

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	48	54

GUARDRAIL AND REFLECTOR SCHEDULE

GUARDRAIL NO.	LOCATION		OFFSET FROM # (FT.)		REMOVE (L.F.)	INSTALL (L.F.)	THRIE BEAM (L.F.)	RUBRAIL (L.F.)	RESET POST (EA)	END TREATMENTS		RM-3 (Yellow)	RM-3 (Bi-Dir) (Yellow)	RM-5 (Bi-Dir)	REMARKS
	FROM	TO	LEFT	RIGHT						LEADING	TRAILING	FLEX POST	FLEX POST		
1	228+58	231+67	16			0.0			52	Modified G	Modified G	2		13	Reset Mod. G
2	231+80	235+79	18			0.0			66	Modified G	Modified G	2		16	Reset Mod. G
3	236+00	238+92	16			0.0			52	Modified G	Modified G	2		13	Reset Mod. G
4	239+20	243+23	16			0.0			68	Fleat-350	Modified G	1		17	Reset Mod. G
5	251+41	260+03	16			0.0			143	Fleat-350	Modified G	2		36	Reset Mod. G
6	253+46	257+59		13		12.5			67	Mod. A-1	Mod. A-1			17	
7	268+42	275+76	16			12.5			118	Modified G	Mod. A-1	1		30	Reset Mod. G
8	275+26	280+61		17		12.5			84	Mod. A-1	Mod. A-1		1	21	
9	275+90	282+29	14			0.0			105	Fleat-350	Modified G	2	1	26	Reset Mod. G
10	285+11	290+16	15			0.0			84	Modified G	Modified G	2		21	Reset Mod. G
11	295+60	308+64	16			12.5			208	Mod. A-1	Modified G	1	1	52	Reset Mod. G
12	310+10	318+93	17			0.0			143	Fleat-350	Modified G	2		36	Reset Mod. G
13	326+86	334+87	17			12.5			129	Mod. A-1	Fleat-350	1		32	
14	329+81	333+62		17		25.0			60	Mod. A-1	Mod. A-1			15	
15	339+18	348+56	16			12.5			151	Fleat-350	Mod. A-1	1		38	
16	360+12	363+02	16			0.0			47	Fleat-350	Fleat-350	2		12	
17	366+25	370+78	16			12.5			73	Mod. A-1	Fleat-350	1		18	
18	376+42	386+58	16			12.5			162	Fleat-350	Mod. A-1	1		41	
19	388+65	399+22	17			0.0			172	Modified G	Fleat-350	2		43	Reset Mod. G
20	404+29	27+26	19			0.0			332	Fleat-350	Modified G	2		83	Reset Mod. G
21	27+48	46+66	19			0.0			306	N/A	Fleat-350	1		77	Reset tie to wall
22	47+61	49+11	19			0.0			24	Fleat-350	N/A			6	Reset tie to wall
						0.0									
TOTAL						125.0			2646			28	3	663	

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

CHAD M. McDONALD

LICENSED
PROFESSIONAL
ENGINEER

No. 9793-C

HAWAII, U.S.A.

This work was prepared by
me or under my supervision

Chad M. McDonald

4/30/2012

MITSUNAGA & ASSOCIATES, INC.

EXP. DATE

NOTE: Contractor to check and verify
dimensions at job before proceeding with work.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

GUARDRAIL AND RELECTOR
MARKER SCHEDULE - 1

MAMALAHOA HIGHWAY RESURFACING

Kaupulehu to Makalei Road

Project No. 190B-01-09M

Scale: As Noted Date: May 2010

SHEET No. C-48 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	49	54

REFLECTOR MARKER SCHEDULE

Station	Left	Right	RM-3 (Bi-Dir)	RM-3	RM-2	RM-1
224+73	x		x			
271+60		x			x	
272+79		x			x	
302+86		x				x
303+42		x	x			
303+80		x				x
321+36	x					x
323+00	x					x
366+81	x		x			
366+81		x	x			
367+91		x				x
371+66	x					x
377+45		x				x
378+97		x				x
380+87		x				x
382+05		x				x
386+01		x				x
14+82		x				x
15+43		x				x
15+98		x				x
21+97		x				x
22+59		x				x
23+20		x				x
		TOTAL	4	0	2	17

GUARDRAIL TOTAL

Item No.	Pay Item	Estimated Qty.	Unit
606.0100	Reset Guardrails and Replace Spacer Block	2646	Post
606.0200	End Anchorage , Modified Type "A-1"	12	Each
606.0300	Terminal Section, Type FLEAT-350	14	Each
606.0400	End Treatment, Modified G	16	Each
606.0500	New Guard Rail	125	L.F.
632.0300	Rellector Marker (RM-3) w/ Flex Post	28	Each
632.0400	Rellector Marker (RM-3) (Bi-Dir) w/ Flex Post	3	Each

Notes:

1. Terminal Section, "SKT-350" may be used in lieu of "ET-2000 PLUS".
2. Quantities shown are inclusive of work on guardrail sections.

ORIGINAL
PLAN

NO.

SURVEY PLOTTED BY

DATE

DESIGNED BY

DATE

QUANTITIES BY

DATE

CHECKED BY

DATE

CHAD M. McDONALD

LICENSED
PROFESSIONAL
ENGINEER

No. 9793-C

HAWAII, U.S.A.

This work was prepared by
me or under my supervision

Chad M. McDonald

7/30/2012

EXP. DATE

NOTE: Contractor to check and verify
dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL AND RELECTOR
MARKER SCHEDULE - 2

MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

Scale: As Noted Date: May 2010

SHEET No. C-47 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	50	54

UTILITY SCHEDULE				
STATION	OFFSET FROM #		TYPE	REMARKS
	LEFT	RIGHT		
216+25		18	WMH	Adjust Top
216+32		19	WVB	Adjust Top
223+90	30		WVB	Adjust Top
223+93		13	WVB	Adjust Top
223+97		16	WVB	Adjust Top
224+10		16	WMH	Adjust Top
224+83		15	WMH	Adjust Top

STREET SURVEY MONUMENT SCHEDULE			
STATION	MONUMENT TYPE	RECONSTRUCT STREET SURVEY MONUMENTS (ITEM NO. 614.0100)	REMARKS
223+35.22	PC	1	Existing Monument
232+35.23	PC	1	Existing Monument
250+76.59	PC	1	Existing Monument
273+71.11	PC	1	Existing Monument
286+37.78	PCC	1	Existing Monument
299+19.78	PT	1	Existing Monument
303+06.92	PC	1	Existing Monument
313+23.59	PT	1	Existing Monument
331+33.28	PC	1	Existing Monument
343+39.95	PT	1	Existing Monument
399+08.65	PC	1	Existing Monument
403+15.32	PT	1	Existing Monument
406+63.94 (Back) = 8+81.13 (Ahead)	Mon	1	Equation Station
13+64.41	PC	1	Existing Monument
16+35.00	PT	1	Existing Monument
27+67.00	PC	1	Existing Monument
31+45.41	PT	1	Existing Monument
34+30.00	PC	1	Existing Monument
41+76.12	PT	1	Existing Monument
44+40.10	PC	1	Existing Monument
48+31.30	PT	1	Existing Monument
TOTAL		21	

Legend:

ARV	Air Relief Valve Box
AC	Asphalt Concrete
DI	Drain Inlet
SMH	Sewer Manhole
TSB	Traffic Signal Box
WMB	Water Meter Box
WMH	Water Manhole
WVB	Water Valve Box

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

CHAD M. MCDONALD

LICENSED PROFESSIONAL ENGINEER

No. 9793-C

HAWAII, U.S.A.

This work was prepared by me or under my supervision

Chad M. McDonald

4/30/2012

MITSUNAGA & ASSOCIATES, INC.

EXP. DATE

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

UTILITY SCHEDULE

MAMALAHOA HIGHWAY RESURFACING

Kaupulehu to Makalei Road

Project No. 190B-01-09M

Scale: As Noted

Date: May 2010

SHEET No. C-48 OF 54 SHEETS

50

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	51	54

LANE AND SHOULDER WIDTH SCHEDULE

BEGIN STATION	END STATION	INTERSECTION	TRAVEL WIDTH (FT.)	AVERAGE SHOULDER WIDTH (FT.)	TRAVEL WAY (S.F.)	SHOULDER WAY (S.F.)	COLD PLANING 3/4" THICK (S.F.)	RECONSTRUCTION WIDTH (FT.)	RECONSTRUCTION LANE	RECONSTRUCTION AREA (S.F.)
215+00	223+63		11	6	19,060	10,311	19,060	0		0
223+63	224+35	Pu'ukala Street	11	6	2,327	925	2,327	0		0
224+35	245+00		11	6	46,674	27,342	46,674	0		0
245+00	246+00		11	6	2,200	1,200	0	22	BOTH	2,200
246+00	248+00		11	6	4,400	2,400	2,200	11	LEFT	2,200
248+00	249+00		11	6	2,200	1,200	0	22	BOTH	2,200
249+00	261+00		11	6	28,873	15,509	28,873	0		0
261+00	264+00		11	6	6,600	3,600	3,300	11	LEFT	3,300
264+00	267+00		11	6	6,600	3,600	6,600	0		0
267+00	267+50		11	6	1,100	600	550	11	RIGHT	550
267+50	320+00		11	6	116,727	71,056	116,727	0		0
320+00	345+50		11	6	56,309	33,984	29,423	11	LEFT	26,886
345+50	50+00		11	6	225,929	145,410	225,929	0		0
				TOTALS	518,999	317,137	481,663	88		37,336

ORIGINAL PLAN NOTE BOOK No.	SURVEY PLOTTED BY	DATE
	DESIGNED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

CHAD M. McDONALD

LICENSED
PROFESSIONAL
ENGINEER

No. 9793-C

HAWAII, U.S.A.

This work was prepared by
me or under my supervision

Chad M. McDonald

4/30/2012

MITSUNAGA & ASSOCIATES, INC.

EXP. DATE

NOTE: Contractor to check and verify
dimensions of job before proceeding with work.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

RECONSTRUCTION SCHEDULE

MAMALAHOA HIGHWAY RESURFACING

Kaupulehu to Makalei Road

Project No. 190B-01-09M

Scale: As Noted

Date: May 2010

SHEET No. C-49 OF 54 SHEETS

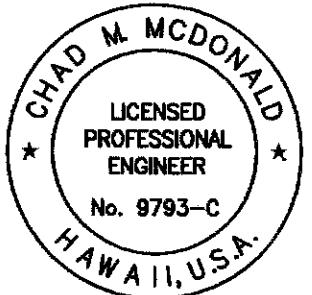
51

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	52	54

SIGN REPLACEMENT, REMOVAL, AND INSTALLATION SCHEDULE

STATION	LEFT	RIGHT	MILE POST	TYPE	RM-3 ATTACHED TO SIGN POST	SIGN TO REMAIN	REMOVE	INSTALL (10 SQ. FT. OR LESS)		DESTINATION SIGN PANEL (SQ. FT.)	*MILE POST MARKER W/ POST (Bi-Dir)	RM-4 W/POST (Bi-Dir)	REMARKS
								W/POST	W/O POST				
216+33	x		32.01	W3-5(45) (36"x36")	2		1	1					
216+65	x		32.00	D10-6 (12"x38")	1		1	1			1		32 / 190
219+24		x	31.96	W2-2L (36"x36") D1-1a "PUUKALA ROAD" (30"x6")	2		1	1					
223+79	x		31.87	D1-1 "Pu'ukala Street" R1-1 (36"x36")	1		1	1					
229+00	x		31.76	W2-2R (36"x36") D1-1a "PUUKALA ROAD" (30"x6")	2		1	1					
238+83	x		31.58	R1-1 (36"x36")	1		1	1					
239+19	x		31.58	W14-1 (36"x36")	2		1	1					
239+28	x		31.58	R2-1 (24"x30")	2		1	1					
243+05	x		31.50	D10-6 (12"x38")	1		1	1			1		31.5 / 190
249+63	x		31.38	R1-1 (36"x36")	1		1	1					
251+31		x	31.35	R1-1 (36"x36")	1		1	1					
257+31	x		31.23	W2-2L (36"x36")	1		1	1					
269+32	x		31.01	Adopt a Highway Sign (60"x24") "West Hawaii HGEA" (60"x12")	2		1			10			
269+37		x	31.01	Adopt a Highway Sign (60"x24") "Hu'i O'puua Hunting Club" (60"x12")	2		1			10			
269+41	x		31.00	D10-6 (12"x38")	1		1	1			1		31 / 190
279+84		x	30.81	W2-2R (36"x36")	1		1	1					
294+95	x		30.52	W2-2L (36"x36")	1		1	1					
295+85	x		30.50	D10-6 (12"x38")	1		1	1			1		30.5 / 190
313+29		x	30.17	"Elevation 2000 ft" (30"x24")	1		1			5			
313+68	x		30.17	"Elevation 2000 ft" (30"x24")	1		1			5			
322+18	x		30.00	D10-6 (12"x38")	1		1	1			1		30 / 190
348+65	x		29.50	D10-6 (12"x38")	1		1	1			1		29.5 / 190
374+95	x		29.00	D10-6 (12"x38")	1		1	1			1		29 / 190
377+03	x		28.97	Adopt a Highway Sign (60"x24") "Hu'i O'puua Hunting Club" (60"x12")	2		1			10			
377+29		x	28.96	Adopt a Highway Sign (60"x24") "West Hawaii Dental" (60"x12")	2		1			10			
401+45	x		28.50	D10-6 (12"x38")	1		1	1			1		28.5 / 190
20+19	x		28.19	W1-2R (36"x36")	1		1	1					

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	CHECKED BY	



This work was prepared by me or under my supervision

Chad M. McDonald 4/30/2012
MITSUNAGA & ASSOCIATES, INC. EXP. DATE
NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**SIGN REPLACEMENT, REMOVAL AND
INSTALLATION SCHEDULE - 1**
MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

Scale: As Noted Date: May 2010

SHEET No. **C-50** OF **54** SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	53	54

SIGN REPLACEMENT, REMOVAL, AND INSTALLATION SCHEDULE													
STATION	LEFT	RIGHT	MILE POST	TYPE	RM-3 ATTACHED TO SIGN POST	SIGN TO REMAIN	REMOVE	INSTALL (10 SQ. FT. OR LESS)		DESTINATION SIGN PANEL (SQ. FT.)	*MILE POST MARKER W/ POST (Bi-Dir)	RM-4 W/POST (Bi-Dir)	REMARKS
								W/POST	W/O POST				
20+66		x	28.18	W1-2R (36"x36")	1		1	1					
28+05		x	28.04	W1-5R (36"x36")	1		1	1					
29+80	x		28.00	D10-6 (12"x48")	1		1	1			1		28 / 190
44+50	x		27.73	W1-8L (24"x30")	2		1	1					
45+60	x		27.71	W1-8L (24"x30")	2		1	1					
				TOTAL	43		32	26		50	9		

ORIGINAL PLAN NOTE BOOK No.	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	CHECKED BY	

CHAD M. McDONALD

LICENSED
PROFESSIONAL
ENGINEER
No. 9793-C
HAWAII, U.S.A.

This work was prepared by
me or under my supervision

4/30/2012

EXP. DATE

NOTE: Contractor to check and verify
dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN REPLACEMENT, REMOVAL AND
INSTALLATION SCHEDULE - 2

MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

Scale: As Noted

Date: May 2010

SHEET No. C-51 OF 54 SHEETS

53

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	190B-01-09M	2010	54	54

STRIPING AND PAVEMENT MARKING SCHEDULE																									
STATION		TRAFFIC REGIME		THERMOPLASTIC EXTRUSION (L.F.)														PAVEMENT MARKERS (Each)							
				4" Double Yellow (L.F.)	4" Yellow Guidelines (L.F.)	4" Yellow (L.F.)	12" Yellow Diagonal (L.F.)	4" White E.P. Stripe (L.F.)	4" White Stripe (L.F.)	8" White Stripe (L.F.)	12" White Diagonal (L.F.)	4" White Guidelines (L.F.)	12" Stop Bar (Lanes)	Yield Line (Lanes)	Cross Walk (Lanes)	SOLID WHITE ARROW				Bike Route Marking w/ 4" White Stripe	A	C	D	H	J
																Left	Straight	Right	Slant Merge						
Start	End	Left	Right																						
215+00	224+15	P	N	23		915		1825					1									46	25	23	92
224+15	226+46	N	N	231		0		462														12	12	0	0
226+46	236+44	N	P	0		998		1996														50	25	25	100
236+44	244+33	P	P	23		0		1578					1									40	22	0	79
244+33	249+52	P	N	0		519		1038														26	13	13	52
250+01	287+31	N	N	3776		0		7460					2									190	191	0	0
287+71	340+41	N	N	5293		0		10540					1									267	266	0	0
340+41	350+81	N	P	0		1040		2080														52	26	26	104
350+81	390+71	P	P	0		0		7980														200	100	0	399
390+71	401+91	P	N	0		1120		2240														56	28	28	112
401+91	50+00	N	N	4592		0		9184														230	230	0	0
		TOTAL		13,938		4,592		46,383					5									1,169	938	115	938

ORIGINAL PLAN	SURVEY PLOTTED BY MITSUNAGA & ASSOCIATES	DATE 4/30/2012
NOTE BOOK	DRAWN BY MITSUNAGA & ASSOCIATES	
No.	DESIGNED BY MITSUNAGA & ASSOCIATES	
	QUANTITIES BY MITSUNAGA & ASSOCIATES	
	CHECKED BY	

CHAD M. McDONALD

LICENSED
PROFESSIONAL
ENGINEER

No. 9793-C

HAWAII, U.S.A.

This work was prepared by
me or under my supervision

Chad M. McDonald

4/30/2012

MITSUNAGA & ASSOCIATES, INC.

EXP. DATE

NOTE: Contractor to check and verify
dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRIPING SCHEDULE

MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

Scale: As Noted Date: May 2010

SHEET No. C-52 OF 54 SHEETS