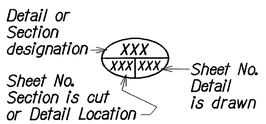
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-072-1(48)	2005	16	20

INDEX TO DRAWINGS

SYMBOLS AND ABBREVIATIONS



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

STRUCTURAL NOTES

DESIGN SPECIFICATIONS:

A. AASHTO 1998 LRFD Bridge Design Specifications, (Second Edition) and its subsequent Interim Specifications.

MATERIALS:

A. Reinforced Concrete: Class A, unless otherwise noted
B. Reinforcing Steel: ASTM A 615, 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 ASTM A 325 hot-dip galvanized after fabrication, unless noted otherwise.
G. All welding shall be in accordance with the current edition of Bridge Welding Code ANSI/AASHTO/AWS D 1.5

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 LRFD Bridge Design Specifications.
E. For cast-in-place concrete, unless otherwise shown, minimum cover for reinforcing steel:
Concrete cast against earth: 3"
Walls/Slabs: 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), one and one-half (1½) times the maximum size of the course aggregate or one and one-half (1½) inches.
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 ground or properly compacted structural fill.
K. In the event of over-excavation, the space between the footing/slabs/wall and the ground shall be filled with a minimum of Class D concrete at the Contractor's expense at no cost to the State.
L. Where the Plans call for reinforcement bars to be embedded or anchored into existing concrete, see Special Provisions, Section 674 - Concrete Retrofit.
M. Where the Plans call for placing fresh plastic concrete against existing concrete, see Special Provisions, Section 674 - Concrete Retrofit.

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 Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
C. The Contractor shall verify all grades and dimensions in the field before commencing with any work.
D. 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.
E. 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.
F. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.

ESTIMATED QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT
206.6010	Structure Excavation for Type 10'x10' Inlet Structure	C.Y.
206.7210	Structure Backfill for Type 10'x10' Inlet Structure	C.Y.
503.1092	Concrete for Type 10'x10' Drain Manhole	L.S.
602.1001	Reinforcing Steel for Type 10'x10' Inlet Structure	L.S.
607.0060	3-Feet High Chain Link Fence with Top and Bottom Rail	L.F.

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN	FEB 2005
	DRAWN BY		FEB 2005
NOTE BOOK	TRACED BY	JFU	FEB 2005
	DESIGN BY		FEB 2005
	QUANTITIES BY	JFU	FEB 2005
N:\Kohala\dgn	CHECKED BY	PS	FEB 2005

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

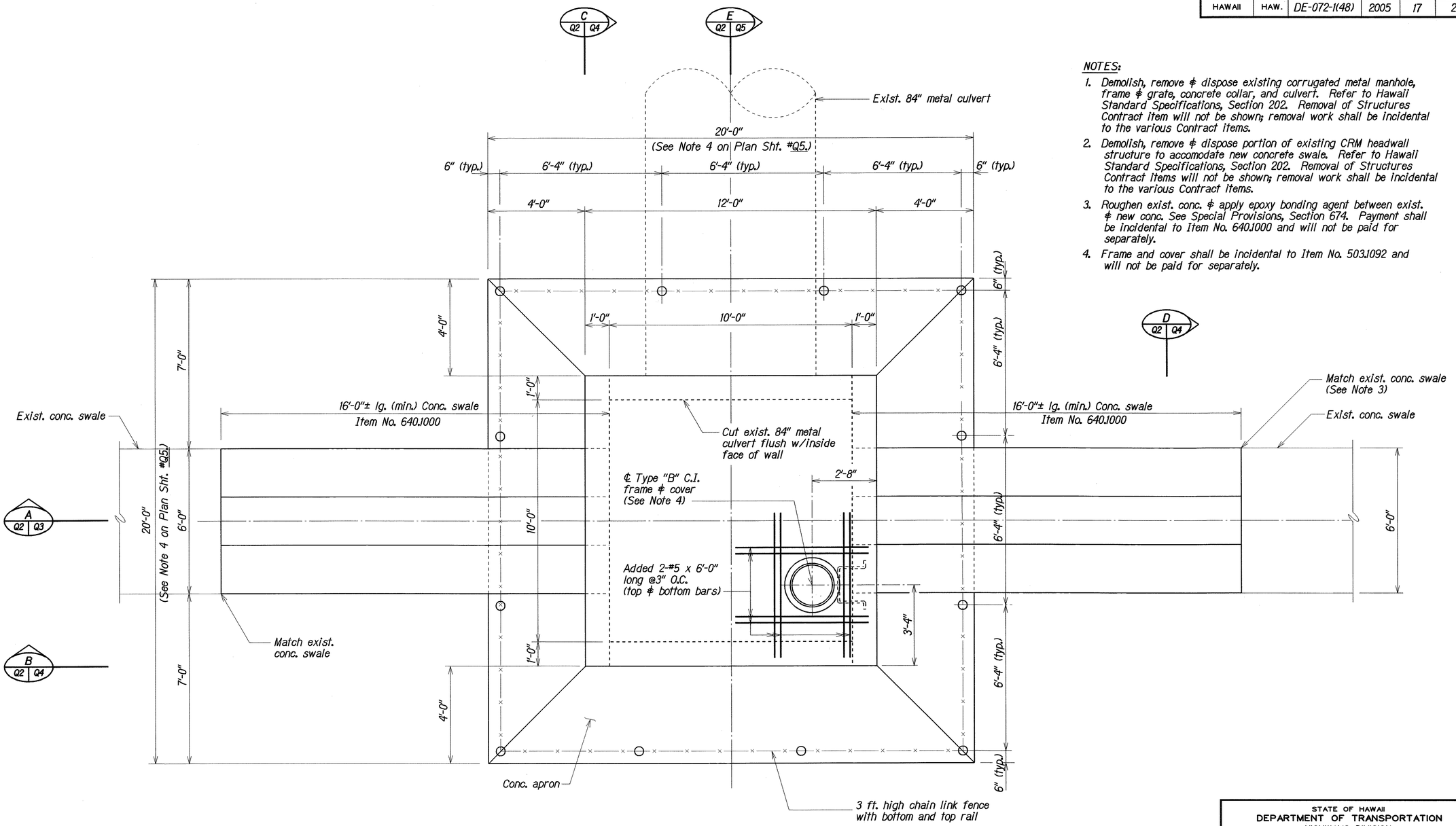
TYPE 10'x10' INLET STRUCTURE
INDEX, ESTIMATED QUANTITIES
STRUCTURAL NOTES AND ABBREVIATIONS

KALANIANAOLE HIGHWAY
DRAINAGE IMPROVEMENT
Vicinity of Keolu Hills
Fed. Aid Project No. DE-072-1(48)

Scale: As Noted Date: Feb, 2005

SHEET No. Q1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-072-1(48)	2005	17	20



NOTES:

1. Demolish, remove & dispose existing corrugated metal manhole, frame & grate, concrete collar, and culvert. Refer to Hawaii Standard Specifications, Section 202. Removal of Structures Contract item will not be shown; removal work shall be incidental to the various Contract items.
2. Demolish, remove & dispose portion of existing CRM headwall structure to accomodate new concrete swale. Refer to Hawaii Standard Specifications, Section 202. Removal of Structures Contract items will not be shown; removal work shall be incidental to the various Contract items.
3. Roughen exist. conc. & apply epoxy bonding agent between exist. & new conc. See Special Provisions, Section 674. Payment shall be incidental to Item No. 640.1000 and will not be paid for separately.
4. Frame and cover shall be incidental to Item No. 503.1092 and will not be paid for separately.

PLAN

Scale: ½" = 1'-0"

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY KMN	FEB 2005
NOTE BOOK	TRACED BY	
	DESIGNED BY JFU	FEB 2005
	QUANTITIES BY JFU	FEB 2005
No. pkuhio7.dgn	CHECKED BY PS	FEB 2005

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 10'x10' INLET STRUCTURE

PLAN

KALANIANAOLE HIGHWAY
DRAINAGE IMPROVEMENT
Vicinity of Keolu Hills
Fed. Aid Project No. DE-072-1(48)

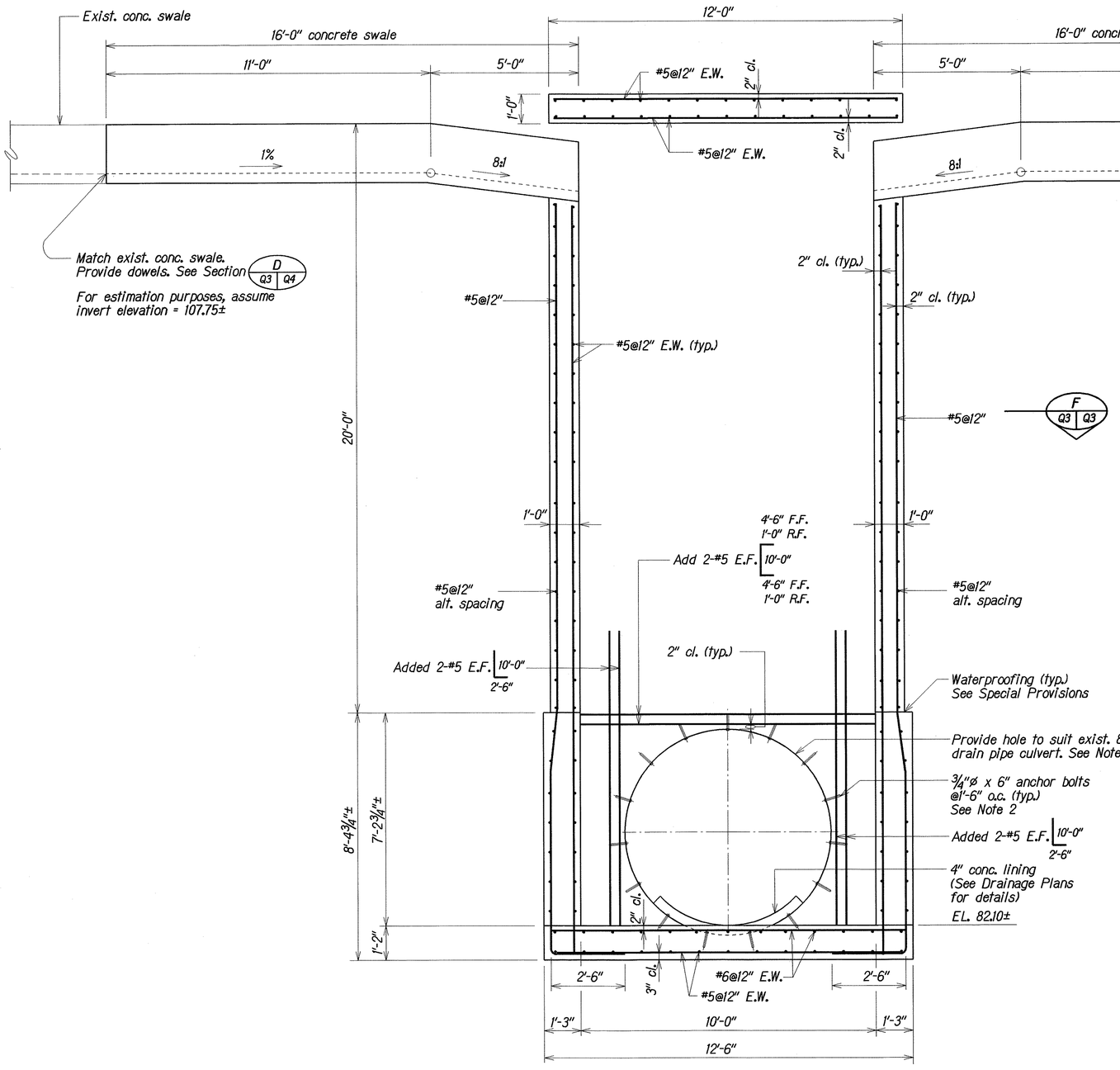
Scale: As Noted Date: Feb. 2005

SHEET No. Q2 OF 5 SHEETS

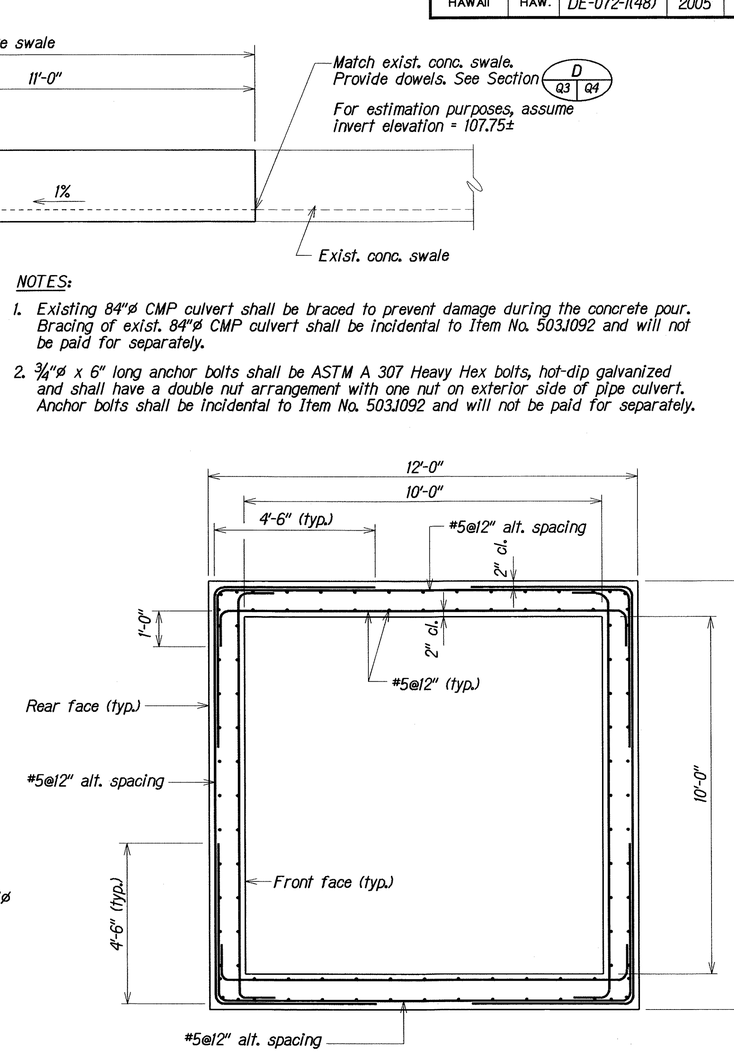
17

L:\Bridge Design Section

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-072-1(48)	2005	18	20



SECTION A Q2 Q3
Scale: 1/2" = 1'-0"



NOTES:

1. Existing 84"ø CMP culvert shall be braced to prevent damage during the concrete pour. Bracing of exist. 84"ø CMP culvert shall be incidental to Item No. 503.1092 and will not be paid for separately.
2. 3/4"ø x 6" long anchor bolts shall be ASTM A 307 Heavy Hex bolts, hot-dip galvanized and shall have a double nut arrangement with one nut on exterior side of pipe culvert. Anchor bolts shall be incidental to Item No. 503.1092 and will not be paid for separately.

SECTION F Q3
Scale: 1/2" = 1'-0"
Q3, Q4, Q5

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN	DATE FEB 2005
	DRAWN BY		FEB 2005
NOTE BOOK	TRACED BY	JFU	FEB 2005
N:\kalihi3.dgn	DESIGNED BY	JFU	FEB 2005
	QUANTITIES BY		
	CHECKED BY	PS	FEB 2005

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 10'x10' INLET STRUCTURE

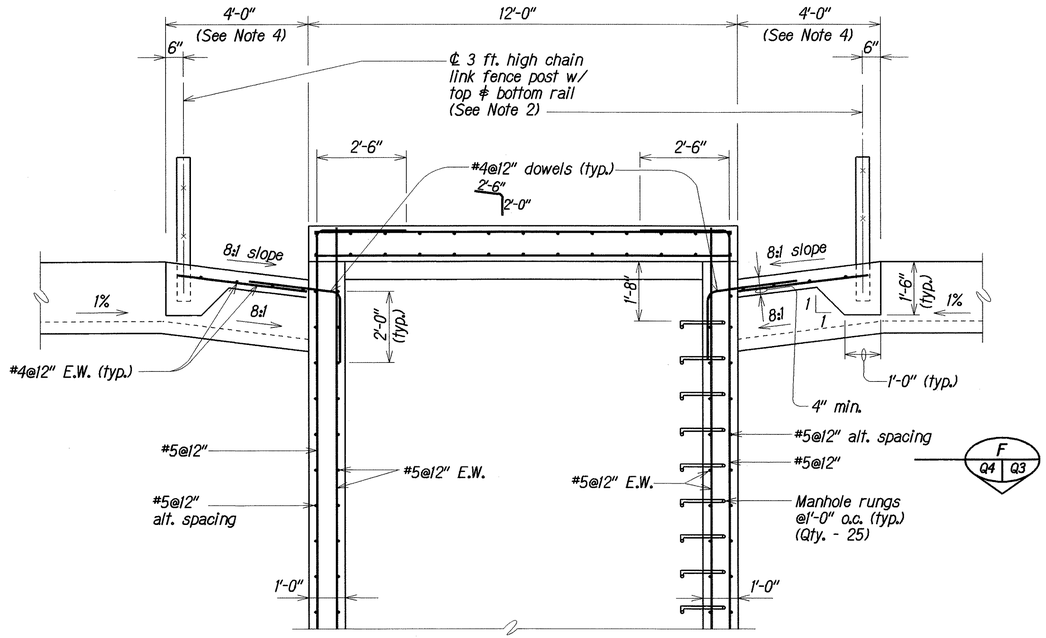
SECTION

KALANIANAOLE HIGHWAY
DRAINAGE IMPROVEMENT
Vicinity of Keolu Hills
Fed. Aid Project No. DE-072-1(48)

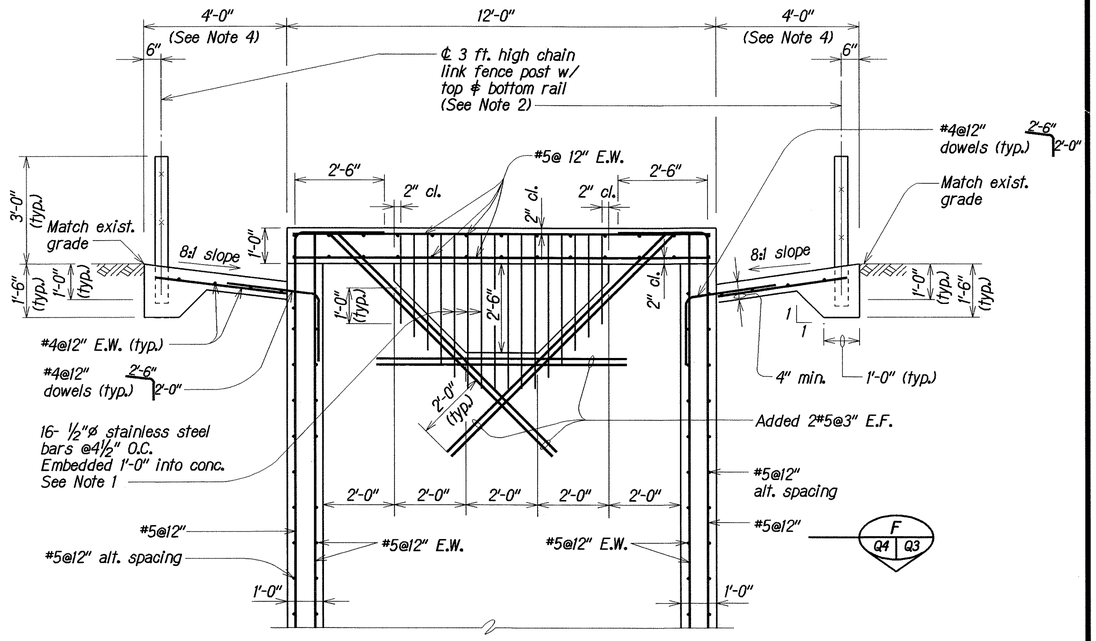
Scale: As Noted Date: Feb. 2005

SHEET No. Q3 OF 5 SHEETS

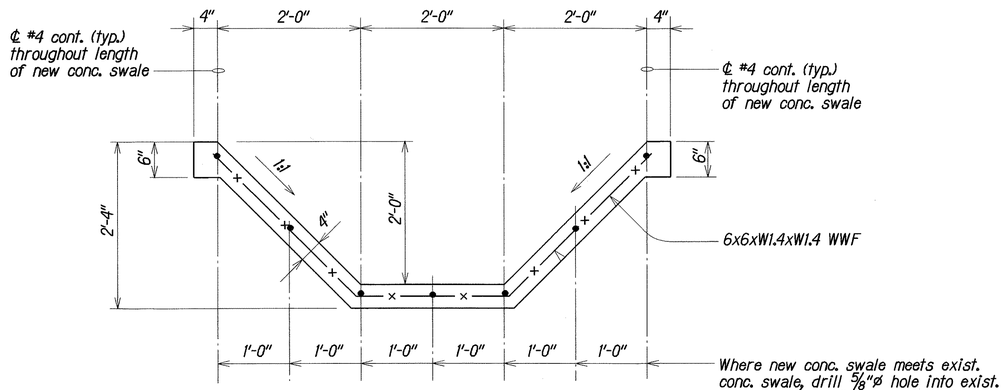
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-072-1(48)	2005	19	20



SECTION
Scale: ½" = 1'-0"
B
Q2 | Q4



SECTION
Scale: ½" = 1'-0"
C
Q2 | Q4



SECTION
CONCRETE SWALE
Scale: 1" = 1'-0"
D
Q2 | Q4
Q3

NOTES:

1. Maintain 4" max. opening between ½"ø S.S. bars. ½"ø S.S. bars shall be installed at mid-depth of wall (℄ S.S. bar to be 6" from front and rear face of wall). S.S. bars shall be ASTM A 955, Grade 60 and shall not be in contact with Gr. 60 rebars or ties. Stainless steel bars shall be incidental to Item No. 503.1092 and will not be paid for separately.
2. 3 feet high chain link fence with top and bottom rail shall be paid for under Item No. 607.0060.
3. Epoxy adhesive dowels shall be incidental to Item No. 640.1000 and will not be paid for separately.
4. Concrete apron surrounding drain manhole (including reinforcing) shall be paid for under Item No. 640.1000 and will not be paid for separately.
5. Manhole rungs shall be incidental to Item No. 503.1092 and will not be paid for separately.

ORIGINAL PLAN	SURVEY PLOTTED BY	KMN
	DRAWN BY	
	TRACED BY	JFU
NOTE BOOK	DESIGNED BY	JFU
	QUANTITIES BY	ES
No. Oahu 4 pgs	CHECKED BY	
	DATE	FEB 2005
		FEB 2005
		FEB 2005
		FEB 2005

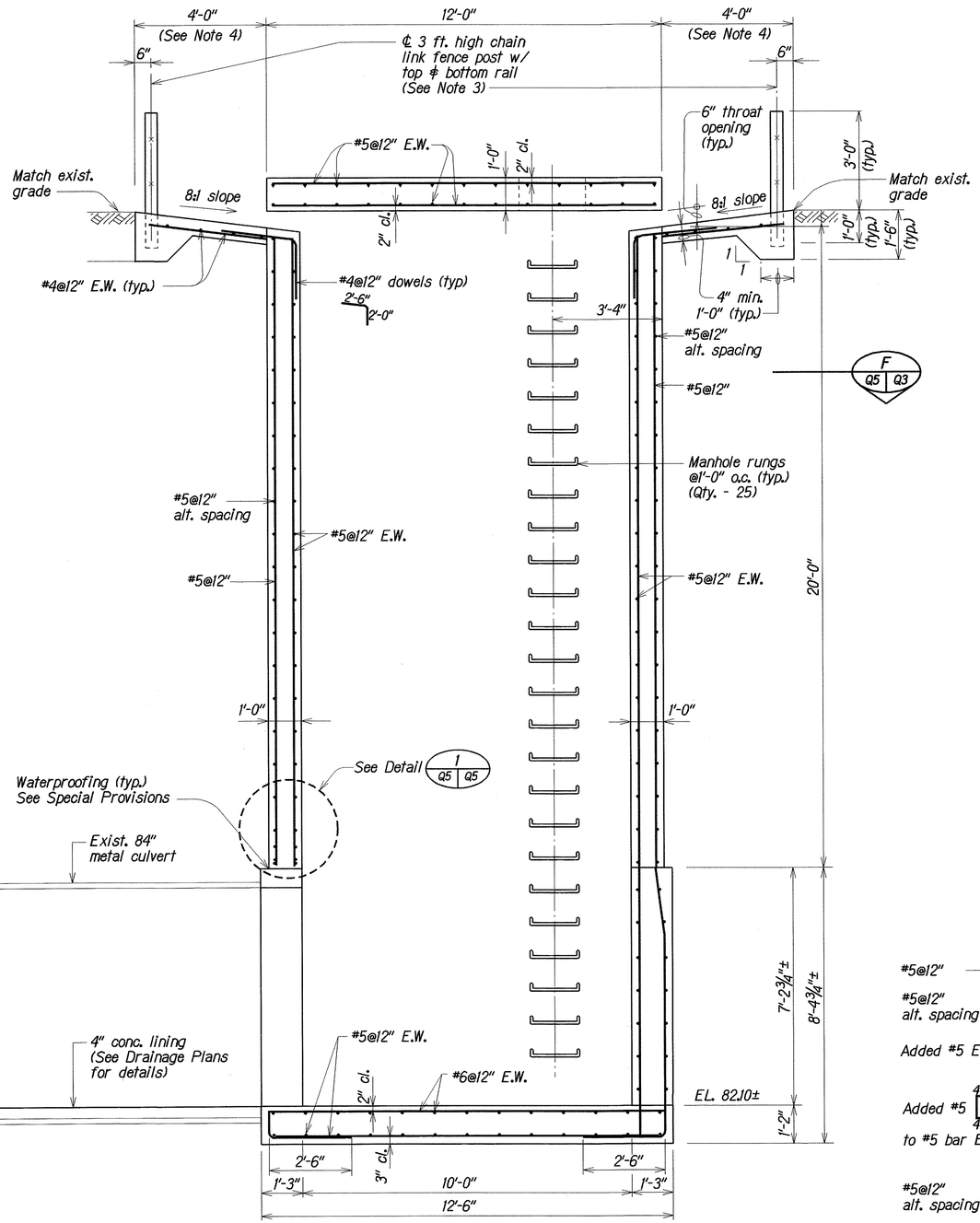
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 10'x10' INLET STRUCTURE
SECTIONS
KALANIANAOLE HIGHWAY
DRAINAGE IMPROVEMENT
Vicinity of Keolu Hills
Fed. Aid Project No. DE-072-1(48)

Scale: As Noted — Date: Feb. 2005

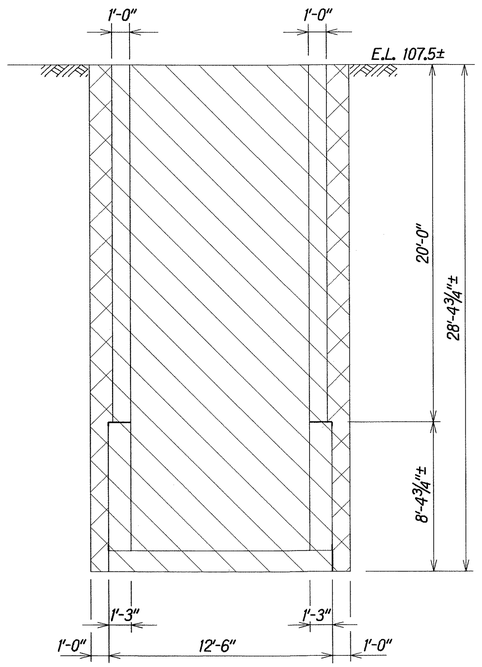
SHEET No. Q4 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	DE-072-1(48)	2005	20	20



SECTION E Q2 Q5

Scale: 1/2" = 1'-0"

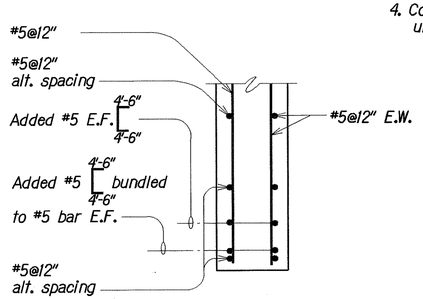


TYPICAL STRUCTURAL EXCAVATION AND BACKFILL PAY LIMITS

Scale: 1/4" = 1'-0"

NOTES:

1. Hatched area shown thus ▨ denotes limits of structure excavation payline.
2. Hatched area shown thus ▨ denotes limits of structure backfill.
3. 3 feet high chain link fence with top and bottom rail shall be paid for under Item No. 607.0060.
4. Concrete apron surrounding drain manhole (including reinforcing) shall be paid for under Item No. 640.1000 and will not be paid for separately.



DETAIL 1 Q5 Q5

Scale: 1" = 1'-0"

ORIGINAL PLAN		SURVEY PLOTTED BY	KMN	DATE	FEB 2005
		DRAWN BY			
NOTE BOOK		TRACED BY	JFU		FEB 2005
		DESIGNED BY			FEB 2005
		QUANTITIES BY	JFU		FEB 2005
N:\pw\dwg\f_dgn		CHECKED BY	PS		FEB 2005

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 10'x10' INLET STRUCTURE
SECTION & TYPICAL STRUCTURE EXCAVATION AND BACKFILL PAY LIMITS

KALANIANAOLE HIGHWAY
DRAINAGE IMPROVEMENT
Vicinity of Keolu Hills
Fed. Aid Project No. DE-072-1(48)

Scale: As Noted Date: Feb, 2005

SHEET No. Q5 OF 5 SHEETS