

Haines Highway Improvements Mileposts 3.5 to 25.3 Bridge Location Alternatives Considered

Four bridge location alternatives were considered during the development process of the Haines Highway Improvements Mileposts 3.5 to 25.3 Project. These alternatives were presented to the public and to the agency Inter-disciplinary Team (IDT) members in late 2005 and early 2009.

Alternatives considered are listed below (refer to attached figure):

- Alternative A - No Action
- Alternative 1A - Repair and Widen Existing Bridge
- Alternative 2A - New Bridge Adjacent Downstream Side (involves minor roadway realignment)
- Alternative 2B - Realign road to reduce curvature and build a new bridge downstream of the existing bridge (involves significant roadway realignment)

The attached matrix summarizes the bridge alternatives analysis. The narrative below provides a more detailed description of each of the alternatives considered and a summary of how the evaluation criteria was applied.

Alternatives were evaluated based on a number of criteria related to the project purpose and need, safety and design standards, and potential impacts to the area's natural resources, parkland, and subsistence use. Specific concerns raised during the public and agency scoping process with regard to the bridge were also considered, including:

1. Avoid relocating the bridge to the high value subsistence fishing area located significantly downstream of the existing bridge (requested by the Klukwan Native Village)
2. Minimize in-river work, bank erosion, and the need for bank stabilization
3. Avoid worsening the situation with regard to legal and illegal access to the river around the existing bridge
4. Increase bridge clearance over the water to improve navigability during high water periods
5. Avoid historical sites to the extent practicable
6. Widen shoulder for safer bicycle and pedestrian use
7. Clean up contaminated site near existing bridge from old pipeline
8. Avoid existing utilities to the extent practicable
9. Concern that because of utilities and the need to maintain residential driveways and access, the existing bridge would still have to be left in place, even if a new one is constructed downstream

Note - only those issues that vary between the alternatives were added as evaluation criteria. All alternatives assume the abandoned pipeline bridge remains in place, and that a temporary construction bridge will be needed.

Alternative A - No Action

Under this alternative, no improvements or bridge construction would take place, and the project Purpose and Need would not be met. The existing bridge width would continue to be substandard for a 55-mile-per-hour (mph) design speed roadway, and would not provide space for bicyclists and pedestrians. In addition, the bridge superstructure, particularly the bridge deck, would continue to be substandard for loading and seismic requirements, which limits the use of Haines Highway for accommodating heavy vehicles.

Positives:

- Property acquisition not needed
- No additional wetland impacts
- No historical sites affected
- No change in surrounding natural resources or habitat

Negatives:

- Does not meet project purpose and need
- Bridge maintenance will continue to be extensive
- Bridge too narrow for separating pedestrian and bike traffic outside of traveled way
- Sight distance remains below 55 mph curve criteria
- River not navigable during high water events
- Highway unusable for loads exceeding HS 13 requirements
- Does not meet current seismic standards

Alternative 1A - Repair and Widen Existing Bridge

Under this alternative, the existing bridge will be brought up to 55-mph design standards by widening the existing substructure and superstructure and by reconstructing and resurfacing the bridge deck. Additional piers would be driven to strengthen the existing piers on one or both sides of the bridge to support new girders needed to widen the bridge. The existing bridge deck would be removed and a new deck installed. The fiber-optics attached to the bridge would have to be temporarily removed and reattached to the new bridge girders. A temporary detour and work staging bridge(s) would have to be constructed. The cost of this effort is estimated at \$13.1 million, approximately \$2 million higher than the cost to replace it with a new structure.

This alternative would not disturb traditional subsistence fishing grounds (Alternative 2B location), and is a more favorable alternative for the Klukwan Native Village members.

Positives:

- Meets project purpose and need
- River access not changed
- No permanent right-of-way (ROW) acquisition required
- Less wetland impacts than Alternative 2B (0.23 acre versus 1 acre)
- Flow regime will closely match existing flow since piers will be in the same locations
- No 4(f) impacts to the Chilkat Bald Eagle Preserve
- Natural resources, fish and wildlife habitat not substantially changed
- No further encroachment into bald eagle nest buffers
- Subsistence fishing habitat downstream not disturbed

Negatives:

- No reduction in pier groups compared to new bridge alternatives
- In-water impacts associated with additional piers
- Utility relocation likely
- No increase in navigational clearance
- Life cycle of bridge not as long as a new bridge
- Highest cost option for meeting the purpose and need
- Impacts to two sites that are recommended by Cultural Resource Consultants, LLC, as eligible for listing on the National Register of Historic Places:
 - The Donnelly Cabin
 - The Chilkat River Bridge

Alternative 2A - New Bridge Adjacent Downstream Side

Under this alternative, a new 540-foot-long bridge would be constructed immediately adjacent to the downstream side of the existing Chilkat River Bridge. Because this would be a four-span bridge, fewer bridge piers than the existing bridge will have less hydraulic influence on the flow regime and scouring of stream substrates. Less in-river structures would minimize potential impacts to prime spawning habitat areas, in comparison to the downstream relocation (Alternative 2B), causing fewer impacts to subsistence and sport fishing. Klukwan's subsistence fishing area would not be disturbed under this alternative.

A 120-foot ROW corridor would be cleared; however, this alternative would follow closely along the existing ROW minimizing the need for additional property acquisition. Longer bridge length would be necessary compared to Alternative 2B since the Chilkat River is wider at this location. The cost for this alternative is approximately \$11.1 million, \$0.8 million more than Alternative 2B due to the increased bridge length.

Positives:

- Meets project purpose and need
- Fewer bridge piers in water, reduced potential for log jams to form
- Increased bridge height will improve navigability during high water events
- Less hydrologic flow influences resulting in less river bottom scouring and flow impacts
- River access not changed
- Minimal property acquisition (approximately 0.4 acre - native allotments)
- Less wetland impacts than Alternative 2B (0.23 acre versus 1 acre)
- Minimal changes to fish habitat
- No 4(f) impacts
- Fish habitat impacts are minimal in comparison to Alternative 2B
- No further encroachment into bald eagle nest buffers
- Minimizes impacts to subsistence fishing areas
- Avoids impacts to the historic Donnelly Cabin

Negatives:

- New structures in river (less than Alternative 1A due to fewer spans and piers)
- Utility lines under the existing bridge will need to be relocated to the new bridge
- Impacts to historical Chilkat River Bridge

Alternative 2B - Relocating Bridge Downstream:

Under this alternative, a new 405-foot three-span bridge would be constructed approximately 820 feet south of the existing bridge. A bridge design that minimizes the number of in-river structures would have the greatest chance of minimizing impacts to spawning habitat by reducing the measured cumulative footprint of the combined piers/footings. Less in-river structures would minimize potential impacts to prime spawning habitat; however, any structures in the waterway may impede the existing ease of subsistence drift netting, which would have an overall negative impact to subsistence and sport fishing.

Alternative 2B would bring the bridge closer to two bald eagle nests that are currently 888 feet (Nest 1) and 1,007 feet (Nest 2) from the existing alignment. Alternative 2B would move the highway alignment 703 feet closer to Nest 1 and 312 feet closer to Nest 2.

Alternative 2B will require clearing of a new 120-foot ROW corridor and approximately 0.96 acre of wetlands fill. The cost for this alternative is approximately \$10.3 million, approximately \$0.8 million less than Alternative 2A, primarily due to the reduced bridge length compared to the Alternative 2A alignment.

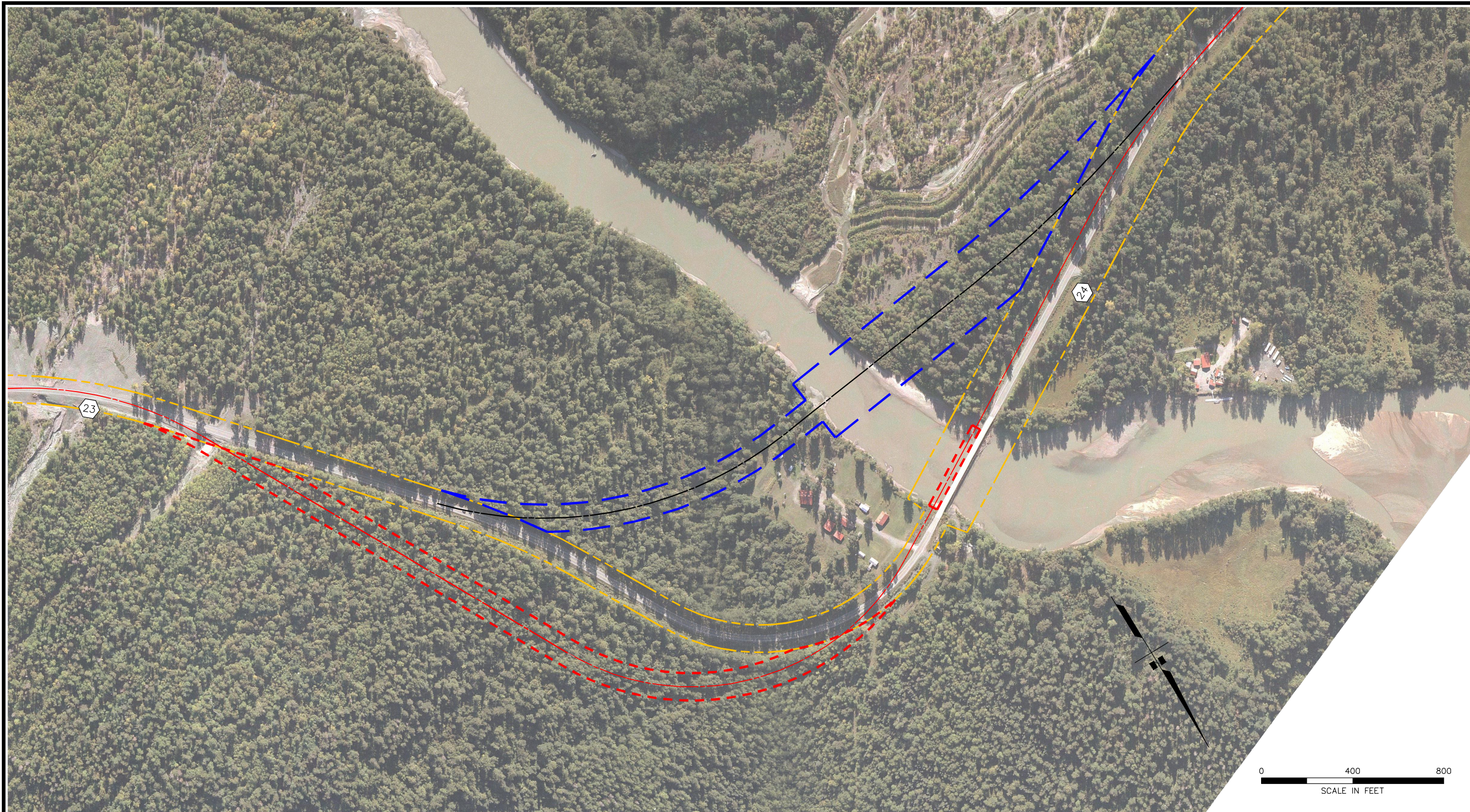
Positives:

- Meets project purpose and need
- Fewer bridge piers in water; reduced potential for log jams to form
- Increased bridge height will improve navigability during high water periods
- Shorter bridge (approximately 135 feet less)
- Less hydrologic flow influences resulting in less river bottom scouring
- Net reduction in river fill after existing bridge is removed
- Less excavation than Alternative 2A
- Lowest cost alternative for achieving the purpose and need

Negatives:

- Requires new structures in waterway (although less than existing due to fewer spans)
- Motorized and non-motorized river accesses may be changed
- Utility lines would need to be realigned to follow new road alignment
- Property acquisition of approximately 6 acres
- Excavation and clearing of a new 120-foot-wide ROW corridor
- Fill of approximately 0.96 acre of wetlands
- 2-acre 4(f) impact in the Chilkat Bald Eagle Preserve
- Temporary fill in waterway
- Temporary fish habitat disturbance
- Impacts to area reported to be important for fish migration and rearing habitat
- Closer to bald eagle nests
- Unfavorable alternative to the Klukwan Native Village Community
- Subsistence fishing areas impacted

Residents who live immediately up and down stream of the existing bridge preferred this alternative; however, many scoping comments were received from local residents and the Klukwan Native Village members opposing this bridge location due to the potential of disrupting a segment of the river that is important for subsistence fishing activities. Not only would this alternative place the bridge in reported salmon spawning habitat, it would also place the highway closer to two existing bald eagle nests, well within the 330-foot primary buffer zone recommended by the U.S. Fish and Wildlife Service. In addition, this alternative would require acquisition of approximately 6.0 acre of property, including native allotments and park land, which would trigger a Section 4(f) evaluation under the Department of Transportation Act. For the above mentioned reasons, this alternative has been eliminated from further consideration.



- PROPOSED CENTERLINE
- ALTERNATIVE 1A: REPAIR AND WIDEN EXISTING BRIDGE
- ALTERNATIVE 2A: CONSTRUCT NEW BRIDGE ADJACENT
DOWNSTREAM SIDE
- ALTERNATIVE 2B: REALIGN ROAD TO REDUCE
CURVATURE - NEW BRIDGE DOWNSTREAM

HAINES HIGHWAY MP 3.5 - 25.3
CHILKAT RIVER BRIDGE ALTERNATIVES

TS 28/29/30 S, R 56/57/58/59 E,
Copper River Meridian, Alaska



DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

DOT & PF Project No. 68606
HAINES HIGHWAY
MILEPOST 3.5 - 25.3

Haines, Alaska








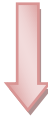








DATE: JULY 2012

FIGURE 1

Haines Highway MP 3.5 to 25.3 Project Bridge Alternatives Matrix

		Performs Well	Neutral	Performs Poorly	Performs Very Poorly
Purpose and Need/ Design Criteria	Evaluation Criteria	No Action A	Repair and widen existing bridge 1A	New bridge adjacent downstream side 2A	Downstream location 2B
	<i>Meets current load and seismic criteria</i>				
	<i>Meets 55mph curve radii and bridge width</i>				
	<i>Number of piers</i>	10	10	3	2
	<i>Elevates Bridge Height</i>				
	<i>Minimizes new river motorized and non-motorized access</i>				
	<i>Utility relocation</i>				
	<i>Minimizes ROW acquisition</i>	0	0	0.4 acres	6.0 acres

Haines Highway MP 3.5 to 25.3 Project Bridge Alternatives Matrix

Purpose and Need/ Design Criteria	Evaluation Criteria	No Action	Repair and widen existing bridge	New bridge adjacent downstream side	Downstream location
		A	1A	2A	2B
	Cost				
Other Environmental and Planning Criteria	Wetland Impacts (acres)	0	0	0	1.0 acres
	Indirect hydrology Impacts (bridge structure on hydrologic flow)				
	4(f) Impact	No	No	No	Yes (2.0 acres)
	Fish Habitat Impacts				
	Eagle Nest distance /disturbance				
	Subsistence Impacts	