Transforming the Southwest Portion of MBTA Bus Route 39 Into a Safe and Efficient Multimodal Corridor

Northeastern University Transportation Engineering Capstone 2020

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Project Background

Domo Civil was tasked with redesigning a 1.2-mile portion of MBTA Bus Route 39 starting on Centre Street at Lochstead Avenue, continuing up South Huntington Avenue, and ending on Huntington Avenue at Parker Hill Avenue. The project corridor is primarily residential and is served by Bus Route 39 as well as the Green Line E Branch that terminates at Heath Street. However, not all users are served well. Cyclists are not provided separated facilities, and all vehicles including public transit vehicles experience major delay. This project aims to remedy these issues with three project goals.

Project Goals

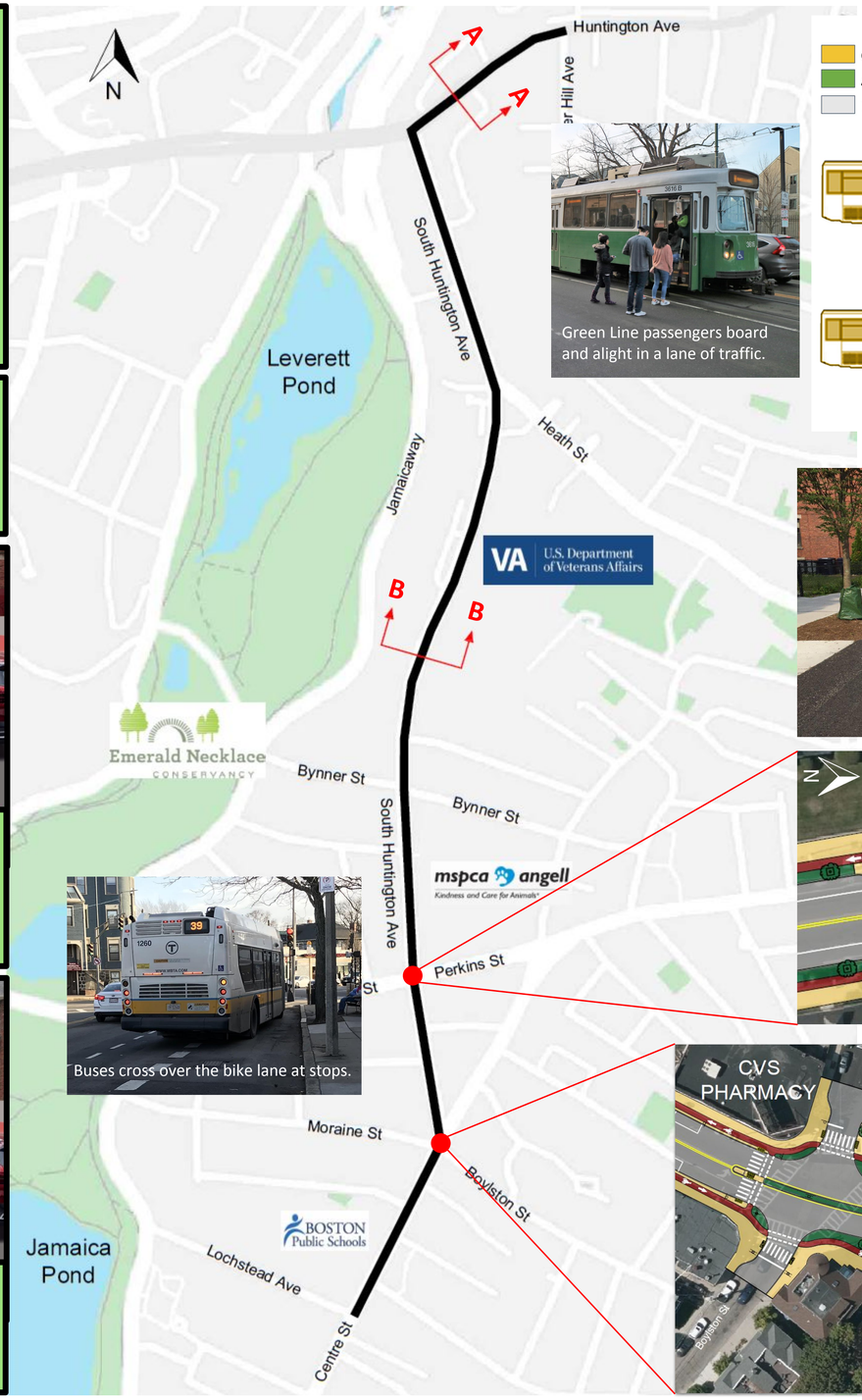
- Safe and comfortable for all users
- Livable, vibrant, and green neighborhood
- Reliable and efficient transportation

Huntington Avenue

Removing the westbound parking lane provides space to include one-way cycle tracks with green strips as buffers. Bus lanes are added to improve transit along the corridor.

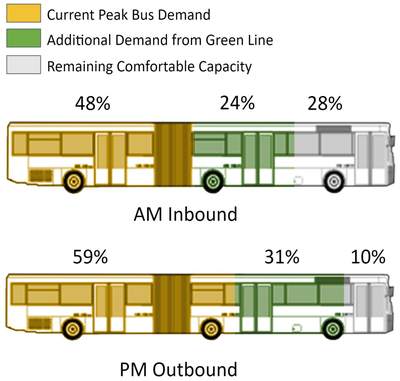
South Huntington Avenue

Reducing the parking and travel lane widths provides space to include one-way cycle tracks with green strips as buffers.



Green Line passengers board and alight in a lane of traffic.

Buses cross over the bike lane at stops.



Cutting Back the Green Line

West of Brigham Circle, the Green Line E Branch shares the middle travel lanes with motor vehicles. It introduces a safety concern, as passengers must board and alight in a lane of traffic. In addition, the trolleys experience delay from traffic lights and introduce delay along the corridor by stopping in the middle lanes. These on-street stops also have significantly less ridership than stops with dedicated right-of-way. Bus Route 39 has stops in the same locations, providing a redundancy in service.

We propose cutting the Green Line E Branch back to Brigham Circle, with passengers taking Bus Route 39 instead. Uniformly distributing demand throughout the peak hours, Bus Route 39 has remaining comfortable capacity in both peak hours. Additionally, the crush capacity allows 30% more passengers on the buses.

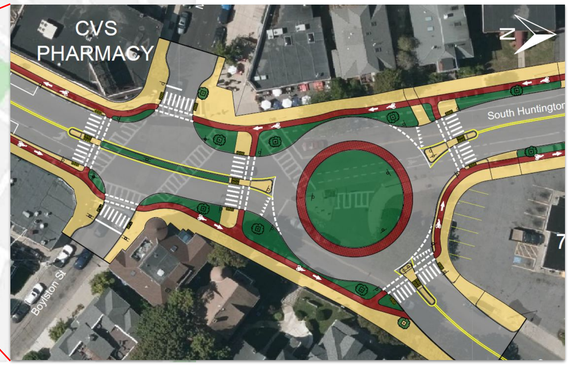
Cycle Tracks

One-way cycle tracks are proposed along the project corridor, replacing bike lanes and sharrows to increase safety. Cycle tracks:

- Provide space exclusively for bikes
- Are located between the parking lane and sidewalk when on-street parking is allowed
- Are separated from other modes of transportation, such as motor vehicles, public transit, and pedestrians

Protected Intersections

- Corner islands maintain separation between users and provide smaller turning radii to decrease vehicle turning speeds.
- Set back crossings ensure motorists complete their turns before reaching conflicting pedestrians and cyclists.
- Sufficient sight distance is provided for vehicles to see pedestrians and cyclists about to cross.
- Crossing distances are shortened for pedestrians and cyclists.



Roundabout at Centre Street

The five-way intersection at Centre Street is converted into a right-turn only unsignalized intersection at Moraine Street and Boylston Street, and a roundabout at South Huntington Avenue. Approximately 2,000 SF of land from 7-Eleven is taken, but the number of parking spaces is maintained. The roundabout:

- Slows vehicles with deflection upon entry
- Simplifies vehicle movements and reduces conflict points
- Reduces crash severity by preventing right-angle crashes
- Reduces vehicle delay
- Acts as a gateway between two major roadways