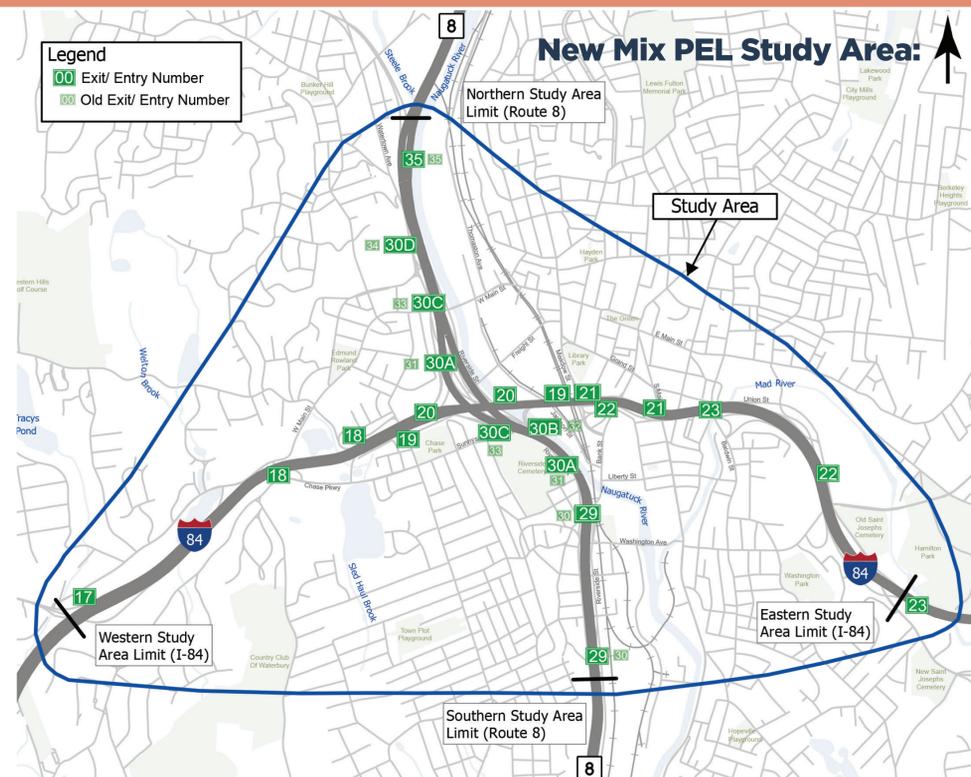


New Mix Planning and Environmental Linkages (PEL) Study Overview

The New Mix is a long-term program of projects set to improve the safety and functionality of the I-84/Route 8 Interchange (the Mixmaster) in Waterbury, CT.

PEL Study:

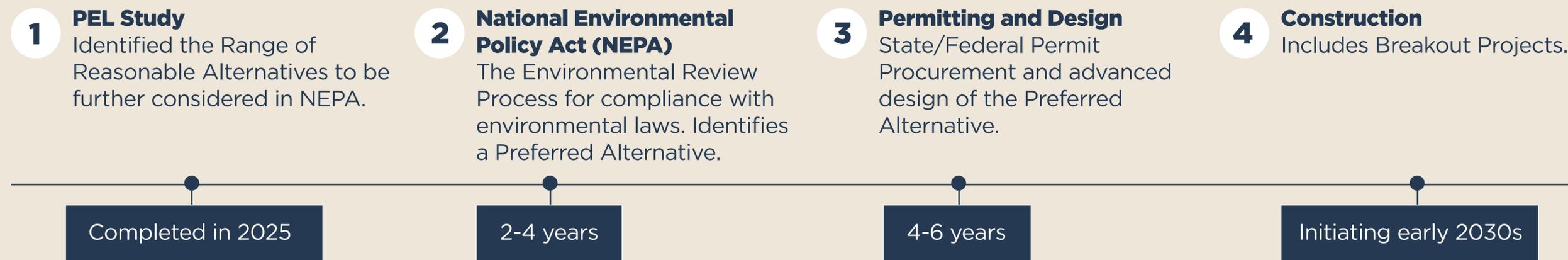
A collaborative early-stage analysis that integrates transportation planning and environmental considerations to streamline project development and decision-making.



New Mix PEL Study Vision:

CTDOT desired to establish a vision, or master plan, for the interchange that addresses and balances the regional importance of the Mixmaster for commuter traffic and motor freight users, while also improving multi-modal services, local connections, and livability within the city of Waterbury to enhance and support social equity and economic vitality.

New Mix Program Overall Schedule



New Mix PEL Study Process

Project initiation

Framework & Methodology

Analysis, needs, and deficiencies identification

Data collection and engineering analysis for transportation, environmental, and community context.



Alternatives Development and Analysis

Preliminary Purpose and Need

State, Regional, and Local Plans

Study Goals and Objectives

No Build

Only safety and maintenance activities.

4 Rehabilitation

Major repair of stacked I-84 bridges.

18 Replacement

Replacement of the Mixmaster.

1 Travel Modes

Only transit, bicycle, rail, and pedestrian.

Universe of Alternatives (23 Options)

Public, Stakeholder, and Agency Outreach

- Level of Detail +

Level 1

Fatal Flaw Analysis

- Cost and ease of construction
- Meeting major needs (Capacity, Bridge Condition, Minimal Traffic Interruptions)

9 Replacement Alternatives

Level 2

Goals and Objectives

- **Transportation:** safety, mobility, connectivity, and system performance.
- **Environment and community:** economic development, avoiding negative impacts on environment and community.
- **Cost:** financial resources could be made available.
- **Constructability:** minimizes construction impacts.

2 Replacement Alternatives

Mobility Equity Analysis

Level 3

Detailed Analysis

- Direct impacts quantified and mitigation opportunities identified.
- Detailed traffic modeling, constructability, and cost evaluations.

Modern Crossover Interchange
Naugatuck River Shift

Range of Reasonable Alternatives

We are here

PEL Study Report and FHWA PEL Questionnaire

PEL Report
Federal Highway Administration (FHWA) PEL Questionnaire

New Mix PEL Preliminary Purpose and Need Statement

The Preliminary Purpose and Need Statement is the foundation of the PEL Study, identifying potential transportation solutions and benefits of future projects.



Mixmaster Needs and Deficiencies



Structural
I-84 stacked bridges will be in poor condition and anticipated to meet their serviceable life in 2045.



Geometric
Substandard shoulder widths, curves, left hand exits, inadequate stopping sight distance, etc.



Operational
Insufficient travel speeds, roadway capacity, lane merging distances, and ramp spacing, etc., affecting congestion.



Crash Rate/Safety
Crash rate attributed to geometric/operational deficiencies is 30% higher than state average.

New Mix Is Providing Solutions That...



Improve System Performance & Air Quality by Reducing Congestion
Improve bridge conditions and functional ratings as well as provide capacity to improve travel speeds and time.



Maintain Critical System Linkages
Configure system ramp connections for high- and low-volume movements between I-84/Route 8.



Facilitate Connectivity & Equitable Mobility Through the Local Road & Multimodal Network
Improve pedestrian and bicycle facilities, green infrastructure, and safety countermeasures.



Reduce Crash Rate & Improve Safety
Eliminate/improve substandard structural, geometric, and operational conditions.

Public input shaped the planning decisions made during the New Mix PEL study.



Public and Other Stakeholders
Local Businesses
NVCOG
State and Federal Agencies
FHWA
City of Waterbury
State and Local Elected Officials
Local Organizations

Input gathered helped to:
Define the New Mix Program's Vision and Preliminary Purpose and Need Statement.
Identify focus areas for the PEL Study and inform solutions that could create a better functioning and more equitable transportation system within Waterbury.



To view PEL study documents and public survey results, visit the Document Library of the New Mix website!



Mobility Equity and the New Mix

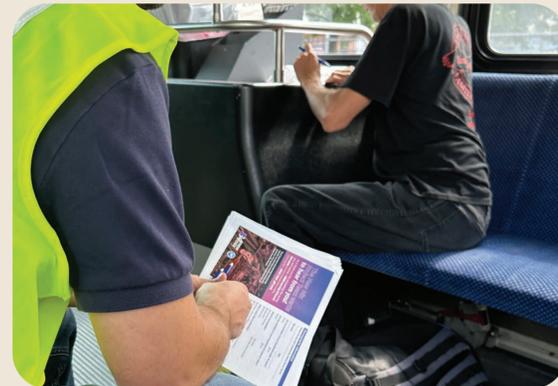
Mobility equity is about putting people first—by aiming to create a transportation system that meets the needs of all community members.



Mobility Equity Analysis

The Mobility Equity Analysis was part of the PEL Study. Its purpose was to identify and prioritize projects that:

- Provide access to opportunity.
- Support a healthy environment.
- Create economic vitality.
- Provide a range of transportation options.



Recommendations and Next Steps

- The Mobility Equity Analysis identified a list of prioritized improvements recommended to remedy infrastructure and safety needs. Strategies that expand public transportation and improve safety guided the prioritization of improvements.
- The following are example projects identified by the analysis for creating a more equitable transportation system in Waterbury:



Pedestrian improvements near Waterbury Green, Waterbury's Silas Bronson Library, and St. Mary's Hospital.



Bicycle network improvements along the North and South Main Street corridor connecting the Central Business District and South End.



Bus stop enhancements surrounding Waterbury Train Station, including benches, shelters, and sidewalks.

- After completion of the Mobility Equity Analysis, recommendations were incorporated into the New Mix PEL Study's Preliminary Alternatives or standalone Breakout Projects.
- Examples include recommendations that may improve walking, biking, and transit opportunities in Waterbury.



To learn more about the Mobility Equity Analysis, visit the Mobility Equity page of the website!
www.newmixwaterbury.com/mobility-equity



Range of Reasonable Alternatives – Advancing to NEPA

Naugatuck River Shift Alternative

- Improve System Performance & Reduce Congestion
- Reduce Crash Rate & Improve Safety
- Maintain Critical System Linkages in Connecticut & the Northeast
- Facilitate Connectivity & Equitable Mobility through the Local Road & Multimodal Network

View from Interchange Core

Existing Conditions



Naugatuck River Shift

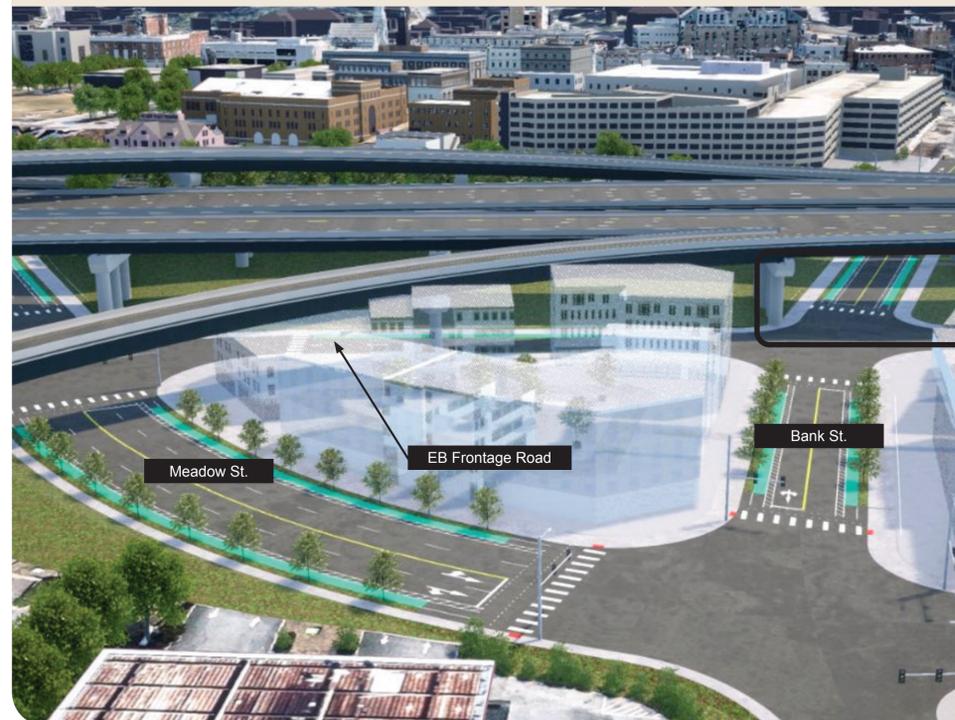


View Facing North from Bank Street

Existing Conditions



Naugatuck River Shift



Existing Conditions



Naugatuck River Shift

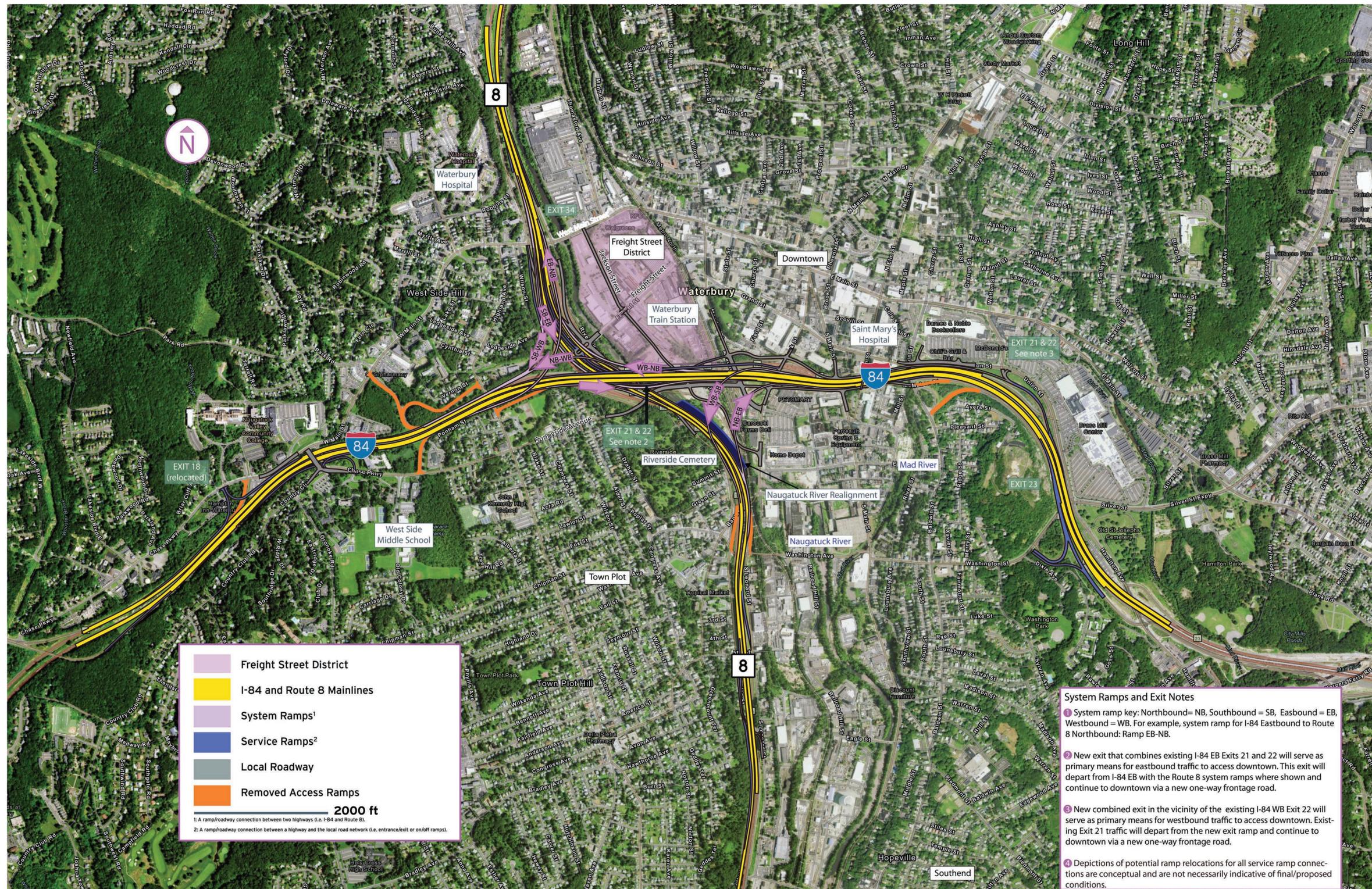


Naugatuck River Shift

The Route 8 structures would remain on the west side of the river resulting in opportunities to provide access to the Naugatuck River on the east riverbank. Excavation activities would need to occur to provide floodplain capacity due to unstacking of Route 8.

Range of Reasonable Alternatives – Advancing to NEPA

Naugatuck River Shift Alternative



Range of Reasonable Alternatives – Advancing to NEPA

Modern Crossover Interchange Alternative

- Improve System Performance & Reduce Congestion
- Reduce Crash Rate & Improve Safety
- Maintain Critical System Linkages in Connecticut & the Northeast
- Facilitate Connectivity & Equitable Mobility through the Local Road & Multimodal Network

View from Interchange Core

Existing Conditions



Modern Crossover Interchange

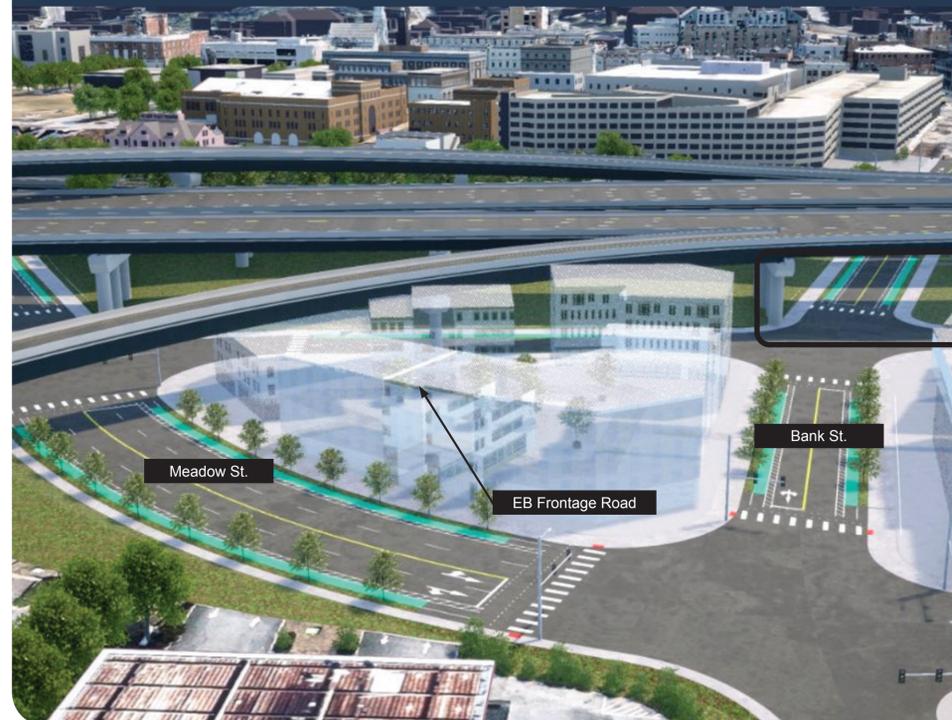


View Facing North from Bank Street

Existing Conditions



Modern Crossover Interchange



Existing Conditions



Modern Crossover Interchange

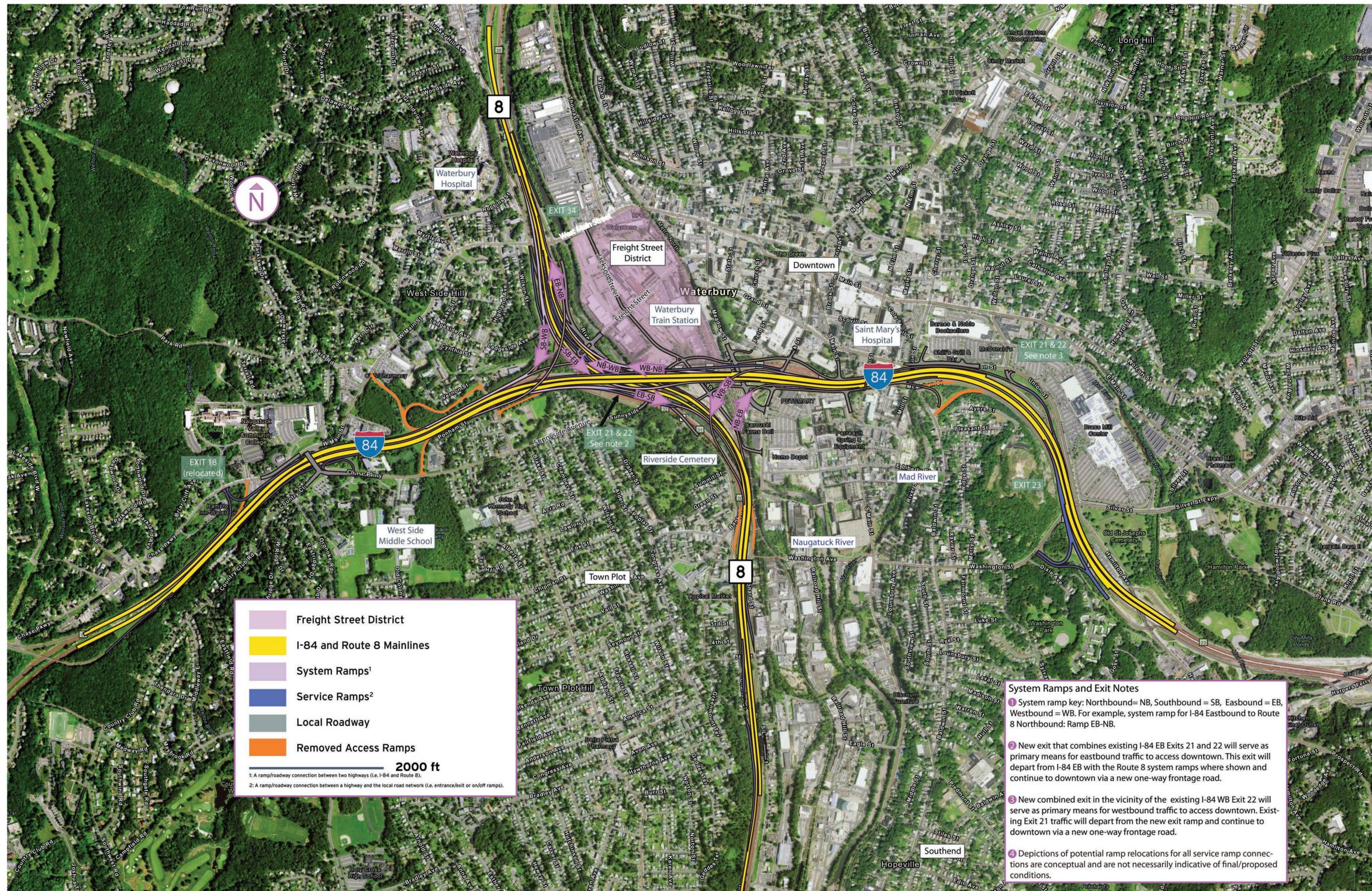


Modern Crossover Interchange

The Route 8 structures would be reconstructed east of the Naugatuck River resulting in opportunities to provide access to the Naugatuck River on the west riverbank.

Range of Reasonable Alternatives – Advancing to NEPA

Modern Crossover Interchange Alternative



Complementary Features

Safe and Activated Corridors Connected Corridors



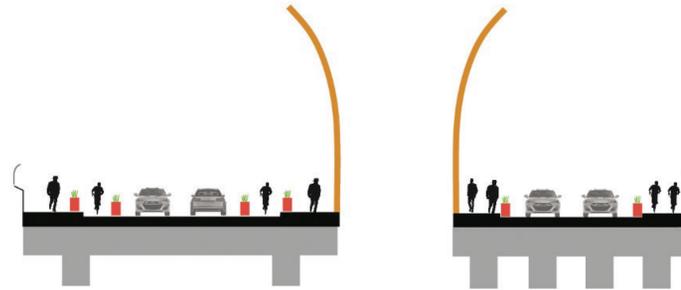
- **Special Paving** – visual cue for pedestrians and drivers
- **Mid-Block Crossing** – formalizes pedestrian desire lines, calms traffic
- **Pedestrian Refuge Islands** – shorter crossings on busy streets



- Active Street Life
- Enhanced Wayfinding
- Multi-Modal Connections

- **Raised Cycle Track** protect cyclists, pedestrians, and motorists
- **Enhanced Lighting** improved safety, unique lighting creates a sense of place
- **Green Infrastructure and Planting Strips** buffer between cars and pedestrians while providing stormwater benefits

Overpasses as Gateways Connecting Corridors



Highland Ave Overpass Opportunity

S. Elm St Overpass Opportunity



Gateway Experienced from the Highway



Gateway Experienced from the Overpass

- Unique installations create a sense of arrival specific to Waterbury
- Incorporate “Safe Route” tactics
- Opportunity to engage local artists

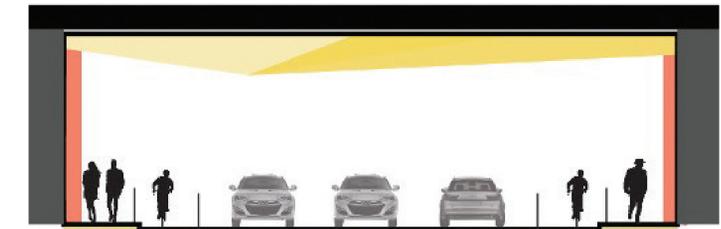


Key plan

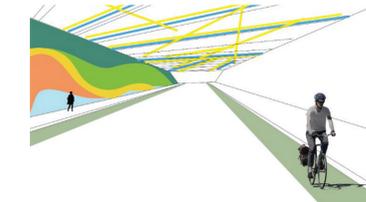
Enlivened Underpasses Connected Corridors



Existing Underpass Experience



Enlivened Underpass Opportunities



- Murals and lighting welcome pedestrians, create visual presence
- Combine with Safe Routes tactics



Colorado Springs, CO

Urban Design Approach and Opportunities

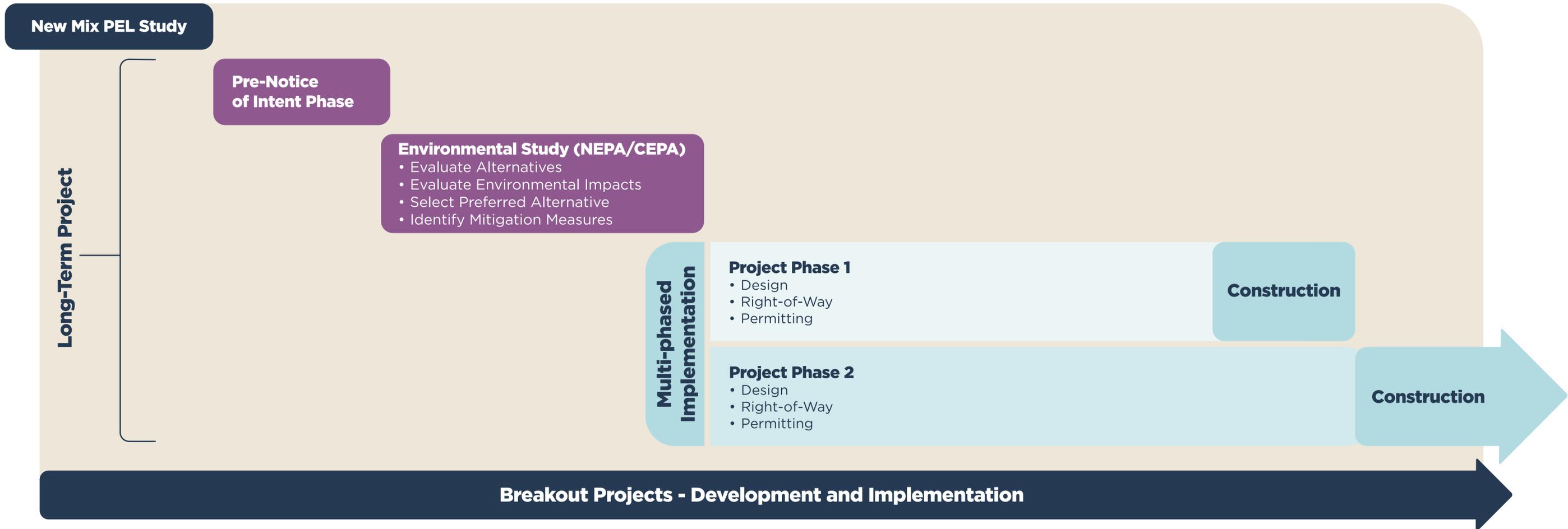
Downtown Open Space Opportunities



Open spaces in the downtown area have the potential to connect communities around the interchange. A connected park system could include:

- Performance/gathering spaces
- Sports courts
- A skate park
- Elevated pedestrian walkways
- Bioretention areas
- Riparian buffers along the river
- Pedestrian plazas
- Local markets
- Picnic areas

New Mix Program Process and Timeline



Timeline Definitions

Breakout Projects
 “Stand-alone” projects identified during the PEL Study which serve a distinct purpose and do not rely on other projects to provide a benefit.

Long-Term Project
 Includes the reconstruction of I-84, Route 8, and their system connections to be completed by mid 2040s. The project is anticipated to be implemented in two or more phases to allow for funding and maintenance of traffic.

Phase: 1
 Project work for the Preferred Alternative that includes either permanent improvements or temporary construction that will remain in place until completion of the Long-Term Project to facilitate traffic flow. Likely to be located on an approach to the interchange.

Phase: 2
 Project work for the Preferred Alternative that begins to improve mainline or system ramp traffic within the elevated core of the interchange.

Breakout Projects

Breakout projects are “stand-alone” projects that are separate from the long-term project and provide a benefit to the traveling public.

Major Project Milestones



Concept



Design



Construction

Mainline Projects

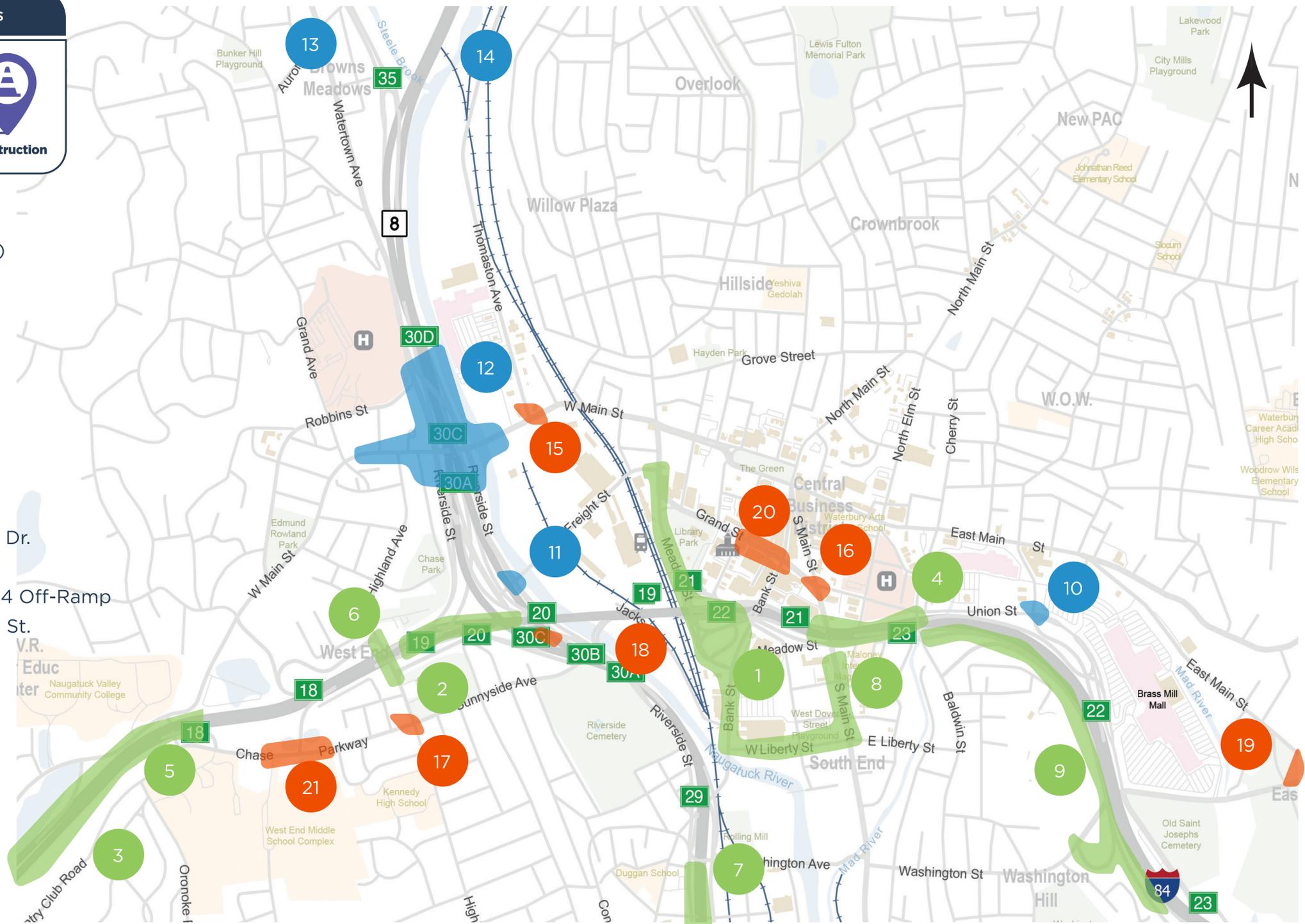
- 1 Elimination of I-84 EB Exit 21 Off-Ramp
- 2 Highland Ave. On-Ramp (I-84 EB Exit 18 On-Ramp)
- 3 I-84 EB Auxiliary Lane at Interchange 17
- 4 I-84 WB On-Ramp from Union St. - Auxiliary Lane
- 5 I-84 Exit 18 Service Interchange Reconfiguration
- 6 Reconstruction of Highland Ave. Bridge over I-84
- 7 Route 8 Exit 30 Interchange Reconfiguration
- 8 Reconstruction of South Elm St. Bridge over I-84
- 9 I-84 EB McMahon St. On-Ramp

Interchange

- 10 I-84 WB Exit 22 Off-Ramp at Union St. & Brass Mill Dr.
- 11 Route 8 NB Exit 32 Off-Ramp at NB Riverside St.
- 12 Watertown Ave. at Robbins St. & Route 8 SB Exit 34 Off-Ramp
- 13 Route 8 Exit 35 Interchange at Rudy Ave. & Aurora St.
- 14 Route 8 Exit 36 at Huntingdon St.

Local

- 15 West Main St. at Thomaston Ave.
- 16 Grand St. & Union St. at South Main St.
- 17 Highland Ave. at Chase Pkwy. & Sunnyside Ave.
- 18 Sunnyside Ave. at Riverside St.
- 19 Silver St. Expressway (Route 69) at East Main St.
- 20 Grand St. Traffic Calming
- 21 I-84 EB Exit at Chase Pkwy.



Breakout Project

Realignment of Route 8 Southbound Exit 34 Off-Ramp at Watertown Avenue and Robbins Street



Ramp Realignment



Existing Condition



Proposed Condition

This project involves the relocation of the Exit 34 Off-Ramp to address connectivity issues as well as operational issues along West Main Street.

The purpose of this project is to improve safety, traffic operations, and air quality on Route 8 SB in the vicinity of Exits 34 and 35 and West Main Street.

This project proposes to:

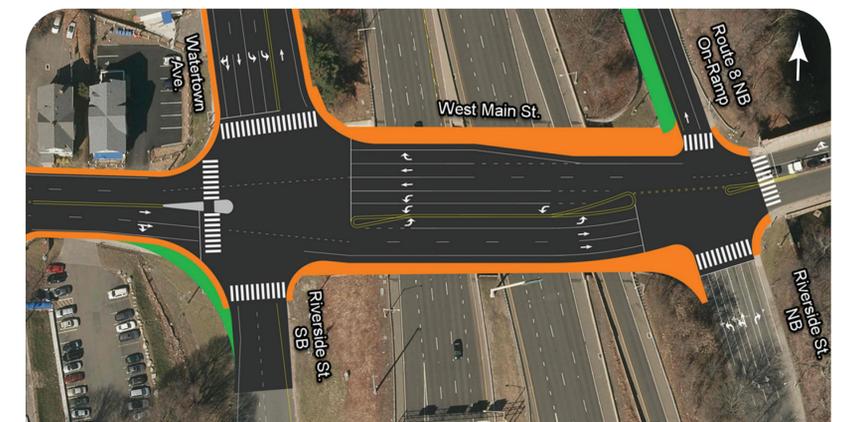
- Relocate the Route 8 SB Exit 34 Off-Ramp from its current terminus at West Main Street to the intersection of Robbins Street and Watertown Avenue.
- Repurpose the existing Route 8 SB Exit 34 Off-Ramp to convert SB Watertown Avenue to a bidirectional roadway (south of Robbins Street).
- Improve lane configuration and traffic signals along West Main Street from west of Colley Street to Riverside Street (NB).
- Realign the Route 8 SB Exit 35 On-Ramp and provide pavement marking modifications for an additional option lane to Exit 34 Off-Ramp.

Construction is anticipated to begin in 2029.

Intersection Improvements



Existing Condition



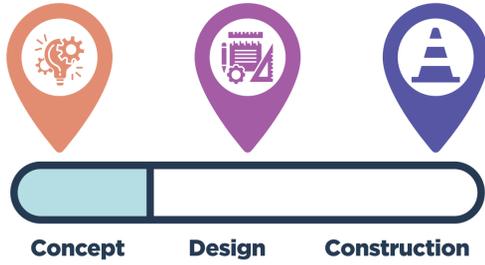
Proposed Condition

The proposed layout will reduce intersection conflict points more than 50% and improve alignment geometry.

Breakout Project

I-84 Eastbound Exit 18 Reconfiguration

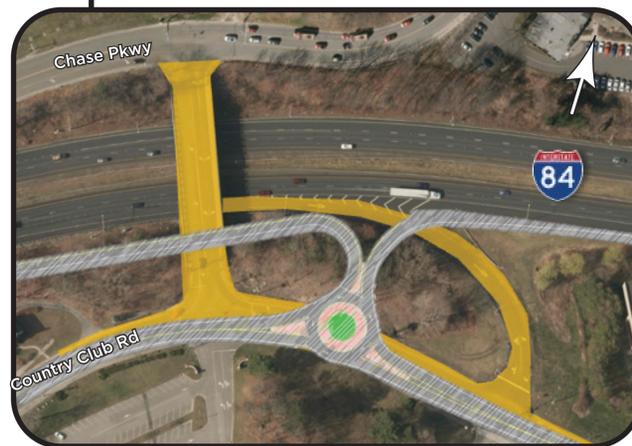
Major Project Milestones



This project is early in the concept phase. Solutions are being considered to reconfigure the ramps at Exit 18 to create better spacing between entrances and exits along the mainline. Providing adequate distance between exits and entrances reduces crash rates by providing more room for merging and diverging.



Sample Concepts



Breakout Project

I-84 Eastbound Exit 18 Reconfiguration

