CASEY ARBORWAY PROJECT:

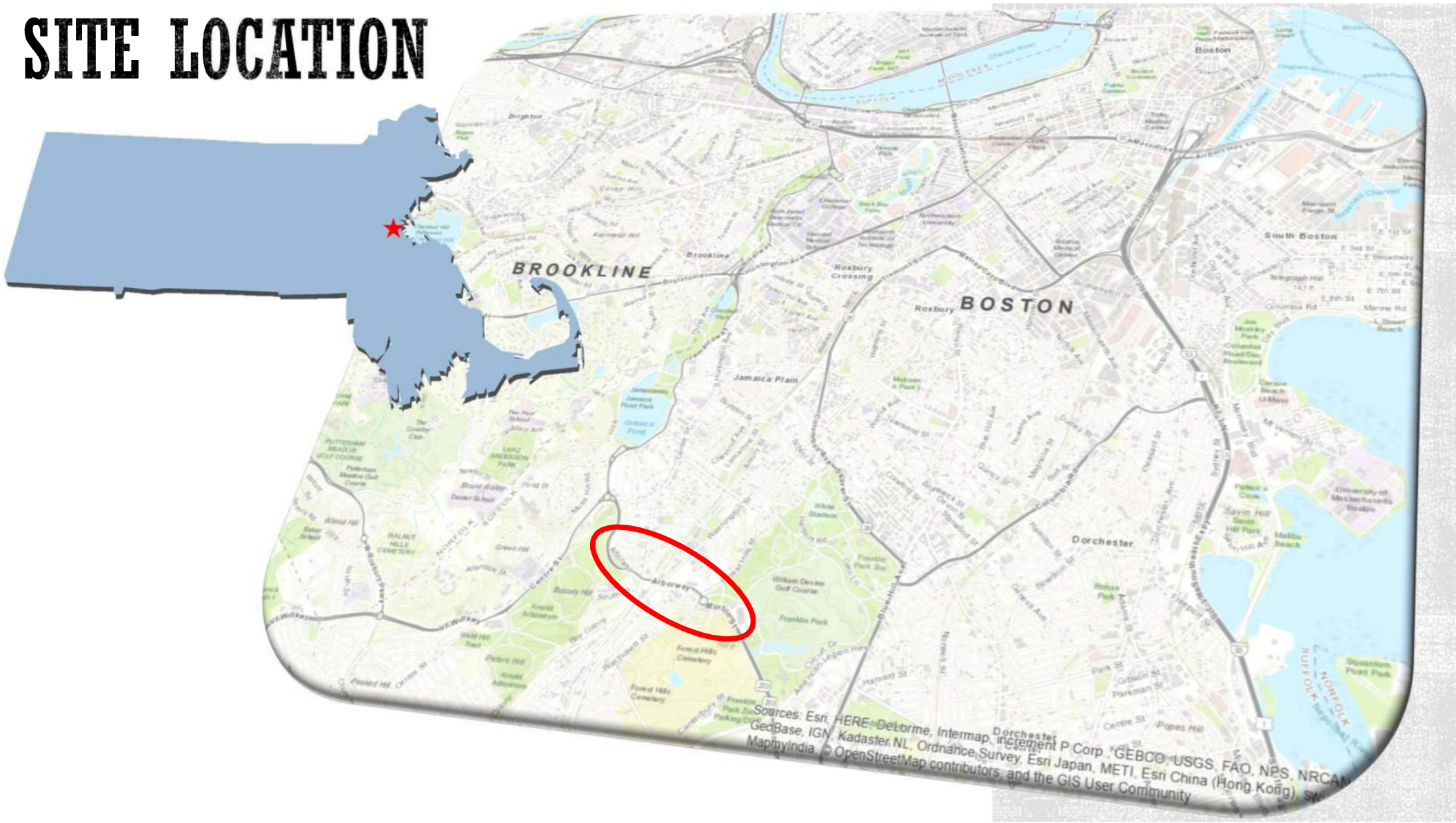
RESHAPING MOBILITY THROUGH INCLUSIVE DESIGN

September 27, 2019

Gary McNaughton, P.E., PTOE

2019 MASITE
Annual Conference

SITE LOCATION



The Team

MassDOT – Highway and Transit

Department of Conservation & Recreation (DCR)

City of Boston

Consultant Team

Working Advisory Group (WAG)

dcr

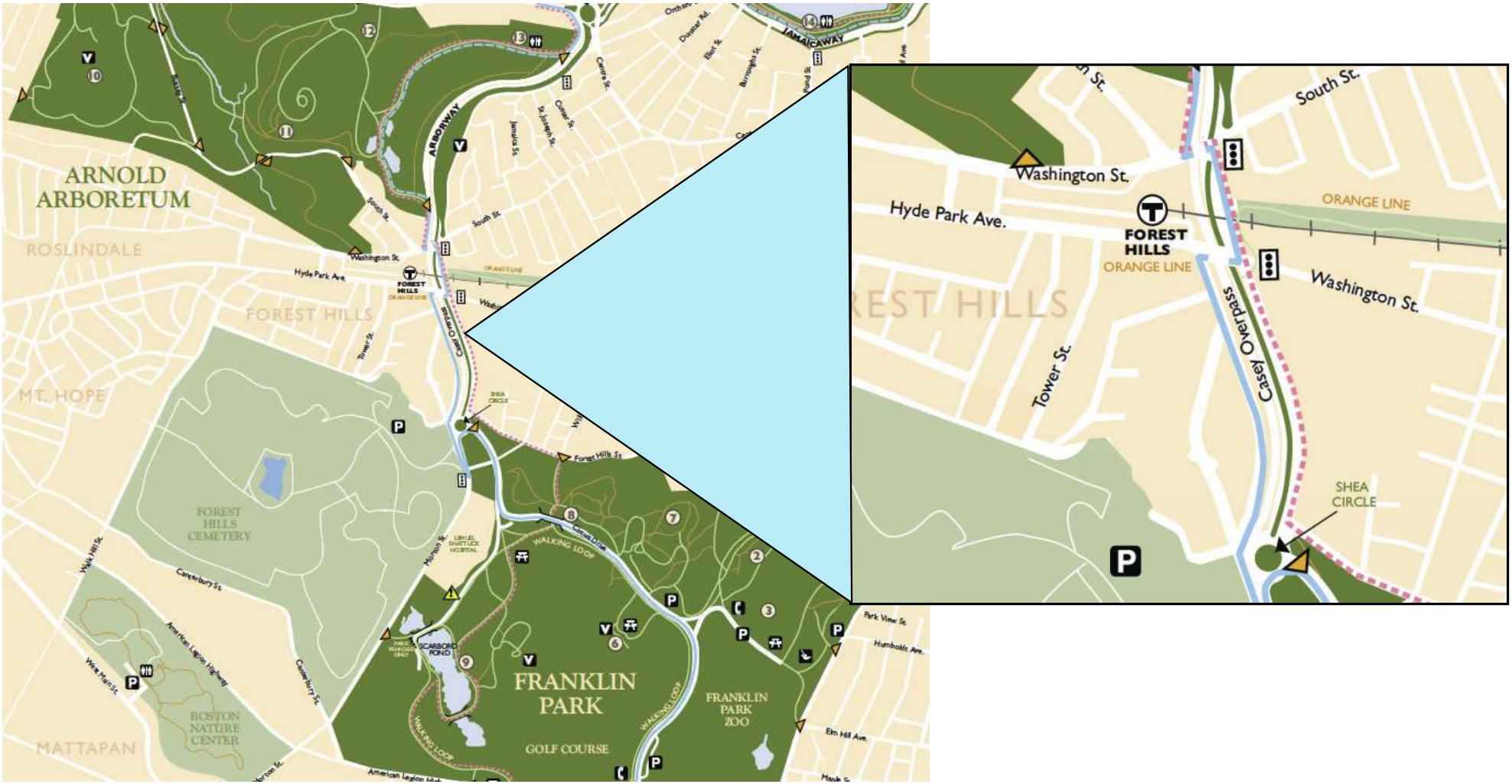
massDOT
Massachusetts Department of Transportation

Massachusetts Bay
Transportation Authority

BOSTONIA.
CONDITA A.D.
1630.

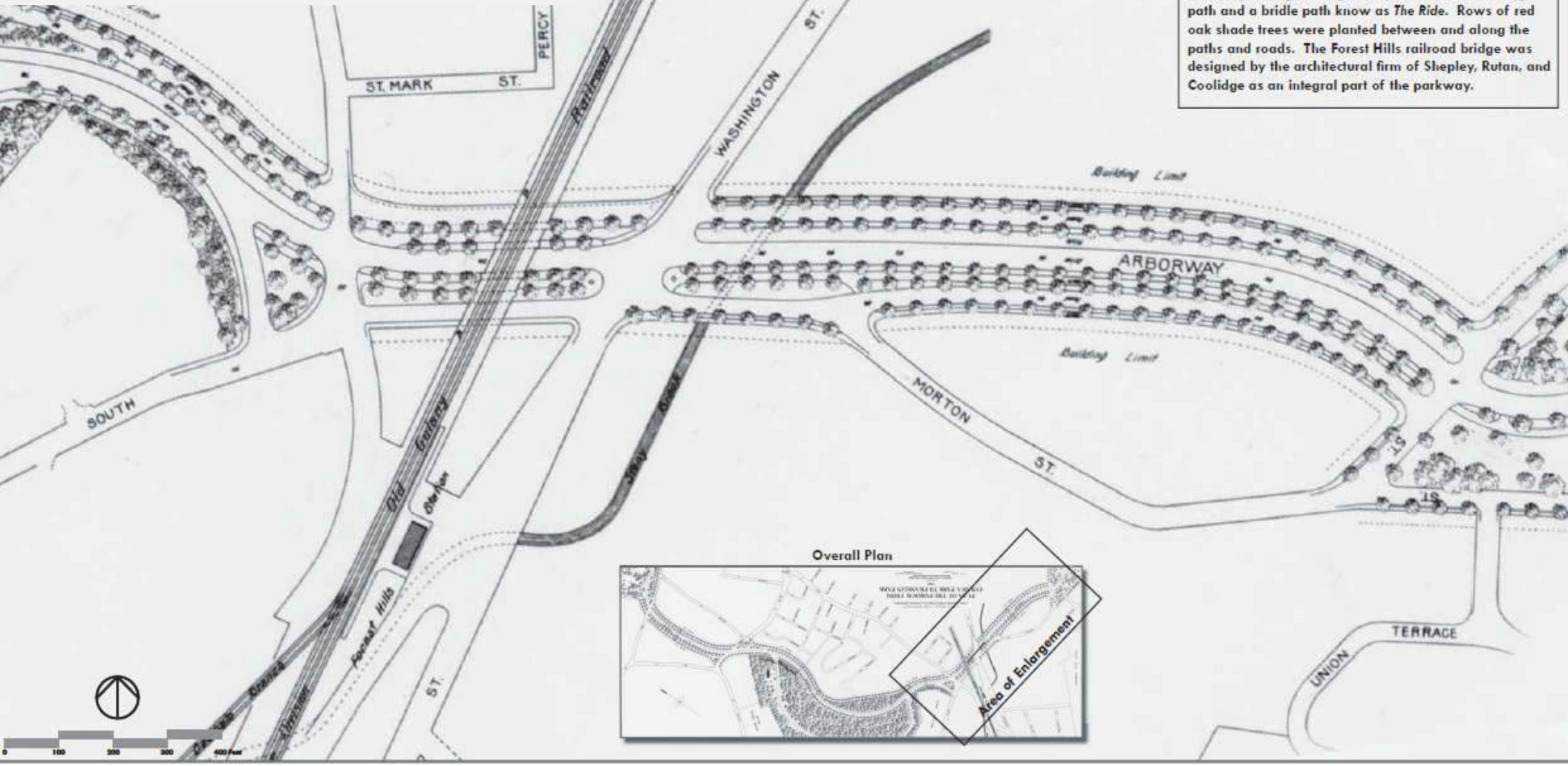
EMERALD NECKLACE PARKS

EMERALD NECKLACE MISSING LINK



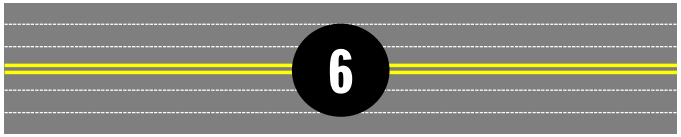
OLMSTED DESIGN

The 1892 Frederick Law Olmsted plan for the Arborway included this portion between the Arnold Arboretum and Franklin Park. It features a separate travel way for different modes: a center carriage way, frontage roadways lining the edges of the corridor, a walking path and a bridle path know as *The Ride*. Rows of red oak shade trees were planted between and along the paths and roads. The Forest Hills railroad bridge was designed by the architectural firm of Shepley, Rutan, and Coolidge as an integral part of the parkway.

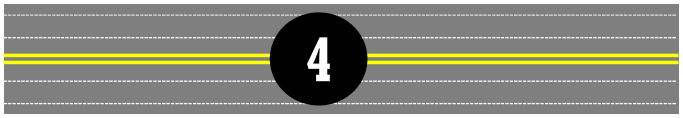


BRIDGE HISTORY

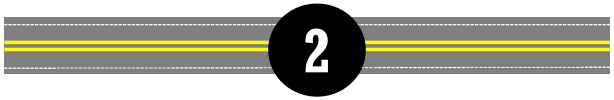
1955 Original Construction
6 lanes



1990 Rehabilitation
4 lanes + sidewalk



2010 Bridge Restrictions
2 lanes

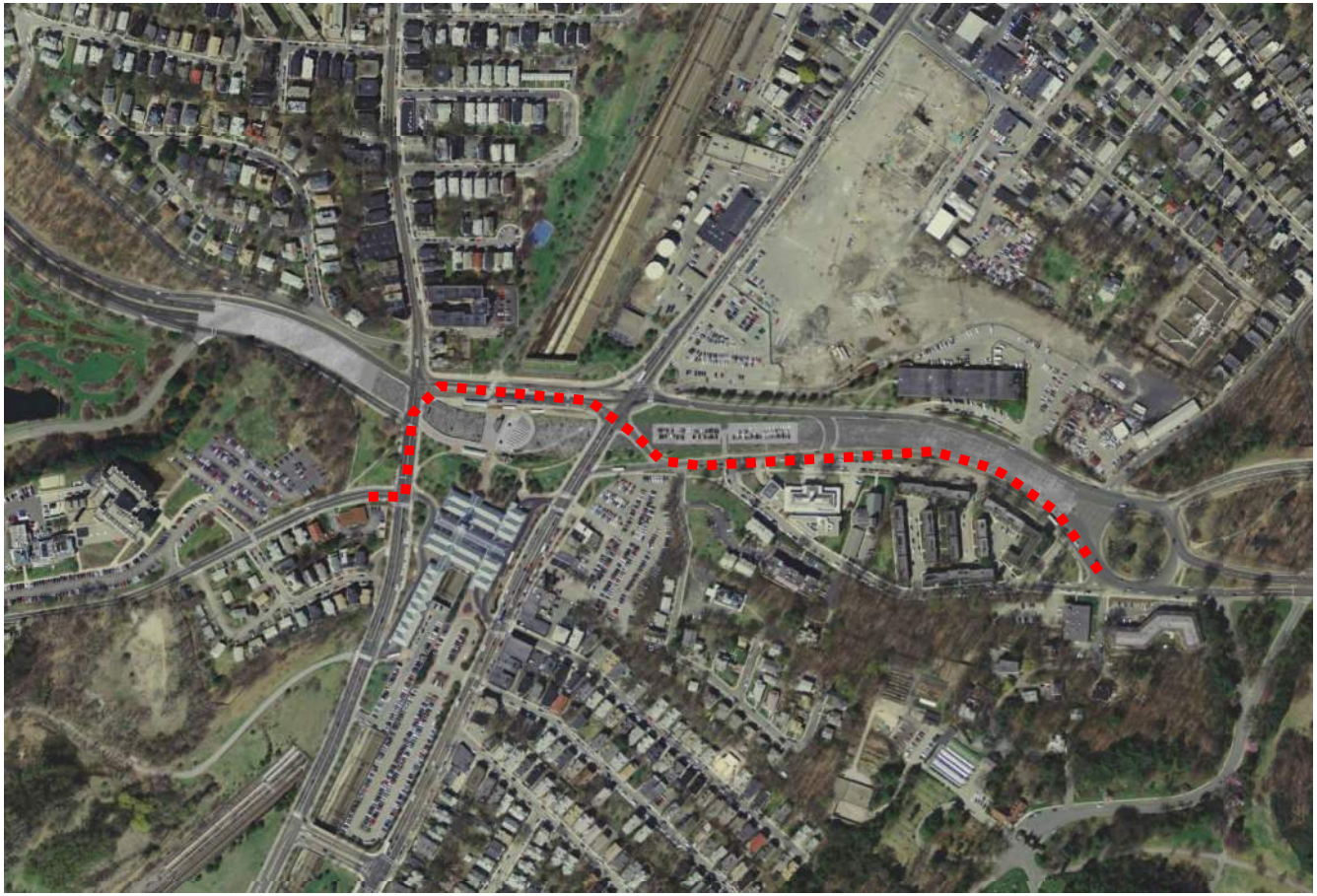


1955-1985

AUTOCENTRIC
DESIGN

2000

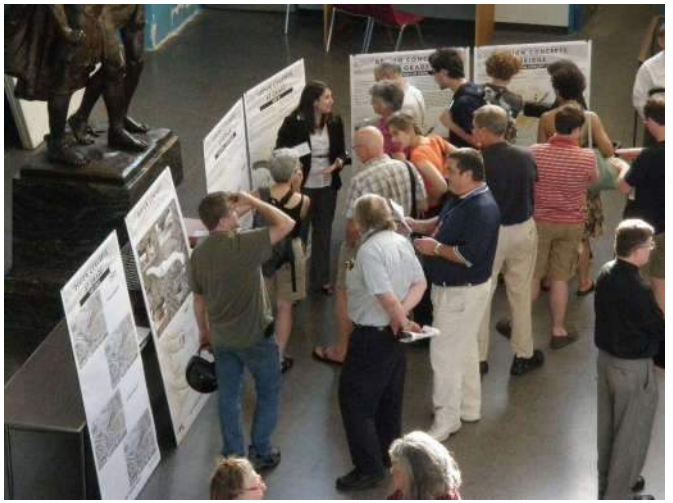
EXISTING ROADWAY ALIGNMENT



THE TRAFFIC PROBLEM

BRIDGE CONDITION (2010)

TAKE A BREATH TO LISTEN



- 20+ Meetings During Planning Phase
  - 12 Months – March 2011 – March 2012
  - 6 Public Meetings/Workshops
  - 14 Working Advisory Group Meetings

TIME TO STUDY – 2011

- **Improve Mobility:** ***connections, circulation and access for all modes and users***
- **Enhance Livability:** ***manage vehicular traffic flow; improve the Emerald Necklace connection; improve pedestrian and bicycle access***

USER GROUPS - MULTIMODAL

USER GROUPS - VEHICULAR

USER GROUPS - ABUTTERS

MEASURES OF EVALUATION

FINAL Measures of Evaluation - MOEs — 8/31/2011

Purpose:	**To evaluate each alternative on its own merits in providing the optimal levels of mobility and livability improvements for 2025 (not construction - but over today's operations)**
Mobility:	**The ability to reach a destination and to use, choose and transfer modes within reasonable time and costs. Mobility is higher when average travel times, variations in travel times, and travel costs are low. The provision of multi-modal opportunities is essential for good mobility.**
Livability:	**The use of transportation investments to improve the standard of living, the environment, and quality of life for all communities. Livable communities are places where transportation, housing and commercial development investments have been coordinated so that people have access to adequate, affordable and environmentally sustainable travel options.**

Goal 1	***Improve Roadway Geometry to Enhance Circulation for all Modes and Users***	
#	**Objective**	**Measure**
1.01	Minimize local street impacts of cut through traffic (e.g., minimize local	Changes in forecast traffic volumes on key local streets
1.02	Enhance pedestrian and bicycle environment	Projected pedestrian level of services (PLOS)
		Type/quality of bike path
		Projected bike level of services (BLOS)
1.03	Improve roadway and intersection operations for vehicles	Vehicle level of Service (LOS) and overall delay
		Simplify network - number of turns between specific destinations

Goal 2	***Improve Access, Modal and Intermodal Local and Regional Corridor Connections to Promote Transportation Choices***	
#	**Objective**	**Measure**
2.01	Maintain or improve surface loading points for passengers at Forest Hills	Number of and access to Forest Hills Station loading points
2.02	Improve bikeability and walkability, bicycle and pedestrian access	Connectivity of bike paths - quality of connections
		Number of lanes crossed between respites along east west corrid
		Minimum sidewalk width
		Off Peak Vehicle Speed

Goal 3	***Remove Barriers for Neighborhood Connections and Integrate Transit into Economic Centers and Residential Areas***	
#	**Objective**	**Measure**
3.01	Support access to future development	Allows curb access to development parcels
		Strengthen neighborhood connections (north/south)
3.02	Promote modal connections that reduce use of personal vehicles	Number of modal connections created

Goal 4	***Integrate Sustainability into Design Concepts***	
#	**Objective**	**Measure**
4.01	Increase tree canopy	Number of net trees planted in the study area
4.02	Minimize adverse water and light impacts	Manage Storm water run off
		Minimize Light pollution
4.03	Minimize life cycle costs	Initial and Life Cycle Costs

Goal 5	***Create a Destination and Sense of Place and Celebrate the Area's Architectural, Transportation and Open Space History***	
#	**Objective**	**Measure**
5.01	Increase space for community gatherings or activities and create a sense of place (e.g., parks, farmers/artists markets, outdoor public gathering space, or similar uses)	Total amount of usable contiguous space
		Total amount of usable open space directly connected to/adjacent to abutting land use
		Creation of areas for community gatherings
		Design solution creates a sense of place
5.02	Enhance value of commercial and residential buildings through improved visual or aesthetic changes.	Visual identification of community resources and features
		Orientation of building facades to enhance interactions and connectivity to residential and commercial development

Goal 6	***Improve the Visibility, Connectivity and Access to Gateway Open Spaces***	
#	**Objective**	**Measure**
6.01	Enhance visual quality and increase open vistas, views, view corridors and access to light and air	Measure of visual quality (vistas, view corridors and views) along and across the corridor at New Washington Street
		Measure of visual quality (vistas, view corridors and views) along the South Street and Hyde Park Avenue North South Corridors
		Area of shadow cast by bridge
6.02	Create a bridge or at grade design which reestablishes Emerald Necklace	Evaluation of Emerald Necklace Connections

CONCEPT DEVELOPMENT

- Assessed Impacts Regionally and Locally
- Considered Reduced Capacity as a Potential Outcome
- Allowed Flexibility to be Creative

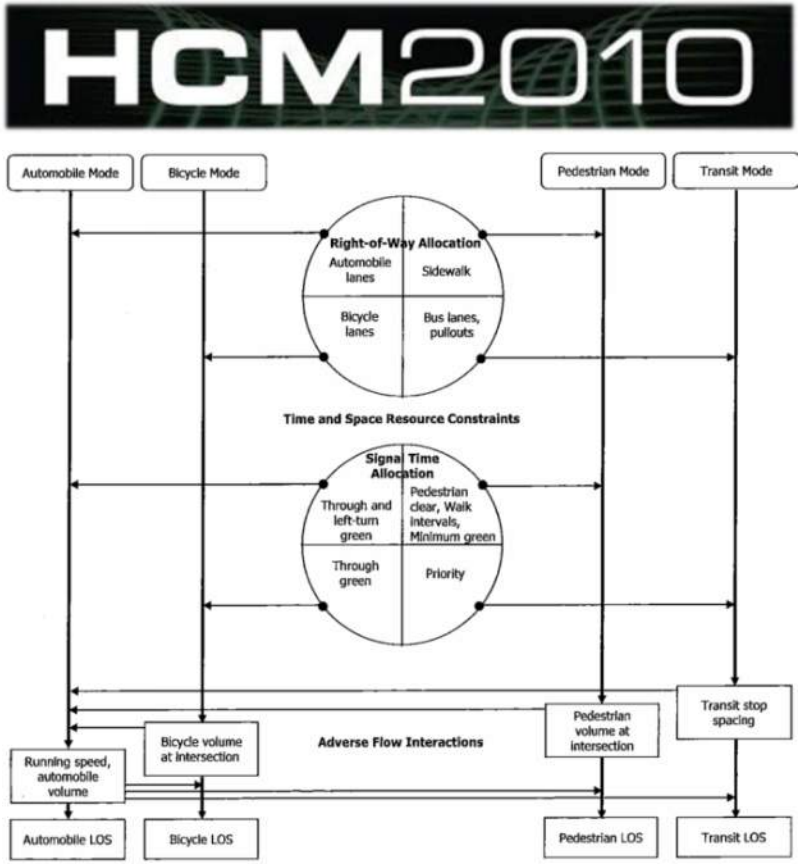
MOBILITY ANALYSIS METHODOLOGY

- Multi-Modal Urban Facilities
- Ped, Bike, and Transit LOS
- Vehicular LOS, v/c, and Queues
- Travel Times
- Regional Modeling
- VISSIM

MULTI-MODAL ANALYSIS
(URBAN FACILITY ANALYSIS)

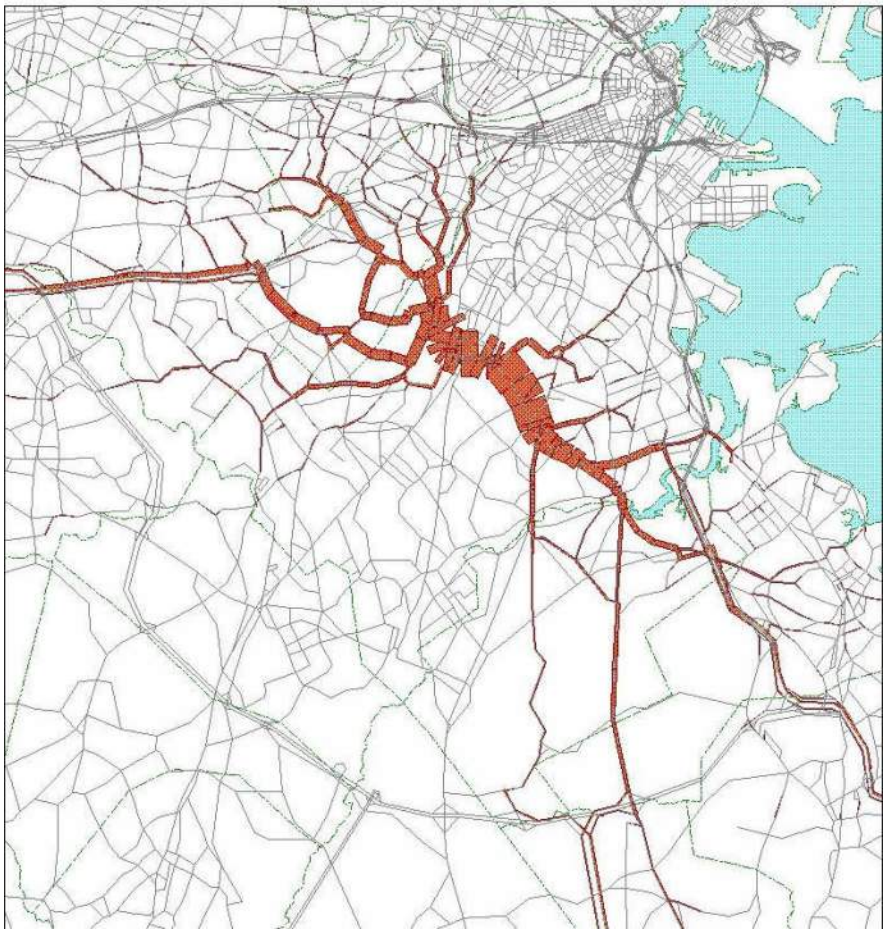
- Integrated multimodal analysis
  - Automobile
  - Pedestrian
  - Bicycle
  - Transit

- Perception-based performance measures
  - Intersections
  - Segments
  - Facilities



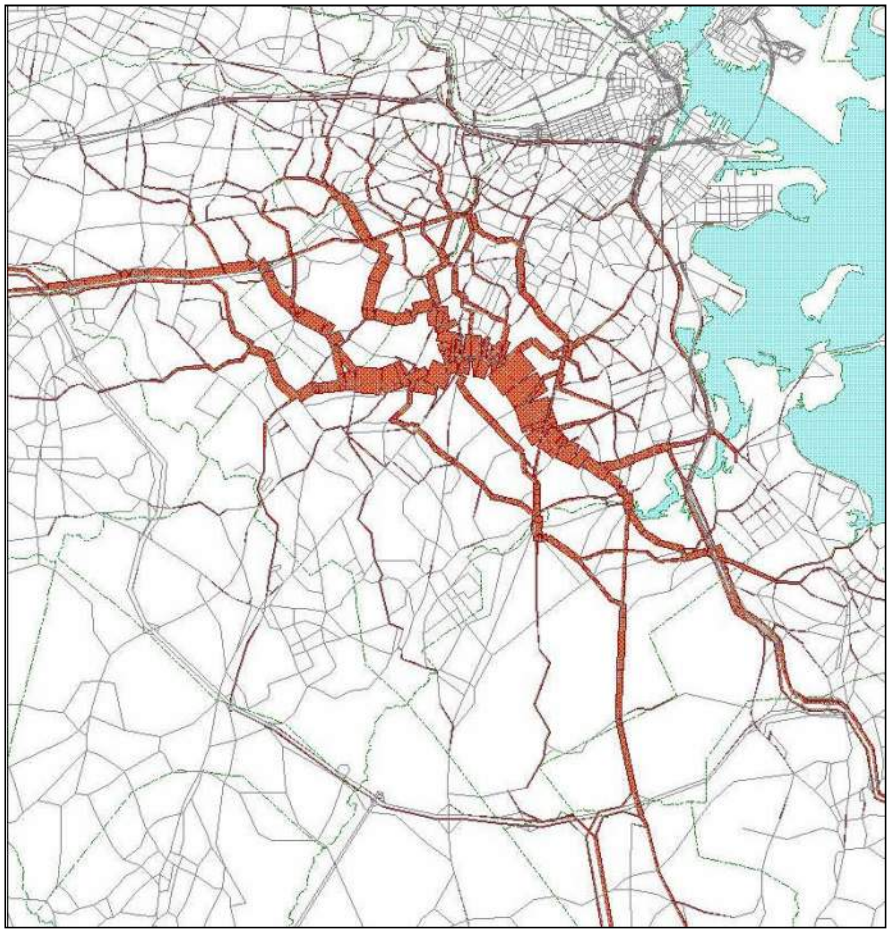
REGIONAL CONNECTIONS

- Considered travel routes of existing overpass users



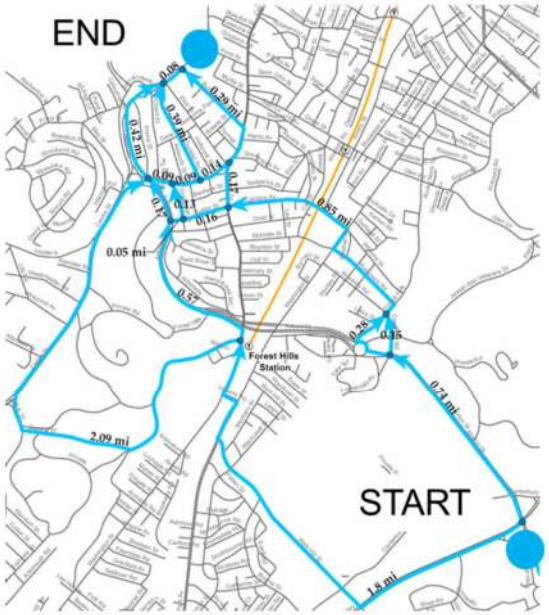
REGIONAL CONNECTIONS

- Identified alternate routes for reduced capacity alternatives
- Assessed regional impacts of capacity reduction



LOCAL TRAVEL PATH OPTIONS

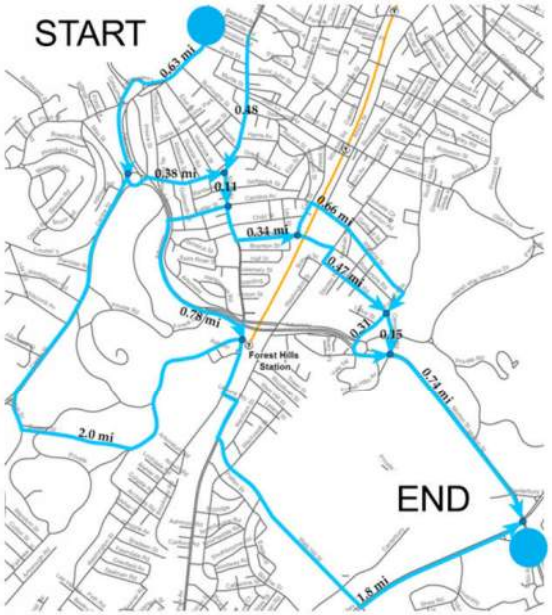
Inbound



Inbound

Path	Distance
North of Casey Overpass	2.3 - 3.2 miles
South of Casey Overpass	3.2 - 4.4 miles
Via Casey Overpass	2.4 miles

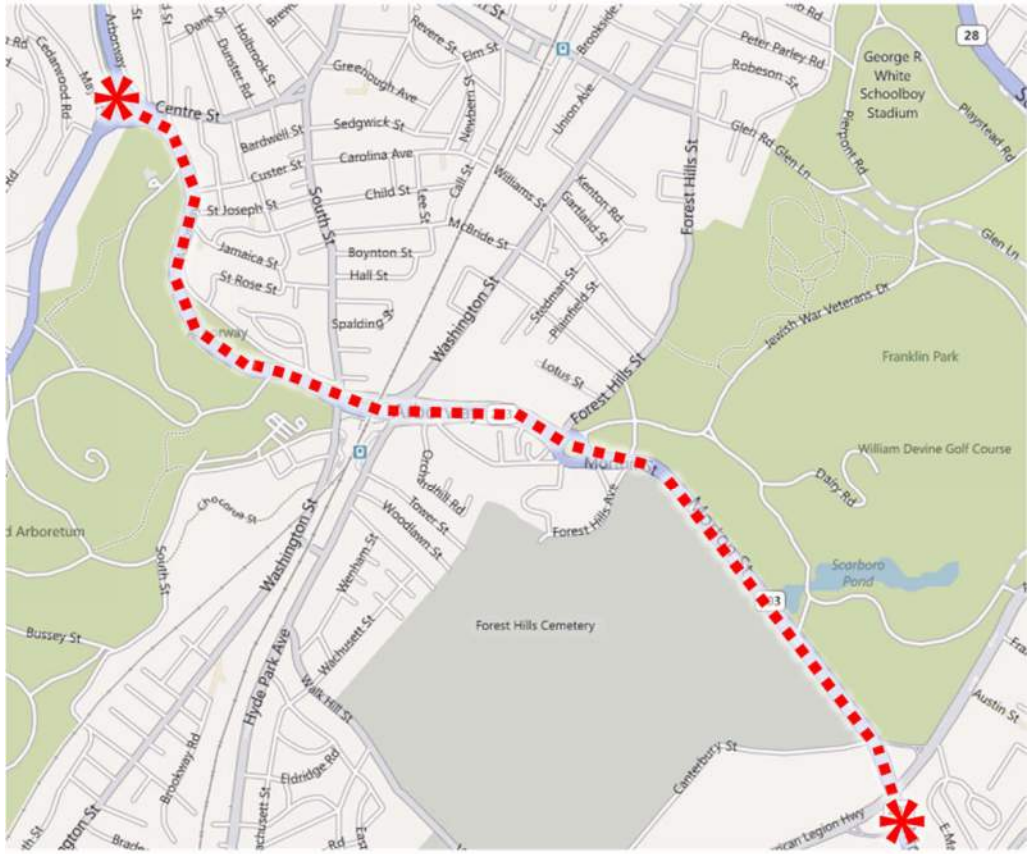
Outbound



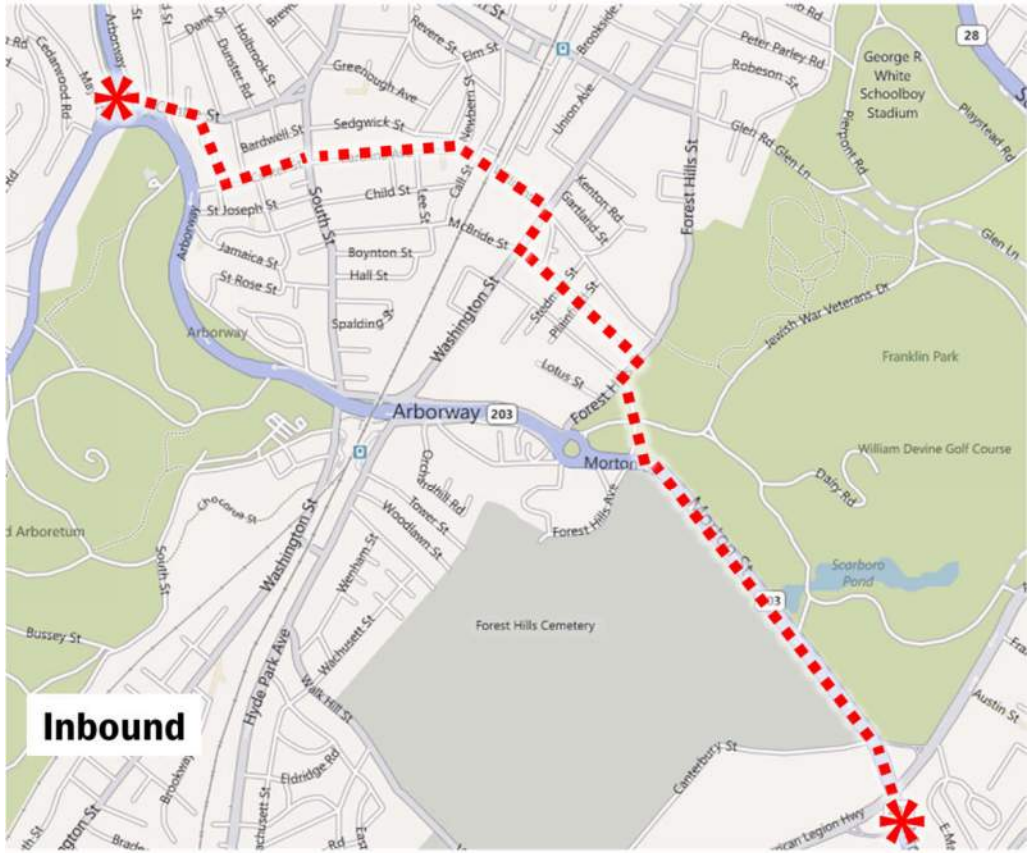
Outbound

Path	Distance
North of Casey Overpass	2.2 - 2.8 miles
South of Casey Overpass	3.0 - 4.4 miles
Via Casey Overpass	2.4 miles

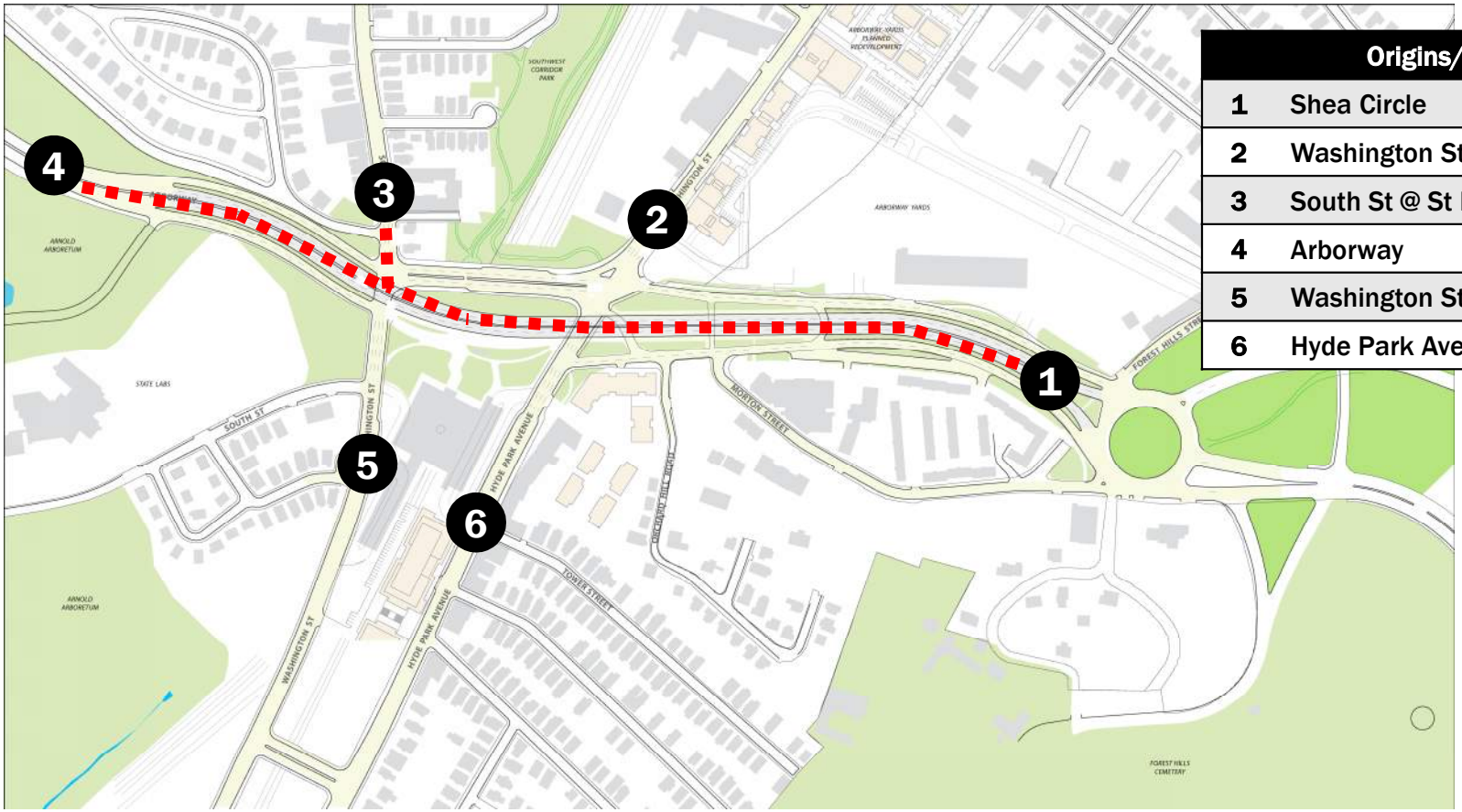
TRAVEL TIME: EAST-WEST



TRAVEL TIME: NEIGHBORHOOD CUT-THRU



TRAVEL TIME COMPARISON



Origins/Destinations	
1	Shea Circle
2	Washington St @ Arborway Yards
3	South St @ St Marks
4	Arborway
5	Washington St @ Forest Hills Station
6	Hyde Park Ave @ Forest Hills Station

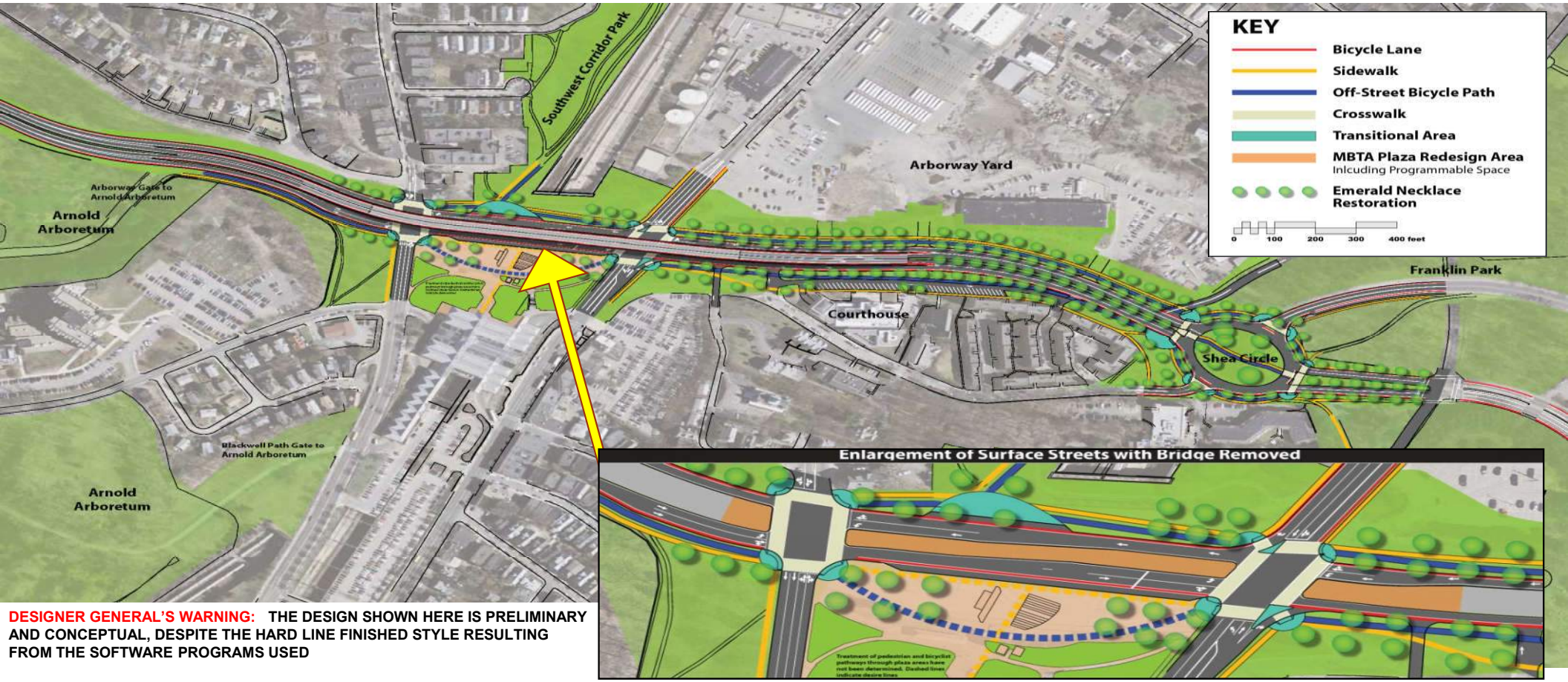
DIFFERENCE BETWEEN AT-GRADE AND BRIDGE ALTERNATIVES

PM Travel Time in Minutes

DRAFT
Work In Progress

(origin) \ (destination)	1	2	3	4	5	6
1		-0.4	-0.3	1.0	0.5	2.6
2	0.0		0.9	0.8	2.2	0.6
3	-0.6	0.8		0.4	0.4	-0.6
4	1.6	1.5	3.6		0.1	0.1
5	0.0	1.3	0.2	0.6		-0.1
6	0.5	0.1	0.0	0.1	1.4	

BRIDGE CONCEPT ALTERNATIVE



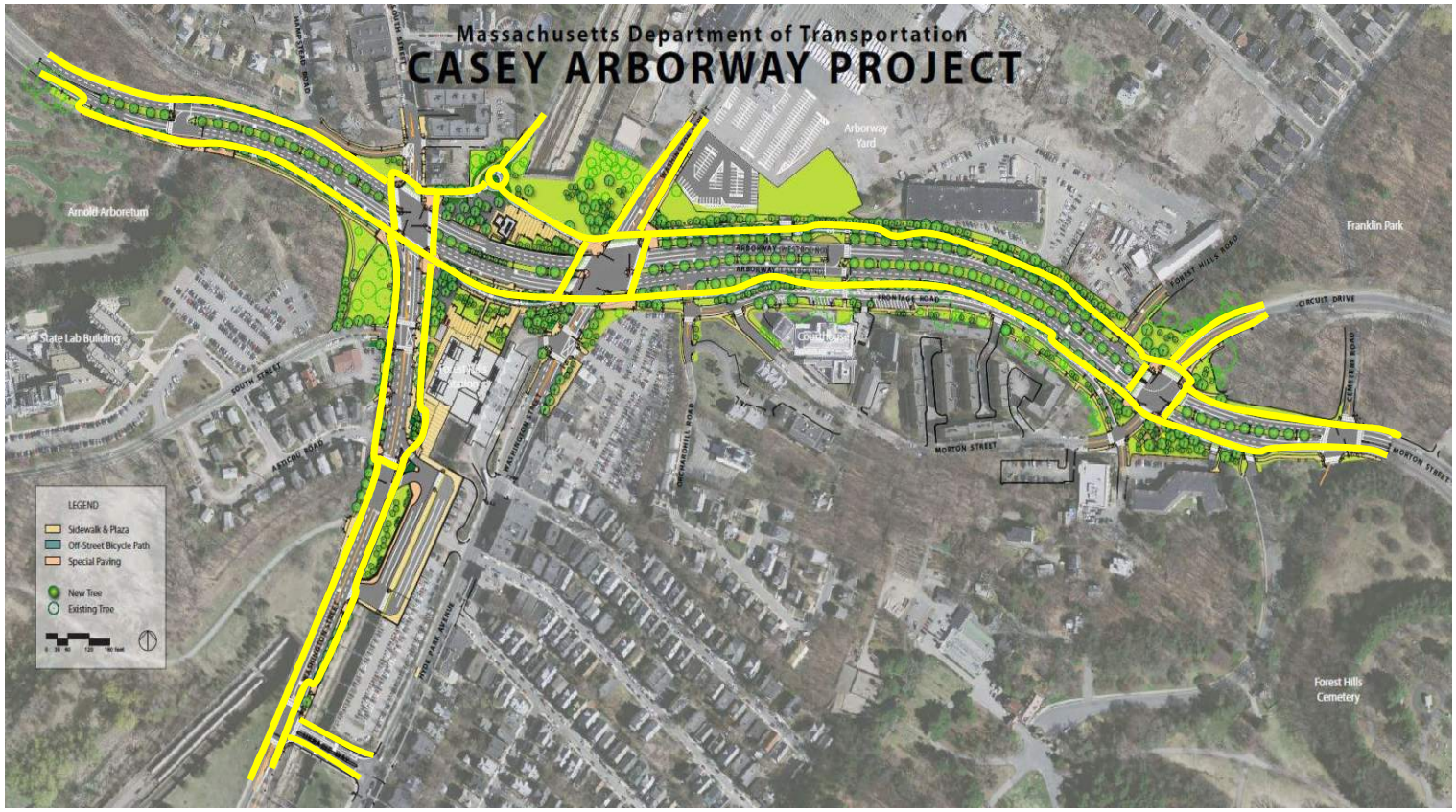
DESIGNER GENERAL'S WARNING: THE DESIGN SHOWN HERE IS PRELIMINARY AND CONCEPTUAL, DESPITE THE HARD LINE FINISHED STYLE RESULTING FROM THE SOFTWARE PROGRAMS USED

AT-GRADE ALTERNATIVE

CAPACITY ANALYSIS RESULTS

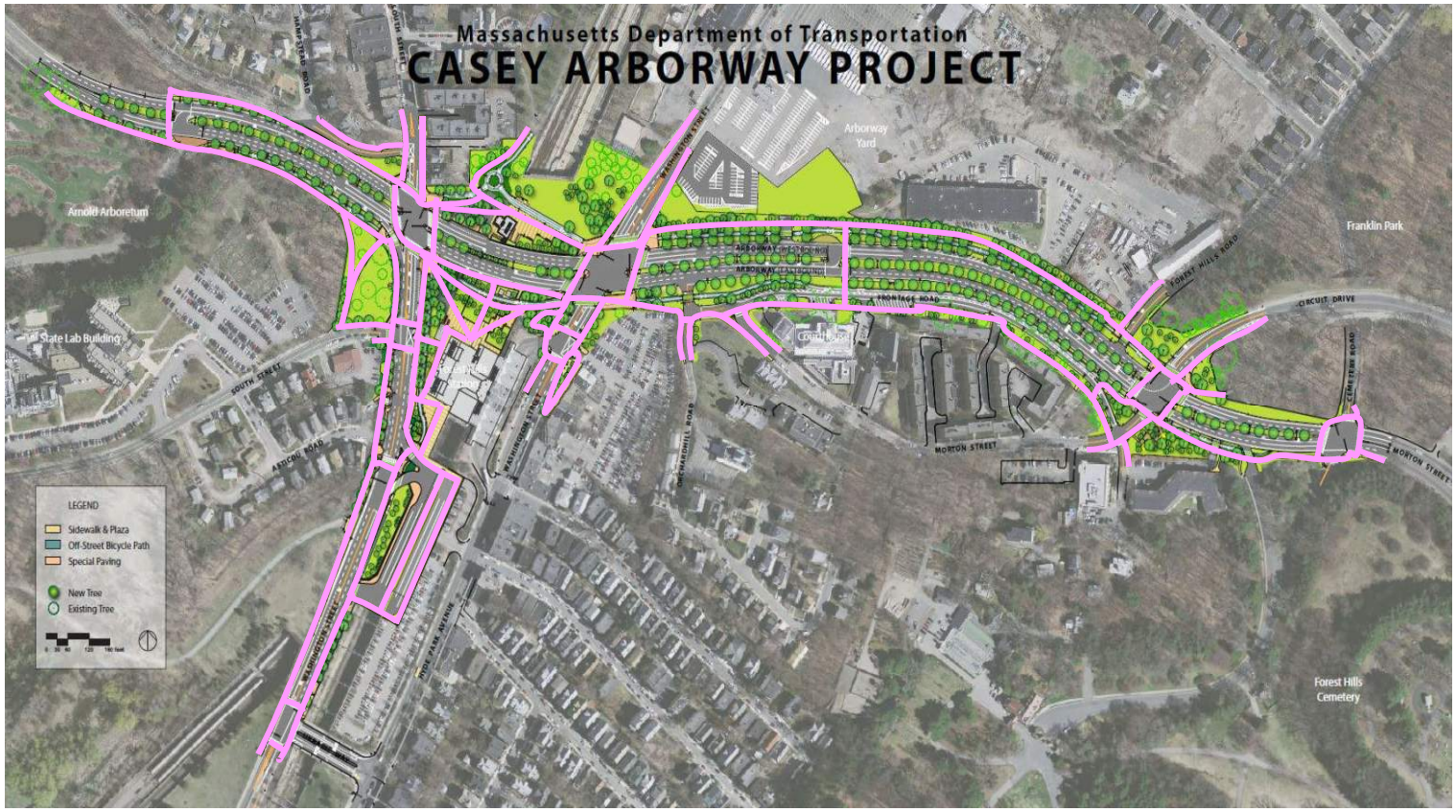
- Traffic was Not a Differentiator!
- Both Alternatives Offer Similar Capacity
- No Diversions or Induced Traffic
- Overall Travel Times Unchanged
- Significant Improvements over Existing

RECONNECTED BICYCLE PATHS



- Nearly 3 Miles of New Bicycle Paths & Bike lanes

RECONNECTED SIDEWALKS



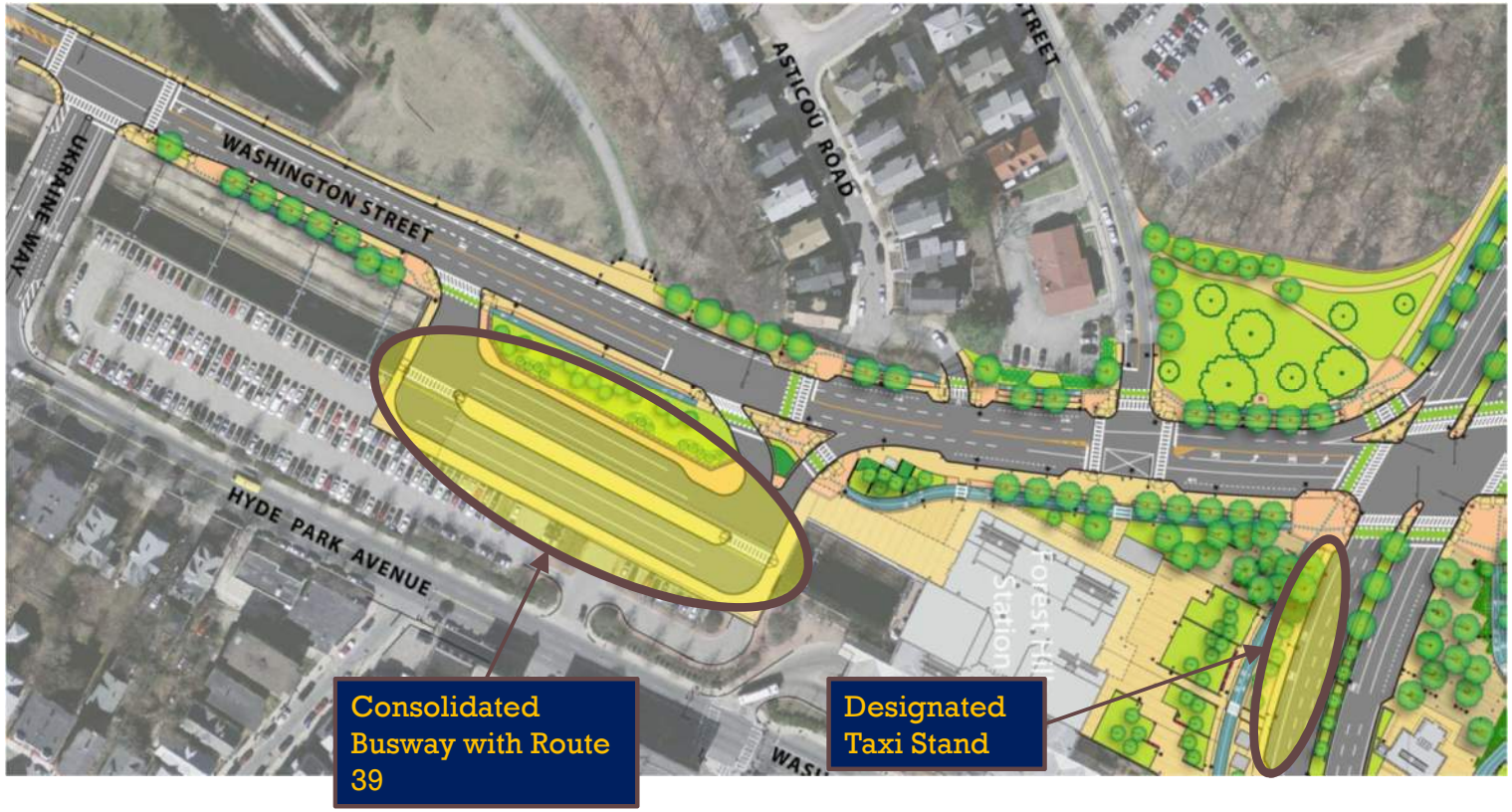
- Over 3 Miles of Improved Sidewalk
- No More missing crossings or dead ends

RECONNECTED INTERSECTIONS

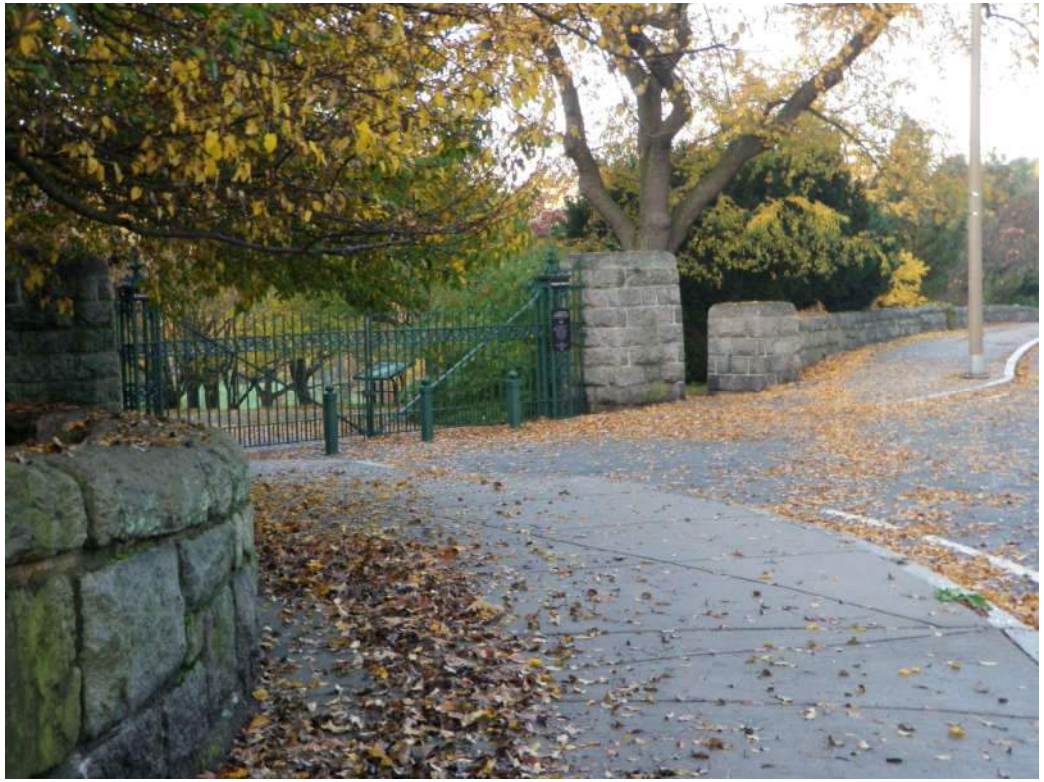
RECONNECTED TRANSIT

- New Orange Line Headhouse – North of the Arborway

RECONNECTED BUSES



RENEWED INFRASTRUCTURE



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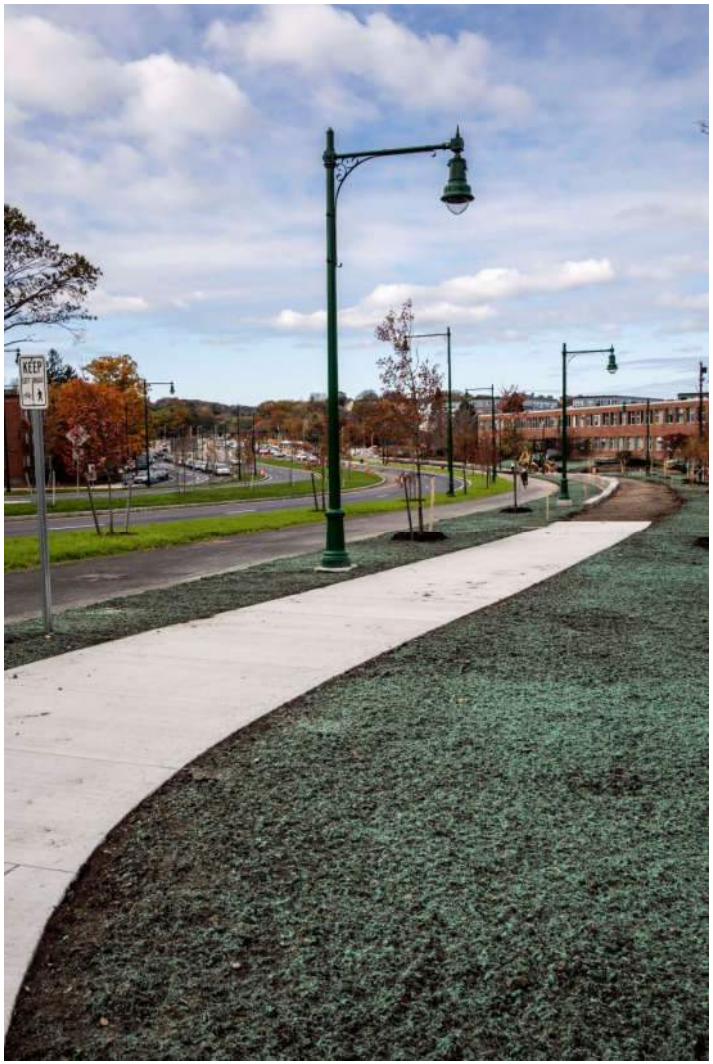

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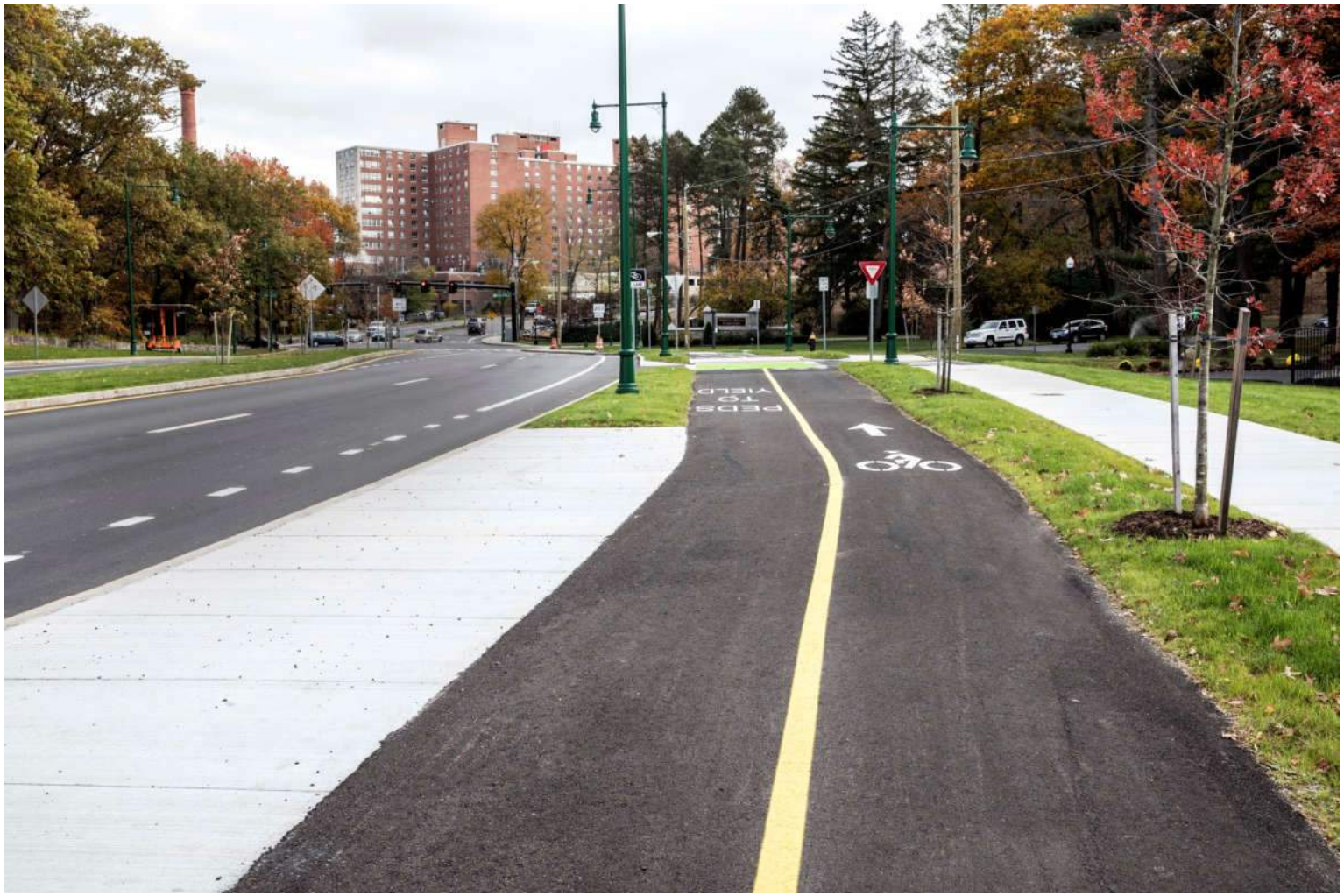

Contact information

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Thank You!