Springfield BM19201
Regional Concerns Meeting

VT Route 106 – Bridge 4 over unnamed brook

March 13, 2023

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Introductions

Rob Young, P.E.

VTrans Project Manager

Laura Stone, P.E.

VTrans Scoping Engineer

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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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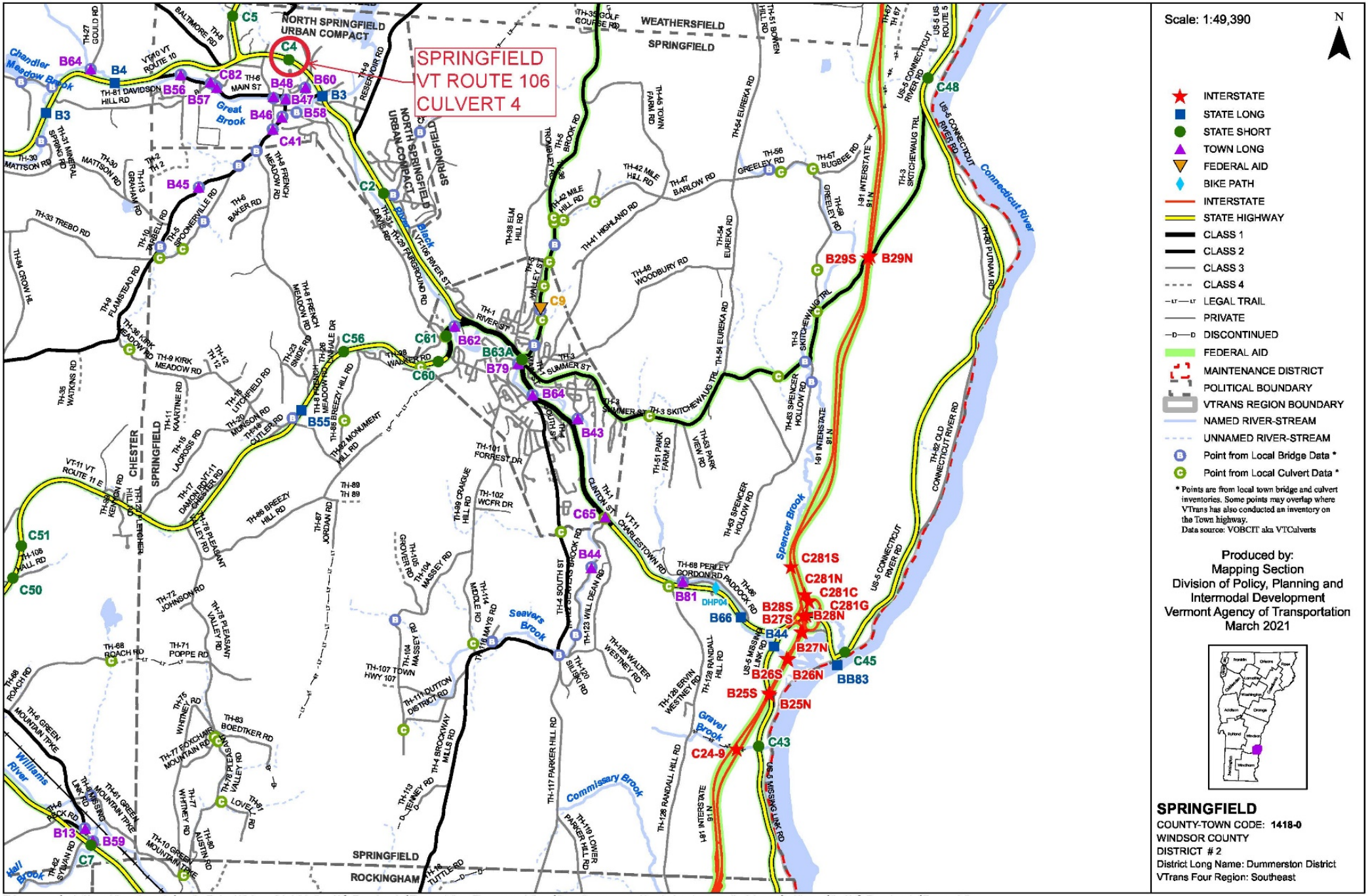

This map was funded in part through grants from the Federal Highway Administration, U.S. Department of Transportation. The representation of the authors expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

Location Map


Bridge 4
Project Location
Springfield Fence Co Inc
106
106
106
Gurney Rd

Meeting Overview

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

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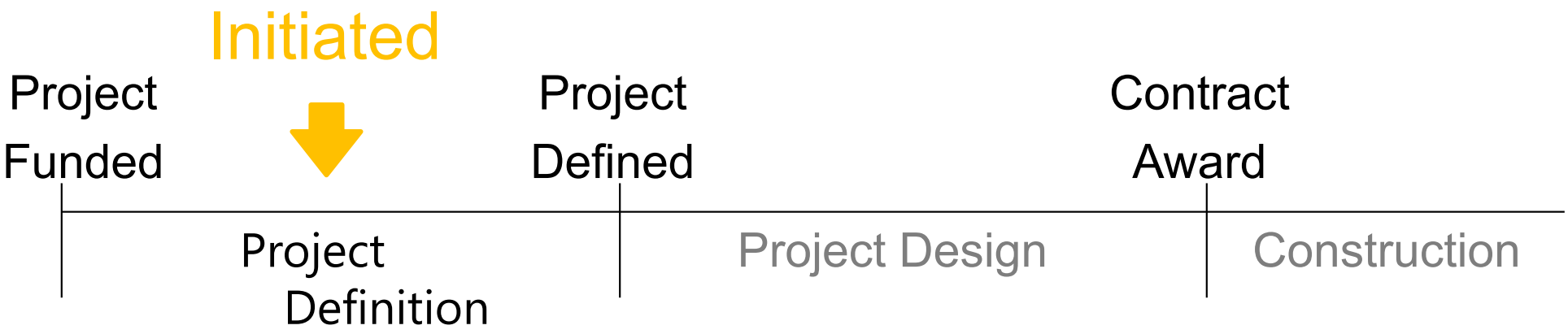
VTrans Project Development Process



- 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 East

Existing Conditions – Bridge #4

- Roadway Classification – Major Collector
- Bridge Type – 13’ Span, 176’ long Corrugated Galvanized Metal Plate Pipe (CGMPP)
- Ownership – State of Vermont
- Constructed in 1958

Looking West

Existing Conditions – Bridge #4

- Municipal Utilities – None
- Public Utilities – Aerial: Green Mountain Power (Three Phase Electric); Comcast, LLC, and Firstlight Fiber, Inc.

Existing Site Conditions – Bridge #4

- The culvert is in poor condition. The structure has heavy rust scale with deep pitting, moderate to heavy section loss, and scattered varying sized perforations along the rust/water line. The outlet end has perforations with visible piping occurring and measurable undermining of 8 to 9-inches. There are large perforations with much of the lower corrugation gone along the invert.

- The existing 13.5-foot clear span does not meet the state stream equilibrium standard of 21 feet for bank full width

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Existing Conditions - Bridge #4

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

Looking North (Upstream)

Existing Conditions - Bridge #4

Looking South (Downstream)

Existing Conditions - Bridge #4

Large Perforations

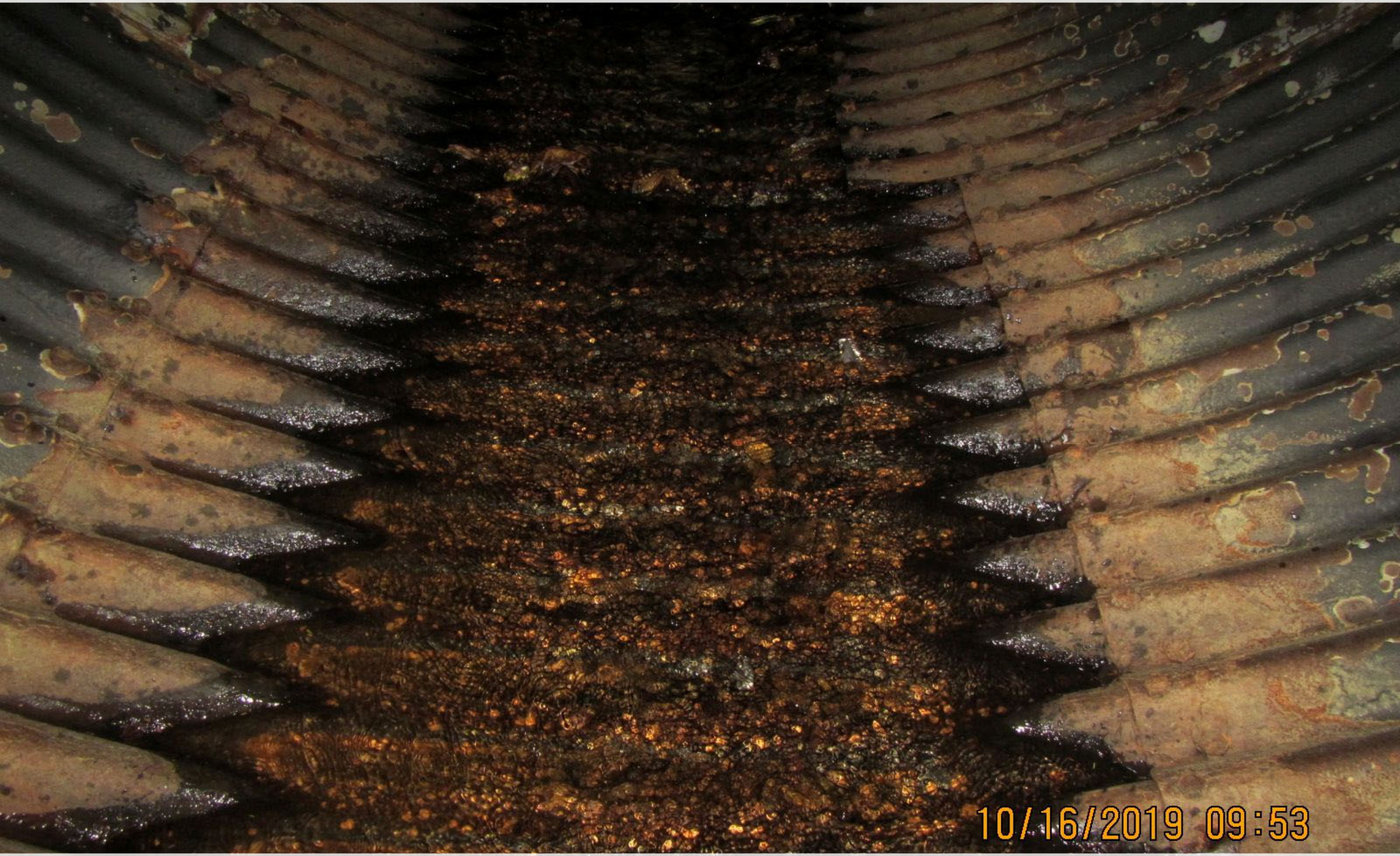
Existing Conditions - Bridge #4

Inlet Undermining

Existing Conditions - Bridge #4

Existing Conditions - Bridge #4

Excessive Rust

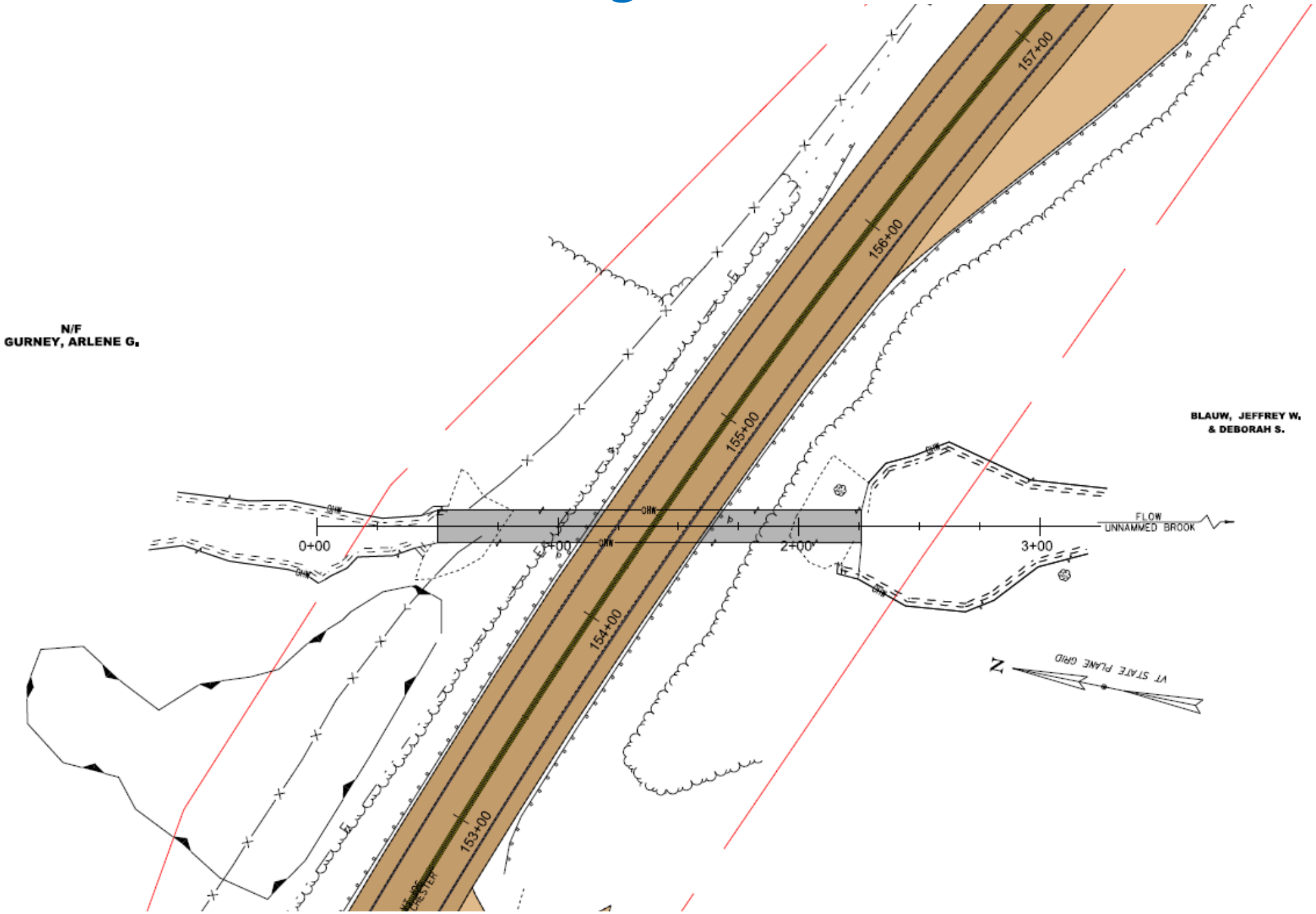


Existing Conditions - Bridge #4

Existing Resources – Bridge #4

- There is a small wetland complex in the northwest quadrant of the project.
- Wildlife Habitat - The area around this culvert is highly fragmented and likely does not allow for high quality regional movement of terrestrial wildlife, but likely contributes to local wildlife movement. Baltimore Brook is a direct tributary to the Black River. It adds quality cold-water habitat for several important fish species. Aquatic organism passage should be incorporated into the design of this project

Existing Conditions



Design Criteria and Considerations

- Average Daily Traffic
  - 6,300 vehicles per day
- Design Hourly Volume
  - 770 vehicles per hour
- % Trucks
  - 11.7%

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Alternatives Considered – Bridge #4

- No Action
  - Not recommended. The culvert is in poor condition and will continue deteriorate if no action is taken.
- Culvert Rehabilitation
  - Invert Repair, Pipe Liner, or Cured-in Place Liner
  - Advantages: Most cost-efficient option, Minimal impacts to resources, Addresses deterioration issues without affecting traffic flow
  - Disadvantages: Life span of the repair work is estimated to be 15 - 50 years, Reduces the clear span, Wildlife connectivity would not be improved
- Culvert Replacement with a 3-sided Frame
  - Advantages: Addresses the structural deficiencies of the existing bridge, Meets the minimum hydraulic standards and provides adequate AOP, Would have minimal future maintenance costs
  - Disadvantages: High upfront costs and fill excavation
- Culvert Replacement with an Integral Abutment Bridge
  - Advantages: Addresses the structural deficiencies of the existing bridge, Meets the minimum hydraulic standards and provides adequate AOP, Would have minimal future maintenance costs
  - Disadvantages: Highest upfront costs, Increased future maintenance

Selected Alternative - Bridge #4

- Replace the existing culvert with a new 3-sided buried frame
  - 21′ span with natural bottom for AOP and to meet minimum BFW
  - 12′/8′ typical to match existing
    - 11′/4′ is standard typical section
  - 75-year design life

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Proposed Typical Section - Roadway

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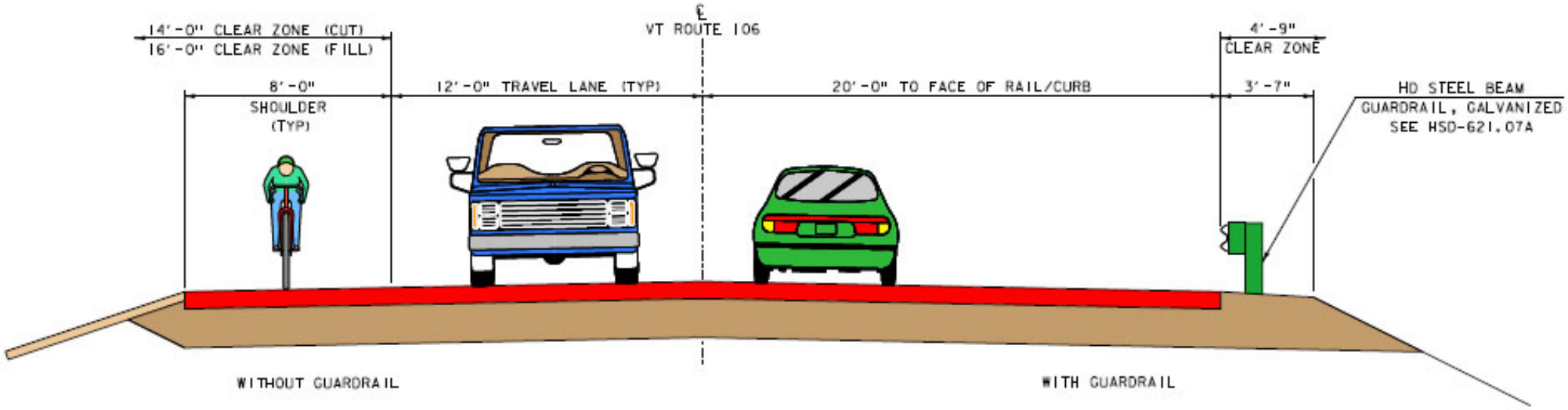
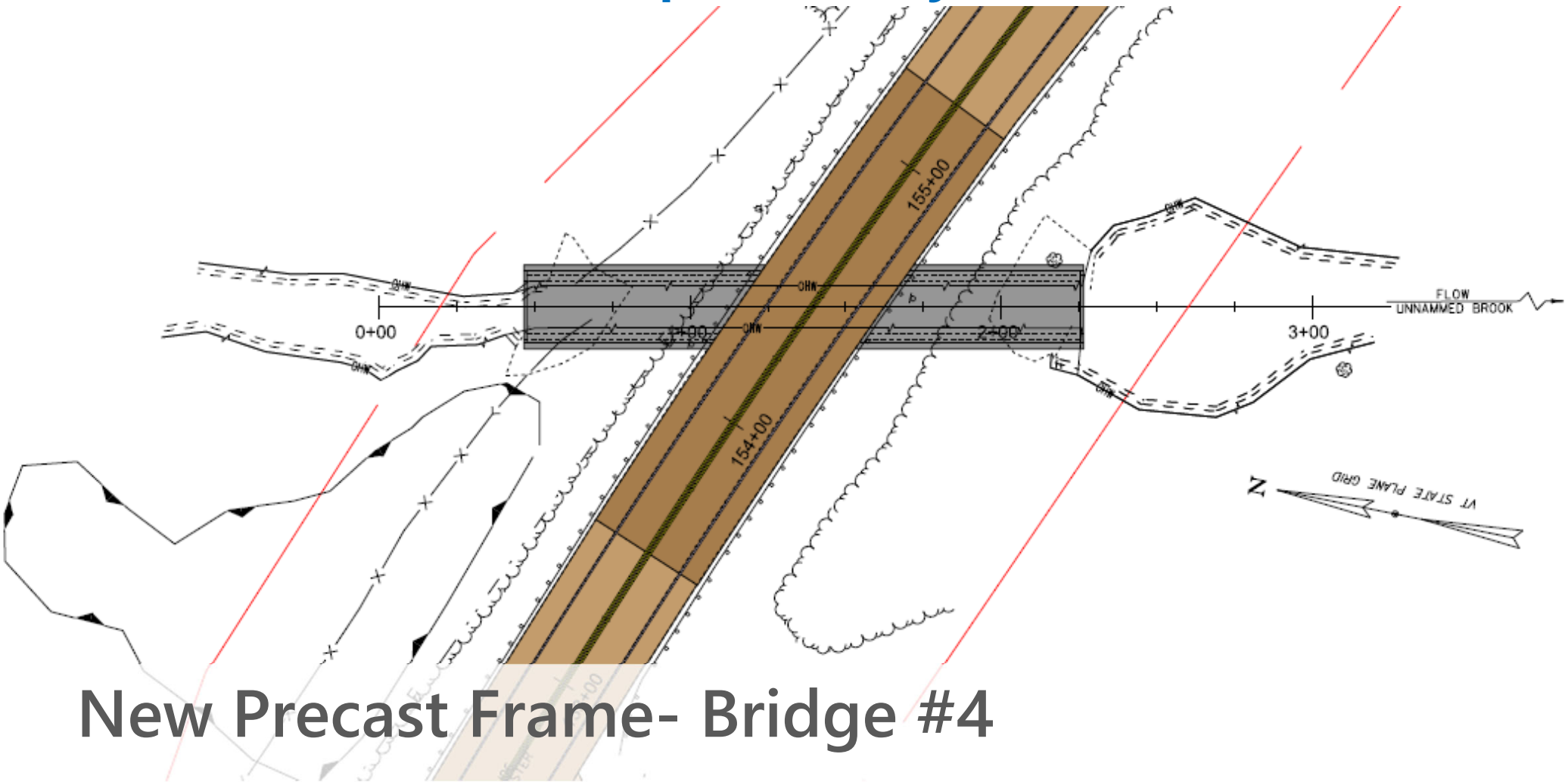


PROPOSED VT ROUTE 106 TYPICAL SECTION

New Precast Frame - Bridge #4

- 12’/8’ roadway typical section

Proposed Layout



New Precast Frame- Bridge #4

- New buried structure along existing channel alignment
- Significant amount of excavation
- Meets minimum hydraulic standard bank full width conditions
- Meets minimum standard geometric design criteria
- 75-year design life

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Proposed Typical Section - Frame

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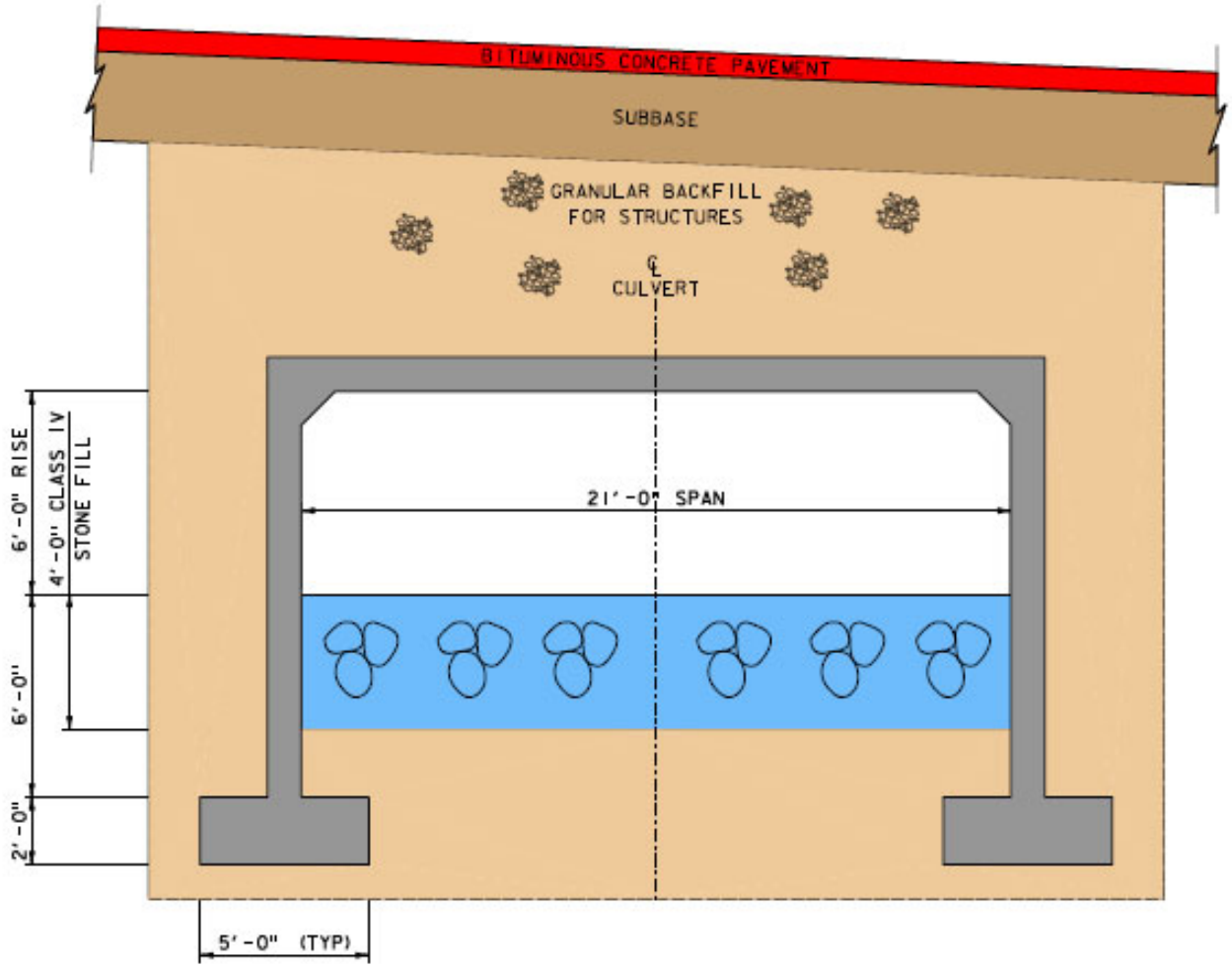

New Precast Frame - Bridge #4

- 21-foot span

Proposed Profile

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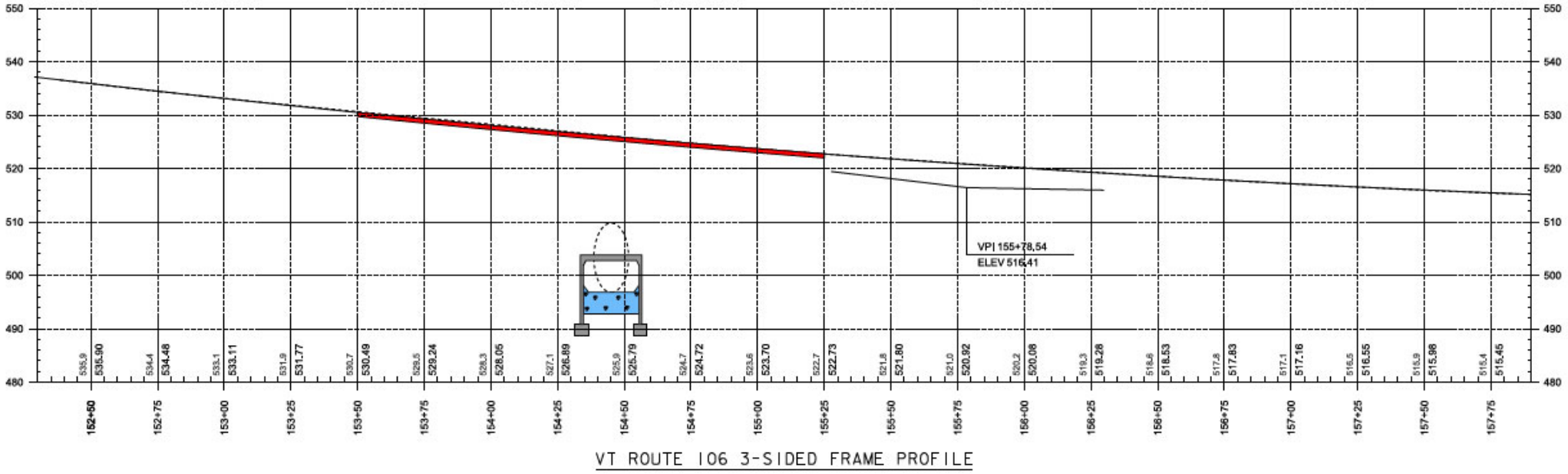


New Precast Concrete Frame - Bridge #4

- Matches existing grade

Maintenance of Traffic Options Considered

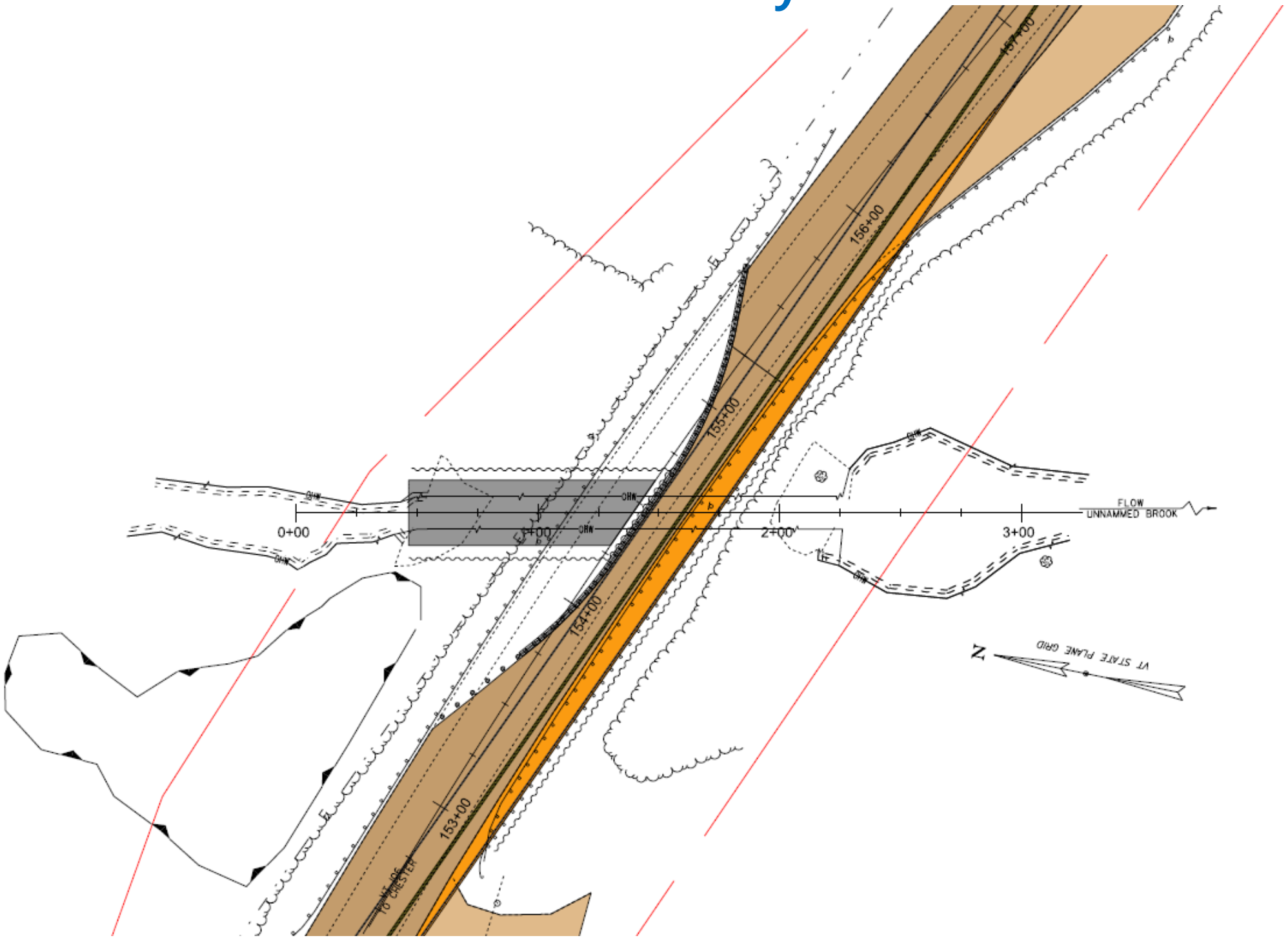
- Offsite Detour
- Temporary Bridge
- Phased construction

Selected Method to Maintain Traffic

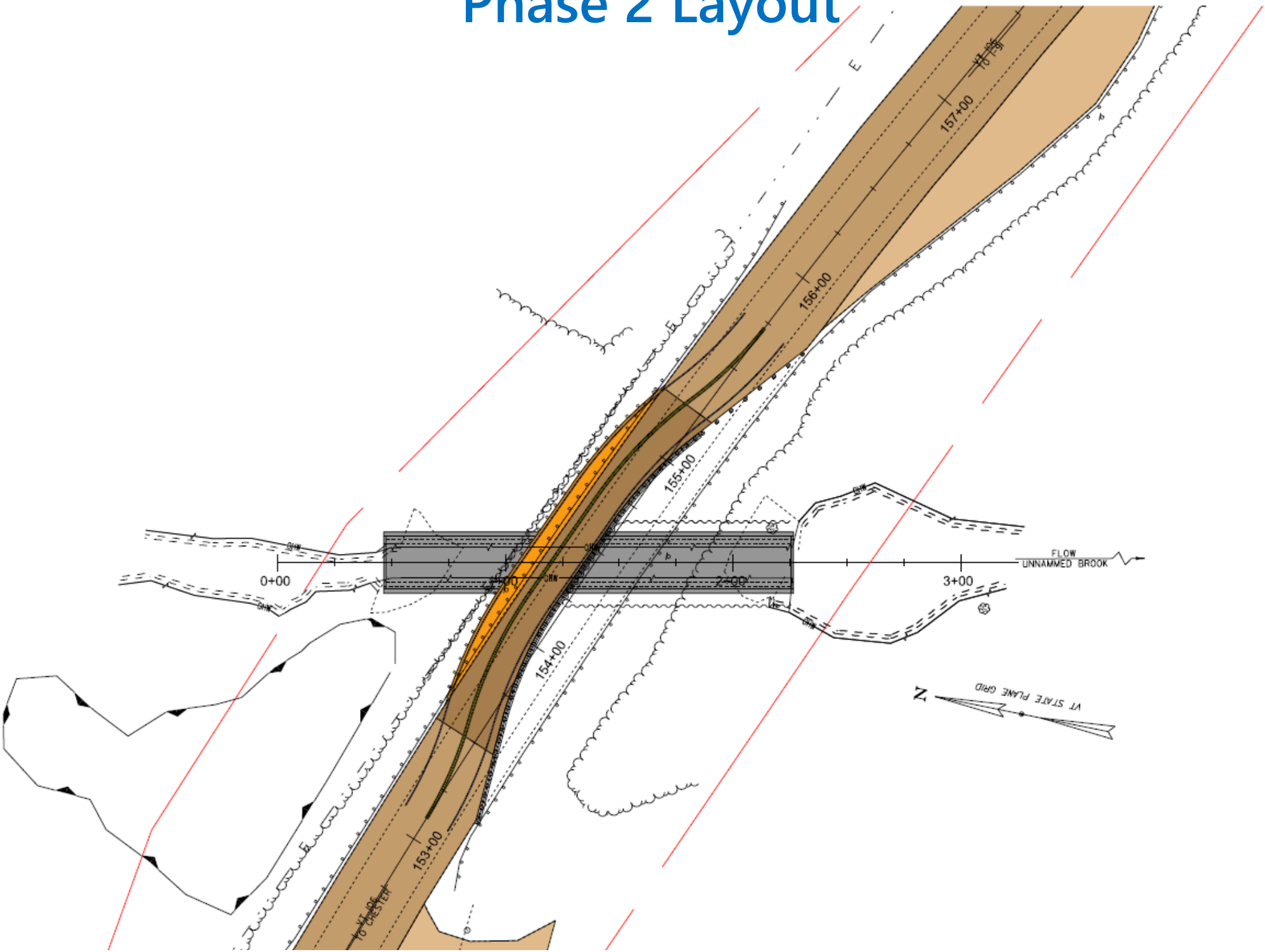
Phased Construction

- 2 Phases with two-way traffic maintained to be confirmed in design

Phase 1 Layout



Phase 2 Layout



Preliminary Project Schedule

- Construction Start – Spring/Summer 2026
  - Total Cost Estimate: $5,360,000

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Project Summary: Bridge #4

- Replace the existing culvert with a new 3-sided buried frame while maintaining traffic via phased construction
  - 2-phases
  - 21′ span with natural bottom for AOP and to meet minimum BFW
  - 12′/8′ typical to match existing
    - 11′/4′ is standard typical section

  - Utility Relocation (Aerial) likely avoided with phased construction
  - Right-of-Way needed
  - Construction Year: 2026
  - 75-year design life

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For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/17B174

Springfield BM19201
Questions and Comments

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11/19/2020

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