

Danby BF 0130(4) Scope Collaboration Meeting FAS Route 130 (TH 1/Brook Road) – Bridge 7 over Mill Brook May 12, 2022

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Introductions

Carolyn Cota, 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





Location Map

Bridge 7 Project Location

Mill Brook no

Brook Rd

Brook Rd

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



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Description of Terms Used





ACT 153 of the 2012 Legislative Session

	Local Share						
	Road Closed	Road Open					
	During	During					
	Construction	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



Looking East over Bridge 7



Existing Conditions – Bridge #7

- Roadway Classification Rural Major Collector
- Bridge Type 40' Span Concrete T-Beam
- Ownership Town of Danby
- Constructed in 1928

06/25/2020

Looking West over Bridge 7



Existing Conditions – Bridge #7

06/25/2020

No utilities

Existing Site Conditions – Bridge #7

- The existing concrete T-beams have patched areas throughout, small pop outs and areas of spalling with exposed reinforcing in the beam ends
- The substructures are in good condition with only some minor abrasion along the base with some small, voided spalls. The is some map cracking in the ends with efflorescence staining.
- The existing bridge width is too narrow for the roadway classification and traffic volumes and does not provide adequate shoulder space for shared use.
- The horizontal and vertical curves through the project area are substandard.
- The bridge does not meet the minimum bank full width requirements.



Bridge Inspection Report Ratings



Existing Conditions - Bridge #7

- Deck Rating
- Superstructure Rating
- Substructure Rating

5 (Fair) 6 (Satisfactory)

7 (Good)

06/25/2020

Eastern Abutment



Western Abutment



T-Beam Deterioration



Upstream Fascia

06/25/2

Resources - View Looking Upstream

Resources – Bridge #7

- Wildlife Habitat within "highest priority" habitat blocks
- Rare, Threatened and Endangered Species (R/T/E)
 - Smooth Green Snake & Wood Turtle
 - Indiana Bat and Northern Long-eared Bat Habitat
- Prime Agricultural Soils.

Existing Conditions



Existing Conditions



FAS ROUTE 130 PROFILE

Design Criteria and Considerations

- Average Daily Traffic
 - 470 vehicles per day
- Design Hourly Volume
 - 75 vehicles per hour
- % Trucks
 - 9.3%



Alternatives Considered – Bridge #7

No Action

- No imminent danger, but will eventually need to be posted for lower traffic loads
- Minor Rehabilitation
 - Deterioration addressed, but not bank full width, substandard hydraulics, or substandard width
 - Bridge seat and substructure repairs
 - 9'/2' typical section
 - 20-year design life
- Superstructure Replacement
 - New deck, railings, and shallow superstructure
 - Substandard BFW
 - Widen to meet minimum standard bridge width (3'-9'-9'-3')
 - 50-year design life
- Full Bridge Replacement (On/Off Alignment)
 - 70' span to meet minimum standard for hydraulics & stream equilibrium
 - Widen to meet minimum standard bridge width (3'-9'-9'-3')
 - 75-year design life



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Alternative 1 Typical Section



Minor Rehabilitation - Bridge #7

• 9' travel lanes with 1'-11" shoulders

Alternative 1 Layout



Minor Rehabilitation - Bridge #7

- Deterioration addressed, but not bank full width, hydraulics, or substandard bridge width
- Bridge seat and substructure repairs
- 20-year design life

Alternative 2 Typical Section





FLOW PROPOSED SUPERSTRUCTURE REPLACEMENT TYPICAL SECTION

Superstructure Replacement - Bridge #7

- Widen to meet minimum standard bridge width (3'-9'-9'-3')

Alternative 2 Layout



Superstructure Replacement - Bridge #7

- New deck, railings, and shallow superstructure
- 50-year design life

Alternative 3 Typical Section







Full Bridge Replacement - Bridge #7

- Widen to meet minimum standard bridge width (3'-9'-9'-3')



Full Bridge Replacement - Bridge #7

- 70' span for improved hydraulics & stream equilibrium
- 75-year design life

Alternative 3 Layout





Full Bridge Replacement (Off Align) - Bridge #7

- 70' span for improved hydraulics & stream equilibrium
- Widen to meet minimum standard bridge width (3'-9'-9'-3')
- 75-year design life

Recommended Alternative - Bridge #7

- Superstructure Replacement
 - -Addresses deteriorating condition of the T-beams.
 - Existing T-beams replaced with a shallow superstructure type, such as solid slabs to improve freeboard for hydraulics.
 - Bridge typical section widened 2-feet to meet the minimum standard for width
 - 9'/3' typical
 - 50-year design life



Maintenance of Traffic Options Considered

- Offsite Detour
- Temporary Bridge
- Phased Construction



Road Closure

- Detour chosen and signed by Town
- 60-day duration
- Shortest Detour Route is 3.0 miles end-to-end
- Truck traffic concerns?

Traffic Control – Detour 1

 Detour Route: Brook Road (FAS 130/TH 1), to Bromley Road and Easy Street, back to Brook Road (3.0 mi end-toend)

- Detour Distance: 2.1 miles
- Thru Route: 0.9 miles
- End-to-End Distance: 3.0 miles
- Added Distance: 1.2 miles



Traffic Control – Detour 2

 Detour Route: Brook Road (FAS 130/TH 1), to Colvin Hill Road and Danby Hill Road, back to Brook Road (3.4 mi end-to-end)

- Detour Distance: 1.8 miles
- Thru Route: 1.6 miles
- End-to-End Distance: 3.4 miles
- Added Distance: 0.2 miles



Phased Construction

- Y 1

 Road too narrow for phased construction



Temporary Bridge

 One Lane Temporary Bridge constructed either Upstream or Downstream side of Brook Road



Downstream Temporary Bridge Layout



Recommendation - Bridge #7

- Superstructure replacement while maintaining traffic on an offsite detour
 - 60-day Bridge Closure
 - Accommodations for trucks?
 - -Addresses deteriorating condition of the T-beams.
 - Existing T-beams replaced with a shallow superstructure type, such as solid slabs to improve freeboard for hydraulics.
 - Bridge typical section widened 2-feet to meet the minimum standard for width
 - 9'/3' typical
 - 50-year design life
 - -Additional Right-of-Way needed
 - Construction year: 2025



Alternatives Matrix

Danby BF 0130(4)	Do Nothing	Alt 1a	Alt 2a	Alt 2b	Alt 3a	Alt 3b	Alt 4a	Alt 4b
		Minor Rehabilitation	Superstructure	Replacement	Full Bridge Replacement On- Alignment		Full Bridge Replacement Off- Alignment	
		Temporary Lane Closures	a. Offsite Detour	b. Temporary Bridge	a. Offsite Detour	b. Temporary Bridge	a. Offsite Detour	b. Temporary Bridge
Total Project Costs	\$0	1,301,277	1,526,243	1,852,509	3,140,950	3,692,613	4,604,705	5,549,708
Annualized Costs	\$0	65,064	30,525	37,050	41,879	49,235	61,396	73,996
Town Share		32,532	38,156	92,625	157,048	369,261	230,235	554,971
		5%	2.50%	5%	5%	10%	5%	10%
Project Development Duration	NA	3 Years	3 Years	4 Years	4 years	4 years	4 years	4 Years
Construction Duration	NA	3 months	4 months	18 months	6 months	18 months	6 months	18 months
Closure Duration (If Applicable)	NA	NA	60 days	NA	Construction Season	NA	Construction Season	NA
Typical Section - Roadway (feet)	20	20	22	22	22	22	22	22
Typical Section - Bridge (feet)	9/2 (22)	9/2 (22)	9/3 (24)	9/3 (24)	9/3 (24)	9/3 (24)	9/3 (24)	9/3 (24)
Geometric Design Criteria	Substandard horizontal and vertical alignment	Substandard horizontal and vertical alignment	Meets minimum standards	Meets minimum standards				
Alignment Change	No Change	No	No	No	No	No	Yes	Yes
Bicycle Access	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
Pedestrian Access	No Change	No Change	Improved	Improved	Improved	Improved	Improved	Improved
Hydraulics	Substandard Hydraulics and BFW	Substandard Hydraulics and BFW	Substandard BFW	Substandard BFW	Meets minimum standards	Meets minimum standards	Meets minimum standards	Meets minimum standards
ROW Acquisition	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Road Closure	No	No	Yes	No	Yes	No	Yes	No
Design Life	10	20	50	50	75	75	75	75

Preliminary Project Schedule

- Construction Start 2025
 - Total Cost Estimate: \$1,530,000
 - Town Share: \$38,000 (2.5% share)



Next Steps – Bridge #7

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/12J618



Danby BF 0130(4) **Questions and Comments** Questions and Commence of the Commence of the

May 12, 2022

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