



I-84 HARTFORD PROJECT

An architectural rendering of a modern urban street. The street features a central asphalt road with double yellow lines, flanked by green-painted bike lanes. Pedestrians are walking on wide sidewalks, and a cyclist is riding in the bike lane. The scene is lined with mature trees and streetlights, creating a vibrant and walkable environment.

I-84 Hartford Project **Urban Design Working Session**

November 15, 2016



Integrating I-84 into the City





I-84 Corridor

Opportunities for integrating I-84 into the City

- Connecting neighborhoods
- Mitigating visual impact
- Mitigating noise impact
- Creating quality local streets for peds / bikes
- Creating attractive places that provide economic and social value



I-84 Corridor

Strategies and Tools

- Capping
- Buildings / streets over lowered highway
- Expanded decking for bridges
- Landscape / raised planters
- Topography
- Noise/Screening walls
- Complete Streets



Example Strategies

Capping and Plaza – Hartford, CT





Example Strategies

Capping and Buildings – Hartford, CT





Example Strategies

Capping and Buildings – Hartford, CT





Example Strategies

Capping and Buildings – Columbus, OH





Example Strategies

Capping and Buildings – Columbus, OH





Example Strategies

Decking and Landscape – Columbus, OH





Noise Control Design Strategy

Vegetative Screening Walls





Noise Control Design Strategy

Curved Transparent Barriers





Noise Control Design Strategy

Pedestrian Walkways and Overpasses Barriers





Noise Control Design Strategy

Freeway Cap Parks





Noise Control Design Strategy

Widened Overpasses





Noise Control Design Strategy

Pedestrian Walkway Enclosures





Noise Control Design Strategy

Roadway Canopies





Noise Control Design Strategy

Landscaping Berms





Example Strategies

Complete Streets





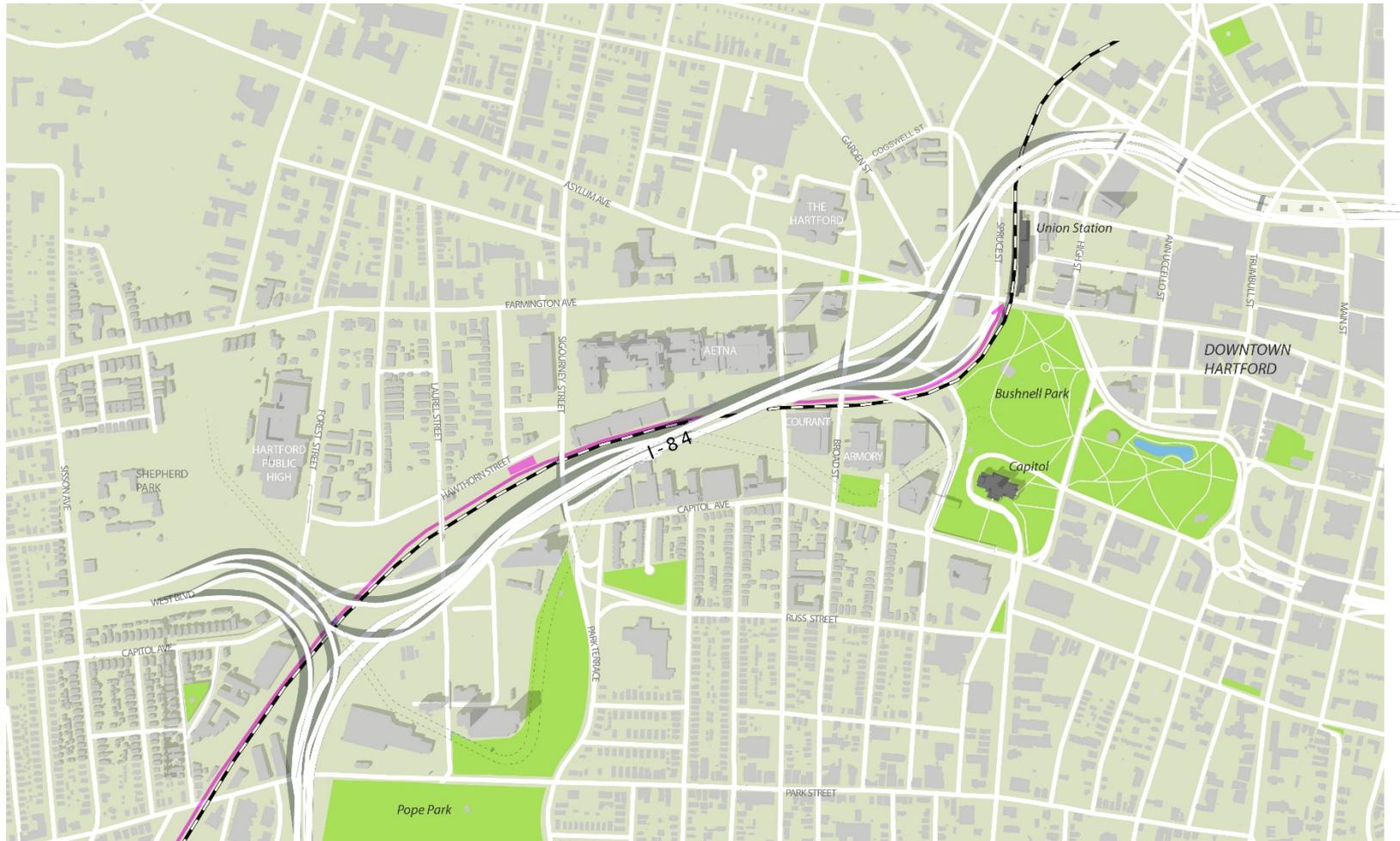
Strategies and Tools by Location





I-84 Corridor

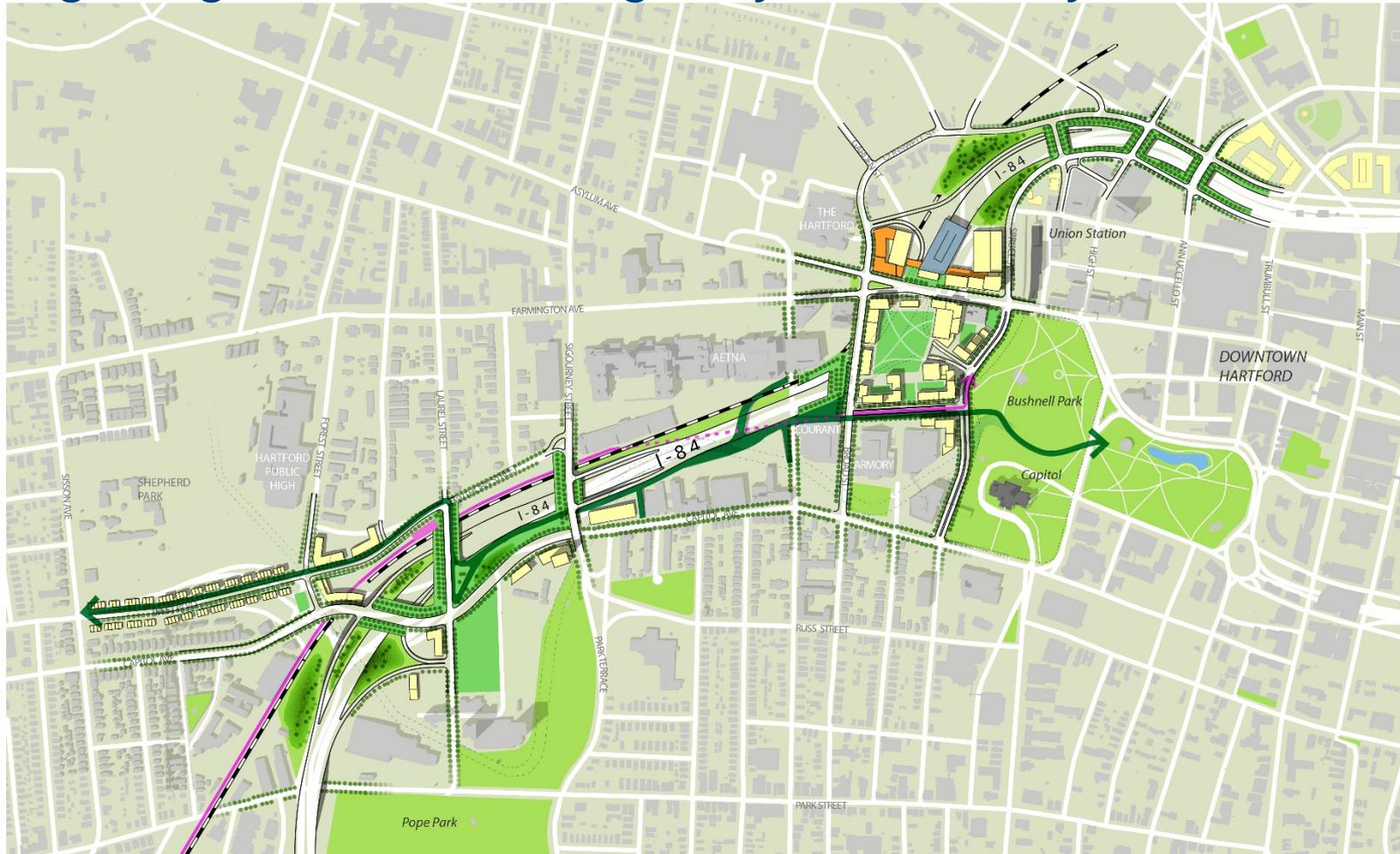
Existing Conditions





I-84 Corridor

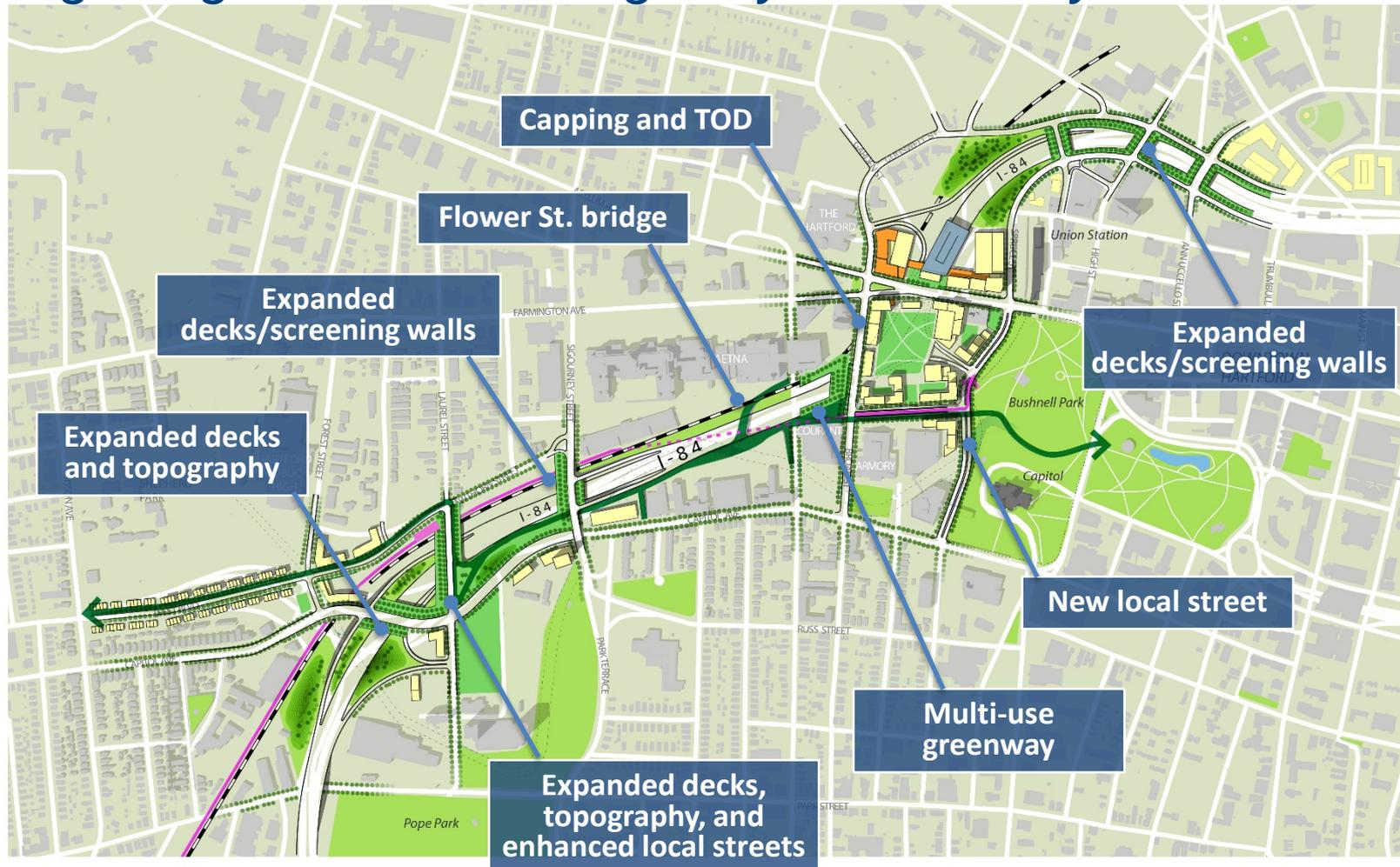
Integrating the Lowered Highway into the City





I-84 Corridor

Integrating the Lowered Highway into the City





I-84 Corridor

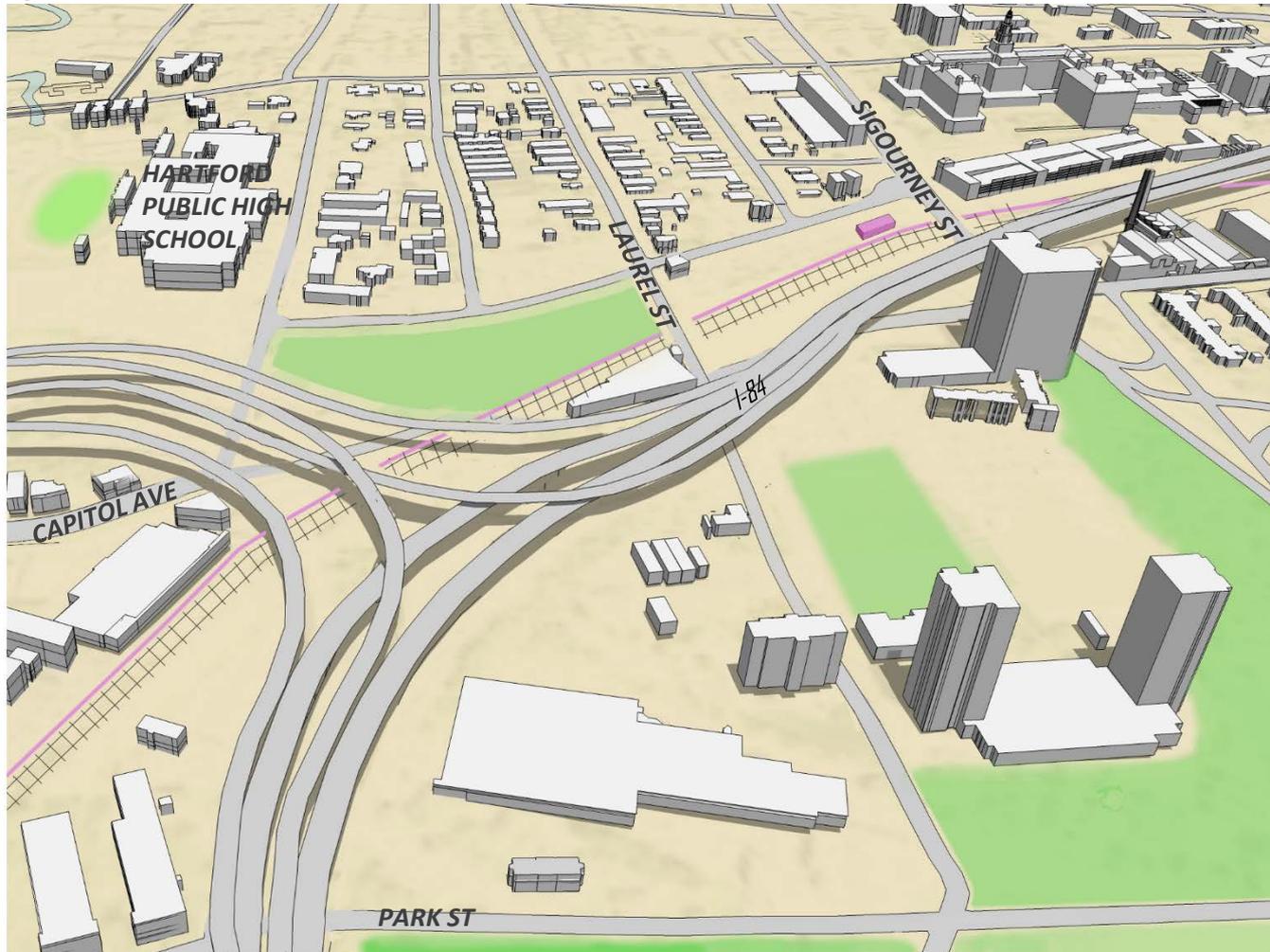
Lowered Highway Option Key Plan





I-84 between Park and Sigourney

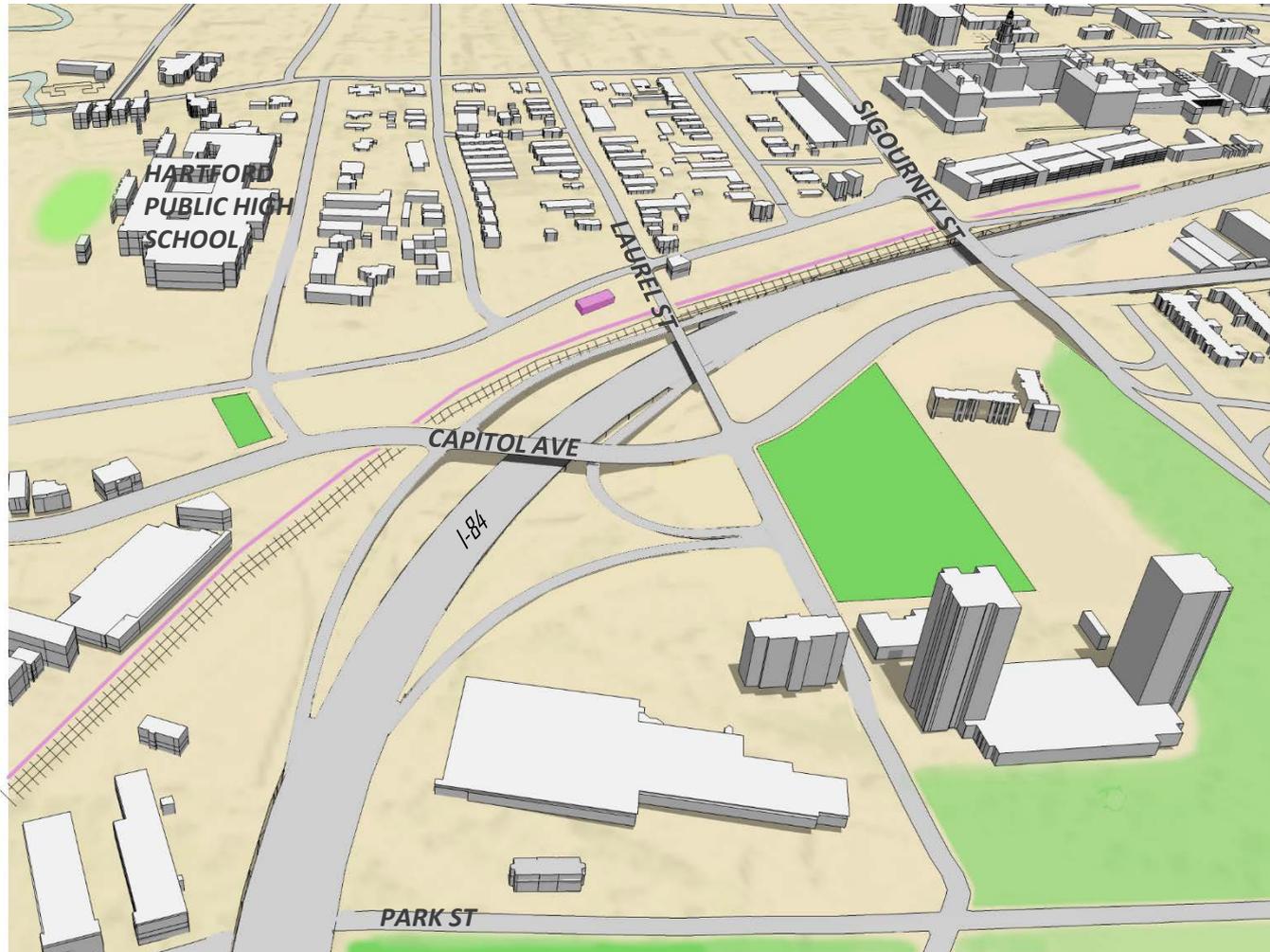
Existing





I-84 between Park and Sigourney

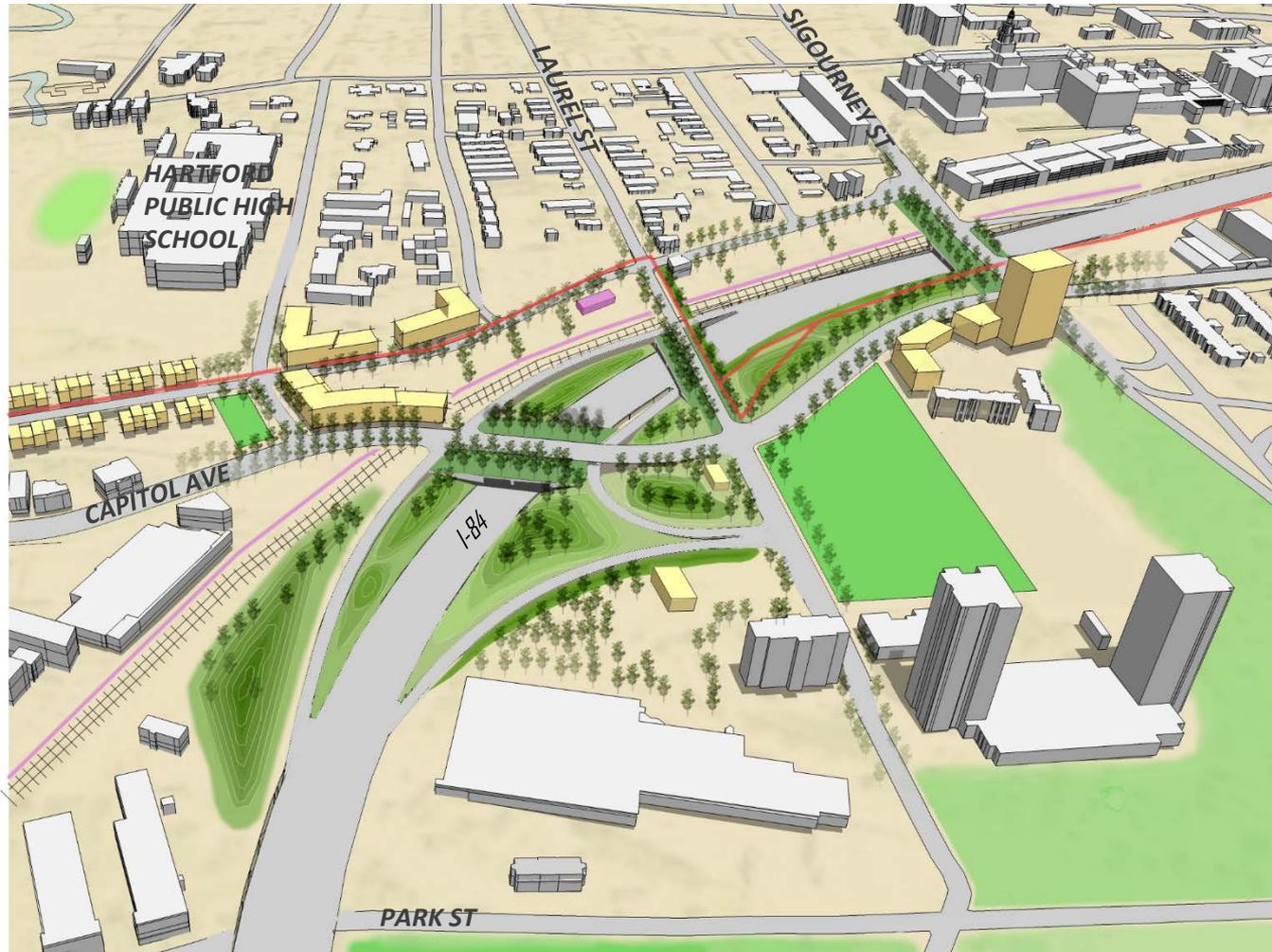
Basic Improvements





I-84 between Park and Sigourney

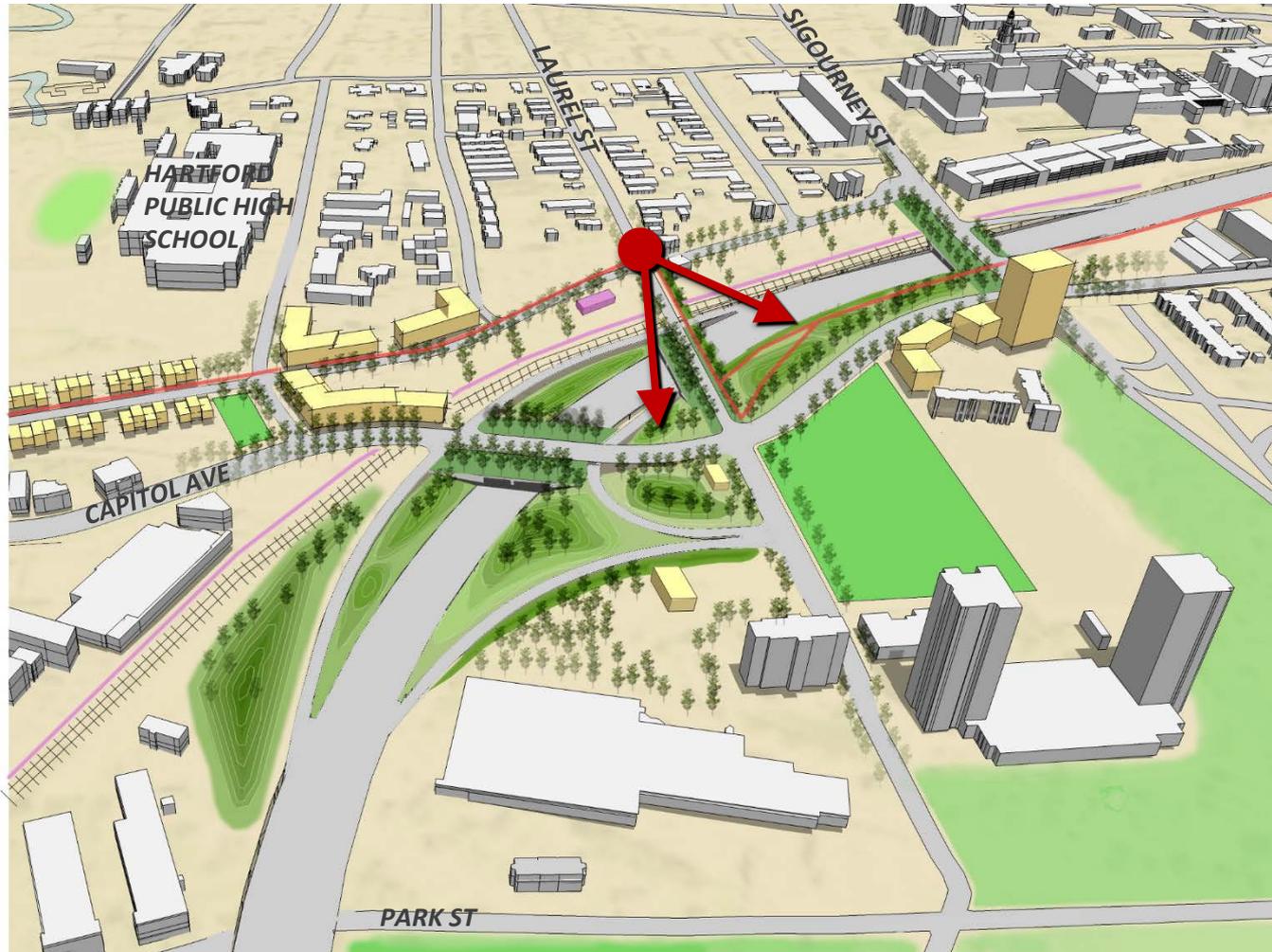
Enhanced Improvements





I-84 between Park and Sigourney

Enhanced Improvements





Laurel Street Looking South

Existing

Connecticut
Street View - Jul 2015

View of elevated I-84 viaduct

Limited sidewalk space/no bike lanes





Laurel Street Looking South

Potential



Screening wall to hide lowered highway and reduce noise

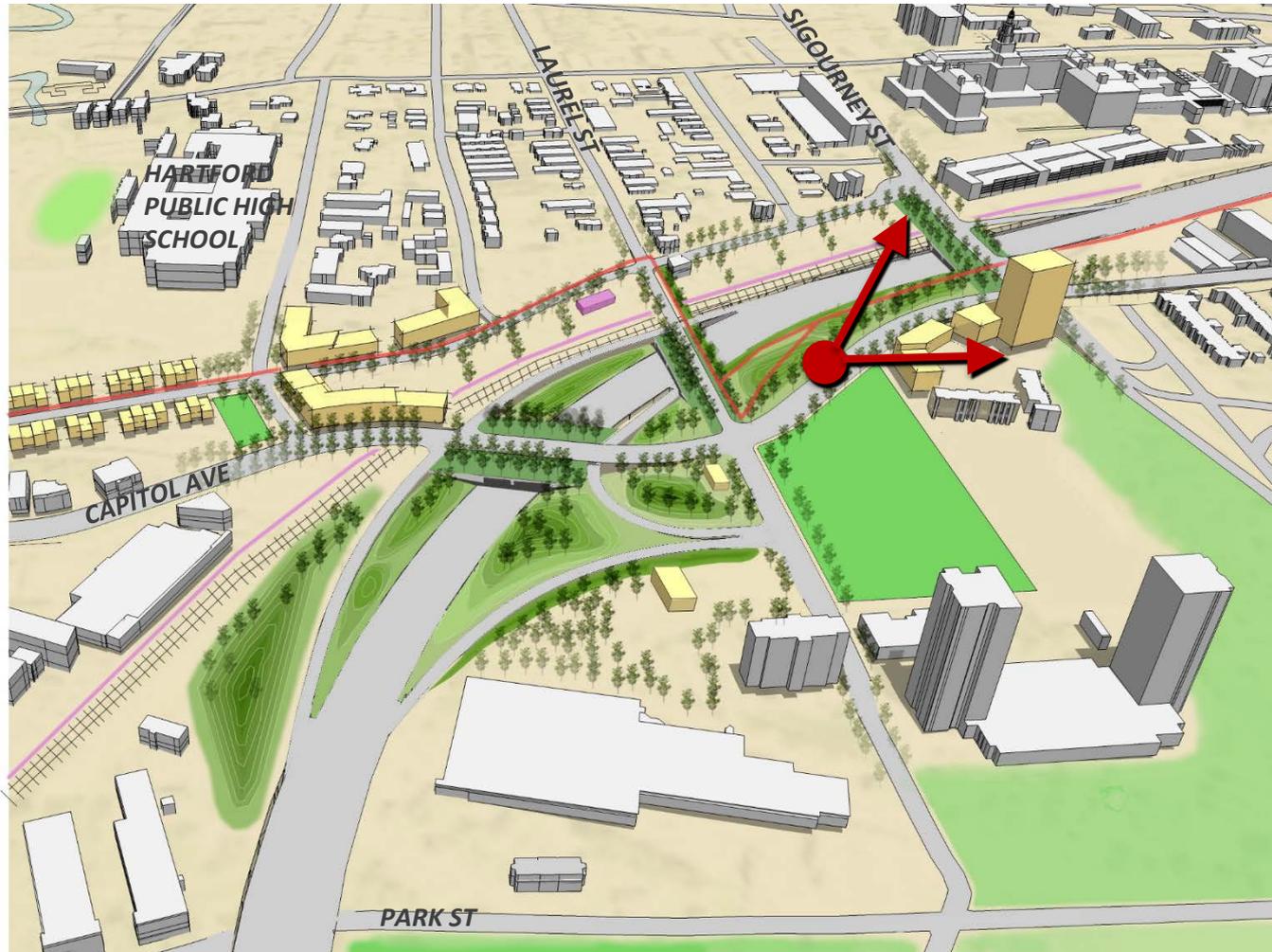
Multi-use greenway on expanded deck

Dedicated Laurel Street bike lanes



I-84 between Park and Sigourney

Enhanced Improvements





Capitol Avenue Looking East

Existing

View of elevated I-84 viaduct

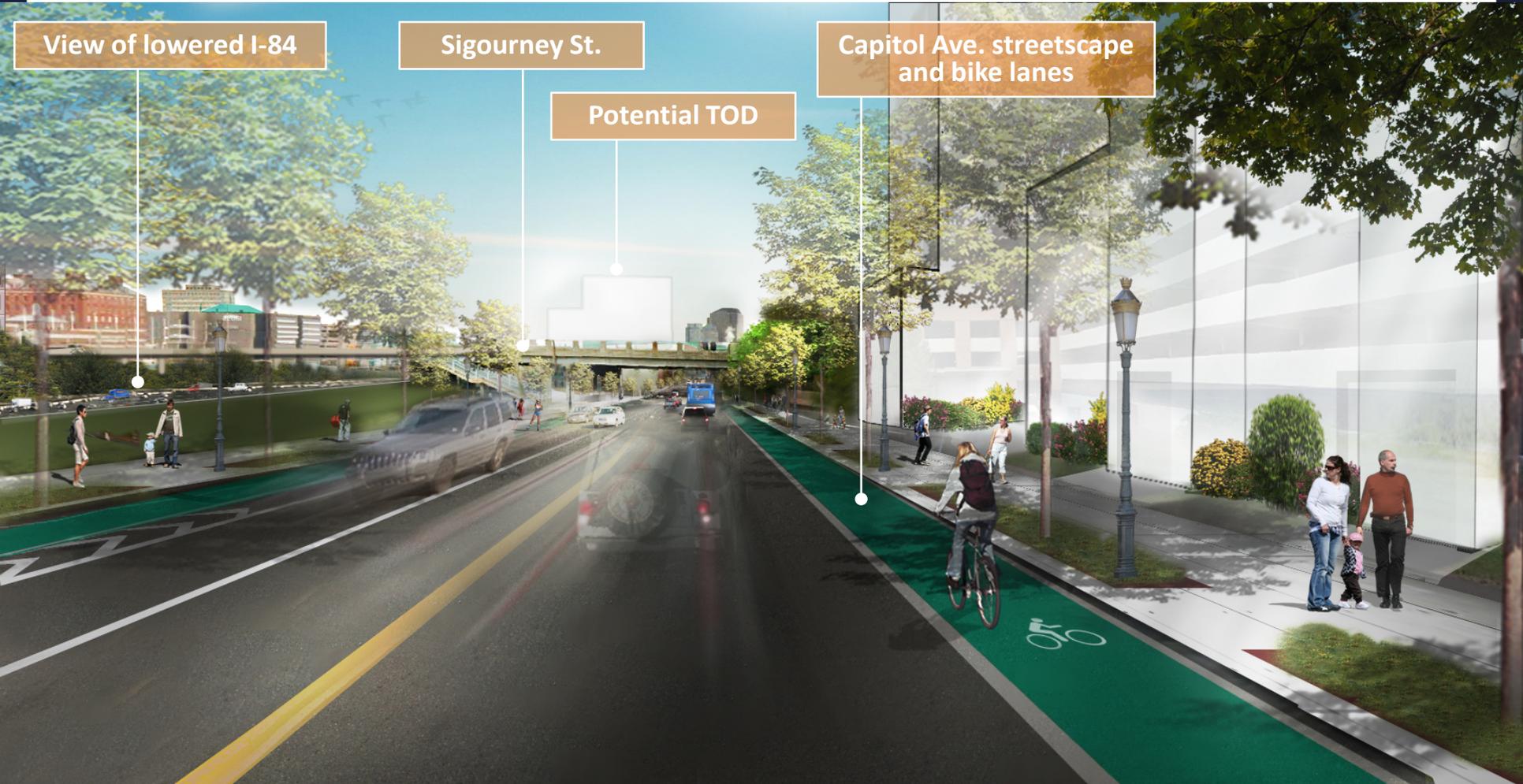
Limited sidewalk space/no bike lanes





Capitol Avenue Looking East

Basic Improvements





Capitol Avenue Looking East

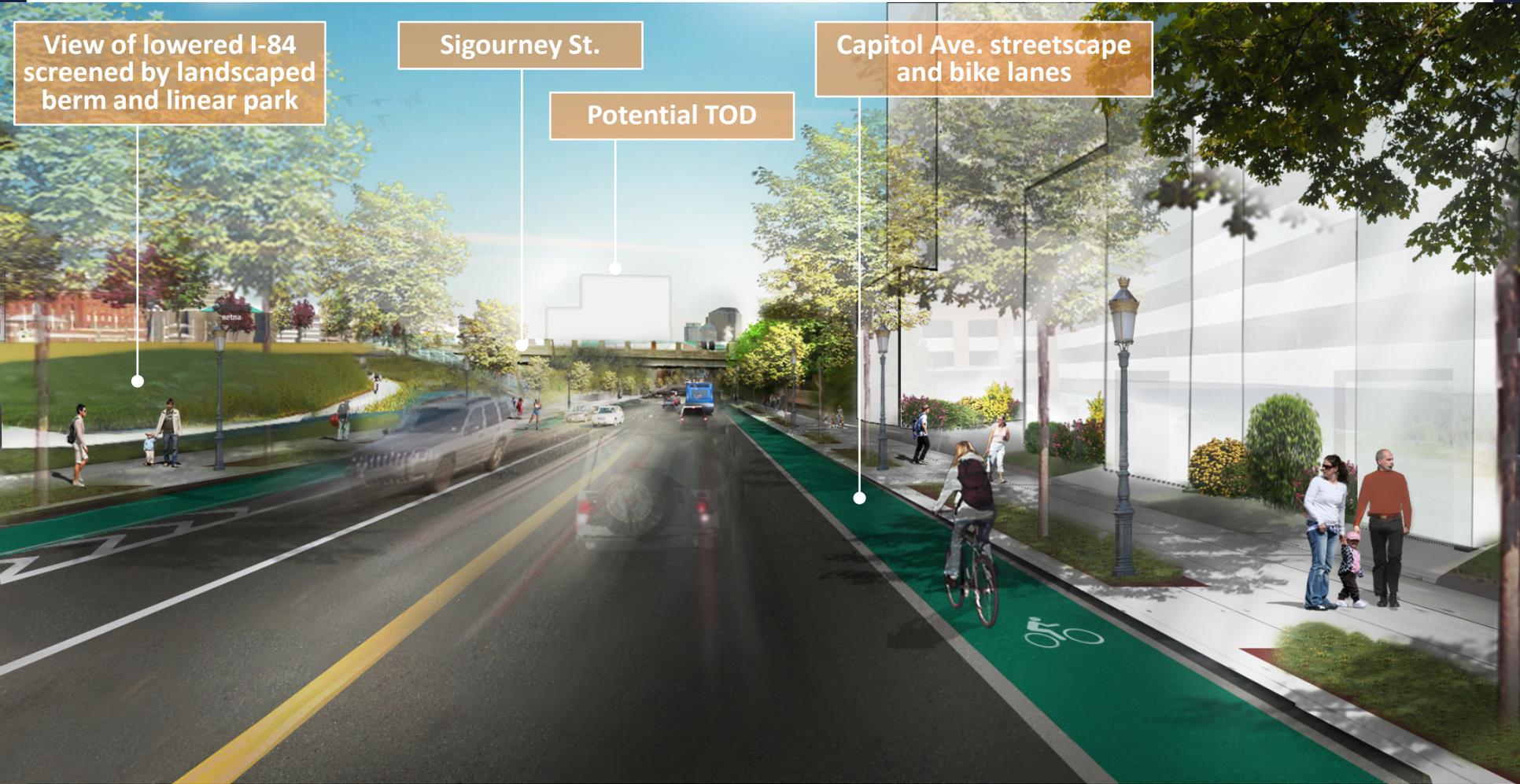
With Topography to Screen View of I-84

View of lowered I-84 screened by landscaped berm and linear park

Sigourney St.

Potential TOD

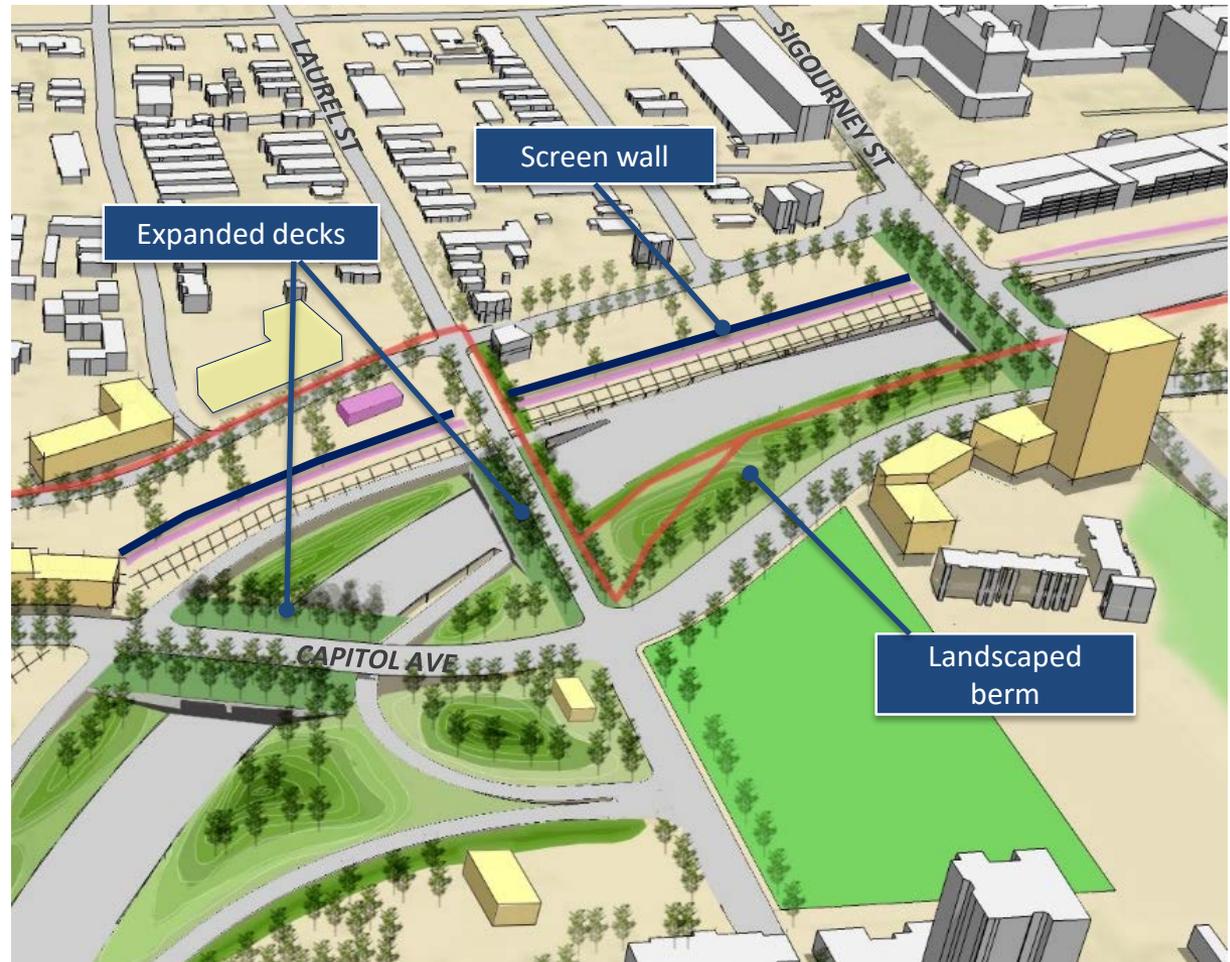
Capitol Ave. streetscape and bike lanes



I-84 between Park and Sigourney

Enhanced Improvements

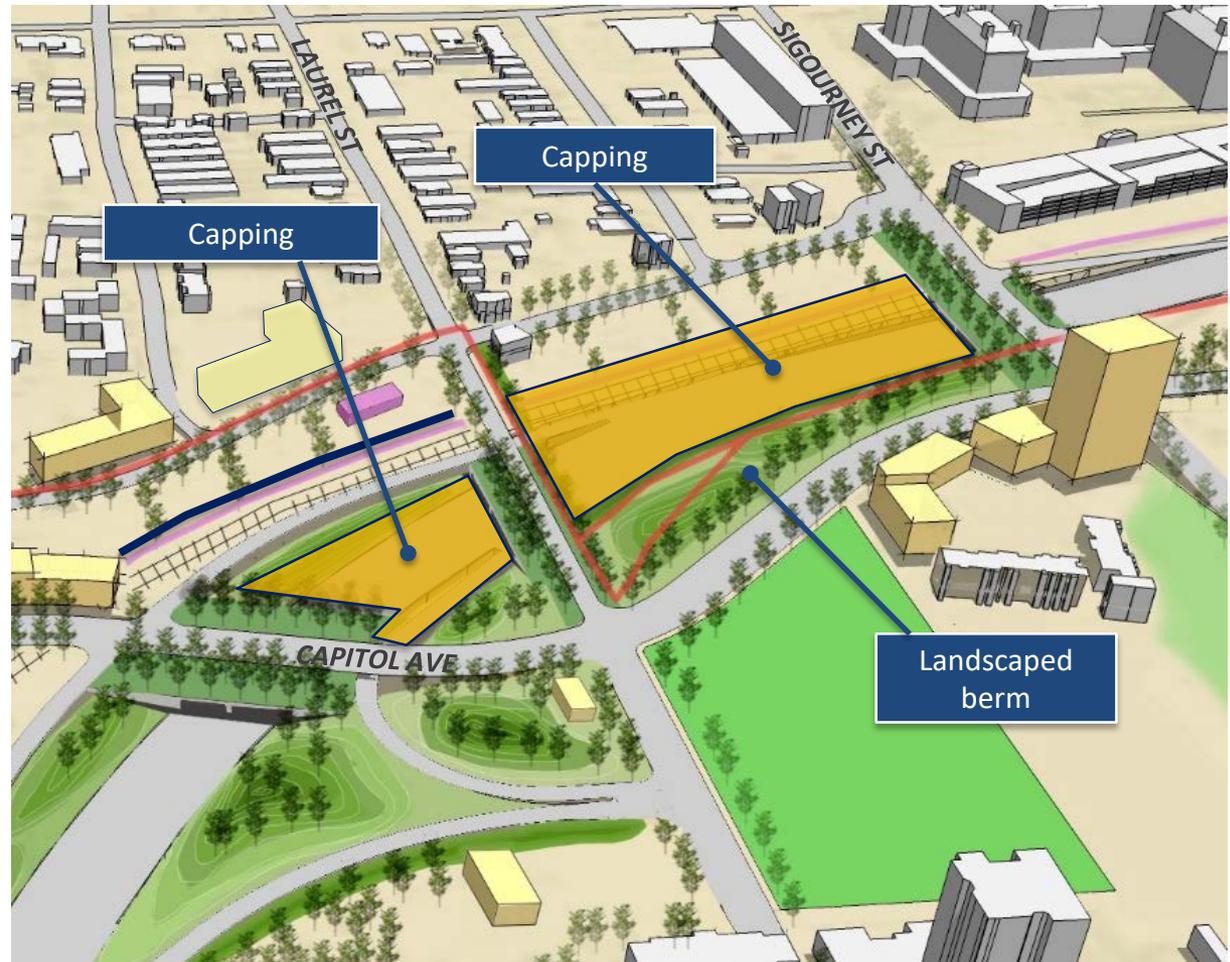
- Expanded bridge decks hide highway
- Screen wall buffers rail and CT *fastrak*
- Landscaped berms buffer I-84
- Multi-use greenway is a neighborhood resource



I-84 between Park and Sigourney

With Capping

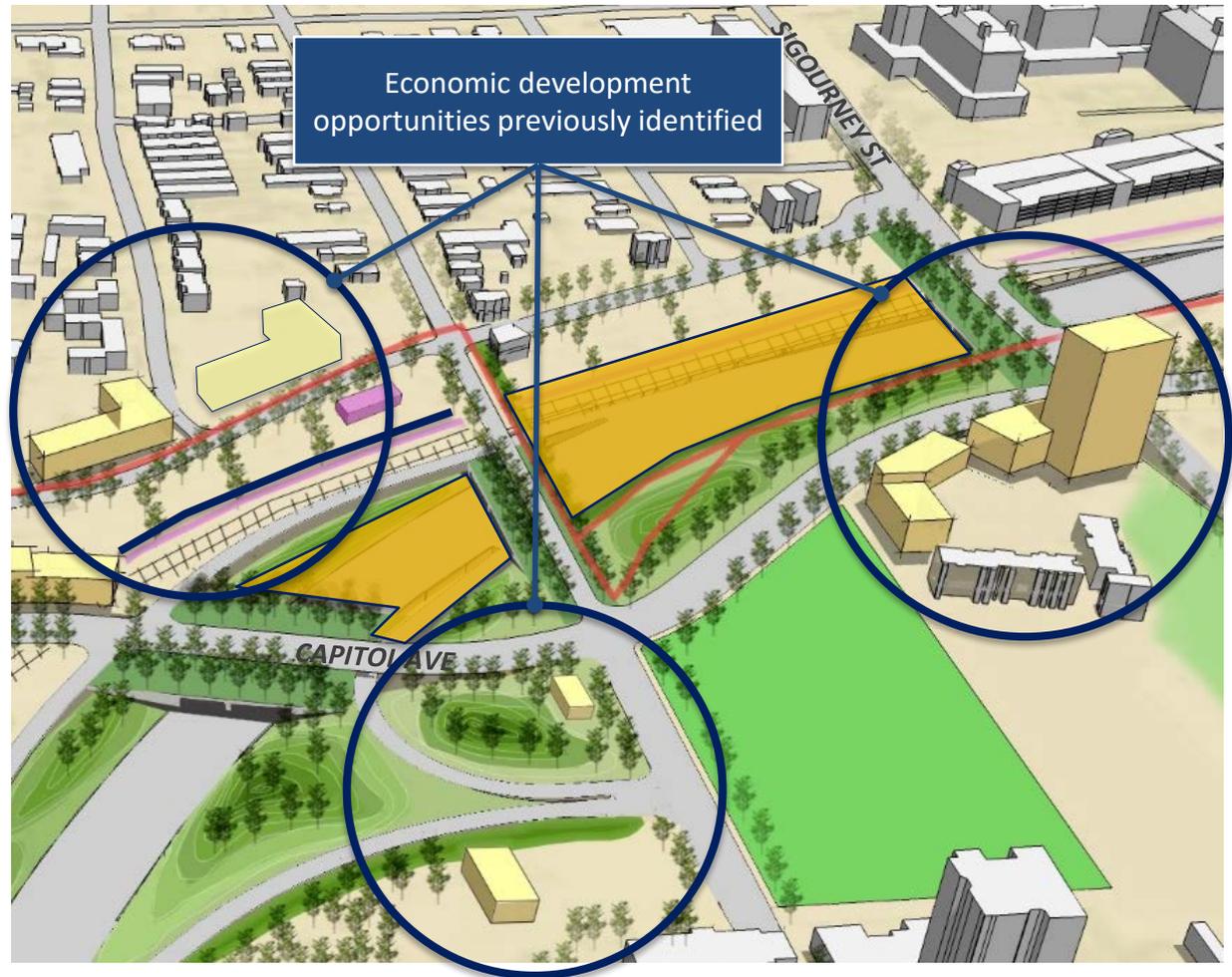
- Capping would further screen visual and noise impacts
- Approx. 7 acres, cost of \$350 - \$425M
- Potential economic development value?
- Potential for surface or structured parking?
- Potential as public park space?



I-84 between Park and Sigourney

Potential for Economic Development

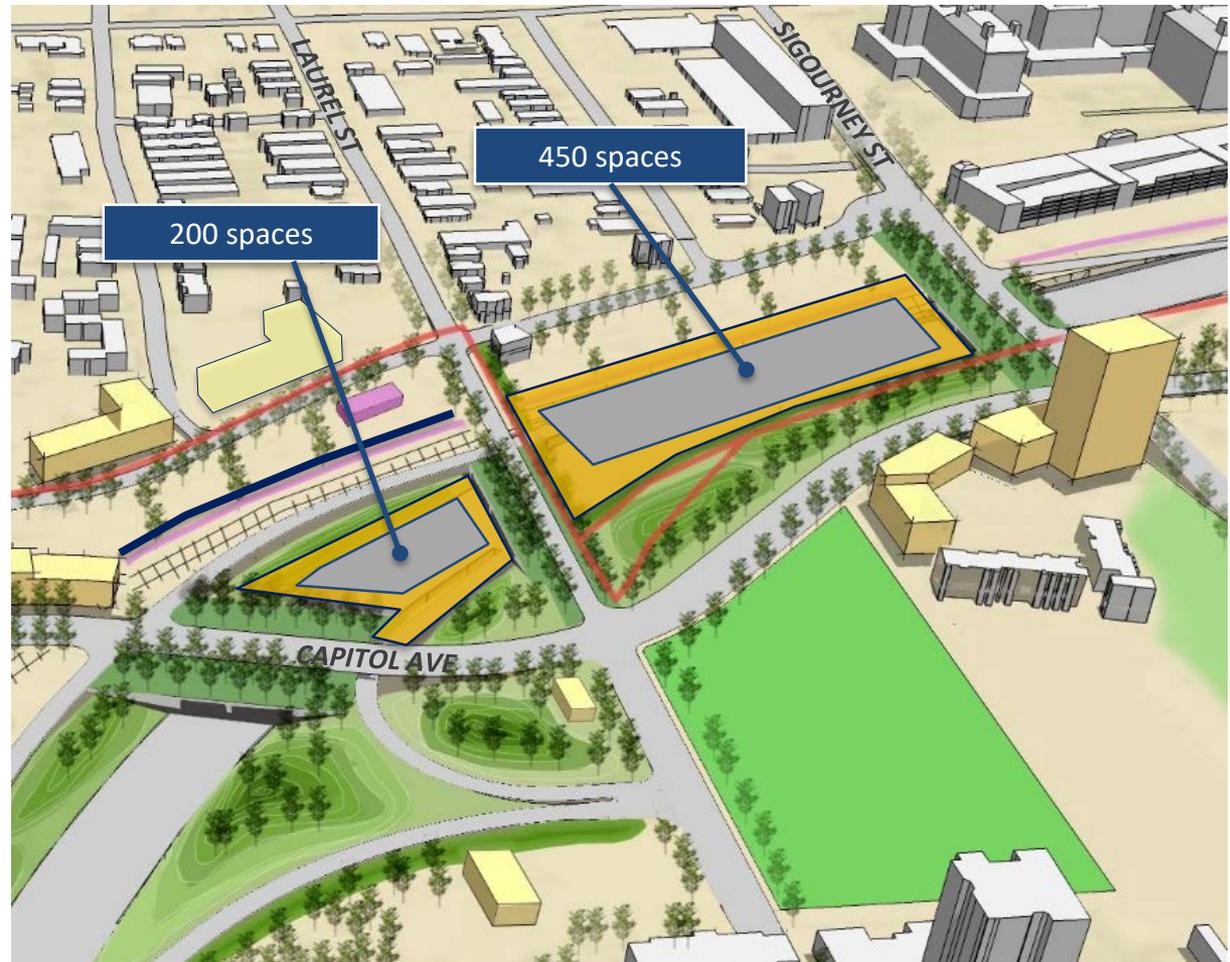
- Private development in the form of buildings on the cap is unlikely given cost premiums
- No additional TOD or economic development opportunities are created beyond those previously identified



I-84 between Park and Sigourney

Potential for Surface Parking

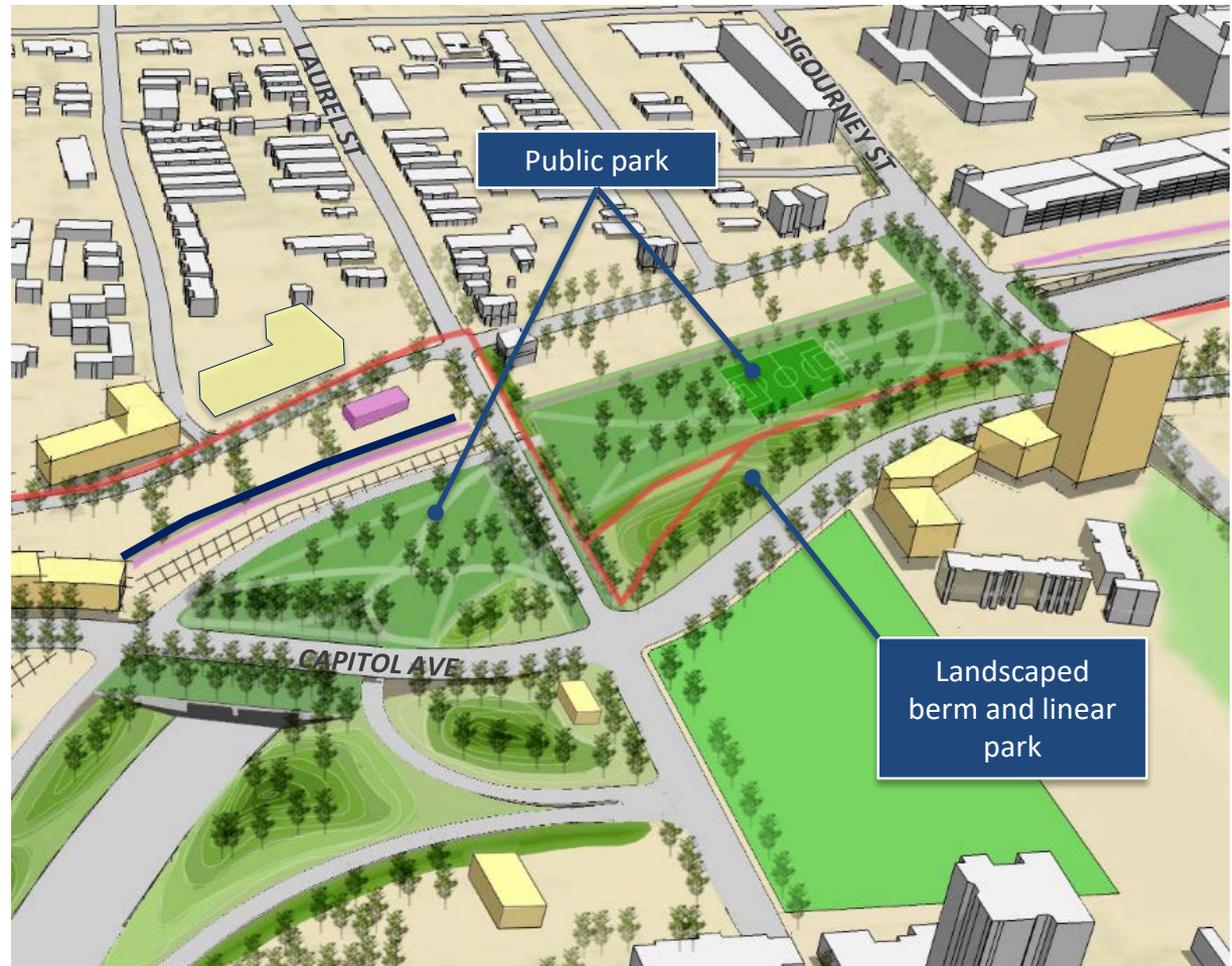
- Would add approximately 650 parking spaces
- Likely affiliated with Aetna
- Has shared parking potential for transit and neighborhood uses



I-84 between Park and Sigourney

Potential for park space

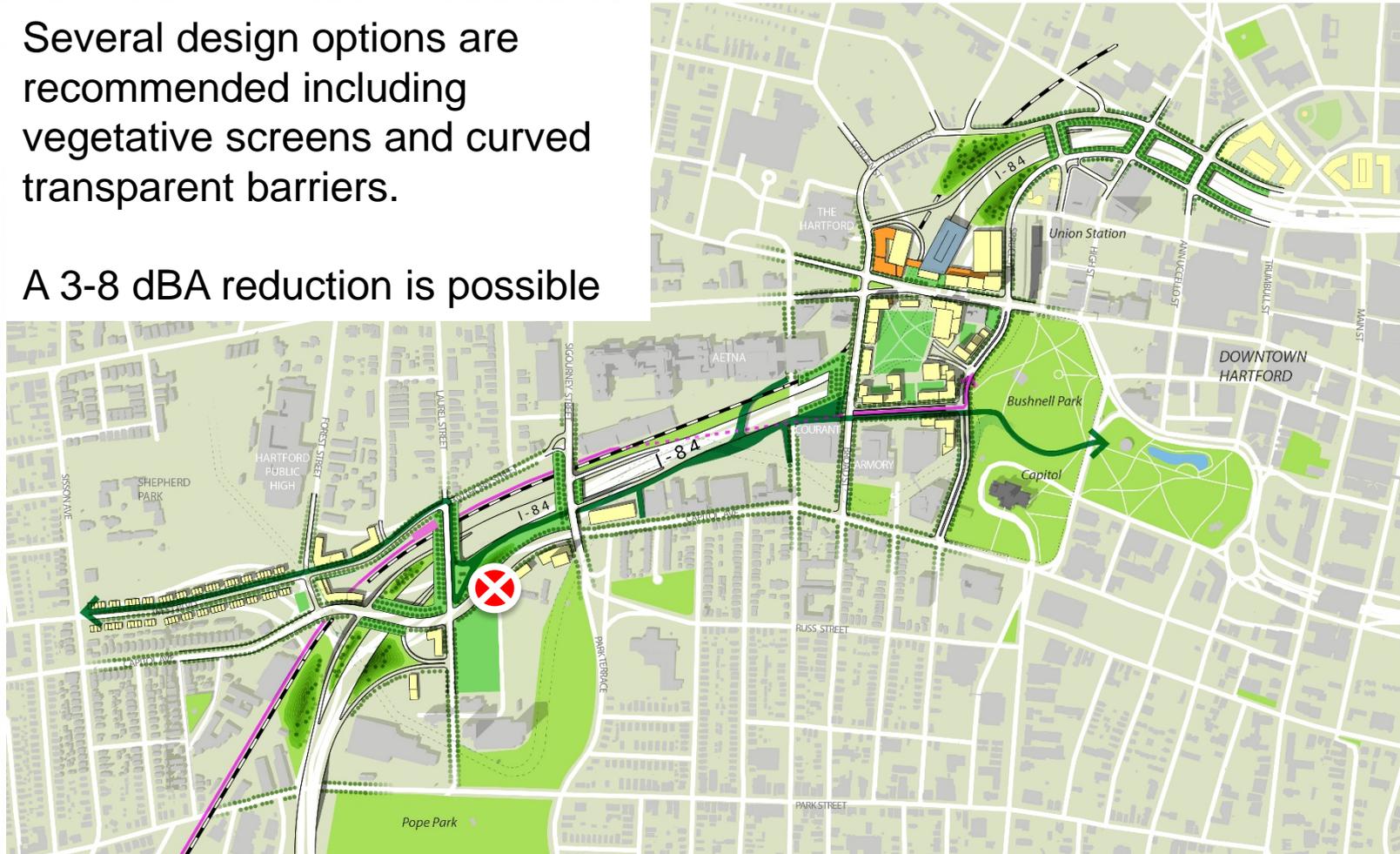
- Active recreation would be likely use
- Pope Park and other green spaces are located nearby
- No commercial or residential buildings are directly adjacent
- Multi-use greenway can be independent



Capitol Ave location between Laurel and Sigourney *Noise mitigation strategy*

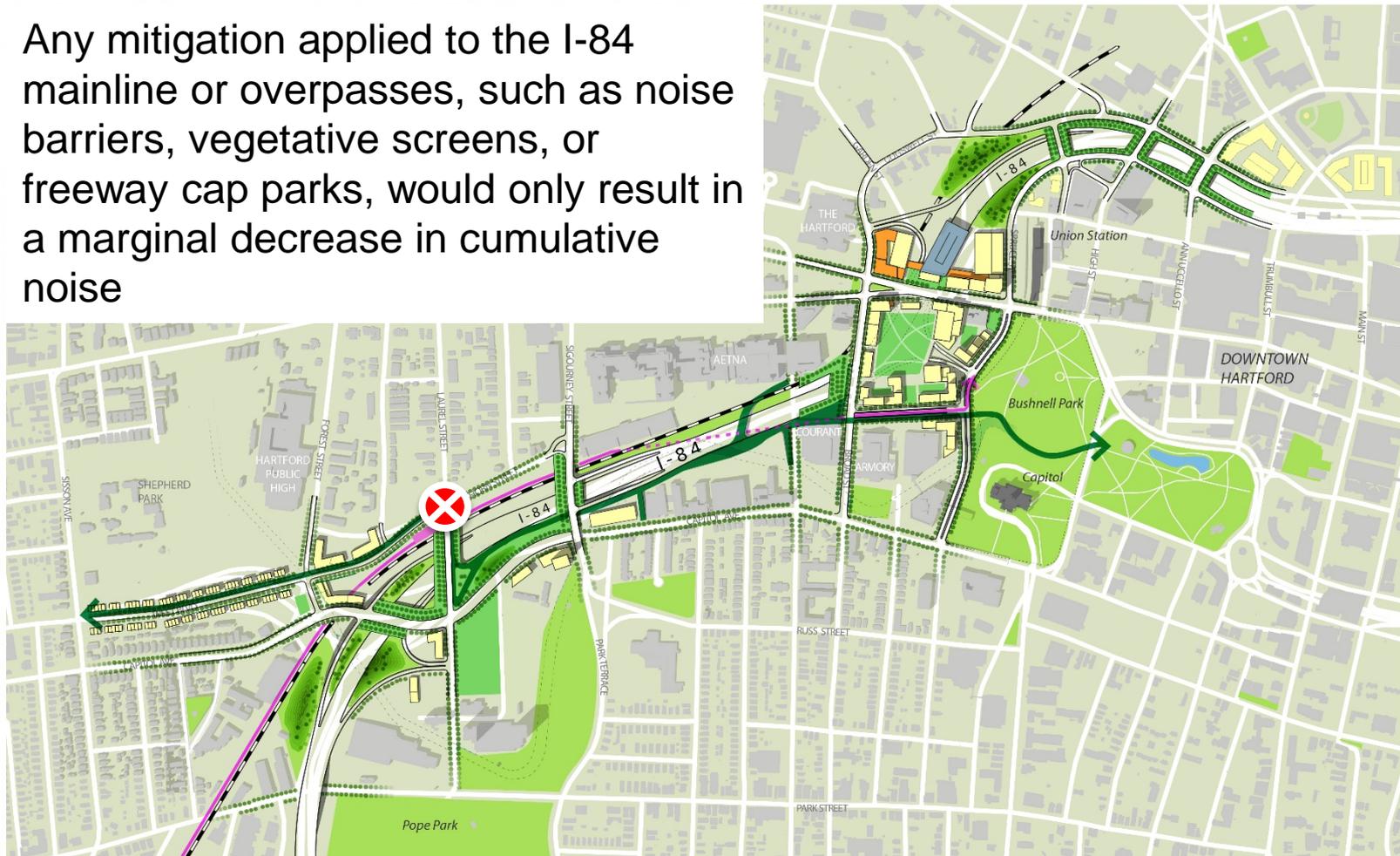
Several design options are recommended including vegetative screens and curved transparent barriers.

A 3-8 dBA reduction is possible



Laurel/Hawthorn *Noise mitigation strategy*

Any mitigation applied to the I-84 mainline or overpasses, such as noise barriers, vegetative screens, or freeway cap parks, would only result in a marginal decrease in cumulative noise





I-84 between Park and Sigourney

Existing Bike/Ped Conditions: Capitol Ave at Forest St

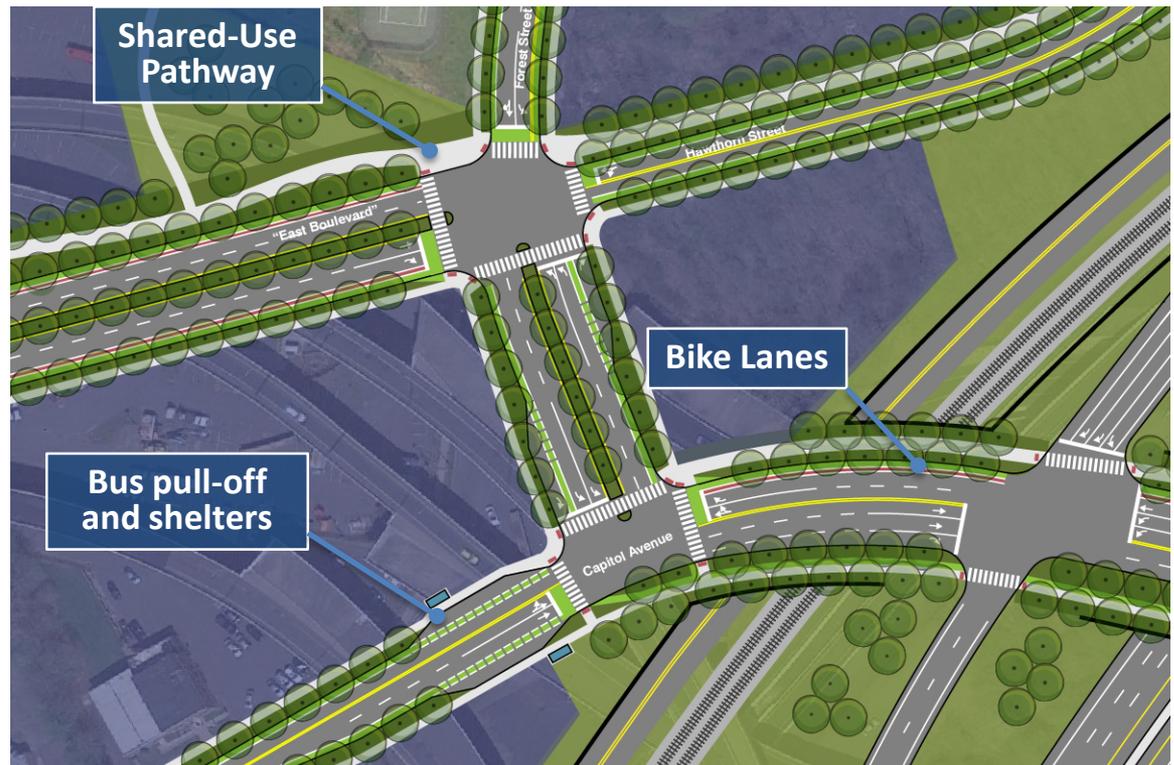
- Sidewalks are narrow and located close to the roadway
- The area is dark due to shadowing from the highway ramps
- There are very few street trees
- There are no bus shelters



I-84 between Park and Sigourney

Recommended Bike/Ped Improvements: Capitol at Forest

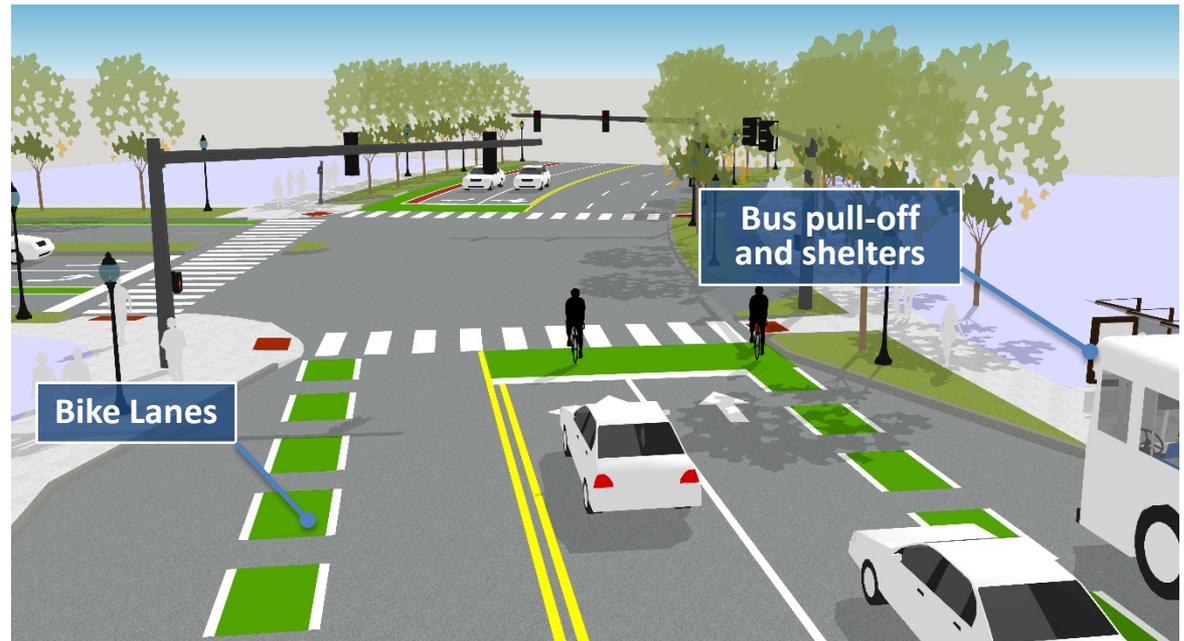
- Wide sidewalks on both sides of all streets
- Multiple marked crosswalks and curb ramps
- On-street bicycle facilities on all streets
- Shared-use pathway on “East Boulevard” and Hawthorn
- Bus shelters and bus pull-offs



I-84 between Park and Sigourney

Typical Bike/Ped Improvements: Capitol at Forest

- Wide sidewalks on both sides of all streets
- Multiple marked crosswalks and curb ramps
- On-street bicycle facilities on all streets
- Bus shelters and bus pull-offs



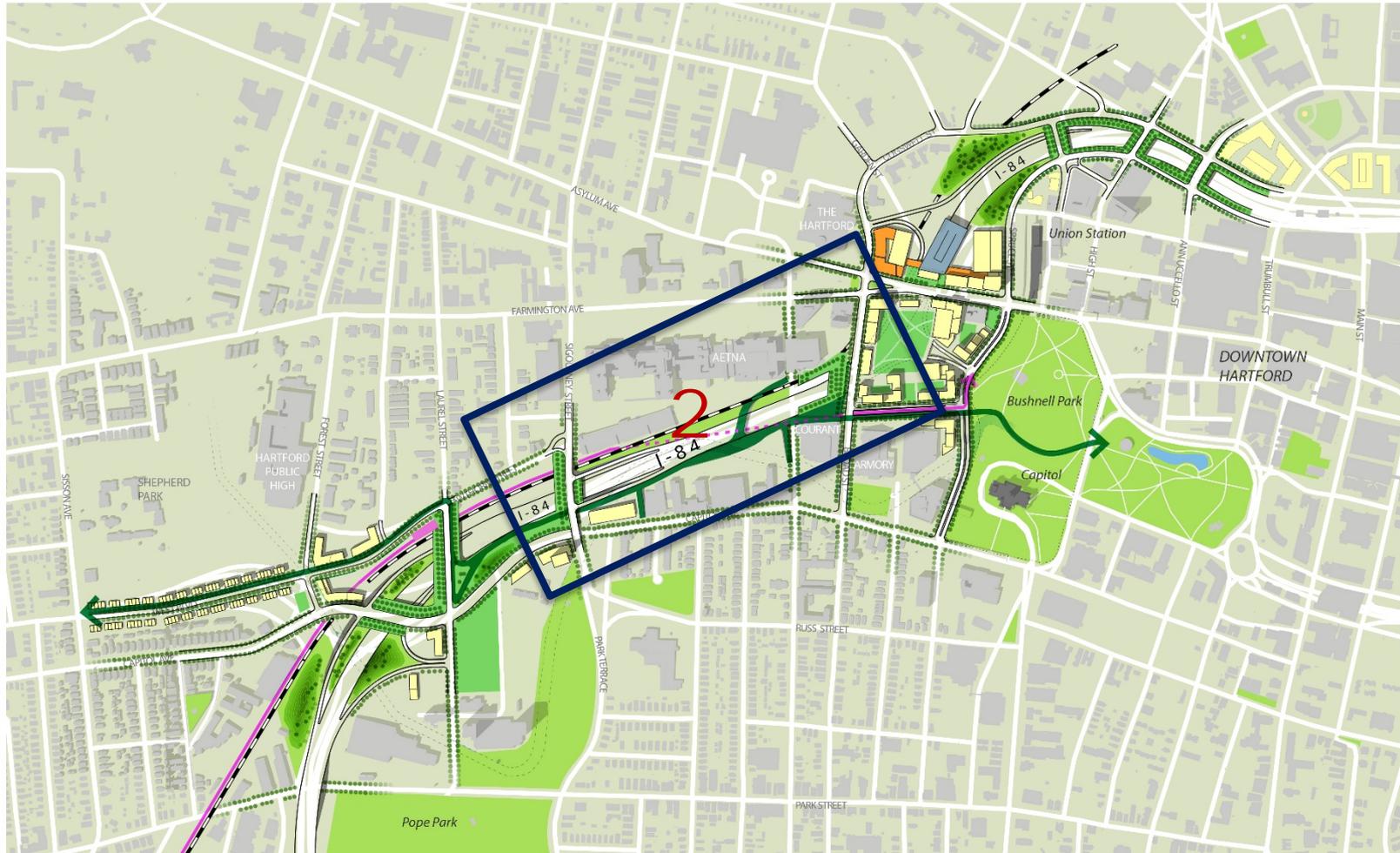


Discussion Questions

1. Which solutions/strategies do you favor?
2. Are they essential to the project's success?
3. Is there anything we haven't thought of?



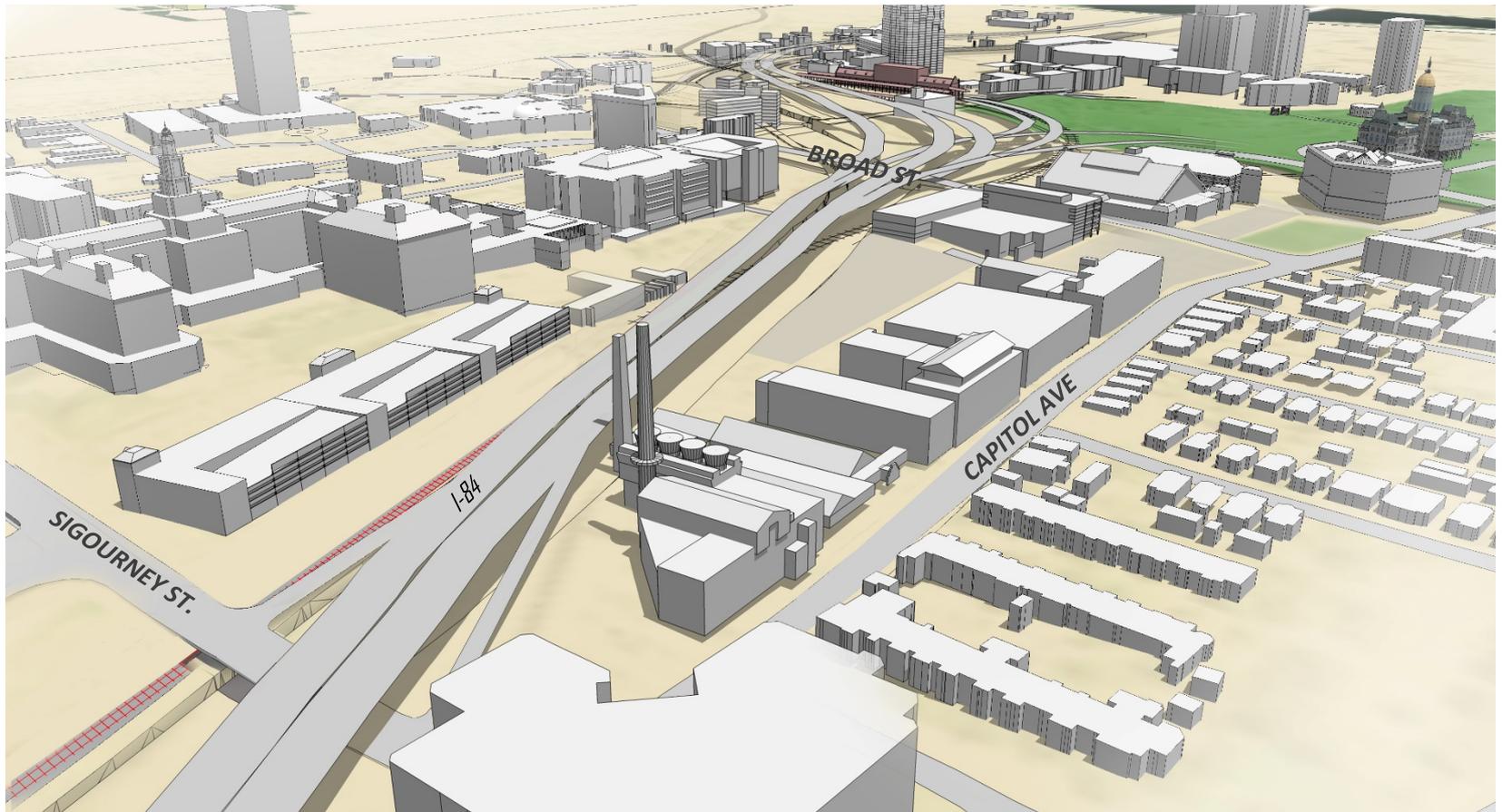
I-84 between Broad and Sigourney





I-84 between Broad and Sigourney

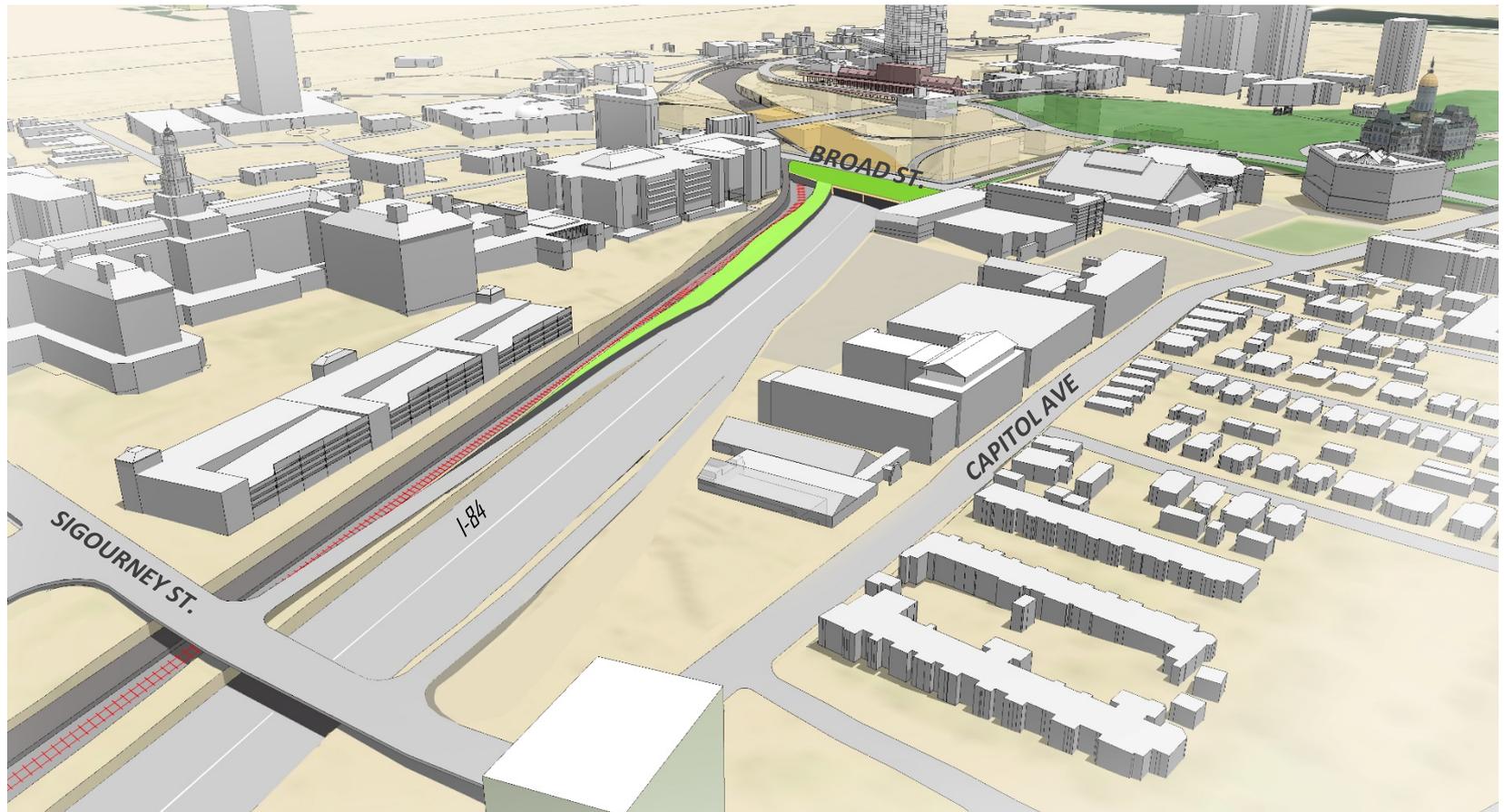
Existing Conditions





I-84 between Broad and Sigourney

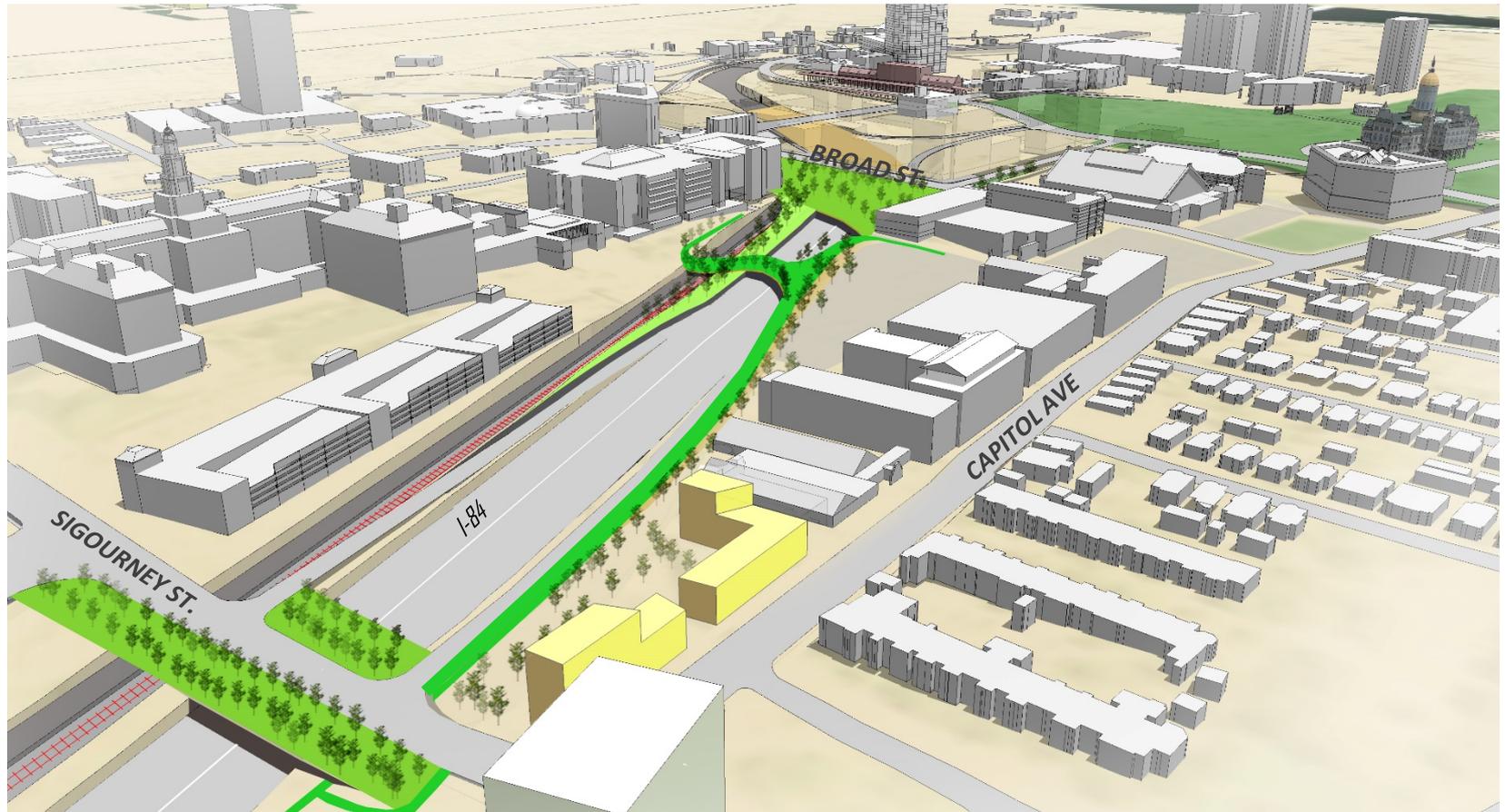
Basic Improvements





I-84 between Broad and Sigourney

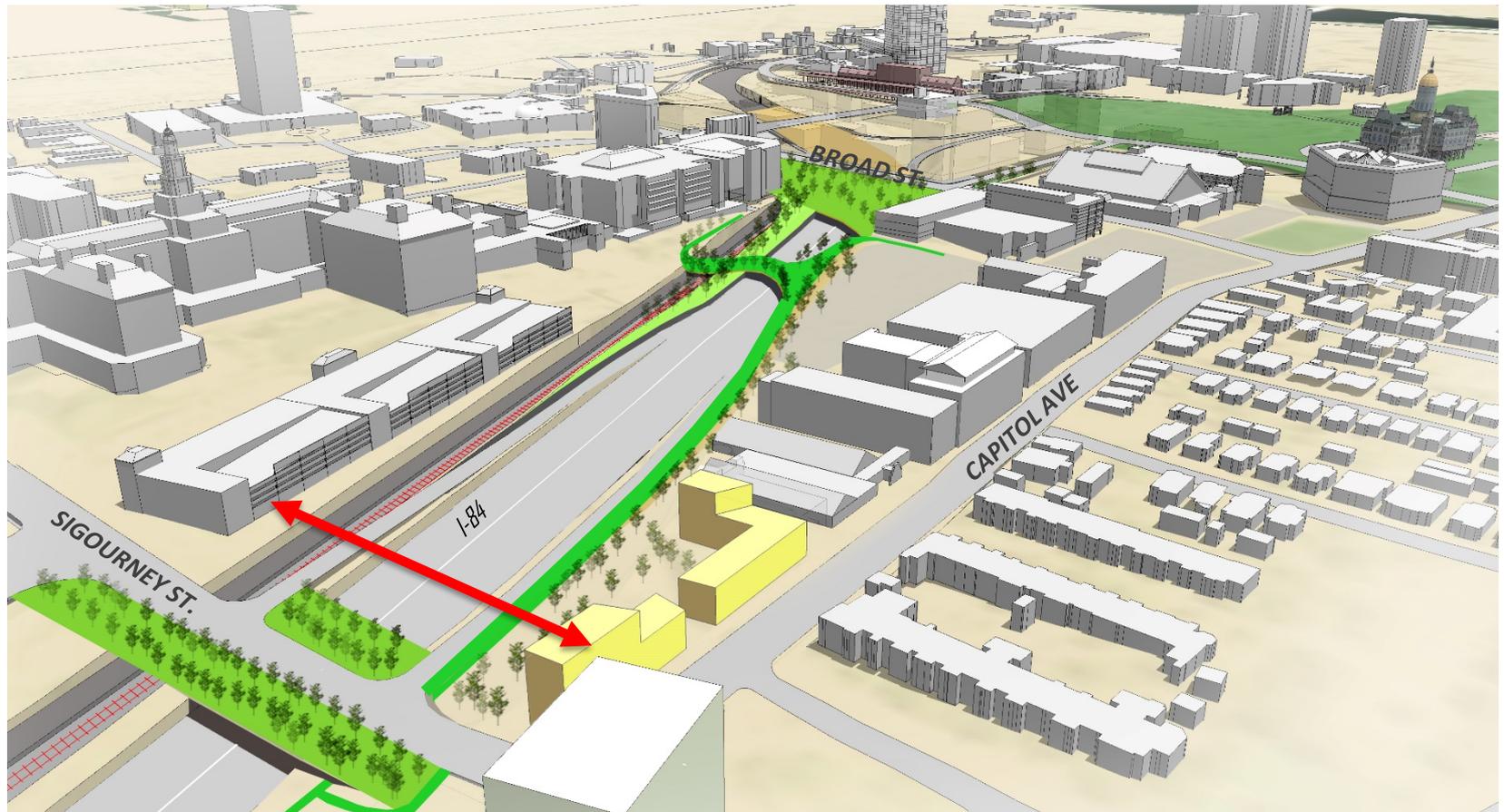
Enhanced Improvements





I-84 between Broad and Sigourney

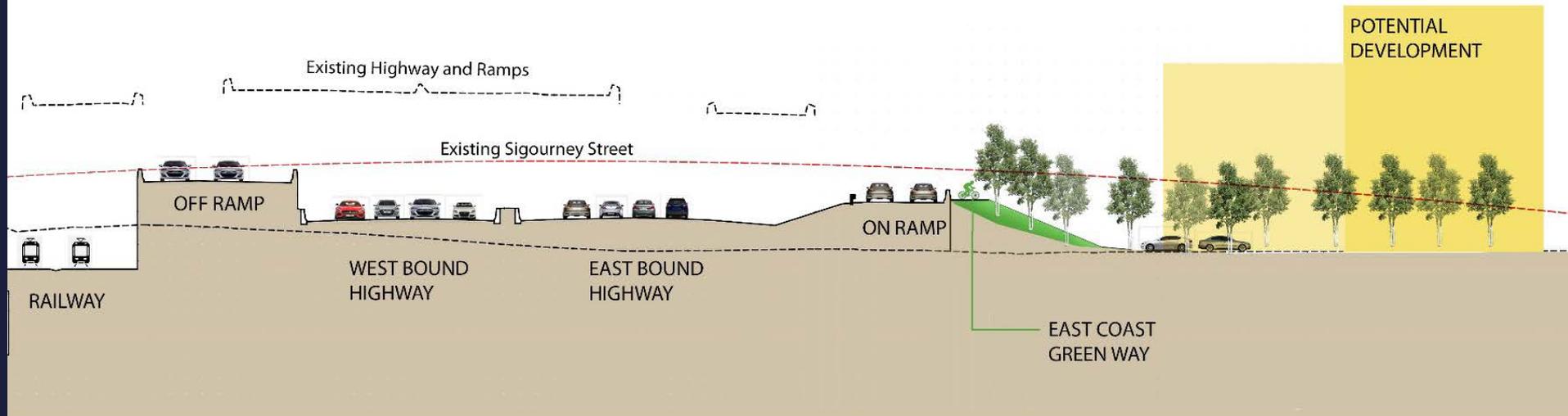
Cross section





I-84 between Broad and Sigourney

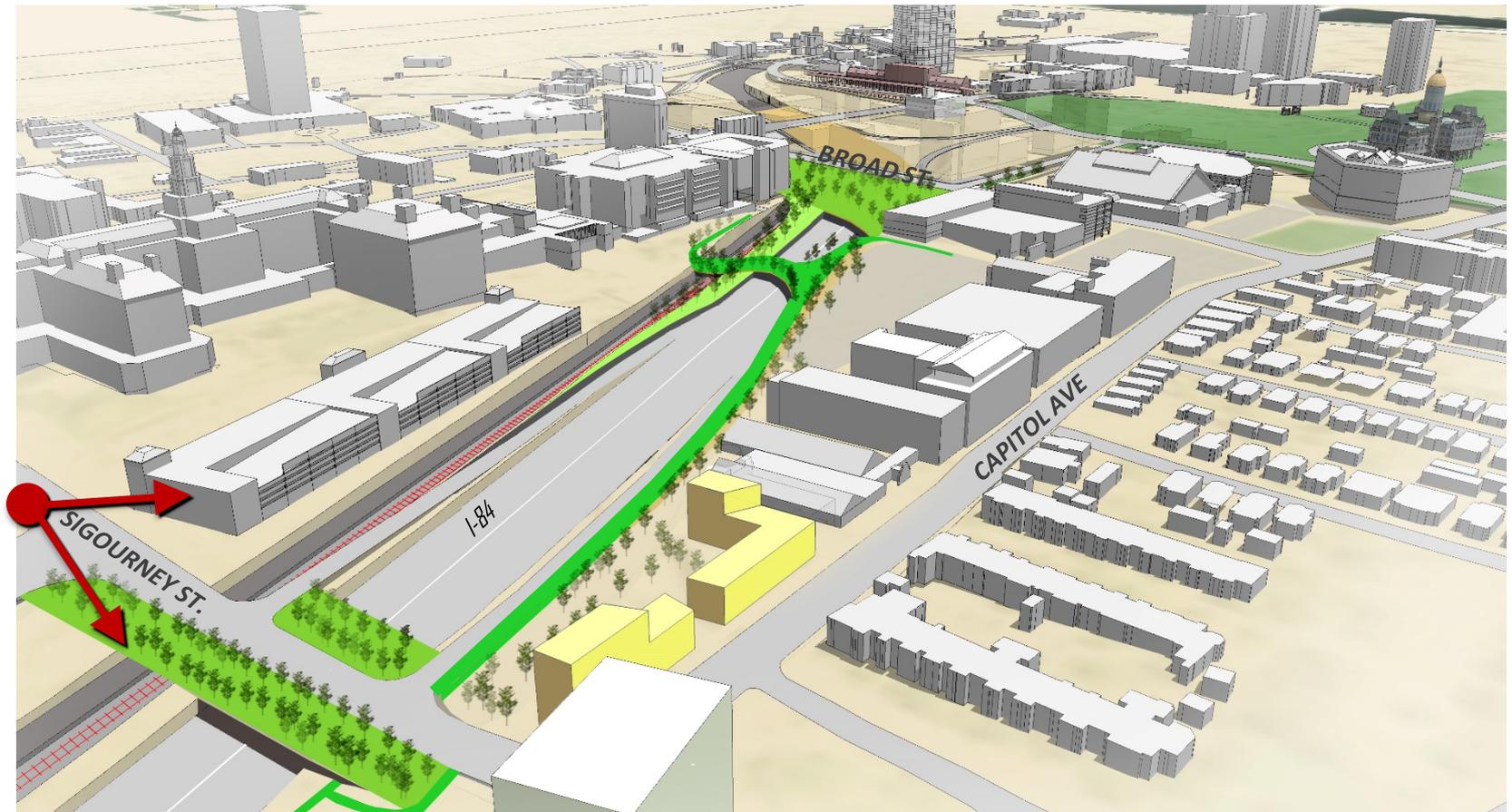
Cross section





I-84 between Broad and Sigourney

View from Sigourney Street





Sigourney Street looking towards I-84

Existing

Elevated I-84 viaduct

Limited sidewalk space/no bike lanes

Elevated I-84 viaduct





Sigourney Street looking towards I-84

Potential



Dedicated bike
lane/cycle track

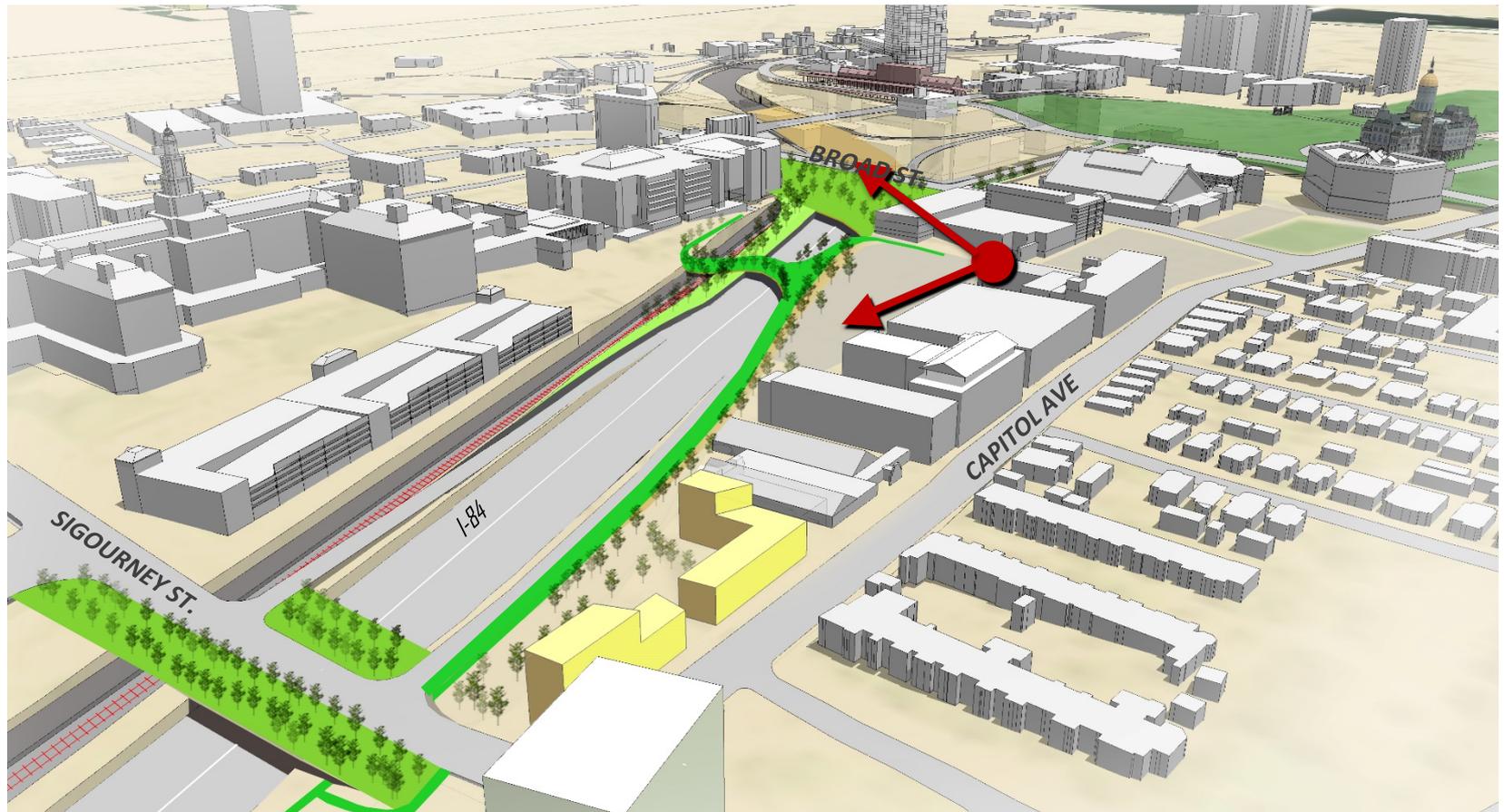
Landscape area on
widened overpass

Screening wall to
block view of I-84
and reduce noise



I-84 between Broad and Sigourney

View from Flower Street





View from Flower Street towards I-84

Existing Conditions



Aetna

Elevated I-84
viaduct

Flower St





View from Flower Street towards I-84

Lowered Highway Alternative



Aetna

Lowered I-84 with
rail behind



View from Flower Street towards I-84

With elevated greenway and barrier wall



Aetna

Elevated greenway with screening wall to block view of I-84 and reduce noise



View from Flower Street towards I-84

With Greenway, Barrier Wall, Landscape, and Ramp

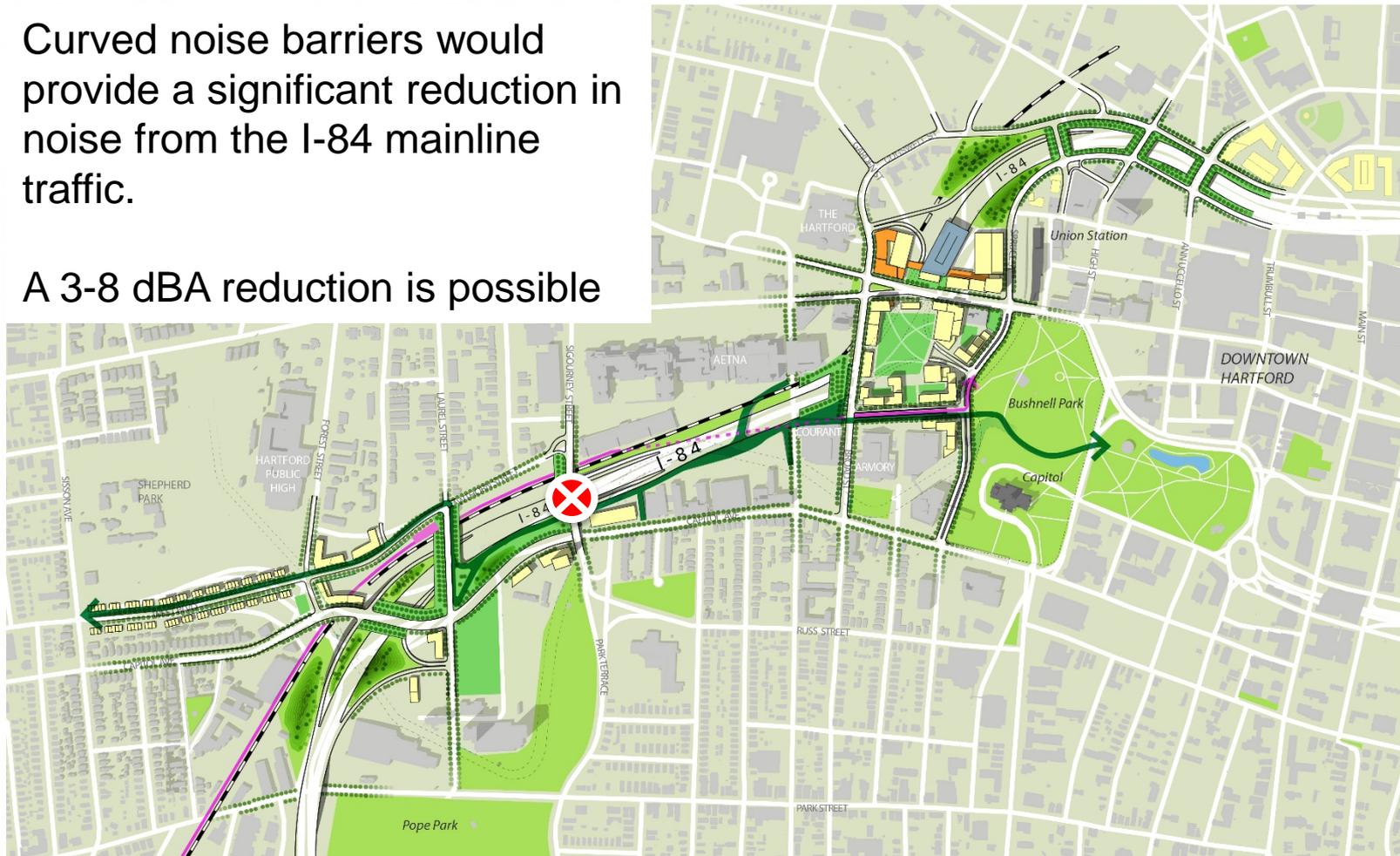




Sigourney overpass *Noise mitigation strategy*

Curved noise barriers would provide a significant reduction in noise from the I-84 mainline traffic.

A 3-8 dBA reduction is possible





Discussion Questions

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3. Is there anything we haven't thought of?



I-84 Corridor

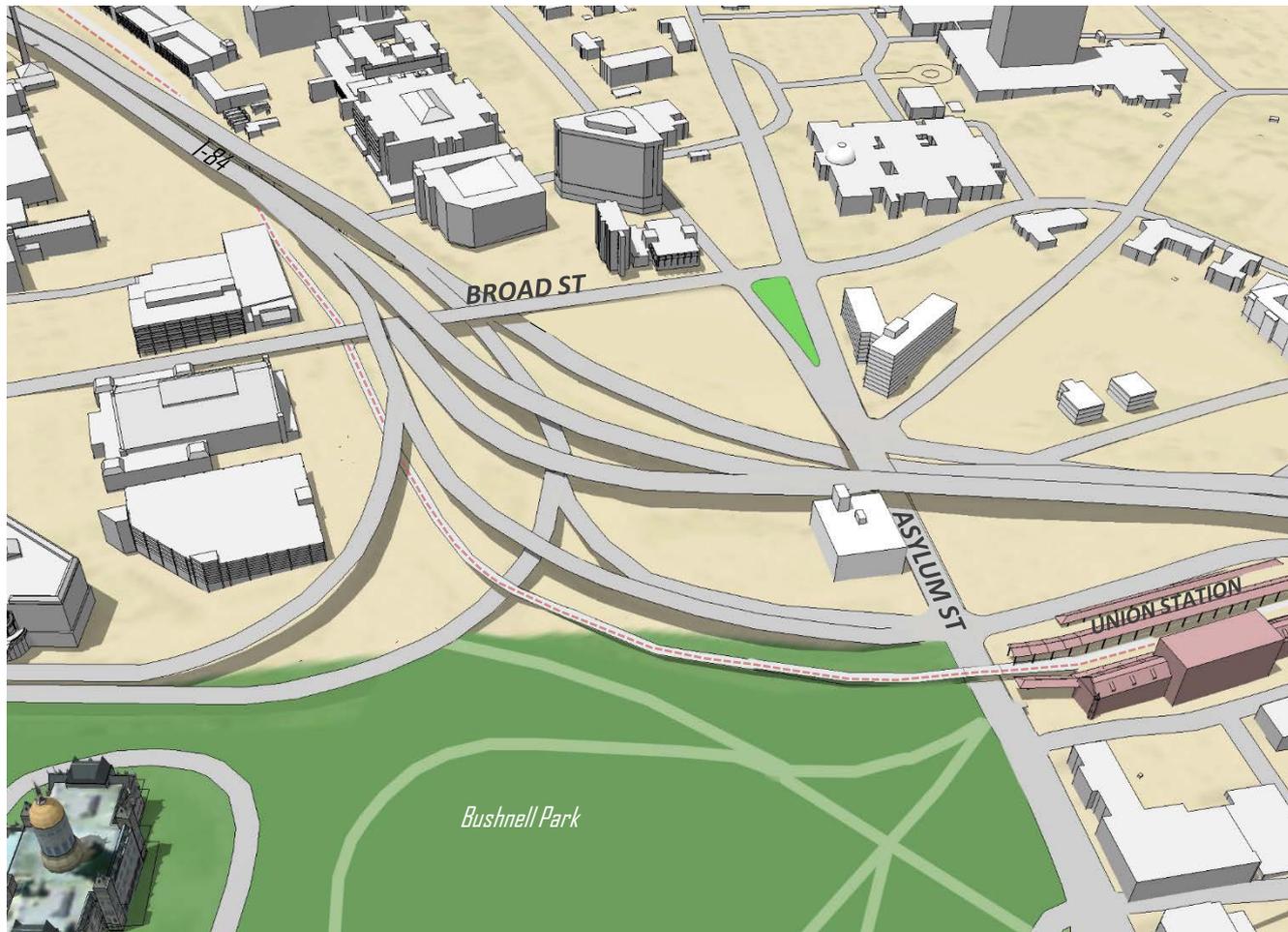
Key Plan





I-84 between Broad and Asylum

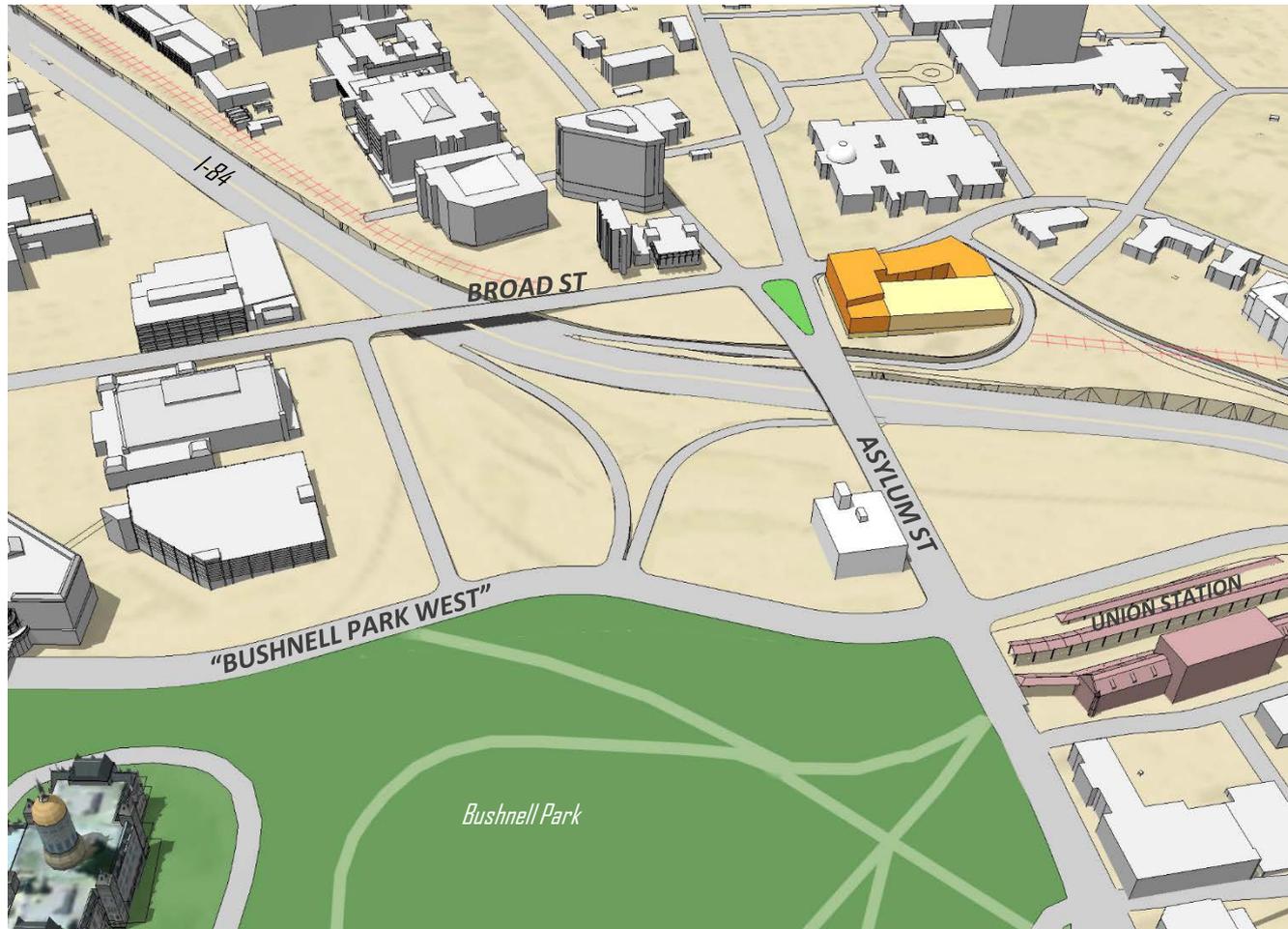
Existing Conditions





I-84 between Broad and Asylum

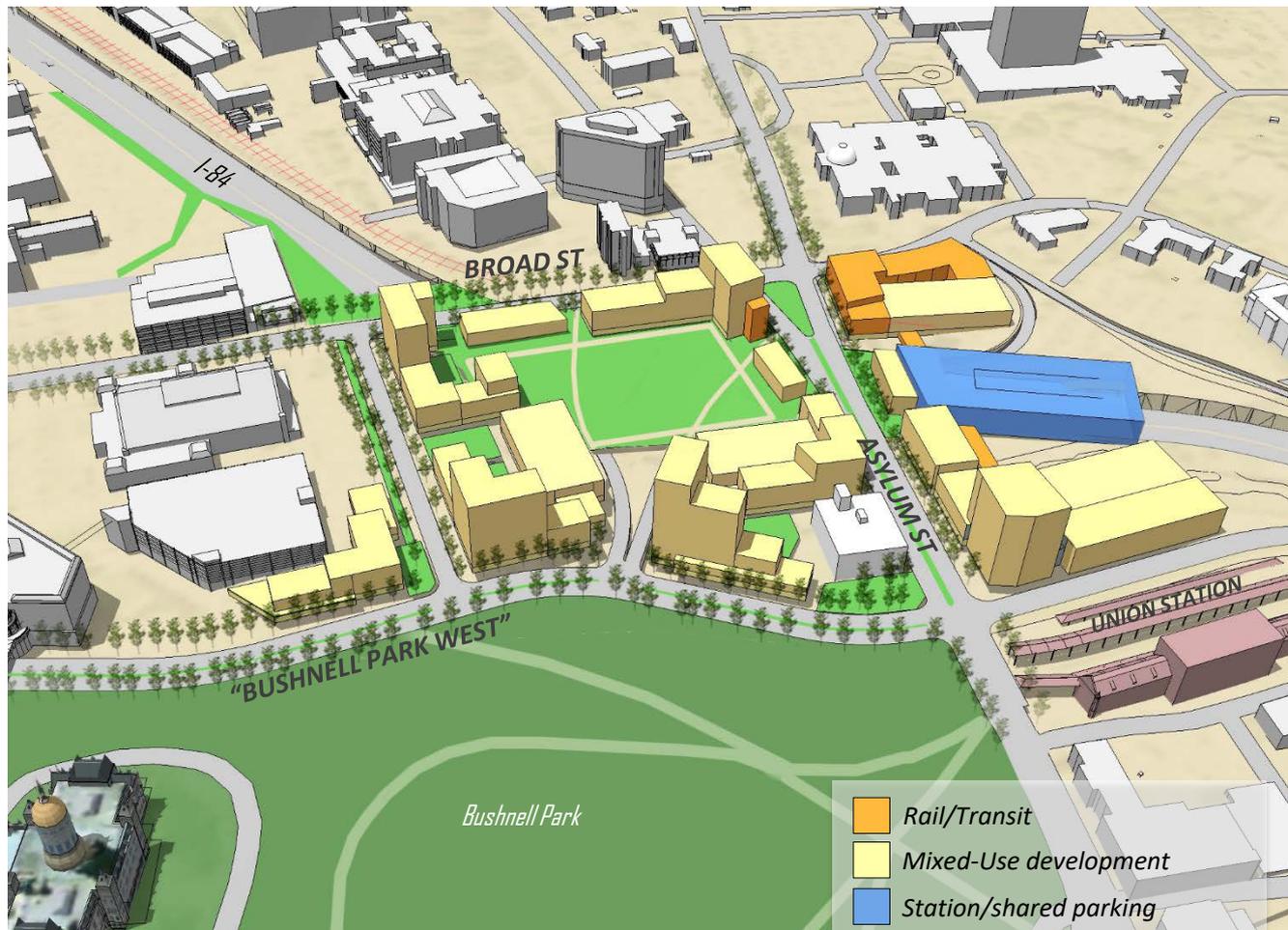
Basic Improvements





I-84 between Broad and Asylum

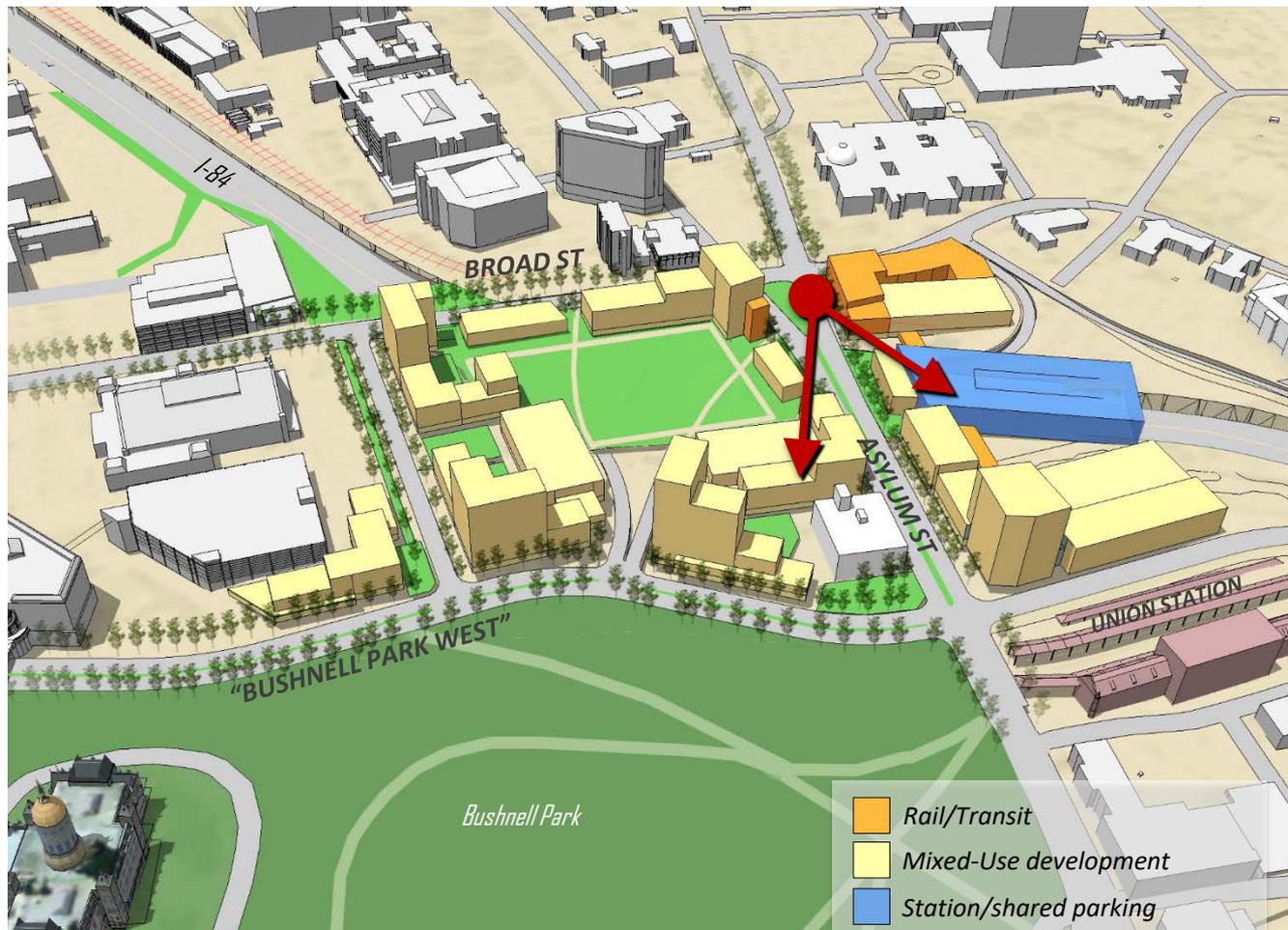
Enhanced Improvements





I-84 between Broad and Asylum

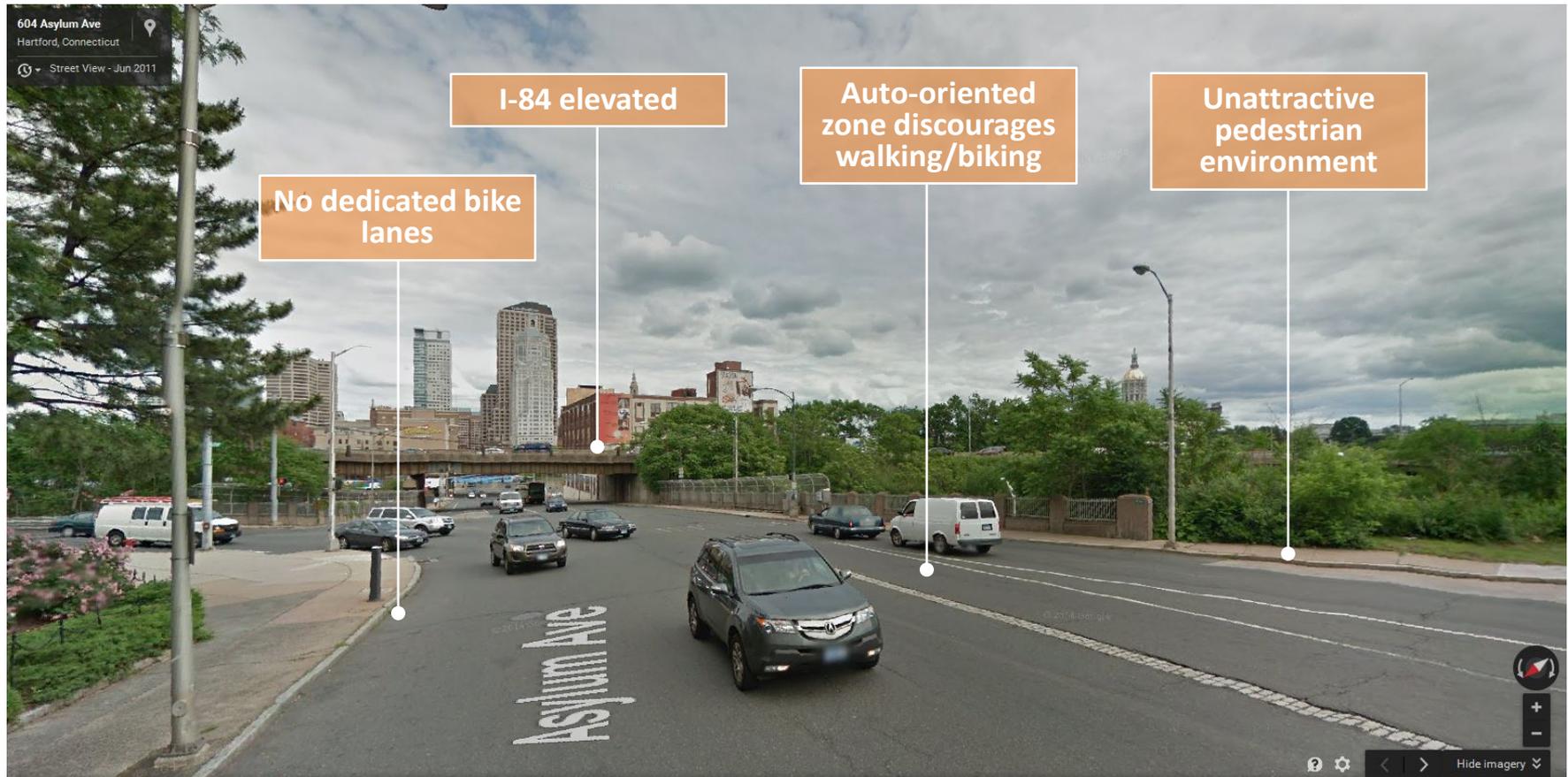
Enhanced Improvements





I-84 between Broad and Asylum

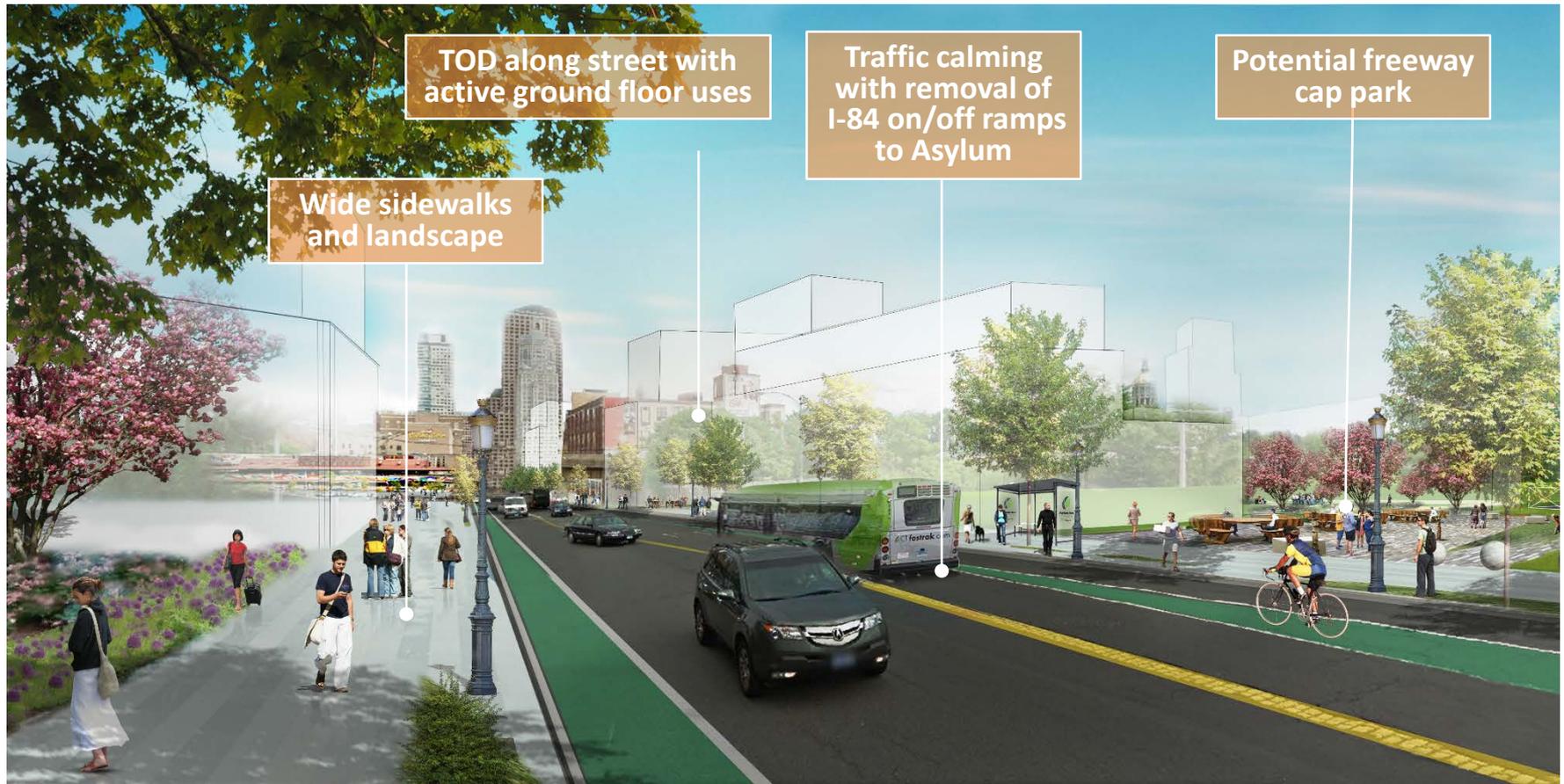
Existing View on Asylum Street





I-84 between Broad and Asylum

Potential View on Asylum Street





Union Station Looking Towards Capitol

Existing

Existing rail viaduct

State Capitol

I-84 on/off ramps

ArtSpace Hartford





Union Station Looking Towards Capitol

Potential (With Rail Viaduct)

Existing rail viaduct

State Capitol

Bushnell Park West

ArtSpace Hartford

Potential TOD





Union Station Looking Towards Capitol

Potential (Without Rail Viaduct)

Corning Fountain

State Capitol

Bushnell Park West

ArtSpace Hartford

Soldiers & Sailors
Memorial Arch

Potential TOD





Broad Street overpass *Noise mitigation strategy*

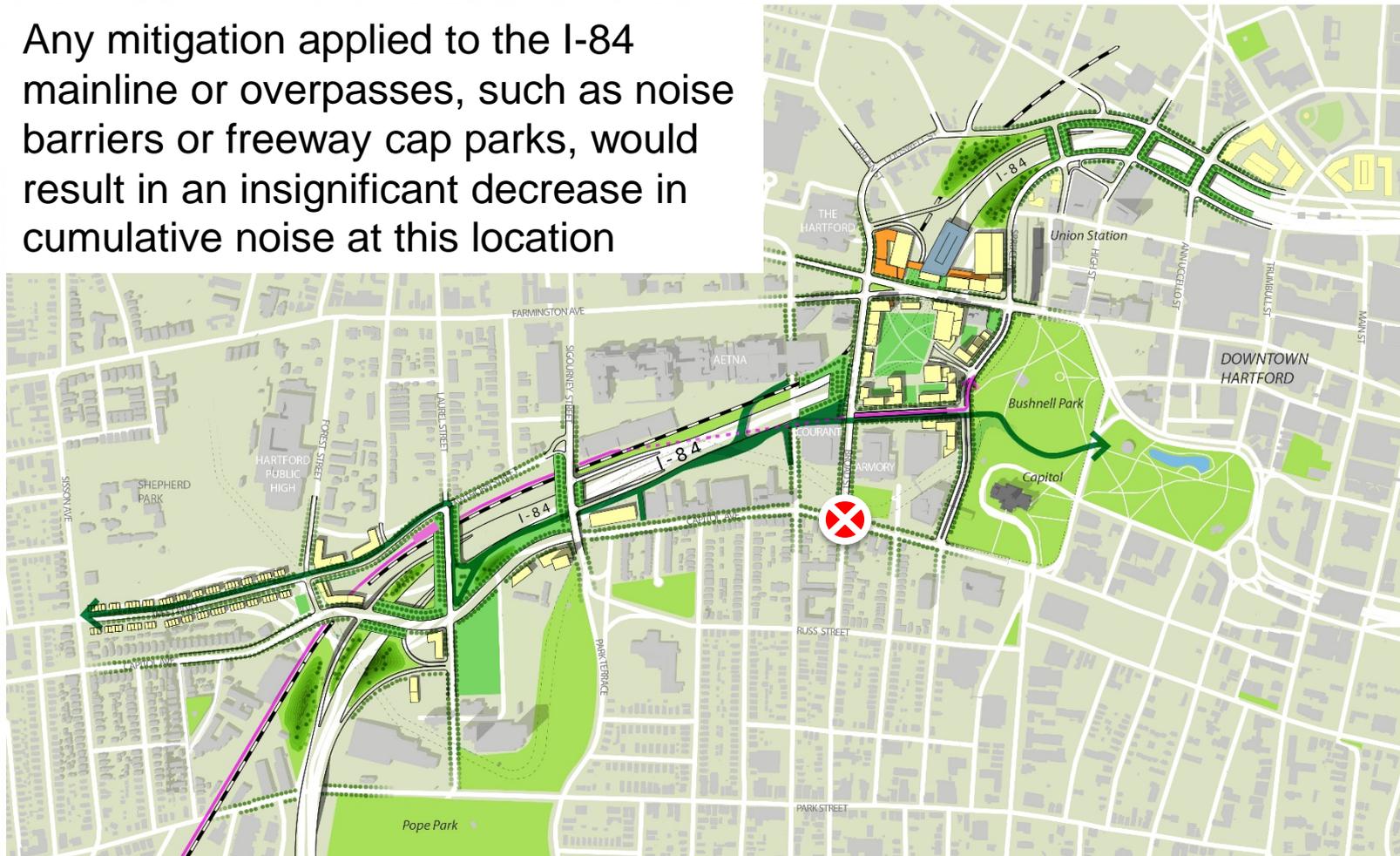
A highway cap could reduce noise levels by 8-12 dBA





Corner of Broad and Capitol *Noise mitigation strategy*

Any mitigation applied to the I-84 mainline or overpasses, such as noise barriers or freeway cap parks, would result in an insignificant decrease in cumulative noise at this location





Asylum/Farmington triangle

Noise mitigation strategy

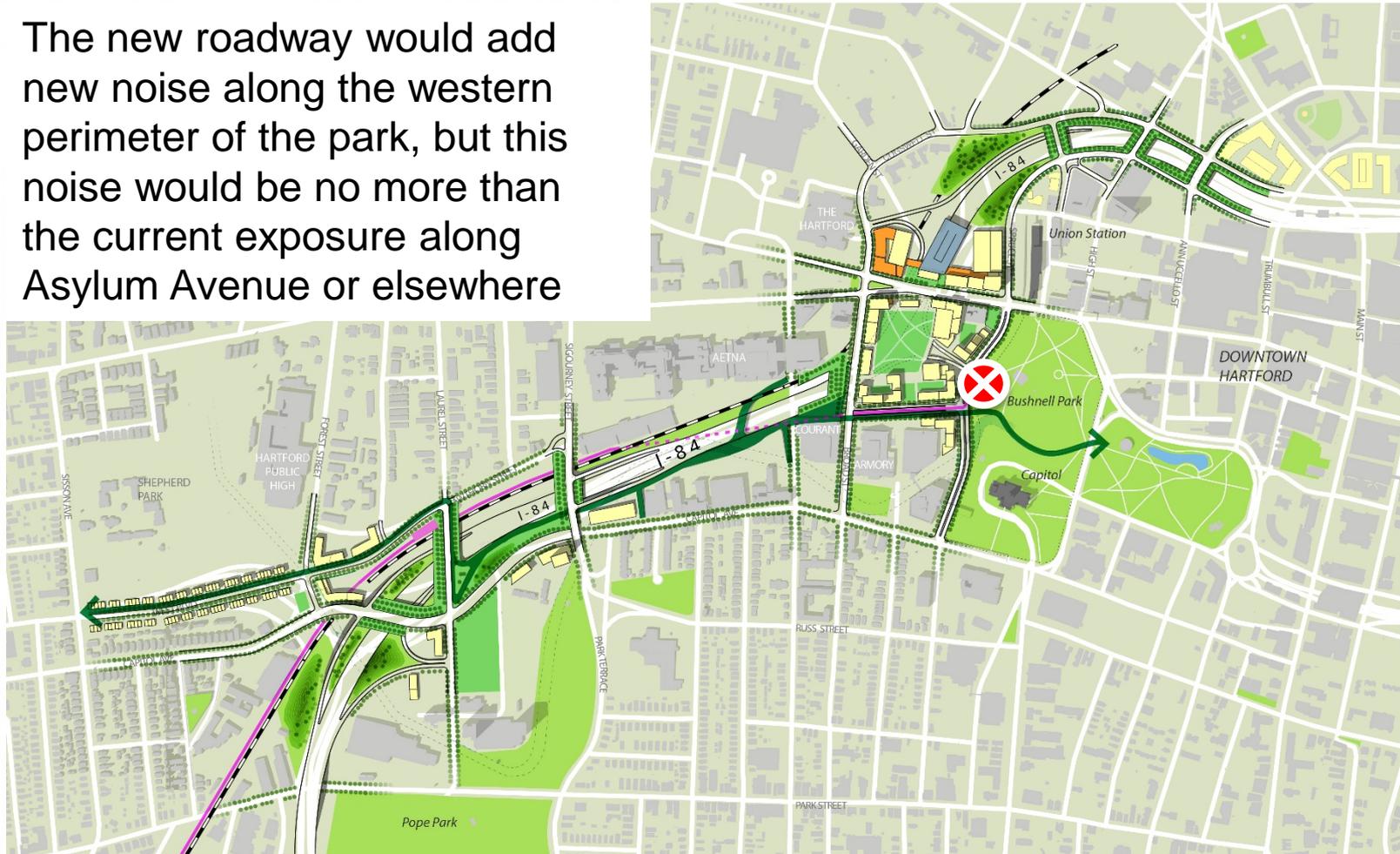
A highway cap could reduce noise levels by 8-12 dBA



Bushnell Park

Noise mitigation strategy

The new roadway would add new noise along the western perimeter of the park, but this noise would be no more than the current exposure along Asylum Avenue or elsewhere



I-84 between Broad and Asylum

Existing Bike/Ped Conditions: “Bushnell Park West”

- Sidewalks located close to the roadway
- No street trees
- Few marked crosswalks
- There are very few street trees
- There are no bus shelters

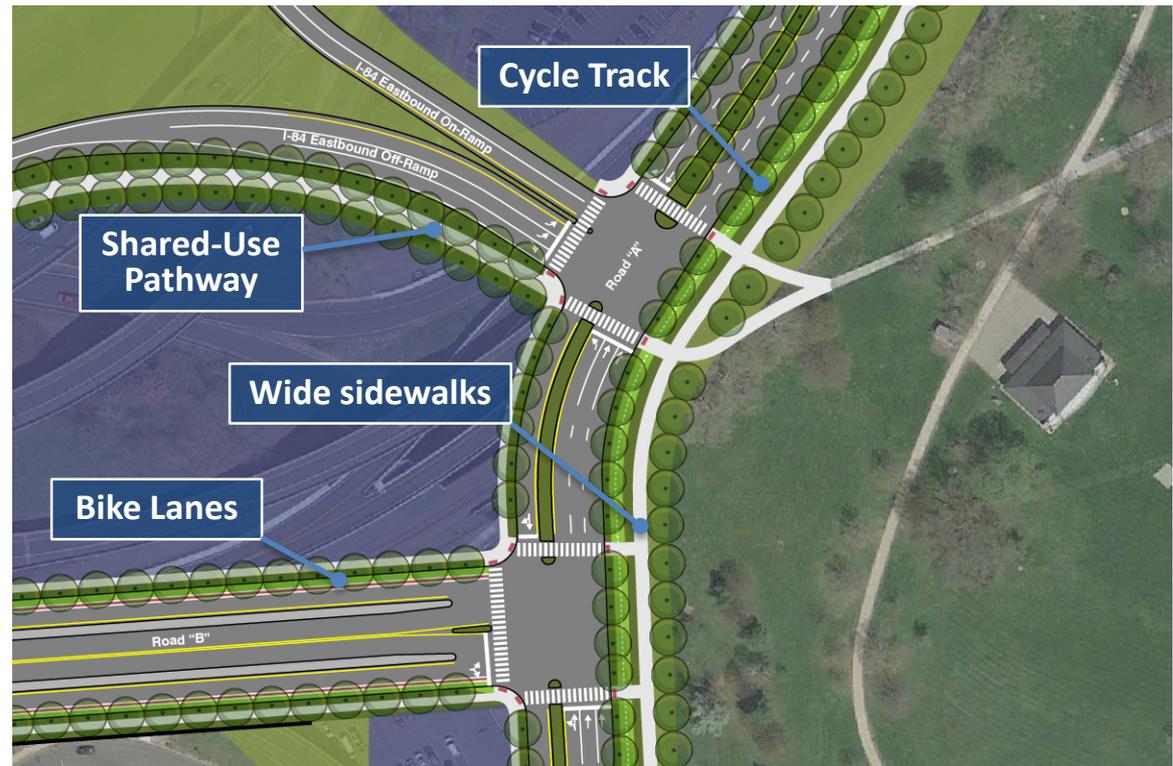




I-84 between Broad and Asylum

Recommended Bike/Ped Improvements: "Bushnell Park West"

- Wide sidewalks on both sides of all streets
- Multiple marked crosswalks and curb ramps
- On-street bicycle facilities or cycle tracks on all streets
- Shared-use pathway/ East Coast Greenway
- Bus shelters and bus pull-offs





I-84 between Broad and Asylum

Existing Bike/Ped Conditions: “Farmington/Asylum Trident”

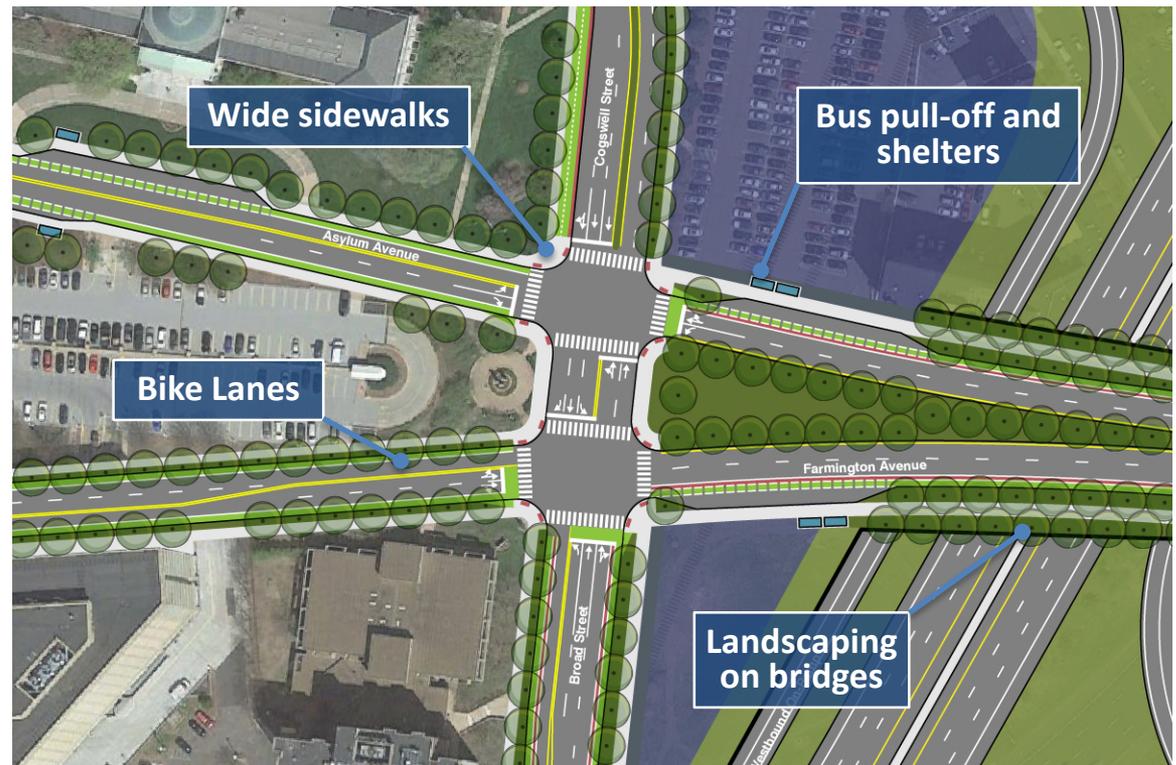
- Sidewalks located close to the roadway
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- There are very few street trees
- There are no bus shelters



I-84 between Broad and Asylum

Bike/Ped Improvements: “Farmington/Asylum Trident”

- Wide sidewalks on both sides of all streets
- Multiple marked crosswalks and curb ramps
- On-street bicycle facilities or cycle tracks on all streets
- Shared-use pathway/ East Coast Greenway
- Bus shelters and bus pull-offs



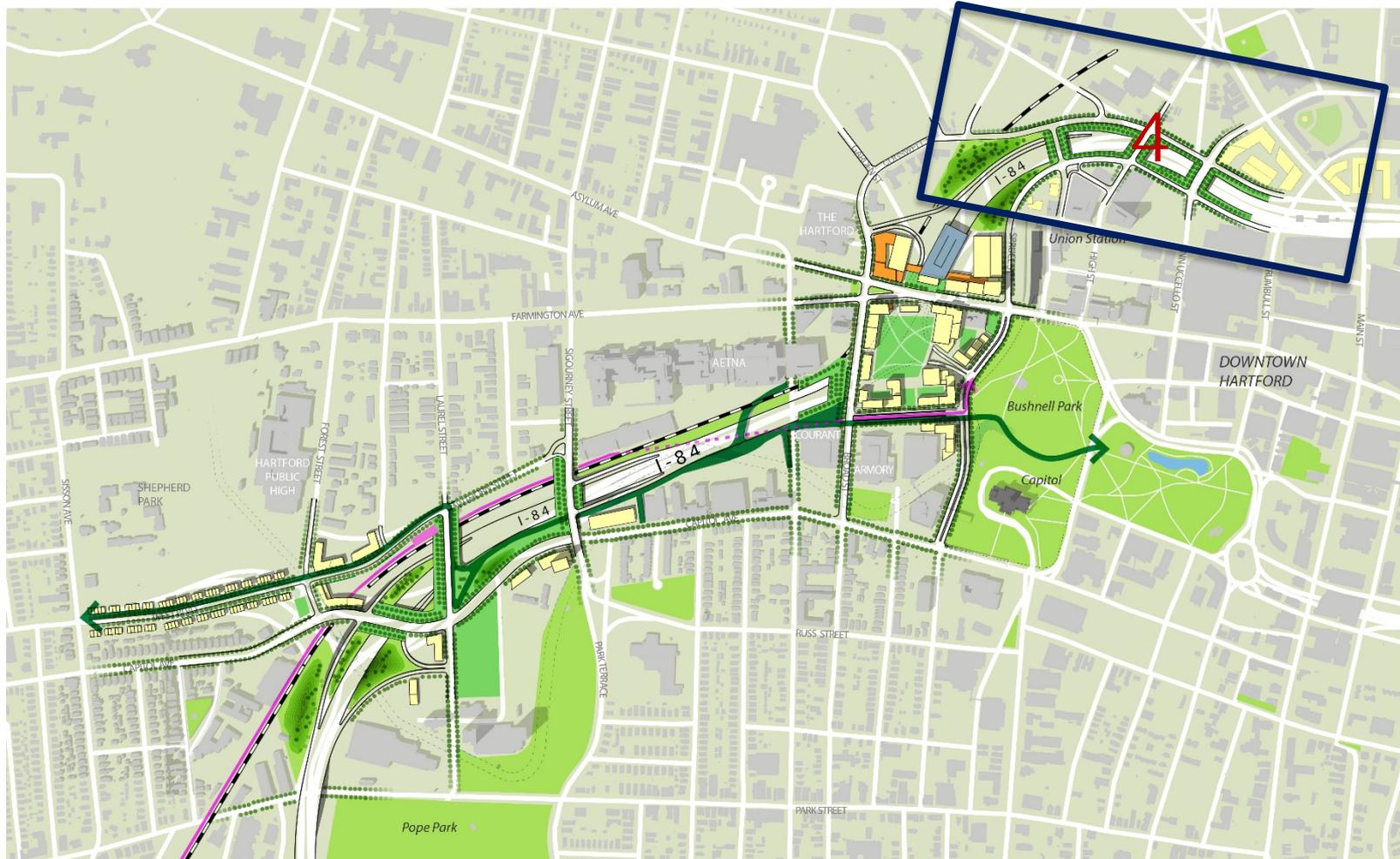


Discussion Questions

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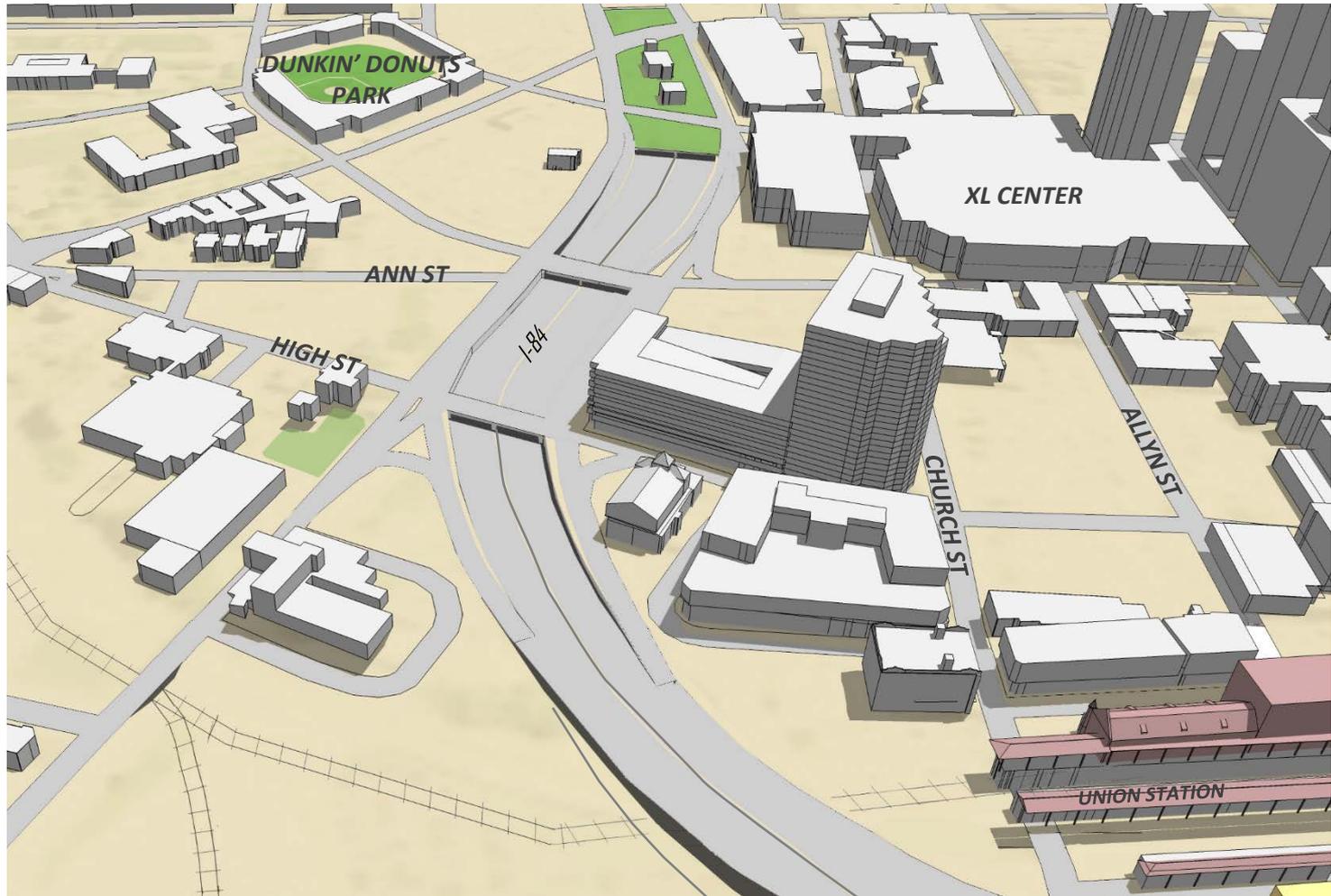
I-84 between High and Ann Uccello Streets





I-84 between High and Ann Uccello Streets

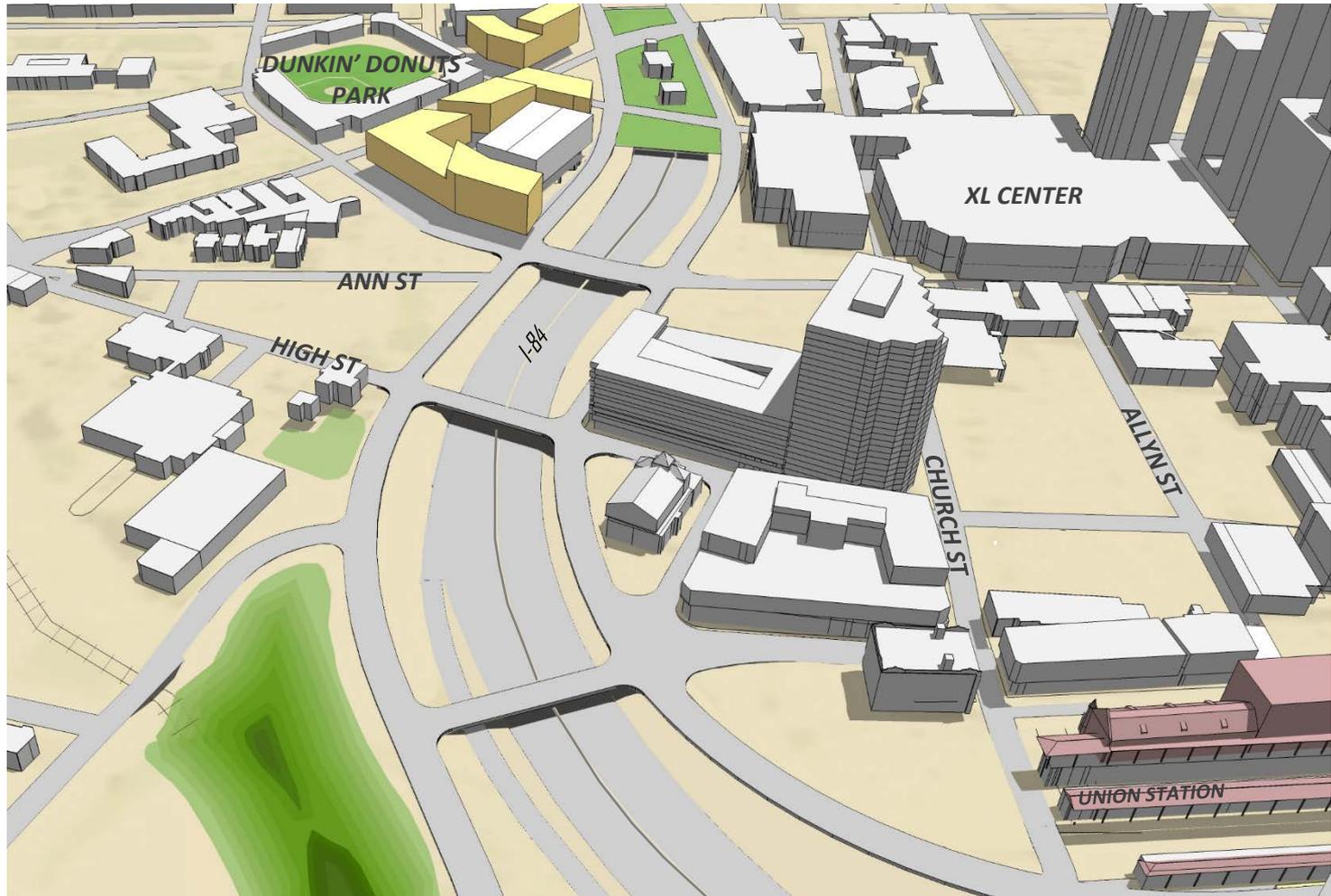
Existing Conditions





I-84 between High and Ann Uccello Streets

Basic Improvements





I-84 between High and Ann Uccello Streets

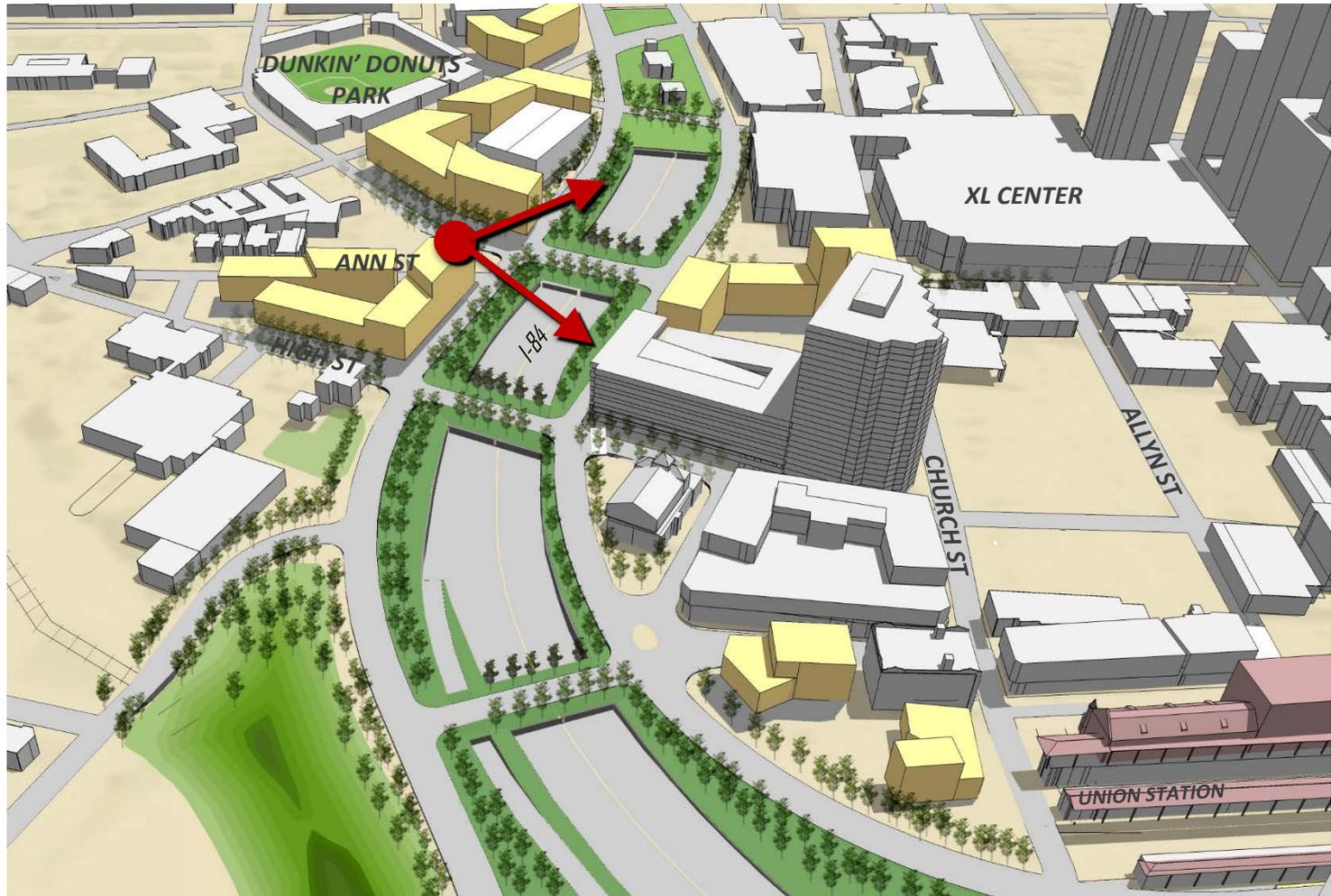
Enhanced Improvements





I-84 between High and Ann Uccello Streets

Enhanced Improvements





I-84 HARTFORD PROJECT

Ann Uccello Street Bridge

Existing View

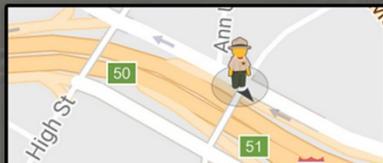
Chapel St N

Hartford, Connecticut

Street View - Aug 2015

View of I-84

View of I-84



Back to Map

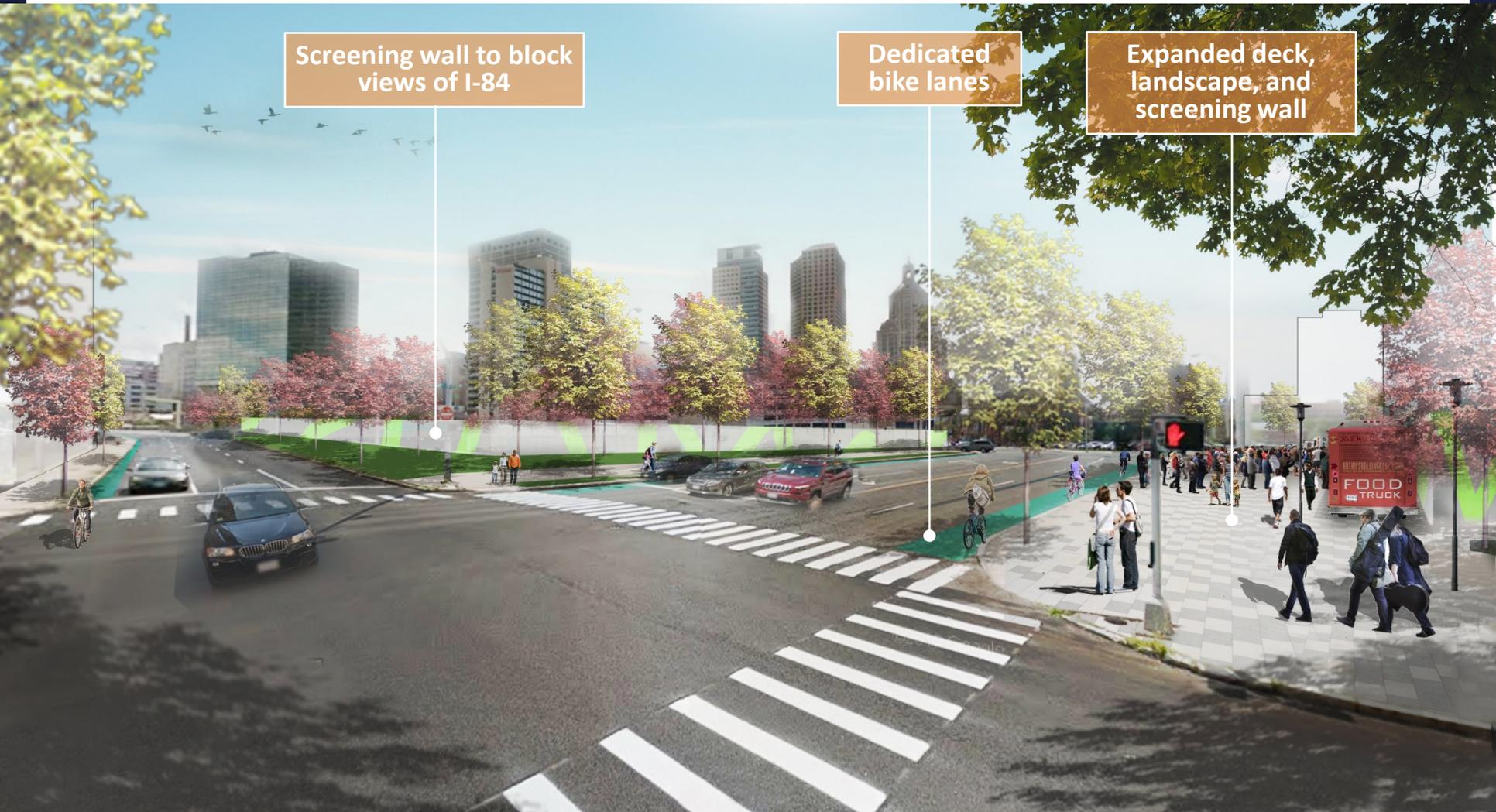
Google



I-84 HARTFORD PROJECT

Ann Uccello Street Bridge

Potential View



Screening wall to block views of I-84

Dedicated bike lanes

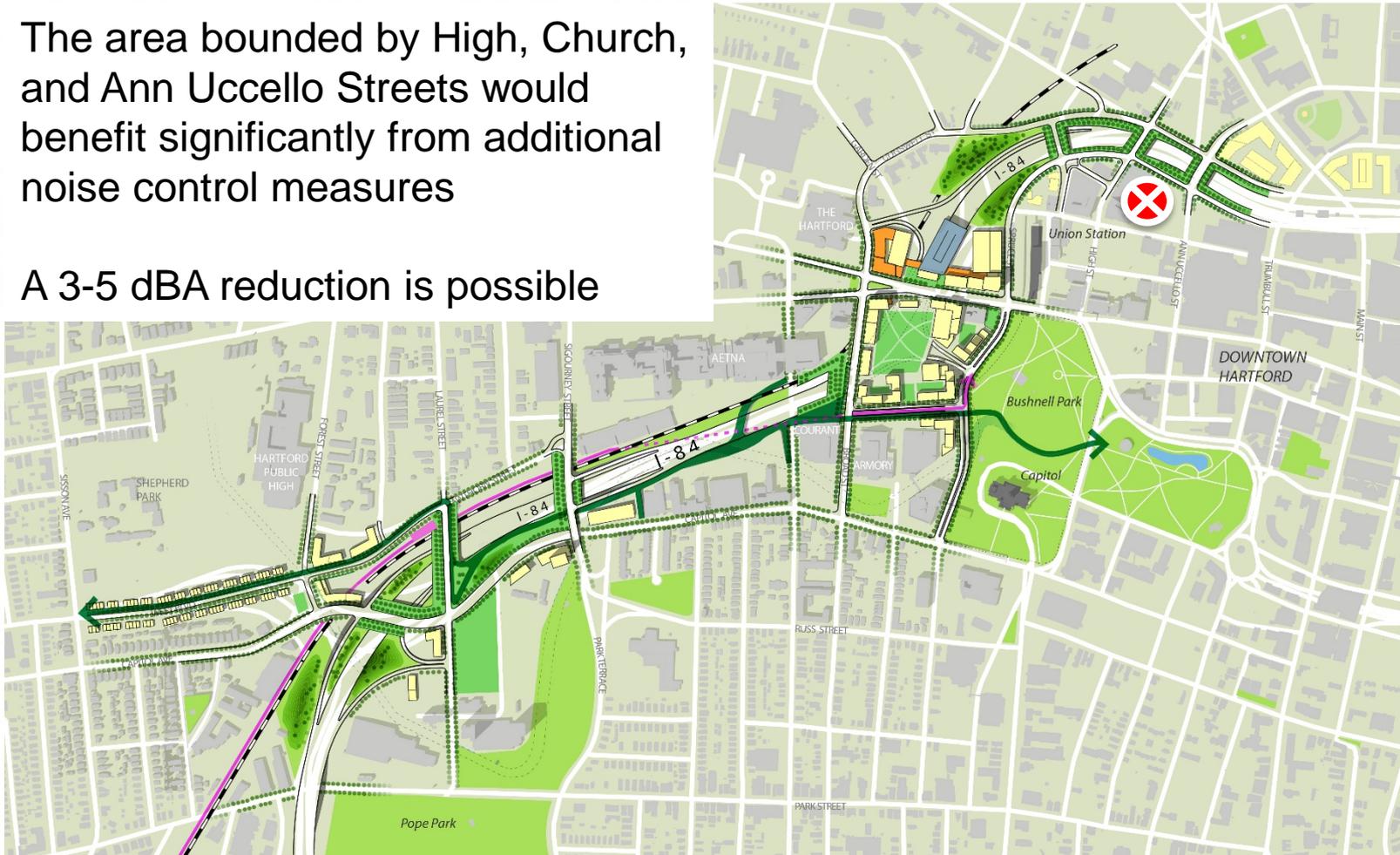
Expanded deck, landscape, and screening wall

High St/Ann Uccello

Noise mitigation strategy

The area bounded by High, Church, and Ann Uccello Streets would benefit significantly from additional noise control measures

A 3-5 dBA reduction is possible





I-84 between High and Ann Uccello Streets

Existing Bike/Ped Conditions: Chapel Street

- Sidewalks located close to the roadway
- No street trees
- There are very few street trees
- There are no bicycle facilities in the area



I-84 between High and Ann Uccello Streets

Recommended Bike/Ped Improvements: Chapel Street

- Wide sidewalks set back from street
- Multiple marked crosswalks and curb ramps
- On-street bicycle facilities on all streets
- Street trees along streets and on bridges





Discussion Questions

1. Which solutions/strategies do you favor?
2. Are they essential to the project's success?
3. Is there anything we haven't thought of?



I-84 HARTFORD PROJECT

Thank you!





Thank You!

Thank you for your time. We appreciate your commitment to helping us reach the best possible solution for the State of Connecticut, the Capitol Region, and the City of Hartford.

-Your I-84 Hartford Project Team



Extra Slides

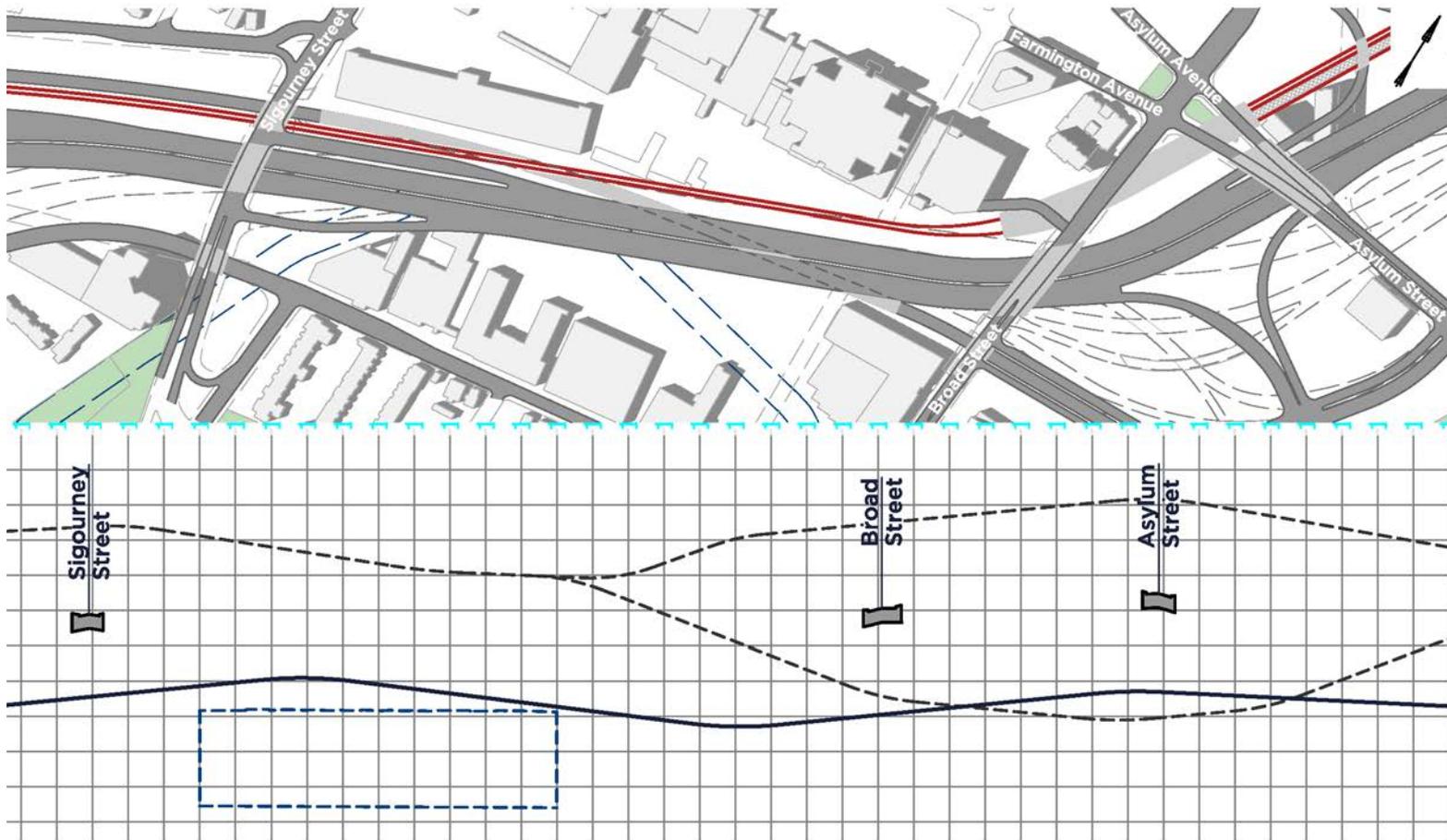


Capping



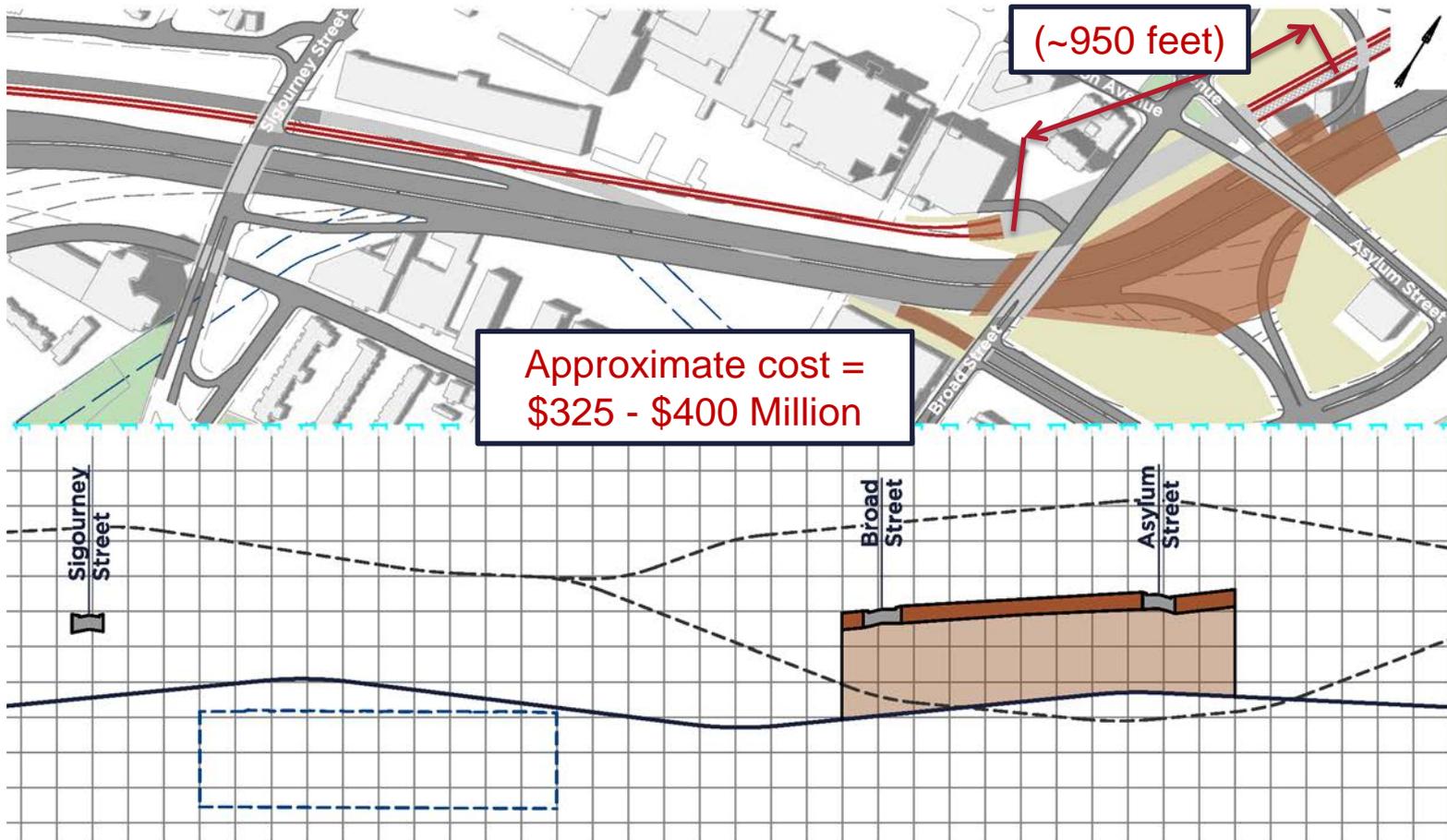


I-84 between Broad and Asylum Base Lowered Highway





I-84 between Broad and Asylum Capping



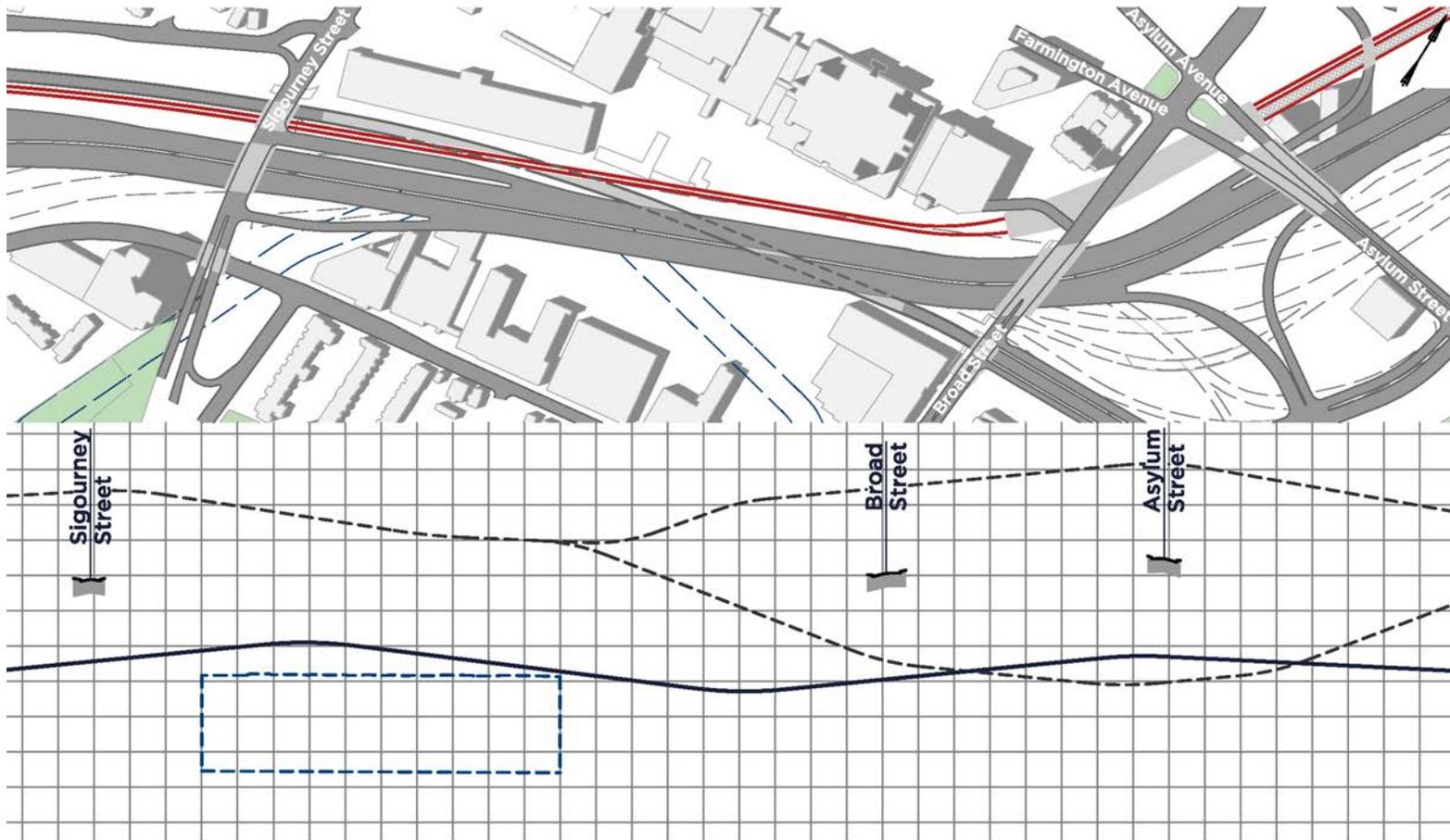


I-84 between Broad and Asylum Capping

- **Benefits**
 - Reconnects Asylum Hill to Downtown
 - Screens highway
 - Supports attractive TOD parcels
 - Helps to catalyze economic development
 - Buildings, open space and parking potential
- **Challenges**
 - Cost

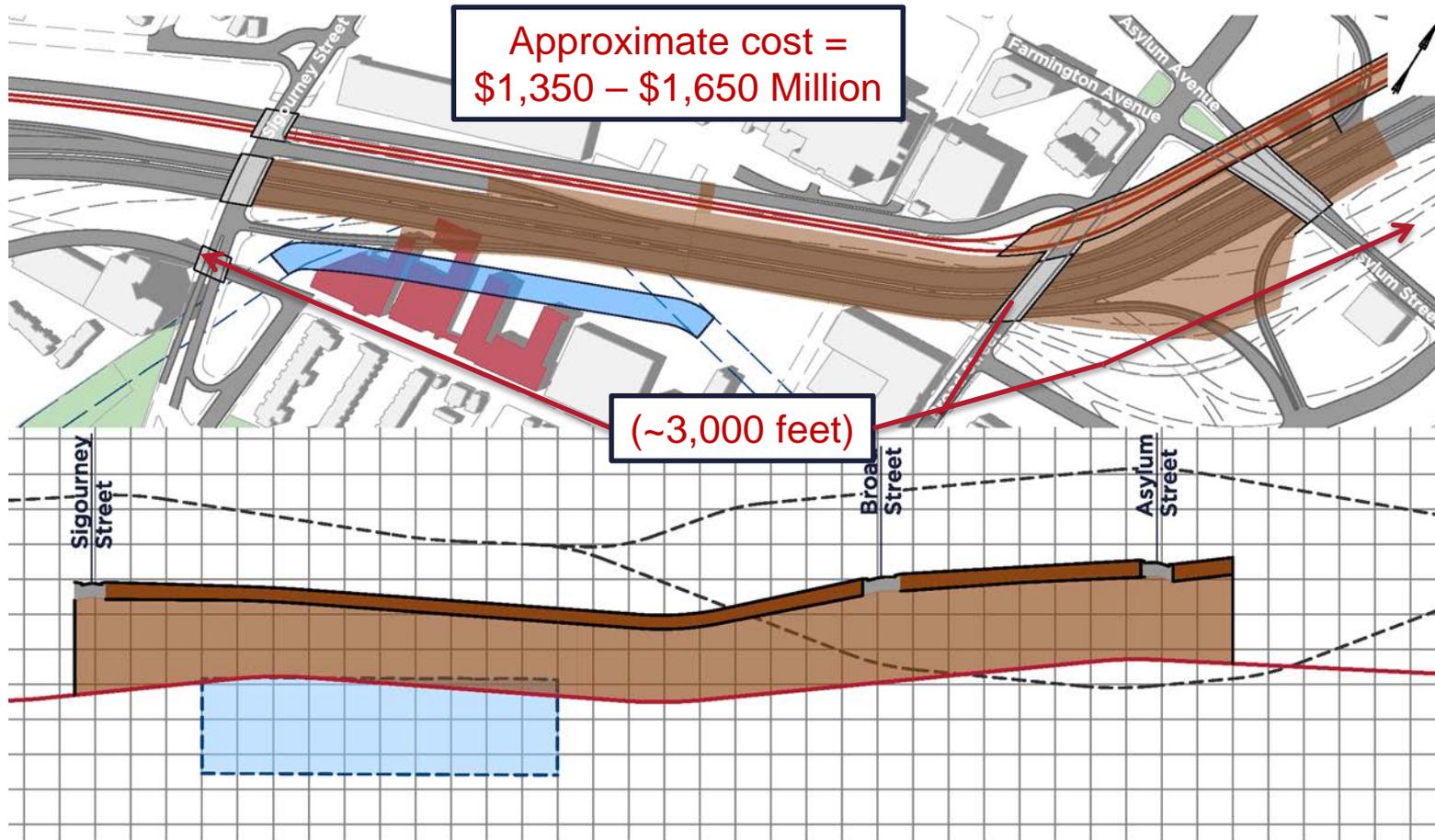


I-84 between Broad and Sigourney Base Lowered Highway



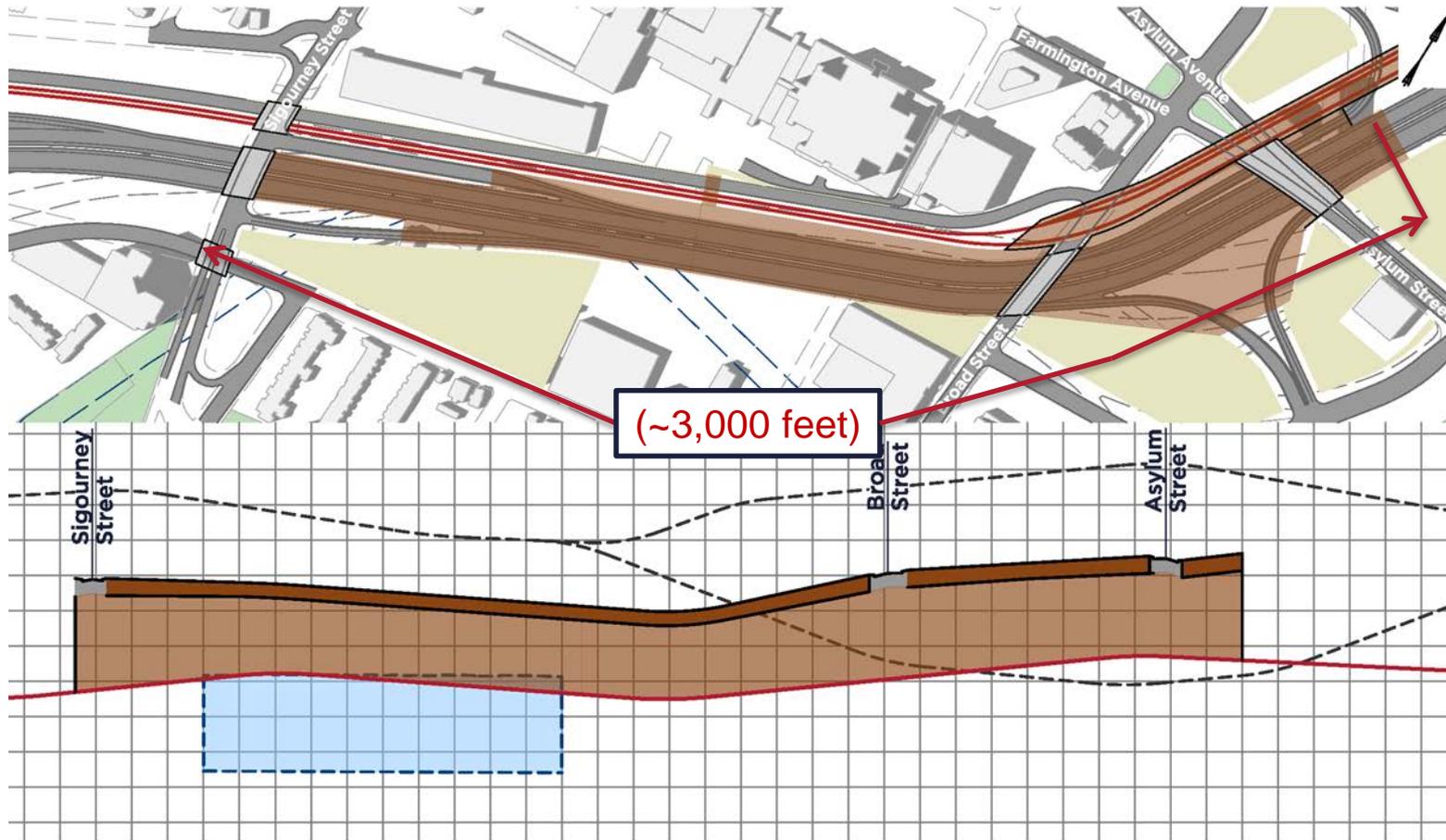


I-84 between Broad and Sigourney Capping with Potential Impacts



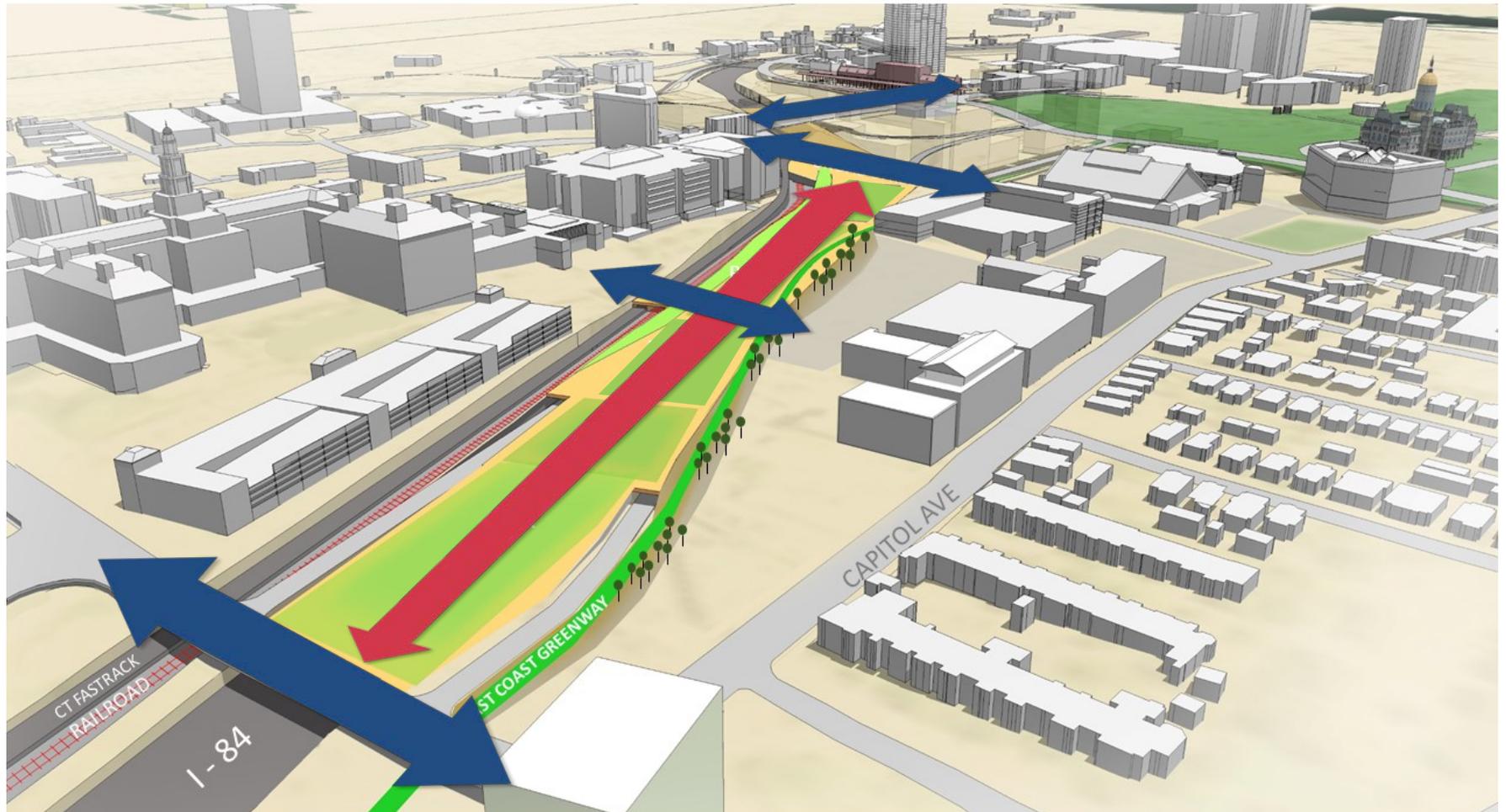


I-84 between Broad and Sigourney Capping with Potential Available Land





I-84 between Broad and Sigourney Connectivity Benefits





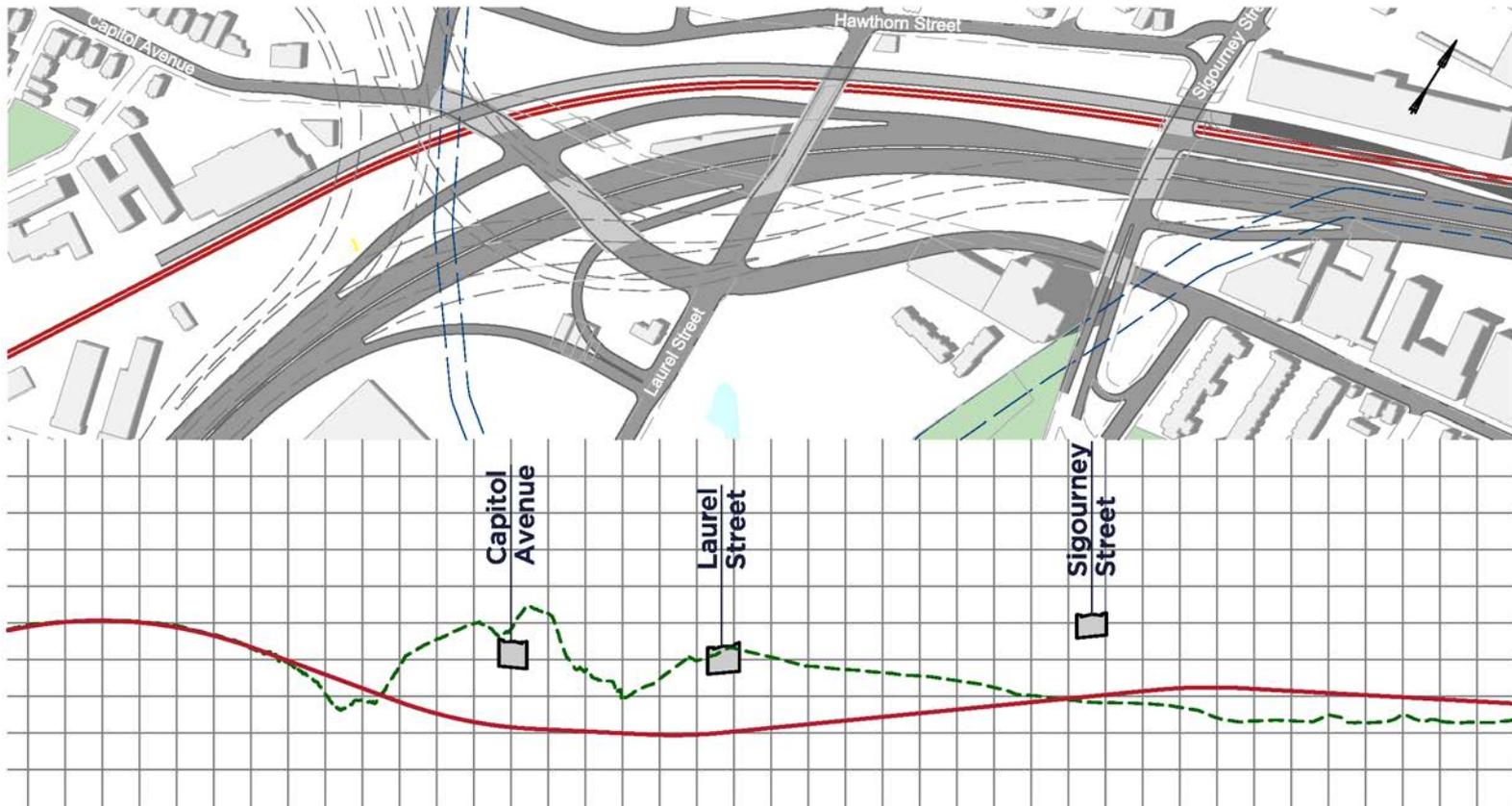
I-84 between Broad and Sigourney

Capping

- Benefits
 - Screens highway
 - Open space and parking potential
- Challenges
 - Cost
 - Park River conduit is a constraint
 - No additional developable land created
 - Does not increase connectivity beyond Broad Street, Greenway, and Sigourney links



I-84 between Sigourney and Capitol Base Lowered Highway

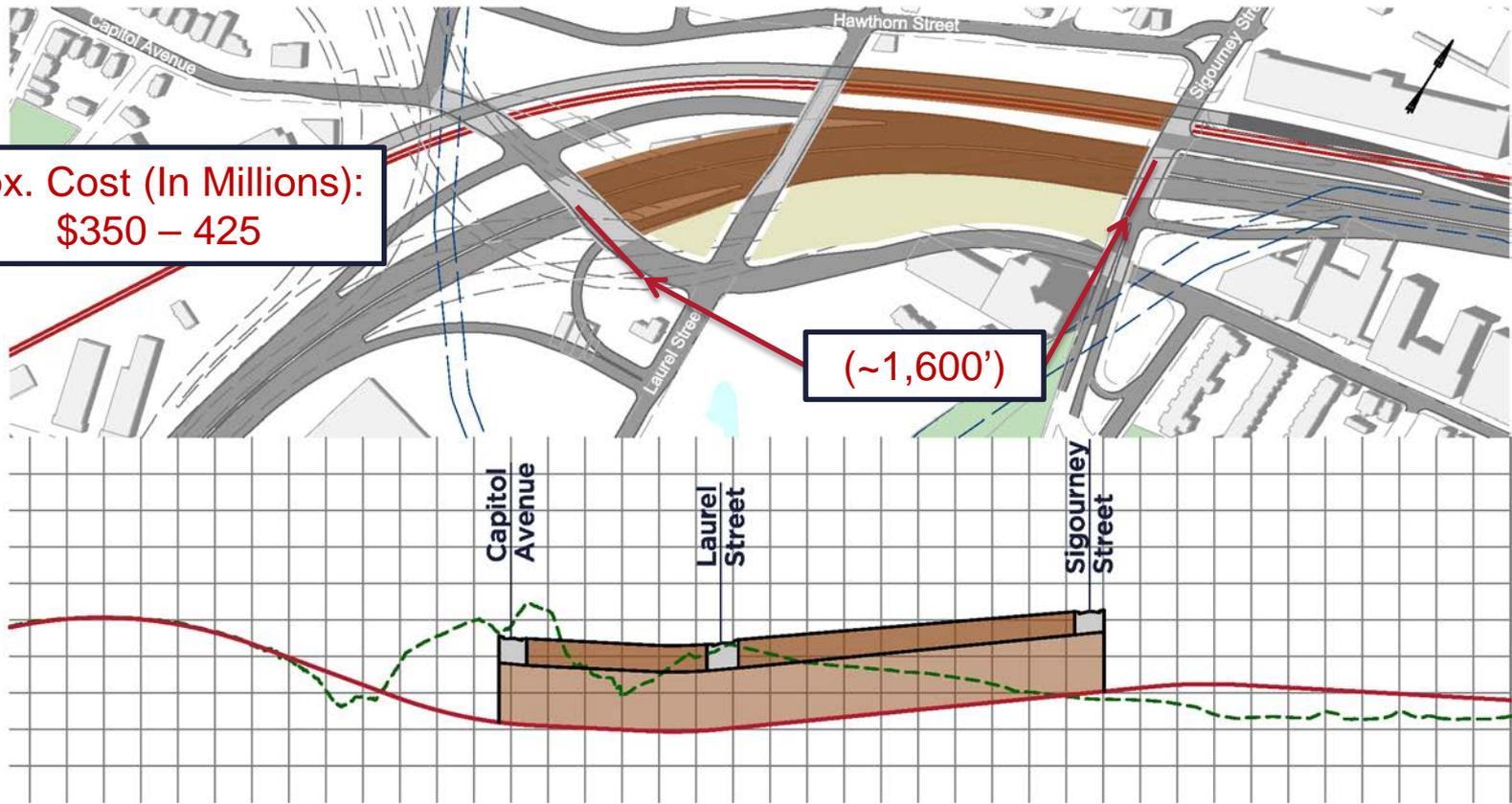




I-84 between Sigourney and Capitol Capping

Apx. Cost (In Millions):
\$350 – 425

(~1,600')





I-84 between Sigourney and Capitol Capping

- **Benefits**
 - Screens highway
 - Open space potential
- **Challenges**
 - Cost
 - Park River conduit is a constraint
 - Does not create additional developable land
 - Does not create increased connectivity due to CTfastrak and rail line barriers

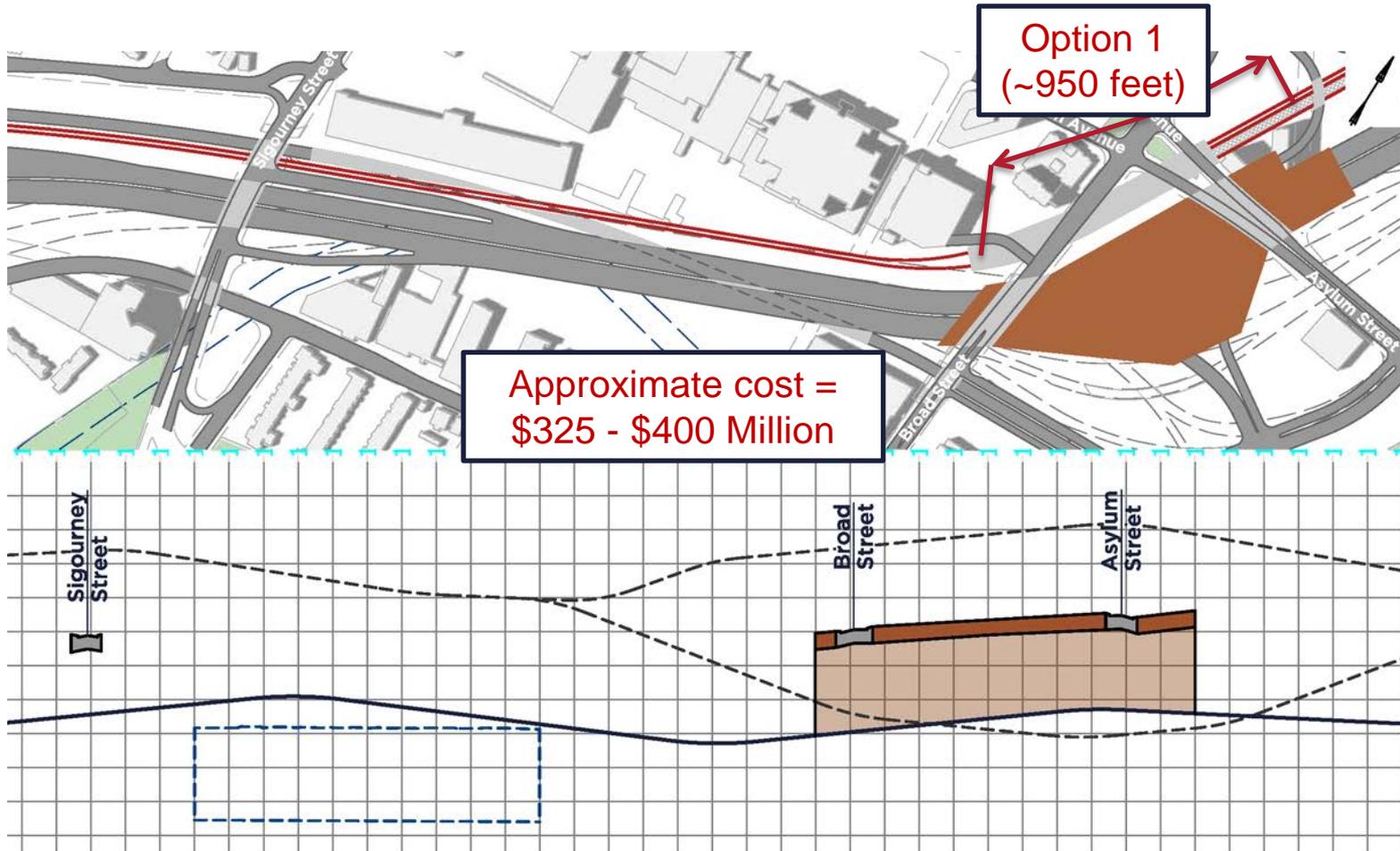


I-84 Corridor Estimated capping costs

- Asylum to Broad 950 ft. (6.2 ac.) \$325-400M
- Asylum to Sigourney 3,000 ft (15.4 ac.) \$1.4 to 1.7B
- Sigourney to Capitol 1,600 ft (7.0 ac.) \$350-425M

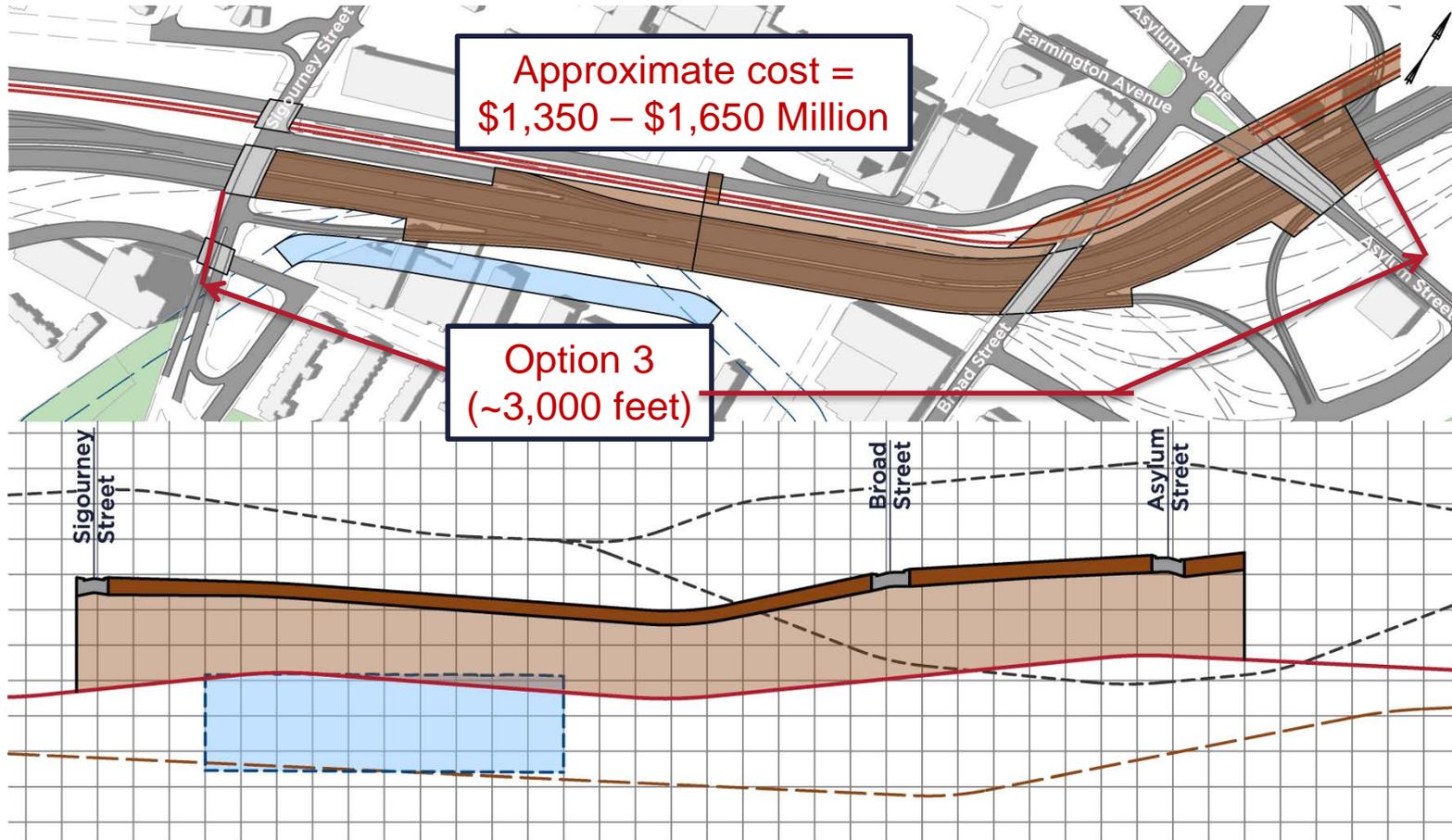


I-84 between Broad and Asylum Capping



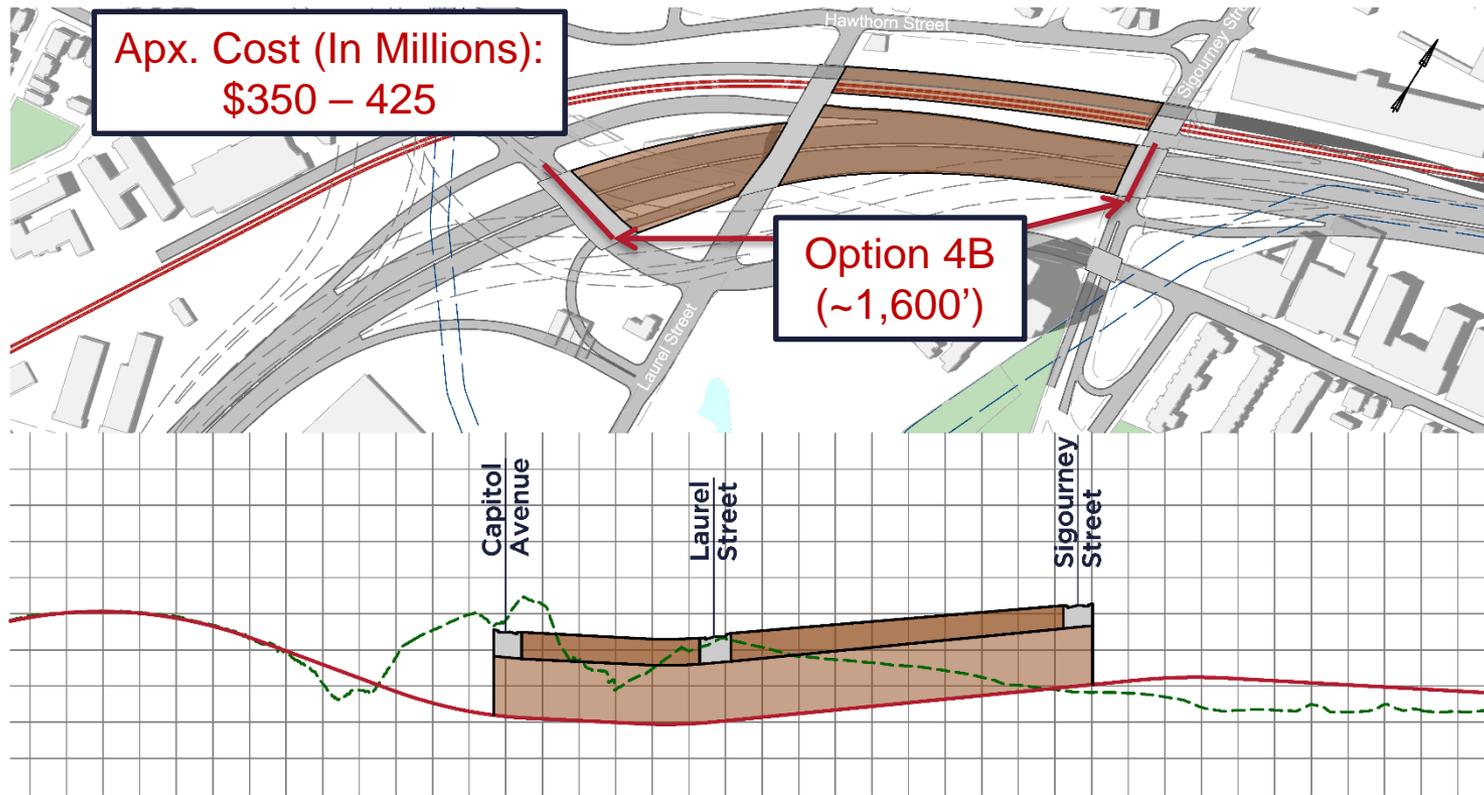


I-84 between Broad and Sigourney Capping





I-84 between Sigourney and Capitol Capping





Case Studies: World Class Trails



The 606 (Bloomingdale Trail)

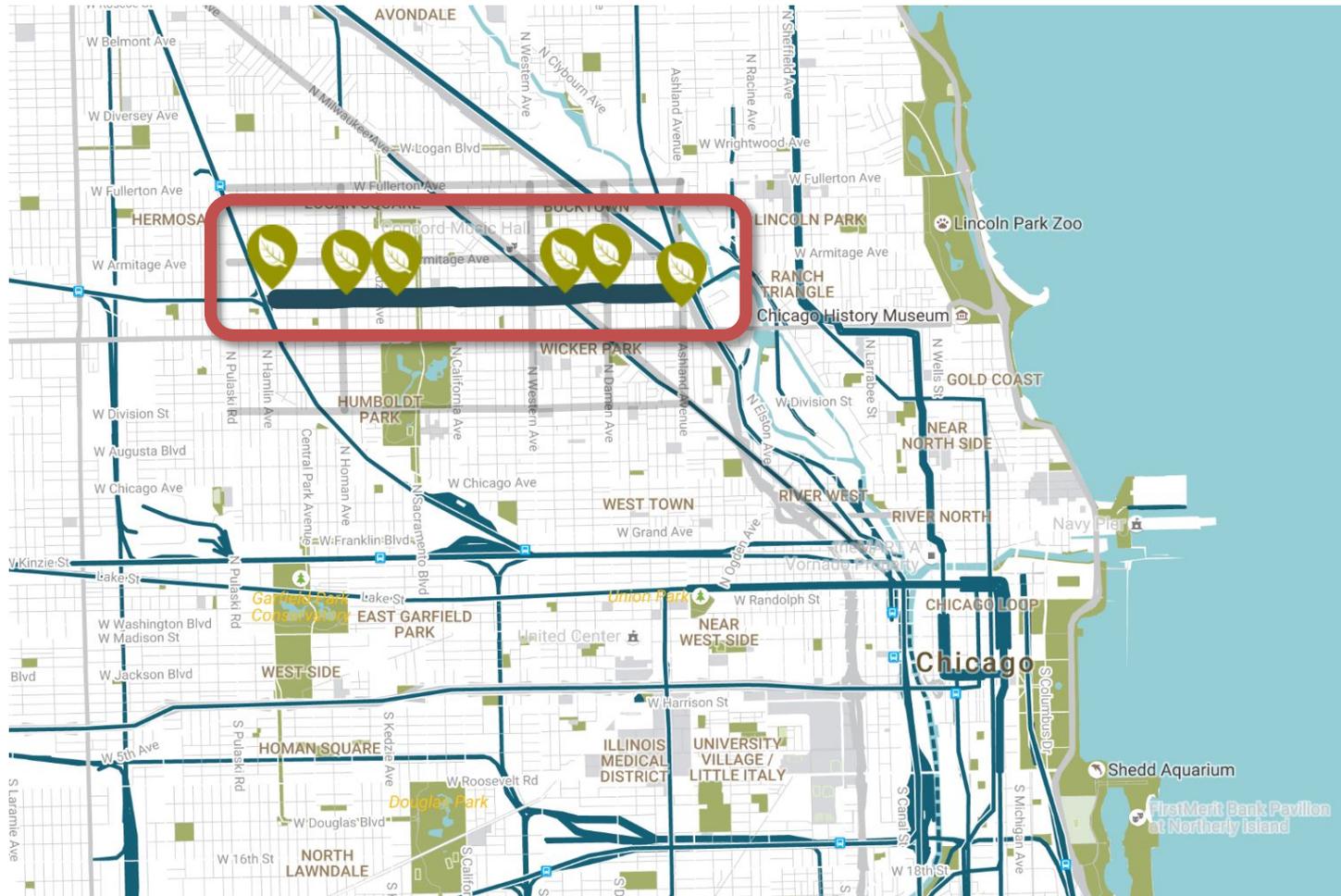
Chicago, IL

- 2.7 mile long east / west linear park
- Former elevated freight rail line
- 10-year timeline for planning, design, and construction
- \$95 million:
 - \$50m federal
 - \$10m city
 - \$35m TPL
- Maintained by private contractor managed by Park District





The 606, Chicago, IL





The 606, Chicago, IL





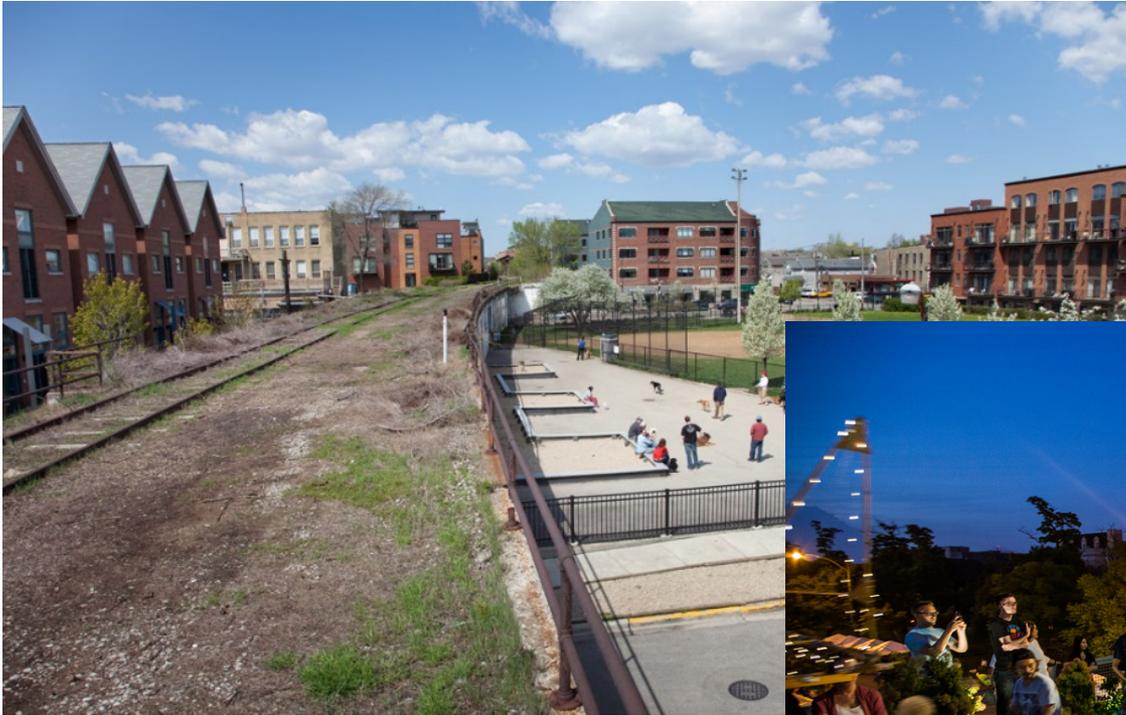
The 606, Chicago, IL



Section A



The 606, Chicago, IL





The 606, Chicago, IL

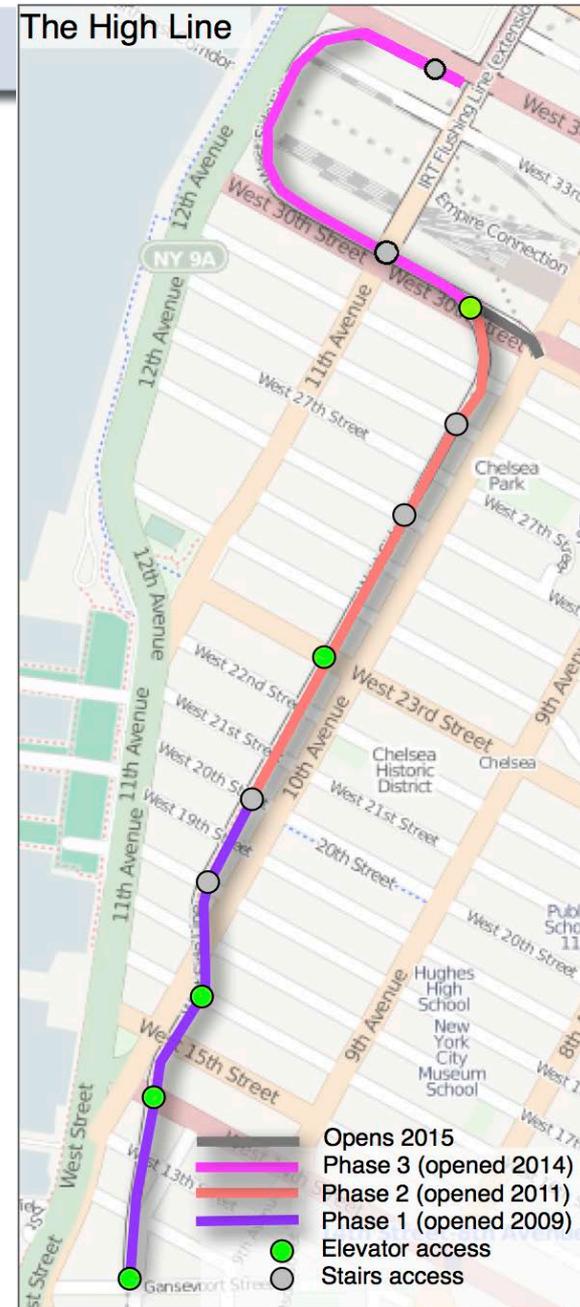




The High Line

New York, NY

- 1.5 mile long north / south linear park
- Former elevated freight rail line
- Initiated in 1999 by non-profit Friends of the High Line
- \$190 million approx:
 - \$ 20m federal
 - \$120m city
 - \$ 50m non-profit
- Spurred substantial economic development – 5 million visitors annually





The High Line, New York, NY

View Before





The High Line, New York, NY

View After





The High Line, New York, NY

Pedestrian Destination





The High Line, New York, NY

Relationship to Ground Level



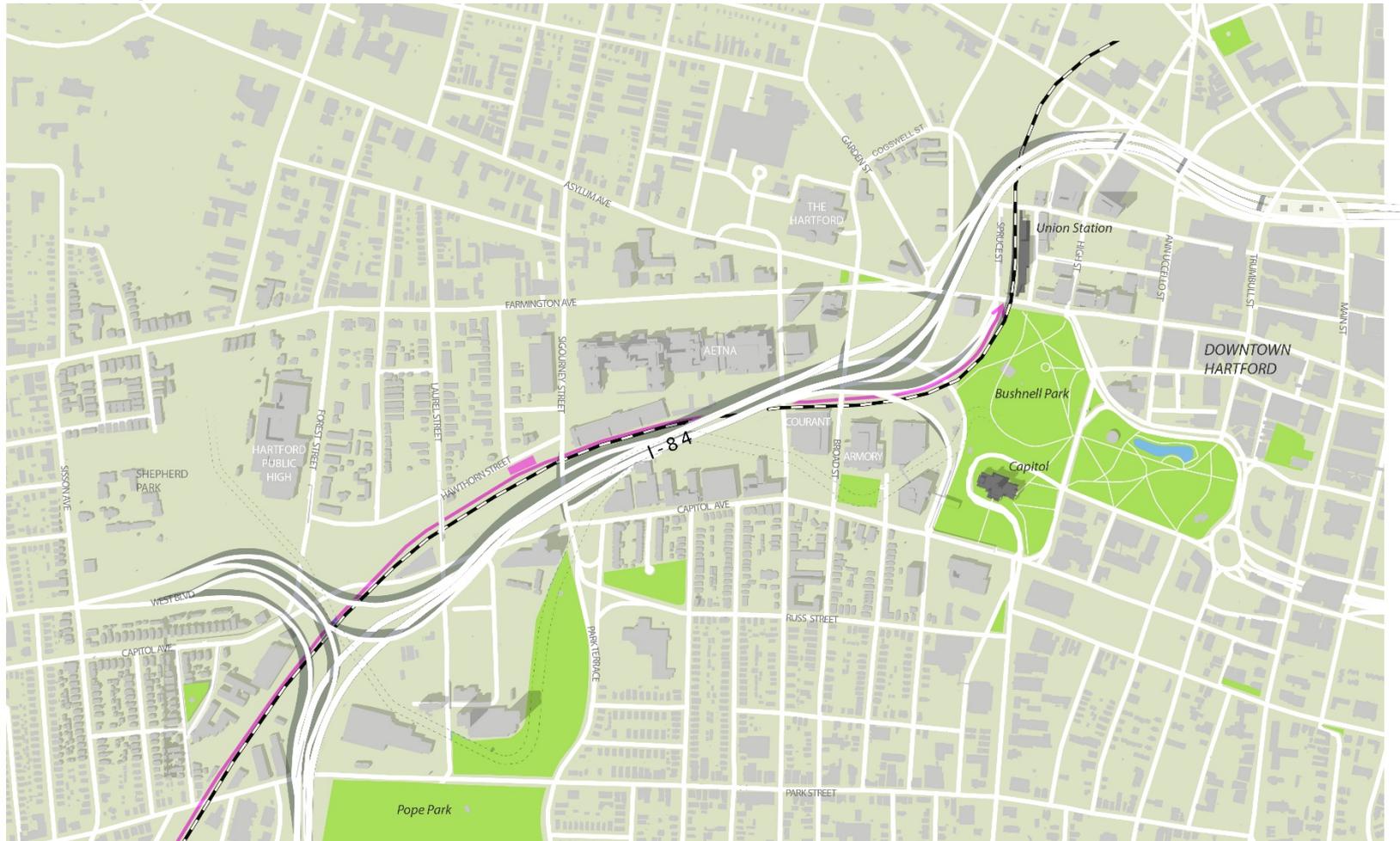


I-84 HARTFORD PROJECT



I-84 Corridor

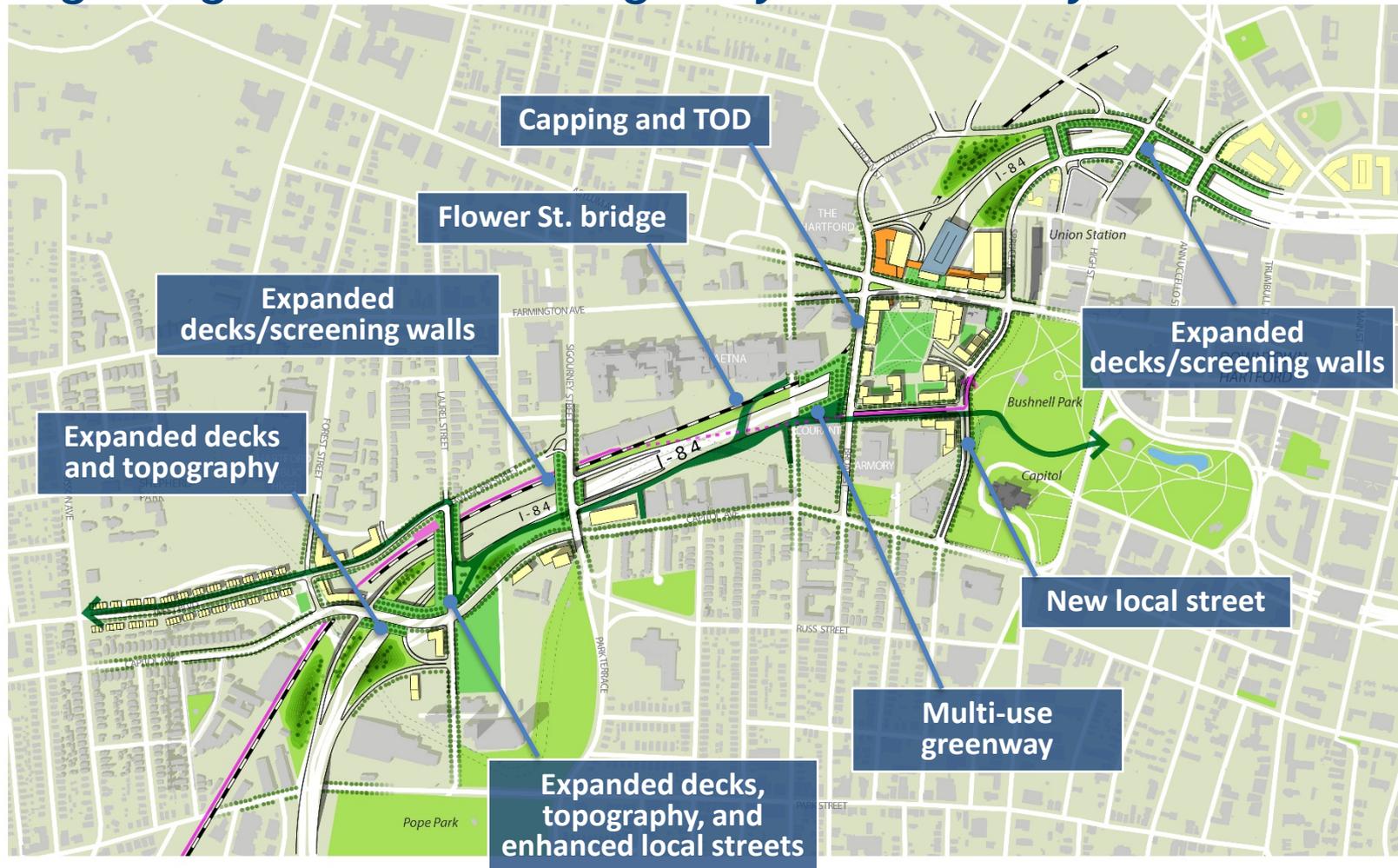
Existing Conditions





I-84 Corridor

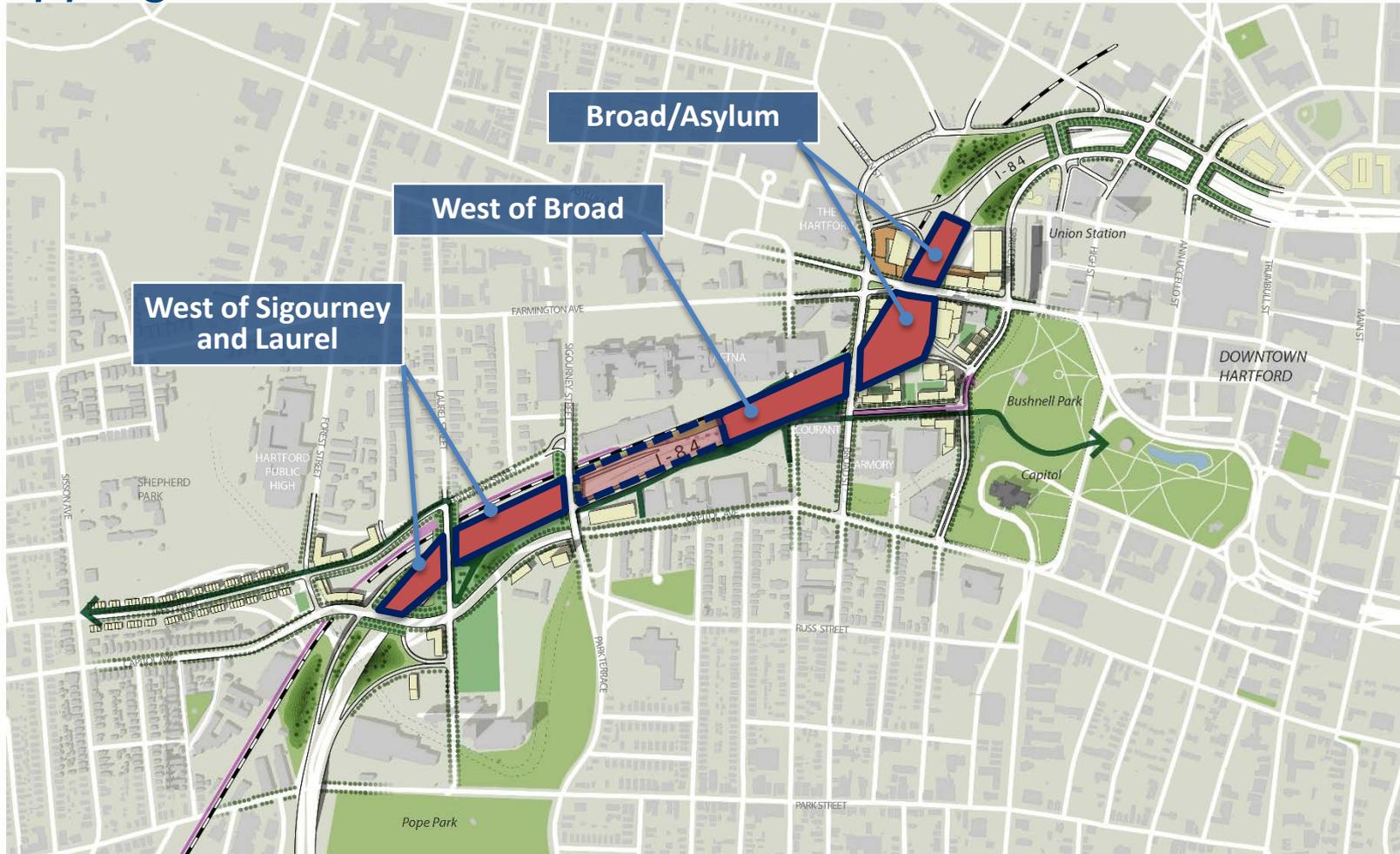
Integrating the Lowered Highway into the City





I-84 Corridor

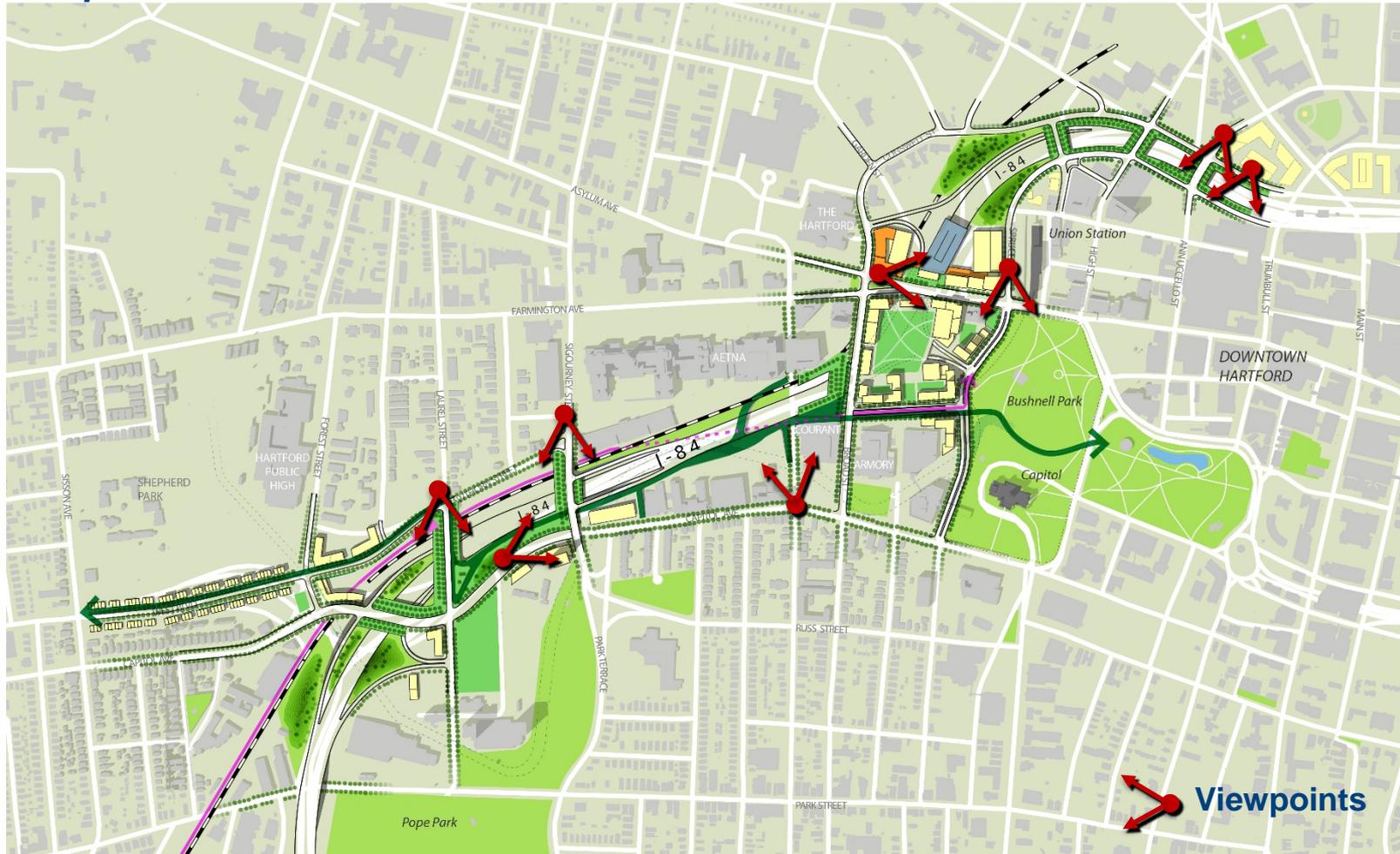
Capping Scenarios Studied





I-84 Corridor

Viewpoints Shown



 Viewpoints



Best Performing Lowered Option (Traffic) To-date *Alternative 3B-E2(S)*



Example Strategies

Noise Mitigation/Screening



Hyder/Arup/Black&Veatch, Tolo-Fanling Project, Hong Kong, China

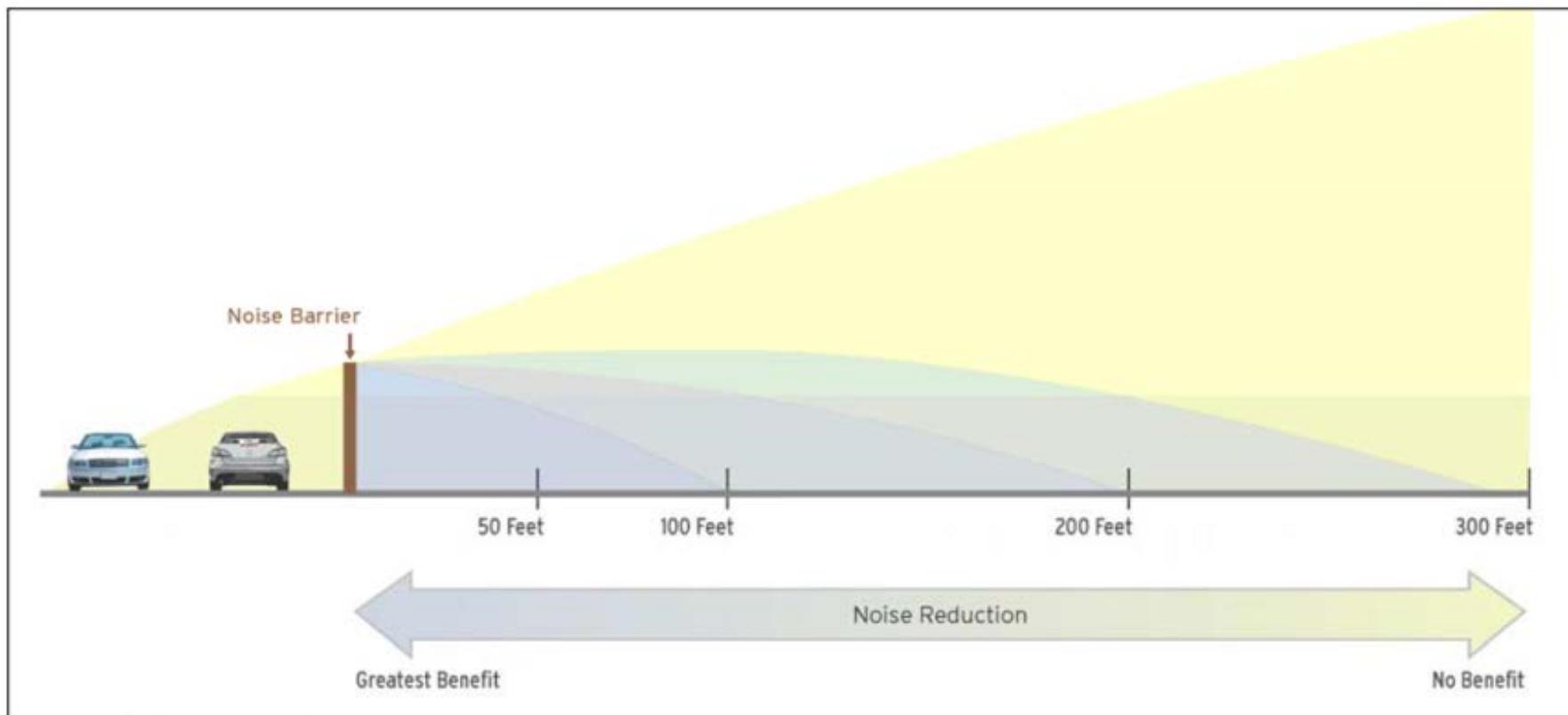


Eskyiu Ltd., Hong Kong, China



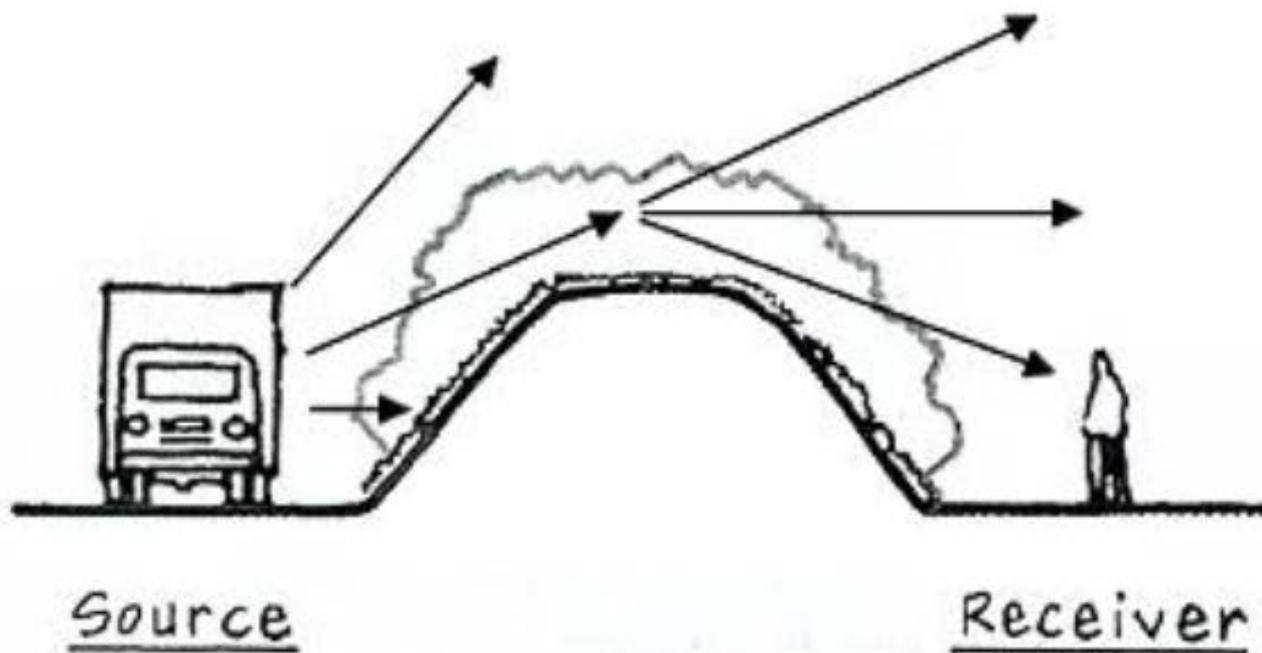
Gensin/Lixin (Alibaba), Zhejiang, China

Noise Barrier Effectiveness



Source: WSDOT, November 2016.

Earthen Berms



Sample Noise Locations



Conceptual Noise Benefits

No.	Location	Existing (dBA)	Design Option	Treatment	Benefit (dBA) ¹	Lowered w/ Treat (dBA)
1	Capitol Ave bet/ Laurel & Sigourney	75 ²	1, 3	Vegetative screens or curved barrier	3-8	67-72
2	Sigourney Overpass	75 ²	2, 5	Curved barrier or widened overpass	3-8	67-72
3	Broad Street Overpass	75 ²	2	Curved barrier	3-8	67-72
			4	Freeway caps	8-12	63-67
			5	Widened overpass	3-5	70-72
4	Corner of Broad and Capitol	75 ²	2, 4	Curved barrier or freeway caps	0-1	74-75
5	Asylum/Farmington Triangle	72 ³	4	Freeway caps	8-12	60-64
			8	Landscape berms	3-8	64-69
6	Laurel and Hawthorn	75 ²	1, 4	Vegetative screens or freeway caps	3-8	67-72
7	Bushnell Park	55 ⁴	1, 4	Vegetative screens or freeway caps	0-1	54-55
8	High St/Ann Uccello	71 ⁵	1, 5	Vegetative screens or widened overpass	3-5	66-68