

Project: Keaau-Pahoa Road Improvements - Route 130 (Southeast of Ainaloa Boulevard)

Economic Justification

Unit Prices

	<u>In-place Unit Cost</u>
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, 7.0" ACB (11.0" roadway excavation)

Roadway excavation	11.0 / 36 in/yd x		\$30.00 /cy	=	\$9.17 /sy
Asphalt concrete	4 / 36 in/yd x	2.07 tons/cy x	\$250.00 /ton	=	\$57.50 /sy
Asphalt concrete base	7 / 36 in/yd x	2.12 tons/cy x	\$250.00 /ton	=	\$103.06 /sy

Pavement section	Initial Costs:	\$169.72 /sy
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Alternative #2: Asphalt Concrete Pavement with Aggregate Base

New pavement section: 7.0" AC, 9.0" AB (16.0" roadway excavation)

Roadway excavation	16.0 / 36 in/yd x		\$30.00 /cy	=	\$13.33 /sy
Asphalt concrete	7 / 36 in/yd x	2.07 tons/cy x	\$250.00 /ton	=	\$100.63 /sy
Aggregate base	9 / 36 in/yd x		\$180.00 /cy	=	\$45.00 /sy

Pavement section	Initial Costs:	\$158.96 /sy
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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: \$169.72 /sy
Maintenance Costs: \$118.33 /sy

Total: \$288.06 /sy

Alternative #2: Asphalt Concrete Pavement with Aggregate Base

Initial Costs: \$158.96 /sy
Maintenance Costs: \$118.33 /sy

Total: \$277.29 /sy
