

# ***Replace Culverts at Mile Posts 62.7 and 63 of the Denali Park Road***

Cultural Resource Report No. 2018-DENA-017

Prepared for:

Don Striker, Superintendent  
Denali National Park and Preserve  
PO Box 9  
Denali, AK 99755

Prepared by:

Phoebe J. Gilbert

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## **Abstract**

Denali National Park and Preserve is planning an undertaking to replace the existing round metal culverts located at Mile Posts 62.7 and 63 of the Denali Park Road with concrete box culverts. The current culverts do not allow for fish passage upstream of the road and need to be replaced. The Park Road is a Cultural Landscape and Historic District, and the culverts are located in one of the most iconic viewsheds along the road. The box culverts would result in a 1-2 foot rise in the elevation of the roadbed at their location and would bring the road footprint closer in line with the Design Standards for the road; replacement with round metal culverts would have resulted in a 5-6ft rise in the road bed. The design of the culverts would be such as to minimize their appearance when viewed from the Stony Hill Overlook.

As designed, the project would not adversely affect the integrity of the Denali Park Road Historic District or Cultural Landscape which qualifies this property for inclusion within the *National Register of Historic Places*. It is recommended that Denali National Park and Preserve make the National Historic Preservation Act, Section 106, determination of “No Historic Properties Adversely Effected” (36 CFR Part 800.5(3)(b)).

## 1 Description of Undertaking

Denali National Park and Preserve (DENA), is planning an undertaking to replace the existing round metal culverts located at Mile Posts 62.7 (Krier's Creek) and 63 (Betty's Brook) of the Denali Park Road with concrete box culverts. The current culverts do not allow for fish passage upstream of the road and need to be replaced. The Park Road is a Cultural Landscape and Historic District, and the culverts are located in one of the most iconic viewsheds (from Stony Dome looking west to Mt. Denali) along the road.

### 1.1 Justifications

- A. The natural migration of fish at Krier's Creek and Betty's Brook is blocked by perched culverts or accelerated water flow produced by the culverts at these locations. As a result the natural processes of the drainage ecosystem are negatively affected. Fish spawning and fry habit areas are blocked and fish populations in this drainage have been reduced.
- B. The existing culverts are at the end of the use life and need to be replaced to avoid damage to the Park Road which could occur during a flood event or spring melt.

### 1.2 Culvert Design

The precast concrete box culverts would have an 11ft. high and 14ft. wide profile; 4-6ft. of the culvert would be buried in the stream bed to create a fish friendly passage channel and the remaining 5-7 ft. would be above ground; this would result in a 2 ft. rise in the height of the park road at the culvert locations. Round metal culverts were considered as well, but their placement would have resulted in a 5-6 ft. rise in the road and so they were rejected. The top edge of the culvert would be at the same elevation as the road; there would be no curb at the location of the culverts.

The culverts would be 30 ft. long (composed of two 15 ft. wide traffic lanes); the design standard for this section of the road is a width of 28 ft.; the culverts come pre-cast and the 30 ft. length is the closest length to the road standard that can be installed. Currently at Krier's Creek the road width is 47 ft. (19 ft. out of standard) and at Betty's Brook it is 28 ft. The installation of the 30 ft. culvert would entail narrowing the road to and from Krier's Creek to ensure it appears uniform from the Stony Hill overlook; thus bringing the road closer to its historic width.

The culverts would have an 18 ft. long precast headwall which would be faced when possible with class 3 riprap for a smooth transition from the road to the surrounding landscape. These

headwalls would be straight and blend with the edge of the road. Where the concrete headwall is not covered in riprap it would be colored and textured so as to minimize its appearance.

During construction a double lane temporary detour would be built to the north of the existing road; this detour would be completely removed and the area rehabilitated at the conclusion of the project.

## 2 Legal Location for the Undertaking and Local Environment

The legal location of the undertaking is the South ½ of Section 9, T17S, R714W, Fairbanks Meridian. The project is located in the West District of DENA at Mile Posts 62.7 and 63 of the Denali Park Road. The project area environment, located at an elevation of 3,400 ft. above sea level (asl), lies tundra biome and consists of open tundra with groundcover of sage, lichen, moss, and sparse dwarf shrubs.

## 3 Area of Potential Effect (APE)

The Area of Potential Effect (APE) encompasses 42.7 acres and encompasses a 100 ft. buffer from each side of the park road from where the culverts first become visible if one is traveling from east to west (at Stony Hill Overlook) to MP 63.5 (where the culverts first become visible if one is traveling from west to east).

## 4 Results of Inventory and Records Check

DENA cultural resource records and GIS data were reviewed previous to this project. The proposed APE has been previously inventoried (Curran 2004; Karchut 2010; Karchut and Coffman 2009), and was visited by the DENA archaeologist in July of 2018. Portions of the Park Road (HEA-429/MMK171) extend into the APE.

### 4.1 Denali Park Road (HEA-429/ MMK-171)

The 92 mile Denali Park Road runs east to west in the foothills north of the Alaska Range in Denali National Park and Preserve. The road extends from milepost 237.3 of the George Parks Highway across several low passes and glacier-fed rivers to the historic mining district of Kantishna, which was incorporated into the park by the Alaska National Interest Lands Conservation Act in 1980. The road was originally constructed from 1922 to 1938 by the Alaska Road Commission (ARC). The ARC and the NPS collaborated on the road design. The road is historically significant for its association with the period of scenic road development in National Parks in the 1920s and 1930s, as well as for its association with the Mission 66 park development program in the 1950s and 1960s (Criterion A). The road is also a rustic example of

landscape engineering combining NPS aesthetic road design principles with the ARC's experience constructing roads in northern environments (Criterion C).

The areas of significance are Entertainment/Recreation and Transportation for its relation to automobile tourism and Landscape Architecture for its aesthetically oriented design. The period of significance begins in 1922, when the route was originally brushed. It extends to 1972, when the shuttle bus system was implemented on the road. The Denali Park Road is significant at a national level as it serves as one of the most important corridors for tourism within Alaska in a National Park. Culverts are considered non-contributing features to the Park Road. No section of the road retains the original historic surface or associated features such as culverts, bridges, or interpretive signs.

Prior to the opening of the Denali Highway in 1957, there were very few private vehicles anywhere on the park road, and all traffic decreased the farther west one went on the road. Because most of the visitor and vehicular activity originates at the east end of the road – near the Alaska Railroad and the George Parks Highway – plans to improve the road have typically been based on a telescoping approach; the road gets more primitive the farther west one travels. The Mission 66 proposal of 1956-1966 to pave the road to MP 31 and to make it a uniform width (and “oiled”) from there to the Eielson Visitor Center (Eielson) at MP 66 was halted due to a national outcry over excessive improvements to a wilderness road.

The culverts at Krier's Creek and Betty's Brook are located on one of the most rustic sections of road whose standardized width is set at 28 ft.; this section of the road was not widened or improved during the Mission 66 period. The widening of the road to 47 ft. at Krier's Creek was completed at an unknown time and is believed to be the result of small incremental changes to the road over its history.

## 5 Recommendations

Only one historic property, the Denali Park Road (HEA-429/ MMK-171), was identified within the APE for the proposed undertaking. The park road in the project area retains most of the flavor of a rustic road. The improvements proposed in this project would retain the existing surface material of the current road with a 2 ft. rise in the surface of the road and a change in width at both locations to 30 ft.. This change at Krier's Creek would be a beneficial reduction of 17 ft. feet, bringing in the road at this section much closer to the 28 ft. standard. At Betty's Brook this would increase the width of the road by 2 ft.; it is anticipated that this increase would not be noticeable at the culvert location or when viewing this section of road from afar.

Construction limits would be established along the whole project length to help prevent damage to areas not being worked on. The areas of ground disturbance and vegetation removal would detract from the rustic nature of the road until revegetation is established.

The project allows for the road to be used for its historic purpose of providing access to rural viewsapes with minimal intrusions. This project, as designed, would improve and not adversely

affect those rural views. The proposed project is also in keeping with Denali National Park and Preserve Road Design Standards, which support the historic integrity of the road.

All ground disturbances for this project would be periodically monitored by appropriate cultural resource staff. If cultural resources or items protected by the Native American Graves Protection and Repatriation Act are discovered during project implementation, all project-related activities in the vicinity of the discovery would be stopped and the park archaeologist would be notified immediately. Denali National Park and Preserve in consultation with the State Historic Preservation Officer and other consulting parties would determine a course of action per 36 CFR Part 800.13.

Based on our review, as designed the project will not adversely affect the Park Road's integrity of location, design, setting, materials, workmanship, feeling or association, which qualifies this property for inclusion within *the National Register of Historic Places*. It is recommended that the Denali National Park and Preserve approach National Historic Preservation Act, Section 106, consultation under 36 CFR Part 800.5(3)(b) as "No Adverse Effect".

## 4 References

Curran, Michele

2004 Cultural Landscape Inventory: Park Headquarters Historic District. Anchorage, AK:  
Cultural Landscapes Program Alaska.

Karchut, J.

2010 Field Notes, 2010 Archaeological Surveys within Denali National Park and Preserve.  
Karchut, J., and Samuel C Coffman

2009 Field Notes, 2009 Archaeological Surveys within Denali National Park and Preserve.

## 5 Maps and Figures

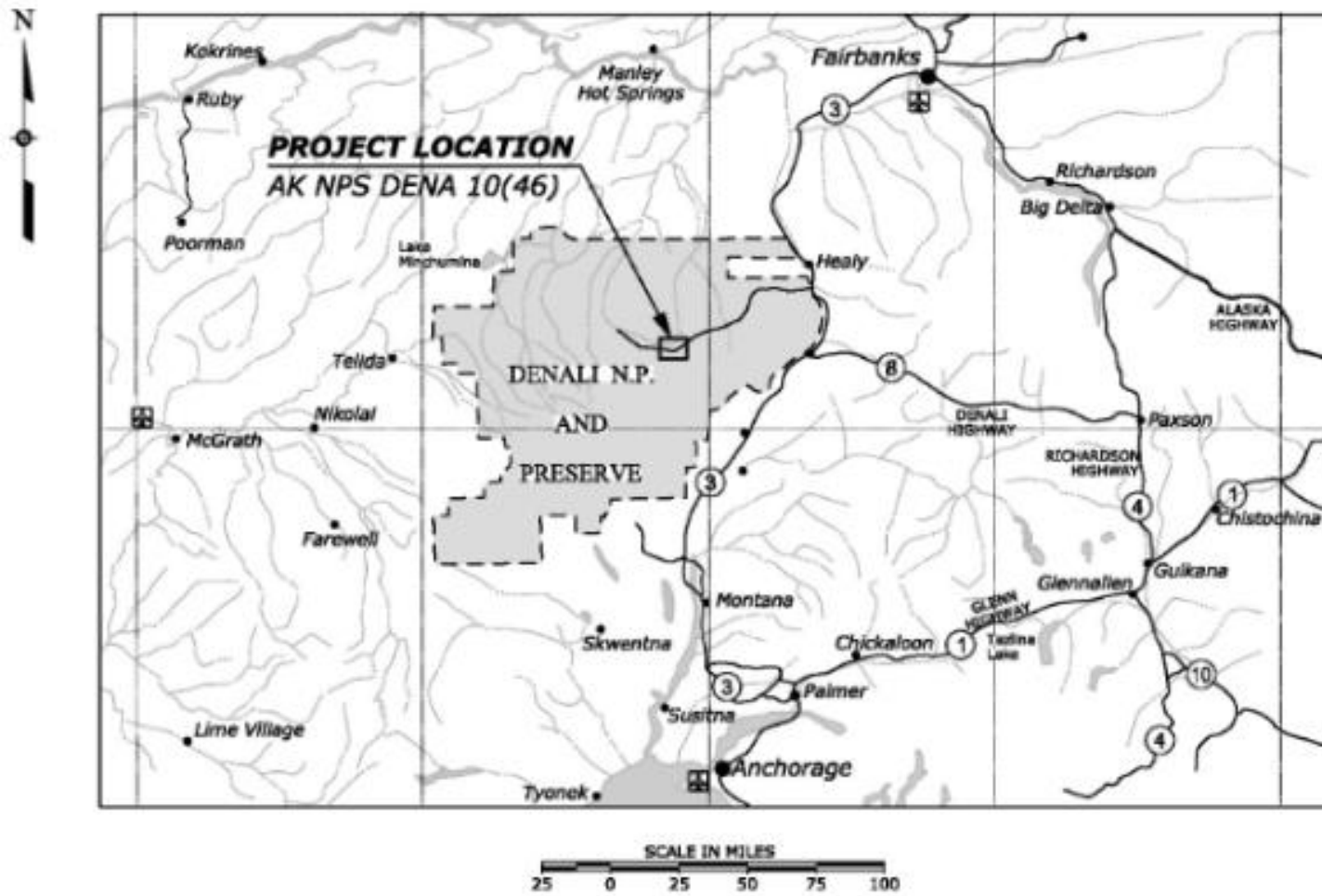


Figure 1- Overview of Project Area



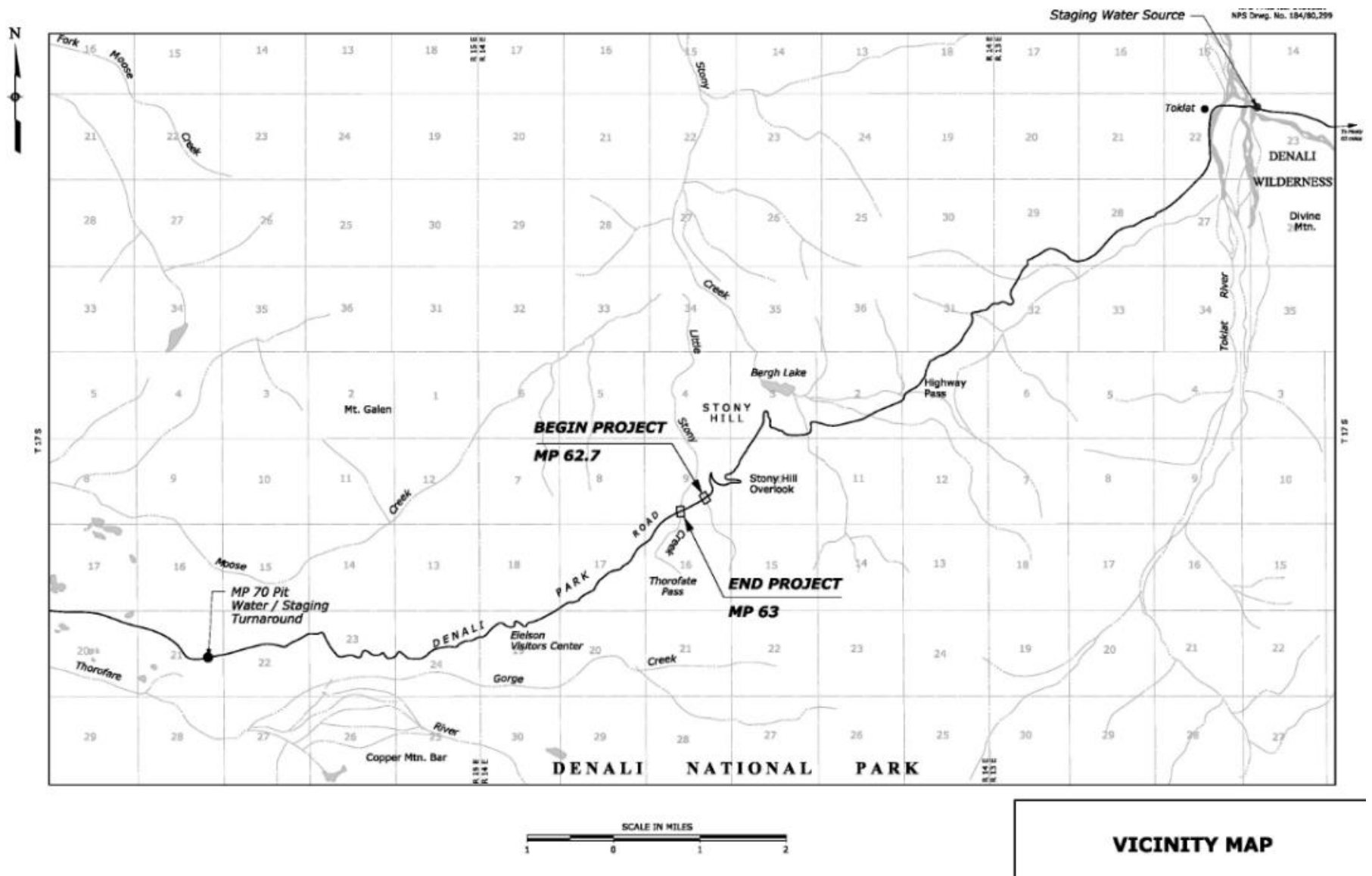


Figure 2- Project Location

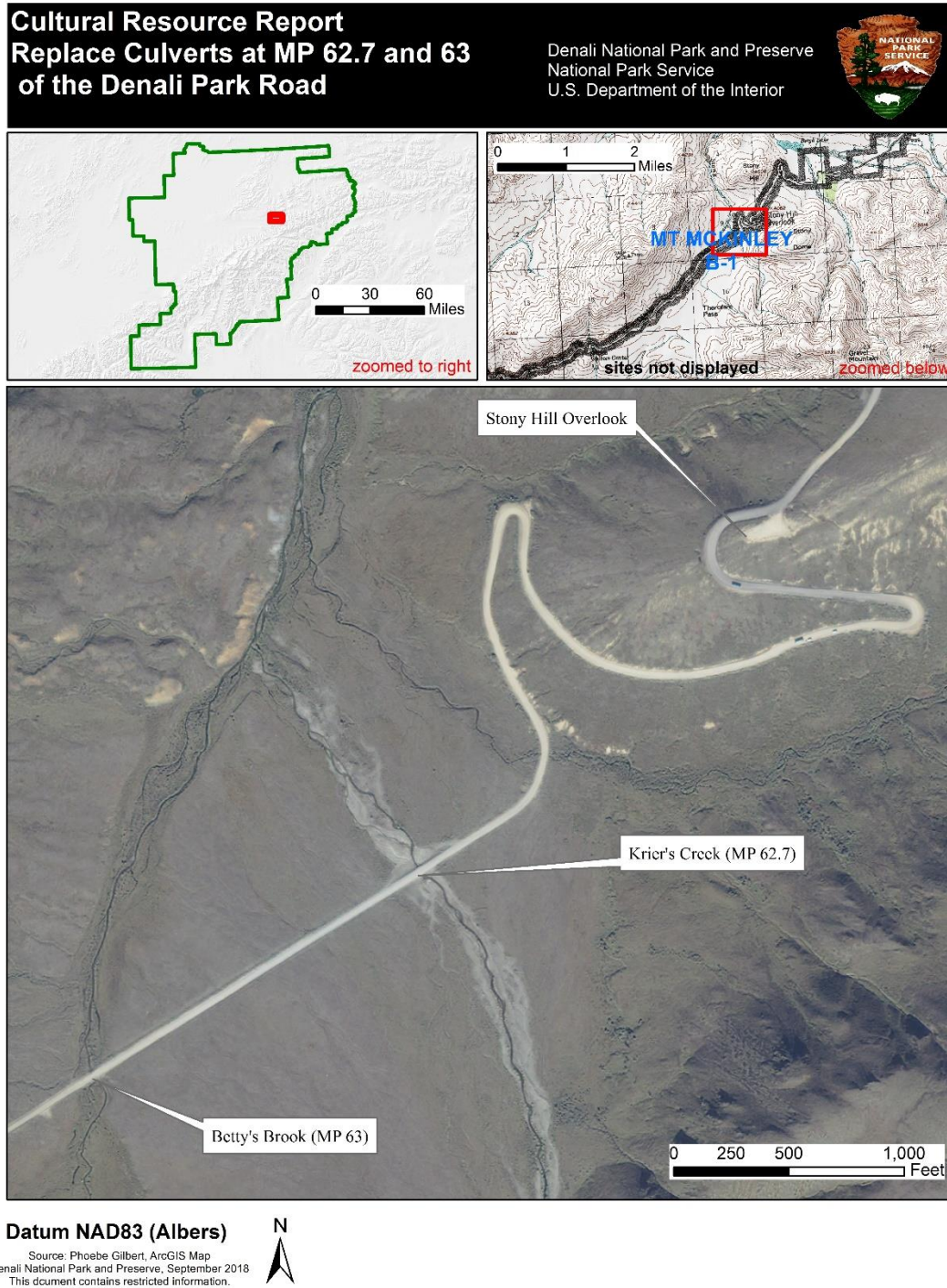
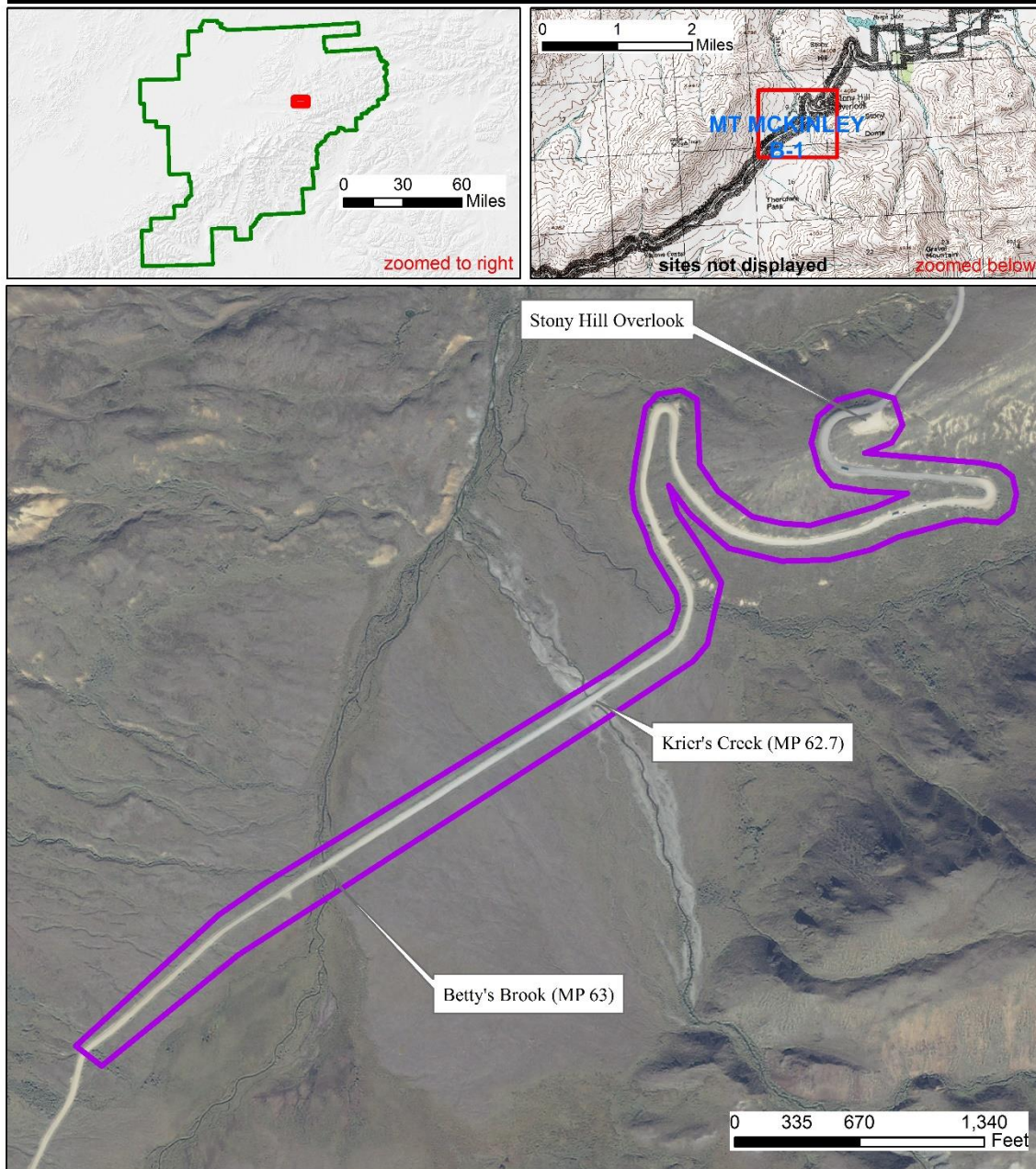


Figure 3- Overview of Stony Hill Overlook, Krier's Creek, and Betty's Brook.



# **Cultural Resource Report** **Replace Culverts at MP 62.7 and 63** **of the Denali Park Road**

Denali National Park and Preserve  
National Park Service  
U.S. Department of the Interior



**Datum NAD83 (Albers)**

Source: Phoebe Gilbert, ArcGIS Map  
Denali National Park and Preserve, September 2018  
This document contains restricted information.



 **APE (42.7 Acres)**

Figure 4- APE of project area (42.7 acres)



Figure 5- Overview of MP62.7 and 63 from Stony Hill Overlook, looking west (NPS Photo, July 17<sup>th</sup>, 2018) with Denali in the background.



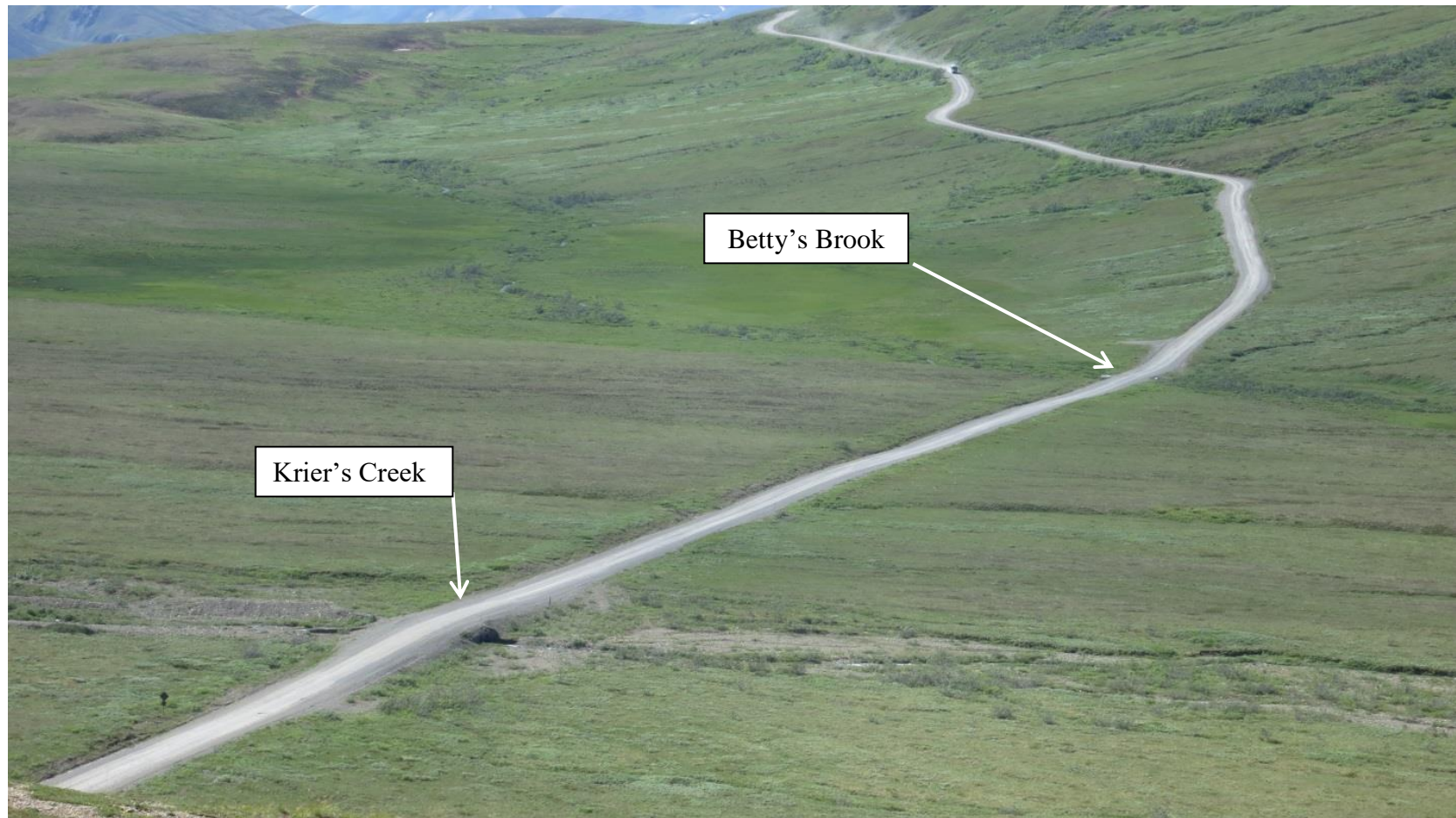


Figure 6- Current overview of MP 62.7 (Krier's Creek) and MP63 (Betty's Brook) from Stony Hill Overlook, looking west (NPS Photo, July 17<sup>th</sup>, 2018). Note 47 ft. width of road at Krier's Creek.



Figure 7- 47 ft. wide road width at Krier's Creek looking west (from steam pipe to steam pipe) (NPS Photo, July 17<sup>th</sup>, 2018).





Figure 8-Krier's Creek existing south (upstream) side gabion basket wing walls and culverts (looking NW) (NPS Photo, July 17<sup>th</sup> 2018).





Figure 9- Krier's Creek existing north (downstream) side gabion basket wall (looking SW) Note drop in elevation from culvert to pool making fish passage impossible. (NPS Photo, July 17<sup>th</sup> 2018).





Figure 10- Betty's Brook existing culvert, south side (upstream) looking east towards Stony Hill Overlook (NPS Photo, July 17<sup>th</sup> 2018).



Figure 11- Betty's Brook existing culvert, north side (downstream) looking east towards Stony Hill Overlook (NPS Photo, July 17<sup>th</sup>, 2018).





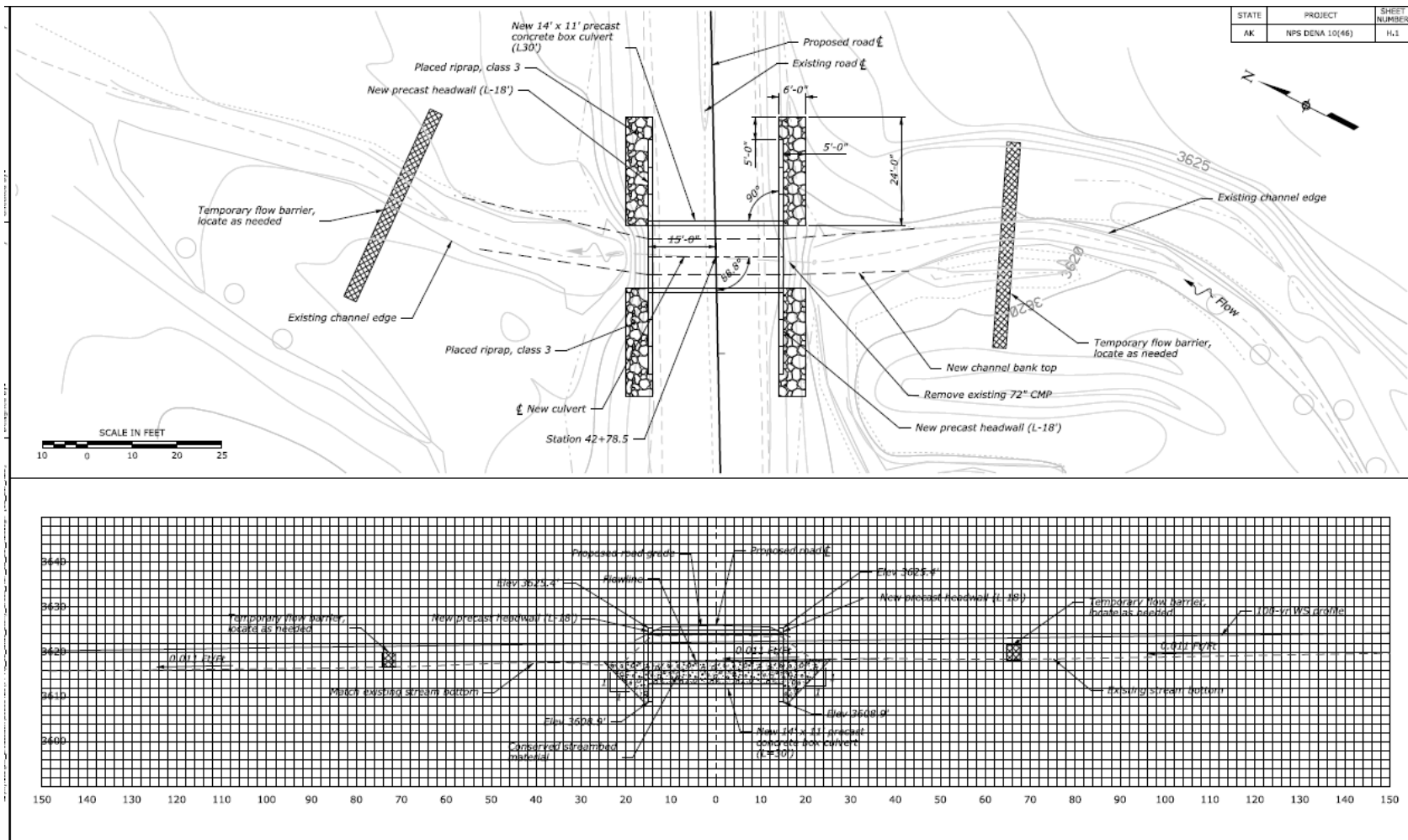


Figure 13- Betty's Brook Culvert Plan and Profile

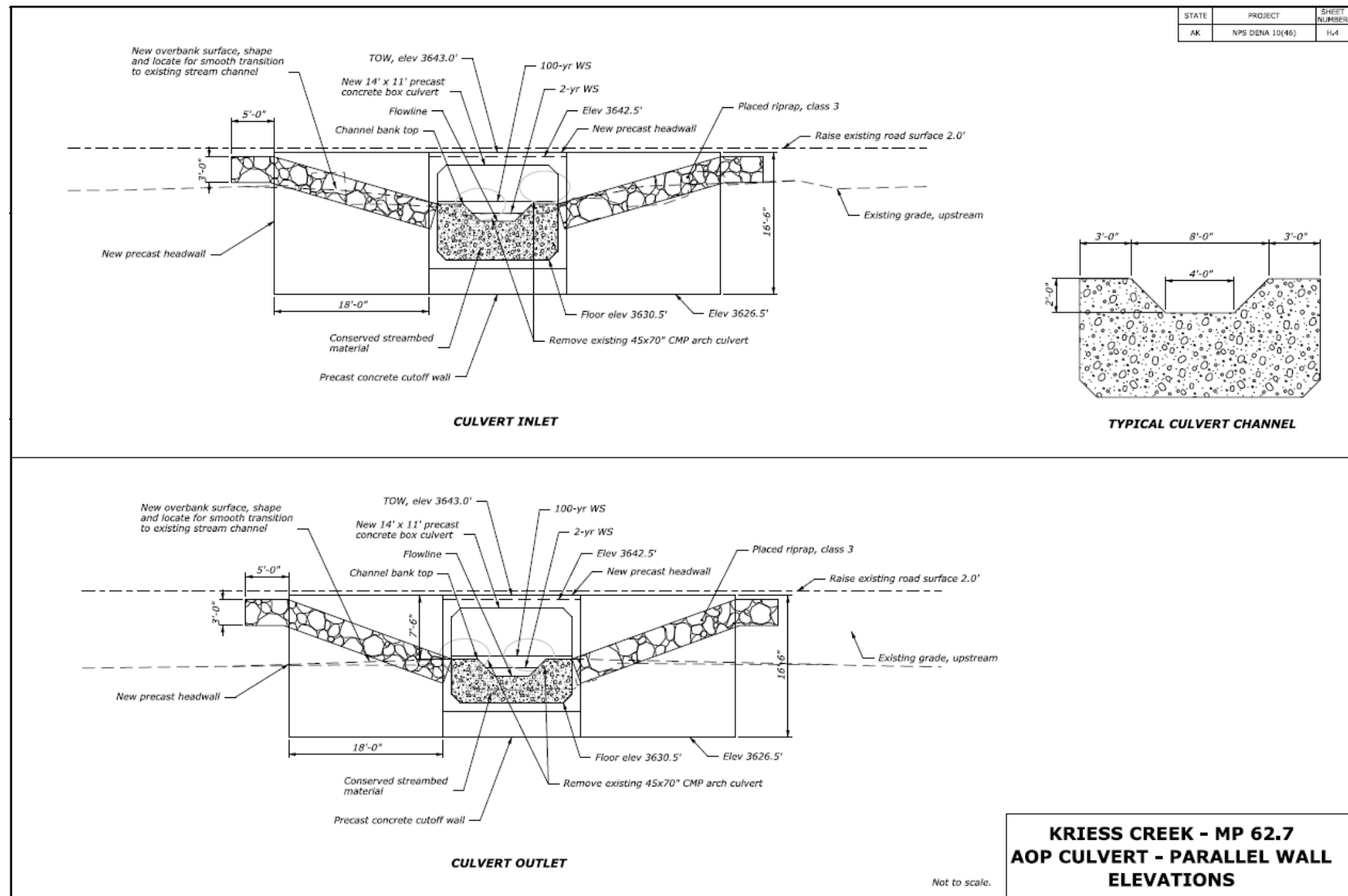


Figure 14- Krier's Creek Culvert Parallel Wall Elevations

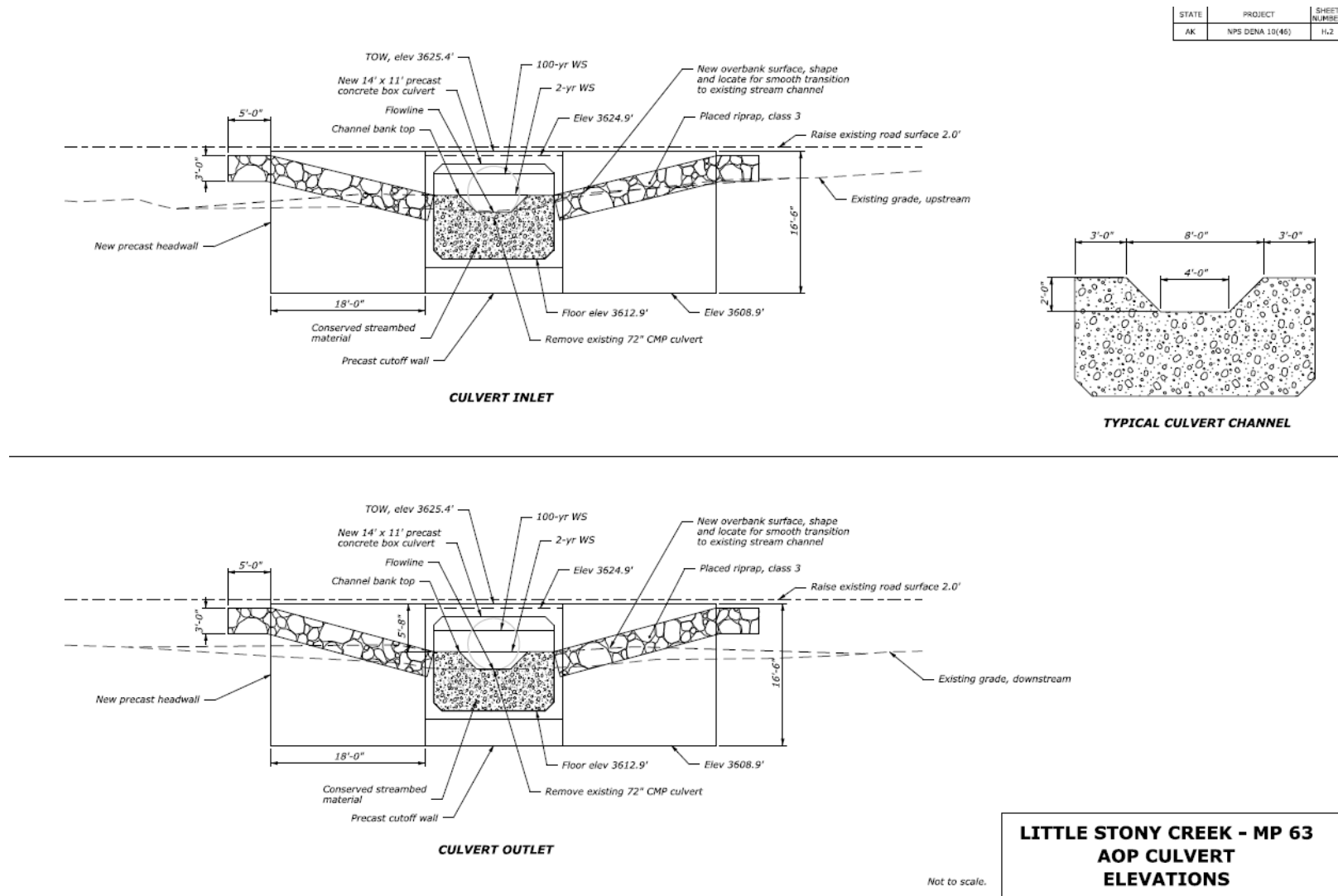


Figure 15- Betty's Brook Culvert Parallel Wall Elevations

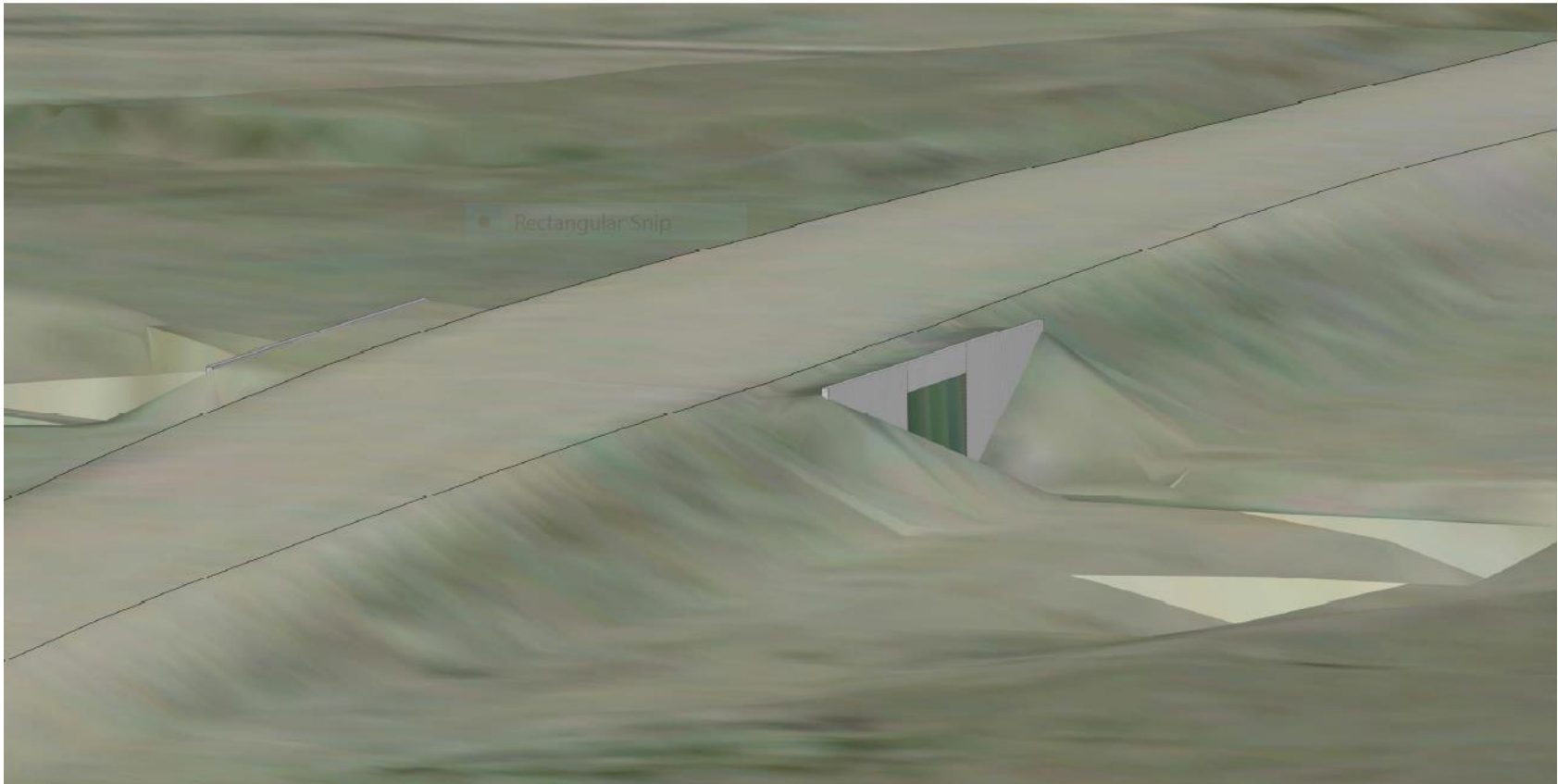


Figure 16- 3D simulation of what the downstream side of the new box culvert at Krier's Creek would look like, view to the southwest.