FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(228)	1999	4	82

GENERAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO LRFD Bridge Design Specifications, 1994

MATERIALS:

A. Reinforced Concrete: Class A
B. Reinforced Steel: ASTM A 615, Grade 40 or Grade 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 180 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. Spliced reinforcing shall conform to Section 602.06(B) of the Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994.
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 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.
M. All existing concrete face receiving new concrete in the finish product shall be roughened, cleaned and have concrete epoxy adhesive applied prior to placement of new pour, unless indicated otherwise or as ordered by the Engineer.
N. Existing structure shown by dashed lines. Limits of existing structure shown by hatched lines. Saw-cut one (1) inch deep along cut line of existing structure. Removal shall be done in such a manner as to preclude any damage to the existing structures. Large vibratory type of equipment will not be permitted in the removal operation, nor for drilling of holes. Only small vibratory hand tools accepted by the Engineer will be allowed. Any damage to the exisiting structure due to the Contractor's action shall be repaired at his expense with no cost to the State.
O. 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 saftey of all concerned and to protect existing structures. All shoring shall satisfy OSHA requirements.
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.

ORIGINAL PLOT	SURVEY PLOTTED BY		DATE
	DRAWN BY	KSG	JUN 1999
NOTE BOOK	TRACED BY	AHF, ST	JUN 1999
	DESIGNED BY	AHF, ST	JUN 1999
	QUANTITIES BY	FU	JUN 1999
	CHECKED BY	DDO	JUN 1999

im228_q1.dgn

INDEX TO DRAWINGS

ESTIMATED QUANTITIES

ITEM NO.	507.7600	507.7601	507.7602	507.7603	507.7610	507.7620	507.7621	507.7630	507.7631	507.7632	507.7640	507.7641	507.7650	507.7651	507.7660	507.7650	606.3112
ITEM DESCRIPTION *Including Bridge Railing	Type "A" End Post Upgrade	Type "AI" End Post Upgrade	Type "A2" End Post Upgrade	Type "A3" End Post Upgrade	Type "B" Headwall Upgrade	Type "C" End Post Upgrade *	Type "CI" End Post Upgrade *	Type "D" End Post Upgrade *	Type "DI" End Post Upgrade *	Type "D2" End Post Upgrade	Type "E" End Post Upgrade	Type "EI" End Post Upgrade	Type "F" End Post Upgrade	Type "FI" End Post Upgrade	Type "G" End Post Upgrade	Bridge Railing Upgrade	Guardrail Type 3 Thrie Beam Transition to End Post
UNIT	Ea.	Ea.	Ea.	Ea.	L.F.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	Ea.	L.F.	L.F.
STRUCTURE NO. 451								4	1	1						516	175
STRUCTURE NO. 414								4								660	100
WAIKELE STRM. BR.						1	1		1				2	1	2	3,510	200
HOAEAE SEPARATION	2	1									4	1					200
HONOULIULI STRM. BR.	1	2	1														100
DBL. 12'x12' BOX CULV.					56												100
PALEHUA SEPARATION	3			1													100
TOTAL	6	3	1	1	56	1	1	8	2	1	4	1	2	1	2	4,686	975

SYMBOLS AND ABBREVIATIONS

Detail or Section designation → XXX / XXX XXX ← Sheet No. Detail is drawn
Sheet No. Section is cut or Detail Location

Abut.	Abutment	Det.	Detail	Irr.	Irrigation	Ref.	Reference
AB	Anchor Bolt	Dia., ø	Diameter	Jt.	Joint	Reinf.	Reinforcement
Alum.	Aluminum	D.I.	Drain Inlet	LC	Length of Curve	Req'd	Required
Approx.	Approximate	Dim.	Dimension	L.F., Lin. Ft.	Linear Feet	Sect.	Section
℄	Baseline	Dwg., Dwgs.	Drawing, Drawings	Lg.	Long	Sht.	Sheet
Bal.	Balance	EA, Ea., ea.	Each	Longit.	Longitudinal	Spcs.	Spaces
Beg.	Begin, Beginning	E.F.	Each Face	L.S.	Lump Sum	Spcd.	Spaced
Blk.	Block	Elec.	Electrical	Light Std.	Lighting Standard	Spcg.	Spacing
Bm.	Beam	Exist.	Existing	Max.	Maximum	Sta.	Station
Brg., Brgs.	Bearing, Bearings	Exp., (E)	Expansion	Min.	Minimum	Std.	Standard
℄	Center Line	F.F.	Front Face	MP	Mile Post	Str.	Straight
Cl., Clr.	Clear	Fin.	Finish	No., #	Number	Struct.	Structural
Col.	Column	Ftg.	Footing	N.T.S.	Not To Scale	Symm.	Symmetrical
Conc.	Concrete	Ga.	Gage, Gauge	O.B.	Outbound	T&B	Top and Bottom
Cont.	Continuous	Galv.	Galvanized	o.c.	On Center	Thk.	Thick, Thickness
CR	Corrosion Resistant	G.D.I.	Grated Drain Inlet	O.D.	Outside Dimension	TS	Tubular Steel
		Gr.	Grade	o/s, O/S	Offset	Typ.	Typical
		Horiz.	Horizontal	P.C.	Point of Curvature	Var.	Varies
		HS	High Strength	PL	Plate	Vert.	Vertical
		H.W.	Headwall	R	Radius	w/	With
		Hwy.	Highway	Rdwy	Roadway		
		I.B.	Inbound				

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

END POST UPGRADE

INDEX TO DRAWINGS, GENERAL NOTES, ESTIMATED QUANTITIES AND ABBREVIATIONS

INTERSTATE ROUTE H-1
GUARDRAIL AND SHOULDER IMPROVEMENTS
PALEHUA SEPARATION TO WAIKELE STREAM BRIDGE
Federal Aid Project No. IM-HI-1(228)

Scale: As Noted Date: Jun. 1999

SHEET No. Q1 OF 29 SHEETS