

Kendall Square Mobility Task Force

November 2015

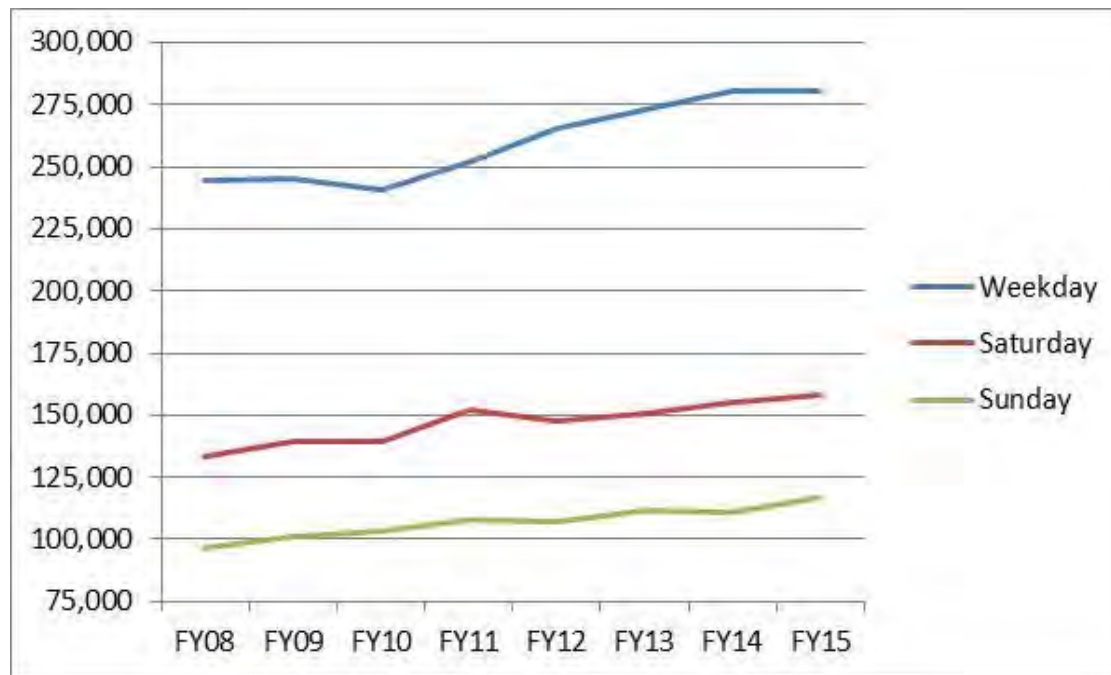
Red Line Overview



- Over 280,000 passengers each weekday—the MBTA's busiest line, and about 19% of MBTA ridership
- 22 stations
- 21 route miles
- 218 Red Line vehicles
- Core frequencies:
 - Peak: every 4-5 minutes
 - Off-peak: every 6-8 minutes

Red Line Ridership Trends

- Current trend is overall growth, especially in off-peak times.
 - Weekdays average 2.0% growth
 - Saturdays average 2.5% growth
 - Sundays average 2.8% average growth

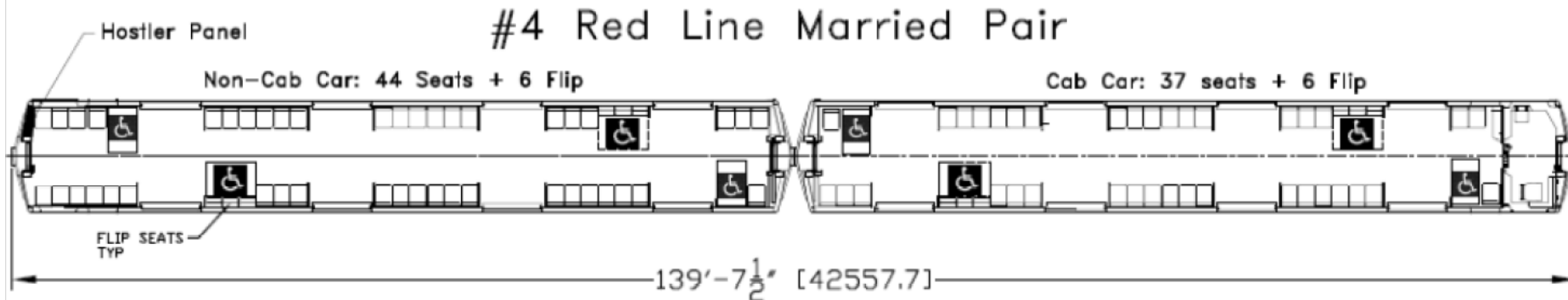


Red Line Vehicles



- Red Line # 1 Cars
 - In Service 1969
 - Quantity: 74
- Red Line # 2 Cars
 - In Service 1987
 - Quantity: 58
- Red Line # 3
 - In Service 1993
 - Quantity: 86

New Red Line Vehicles



- **Phased delivery of 132 new Red Line cars expected 2019-2022**
- **One-for-one replacement of all existing #1 and #2 cars**
- **Capacity improvements**
 - More doors: four doors per side; an increase from three on #1 and #2 cars.
 - Wider doors: 64" wide doors (up from 48") allow accessibility for wheelchair when one half is closed and increase throughput, reduce dwell
 - More space allocated to passengers; only half of cars will have control cabs for the operators; other half will be entirely for passengers
 - New cars can carry ~6% more passengers than existing #1 and #2 cars

New Red Line Vehicles

Environmental Upgrades

- AC propulsion
- Regenerative braking
- LED Lighting
- Environmentally friendly HVAC system



Accessibility Upgrades

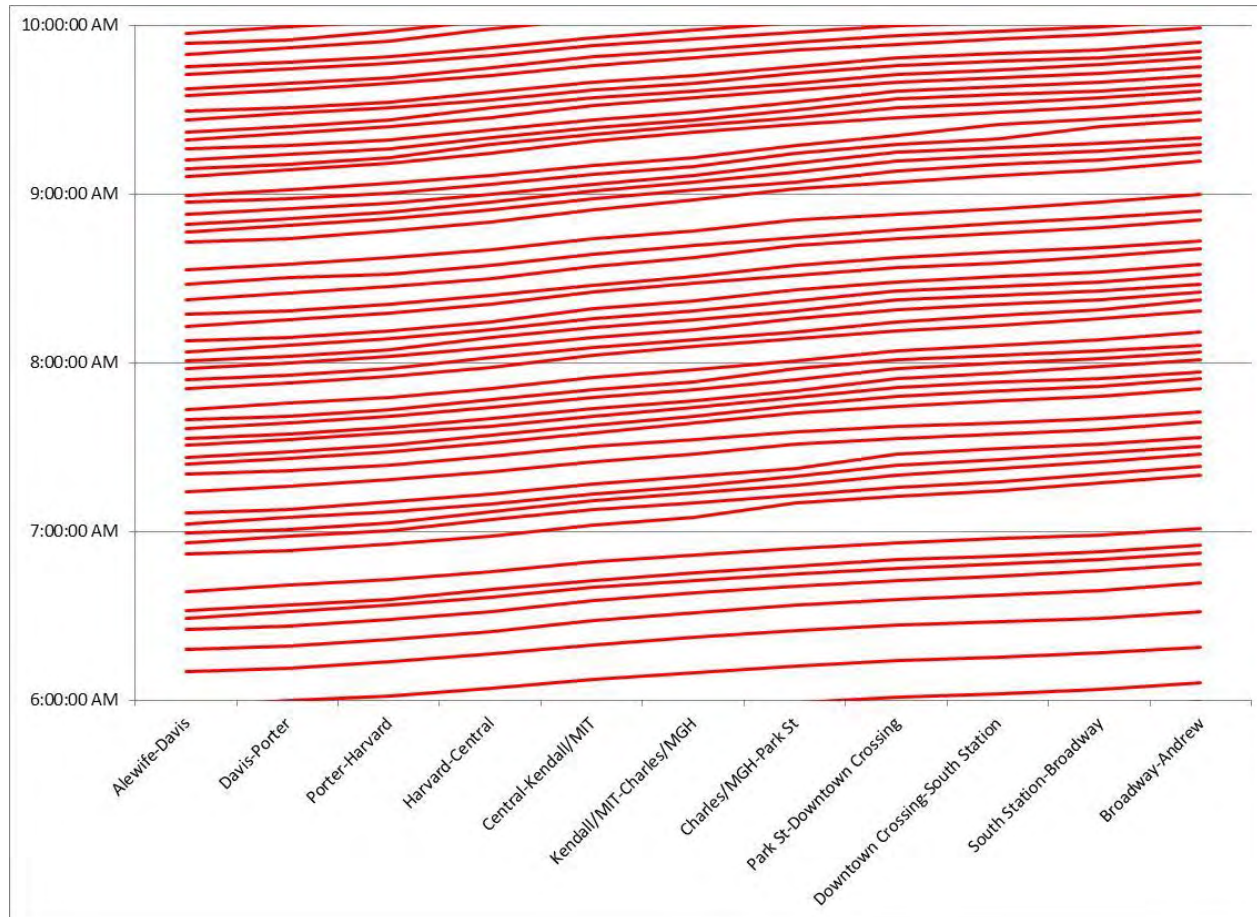
- The new vehicles will be the most accessible cars in the fleet.
- Recommendations from Ad Hoc committee, made up of members of BCIL, AACT, and chaired by SWA, incorporated into specification.
- Two bridge plates installed per married pair; this should also reduce dwell time vs. portable bridge plates

Other Features

- LCD Monitors to display customer information, ads
- Video Surveillance
- Vehicle-to-Wayside Wireless Communication Capable
- Passenger Counters at all Doorways
 - Enables future/potential customer information, such as real-time loads on car so that customer can distribute themselves along platform

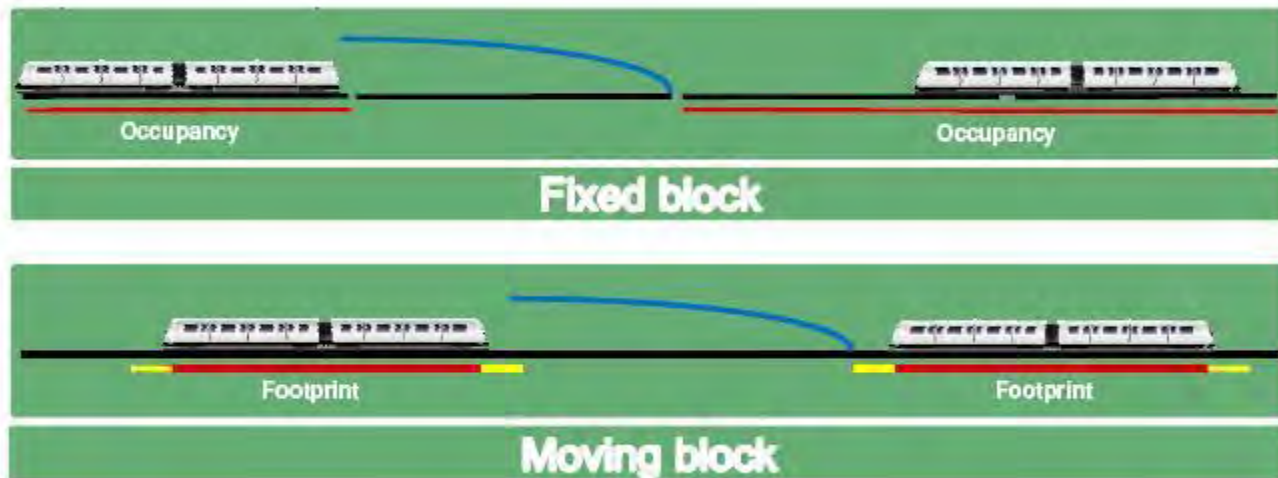
Red Line Service Management

- Incident response is key to managing gaps

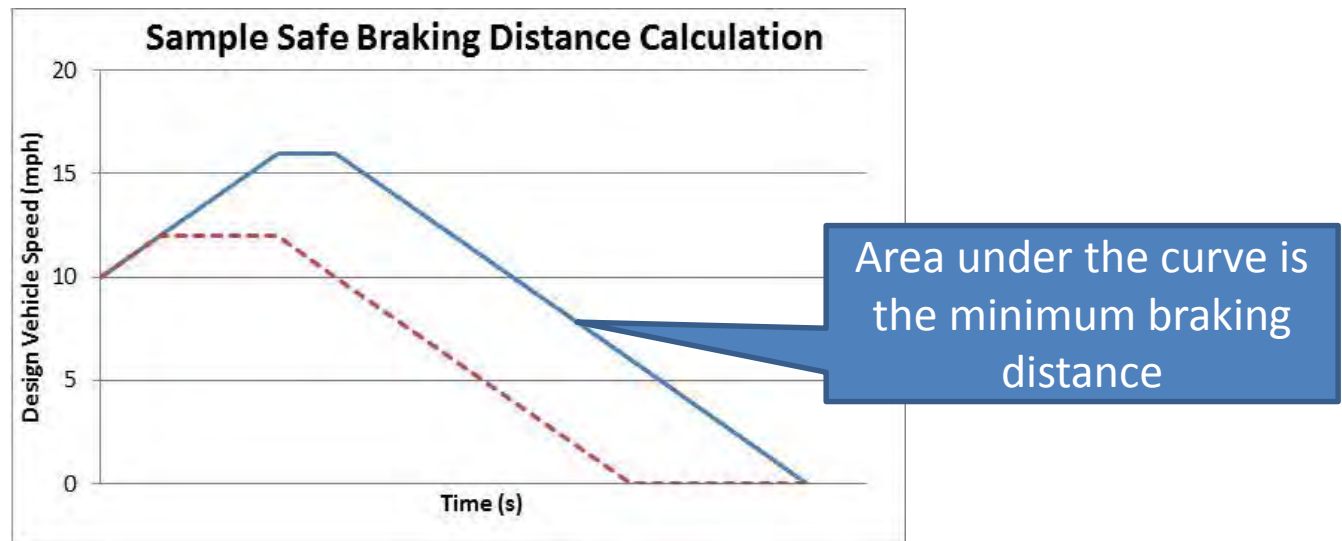


Signal System Design

- Red Line uses a traditional fixed block system
- Systems can decrease the minimum spacing between trains by using a moving block system or CBTC



- Red Line uses a traditional fixed block system
 - For safety, a buffer block must remain open between occupied blocks.
 - System design considers safe braking distance, steepness/grades, acceleration/braking profiles of vehicles



What Can Make More Capacity?

- Signal System – Incremental Changes
 - Improve granularity by looking farther ahead and adjusting speed, such as by changing five aspect analog system to a seven-aspect digital system
 - Adjust safe braking distance model/scenario
 - Changes at interlockings – Columbia Junction, Alewife
- Signal System – Mega Changes – CBTC
- More vehicles, maintenance capacity
- Reduce dwell times
 - More, wider doors
 - Changes at downtown bottlenecks on throughput—Park St, Downtown Crossing, South Station, where dwell is regularly 1-2 minutes or more

- FMCB revamping Service Delivery Policy
- Short-range changes within existing fleet, resources
 - Reallocate buses to increase capacity or extend service elsewhere
 - Speed up existing routes to improve capacity, frequency (e.g. bus lanes, queue jumps, stop consolidation, TSP)
- Long-range growth needs more buses, maintenance capacity
- Routes in this area will likely change as part of GLX. Exact changes not yet determined. Questions include:
 - Can service that duplicates future Green Line alignment be shortened or eliminated, and resources used for new service? Or realigned?
 - Routes 87, 88: shorten to Union Square / Washington St? Realign to serve Kendall? Or Assembly?
 - Route 80: most of route duplicates future Green Line alignment
 - Lechmere – Kendall shuttle?



86	92	104
89	93	105
90	95	109
91	101	CT2

CambridgeSide Shuttle
Kendall/MIT -
CambridgeSide Galleria
617-621-8666
www.cambridgesidegalleria.com/info/services.cfm

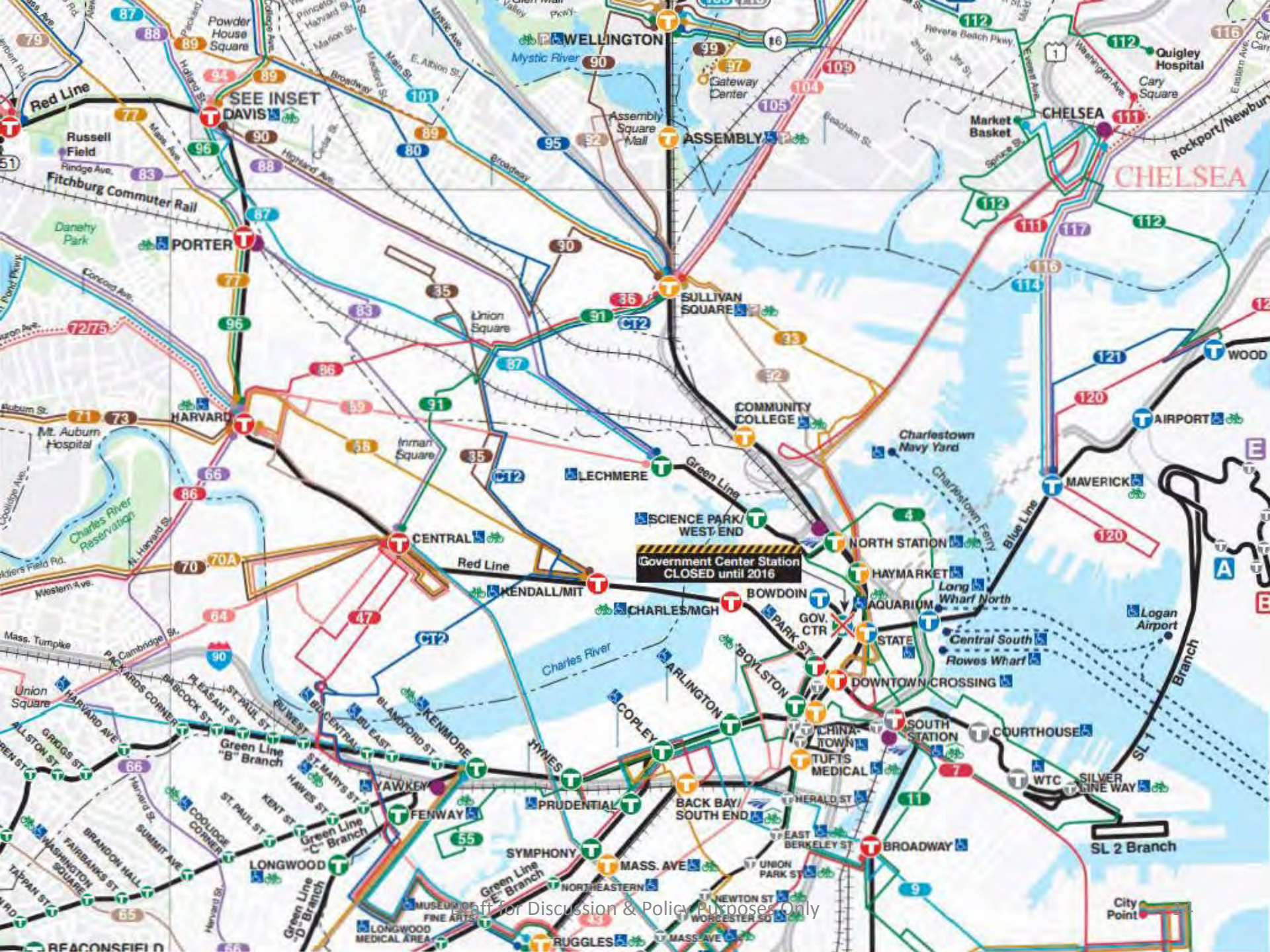
EZRide Shuttle
Cambridge-North Station
617-8E2Info
www.charlesrivermta.org

1	64	83
CT1	70A	91
47	70	

4	424
92	426
93	428
111	434
325	450
326	

SEE INSET

Government Center
CLOSED



An aerial photograph of Boston, Massachusetts, showing the city skyline and the harbor. The harbor is filled with water and several sailboats. The city buildings are visible in the background, with a mix of modern and older architecture. The text is overlaid on the image.

KENDALL SQUARE MOBILITY TASK FORCE

Grand Junction Corridor

Meeting #4

November 16, 2015



CURRENT USE

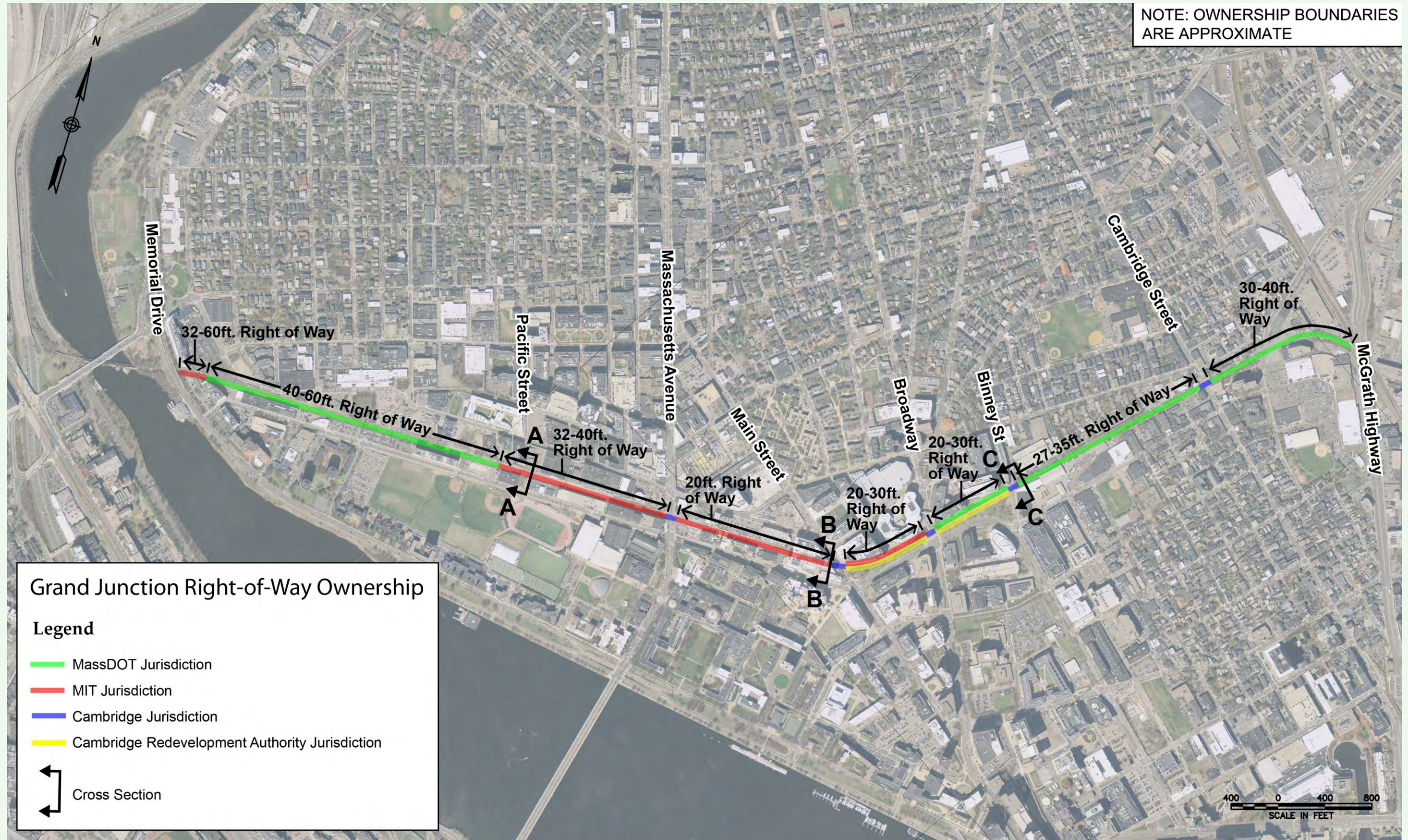
- 8.5 miles long – from Framingham-Worcester CR line in Allston (Beacon Park Yard) to Chelsea (food market)
- Cambridge segment is two miles long
- MassDOT purchased ROW from CSX in 2009
- MBTA and Amtrak use the Grand Junction to transfer equipment between north and south-side operations
- Regular freight to customers on Chelsea
- Rail use needs to be maintained



HISTORICAL PROPOSED USES

- Multi-use path
- Urban Ring – Bus Rapid Transit options
- MBTA Commuter Rail – Framingham-Worcester Line to North Station
- Transit-like services – DMUs or light rail

OWNERSHIP & ROW WIDTH





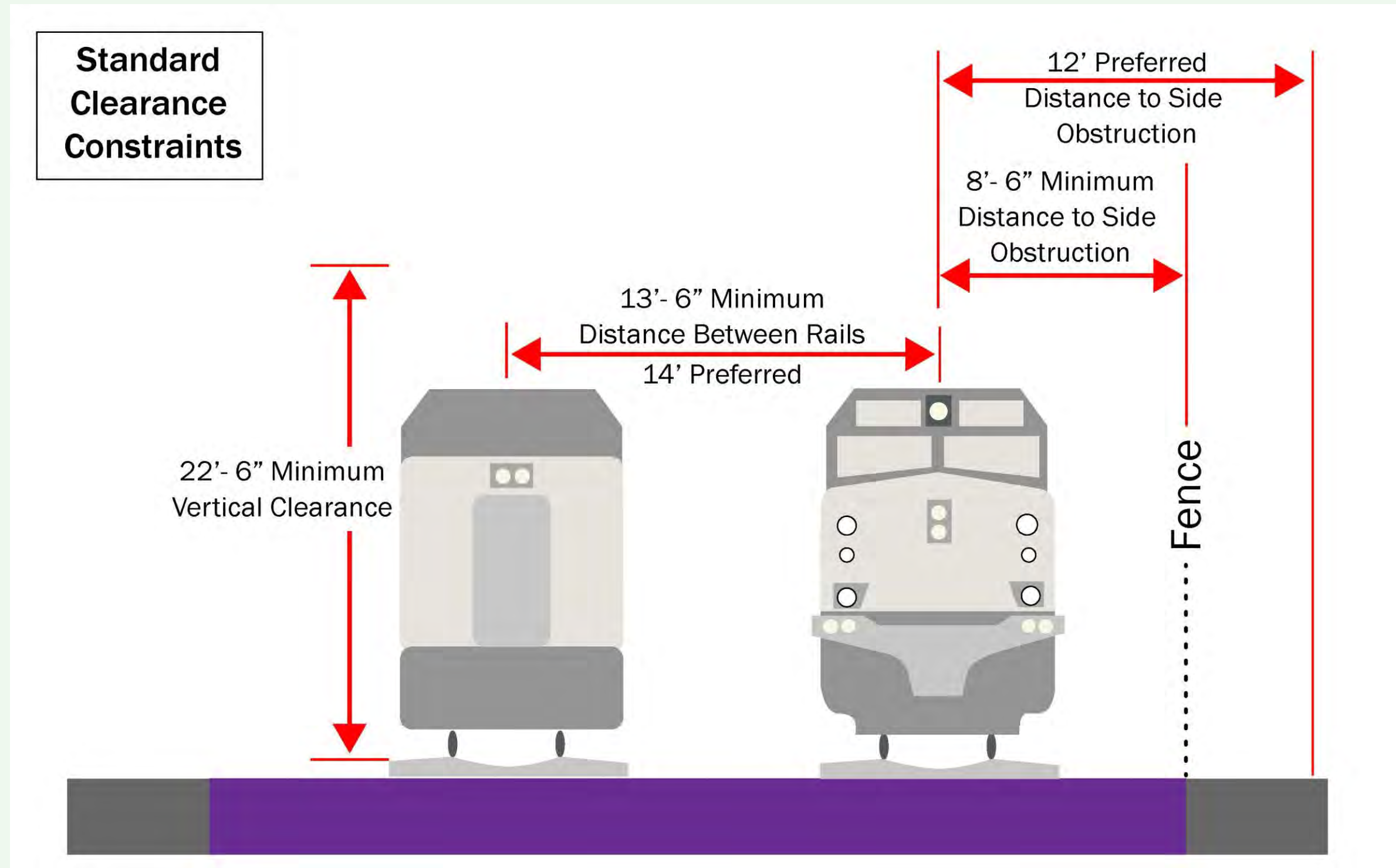
ROADWAY CROSSINGS

- Six roadway crossings:
 - Massachusetts Ave
 - Main Street
 - Broadway
 - Binney Street
 - Cambridge Street
 - Medford Street
- Three ped/bike crossings
- Under Memorial Drive & McCarthy Overpass (Rt. 28)



DESIGN CONSTRAINTS

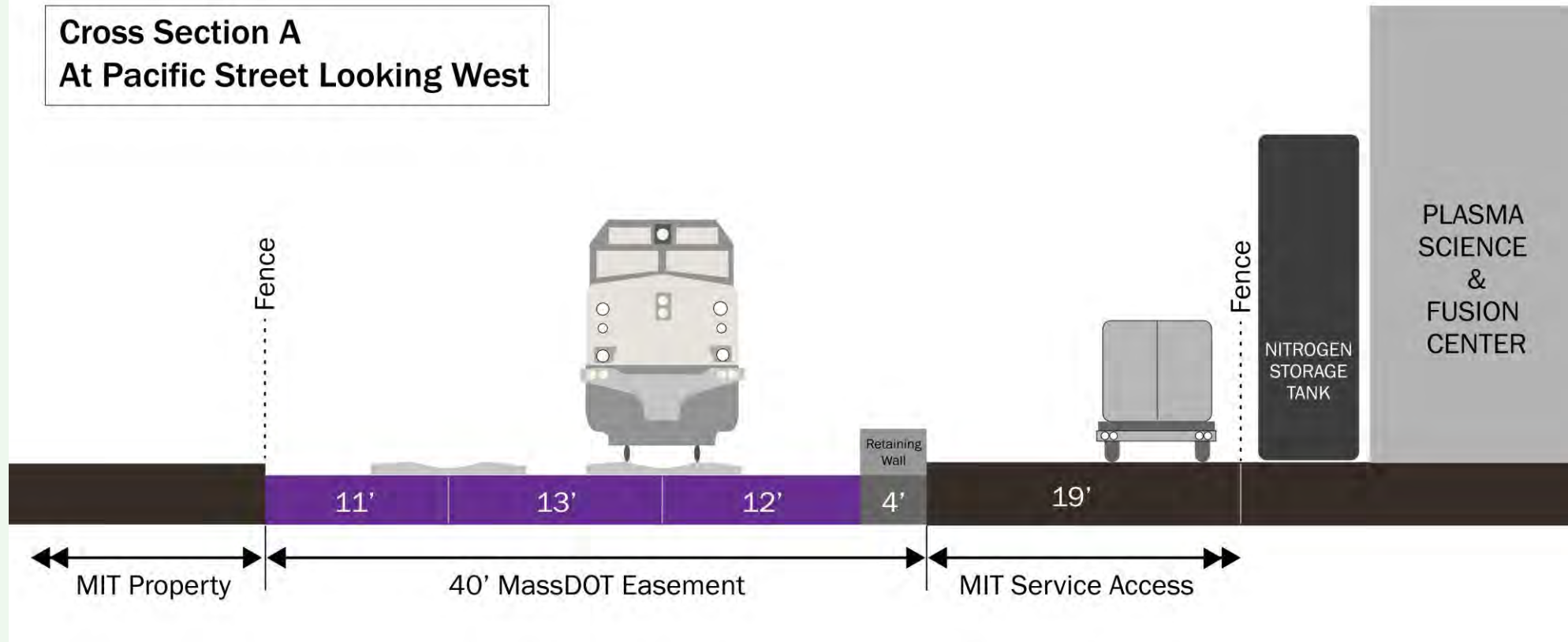
MBTA rail requirements drive design constraints





CONSTRAINED CROSS-SECTIONS

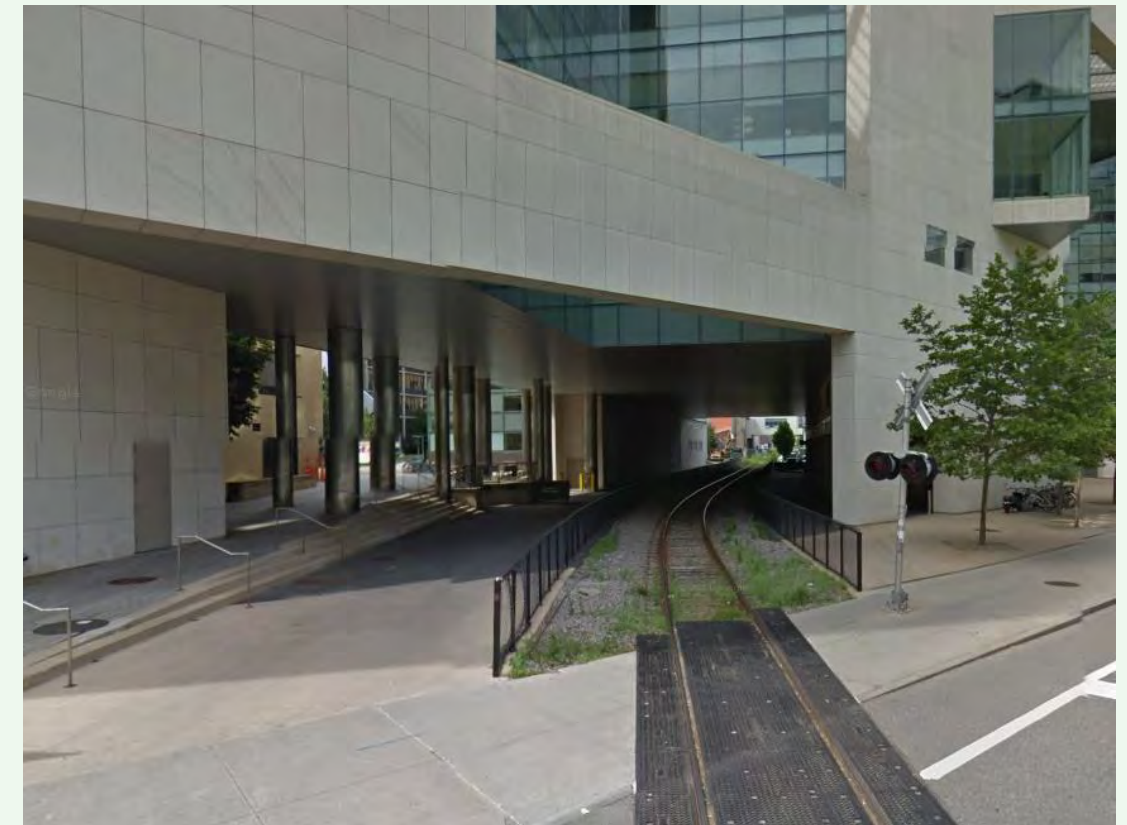
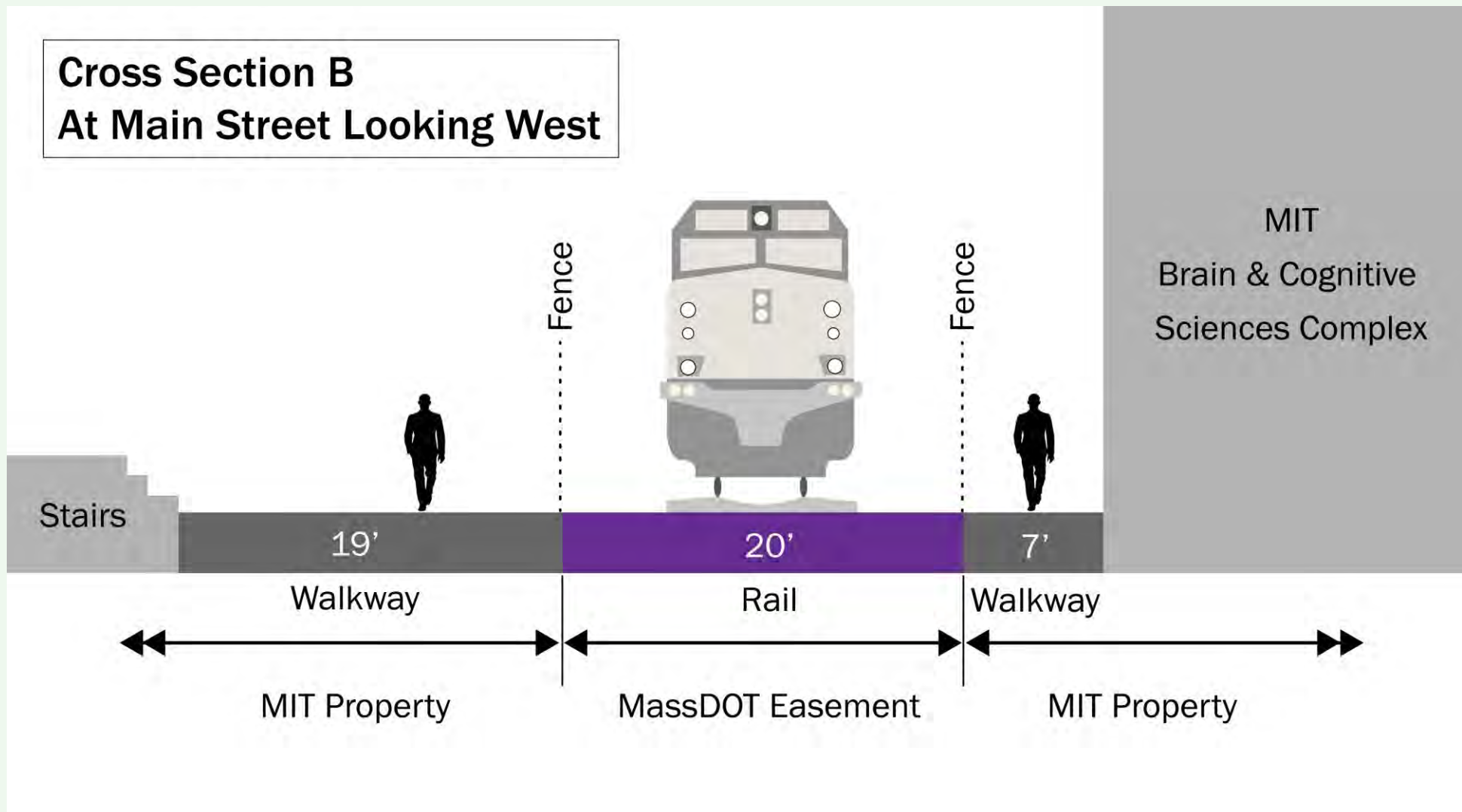
Cross Section A
At Pacific Street Looking West





CONSTRAINED CROSS-SECTIONS

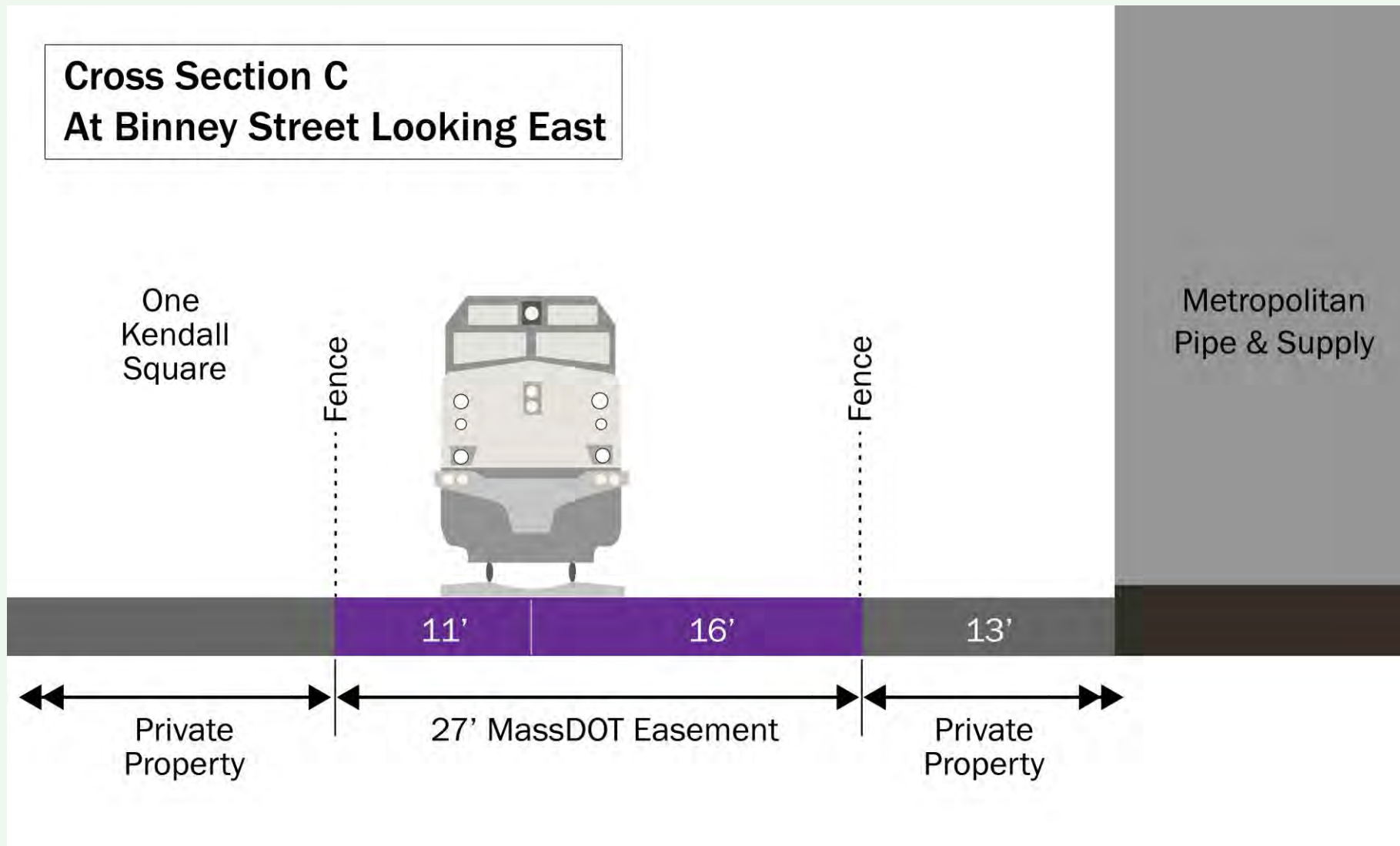
Cross Section B
At Main Street Looking West





CONSTRAINED CROSS-SECTIONS

Cross Section C
At Binney Street Looking East





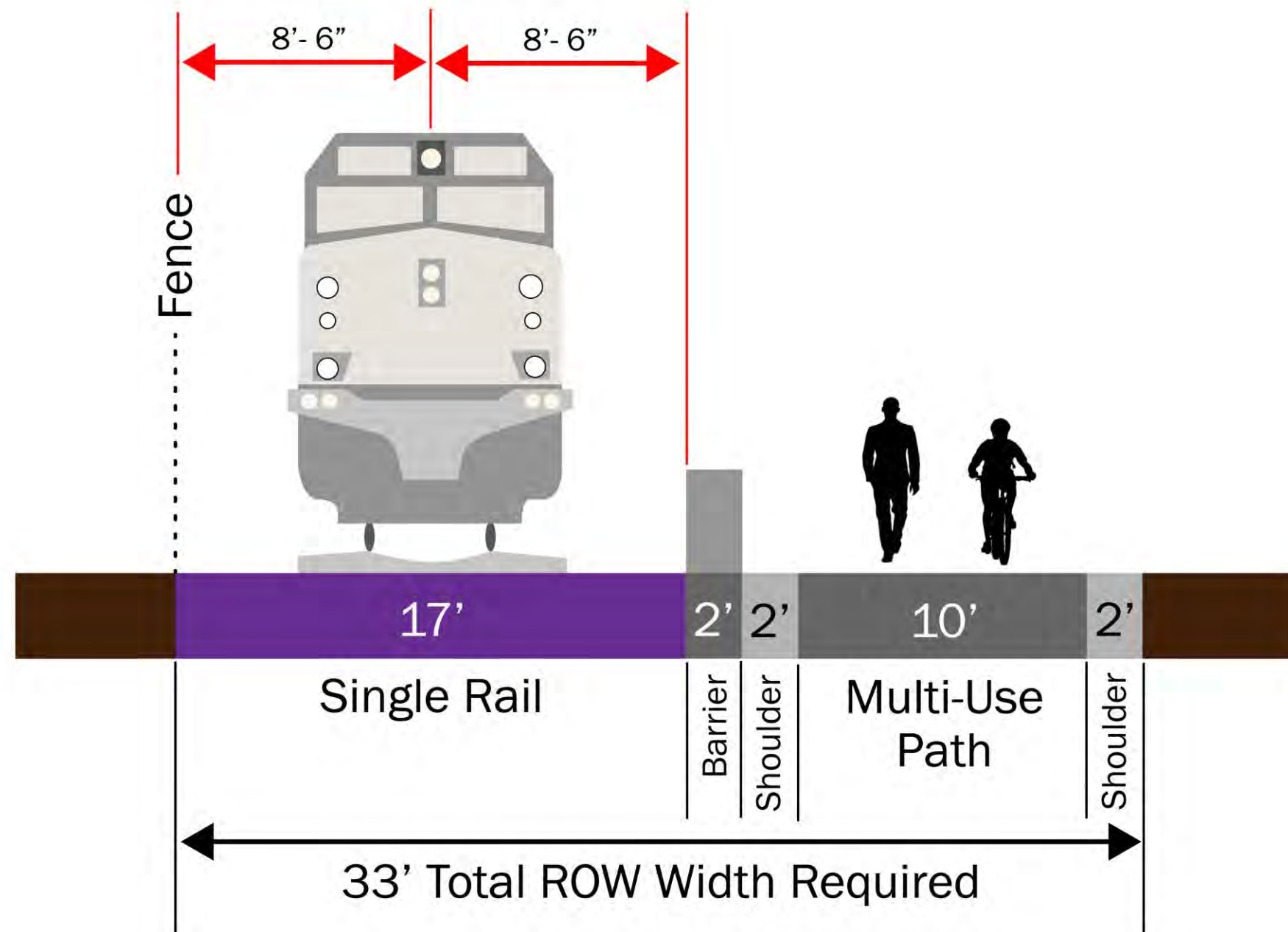
CONNECTIONS

- West end – Beacon Park Yard
 - On-going project – complex interactions
 - Bridge in need of rehabilitation
 - Integration with existing services
 - Tracks connected only to/from west – not Back Bay/SS
- East end – GLX & North Station
 - GLX complicates CR tracks under McCarthy Overpass
 - Constrained ROW from Brickbottom to North Station
 - North Station approaching capacity



SINGLE TRACK RAIL & PATH

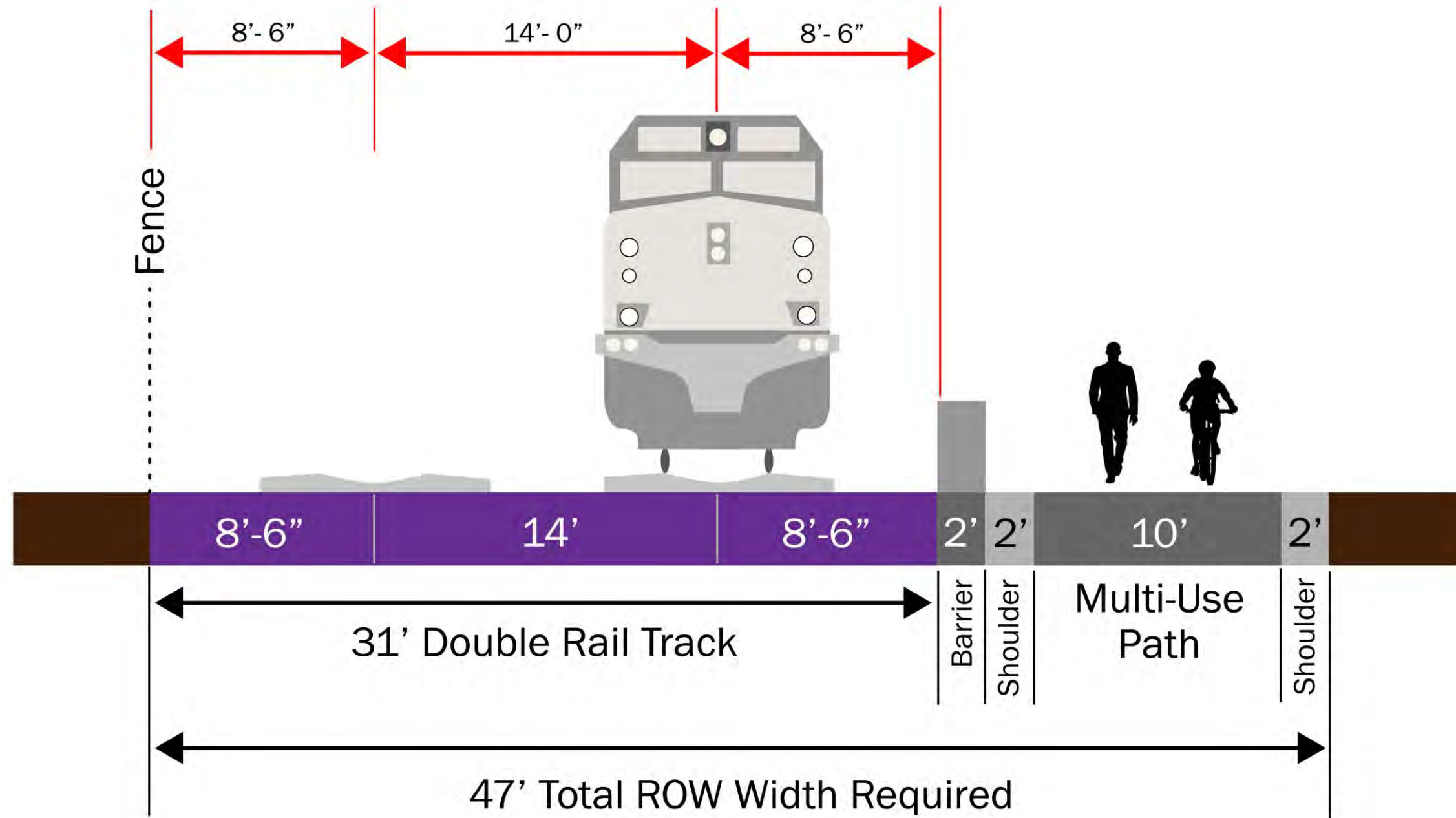
Single Track with Multi-Use Path





DOUBLE TRACK RAIL & PATH

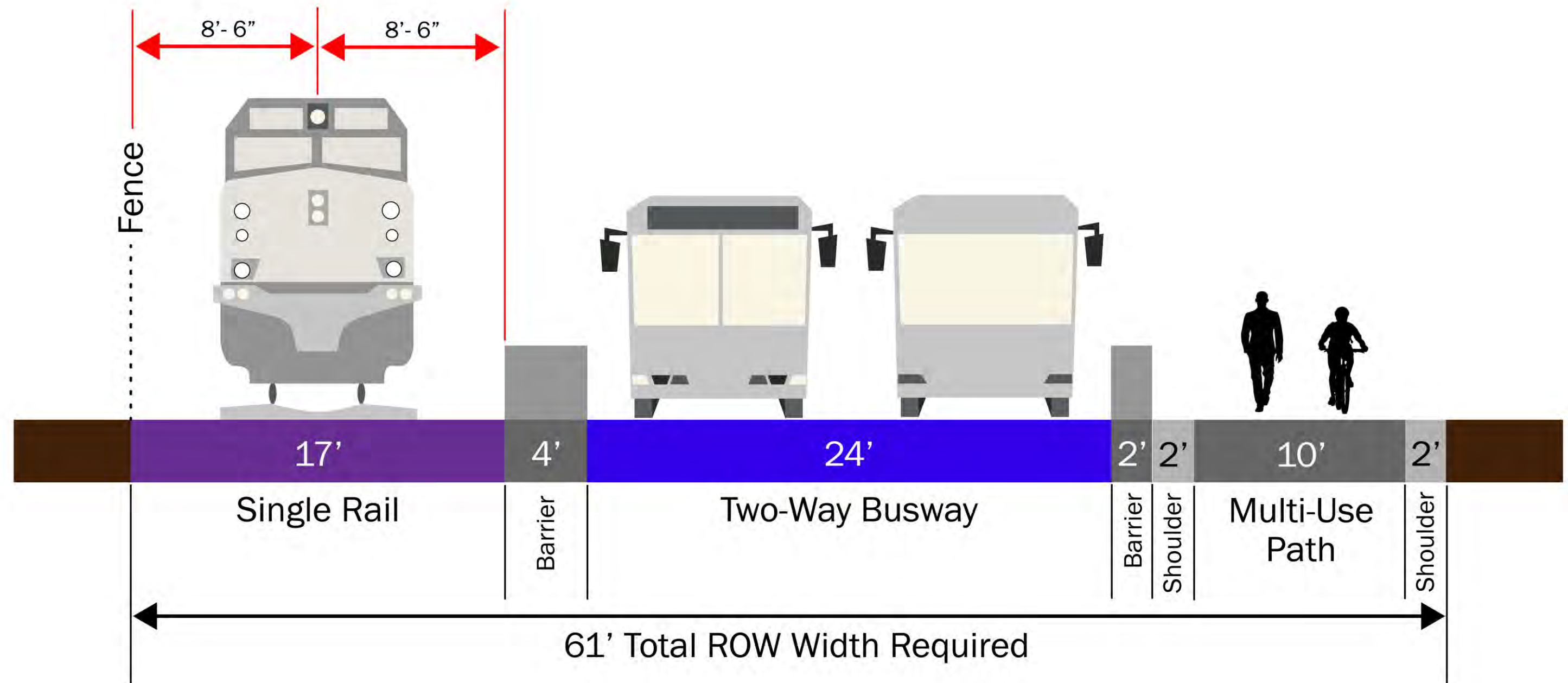
Double Track with Multi-Use Path





SINGLE TRACK RAIL, BUS WAY & PATH

Single Track with Two-Way Busway and Multi-Use Path



An aerial photograph of Boston, Massachusetts, showing the city skyline and the harbor. The harbor is filled with water and several sailboats. The city buildings are visible in the background, with a mix of modern and older architecture. The text is overlaid on a semi-transparent white box in the center of the image.

KENDALL SQUARE MOBILITY TASK FORCE

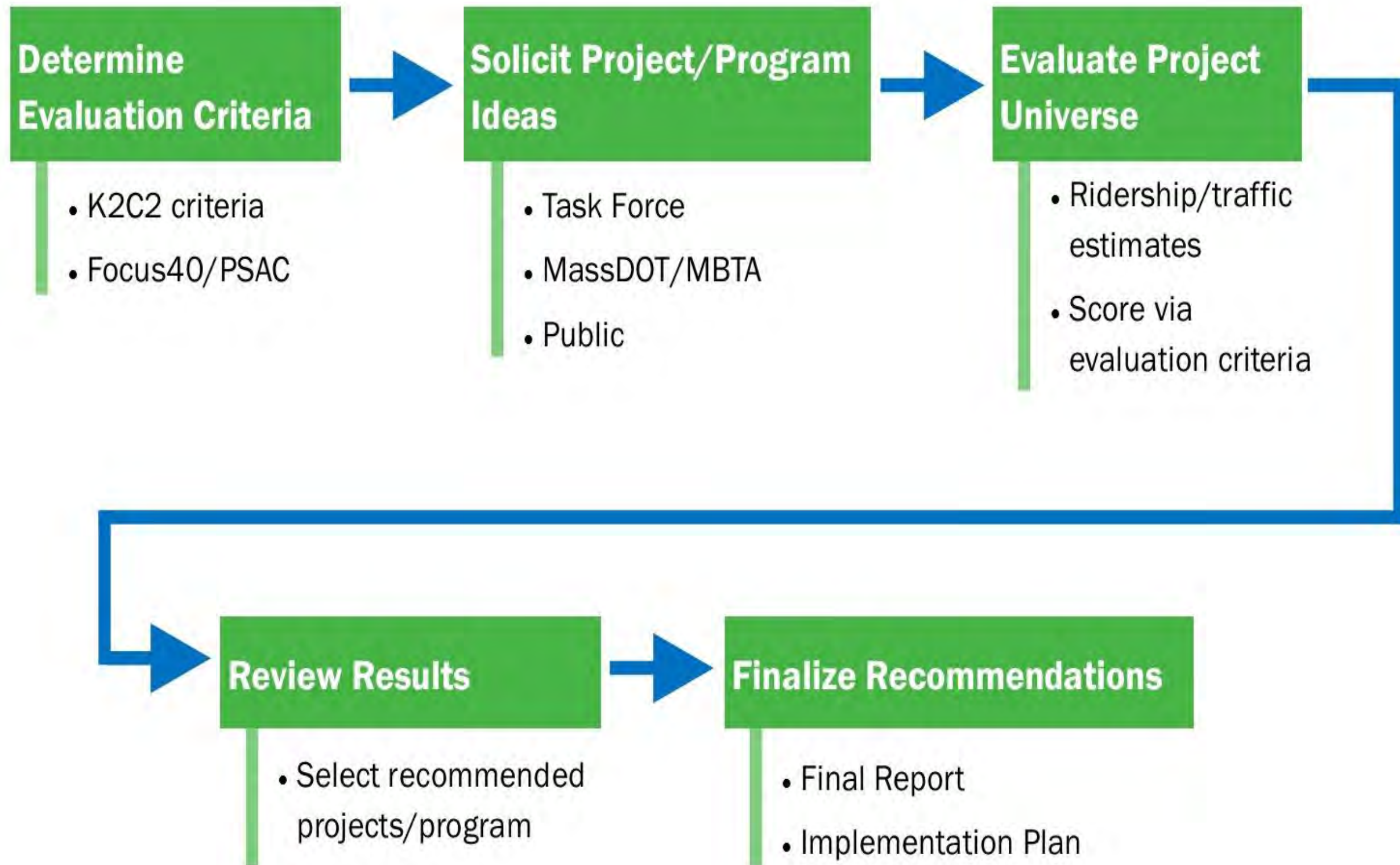
Next Steps

Meeting #4

November 16, 2015



NEXT STEPS





EVALUATION CRITERIA

- Rely on already-established processes
- K2C2 Evaluation Criteria
 - Nurture Kendall's Innovation Culture
 - Create Great Places
 - Promote Environmental Sustainability
 - Mix Living, Learning, Working and Playing
- Focus40 / New MassDOT project selection process

System Preservation

- The Commonwealth should focus on the proactive preservation of assets to ensure that the existing transportation system can support mobility, safety, economic development, and transportation equity in the Commonwealth going forward.

Mobility

- The transportation system should provide options and efficiently connect people to their destinations.

Cost effectiveness

- Investments that have a better benefit to cost ratio should be prioritized.

Economic impact

- The transportation system should support economic growth in the Commonwealth in a sustainable manner.

Environmental and health factors

- The transportation system should avoid or mitigate negative environmental and health impacts, and allow all customers to have access to safe and comfortable healthy transportation options.

Safety

- The transportation system should be safe and ensure the security of people and goods in transit.

Social equity and fairness

- The transportation system should distribute both the benefits and burdens of development equitably among all communities.

Policy support

- Projects should get credit if they address policy goals that are not accounted for or have such a strong anticipated impact that they warrant credit beyond the criteria weight.



NEXT STEPS

