1. Study Team

The Route 53/139 Corridor Transportation Planning Study Team will consist of the Old Colony Planning Council (OCPC) staff:

- Bill McNulty – Project co-manager, general technical analysis, prepare documents, and stakeholders and public outreach, project development
- Guoqiang Li – Project co-manager, general technical analysis, prepare documents, and stakeholders and public outreach, project development
- Matt Dyer – Data collection and analysis, environmental review, prepare documents, websites development, project support and assistance
- Kyle Mowatt – Data collection, capacity analysis, project support and assistance
- Shawn Bailey – Data collection, safety analysis, project support and assistance
- Andrew Vidal – GIS analysis, mapping and website development
- Megan Fournier – Document editor, public outreach and social outlet communication

2. Purpose Statement

The purpose of the comprehensive Route 53/139 Corridor Transportation Planning Study is to conduct an in-depth evaluation of the approximately 2.6-mile center-line segment, which is classified under the federal functional classification system as a Principal Arterial, in the Town of Pembroke, Massachusetts. The geographic area for the Route 53/139 Corridor Study is entirely within Pembroke, running from the Hanover town line on the west side to Route 139 at the Marshfield town line on the east side, and is located within the Large Urban Area. Of the total study length, the entire approximately 2.6 miles is under the MassDOT jurisdiction.

This planning level study will assess existing conditions and operations in relation to service needs for the community, regional commuting, and the economy and result in the development of short-term and long-term actions that will enhance circulation and traffic flow efficiency and improve safety. Staff will review and analyze the traffic volume, speeds, vehicle types, capacity ratios, levels-of-service, collisions, access management design, pedestrian and bicycle traffic and infrastructure, pavement conditions, traffic control, signage, and overall physical layouts and operation. Public input will be included as part of the project identification process. Staff will utilize the Old Colony Metropolitan Planning Organization's Congestion Management Process, Safety Management System, and Pavement Management System to assist in the identification and development of short-term and long-term recommendations for all road users, including motorized, transit, and non-motorized modes.

3. Project Timeline

The Route 53/139 Corridor Study will be developed under task of UPWP #3500 – Route 53/139 Corridor Study, during Federal Fiscal Year 2026, from October 1st, 2025, through September 31, 2026. Advance consultation with Town officials and the Massachusetts Department of Transportation will occur during Fall 2025. Traffic volume data collection is expected to be completed in the early stage of the study, which is around October and November 2025, at the year around peak when schools are in session. Public and community outreach will occur

throughout the project schedule at periodic intervals. A Final Report will be presented to the Town of Pembroke, Massachusetts Department of Transportation, MassDOT District 5, Old Colony Joint Transportation Committee, and Old Colony Metropolitan Planning Organization in the Fall of 2026.

4. Public Outreach

1. A general travel survey with detailed questions will be administered to collect input from the public, community members, and stakeholders regarding existing conditions, as well as their vision and preferences for future improvements. The survey will focus on desired design layouts, community priorities, and strategies for infrastructure planning. Such travel surveys will be administered through SurveyMonkey and distributed via the Towns' websites, social media platforms, and other public communication channels. The survey will be launched during the early stages of the project development process to gather timely public feedback.

2. Stakeholders will be identified for the study and will include those who have the potential to be impacted by the study, those who are concerned in the implementation of improvements, and those who have an interest in the study and process. The process will include reaching out to the business community, residents, and the public at large, groups and agencies with interests in traffic and transportation, local officials (state representatives, councilors, etc.), news organizations (local newspaper and radio), state agencies, and groups that have been traditionally underserved including the elderly, groups with limited English proficiency (LEP), minorities, and people below the poverty line.

3. The stakeholders outreach program will include meetings with local officials in Pembroke including Administration, Public Works, School Department, and Public Safety. Public meetings with stakeholders will include the presentation of findings and will solicit discussion and facilitation of improvements and recommendations. In addition to public meetings, the outreach program will include public surveys, interviews with stakeholders, and meetings with state and local officials, including MassDOT. Notices of meetings will involve the use of a variety of new media, internet postings, as well as traditional means of notice (postings in public places of convenience and newspapers). Meetings may be held virtually in a webinar format. A project webpage within the OCPC website will be created and maintained throughout the project duration.

4. The public and stakeholders outreach process will extend beyond the immediate study area and local jurisdiction. It will include coordinated engagement with neighboring Regional Planning Agencies, Metropolitan Planning Organizations, and adjacent municipalities, and communities to ensure a comprehensive understanding of regional transportation infrastructure conditions and to solicit input that supports future improvement strategies.

Stakeholders will include, but are not limited to, the following groups, listed in no particular order:

- Massachusetts State Senator Dylan Fernandes (Pembroke)
- Massachusetts State Representative Kathleen LaNatra (Pembroke)
- Massachusetts State Representative Ken Sweezey (Pembroke)

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- Massachusetts Department of Transportation (Headquarters, District 5)
- Federal Highway Administration
- Federal Transit Administration
- Select Board
- Planning Board
- Town Manager
- Police Department
- Emergency Management
- Fire Department
- Public Works
- Council on Aging
- South Shore Chamber of Commerce
- Pembroke Chamber of Commerce
- North South River Watershed Association
- MA Safe Routes to School
- School District
- GATRA
- Massachusetts Bay Transportation Authority (MBTA)
- WalkMassachusetts
- MassBike
- Others

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5. Inventory and Review of Peer Studies and Planned Improvements

1. Compile and review traffic studies by consultants and agencies pertinent to the study area
2. Compile and review plans and studies by MassDOT
3. Compile information on potential projects that will impact future trip generation within the study area network.

6. Assess and Analyze Existing Conditions

A. Collect daily traffic counts, speeds, and heavy vehicle percentages at the following locations in Pembroke:

- Route 139/53 Columbia Road at Hanover Town Line
- Route 139 Schoosett Street East of Water Street
- Route 139 Church Street East of Water Street
- Route 139 Church Street West of Oak Street
- Route 139 Church Street underneath Route 3
- Route 139 Church Street at the Marshfield Town Line
- Route 53 Washington Street south of Schoosett Street

B. Collect turning movement counts (TMC) at the following intersection locations listed below. The traffic counts will be conducted during the following times AM 7:00 AM to 9:00 AM, and

PM 4:00 PM to 6:00 PM (2:00 PM to 6:00 PM at intersections heavily affected by school traffic), planned to be completed in November 2025.

- Columbia Road (Route 139/53) at Washington Street
- Schoosett Street (Route 139) at Washington Street (Route 53)
- Schoosett Street (Route 139) at Brick Kiln Road
- Schoosett Street (Route 139) at Lorna Avenue
- Schoosett Street (Route 139 at Water StreetStop
- Church Street (Route 139) at Water Street Stop
- Church Street (Route 139) at North River Plaza/Rainbow Square
- Church Street (Route 139) at Oak Street Extension/Brigantine Village
- Church Street (Route139) at Roue 3southbound ramps
- Church Street (Route 139) at Route 3 northbound ramps
- Church Street (Route 139) at Old Oak Street

C. Turning movement counts will be conducted in September through October when school is in session to include the impact of school traffic.

D. A Physical Inventory will be completed for each TMC location. The physical inventory will be a sketch of the intersection showing roadways and all attributes necessary for analysis. These include but are not limited to:

- Sidewalks and bicycle tracks and/or pedestrian paths
- Bicycle lanes
- Utility poles and lighting
- Traffic signal and pedestrian signals (location of poles and the direction and lanes the signals face)
- Signs, signage, and traffic control (speed limits, stop signs, no turn on red, no parking and parking limitations, etc.)
- Hydrants and other utilities and fixtures including (but not limited to) guard rails, walls, traffic islands, curbs (granite or bituminous), and curb cuts
- Number of vehicular lanes and lane use, including pavement markings, crosswalks, and curb ramps.
- Roadway and lane widths, as well as sidewalk and bicycle path widths
- Grades will be estimated in physical inventories
- Sight distances will be measured at intersections where sight distances are limited
- Land use, landmarks, business and driveways and observation of layouts that impede the safety and efficiency of physical environment
- Bridge, culverts assessment if present
- The date and initials of the person taking the inventory must be on the physical inventory sheet
- Field photographs, dash-cam video, and drone footage will be collected at key locations along the corridor

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E. Signalized intersections will include sheets separate from the physical inventories showing signal timing, internals and phrasings diagrams. The locations of pedestrian signals and traffic signal heads will be shown on the physical inventories. Each signal phase shall be shown with the movements for the lanes given green marked clearly for the direction of travel, along with the clocked time. The north arrow on sketches and signal timing and phasing should always be up toward the top of the sketch.

F. Field surveillance of existing conditions will include photos and/or video of the study area corridor, documentation of locations of posted speed limits, and documentation of other pertinent traffic control and lane use restrictions within the study area corridor. The video and photos will be taken to document various conditions that affect the movement and safety of vehicles, bicyclists, and walkers. The utilization of drone technology will assist with photo and video documentation.

G. Review of existing conditions will include a field review of existing land use and a review of existing zoning within the study area. Work with town to determine potential growth areas and planning development projects.

H. Review of existing conditions will include a field review of existing pavement conditions in the study area corridors utilizing OCPC's pavement management system.

I. Traffic signal permits for signalized intersections and special speed regulation permits for study area roads will be requested from MassDOT.

J. Existing peak hour level-of-service analysis for signalized and un-signalized intersections based on 2025 base year counts shall be conducted utilizing software based on the Highway Capacity Manual.

K. Review of MassDOT IMPACT Collision Data Portal to develop historical collision frequency summary along Route 53/139 Corridor. Collision rates for the study area intersections shall be developed based on practices published in the Manual of Traffic Engineering Studies and compared to average collision rates for the state and for the region.

L. Staff will request collision reports for the collisions that occurred along Route 53/139 Corridor in the continuous years of 2023, 2024, 2025 from Pembroke Police Department. Collision analysis will be performed in junctions with the field audit at selected key locations. Collision patterns regarding type and cause will be discerned.

M. The study area will be screened for locations within the top five percent collision clusters to determine HSIP eligibility. The MassDOT Top 200 Collision Cluster Locations list and OCPC's Top 100 Collision Locations list will be reviewed to determine if any of the study area locations are included on those lists.

N. Data for determining non-motorized safety and accommodations at study area intersections and within the study corridor will be collected. Non-motorized safety and accommodation will be assessed at the study area intersections and within the study corridor.

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O. Warrant analyses, in accordance with the **Manual on Uniform Traffic Control Devices** will be conducted at un-signalized intersections if necessary to determine the justification for traffic signals, stop sign, four-way stop, flashing yellow/red beacon, and protected left or right turn lanes at intersections deemed feasible. Signal Warrant Analyses, in conformance with the Manual on Uniform Traffic Control Devices (MUTCD), will be completed as needed for determining signalization, flashing beacons, and all-way Stop Sign control.

P. Various built and natural environmental GIS layers will be reviewed. Bridge and culvert inventory and condition information will be documented if applicable.

Q. Maps will be developed including but not limited to illustrating the geographic scope of the study areas, as well as existing traffic counts, 85th percentile speeds, and percentage of heavy vehicles in the traffic flow.

R. Documentation of any exiting transit services (i.e. MBTA, and GATRA) and demand will be documented if available.

S. Sustainability involves encouraging alternative, non-motorized modes to conserve energy and reduce reliance on fossil fuels. Principles for creating more sustainable neighborhoods include designing streets and the rights-of-way to encourage shared pedestrian, bicycle, and vehicular use (Complete Streets Concepts). The Federal Highway Administration (FHWA) defines Livability as "…tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, high-quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design." This study will consider livability and sustainability principles in the planning process and in the development of recommended improvements. The "Complete Streets" design strategy enables safe road access and operation for all users including pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities. Complete Streets strategies will be considered and utilized to implement the goals of Sustainability and Livability.

T. Prepare documentation of climate change and resiliency if deemed necessary. Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks. Review and incorporate the Municipal Vulnerability Preparedness (MVP) Plan.

6. Forecast and Analyze Future Conditions

a. A horizon year of 2030 will be assessed to forecast future peak hours traffic, in conformance with MassDOT traffic study requirements. Future peak-hour traffic conditions will be estimated by using an annual compound background traffic growth rate. The results from the latest OCPC Regional Travel Demand Model and the State Travel Demand Model (TDM23.2.1) will be compared with archived volume data to develop. Local officials from Pembroke will be contacted to determine the potential traffic impact for any planned developments in estimate traffic growth. OCPC team will aid in estimating sited specific trip generation from the future development and evaluating the 2025 conditions with the proposed, funded and approved projects.

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b. Peak hour Level-of-service analyses will be performed for study area intersections for 2025 and 2030 conditions including "No-Build" and "Build" conditions. The 2030 "No-Build" conditions will include existing traffic volumes increased by the background growth rate plus traffic due to other planned developments. "Build" conditions will represent 2030 peak hour conditions with existing volumes increased by the background growth rate plus traffic due to other planned developments and alternative recommended improvements in place.

c. Various enterprise data software will be considered to support the study, including but not limited to Replica, RITIX, MS2, Google Traffic and/or Conveyal.

7. Identify Current and Potential Deficiencies

Current and potential deficiencies will be determined based on traffic and safety assessments, at the study area intersections and within the study area corridors, as well as through field assessments and the public outreach program. The identification of deficiencies (traffic congestion and levels-of-service, safety, lighting, signage, and sidewalk and pavement conditions, ADA) will include traffic, transit, bicycle, and pedestrian analyses. These assessments will be coordinated with state and local plans and initiatives.

8. Develop Recommendations

Alternatives for improvements to traffic congestion, traffic circulation, transit, and safety hazards will be developed specific to problems identified based on the analyses, the public outreach program, and meetings with local officials and MassDOT. The improvements will also include non-motorized alternatives and will include cost-effective, short-term, and long-term recommendations.

9. Document Results

A draft report will be prepared and circulated for review and comment on the document's findings and recommendations. OCPC will prepare the draft and final reports that will include the identification of funding sources and recommendations for implementation of recommended improvements.

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Route 53/139 Corridor Study Project Development Timeline

Process	Tasks	Oct-25	Nov-25	Dec-26	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26
Project Initiation	Initial interview with community, MassDOT and regional partners												
	Develop Scope of Work, plans for the studies												
	Review previous studies, plans and documents												
Public and Community Engagement	Formation of OCPC Study Team and Community Work Group												
	Initial stakeholders interview meeting												
	General public survey												
	Community, stakeholders meetings												
	JTC, or MPO project update meetings												
	Public Meetings												
Data Collection	ATR count, TMC count												
	Collect and review speed regulation, signal permit and timing plans												
	Road inventory studies, on-line and field audit												
	Multi-modal planning data collection												
	Environmental data collection												
Mapping and Data Analysis	Develop GIS base and operational data maps												
	Capacity analysis (LOS, delay and air quality)												
	Safety analysis (collision cause and countermeasures)												
	Multi-modal planning analysis (bicycling, walking, transit, etc.)												
Existing Condition Assessment	Intersection operational evaluation												
	Corridor planning and operational evaluation												
	Transportation safe system analysis												
	Climate change and environmental review												
Future Projection and Assessment	Estimate background traffic growth and conditions												
	Compile site specific land use and road development plans												
	Identify future deficiencies												
Plan Design Alternatives Assessment	Alternatives analysis and comparison												
	Development recommendations												
Draft Report	Circulate draft report for review												
	Solicit comments and suggestions for updating draft report												
	Provide project development coordination in various funding resources												
Final Report	Circulate the final report												
	Final Document and archive												

*The Project Development Timeline provides estimated milestones for completion of each task for reference only.

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