



Clothespin Bridge – Final Design Kickoff

Town of Webster



Town of
Webster New Hampshire
Inc 1860

June 19, 2019

Your Project Team



Greg Goodrich, PE
Project Manager



Julie Whitmore, PE
Lead Project Engineer



Peter J. Walker
Permitting Task Lead



Michael Chervincky, PE
Technical QC Engineer



Abbigail Morgan, EIT
Bridge Engineer



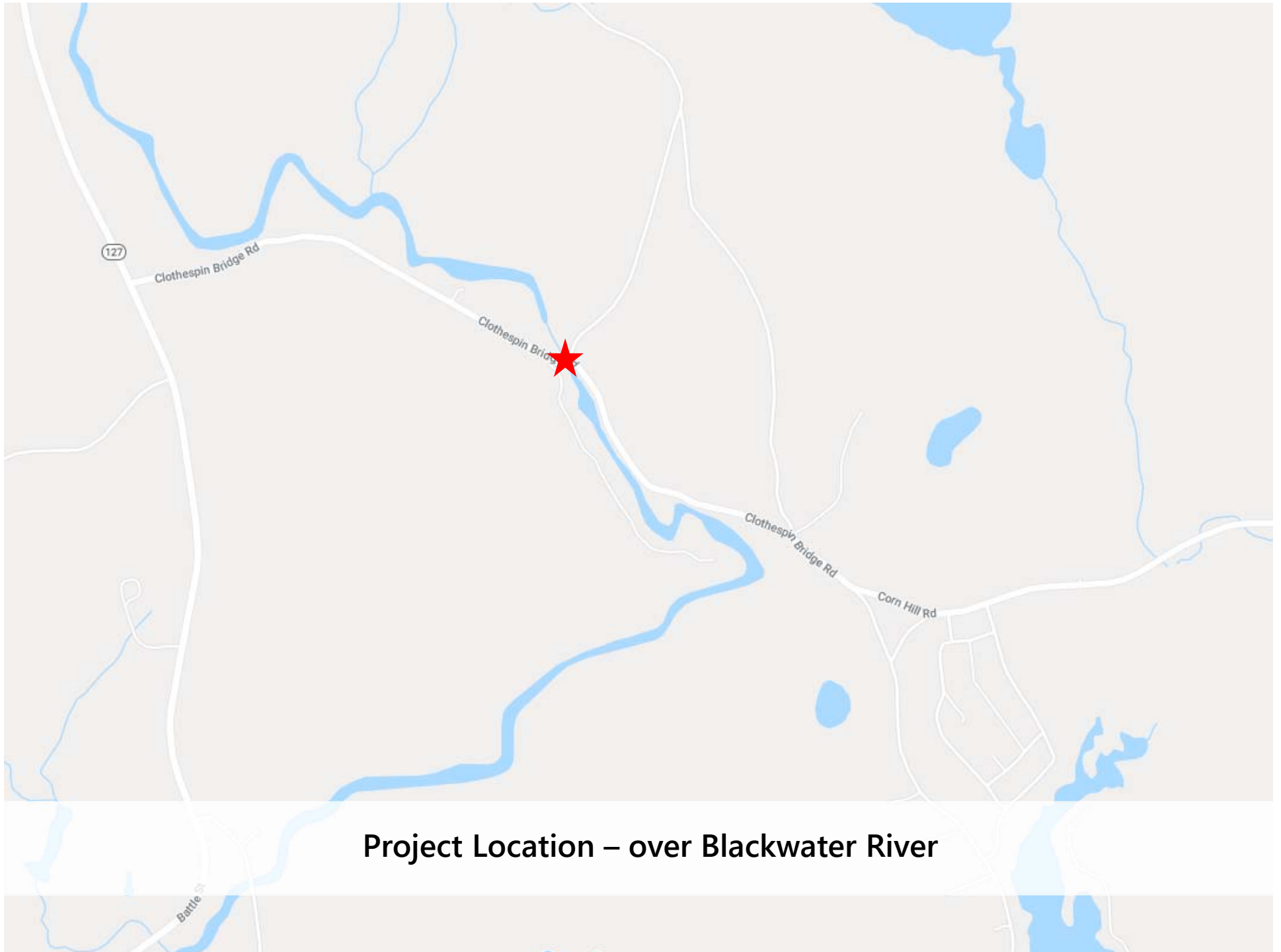
Kyle D'Urso, PE
Project Engineer

Your Project Team

- Others not present:
 - Keith Wentworth – VHB CAD Lead
 - Kris Wilkes – VHB Senior Environmental Scientist
 - Terracon – Geotechnical Subconsultant

Agenda Overview

- Project Location, Background, Purpose and Need
- State Aid Bridge (SAB) Process Overview
- Scope of Work and Project Highlights
- Project Risks
- Overall Schedule
- Next Steps
- Q&A/Wrap-up



Project Location – over Blackwater River



Clothespin Road Bridge – Site Aerial

Project Background – Clothespin Bridge

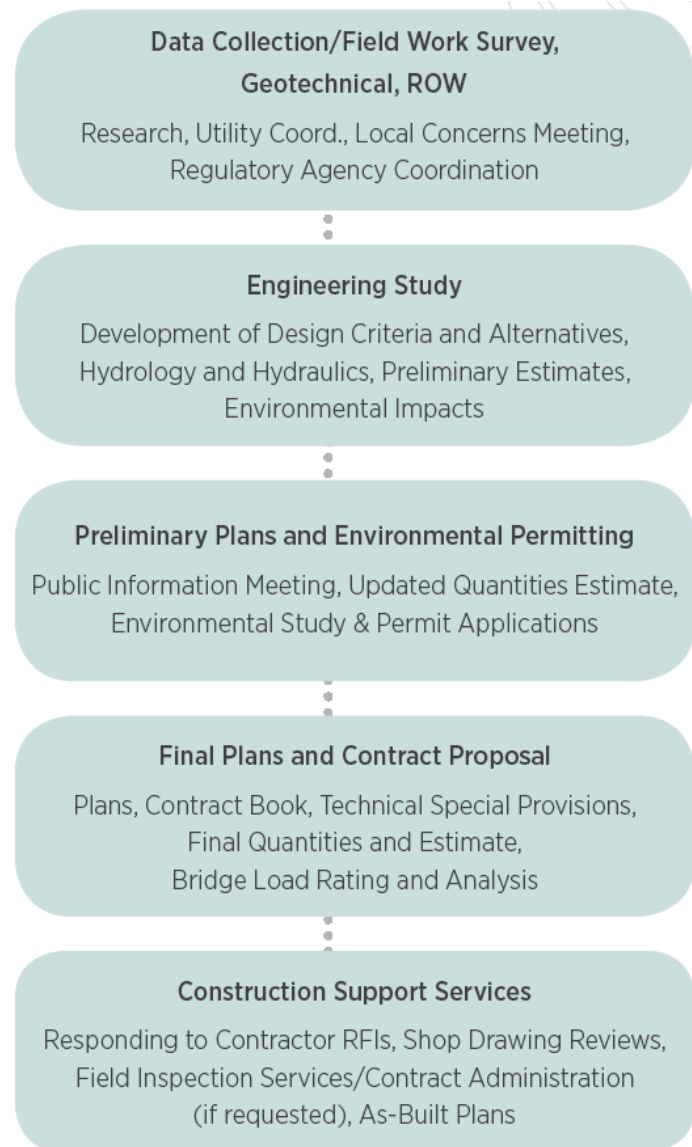
- Bridge No. 121/103
- Rehabilitated in 1939
- 65-foot long, single span, steel beam bridge with concrete deck
- Condition ratings:
 - Deck = 3 (serious)
 - Superstructure = 5 (fair)
 - Substructure = 4 (serious)
- Currently posted for load (E-2)



Project Background – Clothespin Bridge

- Two-lane Class V road:
 - Approach roadway width = 20-feet
 - Existing bridge width = 18-feet (one lane)
 - Aerial utilities along south side of road
- ADT = 550 VPD (2015)
- **Project Purpose:** To replace this structurally deficient red-list bridge

The State Aid Bridge Process



Scope of Work – Data Collection and Survey

- **Environmental Data Collection:** Wetland delineation, stream assessment, and waterfront buffer survey
- **Topographical Survey:**
 - Initial survey completed by Cardigan Mountain Land Survey, LLC
 - Verification and supplemental survey by VHB
 - Bridge limits
 - Roadway approaches, as-needed
 - Detour Road
 - Channel Survey (for Hydraulic Study)
 - Wetland flags
 - ROW monumentation

Scope of Work - Geotechnical

- Prior borings completed by M&W Soils Engineering, Inc.
 - *no Geotechnical Report completed*
- Terracon to provide:
 - 3 additional borings (1 at west abutment, 2 at east abutment)
 - **Preliminary Geotechnical Report** – *1st deliverable*
 - Initial foundation evaluation for Engineering Study
 - Grain sizes for scour analysis
 - **Final Geotechnical Report** – *2nd deliverable*
 - For use in final design of substructure
 - Prepared after approval of Engineering Study

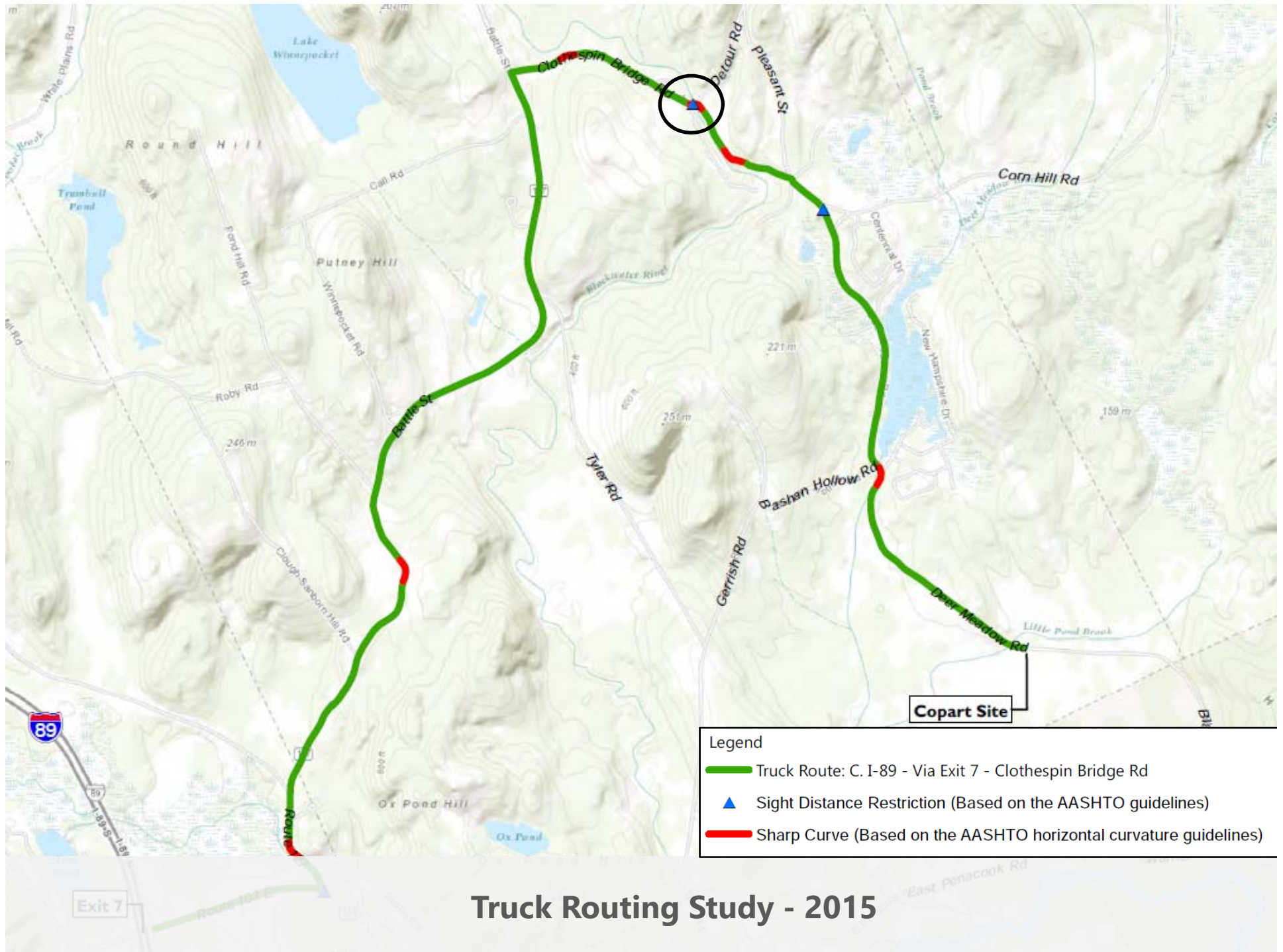
Scope of Work – Roadway Considerations

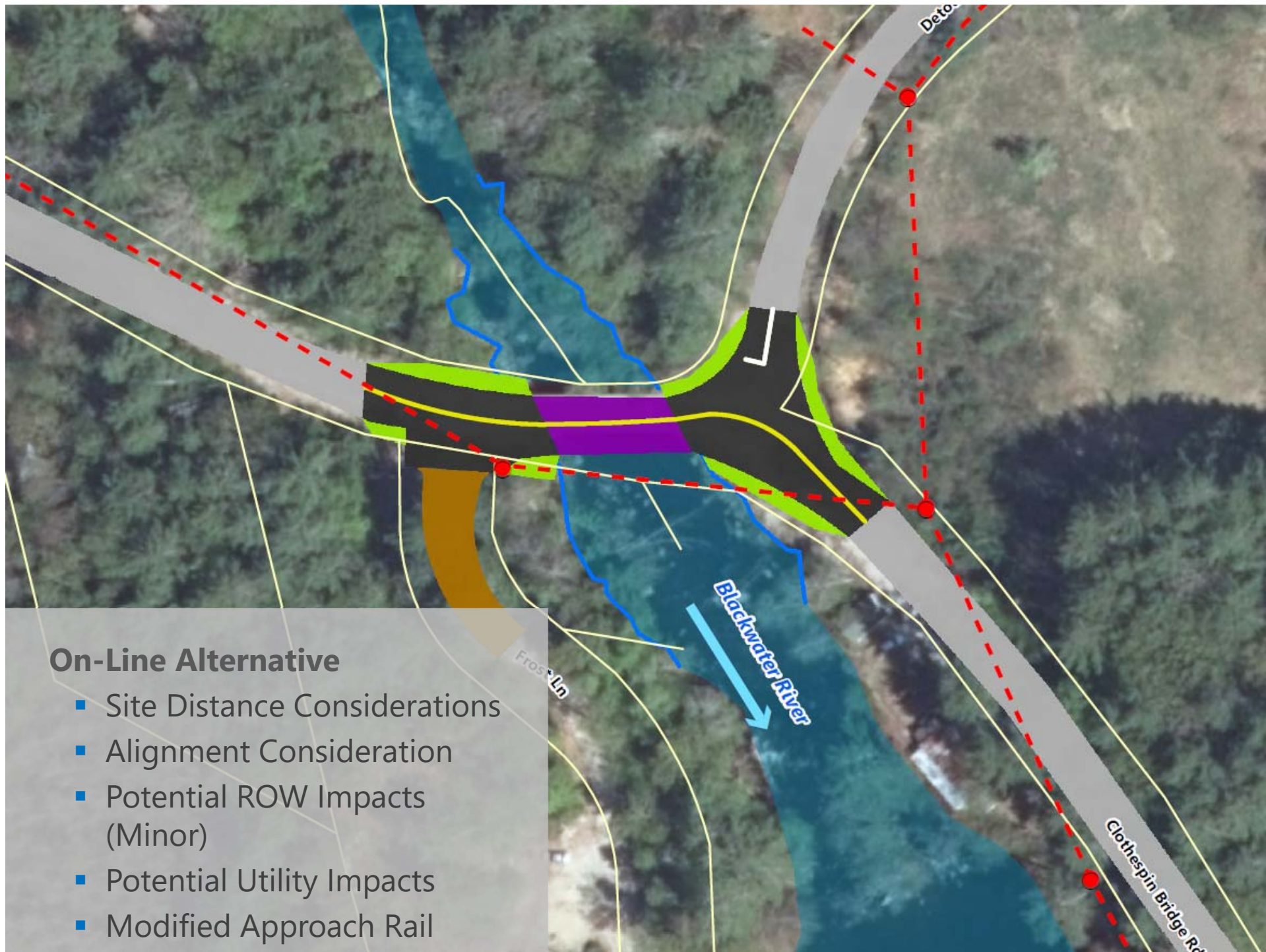
- **2015 Truck Routing Study:** highlighted **sight distance** and **horizontal curvature** deficiencies at the bridge
- Profile modifications anticipated to accommodate:
 - Structural depth of bridge
 - Required hydraulic opening
 - Permitting requirements
- Roadway Alignment Alternative Analysis
 - **On-alignment:** minimize overall impacts and bridge length
 - **Off-alignment:** improvements to sight distance and horizontal curvature

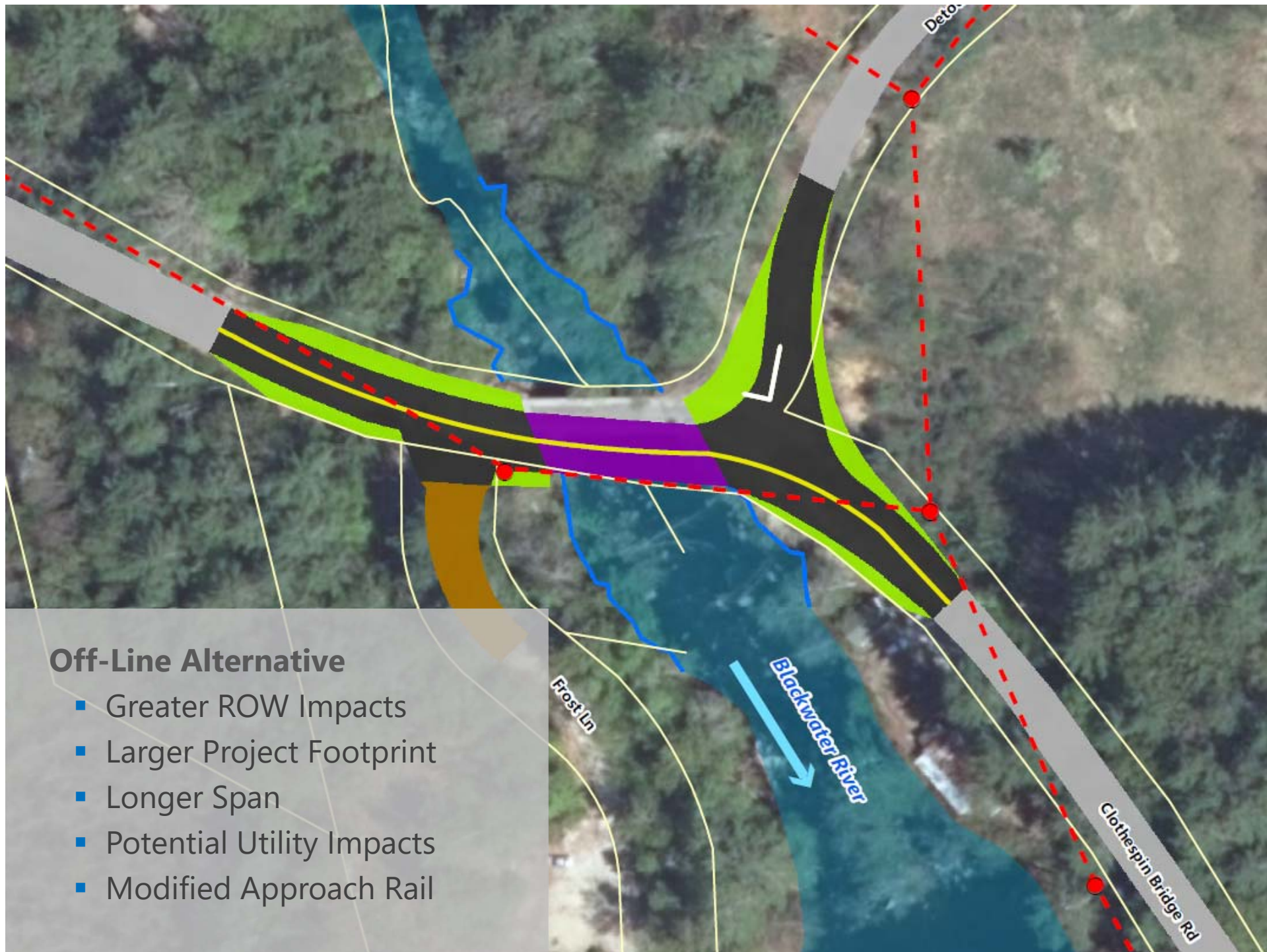
Scope of Work - Roadway Considerations

- Roadway width considerations:
 - Proposed width to match existing roadway approaches, transitioning to 24-foot bridge section
- Proposed pavement section (*to be confirmed*):
 - 4-inches of pavement, on
 - 6-inches of crushed gravel, on
 - 12-inches of gravel











Clothespin Bridge Road – Alignment, Looking East





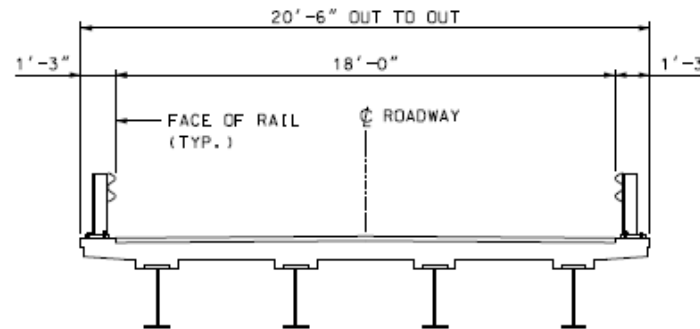
Off-Line Alternative Simulation

Scope of Work - Bridge Considerations

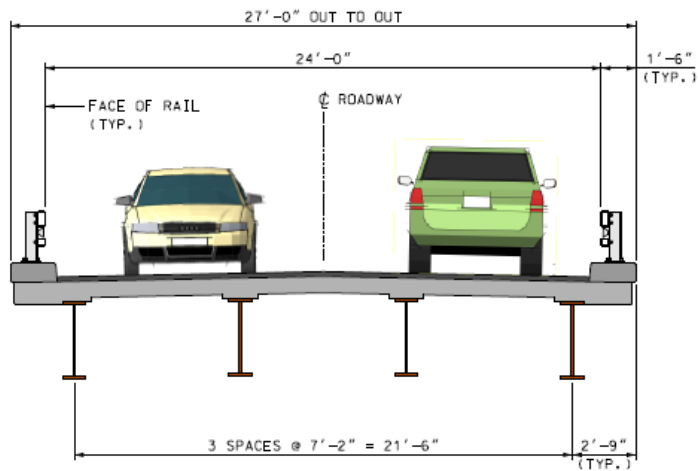
- Superstructure types:
 - Steel stringers
 - Precast Concrete Beams (depending on final span length):
 - Butted or spread box beams
 - NEXT Beams
 - Precast NEBT beams
- Substructure Types:
 - Spread footing on rock (west abut.)
 - Stub abutment on piles (east abut.)
 - Integral vs. conventional abutments



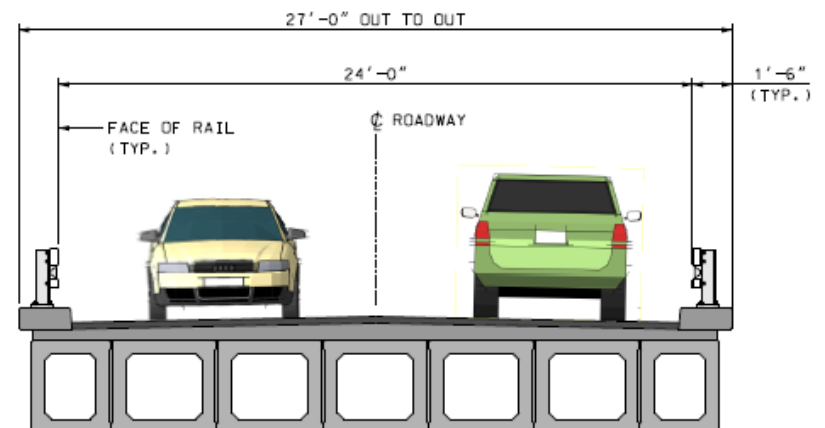
Scope of Work - Bridge Considerations



Existing Bridge Section



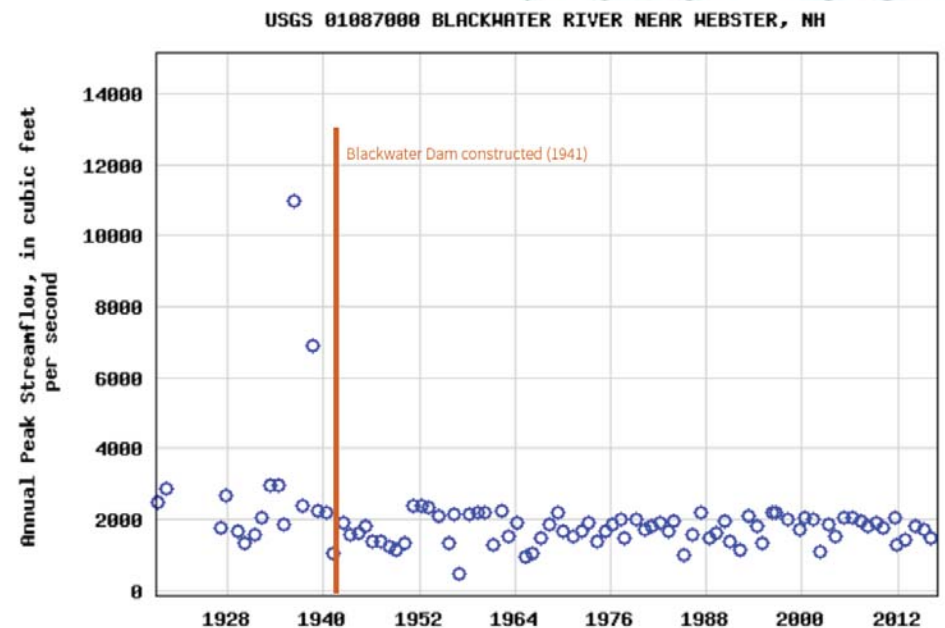
Conceptual Steel Section



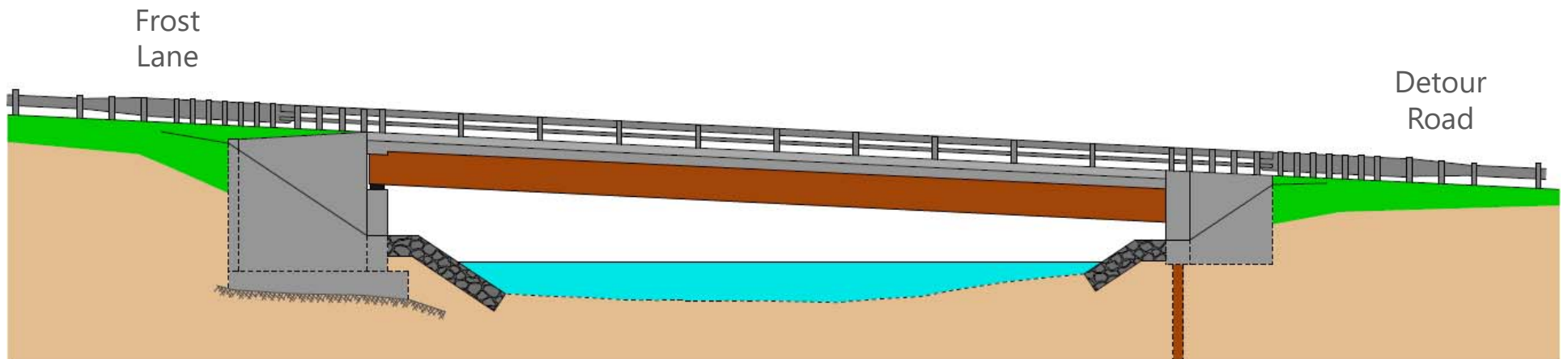
Conceptual Concrete Section

Scope of Work - Bridge Considerations

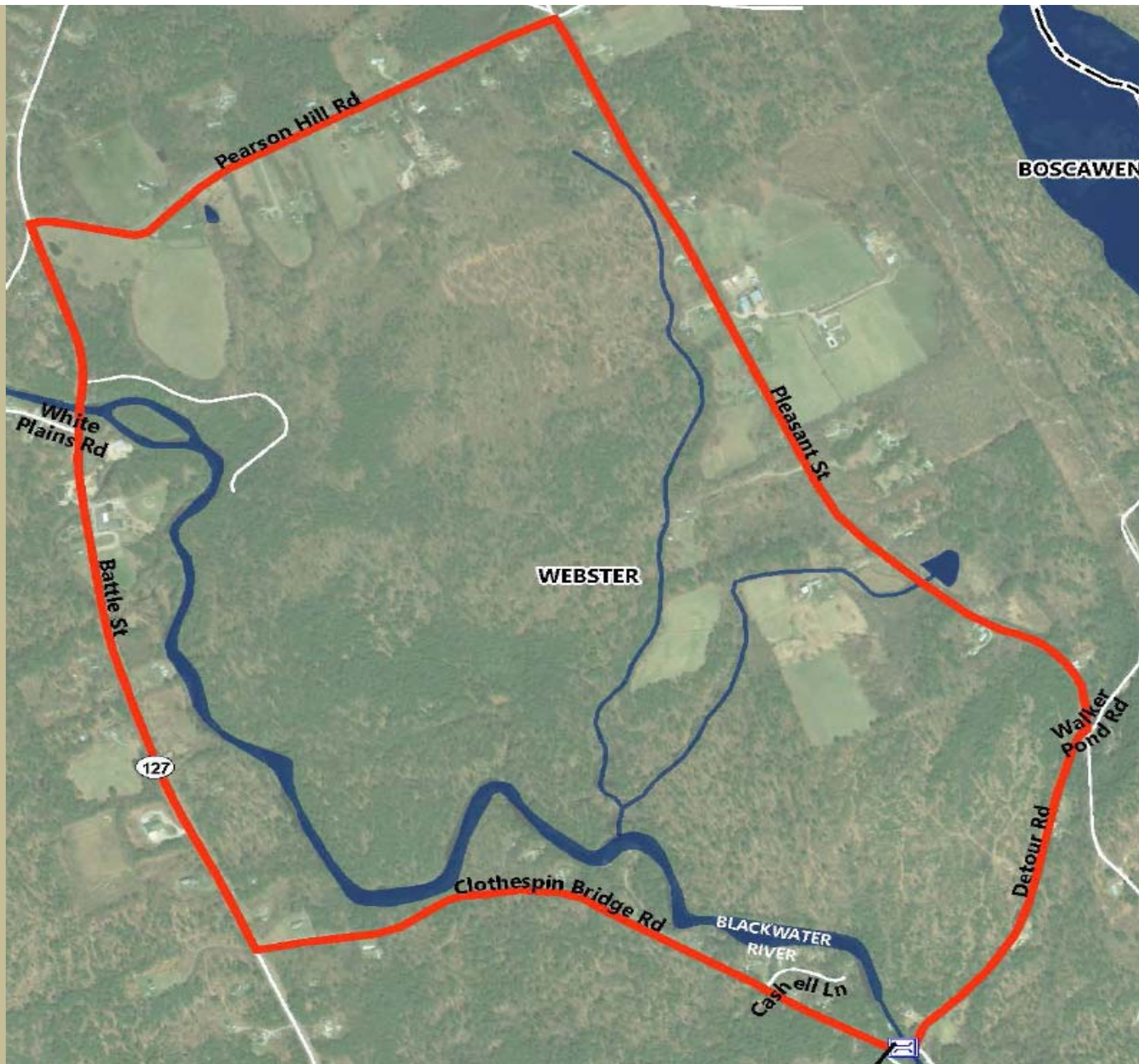
- Hydraulic study considerations:
 - HEC-RAS analysis
 - 1-foot of freeboard to Q50 storm
 - Evaluation of Q100 storm to maintain WS elevs.
- FEMA study (by detailed methods)
- Scour analysis for Q100 and Q500
- Stream crossing rules will also influence span length



Scope of Work - Bridge Considerations



Conceptual Bridge Elevation



Traffic Management During Construction – Detour (4.6 mi)

Scope of Work - Bridge Considerations

- Accelerated Bridge Construction (ABC) considerations
 - Full ABC not recommended:
 - Short detour
 - Low ADT
 - Cost considerations
 - Select details can be used to:
 - Reduce construction duration
 - Minimize impacts to residents



Scope of Work - Bridge Considerations

- ABC component considerations:
 - Prefabricated elements (i.e. precast, etc.)
 - Limit closure activities
 - Schedule requirements



Scope of Work – Environmental Overview

- Environmental Considerations
 - NEPA and Section 4(f) do not apply
 - Environmental Study (NHDOT)
 - NHDES Wetland Permit
 - Shoreland Water Quality
 - Water Quality Certification
- Cultural Resource Considerations
 - RPR Submittal
 - Section 106 Consultation
- Wetland permitting plans and erosion control plans to be developed

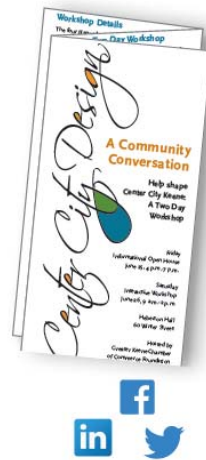


Scope of Work – Right-of-Way Considerations

- Preliminary ROW Plans
- Property Appraisals (by Town)
- Negotiations (by Town)
- Final ROW Plans, including ROW Registry Plans (for recording purposes following acquisitions by the Town)

Scope of Work – Public Outreach

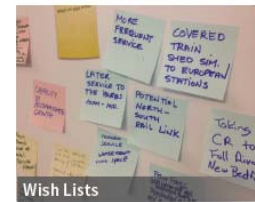
- Public Informational Meetings (2)
- Bridge Committee Meetings (2)



Workshop Facilitation (Pete Walker, left)



Charrettes



Wish Lists



Turning Point



Community Development



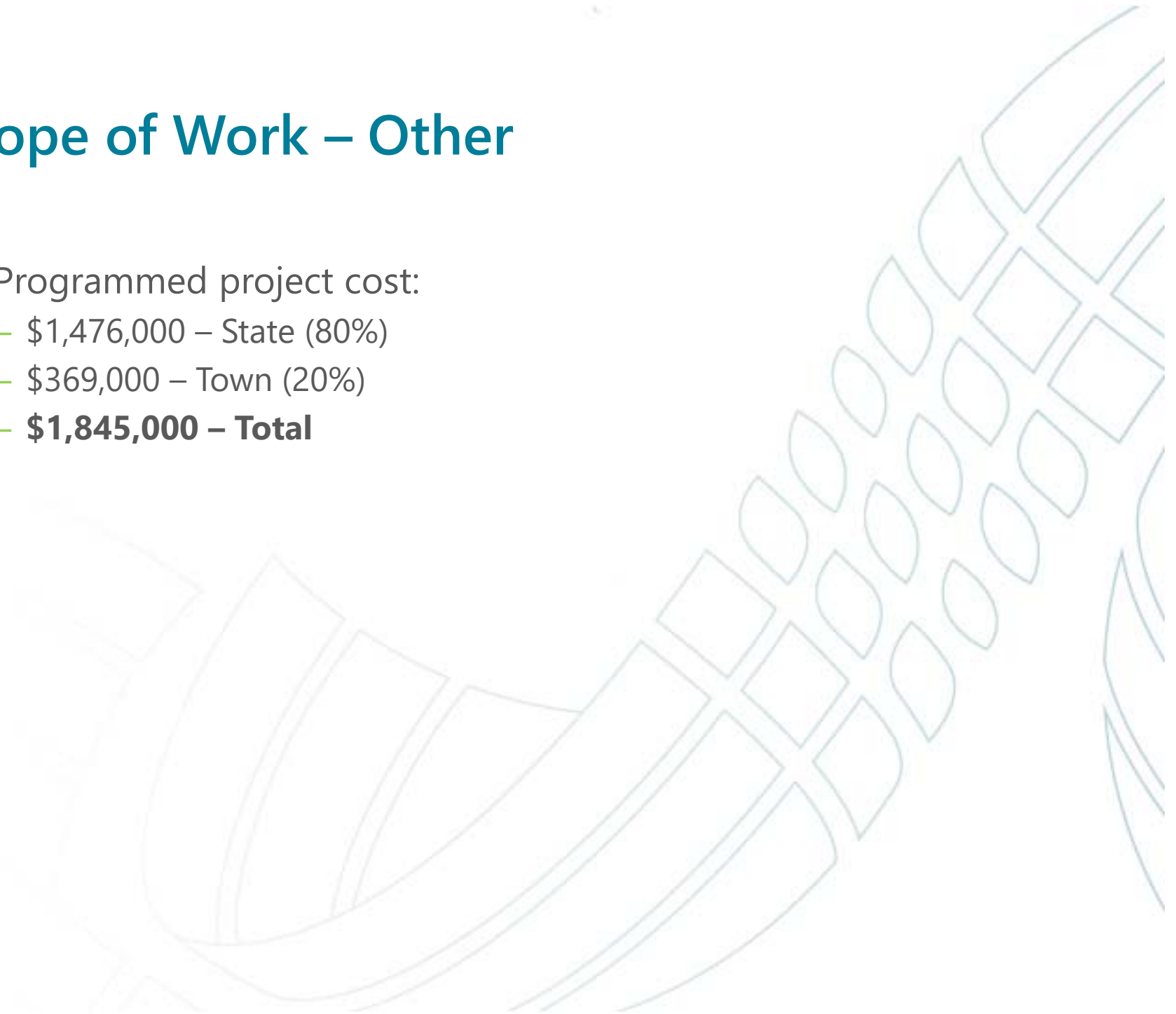
Interactive Activities

Scope of Work – Other

- Utility coordination by VHB
- Bid Phase Services (FY 2023 construction assumed)
 - Invitation to Bid
 - Pre-bid meeting
 - Responding to RFIs
 - Bid opening (by Town)
 - Bid analysis

Scope of Work – Other

- Programmed project cost:
 - \$1,476,000 – State (80%)
 - \$369,000 – Town (20%)
 - **\$1,845,000 – Total**



Project Risks

- Stream crossing rules
 - Drives roadway and environmental impacts and cost
- Geotechnical Evaluation
 - Foundation type and cost
- Right-of-Way process



Overall Schedule

- Survey – summer 2019
- Geotechnical Borings – summer 2019
- Wetland Delineation – summer 2019
- Engineering Study – Late summer/early fall 2019
- Preliminary Plans – Late fall/early winter 2019
- Wetland Permit Application – 1st Quarter 2020
- Final Plans, Specs, and Estimate (PS&E) – Spring/Summer 2020
- Plans shelf-ready – Late summer/early fall 2020
- Advertise for Bids – Fall 2022 (FY 2023)
- Begin Construction – Spring 2023

Next Steps

- Initiate field work and wetland delineation
- Initial permitting coordination
- Public concerns meeting (if requested)
- Develop Engineering Study (first deliverable)





Questions/Comments??