

# RFP Benedict Crossing Bridge Engineering

Town of Arlington Select Board

Request For Proposals

Benedict Crossing Reconstruction

The Arlington Select Board seeks proposals to provide for a scoping study to recommend preferred alternatives to address the failed superstructure of the Benedict Crossing bridge, BR#17, located at Benedict Crossing, Arlington, VT 05250.

Bid due: 12/16/2022 at 12 pm Eastern time

Sealed bids must be submitted to the Town Administrator by email to [nick.zaiac@arlingtonvermont.org](mailto:nick.zaiac@arlingtonvermont.org), and must be received by the bid due date. Alternatively, bids may be placed in the drop box at the front of Arlington Town Hall, 3838 VT Route 7A Arlington VT 05250.

Address all bid envelopes to the Town Administrator with "Benedict Crossing Scoping Study" written on the outside.

Questions may be submitted to [nick.zaiac@arlingtonvermont.org](mailto:nick.zaiac@arlingtonvermont.org) by 11/18/2022 and will be posted on the town website at <https://arlingtonvermont.org/the-latest/>.

## Background

The historically-significant Benedict Crossing bridge was closed after an inspection in the fall of 2020 found issues with its superstructure. Review by Vermont state stream managers authorized a repair/replacement limited to the superstructure of the bridge, keeping existing abutments intact and supposing the repaired/replaced structure does not further constrict the river. See Appendix for documentation and information on this review.

This is a Vermont Agency of Transportation funded project. All participating bidders must be in good legal standing to work on State of Vermont projects and not be on the federal list of disallowed vendors.

Information about the bridge may be obtained by searching "Benedict Crossing" at the Vermont Agency of Transportation website located at:  
<https://vtrans.maps.arcgis.com/apps/webappviewer/index.html?id=968633edde4d40f6b5150d4393b9b1ff>

## Nature of the work to be done

In general, the scope of this project will consist of an engineering study that identifies the alternatives available to the town to address the closure of the bridge in such a way that is compatible with state

and federal laws relating to impacts on historically significant cultural resources. As such, the first goal of the project is analysis of rehabilitation/preservation alternatives.

The outcome of the process will be:

Identification of alternatives available to address the closure of the bridge, including but not necessarily limited to no-build, repair, and replace alternatives. This alternatives analysis shall fully consider the adverse impact on the historic truss structure of the bridge.

An assessment of the historical nature of the bridge and its relation to all potential solutions to the bridge closure.

Clear, written documentation of project issues and overall feasibility

A complete preliminary cost estimate for further engineering, project administration, environmental review, and construction.

A clear statement of the purpose and need for the project so as to determine whether rehabilitation is a feasible and prudent alternative based on the information collected and the project's purpose and need.

### **Alternatives Presentation**

All of the proposed alternatives (including a mandatory "no build" alternative) will be evaluated in an alternatives table. The matrix will include estimated cost and any other factors that will help the community evaluate the alternatives being considered. The engineer shall present this plan at a regular meeting of the Select Board of mutual convenience.

### **Historic Review**

Historic resources will be reviewed to determine potential direct and indirect impacts to those resources. The bridge is a historic structure, alternatives must consider the historic nature of the bridge, and consult with firms or individuals with requisite qualifications to assess historic concerns as they relate to all alternatives considered.

### **Develop Preliminary Cost Estimates**

The consultant will develop preliminary cost estimates for implementation of all included alternatives. Construction cost estimates shall include preliminary bid item quantities. Per foot or lump sum costs will not be an acceptable substitute. The estimates should be based on the assumption that the project will be constructed using a combination of federal, state, and local funding and will be managed by the local community. The cost estimates should include amounts for construction, engineering, municipal project management and construction inspection. If the project is to be completed in phases, cost estimates for each phase shall be provided.

### **Report Production**

Using information gathered from the activities outlined above, submit draft and final reports outlining the findings of the study in the requisite time frame.

### **Standards and Deliverables**

All documents should be provided in digital format. Adobe .pdf format is required for draft and final reports.

All data, databases, reports, programs and materials, in digital and hard copy format created under this project shall be transferred to the Town or RPC upon completion of the project and become the joint property of the Town or RPC and the State of Vermont when applicable.

### **Response Format**

Responses to this RFP shall consist of a technical proposal consisting of:

A cover letter expressing the firm's interest in working with the Town of Arlington including identification of the principal individuals that will provide the requested services.

A description of the general approach to be taken toward completion of the project, an explanation of any variances to the proposed scope of work as outlined in the RFP, and any insights into the project gained as a result of developing the proposal.

A scope of work that includes detailed steps to be taken, including any products or deliverables resulting from each task.

A summary of estimated labor hours by task that clearly identifies the project team members and the number of hours performed by each team member by task.

Demonstration of success on similar projects

*The Town values firms that can express their proposal and qualifications succinctly, and expresses a desire to limit the amount of effort involved in responding to this proposal.*

### **Nature of the bid**

The price should be an all-inclusive bid, with itemization of cost to the extent practical so as to inform board review of the proposals. Any ancillary services offered outside of the required bid tasks should be included as an option.

### **Timeline**

The project must be completed no later than May 1, 2023. Work may start at the convenience of the company, after consulting with Town staff to schedule the work at a mutually agreeable time

### **Right to reject bids**

The Town of Arlington reserves the right to reject any and all bids received and accept any bid that, in its judgment, best serves the needs of the Town of Arlington, Vermont.

### **Disclaimer**

Those submitting bids do so entirely at their own expense. There is no express or implied obligation by the Town of Arlington to reimburse any entity or individual for any costs incurred in preparing or submitting of bids.

RFP Dated 10/24/2022

Arlington Select Board

Appendix

### **Recommended Resources**

Per advice of Vermont Agency of Transportation staff, the Town recommends the reviewing the following resources and/or potential historical subconsultants.

- Robert McCullough, Director of UVM's Historic Preservation Program;  
<https://www.uvm.edu/cas/historicpreservation/profiles/robert-mccullough>
- Jan Lewandowski;  
<https://ptvermont.org/vermontrestorationdirectory/9201/jan-lewandowski-restoration-traditional-building/>
- Consulting Architectural Historians;  
[https://outside.vermont.gov/agency/ACCD/ACCD\\_Web\\_Docs/HP/Resources\\_Rules/Architectural%20History\\_History\\_Architecture.pdf](https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/HP/Resources_Rules/Architectural%20History_History_Architecture.pdf)
- Although specific to covered bridges, many of the best practices found at that FHWA link are relevant for the Benedict Crossing: <https://www.fhwa.dot.gov/bridge/covered.cfm>
- National Park Service has general guidelines for rehabilitating historic properties too that are used to help retain significant historic features of properties:  
<https://www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm>
- Scoping Report FOR Poultney BO 1443(53) Town Highway 6, On the Green, BRIDGE 7 Over Poultney River (available on request, a portion reproduced below): A directly analogous study.

### **Example of alternatives considered in an analogous study (see above)**

*The Town notes that there is no need to consider alternatives that provide for ongoing traffic flow over the project area due to the availability of three alternative bridges.*

Alternatives Summary Based on the existing site conditions, bridge condition, and recommendations from hydraulics, there are several viable alternatives:

Alternative 1a: Truss Rehabilitation (Current Configuration) with Traffic Maintained on OffSite Detour  
Alternative

1b: Truss Rehabilitation (Current Configuration) with Traffic Maintained on Temporary Bridge  
Alternative

2a: Truss Rehabilitation with Added Sidewalk with Traffic Maintained on Off-Site Detour Alternative

2b: Truss Rehabilitation with Added Sidewalk with Traffic Maintained on Temporary Bridge  
Alternative

3a: Full Bridge Replacement On-Alignment with New Camelback Pony Truss and Traffic Maintained  
on Off-Site Detour Alternative

3b: Full Bridge Replacement On-Alignment with New Camelback Pony Truss and Traffic Maintained  
on Temporary Bridge Alternative

4a: Existing Truss Used as Ornamental Fascia Treatment on New Steel Beam Bridge and Traffic  
Maintained on Off-Site Detour Alternative

4b: Existing Truss Used as Ornamental Fascia Treatment on New Steel Beam Bridge and Traffic  
Maintained on Temporary Bridge

Other resources

From: Carvajal, Joshua <Joshua.Carvajal@vermont.gov>

Sent: Monday, March 8, 2021 11:06 AM

To: Nick Zaiac <nick.zaiac@arlingtonvermont.org>

Cc: Taft, Christopher <Christopher.Taft@vermont.gov>; Broker-Campbell, John  
<John.Broker-Campbell@vermont.gov>

Subject: Re: Arlington\_Benedict Crossing\_BR17

Nick,

Based on our site visit on 1/22/2021 and the Vtrans Hydraulics Report for the structure dated  
02/19/2021, have summarized Stream Alteration General Permit (SAGP) jurisdiction for this  
structure:

The existing bridge span is ~72 feet which is about 70% of the bankfull width at this location (range  
of 105' to 110' but this was determined with snow cover on the ground). Bankfull depth was about  
4.25' so 4x the bankfull depth would be 17 feet. Bankfull width of 80' noted in the Vtrans Hydraulics  
Report was obtained from an old geomorphic assessment of the Battenkill and is incorrect.

A replacement structure compliant with SAGP requirements would need an open area with 110' span and 17' rise. Due to limitation at the site with changing road elevations a wider span could be used to offset a lower rise, but the new structure could not have a low chord any lower than the existing structure.

The replacement of the deteriorated superstructure will not trigger stream alteration permit jurisdiction since no work in the bed or bank of the stream is proposed. Though not required, I do recommend that the Town obtain an estimate for a replacement structure compliant with SAGP standards to show the repair is less than 50% of the full replacement. This documentation will be beneficial if the structure is damaged during a flood and FEMA Public Assistance funds become available, since it will prove to FEMA that the proposed repair was not more than 50% the replacement cost if they inquire about past repair costs.

Since the Vtrans Hydraulics Unit was not able to provide a complete hydraulics report for the existing structure, I reviewed the FEMA Flood Insurance Study (FIS) for Bennington County dated December 2, 2015 for existing hydrologic and hydraulic modeling at the crossing (see attachments)

The 50-year flood peak rate was evaluated since FEMA does not model the Q25, which is the design flow for this town structure. Comparing FEMA peak flow rates in the Summary of Discharges (Table 4), the Q50 is comparable to the Q25 peak flow rate obtained from USGS Streamstats (attached). The latter is typically used to determine peak flow rates for a majoring of stream crossings and since it has higher rates than the FIS it is a more conservative value. That said, I evaluated the Q50 peak flow rates and water surface elevation (WSE) for this structure.

The FIS Flood Profile shows the existing structure passes the Q50 peak flow with greater than 1-foot of freeboard (WSE to low chord of bridge) which satisfies the Vtrans Hydraulics Manual requirement of a minimum 1-foot freeboard during the design flow. I mention this because, though the structure does not satisfy bankfull width requirements of the SAGP, it does satisfy the current hydraulic capacity requirements set by VTrans.

Based on the above review, the Town may proceed with replacement of the superstructure of the existing bridge and does not need to obtain coverage under the Stream Alteration General Permit. Elevation of the low chord on the existing structure may not be lowered and no armoring of abutments may be done that change the area of the opening of the bridge.

There may be additional requirements for working on this structure under the local flood hazard area bylaws, please coordinate with the Town floodplain manager.

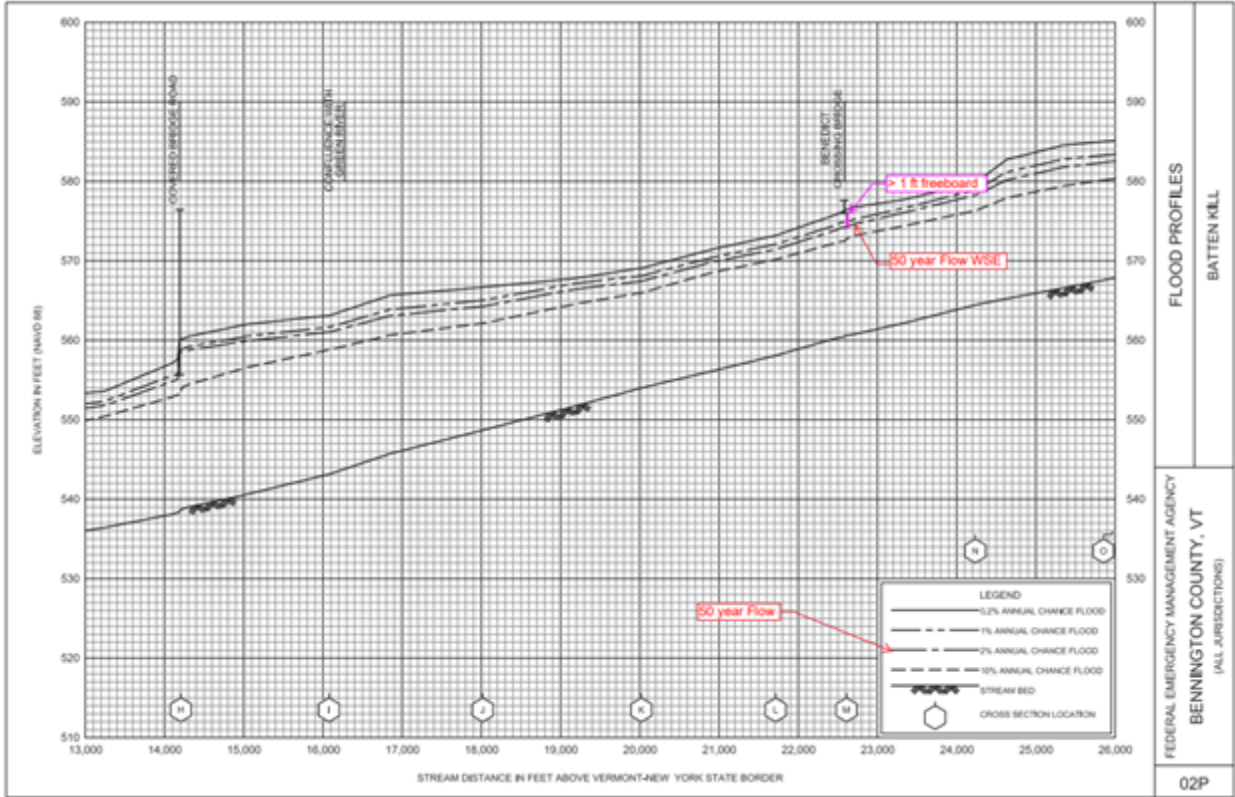
**Joshua Carvajal**, PE |River Management Engineer

Vermont Department of Environmental Conservation

Watershed Management, Rivers Program

Asa Bloomer Building

88 Merchants Row, Suite 430 | Rutland, VT 05701-5903







**LEGEND**

- DFIRM X-Sections
- DFIRM Floodways
- Flood Hazard Areas (Only FEMA)
  - All (1-percent annual chance flood)
  - A (1-percent annual chance flood)
  - AD (1-percent annual chance zone flood)
  - 0.2-percent annual chance flood hazard
- River Corridors (Aug 27, 2019)
  - 5 - 2 sqmi.
  - 25- 5 sqmi.
- Parcels (standardized)
- VTRANS State and Town Long
- VTRANS State Short Structure
- Town Bridge
- Town Culvert
- Roads
  - Interstate
  - US Highway, 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)
  - State Forest Trail
  - National Forest Trail
  - Legal Trail
  - Private Road/Driveway
  - Proposed Roads

1: 855  
March 4, 2021

43.0 0 22.00 43.0 Meters  
WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere 1" = 71 Ft 1cm = 0 Meters  
© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

**NOTES**  
Map created using ANR's Natural Resources Atlas

Table 4 – Summary of Discharges

| FLOODING SOURCE<br>AND LOCATION                           | DRAINAGE<br>AREA<br>(sq. miles) | PEAK DISCHARGES (cfs)     |                          |                          |                            |
|---|---------------------------------|---------------------------|--------------------------|--------------------------|----------------------------|
|   |                                 | 10%-<br>ANNUAL-<br>CHANCE | 2%-<br>ANNUAL-<br>CHANCE | 1%-<br>ANNUAL-<br>CHANCE | 0.2%-<br>ANNUAL-<br>CHANCE |
| BATTEN KILL   |                                 |                           |                          |                          |                            |
| At the Vermont-New<br>York border                         | 202.2                           | 10,572                    | 16,028                   | 18,510                   | 24,971                     |
| 1,400 feet upstream of<br>River Road                      | 197.3                           | 10,508                    | 15,935                   | 18,405                   | 24,835                     |
| 0.97 miles upstream of<br>River Road                      | 195.5                           | 10,421                    | 15, 807                  | 18,259                   | 24,643                     |
| 1,900 feet downstream<br>of Covered Bridge<br>Road        | 194.2                           | 10,355                    | 15,709                   | 18,147                   | 24,497                     |
| 80 feet upstream of the<br>confluence with Green<br>River | 162.8                           | 8,777                     | 13,355                   | 15,446                   | 20,900                     |
| 0.65 miles downstream<br>of Benedict Crossing<br>Road     | 161.9                           | 8,729                     | 13,283                   | 15,363                   | 20,791                     |
| 430 feet downstream of<br>Benedict Crossing<br>Road       | 160.3                           | 8,649                     | 13,163                   | 15,225                   | 20,607                     |
| 2,200 feet upstream of<br>Benedict Crossing<br>Road       | 156.7                           | 8,454                     | 12,871                   | 14,888                   | 20,155                     |
| 0.73 miles downstream<br>of River Road                    | 155.6                           | 8,401                     | 12,792                   | 14,798                   | 20,036                     |

Discharges for South Stream were obtained from weighted averages of flows from the gage analysis and data used by the USACE in previous studies. The discharges were reduced from Cooper Street to just downstream of Depot Street to account for the effect of the naturally occurring diversion of flow down Main Street (References 12 and 13).

Discharges for Warm Brook were obtained from the SCS Flood Plain Management Study for Arlington, as recorded in the Town of Arlington FIS report of 1986 (Reference 10).

Discharges for the Walloomsac River were transposed from the frequency analysis of the 49 years of flood peak data for the North Bennington USGS gage (No. 01334000) using the methodology in Water Resources Council Bulletin 17B (Reference 17).

The 1-percent-annual-chance flood discharge for the Winhall River was based on equations developed from a report on flood magnitude and frequency of Vermont streams (Reference 21). This regional method relates drainage area, area of lakes and ponds, and 24-hour rainfall intensity values to the peak discharge by regression equations.

Peak discharge-drainage area relationships for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for each stream studied by detailed methods are presented in Table 4, "Summary of Discharges."