Public Information Meeting

BRIDGE 19-5 and BRIDGE 19-7 OVER UNNAMED BROOKS ALONG U.S. ROUTE 7 IN SUNDERLAND

September 30, 2024

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Introductions

Gary Laroche, P.E.

VTrans Design Project Manager

Timothy Higginson, P.E.

WSP Highway Project Engineer

Elaine Ezerins

WSP Public Information Consultant

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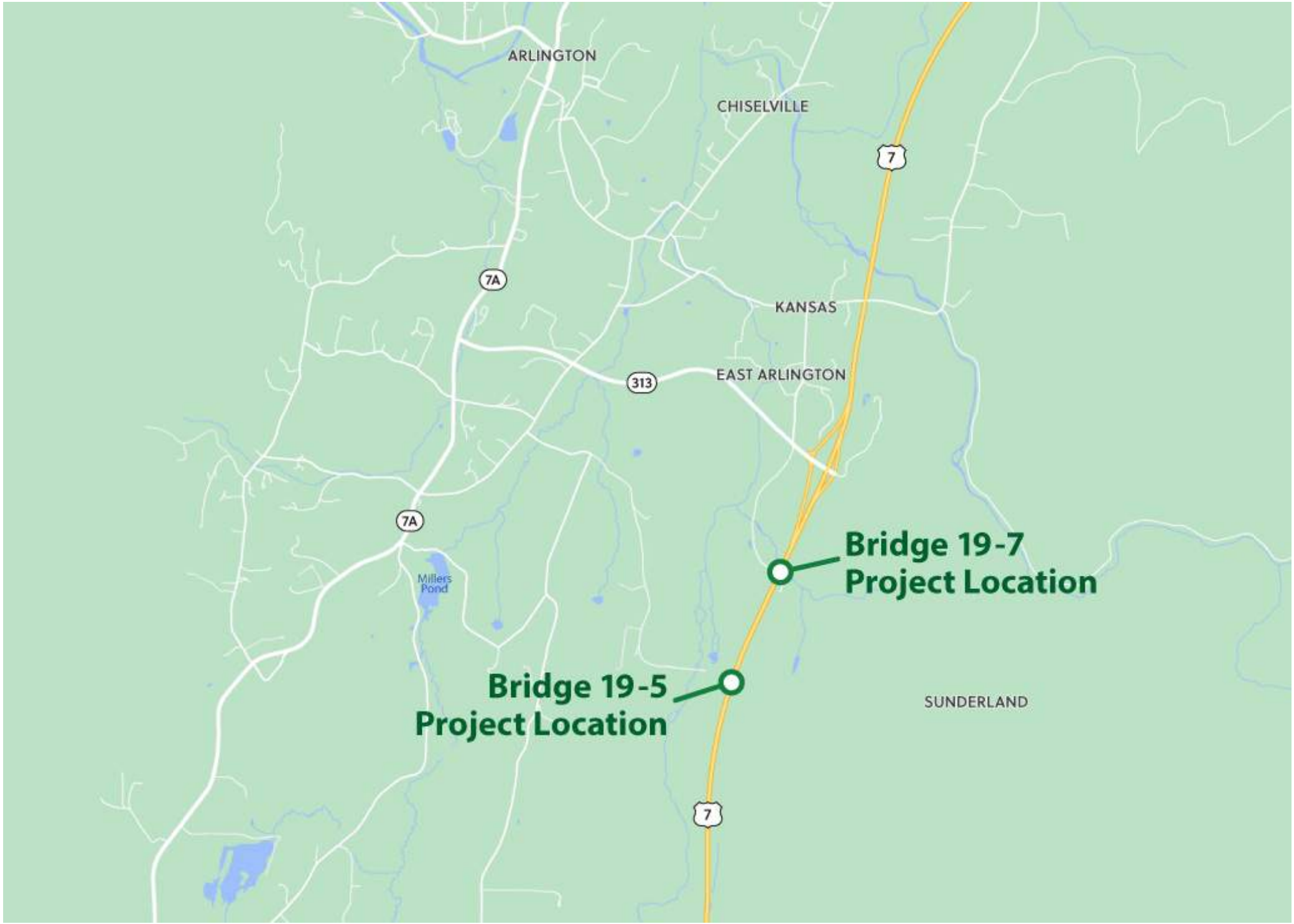
ARLINGTON
CHISELVILLE
7
7A
KANSAS
313
EAST ARLINGTON
7A
Millers Pond
Bridge 19-7
Project Location
Bridge 19-5
Project Location
SUNDERLAND
7

Meeting Agenda

- VTrans Project Development Process
- Project Schedule
- Public Involvement
- Project Overview
  - Existing Conditions
  - Alternatives Considered
  - Proposed Design
- Maintenance of Traffic
- Summary
- Q & A

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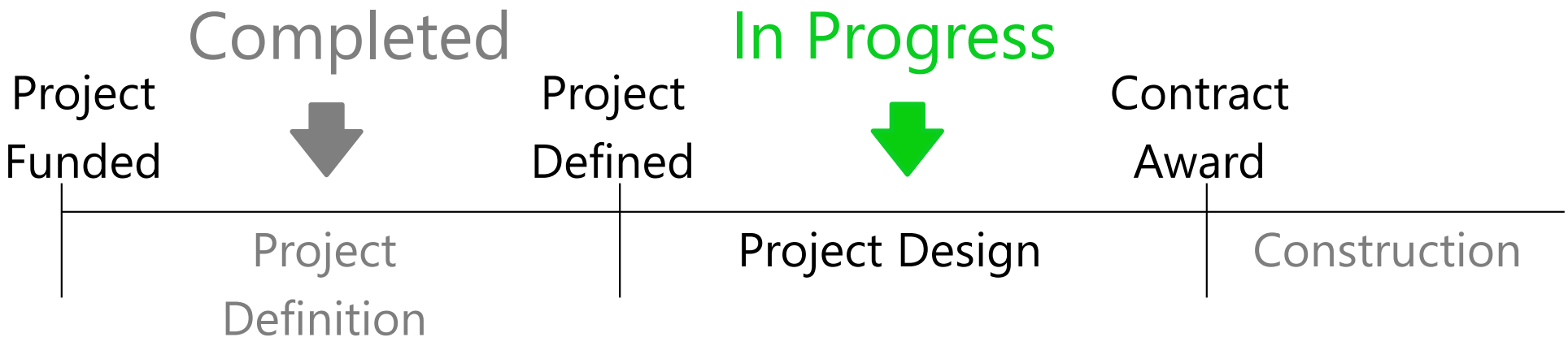
VTrans Project Development Process



- Identify resources & constraints
- Evaluate alternatives
- Public Informational Meeting held October 9, 2023
- Build Consensus

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

- Traffic Control
- Constructed during low-flow conditions
- To be coordinated around community events and while school is out of session

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Project Schedule

- Preliminary Plans (Nov 2024) — In Progress
- Final Plans, Specs, Estimate (Aug 2025)
- No Right-of-Way Required - Clearance Memo (Aug 2025)
- Environmental Permitting (Apr 2025 to Oct 2025)
- Advertise (Dec 2025)
- Contract Award (Jan 2026)
- Construction Window (Apr 2026 to Oct 2026)

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Public Involvement: Design & Construction Phases

- Public Meetings:
  - Regional Concerns Meeting: October 9, 2023
  - Public Information Meeting: September 30, 2024
    - Promotion: email announcements, direct mailers, media advisory
  - Upcoming presentations (in-person):
    - Fall 2025 – *Completion of Final Design*
- Email Project Updates sent to stakeholder list
  - Project Announcements
  - During active construction:
    - Weekly Construction Updates
    - Supplemental Traffic Alerts
- Outreach to municipal officials and businesses
- Maintain a regional events calendar

Contact the Project Team:
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Public Information Consultant
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603-782-2460

Bridge 19-5 Project Factsheet

SCAN ME

Bridge 19-7 Project Factsheet

SCAN ME

Looking South

Existing Conditions – Bridge 19-5

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

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

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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

Rusted Invert / Perforations

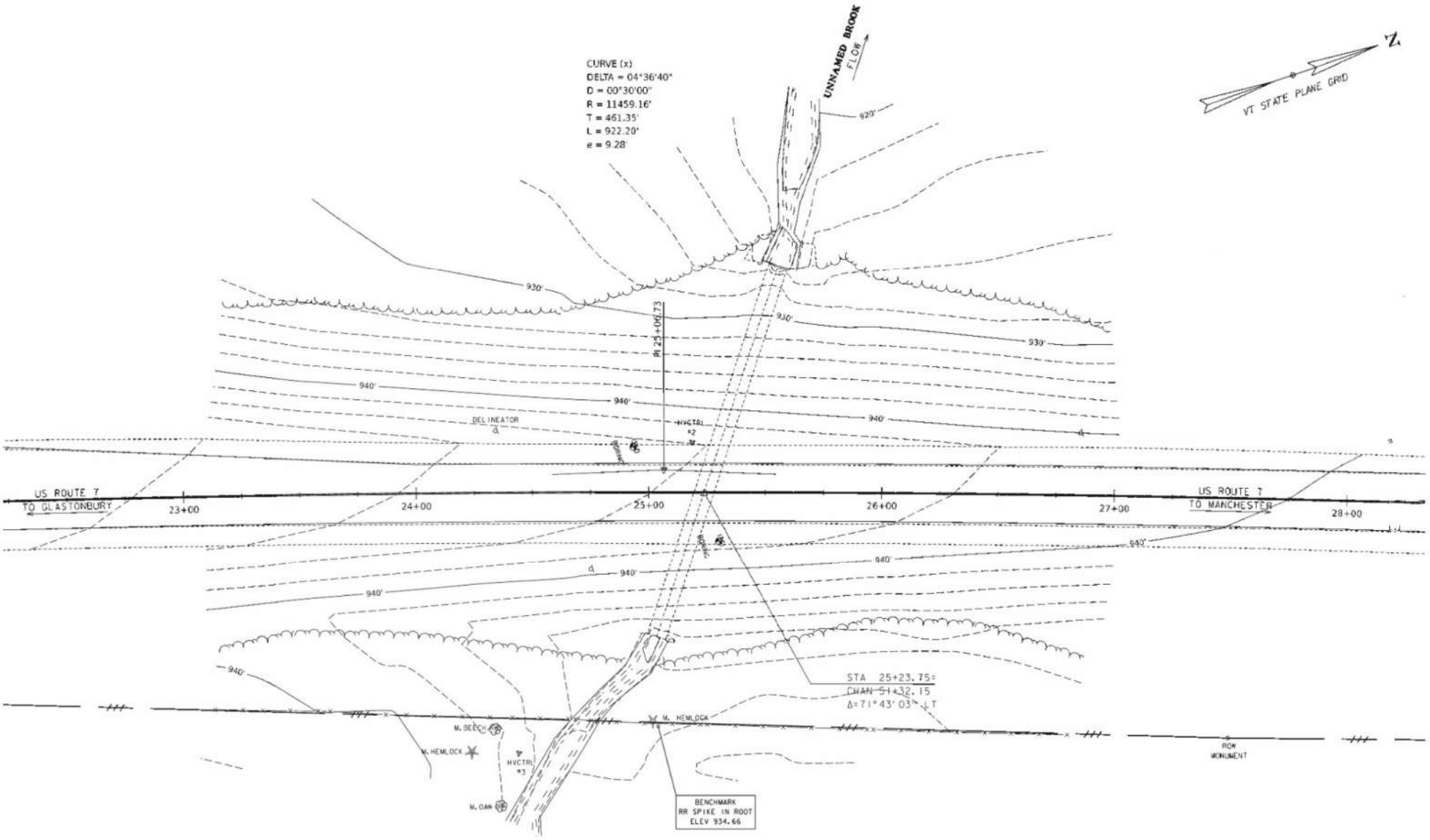
Existing Conditions - Bridge 19-5

Looking Downstream

Existing Conditions – Resources 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 Aquatic Organism Passage (AOP) analysis

Existing Conditions – Bridge 19-5



Looking North

Existing Conditions – Bridge 19-7

- Roadway Classification – Principal Arterial, National Highway System
- Bridge Type – 7-foot 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 19-7

- The 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 19-7

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

Looking Upstream (East)

Existing Conditions - Bridge 19-7

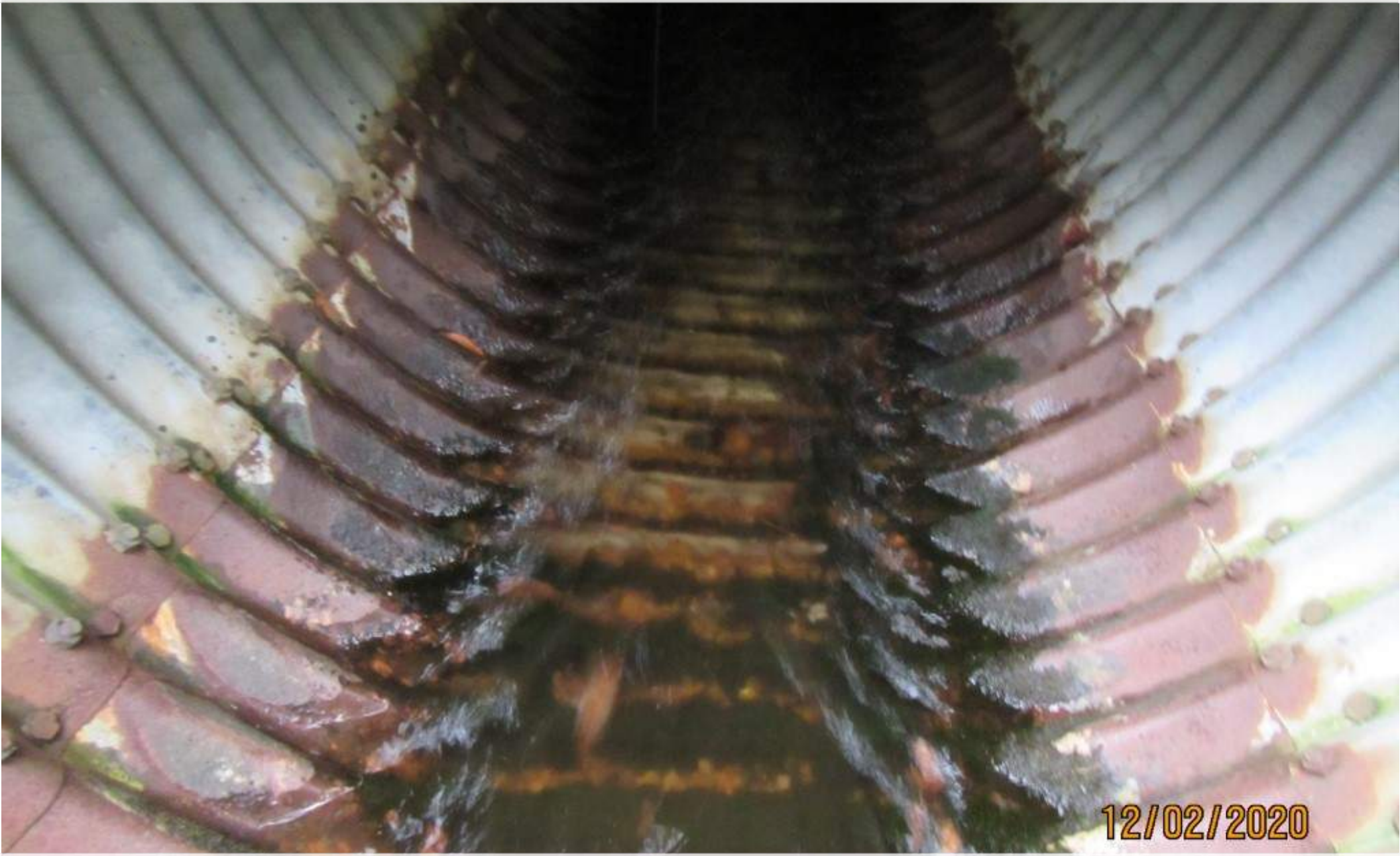
Inlet

Existing Conditions - Bridge 19-7

Outlet

Existing Conditions - Bridge 19-7

Rusted Invert



Existing Conditions - Bridge 19-7

Perforated Invert

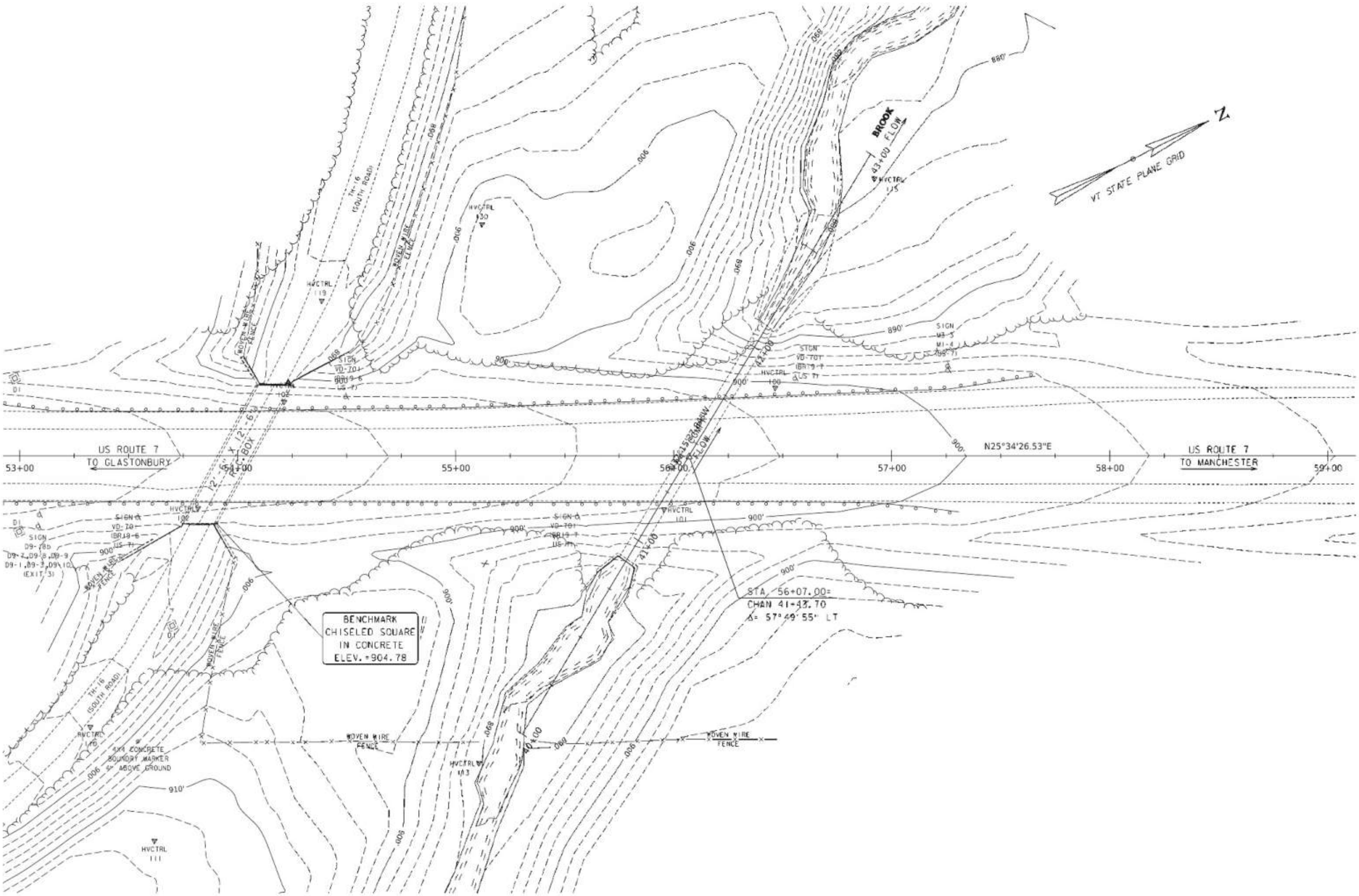
Existing Conditions - Bridge 19-7

Looking Downstream (West) - 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 Aquatic Organism Passage (AOP) analysis

Existing Conditions – Bridge 19-7



Alternatives Considered – Bridge 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 Bank Full Width (BFW)
- Full Bridge Replacement – Precast Concrete Box Culvert
  - Meets all Agency of Natural Resources (ANR) and hydraulic standards
    - 14-foot span
  - Meets geometric standards
  - 75-year design life

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- Full Bridge Replacement – Concrete Buried Frame
  - Meets all ANR and hydraulic standards
    - 14’ minimum span
  - Meets geometric standards
  - 75-year design life

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Proposed Design - Bridge 19-5 & 19-7

- Replace the existing culvert with a new 4-sided concrete box
  - 14-foot span box
  - Minimum hydraulic standard and bank full width conditions will be met
  - Bed retention sills to allow aquatic organisms to pass safely
  - 8′/12′/12′/8′ roadway typical to meet minimum standard width
  - Headwalls that extend four feet below the channel bottom to prevent undermining and wingwalls to reduce overall culvert length
  - 75-year design life

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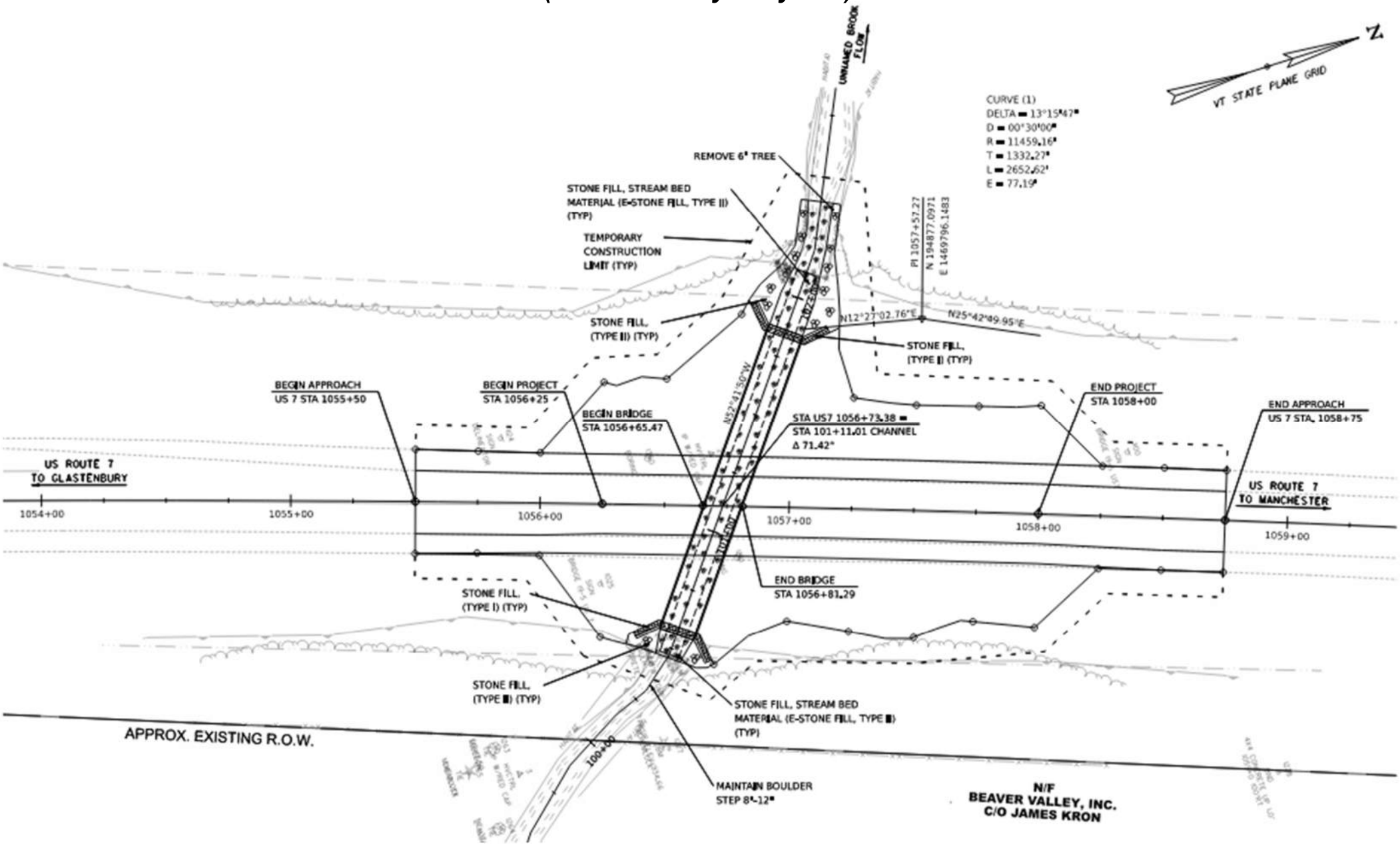
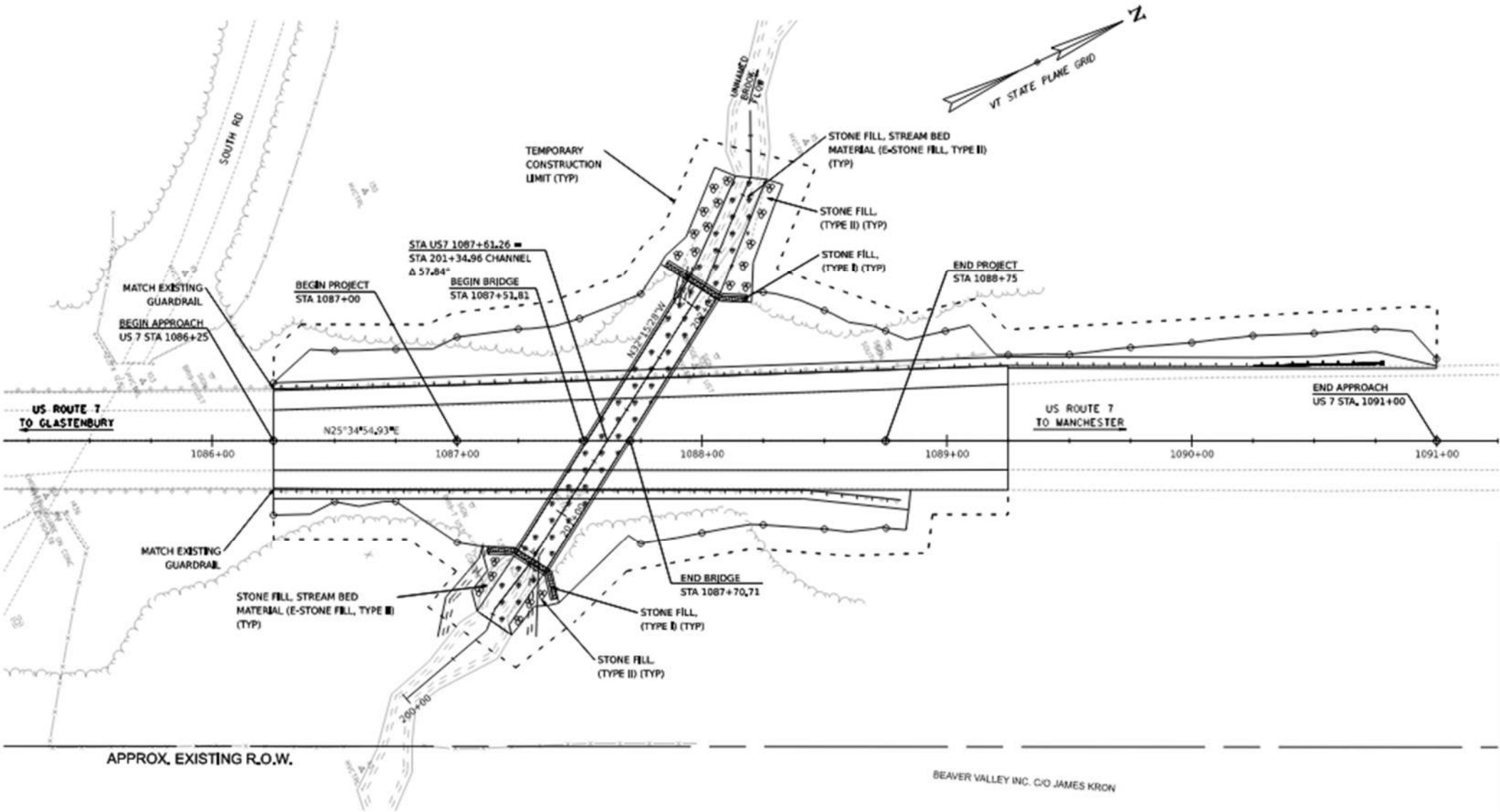
Proposed Design – Bridge 19-5

(Preliminary Layout)



Proposed Design – Bridge 19-7

(Preliminary Layout)



Maintenance of Traffic Options Considered for Bridges 19-5 & 19-7

- Temporary Bridge
- Phased Construction

- Offsite Detour

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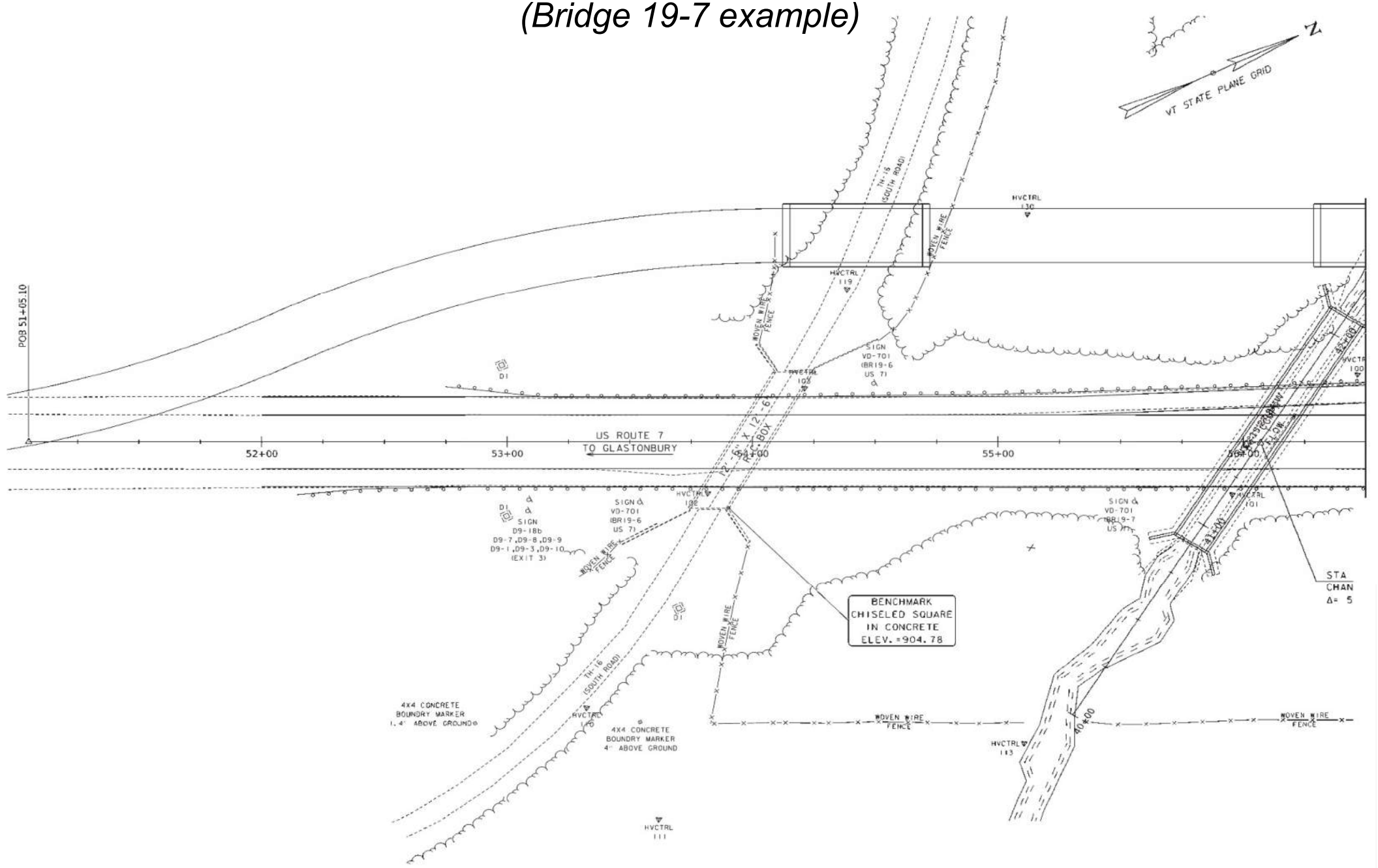
Temporary Bridge

- Two Lane Temporary Bridge constructed either Upstream or Downstream
  - Would require a significant amount of environmental impact
  - A second temporary bridge would need to be constructed over South Road
  - Temporary bridges and associated abutments are costly

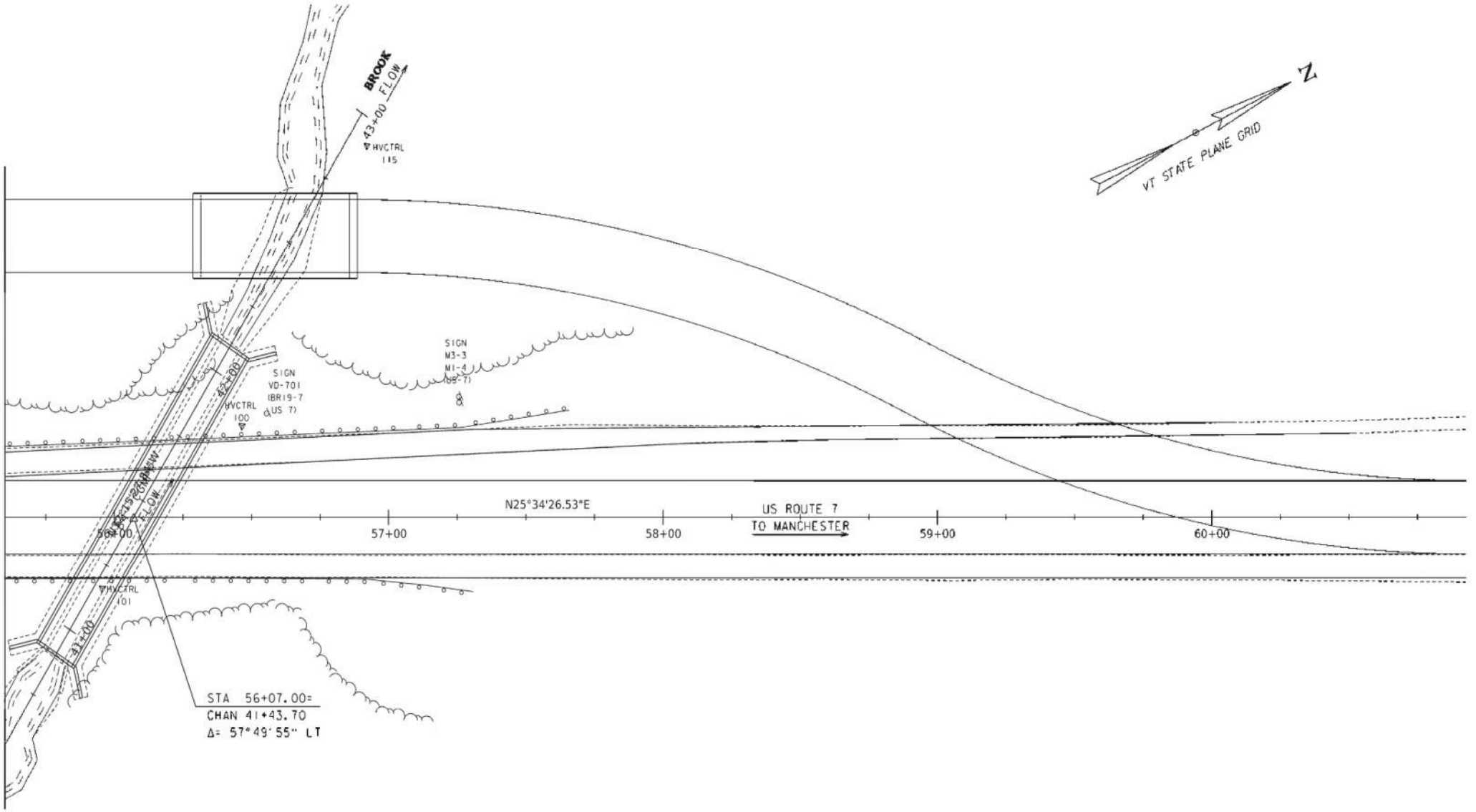
Downstream Temporary Bridge Layout 1

(Bridge 19-7 example)



Downstream Temporary Bridge Layout 2

(Bridge 19-7 example)

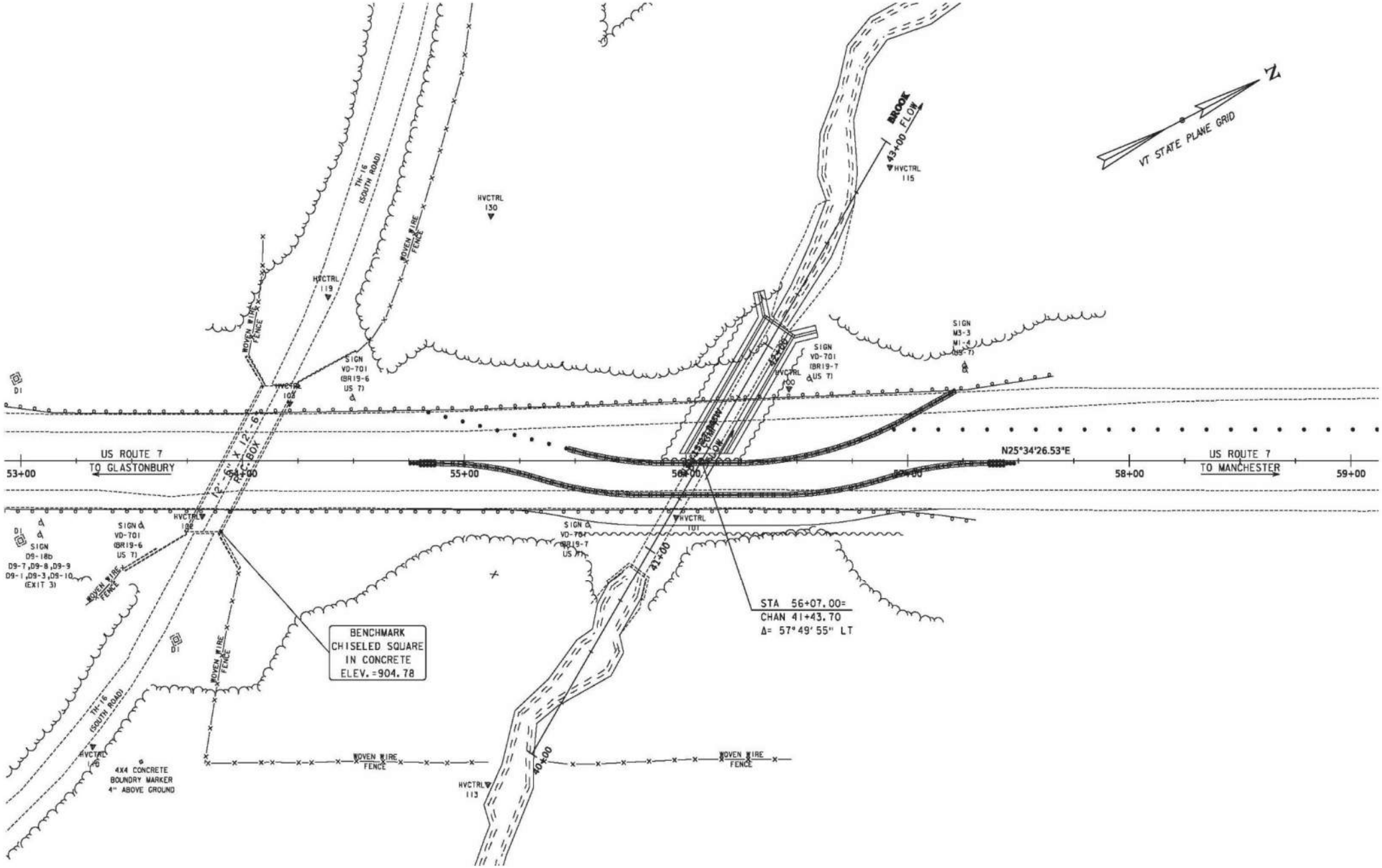


Phased Construction

- 2 Phases with 2-way traffic maintained
- Traffic analysis shows significant delay for one-way alternating
- Sheeting for phased construction is costly

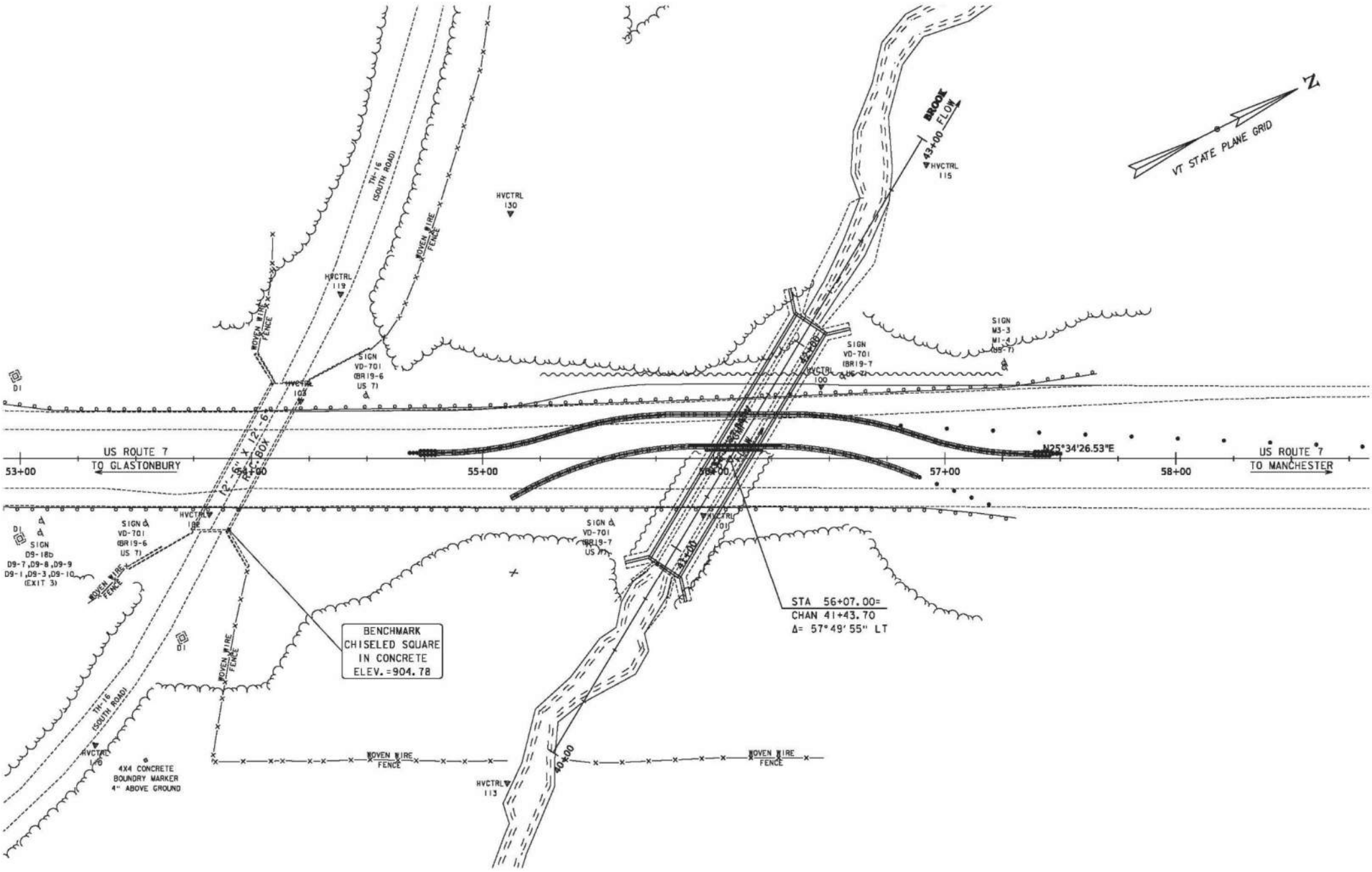
Phased Construction Layout 1

(Bridge 19-7 example)



Phased Construction Layout 2

(Bridge 19-7 example)



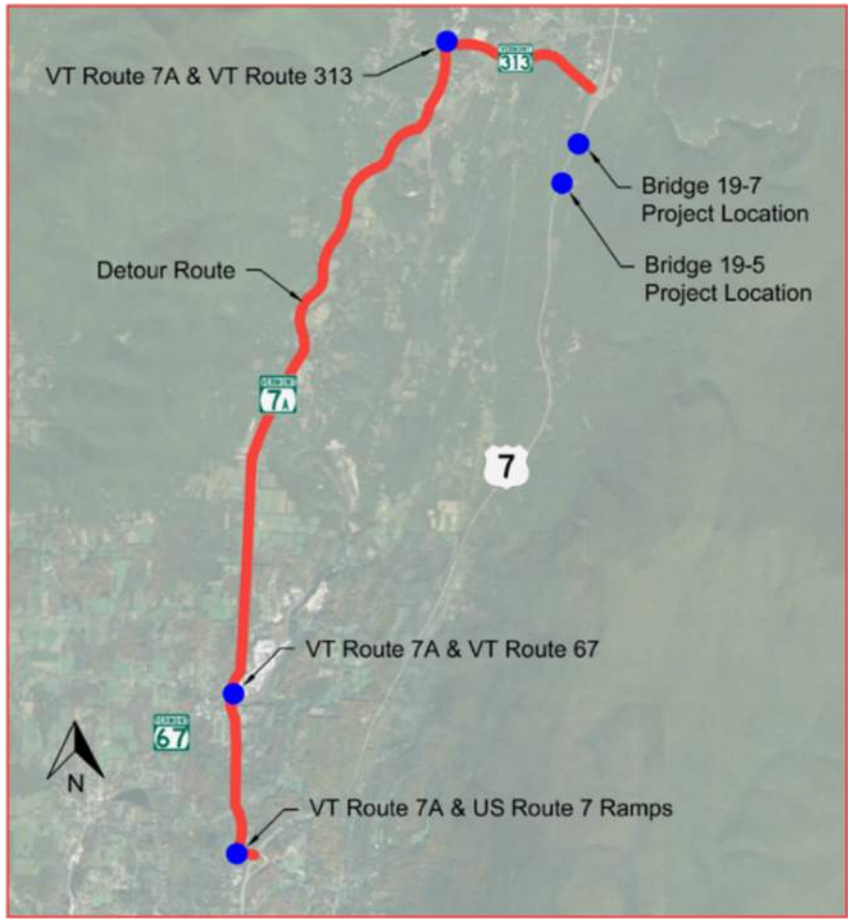
Full-Road Closure

- Off-site Detour via VT Route 7A; signage and temporary signals by the State
- Alternating One-Lane Traffic on US Route 7 prior to and after Full Closure

Maintenance of Traffic – Off-site Detour

(Bridge Closure Period)

- **Regional Detour Route:**
  - US Route 7, to VT Route 313 (Exit 3), to VT Route 7A (Exit 2), back to US Route 7



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

- **Detour Duration: 7-day closure for each culvert**

- Construction stage traffic analysis performed on US Route 7 for full closure with detour and single lane closure with one-way alternating traffic

- Large truck turn movements analyzed along the detour route; no temporary widening is required at intersections

Maintenance of Traffic – One Lane Alternating

(Pre/Post Bridge Closure)

- **US Route 7 – One Lane Alternating Traffic**
  - Utilized to minimize duration of VT Route 7A detour for pre and post closure activities
  - One lane closure on US Route 7 will be allowed Mon-Thurs from 9am to 2pm to avoid peak traffic times
  - Use of one lane alternating traffic is expected to be minimized by using shifts of two lanes of traffic within US Route 7 roadway to allow for pre and post closure work including paving and striping
  - Use of one lane alternating alone is not feasible for construction due to significant delays during the AM, PM and Weekend peak traffic periods.

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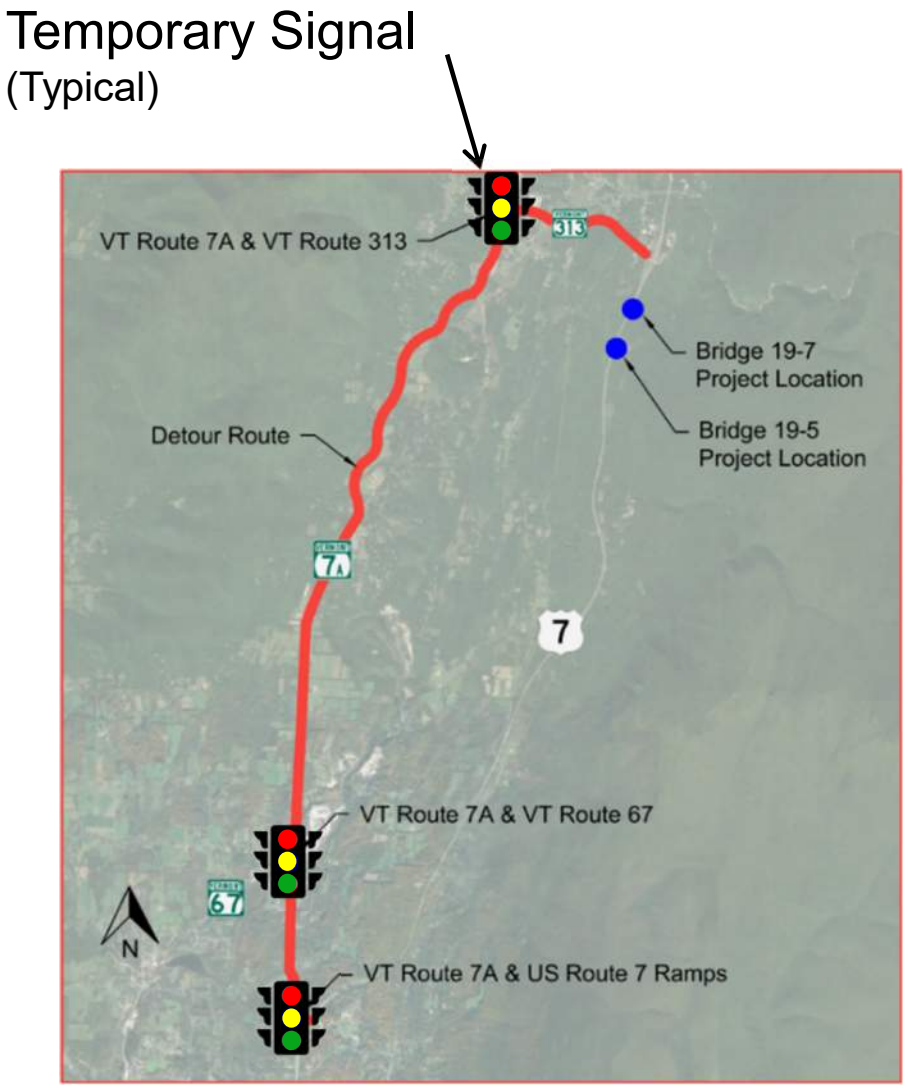
Traffic Analysis – Off-site Detour

(Bridge Closure Period)



- Existing intersections are stop controlled; incorporating temporary signals will reduce delay and minimize safety concerns
- During full-closure, vehicles are routed from US 7 to VT 7A:
  - Diverted 280 veh. in AM peak hour
  - Diverted 350 veh. in PM peak hour
- With temporary signals, intersections will operate at a similar level of service to the existing condition
- Temporary Signal Locations:
  - VT 7A & VT 313
  - VT 7A & VT 67
  - VT 7A & US 7 Ramps

Project Website – link to traffic study
https://resources.vtrans.vermont.gov/FactSheet/default.aspx?pin=20B155

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Traffic Analysis - 2024 Existing Volumes

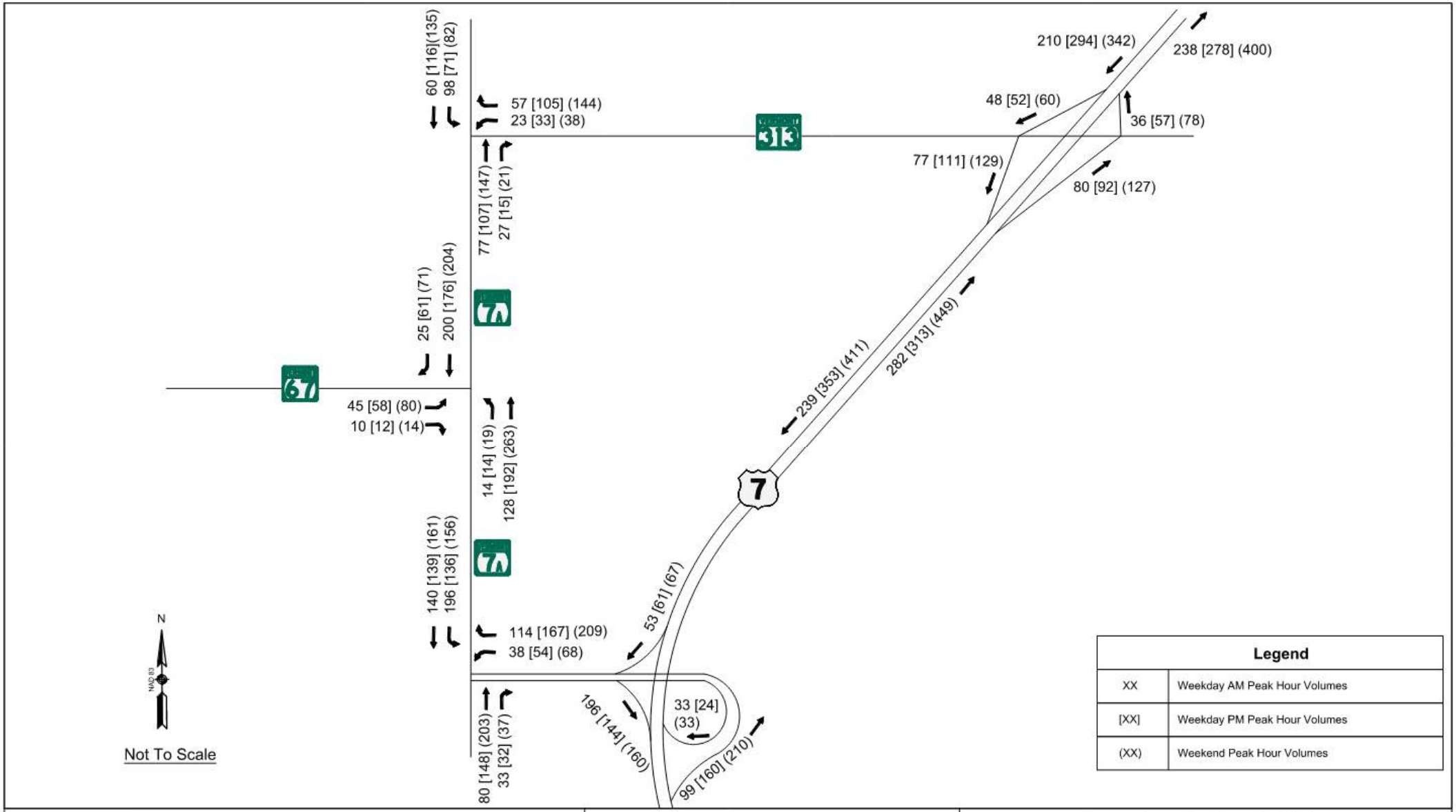


FIGURE 3
2024 EXISTING TRAFFIC VOLUMES

Sunderland, VT
VT ROUTE 7A/US ROUTE 7

Traffic Analysis - Full Closure Volumes

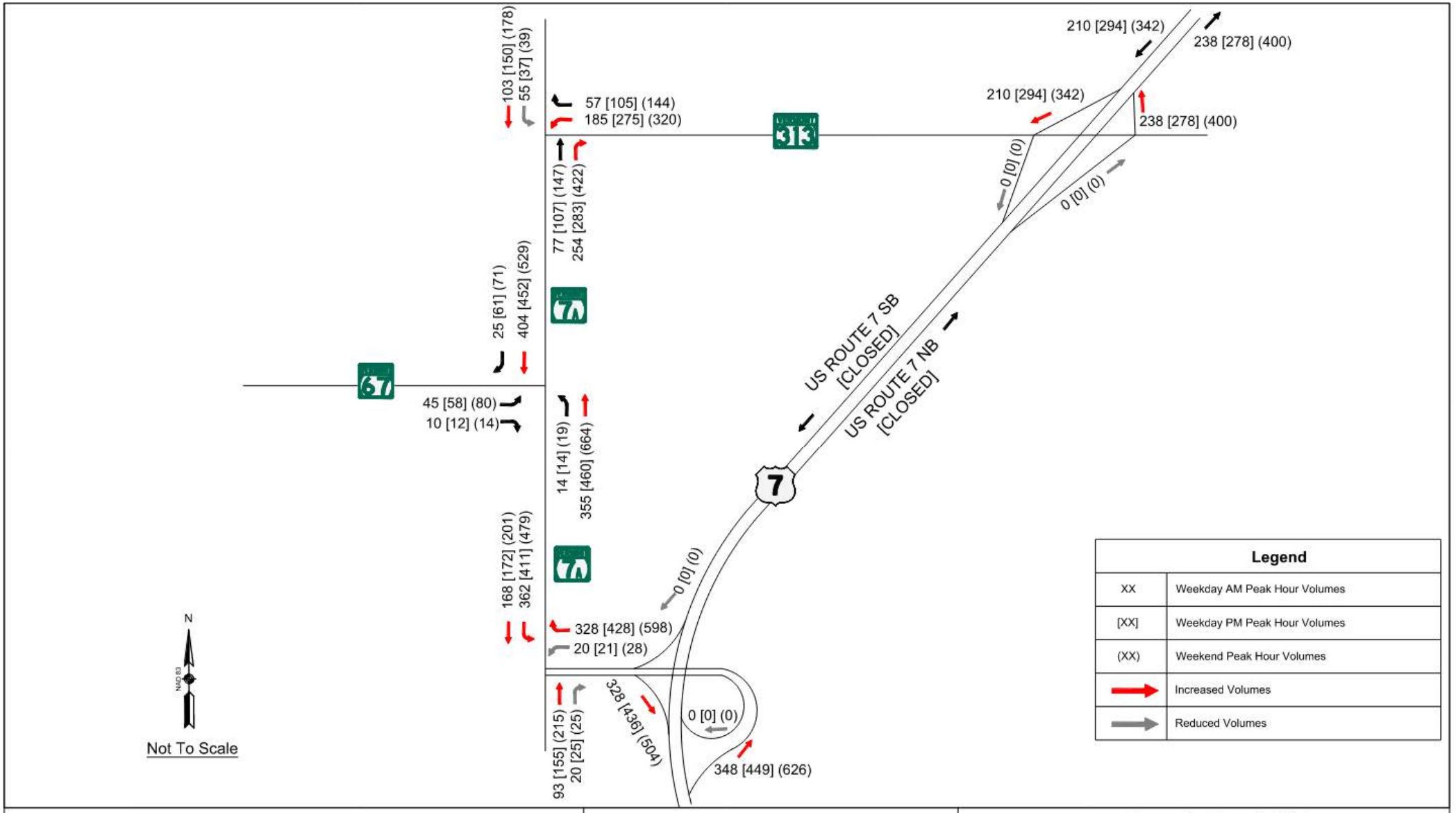


FIGURE 5
FULL CLOSURE TRAFFIC VOLUMES

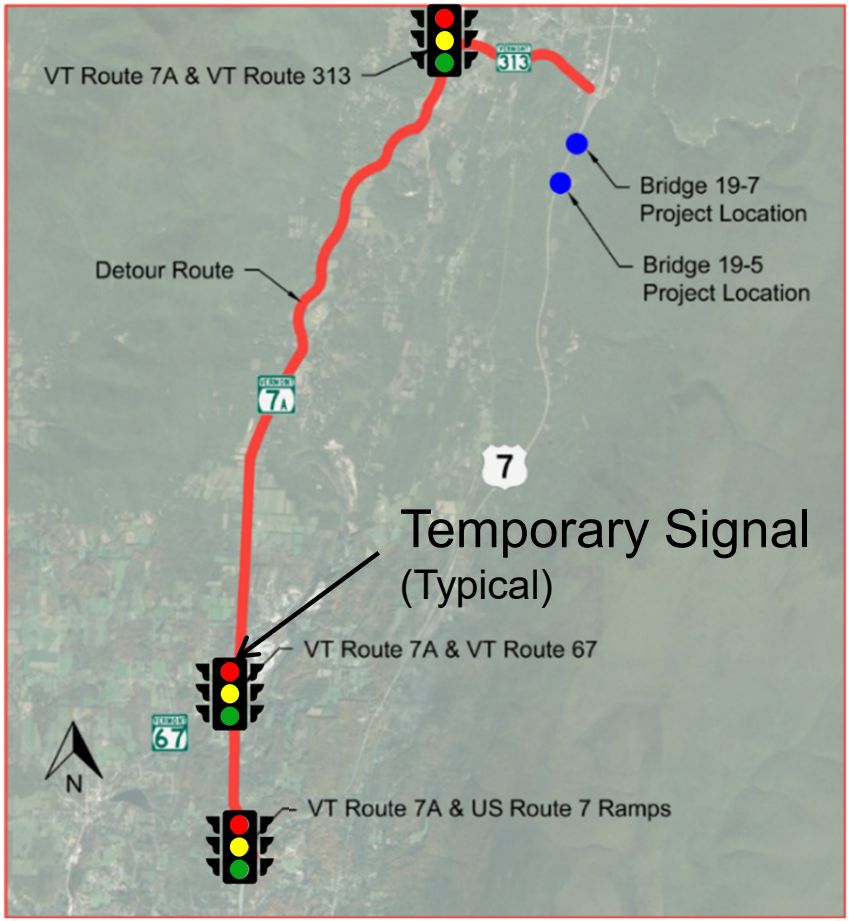
Sunderland, VT
VT ROUTE 7A/US ROUTE 7

Traffic Analysis – Off-site Detour

(Bridge Closure Period)

Each intersection was analyzed for delay & queue length, identifying the Level of Service (LOS) for the following conditions:

- Existing Condition
- Bridge Closure (no improvements)
- Temporary Signal (Bridge Closure with improvements)



- Weekday and Weekend Peak Periods:
  - **VT 7A & VT 313**
    - Existing Condition – LOS A/B
    - Bridge Closure – LOS F
    - Temporary Signal – LOS A/B
  - **VT 7A & VT 67**
    - Existing Condition – LOS C
    - Bridge Closure – LOS F
    - Temporary Signal – LOS C
  - **VT 7A & US 7 Ramps**
    - Existing Condition – LOS C
    - Bridge Closure – LOS F
    - Temporary Signal – LOS A/B

Project Website – link to traffic study
https://resources.vtrans.vermont.gov/FactSheet/default.aspx?pin=20B155

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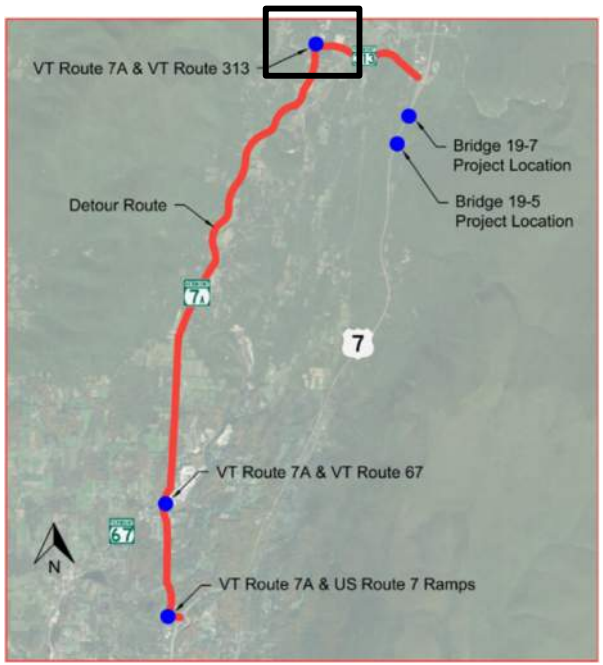
Super Loads

(Recognizing the Detour Height Restriction)

- What constitutes a "Super Load" and requires an Engineering Review?
  - 150,000 pounds or more
  - 100 feet long or longer
  - 15 feet wide or wider
  - 14 feet high or higher
- Bridge closure periods will be coordinated with the DMV for consideration of trucking route during their engineering review. Detour routes will be dependent on the criteria of the oversized load.

Railroad Underpass – see image right



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Summary

- **Proposed Design: Bridge 19-5 & 19-7**
  - 14-foot by 8-foot Precast Concrete Box Culverts
  - Supports Aquatic Organism Passage (AOP)
  - Has 75-year design life
- **Maintenance of Traffic:**
  - Pre/Post Closure:
    - One-way alternating traffic on US Route 7 used for construction activities before/after full-closure, excluding weekends/peak periods
  - Full-Closure with Off-site Detour
    - 7-day closure for each culvert (previously 14-day/culvert)
    - Temporary signals operated only during full-closure periods:
      - VT Route 7A & VT Route 313
      - VT Route 7A & VT Route 67
      - VT Route 7A & US Route 7 Ramps
    - No additional improvements required at detour intersections for vehicle turning movements
- **Construction Schedule**
  - Culverts constructed during low-flow conditions (Jul-Aug 2026)

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Sunderland U.S. 7 Culvert Replacement Projects
[Sunderland BM 20102 and STP CULV (91)]

Questions or Comments?

Raise your hand and a member of our team will call on you to speak.

Ways to Stay Informed

- Contact the Project Team:
  - Elaine Ezerins, Public Information Consultant
  - Email: elaine.ezerins@wsp.com
  - Phone: 603-782-2460

- Sign Up for Email Project Updates:
  - https://lp.constantcontactpages.com/sl/DO4egqv

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