Northfield Village BF 0241(58) Alternatives Presentation Meeting

Vermont Route 12 – Bridge #60 over Dog River

February 9, 2021

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Introductions

Laura Stone, P.E.

VTrans Scoping Engineer

Gary Laroche, P.E.

VTrans Consultant Project Manager

Chris Baker, P.E.

Hardesty & Hanover Project Manager

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Purpose of Meeting

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

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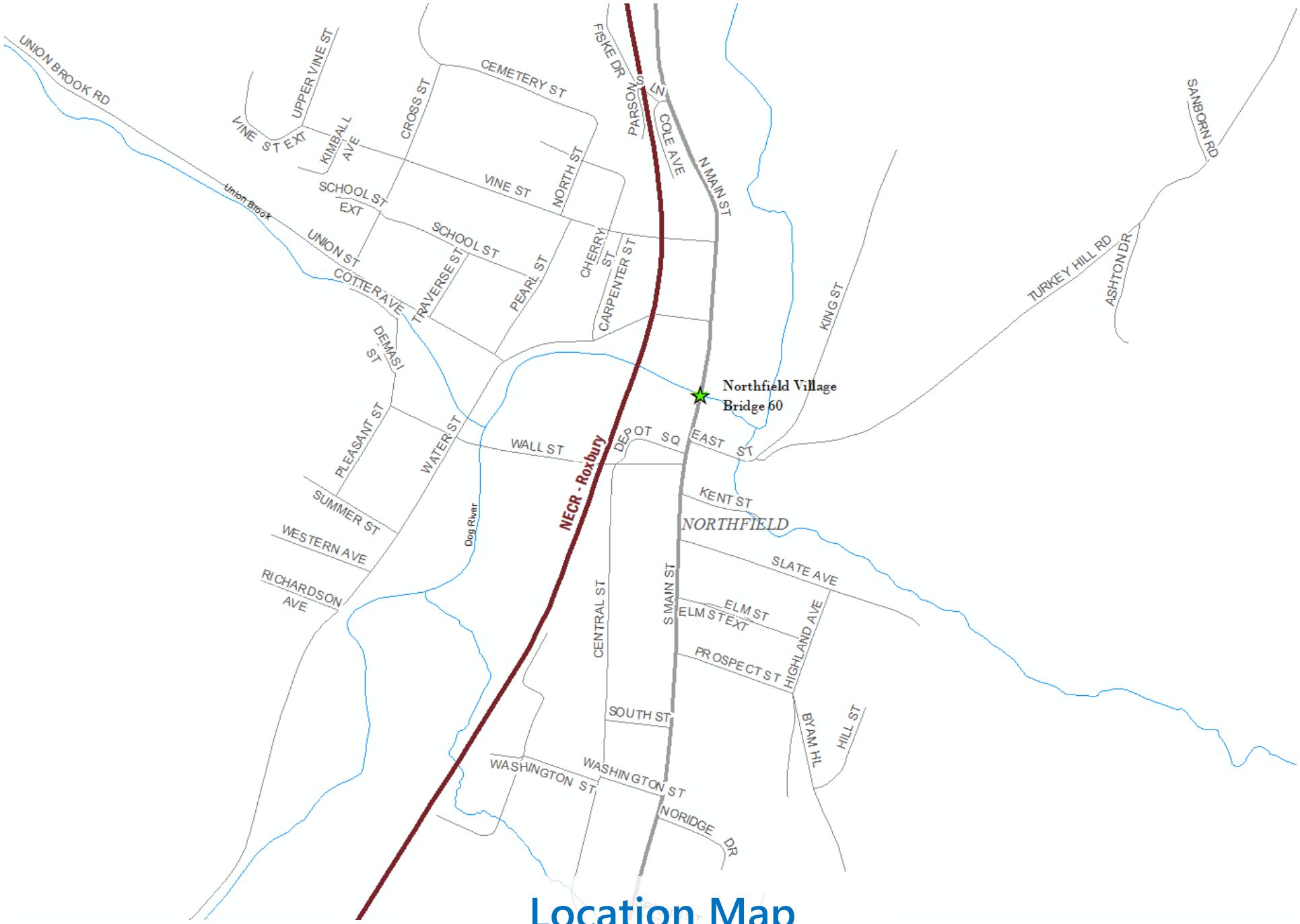

Location Map


Bridge 60
Project Location
Water St
Carpenter St
Kenyons True Value
Hardware store
Champlain Farms
Convenience store
Dollar General
Dollar store
Dog River
N Main St
King St
O'Maddi's Deli & Cafe
China Star
Takeout
The Common Cafe
Takeout
Good Measure
Brewing Co
Cornerstone Burger Co
Takeout
Northfield Pharmacy
Northfield Fire
Department
Northfield Police
Department
East St
Turkey Hill Rd
S Main St
Wall St
Northfield Savings Bank
NAPA Auto Parts -
Northfield Auto Supply
Auto parts store
Freight Yard Way
Central St
Mayo Associates
Grace Evangelical
Free Church
United Church
of Northfield
Northfield Town Clerk
Kent St
Brown Public Library
Google

Meeting Overview

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

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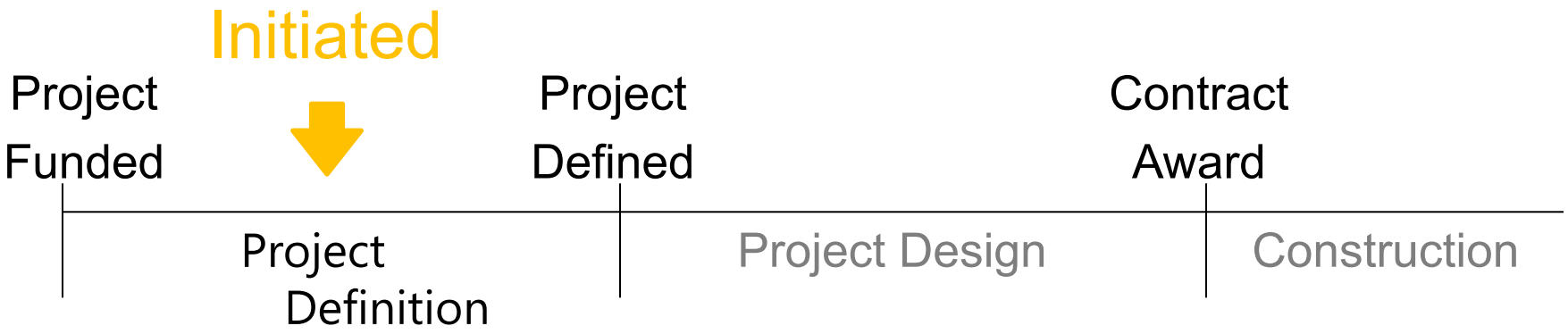
VTrans Project Development Process



- 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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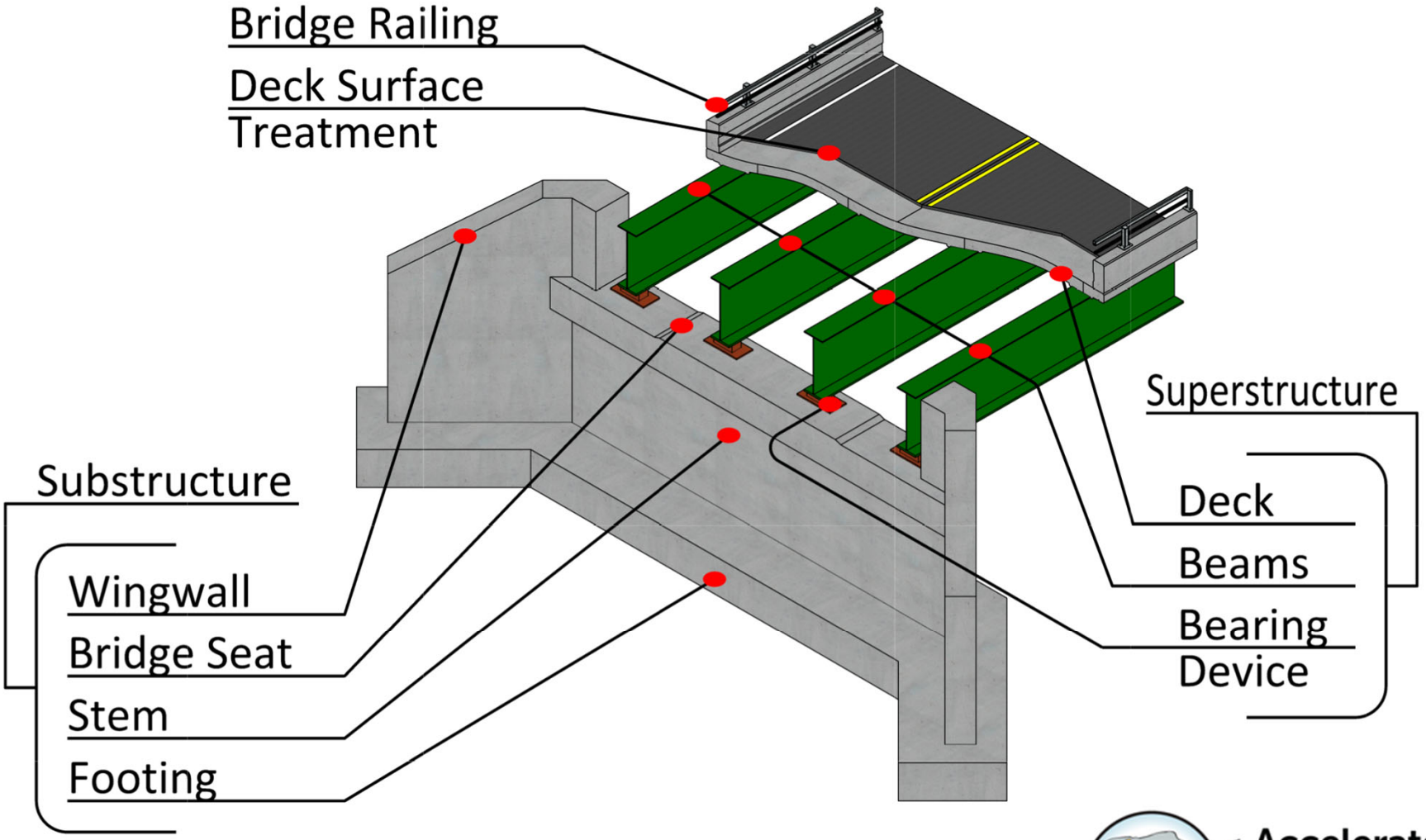
Description of Terms Used



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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

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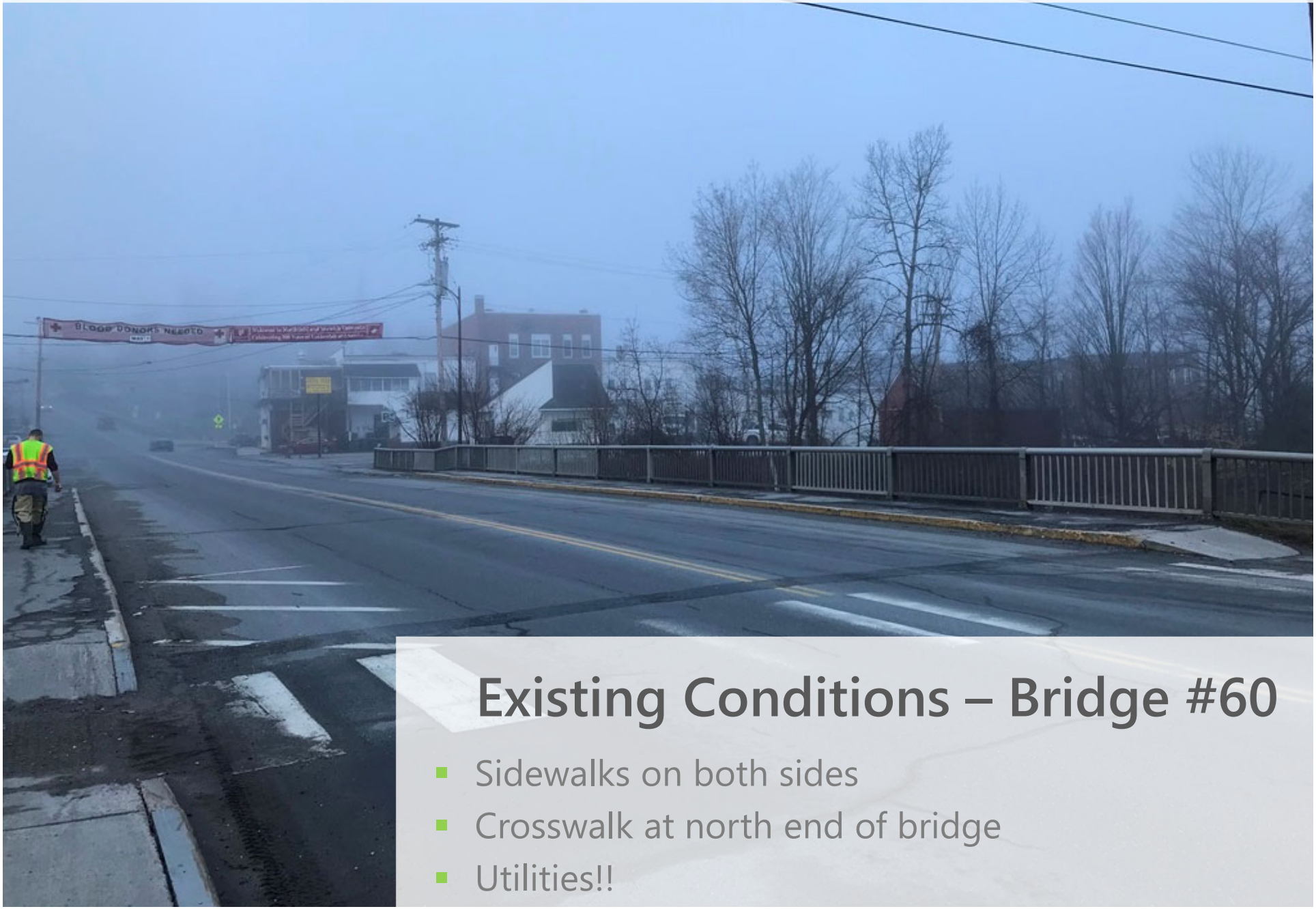
Looking North over Bridge 60

Existing Conditions – Bridge #60

- Roadway Classification – Major Collector (Class 1 TH)
- Bridge Type – 111’ Long 3-Span Concrete T-Beam Bridge
- Ownership – Town of Northfield
- Constructed in 1926, Reconstructed in 1958

Looking South over Bridge 60



Existing Conditions – Bridge #60

- Sidewalks on both sides
- Crosswalk at north end of bridge
- Utilities!!

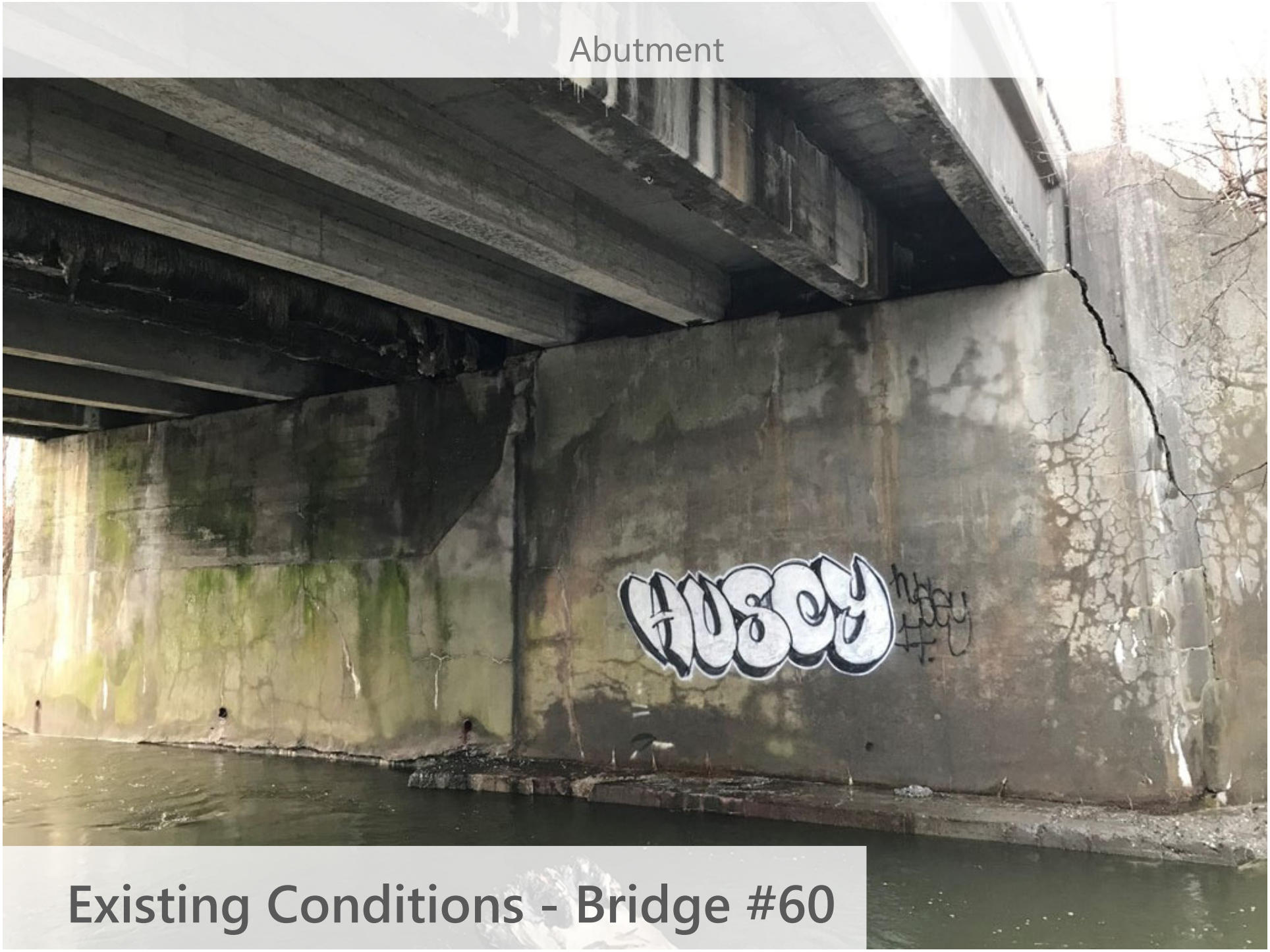
Existing Conditions – Bridges #60

- Sidewalks are in poor condition with heavy spalling and large delaminations
- Wearing Surface is in poor condition with cracking and pot hole formation
- Reinforced concrete T-Beams are in fair to poor condition having areas of heavy saturation, efflorescence leakage, rust staining and spalling with delaminations and exposed rebar
- Both abutments have moderate to heavy cracking with efflorescence leakage due to saturation from above. Additionally, small spalls are present in the bridge seat area below the fifth and sixth beams.
- The pier seat and caps have heavy deterioration with heavy cracking, delaminations, and efflorescence leakage present. The bridge seats at both piers have heavy spalling, saturation and efflorescence leakage below the fifth and sixth beams. The pier shafts have small spalls exposing reinforcing steel along with cracking with efflorescence.
- The Dog River is prone to high debris, and debris gets caught on the existing piers on a regular basis.

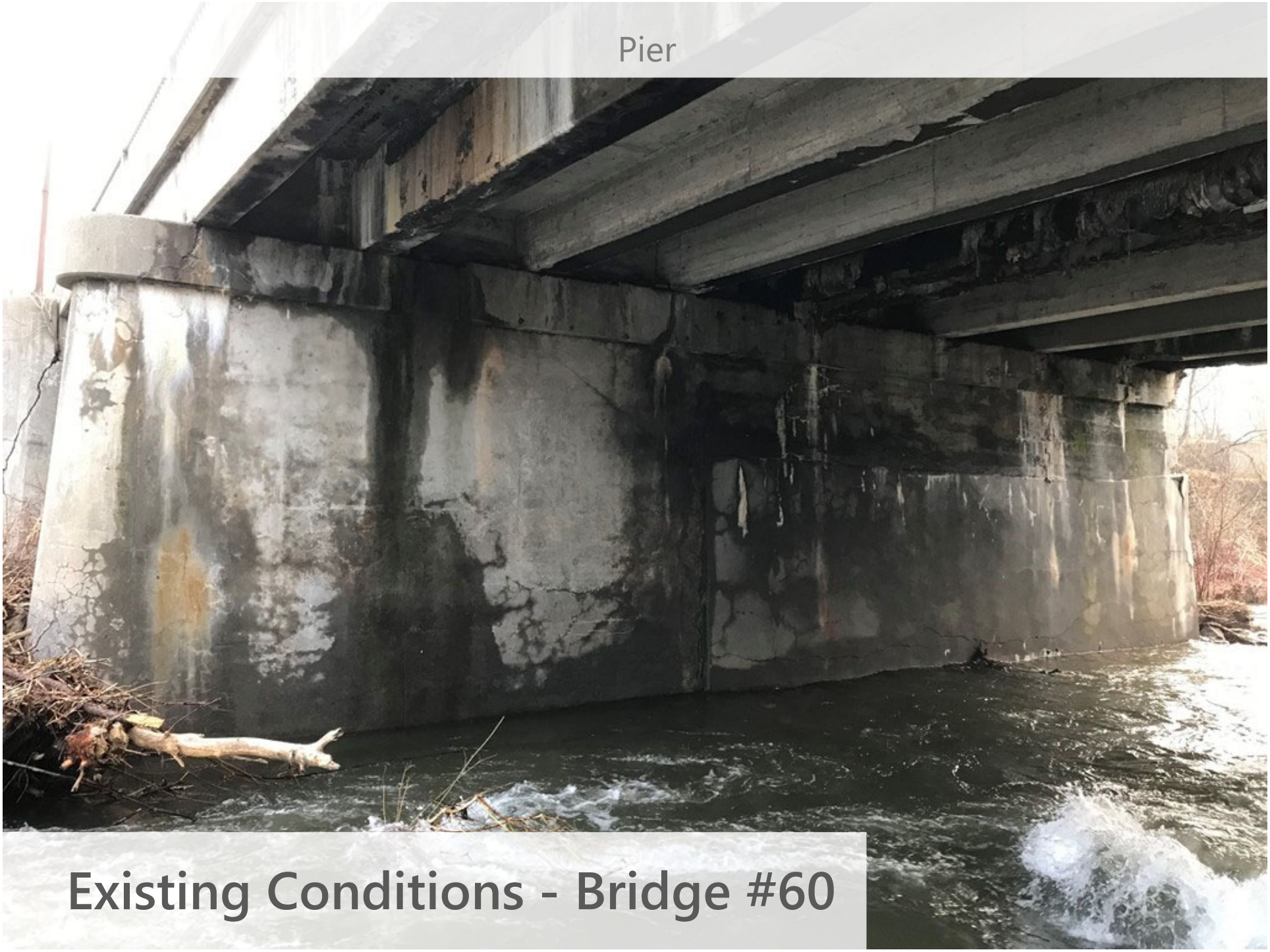
Existing Conditions - Bridge #60

- Deck Rating (Poor) 4
- Superstructure Rating (Fair) 5
- Substructure Rating (Satisfactory) 6

Abutment



Existing Conditions - Bridge #60



Existing Conditions - Bridge #60

Typical Debris Jams at Pier

Existing Conditions - Bridge #60

Existing Conditions - Bridge #60

- Bridge is NOT Historic but is located within the Vermont State Register-listed Depot Square Historic District.
- Three contributing buildings to the Depot Square Historic District are located at the southeastern corner of Bridge No. 60 and are as follows: 38 North Main Street, 28 North Main Street, and 9 East Street.

Resources – Looking Downstream

Existing Conditions - Bridge #60

- Northern Long Eared Bat
  - Potential Habitat under bridge (acoustic survey or time of year restrictions may be required)
- The northeast quadrant of the bridge may retain elements related to series of mills that were a prominent fixture on the Northfield landscape in the nineteenth century.

Finance and Maintenance Agreement: Hazardous Waste

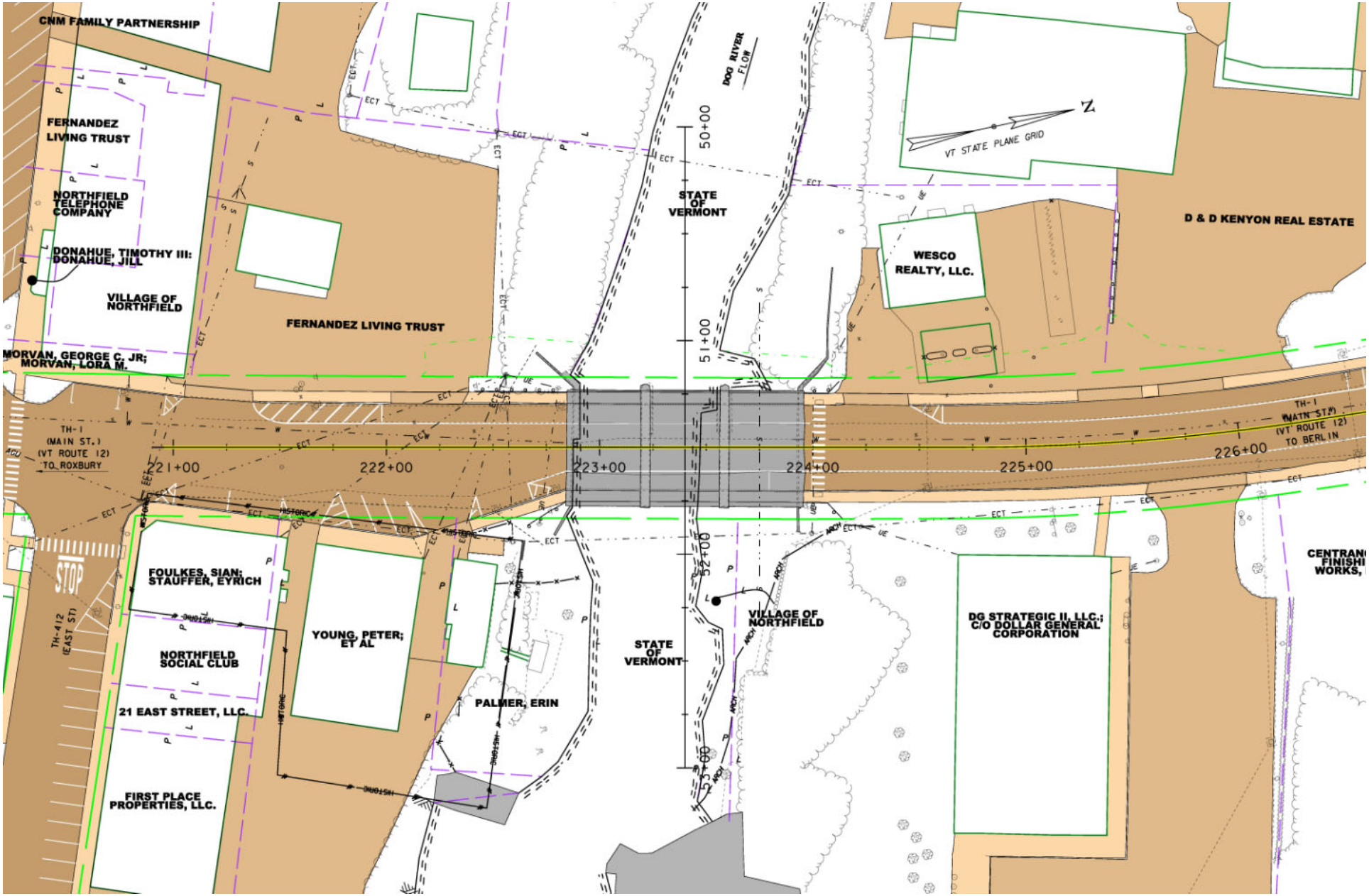
Existing Conditions - Bridge #60

- **22. Hazardous Material Contamination.** The cost of handling, treatment and disposal of petroleum-contaminated soils or other hazardous material contamination in existence prior to construction of the Project shall be non-participating. Accordingly, any costs associated therewith shall be the sole responsibility of the MUNICIPALITY. Hazardous material generated during the construction of the project shall be disposed of as provided for in the project specifications and shall be a participating cost.

UTILITIES

- Municipal Utilities:
  - The Town of Northfield Water and Sewer Department has a waterline attached underneath the bridge.
  - The Town of Northfield Water and Sewer Department has a sewer line Buried in the river a minimum of 10 feet below the ground. It is a 21" reinforced concrete pipe. The Sewer line is located between the norther abutment and the northern pier.
  - The Town of Northfield has street lighting on the 4 corners of the bridge.
- Underground:
  - Village of Northfield Electric Department has underground services.
  - CCI has underground services.
  - TDS has underground services.
  - Trans Video has underground services.
- Aerial:
  - Village of Northfield Electric Department.
  - Green Mountain Power Company (Serving Electric Company)
  - Consolidated Communications
  - TDS Telecom
  - Trans Video

Existing Layout



Design Criteria and Considerations

- Average Daily Traffic
  - 4,800 vehicles per day
- Design Hourly Volume
  - 580 vehicles per hour
- % Trucks
  - 8.2%

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Alternatives Considered – Bridge #60

- No Action
  - Additional maintenance required within 10 years
- All alternatives match the current typical section (11’/9' (40’ face of curb-to-face of curb))
- Rehabilitation
  - Structural deficiencies would be addressed
  - Bad concrete would be removed and replaced, membrane and pave, new joints
  - Debris Issues
  - 15-year design life
- Superstructure Replacement
  - Structural deficiencies would be addressed as well as beam maintenance issues
  - Debris Issues
  - Extensive Utility Relocation
  - 30-year design life
- Full Bridge Replacement
  - Extensive Utility Relocation
  - 75-year design life

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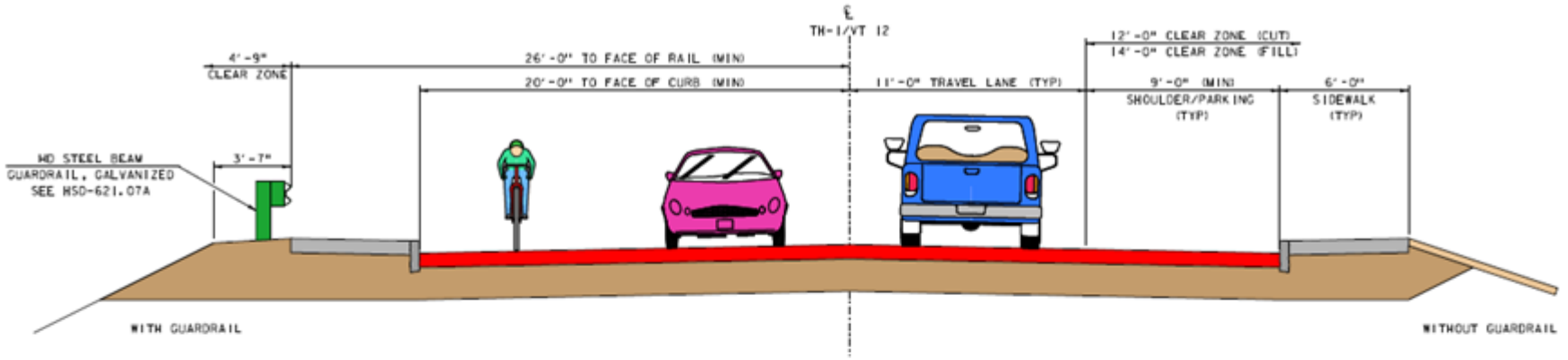
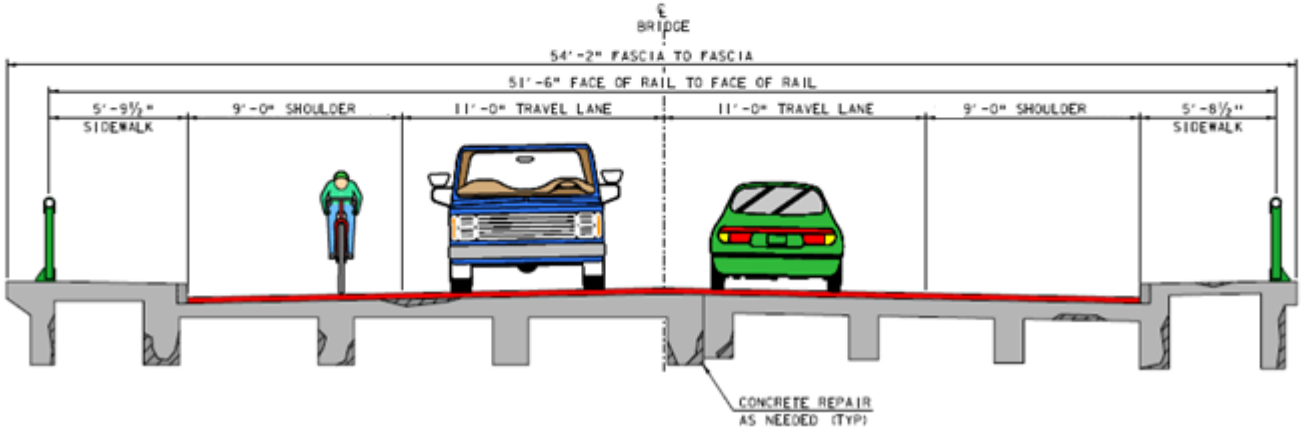
Alternative 1: Minor Rehabilitation Typical Section

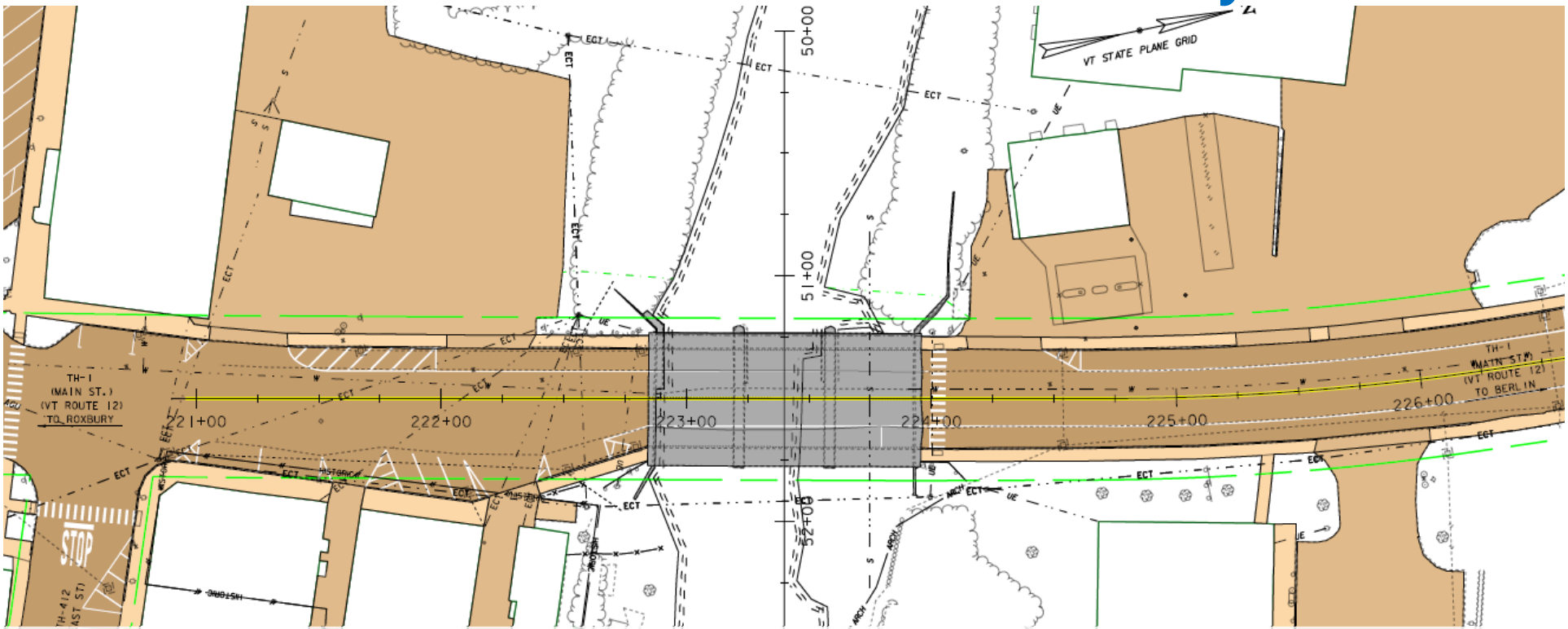


PROPOSED TH-1 (MAIN ST) / VT ROUTE 12 TYPICAL SECTION



BRIDGE REHABILITATION TYPICAL SECTION

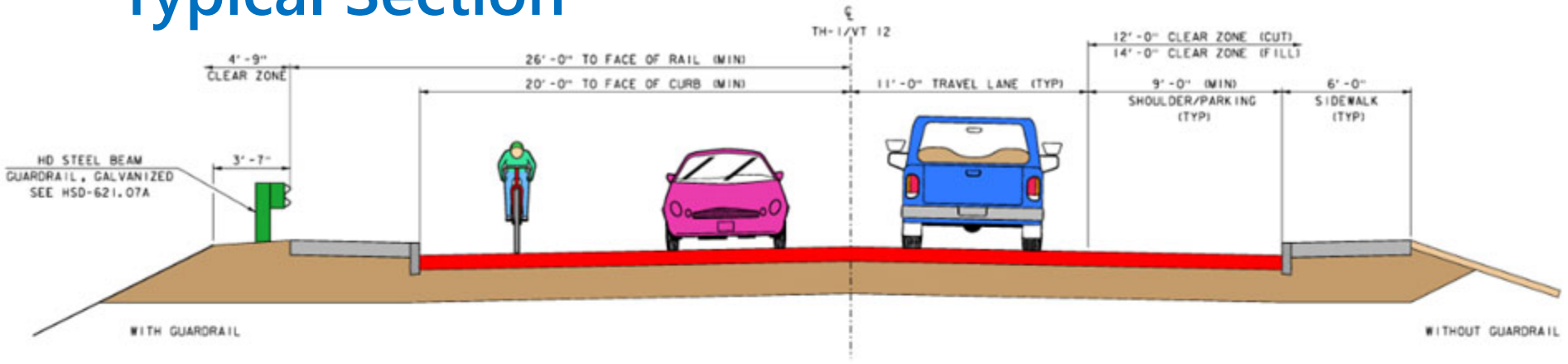
Alternative 1: Minor Rehabilitation Layout



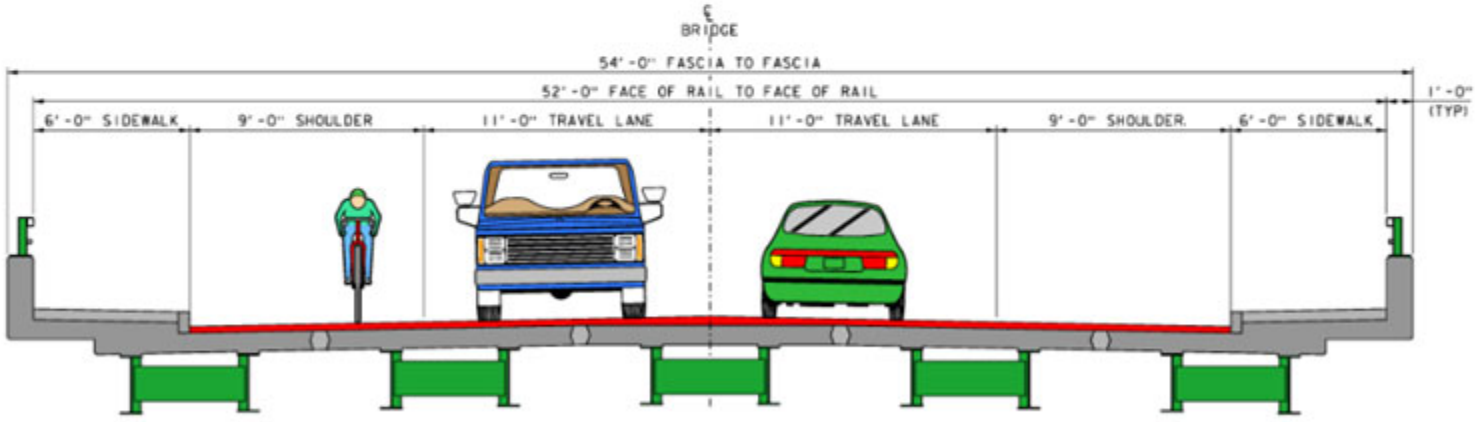
Bridge #60

- Concrete Repair: Superstructure and Substructure
- New Bridge Joints and Membrane and Pave
- 9′-11′-11′-9′ Typical with ≈6′ wide sidewalks on both sides of the bridge
- Debris Issues
- 15-year design life

Alternative 2: Superstructure Replacement Typical Section

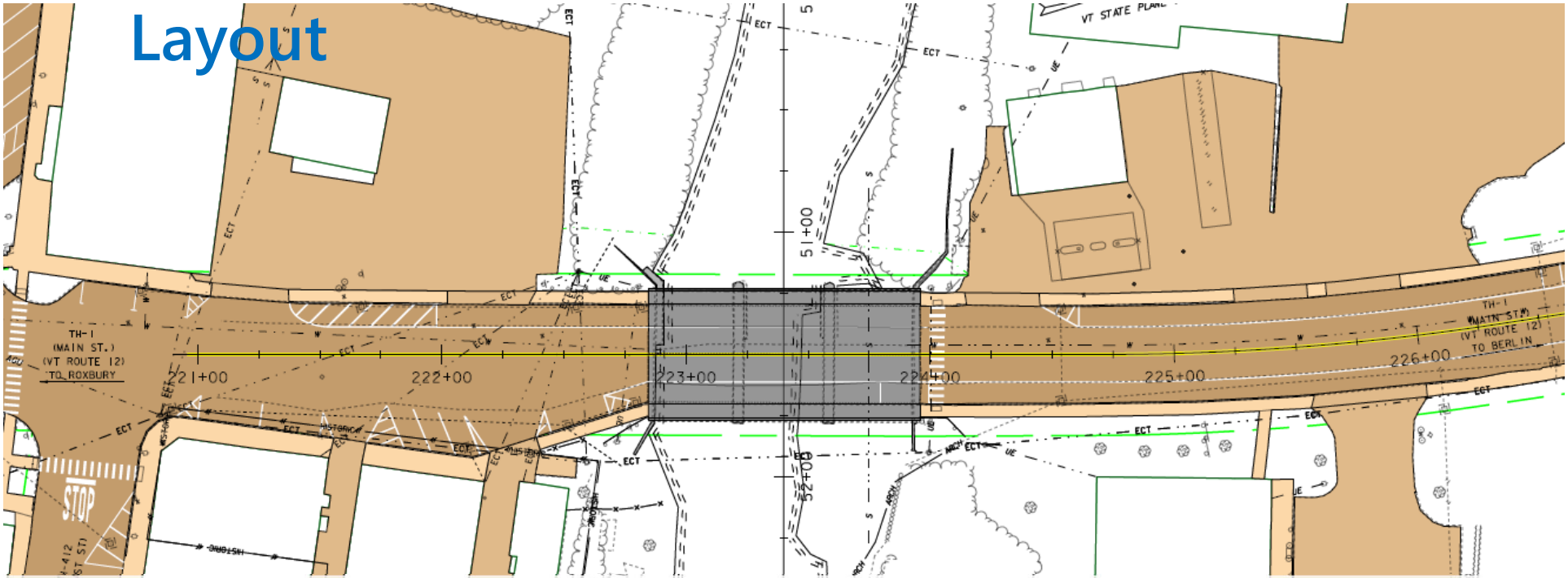


PROPOSED TH-1 (MAIN ST) / VT ROUTE 12 TYPICAL SECTION



PROPOSED BRIDGE TYPICAL SECTION

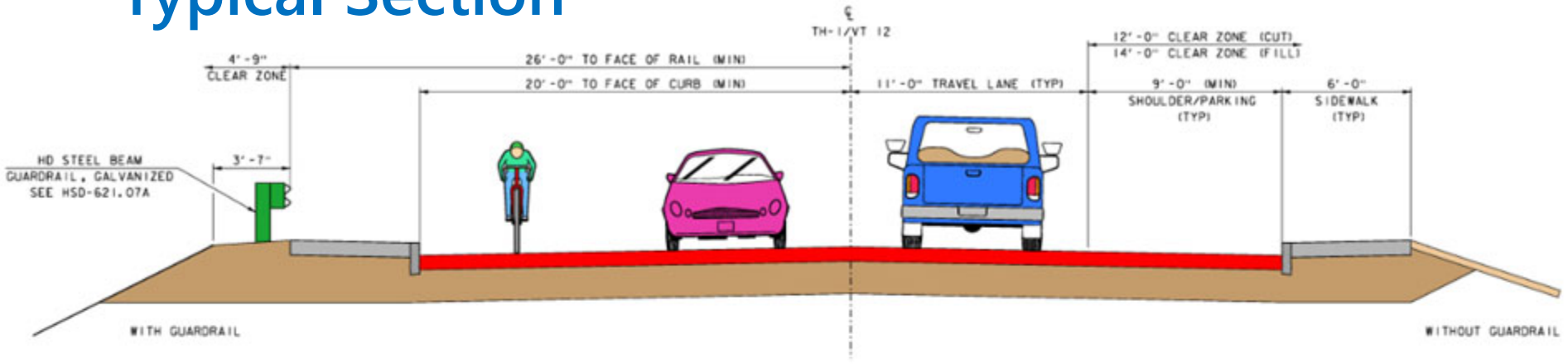
Alternative 2: Superstructure Replacement Layout



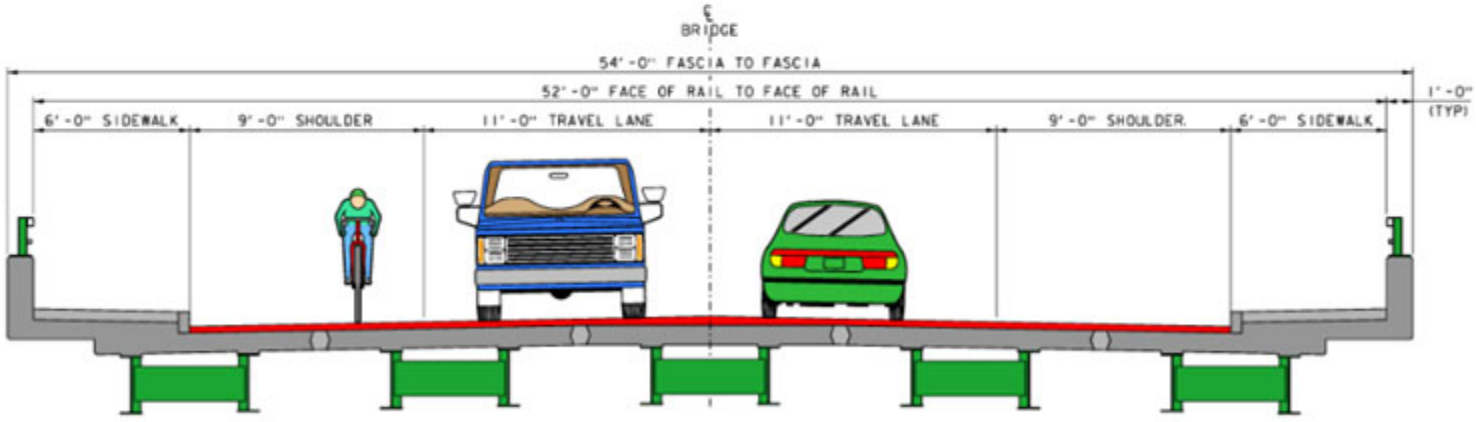
Bridge #60

- New deck and beams on existing substructures
- Concrete repair as needed for substructures
- 9’-11’-11’-9’ Typical with 6’ wide sidewalks on both sides of the bridge
- Debris Issues
- Extensive Utility Relocation and impacts to potential hazardous material
- 30-year design life based on current condition of substructures

Alternative 3: Full Bridge Replacement Typical Section



PROPOSED TH-1 (MAIN ST) / VT ROUTE 12 TYPICAL SECTION



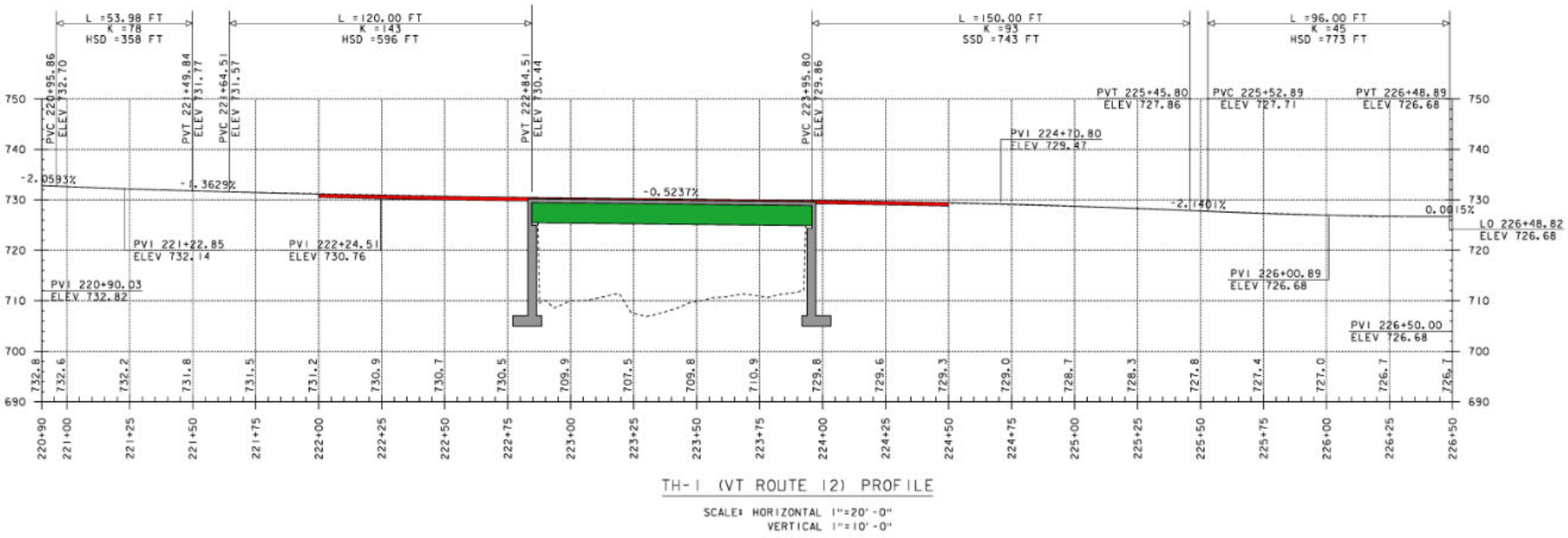
PROPOSED BRIDGE TYPICAL SECTION

Alternative 3: Full Bridge Replacement Layout

Bridge #60

- All new bridge components
- 9′-11′-11′-9′ Typical with 6′ wide sidewalks on both sides of the bridge
- Removal of piers in the river
- Extensive Utility Relocation and impacts to potential hazardous material
- 75-year design life

Proposed Profile



TH-1 (VT ROUTE 12) PROFILE

SCALE: HORIZONTAL 1"=20'-0"
VERTICAL 1"=10'-0"

Bridge #60

- Matches existing vertical alignment

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Recommended Alternative - Bridge #60

- Full Bridge Replacement
  - All new bridge components
    - Single span bridge
  - Match existing typical section: 11’/9’ with sidewalks on each side
  - 75-year design life
  - Right of Way Needed
  - Section 4(f) Review Needed
  - Impacts to Hazardous Waste Sites
  - Extensive Utility Relocation

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Maintenance of Traffic Options Considered

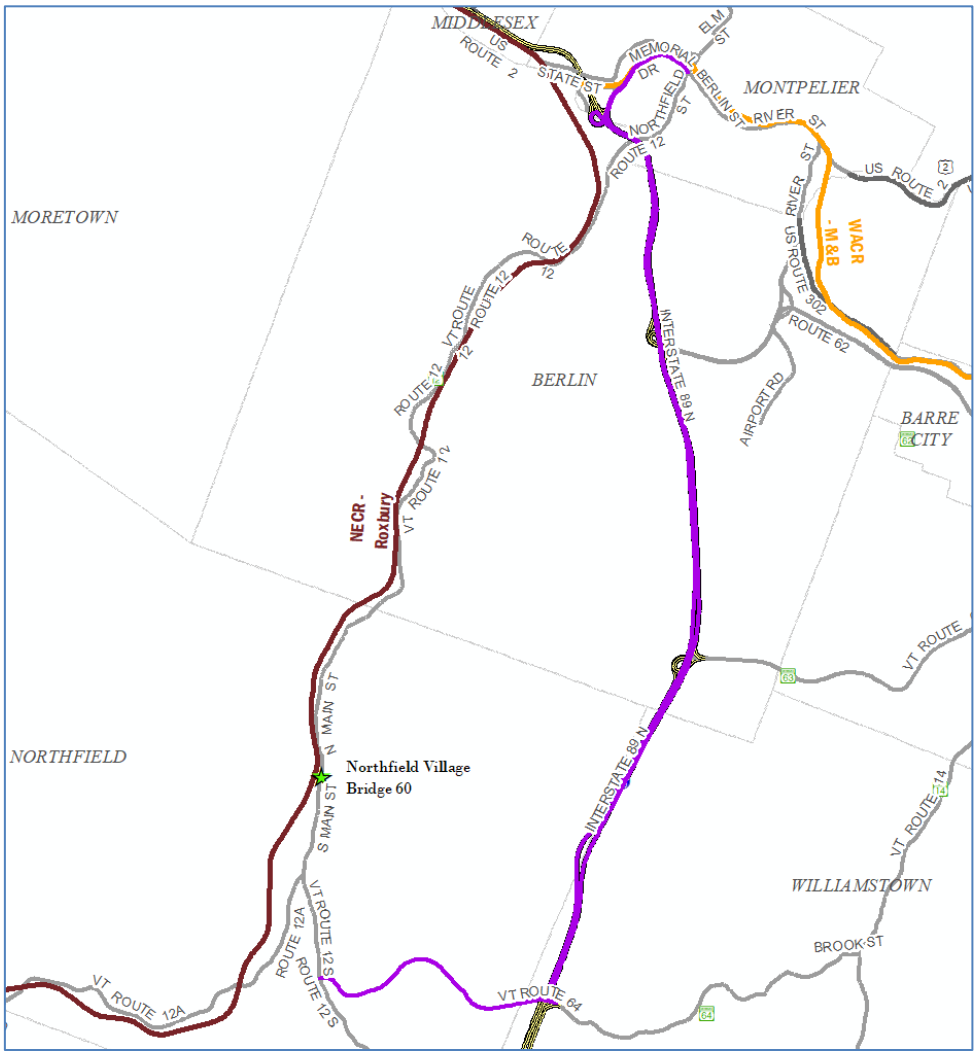
- Offsite Detour
- Phased Construction
- Temporary Bridge

Road Closure

- Detour chosen Town and signed by State (Class 1 TH)
- 0.8 mile end-to-end local detour
  - Crosses over 2 rail crossings
- Approximate 12-week closure

Traffic Control – Offsite Detour (Trucks)

- VT Route 12, to VT Route 64, Memorial Drive and Interstate 89, back to VT Route 12



26.4 Miles end-to-end

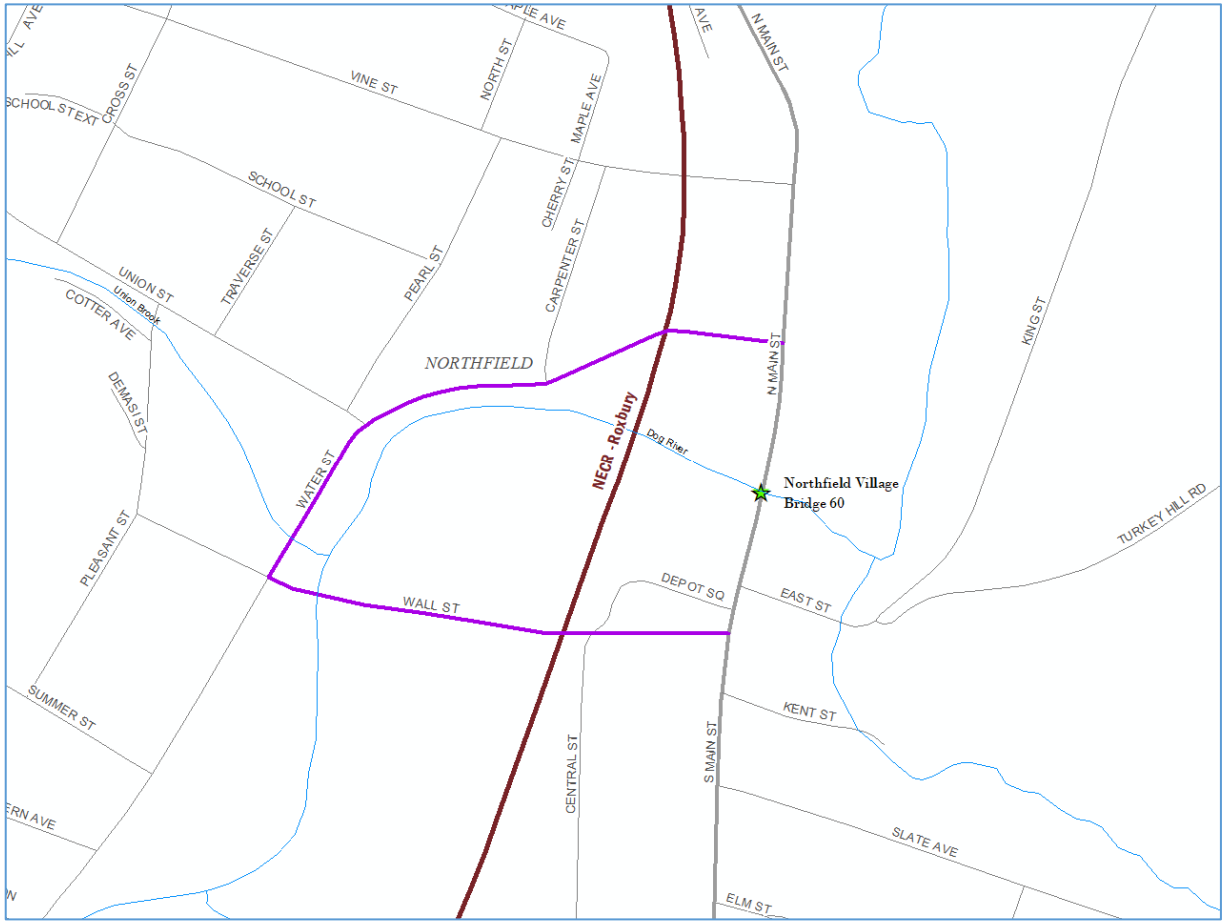
11.9 Miles Through-Route

14.5 Miles Detour Route

2.6 Miles Added

Traffic Control – Offsite Detour (Passenger Cars)

- VT Route 12 (North Main Street), to Water Street, and Wall Street back to VT Route 12 (South Main Street)



0.8 Miles end-to-end

0.2 Miles Through-Route

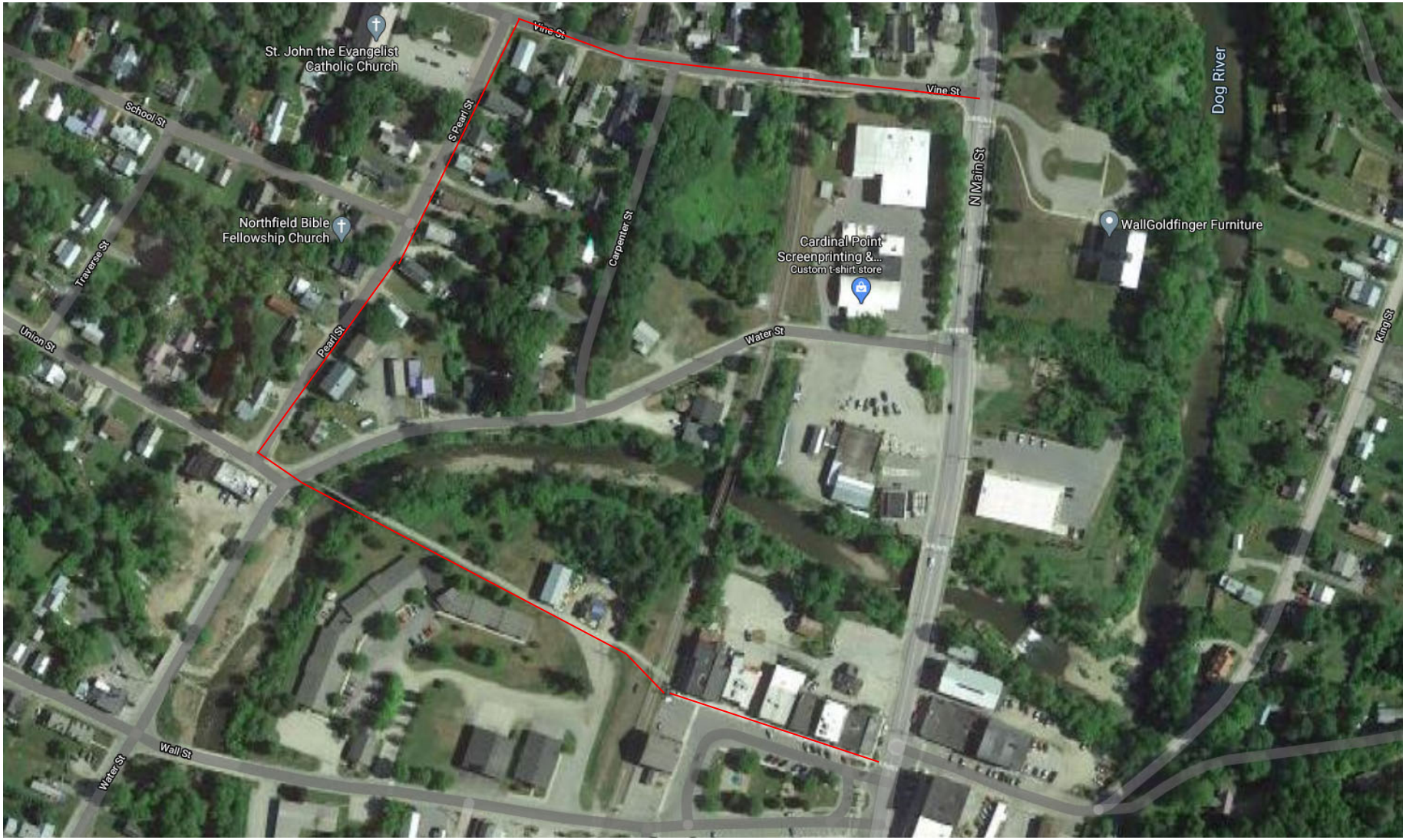
0.6 Miles Detour Route

0.4 Miles Added

Potentially eliminate parking along Wall Street and convert to 2-way traffic flow during construction

Traffic Control – Offsite Detour (Pedestrians)

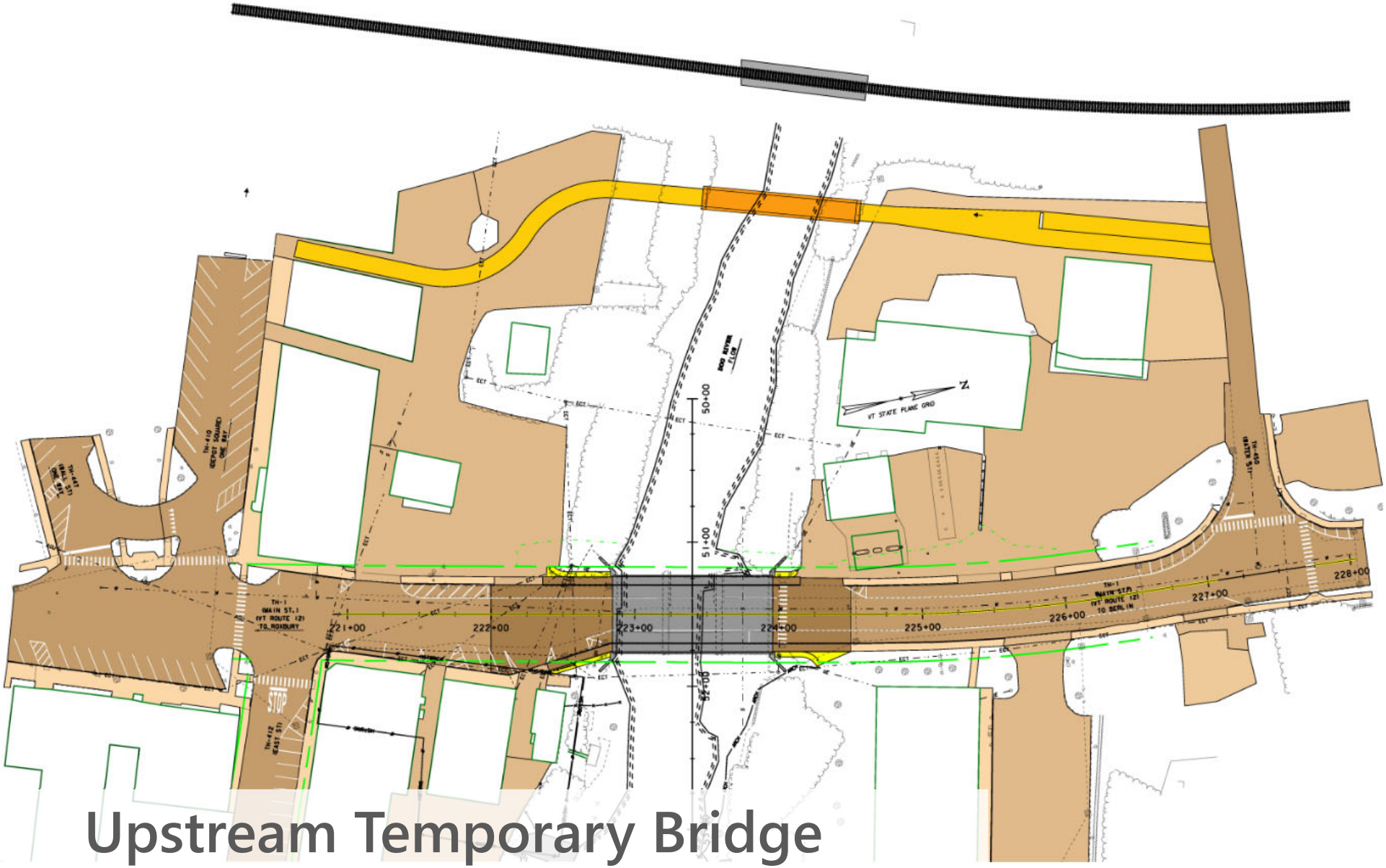
- Utilize existing pedestrian facilities on Pearl Street and Vine Street along with existing pedestrian bridge



Temporary Bridge

- One Lane Alternating Temporary Bridge on Upstream or Downstream side

Upstream Temporary Bridge Layout



Upstream Temporary Bridge

Phased Construction

- Work Completed in 2-phases

Phase 1 Layout

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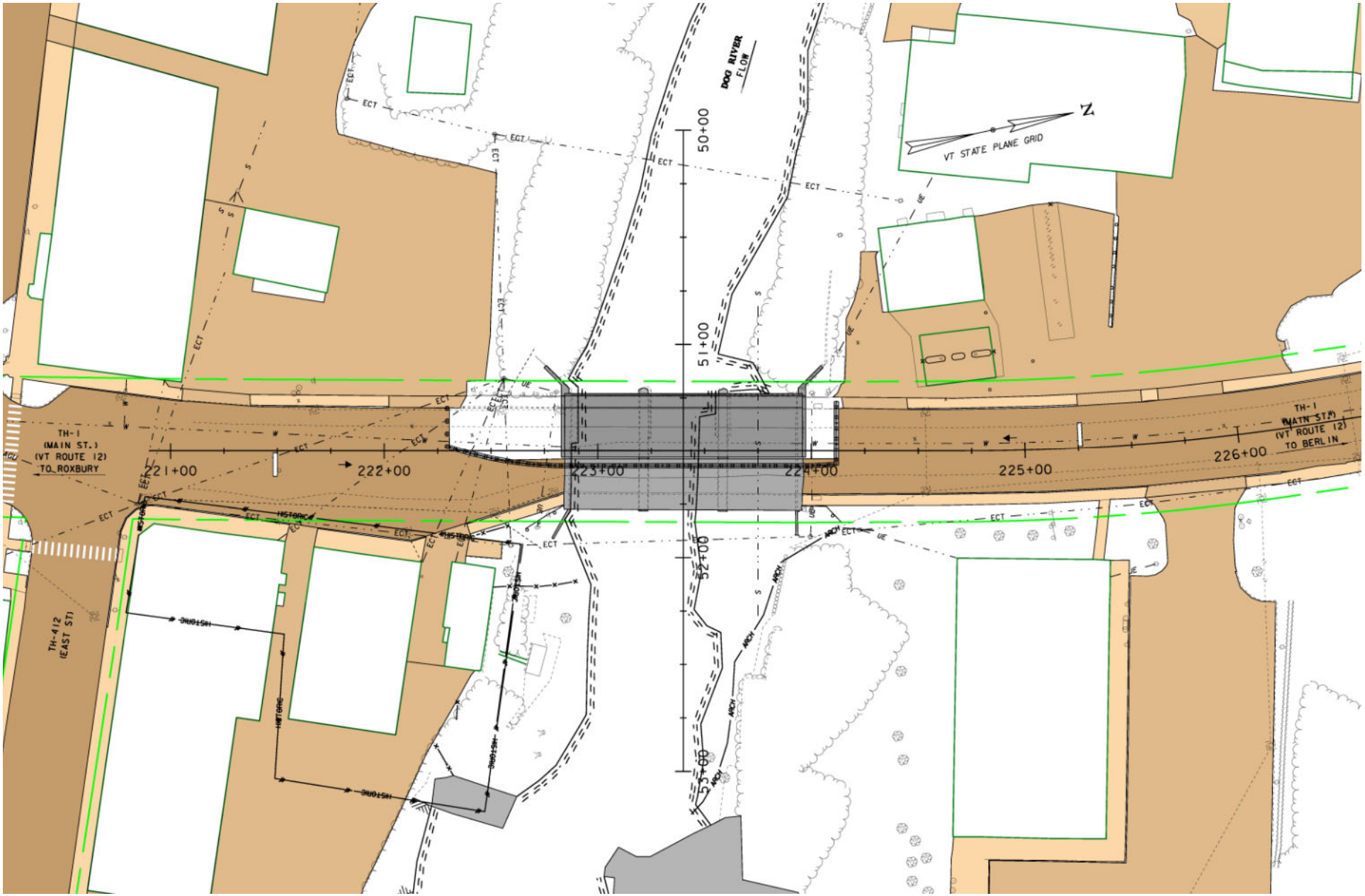

Phase 2 Layout

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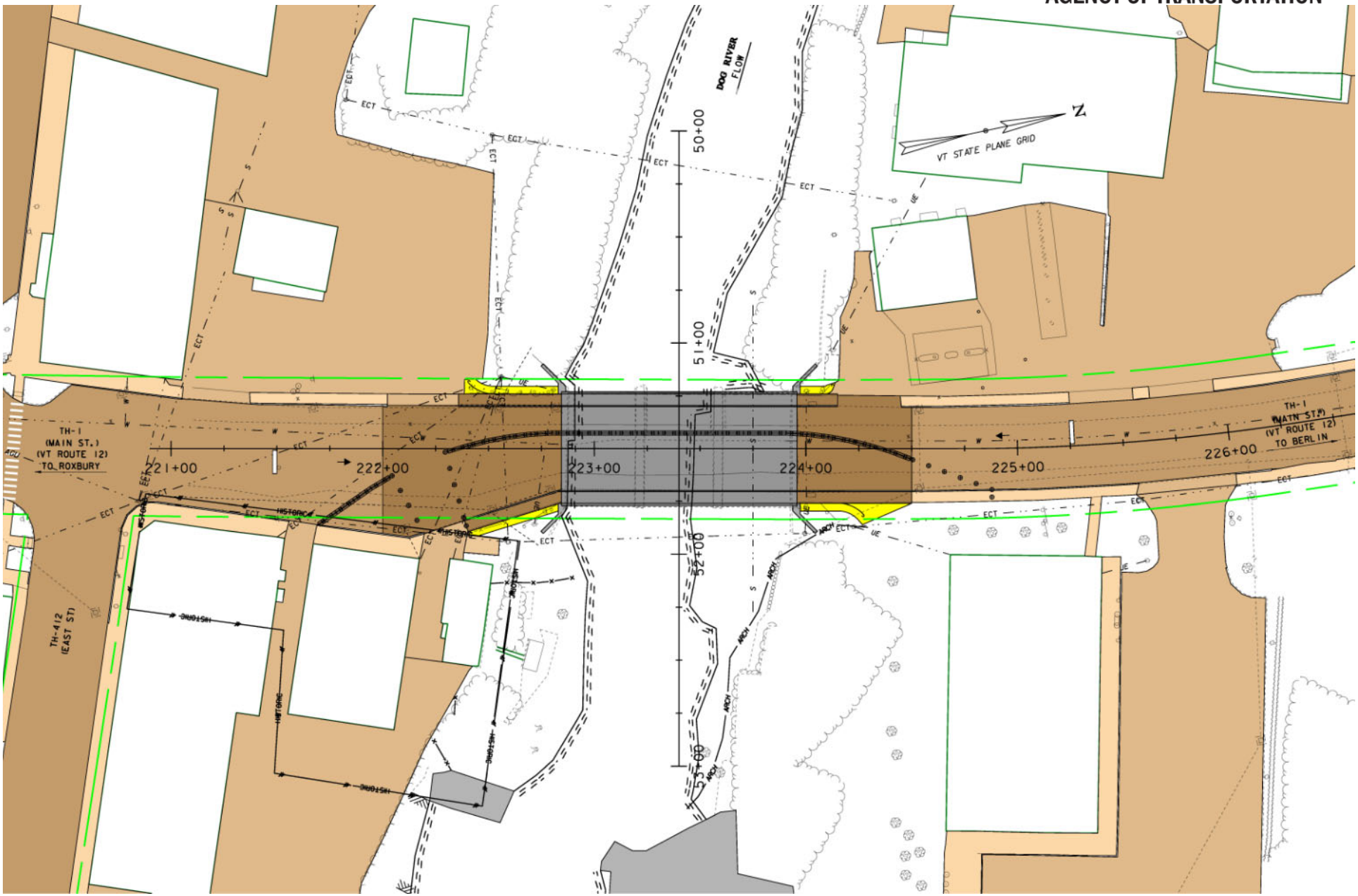

Recommended Scope

- Full Bridge Replacement with Traffic Maintained on an Offsite Detour
  - Approximate 12-week bridge closure
  - All new bridge components
  - Match Existing Typical (11’/9’) with sidewalks on both sides of the bridge
  - Eliminate debris issues with new single span structure
  - 75-year design life
  - Right of Way Needed
  - Extensive Utility Relocation
  - Potential impacts to Hazardous Waste

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Alternatives Matrix

Recommended

Northfield Village BF 0241(58)	Do Nothing	Alternative 1: Superstructure Rehabilitation		Alternative 2: Superstructure Replacement			Alternative 3: Full Bridge Replacement		
		a. Offsite Detour	b. Lane Closures	a. Offsite Detour	b. Phased Construction	c. Temporary Bridge	a. Offsite Detour	b. Phased Construction	c. Temporary Bridge
Total Project Costs	$0	**1,656,000**	**1,518,735**	**3,293,857**	**3,864,412**	**3,787,615**	**5,651,726**	**7,565,584**	**6,813,325**
Annualized Costs	$0	110,400	101,249	109,795	128,814	126,254	75,356	100,874	90,844
Town Share		2.5%	5.0%	2.5%	5.0%	5.0%	5.0%	10.0%	10.0%
		41,400	**75,937**	**82,346**	**193,221**	**189,381**	**282,586**	**756,558**	**681,333**
Project Development Duration		4 years	4 years	4 years	4 years	4 years	4 years	4 years	4 years
Construction Duration		3 months	3 months	4 months	6 months	10 months	6 months	9 months	18 months
Closure Duration (If Applicable)		2 weeks	NA	6 weeks	NA	NA	12 weeks	NA	NA
Typical Section - Roadway (feet)	40'	40'	40'	40'	40'	40'	40'	40'	40'
Typical Section - Bridge (feet)	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')	11'/9' (40')
Geometric Design Criteria	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards
Traffic Safety		Improved	Improved	Improved	Improved	Improved	Improved	Improved	Improved
Bicycle Access	9' shoulders	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
Pedestrian Access	Sidewalks on both sides of bridge	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
Hydraulics	Debris Issues	Debris Issues	Debris Issues	Debris Issues	Debris Issues	Debris Issues	Meets Minimum Standards	Meets Minimum Standards	Meets Minimum Standards
Utilities	NA	No Change	No Change	Aerial and Underground Relocation	Aerial and Underground Relocation	Aerial and Underground Relocation	Aerial and Underground Relocation	Aerial and Underground Relocation	Aerial and Underground Relocation
ROW Acquisition	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Road Closure	NA	Yes	No	Yes	No	No	Yes	No	No
Design Life	<10 years	15	15	30	30	30	75	75	75

Preliminary Project Schedule

- Construction Start – 2025
  - Total Cost Estimate: $5,650,000
    - Town Share: $282,000

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Next Steps – Bridge #60

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
  - Request a Public Information meeting
  - Process local agreements
  - Right-of-Way process (if needed)

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For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/19J223

Northfield Village BF 0241(58) Questions and Comments

Vermont Route 12 – Bridge #60 over Dog River

February 9, 2021

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