

ROUTE 1 CORRIDOR (NORTH ATTLEBOROUGH, ATTLEBORO) TRANSPORTATION STUDY

Southeastern Regional Planning & Economic Development District



Route 1 Corridor Study

Scope of Study:

Route 1 between Route 120 and Irving Avenue
N Attleborough (2.5 Miles); Attleboro (1.5 Miles)

15 signalized intersections

3 major stop-controlled intersections

Route 123

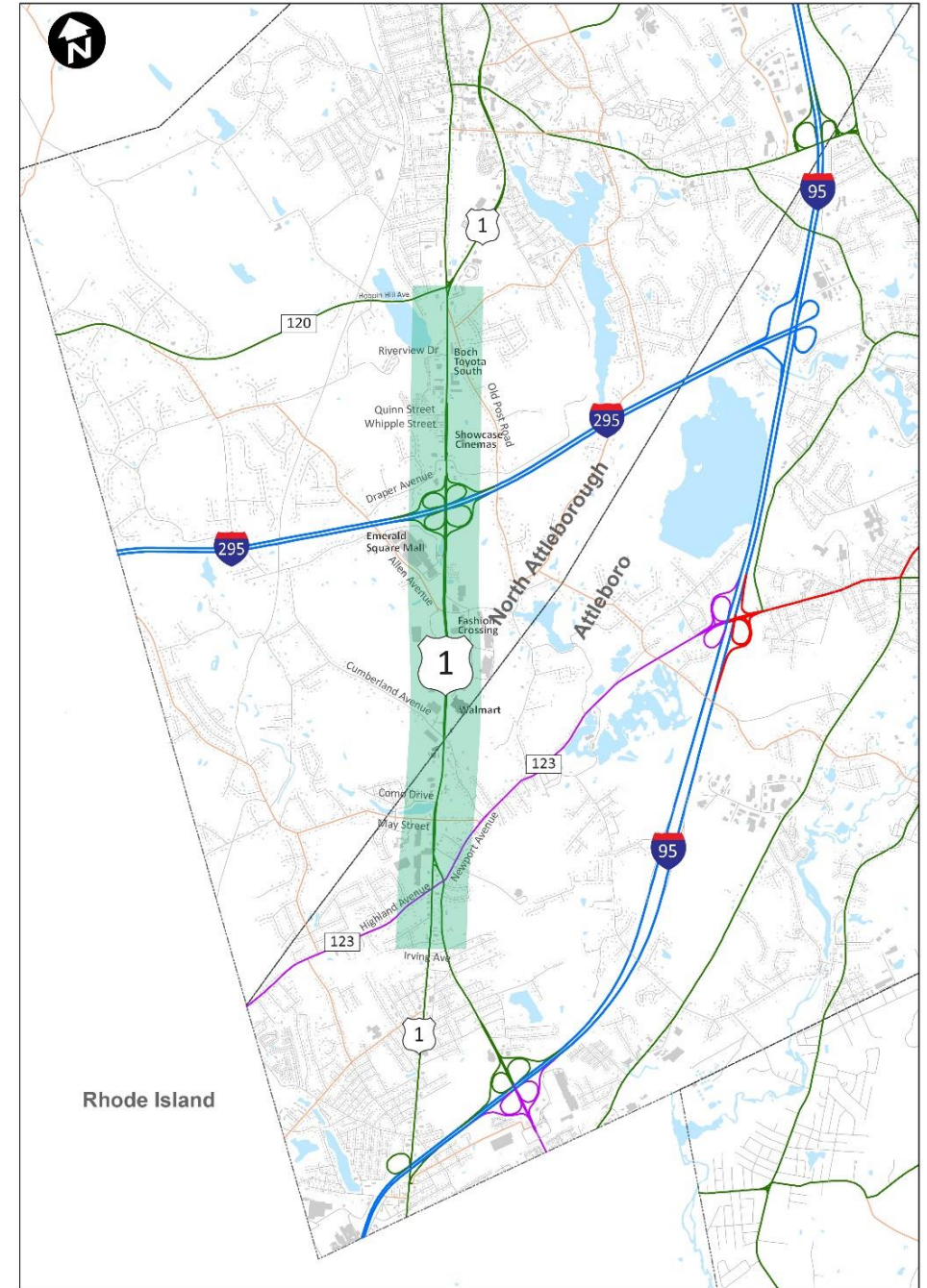
Background:

State owned and maintained

Minor arterial

Weekday 28,000-37,000 vehicles/day

Saturday 29,560-42,500 vehicles/day



Study Process

Public Outreach

- N Attleborough open house (April 24th 2018)
- Attleboro open house (April 25th 2018)
- Online survey (148 Respondents)

Stakeholders Coordination

- N Attleborough
- Attleboro
- GATRA
- Mass DOT District 5

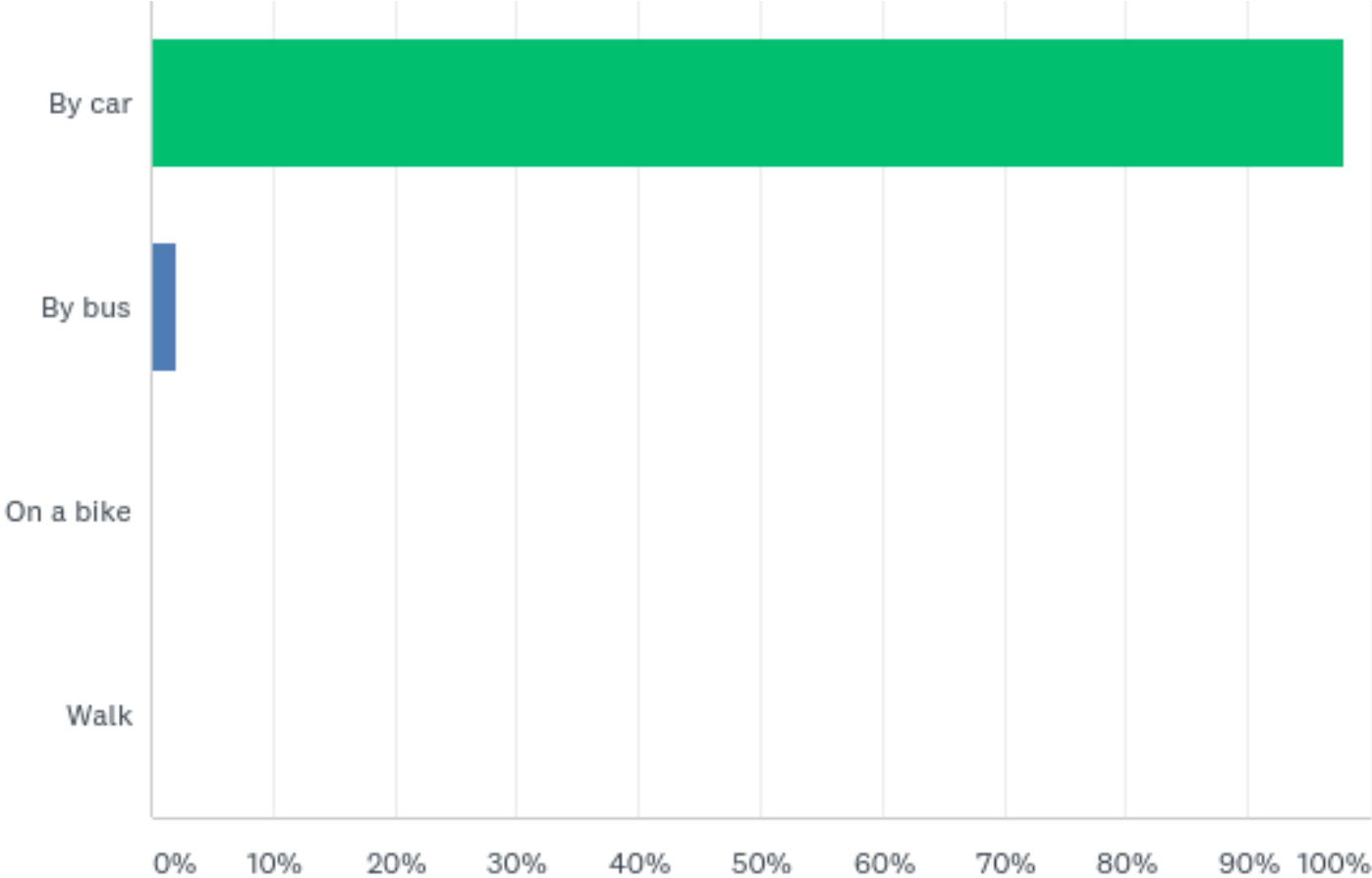
System Evaluations

- Travel demand forecast
- Capacity analysis
- Safety analysis
- Multi-modal accommodations
- Environmental overviews
- Alternatives

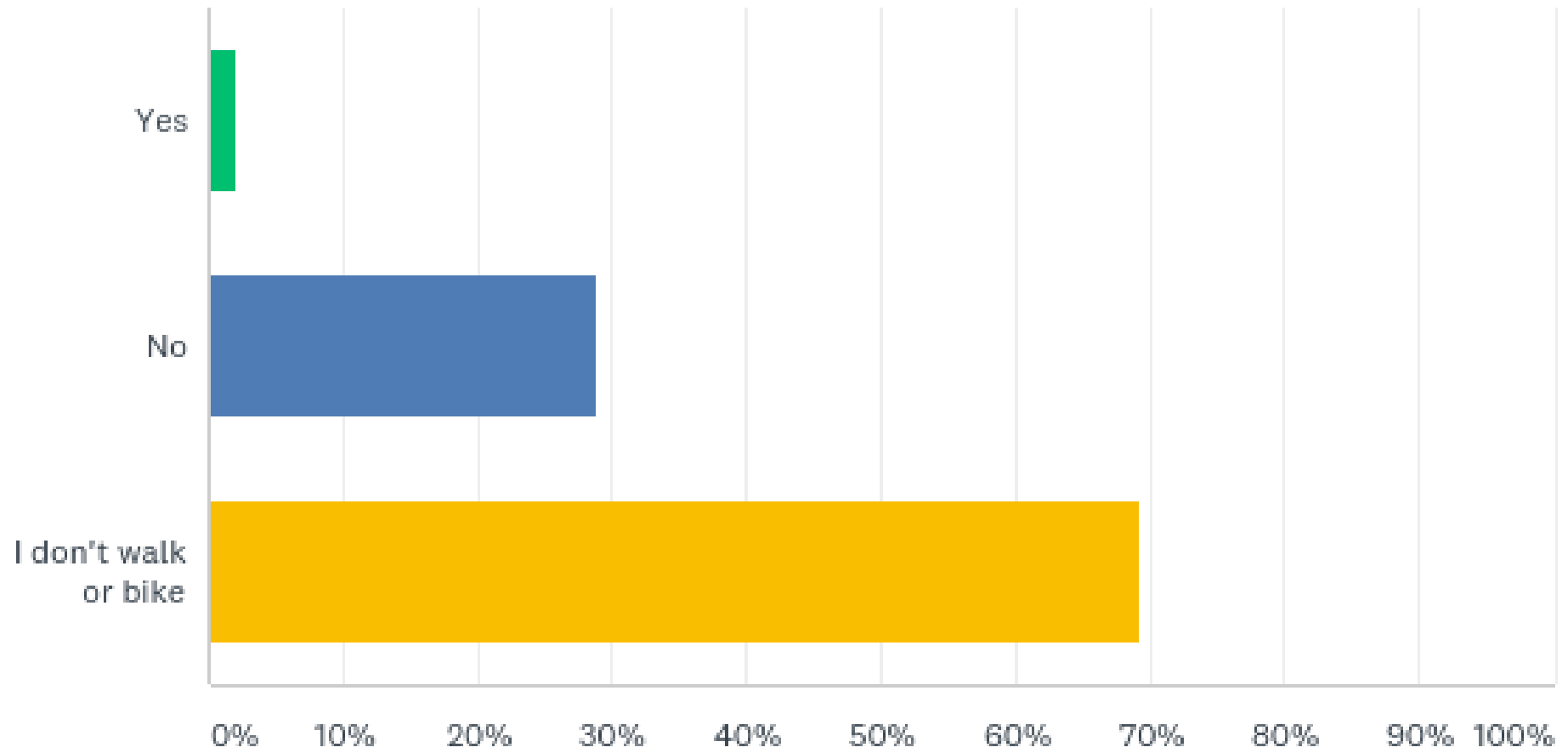


North Attleborough, April 24th 2018

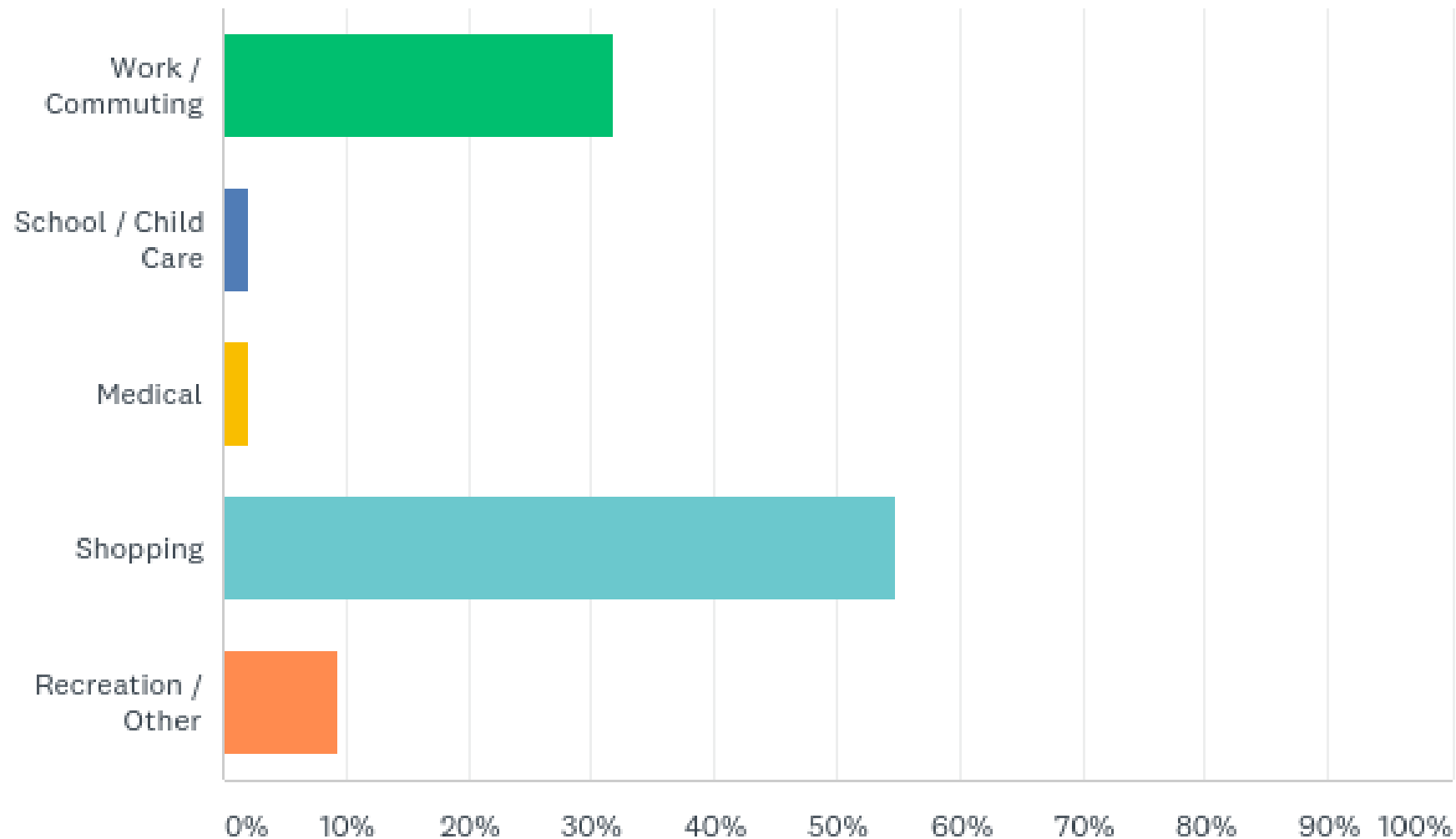
98% respondents answered travel on Route 1 by cars



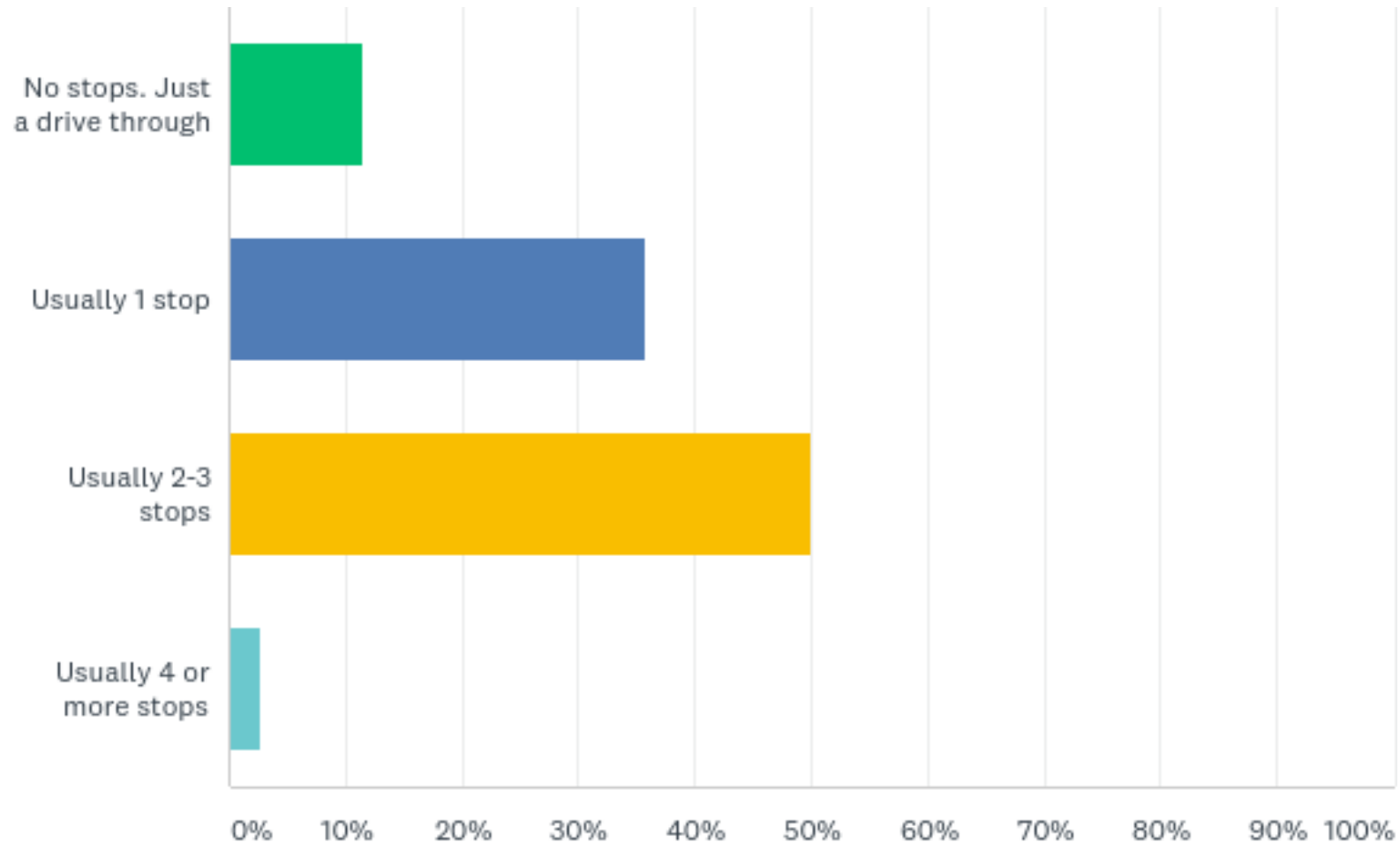
70% respondents answered don't bike or walk
29% respondents answered don't feel safe to walk or bike



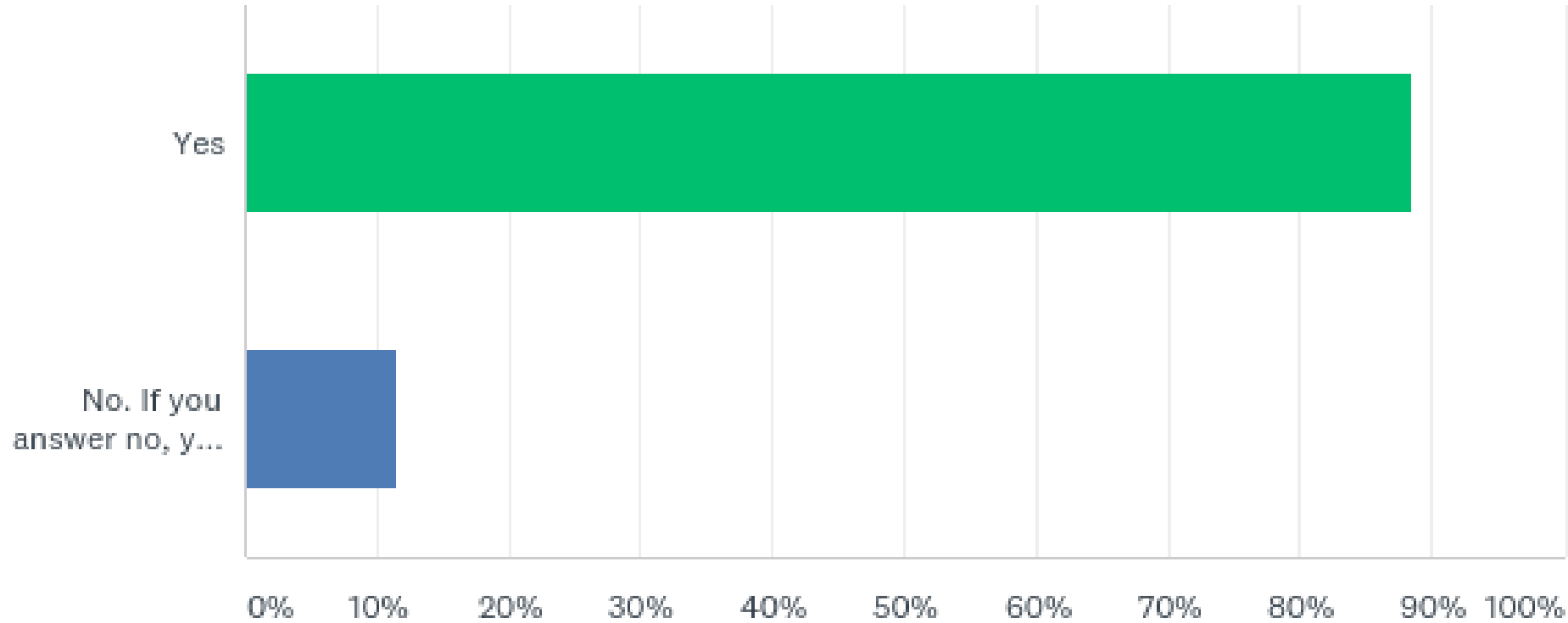
55% respondents answered shopping main reason for trip
32% respondents answered commuting main reason for trip



50% respondents answered make multiple stops
36% answered make 1 stop
12% answered drive through Route 1 (no stops)



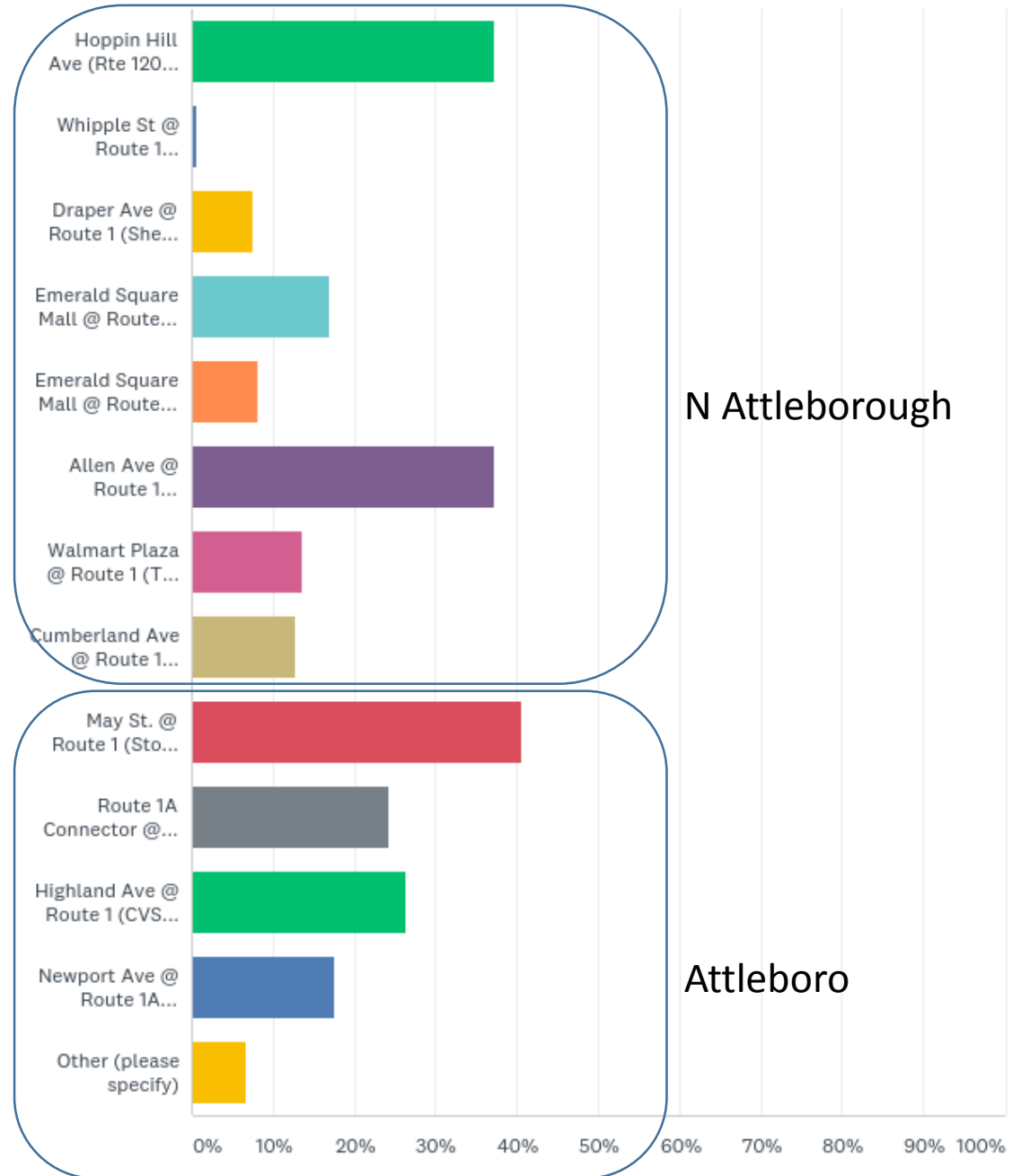
89% respondents answered take a detour to avoid Route 1



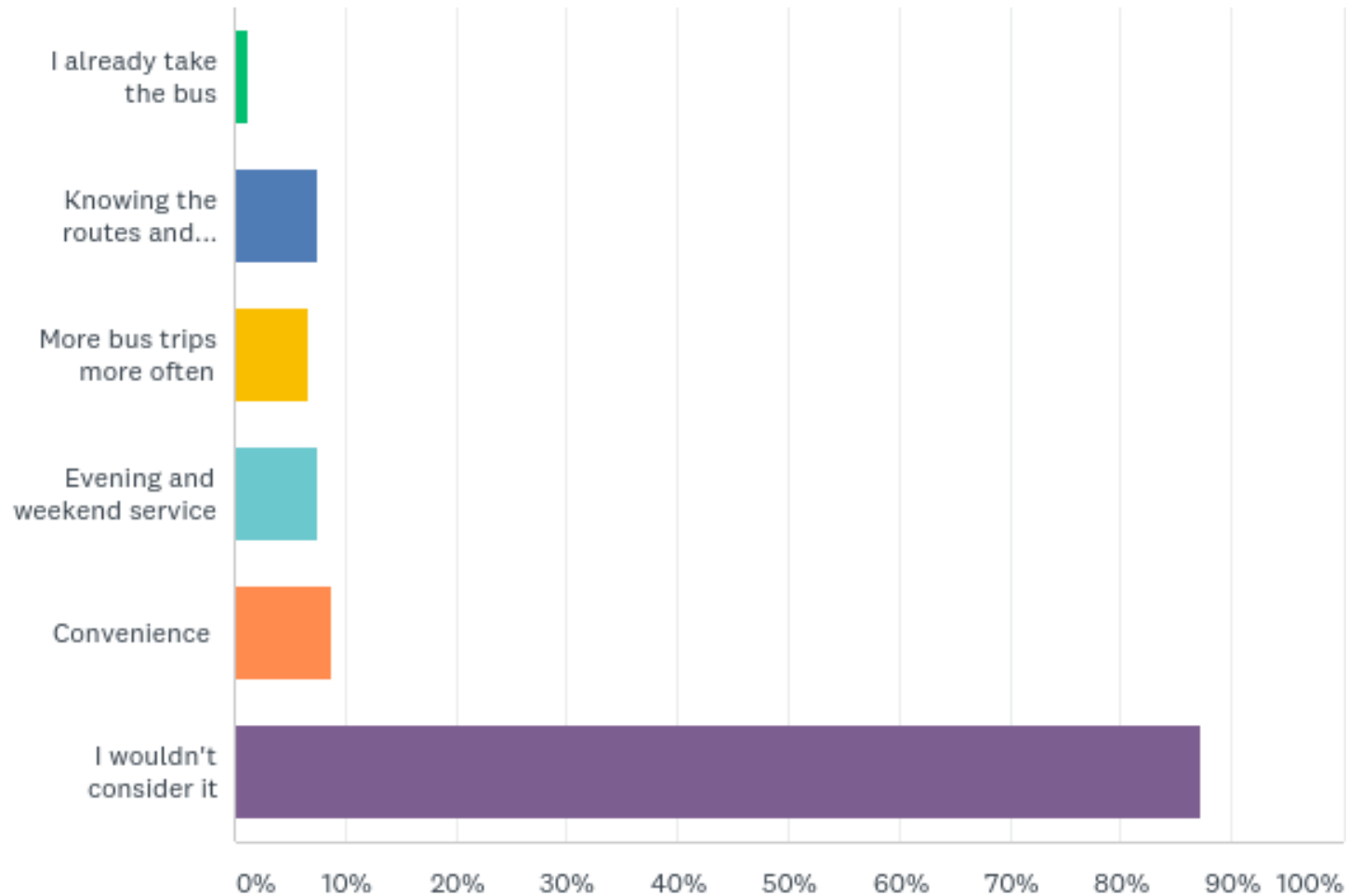
47% respondents answered take a detour during the weekend
33% during weekday commute
21% during the holiday

Respondents picked most congested and dangerous intersections:

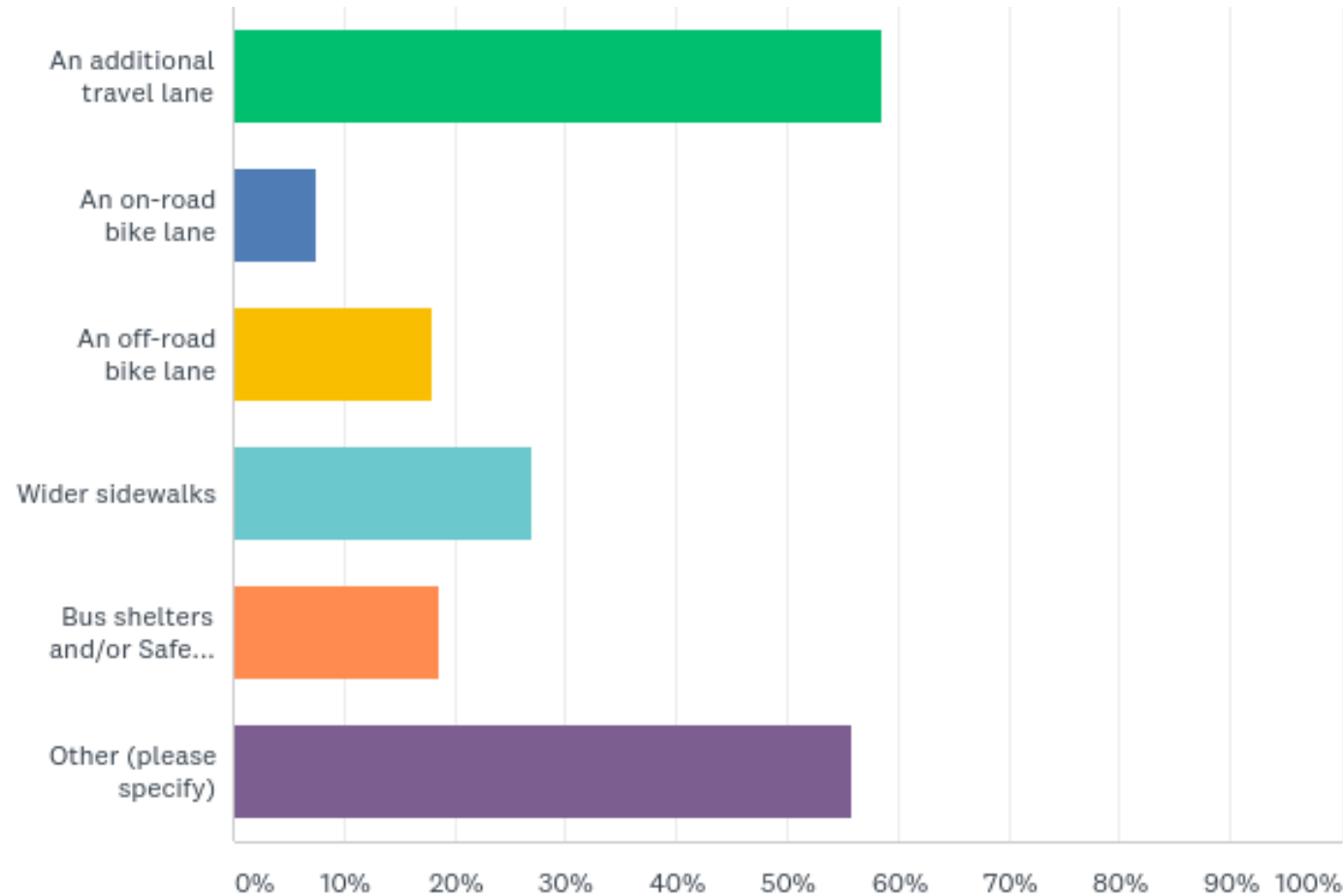
- 41% May St at Route 1
- 37% Hoppin Hill Rd at Route 1
- 37% Allen Ave at Route 1
- 27% Highland Ave at Route 1
- 25% Route 1A at Route 1
- 18% Newport Ave at Route 1A
- 17% Emerald Square Mall entrance(N)
- 14% Walmart Entrance at Route 1
- 13% Cumberland Ave at Route 1
- 9% Emerald Square Mall entrance(S)



88% respondents answered they would not consider taking bus on Route 1

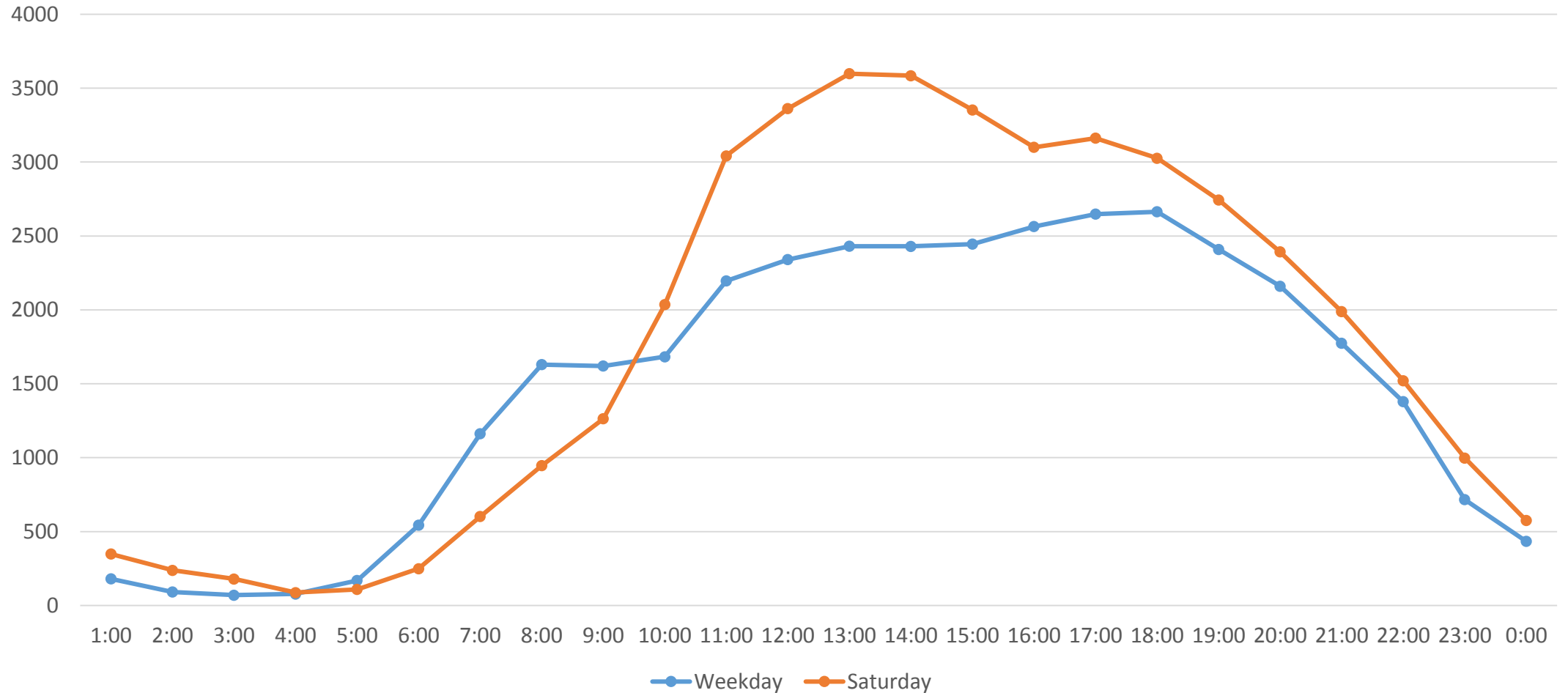


59% respondents suggested additional lane could improve Route 1
27% suggested wider sidewalks
19% suggested bus shelter









24 Hour Volume

Route 1 in N. Attleborough



Capacity Analysis

1. Travel Demand Model
2. Synchro and SimTraffic(LOS)
3. Calibration and Validation

Level of Service	Average Control Delay (seconds/vehicle)
 A	≤ 10
 B	$>10 - 20$
 C	$>20 - 35$
 D	$>35 - 55$
 E	$>55 - 80$
 F	>80

Existing Condition:

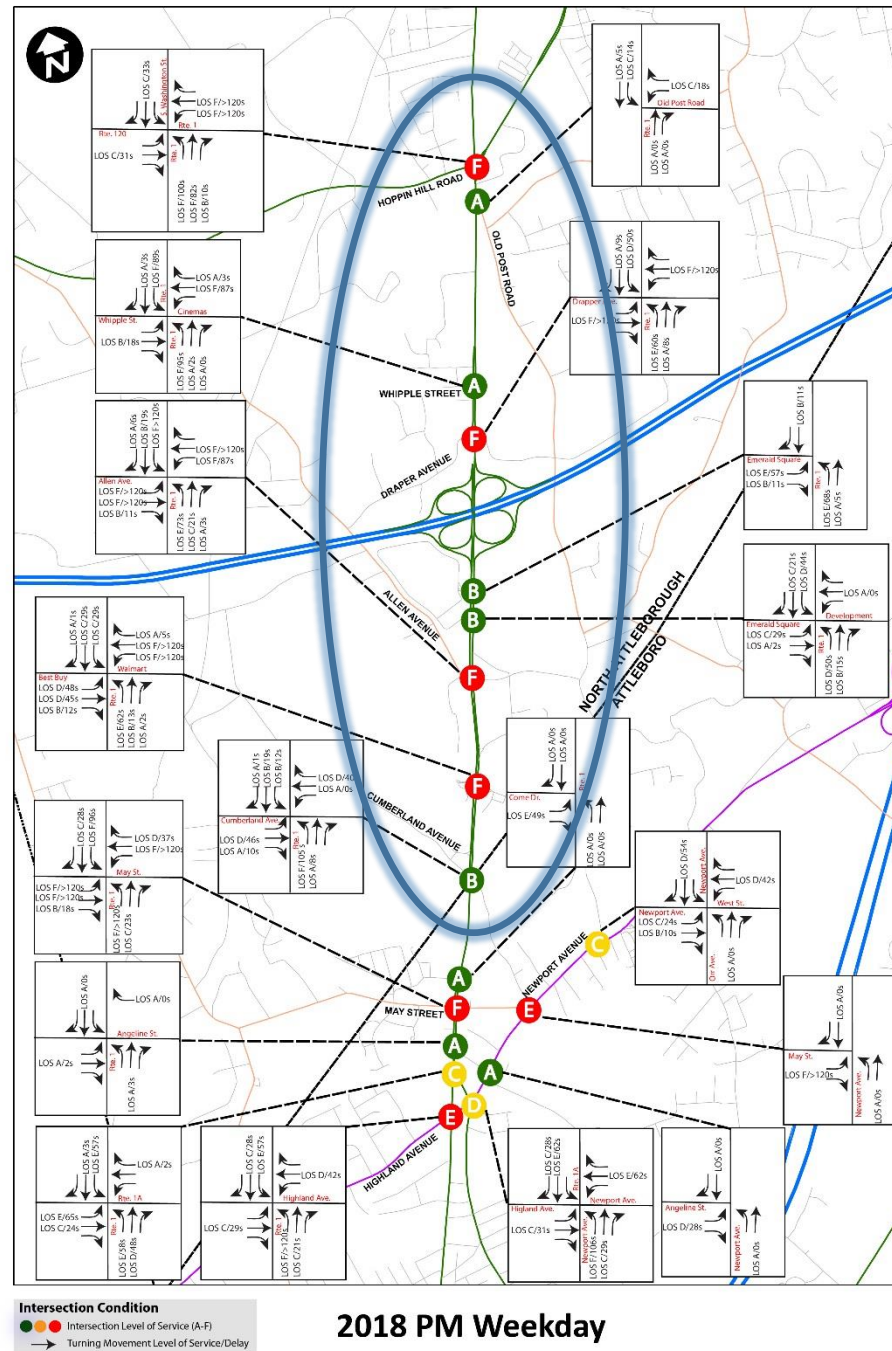
7 out 18 intersections operate LOS E/F

Intersections with LOS E/F at North Attleborough(4/9):

- Hoppin Hill Rd at Route 1
- Draper Ave at Route 1
- Allen Ave at Route 1
- Walmart Entrance at Route 1

Intersection with LOS E/F at Attleboro(3):

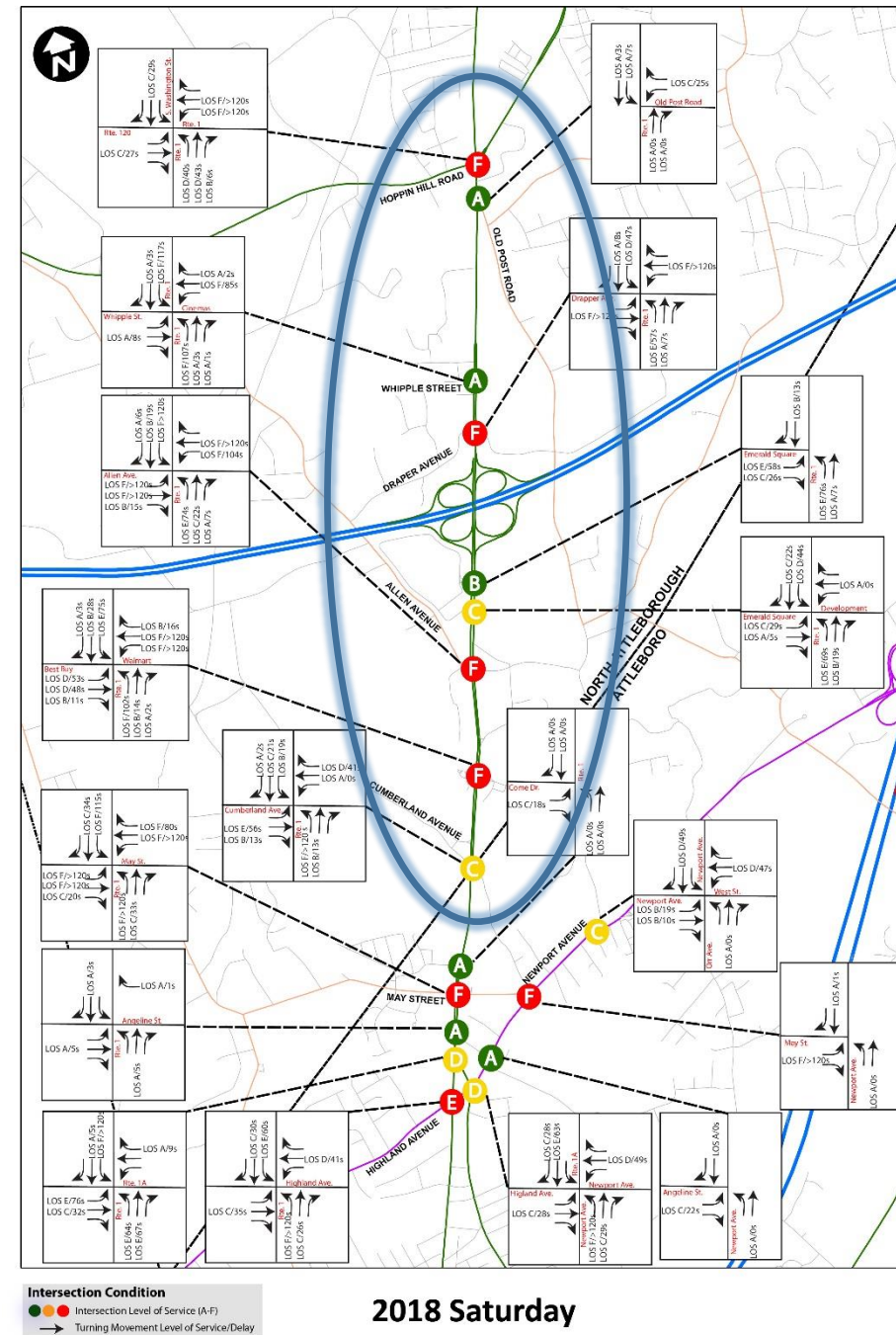
- May St at Route 1
- Highland Ave at Route 1
- Newport Ave at Route 123



2018 PM Weekday

0 0.125 0.25 0.5 0.75 1 Miles

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2018 Saturday

0 0.125 0.25 0.5 0.75 1 Miles

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Future Conditions (2025)

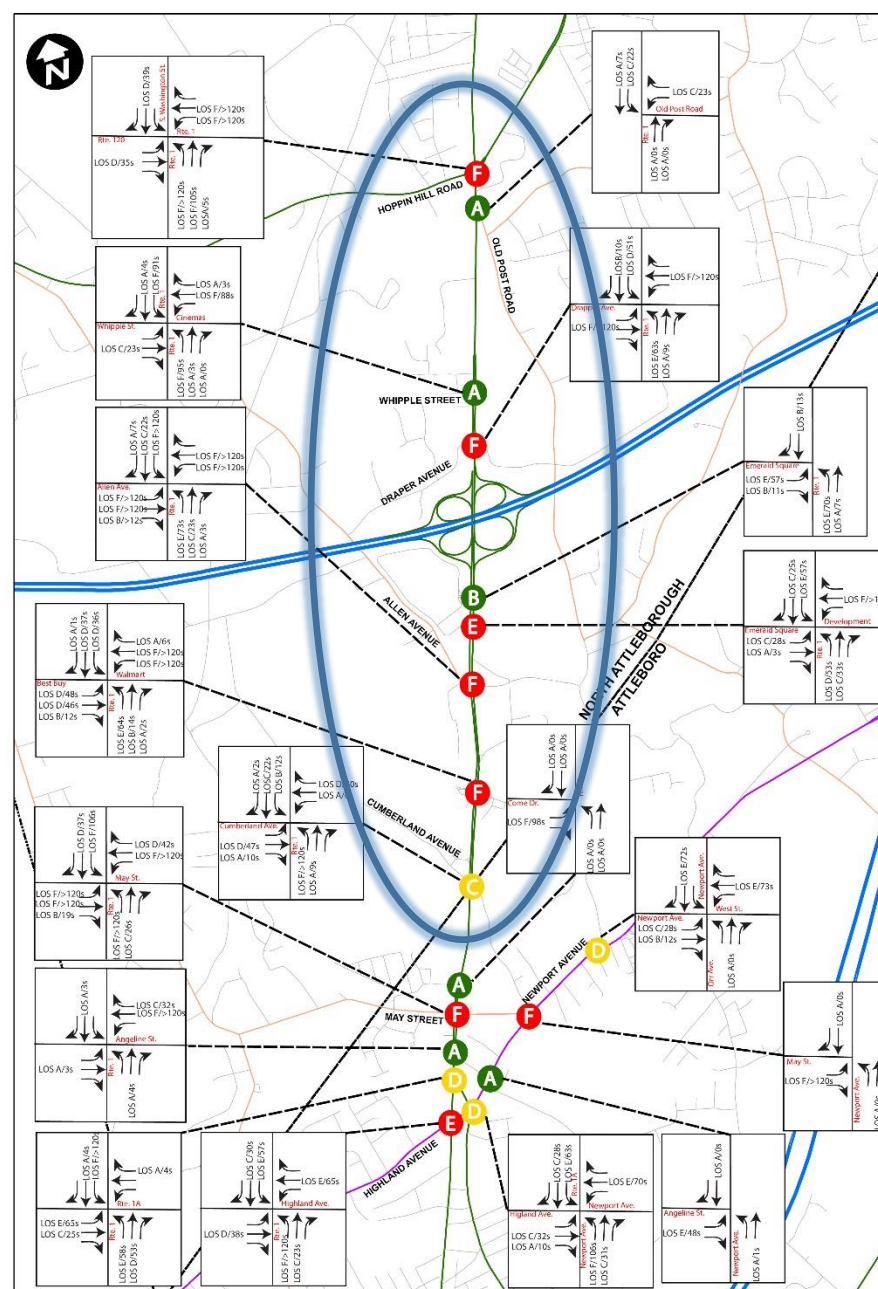
11 out of 18 intersections are projected operate LOS E/F

Intersections with LOS E/F at North Attleborough(5/9):

- Hoppin Hill Rd at Route 1
- Draper Ave at Route 1
- Emerald Square Mall (S)
- Allen Ave at Route 1
- Walmart Entrance at Route 1

Intersection with LOS E/F at Attleboro(6):

- May St at Route 1
- R1 at Route 1A
- Highland Ave at Route 1
- R1A at Route 123
- Newport Ave at Route 123
- May St at Route 123

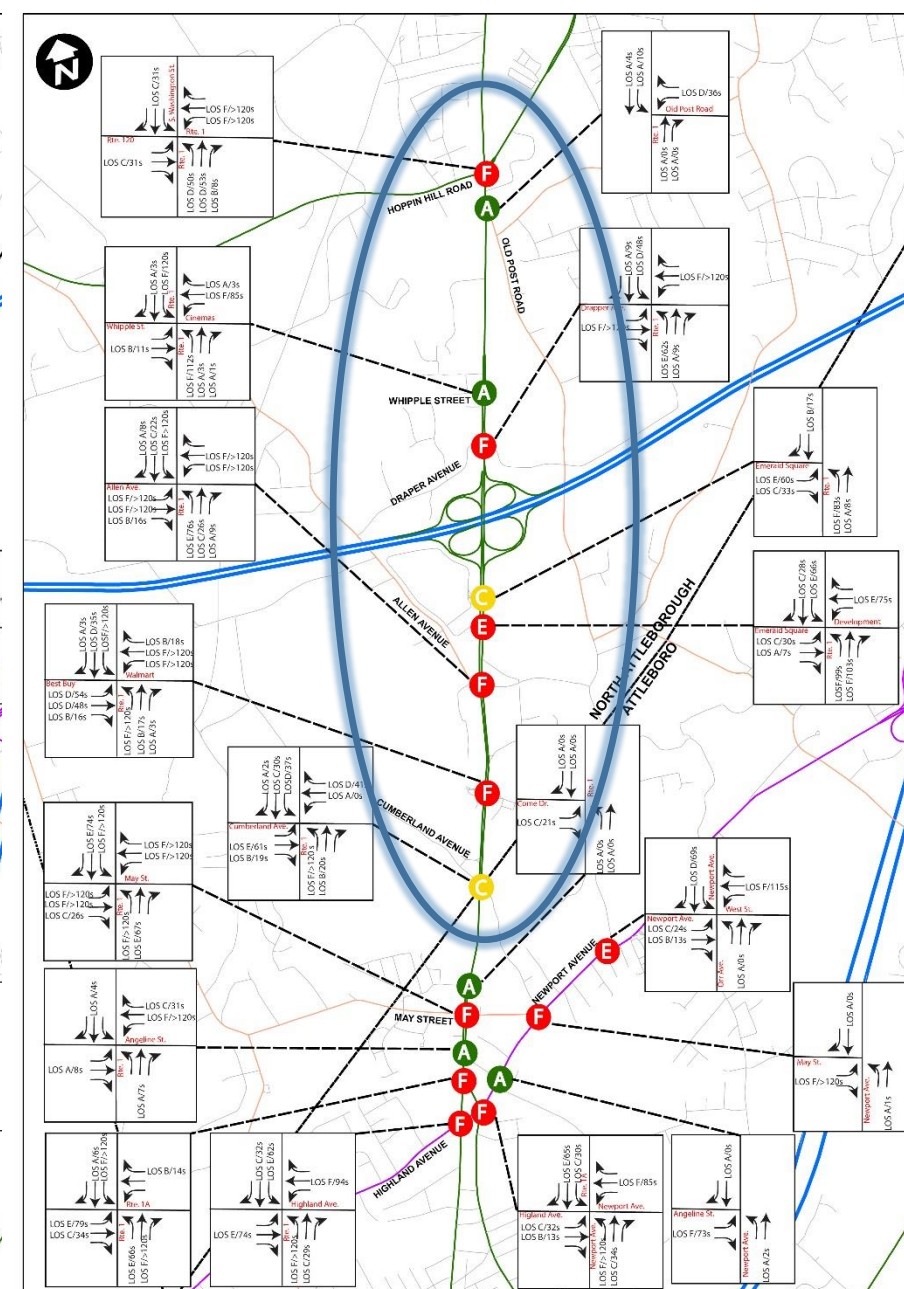


Intersection Condition
 ● ● ● Intersection Level of Service (A-F)
 → Turning Movement Level of Service/Delay

2025 PM Weekday

0 0.125 0.25 0.5 0.75 1 Miles

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Intersection Condition
 ● ● ● Intersection Level of Service (A-F)
 → Turning Movement Level of Service/Delay

2025 Saturday

0 0.125 0.25 0.5 0.75 1 Miles

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Future Condition (2040):

12 out of 18 intersections are projected to operate LOS E/F

Intersections with LOS E/F at North Attleborough(6/9):

Hoppin Hill Rd at R1

Draper Ave at R1

Emerald Square Mall (S) at R1

Allen Ave at Route 1

Walmart Entrance at Route 1

Cumberland Ave at Route 1

Intersection with LOS E/F at Attleboro(6):

May St at Route 1

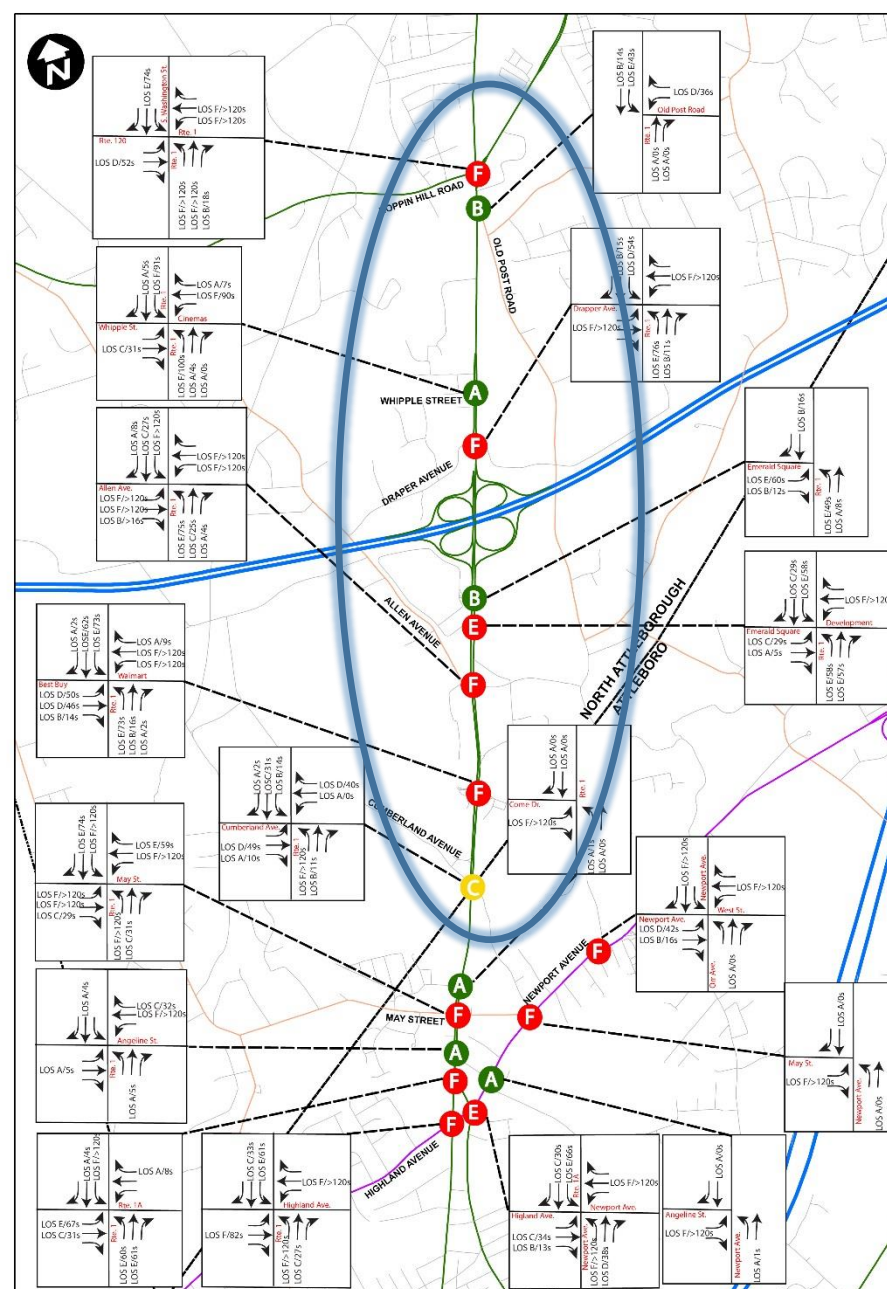
R1 at Route 1A

Highland Ave at Route 1

R1A at Route 123

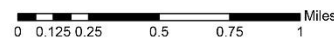
May St at Route 123

Newport Ave at Route 123

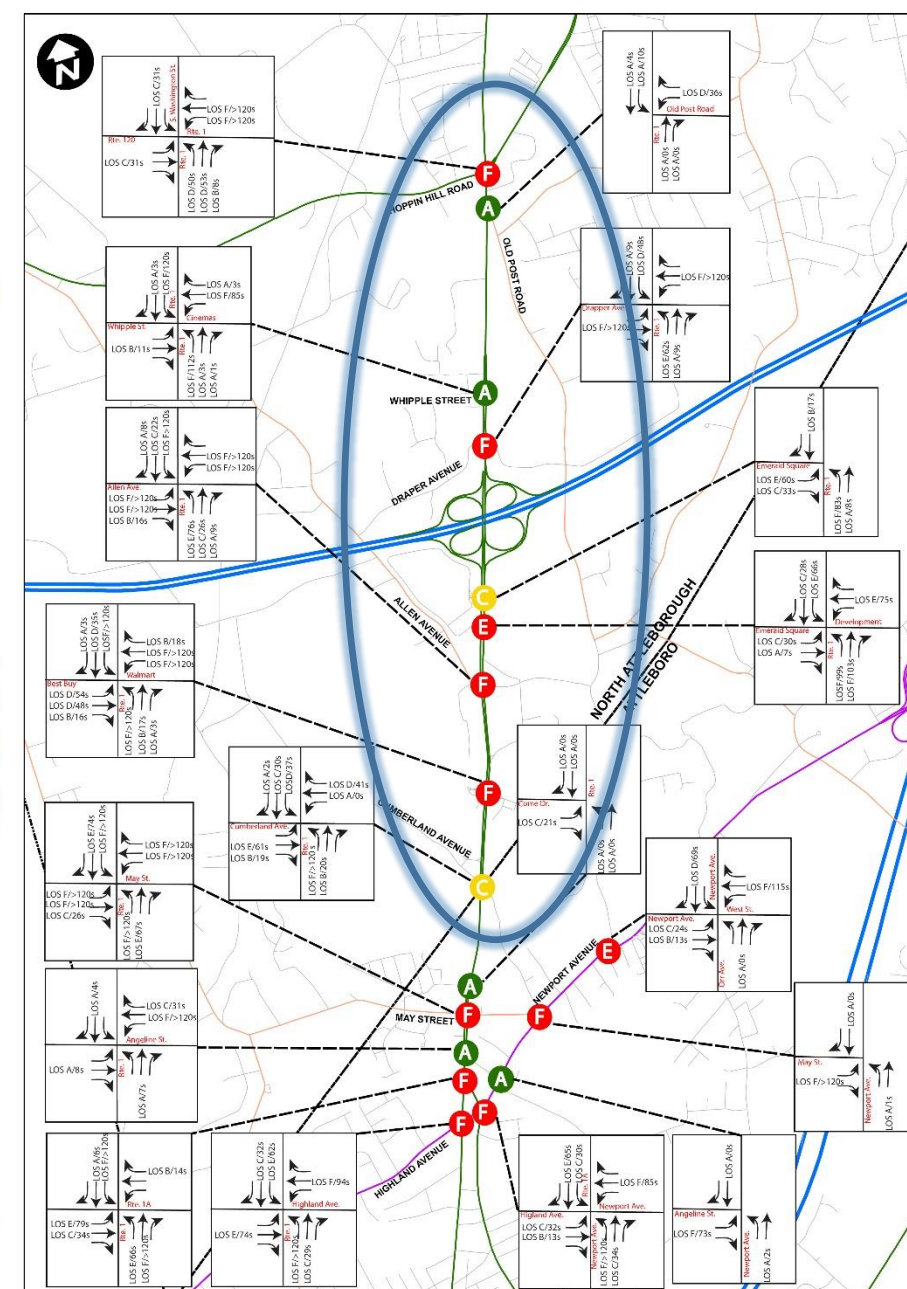


Intersection Condition
 ● ● ● Intersection Level of Service (A-F)
 → Turning Movement Level of Service/Delay

2040 PM Weekday

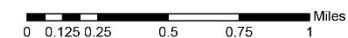


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 Data source: SP2ECO, MapInfo



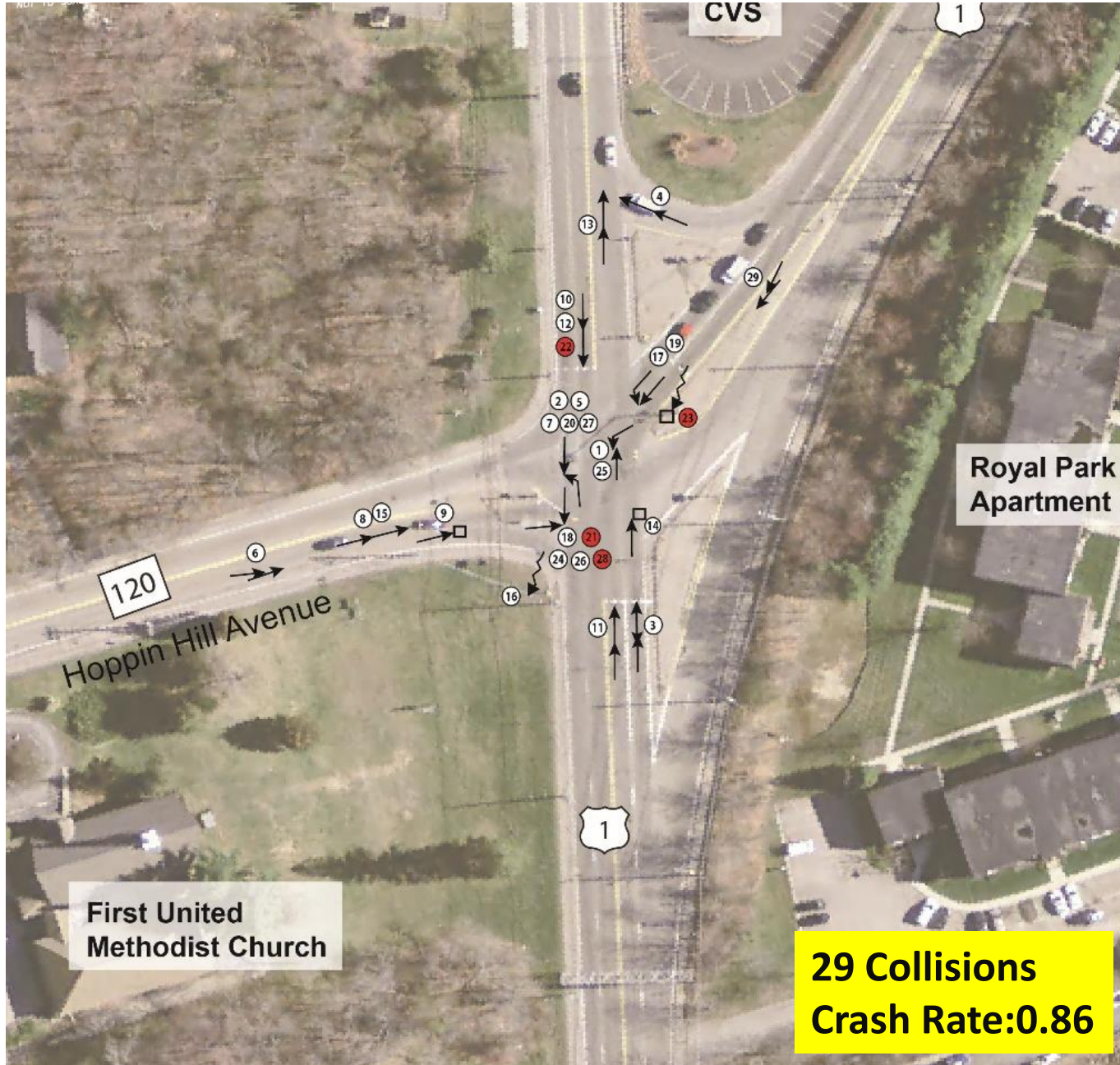
Intersection Condition
 ● ● ● Intersection Level of Service (A-F)
 → Turning Movement Level of Service/Delay

2025 Saturday



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 Data source: SP2ECO, MapInfo

Route 120 at Route 1



Existing conditions

Signalized intersection, LOS F, delay over 120 seconds, very high crash rate

Projected conditions

- 2025: LOS F
- 2040: LOS F

Proposed Improvements:

Construct two additional southbound left turn lanes; Construct new eastbound right turn lane

Potential impact:

2025: LOS F
2040: LOS F



Improvement Concept

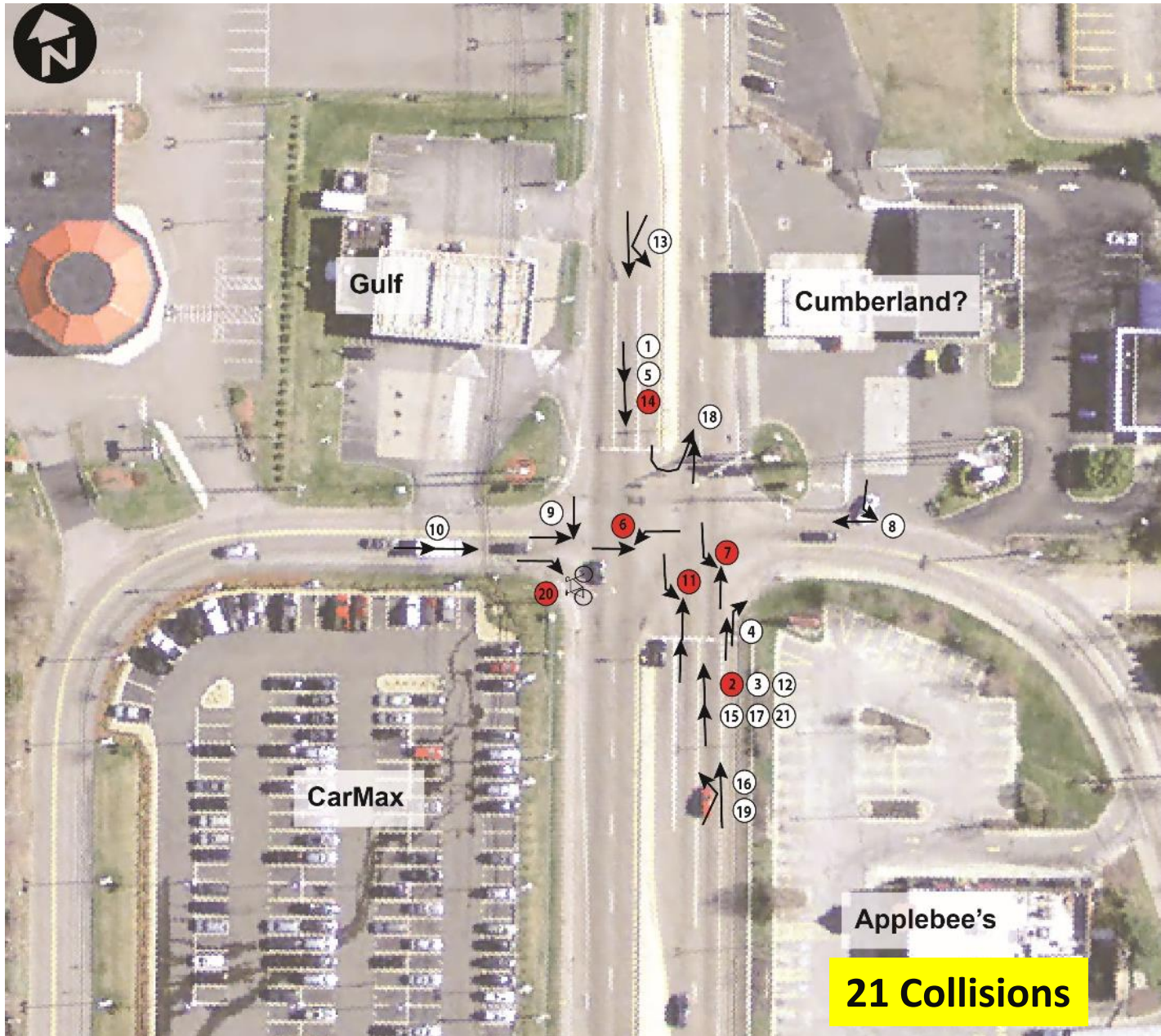
Realignment of Route 1; construct two T shape signalized intersection at Hoppin Hill Road and Route 1 could potentially improve:

1. Intersection LOS B, delay and efficiency
2. Improve bicycle and pedestrian safety
3. Create open space

Simulation of Re-alignment of Route 1 at Hoppin Hill Road



Draper Ave at Route 1



Existing conditions

Signalized intersection, LOS F, delay over 120 seconds, moderate high crash rate

Projected conditions

- 2025: LOS F
- 2040: LOS F

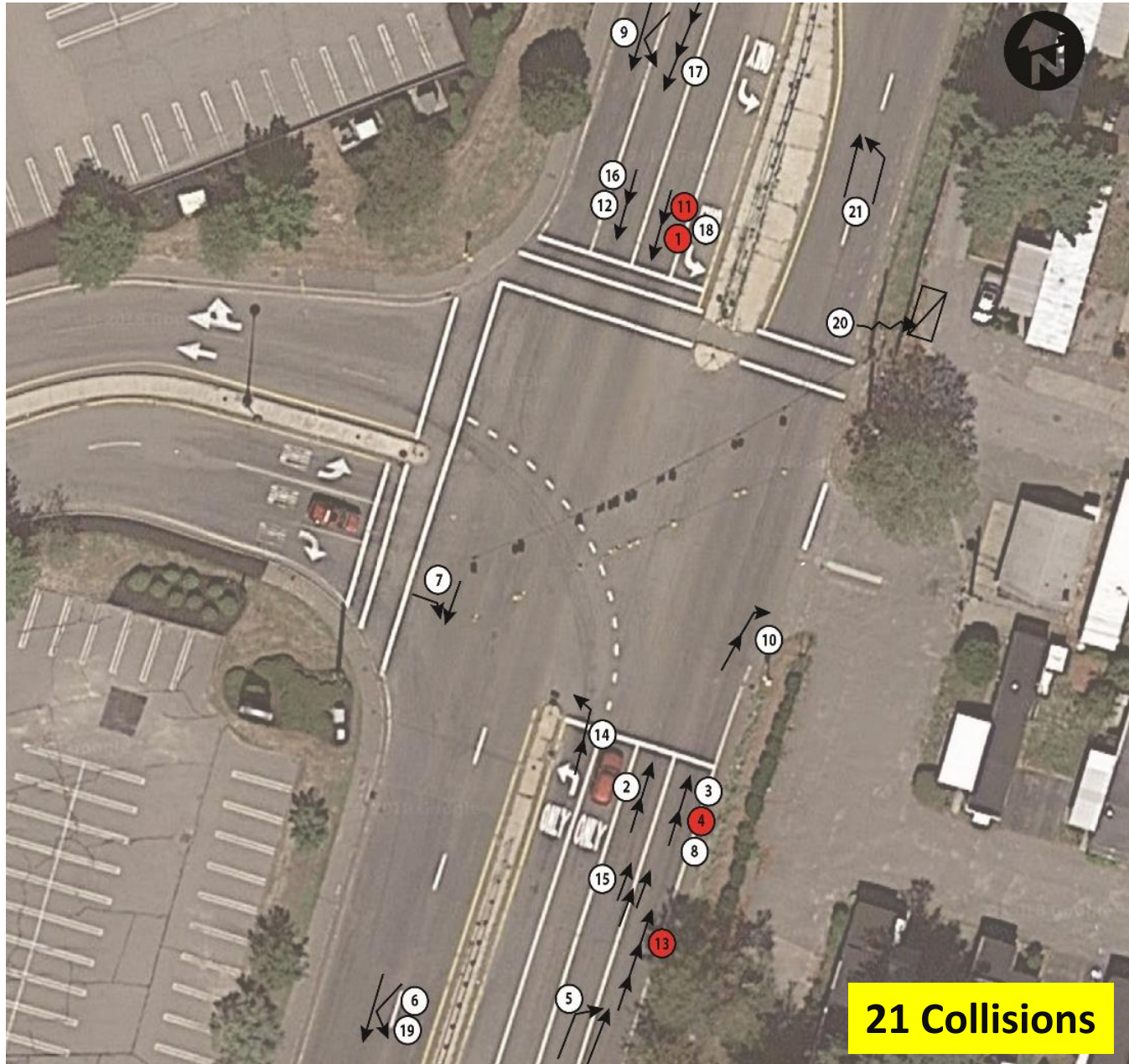
Proposed Improvements:

- Improve bicycle and pedestrian infrastructure
- Optimize signal timing plan
- Install adaptive signal system between Whipple St and Draper Ave
- Add WB left turn lane
- Add NB right turn lane

Estimated Conditions with Improvements:

2025: LOS C
2040: LOS C

Emerald Square Mall South Entrance



Existing conditions

- Signalized intersection
- LOS C, delay 30 seconds
- medium high crash rate

Projected Conditions

- 2025: LOS E
- 2040: LOS F

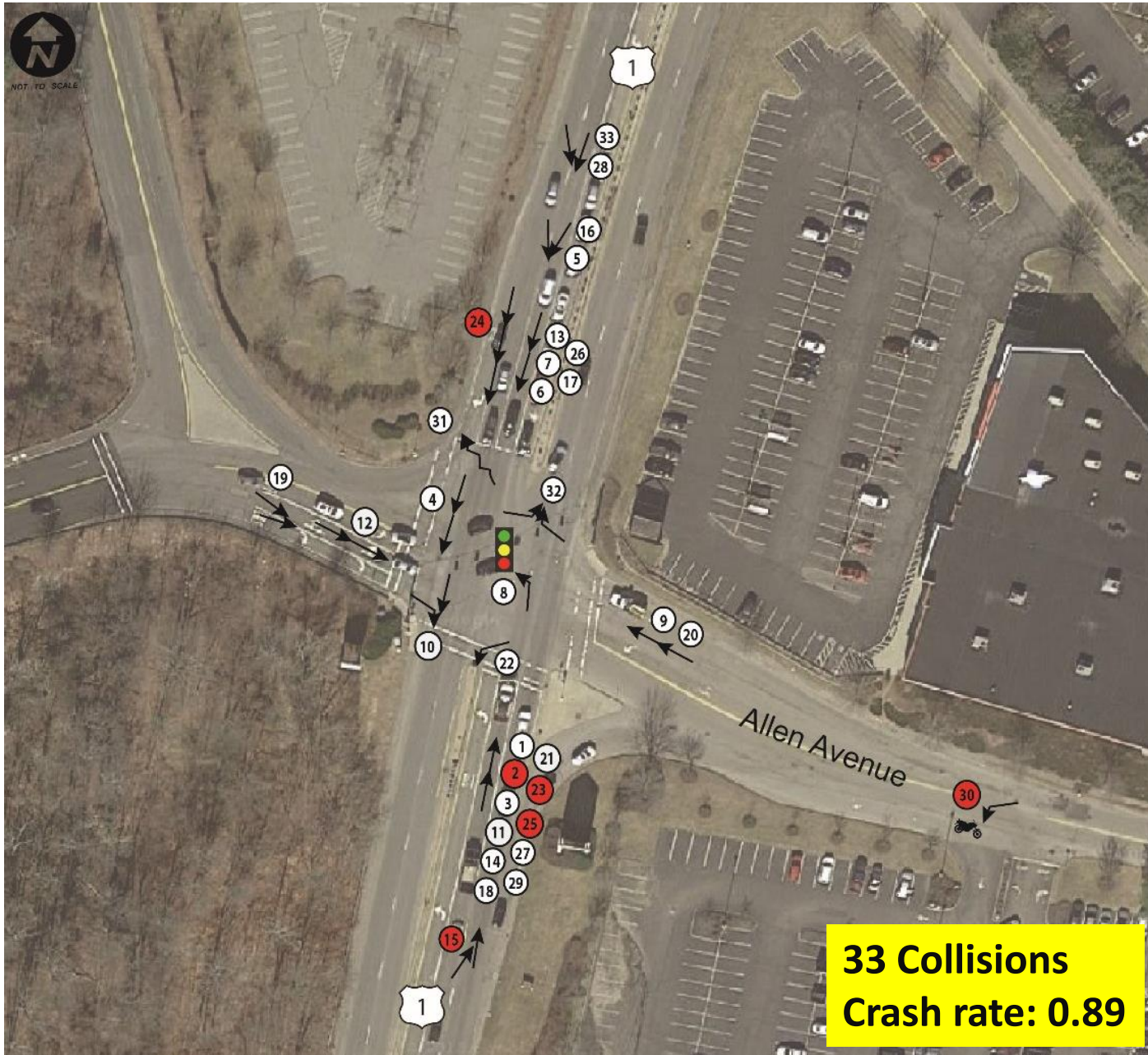
Proposed Improvements:

- Install adaptive signal system from Emerald Square Mall North to Allen Ave intersections
- Add additional northbound and southbound through lane

Estimated Conditions with Improvements:

- 2025: LOS C
- 2040: LOS D

Allen Ave at Route 1



Existing conditions

- Signalized intersection,
- LOS F, average delay over 120 seconds
- very high crash rate

Projected Conditions

- 2025: LOS F
- 2040: LOS F

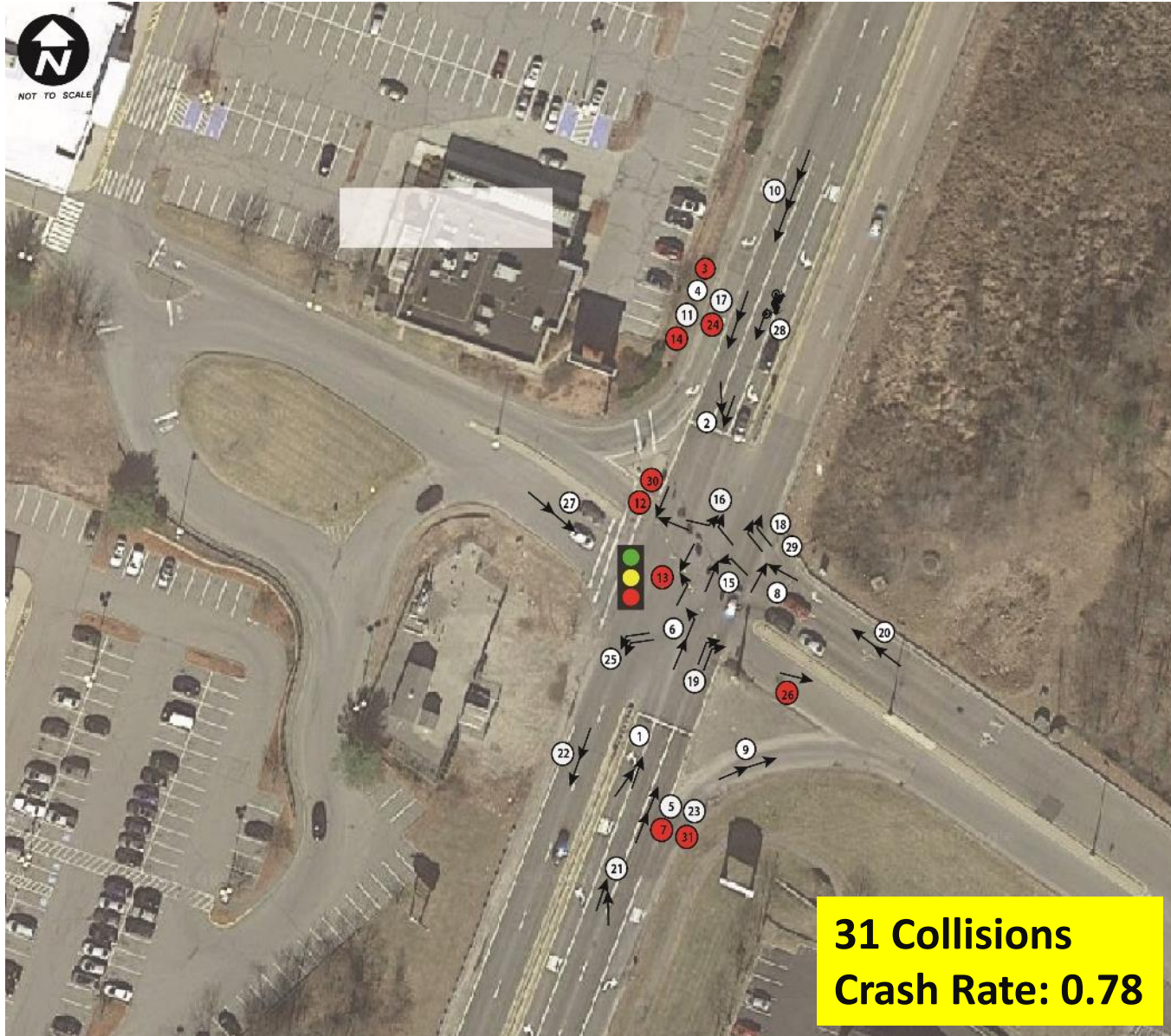
Proposed Improvements:

- Improve bicycle and pedestrian infrastructure
- Install adaptive signal system from Emerald Square Mall North to Allen Ave intersections
- Add additional westbound right turn lane
- Add additional southbound left turn lane

Projected Conditions with Improvements:

- 2025: LOS D
- 2040: LOS D

Walmart/Best Buy Entrance



Existing conditions

- Signalized intersection
- LOS F, delay over 120 seconds
- Very high crash rate

Projected Conditions

- 2025: LOS F
- 2040: LOS F

Proposed Improvements:

- Improve bicycle and pedestrian infrastructure
- Add additional southbound left turn lane
- Add additional northbound and southbound through lane

Projected Conditions with Improvements:

- 2025: LOS D
- 2040: LOS D



Existing conditions

- Signalized intersection
- LOS C, delay of 25 seconds
- Medium high crash rate

Projected Conditions

- 2025: LOS C
- 2040: LOS E

Proposed Improvements:

- Signal timing improvement
- Improve bicycle and pedestrian infrastructure

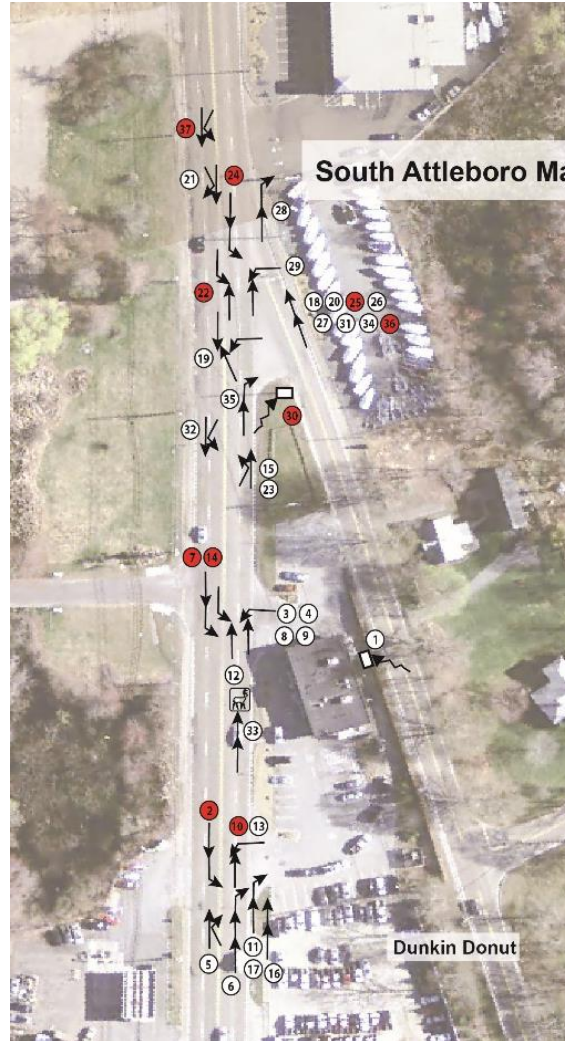
Projected Conditions with Improvements:

- 2025: LOS C
- 2040: LOS D

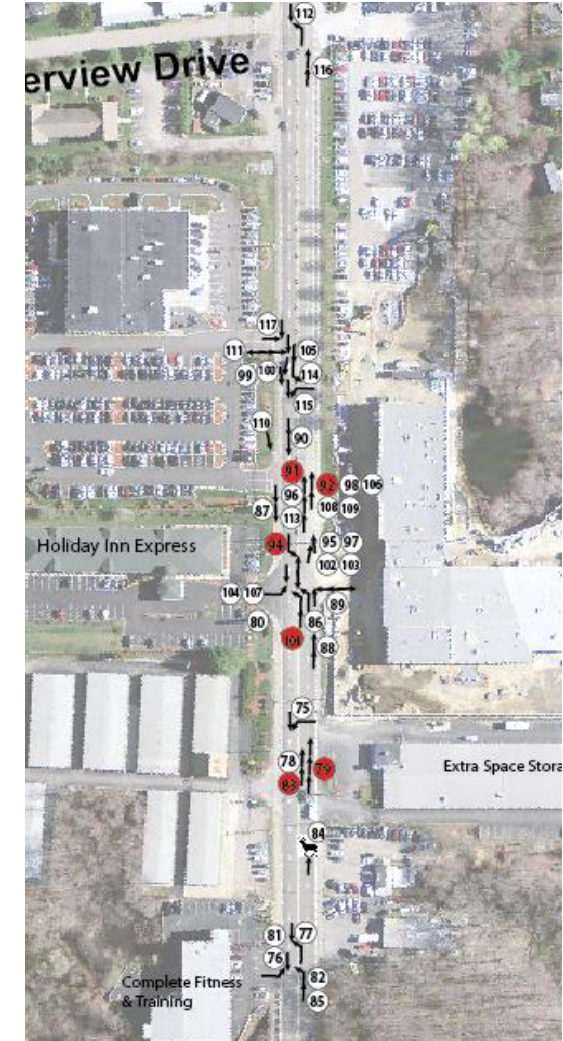
Traffic Collisions on Route 1 between Old Post Road to Quinn Street



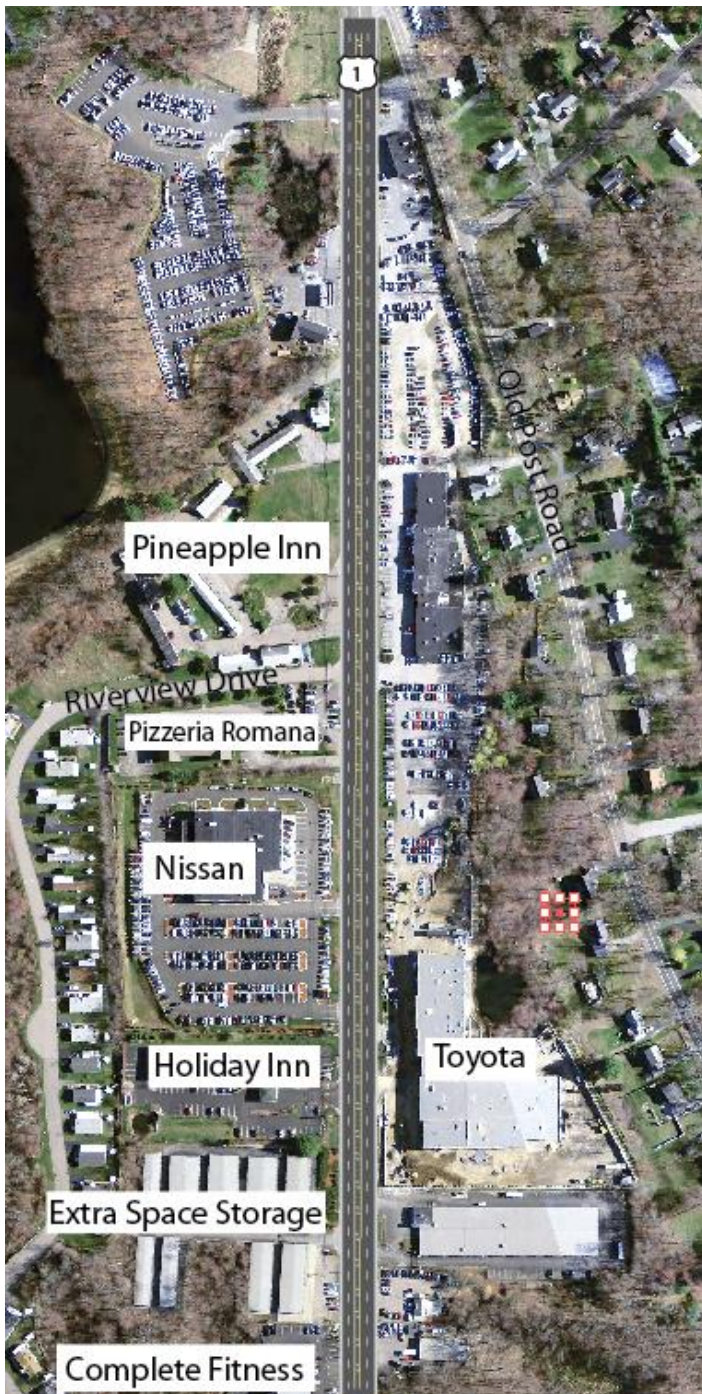
Total 8 Crashes, 1 fatal



Total 37 Crashes



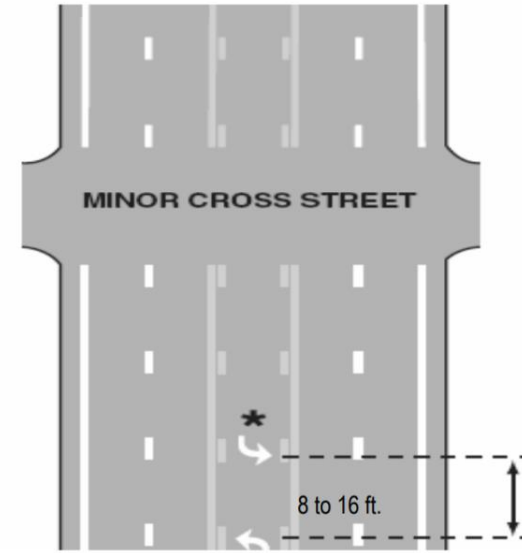
Total 41 Crashes



Improvement Concept

Route 1 between Old Post Road Complete Fitness (North of Quinn St) –
Approximately ½ mile

- Two-Way Continuous Left-Turn (TWLT)
- It would require individual driveway counts to validate



Center two-way left turn lane striping

Proposed Recommendations and Alternatives

Intersections

- **Signals system improvements**

Optimization, coordination, and adaptive traffic signal control technology

- **Geometric capacity**

Construct additional left, right or through lanes where warranted

Improve crosswalks, pedestrian push button and signal phasing in compliance with ADA design standards

Corridor Layout

- 11 feet driving lane
- 10 feet multi-used path
- Access management plan

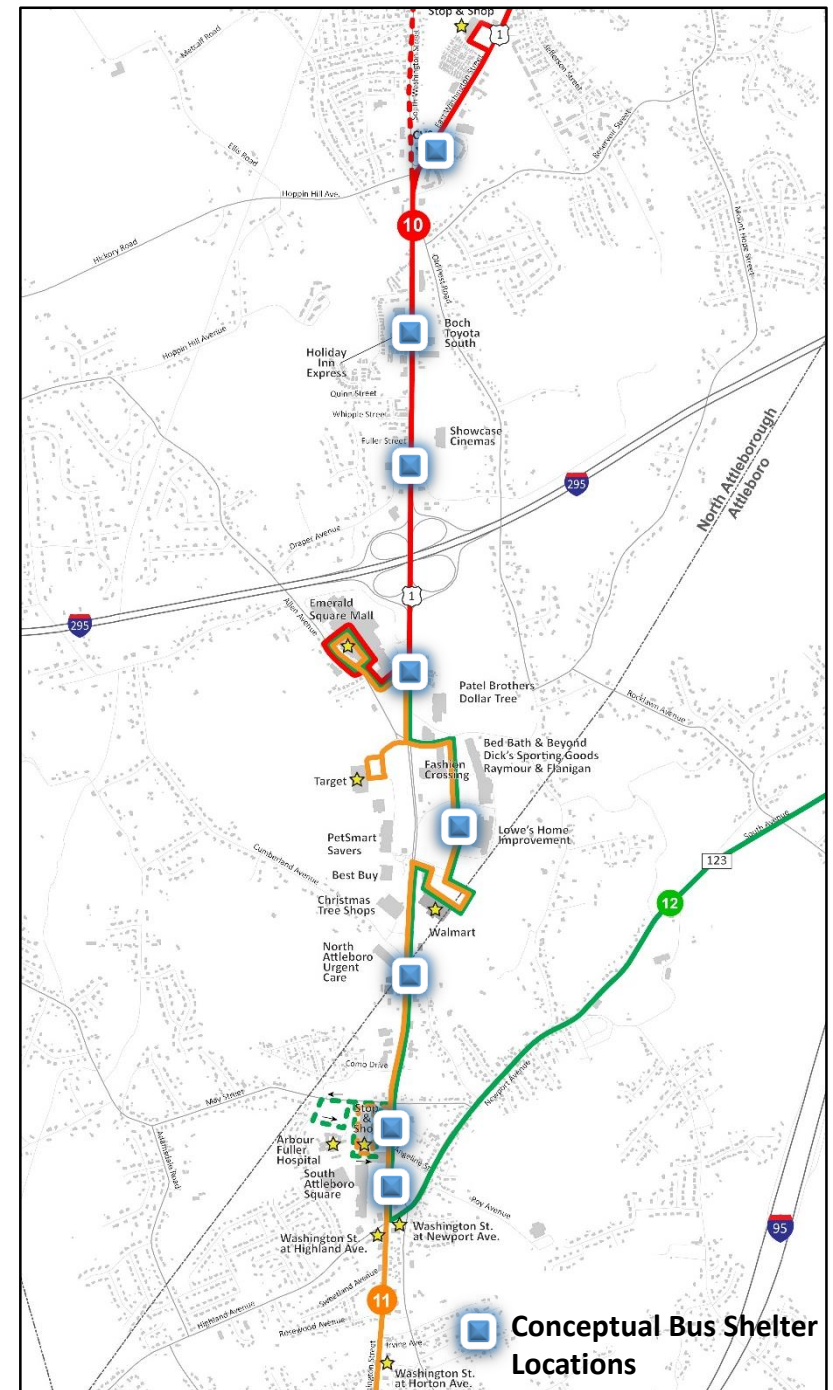
GATRA Bus Route

Existing:

- Route 10, 11 and 12 operate along Route 1
- August ridership range of 3800-4800 people
- Flag stop system; bus service not apparent

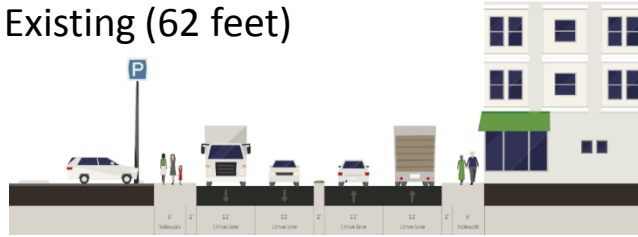
Recommendations:

- Building upon the existing bus network and continue promoting public transit
- Considering bus transit, bicycle, pedestrian (all modes of transportation as priority for infrastructure planning, design and construction
- Consideration of bus shelter and/or bus turnout, connecting businesses, sidewalks and destinations (typical spacing of bus stop of 600 feet)



Cross-section Design Alternatives

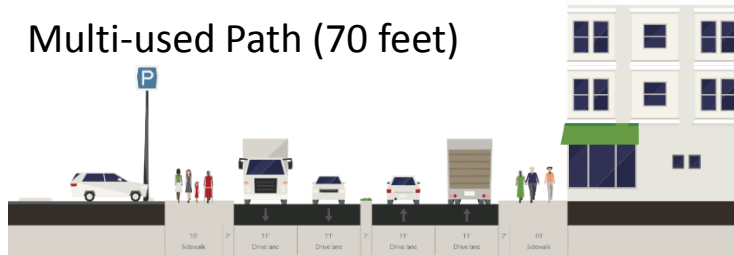
Existing (62 feet)



Pros: Low cost; least changes to the roadway geometry and capacity.

Cons: No accommodation for bicycle and bus transit modes.

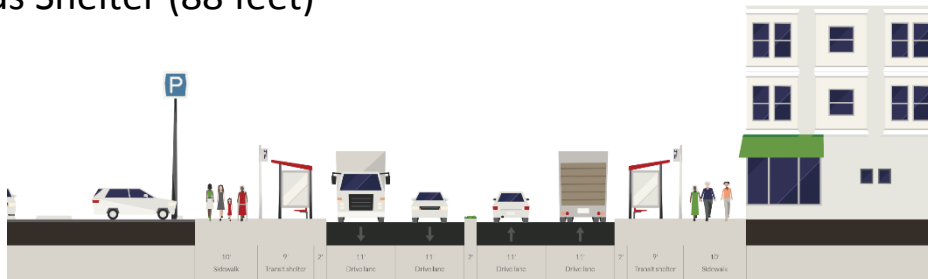
Multi-used Path (70 feet)



Pros:; Increase sidewalk capacity and safety; no changes to the road side geometry.

Cons: Medium cost, modifications on the curbside; no visibility on the bus services.

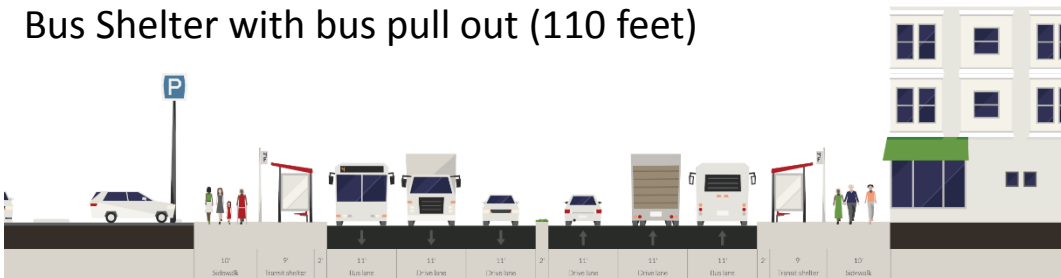
Bus Shelter (88 feet)



Pros: Great visibility of bus service, impact of road capacity, increase bicycle/pedestrian capacity.

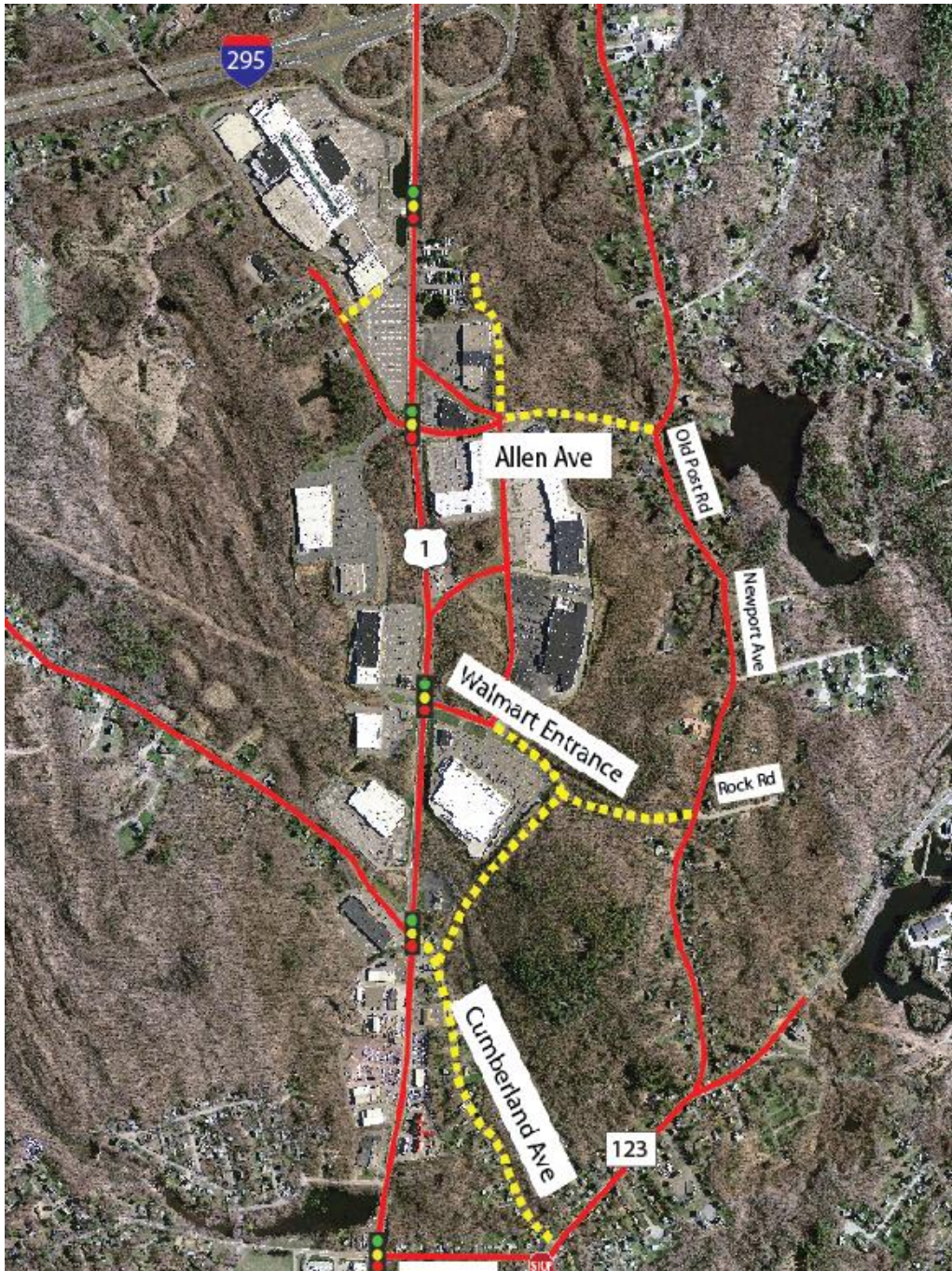
Cons: Costly; ROW issues on curb side and road side; adverse impacts on the existing queue and delay.

Bus Shelter with bus pull out (110 feet)



Pros: Great visibility of bus service, less impact of road capacity increase bicycle/pedestrian capacity.

Cons: Very costly; Require significant changes on road side and curb side.



Access Management Considerations

1. Connect Allen Ave from Route 1 to Old Post Road
2. Connect Cumberland Ave from Route 1 to Newport Ave
3. Extend Walmart Entrance Driveway from Route 1 to Newport Ave
4. Construct new road between Walmart Entrance Driveway and Cumberland Ave

What's Next...

- Draft Report
- Presentations
- Final Report



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