Bicycle & Pedestrian Facilities
Mount Auburn Street Open House, May 2018

Crosswalk Treatments
- Ladder style provides high visibility to motorists
- Resin markings increase visibility at night
- Textured crossings can be used as part of a gateway treatment for traffic calming

Curb Extensions
- Reduces pedestrian crossing distance
- Limits parking to an appropriate distance from crosswalk
- Improves visibility of pedestrians
- Reduces curb radii to slow vehicle turning speeds

Pedestrian Signals
- Accessible Pedestrian Signals (APS) to assist visually impaired individuals
- Exclusive pedestrian phase stops all vehicles during crossing intervals

Rectangular Rapid Flashing Beacon (RRFB)
- Increases pedestrian safety at unsignalized crossings

Bike Boxes
- Provides queueing area for cyclists
- Keeps cyclists in the drivers field of vision

Bicycle facility treatments vary based on available space

Double Buffered Bike Lane
(Segments 2 & 4)
- Horizontal separation for bicyclists from travel lane
- Painted buffer between bicyclists and parking lane to reduce dooring incidents

Buffered Bike Lane
(Portions of Segment 3)
- Used in constrained areas adjacent to parking
- Painted buffer between bicyclists and parking lane to reduce dooring incidents

Traditional Bike Lane
(Portions of Segments 1&3)
- Used in constrained areas

Shared Lane
(Portions of Segment 1)
- Bicyclists positioned within travel lane

Bike Turn Queue
(Irving St. Intersection)
- Queues Left Turning Bicycles
Streetscapes

- Streetscapes are created by the features and amenities located along the street typically on either side of the pedestrian zone.
- The streetscape may extend into the curb zone in cases such as a parklet.
- Streetscapes can include benches, sidewalk cafes, lighting, and shade trees.

Bicycle Parking Amenities

- Bike racks provide an easily accessible short term parking solution.
- Post & Ring style racks provide support and security without the risk of bending wheels.
- Long term parking facilities offer increased security and protection from the elements.

Greenscape

- Street trees create separation for pedestrians and a sense of enclosure for drivers.
- Rain gardens allow for infiltration of sidewalk runoff, recharging groundwater.

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Street Furniture

- Benches encourage walking as a mode of transportation.
- Garbage containers reduce litter when they are spaced appropriately and are located in noticeable positions.

Street Lights

- Ornamental street lighting can be used as part of a gateway treatment.

Placemaking

- Reclaiming paved areas for community use.
- Areas can be created from reconfigured intersections.
  - Bigelow Avenue
  - Boylston Street (East)

Wayfinding

- Directs pedestrians, cyclists, and vehicles to destinations.
- Increases safety and usage.
**Maintaining Curb to Curb Width**

A change in the number and width of lanes, can provide space for all users; drivers, pedestrians, transit riders, and bicyclists within existing roadway footprint.

**Emergency Response**

- Emergency responders are able to utilize space that is not designated for vehicles.
- Motorists can pull out of the travel lane to allow emergency responders to pass.
- Curb extensions contain hydrants at appropriate distances from parked cars.

**Parking**

- Must be 20 ft. from corners and crosswalks, 10 ft. from hydrants, 5 ft. from driveways.
- Proposed project will preserve existing safe legal parking.
- Parking added in critical areas.

**Definition of a Road Diet**

- A technique in transportation planning whereby the number of travel lanes and/or effective width of the road is reduced in order to achieve systemic improvements.
- A Road Diets is a component of a Complete Streets.
- Used as the basis of design for Segments 2 and 4.

**Increased Efficiency for Vehicles**

- Reduction in lane changes creates safer and more efficient travel for vehicles.

**Previous Road Diets in Watertown**

- Main Street
- Nonantum Road
- Greenough Boulevard
- North Beacon Street
- Charles River Road

**Mount Auburn Street at Richards Road**

**WorldTech Engineering**

*Mount Auburn Street Open House, May 2018*
Transit Improvements
Mount Auburn Street Open House, May 2018

Ridership
- Route 71 serves 5,300 passengers per weekday
- 84% of trips are for work or school

Methods of Improving service
- Bus stop consolidation
- Queue Jump Lanes
- Far Side Bus stops
- Transit Signal Priority

Stop Spacing
- Spacing balances trip time with walking distances
- Recommended spacing for key bus routes is 750’-1,300’
- 200’ of distance adds 1 minute of walking time
- Each stop adds an average of 15 seconds to each trip

Mount Auburn Street Open House, May 2018
Transit Improvements
A Complete Streets Project
**Bus Stop Location Types**

- **Near-Side**
  - Minimum length 90’
  - Encourages crossing after the bus is stopped

- **Far-Side**
  - Minimum length 70’
  - Encourages crossing behind the bus

**Bus Stop Lengths**

- Lengths of stops in accordance with MBTA standards
- Taper consideration allows space for buses to pull in and out of designated bus stops

**Passenger Loading Zones**

- Areas must be clear of obstructions
- May overlap sidewalk

**Stop Amenities**

- Bus arrival time boards inform users of wait times for upcoming buses.
- Shelters protect waiting transit users during inclement weather
- Benches increase comfort of waiting transit users
- Short term bike parking at bus stops allows individuals to easily switch between transportation modes

**Curbside Bus Stop**

- In areas with no parking, buses remain in travel lane or encroach into bike lane, if provided
- In areas with parking, buses stop in place of the parking lane

**Bus Pullout**

- Buses are removed from the travel lane
- Curb line is offset from road to provide area for bus

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**Mount Auburn Street Open House, May 2018**
Features of the Pilot Program

- Queue jump lanes give priority to buses at intersections
- Inbound (to Cambridge) Queue jump/right-turn lanes help move traffic
- 7 am to 9 am parking restrictions needed
- Right turns on red are allowed after stopping
- Working with MBTA to include Transit Signal Priority (TSP)
- Results of pilot will inform the corridor design

Funded by the Barr Foundation

- In cooperation with City of Cambridge, MBTA, and DCR
- Includes technical assistance & funding for pilot implementation
- Stems from the Boston BRT initiative developed in 2013 as part of the Barr Foundation’s Climate program
- Result of RFP for local pilots grants in early 2017 (up to $100,000 each) to demonstrate elements of BRT along high ridership corridors

http://www.cambridgema.gov/MtAuburnBusPriority

https://www.barrfoundation.org
Traffic Forecasting & Operations
Mount Auburn Street Open House, May 2018

Historic traffic volumes based on Automated Traffic Recorder (ATR) counts collected May 2007, June 2010, June 2012, June 2014, and May 2017. Future traffic projections based on 5 percent growth to the year 2040 as determined from the CTPS regional traffic model.

2040 Traffic Operations
without project  with project
Morning Peak
Afternoon Peak
- Intersection Level of Service (LOS) is a measure of average delay per vehicle, ranging from LOS A (best) to LOS F (worst)
- LOS D is typically acceptable during peak periods
- See side board for LOS criteria

Improves by 2 or more LOS
Improves by 1 LOS
No change in LOS
Reduction of 1 LOS

Intersection Level of Service (LOS) is a measure of average delay per vehicle, ranging from LOS A (best) to LOS F (worst). LOS D is typically acceptable during peak periods. See side board for LOS criteria.
Existing Conditions
- Outdated traffic signal equipment
- Pedestrian push buttons, signals, and audible tones do not meet current ADA and FHWA standards
- No vehicle detection on Mount Auburn Street – Wait times for side streets and pedestrians are not reduced when vehicles are not present on Mt. Auburn Street
- Detection loops – many are broken, resulting in maximum green time for side streets (maximum red time for Mount Auburn Street)
- No emergency vehicle preemption
- Few protected left turn arrows
- “No Right Turn on Red” at most signals

Smart Signal Technology
- More efficient traffic movement
- Peer-to-peer communications
- Traffic Management and Connected Vehicle ready

Video Vehicle Detection
- Reduces unnecessary green time for approaches when traffic is light
- Lower maintenance when compared to inductive loops
- Traffic counting functionality, including bikes and pedestrians
- Does not record video stream

Pedestrian Signals
- Clear explanation for proper pedestrian use
- Countdown timers
- Accessible Pedestrian Signals (APS) with speech messages to assist visually impaired individuals
- Exclusive pedestrian phase stops all vehicles to provide safer crossing

Left Turn Lanes & Arrows
- Reduces risk of angle crashes
- Reduces delay for left turn movements

Blank-Out Signs
- Prohibit turns on red during pedestrian phase
- Allows turns other times to improve vehicle throughput and mobility

Traffic/Safety Improvements
Mount Auburn Street Open House, May 2018