

HAKALAU FOREST NATIONAL WILDLIFE REFUGE

KEANAKOLU ROAD SPOT IMPROVEMENTS

FINAL SECTION 4(f) EVALUATION

Introduction

The Federal Highway Administration (FHWA), Central Federal Lands Highway Division, in cooperation with the U.S. Fish and Wildlife Service (FWS) and the County of Hawaii, is proposing to rehabilitate deteriorated road conditions along approximately 8.0 miles of Keanakolu Road on the Island of Hawaii. Due to rough and hazardous conditions and the need for a more stable road to access the Hakalau Forest National Wildlife Refuge, the FWS in 2000 requested and secured discretionary funds for road improvements through the Transportation Equity Act for the 21st Century. As administrator of federal transportation funds, the FHWA is the lead federal agency for this proposal.

The proposed undertaking begins 4.55 miles northeast of the junction of Keanakolu Road and John A. Burns Way (Mauna Kea observatory road), and extends to the compound entrance of the Hakalau Forest National Wildlife Refuge (Figure 1). The proposed undertaking is entirely outside the refuge boundary. The road surface is typically about 12 feet wide with existing cut and fill slopes (disturbed width) ranging from 16 to 24 feet.

Section 4(f) Property

Keanakolu Road, site number 22939, is a historic property that is eligible for inclusion in the National Register of Historic Places. The road as it exists today is the result of construction efforts by the Civilian Conservation Corps (CCC) in 1935, and much of that construction, including sections of cobblestone paving, is still intact. The CCC improved upon, but mostly followed, the path of an older wagon road, sections of which were built up and paved in the late 19th and early 20th centuries. The wagon road itself roughly followed the path of an earlier foot trail that dates to the period before Western contact with Hawaii. The road and the trail were known as the Laumai'a road, and the trail was said to have been built by `Umi-a-Liloa (Pukui et al. 1976: 130).

The cobble roadbed built by the CCC in 1935 is exposed in many places along Keanakolu Road (Figure 2). The cobble bed is made of basalt cobbles and small boulders set to form a relatively level surface, and it is evenly bordered with cobbles. Where both edges are preserved, the cobbled bed is 9 ft wide. The stones for the roadbed were quarried from various places along the road; drilled holes are visible in rock faces at several places along the road, indicating that blasting powder was used to quarry rock. There is also a quarry at milepost (MP) 4.0, where there are drilled holes and stockpiled gravel that appears to date from the CCC period, based on the drill holes and the vegetation covering the gravel.

The exposed areas of the CCC cobble roadbed vary in condition along Keanakolu Road. One of the best-preserved sections is between MPs 6.7 and 7.0, but well-preserved exposures of varying

length occur along much of the project corridor. In some places, the cobble bed is in poor condition due to the effects of erosion, traffic wear, and modern grading removing some of the cobbles. There is a high probability that the additional sections of the cobble bed are well preserved under the cinder surface of the current road. In several areas of the road, the exposed cobble bed was observed below the level of the current road surface, suggesting that the cobble bed continued under the modern surface.

Two concrete pipe culverts constructed by the CCC were noted. One is located at MP 6.3 and the other is at MP 7.5. Both consist of dual concrete culverts in shallow washes, with the road built up on stacked boulder and cobble beds (Figure 3). The roadbeds at the culverts have vertical faces.

For most of the length of the project corridor, the current road follows the CCC cobble roadbed; however, in some areas the modern road surface swings off the cobble roadbed, but only by 10 to 13 ft, roughly the width of a truck passing off to the side. Overall, although some sections of the CCC roadbed have been destroyed by modern maintenance or erosion, well-preserved sections of the CCC roadbed are visible, and additional sections are likely to be preserved beneath the current road surface. The construction techniques employed by the CCC resulted in a remarkably durable road surface.

The FHWA initially investigated 16.6 miles of the road, but the proposed undertaking has since been reduced to between milepost 4.55 and milepost 12.55 (to just before the compound entrance to the refuge facility). Figure 4 shows the locations of the exposed cobble roadbed. Other sites noted on Figure 4 either were determined ineligible or will not be affected by the proposed undertaking.

Purpose and Need

Current driving conditions are complicated by a severely deteriorated driving surface consisting predominantly of cinder and soil, with steep grades, hazardous crests, and several gulch crossings that wash out during heavy or consistent rain. The purpose of the project is to create a safer and lower maintenance road to the Hakalau Forest National Wildlife Refuge.

Proposed Project

Due to the limited funding available, only the most severe problems will be addressed. Rehabilitation efforts will consist of the following spot improvements:

- Constructing low water crossings of ephemeral drainages along an 8-mile section of road from milepost 4.55 to milepost 12.55. Concrete work will be confined to the existing roadway template or prism. About 50 feet of each road approach to the low-water crossing will be paved with asphalt. A cut off wall will be constructed on the existing Pahoehoe streambed on the upstream and downstream side of the low water crossing to protect against scouring. These improvements will reduce the level of maintenance required by the County of Hawaii after major storms, and will provide a passable roadway for road users, including Refuge staff that must travel to and from Hakalau Forest NWR as part of their daily business.

- Paving short segments of steep grades with asphalt to provide improved traction for vehicles traversing Keanakolu Road. The existing road is frequently rough due to rock protruding through the existing surface, and can be slick from frequent rains or mist. Paving certain steeply graded segments will allow vehicles to more easily climb steep grades and wet surfaces as well as reduce erosion from moisture and spinning tires. The existing road width will be maintained.
- Widening the roadway an approximately 5 feet at the top of several vertical crests to provide sufficient width for two approaching vehicles to safely pass in order to mitigate for poor sight-distances. The sites proposed generally require minimal or no excavation and will be surfaced with aggregate material.
- Replacing cattle guards and paving the approaches to them with asphalt. The road crosses through several leased ranching operations, and a number of the cattle guard crossings exhibit badly eroded gaps at the roadway/cattle guard interface.

These improvements will not result in any foreseeable increase in traffic volume and vehicular speed or changes to the current land use.

Effects to the Section 4(f) Property

Through consultations with the State of Hawaii, State Historic Preservation Division (SHPD), and Native Hawaiian Organizations and individuals, the FHWA has issued a finding of adverse effect to Keanakolu Road. Any action alternative to rehabilitate the road will cause adverse effects to the property due to general construction activities such as gravelling, paving, running heavy machinery across the surface, and scheduled maintenance by the county following the federal undertaking.

Avoidance Alternatives

No Action Alternative

The no action alternative would constitute an adverse effect to the property because neglect, future traffic, and county maintenance will cause the further deterioration of the cobbled roadbed. This alternative is not prudent because it would not meet the purpose and need for the project.

New Alignment Alternative

A new access to the refuge could be constructed parallel to the existing road, avoiding the construction related impacts to the historic roadway. However, the cobbled roadbed would continue to deteriorate due to a lack of maintenance, and the new roadway would create new environmental impacts, such as impacts to habitat. This alternative is not prudent.

Measures to Minimize Harm

The FHWA, SHPD, and County of Hawaii have signed a Memorandum of Agreement (MOA) to implement a data recovery treatment plan that addresses the adverse effects to the historic property and any mitigation measures (attached). The main features of the data recovery treatment plan methodology include:

- historical research of the development of the road corridor

- historical research of engineering design standards and specification
- oral history interviews
- archeological excavation and recordation (including photographs) of two locations on the roadway in order to record the stratigraphic cross section of the road
- recordation of the grades, turning radii, and other features for roads and trails in the corridor

The FHWA will ensure that the SHPD, County of Hawaii, FWS, and Department of Hawaiian Home Lands will receive a copy of the final data recovery report, and the report will be made available at a local public library. In addition, information gathered shall be made available to the public through interpretive materials in a brochure or panel format.

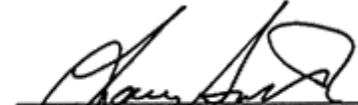
Coordination

The Hawaii SHPD has responsibility for the historic Section 4(f) properties. On July 10, 2001, Mr. Patrick McCoy, Hawaii County Archaeologist, SHPD, accompanied the FHWA and its consultant's representative, Scott Williams, on an inspection of the proposed improvements and a review of the identified eligible historic properties. The SHPD reviewed the cultural resources survey report and concurred with the eligibility and effects determinations.

A draft version of the MOA was circulated to the SHPD, County of Hawaii, FWS, and Department of Hawaiian Home Lands for their review. Comments on the draft MOA were incorporated and the final MOA has been signed by the FHWA, SHPD, County of Hawaii, and FWS.

Finding

Based on the above considerations, there is no feasible and prudent alternative to the use of land from the Keanakolu Road, site number 22939. The proposed project includes all possible planning to minimize harm resulting from such use.



Larry C. Smith, P.E.
Division Engineer
Central Federal Lands Highway Division
Federal Highway Administration

12/16/03
Date



Figure 2. Cobble bed, MP 6.7, view to south



Figure 3. CCC culvert, MP 7.5, view to southwest