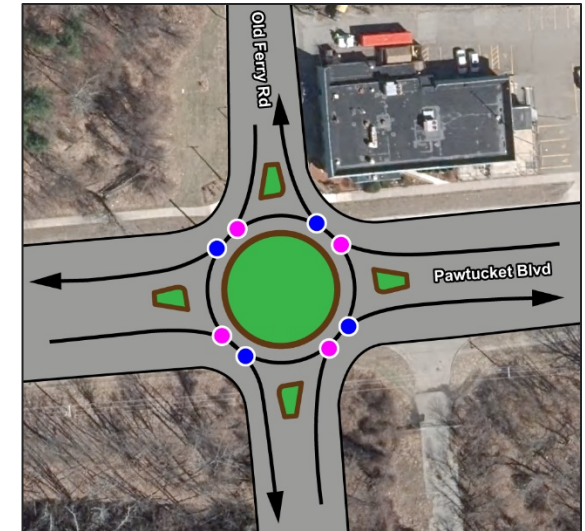
Conflict Points



T-Intersection



4-Legged Intersection

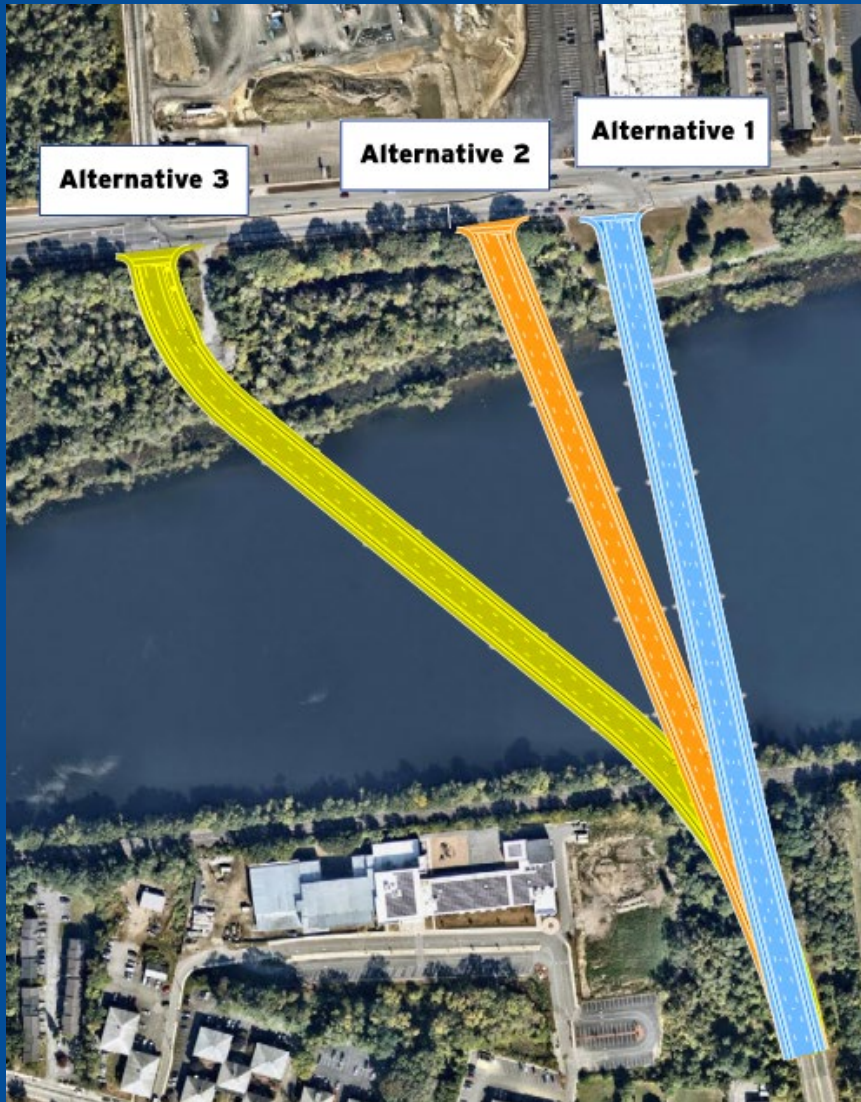


Roundabout

Legend

- Diverging
- Merging
- Crossing

Traffic Analysis Future 2039



Regional Travel Times

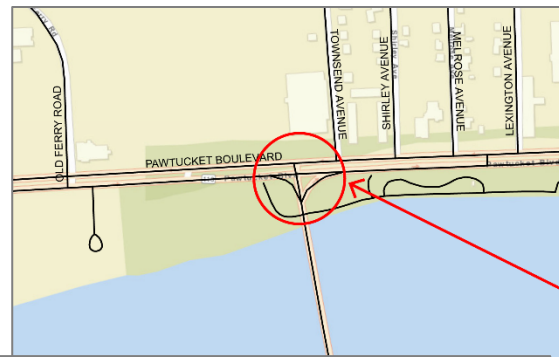
Safety & Operations:

- **Vehicles**
- **Pedestrians**
- **Bicyclists**
- **Intersections**

Emergency vehicle access

Safety & Operations

Improvements at Rourke Bridge @ Pawtucket Blvd



Rourke @ Pawtucket (Build 1 & 2)



CARS:

- All movements under capacity.
- Added capacity to major movements (WB LT, NB)
- Improved signal timings to accommodate the peak hour directional traffic flows.
- Updated clearance intervals as needed.
- Overall LOS C and D
- $v/c > 1.0$



PEDS:

- Addition of crosswalks to all approaches.
- Addition of exclusive pedestrian phasing.
- Removal of channelized right turn lanes to reduce the number of pedestrian crossings per approach.



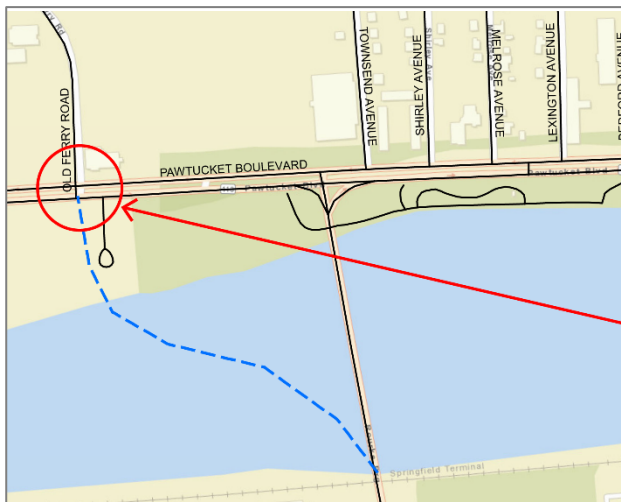
BIKES:

- Addition of bike lanes on Pawtucket Blvd. & Rourke Bridge.



EMERGENCY VEHICLES:

- All improved signals would be equipped with pre-emption.



Old Ferry @ Pawtucket (Build 3)



CARS:

- Reduced delay along Pawtucket Blvd with consolidation of signalized intersections.
- Improved signal timings to accommodate the peak hour directional traffic flows.
- Updated clearance intervals as needed.
- Overall LOS D
- $v/c > 1.0$



PEDS:

- Addition of crosswalks to all approaches.
- Addition of exclusive pedestrian phasing.



BIKES:

- Addition of bike lane on Pawtucket Blvd. & Rourke Bridge.



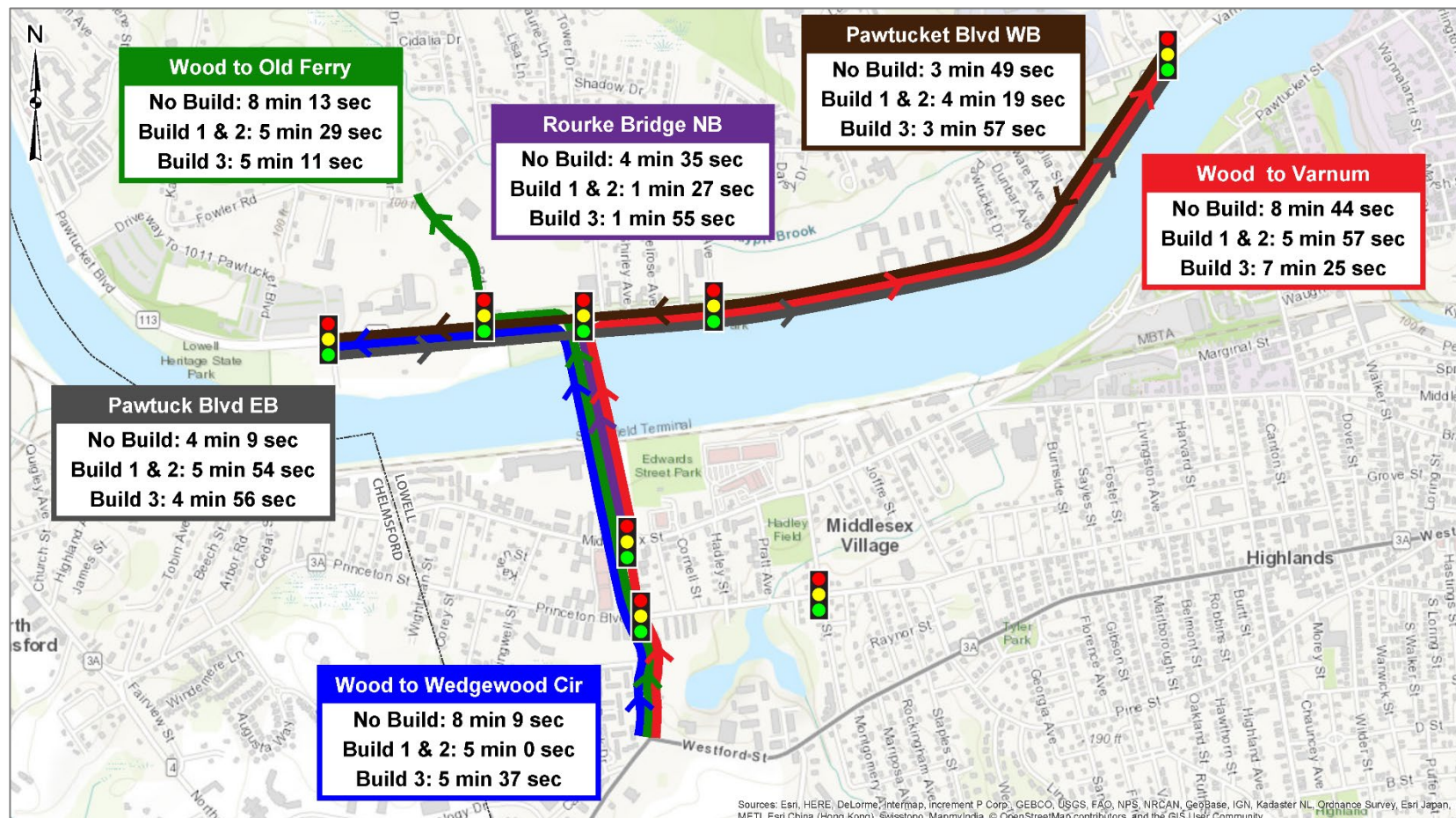
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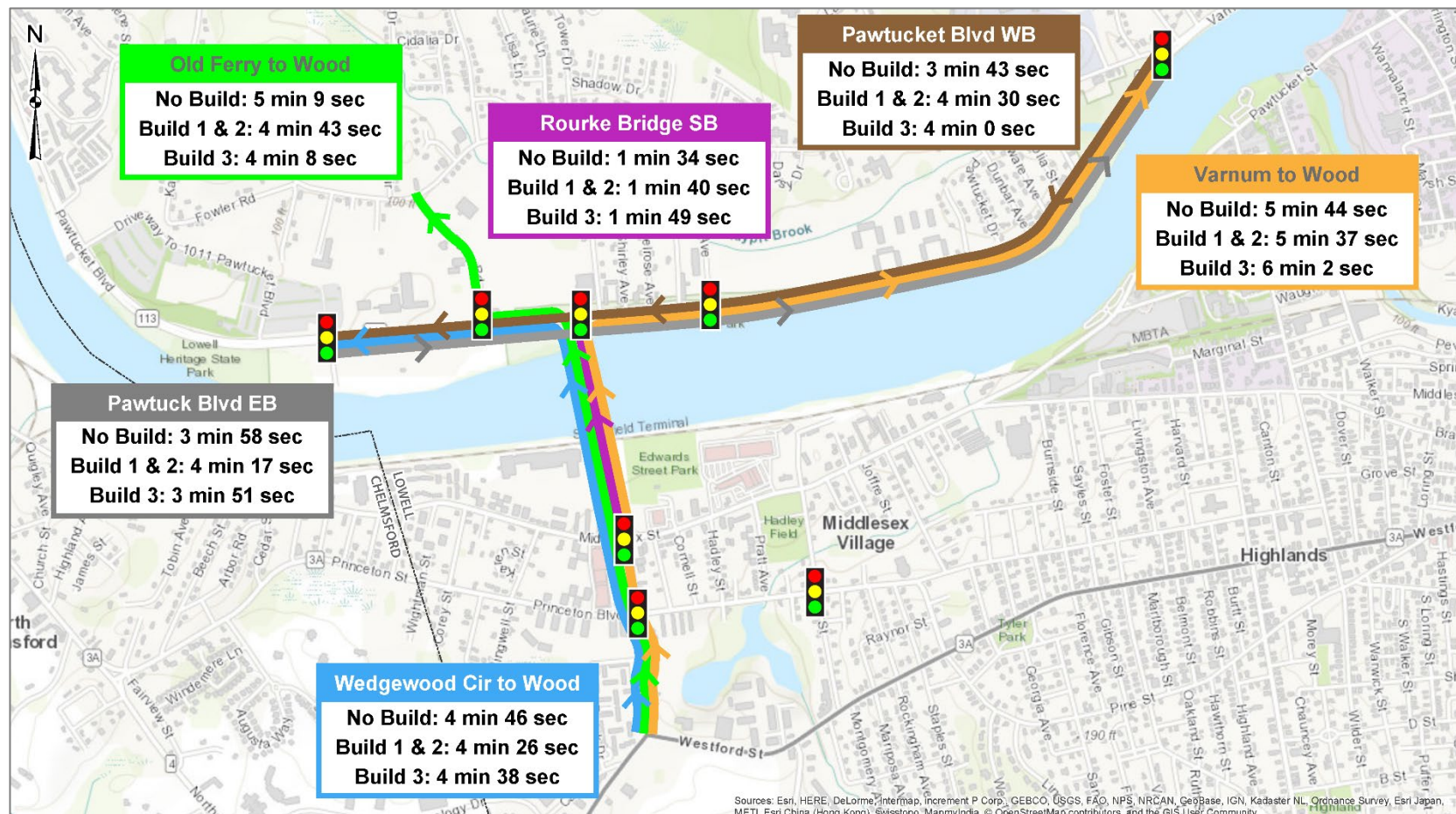


Travel Times

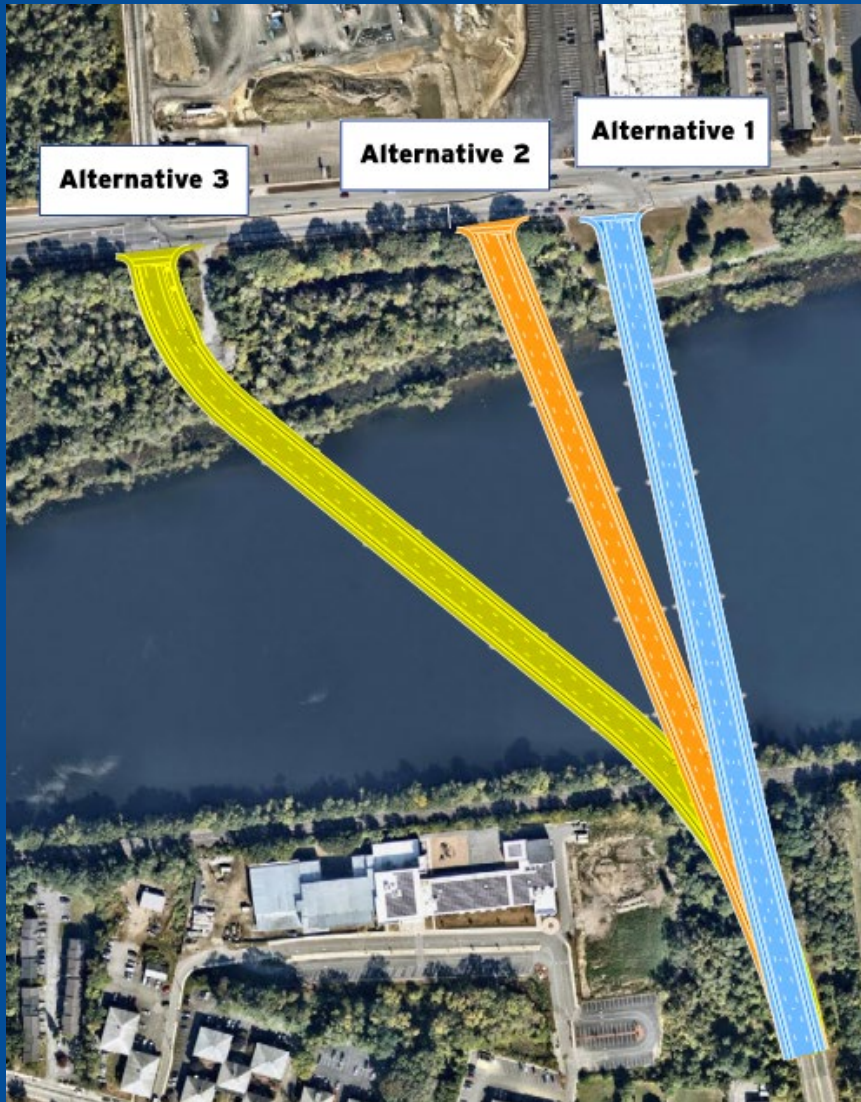
AM Peak Hour Travel Times



PM Peak Hour Travel Times



Urban Design Principles



- **Contribute to City and Neighborhood Character and Image**
- **Contribute to Safe and Effective Connections for All Modes**
- **Contribute to Open Space and Open Space Connections (Green Space and River)**
- **Contribute to City Vitality**

Ground Level Views of Alternative Alignments



Landing Overlooks



Current North Bank Landing



Alignment 3 North Bank Landing



Precedents for Bank Landings



Nearby Recreational Amenities



Vandenberg Esplanade



Bellegarde Boathouse

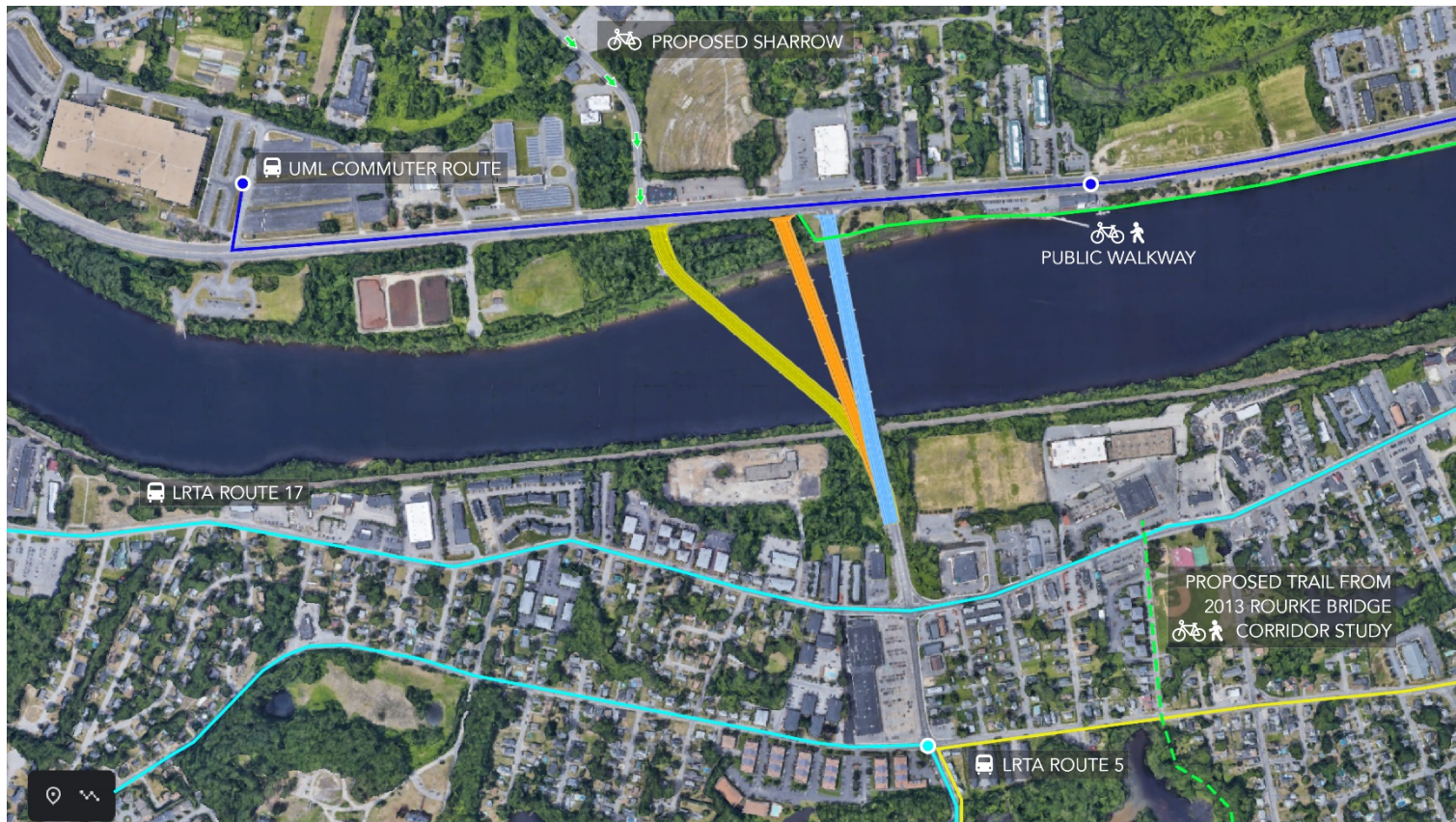


National Park Service Boat Launch

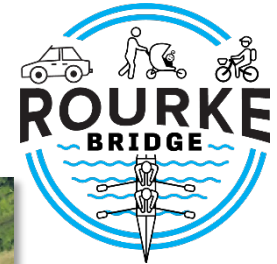


Edwards Street Park

Multi-Modal Connections



Walking Times



Crosswalks



Add'l Intersection with
Crosswalk for
Alternatives 1 & 2 only

Crosswalks to
be built with
all alternatives

2,000'

Existing
Crosswalk



Watercraft Considerations



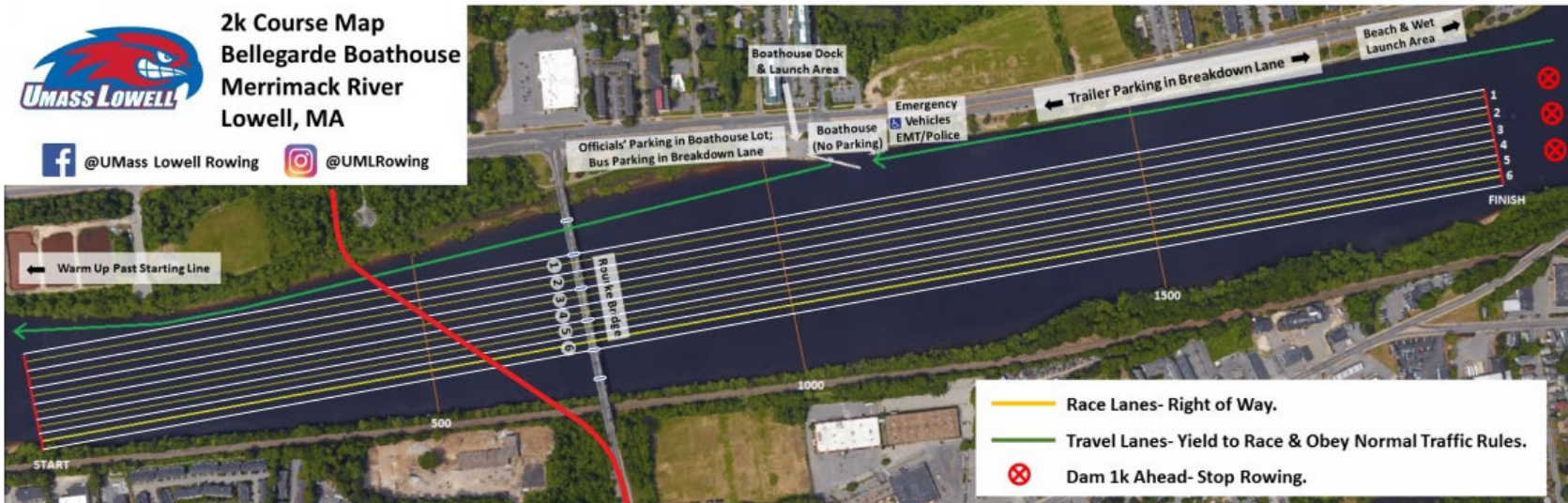
2k Course Map
Bellegarde Boathouse
Merrimack River
Lowell, MA



@UMass Lowell Rowing



@UMLRowing



Environmental Considerations



- **Overview of applicable environmental laws and regulations**
- **Compare the environmental impacts and regulatory implications of alignment alternatives**



Federal, State, and Local Compliance



- **Federal**

- **National Environmental Policy Act (NEPA)**
- **Section 404 of the Clean Water Act - USACE**
- **Section 106 of the National Historic Preservation Act**
- **Section 9 US Coast Guard Coordination**
- **Section 4(f) of the U.S. Department of Transportation Act**
- **Section 6(f) of the Land and Water Conservation Fund Act**
- **Section 7 of the Endangered Species Act (ESA)**
- **National Pollutant Discharge Elimination System (NPDES) Program of the Clean Water Act**
- **Construction General Permit (GP) – United States Environmental Protection Agency (EPA)**
- **National Flood Insurance Program (NFIP) – Federal Emergency Management Agency (FEMA)**

Federal, State, and Local Compliance



- **State/Local**

- **Massachusetts Environmental Policy Act (MEPA)**
- **Massachusetts Endangered Species Act (MESA)**
- **Article 97 of the Massachusetts State Constitution**
- **MA Wetlands Protection Act – Lowell Conservation Commission, MassDEP**
- **Chapter 91 of the Massachusetts Public Waterfront Act– MassDEP**
- **Clean Water Act Section 401: State Certification of Water Quality – MassDEP**
- **Construction Access Permit - Massachusetts Department of Conservation and Recreation (DCR)**

Wetland and River Impacts: Existing Conditions



- **Merrimack River is the predominant wetland feature**
- **Water level in the river is controlled by the Pawtucket Dam (located approximately 1.5 miles downstream)**
- **Vegetated wetlands are present on north side of river**
- **No vegetated wetlands on south side of river (likely due to former development of MBTA railroad)**





Wetland and River Impacts: Alternative 1



Wetland and River Impacts: Alternative 2



Wetland and River Impacts: Alternative 3



Wetland and River Impacts: Vegetated Wetland Impacts



Alternative	Temp Impacts (sf)	Perm Impacts (sf)	Total (sf)
Alternative 1	0	0	0
Alternative 2*	1816	5641	7457
Alternative 3	710	1826	2536

Alignment Alternative 2 does not comply with WPA performance standard limiting BVW impacts to less than 5000 sf

- May require Variance under WPA, mandatory MEPA Environmental Impact Report (EIR)
- Significant impacts to permitting schedule (18-24 months)

Wetland and River Impacts: Floodplains



- **Alternative 1 would impact 1.2 acres of BLSF**
- **Alternative 2 would impact 1.3 acres of BLSF**
- **Alternative 3 would impact 1.7 acres of BLSF**

Alternative 1 - Inline



Alternative 2 - Pawtucket - T

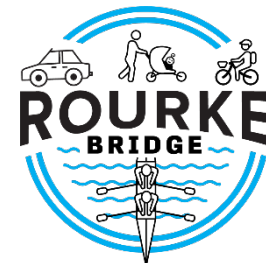


Alternative 3 - Old Ferry



Any impacts to flood storage will be mitigated by providing equivalent compensation areas

Open Space and Recreation



Open Space and Recreation Level of Protection



- **Designated open space and recreation areas may be protected under:**
 - **Section 4(f) of the Department of Transportation Act**
 - **Section 6(f) of the Land and Conservation Act**
 - **Article 97 of the State Constitution**

Site Name	Owner	Section 4(f)	Section 6(f)	Article 97
Lowell Heritage State Park	DCR	Yes	<u>Yes</u>	Yes
Wang Soccer Field	City of Lowell	Yes	No	Yes
Edwards Street Park	City of Lowell	Yes	No	Yes

Open Space and Recreation Level of Protection



Alternative 1 - Inline

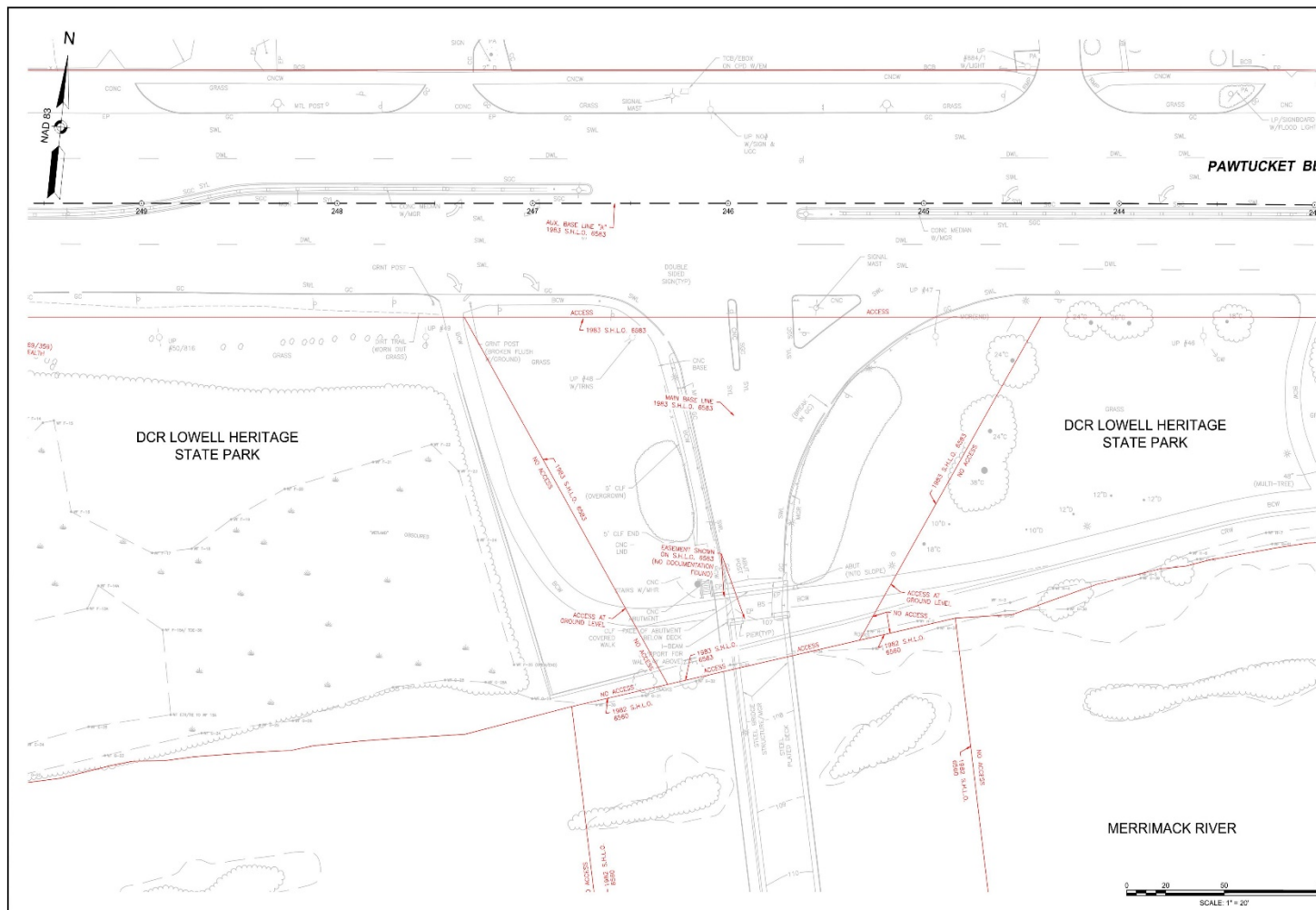


Alternative 2 - Pawtucket - T



Alternative 3 - Old Ferry

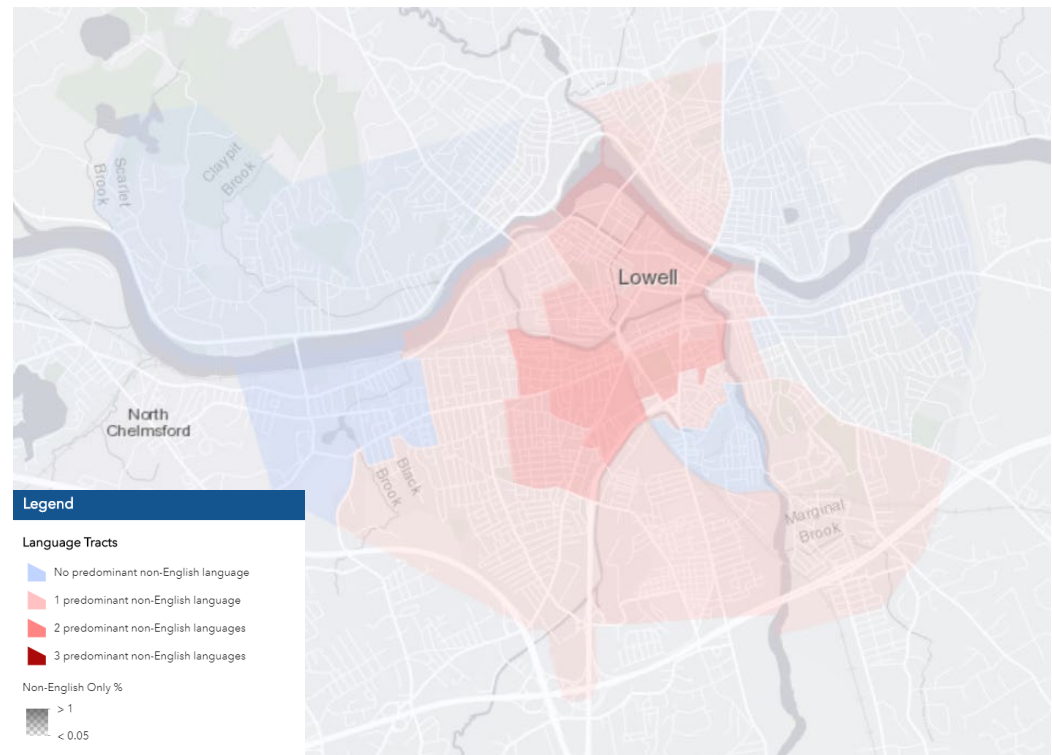




Environmental Justice

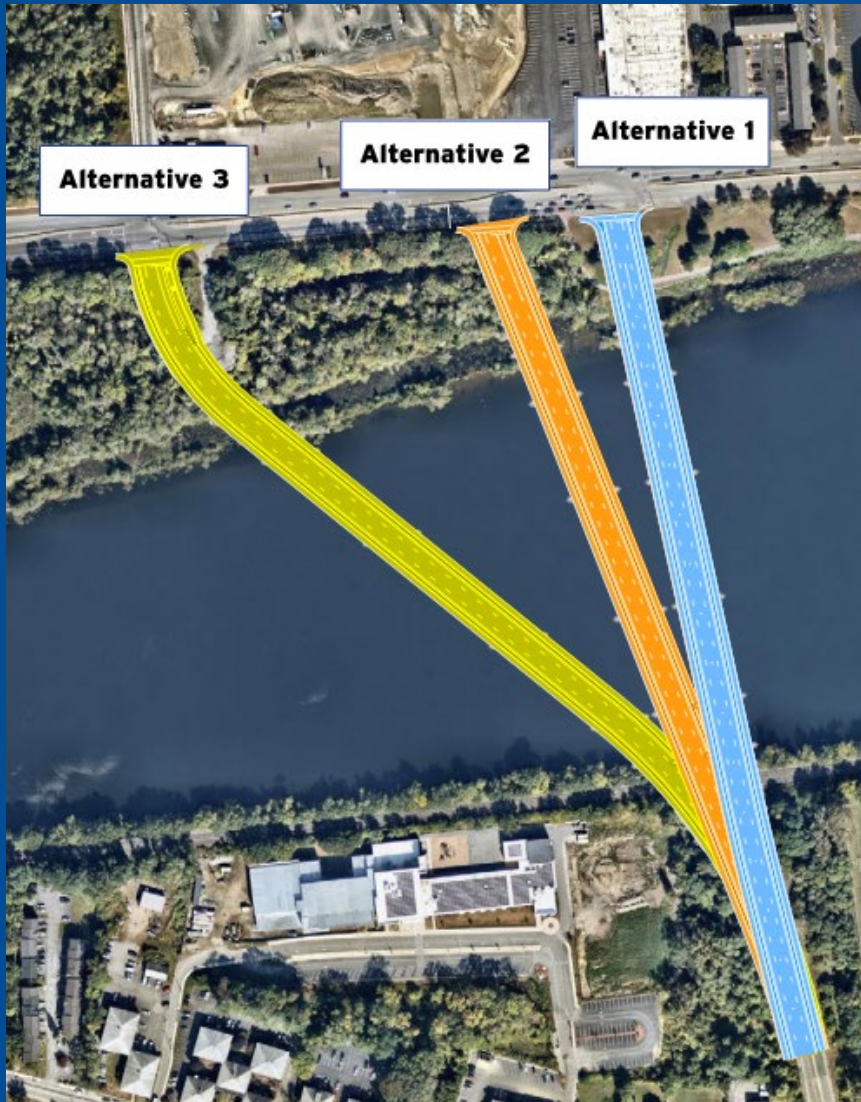


- **Lowell has a diverse population with a large concentration of EJ communities**
- **Will comply with state and federal EJ policy**
- **The Project not anticipated to result in disparate impacts to EJ populations**





Bridge Geometry



Bridge Length

Alt 1 & 2 – 1,050 FT

Alt 3 – 1,250 FT

Number of Piers

Alt 1 & 2 – 5 Piers

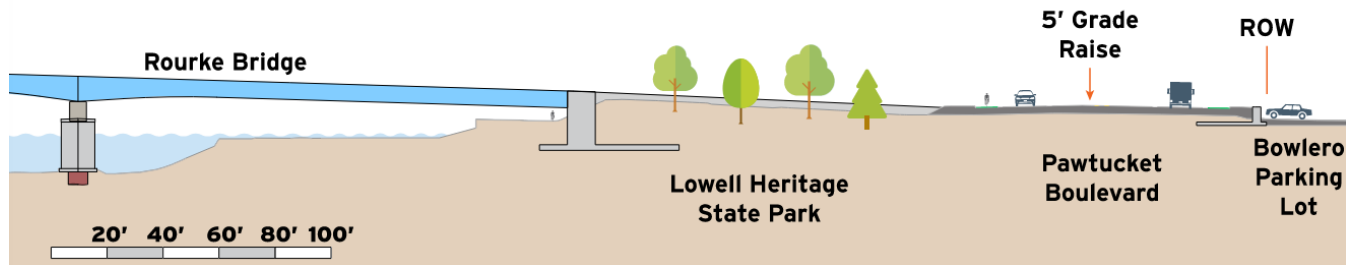
Alt 3 – 6 Piers

30" Watermain

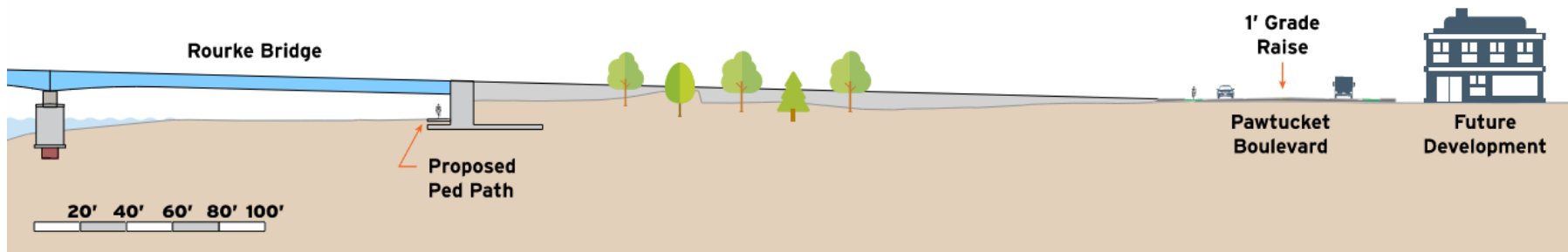
Bridge Geometry



Alternative 1 and 2

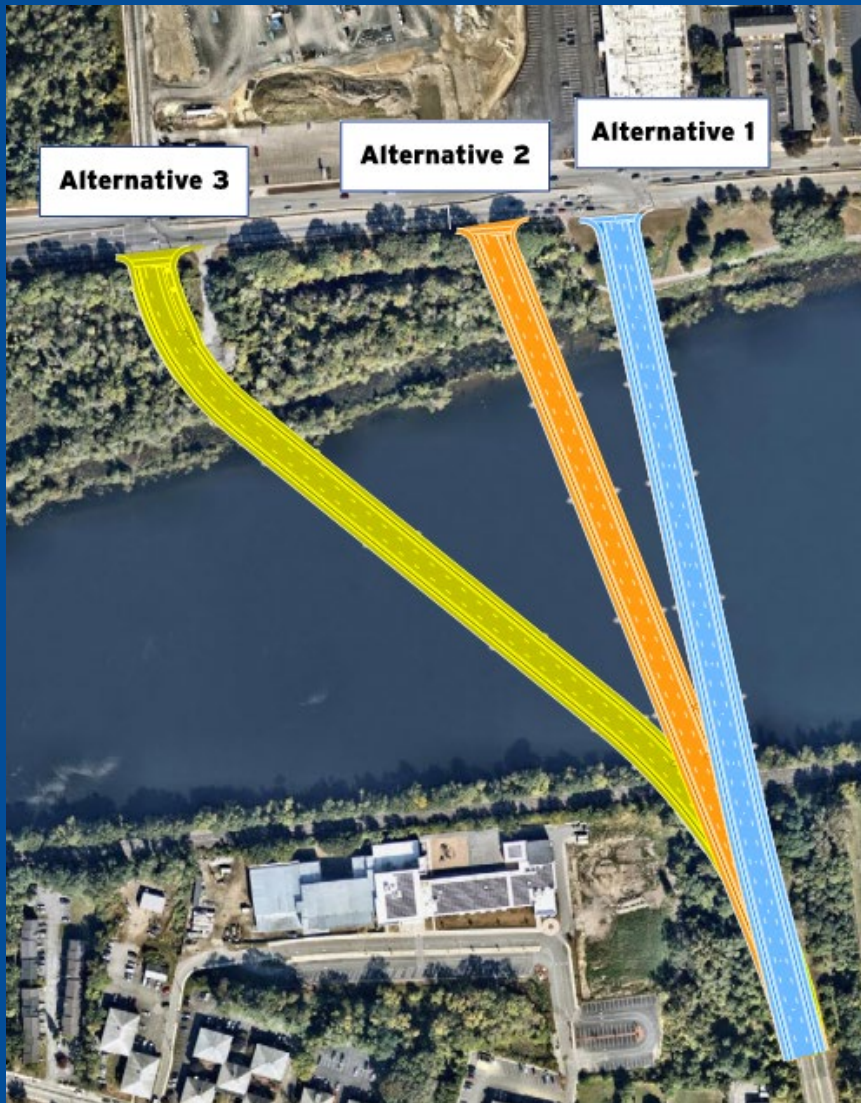


Alternative 3 - Old Ferry





Schedule



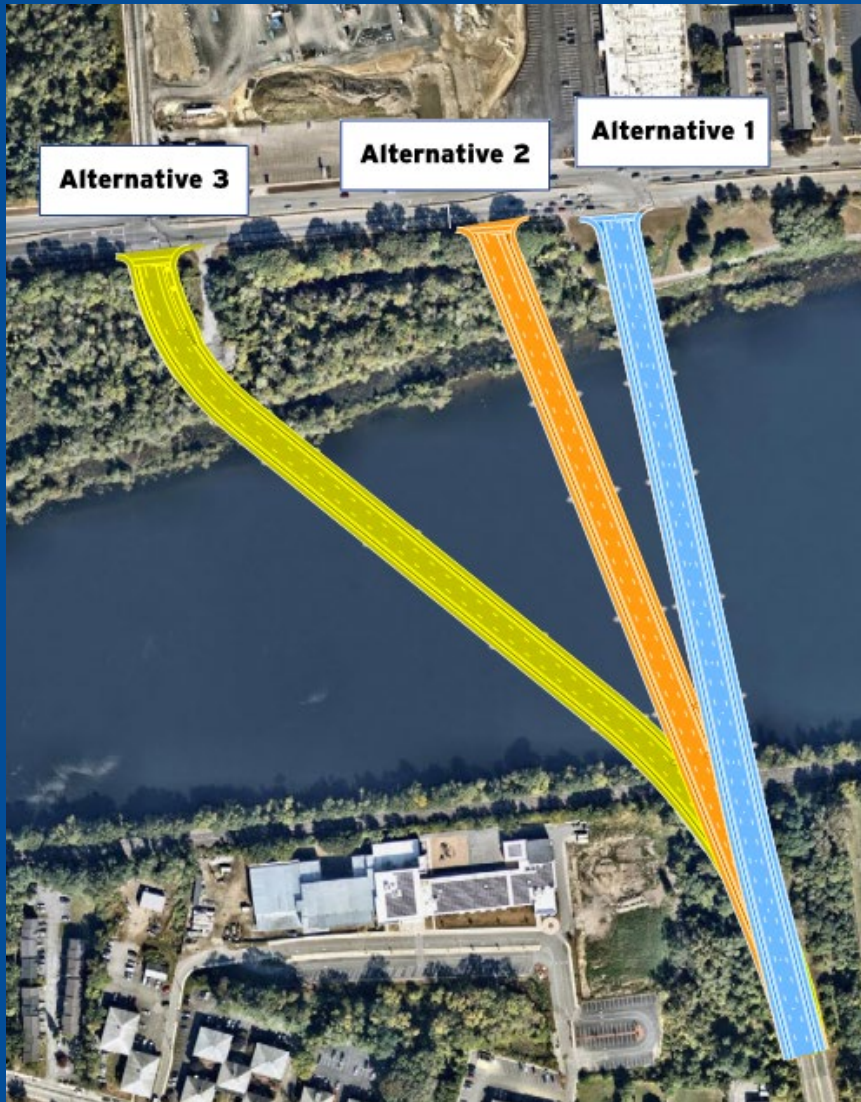
TIMING OF BRIDGE OPENING

Alignment 1: Add 1 year
(multi-stage construction)

Alignment 2: Add 2 years
(Potential Environmental Impact Report & WPA Variance due to wetland impacts >5,000 SF)

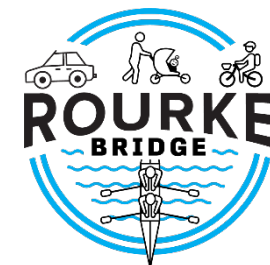
Alignment 3: Shorter
(single stage construction)

Cost

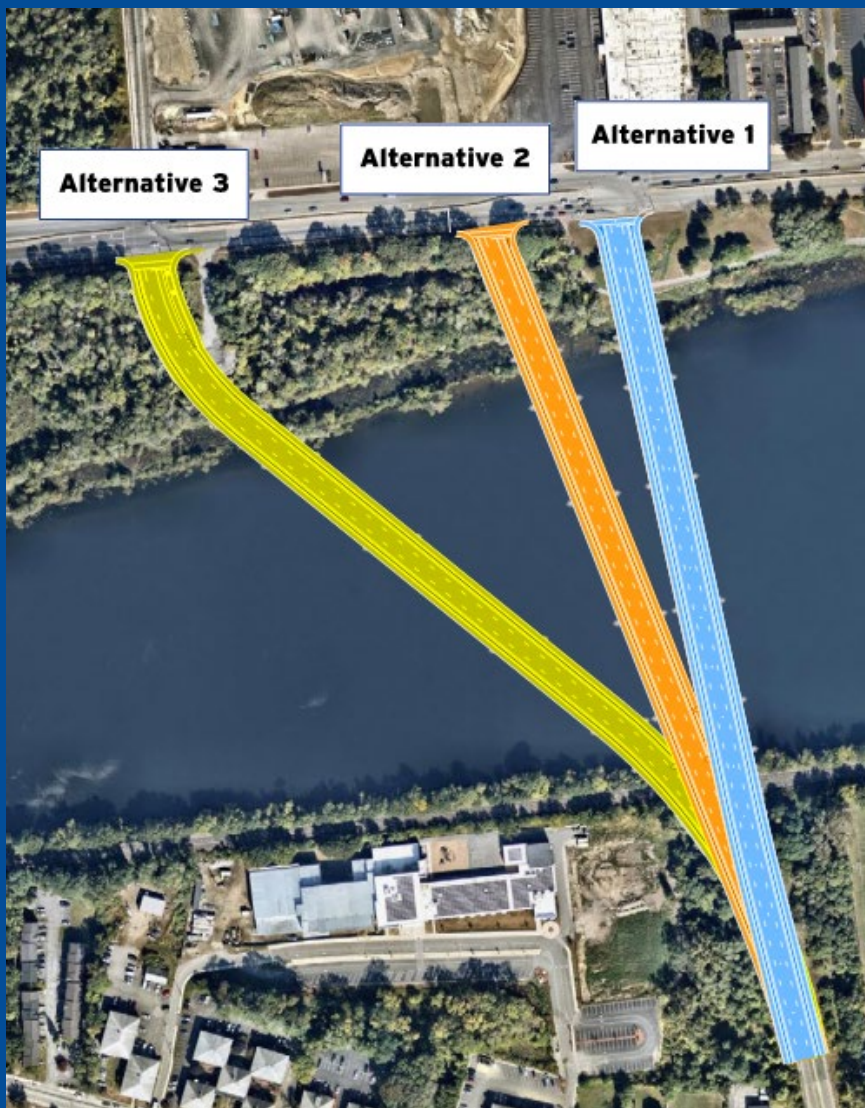


There are many variables that will influence the project cost as the design is developed. Examples include structure type and width, construction means and methods, etc. For the purposes of providing an “apples-to-apples” comparison of the three alignments the current costs are based on:

- **84' wide structure**
 - **4 Travel Lanes**
 - **Buffered Bike Lanes**
 - **Sidewalks**
- **Steel stringer structure type**



Cost



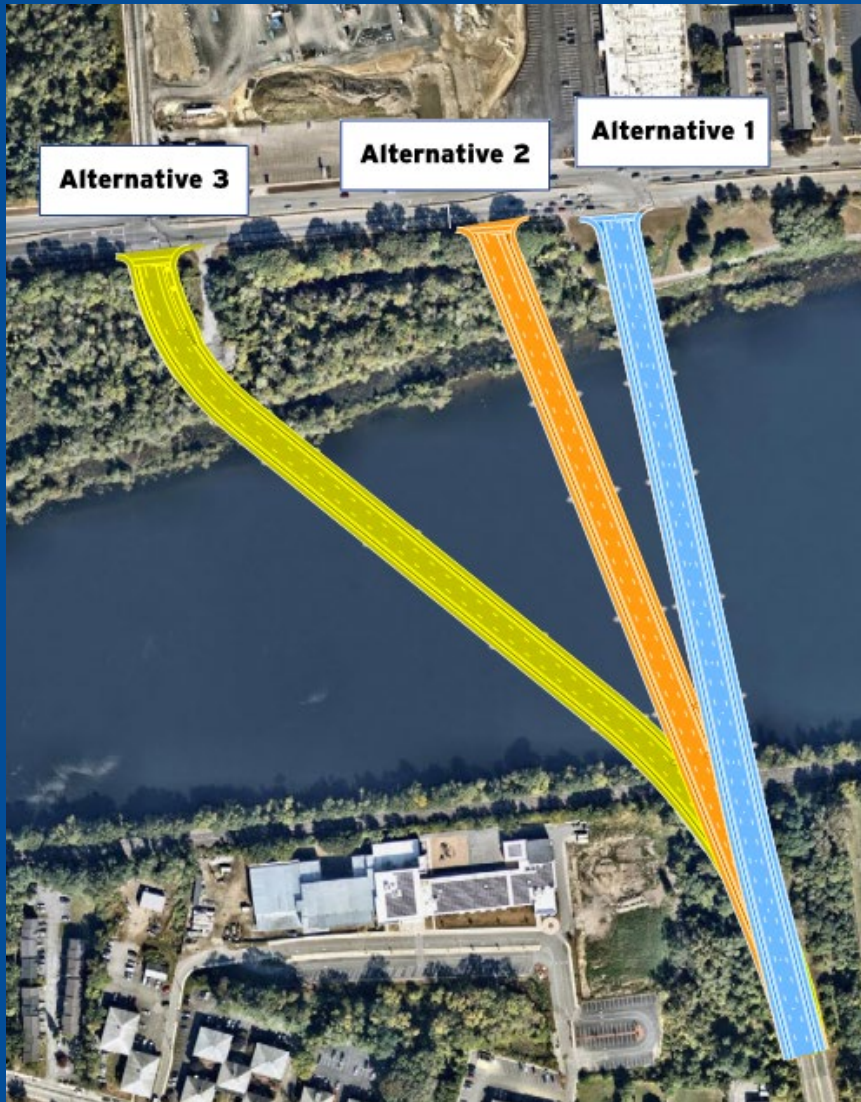
**Alignment 1: \$104M (2020 dollars)
\$131M when escalated 6 years at 4%**

**Alignment 2: \$97M (2020 dollars)
\$128M when escalated 7 years at 4%**

**Alignment 3: \$116M (2020 dollars)
\$141M when escalated 5 years at 4%**



Evaluation Criteria for Selection of Preferred Alignment



POTENTIAL CRITERIA

TRAFFIC OPERATIONS & SAFETY
PEDESTRIAN AND BICYCLE MOBILITY
EMERGENCY VEHICLE ACCESS
WATER RECREATION
AESTHETICS: VIEWS TO/FROM BRIDGE
WETLAND RESOURCE IMPACTS
PROTECTED OPEN SPACE IMPACTS
BRIDGE ROADWAY GEOMETRY
PAWTUCKET BLVD CORRIDOR ACCESS MANAGEMENT
MAINTENANCE & UTILITIES
CONSTRUCTABILITY & TEMPORARY TRAFFIC IMPACTS
CONSTRUCTION SCHEDULE
CONSTRUCTION COST



Q&A

PLEASE USE RAISE HAND FEATURE



Thank You!

**Please provide feedback online
via the links below:**

<http://tiny.cc/RourkeBridge>