Proposed Agenda

• Project process update 5 minutes
• Review of Baseline Concept + Options, Mem Drive to Auburn 20 minutes
• MBTA bus terminal area 50 minutes
• Next Steps 5 minutes

This presentation focused on the transit elements of the evolving draft Conceptual Design. The materials are still IN DEVELOPMENT. Some have not yet been discussed with the Working Group. These topics will be discussed at an October Working Group Meeting and November Public Meeting.

The purpose of this meeting is to get early input from the Transit Advisory Committee on some of the transit-related proposals being discussed.

Please refer to cambridgema.gov/riverstreet for updated materials.
River St Reconstruction Project Area

MBTA Bus Terminal Area

Hoyt Field

Riverside Press Park
Highlight – Transit Operations

Each end of the corridor experiences the most bus delay

Total Daily Passengers ~2,400

Total Daily Passengers ~1,800

Significant bus delay and reliability issues

Hoyt Park

River Press Park

~2,400

~1,800
Less riders use stops on River Street, but bus routes carry a large number of riders through the corridor.
Thousands of people use bus stops in Central Square each day.
City Policies and Planning

New Mobility Blueprint

Toward A Sustainable Future
Cambridge Growth Policy
UPDATE 2007

VISION ZERO CAMBRIDGE

PPR
NEW Expected Timeline

Issues & Opportunities, Existing Conditions

2019

Conceptual Design

2020

25% Design

Working Group

- Public Walks
- Today

Public Meeting #1

Carl Barron Plaza Engagement

Public Meeting #2

Carl Barron Plaza Engagement v2

Public Meeting #3
Expected Timeline

2020

2021

J  A  S  O  N  D  J  F  M  A  M  J  J  A  S  O

75% Design

100% Design

Construction Bids

Public Meeting #4

Construction Process (2020-2022)
Public Meeting #1 – 81 Attendees
Comment: This crosswalk across River Street in front of Riverside Pizza feels unsafe (even with walk sign) because it angles away from Putnam. Many a time we have been crossing River (with walk sign) and a car turning right from Putnam onto River turns without seeing pedestrians. Especially at night.
5 Working Group Meetings
Other outreach...

- River Street pre-construction survey (83 respondents so far)
- Cambridge Winter Farmers Market (3/23/19)
- Mobility Walk (5/14/19)
- River Festival (6/1/19)
- Urban Design Walk (6/11/19)
- Parking Day (9/20/19)

- Business focus group outreach (first breakfast in August, lunch in October)
- Ongoing coordination with Department of Human Service Programs and Cambridge Police Department
- Carl Barron outreach (full exploration of Carl Barron outreach scheduled for Working Group #7 October 22, 2019)
Conceptual Design Development
“Givens” for River Street Reconstruction

- Address flooding & drainage capacity
- Upgrade aging public and private utility infrastructure
- Protect significant utilities which cannot feasibly be relocated
- Preserve healthy trees
- Maximize future trees & improve soil conditions
- Maintain emergency vehicle access (16 to 18 feet)
- Maintain flexibility when routine maintenance or unexpected incidents block part of road
- Include separated bicycle facility (per Cambridge's "Cycling Safety Ordinance")
- Regulate parking to allow us to use curbside space more efficiently
- Maintain regional freight & hazardous materials truck route
- Raise non-signalized side-street crossings
- Improve intersection geometry (slow turns, improve sightlines) while accommodating buses and trucks
General Approach (Transit Focused)

- Two lanes provide flexibility when there is construction, maintenance, trash operations, etc.
- One general use lane handles existing traffic (encouraging slower speeds)
- It is expected that queues can be managed with signal improvements
- Bus only lane to improve bus reliability and reduce delay
Memorial Drive to Putnam Ave
Early Draft Concept for Input

- Two travel lanes
- New trees & landscaping for "neighborhood feel"
- Bus lane begins at bus stop, reducing amount of traffic adjacent to cycle track
- Alternative bus stop location
- Potential BlueBikes Locations
- Signal timing adjustments needed to manage queues
- Note, private property – feasibility TBD
Putnam Avenue to Kelly/Howard Streets

Activation zones supporting local businesses

Vehicle storage in flex space could provide friction with general traffic lane – could slow speeds

One bus stop could be removed (26 people per day, 2-3.5 min walk to next stop)

Enhanced entrance to Hoyt Field (in development)

Activation zone on Kelly/Howard intersection’s south side (with bus stop)
Coast Café Area Today
Kelly/Howard to Auburn Street

Mountable area for fire truck movements

Activation zones supporting local businesses

Safer intersection geometry

New pedestrian crossings
“Flatiron” Building Area Today
At Pleasant Street/Tubman Square

- Pleasant Street as shared street/local access only
- No traffic diversions
- Parking impacts
  - 7 unregulated
  - 1 accessible

Street closure
Raised side street crossing
At Pleasant Street/Tubman Square

- Close Kinnaird Street
- Traffic calming on Pleasant Street
- Traffic diverted through Howard/Kelly street intersection
- Parking impacts
  - 2 unregulated

Traffic Calming Elements
- Pinch Point
- Raised Side-Street Crossing
- Constrained Sight Lines
- On-Street Parking
- Chicanes
- Signal Progression
- Pedestrian Crossing Islands
- Street Trees

Street closure
Raised side street crossing
Summary of Pedestrian Safety and Comfort Features

- Raises all side-street crossings
- Narrows turning radii on most intersections to slow down turns
- Improves visibility at intersections
- Increases vertical elements (trees)
- Moves general traffic in a single lane
- Adds two new crosswalks

- Provides an increased buffer between traffic and people walking and biking (except buses and right-hand turns)
- Simplifies ADA compliant crossings
- Provides more space for people to sit, providing a more neighborhood feeling
Conceptual Design Development:
Auburn St to Central Square
MBTA Bus Terminal Area

• Met 2 times (so far) with MBTA to discuss way to improve transit service and the bus terminal area configuration.

• A few sample questions we have been exploring:
  • Are there more efficient uses of this high demand space (i.e., is this the right space for layovers)
  • How can we improve access and amenities for passengers?
  • How can the terminal area be more effectively integrated with the larger plaza space and the square more generally?
MBTA Bus Terminal Area

Layover locations
- New layover locations for 83/91 allow for more efficient use of bus terminal area
- Significant curb impacts being evaluated, public process and discussion needed

Routing changes
- Allows for more efficient circulation and use of bus terminal area
- Additional public process needed

Roadway closures/operations changes
- Could simplify traffic operations and prioritize transit movements
- Additional public process needed
MBTA Bus Terminal Area

Layover locations
• Magazine Street
• River Street

Routing changes
• Route 47 (keep off Mass Ave)
• Route 64 (continue on River instead of Magazine)

Roadway closures/operations changes
• Green Street between Magazine and River (bus/bike only) – Requires
  • Making Franklin Street two-way, signalized at Western/River
  • Making Magazine between Green and Franklin one-way southbound for general vehicles and two-way for buses/bikes.
47 Route Change

- Not as close to Mass Ave entrances
- Likely provides better travel time and reliability – need to estimate benefits
- Last stop would be at Green at Pearl
- First pickup would be at Green at Magazine
47 Route Change

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- Likely provides better travel time and reliability – need to estimate benefits
- Last stop would be at Green at Pearl
- First pickup would be at Green at Magazine
47 Re-routed off of Mass Ave

Magazine Layover, 47 Route Change

First pickup

Relocated stop

Last stop

WORK IN PROGRESS

TAC Update, October 2, 2019 - Slide 39
Magazine Layover, 47 Route Change

Approx. 1/10 (.1) mile

Last stop

First pickup

Relocated stop

Magazine @ Auburn

47 Re-routed off of Mass Ave

TAC Update, October 2, 2019 – Slide 40

WORK IN PROGRESS
47 Route Change

- Mass Ave @ Prospect
  - 263 Boardings
  - 83/91

- Prospect @ Bishop Allen

- Green @ Magazine
  - 766 Boardings
  - 83/91

- Magazine @ Green
  - 955 Alightings

- Magazine @ Auburn

- Franklin @ Library

- Franklin @ Library

- 800
  - 1,860 Boardings
  - 1,818 Alightings

- Mass @ Pearl
  - 607 Boardings
  - 615 Alightings

- Green @ Magazine
  - 1,183 Boardings
  - 63 Alightings

- Green @ Pearl
  - 507 Alightings

- 376

- 58

- 83/91

- 64

- 70

- 47

- Layover
- Routing
- First Pick-Up
- Elevator

Layovers outside of current extent
Magazine Layover, 47 Route Change

- Approx. location of future redundant elevators

47 Re-routed off of Mass Ave

First pickup

Relocated stop

Approx. 300'

Last stop

TAC Update, October 2, 2019 – Slide 42

WORK IN PROGRESS
Consider:
- Transfer distances/accessibility
- Crowding at stop locations
- Travel time savings (means more service)
- Conflicts at current layover space (currently on Mass Ave)
- Others?
Moving 83/91 layover locations here allows us to reallocate space at bus terminal area for passenger amenities and other uses. Curb impacts continue to be evaluated. Public process impacts and discussion needed.

Consider:
- Transfer distances/accessibility
- Crowding at stop locations
- Travel time savings (means more service)
- Conflicts at current layover space (currently on Mass Ave)
- Others?
Stop Impacts for Route 47 Changes Green @ Pearl

Before 2016 improvements

Route 64 boardings (would be moved to Magazine @ Green): 21 riders
Route 70/70A Boardings (would remain): 430 riders
Route 47 alightings at this location (would remain): 477 riders
Route 47 alightings at Mass Ave @ Pearl (would be alighting here instead): 376 riders

After 2016 improvements
Stop Impacts for Route 47 Changes
Green @ Pearl
Stop Impacts for Route 47 Changes
Mass Ave @ Pearl

Route 47 boardings (would be moved to Green @ Magazine): 800 riders
Route 1 boardings (would remain): 1,089
Route 1 alightings (would remain): 233
Stop Impacts for Route 47 Changes

Green @ Magazine
(curb extension/additional waiting area is likely feasible)

Route 70/70A boardings (would remain): 798 riders
Route 47 boardings at Mass Ave @ Pearl (would move here): 800 riders
Route 64 boardings (off-peak only, would be moved): 111 riders
IDEA: In either case, short section of Green Street between Magazine and Western could be closed to general traffic (it could become Bus/Bike only). This would require:

- Making Franklin St two-way and signalizing at Western/River
- Making the block of Magazine Street between Green and Franklin southbound only for vehicles, two-way for buses and bikes.

Curb impacts continue to be evaluated. Public process and discussion needed.
IDEA: In either case, short section of Green Street between Magazine and Western could be closed to general traffic (it could become Bus/Bike only). This would require:

- Making Franklin St two-way and signalizing at Western/River
- Making the block of Magazine Street between Green and Franklin southbound only for vehicles, two-way for buses and bikes.

Curb impacts continue to be evaluated. Public process and discussion needed.
Early draft reconfiguration of bus bay area with Magazine layovers, WITHOUT Route 47 rerouting

Updates since this graphic was produced (not exhaustive):

- Considering removal of median between River and Western at Green
- Realignment can ease up pinch points for pedestrians and cyclists
- Indicating likely location of separated bicycle facility

No right turns onto River

Parking impacts to provide layover space

Updating alignment and refining pinch points, reviewing crossings and adding protected bicycle facilities

47 rerouting would eliminate need for this layover location.

Not likely feasible unless buses use right turn lanes and signalization changes. Also consider a bus queue jump in place of the curb extension.
Providing layover space on River Street avoids some curb changes on Magazine Street
• (If Green Street between Magazine and River were made bus-only, you would still have the impacts of making Magazine one-way SB for general vehicles and making Franklin two-way between Western and Magazine).

It also allows for a different configuration of the bus bay area

The 64 would need to be re-routed onto River St (could save 2-3 minutes).
Magazine Street can be converted to one-way southwest bound, retaining curb uses.

Franklin Street would still need to be two-way.
Early draft reconfiguration of bus bay area with River St layovers, WITH Route 47 rerouting and Green St as bus/bike only

- Signal added to control two-way traffic
- Potential for continuous bus lane but may constrain pedestrian/bike movements
- Franklin would need to be converted to 2-way
- Queue jump space for two buses. Need special signaling (could be twice during phase)
- 2 buses can load/unload but would not be separate berths (would be similar to Mass Ave @ Pearl today)

Updates since this graphic was produced (not exhaustive):
- Considering removal of median between River and Western at Green
- Realignment can ease up pinch points for pedestrians and cyclists
- Indicating likely location of separated bicycle facility

TAC Update, October 2, 2019 – Slide 54
MBTA Bus Terminal Area

• Please share all your concerns and thoughts!
• What makes sense?
• What might we not be thinking about?
• Any other creative ideas?
Next Steps
Next Meetings

• **Working Group #7 Meeting**: Tuesday, October 22, 6-8pm at Manning Apartments
  - Concept plans – Auburn Street to Massachusetts Avenue (including Carl Barron Plaza, MBTA bus terminal area, and Green Street)

• **Public Meeting #2**: Tuesday, November 19, Putnam Ave Upper School, Time and details still TBD
  - Full Concept Design Introduction
  - Public Feedback
Complete and Share the Pre-Construction Survey!!

• Still live at cambridgema.gov/riverstreet!

• Will become the “before” survey for the River Street Reconstruction

• When the post-construction survey is complete, the two will help the City evaluate the project

• Please help us distribute to your neighbors!
River Street Reconstruction

Take our survey and tell us how River Street works for you today!

The River Street Reconstruction project will upgrade the sanitary sewer, stormwater, and water subsurface infrastructure while developing a new surface design for River Street, the bus terminal area at River and Magazine Streets near Central Square, and Carl Barron Plaza. The project aims to create a streetscape design that meets the needs of all the various users and in a way that engages the local community, contributes to overall enhancement of the neighborhood, and meets the City’s goals related to infrastructure, transportation, and urban design.

The concurrent design of Carl Barron Plaza, the significant open space at the heart of Central Square will include consideration of public art, fixed and/or movable furniture, access, plantings, and landscaping. The design must also consider the complexity of transportation needs related to the bus bays adjacent to the Plaza and people moving through the plaza.

The community outreach and design processes will occur throughout 2019 and into early 2020. Construction is anticipated to begin in spring 2020.

Click here to sign up for email updates on this project.

Click here to provide general comments and feedback.

The Public Input Map is now closed, but you can still access it through the link to see what input was provided on issues and opportunities along River Street and at Carl Barron Plaza. Soon we will be posting a survey for you to understand how you use River Street today so that we can use that input in the design and also compare to a similar survey after the construction is complete.
THANK YOU!
riverstreet@cambridgema.gov
Extra slides
“Flatiron” Building Area
Guidance for Our Designers: Shared Design Goals

- Safe
- Inclusive
- Human Scale
- Ecological
- Multimodal
- Activated
- Resilient
Guidance for Our Designers: Location-Specific Comment Map

- Add greenery in front of business
- Request to have parking spaces marked
- Request to replace parking with wider sidewalk
- Cyclists riding against traffic
- Crosswalk requested
- Benches Requested
- Remove billboard here
- Sightline issues at crosswalk. Cars don't stop. Children cross here to access MLK School.
- Poor visibility of pedestrians for NB-EB right turns reported
- Request for separated bike lane
- Bus bump out requested
- Keep pedestrian scramble
- Request for more trees and LID features
The Street Design Exercise

Things we noticed on working group members' layouts of a generic street with the same width as River Street and sample land uses:

• Every group debated reducing the street width to one lane of travel - some wanted it, others were concerned about traffic/queueing impacts

• Most groups alternated green space with parking along the curbside

• Two out of three groups included a one-way bikeway (the third debated it)

• Two out of three groups included a bus lane (the third debated it)
Conceptual Design Development: Idea Exploration
Many Ideas from the Public Process to Explore, Including:

**Separated Bicycle Facilities**
- Left side cycle track
- Two-way cycle track
- One lane cycle track

**Pedestrian Facilities**
- Safer and additional pedestrian crossings

**Traffic Operations**
- Reduce travel lanes to one lane
- Signal timing changes
- Bus only lane

**Placemaking and Green Infrastructure**
- Gateway treatments
- Repurposing curb space for green infrastructure, seating for businesses, etc.
- Creating places to be
A Few Ideas Were Tough to Implement

<table>
<thead>
<tr>
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<th>Pedestrian Facilities</th>
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One-lane between Putnam Avenue and Fire Station
# One-lane between Putnam Avenue and Fire Station

## Pros

- 4’ to 6’ more for activation/buffer on north side
- Shorter pedestrian crossings
- Wider bicycle facility/wider buffer
- Easier bicycle facility maintenance

## Cons

- Requires raised cycle track to be mountable (emergency vehicle access) which could exacerbate illegal parking/stopping/loading

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Early rendering of Beacon Street cycle track (Somerville)
One-lane between Putnam Avenue and Fire Station

**Pros**

- 4’ to 6’ more for activation/buffer on north side
- Shorter pedestrian crossings
- Wider bicycle facility/wider buffer
- Easier bicycle facility maintenance

**Cons**

- Requires raised cycle track to be mountable (emergency vehicle access) which could exacerbate illegal parking/stopping/loading
- Maintaining clear width and mountable feature would be challenging during and after snow events
- Buses experience same congestion as general vehicles
- Street/utility repairs would block entire street
- Routine operations including trash collection and street sweeping would block street
Left-side Cycle Track
# Left-side Cycle Track

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>• Reduces number of potential bus stop conflicts</td>
<td>• Cyclists would cross more conflict points/travel lanes</td>
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<tr>
<td>• Sunny side of the street (melts ice quicker)</td>
<td>• Transitions at each end of corridor would cause more delay for cyclists</td>
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<td>• Fewer major driveway conflicts</td>
<td>• Uncommon design</td>
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<td></td>
<td>• Adjacent to general travel lane (as opposed to a bus lane, which has fewer vehicles and trucks)</td>
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Two-way Cycle Track
Two-way Cycle Track

**Pros**

- Allows for two-way travel and accommodates desire line to/from Allston neighborhood
- Creates a wider buffer between pedestrians and street

**Cons**

- Retaining two travel lanes requires removal of most curbside uses, including commercial loading and disabled parking
- Reduces opportunity to provide activation spaces for local businesses
- Significant conflict points for cyclists who are travelling contraflow to traffic
Memorial Drive to Putnam Ave

- Two travel lanes
- New trees & landscaping for “neighborhood feel”
- Potential BlueBikes Locations
- Question: Will reducing to one lane for general travel cause traffic congestion, similar to when a lane is closed now?
- Bus lane begins at bus stop, reducing amount of traffic adjacent to cycle track
- Alternative bus stop location
- Combined turn lane & bus lane
The impact of signal timing

- Signals control how many people can get through an intersection.
- Today, there is an "all stop" pedestrian crossing phase, which forces pedestrians to wait two phases to cross (73 seconds).
- "Concurrent" pedestrian phasing can help move everyone (people walking, biking, taking the bus, and driving) through the intersection with less delay.

Based on field measurements of vehicle queues.
Today's signal timing at Putnam limits all users of River St.

- 3-phase signal, total 100 second cycle time
- The all stop or exclusive pedestrian phase forces everyone to wait longer to cross and limits how many vehicles can get through during the green time.
Concurrent phasing at Putnam Avenue could open the valve

- 2-phase signal can be more efficient for everyone
- **What about safety??**
  - Concurrent (pedestrians cross with parallel traffic) with Leading Pedestrian Interval (LPI)
  - Safety can be improved with shorter crossing distances and better sightlines

Pedestrians cross concurrently with traffic in an intersection with a safer geometry
Intersection with Putnam Avenue

- Shorter pedestrian crossings & leading pedestrian interval (pedestrian head start)
- Narrower street west of Putnam and presence of people indicates pedestrians/neighborhood to drivers, calming traffic
- Protected Intersection Elements (and head start) for bikes
- Mountable truck apron to slow turning cars & allow truck turns
Mountable Turn Apron

- General purpose lane
- Transit lane + right turn lane
Extending the Neighborhood Feel

New planting areas/Blue Bikes locations
At Howard Street/Kelly Road

Existing signal not warranted based on traffic volumes, but signal serves other uses:

• Provides signalized pedestrian crossing on the Amigos School’s designated Safe Route to School
• Stops traffic for Fire Department
• Could help mitigate other implications of the design: traffic volumes could increase with one of two Tubman options