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All questions and comments are welcome and appreciated, however we do request that you refrain from any disrespectful comments.



Project Team

- **MassDOT Highway Division & MassDOT District 5**
 - Project Proponent
 - Responsible for administering the Design Process & Resident Engineering Services
 - Responsible for Right-of-Way Acquisitions
 - Robert Antico Project Manager Major Projects
 - Richard Bilski District 5 Utility Constructability Engineer
 - Lisa Szamreta Right of Way Division
- **Nitsch Engineering**
 - Roadway Design
 - Matthew Soltys, PE, RSP, ENV SP Project Manager
- HDR, Inc.
 - Bridge Design
 - Charles Swanson, PE Senior Project Manager



Agenda

- 1 How did we get here?
- 2 What do we want to accomplish?
- **3** Why was this project initiated?
- **4** Proposed intersection improvements
- **5** Proposed bridge design
- 6 Design Aesthetics
- 7 How will be property be impacted?
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- **9** What are the environmental, cultural resource, and community impacts?
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- **11** How will we keep you informed?
- 12 Questions and discussion





How did we get here?

December 2016

Road Safety Audit for the Intersection of Route 28 at Old Main Street/North Main Street

Spring 2018

25% Intersection Design Completed and Submitted

Submitted and received approval of the Bridge Type Study

Summer 2018

Held several meetings with Towns, Shareholders, and Emergency services Submitted and received approval of 25% plans and bridge sketch plans

January 2022

Design Public Hearing







Public Outreach

Recent public outreach

Past public meetings

- May 24, 2018 Bass River Public Information Meeting
- October 9, 2018 Yarmouth Intersection Improvements Public Information Meeting

Past stakeholder meetings

- December 19, 2017 Friends of Bass River
- March 27, 2018 Yarmouth, Dennis, Harwich and Chatham **Emergency Response Meeting**
- May 11, 2018 Marina Managers and Town Harbormasters
- May 17, 2018 Friends of Bass River/ Chamber of Commerce

Hearing notices shared

- The Cape Cod Times Dec 20, Jan 3, Jan 10
- The Barnstable Patriot Jan 7
- Cape Media Center Daily since Dec 21
- Town websites of Dennis and Yarmouth

- River
- June 6, 2019 Towns of Dennis and Yarmouth **Aesthetics Discussion**
- October 22, 2021 Friends of Bass River

- Area grocery stores, libraries, post offices, and **Town Halls**
- Cape Cod RTA
- Hyannis Brazilian Community Center

– May 3, 2019 Town of Yarmouth and Friends of Bass







What do we want to accomplish?

Project Goals

- Meet current design and safety standards along the Bass River Bridge and at the Main Street intersection in Yarmouth
- Improve multimodal connectivity along Route 28 between Dennis and Yarmouth
- Reduce the impacts of construction to the traveling public, river users, and abutters to the extent possible
- Improve safety for all users throughout the project limits
- Replace the structurally deficient bridge
- Use winter construction to reduce impacts during the summer high season
- Maintain having a sidewalk available throughout construction.





Why was this project initiated?

Existing Conditions

The existing bridge was built in 1935.

This bridge has been considered structurally deficient and in serious condition.







Existing Conditions

- Route 28 at North Main Street/Old Main Street is a high crash location for vehicles and bicyclist, ranked #50 in MA for highest crash location (2014)
- Lack of ADA compliance and bicyclist and pedestrian accommodations/connections.
- No Protected left turn phases and lack of adequate storage
- Outdated signal and lack of visibility
- Parking issues







Proposed Intersection Improvements

Proposed Roadway Improvements

- Modification of roadway geometry
- New traffic signal at Route 28/North Main Street/Old Main Street
- Aligning the Station Avenue approach to improve sight distance, turning movement, and conflicts.
- Roadway widening to provide turning lanes and improve capacity and operation.
- Construct shared use path to provide access and safety.
- Pedestrian accommodations on both sides of the roadway, throughout
- HAWK crossing signal control at the Dennis side of the project limits
- Improve Parking





Route 28 at North Main Street/Old Main Street



- Proposed new traffic signal
- Emergency vehicle pre-emption
- Extension of dedicated left turn lanes, with protected phases
- New dedicated right turn lane on **Old Main Street**
- Bicycle & pedestrian crossings



North Main Street at Station Avenue



- Realignment of intersection to form a "T"
- Improve sight lines for all approaches
- ADA improvements



Proposed Municipal Parking Lot at Mill Lane



- Proposed town owned municipal parking lot along Mill Lane
 - Defined parking with clear entry/exit locations
- ADA accommodations
- Dedicated bus pull offs at parking lot
- Connection to shared use path
 - Easy access to amenities
- Proposed underground drainage infiltration for parking lot and roadway runoff
 - Reduce runoff to Bass River



Proposed Roadway Improvements – Dennis Side



- HAWK Signal at mid-block crossing
- Shared Use Path along South Side
 - Crosses Route 28 at Bass River Park
 - Terminates at existing Bass River Park path
- Shared use path connection
 between Bass River Park and
 Yarmouth



Proposed Roadway Cross Section – North Main Street – Looking South (Bridge on left)



- Removal of angled parking on North Main Street
- Retain existing buildings
- Sidewalks on both sides of the roadway
- Extension of dedicated left turn lane





Proposed Roadway Cross Section – Old Main Street – Looking North (Bridge on right)



- Sidewalks on both sides of the roadway
- Addition of dedicated right turn lane
- Retain existing landscape
 buffer and mature trees on
 east side



Proposed Roadway Cross Section – Route 28 – Eastbound – Looking East (Bridge ahead)



- Sidewalk and bicycle lane on north side of Route 28 (Left)
- Shared Use Path along south side, consistent with bridge (Right)
- Extension of dedicated left turn lane



Proposed Roadway Cross Section – Route 28 – Westbound - – Looking West (Bridge behind)



- Sidewalk on north side of Route 28 (Right)
- Shared Use Path along south side, consistent with bridge (Left)
- Minimize impacts to abutting properties





Proposed Bridge Plan View Main Structure





Proposed Bridge Elevation





Proposed Navigational Channel Improvements

Proposed Navigational

Channel Width

- Existing channel was 30' wide
- Proposed channel width is 45'-8"
- Proposed Navigational Vertical

Clearance

- Existing clearance 15'-6"
- Proposed clearance 15'-6" but removing the navigational lights from the clearance envelope





Proposed Bridge Typical Cross Section looking towards Yarmouth

- Bridge Deck Width: 60'-1"
- Roadway Width: 36'-0"
- 2 Lanes Each: 11'-0"
- 2 Shoulders Each: 7'-0"
- South Sidewalk: 12'-0" Shared Use Path
- North Sidewalk: 6'-8"





Proposed Bridge Cross Section at Bulb-Out







Aesthetics – Current Proposals

- Concrete Next Beams maintain the classic "Cape Look", compared to more urban steel beams
- Ornamental lights and railings will provide a traditional look during the day and night
- Walkway entrance enhancements will provide a welcoming environment
- Colored concrete sidewalks throughout project for decorative finish



High Overhead Lighting





Railing





Bulb-out General Plan

At Pile Bent 3 and Pile Bent 6:

- Avoids the Navigational Opening
- Symmetric Bulb-outs along the Bridge





Abutment Aesthetics



Abutment Treatments:

- Will provide an entrance way
- Allow for local art installations
- Allow the towns to add character
- Provide a location for historic plaques





How will your property be impacted?

Right of Way (ROW) discussion – 25% Design

- MassDOT responsible for acquiring all necessary rights in public land for design, construction, and implementation of a project.
- Affected property owners will be contacted by personnel from the ROW Bureau or consultants representing MassDOT.
 - Procedures must comply with state and federal regulations governing the acquisition process.
 - Property owners are protected under Massachusetts General Laws, primarily Chapter 79.
 - If project receives federal funds, property owners are further protected under Title III of the Real Property Act of 1970, as amended.
- Fee takings, permanent easements, and/or temporary construction easements may be required.







How will bicyclists and pedestrians be impacted?

Bicyclist and Pedestrian Impacts

- New Shared Use Path and Sidewalk will be constructed to provide safe pedestrian and bicycle areas along Route 28
 - -Connection between Municipal Parking Lot, Bus stops, and Bass River Park -Improves accessibility to amenities along Route 28
- New sidewalks along Old Main Street, North Main Street, and Station Avenue
- ADA compliant pedestrian ramps and crossings
- A sidewalk/bicycle path will be available throughout construction to reduce impact to pedestrians and bicyclists



Bicycle Movements Along Route 28





Pedestrian Movements Within the Project







What are the environmental, cultural resource, and comunity impacts?

Permits and Approvals

Underway

National Environmental Policy Act – Categorical Exclusion

United States Coast Guard – Section 9 Bridge Permit

Request for Preliminary Navigation Determination Anticipated Navigation Determination Approval January 2022 Bridge Permit Application

National Marine Fisheries Service – Essential Fish Habitat Assessment

Submerged Aquatic Vegetation Survey and Consultation

Future

US Army Corps of Engineers – Section 404 Wetland Permit

MA Department of Environmental Protection – Section 401 Water Quality Certification

National Marine Fisheries Service; US Fish & Wildlife Service – Section 7 Endangered Species Act Informal Consultation

MA Historical Commission - Section 106/Chapter 9; State, Local & Tribal Consultation



DATA SOURCE: MasaGIS

Non-Profit Open Space







Construction Stage 1 – Phase 1A



Demolish north fascia of the existing bridge and construct the northern part of the proposed bridge for temporary sidewalk.

The intersection construction phases will match the bridge construction phasing



Construction Stage 1 – Phase 1B



Demolish south fascia of the bridge and construct the southern part of the proposed bridge.



Construction Stage 2



Demolish middle of the existing bridge and construct the middle part of the proposed bridge.

Shift the two lanes of traffic to the proposed bridge.



Construction Stage 3

• Construct the wearing surface and shift the traffic to the final traffic lanes.



CONSTRUCTION STAGE 3 - SURFACE CONSTRUCTION

SCALE: $\frac{1}{4}$ = 1'-0"

Impacts on Road Users

- Two travel lanes will be maintained throughout construction
- Lane shifts and shoulder closures are expected
- Alternating one-way traffic during off-peak hours Utilizing police details for traffic control
- Construction will take place in winter to reduce impact to summer high season
- Access to private properties and businesses to be maintained throughout construction
- Pedestrian and Bicyclists will be accommodated through the work zones

VIDEO RENDERING

Our next steps

75% Design Submission Early Summer 2022

File Environmental Permits Summer 2022

Final Design Submissions Summer 2023

Advertise for Construction Fall 2023

Begin Construction Winter 2023

How will we keep you informed?

How we will keep you informed

- **Project website Scan QR Code**
 - Updated with the most recent project developments
 - <u>https://www.mass.gov/route-28-over-bass-river-bridge-replacement-and-intersection-project</u>
 - Subscribe via the project website to receive project updates
- **Project email**
 - Send your questions and feedback directly to the project team
 - Rte28OverBassRiver@dot.state.ma.us
- **Mail:** Carrie E. Lavallee, P.E., Acting Chief Engineer MassDOT Highway Division 10 Park Plaza, Suite 6340 Boston, MA 02116 Attention: Project Management, Project File No. 612574

Questions and discussion

Questions and answers

"Raise your hand" to be unmuted for verbal questions

Submit your questions and comments using the Q&A button

Please state your name before your question

Please share only 1 question or comment at a time, limited to 2 minutes, to allow others to participate

To ask a question via phone, dial *9 and the moderator will call out the last 4digits of your phone number and unmute your audio when it is your turn.

Please take a few minutes to complete the survey after the meeting to let us know how your experience was with this virtual meeting.

All questions and comments are subject to disclosure for public records. Please use these functions for project related business only.

Thank You

D-07-004 = Y-01-003

Route 28 over Bass River and Intersection Improvements at Main Street (Route 28) and North Main Street/Old Main Street

Virtual Public Meeting | January 13, 2022 | 6:30 PM

Project File No. 612574

Appendix – Traffic Terms

*Actuated Signals: A traffic signal that uses some type of detection system to aid in effectively processing traffic. Layman's term = Smart Lights.

*Adaptive Signals: Adjusts the timing of red, yellow and green lights to accommodate changing traffic patterns and ease traffic congestion.

*Capacity: The theoretical or calculated value of how many vehicles can accommodate a specific area during a specified time period, usually measured as "vehicles per lane per hour" or "total vehicles entering an intersection per hour."

*Concurrent Pedestrian Phasing: The crosswalk parallel to the current thru movement gets the walk.

*Crash Cluster: A grouping of crashes that are combined into clusters based on fixed distance between crashes.

*Crash Rate: Represents number of crashes per million entering vehicles.

***Cycle:** The total time to complete one sequence of signalization for all movements at an intersection. In an actuated controller unit, the cycle is a complete sequence of all signal indications.

*Cycle Failure: When a traffic signal is unable to process the amount of vehicles queued at the intersection. Vehicles waiting at the back of the line will have to sit through multiple cycles before being able to proceed through the intersection.

*EPDO: Equivalent Property Damage Only (EPDO) value. A severity weighted number representing crashes in a given location over a certain period of time.

*Exclusive Pedestrian Phase: When actuated by a pedestrian, or in some urban cases always part of the signal cycle, all possible pedestrian movements are allowed. All vehicle movements get a red signal.

***HSIP:** Highway Safety Improvement Program (HSIP). Funding source for high crash locations. HSIP qualifications are top 5% crash locations in each Regional Planning Association (RPA).

Appendix – Traffic Terms cont.

*Level of Service: Level of Service (LOS). A qualitative measure used to relate the quality of motor vehicle traffic service. LOS is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measure like vehicle speed, density, congestion, etc.

*Lead / Lag: Defines the left turn phasing in a signal. Lead/Lead = both direction left turn start before the thru movement. Lead/Lag = one direction gets the left before the thru while the other direction gets the left with the thru after the opposing directions traffic stops. Lag/Lag = both directions get the left after the thru movements go.

*PDO: Property Damage Only (PDO). A crash that results only in property damage with no injuries.

*Phasing: The right-of-way, yellow change, and red clearance intervals in a cycle that are assigned to an independent traffic movement or combination of traffic movements.

*Protected / Permissive Left: Protected Left turn phasing is when a signal only allows lefts to occur when no conflicts exist (e.g. when the opposite direction has a red or when opposite thru traffic has a red and opposing left turns are allowed to go as well.) Protected permissive left is when a signal gives a protected phase and then permits lefts when the opposite direction has a green. Left turning vehicles must yield to the thru traffic. Permissive only is when left turning vehicles must always yield to thru opposing traffic.

*Queue: Line of vehicles waiting at a traffic light. Queue length represents the total distance occupied by the vehicles waiting in line.

*RRFB: Rectangular Rapid Flashing Beacon (RRFB). A type of enhanced pedestrian crossing device that employs traditional pedestrian crossing signs with flashing beacons, which should only flash when actuated by pedestrians, to alert drivers.

*Road User Cost: Additional costs borne by motorists as a result of work zone activity. The computation process is based on the assessment of mobility, safety, environmental, business, and local community impacts resulting from the work zone activities of a roadway project.

Appendix – Traffic Terms cont.

***Split Phasing:** A type of signal phasing scheme which separates vehicle conflicts by assigning the right-of-way sequentially to the two opposing approaches.

*Travel Time Delay: Calculated difference in time between the actual travel time through an area and what the travel time would be if there was no congestion.

*V/C (Volume / Capacity Ratio): A ratio of the number of vehicles compared to the capacity or an intersection or road segment. A V/C over "1" means the intersection cannot handle the amount of vehicles entering and will result in cycle failure.

*Yellow / Red Clearance: Amount of time given to the yellow timing and all red timing to ensure vehicles are adequately cleared from the intersection before conflicting movements can occur.

Appendix – Bridge Terms

*Abutment: The end support of the bridge. Helps support lateral pressure.

*Bridge Inspection: Bridge Inspections are done to assure the safety of the traveling public on bridges, achieve and maintain compliance with the National Bridge Inspection Standards (NBIS), and identifying deficiencies to determine maintenance activities on and/or rehabilitation/replacement of structures. Typically, routine bridge inspections are performed every two years.

***Deck:** Driving surface portion of the bridge, usually comprised of concrete.

*Deep Foundations: A type of foundation that transfers the load of the bridge deep within the earth, sometimes to bedrock.

*Drilled Shaft: Deep foundations that are created by drilling down and filling in with reinforced concrete. *Driven Piles: A column (either reinforced concrete or steel) that is driven into the ground meant to help support the weight of the bridge. Driven methods can be hammering or vibratory.

*Girder: A large iron or steel beam or compound structure used for building bridges and the framework of large buildings.

*Load Rating: Determines the safe load carrying capacity of newly built and existing bridges. Load ratings are performed to evaluate and determine substandard bridges requiring posting, and to provide a means of determining the bridges requiring rehabilitation or replacement. Additionally, FHWA requires reporting of bridge load ratings on an annual basis.

*Micropiles / Minipiles: These are piles less than 12in in diameter and are drilled and grouted in place.

***Piers:** A solid support designed to sustain vertical pressure. Placed along the span of the bridge to support it.

Appendix – Bridge Terms cont.

*Span: A length of bridge between piers or abutments.

*Superstructure: Supports immediately beneath the driving surface, usually comprising of steel or concrete beams.

*Substructure: Foundation and supporting columns and piers.

*Structurally Deficient: A structurally deficient bridge is one for which the deck, the superstructure, or the substructure are rated in condition 4 or less on a scale of 0-9 (0 being the lowest rating, and 9 being the best rating). Structurally deficiency does not necessarily imply that a bridge is unsafe. It does, however, mean that a structure has deteriorated to the point of needing repairs to prevent vehicular weight restrictions on it.

