



Stowe BO 1446(37)

Alternatives Presentation Meeting

Town Highway 43 – Bridge #51 over Miller Brook

February 12, 2018

04/11/2017



Introductions

Carolyn Carlson, P.E.

VTrans Design Project Manager

Kara Yelinek

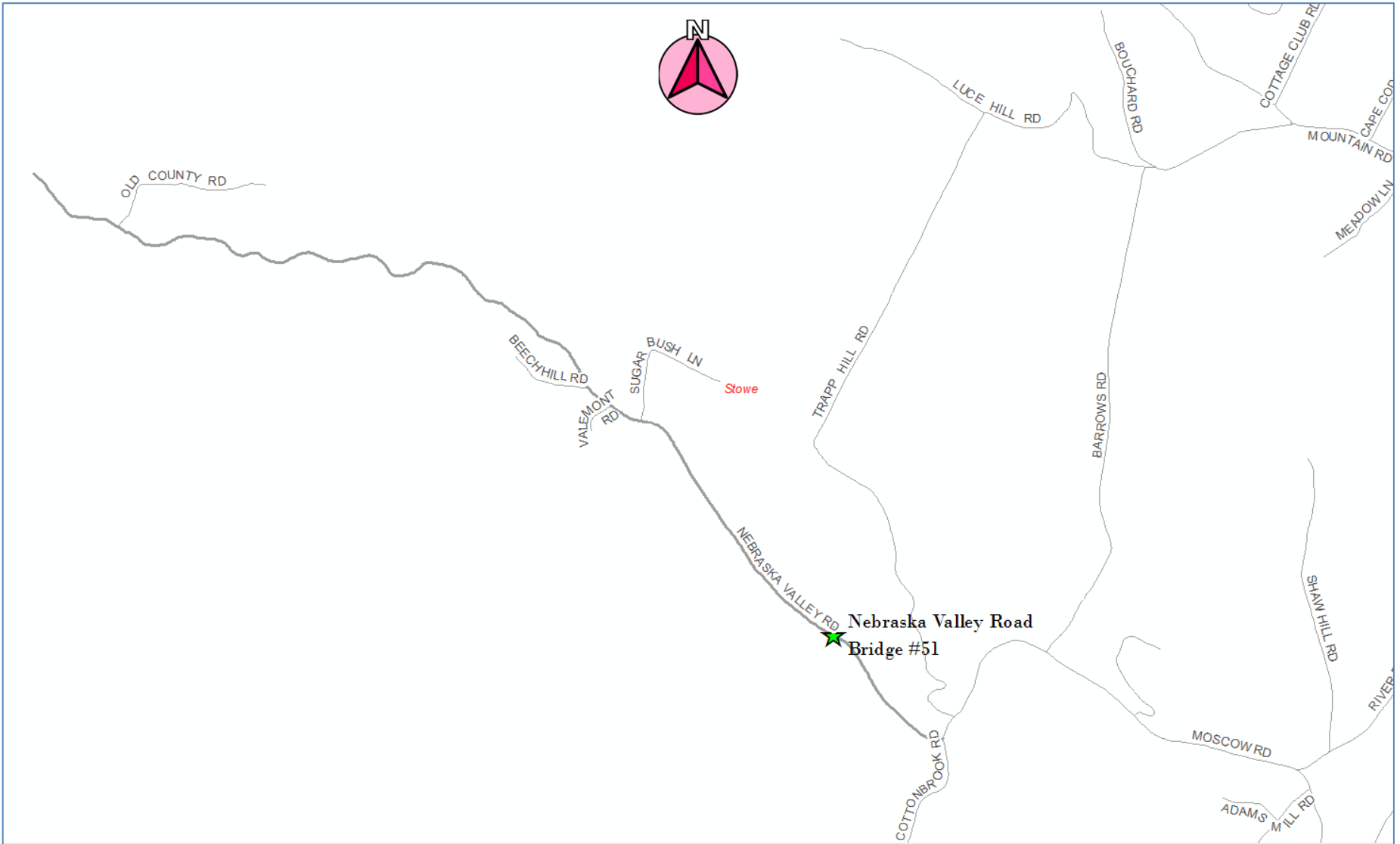
VTrans Design Engineer

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



Location Map

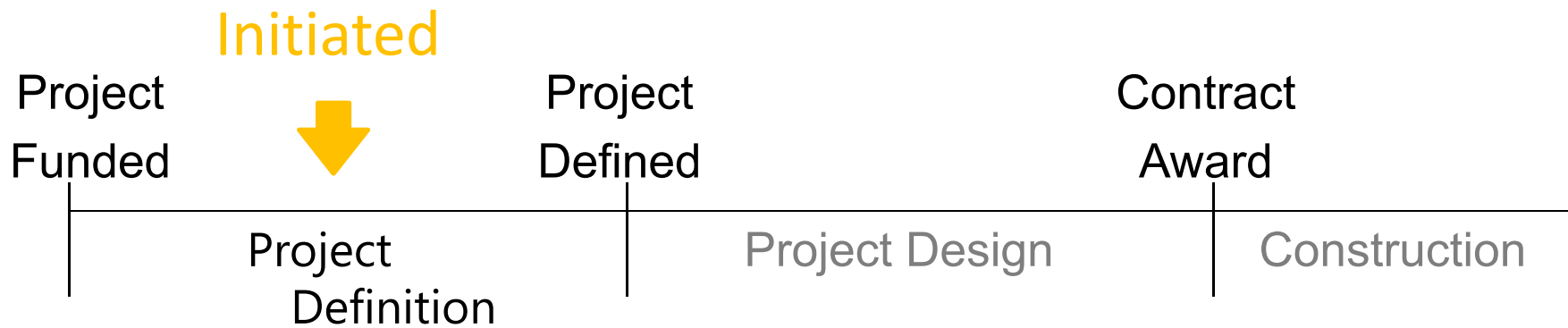


Bridge 51
Project Location

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

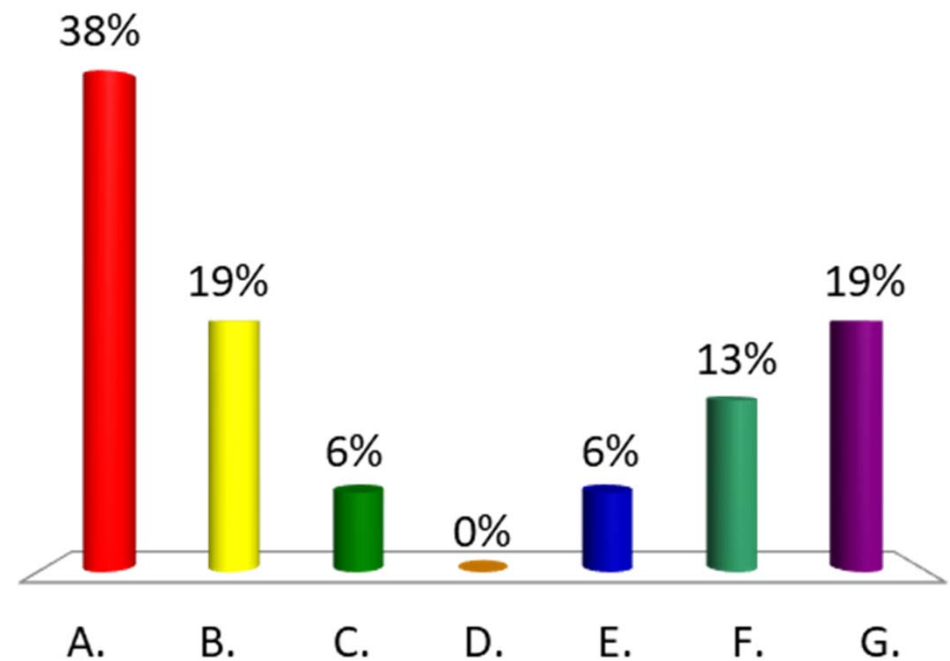


- Identify resources & constraints
- Evaluate alternatives
- Public participation
- Build Consensus

- Quantify areas of impact
- Environmental permits
- Develop plans, estimate and specifications
- Right-of-Way process if necessary

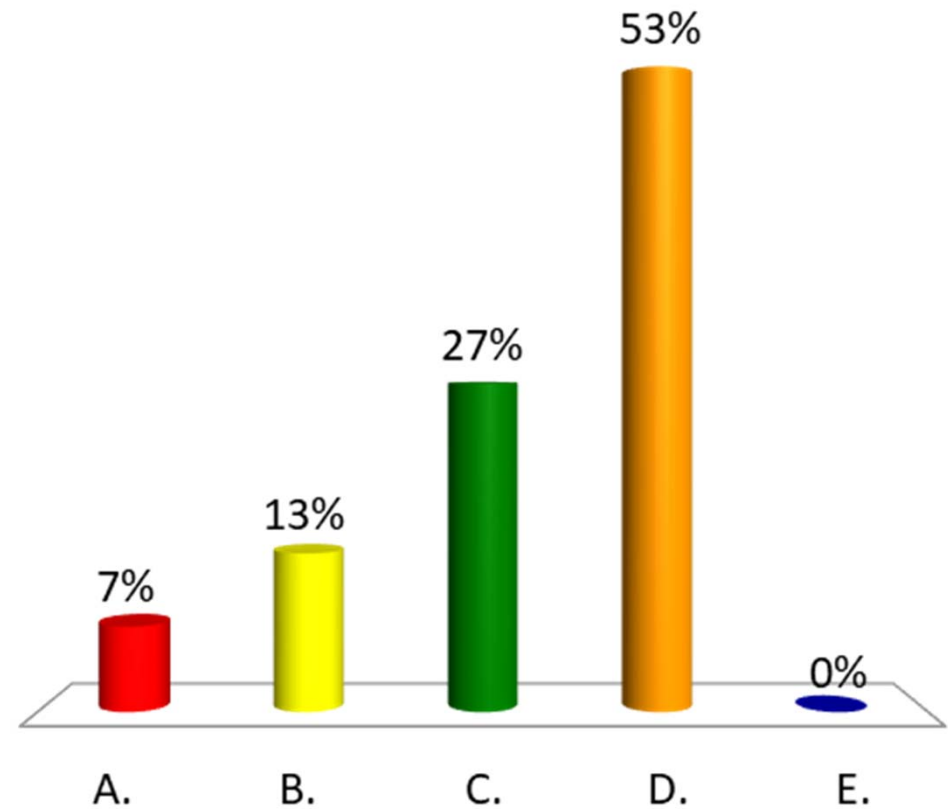
Who are you representing?

- A. Municipal Official
- B. Resident
- C. Local Business
- D. School
- E. Emergency Services
- F. Independent Organization
- G. Other



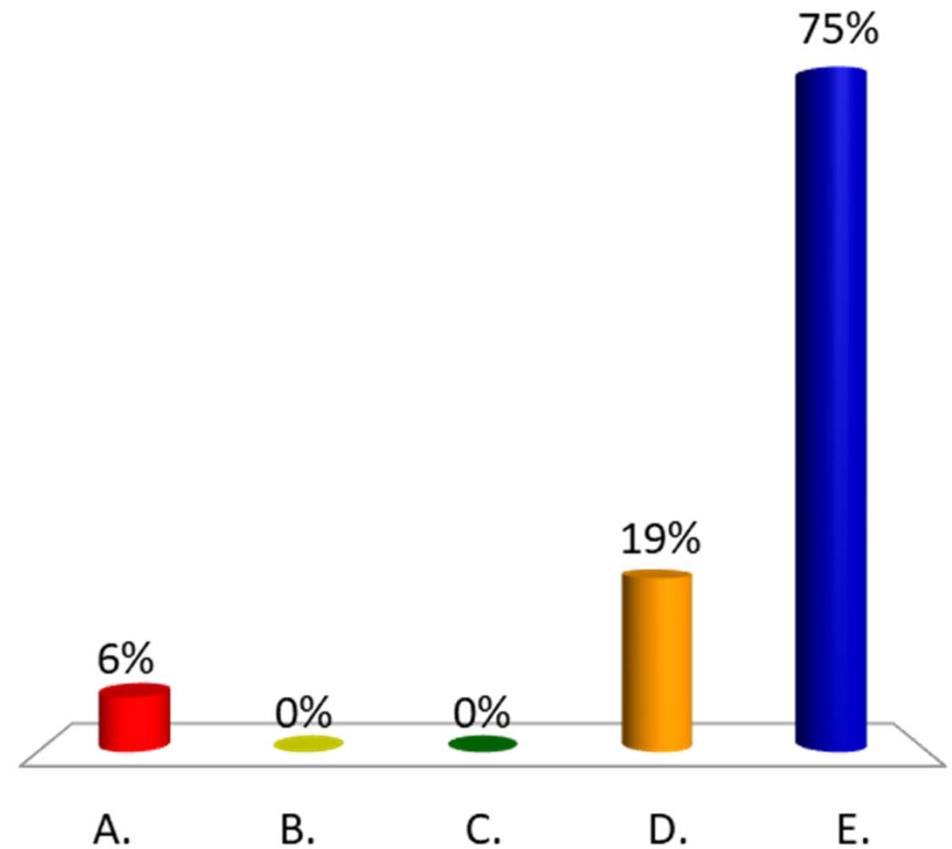
How often do you use this segment of Nebraska Valley Road?

- A. Daily
- B. Weekly
- C. Monthly
- D. Rarely
- E. Never



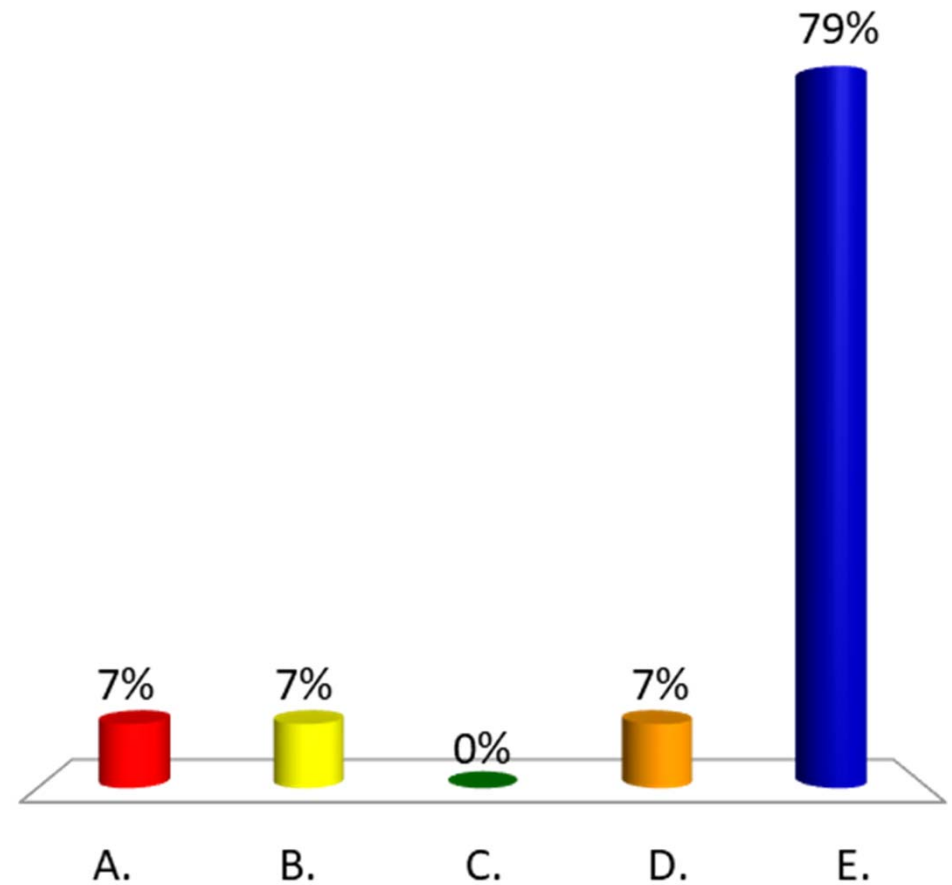
How often do you walk over the bridge?

- A. Daily
- B. Weekly
- C. Monthly
- D. Rarely
- E. Never



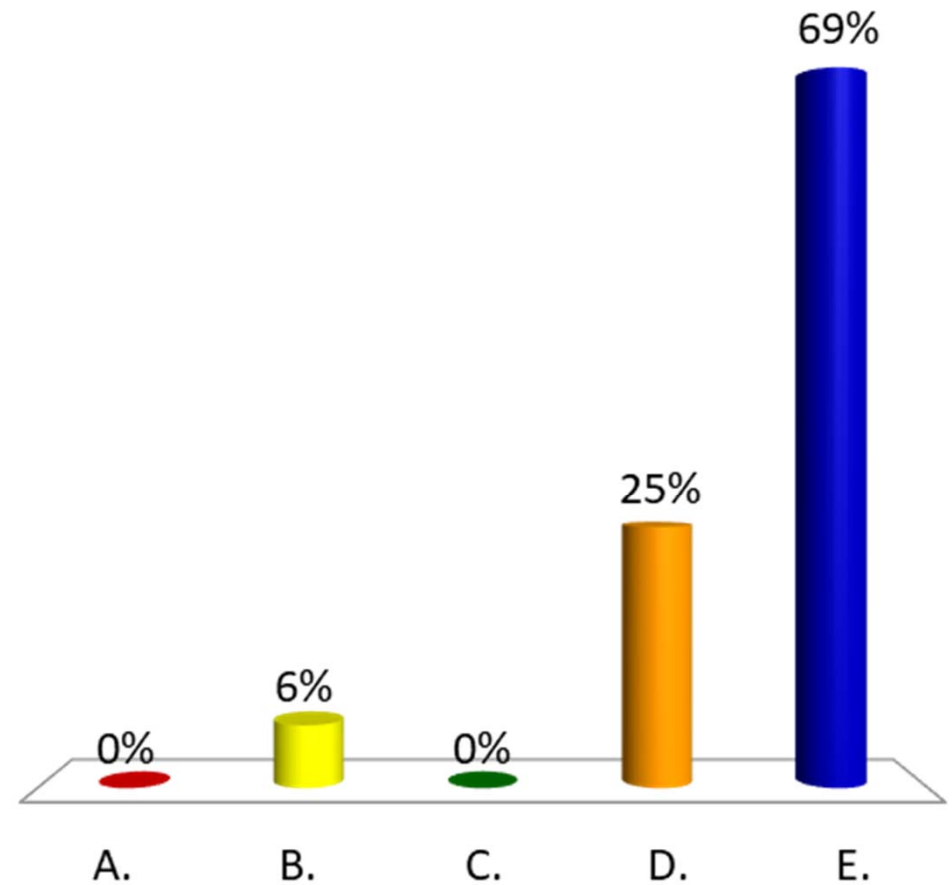
How often do you bike over the bridge?

- A. Daily
- B. Weekly
- C. Monthly
- D. Rarely
- E. Never



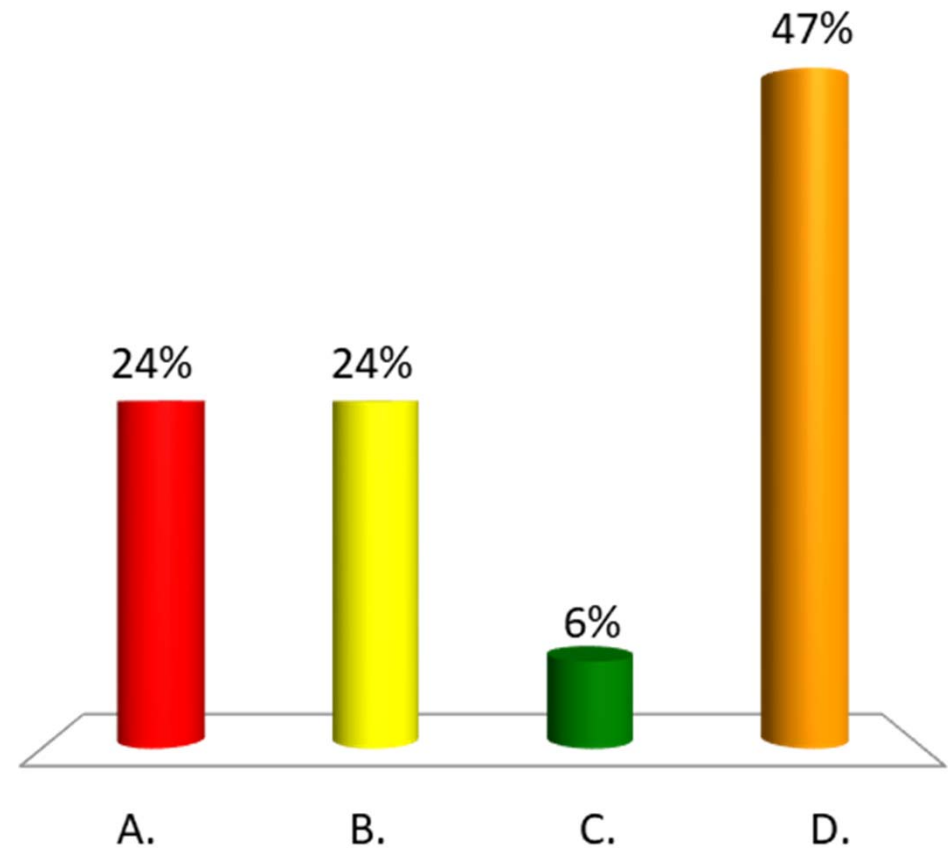
How often do you recreate at the bridge?

- A. Daily
- B. Weekly
- C. Monthly
- D. Rarely
- E. Never



What is your reason for attending this meeting?

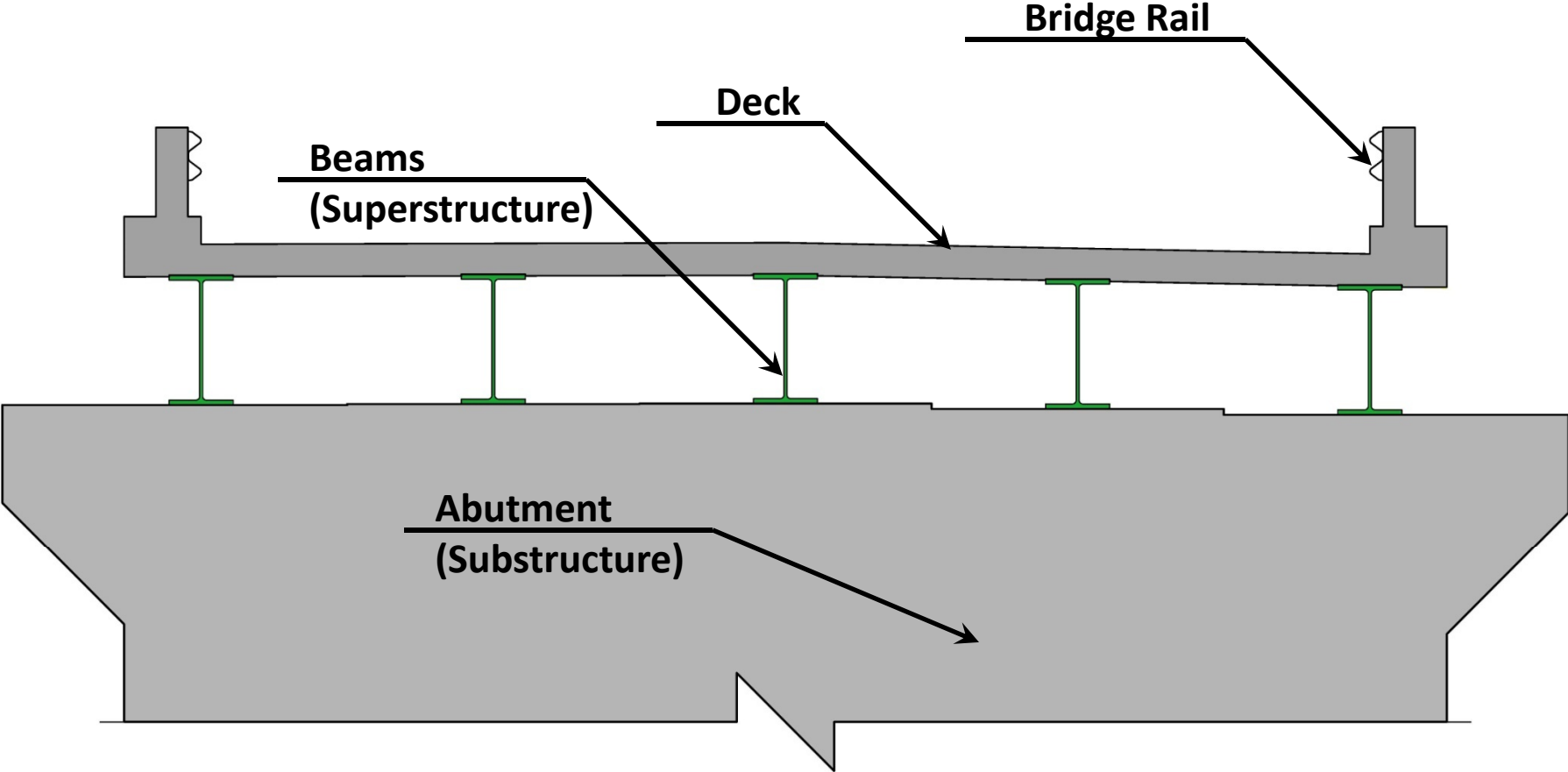
- A. Specific Concern
- B. General Interest
- C. Live in Close Vicinity
- D. Other



Project Overview

- Existing Conditions
- Alternatives Considered
- Recommended Alternative

Description of Terms Used



Cross Section of Bridge

Looking East over Bridge



Existing Conditions – Bridge #51

- Roadway Classification – Local Road (Class 3 TH)
- Bridge Type – 54' Span Rolled Beam Bridge
- Ownership – Town of Stowe 04/20/2016
- Constructed in 1948

Deck & Superstructure Deterioration – Bedrock Outcrop @ Eastern Abutment



Existing Conditions - Bridge #51

- Deck Rating 4 (Poor)
- Superstructure Rating 6 (Satisfactory)
- Substructure Rating 5 (Fair)
- 12-month Inspection Frequency

04/20/2016

Looking West over Bridge



Existing Conditions - Bridge #51

- House located in Northwest Quadrant
- Substandard Bridge Width
- Bridge railing in poor condition and does not meet standard

04/20/2016

Deck Condition

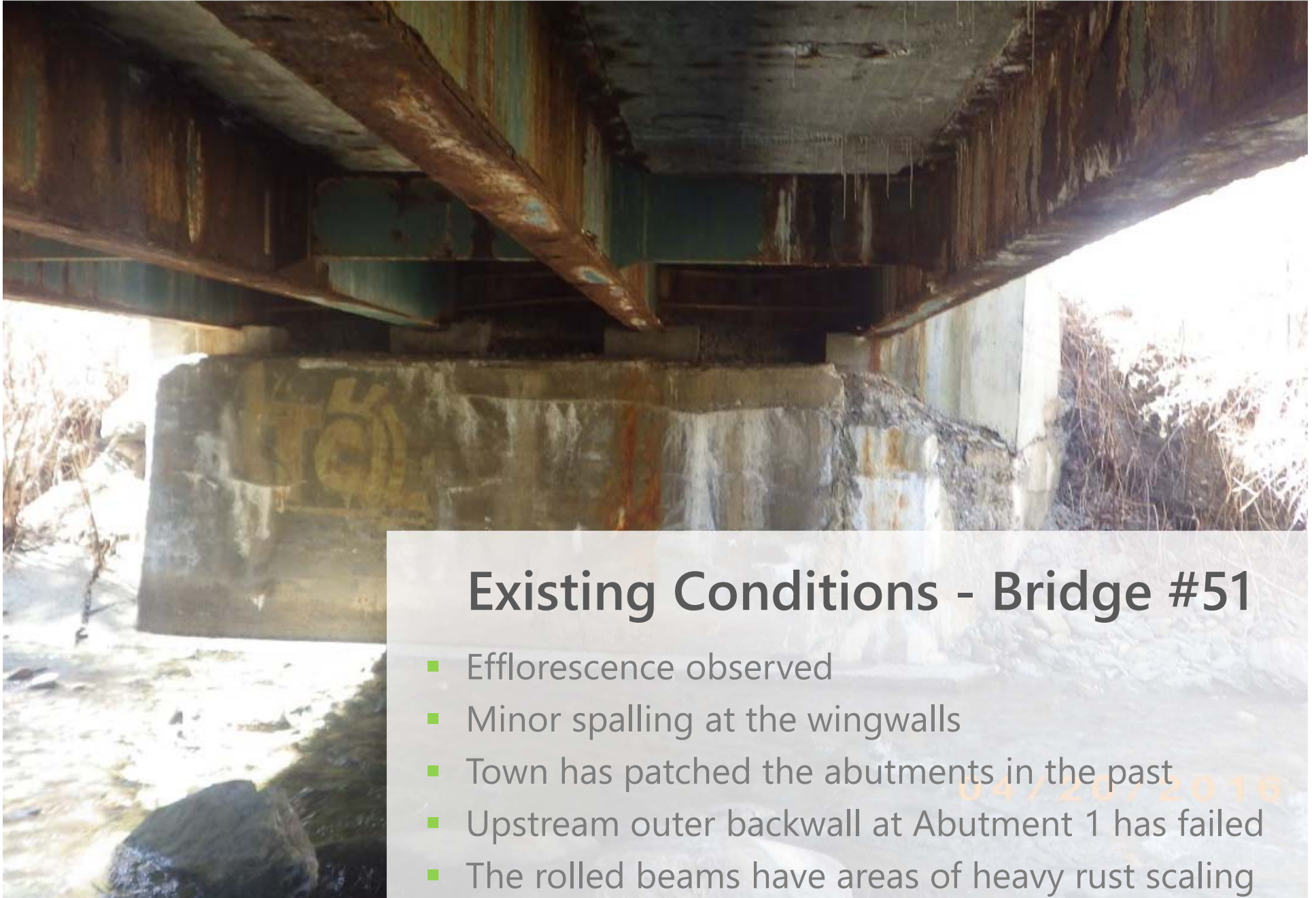


Existing Conditions - Bridge #51

04/11/2017

- At risk for full-depth pop-outs
- Saturated with exposed reinforcing steel and concrete spalling

Western Abutment



Existing Conditions - Bridge #51

- Efflorescence observed
- Minor spalling at the wingwalls
- Town has patched the abutments in the past
- Upstream outer backwall at Abutment 1 has failed
- The rolled beams have areas of heavy rust scaling

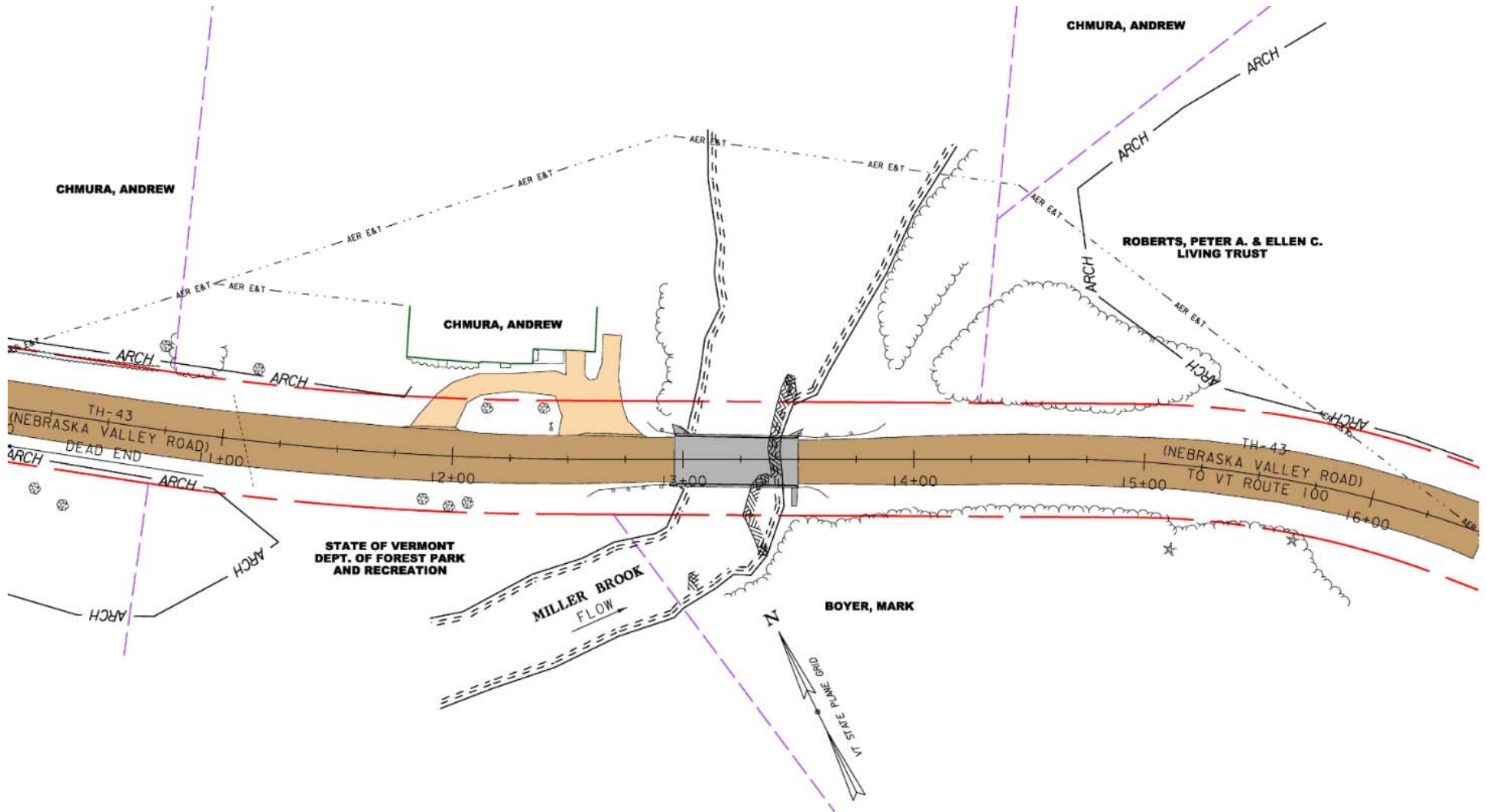
Hydraulics and Environmental Resources



Existing Conditions - Bridge #51

- Northern Long Eared Bat Habitat
- Clear span is within acceptable limits of the required bankfull width
- Archaeologically sensitive areas in 3-quadrants of the project area

Existing Conditions



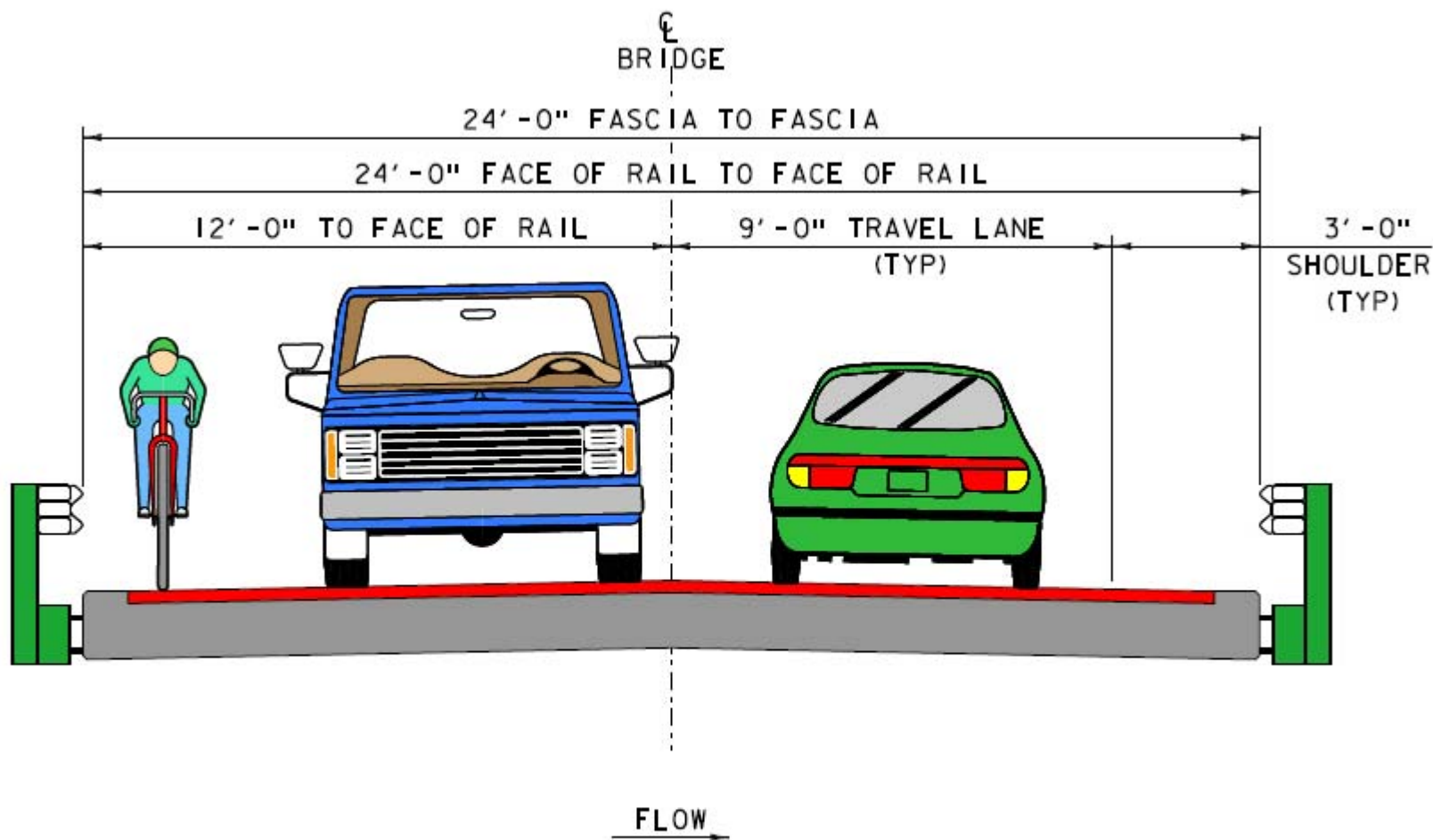
Design Criteria and Considerations

- ADT of 430
- DHV of 60
- % Trucks: 3.4
- Design Speed of 35 mph

Alternatives Considered – Bridge #51

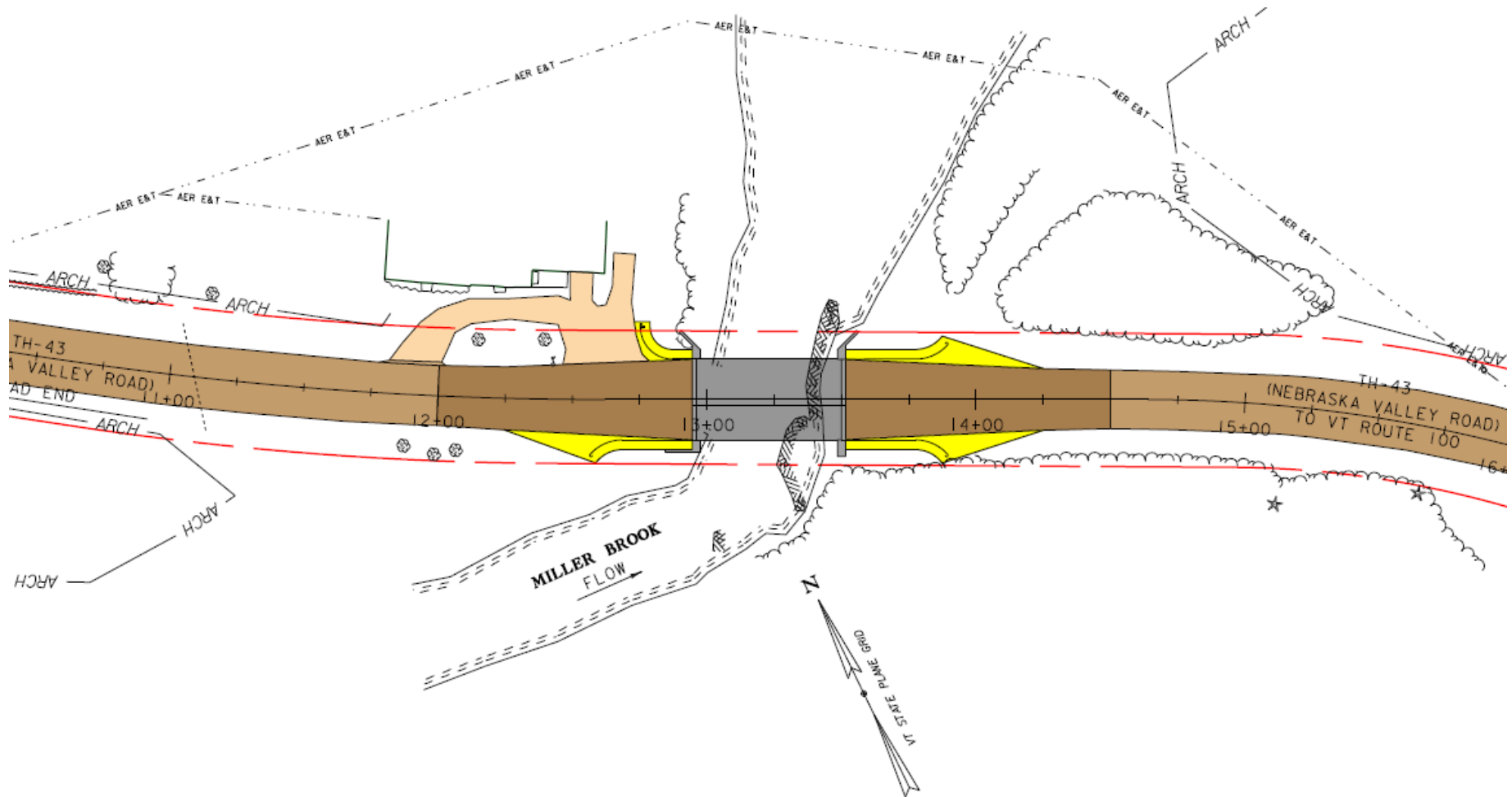
- No Action
 - Additional maintenance required within 10 years
- Deck Replacement
 - Structural deficiencies would be addressed
 - Widen to minimum standard (9'/2')
 - 30 year design life
 - Meets all ANR and hydraulic standards, BFW within acceptable limit
- Superstructure Replacement
 - Structural deficiencies would be addressed as well as beam maintenance issues
 - Widen to minimum standard (9'/2')
 - 30 year design life
 - Meets all ANR and hydraulic standards, BFW within acceptable limit
- Full Bridge Replacement
 - Meets all ANR and hydraulic standards
 - Meets geometric standards
 - 80 year design life

Proposed Typical Section



PROPOSED BRIDGE TYPICAL SECTION

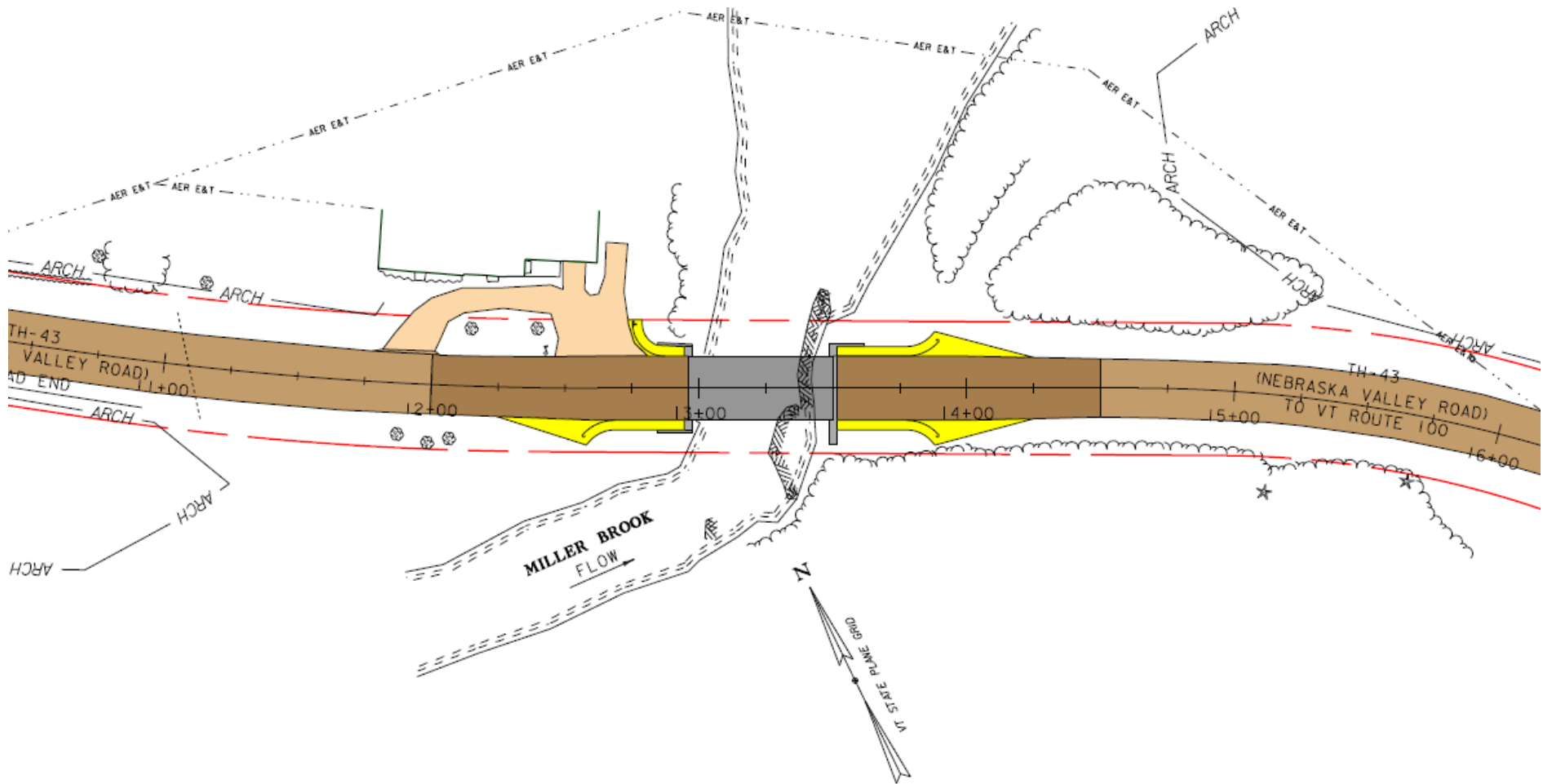
Alternative 3a Layout



Full Replacement On Alignment - Bridge #51

- 10'/5' typical, 80 year design life, **phasing**

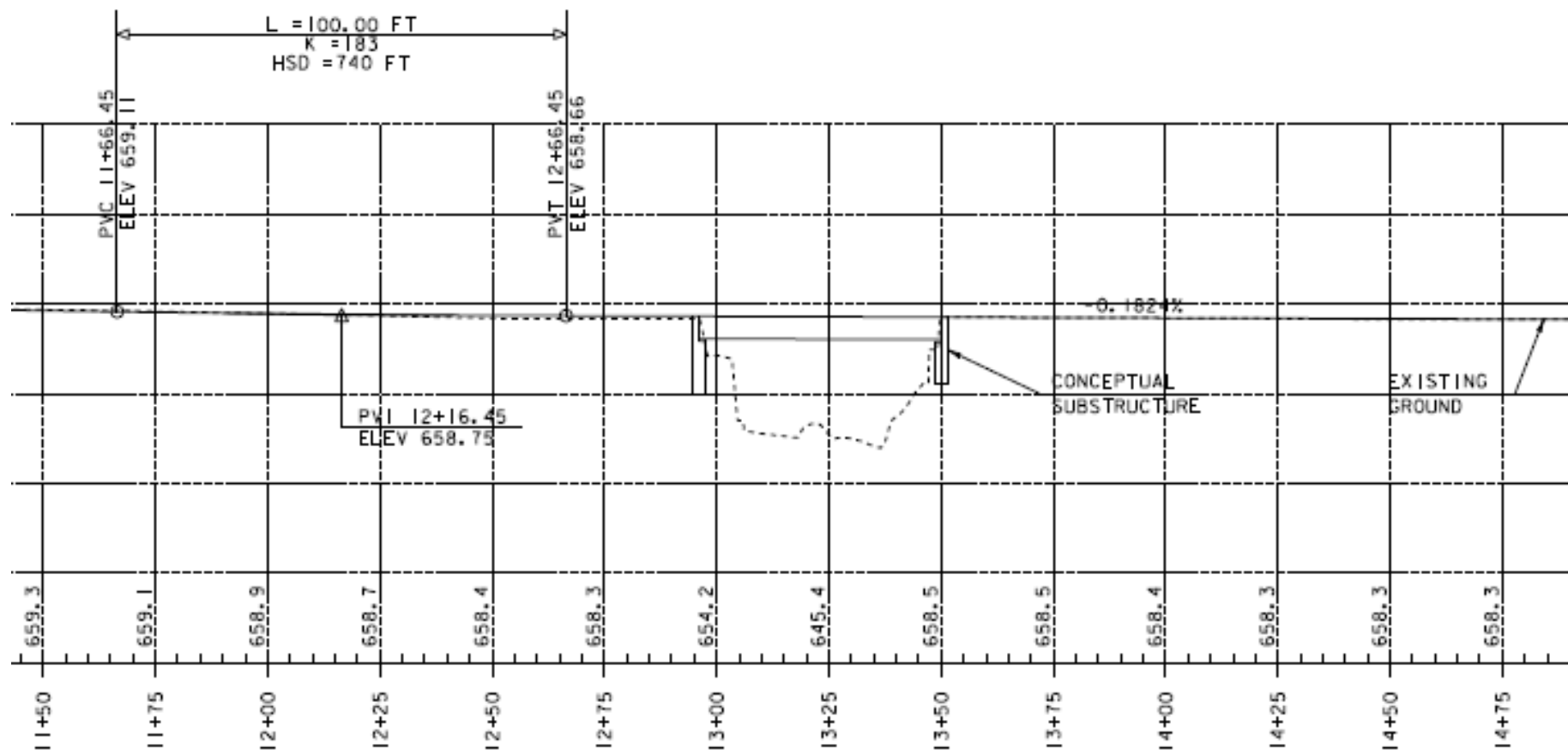
Alternative 3b Layout



Full Replacement On Alignment - Bridge #51

- 9'/3' typical, 80 year design life, **temp bridge**

Proposed Profile



TOWN HIGHWAY 43 PROFILE

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

Recommended Alternative - Bridge #51

- Full Bridge Replacement
 - Maintain existing centerline of road
 - Widen Bridge to 9'/3' typical to match corridor
 - Meets all geometric criteria - <1% slope over the bridge
 - 80 year design life
 - Right-of-Way needed

Maintenance of Traffic Options Considered

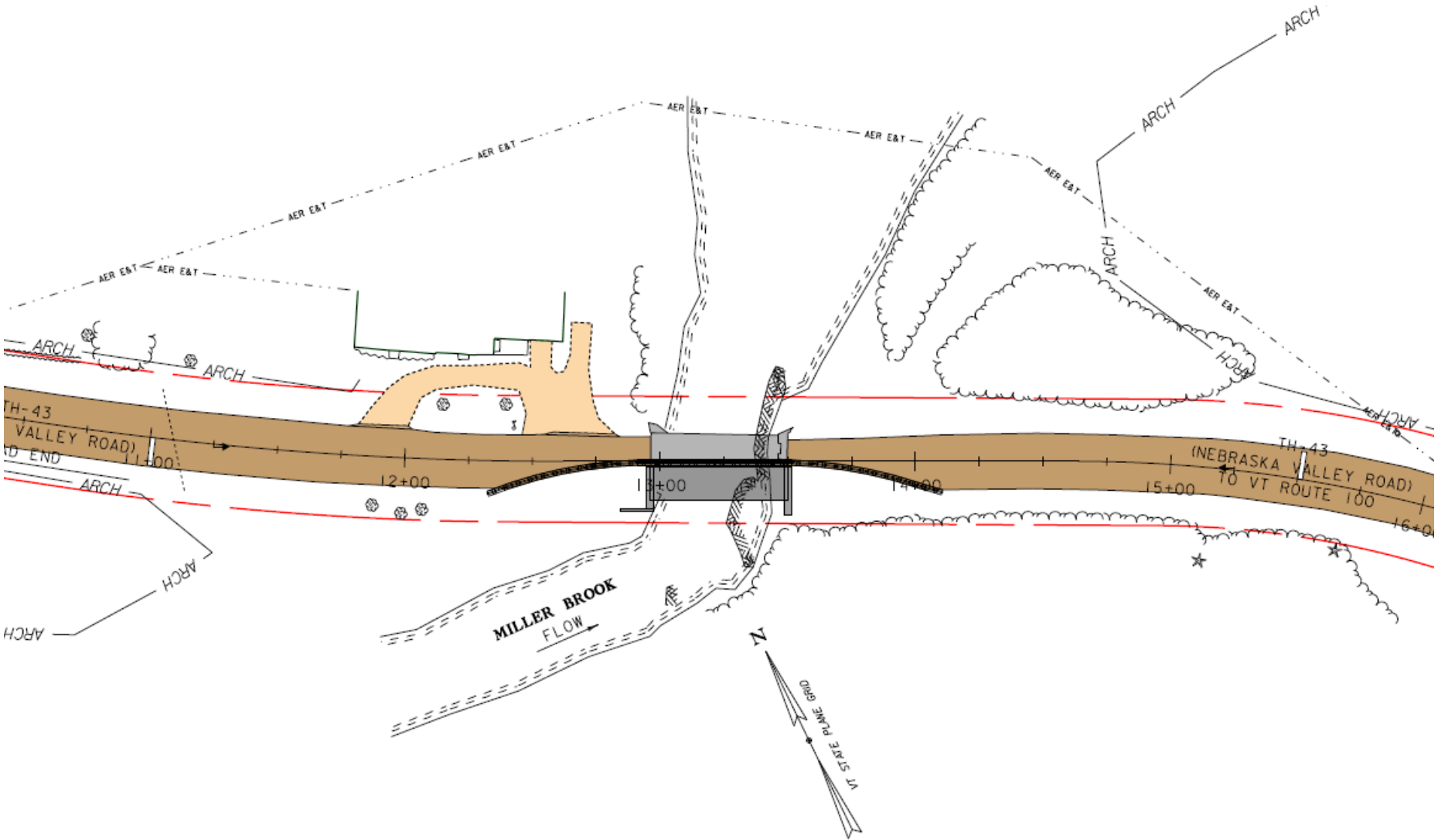
- Phased Construction
- Temporary Bridge



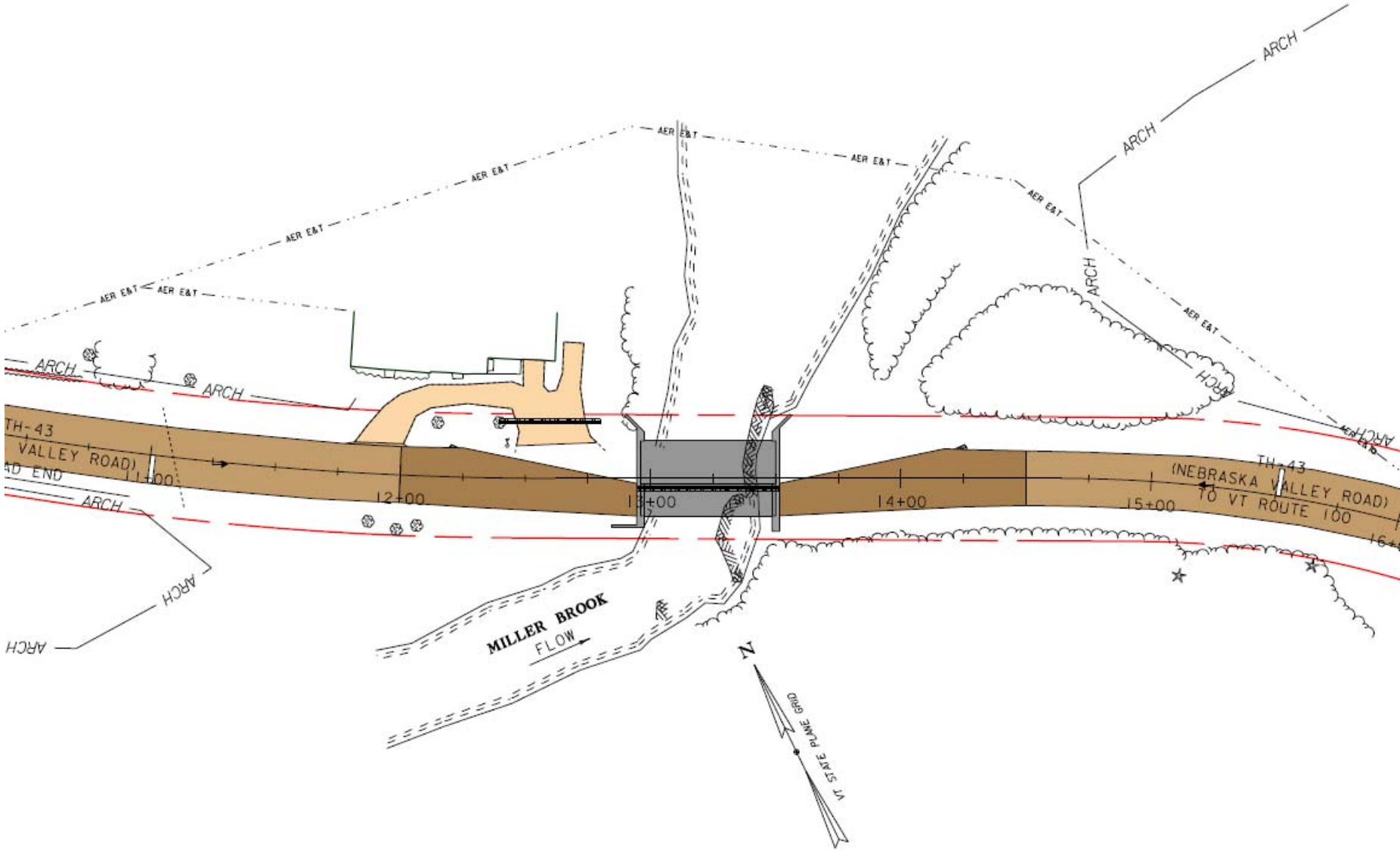
Phased Construction

- 2 Phases with one-lane alternating traffic with Traffic Signal
- New Bridge would be 8-feet wider than minimum standard
- Additional ROW needed

Phase 1 Layout



Phase 2 Layout

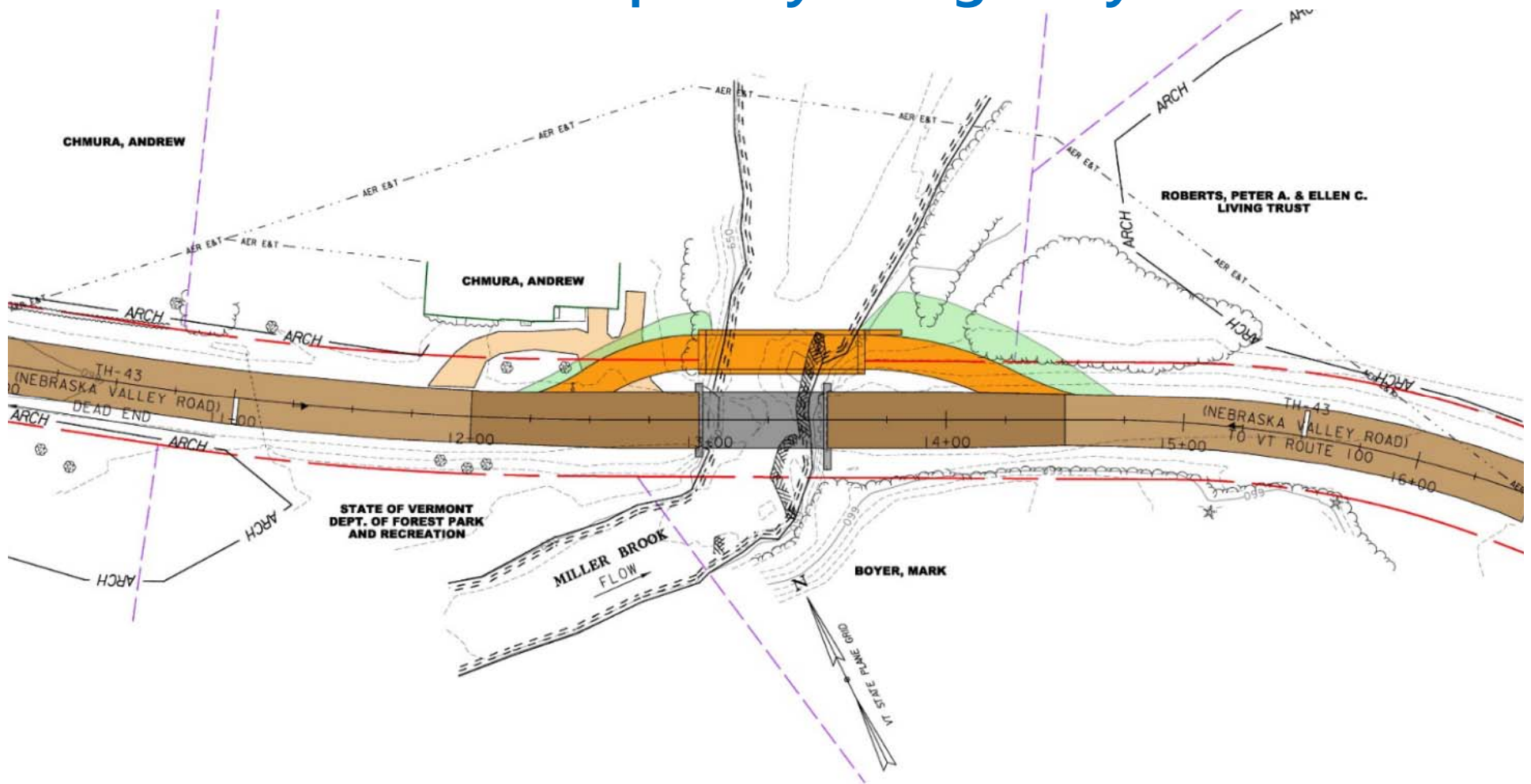




Temporary Bridge

- One Lane Temporary Bridge with Traffic Signal
- Downstream Temporary Bridge recommended for cost and constructability
- Temporary Bridge would require temporary ROW acquisition

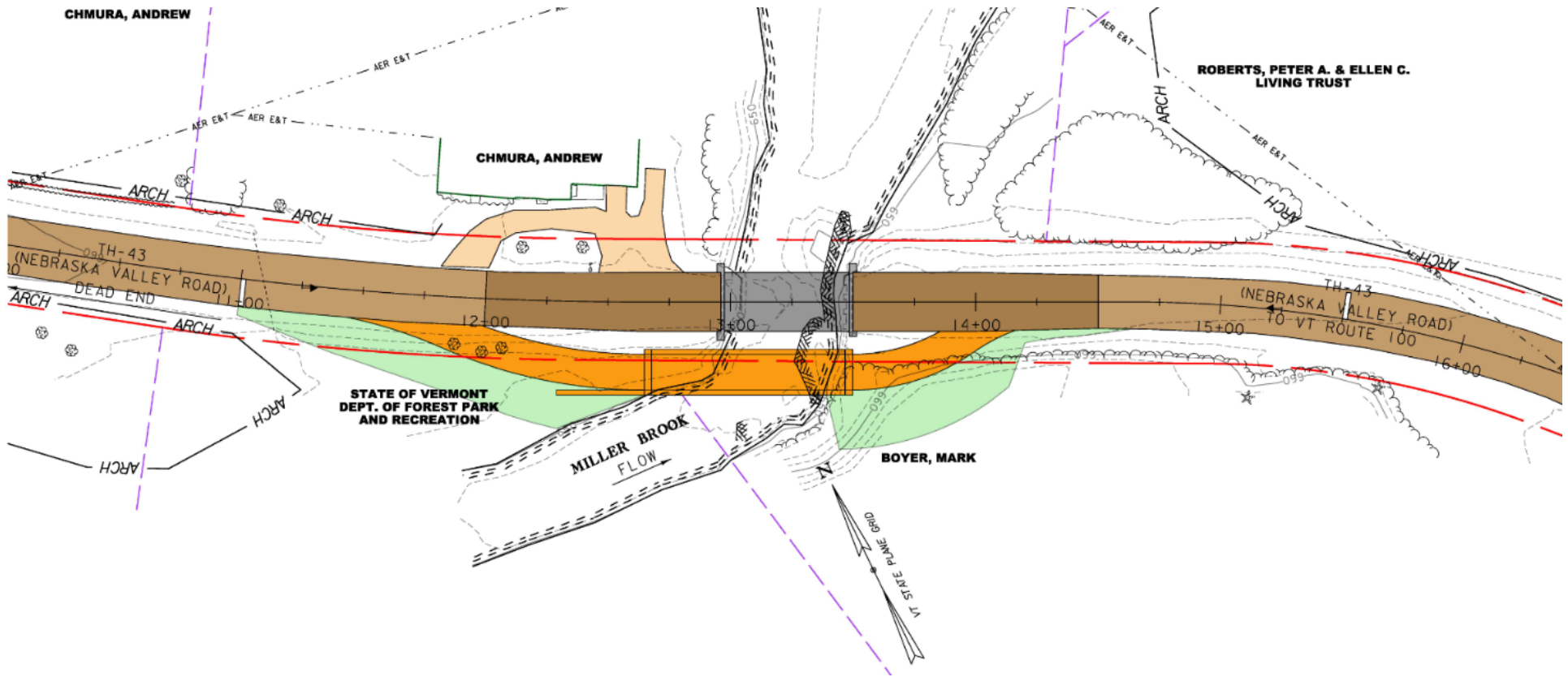
Downstream Temporary Bridge Layout



Temporary Bridge Option - Bridge #51

- Downstream recommended due to constructability
 - Lower cost

Upstream Temporary Bridge Layout



Temporary Bridge Option - Bridge #51

- Upstream temporary has greater impacts and potential impacts to Northern Long Eared Bat Habitat
- Longer Temporary Bridge required, solid rock excavation
 - Estimated to cost an additional \$70,000

Recommended Scope

- Full Bridge Replacement ON Alignment with Traffic Maintained on Temporary Bridge
 - Downstream Temporary Bridge
 - Maintain existing centerline of road
 - Widen Bridge to 9'/3' typical to match corridor and provide bicycle accommodations
 - Exceeds the minimum standard (9'/2')
 - Meets all geometric criteria - <1% slope over the bridge
 - Eastern abutment founded directly on bedrock
 - Western abutment either a semi-integral or on spread footings
 - 80 year design life
 - Construction – Summer 2022
 - Right-of-Way needed
 - Utility relocation not needed

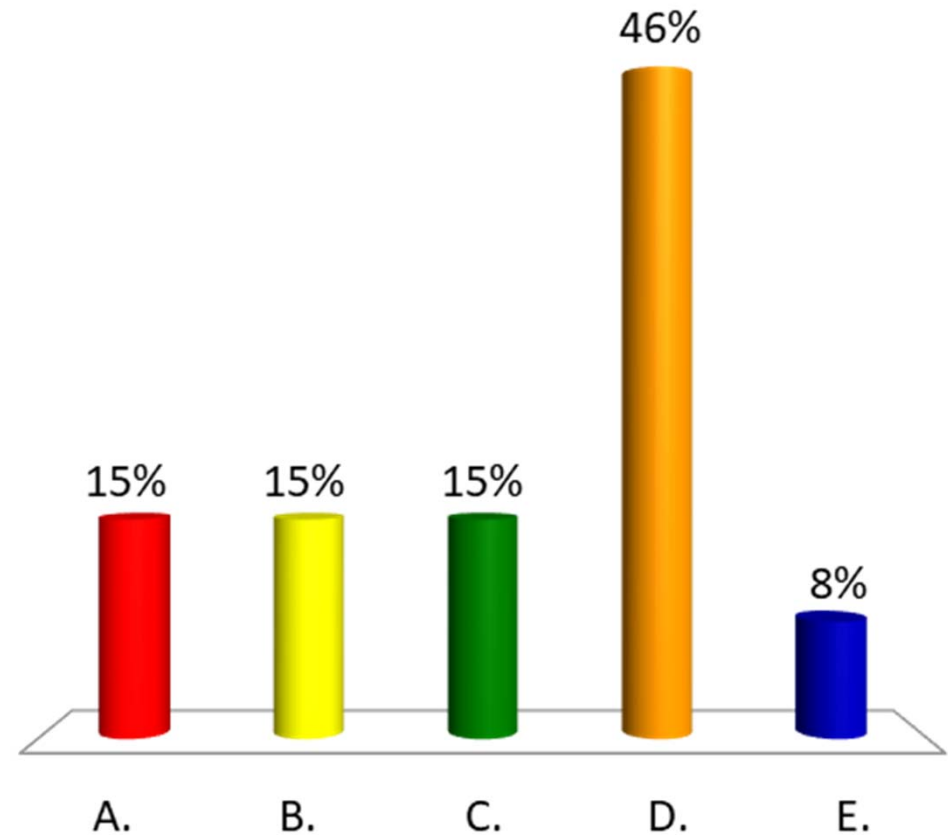
Alternatives Matrix



	Alt 1: Deck Replacement	Alt 2: Superstructure Replacement	Alt 3: Full Bridge Replacement	
Stowe BO 1446(37)	Temporary Bridge	Temporary Bridge	a. Phased Construction (30' Bridge Width)	b. Temporary Bridge (24' Bridge Width)
Total Project Costs (Including E & C)	\$680,754	\$1,077,721	\$2,217,550	\$1,806,347
Town Share	\$34,040	\$53,885	\$221,755	\$180,635
Town %	5%	5%	10%	10%
Project Development Duration	4 years	4 years	4 years	4 years
Construction Duration	18 months	18 months	8 months	18 months
Closure Duration (If Applicable)	N/A	N/A	N/A	N/A
Typical Section - Bridge (feet)	2-9-9-2	2-9-9-2	5-10-10-5	3-9-9-3
Hydraulics	Meets Standard	Meets Standard	Meets Standard	Meets Standard
Utility	No Change	No Change	No Change	No Change
ROW Acquisition	Yes	Yes	Yes	Yes
Design Life (Years)	30	30	80	80

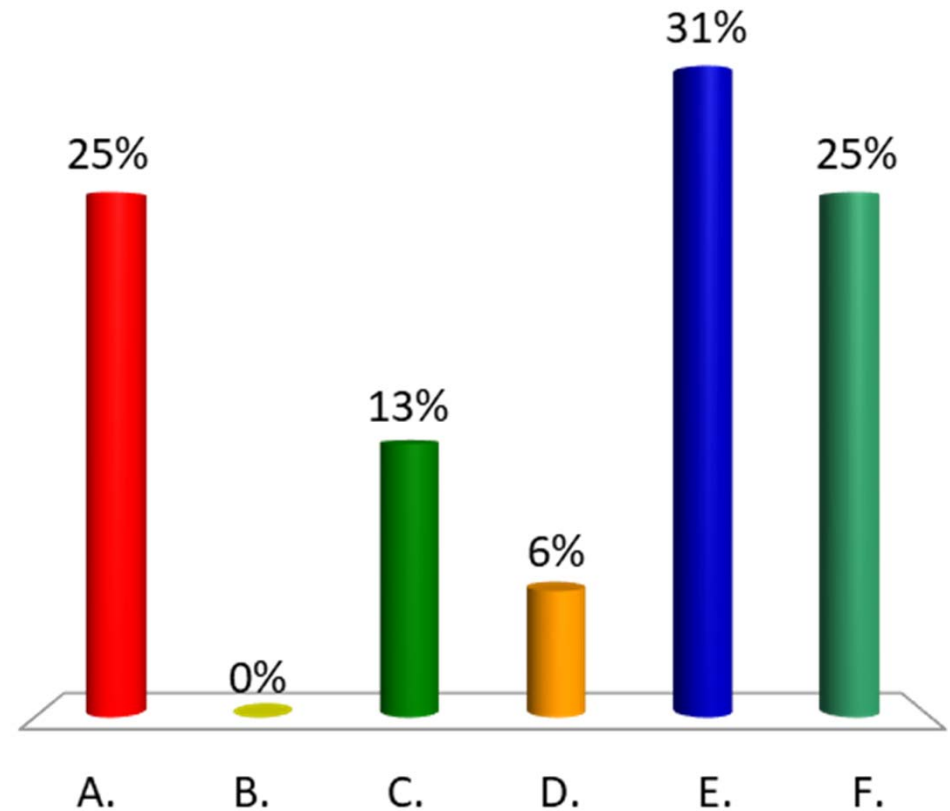
Which would you be most concerned about?

- A. Bridge Aesthetics
- B. Environmental Impacts
- C. Recreational Impacts
- D. Other
- E. Not Really Concerned



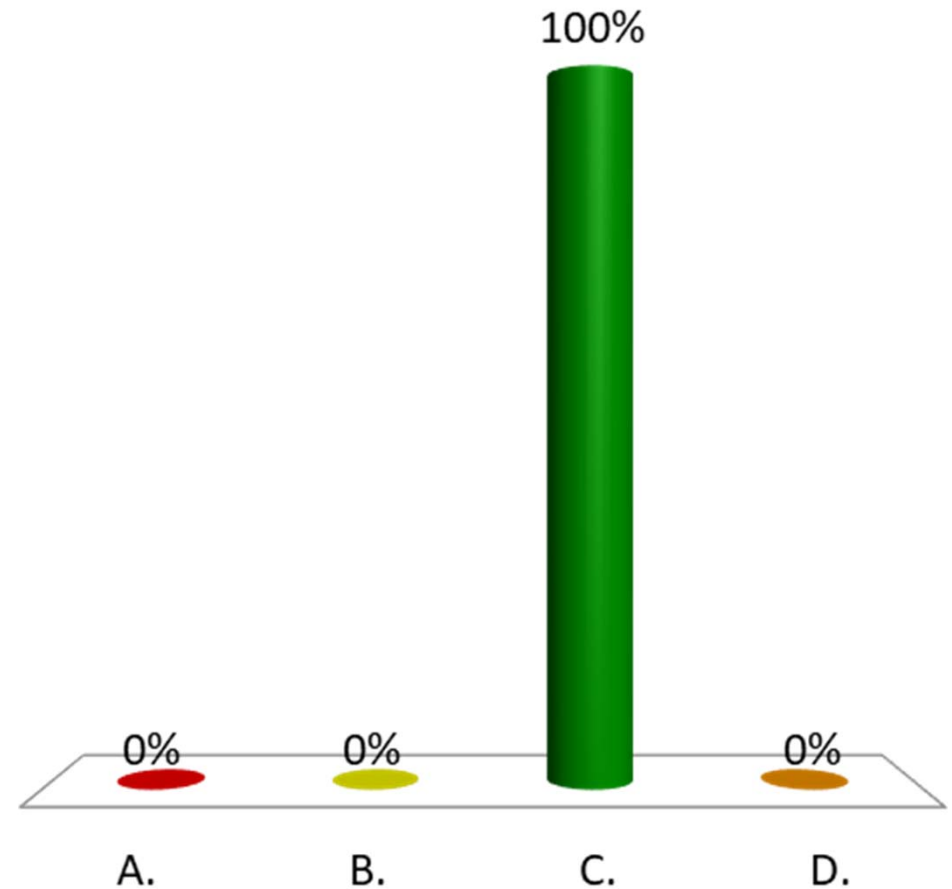
Which design aspect is the most important to you?

- A. Shoulder width/bicycle accommodations
- B. Aesthetics – Bridge Railing
- C. Construction Year
- D. Construction Duration
- E. Cost
- F. Other



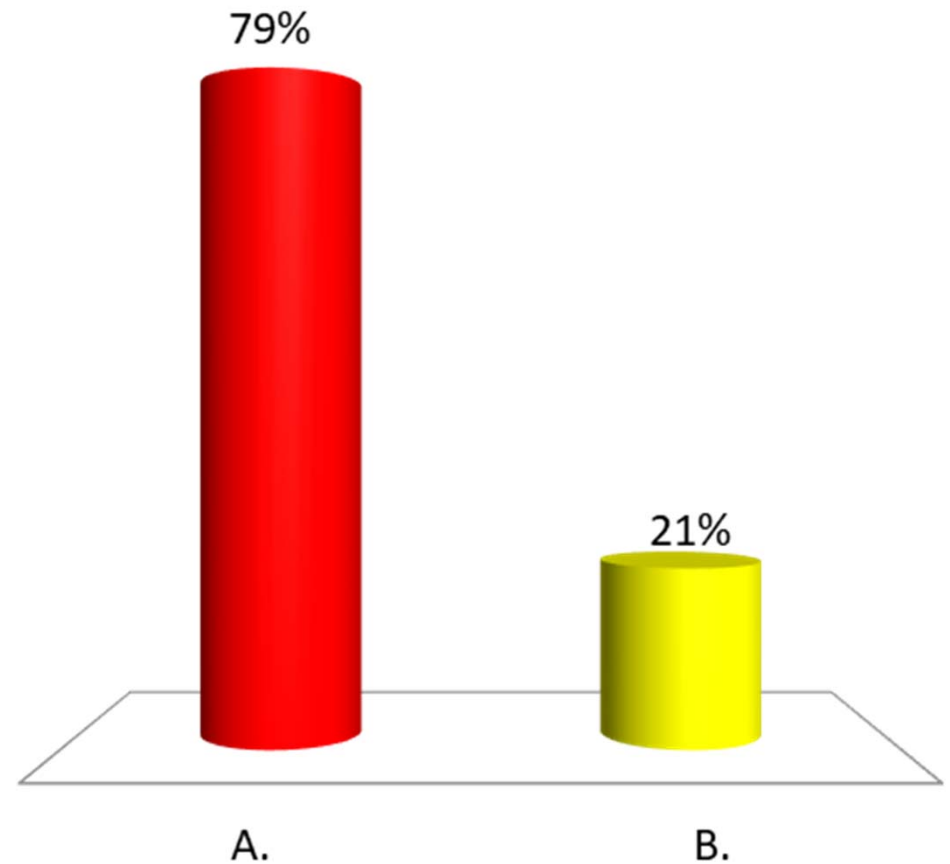
Did you find this presentation to be?

- A. Too technical in nature
- B. Too simplified
- C. Just about right
- D. Not much use at all



Do you find the recommended scope of work satisfactory?

- A. Yes
- B. No



Next Steps – Bridge #51

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/12J660>



Stowe BO 1446(37) Questions and Comments Town Highway 43 – Bridge #51 over Miller Brook

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04/11/2017