



Route 114 Safety Improvements Project Danvers/Peabody

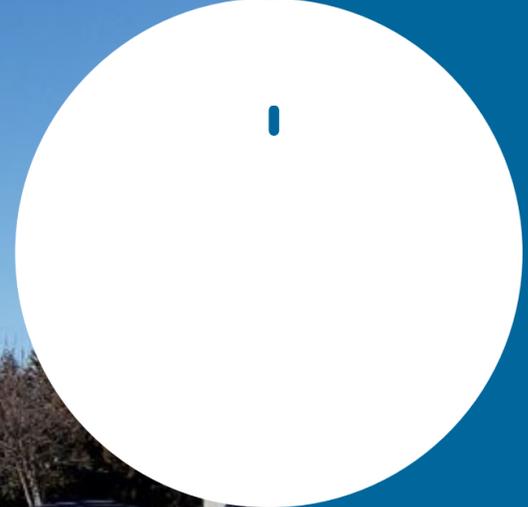
MassDOT in collaboration with Representative Tom Walsh's Office, Representative Sally Kerans' Office, and Senator Lovely's Office

Peabody Municipal Safety Committee | October 27 | 6pm

Agenda

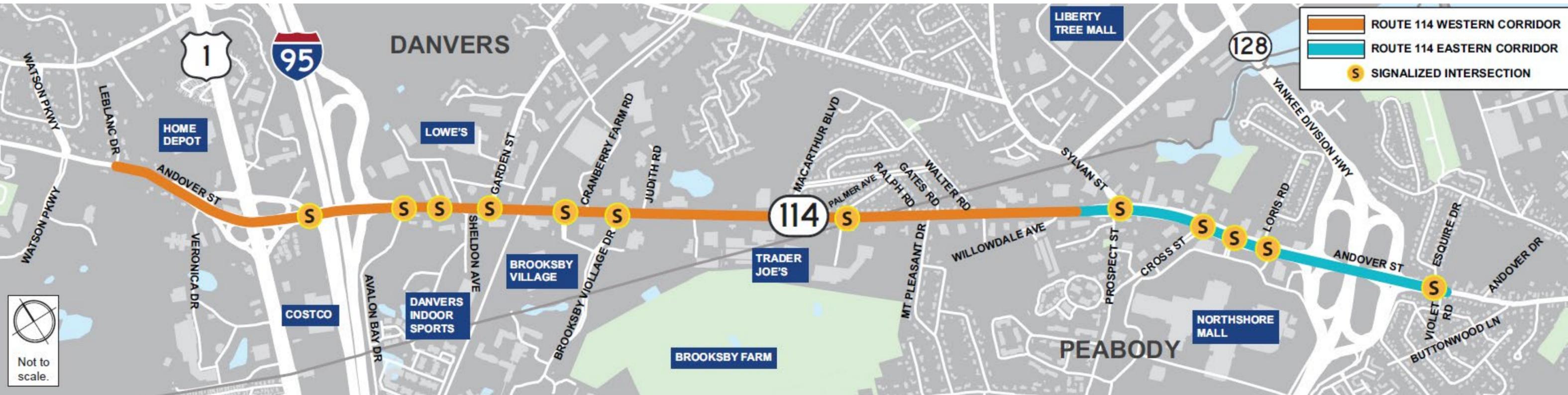
- ✓ Background
- ✓ Existing Conditions
- ✓ Design Development
- ✓ Next Steps





Project Background

Background: Project Location



- 12 signalized intersections included in analysis
- Two separate Road Safety Audits were conducted along the corridor, so it will be referred to as the “Western Corridor” and “Eastern Corridor”
- The Peabody portion of the project exists within both the Eastern and Western Corridor

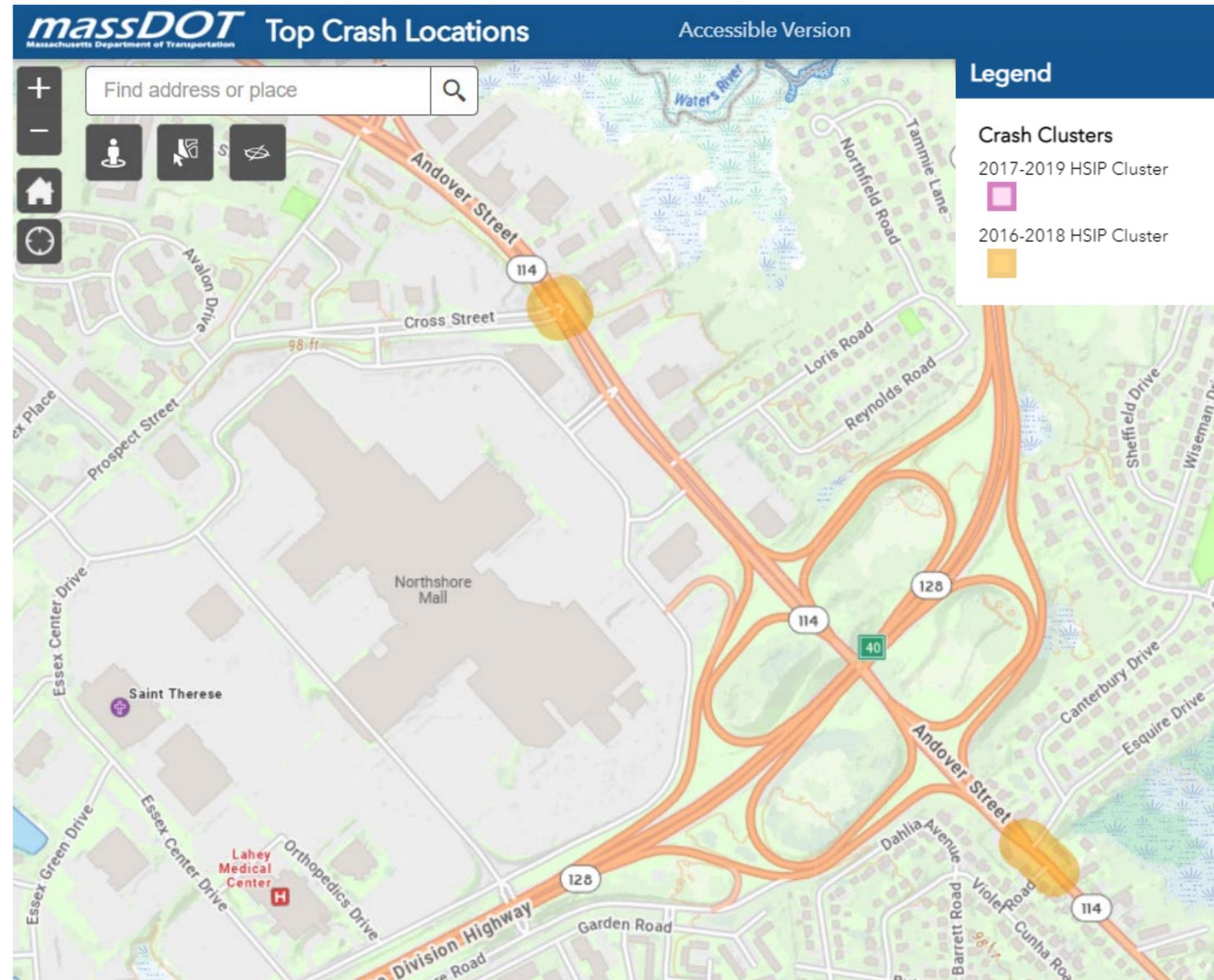
Background: Purpose & Need

Need

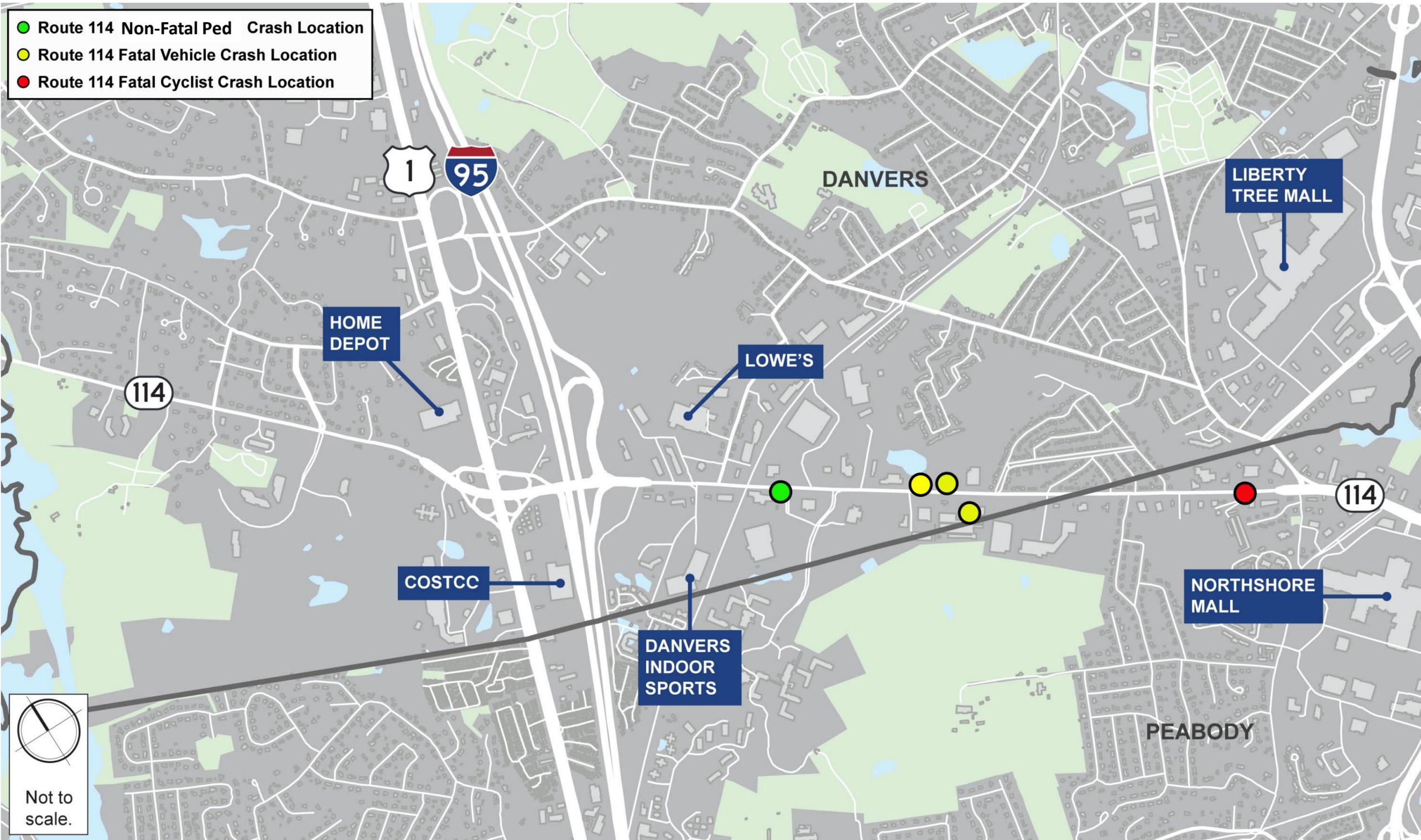
- Reduce Speeds and Decrease Injury Crashes
- Studied **285 Crashes** on the Western Corridor (2017-2019) inclusive of fatality crashes in 2020 and 2021
 - **4 Fatalities** within Study Period
 - **35% Injury Crashes**
 - **1 pedestrian** and **1 bicyclist** crash
- Studied **195 Crashes** on the Eastern Corridor (2012-2015)
 - **33% higher than** statewide average crash rate
 - **Zero** fatalities during study period
 - Most crashes were **rear end**
 - **Zero** crashes involving pedestrian/bicyclist

Purpose

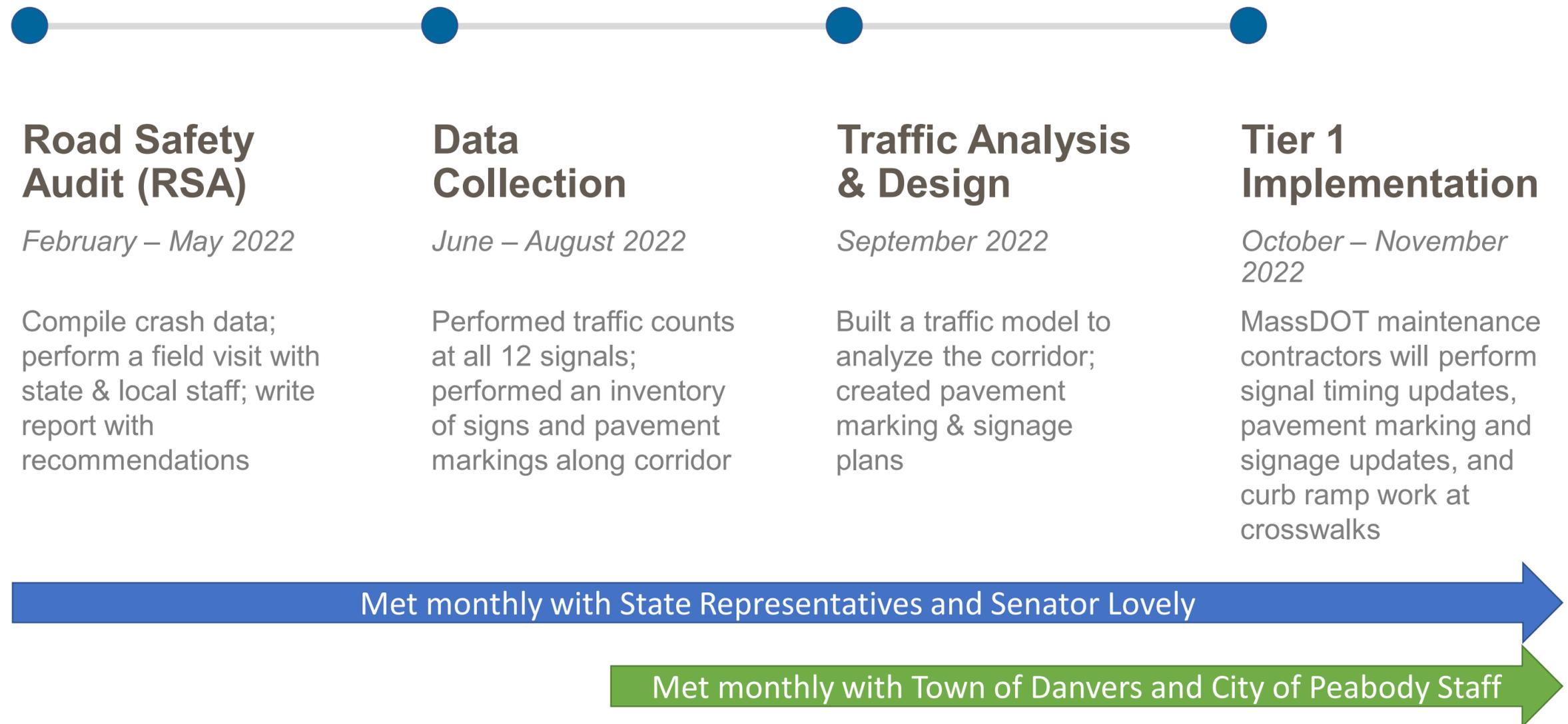
- Incrementally improve safety along the corridor in a tiered approach instead of waiting for a full long-term roadway reconstruction project



Background: Fatal and Vulnerable Crash Locations



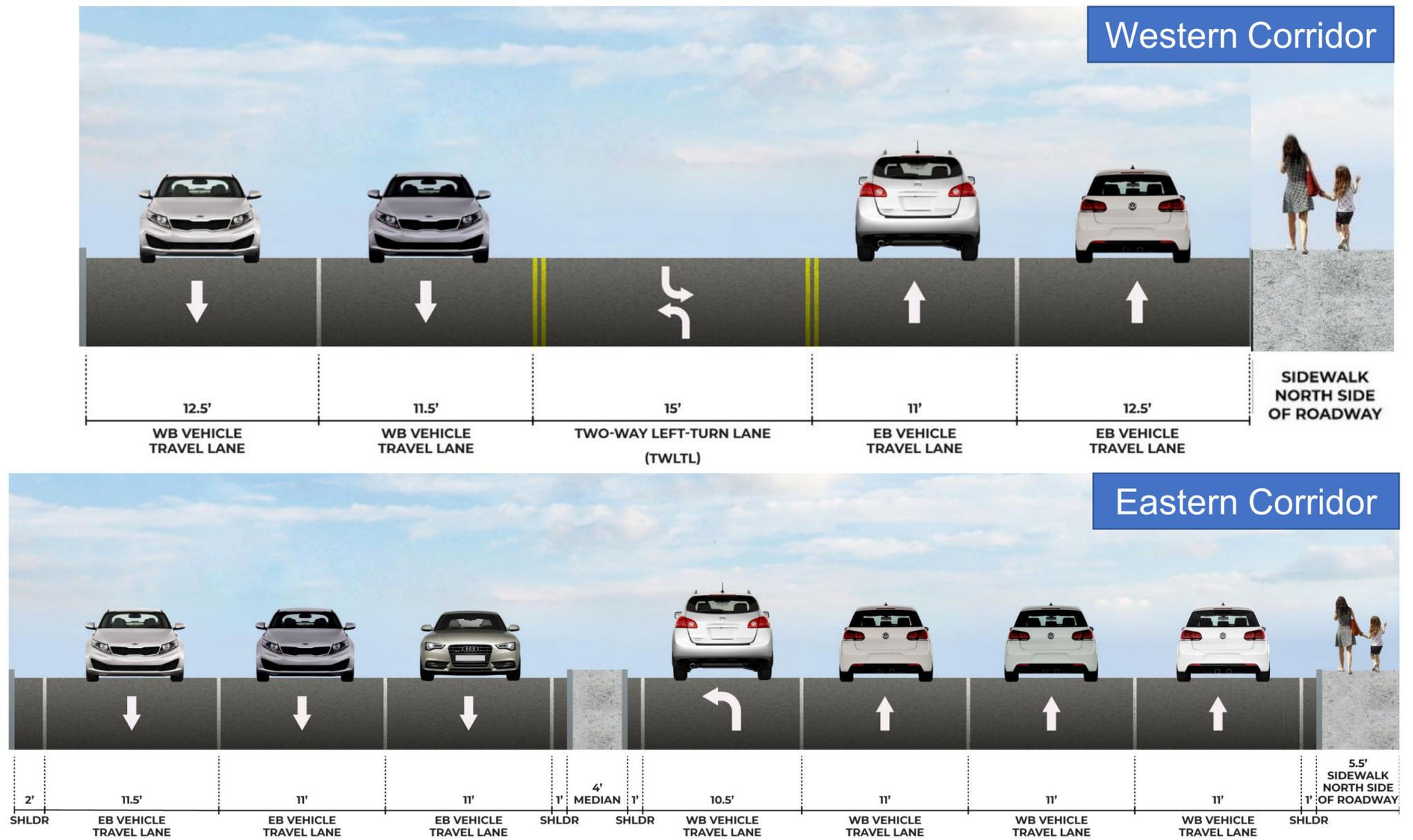
Background: Process





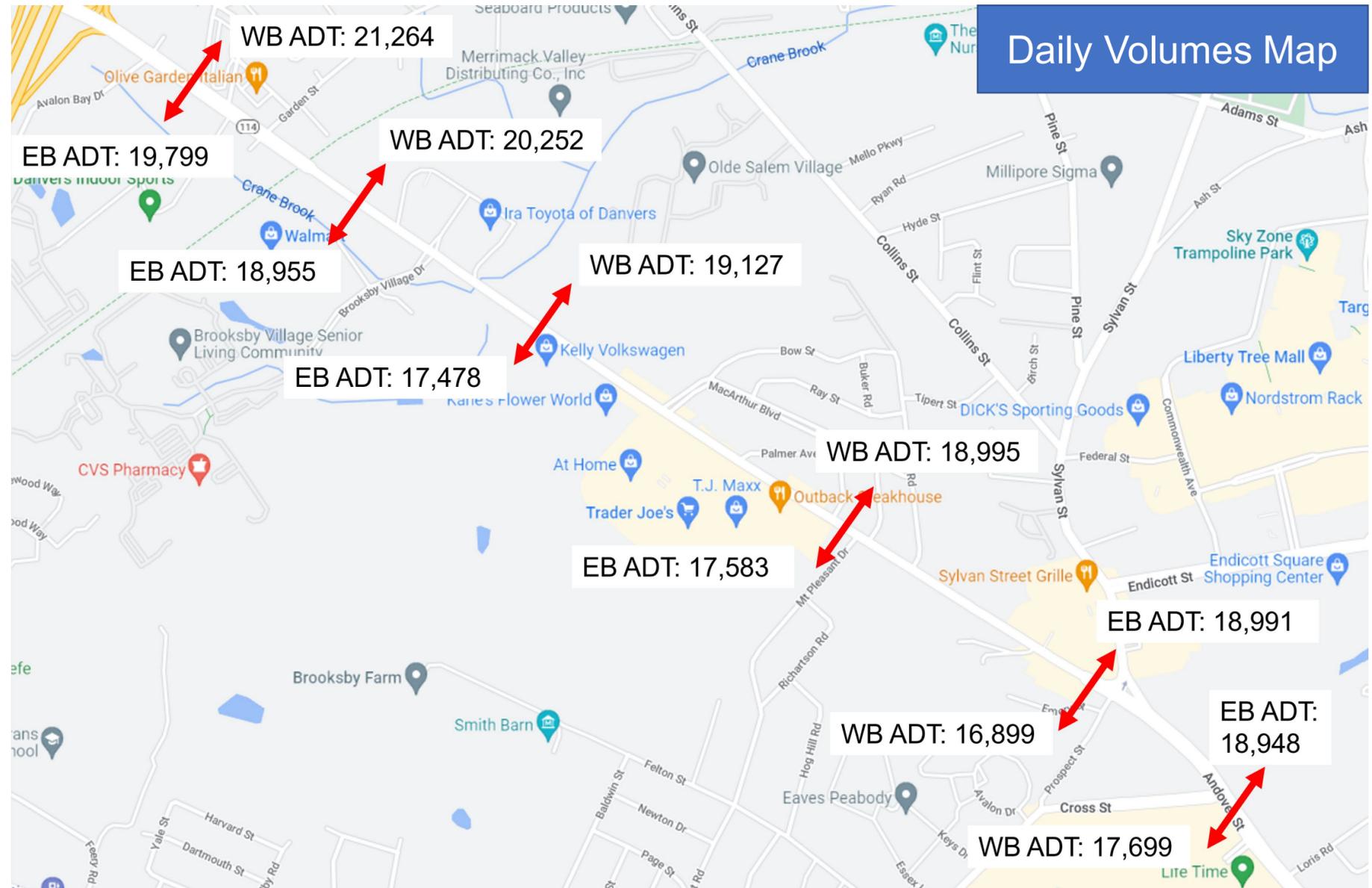
Existing Conditions

Existing Conditions: Cross Section



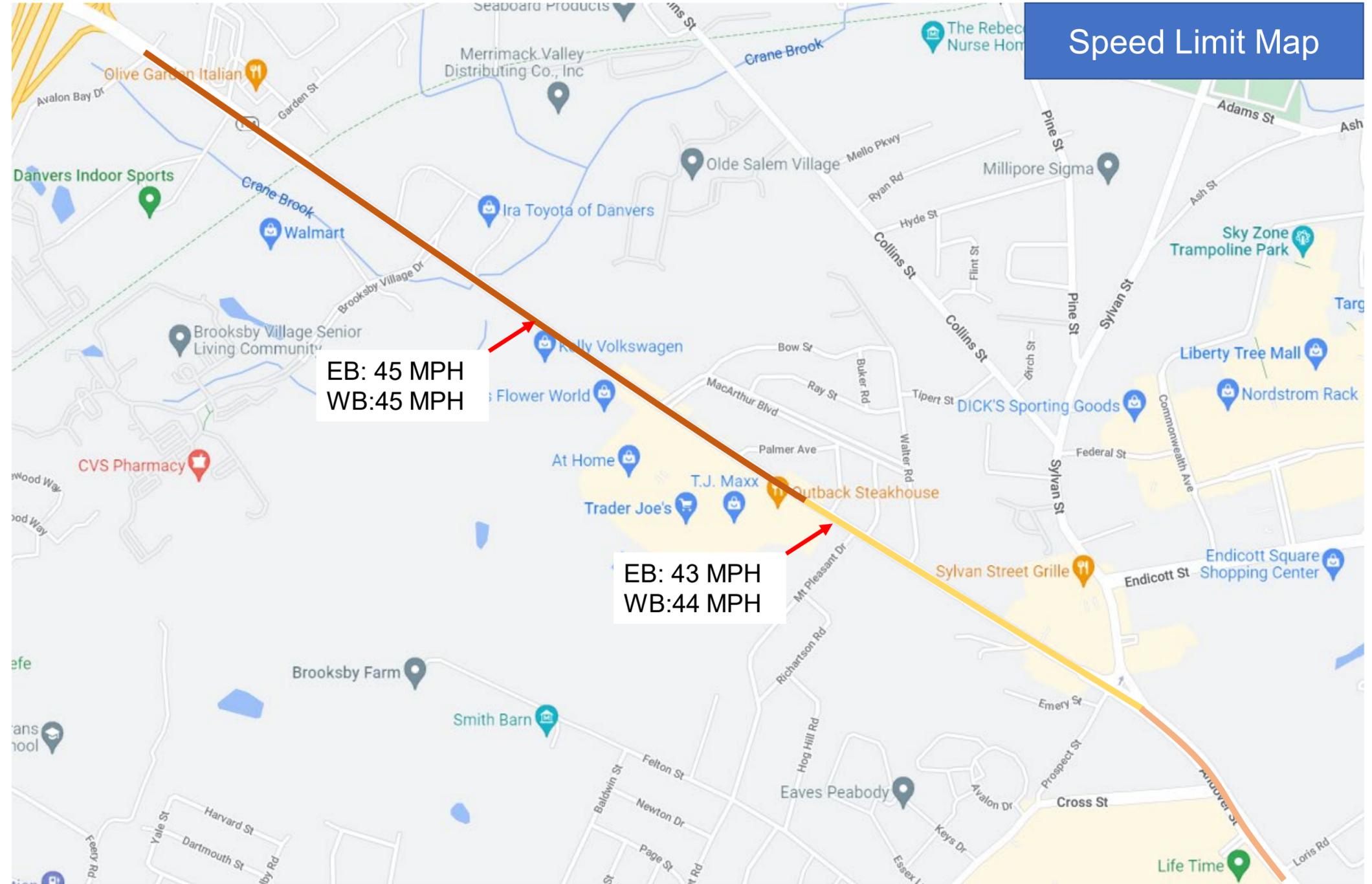
Existing Conditions: Traffic Counts

- Daily volumes approximately **36,000 to 41,000 veh/day**
- Turning Movement counts (TMCs) at 17 Intersections
- Eastern Corridor collected November 2019; Western Corridor collected 5/25/22-5/26/22

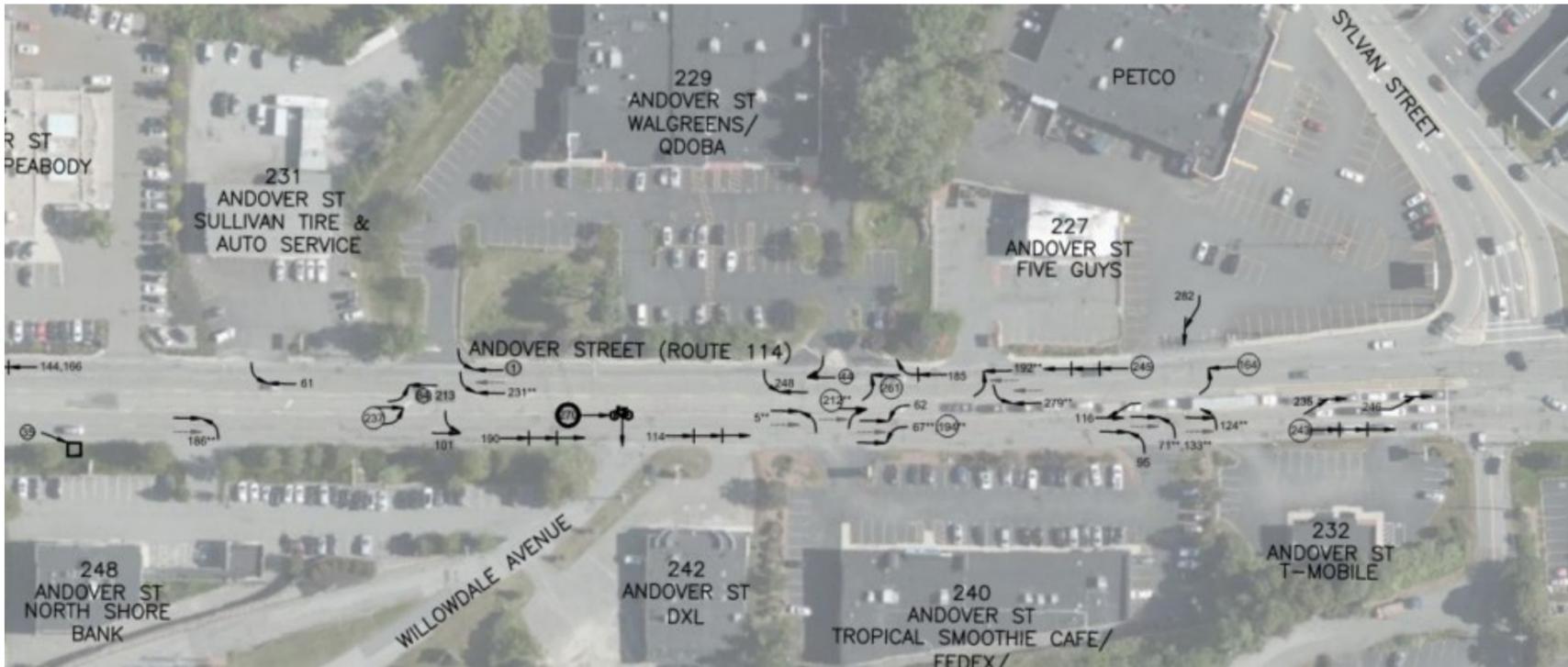


Existing Conditions: Speeds

- Speed limit on the corridor ranges from 30 to 40 mph as shown to the right
- ATR show speeds ranging from 36 to 45 mph
 - 44 mph speeds were measured on the Western Corridor
 - Speeding was not noted as an issue on the Eastern Corridor in the RSA



Existing Conditions: Road Safety Audit (RSA)



- **285 Crashes** on the Western Corridor (2017-2019)
 - 95 crashes per year along the 3 mile stretch
 - Crash Rate: 2.12
- **195 Crashes** on the Eastern Corridor (2012-2015)
 - 48 crashes per year along the 0.7 mile stretch
 - Crash Rate: 4.77

PEABODY/DANVERS, MA ANDOVER STREET (ROUTE 114) REGION: MAPC		SYMBOLS Moving Vehicle, Backing Vehicle, Non-involved Vehicle, Pedestrian, Bicycle, Animal, Fixed Object, Parked Vehicle, Exact location could not be determined based on crash report, Courtesy crash		TYPES OF CRASH Rear End, Head On, Angle, Turning Movement, Sideswipe, Out of Control		SEVERITY Injury, Fatal, Non-daylight Crash		APPROX SCALE: 1"=80'-0"
TIME PERIOD ANALYZED: 2017 - 2019 (INCLUDES 2020/2021 FATAL CRASHES) SOURCE OF CRASH DATA: MASSACHUSETTS CRASH PORTAL DATE PREPARED: JANUARY 2022 PREPARED BY: AB/VM								

RSA Crash Number	Crash Number	Crash Document Number	Crash Diagram Page Number	Max Injury Status	Crash Date	Crash Day	Crash Time	Manner of Collision (MC)	Light Condition (LC)	Weather Condition (WC)	Road Surface (RS)	Driver Contributing Code (DCC)	Age					Comments
													#	#	#	#	#	
1	4309998	PW201701300602	10	Non-fatal injury	1/3/2017	Tuesday	8:31 PM	Angle	Dark - lighted roadway	Rain	Wet	Failed to yield right of way	44	59				V1 was traveling WB on Route 114 in the inside lane when V2 pulled out of the Route 114 #229 (Walgreens) Driveway to take a left-turn and collided with V1.
2	4314459	PW201702000821	6	Property damage only	1/10/2017	Tuesday	8:18 AM	Rear-end	Daylight	Cloudy	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	41	49	26	37		V1 and V2 were traveling WB on Route 114 when V2 attempted to go around a truck in the center turning lane of ... and struck V1, resulting in V1 spinning out of control and traveling EB on Route 114.





Design Development

Design Development: Road Safety Audit

TIME FRAME		COSTS	
	<1 Year	Low	<\$10,000
	1-3 Years	Medium	\$10,001-\$50,000
Long-Term	>3 Years	High	>\$50,000

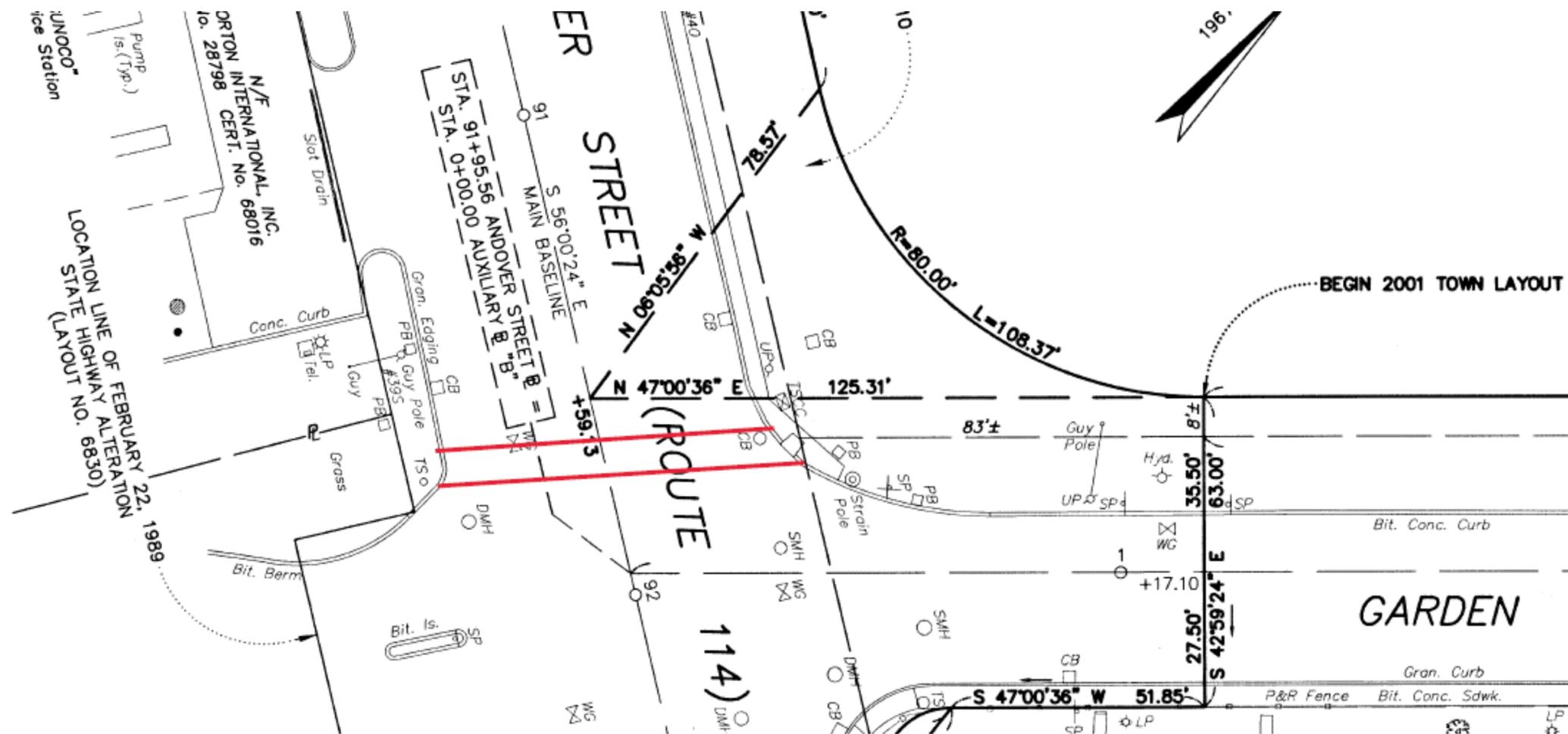


ROUTE 114 PLANNED SAFETY ENHANCEMENTS		
	Short-Term	Mid-Term
Cross Section/ Pavement Markings:	<ul style="list-style-type: none"> - Re-stripe shoulder - Eliminate extra travel lanes - Add dotted extension lines and advanced lane assignment markings at intersections 	<ul style="list-style-type: none"> - New pavement markings will be installed for the length of the corridor when resurfacing occurs - Reduce lane widths and introduce wider shoulders into the roadway
Signage:	<ul style="list-style-type: none"> - Replaced faded or damaged signs - Remove unneeded signage - Add signage where new design requires 	<ul style="list-style-type: none"> - Advanced lane control signs and any custom signage.
Access Management:	<ul style="list-style-type: none"> - Use pavement markings to discourage dangerous left turns in/out of driveways, such as near Sylvan Street 	<ul style="list-style-type: none"> - Harden restrictions with installation of flex posts
Signals:	<ul style="list-style-type: none"> - Replace damaged retroreflective backplates - Update signal timings to support intersection changes 	

Design Development: Tier 1 Scope

Work needed to avoid the following to fit within the “Short-Term” umbrella:

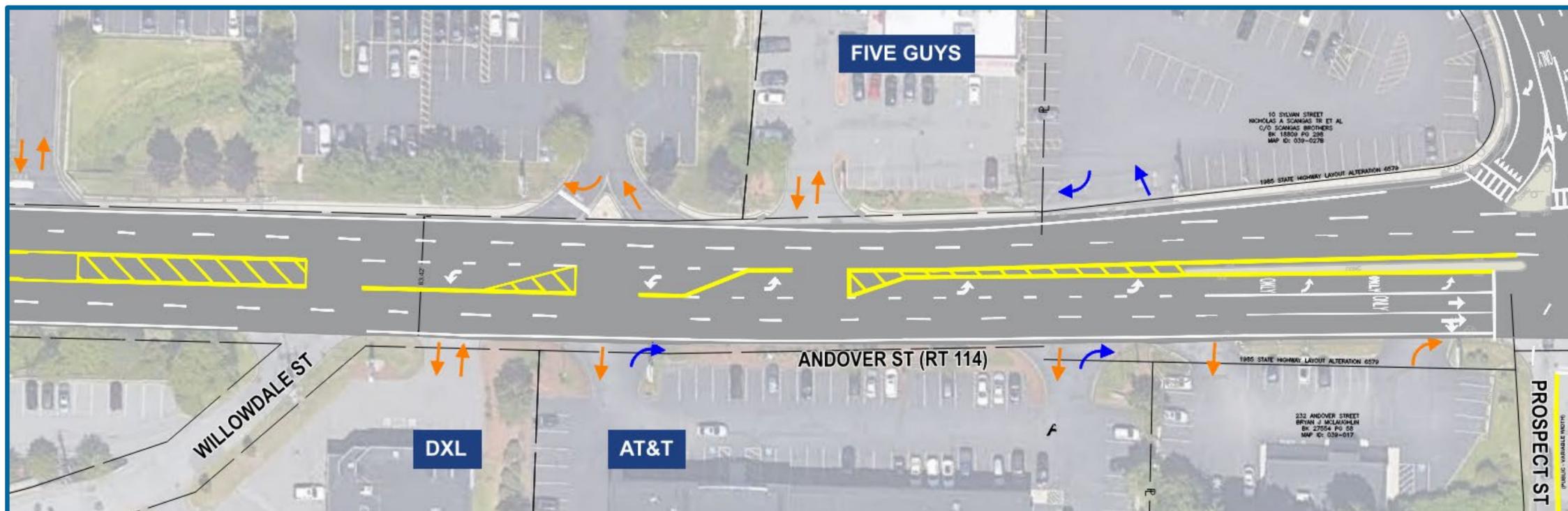
- Right-of-way (Property impacts)
- Significant changes to business access
- Utility trenching across the roadway
- Re-paving the road (temperature requirements)



Design Development: Tier 1 Scope

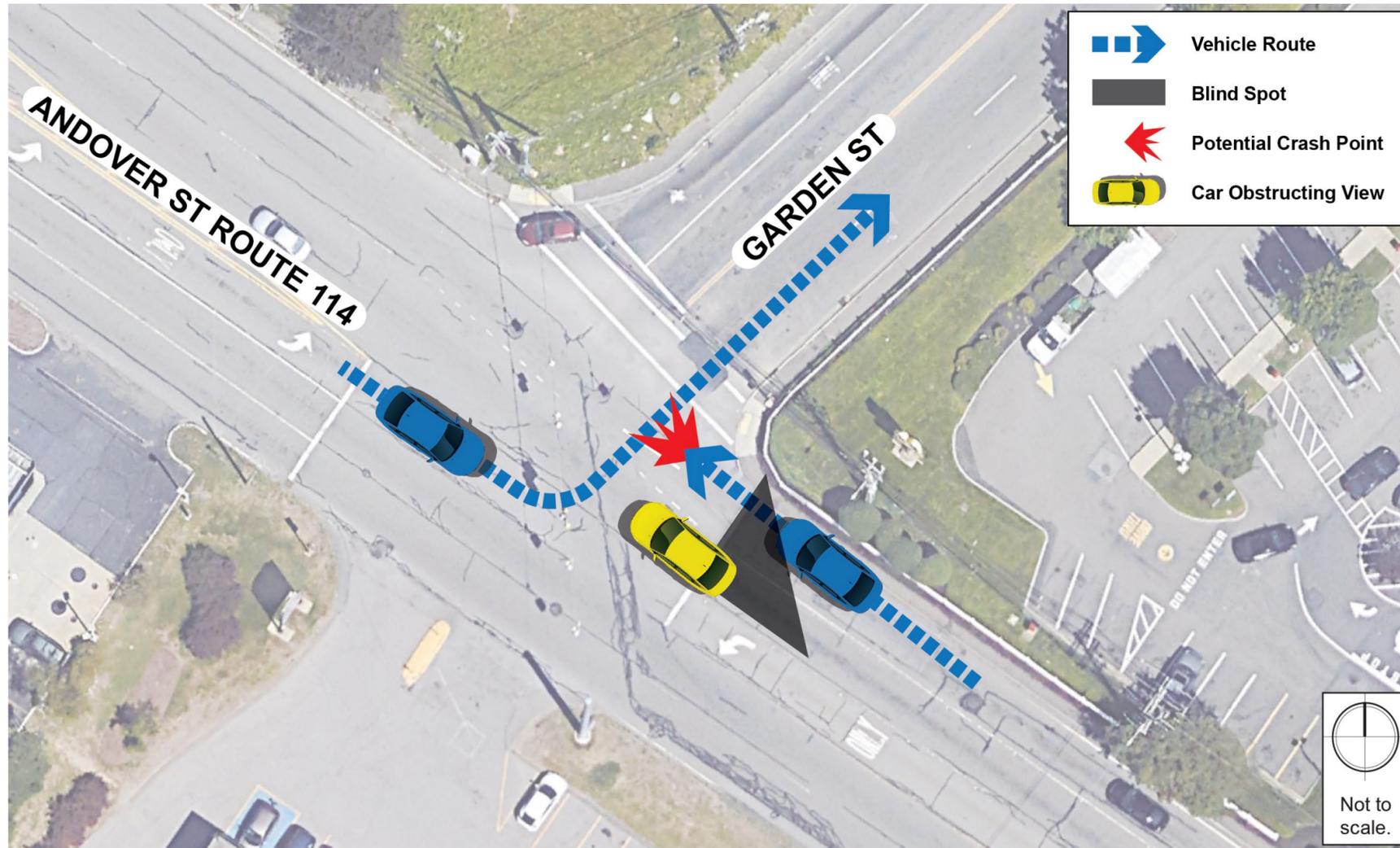
The following elements will be implemented in the Fall/Winter 2022 Improvements:

-  Signal timing updates including new protected left turns
-  Pavement marking & signage updates
-  Provide two new crosswalks across Route 114 at Garden Street and Palmer Avenue



Design Development: Protected Left Turns

Intersection	# of Angled Crashes
Route 114 at Garden Street	3
Route 114 at Walmart Driveway	0
Route 114 at Brooksby Village Drive	3
Route 114 at Cross Street	5



Existing



-  **STOP.** Left-turning drivers must stop and wait.
-  **WARNING / CAUTION.** The left turn signal is changing to red.
-  **CAUTION.** You may cautiously turn left *after* yielding to oncoming traffic and to pedestrians (similar to a green ball). Oncoming traffic will typically have a green light.
-  **GO.** Left-turning drivers have the right of way.

Proposed



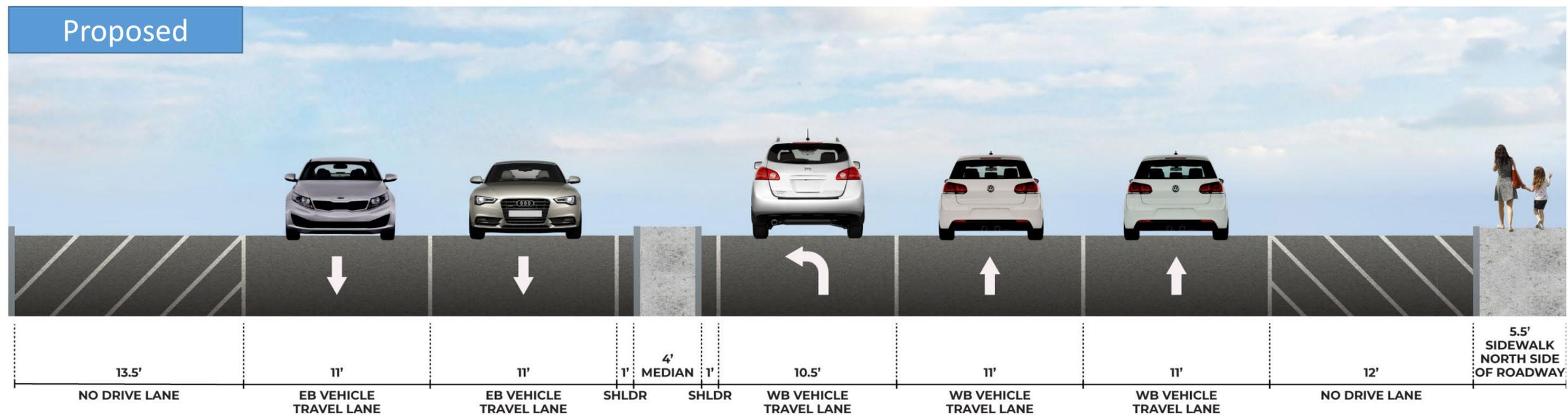
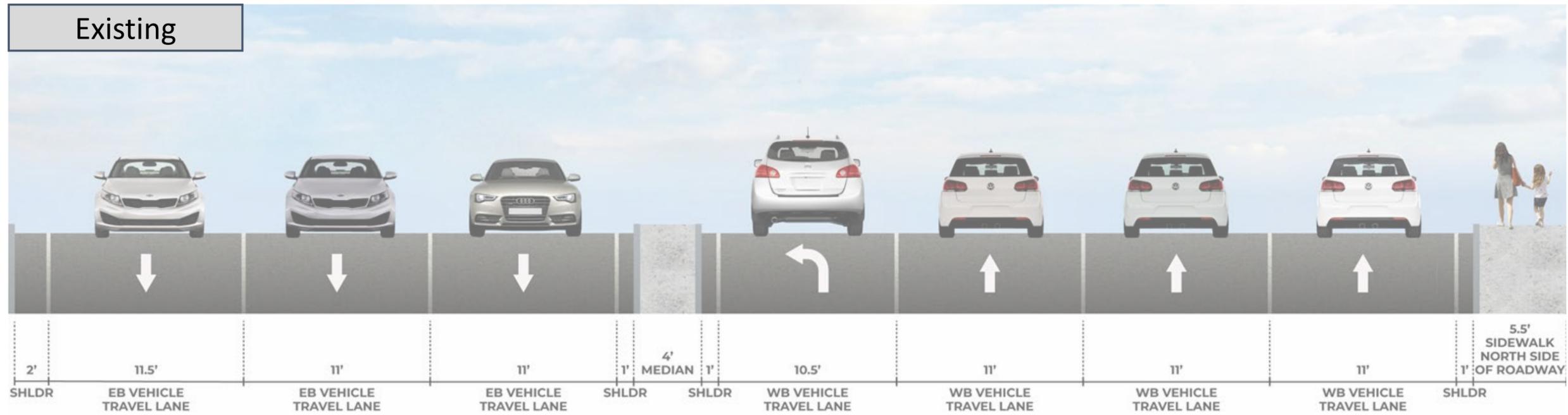
-  RL
-  YL
-  L

Design Development: Pavement Markings & Signage

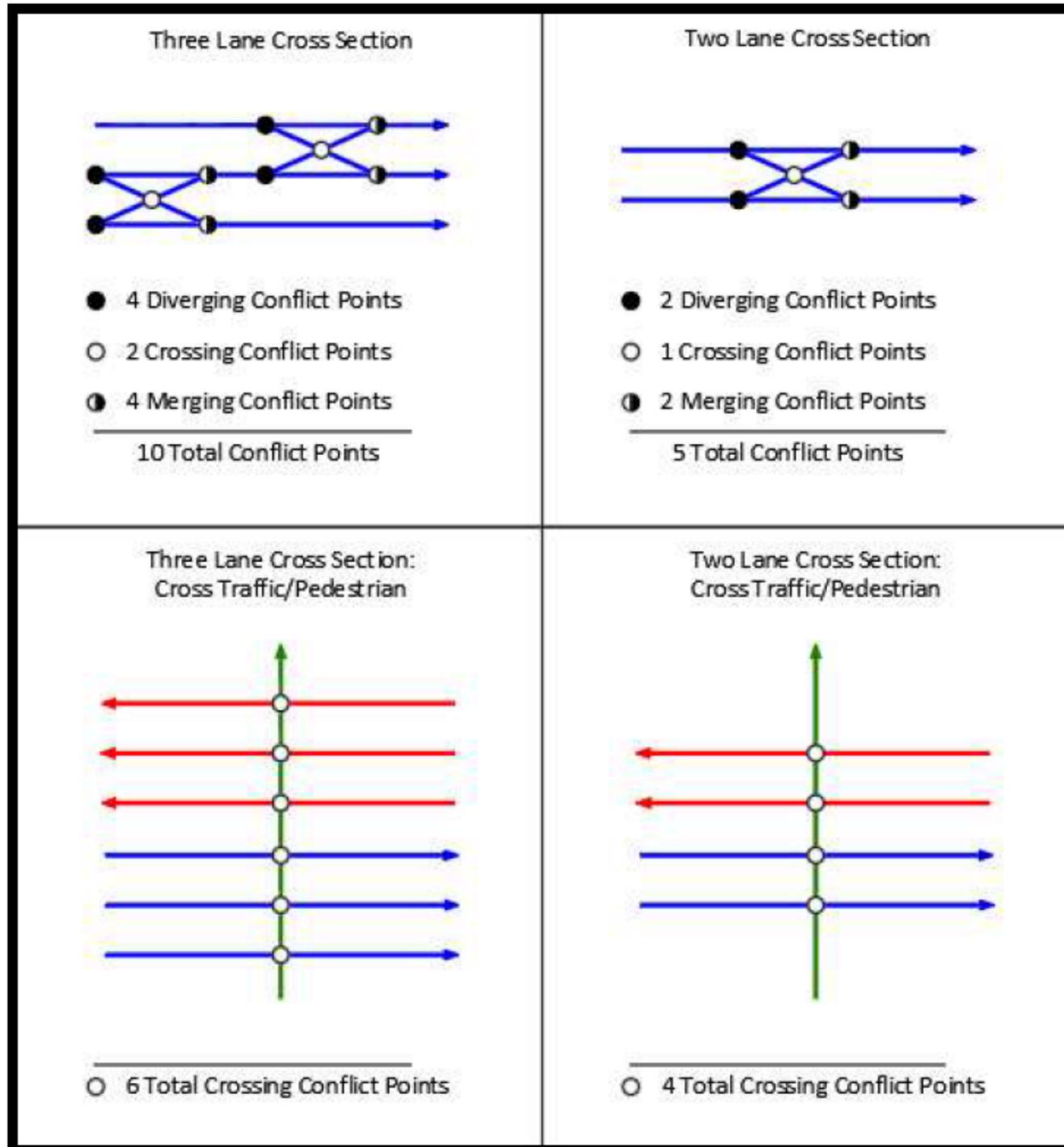
- Pavement markings are faded or missing in some locations, especially problematic at crosswalks
- Some existing signs are damaged, faded, or missing



Design Development: Remove Extra Travel Lane



Design Development: Remove Extra Travel Lane



A lane reduction reduces the number of conflict points for all road users

Can reduce in sideswipe, rear end, and angle crashes

Intersection	Rear End	Sideswipe	Angle	Other
Sylvan Street	62%	24%	12%	3%
Cross Street	56%	30%	4%	11%
Mall Entrance/Loris Road	43%	38%	17%	2%
Route 128 Interchange	82%	10%	8%	0%
Esquire Drive	68%	17%	15%	0%

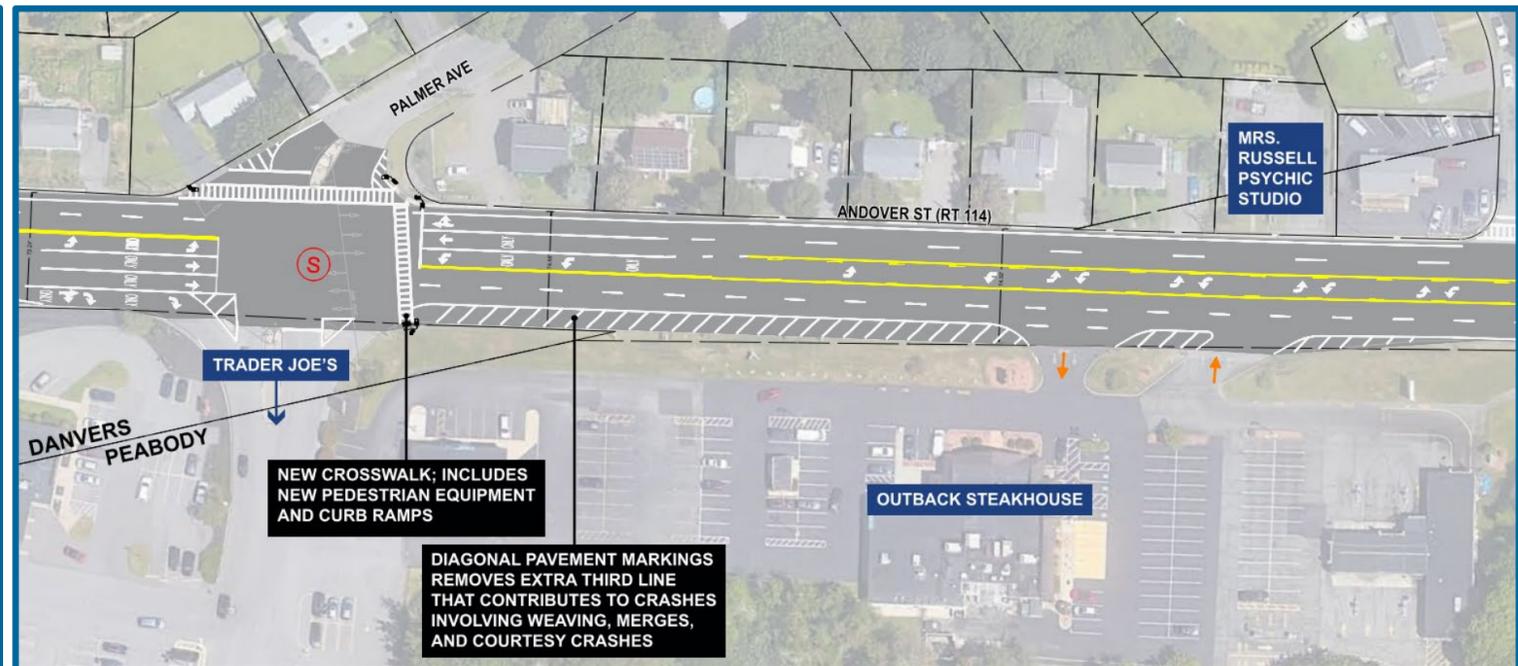
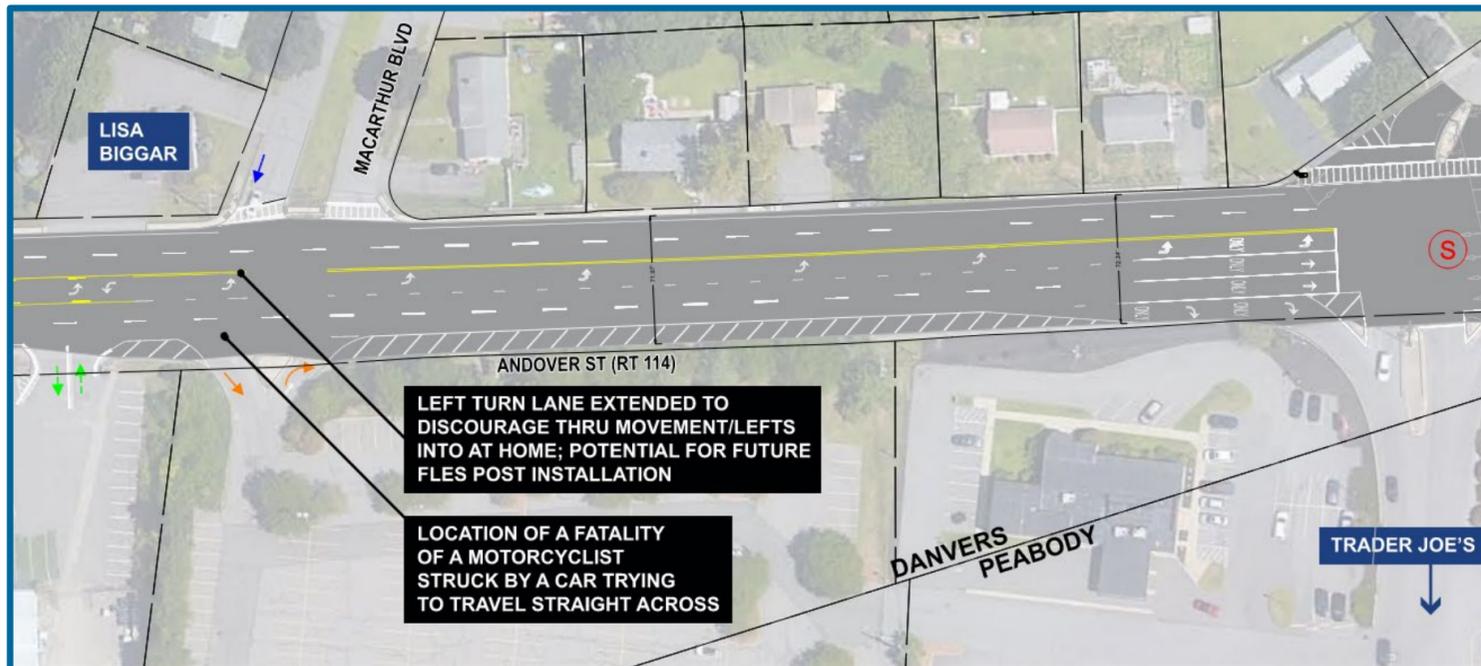
Design Development: Remove Extra Travel Lane



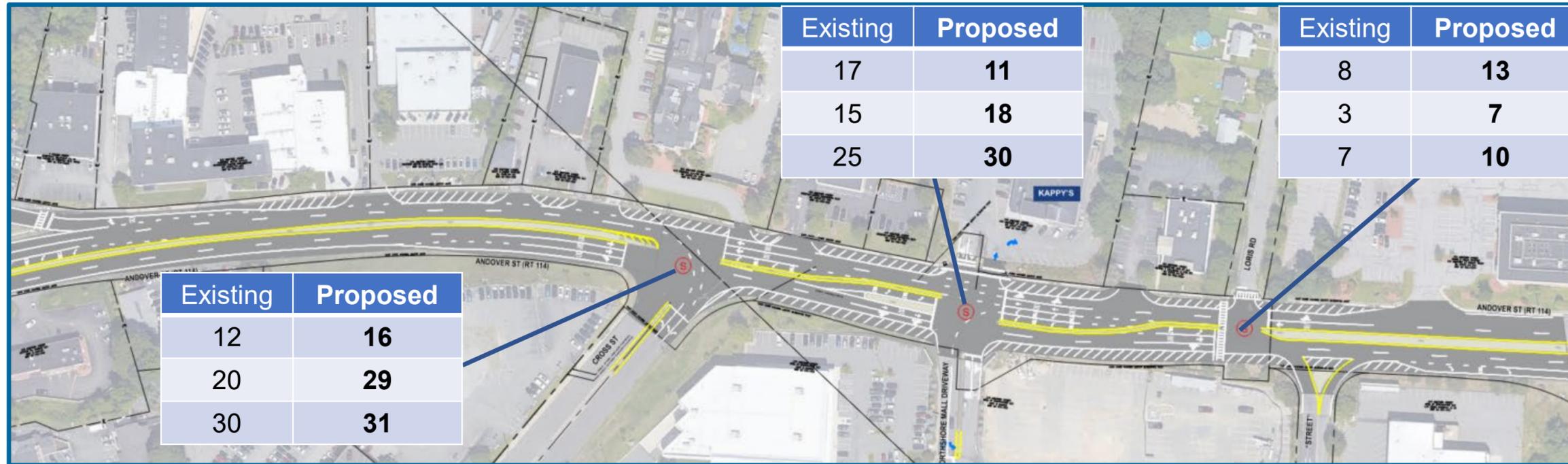
Reduces crashes related to weaving and merging

Improve sight distance of Route 114 drivers of Loris Road to reduce red-light running here

Reduces speeds and conflicts

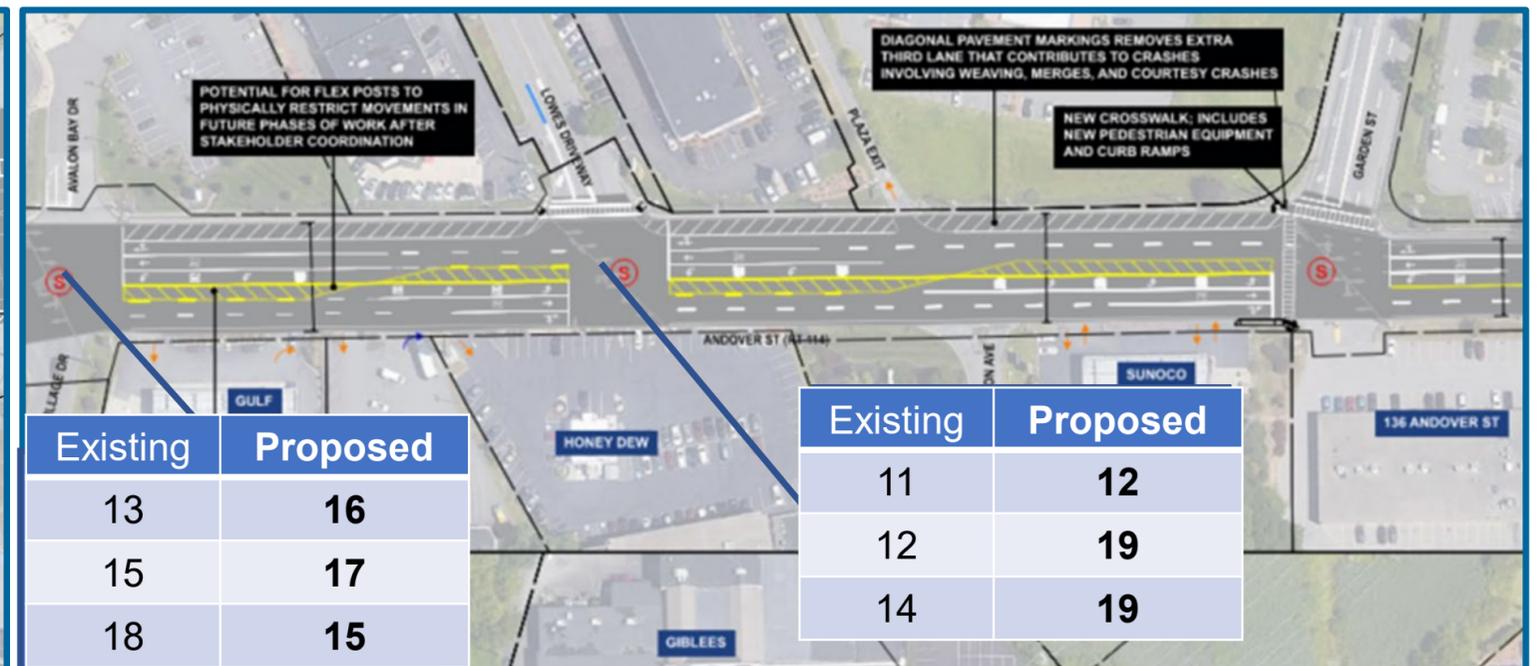
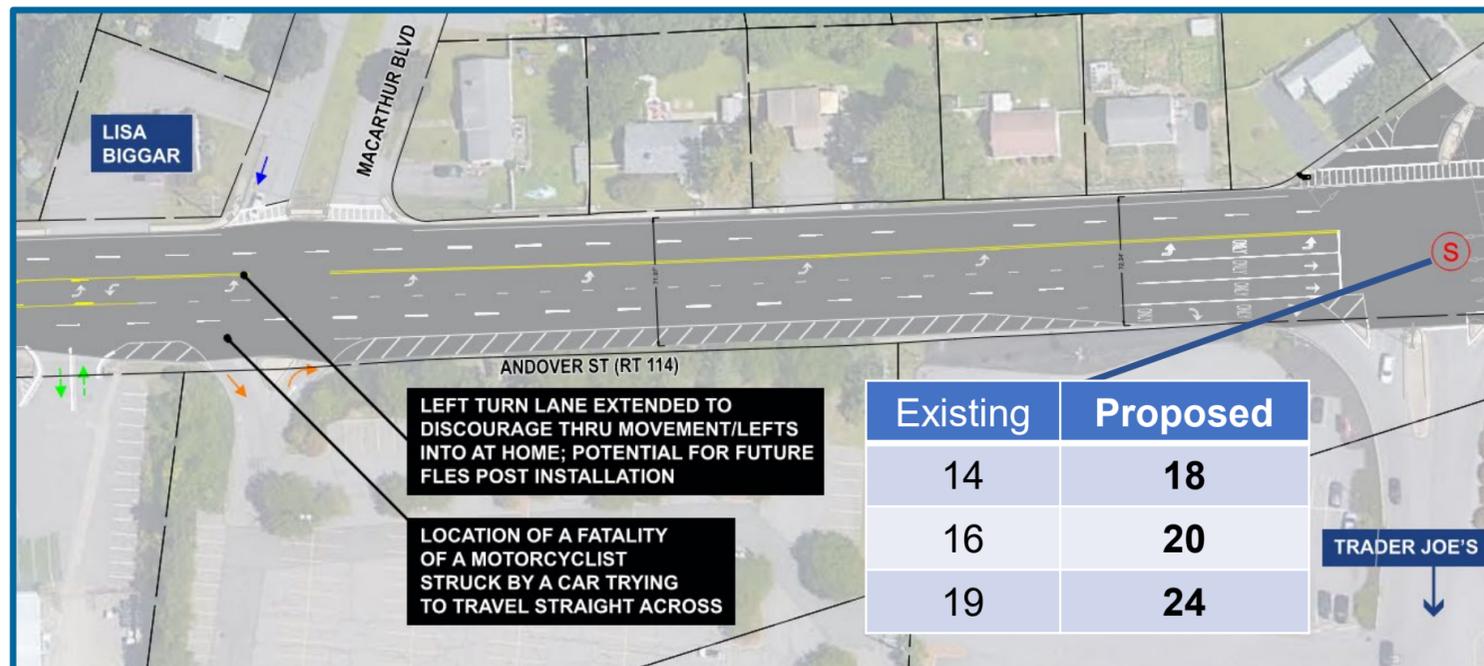


Design Development: Remove Extra Travel Lane

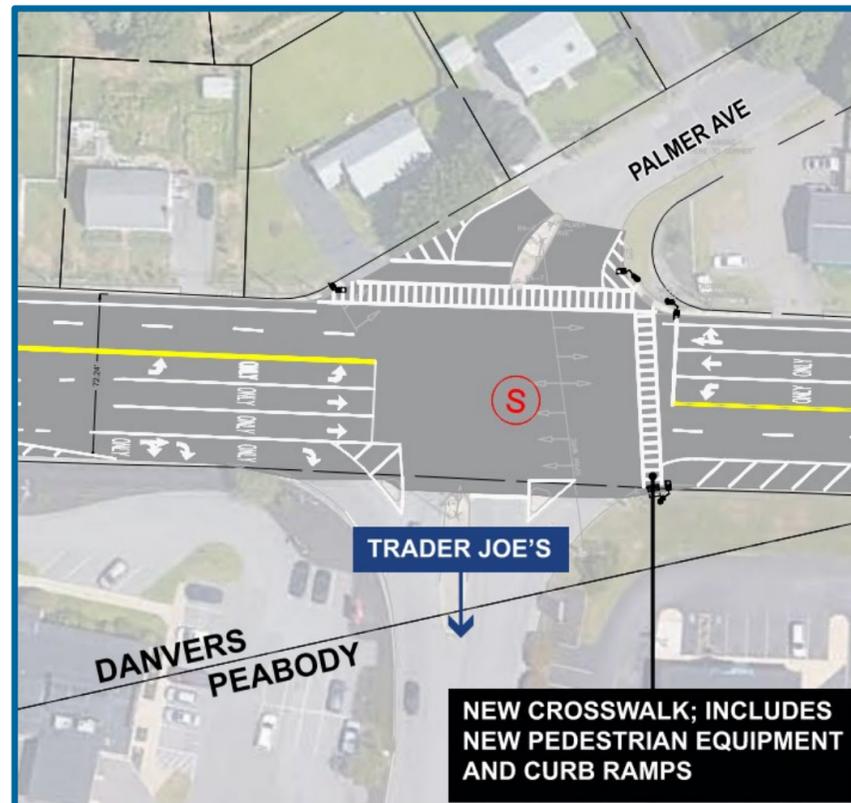
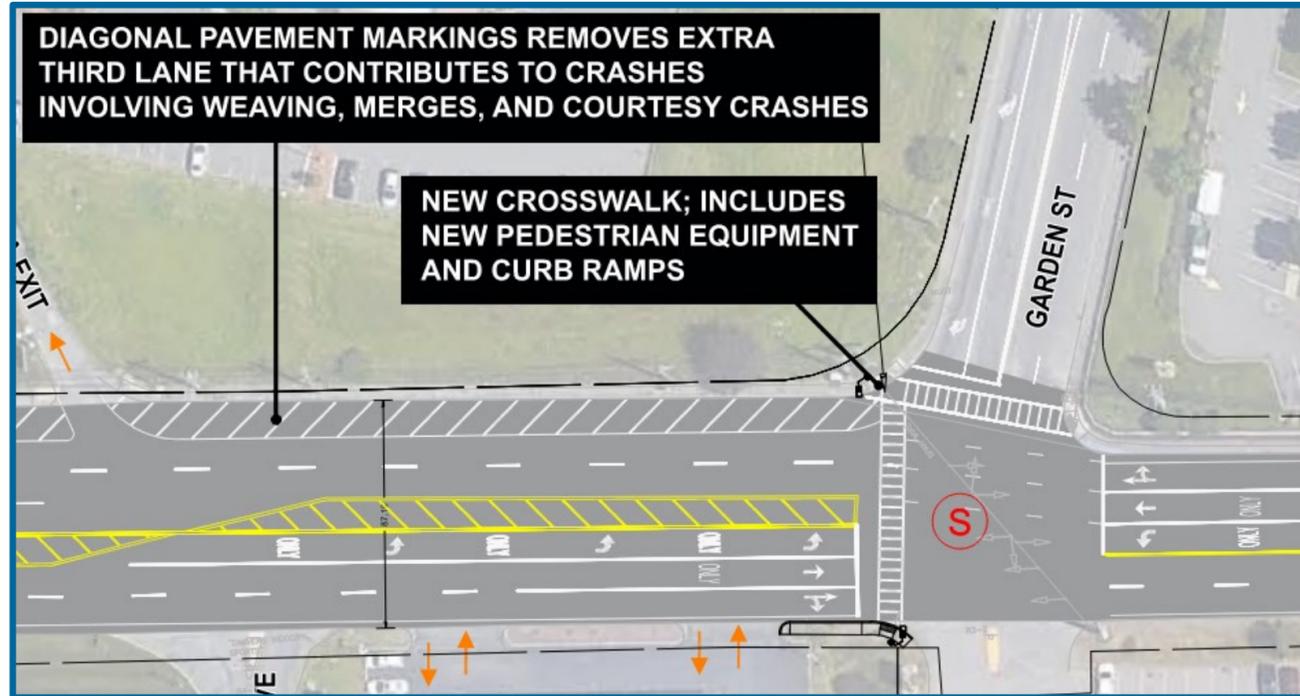


Traffic analysis for intersection delay (in seconds) showed negligible changes due to the proposed

Existing	Proposed
Weekday AM Delay	Weekday AM Delay
Weekday PM Delay	Weekday PM Delay
Saturday Afternoon Delay	Saturday Afternoon Delay



Design Development: Crosswalks



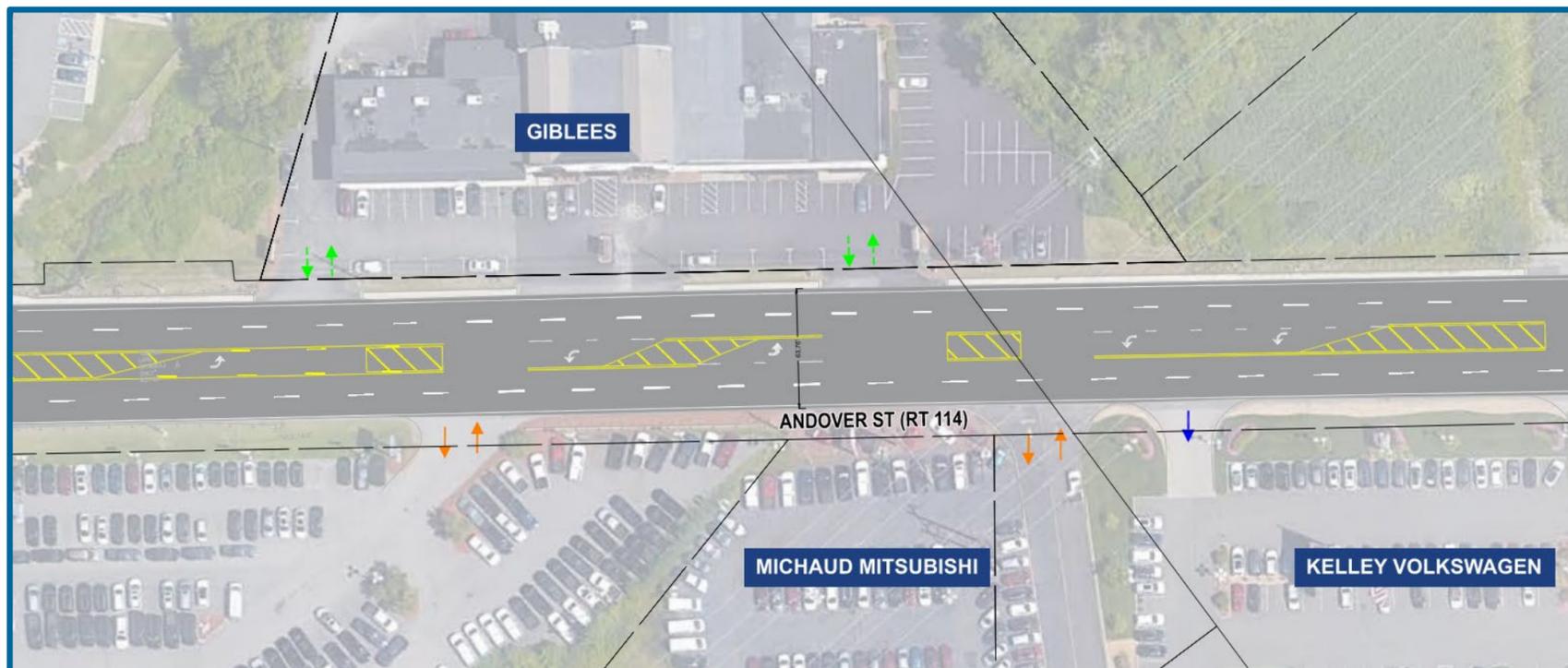
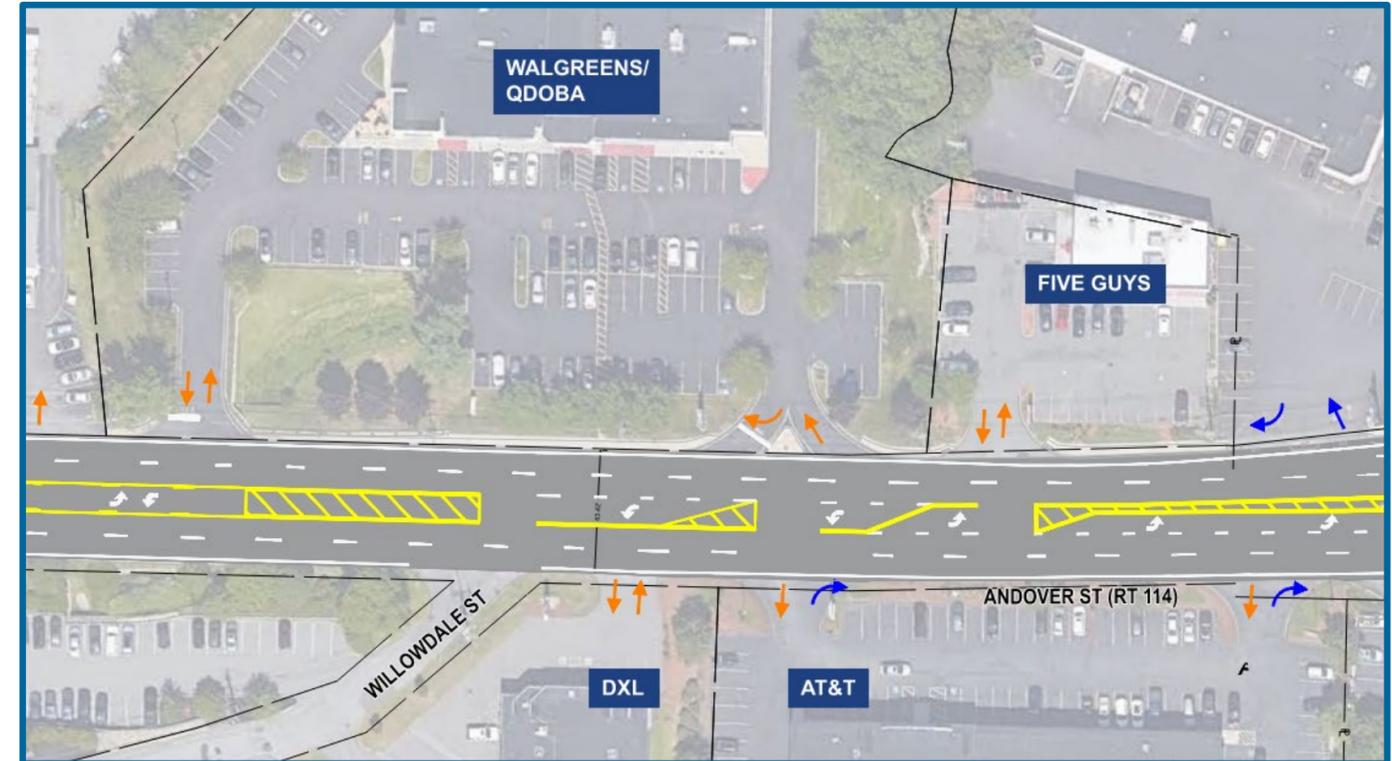
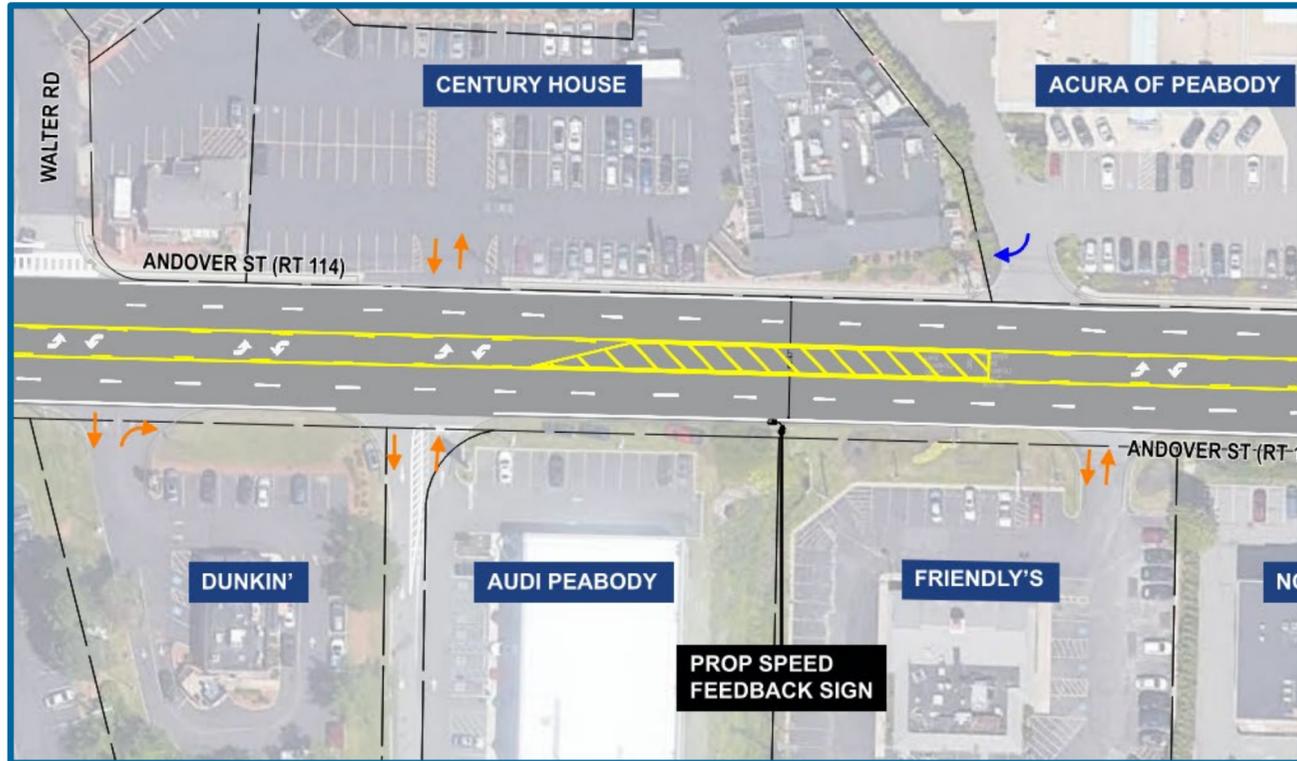
1.5 - mile stretch between crosswalks across Route 114 (Brooksby Village Drive to Loris Road)

Two new crosswalks at Garden and Palmer to meet demand created by land use on both sides of the road

Locations selected by crash history, pedestrians counted and feasibility

More crosswalks to be evaluated for Spring/Summer

Design Development: Changes to Two Way Left Turn Lane



Add diagonal hatching to areas of the two-way-left-turn-lane that do not require turns

Convert TWLTL to pocket lefts as appropriate

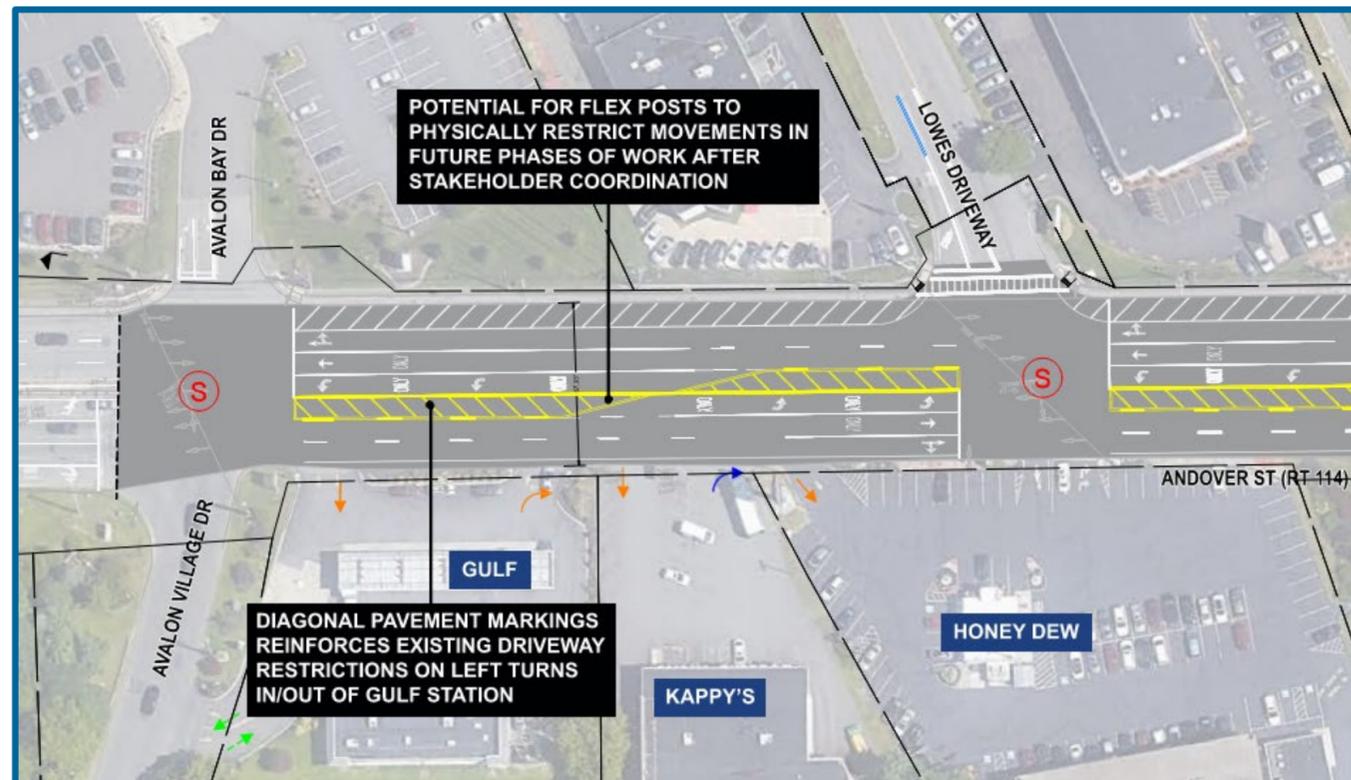
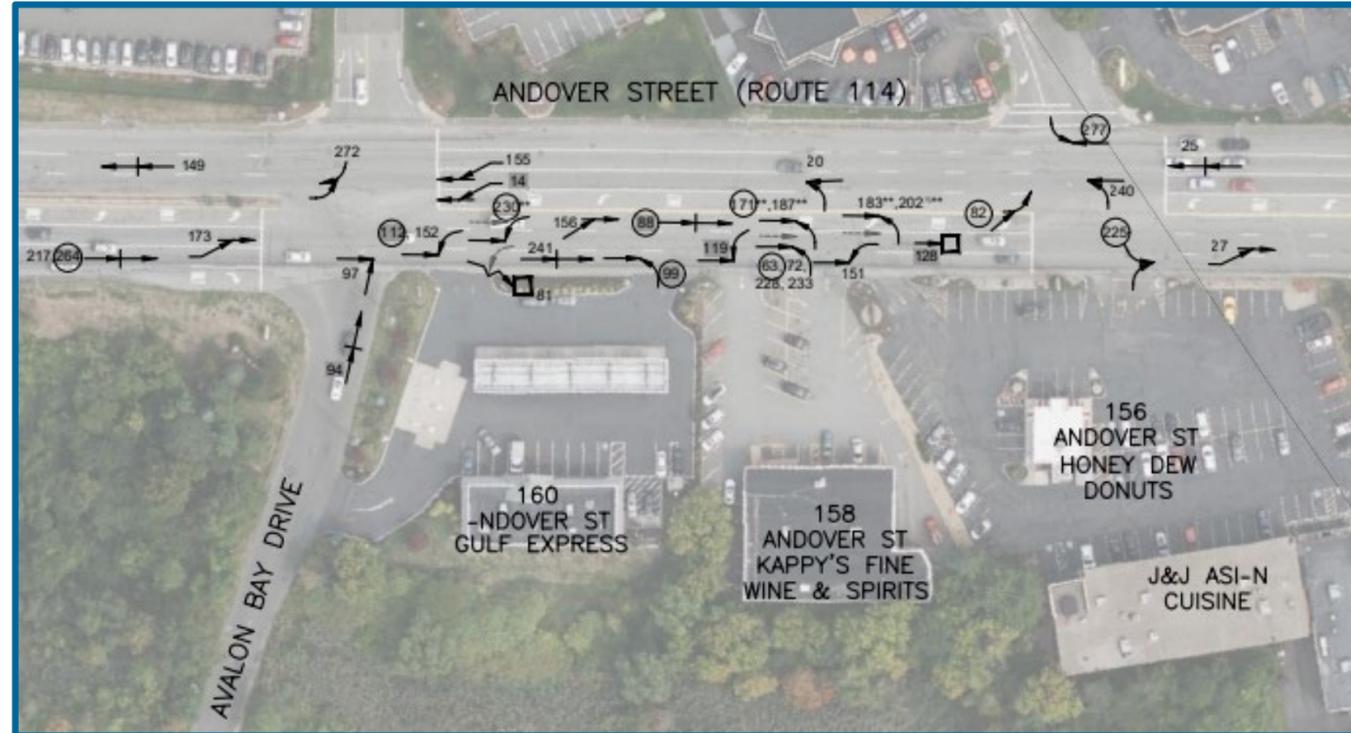
Goal is to provide visual breaks in the TWLTL to avoid unnecessary driving in it, reducing head-on conflicts and speeding

Design Development: Access Management

Discourage dangerous turns to access businesses with pavement markings

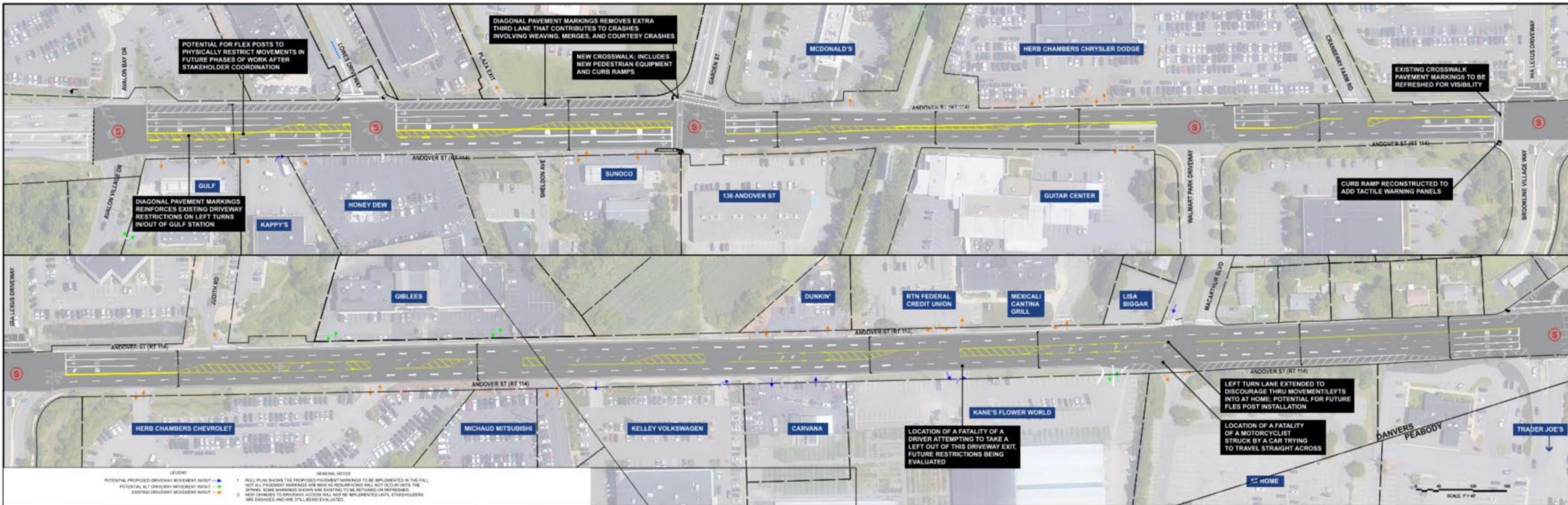
Potential to add flex posts to physically restrict movements after coordination

Targeted areas with redundant access points, alternate access to a signal via a side street, and significant crash history



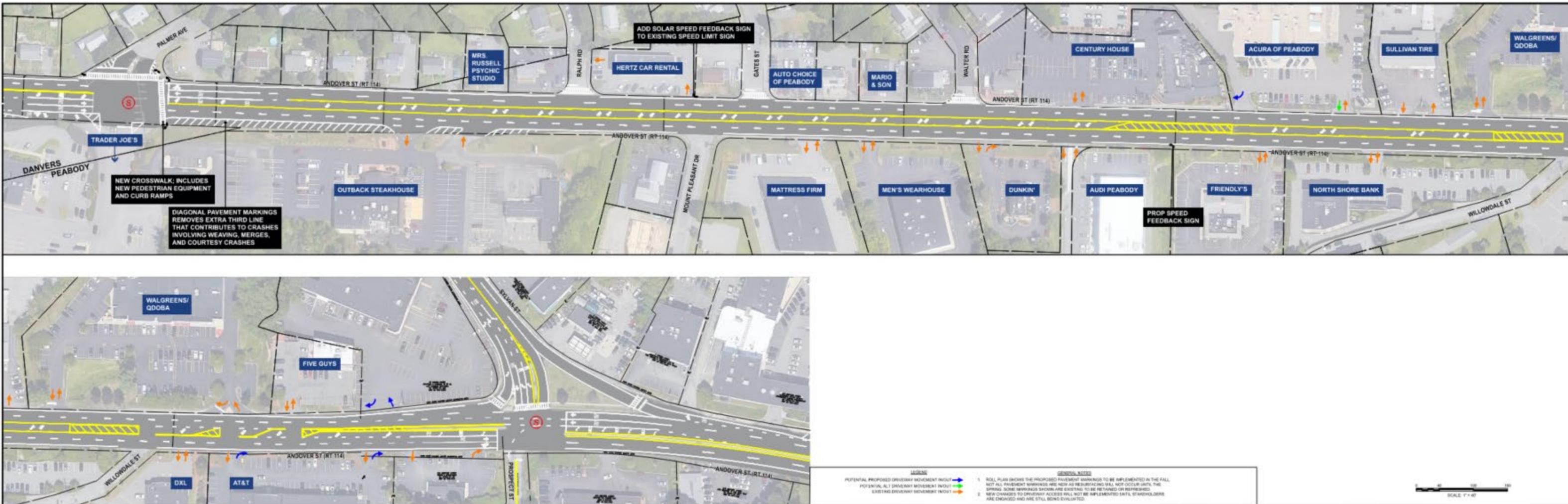
Design Development: Roll Plan

- Sheet 1 of 3



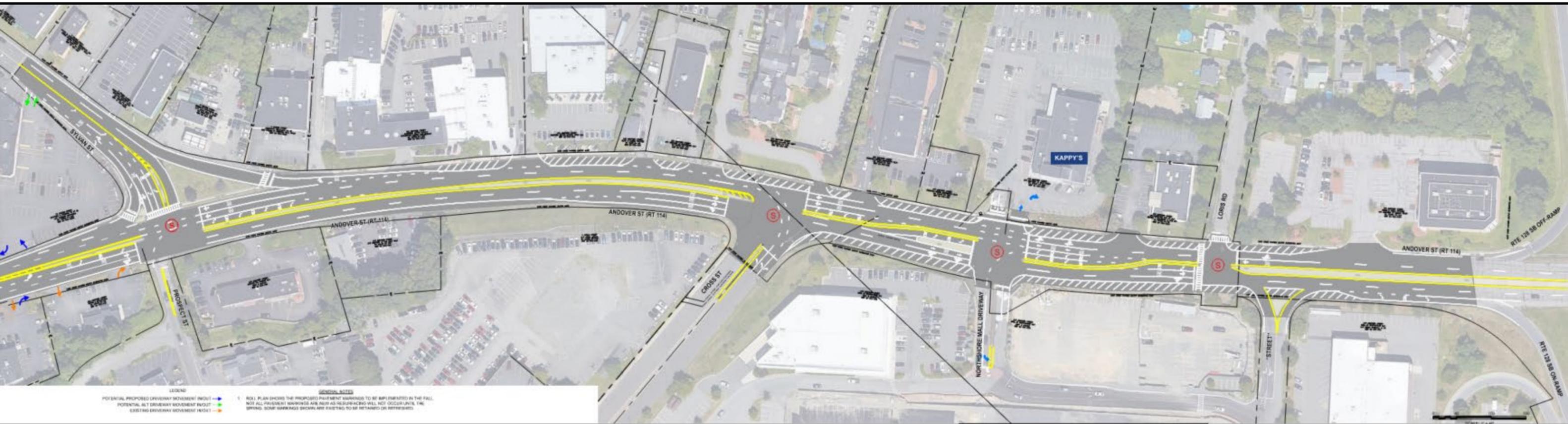
Design Development: Roll Plan

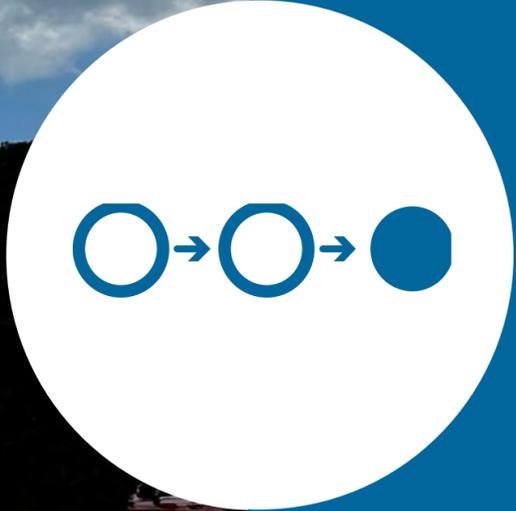
- Sheet 2 of 3



Design Development: Roll Plan

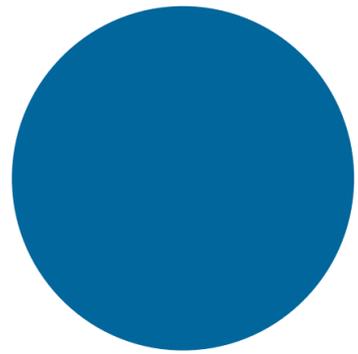
- Sheet 3 of 3



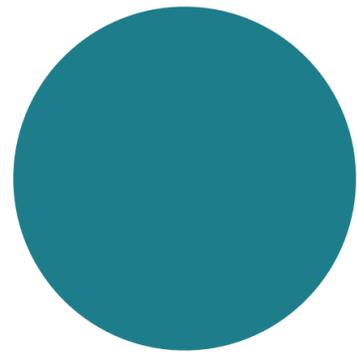


Next Steps

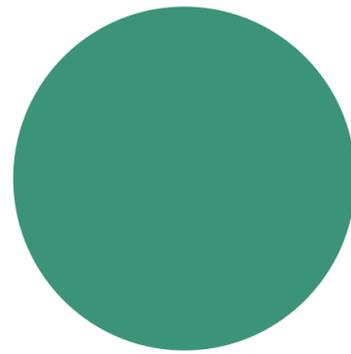
Next Steps



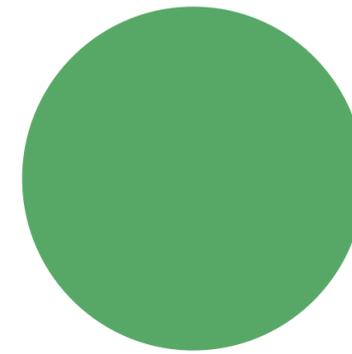
Fall Implementation of Tier 1 Improvements & Evaluation



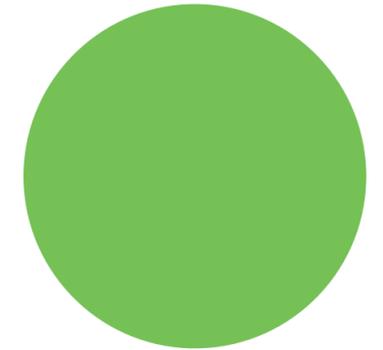
Public Meeting for Discussion of Tier 2 Improvements



Reach out to stakeholders and businesses for coordination and rights-of-entry as needed



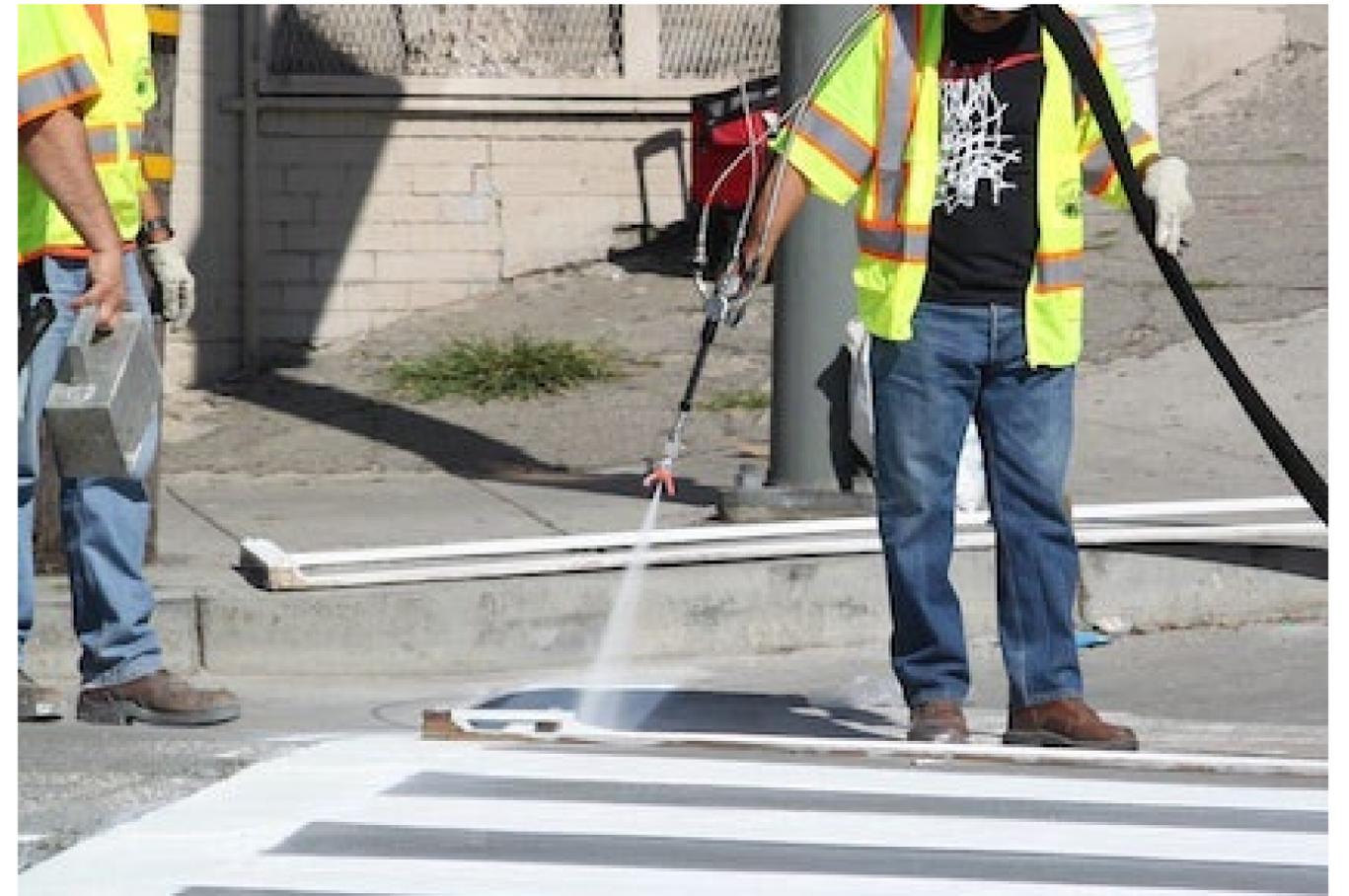
Design of Tier 2 Improvements over the Winter/Spring



Spring/Summer Implementation of Tier 2 Improvements

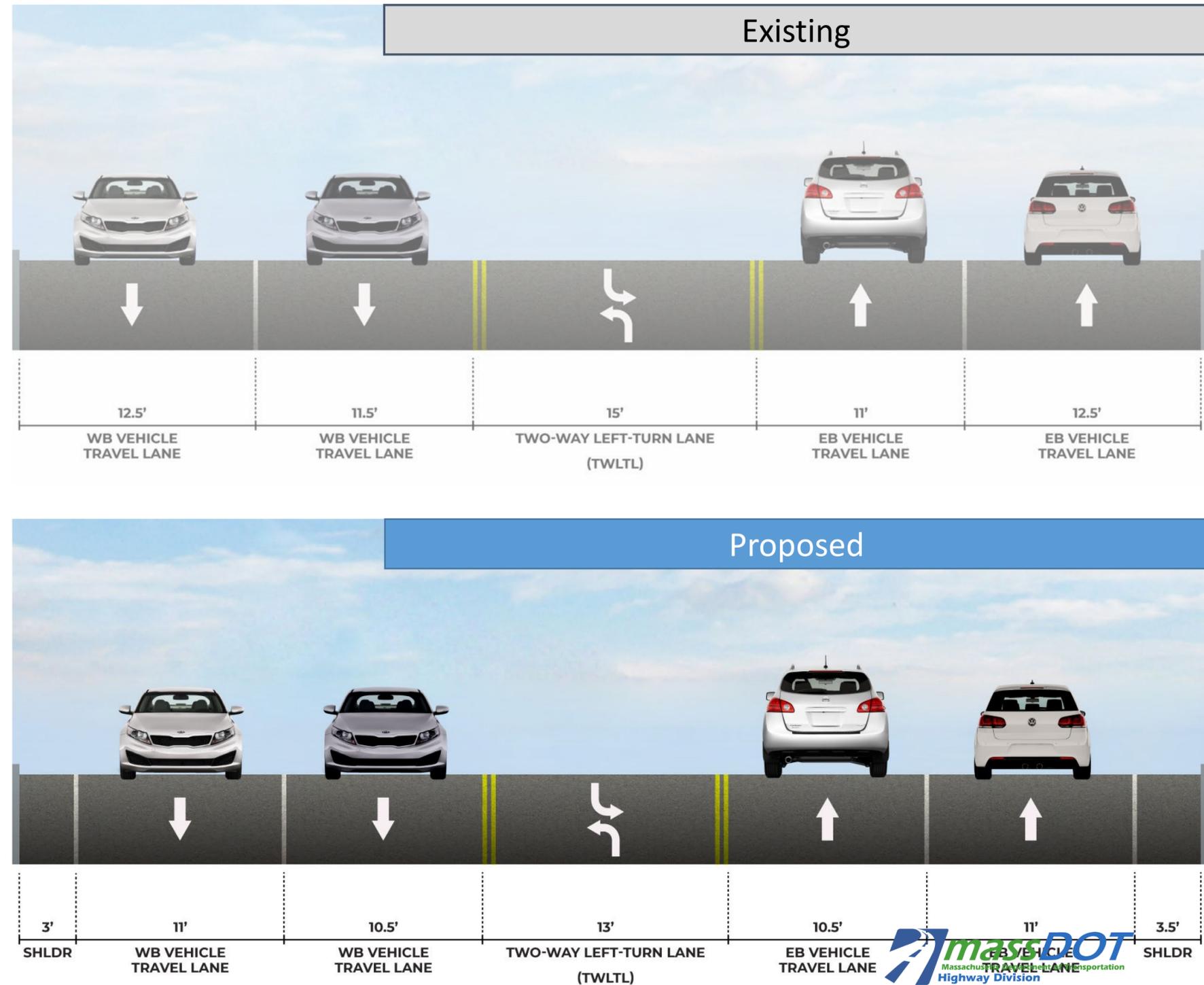
Next Steps: Tier 1 Implementation Update

-  Signal work: Mostly complete; pending pedestrian equipment
-  Pavement markings: white markings done, yellow and crosswalk pending
-  Curb ramps: anticipated this week



Next Steps: Tier 2 Implementation

- Resurfacing of the corridor and providing narrower travel lanes to reduce speeding
- Installing flex posts, signs, and pavement marking in targeted locations to restrict left-turns with high potential for conflict and/or significant crash history
- More pedestrian crossing opportunities
- Targeted sidewalk construction to connect to destinations on the south side of Route 114 and fill desire lines





**How will we
keep you
informed?**

How Will We Keep You Informed?



Project Website: <https://www.mass.gov/route-114-danverspeabody-safety-improvements-project>



Project email: route114safety-peabodydanvers@dot.state.ma.us

Reach out with questions, concerns, or to sign up for future updates!

Look out for a Public Workshop on the
Tier 2 Design Improvements later this year!



Questions and discussion



Thank You

Route 114 Safety Improvements Project Danvers/Peabody

Peabody Municipal Safety Committee | October 27 | 6pm

MassDOT Project Manager: Kayla Sousa

Email: route114safety-peabodydanvers@dot.state.ma.us