Sunderland
Public Informational Meeting

US ROUTE 7, BRIDGE 19-5 OVER UNAMED BROOK

October 9, 2023

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US ROUTE 7, BRIDGE 19-7 OVER UNAMED BROOK

12/02/2020

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Introductions

Gary Laroche, P.E.

VTrans Design Project Manager

Laura Stone, P.E.

VTrans Scoping Project Manager

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Purpose of Meeting

- Provide an understanding of our approach to the project
- Provide an overview of project constraints
- Discuss our selected alternative
- Provide an opportunity to ask questions and voice concerns

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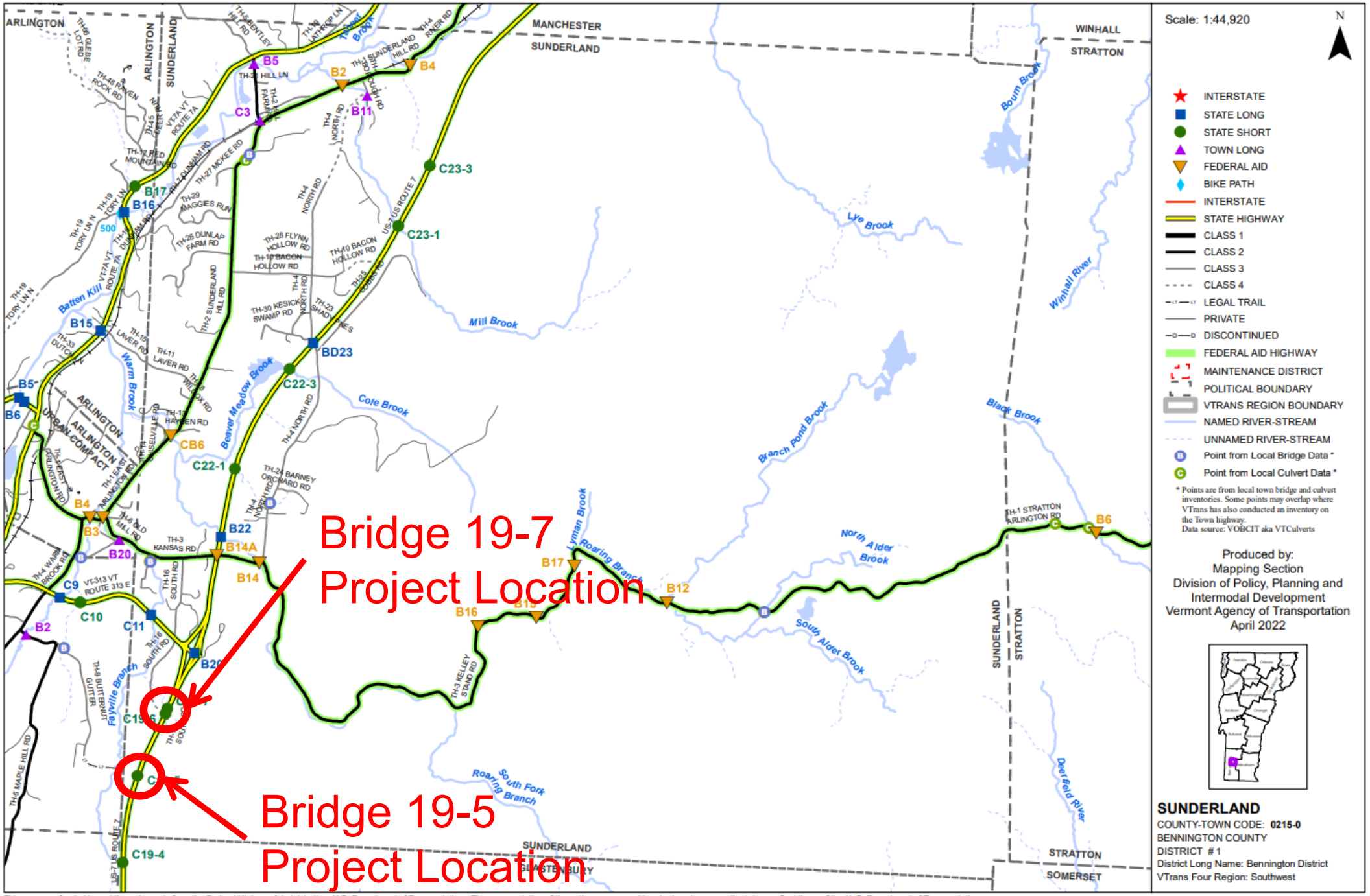
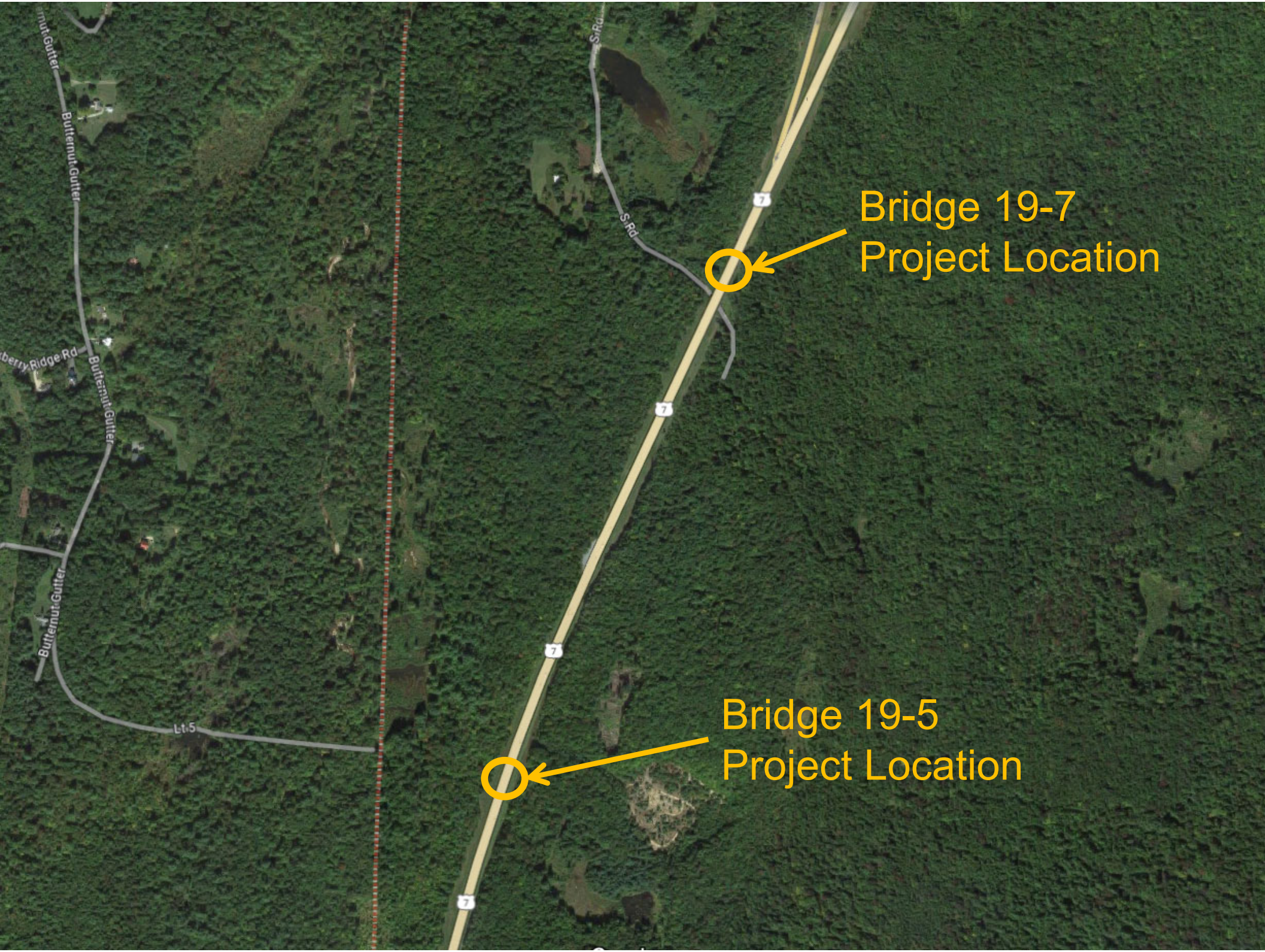


This map was funded in part through grants from the Federal Highway Administration, U.S. Department of Transportation. The representation of the authors expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

Location Map


Bridge 19-7
Project Location
Bridge 19-5
Project Location
Buttermut Gutter
Buttermut Gutter
Buttermut Gutter
Buttermut Gutter
S Rd
S Rd
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7
7
7
7

Meeting Overview

- VTrans Project Development Process
- Project Overview
  - Existing Conditions
  - Alternatives Considered
  - Selected Alternative
- Maintenance of Traffic
- Schedule
- Summary
- Questions

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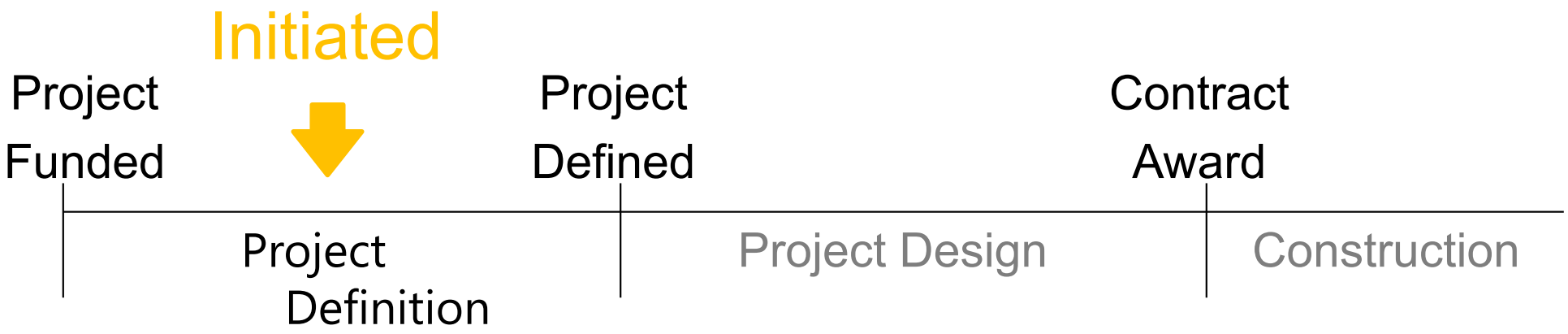
VTrans Project Development Process



- Identify resources & constraints
- Evaluate alternatives
- Public participation
- Build Consensus

- Quantify areas of impact
- Environmental permits
- Develop plans, estimate and specifications
- Right-of-Way process if necessary

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Looking South

Existing Conditions – Bridge 19-5

- Roadway Classification – Principal Arterial, National Highway System
- Bridge Type – 8’ Span Corrugated Galvanized Metal Plate Pipe Arch (CGMPPA)
- Culvert Length: 162 feet
- Fill Over Culvert: 13 feet
- Ownership – State of Vermont
- Constructed in 1978

Looking North

Existing Conditions – Bridge #19-7

- Roadway Classification – Principal Arterial, National Highway System
- Bridge Type – 7’ Span Corrugated Galvanized Metal Plate Pipe (CGMPP)
- Culvert Length: 120 feet
- Fill Over Culvert: 10 feet
- Ownership – State of Vermont
- Constructed in 1979

Existing Site Conditions – Bridge 19-5

- The culvert is in poor condition. There are holes throughout the invert ranging in size up to full length across the invert. Piping is present throughout.
- Culvert meets hydraulic standards and bank full width standard
- Culvert does not meet Aquatic Organism Passage standard

Existing Site Conditions – Bridge #19-7

- Culvert is in fair condition. There is heavy rust scaling, pitting, and large perforations scattered along the culvert barrel. The invert haunches throughout the structure have heavy rust scaling, pitting and large perforations scattered along the barrel length
- Culvert does not meet stream equilibrium standard of 14’ for bank full width

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Existing Conditions - Bridge 19-5

- Culvert Rating 4 (Poor)
- Channel Rating 6 (Satisfactory)

Looking Upstream

Existing Conditions - Bridge 19-5

Inlet

Existing Conditions - Bridge 19-5

Outlet

Existing Conditions - Bridge 19-5

Existing Conditions - Bridge #19-7

- Culvert Rating 5 (Fair)
- Channel Rating 8 (Very Good)

Inlet

Existing Conditions - Bridge #19-7

Outlet

Existing Conditions - Bridge #19-7

Perforated Invert

Existing Conditions - Bridge #19-7

Looking Downstream - Resources

Existing Conditions – Bridge #19-5

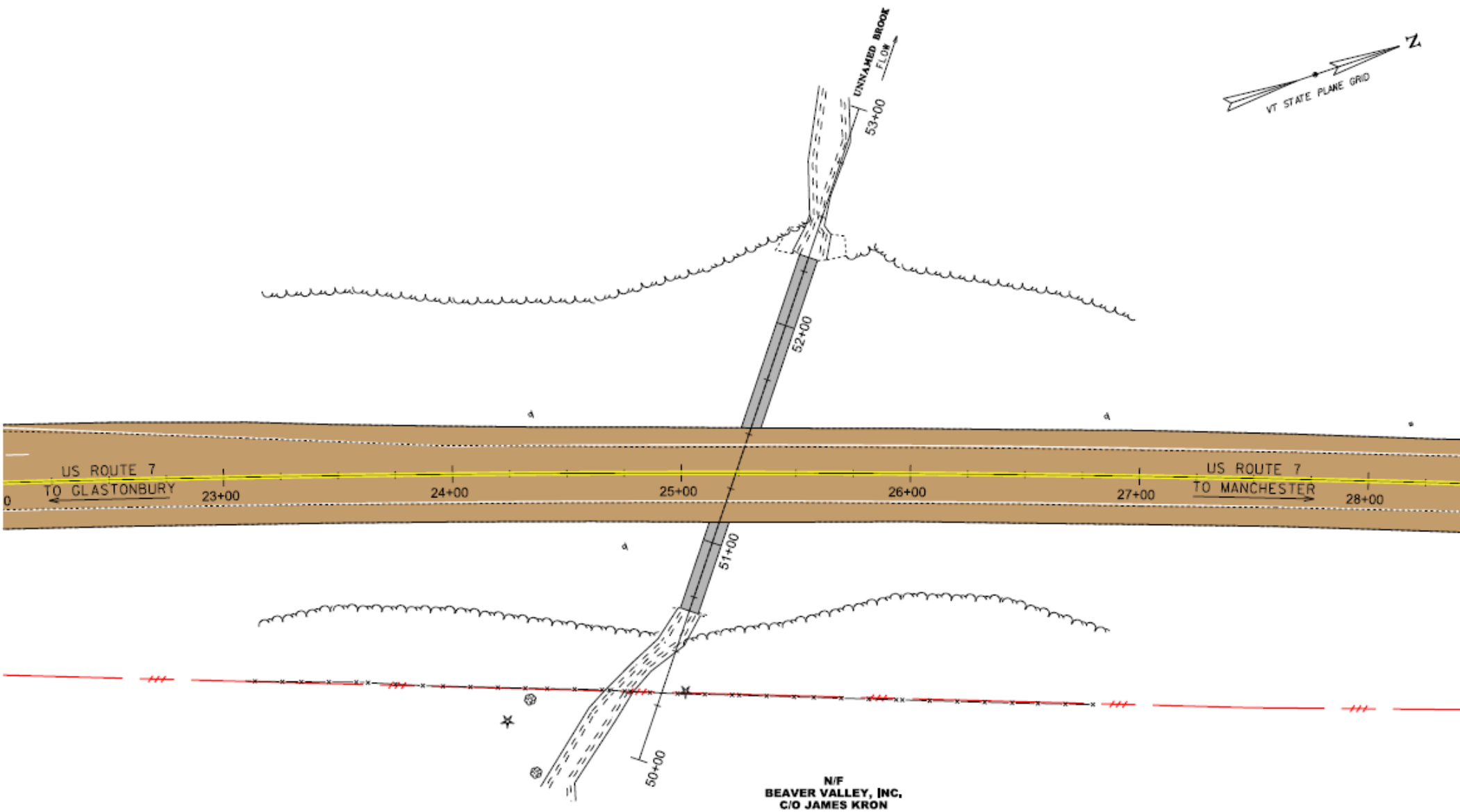
- Wetlands – There are class II wetlands surrounding the project area
- Within the Northern Long Eared Bat's habitat range
- Wildlife Habitat - Identified as being a "top priority for wildlife passage" categorization for habitat, and as having "prime fish habitat" category under the AOP analysis

Looking Downstream - Resources

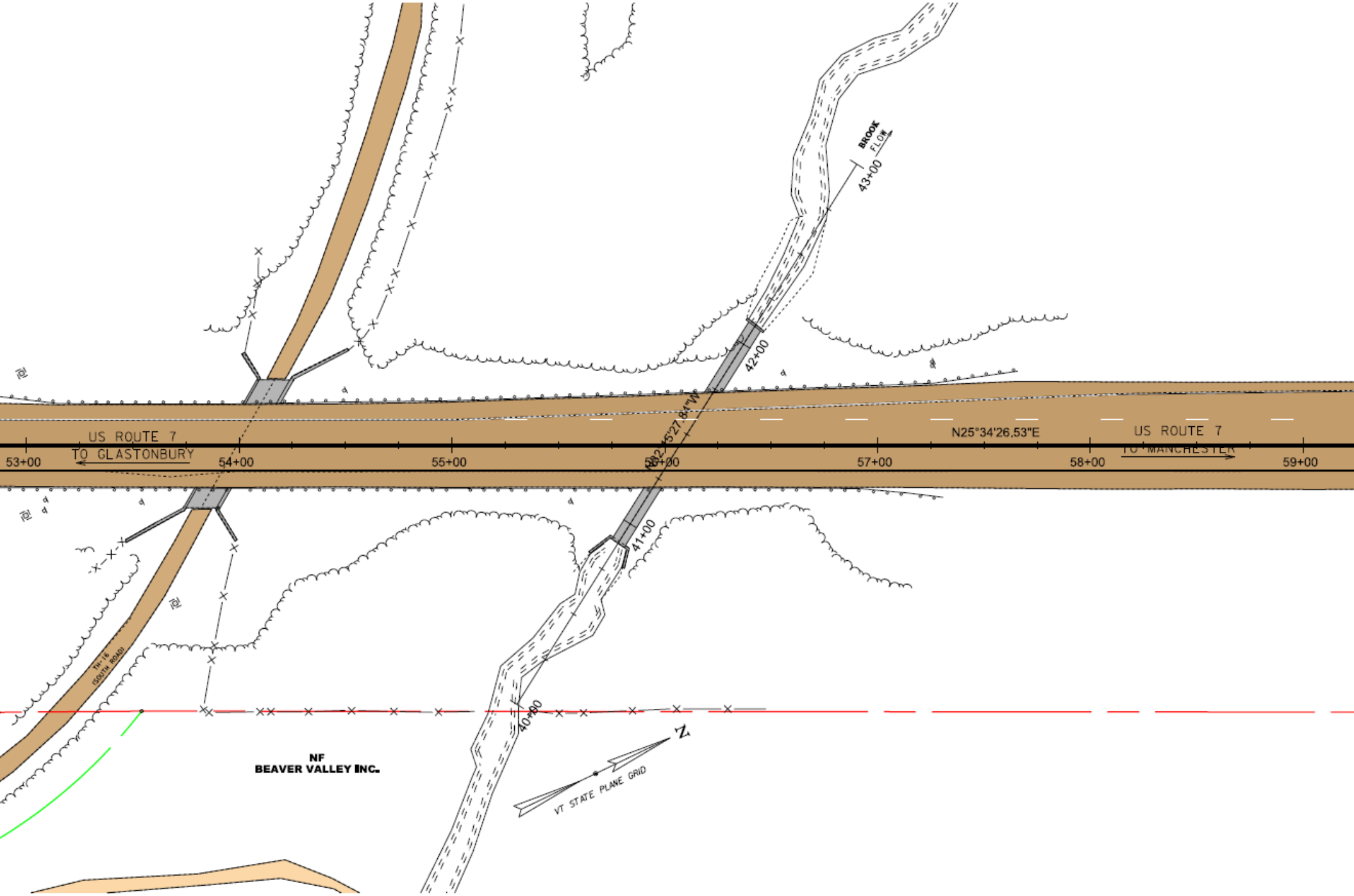
Existing Conditions - Bridge #19-7

- Within the Northern Long Eared Bat's (NLEB's) habitat range.
- Wildlife Habitat - Bridge 19-7 was identified as being a "top priority for wildlife passage" categorization for habitat, and also as having "prime fish habitat" category under the AOP analysis

Existing Conditions – Bridge #19-5



Existing Conditions – Bridge #19-7



Design Criteria and Considerations

- Average Daily Traffic
  - 8,520 vehicles per day
- Design Hourly Volume
  - 1,050 vehicles per hour
- % Trucks
  - 6.3%

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Alternatives Considered – Bridges #19-5 & 19-7

- No Action
  - Additional maintenance required within 10 years
- Culvert Rehabilitation
  - Invert Repair, Spray on liner, or Slip Liner with AOP Retrofits
  - 15 to 50-year design life
  - Substandard BFW, substandard AOP
- Full Bridge Replacement
  - Meets all ANR and hydraulic standards
    - Bridge #19-5: 8’ minimum span concrete box or frame
    - Bridge #19-7: 14’ minimum span concrete box or frame
  - Meets geometric standards
  - 75-year design life

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Selected Alternative – Bridges #19-5 & #19-7

- Replace the existing culverts with new 4-sided concrete box
  - Bridge #19-5: 8′ minimum span concrete box
  - Bridge #19-7: 14′ minimum span concrete box
  - Minimum hydraulic standard and bank full width conditions will be met
  - 10′/12′/12′/10′ roadway typical to meet minimum standard width
  - Bed retention sills to allow aquatic organisms to pass safely
  - Headwalls that extend four feet below the channel bottom to prevent undermining
  - Extends the life of the structure(s) an additional 75 years

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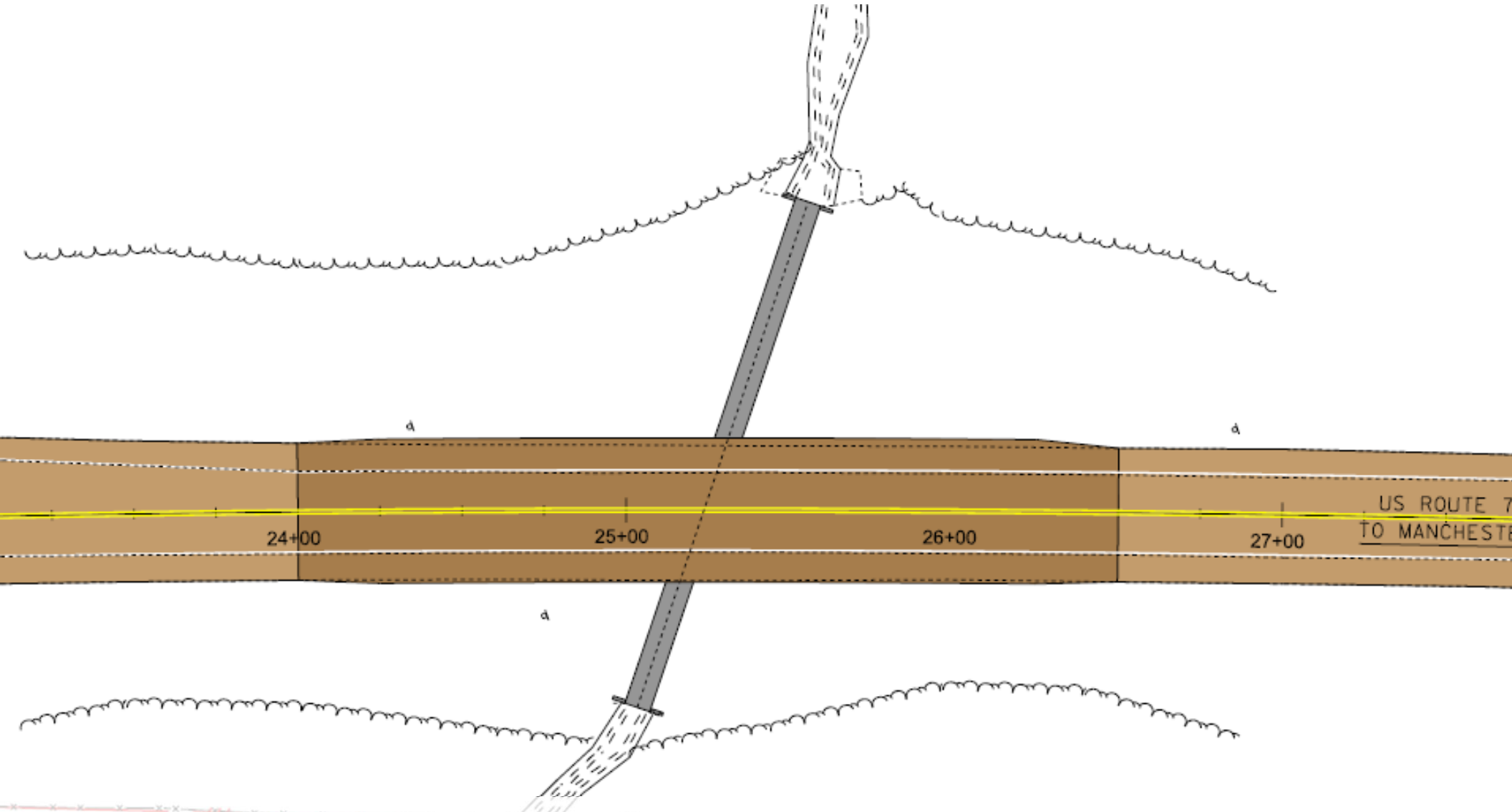
Bridge #19-5 Replacement Alternative –Precast Box



- Addresses the structural deficiencies of the existing bridge
- Meets 8’ minimum BFW requirements and minimum hydraulic standards
- Meets minimum roadway width standard of 44’
- Design Life; 75 years

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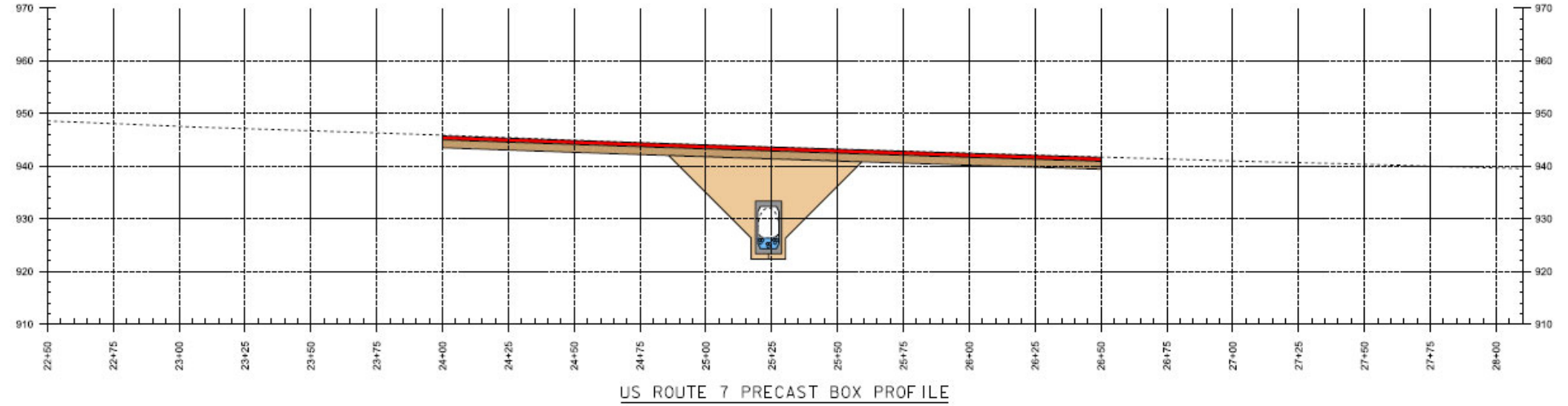
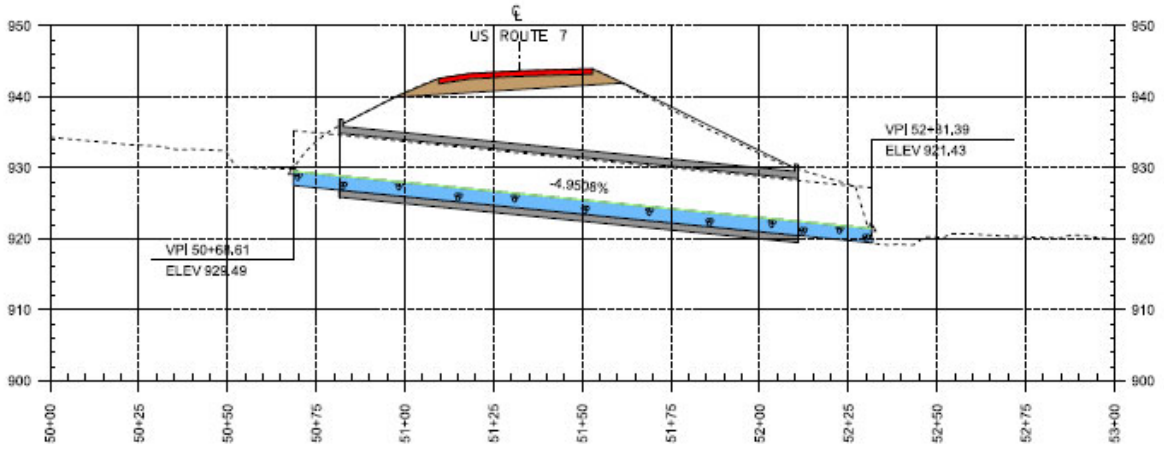
Bridge #19-5 Replacement Alternative –Precast Box



US ROUTE 7 PRECAST BOX PROFILE



PRECAST BOX CHANNEL PROFILE

- Roadway profile to match existing

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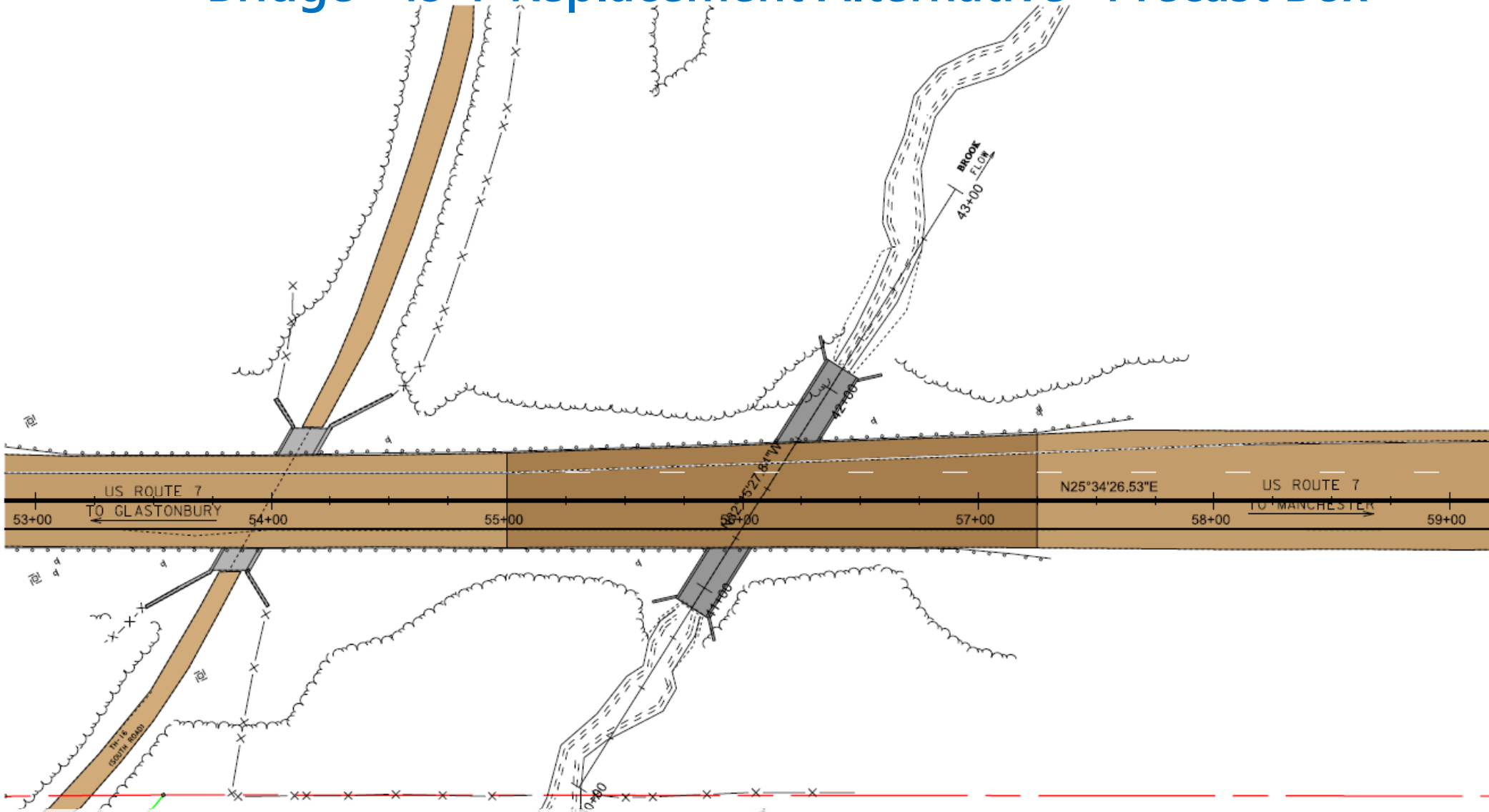
Bridge #19-7 Replacement Alternative –Precast Box



- Addresses the structural deficiencies of the existing bridge
- Meets 14’ minimum BFW requirements and minimum hydraulic standards
- Meets minimum roadway width standard of 44’
- Design Life; 75 years

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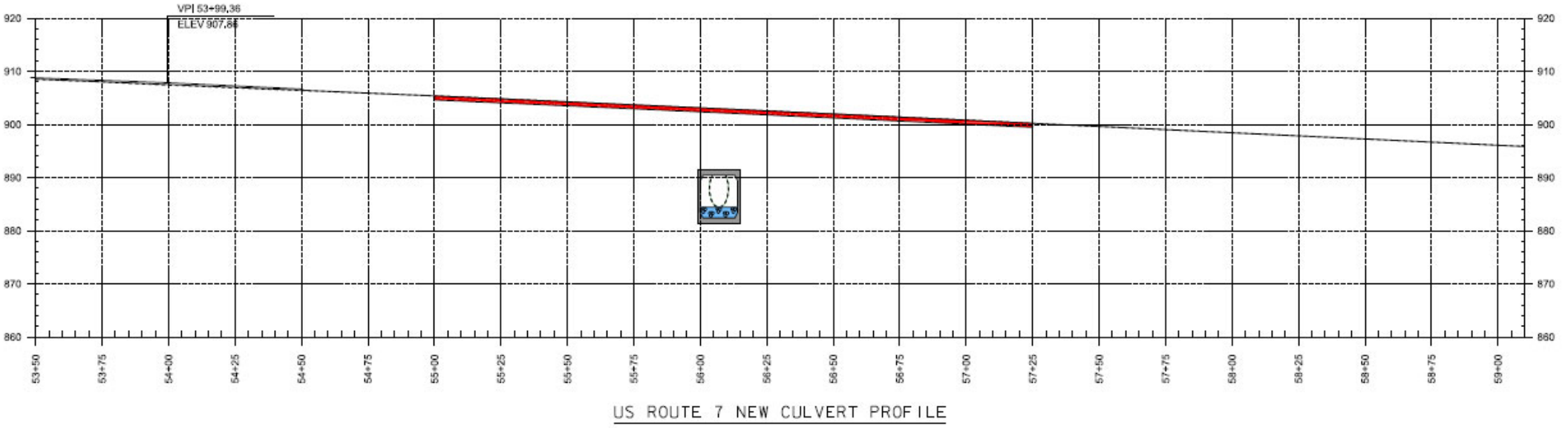
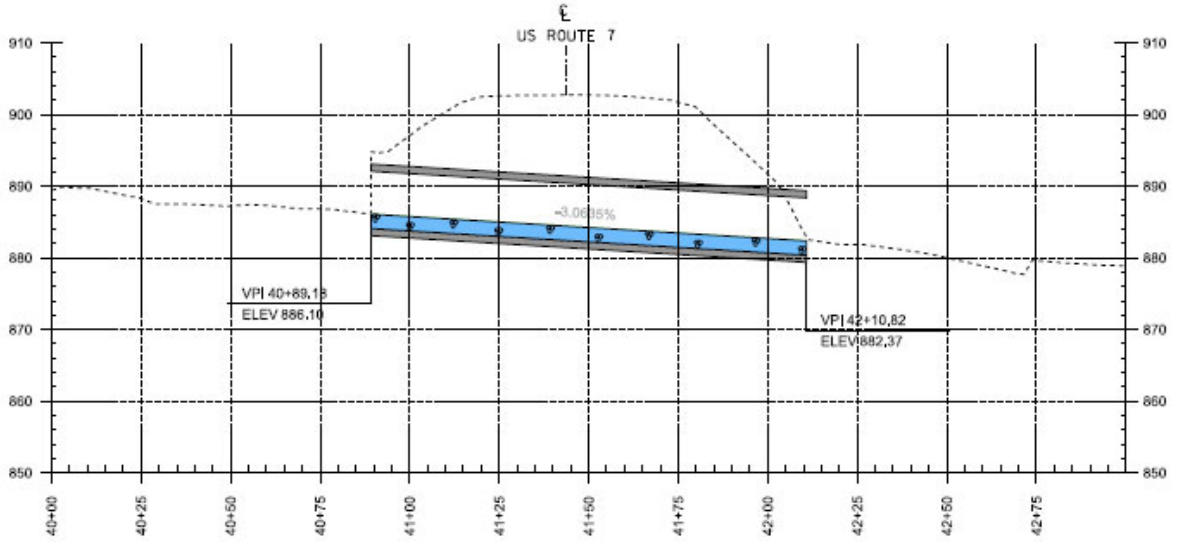
Bridge #19-7 Replacement Alternative –Precast Box



US ROUTE 7 NEW CULVERT PROFILE



CULVERT 19-7 NEW CULVERT CHANNEL PROFILE

- Roadway profile to match existing

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Maintenance of Traffic Options Considered

- **Offsite Detour** – This option would close the bridge and reroute traffic onto an official, signed State detour.

- **Phased Construction** – Involves maintenance of traffic over the existing culvert while building one half at a time of the proposed structure. This allows the road to stay open during construction, but with reduced lane widths.

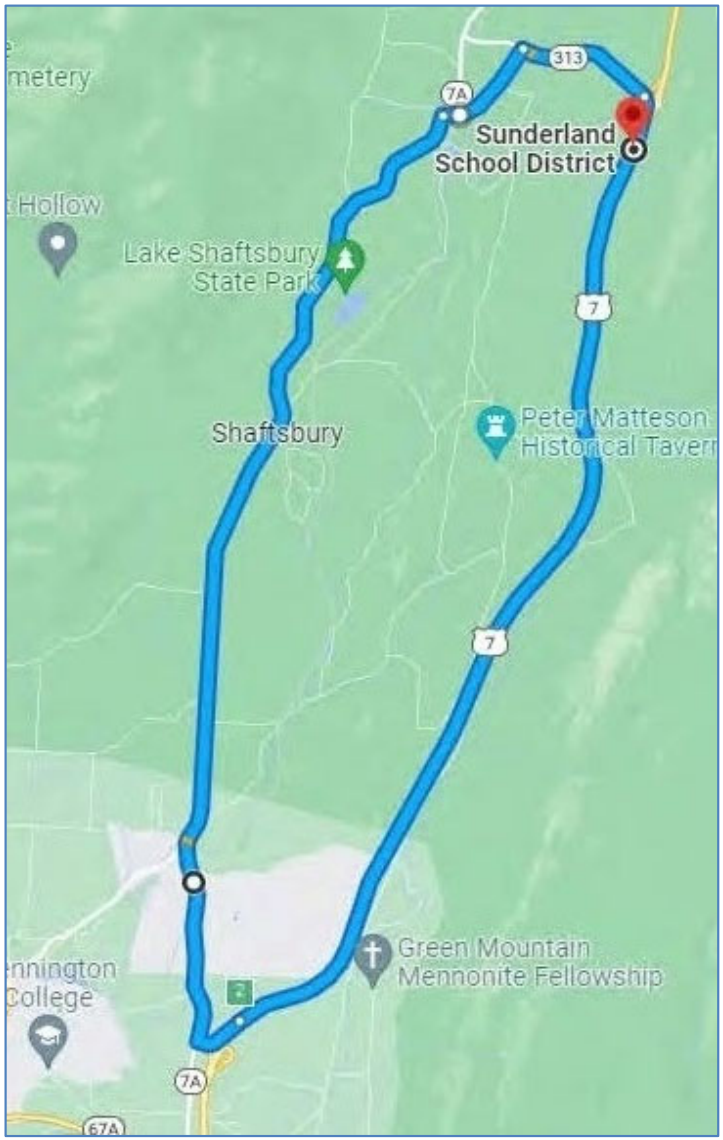
- **Temporary Bridge** - A temporary bridge on either side would have limits outside the existing Right-of-Way

Road Closure

- Detour chosen and signed by State
- 14-day closure duration per culvert
- Shortest Detour Route adds 3.3 miles

Traffic Control – Detour Option

- **Regional Detour Route:** US Route 7, to VT Route 313, and VT Route 7A, back to US Route 7



- Through Distance: 9.6 miles
- Detour Distance: 12.9 miles
- Added Distance: 3.3 miles

Preliminary Project Schedule

- Construction Start – Spring/Summer 2026
  - Total Cost Estimate: $3,920,000

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Project Summary – Bridges #19-5 & 19-7

- Replace the existing culvert with a new 4-sided concrete box while maintaining traffic on offsite detour
  - Traffic maintained on offsite detour for 14 days for each structure
  - US Route 7 through the project area is a restricted access highway, with no driveways or Town Highways to maintain
  - Shaftsbury, Arlington, and Manchester Villages will be affected by an increase in traffic
    - The closure duration will be kept as short as possible
  - 8-foot (Bridge #19-5) and 14’ (Bridge #19-7) minimum span box
  - The construction contract for these structures will be combined and there will be two 14-day closure periods within one construction season.
  - 75 year design life

For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/23B027

Sunderland Culvert Bundle
Questions and Comments

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