

Grant Application - 2016

Criteria	Current Status (Baseline)	Planned Improvement	Benefit
Safety	82 year old bridge utilizing a structural method no longer accepted Structurally deficient and functionally obsolete	Construct new bridge utilizing current approved construction methodology Construct to current design standards	75 year useful life Ensured economic and employment access Improved safety for all vehicle and modal types
State of Good Repair	Poor geometrics for current volumes and weight High likelihood of 4-week closure within 5 years High likelihood of one - year closure within 10 yrs	Incorporate approach geometry into new structure Replace inherently weak construction methodology with more reliable system Same	Improve travel time by eliminating speed reductions Minimize structural stress Eliminate long closure Maintain essential economic, recreational, safety connections
Economic Competitiveness	Vulnerable economically viable access to critical markets with national significance	Design for redundancy Connect with existing alignment in an integrated system	Reliable, continuous access to markets Increase speeds, delivery time safely
Quality of Life	No non-motorized alternatives meeting current design standards	Construct wider shoulders and wider, more protected pedestrian and bicycle pathways	Enhance non-motorized safety Support and encourage non-motorized usage
Environmental Sustainability	Only detour route to markets is 94 miles Current approach alignment does not protect adjacent wetlands or wildlife habitat Current structure does not manage water run-off	New structure designed to withstand all predictable eventualities Map, evaluate and protect natural areas using context sensitive design New structure will manage run-off	Maintain air quality by avoiding heavy truck detours Ensure continued convenient recreational access Protected natural habitat Protect water quality in the river
Innovation	Alignment, structural design and context integration was developed 81 years ago Existing project was constructed using the traditional design-bid-build concept	Incorporate interdisciplinary team analysis into project development process Explore using alternative construction approaches such as design-build or GCCM	Assurance that project will be integrated into the entire community for its design life - 75 years Lower overall construction costs and potential construction schedule improvements
Partnership	Originally constructed by a single entity with no public input or partnership collaboration	Develop project through robust planning process including multiple stakeholders	Integration of new structure into local, regional and state plans and existing projects; local support for a regionally significant project

**Granite Falls Bridge #102 Replacement
Grant Application
Benefit Cost Analysis (1)**

Costs	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2040
Construction	23,600,000																						
Benefits																							
Capital (avoided costs)																							
Bridge Painting (2)	1,328,668													3,408,870									
Reconstruction (3)	22,627,447																		58,848,023				
Major Repair (4)	526,065																						
GHG Emission Saved																							
GHG Emissions (detour) (5)	189,534			228,422																			
GHG Emissions (idling) (6)	175,959		3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074	3,074
Ladders of Opportunity																							
DBE (7)		3,665,993																					
Training		42,358																					
Total	24,847,673	3,708,351																					
BCR	1.21																						

Footnotes (1) All costs are in 2017 Dollars
 (2) Cost to paint current structure on 20 year cycle; last painted in 2010. Costs inflated at 3%/year and discounted at 7% per OMB Circular A-4
 (3) Cost to replace current structure at 100 year anniversary; continuous impact loading (metal fatigue) will render substructure unsafe and cannot be renovated due to design
 (4) Four week shut down to replace failing gusset plates
 (5) Avoided GHG emissions due to four week detour using average mpg, emission rates and social cost of GHG per EPA
 (6) Avoided GHG cost of idling time attributable to single heavy truck limitation based on 750 trucks idling 5 minutes each per day and emissions data from US Energy Information Administration
 (7) Based on recent similar projects in same geographical vicinity