Cape Cod Bridges Program Industry Day

June 25, 2024

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Program Purpose and Goals

Program Purpose

The purpose of the Cape Cod Bridges Program is to improve cross-canal mobility and accessibility between Cape Cod and mainland Massachusetts for all road users and to address the increasing maintenance needs and functional obsolescence of the aging Cape Cod Canal highway bridges.

Program Goals

- Maintain and Improve the Socioeconomic Fabric of the Surrounding Community
- Preserve and Protect Natural Resources
- Enhance the Resiliency and Sustainability of the Built Environment
- Maximize Constructability
- Facilitate Emergency response
- Cost Effectiveness

Program Goals

- Remove traffic from existing bridges as soon as practicable.
- Maintain two lanes of traffic across the canal in each direction, at all times.
- Maintain connections between the mainline roadways* and the local roadway network.
- Minimize impacts to navigation.
- Minimize impacts to businesses.

*Mainline roadways are defined as: Sagamore Bridge – Route 3 and Route 6, Bourne Bridge – Route 25 and Route 28

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Delivery Partners and Governmental Stakeholders

Delivery Partners and Governmental Stakeholders

MassDOT

- Lead project delivery agency to complete the feasibility study and alternatives analysis, preliminary design and environmental permitting process, and construct replacement Bridges
- Own, operate, and maintain the completed Bridges and Approaches

USACE

- Own, operate, and maintain the existing Bridges until the new Bridges are in place
- Share information, provide technical support, and facilitate the transfer of ownership of the new bridges to MassDOT

FHWA

- Lead federal Agency for the NEPA Process
- Provide Oversight for the Delivery of the Program

Delivery Partners and Governmental Stakeholders

Advisory Group

- State and Federal Elected Officials
- Stakeholders – Including the Town of Bourne, Planning Commissions, Emergency Services, Economic Development Representatives, and Chambers of Commerce

Program Scope and Status

Program Scope – Background

- The Bourne and Sagamore Bridges provide the only roadway access for the more than 35 million vehicles that cross Cape Cod Canal each year.
- There are more than 250,000 year-round residents on Cape Cod and Islands.
- The Bourne and Sagamore Bridges, were concurrently built between 1933 and 1935.

Program Scope – Background

- The Bridges are close to 90 years old, functionally obsolete, and no longer meet the needs of the traveling public
- Currently, the roadways of both Bridges consist of two undivided through lanes in each direction with a sidewalk on one side.
- Traffic delays are prevalent during the summer months with traffic backing up along major highway corridors and at several intersection approaches.
- High crash rates can be attributed directly to the existing cross sections of the Bridges and congestion.

Program Scope – Canal Crossings

The National Environmental Policy Act (NEPA) scoping process is complete.

Decisions regarding the following design elements are complete:

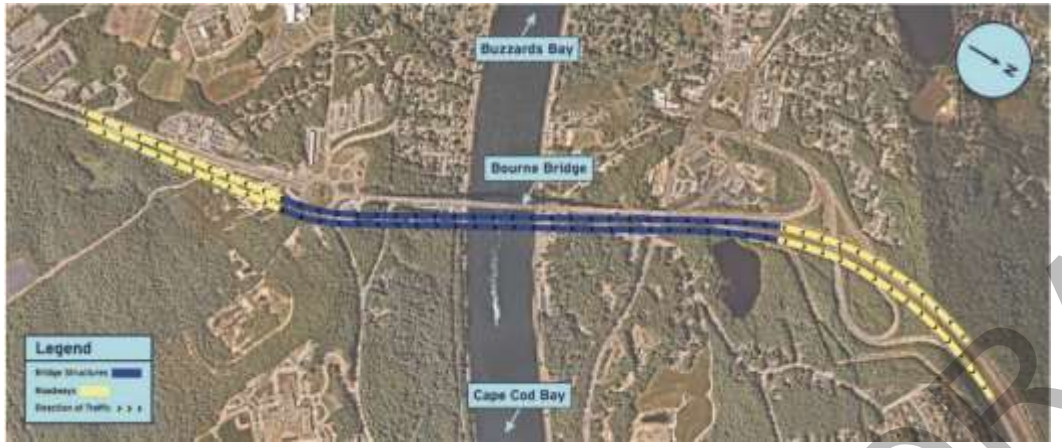
- Location of mainline roadways
- Bridge Type, Configuration, and Cross-Section
- Mainline profile grades

The analysis that supports these decisions has been presented to the public.

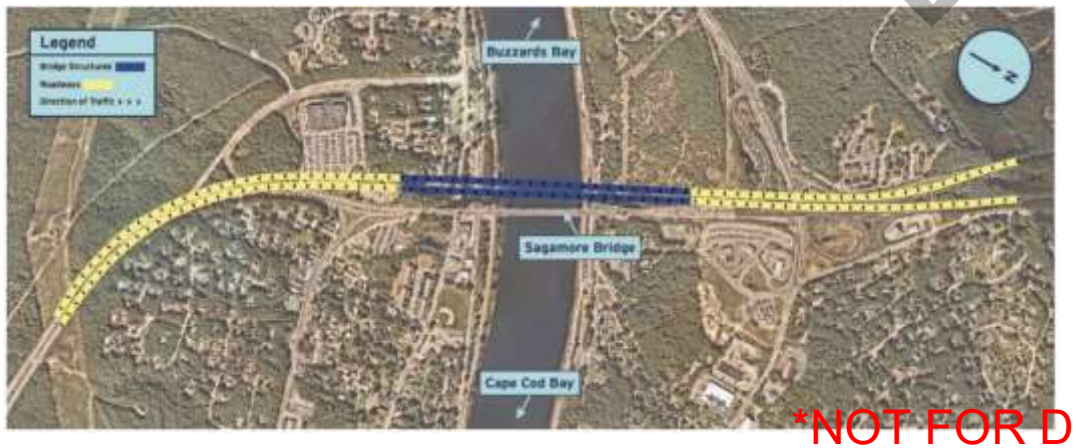
Program Scope – Location of Mainline Roadways

Bourne – Route 25 and Route 28, Sagamore – Route 3 and Route 6

Bourne Crossing



Sagamore Crossing



- The proposed Bourne Bridge will be located to the East of the existing bridge.
- The proposed Sagamore Bridge will be located to the West of the existing bridge.
- These locations minimize the impacts to private and commercial properties and result in fewer impacts to the public during construction compared to other mainline locations.

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Program Scope – Canal Crossing Bridge Type

- Twin Tied Arch Bridges supporting an approximate 720-foot mainline span.
- Bridge piers at the waterline adjacent to the service road (shoreline piers), into the tidal rip rap slope.
- Each crossing (Bourne and Sagamore) would have two separate decks (twin structures).

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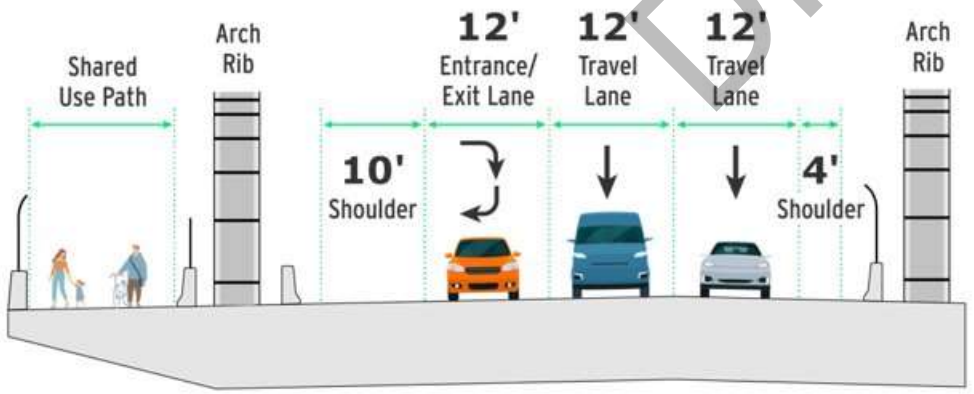
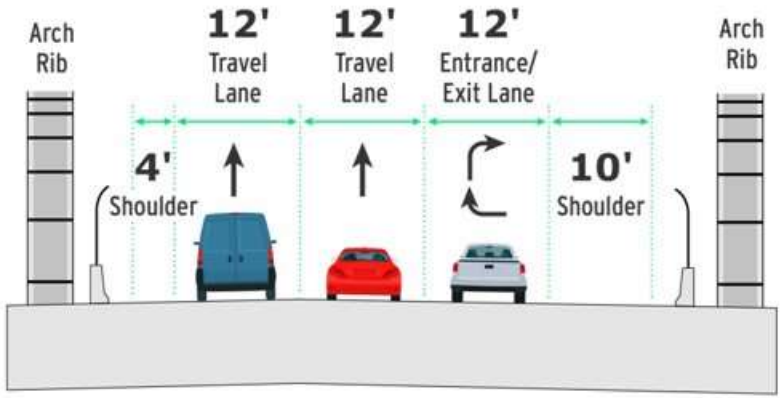
Program Scope – Bridge Configuration and Cross-Section

The lane configuration described below is consistent with state and federal design guidelines.
The lane configuration is applicable for both directions of travel at each crossing (Bourne and Sagamore)

- Through travel lanes – two through lanes – 12 feet wide each
- Entrance/Exit lane – 12 feet wide
- Left side shoulder – 4 feet wide
- Right side shoulder – 10 feet wide





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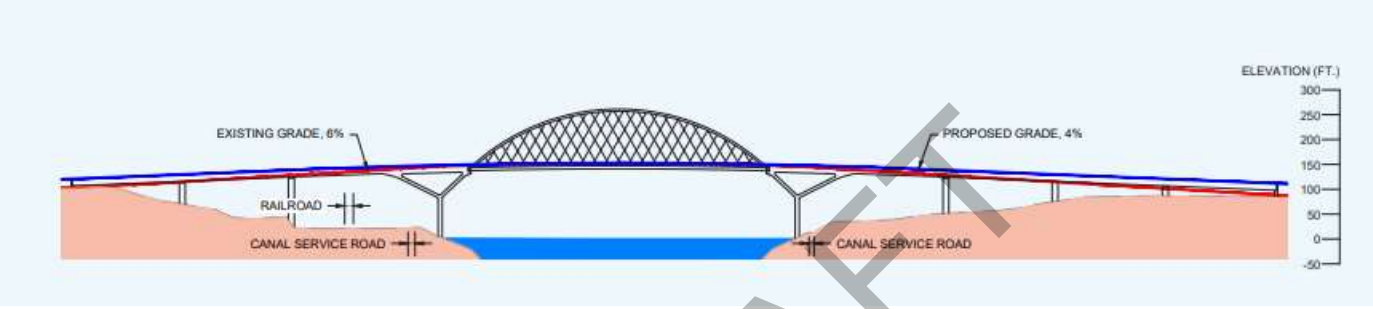
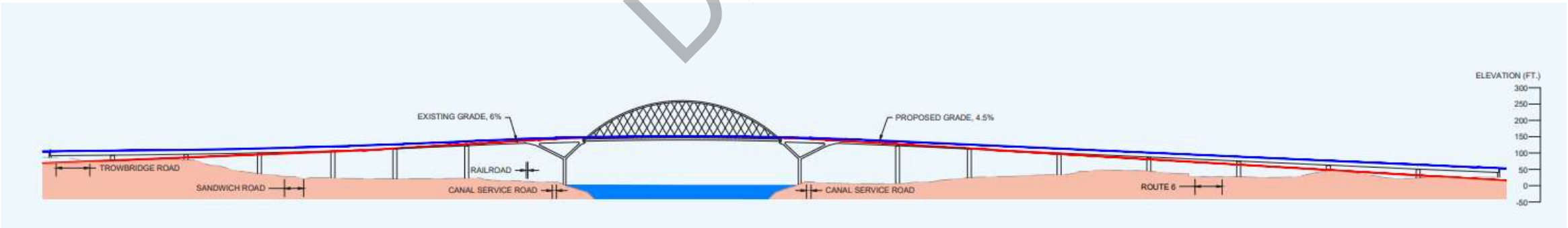
Program Scope – Mainline Profile Grades

Bourne – Route 25 and Route 28, Sagamore – Route 3 and Route 6



Sagamore Crossing
Maximum Profile Grade 4.0%



Bourne Crossing
Maximum Profile Grade 4.5%

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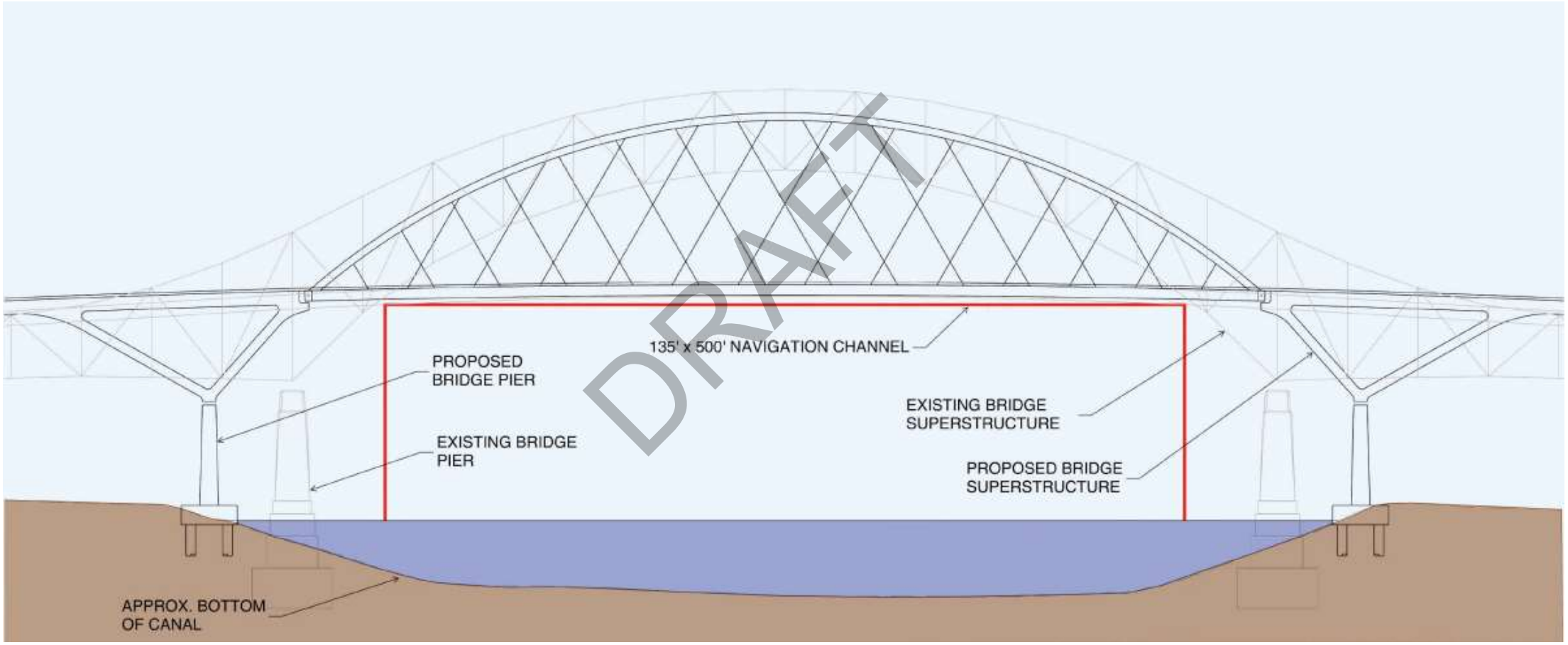
Program Scope – Canal Crossing Navigational Clearances



Maintain a minimum of 500 feet of horizontal channel width and 135-foot vertical navigational clearance

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Program Scope – Interchange Evaluations

- The range of interchange options has been screened down to 10 (2 Sagamore north side, 3 Sagamore south side, 3 Bourne north side, 2 Bourne south side).
- A single pairing of two interchange approach options at each canal crossing will be retained for detailed study in the Draft Environmental Impact Statement (DEIS)/Draft Environmental Impact Report (DEIR).
- The evaluation of interchange options is ongoing and therefore the interchanges included in this presentation are illustrative only.

Program Scope – Interchange Options

Sagamore North - **Illustrative**

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Program Scope – Interchange Options

Sagamore South - **Illustrative**

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Program Scope – Interchange Options

Bourne North - **Illustrative**

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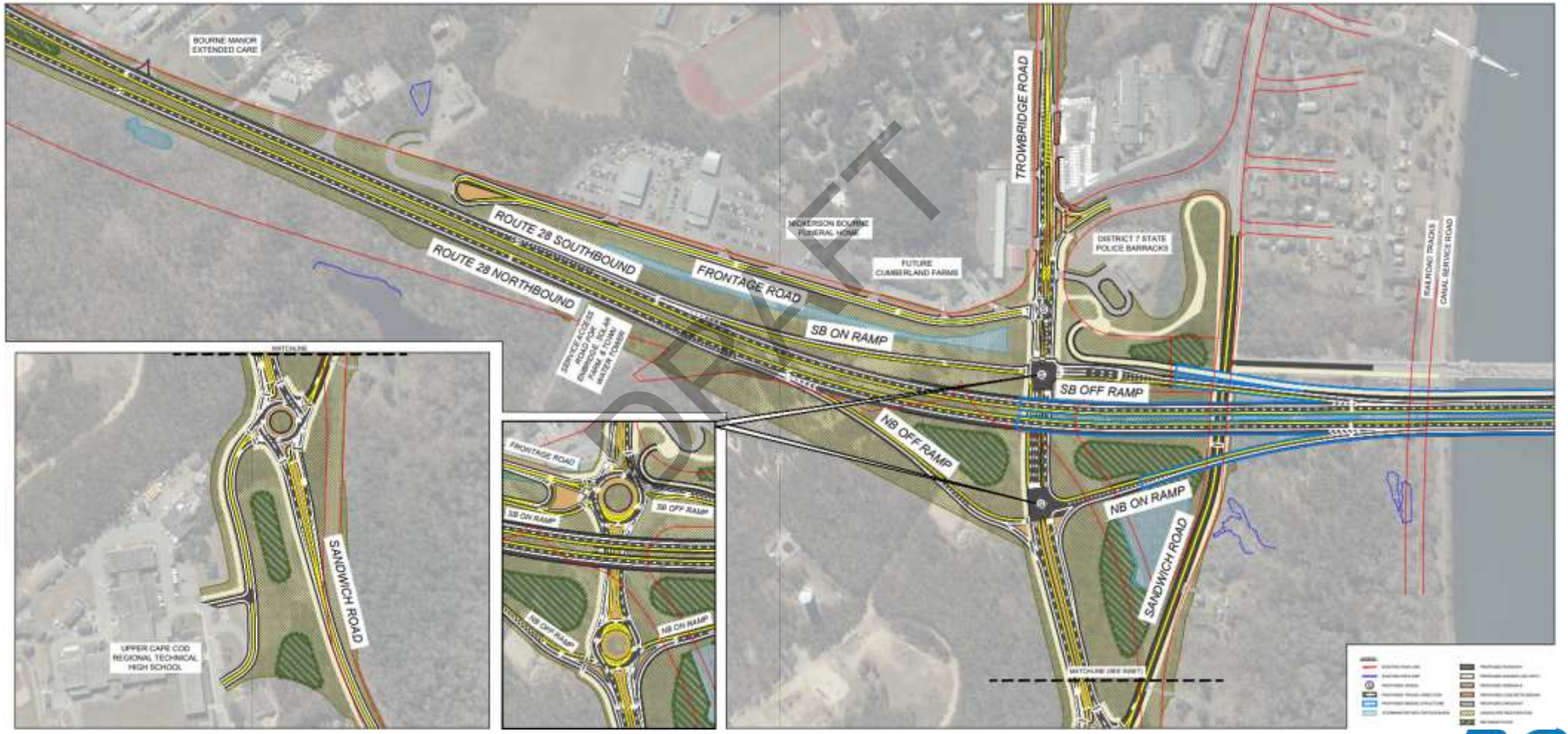
Program Scope – Interchange Options

Bourne South - **Illustrative**



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Program Status – Subsurface Investigations

2021-2022: First Round

- Pilot Borings Program (soil/rock sampling and coring)
- Geophysical surveys (both on ground and in boreholes)
- Near the Cape Cod Canal and proposed Sagamore Bridge and Bourne Bridge pier locations.
- Produced a "Preliminary Geotechnical Data Report (GDR)" which also includes specific laboratory test results.

2023-2024: Second Round

- Pilot Borings Program
- Project-wide explorations at bridges, walls, stormwater locations.
- Produced a "Phase II GDR" which includes laboratory test results.

2025: Sketch Plan Phase

- Exploration Program for bridge, Shared Use Path, and highway structures, along the approved alignment, (both Sagamore Bridge and Bourne Bridge locations).

2026: Final Base Technical Concept Phase

- Exploration Program (all remaining borings required by MassDOT Bridge Manual not obtained earlier).

Project Status – Project Development Phase

Sagamore Bridge and Bourne Bridge (One NEPA/MEPA Process)

Feb. 2024
- NEPA Notice of Intent Published in Federal Register

May 2025
- Draft EIS Published in Federal Register

Feb. 2026
- Final EIS/ROD is Issued

May 2026
- State and Federal Permits Complete

Aug. 2026
- Preliminary Design Complete

Jan. 2027
- Final Request for Proposals Issued

Program Status – Public Involvement

- Six Rounds of Public Meetings
- Average Attendance: 760
- Topics Covered Included
  - Purpose and Need
  - Canal Crossing Locations
  - Canal Bridge Type
  - Canal Bridge Cross-Section Configuration
  - Interchange Options
- Two Open Houses
- Three Advisory Group Meetings
- Strong Public Support for the Program

Construction Cost Estimate

Construction Cost Estimate

Cost and Schedule Risk Assessment

- Cost and Schedule Risk Assessment (CSRA) Workshop
- May 22, 2023, to May 25, 2023
- Led by FHWA CSRA Cadre Team
- Participants
  - FHWA Division Office
  - MassDOT
  - USACE
  - Project Team and Consultants
  - Subject Matter Experts
  - Over 80 Participants

Construction Cost Estimate

Cost and Schedule Risk Assessment

Estimated Program Costs based on P70 Amount

Sagamore Bridge Project

Design-Build Contract **$1.46 Billion**
(Bridge $890M; Interchanges $570M)
7-Year Construction Duration

Bourne Bridge Project

Design–Build Contract **$1.95 Billion**
(Bridge $1.42B; Interchanges $530M)
7-Year Construction Duration

Environmental and Permitting Process

Environmental and Permitting Process

MEPA/NEPA

- The Program will utilize a combined NEPA/MEPA process.
- An Environmental Notification Form (ENF) was filed with the MEPA Office in May 2023.
- The NEPA Notice of Intent (NOI) (including NOI Supplemental Document, and Alternatives Analysis Report) was published in the Federal Register in February of 2024 (this milestone marks the start of the NEPA process).
- The EIS scoping process concluded on May 31, 2024.

Environmental and Permitting Process

MEPA/NEPA

- As a designated "major project" under 23 U.S.C. 139(a)(7), the Program will be reviewed under the One Federal Decision (OFD) framework enacted through Section 11301 of the Infrastructure, Investments, and Jobs Act (IIJA).
- The Act specifies a two-year period for an EIS as measured from the publication of a Notice of Intent to the issuance of the Record of Decision.
- The Cape Cod Bridges Program is included on the Permitting Dashboard – Federal Infrastructure Projects.
- The Permitting Dashboard indicates NEPA completion in February of 2026.

Environmental and Permitting Process

Permits and Approvals

- Title 23 U.S.C. 139(a)(7) specifies that all required Federal authorizations are to be completed within 90 days after issuance of the Record of Decision.
- **MassDOT intends to secure all state and federal environmental permits and approvals necessary to support the construction of the BTC prior to issuing the Final RFP.**
- To facilitate DB contracting, some permits/approvals will be issued for the overall Program and others will be issued per project.
- Permit conditions will likely require contractor submittals and ongoing coordination with regulating agencies.
- Construction period permits will be required; e.g., NPDES CGP.

Environmental and Permitting Process

Permits and Approvals

Federal Agency	Review
US Army Corps of Engineers	Section 404 of the Clean Water Act (33 USC 1344); Section 10 of the Rivers and Harbors Act (33 USC 403); Section 408 approval under Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408)
US Coast Guard	Bridge Permits under Section 9 of the Rivers and Harbors Act of 1899
National Marine Fisheries Service (NMFS)	Section 7 of the Endangered Species Act (16 USC 1536) and the Marine Mammal Protection Act of 1972 (16 USC 1371)
U.S. Fish and Wildlife Service (USFWS)	Section 7 of the Endangered Species Act (16 USC 1536), the Migratory Bird Treaty Act of 1918 (16 USC 703), the Bald and Golden Eagle Protection Act (16 USC 668), and the Fish and Wildlife Coordination Act (16 US. 661)
NMFS Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801- 1891d)
Federal Highway Administration	Section 4(f) of the U.S. Department of Transportation Act (49 USC 303(c); Section 106 of the National Historic Preservation Act (54 USC 306108)
United States Environmental Protection Agency (USEPA)	National Pollutant Discharge Elimination System (NPDES) – Construction General Permit for discharge of stormwater from construction sites that disturb one acre or more of land under Section 402 of the Clean Water Act (33 USC 1342);
Federal Aviation Administration (FAA)	Air Commerce and Safety Regulations (29 USC 44718)

Environmental and Permitting Process

Permits and Approvals

State Agency	Review
Massachusetts Environmental Policy Act (MEPA) Office	Secretary Certification under the Massachusetts Environmental Policy Act (MEPA), (301 Code of Massachusetts Regulations [CMR] 11.00)
Bourne Conservation Commission	Order of Conditions (OOC) under the Massachusetts Wetlands Protection Act (310 CMR 10.00)
Massachusetts Department of Environmental Protection (MassDEP)	401 Water Quality Certification (WQC) under 314 CMR 9.00; Chapter 91 Licenses under the Massachusetts Public Waterfront Act (310 CMR 9.00)
Massachusetts Office of Coastal Zone Management (MA CZM)	Federal Consistency Review under the Coastal Zone Management Act (321 CMR 20.00)
Massachusetts Historical Commission (MHC)	State Archaeologist Permit pursuant to 950 CMR 70.00
Massachusetts Division of Fisheries and Wildlife (MA DFW)	Conservation and Management Permit (CMP) under the Massachusetts Endangered Species Act (MESA) (321 CMR 10.00).

ROW Status

Right of Way Status

The Program requires the acquisition and relocation of a number of residential and commercial properties.

Permanent and temporary easements will also be required.

It is MassDOT's intent to:

- Seek approval to acquire property in advance of NEPA completion (Early Acquisitions)
- Seek approval for Early Acquisitions for the Sagamore Bridge Project once the finance plan for the Sagamore Bridge Project is complete
- **Secure all property rights necessary to construct the BTC prior to the issuance of the Design-Build Notice to Proceed.**

Major Utility Relocations

Major Utility Relocations

- Gas lines are located on both the existing Bourne Bridge and existing Sagamore Bridge.
- These gas lines will be replaced with a new gas line under the canal, at a location away from the proposed bridges.
- Design, permitting, and construction of the new gas lines is proceeding as a separate, independent action undertaken by the owners of the gas lines.
- This work is underway.
- **The goal is to have this gas relocation work completed so as not to interfere with the bridge construction.**

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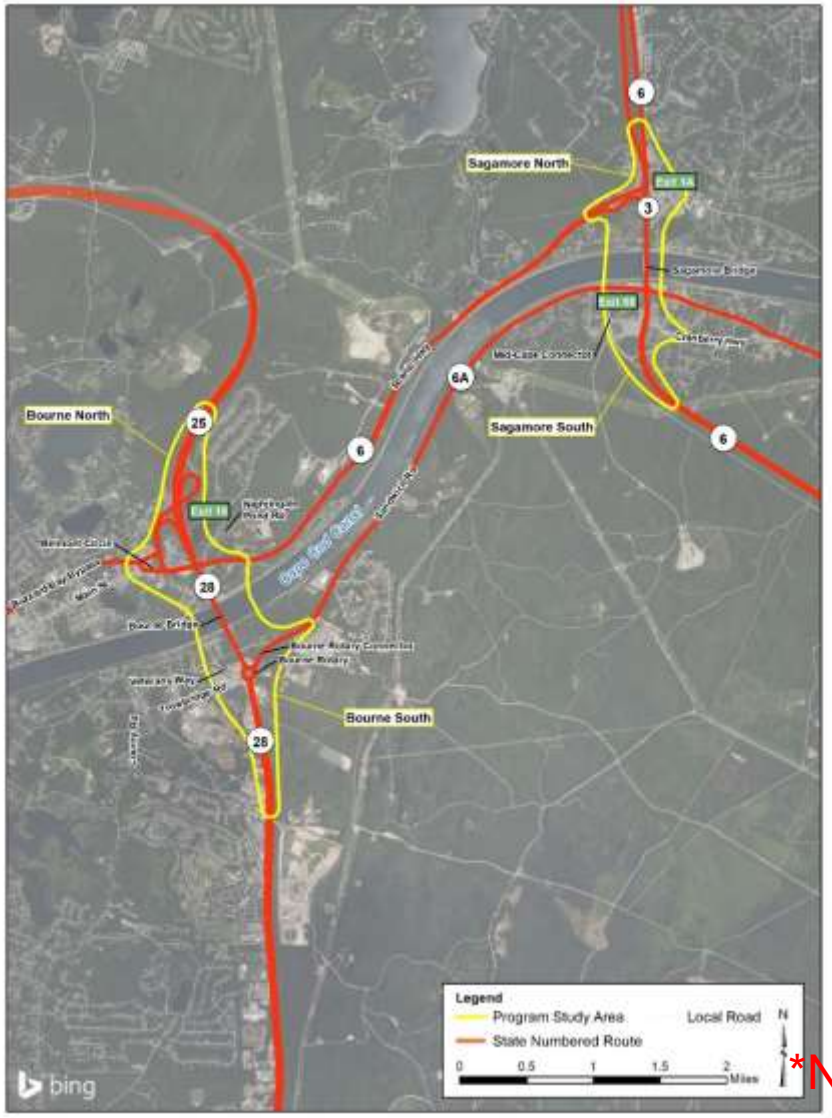
Initial Packaging and Procurement Plan

Initial Packaging and Procurement Plan



- The Cape Cod Bridges Program is currently envisioned to be implemented under two Design-Build procurements.
- One for the Sagamore Bridge Project and one for the Bourne Bridge Project.
- Includes the Canal Crossings and the interchanges on either side of the canal.
- A Best Value Design-Build (BVDB) Procurement process would be used for the Projects (as authorized under M.G.L. c. 149A, § 14 et seq).

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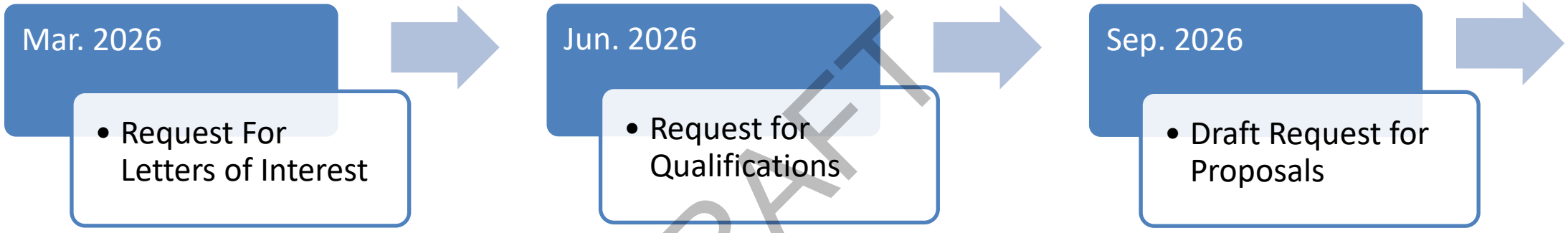
Initial Packaging and Procurement Plan

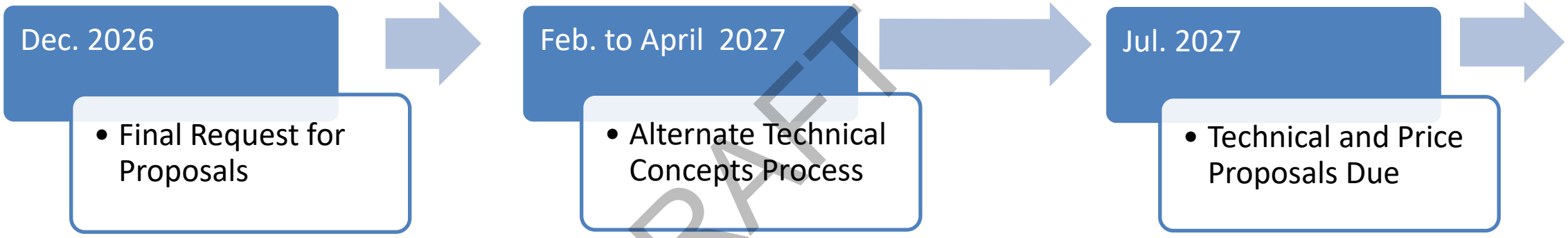
Sagamore Bridge Project



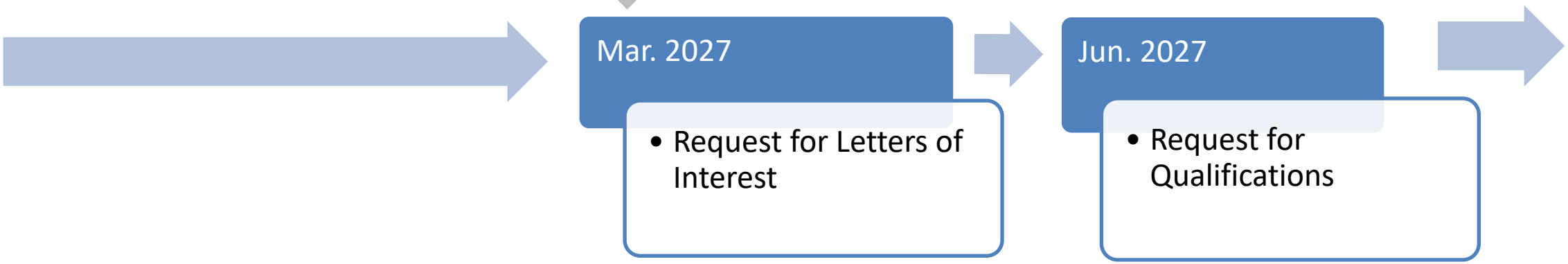
Bourne Bridge Project

Initial Packaging and Procurement Plan

Sagamore Bridge Project



Bourne Bridge Project



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Initial Packaging and Procurement Plan

Sagamore Bridge Project

Sep. 2027
- Oral Presentations

Nov. 2027
- Public Price Opening

Jan. 2028
- Notice to Proceed

Bourne Bridge Project

Sep. 2027
- Draft Request for Proposals

Dec. 2027
- Final Request for Proposals

Feb. to April 2028
- Alternate Technical Concepts Process

Initial Packaging and Procurement Plan

Sagamore Bridge Project

Ongoing

- Design Build Phase

Bourne Bridge Project

Jul. 2028

- Technical and Price Proposals Due

Sep. 2028

- Oral Presentations

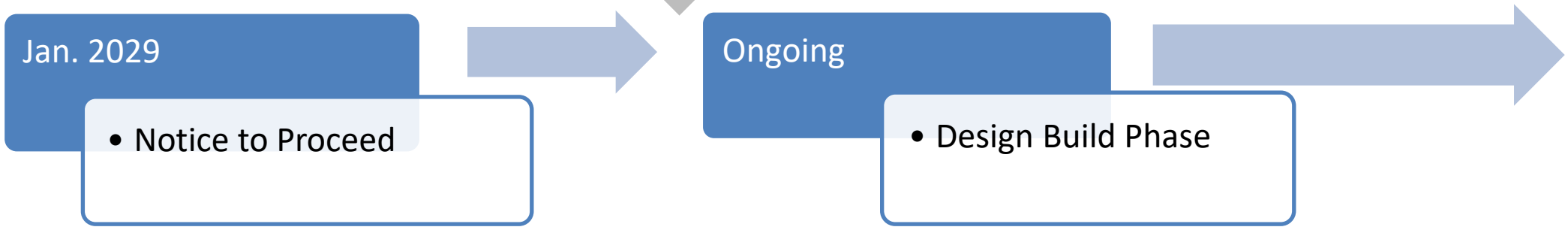
Nov. 2028

- Public Price Opening

Initial Packaging and Procurement Plan

Sagamore Bridge Project

Bourne Bridge Project



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Initial Packaging and Procurement Plan

- Various sources of federal funding present the possibility of a USACE/Eastern Federal Lands (EFL) procurement.
- Possible EFL procurements may include:
  - Construction of Sagamore Approach Interchanges – **Approx. $450M**
  - Construction of Sagamore Substructure Elements – **Approx. $290M**
  - Construction of NB and SB Sagamore Canal Crossing – **Approx. $890M**
  - The Entire Program – **Approx. $3.4B**
- USACE/EFL prequalification would be required

Thank You

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