

WE12 - Worcester Elmore VT Route 12 Public Informational Meeting VT Route 12 - Worcester Bridges #84, 87, & 89

February 1, 2021



Introductions

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Purpose of Meeting

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



Meeting Overview

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



VTrans Project Development Process





Location Map

- ELMORE BF 0241(55) 19B212, VT Route 12, Bridge 94 over unnamed brook.
- ELMORE STP CULV(64) 18B003, VT Route 12, Bridge 90 over unnamed brook.
- WORCESTER BF 0241(56) 19B213, VT Route 12, Bridge 87 over Hardwood brook.
- WORCESTER BF 0241(57) 19B214, VT Route 12, Bridge 89 over North brook.
- WORCESTER BF 0241(59) 86E053, VT Route 12, Bridge 84 over the north branch of Winooski river



Design Criteria and Considerations

- Average Daily Traffic
 - 1,700 vehicles per day (Bridge 84)
 - 1,200 vehicles per day (Bridge 87 and Bridge 89)
- Design Hourly Volume
 - 260 vehicles per hour (Bridge 84)
 - 180 vehicles per hour (Bridge 87 and Bridge 89)
- % Trucks
 - 8.8%





Worcester BF 0241(59) VT Route 12– Bridge #84 over the North Branch of Winooski River





Looking North over Bridge 84



- Roadway Classification Major Collector
- Bridge Type Single Span Rolled Beam Bridge
- Bridge Length 84 feet
- Ownership State of Vermont
- Constructed in 1936

Looking South over Bridge 84



- Aerial Utilities
- Narrow Bridge
 - Existing Typical Section: 10'/0'
 - Standard Typical: 10'/4'
 - Corridor Typical: 11'/4'

- The deck is in poor condition.
 - widespread rust staining, concrete scaling, saturation leakage and efflorescence leakage.
 - Localized large spalls
 - Multiple patches, potholes, depressions and cracking in wearing surface above
- The superstructure is in satisfactory condition
 - Rolled beams paint failure with paint starting to peel, flake and bubble.
- The substructures are in satisfactory condition
 - Backwalls have areas of concrete scaling with heavy efflorescence leakage present
 - The southern abutment has a full height vertical crack.
- VT Route 12 through the project area and over the bridge is substandard in width by 8 feet.



Condition Ratings

Existing Conditions - Bridge #84

- Deck Rating
- Superstructure Rating
- Substructure Rating
- Channel Rating

4 (poor) 6 (satisfactory) 6 (satisfactory) 8 (very good)

Southern Abutment



Resources – Looking Downstream



- Northern Long-Eared Bat
- Wetlands
- Wildlife Habitat

- Archaeological Resources
 - Old Sawmill Foundation
- Primary agricultural soils



Local Concerns

- The Town has indicated that there is a heavy amount of pedestrian traffic and bicycle traffic over the bridge.
- The Town feels that the bridge is too narrow and that the narrow width is an issue.



Alternatives Considered – Bridge #84

- No Action
 - Additional maintenance required within 10 years
- Minor Rehabilitation
 - Concrete Repairs, New Bridge Joints
 - Narrow Bridge
 - 10'/0' typical
 - 15-year design life
- Deck Replacement
 - 10'/2' typical
 - 40-year design life
- Superstructure Replacement
 - 10'/3' typical
 - 40-year design life
- Full Bridge Replacement
 - Approximate 90-foot Span
 - 11'/4' typical
 - 75-year design life



Selected Alternative - Bridge #84

- Full Bridge Replacement
 - Substructures founded on exposed bedrock
 - Minimum 66' clearspan per hydraulics recommendation
 - Approximate 90' span
 - Widen to 11'/4' typical to match the corridor
 - Paved width is widened by 10'
 - 75-year design life





Proposed Typical Section



PROPOSED VT ROUTE 12 TYPICAL SECTION









- 11'/4' typical, 75-year design life
- Approximate 90' Span
- Founded on exposed bedrock



Proposed Profile



Maintenance of Traffic Options Considered

- Offsite Detour
- Phased Construction
- Temporary Bridge



Temporary Bridge

 One Lane Temporary Bridge constructed on Upstream side of VT Route 12



- Limits outside the Right-of-Way
- Avoids structure and house in the NE quadrant
- Avoids aerial utilities located on downstream side

Preliminary Project Schedule

- Construction Start Summer 2024
 - Total Cost Estimate: \$2,400,000



Project Summary: Bridge 84

- Full Bridge Replacement with Traffic Maintained on an Upstream Temporary Bridge
 - Substructures founded on exposed bedrock
 - Approximate 90' span
 - Meets minimum 66' clearspan per hydraulics recommendation
 - Widen to 11'/4' typical to match corridor
 - Paved width is widened by 10'
 - 75-year design life



For more information:

https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/86E053



Worcester BF 0241(59) Questions and Comments VT Route 12– Bridge #84 over the North Branch of Winooski River

AGENCY OF TRANSPORTATION



Worcester BF 0241(56) VT Route 12 – Bridge #87 over Hardwood Brook





Looking North over Bridge 87



- Roadway Classification Major Collector
- Bridge Type 14' Span CGMPPA (Corrugated Galvanized Metal Plate Pipe Arch)
- Culvert Length 96 feet
- Fill Over Culvert 6 feet
- Ownership State of Vermont
- Constructed in 1961

Looking South over Bridge 87



Existing Conditions – Bridge #87

Aerial Utilities

- The culvert is in fair condition
 - Barrel: On the outlet end, there is a large hole at the water line.
 - Invert: The invert of the culvert has deep pitting and heavy rust scaling in random spots. It is expected that holes will start to form in the near future.
- The existing culvert does not meet the calculated or measured bank full width. There is a large scour hole at the outlet, indicative of an undersized structure.








Debris Jams After Large Storm Events



Resources – Looking Downstream



Existing Conditions – Bridge #87

- Wetlands At Inlet and Outlet
- Primary agricultural soils
- Wildlife Habitat
- Northern Long-Eared Bat
- Large Scour Hole at Outlet

- Historic Resources (Representative samples of the milling industry that was once prevalent in the area)
 - Residence at 980 Elmore Road
 - Residence at 962 Elmore Road



Alternatives Considered – Bridge #87

- No Action
 - Additional maintenance required within 10 years
- Culvert Rehabilitation
 - Invert Repair, Slip Liner, or Spray-on Liner
 - Further reduces substandard BFW not ideal for wildlife crossing potential
 - 11'/4' typical
 - 20 to 40-year design life
- New Precast 3-Sided Frame or Box Culvert
 - 19' x 7' minimum waterway opening meets minimum BFW requirements
 - 11'/4' typical
 - 75-year design life
- New Bridge
 - Approximate 35-foot Span (90' if integral abutment)
 - 11'/4' typical
 - Increased future maintenance costs
 - 75-year design life



Selected Alternative - Bridge #87

- Culvert Replacement with a New Buried Structure
 - Precast Concrete Box
 - Contingent on borings
 - Minimum 19' x 10' box with Type E3 Stone
 - 19' x 7' waterway opening
 - 87' Culvert Length
 - 11'/4' typical to match existing conditions
 - Exceeds the 11'/3' standard typical section
 - 75-year design life





Proposed Typical Section







Proposed Layout



New Buried Structure, Precast Box - Bridge #87

- 11'/4' typical, 75-year design life
- 19' x 7' waterway opening
- 87' Culvert Length



Proposed Profile



New Buried Structure, Precast Box - Bridge #87

Match existing vertical curve

Maintenance of Traffic Options Considered

- Offsite Detour
- Phased Construction
- Temporary Bridge



Temporary Bridge

 One Lane Temporary Bridge constructed on Downstream side of VT Route 12

Downstream Temporary Bridge Layout 327+00 329+00 330+00 32840 D 185-311 **Downstream Temporary Bridge**

- Aerial utilities impacted
- Wetland area impacted
- Limits outside the Right-of-Way
- Large Scour Hole at outlet to span
- Avoids S1 plant species only known population in VT

Preliminary Project Schedule

- Construction Start Summer 2024
 - Total Cost Estimate: \$2,200,000



Project Summary: Bridge 87

- Culvert Replacement with a New Buried Structure with Traffic Maintained on a Downstream Temporary Bridge
 - Precast Concrete Box
 - Contingent on borings
 - 19' x 10' box with Type E3 Stone
 - 19' x 7' waterway opening
 - 87' Culvert Length
 - 11'/4' typical to match existing conditions
 - Exceeds the 11'/3' standard typical section
 - 75-year design life
 - Structure type contingent on borings



For more information:

https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/19B213



Worcester BF 0241(56) Questions and Comments VT Route 12 – Bridge #87 over Hardwood Brook





Worcester BF 0241(57) Scope Collaboration Meeting VT Route 12 – Bridge #89 over North Brook





Looking North over Bridge 89

Existing Conditions – Bridge #89

- Roadway Classification Major Collector
- Bridge Type 15' Span CGMPP (Corrugated Galvanized Metal Plate Pipe)
- Culvert Length 172 feet
- Fill Over Culvert 3 feet
- Ownership State of Vermont
- Constructed in 1964

Looking South over Bridge 89



Existing Conditions – Bridge #89

- The culvert is in fair condition
 - The invert has some holes and undermining has started at the outlet.
- The existing culvert does not meet the calculated or measured bank full width.



Condition Ratings

Existing Conditions - Bridge #89

5 (Fair)

Culvert Rating





Resources – Looking Downstream



Existing Conditions – Bridge #89

- Wildlife Habitat
- Northern Long-Eared Bat
- Large Scour Hole at Outlet

Existing Conditions



Alternatives Considered – Bridge #89

- No Action
 - Additional maintenance required within 10 years
- Culvert Rehabilitation
 - Invert Repair, Slip Liner, or Spray-on Liner
 - Further reduces substandard BFW not ideal for wildlife crossing potential
 - 11'/4' typical
 - 20 to 40-year design life
- New Precast 3-Sided Frame
 - 42' x 7.75' waterway opening meets minimum BFW requirements
 - 11'/4' typical
 - 75-year design life
- New Bridge
 - Approximate 100-foot Span
 - 11'/4' typical
 - Increased future maintenance costs
 - 75-year design life



Selected Alternative - Bridge #89

- Culvert Replacement with a New Bridge
 - Structure type contingent on borings
 - Approximate 100' Span
 - 11'/4' typical to match existing conditions
 - Exceeds the 11'/3' standard typical section
 - 75-year design life





Proposed Typical Section







_FLOW PROPOSED BRIDGE TYPICAL SECTION



Proposed Layout



• 75-year design life



Proposed Profile



Maintenance of Traffic Options Considered

- Offsite Detour
- Phased Construction
- Temporary Bridge



Temporary Bridge

 One Lane Temporary Bridge constructed on Upstream side of VT Route 12

Upstream Temporary Bridge Layout



Upstream Temporary Bridge

Limits outside the Right-of-Way

Preliminary Project Schedule

- Construction Start Summer 2024
 - Total Cost Estimate: \$3,100,000



Project Summary: Bridge 89

- Culvert Replacement with a New Bridge and Traffic Maintained on a Temporary Bridge
 - One Lane Alternating Traffic Maintained
 - Potential for phased construction pending geotechnical data
 - Structure type contingent on borings
 - Approximate 100' Span
 - 11'/4' typical to match existing conditions
 - Exceeds the 11'/3' standard typical section
 - 75-year design life
 - Right-of-Way may be needed for placement of a temporary bridge





Worcester BF 0241(57) Questions and Comments VT Route 12 – Bridge #89 over North Brook





WE12 - Worcester Elmore VT Route 12 Questions and Comments VT Route 12 - Worcester Bridges #84, 87, & 89

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