

# South Massachusetts Avenue Corridor Safety Improvements



SMA Advisory Committee Meeting #4 | Sept. 12, 2018

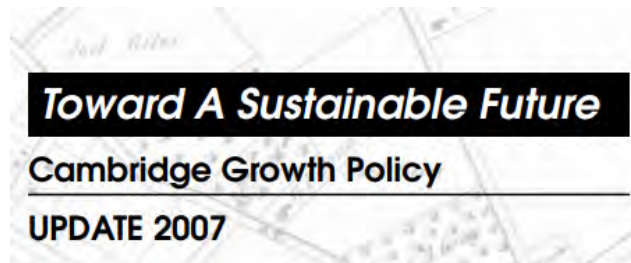
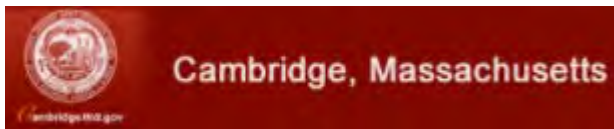
# Agenda

## Massachusetts Avenue – Sidney Street to Memorial Drive

- Welcome
- Review of Project Background & Goals
- Recent Process
- Review of Current Issues
- Discussion of Evaluation Questions and Metrics
- Schedule Update
- Discussion/  
Questions



# Municipal Policies



**Vision Zero** calls for the elimination of fatalities and serious injuries resulting from traffic crashes, and emphasizes that they can, and should be prevented (2016).

**Complete Streets** are designed and operated to enable safe access for *all* users – regardless of age, ability, or mode of transportation (2016).

**Vehicle Trip Reduction Ordinance** established programs to encourage alternatives to single-occupancy vehicle travel (1992).

**Cambridge Growth Policy** emphasizes sustainable modes of transportation such as walking, biking and using transit and low-emission vehicles, which promote livability and help to improve air quality and reduce greenhouse gas emissions (1993/2007).

# Flexible Implementation

Based on Policies and Plans and direction of City leadership:

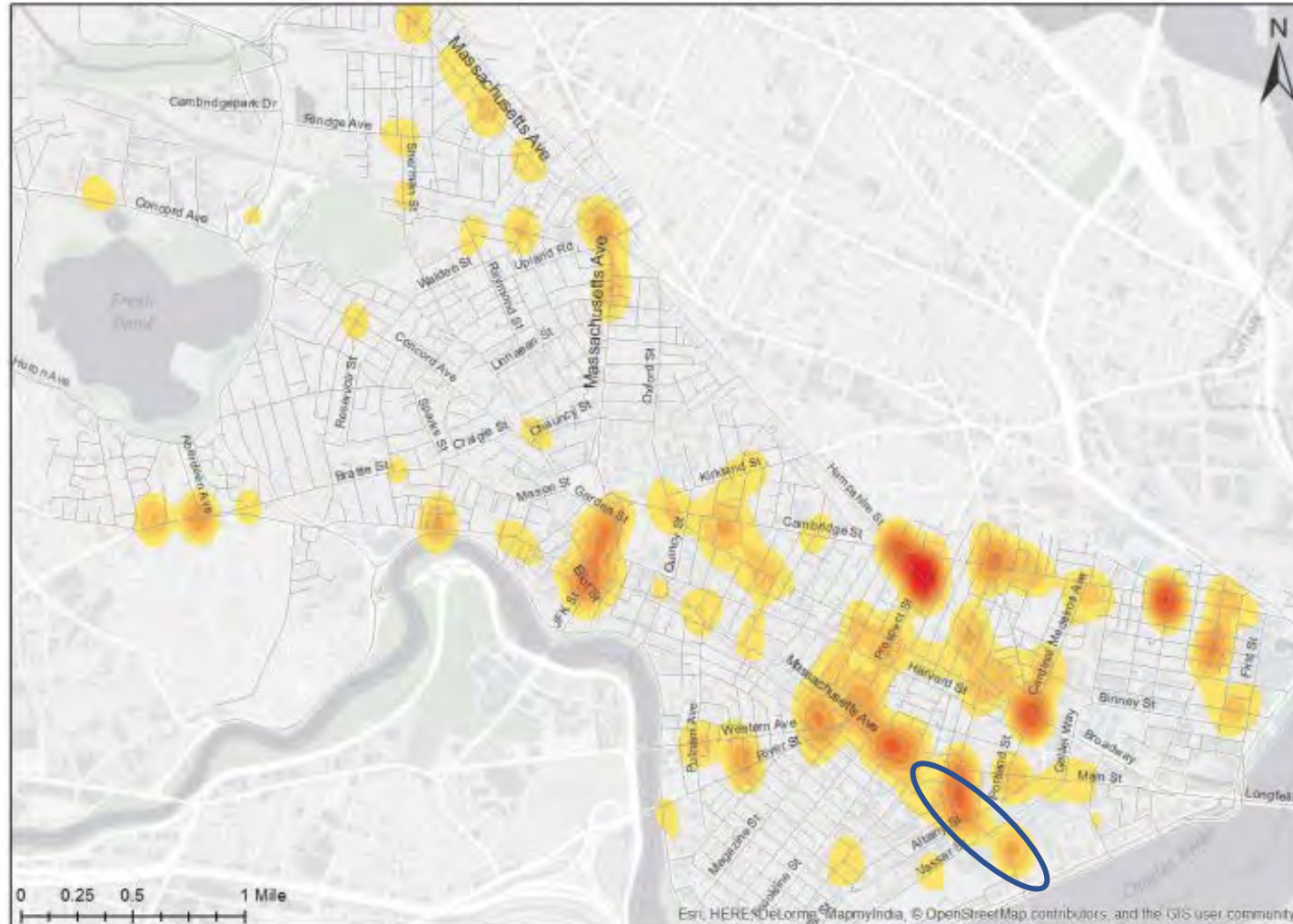
- Evaluate and implement “**quick build**” solutions to enhance the comfort and promote sustainable transportation for people walking, biking, driving and using transit
  - ✓ Designs that are **flexible** after implementation
  - ✓ **Modifications possible** based on evaluation (including feedback)



# Corridor Safety History

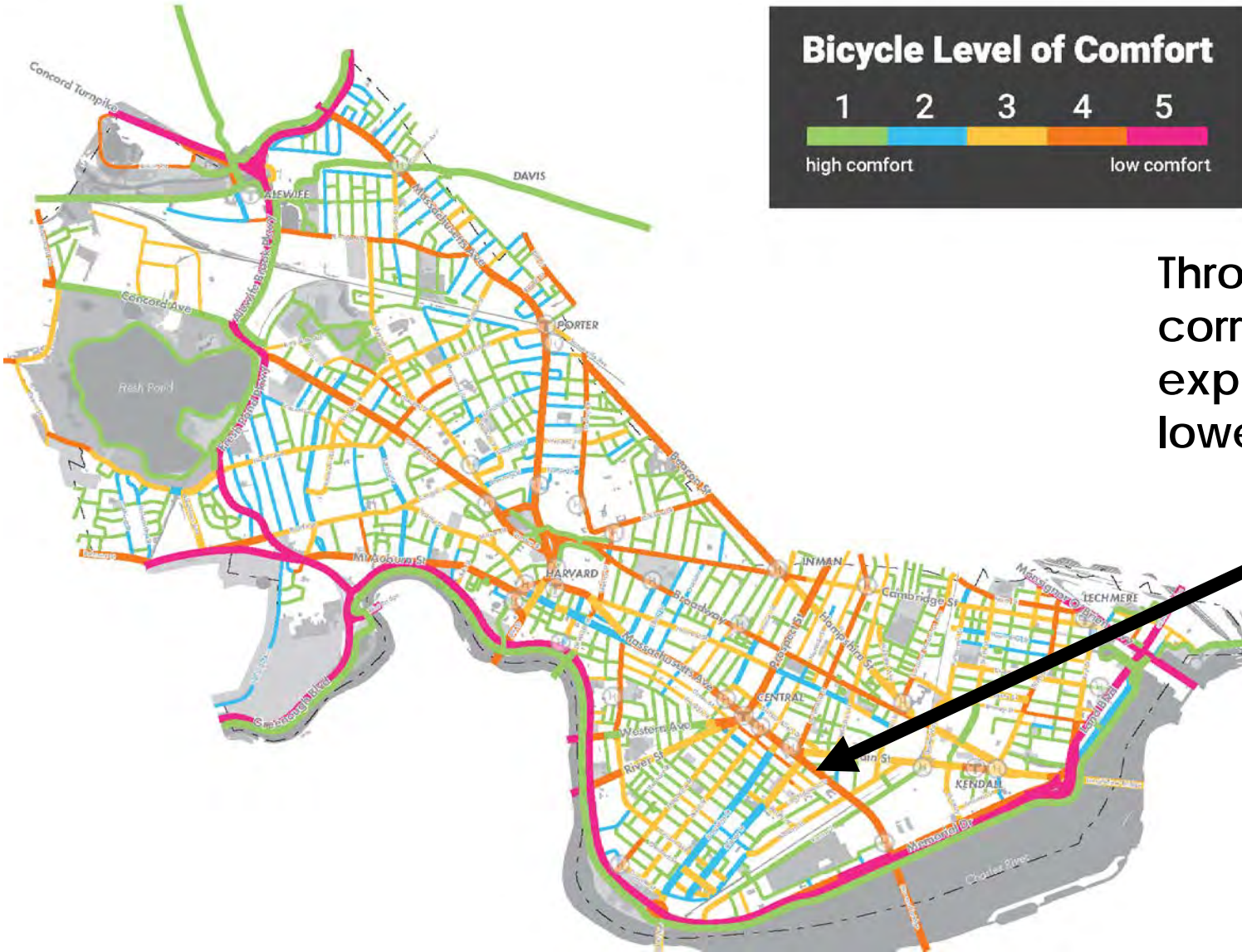
## Reported Crashes Requiring EMS Transport, 2015-2016

Crashes Requiring EMS Transports 2015-2016



Density Map of Crashes Requiring EMS Transport to the Hospital, as reported by responding officer, for 2015 and 2016.

# People Bicycling



Throughout the entire corridor length, users experience the second lowest level of comfort.

# People Walking

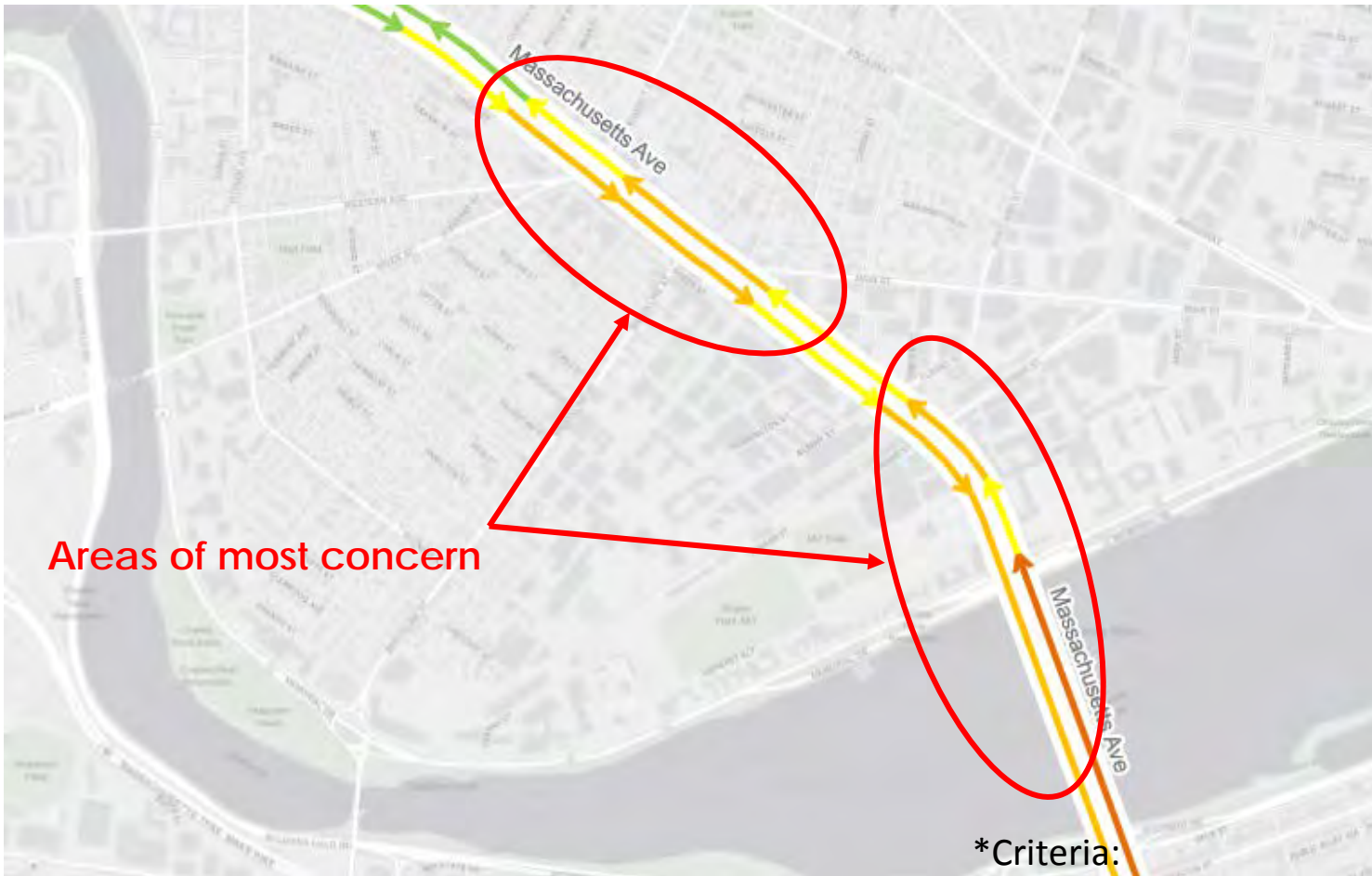


Walking in this corridor:

- ✓ Local and regional destinations and connections
- ✓ Evaluating ease and comfort of crossing at and between intersections

# Transit Service Analysis

## MBTA Bus Route 1\*: AM Peak



Composite Grade*
Excellent (A)
Good (B)
Satisfactory (C)
Unsatisfactory (D)
Poor (E)
Failing (F)
N/A

\*Route 1 is ranked in top 5 MBTA bus routes for ridership.

\*Criteria:

- Excess vehicle travel time compared to a minimum
- Passenger time (travel time x riders)
- Reliability (how much the travel time varies)



# Transit Service

## MBTA Bus Route 1: PM Peak



Composite Grade
Excellent (A)
Good (B)
Satisfactory (C)
Unsatisfactory (D)
Poor (E)
Failing (F)
N/A

Method: Automatic Passenger Counter (APC) Data (MBTA)

# Project Goals



- ✓ Address safety issues and reduce crashes - Vision Zero
- ✓ Reduce transit delays
- ✓ Enable/encourage people of all ages and abilities to choose sustainable transportation

# Public Process



- ✓ Appointed Advisory Committee
- ✓ Wikimap online
- ✓ Survey online and at public meetings
- ✓ Outreach to Businesses
  - ✓ Direct meetings with XX local businesses
  - ✓ Coordination with CSBA
- ✓ Individual Stakeholder meetings
- ✓ Transit/Ped/Bike Committees
- ✓ Communitywide Meetings
- ✓ Posted and electronic announcements

# Public Feedback



- ✓ Need for safer conditions for bicyclists
  - ✓ Motorists and delivery vehicles block bike lanes
  - ✓ Desire for greater separation from moving vehicles
- ✓ Need for additional crosswalks traversing Mass Ave
- ✓ Desire to improve transit operations
- ✓ Concerns about unpredictable ridesharing, tour bus, food truck, commercial loading & pick-up/drop-off activity
- ✓ Relocate MIT-related tour buses loading/unloading
- ✓ Concerns about long vehicle queues, traffic at Vassar Street
- ✓ Minimize conflicts,
  - ✓ bus/bike conflicts and
  - ✓ bike/ped conflicts at 77 Mass Ave.
- ✓



# Actions Since Last Public Meeting

- Additional outreach – 3 farmers markets, 2 senior coffees, 1 senior town meeting, 2 Central Fleas, 1 Taste of Cambridge,
- Review curb use changes with MIT
- Investigate additional queue jumps for the bus in NB direction
- Coordination with state agencies on additional measures in short and long-term on state facilities
- Additional review of traffic analysis
  - Ascertain that design does not negatively impact corridor bus service prior to implementation

# Draft Design – Before and After

## South Mass. Ave. Corridor



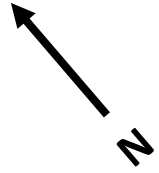
*Before*



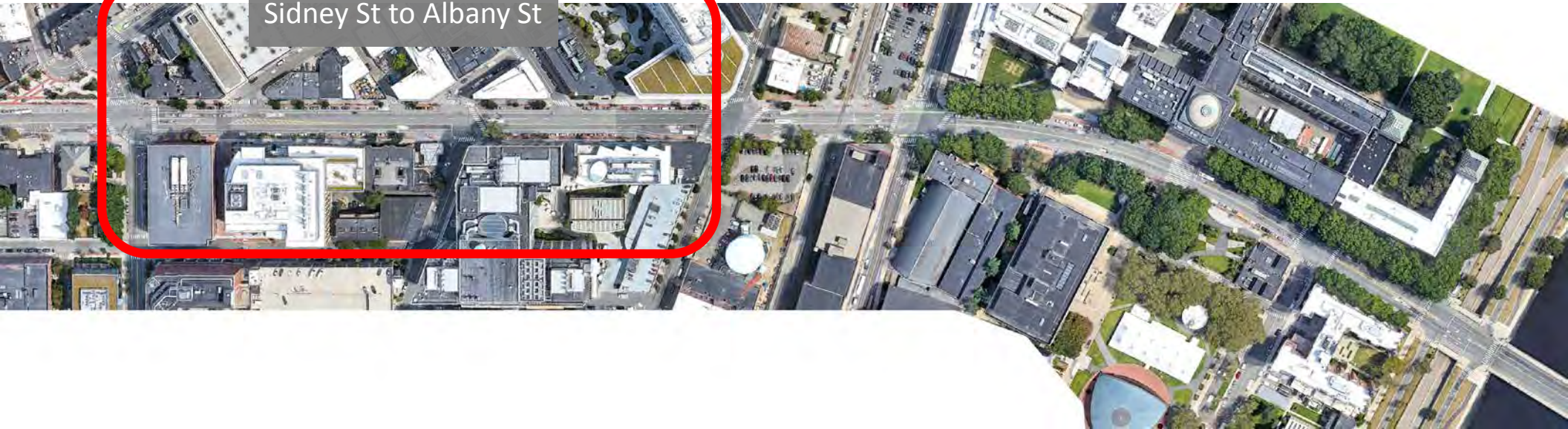
*After*

# Proposed Design

## Three Main Sections

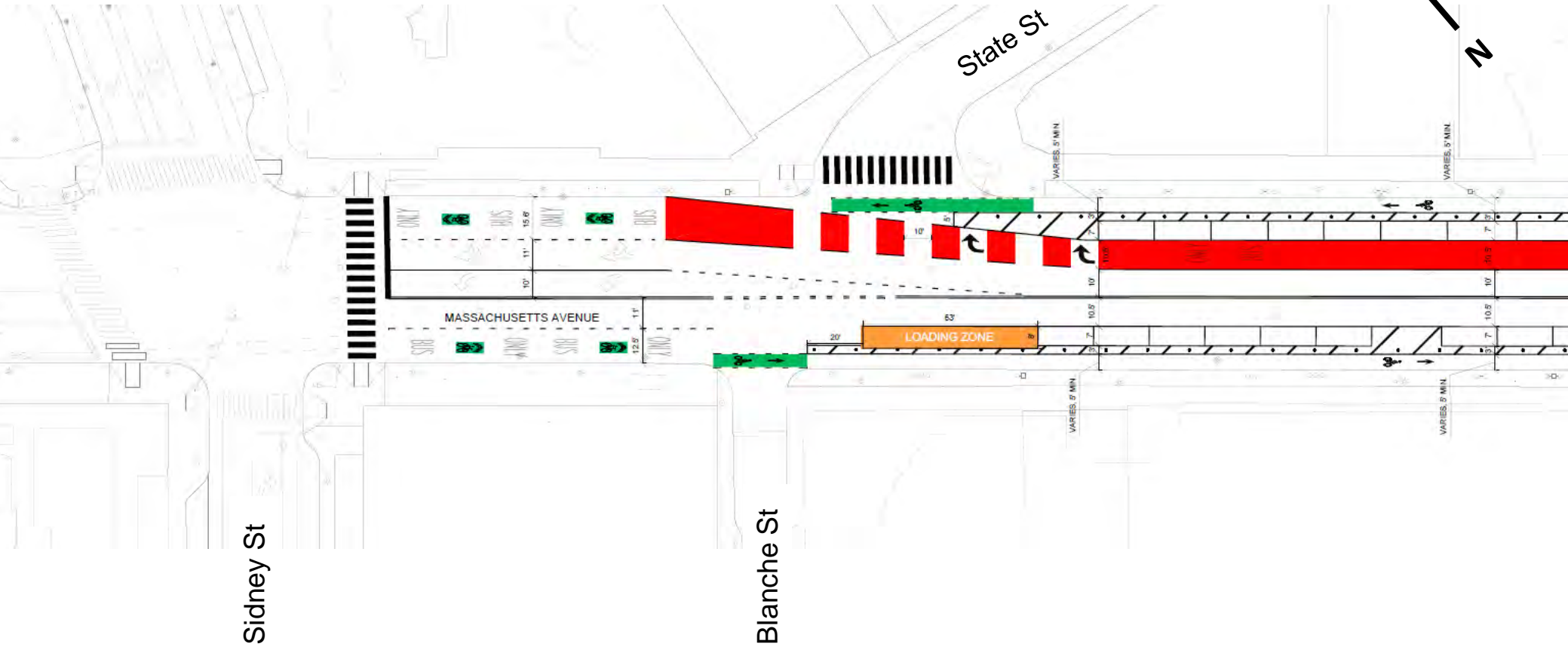


Section 1:  
Sidney St to Albany St



# Proposed Design

## Section 1: Sidney St to Albany St (A)

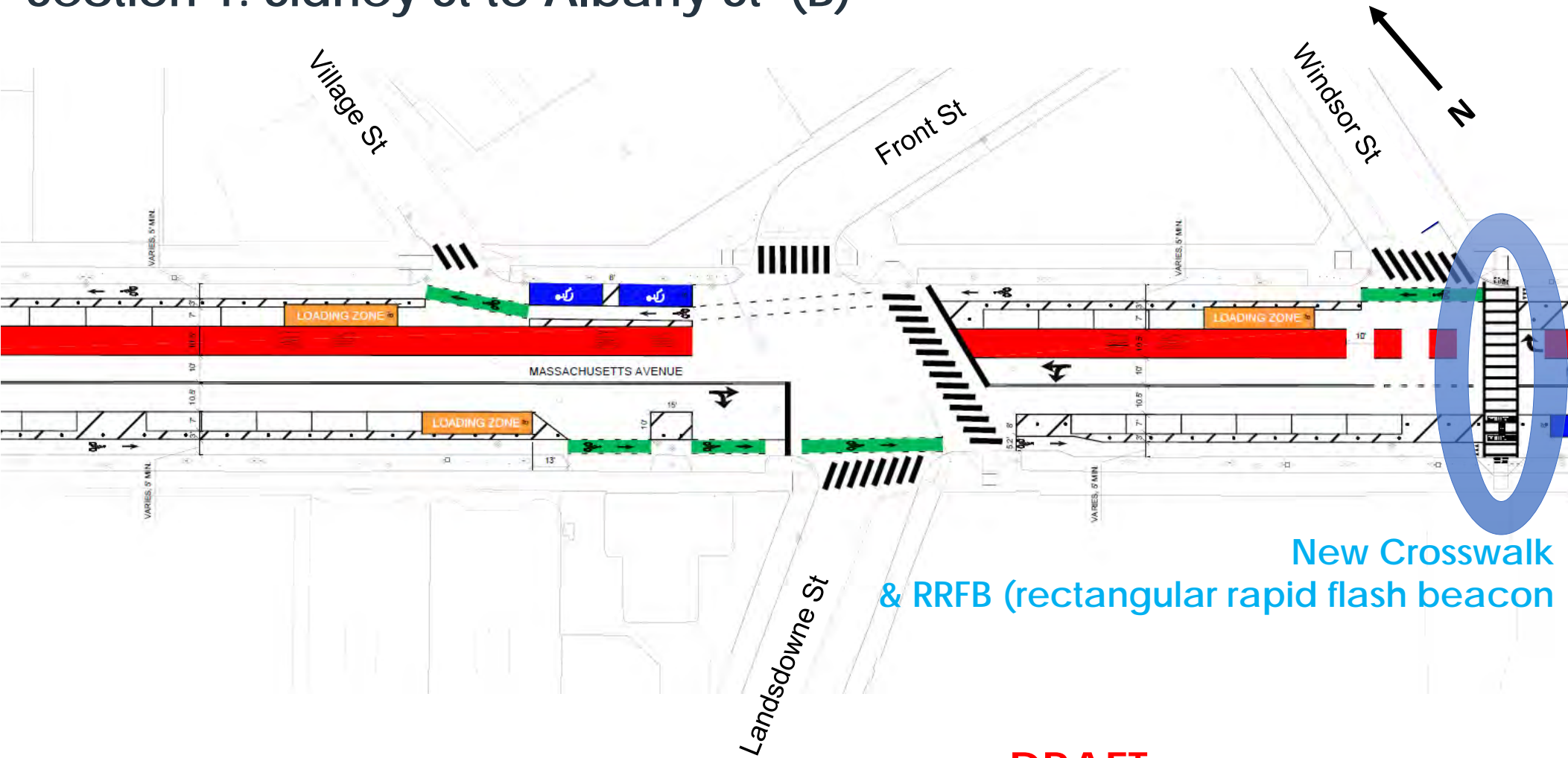


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# Proposed Design

## Section 1: Sidney St to Albany St (B)

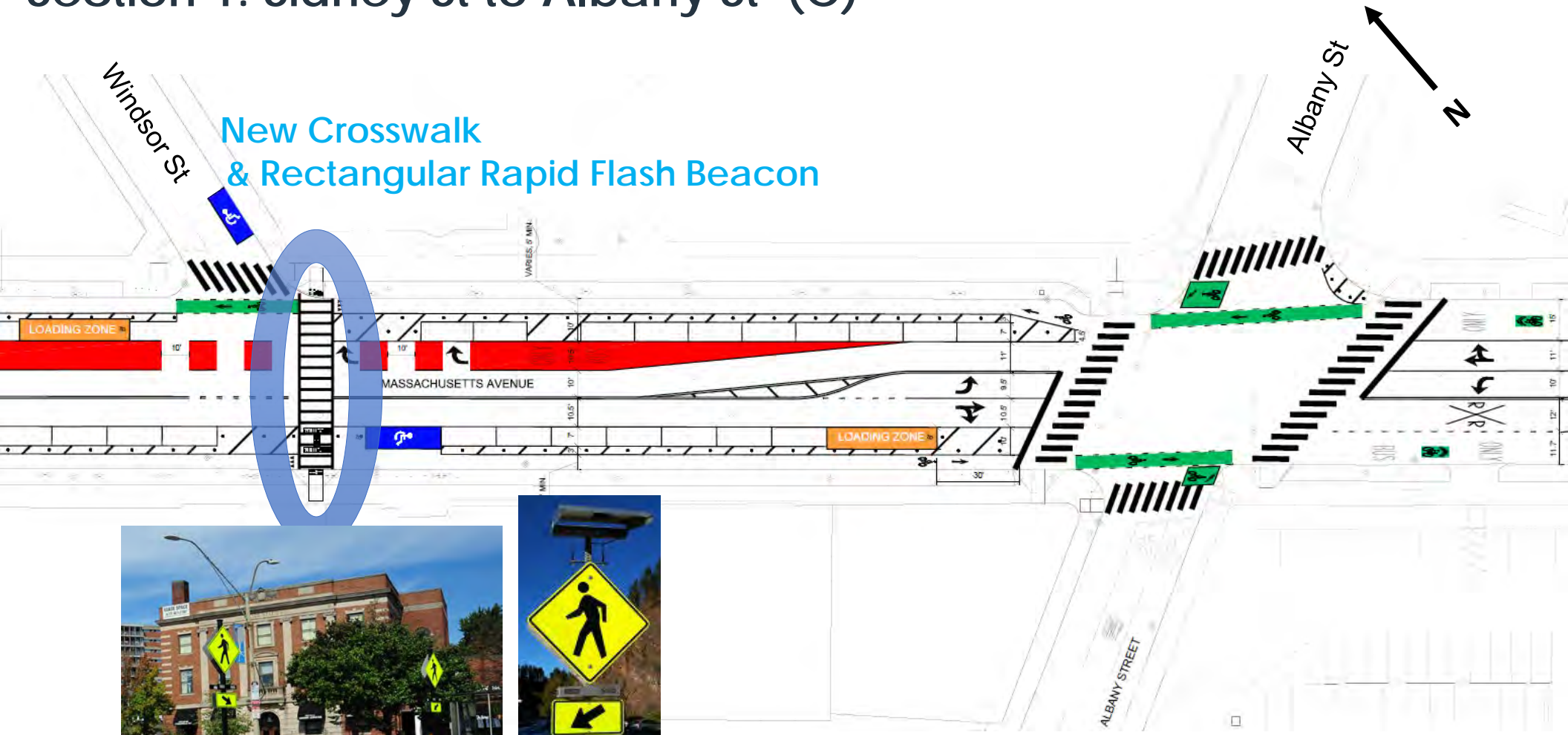


New Crosswalk  
& RRFB (rectangular rapid flash beacon)

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# Proposed Design

## Section 1: Sidney St to Albany St (C)



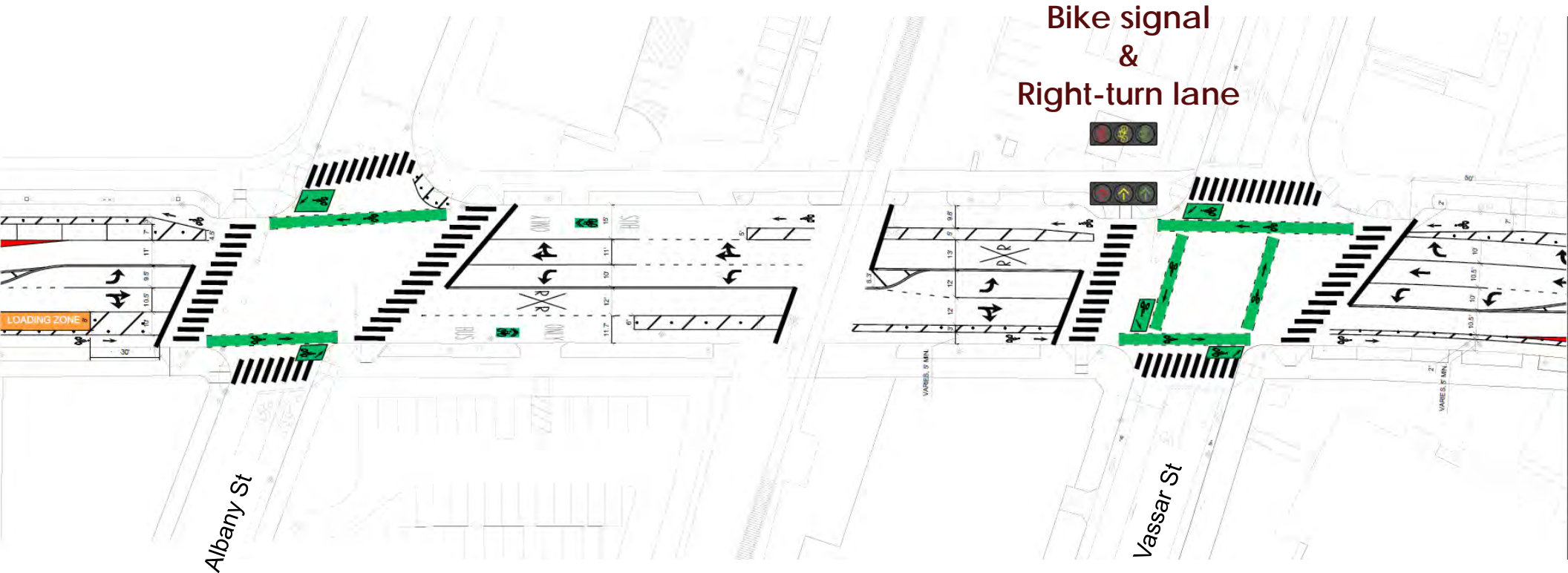
New Crosswalk  
& Rectangular Rapid Flash Beacon



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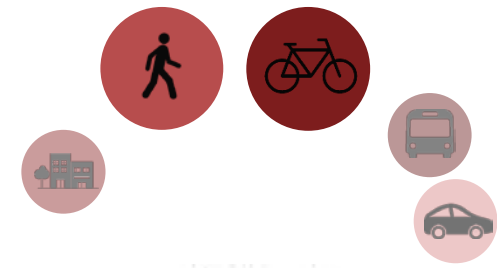
# Proposed Design

## Section 2: Albany St & Vassar St



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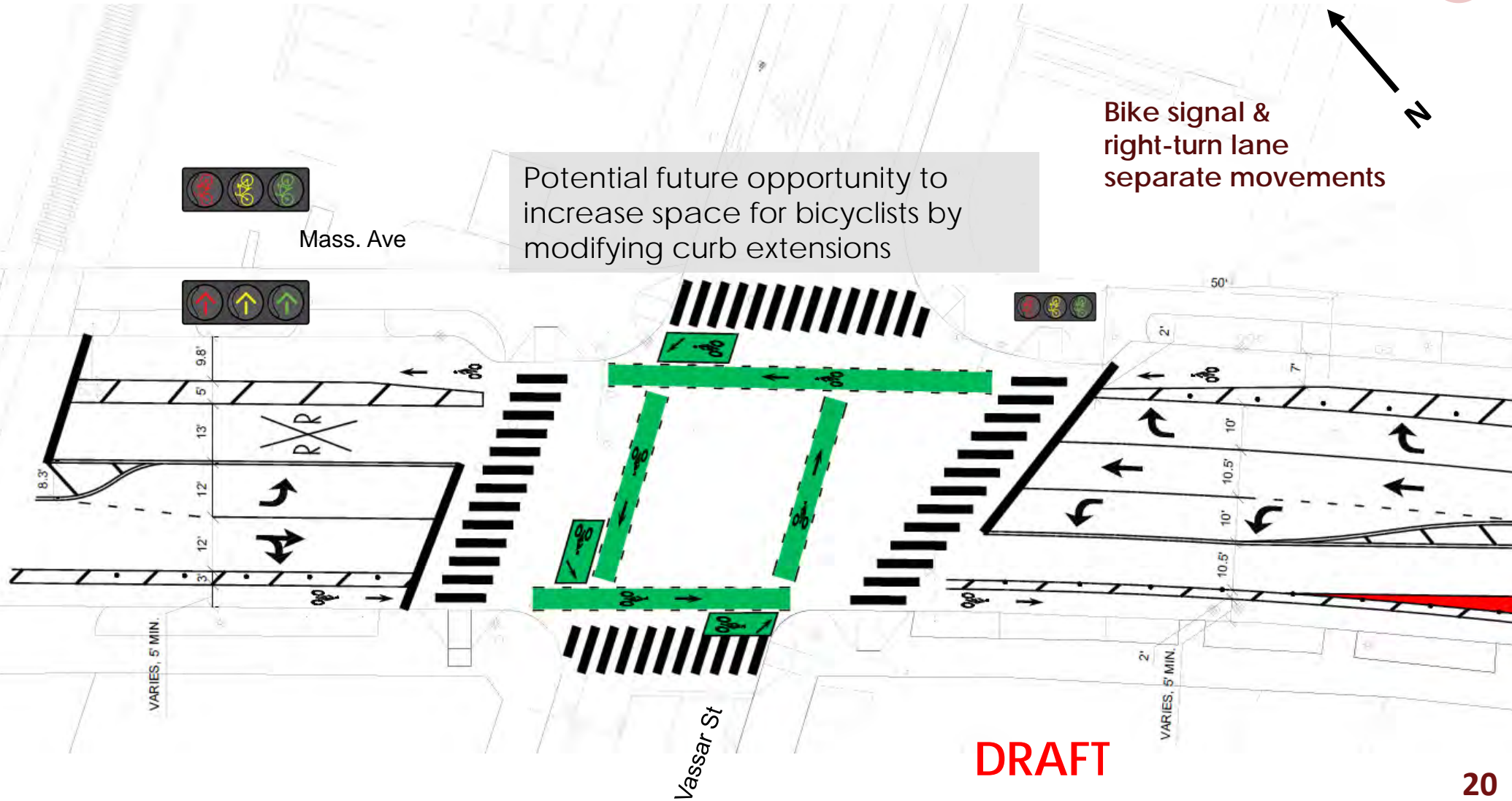
# Proposed Design



Mass. Ave

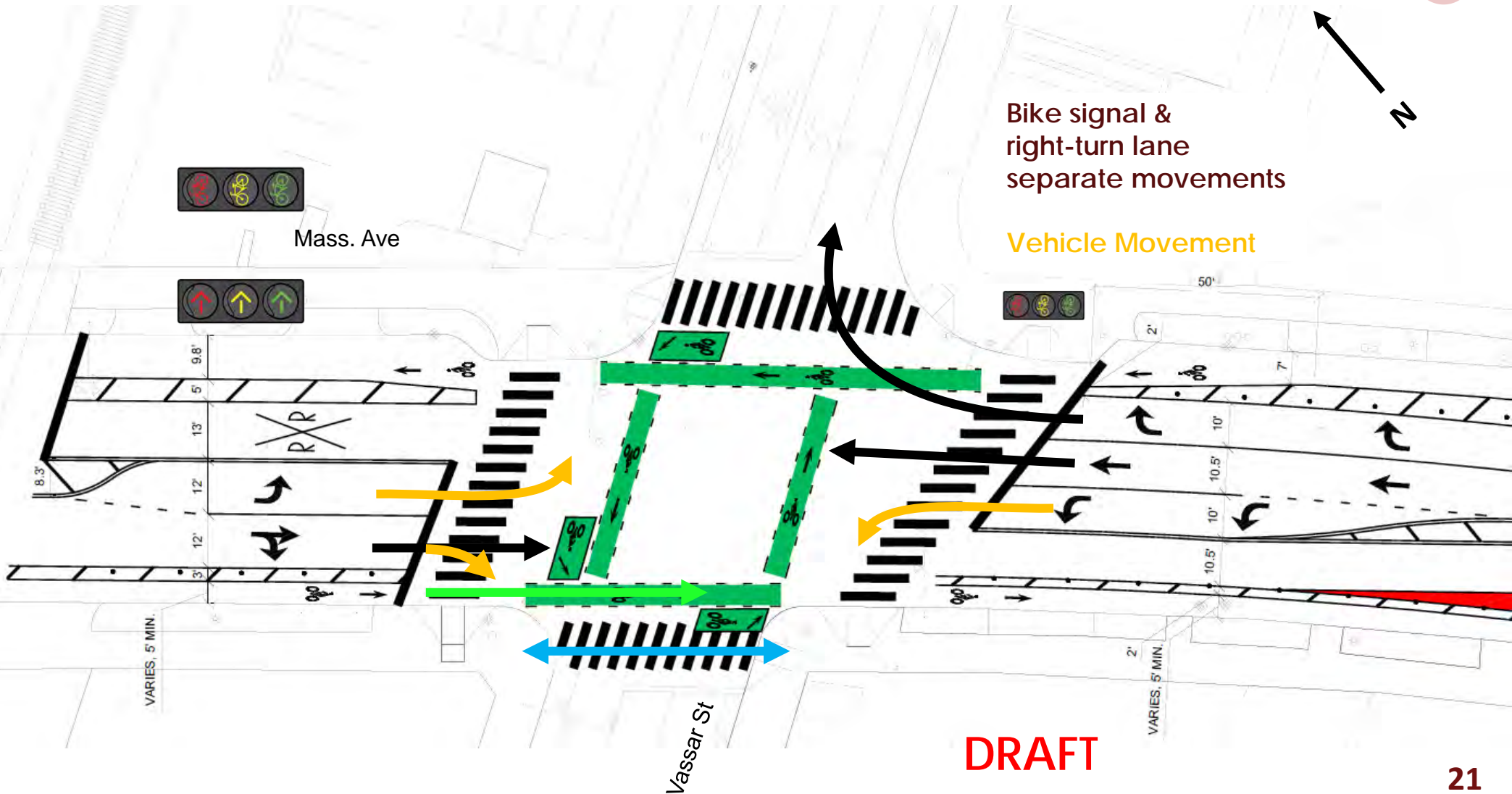
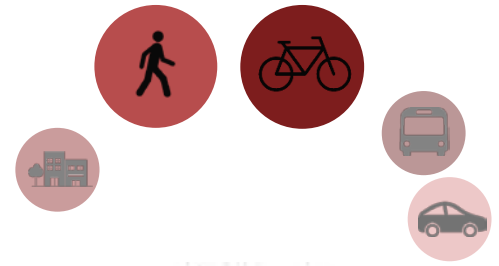
Potential future opportunity to increase space for bicyclists by modifying curb extensions

Bike signal & right-turn lane separate movements



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# Proposed Design

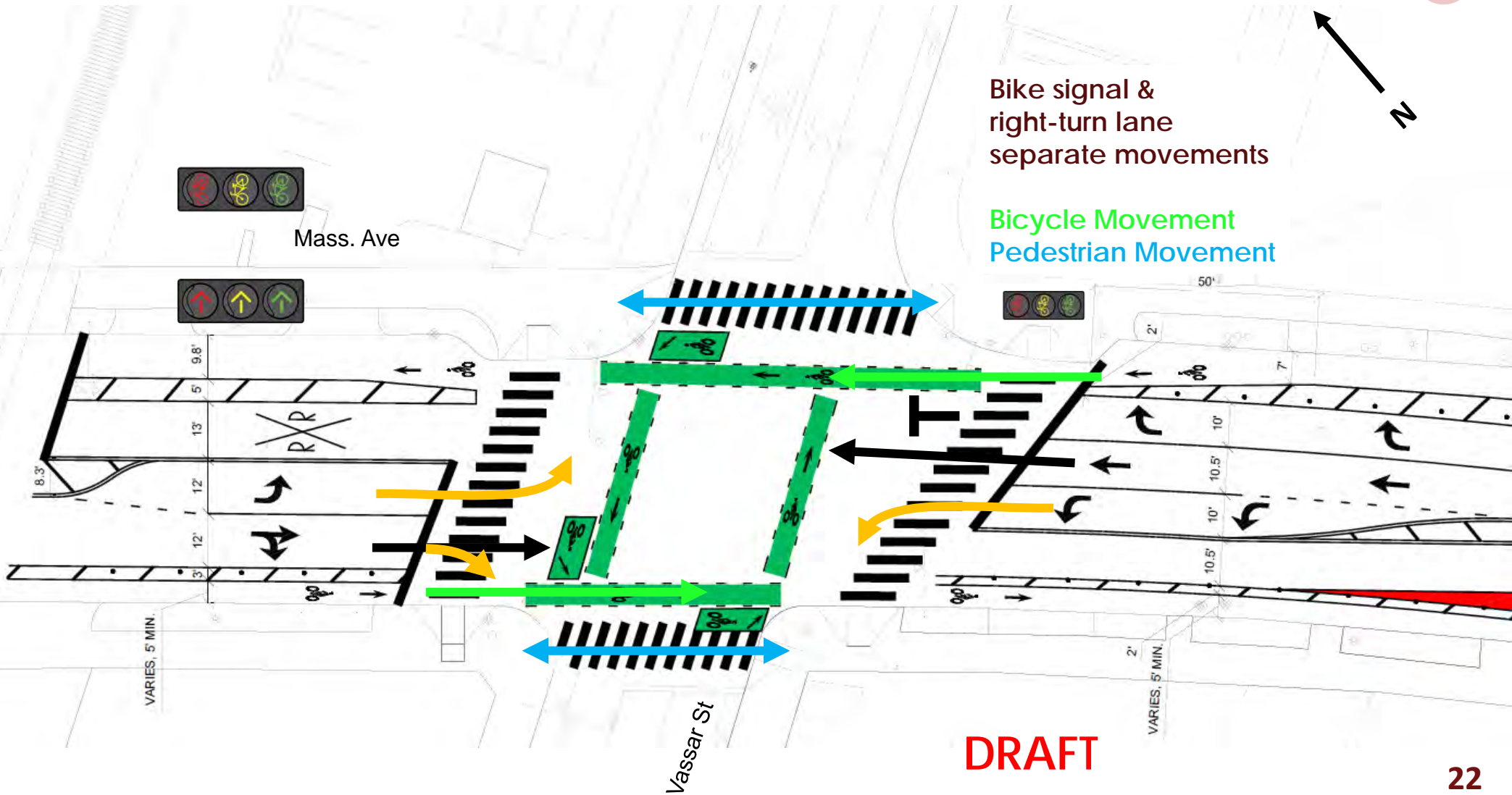
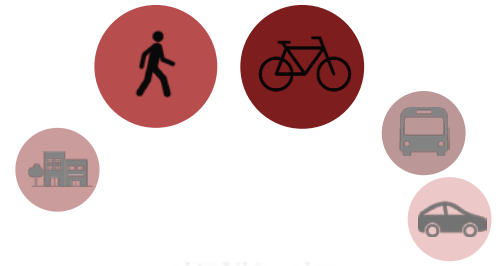


Bike signal & right-turn lane separate movements

Vehicle Movement

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# Proposed Design



Bike signal & right-turn lane separate movements

Bicycle Movement  
Pedestrian Movement

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# Proposed Design

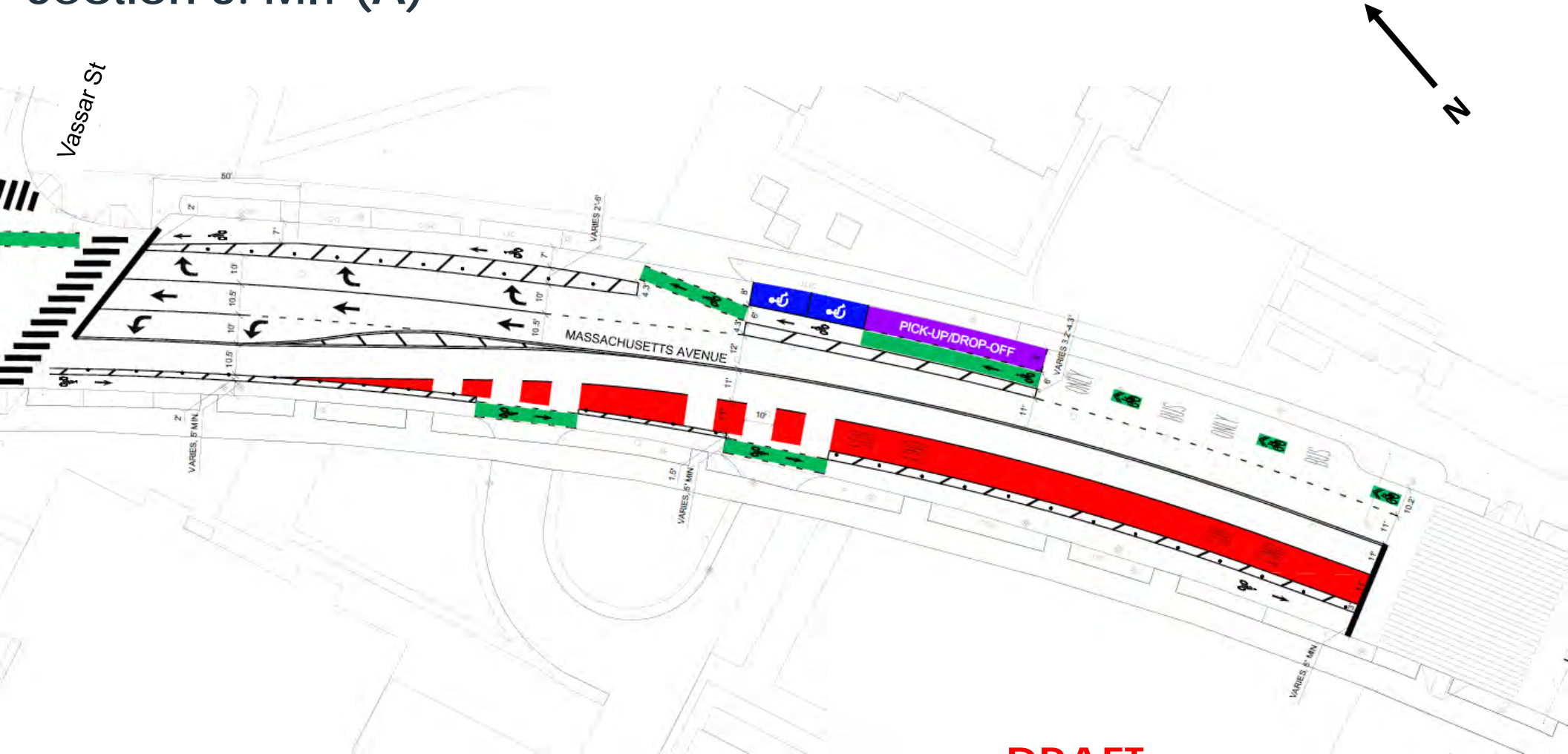
## Three Main Sections



Section 3:  
MIT

# Proposed Design

## Section 3: MIT (A)

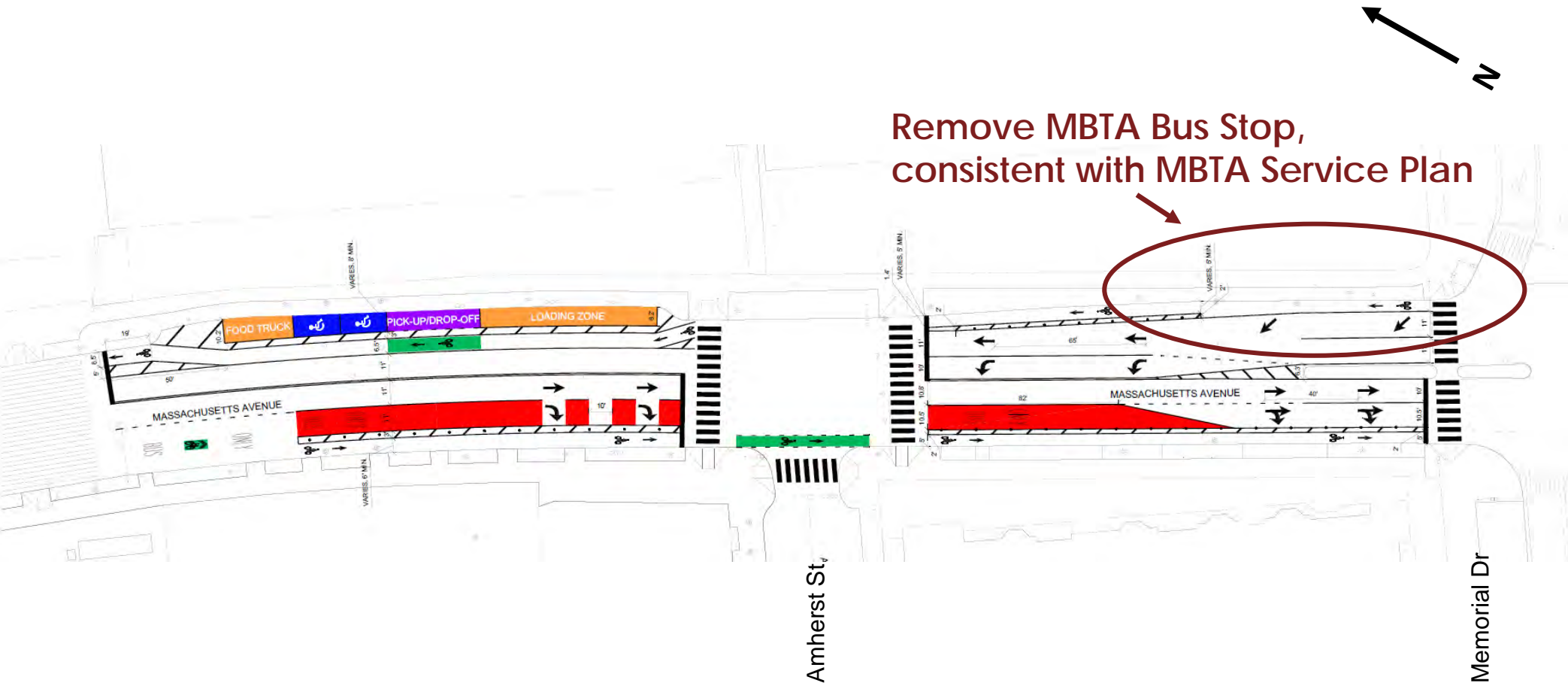


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# Proposed Design

## Section 3: MIT (B)



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# Project Evaluation Questions & Data Collection

- User Feedback
  - On-line survey; hard copies available
  - Wikimap
  - Intercept surveys
- Technical Data
  - Counts: motor vehicles, pedestrian, cyclists
  - Speeds
  - Travel times along corridor
    - Transit vehicles
    - Motor vehicles
- Safety Data
  - Crash analysis (requires 3 years for statistical validity, but will monitor for issues and trends)



# Project Evaluation Questions & Data Collection

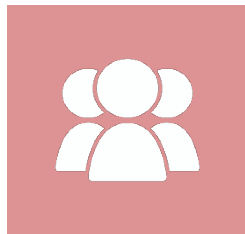
- Signal intersections
  - Vehicle queues
  - LOS for Pedestrians
  - Conflicts
- New Pedestrian Crossing
  - Counts: number of users
  - Yield study (based on standard protocols)
- Parking/Loading/Ride Hail
  - Parking study
  - Delivery vehicles
  - Observations: where are ride hail vehicles stopping?

NEXT STEPS

# Schedule



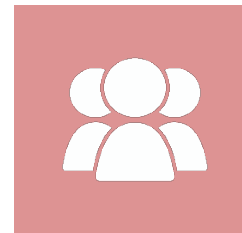
Bicycle,  
pedestrian,  
traffic  
counts  
April



Public  
Meeting #1  
May 3



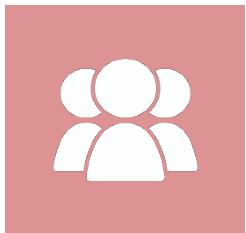
Refine Design  
May - August



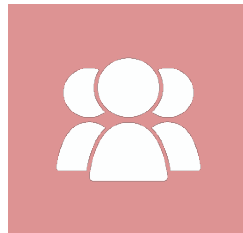
Public Meeting  
#2/Open House  
June 19



Parking study  
Week of April  
30



Advisory  
Committee  
Meeting #1  
April 11



Advisory  
Committee  
Meetings #2-3  
May, Sept.



Anticipated  
Implementation  
Fall/Oct 2018

Evaluation

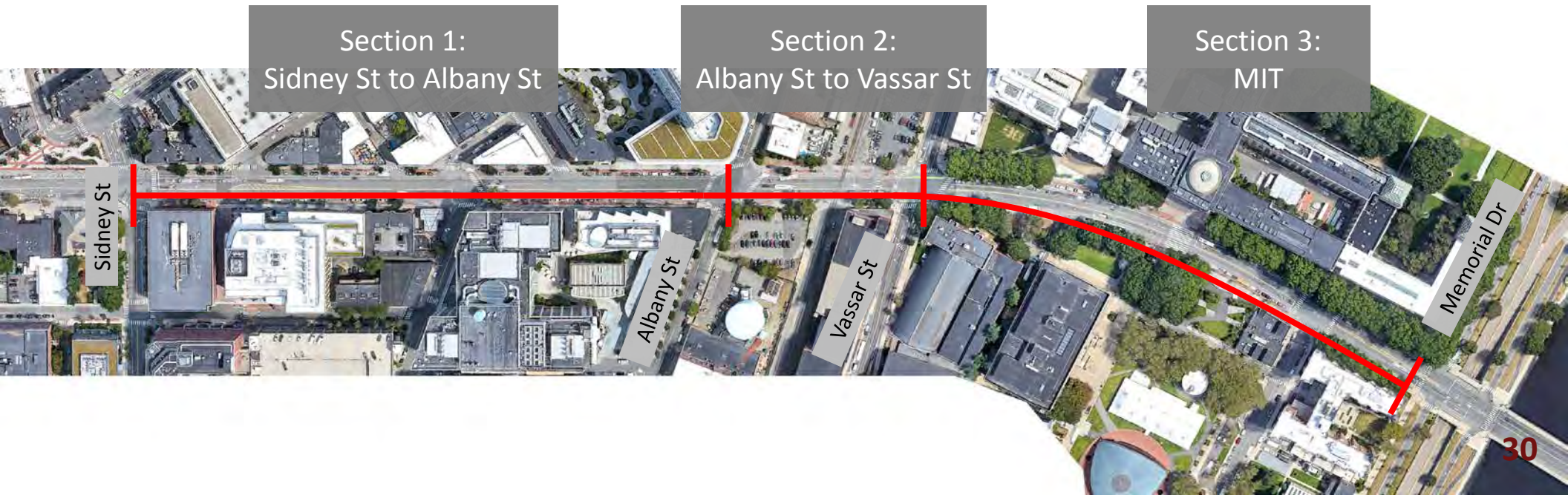


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# Transportation/Traffic Analysis

## Three Main Sections

The corridor has been divided into 3 sections for clarity



Section 1:  
Sidney St to Albany St

Section 2:  
Albany St to Vassar St

Section 3:  
MIT

Sidney St

Albany St

Vassar St

Memorial Dr

30

# Transportation/Traffic Analysis

## Cross Sections

- The three general cross sections (intersections vary)

Section 1:  
Sidney St to Albany St



Section 2:  
Albany St to Vassar St

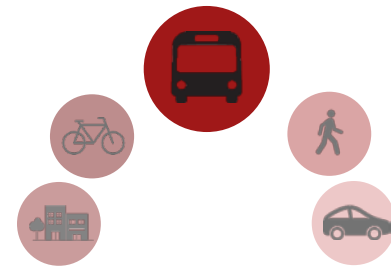


**Most Complicated**

Section 3:  
MIT



# Transportation/Traffic Analysis



## Bus Facilities

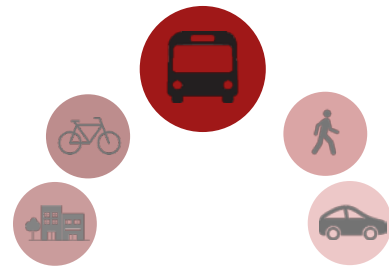
Bus lanes proposed for two sections, to address the key areas of delay



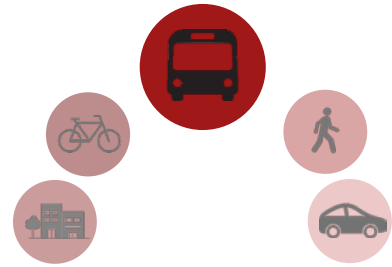


# Transportation/Traffic Analysis

## Bus Facility Details - *After*



# Transportation/Traffic Analysis



## Bus Facility Details - *Before*



# Transportation/Traffic Analysis



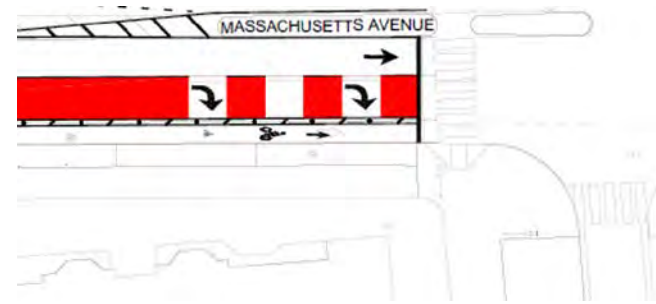
## Bus Facility Details

Bus lanes at intersections: Right turning motorists may use bus lane

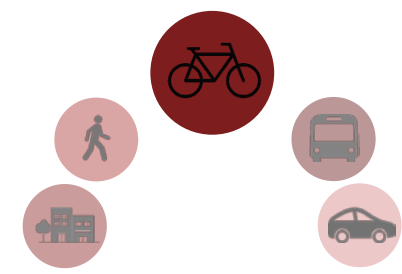
National Precedent



Design Sample

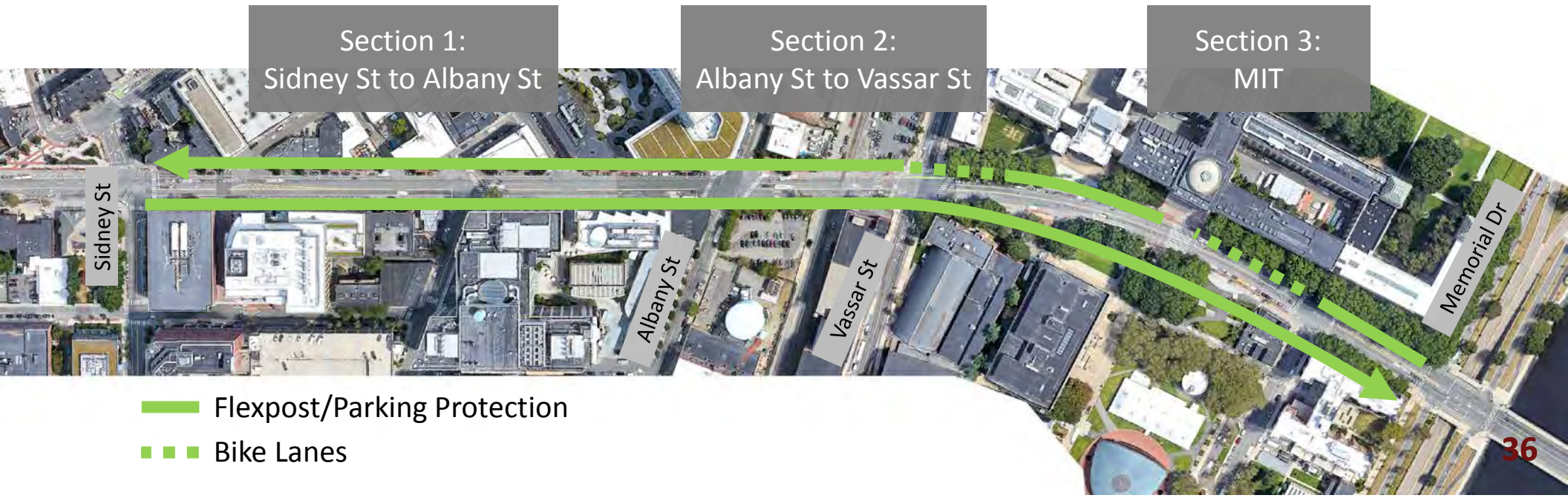


# Transportation/Traffic Analysis

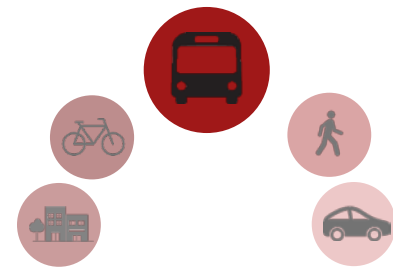


## Bicycle Facilities

For most of the corridor, separated bike lanes can be created using on-street parking and flex posts



# Transportation/Traffic Analysis



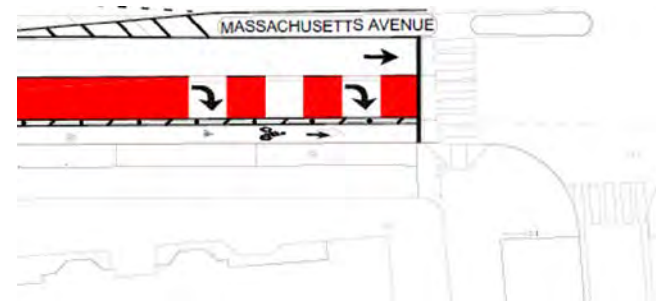
## Bus Facility Details

Bus lanes at intersections: Right turning motorists may use bus lane

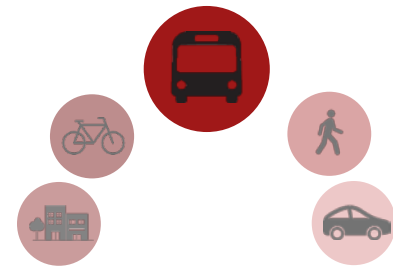
National Precedent



Design Sample



# Transportation/Traffic Analysis



## Bus Facility Details

Bus Lanes  
with Parking



DESIGN OVERVIEW

# Bicycle Facilities

## Separated Bike Lane – Parking Protected



Parking Protected Bicycle Lanes

DESIGN OVERVIEW

# Bicycle Facilities

## Bike Lane with Curbside Parking

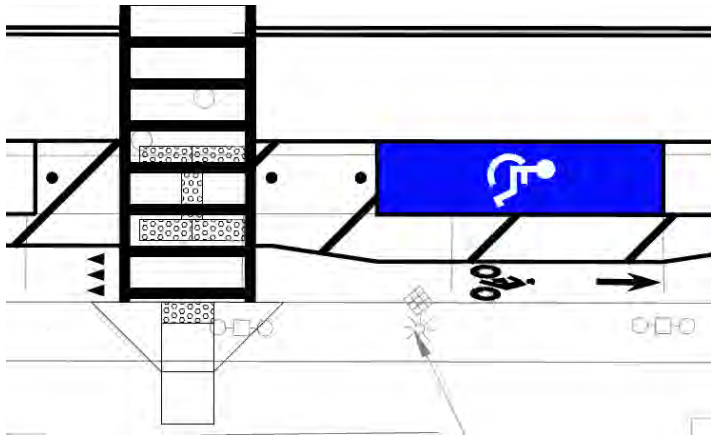


Curbside parking/Accessible Parking



# Parking Facilities

## Accessible Parking

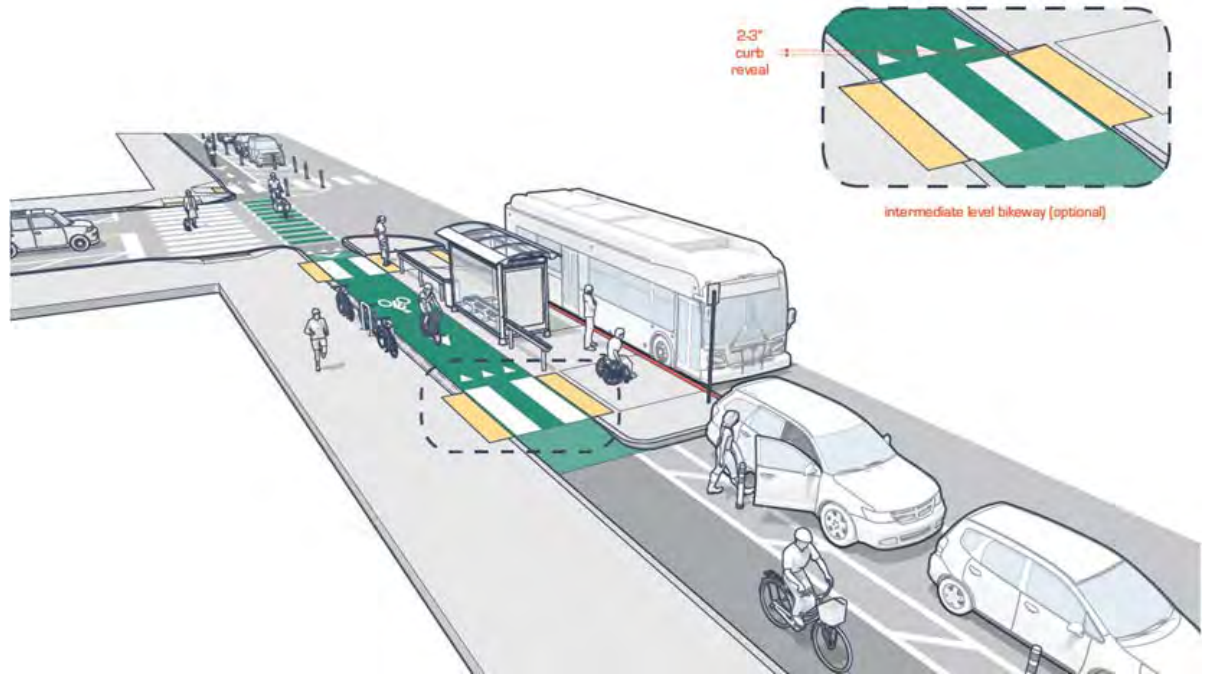


Denver, CO

# Bus Stop Options

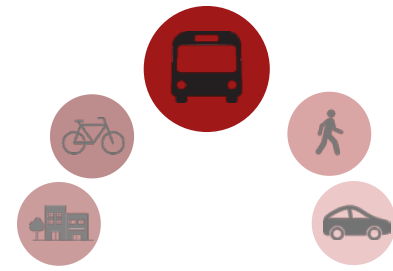


*Bus stop at curb*



*Floating bus stop  
(possible future item)*

# Bus Stop Options



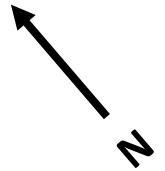
Potential for a future modular floating bus stop under evaluation



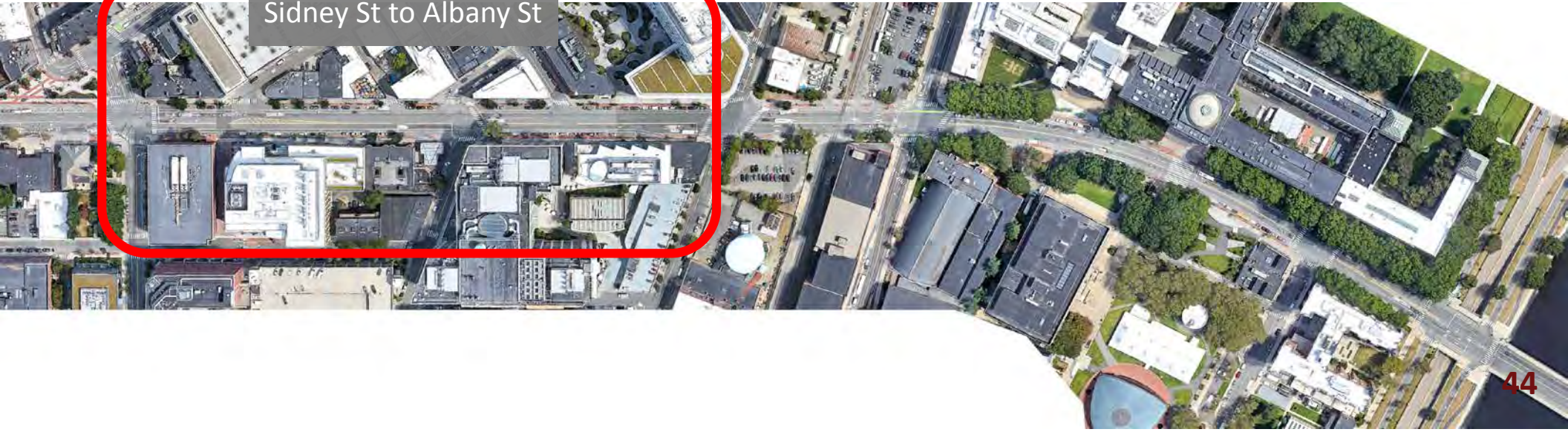
# Transportation/Traffic Analysis

## Three Main Sections

- Detailed Design



Section 1:  
Sidney St to Albany St



# Transportation/Traffic Analysis

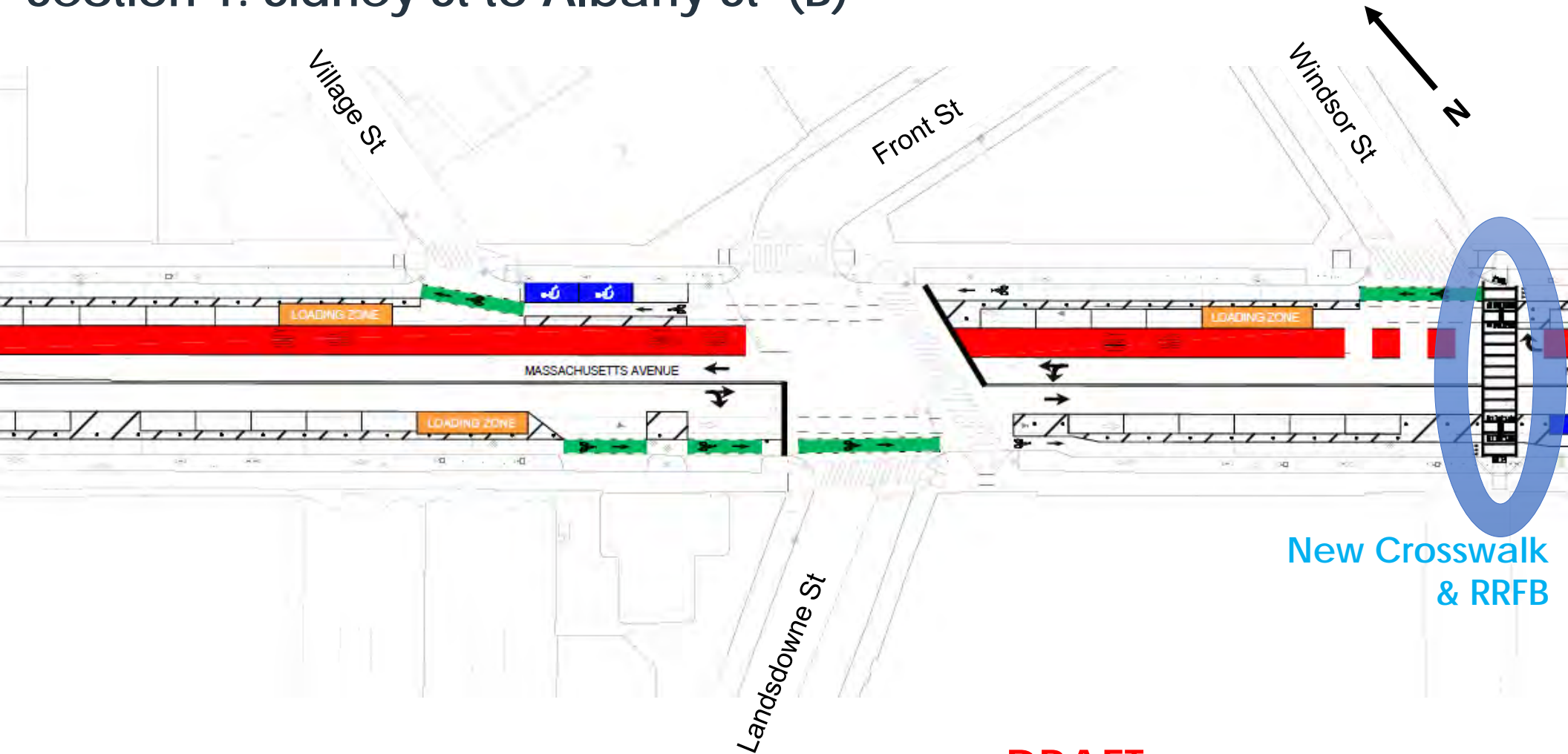
## Section 1: Sidney St to Albany St (A)



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# Transportation/Traffic Analysis

## Section 1: Sidney St to Albany St (B)



New Crosswalk  
& RRFB

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# Transportation/Traffic Analysis

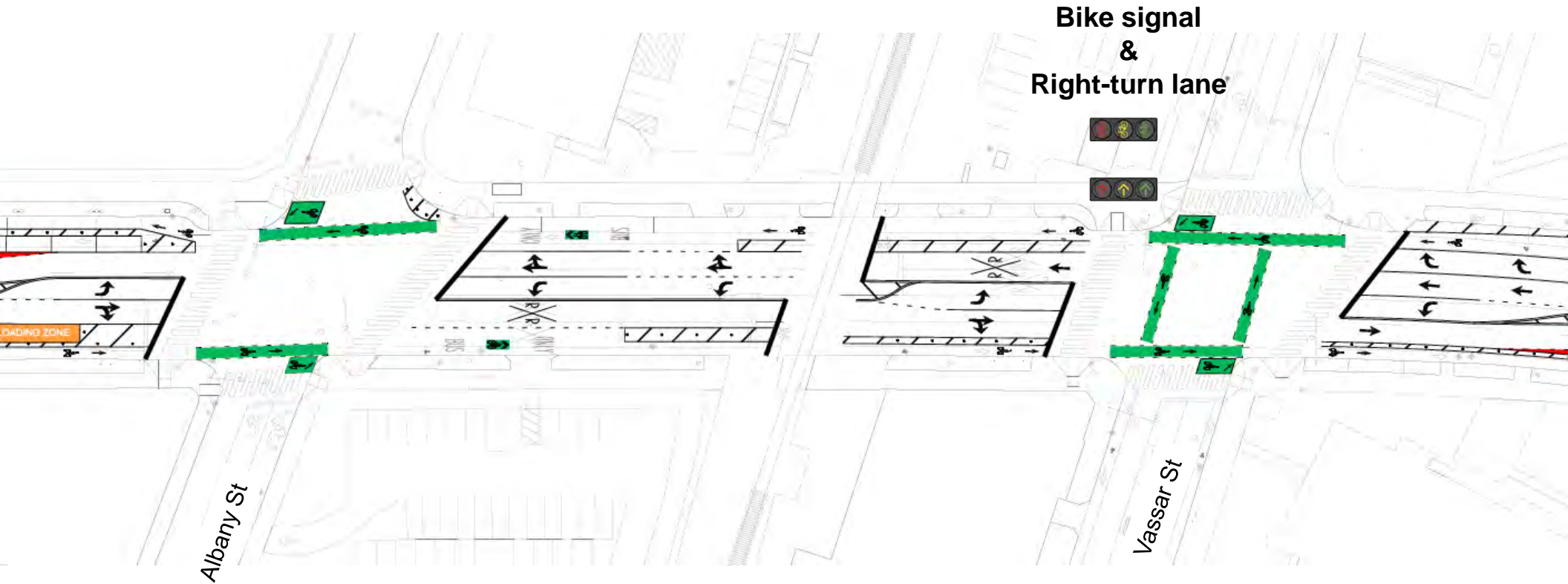
## Section 1: Sidney St to Albany St (C)



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# Transportation/Traffic Analysis

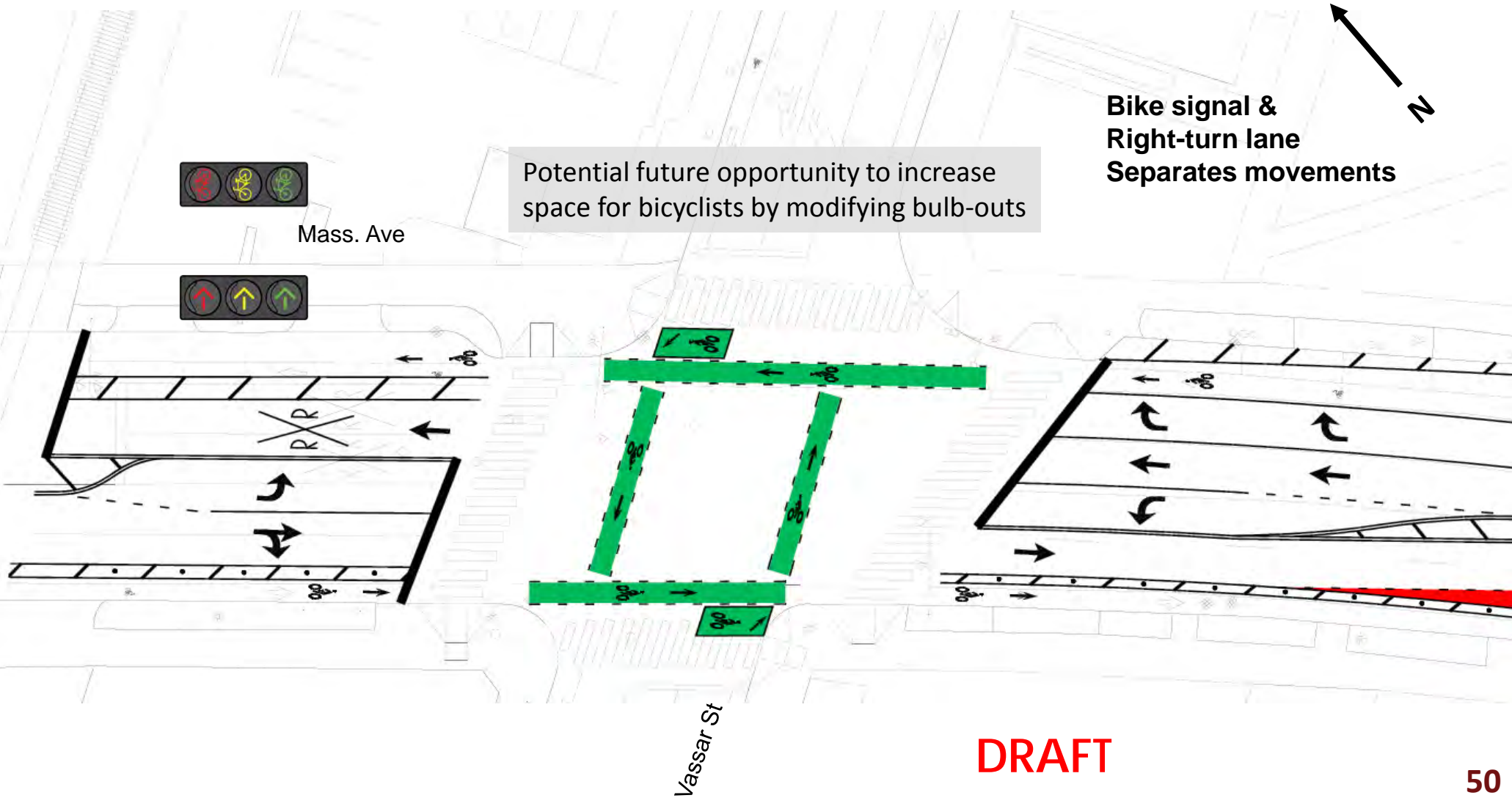
## Section 2: Albany St & Vassar St



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# Design Analysis



Potential future opportunity to increase space for bicyclists by modifying bulb-outs

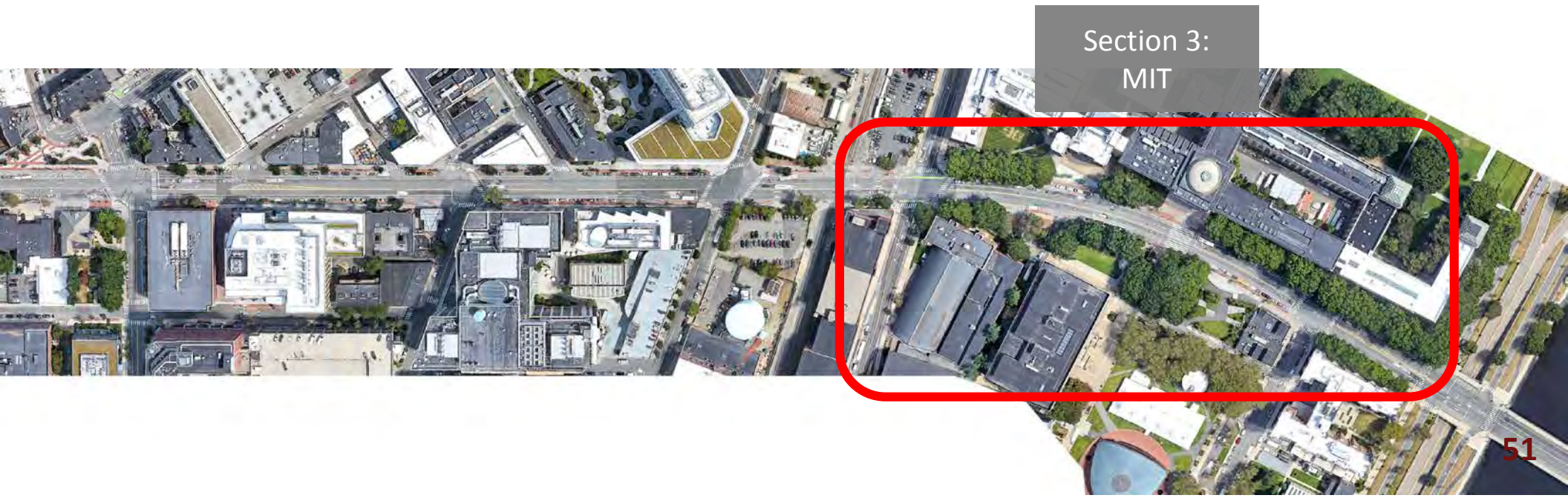
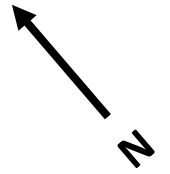
**Bike signal & Right-turn lane**  
**Separates movements**

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# Transportation/Traffic Analysis

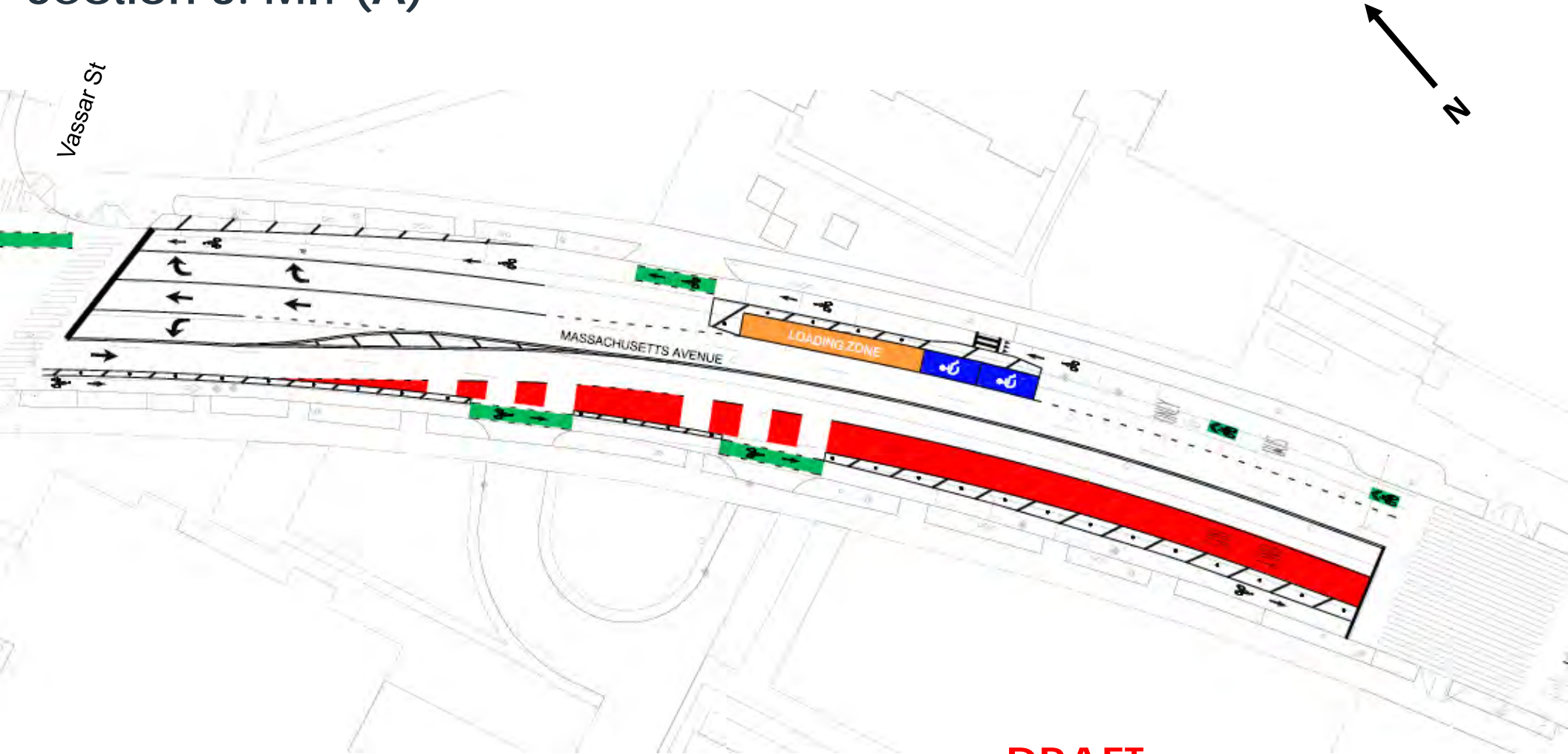
## Three Main Sections

Other Design Details



# Transportation/Traffic Analysis

## Section 3: MIT (A)

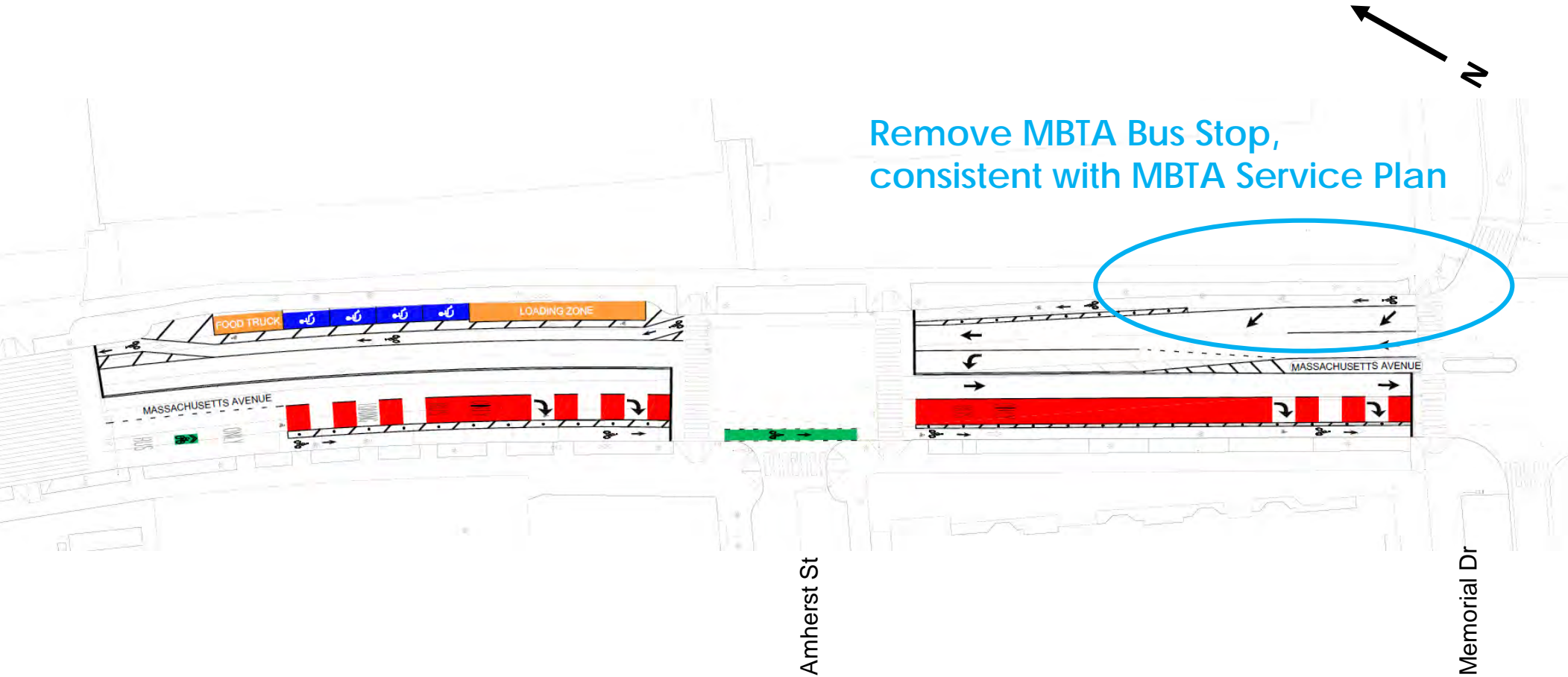


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# Transportation/Traffic Analysis

## Section 3: MIT (B)

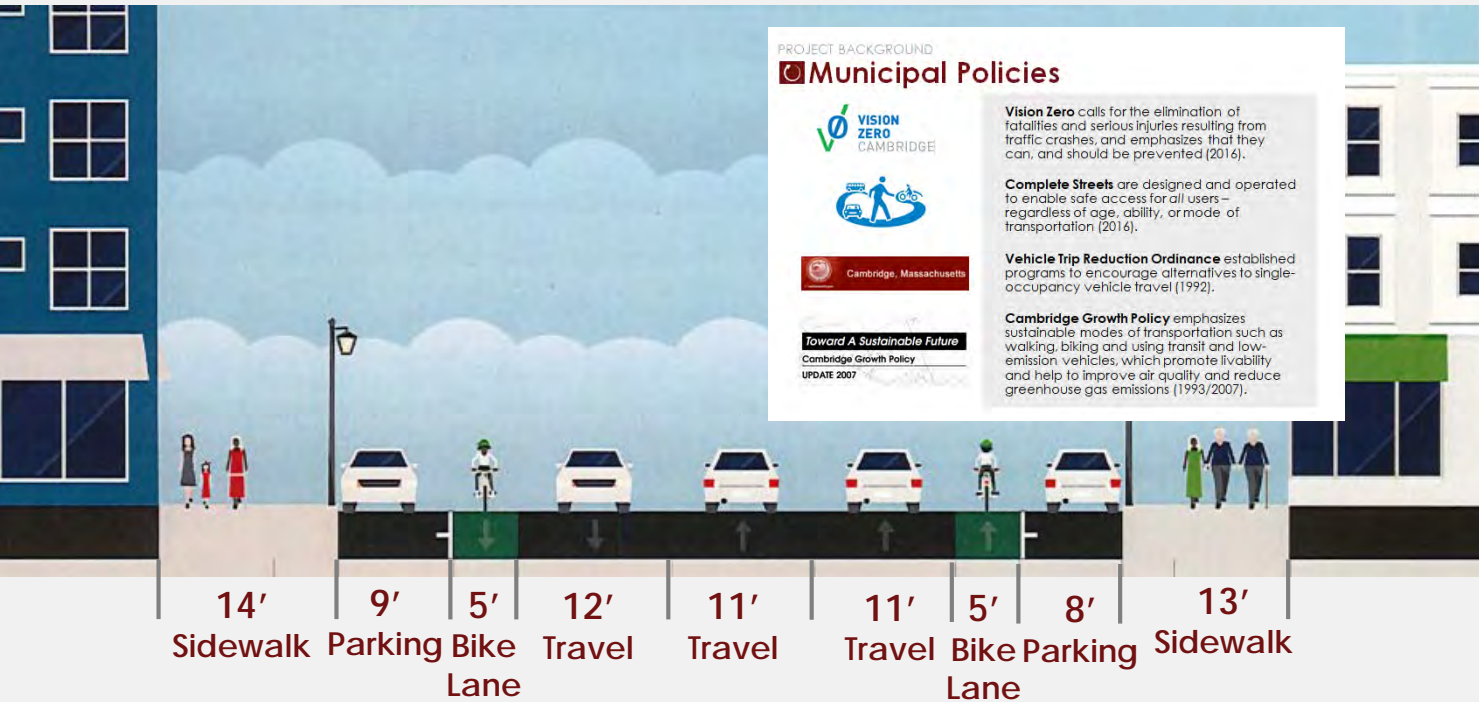
Remove MBTA Bus Stop,  
consistent with MBTA Service Plan



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# Existing Conditions

## Mass. Ave. Cross-Section (at Amherst Street)



- ✓ 88' wide
- ✓ On-street bike lane
- ✓ On-street vehicle parking
- ✓ Mix of meters and other parking
- ✓ Bus stops
- ✓ Curb extensions at multiple locations

# Safety History

## Reported Bicycle Crashes, 2015-2016



# Transportation/Traffic Analysis

- Corridor-wide transportation analysis to determine where:
  - **Bus** lanes can be added
  - **Vehicle** lanes can be repurposed
  - **Signal** operations can be modified
  - **Bicycle** lanes can be separated
  - **Bicycle** buffers can be added
  - **Parking** can be re-located for better operations

