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ABBREVIATIONS AND SYMBOLS

Abut.	Abutment	Max.	Maximum
AB	Anchor Bolt	Min.	Minimum
Alum.	Aluminum	MP	Mile Post
Approx.	Approximate	No. *	Number
#	Baseline	N.T.S.	Not To Scale
Bal.	Balance	OB	Outbound
Beg.	Begin, Beginning	oc	On Center
Bk.	Block	OD	Outside Dimension
Bm.	Beam	o/s, O/S	Offset
Brg., Brgs.	Bearing, Bearings	PC	Point of Curvature
¢	Center Line	PL	Plate
Cl., Clr.	Clear	R	Radius
Conc.	Concrete	Rdwy.	Roadway
Cont.	Continuous	Ref.	Reference
Det.	Detail	Reinf.	Reinforcement
Dia., ø	Diameter	Req'd.	Required
Dim.	Dimension	R/W	Right of Way
Dwg., Dwgs.	Drawing, Drawings	Sect.	Section
EA, Ea., ea.	Each	Sht.	Sheet
EF	Each Face	Spes.	Spaces
EP	Edge of Pavement	Spcg.	Spacing
ES	Edge of Shoulder	Sta.	Station
Exist.	Existing	Std.	Standard
Exp., (E)	Expansion	Str.	Straight
		Symm.	Symmetrical
FF	Front Face		
Fin.	Finish	T#B	Top and Bottom
Ftg.	Footing	Thk.	Thick, Thickness
Ga.	Gage, Gauge	TS	Tubular Steel
Galv.	Galvanized	Typ.	Typical
Gr.	Grade	Vert.	Vertical
Horiz.	Horizontal	w/	With
HS	High Strength		
Hwy.	Highway		
IB	Inbound		
Jt.	Joint		
LC	Length of Curve		
LF., Lin. Ft.	Linear Feet		
Lg.	Long		
Longit.	Longitudinal		
L.S.	Lump Sum		

Detail or
Section
designation

XXX
XXX|XXX

Sheet No.
Section is cut or
Detail Location

Sheet No.
Detail
is drawn

GENERAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO LRFD Bridge Design Specifications, 1998

MATERIALS:

- A. Reinforced Concrete: Class A
B. Reinforced Steel: ASTM A 615, Grade 40 or 60
C. Admixture in concrete: See Special Provisions
D. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.
E. All structural steel shall be ASTM A 36 hot-dip galvanized after fabrication.
F. All anchor bolts, washers and nuts shall be AASHTO M 164 hot-dip galvanized after fabrication, unless noted otherwise.
G. All welding shall be in accordance with the current edition of Reinforcing Steel Welding Code AWS D 1.4.

CONSTRUCTION METHODS:

- A. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 Edition and Special Provisions.
B. Except as noted otherwise, all vertical dimensions are measured plumb.
C. For steel reinforcing, stagger all splices where possible.
D. Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.
E. For cast-in-place concrete, minimum reinforcement cover:
Concrete cast against earth: 3"
Walls: 2"
F. At the time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
G. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
H. Minimum clear spacing between parallel bars shall be one and one-half (1½) times the diameter of the bars (for non-bundled bars). But in no case shall the clear distance between the bars be less than one and one-half (1½) times the maximum size of the coarse aggregate.
I. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.
J. All footings shall bear on firm undisturbed natural soils or properly compacted structural fill.
K. All existing reinforcing and anchor bolts that can be incorporated in the new work shall be bent or cut as required and cleaned before being utilized in the new work.
L. All existing reinforcing and anchor bolts that cannot be incorporated in the new work shall be completely removed or removed to a minimum depth of one and one-half (1½) inches below finish grade and the area patched with mortar.

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- M. All existing concrete face receivng new concrete in the finish product shall be roughened, cleaned and have concrete epoxy adhesive applied prior to placement of the new pour, unless indicated otherwise or as ordered by the Engineer.
N. Epoxy fill shall be "Double Cartridge" type. Epoxies that require manual measuring or mixing shall not be allowed.

REFERENCE:

- A. Refer to Standard Plans for additional details and notes not covered by details and typical drawings.

GENERAL:

- A. All items noted incidental will not be paid for separately.
B. The location of the existing utilities shown on the plans are approximate.
C. The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
D. The Contractor shall verify all grades and dimensions in the field before commencing with any work.
E. The Contractor shall be solely responsible for the protection of adjacent property, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at no cost to the State.
F. The Contractor shall conduct his work in such a manner and provide such temporary shoring or other measures as may be necessary to insure the safety of all concerned and to protect existing structures.
G. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with minimum of Class D concrete at no cost to the State.
H. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.

ESTIMATED QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	WAIKAPU BRIDGE	UKUMEHAME BRIDGE	KAUAULA BRIDGE	JERSEY BARRIER AT 74+00 # 76+50	JERSEY BARRIER AT 101+00 # 106+00	JERSEY BARRIER AT 139+50 # 142+00	JERSEY BARRIER AT 553+60 # 555+90	CULVERT AT STA. 99+84	CULVERT AT STA. 199+16	CULVERT AT STA. 210+97	CULVERT AT STA. 249+92	TOTAL
507.7600	Type "A" End Post Upgrade	Ea.	2											2
507.7605	Type "B" End Post Upgrade	Ea.	2											2
507.7610	Type "C" End Post Upgrade	Ea.		4										4
507.7615	Type "D" Bridge Railing Upgrade	LF		67										67
507.7620	Type "E" End Post Upgrade	Ea.			4									4
507.7625	Type "F" Bridge Railing Upgrade	LF			55									55
507.7630	Type "G" Jersey Barrier Upgrade	Ea.				2	2	2	2					8
507.7635	Type "H" Culvert Headwall Upgrade	LF								76			83	159
507.7640	Type "I" Culvert Headwall Upgrade	LF									77	39		116
606.3112	Guardrail Type 3 Thrie Beam Transition to End Post or Median Barrier	LF	50	100	100	50	50	50	50	100	100	50	100	800

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UPGRADE PLANS
**INDEX TO DRAWINGS, GENERAL NOTES,
ESTIMATED QUANTITIES AND ABBREVIATIONS**
HONOAPIILANI HIGHWAY GUARDRAIL AND SHOULDER IMPROVEMENTS
High Street to Puamana
Federal Aid Project No. STP-0900(53)
Scale: As Noted Date: May 1999