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Town of Shaftsbury
Municipal Offices at Cole Hall

PO Box 409
61 Buck Hill Road
Shaftsbury, VT 05262-0409
802 442 4038

Request for Proposals
Shaftsbury Hollow Culvert Project

The Town Of Shaftsbury is seeking proposals for the design and installation of a culvert to replace an existing culvert located on Shaftsbury Hollow Road within the Town of Shaftsbury, Vermont.

Shaftsbury Hollow Culvert:

- 7 feet high
- 26 feet clear span
- 50 feet long
- 182 square feet of waterway area
- Design and construct a replacement structure (plans must be engineered and stamped)
- Temporary roadway or access alternatives required
- Must meet applicable regulations and hydraulic standards
- State permitting will be the responsibility of the contractor in conjunction with the Town Of Shaftsbury DPW
- Pre – Bid meeting attendance will be required
- Pre – Bid meeting will be held on site Wednesday June 17 2020 at 1PM

Responses to the Request for Proposals should consist of:

1. A description of the approach to be taken to carry out the proposal (specific to above mentioned list)
2. Documentation of the relevant experience, qualifications and licenses
3. Proposed fee structure, including total project cost
4. Timeline, benchmarks, and anticipated completion date
5. Traffic Control plan(s) and Signage plan(s)

Period of Performance

Work must be completed by December 2021

Insurance Requirements:

- The bidder (contractor) shall provide the Town an insurance certificate indicating at a minimum the contractor's business automobile, worker's compensation, and general liability insurance coverage.
- The contractor assumes all liability of damage done to personal and public property in the Town's ROW and to private property while executing this contract.

Submissions**Bid Review and Selection Process:**

- Bids must be submitted on the enclosed Bid Sheet and returned in a sealed envelope clearly labeled on the outside **"Shaftsbury Hollow Culvert Project."**
- Bids must be received by the Town Administrator located at the Shaftsbury Municipal Office Building (Cole Hall). Mailing address is P.O. Box 409, 61 Buck Hill Road, Shaftsbury, VT 05262. by 11:59am on Thursday July 2, 2020.
- Faxed or emailed bids will not be accepted.

Bids will be opened, read and reviewed at a warned Selectboard meeting on or about July 6th, 2020. Bids must be valid for **30 days from the date of opening**. The contract will be awarded **within 30 days of bid opening** to the ***"lowest, best qualified and most responsible vendor"*** in the judgment of the Shaftsbury Selectboard, in consultation with the DPW Supervisor.

Contract will be awarded according to provisions of the Shaftsbury Purchasing Policy revised June 5, 2017. The policy is available on line at shaftsburyvt.gov.

The Town of Shaftsbury reserves the right to reject any or all bids/proposals received, to negotiate with any qualified source, or to cancel in part or in its entirety this bid/proposal as in the best interest of the Town of Shaftsbury. This solicitation in no way obligates the Town of Shaftsbury to award a contract.

Direct all questions to DPW Supervisor Mike Yannotti at DPW@shaftsburyvt.gov

Submit all proposals to:

- David Kiernan Town Administrator
- Town of Shaftsbury, Vermont
- P.O Box 409 Shaftsbury, VT 05262
- Telephone: (802) 442-4038 Ext. 3
- Email Administrator@shaftsburyvt.gov

VT AGENCY OF TRANSPORTATION

PROGRAM DEVELOPMENT DIVISION

HYDRAULICS UNIT

TO: Marge Skinner, District 1 Technician

FROM: David Willey, Hydraulics Project Supervisor

DATE: January 7, 2014

SUBJECT: Shaftsbury TH 9 (Shaftsbury Hollow Road) Br. 42 Over Little White Creek
Site just north of Hollow Hideaway Road,
GPS coordinates: N 43.002970° W 73.250849°

We have completed our hydraulic study for the above referenced site, and offer the following information for your use:

Hydrology

This site has a hilly to mountainous drainage basin. It is mostly forested. The total contributing drainage area is about 5.9 sq. mi. There is an overall length of 26,500 feet from the divide to the site, with a 2200-foot drop in elevation, giving an average overall channel slope of 8%. The stream slope at the site was estimated to be about 5%. Using several hydrologic methods, we selected the following design flow rates:

<u>Recurrence Interval in Years</u>	<u>Flow Rate in Cubic Feet per Second (CFS)</u>
Q2.33	325
Q10	720
Q25	950 - Town Highway Design Flow
Q50	1180
Q100	1400 - Check flow

Existing Conditions

The existing structure is a corrugated metal plate pipe arch. It is about 15'-4" wide by 9'-3" high, providing a waterway opening of approximately 109 sq. ft. The pipe has mitered ends. There is a 1' drop into a large scour pool at the outlet.

Our calculations show the existing structure has adequate capacity hydraulically. Headwater to depth ratios are within the allowable values and there is no roadway overtopping up to the design Q25. This structure results in a headwater depth of 8.9' at Q25. Water overtops the roadway below the Q50, due to the pipe being at capacity and the low amount of cover over the pipe. This pipe constricts the natural channel width, resulting in scour at the outlet and an increased potential for deposition and debris blockage at the inlet. The structure does not provide fish passage or meet the current design guidelines.

Recommendations

In sizing a new structure we attempt to select structures that meet the hydraulic standards, fit the natural channel width, the roadway grade and other site conditions. We measured a channel width of approximately 20' to 25' during our site visit. The Agency of Natural Resources 'VT Regional Hydraulic Geometry Curves' give a bank full width of 29' for this size drainage area. Those curves are only based on drainage area and do not consider other factors or other site specific conditions. They may not be valid

for this drainage area. The long span needed to match the natural channel width limits the replacement options to a bridge type structure. Based on our calculations and the information available, we recommend any of the following structures as a replacement at this site:

1. A bridge with a 26' minimum clear span, measured perpendicular to the channel, with a 7' high minimum waterway opening, providing at least 182 sq. ft. of waterway area. This structure will result in a headwater depth at Q25 = 5.9' and at Q100 = 7.6', with no roadway overtopping up to Q100.
2. Any similar structure, such as an open bottom arch, with a minimum clear span of 26' and at least 180-sq. ft. of waterway area, that fits the site conditions, could be considered.

General comments

If a new bridge is installed, the bottom of abutment footings should be at least six feet below the channel bottom, or to ledge, to prevent undermining. Abutments on piles should be designed to be free standing for a scour depth at least 6' below channel bottom.

If an open bottom arch is installed, we recommend full height concrete headwalls be constructed at the inlet and outlet. The bottom of abutment footings under the arch should be at least six feet below the channel bottom, or to ledge, to prevent undermining. We recommend a minimum cover of 3' over all metal arch structures. Pipe manufactures can provide specific recommendations for minimum and maximum fill heights and required pipe thickness. All structures are required to meet public highway loadings.

It is always desirable for a new structure of this size to have flared wingwalls at the inlet and outlet, to smoothly transition flow through the structure, and to protect the structure and roadway approaches from erosion. The wingwalls should match into the channel banks. Any new structure should be properly aligned with the channel. A new structure should span the natural channel width.

Stone Fill, Type III should be used to protect any disturbed channel banks or roadway slopes at the structure's inlet and outlet, up to a height of at least one-foot above the top of the opening. The stone fill should not constrict the channel or structure opening.

The Agency of Natural Resources (ANR), Corps of Engineers, or other permitting agency may have additional concerns regarding replacement of this structure, or any channel work. The River Management Engineer should be contacted with respect to those concerns, before a replacement structure is ordered. ANR may want a wider structure, based on calculated bank full width or if they feel a wider structure is required to span the natural channel width.

Please keep in mind that while a site visit was made, these recommendations were made without the benefit of a survey and are based on limited information. The final decision regarding the replacement of this structure should take into consideration matching the natural channel conditions, the roadway grade, environmental concerns, safety, and other requirements of the site.

A bridge of this size warrants a more detailed hydraulic study if survey becomes available.

Please contact us if you have any questions or if we may be of further assistance.

DCW

cc: Jaron Borg, A.N.R. River Management Engineer

Hydraulics Project File via NJW

Hydraulics Chrono File