

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	2008	23	30

GENERAL NOTES

DESIGN SPECIFICATIONS:

AASHTO LRFD Bridge Design Specifications, Fourth Edition, 2007. State of Hawaii DOT (Highway Division) Design Criteria for Bridges and Structures 4/15/2008.

MATERIALS:

- A. Reinforced Concrete:  $f'c = 4,000$  psi min.  
B. Reinforced 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 wide flange structural steel shape shall be ASTM A952. All HSS (tube) structural steel shall be ASTM A500 Grade B. All other structural steel shall be ASTM A36. All structural steel shall be hot-dip galvanized after fabrication.  
F. All anchor bolts, nuts and washers shall be ASTM A 325, hot-dip galvanized after fabrication, unless noted otherwise.  
G. All structural steel welding shall be in accordance with AWS D 1.1/D 1.1M : 2002.

CONSTRUCTION REQUIREMENTS:

- A. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, (Hawaii 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 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 ( $1\frac{1}{2}$ ) 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 ( $1\frac{1}{2}$ ) times the maximum size of the course 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. Expansion and contraction joints in bridge rail upgrade to match respective joints in existing bridge rail. Premolded joint filler for joints to be incidental to bridge rail upgrade.  
L. Epoxy for dowels shall meet the requirements for ASTM C881 Type IV, Grade 1, Class C.

REFERENCE:

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

GENERAL:

- A. 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.  
B. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with a minimum of Class D concrete at the Contractor's expense at no cost to the State.  
C. Unless noted otherwise, chamfer all exposed concrete edges three-quarters ( $\frac{3}{4}$ ) of an inch.

SYMBOLS AND ABBREVIATIONS

Detail or Section designation  
Sheet No. Section is cut or Detail Location  
Sheet No. Detail is drawn

(X) - Bearing Abutment Seat Line  
- Boring No. & Designation

Abut. Abutment  
AC Asphaltic Concrete  
Adj. Adjacent  
Alt. Alternate  
Alum. Aluminum  
Approx. Approximate  
Az. Azimuth

Baseline  
Bal. Balance  
Bet., Btwn. Between  
B.F. Back Face  
Blt. Bolt  
B, Bot., Bott. Bottom  
Br. Bridge

Center Line  
Cant. Cantilever  
C.F. Cubic Feet  
Cl., Clr. Clear  
Col. Column  
Conc. Concrete  
Conn. Connection  
Const. Construction  
Cont. Continuous  
C.Y., Cu. Yd. Cubic Yards

Det. Diameter  
Dia.,  $\phi$   
Dim. Dimension  
Dwg., Dwgs. Drawing, Drawings

EA, Ea, ea. Each Face  
EF Each Face  
El., Elev. Elevation  
E.P. Edge of Pavement  
Eq. Equal  
Est. Estimated  
E.W. Each Way  
Exc. Excavation  
Exlst. Existing  
Exp., (E) Expansion  
Ext. Exterior

Specified Strength of Concrete  
F'ci Strength of Concrete at Time of Initial Prestress  
FF Front Face  
Fig. Figure  
Fin. Finish  
Fin. Gr. Finish Grade  
Ftg. Footing

Gage, Gauge  
Galv. Galvanized  
Gr. Grade  
Grd. Ground

Horizontal  
Horiz. High Strength  
HS Height  
Ht. Highway

I.F. Inside Face  
In. Inch  
Int. Interior  
Inv. Invert

Jt. Joint  
L Length  
LBS., lb., lbs. Pound, Pounds  
L.F., Lin. Ft. Linear Feet  
Lg. Long  
Longit. Longitudinal  
L.S. Lump Sum  
Lt. Left  
Ltg. Std. Lighting Standard

Max. Maximum  
Min. Minimum  
Misc. Miscellaneous

N North  
N.F. Near Face  
No., # Number  
N.T.S. Not To Scale

On Center  
a.c. Opening  
Opn'g Offset  
o/s, O/S

Portland Cement Concrete  
P.C.C. Plate  
PL Pavement  
Pvmt.

R Radius  
Rdwy Roadway  
Ref. Reference  
Reinf. Reinforcement  
Ret. Retaining  
Req'd Required  
R.F. Rear Face  
Rt. Right  
R/W Right Of Way

Sect. Section  
SF Square Feet  
Shldr. Shoulder  
Sht. Sheet  
Spa. Space  
Spod. Spaced  
Spog. Spacing  
Spec. Specification  
Sta. Station  
Std. Standard  
Stirr. StIRRup  
Str. Straight  
Struct. Structural  
Symm. Symmetrical

T Top  
Temp. Temporary  
Term Terminal  
Thk. Thick, Thickness  
T.O.D. Top Of Deck  
Typ. Typical

Var. Varies  
Vert. Vertical  
w/ With  
W.W. Wingwall

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DRWN BY	ASSG. LWA	MAR 2008
DESIGNED BY	DGT	MAR 2008
QUANTITIES BY	PLS	MAR 2008
CHECKED BY		

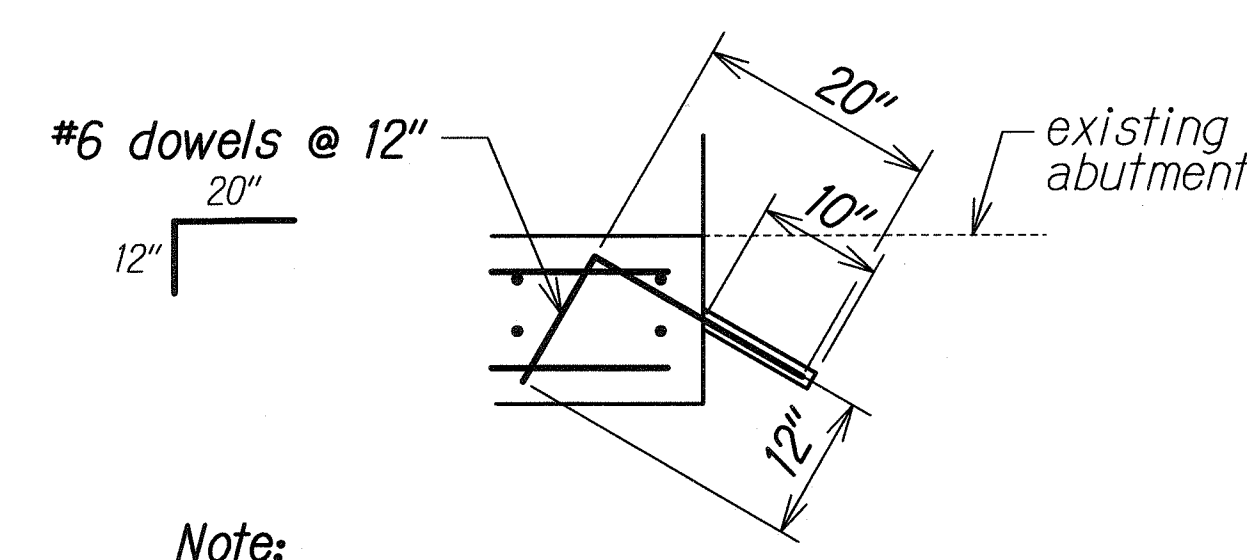
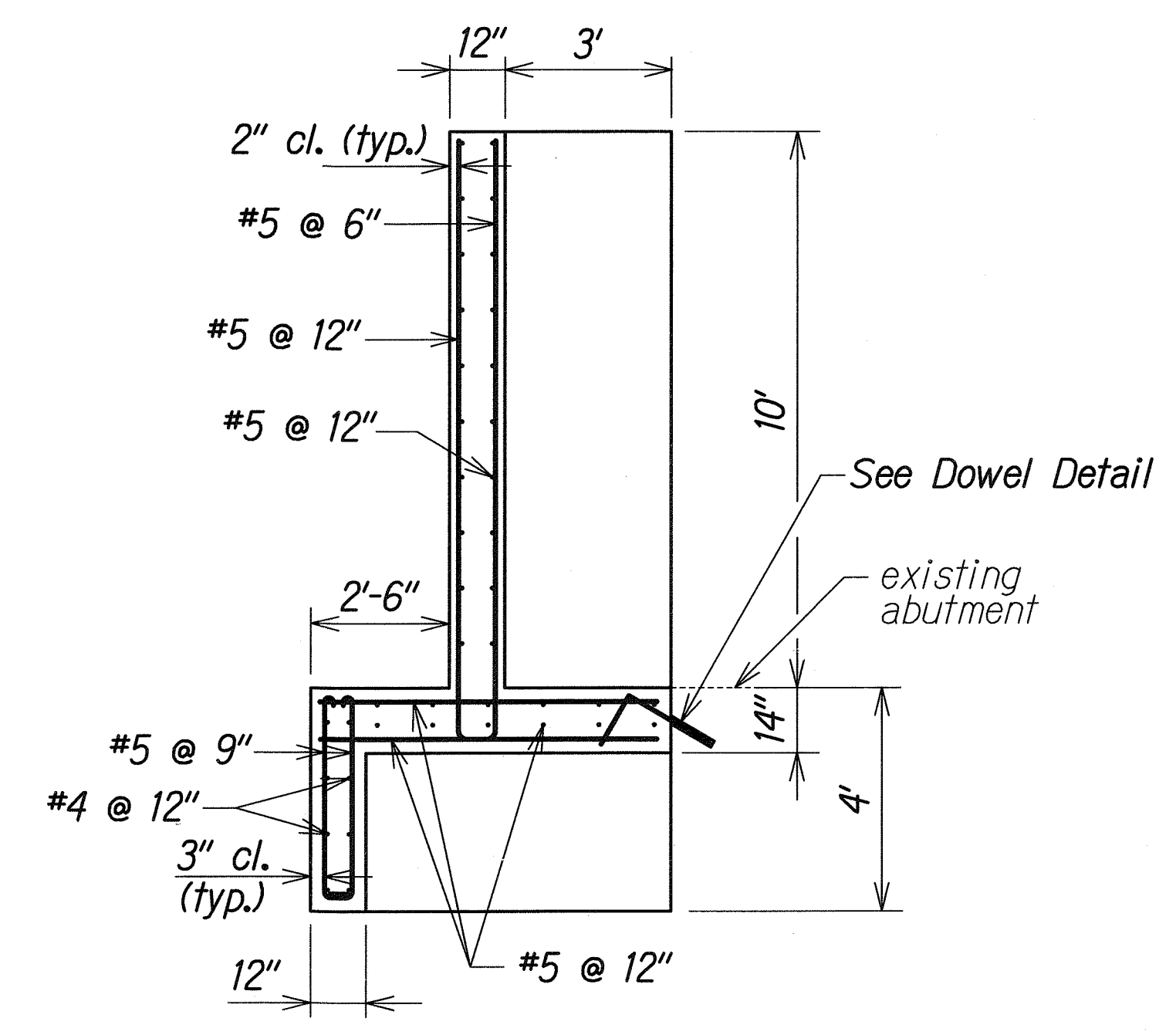
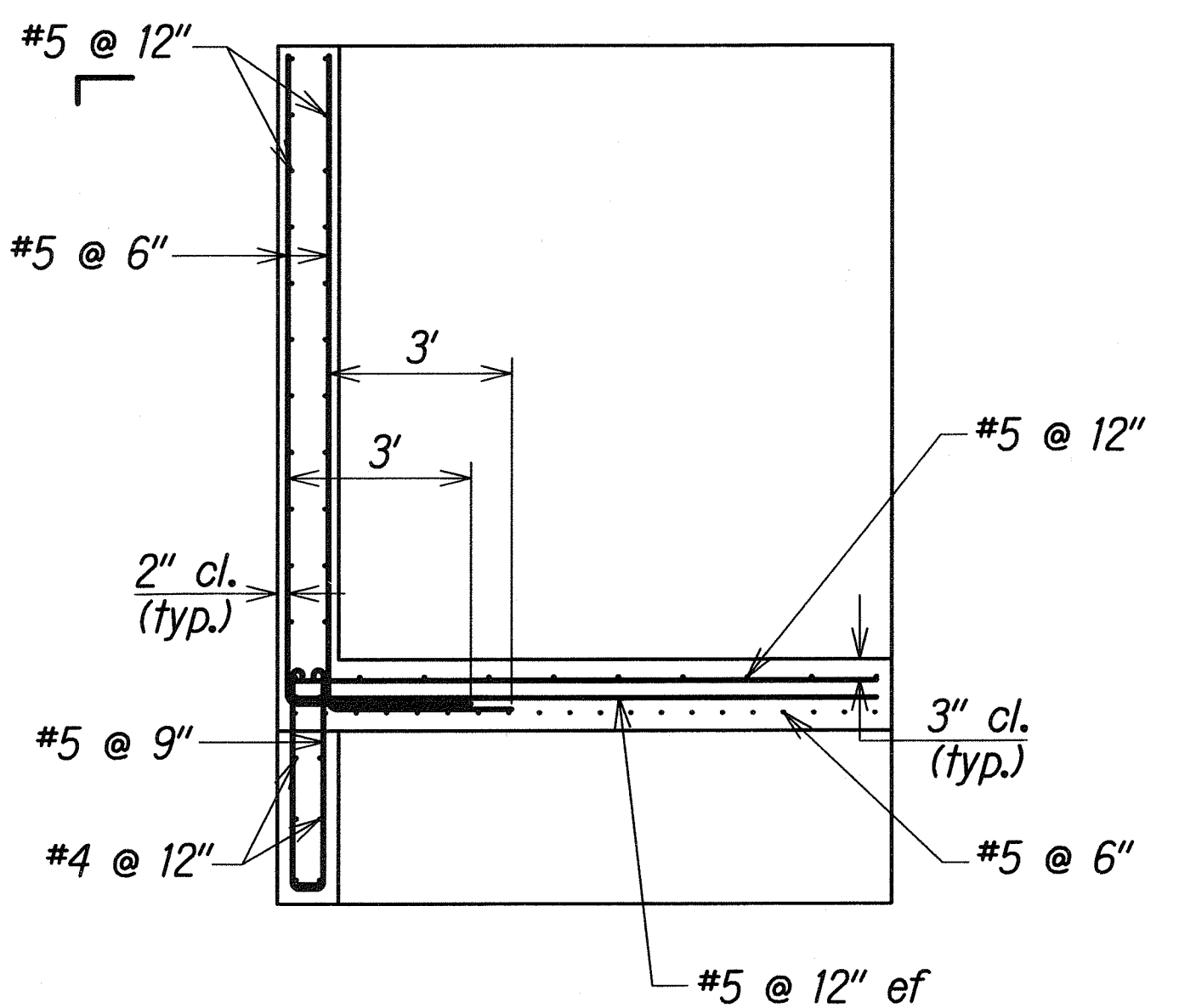
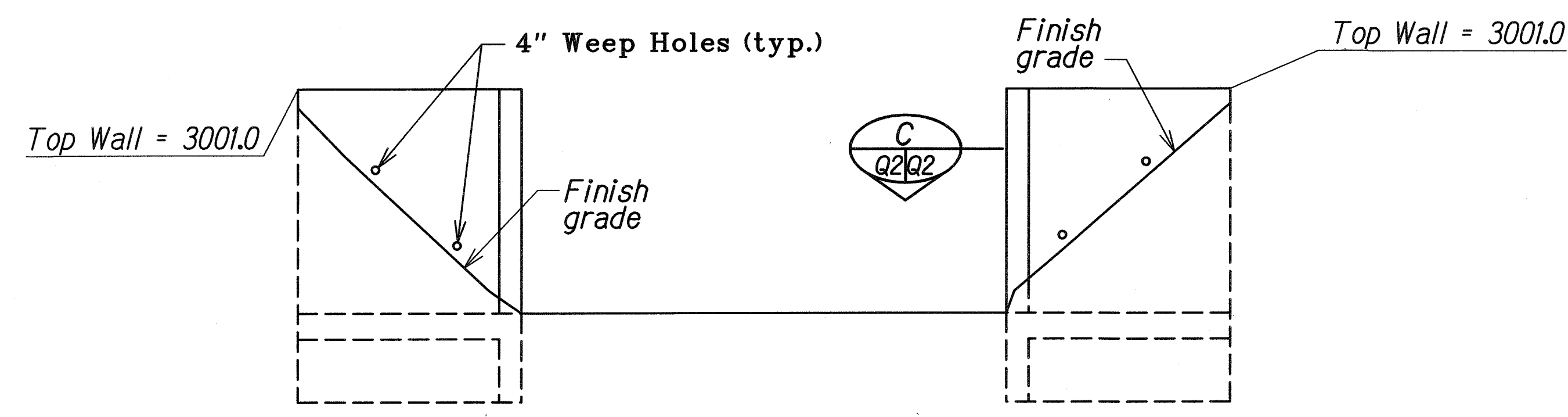
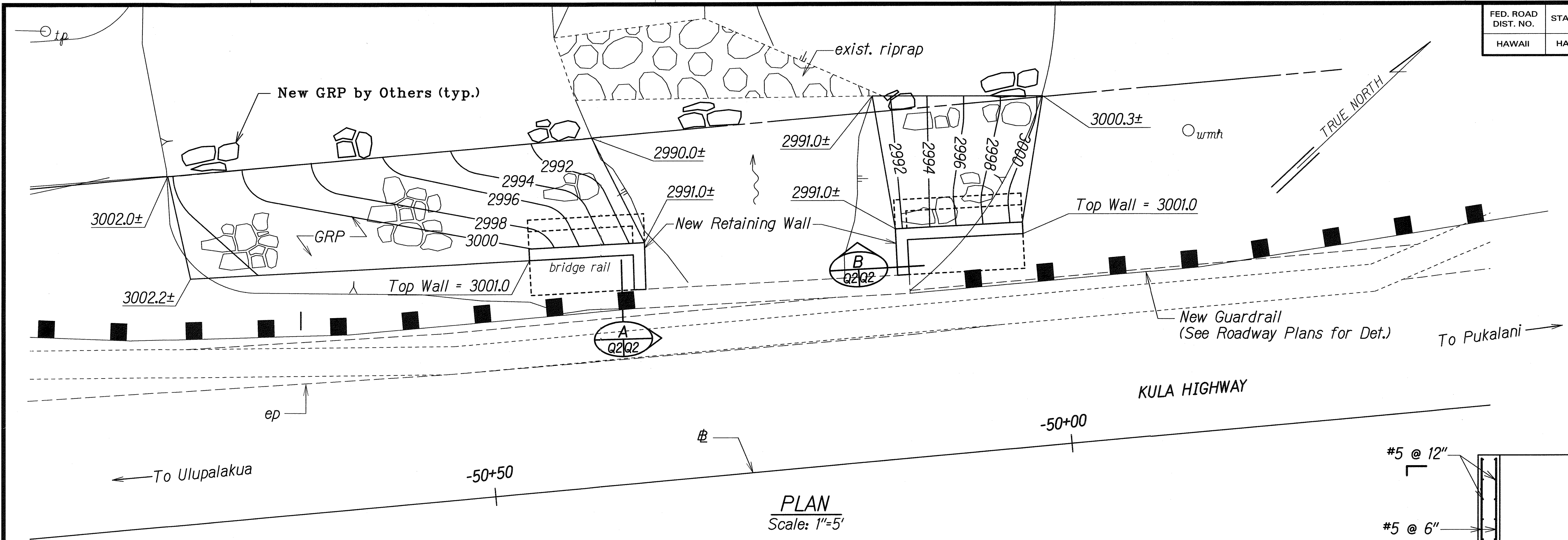
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
GENERAL NOTES, SYMBOLS & ABBREVIATIONS KULA HIGHWAY FLOOD DAMAGE REPAIRS AT VARIOUS LOCATIONS Project No. 37CDE-01-08M

Scale: As Noted

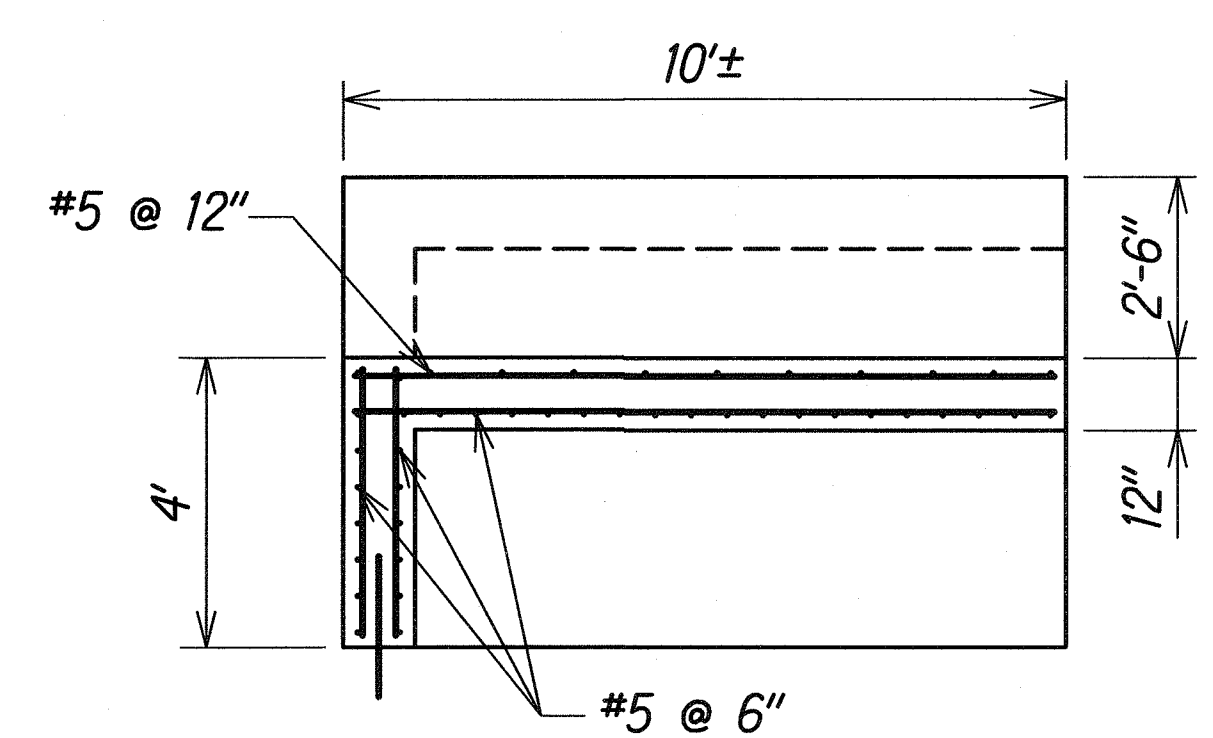
Date: Apr. 2008

SHEET No. 01 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	2008	24	30



Note:  
Drill 10" deep hole in existing abutment.  
Holes to be 30° above horizontal.  
Epoxy/grout #6 rebar dowels  
@ 12" using ASTM C881 Type IV  
Grade III Class C epoxy.



LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING WALL**  
PLAN AND DETAILS  
KULA HIGHWAY FLOOD DAMAGE REPAIRS  
AT VARIOUS LOCATIONS  
Project No. 37CDE-01-08M  
Scale: As Shown Date: April, 2008  
SHEET No. Q2 OF 8 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

SECTION A  
Scale: 3/8"=1'

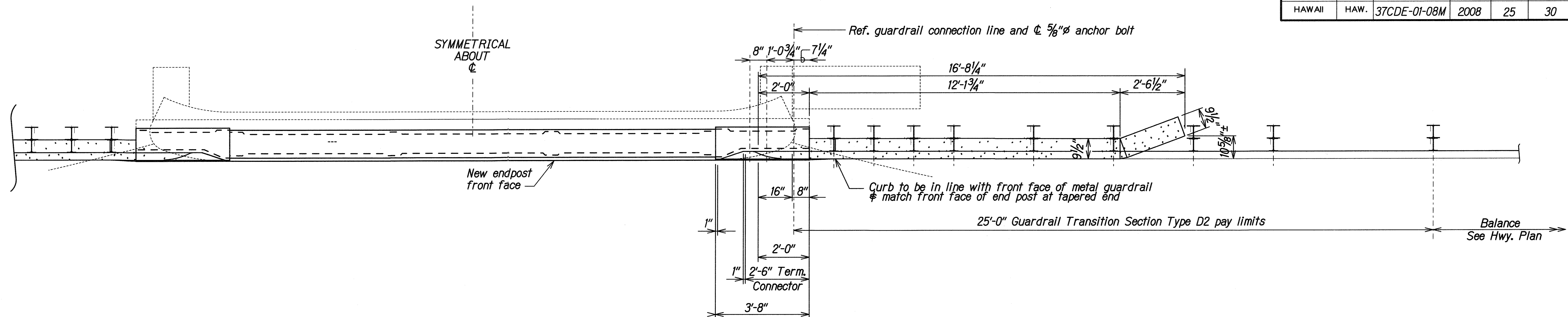
DOWEL DETAIL  
Scale: 3/4"=1'

SECTION C  
Scale: 3/8"=1'

"AS-BUILT"

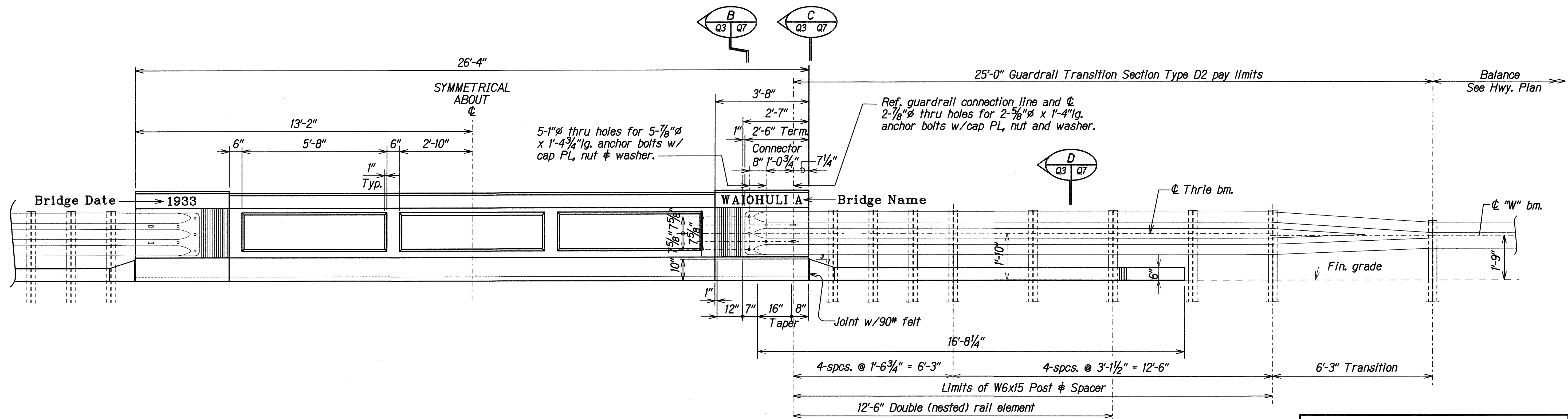


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	2008	25	30



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

Note:  
See Sht#QZ for Transition Section Type D2 and Appurtenances details.



FRONT FACE ELEVATION  
Scale: 1/2" = 1'-0"

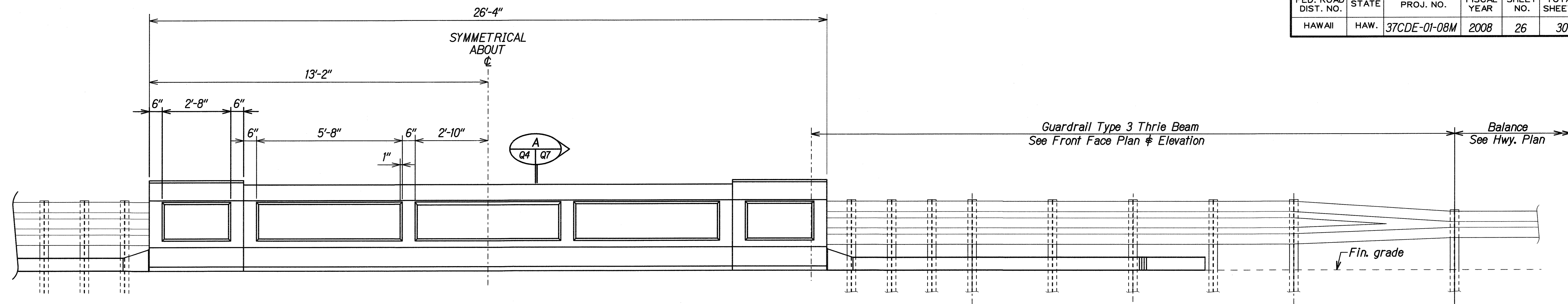
LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
	Text for as-built posting

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

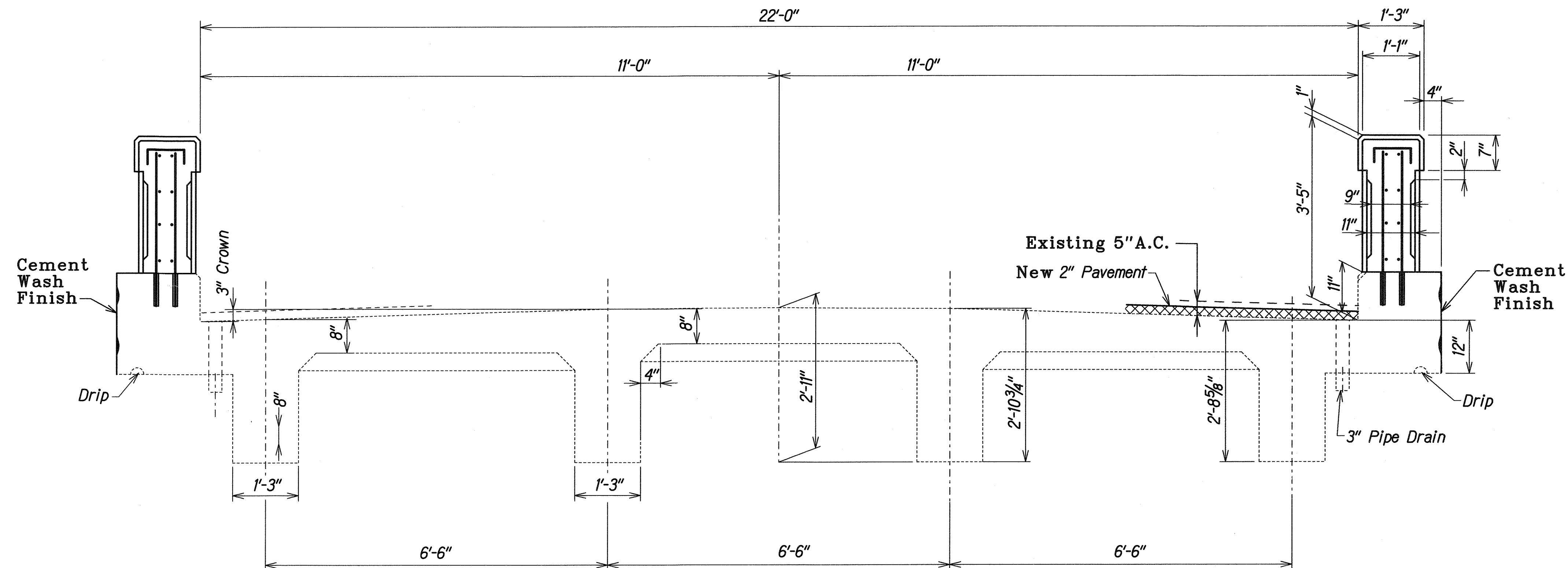
**NEW BRIDGE RAIL AND TRANSITION**  
FRONT FACE PLAN AND ELEVATION  
KULA HIGHWAY FLOOD DAMAGE REPAIRS  
AT VARIOUS LOCATIONS  
Project No. 37CDE-01-08M

Scale: As Shown  
Date: April, 2008

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	2008	26	30



**BACK FACE ELEVATION**  
Scale:  $\frac{1}{2}" = 1'-0"$



**TYPICAL SECTION THRU BRIDGE**  
Scale:  $\frac{3}{4}" = 1'-0"$

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**NEW BRIDGE RAIL AND TRANSITION**  
**BACK FACE ELEVATION AND TYPICAL SECTION**  
KULA HIGHWAY FLOOD DAMAGE REPAIRS  
AT VARIOUS LOCATIONS  
Project No. 37CDE-01-08M

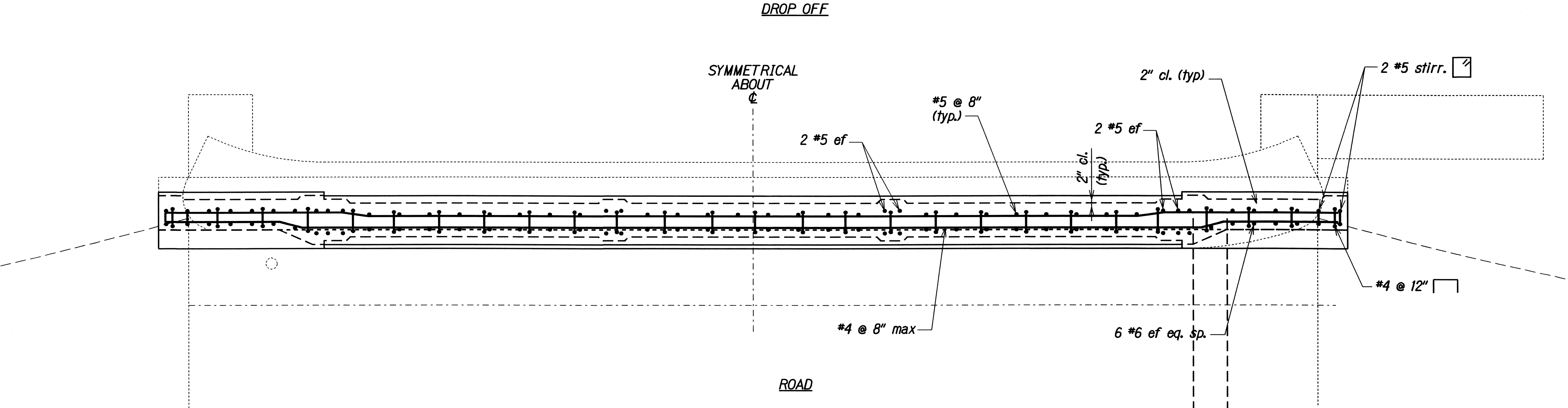
Scale: As Shown Date: April, 2008

SHEET No. Q4 OF 8 SHEETS

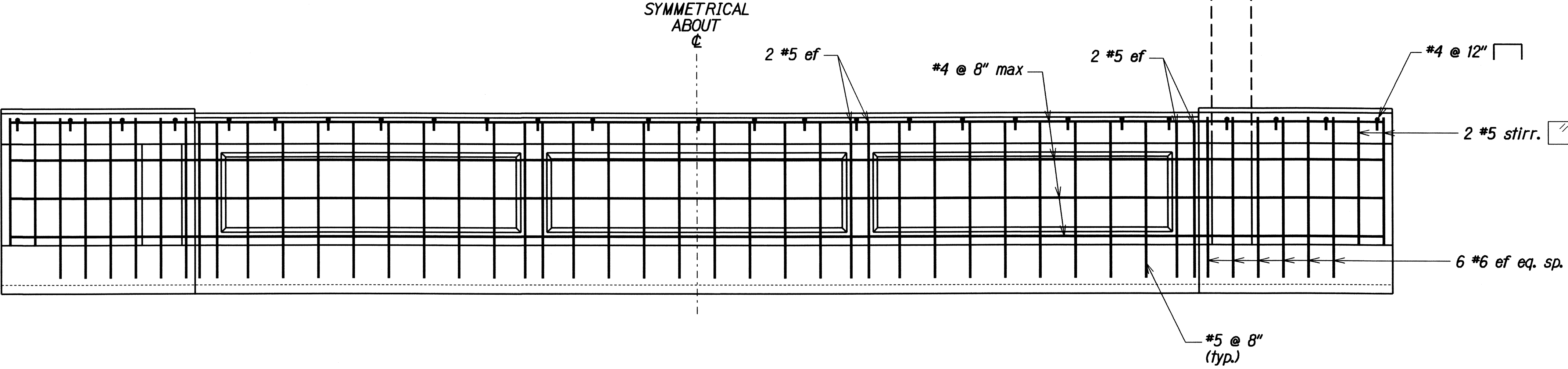
"AS-BUILT"

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
DATE	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	1993	27	30



**BRIDGE REBAR PLAN**  
 Scale: 3/4" = 1'-0"



**BRIDGE REBAR ELEVATION**  
 Scale: 3/4" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	XXX 1997
QUANTITIES BY	DESIGNED BY	XXX 1997
CHECKED BY	CHECKED BY	XXX 1997

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**NEW BRIDGE RAIL REBAR**  
**PLAN AND ELEVATION**  
KULA HIGHWAY FLOOD DAMAGE REPAIRS  
AT VARIOUS LOCATIONS  
Project No. 37CDE-01-08M

Scale: As Shown
Date: April, 2008

SHEET No. 05 OF 8 SHEETS



FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37CDE-01-08M	2008	28	30

GENERAL NOTES FOR GUARDRAIL TRANSITION

DESIGN SPECIFICATIONS:

AASHTO LRFD Bridge Design Specifications, Third Edition, 2004 w/ subsequent interim revisions.

MATERIALS:

- A. Reinforced Concrete: Class A (f'c = 3,000 psi min.)  
B. Reinforced 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, nuts and washers 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 Reinforcing Steel Welding Code AWS D 1.4.

CONSTRUCTION REQUIREMENTS:

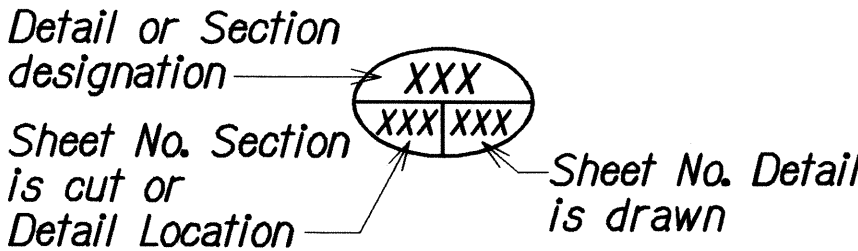
- A. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, (Hawaii 1994 edition and Special Provisions).  
B. Except as noted otherwise, all vertical dimensions are measured plumb.  
C. For steel reinforcing , stagger all splices where possible.  
D. Steel reinforcing 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 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.

REFERENCE:

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

GENERAL:

- A. 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.  
B. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with a minimum of Class D concrete at the Contractor's expense at no cost to the State.  
C. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.



(X) - Bearing Abutment Seat Line

⊕ - Boring No. & Designation

Abut.	Abutment
AC	Asphaltic Concrete
Adj.	Adjacent
Alt.	Alternate
Approx.	Approximate
Az.	Azimuth
⊕	Baseline
Bal.	Balance
Bet., Btwn.	Between
B.F.	Both faces
B.F.E.	Bottom Footing Elevation
Bk.	Back
Blf.	Bolt
Bm.	Beam
B, Bot., Bott.	Bottom
Br.	Bridge
Brg., Brgs.	Bearing, Bearings
B.V.C.	Beginning of Vertical Curve
⊕	Center Line
Cant.	Canilever
C.F.	Cubic Feet
CIP	Cast in Place
C.I.P.	Cast Iron Pipe
Cl., Clr.	Clear
Col.	Column
Conc.	Concrete
Conn.	Connection
Const.	Construction
Cont.	Continuous
CRM	Cement Rubble Masonry
C.Y., Cu. Yd.	Cubic Yards

Det.	Detail
Dia, ∅	Diameter
Dim.	Dimension
Dwg., Dwgs.	Drawing, Drawings
EA, Ea, ea.	Each
E.F.	Each Face
Elec.	Electrical
El., Elev.	Elevation
Emb.	Embankment
E.P.	Edge of Pavement
Eq.	Equal
Est.	Estimated
E.W.	Each Way
Exc.	Excavation
Exist.	Existing
Exp., (E)	Expansion
Ext.	Exterior
(F)	Fixed
F'c	Specified Strength of Concrete
F'ci	Strength of Concrete at Time of Initial Prestress
F.F.	Front Face
Fig.	Figure
Fin.	Finish
Fin. Gr.	Finish Grade
Ftg.	Footing
Ga.	Gage, Gauge
Galv.	Galvanized
Gir., G	Girder
G.R.P.	Grouted Rubble Paving
Gr.	Grade
Grd.	Ground
(H)	Hinge
Horiz.	Horizontal
HS	High Strength
Ht.	Height
Hwy.	Highway

I.B.	Inbound
I.F.	Inside Face
In.	Inch
Int.	Interior
Inv.	Invert
Jt.	Joint
L	Length
LBS., lb., lbs.	Pound, Pounds
LF., Lin. Ft.	Linear Feet
Lg.	Long
Longit.	Longitudinal
LS.	Lump Sum
Lt.	Left
Ltg. Std.	Lighting Standard
Max.	Maximum
Mech.	Mechanical
Min.	Minimum
Misc.	Miscellaneous
N	North
N.B.	Northbound
N.F.	Near Face
No., #	Number
N.T.S.	Not To Scale
O.B.	Outbound
o.c.	On Center
O.G.	Outside Girder
Opr'g	Opening
o/s, O/S	Offset
P.B.	Pull Box
P.C.	Point of Curvature
P.C.C.	Portland Cement Concrete
Perf.	Perforated
PG- ( )	Prestressed Girder-(Type)
PL	Plate
P/S	Prestressed Strands
Pvmt.	Pavement

R	Radius
Rdwy	Roadway
Ref.	Reference
Reinf.	Reinforcement
Ret.	Retaining
Req'd	Required
R.F.	Rear Face
Rt.	Right
R/W	Right Of Way
S	South
S.B.	Southbound
Sect.	Section
SF	Square Feet
Shldr.	Shoulder
Shf.	Sheet
Spc.	Space
Spod.	Spaced
Spog.	Spacing
Spec.	Specification
Sprd.	Spread
Sta.	Station
Std.	Standard
Stirr.	Stirrup
Str.	Straight
Struct.	Structural
Symm.	Symmetrical
T	Top
Temp.	Temporary
Thk.	Thick, Thickness
T.O.D.	Top Of Deck
Tot.	Total
Transv.	Transverse
Typ.	Typical
Var.	Varies
V.C.	Vertical Curve
Vert.	Vertical
W	West
w/	With
W.W.	Wingwall

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTED BOOK	DESIGNED BY	MAY 2008
QUOTED BOOK	QUANTITIES BY	MAY 2008
IN - ZONE	CHECKED BY	MAY 2008

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

TYPE "D2" ENDPOST  
GENERAL NOTES, SYMBOLS  
AND ABBREVIATIONS  
KULA HIGHWAY FLOOD DAMAGE REPAIRS  
AT VARIOUS LOCATIONS  
Project No. 37CDE-01-08M

Scale: As Noted      Date: Apr. 2008

SHEET No. 06 OF 8 SHEETS





