FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	169	230

INDEX TO STRUCTURAL DRAWINGS

INDEX TO STRUCTURAL DRAWINGS

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-UEHAWA\CAD\07-17-13 FINAL 100%\FHU-S001.DWG PLOT TIME: 07-16-13, 4:04 PM)

DAVID K. FUJIWARA
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David K. Fujiwara
KSF, INC.

APRIL 30, 2014
LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INDEX TO STRUCTURAL DRAWINGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. S0.1 OF 6 SHEETS

STRUCTURAL GENERAL NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 170	230

1. General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge and Public Works Construction, 2005, together with Special Provisions prepared for this contract.

2. Design Specifications:
   (A) AASHTO 2012 LRFD Bridge Design Specifications (Sixth Edition) including subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.
   (B) HDOT Memorandum dated October 20, 2010 with subject title "Design Criteria for Bridges and Structures".
   (C) AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition (2009) including subsequent interim revisions and additions.

3. Loads:
   (A) Live Load: Pedestrian Loading - 85 psf
   (B) Wind Load: 105 mph. Value is a 3 second gust speed at 32.8 ft above ground for Exposure C category and is associated with an annual probability of 0.02 (50 year mean recurrence interval).
   (C) Utility Load: An allowance of 150 PLF on each side of the bridge for utility loads has been provided for in the design.
   (D) Seismic Load: Acceleration Coefficient - 0.17g
   (E) Ballast Rock = 160 pcf

4. Materials:
   (A) All concrete strengths shall be as noted below:

Item No.	Structural Parts	Specified Compressive Strength, f'c (28 Days)	1 Maximum Cement Content (lbs./Cu. Yd.)
(1)	Culvert Extension and Culvert Return Walls (See Notes 4(B) & 4(C))	SBD (See Standard Specifications & Special Provisions Section 601)	750
(2)	Concrete Railing (See Notes 4(B) & 4(C))	Lightweight Concrete (See Standard Specifications & Special Provisions Section 601)	799
1 (3)	Drilled Shaft for Type II Traffic Signal Standard (including Pedestal)	4500 psi	670
(4)	Retaining Wall (See Notes 4(B) & 4(C))	5000 psi	625
(5)	Drainline Connection at Existing Culvert (See Notes 4(B) & 4(C))	5000 psi	625
(6)	Except as noted otherwise, all others	4000 psi	625

   All concrete with a 28 day compressive strength of 4,000 psi or greater shall have a maximum W/C Ratio of 0.45.

4. Materials (Cont.):
   (B) A shrinkage reducing admixture (SRA), Tetraguard AS20 by BASF or Eclipse by W.R. Grace & Co., or approved equal, shall be added to the concrete mix for Items (1), (2) ,(5) and (6). The minimum dosage requirement shall be 128 ounces per cubic yard of concrete.
   (C) A migrating corrosion inhibitor amine carboxylate water-based admixture shall be added to the concrete mix for Items (1), (2), (5) and (6). The minimum dosage shall be 24 ounces per cubic yard of concrete. The admixture shall not affect the set time of the concrete.
   (D) All reinforcing steel shall be ASTM A615 Grade 60 deformed bars unless otherwise noted.
   (E) Reinforcing steel shall be ASTM A934 where epoxy-coated reinforcing bars are specified.
   (F) Glass Fiber Reinforced Polymer Bar
      (1) Glass Fiber Reinforced Polymer (GFRP) rebar shall have a minimum tensile strength of 110 ksi for #4 bar and smaller. All others shall have a minimum tensile strength of 95 ksi.
      (2) The modulus of elasticity of the GFRP bar shall be a minimum of 5,900,000 psi.
      (3) Minimum concrete cover for the GFRP bars shall be 1" unless otherwise noted.
      (4) Minimum lap splice lengths for the GFRP bars shall be 42 bar diameters unless otherwise noted.
      (5) All GFRP bars shall be securely tied in place. Tie wire shall be either Alloy 302 or 304 Stainless Steel or non-metallic.
      (6) The GFRP bars may be cut in the field with a masonry or diamond blade.
      (7) All work including materials and bends shall follow manufacturer's recommendations.
   (G) Expanded Polystyrene (EPS) : EPS 15 ASTM D 6817 (Type 1 per ASTM C578).
   (H) Non-shrink grout shall be Portland Cement base, prepackaged, non-metallic, non-gaseous ready to use grout mix and shall be applied as recommended by the manufacturer. Non-shrink grout shall have a minimum 28-day compressive strength of 8,900 psi. A migrating corrosion inhibitor amine carboxylate water-based admixture shall be added to the non-shrink grout. The minimum dosage shall be 10 grams per 0.4 to 0.5 cubic feet of non-shrink grout.

5. Reinforcement:
   (A) The minimum covering measured from the surface of the concrete to the face of any reinforcing bars shall be 3" except for GFRP bars, the minimum cover shall be 1" unless otherwise noted.
   (B) Reinforcing bars shall be detailed in accordance with the latest edition of the design specification in Note 2 unless otherwise noted.
   (C) Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".

5. Reinforcement (Cont.):
   (D) All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.
   (E) Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than one foot in each direction, in which case alternate intersections shall be tied.

6. Construction Notes:
   (A) See Standard Specifications and Special Provisions.
   (B) Except as otherwise noted, all vertical dimensions are measured plumb.
   (C) The Contractor shall verify all site conditions and not rely upon these plans since conditions may differ from those shown.
   (D) The Contractor shall be solely responsible for the protection of adjacent properties, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.
   (E) The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.
   (F) The Contractor shall verify all dimensions and site conditions and shall report any discrepancies in writing to the Engineer before commencing work or ordering materials.
   (G) For concrete finish see Standard Specifications and Special Provisions.
   (H) Construction joints may be relocated or additional ones added subject to the approval of the Engineer.
   (J) Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".
   (K) Contractor shall verify elevations before fabricating wall reinforcing.
   (L) Immediately prior to pouring concrete onto construction joints, the joints shall be coated with Duralprep A.C., which is a water based epoxy modified portland cement bonding agent and anti-corrosion coating, or approved equal. The coating shall be applied in accordance with the manufacturer's recommendations.

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David K. Fujiwara — KSF, INC. — APRIL 30, 2014 LIC. EXP. DATE

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DATE	REVISION
11/08/13	1 Add. 1 - Modified 4.(A) Materials

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. S0.2 OF 6 SHEETS

ADD. 170

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	171	230

STRUCTURAL GENERAL NOTES

6. Construction Notes (Cont.):

(L) Falsework for the box culvert extension shall be supported by the existing box culvert or U-channel. However, all parts of this falsework shall be above elevation 8.0.

(M) During construction, netting, filter cloth, or similar materials shall be suspended below the work area to capture any falling debris, including liquids, and prevent contamination of the stream area below.

(N) No falsework hardware shall be left in the existing concrete. Holes and defects in the existing concrete created by the removal of falsework hardware shall be repaired with a bonding agent having a corrosion inhibitor. The patching concrete material shall also contain a corrosion inhibitor and shall be a non-shrink concrete or grout.

(O) All repair work shall be in accordance with the manufacturer's recommendations.

(P) For removal of concrete structures, refer to Special Provisions Section 202.

7. Foundation:

For boring logs and other geotechnical information by Geolabs, see geotechnical engineering exploration report entitled, "Geotechnical Engineering Exploration Farrington Highway Intersection Improvements Nanakuli and Haleakala Intersections Nanakuli, Oahu, Hawaii" dated August 10, 2010.

Footing are embedded min. 2'-0" below finish grade.

(A) Allowable bearing value = 3,000 psf for service limit state
= 5,500 psf for strength limit state
= 9,000 psf for extreme event limit state

(B) Coefficient of friction = 0.36 for strength limit state
= 0.46 extreme event limit state

(C) Passive earth pressure = 180 pcf for strength limit state
= 360 pcf for extreme event limit state

(D) Active earth pressure = 40 pcf for Level Backfill

(E) Internal friction angle = 30 degrees

(F) Dynamic Lateral Earth Pressure = 6.9 H^2 plf

ORIGINAL PLAN
NOTE BOOK No.
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DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-UEHAWA\CAD\07-17-13 FINAL 100%\FHU-S002.DWG PLOT TIME: 07-16-13, 4:08 PM)

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. S0.3 OF 6 SHEETS

SYMBOLS AND ABBREVIATIONS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	172	230

∉	And
@	At
℄	Baseline
℄	Centerline
ø	Diameter
≥	Greater Than or Equal to
≤	Less Than or Equal to
#	Number
±	Plus or Minus
AB	Anchor Bolt
Abut.	Abutment
AC	Asphaltic Concrete
Add.	Additional, Added
Alt.	Alternate
Approx.	Approximate
Az.	Azimuth
B, Bot., Bott.	Bottom
Bal.	Balance
Bet.	Between
BF	Both Faces, Back Face
BFE	Bottom of Footing Elevation
Bk.	Back
Blt.	Bolt
Bm.	Beam
BOF	Bottom of Footing
Br.	Bridge
Brg., Brgs.	Bearing, Bearings
BVC	Beginning of Vertical Curve
BW	Both Ways
Cant.	Cantilever
CBW	Concrete Barrier Wall
cc	Center to Center
CF	Cubic Feet
CFCW	Continuous Flashing Compound Waterproofing
CG	Center of Gravity
cgs	Center to Gravity of Strands
CIP	Cast-in-Place
CJ	Control Joint
Cl.	Class
Clr.	Clearance
CLSM	Controlled Low Strength Material
CO	Clean Out
Col.	Column
Conc.	Concrete
Conn.	Connection
Const.	Construction
Const. Jt.	Construction Joint
Cont.	Continuous
CSL	Cross Hole Sonic Loggin
CY, Cu. Yd.	Cubic Yard
Dbl.	Double
Det.	Detail
DI	Drain Inlet, Ductile Iron
Dia.	Diameter
Diaph.	Diaphragm
Dim.	Dimension
Dist.	Distance
Dn.	Down
DO	Ditto
DS	Drilled Shaft
Dwg., Dwgs.	Drawing, Drawings
Dwls.	Dowels
E	East
(E), Exp.	Expansion
EA, Ea., ea.	Each
EF	Each Face
EFH	Each Face Horizontal
EFV	Each Face Vertical
EJ	Expansion Joint
El., Elev.	Elevation
Elec.	Electrical
EMH	Electrical Manhole
Emb.	Embankment
Embed.	Embedded, Embedment
EP	Edge of Pavement
EPS	Expanded Polystyrene
Eq.	Equal
Est.	Estimated
EVC	End of Vertical Curve
EW	Each Way
Ex., Exist.	Existing
Exc.	Excavation
Excl.	Excluding
Ext.	Exterior
(F)	Fixed
FA	Force Account
FB	Flat Bar
F'c	Specified Strength of Concrete
F'ci	Strength of Concrete at Time of Initial Prestress
FF	Far Face. Front Face
Fig.	Figure
Fin. Gr.	Finish Grade
FRP	Fiber Reinforced Plastic
Ft.	Feet, Foot
Ftg.	Footing
Ga.	Gage, Gauge
Galv.	Galvanized
GFRP	Glass Fiber Reinforced Polymer
Gr.	Grade
Grd.	Ground
GRP	Grouted Rubble Pavement
(H)	Hinge
HECO	Hawaiian Electric Company
Horiz., H	Horizontal
HS	High strength
Ht.	Height
IB	Inbound
ID	Inside Diameter
I.F.	Inside Face
In.	Inch
Int.	Interior
Inv.	Invert
Jt.	Joint
K	Kips
KF	Kip Foot
KLF	Kips Per Linear Foot
KSF	Kips Per Square Foot
KSI	Kips Per Square Inch
L	Length
lb., lbs., LBS.	Pound, Pounds
LF, Lin. Ft.	Linear Feet/Foot
Longit.	Longitudinal
LS	Lump Sum
Ltg. Std.	Lighting Standard
M	Modified
Max.	Maximum
Mech.	Mechanical
MH	Manhole
Min.	Minimum
Misc.	Miscellaneous
MPH	Miles Per Hour
N	North
NF	Near Face
NIC	Not in Contract
No.	Number
NTS	Not to Scale
OB	Outbound
oc	On Center
OD	Outside Diameter
O.F.	Outside Face
OG	Outside Girder, Outbound Girder
Opn'g	Opening
O/S	Offset
PB	Pull Box
P(e)	Effective Prestressing Force
PC	Point of Curvature
PCC	Portland Cement Concrete
PCF	Pounds per Cubic Foot
Perf.	Perforated
PI	Point of Intersection of Tangents
PIVC	Point of Intersection of Vertical Curve
PL	Plate
PLF	Pounds per Linear Foot
PP	Precast Plank
PRC	Point of Reverse Curvature
Prestr.	Prestressed
P/S	Prestressed Strands
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
Pt., Pts.	Point, Points
PT	Point of Tangency, Post Tensioned
PVC	Polyvinyl Chloride
Q	Flow Rate
R, Rad.	Radius
Rdwy.	Roadway
Rebar	Reinforcing Bar
Ref.	Reference
Reinf.	Reinforced, Reinforcing, Reinforcement
Req'd.	Required
Ret.	Retaining
RF	Rear Face
R/W, ROW	Right of Way
S	South
SDMH	Sewer Drain Manhole
SE	Super Elevation
Sect.	Section
SF	Square Feet
Sht.	Sheet
Sim.	Similar
Sl.	Slope
Spc., Spg.	Spaces, Spacing
Spec.	Specification
Sprd.	Spread
SS	Stainless Steel
Sta.	Station
Stagg.	Staggered
Std.	Standard
Stiff.	Stiffener
Stirr.	Stirrup
Stl.	Steel
Str.	Straight
Struct.	Structure
SY	Square Yard
Symm.	Symmetrical
T	Top
Tan.	Tangent
T&B	Top and Bottom
Temp.	Temporary
Thk.	Thick
TFE	Top of Footing Elevation
TOD	Top of Deck
TOF	Top of Footing
Tot.	Total
TOW	Top of Wall Elevation
Transv.	Transverse
TS	Structural Tubing
Typ.	Typical
Undergrd.	Underground
UNO	Unless Noted Otherwise
V, Vert.	Vertical
Var.	Varies
VC	Vertical Curve
W	West
w/	With
W/C	Water/Cement Ratio
WP	Work Point, Working Point
WS	Water Surface
WW	Wing Wall
WWR	Welded Wire Reinforcing
Yr.	Year

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SYMBOLS AND ABBREVIATIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. S0.4 OF 6 SHEETS

172

ORIGINAL PLAN
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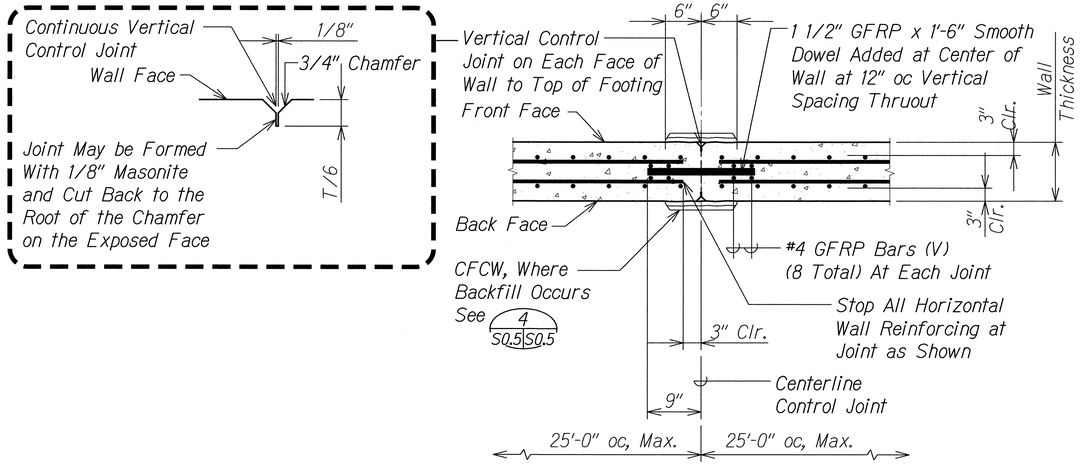
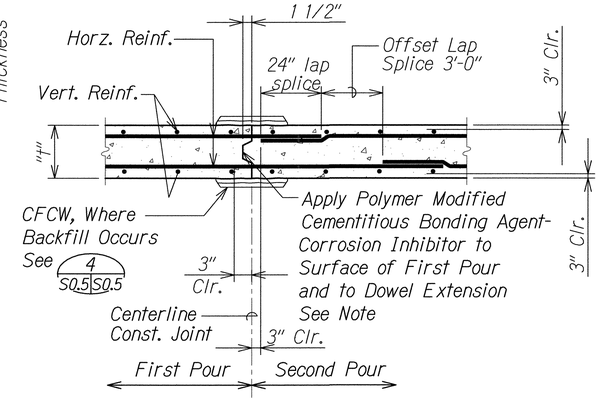
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	173	230



TYPICAL WALL VERTICAL CONTROL OR CONSTRUCTION JOINT AT CONTROL JOINT LOCATION DETAIL

Not to Scale

1 | S0.5 | S0.5 | S1.9

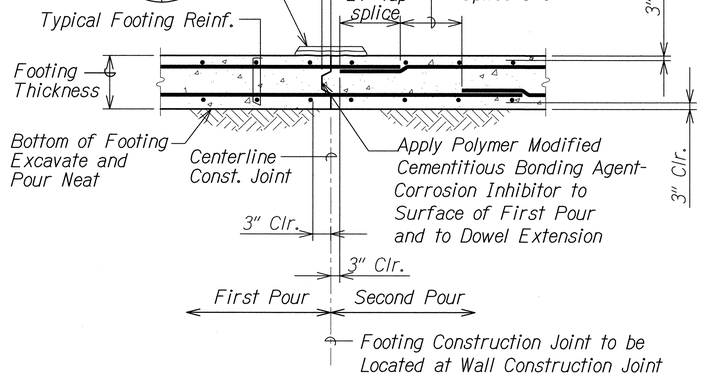


Note: Use 1 1/2" Deep X "t"/3 Keys.

TYPICAL WALL VERTICAL CONSTRUCTION JOINT DETAIL

Not to Scale

2 | S0.5 | S0.5



TYPICAL FOOTING CONSTRUCTION JOINT DETAIL

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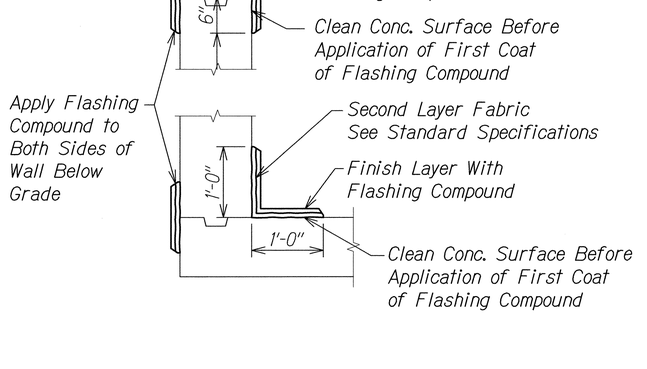
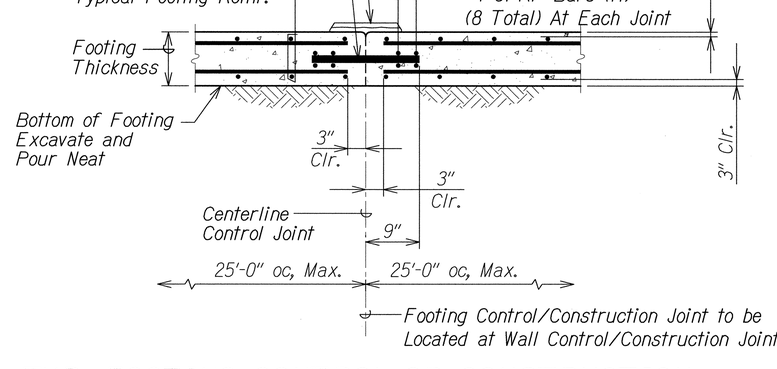


TYP. CONTINUOUS FLASHING COMPOUND WATERPROOFING (CFCW) DETAILS

Not to Scale

4 | S0.5 | S0.5

S0.6



TYP. FOOTING CONTROL OR CONSTRUCTION JOINT AT CONTROL JOINT LOCATION DETAIL

Not to Scale

5 | S0.5 | S0.5

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STATE OF HAWAI'I
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TYPICAL DETAILS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S0.5 OF 6 SHEETS

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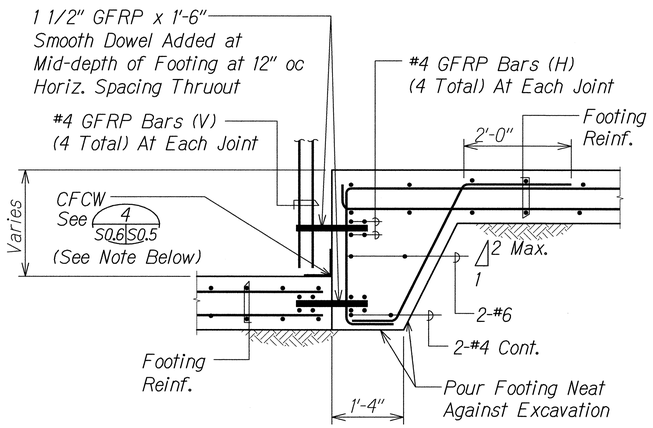


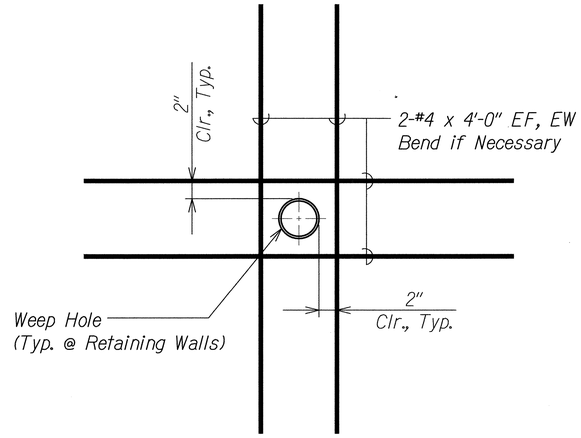
Note:
CFCW Shall not be placed on the footing and the footing step where they connect to the vertical stem of retaining wall.

TYPICAL FOOTING STEP DETAIL

Scale: 3/4" = 1'-0"

1 S1.2 S0.6

S1.4, S1.6, S1.10

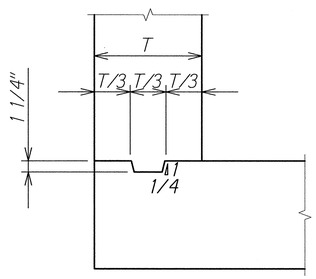


ADDED REINFORCING AT WEEP HOLES

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

2 S0.6 S0.6

S1.1 to S1.6



Legend:
T = Wall Thickness

TYPICAL KEY DIMENSIONS AT BOTTOM OF WALL

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

4 S0.6 S0.6

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TYPICAL DETAILS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
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Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S0.6 OF 6 SHEETS

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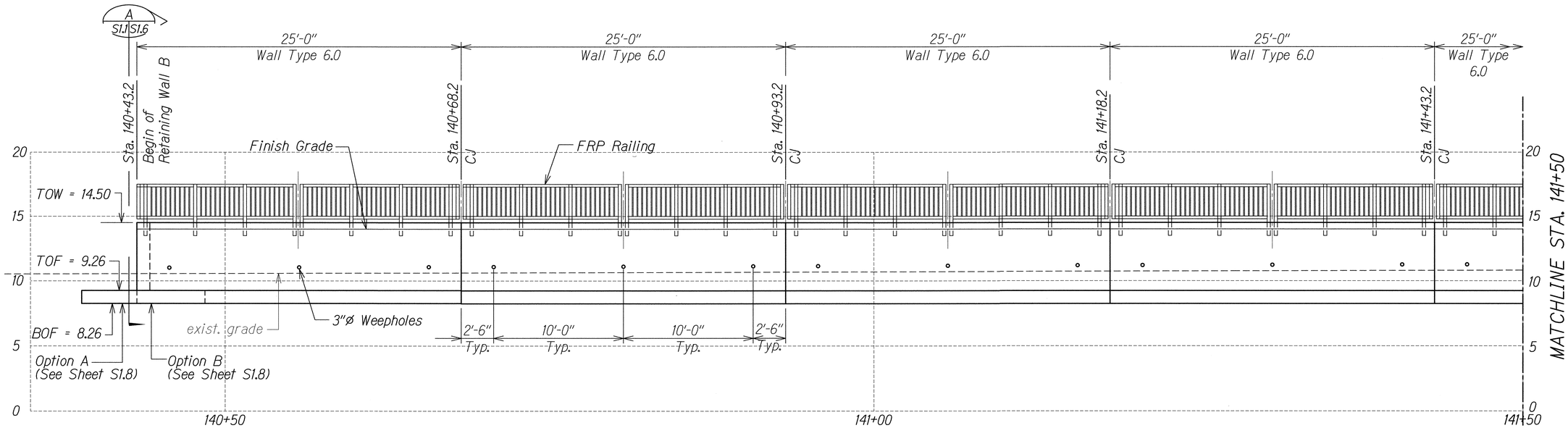
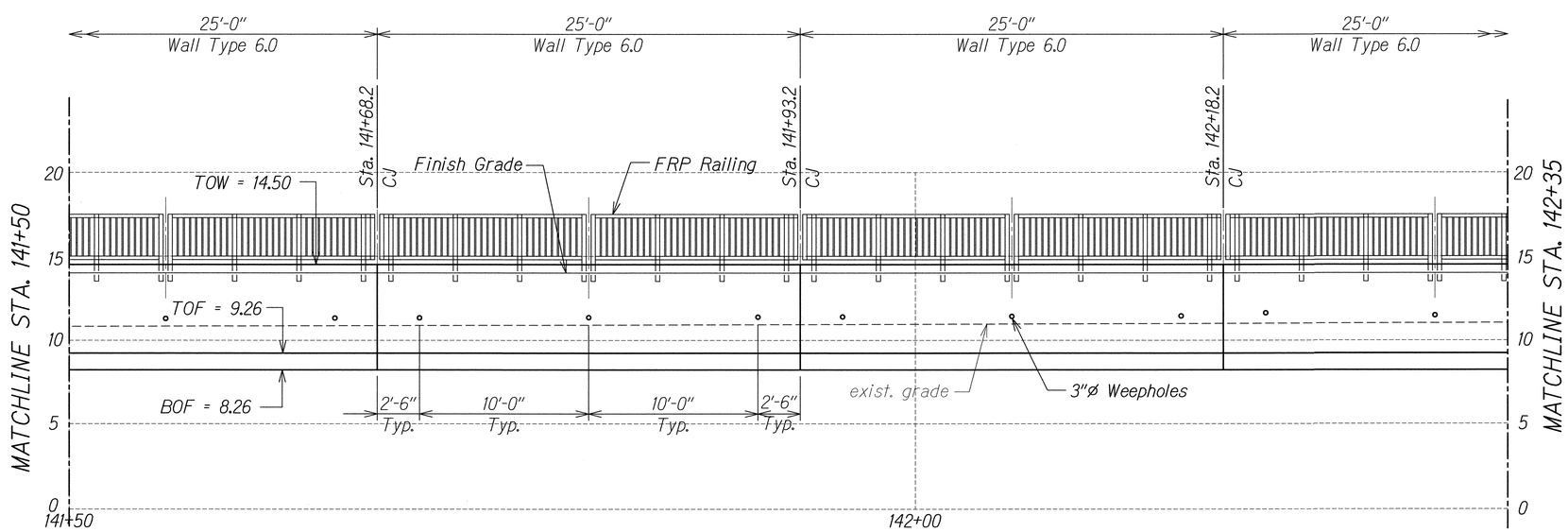
HAWAII	HAW.	STP-093-1(22)	2013	175	230



ELEVATION - STA. 140+43.2 TO 141+50 (A S1.1 | S1.1)

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



ELEVATION - STA. 141+50 TO 142+35 (B S1.1 | S1.1)

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

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. For FRP Railing, see Sheets S5.1 and S5.3.

DAVID K. FUJIMARA LICENSED PROFESSIONAL ENGINEER NO. 8104-S HAWAII, U.S.A.

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL B ELEVATION STA. 140+43.2 TO STA. 142+35

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

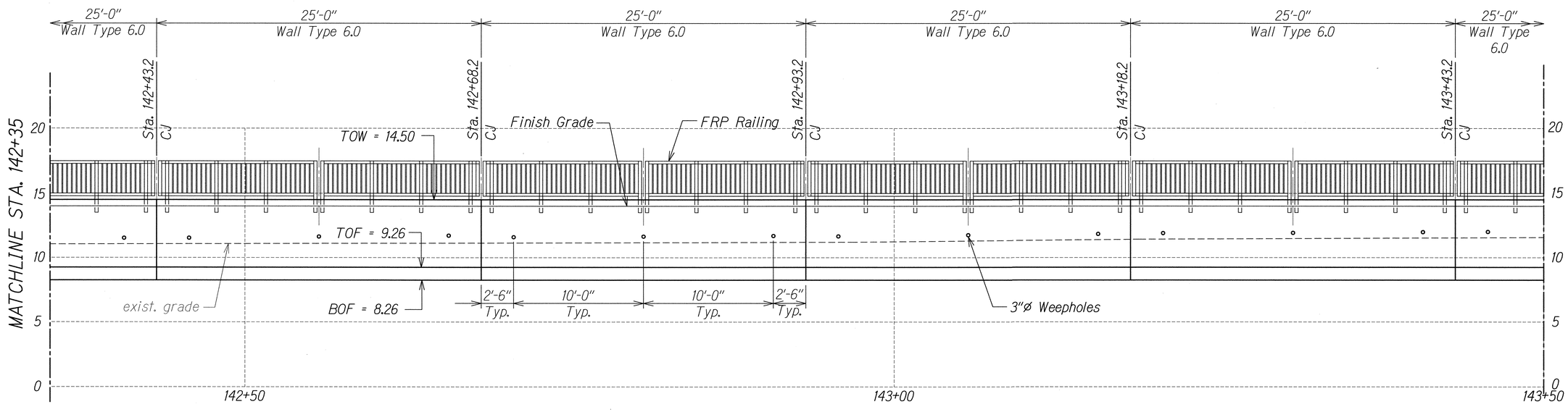
SHEET No. S1.1 OF 10 SHEETS

175

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:10 PM)

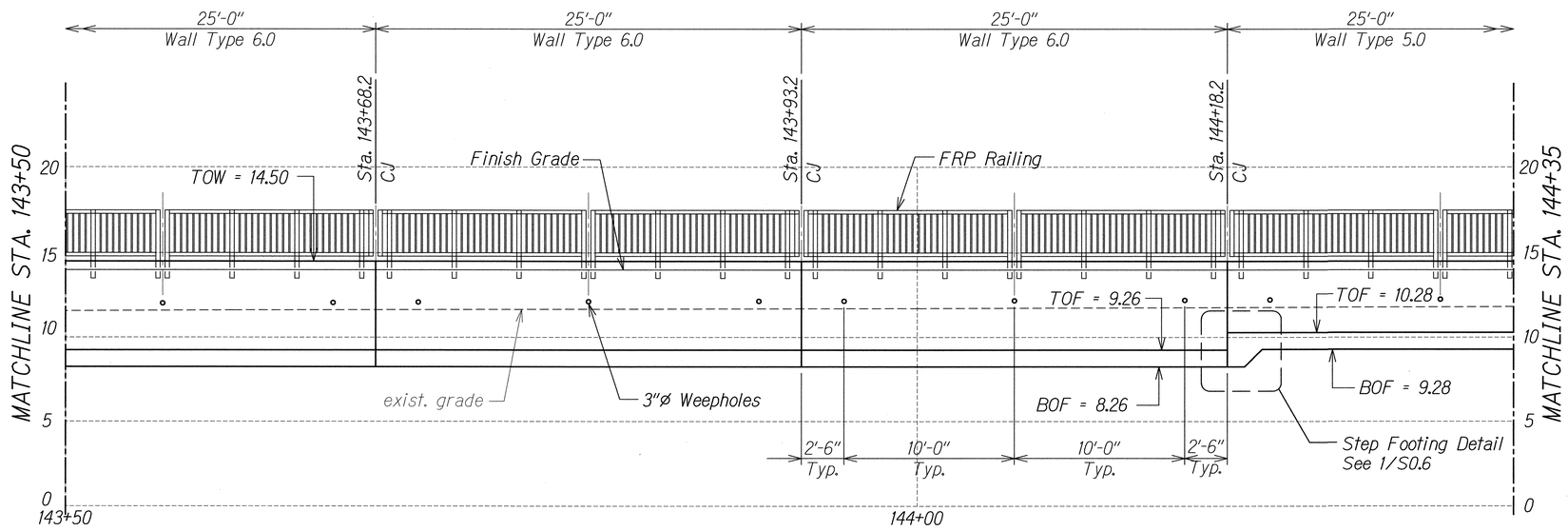
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	176	230



ELEVATION - STA. 142+35 TO 143+50

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

A S1.2 | S1.2



ELEVATION - STA. 143+50 TO 144+35

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

B S1.2 | S1.2

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. For FRP Railing, see Sheets S5.1 and S5.3.

DAVID K. FUJIWARA LICENSED PROFESSIONAL ENGINEER NO. 8104-S HAWAII, U.S.A.

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL B ELEVATION
STA. 142+35 TO STA. 144+35

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

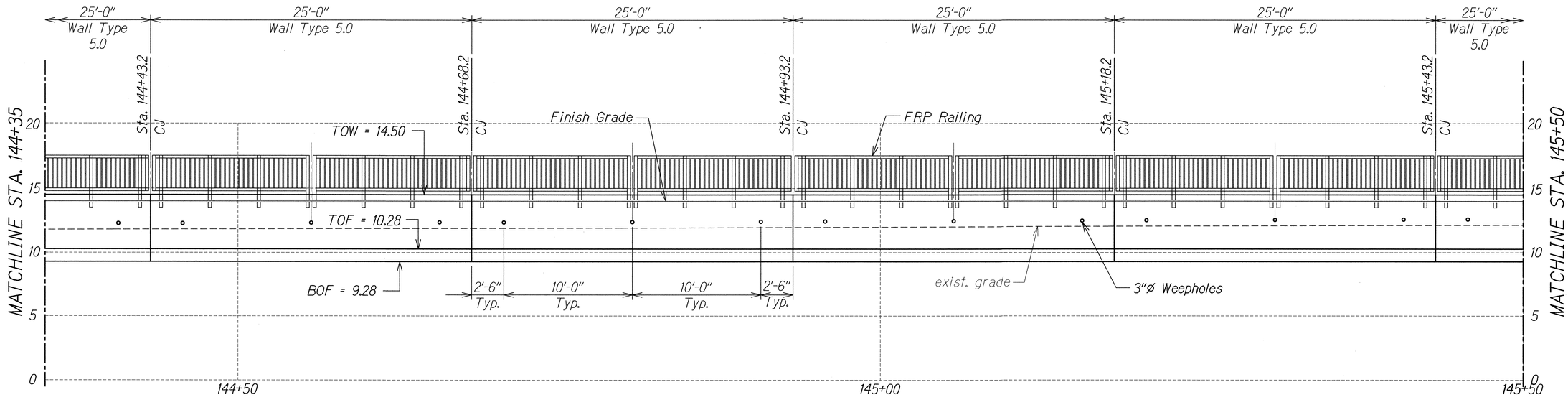
Scale: As Shown Date: April 2013

SHEET No. S1.2 OF 10 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:10 PM

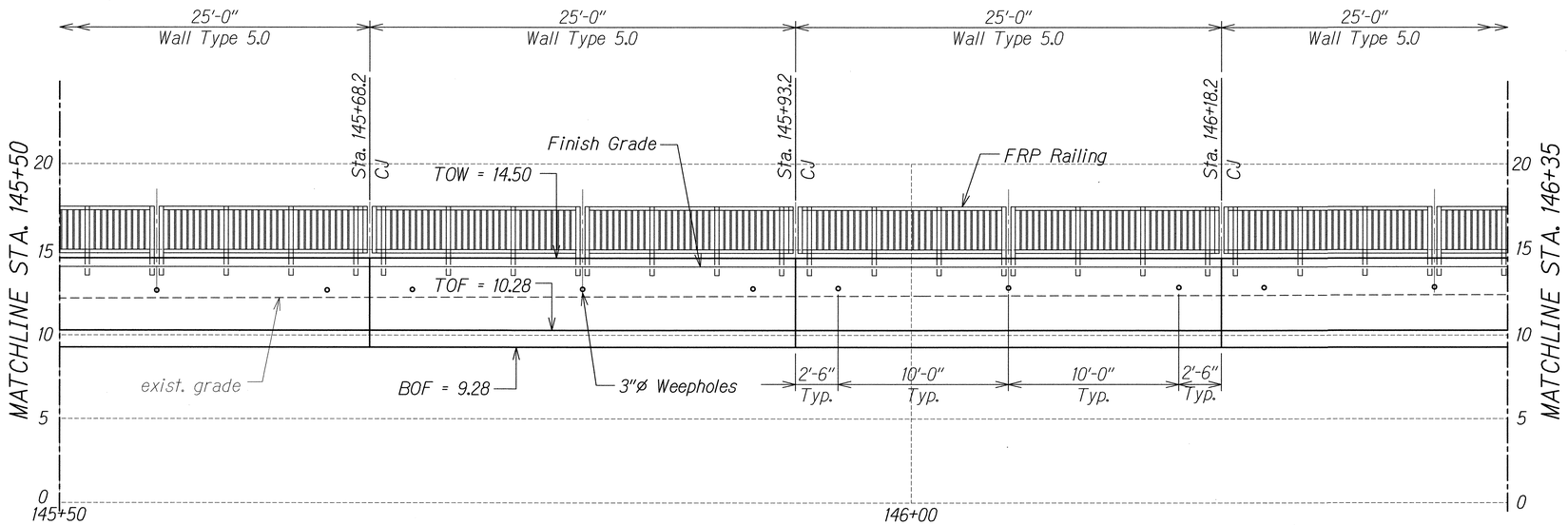
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	177	230



ELEVATION - STA. 144+35 TO 145+50

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

A S1.3 | S1.3



ELEVATION - STA. 145+50 TO 146+35

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

B S1.3 | S1.3

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. For FRP Railing, see Sheets S5.1 and S5.3.

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL B ELEVATION STA. 144+35 TO STA. 146+35

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

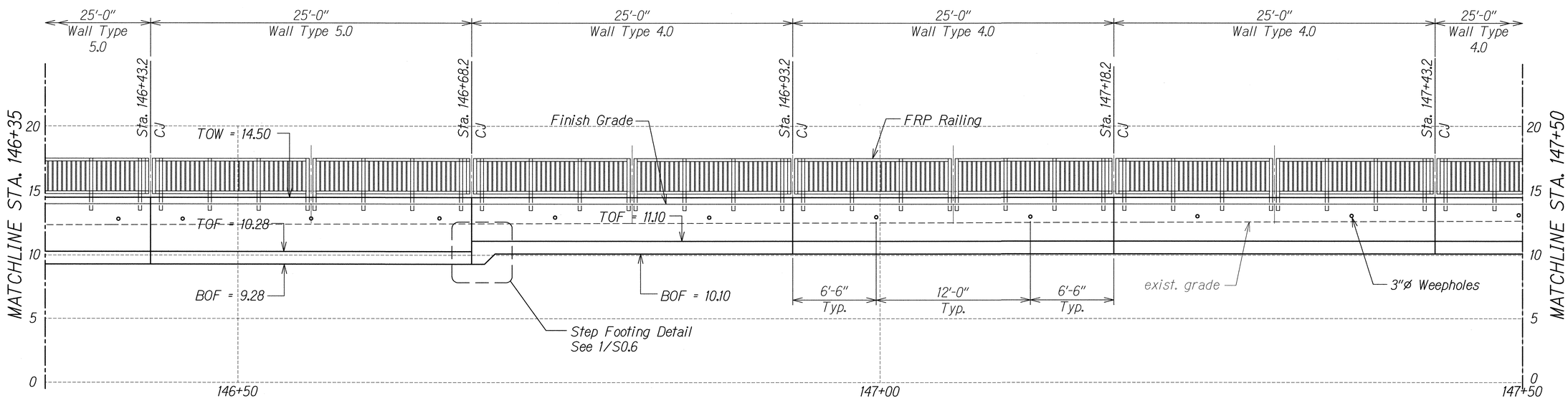
Scale: As Shown Date: April 2013

SHEET No. S1.3 OF 10 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:10 PM)

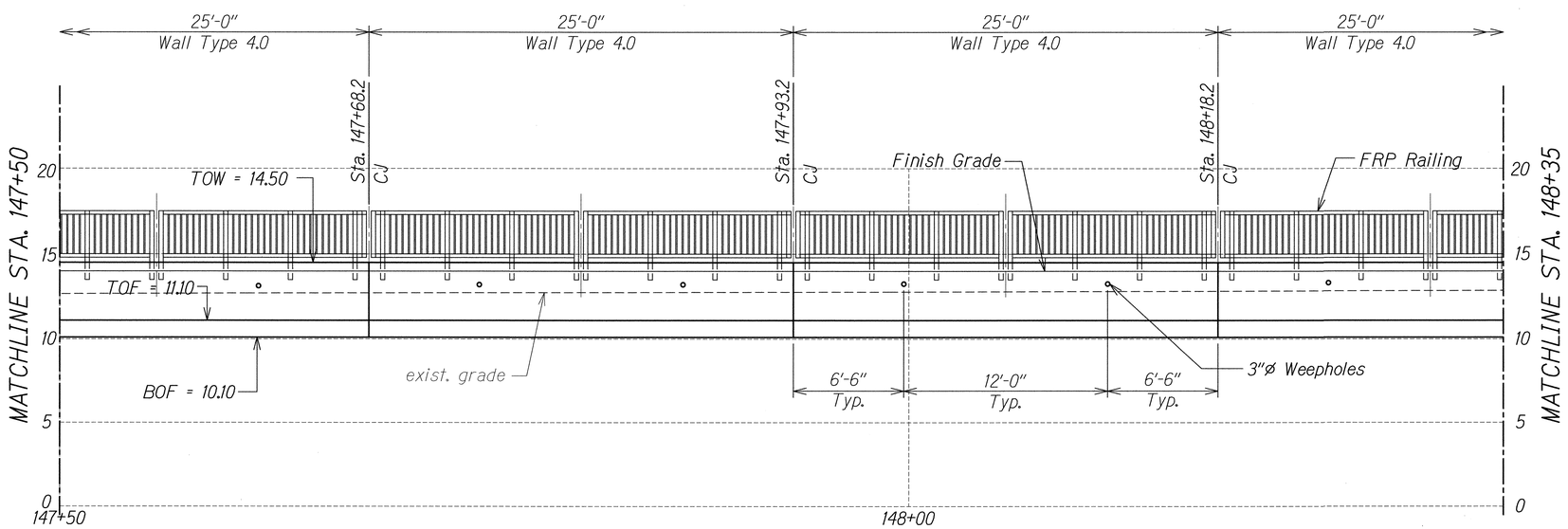
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	178	230



ELEVATION - STA. 146+35 TO 147+50

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

A S1.4 | S1.4



ELEVATION - STA. 147+50 TO 148+35

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

B S1.4 | S1.4

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. For FRP Railing, see Sheets S5.1 and S5.3.

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL B ELEVATION
STA. 146+35 TO STA. 148+35

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

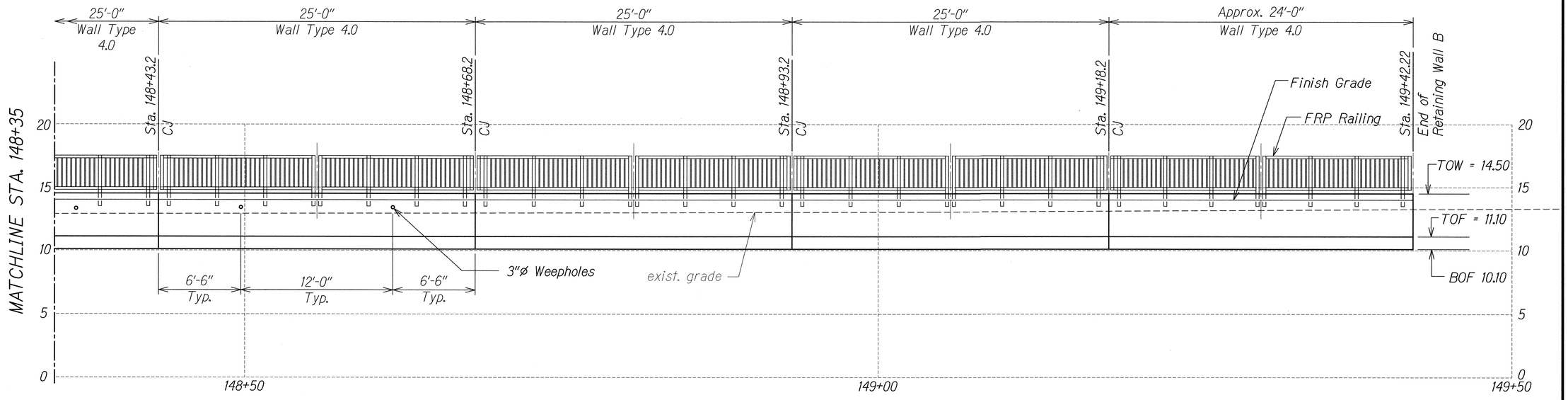
SHEET No. S1.4 OF 10 SHEETS

178

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

DRAWING NAME: Z:\OD ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEPAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:10 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	179	230



ELEVATION - STA. 148+35 TO 149+42.22 (A S1.5 | S1.5)

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

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. For FRP Railing, see Sheets S5.1 and S5.3.

DAVID K. FUJIWARA LICENSED PROFESSIONAL ENGINEER NO. 8104-S HAWAII, U.S.A.

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KSF, INC. APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL B ELEVATION
STA. 148+35 TO STA. 149+42.22

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

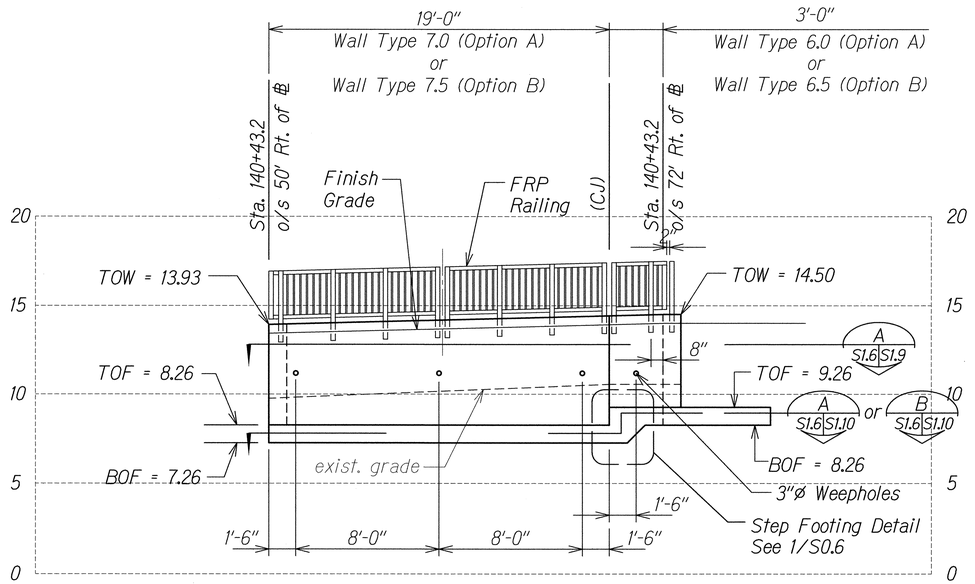
SHEET No. S1.5 OF 10 SHEETS

179

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:11 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	180	230



ELEVATION - STA. 140+43.2 (A S1.1 | S1.6)

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

LEGEND:

CJ Control Joint in Wall and Footing
TOF Top of Footing Elevation
BOF Bottom of Footing Elevation
TOW Top of Wall Elevation

NOTES:

1. For finish grade elevation road side of wall, see Civil drawings.
2. See 2/S0.6 for added reinforcing at weep holes.
3. If the existing wall footing interferes with the footing of Wall Type 6.0 and 7.0 (Option A) refer to Wall Type 6.5 and 7.5 (Option B).

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

DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S101.DWG PLOT TIME: 07-16-13, 4:11 PM)

DAVID K. FUJIMARA
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NO. 8104-S
HAWAII, U.S.A.

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KSF, INC. APRIL 30, 2014
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL A ELEVATION
STA. 140+43.2

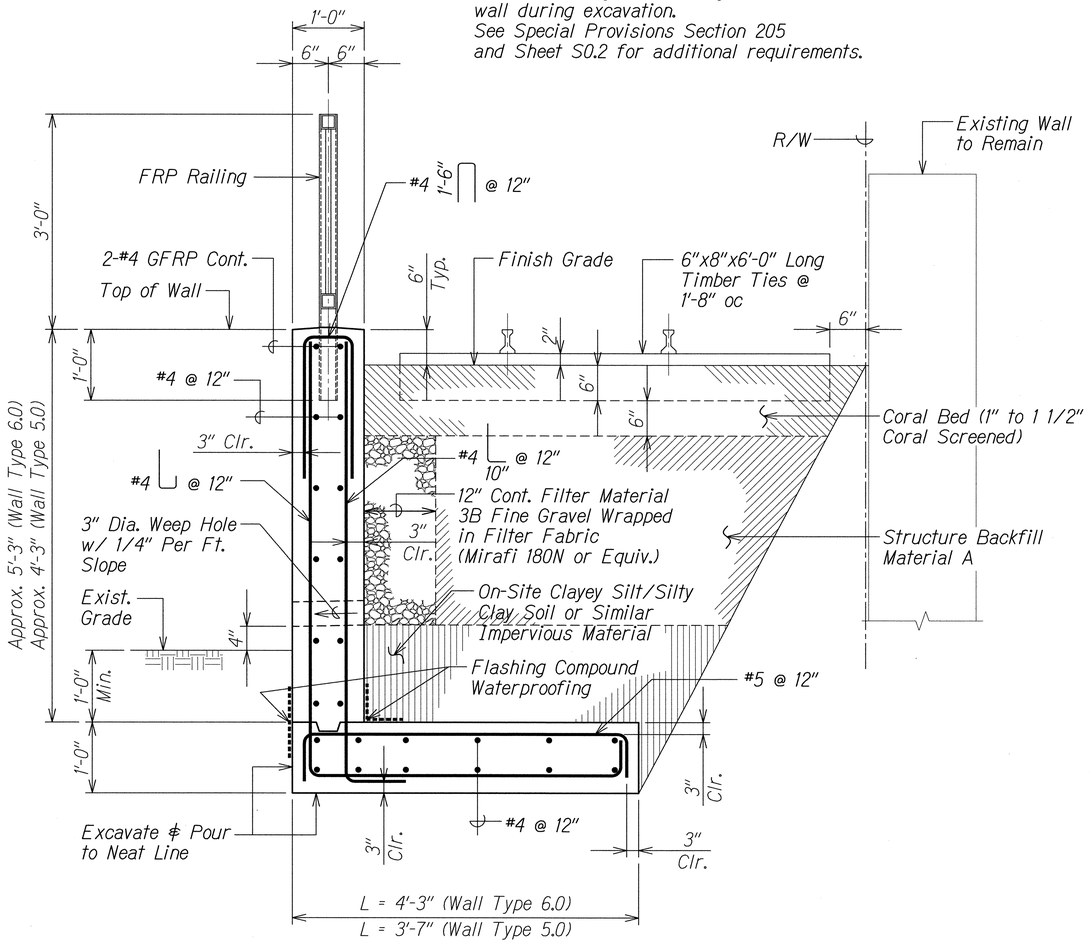
FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S1.6 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	181	230

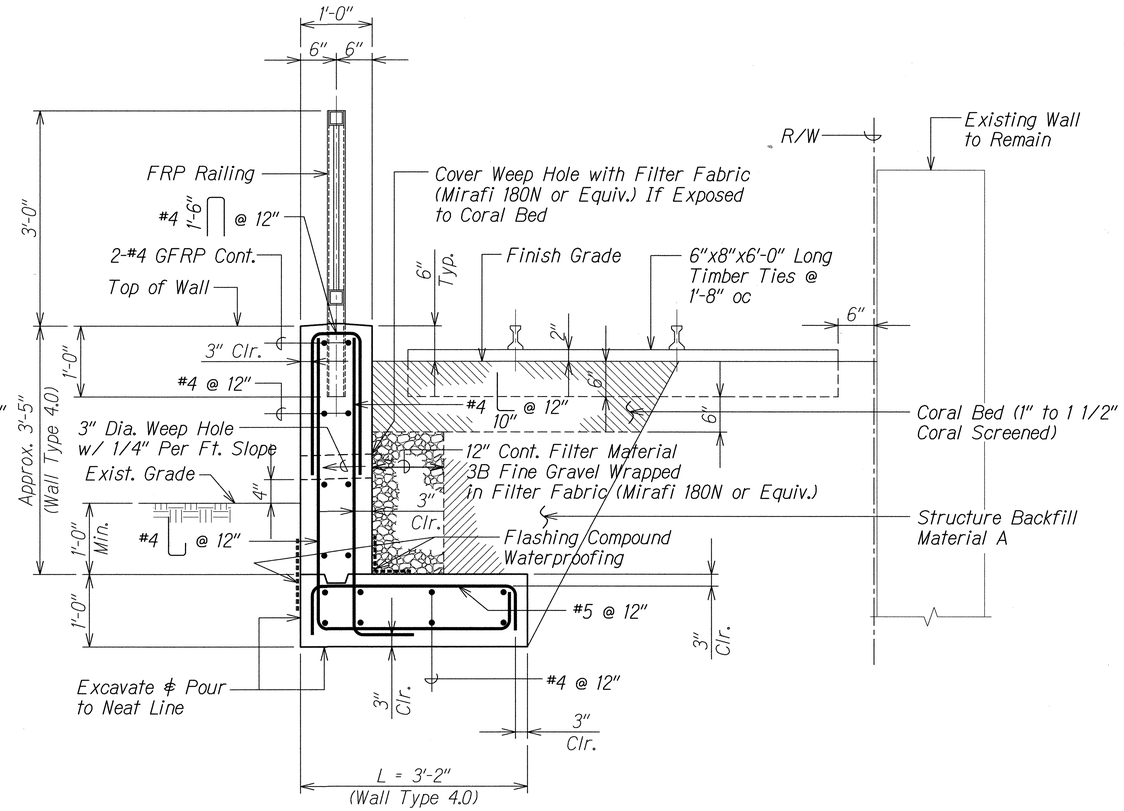
Note:
Provide bracing for existing wall during excavation.
See Special Provisions Section 205 and Sheet S0.2 for additional requirements.



TYPICAL RET. WALL B SECTION

Scale: 1" = 1'-0"

A S1.7 | S1.7 — S1.10



TYPICAL RET. WALL B SECTION

Scale: 1" = 1'-0"

B S1.7 | S1.7

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LICENSED PROFESSIONAL ENGINEER
NO. 8104-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL WALL SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

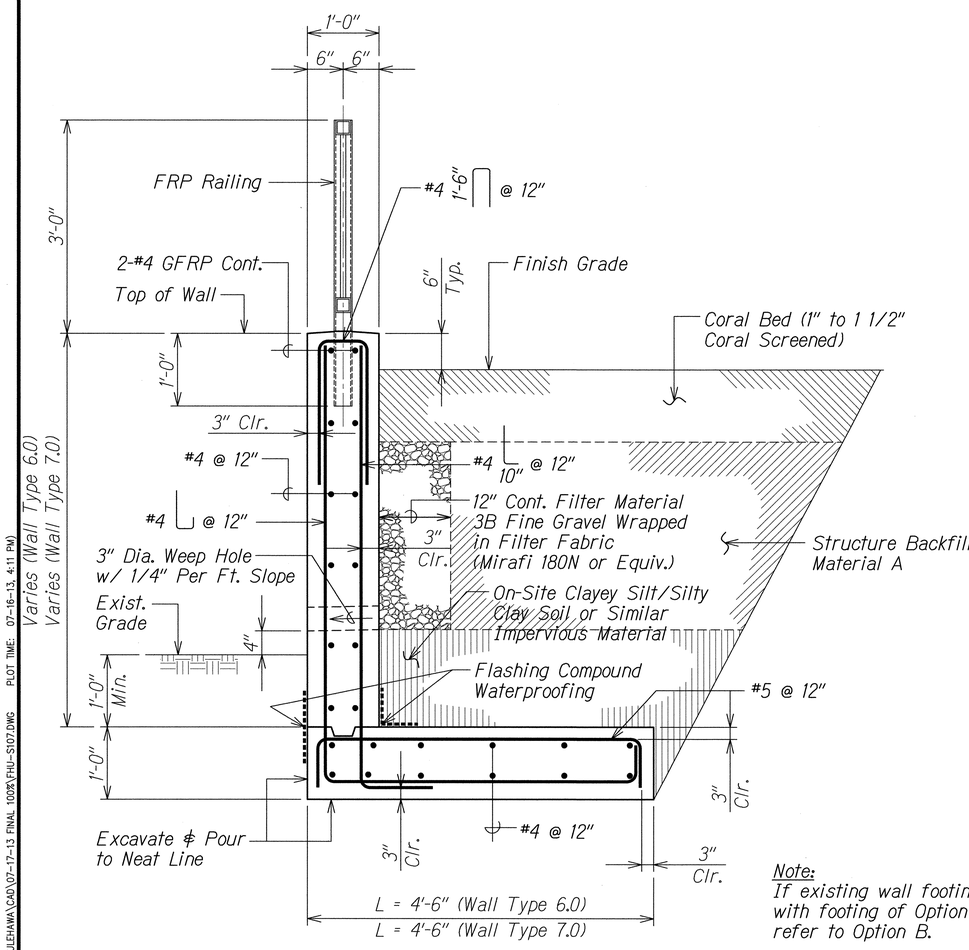
SHEET No. S1.7 OF 10 SHEETS

181

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

DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S107.DWG PLOT TIME: 07-16-13, 4:11 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	182	230

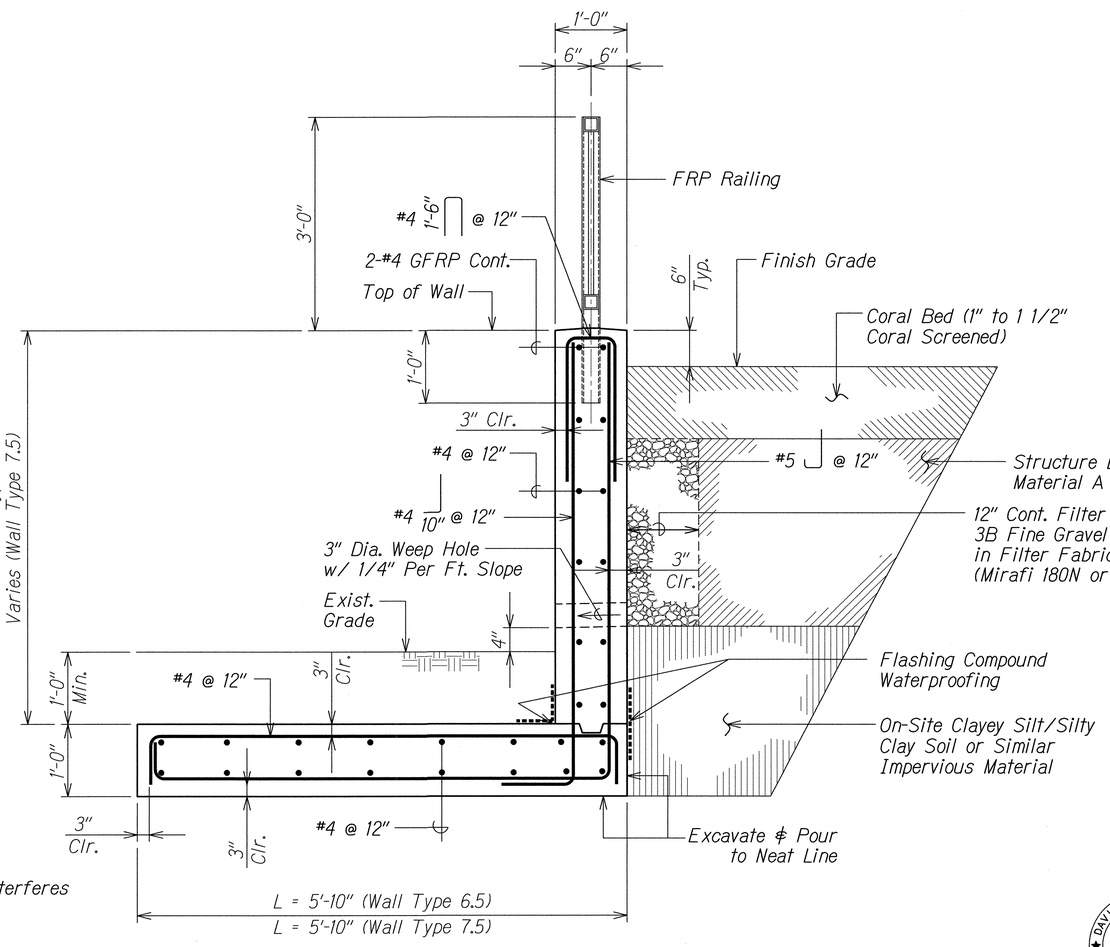


Note:
If existing wall footing interferes with footing of Option A, refer to Option B.

TYPICAL RET. WALL A SECTION - OPTION A

Scale: 1" = 1'-0"

A S1.10 | S1.8



TYPICAL RET. WALL A SECTION - OPTION B

Scale: 1" = 1'-0"

B S1.10 | S1.8

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KSF, INC.

APRIL 30, 2014
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL WALL SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

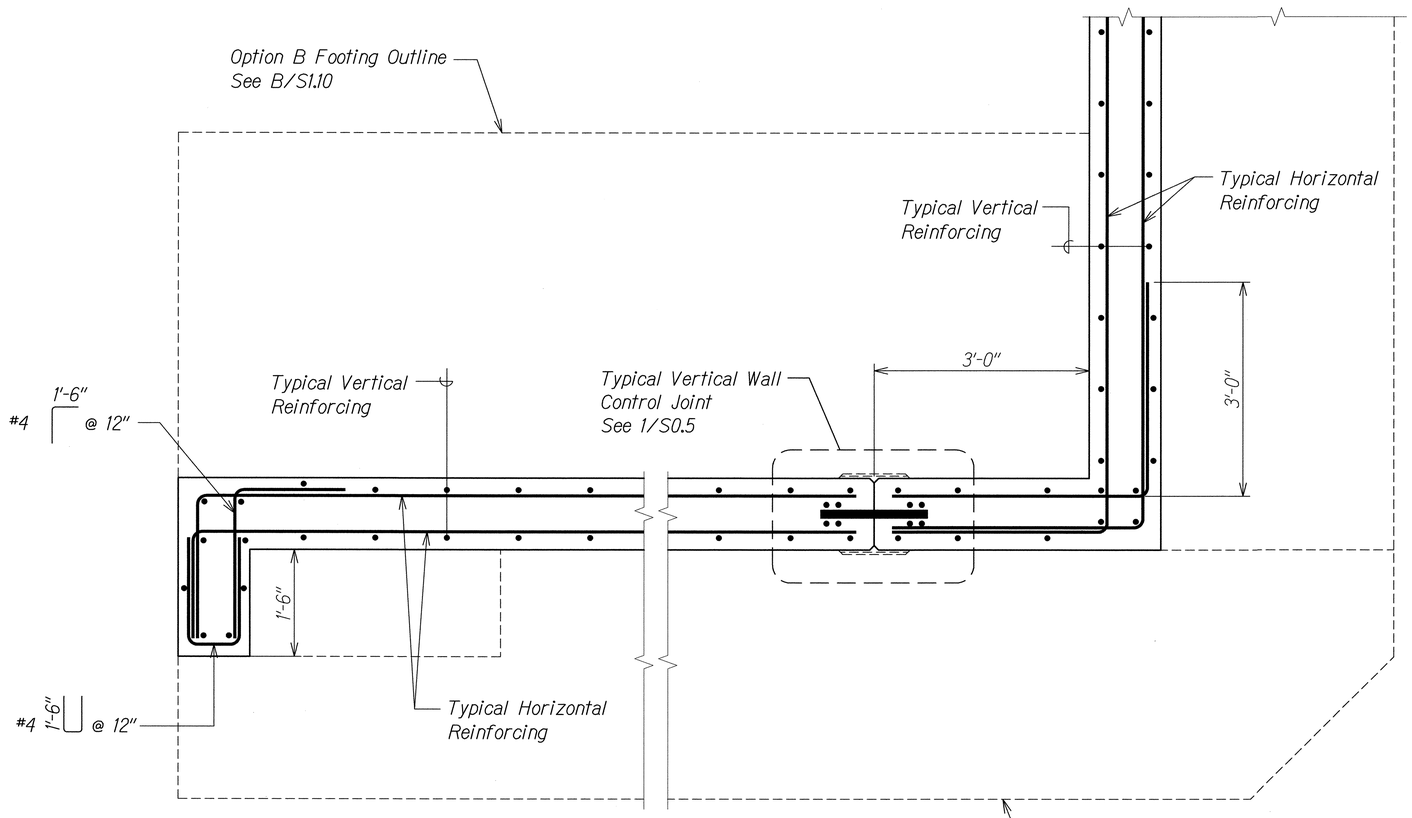
SHEET No. S1.8 OF 10 SHEETS

182

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S107.DWG PLOT TIME: 07-16-13, 4:11 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	183	230



SECTION (A — S1.6 | S1.9)
Scale: 1" = 1'-0"

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S107.DWG PLOT TIME: 07-16-13, 4:11 PM)

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

DAVID K. FUJIWARA
LICENSED PROFESSIONAL ENGINEER
NO. 8104-S
HAWAII, U.S.A.

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David K. Fujiwara — KSF, INC. — APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

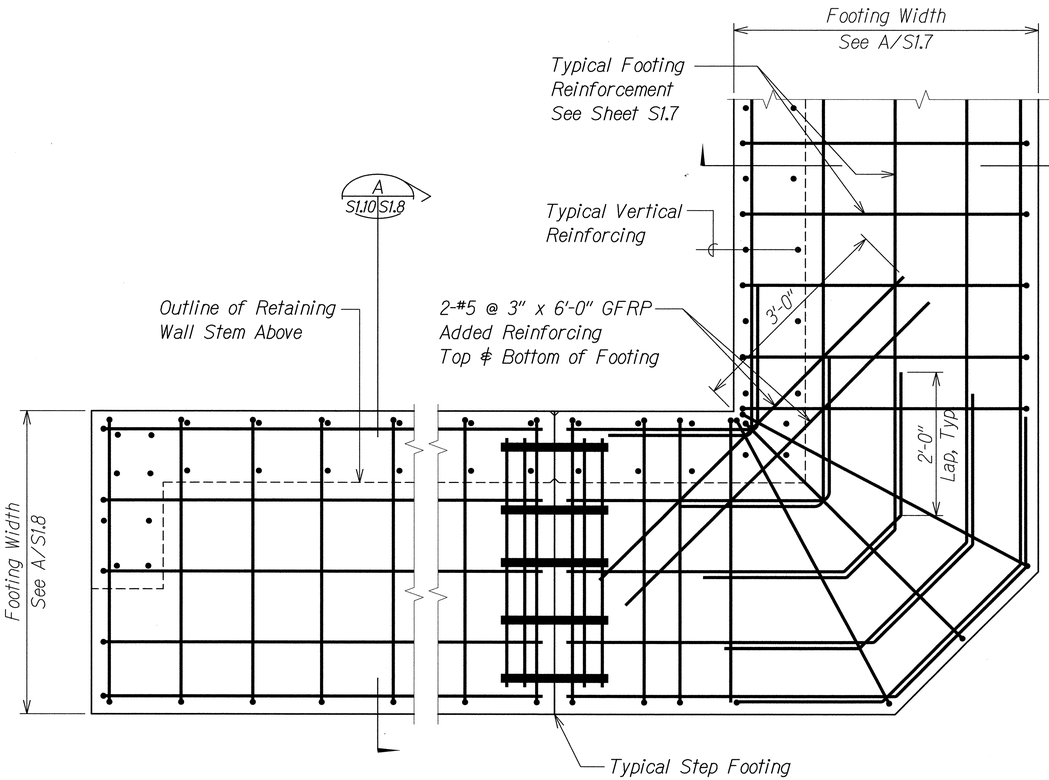
SECTION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S1.9 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	184	230

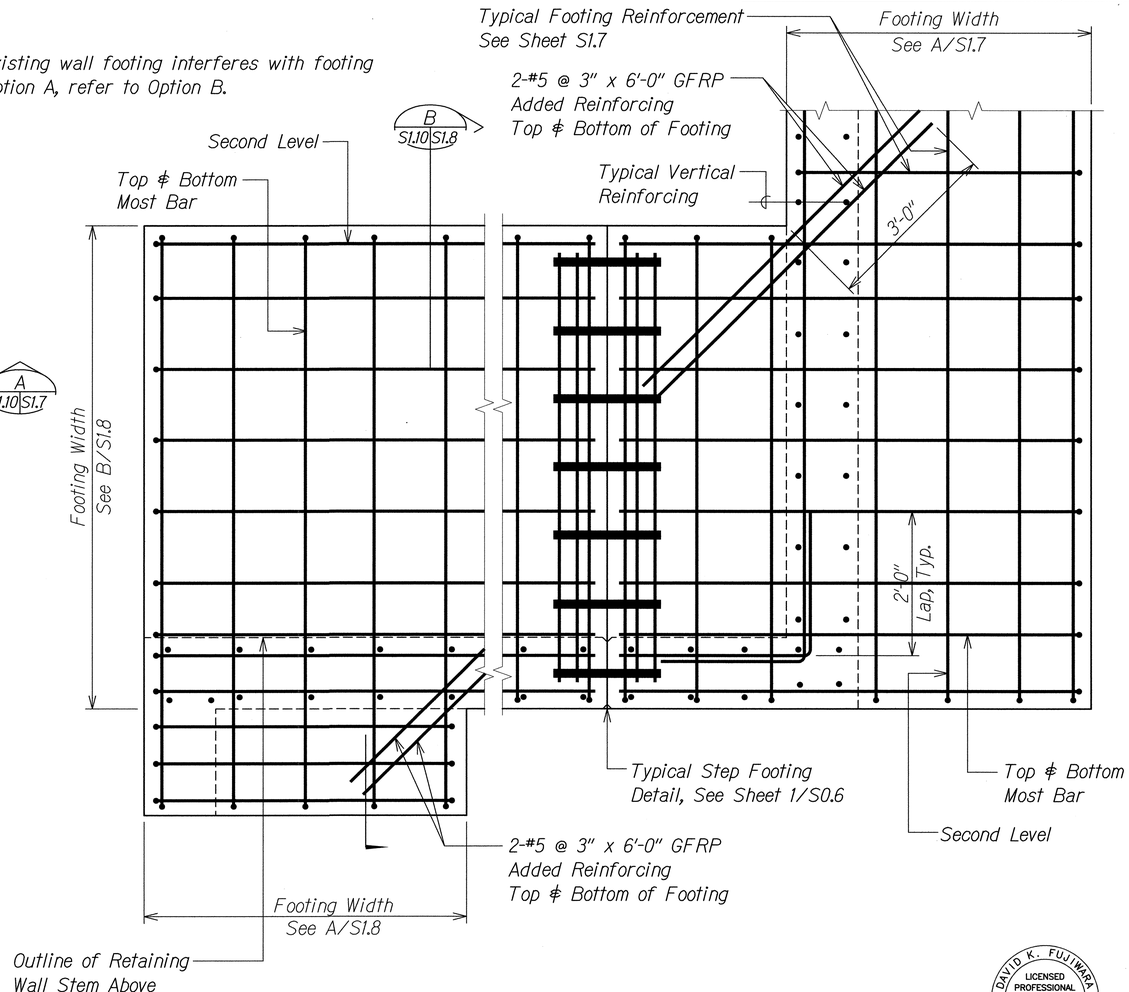


SECTION - OPTION A

Scale: 1" = 1'-0"

A S1.6 S1.10 S1.9

Note:
If existing wall footing interferes with footing of Option A, refer to Option B.



SECTION - OPTION B

Scale: 1" = 1'-0"

B S1.6 S1.10 S1.9

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NO. 8104-S
HAWAII, U.S.A.

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KSF, INC. — APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

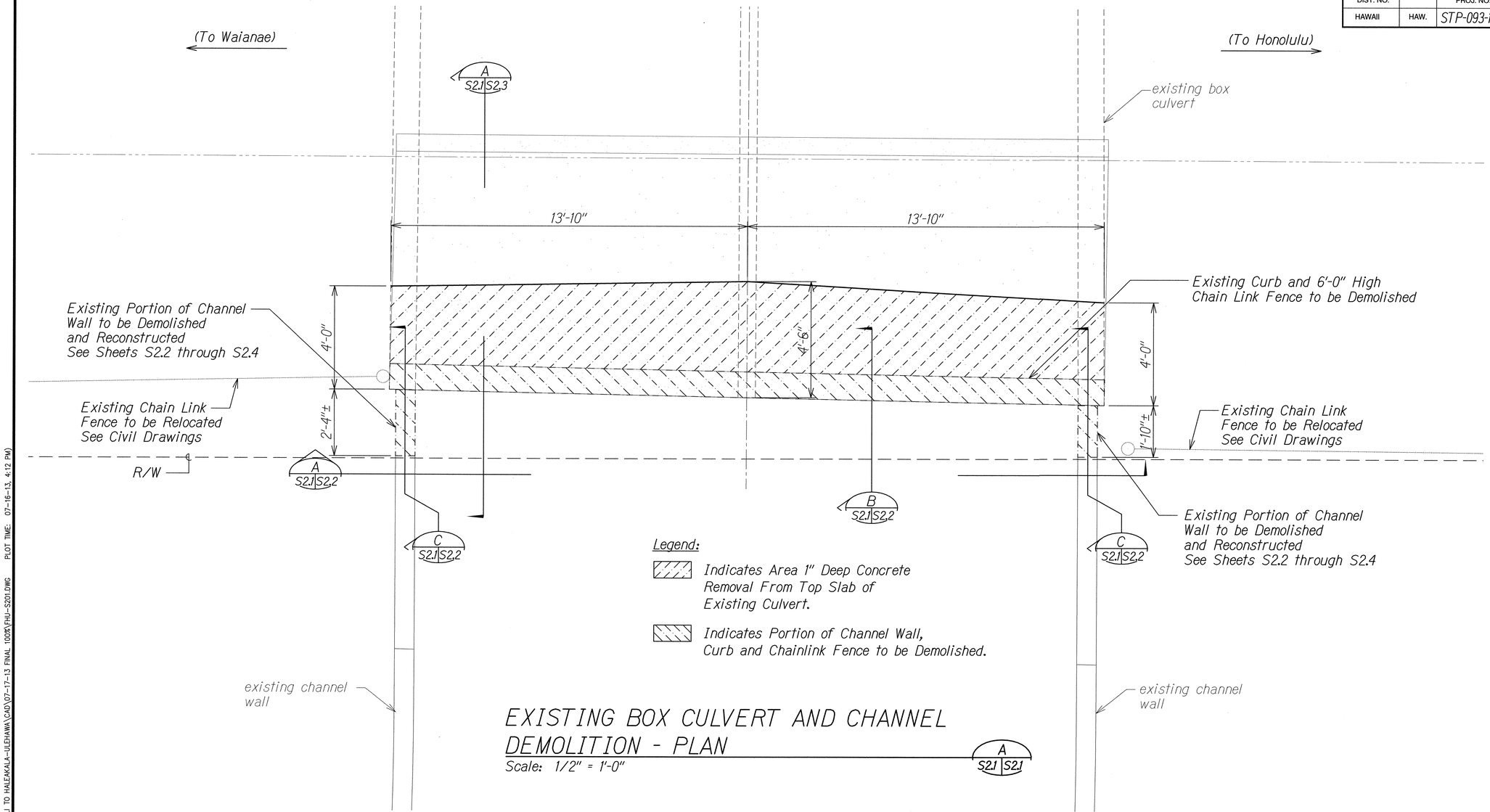
Scale: As Shown Date: April 2013

SHEET No. S1.10 OF 10 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S1010.DWG PLOT TIME: 07-16-13, 4:12 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	185	230



Legend:

Indicates Area 1" Deep Concrete Removal From Top Slab of Existing Culvert.

Indicates Portion of Channel Wall, Curb and Chainlink Fence to be Demolished.

EXISTING BOX CULVERT AND CHANNEL DEMOLITION - PLAN

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

A S2.1 S2.1

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\HU-S201.DWG PLOT TIME: 07-16-13, 4:12 PM)

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

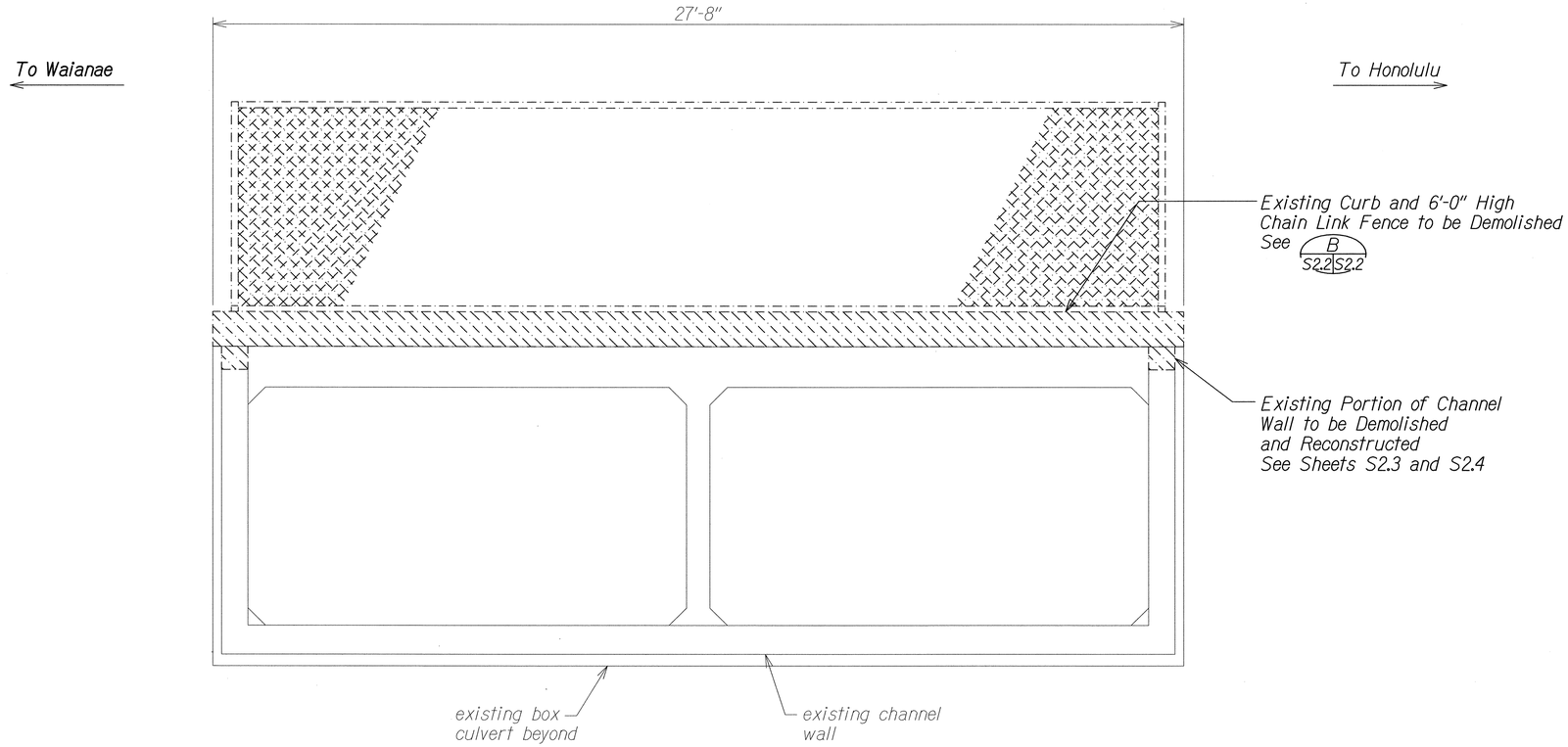
EXISTING BOX CULVERT AND CHANNEL DEMOLITION - PLAN

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

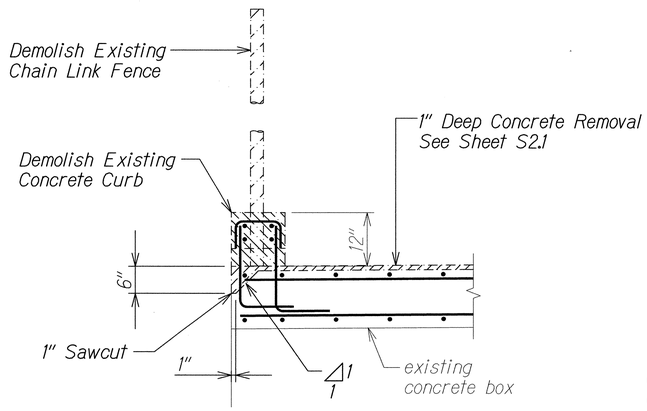
SHEET No. S2.1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	186	230



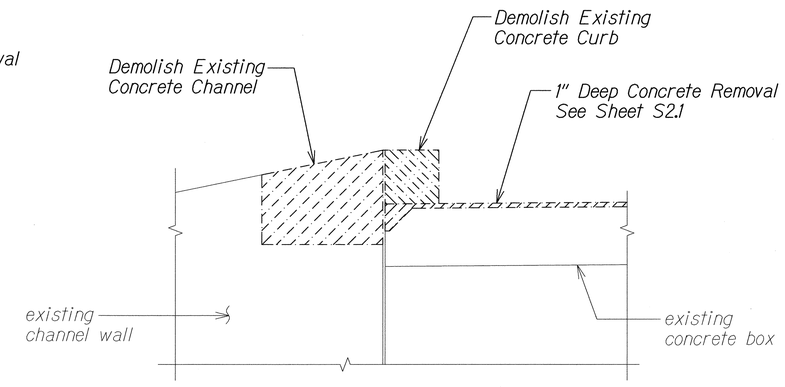
BOX CULVERT DEMOLITION - ELEVATION (A S2.1 S2.2)

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



SECTION (B S2.1 S2.2 S2.2)

Scale: 3/4" = 1'-0"



SECTION (C S2.2 S2.2)

Scale: 3/4" = 1'-0"

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

DRAWING NAME: Z:\DD ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S201.DWG PLOT TIME: 07-16-13, 4:12 PM)

DAVID K. FUJIWARA
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

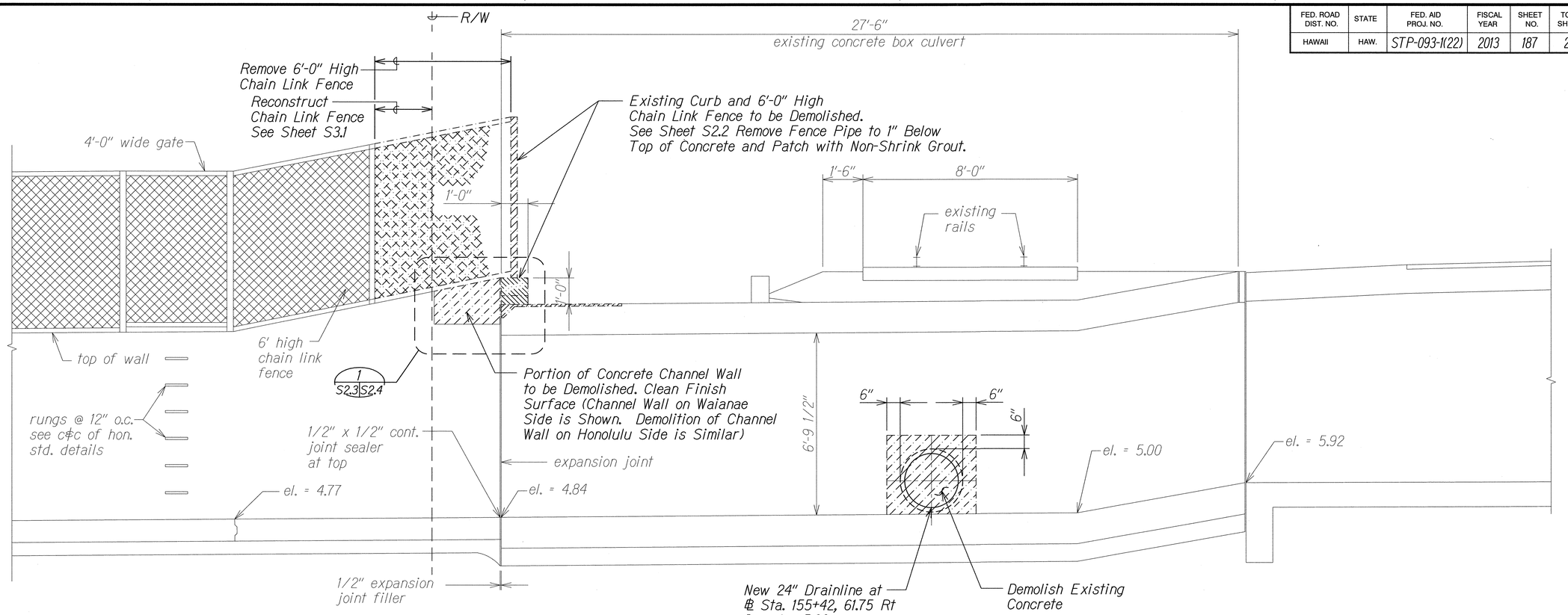
EXISTING BOX CULVERT AND CHANNEL DEMOLITION - SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

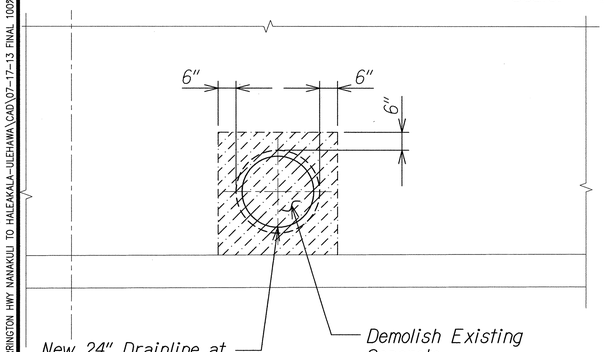
SHEET No. S2.2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	187	230



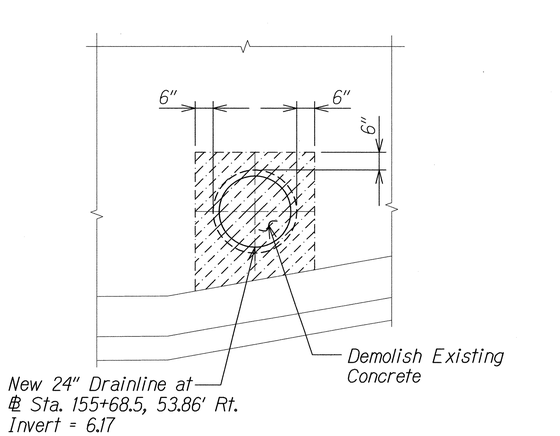
CULVERT AND CHANNEL WALL DEMOLITION - SECTION (A S2.1 | S2.3)

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



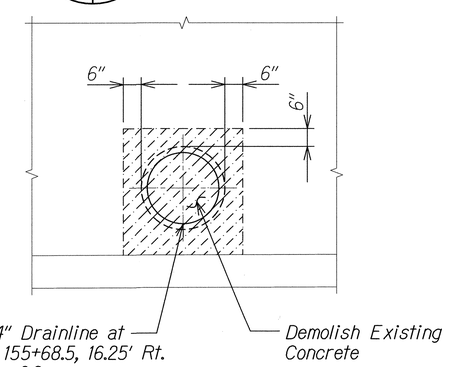
CULVERT WALL DEMOLITION AT STA. 155+42, 16.25 RT - SECTION (B S2.3 | S2.3)

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



CULVERT WALL DEMOLITION AT STA. 155+68.5, 53.86 RT - SECTION (C S2.3 | S2.3)

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



CULVERT WALL DEMOLITION AT STA. 155+68.5, 16.25 RT - SECTION (D S2.3 | S2.3)

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

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S201.DWG PLOT TIME: 07-16-13, 4:12 PM)

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

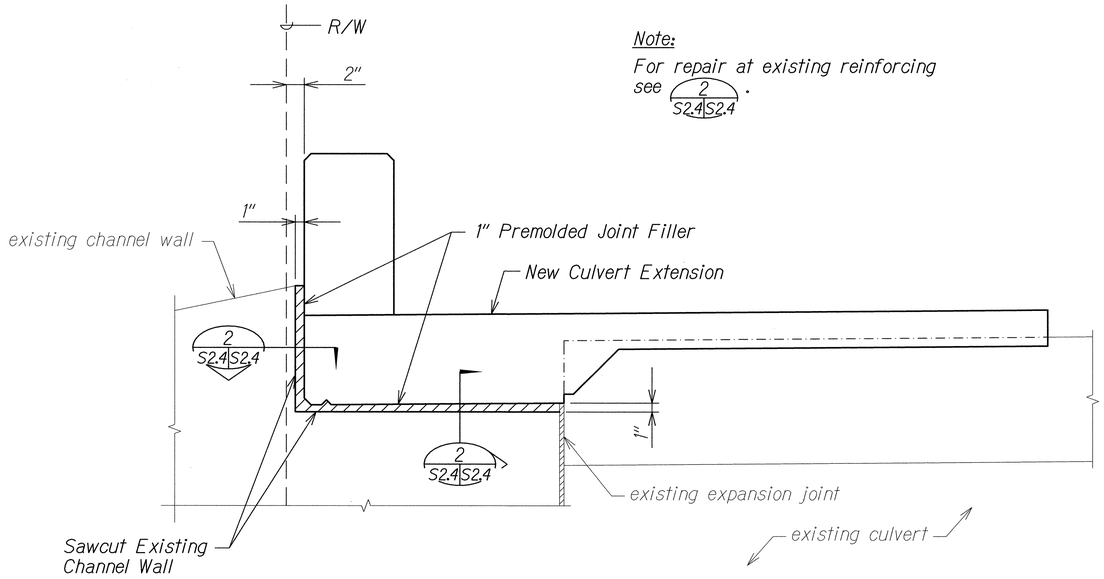
EXISTING BOX CULVERT AND CHANNEL DEMOLITION - SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S2.3 OF 4 SHEETS

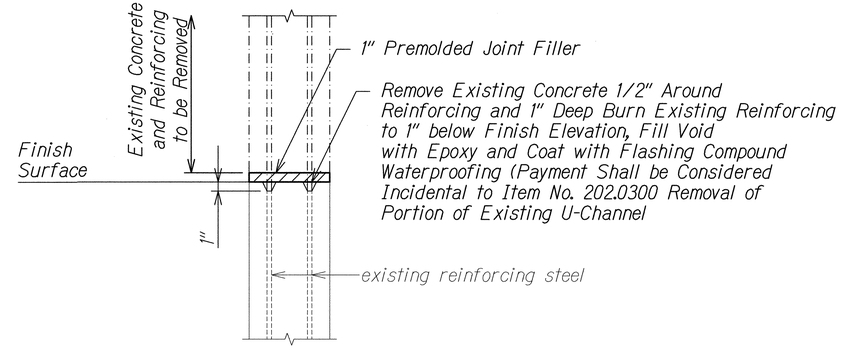
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	188	230



Note:
For repair at existing reinforcing see 2 S2.4|S2.4 .

EXISTING CHANNEL DEMOLITION 1 S2.3|S2.4

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



EXISTING CHANNEL DEMOLITION - DETAIL 2 S2.4|S2.4

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

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S201.DWG PLOT TIME: 07-16-13, 4:12 PM)

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

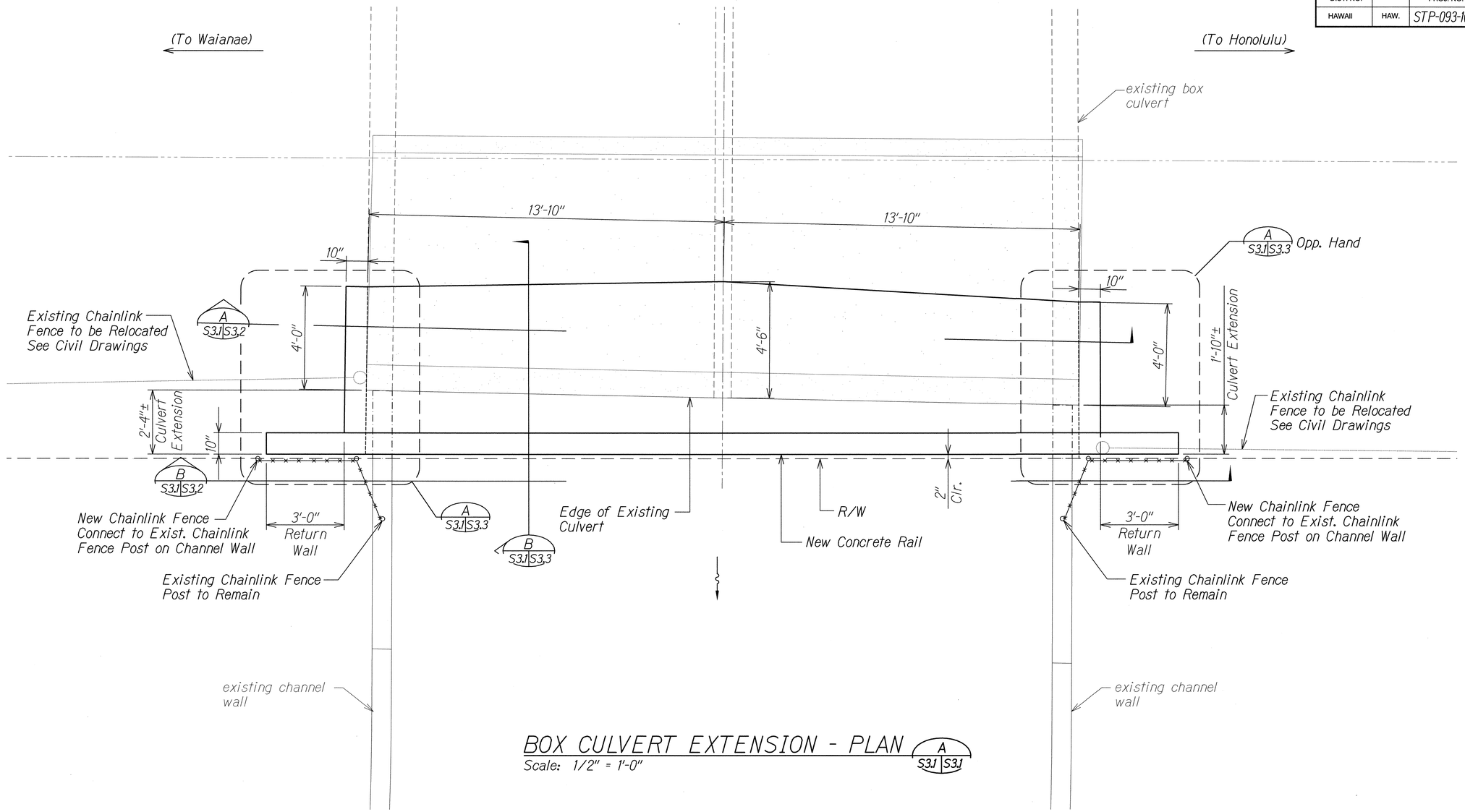
EXISTING CHANNEL DEMOLITION DETAILS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S2.4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	189	230



BOX CULVERT EXTENSION - PLAN

A S3.1 | S3.1

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

DRAWING NAME: Z:\DO ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEPAWA\CAD\07-17-13 FINAL 100%\FHU-S301.DWG PLOT TIME: 07-16-13, 4:13 PM)

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

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HIGHWAYS DIVISION

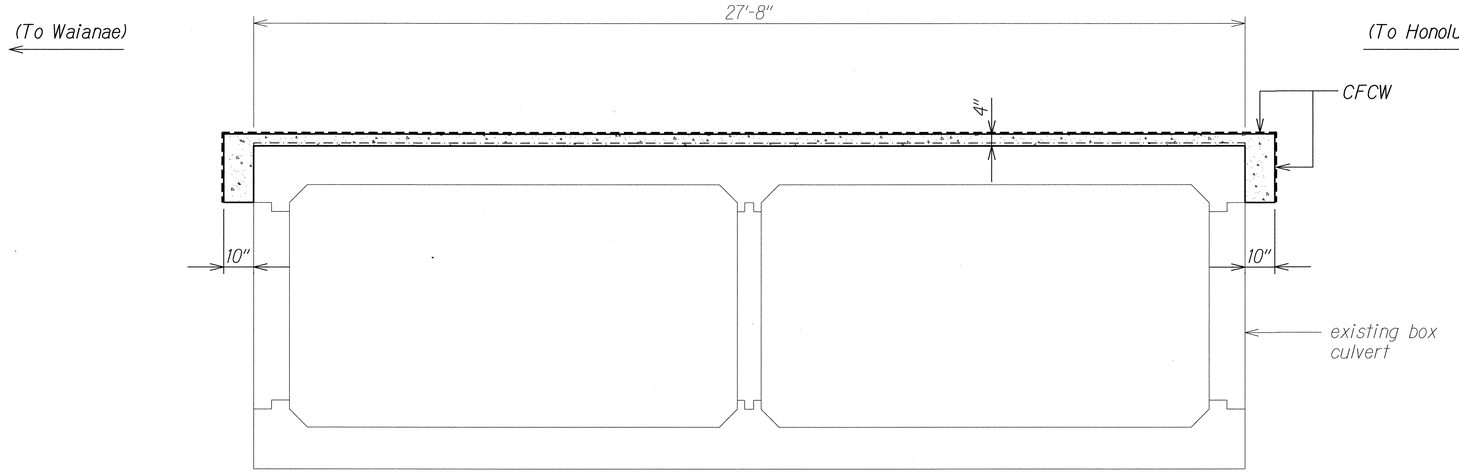
BOX CULVERT EXTENSION - PLAN

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

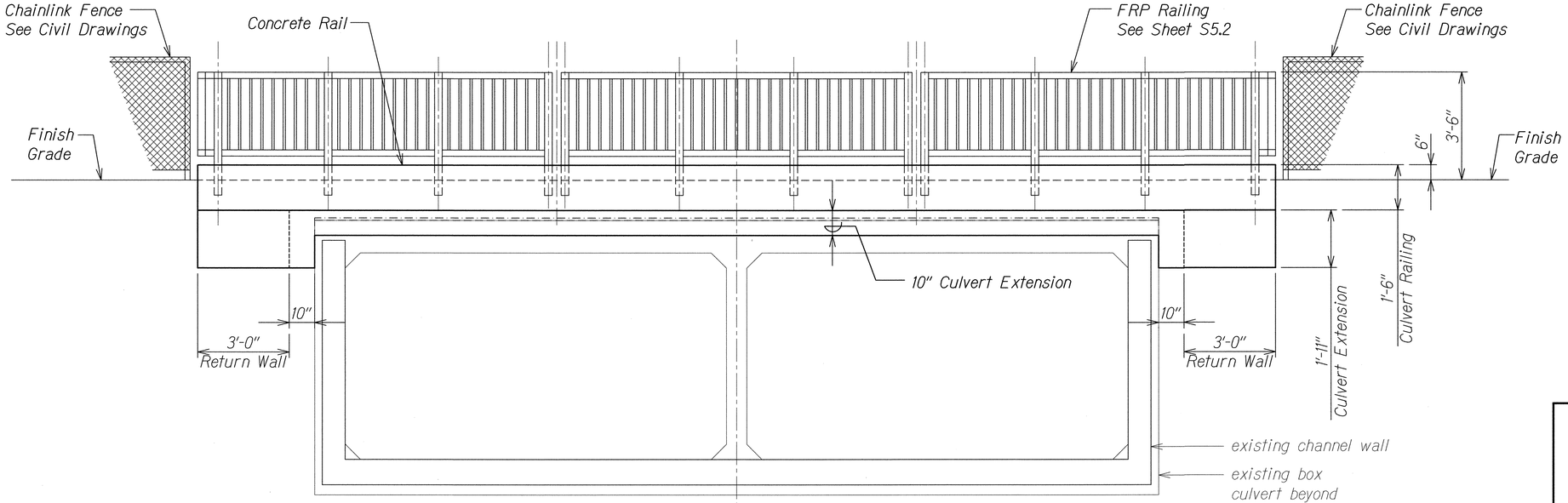
SHEET No. S3.1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	190	230



BOX CULVERT - SECTION (A S3.1 | S3.2)

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



BOX CULVERT - ELEVATION (B S3.1 | S3.2)

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

DRAWING NAME: Z:\OO ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S301.DWG PLOT TIME: 07-16-13, 4:13 PM)

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

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STATE OF HAWAII
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HIGHWAYS DIVISION

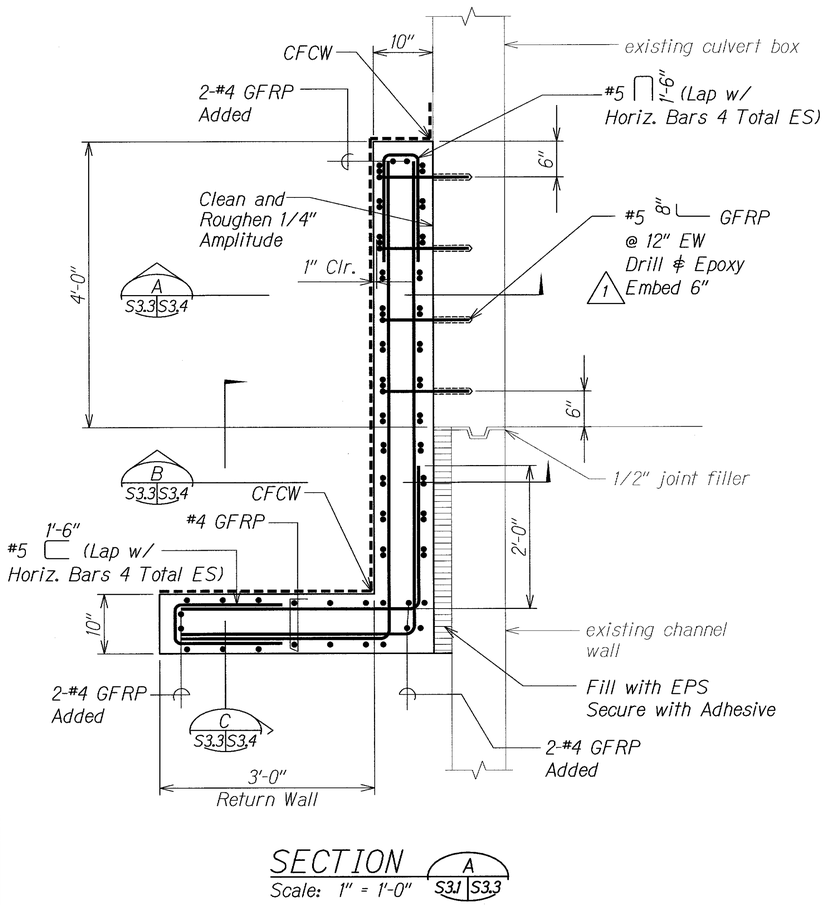
SECTION AND ELEVATION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

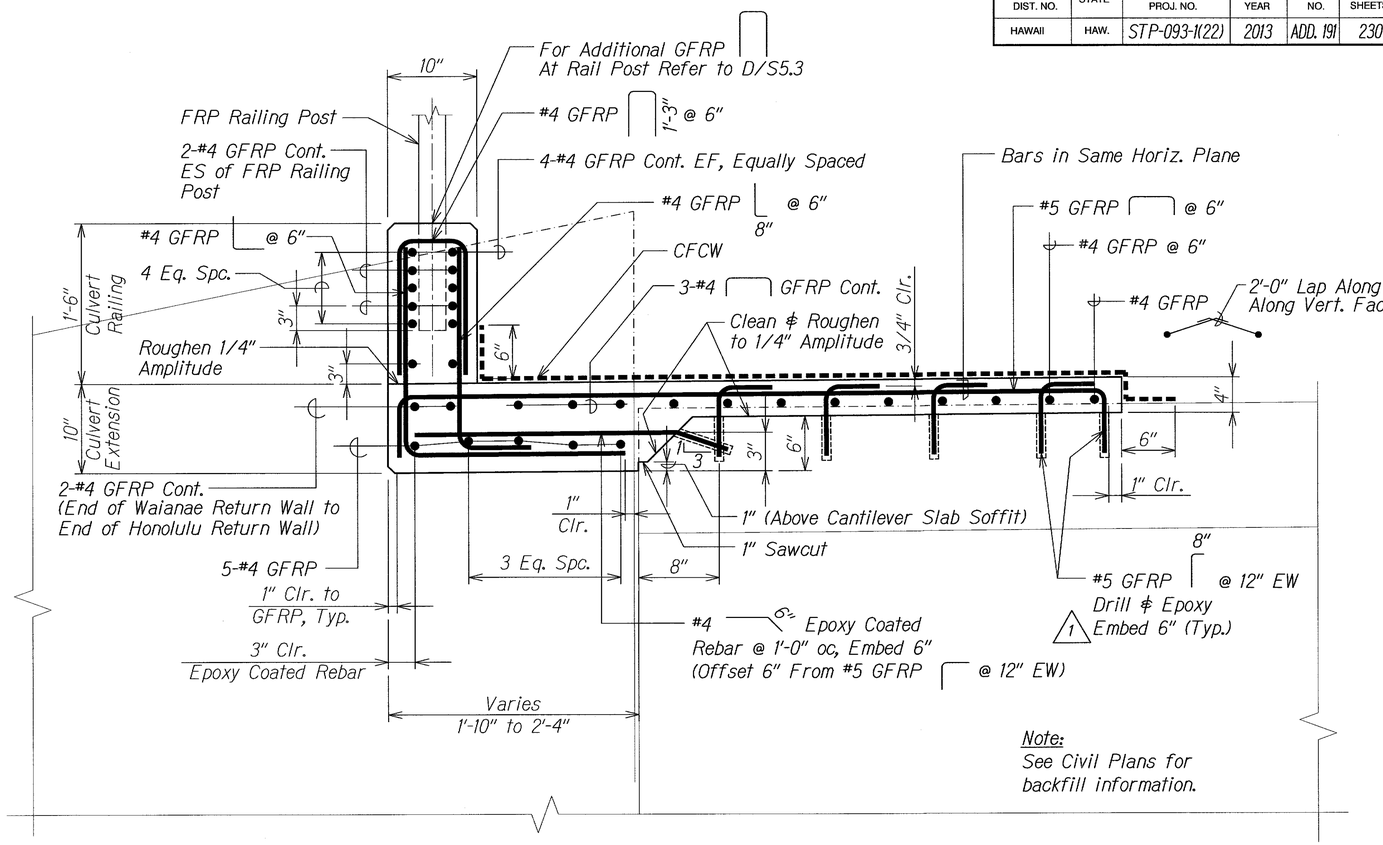
Scale: As Shown Date: April 2013

SHEET No. S3.2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 191	230



SECTION A
Scale: 1" = 1'-0"
S3.1 S3.3



Note:
See Civil Plans for backfill information.

SECTION B
Scale: 1 1/2" = 1'-0"
S3.1 S3.3
S5.2

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KSF, INC. — LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S3.3 OF 5 SHEETS

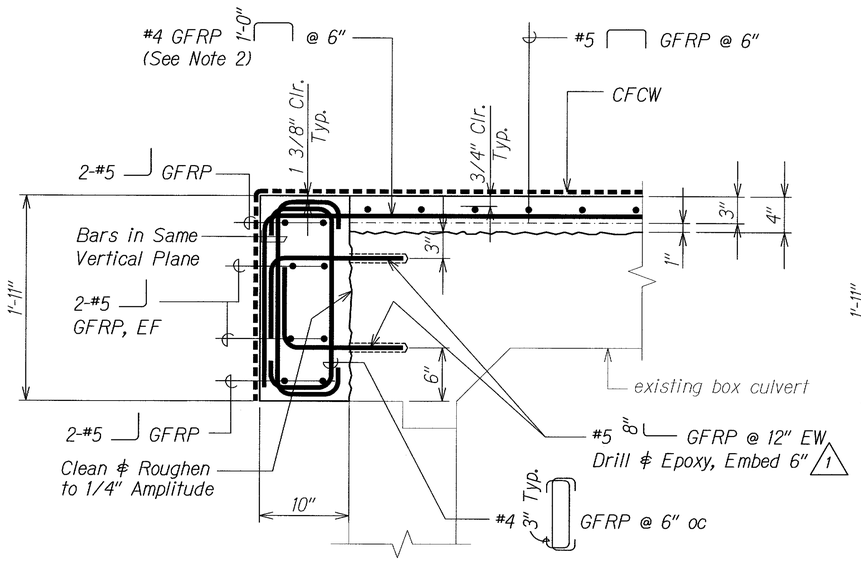
DATE	REVISION
11/08/13	1 Add. 1 - Modified Embedment

ADD. 191

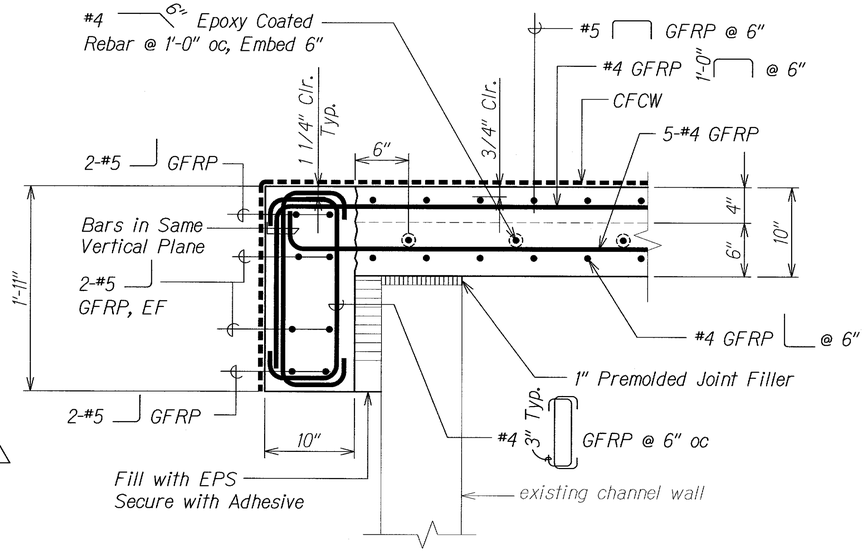
ORIGINAL PLAN
NOTE BOOK No.
SURVEY PLOTTED BY DATE
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-S301 ADD1.DWG PLOT TIME: 11-04-13, 4:57 PM

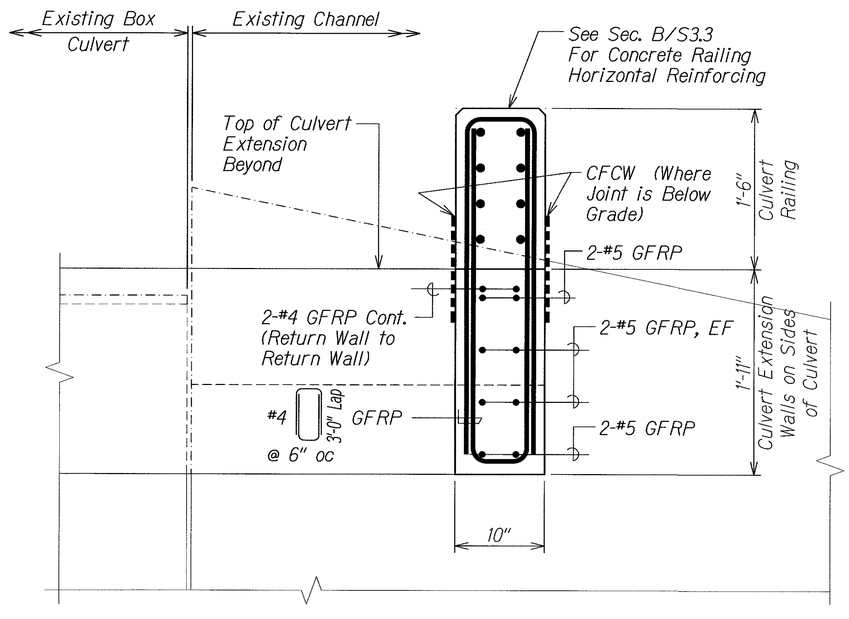
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 192	230



SECTION A
Scale: 1 1/2" = 1'-0" S3.3 | S3.4



SECTION B
Scale: 1 1/2" = 1'-0" S3.3 | S3.4



SECTION C
Scale: 1 1/2" = 1'-0" S3.3 | S3.4

Notes:

1. For FRP Railing, see Sheets S5.2 and S5.3.
2. Offset #4 GFRP ⌐ or #4 GFRP ⊔ such that there is a maximum bundle of three (3) bars. Offset shall be 1" minimum.

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

DRAWING NAME: Z:\OD ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD\FHU-S301 ADD1.DWG PLOT TIME: 11-04-13, 4:57 PM)

11/08/13	1	Add. 1 - Modified Embedment
DATE		REVISION

DAVID K. FUJIWARA
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NO. 8104-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

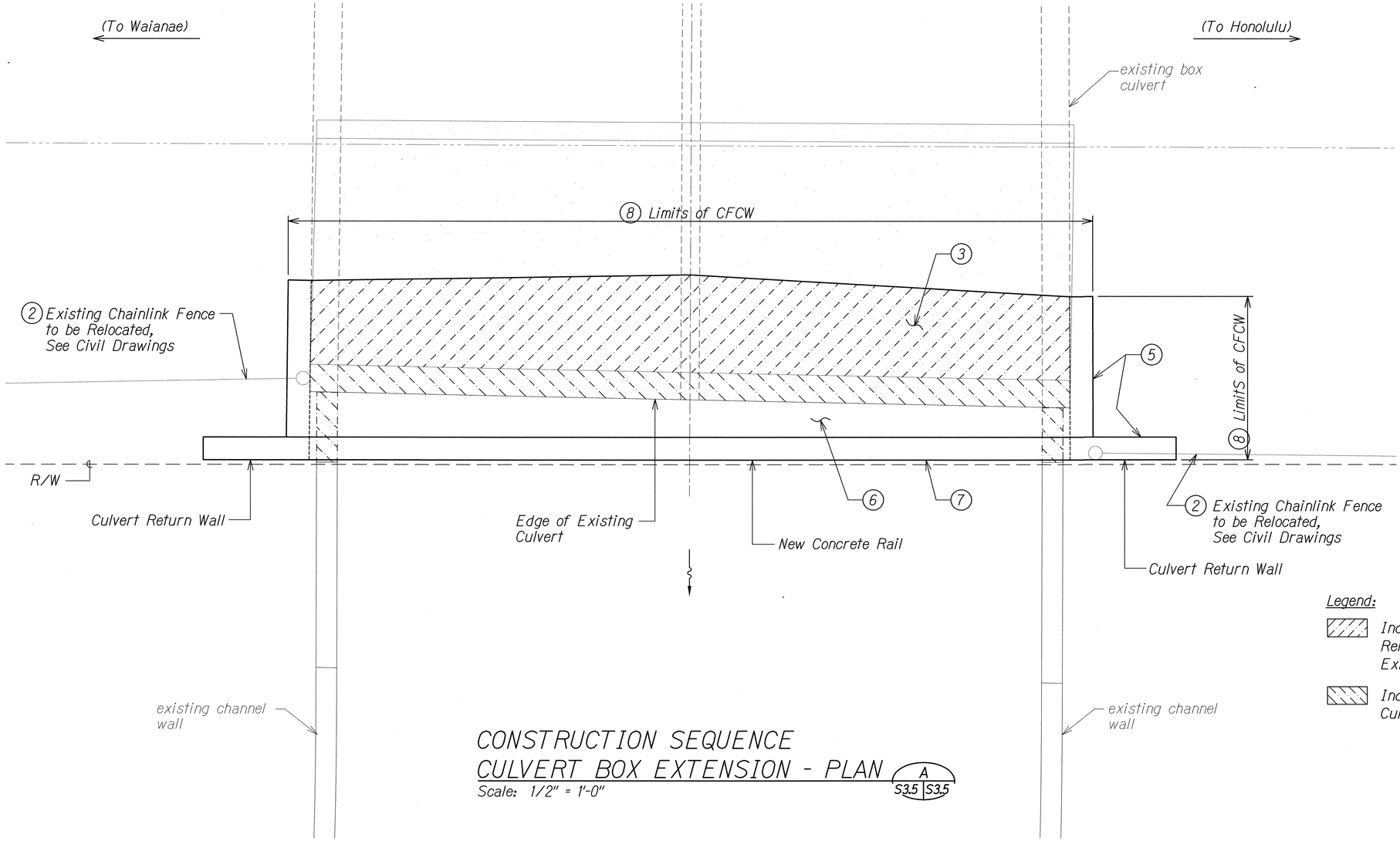
FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S3.4 OF 5 SHEETS

ADD. 192

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	193	230



CONSTRUCTION SEQUENCE:

1. Demolish Portion of Existing Structures Shown on Sheets S2.1 to S2.4 (Refer to Special Provisions Section 202)
2. Relocate Chainlink Fence As Necessary
3. Remove 1" Deep Concrete from Top Slab of Existing Culvert
4. Drill and Epoxy Dowels in Existing Culvert
5. Construct Culvert Extension Walls on Culvert Return Walls
6. Construct Culvert Extension
7. Remove Falsework a Minimum of 14 Days after Concrete in Stage (6) has been Cast. Then, Construct Concrete Railing and FRP Railing
8. Install CFCW a Minimum of 28 Days after Concrete in (7) has been Cast. Refer to A/S3.3, B/S3.3, and A/S3.2.
9. Backfill

Legend:

Indicates Area 1" Deep Concrete Removal From Top Slab of Existing Culvert.

Indicates Portion of Channel Wall, Curb and Chainlink Fence to be Demolished.

CONSTRUCTION SEQUENCE CULVERT BOX EXTENSION - PLAN

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

A S3.5 | S3.5

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION SEQUENCE
BOX CULVERT EXTENSION - PLAN

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

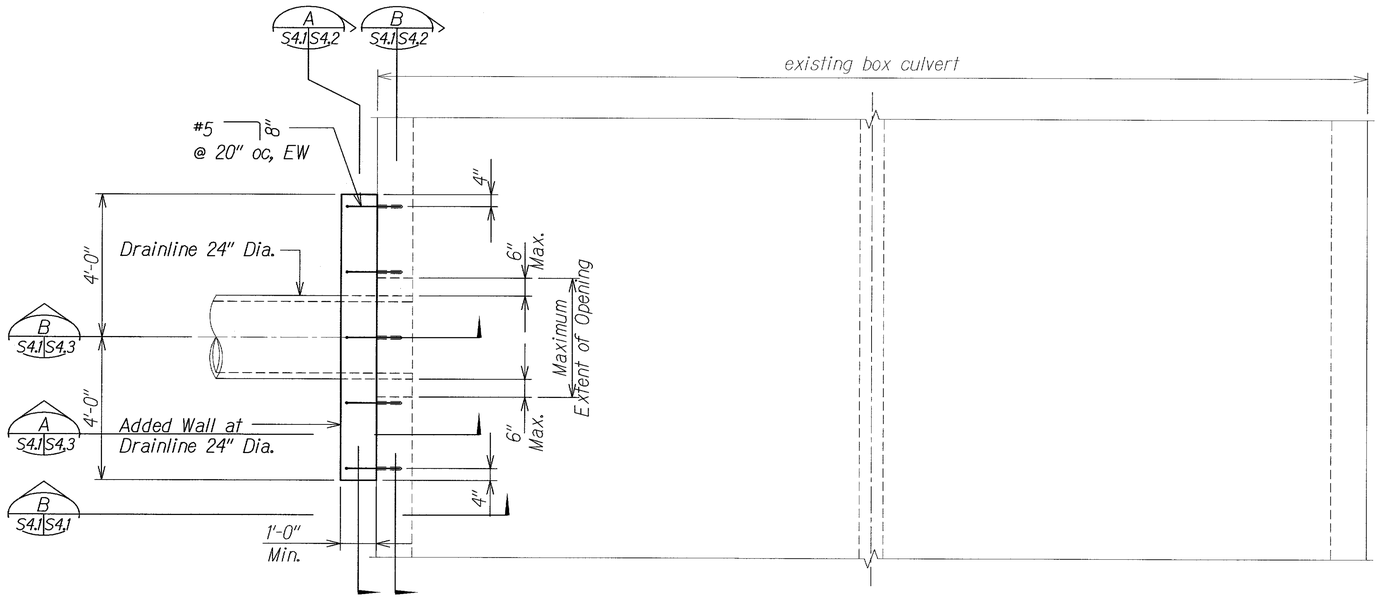
Scale: As Shown Date: April 2013

SHEET No. S3.5 OF 5 SHEETS

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

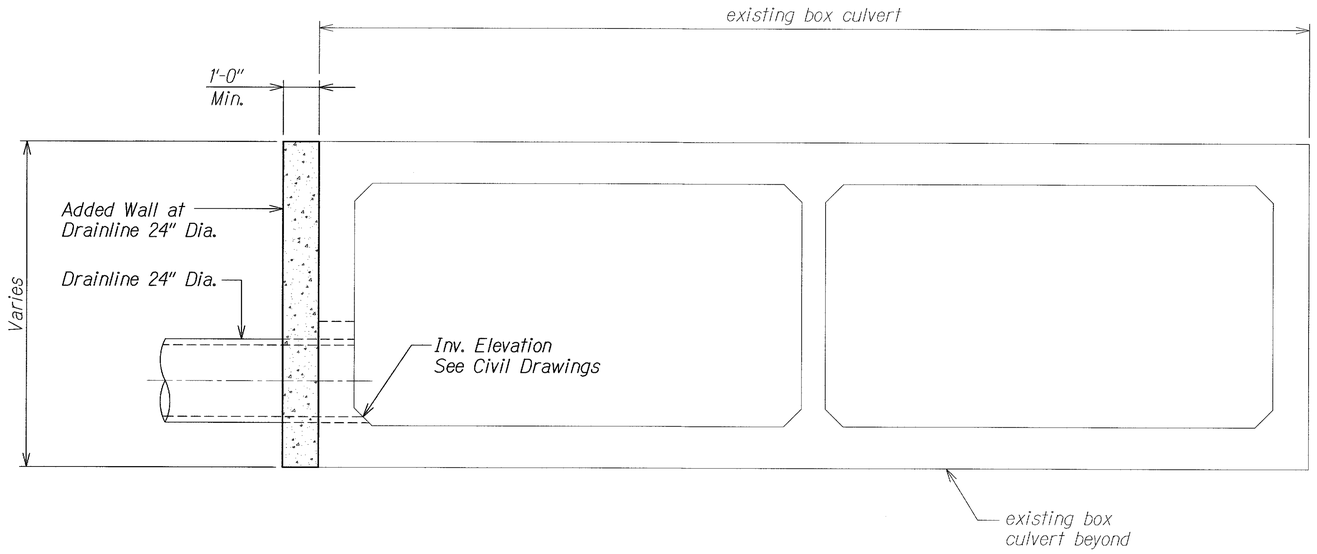
DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-S305.DWG PLOT TIME: 07-16-13, 4:14 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 194	230



TYPICAL CONNECTION OF 24" DIA. DRAIN PIPE TO BOX CULVERT - PLAN (A S4.1 S4.1)

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



BOX CULVERT - SECTION (B S4.1 S4.1)

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

/1 *Notes:*

1. *All work for removal of existing reinforced concrete will be paid for under Item No. 202.0200 - Removal of Portion of Existing Box Culvert.*
2. *The work for evaluation, design, construction and removal of the temporary shoring shall be incidental to Pay Item 206.2000 - Excavation for Drainage Facilities.*
3. *The Contractor shall be responsible for protecting the sides of the excavations from cave-ins. If the Contractor decides to brace or shore the cut slope, the Contractor shall submit working drawings and calculations. The working drawings and calculations shall be stamped by a registered Hawaii Structural Engineer and a registered Civil Engineer specializing in Geotechnical Engineering in the State of Hawaii. If the Contractor decides not to brace the cut slope, the Contractor shall submit, when requested by the Engineer, calculations, showing the stablility of the slope, stamped by a registered Civil Engineer specializing in Geotechnical Engineering in the State of Hawaii. The working drawings and calculations shall be reviewed and accepted by the Engineer before proceeding with the construction.*
4. *Structural General Note 6.(M) is applicable for the removal of existing reinforced concrete and connection of 24" dia. pipe connection.*

CONSTRUCTION SEQUENCE:

(1) *Install shoring, excavate trench for drain, and remove all superimposed loads from top slab of existing culvert.*

(2) *Sawcut opening in existing culvert wall.*

(3) *Install 24" drain pipe and reinforcing in opening of existing wall and fill blockout between drain and existing wall, See sheets S4.2 and S4.3.*

(4) *Place reinforcing for added wall and pour added wall, see Sheets S4.2 and S4.3*

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL CONN. OF 24" DIA. PIPE TO EXIST. BOX CULVERT-PLAN & SECTION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S4.1 OF 3 SHEETS

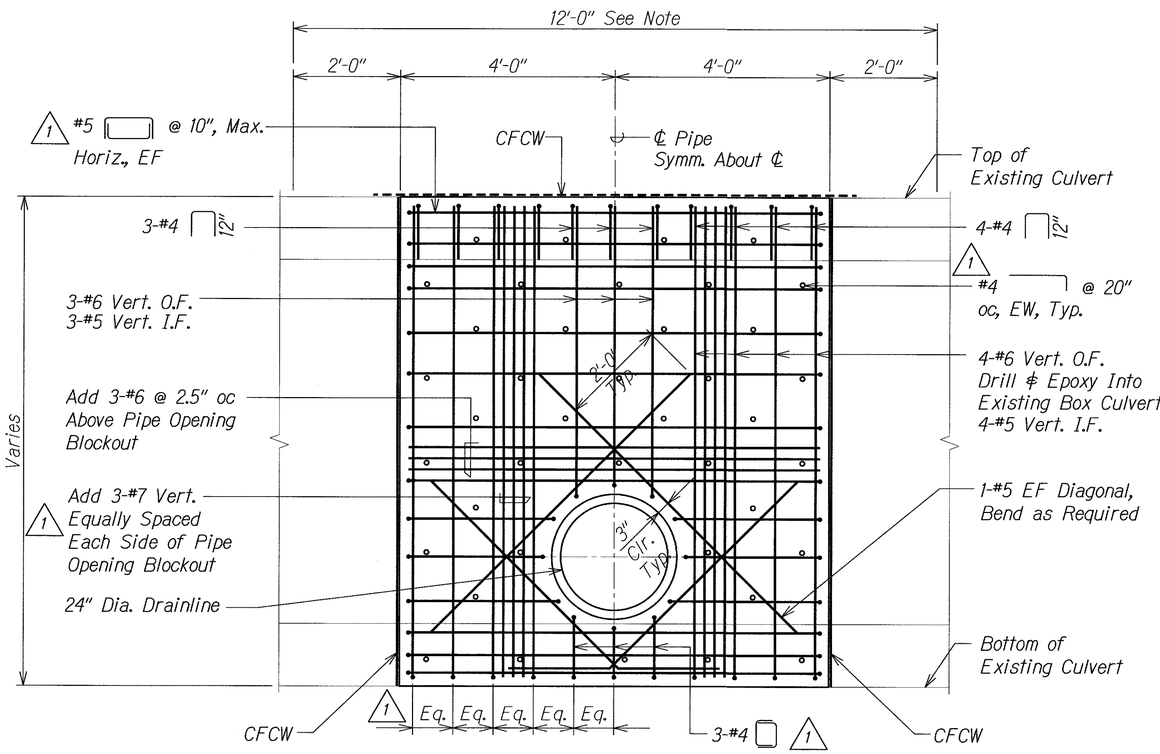
DATE	REVISION
11/08/13	/1 Add. 1 - Modified Notes

ADD. 194

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

DRAWING NAME: Z:\00 ONGOING\12-025-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-S401 ADD1.DWG PLOT TIME: 11-04-13, 4:58 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 195	230

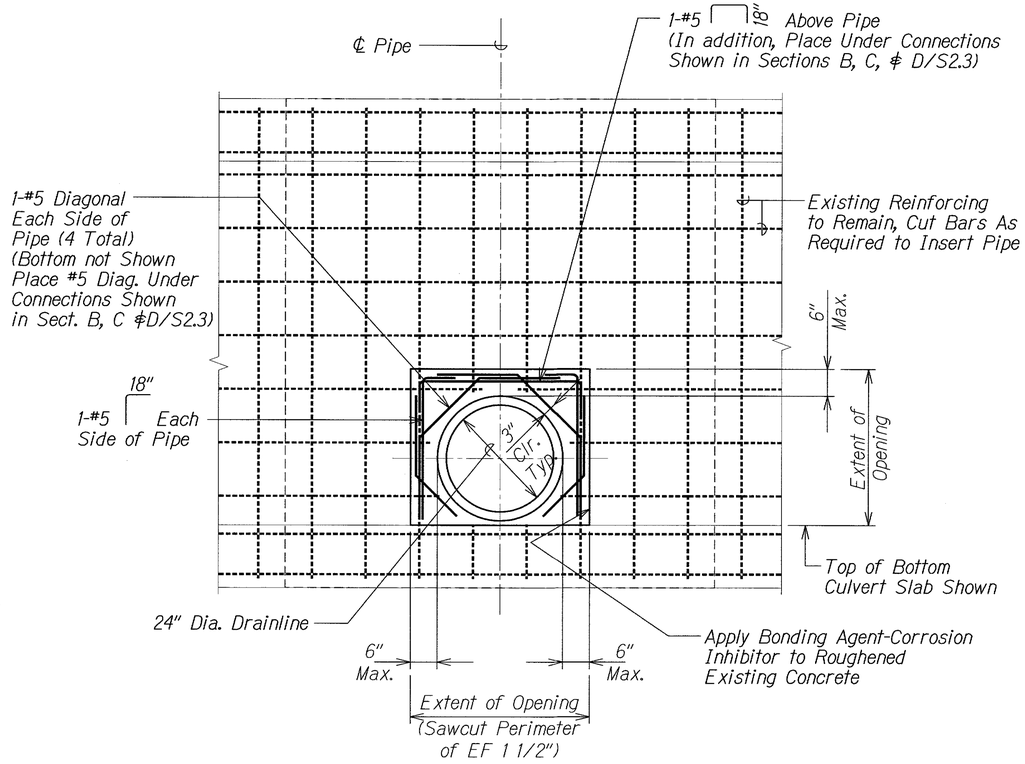


Note:
Remove all superimposed loads from top slab of existing culvert prior to removal of existing concrete.
See Specifications Section 206 for payment.

SECTION - ADDED WALL AT EXISTING BOX CULVERT WALL

Scale: 3/4" = 1'-0"

A S4.1 | S4.2



SECTION - ADDED REINFORCING WITHIN EXISTING BOX CULVERT WALL AT OPENING

Scale: 3/4" = 1'-0"

B S4.1 | S4.2

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KSF, INC. — APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S4.2 OF 3 SHEETS

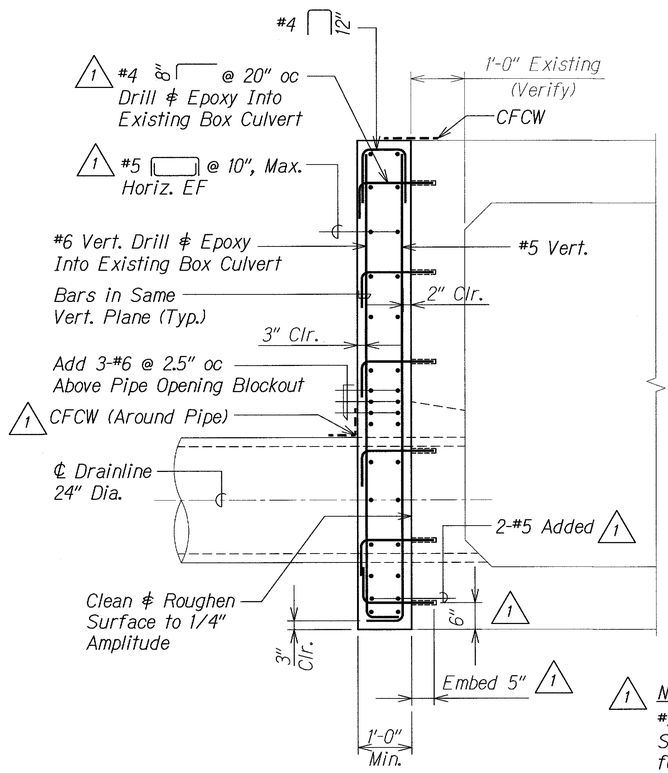
DATE	REVISION
11/08/13	1 Add. 1 - Modified Section

ADD. 195

ORIGINAL PLAN | NOTE BOOK No. | NEWLY PLOTTED BY DATE | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-S401 ADD1.DWG PLOT TIME: 11-06-13, 9:31 AM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 196	230

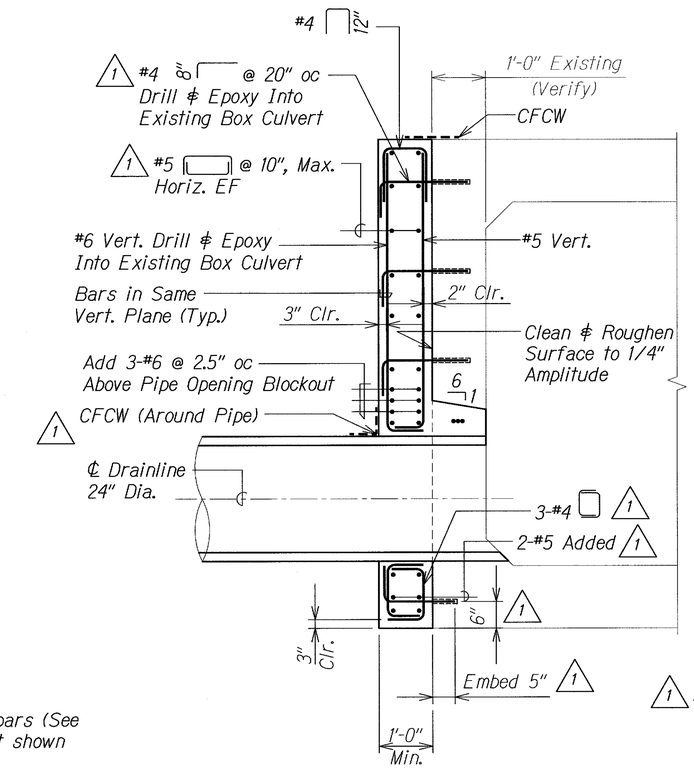


1 Note:
#5 Diagonal bars (See Sht. S4.2) not shown for clarity.

SECTION - ADDED WALL AT 24" DIA. DRAINLINE

Scale: 3/4" = 1'-0"

A S4.1 | S4.3



1 Note:
#5 Diagonal bars (See Sht. S4.2) not shown for clarity.

SECTION - ADDED WALL AT 24" DIA. DRAINLINE

Scale: 3/4" = 1'-0"

B S4.1 | S4.3

DAVID K. FUJIMARA
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NO. 8104-S
HAWAII, U.S.A.

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KSF, INC. — APRIL 30, 2014 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S4.3 OF 3 SHEETS

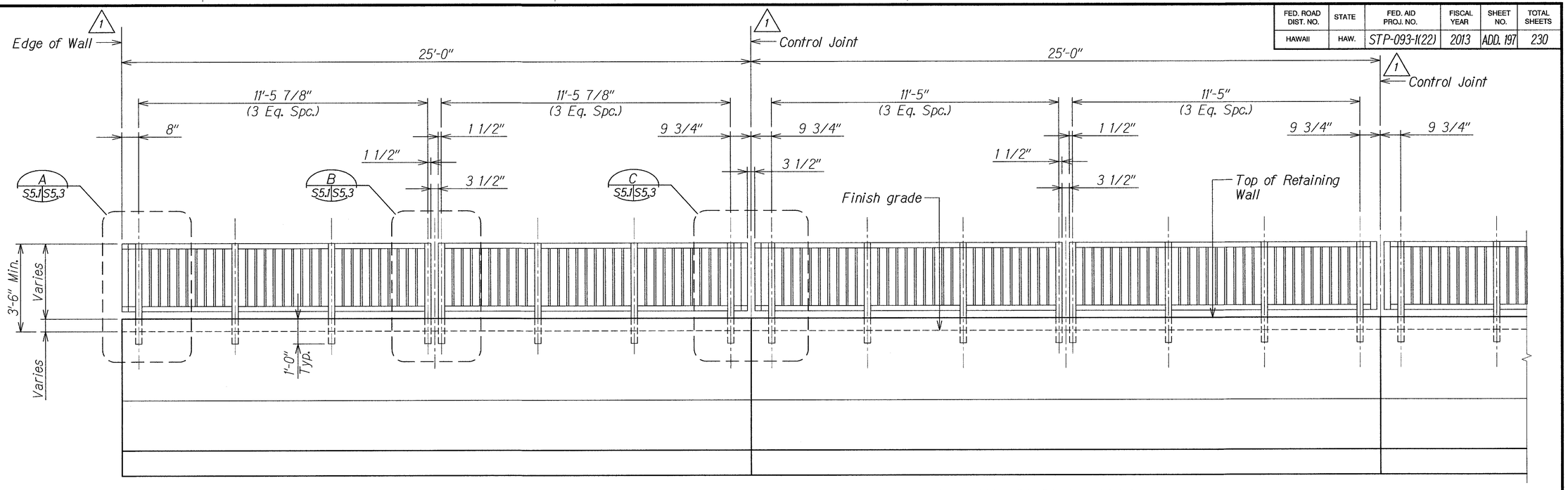
DATE	REVISION
11/08/13	1 Add. 1 - Modified Sections

ADD. 196

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

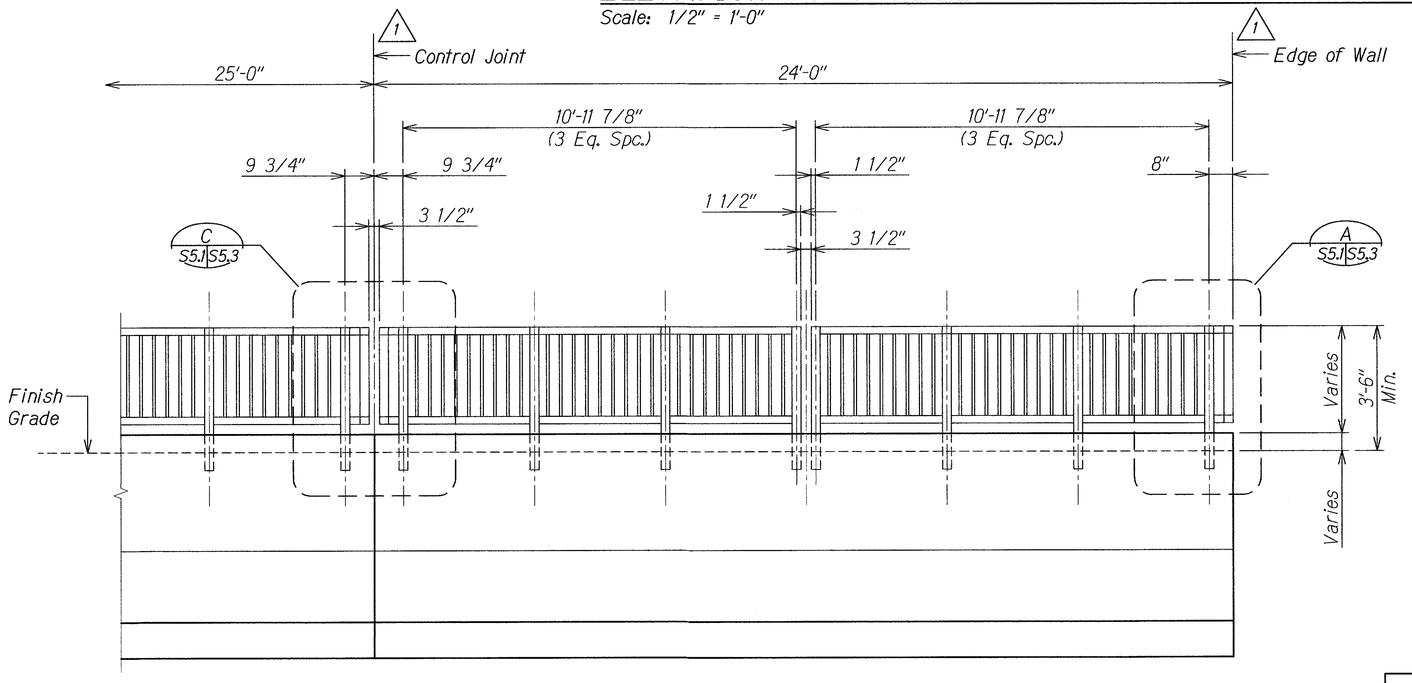
DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-S401 ADD1.DWG PLOT TIME: 11-06-13, 9:26 AM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 197	230



ELEVATION - FRP PEDESTRIAN RAILING AT RETAINING WALL (A S5.1 S5.1)

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



ELEVATION - FRP PEDESTRIAN RAILING AT END OF RETAINING WALL (B S5.1 S5.1)

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

1 Note:
Contractor shall verify and coordinate FRP Railing supply lengths with retaining wall Control Joint locations.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FRP PEDESTRIAN RAILING ELEVATIONS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S5.1 OF 3 SHEETS

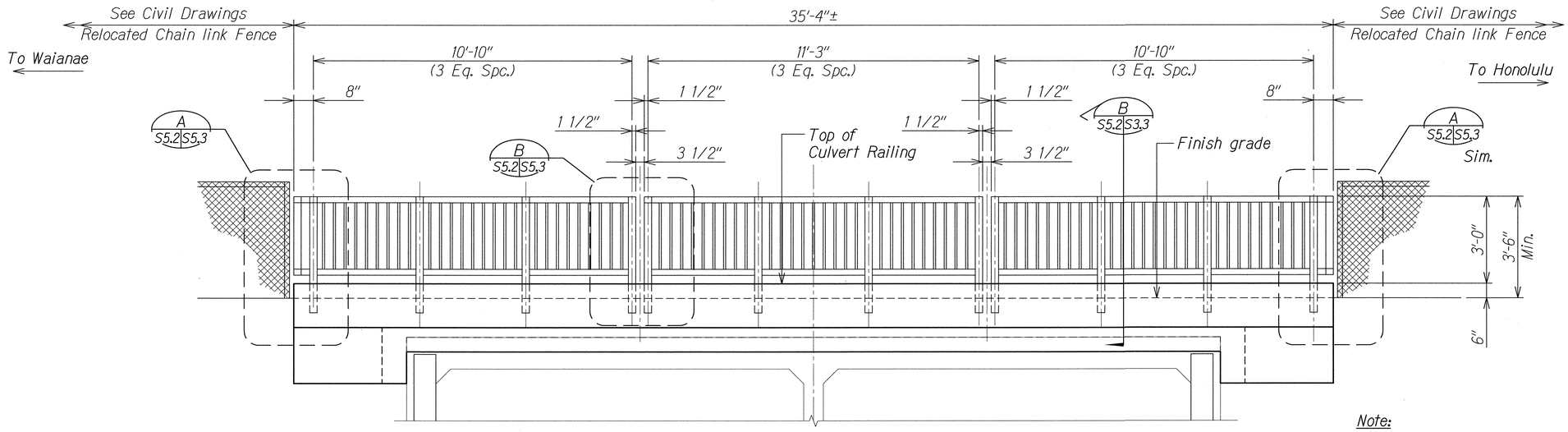
DATE	REVISION
11/08/13	1 Add. 1 - Added Callouts & Note

ADD. 197

ORIGINAL PLANS PREPARED BY
NOTE BOOK
No.
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-S501 ADD1.DWG PLOT TIME: 11-04-13, 5:01 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	198	230



Note:
See sheet S5.3 for FRP pedestrian railing sections and details.

ELEVATION - FRP PEDESTRIAN RAILING AT CULVERT EXTENSION

A S5.2 | S5.2

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

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

DRAWING NAME: Z:\00 ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\07-17-13 FINAL 100%\FHU-SS01.DWG PLOT TIME: 07-16-13, 4:15 PM)

DAVID K. FUJINAKA
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LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

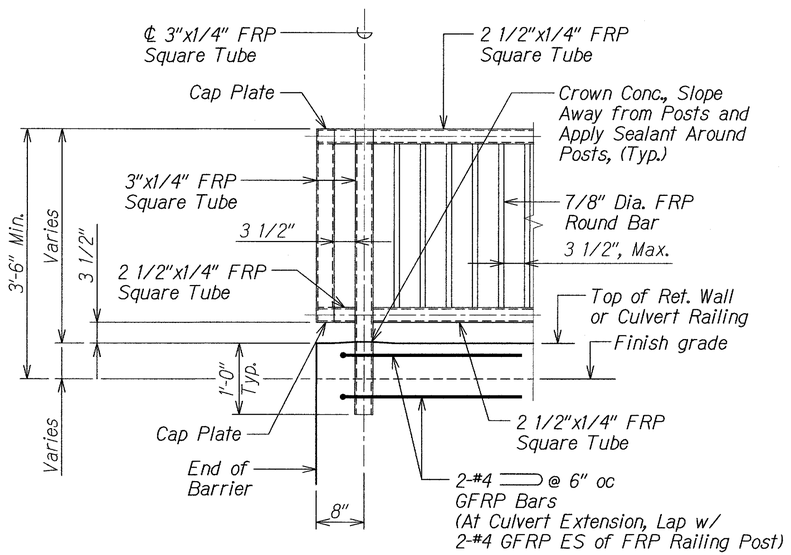
FRP PEDESTRIAN RAILING ELEVATION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S5.2 OF 3 SHEETS

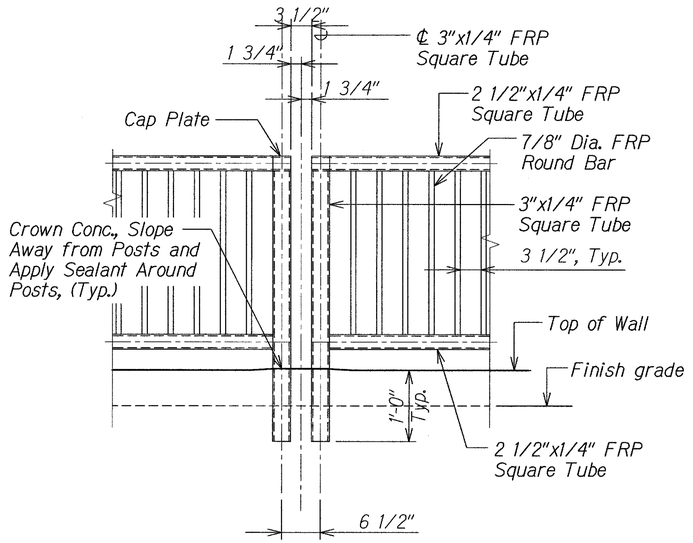
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 199	230



ELEVATION - END CONDITION FRP PEDESTRIAN RAILING ON RET. WALL OR CULVERT EXTENSION

Scale: 1" = 1'-0"

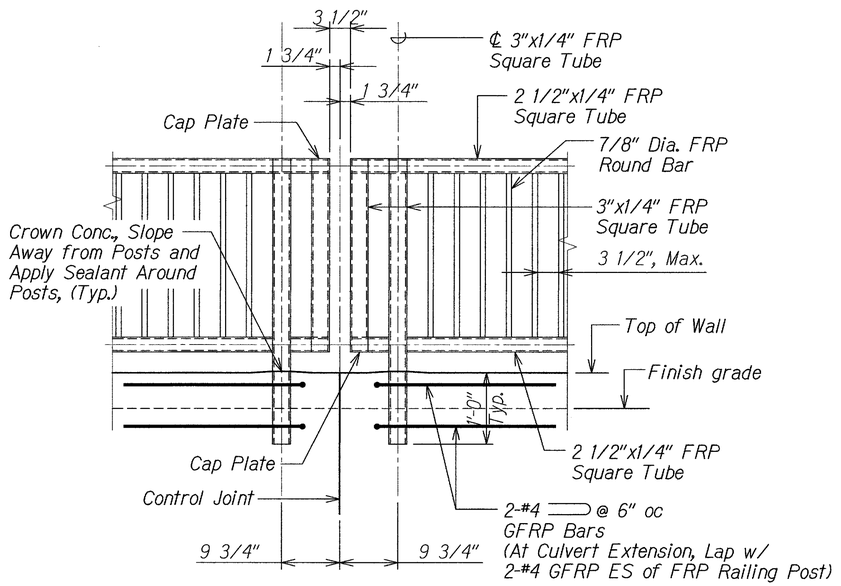
A — S5.1 | S5.3 — S5.2 S5.3



ELEVATION - AT TYPICAL BETWEEN PANEL FRP PEDESTRIAN RAILING ON RET. WALL OR CULVERT EXTENSION

Scale: 1" = 1'-0"

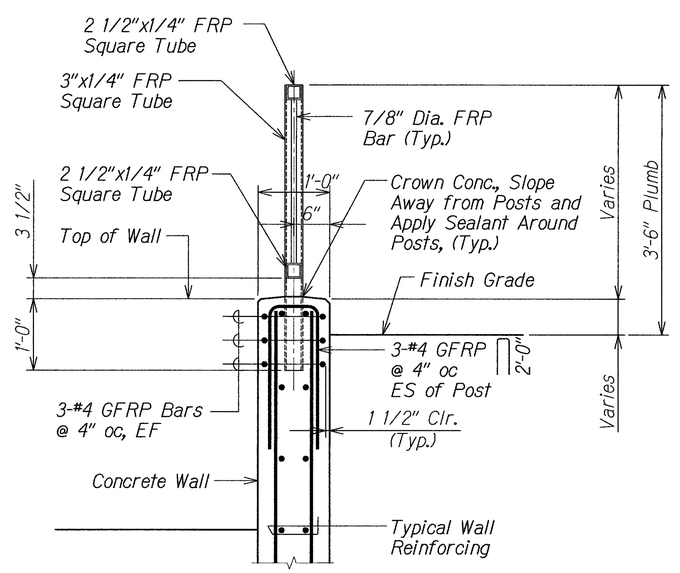
B — S5.1 | S5.3 — S5.2 S5.3



ELEVATION - AT CONTROL JOINT FRP PEDESTRIAN RAILING ON RET. WALL OR CULVERT EXTENSION

Scale: 1" = 1'-0"

C — S5.1 | S5.3 — S5.3



TYPICAL RAILING SECTION

Scale: 1" = 1'-0"

D — S5.3 | S5.3

Notes:

1. Top of railing shall be 3'-6" above finish grade adjacent to the railing.
2. Control joints in the walls or barriers shall match railing joints.
3. All openings in railing shall be capped and sealed to prevent water intrusion.
4. Reinforcing at post locations is shown for concrete retaining wall only. See sheet S3.3 for condition at culvert extension.
1. 5. See Special Provisions Section 507.03 (B) (7) for painting details

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FRP PEDESTRIAN RAILING ELEVATIONS AND SECTION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown — Date: April 2013

SHEET No. S5.3 OF 3 SHEETS

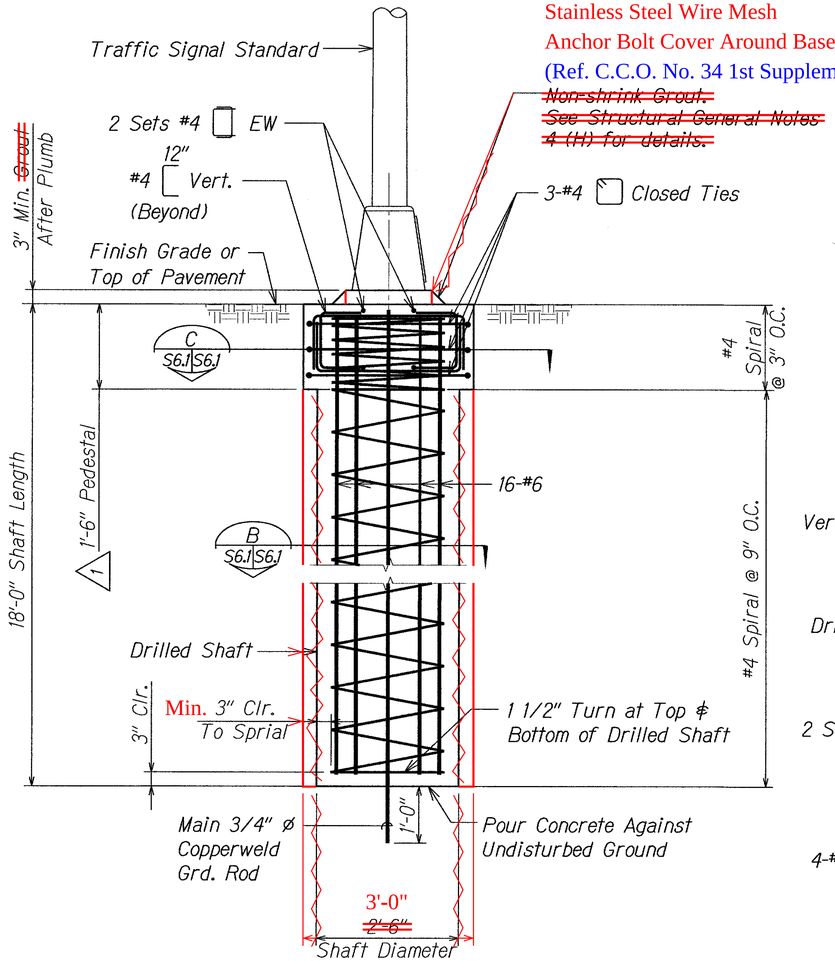
DATE	REVISION
11/08/13	1 Add. 1 - Added Note

ADD. 199

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

DRAWING NAME: Z:\DO ONGOING\12-028-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\FHU-SS01 ADD1.DWG PLOT TIME: 11-04-13, 5:01 PM)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	ADD. 200	230



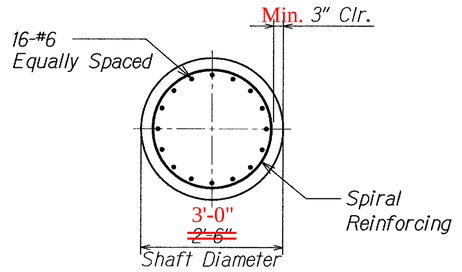
Stainless Steel Wire Mesh
Anchor Bolt Cover Around Base Plate
(Ref. C.C.O. No. 34 1st Supplement)
~~Non-shrink Grout.~~
~~See Structural General Notes 4 (H) for details.~~

3-#4 Closed Ties

[Ref. C.C.O. No. 30 (Typ.)]

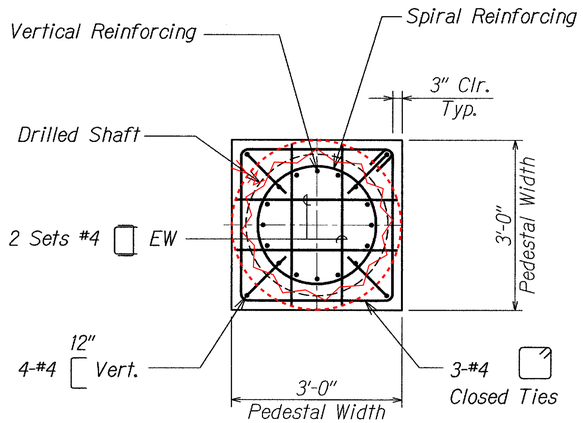
TYPICAL POLE FOUNDATION A S6.1 S6.1

Scale: 3/4" = 1'-0"



SECTION B S6.1 S6.1

Scale: 3/4" = 1'-0"



SECTION C S6.1 S6.1

Scale: 3/4" = 1'-0"

Notes:

1. See Civil drawings for additional details.
2. Traffic Signal Standard manufacturer's recommendations shall be followed.

Drilled Shaft Schedule

	Shaft Diameter Inch	Shaft Length Feet	Pedestal Width Inch	Vertical Reinforcing	Spiral Reinforcing
Type II - Traffic Signal Standard	36 ~~30~~	18	36	16-#6	#4 @ 9"

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL TRAFFIC SIGNAL POLE FOUNDATION

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: As Shown Date: April 2013

SHEET No. S6.1 OF 1 SHEETS

DATE	REVISION
11/08/13	1 Add. 1 - Modified Callout

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

DRAWING NAME: Z:\00 ONGOING\12-026-FARRINGTON HWY NANAKULI TO HALEAKALA-ULEHAWA\CAD\11-08-13 ADD1\PHU-S601 ADD1.DWG PLOT TIME: 11-04-13, 5:02 PM)

"AS-BUILT"

ADD. 200