Project: Keaau-Pahoa Road Improvements - Route 130 (Shower Drive to Ainaloa Boulevard)

Economic Justification

Unit Prices

	In-place Unit Cost
Roadway Excavation	$30.00 per cubic yard
Asphalt Concrete (AC)	$250.00 per ton
Asphalt Concrete Base (ACB)	$250.00 per ton
Aggregate Base Course (AB)	$180.00 per cubic yard
Cold Planing of Existing AC	$15.00 per square yard

Assumptions and Limitations

1. In-place Unit Cost based on information provided by SSFM International, Inc. received on November 20, 2018.

2. Pavement sections are based on the design guidelines provided in the State of Hawaii Department of Transportation (HDOT) Pavement Design Manual dated March 2002.

3. Conversion Factors:

Asphaltic Concrete	2.07 Tons/cubic yard
Asphaltic Concrete Base	2.12 Tons/cubic yard

4. The design period is 50 years.

5. Remove and replace 2.0 inches of AC every 10 years for AC pavement sections.

6. Assume excavation will be required for pavement sections.

Initial Costs - Typical Pavement Sections

Alternative #1: Asphalt Concrete Pavement with Asphaltic Concrete Base

New pavement section: 4.0" AC, 8.0" ACB (12.0" roadway excavation)

Roadway excavation	12.0 / 36 in/yd x		$30.00 /cy	=	$10.00 /sy
Asphalt concrete	4 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$57.50 /sy
Asphalt concrete base	8 / 36 in/yd x	2.12 tons/cy x	$250.00 /ton	=	$117.78 /sy
Pavement section			Initial Costs:		$185.28 /sy

Alternative #2: Asphalt Concrete Pavement with Aggregate Base

New pavement section: 7.5" AC, 10.0" AB (17.5" roadway excavation)

Roadway excavation	17.5 / 36 in/yd x		$30.00 /cy	=	$14.58 /sy
Asphalt concrete	7.5 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$107.81 /sy
Aggregate base	10 / 36 in/yd x		$180.00 /cy	=	$50.00 /sy
Pavement section			Initial Costs:		$172.40 /sy

Maintenance Costs - Typical Pavement Sections

Asphalt concrete pavement sections

Year 10

Cold Planing	2 / 36 in/yd x		$15.00 /cy	=	$0.83 /sy
Asphalt concrete overlay	2 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$28.75 /sy

Year 20						
	Cold Planing	2 / 36 in/yd x		$15.00 /cy	=	$0.83 /sy
	Asphalt concrete overlay	2 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$28.75 /sy
Year 30						
	Cold Planing	2 / 36 in/yd x		$15.00 /cy	=	$0.83 /sy
	Asphalt concrete overlay	2 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$28.75 /sy
Year 40						
	Cold Planing	2 / 36 in/yd x		$15.00 /cy	=	$0.83 /sy
	Asphalt concrete overlay	2 / 36 in/yd x	2.07 tons/cy x	$250.00 /ton	=	$28.75 /sy

Total Maintenance Costs: $118.33 /sy

Total Present Worth Costs - Typical Pavement Sections

Alternative #1: Asphalt Concrete Pavement with Asphalt Concrete Base

Initial Costs:	$185.28 /sy
Maintenance Costs:	$118.33 /sy
Total:	$303.61 /sy

Alternative #2: Asphalt Concrete Pavement with Aggregate Base

Initial Costs:	$172.40 /sy
Maintenance Costs:	$118.33 /sy
Total:	$290.73 /sy