Essex-Jericho Culvert Bundle Public Informational Meeting

March 21, 2024

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Introductions

Laura Stone, P.E.

VTrans Scoping Project Manager

Mahendra Thilliyar, P.E.

VTrans Design Project Manager

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Purpose of Meeting

- Provide an understanding of our approach to the project
- Identify current efforts and anticipated schedule
- Provide an opportunity to ask questions and voice concerns

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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

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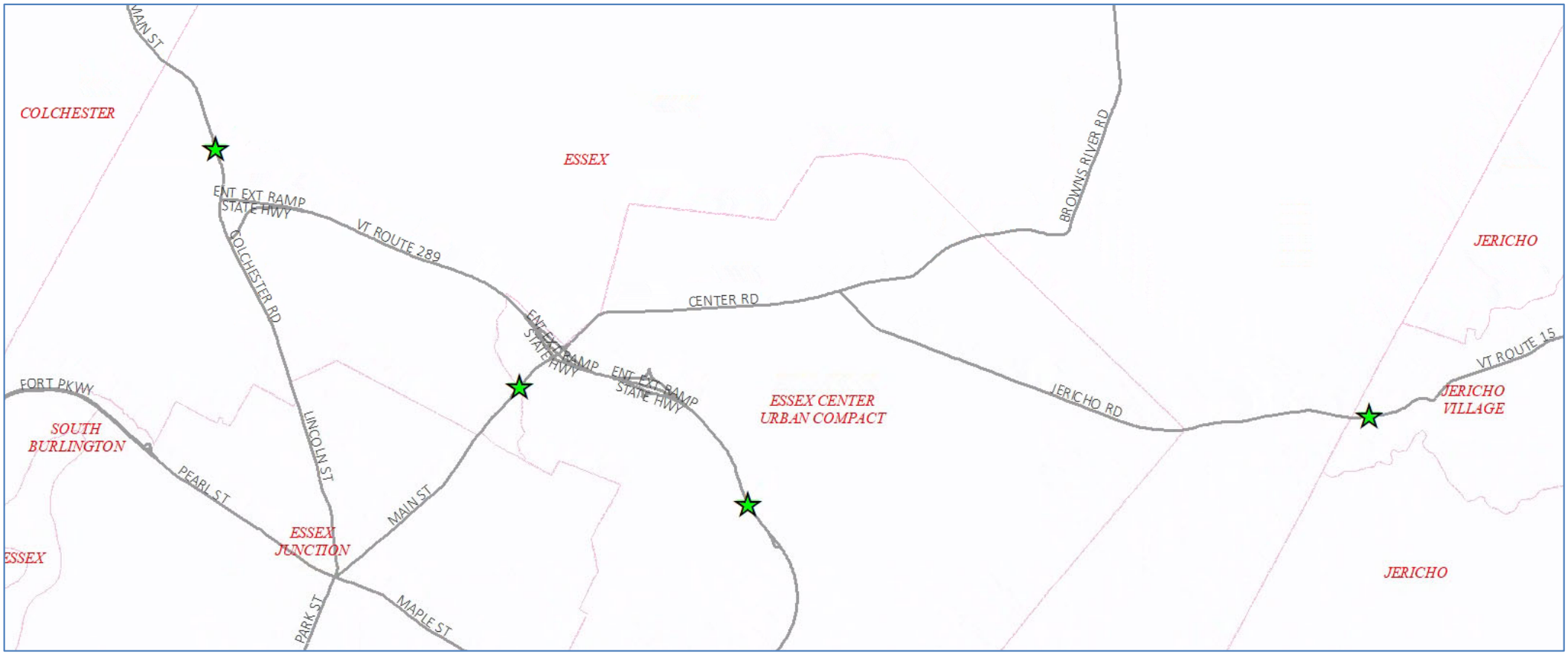
Location Map

- ESSEX TOWN STP CULV(148) 23B688, Bridge 11 on VT Route 2A
- ESSEX TOWN STP CULV(149) 23B689, Bridge 2 on VT Route 15
- JERICHO STP CULV(150) 23B690, Bridge 6A on VT Route 15
- ESSEX TOWN NH CULV(151) 23B691, Bridge 17-A on VT Route 289



Jericho STP CULV(150)

JERICHO VT ROUTE 15, BRIDGE 6A OVER UNNAMED BROOK

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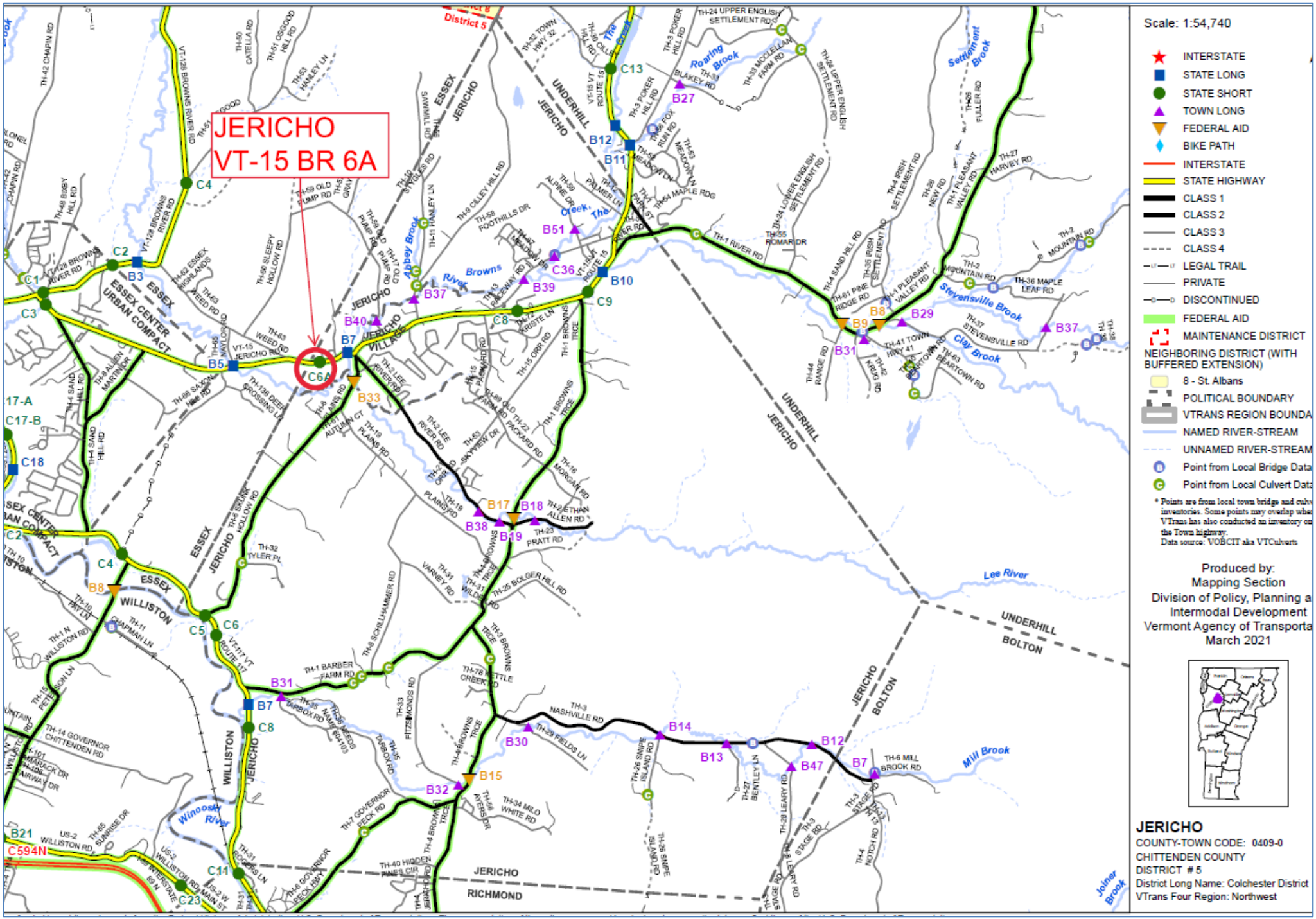

Location Map


Mountain View Rd
Mountain View Rd
Bridge 6-A
Jericho Rd
15
ho Rd

Looking West

Existing Conditions – Bridge #6A

- Roadway Classification – Principal Arterial
- Bridge Type – 6’ Asphalt Coated Corrugated Galvanized Muilt Plate Pipe (ACCGMPP)
- Ownership – State of Vermont
- Unknown construction year

Looking East

Existing Conditions – Bridge #6A

- Aerial utilities: Comcast, Consolidated Communications, and Green Mountain Power
- Underground utilities: Jericho Village Water System, Vermont Gas Systems
- All utilities run parallel to VT15 on the north side of the roadway

Existing Site Conditions – Bridge #6A

- The culvert is in poor condition. There is heavy rust scaling and pitting which has led to small perforations along the haunches in the first half of the barrel. Moderate distortion throughout the pipe has allowed for small gaps along connection joints leading to minor piping. The invert is covered with gravel, and is in poor condition.

- The existing culvert meets VTrans hydraulics standards and meets bankfull width.

- VT Route 15 has substandard shoulder widths along the VT Route 15 corridor through the project area.

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Existing Conditions - Bridge #6A

- Culvert Rating 4 (Poor)
- Channel Rating 7 (Good)

Looking Upstream (North)

Existing Conditions - Bridge #6A

Looking Downstream (South)

Existing Conditions - Bridge #6A

Inlet

Existing Conditions - Bridge #6A

Outlet

Existing Conditions - Bridge #6A

Culvert Barrel (Facing Upstream)

Existing Conditions - Bridge #6A

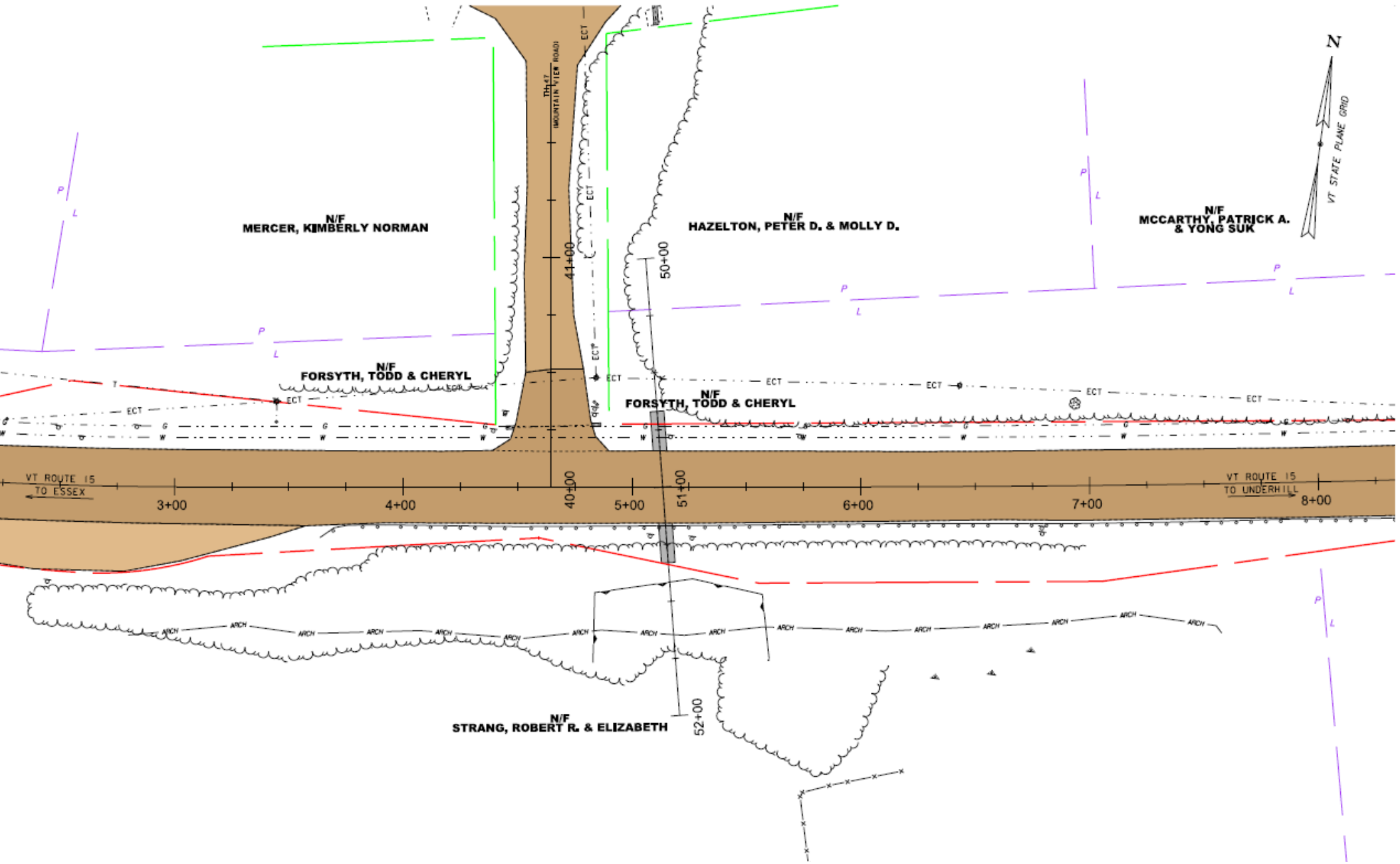
Heavy Corrosion along Eastern Wall near Upstream

Existing Conditions - Bridge #6A

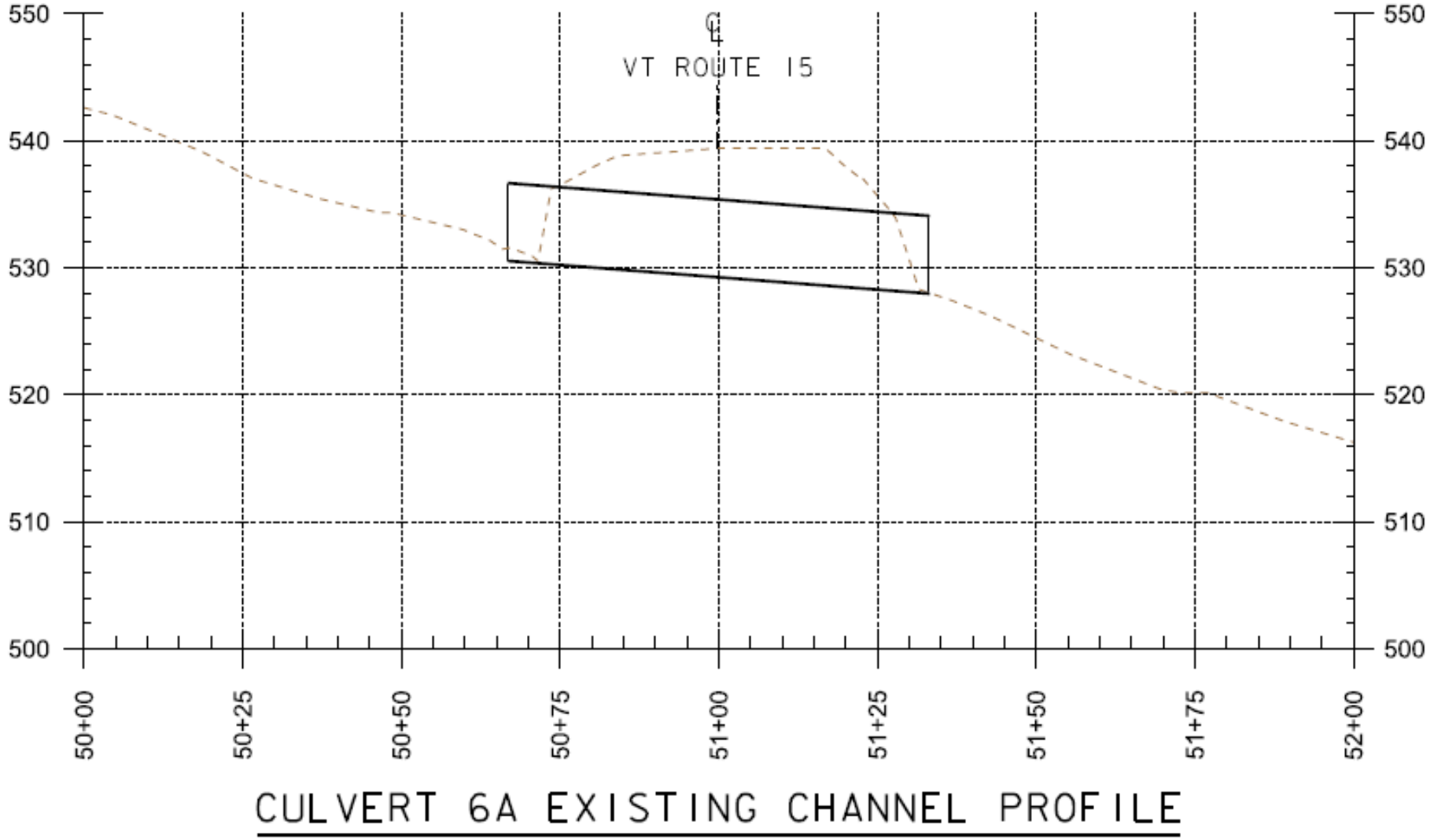
Existing Resources – Bridge #6A

- Wetland complexes are mapped on the outlet end (south side of VT Route 15) of the culvert within the study area.
- Historic Resources – BR6A is not historic
- Archeological – one area of archeological sensitivity to the south located on an outwash plain above a floodplain of the Winooski River
- Wildlife Habitat – None of the wildlife habitat components were identified as priority or highest priority within the study area

Existing Conditions – Layout



Existing Conditions – Profile



Design Criteria and Considerations

- Average Daily Traffic
  - 10,482 vehicles per day
- Design Hourly Volume
  - 1,200 vehicles per hour
- % Trucks
  - 8.7%

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Alternatives Considered – Bridge #6A

- No Action
  - Additional maintenance required within 10 years
- Culvert Rehabilitation – Pipe Liner
  - Minimum 4-ft inner diameter pipe liner
  - Meets VTrans hydraulic standards
  - Estimated 50-year design life
- Culvert Rehabilitation – Spray-On Liner
  - Meets VTrans hydraulic standards
  - Estimated 30-year design life
- Culvert Replacement – CPEP Structure
  - Proposed 3-ft diameter Corrugated polyethylene pipe
  - Meets VTrans hydraulic standards
  - 75-year design life

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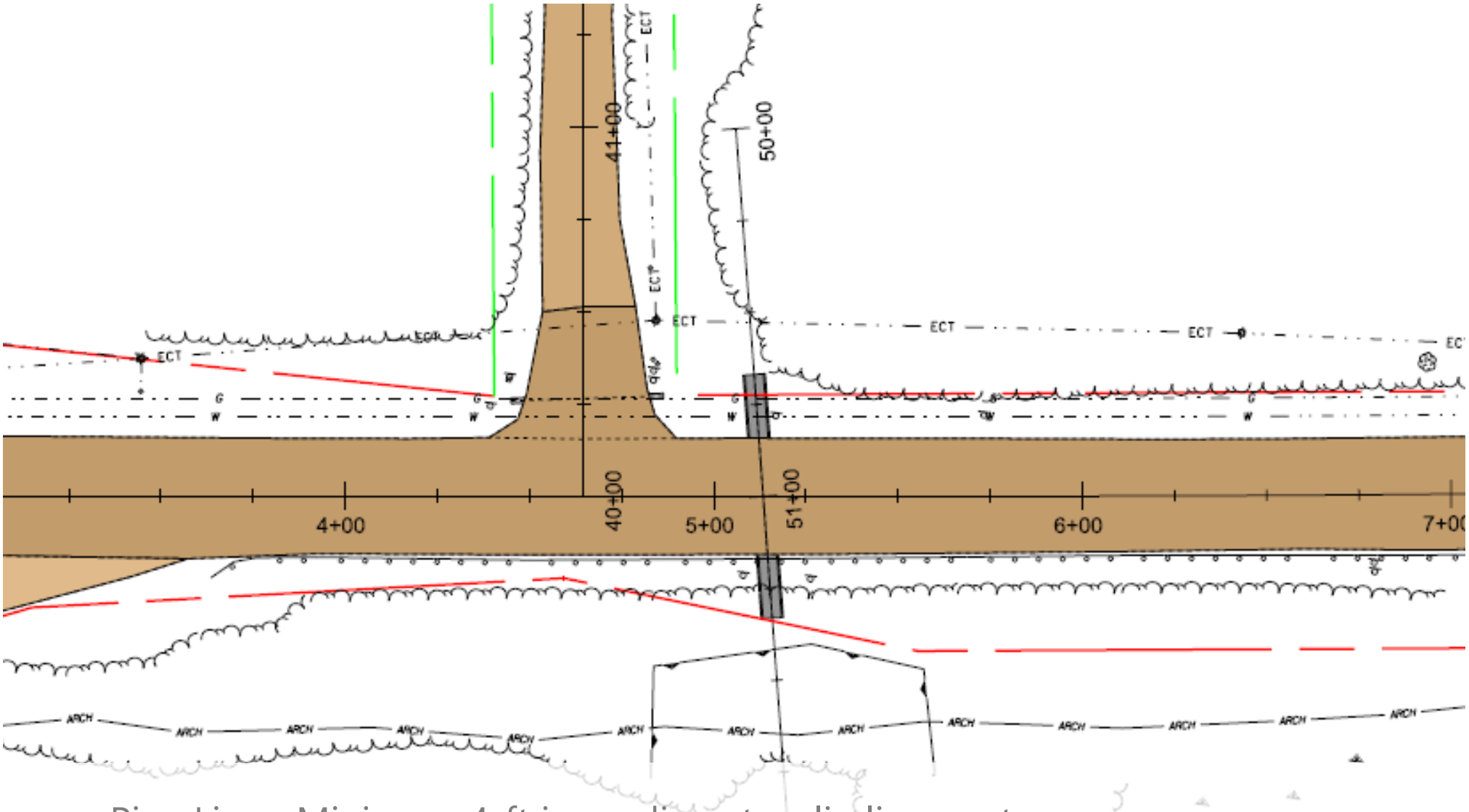
Selected Alternative: Rehabilitation – Culvert Liner



- Pipe Liner: Minimum 4-ft inner diameter slip liner system
- Spray-On Liner: polymer-enhanced cement mortar liner recommended
- Substandard shoulder widths through VT 15 corridor
- Meets minimum hydraulics standards
- Design Life; approx. 30 to 50 years

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Recommended Alternative - Bridge #6A

- Rehabilitate the existing culvert with a Round Pipe Slip Liner system while maintaining traffic on the existing culvert
  - Minimum 4-foot inside diameter slip liner system
  - Minimum hydraulic standards will be met
  - Substandard shoulder widths along the VT Route 15 corridor through the project area
  - Extends the life of the structure an additional 50 years
  - Possible temporary lane or shoulder closures for mobilizing construction equipment and managing truck traffic

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Jericho STP CULV(150)
Questions and Comments

JERICHO VT ROUTE 15, BRIDGE 6A OVER UNNAMED BROOK

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ESSEX TOWN STP CULV(149)

ESSEX VT ROUTE 15 BRIDGE 2 OVER INDIAN BROOK

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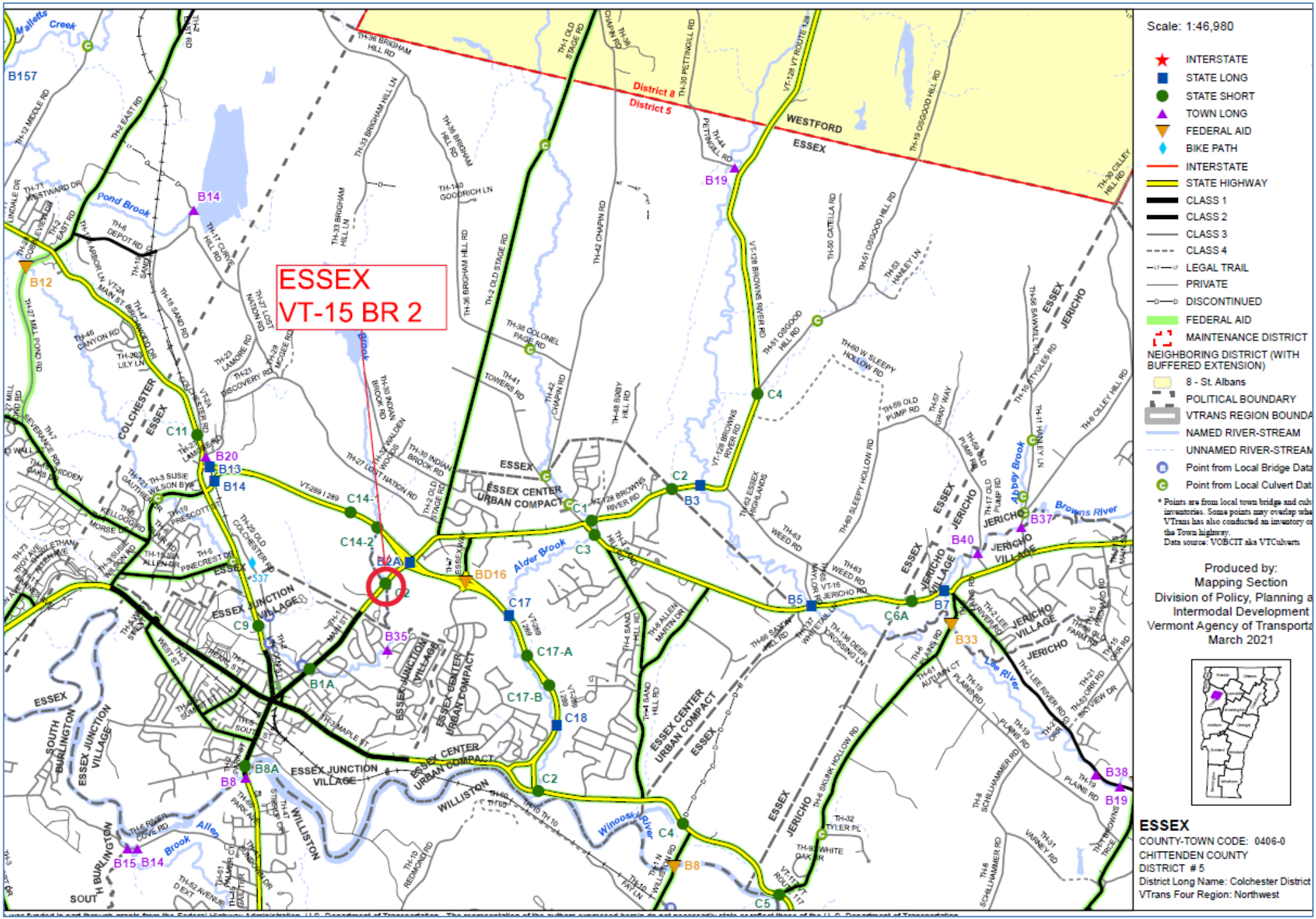

Location Map

Aerial View

Looking Northeast

Existing Conditions – Bridge #2

- Roadway Classification – Principal Arterial (NHS)
- Bridge Type – 8’ Span Concrete Box Culvert
- Ownership – State of Vermont
- Unknown construction year

Looking Southwest

Existing Conditions – Bridge #2

- Aerial utilities (electric, communications, and telephone) run parallel to VT15 on the northwest side
- Underground utilities (gas, sewer, fiberoptics) run parallel to VT15 on the southeast side

Existing Conditions - Bridge #2

- Culvert Rating 4 (Poor)
- Channel Rating 7 (Good)

Culvert Barrel – Timber Bracing

Existing Conditions - Bridge #2

Design Criteria and Considerations

- Average Daily Traffic
  - 11,692 vehicles per day
- Design Hourly Volume
  - 1,467 vehicles per hour
- % Trucks
  - 3.5%

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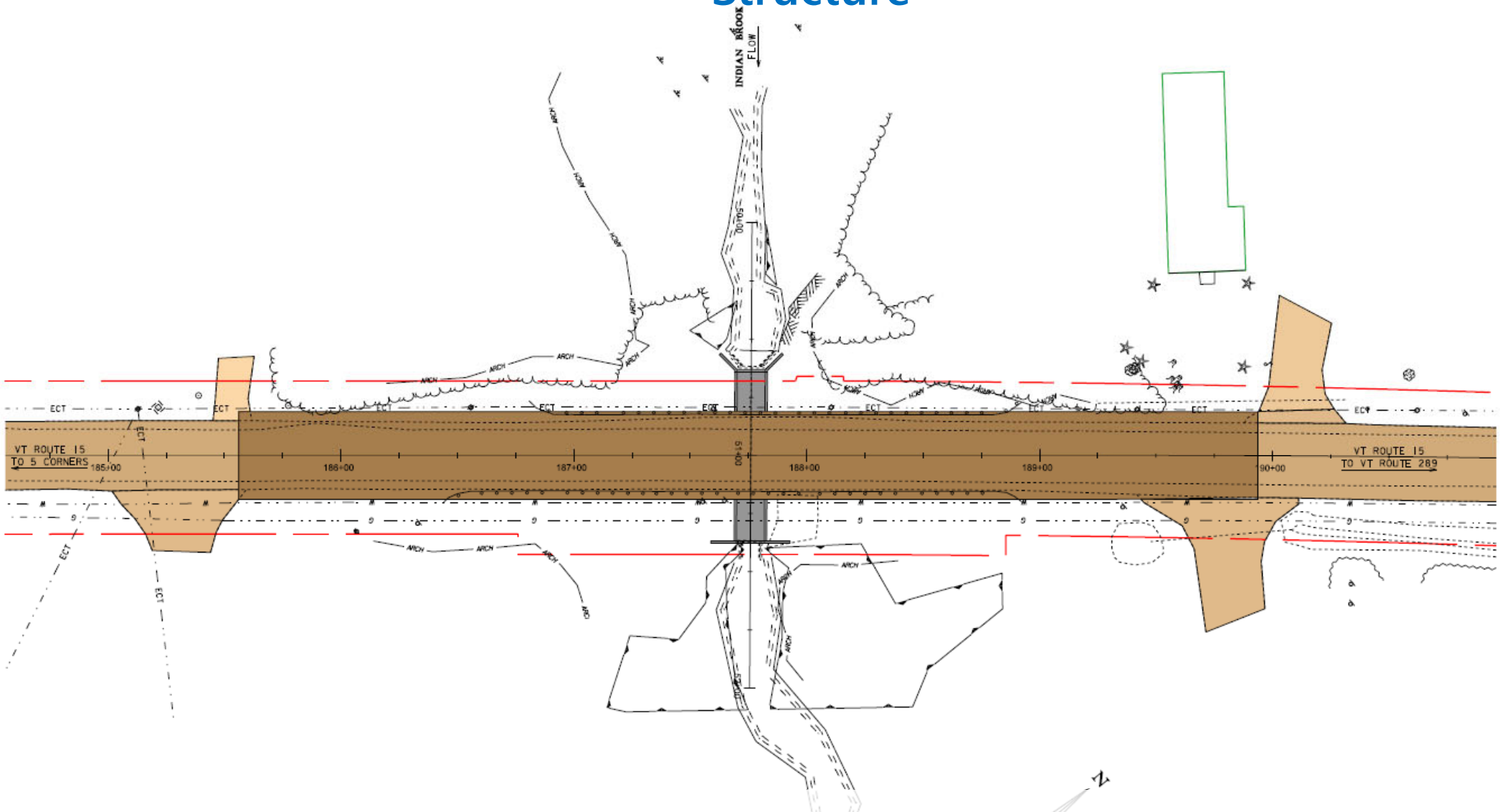
Selected Alternative: Culvert Replacement with Buried Structure



- Proposed 12’ span x 8’ rise (embedded 2-feet), approx. 75-ft long precast concrete buried structure (on-alignment)
- Meets minimum hydraulic standards
- Design Life; 75 years

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Maintenance of Traffic Options Considered

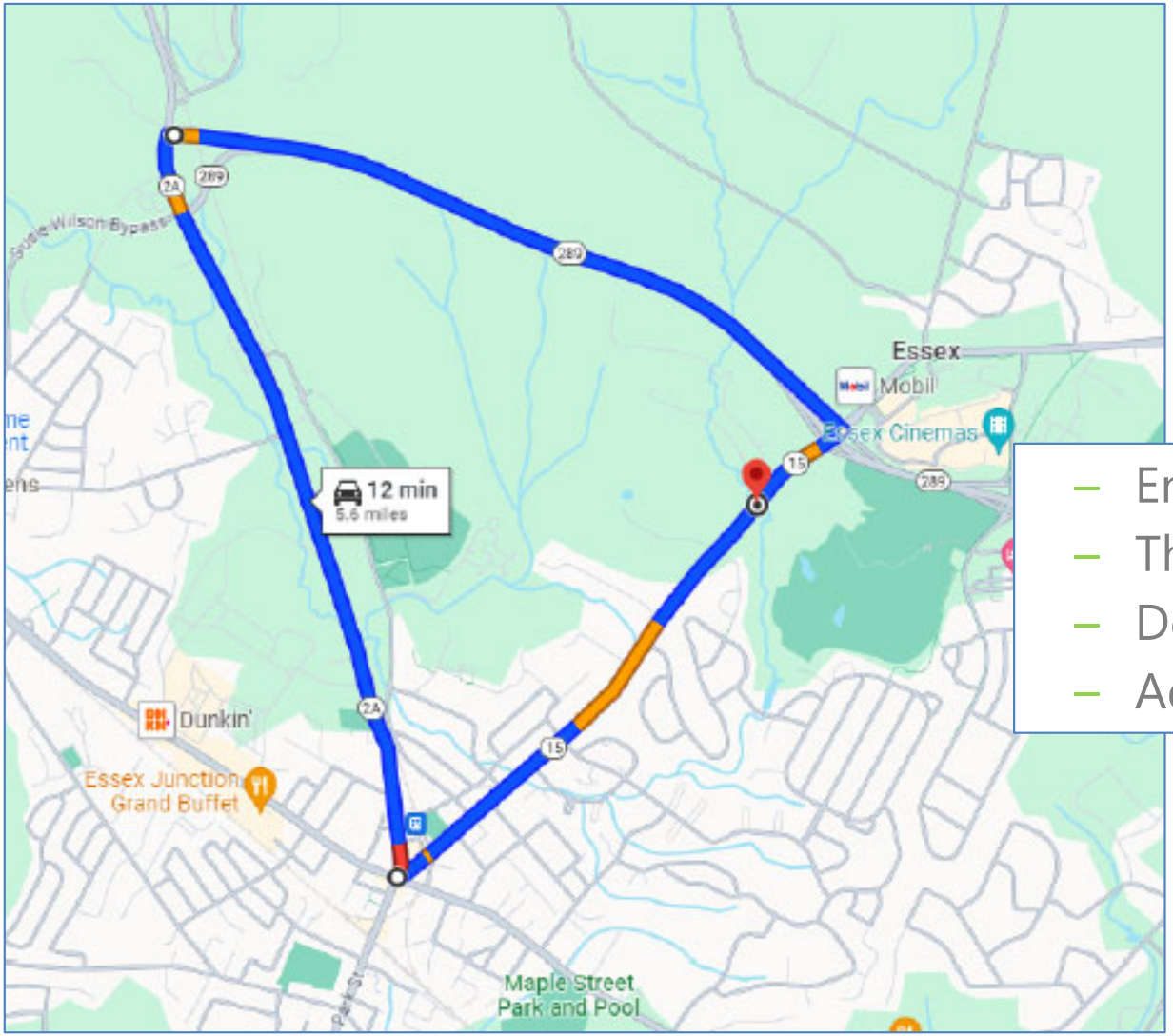
- Offsite Detour
- Phased Construction
- Temporary Bridge

Road Closure

- Detour chosen and signed by State
- Accelerated weekend closure
- Shortest Detour Route is 5.6 miles end-to-end

Traffic Control – Shortest Detour Option

- **Regional #1 Detour Route:** VT Route 15, to VT Route 289, to VT Route 2A, back to VT Route 15

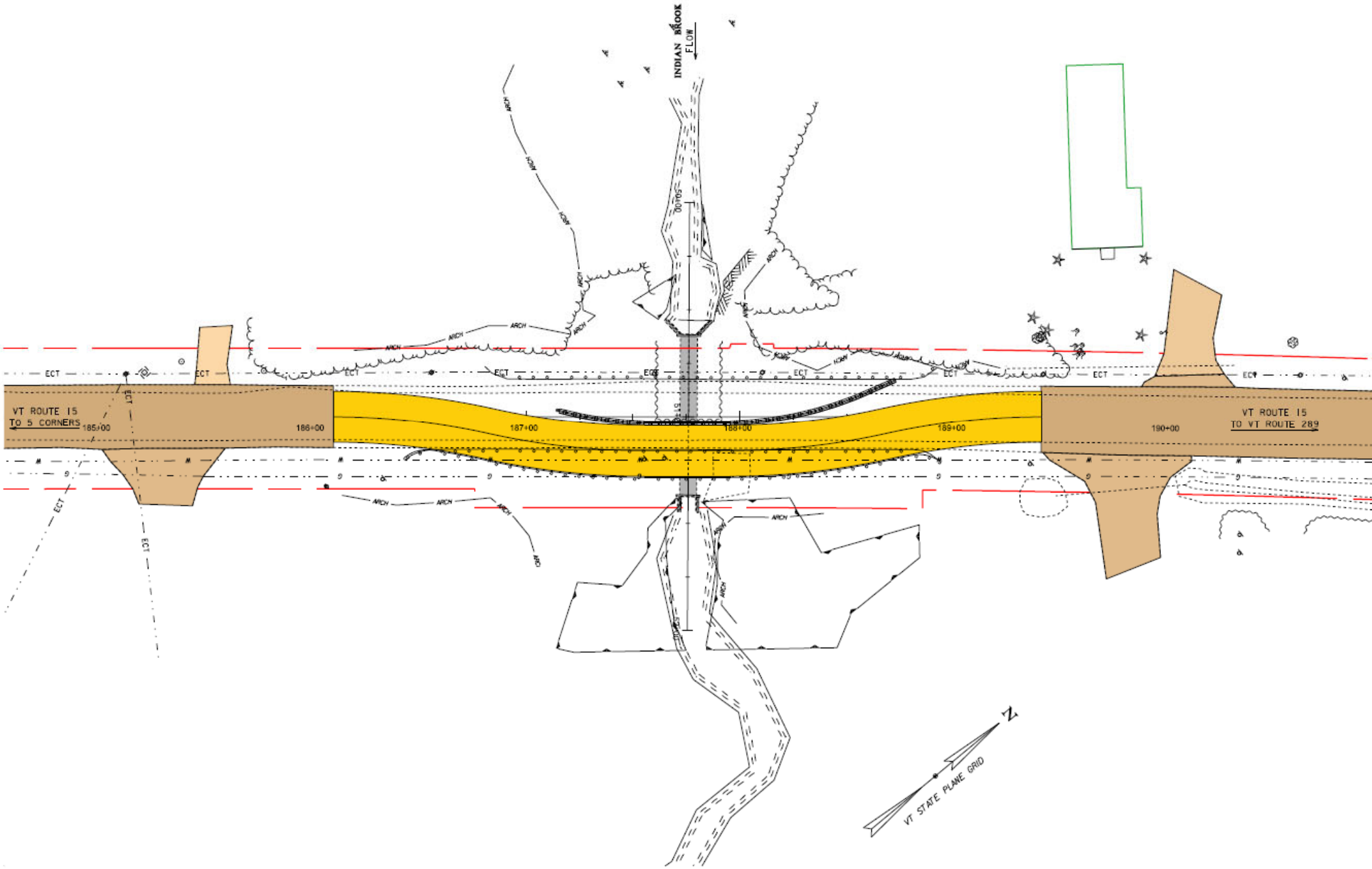


- End-to-End Distance: 5.6 miles
- Through Distance: 1.6 miles
- Detour Distance: 4.0 miles
- Added Distance: 2.4 miles

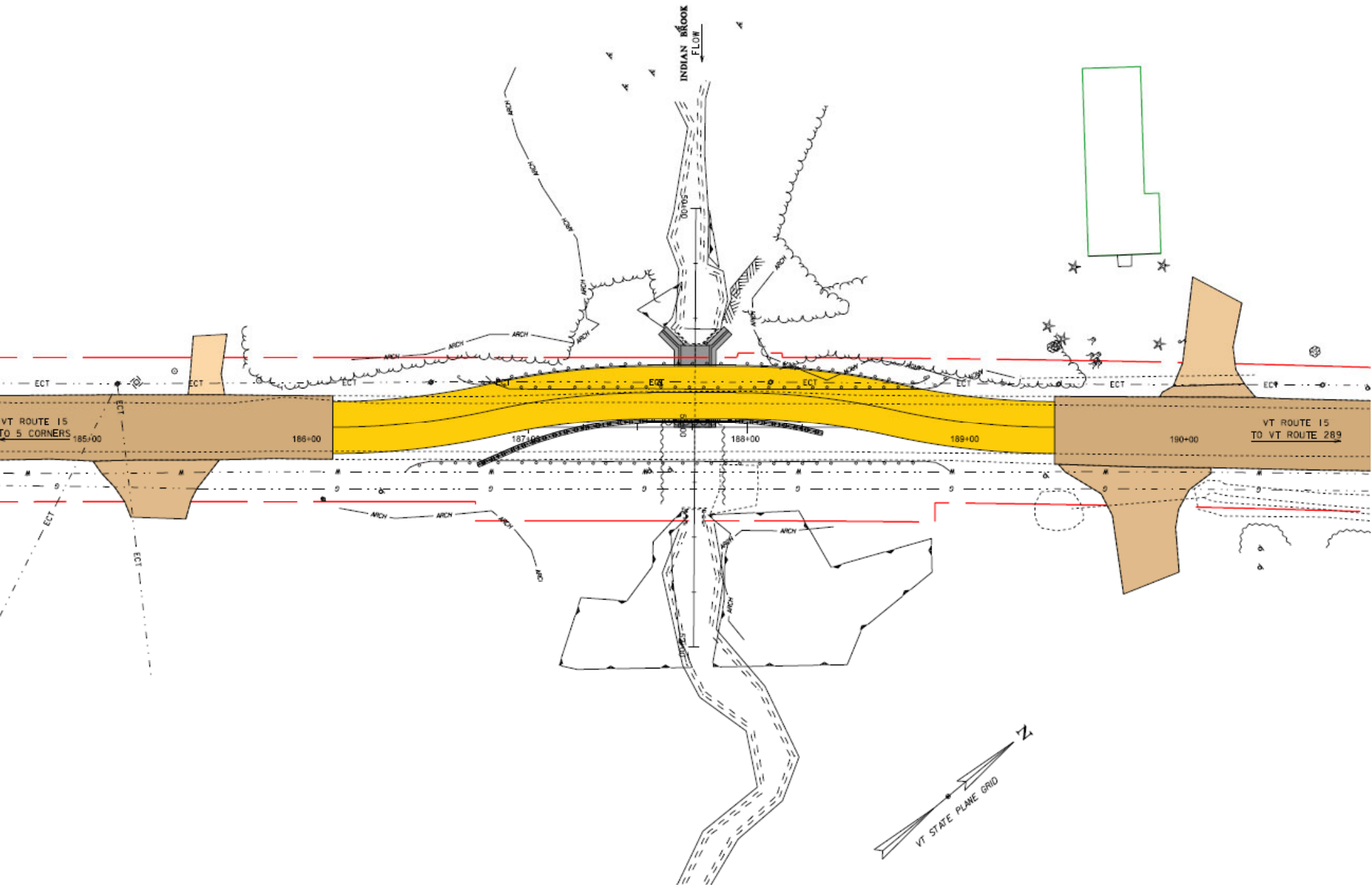
Phased Construction

- 2 Phases with two-lane or one-lane alternating traffic with Traffic Signal

Phased Construction Layout 1



Phased Construction Layout 2



Recommended Alternative - Bridge #2

- Replace the existing culvert with a new 3-sided or 4-sided Precast Concrete Buried Structure
  - Traffic will be maintained via phased construction and/or an offsite detour, or a combination of the two in order to keep the corridor partially open during construction to be determined in design
  - Impacts to utilities, environmental resources and cultural resources will be minimized by not constructing a temporary bridge
  - Proposed 12’ span, 75’ long precast concrete box or frame (on-alignment)
  - Proposed 12’ span meets the minimum hydraulic standards and bank full width conditions
  - New culvert length designed to meet minimum roadway width standards
  - 75-year Design life

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ESSEX TOWN STP CULV(149)
Questions and Comments
ESSEX VT ROUTE 15 BRIDGE 2 OVER INDIAN BROOK

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ESSEX TOWN STP CULV(148)

ESSEX VT ROUTE 2A, BRIDGE 11 OVER UNNAMED BROOK

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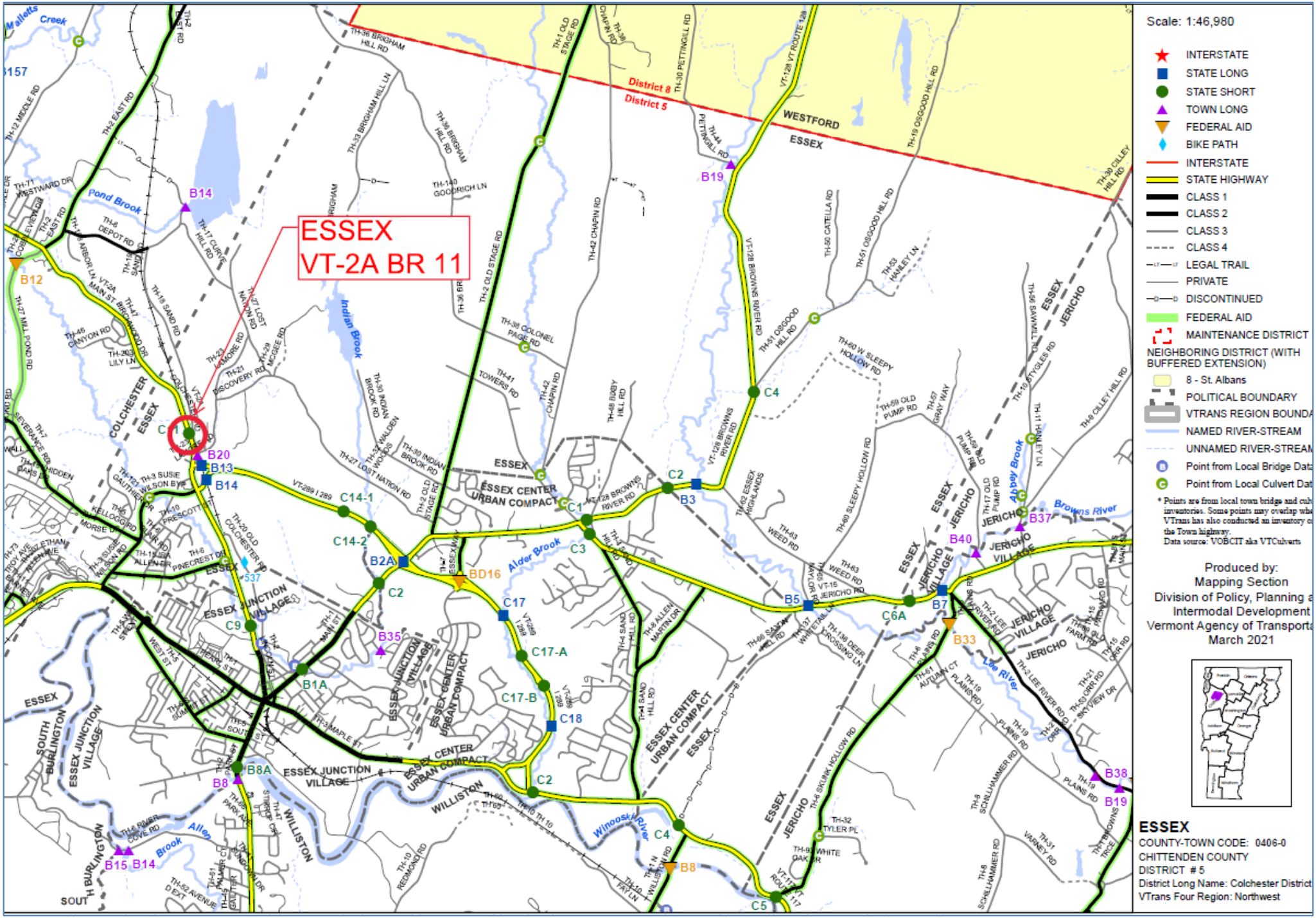


Location Map


Gentes Rd
Gentes Rd
Vermont Estate
Sales Services
Bridge 11

Looking North

Existing Conditions – Bridge #11

- Roadway Classification – Minor Arterial (National Highway System)
- Bridge Type – 6’x6’ Single Span RC Concrete Box Culvert
- Ownership – State of Vermont
- Constructed in 1934

Existing Conditions - Bridge #11

- Culvert Rating 4 (Poor)
- Channel Rating 5 (Fair)

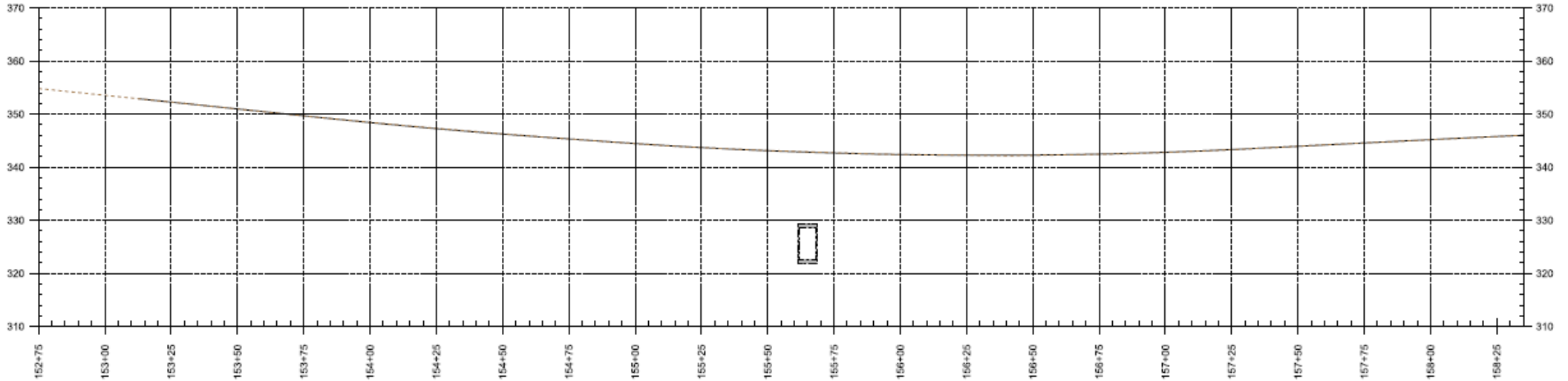
Failed Wingwall

Existing Conditions - Bridge #11

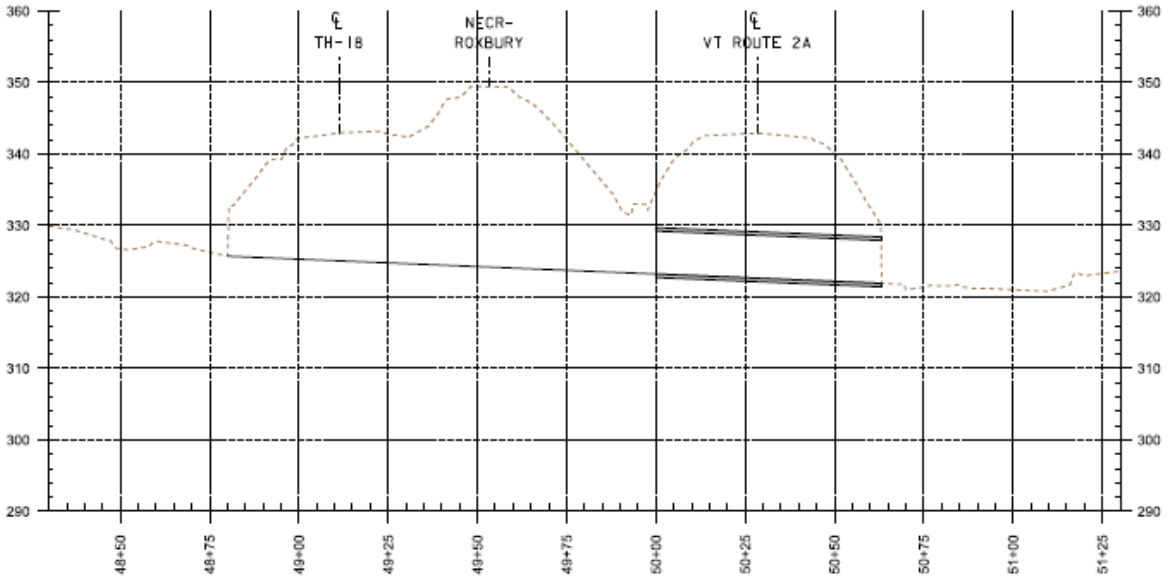
3ft of Backfill Sediment Loss in Spalled Area

Existing Conditions - Bridge #11

Existing Conditions – Profile



VT ROUTE 2A EXISTING PROFILE



BRIDGE 11 EXISTING CHANNEL PROFILE

Design Criteria and Considerations

- Average Daily Traffic
  - 10,683 vehicles per day
- Design Hourly Volume
  - 1,200 vehicles per hour
- % Trucks
  - 4.9%

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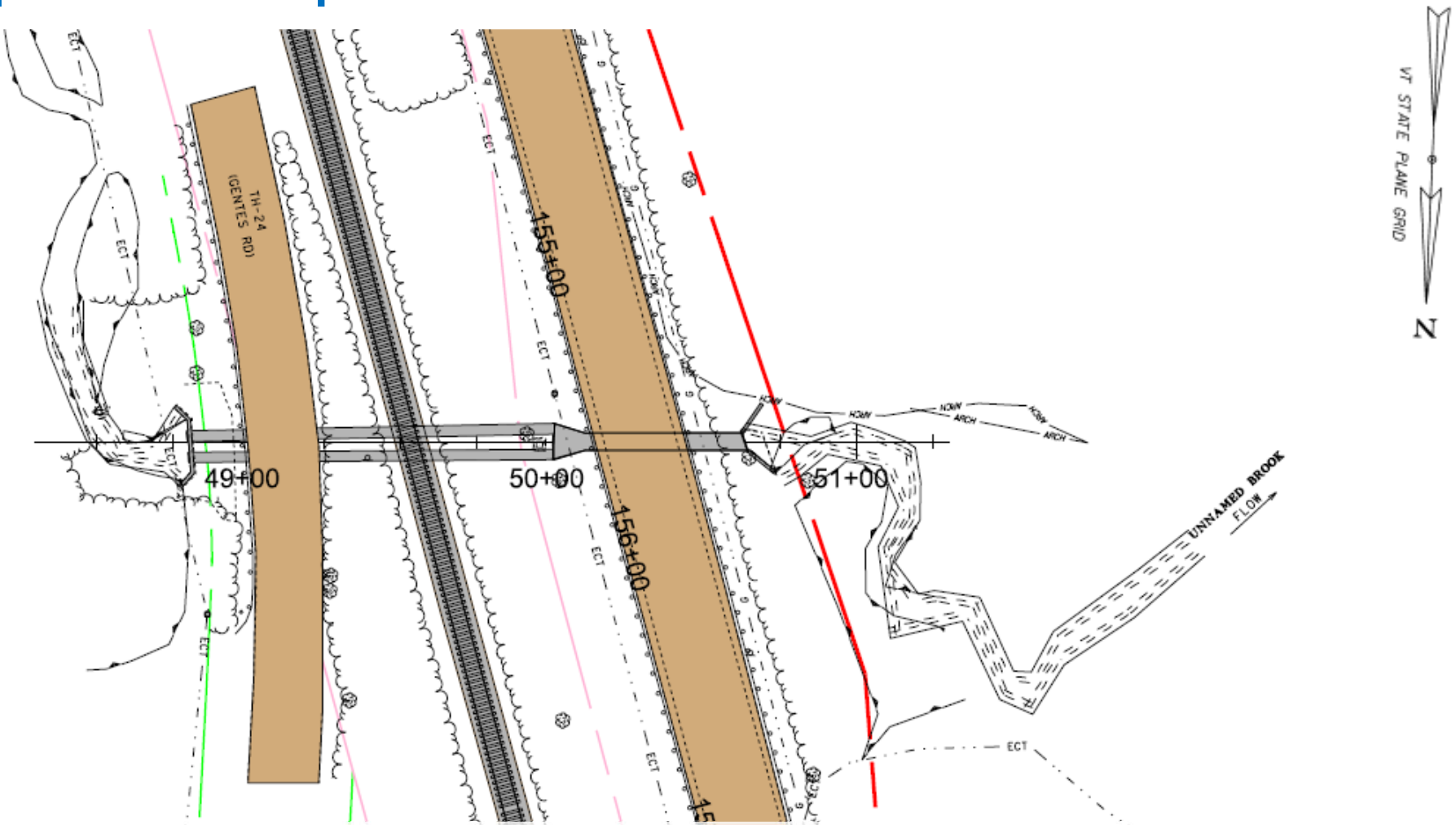
Selected Alternative: Culvert Rehabilitation – Concrete Repair and Slope Work



- Does not meet minimum standard 11’/5’ (32’) roadway width
- Meets minimum bank full width conditions
- Least costly option
- Shortest construction duration
- Design Life; approx. 30 years

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Recommended Alternative - Bridge #11

- Rehabilitate the existing culvert with Class III concrete repair and slope stabilization work while maintaining traffic on the existing culvert with temporary lane closures as needed.
  - Class III concrete repair and slope stabilization work including new wingwalls and headwall, and armoring side slopes
  - Minimum hydraulic standard and bank full width conditions will be met
  - Temporary lane or shoulder closures as needed in order to mobilize/demobilize construction equipment or manage truck traffic
  - Extends the life of the structure an additional 30 years

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ESSEX TOWN STP CULV(148)
Questions and Comments
ESSEX VT ROUTE 2A, BRIDGE 11 OVER UNNAMED BROOK

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11/27/2018

ESSEX TOWN NH CULV(151)

VT ROUTE 289, BRIDGE 17A OVER UNNAMED BROOK

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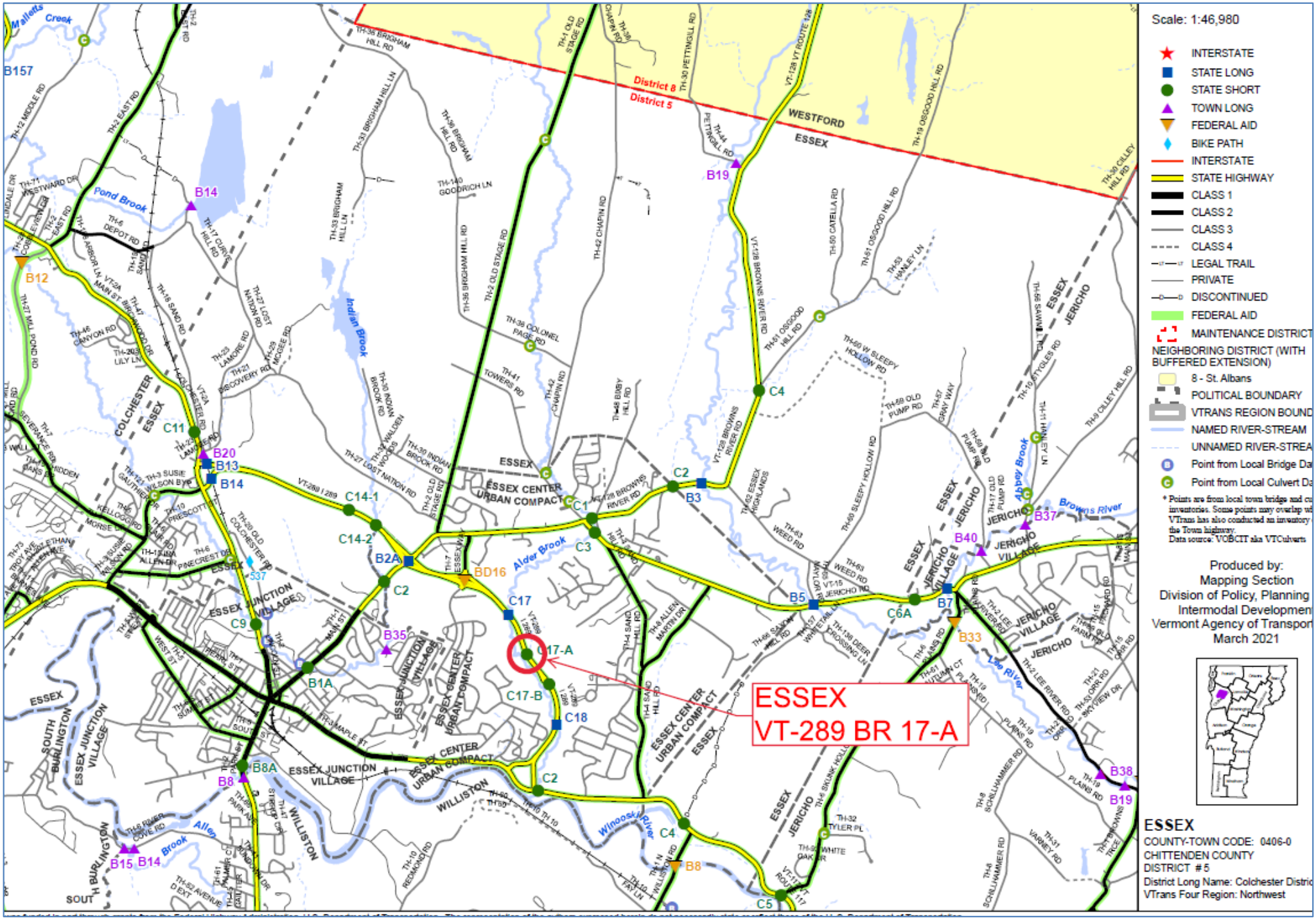
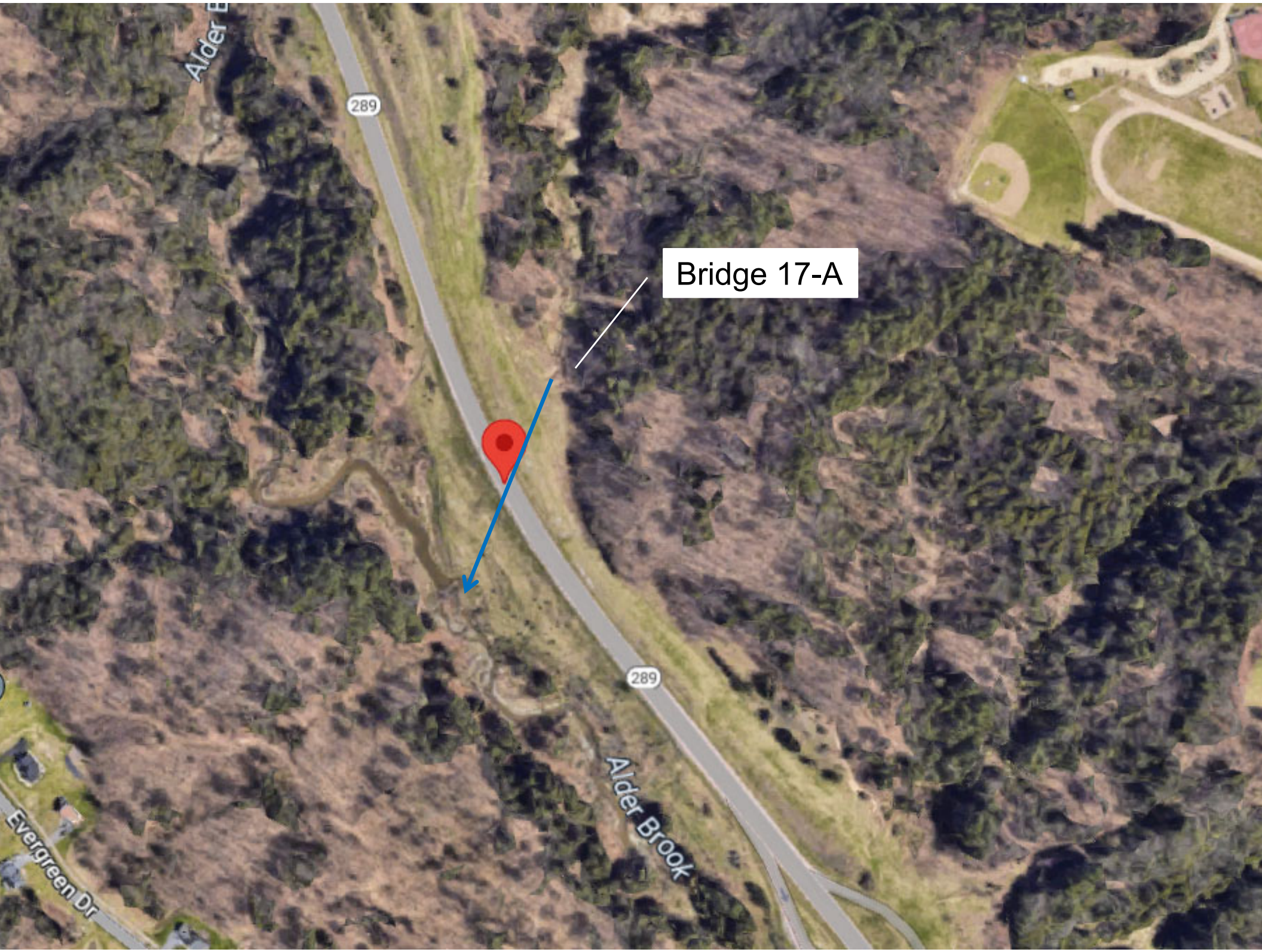


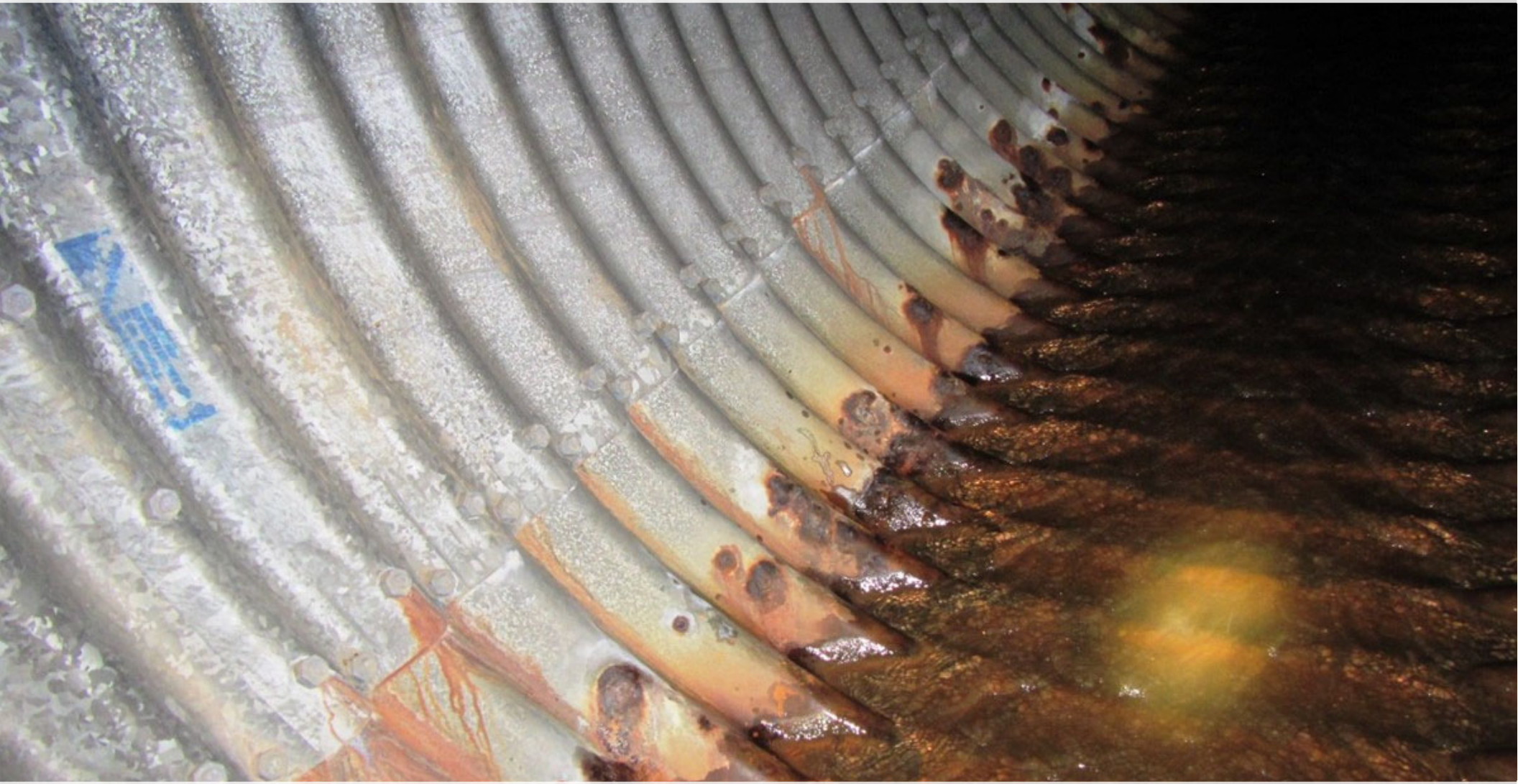
Location Map


Bridge 17-A
289
289
Alder Brook
Evergreen Dr

Looking Northwest

Existing Conditions – Bridge #17A

- Roadway Classification – Other Principal Arterial (National Highway System)
- Bridge Type – 7’ Corrugated Galvanized Metal Plate Pipe (CGMPP)
- Ownership – State of Vermont
- Constructed in 1993



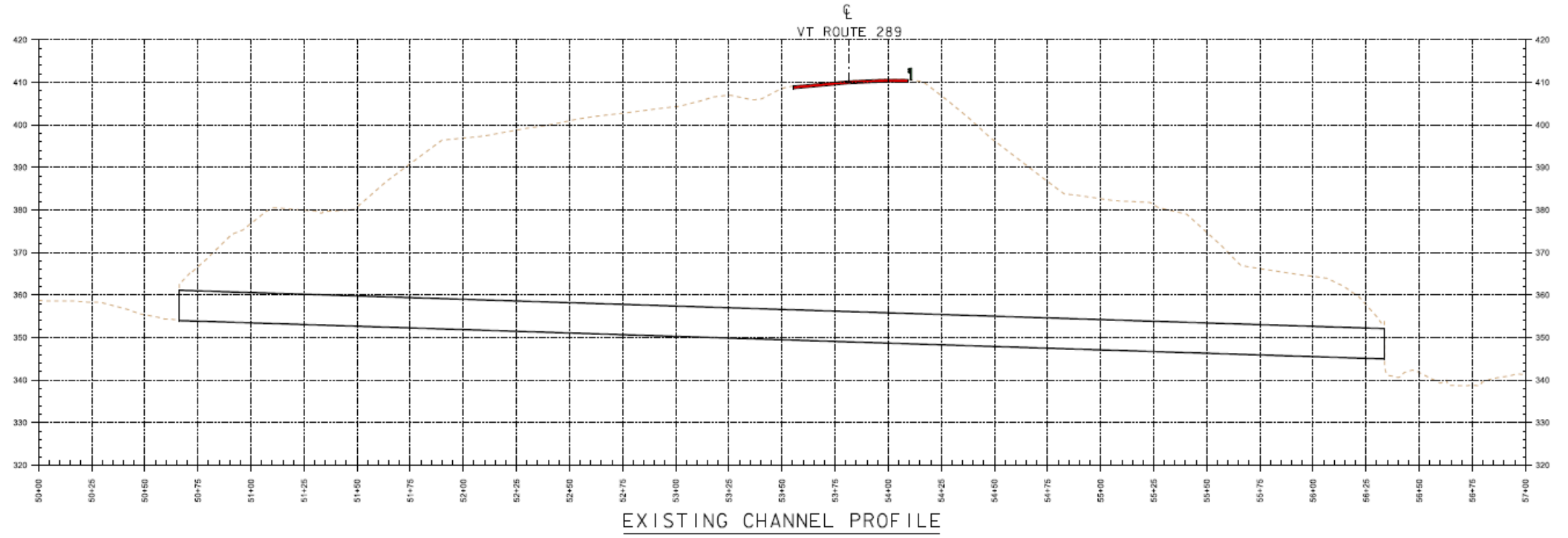
Existing Conditions - Bridge #17A

- Culvert Rating 5 (Fair)
- Channel Rating 7 (Good)

Culvert Barrel

Existing Conditions - Bridge #17A

Existing Conditions – Profile



EXISTING CHANNEL PROFILE

- 56’ fill over Inlet
- 65’ fill over Outlet

Design Criteria and Considerations

- Average Daily Traffic
  - 5,351 vehicles per day
- Design Hourly Volume
  - 660 vehicles per hour
- % Trucks
  - 4.7%

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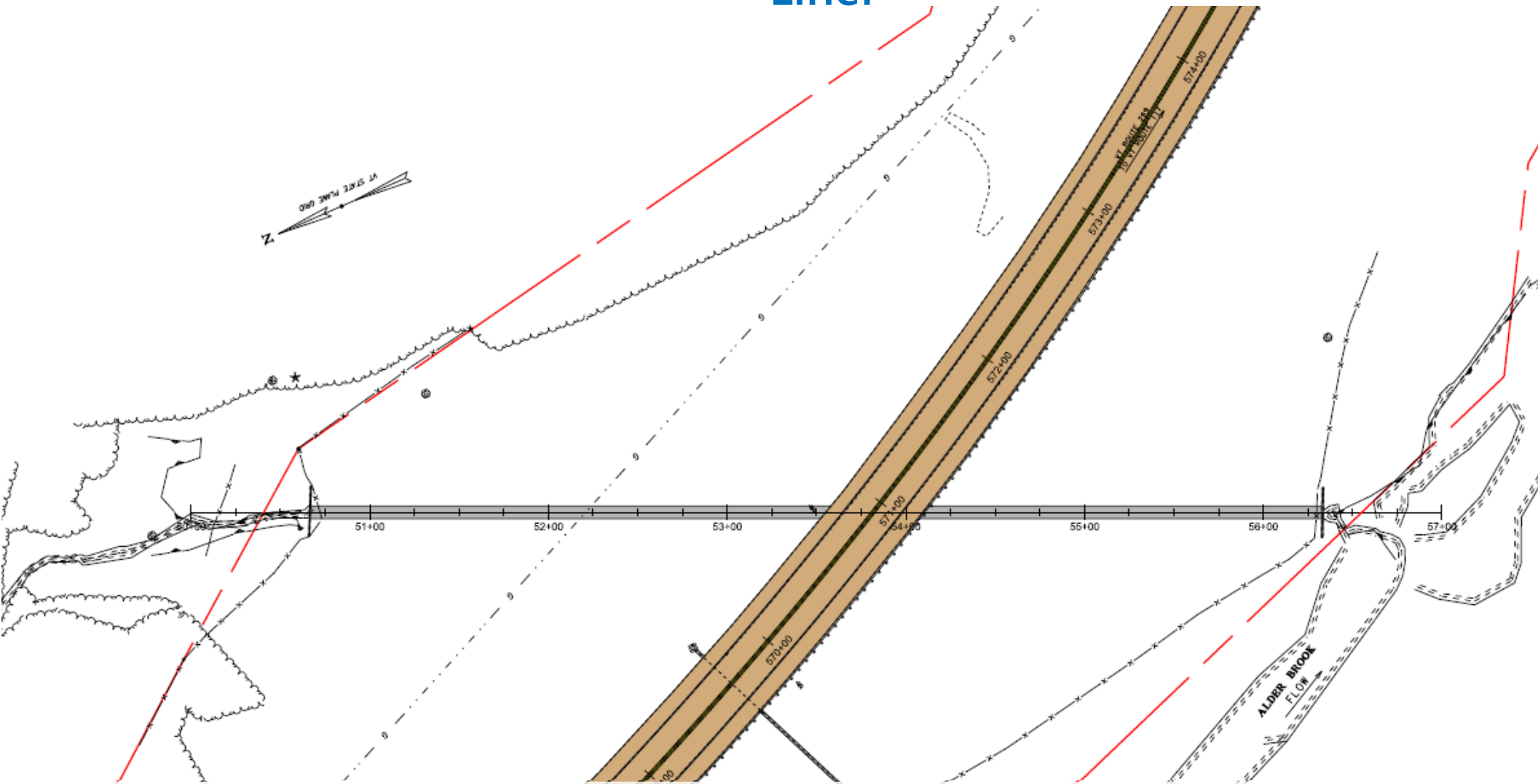
Selected Alternative: Culvert Rehabilitation – Invert or Slip Liner



- 72″ inner diameter Slip Liner or Concrete Invert
- Meets minimum standard 12′/8′ (42′) roadway width
- Meets minimum bank full width conditions
- Design Life; approx. 50 years

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Recommended Alternative - Bridge #17A

- Rehabilitate the existing culvert with a slip liner or concrete invert while maintaining traffic on the existing culvert
  - Possible temporary lane or shoulder closures for mobilizing construction equipment and managing truck traffic
  - Meets Minimum hydraulic standard and bank full width
  - 8′/12′/12′/8′ roadway typical meets minimum standard width
  - Extends the life of the structure an additional 50 years

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ESSEX TOWN NH CULV(151)
Questions and Comments

VT ROUTE 289, BRIDGE 17A OVER UNNAMED BROOK

11/27/2018

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Preliminary Project Schedule and Summary

- Construction Start – Summer 2026, Multi-Year Project

- Essex Bridge 2 on VT Route 15: Full bridge replacement with traffic maintained via phased construction and/or an offsite detour, or a combination of the two

https://outside.vermont.gov/agency/VTRANS/external/Projects/Structures/23B689

- Essex Bridge 17A on VT Route 289: Culvert rehabilitation with minimal impacts to traffic

https://outside.vermont.gov/agency/VTRANS/external/Projects/Structures/23B691

- Essex Bridge 11 on VT Route 2A: Rehabilitation limited to the State-owned portion of the culvert with short term lane closures for access

https://outside.vermont.gov/agency/VTRANS/external/Projects/Structures/23B688

- Jericho Bridge 6A on VT Route 15: Culvert slip liner with temporary lane closures and minimal impacts to traffic

https://outside.vermont.gov/agency/VTRANS/external/Projects/Structures/23B690

Essex-Jericho Culvert Bundle Questions and Comments

March 21, 2024

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