Plymouth BF 013-3(17)
Regional Concerns Meeting

VT Route 100– Bridge #114 over Reservoir Brook

September 21, 2020

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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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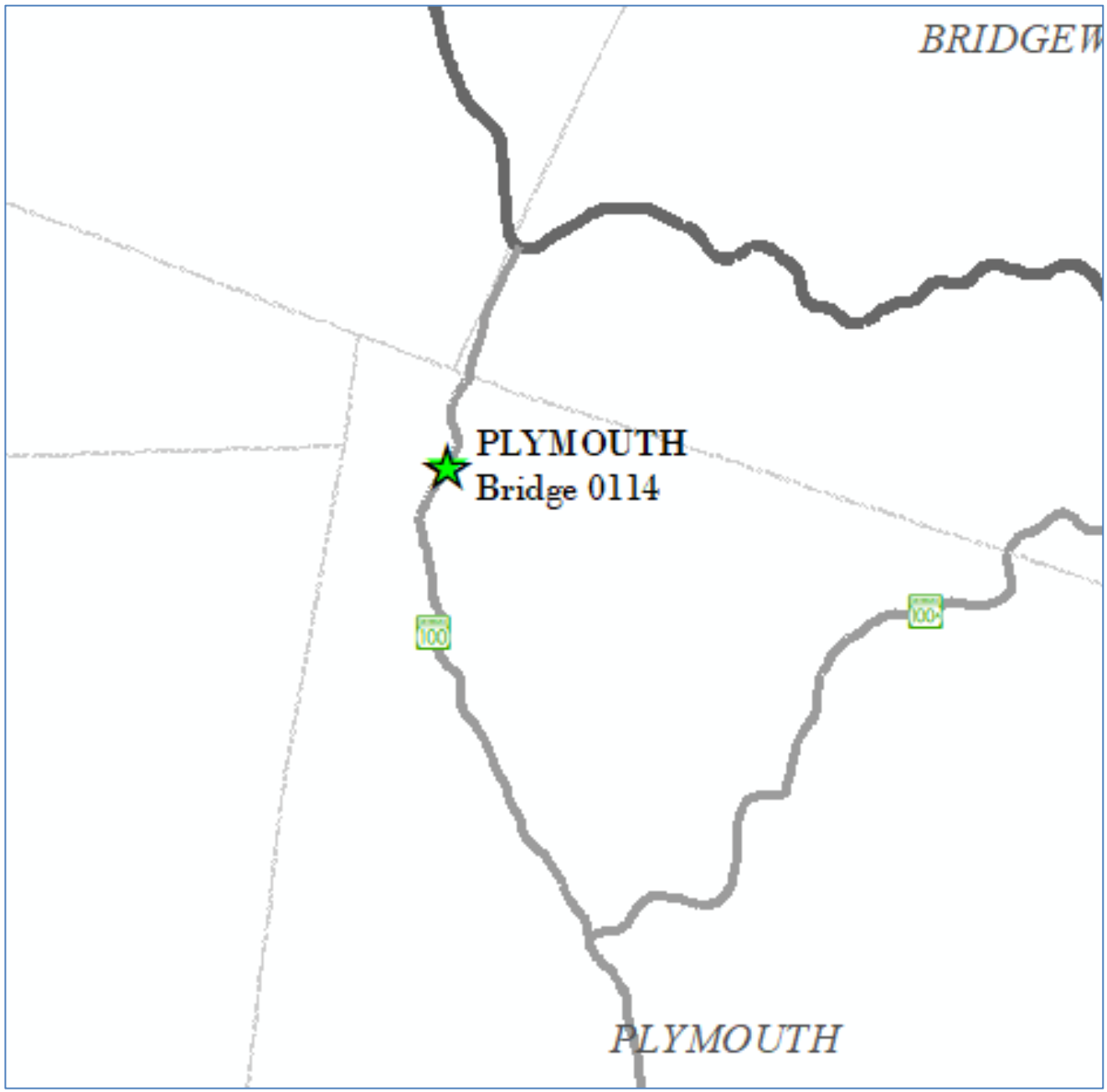

Location Map


Bridge 114
Project Location
Reservoir Brook
100
100
100
100
100
100
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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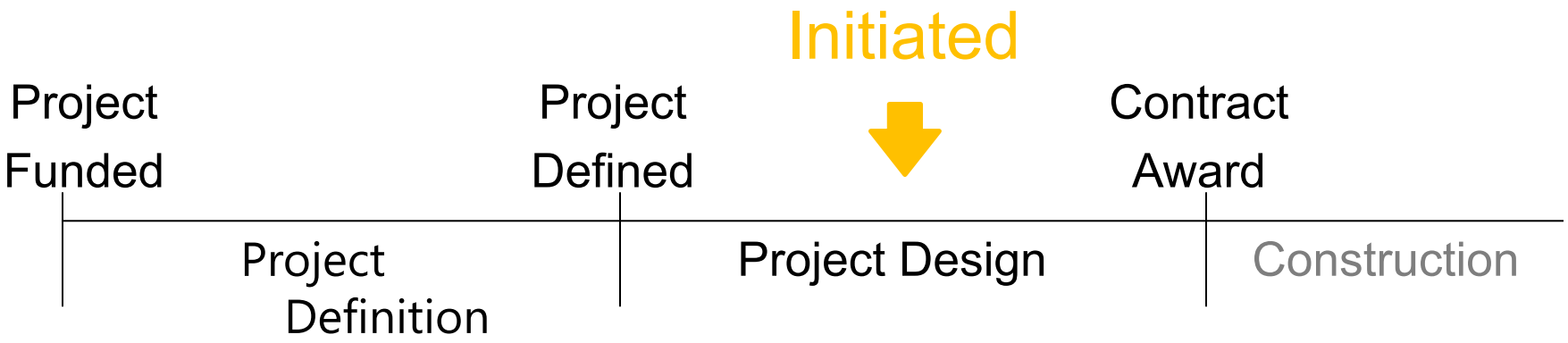
VTrans Project Development Process



- 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 over Bridge 114

Existing Conditions – Bridge #114

- Roadway Classification – Rural Minor Arterial
- Bridge Type – 7’ Span CGMPP (Corrugated Galvanized Metal Plate Pipe)
- Ownership – State of Vermont
- Constructed in 1971

Looking South over Bridge 114

Existing Conditions – Bridge #114

- Aerial Utilities
- Steep slopes upstream and downstream

Existing Conditions – Bridge #114

- The culvert is in serious condition.
  - There is a hole along the top of barrel toward inlet end.
  - The pipe has some deformation starting along south side of the barrel.
  - Large holes along the haunch areas have been observed throughout and along the invert.
  - The invert has started to crush and has slotted holes and torn out ribs. Piping is occurring along barrel walls and along invert.
  - Crushing is evident at the mid-span and along the invert.

- The existing culvert does not meet the minimum hydraulic standard. The existing culvert does not meet the calculated or measured bank full width.

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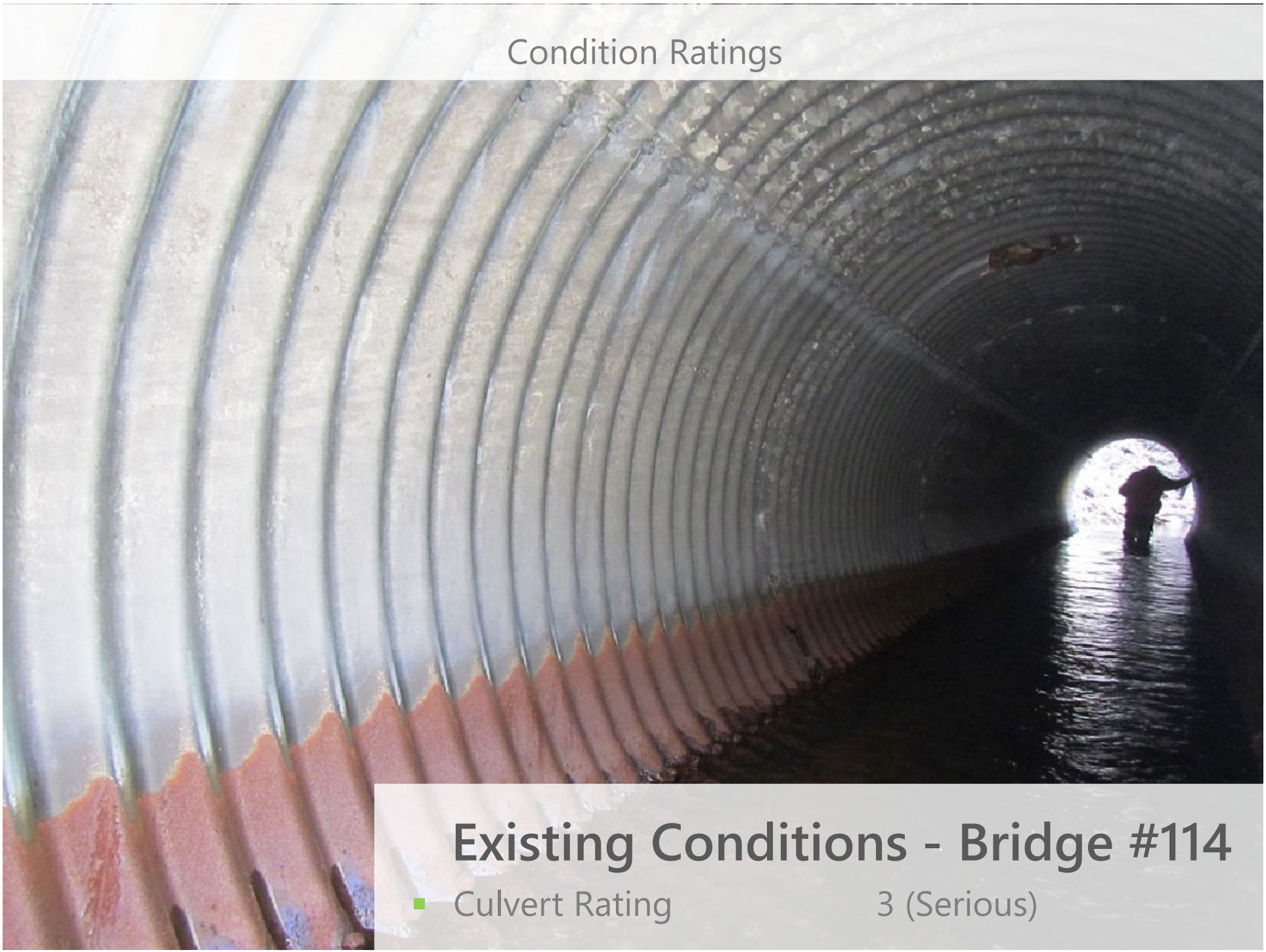


Existing Conditions - Bridge #114

- Culvert Rating 3 (Serious)

Inlet

Existing Conditions - Bridge #114

Outlet

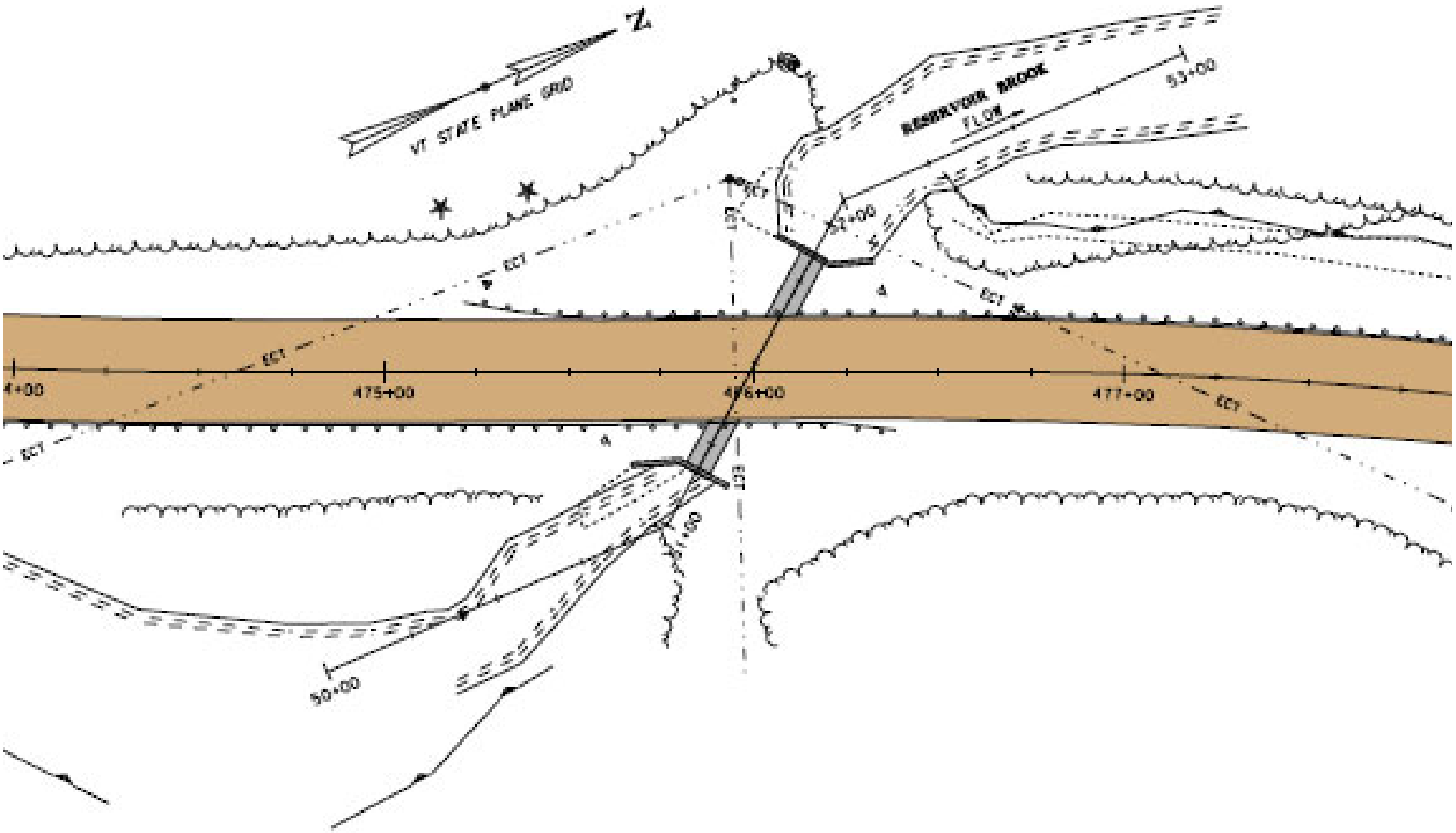
Existing Conditions - Bridge #114

Resources – Looking Upstream

Existing Conditions – Bridge #114

- Northern Long-Eared Bat
- Wetlands
- Statewide significant agricultural soils and prime agricultural soils
- Wildlife Habitat

Existing Conditions



Design Criteria and Considerations

- Average Daily Traffic
  - 1,200 vehicles per day
- Design Hourly Volume
  - 190 vehicles per hour
- % Trucks
  - 24.0%

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Alternatives Considered – Bridge #114

- No Action
  - Additional maintenance required within 10 years
- Rehabilitation
  - Slip Liner or Spray on Liner
  - Minimal Traffic Impacts
  - Hydraulically substandard
  - Roadway width substandard: 11′/3′ typical
  - 30-year design life
- New Buried Precast Box or Steel Pipe Arch
  - Contingent on borings
  - 16′ span with buried invert
  - Roadway to match existing: 11′/3′ typical
  - 75-year design life
- New Precast 3-Sided Frame or Metal Arch
  - 16′ span
  - Roadway to match existing: 11′/3′ typical
  - 75-year design life

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Selected Alternative - Bridge #114

- Culvert Replacement with a Buried Steel Pipe Arch
  - Closed bottom culvert based on borings
  - 16′ span with buried invert
  - Typical section to match existing: 11′/3′
    - Culvert lengthened to allow for future widening of roadway to accommodate minimum standard: 11’/4’ typical
  - Aerial utility relocation avoided with metal structure
  - 75-year design life

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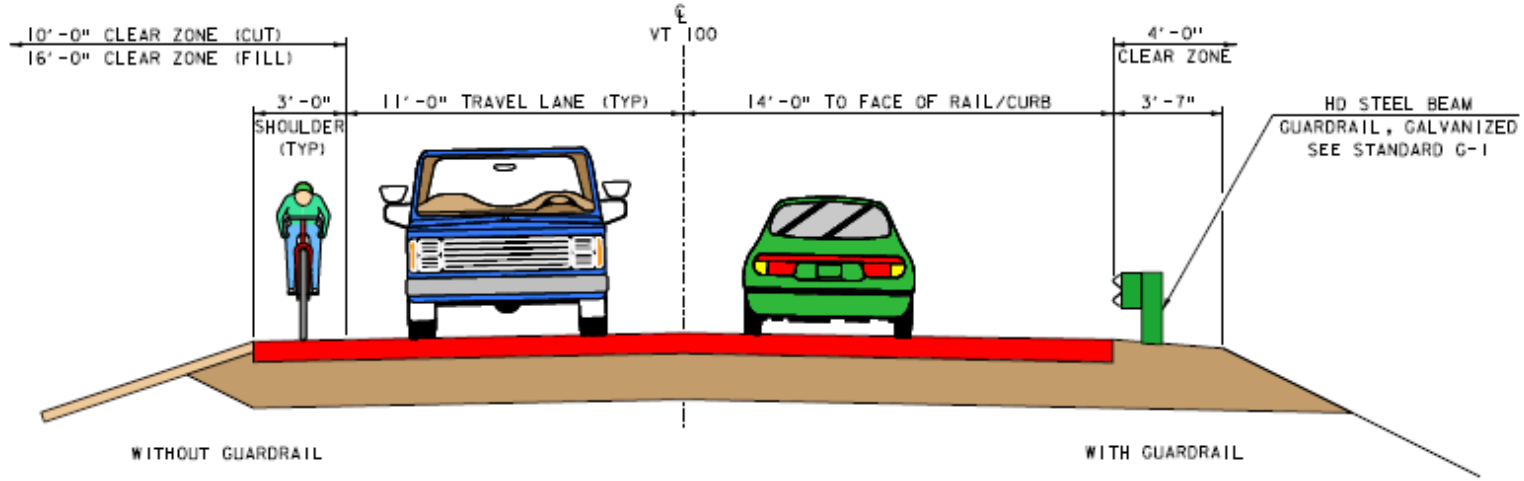
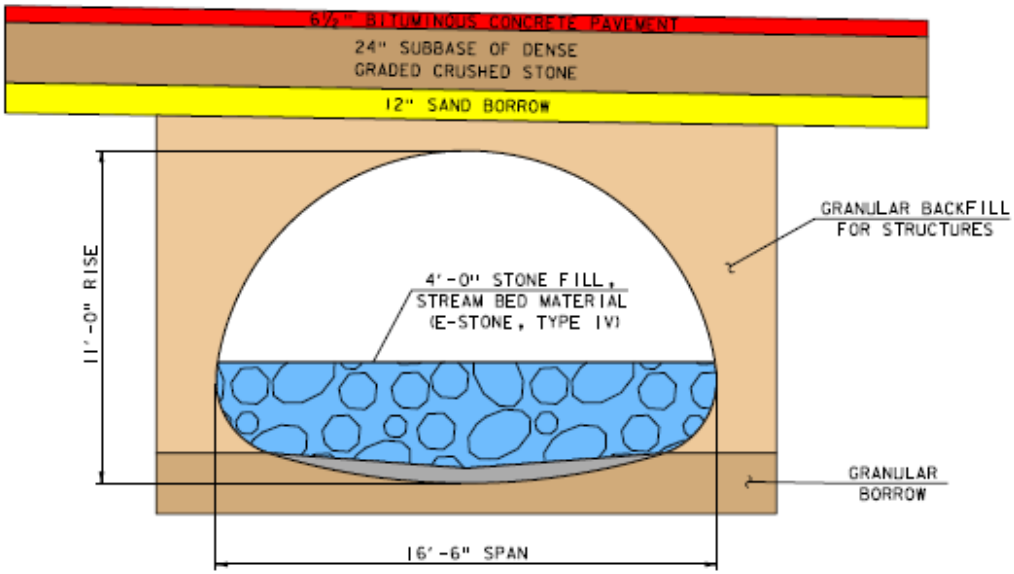
Proposed Typical Sections

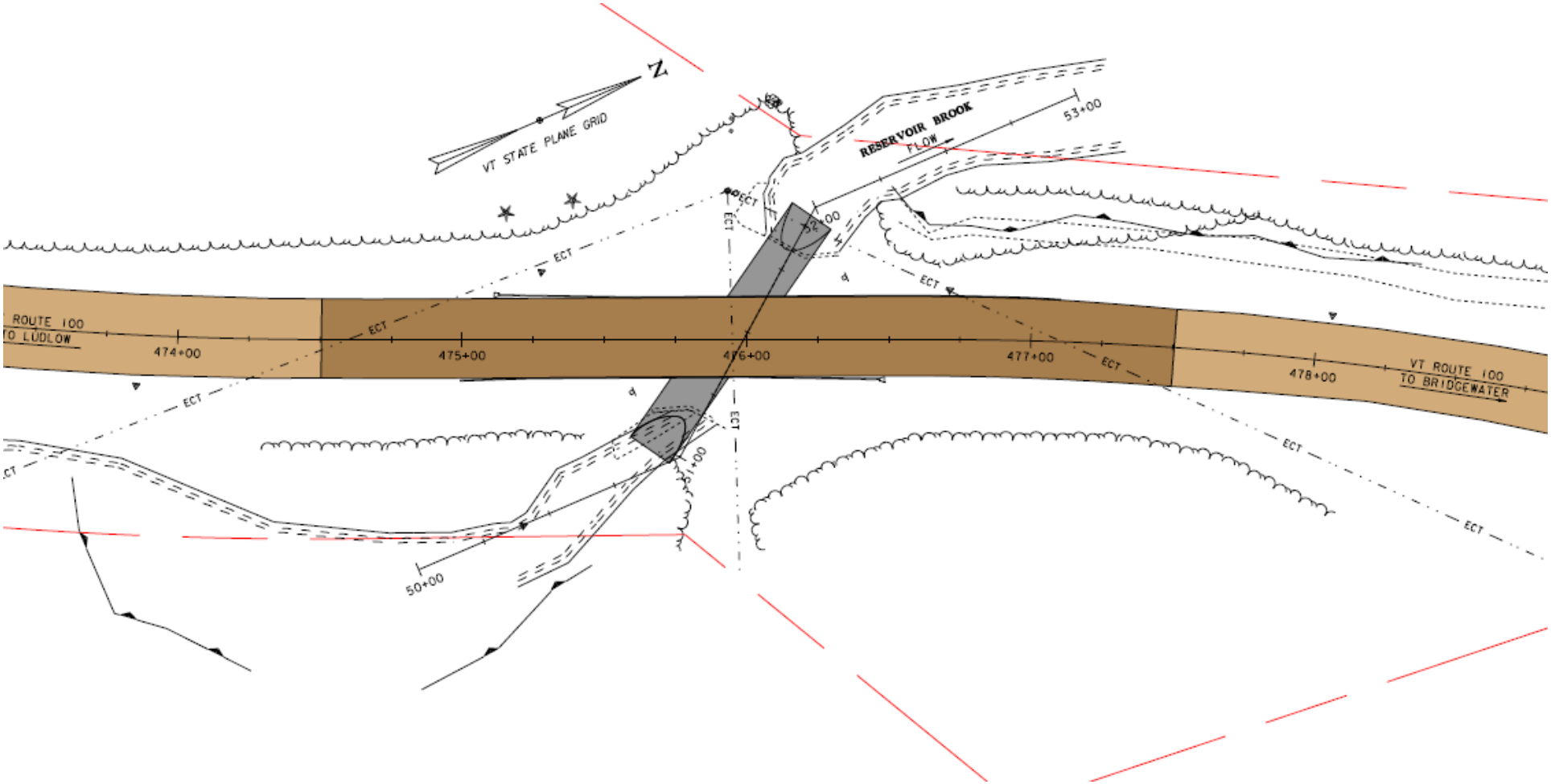


PROPOSED VT ROUTE 100 TYPICAL SECTION



CULVERT TYPICAL SECTION

Proposed Layout



Maintenance of Traffic Options Considered

- Offsite Detour
- Phased Construction
  - Not Recommended due to condition of existing pipe
- Temporary Bridge

Selected Method of Traffic Maintenance

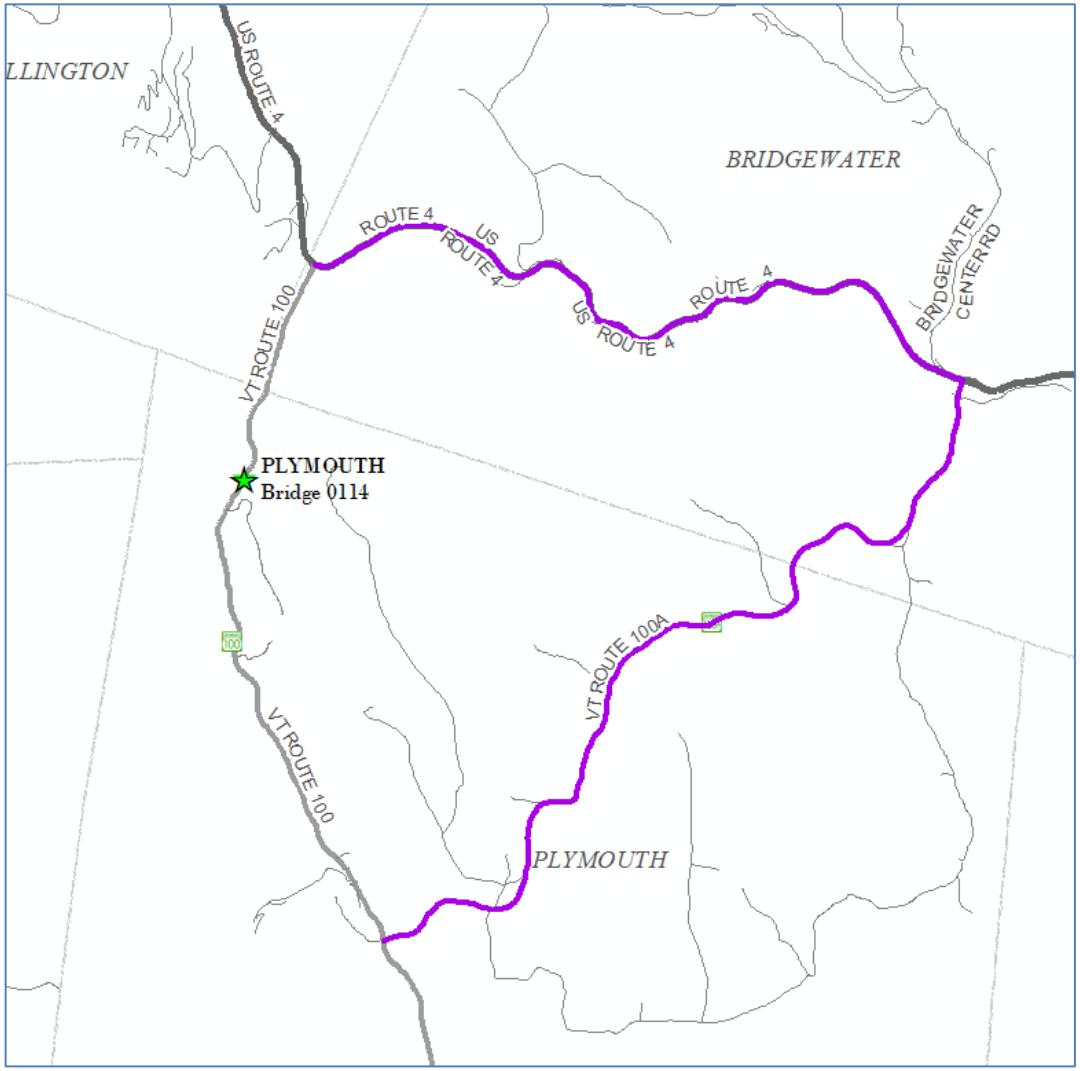
Road Closure

- Detour chosen and signed by State
- 7 to 14 days
- Heavy Truck Traffic
- Shortest Regional Detour Route is 18 miles end-to-end
- No Local Bypass Routes available

Traffic Control – Regional Detour

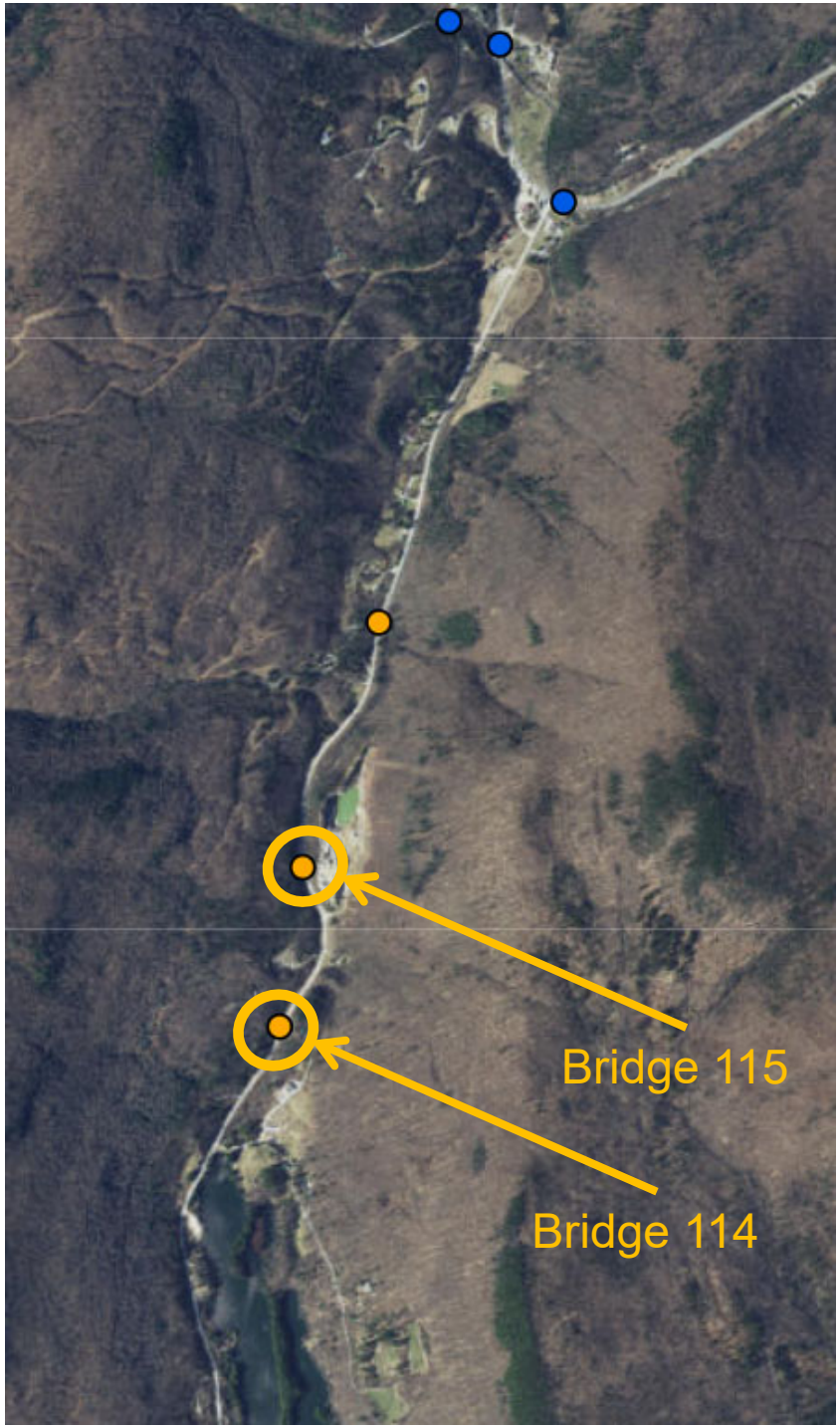
- **Regional Detour Route:** VT Route 100, to US Route 4 and VT Route 100A, back to Vermont Route 100.

  - Through distance: 5.4 miles
  - Detour distance: 12.6 miles
  - End-to-end distance: 18.0 miles
  - Added Miles: 7.2 miles



Project Bundling

- PLYMOUTH BF 013-3(13) 19B216, VT Route 100, Bridge 115 over Reservoir Brook.
  - Scope: Full Bridge Replacement with open bottom Steel Arch
  - Traffic Control: 14-day bridge closure
- PLYMOUTH BF 013-3(17) 19B216, VT Route 100, Bridge 114 over Reservoir Brook.
  - Scope: Full Bridge Replacement with a 16-foot span buried closed bottom Steel Pipe Arch
  - Traffic Control: 7-day to 14-day bridge closure
- Closures will be staggered



Preliminary Project Schedule

- Construction Start – August to September 2021
  - Contractor will be given 2 2-week windows within timeframe
  - Total Cost Estimate: $1,200,000

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Project Summary: Bridge 114

- Culvert Replacement with a Buried Steel Pipe Arch and Traffic Maintained on an Offsite Detour
  - 7 to 14-day bridge closure
  - Closed bottom culvert based on borings
  - 16′ span with buried invert
  - Typical section to match existing: 11′/3′
    - Culvert lengthened to allow for future widening of roadway to accommodate minimum standard: 11’/4’ typical
  - Aerial utility relocation avoided with metal structure
  - No Right of Way
  - 75-year design life

  - Construction Year: 2021 (Bundled with Bridge 115)

For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/19B216

Plymouth BF 013-3(17)
Questions and Comments

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