Swanton BF 036-1(16)
Alternatives Presentation Meeting

VT Route 78 – Bridge 6 Over Missisquoi River

July 14, 2025

Introductions

Laura Stone, P.E.

VTrans Scoping Engineer

Jonathan Griffin, P.E.

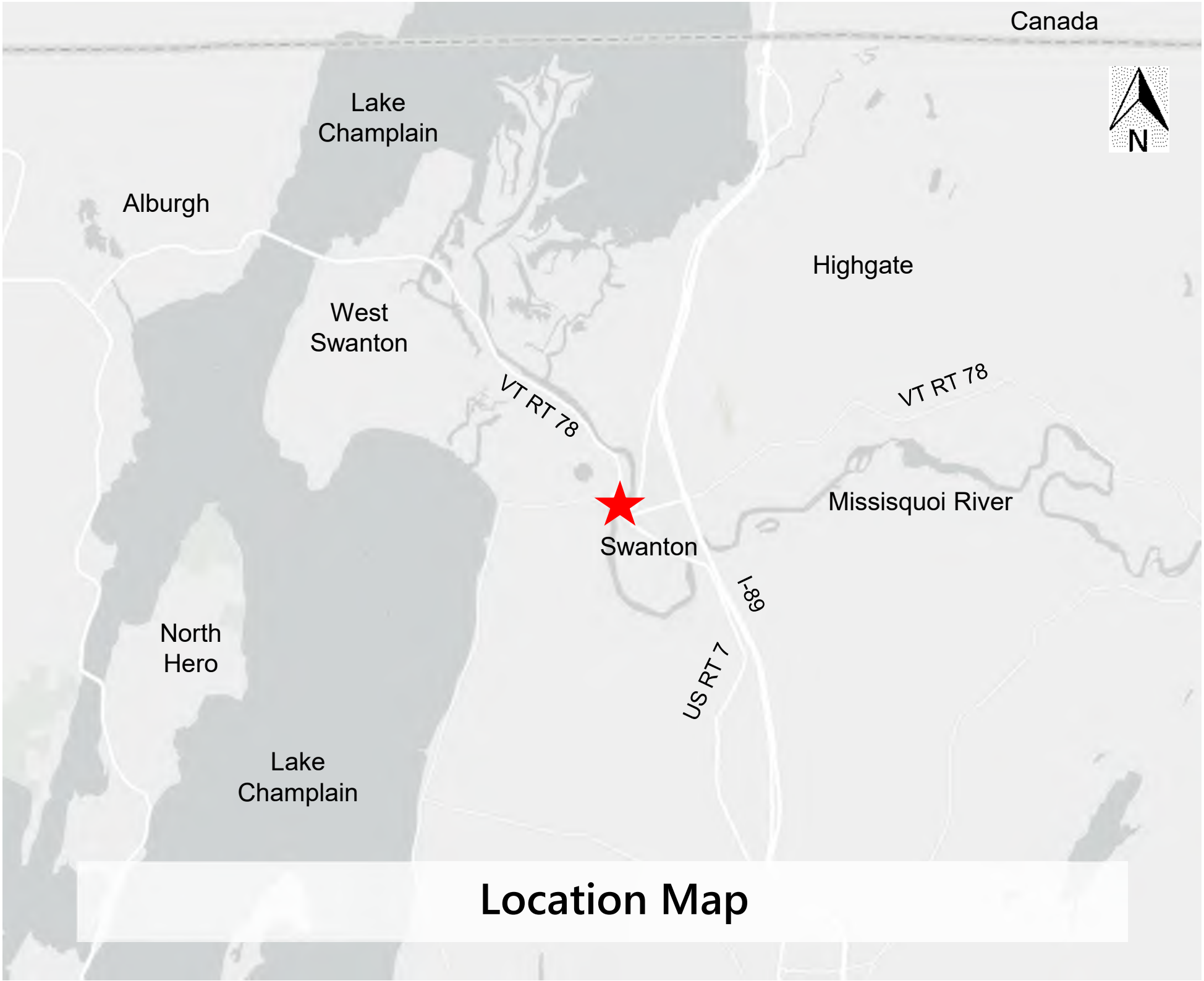
VTrans Consultant Project Manager

Tiffany Card, P.E.

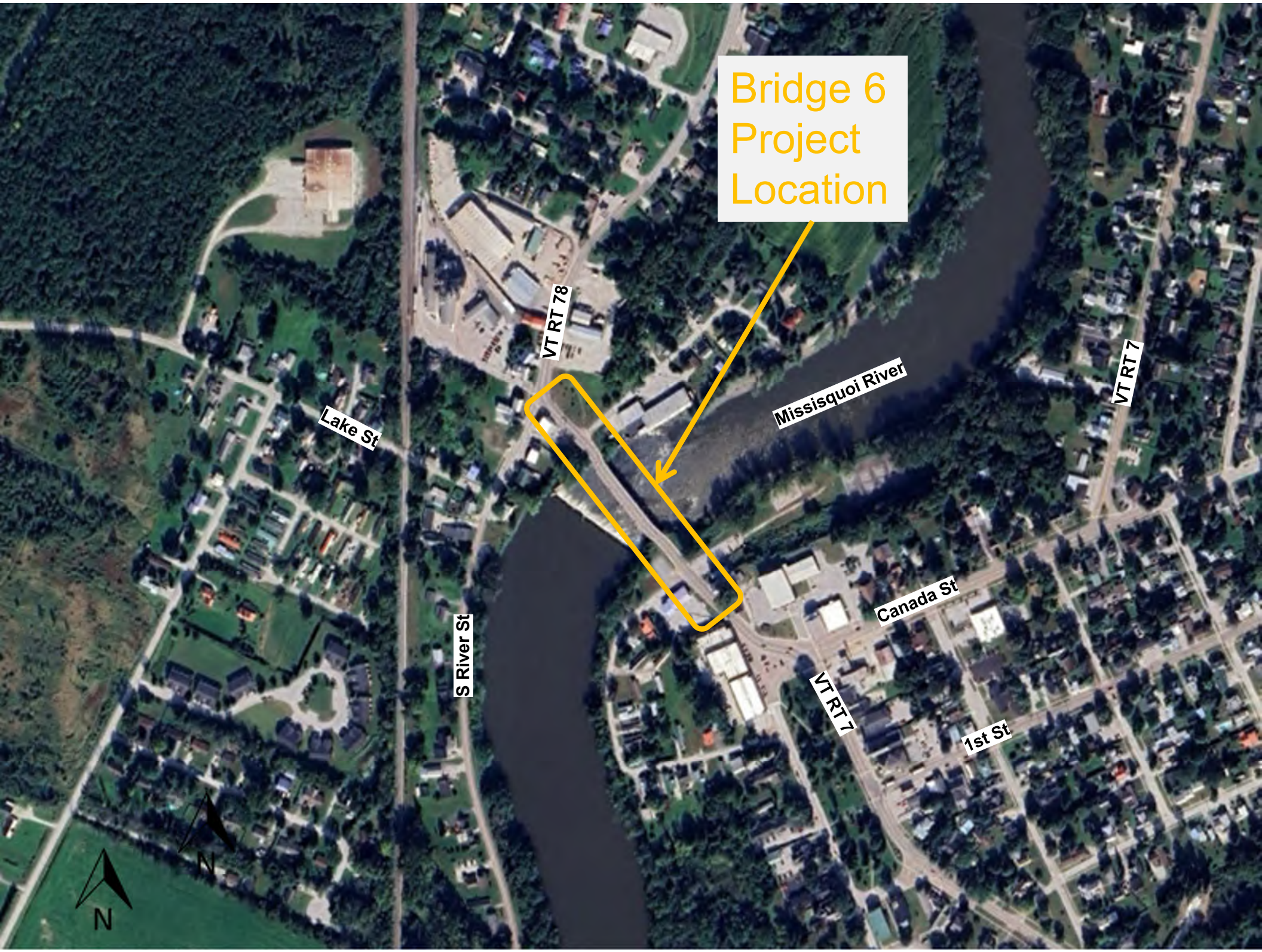
Green International Project Manager

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



Location Map

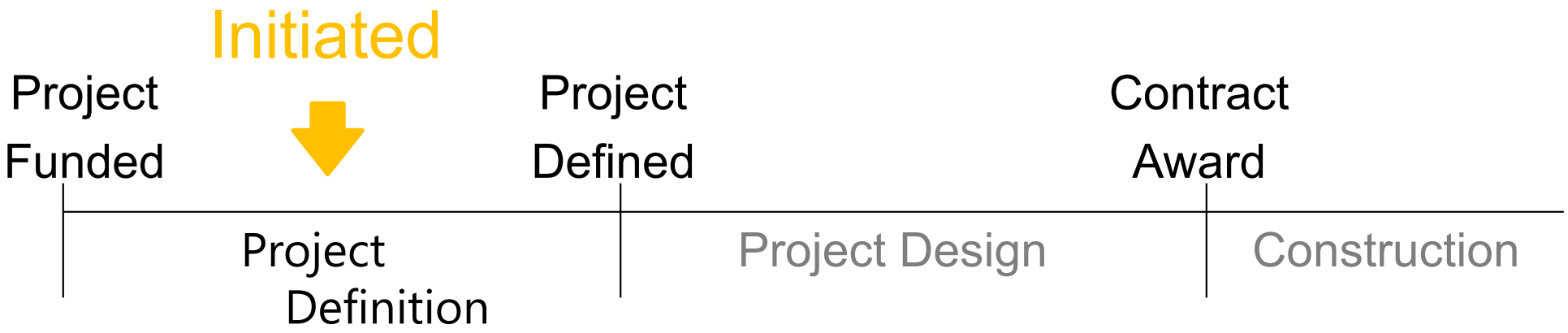

Bridge 6
Project
Location
VT RT 78
Missisquoi River
VT RT 7
Lake St
S River St
Canada St
VT RT 7
1st St
N
N

Meeting Overview

- VTrans Project Development Process
- Project Overview
  - Existing Conditions
  - Alternatives Considered
  - Recommended Alternative

- Maintenance of Traffic
- Schedule
- Summary
- Questions

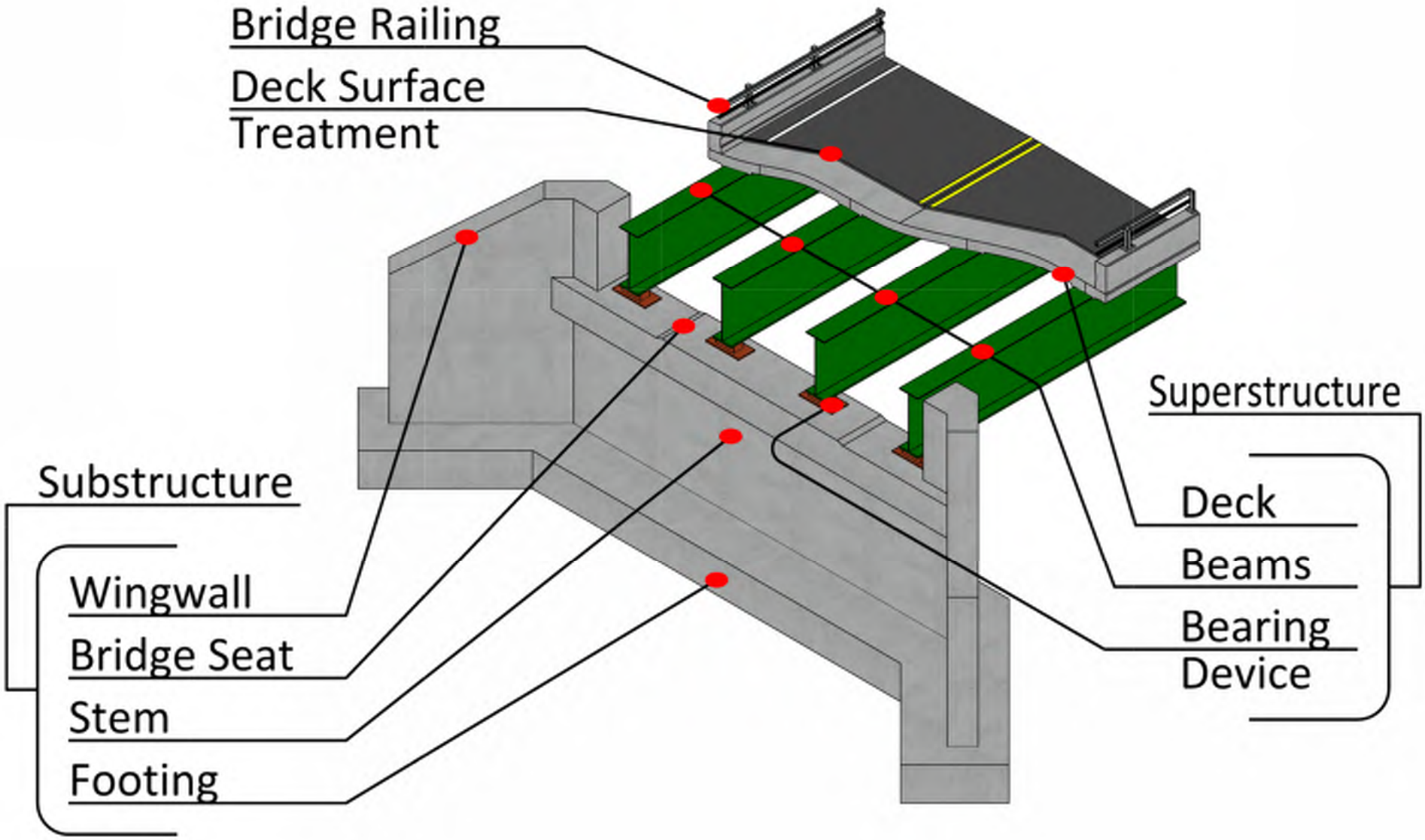
VTrans Project Development Process



- 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

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

Existing Conditions – Bridge #6

- Roadway Classification – Rural Principal Arterial
- 4 Span Stringer/Multi-beam or Girder
- Bridge: Max Span – 80 feet, Length – 302 feet, Skew – 0 degrees
- Constructed in 1966
- Ownership – Village of Swanton

Existing Conditions – Bridge #6

- Advanced deterioration of the abutment joints
- Beam ends and end diaphragms at abutments have notable rust and section loss
- Abutment bearings have significant rust and pier bearings have missing anchor bolts
- North fascia beam has significant rust with section loss in the lower web and bottom flange
- Bridge railing and approach guardrail is substandard
- Deck drains have significant perforations and leakage

Existing Conditions - Bridge #6

Deck Rating	6 Satisfactory
Superstructure Rating	6 Satisfactory
Substructure Rating	6 Satisfactory
Channel Rating	8 Very Good

Typical Top of Deck and Abutment Joint Condition

Typical Underside of Deck – Span 2

Existing Conditions - Bridge #6

Beam 6 at Abutment 1

Existing Conditions - Bridge #6

Typical Deck Drain

Existing Conditions - Bridge #6

Existing Conditions - Bridge #6

- Bridge is NOT Historic but there are resources in the project area considered historic or eligible for historic listing.
- These include the Swanton Village Historic District, the Swanton Dam, the mill located adjacent to the northwest corner of the bridge and the town-owned Marble Mill Park and Goose Point Park.

Existing Conditions - Bridge #6

- Northern Long Eared Bat
  - Potential Habitat Under Bridge. An acoustic survey or time-of-year restriction may be required.
- Archaeological Resource Assessment (ASA)
  - The proposed area of potential effect is sensitive for both pre-contact Native American and historic Euro-American sites. Any work within these areas would require an archaeological survey prior to ground disturbing activities.

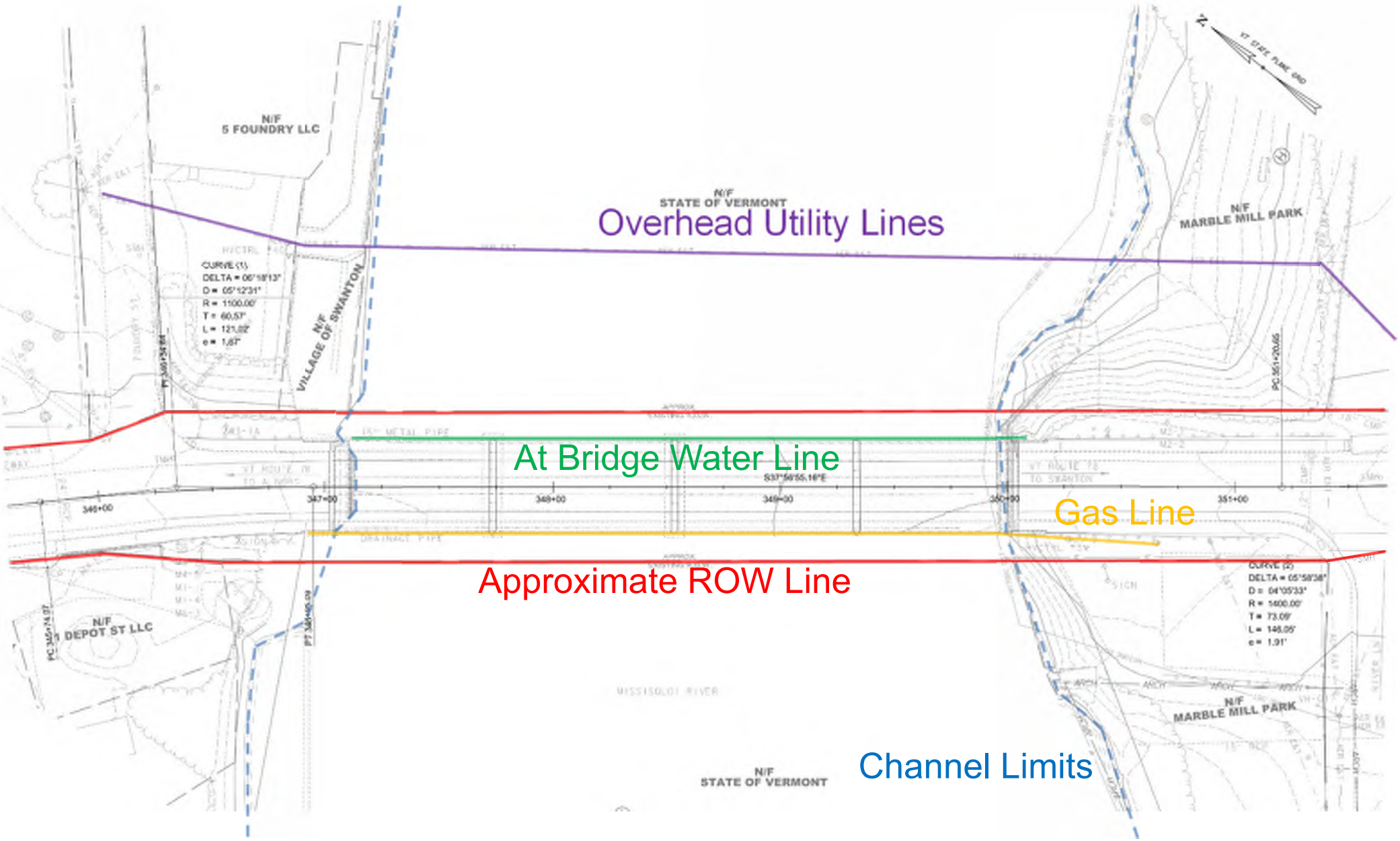
UTILITIES

- Municipal Utilities:
  - A gas line is mounted on the south fascia beam
  - Water line is mounted on the north fascia beam
  - Both utilities should be maintained during construction
  - Telephone manholes and sewer manholes on both approaches

- Public Utilities (Aerial):
  - Overhead utility wires running parallel to the structure on the north side
  - Lines are approx. 75’ from the existing bridges

- Public Utilities (Underground):
  - 60” diameter ACCGMP pipe located under the west approach, running perpendicular to the bridge

Existing Conditions – Bridge #6



Design Criteria and Considerations

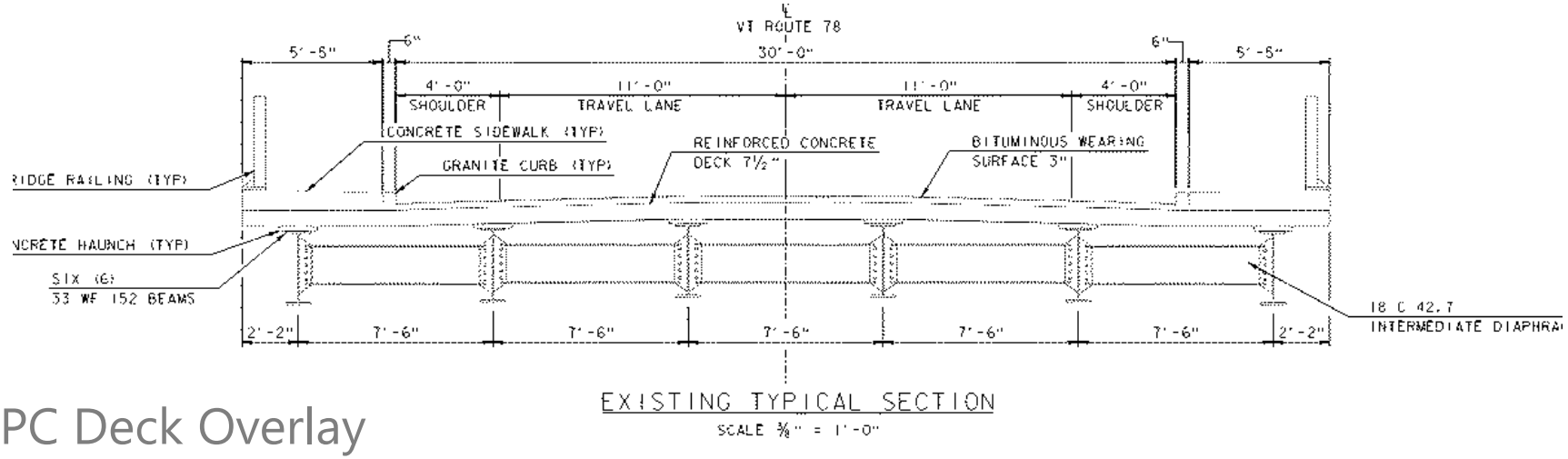
- Vermont State Standards (VSS) & VTrans Structures Design Manual
- Two Lane Rural Principal Arterial
- Substandard Criteria
  - Approach and bridge shoulder widths
  - Bridge railing and approach guardrail
  - Structural capacity
- Passed Criteria
  - Horizontal geometry
  - Vertical geometry
  - Superelevation/banking
  - Clear zone
- Average Daily Traffic
  - 10,800 Vehicles Per Day
- Design Hourly Volume
  - 1,200 Vehicles Per Hour
- Percent Trucks
  - 15 %

Alternatives Considered – Bridge #6

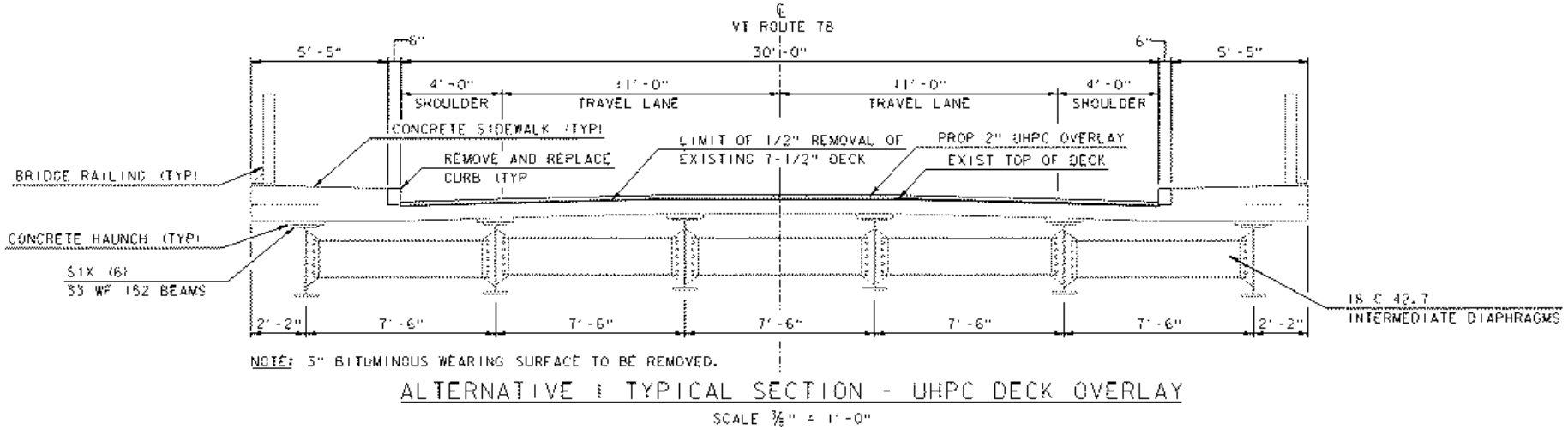
- No Action
  - Additional maintenance required within 10 years
- Alternative 1: UHPC Overlay and Miscellaneous Repairs
  - Most limited in structural scope
  - Repair existing deck deficiencies, remove and replace top of deck surface with an Ultra High-Performance Concrete overlay
  - 20 to 35-Year Design Life
- Alternative 2: Deck Replacement and Miscellaneous Repairs
  - Replacement of concrete deck and structural repairs to steel beams, bearings and substructure as needed
  - 20 to 35-Year Design Life
- Alternative 3: Superstructure Replacement:
  - New deck, railings, beams, bearings, and repairs to address Pier 1 undermining.
  - 35-Year Design Life
- Alternative 4: Full Bridge Replacement:
  - 75-Year Design Life

Alternatives Considered – Bridge #6

- No Action

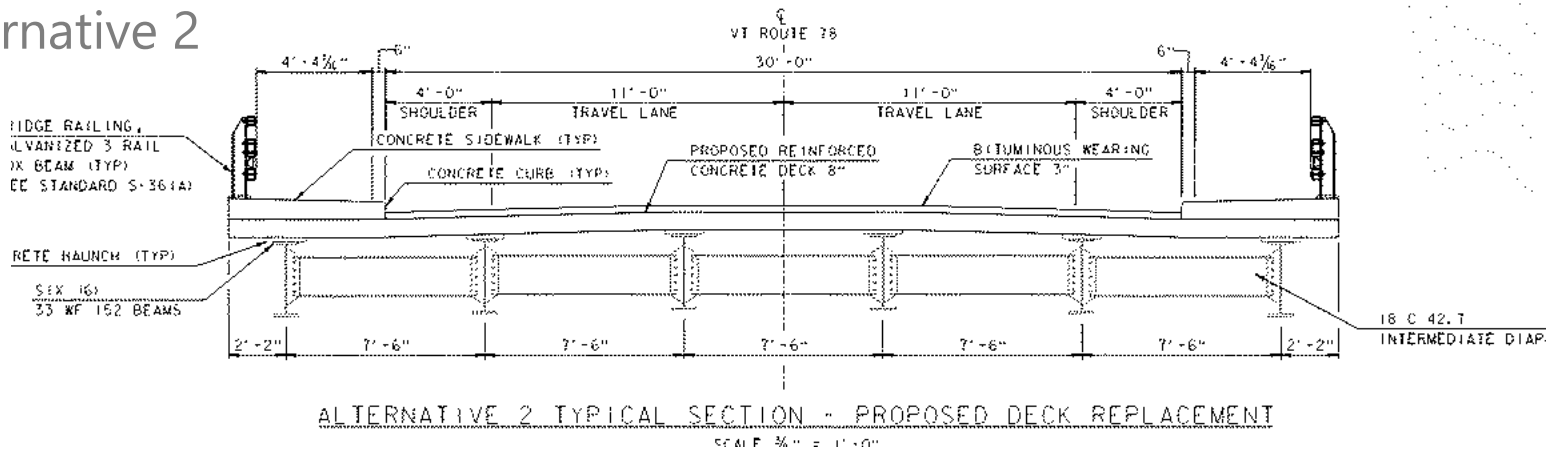


- UHPC Deck Overlay
  - Alternative 1



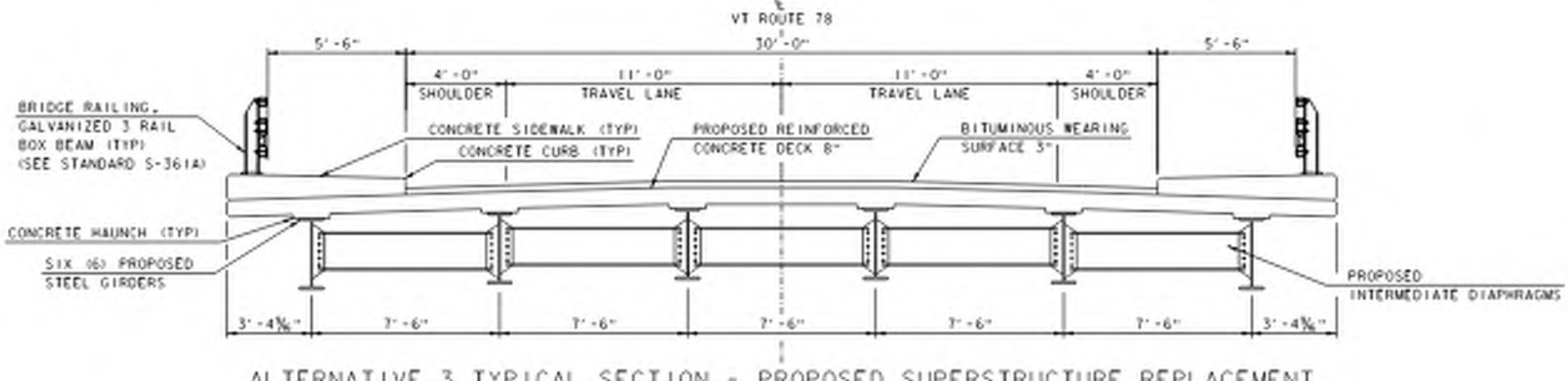
Alternatives Considered – Bridge #6

- Deck Replacement
  - Alternative 2



ALTERNATIVE 2 TYPICAL SECTION - PROPOSED DECK REPLACEMENT

- Superstructure/ Full Replacement
  - Alternative 3/4



ALTERNATIVE 3 TYPICAL SECTION - PROPOSED SUPERSTRUCTURE REPLACEMENT

SCALE ⅜" = 1'-0"

Recommended Alternative – Bridge #6

Two (2) viable alternatives for consideration:

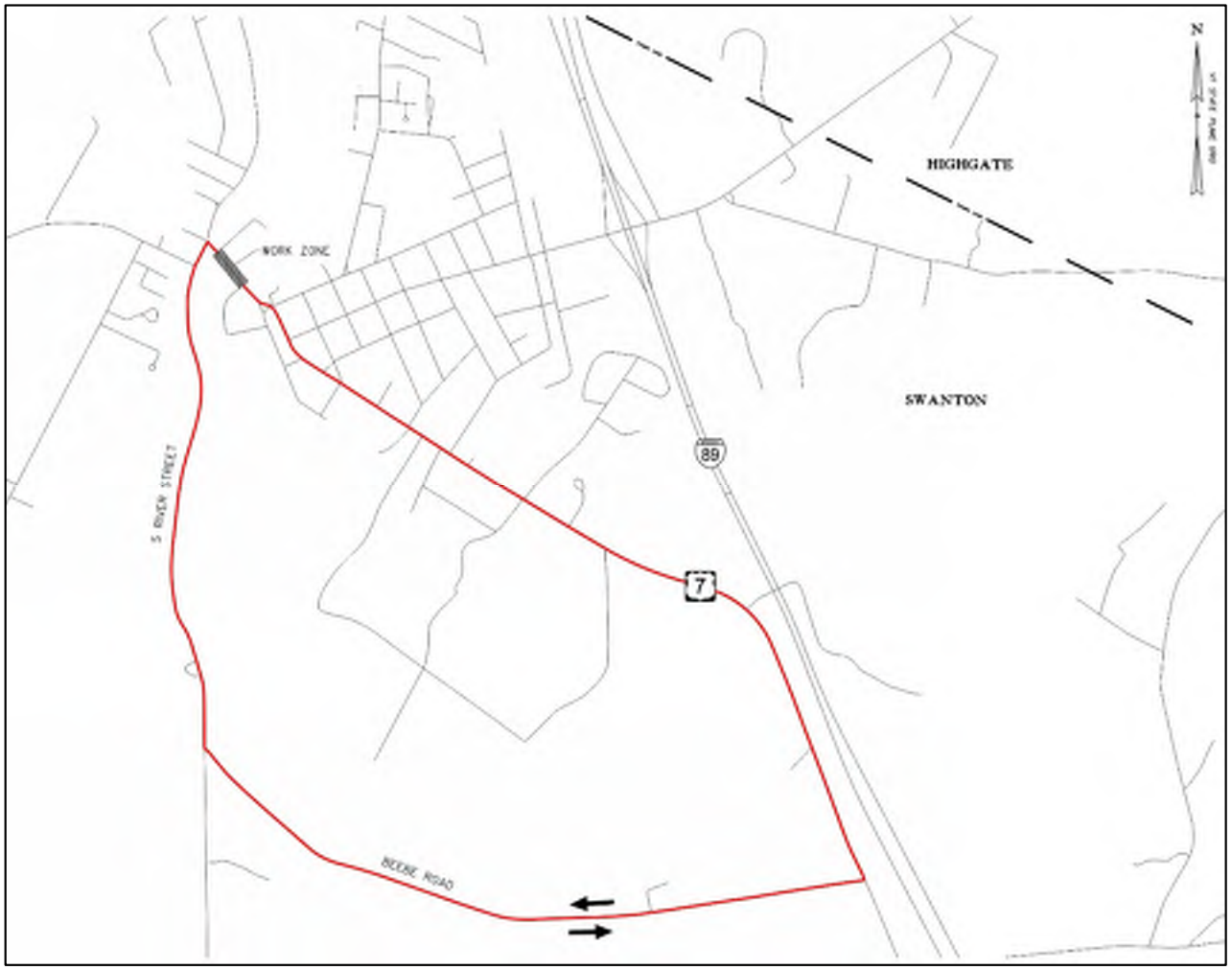
- Alternative 1: UHPC Overlay and Miscellaneous Repairs
  - Lowest annualized cost and shortest construction duration and project delivery duration
  - Addresses most apparent deficiencies with structure
  - Maintains the existing cross section: 11′ lanes, 4′ shoulders, and 5′ sidewalks

- Alternative 3: Superstructure Replacement
  - Second lowest annualized cost
  - Slight increase in bridge cross section: 11′ lanes, 4′ shoulders, and 5′-6″ sidewalks
  - Addresses more comprehensive repair needs

Maintenance of Traffic Options (MOT)

- Maintaining Traffic on Existing Bridge
- Off-Site Detour with Bridge Closure
- Temporary Bridge
- Phased Construction

MOT: Local Detour



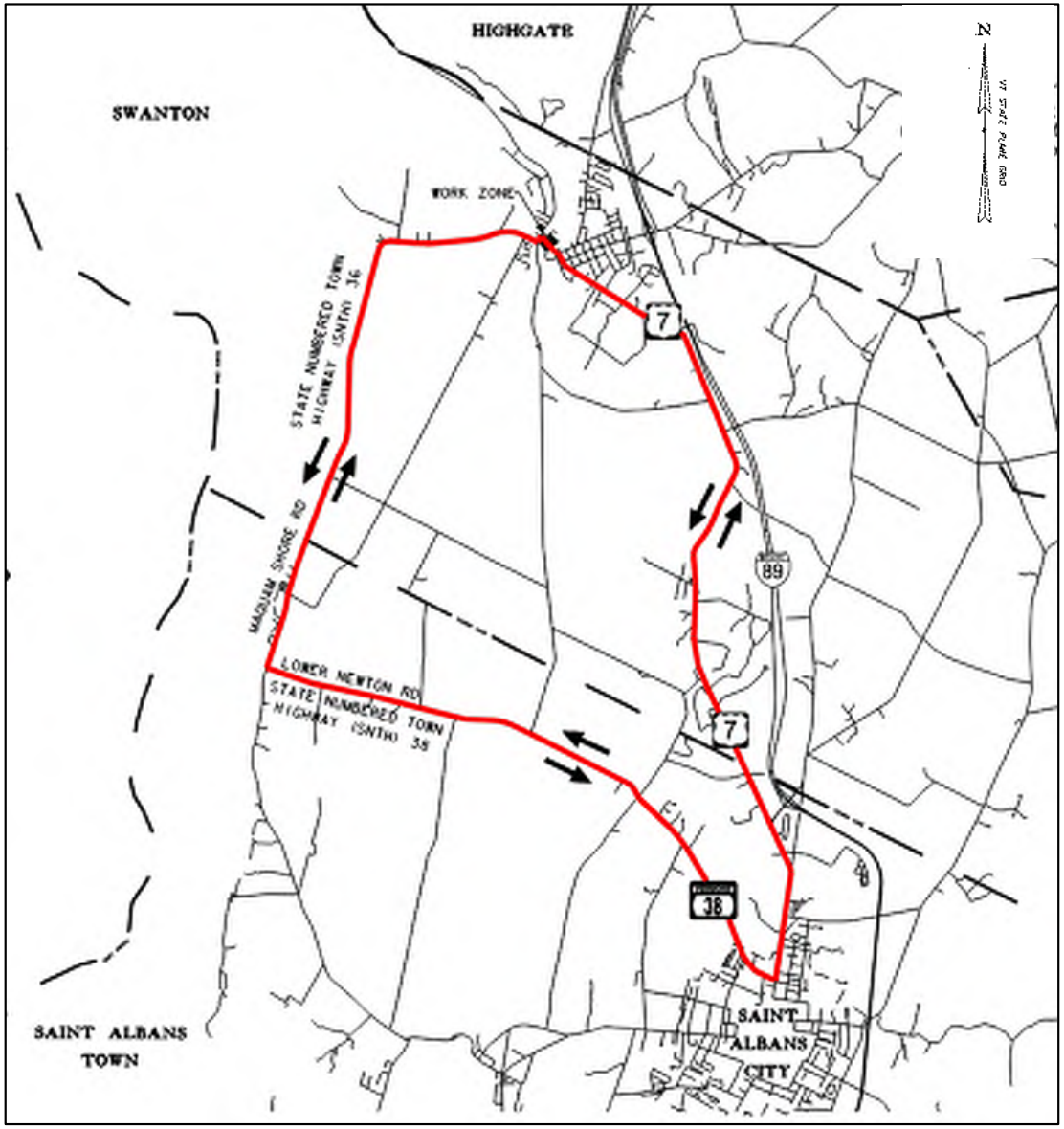
Detour Route

VT Route 78, to US Route 7, to Beebe Rd, to South River St, back to VT Route 78

Detour Route Length: 5.5 miles

Approx. Travel Time: 10 minutes

MOT: Regional Detour



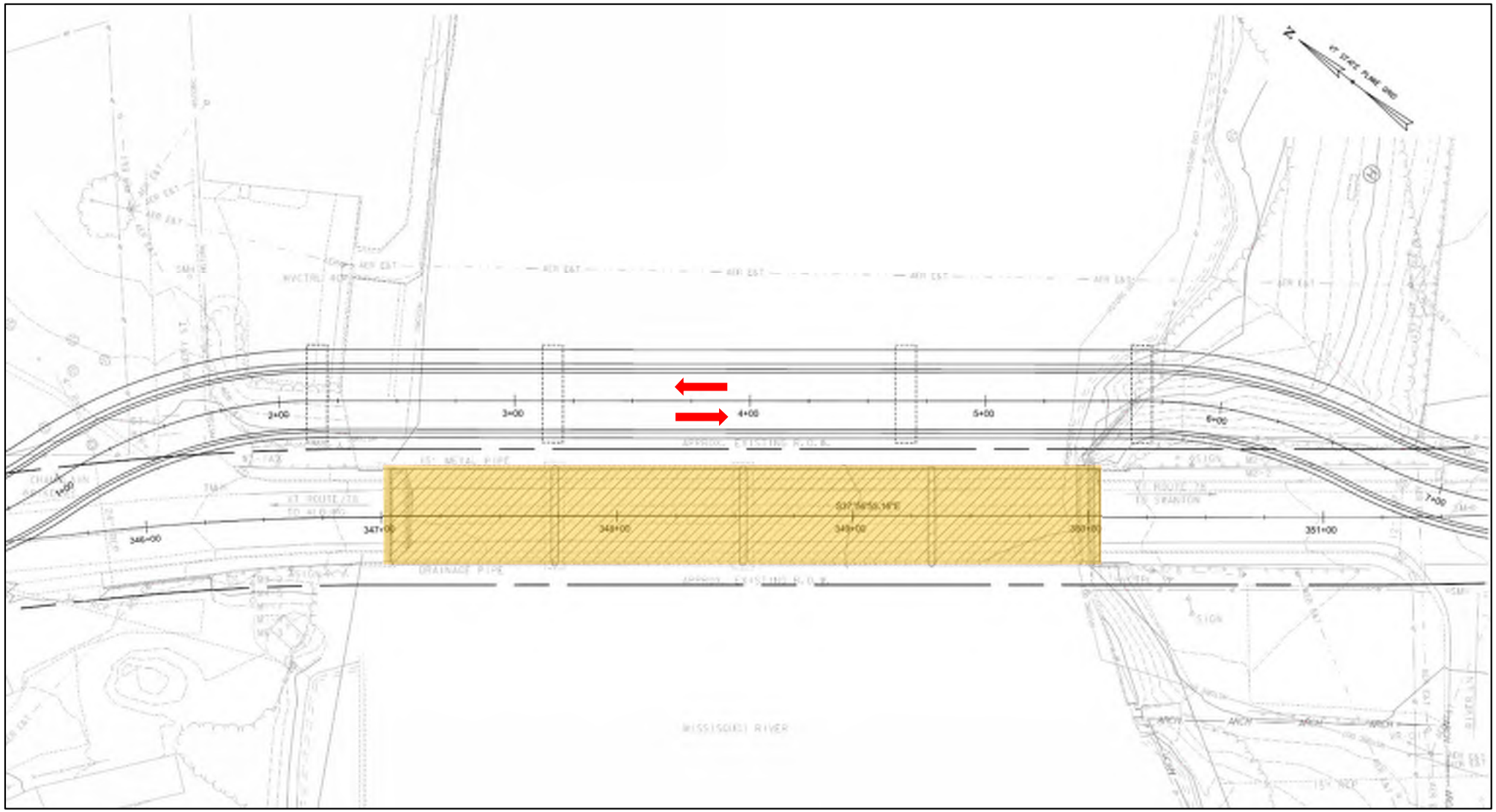
Detour Route

VT Route 78, to US Route 7, to SNTH 38, to SNTH 36, back to VT Route 78

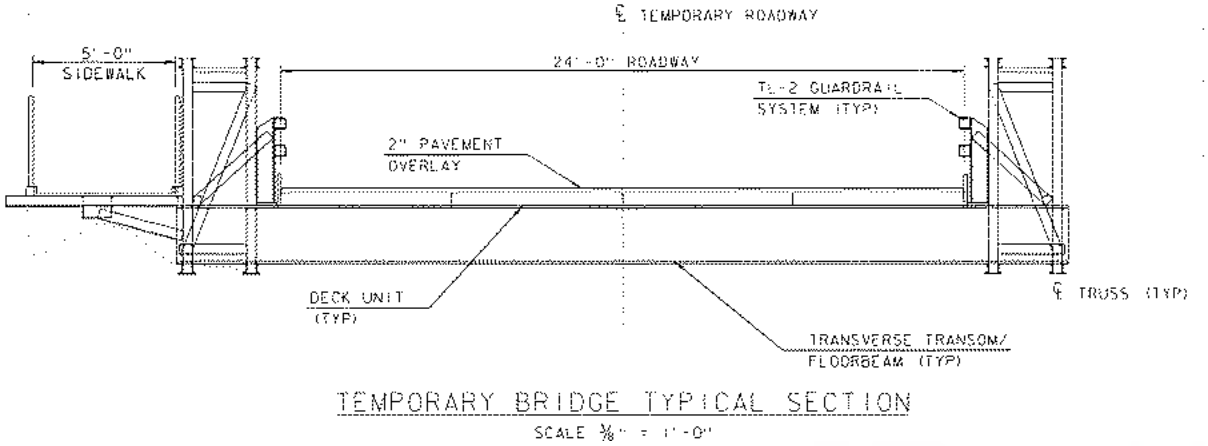
Detour Route Length: 20 miles

Approx. Travel Time: 35 minutes

MOT: Temporary Bridge

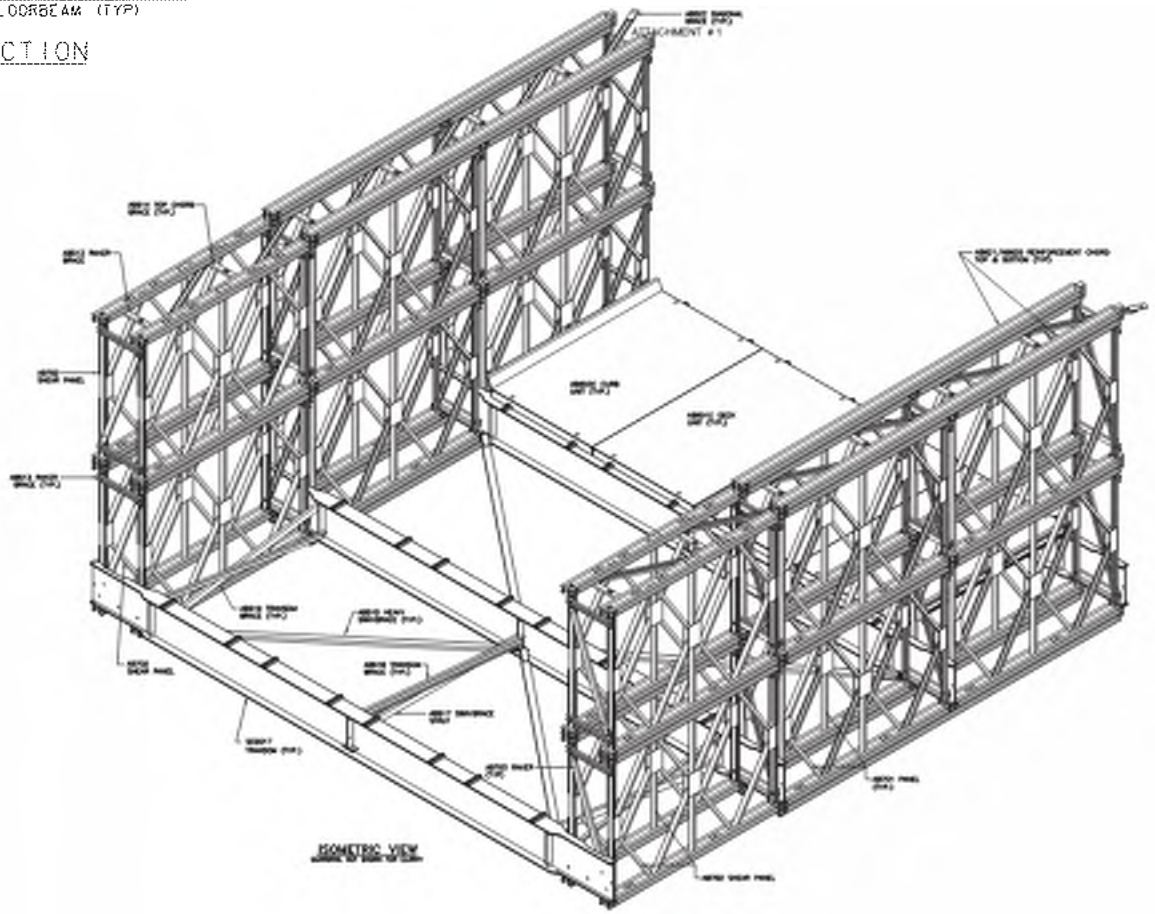


MOT: Temporary Bridge

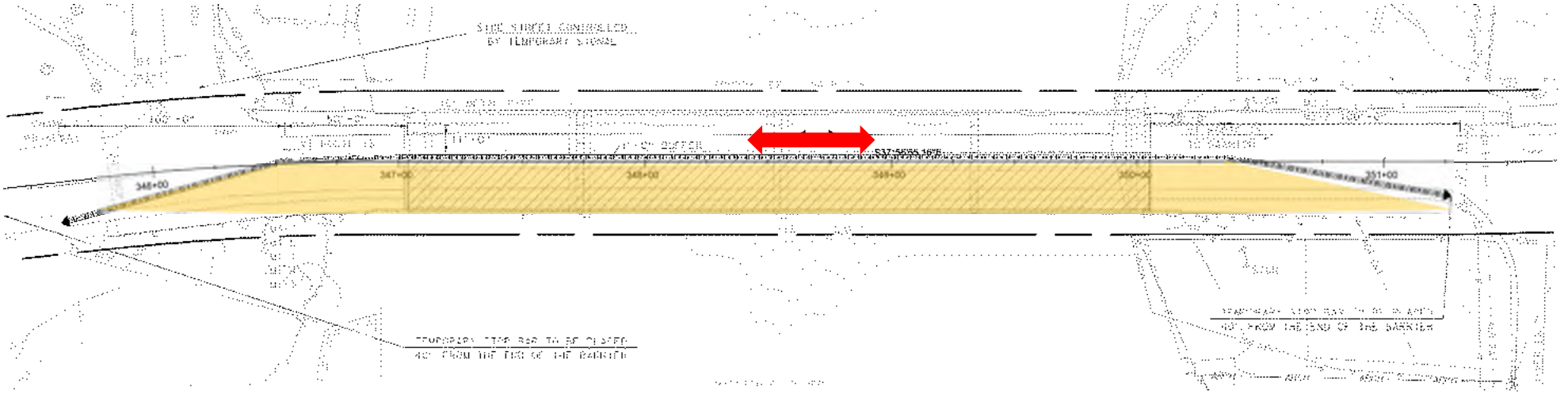


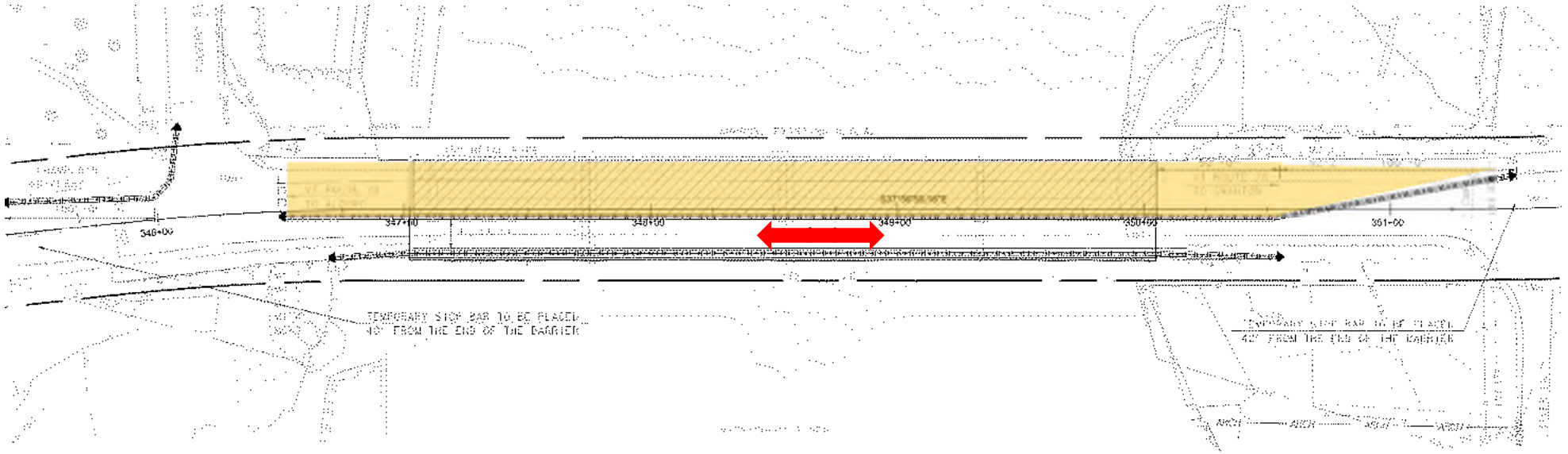
TEMPORARY BRIDGE TYPICAL SECTION

SCALE ⅜" = 1'-0"



MOT: Phased Construction





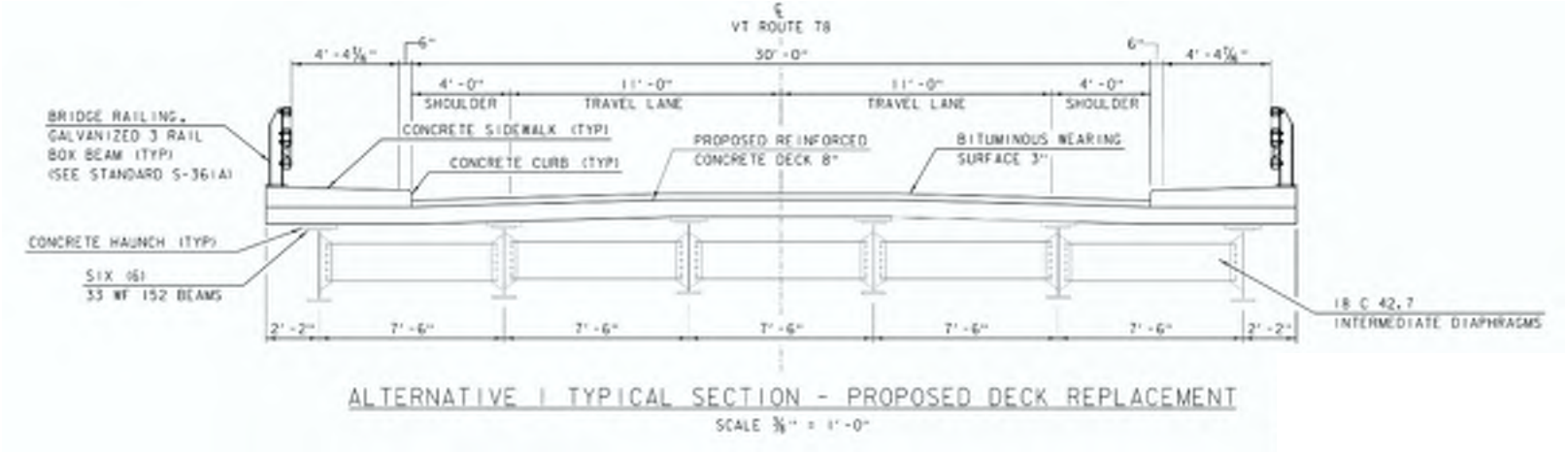
Recommended Scope

- Alternative 1: UHPC Overlay and Miscellaneous Repairs
  - Project Development Duration: 1 to 2 Years
  - Construction Duration: 4 Months
  - Design Life: 20 to 35 Years
  - Match current typical section

- Alternative 3: Superstructure Replacement
  - Project Development Duration: 4 Years
  - Funding Availability: 2035
  - Construction Duration: 8 Months
  - Design Life: 35 Years
  - Match current typical section

Recommended Alternatives - Bridge #6

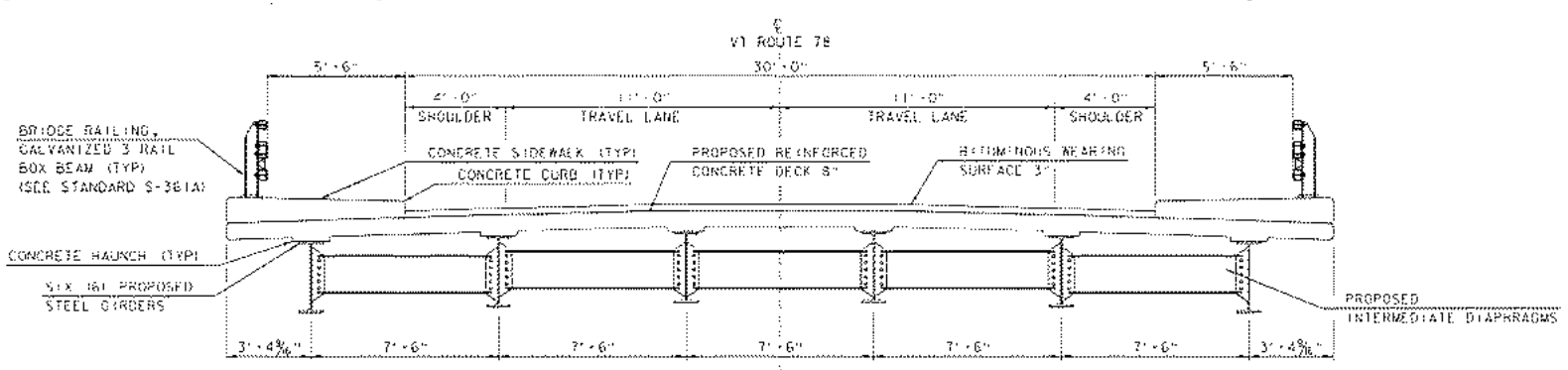
- UHPC Overlay and Misc. Repairs with Traffic Maintained by Off-Site Detour



ALTERNATIVE 1 TYPICAL SECTION - PROPOSED DECK REPLACEMENT

SCALE ⅜" = 1'-0"

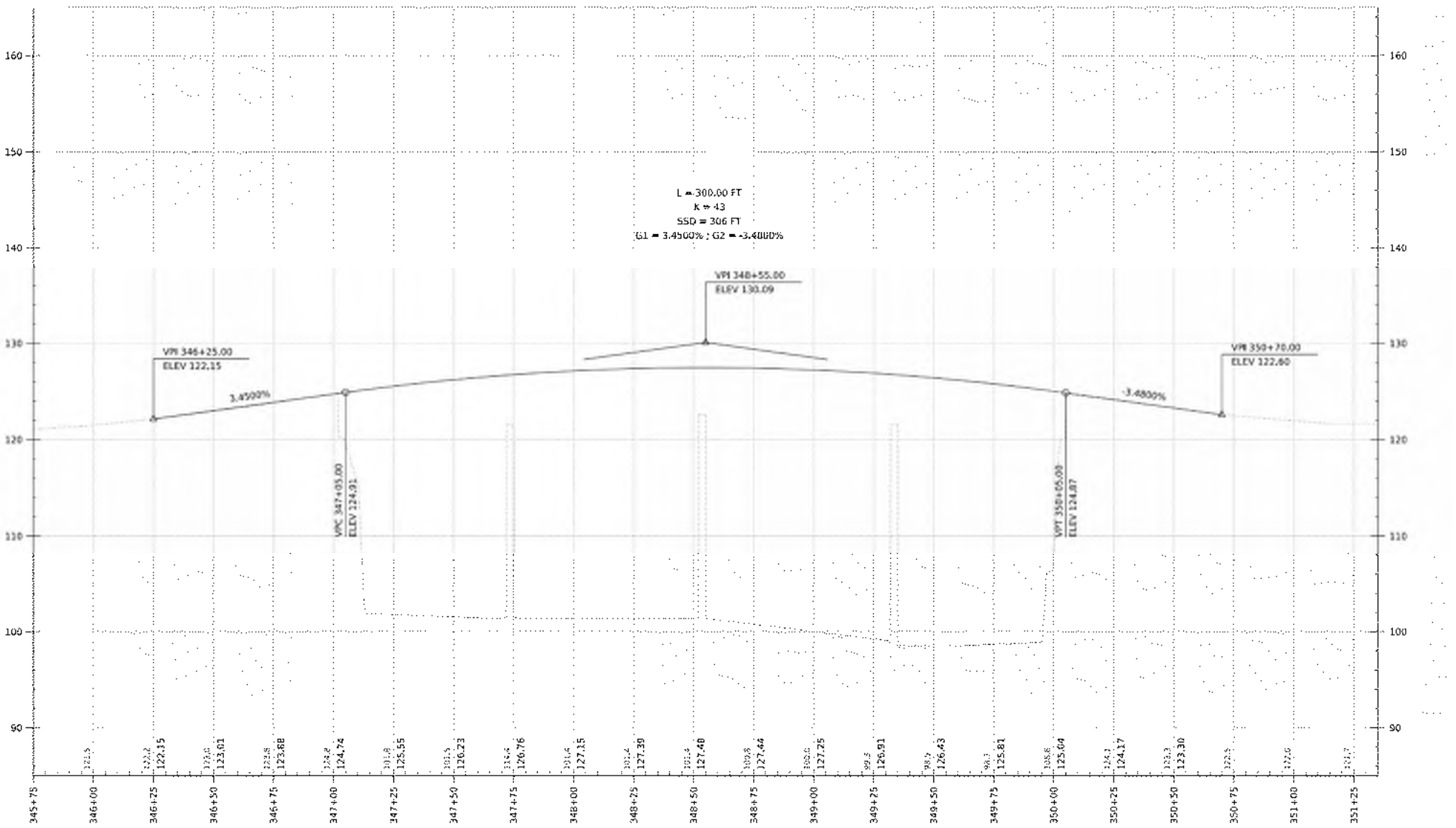
- Superstructure Replacement with Traffic Maintained by Off-Site Detour



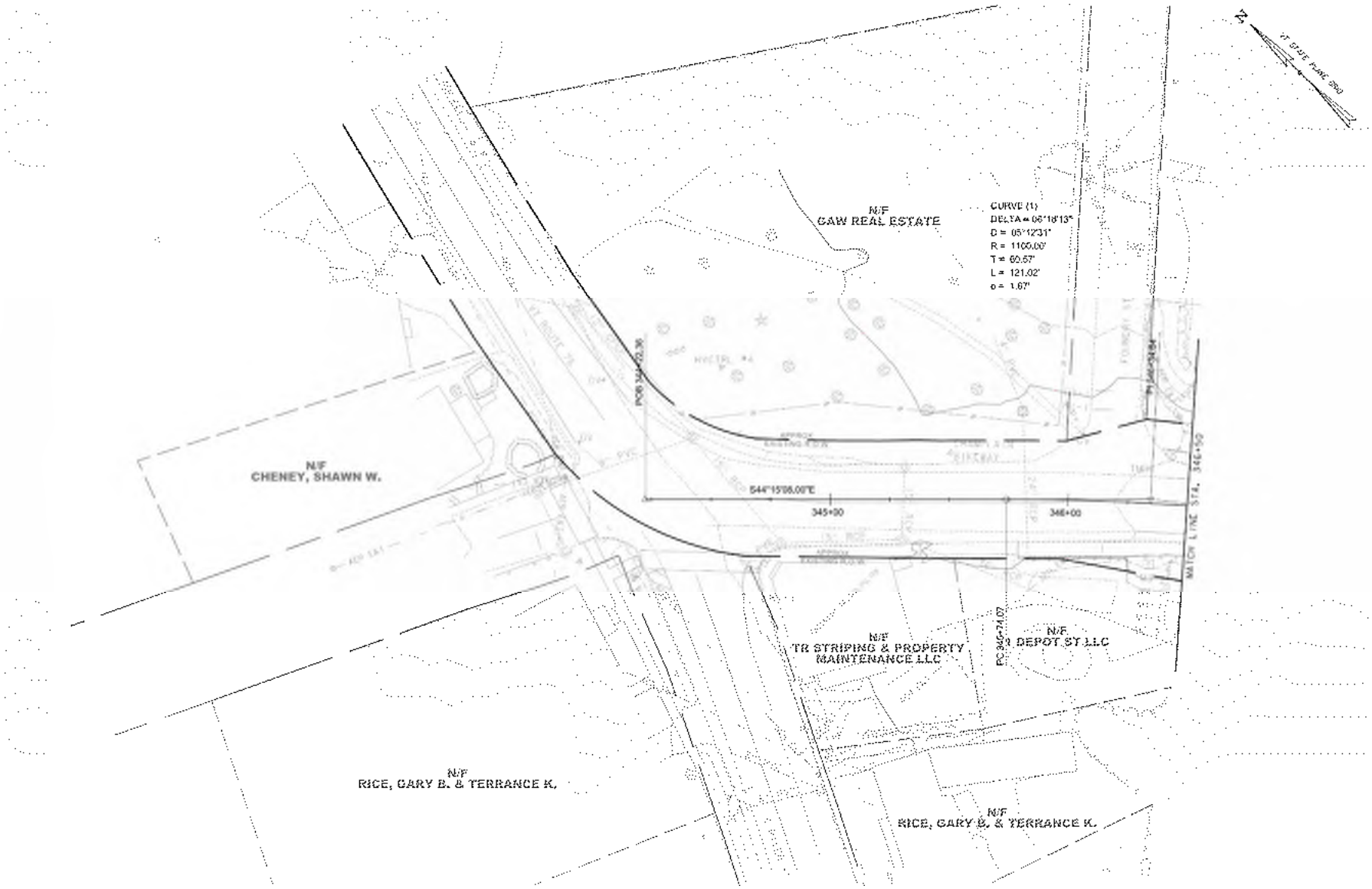
ALTERNATIVE 2 TYPICAL SECTION - PROPOSED SUPERSTRUCTURE REPLACEMENT

SCALE ⅜" = 1'-0"

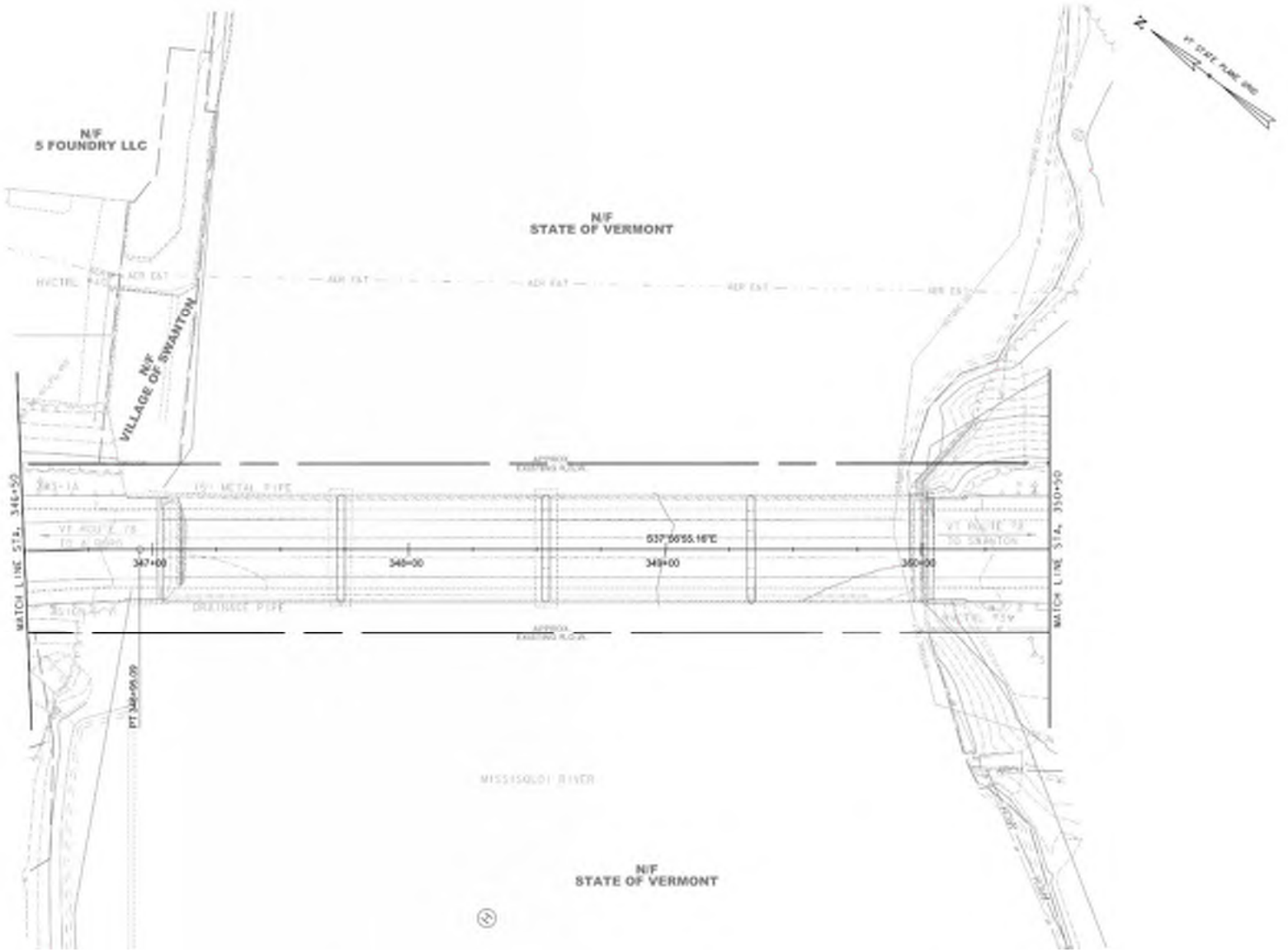
Recommended Alternative: Bridge Profile



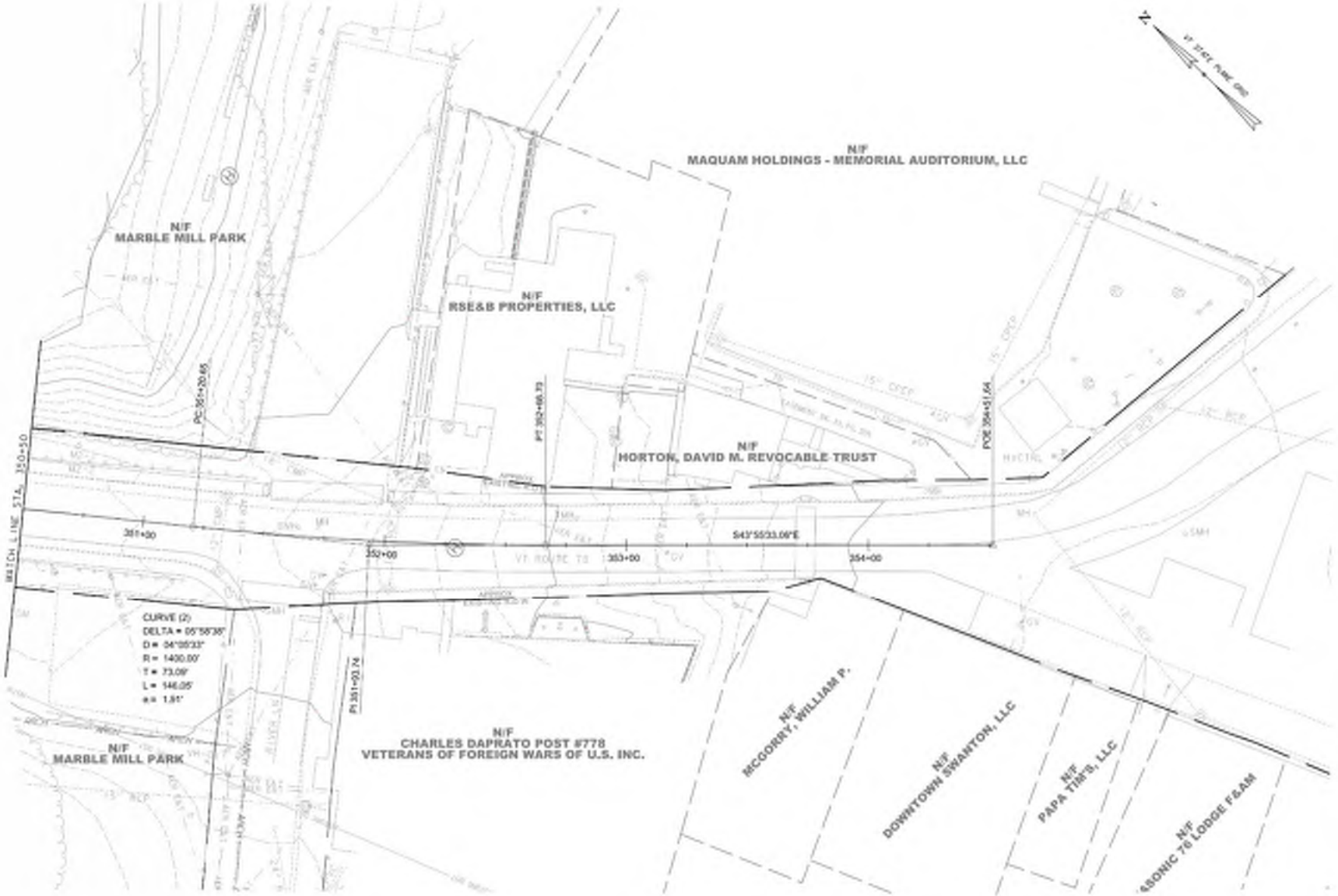
Recommended Alternative: Bridge Layout



Recommended Alternative: Bridge Layout



Recommended Alternative: Bridge Layout



Recommended Alternative: Bridge Layout

Swanton BF 036-1(16)		Do Nothing	Alt 1a	Alt 1b	Alt 2a	Alt 2b	Alt 2c	Alt 3a	Alt 3b	Alt 3c	Alt 4a	Alt 4b	Alt 4c
			UHPC Overlay and Misc. Repairs		Deck Replacement and Miscellaneous Repairs			Superstructure Replacement			Full Bridge Replacement		
			a. Staged	b. Off-Site Detour	a. Staged	b. Off-Site Detour	c. Temporary Bridge	a. Staged	b. Off-Site Detour	c. Temporary Bridge	a. Staged	b. Off-Site Detour	c. Temporary Bridge
COST	**Bridge Cost**	**$0**	**$1,036,200**	**$901,000**	**$1,932,900**	**$2,378,300**	**$1,632,200**	**$3,503,600**	**$3,046,600**	**$3,046,600**	**$12,908,200**	**$11,224,500**	**$11,224,500**
	Removal of Structure	$0	$20,700	$18,000	$28,865	$25,100	$25,100	$86,595	$75,300	$75,300	$54,122	$47,063	$47,063
	Roadway	$0	$547,000	$381,000	$609,000	$415,000	$384,000	$627,000	$436,000	$436,000	$1,153,000	$802,000	$802,000
	Maintenance of Traffic	$0	$221,600	$90,300	$221,600	$90,300	$2,474,040	$221,600	$90,300	$2,474,040	$221,600	$84,300	$2,474,040
	Construction Costs	$0	$1,825,500	$1,390,300	$2,792,365	$2,908,700	$4,515,340	$4,438,795	$3,648,200	$6,031,940	$14,336,922	$12,157,863	$14,547,603
	Construction Engineering & Contingencies	$0	$547,650	$347,575	$837,710	$727,175	$1,128,835	$665,819	$547,230	$904,791	$2,867,384	$1,823,679	$2,182,140
	Accelerated Premium	$0	$0	$458,799	$0	$959,871	$0	$0	$1,203,906	$0	$0	$4,012,095	$0
	Total Construction Costs w CEC	$0	$2,373,150	$2,196,674	$3,630,075	$4,595,746	$5,644,175	$5,104,614	$5,399,336	$6,936,731	$17,204,306	$17,993,637	$16,729,743
	Preliminary Engineering[2]	$0	$182,550	$139,030	$279,237	$290,870	$361,227	$665,819	$547,230	$904,791	$2,867,384	$1,215,786	$2,909,521
	Right of Way	$0	$15,000	$15,000	$15,000	$15,000	$150,000	$15,000	$15,000	$150,000	$15,000	$15,000	$150,000
	Total Project Costs	$0	$2,570,700	$2,350,704	$3,924,311	$4,901,616	$6,155,402	$5,785,434	$5,961,566	$7,991,522	$20,086,691	$19,224,423	$19,789,263
	Annualized Costs	$0	$128,535	$117,535	$196,216	$245,081	$307,770	$165,298	$170,330	$228,329	$267,823	$256,326	$263,857
	Town Share	**N/A**	**$128,535**	**$58,768**	**$196,216**	**$122,540**	**$307,770**	**$289,272**	**$149,039**	**$399,576**	**$2,008,669**	**$961,221**	**$1,978,926**
	Town %	N/A	5.0%	2.5%	5.0%	2.5%	5.0%	5.0%	2.5%	5.0%	10.0%	5.0%	10.0%
SCHEDULING	Project Development Duration[3]	N/A	2 years	2 years	2 years	2 years	4 years	2 years	2 years	4 years	4 years	4 years	4 years
	Construction Duration	N/A	12 months	4 months	12 months	4 months	12 months	18 months	8 months	18 months	30 months	16 months	24 months
	Closure Duration (If Applicable)	N/A	N/A	30 days	N/A	30 days	N/A	N/A	60 days	N/A	N/A	120 days	N/A
ENGINEERING	Typical Section - Roadway (feet)	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"	30'-0"
	Typical Section - Bridge (feet)	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4	4-11-11-4
	Geometric Design Criteria	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width	Substandard Width
	Traffic Safety	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
	Alignment Change	No	No	No	No	No	No	No	No	No	No	No	No
	Bicycle Access	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
	Hydraulics[4]	-	-	-	-	-	-	-	-	-	-	-	-
	Pedestrian Access	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change	No Change
	Utilities	No Change	No Change	No Change	No Change	No Change	No Change	Temporary Relocation	Temporary Relocation	Temporary Relocation	Temporary Relocation	Temporary Relocation	Temporary Relocation
OTHER	ROW Acquisition	No	No	No	No	No	Yes	No	No	Yes	No	No	Yes
	Road Closure	No	No	Yes	No	Yes	No	No	Yes	No	No	Yes	No
	Design Life	<10	20	20	20	20	20	35	35	35	75	75	75

Recommended Alternatives – A Closer Look

Swanton BF 036-1(16)	Alternative 1b	Alternative 3b
	Deck Replacement and Misc. Repairs	Superstructure Replacement
	Off-Site Detour	Off-Site Detour
Total Project Cost (Including Engineering and Contingencies)	$2,350,704	$5,961,566
Town Share	$58,770	$149,040
Project Development Duration	2 Years	4 Years
Construction Duration	4 Months	8 Months
Closure Duration (If applicable)	30	60
Geometric Design Criteria	Substandard Width	Substandard Width
Alignment Change	No	No
Utilities	No Change	Temporary Relocation
ROW	No	No
Anticipated Service Life	20 to 35 Years	35 Years
Annualized Cost	$117,535	$170,330

Preliminary Project Schedule

- Construction Start – Depends on the Alternative Selected

  - Alternative 1: Total Cost Estimate: $2,350,704
    - Town Share: $58,768
    - Anticipated 2027 start

  - Alternative 3: Total Cost Estimate: $5,961,566
    - Town Share: $149,039
    - Anticipated 2035 start

Next Steps – Bridge #6

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)

For more information:

- https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/22J402

Swanton BF 036-1(16)
Questions and Comments

VT Route 78 – Bridge 6 Over Missisquoi River

July 14, 2025