



Categorical Exclusion Documentation Form (CE Form)

Project: Polychrome Area Improvements: Design Changes

Project Location: Denali Borough, AK

PEPC Project Number: 113088

Related PEPC Project: Polychrome Area Improvements Environmental Assessment (101706)

Description of Action (Project Description):

Denali National Park and Preserve completed an Environmental Assessment (EA) for improvements to the Park Road in the Polychrome Area to address several geologic hazards that are jeopardizing public safety and infrastructure (NPS, 2022a). The Finding of No Significant Impact (FONSI) selected the alternative which includes constructing a bridge spanning the Pretty Rocks landslide at mile 45.4 of the Denali Park Road (NPS, 2022b). As the bridge design progressed following the completion of the EA, some changes to the project have occurred. This compliance documentation serves as a review of the impacts associated with those design changes, relative to the impacts already discussed in the EA.

Summary of changes (Figure 1):

- 1) The western bridge abutment will be constructed approximately 150' to the southwest of the location identified in the EA due to the increased stability of the new location. As a result, the bridge alignment will shift from being suspended above the non-wilderness corridor along the Park Road to being partly suspended above wilderness.
- 2) The new western abutment location will cause the new road alignment on the west side of the bridge to also be repositioned, requiring less excavation in wilderness and less total excavation. The EA estimated 125,000-150,000 cubic yards of total excavation (less than 1 acre in wilderness) and the design changes will result in an estimated 75,000-100,000 cubic yards of total excavation (less than 0.5 acre in wilderness). Correspondingly, there will be less excavated material placed on the slope below the road, including less in wilderness and none in wetlands.
- 3) The excavated slope on the west side of the bridge will no longer include a bench cut, which eliminates the annual maintenance using motorized vehicles in wilderness that was described in the EA. The excavation will still produce rough, irregular rock faces that resemble the surrounding natural rock.
- 4) The new abutment location will require the bridge to be longer and therefore taller: approximately 475 ft long and 50 ft tall compared to the approximately 400 ft long and 10 ft tall bridge represented in the EA. The bridge will still be constructed using weathering steel that is a nonreflective orange-brown color that will darken over time to reduce contrast with the surroundings.
- 5) The design will include the addition of 23 thermosiphons installed in the ground around the eastern abutment of the bridge to mitigate the potential for permafrost thaw and ensure the longevity of the bridge. The EA mentioned that the use of thermosiphons would be researched and evaluated for future design consideration (p.16) and thermal modeling completed since the FONSI resulted in their recommended addition. The thermosiphon condensers will be three-inch diameter cream-colored pipes extending 18 ft above ground and grouped in two racks on the outboard side of the bridge. They will be located as close to the bridge structure as practical, to minimize their visibility.
- 6) The design will include additional measures to stabilize the slopes in front of the abutments: on the east side, a soil nail wall will be installed with a steel wire mesh facing (over an area approximately 25-35 ft tall and 70-80 ft wide) and on the west side, rock dowels will be installed into the slope (over an area approximately 80-90 ft tall and 55-65 ft wide). The project description in the EA included two retaining walls and rock bolts or dowels above the road, while these new installations will be below the road, but they will be outside of wilderness. They will still be designed to match natural surroundings by using weathering steel for the wire mesh and soil nail spike plates and cutting the rock dowels flush with the rock and grouting over them.

- 7) The bridge design will no longer include nest deterrents. The EA included this measure as a possible way to mitigate the impact of human-enhanced raven populations and resulting increased predation on other avian species due to the presence of artificial nesting platforms such as a bridge. It was later determined that nest deterrents such as spikes, netting, lasers, or structure modifications are detrimental to visual resources, a potential hazard for other wildlife, and impractical. Furthermore, there's no evidence that these deterrents would be effective or long-lasting.
- 8) The road near Bear Cave Landslide (MP 44.8) will be temporarily widened as part of Phase I, instead of phase II, to allow for oversize vehicles to turnaround during the bridge construction. The road widening will not occur in wilderness and ground disturbance in the vicinity of known archeology sites will be monitored by cultural resources staff. The road will still be returned to the existing roadway centerline and width, and the disturbed area will still be revegetated following the completion of the Polychrome Area Improvements.

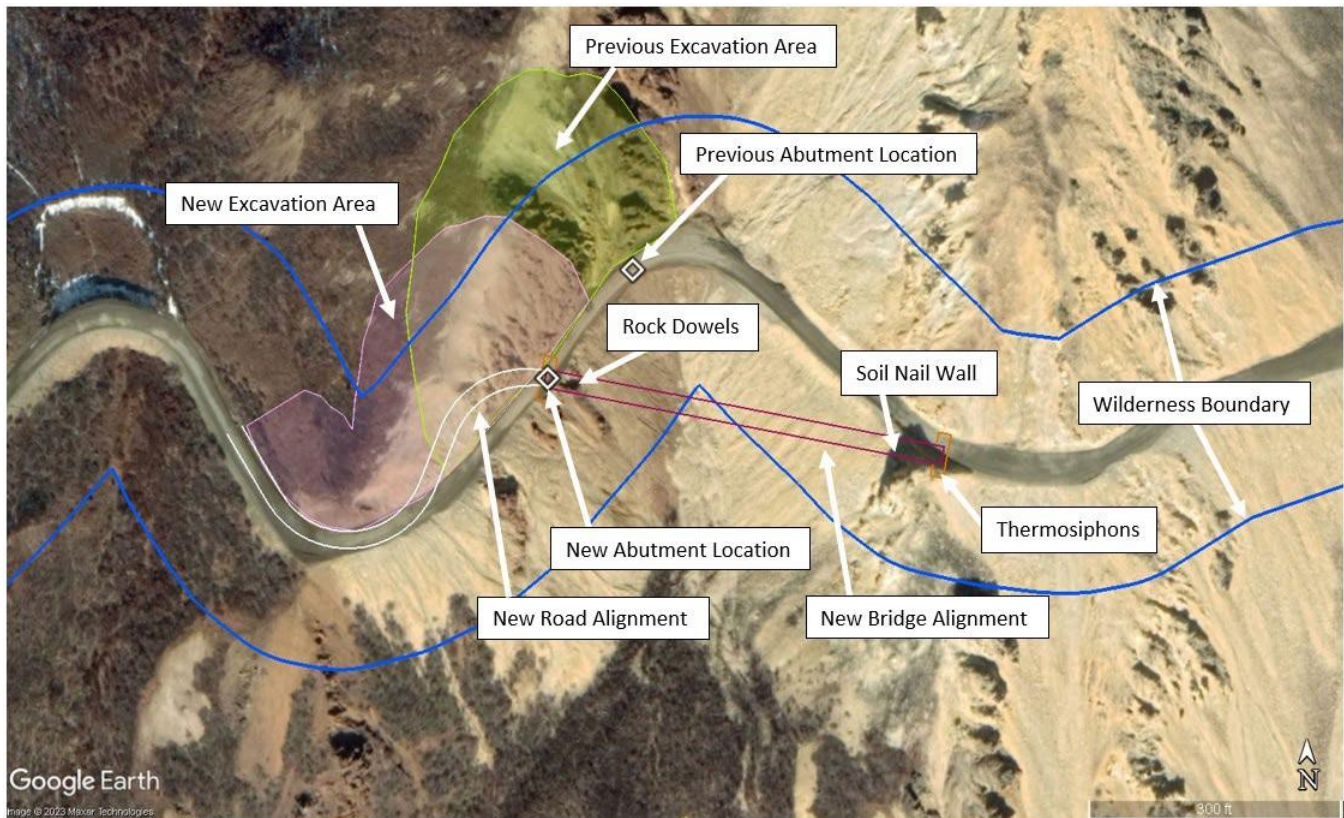


Figure 1 (NPS): Aerial view of Pretty Rocks project area with design change locations.

Impact Analysis:

Geology

Previously disclosed impacts (EA Section 3.2.2.2): Bridge construction and associated rock and scree excavation would disturb existing rock formations, scree slopes, and permafrost. Installing a bridge spanning the Pretty Rocks Landslide would allow the landslide and other associated processes to continue on to the toe of the landslide below the construction area without additional disturbance from road maintenance.

Additional impacts: The installation of thermosiphons will lower the subsurface temperature around the east abutment from near 32°F to 28°F or colder and keep the underlying ice-rich permafrost frozen for the design life of the bridge foundation (BGC, 2023). Otherwise, based on climate model projections, permafrost conditions at the site would likely degrade and the ice between the rhyolite and the ash tuff/clay would melt, resulting in retrogression of the Pretty Rocks Landslide eastern scarp (BGC, 2022). Although the thermosiphons will slow the thawing process, they are counteracting the accelerated warming caused by climate change and helping preserve the existing permafrost conditions. Therefore, their addition will stabilize the geology in a localized area and not cause an additional impact to geologic resources.

Visual Resources

Previously disclosed impacts (EA Section 3.4.2.2): The addition of a bridge and retaining walls on the Park Road, as well as excavation and placement of material, would alter the visual setting of the road in the Pretty Rocks Landslide and Bear Cave Landslide areas.

Additional impacts: The change in bridge size will increase the percentage of the viewed landscape that is dominated by a human-made structure (Figure 2). The straight lines and square angles of the bridge are in contrast to the irregular shapes of the natural rock slopes around it, and the larger bridge will increase the magnitude of that contrast. The thermosiphons will introduce additional contrast, due to their uniform light color against the dark weathered steel of the bridge and the mottled color of the surrounding sediment. Their strategic placement close to the bridge will consolidate the visual impact and they will not be easily distinguishable from the rest of the bridge infrastructure as viewed from the Key Observation Point at the Polychrome Overlook. The installation of slope stabilization measures below the road will introduce visual features into the project area that are similar in nature to the retaining walls already included in the design above the road, while adding more lines and contrast to some views. However, the weathering steel and grout used for the wire mesh, soil nails, and rock dowels to match the natural surroundings will reduce their visibility and decrease the contrast. The change in the extent of the excavation area may obscure more of the infrastructure from viewpoints to the west of the project area. The irregular rock faces of the cut slopes and the lower quantity of the material placed on the slope below the road will reduce the disruptions to the natural slope lines in the viewed landscape. Overall, these design changes will cause a minimal deterioration of the visual resource.



Figure 2 (BGC): Computer-generated representation of Pretty Rocks project area with bus for scale.

Visitor Use and Experience

Previously disclosed impacts (EA Section 3.5.2.2): Bridge construction and road maintenance projects would affect visitor experience by increasing long-term safety and reliability of park access. Bridge construction may temporarily disrupt recreation with loud noises and increased dust in the vicinity of the proposed project area. Project construction and operations

may temporarily displace wildlife, decreasing wildlife viewing opportunities in the vicinity of the bridge. In addition, the project would be visible from the valley floor and high points in the surrounding landscape where hiking is permitted, including designated wilderness.

Additional impacts: The increased size of the bridge will increase the presence of the bridge in the experience of visitors traveling through the Pretty Rocks area by bus. The larger bridge structure and the addition of thermosiphons may block more of the scenic view from the road as they approach from the east, which will detract from the natural surroundings and diminish the visitor experience. However, the impact will be to a similar degree as the smaller bridge previously analyzed in the EA. By strategically placing the thermosiphons close the eastern end of the bridge, the total developed area will still be minimized, and the overall visitor impact from the site will still be brief. The increased size of the bridge will make it more noticeable to backcountry hikers, particularly from the river bar below the road, and may draw their attention away from their natural surroundings and may cause a minimal impact their wilderness experience. The thermosiphons also offer an interpretive opportunity that could enhance the visitor experience.

Wildlife

Previously disclosed impacts (EA Section 3.7.2.2): The area provides important seasonal and year-round habitat for a variety of avian and mammalian species, especially golden eagles (*Aquila chrysaetos*), Dall's sheep (*Ovis dalli dalli*), caribou (*Rangifer tarandus*), and grizzly bear (*Ursus arctos horribilis*). The proposed project would cause minor habitat loss and disturbance to wildlife from blasting, excavation, and material placement. Temporary localized disturbances to wildlife from project construction and operations may displace wildlife.

Additional impacts: The lack of nest deterrents will potentially allow ravens to build nests on the new bridge, which would require additional cleaning and periodic nest removal by NPS. Nest removal would occur outside nesting season, in compliance with the Migratory Bird Treaty Act, and ravens would have ample alternative sites to build a new nest so the impact would be negligible. However, it's possible that the golden eagles known to nest above the road in the area will serve as a natural deterrent, which is preferable to any human-introduced deterrent, and would negate the impact caused by the design changes. The installation of a wire mesh facing on the slope is a potential hazard to Dall sheep whose hooves could get caught or damaged, although this is unlikely to occur due to the location of the wire mesh under the bridge where sheep are less likely to travel than above the road, so the risk is small. Both of these design changes could cause a minimal disturbance to wildlife, temporarily stressing or displacing individuals but there are no anticipated population-level impacts from the changes.

Wetlands and Vegetation

Previously disclosed impacts (3.8.2.2): The project area is mostly on steep rock slopes sparsely vegetated with species and vegetation communities that are common in the park. Less than 1 acre of wetlands is present in the project area, the majority of which is low quality wetlands and streams that are already disrupted by the Park Road or landslide activity. The project would remove or cover approximately 14 acres of vegetation during construction and would disturb some additional vegetation by driving over it with heavy machinery.

Additional impacts: Although more than 0.5 acres of vegetation may be permanently lost from the road corridor around Bear Cave Landslide, the reduction in the amount of excavation and material placement in the area around the Pretty Rocks Landslide will retain more of the vegetated slope above the road on the west side of the bridge and will bury less of the vegetated slope below the road, which will lessen the overall loss of vegetation from the project. Less excavation will also reduce the material placement area on the slope below the road, thereby avoiding the direct disturbance of 0.59 acres of wetlands on the toe of the landslide (Figure 3). The change in the timing of the temporary road widening at Bear Cave will result in clearing roadside vegetation a few years sooner than originally planned. will not cause additional impact to the vegetation or the park's ecosystem. The area will still be revegetated following the completion of the Polychrome Area Improvements project.

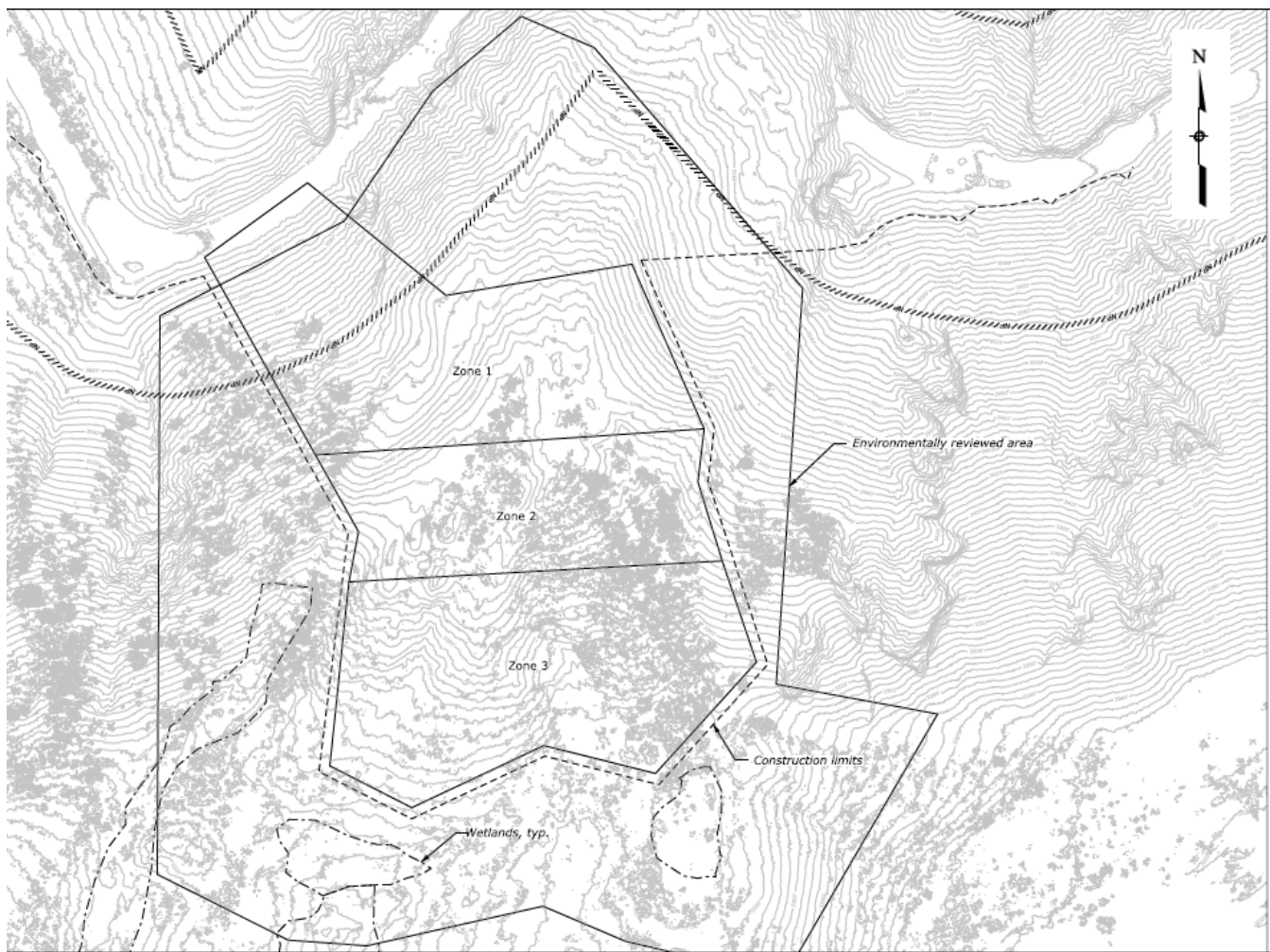


Figure 3 (Jacobs): The reduced material placement area will avoid the 0.59 acres of wetlands located outside zones 1-3.

Cultural Resources

Previously disclosed impacts (EA Section 3.9.2.2): The majority of the Park Road—including the project area—is part of a historic district listed in the National Register (Mount McKinley National Park Road Historic District). The majority of the Park Road is also in an identified Cultural Landscape (Mount McKinley National Park Road Cultural Landscape). Altering the road alignment and adding new constructed features would diminish the integrity of the historic character of the road. The proposed project would also maintain access, which would preserve the historic use of this resource.

Additional impacts: The change in bridge size, the addition of thermosiphons, and the additional slope stabilization measures will increase the visible presence of features that are incompatible with the Park Road Historic District and detract from its integrity of feeling and design. However, the use of materials and colors and techniques that blend features into the natural surroundings and the smaller excavation area and lower quantity of material placed on the slope below the road will lessen the impact. The temporary widening of the road near the Bear Cave Landslide may disturb an archaeology site that consists of a collection of historic metal cans associated with the building of the road. The long-term adverse effects to these cultural resources will be increased by these design changes, but the nature of the effects will not change and the existing Memorandum of Agreement (NPS, 2022c) with consulting parties still adequately resolves the project’s adverse effects to historic properties.

Wilderness

Previously disclosed impacts (EA Section 3.10.2.2): A portion of excavation and placement of materials would occur within designated wilderness adjacent to the road. Potential bolts installed for rockfall risk reduction at several sites would be in the

surface and subsurface of the wilderness. Noise and visual impacts from construction activity temporarily would diminish opportunities for solitude in wilderness areas. Maintaining road access through the Polychrome area would provide opportunities for unconfined wilderness recreation in wilderness areas accessed from the Park Road west of the project area.

Additional impacts: Although the bridge will be suspended above a wilderness area, the bridge structure itself will not be in wilderness and therefore the shifted bridge alignment will not impact wilderness character. Less excavation and less material placement will reduce the size of the wilderness area manipulated by humans and reduce the loss of plant communities and animal habitat in wilderness, thus lessening impacts to the untrammeled and natural qualities of the wilderness within the project area. The elimination of the bench cut and the related long-term presence of motorized vehicles in wilderness for maintenance of the rockfall bench will reduce impacts to the undeveloped quality of the wilderness within the project area. The larger bridge will be more visible and will increase the scale of the development seen from the adjacent wilderness area, thereby indirectly diminishing opportunities for solitude. The impacts to wilderness will be decreased by these design changes and the project does not differ in nature from the minimum impact alternative identified in the Minimum Requirements Analysis (NPS, 2022a) so an additional MRA is not needed.

References:

BGC, 2022. Geotechnical Modeling Report. Project Name: AK NPS DENA 10(49) Polychrome Area Improvements. BGC Engineering, Inc. March 29, 2022.

BGC, 2023. Geotech Memo No. 06. Project Name: AK NPS DENA 10(49) Polychrome Area Improvements. BGC Engineering, Inc. March 14, 2023.

NPS, 2022a. Polychrome Area Improvements Environmental Assessment. Denali National Park and Preserve, Alaska. 2022.

NPS, 2022b. Finding of No Significant Impact Polychrome Area Improvements. Denali National Park and Preserve, Alaska. March 10, 2022.

NPS, 2022c. Memorandum of Agreement Between the National Park Service, Denali National Park and Preserve and the Alaska State Historic Preservation Officer Regarding the Polychrome Area Improvements Project and the East Fork Area Improvements and Use Project. Denali National Park and Preserve, Alaska. Feb 22, 2022.

CE Citation:

3.3.A.1 Changes or amendments to an approved action when such changes would cause no or only minimal environmental impact.

CE Justification:

The construction of a bridge at Pretty Rocks (Mile 45.4) is an approved action in the Polychrome Area Improvements EA and FONSI. Most of the changes to the design would result in no additional effect or a reduced effect to resources, relative to the impacts already discussed in the EA. Other changes to the design, including the increased size of the bridge and the additional slope stabilization features to the project area, would cause only minimal impacts: The removal of nest deterrents and the installation of a wire mesh facing could displace or injure wildlife, but the potential is low, and the impact would only affect a few individuals. The increased bridge size and the additional features would diminish the scenic quality of visual resources, which also adversely affects cultural resources, visitor experience, and wilderness, but the impacts would be minimized through mitigations to reduce contrast.

Decision: I find that the action fits within the categorical exclusion above. Therefore, I am categorically excluding the described project from further NEPA analysis. No extraordinary circumstances apply.

Superintendent Signature:

Signature on file 4/25/23

Brooke Merrell

Extraordinary Circumstances:

If implemented, would the proposal...	Yes/No	Explanation
A. Have significant impacts on public health or safety?	No	These design changes would result in a more sustainable bridge and more stable abutments and slopes which improves public safety.
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?	No	As described in the CE above, some of the design changes would have no additional effect to resources, such as socioeconomics and noise and soundscapes. Many of the design changes would reduce the effects to resources such as geology, wetlands and vegetation and wilderness, compared to what was analyzed in the EA (2022). The removal of nest deterrents and the installation of a wire mesh would have a low potential to impact a small amount of wildlife. The increased bridge size and the additional slope stabilization features would have long-term adverse effects to visual resources which affect cultural resources, visitor experience, and wilderness. However, these changes would incorporate mitigations to minimize the impacts such as consolidating infrastructure and using finishes and facings that blend into the surroundings so they will still result in no significant adverse impacts to resources.
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?	No	The design changes have been shared with key stakeholders and the response did not indicate that the effects would be highly controversial nor does the NPS expect the public to contest the minimal nature of the effects, relative to the effects previously disclosed to the public. None of the issues identified in the EA involve unresolved conflicts concerning resource uses.
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?	No	The minimal effects of the design changes would not be highly uncertain because they can be determined from the previous analysis in the EA and based on other road construction projects that have occurred along the Park Road.
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?	No	These design changes are specific to this project and do not set a precedent for future projects.
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?	No	This project includes all of the directly related design changes known at this time and the impact of each change individually would be minimal and not significant. No new cumulative impacts were identified from the design changes.
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?	No	These design changes would not have a significant impact on the Park Road Historic District because they would not change the magnitude of the adverse effect and no additional mitigations would be required to reduce the effect.
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?	No	This is not applicable because there are no endangered or threatened species or critical habitat in Denali National Park and Preserve.
I. Violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?	No	No such laws would be violated.
J. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898)?	No	There would be no effect on low income or minority populations.

K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?	No	There are no known Indian sacred sites in the area.
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?	No	All construction equipment would be cleaned of dirt that could harbor non-native seeds and therefore this project would have very little potential to introduce invasive species.