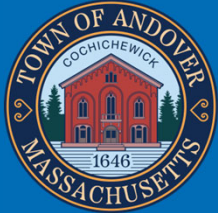
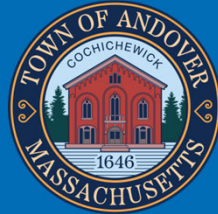


Elm Square Safety Forum #3

October 9, 2024



Introduction / Agenda



- Summary of completed safety action items
- Summary of current planning and design tasks
- Review of intersection alternatives/questions/comments
- Summary of neighborhood traffic considerations
- Other Public input (Email: Elmsquaresafety@andoverma.us)

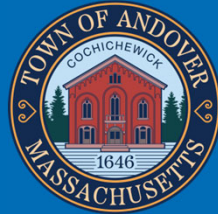


Key Speakers & Available Resources



- Andrew Flanagan - Town Manager
- Michael Lindstrom - Deputy Town Manager
- Patrick Keefe - Police Chief
- Glen Ota - Safety Officer
- Janet Nicosia - Town's Director of Facilities
- Christopher Cronin - Town's Director of Public Works
- Carlos Jaquez, PE - Town's Deputy Director of Public Works
- Arthur Martineau, PE - Town Engineer
- Paul Materazzo, Town's Director of Planning & Land Use
- Kevin Dandrade, PE, PTOE - TEC, Inc.
- Samuel Gregorio, PE, PTOE, RSP - TEC, Inc.

Completed Actions



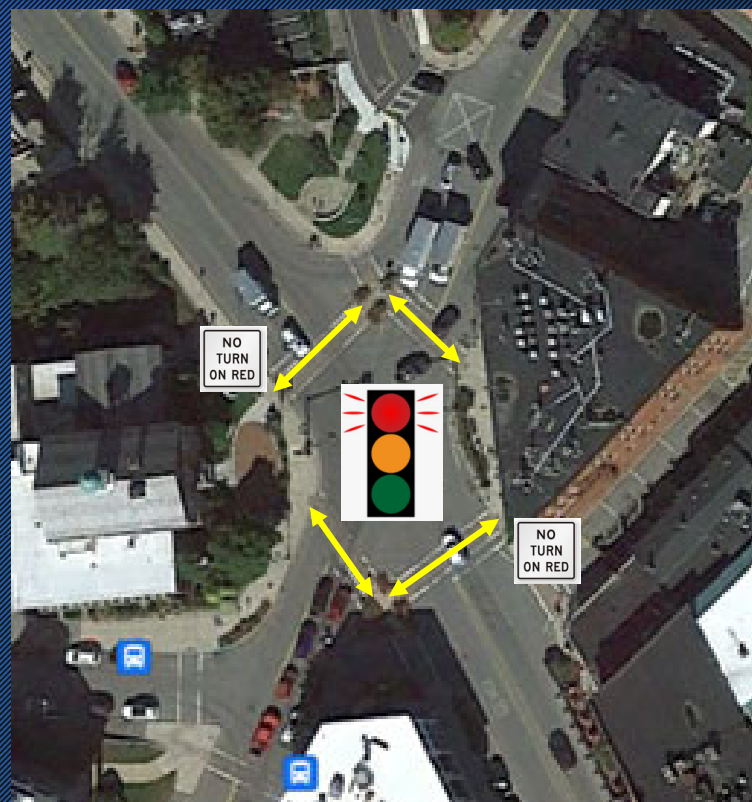
- Completed a Road Safety Audit (RSA) in June 2023
- Received MassDOT approval and implemented immediate action items:
 - **EXCLUSIVE PEDESTRIAN PHASING**
 - Converted N. Main St to a single southbound lane entering downtown
 - Adjusted stop line locations on Elm Street
 - Added 'No Turn on Red' signs on Main / N. Main
 - Optimized traffic signal timings
 - Improved sight lines from High Street stop line
 - Relocated Central Street crosswalk from Essex St further west
- Field survey of the entire project area
- Preliminary design for longer-term improvements
- Study of potential neighborhood impacts

Immediate Action - COMPLETED!

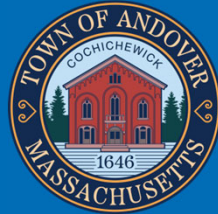
Exclusive Pedestrian Phasing



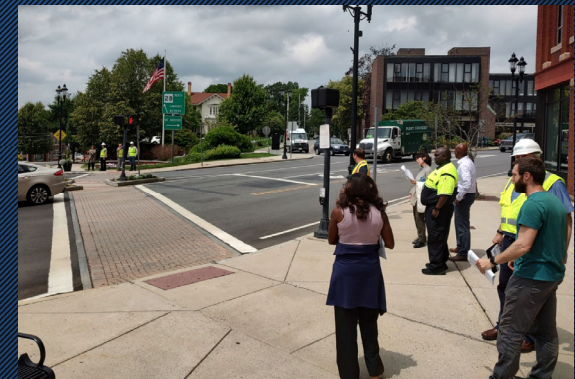
- All lights are red when walk signals are illuminated
- Adjusted pedestrian times to new federal guidance
- Enhanced safety with “No Turn on Red” signs on Rt. 28 north and south
- Installed new signs and markings at slip-right lanes



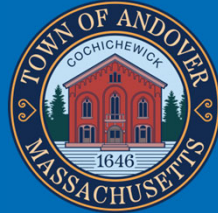
Summary of Key RSA Findings to be Addressed



- Design options to better control traffic at slip-right lanes (triangular islands)
- New pedestrian signal equipment to improve visibility with additional push button locations
- Address the vehicle conflicts and queuing at Elm St. / High St.
- Evaluate opportunities for alternative lane use and how to accommodate trucks, including stop line placement
- Restripe stop lines with greater offset from crosswalks to improve visibility of pedestrians

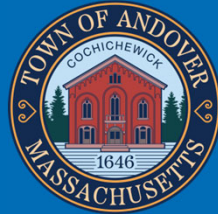


TEC's Recent Planning & Conceptual Design



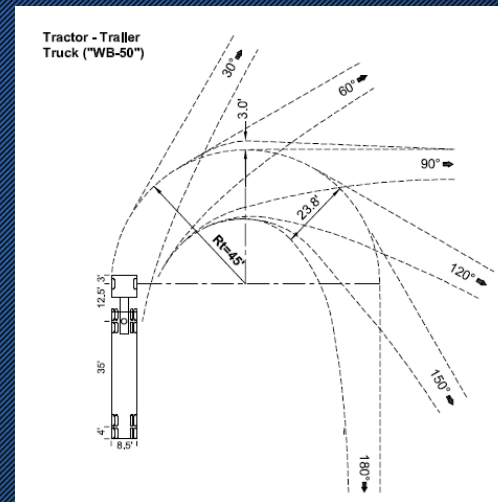
- Design goals:
 - Improve pedestrian access and safety
 - All alternatives:*
 - *Maintain exclusive pedestrian phasing*
 - *Introduce a new diagonal crosswalk*
 - *Seek to minimize exposure within the intersection*
 - Assess accommodations for safe truck movements
 - Do not make it worse than existing conditions*
 - Maximize/expand sidewalk areas where possible
 - Alert drivers to the presence of bicyclists
 - Minimize vehicle conflict areas and backups over crosswalk areas
 - Maintain a reasonable level of vehicular traffic delays on each approach



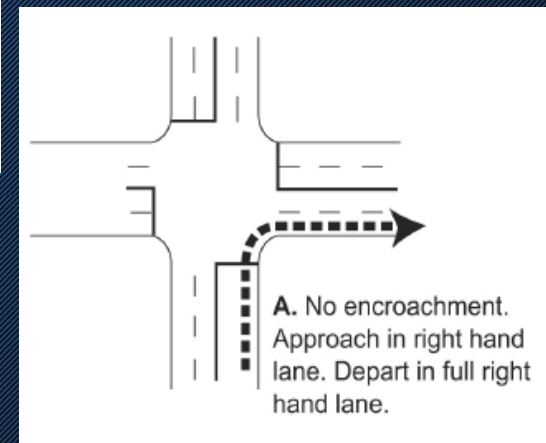


Intersection Design Guidance - Trucks

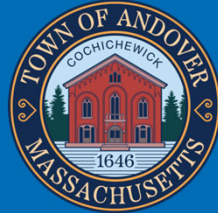
- Heavy Commercial Vehicles / Trucks
 - Provide a necessary service to businesses in the downtown area
 - Movements need to be considered when determining curbs and centerlines
 - Truck restrictions are unlikely due to State Route designation, low truck volumes, and no reasonably identifiable alternate routes
 - Wholesale truck restrictions do not apply to deliveries to local businesses
 - Creative truck turn restrictions may be possible
 - Any alternatives considered should not make the movements encroach more



MassDOT Guidance



TEC's Recent Planning & Initial Concepts



- Prepared 6 initial geometric alternatives:
 - A** Signalization of existing slip-right lanes
 - B** Signalization of slip-right lanes with minor island changes
 - C** Removal of slip-right lanes and islands
 - D1** “Road Diet” on Elm Street and Main Street
 - D2** Partial “Road Diet” / Curb Extensions
 - D3** Hybrid - Removal of Elm St slip-right lane
- Reviewed 3 traffic control alternatives:
 - E-F** Turn Restrictions at Elm/High
 - G** Signalization of Elm/High Intersection
- Obtained additional neighborhood traffic data in May 2024 and analyzed impacts of turn restrictions at Elm St / High St



Conceptual Alternative A - Existing Islands

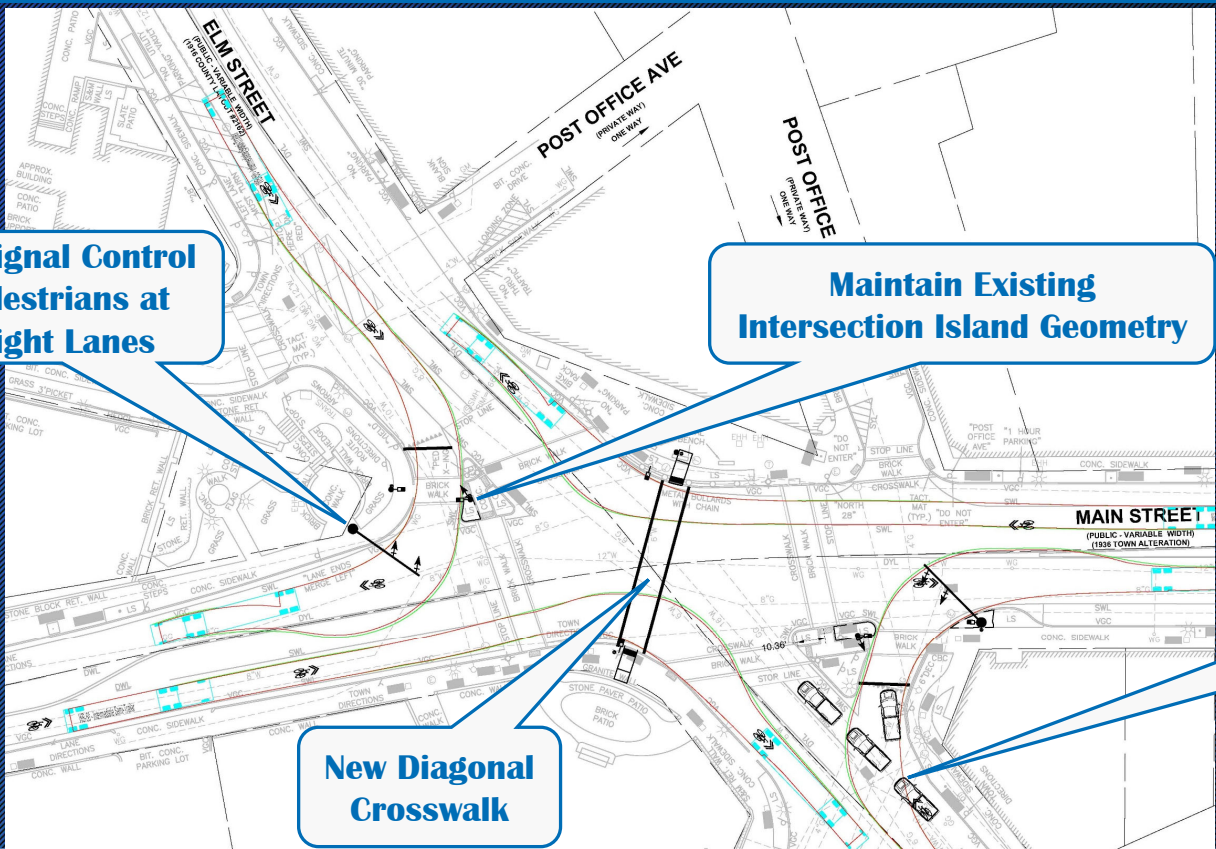


Traffic Signal Control for Pedestrians at Slip-Right Lanes

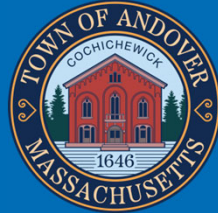
Maintain Existing Intersection Island Geometry

3rd Central Street Vehicle Blocks Right-Turn Channel

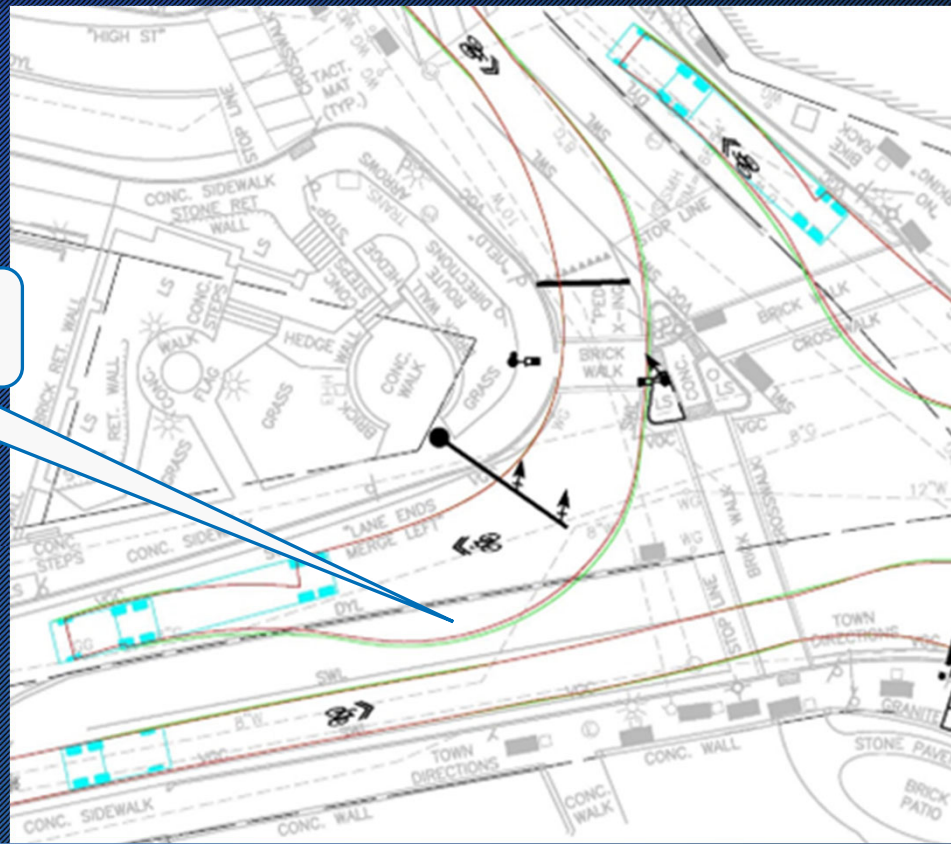
New Diagonal Crosswalk



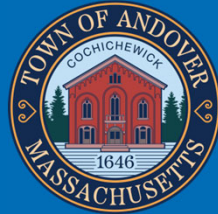
Conceptual Alternative A - Existing Islands



**Truck Movements
Cross N. Main St
Centerline**



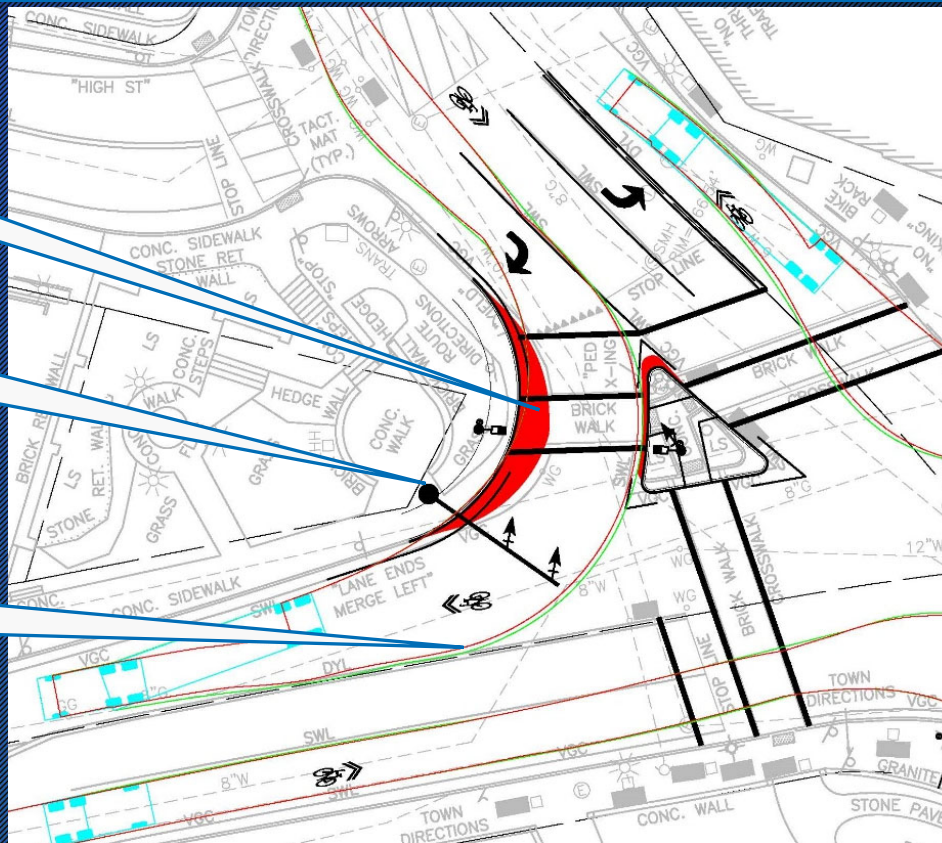
Conceptual Alternative B - Modified Islands



Minor Curb Line Changes

Traffic Signal Control for Pedestrians at Slip-Right Lanes

Trucks Stay in the Appropriate Lanes



Conceptual Alternative C - No Islands



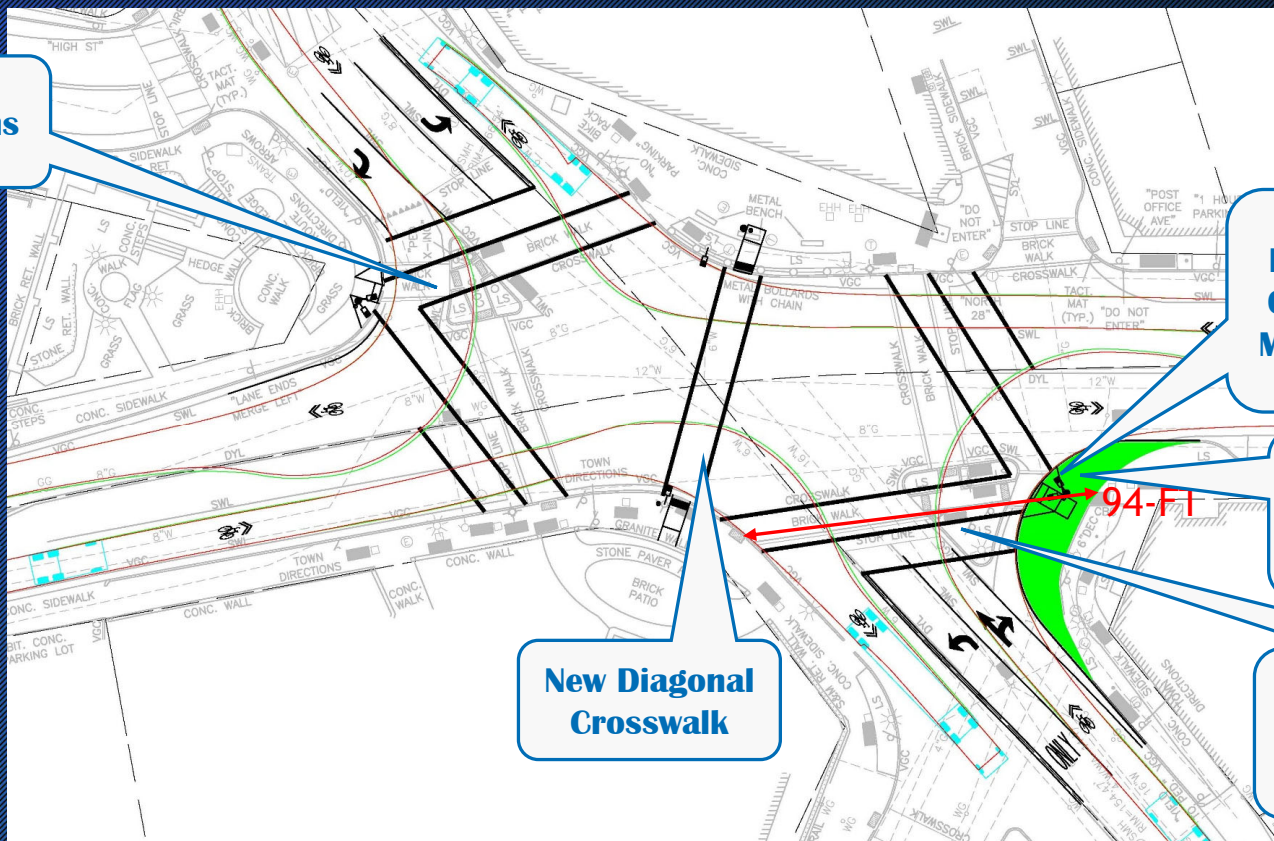
Removes Existing Island and Maintains Outer Curb Line

Removes Existing Islands and Adjusts Outer Curb Lines to Maintain Reasonable Crossing Distance

Further Investigate Truck Right-Turn Characteristics and Evaluate Truck Turn Restrictions

New Diagonal Crosswalk

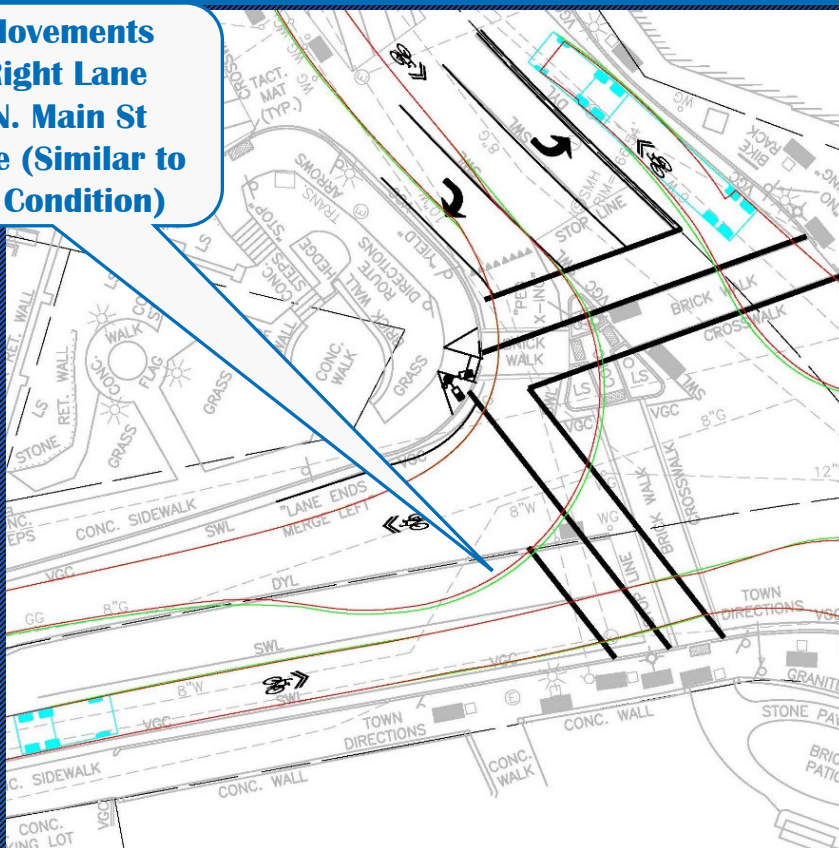
Longer Crosswalks Require More Pedestrian Clearance Time / More Exposure



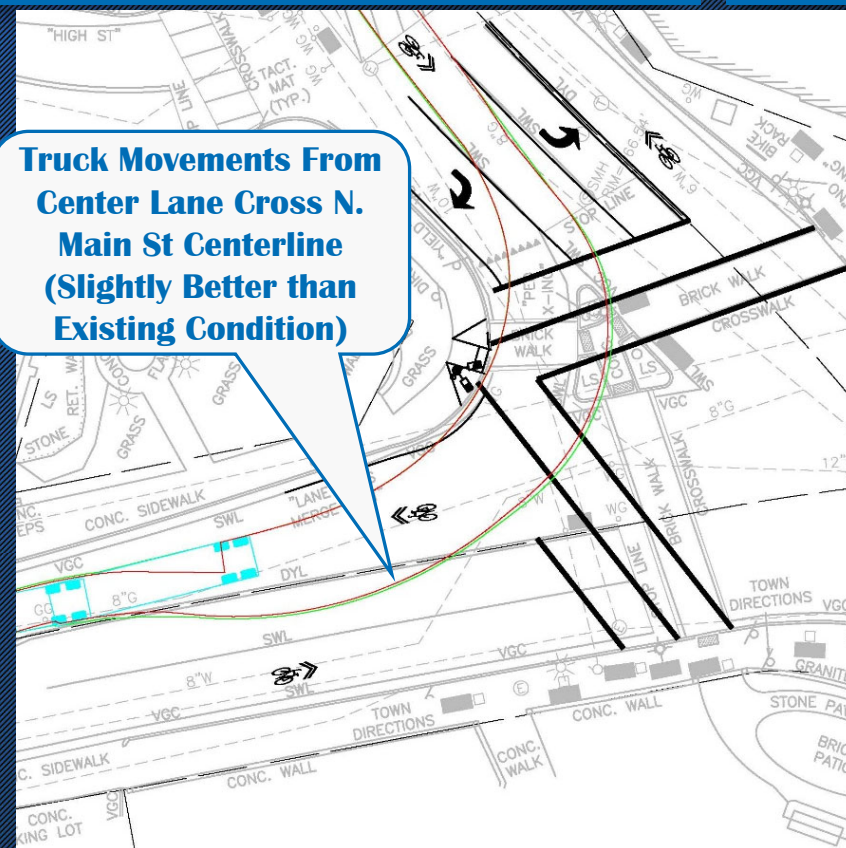
Conceptual Alternative C - No Islands



Truck Movements From Right Lane Cross N. Main St Centerline (Similar to Existing Condition)



Truck Movements From Center Lane Cross N. Main St Centerline (Slightly Better than Existing Condition)



Conceptual Alternative D1 - Road Diet



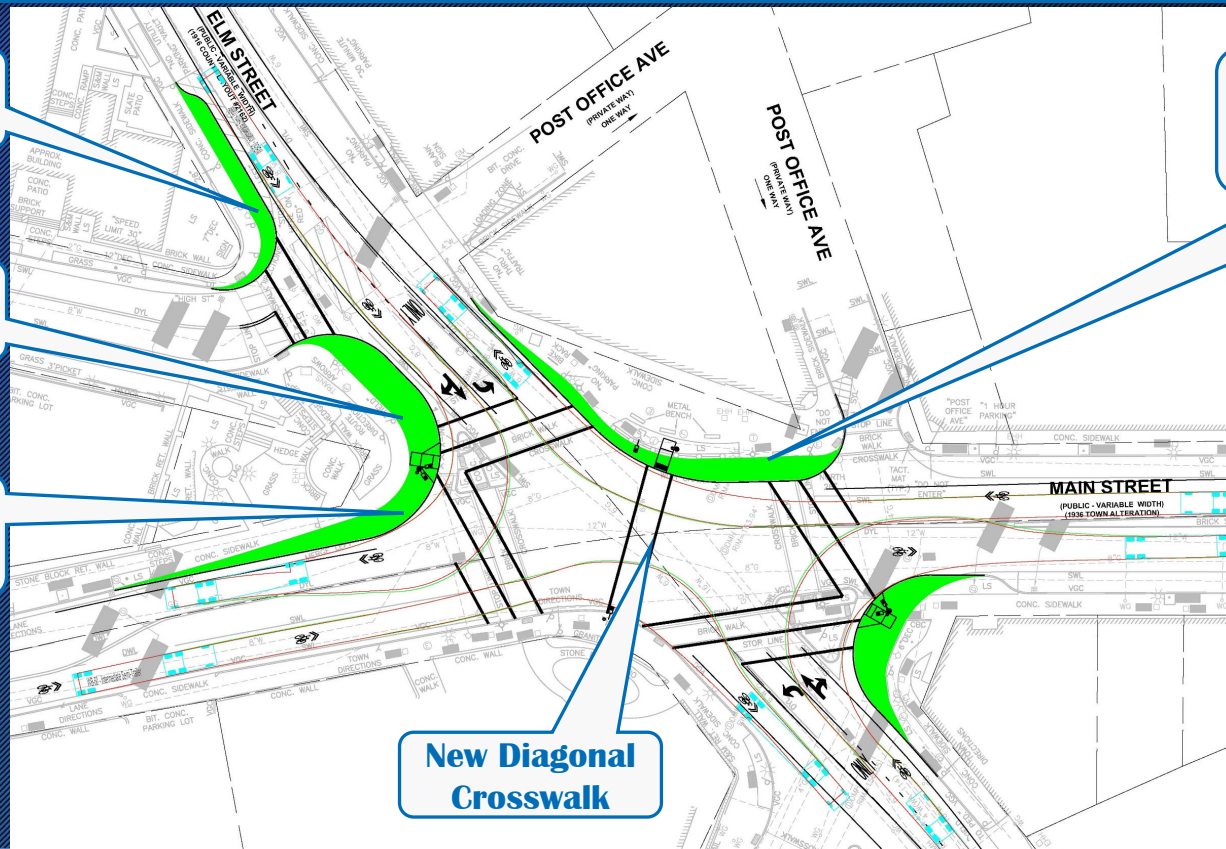
Remove Pavement & Adjusts Outer Curbs

Eliminate Existing Right-Turn Lane

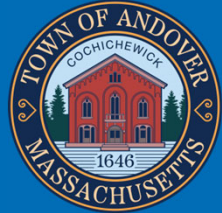
Remove Excess Pavement within N. Main Street

Remove Excess Pavement for Short Main St Right-Turn Lane

New Diagonal Crosswalk

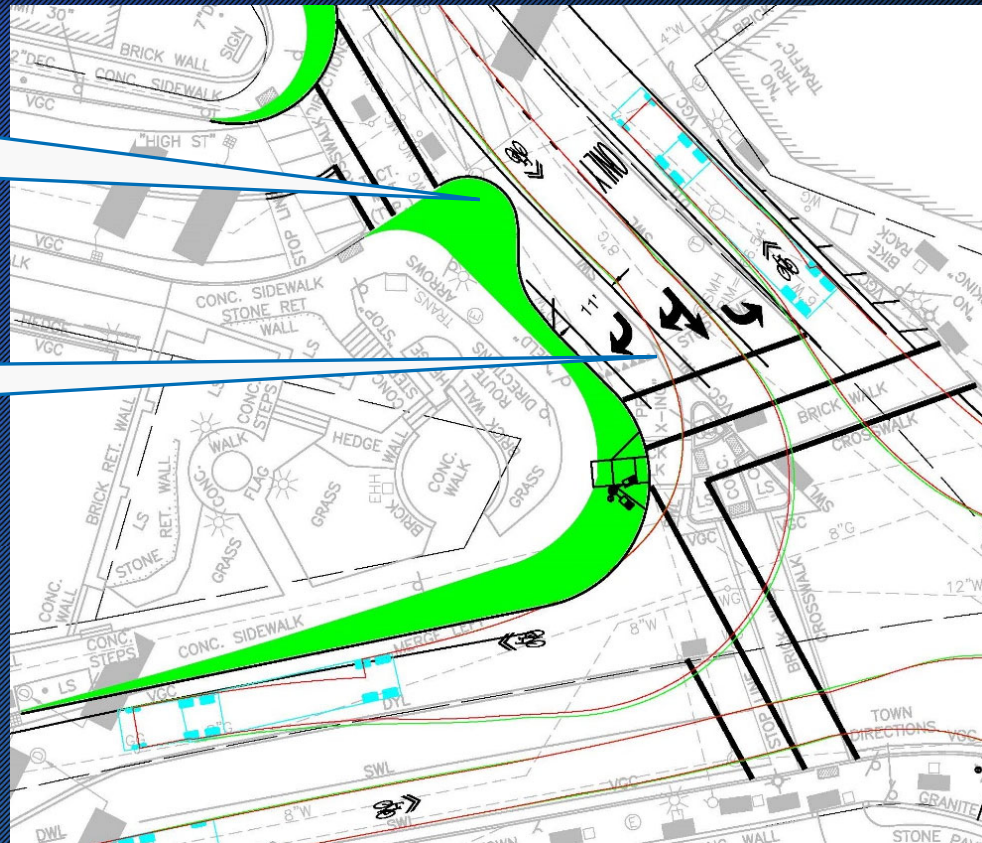


Conceptual Alternative D2 - Partial Road Diet

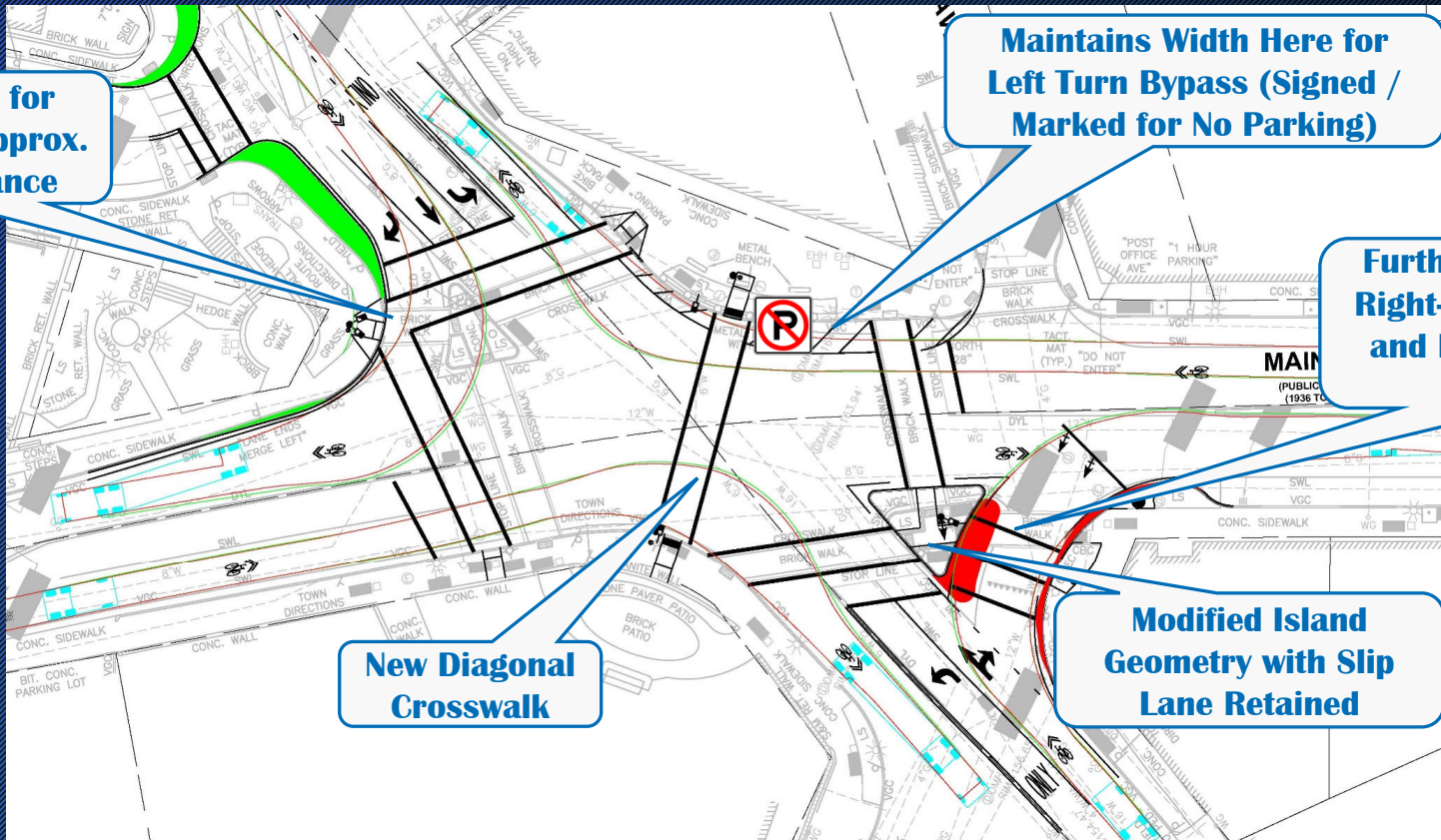
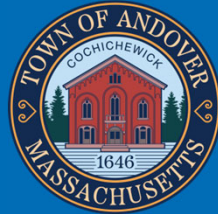


Remove Pavement & Construct Curb Extension to Improve Visibility of Crosswalk

Remaining Right-Turn Lane is Too Short to Be Effective



Conceptual Alternative D3 - Hybrid



Larger Radius for Turns - Same Approx. Crossing Distance

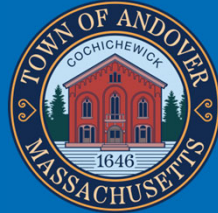
Maintains Width Here for Left Turn Bypass (Signed / Marked for No Parking)

Further Investigate Truck Right-Turn Characteristics and Evaluate Truck Turn Restrictions

Modified Island Geometry with Slip Lane Retained

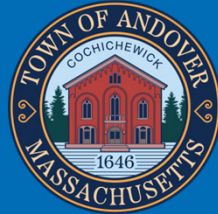
New Diagonal Crosswalk

Summary of Intersection Layout Alternatives



Alt	Name	Exclusive Ped Phase ?	Single-Stage Crossing ?	Longest Crosswalk	Exclusive Ped Time	Truck Encroachment
A	Existing / Signalized Slip Lanes	Yes	No	63'	25 sec	Maintains Existing
B	Modified / Signalized Slip Lanes	Yes	No	64'	25 sec	Improves
C	No Slip Lanes / No Islands	Yes	Yes	76'	29 sec	Maintained
D1	Road Diet	Yes	Yes	80'	30 sec	Maintained
D2	Modified Road Diet	Yes	Yes	80'	30 sec	Maintained
D3	Hybrid	Yes	Partial	70'	27 sec	Improves

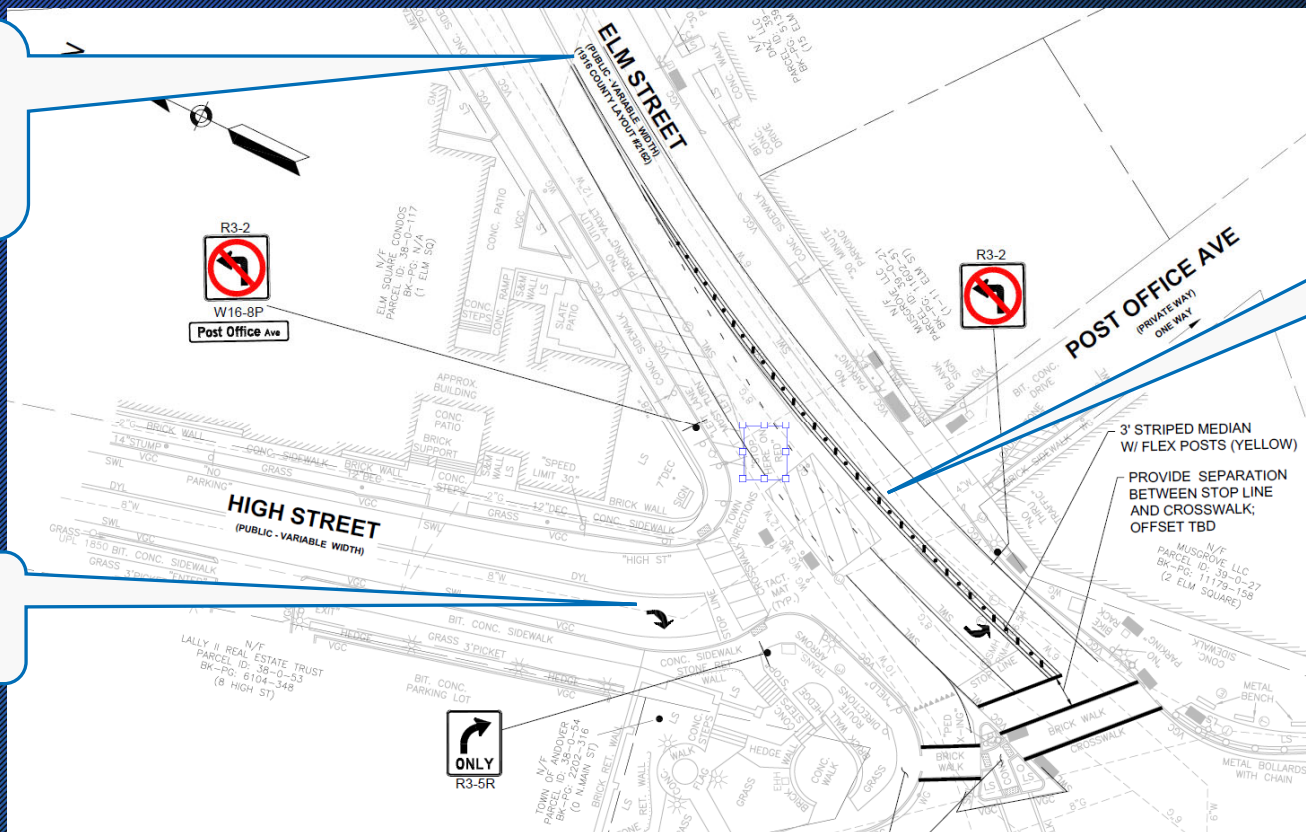
Conceptual Access Alternatives E & F Turn Restrictions



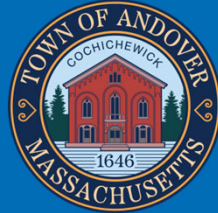
Consider Turn Restrictions at Maple & Wolcott (Alt F) after reviewing data from a Pilot Project

Centerline Stanchions (Flex Posts) & Signs along Elm St to Restrict Access

High St Approach to Elm St is Limited to Right-Turn-Only



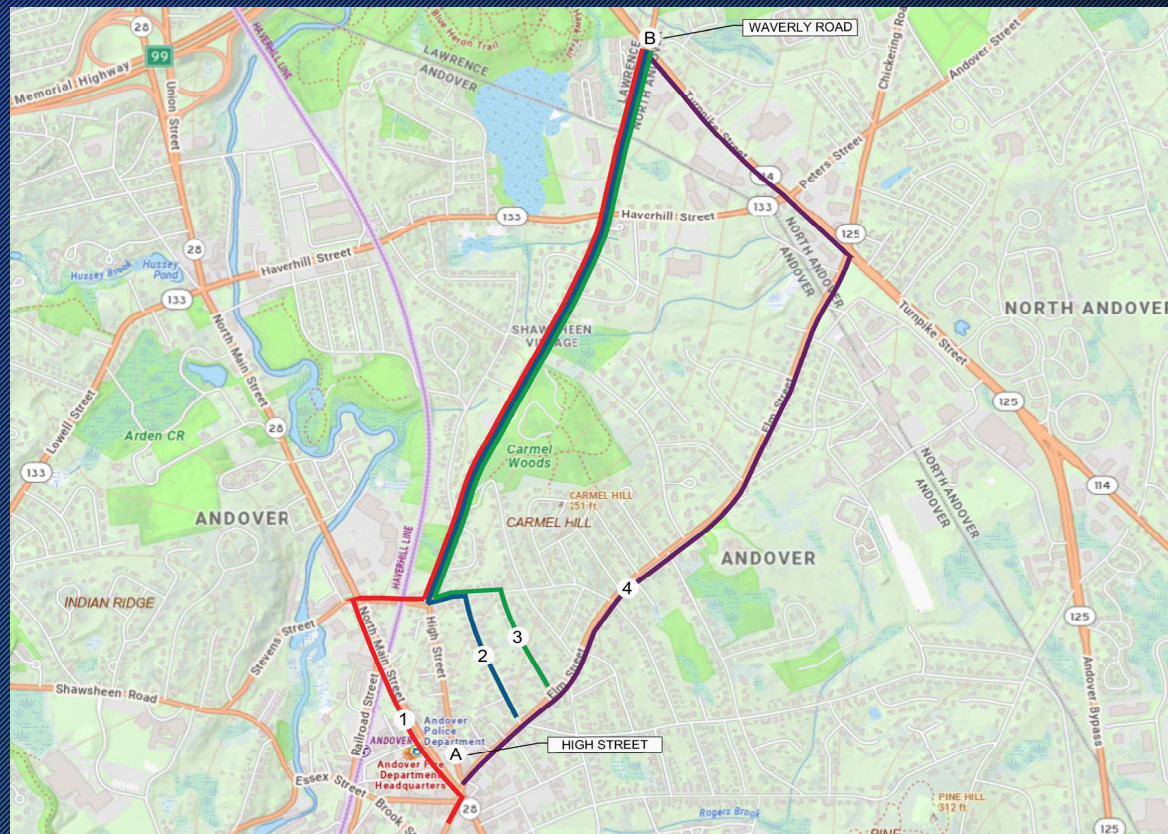
Potential Impacts of Turn Restrictions



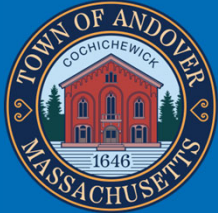
- Diversion of **90 to 120** left-turns from Elm St onto High St
- Residents on High Street will have slightly longer trips depending on the destination, but **½ of the normal traffic**
- TEC performed travel time runs after schools recommenced in September
- Likely alternative routes around Elm/High:
 - Advanced Central St left to N. Main St to Harding St
 - Elm St to Maple St to Harding St - highest potential for impact
 - Elm St to Wolcott St to Harding St - moderate potential for impact
 - Elm St to Route 114 (in N. Andover) - fastest at certain times



Potential Impacts of Turn Restrictions



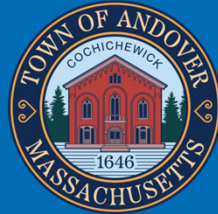
Potential Impacts of Turn Restrictions



- Option for a Pilot Project (3 to 4 weeks long)
 - Obtain additional “baseline” traffic count data
 - Implement turn restrictions at Elm/High with public notices and message boards
 - Monitor traffic diversion trends
 - Introduce other peak hour / daily turn restrictions as required at Maple Street and Wolcott Street
 - Measured/counted/studied with restrictions in place for future data-driven decision making
 - Remove turn restrictions until a permanent approach is determined



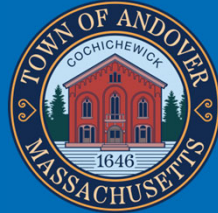
Next Steps



- Review the results of Public Forum #3 and continue to receive comments from Elm Square email address
- Refine recommendations based on constructive public feedback and input
- Issue technical memorandum with preferred recommendation
- Review conceptual intersection and traffic control changes with MassDOT, including:
 - Traffic signal retrofits to improve visibility
 - Changes to slip-right lanes
 - Improved push button locations
 - Diagonal crosswalk (east-west)
 - Potential turn restrictions at Elm St /High St
- Option to perform pilot project for High St turn restrictions
- Perform detailed design, permitting, and bidding of planned improvements
- Construct improvements - Possibly Late 2025



Public Input - Questions and Comments?



How can I provide comments in writing?

Please send an email to: Elmsquaresafety@andoverma.us

