



Norwich IM 091-2(89)  
Regional Concerns Meeting  
Interstate 91 – Bridges #48 N&S over VT Route 10A

July 22, 2020

# Introductions

**JB McCarthy, P.E.**

VTrans Consultant Project Manager

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VTrans Scoping Engineer

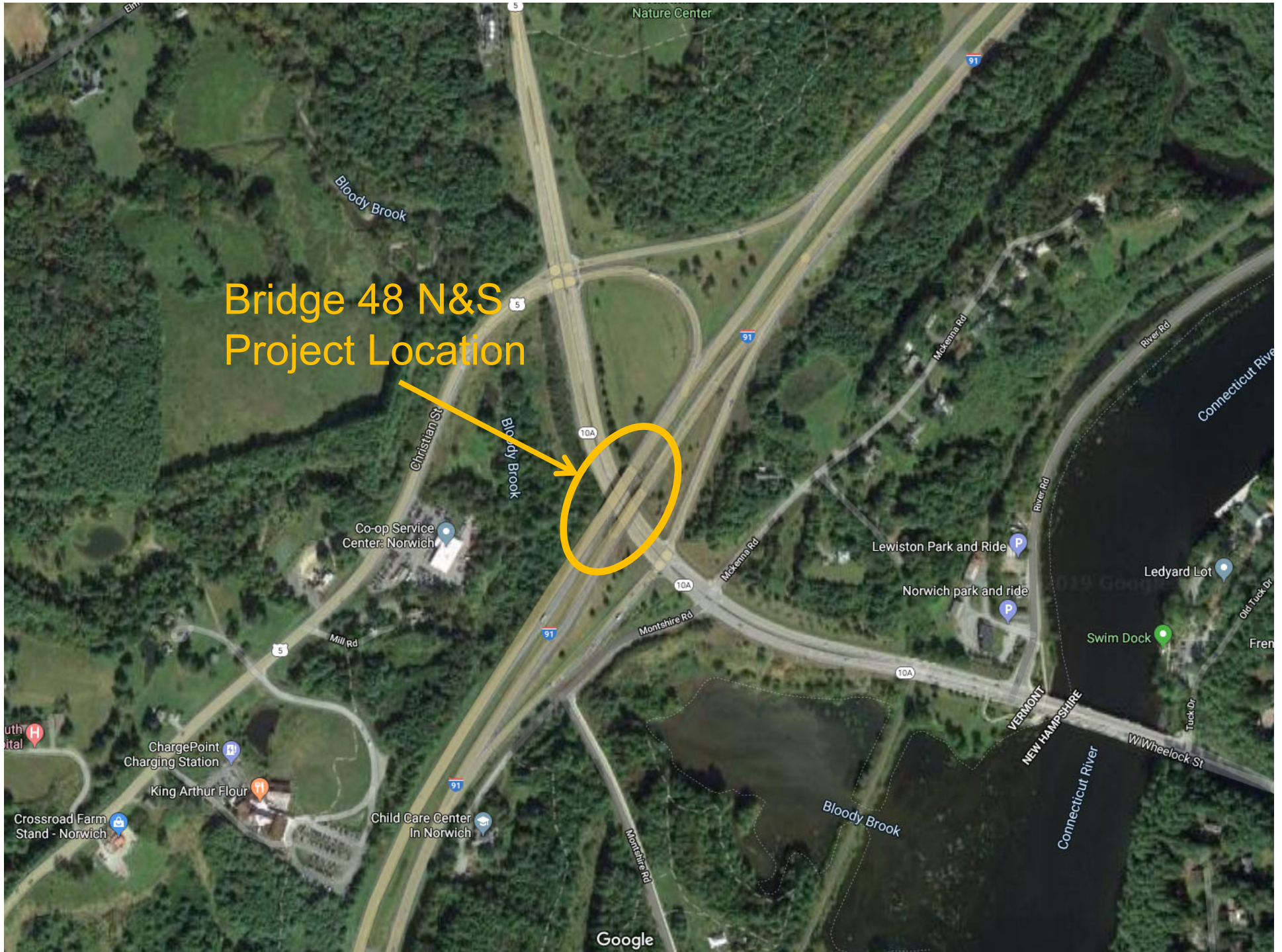
# Meeting Overview

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



Location Map

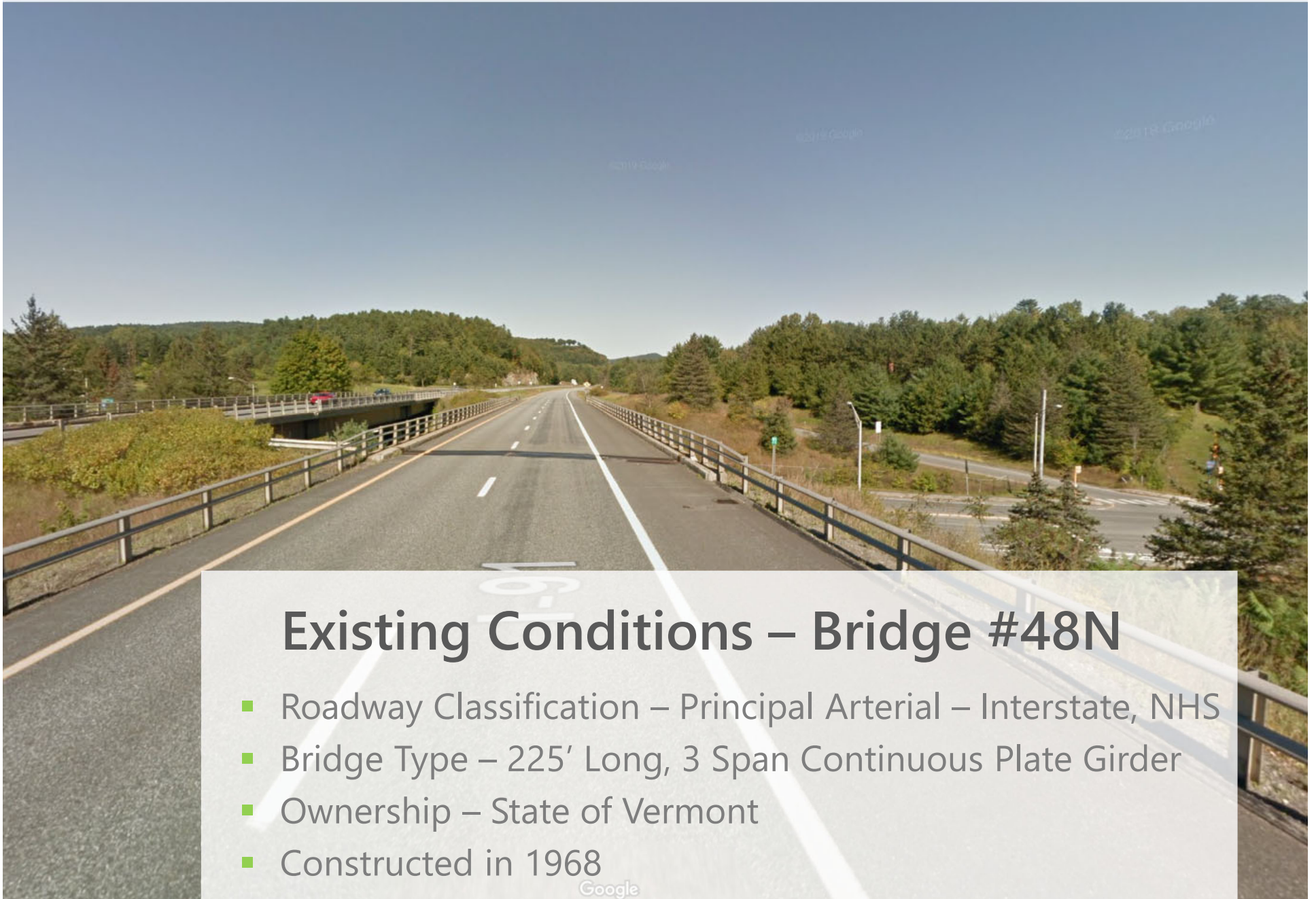




Bridge 48 N&S  
Project Location



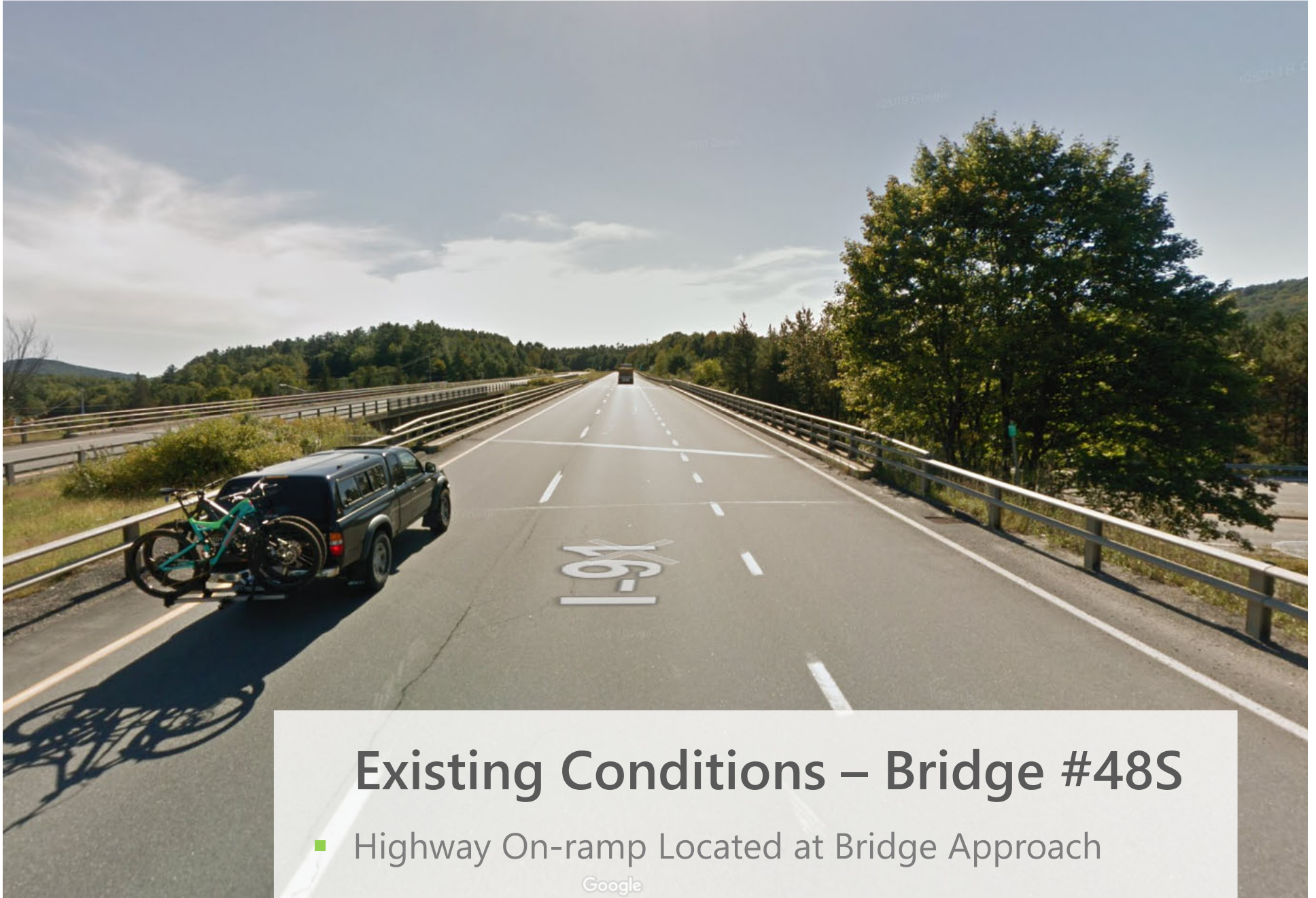
## Looking North over Bridge 48N



### Existing Conditions – Bridge #48N

- Roadway Classification – Principal Arterial – Interstate, NHS
- Bridge Type – 225' Long, 3 Span Continuous Plate Girder
- Ownership – State of Vermont
- Constructed in 1968

## Looking South over Bridge 48S



### Existing Conditions – Bridge #48S

- Highway On-ramp Located at Bridge Approach



## Condition Ratings



- Bridges 48 N&S are both structurally deficient due to the condition of the substructures
  - Spalling with deep voids in the backwalls
  - Spalls have undermined the bearings and have caused minor settlement

## Existing Conditions - Bridges #48 N&S

	Bridge 48N	Bridge 48S
■ Deck Rating	7 (Good)	6 (Satisfactory)
■ Superstructure Rating	7 (Good)	6 (Satisfactory)
■ Substructure Rating	4 (Poor)	4 (Poor)





Fine Map Cracking in Pier Caps Ends



Existing Conditions - Bridge #48 N&S

Abutment



**Existing Conditions - Bridge #48 N&S**



## Wingwall Cracking and Curb Deterioration



**Existing Conditions - Bridge #48 N&S**



## Abutment Deterioration at Bearing Locations



**Existing Conditions - Bridge #48 N&S**



Curb Deterioration at Joint Locations



**Existing Conditions - Bridge #48 N&S**



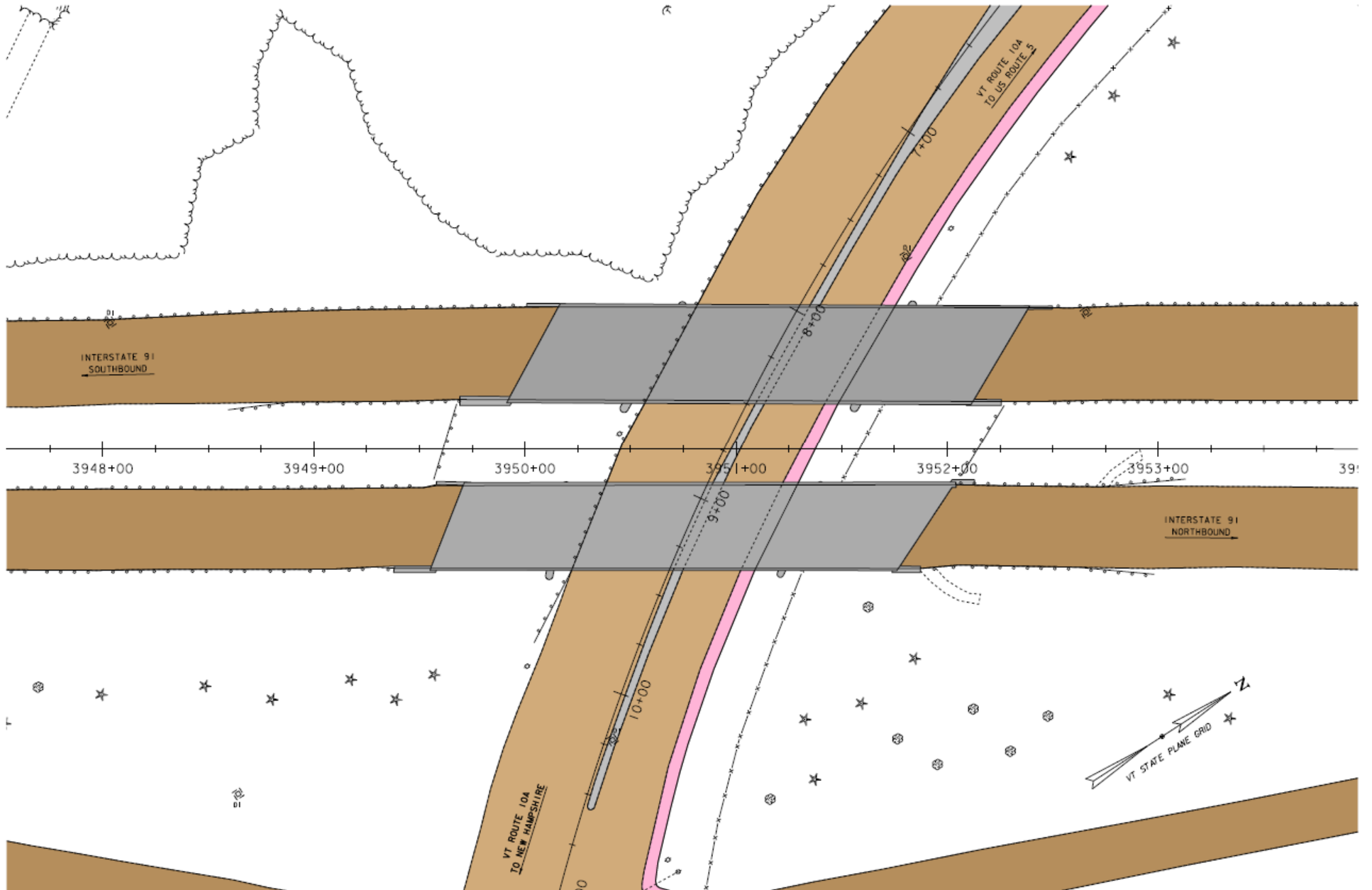
Curb Deterioration



Existing Conditions - Bridge #48 N&S



# Existing Conditions



# Design Criteria and Considerations

- Average Daily Traffic
  - 6,600 vehicles per day (I-91 northbound)
  - 10,900 vehicles per day (I-91 southbound)
  - The 2016 AADT on VT Route 10A under Bridges 48 N&S is 12,600 vehicles per day
- Design Hourly Volume
  - 810 vehicles per hour (northbound)
  - 1,300 vehicles per hour (southbound)
- % Trucks:
  - 17.1% (northbound)
  - 15.8% (southbound)

# Alternatives Considered – Bridge #48 N&S

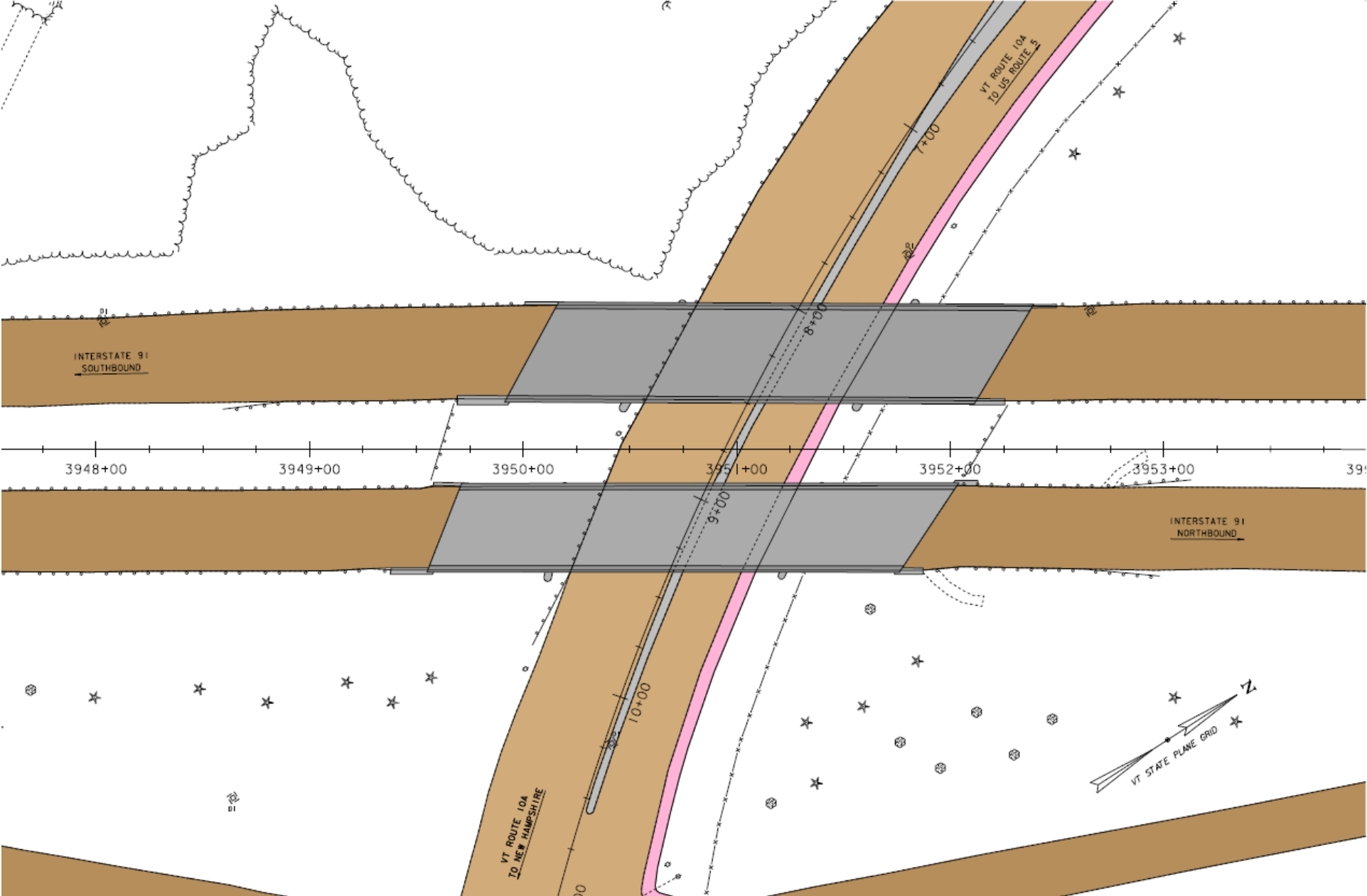
- No Action
  - Additional maintenance required within 10 years
- Rehabilitation
  - New abutment stems and bridge seats poured on existing footings (supported on piles), new backwalls to be poured as well
  - Replacement of all finger joints
  - New curbs poured behind the existing granite facing
  - 30-year design life
- Deck Replacement
  - New abutment stems and bridge seats poured on existing footings (supported on piles)
  - Would address the maintenance issues (curb spalling, poor joints)
  - 40-year design life
- Superstructure Replacement
  - New abutment stems and bridge seats poured on existing footings (supported on piles)
  - Would address the maintenance issues (curb spalling, poor joints)
  - Easier to replace the abutments with the superstructure removed
  - 40-year design life
- Full Bridge Replacement On Alignment
  - Maintain existing alignment
  - 100-year design life



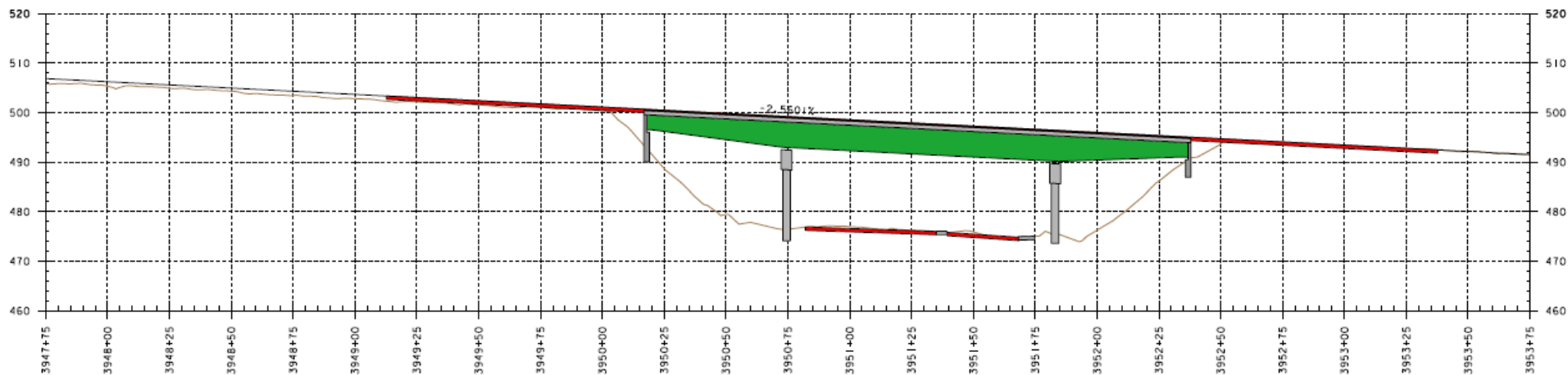
# Selected Alternative - Bridge #48 N&S

- Rehabilitation
  - New abutment stems or major rehabilitation of existing stems and bridge seats
  - New backwalls
  - Replacement of all finger joints
  - New fascias, curbs, and railing
  - Membrane and pave
  - 30-year design life
  - No Right of Way Needed
  - No Utility Relocation

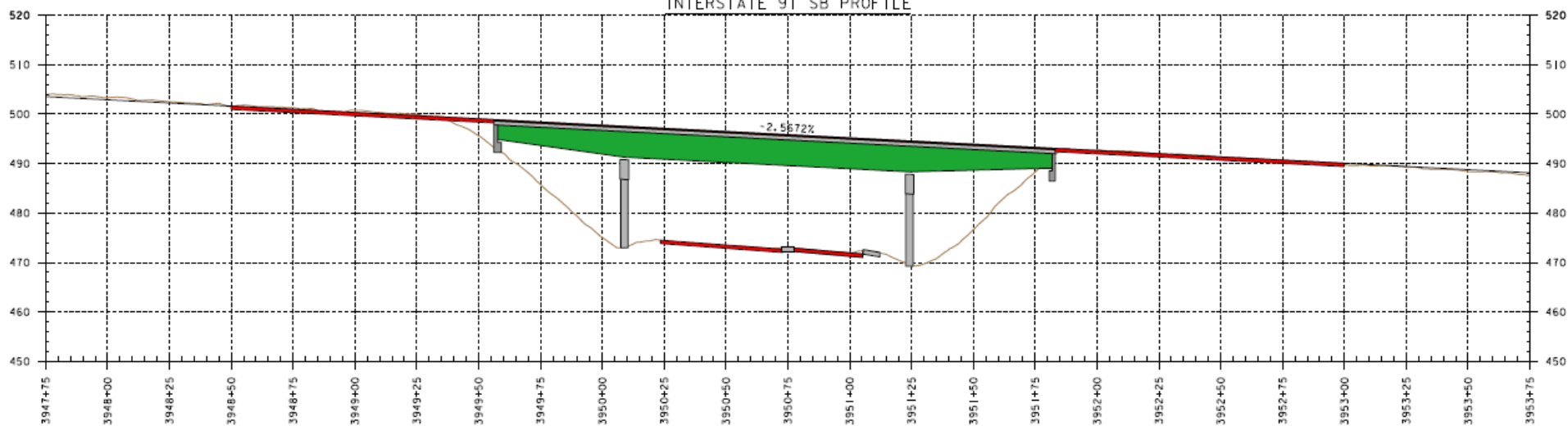
# Proposed Layout



# Proposed Profile



INTERSTATE 91 SB PROFILE



INTERSTATE 91 NB PROFILE



# Maintenance of Traffic Options Considered

- Offsite Detour with Accelerated Bridge Construction Techniques
- Phased Construction
- Temporary Bridge
- Crossovers

## Selected Method of Traffic Maintenance

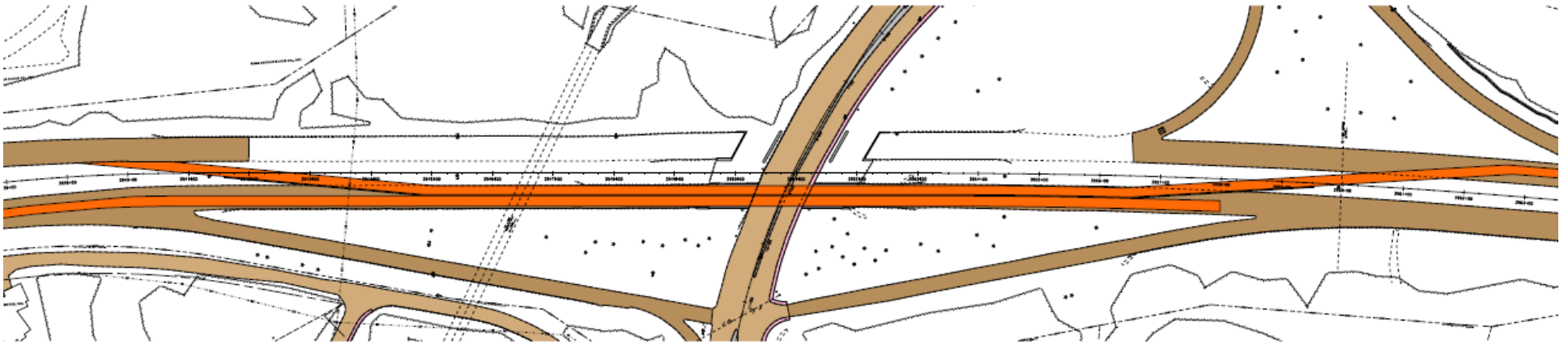


### Crossovers

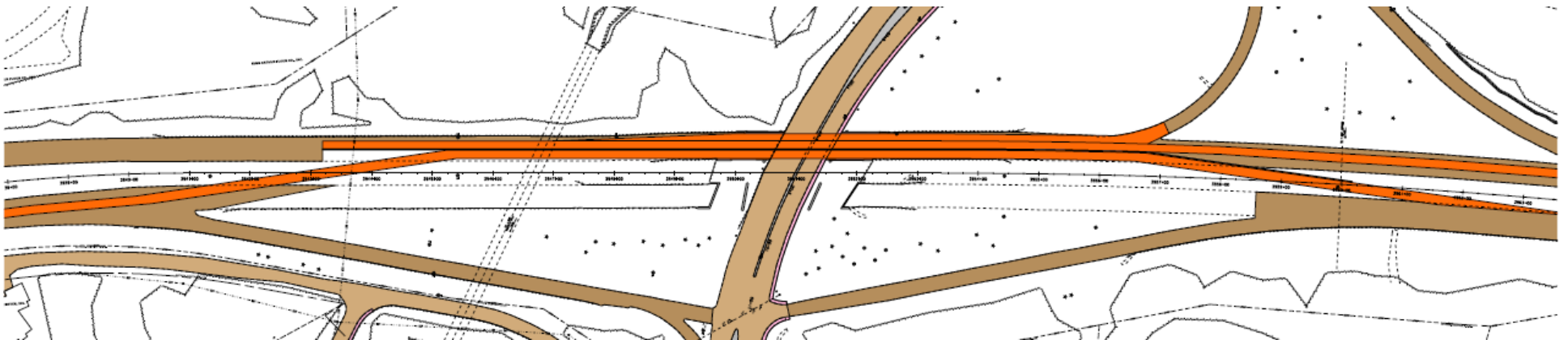
- One lane traffic maintained for each barrel
- On ramp for I-91 south will either need to be closed during construction or be relocated. Traffic utilizing exit 13 to enter I-91 SB would need to detour onto US Route 5 to the exit 12 on ramp if a detour is chosen

# Crossover Layout

- Traffic on northbound structure



- Traffic on southbound structure





# Preliminary Project Schedule

- Construction Start – 2023
  - Total Cost Estimate: \$3,457,000

# Project Summary: Bridge 48 N&S

- Rehabilitation with Traffic Maintained on crossovers
  - New abutment stems or major rehabilitation of existing stems and bridge seats
  - New backwalls
  - Replacement of all finger joints
  - New fascias, curbs, and railing
  - Membrane and pave
  - 30-year design life
  - No Right-of-Way Needed
  - No Utility Relocation
  - Southbound on-ramp potential relocation
  - Potential short-term closures of VT Route 10A
- Construction Year: 2023

## For more information:

- <https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/12A568>



# Norwich IM 091-2(89) Questions & Comments

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