


November 4, 2013

MEMORANDUM

TO: HWY-DS

ATTN: Shawn M. Clarke

FROM: HWY-PH 

The following data are submitted for your information:

NAME OF PROJECT: Pali Highway Resurfacing, Waokanaka St to Kamehameha Hwy
Districts of Koolaupoko and Honolulu, Oahu
Route 61 (2.64 to 7.69 mp)

PROJECT NO.: _____

SECTION: _____

TRAFFIC DATA:

2013 ADT
2023 ADT
DHV
Design K
Design D
Design T
T24

Pali Highway, Waokanaka Street to Kamehameha Highway Route 61 (2.64 to 7.69 mp)	
	49,100
	51,800
	4,400
	8.5
	65/35
	3.0
	3.0
24-HOUR TRUCK COMPOSITION	
PERCENT	
BUS	32.57
2D	51.93
3X	5.23
4X	0.26
2S1, 3S1, 2S2	4.13
3S2, 3-2, 2-3	4.78
6/6+X S-TLR	0.88
5X M-TLR	0.02
6X M-TLR	0.01
7X M-TLR	0.20

CLASSIFICATION

REF. NO. TA 13-19

TRAFFIC INDEX DETERMINATION

Project: Rehabilitation of Pali Highway
Waokanaka Street to Kamehameha Highway
Honolulu to Kaneohe, Oahu, Hawaii

Street Name: Pali Highway (Waokanaka Street to Kamehameha Highway)

(1)	Design Period (years)	10
(2)	Current Average Daily Traffic (ADT) Per Direction	31915
(3)	Future Average Daily Traffic (ADT) Per Direction	33670
(4)	Average ADT Per Direction Over Design Period	32792.5
(5)	Design Lane Factor	1

Number of Lanes In One Direction	Design Lane Factor
1	1
2	1
3	0.8
4	0.75

(6)	24-Hour Truck Traffic, T_{24} (%)	3
	Truck Traffic Distribution :	
	2-axle =	84.50%
	3-axle =	5.23%
	4-axle =	4.39%
	5-axle =	4.80%
	6-axle =	0.89%
	7-axle =	0.20%
(7)	Average Daily Truck Traffic Per Direction, ADTT	984
(8)	Equivalent 18-kip Single Axle Loads, ESAL	
	2-axle : % of 2-axle trucks x No. trucks x 65	= 54034
	3-axle : % of 3-axle trucks x No. trucks x 525	= 27012
	4-axle : % of 4-axle trucks x No. trucks x 1162	= 50184
	5-axle : % of 5-axle trucks x No. trucks x 1462	= 69037
	6-axle : % of 6-axle trucks x No. trucks x 968	= 10380
	Annual ESAL :	= 210647
	Total ESAL For Design Period	= 2106474
	TRAFFIC INDEX (TI) = 9 (ESAL/1,000,000)EXP(0.119)	9.83
	SAY	10.0

Project: Rehabilitation of Pali Highway
 Waokanaka Street to Kamehameha Highway
 Honolulu to Kaneohe, Oahu, Hawaii

Street: Milepost 2.64 to Milepost 5.33

Design Parameters

Traffic Index	10.0
R value of ACB	90
R value of ASB	60
R value of Subgrade	15

Pavement Section using Asphalt Concrete Base and Aggregate Subbase

Trial Thickness of AC + ACB 9 Inches

(1) **Asphalt Concrete (AC)**

GE required					0.320	
GE with Tolerance =	0.320	+	0.240	=	0.560	
Gf of AC					2.013	
GE/Gf	=	3.34		SAY	3.500	Inches
				USE	4.000	Inches

(2) **Asphalt Concrete Base (ACB)**

GE required	=		1.280
GE of AC	=		0.431
GE required of ACB	=		0.849
Gf of ACB			1.912
GE/Gf	=	5.33	SAY 5.50 Inches
			USE 6.00 Inches

(3) **Calculate New Gf of AC**

Thickness of AC + Thickness of ACB	0.833
New Gf of AC	2.084
New Gf of ACB	1.980

(4) **Aggregate Subbase (ASB)**

GE required	=	2.720
GE of AC	=	0.455
GE of ACB	=	0.990
GE required of ASB	=	1.275
GE less tolerance	=	1.035
Gf of ASB	=	1.000
GE/Gf	=	12.42
	SAY	13.00 Inches
	USE	13.00 Inches

Design Pavement Section

4.0	Inches	AC
6.0	Inches	ACB
13.0	Inches	ASB
23.0	Inches	Total Thickness

Project: Rehabilitation of Pali Highway
 Waokanaka Street to Kamehameha Highway
 Honolulu to Kaneohe, Oahu, Hawaii

Street: Milepost 5.33 to Milepost 6.59

Design Parameters

Traffic Index	10.0
R value of ACB	90
R value of ASB	60
R value of Subgrade	15

Pavement Section using Asphalt Concrete Base and Aggregate Subbase

Trial Thickness of AC + ACB 9 Inches

(1) **Asphalt Concrete (AC)**

GE required					0.320	
GE with Tolerance =	0.320	+	0.240	=	0.560	
Gf of AC					2.013	
GE/Gf	=	3.34		SAY	3.500	Inches
				USE	4.000	Inches

(2) **Asphalt Concrete Base (ACB)**

GE required	=		1.280
GE of AC	=		0.431
GE required of ACB	=		0.849
Gf of ACB			1.912
GE/Gf	=	5.33	SAY 5.50 Inches
			USE 7.00 Inches

(3) **Calculate New Gf of AC**

Thickness of AC + Thickness of ACB	0.917
New Gf of AC	2.151
New Gf of ACB	2.043

(4) **Aggregate Subbase (ASB)**

GE required	=	2.720
GE of AC	=	0.477
GE of ACB	=	1.192
GE required of ASB	=	1.051
GE less tolerance	=	0.811
Gf of ASB	=	1.000
GE/Gf	=	9.73
	SAY	10.00 Inches
	USE	10.00 Inches

Design Pavement Section

4.0	Inches	AC
7.0	Inches	ACB
10.0	Inches	ASB
21.0	Inches	Total Thickness

Project: Rehabilitation of Pali Highway
 Waokanaka Street to Kamehameha Highway
 Honolulu to Kaneohe, Oahu, Hawaii

Street: Milepost 6.59 to Milepost 7.68

Design Parameters

Traffic Index	10.0
R value of ACB	90
R value of ASB	60
R value of Subgrade	15

Pavement Section using Asphalt Concrete Base and Aggregate Subbase

Trial Thickness of AC + ACB 9 Inches

(1) **Asphalt Concrete (AC)**

GE required					0.320	
GE with Tolerance =	0.320	+	0.240	=	0.560	
Gf of AC					2.013	
GE/Gf	=	3.34		SAY	3.500	Inches
				USE	4.000	Inches

(2) **Asphalt Concrete Base (ACB)**

GE required	=		1.280
GE of AC	=		0.431
GE required of ACB	=		0.849
Gf of ACB			1.912
GE/Gf	=	5.33	SAY 5.50 Inches
			USE 9.50 Inches

(3) **Calculate New Gf of AC**

Thickness of AC + Thickness of ACB	1.125
New Gf of AC	2.301
New Gf of ACB	2.186

(4) **Aggregate Subbase (ASB)**

GE required	=	2.720
GE of AC	=	0.527
GE of ACB	=	1.731
GE required of ASB	=	0.462
GE less tolerance	=	0.222
Gf of ASB	=	1.000
GE/Gf	=	2.67
	SAY	6.00 Inches
	USE	3.00 Inches

Design Pavement Section

4.0	Inches	AC
9.5	Inches	ACB
3.0	Inches	ASB
16.5	Inches	Total Thickness