

TRANSPORTATION BOARD PRESENTATION

Wednesday, June 29, 2016 @ 7:00 PM

Room 103, Brookline Town Hall

333 Washington Street

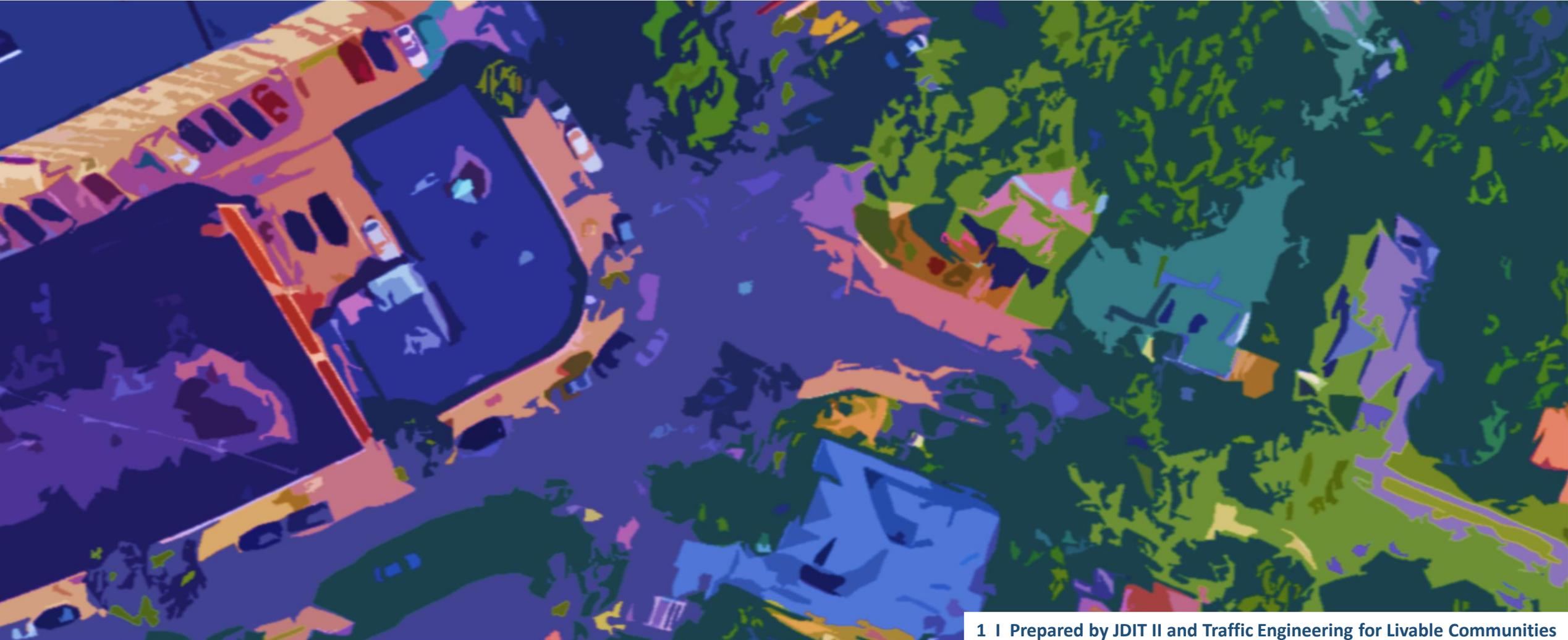
- 7:00 PM 1. CALL TO ORDER
- 7:00 PM 2. PRESENTATION BY JACKIE DEWOLFE AND TOM BERTULIS FROM LIVABLE COMMUNITIES ON THE HAMILTON SQUARE VISIONING PROJECT AND DISCUSSION ON NEXT STEPS BY THE TRANSPORTATION BOARD. Presentation available at www.brooklinema.gov/transportation
- 8:30 PM 7. PRESENTATION BY WORLD TECH ENGINEERING ON THE GREEN STREET TRAFFIC SIGNAL STUDY AND DISCUSSION ON NEXT STEPS. Report available at www.brooklinema.gov/transportation

Quorum not present. No actions items or business was conducted, only presentations.

PLEASE NOTE THAT ALL TIMES ARE APPROXIMATE AND THE BOARD RESERVES THE RIGHT TO CALL ITEMS OUT OF ORDER. WE STRONGLY RECOMMEND THAT YOU ARRIVE 30 MINUTES BEFORE THE TIME SHOWN ON THE AGENDA FOR YOUR ITEM OF INTEREST

The Town of Brookline does not discriminate on the basis of disability in admission to, access to, or operations of its programs, services or activities. Individuals who need auxiliary aids for effective communication in programs and services of the Town of Brookline are invited to make their needs known to the ADA Coordinator, Stephen Bressler, Town of Brookline, 11 Pierce Street, Brookline, MA 02445. Telephone (617) 730-2330; TDD (617) 730-2327.

Re-imagining the intersection at Thorndike, Hamilton, Lawton & Abbottsford Brookline, MA



PRESENTERS

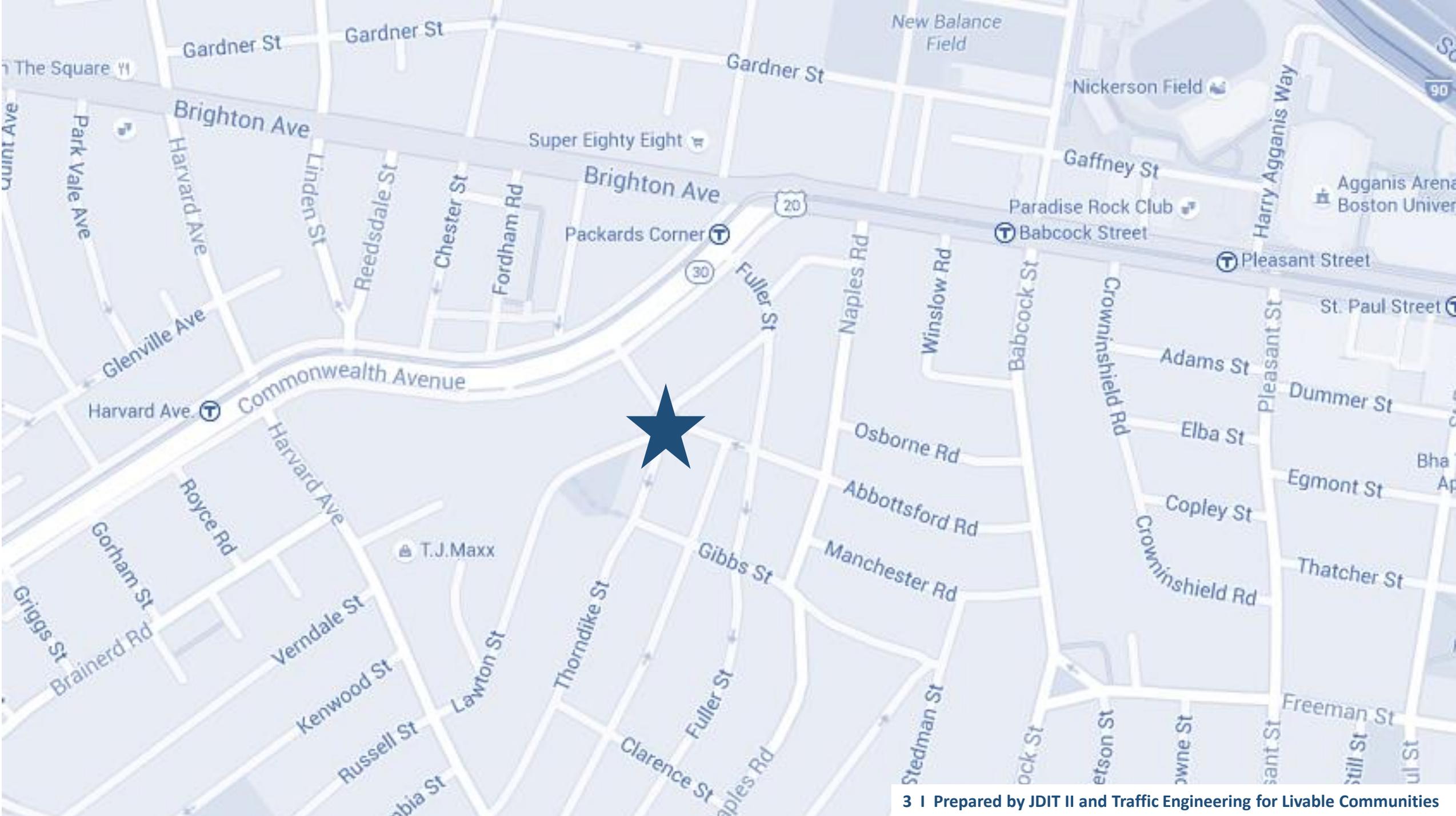
Consultants for the Town of Brookline



Tom Bertulis, MS, PE, PTOE
Traffic Engineering for
Livable Communities



Jackie DeWolfe
Consultant, JDIT II
Exec. Dir., LivableStreets







Commonwealth Avenue, Boston

Clear Flour Bakery

**Bay
Cove
Academy**

Herb Chambers garage entrance

An aerial photograph of a residential neighborhood, showing houses, streets, and trees. The image is semi-transparent, allowing the text to be overlaid clearly. The text is in a dark blue, sans-serif font.

Presentation contents

1. Purpose
2. Process
3. Proposals

6 concepts
14 similarities
2 directions

Developed by
workshop
participants





PURPOSE

Community visioning process to map solutions

Background

The Town of Brookline received many requests over the years from residents to address safety and speeding concerns, including a request to investigate putting in an all way stop control

PROCESS

- December 2015: Workshop planning team kick off
- Jan – April 2016: Workshop prep & data collection
- May 2016: Two-part workshop (May 4 & 15)
- June 2016: Compile results & present to Brookline Transportation Board (June 29)

Planning team

Scott Englander, Brookline Transportation Board

Guus Driessen, Brookline Transportation Board

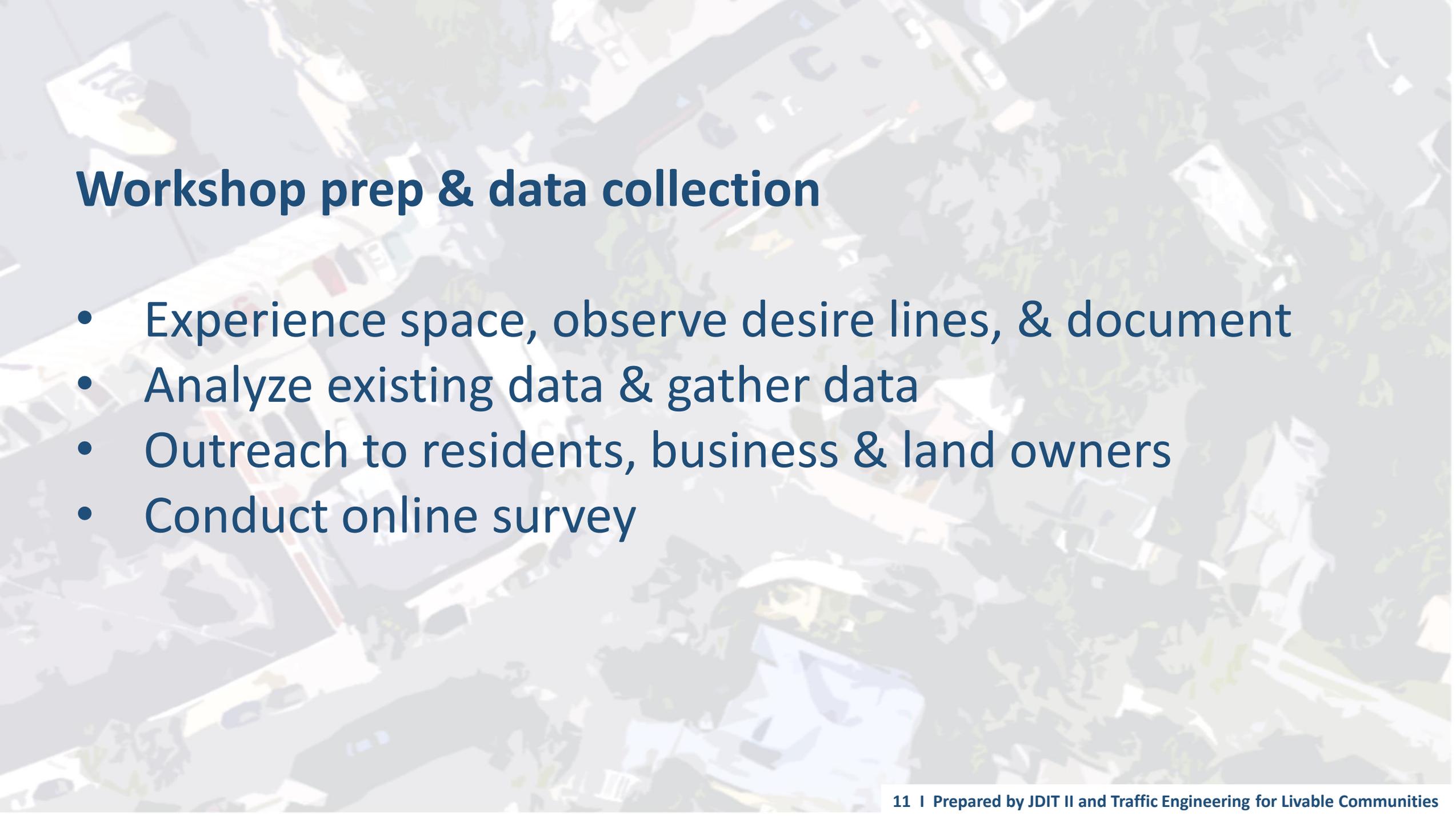
Todd Kirrane, Brookline Engineering Department

Daniel Martin, Brookline Engineering Department

Kara Brewton, Brookline Economic Development Dept.

Tom Bertulis, Consultant

Jackie DeWolfe, Consultant

An aerial photograph of a city street scene, showing buildings, trees, and a blue car parked on the side. A person is walking on the sidewalk. The image is faded and serves as a background for the text.

Workshop prep & data collection

- Experience space, observe desire lines, & document
- Analyze existing data & gather data
- Outreach to residents, business & land owners
- Conduct online survey



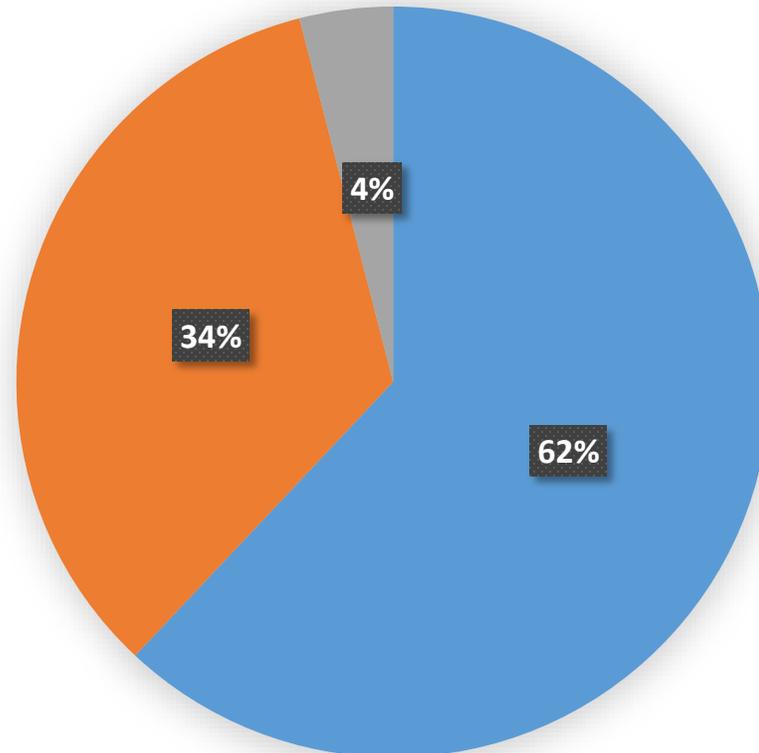
Seasonal observations too!



Photo credit: Rebecca Albrecht

Travel Intercept Survey: How do people get to Clear Flour Bakery?

4% people bike
34% people walk
62% people drive



April 9 – 14th, 2016

Sat 9-11 AM

Tues 9-11 AM, 3:30-5:30 PM

Thurs 9-11 AM, 3:30-5:30 PM

Survey conducted by Town staff at peak/busiest bakery hours

Conducted at the same time as the parking utilization study

Parking utilization study

Conducted at the same time as the travel intercept survey



Parking utilization study

Average results during peak bakery hours

Tuesday: 49 / 90 spaces available

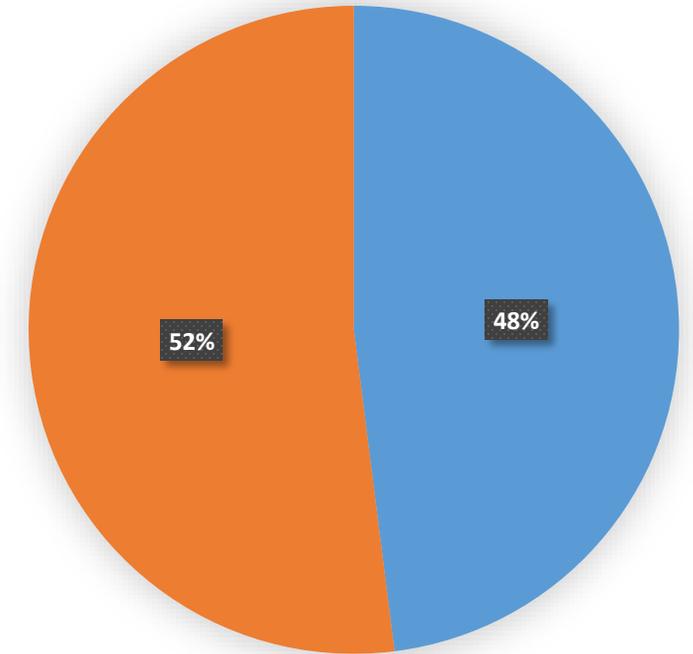
Thursday: 45 / 90 spaces available

Saturday: 46 / 90 spaces available

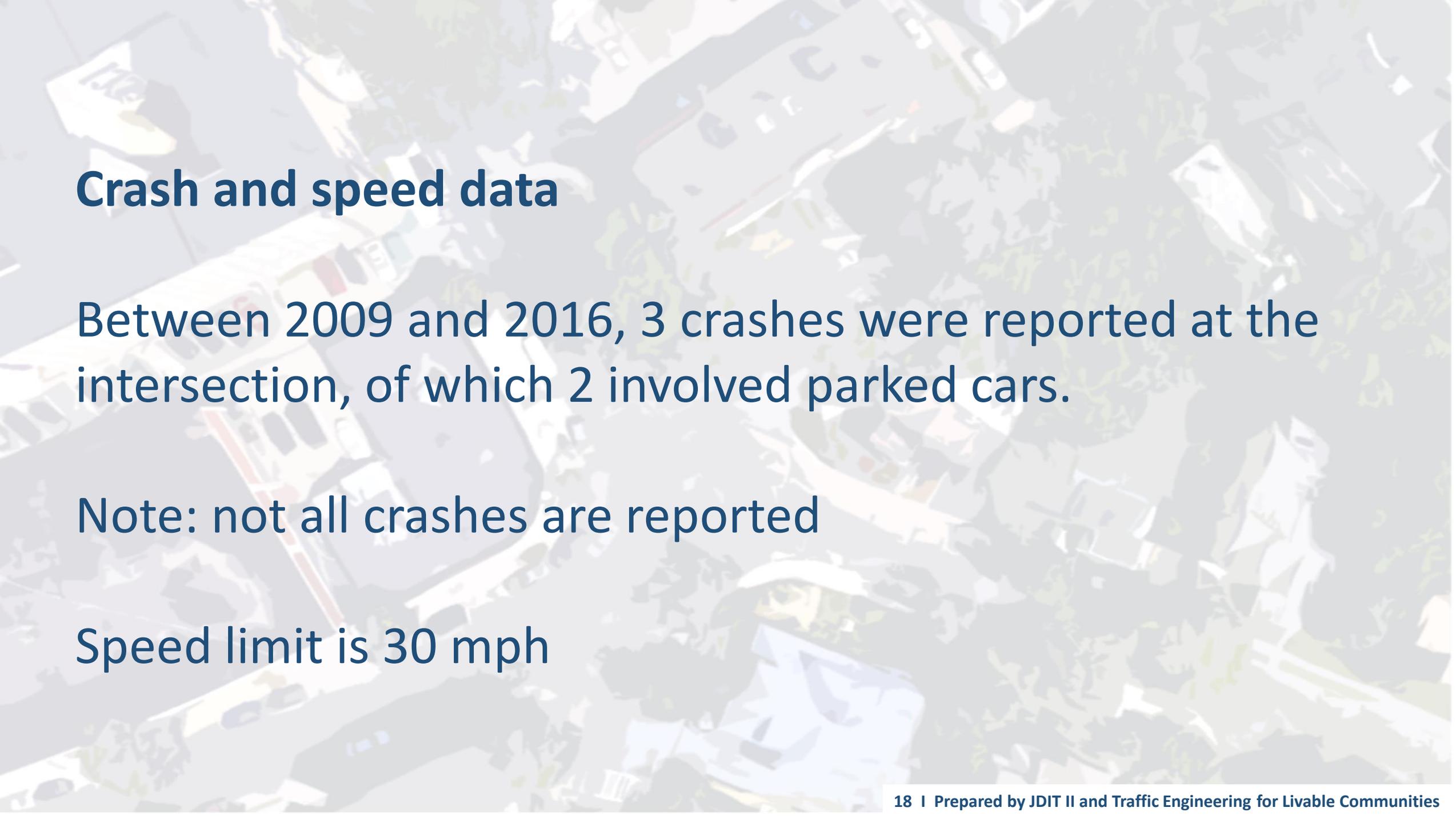
Over 3 days, an average of 52% of parking spots were available within one block. Counts conducted by Town staff.

Conducted at the same time as the travel intercept survey

Available Parking Spots (in orange)





An aerial photograph of a residential neighborhood. A street intersection is highlighted with a red line. The surrounding area includes houses, trees, and a parking lot. The text is overlaid on the left side of the image.

Crash and speed data

Between 2009 and 2016, 3 crashes were reported at the intersection, of which 2 involved parked cars.

Note: not all crashes are reported

Speed limit is 30 mph

**Identified need
to accommodate
heavy vehicles
due to
commercial
businesses,
school, and
resident
deliveries**



Conducted outreach and resident survey

- Snail mailed all Brookline residents 800 ft radius from intersection
- Posted signs in area about workshop
- Outreach to Town Meeting Members, neighborhood associations, businesses, school, land owners
- Online RSVP and survey

31 residents completed the following survey questions:

- How do you travel around and through the intersection?
- What do you like about this area?
- If there is something you could change, what would it be and why?

Conducted two part workshop at Bay Cove Academy

Part I: Wednesday, May 4, 6 – 8 PM

Part II: Sunday, May 15, 10 AM – 1:30 PM

Intended outcomes of the workshops:

- Shared understanding of challenges of intersection
- Determine who we are prioritizing space for
- Learn new ideas & opportunities
- Design alternatives for the space



Workshop participants

45 people who

Work	12
Play	19
Shop	40
Study	5
Live	37

in the area

An aerial photograph of a city street intersection, overlaid with a semi-transparent grey box containing text. A red arrow points from the bottom left towards the center of the intersection.

Summary of what we heard – the biggest issues are...

“large, undefined, confusing”

“not friendly for people walking”

“high speeds on streets leading to intersection”

“lack of outdoor seating, bike racks, flowers”

“not bike friendly”

“skateboarders at midnight”

An aerial photograph of a city street intersection, overlaid with a semi-transparent grey filter. A red arrow points from the bottom left towards the center of the intersection. The text is overlaid on this image.

Summary of what we heard – the area needs...

“a traffic circle”

“benches”

“wider sidewalks”

“contraflow bike lanes”

“food forest”

“bike parking”

“nothing. Like the way it is.”

“tighten geometry of intersection”



Summary of what we heard – what do you like about it...

“Clear Flour Bakery”

“everything”

“it’s potential”

“love the way I can walk straight across the middle”

“quaintness”

“existing stores”

“curviness”

“openness”

“vitality and level of activity”

Who should we be designing for?

Ranking in priority order

1	People walking	Peds	Peds	Peds / cars	Peds
2	People biking	Trucks	Bikes	Trucks	Bikes
3	Cars / taxi	Cars	Parked cars		Cars
4	Trucks		Moving cars		Buses
5			Buses / trucks		Carpools
6					Trucks

Developed by workshop participants in 5 groups

**Recommended
tools to
improve the
intersection**



Bike parking “corral”



Curb extensions



**Traffic circle “mini-
roundabout”**



Crosswalks

**Continued...
Recommended
tools to
improve the
intersection**



Raised crosswalk



Seating “parklet”



Painted intersection



Painted traffic circle

**Recommended
tools to
improve the
approaches to
the intersection**



Wider sidewalk



Painted streets



Traffic calming

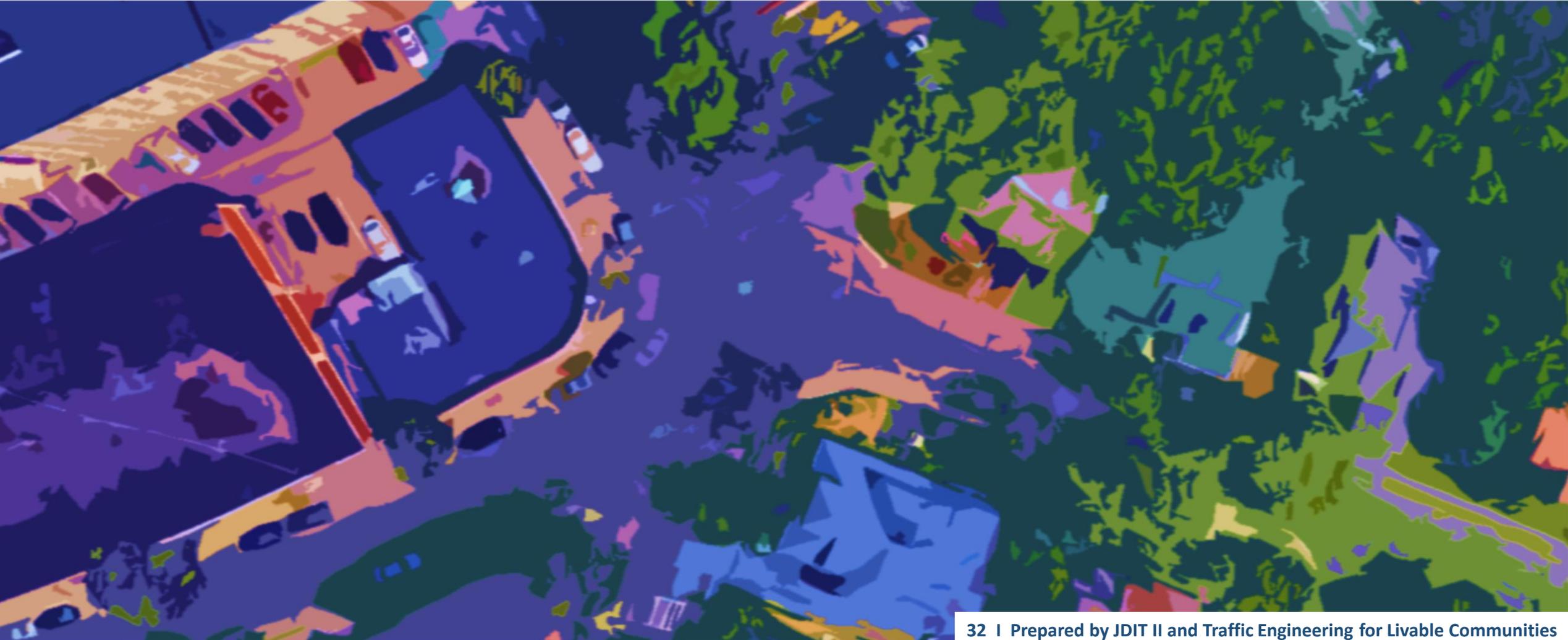


Traffic calming chicane

Why not just a stop sign or four-way stop?

- Unusual intersection: sight distance issues require a creative approach 
- Stop sign: no guarantee a motor vehicle will stop 
- Desire lines don't match where crosswalks would go if following regulations 

Re-imagining the intersection at Thorndike, Hamilton, Lawton & Abbottsford PROPOSALS



6 concepts
14 similarities
2 directions

Developed by
workshop
participants



14 similarities – consensus among workshop participants

1. Raised elements
2. Allow people to walk at desire lines (i.e. through middle of intersection)
3. Bike parking corral
4. Bump out seating somewhere
5. Raised crossing between parks on Lawton Street
6. Marked crossing in front of school
7. Contraflow bike lane on Abbotsford
8. Desirable to reduce speed on Abbotsford to Lawton, and Thorndike to Lawton
9. Explore removing 8-10 AM parking restriction
10. Create a true left turn from Abbotsford to Lawton
11. Okay to remove parking in intersection, especially at Abbotsford
12. Pedestrian scale lighting and plantings
13. Clearer ADA signage on Lawton to tell people it's a ramp, not parking
14. Aesthetic improvements

#5 Raised pedestrian crossing from park to park across Lawton St



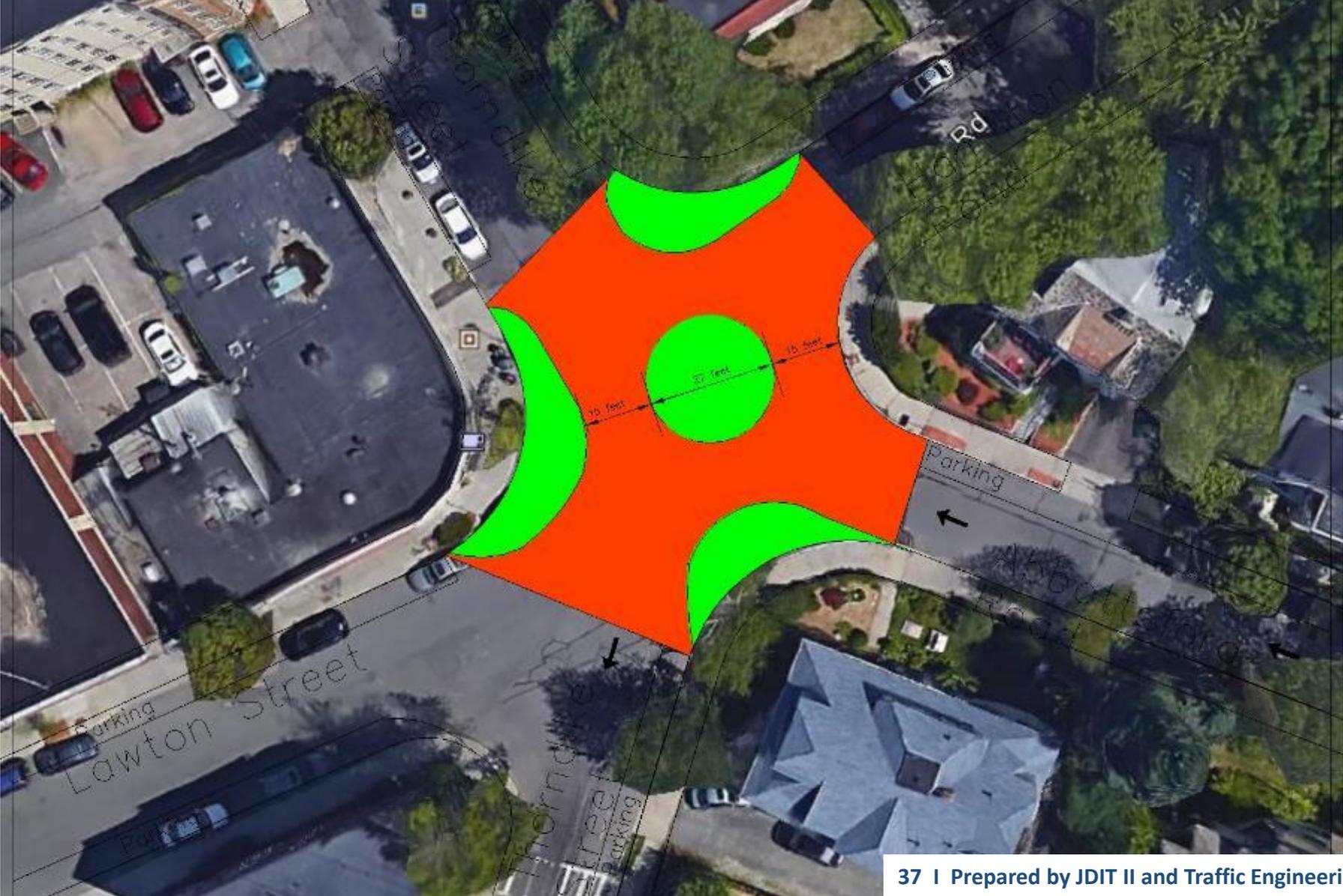
2 DIRECTIONS

1. Painted traffic circle “mini-roundabout”

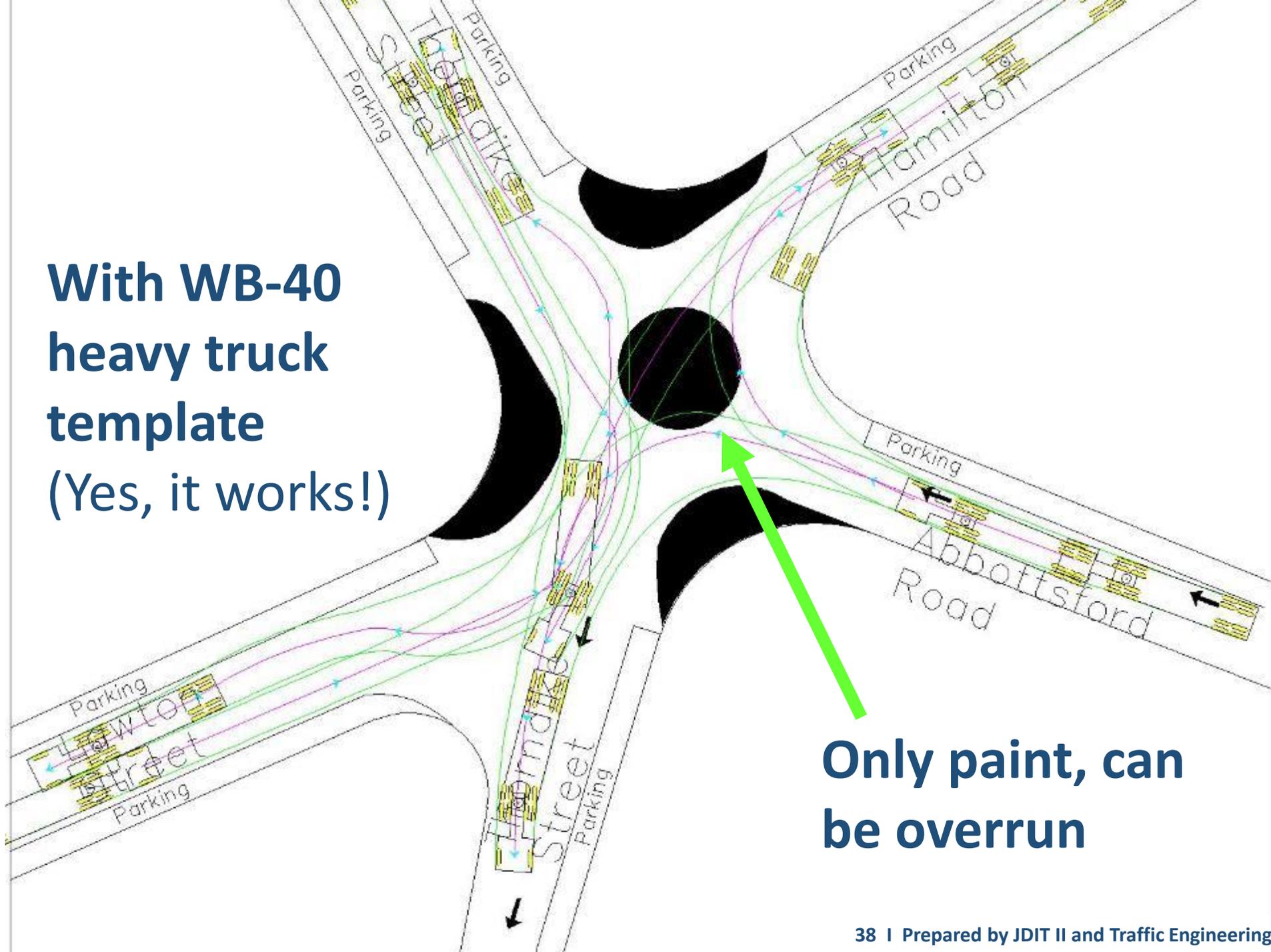
1A. Raised traffic circle “mini-roundabout”

2. Raised intersection

1. Painted traffic circle “mini-roundabout” with bulb outs



**With WB-40
heavy truck
template
(Yes, it works!)**



**Only paint, can
be overrun**

Some options for bulb outs



Painted traffic circle “mini-roundabout”

Advantages

- Inexpensive
- The design incorporates bulb outs
- Adds to uncertainty and intrigue principle than adds to safety
- Allows greater freedom of where pedestrians cross

Disadvantages

- Not as effective in traffic calming as raised features
- May be confusing for drivers not used to roundabouts
- May still be occasional drivers not yielding to pedestrians

1A. Raised traffic circle “mini-roundabout” with bulb outs



Raised traffic circle
“mini-roundabout”
with no crosswalks



Large raised roundabout does not work for heavy vehicles.

Smaller raised roundabout could be explored



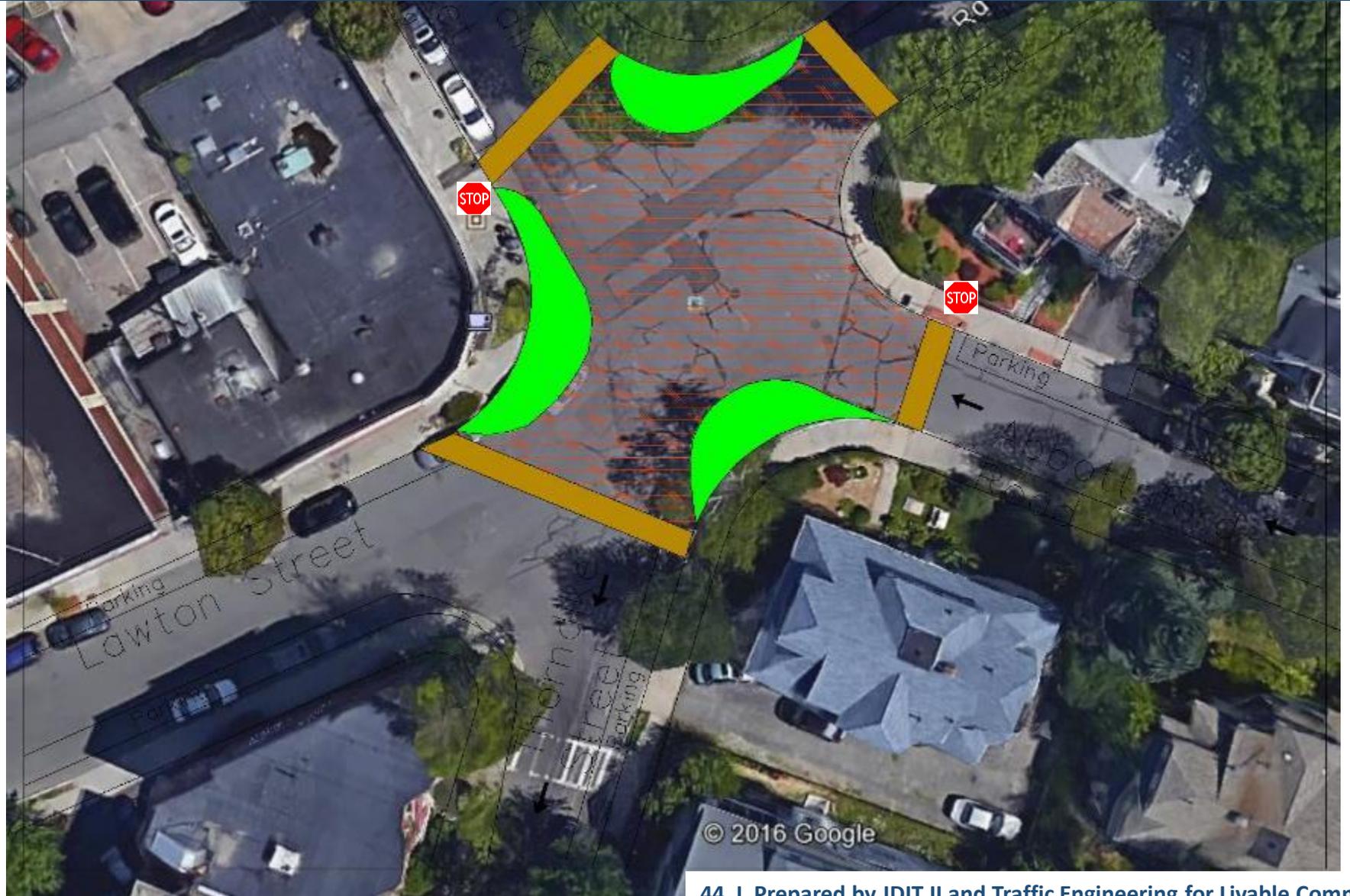
Raised traffic circle examples



2. Raised intersection with bulb outs

Bulb outs can be used for seating, plantings, etc.

Existing stop sign at Thorndike, new stop sign at Abbottsford Rd



Raised intersection examples



Raised intersection

Advantages

- More effective in traffic calming than painted features
- The design incorporates bulb outs
- Sinusoidal curves are bike-friendly
- The low speeds are pedestrian friendly; pedestrians don't have to cross at crosswalks and can cross anywhere

Disadvantages

- Higher cost
- Possible drainage design issues

Some options for bulb outs



Parking impacts

Eight (8) parking spaces lost (in red) with bulb outs – all eight (8) spots are not legal parking spots anyway



Cost

Tactical Urbanism provides short-term fixes at low cost:

- Paint for intersection repair and tactical urbanism: \$7.50 for 16 oz jar of acrylic paint
- Thermoplastic: \$2.00 per linear foot
- Street tree: \$573-1,000 each
- Bench: \$1,700 each
- Semi-permanent parklets range from \$15,000-\$20,000

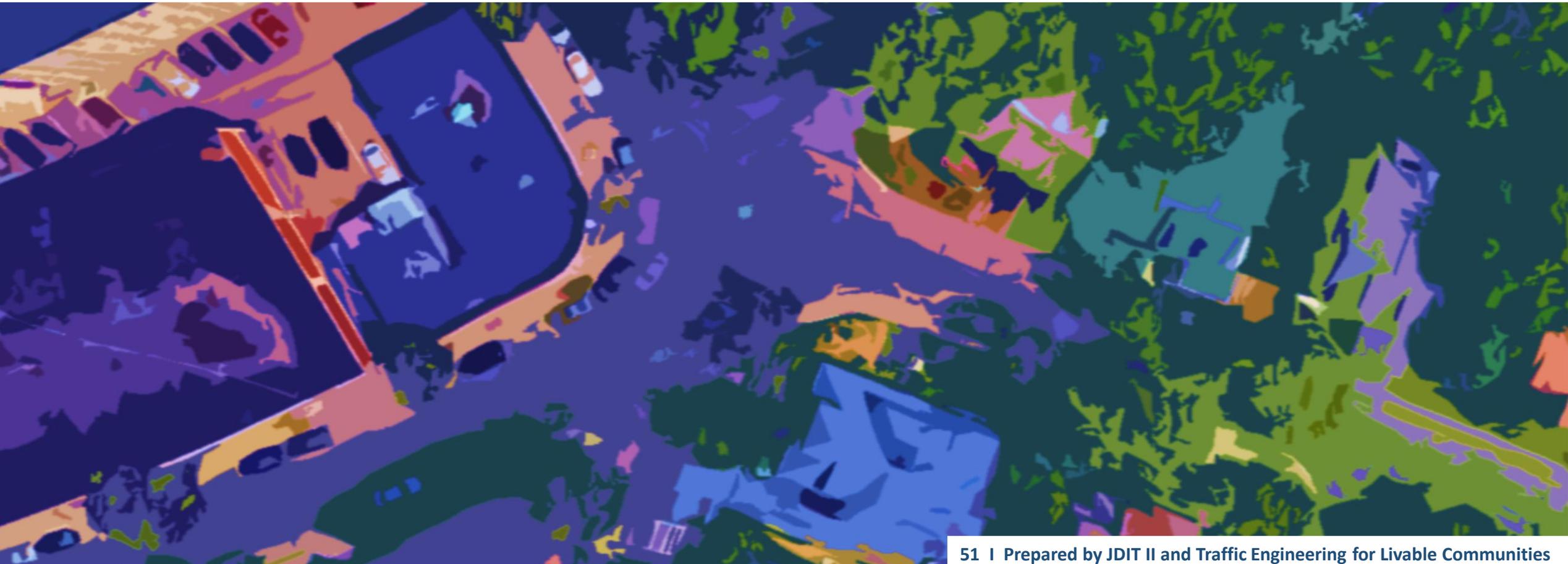
Permanent fixes tend to cost more:

- Raised crossing: \$20,000
- Raised intersection: \$50,540
- Mini traffic circle: \$15,000
- Pedestrian scale lighting: \$4,880 per streetlight

Thank you!

Special thanks to Bay Cove Academy for hosting workshops
& thank you to all participants for your input and time

Questions?



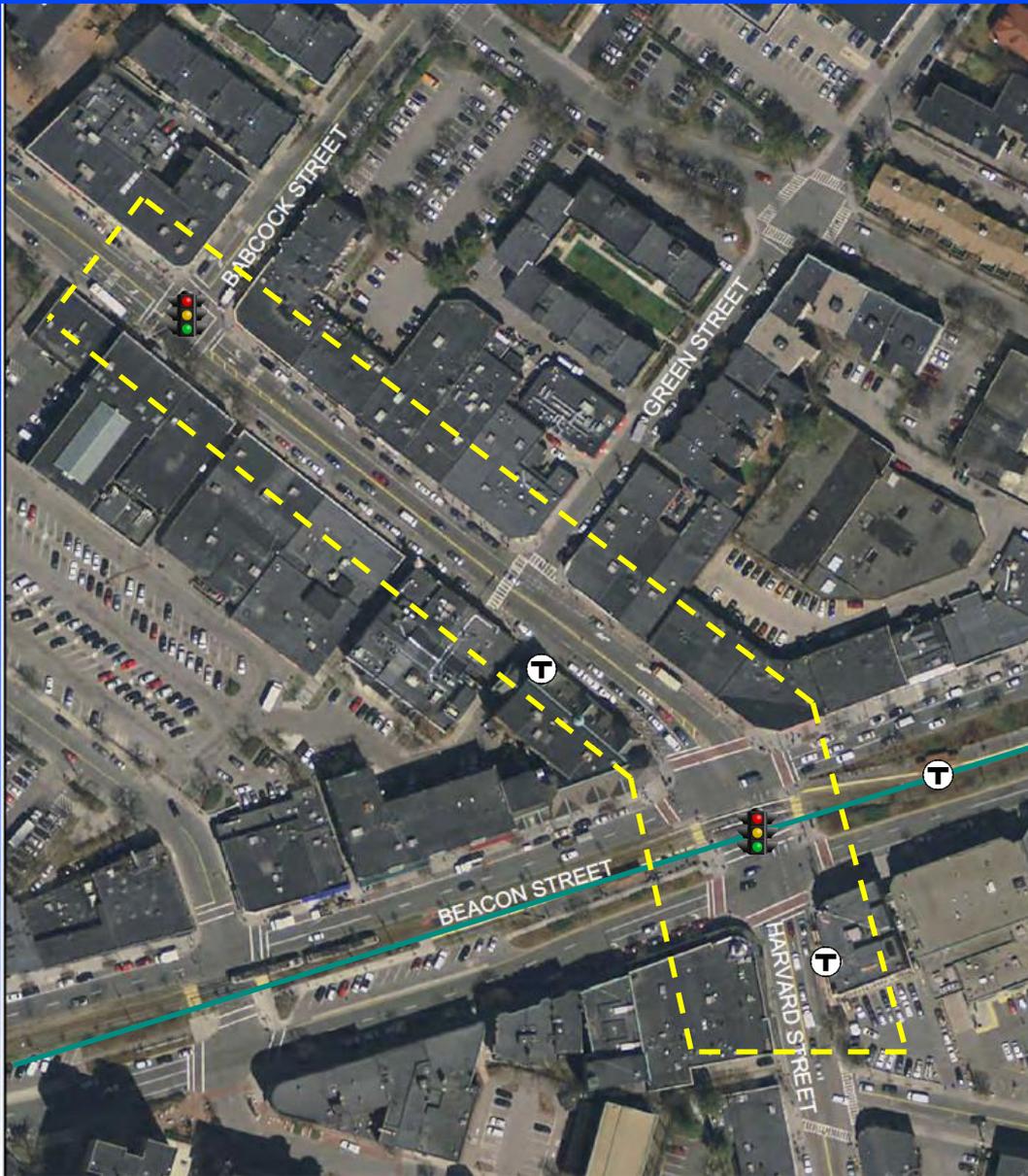
Pedestrian Actuated Signal Study Harvard Street at Green Street



Town of Brookline Transportation Board

Wednesday, June 29, 2016

STUDY AREA



- Harvard Street at Babcock Street
- Harvard Street at Green Street
- Harvard Street at Beacon Street

 Signalized Intersection

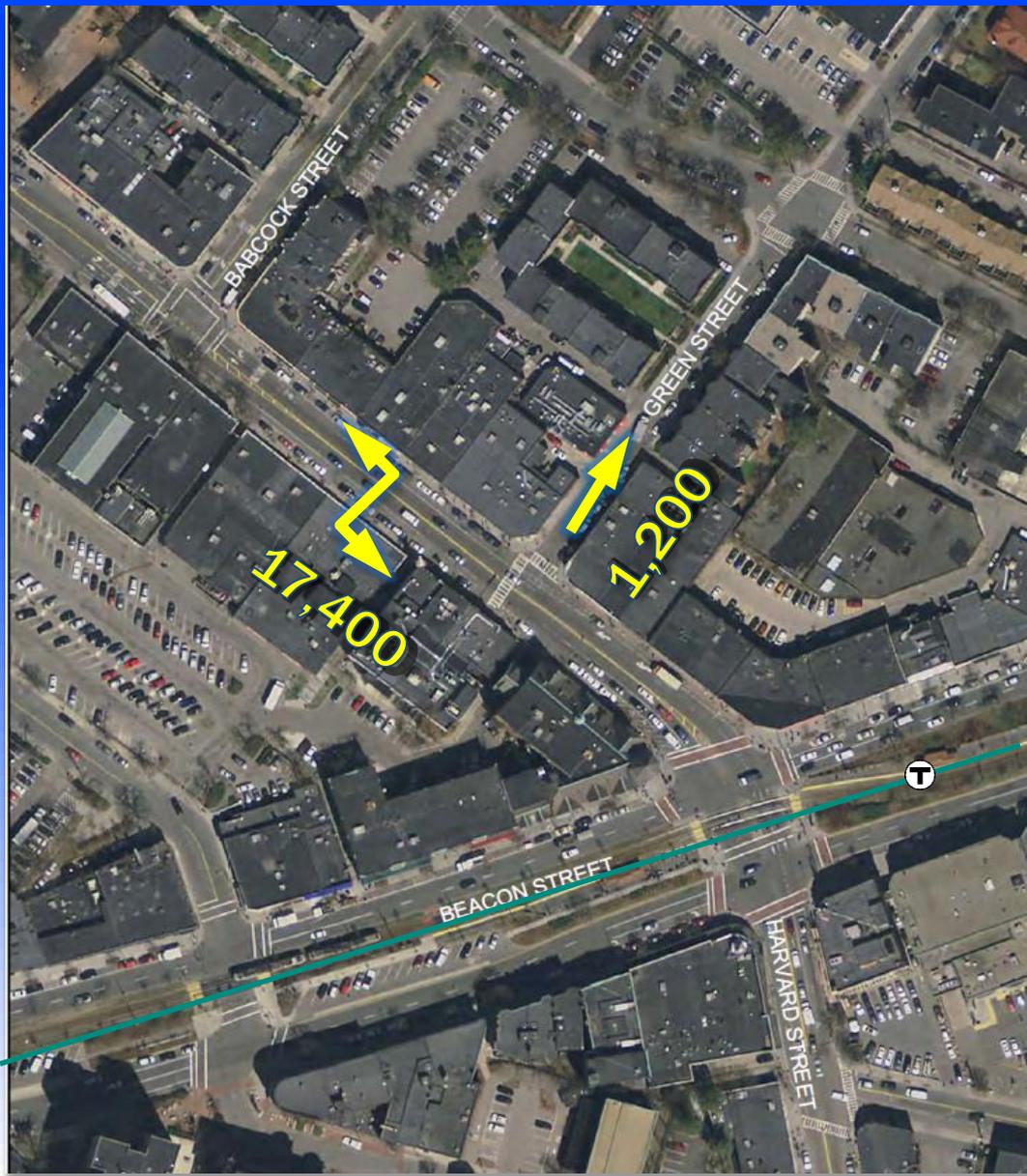
 Transit Stop (MBTA Green Line/66 Bus)

PROJECT NEED

- Congestion along Harvard Street corridor
- Vehicles, pedestrians, bicycles, transit
- Over 1,000 pedestrians crossing during peak hours
- Vehicle queues extend into Beacon Street
- **Operational Improvements & safety upgrades**

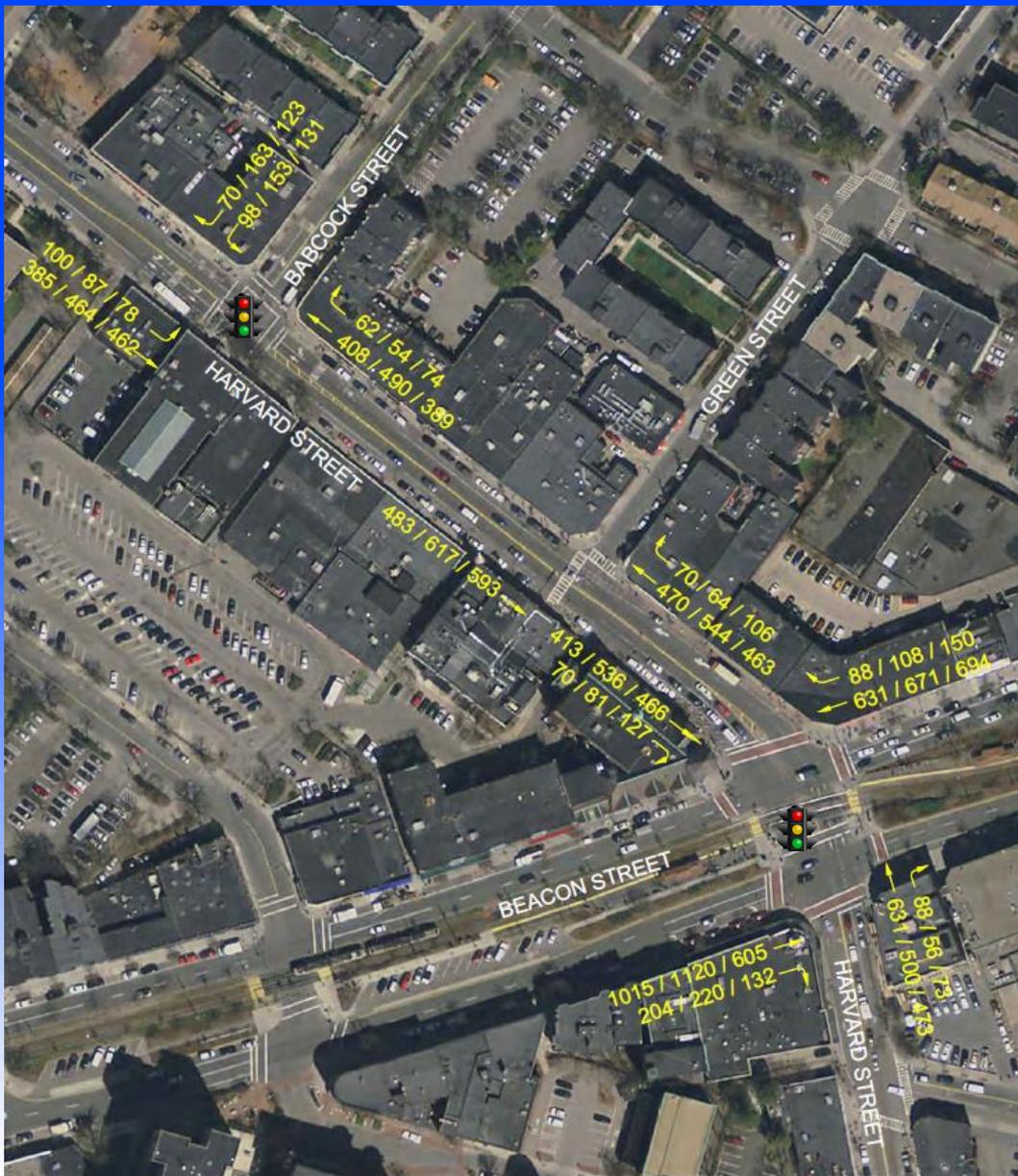
TRAFFIC VOLUMES

- 2014 Daily Traffic Volume

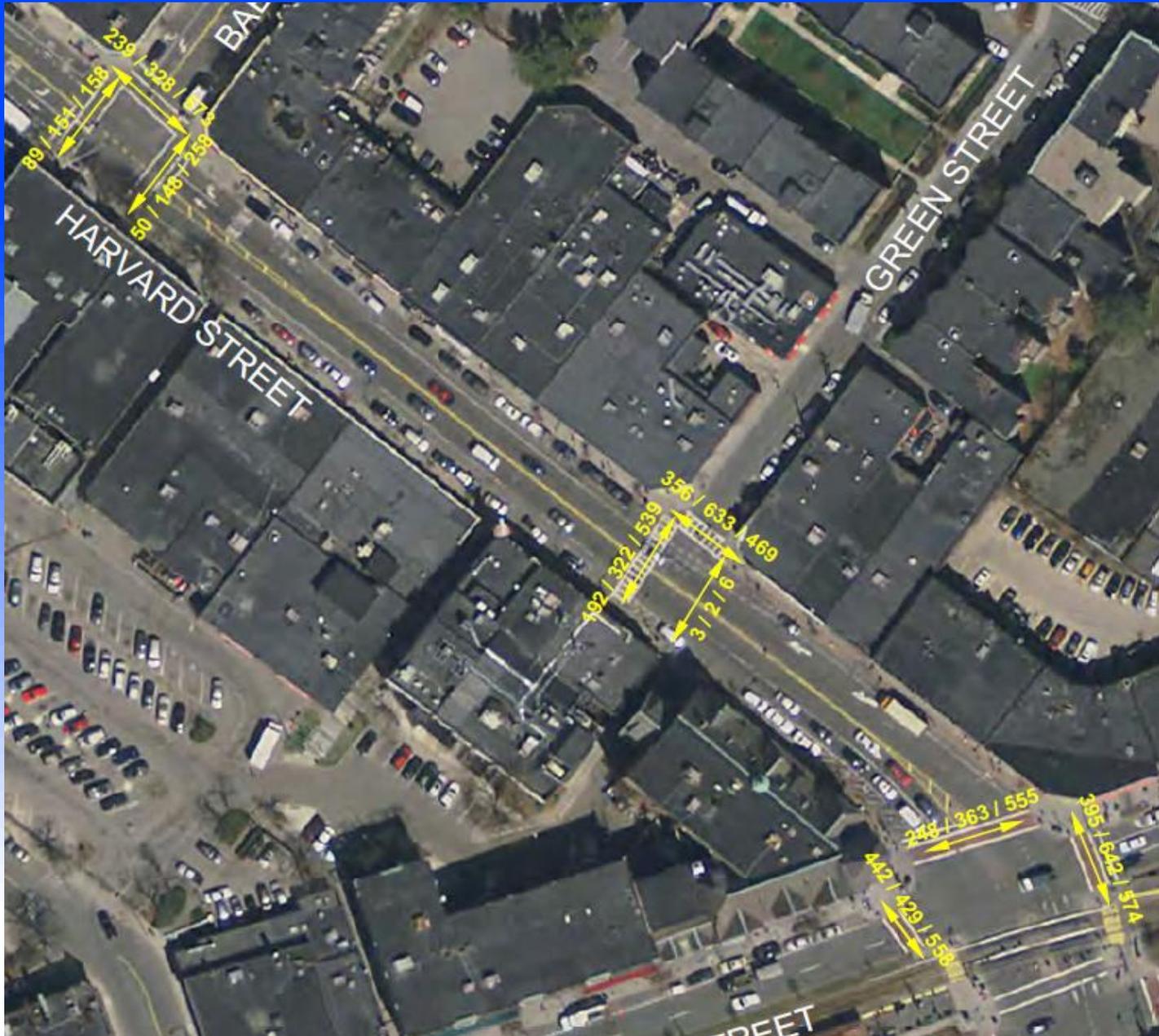


TRAFFIC VOLUMES

- Weekday Morning (7:45-8:45 a.m.)
- Weekday Evening (5:00-6:00 p.m.)
- Saturday Midday (12:00-1:00 p.m.)

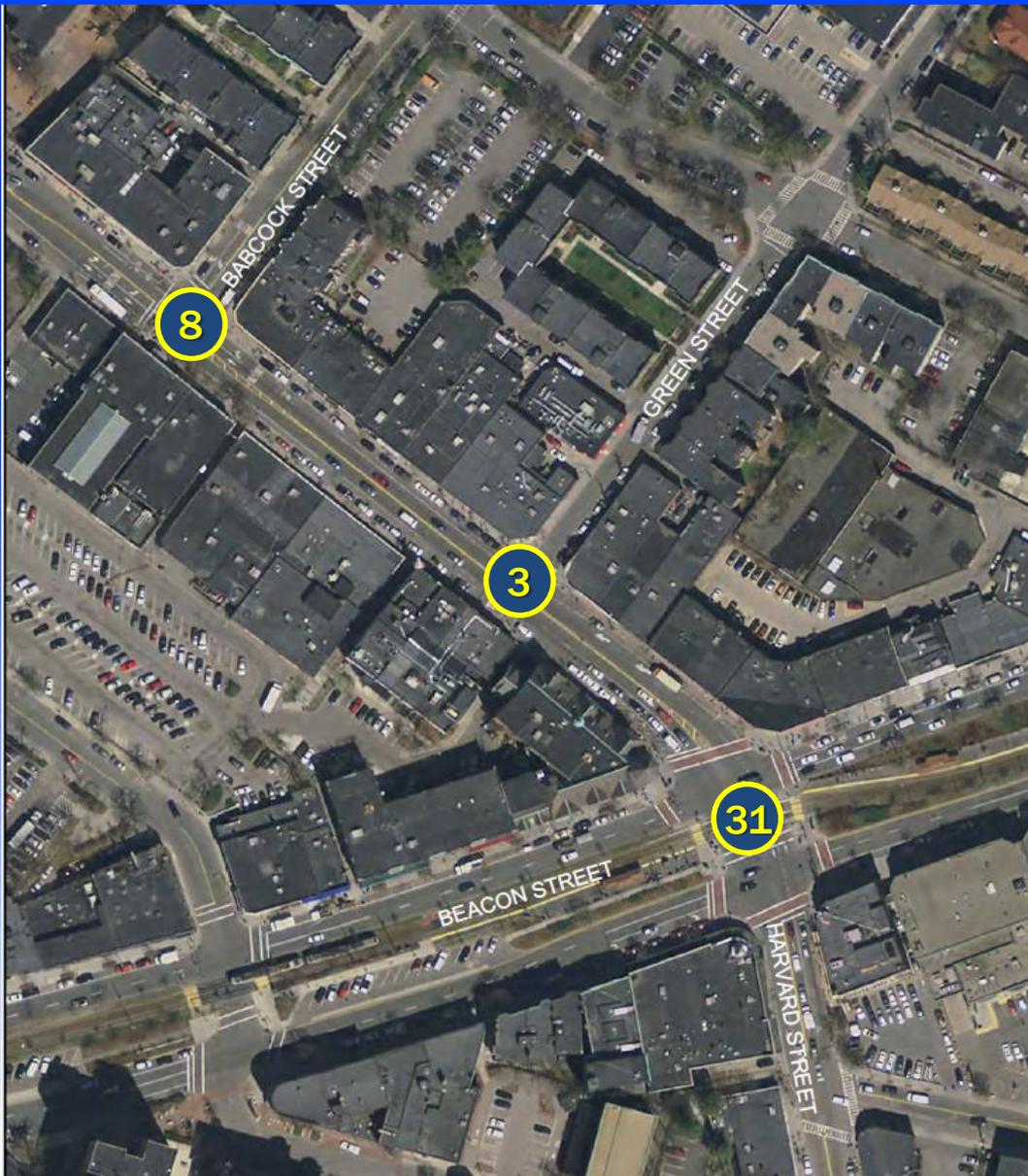


PEDESTRIAN VOLUMES



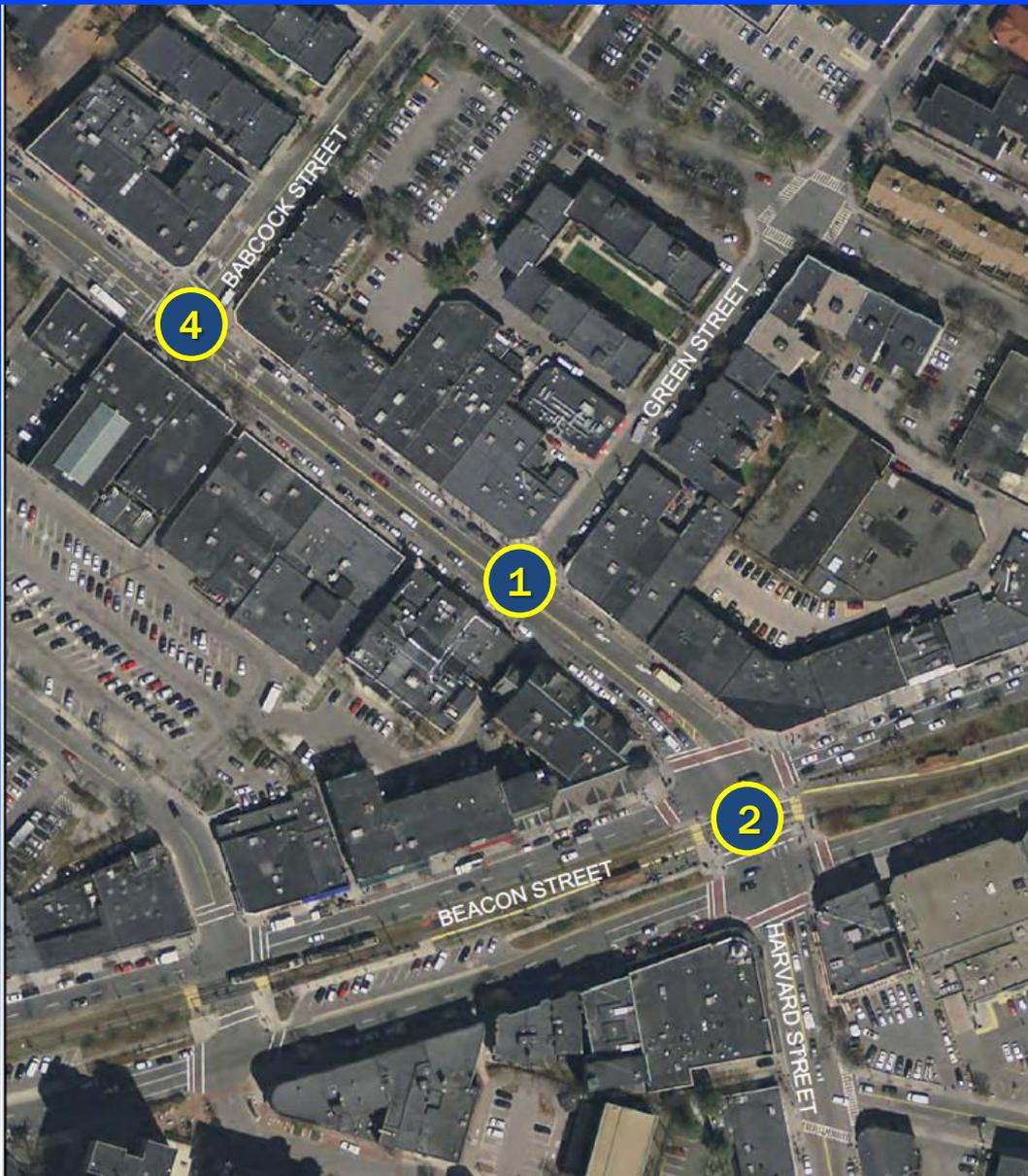
CRASH HISTORY

➤ Total crashes, 2007-2011



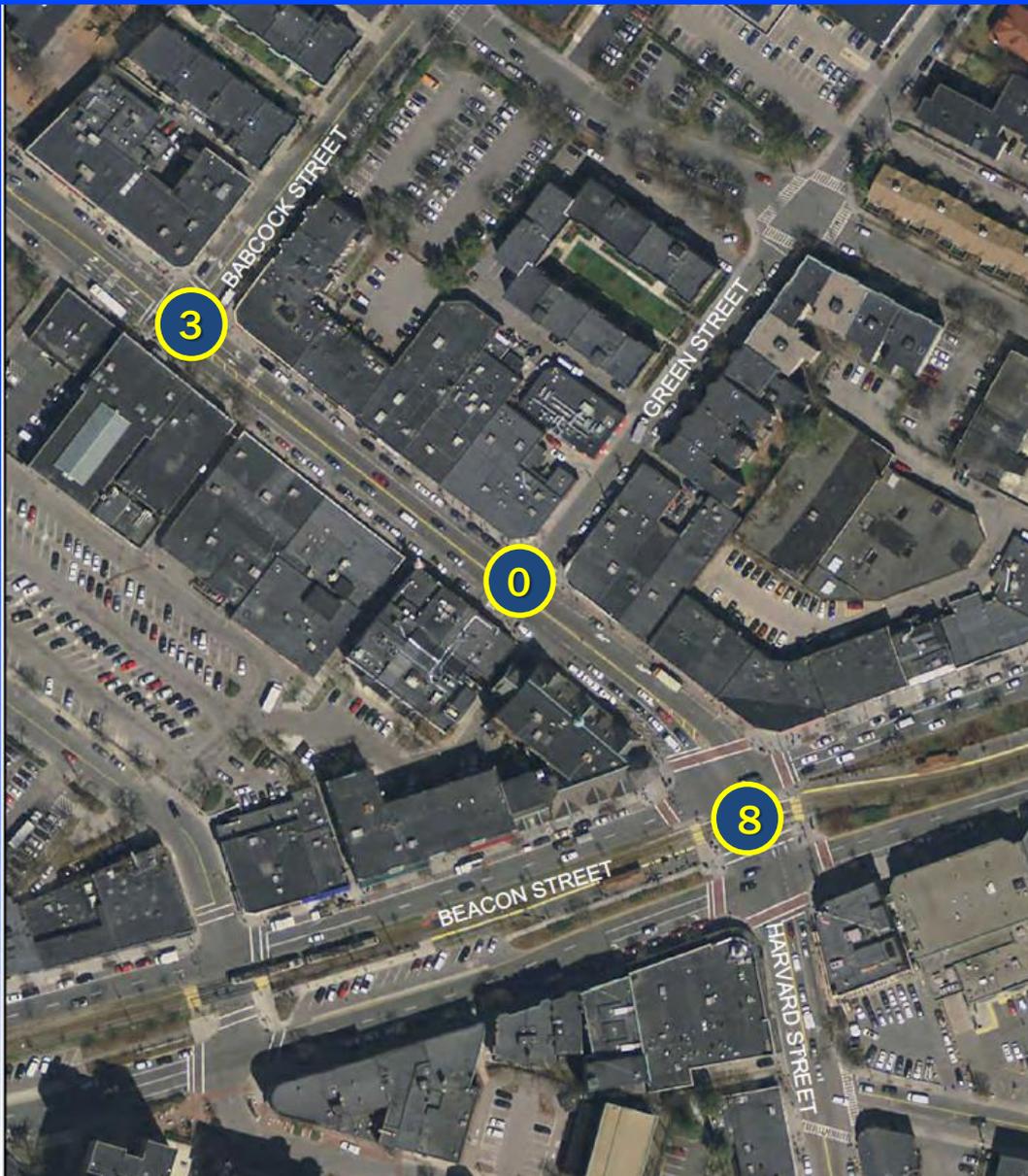
CRASH HISTORY

➤ Ped/Bike crashes, 2007-2011



CRASH HISTORY

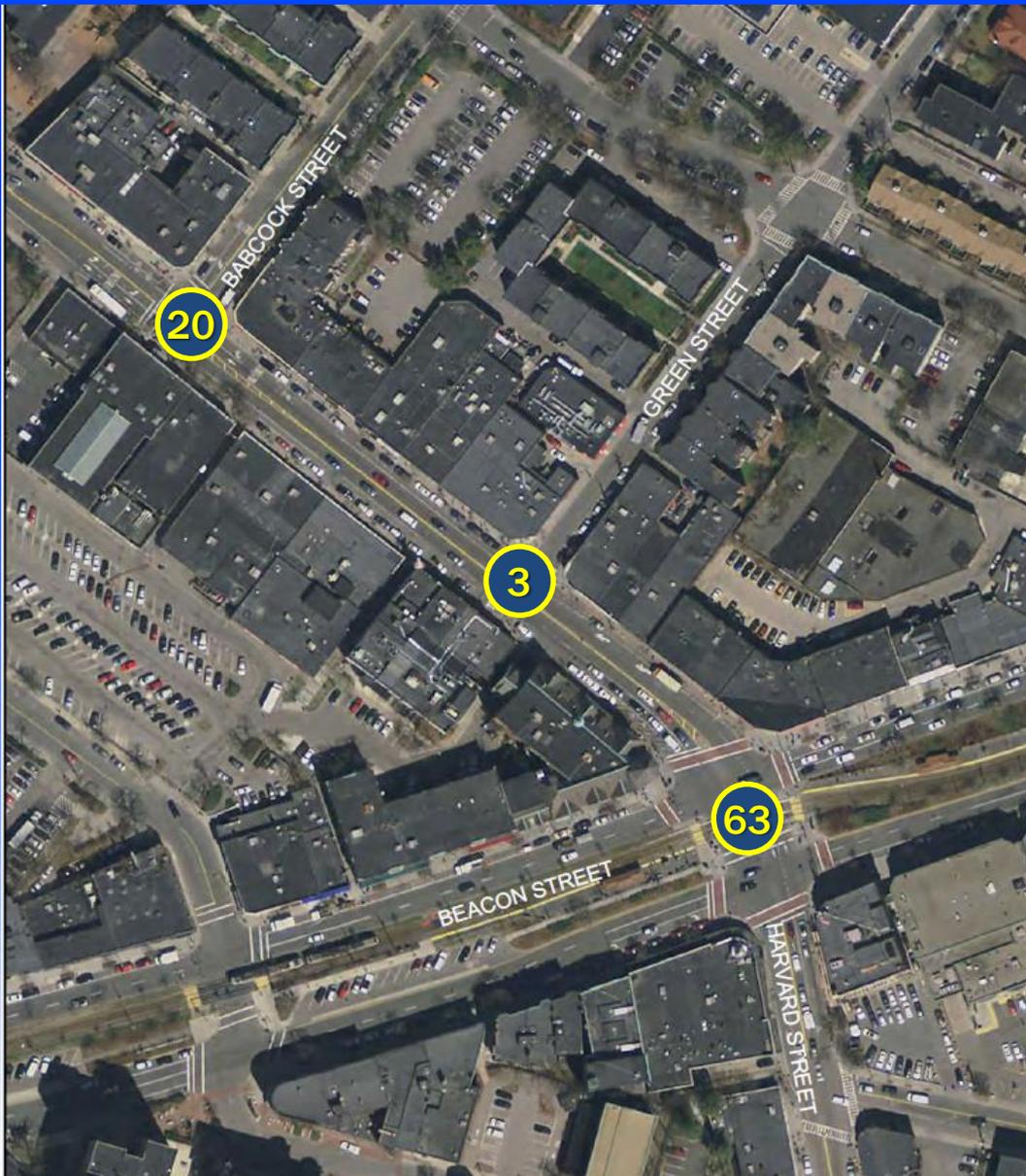
- Injury crashes, 2007-2011
- No fatalities during study period



CRASH HISTORY

- Equivalent Property Damage Only (EPDO) Crashes, 2007-2011

(Fatal = x10, Injury = x5, PDO = x1)



VEHICLE SPEED

- Average/85th Percentile Speed
- mph



TRAVEL TIME

- Beacon Street to Babcock Street
- Morning/Evening/Sat Midday
- Seconds



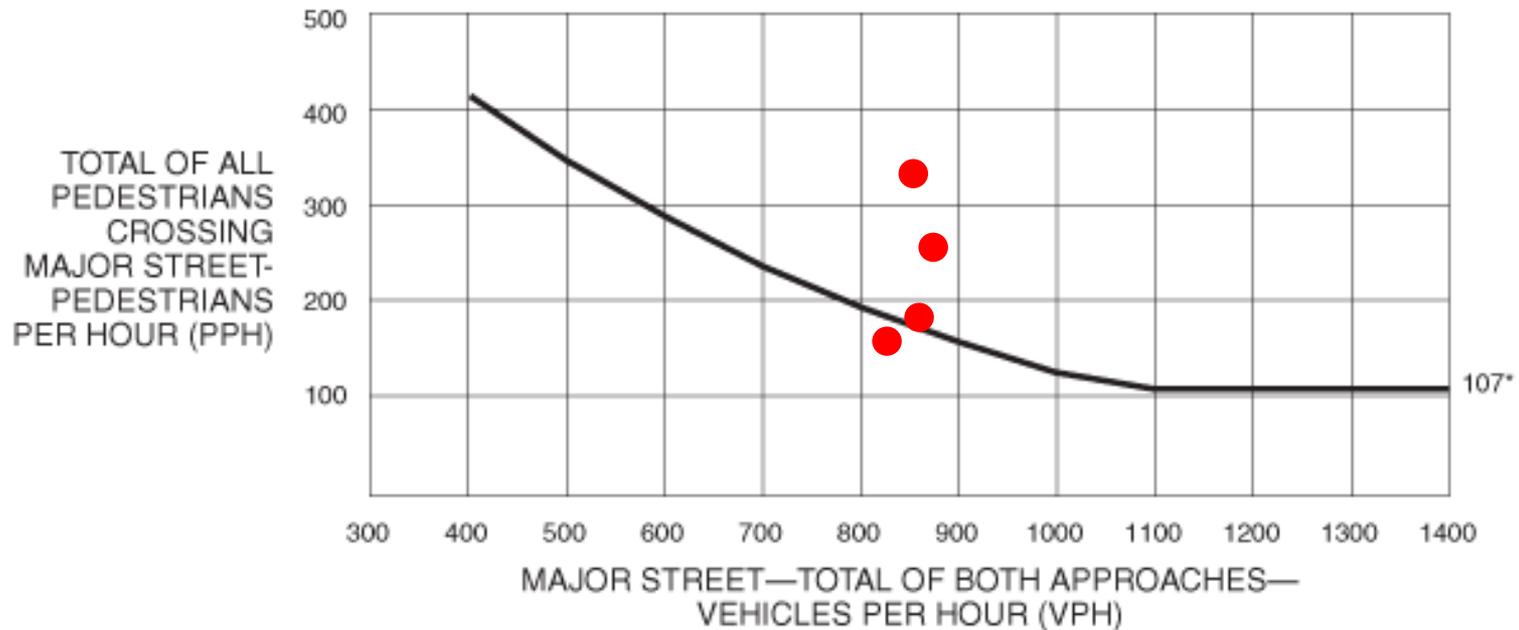
GOALS

- **Improve pedestrian operations and safety**
- **Reduce queuing into Beacon Street**
- **Reduce travel times**

PEDESTRIAN ACTUATED SIGNAL

➤ MUTCD Warrant Analysis – Four Hour Volume

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume

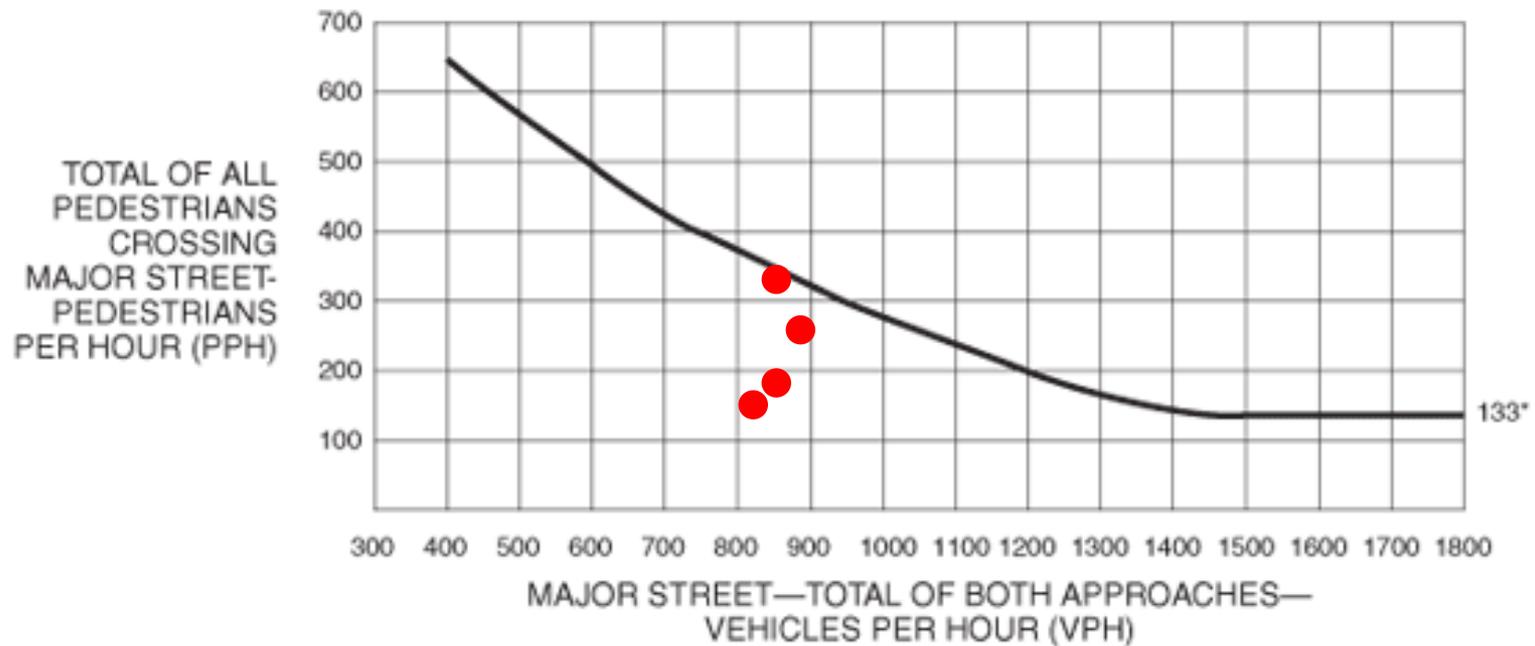


*Note: 107 pph applies as the lower threshold volume.

PEDESTRIAN ACTUATED SIGNAL

➤ MUTCD Warrant Analysis – Peak Hour Volume

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



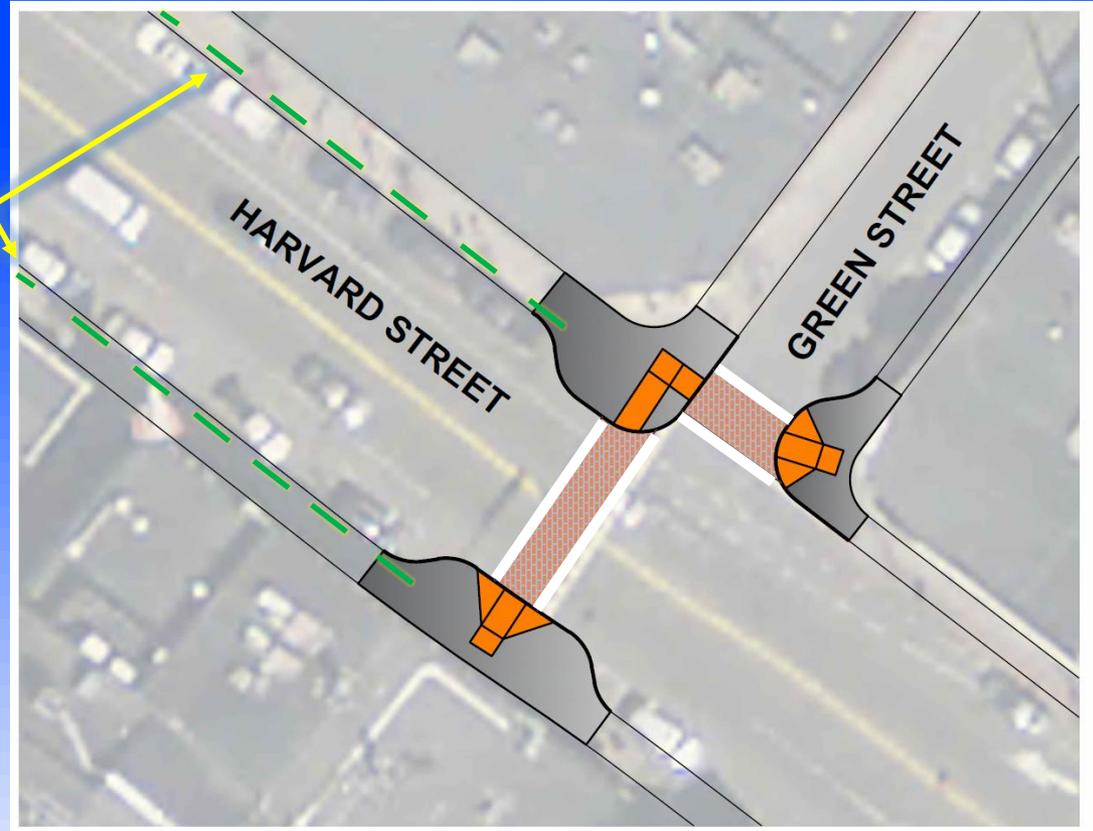
*Note: 133 pph applies as the lower threshold volume.

PEDESTRIAN ACTUATED SIGNAL

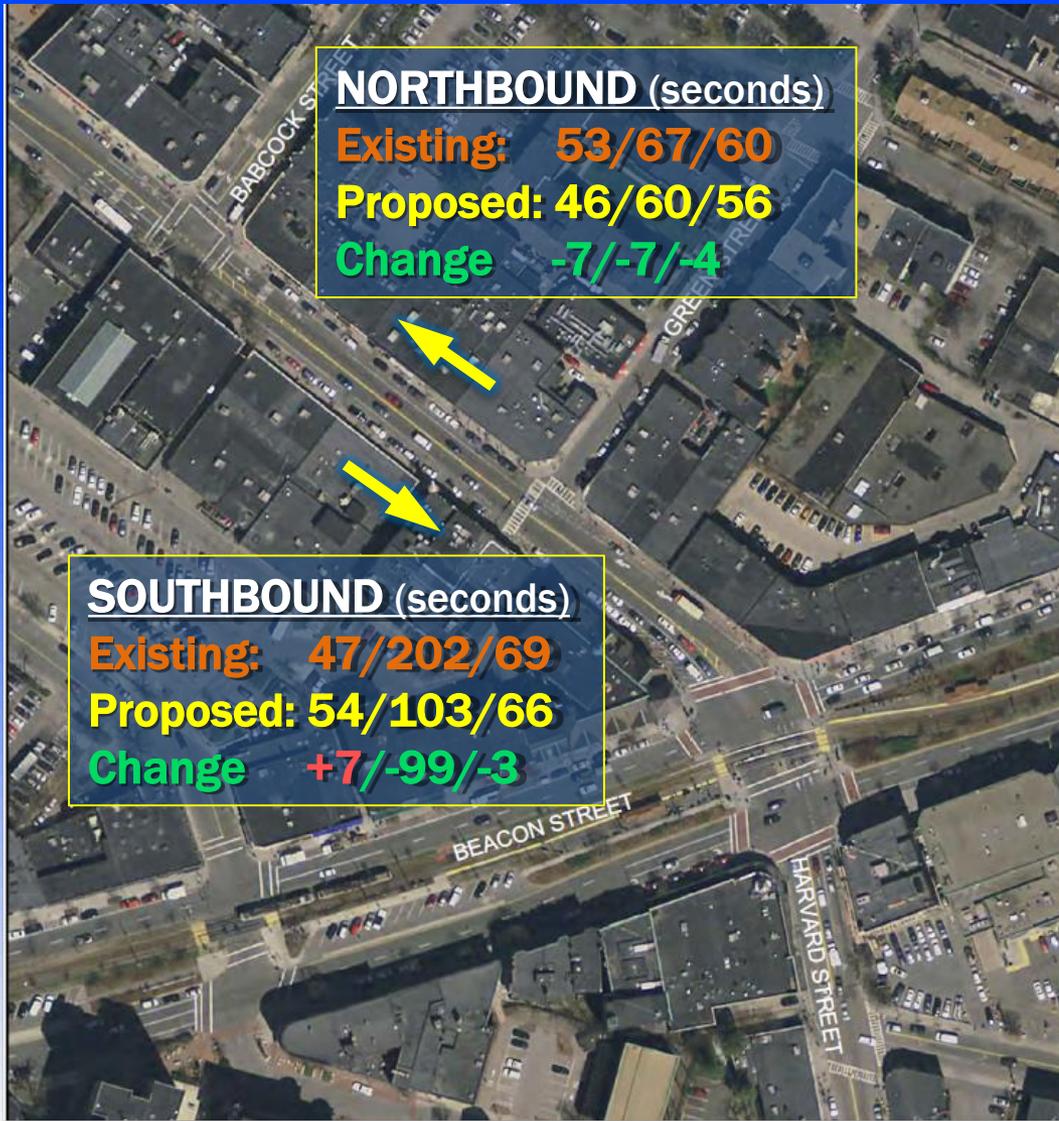
- Requires coordination with Beacon Street and Babcock Street
 - Up to 40 seconds of wait time for WALK signal
- Only improves flow if pedestrians obey signal
- Waiting pedestrians block sidewalk
- **Not recommended**

POTENTIAL IMPROVEMENTS

- Curb Extensions
- High-visibility crosswalks
- Street furniture to discourage mid-block crossing
- Harvard Street crossing reduced from 58 ft to 38 ft
- Green Street crossing reduced from 30 ft to 19 ft



POTENTIAL IMPROVEMENTS



REVISED COORDINATION PLAN

- Currently set for 30 mph
- Actual 85th Percentile speed:
18 mph northbound
17 mph southbound
- Minor increase southbound in
Weekday Morning

POTENTIAL IMPROVEMENTS



HARVARD STREET AT BEACON STREET NORTHBOUND LANE ASSIGNMENT

- Shared through – through/right beginning at Longwood Avenue
- Merges back to one lane before Green Street
- Merge & conflicts contribute to congestion and queuing

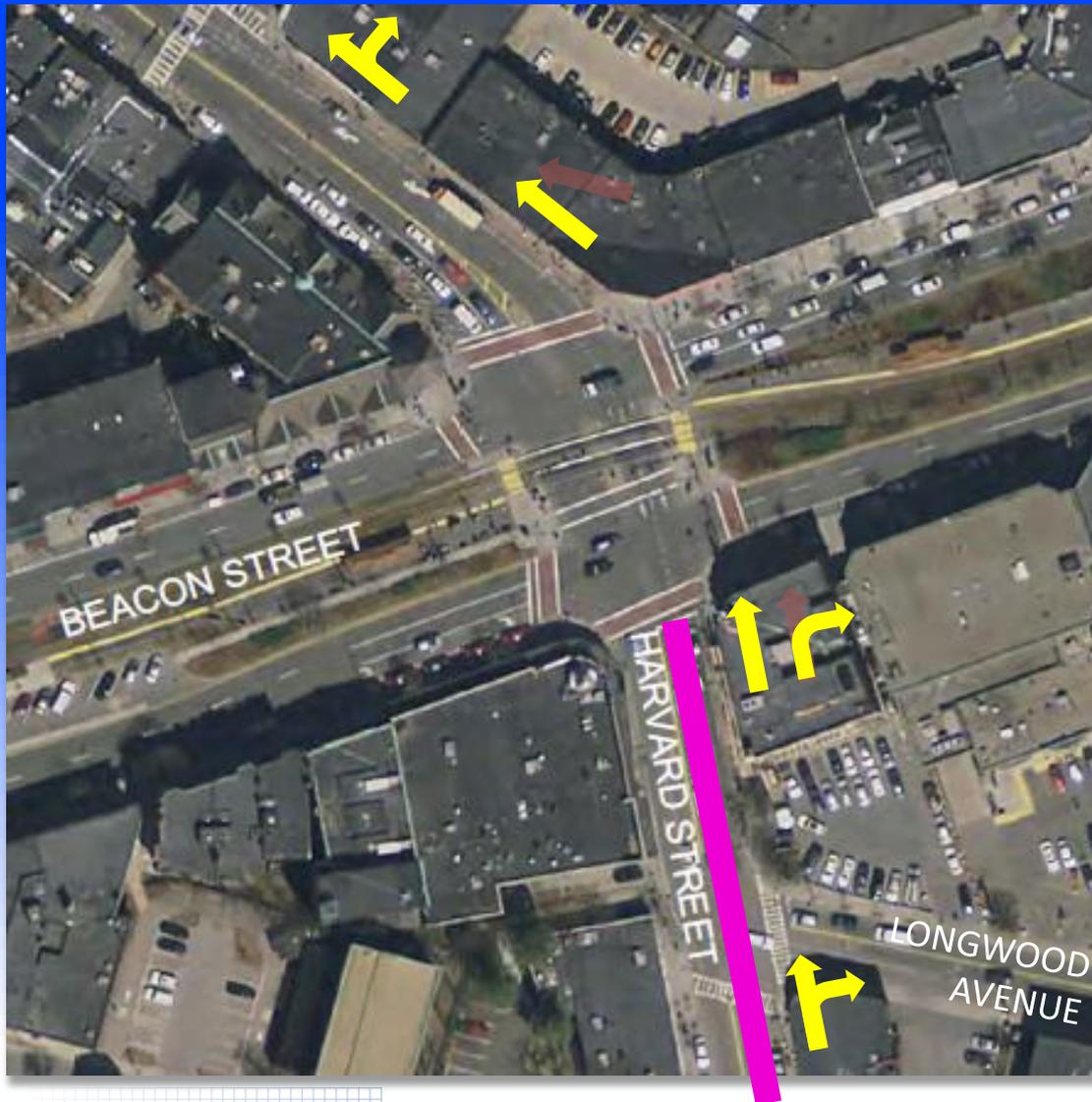
POTENTIAL IMPROVEMENTS



HARVARD STREET AT BEACON STREET NORTHBOUND LANE ASSIGNMENT

- Convert right lane to right turn only
- Eliminates merge north of Beacon Street

POTENTIAL IMPROVEMENTS



HARVARD STREET AT BEACON STREET NORTHBOUND LANE ASSIGNMENT

- Northbound queues would extend 400 to 600 feet during peak periods
- Queuing through Longwood Avenue – Blocking and poor sight distance

POTENTIAL IMPROVEMENTS



HARVARD STREET AT BEACON STREET NORTHBOUND LANE ASSIGNMENT

- Recommendation – Evaluate signaling Harvard Street at Longwood Avenue intersection
- Queue management
- Safe gaps for left turns from Longwood Avenue; safe crossing for pedestrians

SUMMARY & NEXT STEPS

Short term

- Implement coordination plan
- Street furniture – Harvard Street, Green Street to Babcock

Long Term

- Design permanent pedestrian improvements at Green Street
- Further study – Harvard Street at Longwood Avenue Signalization

QUESTIONS?

