Section 4(f)
Limited Scope Re-Evaluation

PURSUANT TO 49 USC 303 DEPARTMENT OF TRANSPORTATION ACT OF 1966

FEDERAL HIGHWAY ADMINISTRATION
MAINE DEPARTMENT OF TRANSPORTATION

FRANK J. WOOD BRIDGE
WIN 22603.00
BRUNSWICK-TOPSHAM
CUMBERLAND AND SAGADAHOC COUNTIES

January 2023

Introduction & Scope

The Frank J. Wood Bridge (Bridge #2016) connects US Route 201 (Highway Corridor Priority 3 road) over the Androscoggin River, connecting the town of Brunswick in Cumberland County, and the town of Topsham in Sagadahoc County, Maine.

On February 21, 2019, the Federal Highway Administration (FHWA) determined that there was no feasible and prudent alternative to Section 4(f) use of the following properties to accommodate transportation improvements for the Frank J. Wood Bridge Project[1]:

- Cabot Mill (National Register of Historic Places (NRHP) Eligible);
- Frank J. Wood Bridge (NRHP Eligible);
- Brunswick-Topsham Industrial Historic District (NRHP Eligible); and
- Pejepscot Paper Company (NRHP Listed).

The FHWA determination concluded that the difference in costs, particularly service life costs, between avoidance alternatives (including bridge rehabilitation) and the proposed replacement alternative were costs of extraordinary magnitude. FHWA therefore concluded that the avoidance alternatives were not feasible and prudent as defined at 23 C.F.R. 774.17[2]. The Section 4(f) Evaluation discussed Construction Costs, Service Life Costs, Annual Costs over Service Life, and Life Cycle Cost (LCC), with emphasis on Service Life Costs.

The scope of this Re-Evaluation is limited to the conduct of an analysis directed by a United States District Court Order. In 2020, FHWA's decision was challenged in the United States District Court for the District of Maine and upheld. The District Court's decision was subsequently appealed to the United States Court of Appeals for the First Circuit. On January 4, 2022, the First Circuit issued an opinion that vacated-in-part and affirmed-in-part the District Court decision and remanded the matter back to FHWA. On March 2, 2022, the District Court ordered FHWA to conduct "further administrative proceedings consistent with the opinion of the Court of Appeals, i.e.: 'for the strictly limited purpose of allowing the agency to further justify use of the service-life analysis and/or to decide whether a 53% price differential represents a cost of an extraordinary magnitude under 23 C.F.R. § 774.17.'" *Historic Bridge Found*. *V. Buttigieg*, No. 2:19-cv-408 (D. Me. Mar. 2, 2022) (quoting *Historic Bridge Found. v. Buttigieg*, 22 F.4th 275, 286 (1st Cir. 2022)).

The 53% price differential cited by the Court refers to a Life Cycle Cost Analysis (LCCA) completed by MaineDOT in 2019. The LCCA resulted in a value of $13,720,000 for Alternative 2 (upstream replacement) and $20,990,000 for Alternative 3, the lowest cost rehabilitation alternative, for a difference of $7,270,000. This Section 4(f) Re-Evaluation affirms that the 53% difference in 2019 Life Cycle Costs between replacement and rehabilitation alternatives is a cost of extraordinary magnitude in the context of the Project at issue here. This Re-Evaluation affirms that as a result of the cost of extraordinary magnitude, the rehabilitation alternatives are not prudent and feasible.

[1] The Environmental Assessment & Final Section 4(f) Evaluation may be accessed here:
https://www.maine.gov/mdot/env/documents/fjwepr/ea/2019/Final_revised_EA_Final_4f_Frank-J-Wood-2.28.19.pdf
[2] 23 C.F.R. 774.17

Public Process & Interagency Coordination

This Section 4(f) Re-Evaluation was public noticed via MaineDOT's website for 30 days starting project website[3]. Wednesday, July 27, 2022. A legal public notice was also published in the Times Record on July 27, 2022, inviting the public to the website to review the document and comment. FHWA distributed the document via email directly to the State Historic Preservation Officer (SHPO), Section 106 Consulting Parties, and the U.S. Department of the Interior (DOI).

FHWA considered all substantive comments. A summary of comments received along with responses is being posted with this final Section 4(f) Re-Evaluation.

Action Description

In 2019 MaineDOT and FHWA selected *Alternative 2: Replacement on Curved Upstream Alignment*. This alternative calls for replacing the Frank J Wood Bridge with a new 835' long, multi-span, steel girder bridge. A curved design reduces length of roadway approach construction, as well as right of way impacts to abutting properties, including several historic properties and a public park. Span arrangement and number of piers would be designed to minimize footprint impacts within the existing river channel, as well as impacts within the Federal Emergency Regulatory Commission (FERC) Boundary. The selected alternative will also maximize engineering efficiency of the bridge's superstructure (e.g., amount of material used, weight on each pier, and constructability). The new bridge design will maintain existing hydraulic clearance over the river. The project will improve bicycle and pedestrian mobility and will remove a fracture critical[4] bridge from the MaineDOT Bridge Inventory.

The estimated construction duration for the proposed action is approximately 2½ years. No temporary bridge would be required since traffic would be maintained on the existing bridge during construction. A short term (approximately 2 months) a single lane northbound road closure and detour would be needed during the final tie-in of the approaches. The existing bridge will be removed.

[3] MaineDOT's project website may be accessed here: *https://www.maine.gov/mdot/env/frankjwood/*

[4] Fracture critical bridges are those which are in danger of collapse if a single element fails (based not on damage or decay, but on design). See 23 CFR § 650.305 "Fracture critical member (FCM). A steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse."

Feasible & Prudent Avoidance Alternatives Analysis

Summary of Prior Avoidance Alternatives Analysis

A federal transportation agency must show that there are no prudent and feasible avoidance alternatives to using a Section 4(f) resource before a project can proceed. FHWA Regulations at 23 CFR 774.17 provide guidance on the definition of whether an alternative is feasible and prudent.

The 2019 Individual Section 4(f) Evaluation for this project presented a rationale for dismissal of several alternatives that would have avoided use of the bridge because they were not prudent. This analysis is summarized in Table 1[5], which shows the six prudence factors applied to each avoidance alternative. If an alternative implicates any one of the six factors, it must be removed from consideration.

Bridge Rehabilitation Alternatives 3 & 4 are discussed further in this Re-Evaluation because they were previously determined not prudent based on cost considerations, with emphasis on Service Life Costs and Annual Costs over Service Life and therefore fall within the scope of the Court's remand. The other alternatives listed in Table 1 were determined not prudent based primarily on other factors and are not discussed further in this Re-Evaluation.

Alternative 3: Bridge Rehabilitation with Existing Westerly Sidewalk

Alternative 3 would rehabilitate the Frank J. Wood Bridge using the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties. This alternative would not result in a finding of adverse effect under Section 106 and would not result in a Section 4(f) use. The rehabilitated bridge would remain fracture critical. This alternative would increase the roadway width to two 11-foot lanes with two 4-foot shoulders and one 5-foot sidewalk. Construction duration for both rehabilitation alternatives is estimated to be three years, which is about 6 months longer than Alternative 2. This alternative would require a temporary bridge during construction.

Alternative 4: Bridge Rehabilitation with Existing Westerly Sidewalk & New Easterly Sidewalk

Alternative 4 would rehabilitate the Frank J. Wood Bridge using the Secretary of the Interior's Standards and Guidelines for the Treatment of Historic Properties. This alternative likely would not result in a finding of adverse effect under Section 106 nor would this alternative result in a Section 4(f) use. The rehabilitated alternative would remain fracture critical. This alternative would increase the roadway width to two 11' lanes with two 4' shoulders and two 5' sidewalks. The existing bridge deck would be replaced by a light weight exodermic deck with a concrete wearing surface to accommodate the extra weight of a second sidewalk. This alternative does not support the weight of a bituminous surface. This alternative would require a temporary bridge during construction.

This Re-Evaluation compares the life cycle costs of these two avoidance alternatives with the life-cycle costs of the previously selected replacement alternative (Alternative 2) to reconsider FHWA's 2019 dismissal of Alternatives 3 & 4 as not feasible and prudent due to additional construction, maintenance, or operational costs of an extraordinary magnitude.

[5] Table 2 from the 2019 Section 4(f) Evaluation

Table 1: Analysis – Are There Any Prudent and Feasible Avoidance Alternatives? [6]								
	No Build	Conversion to Bike/Ped Facility; New Vehicular Bridge Offsite	Conversion to Bike/Ped Facility; Detour Traffic	Rehabilitation with Existing Westerly Sidewalk (Alternative 3)	Rehabilitation with Existing Westerly Sidewalk and New Easterly Sidewalk (Alternative 4)	Minor Bridge Rehabilitation Resulting in Removal of Heavy Traffic & Posting the Bridge	Bridge Rehabilitation w/ One-Travel Lane and Load Posting	Bridge Rehabilitation (1 sidewalk) w/o Consideration of Secretary of the Interior Standards
Is this Alternative Prudent & Feasible per per 23 CFR 774.17 Part 3 ➔	No	No	No	No	No	No	No	No
(i) Compromises Purpose and Need?	Yes	Yes	No	No	No	Yes	Yes	No
(ii) Unacceptable Safety & Operations Problems?	Yes	No	No	No	No	No	No	No
(iii) Severe social, economic, or environmental impacts?	No	Yes	Yes	No	No	Yes	Yes	No
(iv) Costs of an extraordinary magnitude?	Yes	No	No	Yes	Yes	Yes	Yes	Yes
(v) Other problems or unique factors?	No	Yes	Yes	No	No	Yes	Yes	No
(vi) Cumulative factors present?	Yes	Yes	Yes	No	No	Yes	No	No

[6] Table 2 from 2019 4(f) Evaluation

Discussion of Life Cycle Cost

MaineDOT completed a Life Cycle Cost Analysis (LCCA) for Frank J. Wood Bridge that was considered in the decision-making for the project and was included in Appendix H of the Preliminary Design Report[7]. No changes have been made to that analysis for this Re-Evaluation. This Section describes the methodology that generated the LCCA in the Preliminary Design Report.

What is Life Cycle Cost Analysis?

LCCA is a standard engineering economic analysis method useful in comparing the relative merit of competing bridge improvement alternatives. This evaluation technique converts the estimated costs occurring for each alternative over the defined life-cycle analysis period into current dollar equivalents—what is termed present value. The LCCA accounts for estimated construction cost on the current project and the discounted present value of anticipated future operations, maintenance, capital project costs, and estimated remaining value of the bridge at the end of the analysis period. It also accounts for differences in the design life between alternatives. The LCCA assumes money could be set aside today for future work and incorporates economic concepts and techniques such as earned interest on investments and discounting the opportunity value of time.

FHWA developed guidance and background for transportation officials considering the use of Life Cycle Cost Analysis in decision-making[8]. It acknowledges that considering alternatives for investment of public dollars should include not only the initial costs (construction costs), but also the cost of periodic maintenance and rehabilitation required to ensure the investment remains in service for its intended design life. Use of Life Cycle Cost Analysis is intended to identify the best value/most cost-effective transportation solution (least cost over the life of the alternative) and discourages decision-making based solely on initial cost.

Scope & Methodology of the Frank J. Wood Bridge LCCA

The typical methodology for a Life Cycle Cost Analysis is to add up all the construction, maintenance, and future inspection costs for the expected life of the alternative, and then discount each individual cost event to present value, tally the discounted individual event values, and finally, compare the totals of the alternatives. Table 2 summarizes the calculations at each step in the Life Cycle Cost Analysis. Table 3 summarizes the results. Each step is described further below.

Step 1: Estimate LCCA Inputs: Service Life and Estimated Costs

Appendix H of the Preliminary Design Report (attached) provides the preliminary cost estimates for each alternative that were used in the LCCA. They are also summarized in Tables 2 and 3.

Service Life

Service life is defined as the number of years the bridge alternative can be part of the transportation system with maintenance, repair, and/or rehabilitation before its eventual replacement. The Service Life of the Replacement Alternatives 1 and 2 are estimated at 100 years, while the Service Life of Rehabilitation Alternatives 3 and 4 are estimated at 75 years. When the Service Life differs between alternatives, the LCCA must reconcile the difference over an equal analysis period for all alternatives. As described below in Step 3, a Residual Value analysis was used to address the difference between the Service Lives of the Replacement and Rehabilitation alternatives for this project.

Construction Costs

Construction cost estimates are generated based on recent bid histories for similar projects. These costs only include the initial cost to construct the project and do not consider future improvements or maintenance. Construction unit prices are generated from recent bid history for all items. Unit price multiplied by unit

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[7] See 2019 Environmental Assessment Appendix 2:
https://www.maine.gov/mdot/env/documents/fjwepr/ea/2019/Appendix-2-Frank-J-Wood-Preliminary-Design-Report.pdf

[8] Life-Cycle Cost Analysis Primer, U.S. Department of Transportation, FHWA Office of Asset Management (August 2002) (“FHWA Primer”) at 9, 22.

quantity produces total item cost. Factors affecting bid prices for individual components of a project include location, constructability, and market conditions. Construction estimates are adjusted based on professional engineering judgment. Early in the preliminary design process MaineDOT drafted a Preliminary Design Report (PDR) to document general project information, conceptual designs, and corresponding cost estimates. This report also incorporates preliminary plans. Appendix H of the PDR for the Frank J Wood Bridge Project (Appendix 2, pages H-5 to H-18) contains cost estimates (Structural Cost Estimates) that add up to construction cost for each alternative.

Each of the construction cost estimates for the Frank J. Wood Bridge carry a contingency cost. This is in recognition of variations in estimates and changes in costs during construction. Contingencies are estimated based on past project history for similar type bridge projects. This project site is unique due to the exposed and highly variable bedrock, exposure to high velocity flows, and proximity to the upstream dam. Due to the uncertainties associated with rehabilitating an existing deteriorated truss bridge, a higher amount of contingency cost is typically carried for rehabilitation options. A 15% rehabilitation contingency was used for Alternatives 3 & 4. All alternatives carry a 7% contingency cost for items such as traffic control plans and field offices.

The construction cost of Alternative 1 is estimated at $16,000,000. This cost includes the construction of a temporary bridge needed during construction for vehicular traffic. The construction cost of Alternative 2 is estimated at $13,000,000. A work trestle would be needed during construction for access to construct the cofferdams and piers, to erect the structural steel superstructure, to place deck concrete, and to remove the existing bridge. A cost premium of $1 million is included in the estimate to account for the added expense of a work trestle.

The construction costs of Alternative 3 and Alternative 4 are estimated at $15,000,000 and $17,000,000, respectively. These costs include the construction of a temporary bridge needed during construction for vehicular traffic. Alternative 4 is estimated at $2,000,000 more than Alternative 3 because Alternative 4 includes a more expensive lightweight deck and a new sidewalk.

Future Expenditures
In addition to the initial Construction Cost, LCCA requires the input of all anticipated future expenditure activities over the course of the Service life of each alternative. The inputs include the costs of all maintenance, inspection, and future improvements, as well as the timing of each of those activities. In Step 2 of the LCCA, a discounted value is calculated for each of these future expenditures.

<u>Future Expenditures-Replacement Alternatives (1 and 2)</u>
FHWA requires that states inspect bridges every twenty-four months. Estimates for inspection are broken down into annual costs even though inspections would be completed every two years. The biennial inspection of a new bridge typically requires an inspection team spending a day or two looking at all bridge elements. The inspection would be followed by the preparation of a report detailing findings. Routine annual maintenance for a new bridge would include washing of the drains, curb lines, and joints as well as washing of any debris that might have built up on the structure. Required periodic improvements include milling and resurfacing the asphalt wearing surface every 15 years and painting the girders at year 35 and year 70.

As shown in Tables 2 & 3, for both replacement alternatives (Alternative 1 and Alternative 2), the accumulated cost of all future expenditures (annual maintenance, 50 inspections, 2 steel paintings and 6 wearing surface replacements) total $4,260,000 over 100 years.

<u>Future Expenditures-Rehabilitation Alternatives (3 and 4)</u>
Estimates for inspection of the rehabilitation alternatives include the routine biennial inspection as well as additional effort for fracture critical bridges. Inspection of a fracture critical bridge requires a minimum of two inspectors, at least one of whom needs to be a qualified fracture critical bridge

inspector, completing hands on inspection of every fracture critical member of the bridge. This type of inspection often requires bridge lane closures and the lease of specialized equipment for access and traffic control. Fracture critical inspection can take up to two weeks onsite versus one or two days for other non-fracture critical bridges as well as one to two additional weeks of effort to produce required reporting. The estimated cost of these annual inspections is $30,000 per year.

Maintenance for a rehabilitated bridge would include annual washing of the drains, curb lines, and joints as wells as washing of any debris that might have built up on the structure. Because of the age of the bridge, it is likely that cracks in fatigue sensitive or fracture critical members would be found during inspection and immediate repairs would be required. A value of $40,000 per year to repair fatigue cracks was used in the maintenance service life cost estimate for this work.

Required periodic improvements for rehabilitation include paint every 20 years, and a deck replacement at year 40. Based on the performance of similar aged bridges and the age of the most recent major substructure rehabilitation at the Frank J. Wood Bridge, additional substructure rehabilitations would be expected at years 20 and 50 following the initial construction of the rehabilitation alternatives.

As shown in Tables 2 and 3, for Rehabilitation Alternative 3 and Alternative 4, the accumulated cost of all future expenditure activities (annual maintenance, 75 inspections, 5 steel paintings, 2 substructure rehabilitations, and 1 deck replacement) total $20,250,000 and $21,250,000 respectively, over 75 years.

Step 2: Apply Present Value Calculation to Future Expenditures

The fundamental calculation within LCCA consists of adding the initial construction cost of the alternative to a present value calculation of each future construction, maintenance, and operational cost activity. The present value of each future expenditure activity is calculated by applying an annual discount rate to each event. The intention behind the present value calculation is to provide a comparison of all costs at a single point in time (the present). In accordance with FHWA guidance[9], "constant" dollars were used for all future costs in the LCCA calculation. That means using estimated future costs of construction and maintenance activities at the prices experienced at the time of the analysis without applying anticipated inflation[10]. In accordance with MaineDOT's Bridge Design Guide[11], the LCCA for the Frank J. Wood Bridge used a discount rate of 4% to account for the annual growth rate of an investment. It did not include inflation.

The formula used to discount future constant value costs to present value is as follows[12]:

$$\text{Present Value} = \text{Future expenditure cost} \times \frac{1}{(1+r)^n}$$

Where r= real discount rate

n= number of years in the future when the cost will be incurred

[9] Life-Cycle Cost Analysis Primer, U.S. Department of Transportation, FHWA Office of Asset Management (August 2002) ("FHWA Primer") at 15.

[10] While inflation will surely cause the actual cost of a bridge painting 60 years from now to be more than the $4M cost of today, other economic factors would likely lessen the impact of a straight inflationary increase over that time period. Attempting to resolve these complicated unknowns is fraught with assumptions and is unnecessary given the purpose and order of magnitude of the comparison. This is why constant dollars are used.

[11] *2003 Bridge Design Guide: 2.2.6 Standard Assumptions, https://www.maine.gov/mdot/bdg/*

[12] *Life-Cycle Cost Analysis Primer, U.S. Department of Transportation, FHWA Office of Asset Management (August 2002) ("FHWA Primer")*

Using this calculation, the sum of the present values of future expenditures for Alternative 3 was $5,501,000 and Alternative 4 was $5,710,000. The sum of the present value of future costs for Alternative 2 was $715,000.

Step 3: Apply Present Value Calculation to Deferred Replacement Bridge Cost & Residual Value

Generally, design alternatives should be evaluated over equivalent analysis periods to accurately compare life cycle costs. In this case, the replacement alternative (2) is anticipated to have a service life of 100 years, while the service lives of the rehabilitation Alternatives 3 & 4 were estimated to be 75 years.

To account for the cost associated with building a replacement bridge in year 75 in the rehabilitation scenarios and recognizing the value of the remaining service life of those replacement bridges that remain at Year 100, the following adjustment was made to the rehabilitation alternatives to properly compare the alternatives over an equivalent analysis period of 100 years:

Year 75 Bridge Replacement	= $686,000
Year 100 Bridge Replacement	= $257,000
Year 100 Residual Value of Bridges Replaced at Year 75	= 75 years remaining service life
	= 75% of the cost of the Year 100 Bridge Replacement
	= $193,000
Net Adjustment to Rehabilitation Alternatives	= Cost of Year 75 Replacement – Year 100 Residual Value
	= $493,000

Step 4 & 5: Calculate Present Value of Life Cycle Costs of each Alternative & Compare

To obtain the Net Present Value Life Cycle cost of each Alternative, the Frank J. Wood LCCA added the Construction Costs to the Present Value of Future Expenditures, then adjusted the rehabilitation alternatives as described above to account for a replacement during the analysis period and the remaining service life of that replacement at Year 100.

The analysis resulted in LCCA values of $13.72 M for Replacement Alternative #2; approximately $20.99 M for Rehabilitation Alternative #3; and $23.2 M for rehabilitation Alternative #4. The lowest cost rehabilitation alternative (Alternative 3) has a 53% higher Present Value Life Cycle Cost than Replacement Alternative #2. This is the focus of the Cost of Extraordinary Magnitude discussion that follows.

Table 2. Frank J. Wood Bridge Life Cycle Cost Analysis Methodology

	Alternative 2	Alternative 3	Alternative 4
	Replacement on Upstream Curved Alignment Service Life - 100 years	**Rehabilitation Service Life - 75 years**	**Rehabilitation Service Life - 75 years**
Step 1: Estimate Cost Inputs			
Construction Costs	$ 13,000,000	$ 15,000,000	$ 17,000,000
Sum of Future Expenditures	$ 4,260,000	$ 20,250,000	$ 21,250,000
Step 2: Apply Present Value Calculation to Future Expenditures			
Sum of Present Value of Future Expenditures Discounted at 4%	$ 715,000	$ 5,501,000	$ 5,710,000
Step 3: Apply Present Value Calculation to Deferred Replacement Bridge Cost & Residual Value*			
Present Value of Replacement Bridge Cost at Year 75 (+)	n/a	$ 686,000	$ 686,000
Present Value of Residual Value of Replacement Bridge at Year 100 (-)	n/a	$ 193,000	$ 193,000
Step 4: Calculate Present Value of Life Cycle Costs of Alternatives			
Construction Costs + Present Value of Future Expenditures + (Present Value of Replacement Cost - Present Value of Residual Value) Rounded to nearest $10,000	**$ 13,720,000**	**$ 20,990,000**	**$ 23,200,000**
Step 5: Compare Present Value of Life Cycle Costs			
As percent of Up-Front Construction Cost of Bridge Replacement ($13,000,000)	106%	161%	178%
Compared to Present Value of Lowest LCC Alternative ($13,720,000)	**100%**	**153%**	**169%**

*Additional cost to reconcile the 25-year difference in expected life of the replacement alternative (100 years) and the rehabilitation alternatives (75 years).

Table 3. Comparison of LCC and Service Life Cost of Replacement Alternative 2 and Rehabilitation Alternatives[13].

	Alternative 2			Alternative 3			Alternative 4		
	Replacment on Upstream Curved Alignment **Service Life - 100 years**			**Rehabilitation** **Service Life - 75 years**			**Rehabilitation with Added Sidewalk** **Service Life - 75 years**		
Cost Items	Year	Estimated Cost	Discounted LCCA Value	Year	Estimated Cost	Discounted LCCA Value	Year	Estimated Cost	Discounted LCCA Value
Construction Cost	*1*	*$ 13,000,000*	*$ 13,000,000*	*1*	*$ 15,000,000*	*$ 15,000,000*	*1*	*$ 17,000,000*	*$ 17,000,000*
Future Expenditures									
Inspections	Biennial ($1,200 each)	$ 60,000	$ 14,000	Annual ($30,000 each)	$ 2,250,000	$ 710,000	Annual ($30,000 each)	$ 2,250,000	$ 710,000
Maintenance	Annual ($1,000 each)	$ 100,000	$ 24,000	Annual ($40,000 each)	$ 3,000,000	$ 947,000	Annual ($40,000 each)	$ 3,000,000	$ 947,000
Paint	20			20	$ 4,000,000	$ 1,826,000	20	$ 4,000,000	$ 1,826,000
	35	$ 1,750,000	$ 443,000	35			35		
	40			40	$ 4,000,000	$ 833,000	40	$ 4,000,000	$ 833,000
	60			60	$ 4,000,000	$ 380,000	60	$ 4,000,000	$ 380,000
	70	$ 1,750,000	$ 112,000	70			70		
Deck Replacement	None			40	$ 1,000,000	$ 208,000	40	$ 2,000,000	$ 417,000
Substructure Rehab	None			20	$ 1,000,000	$ 456,000	20	$ 1,000,000	$ 456,000
				50	$ 1,000,000	$ 141,000	50	$ 1,000,000	$ 141,000
Wearing Surface	15	$ 100,000	$ 56,000	None			None		
	30	$ 100,000	$ 31,000						
	45	$ 100,000	$ 17,000						
	60	$ 100,000	$ 10,000						
	75	$ 100,000	$ 5,000						
	90	$ 100,000	$ 3,000						
Sum of Future Expenditures		*$ 4,260,000*	*$ 715,000*		*$ 20,250,000*	*$ 5,501,000*		*$ 21,250,000*	*$ 5,710,000*
Service Life Adjustment for Replacement Bridge at Year 75				*75*		*$ 493,000*	*75*		*$ 493,000*
	Total	**$17,300,000**	**$13,720,000**		**$35,200,000**	**$20,990,000**		**$38,200,000**	**$23,200,000**
					+104% over Replacement Alternative #2	**+53%** over replacement Alternative #2			**+69%** over replacement Alternative #2

[13] Table 3 is a modification of Table 5 from the 2019 Section 4(f). Values from the Life Cycle Cost Analysis have been added for each Alternative. Totals represent rounded values using the following convention: When rounding the number 5, round up if the digit to the left is odd, and do not round up if the number is even. Example: 1350 rounds to 1400; 1250 rounds to 1200

How did MaineDOT and FHWA Consider Costs of Extraordinary Magnitude?

In determining whether the additional expenditure required to construct an avoidance alternative was of an extraordinary magnitude and therefore not prudent, FHWA & MaineDOT considered the Present Value Life Cycle costs of Alternatives 2, 3, and 4. Based upon this consideration alone, FHWA concludes that Alternatives 3 and 4 present costs of extraordinary magnitude and are not prudent avoidance alternatives. However, FHWA & MaineDOT also considered additional factors that support this conclusion. In particular, the Agencies considered that Rehabilitation Alternatives 3 and 4 would require the State of Maine to bear the costs and risks of keeping a Fracture Critical Bridge in the State Asset Inventory. Further, the Agencies took account of differences in Service Life Cost between the various alternatives given that inquiry reflects MaineDOT's funding realities and limited ability to budget for future costs.[14]

Present Value of Life Cycle Costs

The LCCA analysis above resulted in Present Value Life Cycle costs of $13.72 M for Replacement Alternative 2; approximately $20.99 M for Rehabilitation Alternative 3; and $23.2 M for Rehabilitation Alternative 4. The lowest cost rehabilitation alternative (Alternative 3) has a 53% higher Present Value Life Cycle Cost than the replacement alternative. As noted previously, MaineDOT uses Life Cycle Cost Analysis to identify the best value/most cost-effective transportation solution. The LCCA confirms that Alternative 2 was the best value and most cost-effective solution.

Costs of Keeping a Fracture Critical Bridge in the State Asset Inventory

In addition to dollar values, there is added risk and uncertainty to keeping a fracture critical bridge in service beyond its intended service life, even if it is extensively rehabilitated. This risk is captured and accounted for to some extent by recognizing increased costs for inspection and future routine maintenance, but the cost analyses do not fully capture the risk of unexpected but needed repairs or rehabilitations. If a fracture critical component were to fail, it could cause a bridge to collapse.

It is imperative that any defects in the fractural critical members be identified in time to prevent a possible catastrophe. These defects can be caused by corrosion, fatigue, flaws in the steel, and impact damage by vehicles or debris. Unfortunately, there is no consistent way to continuously monitor for defects. The standard method of inspecting fractural critical bridges is to conduct a hands-on inspection where qualified inspectors access the entire bridge at arm's length looking for any signs of damage. These inspections are required to be conducted at regular intervals not to exceed 24 months. As an added precaution, MaineDOT reduces this period to 12 months for bridges that are in poor condition.

A secondary concern is the cost of the inspections and the disruptions they cause. Getting an inspector within arm's length of all bridge elements takes considerable time and effort. A fracture critical inspection also requires more equipment and time to access the entire bridge which results in more traffic restrictions. For these reasons, it is challenging and less preferable to continue to maintain fracture critical bridges as part of the state's overall bridge inventory.

In sum, the increased challenges presented by the rehabilitation options are relevant to assessing the magnitude of cost differences among the alternatives and determining if additional expenditure for an avoidance alternative is prudent. Spending 53% more money to rehabilitate, maintain, and frequently inspect a fracture

[14] Further discussion regarding the economic context in which this project is being proposed is included in the original Individual 4(f) Evaluation, including details on the size of MaineDOT's bridge program, budget, and unmet needs. *See Final* 4(f) *Evaluation* pages 17-21 *available at* https://www.maine.gov/mdot/env/documents/fjwepr/ea/2019/Final_revised_EA_Final_4f_Frank-J-Wood-2.28.19.pdf

critical bridge that comes with more stringent and costly federal inspection requirements, traffic impacts, and increased user costs to the public is not prudent, and bears on the consideration of whether that 53% differential constitutes one of an extraordinary magnitude.

Service Life Cost - Further Considerations

LCCA appropriately promotes the consideration of future costs of alternatives over a simple comparison of initial construction cost to identify the best value/most cost-effective transportation solution. In addition to cost estimates under the LCCA, MaineDOT typically gains additional insight by considering Service Life Costs.

Service life is defined as the number of years a bridge can be part of the transportation system with maintenance, repair, and/or rehabilitation before its eventual replacement. The Service Life Cost is the total cost to maintain a structure over its design service life. It includes the cost of initial construction (construction cost), maintenance costs, inspections, and the cost of expected future improvements. Costs are broken down into required annual costs (such as inspections and anticipated maintenance) as well as periodic items (such as bridge painting, deck replacements, and structural rehabilitation). Costs are not discounted to net present value. These costs are generated based on the historical maintenance needs of similar bridge types and historical data on costs.

The term Service Life Cost is a label given in the project documentation for the simple sum of all estimated actual costs over the expected life (service life) of the alternative. The term "service life" is used throughout FHWA's LCCA guidance to describe the expected useful life of an asset. The maintenance costs, inspections and future improvements over the service life of each alternative were included in the FJW Life Cycle Cost Analysis as Future Expenditures. For Alternative 2, the total cost over service life is estimated to be $17,300,000.[15] .

Relevant here, a 53% difference in net present values between Rehabilitation Alternative 3 and Replacement Alternative 2 translates to increased undiscounted costs to the agencies that is nearly double.[16]

By way of example, the rehabilitation options will require painting the steel truss elements every 20 years to extend the life of the structure to 75 years. With each painting estimated to cost $4M, the calculated present value of the painting project required at year 60 is $380,000 ($4M discounted at 4% per year over 60 years). But, of course, the bridge cannot be painted for $380,000 now, nor will that be the cost when the painting actually takes place. Similarly, the replacement option includes a wearing surface replacement at year 60. The calculated present value of the wearing surface replacement at year 60 is $10,000. Again, a wearing surface treatment cannot be performed for $10,000 today, or 60 years from now. In sum, the difference in cost estimates under the Service Life Cost analysis makes the substantial differences in cost between the replacement and rehabilitation alternatives more apparent.

Does the Cost Difference between Bridge Rehabilitation Alternatives and Replacement Alternatives Represent a Cost of Extraordinary Magnitude?

FHWA must determine if the above analysis supports the Section 4(f) Evaluation's conclusion that the Rehabilitation Alternatives are not feasible and prudent avoidance alternatives to using the Section 4(f) properties. The relevant regulation, 23 CFR 774.17, states:

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[15] Annual Cost over Service Life comparison was calculated and presented in the Environmental Assessment and the Final Section 4(f) Evaluation. The comparison resulted in Annual Cost per Service Life year of $43,000 for Replacement Alternative 2 and $269,333 for the lowest cost Rehabilitation Alternative 3, and $482,667 for Alternative 4.
https://www.maine.gov/mdot/env/documents/fjwepr/ea/2019/Final_revised_EA_Final_4f_Frank-J-Wood-2.28.19.pdf

[16] Alternative 3, the lowest cost rehabilitation alternative, has a total Service Life Cost of $35,200,000, which is 103% more than the cost of Replacement Alternative 2. *See Final 4(f) Evaluation* pages 17-25.

(3) An alternative is not prudent if:
(i) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
(ii) It results in unacceptable safety or operational problems;
(iii) After reasonable mitigation, it still causes:
(A) Severe social, economic, or environmental impacts;
(B) Severe disruption to established communities;
(C) Severe disproportionate impacts to minority or low income populations; or
(D) Severe impacts to environmental resources protected under other Federal statutes;
(iv) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
(v) It causes other unique problems or unusual factors; or
(vi) It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

As described previously, the difference in Life Cycle Costs to construct, maintain and operate the specific rehabilitation and replacement options over their expected life spans presents a cost of extraordinary magnitude. This is particularly so given the context of the continued expense of operating a fracture critical bridge.

Alternative 3: Bridge Rehabilitation with Existing Westerly Sidewalk

Alternative 3 has a life cycle cost of $20.99 M. Alternative 3 was the lowest cost rehabilitation alternative and has a 53% higher Life Cycle Cost than Replacement Alternative 2. Based on all the above considerations, FHWA and MaineDOT determined that the 53% difference in Life Cycle Cost represents a cost of extraordinary magnitude. The expenditure of additional funds to construct Alternative 3, which has a shorter life span and leaves a fracture critical bridge in place is dismissed as not prudent per 23 CFR 774.17 Part 3 (iv).

Alternative 4: Bridge Rehabilitation with Existing Westerly Sidewalk and New Easterly Sidewalk

Alternative 4 had a life cycle cost of $23.2 M. This is a 69% higher Life Cycle Cost than Replacement Alternative 2. Based on all the above considerations, FHWA and MaineDOT determined that the 69% difference in Life Cycle Cost represents a cost of extraordinary magnitude. The expenditure of additional funds to construct Alternative 4, which has a shorter life span and leaves a fracture critical bridge in place is dismissed as not prudent per 23 CFR 774.17 Part 3 (iv).

Section 4(f) Re-Evaluation Conclusion

The agencies find that the rehabilitation avoidance alternatives (Alternatives 3 and 4) present increased costs of 53% and 69% respectively, result in additional construction, maintenance, and operational costs of an extraordinary magnitude, and therefore are not prudent alternatives for the Frank J Wood Bridge project.

Regarding the two replacement alternatives (Alternatives 1 and 2), FHWA affirms its 2019 determination that Alternative 2 results in the least overall harm because:

- It is the alternative that requires the least amount of time for in-water work in areas with endangered species and their habitats; per 23 CFR 774.3(c)(1)(vi), resulting in less harm to endangered and threatened fish species and their habitats.
- At $13M in construction costs, it is $3M less than Alternative 1. At $17.3M in service life costs, it is $3M less than Alternative 1. The Present Value of Life Cycle Costs for Alternative 2 is $3 million less than Alternative 1. This represents a substantial difference among the two alternatives[17]; per 23 CFR 774.3(c)(1)(vii).

All other portions of the 2019 Section 4(f) Evaluation remain unchanged.

[17] "Substantial" is informed by data presented in the Funding and Costs of Extraordinary Magnitude section (pages 17-22) of the *Final Section 4(f) Evaluation,* and **Appendix 8**: *Keeping our Bridges Safe Report*.

Section 4(f) Determination

Based on the information presented above, there remains no feasible and prudent alternative to the use of land from the National Register Eligible Cabot Mill, National Register Eligible Brunswick Topsham Industrial Historic District, National Register Eligible Frank J. Wood Bridge, and the National Register Listed Pejepscot Paper Company. This proposed action includes all possible planning to minimize harm to these properties resulting from such use.

This determination follows consideration of all information contained in the Frank J. Wood Bridge Project Individual Section 4(f) Evaluation concluded February 2019 as well as the limited Section 4(f) Re-evaluation above.

Todd D. Jorgensen
1/27/23

Todd D. Jorgensen — Date

Division Administrator

FHWA Maine Division

Summary of Comments & Responses

Frank J Wood Limited Scope Section 4(f) Re-Evaluation

January 2023

Introduction

MaineDOT and FHWA published a draft of the Limited Scope Section 4(f) Re-Evaluation on Wednesday, July 27, 2022. The document was posted on the MaineDOT Frank J. Wood Bridge project webpage at https://www.maine.gov/mdot/env/frankjwood/. A legal public notice was published in the Times Record on July 27, 2022, inviting the public to the website to review the document and comment. FHWA also distributed the document via email directly to the following parties:

- Kirk Mohney, State Historic Preservation Office (SHPO) at the Maine Historic Preservation Commission
- U.S. Department of Interior (DOI)
- Section 106 Consulting Parties

Comments were accepted through August 29, 2022, via the website and by email and U.S. mail to Rachel LeVee at FHWA Maine Division.

Summary of Comments Received

MaineDOT & FHWA received 57 comments in total. Six of the comments were received after the comment deadline. They were noted as late responses but were still considered. The compiled comments are publicly available on the project webpage at https://www.maine.gov/mdot/env/frankjwood/. FHWA received one request to extend the comment period but declined to extend it.

Comments / correspondence from the U.S. Department of the Interior were received on August 24, August 29, and November 2, 2022. DOI concurs that the replacement of the Frank J Wood Bridge includes all possible planning to minimize harm and reasonable mitigation. DOI has no objection to Section 4(f) approval of this project.

The remainder of public comments are discussed below. Because a substantial number of comments requested that FHWA consider more recent cost estimates, FHWA has provided a lengthy response in this category (Category C).

A. Comments on Fracture Critical Bridge

Several commentors noted that the term "fracture critical" does not mean "unsafe" and stated their belief that the "fracture critical" elements of the Frank J. Wood Bridge do not increase costs by an extraordinary magnitude. These commenters also noted that technology could decrease the cost of bridge inspections.

RESPONSE A (Fracture Critical Bridge):

In FHWA's limited scope Section 4(f) Re-Evaluation, the agency considered solely whether a 53% price differential represents a cost of an extraordinary magnitude under 23 C.F.R. § 774.17. As such, although FHWA does account for important safety considerations, FHWA did not rest its decision on whether rehabilitation options would leave the bridge with fracture critical elements. The description of fracture critical bridge elements is accordingly limited to a discussion of cost estimates (mainly, the cost of inspections) used in the agency's original Life Cycle Cost Analysis.

B. Comments Outside the Scope of this Re-Evaluation

Eight comments stated support for proceeding with construction of a new bridge. A sub-set of those comments criticized use of constant dollars in the Life-Cycle Cost Analysis. The remainder of the comments supported rehabilitation of the existing bridge. The bulk of these comments were general in nature and included the following issues and concerns:

- Commentors stated aesthetic concerns with the proposed new bridge and related potential impacts to tourism/business
- Commentors were concerned that the new bridge will increase the speed of traffic
- Commentors had concerns about impacts to surrounding neighborhoods and historic properties from new bridge abutments and approaches
- Commentors shared their belief that MaineDOT has not given fair consideration to rehabilitation of the existing bridge
- Commentors requested consideration of the value of retaining what they considered a locally-significant historic bridge and surroundings
- One commentor requested that FHWA consider the financial impact of a fish ladder in the new bridge cost
- One commentor suggested that a NEPA Re-Evaluation is required
- One commentor requested additional environmental impact comparison between alternatives to support a least overall harm determination
- One commentor suggested that since MaineDOT issued a press release before FHWA released the draft Re-Evaluation, FHWA is not impartial
- One commentor asked FHWA and MaineDOT to consider the cost of the carbon footprint which could offset the cost difference between rehabilitation and replacement

RESPONSE B (Comments outside the Scope of this Re-Evaluation):

These comments generally address issues outside the scope of the U.S. District Court's remand order, *Historic Bridge Foundation v. Chao*, No. 2:19-cv-00408-LEW, ECF Doc. 54 (D.Me. March 2, 2022), to which the Re-Evaluation responds.[1] In addition, many of the topics noted above were addressed in great detail within FHWA's *Revised Environmental Assessment & Final Individual Section 4(f) Evaluation*, available on MaineDOT's website at:

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[1] Further details regarding the District Court's remand order are provided in Section C below.

https://www.maine.gov/mdot/env/frankjwood/. The NEPA process resulted in a final decision that balanced engineering and transportation needs with social, economic, and natural environmental factors. During that process the public, businesses, interest groups, and federal and state agencies provided extensive input on many of the concerns noted above, and FHWA responded to those comments in the final Environmental Assessment.

C. Comments Received Related to New Cost Figures

Many comments pertain to FHWA not updating the cost estimates for the replacement bridge and other bridge alternatives in the draft Re-Evaluation. Although these comments are not directly responsive to the ultimate issue before FHWA on remand, FHWA nevertheless wishes to address this issue.

Several comments offered new information on cost and made specific cost assertions:

- Commentors suggested that FHWA's Re-Evaluation did not explain or provide the agency's rationale for finding a cost of extraordinary magnitude in the context of MaineDOT's current $3.17 billion triennial workplan
- Commentors suggested that $2.7 billion in additional funding that the State of Maine is expected to receive under the Bipartisan Infrastructure Bill, including an extra $225 Million slated for "Bridge Repairs" in Maine, should change FHWA's extraordinary magnitude analysis
- Commentors suggested that MaineDOT's more recent $42 million published cost estimate for the Frank J. Wood bridge replacement exceed the $13 million estimate in 2016 and are not in line with the construction industry rate of inflation
- One Commentor (Mr. Shulock, on behalf of the Friends of Frank J. Wood Bridge) provided his own updated cost estimate for rehabilitation; specifically, he provided an estimate for Alternative 3 (rehabilitation) of $19.2 million, which another commentor, Mr. Graham, used to compare with MaineDOT's estimate of $42 million for Alternative 2 (replacement)

Other commentors mentioned new costs more generally:

- Commentors stated that the draft Re-Evaluation is arbitrary, capricious, or an abuse of discretion because it includes outdated cost estimates
- Commentors noted that because the construction costs section of the 4(f) Re-Evaluation states that construction costs are estimated based on recent bid history, a qualified third-party engineer with experience in truss rehabilitation should be hired to analyze expenses
- Commentors suggested that increased material costs favor rehabilitation because impacts of recent supply chain issues and inflation appear primarily in the cost of materials

RESPONSE C (Comments on New Cost Figures):

FHWA acknowledges that the current cost estimate for the bridge replacement project has increased since the original cost estimates were prepared during the NEPA process. However, the exclusive purpose of the present Re-Evaluation is to respond to the remand instructions in the January 2022 decision of the First Circuit Court of Appeals. *See Historic Bridge Found. v.*

Buttigieg, 22 F.4th 275 (1st Cir. 2022). The First Circuit and the U.S. District Court for the District of Maine affirmed FHWA's findings and analysis—except for the agency's reliance upon a Service Life Cost methodology in its Section 4(f) evaluation—and remanded the case for further consideration of that issue alone. Specifically, the District Court explained that the "matter is hereby remanded for further administrative proceedings consistent with the opinion of the Court of Appeals; *i.e.*: for the strictly limited purpose of allowing the agency to further justify use of the service-life analysis and/or to decide whether a 53% price differential represents a cost of an extraordinary magnitude under 23 C.F.R. § 774.17." *Historic Bridge Found. v. Chao*, No. 2:19-cv-00408-LEW, ECF Doc. 54 (D. Me. March 2, 2022) (citing *Historic Bridge Found.*, 22 F.4th at 286 (internal quotes omitted)). Given that instruction, comments directed at costs generally and the appropriateness of specific components of the project (*i.e.*, painting estimates, and the inclusion and cost of a temporary bridge and work trestle) are outside the scope of the Re-Evaluation.

Instead, the remaining issue considered in the draft Re-Evaluation is whether the approximately 53% cost differential between alternatives using a life cycle cost analysis (LCCA)[2] is a cost of extraordinary magnitude under 23 C.F.R. § 774.17. Although time has passed since the original cost estimates for the various alternatives were developed, the courts' orders make clear that FHWA was directed to answer a specific question using the cost information in the record at the time of the issuance of the Finding of No Significance on March 12, 2019. FHWA followed the courts' directives in preparing the draft Re-Evaluation.

Notwithstanding the above, FWHA seeks to respond to concerns predicated upon an updated construction cost estimate submitted by a commenter (Mr. Shulock) for one of the rehabilitation alternatives (Alternative 3). Mr. Shulock's construction cost estimate of $19 million for Alternative 3 was presented during public comments for direct comparison with the updated construction cost estimate of $42 million provided in MaineDOT's latest 3-Year Work Plan for the FHWA-selected alternative (Alternative 2). As part of preparing this response MaineDOT and FHWA considered this new information and scrutinized the accuracy of the cost estimate provided by Mr. Shulock.

Mr. Shulock's cost estimates include several flaws. Among other things, his estimate omits major items that are included in the current replacement estimate, uses an inflation rate that is too low, and averages actual Maine bid prices with lower New Hampshire bid prices. As to the first flaw, Mr. Shulock overlooks that: (1) the $42 million estimate includes local amenities, utility work, and full right-of-way costs that were not included in the Preliminary Design Report (PDR) estimate for Alternative 3, accounting for nearly $5.77 million that must be added to Mr.

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[2] LCCA is a standard engineering economic analysis used to compare the relative merit of competing alternatives. LCCA and Service Life Cost (SLC) both account for the cost of initial construction (construction costs), maintenance costs, inspections, and the cost of expected future improvements to a structure. LCCA, however, converts the estimated future costs (*e.g.*, maintenance, inspections, etc.) occurring for each alternative over a defined period into current dollar equivalents—what is termed present value. SLC, on the other hand, does not discount estimated future costs to net present value.

Shulock's estimate to achieve parity [3] and (2) the $42 million figure includes approximately $5.5 million in preliminary and construction engineering costs that would need to be considered as part of either alternative; and (3) Mr. Shulock's $19 million figure underestimates the costs of painting, site access/trestle, removal of the existing slab, and construction of the temporary bridge. In sum, although MaineDOT estimates the current replacement total project budget at around $42 million, inclusion of the above elements into Mr. Shulock's $19 million estimate for rehabilitation reduces the differential between the alternatives.[4]

Moreover, as the cost analysis in the initial 4(f) Evaluation demonstrates, construction costs are only one part of a full comparative cost analysis. As FHWA previously concluded, long-term maintenance costs are what truly separate the two alternatives, and FHWA relied on the total cost differential between the alternatives (construction plus maintenance costs) to make its extraordinary magnitude finding. Commenters (and Mr. Shulock and Mr. Graham, in particular) overlook this difference.

As to the second flaw, Mr. Shulock's use of a national multi-industry average for inflation of about 23% is too low based on recent trends in the Maine transportation infrastructure construction industry. A report recently published by the University of Maine Margaret Chase Smith Policy Center and the Transportation Infrastructure Durability Center supports observations that MaineDOT has seen a general increase in construction costs of approximately 40% from 2018 to 2022, though individual project size and complexity can further influence the cost. MaineDOT's recent effort to replace two bridges along U.S. Route 2 in Old Town is an example of this. Bids received for that project were close to double the estimates provided by MaineDOT. Second, the Producer Price Index shows inflation rates for various steel components ranging from 66% to 90% since 2016. Platts Steel Spot Market Price shows inflation of over 200% for Plate steel, 97% for rebar, 89% for overall construction materials, and 34% for 4000 psi concrete. Some of the cost drivers mentioned above are related to a 120% increase in diesel fuel recognized by the U.S. Energy Information Agency and a 116% increase in unleaded gasoline noted by the Bureau of Labor Statistics. In sum, MaineDOT's recent bid experience supports FHWA's finding that the ratio of increased costs reflected in the recent work plan estimates for the replacement alternative would also apply at least equally to rehabilitation Alternative 3.

Finally, reference to the Thetford-Lyme bridge rehabilitation project in New Hampshire cannot support an assertion that rehabilitation Alternative 3 will cost less than replacement Alternative 2. As an initial matter, the square footage for the FJW bridge is about three times that of Thetford-Lyme and the amount of structural steel needed for the Thetford-Lyme bridge is only

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[3] These added construction elements and associated increased costs are typical as projects proceed from a conceptual design phase to a more detailed plan and development of a final bid package.

[4] In addition to increased costs due to inflation, the updated project budget estimate for replacement Alternative 2 also includes other new cost items, such as over $2 million in approach work, that were not included in the $13 million construction cost estimate from the PDR considered in the original Section 4(f) analysis.

25% of that needed for FJW. Moreover, the FJW bridge is not only larger than the Thetford-Lyme bridge, but the scope of the rehabilitation proposed for the FJW bridge is far more extensive given the proposed rehabilitation is designed to achieve maximum historic preservation. And unlike the FJW bridge, the Thetford-Lyme bridge will not include sidewalks. Finally, the Thetford-Lyme bridge is being rehabilitated to last 50 years, as opposed to the 75-year life rehabilitation envisioned by Alternative 3. However, to the extent the Thetford-Lyme project is instructive at all, the unit prices received during New Hampshire's recent June 2022 bid opening for that project confirm the rates of inflation mentioned above and reflected in MaineDOT's recent construction estimate.

In summary, the First Circuit directed FHWA to make a specific determination based upon the existing record for the agency's § 4(f) analysis. In accordance with the First Circuit's opinion and the District Court's subsequent remand order, FHWA conducted its §4(f) Re-Evaluation based upon on the LCCA cost estimates included in the initial 4(f) Evaluation. As described above, FHWA is not persuaded that the effects of inflation and other cost considerations presented in public comments materially change the conclusions reached in its draft § 4(f) Re-Evaluation.

Comments Received by Commentor

Topic A: Comments on Fracture Critical Bridge

Topic B: Comments outside scope of Re-Evaluation (e.g., in favor, not in favor of new bridge, historic concerns, business concerns, safety concerns)

Topic C: Comments related to/requesting new cost figures

Comment Number	Commentor	Comment Topic (A-C)
1	Ruth Lyons	B
2	Don Spann	B
3	Paul Jones	B
4	Nathan Holth	B
5	Richard Mersereau	B
6	Sally Pelletier	B
7	Dorothy Bonito	B
8	Chris Endsley	B
9	Larry LaClair	B
10	Andrea LeBlanc	B
11	Friends of the FJW Bridge, Ferster & Merritt	A, B, C
12	Sue Spann	B
13	Jack Parker, Reed & Reed	B, C
14	Martin Perry, Henry D'Alessandris	C
15	Nan March	A, C
16	James P. McCormick, MD	B, C
17	Elizabeth Hanks Leonard	B, C
18	Arlene Morris	A, B, C
19	Steven Stern	B, C
20	Jaime Kline	B, C
21	Amy Gottlieb	A, B, C
22	Marily Koshland/Dr. Stephen Koshland	B
23	Gavin Engler	B, C
24	Ann Carroll	B
25*	Marily Koshland/Dr. Stephen Koshland	B
26	James Whittaker	B
27	William F. Morin	B
28	Penninah Graham	B
29	Camilla Beale	B
30	Waterfront Maine, Jonathan M. Dunitz	B
31	Maine Preservation, Tara Kelly	B, C
32	Scott T. Hanson	B, C
33	Allison Brigham	B, C
34	Daniel Flaig Jr	B, C
35	Alex Carleton	B

36	Donna Neff	B
37	Matthew Kennett	B
38	Houghton M. White	B
39	Mary Baxter White	B
40	Friends of the FJW Bridge, John Graham	A, B, C
41	John Graham (personal)	C
42	Chick Carroll	B, C
43	Sean B. White	B
44	John Graham (real estate)	A, B, C
45	US Department of the Interior, Andrew Raddant	See comment summary (page 1)
46	Scott Newman	B, C
47	Phinney White	C
48	Susan Z. White	B
49	Christopher Marston	B
50	Reid Kinney	B
51	National Trust for Historic Preservation, Elizabeth S. Merritt	B, C
52	Cheryl King	A, B, C
53	Karen L. Munson	B
54	Spencer H. Hall	B
55	Arlene Morris	C
56	Waterfront Maine, Jonathan M. Dunitz	B
57	Steven Stern	B, C