Norton BF 0321(21)
Public Informational Meeting
VT ROUTE 114, BRIDGE 41 OVER NUMBER FIVE BROOK

April 9, 2024

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Introductions

Laura Stone, P.E.

VTrans Scoping Project Manager

Chris Mooney

VTrans Lead Design 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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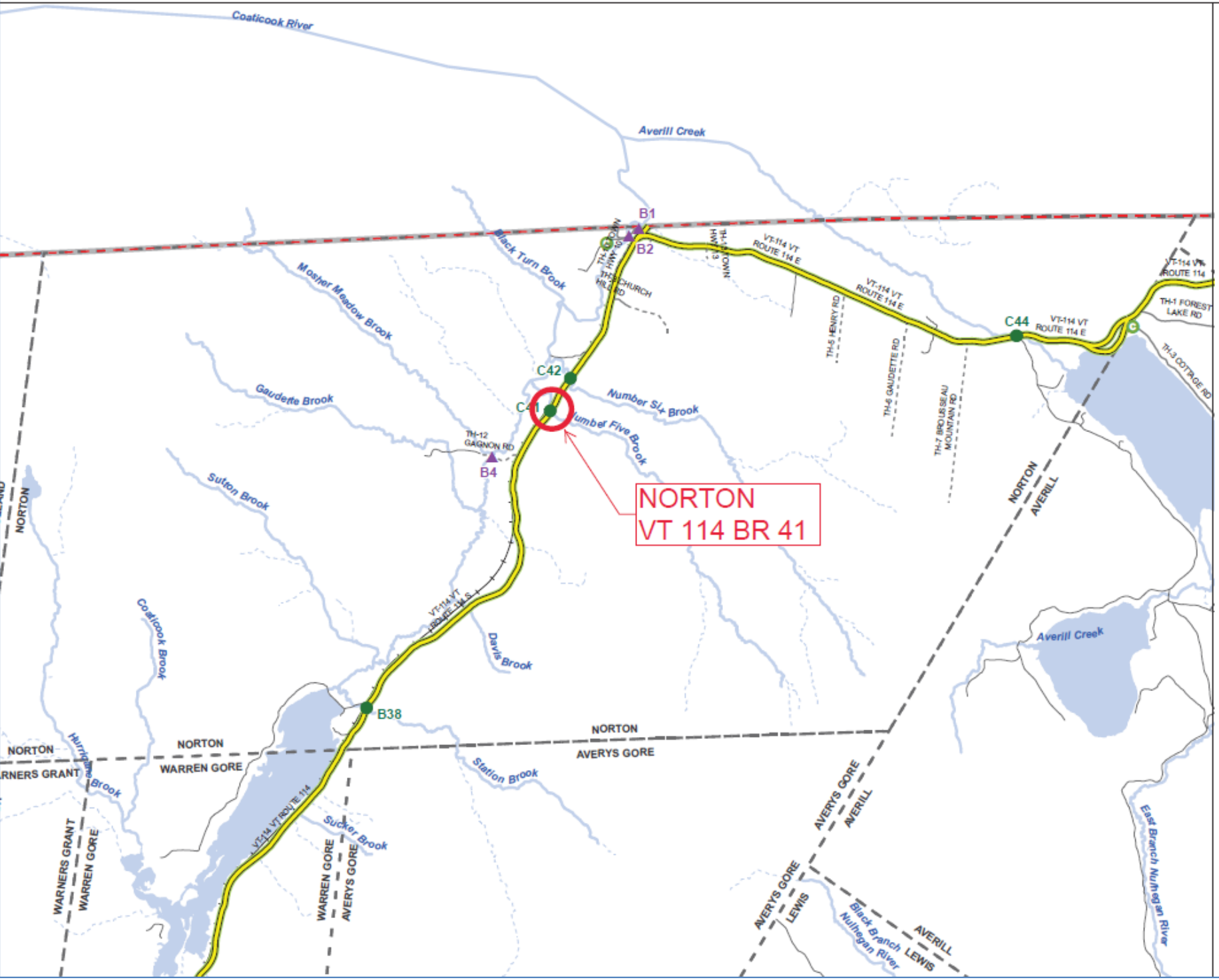

Location Map

Aerial View


Number Five Brook
114
Bridge 41
114
Power House Rd
114
Power House Rd
Number Five Brook
Google

Meeting Overview

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

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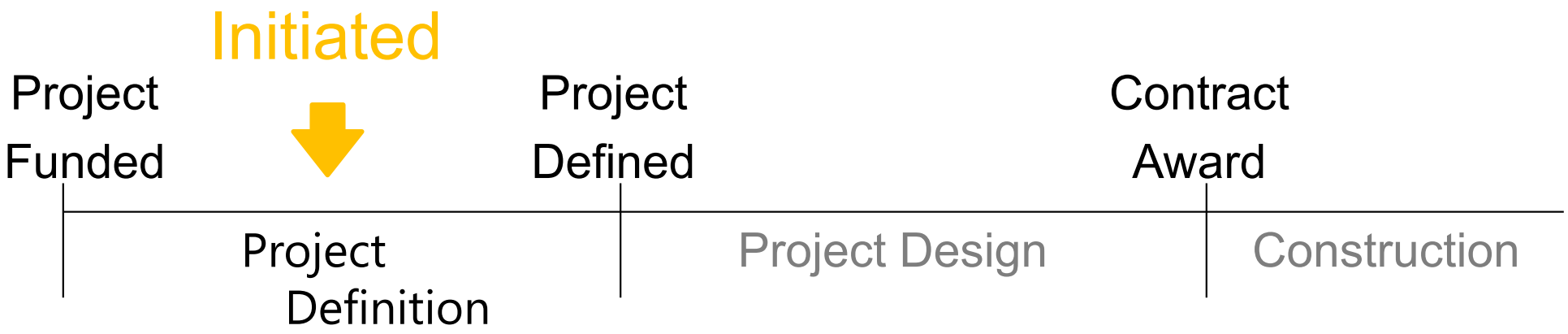
VTrans Project Development Process



- 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 North

Existing Conditions – Bridge #41

- Roadway Classification – Major Collector
- Bridge Type – 10ft Span Corrugated Galvanized Multi Plate Pipe (CGMPP)
- Ownership – State of Vermont
- Constructed in 1957

Looking South

Existing Conditions – Bridge #41

- Aerial utilities (electric, communications, NEK broadband, and telephone) run parallel to VT114 on the west side.
- Underground: (communications) underground drop on a pole ~375′ north of BR41. The underground utilities runs north from this pole.

Existing Site Conditions – Bridge #41

- The culvert is in **poor condition**. The culvert has begun to deform and squash towards the northern direction. Voids are present throughout the length of the pipe causing sediment loss behind various panels. The CGMPP has a concrete invert treatment that is in poor condition. There are also large perforations forming along the lower portions causing the deformation and voids along the pipe.

- The piping has caused settlement in the roadway with asphalt patching present over the structure mainly in the southern travel lane. District 9 has shimmed this area twice during Summer 2023. A slight dip has developed since.

- The existing culvert does not meet the measured bank full width of Number Five Brook.

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Existing Conditions - Bridge #41

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

Looking Upstream (Southeast)

Existing Conditions - Bridge #41

Looking Downstream (North)

Existing Conditions - Bridge #41

Inlet

Existing Conditions - Bridge #41

Barrel – Deformation

Existing Conditions - Bridge #41

Outlet

Existing Conditions - Bridge #41

Scour Hole “Sill” is Visible Ledge at Outlet

Existing Conditions - Bridge #41

Perforations/Crushing on Side Panel

Existing Conditions - Bridge #41

Perforated Invert

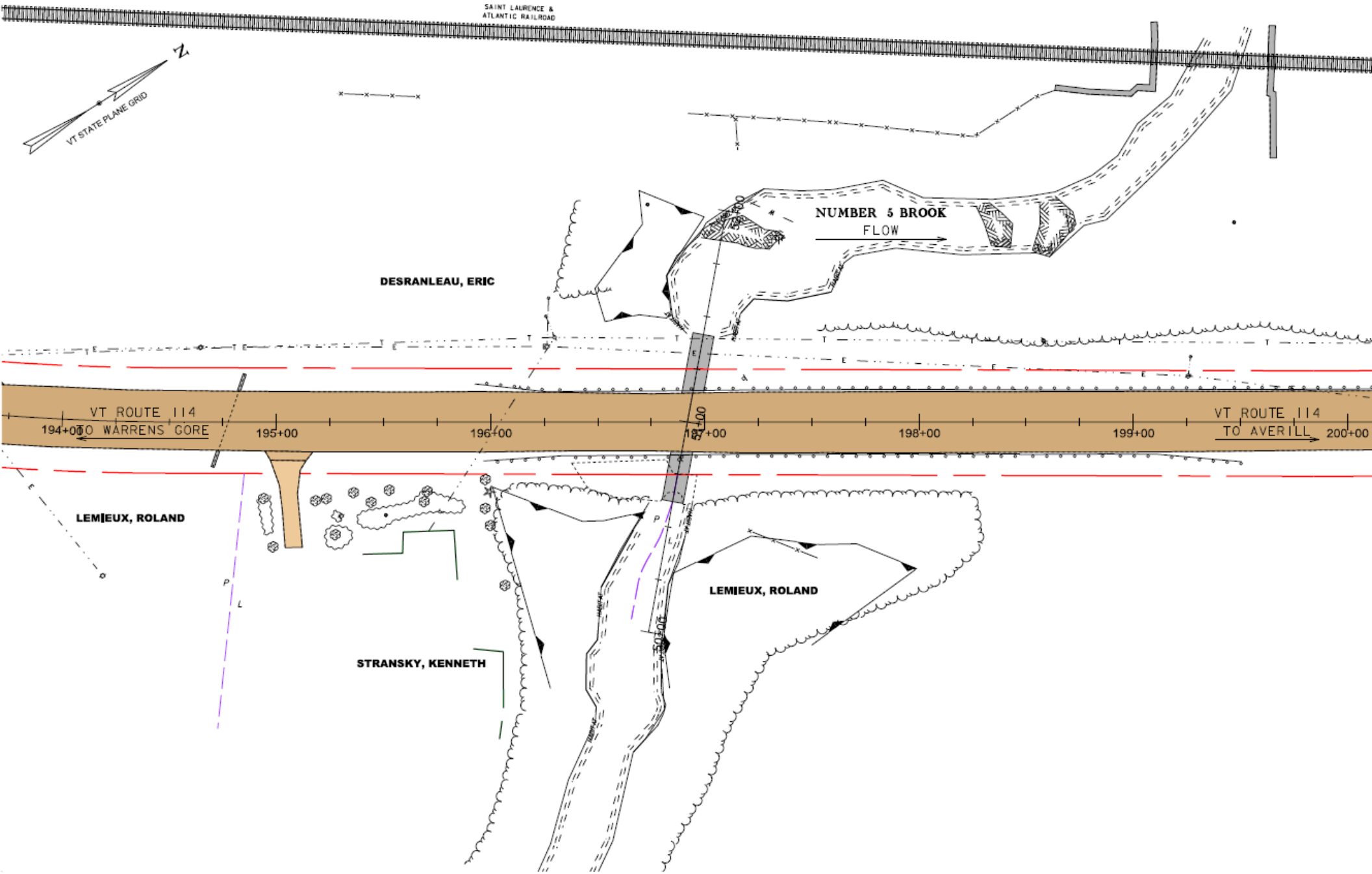
Existing Conditions - Bridge #41

Existing Resources – Bridge #41

- Wetlands – there are wetland complexes mapped on both sides of the Number Five brook banks at the inlet and on the western bank at the outlet end of the culvert

- Wildlife Habitat – The terrestrial passage screening tool indicated that the area ranks high for wildlife connectivity.

Existing Conditions



Design Criteria and Considerations

- Average Daily Traffic
  - 557 vehicles per day
- Design Hourly Volume
  - 90 vehicles per hour
- % Trucks
  - 14.2%

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Alternatives Considered – Bridge #41

- No Action
  - Additional maintenance required within 10 years
- Culvert Rehabilitation
  - Pipe liner, or Spray-On liner
  - 30 to 50-year design life
  - Substandard BFW and increases hydraulic inadequacy
  - Doesn't address roadway settlement issue
- Buried Structure Replacement – Concrete Rigid Frame
  - Meets hydraulic standards
    - 22' minimum clear span
  - Meets geometric standards
  - 75-year design life
- Full Bridge Replacement – At-Grade Steel Beam Bridge
  - Meets hydraulic standards
    - 22' minimum clear span
  - Meets geometric standards
  - 75-year design life

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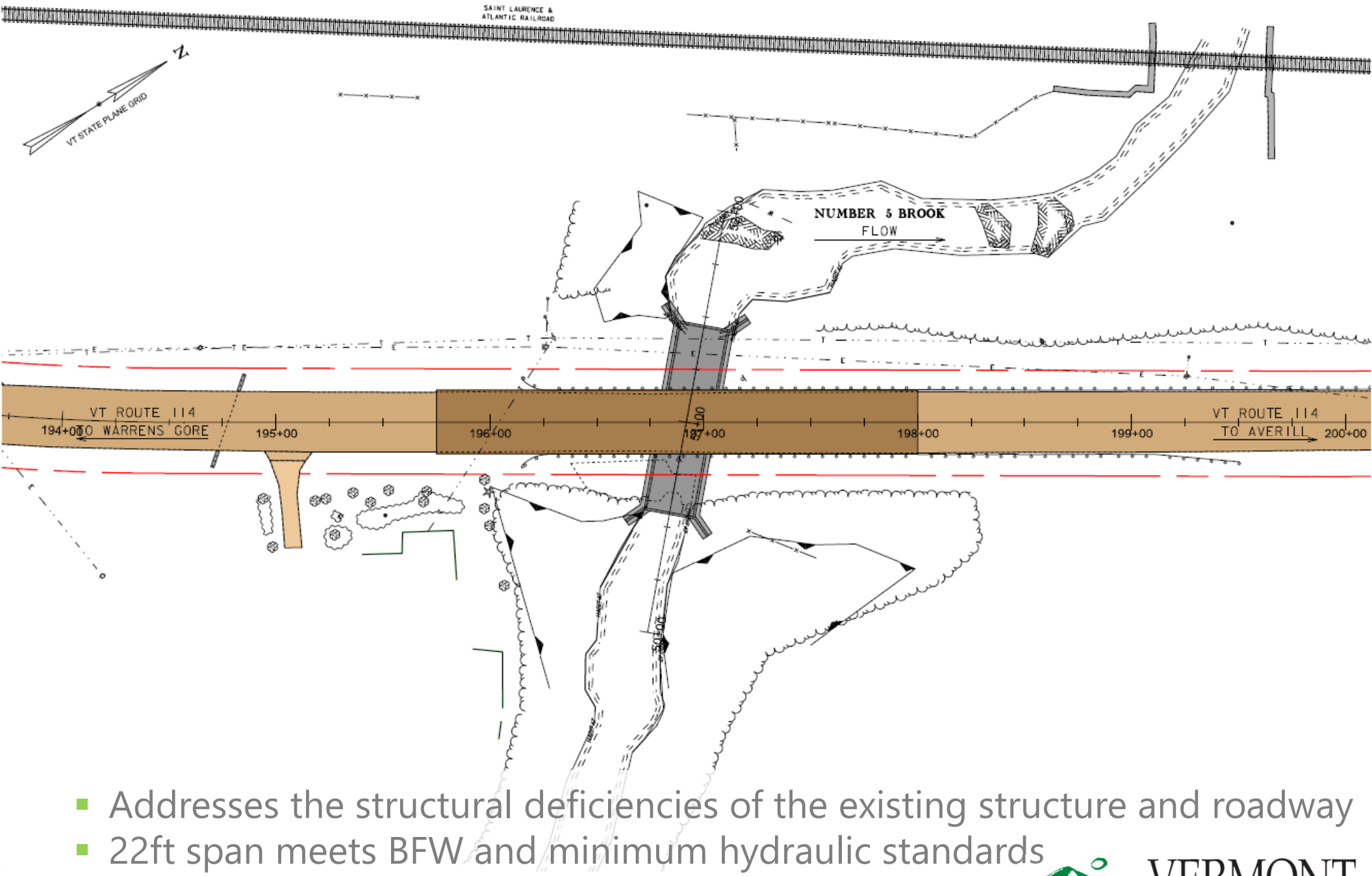
Selected Alternative – New Buried Structure



- Addresses the structural deficiencies of the existing structure and roadway
- 22ft span meets BFW and minimum hydraulic standards
- Design Life; 75 years

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Selected Alternative - Bridge #41

- Replace the existing culvert with a new 3-sided concrete rigid frame structure
  - 22-foot minimum span, open bottom, 3-sided precast concrete rigid frame
  - Minimum hydraulic standard and bank full width conditions will be met
  - Roadway settlement issues over BR41 on VT114 would be addressed
  - Meets geometric standards
  - 75-year design life

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Maintenance of Traffic Options Considered

- Offsite Detour
- Phased Construction
- Temporary Bridge

Selected Maintenance of Traffic Options

- **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 and a long construction season.

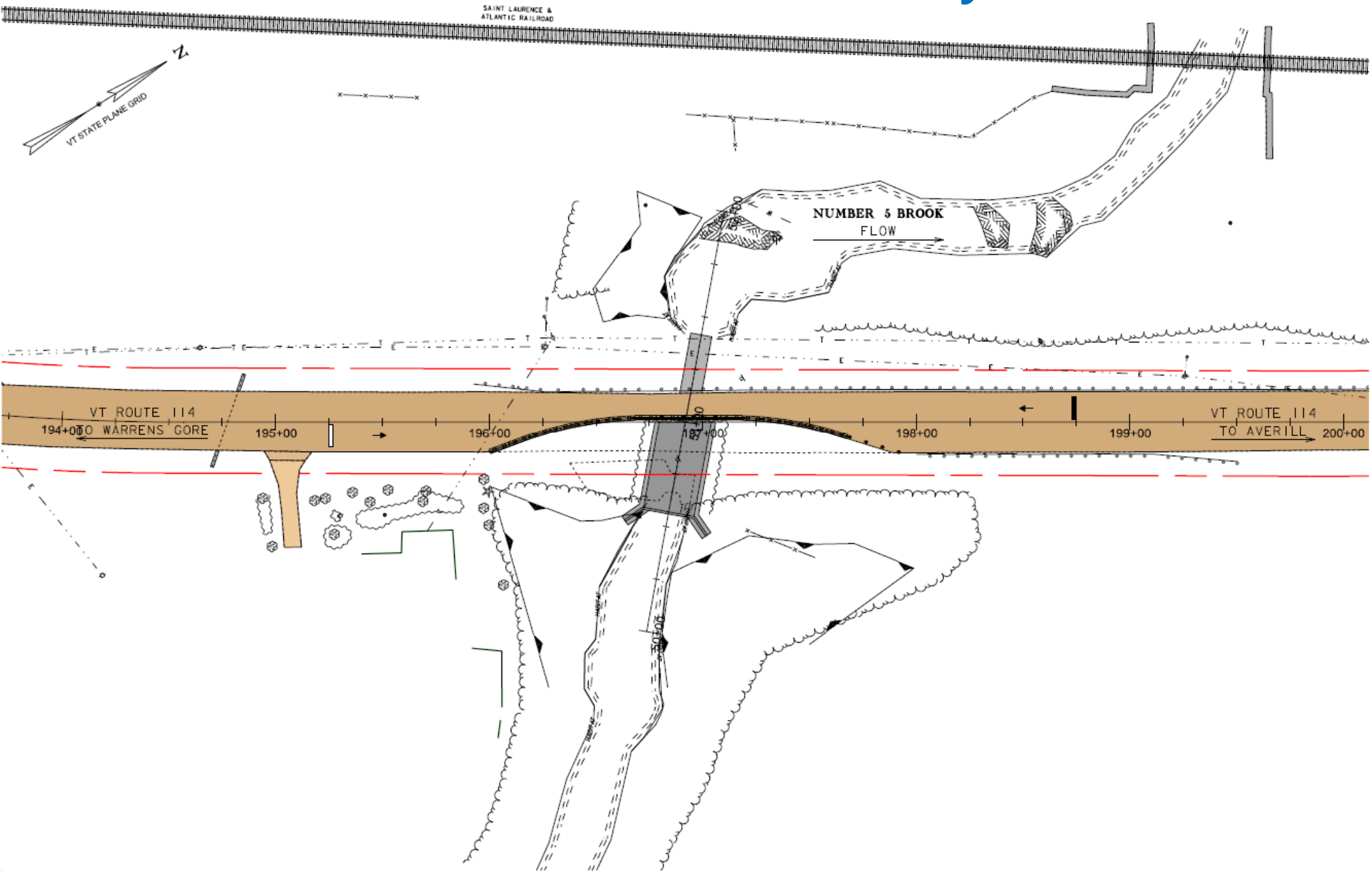
OR

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

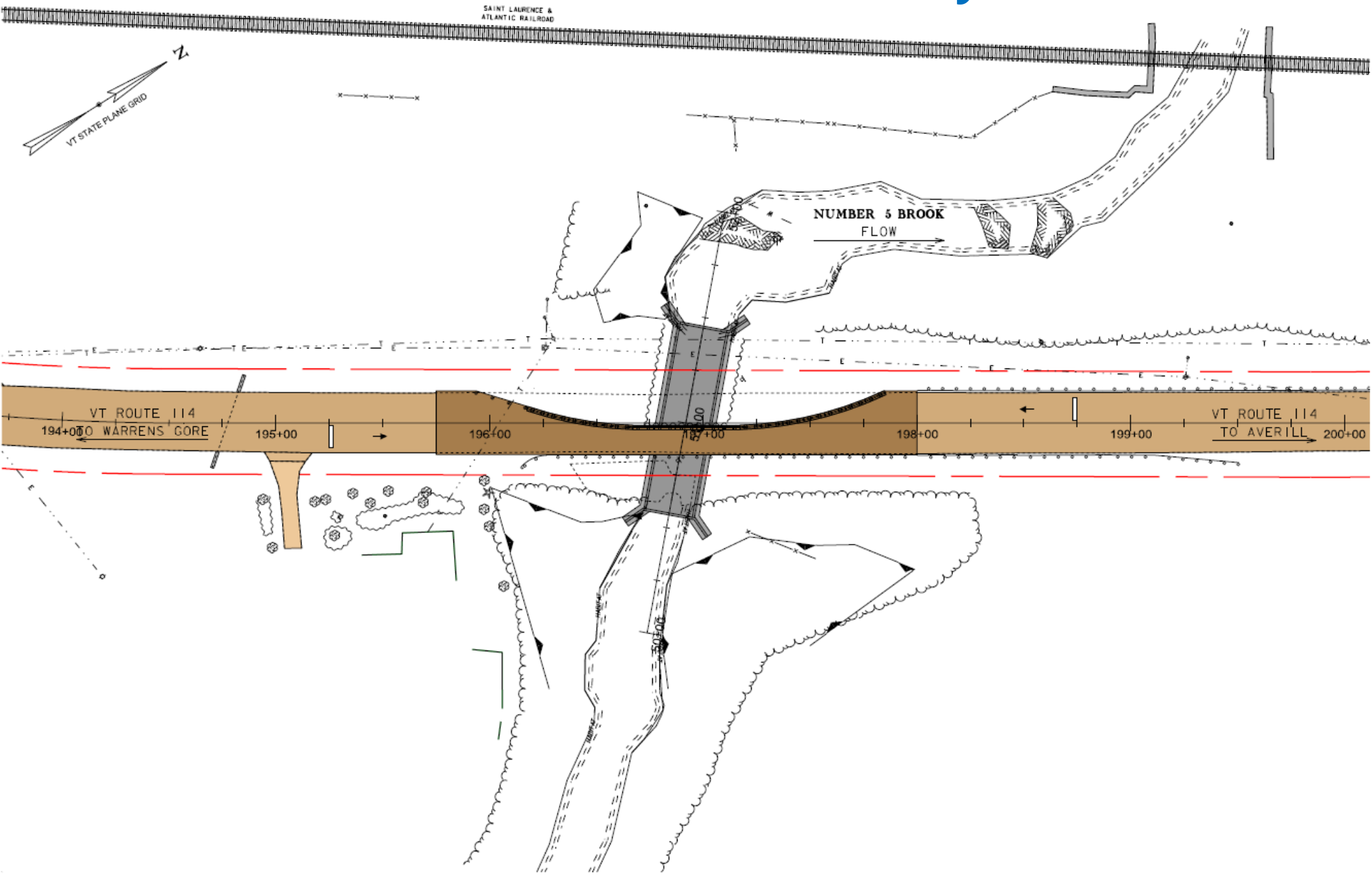
Phased Construction

- 2 Phases with 1-lane of traffic maintained with a traffic signal

Phased Construction Layout 1



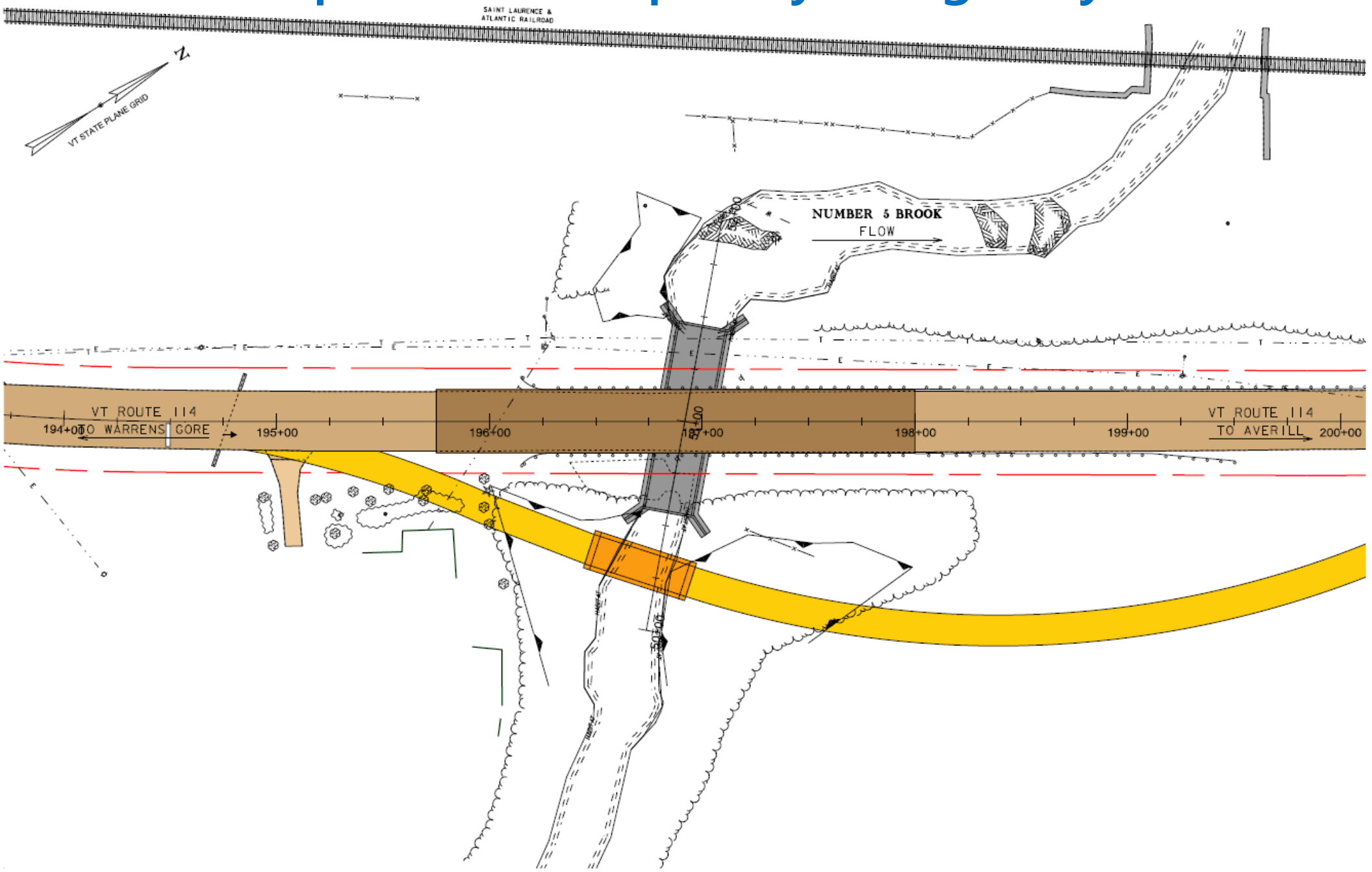
Phased Construction Layout 2



Temporary Bridge

- One Lane Temporary Bridge constructed Upstream
  - Would require tree clearing and impacts to wetlands

Upstream Temporary Bridge Layout



Preliminary Project Schedule

- Construction Start – Spring/Summer 2027
  - Construction year contingent on Right-of-Way and permitting
  - Total Cost Estimate: $2,800,000

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Project Summary - Bridge #41

- Replace the existing culvert with a new 3-sided concrete rigid framewhile maintaining one lane of traffic through the project area
  - Traffic maintained via phased construction or a one lane temporary bridge
  - 22-foot minimum span, 3-sided, open bottom, precast rigid frame
  - Minimum hydraulic standard and bank full width conditions will be met
  - Roadway settlement issues over the existing structure would be addressed
  - Meets geometric standards
  - 75-year design life

For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/22B360

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Questions and Comments

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