



Moretown BF 0167(16)

Alternatives Presentation Meeting

Vermont Route 100B – Bridge #2 over Mad River
January 17, 2017

Introductions

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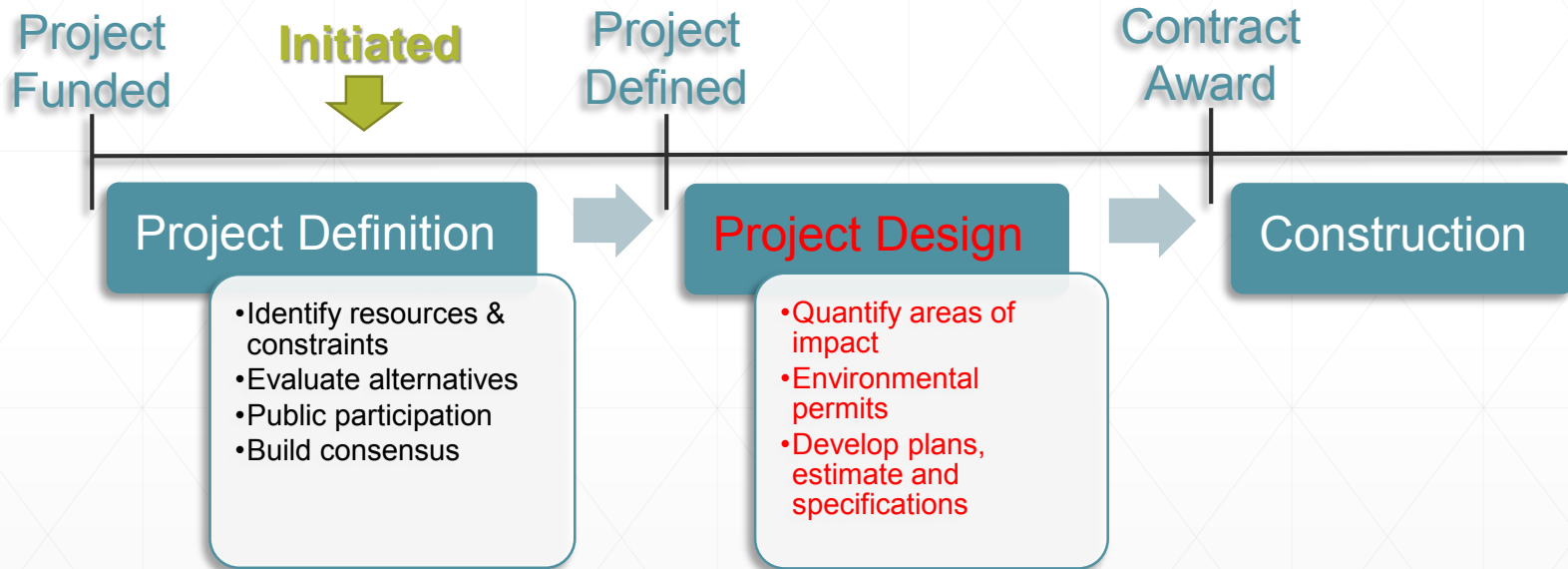
Purpose of Meeting

- Discuss alternatives that were considered
 - Describe the project constraints
 - Provide an opportunity to ask questions and voice concerns
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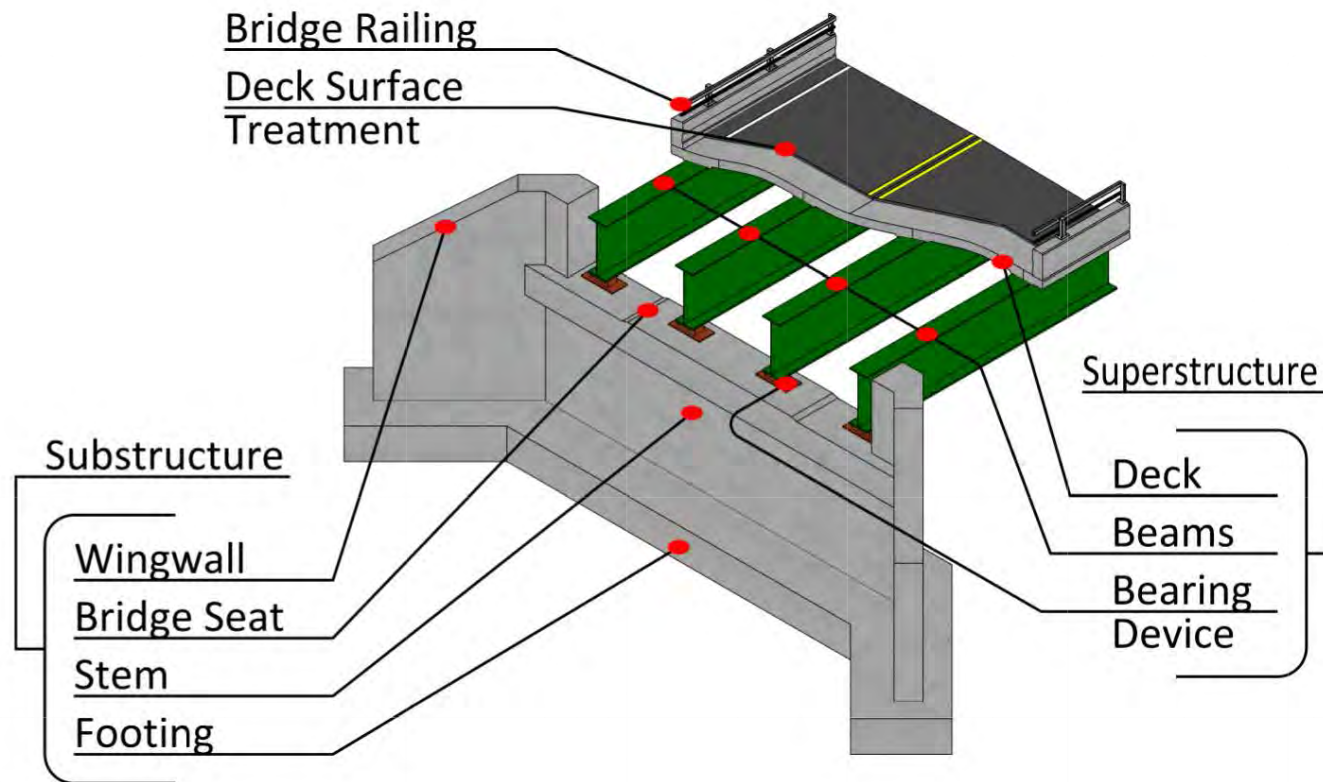
Meeting Overview

- VTrans Project Development Process
 - Project Overview
 - Existing Conditions – Roadway alignment and Bridge
 - Summary of Alternatives Studied – with costs
 - Recommended Alternative
 - Maintenance of Traffic during construction
 - Design and Construction Schedule
 - Questions?????
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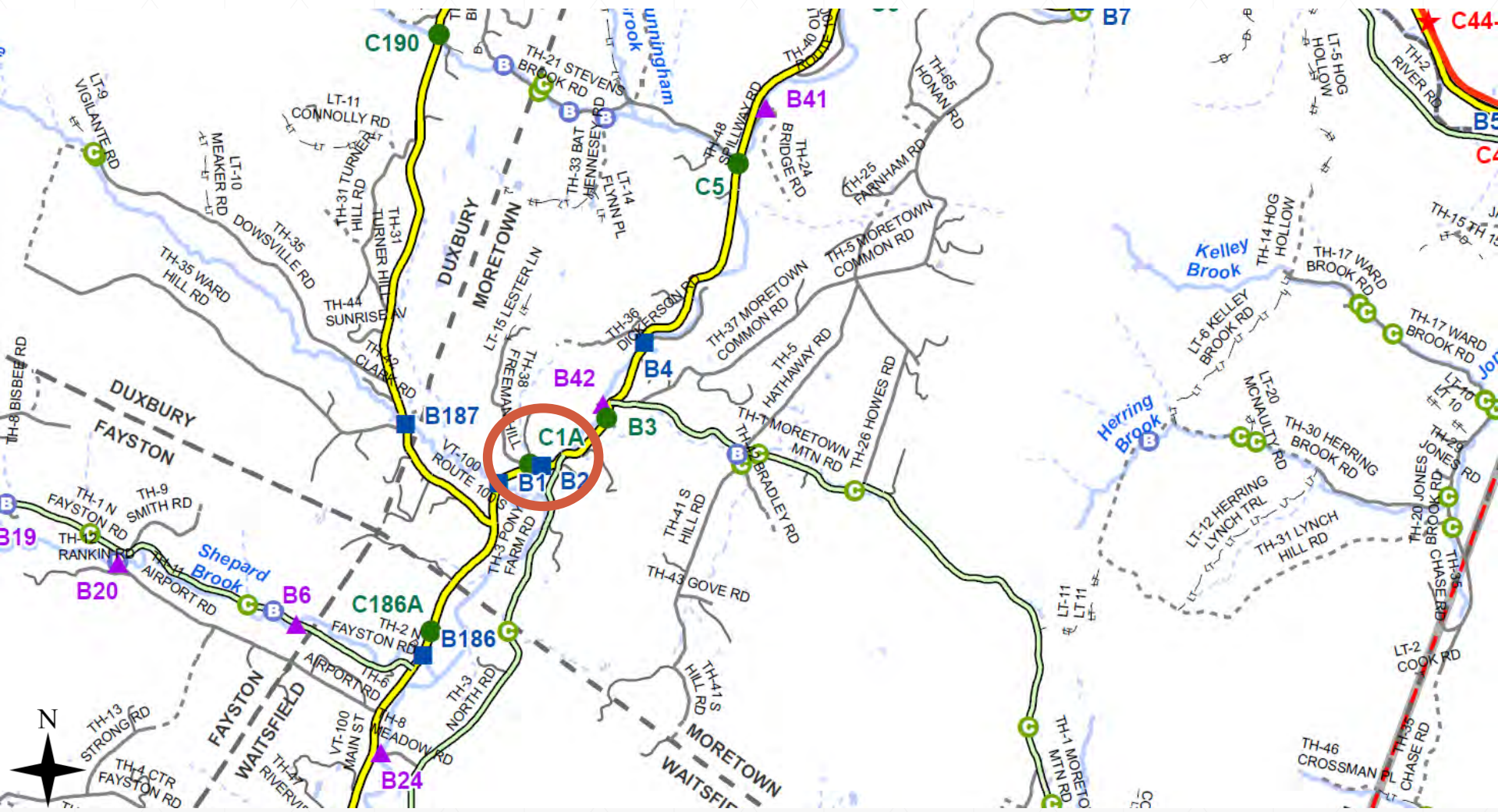
VTrans Project Development Process



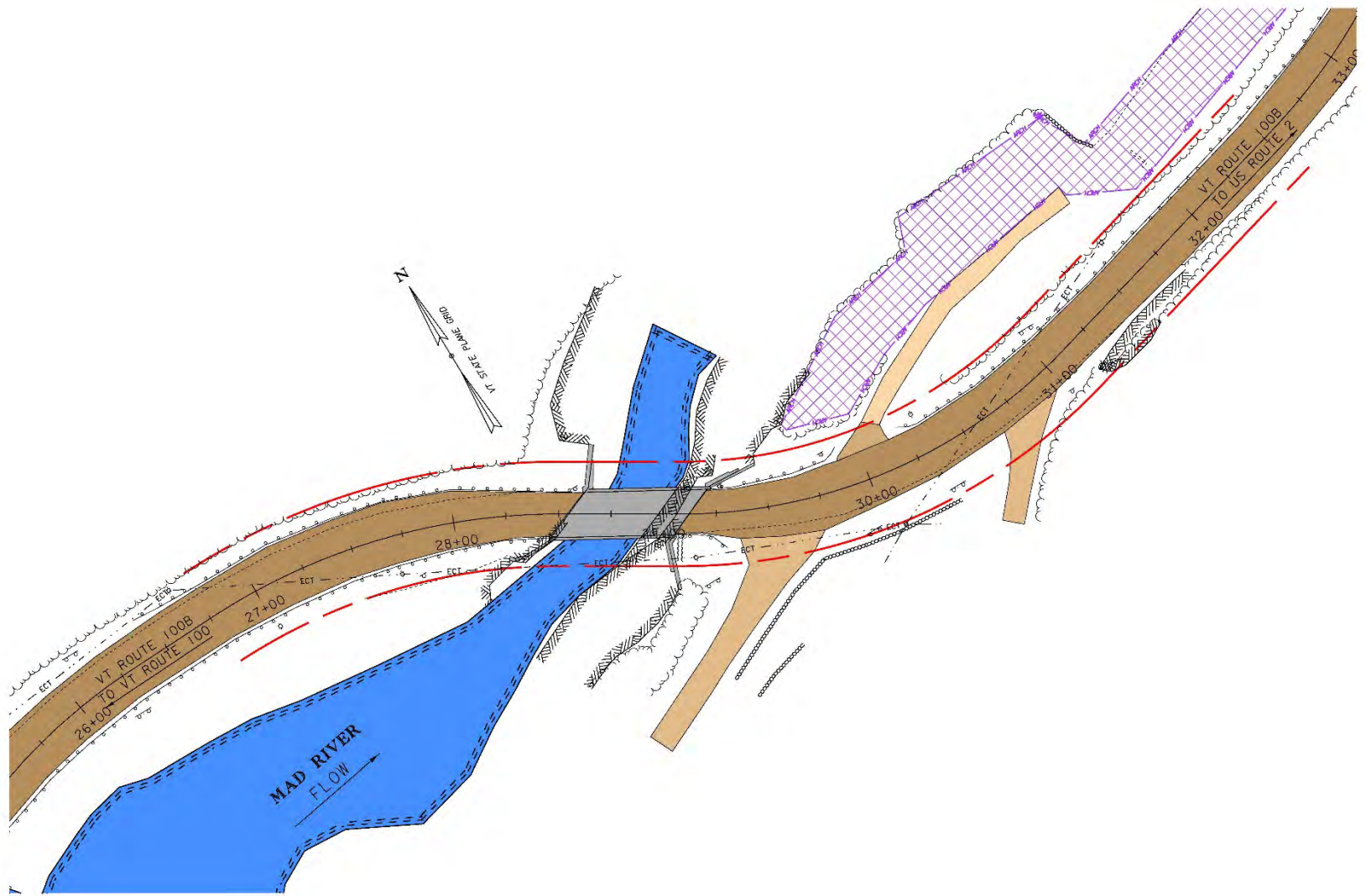
Description of Terms Used



Location Map – Bridge #2



Existing Site Constraints





Existing Bridge Information

- Bridge Type: Concrete T-Beam
- Bridge Span: 59 Feet
- Constructed in 1928
- Ownership: State of Vermont



Existing Conditions

1. Curbs, deck fascia and bridge railing posts significant section loss.
2. Concern with the structural capacity of the bridge rail system to properly protect the traveling public.
3. The shoulder width is substandard in the roadway and on the bridge.
4. Existing bridge approach alignments are posted for advisory speeds.



Existing Bridge Railing Posts



Fascia



North Abutment



South Abutment



Upstream Wingwall



Upstream Channel



Downstream Channel

Old Mill Foundation

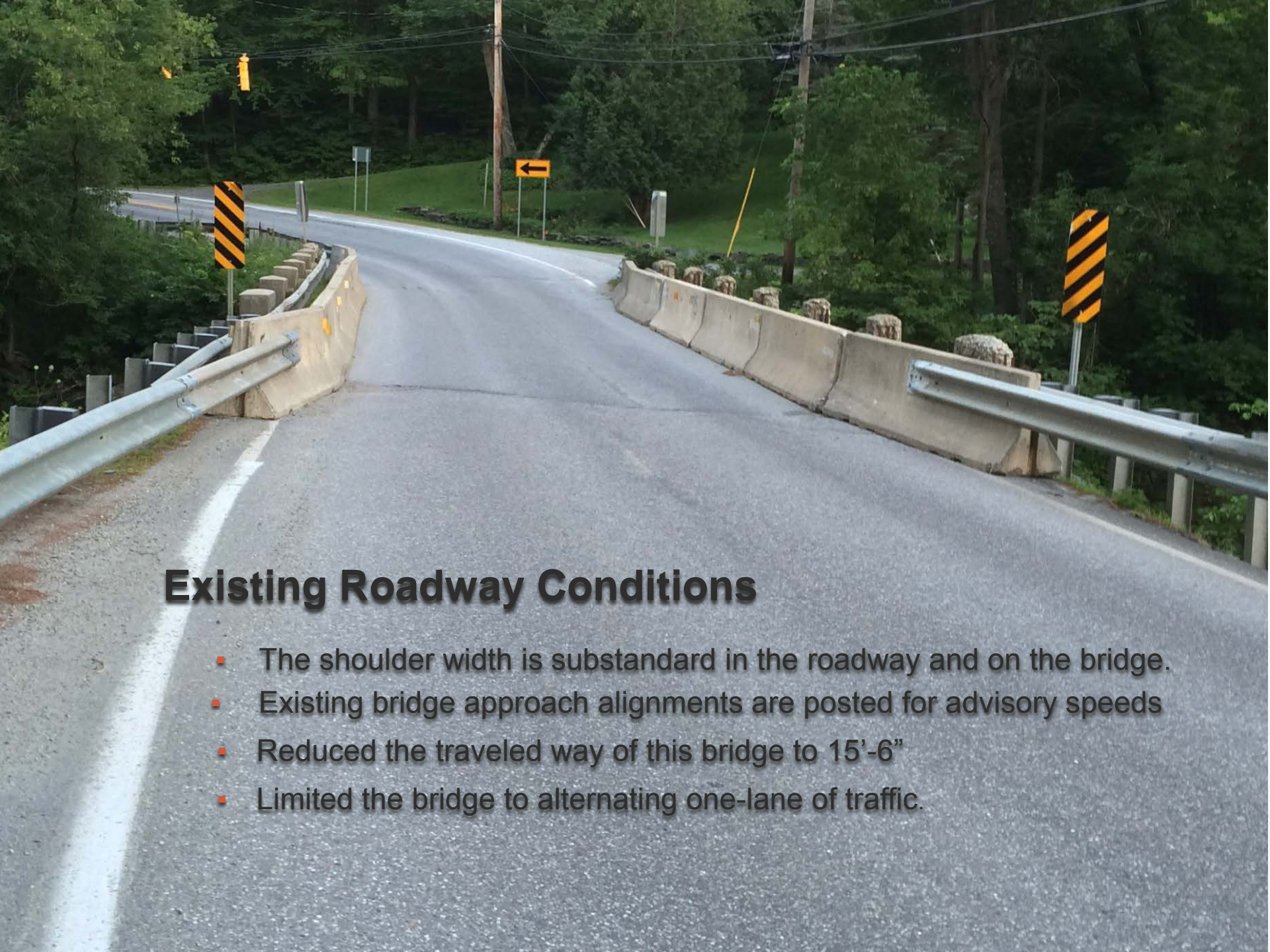


Old Mill Foundation



Location Map – Bridge #2





Existing Roadway Conditions

- The shoulder width is substandard in the roadway and on the bridge.
- Existing bridge approach alignments are posted for advisory speeds
- Reduced the traveled way of this bridge to 15'-6"
- Limited the bridge to alternating one-lane of traffic.



North Approach (looking south)



Looking South Through Bridge



South Approach (looking north)

Design Criteria and Considerations

- Substandard Functional Features:
 - Existing 1 ft shoulder and 9 ft lanes.
 - Functionally obsolete 20 ft bridge rail to rail width
 - ADT = 3300 vehicles per day
 - DHV (Design Hourly Volume) = 400
 - % Trucks: 5.7
 - Design Speed of 30 mph
 - Vermont State Design Standards require
 - 4 ft. shoulders
 - 11 ft. travel lanes
-

Alternatives Considered

- **No Action**



Alternatives Considered

Rehabilitation

Alt. 1 – Existing alignment with minor widening

New Bridge on Revised Alignment,

Alt 2A - 300 ft. radius (~30 mph) with a new 90 ft. single span bridge.

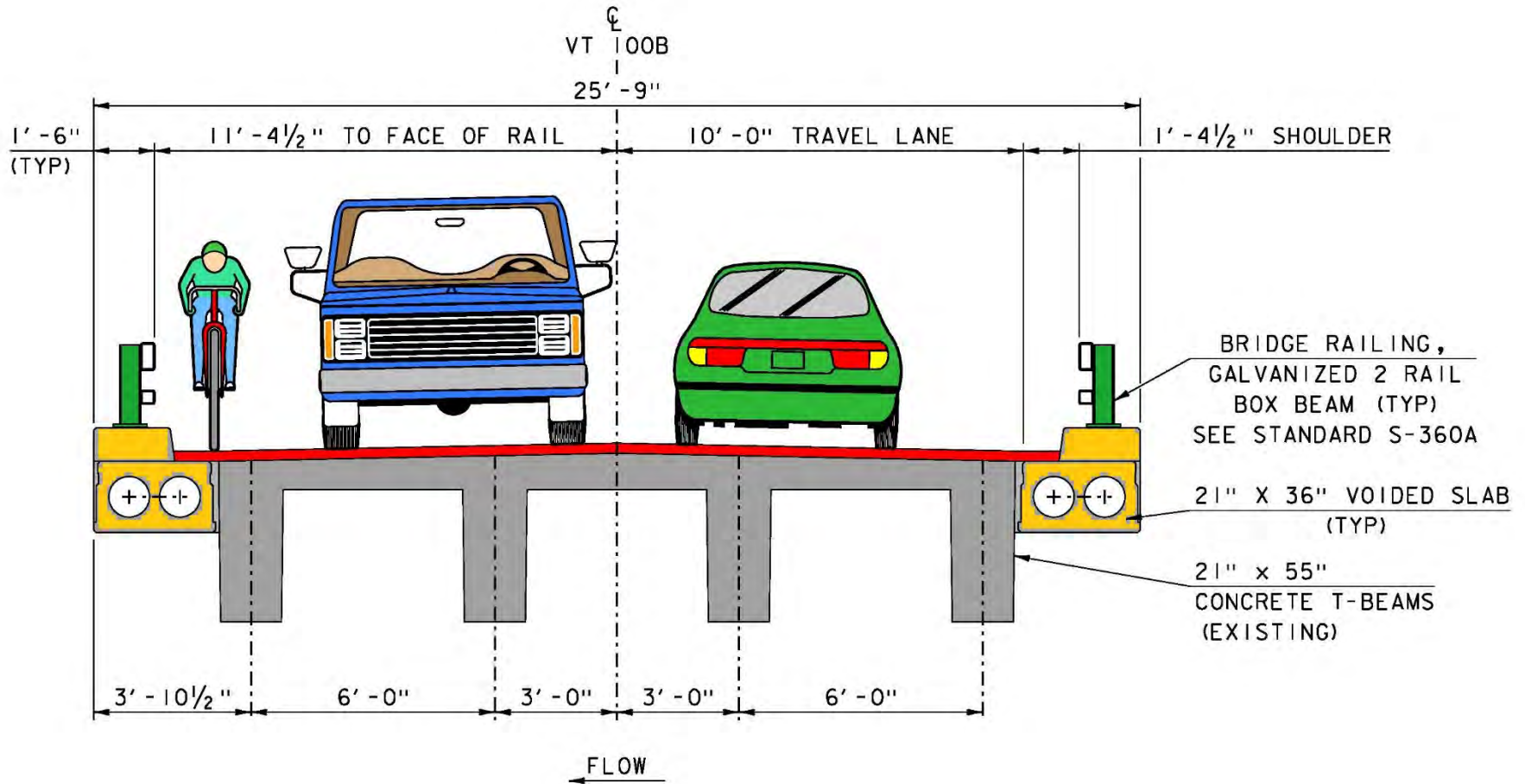
Alt 2B - 415 ft. radius (meets 30 mph) with a new 90 ft. single span bridge.

Alt 2C - 350 ft. radius (~30 mph) with a new 90 ft. single span bridge

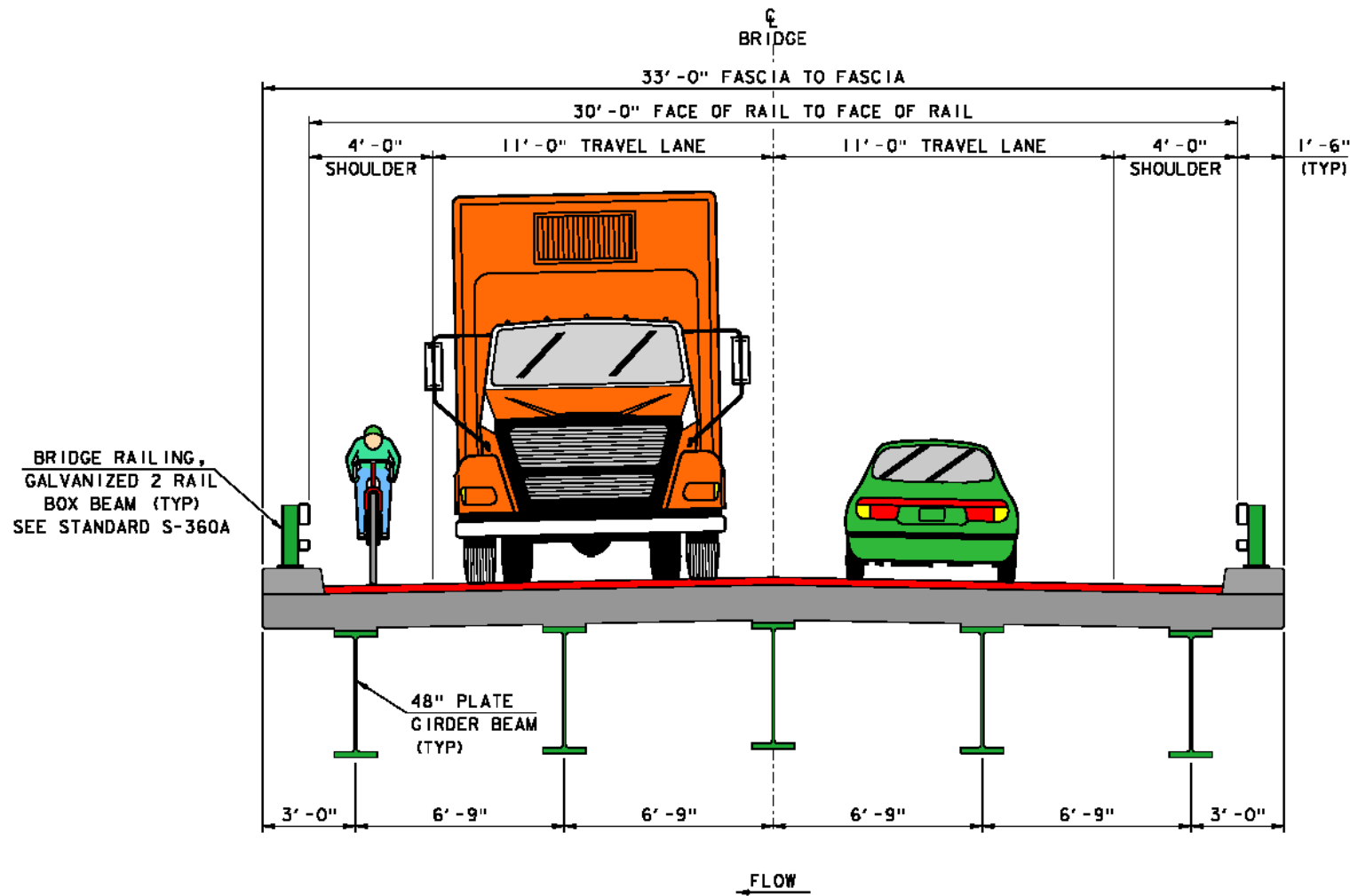
Alternative 1 – Rehabilitation Typical Bridge Section

10-15 years of service life

Areas of structural concern on the existing superstructure

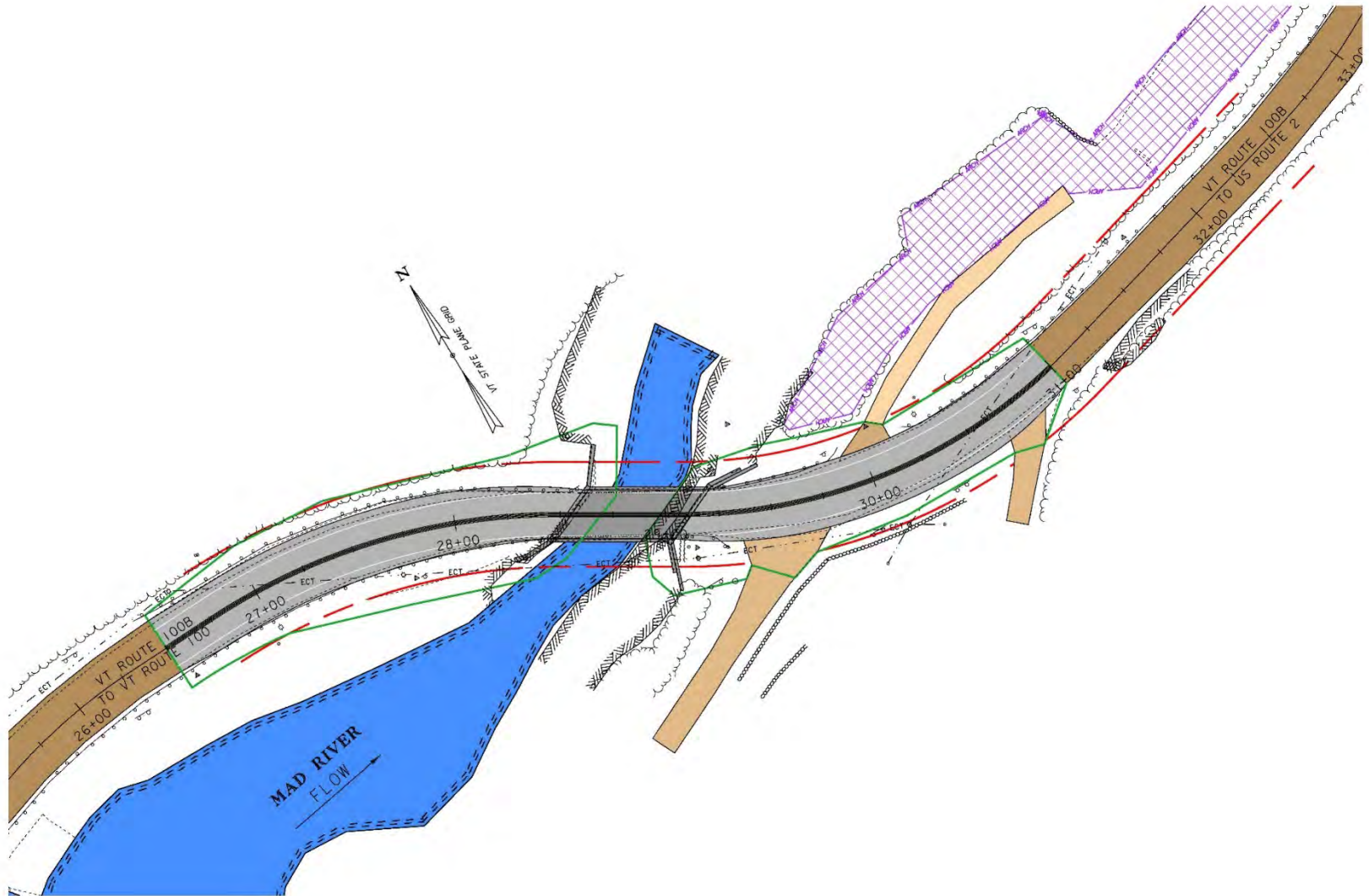


New Bridge Typical Section



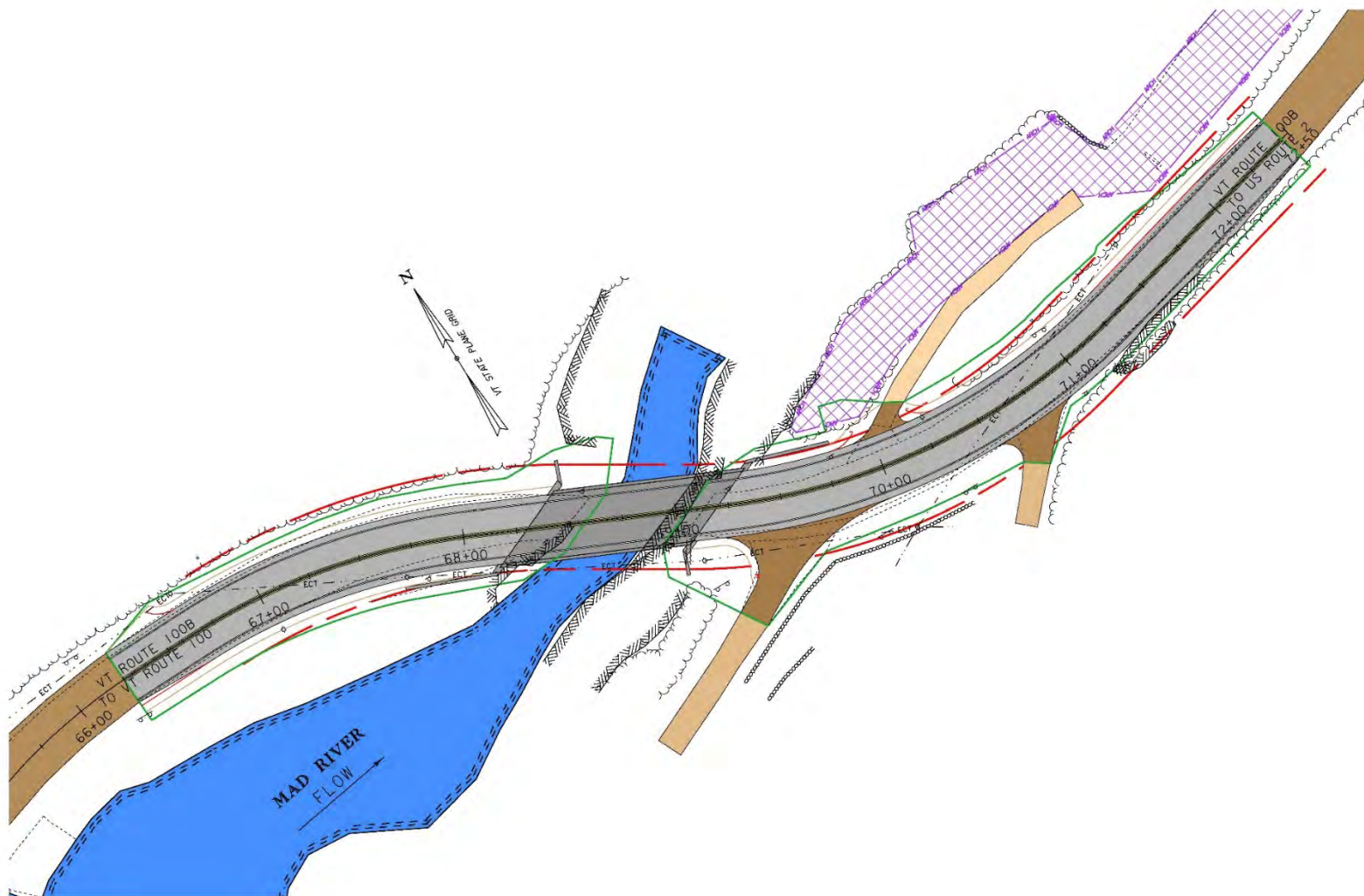
Alternative – 1

Rehabilitation

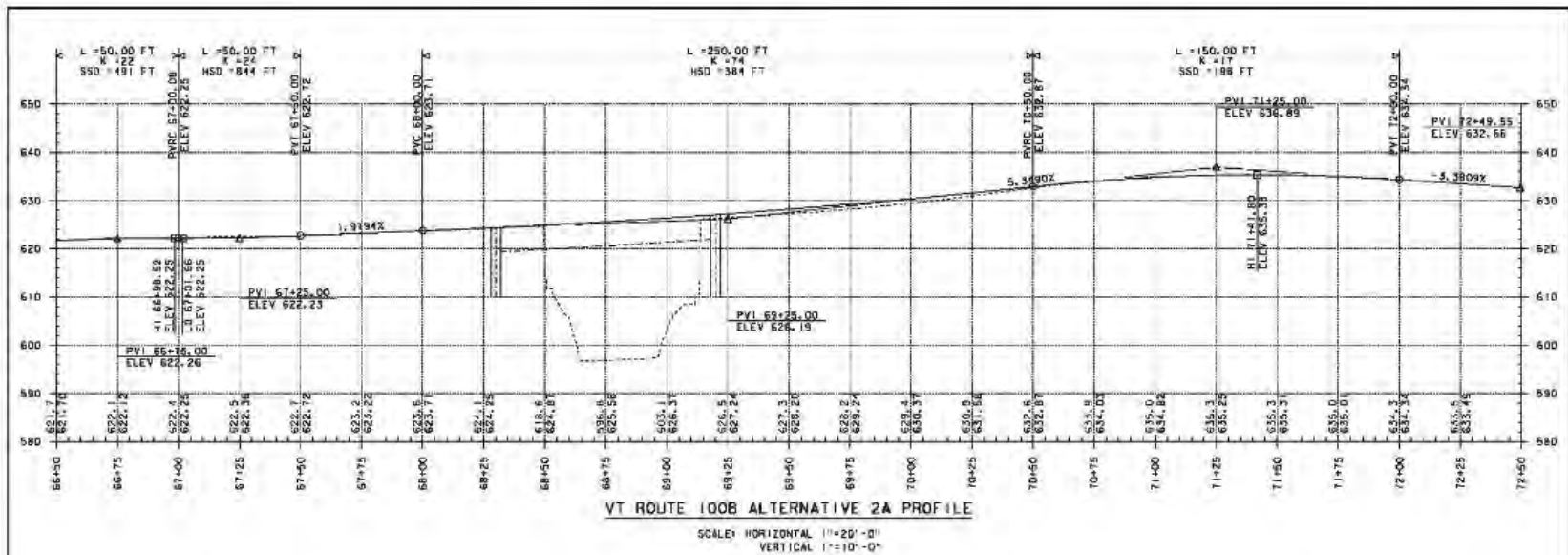


Alternative – 2A

New Bridge
25-30mph design

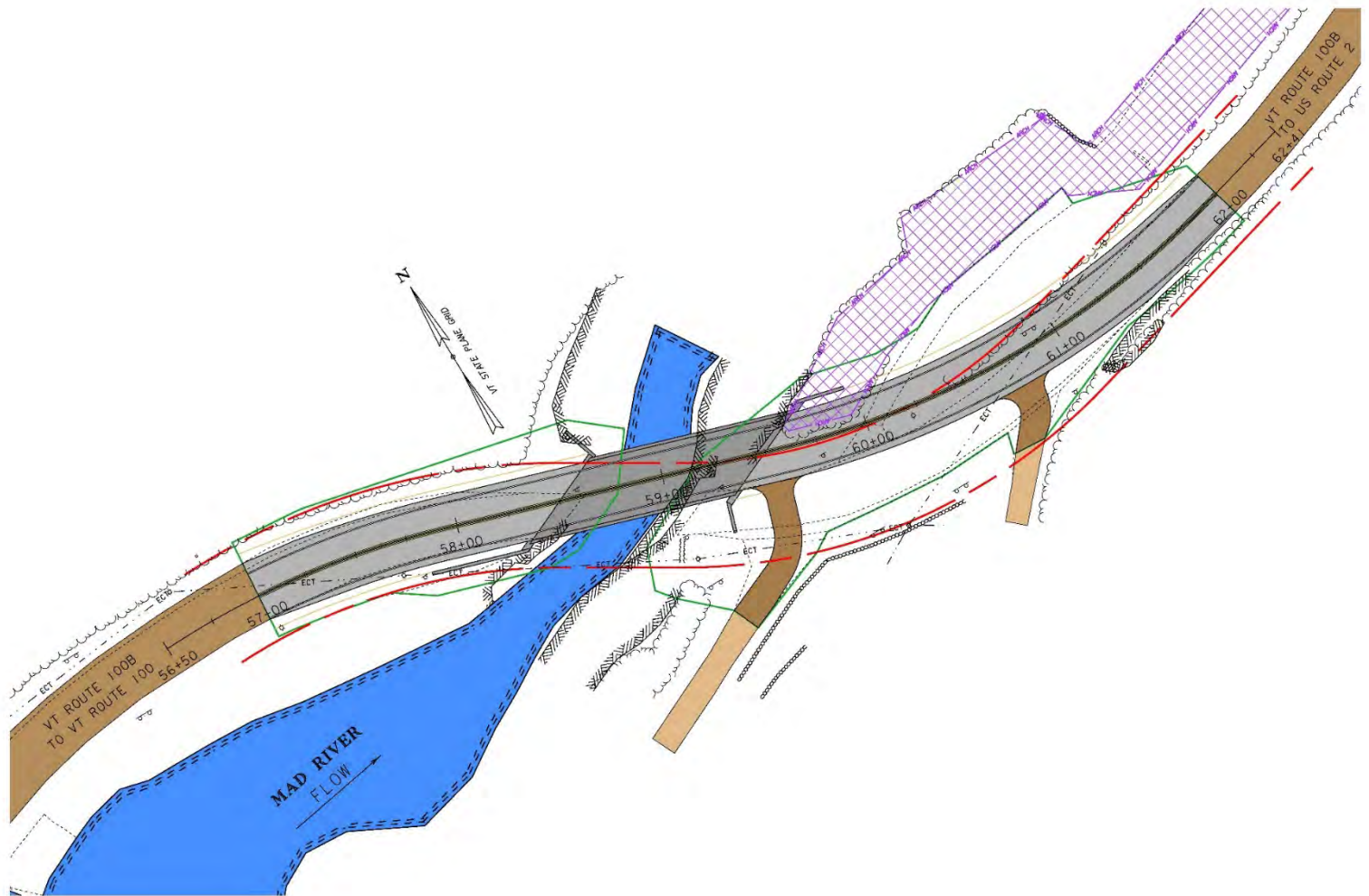


Alternative 2A – Vertical Profile



Alternative – 2B

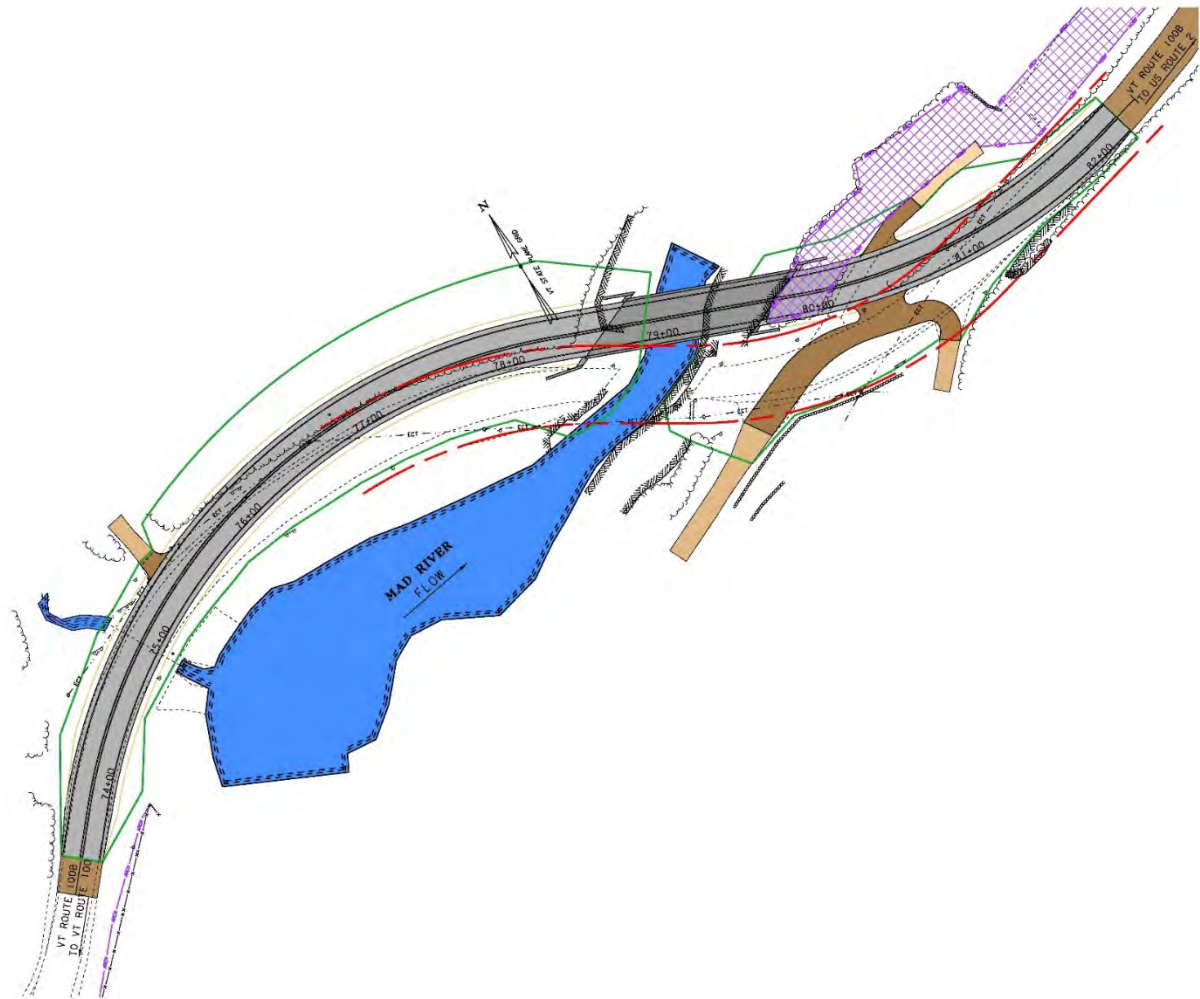
New Bridge
30mph design



Alternative – 2C

New Bridge

25-30 mph alignment design

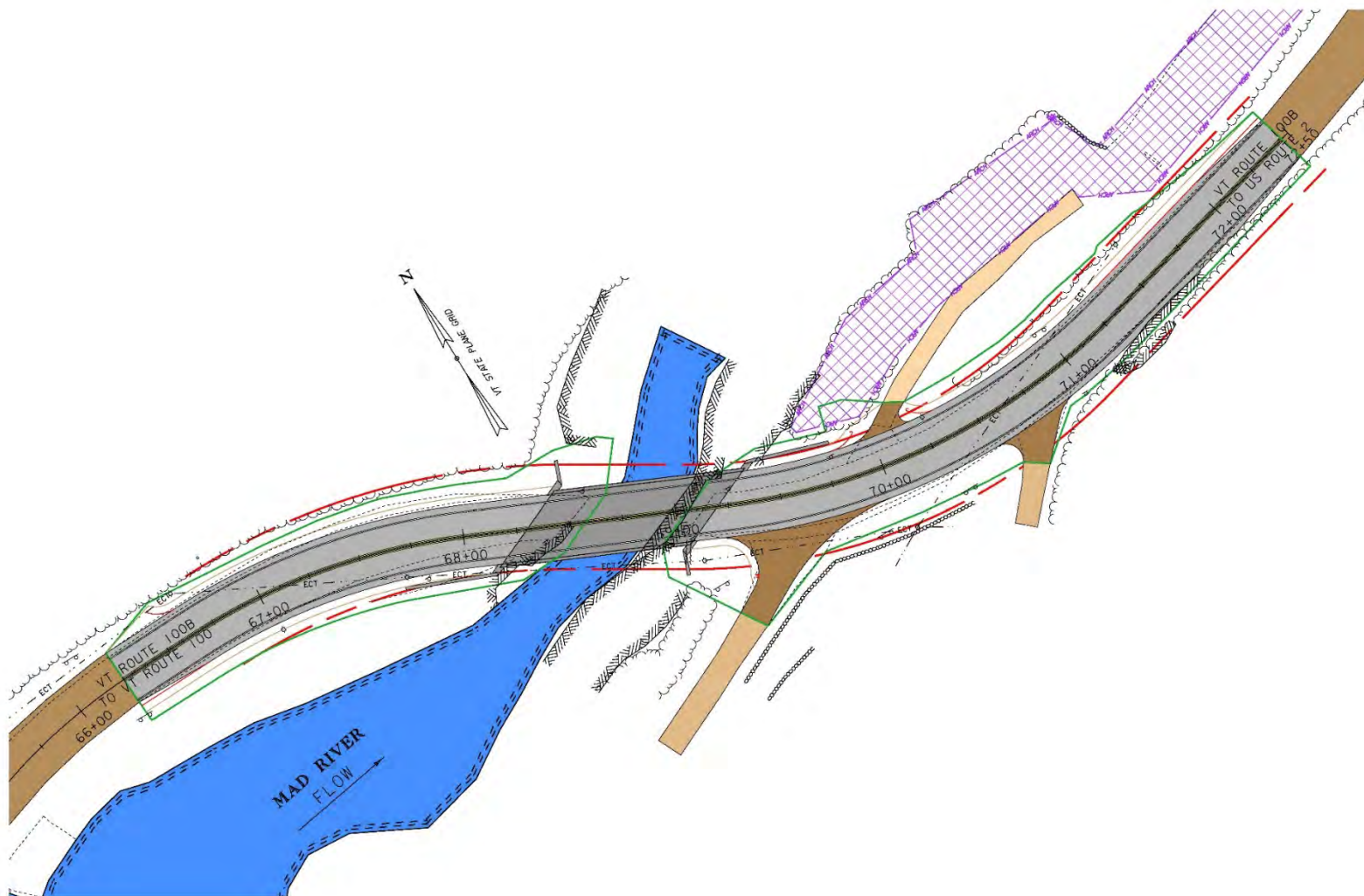


Recommend Alternative 2A

- Complete Bridge Replacement, 25-30mph design
 - Minor, positive improvements to the horizontal and vertical alignment
 - Abutments founded on bedrock (economical)
 - Traffic maintained on off-site detour, 3 month closure proposed
-

Alternative – 2A

New Bridge
25-30mph design





ROAD CLOSED

Road Closure

- 3 month closure
- Detour:

▪ Through distance:	0.5 miles	1 min
▪ Detour distance:	18.3 miles	24 min
▪ Added distance:	17.8 miles	21 min
▪ End to end distance:	19.5 miles	27 min
- One local bypass:

▪ Bypass distance:	4.6 miles	9 min
▪ Added distance:	3.4 miles	6 min

Off-Site Detour

- North on Route 100,
East on Route 2,
South on Route 100B

Closed portion: (VT100B)

0.5 miles

1 min

Detour:

18.3 miles

25 min

Added distance:

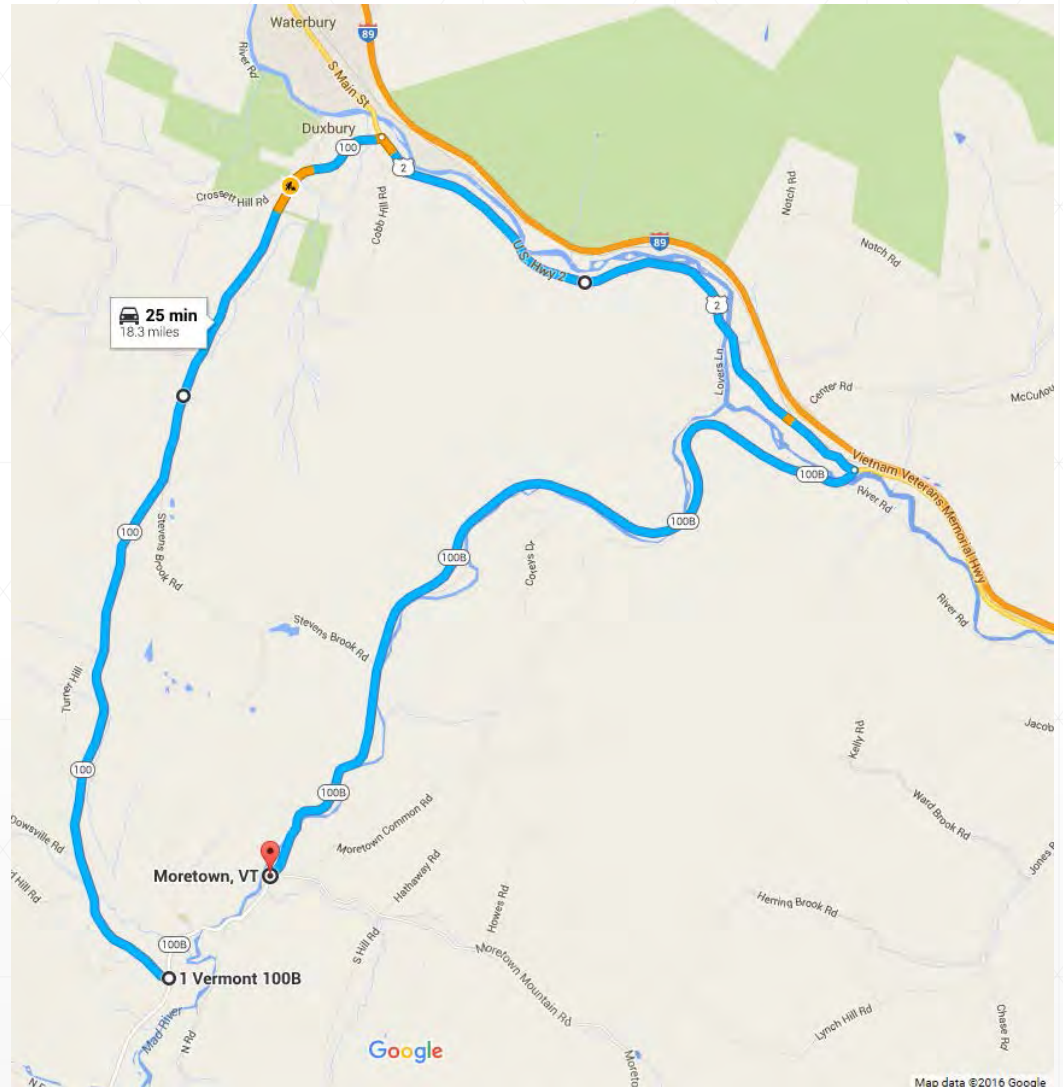
17.8 miles

21 min

End to end distance:

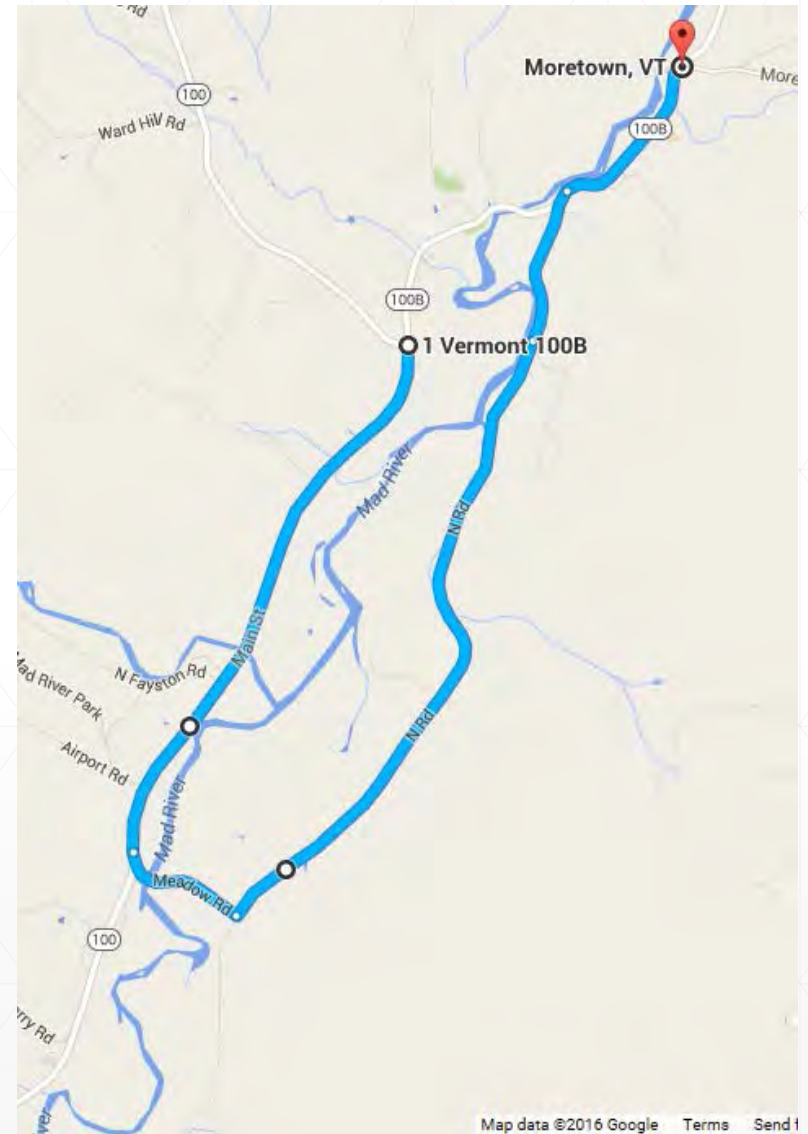
19.5 miles

27 min



Local Bypass

	<u>Miles</u>	<u>Time</u>
South on VT 100	1.6	2
Meadow Rd.	0.3	1
North/Pony Farm Rd.	<u>2.2</u>	<u>4</u>
Total	4.1	7

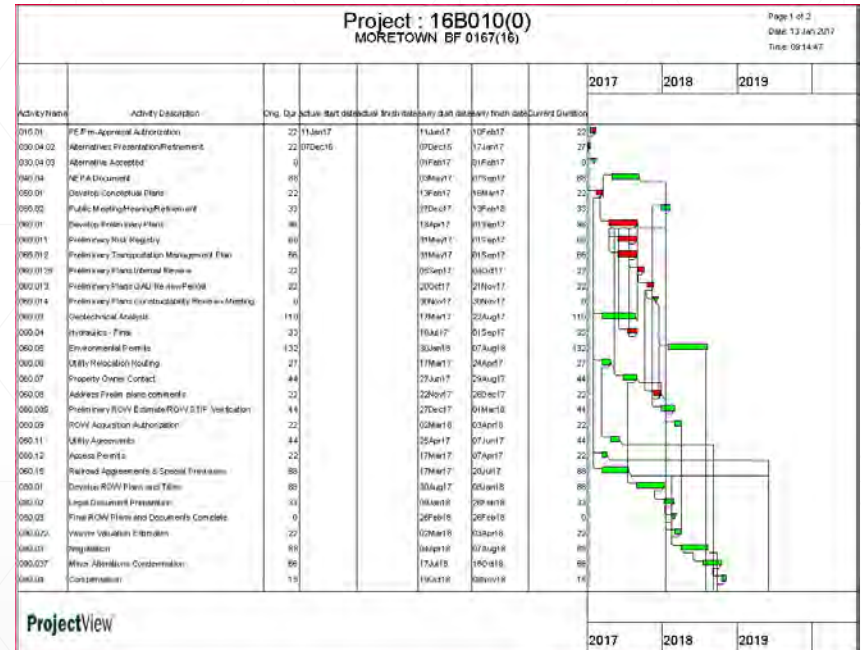


Alternatives Matrix

Moretown BF 0167(16)		Do Nothing	Alt 1	Alt 2a	Alt 2b	Alt 2c
			Superstructure Rehab	New Structure on Revised Alignments		
			Off-Site Detour	Off-Site Detour	Off-Site Detour	Existing Bridge as Temporary
COST ¹	Bridge Cost	\$0	\$375,000	\$1,250,000	\$1,320,000	\$1,320,000
	Removal of Structure	\$0	\$80,000	\$75,000	\$75,000	\$75,000
	Roadway	\$0	\$315,000	\$500,000	\$690,000	\$1,200,000
	Maintenance of Traffic	\$0	\$50,000	\$30,000	\$30,000	\$50,000
	Construction Costs	\$0	\$820,000	\$1,855,000	\$2,115,000	\$2,645,000
	Construction Engineering + Contingencies	\$0	\$250,000	\$550,000	\$610,000	\$880,000
	Total Construction Costs w CEC	\$0	\$1,070,000	\$2,415,000	\$2,755,000	\$3,500,000
	Preliminary Engineering²	\$0	\$165,000	\$375,000	\$425,000	\$520,000
	Right of Way	\$0	\$0	\$50,000	\$150,000	\$400,000
	Total Project Costs	\$0	\$1,235,000	\$2,840,000	\$3,330,000	\$4,430,000
SCHEDULING	Project Development Duration ³	N/A	6 months	2 years	3 years	3 years
	Construction Duration	N/A	6 weeks	3 months	3 months	5 months
	Closure Duration (If Applicable)	N/A	4 weeks	3 months	3 months	0
ENGINEERING	Typical Section - Roadway (feet)	35 ft.	22 ft.	30 ft.	30 ft.	30 ft.
	Typical Section - Bridge (feet)	3.9-11-11-3.9	1-10-10-1	4-11-11-4	4-11-11-4	4-11-11-4
	Geometric Design Criteria	Substandard width and banking, western approach	Substandard width, 25 mph alignment	Standard width, alignment meets 25 mph	Standard width, alignment meets 30 mph	Standard width, alignment meets 25 mph
	Traffic Safety	No Change	Minimal Improvement	Improved	Improved	Improved
	Alignment Change	No	No	Yes - minor	Yes	Yes - minor
	Bicycle Access	No Change	No Change	Improved	Improved	Improved
	Hydraulic Performance	Meets standard	No Change	Meets Standard	Meets Standard	Meets standard
	Pedestrian Access	No Change	No Change	Improved	Improved	Improved
	Utility	No Change	No Change	Relocated	Relocated	Relocated
OTHER	ROW Acquisition	No	No	Yes - minor	Yes - moderate	Yes - major
	Road Closure	No	Yes	Yes	Yes	No
	Design Life	<10 years	<10 years	100 years		

Project Design Schedule

- Conceptual Plans – March 2017
- Property owner visits - August 2017
- Preliminary Plans – September 2017
- Permits - August 2018
- Final Plans – July 2018
- Contract Plans – February 2019
- Advertising – September 2019





For more information:

- <https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/16b010>

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Questions and Comments

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