

The *New Mix*:
Project Advisory Committee (PAC) Meeting #5
May 01, 2023



HNTB



Agenda

- **Welcome Back!**
- **Review PEL Study Progress**
 - Stacked I-84 alternative
 - Tunnel alternative
- **Design Progression for Level 2**
- **Level 2 Screening Methodology and Preliminary Results**
- **Next Steps**



Since Our Last Meeting...

You have been:



Providing input for the New Mix Program's PEL Study.



Checking email for information about the New Mix Program.

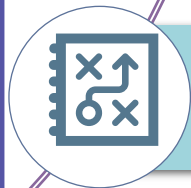
We have been:



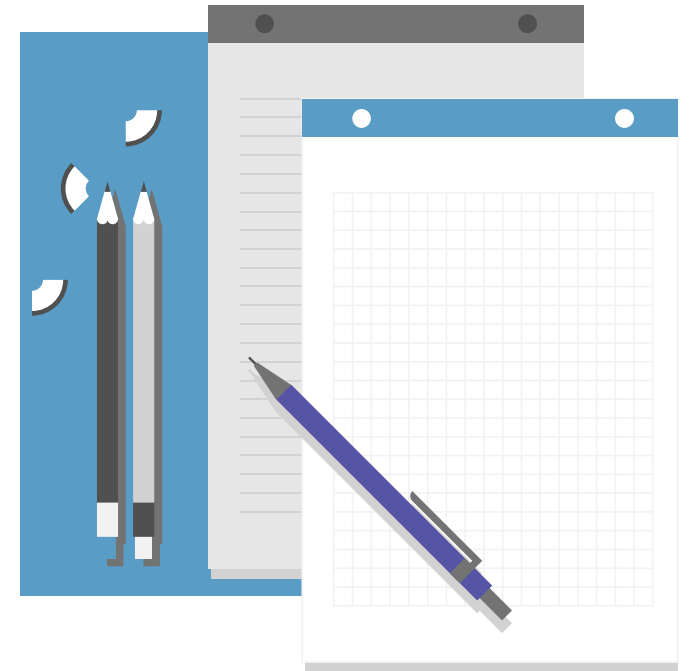
Obtaining Input from PAC members, stakeholders, and the public.



Performing Level 1 analysis on the Stacked I-84 Alternative and creating a graphical depiction of the Tunnel Alternative.



Developing and Evaluating the Initial Alternatives in Level 2.



Overview of *New Mix* Planning and Development Process

PEL Study

- Links transportation planning and environmental / community concerns
- Will identify a Range of Reasonable Alternatives

Today through 2023

National Environmental Policy Act (NEPA) Process

- The Environmental Review Process for compliance with environmental laws
- Will identify a Preferred Alternative

2-4 years

Design and Permitting

- Advanced design of the *Preferred Alternative* and associated break out projects
- State and Federal Permit Procurement

4-6 years

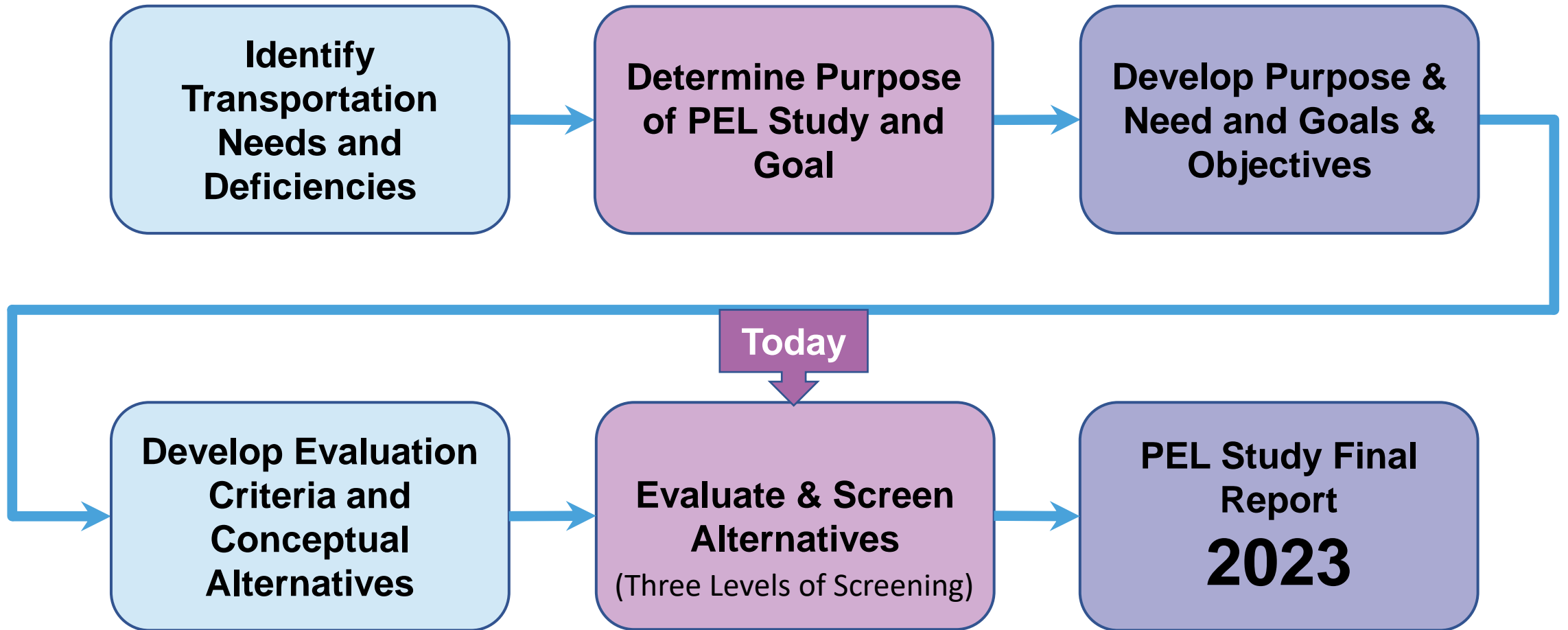
Construction

- Includes the Near-term, and Long-term breakout projects
Anticipated completion in 2045

Initiating early 2030s

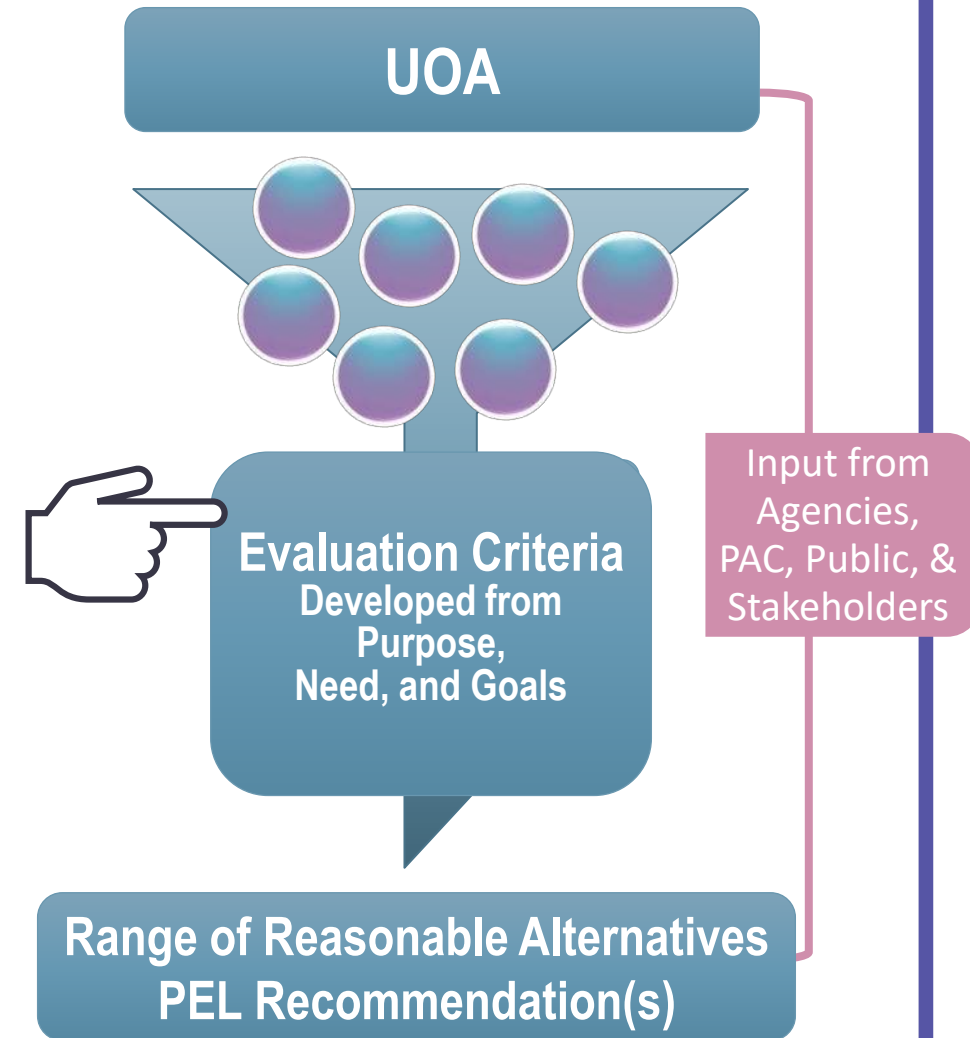


The *New Mix* PEL Study Process



The *New Mix* PEL Process: Screening the Universe of Alternatives (UOA)

- **Level 1:** Evaluation of Fatal Flaws; based on **Purpose** and **Need** – Least Detail
- **Level 2 :** Evaluation of the **Goals** of the project, informed through public outreach – Medium Detail
- **Level 3:** Evaluation of the **impacts** and **mitigation** opportunities identified – Most Detail
- Concludes with the identification of the **Range of Reasonable Alternatives / PEL Recommendations** for NEPA
- Public outreach occurs during all phases of the PEL



Note:  = a Project Alternative within a UOA

Level 1 Analysis of Conceptual Alternatives

Conceptual level of supplemental engineering performed to:

- Formalize the **Stacked I-84 Alternative**
- Produce a graphic for the **Tunnel Alternative**

Can the Alternative Satisfy the Purpose of the Project?

Does it have any fatal flaws?



Pass

Fail



Level 1 Analysis of New Conceptual Alternatives

Level 1 Screening Results

Alternative	Result	Preliminary Purpose and Needs Criteria			Practicability Criteria	
		Structural	Geometric	Operational (Traffic)	Cost	Feasibility
Stacked I-84	Fail	Pass	Pass	Fail	Pass	Pass
Tunnel	Fail	Pass	Pass	Pass	Fail	Pass

Conceptual level of supplemental engineering performed to:

- Formalize the **Stacked I-84 Alternative**
- Produce a graphic for the **Tunnel Alternative**

Alternatives are Fatally Flawed



Preliminary Level 1 Screening: *Stacked I-84*



Why was it developed?

- Potential reduction of ROW impacts

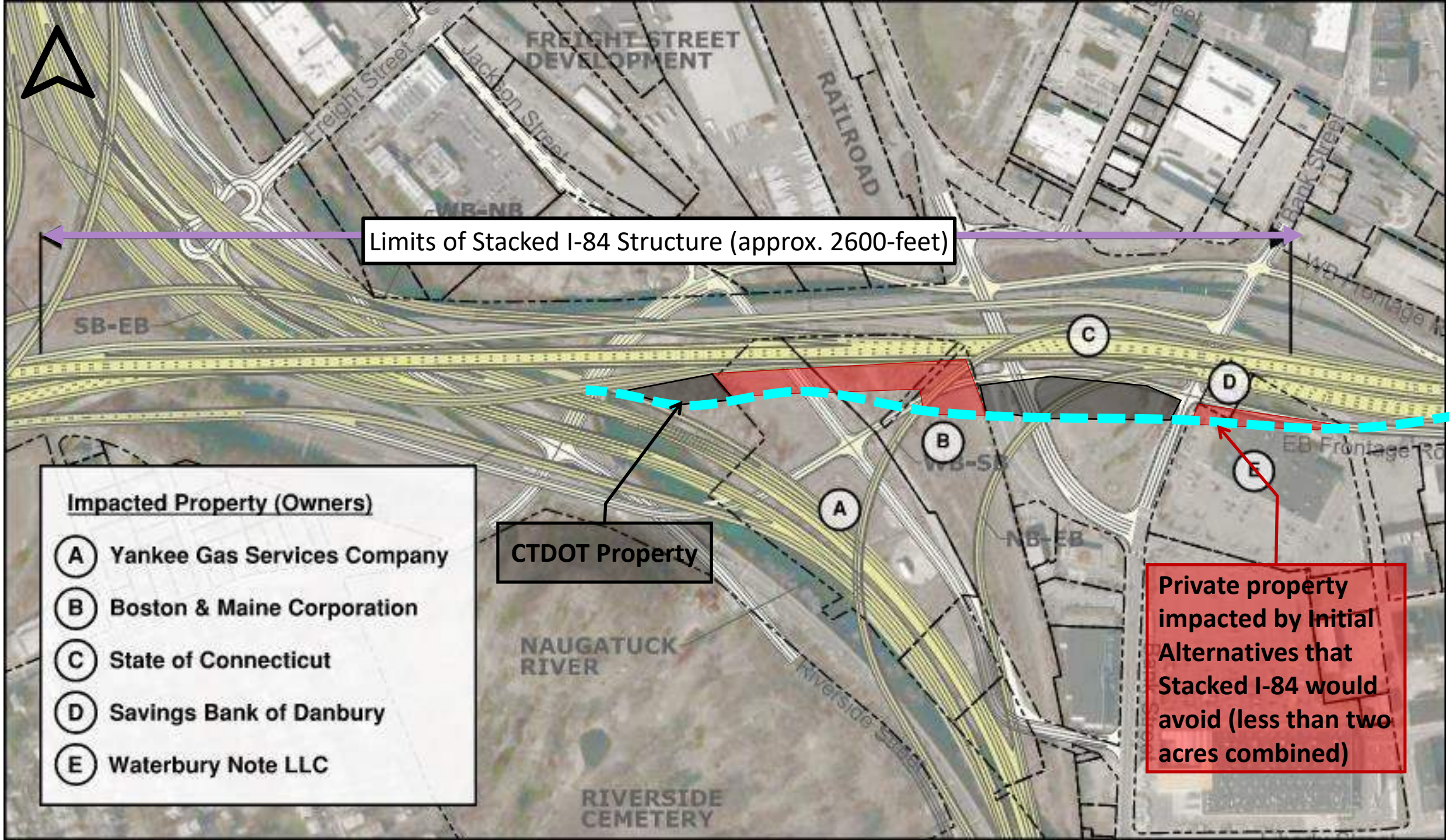


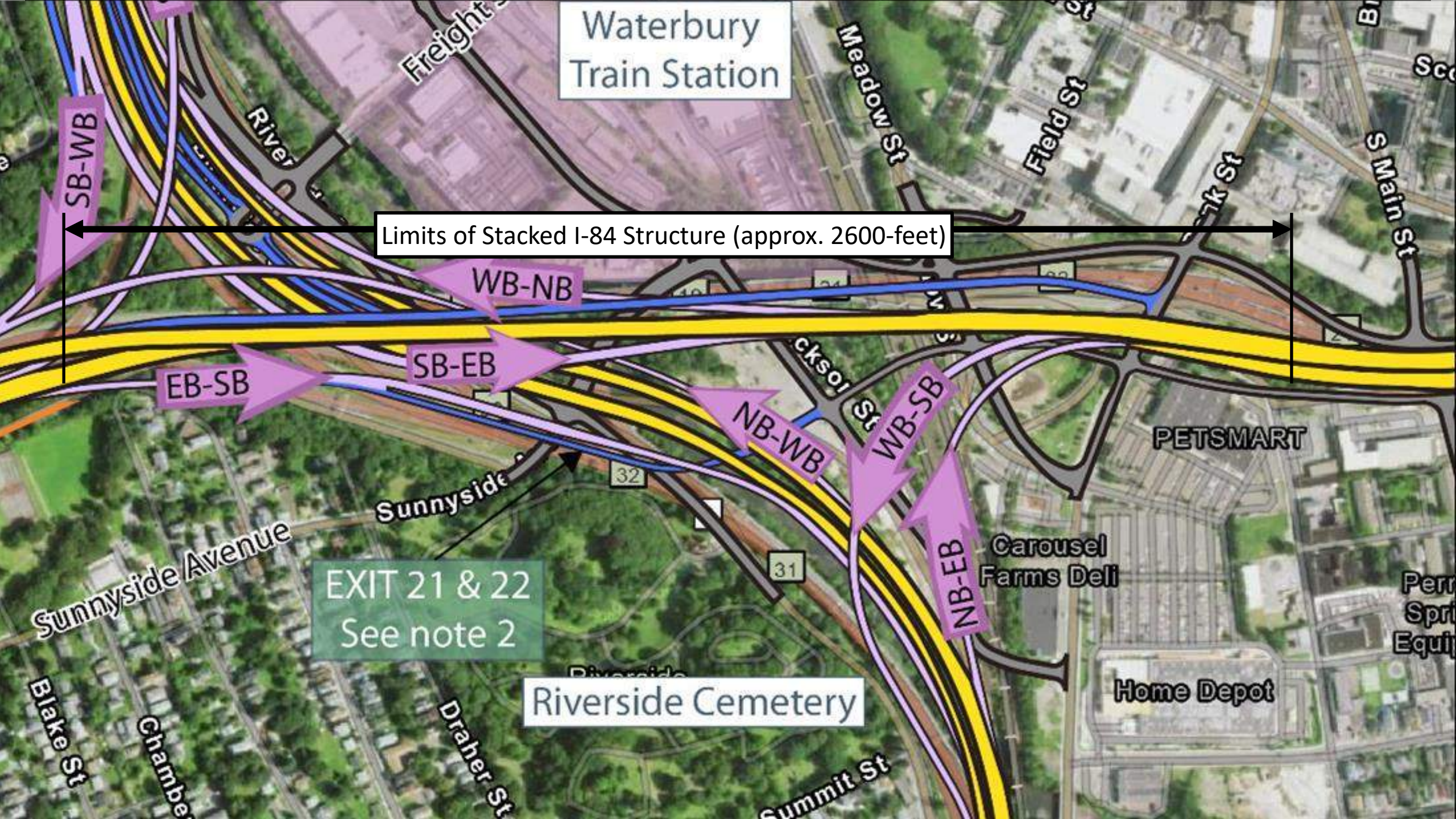
Limits of Stacked I-84 Structure (approx. 2600-feet)

- Impacted Property (Owners)**
- (A) Yankee Gas Services Company
 - (B) Boston & Maine Corporation
 - (C) State of Connecticut
 - (D) Savings Bank of Danbury
 - (E) Waterbury Note LLC

CTDOT Property

Private property impacted by Initial Alternatives that Stacked I-84 would avoid (less than two acres combined)





Waterbury Train Station

Limits of Stacked I-84 Structure (approx. 2600-feet)

EXIT 21 & 22
See note 2

Riverside Cemetery

PETSMArt

Carousel Farms Deli

Home Depot

SB-WB

WB-NB

EB-SB

SB-EB

NB-WB

WB-SB

NB-EB

Freight

River

Meadow St

Field St

Stark St

S Main St

Sunnyside Avenue

Sunnyside

cksol St

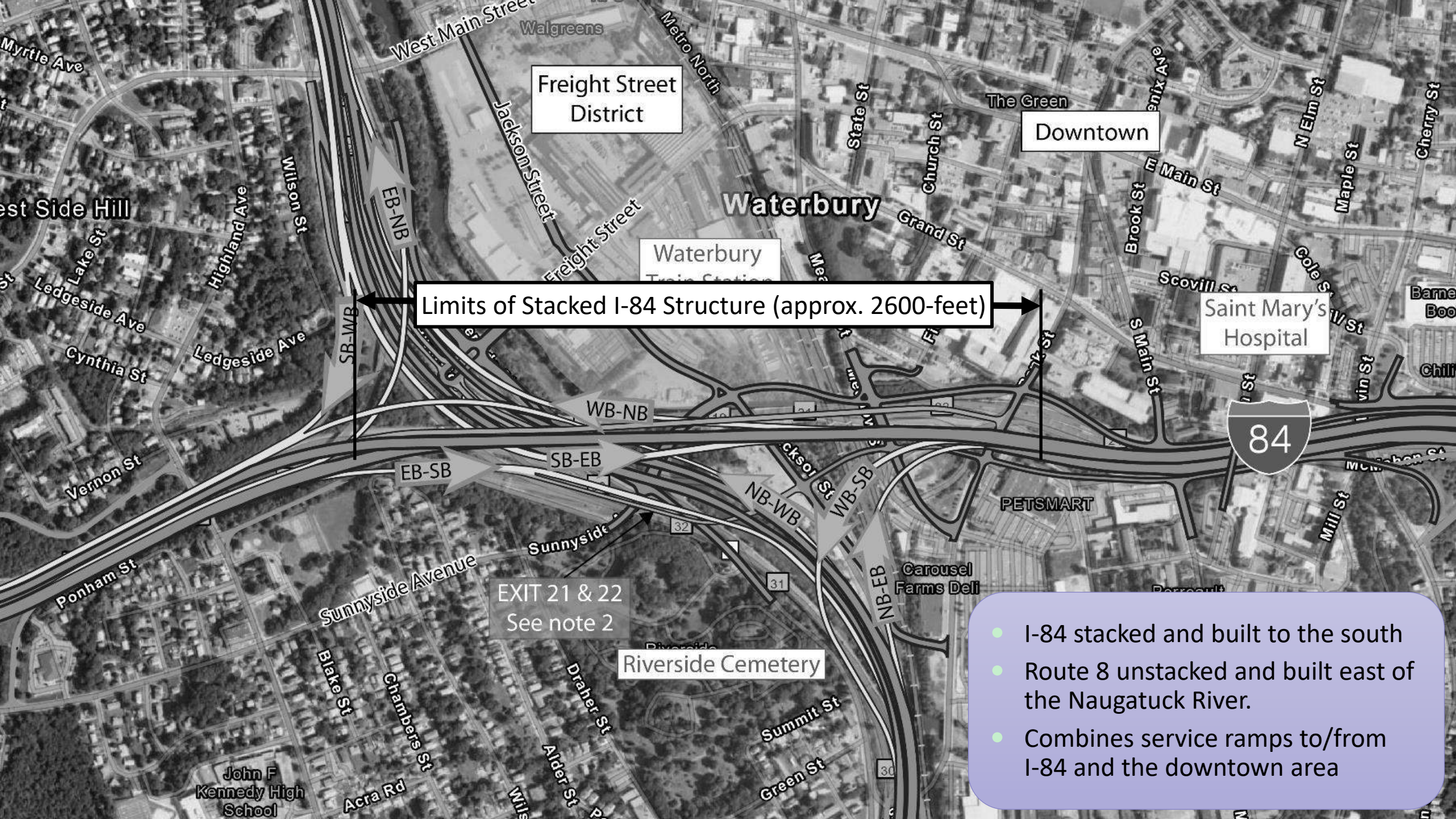
Blake St

Chamber

Draher St

Summit St

Perr
Spr
Equi



Freight Street District

Downtown

Waterbury

Waterbury Train Station

Limits of Stacked I-84 Structure (approx. 2600-feet)

Saint Mary's Hospital

84

EXIT 21 & 22
See note 2

Riverside Cemetery

- I-84 stacked and built to the south
- Route 8 unstacked and built east of the Naugatuck River.
- Combines service ramps to/from I-84 and the downtown area



Freight Street District

Waterbury

Waterbury Train Station

EB-NB

SB-WB

WB-NB

EB-SB

SB-EB

NB-WB

WB-SB

NB-EB

EXIT 21 & 22
See note 2

Riverside Cemetery

84



West Side Hill

Naugatuck Valley Community College

John F Kennedy High School

Parklawn Dr

Joy Rd

Robinwood Rd

Merrill St

Myrtle Ave

Highland Ave

Wilson St

Jackson Street

Freight Street

State St

Meadow St

Ledgeside Ave

Ledgeside Ave

Cynthia St

Park Rd

Fern Cir

W Main St

Vernon St

W Main St

Ponham St

Sunnyside Avenue

Sunnyside

32

31

Summit St

Green St

Alder St

Poplar St

Blake St

Chambers St

Acra Rd

Lawlor St

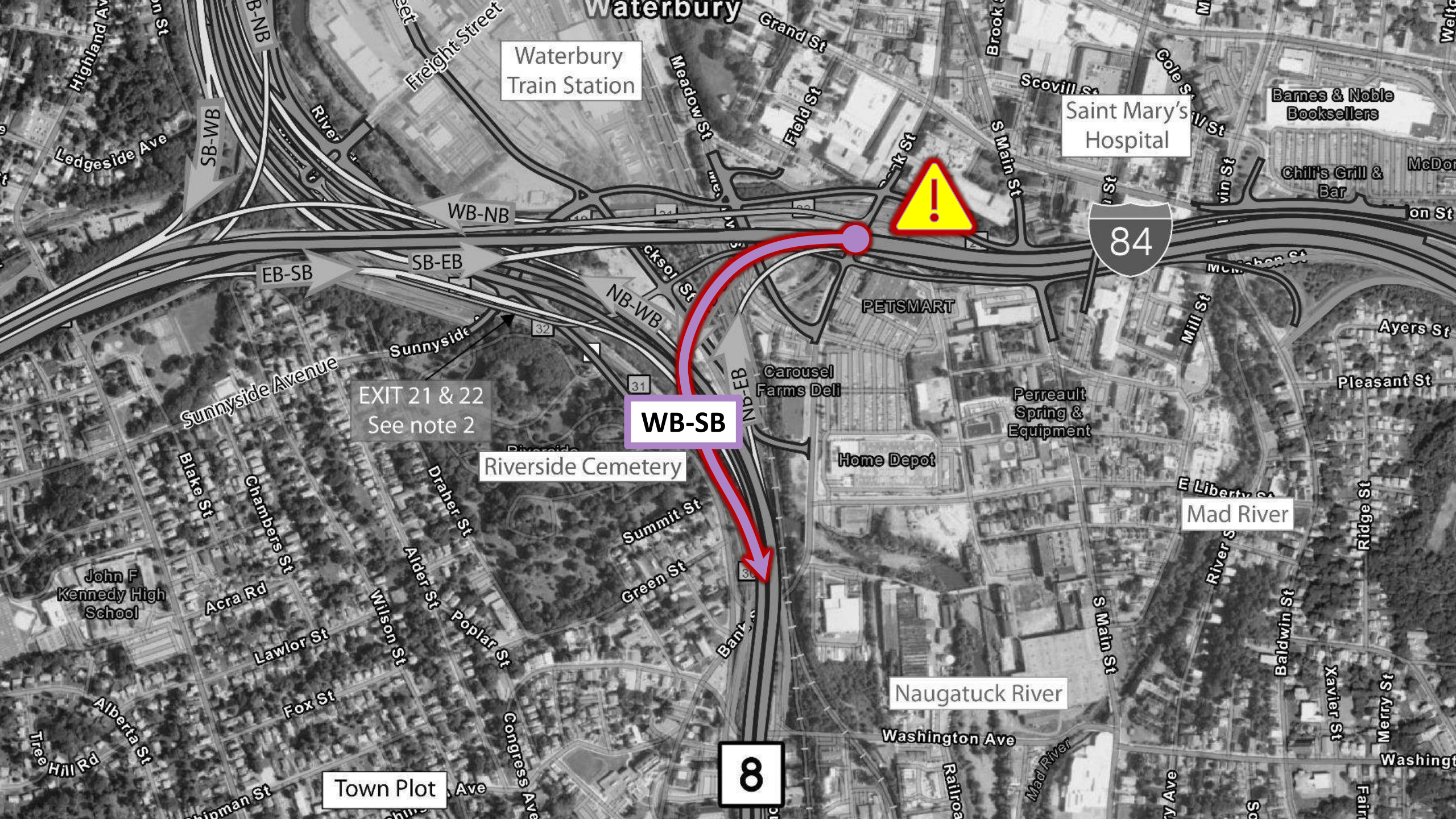
Wilson St

Courtesy Club Rd

Chase Pkwy

EXIT 18 (located)

pto
terbury



Waterbury
Train Station

Saint Mary's
Hospital

Barnes & Noble
Booksellers



WB-SB

EXIT 21 & 22
See note 2

Riverside Cemetery

Home Depot

Mad River

Naugatuck River



Town Plot

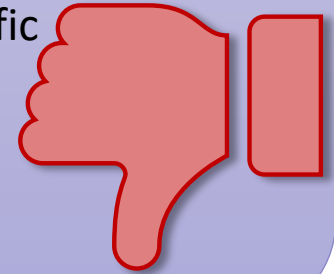
Preliminary Level 1 Screening Results: *Stacked I-84*



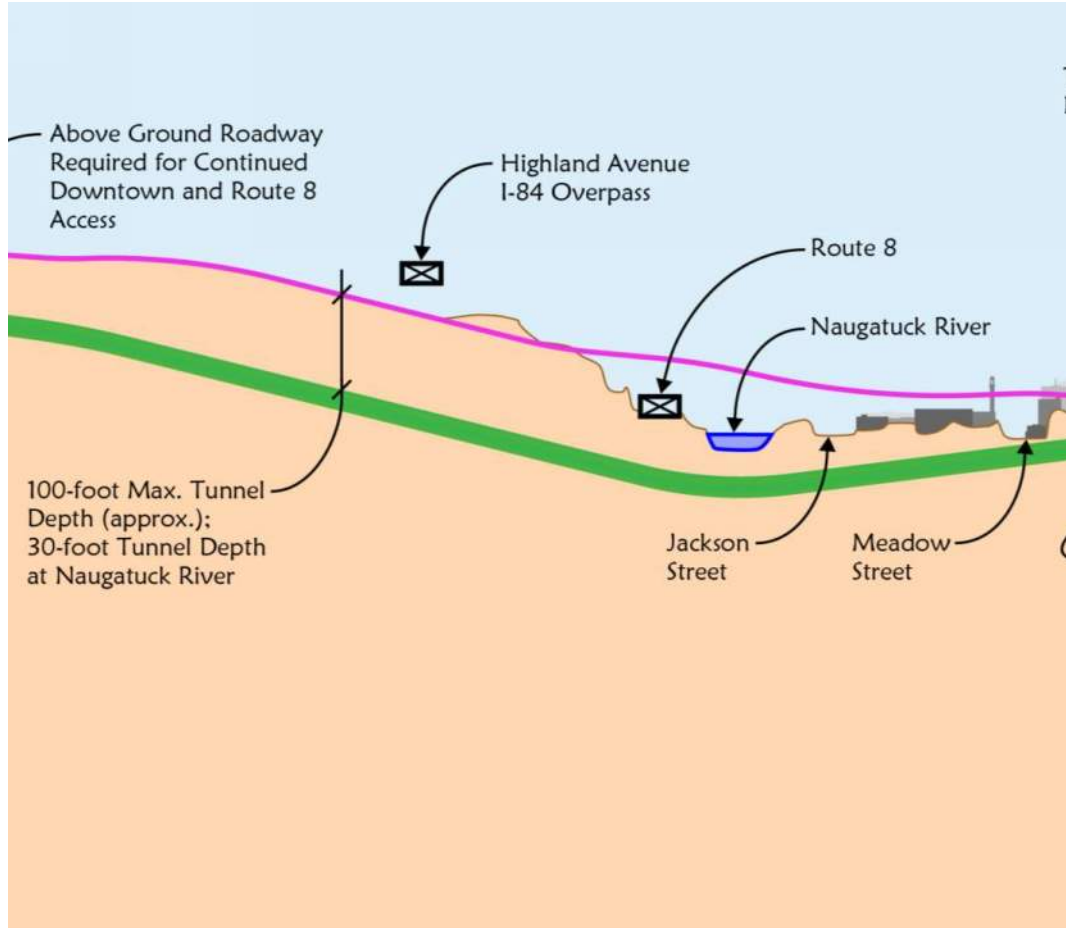
Level 1 Screening Results

Result	Preliminary Purpose and Needs Criteria			Practicability Criteria	
	Structural	Geometric	Operational (Traffic)	Cost	Feasibility
Fail	Pass	Pass	Fail	Pass	Pass

- ✓ Replaces aging structures
- ✓ Achieves modern design standards
- ✗ Left-hand ramps result in substandard weave distances that result in poor traffic operations.
- ✓ Practicable cost
- ✓ Practicable construction

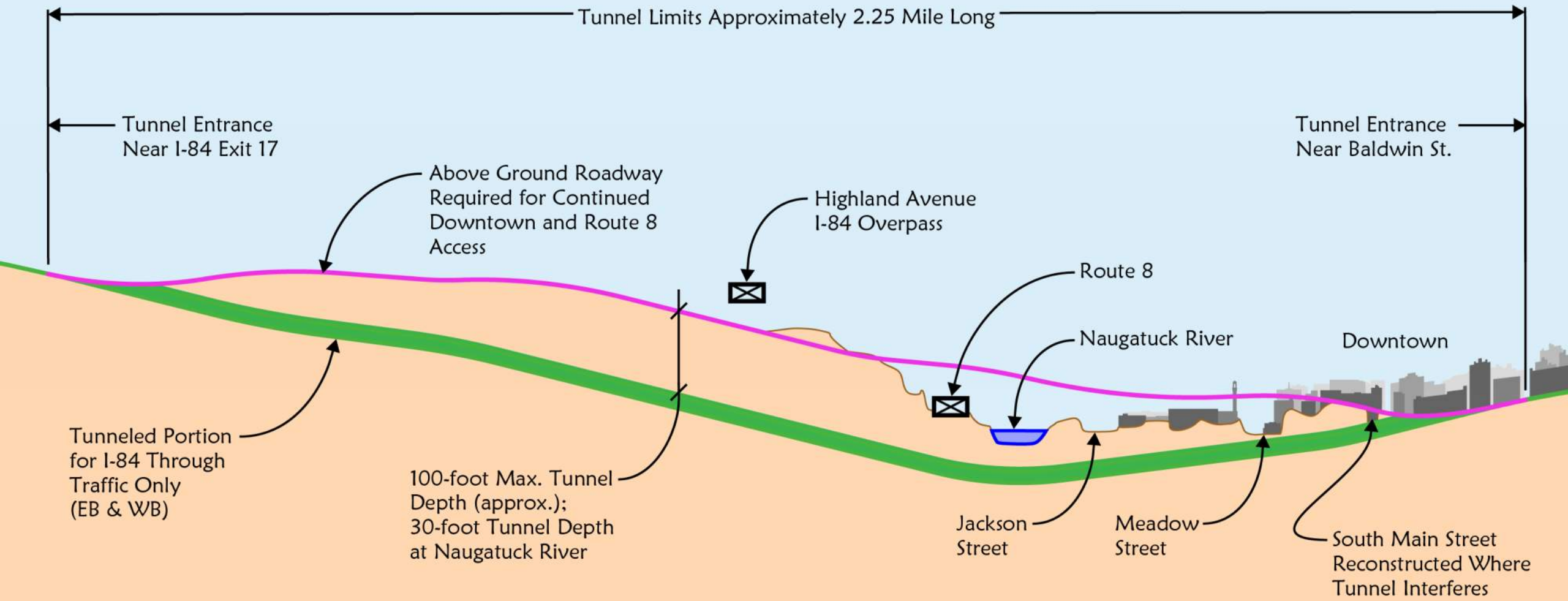


Preliminary Level 1 Screening Results: *Tunnel*

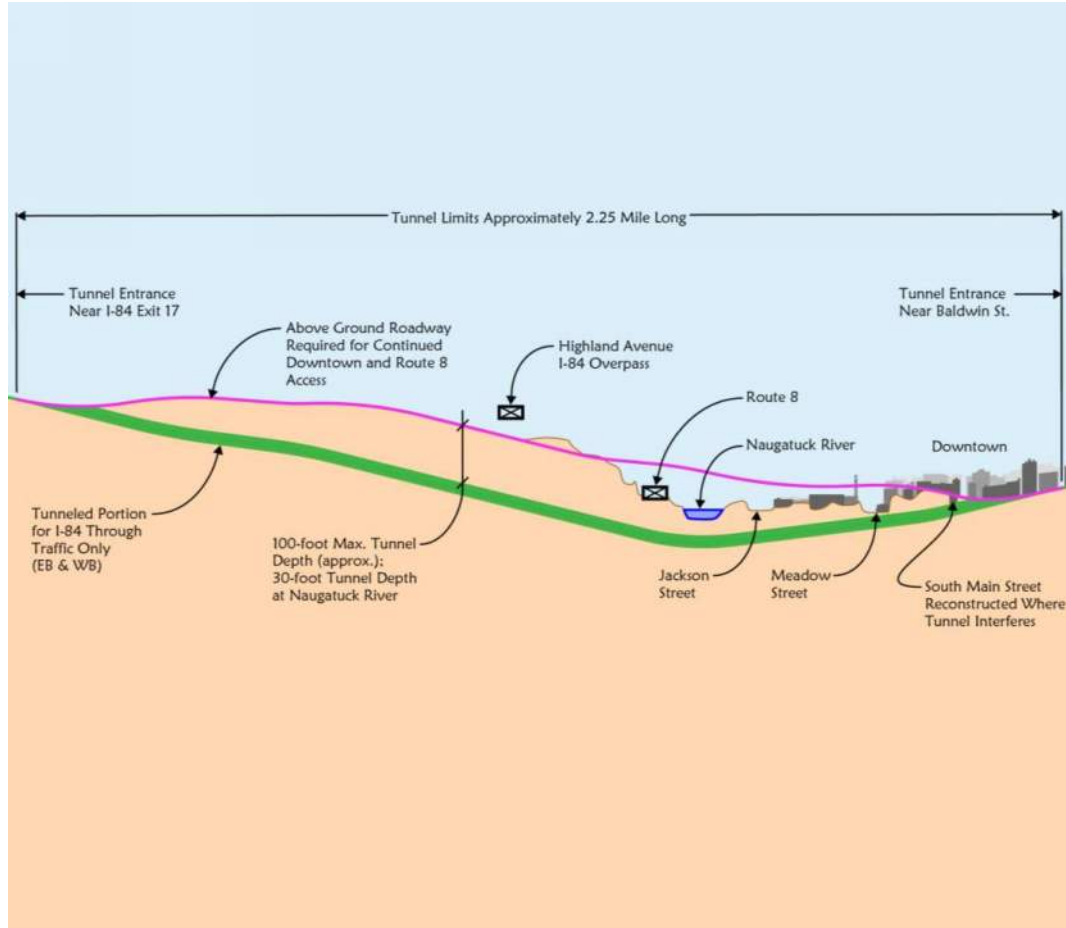


Level 1 Screening Results

Result	Preliminary Purpose and Needs Criteria			Practicability Criteria	
	Structural	Geometric	Operational (Traffic)	Cost	Feasibility
Fail	Pass	Pass	Pass	Fail	Pass



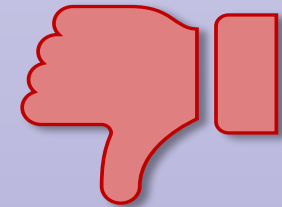
Preliminary Level 1 Screening Results: *Tunnel*



Level 1 Screening Results

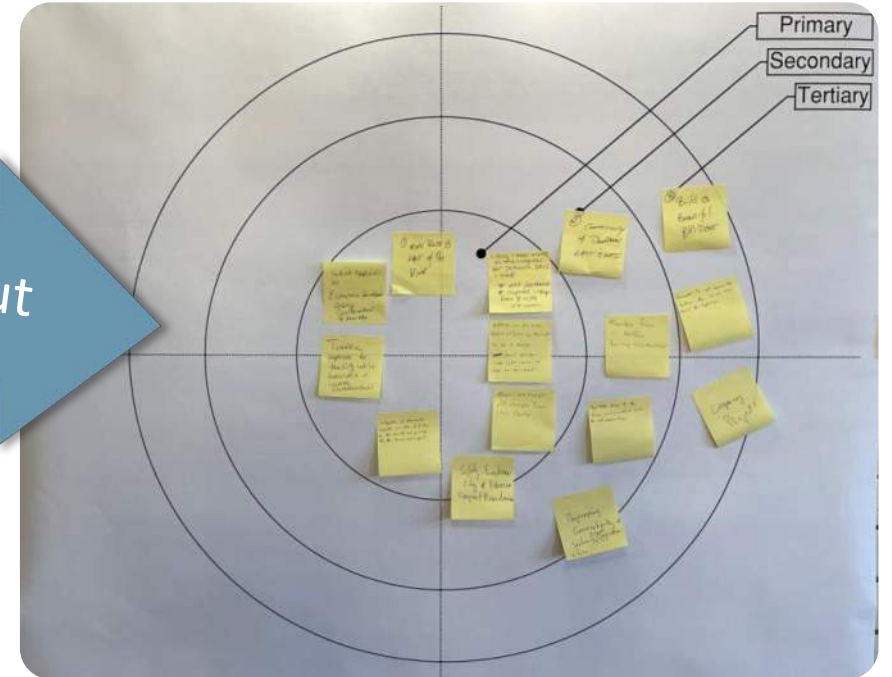
Result	Preliminary Purpose and Needs Criteria			Practicability Criteria	
	Structural	Geometric	Operational (Traffic)	Cost	Feasibility
Fail	Pass	Pass	Pass	Fail	Pass

- ✓ Replaces aging structures
- ✓ Achieves modern design standards
- ✓ Provides adequate capacity
- ✗ Practicable Cost
 - Unreasonable and impractical projected construction and maintenance costs due to the extended length of tunnel required to meet design standards for I-84 through traffic. (minimum \$10 billion, more than 2x higher than the next most expensive option)
- ✓ Practicable construction



Design Progression for Level 2

December PAC Meeting



Progression from Level 1 to Level 2

Level 1

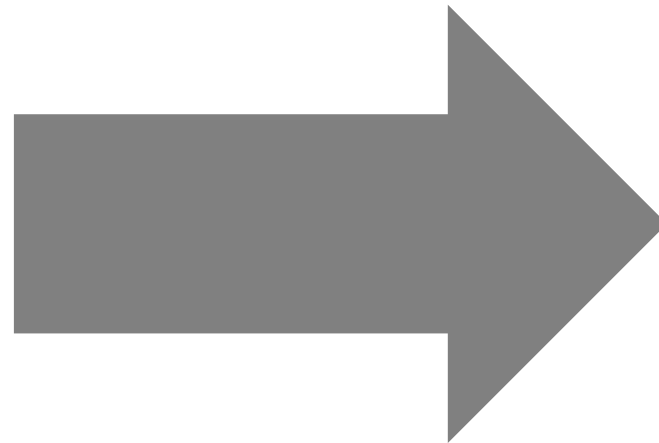
5% Design

Many Unknowns

Engineering Judgement

Fatal Flaw Evaluation

Qualitative



Level 2

10% Design

Fewer Unknowns

Use of Innovative
Design Tools

Goal-Based Evaluation

Qualitative /
Quantitative

Level 2 Design Progress

Level 2

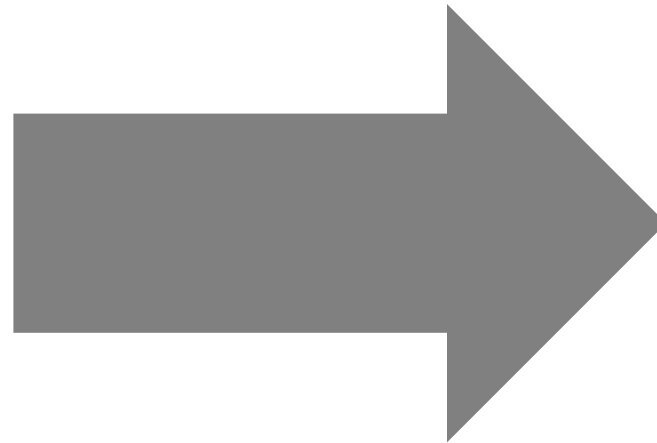
10% Design

Fewer Unknowns

Use of Innovative
Design Tools

Goal-Based Evaluation

Qualitative /
Quantitative



Places & Spaces



Parks, Greenways, and
Open Space



Smart Development

Connecting Corridors



Safe Active Routes



Enlivened Underpasses and
Overpasses

Preliminary Approach to Design

Places & Spaces



Parks, Greenways, and
Open Space



Smart Development

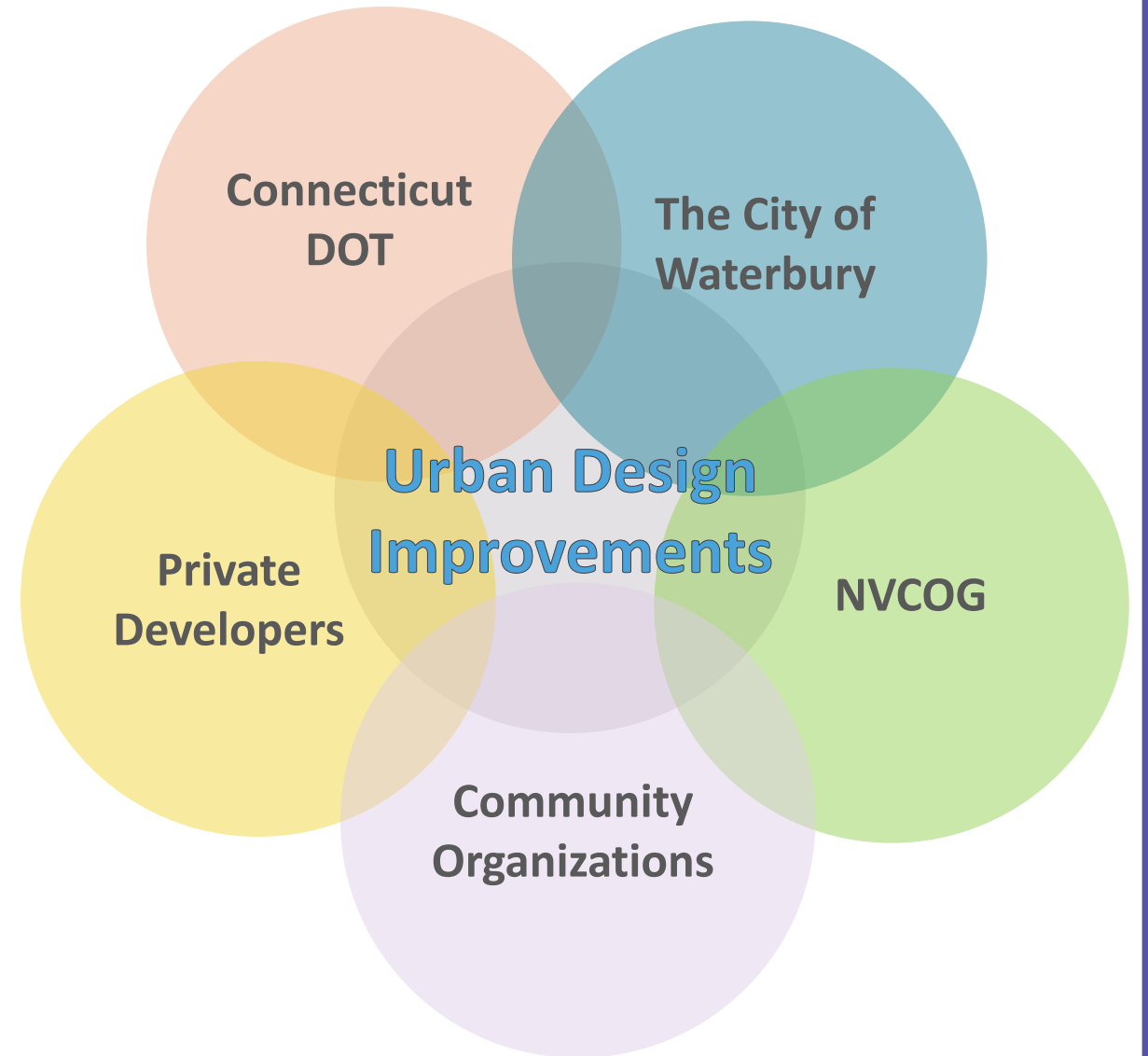
Connecting Corridors



Safe Active Routes



Enlivened Underpasses and
Overpasses



Places & Spaces

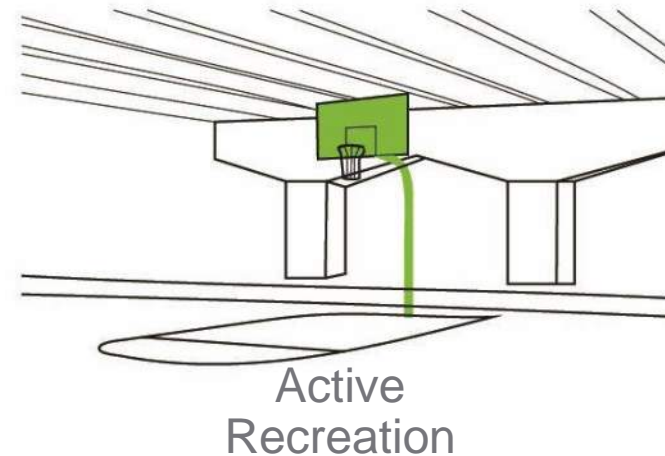
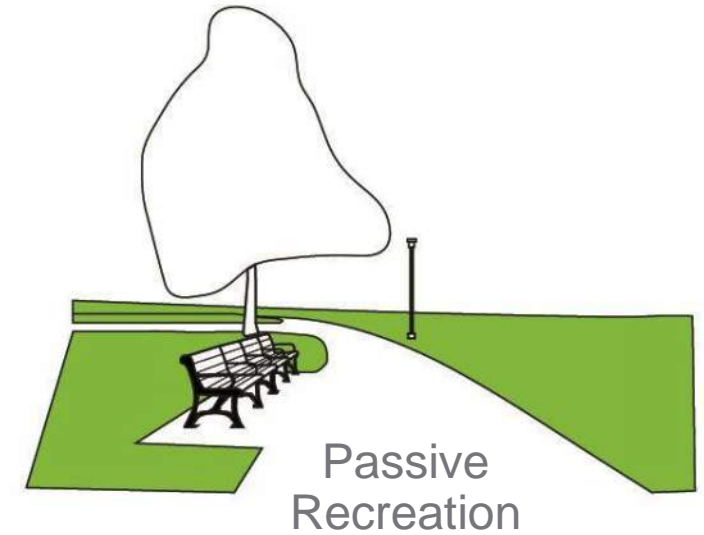
Precedents



- Generate enlivened public use around infrastructure
- Activate abandoned or underutilized spaces
- Strengthen connection to the waterfront
- Create a connective tissue between neighborhoods and throughout the city



Tools: Parks, Greenways, and Open Space



Places & Spaces

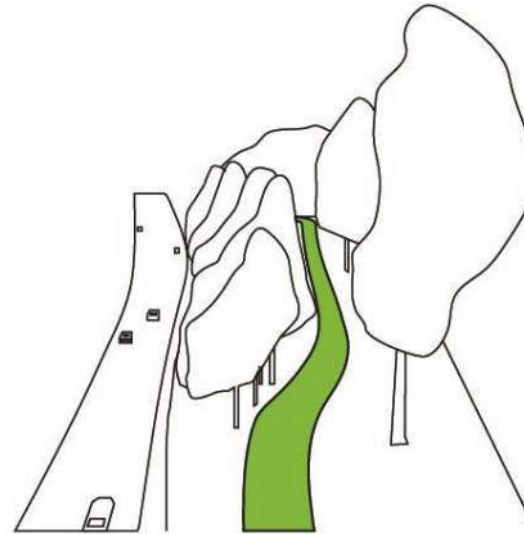
Precedents



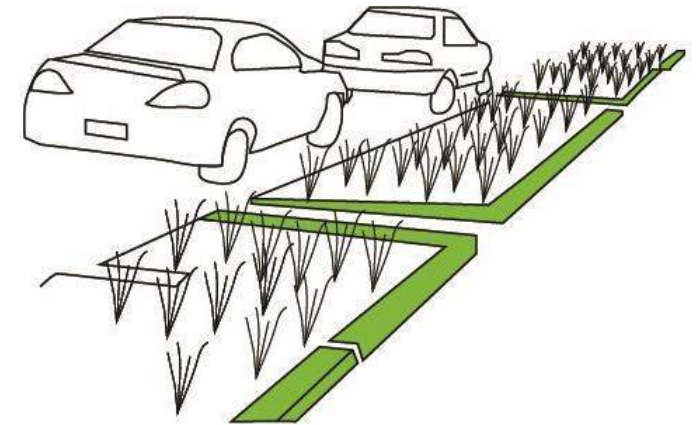
- Generate enlivened public use around infrastructure
- Activate abandoned or underutilized spaces
- Strengthen connection to the waterfront
- Create a connective tissue between neighborhoods and throughout the city



Tools: Parks, Greenways, and Open Space



Greenways



Green Infrastructure

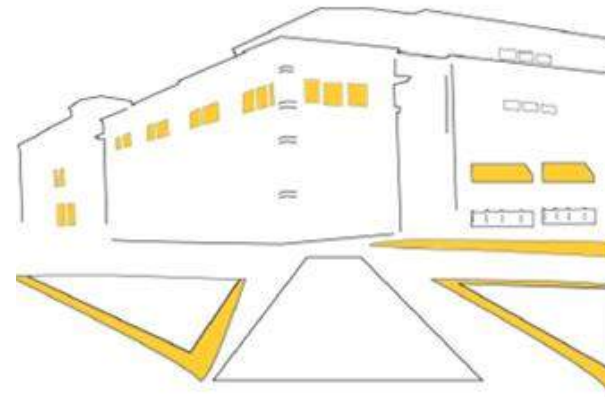
Places & Spaces

Precedents



Tools: Smart Development

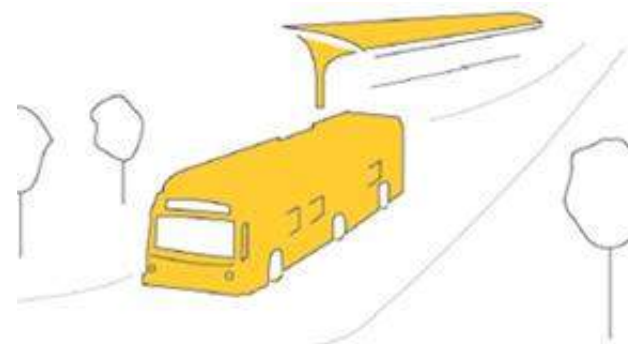
- Create a connective tissue between neighborhoods and throughout the city
- Generate enlivened public use around infrastructure
- Generate future economic development



Mixed-Use Properties



Diverse Housing Types



Transit Oriented Development (TOD)

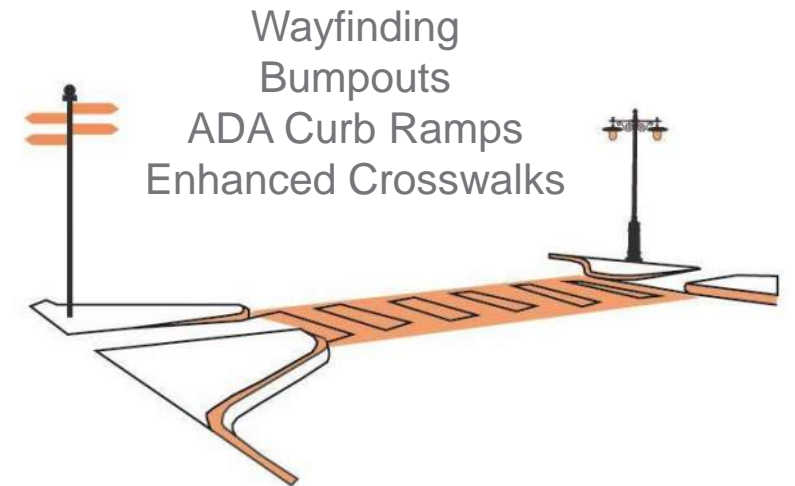
Connecting Corridors

Precedents



Tools: Safe Active Routes

- Accommodate many users through safe multimodal streets
- Connect people to key destinations, the historic downtown and wider transportation networks
- Improve universal access throughout Downtown Waterbury
- Enhance stormwater management through a connected network of parks and green infrastructure



Connecting Corridors

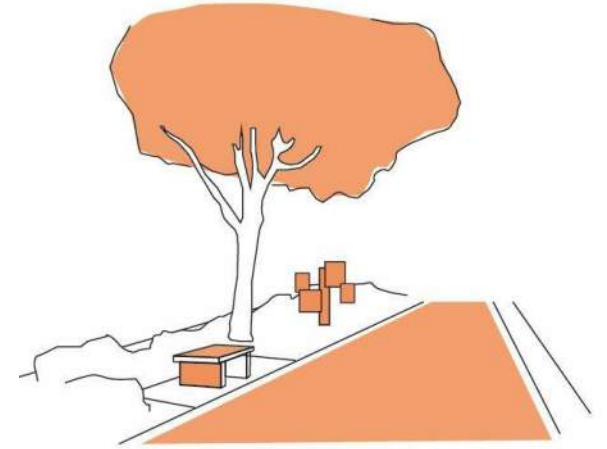
Precedents



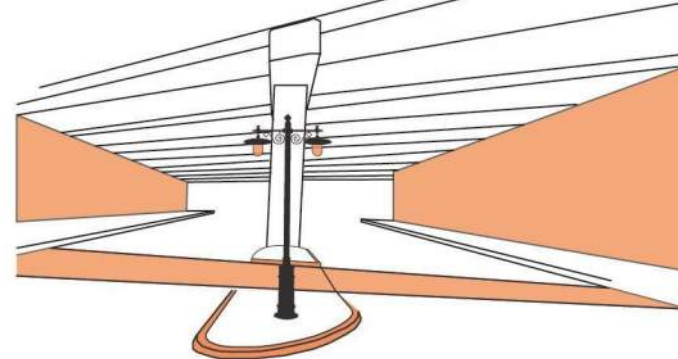
Tools: Safe Active Routes

- Accommodate many users through safe multimodal streets
- Connect people to key destinations, the historic downtown and wider transportation networks
- Improve universal access throughout Downtown Waterbury
- Enhance stormwater management through a connected network of parks and green infrastructure

Enhanced Plantings Street Trees



Pedestrian Refuge Islands Enhanced Lighting



Connecting Corridors

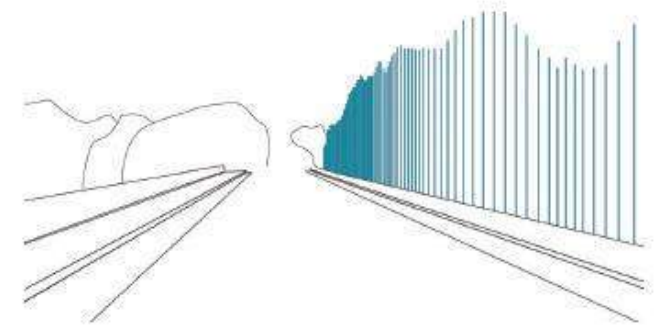
Precedents



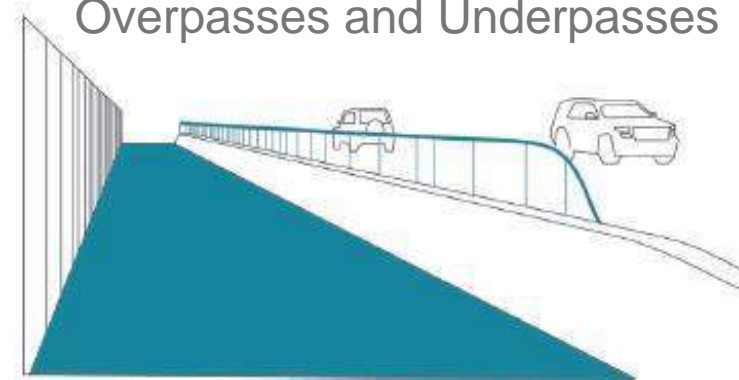
Tools: Enlivened Underpasses and Overpasses

- Create unique and site-specific installations to create a greater sense of place
- Murals and lighting welcome pedestrians, create visual presence
- Combine with Safe Routes tactics

Infrastructure as Art



Pedestrian Accommodations at Enlivened Overpasses and Underpasses



Level 2 Screening Methodology and Results

New Mix PEL Study Screening Process



Level 2 Results: Preliminary Alternatives

Level 3 Results: Range of Reasonable Alternatives

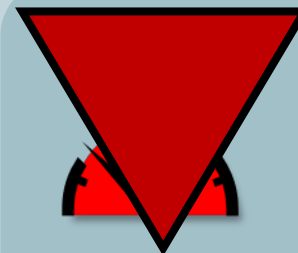
PEL Recommendations

Input from Agencies, PAC, Public, & Stakeholders

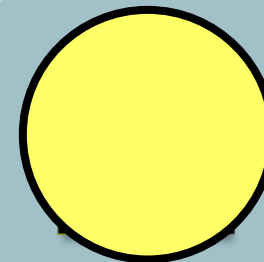
Criteria:

Environment / Community
Transportation
Cost
Constructability

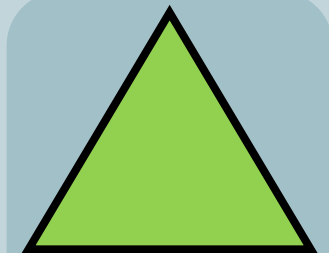
SCORING: Rated on how well each alternative can achieve study goals



Most Disadvantage



Neutral



Most Advantage

New Mix PEL Study Evaluation Criteria (Levels 2 and 3)

- Enhance Connectivity & Mobility*
- Enhance Modal Interrelationships*
- Support Economic Development
- Avoid or Minimize Impacts
(Community, Natural Resources,
Cultural Resources, & Sensitive
Populations)

Community/ Environment

Transportation

- Improve system performance
- Reduce congestion
- Reduce crash rate
- Maintain critical linkages

- Maximize Ease of Construction
- Minimize Construction Impacts to
Commuters and the Surrounding
Community
- Provide phasing flexibility

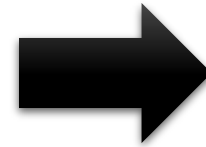
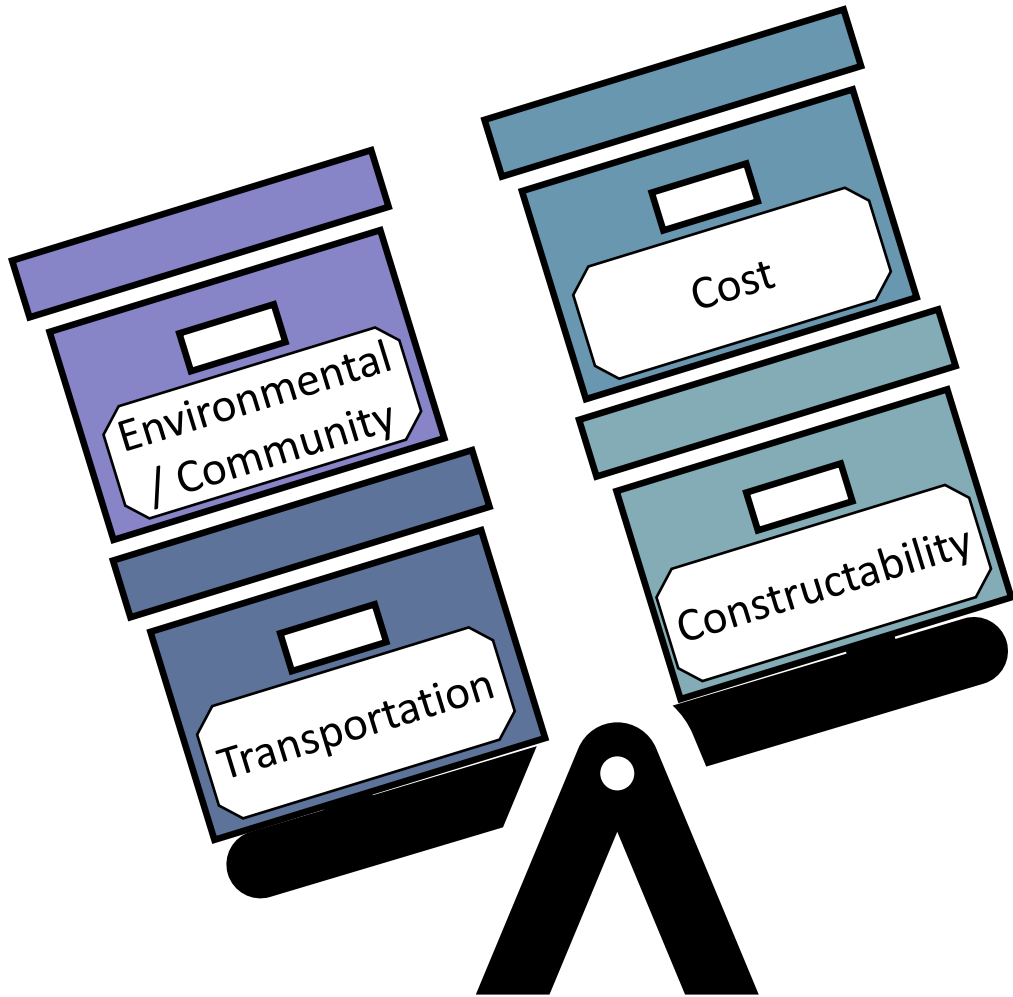
Constructability

Cost

- Financial resources can be made
available
- Phasing opportunities and
fundability

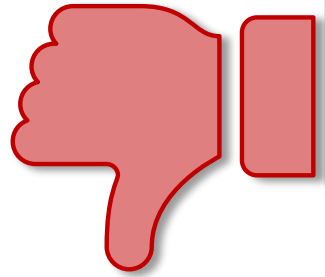
* Evaluated under the transportation group due to the analysis being tied to the local road network

New Mix Level 2 Scoring



Rating	Threshold
▲	Advancing
●	Not Advancing
▼	

New Mix Level 2 Screening: Preliminary Results*



6

Initial Alternatives proposed to be **DISMISSED**:
Failed to achieve a majority of the goals and objectives.

3

Initial Alternatives proposed to **ADVANCE**:
Achieve a majority of the goals and objectives.
















































1

No-Build Alternative must be retained for future evaluations⁺

*Results are not final until after public input is received











⁺The No-Build Alternative failed to meet the criteria but must be retained for evaluation in the subsequent screening levels and NEPA analyses as required.

Level 2 Screening Preliminary Results*:

Initial Alternative	 Rating	 Transportation	 Environmental / Community	 Cost	 Constructability
No-Build					
Modern Crossover Interchange					
Naugatuck River Shift					
Keeping Route 8 Stacked					
Combined System Connections					
Modern Crossover Interchange with Route 8 Split to the South					
Interchange Shifted East					
South City Bypass					
Partial System Interchange with Freight Street Interchange	N/A	N/A FATALLY FLAWED			
Half Diverging Diamond	N/A	N/A FATALLY FLAWED			

*Results are not final until after public input is received

Level 2 Screening Preliminary Results*:

Initial Alternative	 Rating	 Results
No-Build ⁺		Advancing⁺
Modern Crossover Interchange		Advancing
Naugatuck River Shift		Advancing
Keeping Route 8 Stacked		Advancing
Combined System Connections		Not Advancing
Modern Crossover Interchange with Route 8 Split to the South		Not Advancing
Interchange Shifted East		Not Advancing
South City Bypass		Not Advancing
Partial System Interchange with Freight Street Interchange	N/A	Not Advancing
Half Diverging Diamond	N/A	Not Advancing

*Initial Alternatives that pass the Level 2 screening are called **Preliminary Alternatives** to be further evaluated in Level 3 screening*

Questions?

*Results are not final until after public input is received

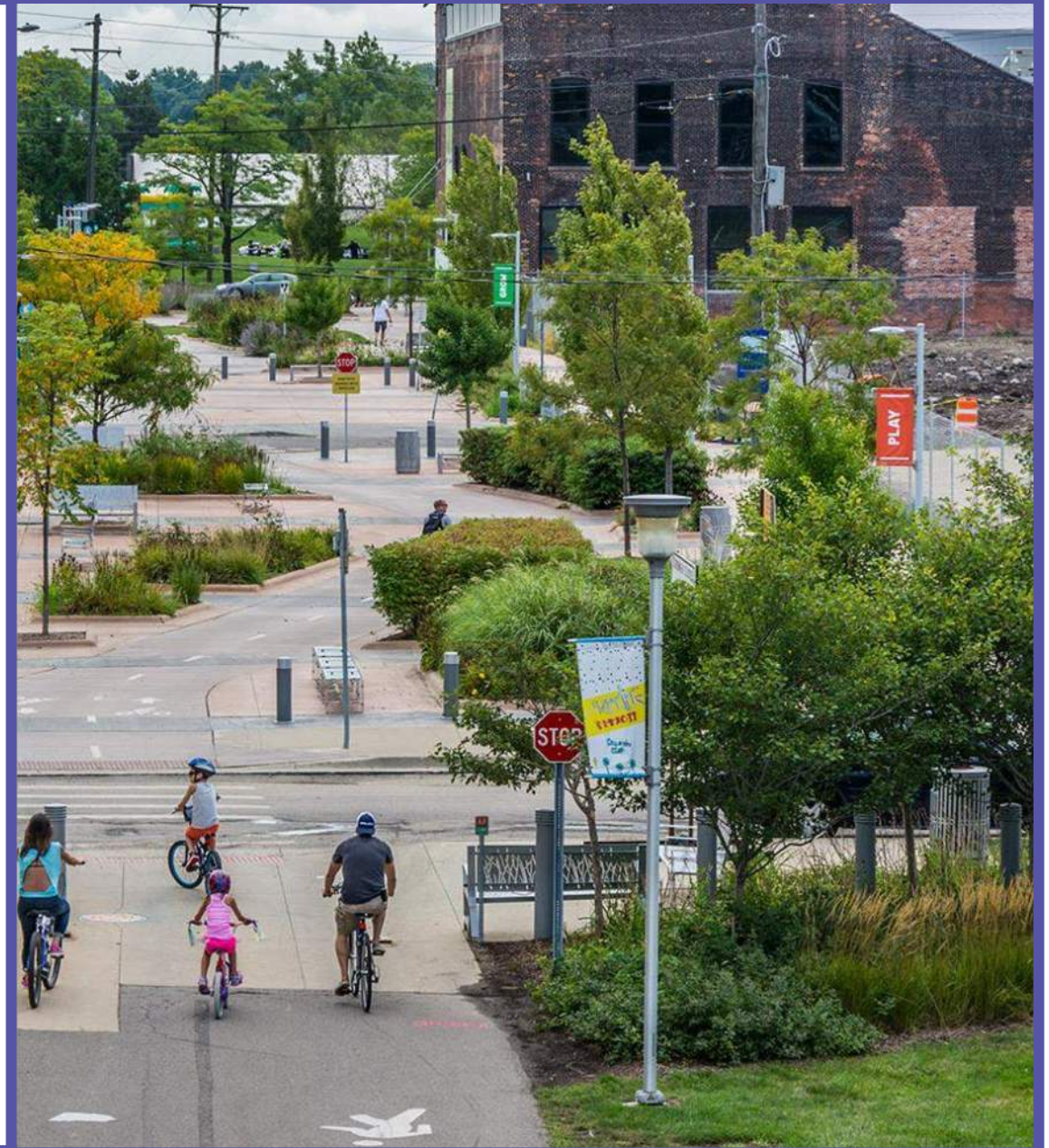
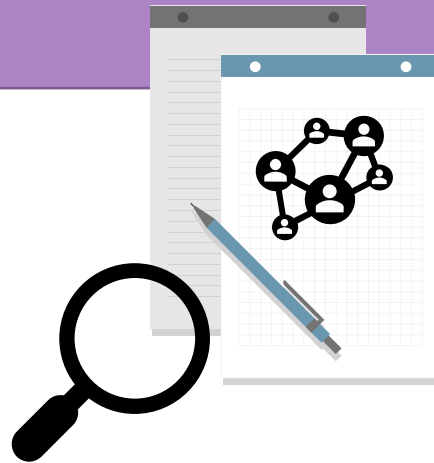
⁺The No-Build Alternative is fatally flawed and failed to meet the criteria but must be retained for evaluation in the subsequent screening levels and NEPA analyses as required.

Next Steps

Upcoming Study Aspects

The Study Team will be taking a deeper dive into evaluating other modes of travel for integration into the Project

- Mobility Equity Considerations
 - e.g., bike/ped, transit, rail, access, connectivity, accessibility, etc.
- Surveys will be deployed, and additional meetings and presentations will occur.



New Mix Level 3 Progression of Design

Places & Spaces Precedents

Active Waterfront



Gathering Space



- **Implementing** the tools to meet the urban design objectives, the project team will continue to refine a plan of preliminary opportunities
- **“Primary opportunities”**: areas that would be directly impacted by the New Mix construction
- **“Secondary opportunities”**: indirect impacts that could contribute to a comprehensive network of places and spaces and connecting corridors

Connecting Corridors Precedents

Overpasses As Gateways



Enlivened Underpasses

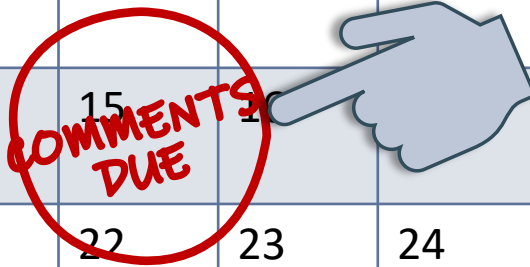


PAC Comments Due

Comments / Input Due: May 15, 2023

Email: Nhodes@hntb.com

May						
S	M	T	W	TH	F	S
30	1 <i>TODAY</i>	2	3	4	5	6
7	8	9	10	11	12	13
14	15 <i>COMMENTS DUE</i>	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10



Comments on Preliminary Level 2 Screening Results comments are due May 04 for incorporation into the PEL Documents.

Before the Next Meeting Continue to...



Review PAC Meeting #5 Information Materials and provide input on the preliminary results of the Level 2 Screening.



Explore the Program Website.



Check email for information about the next PAC meeting and scheduling.



Remain excited to participate in our next meeting.



Questions & Comments

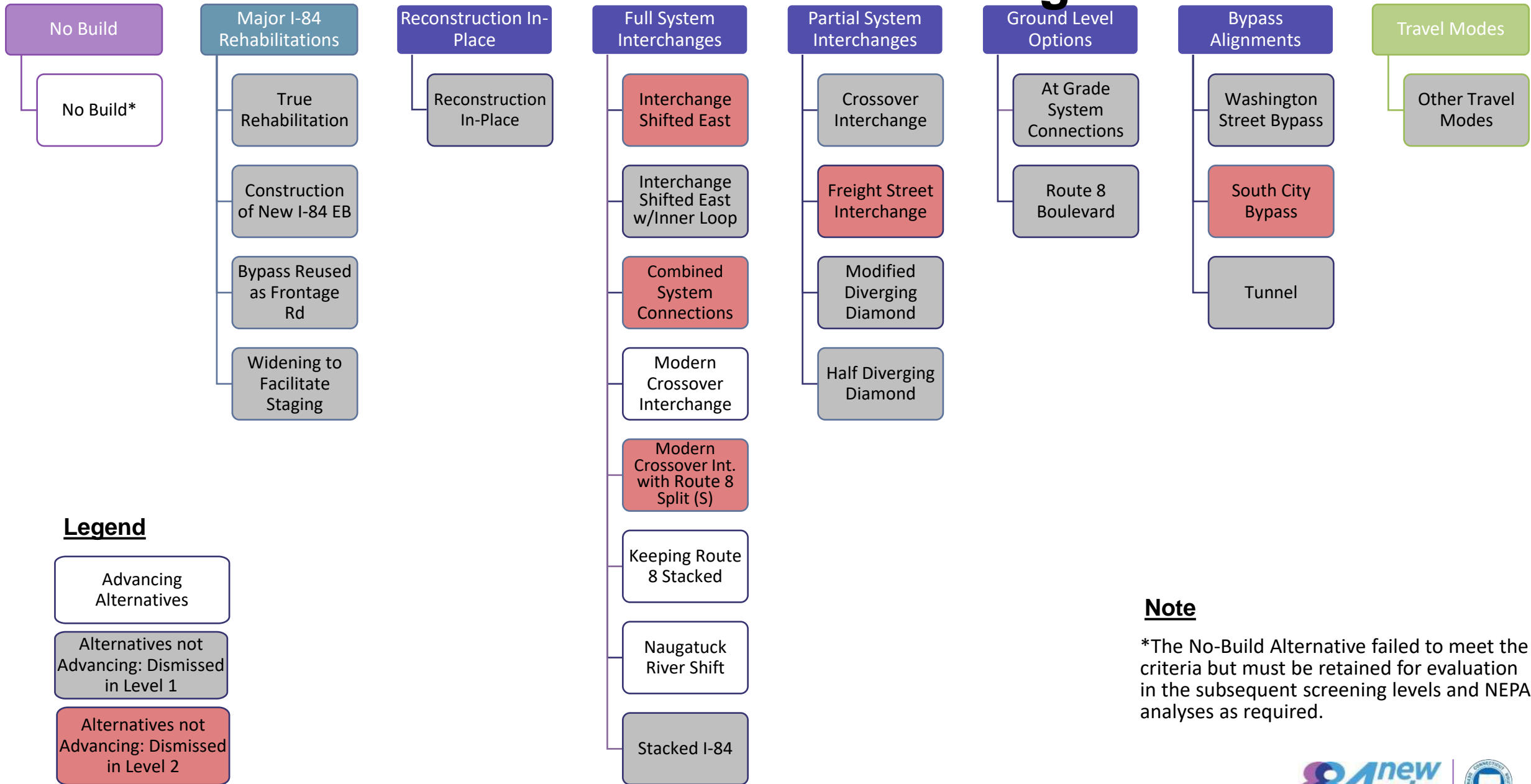


Thank you.



Additional Information: Dismissed Alternatives

Universe of Alternatives: Level 2 Screening Results











Legend

- Advancing Alternatives
- Alternatives not Advancing: Dismissed in Level 1
- Alternatives not Advancing: Dismissed in Level 2

Note









*The No-Build Alternative failed to meet the criteria but must be retained for evaluation in the subsequent screening levels and NEPA analyses as required.

Interchange Shifted East

Goal Category	Score
 Transportation	 Meets 76% of Goals
 Environmental / Community	 Meets 29% of Goals
 Cost	 Meets 50% of Goals
 Constructability	 Meets 67% of Goals











Combined System Connections

Goal Category	Score
 Transportation	 Meets 81% of Goals
 Environmental / Community	 Meets 46% of Goals
 Cost	 Meets 50% of Goals
 Constructability	 Meets 50% of Goals











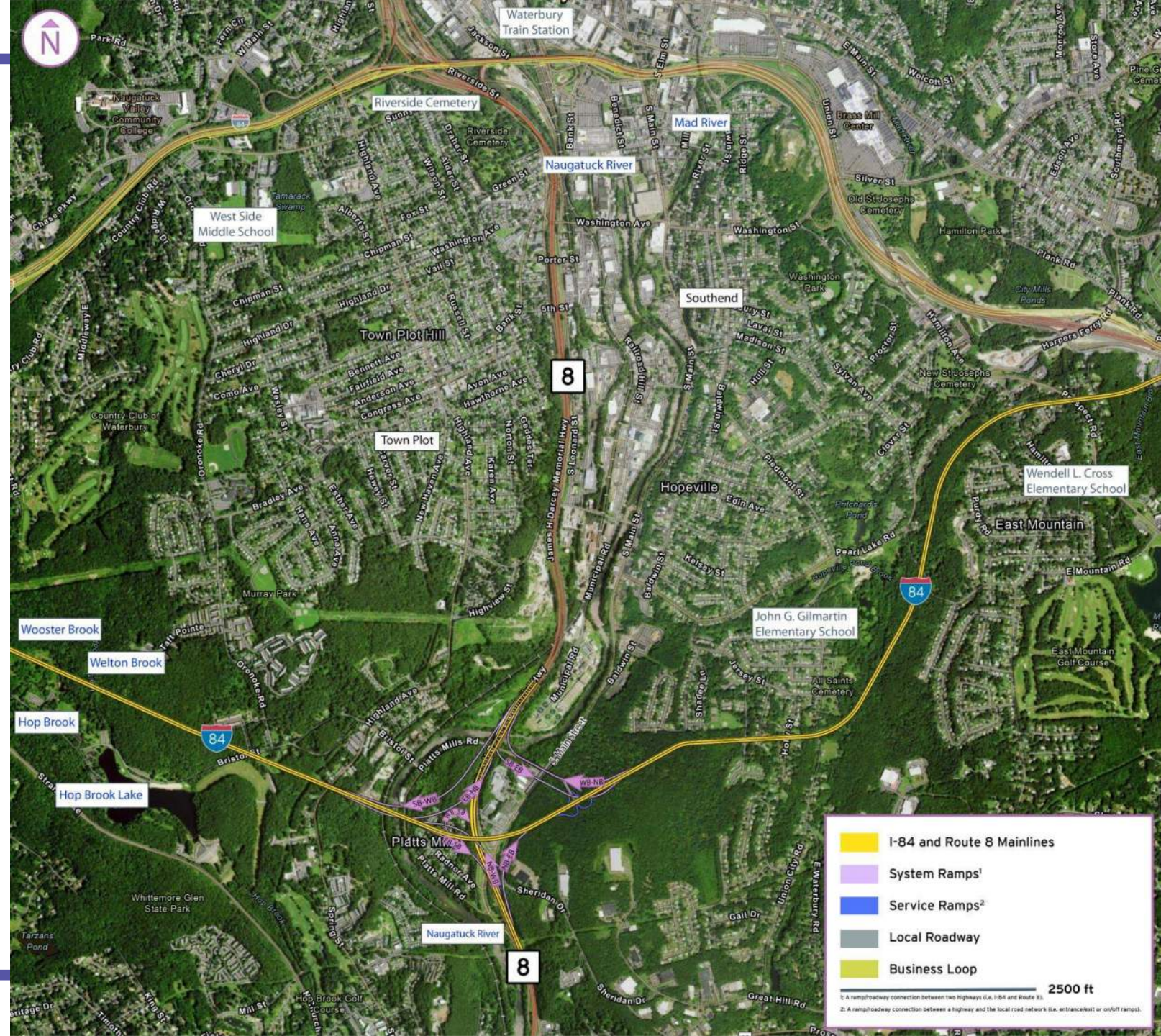
Modern Crossover Interchange with Route 8 Split to the South

Goal Category	Score
 Transportation	 Meets 64% of Goals
 Environmental / Community	 Meets 67% of Goals
 Cost	 Meets 50% of Goals
 Constructability	 Meets 50% of Goals



South City Bypass

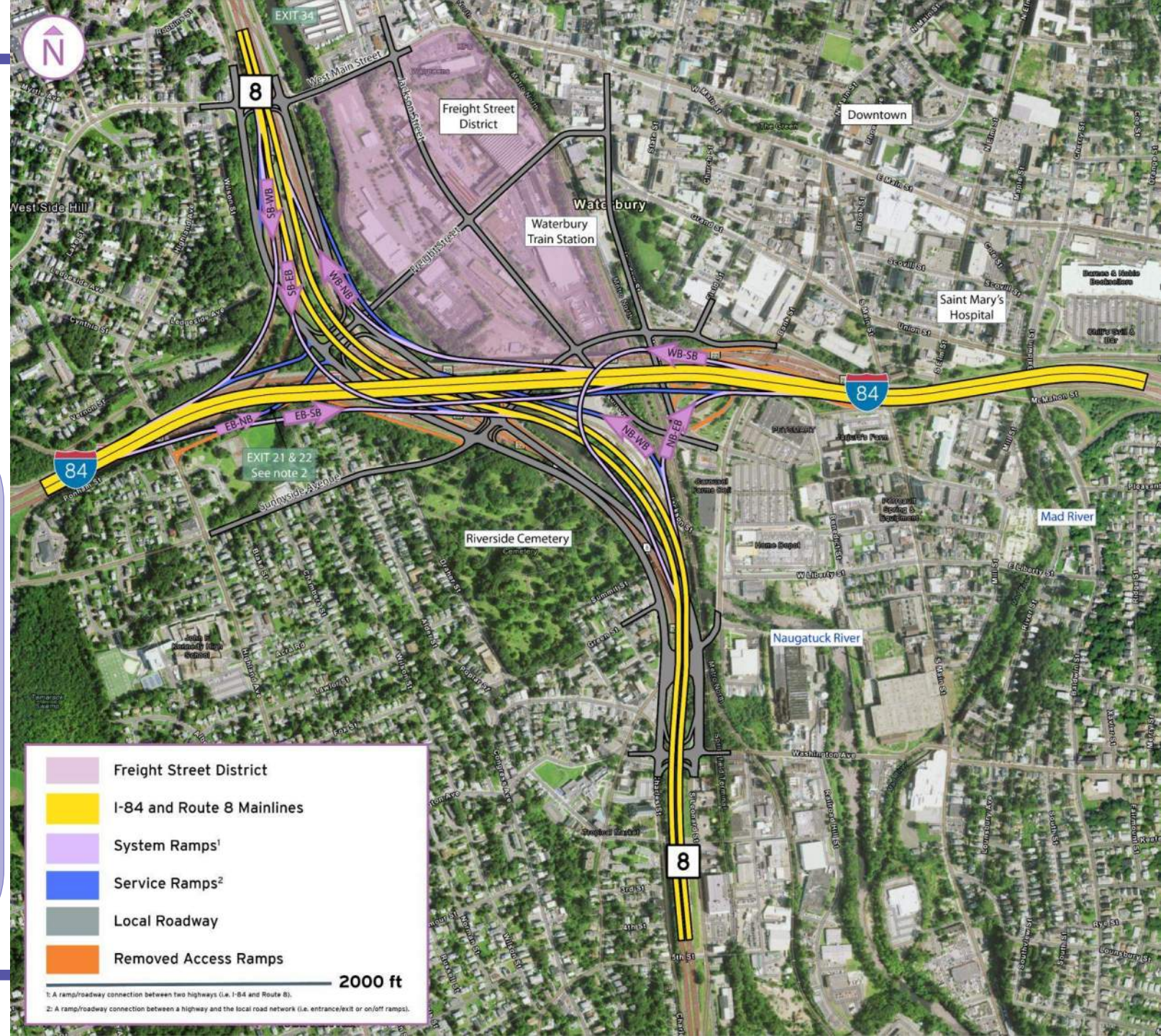
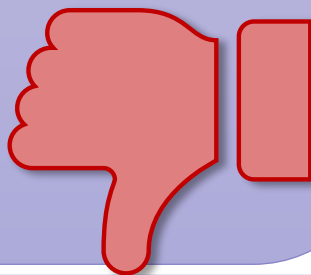
Goal Category	Score
 Transportation	 Meets 62% of Goals
 Environmental / Community	 Meets 13 % of Goals
 Cost	 Meets 0% of Goal
 Constructability	 Meets 67% of Goals



Partial Crossover Interchange with Freight Street Interchange

Fatally Flawed

- ✓ Replaces aging structures
- ✓ Achieves modern design standards
- ✗ Provides adequate capacity
 - Indirect connections would require the use of the local road network resulting in an increase of traffic at unacceptable levels
- ✓ Practicable cost
- ✓ Practicable construction



Half Diverging Diamond Interchange

Fatally Flawed

- ✓ Replaces aging structures
- ✓ Achieves modern design standards
- ✗ Provides adequate capacity
 - The heavy traffic volume on two of the system movements would not function adequately due to poor geometry and high traffic volumes resulting in poor LOS
- ✓ Practicable cost
- ✓ Practicable construction

