FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	39	109

INDEX TO BRIDGE DRAWINGS

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INDEX TO BRIDGE DRAWINGS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S0.1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	40	109

BRIDGE GENERAL NOTES

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

2. DESIGN SPECIFICATIONS:

   A. AASHTO LRFD Bridge Design Specifications Ninth Edition (2020) including all subsequent interim revisions and editions.

   B. State of Hawaii Department of Transportation Highways Division "Design Criteria for Bridges and Structures" dated August 8, 2014 including subsequent interim revisions.

   C. AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition (2017).

3. LOADS:

   A. Dead Loads: Concrete self weight assumed to be 160 pcf.

   B. Live Load: AASHTO HL-93 Loading.

   C. Seismic Loads:
   In accordance with (AASHTO) 2014 LFRD Bridge Design Specifications, 7th Edition, including the 2015 interim Revision Edition. Peak Ground Acceleration (PGA = 0.065g), modified by the Site Coefficient (F_{PGA} = 1.6) to give a spectrum acceleration, A_S = 0.104g. Short period acceleration at 0.2 seconds (S_S = 0.143g) modified by the site coefficient (F_a = 1.600) to give the short period spectrum acceleration, S_{DS} = 0.228g. Long period acceleration at 1.0 seconds (S_1 = 0.042g) modified by the Site Coefficient (F_V = 2.400) to give the long period spectrum acceleration, S_{D1} = 0.100g. Site Class = D. Seismic Zone = 1. Operational Category = Essential.

   D. Utility Load: An allowance of 150 plf on each side of bridge for utility loads has been provided for in the design.

   E. Railing Test Level: TL-3

   F. Future wearing surface: 25 psf curb to curb.

4. MATERIALS:

   A. All concrete properties shall be as noted below:

Item No.	Structural Parts	Minimum Compressive Strength, f'c (28 Days)	Maximum Water/ Cement (W/C)	Included Admixtures*
(1)	Drilled Shafts	5,000 psi	0.45	4.(B)
(2)	Shaft Cap Beam	6,000 psi	0.40	4.(B), 4.(C), 4.(D)
(3)	End Beam	6,000 psi	0.40	4.(B), 4.(C), 4.(E)
(4)	All Others	5,000 psi	0.45	4.(B)

*Refer to notes 4.(B) through 4.(E) in this section

4. MATERIALS (Cont.):

   B. Amine carboxylate corrosion inhibiting water-based admixture such as Cortec MCI 2005 NS or approved equal shall be added at a dosage of 24 ounces per cubic yard.

   C. Shrinkage reducing admixture such as Eclipse 4500 or Masterlife SRA 20 or approved equal shall be added at a dosage of 128 ounces per cubic yard or as recommended by the manufacturer.

   D. Alkali resistant structural glass fiber such as CEMFIL, ANTI-CRAK HP67/36 or approved equal shall be added to the concrete mix. The dosage rate shall be 15 lbs per cubic yard for CEMFIL or the equivalent amount of approved equal to achieve similar properties as the glass dosage. The fiber shall be added to the concrete as recommended by the manufacturer during the mixing process.

   E. A structural fiber such as 2 1/4" long Forta Ferro Fiber or approved eequial shall be added to the concrete mix. The dosage rate shall be 7.5 lbs per cubic yard or the equivalent amount of approved equal to achieve similar properties as the glass dosage. The fiber shall be added tot he conrete as recommended by the manufacturer during the mixing process.

   F. The use of calcium chloride in any concrete is prohibited.

   G. All concrete exposed within 7 days of placement shall be cured using Sinak Lithium Cure 1000 or approved equal at a coverage rate of no less than 400 sq. ft. per gallon.

   H. All reinforcing steel shall be ASTM A615 Grade 60 deformed bars unless otherwise noted.

   I. Epoxy for anchoring deformed bars shall be HILTI-RE 500V30 or approved equal. Manufacturer's recommendations shall be followed.

5. REINFORCEMENT:

   A. The covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:

      (1) Deck Slabs
         a. Top Bars = 2 1/2"
         b. Bottom Bars = 1 1/2"

      (2) Concrete cast against and permanently exposed to earth = 3"

      (3) All others unless otherwise noted = 2"

   B. Reinforcing bars shall be detailed in accordance with the latest edition of the AASHTO LRFD bridge design specifications unless otherwise noted.

5. REINFORCEMENT (Cont.):

   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", whichever is greater.

   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. ELASTOMERIC BEARING PADS:

   A. Top of concrete surfaces receiving elastomeric bearing pads shall be finished with a steel trowel to a smooth level surface to the elevation shown on the plans. Grind down high spots as needed to provide an even bearing surface to 1/16"± tolerance.

   B. To prevent displacement, the bottom of bridge bearing pads shall be secured to the top of the raised piers with adhesives recommended by the Manufacturer and approved by the Engineer.

7. CONSTRUCTION NOTES:

   A. 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.

   B. The Contractor shall verify all site conditions and not rely upon these plans for existing, dimensions, elevations and azimuths, stream channel location, roads, roadway gutters, curbs and sidewalks, etc. Conditions may differ from those shown.

   C. 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.

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VBS-S0002 GNOTES.DWG PLOT TIME: 04-05-21 3:32 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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Calvin Miyahara

4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE GENERAL NOTES

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S0.2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	41	109

BRIDGE GENERAL NOTES

7. CONSTRUCTION NOTES (Cont.):

D. 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.

E. Except as otherwise noted, all vertical dimensions are measured plumb.

F. For concrete finish see Standard Specifications and Special Provisions.

G. Construction joints may be relocated or additional ones added subject to the approval of the Engineer.

H. Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4" x 3/4".

I. The Contractor shall verify the location and size of all existing reinforcing bars prior to drilling.

J. Location of drilled holes shown in plans are approximate. Prior to placing holes in concrete, the Contractor shall locate all reinforcing steel anchor bolts, thru bolts holes, etc. and adjust the location of the drilled holes to be clear all of them. Final hole locations are subject to the approval of the Engineer.

K. Drilled holes in existing concrete for reinforcing steel dowels shall not be left unfilled for more than 8 hours. Epoxy in drilled holes shall be able to develop the full strength of the dowels prior to pouring concrete around reinforcing steel dowels. Follow all epoxy manufacturer's recommendations for dowel, drilling and epoxy. Coring of holes will not be allowed unless approved by Engineer.

L. Contractor shall unplug, clean existing drains and manholes at the start of the project and maintain them during the entire duration of the project.

M. When only portions of concrete are to be demolished, the interface between the demolished concrete and the concrete that is to remain shall have a 3/4 inch deep sawcut around the entire perimeter of the demolished area.

N. Construction joints between separate pours shall not be feather edged. All joints shall be made square and vertical prior to pouring, unless otherwise noted.

O. The concrete surfaces which new concrete is poured against shall be roughened to a full amplitude of 1/4 of an inch and cleaned.

P. All existing reinforcing shall remain in place and shall not be damaged in any way unless otherwise noted.

7. CONSTRUCTION NOTES (Cont.):

Q. All existing reinforcing that is to remain in place shall have a minimum concrete cover of 1 1/2". All concrete, rust and other deleterious material that affects bonding to the concrete shall be removed from the reinforcing steel before concrete is poured around it.

R. The Contractor shall submit working drawings and calculations for the proposed temporary work platform, new bridge construction, jacks, temporary shoring for existing bridge, and existing bridge superstructure. The existing bridge superstructure shall be checked for all temporary conditions during construction. Temporary work platform, jacks and temporary shoring shall follow the design criteria stated in Items 1, 2 and 3 in the Bridge General Notes. During construction the existing bridge superstructure shall be able to carry all present loads. The drawings and calculations shall be stamped by a licensed Hawaii Structural Engineer. The drawings and calculations shall be found acceptable by the Engineer before any construction work is to proceed.

S. Lead and bronze is present on the bridge. Cost for the removal, handling, and disposing of lead and bronze shall be considered incidental to the Proposal Schedule Item 202.0100 - Removal of Concrete.

8. GENERAL:

A. All items not shown on the proposal schedule will not be paid for separately and shall be considered incidental to the various pay items.

B. Standard Plans refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.

C. Plans of the existing bridge are available for review from the Highways Design Branch located at the State Department of Transportation, Highways Division, Kakuhihewa Building, Room 609, 601 Kamokila Boulevard, Kapolei, HI 96707.

D. Existing structure has not been checked with the design loads in Item 3. Design loads in item 3 are applicable only to the design of new concrete elements and elastomeric bearing pads shown in the structural plans.

ORIGINAL PLAN
NOTE BOOK No.
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DRAWING NAME: Z:\DO ONGOING\29-016-WAILUA PCR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0002 GNOTES.DWG PLOT TIME: 04-05-21, 3:32 PM)

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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Calvin Miyahara 4-30-22
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STATE OF HAWAI'I
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HIGHWAYS DIVISION

BRIDGE GENERAL NOTES

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S0.3 OF 4 SHEETS

SYMBOLS AND ABBREVIATIONS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	42	109

∉	And
@	At
Ø	Diameter
≥	Greater Than or Equal to
≤	Less Than or Equal to
#	Number
Abut.	Abutment
Abbr.	Abbreviation
Add.	Additional
Alt.	Alternate
AB	Anchor Bolt
AC	Asphaltic Concrete
Approx.	Approximate
Az.	Azimuth
Bk.	Back
Bal.	Balance
℄	Baseline
Bm.	Beam
Brg., Brgs.	Bearing, Bearings
BVC	Beginning of Vertical Curve
Bet.	Between
BF	Both Faces
BW	Both Ways
BFE	Bottom of Footing Elevation
Bot., Bott., B	Bottom
BOF	Bottom of Footing
Br.	Bridge
Blt.	Bolt
Cant.	Cantilever
CIP	Cast Iron Pipe
	Cast-In-Place
℄	Center line
CG	Center of Gravity
cc	Center to Center
CFCW	Continuous Flashing Compound Waterproofing
Cl.	Class
Clr.	Clearance
CO	Clean Out
Col.	Column
Conc.	Concrete
CBW	Concrete Barrier Wall
CMU	Concrete Masonry Unit
CRM	Concrete Rubble Masonry
Conn.	Connection
Const.	Construction
CJ	Construction Joint
Cntl. Jt.	Control Joint
CLSM	Controlled Low Strength Material
Cont.	Continuous
CSL	Crosshole Sonic Log
CF	Cubic Feet
CY, Cu. Yd.	Cubic Yard
Demo.	Demolish, Demolition
Det.	Detail
Dia.	Diameter
Diaph.	Diaphragm
Dim.	Dimension
Dist.	Distance
DO	Ditto
Dwls.	Dowels
Dn.	Down
Dbl.	Double
DI	Drain Inlet, Ductile Iron
Dwg., Dwgs.	Drawing, Drawings
DS	Drilled Shaft
E	East
EA, Ea., ea.	Each
EF	Each Face
EFH	Each Face Horizontal
EFV	Each Face Vertical
EW	Each Way
EPE	Existing Edge of Pavement
EPS	Expanded Polystyrene
ES	Edge of Shoulder
Elec.	Electrical
EMH	Electrical Manhole
El., Elev.	Elevation
Emb.	Embankment
EVC	End of Vertical Curve
Eq.	Equal
Est.	Estimated
Exc.	Excavation
Excl.	Excluding
Exist., Ex.	Existing
Exp., (E)	Expansion
EJ	Expansion Joint
Ext.	Exterior
(F)	Fixed
FA	Force account
FB	Flat Bar
FC	Compression Stresses
f'c	Specified Compressive Strength of Concrete at 28 days
f'ci	Specified Compressive Strength of Concrete at Time of Initial Prestress
FF	Far Face, Front Face
Fig.	Figure
Fin. Gr.	Finish Grade
FRP	Fiberglass Reinforced Plastic
FT	Tensile Stresses
Ftg.	Footing
Ft.	Feet, Foot
Ga.	Gage, Gauge
Galv.	Galvanized
G, Gir.	Girder
GDI	Grated Drain Inlet
GFRP	Glass Fiber Reinforced Polymer Rebar
Gr.	Grade
Grd.	Ground
GRP	Grouted Rubble Pavement
Ht.	Height
(H)	Hinge
Horiz., H	Horizontal
HDOT	State of Hawaii Department of Transportation
HDPE	High Density Polyethylene
HS	High strength
HECO	Hawaiian Electric Company
IB	Inbound
In.	Inch
ID	Inside Diameter
IF	Inside Face
Int.	Interior
Inv.	Invert
Jt.	Joint
K	Kips
KF	Kip Foot
KSF	Kips Per Square Foot
KSI	Kips Per Square Inch
KLF	Kips Per Linear Foot
L	Length
lb., lbs., LBS.	Pound, Pounds
Ltg. Std.	Lighting Standard
LF, Lin. Ft.	Linear Feet/Foot
LS	Lump Sum
Longit.	Longitudinal
M	Modified
MH	Manhole
Max.	Maximum
Mech.	Mechanical
Min.	Minimum
Misc.	Miscellaneous
MPH	Miles Per Hour
NF	Near Face
N	North
NIC	Not in Contract
No.	Number
NTS	Not to Scale
O/S	Offset
oc	On Center
Opn'g	Opening
OB	Outbound
OD	Outside Diameter
OG	Outside Girder, Outbound Girder
Perf.	Perforated
PL	Plate
PCC	Portland Cement Concrete
PC	Point of Curvature
PCF	Pounds per Cubic Foot
P(e)	Effective Prestress Force After All Losses
PPM	Parts Per Million
PSF	Pounds per Square Foot
PSI, psi	Pounds per Square Inch
PLF	Pounds per Linear Foot
PI	Point of Intersection of Tangents
PIVC	Point of Intersection of Vertical Curve
PT	Point of Tangency
Pt., Pts.	Point, Points
PRC	Point of Reverse Curvature
PVC	Polyvinyl Chloride
Prestr.	Prestressed
P/S	Prestressed Strands
PB	Pull Box
Rad., R	Radius
RF	Rear Face
Rebar	Reinforcing Bar
Ref.	Reference
Reinf.	Reinforced, Reinforcing, Reinforcement
Req'd.	Required
Ret.	Retaining
ROW	Right of Way
Rdwy.	Roadway
Sect.	Section
SRW	Segmental Retaining Wall
Sht.	Sheet
Sim.	Similar
Sl.	Slope
S	South
Spc., Spg.	Spaces, Spacing
Sprd.	Spread
Spec.	Specification
SF	Square Feet
SY	Square Yard
SS	Stainless Steel
Std.	Standard
Sta.	Station
Stiff.	Stiffener
Stirr.	Stirrup
Stl.	Steel
Str.	Straight
Struct.	Structure
SE	Super Elevation
Symm.	Symmetrical
Tan.	Tangent
TC	Continuity Tendons
Temp.	Temporary
TD	Deck Tendon
Thk.	Thick
T	Top
T∉B	Top and Bottom
TCE	Top of Column (and Bent Cap Soffit) Elevation
TOD	Top of Deck
TOP	Top of Pier
TFE	Top of Footing Elevation
Tot.	Total
Transv.	Transverse
TS	Structural Tubing
TSS	Tendon For Girder in Simply Supported Condition
Typ.	Typical
Undergrd.	Underground
UHPC	Ultra High Performance Concrete
Var.	Varies
Vert., V	Vertical
VC	Vertical Curve
VESLMC	Very Early Strength Latex Modified Concrete
W/C	Water/Cement
w/	With
W	West
WWF	Welded Wire Fabric
WW	Wingwall
WP	Work Point, Working Point
WS	Water Surface
XJS	Expansion Joint System
Yr.	Year

ORIGINAL PLAN | NOTE BOOK No.

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QUANTITIES BY "
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CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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Calvin Miyahara
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4-30-22
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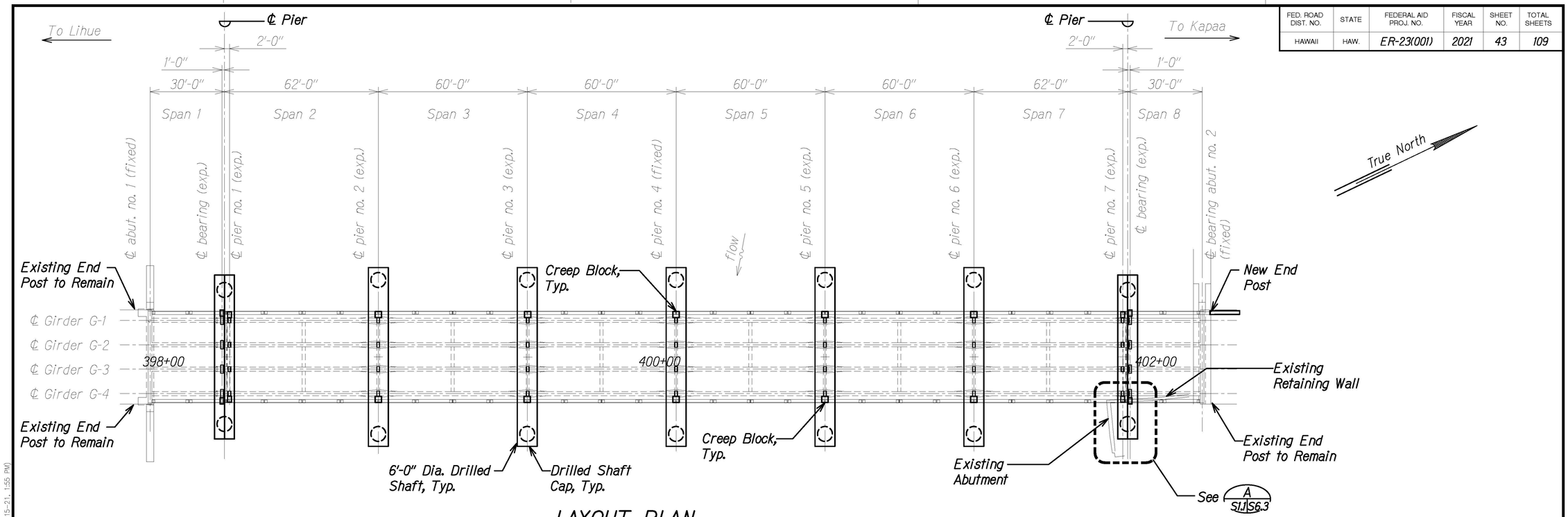
SYMBOLS AND ABBREVIATIONS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

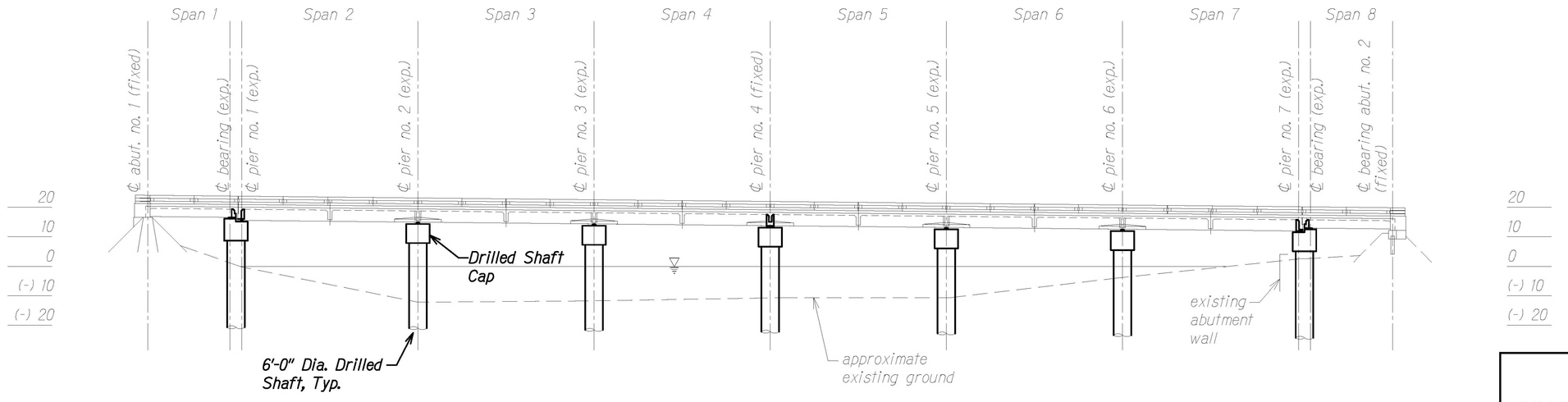
Scale: None Date: Apr. 2021

SHEET No. S0.4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	43	109



LAYOUT PLAN
Scale: 1" = 20"



ELEVATION
Scale: 1" = 20"

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

DRAWING NAME: Z:\OD DIGGING\23-016-WAILUA RVR BR SCOUR-BDT\01 CAD\04-20-21 BID RVSN\WBS-S1\01 LAYOUT PLAN-ELEV.DWG PLOT TIME: 04-15-21, 1:55 PM)

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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HIGHWAYS DIVISION

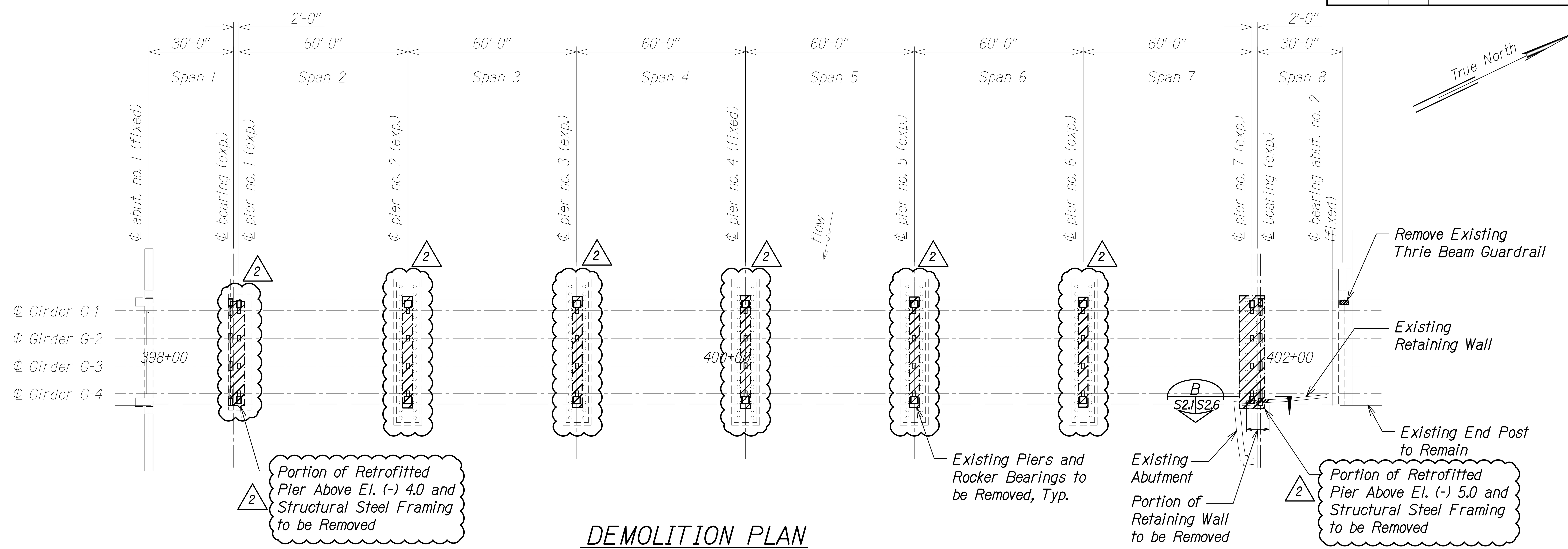
BRIDGE LAYOUT PLAN AND ELEVATION

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S1.1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 44	109



DEMOLITION PLAN

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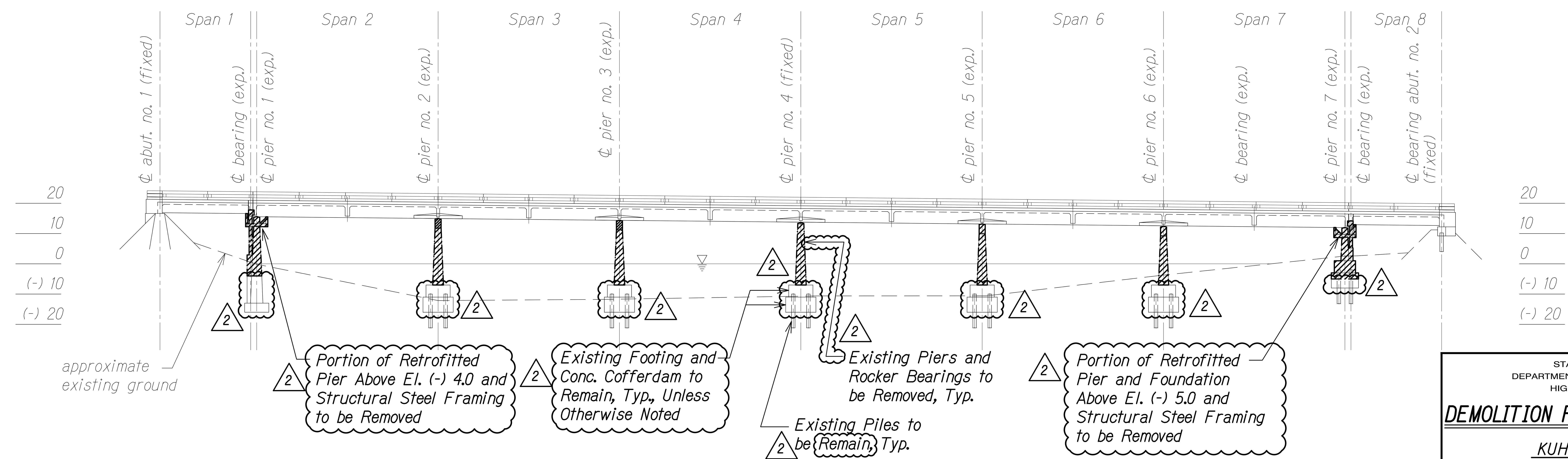

DEMOLITION ELEVATION

Scale: 1" = 20"

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LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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DATE	REVISION
8/27/21	2 Add. 4 - Revised Demolition

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION PLAN AND ELEVATION

KUHIO HIGHWAY

Repairs to Wailua River Bridge

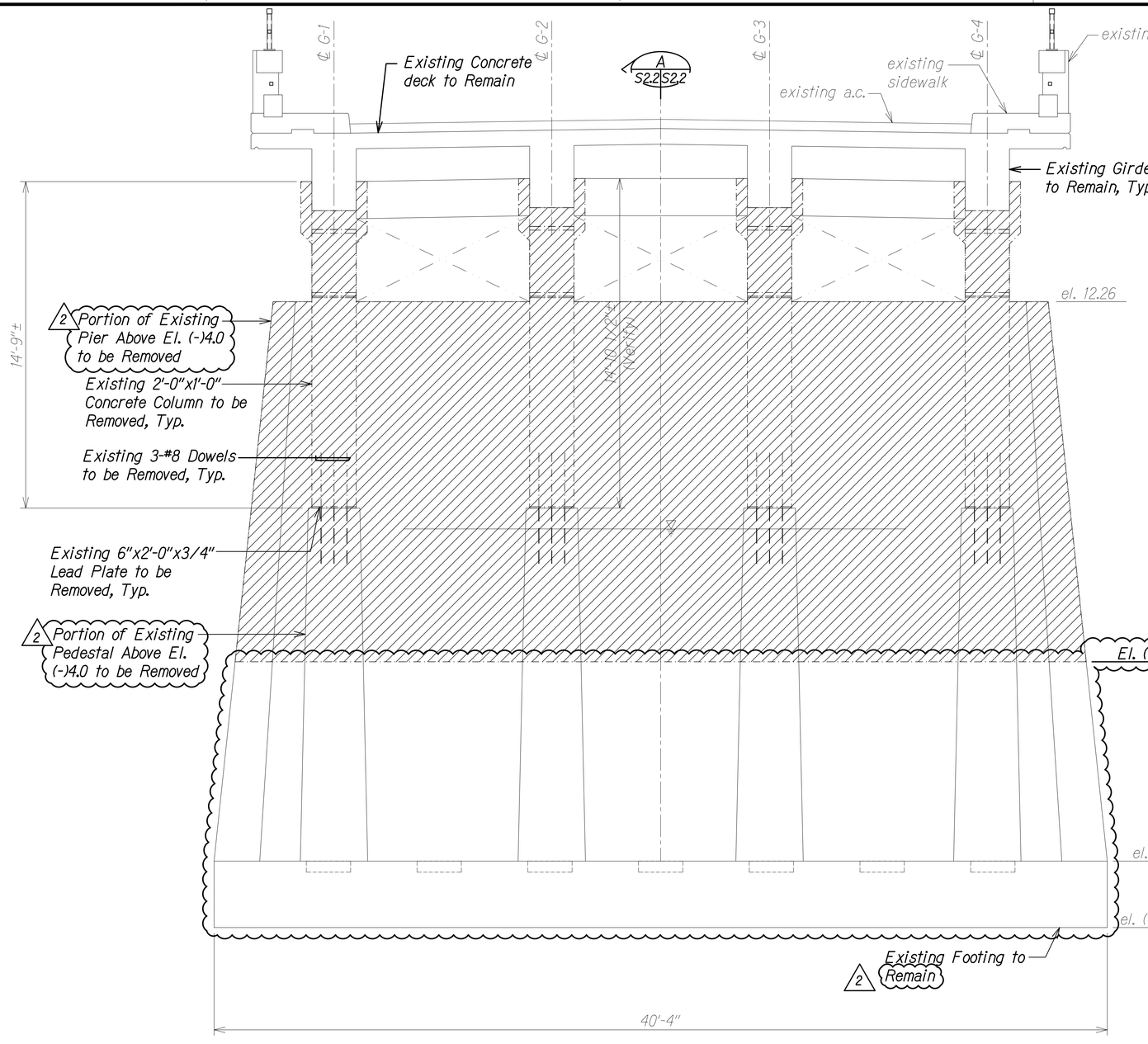
Fed. Aid Project No. ER-23(001)

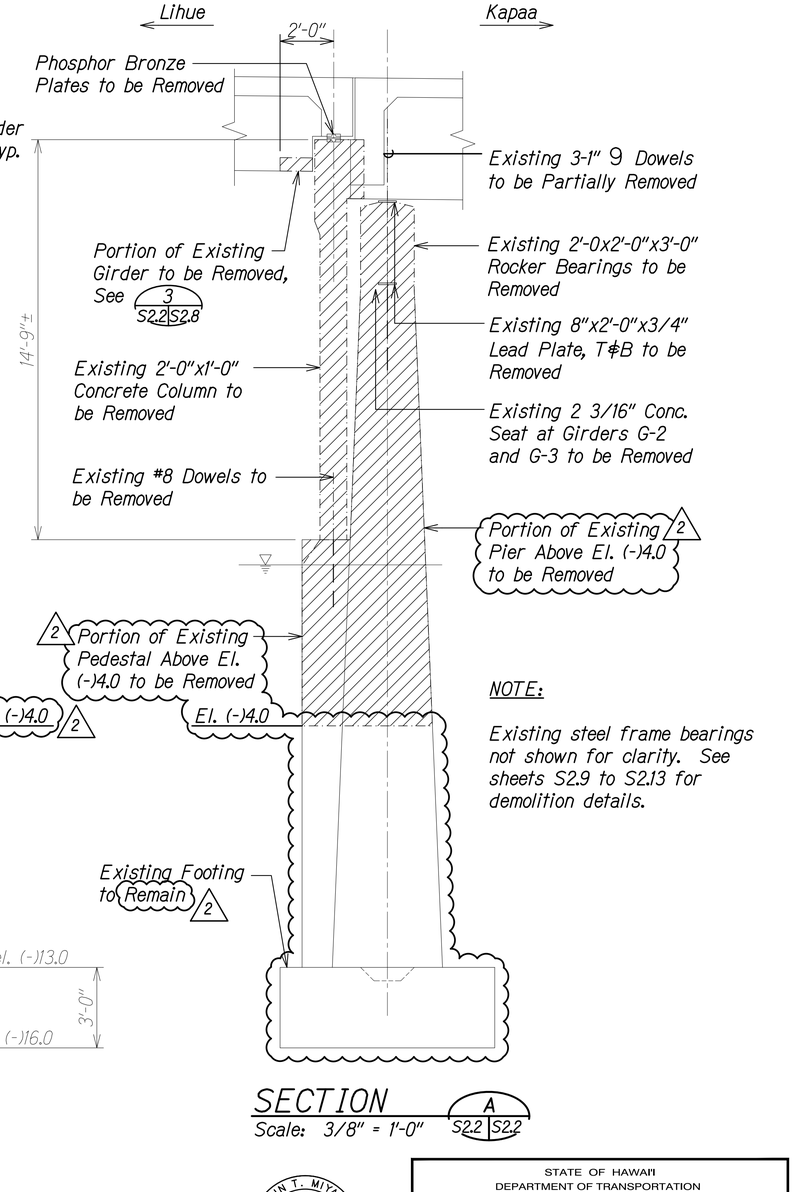
Scale: As Noted — Date: Apr. 2021

SHEET No. S2.1 OF 13 SHEETS

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

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 45	109





NOTE:

Existing steel frame bearings not shown for clarity. See sheets S2.9 to S2.13 for demolition details.

SECTION A S2.2 S2.2

Scale: 3/8" = 1'-0"

LEGEND:

Extent of Demolition

ELEVATION - PIER NO. 1 (LIHUE SIDE)

Scale: 3/8" = 1'-0"

DATE		
8/27/21	2	Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 1 (LIHUE SIDE)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

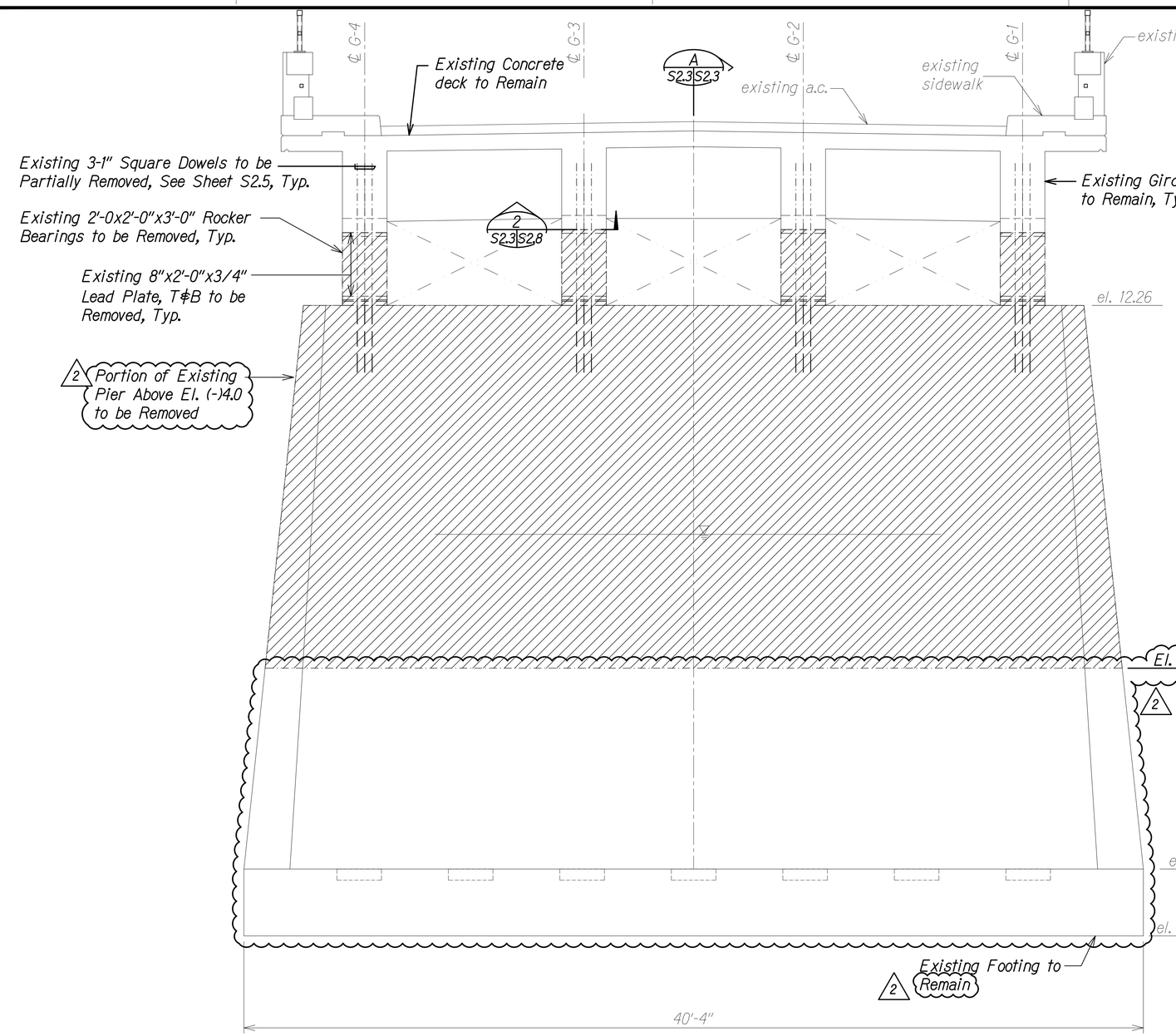
SHEET No. S2.2 OF 13 SHEETS

ADD. 45

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

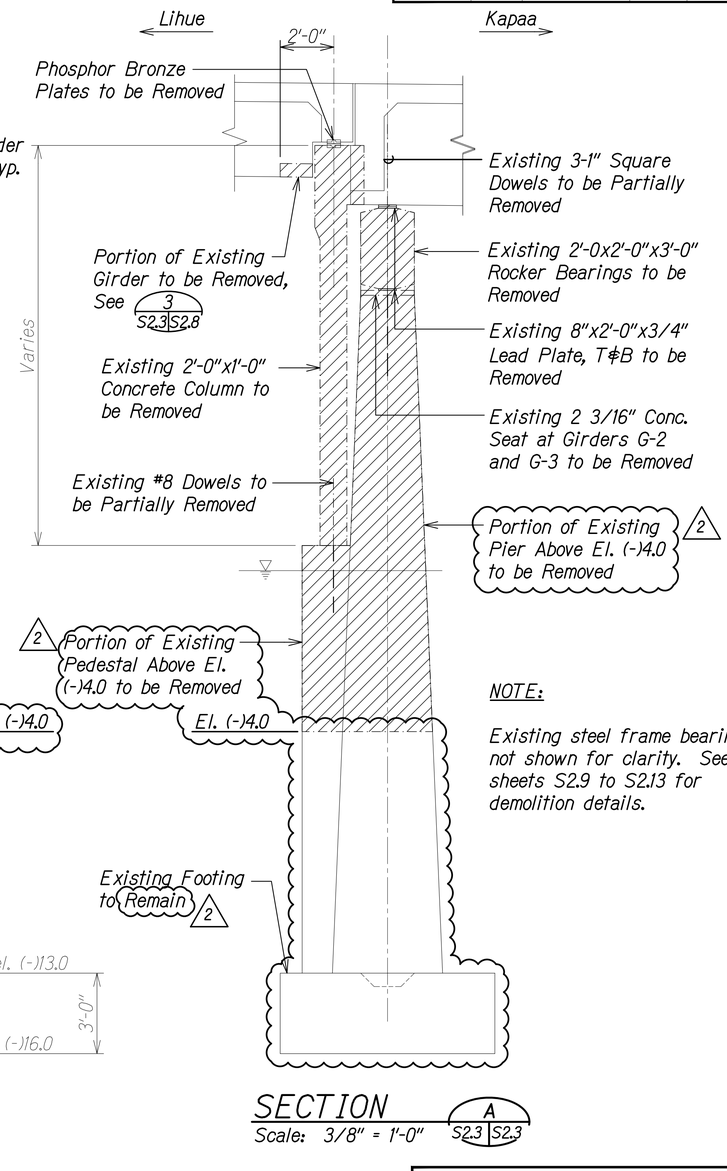
DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\08-27-21 ADD4 DELTA\WBS-50920 DEMO P1-P7 ADD4.DWG PLOT TIME: 08-27-21, 11:05 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 46	109



ELEVATION - PIER NO. 1 (KAPAA SIDE)

Scale: 3/8" = 1'-0"



SECTION A S2.3 S2.3

Scale: 3/8" = 1'-0"

NOTE:

Existing steel frame bearings not shown for clarity. See sheets S2.9 to S2.13 for demolition details.

LEGEND:

Extent of Demolition

DATE		
8/27/21	2	Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 1 (KAPAA SIDE)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

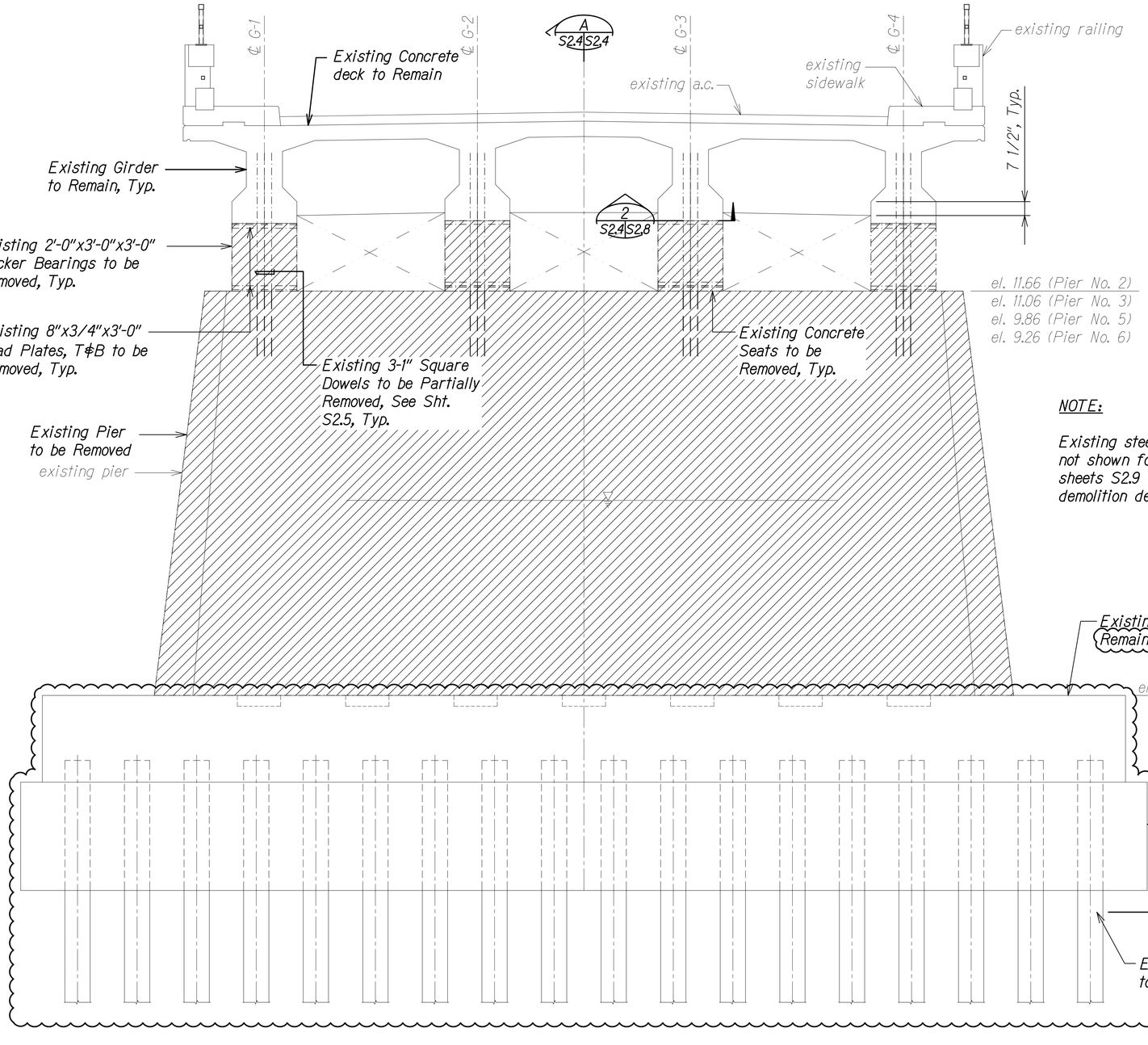
SHEET No. S2.3 OF 13 SHEETS

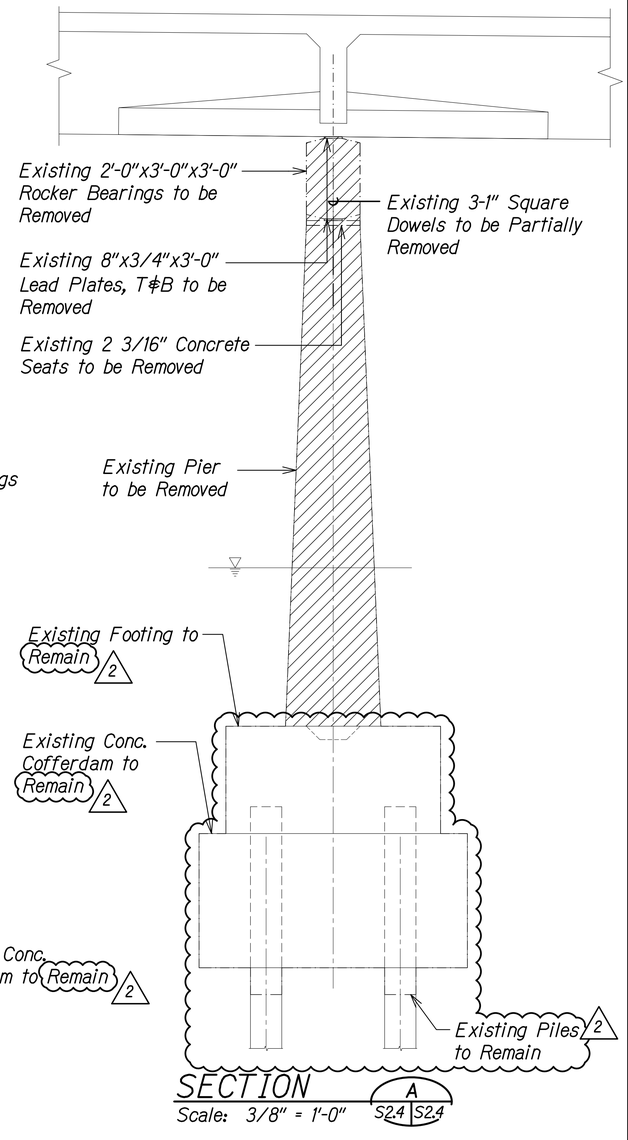
ADD. 46

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

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-BOTY\01 CAD\08-27-21-ADD4 DELTA\WBS-50202 DEMO P1-P7 ADD4.DWG PLOT TIME: 08-27-21, 11:05 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 47	109





SECTION A S2.4 S2.4
Scale: 3/8" = 1'-0"

NOTE:

Existing steel frame bearings not shown for clarity. See sheets S2.9 to S2.13 for demolition details.

LEGEND:

Extent of Demolition

ELEVATION - PIER NO. 2
(PIER NOS. 3, 5 AND 6 SIMILAR)
Scale: 3/8" = 1'-0"

DATE		
8/27/21	2	Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara
SIGNATURE

4-30-22
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 2
(PIER NOS. 3, 5, & 6 SIM.)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

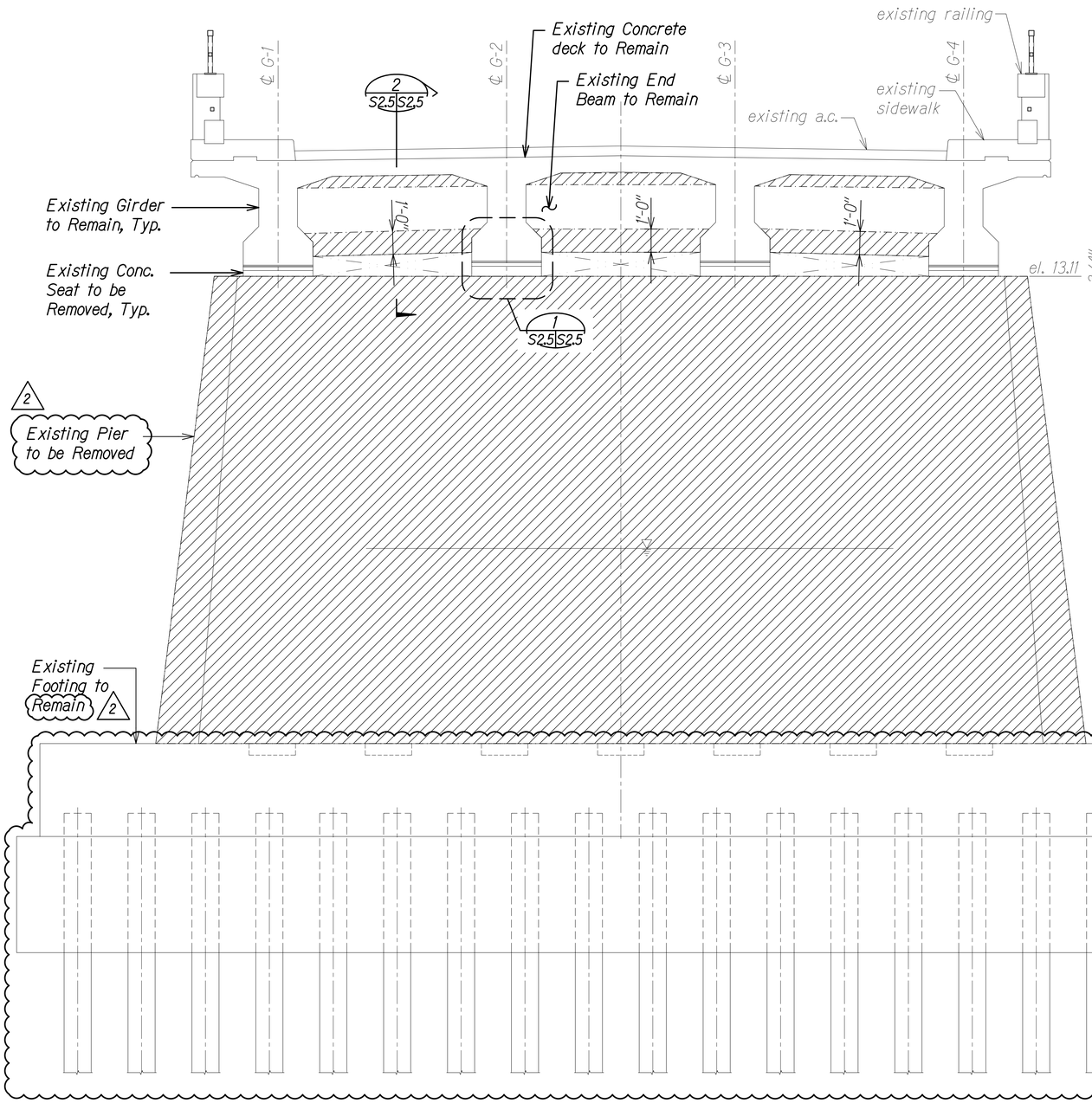
SHEET No. S2.4 OF 13 SHEETS

ADD. 47

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

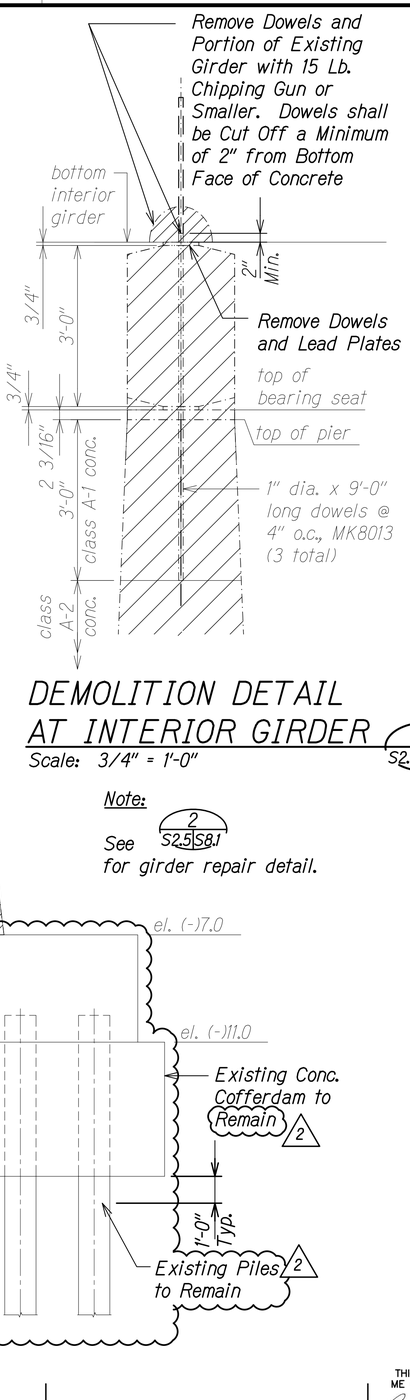
DRAWING NAME: Z:\00 ONGOING\20-016 WAILUA RVR BR SCOUR-DOT\01 CAD\08-27-21\ADD4 DELTA\WBS-S0202 DEMO P1-P7 ADD4.DWG PLOT TIME: 08-27-21, 11:05 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 48	109



ELEVATION - PIER NO. 4

Scale: 3/8" = 1'-0"



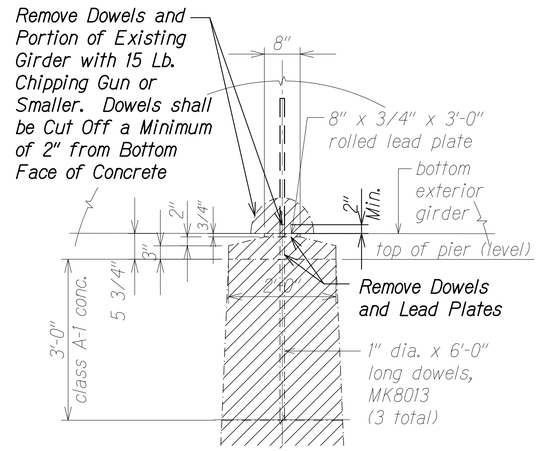
DEMOLITION DETAIL AT INTERIOR GIRDER

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

3 S2.5 S2.5

Note:

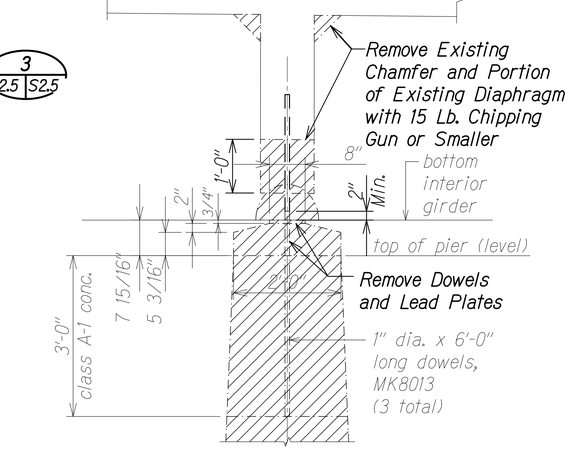
See 2 S2.5 S8.1 for girder repair detail.



DEMOLITION DETAIL AT GIRDER

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

1 S2.5 S2.5



DEMOLITION DETAIL AT END BEAM

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

2 S2.5 S2.5

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

DATE		
8/27/21	2	Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 4

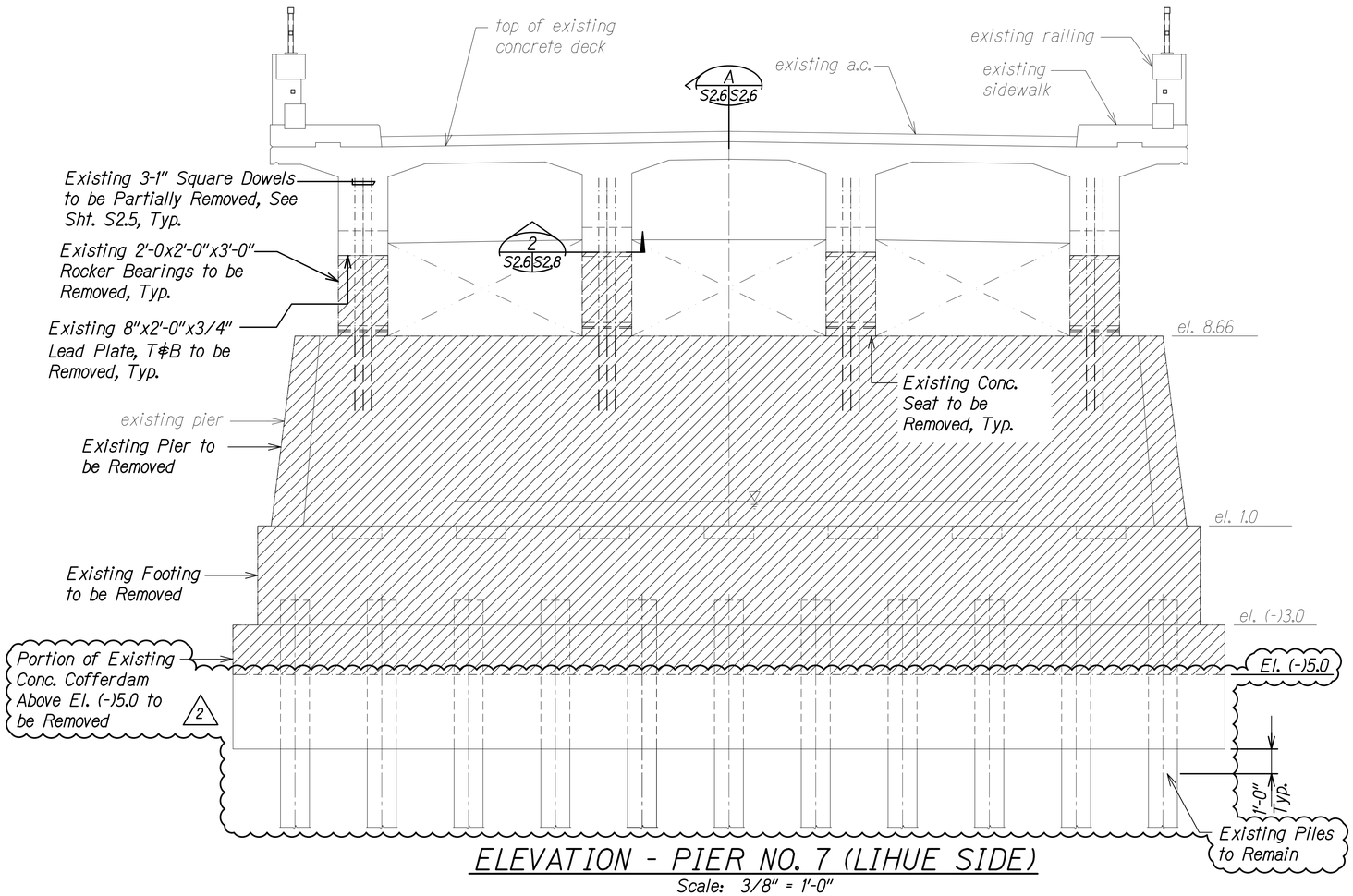
KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S2.5 OF 13 SHEETS

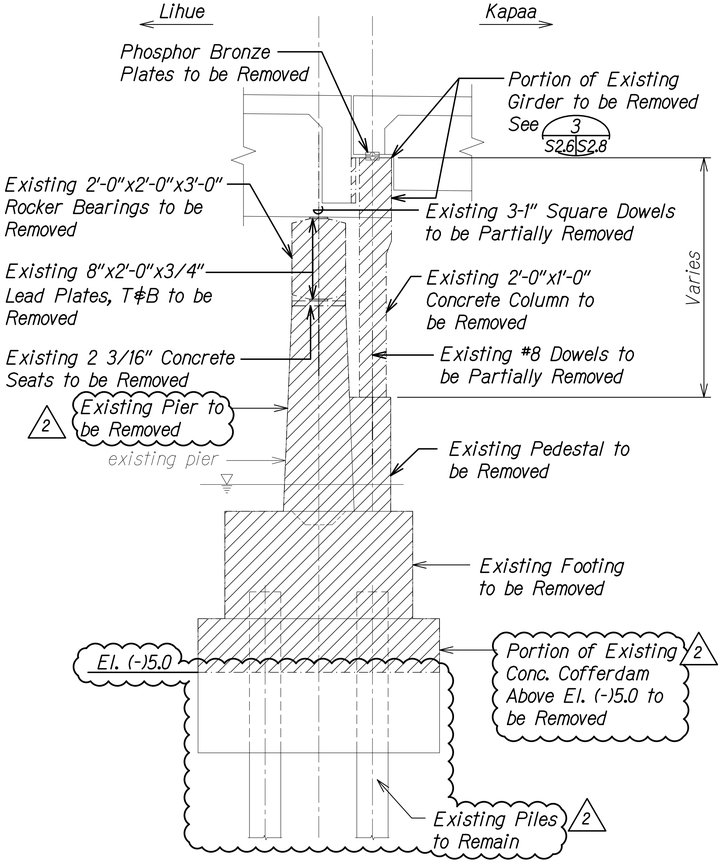
ADD. 48

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 49	109



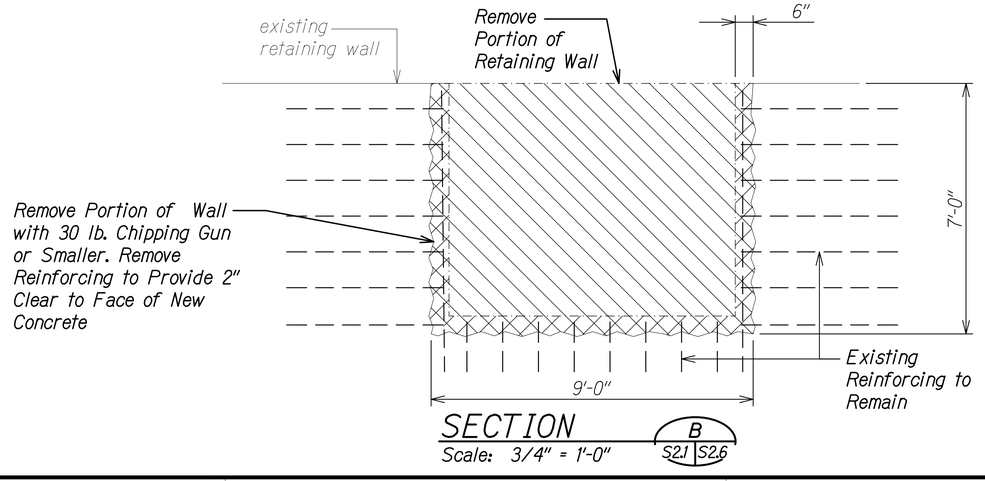
ELEVATION - PIER NO. 7 (LIHUE SIDE)

Scale: 3/8" = 1'-0"



SECTION A

Scale: 3/8" = 1'-0" S2.6 S2.6



SECTION B

Scale: 3/4" = 1'-0" S2.1 S2.6

NOTE:

Existing steel frame bearings not shown for clarity. See sheet S2.12 for demolition details.

LEGEND:

Extent of Demolition

DATE	
8/27/21	2 Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 7 (LIHUE SIDE)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S2.6 OF 13 SHEETS

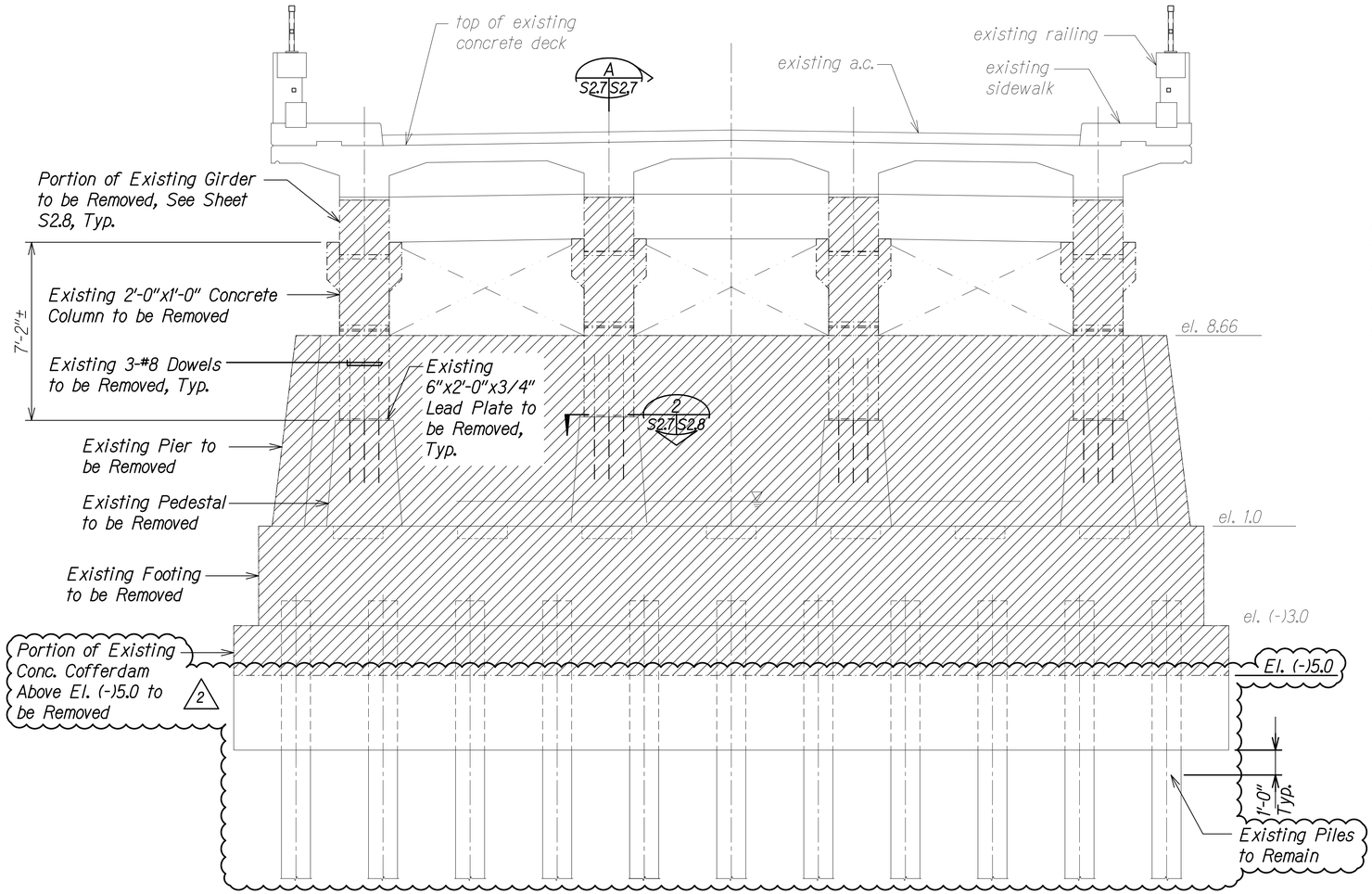
ADD. 49

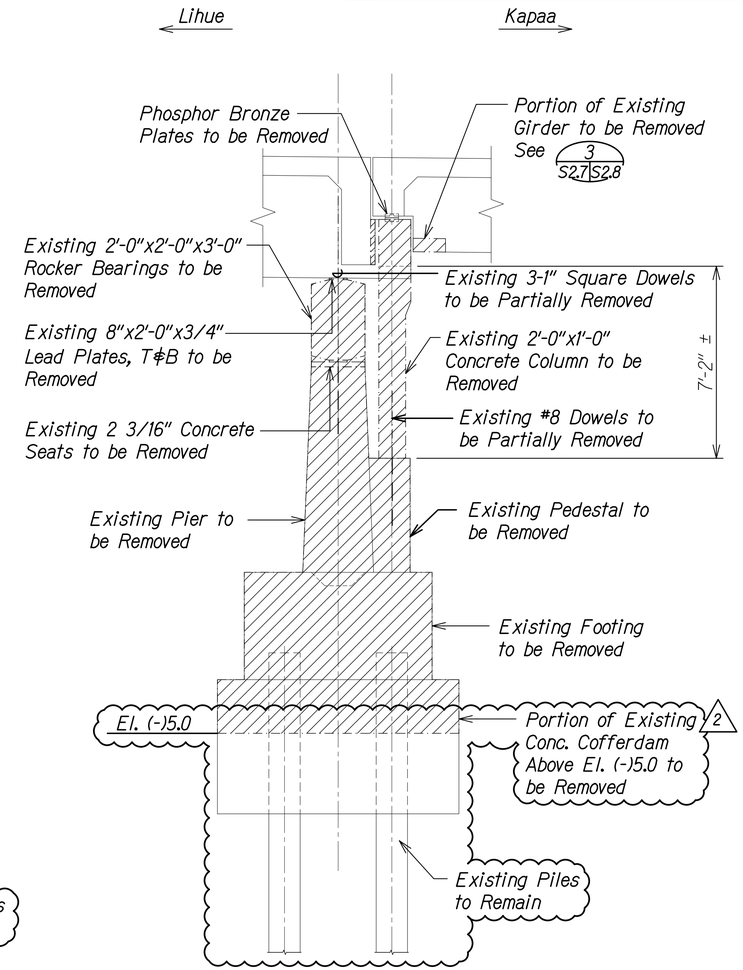
ORIGINAL PLAN | NOTE BOOK No.

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

DRAWING NAME: Z:\OD ENGINEERING\25-016-WAILUA RVR BR SCOUR-BDT\01 CAD\08-27-21-ADD4 DELTA\WBS-59202 DEMO P1-P7 ADD4.DWG PLOT TIME: 08-27-21, 11:06 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 50	109





SECTION A S2.7 S2.7

Scale: 3/8" = 1'-0"

NOTE:

Existing steel frame bearings not shown for clarity. See sheet S2.12 for demolition details.

LEGEND:

Extent of Demolition

ELEVATION - PIER NO. 7 (KAPAA SIDE)

Scale: 3/8" = 1'-0"

DATE		
8/27/21	2	Add. 4 - Revised Demolition

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION AT PIER NO. 7 (LKAPAA SIDE)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

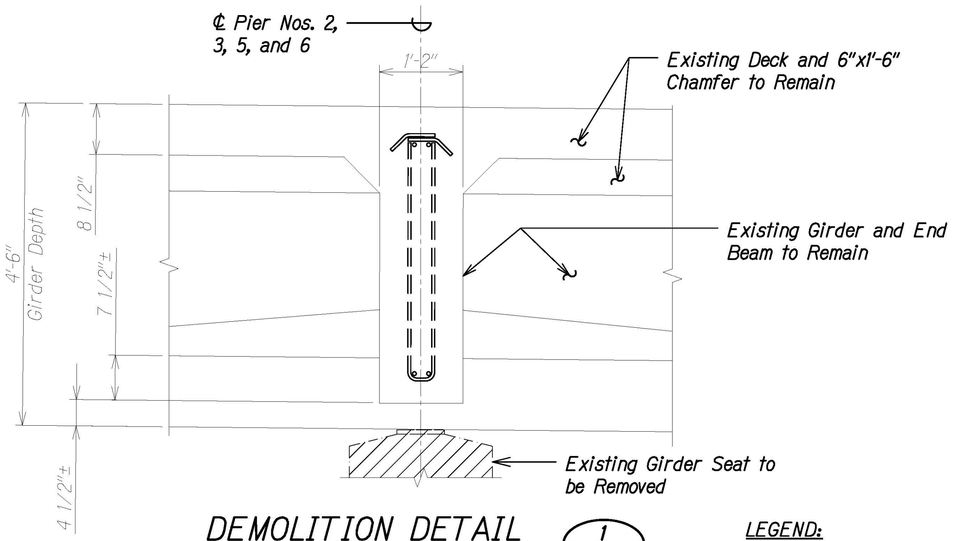
SHEET No. S2.7 OF 13 SHEETS

ADD. 50

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

DRAWING NAME: Z:\OD ONGONGO\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\08-27-21\ADD4 DETAILS\BRS-S0202 DEMO P1-P7 ADD4.DWG PLOT TIME: 08-27-21, 11:06 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	51	109



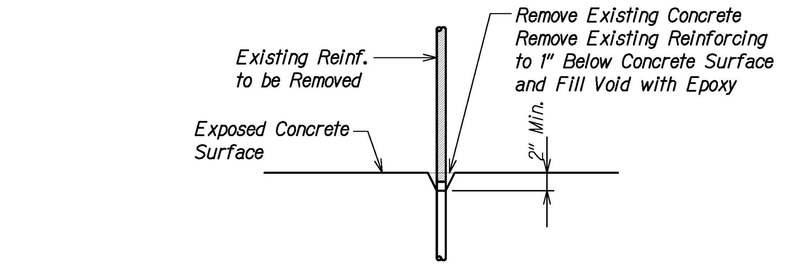
DEMOLITION DETAIL

Scale: 1" = 1'-0"

1 S2.1 S2.8 S2.4

LEGEND:

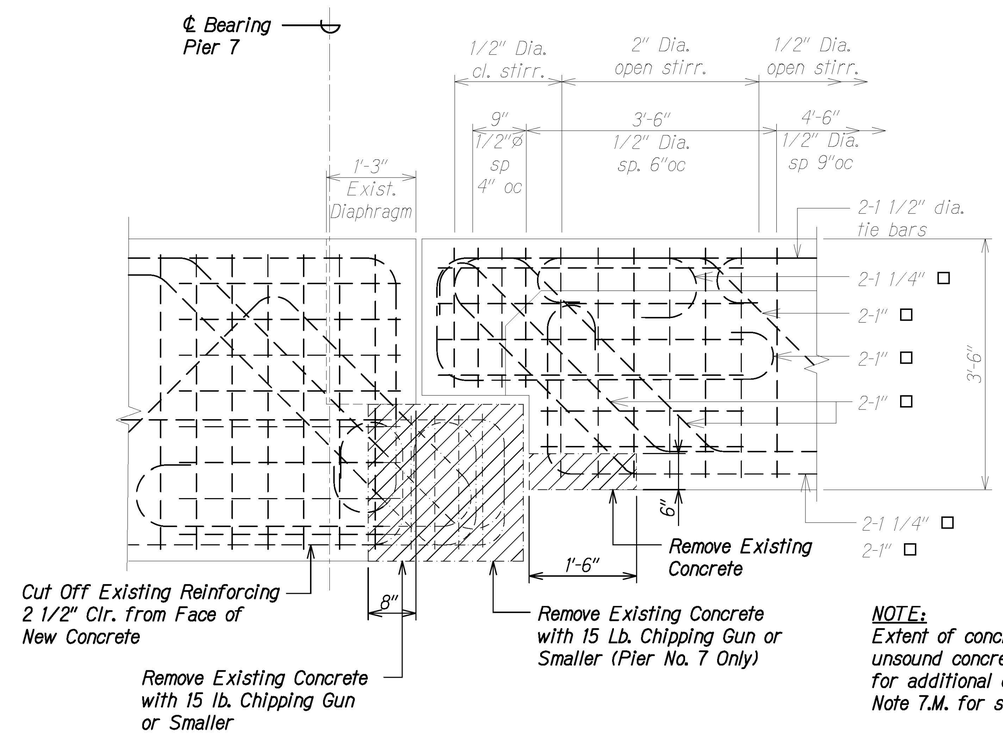
Extent of Demolition



TYPICAL REINFORCING REMOVAL DETAIL

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

2 S2.3, S2.4, S2.6, S2.7 S2.2 S2.8



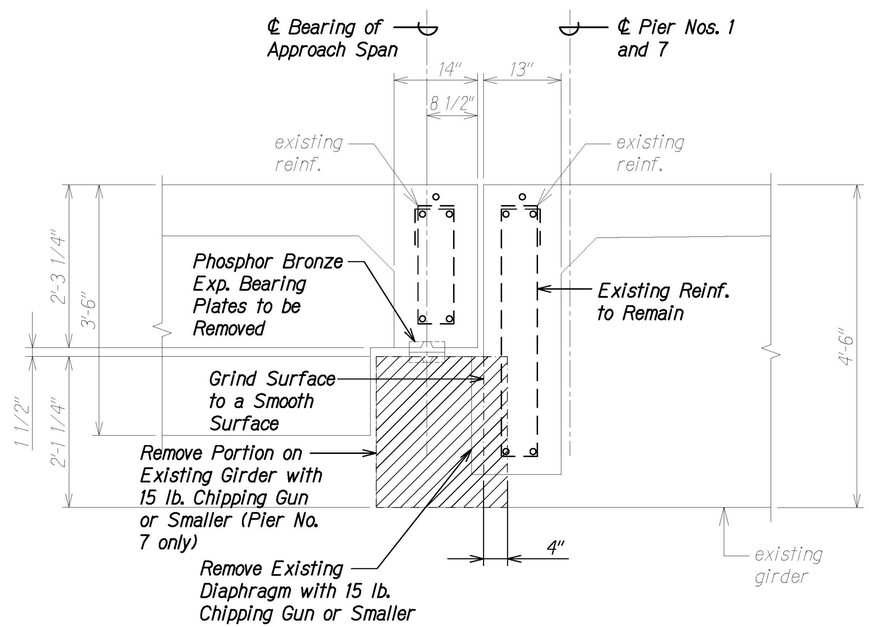
DEMOLITION DETAIL

Scale: 1" = 1'-0"

3 S2.8 S2.8

NOTE:

Extent of concrete removal to include any unsound concrete encountered. Notify Engineer for additional demolition. See Bridge General Note 7.M. for sawcut requirements.



DEMOLITION DETAIL

Scale: 1" = 1'-0"

4 S2.1 S2.8

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

NOTE BOOK | No.

DRAWING NAME: Z:\OD ONGOING\03-016-WAILUA RVR BR SCOUR-BDY\01 CAD\04-05-21 BID\WBS-S0002 DEMO P1-P7.DWG PLOT TIME: 04-05-21, 3:38 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

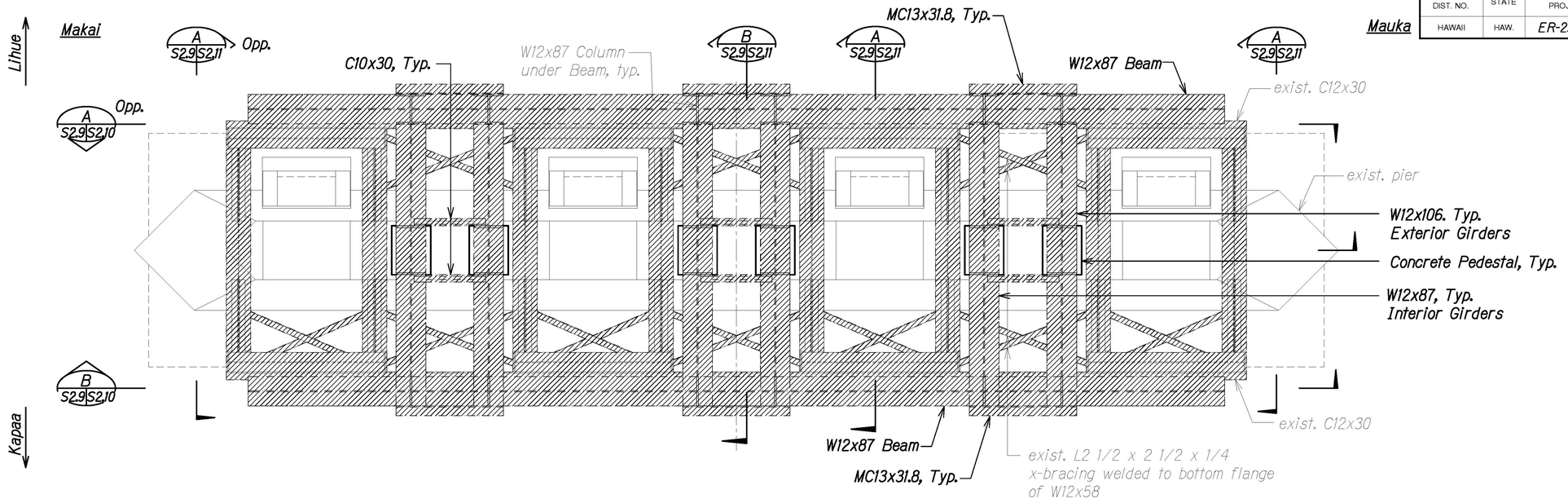
DEMOLITION DETAILS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S2.8 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	52	109



PIER NO. 1 PLAN

A S2.9 S2.9

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

NOTES:

1. Remove all structural steel including added plates, bolts, nuts, bearing pads, and concrete pedestals.
2. For additional steel details see sheets S2.10 and S2.11.
3. For concrete demolition details see sheets S2.2 and S2.3.

LEGEND:

Steel to be Removed

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STEEL DEMOLITION PLAN AT PIER NO. 1

KUHIO HIGHWAY

Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted — Date: Apr. 2021

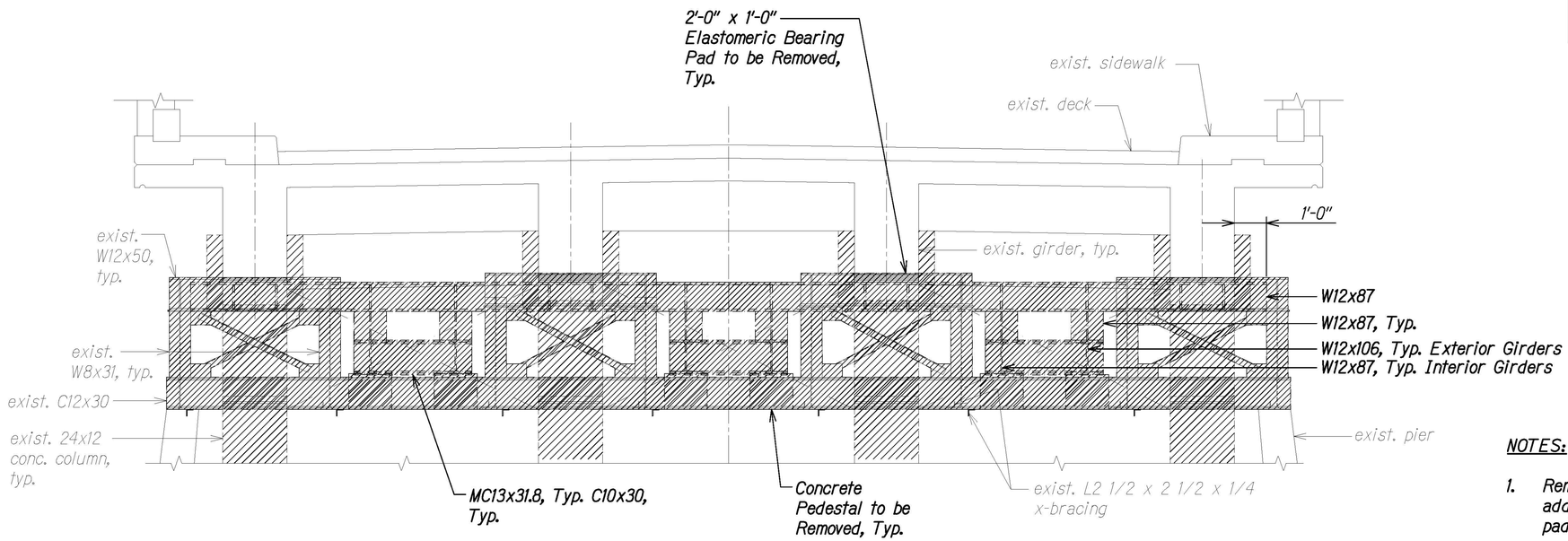
SHEET No. S2.9 OF 13 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY ____ DATE
DRAWN BY ____ "
TRACED BY ____ "
DESIGN BY ____ "
QUANTITIES BY ____ "
CHECKED BY ____ "

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0209 DEMO P1 STL.DWG PLOT TIME: 04-05-21 3:38 PM

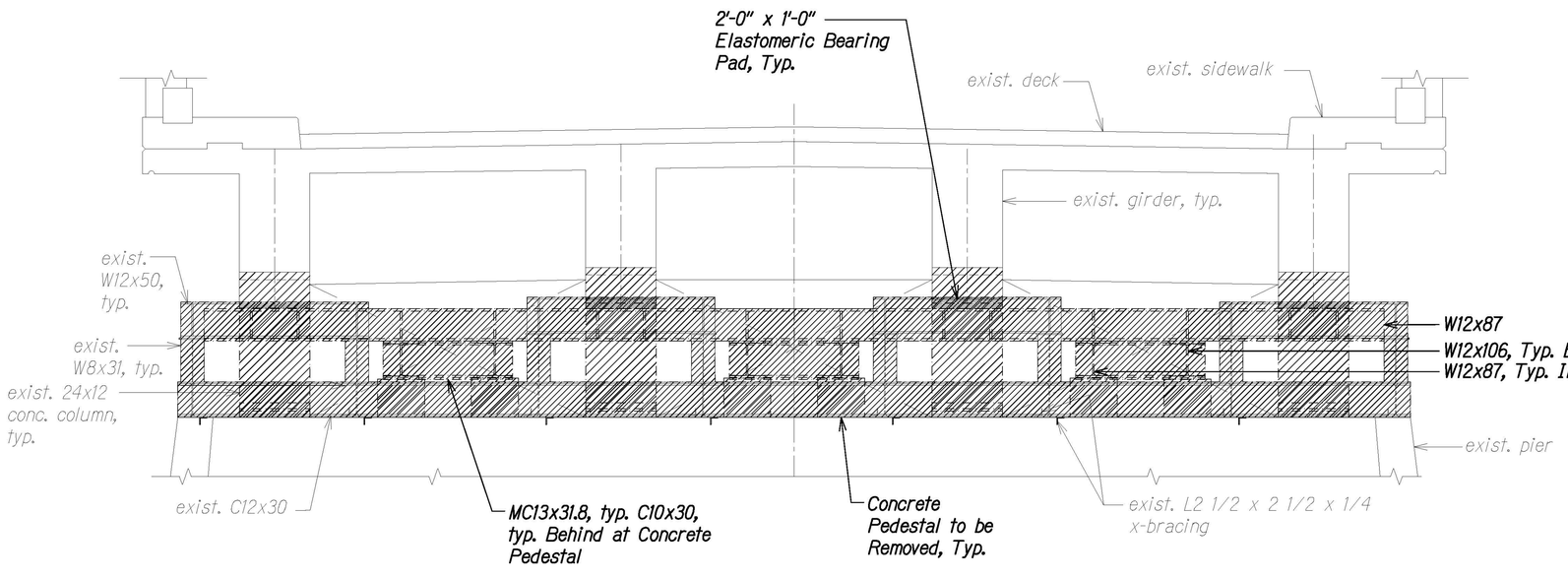
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	53	109



ELEVATION - PIER NO. 1 (LIHUE SIDE)

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

A S2.9 | S2.10



ELEVATION - PIER NO. 1 (KAPAA SIDE)

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

B S2.9 | S2.10

NOTES:

1. Remove all structural steel including added plates, bolts, nuts, bearing pads, and concrete pedestals.
2. For additional steel details see sheet S2.11.
3. For concrete demolition details see sheets S2.2 and S2.3.

LEGEND:

Extent of Concrete Demolition See shts. S2.2 and S2.3

Steel to be Removed

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STEEL DEMOLITION ELEVATIONS AT PIER NO. 1

KUHIO HIGHWAY

Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

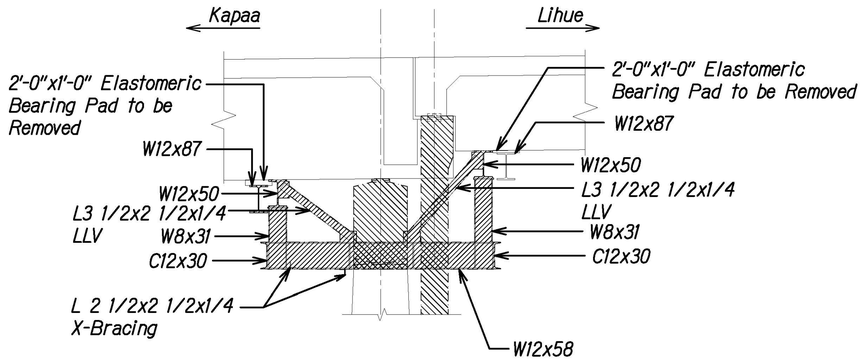
SHEET No. S2.10 OF 13 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.

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

DRAWING NAME: Z:\OD ONGOING\23-016 WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-59209 DEMO P1 STL.DWG PLOT TIME: 04-05-21, 3:38 PM)

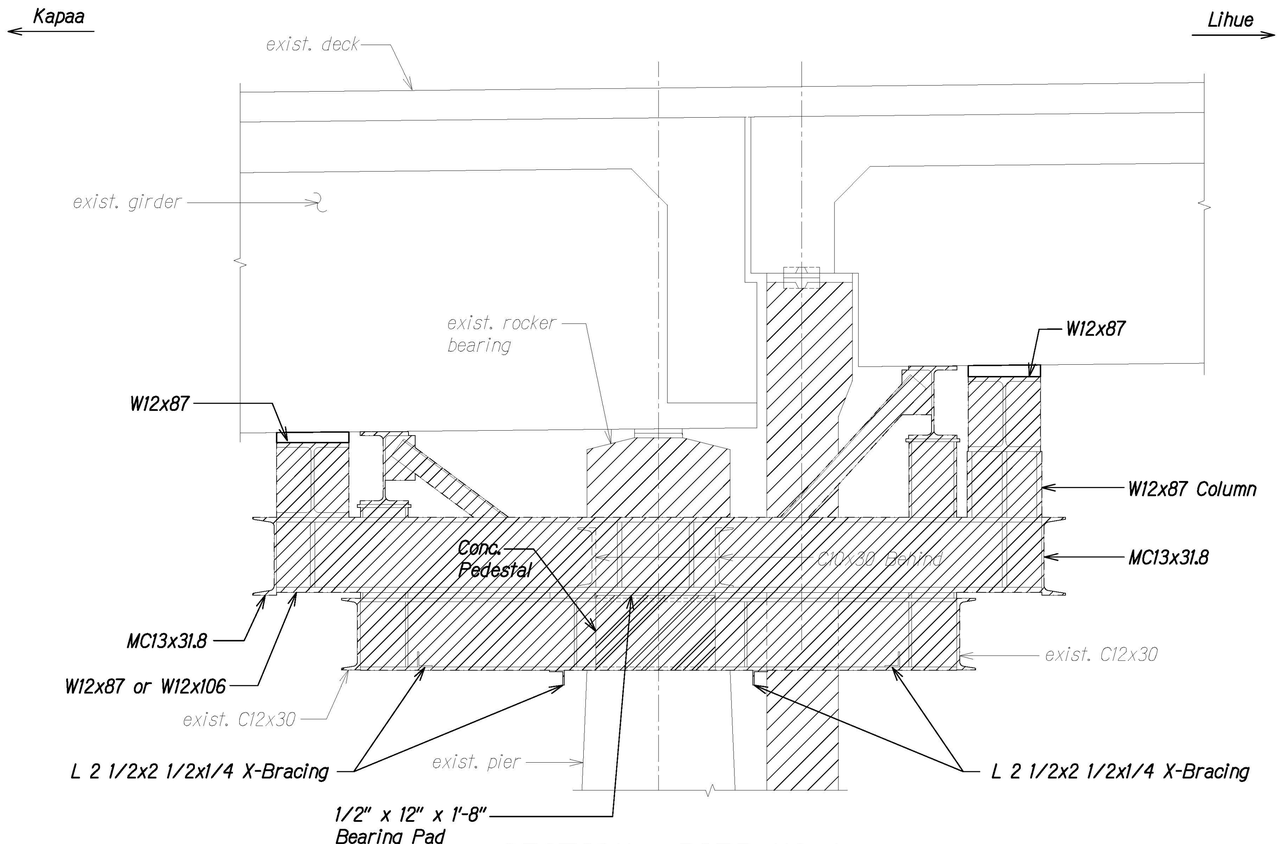
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	54	109



SECTION - PIER NO. 1 (AT GIRDERS)

Scale: 3/8" = 1'-0"

A S2.9 | S2.11



SECTION - PIER NO. 1 (BETWEEN GIRDERS)

Scale: 1" = 1'-0"

B S2.9 | S2.11

NOTES:

1. Remove all structural steel including plates, bolts, nuts, and bearing pads.
2. For concrete demolition details see sheets S2.2 and S2.3.

LEGEND:

Extent of Concrete Demolition See shts. S2.2 and S2.3

Steel to be Removed

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STEEL DEMOLITION SECTIONS AT PIER NO. 1

KUHIO HIGHWAY

Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

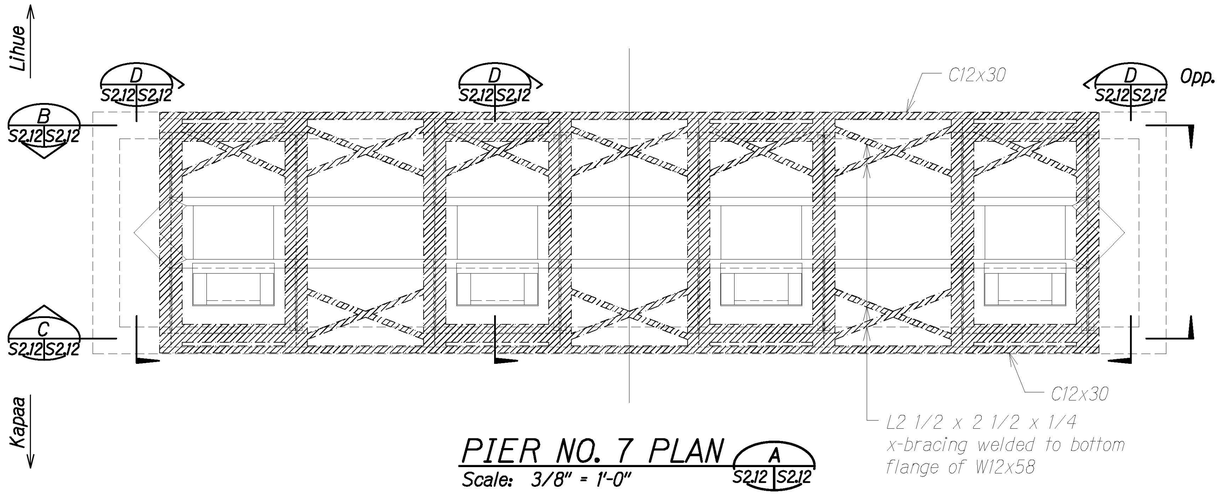
SHEET No. S2.11 OF 13 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

NOTE BOOK | No.

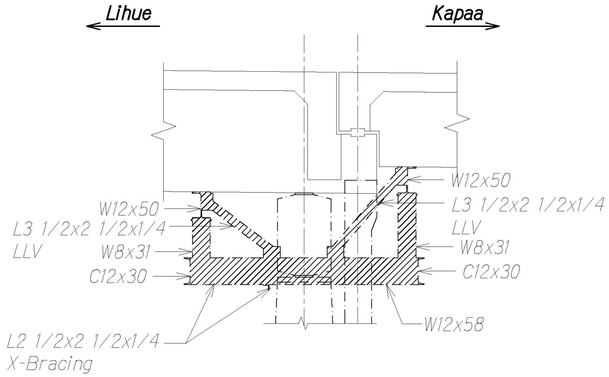
DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-59709 DEMO P1 STL.DWG PLOT TIME: 04-05-21, 3:39 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	55	109



PIER NO. 7 PLAN (A S2.12 S2.12)

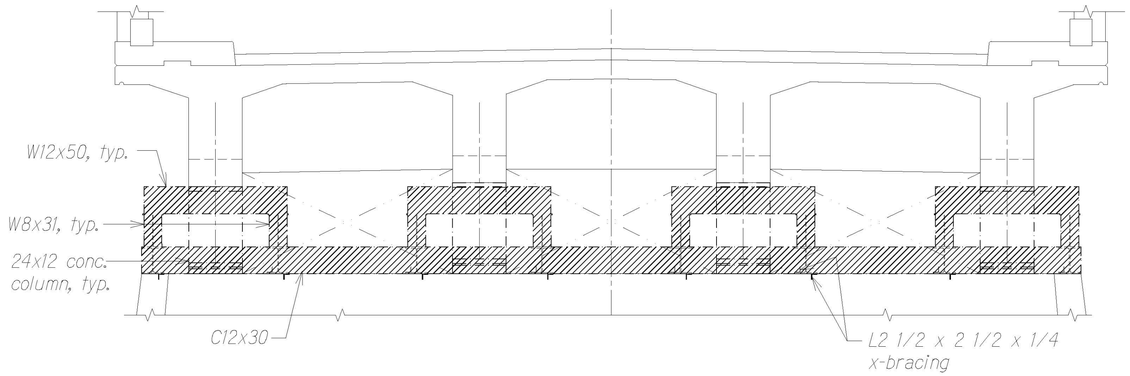
Scale: 3/8" = 1'-0"



TYPICAL SECTION - PIER NO. 7 (AT GIRDERS)

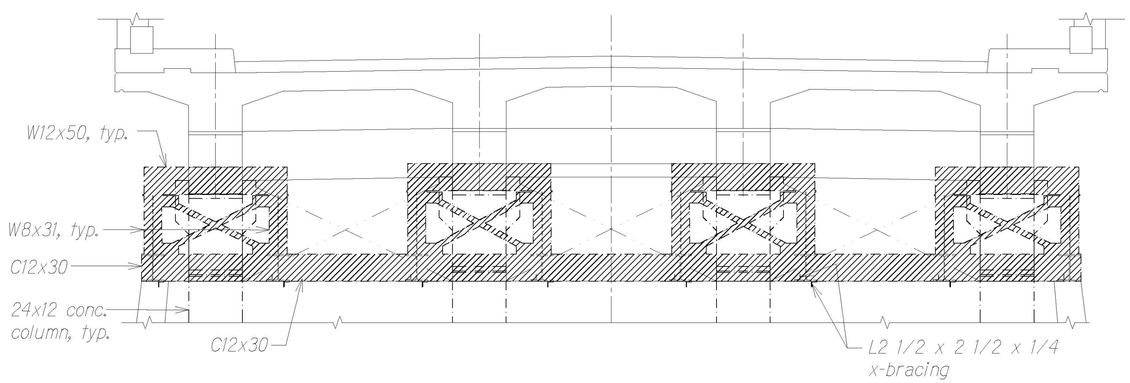
Scale: 3/8" = 1'-0"

D S2.12 S2.12



ELEVATION - PIER NO. 7 (LIHUE SIDE) (B S2.12 S2.12)

Scale: 3/8" = 1'-0"



ELEVATION - PIER NO. 1 (KAPAA SIDE) (C S2.12 S2.12)

Scale: 3/8" = 1'-0"

NOTES:

1. Remove all structural steel including plates, bolts, nuts, and bearing pads.
2. For concrete demolition details see sheets S2.6 and S2.7.

LEGEND:

Extent of Concrete Demolition
See shts. S2.6 and S2.7

Steel to be Removed

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STEEL DEMOLITION AT PIER NO. 7

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

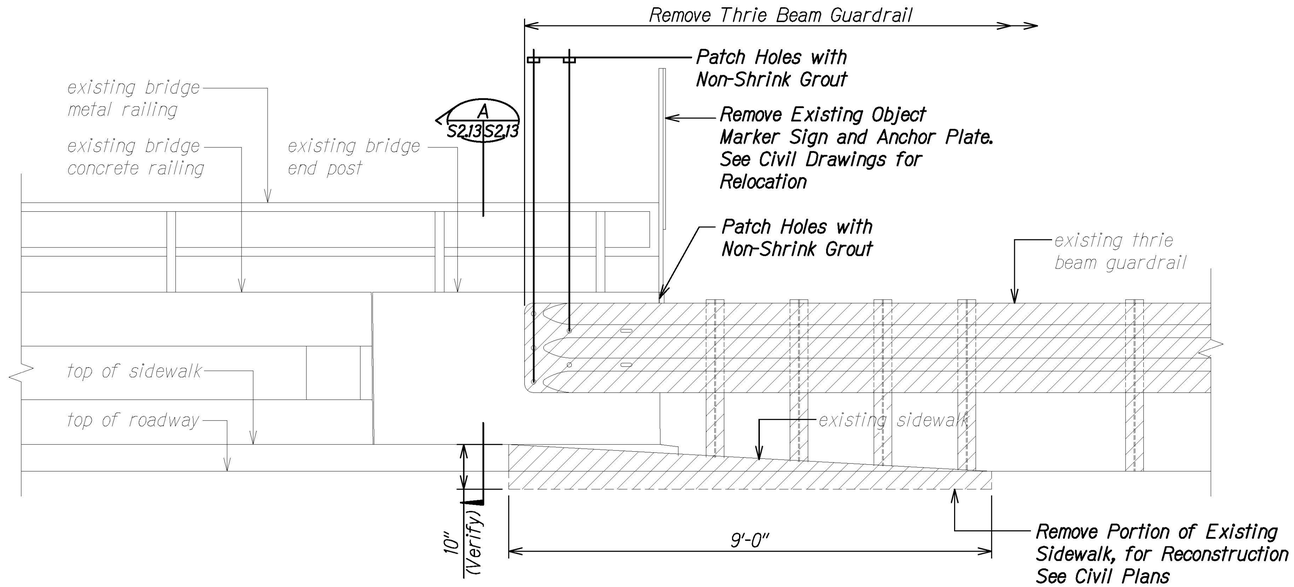
Scale: As Noted — Date: Apr. 2021

SHEET No. S2.12 OF 13 SHEETS

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

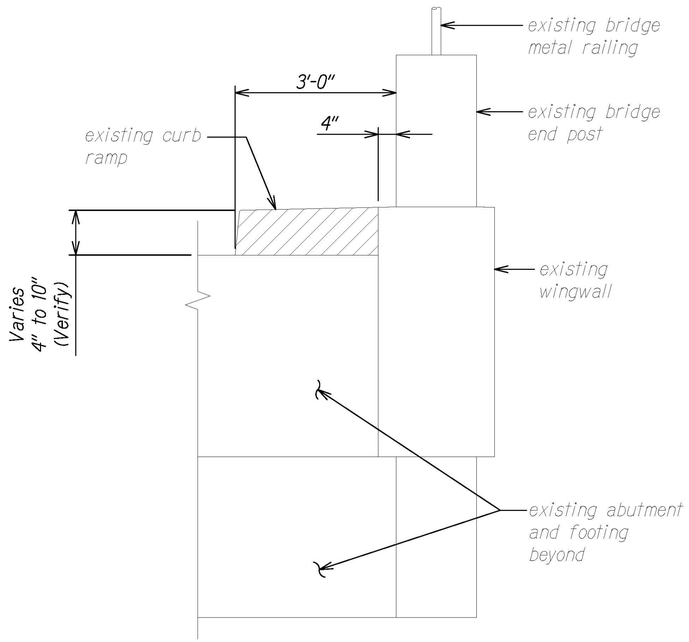
DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT.01 CAD\04-05-21 BID\WBS-S0212 DEMO P7 STL DEMO.DWG PLOT TIME: 04-05-21 3:40 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	56	109



ELEVATION (KAPAA MAUKA)

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



SECTION A S2.13 | S2.13

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

NOTES:

1. Verify location of all utilities.
2. Highway signage may be removed to accomodate demolition but must be returned to its original condition at completion.

LEGEND:

Extent of Demolition

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY ____ DATE
DRAWN BY
TRACED BY
DESIGN BY
QUANTITIES BY
CHECKED BY

DRAWING NAME: Z:\OD ONGOING\29-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VRS-S02.13 DEMO ENDPOST.DWG PLOT TIME: 04-05-21, 3:40 PM)

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

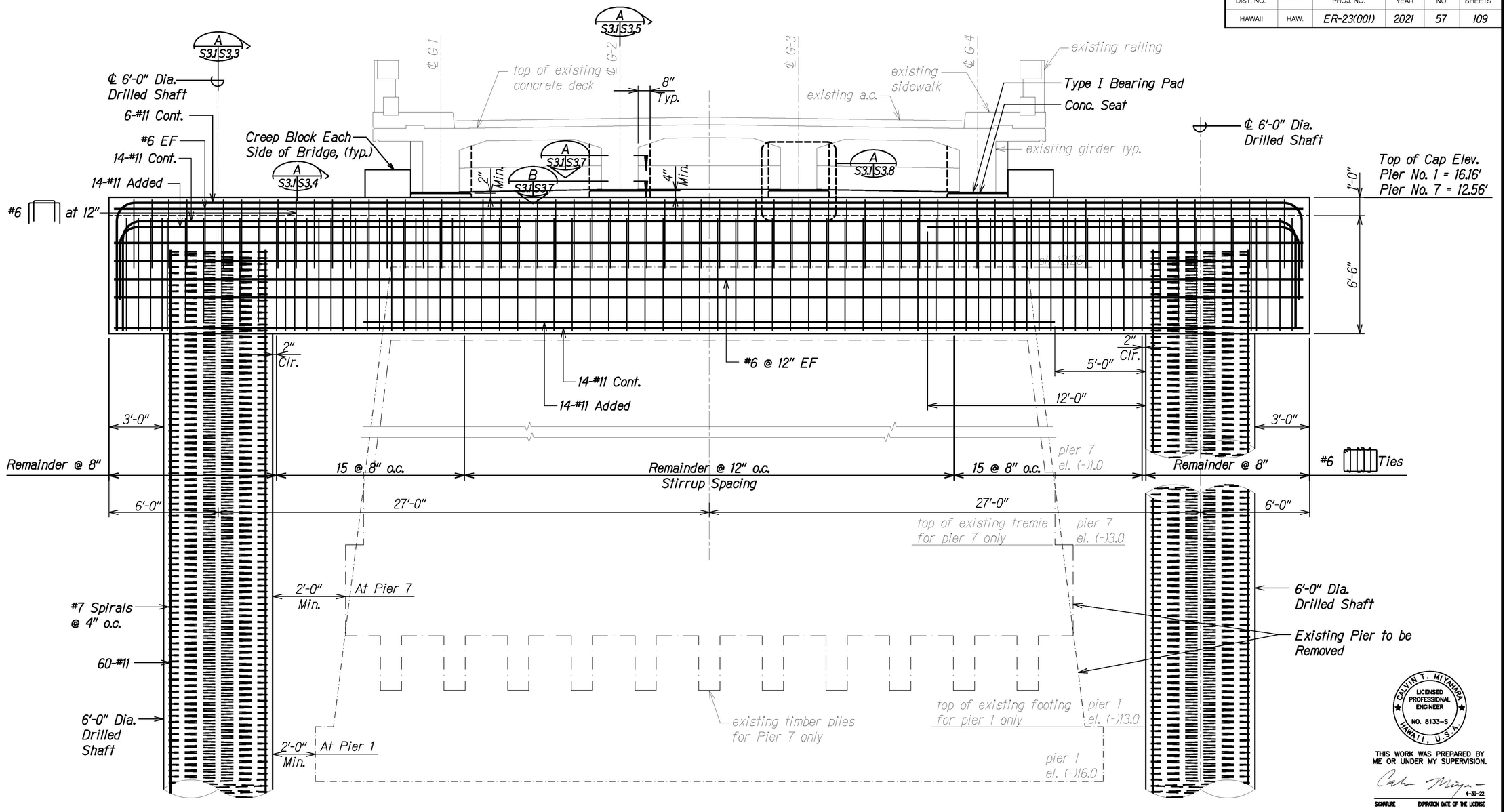
END POST DEMOLITION, ELEVATION AND SECTION

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S2.13 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	57	109



ORIGINAL PLAN
NOTE BOOK
No.

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

Note:

The Contractor shall investigate site conditions at the shaft locations before installing the shafts. Notify the Engineer immediately of any obstructions that may interfere with the installation of the shafts.

ELEVATION - PIER NO. 1 (LIHUE SIDE)
(PIER NO. 7 (KAPAA SIDE) SIMILAR)

Scale: 3/8" = 1'-0"

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

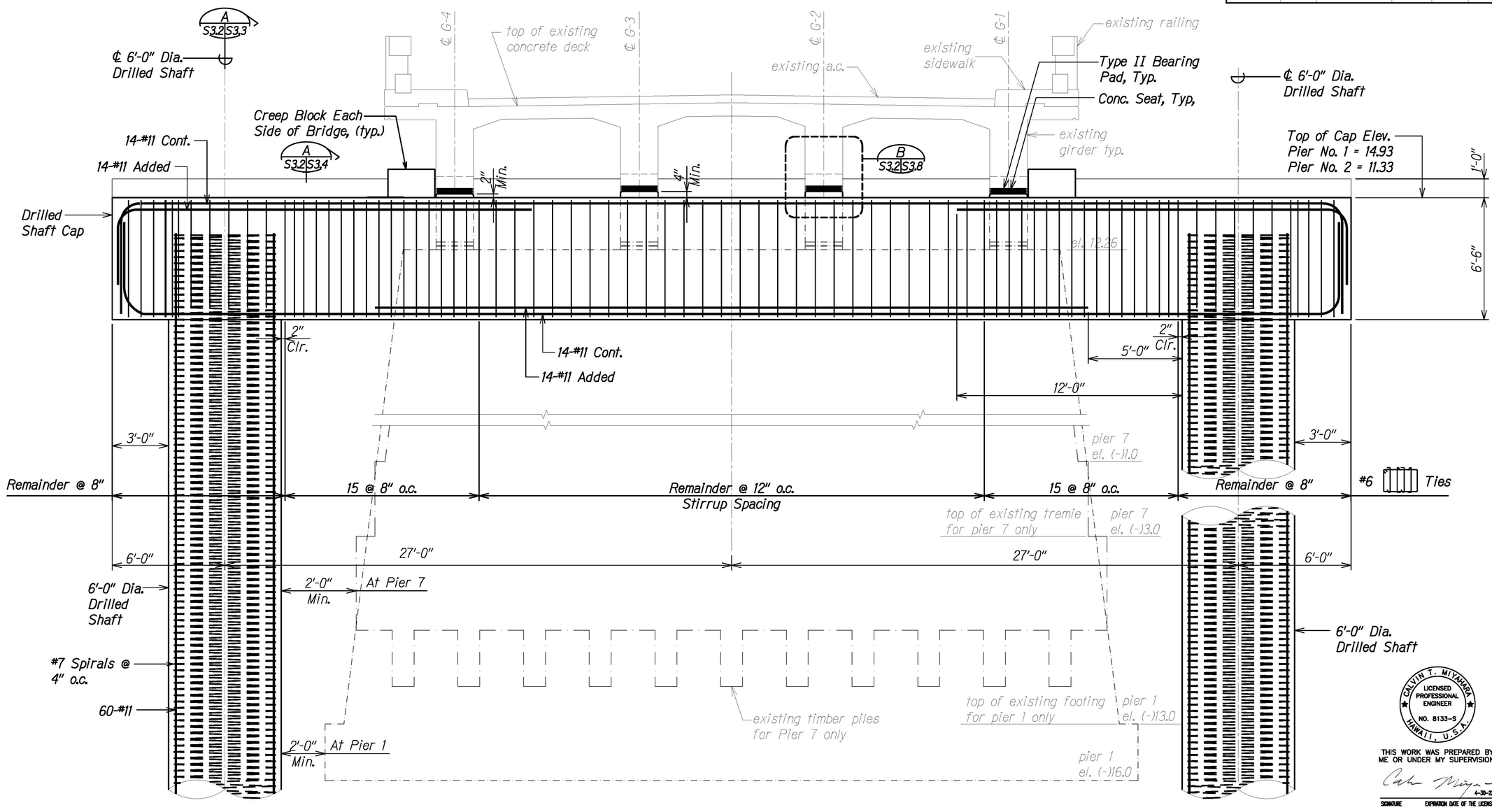
ELEVATION AT PIER NO. 1 (LIHUE SIDE)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.1 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	58	109



ELEVATION - PIER NO. 1 (KAPAA SIDE)
(PIER NO. 7 (LIHUE SIDE) SIMILAR)
Scale: 3/8" = 1'-0"

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

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELEVATION AT PIER NO. 1 (KAPAA SIDE)

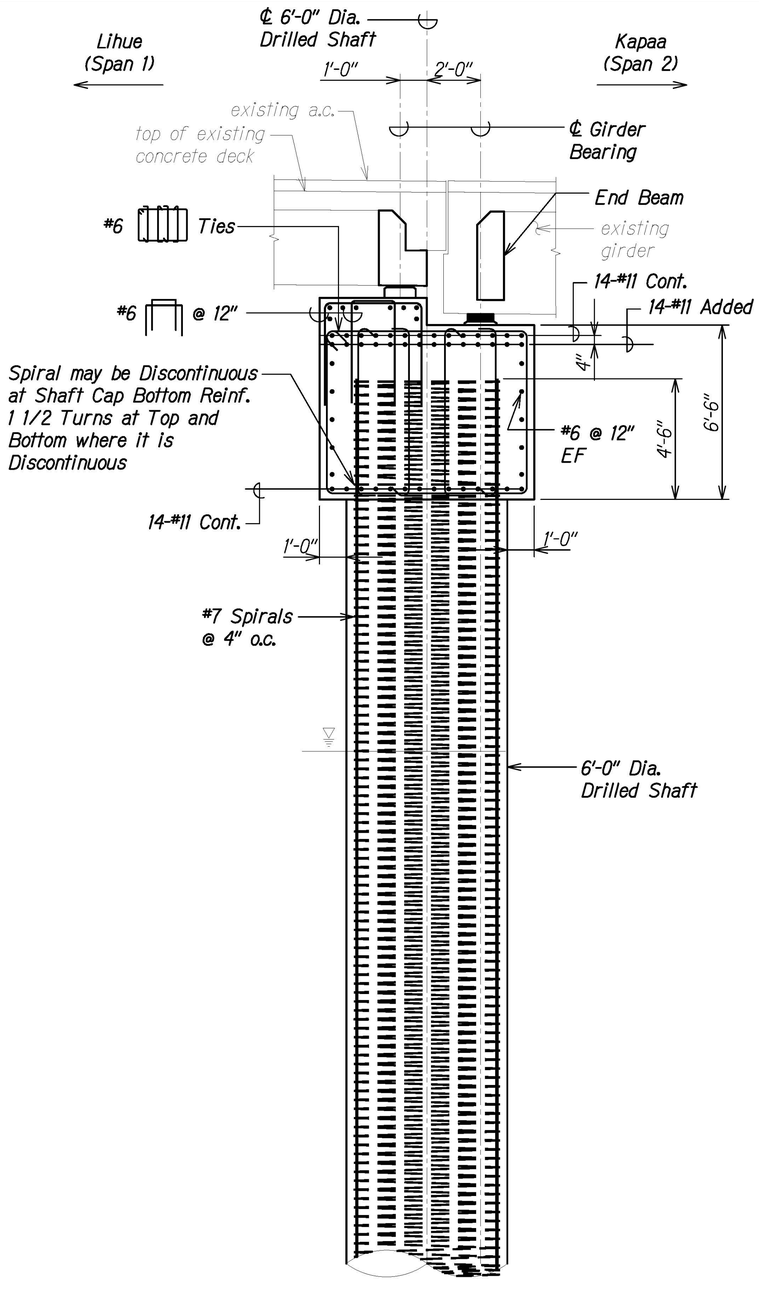
KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.2 OF 9 SHEETS

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-29-21 BID PKG\WBS-S030I ELEV-SECT P1&7.DWG PLOT TIME: 04-15-21, 1:54 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	59	109



SECTION AT PIER NO. 1
(PIER NO. 7 SIMILAR)
Scale: 3/8" = 1'-0"

A
S3.1 | S3.3
S3.2

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VBS-S0301 ELEV-SECT P1&7.DWG PLOT TIME: 04-05-21, 3:41 PM

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

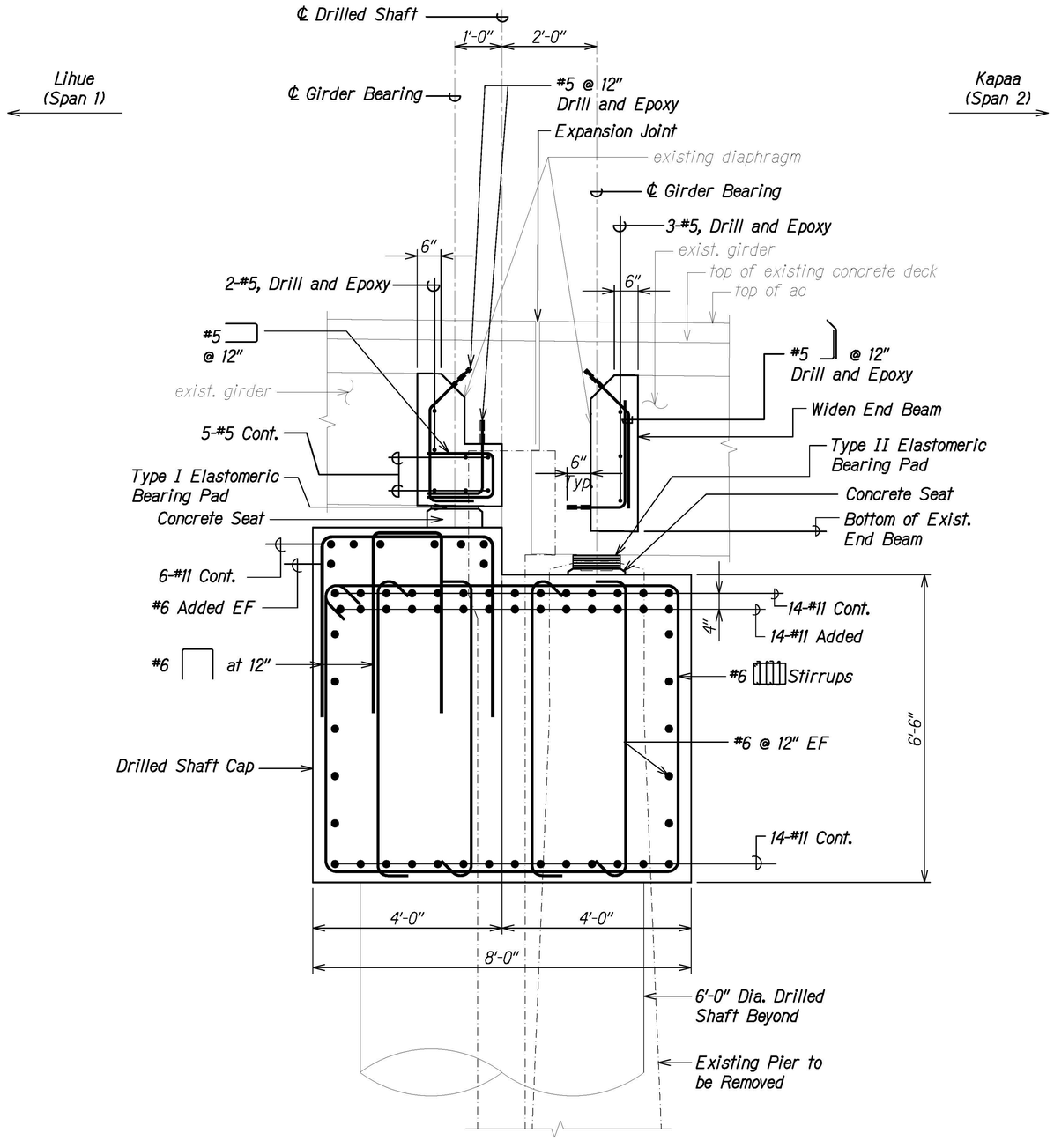
SECTION AT PIER NO. 1

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.3 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	60	109



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

A
S3.1 | S3.4
S3.2

ORIGINAL PLAN
NOTE BOOK
No.

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-56301 ELEV-SECT P1&2.DWG PLOT TIME: 04-05-21 3:42 PM

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-30-22
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTION

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

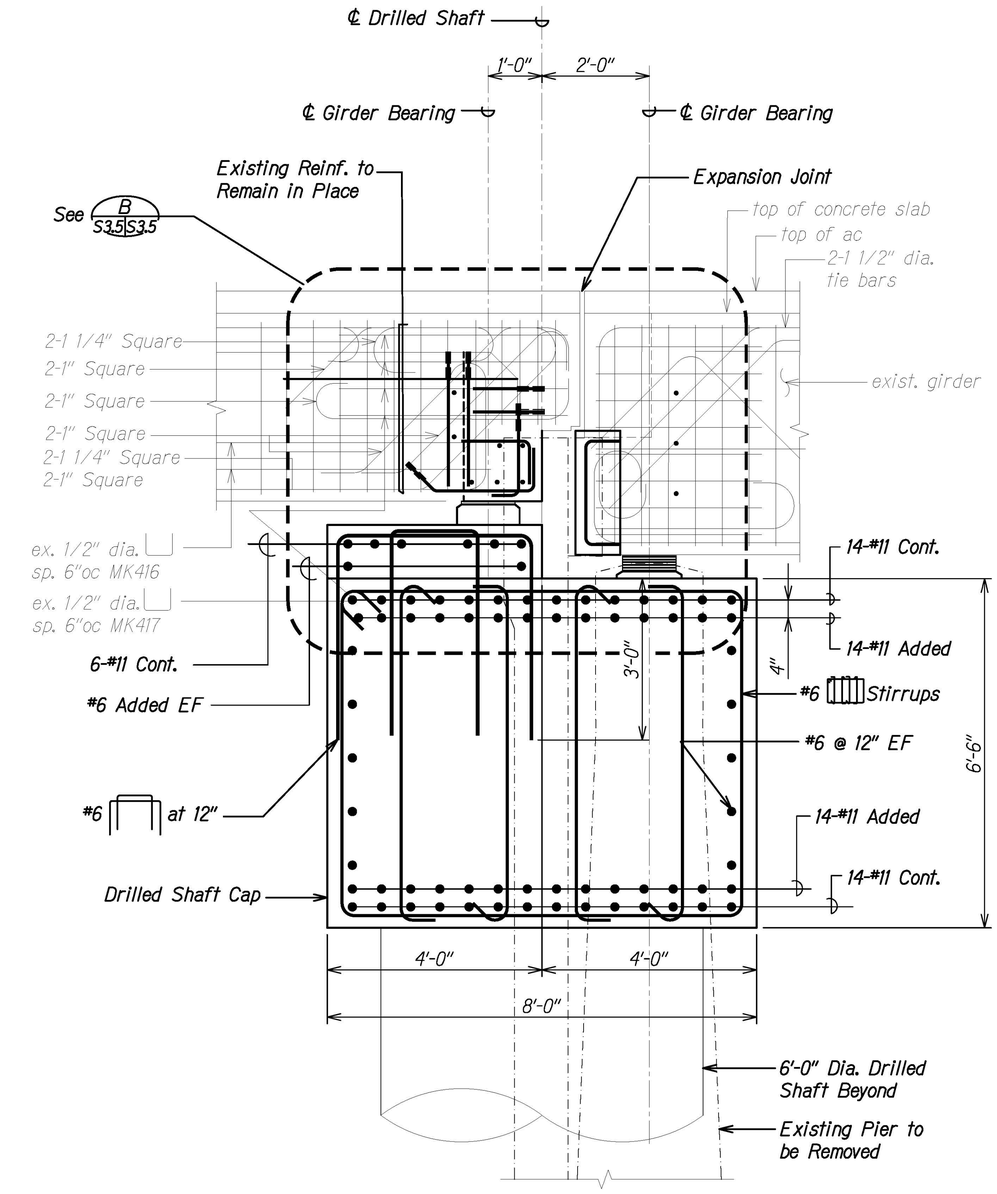
Scale: As Noted Date: Apr. 2021

SHEET No. S3.4 OF 9 SHEETS

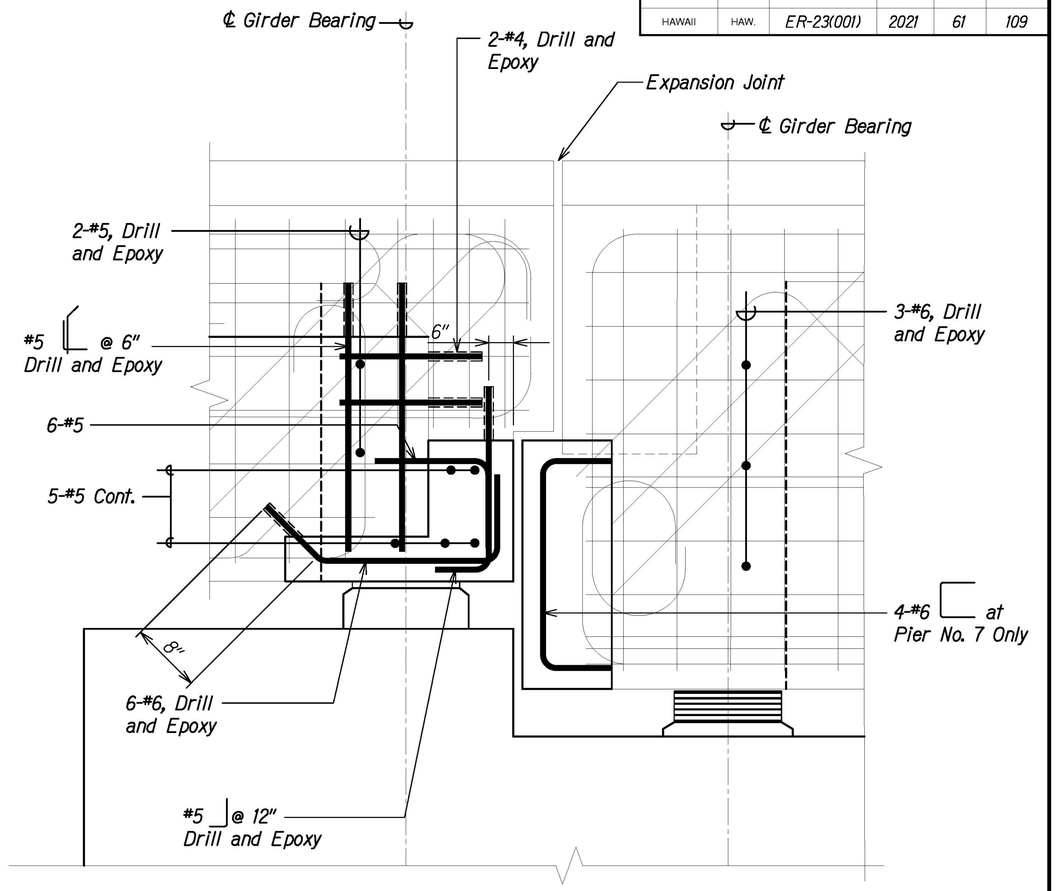
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	61	109

Lihue
(Span 1)

Kapaa
(Span 2)



SECTION A
Scale: 3/4" = 1'-0" S3.2 S3.5



ENLARGED SECTION B
Scale: 3/4" = 1'-0" S3.5 S3.5

ORIGINAL PLAN

NOTE BOOK
No.

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

DRAWING NAME: Z:\DO DIGGING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0301 ELEV-SECT P1&7.DWG PLOT TIME: 04-05-21, 3:42 PM

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
No. 8133-S
HAWAII, U.S.A.

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SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

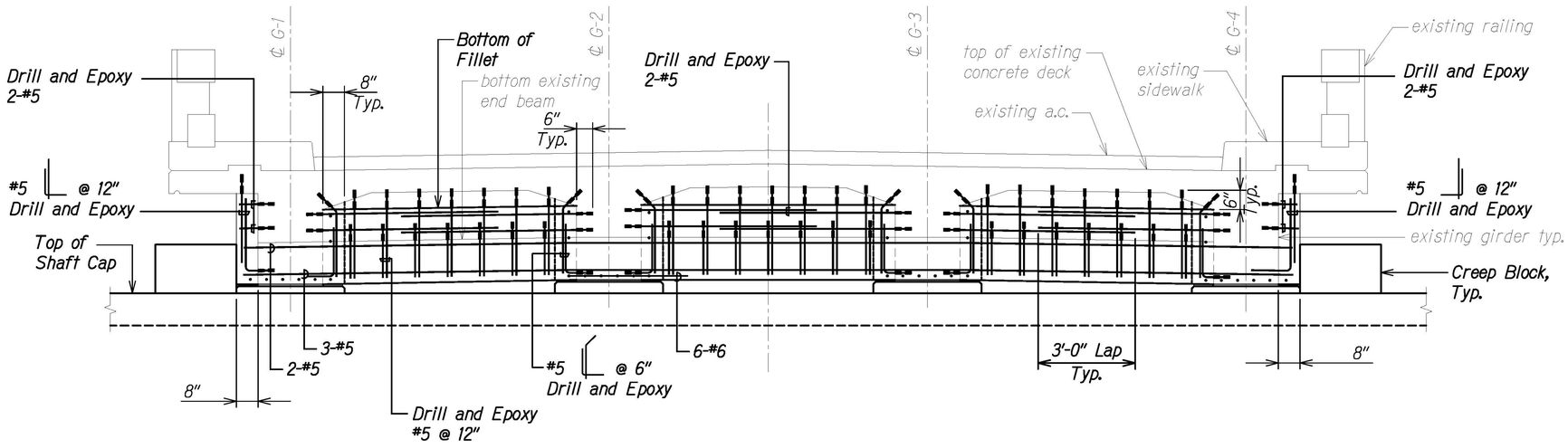
SECTIONS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

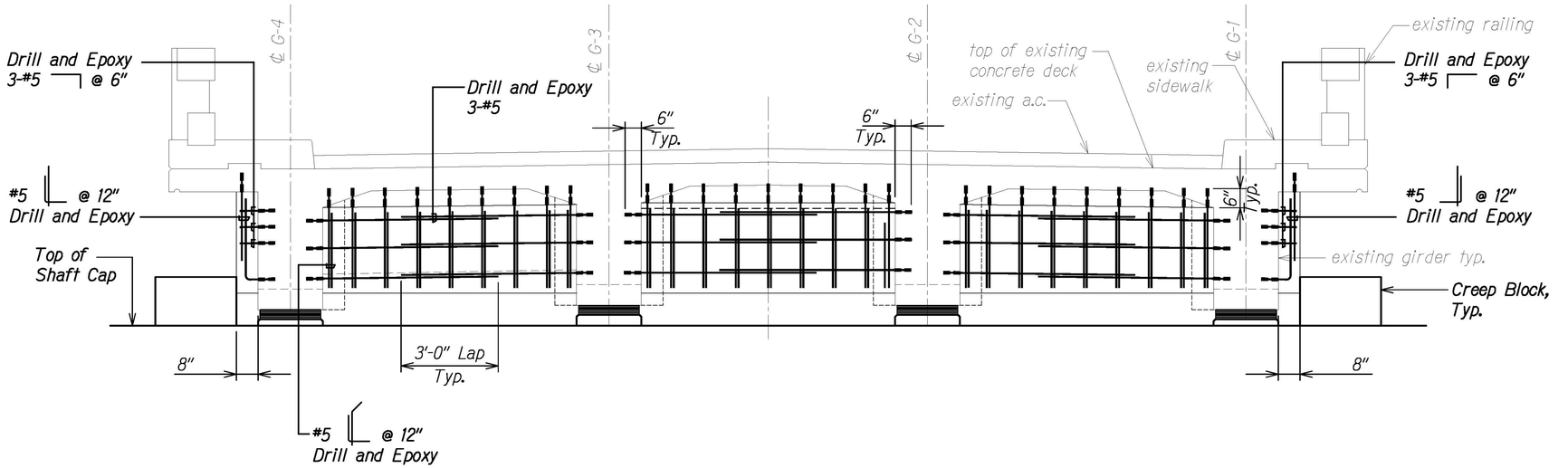
SHEET No. S3.5 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	62	109



SECTION - SPANS 1 AND 8

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



SECTION - SPANS 2 AND 7

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0301 ELEV-SECT P1&2.DWG PLOT TIME: 04-05-21, 3:42 PM

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

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCING AT SPANS 1 & 8 AND SPANS 2 & 7

KUHIO HIGHWAY

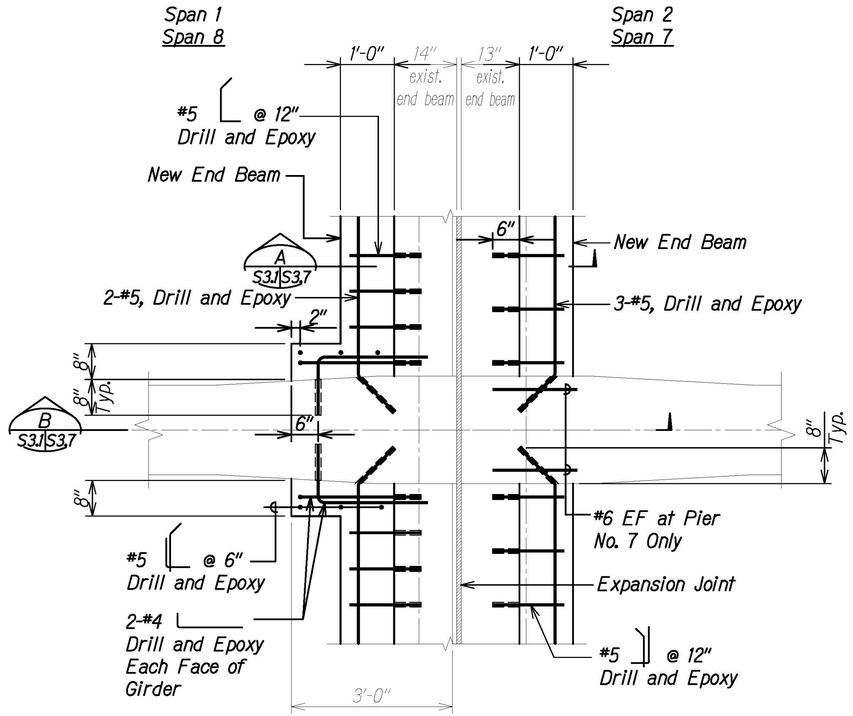
Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.6 OF 9 SHEETS

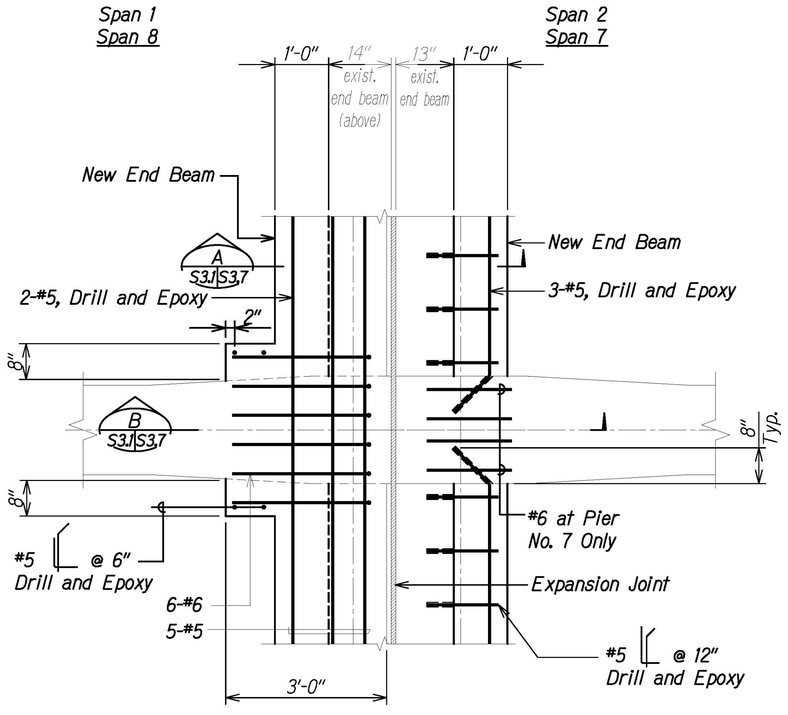
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	63	109



PLAN AT END BEAM (SPANS 1-2 AND 8-7)

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

A S3.1 | S3.7 — S3.2



PLAN (SPANS 1-2 AND 8-7)

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

B S3.1 | S3.7 — S3.2

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REINFORCING PLANS AT SPANS 1-2 AND 8-7

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

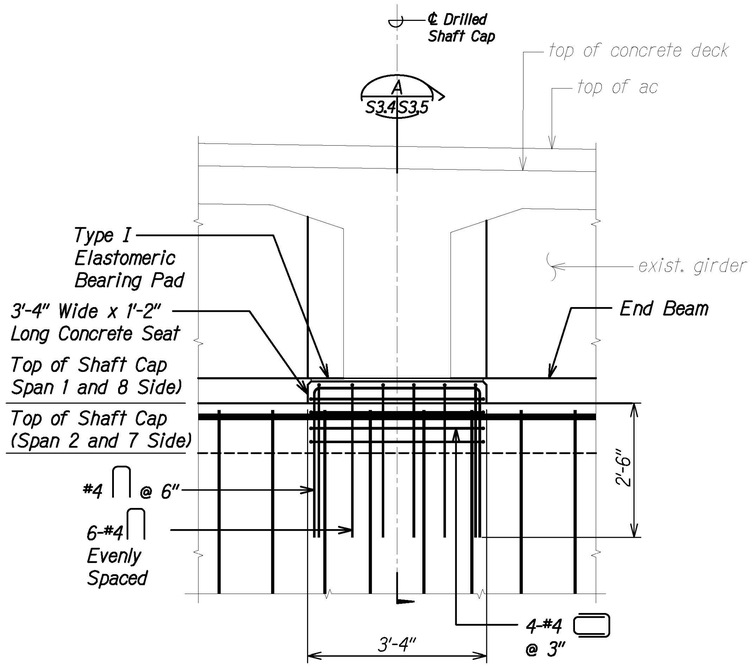
Scale: As Noted Date: Apr. 2021

SHEET No. S3.7 OF 9 SHEETS

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

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0301 ELEV-SECT P1&7.DWG PLOT TIME: 04-05-21, 3:42 PM

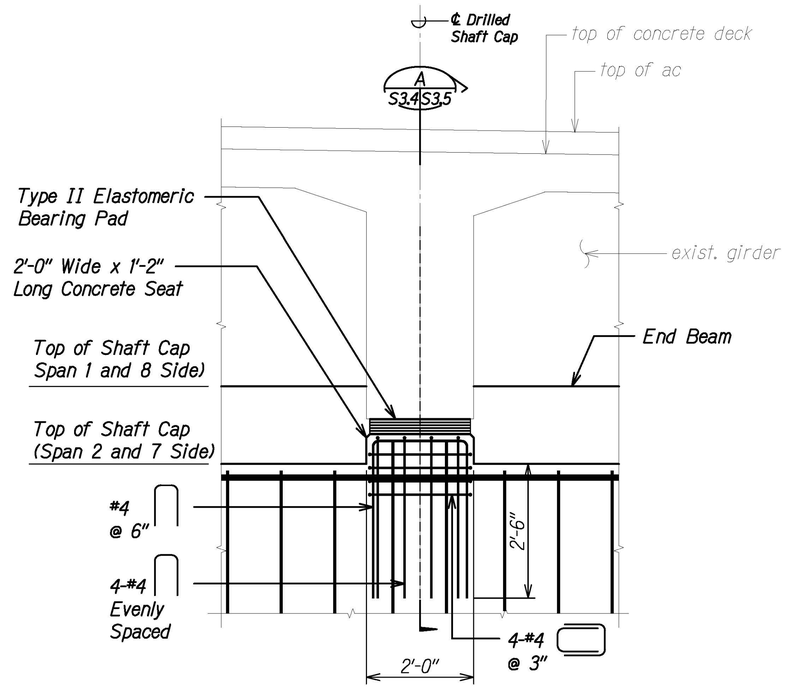
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	64	109



CONC. SEAT DETAIL AT SPAN 1 (SPAN 8 SIM.)

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

A S3.1 S3.8



CONC. SEAT DETAIL AT SPAN 2 (SPAN 7 SIM.)

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

B S3.2 S3.8

Note:

1. Concrete seat shall not exceed 6" in height unless approved by the Engineer.

ORIGINAL PLAN
NOTE BOOK
No.

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S3361 ELEV-SECT P1&7.DWG PLOT TIME: 04-05-21, 3:43 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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4-30-22
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

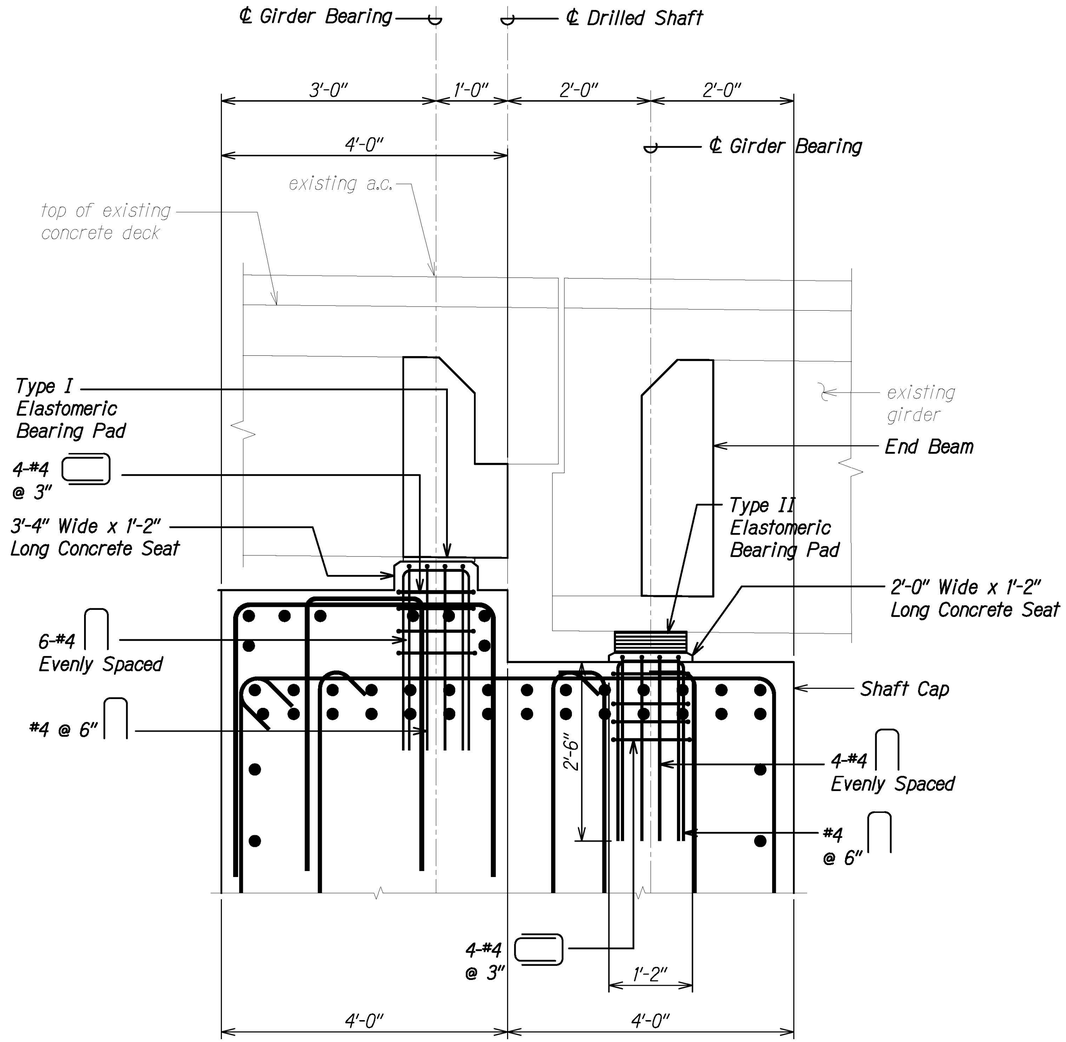
CONCRETE SEAT AT PIER NO. 1

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.8 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	65	109



CONC. SEAT SECTION (PIER NO. 7 SIMILAR)

Scale: 1" = 1'-0"

A S3.9 | S3.9

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

DRAWING NAME: Z:\OD DWGS\03-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-93351 ELEV-SECT P1&7.DWG PLOT TIME: 04-05-21, 3:43 PM)

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

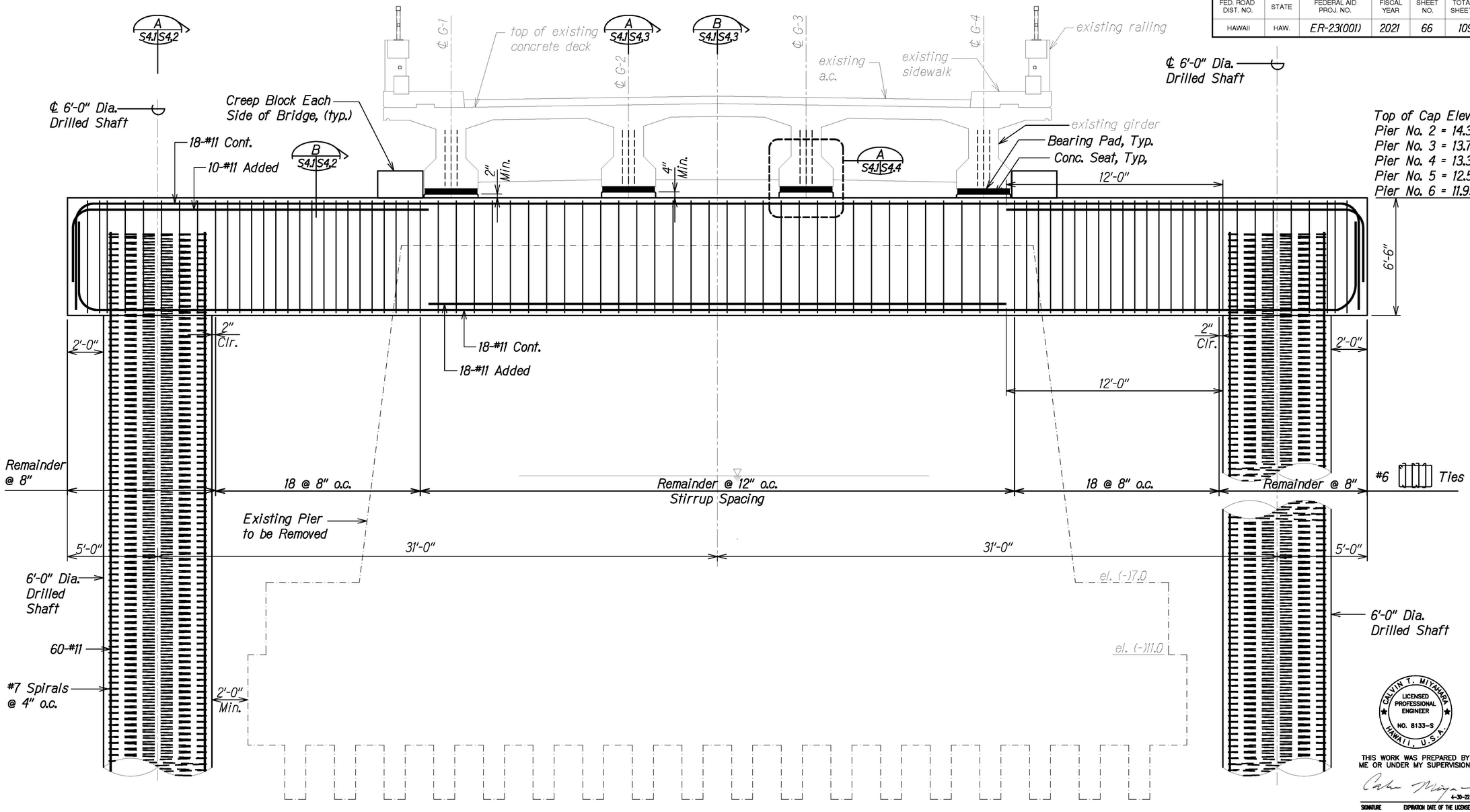
CONCRETE SEAT AT PIER NO. 1

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S3.9 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	66	109



Note:

The Contractor shall investigate site conditions at the shaft locations before installing the shafts. Notify the Engineer immediately of any obstructions that may interfere with the installation of the shafts.

ELEVATION - PIER NO. 2
(PIER NOS. 3, 5 & 6 SIMILAR)

Scale: 3/8" = 1'-0"

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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4-30-22
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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELEVATION AT PIER NO.2
(PIER NOS. 3, 5, & 6 SIMILAR)

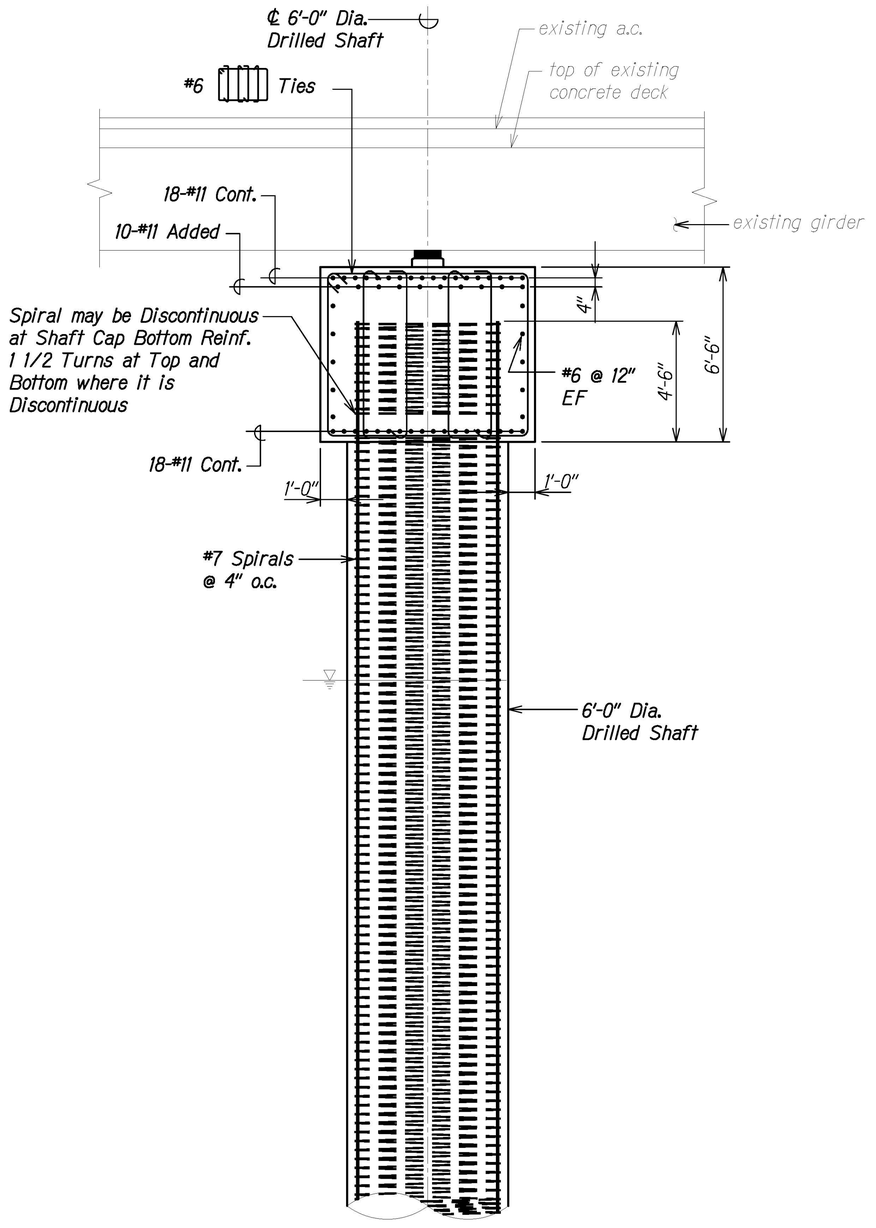
KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

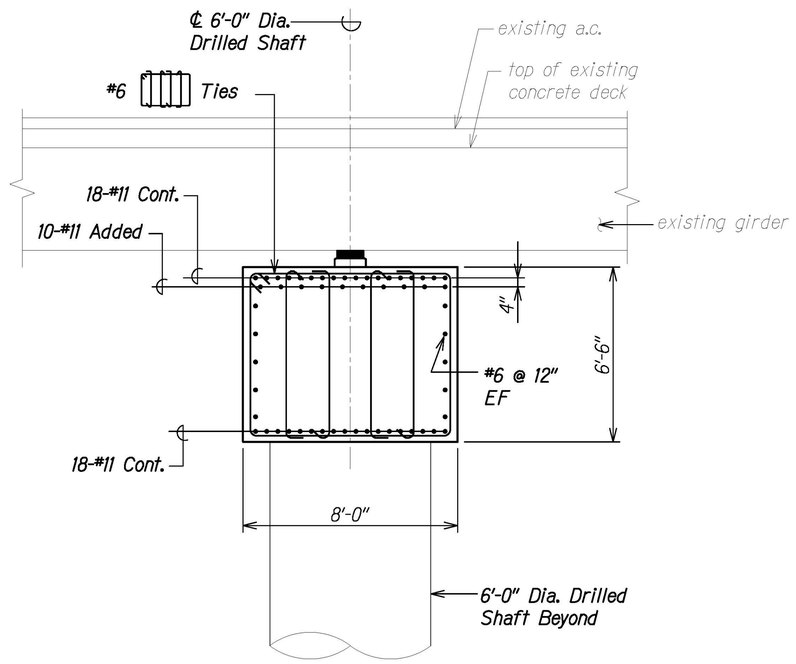
SHEET No. S4.1 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	67	109



SECTION PIER NO. 2
(PIER NOS. 3 TO 6 SIM.) A S4.1 S4.2
Scale: 3/8" = 1'-0"



SECTION PIER NO. 2
(PIER NOS. 3 TO 6 SIM.) B S4.1 S4.2
Scale: 3/8" = 1'-0"

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

DRAWING NAME: Z:\OD ONGOING\03-01B-WAILUA PKR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S1401 ELEV-SECT P2.3.5.6.DWG PLOT TIME: 04-05-21, 3:44 PM

LICENSED PROFESSIONAL ENGINEER
CALVIN T. MIYAHARA
NO. 8133-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

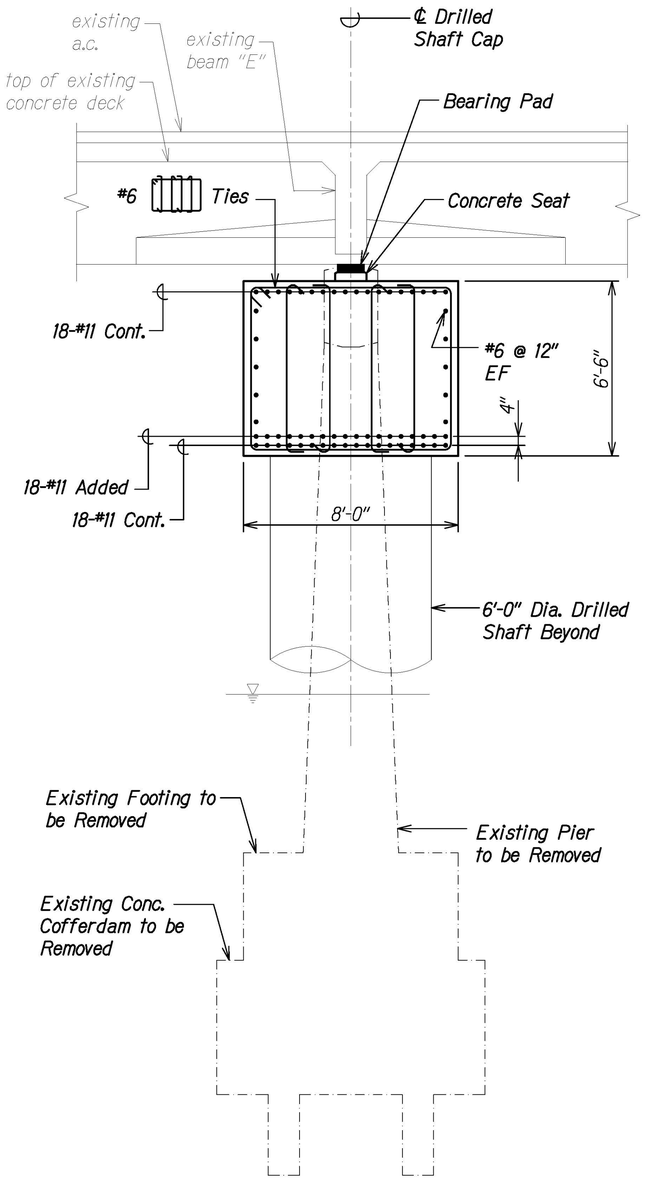
SECTIONS AT PIER NO. 2 (PIER NOS. 3 TO 6 SIM.)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

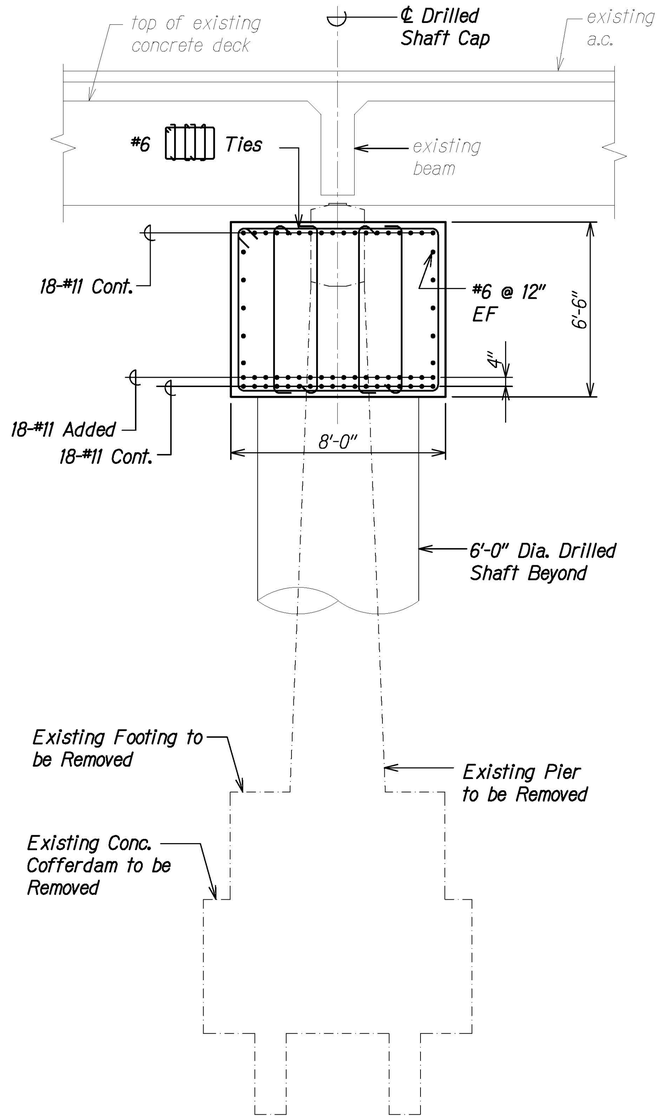
Scale: As Noted Date: Apr. 2021

SHEET No. S4.2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	68	109



SECTION
(PIER NOS. 3, 5, & 6 SIM.) A
Scale: 3/8" = 1'-0"
S4.1 | S4.3



SECTION
(PIER NOS. 3, 5, & 6 SIM.) B
Scale: 3/8" = 1'-0"
S4.1 | S4.3

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0401 ELEV-SECT P2,3,5,6.DWG PLOT TIME: 04-05-21, 3:44 PM

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-30-22
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

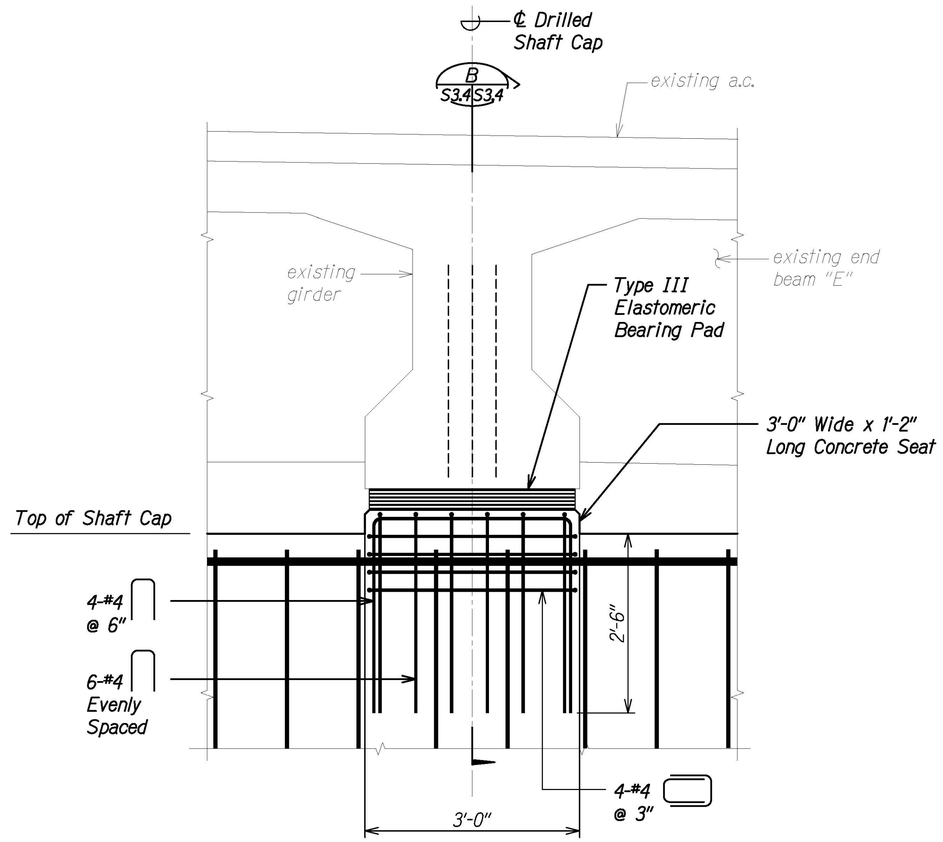
SECTIONS AT PIER NO. 2
(PIER NOS. 3, 5 & 6 SIMILAR)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S4.3 OF 4 SHEETS

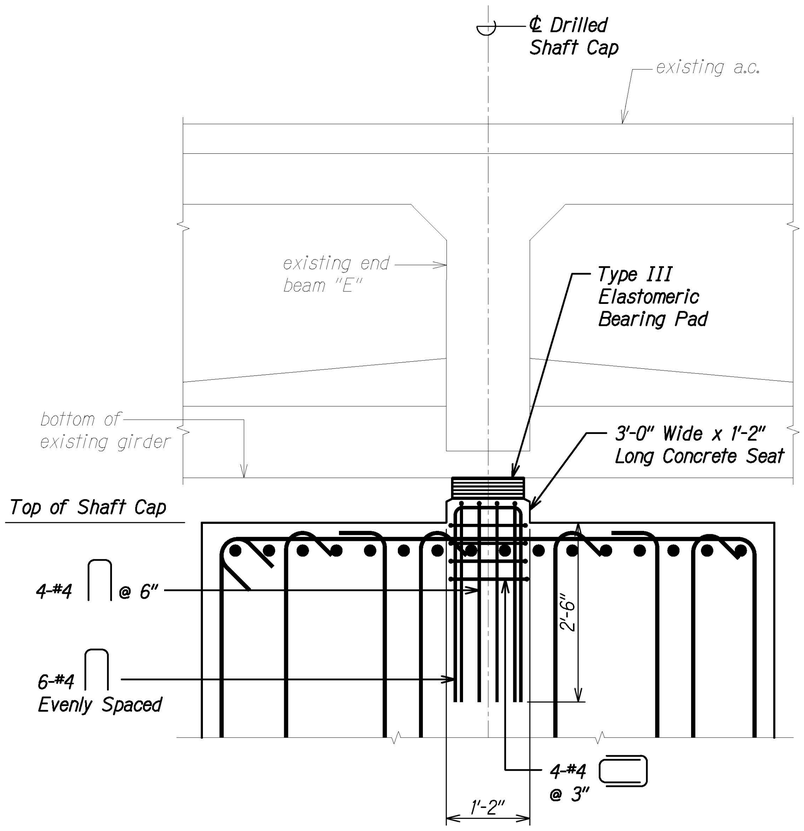
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	69	109



CONC. SEAT SECTION (PIER NOS. 3, 5, & 6 SIM.)

Scale: 1" = 1'-0"

A S4.1 S4.4



CONC. SEAT SECTION (PIER NOS. 3, 5, & 6 SIM.)

Scale: 1" = 1'-0"

B S4.1 S4.4

Note:

1. Concrete seat shall not exceed 6" in height unless approved by the Engineer.

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONC. SEAT AT PIER NO. 2 (PIER NOS. 3, 5 & 6 SIMILAR)

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

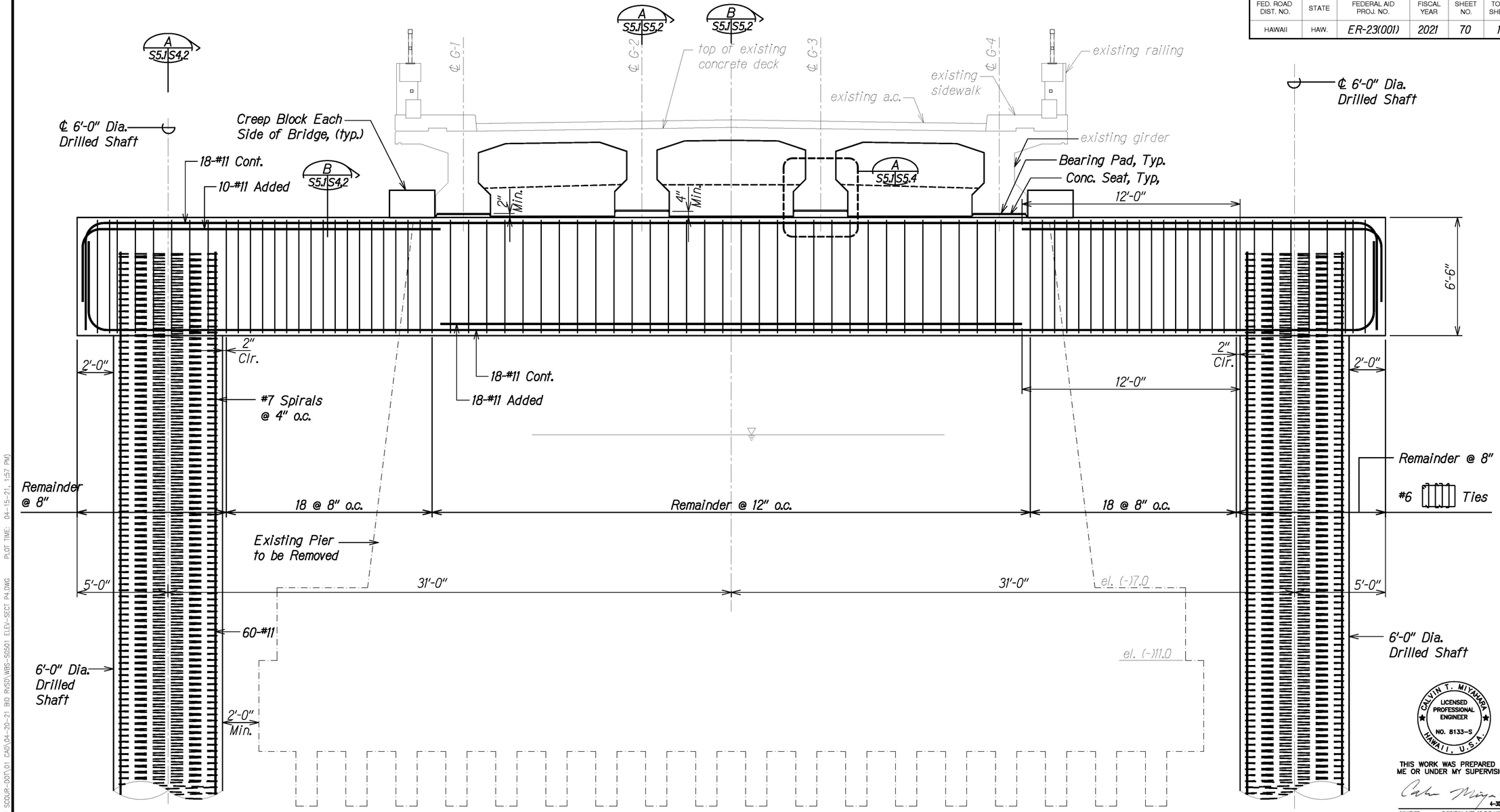
SHEET No. S4.4 OF 4 SHEETS

69

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0401 ELEV-SECT P2,3,5,6.DWG PLOT TIME: 04-05-21, 3:44 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	70	109



Note:

The Contractor shall investigate site conditions at the shaft locations before installing the shafts. Notify the Engineer immediately of any obstructions that may interfere with the installation of the shafts.

ELEVATION - PIER NO. 4

Scale: 3/8" = 1'-0"

CALVIN T. MIYAHARA
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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELEVATION AT PIER NO. 4

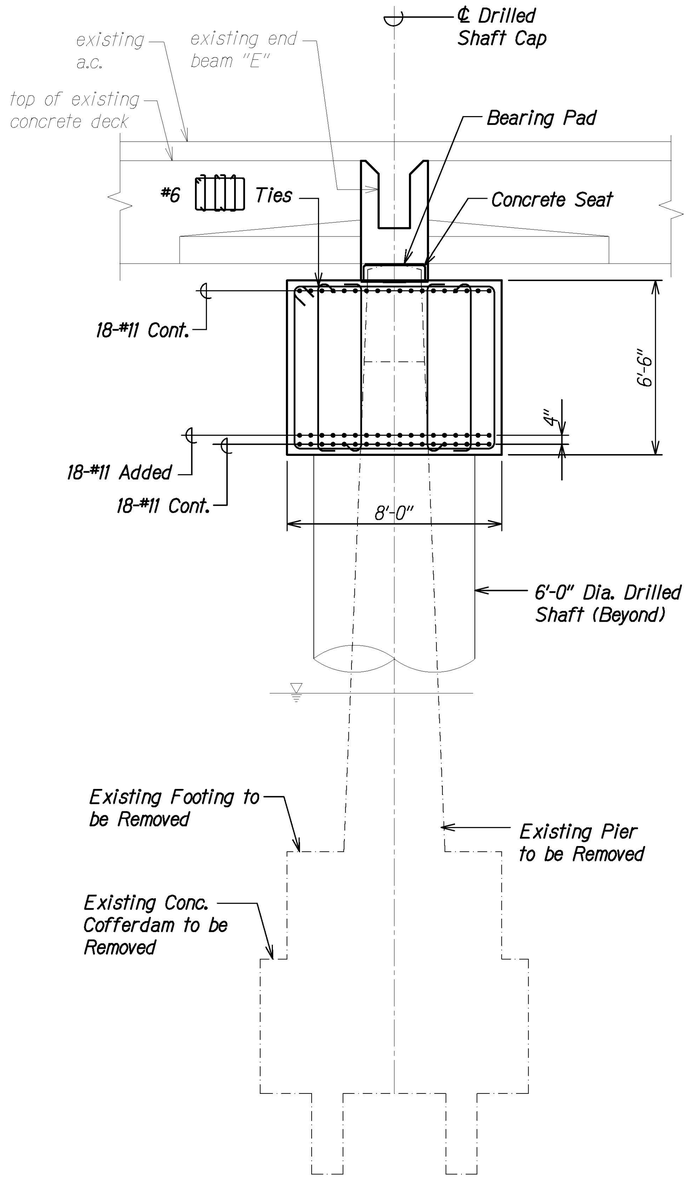
KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted — Date: Apr. 2021

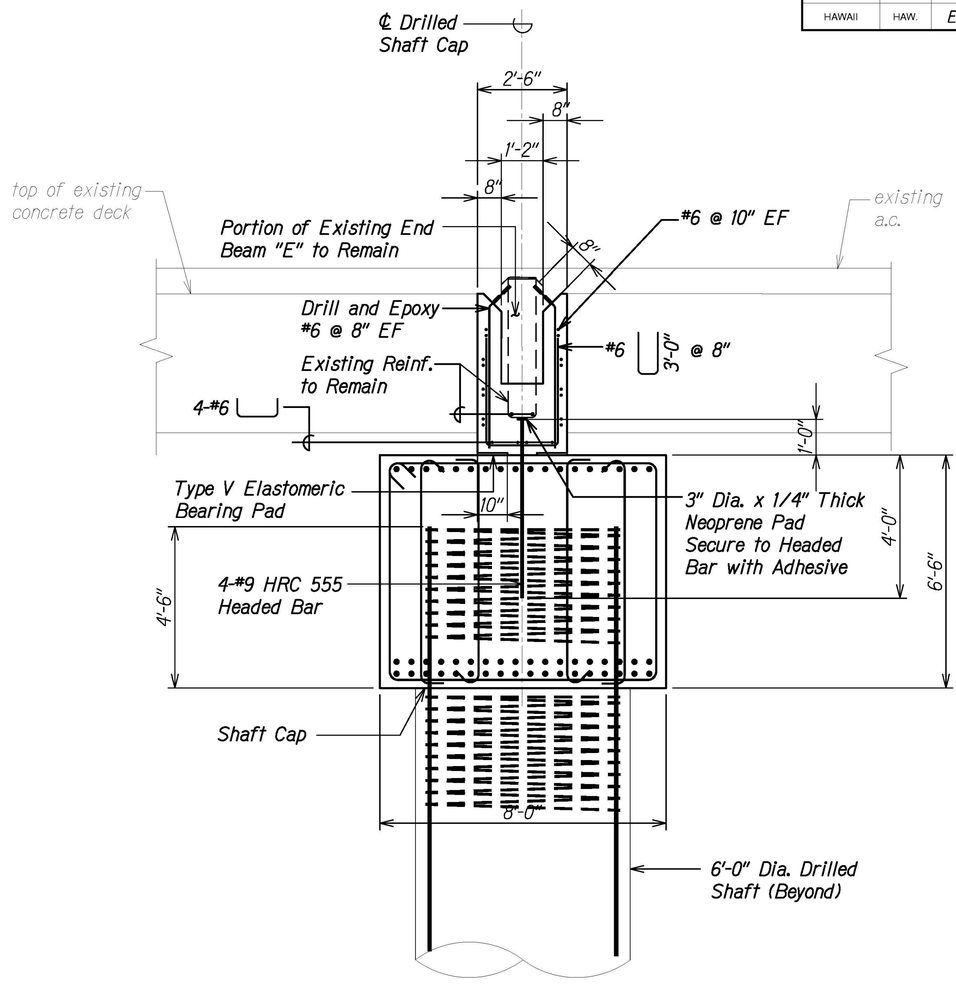
SHEET No. S5.1 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	71	109



SECTION
Scale: 3/8" = 1'-0"
A S5.1 S5.2



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

CALVIN T. MIYAHARA
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No. 8133-S
HAWAII, U.S.A.

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4-30-22
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

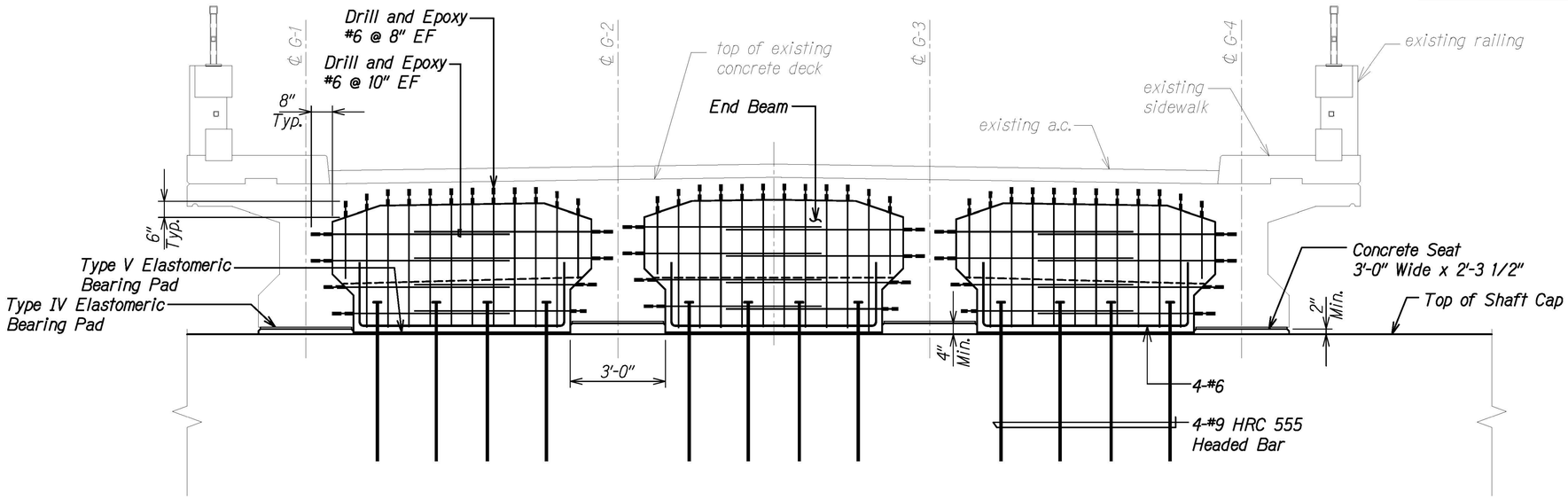
SHEET No. S5.2 OF 4 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

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

DRAWING NAME: Z:\OD ONGOING\20-016 WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-53501 ELEV-SECT P4.DWG PLOT TIME: 04-05-21, 3:45 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	72	109



SECTION (A) S5.3 | S5.3

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

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

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S5631 ELEV-SECT P4.DWG PLOT TIME: 04-05-21 3:45 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

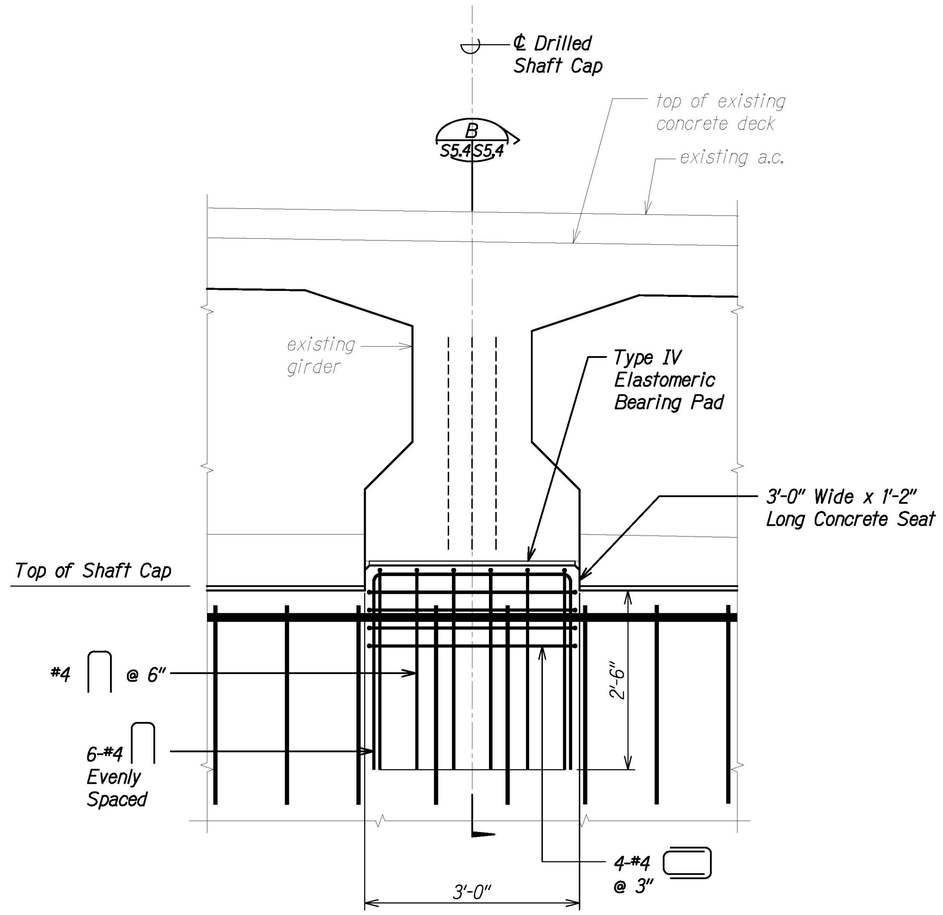
SECTION

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S5.3 OF 4 SHEETS

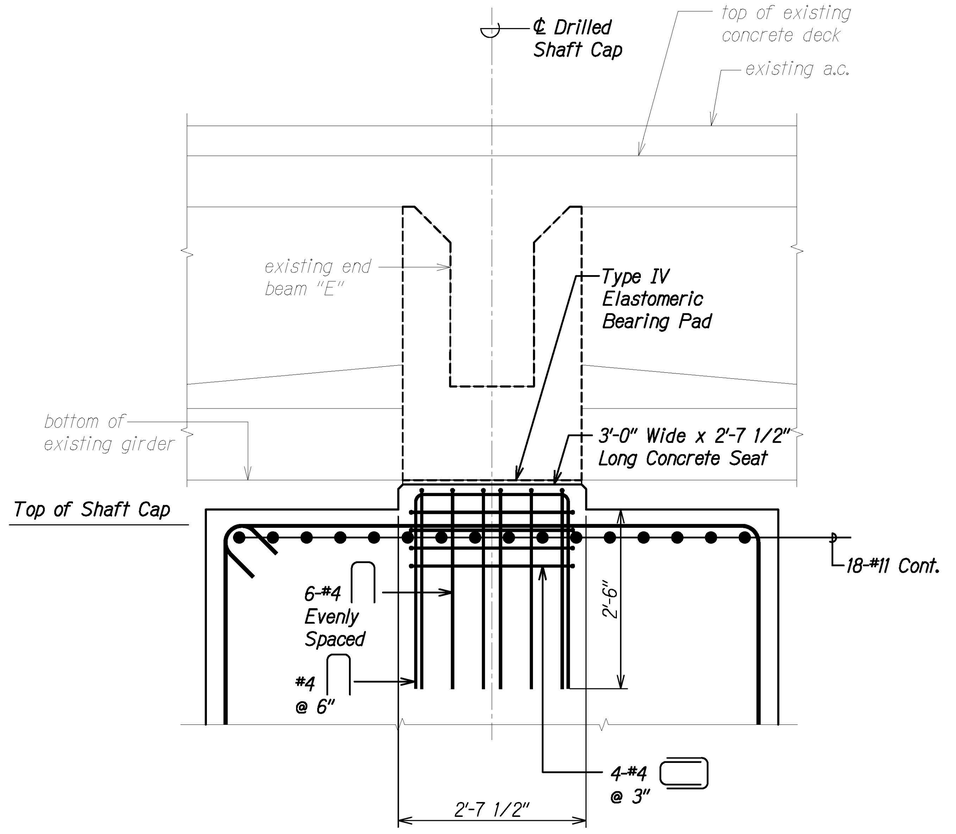
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	73	109



CONC. SEAT DETAIL A

Scale: 1" = 1'-0"

S5.1 | S5.4



CONC. SEAT DETAIL B

Scale: 1" = 1'-0"

S5.4 | S5.4

Note:

1. *Concrete seat shall not exceed 6" in height unless approved by the Engineer.*

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-22

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE SEAT AT PIER NO. 4

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

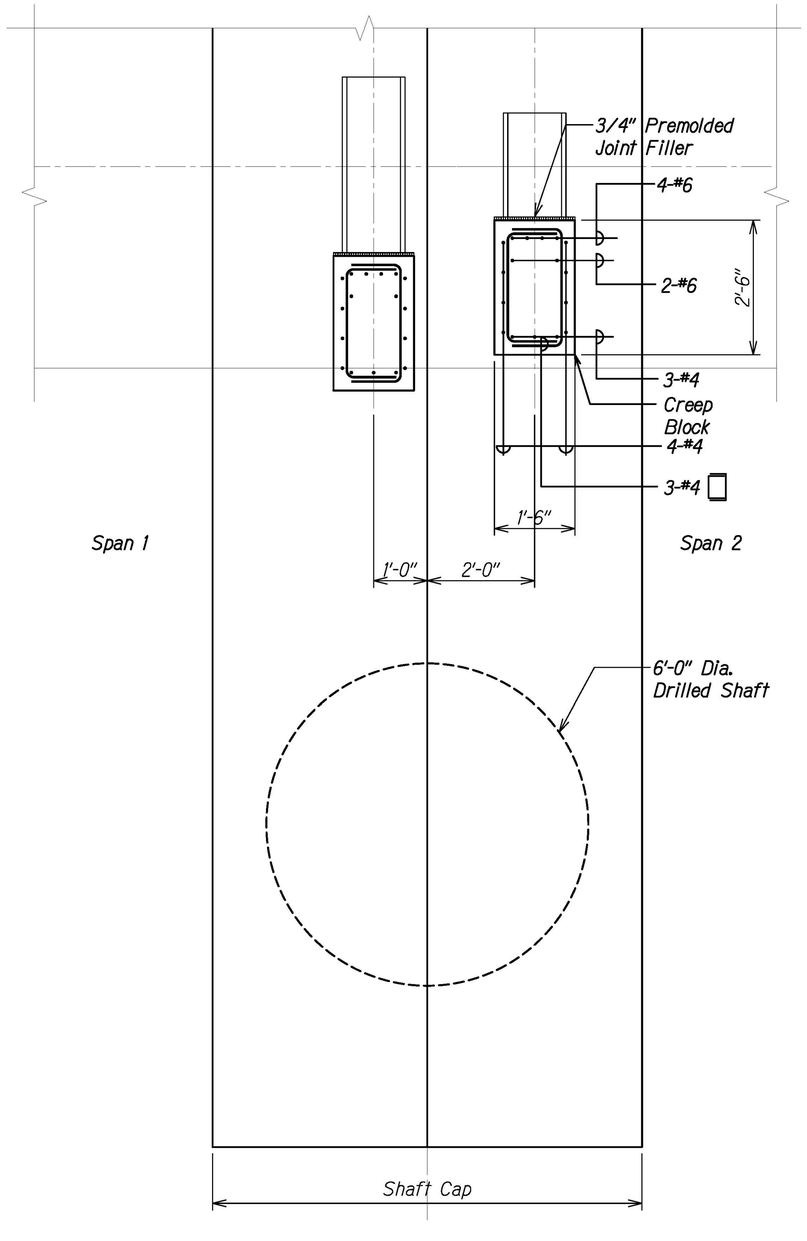
Scale: As Noted — Date: Apr. 2021

SHEET No. S5.4 OF 4 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VBS-S5S51 ELEV-SECT P4.DWG PLOT TIME: 04-05-21, 3:46 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	74	109



CREEP BLOCK PLAN AT PIER NO. 1

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

A S6.1 | S6.1

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-20-21 BID RVSD\WBS-56691 S0602 CREEP BLK P1-7.DWG PLOT TIME: 04-15-21, 1:58 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

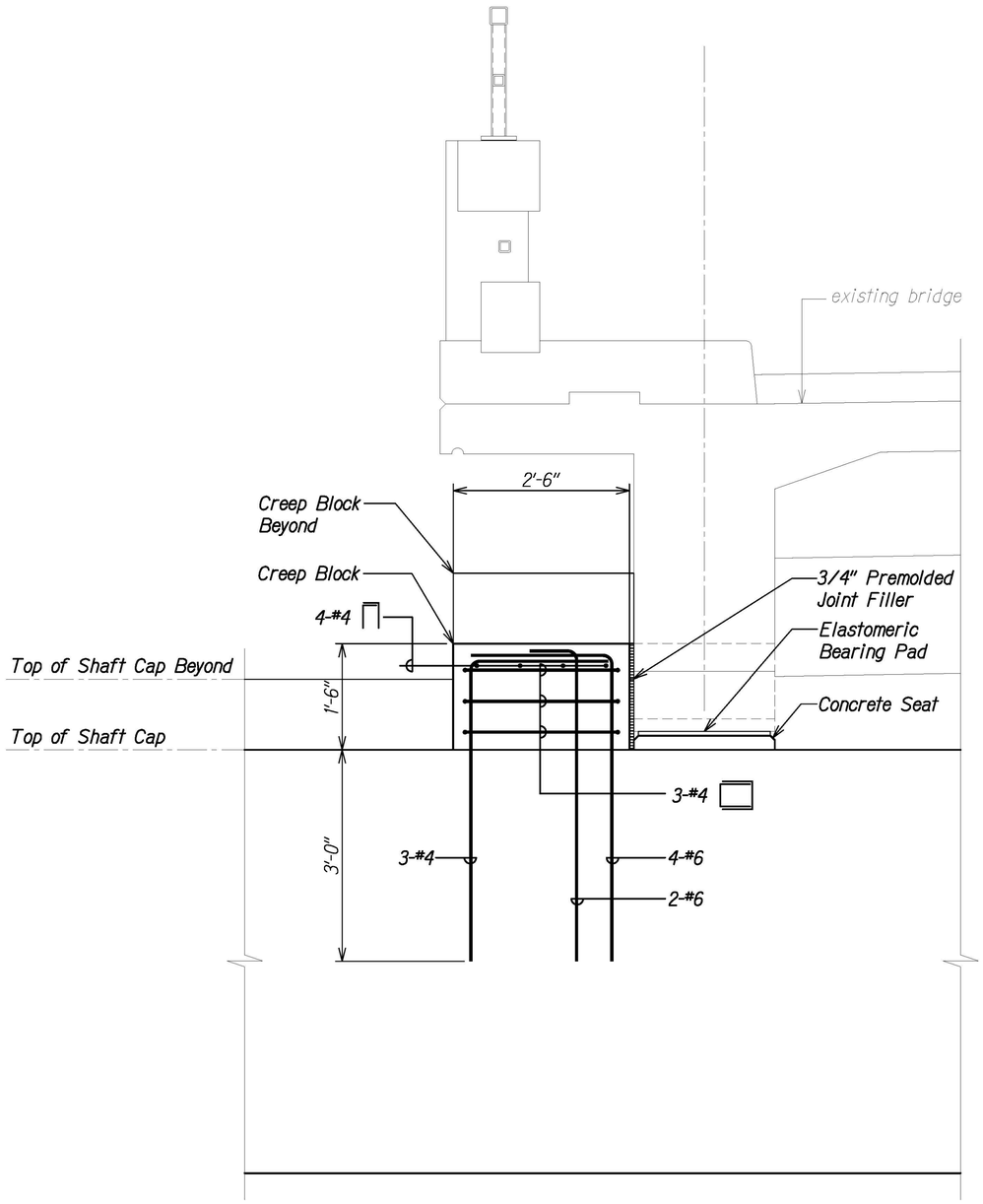
CREEP BLOCK PLAN AT PIER NO. 1

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

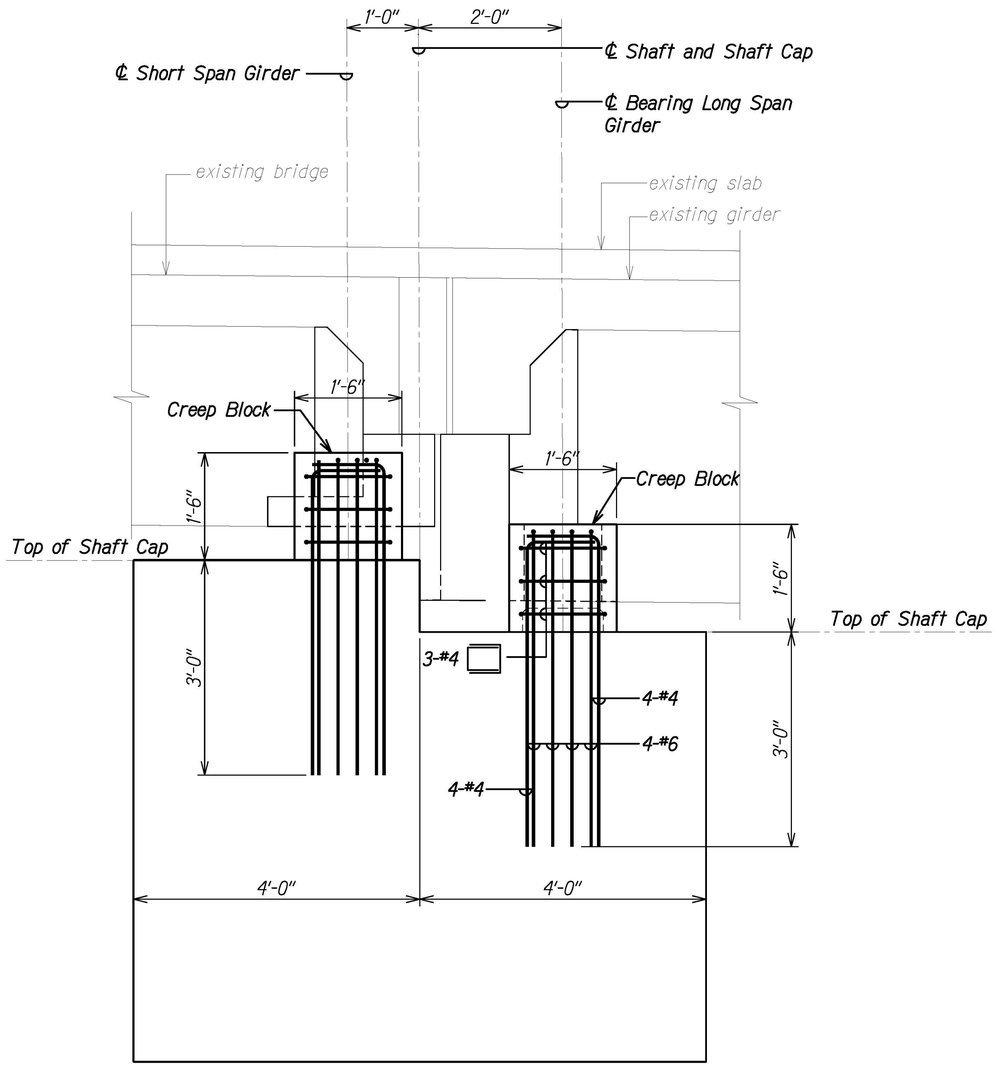
Scale: As Noted Date: Apr. 2021

SHEET No. S6.1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	75	109



CREEP BLOCK SECTION A
Scale: 1" = 1'-0"
S6.2 | S6.2



CREEP BLOCK SECTION B
Scale: 1" = 1'-0"
S6.2 | S6.2

CALVIN T. MIYAMARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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4-30-22
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CREEP BLOCK SECTIONS AT PIER NOS. 1 & 7

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

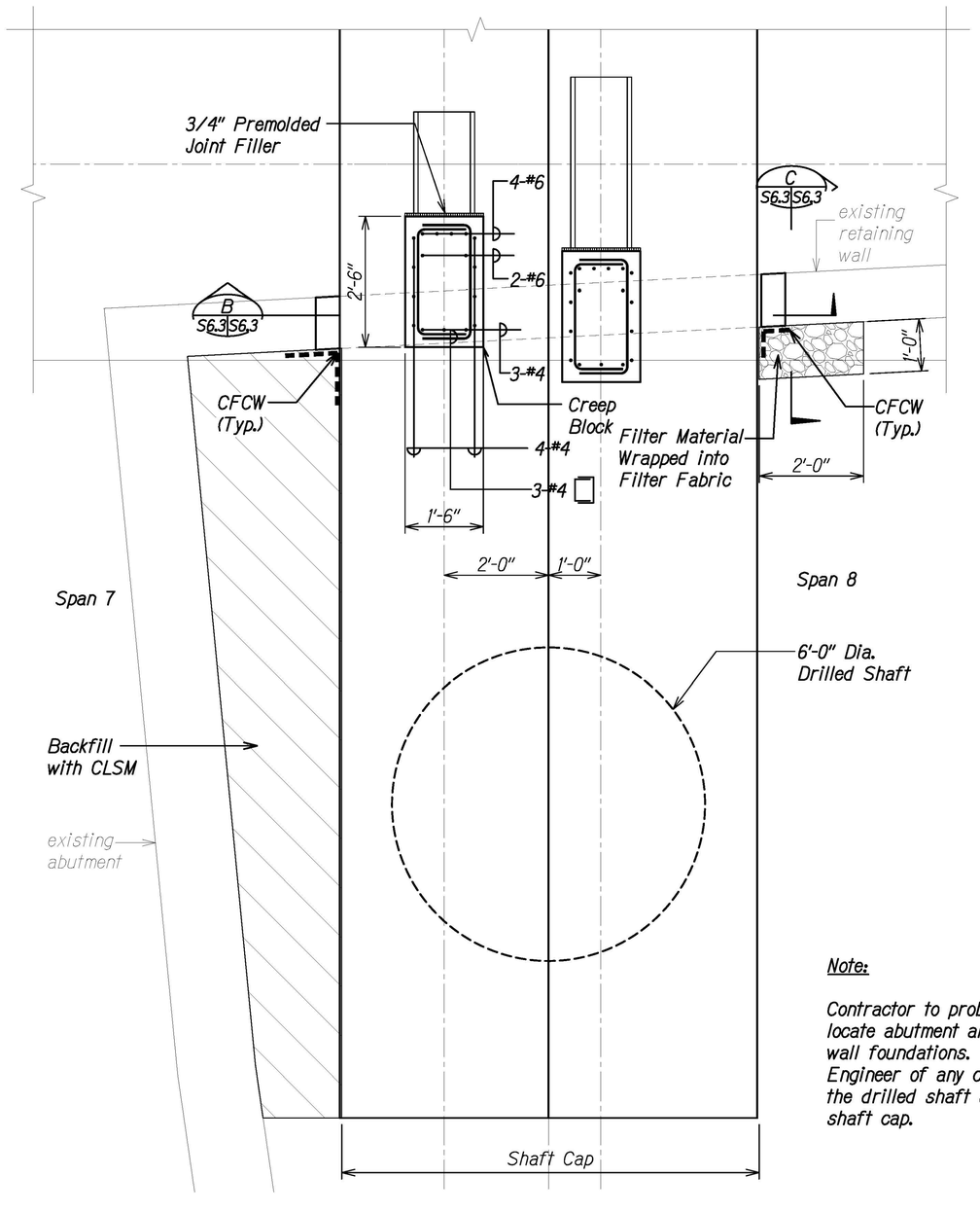
Scale: As Noted Date: Apr. 2021

SHEET No. S6.2 OF 4 SHEETS

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

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S6621 S6622 CREEP BLK P1-7.DWG PLOT TIME: 04-05-21, 3:46 PM

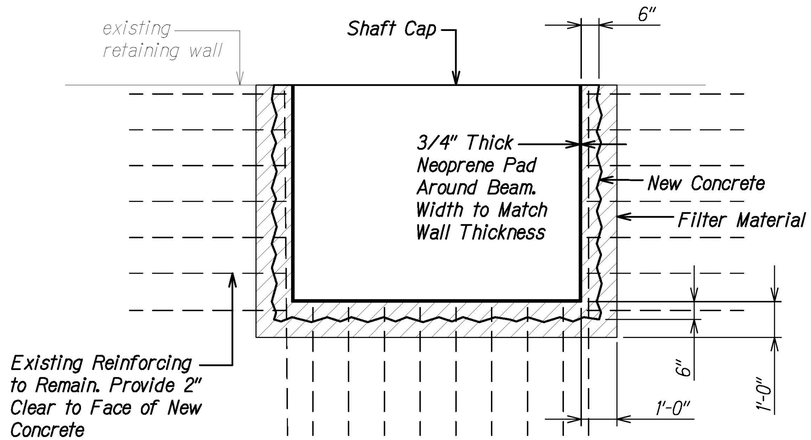
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	76	109



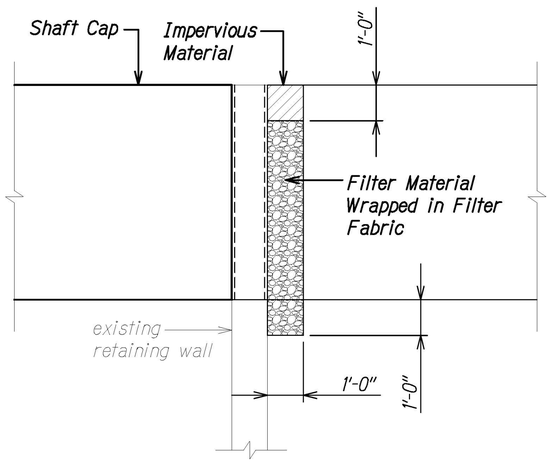
CREEP BLOCK
PLAN AT PIER NO. 7 (A S6.3 | S6.3)
Scale: 3/4" = 1'-0"

Note:

Contractor to probe area to locate abutment and retaining wall foundations. Inform the Engineer of any conflicts with the drilled shaft and drilled shaft cap.



SECTION (B S6.3 | S6.3)
Scale: 1/2" = 1'-0"



SECTION (C S6.3 | S6.3)
Scale: 1/2" = 1'-0"

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CREEP BLOCK PLAN AND SECTIONS AT PIER NO. 7

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

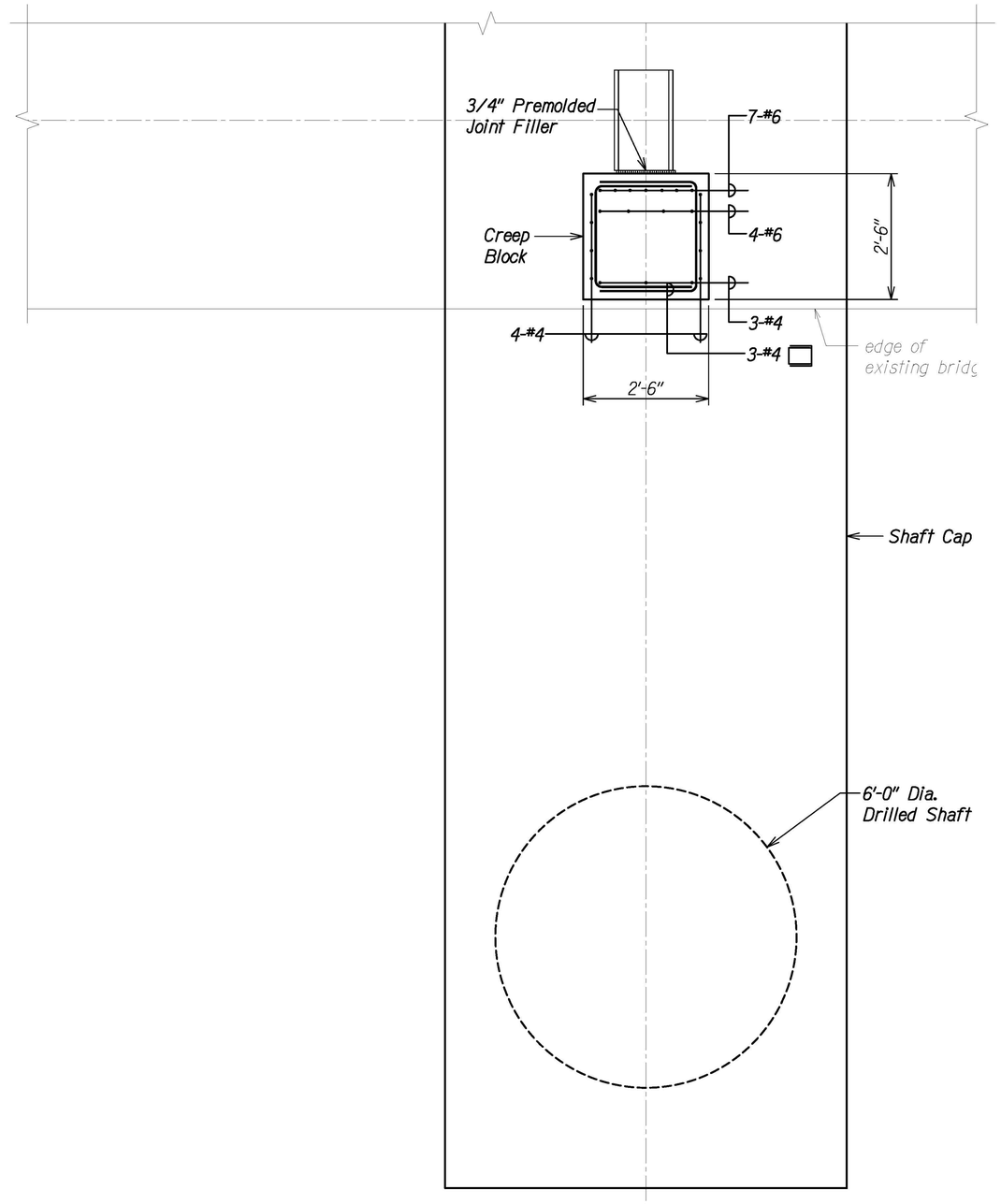
Scale: As Noted Date: Apr. 2021

SHEET No. S6.3 OF 4 SHEETS

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-20-21 BID PKG\WBS-59601 S9602 CREEP BLK P1-7.DWG PLOT TIME: 04-15-21, 1:58 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	77	109



CREEP BLOCK PLAN AT PIER NOS. 2-6

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

A S6.4 | S6.4

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

DRAWING NAME: Z:\OD DWGS\03-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-59604 S0605 CREEP BLK DET 2-6.DWG PLOT TIME: 04-05-21, 3:47 PM)

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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4-30-22

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

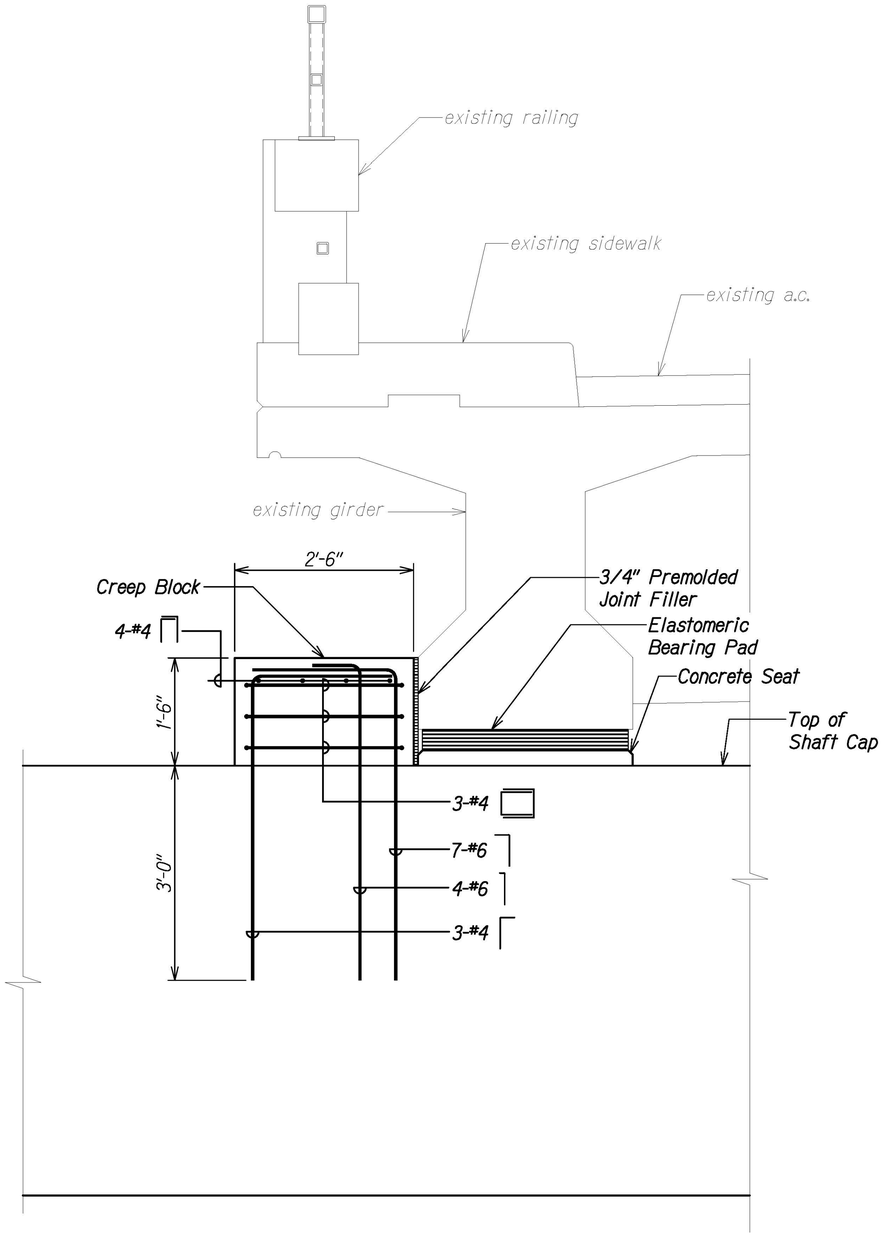
CREEP BLOCK PLAN AT PIER NOS. 2-6

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

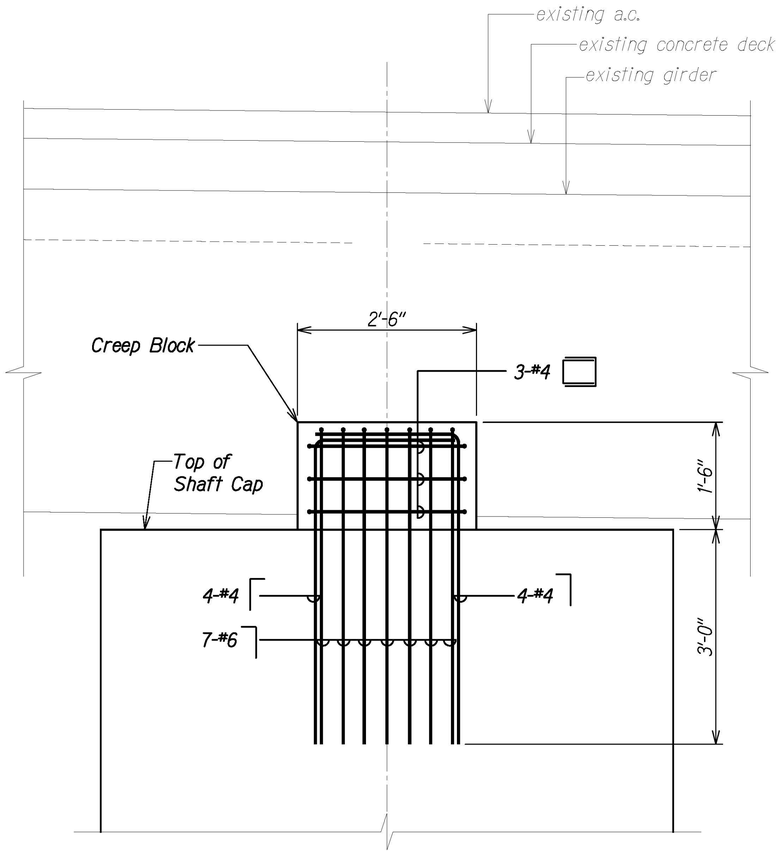
Scale: As Noted Date: Apr. 2021

SHEET No. S6.4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	78	109



CREEP BLOCK SECTION A
Scale: 1" = 1'-0"
S6.5 | S6.5



CREEP BLOCK SECTION B
Scale: 1" = 1'-0"
S6.5 | S6.5

ORIGINAL PLAN
NOTE BOOK
No.

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0604 S0605 CREEP BLK DET 2-6.DWG PLOT TIME: 04-05-21, 3:47 PM)

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

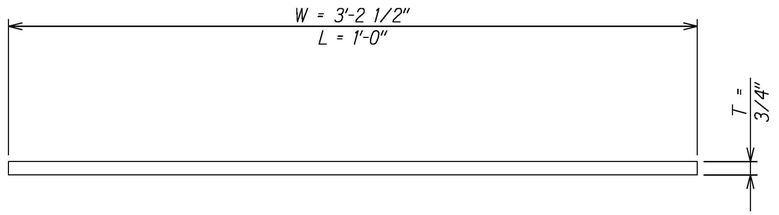
CREEP BLOCK SECTIONS AT PIER NOS. 2-6

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S6.5 OF 4 SHEETS

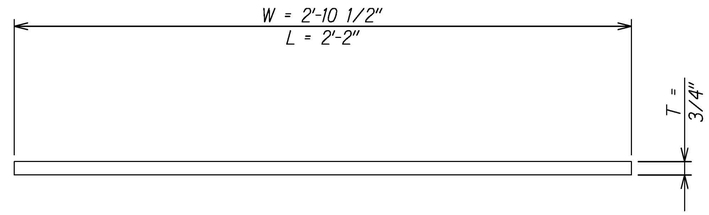
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	79	109



ELASTOMERIC BEARING PAD, TYPE I

Scale: 3" = 1'-0"

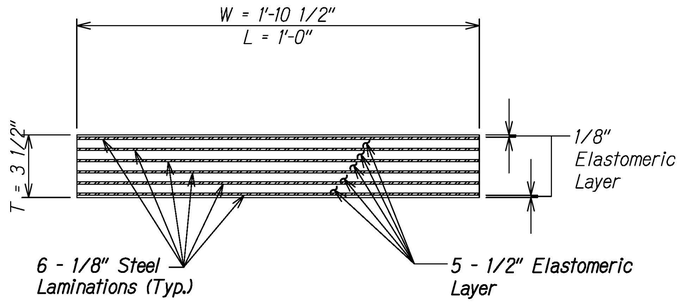
1 S7.1 | S7.1



ELASTOMERIC BEARING PAD, TYPE IV

Scale: 3" = 1'-0"

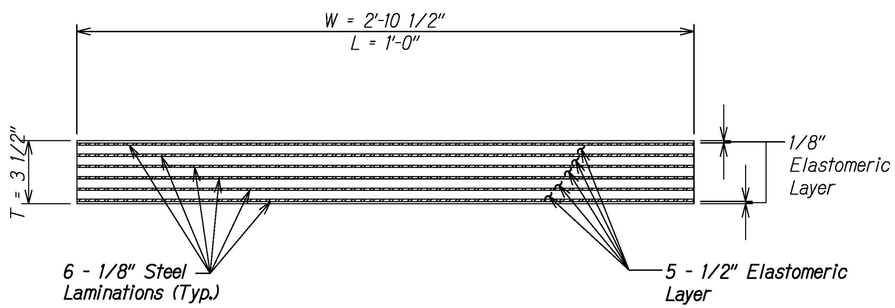
4 S7.1 | S7.1



ELASTOMERIC BEARING PAD, TYPE II

Scale: 3" = 1'-0"

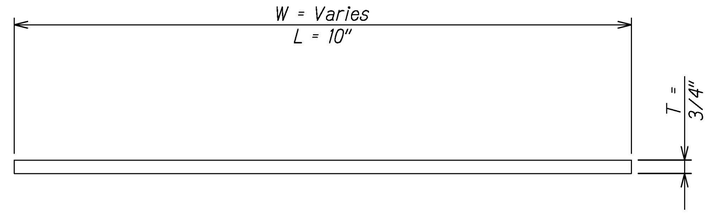
2 S7.1 | S7.1



ELASTOMERIC BEARING PAD, TYPE III

Scale: 3" = 1'-0"

3 S7.1 | S7.1



ELASTOMERIC BEARING PAD, TYPE V

Scale: 3" = 1'-0"

5 S7.1 | S7.1

ORIGINAL PLAN
NOTE BOOK No.

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0701 EJAS BRG PAD.DWG PLOT TIME: 04-05-21, 3:48 PM)

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-22 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

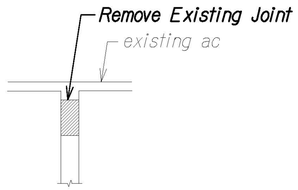
ELASTOMERIC BEARING PAD

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S7.1 OF 1 SHEETS

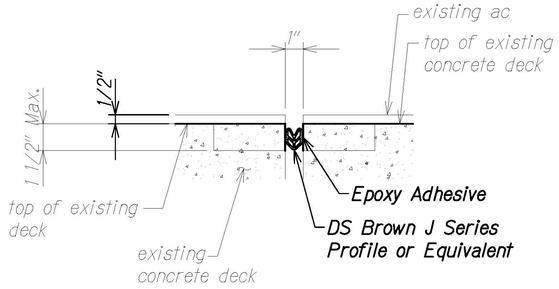
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	80	109



EXPANSION JOINT DEMOLITION PIER NOS. 1 AND 7

Not to Scale

1 S8.1 S8.1



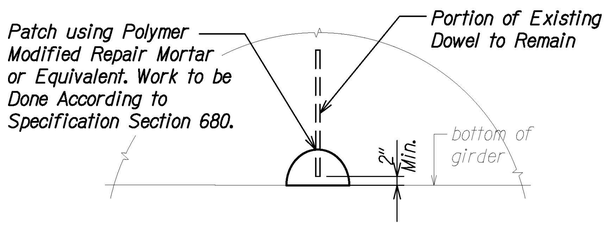
TYPICAL EXPANSION JOINT REPAIR PIER NOS. 1 AND 7

Not to Scale

2 S8.1 S8.1

NOTES:

1. As-built plans call for a 1-inch wide joint. The joint may be wider, verify in field before ordering the expasion joint seal.
2. Joint Seal manufacturer's recommendations shall be followed
3. The cost of the joint seal shall be considered incidental to Section 503 - Concrete Structures.



TYPICAL GIRDER REPAIR DETAIL

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

3 S8.1 S8.1

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

DRAWING NAME: Z:\00 ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S9801 EXP JT.DWG PLOT TIME: 04-05-21, 3:48 PM

CALVIN T. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 8133-S HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

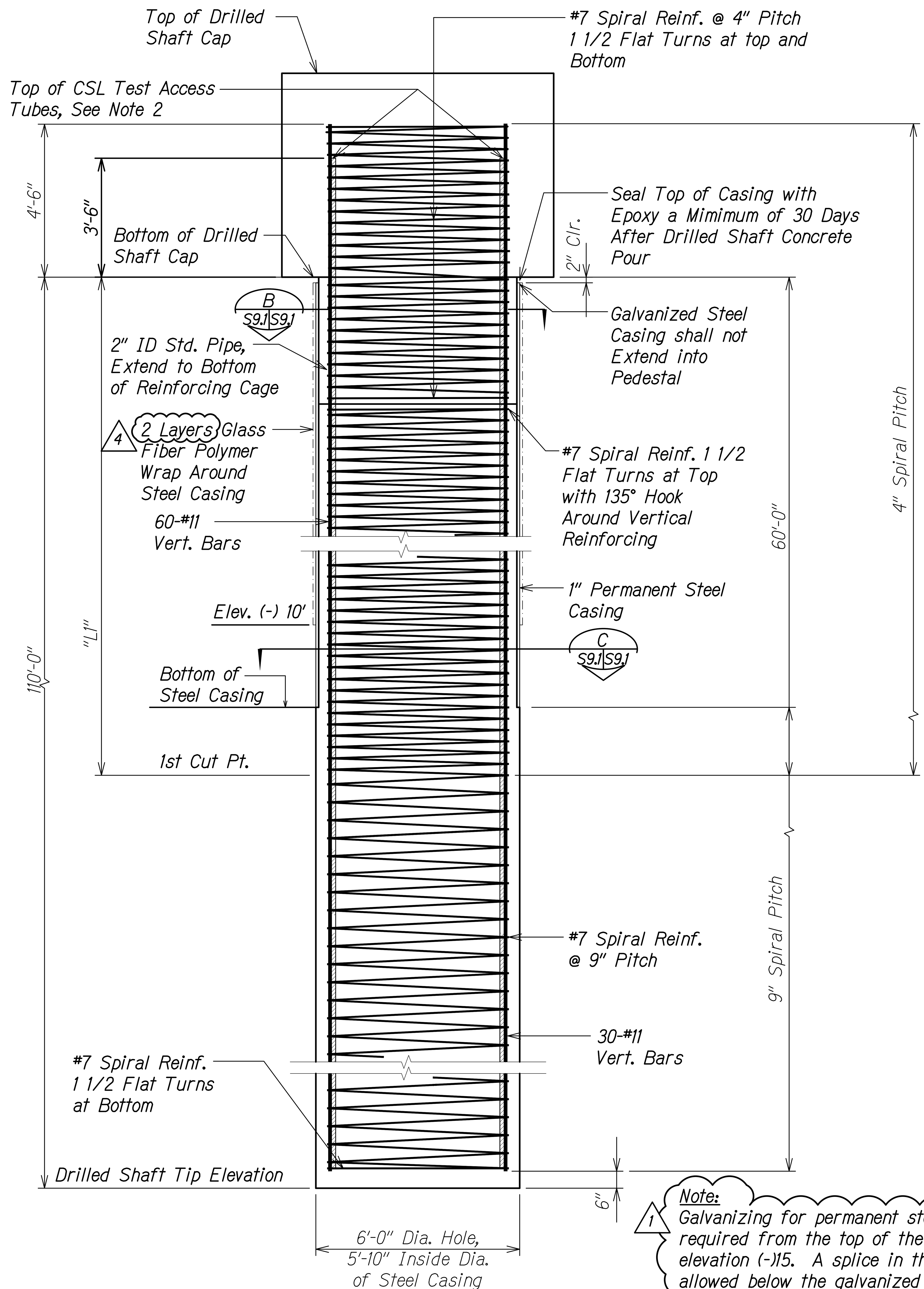
EXPANSION JOINT AND GIRDER REPAIR

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

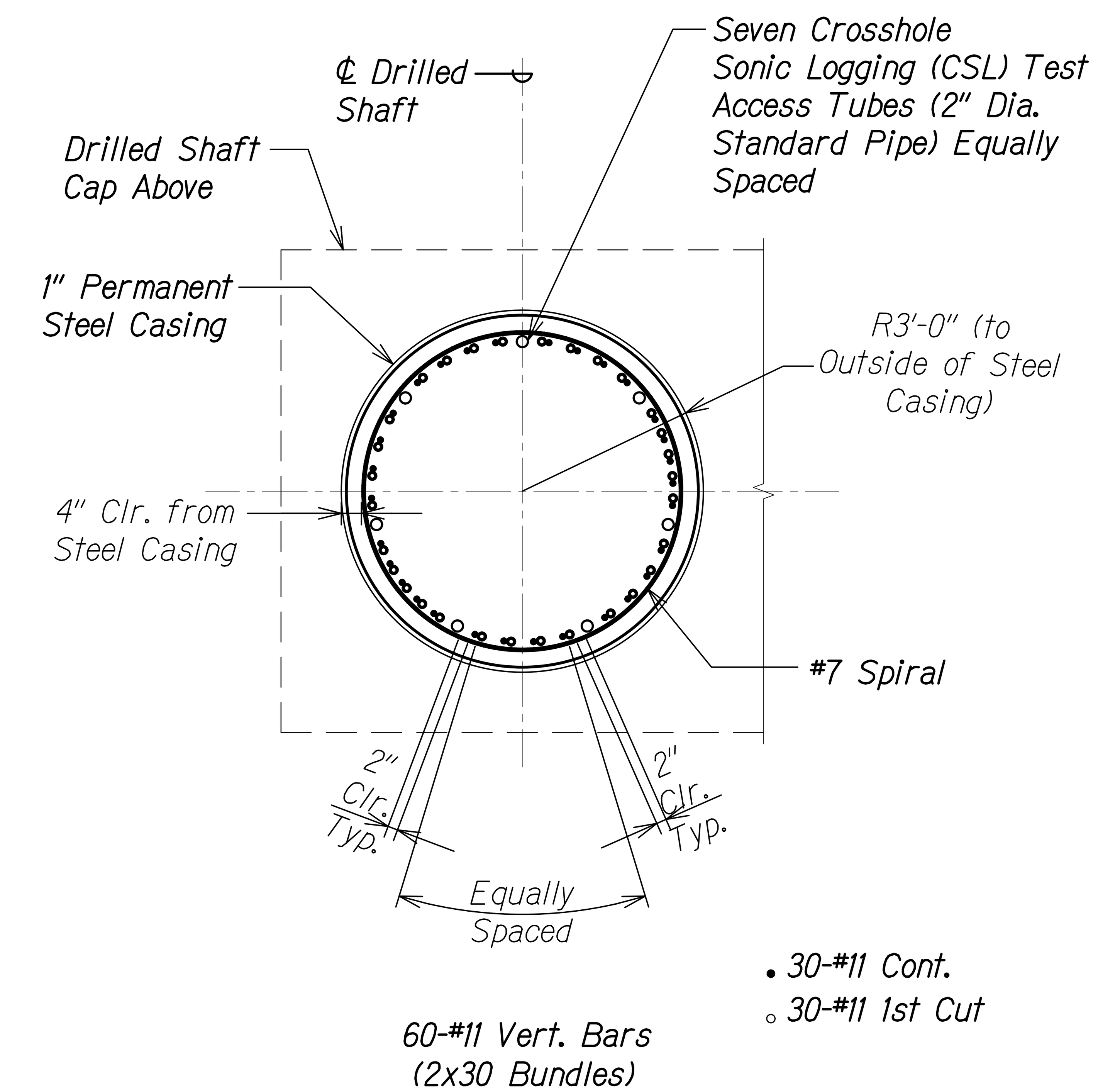
SHEET No. S8.1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	ADD. 81	109

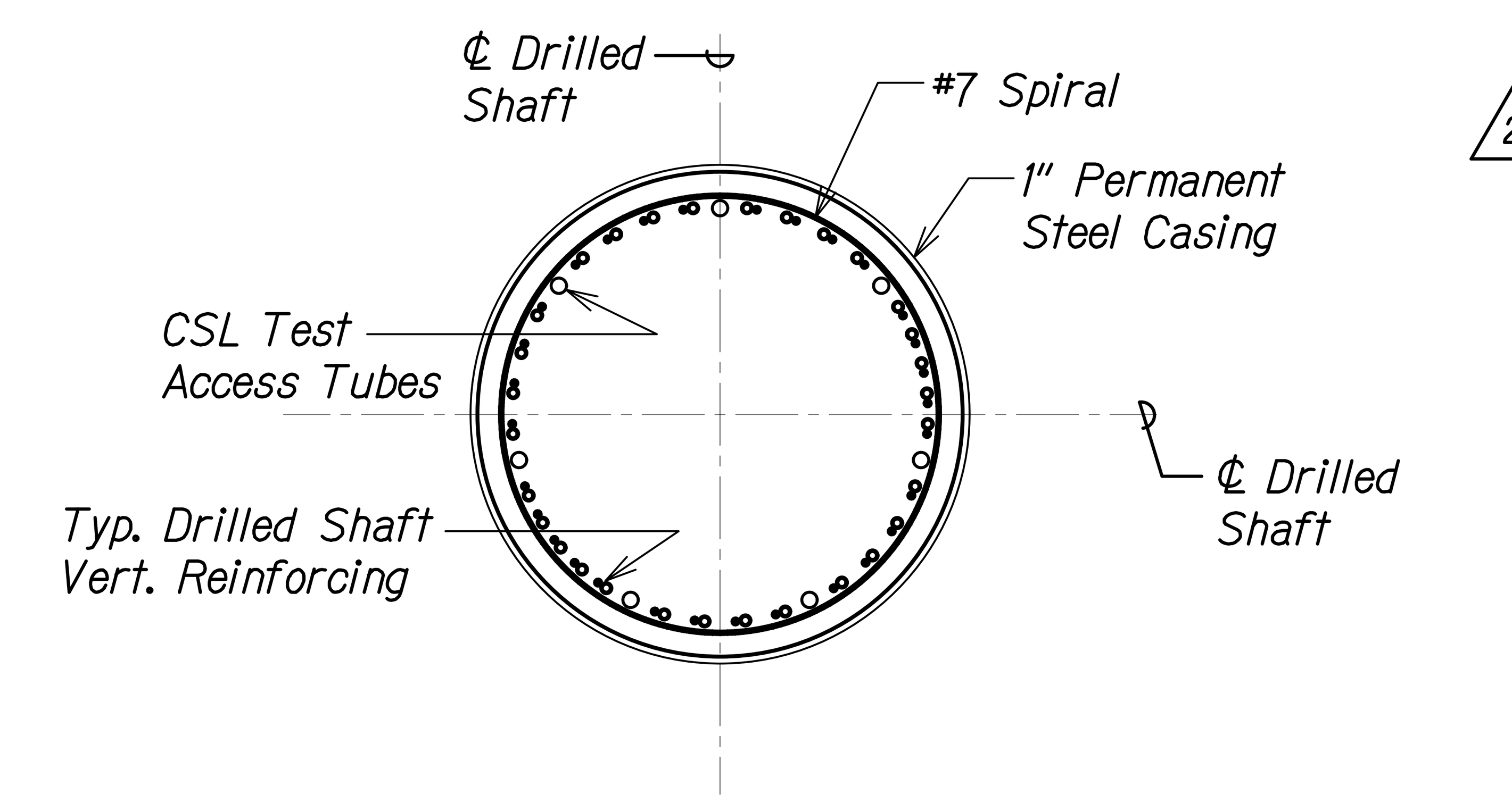


Note: Galvanizing for permanent steel casing is only required from the top of the steel casing to elevation (-)15. A splice in the casing will be allowed below the galvanized portion of the casing.

DRILLED SHAFT ELEVATION AT PIERS (A, S9.1 | S9.1)
Scale: 1/2" = 1'-0"



SECTION B (S9.1 | S9.1)
Scale: 1/2" = 1'-0"



SECTION C (S9.1 | S9.1)
Scale: 1/2" = 1'-0"

NOTES:

1. Crosshole Sonic Logging (CSL) testing shall be performed on every drilled shaft. Shafts indicating irregular CSL readings may be subjected to additional testing.
2. After CSL testing, a portion of the CSL test access tubes shall be removed to one inch above top of the drilled shaft elevation. Tubes shall be completely filled with non-shrink, non-metallic, cementitious grout of at least equal strength as drilled shaft prior to pouring the transition zone. See Specifications for additional grout requirements.
3. Lap splice length for #11 vert. bar shall be 8'-0". No lap splices of vert. bars are allowed in the upper 35'-0" of the drilled shaft.
4. Lapped splices shall have a minimum of 2'-0" vertically between splice points.
5. Staggered splice points for longitudinal reinforcing shall not be more than 50% of the total at any section normal to the axis of the shaft.
6. Lap splice length for #7 spirals shall be 4'-0" min. with a 135° hook bend at each end.
7. Each end of the spiral shall have 1 1/2 extra turns with a 135° hook around a vertical reinforcing bar.
8. Concrete or other non-corrosive spacing devices shall be used to maintain the reinforcement cage in position within the shaft.
9. (Rev. 2) Finish coating on FRP shall be touched up above elevation 0.00 after drilled shaft cap is complete. FRP manufacturer's recommendations shall be followed.

CALVIN T. MIYAHARA, LICENSED PROFESSIONAL ENGINEER, NO. 8133-S, HAWAII, U.S.A.

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DATE		REVISION
8/27/21	2	Add. 4 - Revised & Added Notes
8/10/21	1	Add. 2 - Added Note

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRODUCTION DRILLED SHAFT AT PIERS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted — Date: Apr. 2021

SHEET No. S9.1 OF 3 SHEETS

ADD. 81

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	82	109

DRILLED SHAFT SCHEDULE							
Drilled Shaft Mark	Pier No. 1	Pier No. 2	Pier No. 3	Pier No. 4	Pier No. 5	Pier No. 6	Pier No. 7
Drilled Shaft Diameter	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"
Estimated Drilled Shaft Tip Elevation	(-) 75	(-) 135	(-) 130	(-) 125	(-) 125	(-) 125	(-) 105
Length of Shaft "L"	85'-0"	144'-0"	138-0"	133'-0"	132'-0"	131'-0"	111'-0"
"L1"	50'-0"	70'-0"	70'-0"	70'-0"	70'-0"	70'-0"	70'-0"
Length of Permanent Steel Casing "L3"	60'-0"	60'-0"	60'-0"	60'-0"	60'-0"	60'-0"	60'-0"
Strength 1 Limit State Compressive Demand (KIPS)	1,400	1,900	1,800	1,800	1,800	1,900	1,400

NOTE:

30-#11 Vertical reinforcing bars terminate at "L1". In addition the spiral reinforcing changes from #7 @ 4" to #7 @ 9" at "L1".

ORIGINAL PLAN
NOTE BOOK
No.

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

DRAWING NAME: Z:\OD ONGOING\29-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S9901 PROD DS.DWG PLOT TIME: 04-05-21, 3:49 PM

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

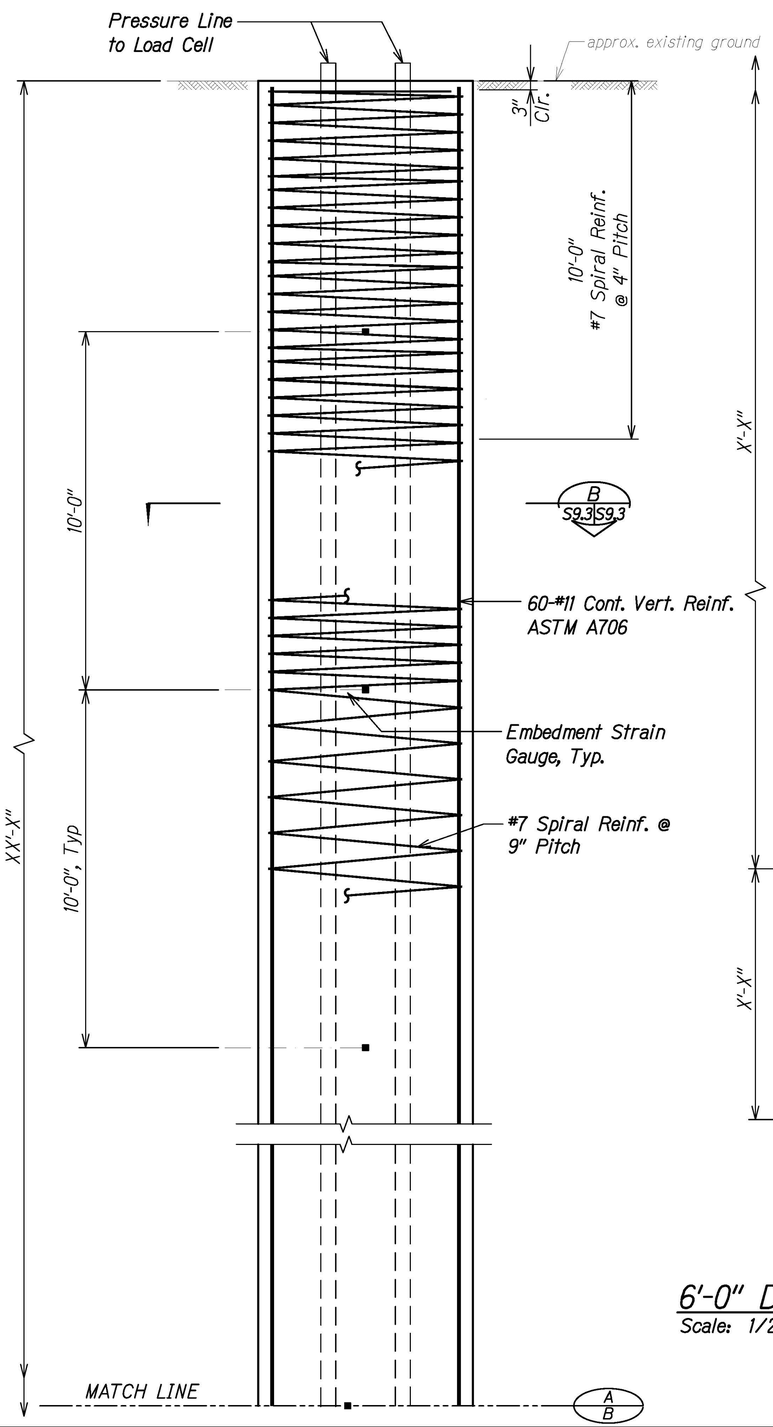
DRILLED SHAFT SCHEDULE

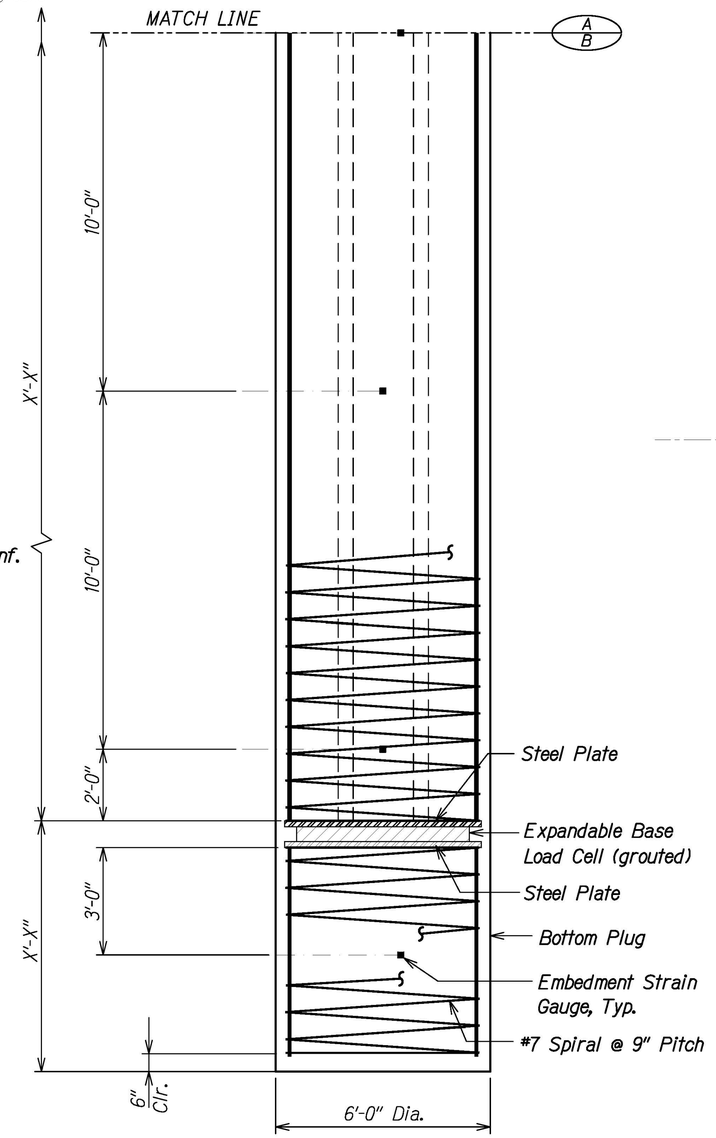
KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

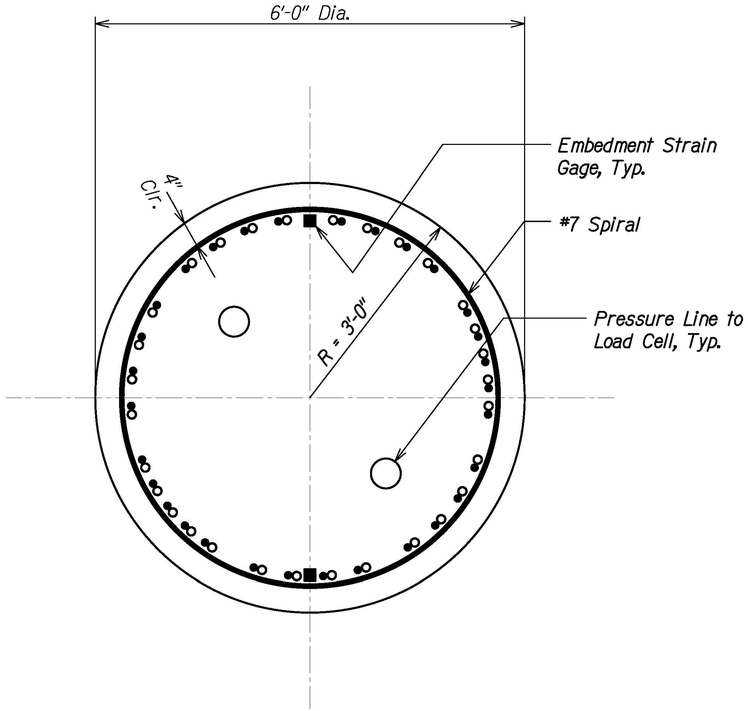
Scale: As Noted Date: Apr. 2021

SHEET No. S9.2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	83	109







SECTION B
Scale: 1" = 1'-0"
S9.3 S9.3

6'-0" DIA. LOAD TEST SHAFT ELEVATION A
Scale: 1/2" = 1'-0"
S9.3 S9.3

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

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S0903 DS LOAD TEST.DWG PLOT TIME: 04-05-21, 3:49 PM

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LICENSED PROFESSIONAL ENGINEER
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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOAD TEST SHAFT

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

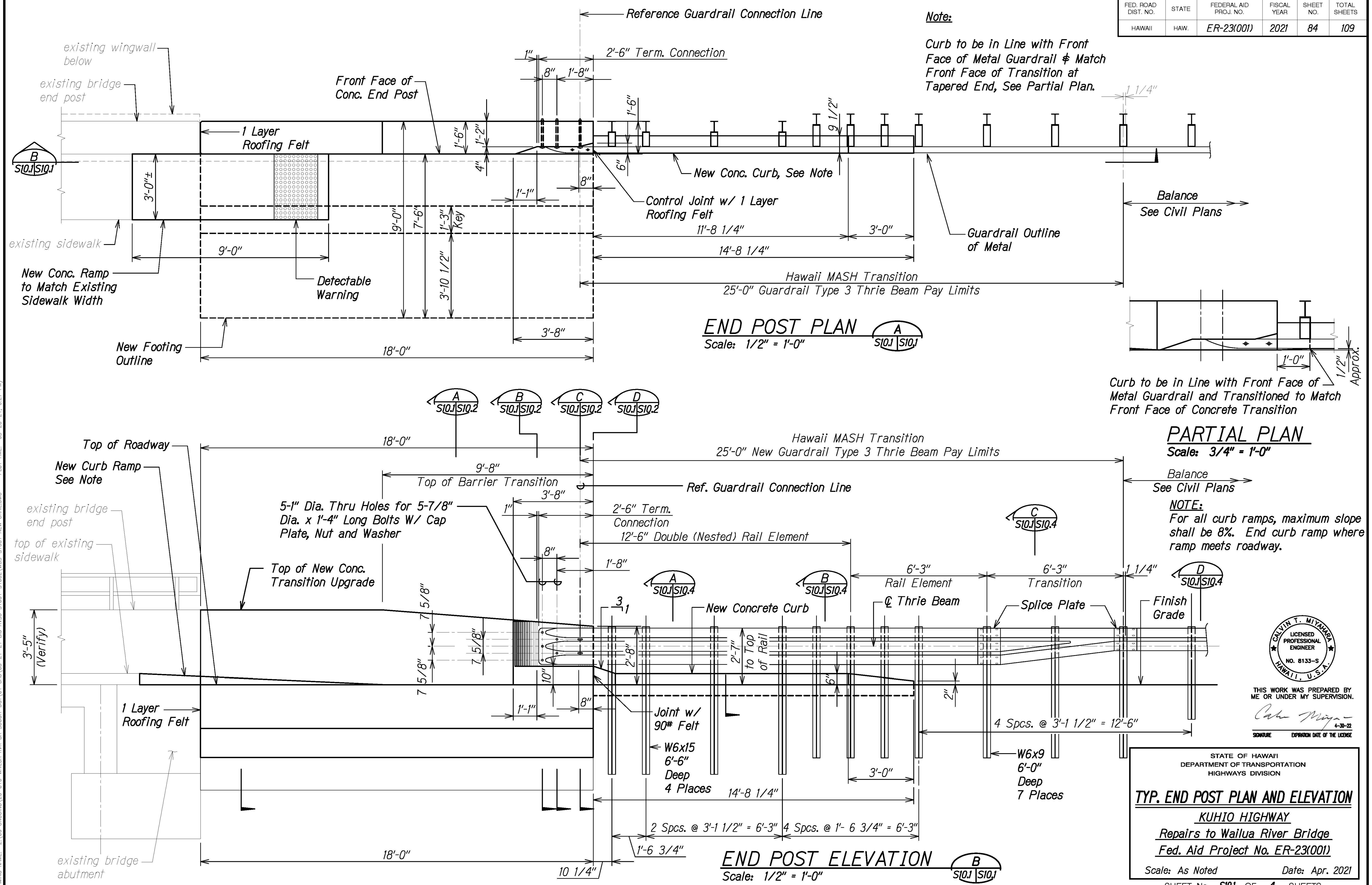
Scale: As Noted — Date: Apr. 2021

SHEET No. S9.3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	84	109

Note:

Curb to be in Line with Front Face of Metal Guardrail & Match Front Face of Transition at Tapered End, See Partial Plan.



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LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYP. END POST PLAN AND ELEVATION

KUHIO HIGHWAY

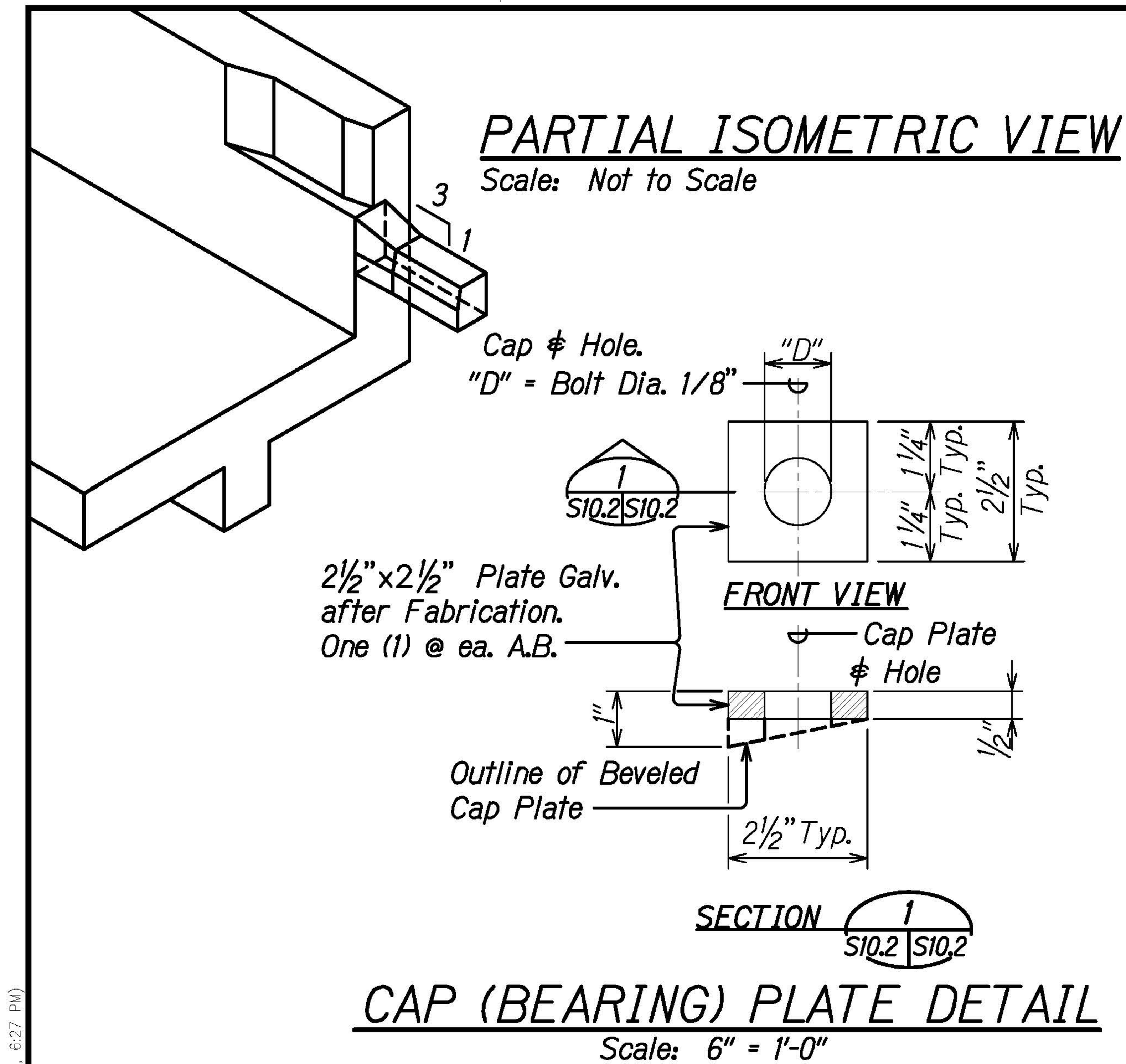
Repairs to Wailua River Bridge

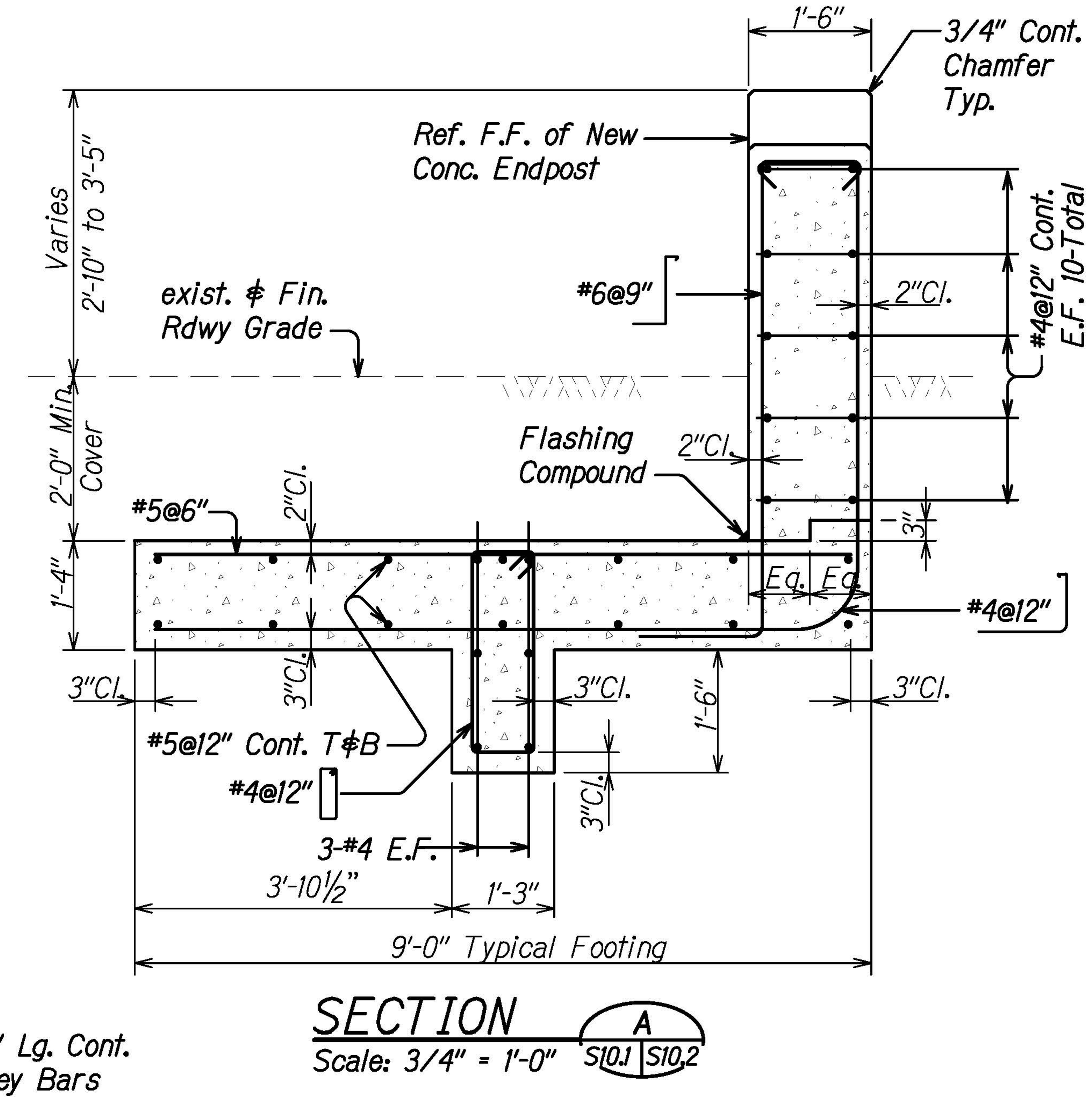
Fed. Aid Project No. ER-23(001)

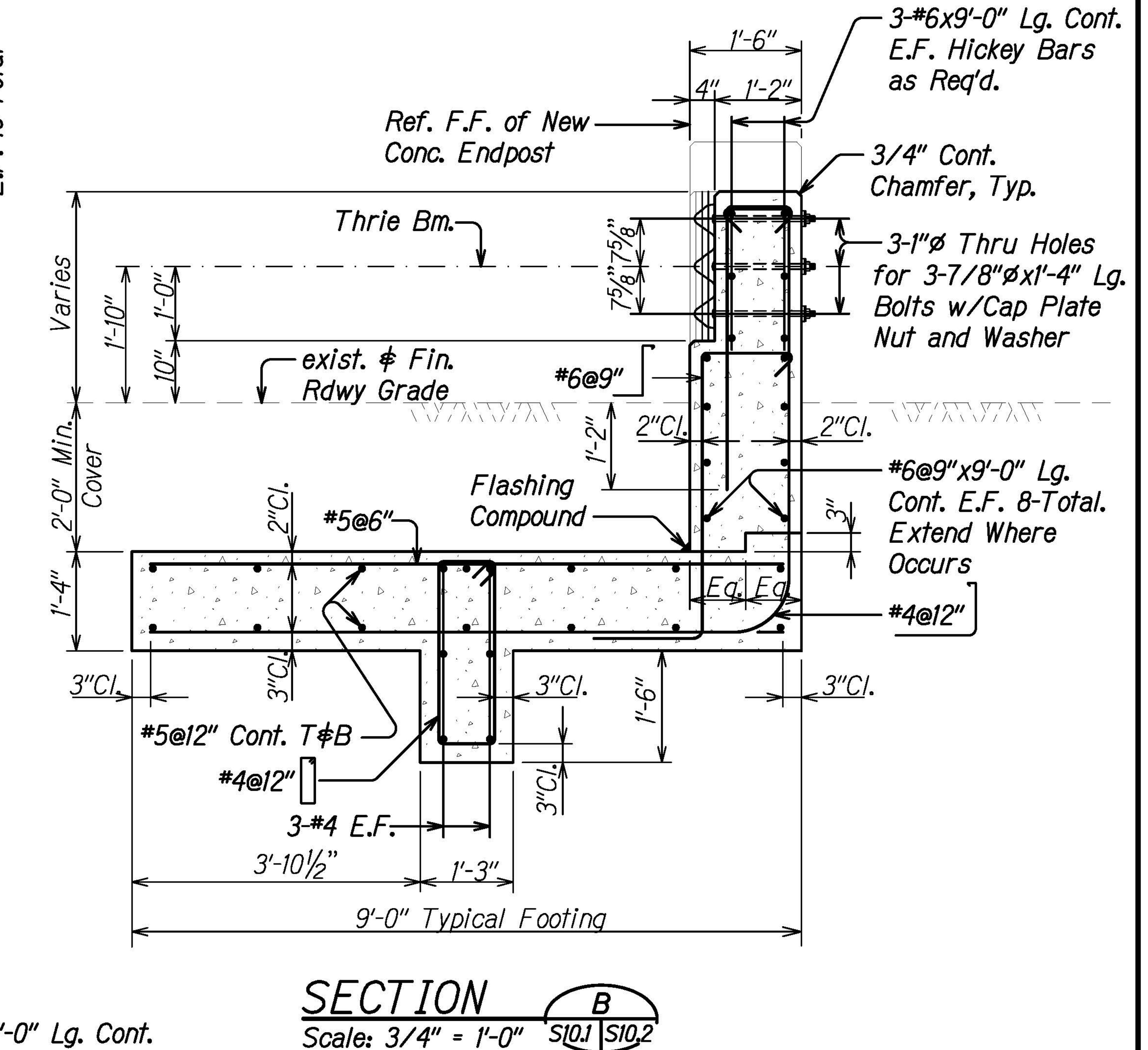
Scale: As Noted — Date: Apr. 2021

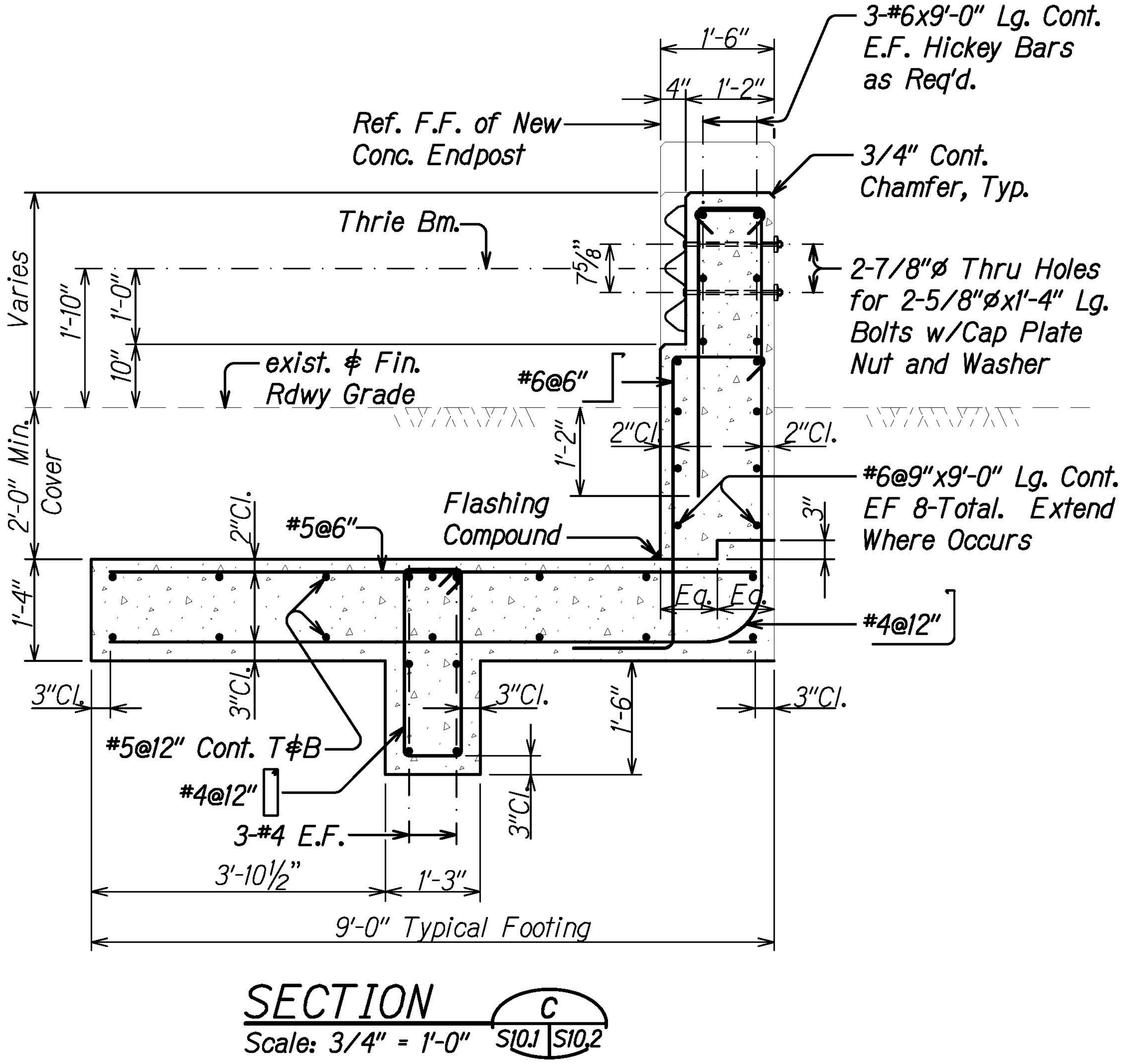
SHEET No. S10.1 OF 4 SHEETS

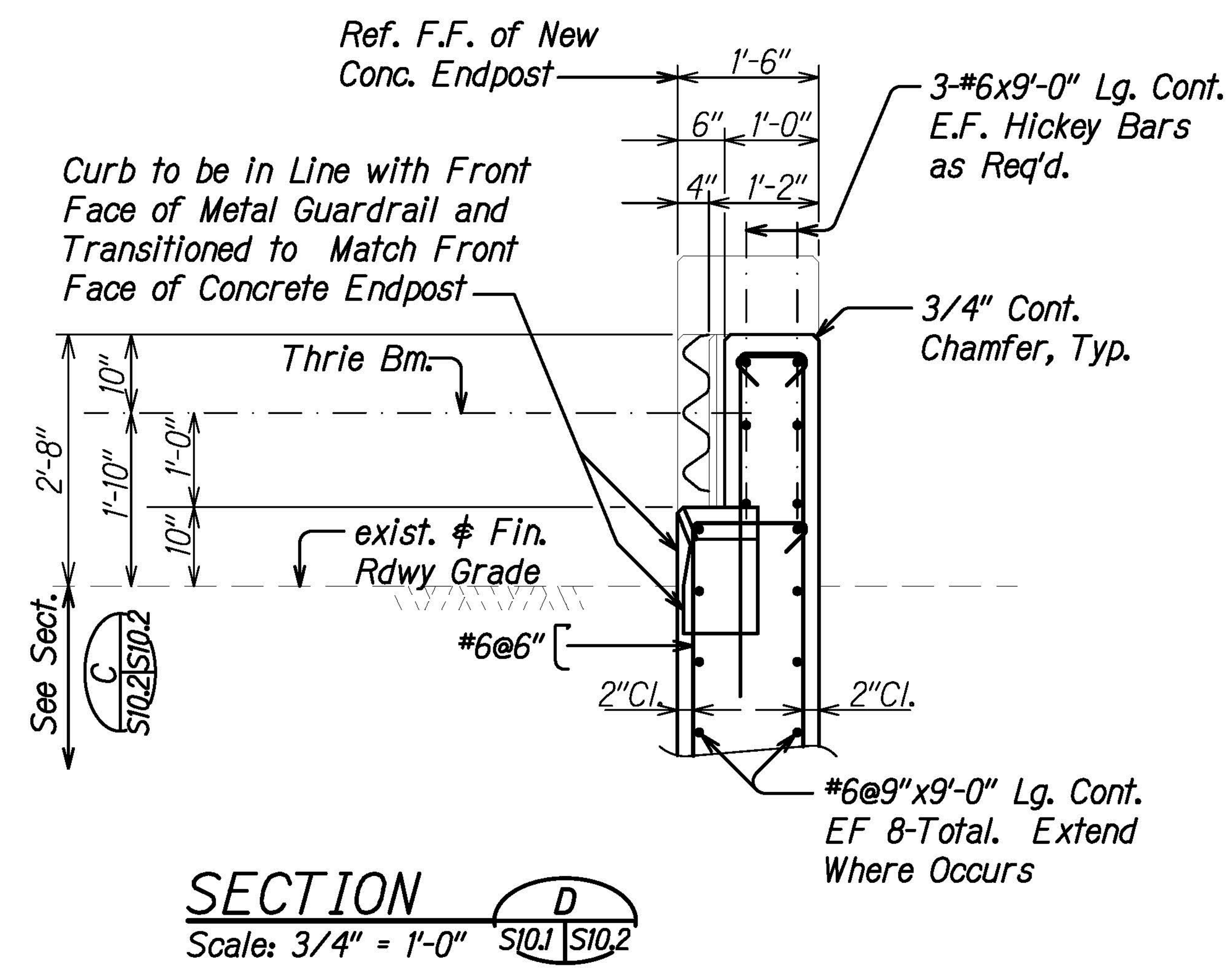
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	85	109

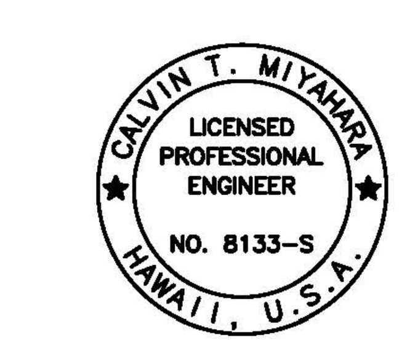












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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYP. END POST SECTIONS AND DETAIL

KUHIO HIGHWAY

Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted   Date: Apr. 2021

SHEET No. S10.2 OF 4 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\05-21-21 BID RVSD S1001-S1002\WRS-S1001 NEW GRAIL.DWG   PLOT TIME: 05-20-21, 6:27 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	86	109

NOTES:

A. The work necessary to connect guardrail to the concrete end post shall include all labor, materials, tools, equipment and incidentals necessary to complete the work and will not be paid for separately.

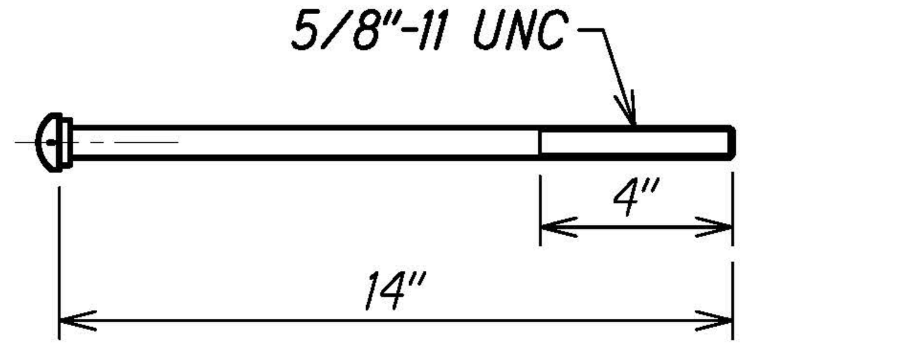
B. Lap terminal connector and rail elements in the direction of traffic to prevent snagging.

C. Bolts shall have sufficient length when installed to ensure that the nut is at least flush but should not project more than 1/4". The Contractor will not be allowed to cut, grind or otherwise alter the bolt to meet this reguirement unless it is done during the fabrication of the bolt prior to galvanizing.

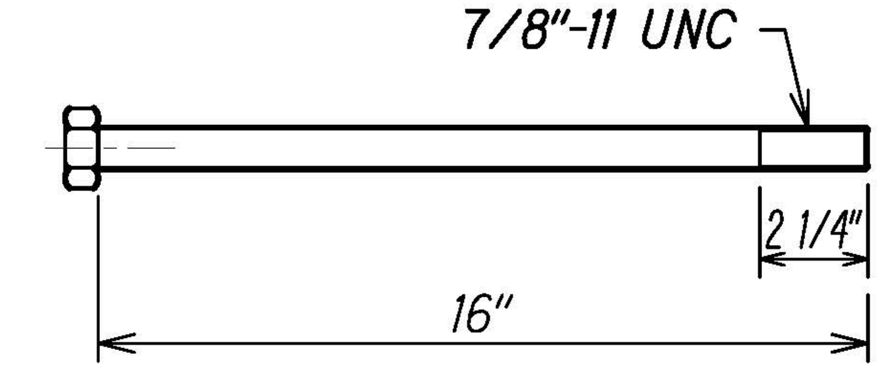
D. The first 25'-0" of guardrail adjoining the "Terminal Connector" shall be placed tangent to the concrete transition front face or parallel to the roadway, unless conditions at the site renders it impossible to do so. Flare point to be determined in field.

E. Head of all bolts shall be placed on the traffic side of the rail.

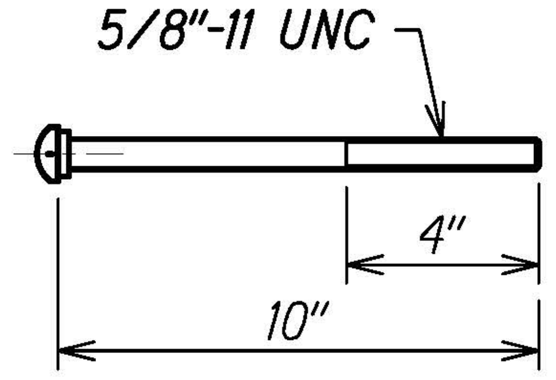
F. All W6x8.5, W6x9 and W6x15 guardrail posts shall be clearly stamped during fabrication "W6x8.5", "W6x9", or "W6x15", respectively, on each post.



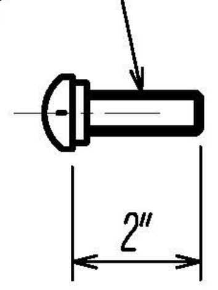
5/8"-11 UNC, 14" Long Guardrail Bolt



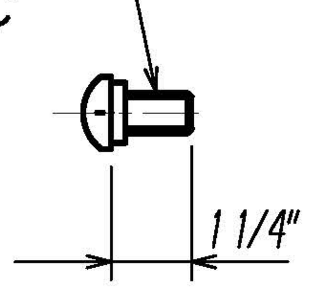
7/8"-9 UNC, 16" Long Heavy Hex Head Bolt



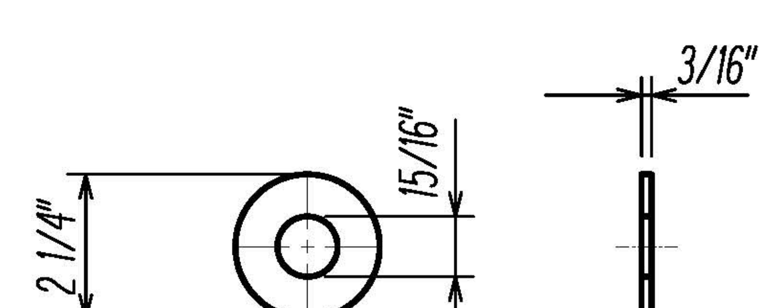
5/8"-11 UNC, 10" Long Guardrail Bolt



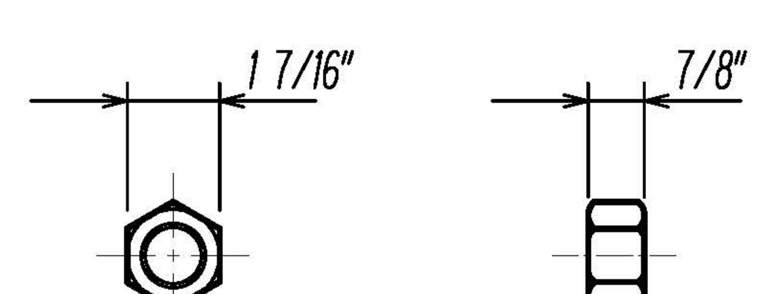
5/8"-11 UNC, 2" Long Guardrail Bolt



5/8"-11 UNC, 1 1/4" Long Guardrail Bolt

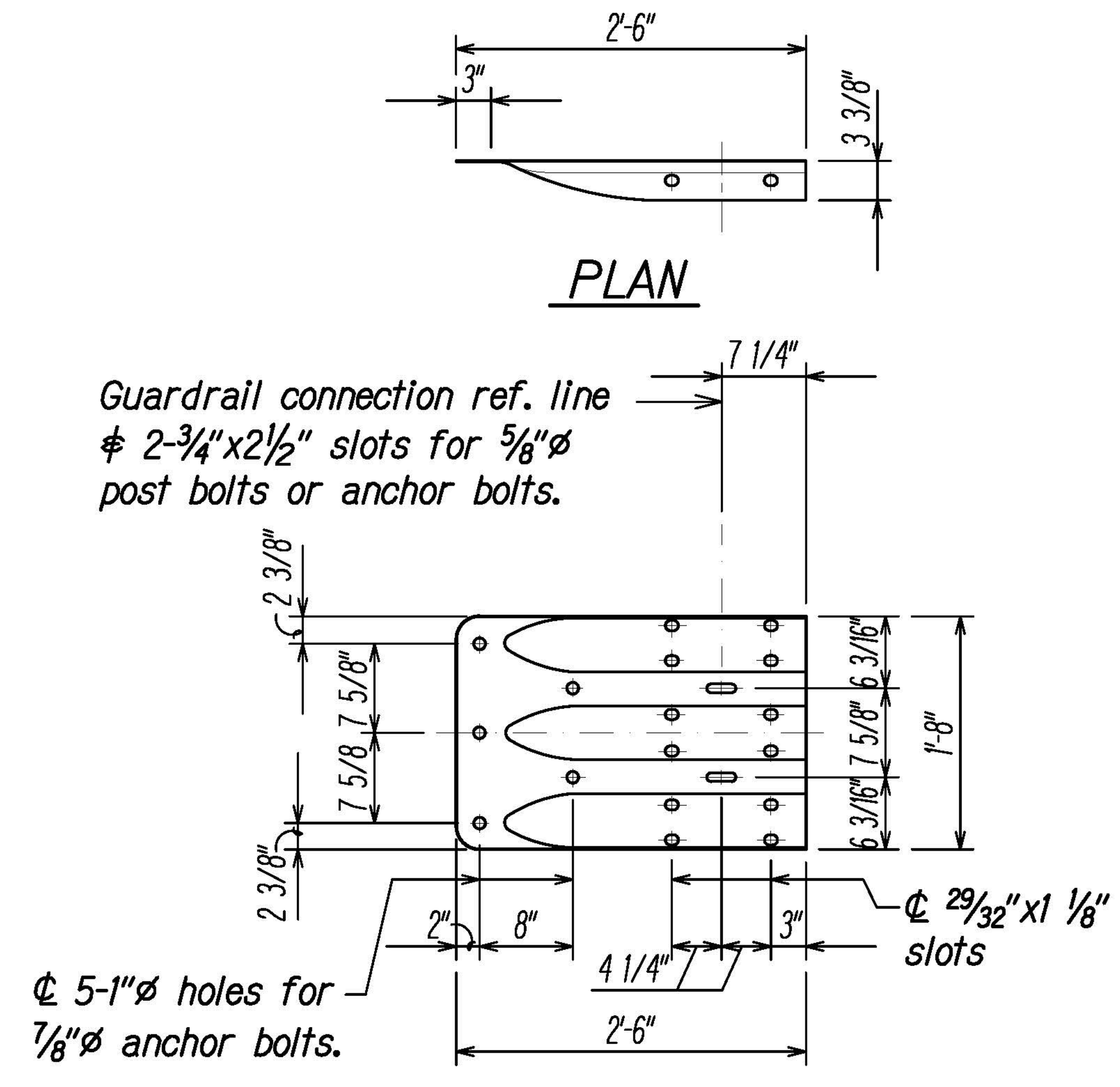


5/8" Dia. Plain USS Washer

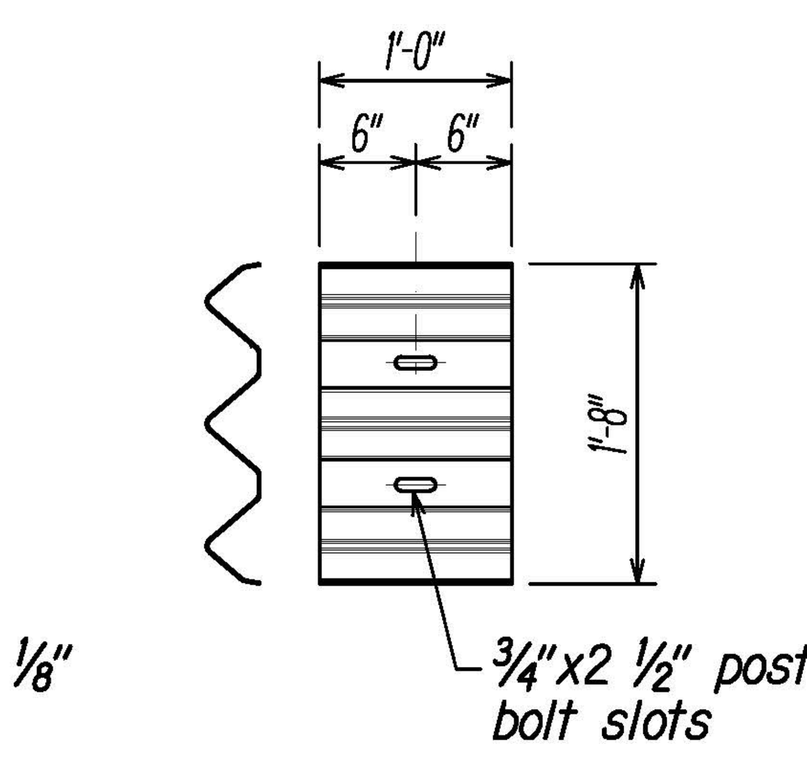


7/8"-9 UNC Heavy Hex Nut

5/8-11 UNC Heavy Hex Nut

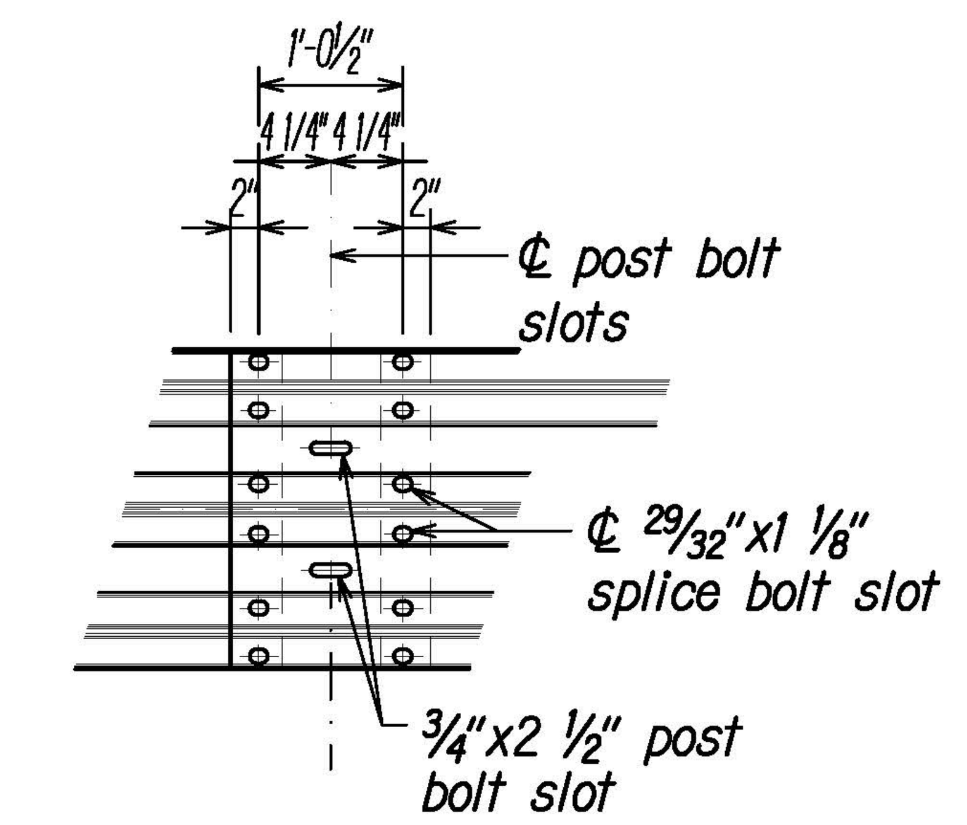


TERMINAL CONNECTOR
Scale: 1" = 1'-0"

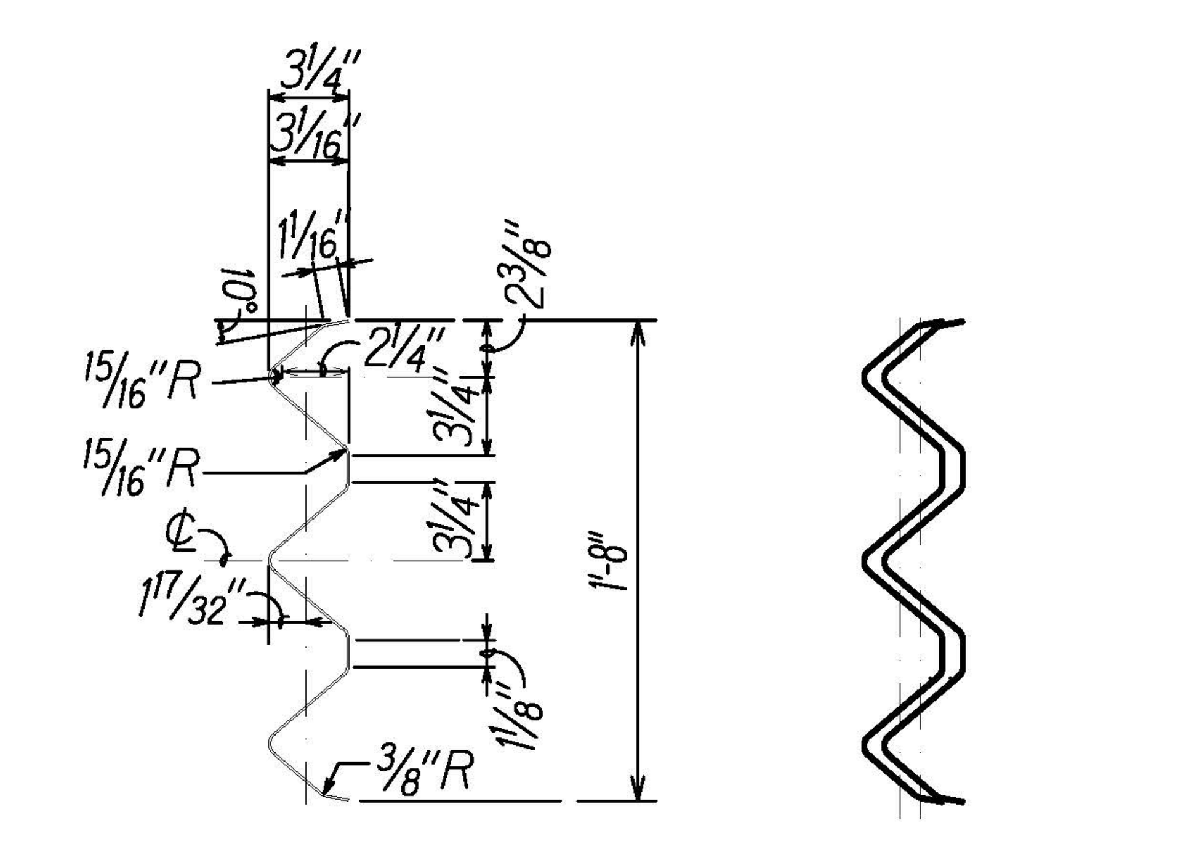


(Use at posts where splices do not occur.)

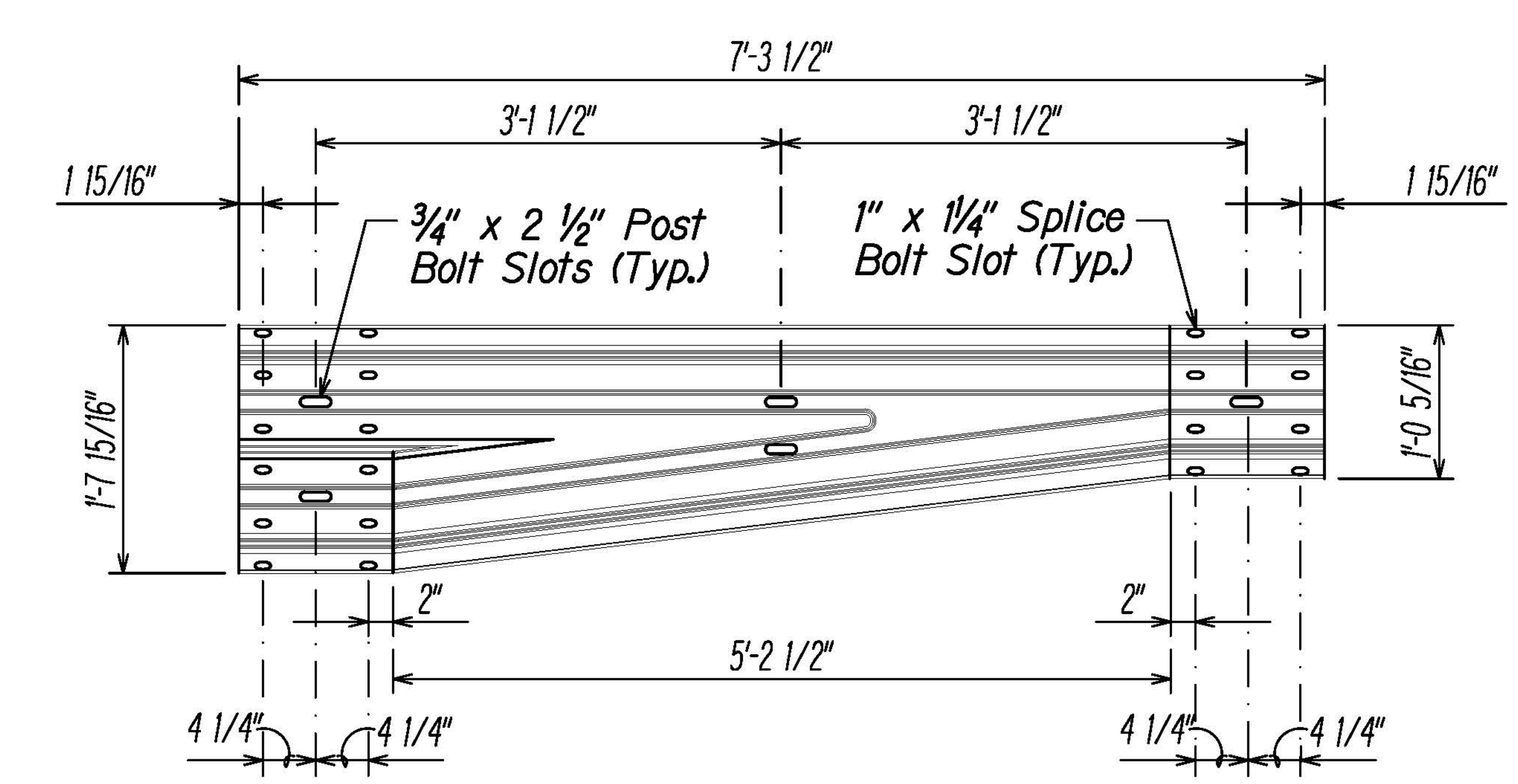
BACKUP PLATE
Scale: 1" = 1'-0"



RAIL SPLICE
Scale: 1" = 1'-0"



SECTION THRU RAIL ELEMENT
Scale: 1 1/2" = 1'-0"



TRANSITION SECTION
Scale: 1" = 1'-0"

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Calvin Miyahara
4-30-22
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METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

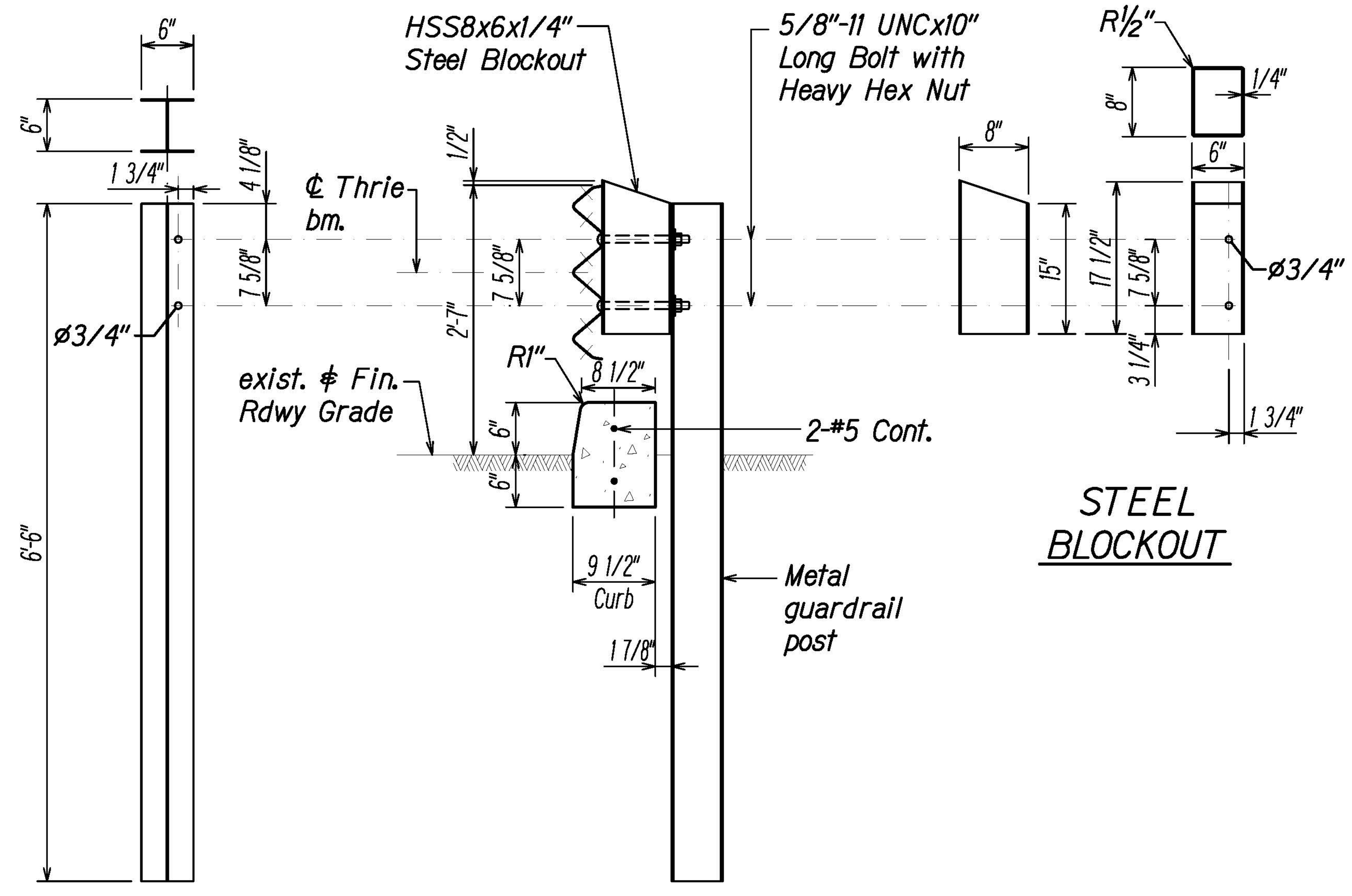
KUHIO HIGHWAY

Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

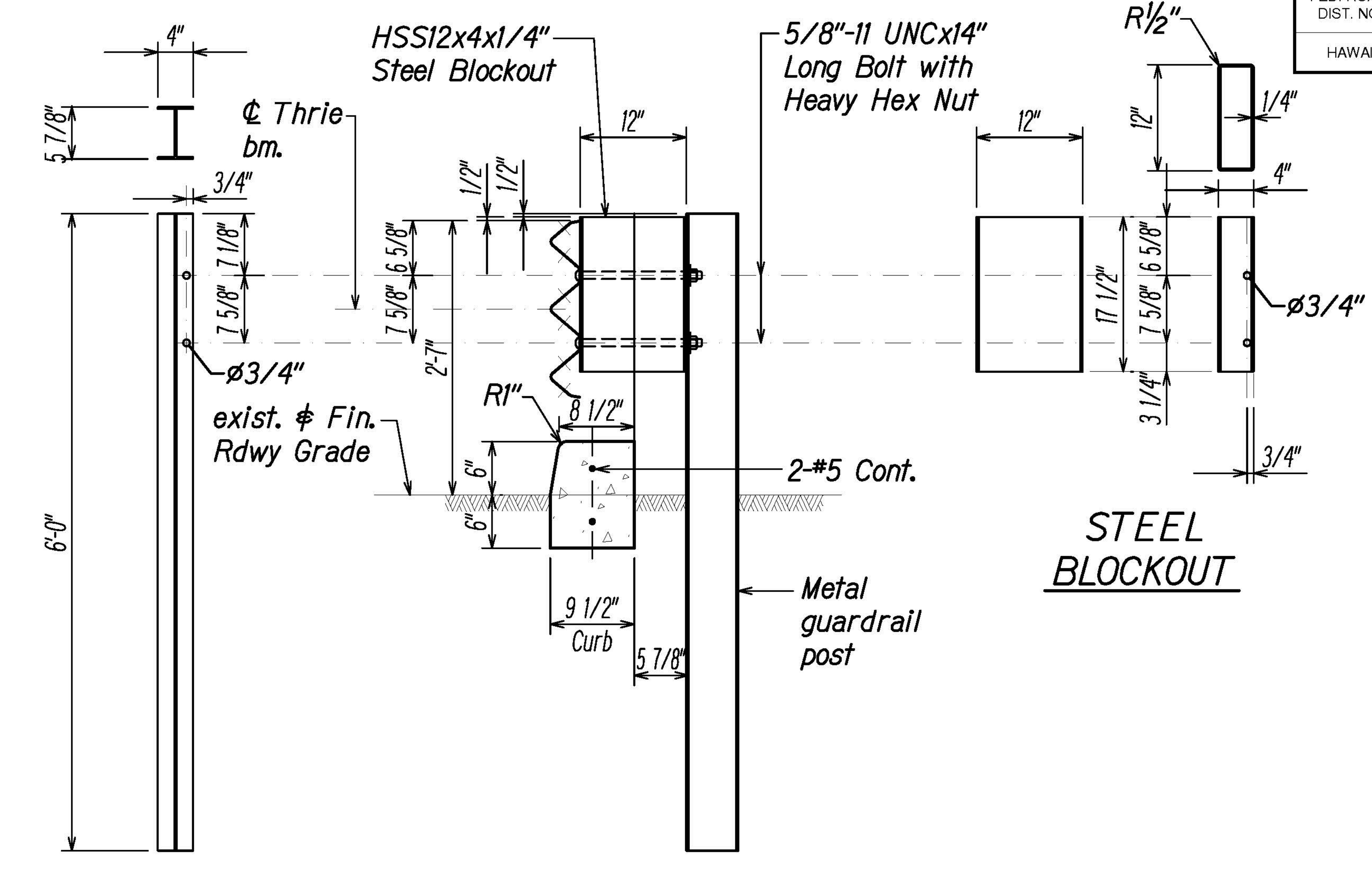
SHEET No. S10.3 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	87	109



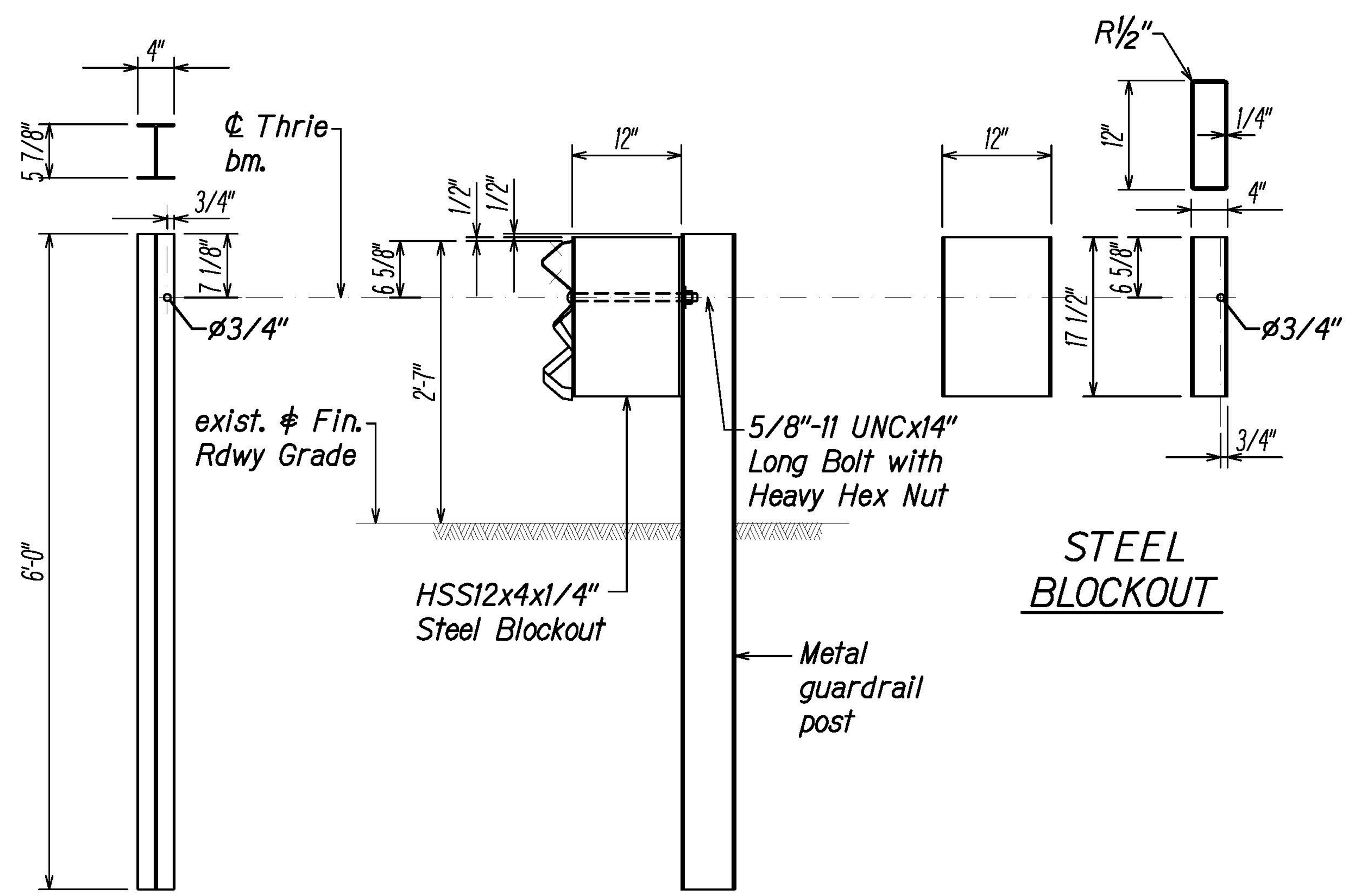
W6x15 POST

SECTION A
Scale: 1" = 1'-0" S10.1 S10.4



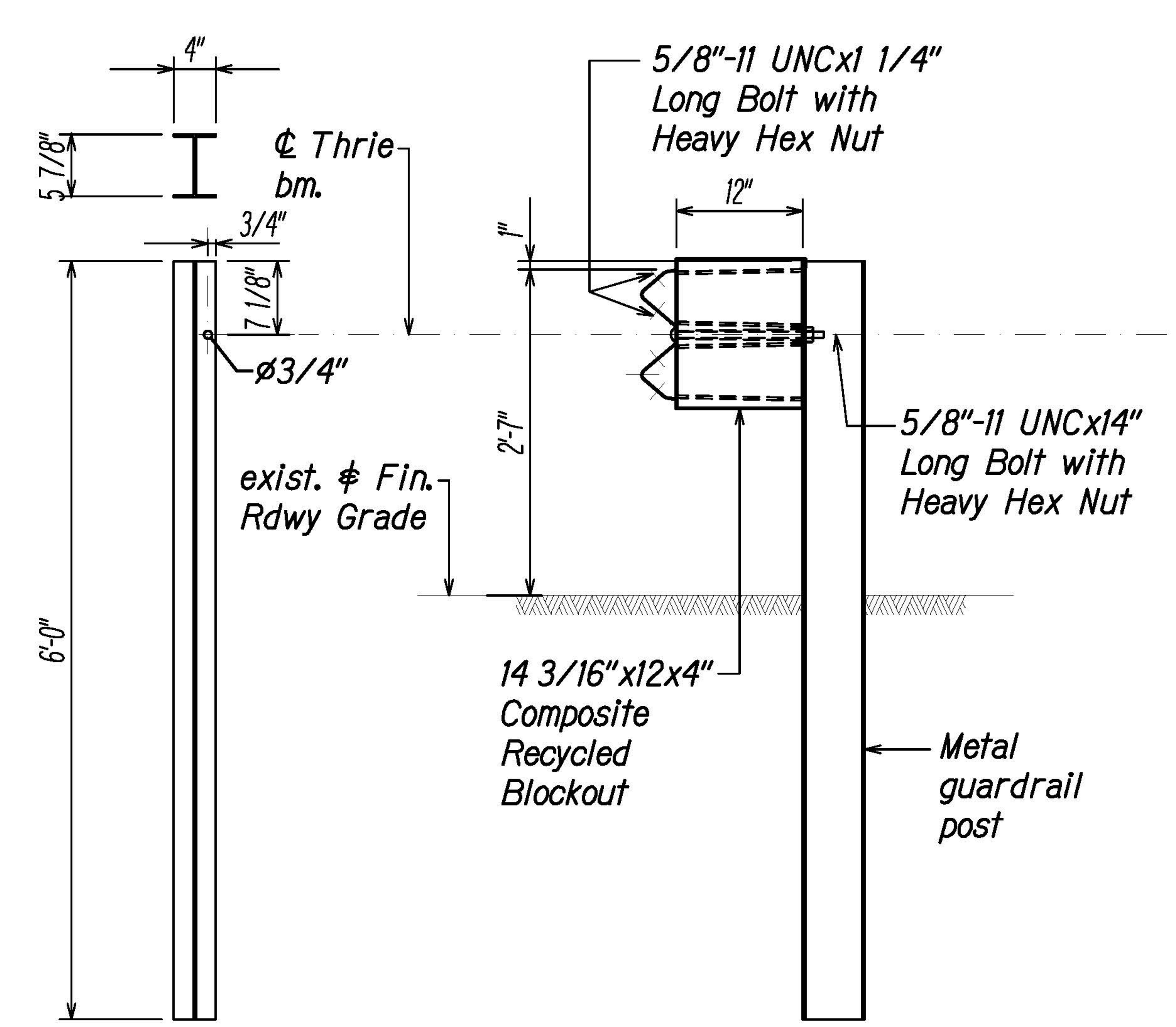
W6x9 POST

SECTION B
Scale: 1" = 1'-0" S10.1 S10.4



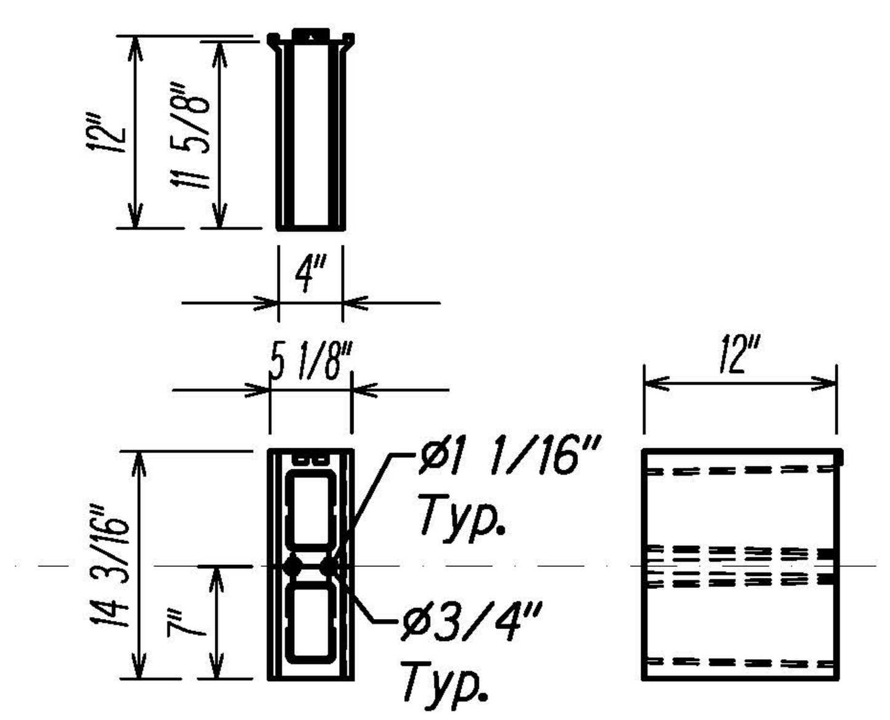
W6x9 POST

SECTION C
Scale: 1" = 1'-0" S10.1 S10.4



W6x9 POST

SECTION D
Scale: 1" = 1'-0" S10.1 S10.4



COMPOSITE RECYCLED BLOCKOUT

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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Calvin Miyahara 4-30-22

SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

KUHIO HIGHWAY

Repairs to Wailua River Bridge

Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S10.4 OF 4 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\05-07-21 BID RVSD S1001 S1004\WRS-S1003 GRAIL DTLS.DWG PLOT TIME: 05-07-21, 10:28 AM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	88	109

PREPARATION OF SUBSTRATE AND REINFORCING STEEL FOR SPALL REPAIRS:

1. "Defective Concrete" as noted on the drawings refers to "spalls", "delaminations" and "honeycombing."
2. Extent of defective concrete is approximate and may vary. The Contractor shall sound all concrete in the designated general areas (shown on the plans and identified in the schedule) before proceeding with repair work, so as to identify any additional repair area(s) not explicitly shown on the plans.
3. The defective concrete shall be completely removed to sound substrate and beyond the extent of the existing reinforcing. The Contractor shall take necessary precautions to avoid damaging the underlying sound concrete.
4. The defective concrete shall be squared by saw-cutting and chipping the concrete at the perimeter beyond the removal area a minimum of 1 inch to attain a 3/4 inch maximum depth and to prevent feather edge conditions. Exercise great care to avoid cutting or damaging any existing embedded steel reinforcing. Angles between adjacent saw-cuts around the perimeter shall not be less than 90 degrees and the shape of each patch shall not be irregular.
5. For any embedded reinforcement within the repair area, additional concrete shall be removed to attain a minimum 1 inch clear space measured radially around the bars.
6. Existing concrete surfaces within the repair areas shall be roughened to achieve a Concrete Surface Profile equal to CSP 6-8 in accordance with International Concrete Repair Institute (ICRI) Guideline 310-2 to ensure proper adhesion with repair material.
7. All exposed concrete surfaces and reinforcing bars in the repair area shall be needle gunned to remove all scale, loose rust, debris and deteriorated concrete. Any areas not patched within 48 hours after needle gunning shall be recleaned.
8. Any reinforcement in repair area which has lost more than 25 percent of its cross-sectional area shall be called to the attention of the Engineer. Repair shall be in accordance with typical concrete repair details, see sheet S11.2.
9. Immediately prior to placement of bonding agent and repair material, the repair area shall be cleaned of all dust and debris with high-pressure, oil-free compressed air at a minimum of 100 psi. Patch area shall then be washed with clean water so that exposed concrete surface is saturated, but with no water accumulation on the surface.
10. Repair material manufacturer's representative shall be present for initial repair to ensure proper preparation and application techniques are being utilized.
11. For Bidding purposes, Contractor shall assume an average spall depth of 4".

APPLICATION OF SPALL REPAIR MATERIALS:

1. All exposed steel shall be liberally coated with two 20 mil coats of bonding agent. The coating shall be complete with no skips, pin holes or holidays around the entire surface of the exposed steel. The first coat shall be allowed to dry 3 hours prior to application of the second coat. The second coat shall also be allowed to dry a minimum of 30 minutes prior to the placement of the repair material. Care shall be taken to avoid applying the coating material to the concrete substrate. Repair material shall be placed within the open time of coating application.
2. The Contractor shall not secure forms by powder actuated fastenings. All holes and spalls caused by temporary attachments shall be patched. All inserts shall be removed or shall be stainless steel with minimum 3/4 inch cover after form removal.
3. Repair material shall be applied in thicknesses per manufacturer's recommendations. When thicknesses exceed maximum for neat material, it shall be extended with aggregate as recommended by manufacturer.
4. Snap ties and inserts shall be plastic or stainless steel.
5. All concrete repairs shall be made smooth and level with the existing concrete surface unless a built-up section is required to maintain 1 inch minimum concrete cover.
6. The repair material shall be vibrated, rodded, or tamped during placement to consolidate the pour and fill all corners of the patch or form with no voids.
7. There shall be no cold joints in the field of the repair.
8. The repaired surface finish profile shall match the original surface finish profile.
9. Apply a curing compound as recommended by the manufacturer. Remove curing from any surface where bonding is needed after curing is complete.
10. Repair areas shall be allowed to cure 4 hours minimum with no vehicular traffic applied directly above or within 6 feet horizontally of the repair area. The Contrator shall schedule the work accordingly to allow repairs to attain min. concrete compressive strength of 3,000 psi prior to reopening to traffic.
11. See Specifications Section 680 for Repair Material.
12. Submit 6 copies of repair material manufacturer's material data and work recommendations.

ORIGINAL PLAN
NOTE BOOK
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CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
No. 8133-S
HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE REPAIR NOTES

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S11.1 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	89	109

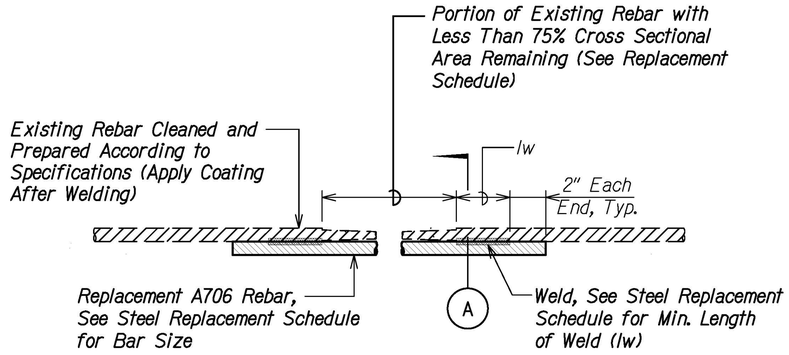
REPLACEMENT SCHEDULE

SIZE OF EXISTING REINFORCING		SIZE OF NEW REPLACEMENT REINFORCING	MIN. LENGTH OF WELD EACH SIDE (lw)
SQUARE	ROUND		
3/8"	#3	#4	2"
	#4	#4	2"
1/2"	#5	#5	2 1/2"
5/8"	#6	#6	3 1/2"
3/4"	#7	#7	4"
7/8" OR 1"	#8	#8	5"

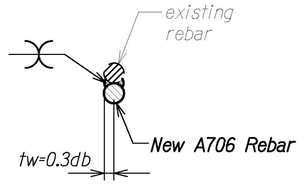
NOTES:

1. Replacement reinforcing shall be spliced to existing reinforcing on the opposite face of the concrete repair so as not to reduce the existing clear cover.
2. For welding of #3, #4, and #5 replacement reinforcing, welding may be performed on one side only, if lw is increased to lw1 as shown below.
3. For bidding purposes, contractor shall assume 1 Lb. of rebar required per square foot of defective concrete repair.

SIZE OF REPLACEMENT REINFORCING OR DOWEL	MINIMUM LENGTH OF WELD ONE SIDE lw1
#3	4"
#4	4"
#5	5"



REBAR REPLACEMENT ELEVATION



tw = Weld Thickness
db = Bar Diameter
lw = Length of Weld Each Side
lw2 = Length of Weld One Side

(See Steel Replacement Schedule)

SECTION A

SPLICE FOR #8 BARS AND SMALLER

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE REPAIR NOTES

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S11.2 OF 14 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

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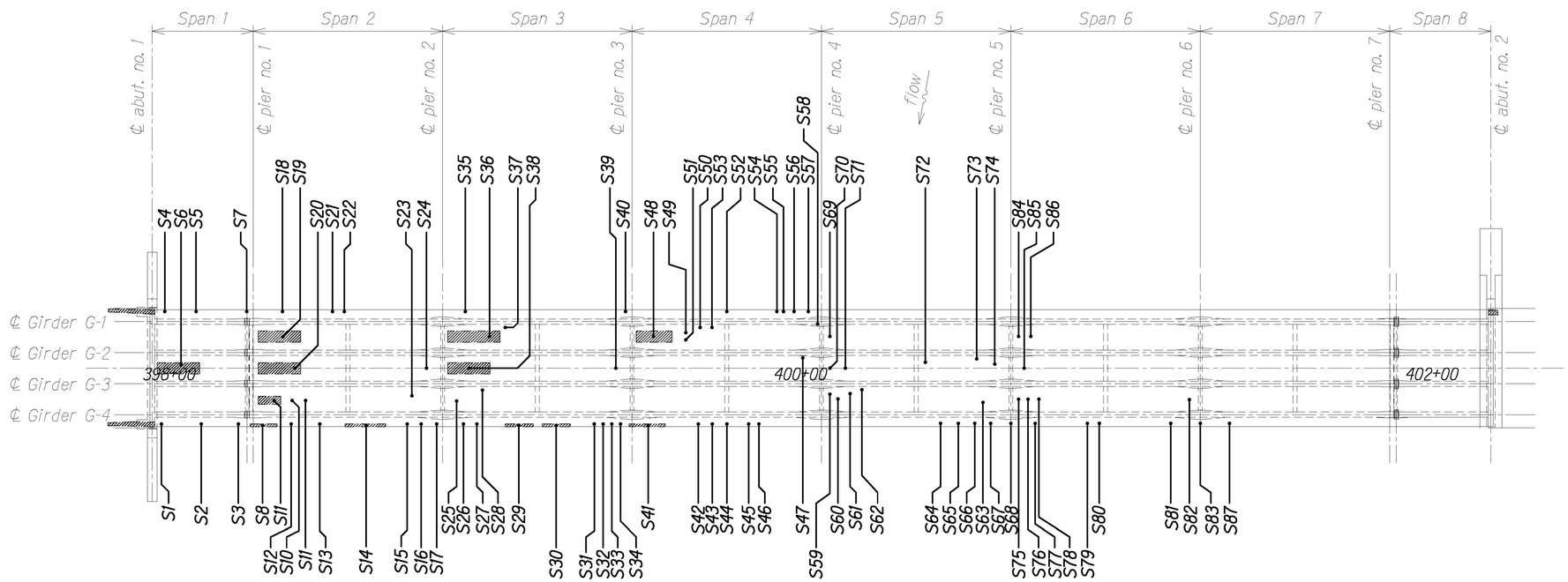
DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VBS_S1101 SPALL NOTES.DWG PLOT TIME: 04-05-21, 3:51 PM)

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	90	109

To Lihue

To Kapaa



DECK SLAB SOFFIT SPALLS

Scale: 1" = 20"

True North

Legend:

S## Soffit Defect No.

Note:

For soffit spall sizes, see sheets S11.4 to S11.6.

CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DECK SLAB SOFFIT SPALLS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S11.3 OF 14 SHEETS

ORIGINAL PLAN
NOTE BOOK No.

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DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DRAWING NAME: Z:\00 ONGOING\20-016 WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S1103 SOFFIT.DWG PLOT TIME: 04-05-21, 3:51 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	91	109

DECK SOFFIT SPALLS AND DELAMINATIONS

DEFECT NO.	REPAIR TYPE	LENGTH	WIDTH	TOTAL (sf)	LENGTH	SIDE WIDTH	TOTAL (sf)	TOTAL (sf)	REMARKS
S1	SC	6	1.5	9	6	1	6	15	
S2	SC	5.5	1.5	8.25	5.5	1	5.5	13.75	
S3	SC	4	1.5	6	4	1	4	10	
S4	SC	3	1	3	3	0.5	1.5	4.5	
S5	S	5	1.5	7.5	-	-	-	7.5	
S6	S	15	4	60	-	-	-	60	
S7	SC	2	2	4	2	0.5	1	5	
S8	SC	10.5	1.5	15.75	10.5	1	10.5	26.25	Exposed Rebar
S9	S	8	2.5	20	-	-	-	20	
S10	S	2	2	4	-	-	-	4	Exposed Rebar
S11	S	3	2	6	-	-	-	6	
S12	SC	3.5	2	7	3.5	0.5	1.75	8.75	
S13	S	8.5	1.5	12.75	-	-	-	12.75	Exposed Rebar
S14	SC	12	1.5	18	3.5	1	3.5	21.5	Exposed Rebar
S15	S	1	1	1	-	-	-	1	
S16	S	2	2	4	-	-	-	4	
S17	SC	3	1.5	4.5	3	0.5	1.5	6	
S18	S	0.5	0.5	0.25	-	-	-	0.25	Exposed Rebar
S19	S	12	5	60	-	-	-	60	Exposed Rebar
S20	S	19	4	76	-	-	-	76	
S21	S	0.5	0.5	0.25	-	-	-	0.25	Exposed Rebar
S22	S	1	1	1	-	-	-	1	Exposed Rebar
S23	S	5	2	10	-	-	-	10	
S24	S	3	3	9	-	-	-	9	
S25	S	5	3	15	-	-	-	15	
S26	S	3	1	3	-	-	-	3	
S27	S	4	1	4	-	-	-	4	Exposed Rebar
S28	S	1	1	1	-	-	-	1	
S29	S	6	1	6	-	-	-	6	Exposed Rebar
S30	S	5	1	5	-	-	-	5	Exposed Rebar
S31	S	1	1	1	-	-	-	1	
S32	S	2	1	2	-	-	-	2	Exposed Rebar
S33	S	4	1	4	-	-	-	4	
S34	S	1	1	1	-	-	-	1	

Note: All dimensions in units of feet.

ORIGINAL PLAN
NOTE BOOK No.

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CALVIN T. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 8133-S
HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DECK SLAB SOFFIT SPALLS TABLE

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S11.4 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	92	109

DECK SOFFIT SPALLS AND DELAMINATIONS

DEFECT NO.	REPAIR TYPE	LENGTH	WIDTH	TOTAL (sf)	LENGTH	SIDE WIDTH	TOTAL (sf)	TOTAL (sf)	REMARKS
S35	S	2	1	2	-	-	-	2	Exposed Rebar
S36	S	14	5	70	-	-	-	70	
S37	S	1	1	1	-	-	-	1	
S38	S	10	4	40	-	-	-	40	
S39	S	3	2	6	-	-	-	6	
S40	S	3	1	3	-	-	-	3	Exposed Rebar
S41	S	6.5	1.5	9.75	-	-	-	9.75	Exposed Rebar
S42	S	2	1	2	-	-	-	2	
S43	S	3	1	3	-	-	-	3	
S44	S	3	1.5	4.5	-	-	-	4.5	
S45	S	0.5	1	0.5	-	-	-	0.5	
S46	S	1	0.5	0.5	-	-	-	0.5	
S47	S	3	2	6	-	-	-	6	
S48	S	11	4	44	-	-	-	44	Exposed Rebar
S49	S	3	1	3	-	-	-	3	
S50	S	2	2	4	-	-	-	4	
S51	S	1	1	1	-	-	-	1	
S52	S	1	1	1	-	-	-	1	Exposed Rebar
S53	S	1	1	1	-	-	-	1	
S54	S	1	1	1	-	-	-	1	Exposed Rebar
S55	S	1	1	1	-	-	-	1	Exposed Rebar
S56	S	1	1	1	-	-	-	1	Exposed Rebar
S57	S	2	1.5	3	-	-	-	3	
S58	S	0.5	0.5	0.25	-	-	-	0.25	Exposed Rebar
S59	S	2	2	4	-	-	-	4	
S60	S	1.5	1	1.5	-	-	-	1.5	
S61	S	6	3	18	-	-	-	18	
S62	S	0.5	0.5	0.25	-	-	-	0.25	Exposed Rebar
S63	S	3	3	9	-	-	-	9	
S64	S	6.5	1	6.5	-	-	-	6.5	
S65	S	1	1	1	-	-	-	1	Exposed Rebar
S66	S	1	0.5	0.5	-	-	-	0.5	
S67	S	2	1	2	-	-	-	2	
S68	S	3.5	1	3.5	-	-	-	3.5	

Note: All dimensions in units of feet.

ORIGINAL PLAN
NOTE BOOK
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HIGHWAYS DIVISION

DECK SLAB SOFFIT SPALLS TABLE

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

SHEET No. S11.5 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	93	109

DECK SOFFIT SPALLS AND DELAMINATIONS									
DEFECT NO.	REPAIR TYPE	LENGTH	WIDTH	TOTAL (sf)	LENGTH	SIDE WIDTH	TOTAL (sf)	TOTAL (sf)	REMARKS
S69	S	6	5	30	-	-	-	30	Exposed Rebar
S70	S	4	2.5	10	-	-	-	10	
S71	S	3	2	6	-	-	-	6	
S72	S	2	1	2	-	-	-	2	
S73	S	0.5	0.5	0.25	-	-	-	0.25	
S74	S	2	1	2	-	-	-	2	
S75	S	4	2	8	-	-	-	8	
S76	S	2	1	2	-	-	-	2	Exposed Rebar
S77	S	2.5	1.5	3.75	-	-	-	3.75	
S78	S	1	1	1	-	-	-	1	
S79	S	2	2	4	-	-	-	4	
S80	S	2	1	2	-	-	-	2	
S81	S	2.5	1	2.5	-	-	-	2.5	
S82	S	1.5	1.5	2.25	-	-	-	2.25	
S83	S	1	1	1	-	-	-	1	
S84	S	1.5	1.5	2.25	-	-	-	2.25	
S85	S	4	1.5	6	-	-	-	6	
S86	S	3	3	9	-	-	-	9	
S87	S	1	1	1	-	-	-	1	
TOTAL (sf)				739			35.25	774.25	

NOTES:

1. All dimensions in units of feet.
2. Additional spalls and delaminations may be discovered. In addition spalls may be larger than anticipated. These areas shall be repaired and will be paid for under Pay Item 680.0500 Additional Spall Repair.

ORIGINAL PLAN
NOTE BOOK
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LICENSED PROFESSIONAL ENGINEER
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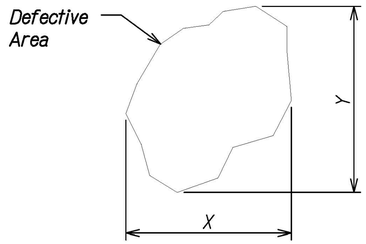
DECK SLAB SOFFIT SPALLS TABLE

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

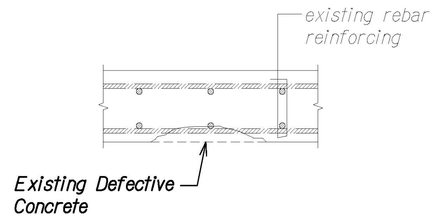
SHEET No. S11.6 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	94	109

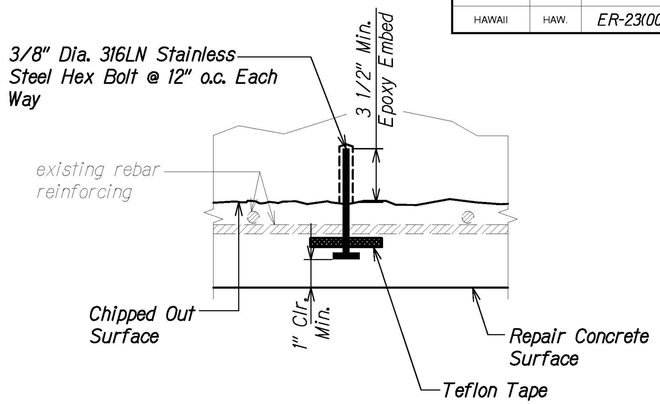


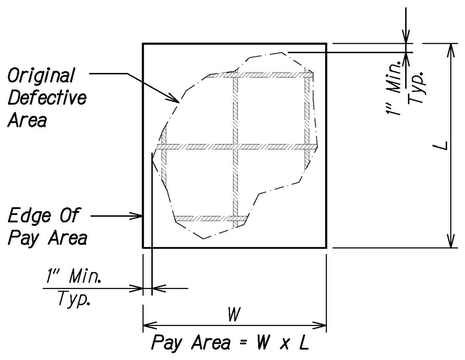
Existing Defective Area = X x Y

EXISTING DECK SOFFIT PLAN

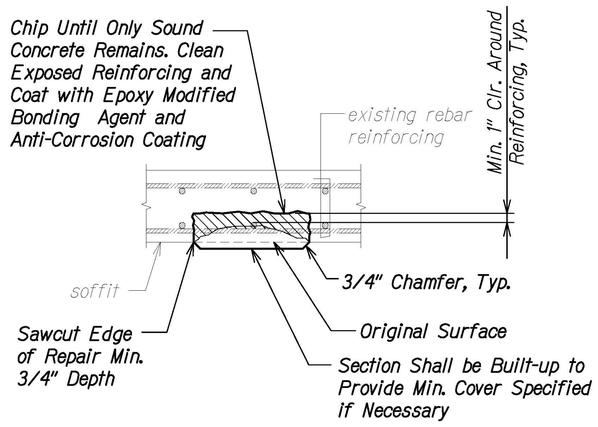


EXISTING DECK SECTION





DECK SOFFIT REPAIR PLAN



DECK REPAIR SECTION

CONCRETE REPAIR DETAILS - TYPE "S"

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

1 / S11.7 | S11.7

Notes:

1. Detail shall be used only where repairs exceed 6 sq. ft.
2. Dowels may be adjusted up to 2" in any horizontal direction along soffit to avoid damaging existing embedded reinforcing.
3. Dissimilar metals shall not touch and/or shall be separated with a teflon tape.
4. Stainless steel dowels shall be considered incidental to Section 680.1000 - Defective Concrete Repairs - Type "S".

DETAIL

Scale: 3" = 1'-0"

2 / S11.7 | S11.7

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LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

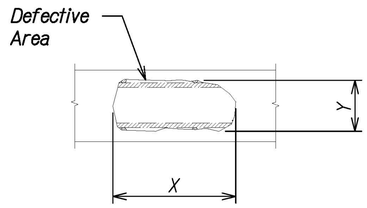
SOFFIT REPAIR DETAILS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted — Date: Apr. 2021

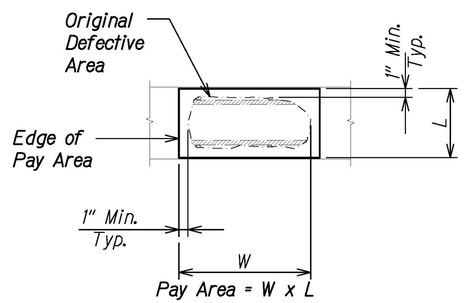
SHEET No. S11.7 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	95	109

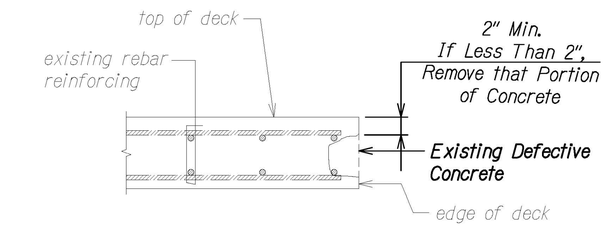


Existing Defective Area = X x Y

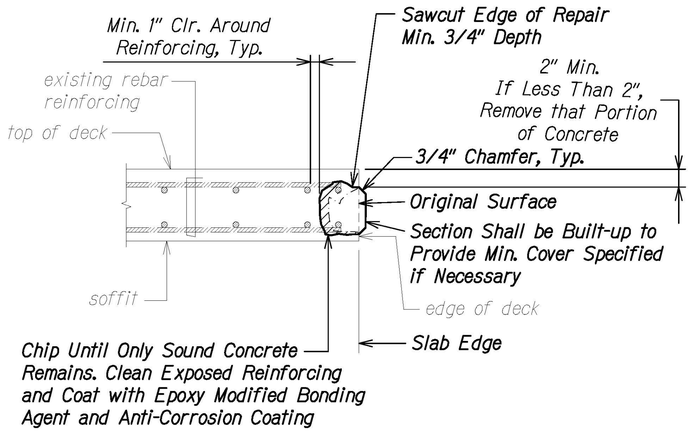
SIDE ELEVATION EXISTING DECK SOFFIT



SIDE ELEVATION DECK SOFFIT REPAIR



EXISTING DECK SECTION

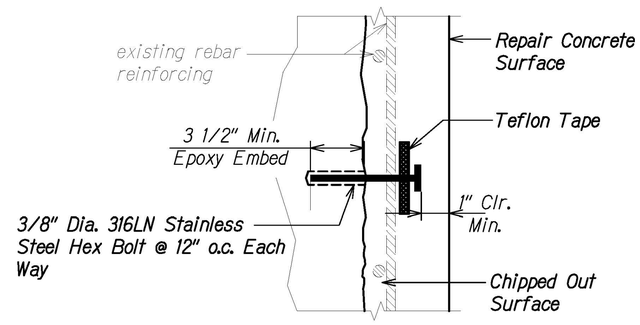


DECK REPAIR SECTION

CONCRETE REPAIR - TYPE "SE"

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

1 | S11.8 | S11.8



Notes:

1. Detail shall be used only where repairs exceed 6 sq. ft.
2. Dowels may be adjusted up to 2" in any horizontal direction along soffit to avoid damaging existing embedded reinforcing.
3. Dissimilar metals shall not touch and/or shall be separated with a teflon tape.
4. Stainless steel dowels shall be considered incidental to Section 680.2000 - Defective Concrete Repairs - Type "SE" and "SC".

DETAIL

Scale: 3" = 1'-0"

2 | S11.8 | S11.8

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SOFFIT REPAIR DETAILS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

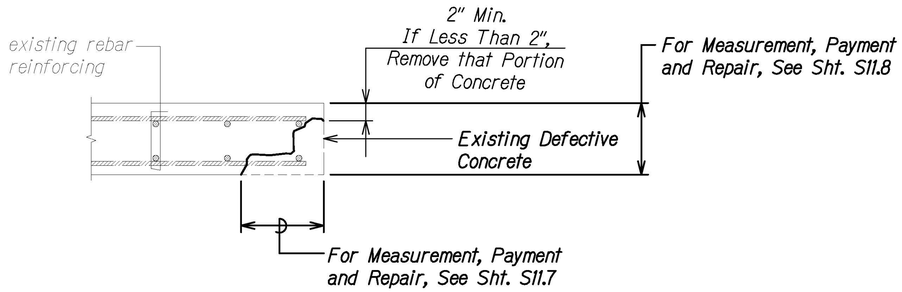
SHEET No. S11.8 OF 14 SHEETS

ORIGINAL PLAN | NOTE BOOK No.

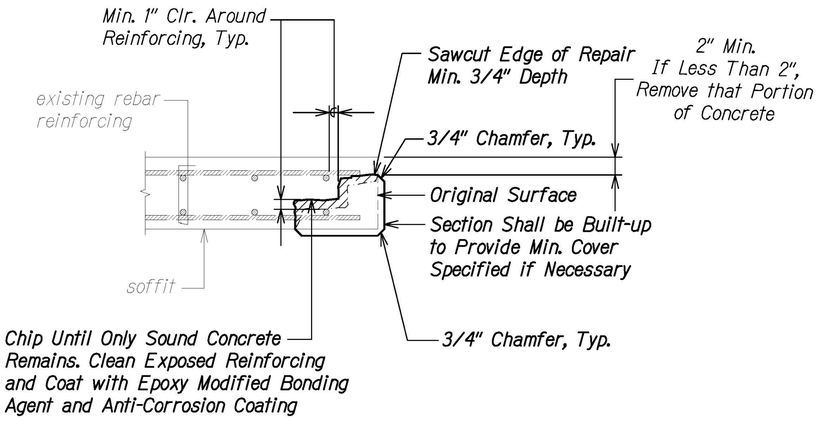
SURVEY PLOTTED BY DATE
DRAWN BY "
TRACED BY "
DESIGNED BY "
QUANTITIES BY "
CHECKED BY "

DRAWING NAME: Z:\OD ONGOING\20-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\V85-S1107 S DTLS.DWG PLOT TIME: 04-05-21, 3:53 PM

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	96	109



EXISTING DECK SECTION



DECK REPAIR SECTION

CONCRETE REPAIR - TYPE "SC"

1
S11.9 | S11.9

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

DRAWING NAME: Z:\OD ONGOING\20-016 WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S1107 S SHEET.DWG PLOT TIME: 04-05-21, 3:53 PM

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SOFFIT REPAIR DETAILS

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Fed. Aid Project No. ER-23(001)

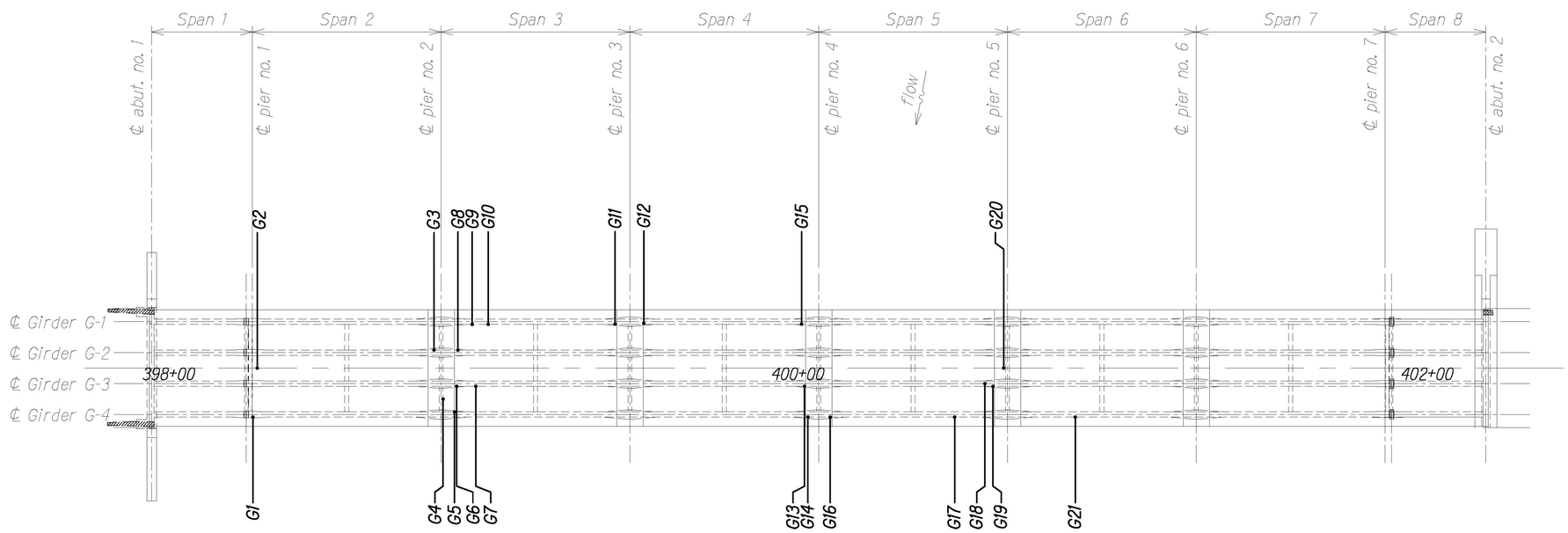
Scale: As Noted Date: Apr. 2021

SHEET No. S11.9 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	97	109

To Lihue

To Kapaa



True North

Legend:

G## Girder Defect No.

Notes:

1. For girder spall sizes, see sheet S9.11.
2. End beams and diaphragms shall be treated as girders for spalls and delaminations.

GIRDER SPALLS AND DELAMINATIONS

Scale: 1" = 20"

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

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\WBS-S1110 GIRDER.DWG PLOT TIME: 04-05-21, 3:53 PM

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GIRDER SPALLS AND DELAMINATIONS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S11.10 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	98	109

GIRDER SPALLS AND DELAMINATIONS

DEFECT NO.	REPAIR TYPE	LENGTH	HEIGHT	TOTAL (sf)	LENGTH	BOTTOM WIDTH	TOTAL (sf)	TOTAL (sf)	SPAN NO.	GIRDER NO.	LOCATION/ REMARKS
G1	GV	2.5	1.5	3.75	-	-	-	3.75	2	4	
G2	GC	1	0.5	0.5	1	1	1	1.5	2	-	End Beam at Pier
G3	GC	2	0.5	1	2	0.5	1	2	2	3	
G4	GV	5	1	5	-	-	-	5	3	1	
G5	GC	3	1	3	3	1	3	6	3	-	End Beam at Pier
G6	GC	3	1	3	3	0.5	1.5	4.5	3	3	
G7	GC	3	0.5	1.5	3	1	3	4.5	3	3	
G8	GC	7	1	7	7	0.5	3.5	10.5	3	2	Exposed rebar
G9	GC	4	1	4	4	1	4	8	3	1	
G10	GV	1	1	1	-	-	-	1	3	1	
G11	GV	3	2	6	-	-	-	6	3	1	
G12	GV	5	2	10	-	-	-	10	4	1	
G13	GV	3	1	3	-	-	-	3	4	3	Exposed rebar
G14	GC	5	1	5	5	0.5	2.5	7.5	4	4	
G15	GV	3	2	6	-	-	-	6	4	1	
G16	GV	2.5	0.5	1.25	-	-	-	1.25	5	4	
G17	GC	4	2	8	4	0.5	2	10	5	4	Exposed stirrup
G18	GV	1	0.5	0.5	-	-	-	0.5	5	3	
G19	GV	3	1	3	-	-	-	3	5	3	
G20	GV	1.5	1	1.5	-	-	-	1.5	5	-	End Beam at Pier
G21	GV	1	1	1	-	-	-	1	6	4	
TOTAL (sf)								96.5			

NOTES:

1. All dimensions in units of feet.
2. Additional spalls and delaminations may be discovered. In addition spalls may be larger than anticipated. These areas shall be repaired and will be paid for under Pay Item 680.0500 Additional Spall Repair.
3. End beams and diaphragms shall be treated as girders for spalls and delaminations.

ORIGINAL PLAN
NOTE BOOK No.
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TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

DRAWING NAME: Z:\OD ONGOING\23-016-WAILUA RVR BR SCOUR-DOT\01 CAD\04-05-21 BID\VRS-S1111 G TABLE.DWG PLOT TIME: 04-05-21, 3:54 PM

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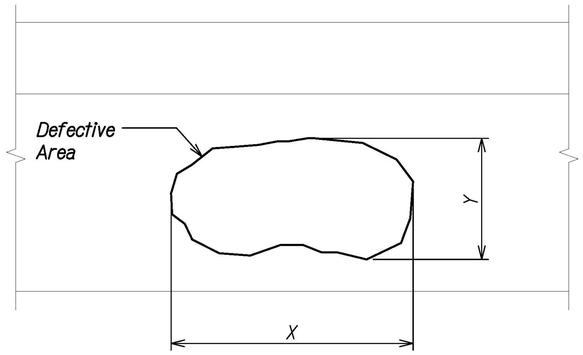
GIRDER SPALLS AND DELAMINATIONS TABLE

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: None Date: Apr. 2021

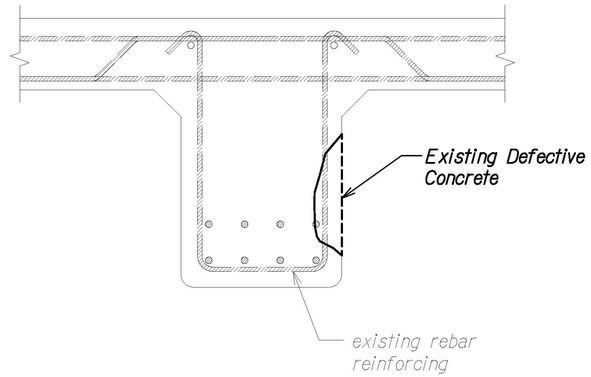
SHEET No. S11.11 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	99	109

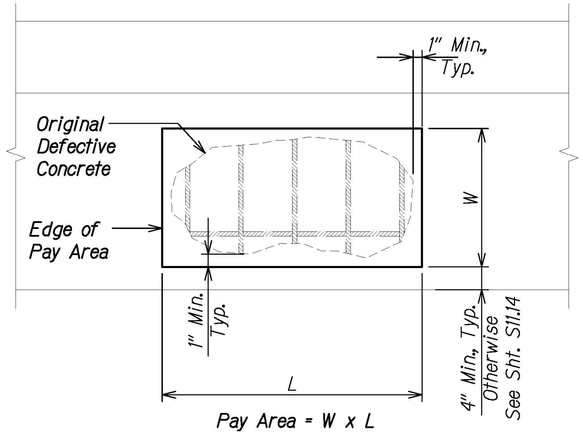


Existing Defective Area = X x Y

BEAM ELEVATION

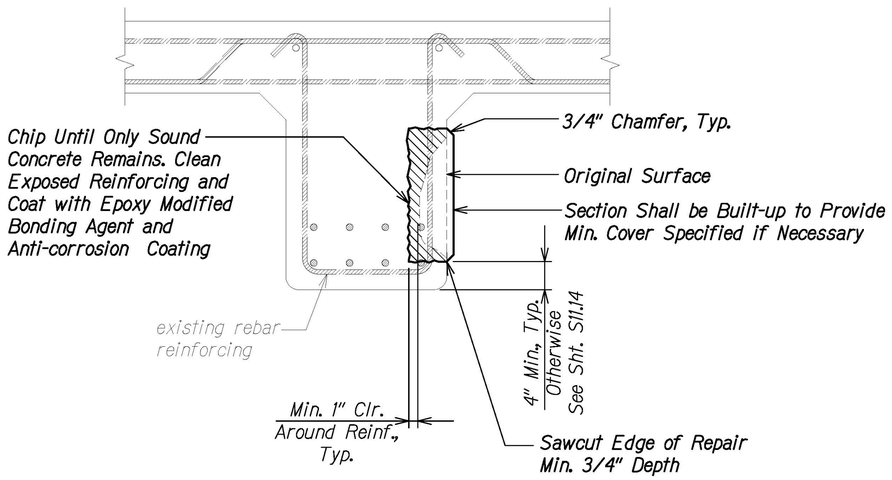


BEAM SECTION



Pay Area = W x L

BEAM ELEVATION



BEAM SECTION

CONCRETE REPAIR - TYPE "GV"

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

1 / S11.12 | S11.12

ORIGINAL PLAN

NOTE BOOK
No.

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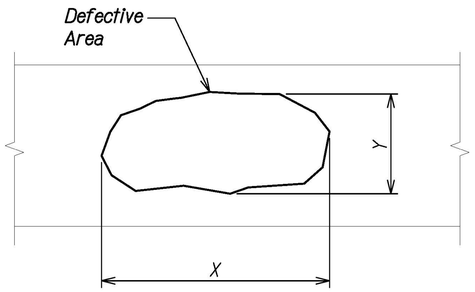
GIRDER REPAIR DETAILS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

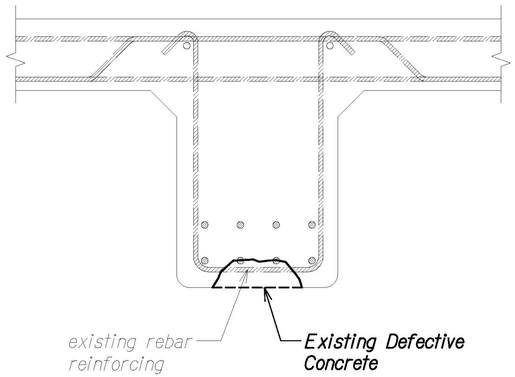
SHEET No. S11.12 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	100	109



Existing Defective Area = X x Y

BEAM SOFFIT PLAN



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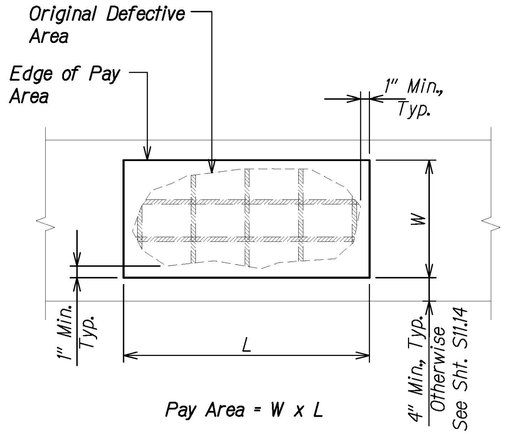
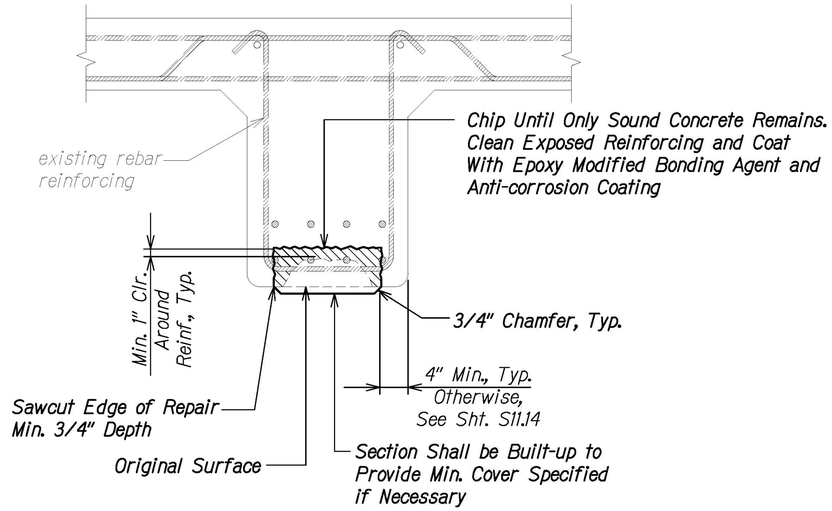


Pay Area = W x L

BEAM SOFFIT PLAN



BEAM SECTION

CONCRETE REPAIR - TYPE "GH"

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

1 / S11.13 | S11.13

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY ____ DATE
DRAWN BY " "
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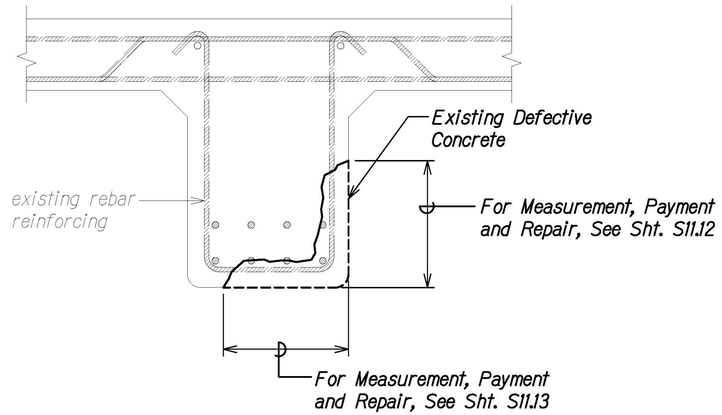
GIRDER REPAIR DETAILS

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

Scale: As Noted Date: Apr. 2021

SHEET No. S11.13 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	101	109



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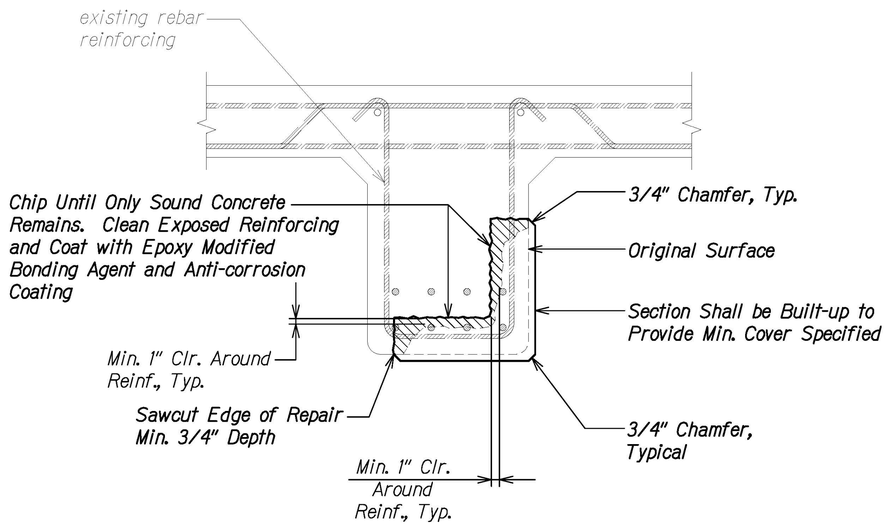

BEAM SECTION

CONCRETE REPAIR - TYPE "GC" (1 S11.14 | S11.14)

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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GIRDER REPAIR DETAILS

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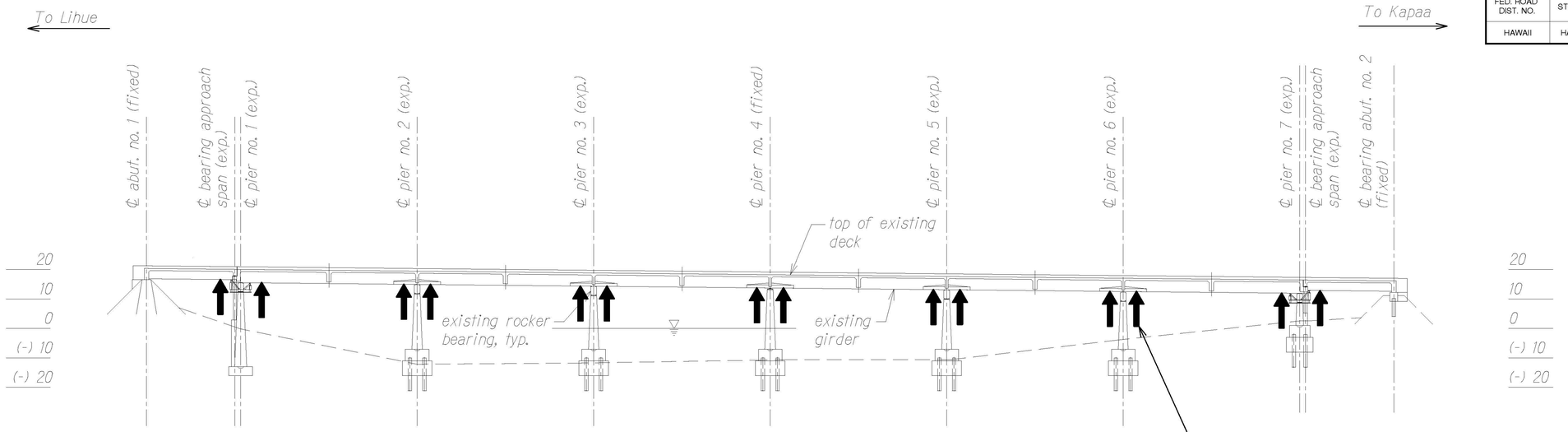
SHEET No. S11.14 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-23(001)	2021	102	109



CONSTRUCTION SEQUENCE

Scale: 1" = 20"

PIER CONSTRUCTION SEQUENCE:

1. The Contractor shall submit a work plan that includes all stages of work for approval by the Engineer.
2. Install BMPs. See Civil plans.
3. Construct shoring at piers.
4. Disconnect girder from piers by removing existing dowels.
5. Raise bridge girders. See Temporary Shoring notes for criteria.
6. Remove existing structural steel supports, concrete piers and columns, portion of existing girders, and rocker bearings at piers.
7. Repair bridge girders and construct end beams.
8. Drilled Shafts may be constructed between Stages 2 and 5.
9. Construct Drilled Shaft Cap.
10. Install Elastomeric Bearings after the concrete in the Shaft Cap attains a compressive strength of 4000 psi and has a minimum age of 7 days.
11. Lower bridge girders onto elastomeric bearing.
12. Final Bottom of Girder Elevations Shall Match Existing Bottom of Girder Elevations. Deflections of Drilled Shaft Cap Due to Dead Loads and Compression of the Bearing Pad Shall be Taken into Account when Determining Final Elevations. The Final Bottom of Girder Elevation Calculations Shall be Part of the Work Plan.
13. Repeat Stages 1 to 9 for remaining piers.
14. Construct Creep Blocks.
15. Remove temporary shoring. Repair any damage to existing structure.
16. Remove BMPs. See Civil plans.

TEMPORARY SHORING NOTES:

1. All girders at the same pier shall be raised and lowered at the same time. Jacks must be used on both sides of all piers.
2. Bridge girders shall not be raised more than 1/2" higher than it's existing elevation.
3. Raising of bridge girders may begin at any pier and in any order. Raising of bridge girders at multiple piers concurrently is permitted.
4. Bearings, jacks, and temporary shoring must be sufficient in carrying the loads shown on sheet S0.3. Supports need not be designed for concrete shrinkage forces or movements. See General Note 7.R.

ORIGINAL PLAN
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CONSTRUCTION SEQUENCE

KUHIO HIGHWAY
Repairs to Wailua River Bridge
Fed. Aid Project No. ER-23(001)

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SHEET No. S121 OF 1 SHEETS