



# Mt. Holly BO 1443(56) Alternatives Presentation Meeting

**Town Highway 17 – Bridge 64 over Mill River Branch**

January 24, 2023

# Introductions

**Dave Peterson, P.E.**

VTrans Design Project Manager

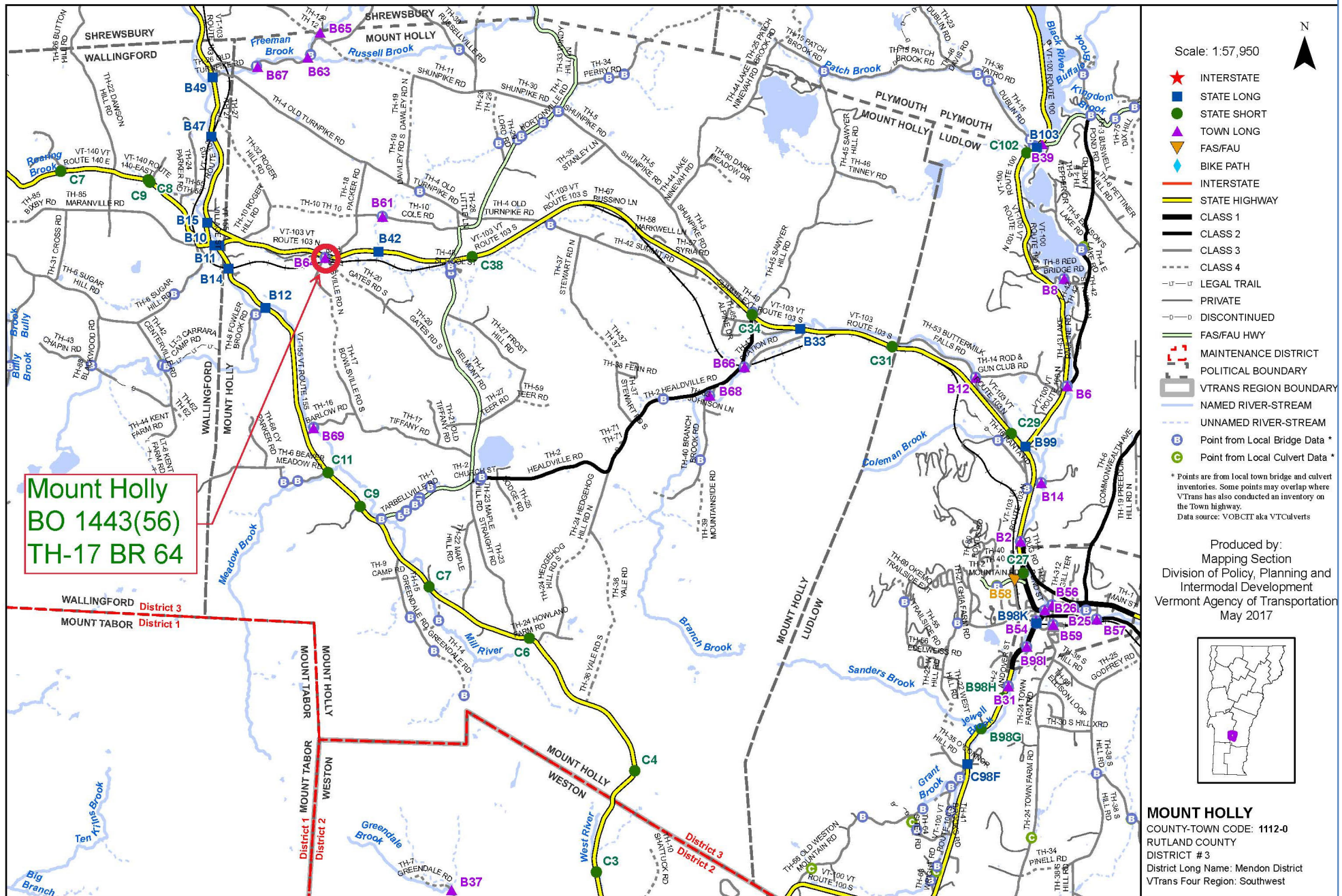
**Laura Stone, P.E.**

VTrans Scoping Engineer

# Purpose of Meeting

- Provide an understanding of our approach to the project
- Provide an overview of project constraints
- Discuss alternatives that were considered
- Discuss our recommended alternative
- Provide an opportunity to ask questions and voice concerns

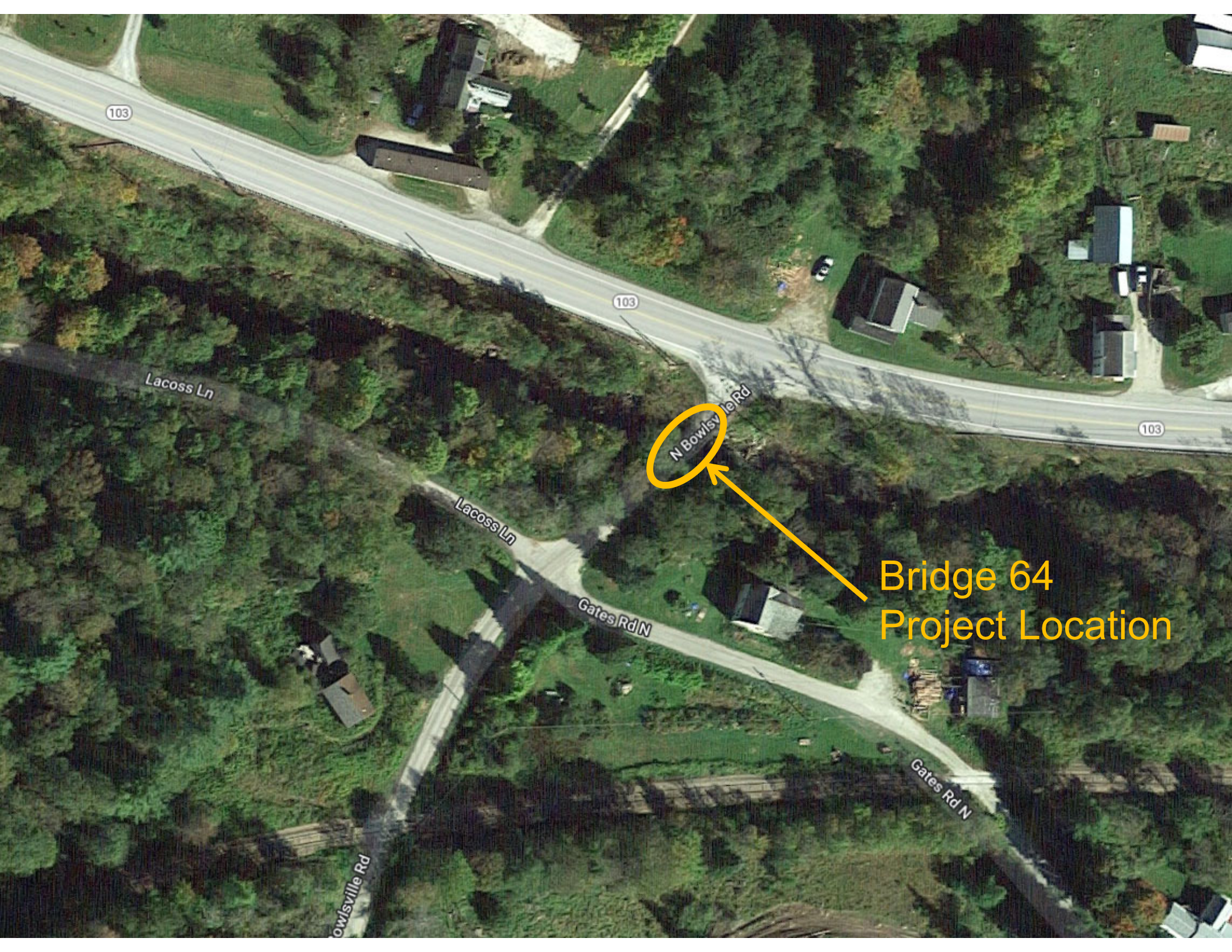




This map was funded in part through grants from the Federal Highway Administration, U.S. Department of Transportation. The representation of the authors expressed herein do not necessarily state or reflect those of the U. S. Department of Transportation.

## Location Map





103

Lacoss Ln

103

N Bowlsby Rd

103

Lacoss Ln

Gates Rd N

Gates Rd N

Bowlsville Rd

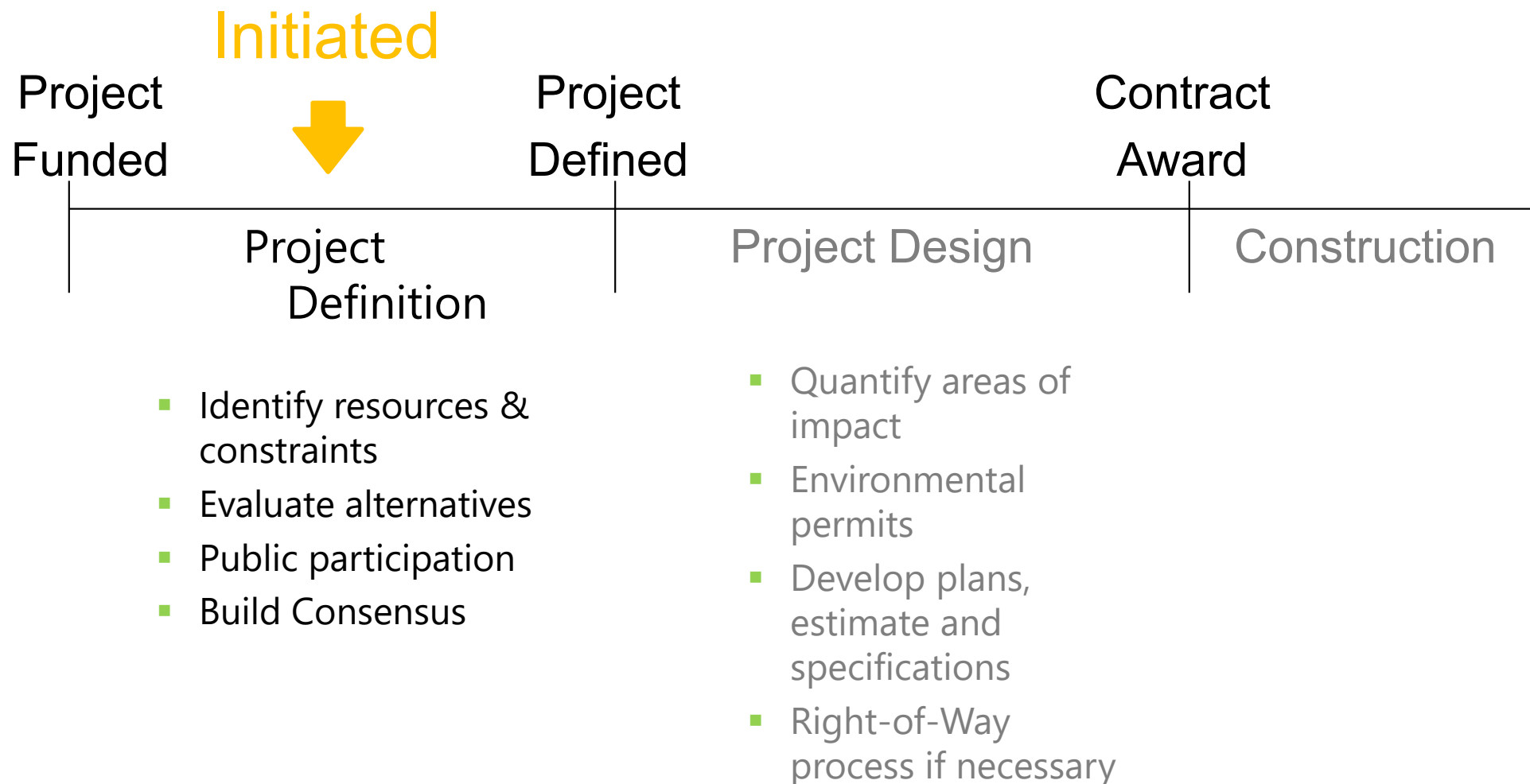
Bridge 64  
Project Location



# Meeting Overview

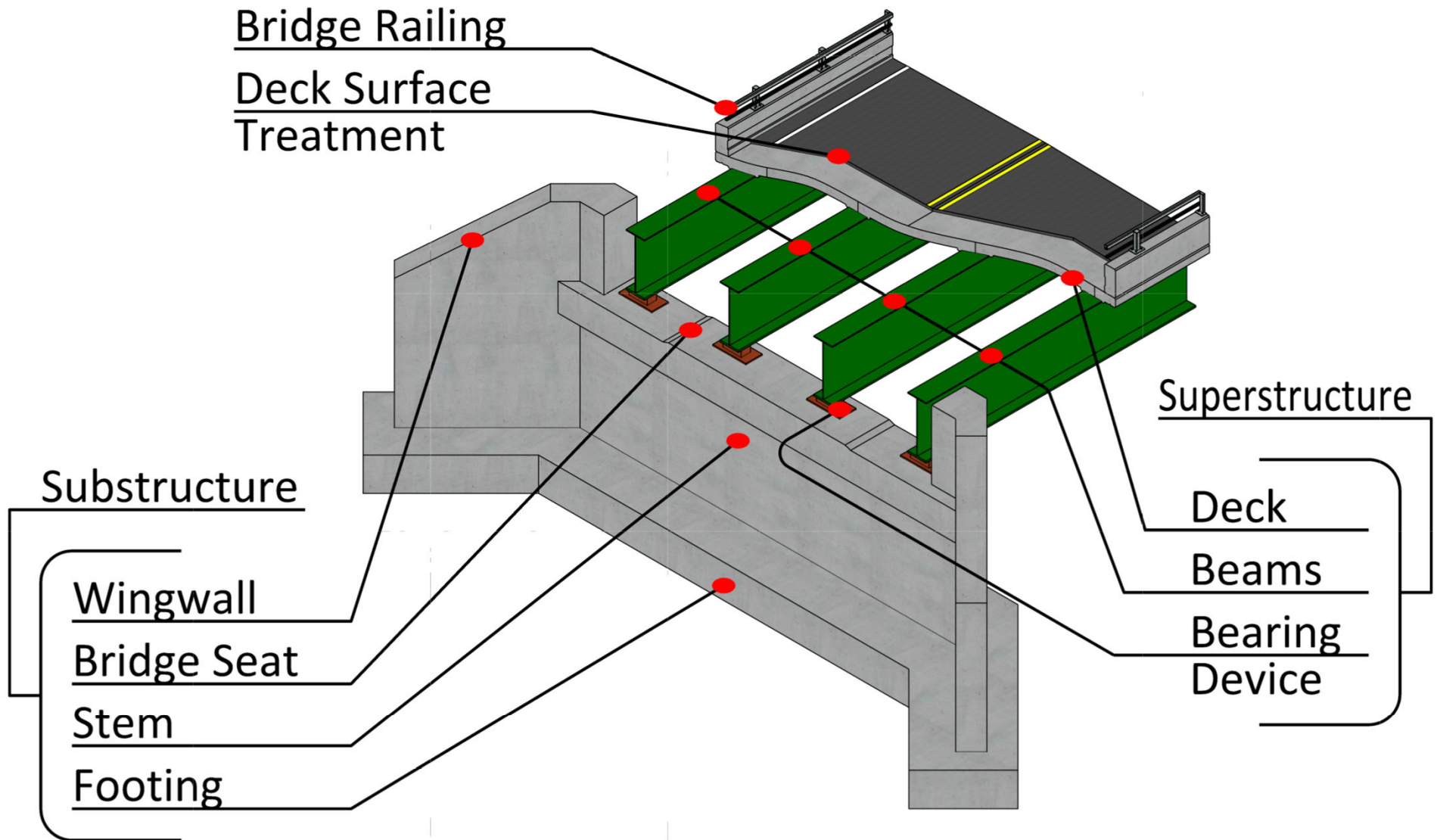
- VTrans Project Development Process
- Project Overview
  - Existing Conditions
  - Alternatives Considered
  - Recommended Alternative
- Maintenance of Traffic
- Schedule
- Summary
- Next Steps
- Questions

# VTrans Project Development Process





# Description of Terms Used



# ACT 153 of the 2012 Legislative Session

	Local Share	
	Road Closed During Construction	Road Open During Construction
Rehabilitation	2.5%	5%
Replacement	5%	10%

- Per Act 153, the local share is reduced by 50% for rehabilitating versus replacement
- Per Act 153, the local share is reduced by 50% for closing the road to traffic during construction
- The construction phase of the project will be funded at 100% federal per the Infrastructure Investment and Jobs Act (IIJA)



## Looking Southwest



## Existing Conditions – Bridge #64

- Roadway Classification – Rural Local Road (Class 3)
- Bridge Type – 31-foot span Rolled Beam Bridge
- Ownership – Town of Mt. Holly
- Constructed in 1934

10/08/2020



Looking Northeast



## Existing Conditions – Bridge #64

- Aerial Utilities – Green Mountain Power (3 phase electric); Comcast (internet); Vermont Telephone Company (communications)
  - These lines run parallel to VT Route 103 along the eastbound lane which runs perpendicular to North Bowlsville Road. These powerlines are close to the bridge location and may have to be relocated for construction.

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# Existing Site Conditions – Bridge #64

- The bridge has heavy deterioration and map cracking along the abutments, backwalls, and wingwalls. The heavily saturated concrete in the deck has been reduced to erodible fine soils and could soon penetrate the travelable portion of the deck. There are many areas of section loss along the fascia beams and bottom flanges along the bridge.
- The bridge does not meet the minimum standards for width.
- The bridge railing is substandard.
- The existing bridge does not meet the hydraulic standard for bank full width and has a scour critical rating.



## Bridge Inspection Report Ratings



### Existing Conditions - Bridge #64

- Deck Rating 6 (Satisfactory)
- Superstructure Rating 5 (Fair)
- Substructure Rating 5 (Fair)
- Channel Rating 6 (Satisfactory)

10/08/2020



## Fascia Beam Rust



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Existing Conditions - Bridge #64



## Fascia Deterioration



Existing Conditions - Bridge #64



## Missing/Compromised Bridge Rail



**Existing Conditions - Bridge #64**



## Abutment Cracking & Spalling



Existing Conditions - Bridge #64

## Superstructure Corrosion



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Existing Conditions - Bridge #64



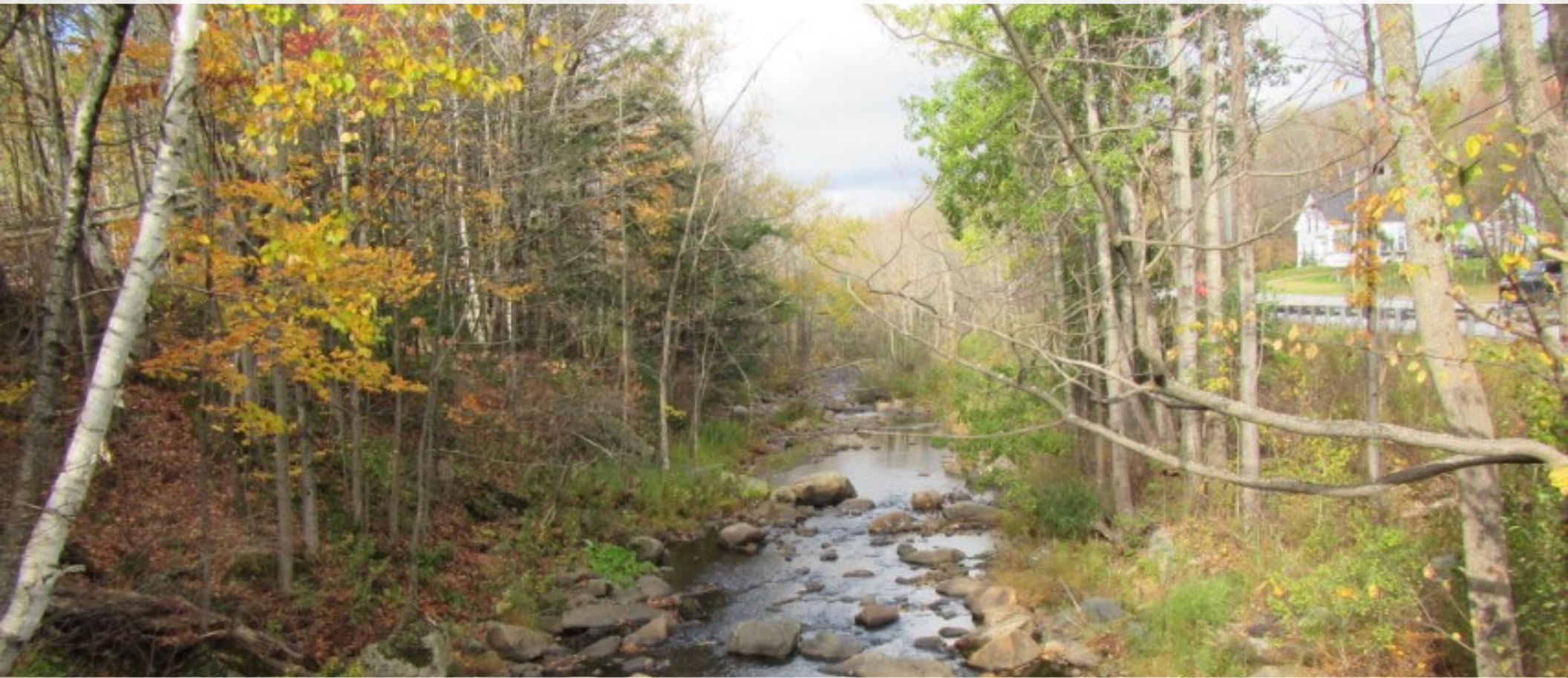
## Abutment Breach/Spalling



Existing Conditions - Bridge #64



Looking West (Downstream)



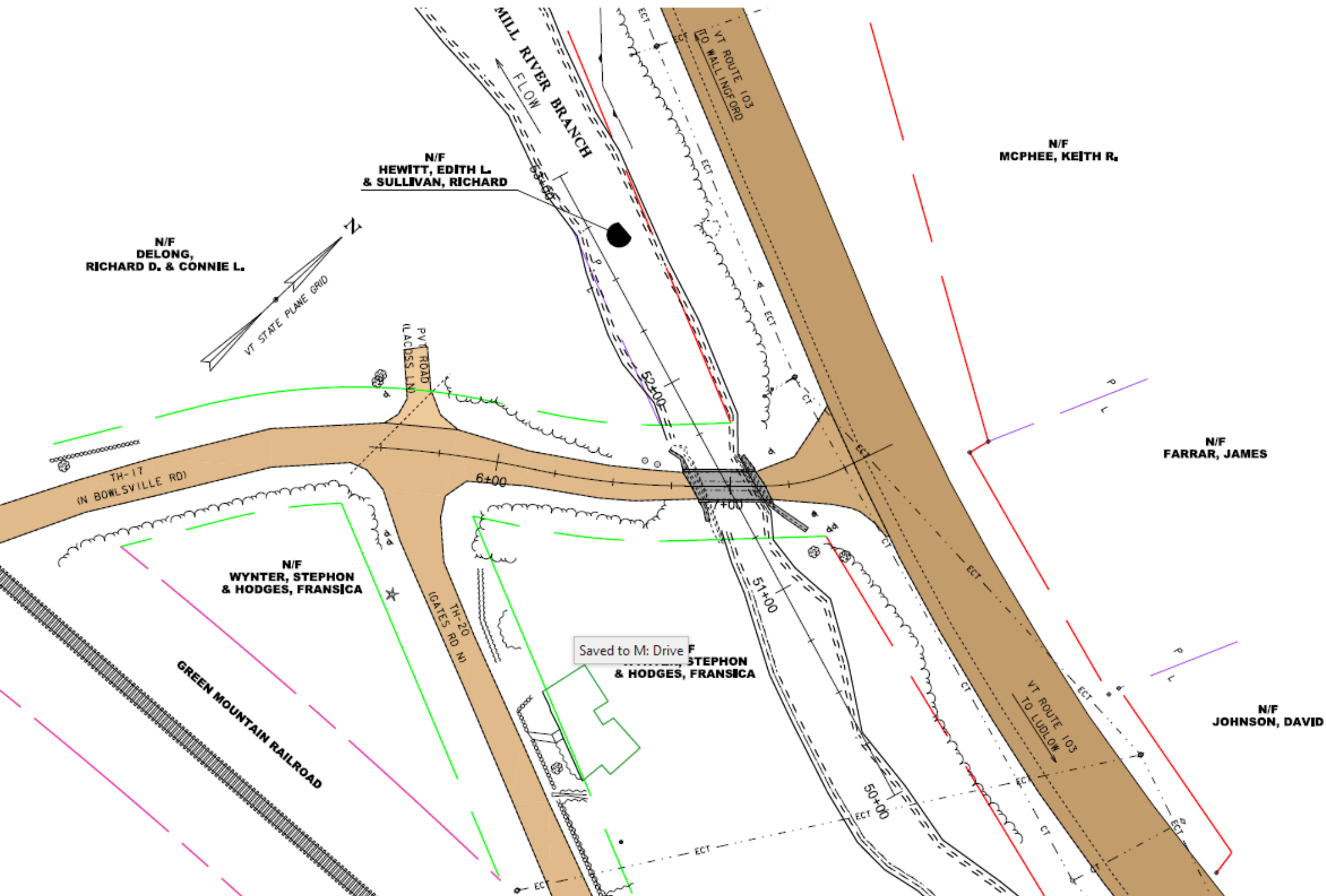
## Environmental Resources - Bridge #64

- Class II wetlands in 3 quadrants of the project area
- Located in a Type A Flood Hazard Area
- Suitable summer bat habitat
- Wildlife habitat

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# Existing Conditions



# Design Criteria and Considerations

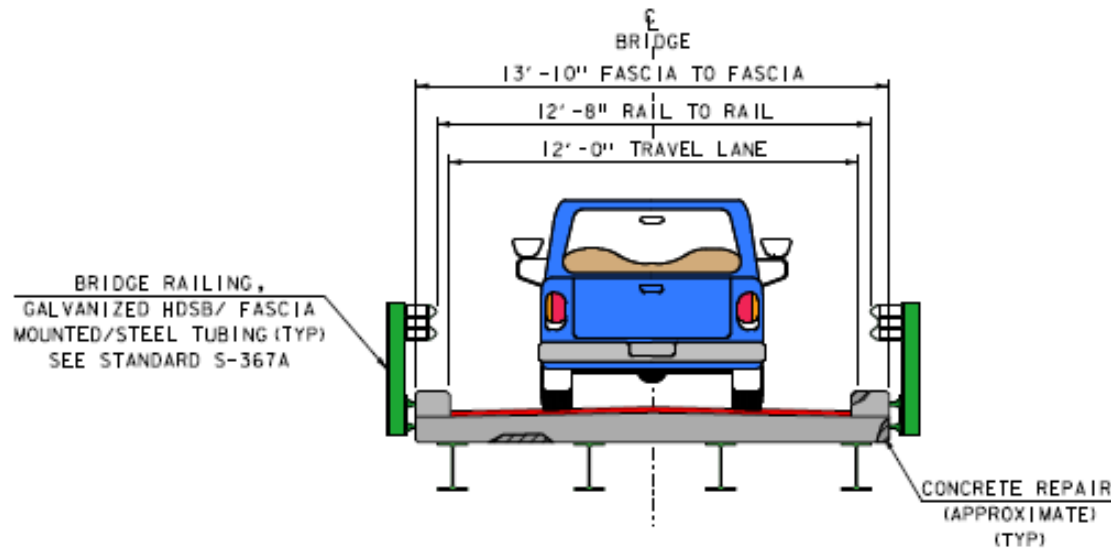
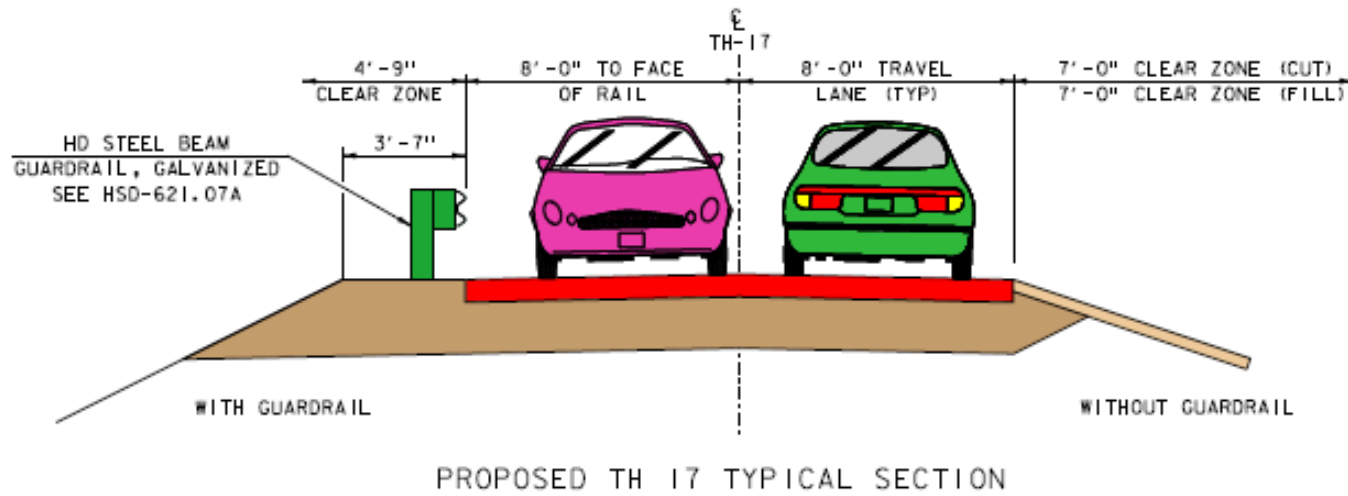
- Average Daily Traffic
  - 35 vehicles per day
- Design Hourly Volume
  - 5 vehicles per hour
- % Trucks
  - 8.0%



# Alternatives Considered – Bridge 64

- No Action
  - No imminent danger, but will eventually need to be posted for lower traffic loads
- Minor Rehabilitation
  - Would address the deterioration issues of the existing bridge
  - 12'-8" rail-to-rail typical section
  - 15-year design life
- Deck Replacement
  - New cast-in-place deck
  - Widened to 14' Rail-to-Rail typical
  - 30-year design life
- Superstructure Replacement
  - New deck, railings, and superstructure
  - Widened to 16' Rail-to-Rail typical
  - 40-year design life
- Full Bridge Replacement (On and Off Alignment)
  - Span increased to meet minimum standard BFW
  - Widened to standard 16' Rail-to-Rail typical
  - 75-year design life

# Minor Rehabilitation Typical Section

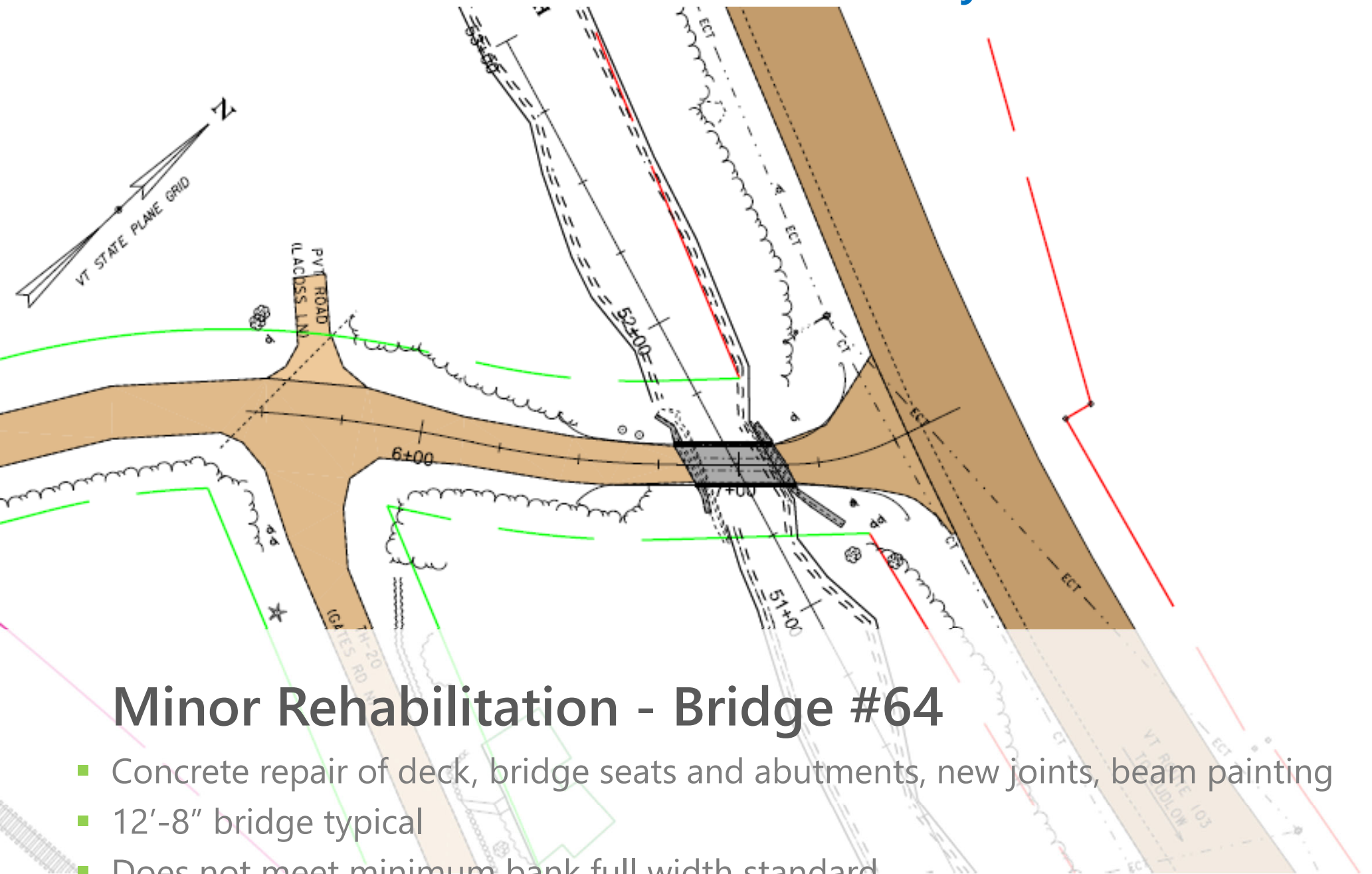


## Minor Rehabilitation - Bridge #64

- Matches existing substandard bridge width
- 12'-8" bridge typical



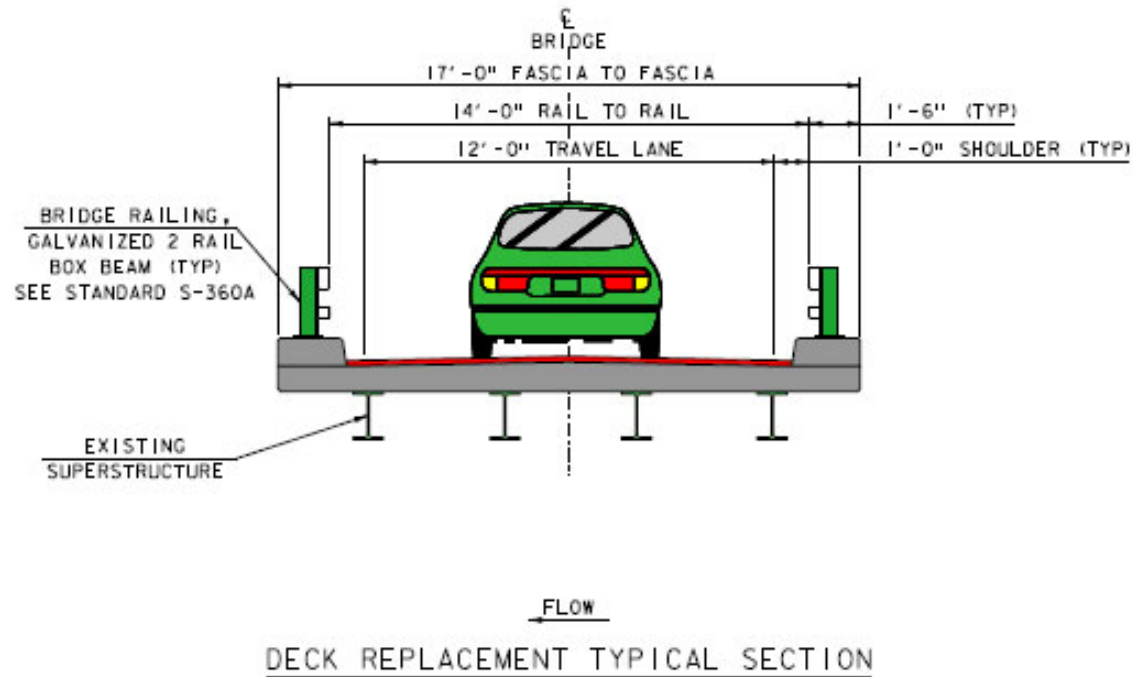
# Minor Rehabilitation Layout



## Minor Rehabilitation - Bridge #64

- Concrete repair of deck, bridge seats and abutments, new joints, beam painting
- 12'-8" bridge typical
- Does not meet minimum bank full width standard
- Design Life; 15 years

# Deck Replacement Typical Section

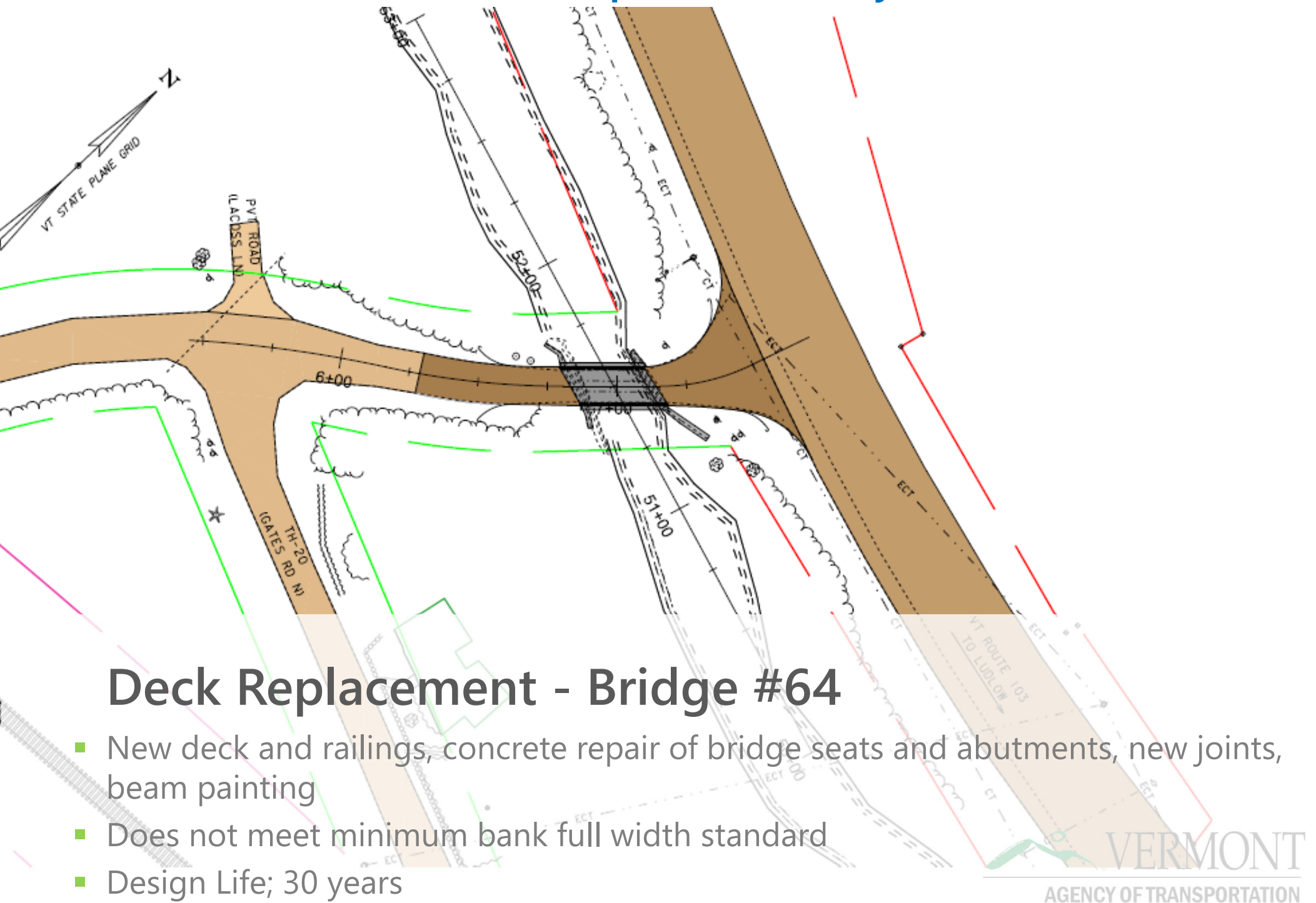


## Deck Replacement - Bridge #64

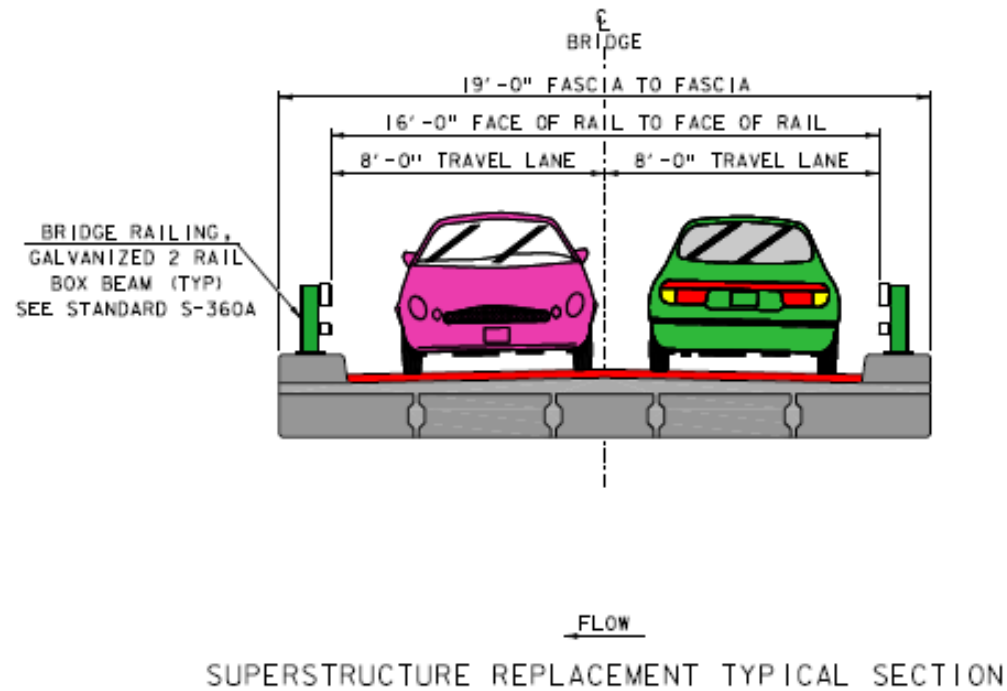
- 14' rail-to rail bridge typical



# Deck Replacement Layout



# Superstructure Replacement Typical Section

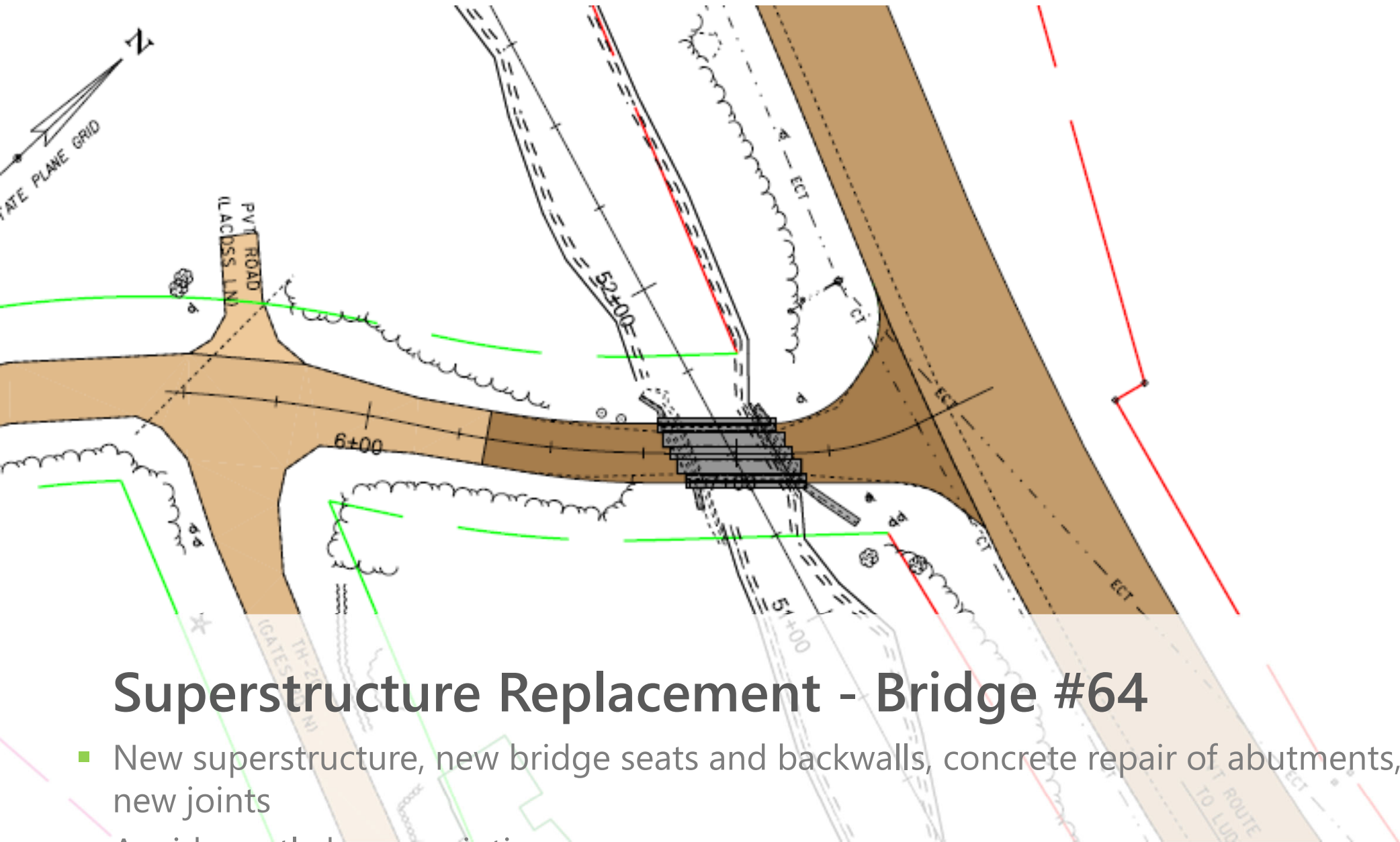


## Superstructure Replacement - Bridge #64

- 16' bridge typical



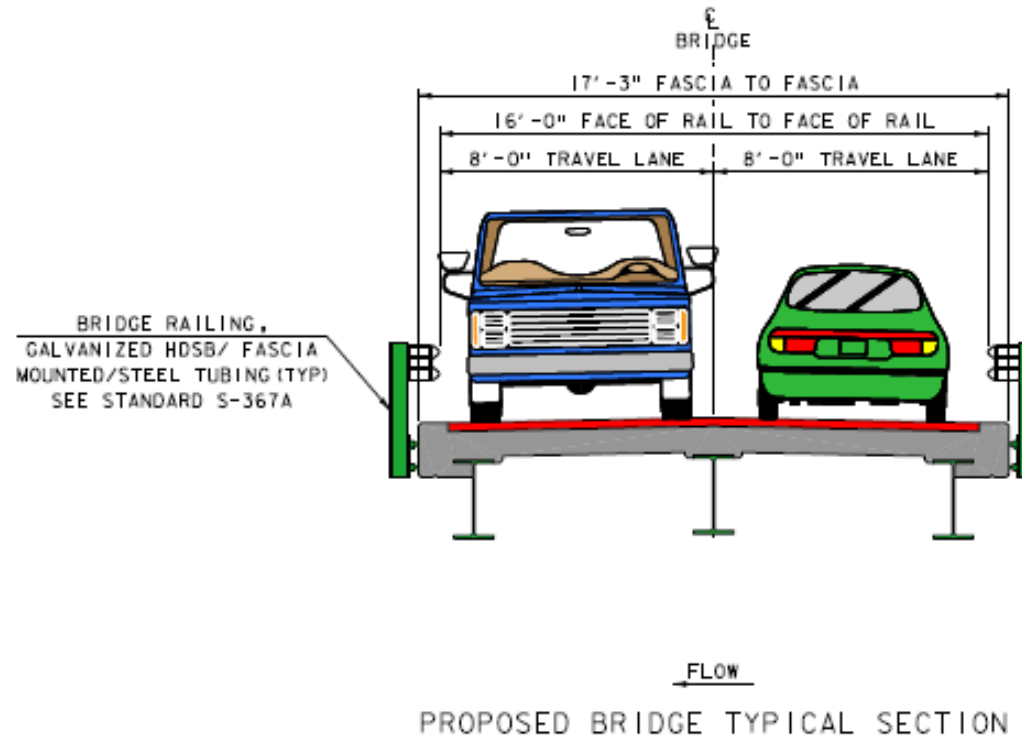
# Superstructure Replacement Layout



## Superstructure Replacement - Bridge #64

- New superstructure, new bridge seats and backwalls, concrete repair of abutments, new joints
- Avoids costly beam painting
- Does not meet minimum bank full width standard
- Design Life; 40 years

# New Bridge On-Alignment Typical Section

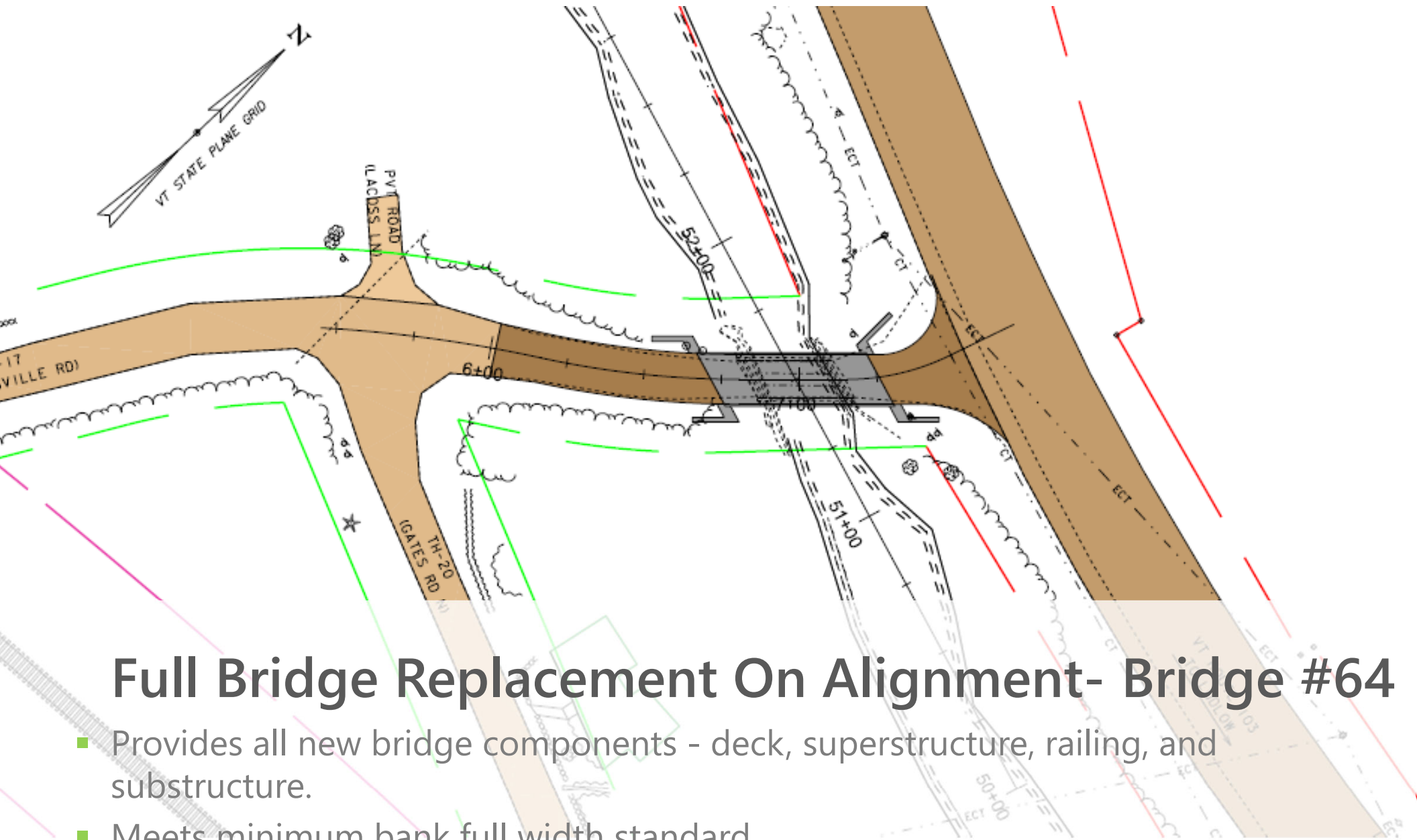


## Full Bridge Replacement On Alignment- Bridge #64

- Minimum 16' bridge typical



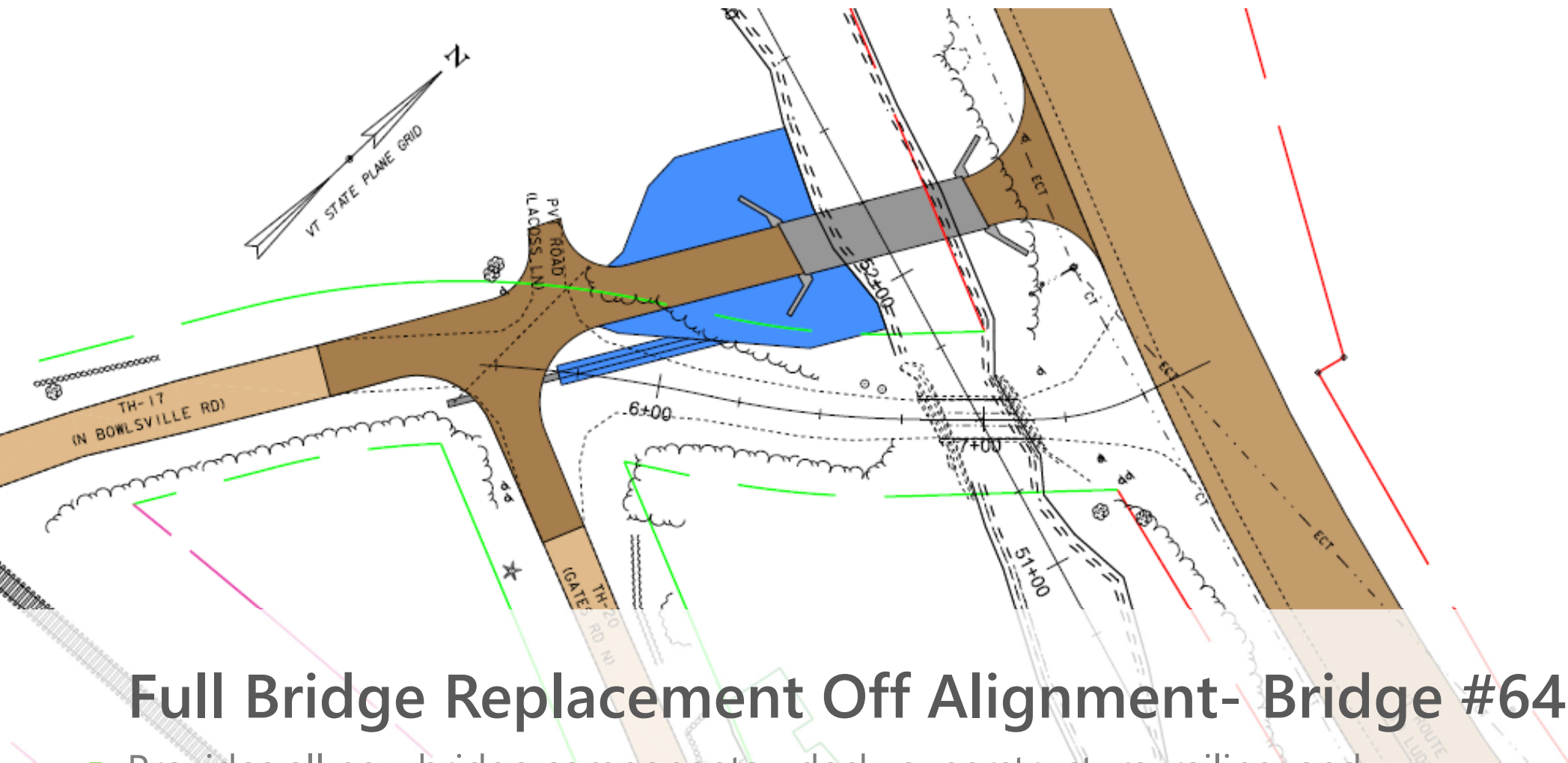
# New Bridge On-Alignment Layout



## Full Bridge Replacement On Alignment- Bridge #64

- Provides all new bridge components - deck, superstructure, railing, and substructure.
- Meets minimum bank full width standard
- Bedrock located approx. 60-64 ft bgs: Integral abutment bridge
- Design Life; 75 years

# New Bridge Off-Alignment Layout



## Full Bridge Replacement Off Alignment- Bridge #64

- Provides all new bridge components - deck, superstructure, railing, and substructure.
- Existing bridge can be used for traffic control
- Meets minimum bank full width standard
- Bedrock located approx. 60-64 ft bgs: Integral abutment bridge
- Design Life; 75 years



# Recommended Alternative - Bridge #64

- Full Bridge Replacement
  - Minimum 16' typical section to meet standards
  - Minimum 40-foot span to meet the hydraulic standard for BFW
  - Design life - 75 years

# Maintenance of Traffic Options Considered

- Offsite Detour
- Temporary Bridge
- Existing Bridge



A photograph of a road closure. In the center, a white rectangular sign with a black border and the words "ROAD CLOSED" in large, bold, black capital letters is mounted on a white post. The sign is flanked by two horizontal barriers with red and white diagonal stripes. In the background, there is a concrete wall, a chain-link fence, and green trees under a clear blue sky.

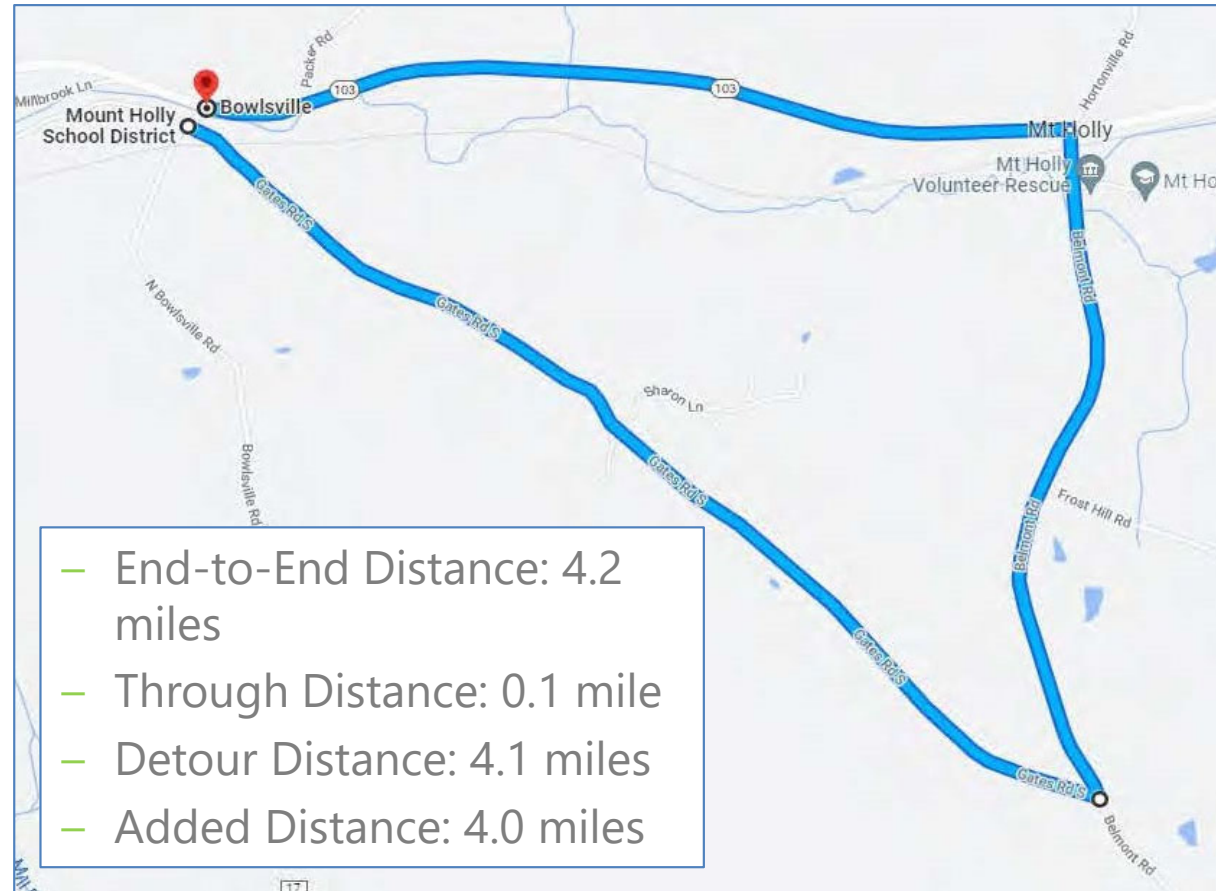
ROAD  
CLOSED

## Road Closure

- Detour chosen and signed by Town
- Construction Season duration
- Shortest Detour Route is 4.2 miles end-to-end

# Traffic Control – Detour Option

- **Detour Route:** North Bowlsville Road, to North and South Gates Road, Belmont Road, and VT Route 103, back to North Bowlsville Road
- This traffic maintenance alternative may not be available for selection as there are sections of class four roads along South Gates Road and North Bowlsville Road where the roads are unimproved dirt roads and considered “primitive”. All three detour options available have these class four primitive dirt road segments.





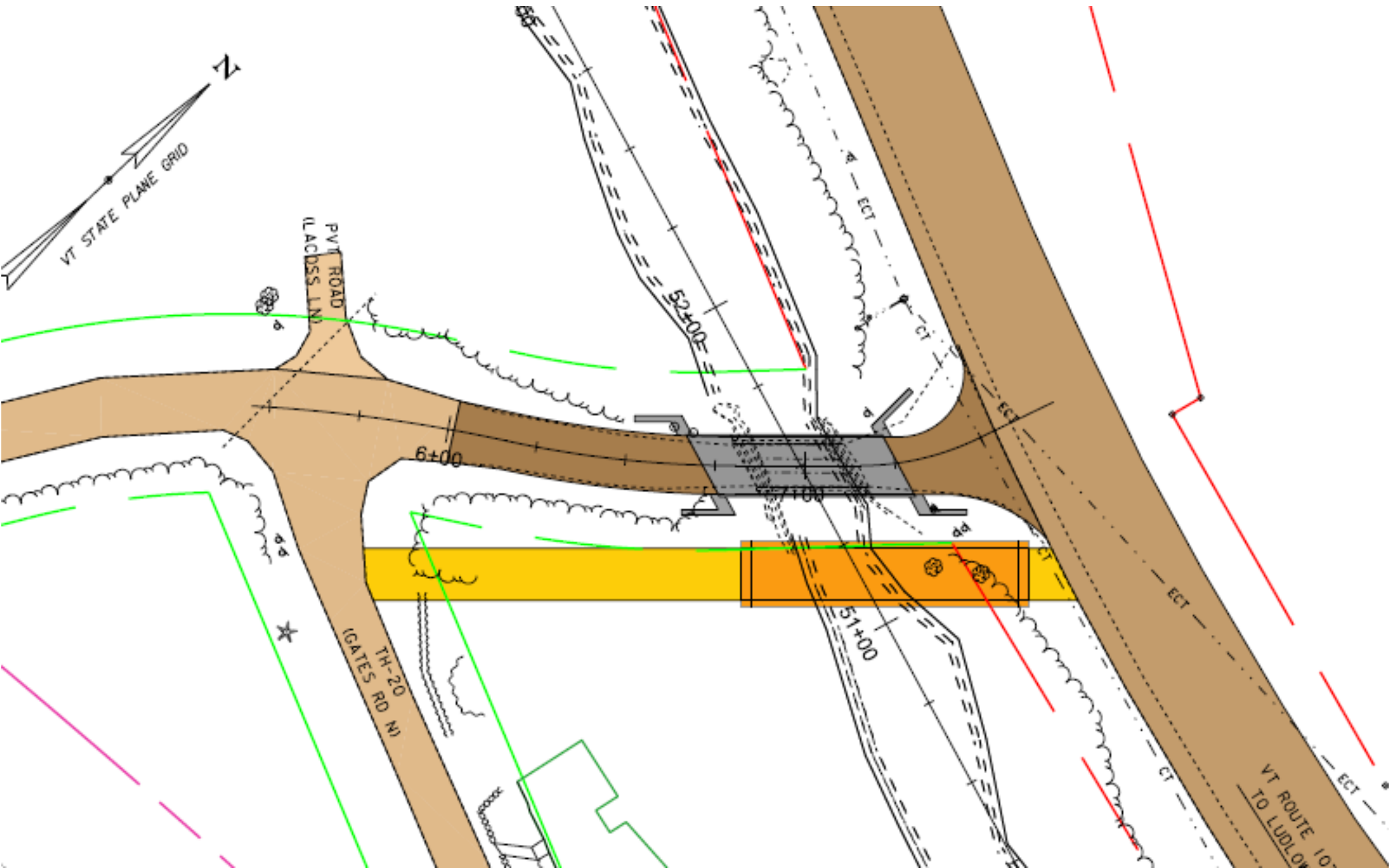


## Temporary Bridge

- One Lane Temporary Bridge constructed either Upstream or Downstream

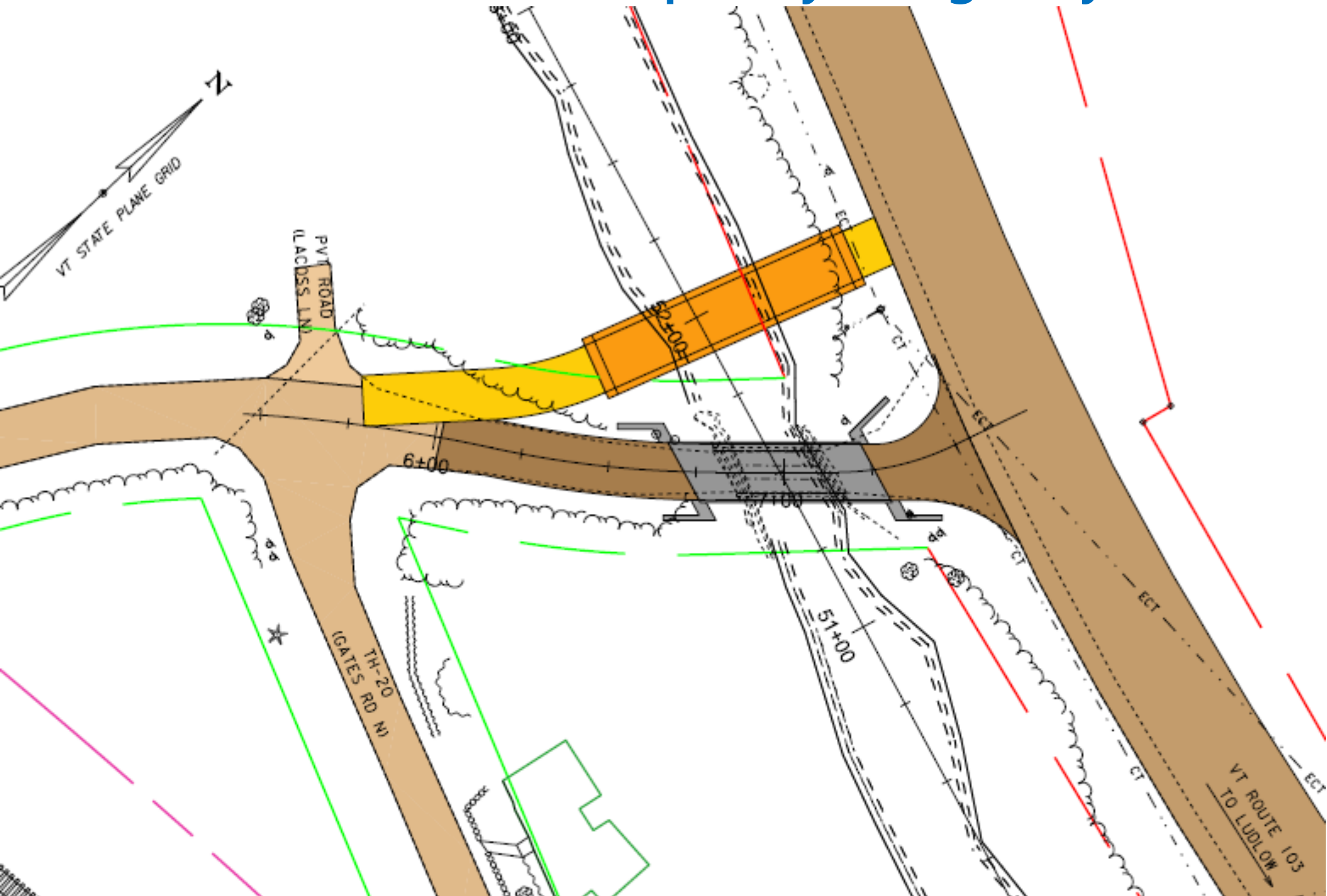


# Upstream Temporary Bridge Layout





# Downstream Temporary Bridge Layout







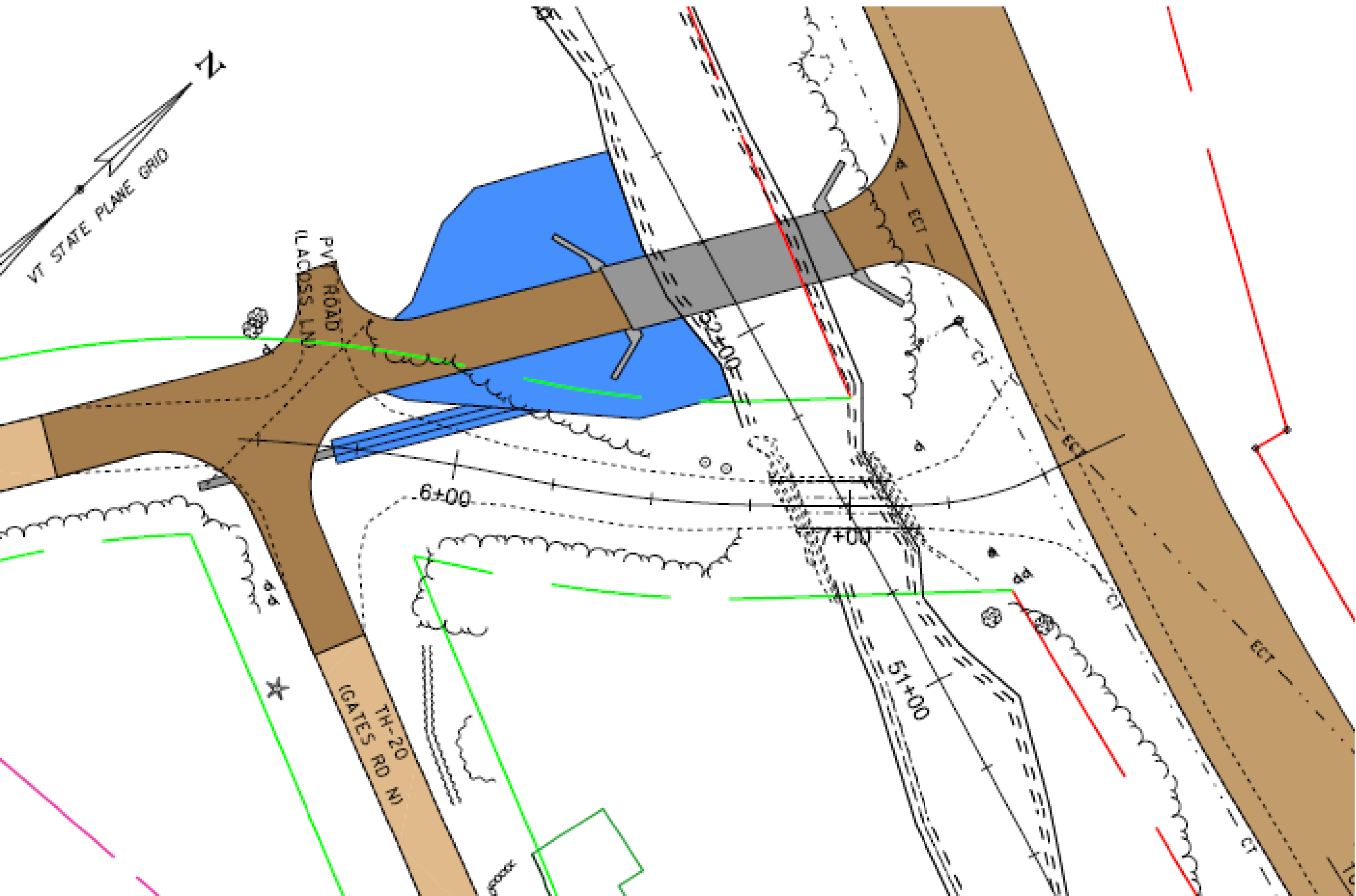
## Existing Bridge

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- Traffic maintained on existing bridge while a new bridge is constructed Downstream



# Off Alignment Bridge Layout



# Recommended Alternative - Bridge #64

- Full Bridge Replacement while maintaining traffic during construction
  - Minimum 40-foot span to meet the hydraulic standard for BFW
  - Design life: 75 years
  - Two replacement options for the Town of Mt Holly to choose from:
    - Option 1: Full bridge replacement on-alignment with traffic maintained on a one-lane alternating temporary bridge during construction.
    - Option 2: Full bridge replacement off-alignment while maintaining traffic on the existing bridge during construction.



# Alternatives Matrix

Mt Holly BO 1443(56)	Alternative 1		Alternative 2		Alternative 3		Alternative 4		
	Minor Rehabilitation		Deck Replacement		Superstructure Replacement		Full Bridge Replacement		
	On-Alignment		On-Alignment		On-Alignment		On-Alignment		Off-Align
	a. Offsite Detour	b. Temporary Lane Closures	a. Offsite Detour	b. Temporary Bridge	a. Offsite Detour	b. Temporary Bridge	a. Offsite Detour	b. Temporary Bridge	c. Existing Bridge
Total Project Costs	\$1,157,600	\$1,095,744	\$1,394,971	\$1,495,800	\$1,095,744	\$1,540,245	\$1,496,038	\$1,534,216	\$1,831,131
Annualized Costs	\$77,173	\$73,050	\$46,499	\$49,860	\$27,394	\$38,506	\$19,947	\$20,456	\$24,415
Town Share: construction phase funded at 100% federal per IIJA	\$5,000	\$10,000	\$6,250	\$16,500	\$6,250	\$16,500	\$17,500	\$43,000	\$57,000
	2.5%	5%	2.5%	5%	2.5%	5%	5%	10%	10%
Project Development Duration	2 years	2 years	2 years	4 years	2 years	4 years	2 years	4 years	4 years
Construction Duration	2 months	4 months	4 months	8 months	5 months	8 months	6 months	8 months	8 months
Closure Duration (If Applicable)	45 days	NA	60 days	NA	60 days	NA	Construction duration	NA	NA
Typical Section - Roadway (feet)	14	14	14	14	16	16	16	16	16
Typical Section - Bridge	12'-8"	12'-8"	14'	14'	16'	16'	16'	16'	16'
Geometric Design Criteria	Substandard Width		Substandard Width		Meets Minimum Standards		Meets Minimum Standards		
Traffic Safety	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved
Alignment Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	Yes
Bicycle Access	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved
Pedestrian Access	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved	Improved
Hydraulics	Substandard BFW/Scour critical		Substandard BFW/Scour critical		Substandard BFW/Scour critical		Meets Minimum Standards		
Utilities	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
ROW Acquisition	No	No	No	Yes	No	Yes	No	Yes	Yes
Road Closure	Yes	No	Yes	No	Yes	No	Yes	No	No
Design Life (yrs)	15	15	30	30	40	40	75	75	75

# Preliminary Project Schedule

- Construction Start – 2025
  - Total Cost Estimate: \$1.5 to 1.8 million
    - Town Share: \$43,000 to \$57,000 (10% share for PE and ROW only\*)

\*Construction phase will be 100% federally funded



# Next Steps – Bridge #64

This is a list of a few important activities expected in the near future and is not a complete list of activities.

- ➡ Wait for Town response to recommendation on proposed project
  - Develop Conceptual plans and distribute for comment
  - Process local agreements
  - Right-of-Way process
  - Updates on project plans and estimates at each submittal

## For more information:

- <https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/12J642>



Mt. Holly BO 1443(56)

Questions and Comments

**Town Highway 17 – Bridge 64 over Mill River Branch**

January 24, 2023

10/08/2020