

Memorandum

Date: 7/29/2016
To: Wade Salyards, MDT
Copy to: Russ Lay, Steve Grabill
From: Kathy Harris
RE: Swan River - Bridge St (Bigfork) UPN 9020000 STPB 9015 (126):
Project Need and Screening Criteria



This memorandum summarizes the Project Needs and screening criteria for comparing options for the rehabilitation or replacement of the historic Swan River Bridge as part of a feasibility study. This final version incorporates changes from the July 2016 Steering Committee meeting. A future addendum to this memo will assess project risk factors.

Background

The Swan River Bridge does not meet current design standards, is functionally obsolete and is structurally deficient. Without treatment of ongoing corrosion and deterioration, bridge closure is imminent. Timing of bridge closure is uncertain but the bridge may need to be closed for safety reasons in the near future. The owner (Flathead County), MDT and the project Steering Committee concur that, due to the unique nature and historic appearance of this bridge to the community of Bigfork, some current design standards do not need to be met. The project Steering Committee includes three members from the community, three members from Flathead County and three members from MDT.

Project Needs

A bridge for both vehicular and pedestrian crossing of the Swan River is needed at the current location of the Swan River Bridge in Bigfork. The community strongly desires to maintain the historical appearance of the single-lane, truss structure and would like to retain the 1912, NRHP-listing if feasible.

Three project needs (or project goals) were developed over a series of meetings with the Steering Committee and were reinforced at the first public meeting. The Project Needs are:

1. Provide a Safe Crossing of the Swan River
2. Maintain the Historic Truss Appearance
3. Ensure the Project is Constructible and Maintainable

Project Screening Criteria

Based upon these needs, screening criteria were developed by the Steering Committee at meetings on April 6 and May 16, 2016 with minor adjustments from the July 29 meeting. Screening criteria itemize the project needs in measurable definitions which will allow a qualitative (graphic) comparison between bridge options.

Table 1 identifies the screening criteria which reflect Flathead County, MDT and community desires to provide safe vehicle and pedestrian passage and to maintain the historic appearance of the 1912 truss bridge. Table 1 also summarizes which entities listed or supported the various criteria.

Table 1. Swan River Bridge Needs and Screening Criteria

Need	Required	Screening Criteria	Source			
			MDT	County	SC	Public
Provide Safe Crossing of Swan River						
	Yes	Increase Load Rating (HS 15 Minimum)	X	X	X	X
		Provide 75 Year Bridge Life	X	X		
		Maintain vertical clearance above river			X	
	Yes	Provide one-vehicular lane (minimum)	X	X	X	X
	Yes	Provide pedestrian area (ADA walkway and railing)	X	X	X	X
		Maintain slow vehicular speeds			X	X
		Improve other design standards	X	X	X	X
		Improve Guardrail (approach)	X	X		
Maintain Historic Truss Appearance						
	Yes	Maintain historic appearance of overhead truss			X	X
		Maintain historic integrity /NRHP listing of bridge			X	
		Keep silver paint color				X
		Replicate (existing) overhead truss dimensions				X
Constructible and Maintainable						
	Yes	Funding for rehab or replacement	X	X	X	
	Yes	Permit-able (construction)	X			
	Yes	Permit-able (stormwater from bridge)	X			
	Yes	Ease of Maintenance by County	X	X		
		Remove wooden deck	X	X		X
		Reduce special maintenance needs (snow, paint, etc.)		X		
		Reduce bridge degradation into river		X	X	
		Avoid right of way acquisition	X	X	X	
		Minimize utility costs	X	X	X	

Description of Project Screening Criteria

Need 1: Provide Safe Crossing of Swan River.

- a) Increase load limit. A minimum of an H-15 loading is required for rehabilitation, with a higher loading preferred if the higher load is shown to be feasible. A standard HS-20 design loading is required for new construction.
- b) Provide 75-year bridge life. Standard for new bridge design is 75-years but this project could accept reduced life for rehabilitation.
- c) Minimize reduction of the current vertical clearance above the river.
- d) Provide minimum of one-lane vehicular width.
- e) Accommodate pedestrians. Provide walkway that is separated from vehicles. Full accessibility (Americans with Disability Act (ADA) requirements) will be required for any federal funding. Provide pedestrian rail to current design standards.
- f) Provide design that encourages the current slow vehicular speeds (due to need to see across one-lane bridge before entering onto bridge and also tight approach radii which limit sight distance).
- g) Improve other design standards (approaches, barrier rails, etc.)
- h) Improve guardrail (on the bridge approach).

Need 2: Maintain Historic Truss Appearance.

- a) Maintain appearance of overhead truss structure.
- b) Maintain historic integrity and NRHP-listing of bridge.
- c) Keep silver paint color.
- d) Replicate (existing) overhead truss dimensions.






Need 3: Provide a crossing that is constructible and maintainable (by standard County resources).

- a) Propose an option that is fundable (federal funds and County funds).
- b) Propose an option that can be permitted (through known construction permits)
- c) Propose an option that can be permitted through DEQ and Clean Water Act requirements to eliminate bridge deck runoff (directly into open water such as runoff from a wooden plank deck).
- d) Provide an option that can be maintained by County for the life of the structure (reduce special maintenance needs such as substructure cleaning, etc.).
- e) Remove wooden deck.
- f) Reduce need for special County maintenance (narrow bridge width requires special vehicle for snow plowing, pedestrian path maintenance, vehicle crash repairs, truss painting, deck replacement).
- g) Reduce bridge degradation (peeling, flaking of lead-based paint and deterioration of steel) into river.
- h) Avoid right-of-way acquisition.
- i) Minimize utility costs.

Criteria Ratings

Because this project is unique and may not meet all current design requirements, a fatal-flaw screening is proposed to eliminate bridge options that do not meet a minimum threshold or provide a benefit to the community and to the area's infrastructure. This minimum is reflected in screening criteria shown as "Required". If an option does not meet the "Required" criteria; it will be considered unfeasible and not moved forward.

Each conceptual option developed for bridge rehabilitation or replacement will be rated on each screening criteria, typically by the Steering Committee and the design team. The symbols shown below are a modified form of Harvey Balls ideograms and will be used for the qualitative comparisons.

-  Beneficial or Optimum Rating
-  Moderate Benefit
-  Neutral
-  Moderately Detrimental
-  Detrimental or Lowest Rating

These symbols reflect the optimum to the least preferred (the full red circle is the highest rating while the open black circle is neutral and the filled black circle reflects the lowest rating for each criteria). The Steering Committee will typically develop the ratings with input from the design team. Due to the technical analysis required; select structural criteria will be rated by the design team (delineated in Table 1).