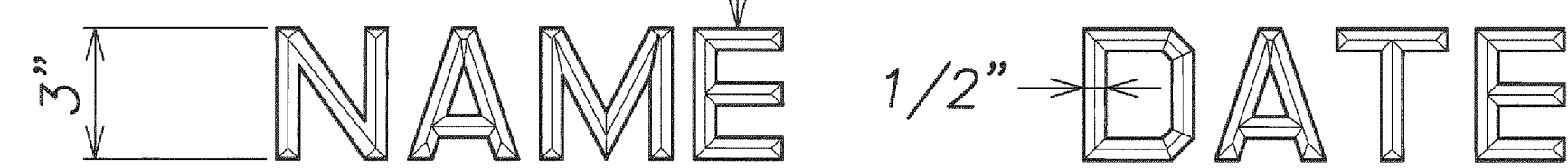


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-STP-3400(5)	2012	55	108

Depressed "V"  
Letters 3/8" Deep



Use Correct Name Of Bridge

Date Of Year Built

Note:

1. Name and Date Shall Be Placed at the Trailing End Post on Each Side of the Roadway.
2. Exact Details and Spacing of Letters and Figures and Location Shall be as Directed by the Engineer. Gothic Letters and Figures Approximating Dimensions Shown will be Acceptable if Approved by the Engineer.
3. The Name of Bridge Shall be "Iao Stream Bridge".

## TYPICAL DETAIL OF LETTERS AND FIGURES AT CONCRETE END POST

Not To Scale

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

Path: V:\112303 (Iao Bridge - Hawaii)\Design\New KPH Plan Filename: MO\_S1-1 Plot date: Oct 17, 2012-03:14:22pm CAD User: TamiA, Xref Filename: DOTBORO | AUTODATE | Hasey-Hawaii.lao |



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OR UNDER MY SUPERVISION.

*Izzy H. Hasey* APRIL 30, 2014  
CONSULTING ENGINEERS L.C. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

DETAIL

WAIHEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S1-1 OF SHEETS



## GENERAL STRUCTURAL NOTES:

### DESIGN SPECIFICATIONS

AASHTO 2010 LRFD Bridge Design Specifications with Subsequent Interim Specifications and as modified by State of Hawaii, Highways Division, "Design Criteria for Bridges and Structures", dated April 15, 2008.

### GENERAL SPECIFICATIONS

Hawaii Standard Specifications for Road, Bridge, and Public Works Construction 2005 and Special Provisions prepared for this project.

### DESIGN LIVE LOAD: AASHTO HL-93

### ADDITIONAL LOADS:

25 PSF for Asphalt Concrete Wearing Surface.  
150 PLF for Future Utilities on each side of Bridge.

### SEISMIC ACCELERATION COEFFICIENT:

Acceleration Coefficient = 0.28  
Site Class C  
Seismic Design Category B  
Importance Category = Essential Bridge

### MATERIALS:

1. Reinforced Concrete:  $f'_c=4000$  PSI, unless noted otherwise.
2. Reinforced Deck Concrete: Type SBD, See Special Provision.
3. Reinforcing Steel: ASTM A615, Grade 60 unless noted otherwise.
4. Structural Steel: ASTM A992, Hot Dip Galvanized, unless noted otherwise.
5. Stainless Steel: Type 316, unless noted otherwise.
6. Anchor Bolts: ASTM F1554, Grade 55, Hot Dip Galvanized, unless noted otherwise.
7. Prestressed Concrete:  $f'_c=6500$  PSI  $f'_ci=5000$  PSI
8. All welding shall be in accordance with the current edition of Reinforcing Steel Welding Code AWS D 1.4.
9. Provide shrinkage reducing admixture and migrating corrosion Inhibiting admixture to concrete for bridge decks, diaphragms, end beams, and bridge railings. See special provision for Requirements.
10. Concrete Deck Patch  $f'_c=6000$  psi, See Special Provisions.

### GIRDER BEARINGS:

1. Girder concrete seats receiving elastomeric pads shall be poured monolithically with supporting structure. Top of concrete seats shall be finished with a steel trowel to a smooth level surface to the elevation shown on the plans.
2. Elastomeric pads: Bottom of bridge bearing pads shall be secured to the concrete seats, to prevent displacement with adhesives approved by the Engineer.

### CONSTRUCTION NOTES:

1. Materials and workmanship shall conform to the Hawaii Standard Specification for Road and Bridge Construction (2005 Edition), Special Provisions prepared for this project, project drawings, and project specific permit requirements.
2. In general, top of concrete deck slab shall be constructed to follow the roadway vertical and horizontal curves.

### CONSTRUCTION NOTES: (Continue)

3. For the installation of anchor bolts, the Contractor shall provide rigid templates to maintain the proper locations and shall protect such anchor bolts at all times during the period of construction. Methods shall be approved by the Engineer.
4. Except as noted otherwise, all vertical dimensions are measured plumb.
5. Information for existing bridge has been prepared based on record drawings. The Contractor shall verify all site conditions and not rely upon these plans for utilities or stream location, etc. Conditions may differ from those shown.
6. The Contractor shall verify the location of all utility lines and notify the respective owners before commencing the work of excavation or the installation of footings, including any temporary measures required to stabilize the excavation. Any damage to utility lines caused by the Contractor shall be replaced at his expense and at no cost to the State.
7. For concrete finish, see Standard Specifications.
8. Unless noted otherwise, all exposed concrete edges shall be chamfered  $3/4" \times 3/4"$ .
9. Contractor to take adequate measures to protect the public and structures during construction. Such measures shall include but not be limited to falsework, formwork, bracing, loads for construction equipment, wind forces, stream flow, seismic forces, and others.
10. Contractor to be solely responsible for acquiring required construction related permits from the various government agencies required to complete the work.
11. Contractor shall take precautions to prevent damage to existing reinforcing steel that is to be incorporated into the new work.
12. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.

### FOUNDATION:

1. General:
  - A. The limits for excavation shown on the standard plans should not be considered as indicative of actual excavation requirements.
  - B. The Contractor shall assume sole responsibility for the construction and safety of all footing excavations. The Contractor shall submit his excavation plan including shoring protection to the Engineer. If dewatering is required, Contractor to submit pertinent permit.
2. A geotechnical report titled, "Geotechnical Engineering Exploration, Waiehu Beach Road (Route 3400), Rehabilitation of Iao Stream Bridge, Wailuku, Maui, Hawaii" dated March 5, 2012 by Geolabs, Inc., has been prepared and is available for review at the office of the Engineer. Seismic Site Class C Acceleration Coefficient =0.28.

Property	Extreme Exist. Limit State	Strength. Limit State
Foundation Bearing Capacity Abutments and Piers	24 ksf	10.8 ksf
Soils Sliding Resistance	0.59	0.47
Passive Pressure Resistance	500 pcf	250 pcf

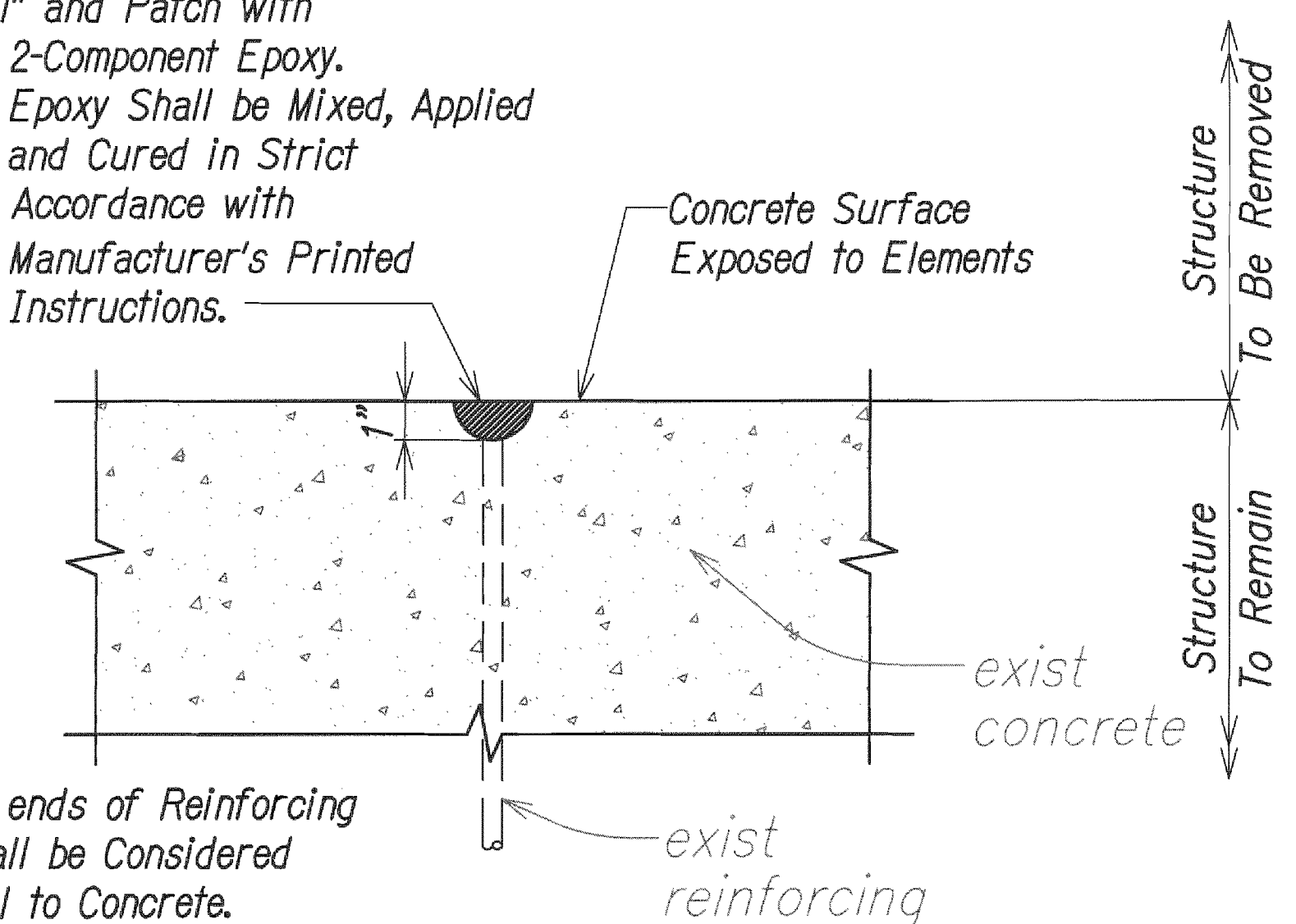
Equivalent Fluid Pressure-Level Backfill Condition 35 pcf

### GENERAL:

1. All items noted incidental will not be paid for separately.
2. Standard detail drawings 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.
3. Edge of Existing Concrete to be remain shall be square cut by sawcutting to a minimum depth of  $1/2"$  or up to the depth of existing reinforcement.

Chip Back Existing Reinforcing

1" and Patch with  
2-Component Epoxy.  
Epoxy Shall be Mixed, Applied  
and Cured in Strict  
Accordance with  
Manufacturer's Printed  
Instructions.



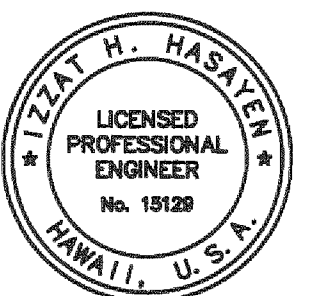
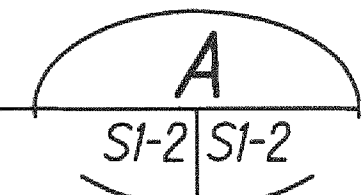
Patching ends of Reinforcing Steel Shall be Considered Incidental to Concrete.

### NOTE:

Demolition of Existing Members in the Way of New Construction Shall be Executed in a Manner Such to Minimize Damage to the Portions of the Members to Remain Outside the Limits of Demolition, where not Incorporated into New Work.

### TYPICAL DETAIL FOR TREATMENT OF EXPOSED REINFORCING

Scale: Not To Scale



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WIZAT H. HASAN  
APRIL 30, 2014  
L.C. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STRUCTURAL GENERAL NOTES  
AND DETAIL**

**WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S1-2 OF SHEETS



GENERAL STRUCTURAL NOTES (cont):

REINFORCING STEEL:

1. Reinforcing bars shall be ASTM A615, Grade 60, unless shown otherwise.
2. Reinforcing splices shall be made only where indicated on the drawings.
3. All reinforcing bars, anchor bolts, dowels and other embedded items are to be securely tied in place before concrete pour.
4. All reinforcing bar bends shall be made cold.
5. Reinforcement shall be detailed in accordance with AASHTO LRFD Bridge Design Specifications, 5th Edition, 2010, including subsequent Interim Revisions, unless otherwise noted.
6. Welding of reinforcing steel is not permitted, unless otherwise shown on the drawings. Welding of reinforcing steel shall conform to (the latest edition of AWS D1.4 "AWS Structural Welding Code-Reinforcing Steel" of the American Welding Society. Deformed reinforcing bars to be welded shall conform to ASTM. A706, Grade 60.
7. Unless otherwise noted, the covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows:
- (a) Deck top bars . . . . . 2 1/2" clear
- (b) Deck bottom bars. . . . . 1 1/2" clear
- (c) Railing and Parapets. . . . . 2" clear
- (d) Formed surfaces exposed to earth and weather. . . . . 2" clear
- (e) Bottoms and side of footings where concrete is deposited on grade. . . . . 3" clear
- (f) All others. . . . . 2" clear
8. Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of the bar, but in no case shall the clear distance between parallel bars be less than 1 1/2 times the maximum size of the coarse aggregate, or 1 1/2 inches.
9. All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to center of bars, unless otherwise noted.
10. Reinforcing bars shall be securely tied at all intersections and lap spliced except where the spacing of the intersections is less than 12 inches in each direction, in which case alternate intersections shall be tied.
10. Resin bonded dowels, as labeled on the plans, consist of drilling holes into the existing concrete and installing steel reinforcing bars in the holes with epoxy resin. unless otherwise noted, minimum embedment depths for resin bonded dowels shall be as follows:

Bar Size	Hole Diameter (in)	Minimum Embedment (in)
4	5/8	7
5	3/4	8
6	1	9
7	1 1/8	11
8	1 1/4	13
9	1 3/8	16

STRUCTURAL STEEL AND MISCELLANEOUS METAL:

1. All structural steel shall conform to ASTM A992, unless otherwise noted. All steel tubes shall conform to ASTM A500, Grade B. All structural pipes shall conform to ASTM A53, Grade B. Plates shall conform to ASTM A36.
2. All structural steel and miscellaneous metal shall be hot dip galvanized after fabrication. All holes (other than stainless steel) shall be punched before galvanizing.

3. All anchor bolts and threaded rods and other hardware including nuts and washers which connect steel to concrete shall conform to ASTM F1554, Grade 55, hot dipped galvanized.
4. Thru bolts for guardrail connections shall conform to ASTM A325, galvanized unless otherwise noted.
5. All welds shall be in conformance with the structural welding code AWS D1.4 of the American Welding Society. Electrodes for A36, A500 and A992 shall be E70.
6. All stainless steel plates, bars, rods, anchor bolts and shapes shall be Type 316 or 316L. Welding of stainless steel shall be in accordance with the latest edition of AWS D1.6 "Structural Welding Code - Stainless Steel".
7. Stainless steel threaded rods and nuts shall conform to ASTM A276, Type 316L.

PAINT

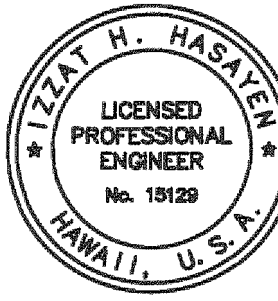
1. Metal Components of the Railings shall be Galvanized and Painted.
2. Clean Galvanized surface in accordance with The Society for Protective Coatings SSPC-Sp1 (Solvent Wash).
3. Apply Universal Epoxy Primer, such as 205 DEVTRAN or approved equal , minimum 6 mils dry film thickness.
4. Apply 2 Top Coats of Aliphatic Urethane Glass Enamel, such as 379UVA DEVTHANE, minimum 6 mils thickness each coat. Color shall be medium gray.
5. Submit Product data, Material Safety Data Sheet and color sample to Engineer for review and approval.

ABBREVIATIONS:

<b>A</b>	A.B. Anchor Bolt	<b>D</b>	Dbl. Double
	Abut. Abutment		Det. Detail
	A.C. Asphalt Concrete		Dia. Diameter
	A.F.F. Above Finish Floor		Dim. Dimension
	Alt. Alternate		DWG. Drawing
	Approx. Approximate		Dwls. Dowels
<b>B</b>		<b>E</b>	
	(B) Bottom Reinforcement		Ea. Each
	Brg Bearing		
	B Baseline		E.F. Each Face
	BM. Beam		E.J. Expansion Joint
	B.F.. Bottom of Footing		El. Elevation
	Bot. Bottom		Eq. Equal
	Btwn. Between		E.S. Each Side
<b>C</b>			E.W. Each Way
	C.I.P.. Cast in Place		Exp. Expansion
	C.J. Construction Joint		Ext. Exterior
	C.L. Centerline		Exist. Existing
	Clr. Clear		(E) Existing
	CMU. Cement Masonry Unit		
	Col. Column		
	Conc. Concrete		
	Conn. Connection		
	Const. Construction		
	Cont. Continue		

ABBREVIATIONS (cont):

<b>F</b>	Fdn. Foundation	<b>S</b>	Sched. Schedule
	Fin. Finish		Sect. Section
	Ftg. Footing		Sht. Sheet
<b>G</b>			Sim. Similar
	Ga. Gauge		Sl. Slope
	Galv. Galvanized		SP. Spaced
<b>H</b>			Specs. Specifications
	(H) Horizontal Reinforcement		S.O.G. Slab-on-Grade
	Hgr. Hanger		Sq. Square
	H.H. Hex Head		Sta. Station
	Horiz. Horizontal		Std. Standard
<b>I</b>			Stiff. Stiffener
	I.D. Inside Diameter		Stir. Stirrup
	I.F. Inside Face		Stl. Steel
	I.J. Intermediate Joint		Struct. Structural
	Info. Information		Symm. Symmetrical
	Int. Interior	<b>T</b>	
	Interm. Intermediate		(T) Top (Reinforcement)
<b>J</b>			T&B Top and Bottom
	Jt. Joint		Thk. Thick
	L.L.H. Long Leg Horizontal		Thru. Through
	L.L.V. Long Leg Vertical		T.O.F. Top of Footing
	Longit. Longitudinal		T.O.S. Top of Slab
<b>M</b>			T.O.S.S. Top of Structural Steel
	Max. Maximum		T.O.W. Top of Wall
	M.B. Machine Bolt		Trans. Transfer
	Min. Minimum		Transv. Transverse
	Misc. Miscellaneous		Typ. Typical
<b>O</b>		<b>U</b>	
	O.C. On Center		U.O.N. Unless Otherwise Noted
	O.D. Outside Diameter	<b>V</b>	
	O.F. Outside Face		(V) Vertical (Reinforcement)
	O.H. Opposite Hand		Vert. Vertical
	Opn'g. Opening	<b>W</b>	
	Opp. Opposite		w/ With
<b>P</b>			Wd. Wood
	Pl. Plate		W.P. Working Point
	PS Prestressed		
	Pt.(s) Point(s)		
<b>R</b>			
	Rad. Radius		
	Reinf. Reinforced, Reinforcement		
	Req'd Required		
	R.O.W. Right of Way		
	R.W. Retaining Wall		



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APRIL 30, 2014  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STRUCTURAL GENERAL NOTES  
AND ABBREVIATIONS**

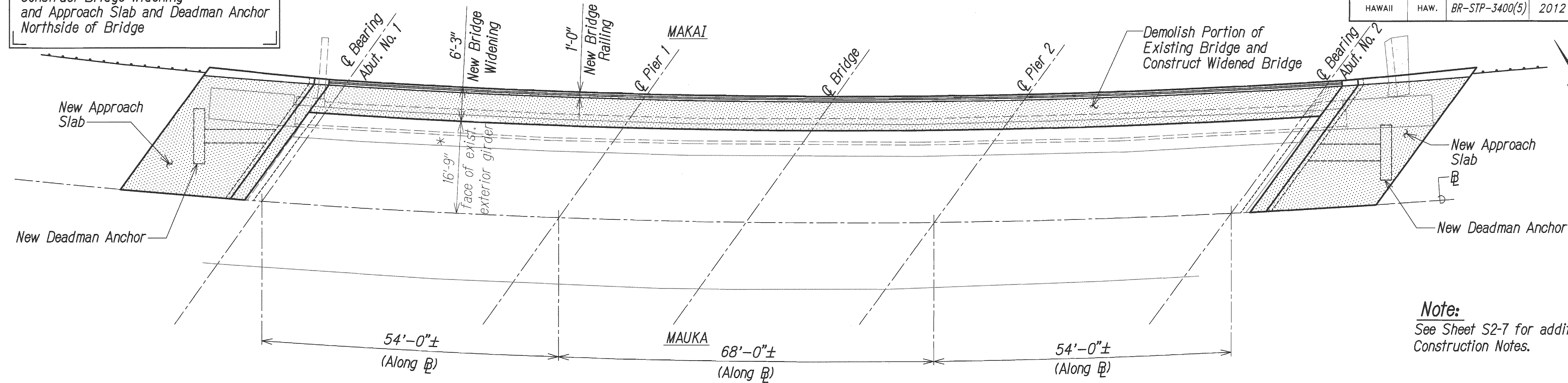
**WAIHEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012



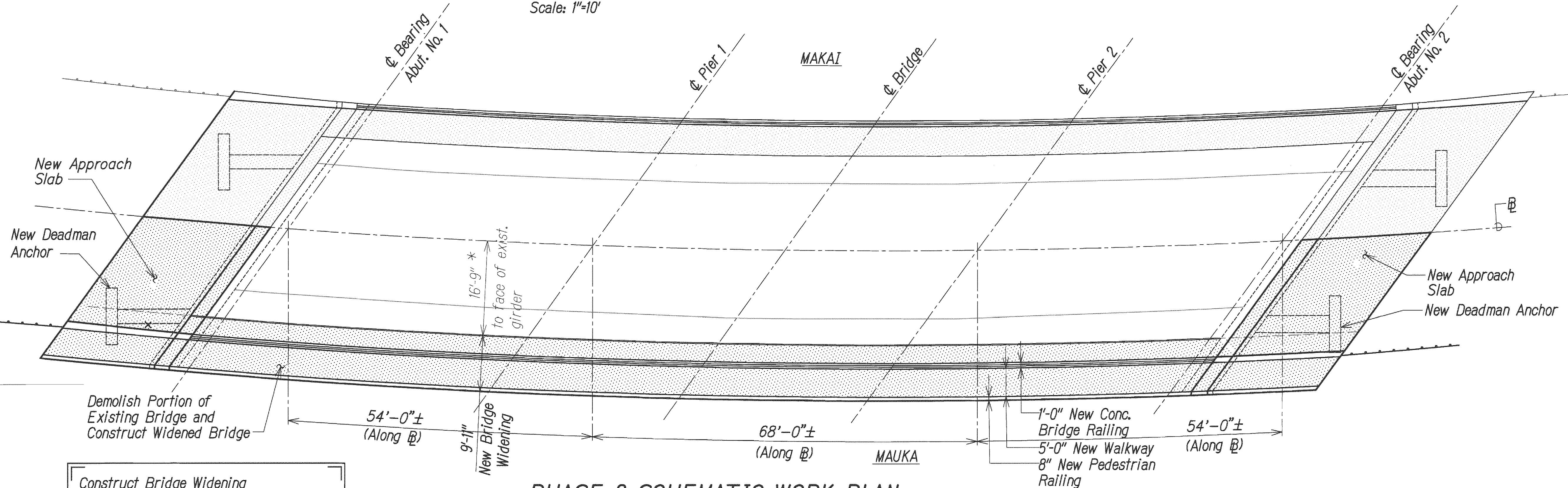
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HAWAII	HAW.	BR-STP-3400(5)	2012	58	108

Construct Bridge Widening and Approach Slab and Deadman Anchor Northside of Bridge



**Note:**  
See Sheet S2-7 for additional Construction Notes.

**PHASE 1 SCHEMATIC WORK PLAN**  
Scale: 1"=10'

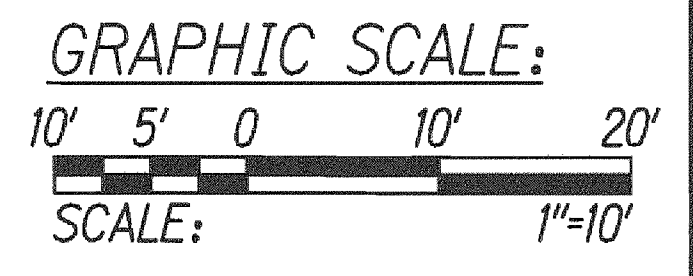


Construct Bridge Widening and Approach Slab and Deadman Anchor Southside of Bridge

**PHASE 2 SCHEMATIC WORK PLAN**  
Scale: 1"=10'

\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.



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*Izzy H. Hasayen* APRIL 30, 2014  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**WORK PHASING PLAN**

**WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S1-40F SHEETS

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

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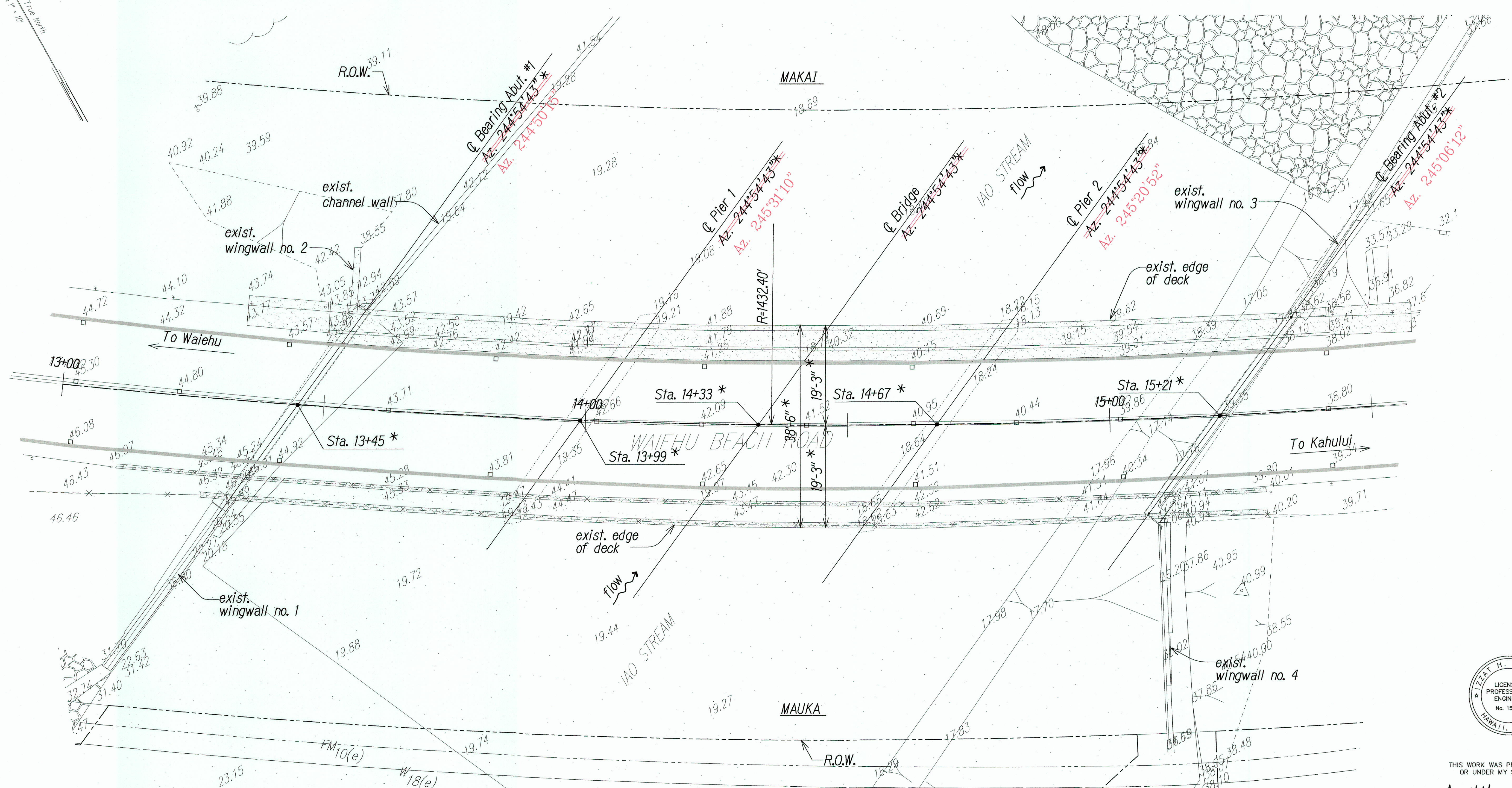


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-STP-3400(5)	2012	59	108

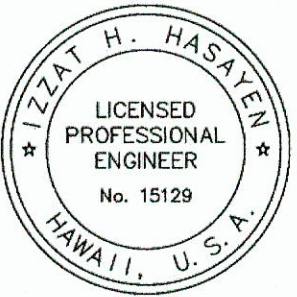
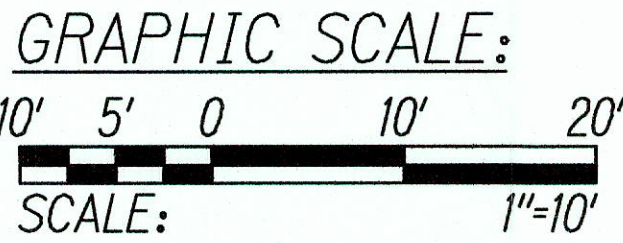
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

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



EXISTING BRIDGE LAYOUT PLAN  
Scale: 1"=10'



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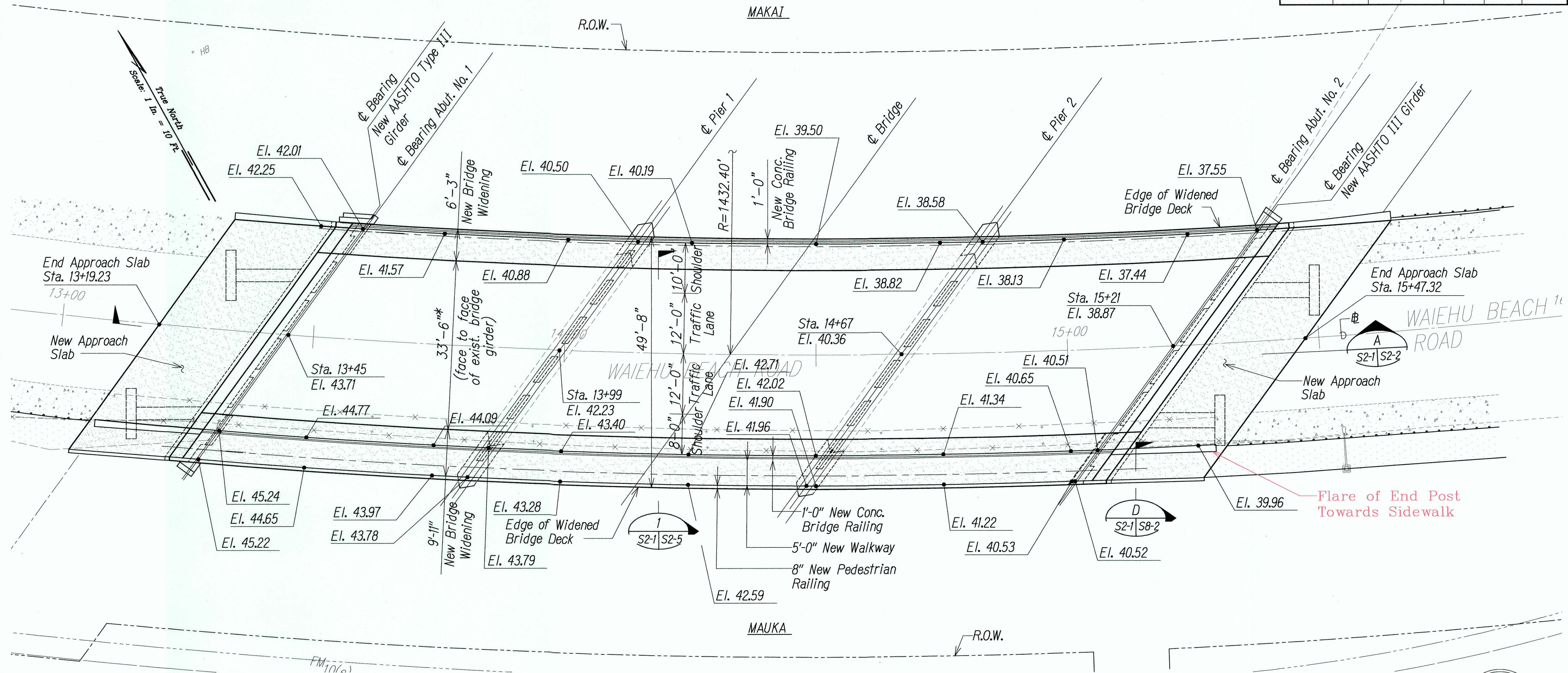
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**EXISTING BRIDGE LAYOUT PLAN**  
WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012



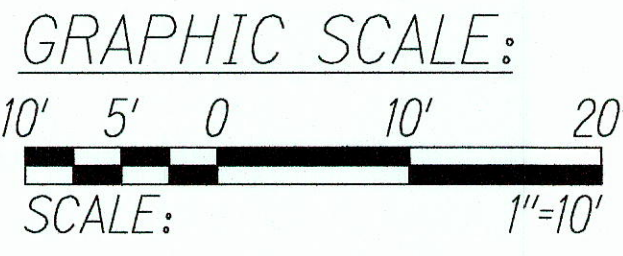
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HAWAII	HAW.	BR-STP-3400(5)	2012	60	108



BRIDGE LAYOUT PLAN  
Scale: 1"=10'

Note:  
Elevations shown are at  $\phi$  of Abutments,  $\phi$  Piers and 25 foot Intervals Radially along the Baseline.  
Elevations shown are top of A.C. at Shoulder or Concrete Sidewalk at Face of Concrete Curb.  
See Sheet 6-1 Detail A and B for Detail Locations of Elevation Control Points

CURVE DATA	
$\Delta$	48° 44' 00"
$\Delta/2$	24° 22' 00"
R	1432.40'
T	648.76
Ch	1181.94
Lc	1218.34



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*H. Hasegawa*  
CONSULTING ENGINEERS APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
  
BRIDGE LAYOUT PLAN  
  
WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)  
  
Date: October 2012  
  
SHEET No. S2-10F SHEETS

ORIGINAL PLAN	DATE
NOTE BOOK	DESIGNED BY
	QUANTITIES BY
	CHECKED BY

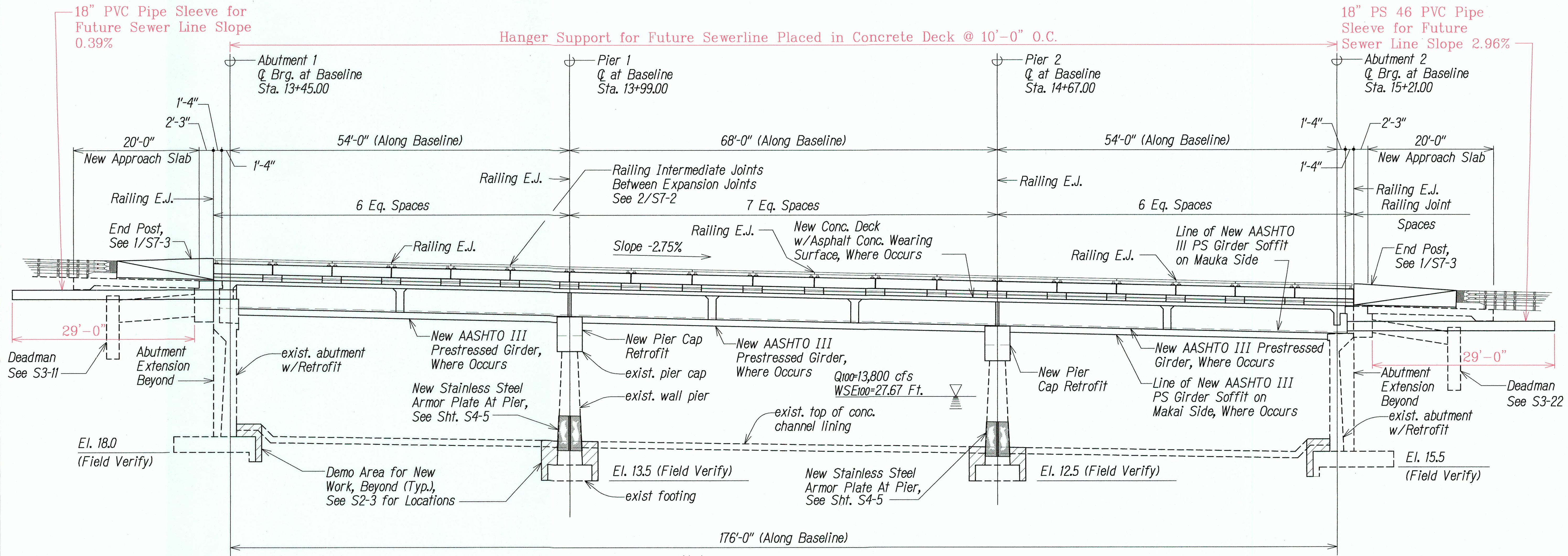
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 Double line for as-built deletion  
 Roadway Text for as-built posting

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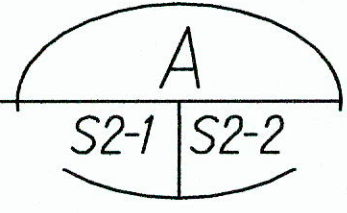


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-STP-3400(5)	2012	61	108

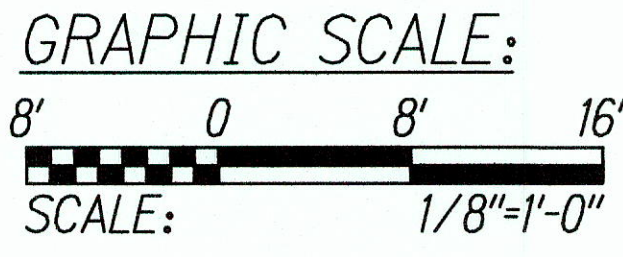


Note:  
Replace Existing 12" Channel Slab  
Where Removed due to New Work.  
(Incidental to Various Construction Items)

LONGITUDINAL SECTION ALONG BASELINE  
Scale: 1/8"=1'-0"



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



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

LONGITUDINAL SECTION  
ALONG BASELINE

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S2-2 OF SHEETS

ORIGINAL PLAN	DATE
NOTE BOOK	
No.	

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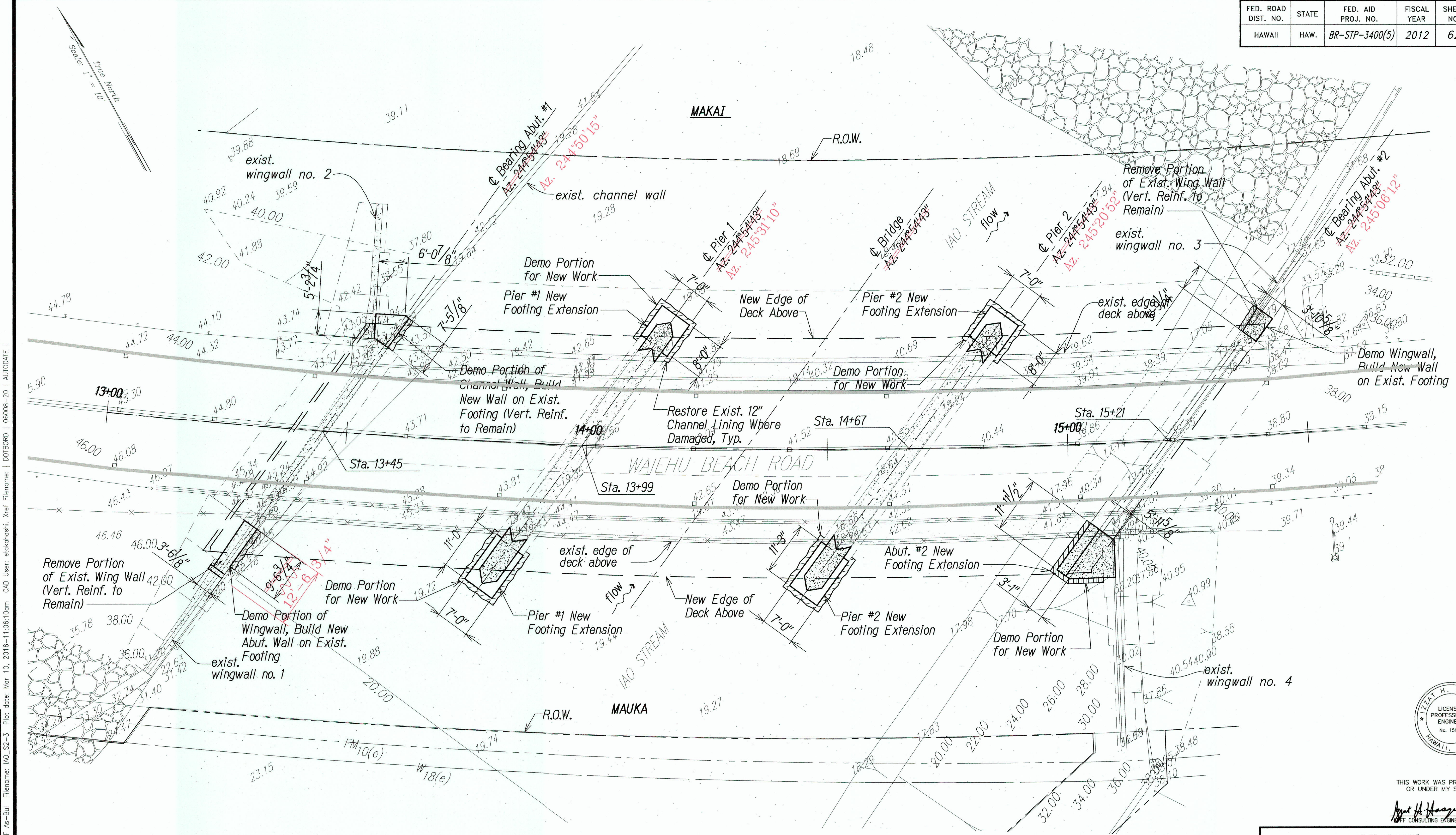


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*Izat H. Hasegawa*  
CONSULTING ENGINEERS APRIL 30, 2016  
LIC. EXP. DATE

"AS-BUILT"



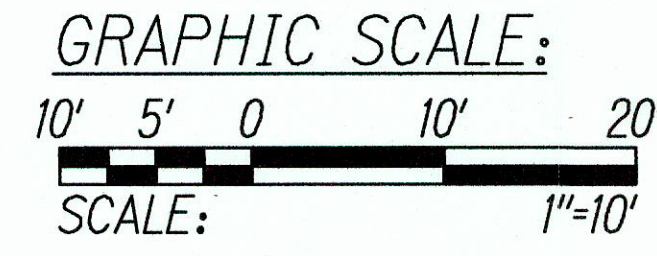
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HAWAII	HAW.	BR-STP-3400(5)	2012	62	108



**Note:**  
For Deadman layout See Sheets S3-11 and S3-22.

**FOUNDATION PLAN**  
Scale: 1"=10'

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



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**FOUNDATION PLAN**  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012

SHEET No. S2-3 OF SHEETS

DATE	_____
DESIGNED BY	_____
TRACED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____

ORIGINAL PLAN No. \_\_\_\_\_

Path: L:\WOA\7213-01\00\CIVIL\As-Built\VPFF As-Built File Name: IAO\_S2-3 Plot date: Mar 10, 2016-11:06:10am CAD User: etokashu Xref File Name: DOTBORO | 06008-20 | AUTODAT



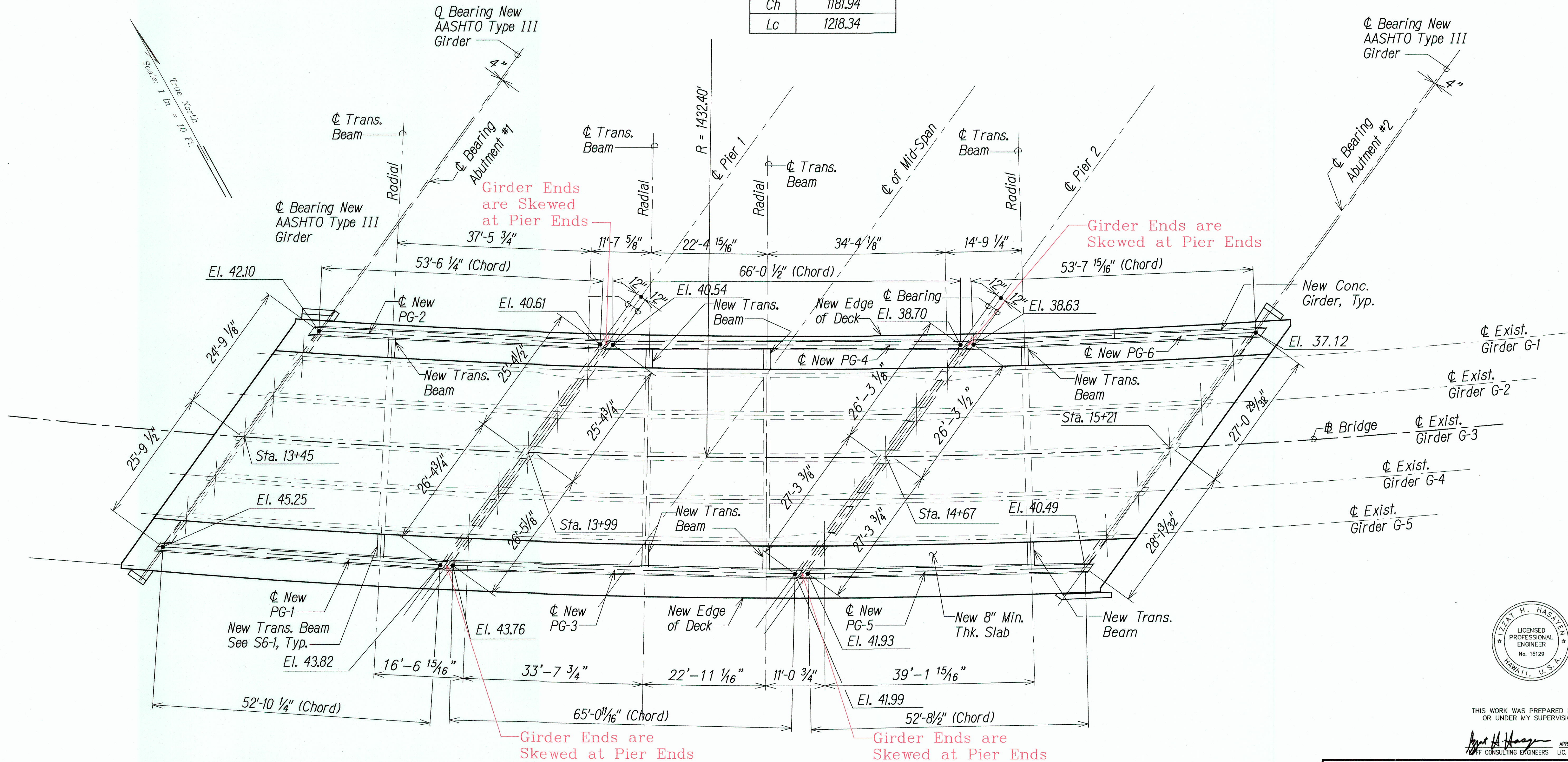
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
*H. Hassen*  
APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

"AS-BUILT"



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-STP-3400(5)	2012	63	108

CURVE DATA	
$\Delta$	48° 44' 00"
$\Delta/2$	24° 22' 00"
R	1432.40'
T	648.76
Ch	1181.94
Lc	1218.34



**Note:**  
Elevations shown are at Top of Concrete Deck or Concrete Sidewalk at Center of Bearings

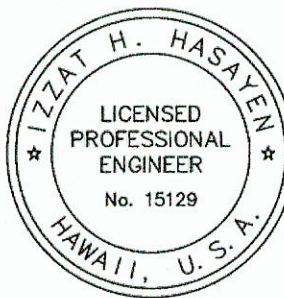
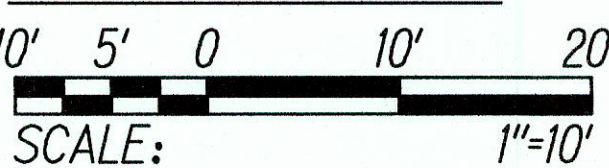
### DECK FRAMING PLAN

Scale: 1"=10'

#### LEGEND FOR AS-BUILT POSTINGS

- Squiggly line for as-built deletion
- Double line for as-built deletion
- Roadway Text for as-built posting

#### GRAPHIC SCALE:



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*Izzat H. Hasayen*  
CONSULTING ENGINEERS  
APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

### DECK FRAMING PLAN

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

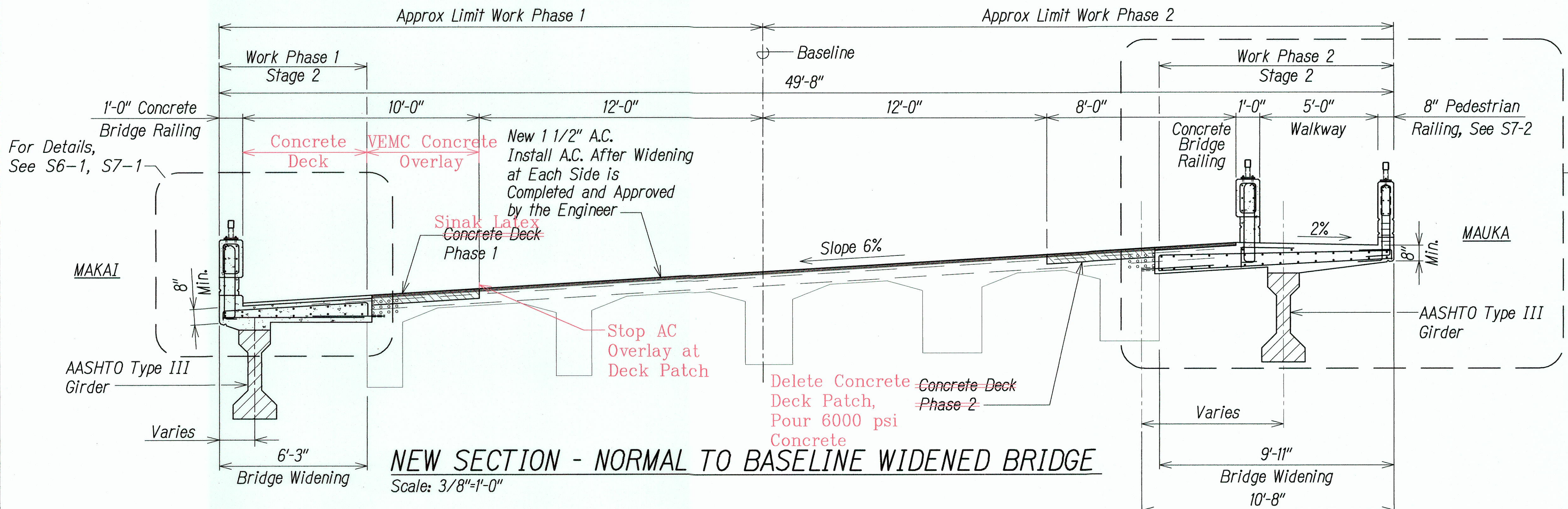
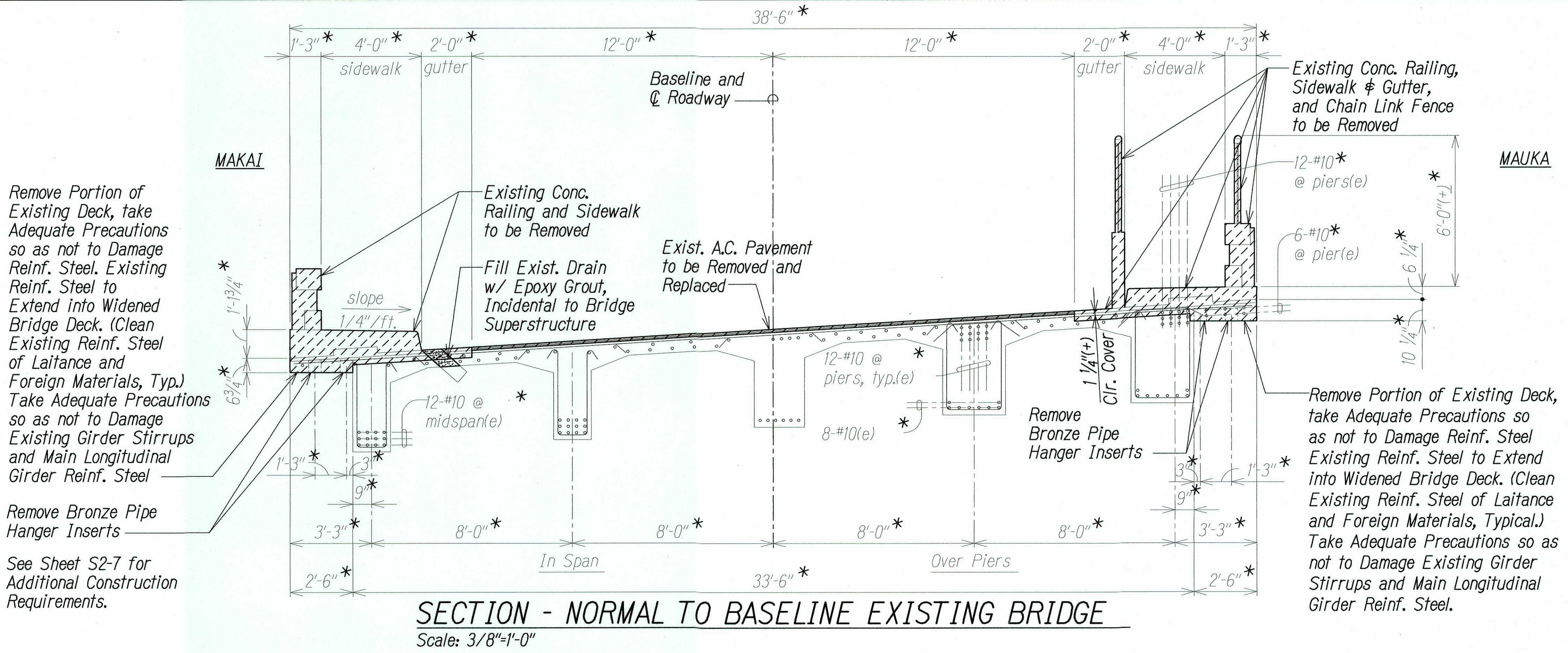
Date: October 2012

SHEET No. S2-4 OF SHEETS

"AS-BUILT"



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-STP-3400(5)	2012	64	108



\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

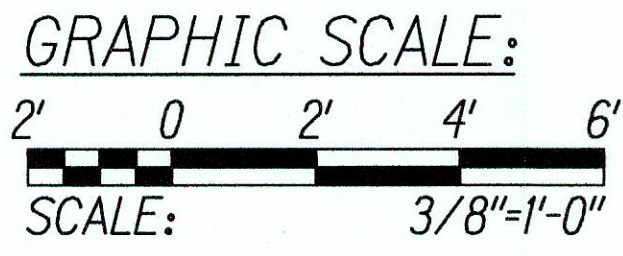
- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.

**LEGEND FOR AS-BUILT POSTINGS**

~~~~~ Squiggly line for as-built deletion

== Double line for as-built deletion

Roadway Text for as-built posting



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**SECTION NORMAL TO BASELINE**

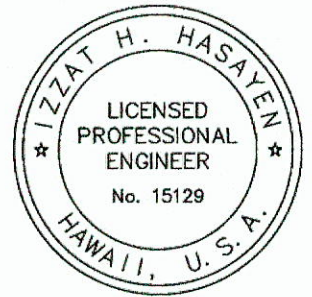
**WAIIEHU BEACH ROAD**

**REHABILITATION OF IAO STREAM BRIDGE**

**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S2-5 OF SHEETS



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*John H. Hasten* APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

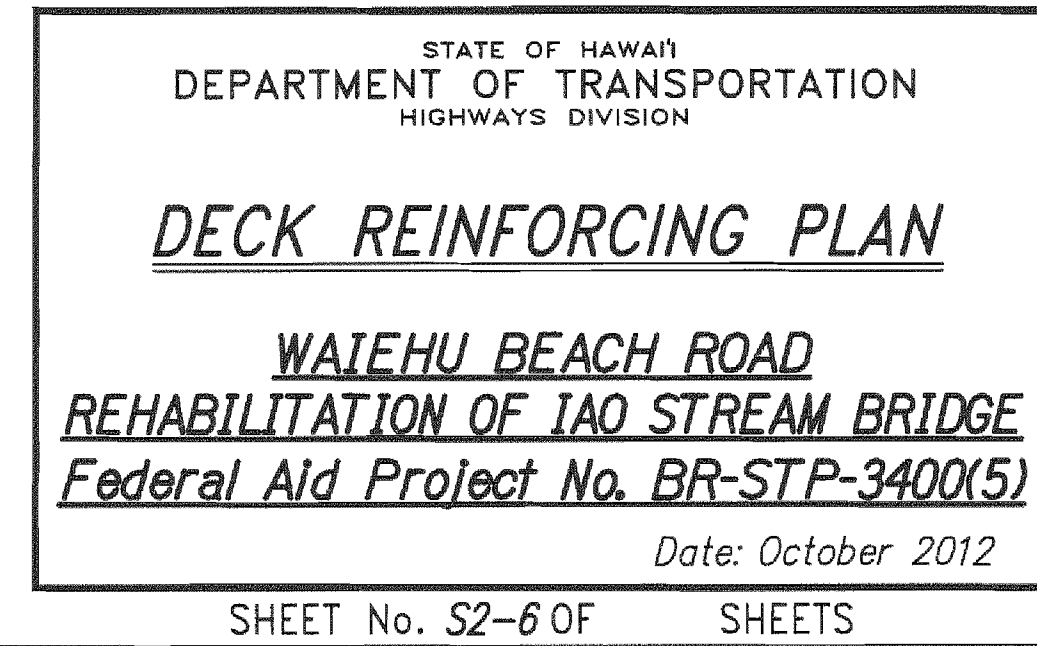
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|---------------|---------------|
| ORIGINAL PLAN | DATE          |
| NOTE BOOK     | DESIGNED BY   |
|               | CHECKED BY    |
|               | QUANTITIES BY |

Path: L:\W04\7213-01 Iao CIVIL As-Built\VPFF As-Built File Name: IAO\_S2-5 Plot date: Mar 10, 2016 11:06:16am CAD User: elokhashi Xref File Name: DOTBORD AUTODATE Dimension Note

"AS-BUILT"



Path: V:\112303 (loo Bridge - Hawaii)\Design\New KPFF Plan  
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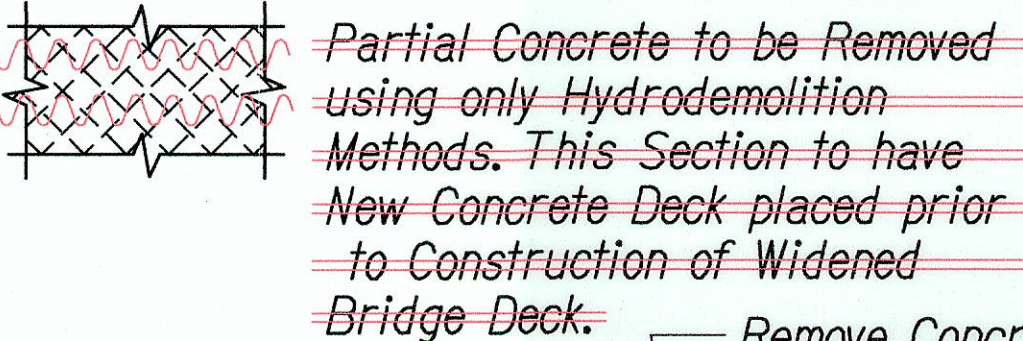


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 66        | 108          |

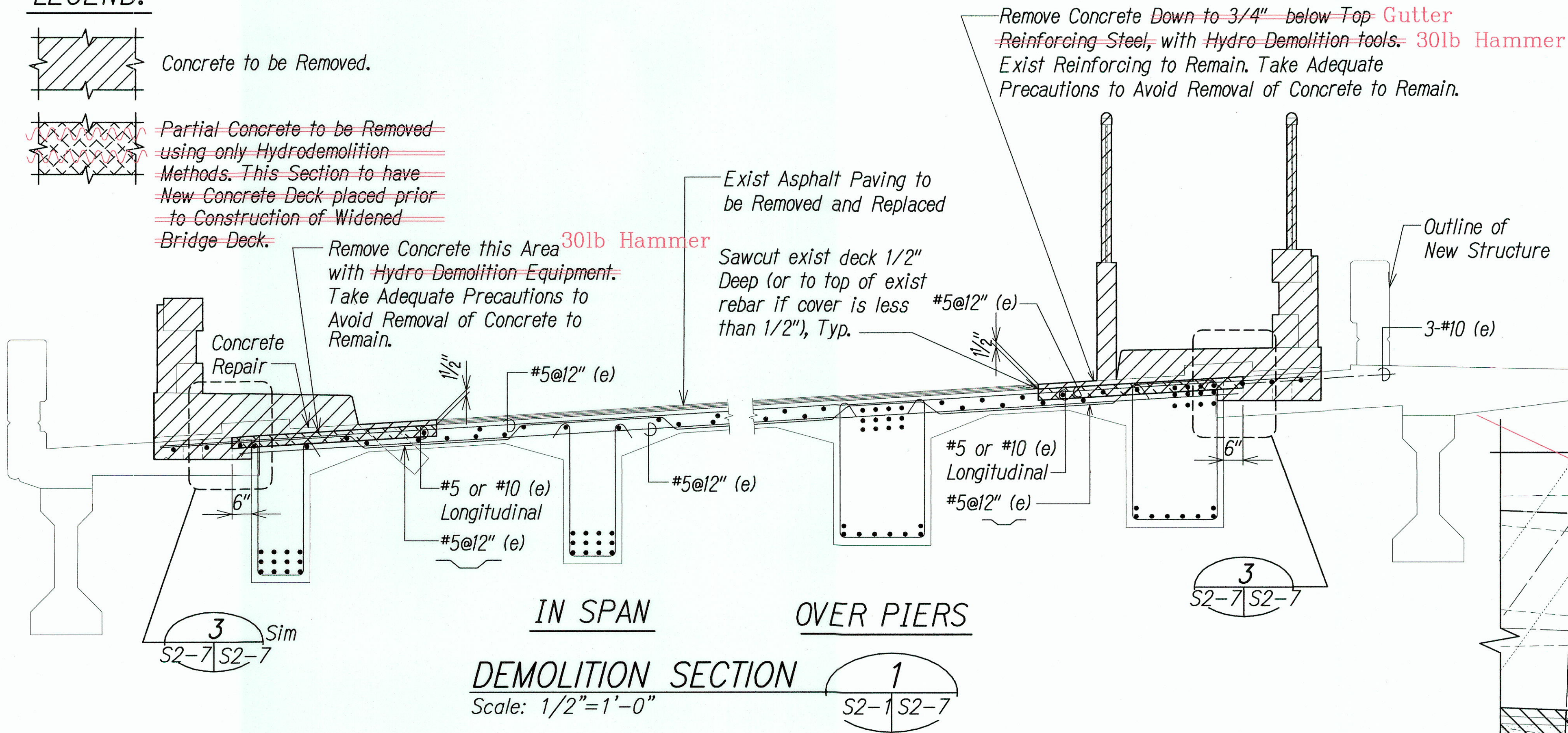
### LEGEND:



Concrete to be Removed.



Partial Concrete to be Removed using only Hydrodemolition Methods. This Section to have New Concrete Deck placed prior to Construction of Widened Bridge Deck.



### DETAIL

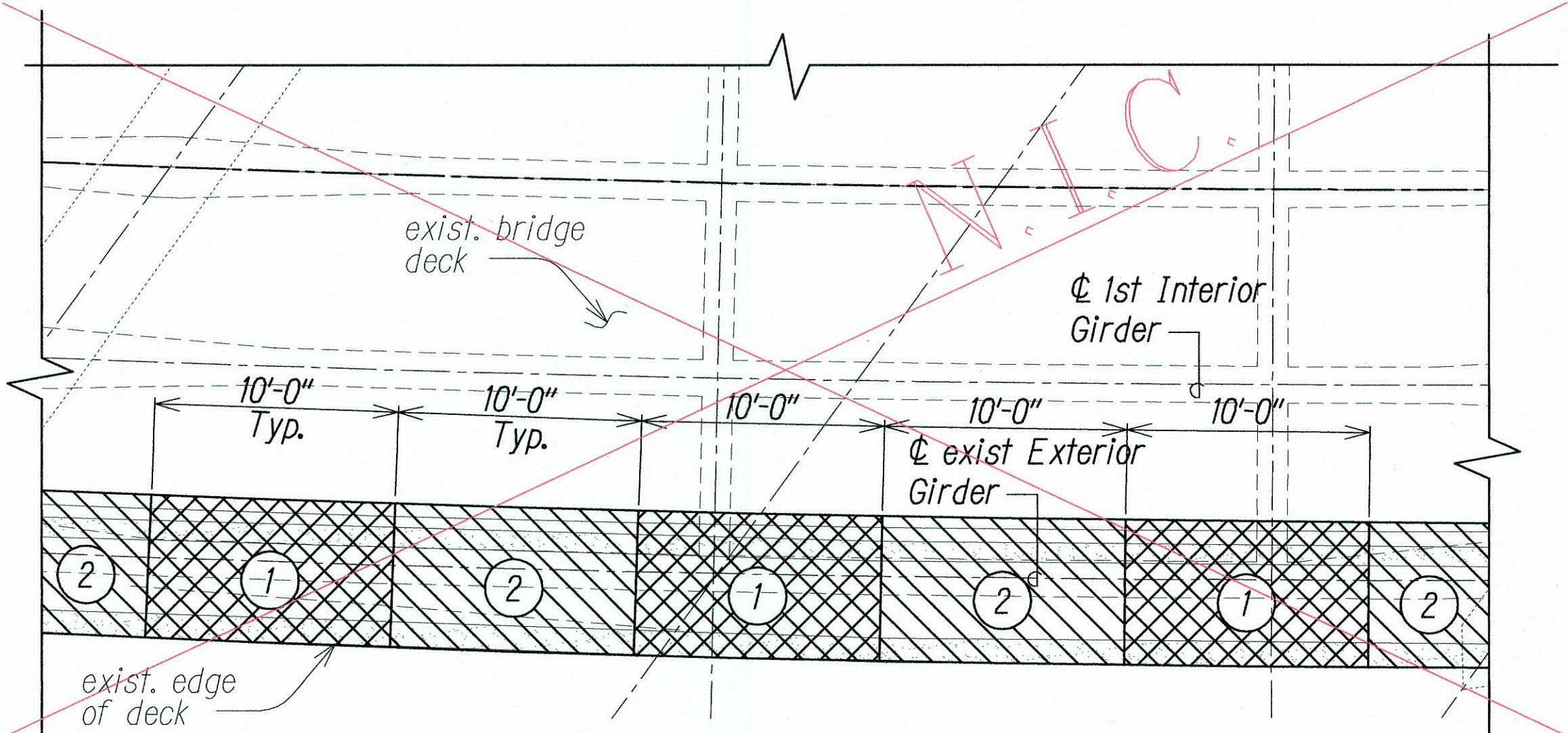
Scale: 1/2"=1'-0"

3

S2-7 S2-7

### Notes:

- No Vehicular Traffic permitted between existing Exterior Girder and First Interior Girder Undergoing Deck Repair.
- Construction Equipment are not Permitted on Girder Spans Undergoing Deck Repair.
- Submit Location and Duration of Equipment, including Vehicles Axial Load and Spacing used during the Repair Work on the Deck for Review and Approval.
- Allow Concrete in Widened Bridge Deck to Achieve Compressive Strength of 3,750 psi Before Opening to Traffic.
- Contractor shall Perform the Work to Minimize Disruptions to Traffic.
- Contractor shall Maintain 1 Lane of Traffic in Each Direction while Performing the Work. However, One Lane of Traffic Adjacent to Work Areas may be Closed During a Period Starting Friday Evening at 8:30 PM to the following Monday Morning at 5:00 AM, at which Time Traffic shall be Restored to One Lane in each Direction. Suitable Traffic Control Measures shall be in Place to Direct Traffic During Lane Closures. Concrete Strength shall be Verified that the Minimum Concrete Strength has been Attained Prior Opening the Bridge to Traffic.
- The Hawaii Department of Transportation Maui District is able to Provide 95 Portable Concrete Barriers Stored at the Hansen Road Baseyard for use on this Project. Contact Mr. Bill John Park (808-446-1419) to Coordinate use of the Barriers. The Contractor Shall be Solely Responsible for Transporting the Barrier to and from the Site. Return the Barriers to the Baseyard as soon as they are no Longer Needed. Repair any Damages to the Barriers that Occurred while in use on this Project at no Cost to the State.
- Stage 1 work of each Phase shall be Completed before Concrete Pouring of Stage 2 Deck Work. See 2/S2-7 for Deck Sequence.
- Use Hydrodemolition Equipment at Areas where Partial Thickness Removal of Bridge Deck is Indicated. Provide 3/4 inch Clearance around Reinforcing Steel to Remain. Chipping Hammers and other Conventional Demolition Methods may be used at other Locations. Demolition of Sidewalk and Railing shall be done with Equipment no greater than a 30Lbs Hammer. Take Adequate Precautions to avoid removal of Concrete Past Limits Indicated and Damage of Concrete to Remain.
- Partial Thickness Removal with Corresponding Placement of Concrete Deck shall be Performed in Alternating Lengths of 10 feet along the Bridge.
- Until New Concrete has Attained a Minimum Compressive Strength of 3,750 psi:
  - Do not allow Vehicle within 12 feet of New Concrete.
  - Do not allow Traffic Speed to Exceed 10 Miles per Hour within 12 feet of the New Concrete.
  - Do not allow Construction Equipment Speed to Exceed 5 Miles per Hour within 12 feet of New Concrete.
- Existing Reinforcing Steel shall have Concrete and Rust Formations Removed Prior to Placement of New Concrete.
- Standing Water shall be Removed by Vacuum Equipment Prior to Slurry or Concrete Placement.
- At Partial Thickness Deck Removal Areas Concrete Surface shall be Brought to a Saturated Surface Dry Condition Prior to Placement of Cement Slurry Bond Coat.



### PARTIAL DECK THICKNESS DEMOLITION PLAN

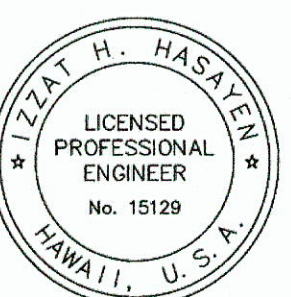
Scale: None

2

S2-7 S2-7

### Legend:

- Denote Stage 1 Work.
- Denote Stage 2 Work.



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*Izzy H. Hasegawa*  
CONSULTING ENGINEERS  
APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

### DETAILS

**WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S2-7 OF

SHEETS

"AS-BUILT"

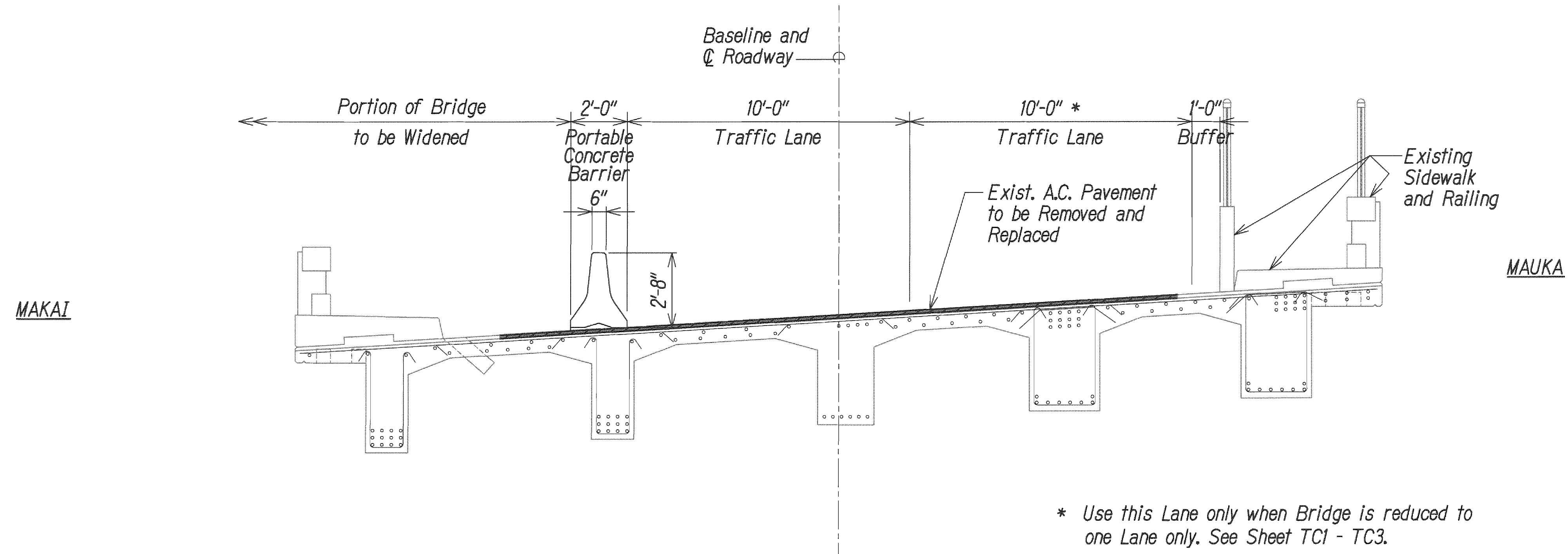
66

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| CHECKED BY        |      |
| NOTED BY          |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     | No.  |
| NOTE BOOK         |      |

Path: L:\W04\7213-01 Iao CIVIL\As-Built\KPF As-Bui File Name: IAO S2-7 Plot Date: Mar 10, 2016-11:06:23am CAD User: etakchashi.Xref File Name: DOTBOARD AUTODAT 06008-20



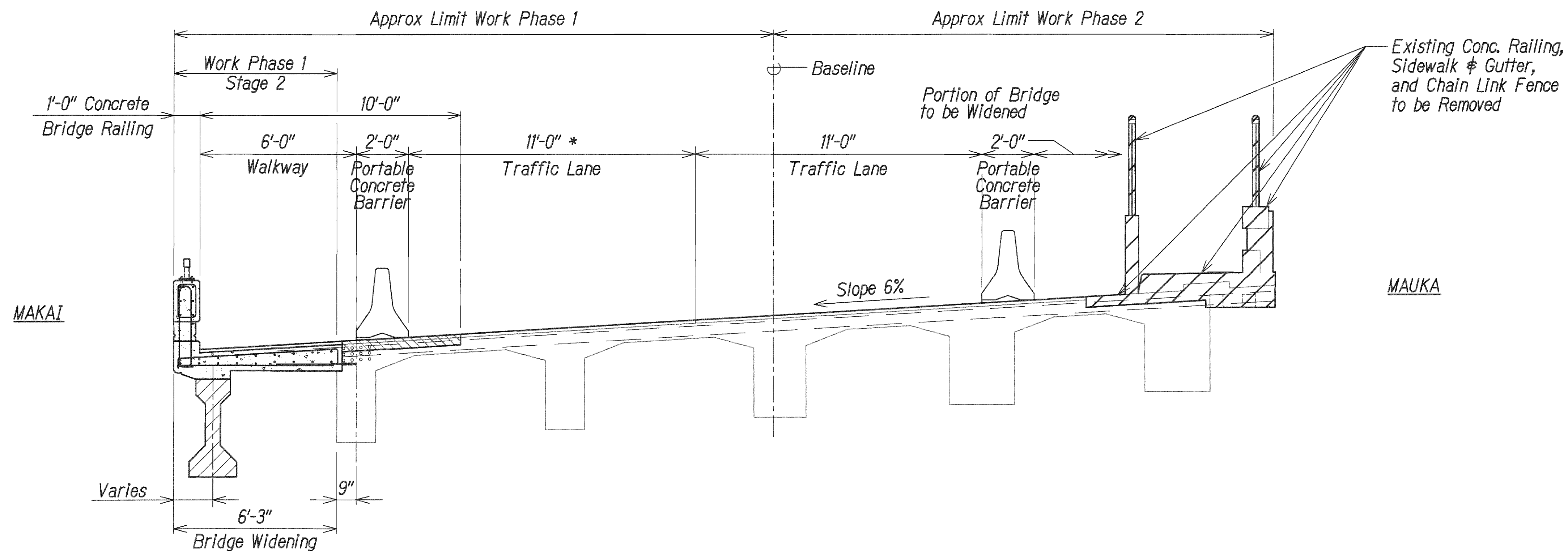
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 67        | 108          |



See Sheet S2-7 for Additional Construction Requirements.

### PHASE 1 CONSTRUCTION - LANE CONFIGURATION

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



### PHASE 2 CONSTRUCTION - LANE CONFIGURATION

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

GRAPHIC SCALE:  
2' 0 2' 4' 6'  
SCALE: 3/8"=1'-0"



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*T. H. Hasey*  
T. H. HASEY CONSULTING ENGINEERS L.C. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CONSTRUCTION PHASING DETAILS**

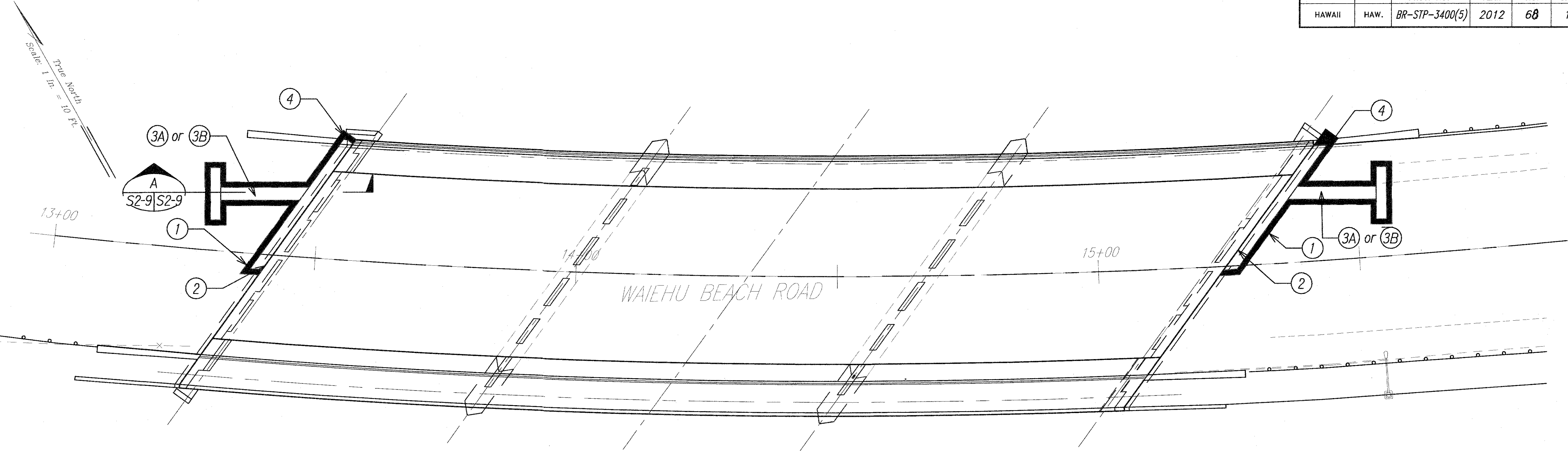
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S2-8 OF SHEETS



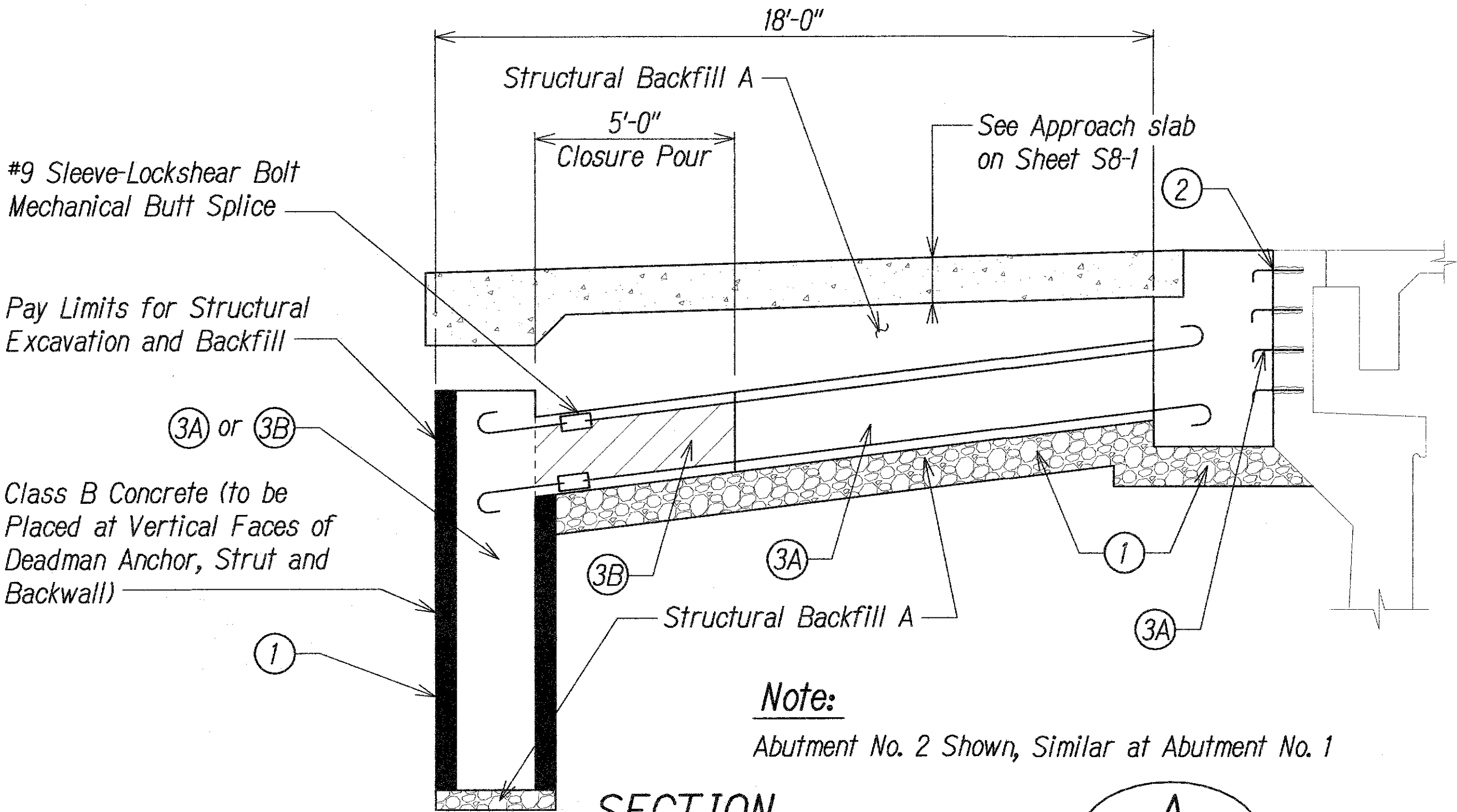
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|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 68        | 108          |



**PROPOSED DEADMAN CONSTRUCTION SEQUENCE PLAN**  
Scale: 1"=10'

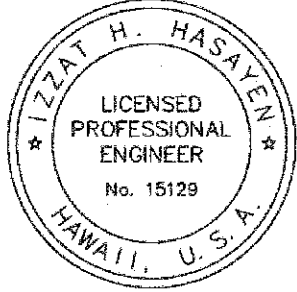
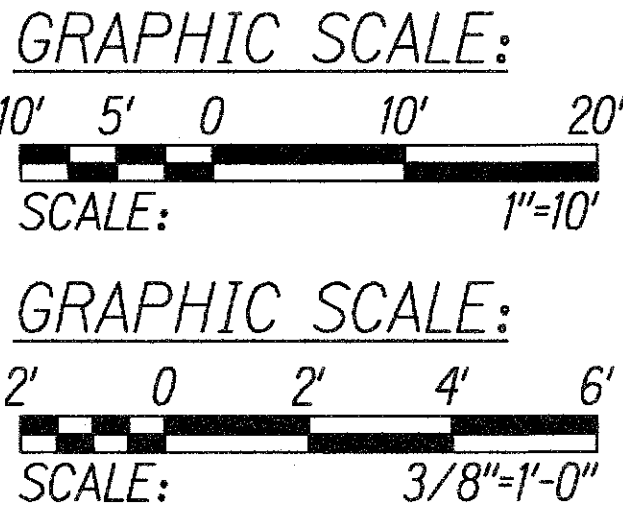
**CONSTRUCTION SEQUENCE**

- ① Install Shoring, Excavate and Place Structural Backfill for Deadman Anchor, Strut and Backwall.
- ② Clean and Roughen Existing Backwall, Locate Existing Reinforcing Bars and Install Epoxy Grouted Reinforcement.
- ③A Place Rebar and Cast Concrete for Deadman Anchor, Strut and Backwall (CIP).
- ③B Place Precast Strut and Deadman Anchor and Rebar for Backwall. Cast Concrete for Backwall and Closure Pour (Precast Option).
- ④ Backfill with Class B Concrete. Along Vertical Faces of Concrete. Use Structural Backfill A on Top of Concrete.
- ⑤ Repeat for Mauka Side.



**SECTION A**  
Scale: 3/8"=1'-0"

**Note:**  
Abutment No. 2 Shown, Similar at Abutment No. 1



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*Lizzy H. Hasaen* APRIL 30, 2016  
CONSULTING ENGINEERS LIC. EXP. DATE

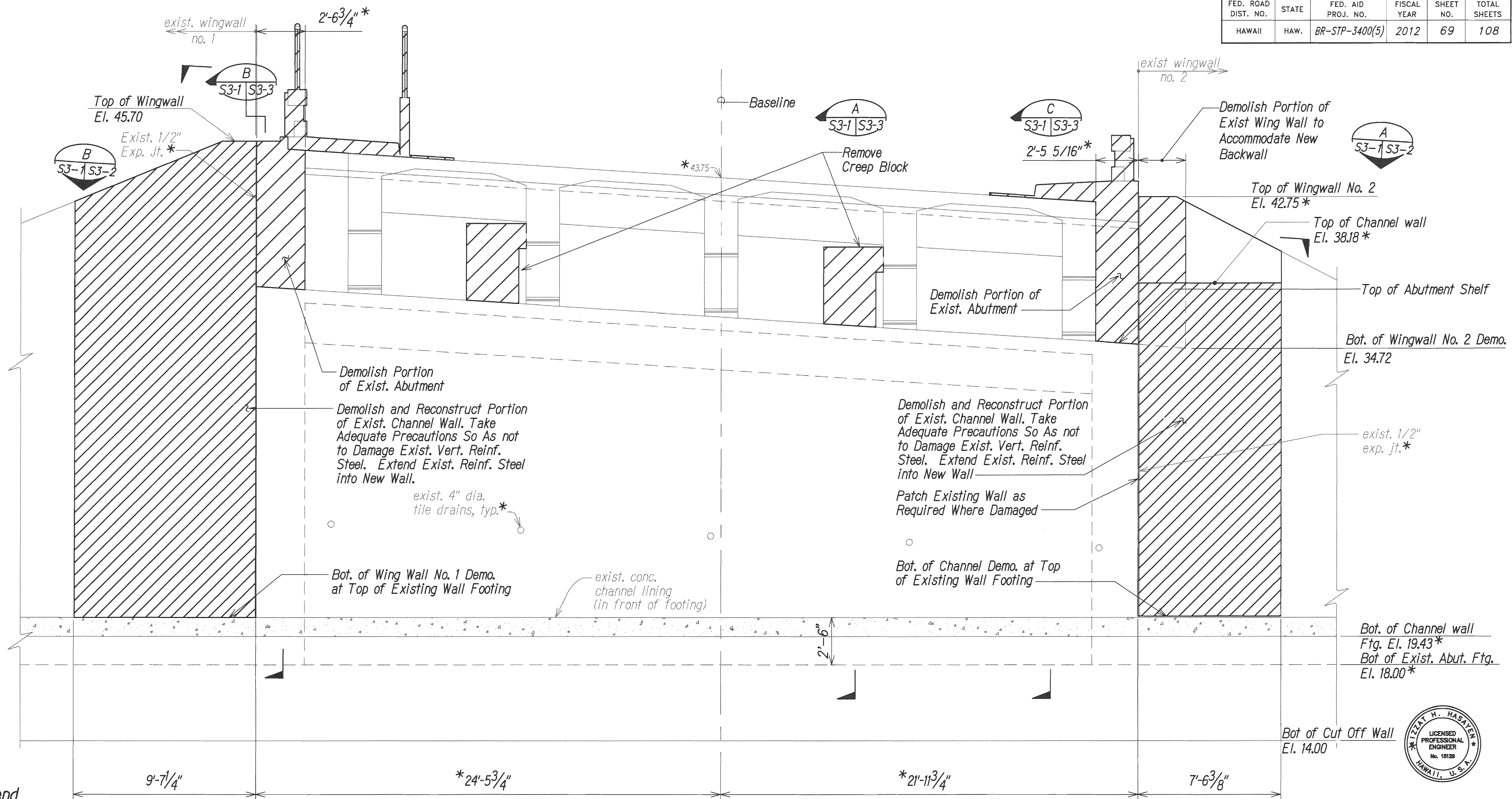
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PROPOSED DEADMAN  
CONSTRUCTION SEQUENCE**  
  
**WAIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 69        | 108          |

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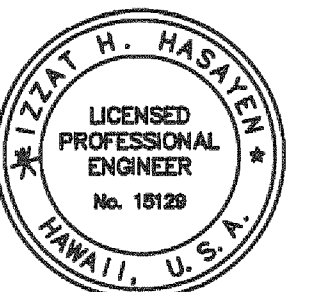
### ABUTMENT NO. 1 DEMOLITION - ELEVATION

Scale: 3/8"=1'-0"  
 - Shown Looking Back on Station  
 - Shown Normal to  $\phi$  of Bearing  
 - Elevations Shown Along  $\phi$  of Exist Bearing

\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.

GRAPHIC SCALE:  
 2' 0 2' 4' 6'  
 SCALE: 3/8"=1'-0"



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*Elizabeth H. Hasayen*  
 KPEFF CONSULTING ENGINEERS APRIL 30, 2014  
 LIC. EXP. DATE

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**ABUTMENT NO. 1  
 DEMOLITION ELEVATION**

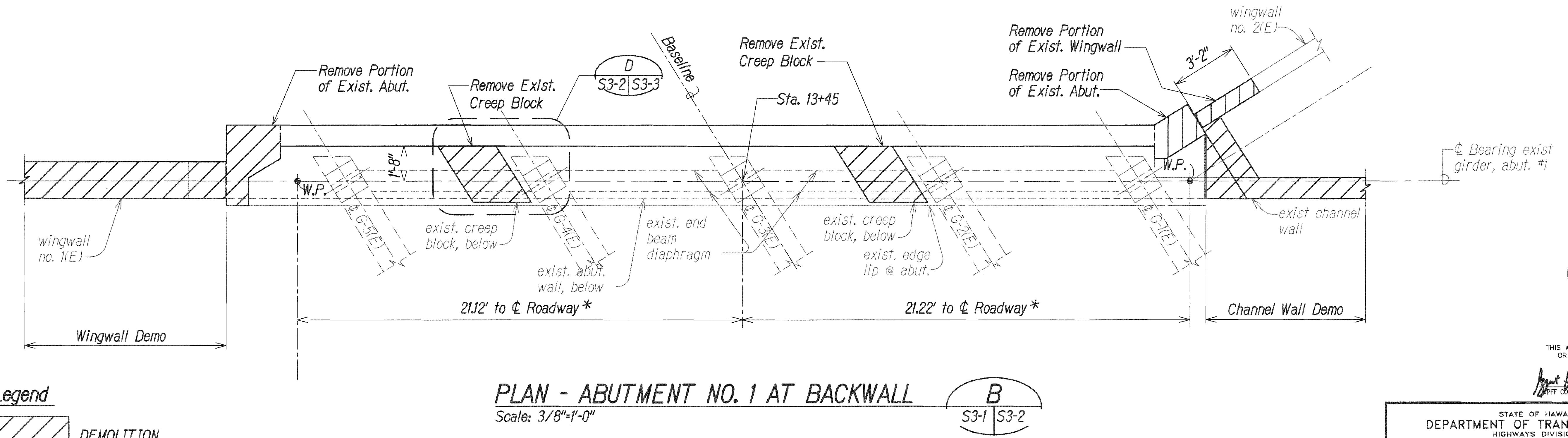
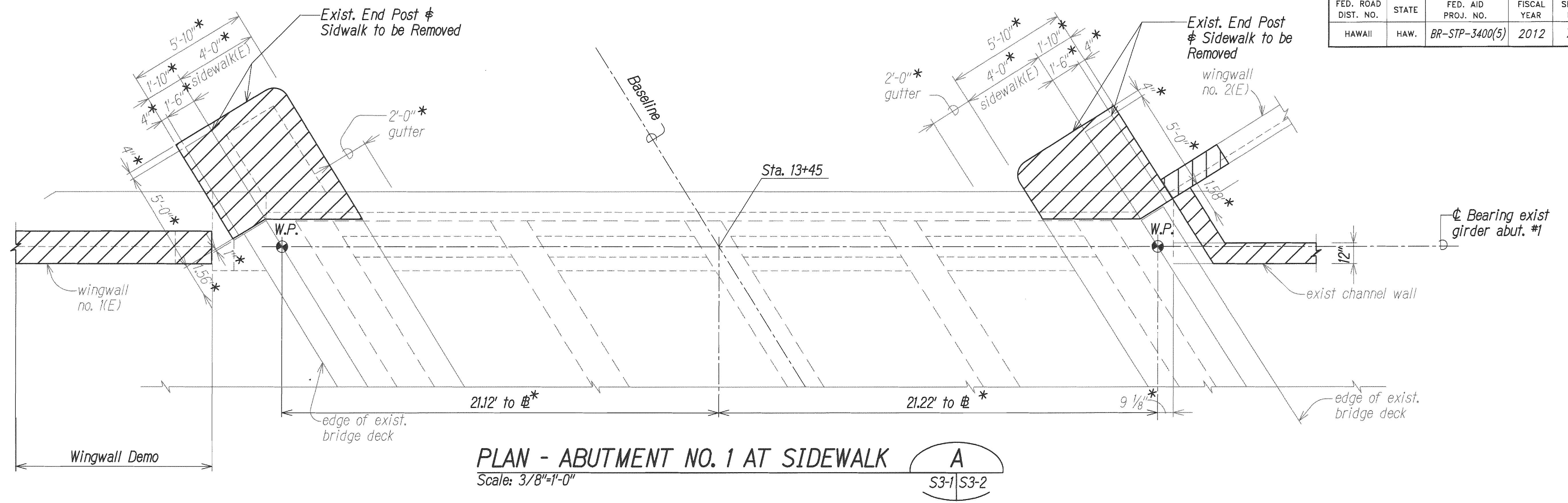
**WAIIEHU BEACH ROAD  
 REHABILITATION OF IAO STREAM BRIDGE  
 Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S3-1 OF SHEETS



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 70        | 108          |

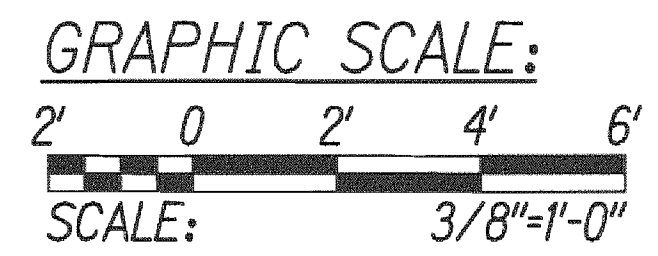


**Legend**

DEMOLITION

\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

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*T. H. Hasiyen* APRIL 30, 2014  
 OFFICE CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**ABUTMENT NO. 1  
 DEMOLITION PLAN/SECTIONS**

**WAIIEHU BEACH ROAD  
 REHABILITATION OF IAO STREAM BRIDGE**

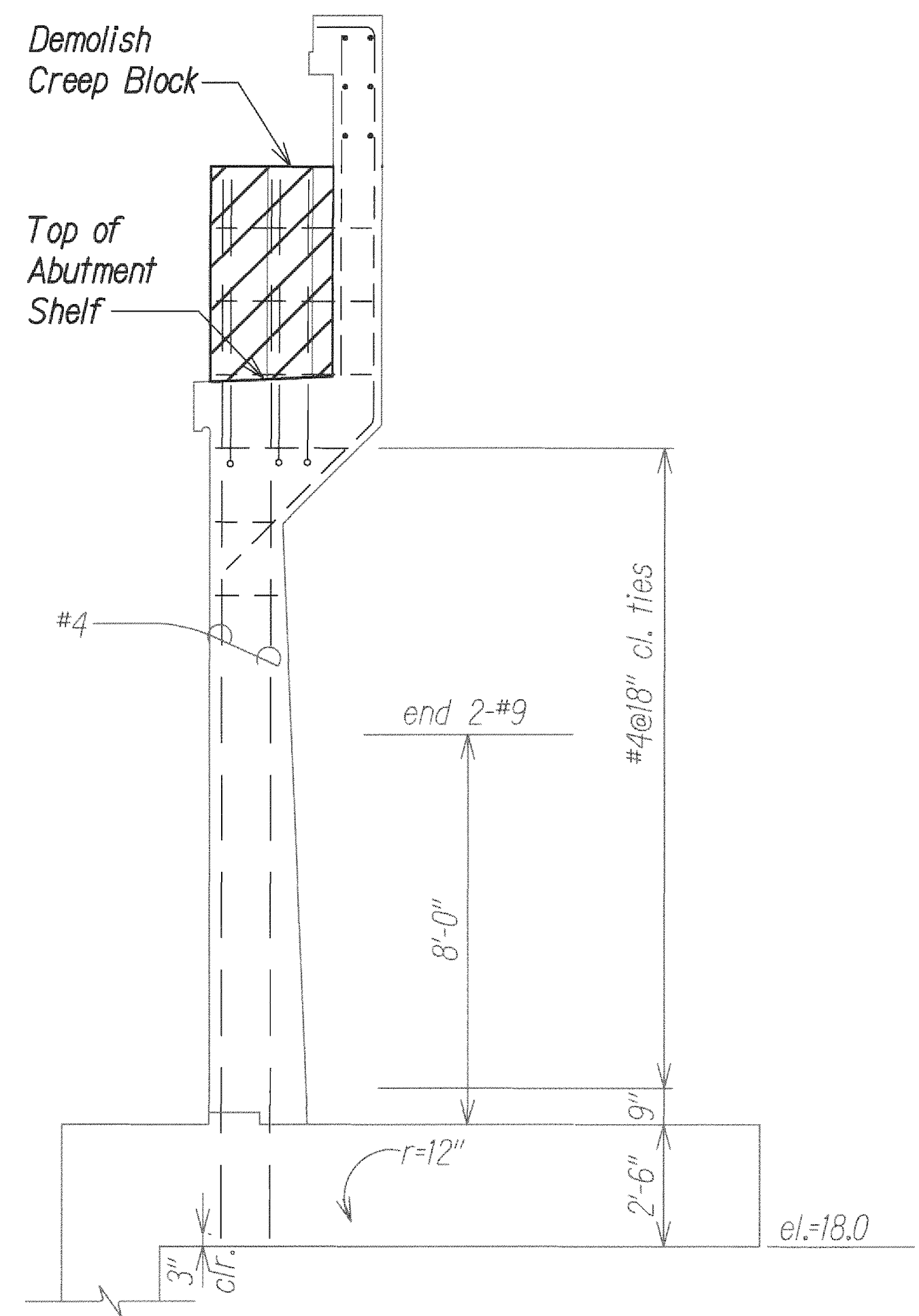
**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

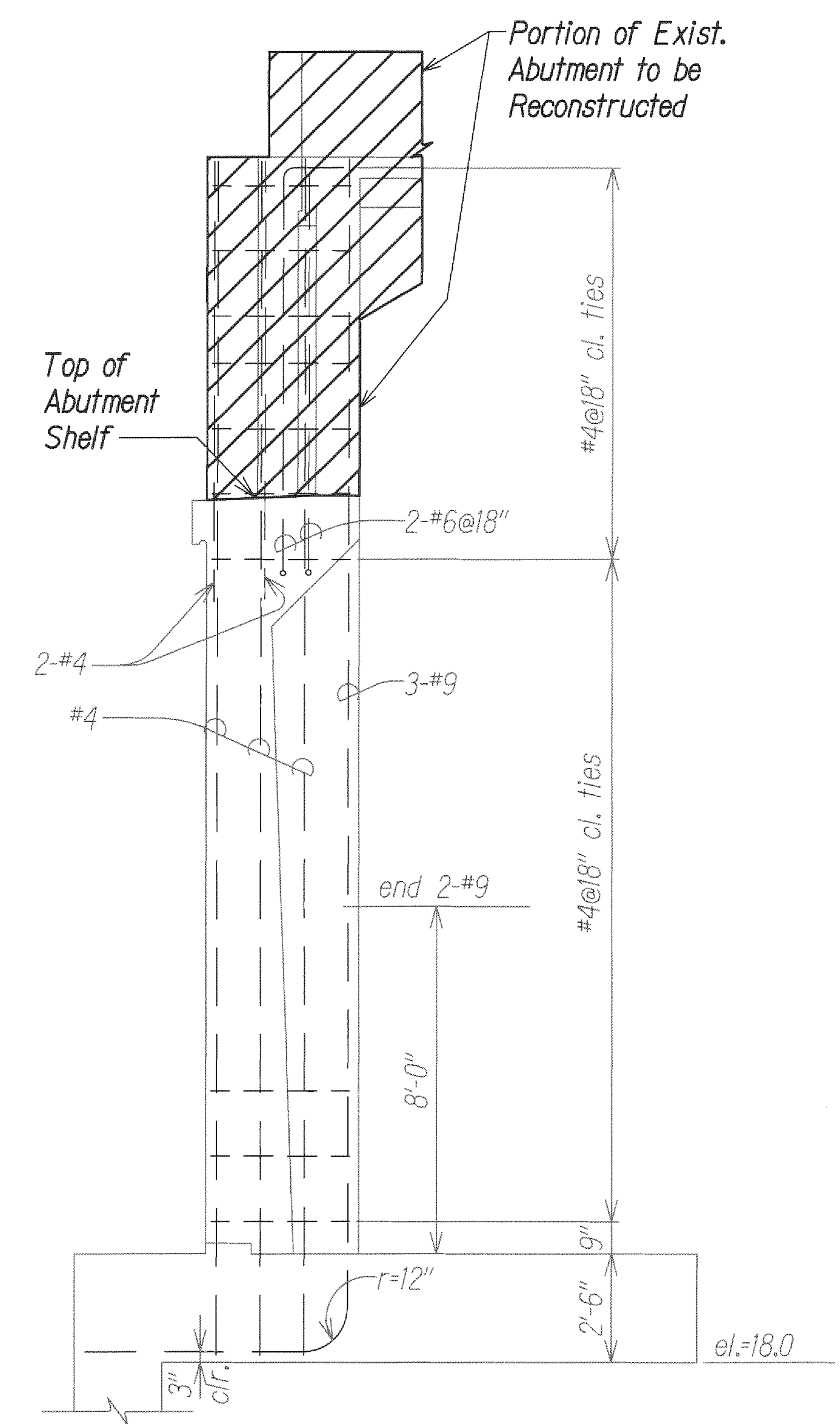
SHEET No. S3-2 OF SHEETS



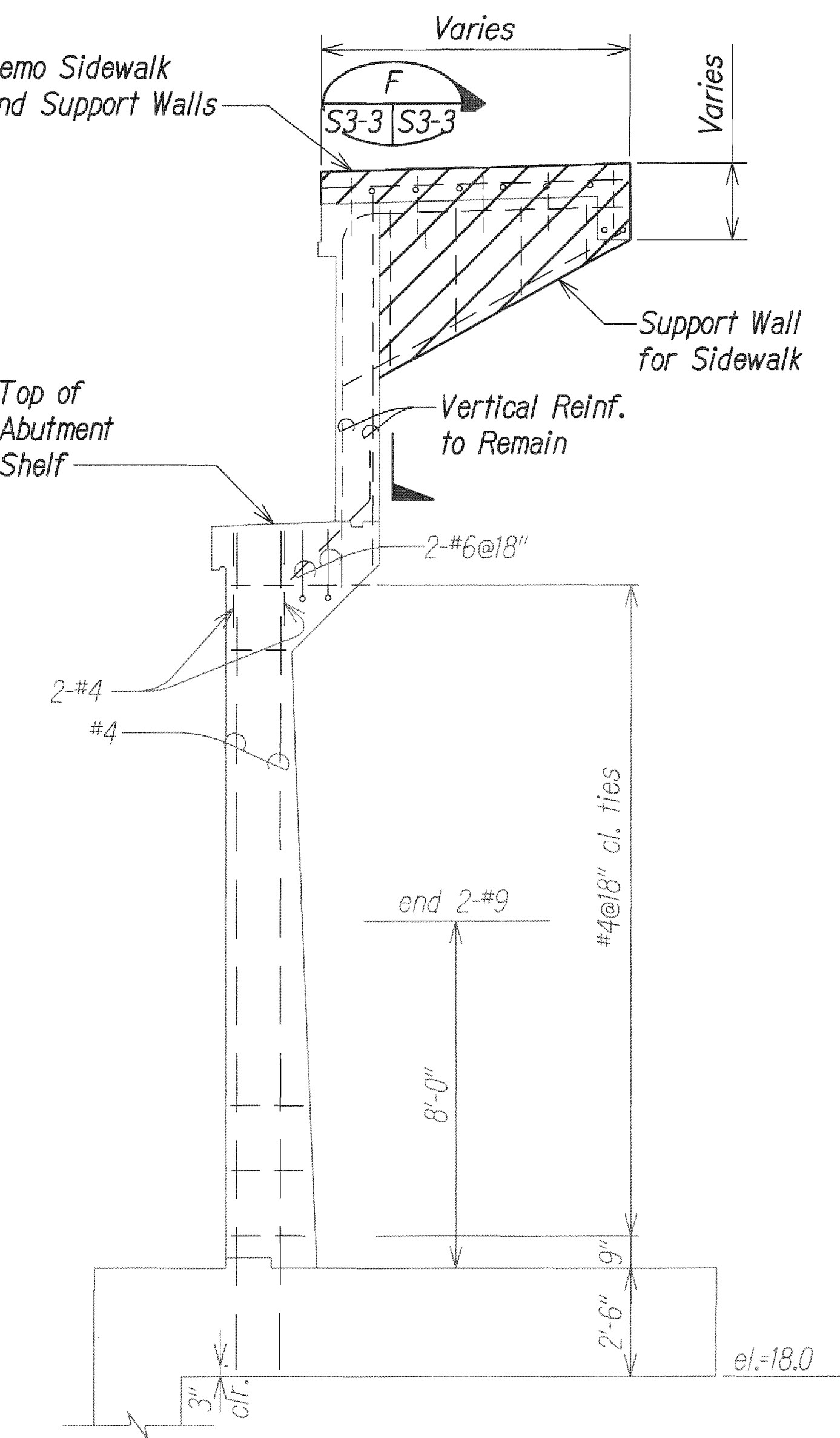
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|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 71        | 108          |



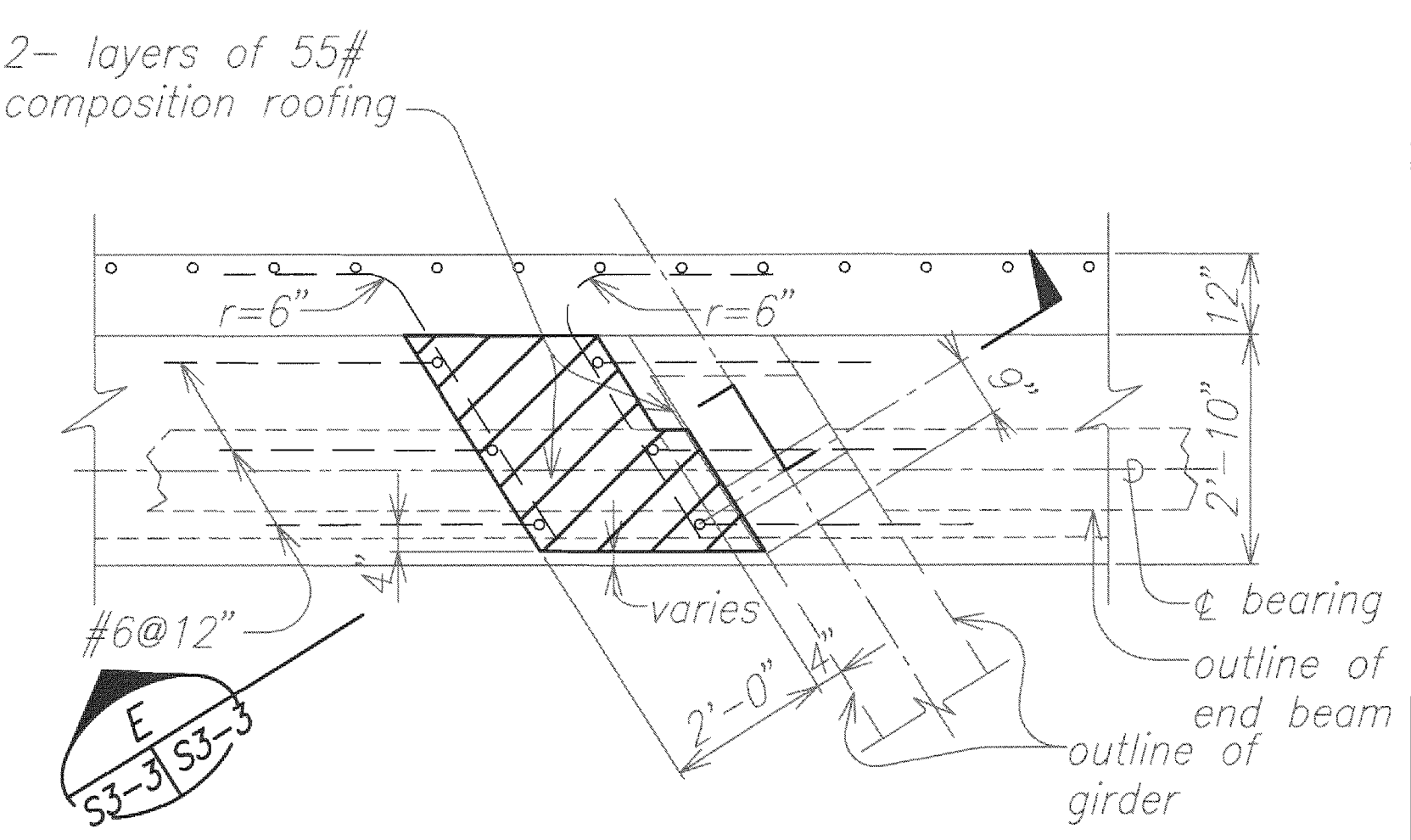
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S3-1 S3-3



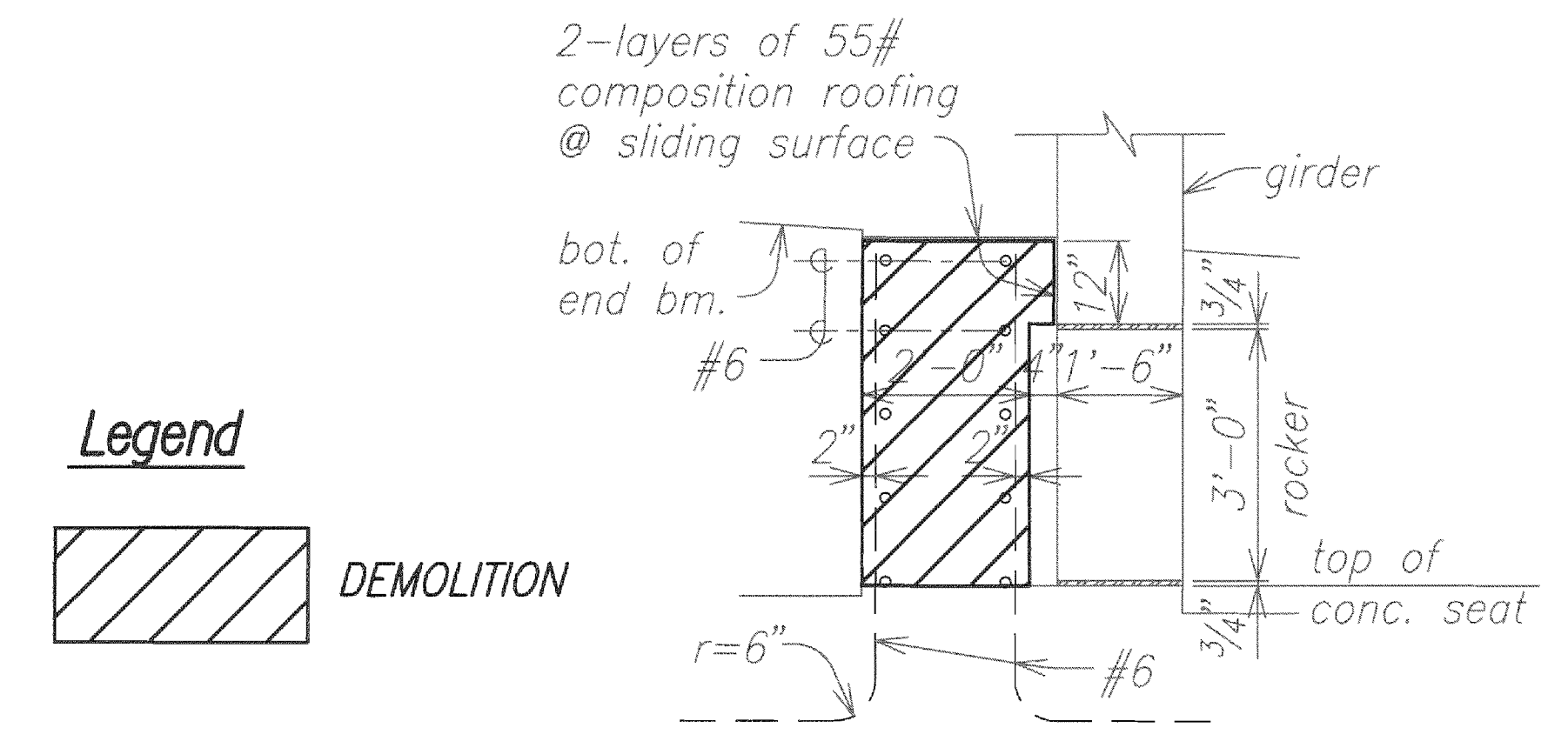
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S3-1 S3-3



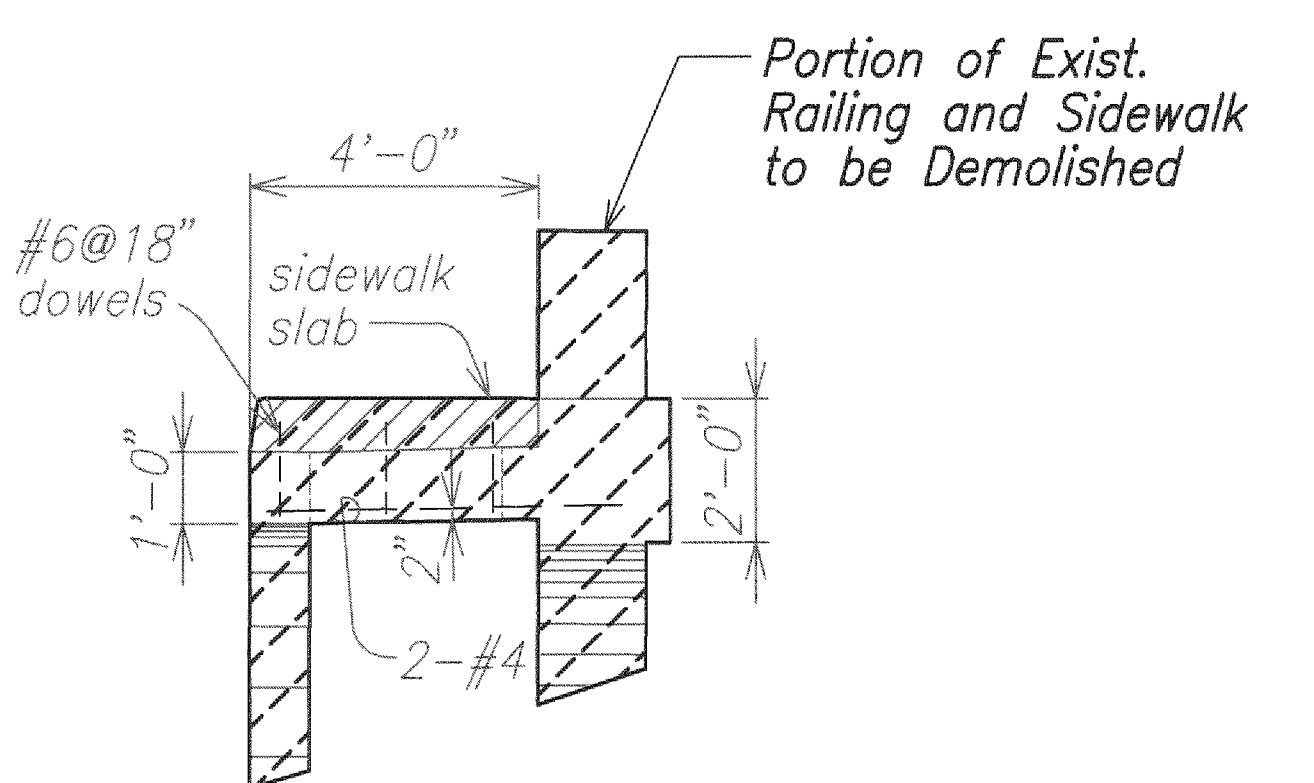
**SECTION C**  
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S3-1 S3-3



**PLAN - DETAIL OF CREEP BLOCK D**  
Scale: 1/2"=1'-0"  
S3-2 S3-3



**SECTION E**  
Scale: 1/2"=1'-0"  
S3-3 S3-3



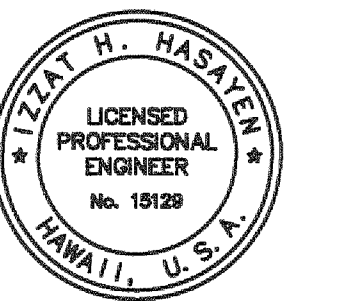
**SECTION F**  
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S3-3 S3-3

**Legend**

DEMOLITION

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- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

*Izat H. Hasayen*  
APRIL 30, 2014  
L.C. EXP. DATE

**GRAPHIC SCALE:**

2' 0' 2' 4' 6'

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

**GRAPHIC SCALE:**

2' 0' 2' 4' 6'

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ABUTMENT NO. 1  
DEMOLITION DETAILS**

**WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE**  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

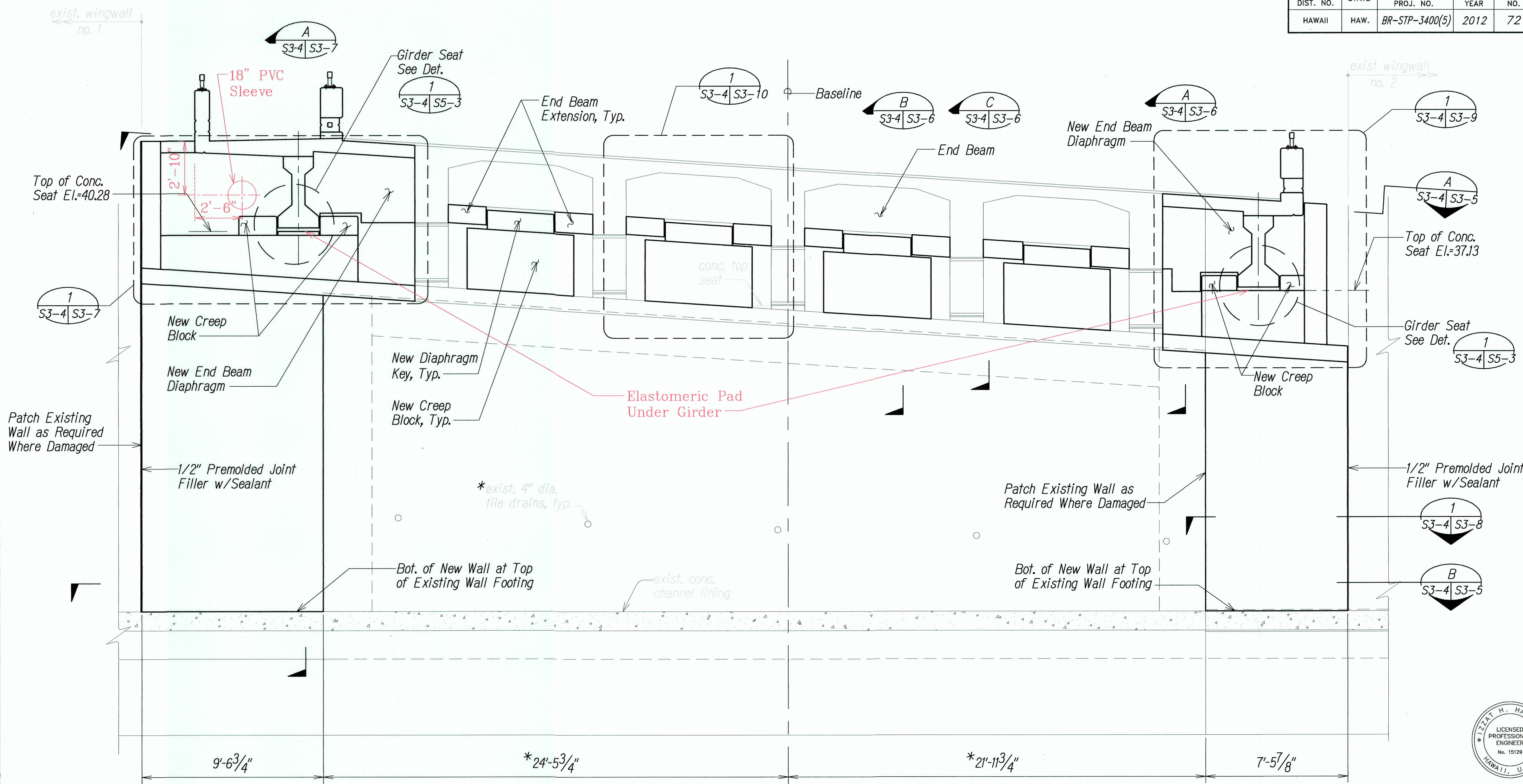
SHEET No. S3-3 OF SHEETS



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 72        | 108          |

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|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|               | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | CHECKED BY        |      |
| NOTE BOOK     | QUANTITIES BY     |      |
|               | CHECKED BY        |      |
|               | NO.               |      |
|               |                   |      |



### ABUTMENT NO. 1 - ELEVATION

- Scale: 3/8"=1'-0"  
 - Shown Looking Back on Station  
 - Shown Normal to  $\phi$  of Bearing  
 - Elevations Shown Along  $\phi$  of Exist Bearing

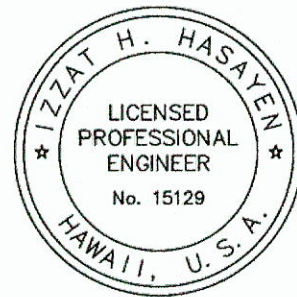
\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.

#### LEGEND FOR AS-BUILT POSTINGS

- Squiggly line for as-built deletion  
 Double line for as-built deletion  
 Roadway Text for as-built posting

GRAPHIC SCALE:  
 2' 0 2' 4' 6'  
 SCALE: 3/8"=1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

April 30, 2016  
 OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

### ABUTMENT NO. 1 ELEVATION

WAIEHU BEACH ROAD  
 REHABILITATION OF IAO STREAM BRIDGE  
 Federal Aid Project No. BR-STP-3400(5)

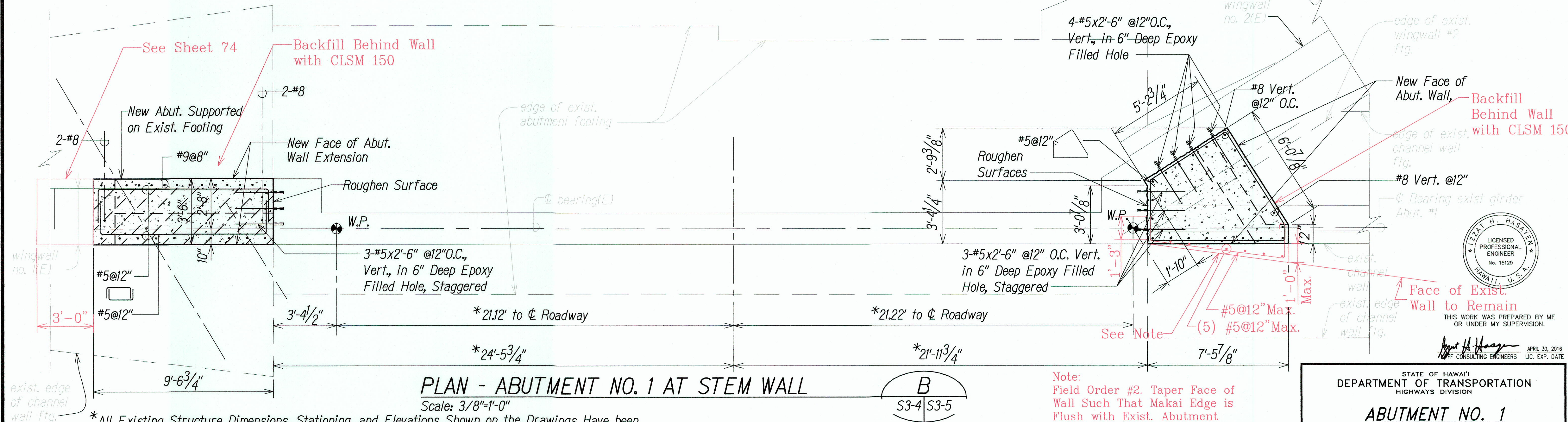
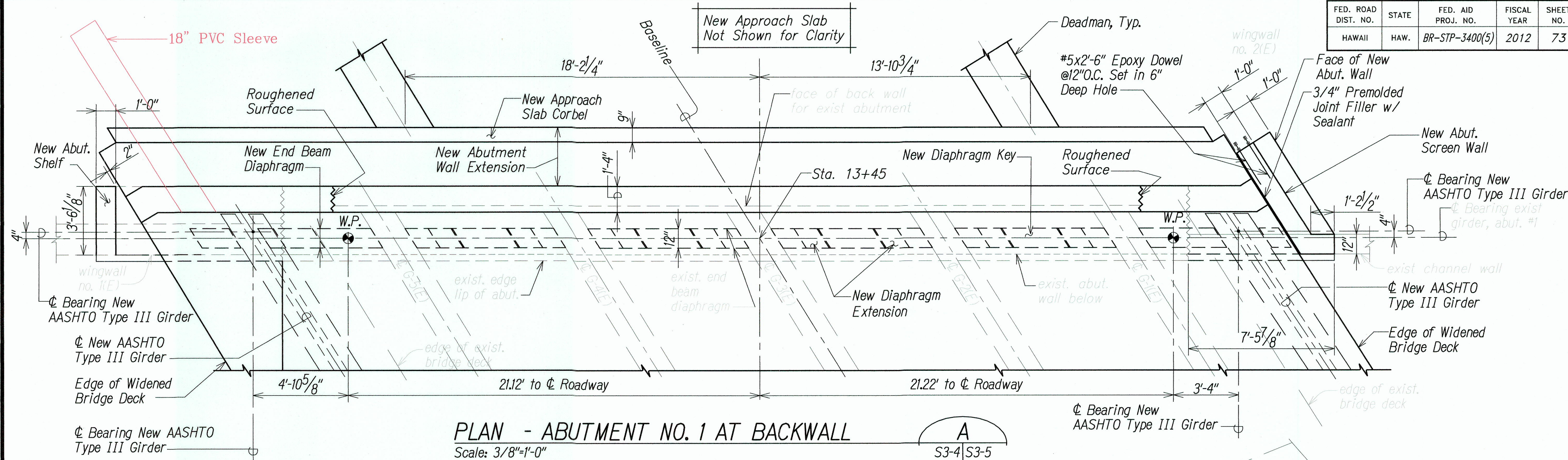
Date: October 2012

SHEET No. S3-40F SHEETS

"AS-BUILT"



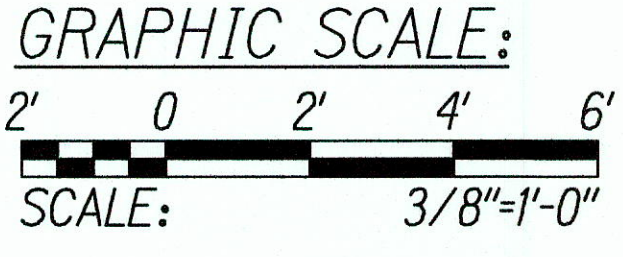
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 73        | 108          |



\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.

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



Note:  
Field Order #2. Taper Face of Wall Such That Makai Edge is Flush with Exist. Abutment and Exist. Channel Wall.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ABUTMENT NO. 1

PLAN

WAIIEHU BEACH ROAD

REHABILITATION OF IAO STREAM BRIDGE

Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S3-5 OF SHEETS

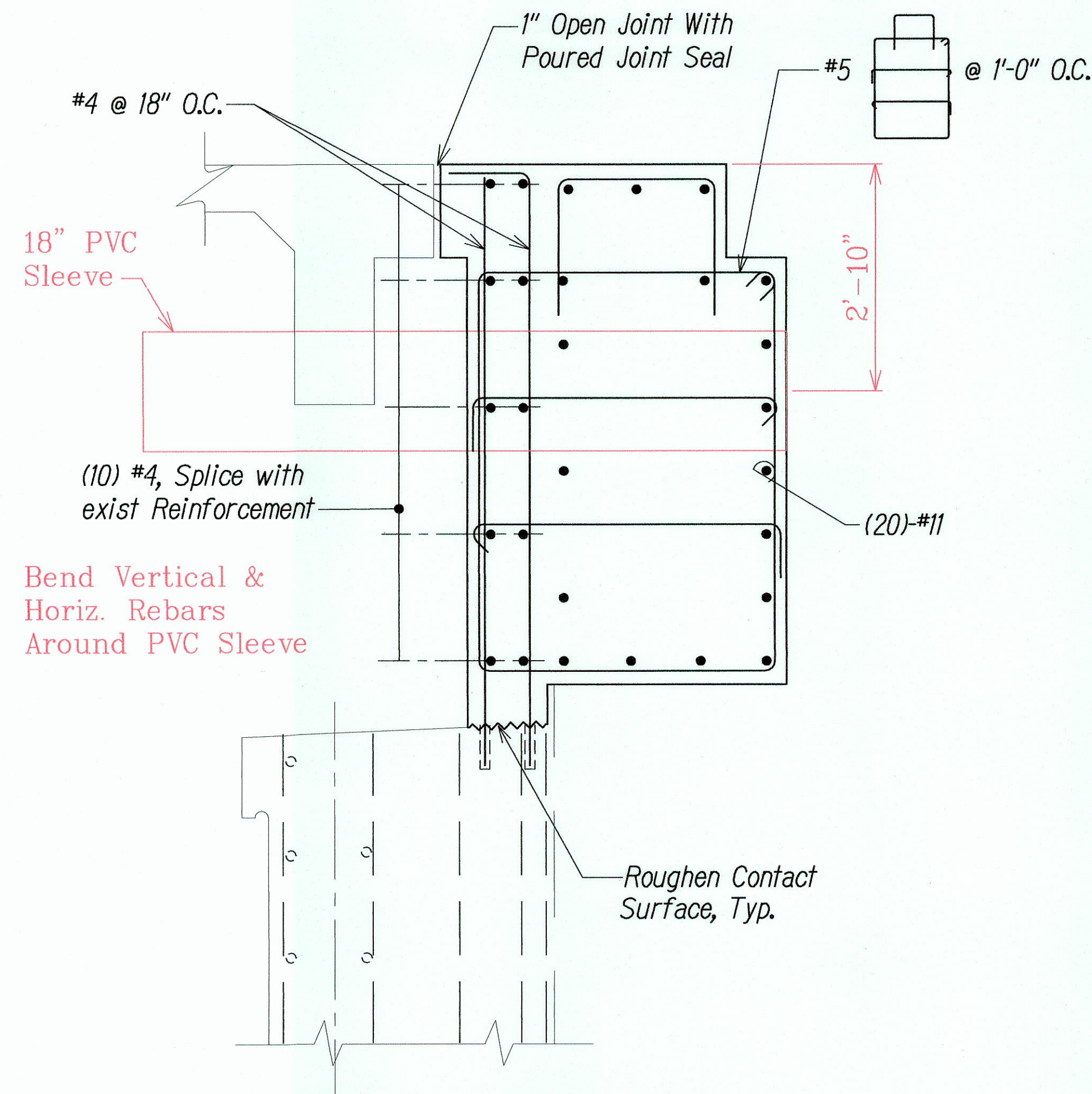
|             |       |
|-------------|-------|
| DATE        | _____ |
| DESIGNED BY | _____ |
| CHECKED BY  | _____ |
| NOTED BY    | _____ |
| ORIGINAL    | _____ |

Path: L:\W04\7213-01 Iao\04\01\As-Built\VPFF As-Built File Name: IAO\_S3-5 Plot date: Mar 10, 2016-11:06:45am CAD User: etakoshu Xref File Name: | DOTBORD | AUTODRAW | Dimension Note |

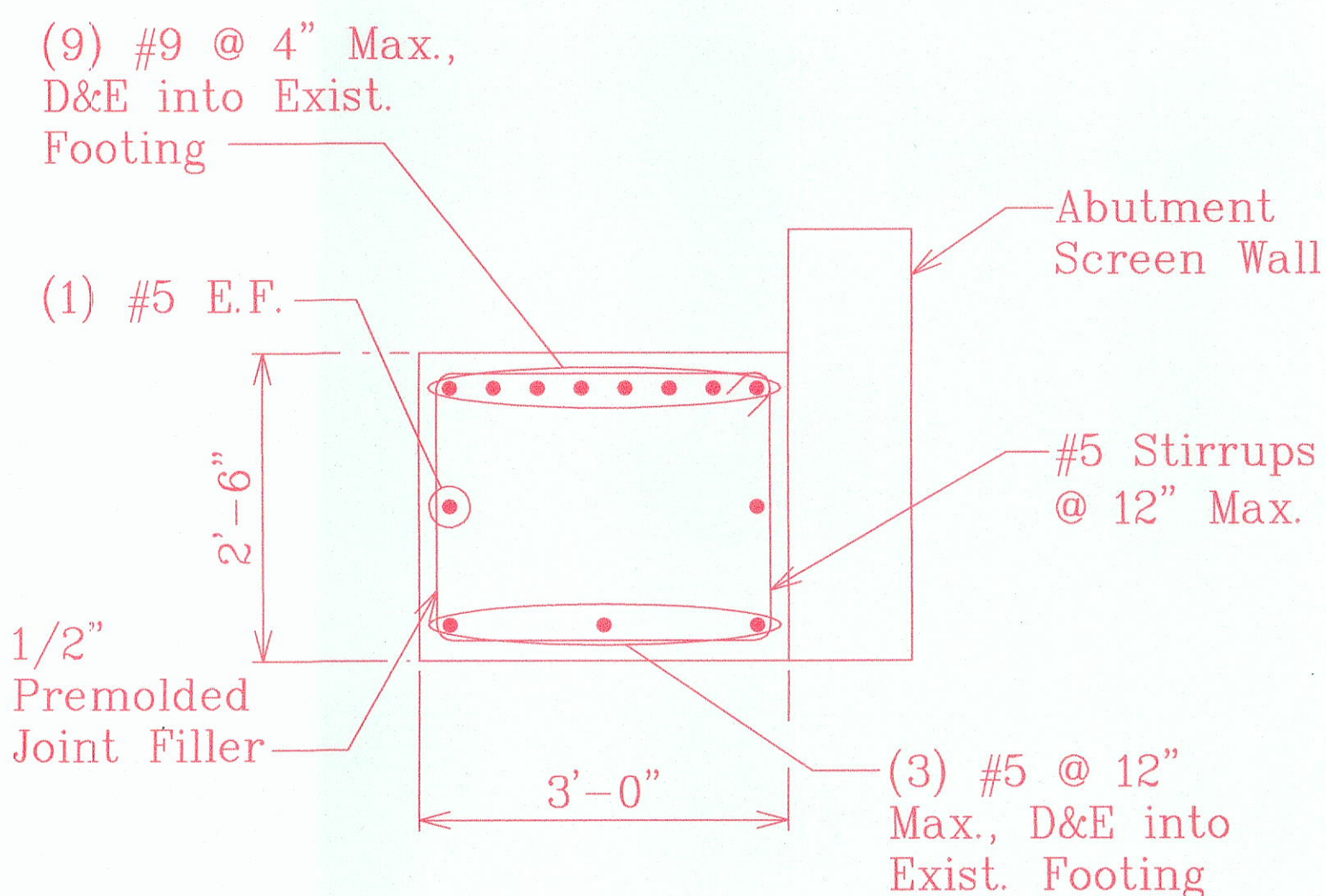
"AS-BUILT"



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 74        | 108          |

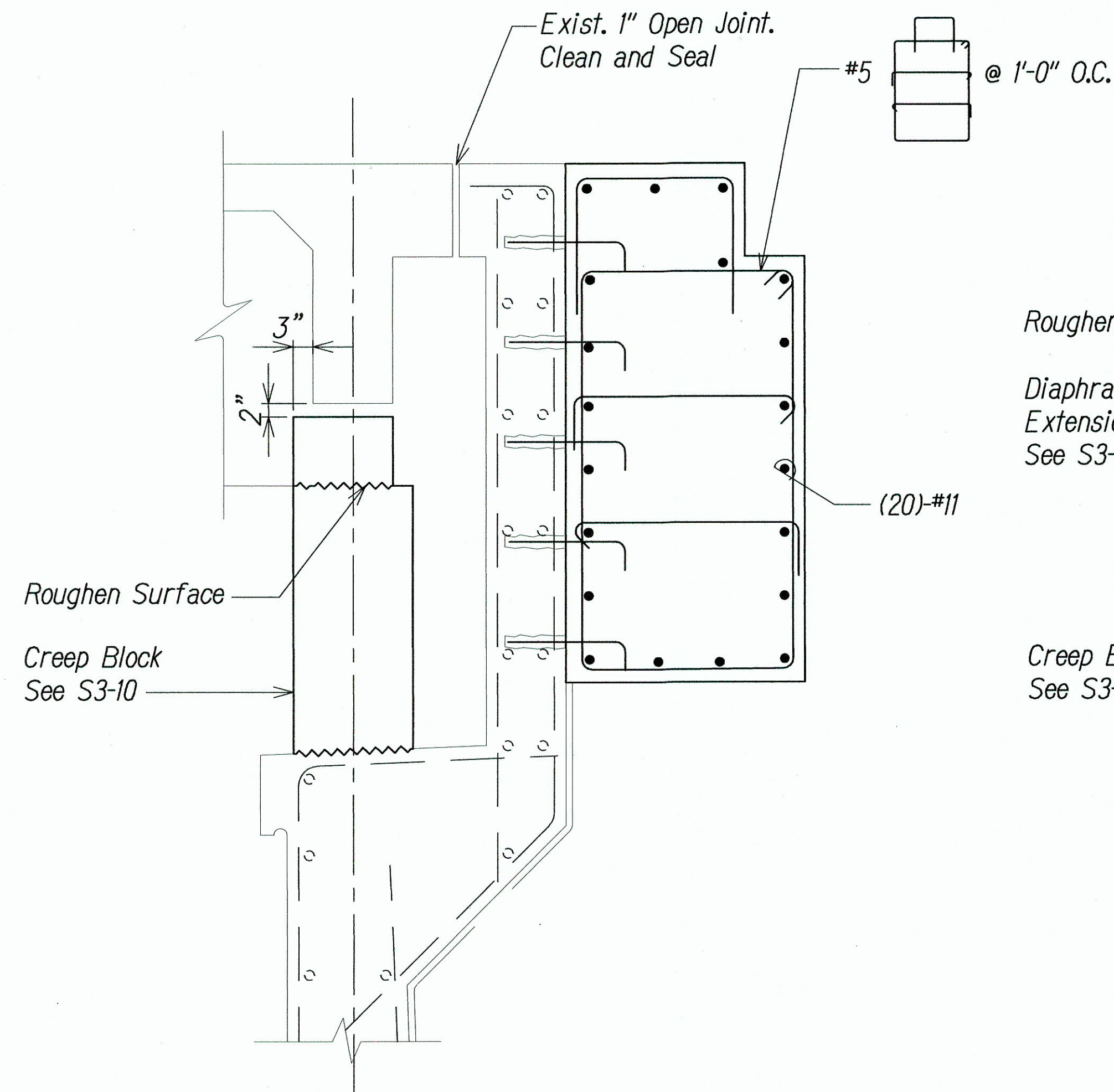


SECTION THRU NEW  
BACKWALL  
Scale: 3/4"=1'-0"

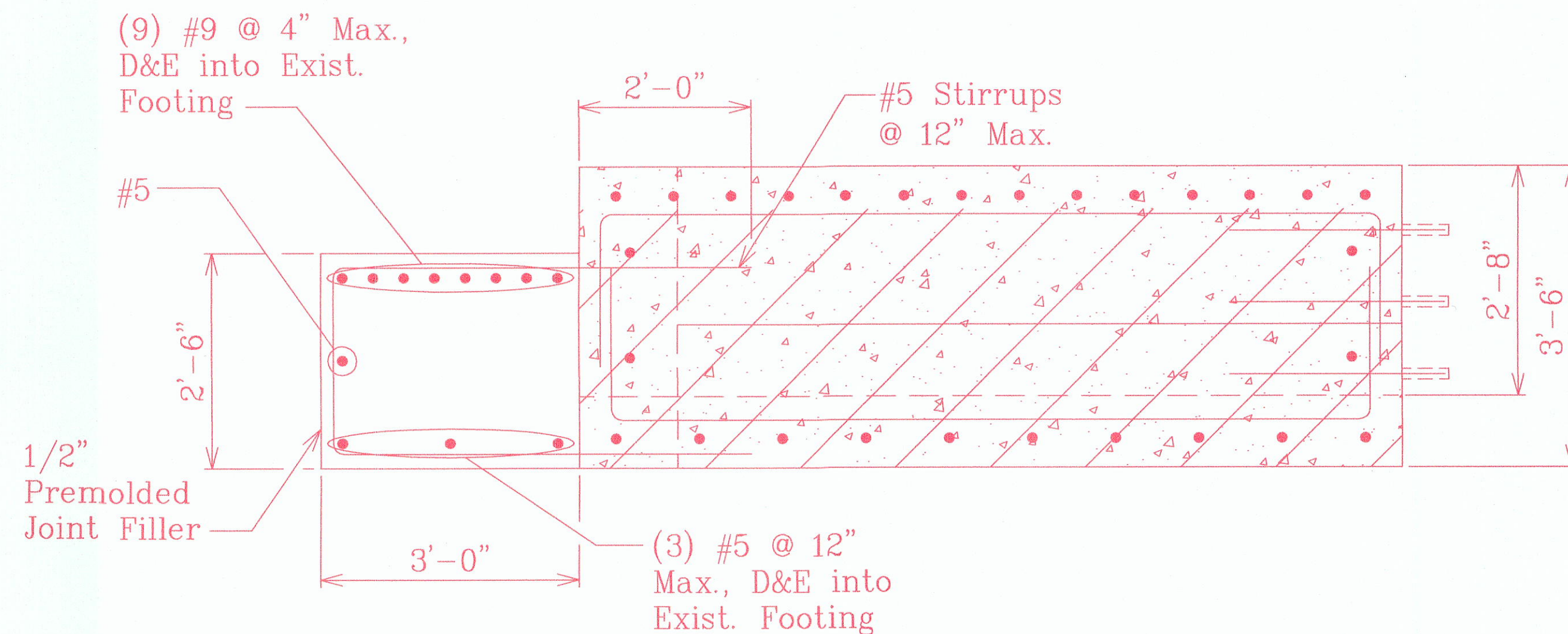


### ADDITIONAL MAUKA EXTENSION #1 ABOVE TOP OF ABUTMENT SHELF

- Notes:
- Top of Additional Mauka Extension Shall Match Existing.
  - See Sheet S3-5 for Details not Shown.

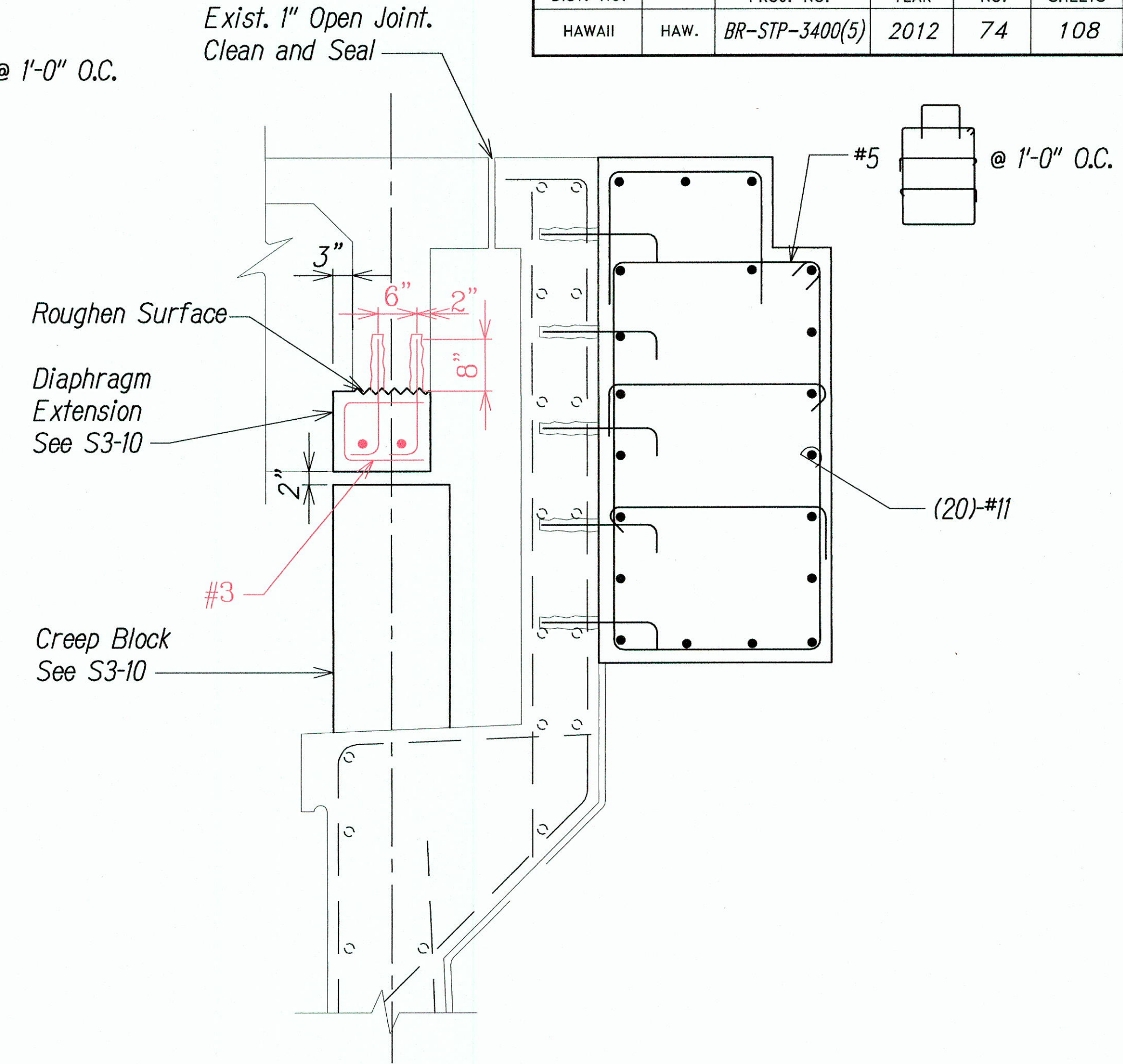


SECTION THRU NEW  
GIRDER CREEP BLOCK  
Scale: 3/4"=1'-0"



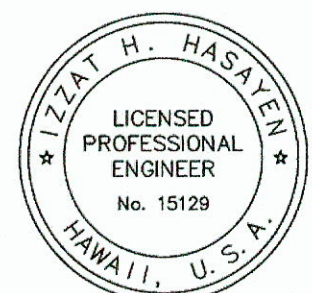
### ADDITIONAL MAUKA EXTENSION #1 BELOW TOP OF ABUTMENT SHELF

- Notes:
- See Sheet S3-5 for Details not Shown.



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

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



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

*Izzy H. Haslam*  
CONSULTING ENGINEERS APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

ABUTMENT NO. 1  
SECTIONS  
WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)  
Date: October 2012

SHEET No. S3-6 OF SHEETS

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
| No.           | CHECKED BY        |      |

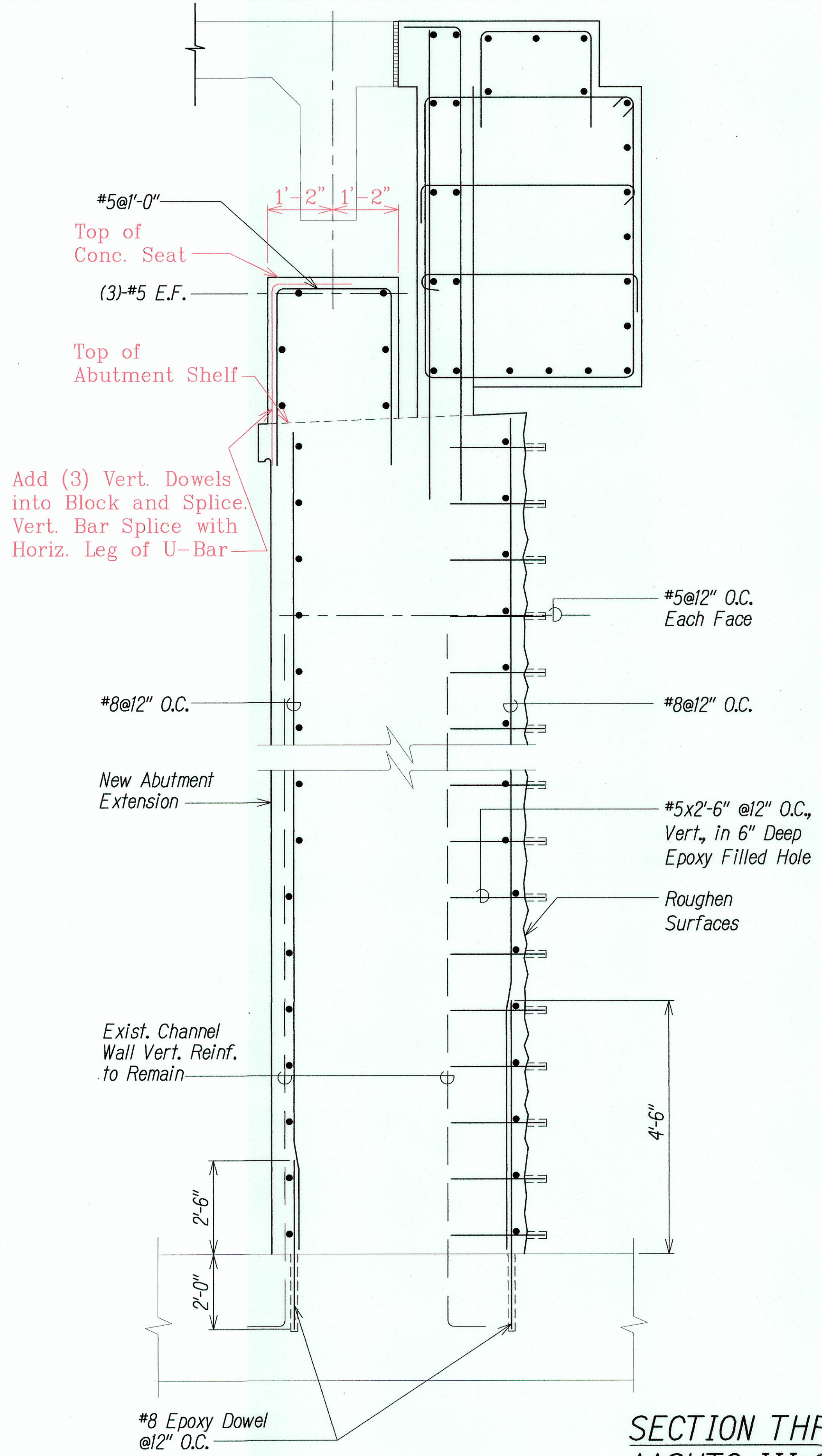
Path: L:\W04\7213-01 Iao Stream\As-Built\KRF As-Bui File Name: IAO S3-6 Plot Date: Mar 10, 2016-11:06:48am CAD User: etakchoshi Xref Filename: DOTBORD AUTODRAW



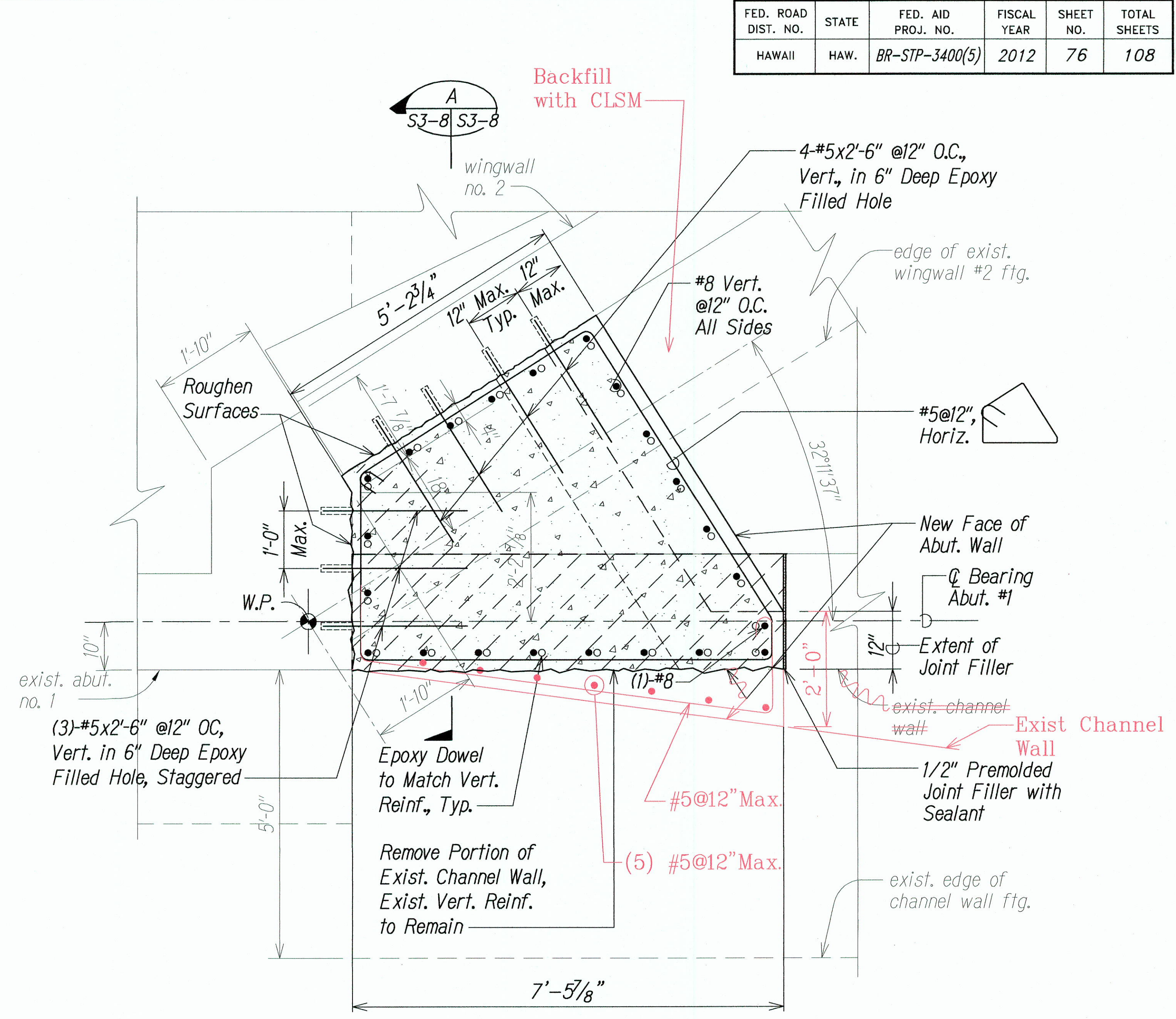
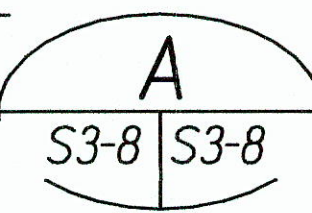




| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 76        | 108          |



SECTION THRU NEW  
AASHTO III GIRDER  
Scale: 3/4"=1'-0"



DETAIL - PLAN VIEW ABUT. NO. 1  
Scale: 3/4"=1'-0"

Note:  
Taper Face of Wall such that New  
Face is Flush with Existing.

**LEGEND FOR AS-BUILT POSTINGS**

Squiggly line for as-built deletion

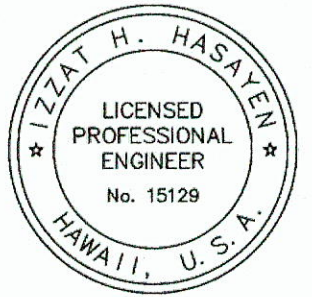
Double line for as-built deletion

Roadway Text for as-built posting

**GRAPHIC SCALE:**

1' 0 1' 2' 3'

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



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

*John H. Hasten* APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

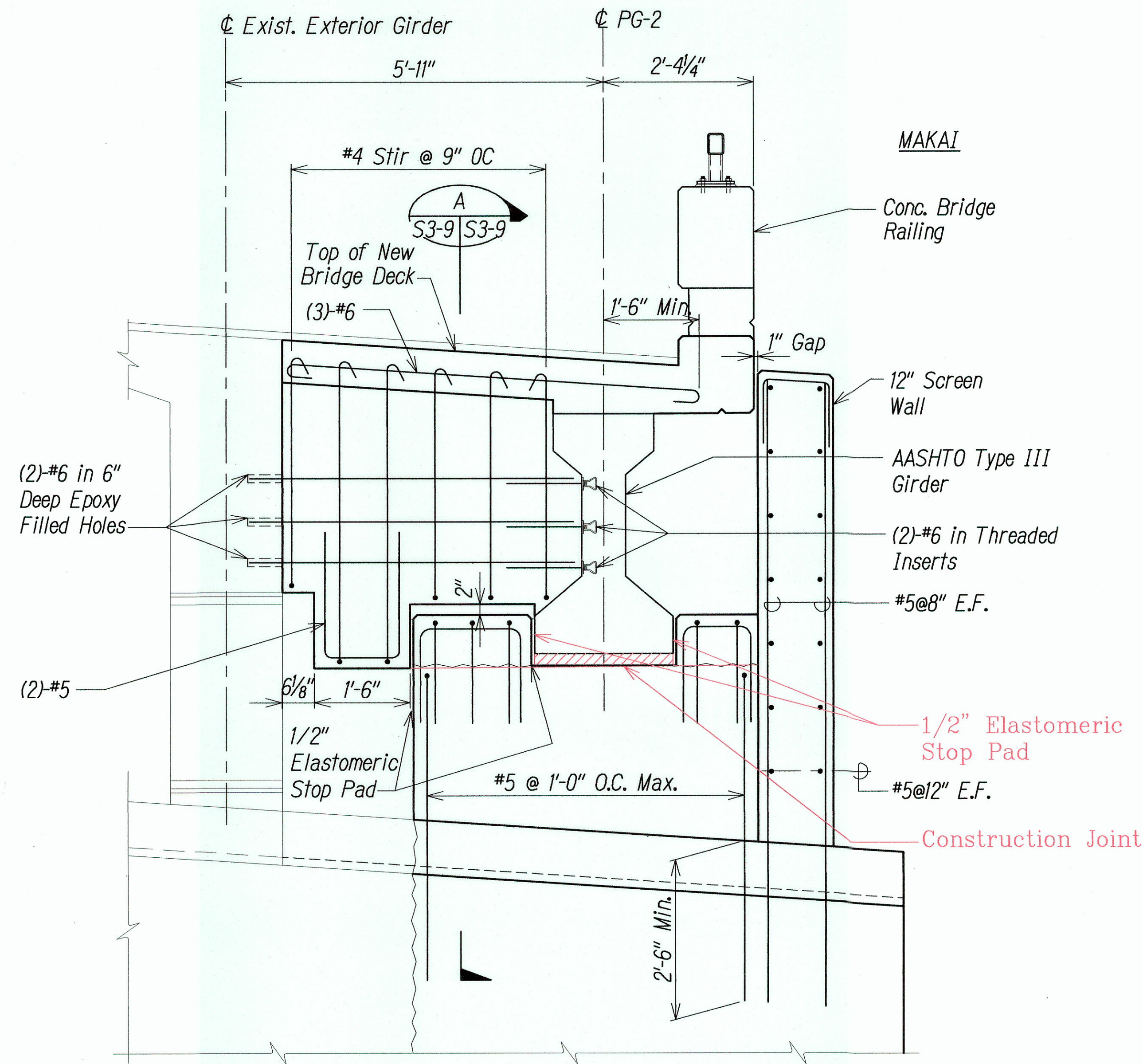
**ABUTMENT NO. 1  
MAKAI EXTENSION I**

**WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE**  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

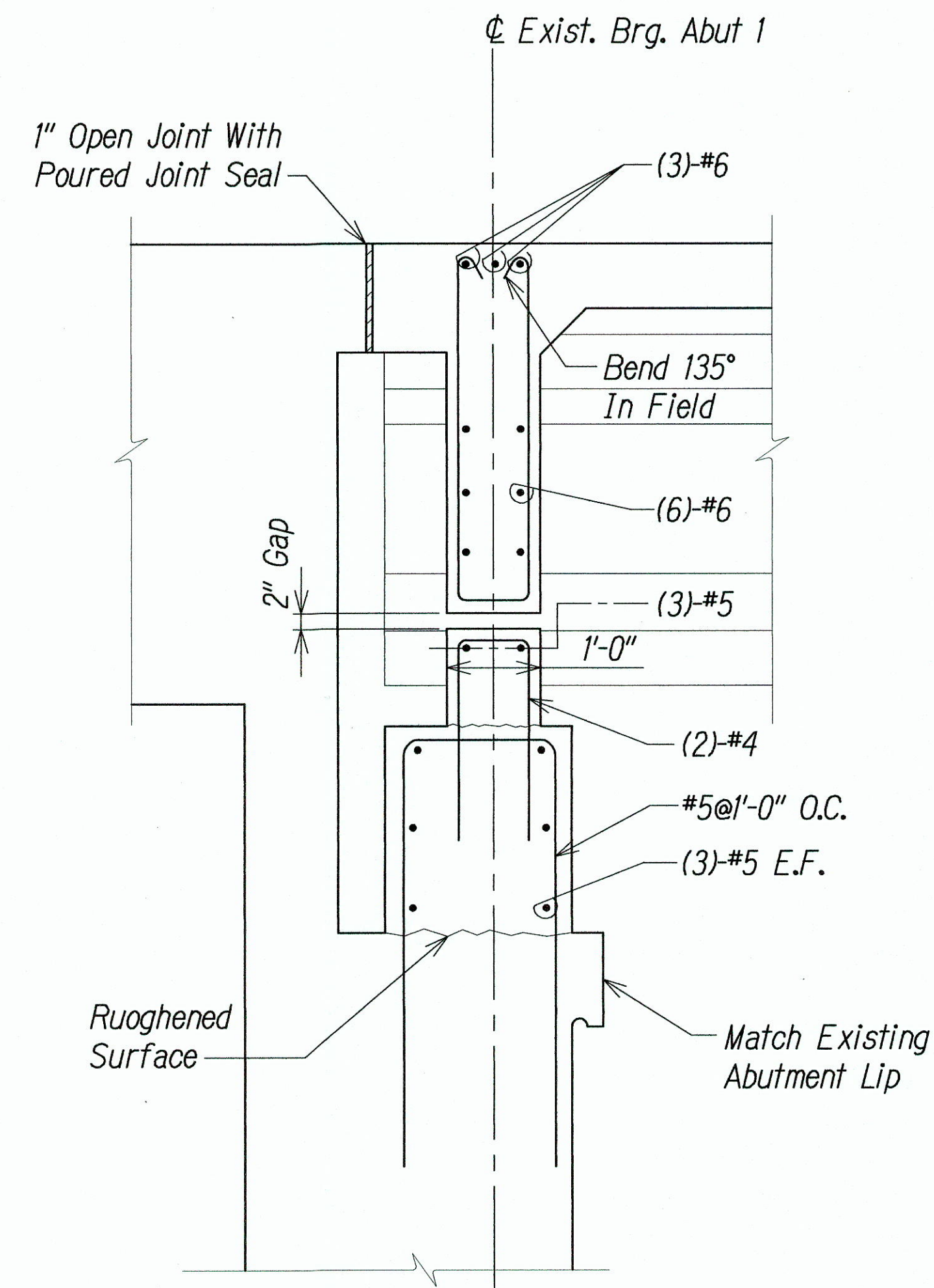
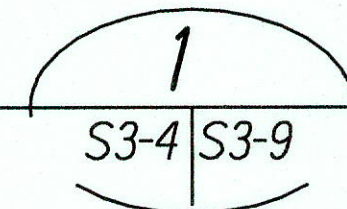


| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| HAWAII                 | HAW.  | BR-STP-3400(5)        | 2012           | 77           | 108             |



DETAIL

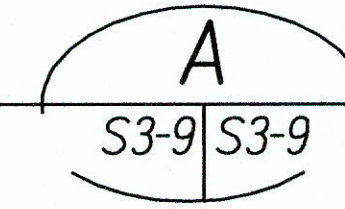
Scale:  $3/4"=1'-0"$





*Note: For Primary Abutment Reinforcement See S3-8.*

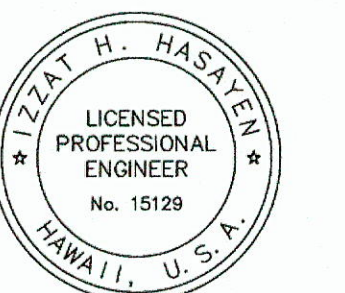
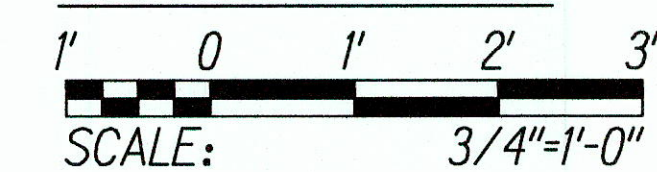
CREEP BLOCK SECTION

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



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

GRAPHIC SCALE:



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

By: H. Hasen APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

ABUTMENT NO. 1  
MAKAI EXTENSION II

WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. 53-9 OF SHEETS

"AS-BUILT"

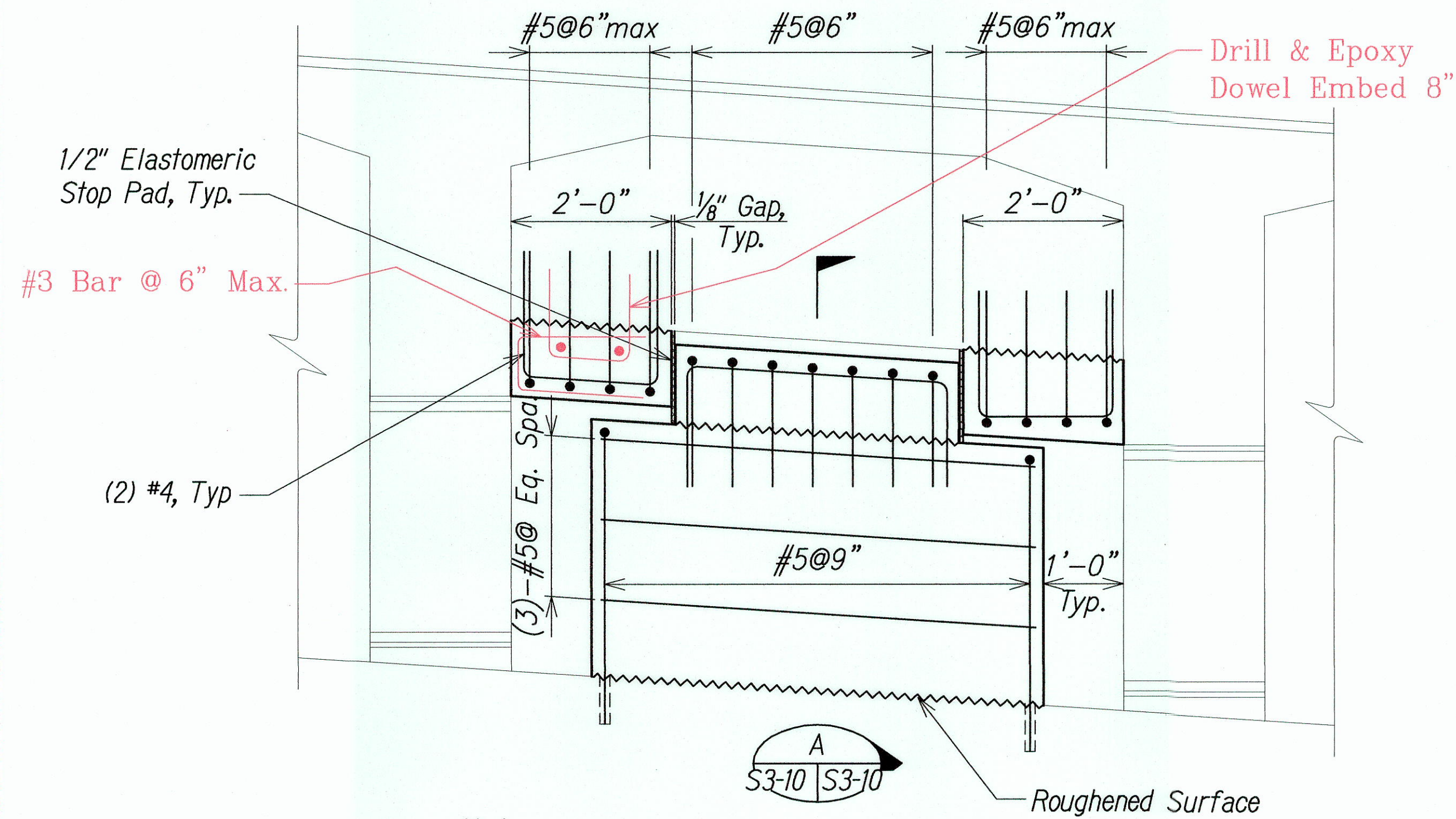
77

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

Path: L:\WOA\7213-01 Ioo\CIVIL\As-Built\KPFF As-Bui Filename: IAO\_S3-9 Plot date: Mar 10, 2016-11:06:57am CAD User: etakahashi. Xref Filename: DOTBORD | AUTODATE |

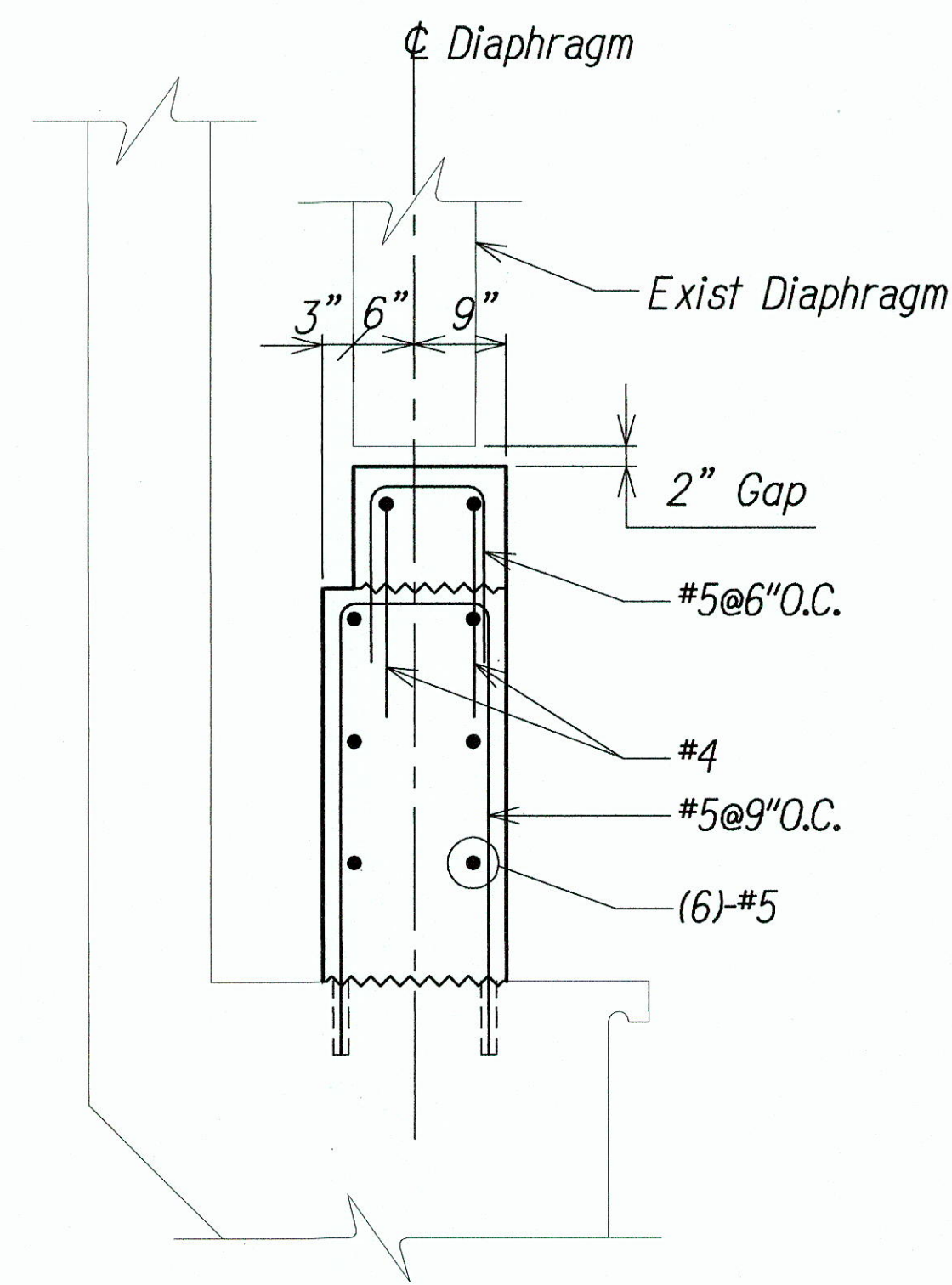


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 78        | 108          |



Note:  
Taken along  $\phi$  of Bearing.

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



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

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

GRAPHIC SCALE:  
1' 0 1' 2' 3'  
SCALE: 3/4"=1'-0"



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

APRIL 30, 2016  
CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**ABUTMENT NO. 1**  
**DETAILS**  
**WAIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012



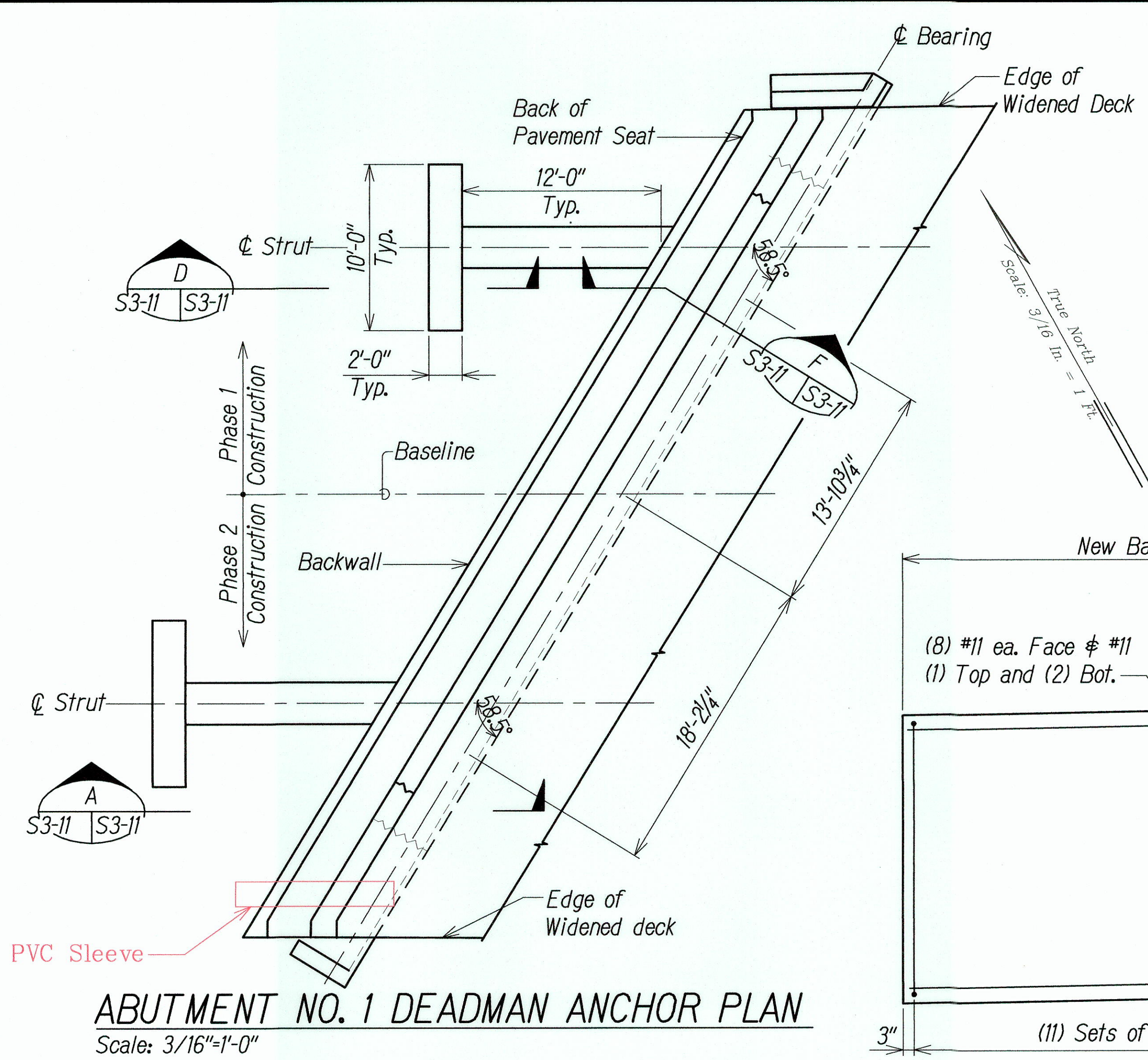
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 79        | 108          |

**LEGEND FOR AS-BUILT POSTINGS**

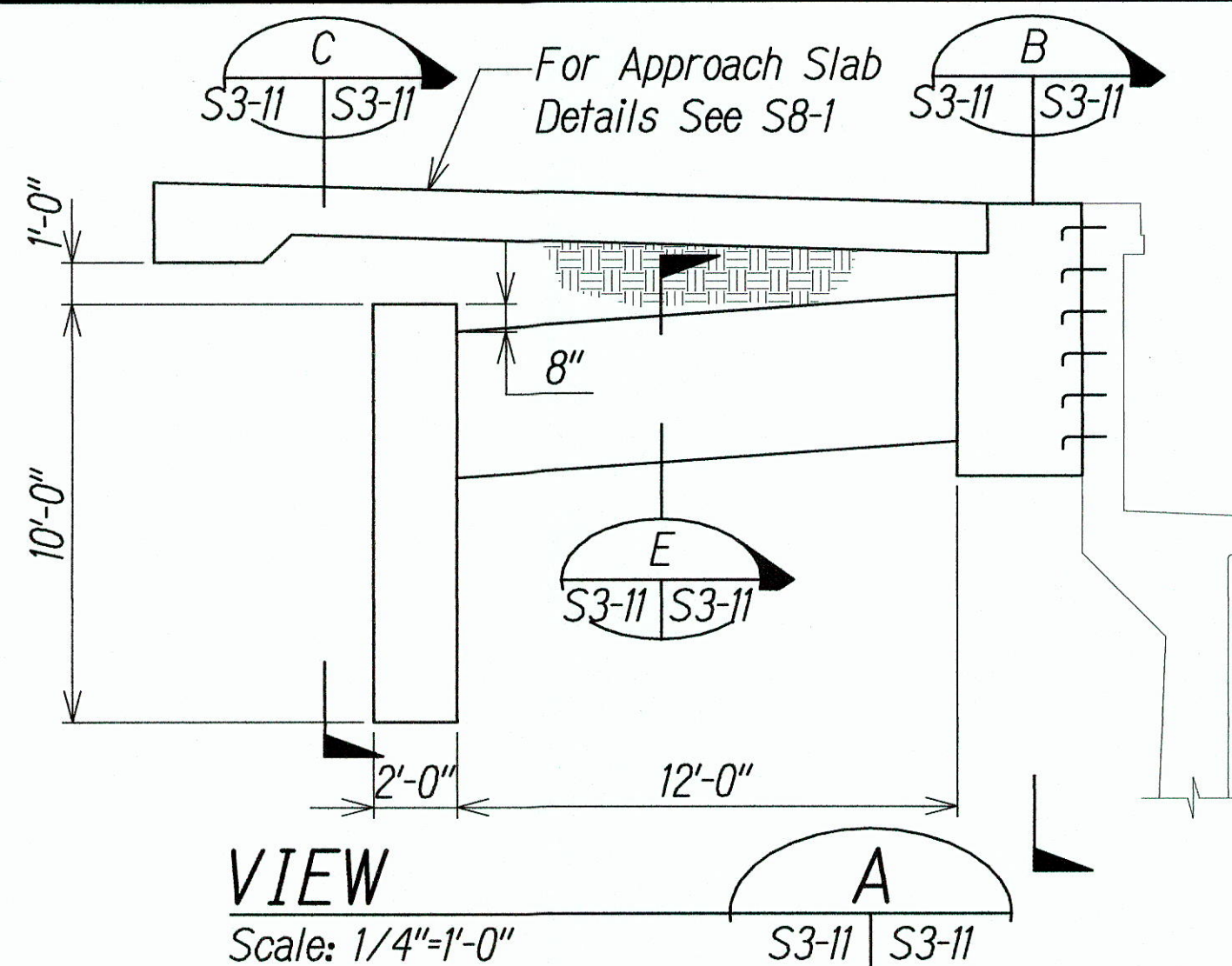
~~~~~ Squiggly line for as-built deletion

== Double line for as-built deletion

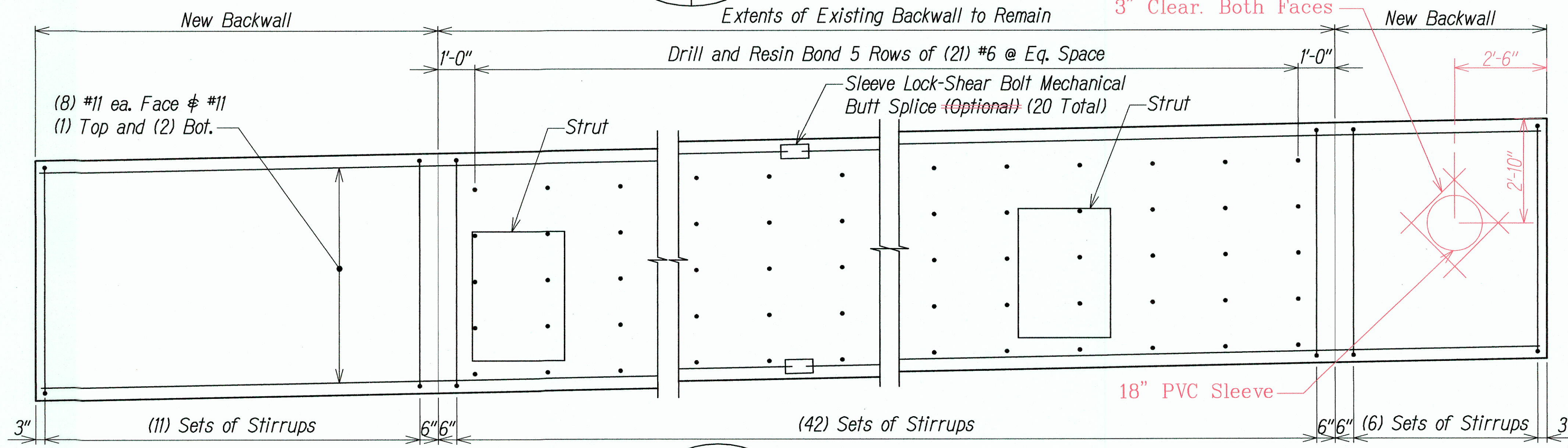
Roadway Text for as-built posting



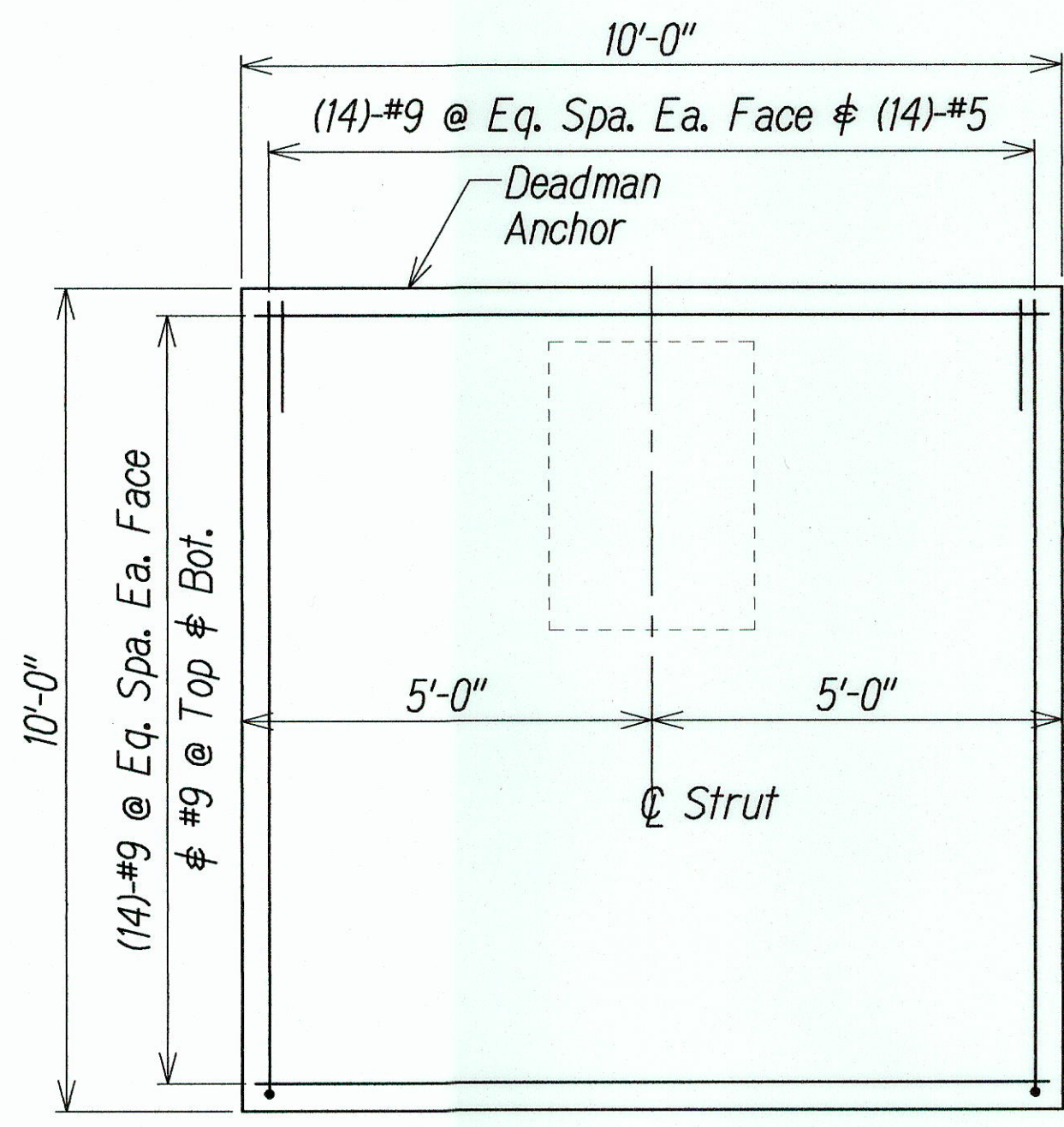
**ABUTMENT NO. 1 DEADMAN ANCHOR PLAN**  
Scale: 3/16"=1'-0"



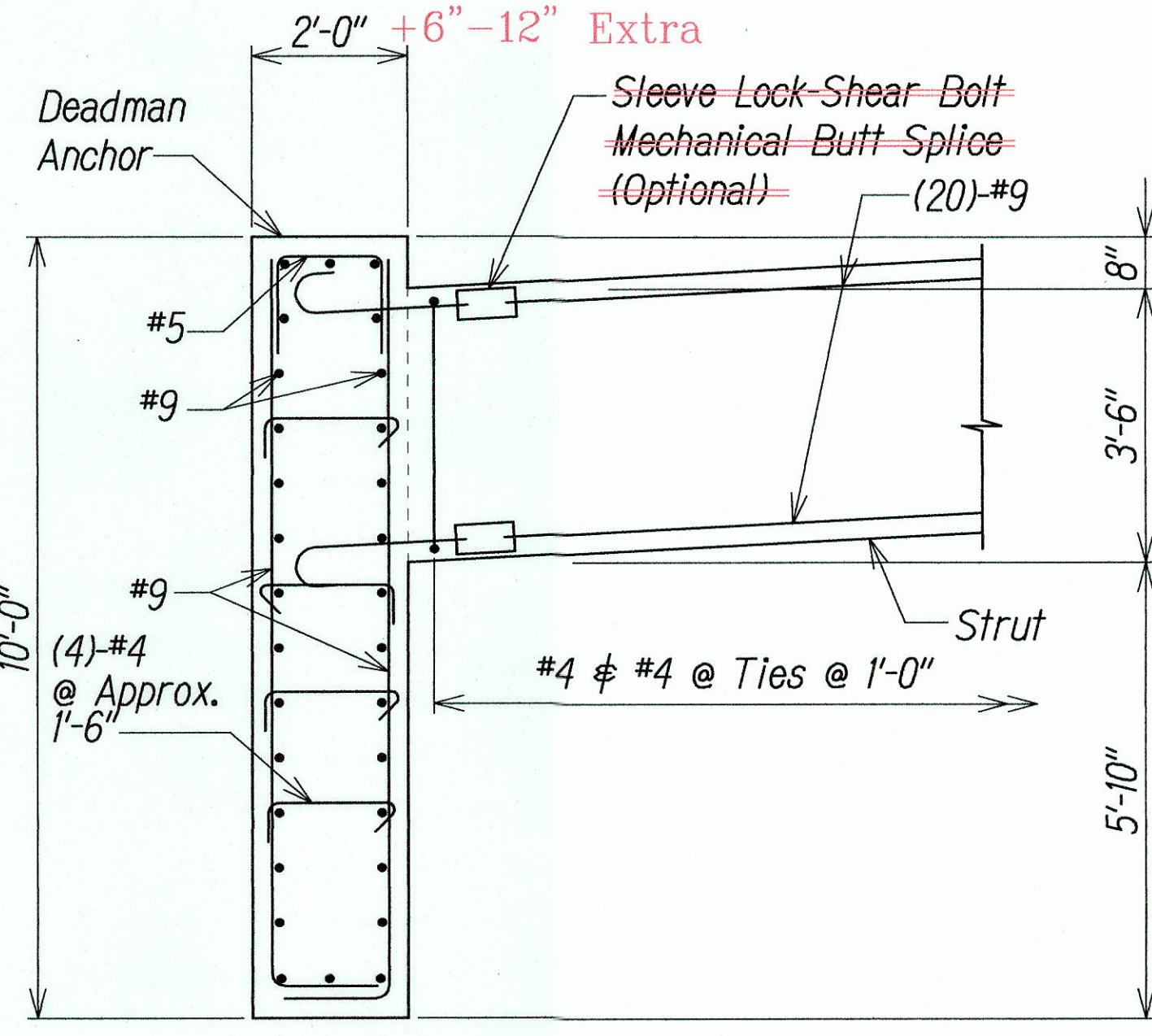
**VIEW**  
Scale: 1/4"=1'-0"



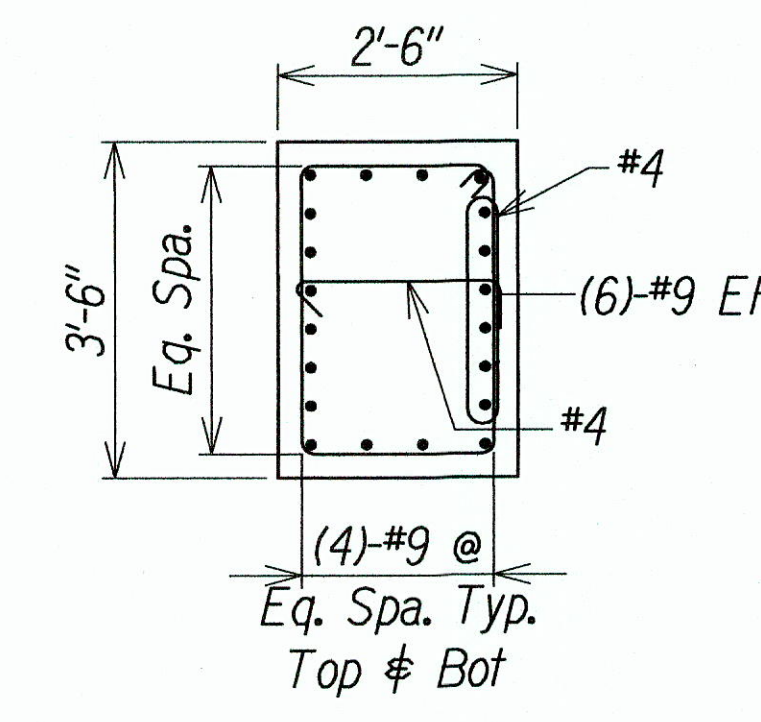
**SECTION**  
Scale: 1/2"=1'-0"



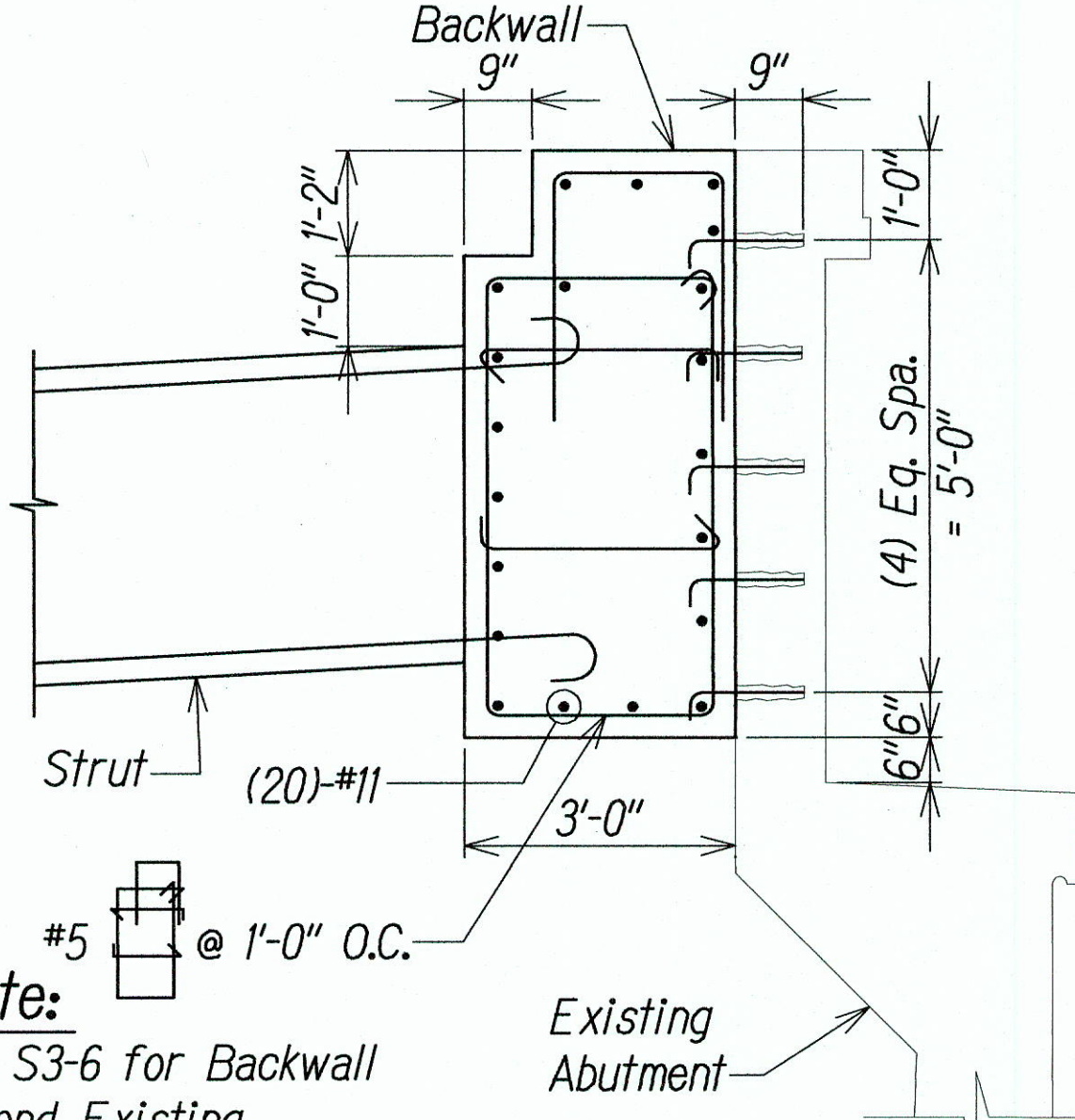
**SECTION**  
Scale: 1/2"=1'-0"



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



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

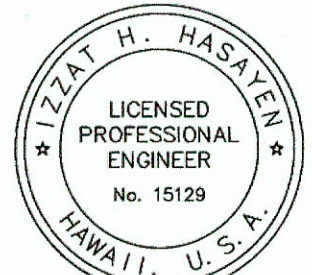


**SECTION**  
Scale: 1/2"=1'-0"

**GRAPHIC SCALE:**  
4' 0' 4' 8' 12'  
SCALE: 3/16"=1'-0"

**GRAPHIC SCALE:**  
4' 0' 4' 8'  
SCALE: 1/4"=1'-0"

**GRAPHIC SCALE:**  
2' 0' 2' 4'  
SCALE: 1/2"=1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ABUTMENT NO. 1  
DEADMAN DETAILS**

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S3-110F SHEETS

"AS-BUILT"

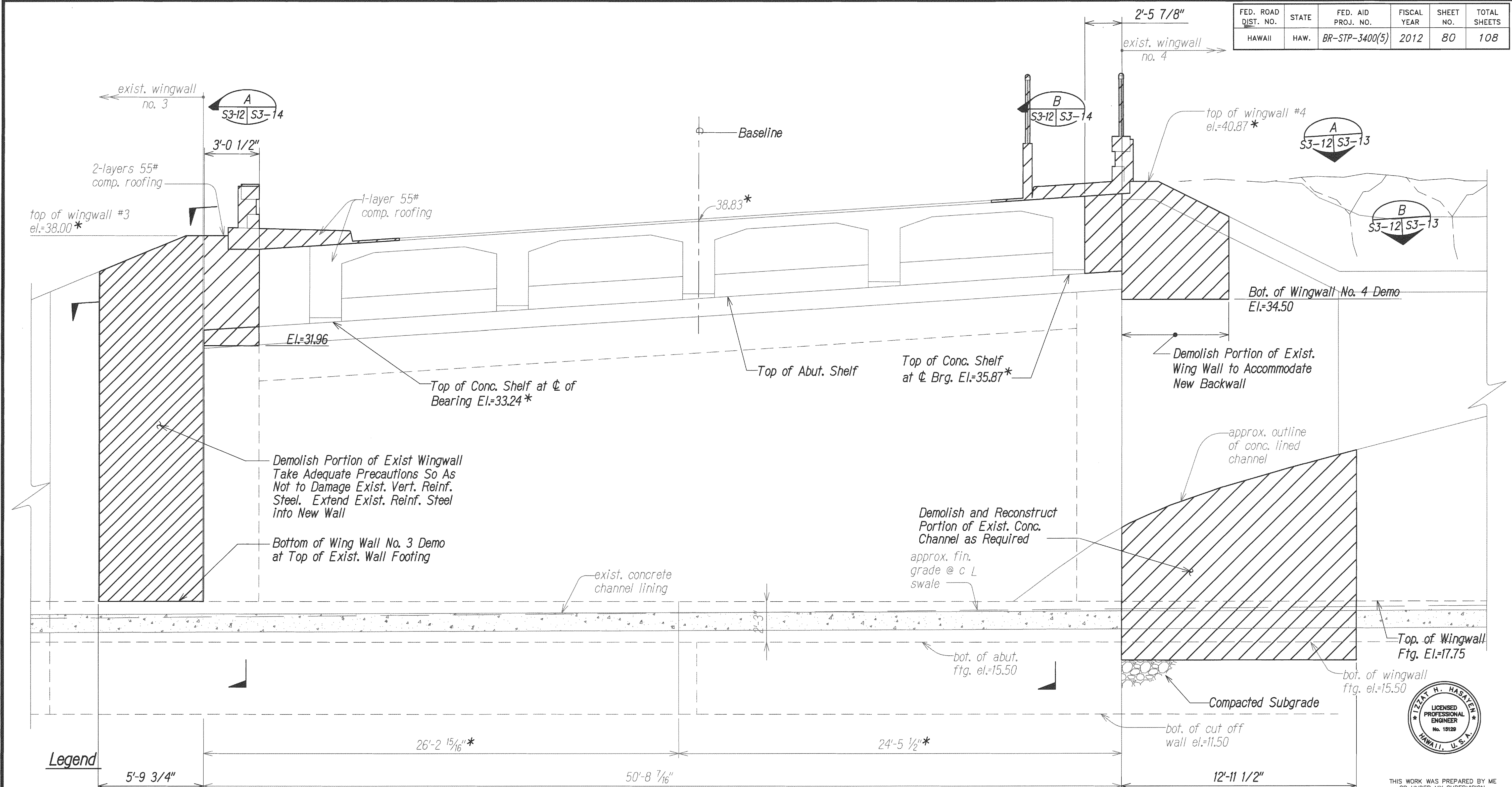
79

|               |      |
|---------------|------|
| ORIGINAL PLAN | DATE |
| DESIGNED BY   |      |
| DESIGNED BY   |      |
| QUANTITIES BY |      |
| CHECKED BY    |      |

Path: L:\W04\7213-01 Iao CIVIL\As-Built\VPFF As-Built File Name: IAO\_S3-11 Plot Date: Mar 10, 2016 11:07:03am CAD User: etakobashi Xref File Name: DOTBOARD AUTODRAW



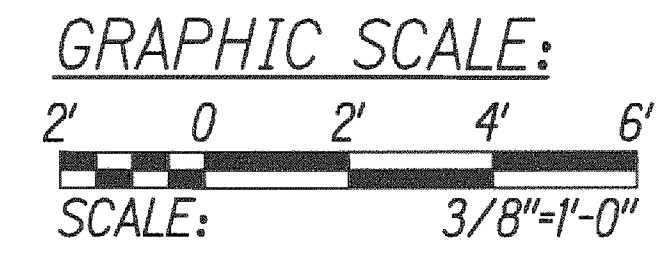
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 80        | 108          |



**Legend**

DEMOLITION

**ELEVATION - ABUTMENT NO. 2**  
 Scale: 3/8"=1'-0"  
 - Shown Looking Ahead on Station  
 - Shown Normal to  $\phi$  of Bearing  
 - Elevations Shown Along  $\phi$  of Exist Bearing



\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.



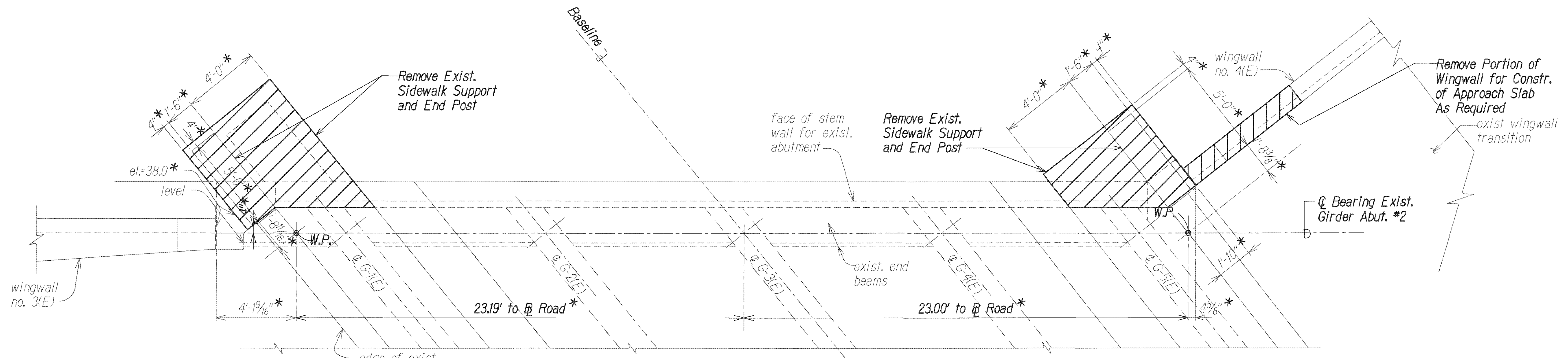
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.  
 H. H. Hasey  
 APRIL 30, 2014  
 LICENSED PROFESSIONAL ENGINEER  
 LIC. EXP. DATE

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**ABUTMENT NO. 2**  
**DEMOLITION ELEVATION**  
**WAIERU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
 Date: October 2012

SHEET No. S3-12 OF SHEETS

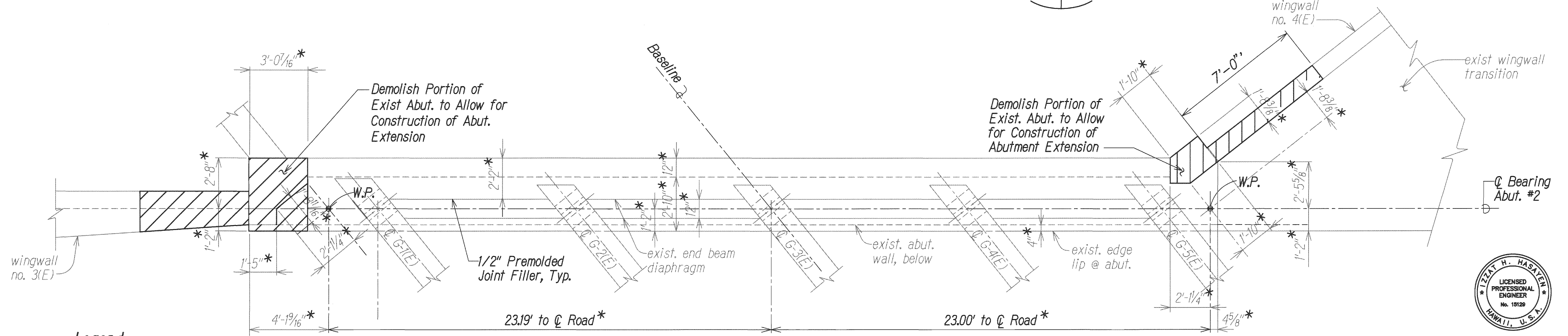


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 81        | 108          |



**PLAN - ABUTMENT NO. 2 AT SIDEWALK**  
Scale: 3/8"=1'-0"

**A**  
S3-12 S3-13



**PLAN - ABUTMENT NO. 2 AT BACK WALL**  
Scale: 3/8"=1'-0"

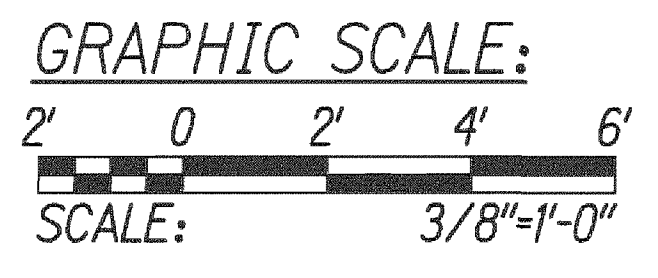
**B**  
S3-12 S3-13

**Legend**

DEMOLITION

\*All Existing Structure Dimensions, Stationing, and Elevations Shown on the Drawings Have been Obtained from the Following Documents. All Dimensions and Elevations Related to the Existing Structure Shall be Measured by the Contractor in the Field Prior to Fabrication and Construction of New Work.

- Territory of Hawaii Territorial Highway Department, R. Kawamura "Iao Bridge, Waiehu Beach Road", November 1952.



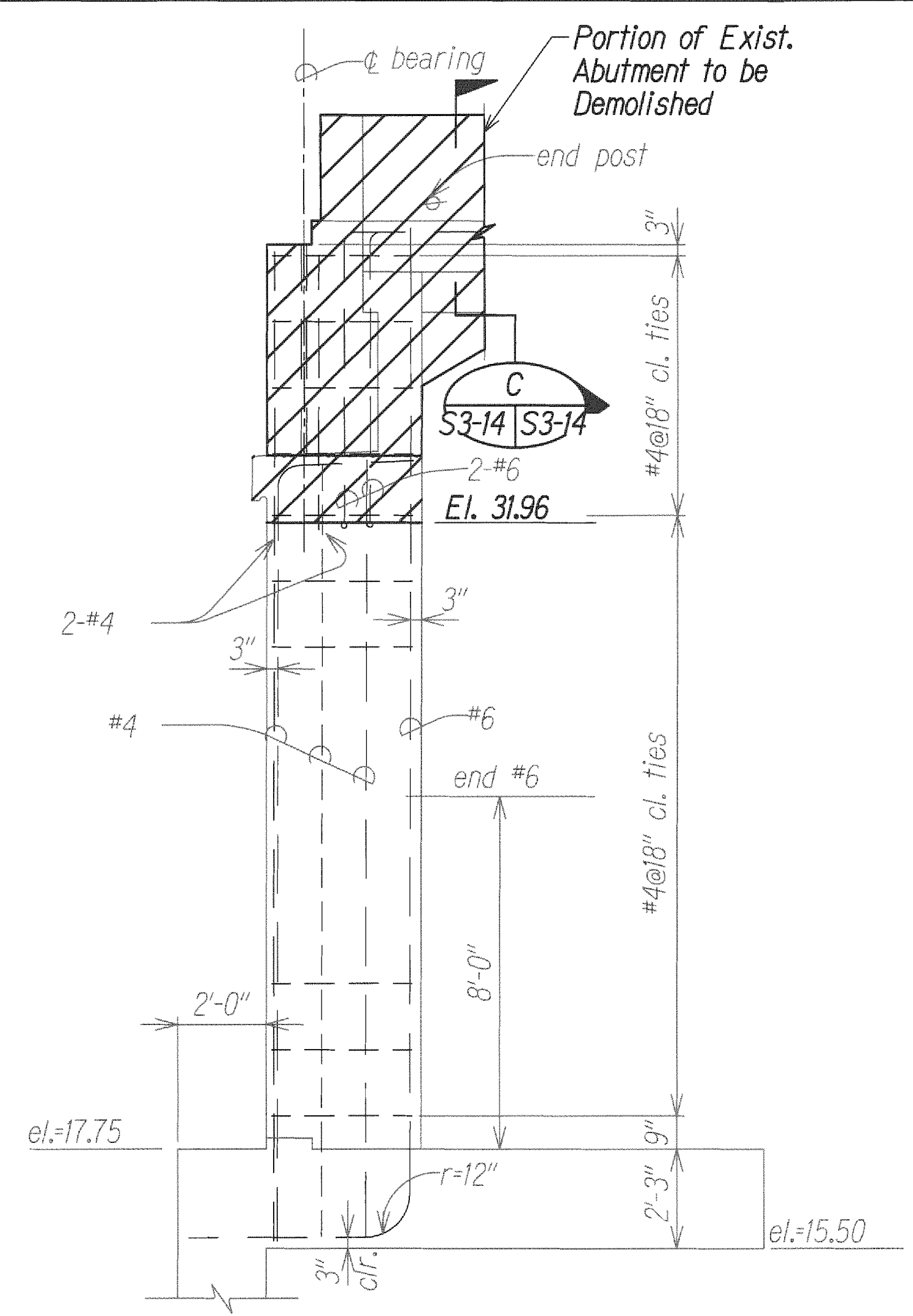
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ABUTMENT NO. 2**  
**DEMOLITION PLAN/SECTIONS**  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

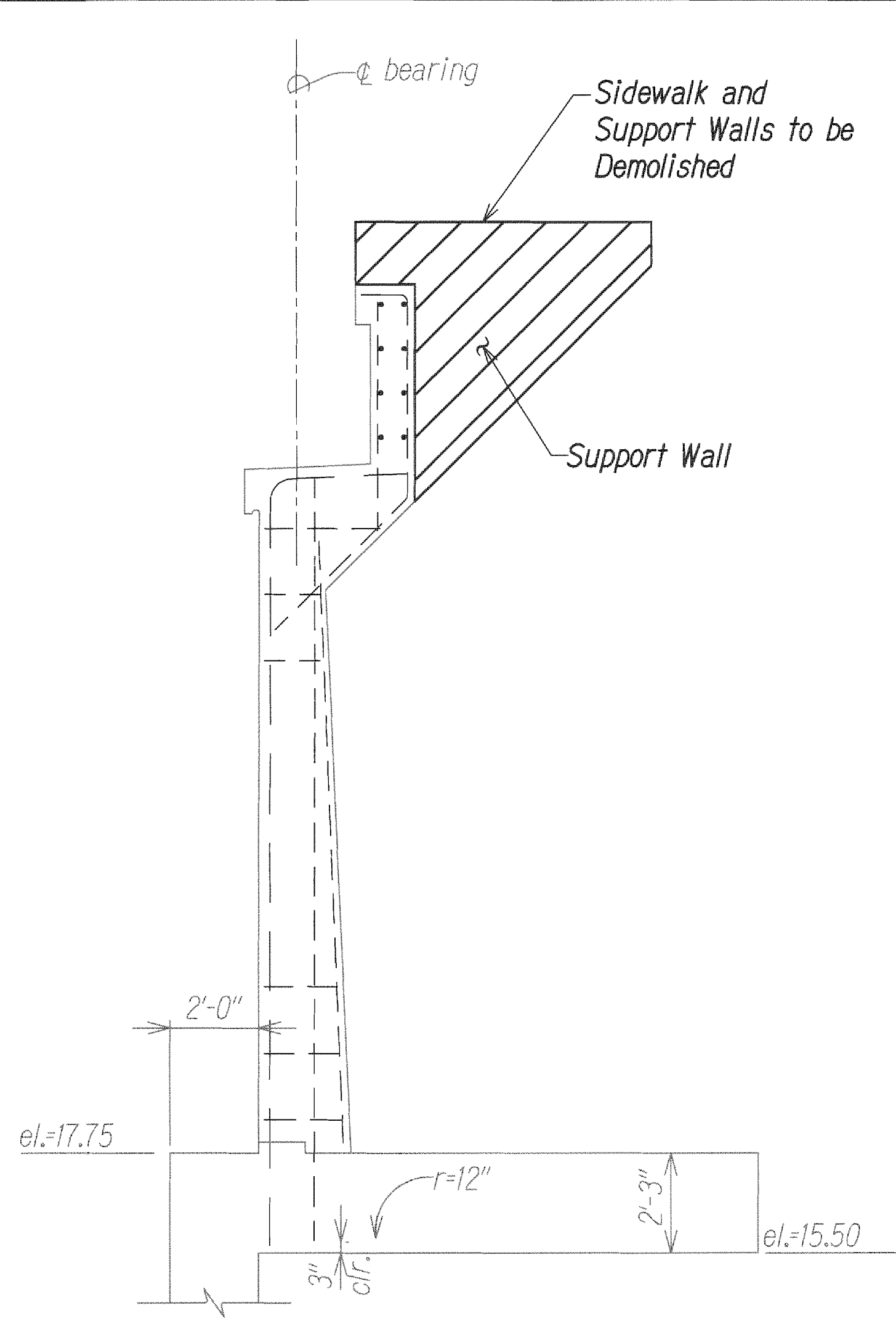


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 82        | 108          |



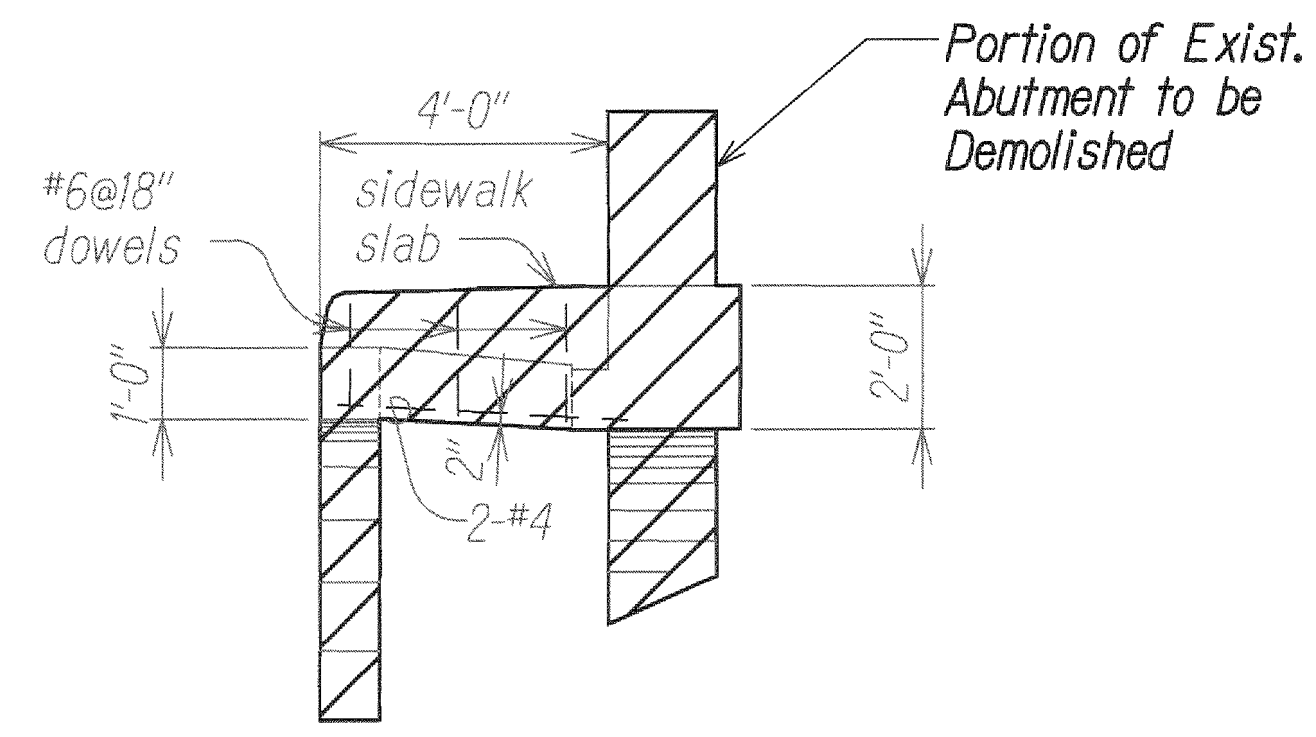
**SECTION AT  
END OF ABUTMENT**  
Scale: 3/8"=1'-0"

**A**  
S3-12 S3-14



**TYPICAL SECTION  
AT SIDEWALK**  
Scale: 3/8"=1'-0"


**B**  
S3-12 S3-14

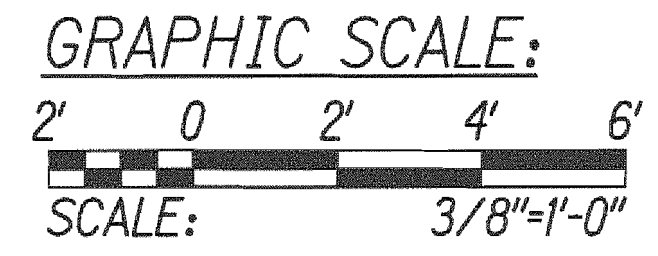


**SECTION**  
Scale: 3/8"=1'-0"

**C**  
S3-14 S3-14

**Legend**

 DEMOLITION



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

*Tizat H. Hasaver*  
TIZAT H. HASAVER  
CONSULTING ENGINEERS  
APRIL 30, 2014  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ABUTMENT NO. 2  
DEMOLITION SECTIONS**  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012

SHEET No. S3-14 OF SHEETS



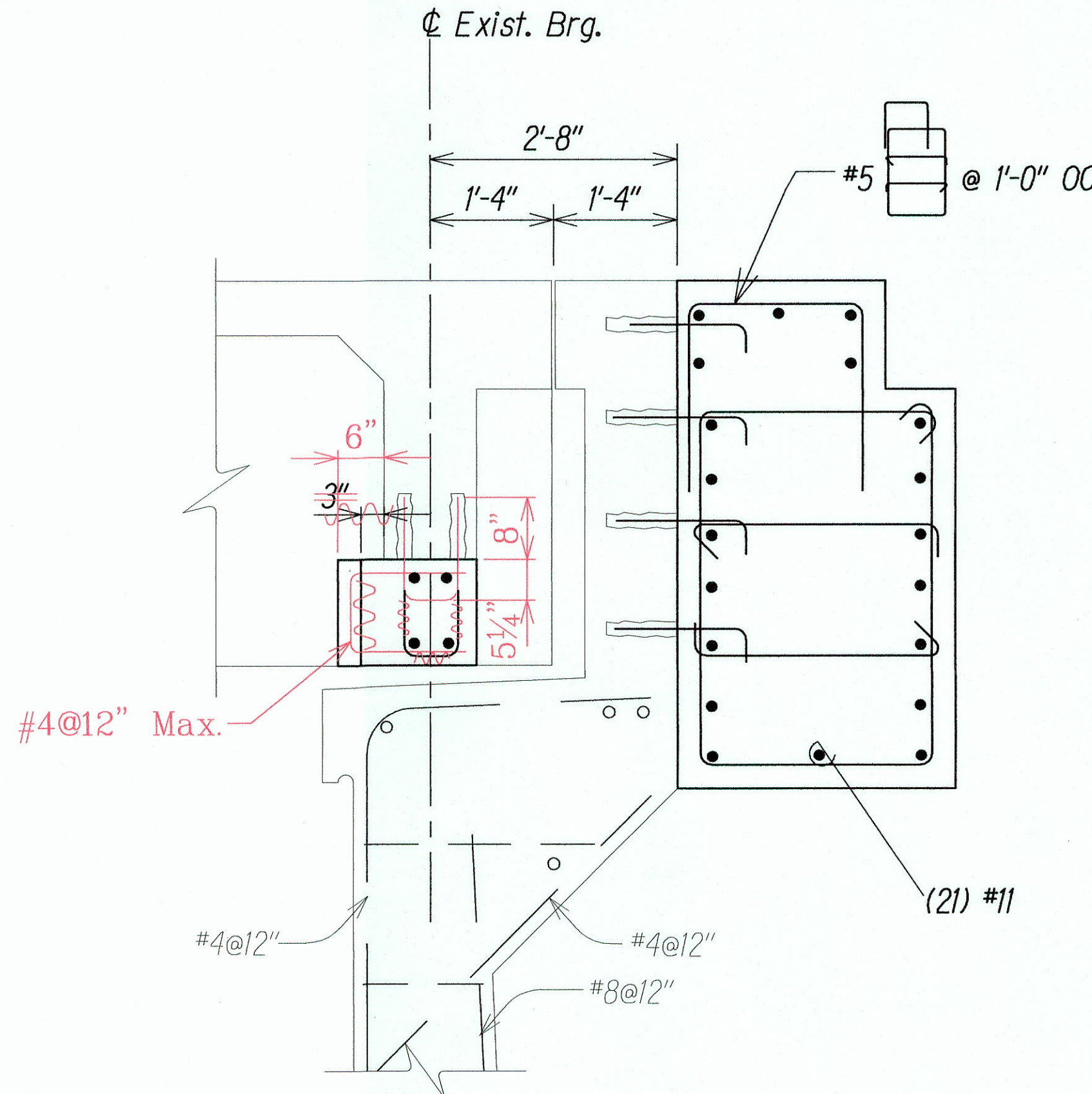




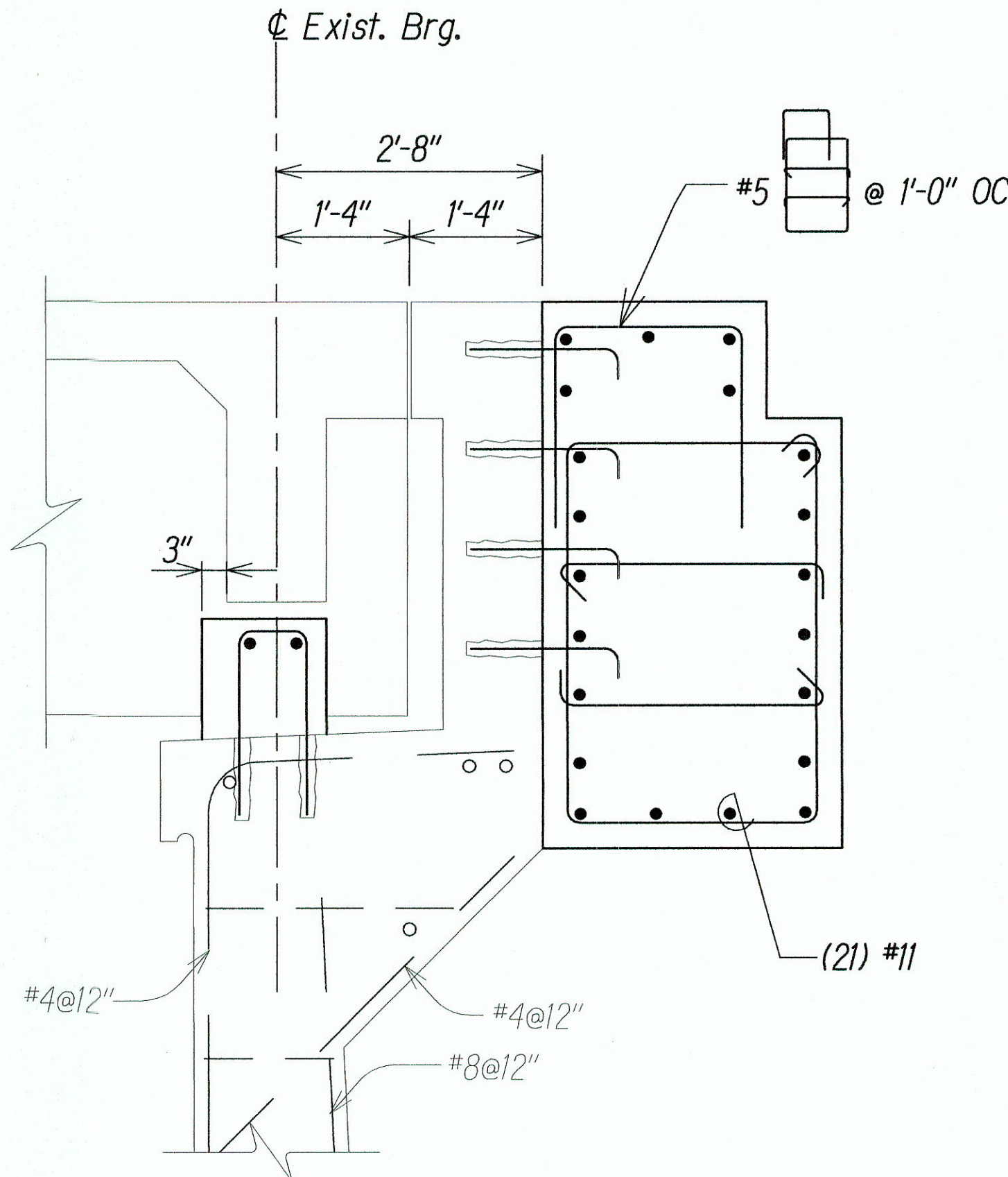




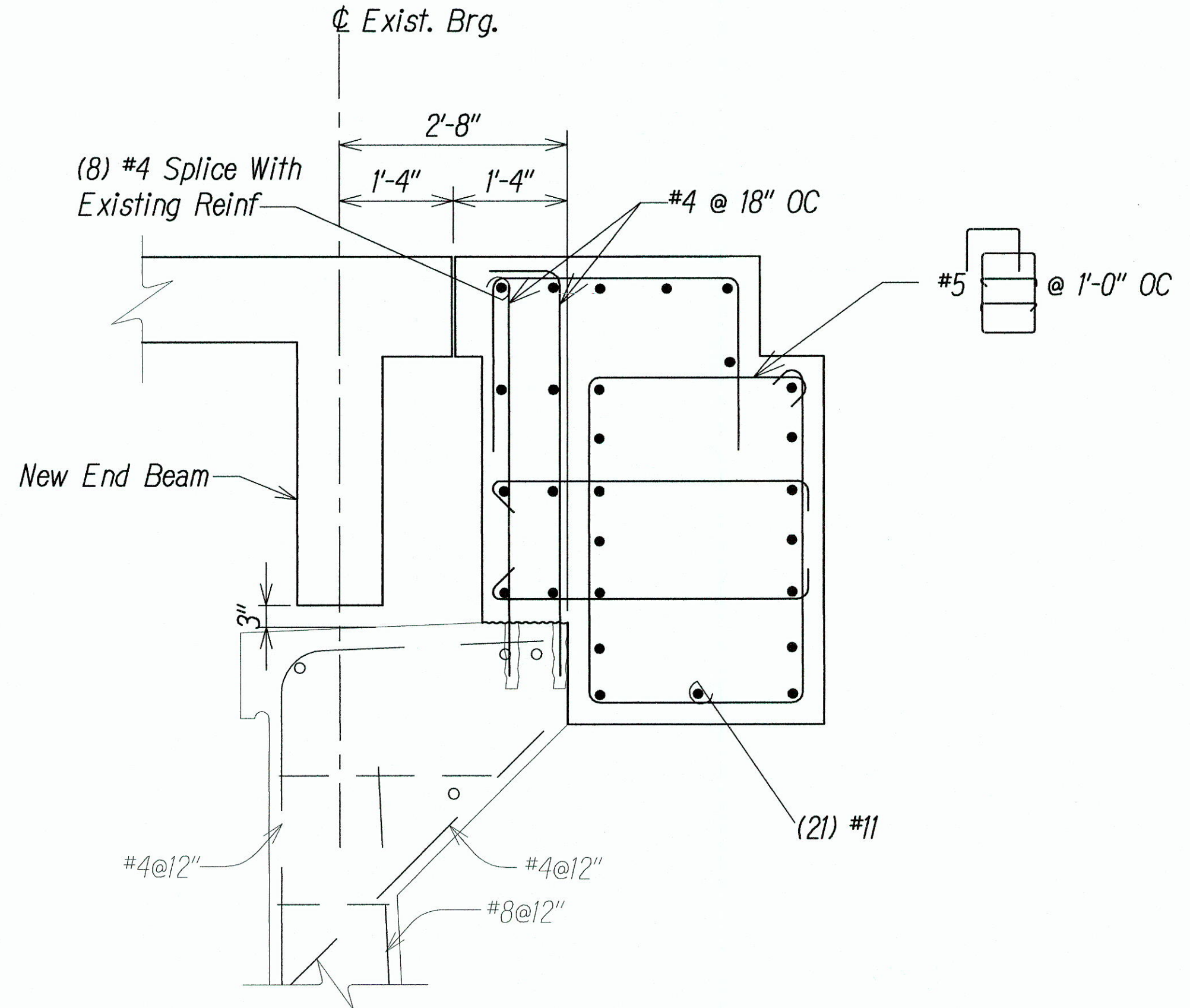
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 85        | 108          |



SECTION THRU NEW  
END BEAM EXTENSION **A**  
Scale: 3/4"=1'-0" S3-15 S3-17



SECTION THRU NEW  
END BEAM KEY **B**  
Scale: 3/4"=1'-0" S3-15 S3-17



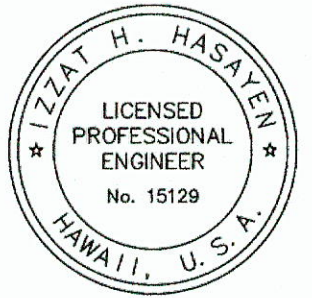
SECTION THRU NEW  
END BEAM AND BACKWALL **C**  
Scale: 3/4"=1'-0" S3-15 S3-17

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

Path: L:\W04\7213-01\loc\Civil\As-Built\VPFF As-Bui File: W04\_7213-17 Plot date: Mar 10, 2016 11:07:21am CAD User: elakoboshi Xref: File: W04\_7213-17 AUTODATE

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

GRAPHIC SCALE:  
1' 0 1' 2' 3'  
SCALE: 3/4"=1'-0"



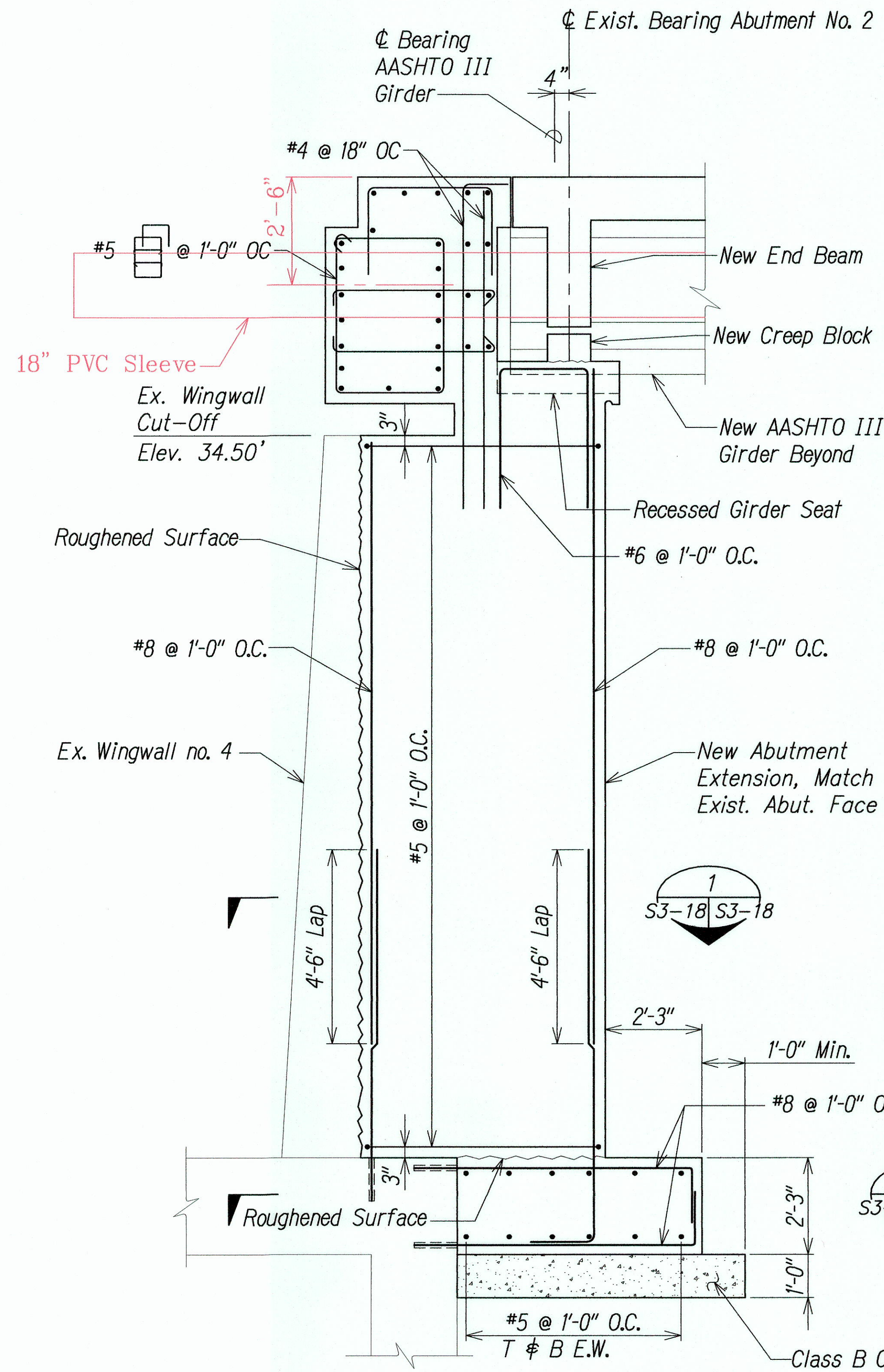
THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.  
APRIL 30, 2016  
L.C. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**ABUTMENT NO. 2**  
**SECTIONS**  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012  
SHEET No. S3-17 OF SHEETS

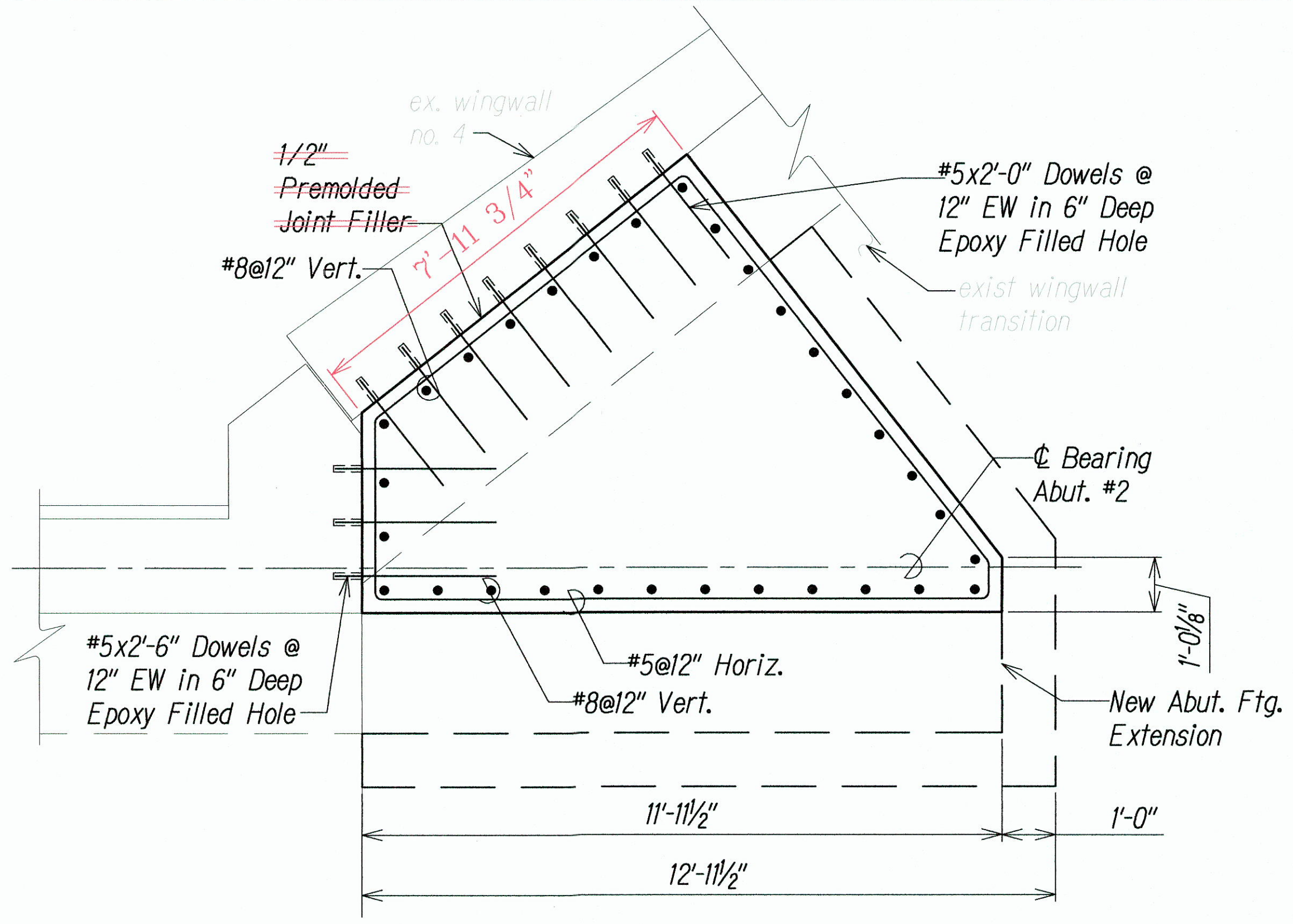
"AS-BUILT"



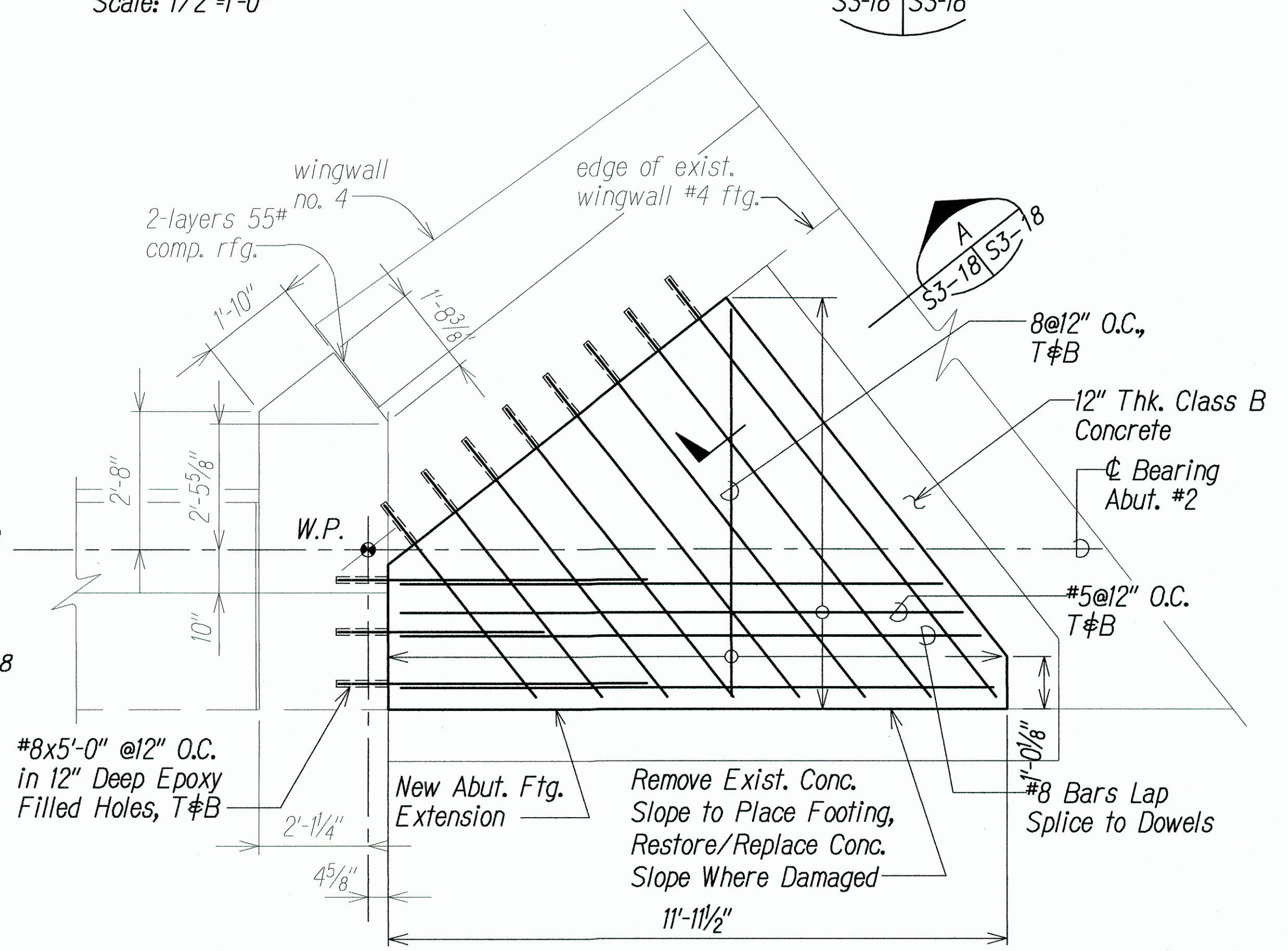
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 86        | 108          |



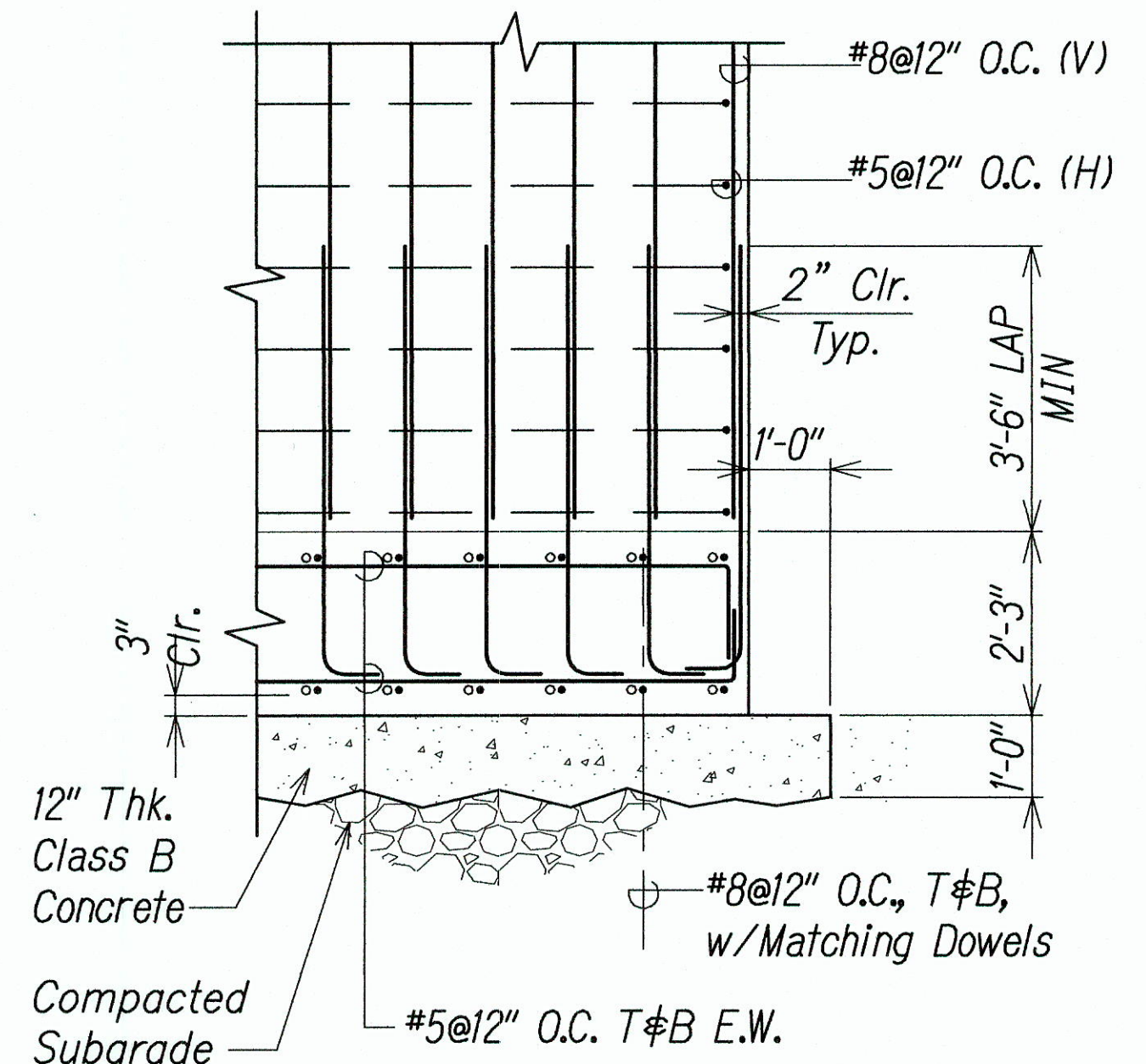
**SECTION @ AASHTO III GIRDER BEARING**  
 Scale: 1/2"=1'-0"  
 B  
 S3-15 S3-18



**SECTION THRU WALL EXTENSION**  
 Scale: 1/2"=1'-0"  
 1  
 S3-18 S3-18



**SECTION THRU FOOTING EXTENSION**  
 Scale: 1/2"=1'-0"  
 2  
 S3-18 S3-18



**SECTION**  
 Scale: 1/2"=1'-0"  
 A  
 S3-18 S3-18

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



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

*Izziat H. Hasayen*  
 CONSULTING ENGINEERS  
 APRIL 30, 2016  
 LIC. EXP. DATE

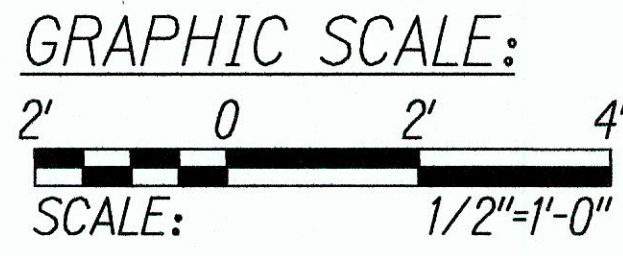
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**ABUTMENT NO. 2  
 MAUKA EXTENSION I**

**WAIIEHU BEACH ROAD  
 REHABILITATION OF IAO STREAM BRIDGE**  
 Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S3-18 OF SHEETS



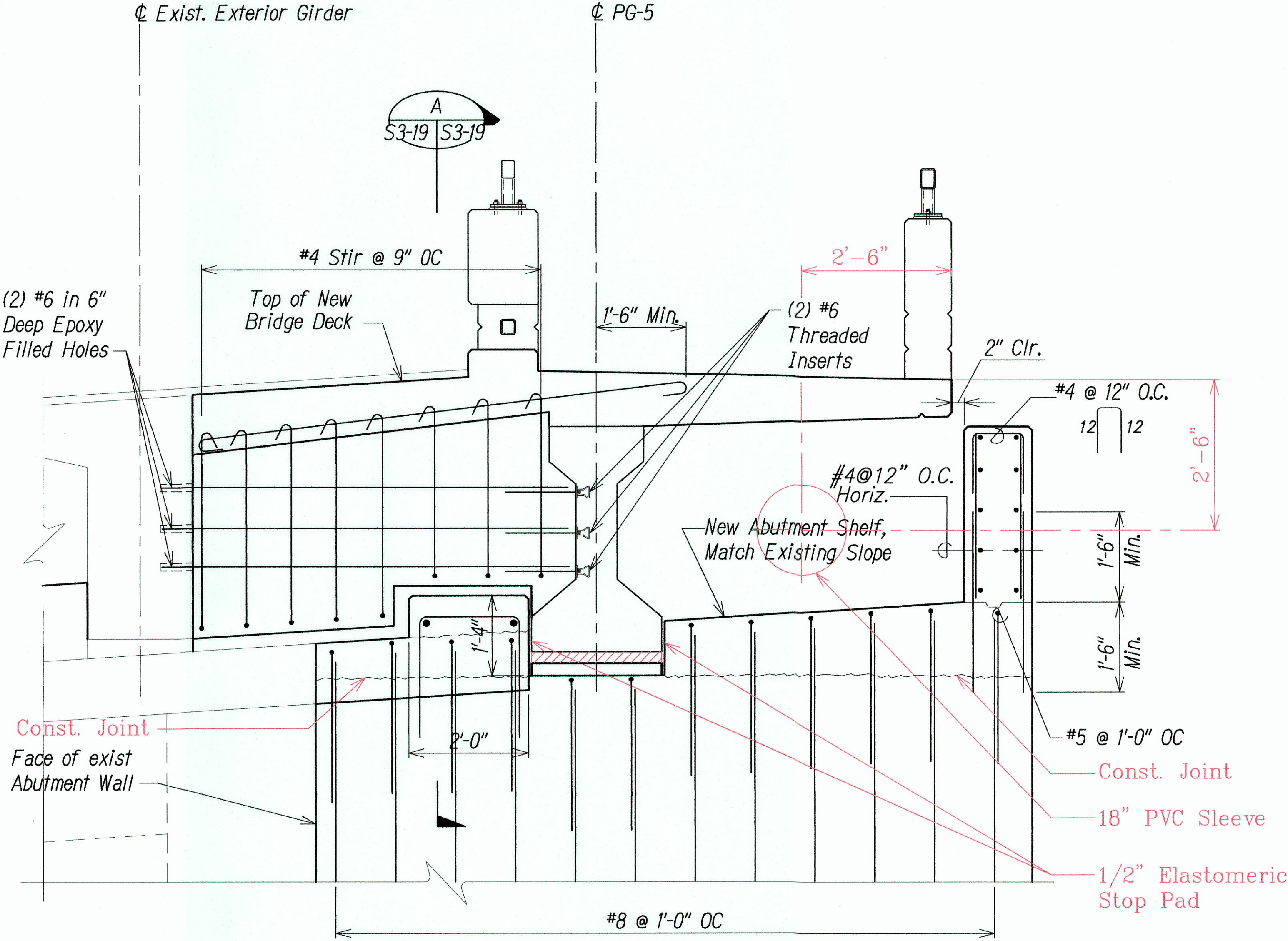
|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| CHECKED BY        |      |
| NOTED BY          |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     | No.  |
| NOTE BOOK         | No.  |

Path: L:\W04\7213-01 Iao CIVIL As-Built\VPFF As-Bui File name: IAO\_S3-18 Plot date: Mar 10, 2016-11:07:24am CAD User: etokohoshi Xref File name: DOTB090 AUTODATE

"AS-BUILT"

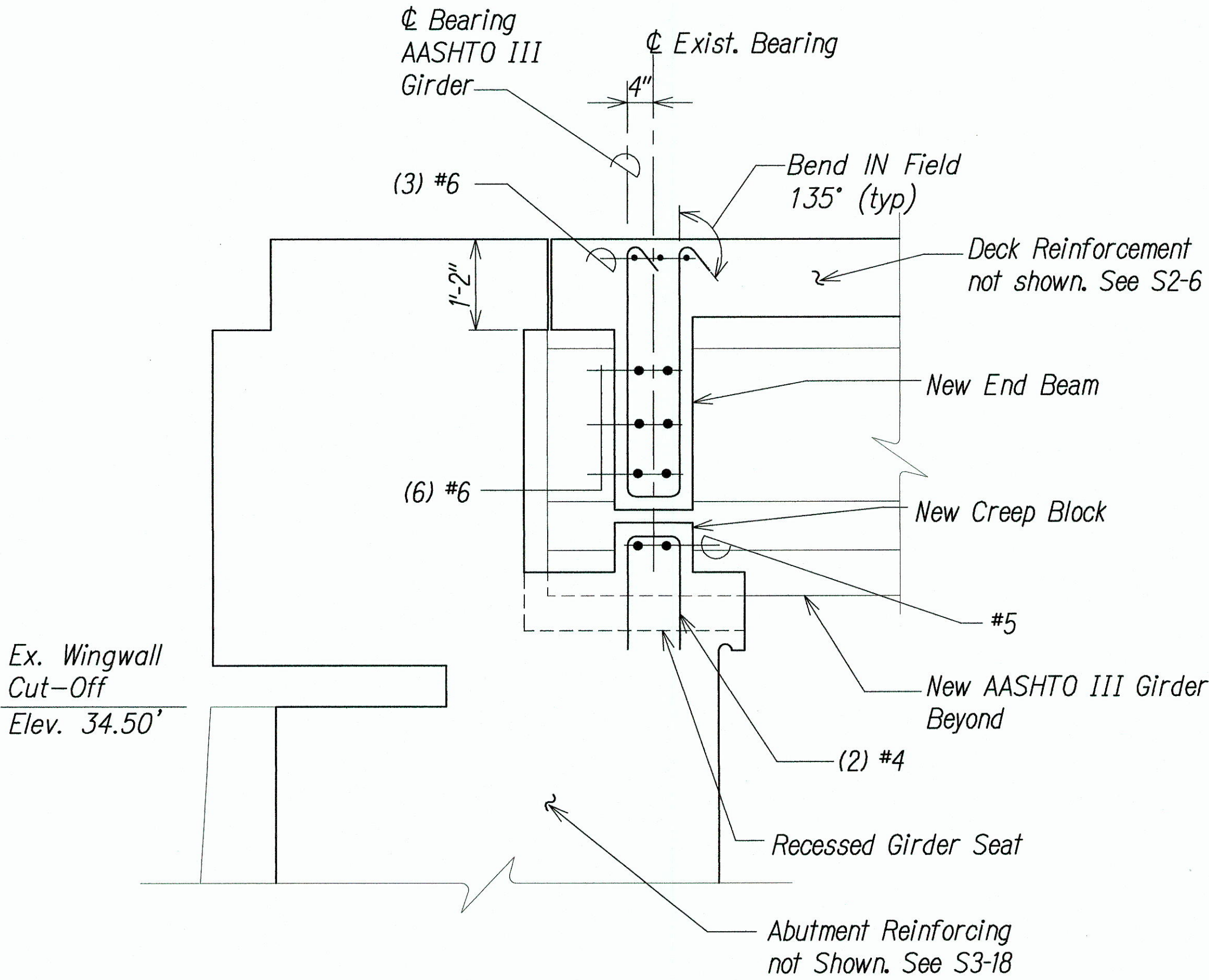


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 87        | 108          |



Note: Dimensions Shown are Along  $\phi$  of Existing Bearing.

**DETAIL**  
 Scale: 3/4"=1'-0"  
 S3-15 S3-19



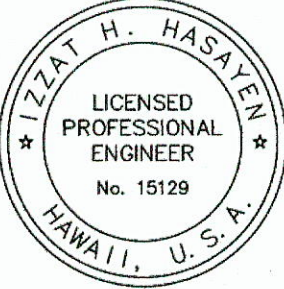
**SECTION**  
 Scale: 3/4"=1'-0"  
 S3-19 S3-19

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | CHECKED BY        |      |

Path: L:\W04\7213-01 Iao W04\As-Built\VPFF As-Bui File: IAO\_S3-19 Plot date: Mar 10, 2016-11:07:27am CAD User: elakoboshi. Xref Filename: | DOTBORD | AUTODATE |

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

**GRAPHIC SCALE:**  
 1' 0 1' 2' 3'  
 SCALE: 3/4"=1'-0"



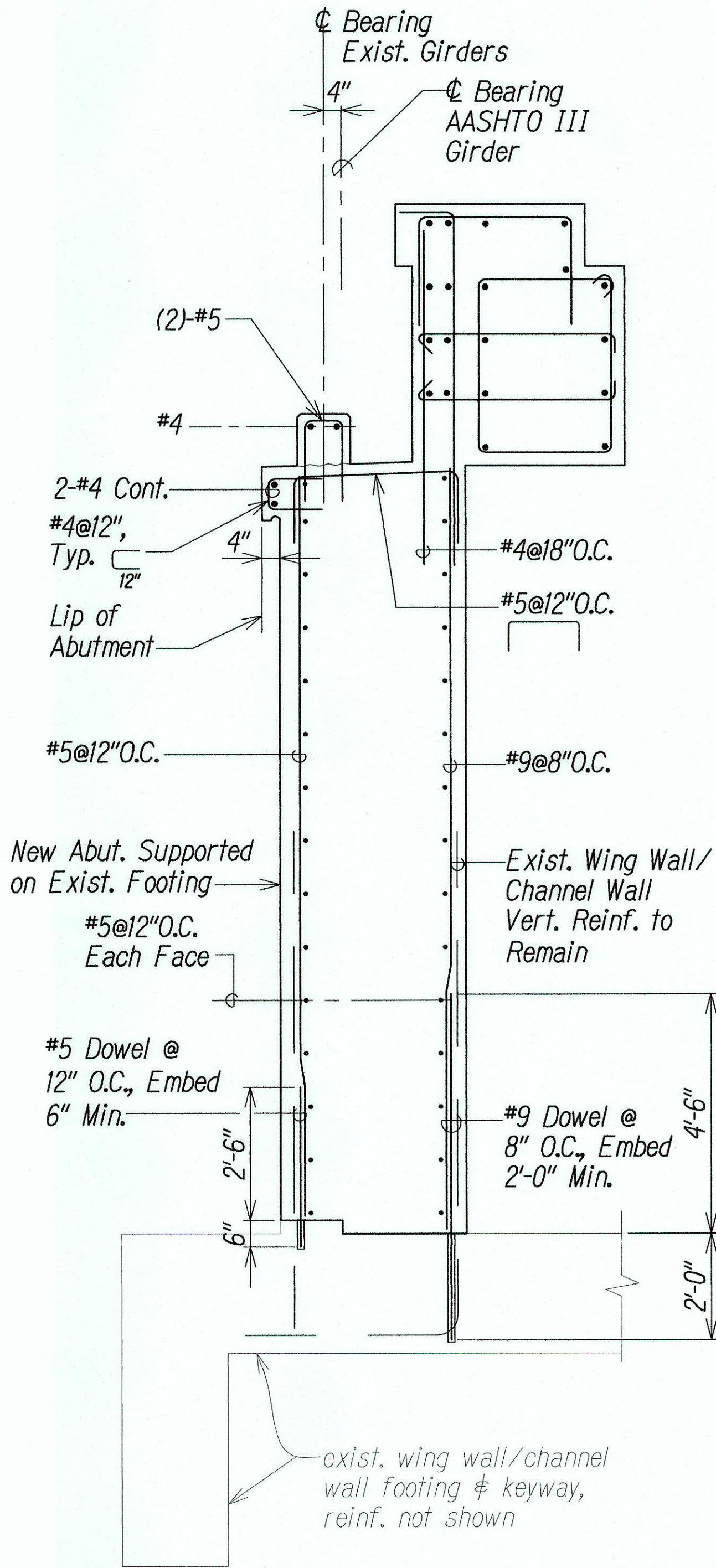
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

April 30, 2016  
 OFF CONSULTING ENGINEERS LIC. EXP. DATE

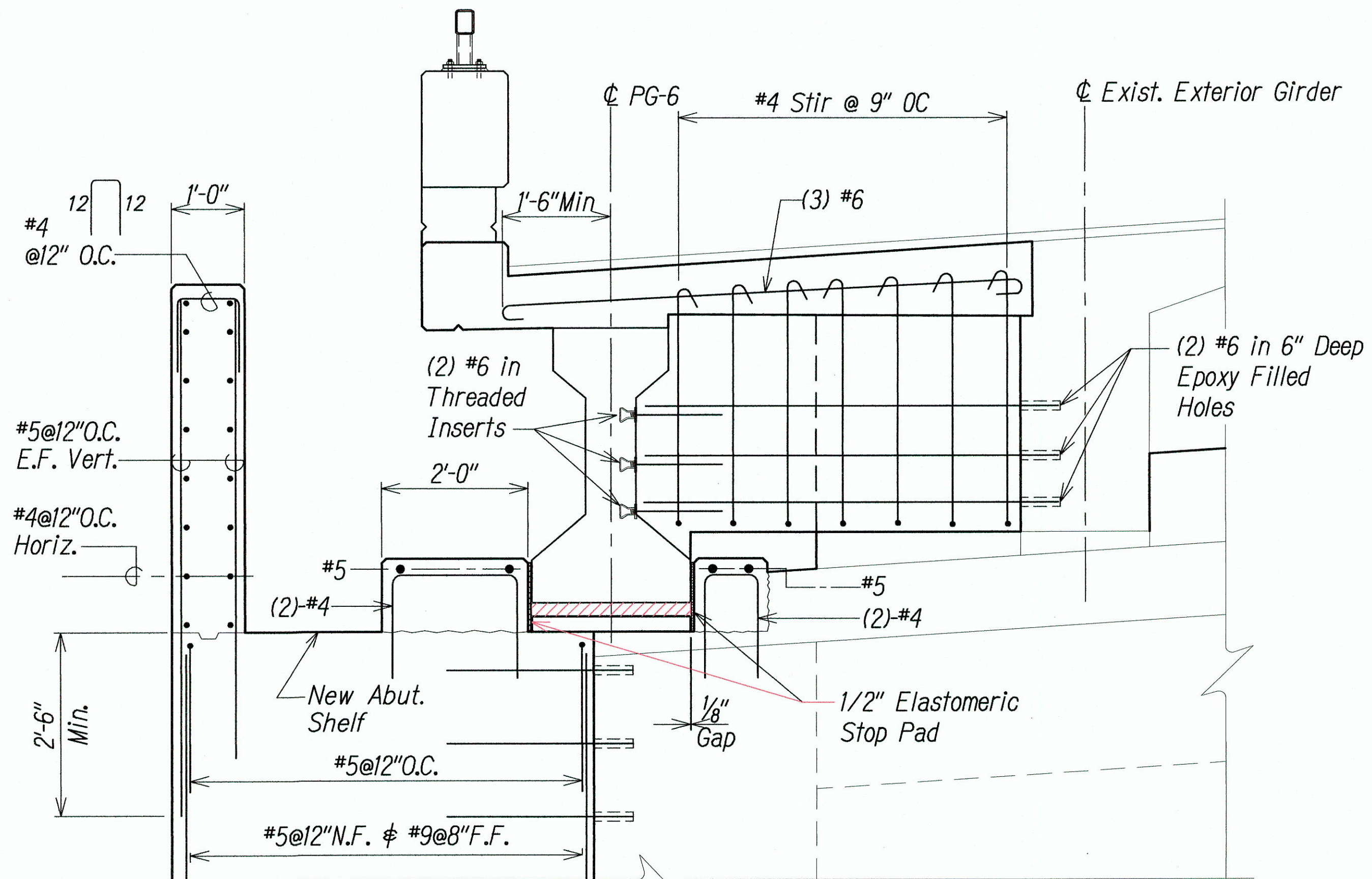
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**ABUTMENT NO. 2**  
**MAUKA EXTENSION II**  
**WAIHEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
 Federal Aid Project No. BR-STP-3400(5)  
 Date: October 2012



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 88        | 108          |

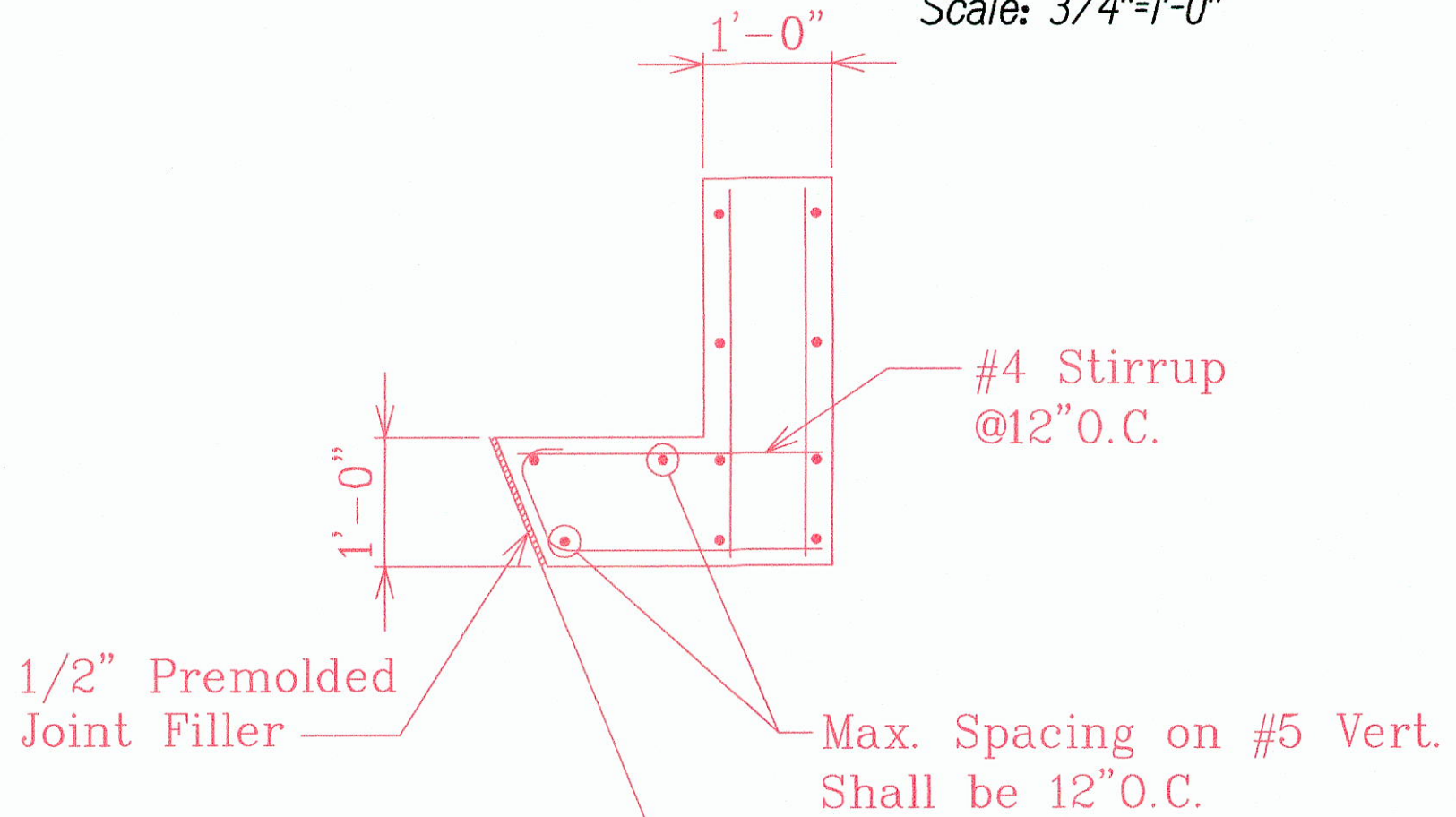


SECTION THRU NEW ABUTMENT WALL  
Scale: 1/2"=1'-0"



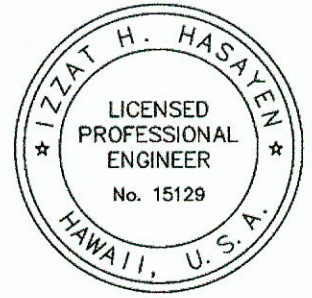
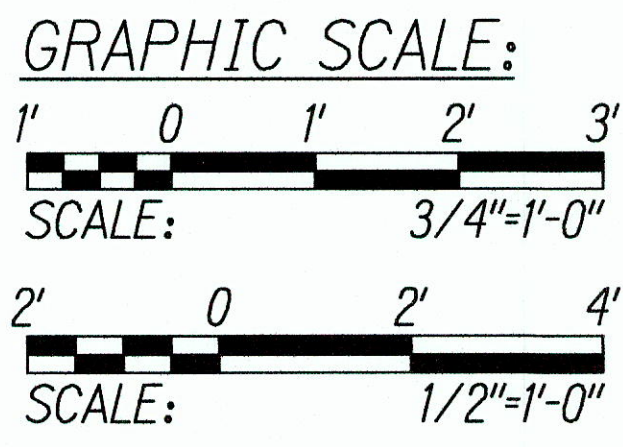
Note:  
Dimensions Shown are Along  $\phi$  of Existing Bearing.

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



ABUTMENT 2 MAKAI SCREEN WALL  
Scale: 3/4"=1'-0"

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

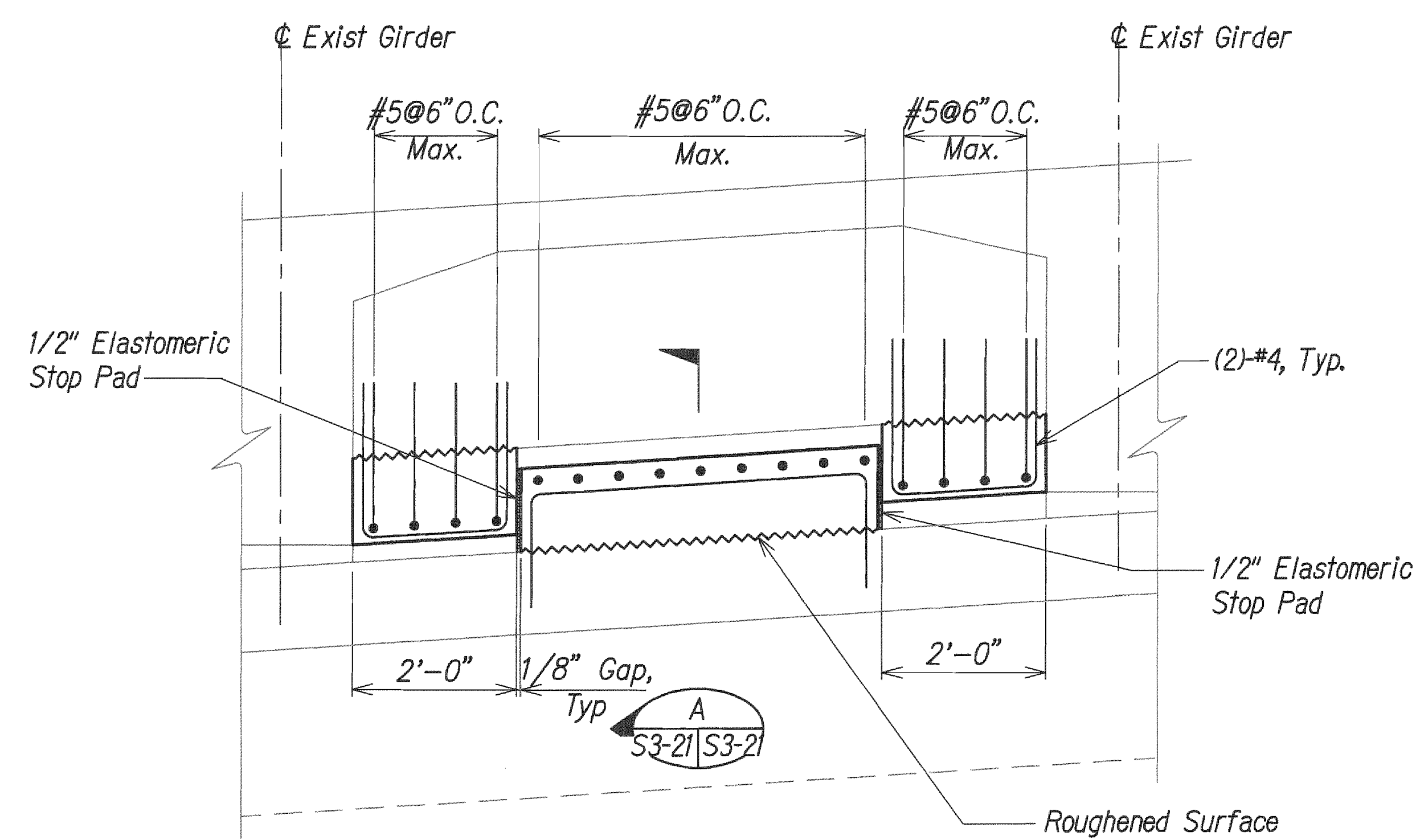


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**ABUTMENT NO. 2  
MAKAI EXTENSION**  
WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)  
Date: October 2012

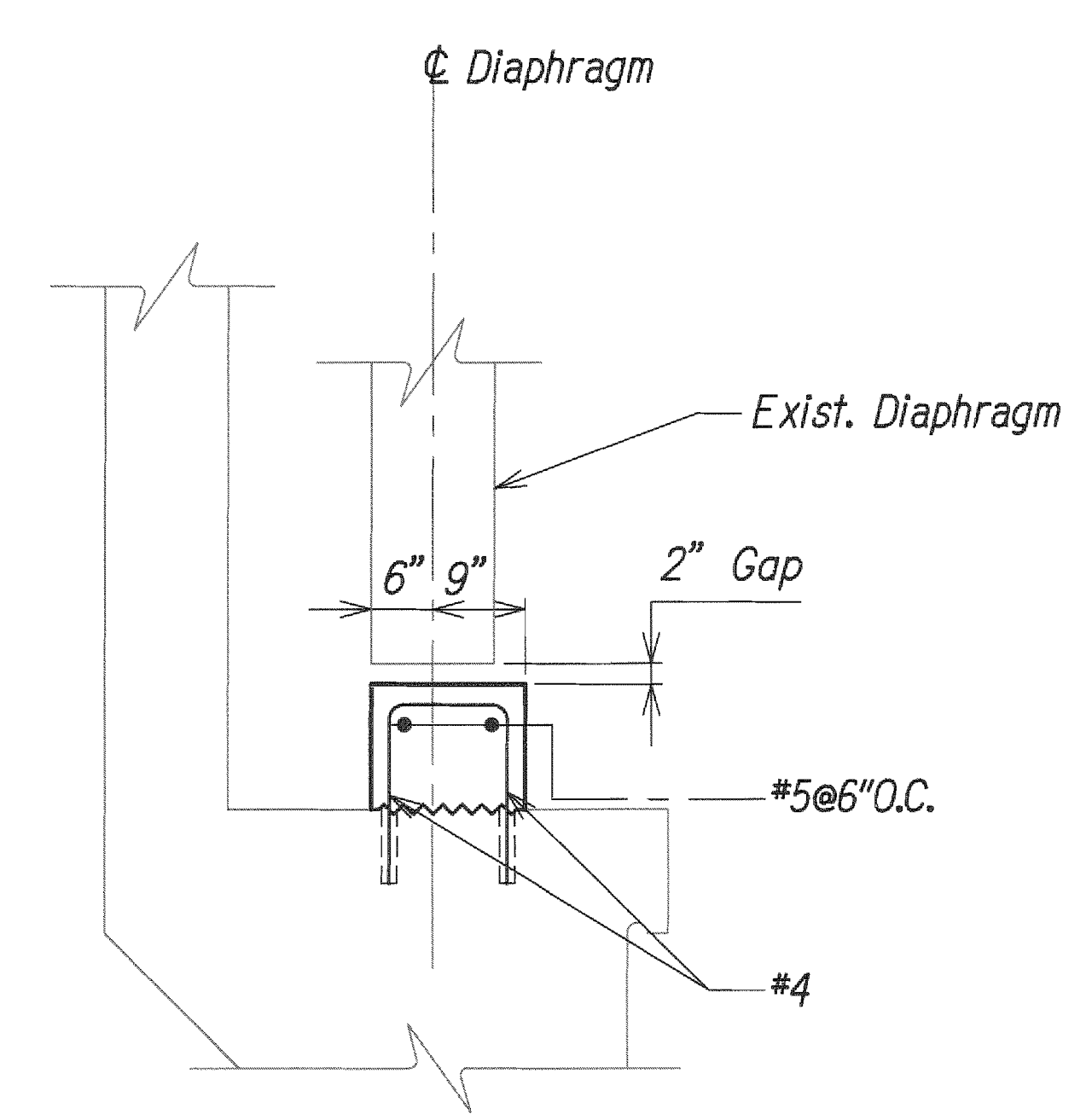


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 89        | 108          |



**Note:**  
Taken along  $\phi$  of Bearing.

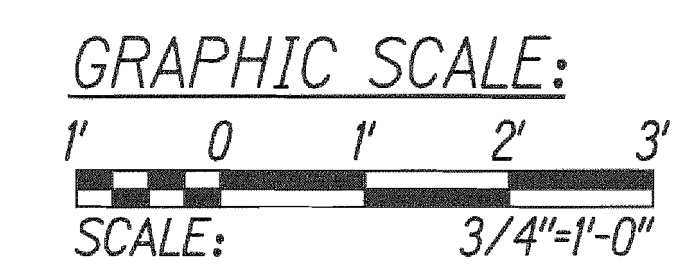
**DETAIL**  
Scale: 3/4"=1'-0"  
1  
S3-15 S3-21



**SECTION**  
Scale: 3/4"=1'-0"  
A  
S3-21 S3-21

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLATTED BY | DATE |
| NOTE BOOK     | DRAWN BY          |      |
|               | DESIGNED BY       |      |
|               | CHECKED BY        |      |
| No.           |                   |      |

Path: V:\112003 (Iao Bridge - Hawaii)\Design\New KFFE Plan File\Name: NO. S3-21 Plot date: Oct 17, 2012 03:15:40pm CAD User: TamielA. Xref Filenome: DOTBOARD AUTODRAW Hosoyen-Hawaii.lao



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OR UNDER MY SUPERVISION.  
*H. H. Hasey*  
HFF CONSULTING ENGINEERS APRIL 30, 2014  
L.C. EXP. DATE

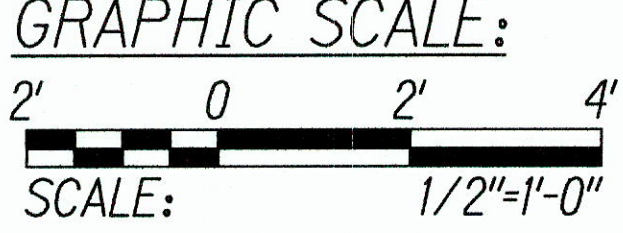
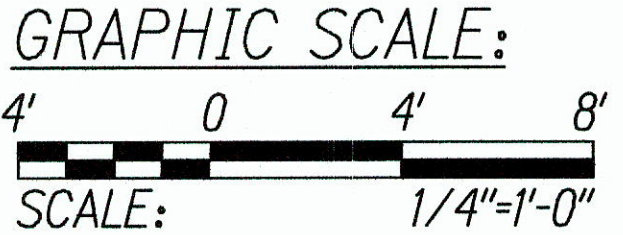
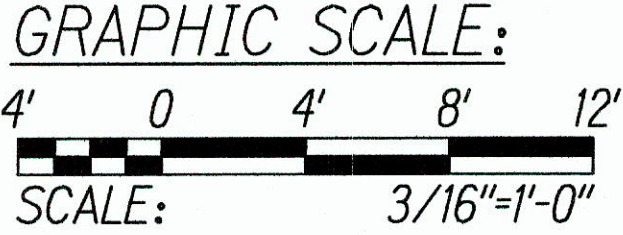
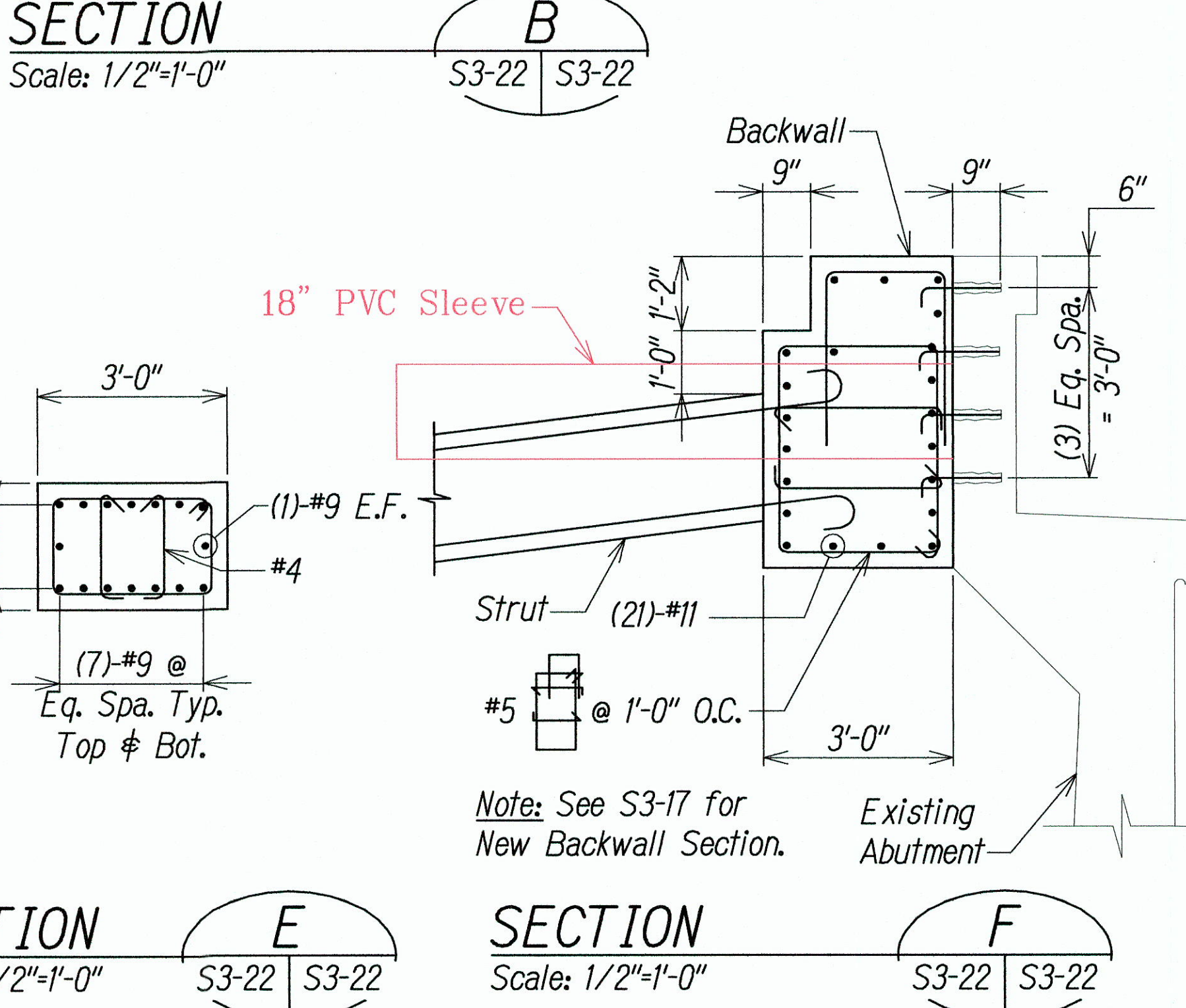
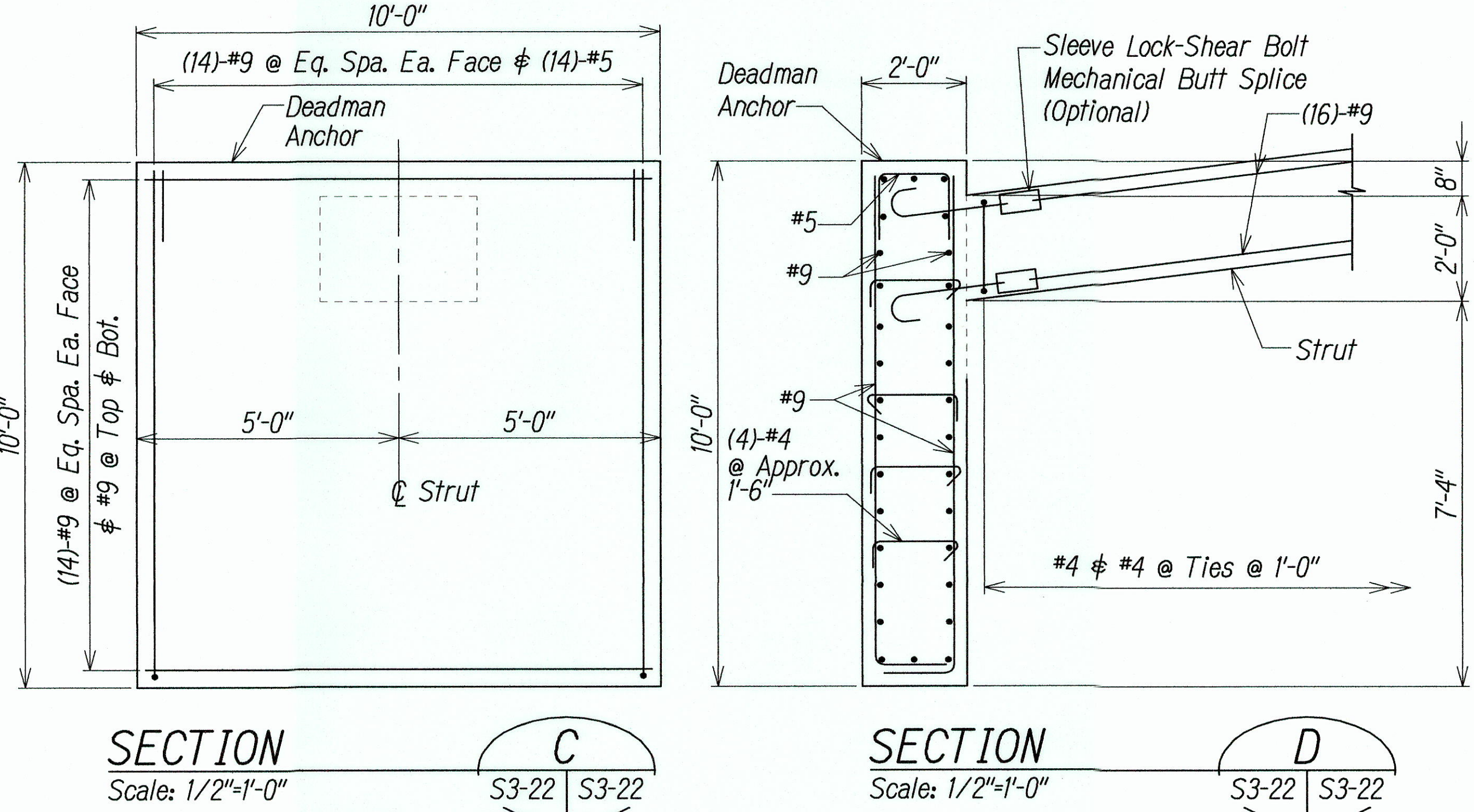
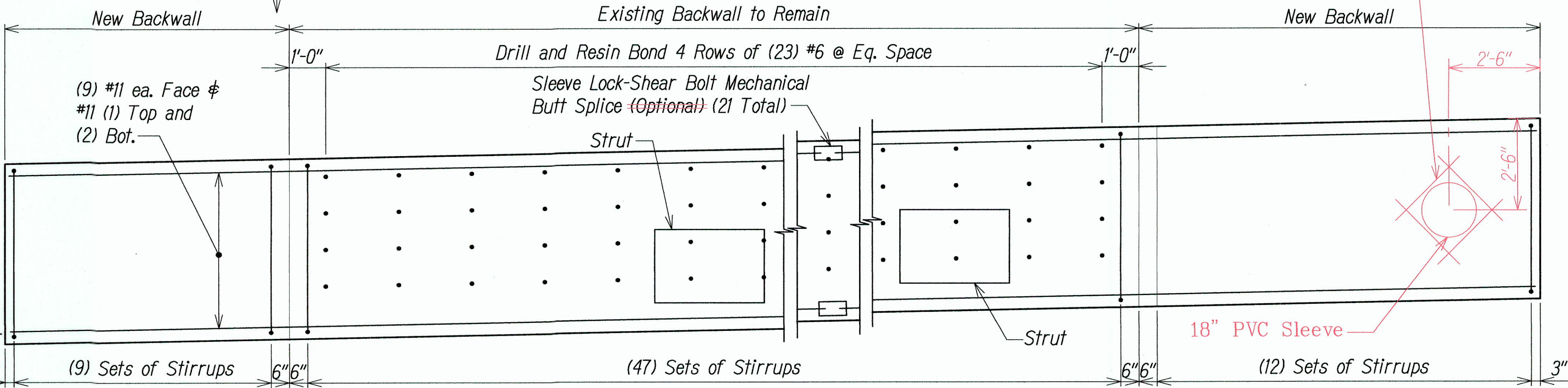
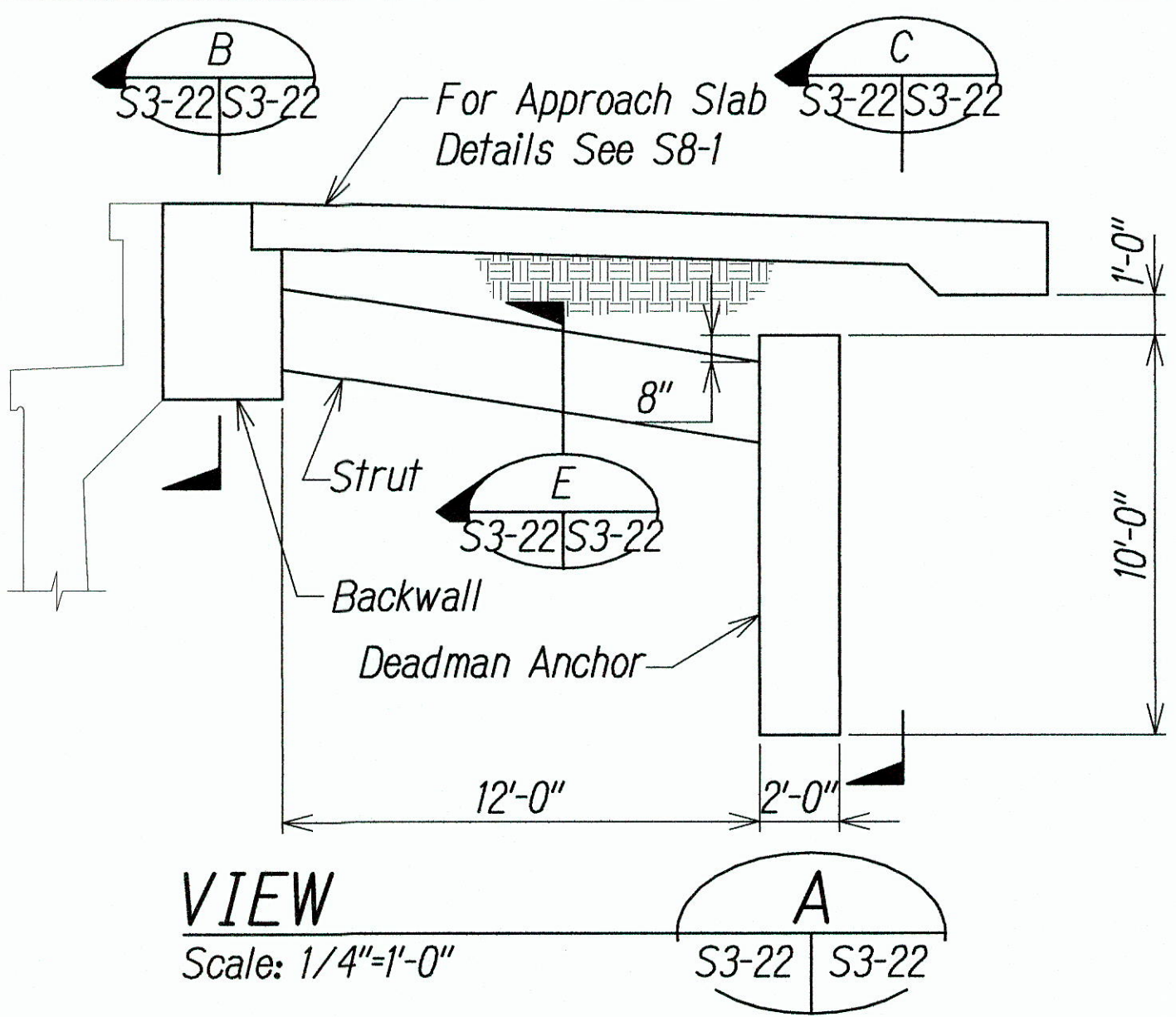
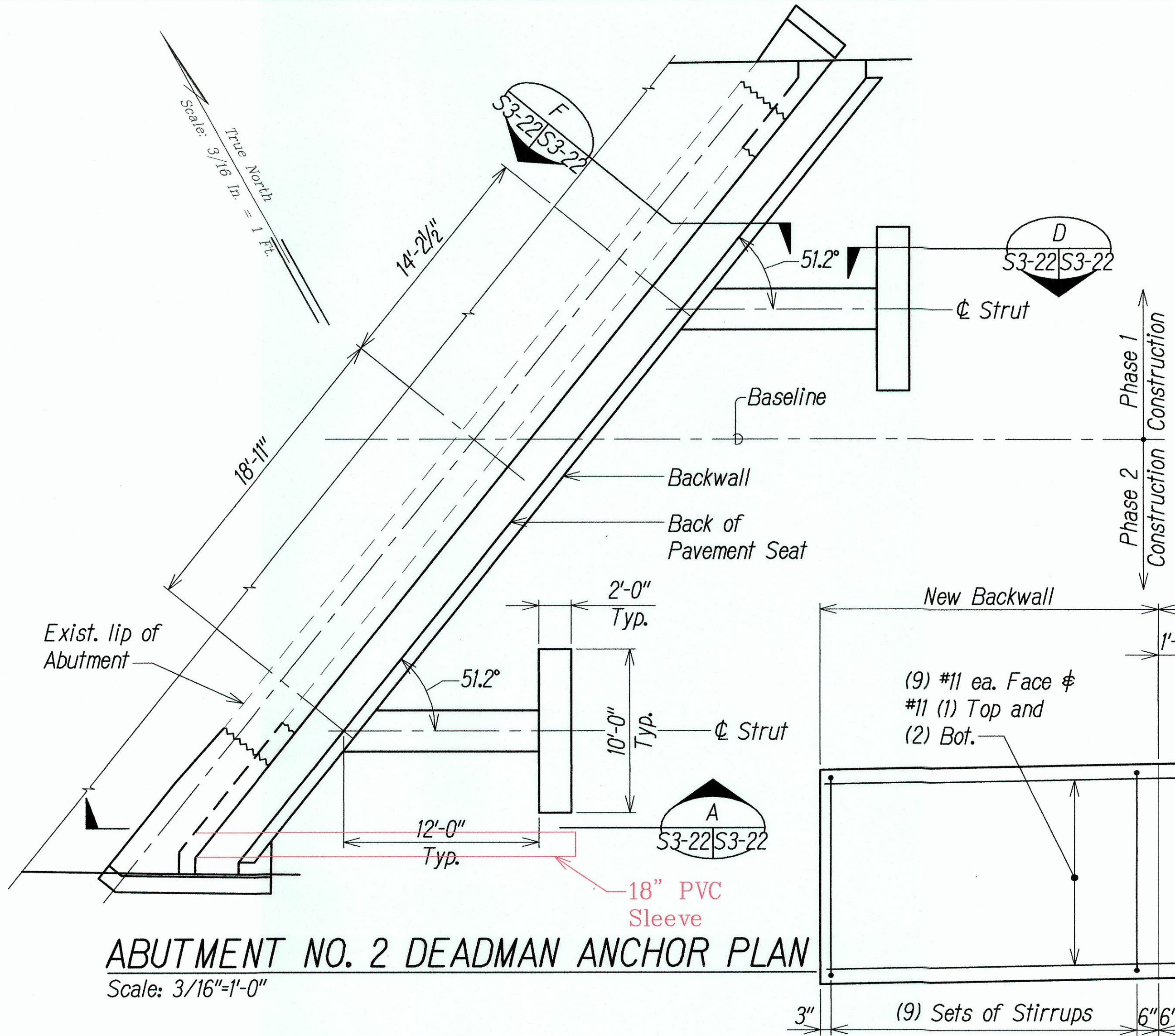
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
  
**ABUTMENT NO. 2**  
**DETAILS**  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012  
SHEET No. S3-21 OF SHEETS



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 90        | 108          |

# LEGEND FOR AS-BUILT POSTINGS

- Squiggly line for as-built deletion
- Double line for as-built deletion
- Roadway Text for as-built posting



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**ABUTMENT NO. 2  
DEADMAN DETAILS**

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S3-220F

SHEETS

|               |               |
|---------------|---------------|
| ORIGINAL PLAN | DATE          |
| NOTE BOOK     | DESIGNED BY   |
|               | QUANTITIES BY |
|               | CHECKED BY    |

Path: L:\W04\7213-01\_100\Civil\As-Built\VPFF As-Built File: IAO\_S3-22\_Plot.dwg: Mor 10, 2016 - 11:07:36am CAD User: etakahoshi. Xref File: IAO\_S3-22\_Plot.dwg: Mor 10, 2016 - 11:07:36am

"AS-BUILT"



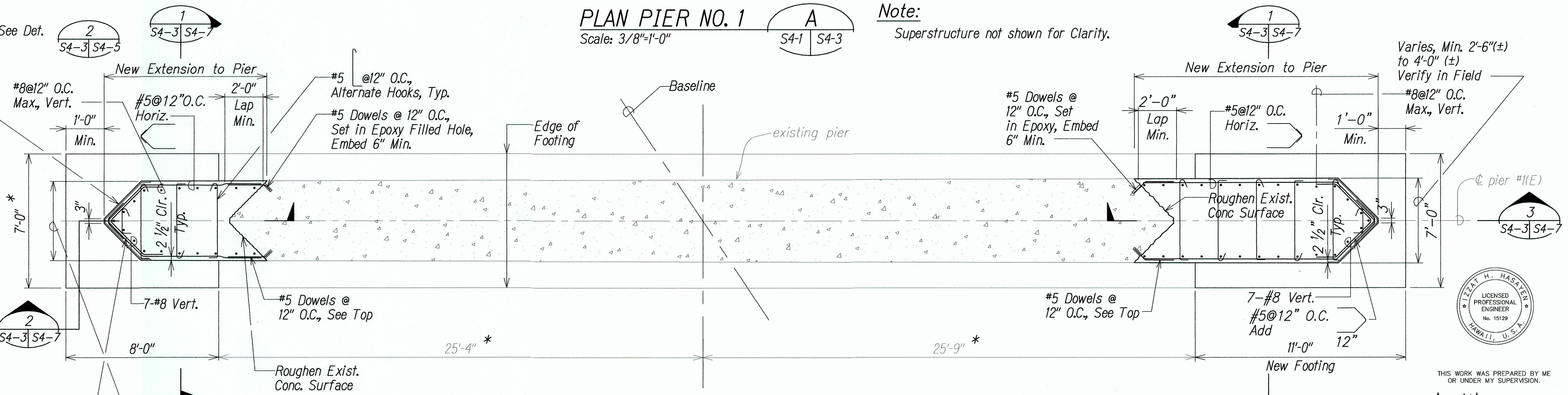








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Filename: IAO\_S4-3 Plot date: Mar 10, 2016-11:07:45am CAD User: etakahashi. Xref Filename: | DOTBORD | AUTODATE |



\* Contractor to Verify Existing Dimensions in the Field.

GRAPHIC SCALE:

2' 0 2' 4' 6'

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

PIER NO. 1 PLAN AND  
FOUNDATION PLAN

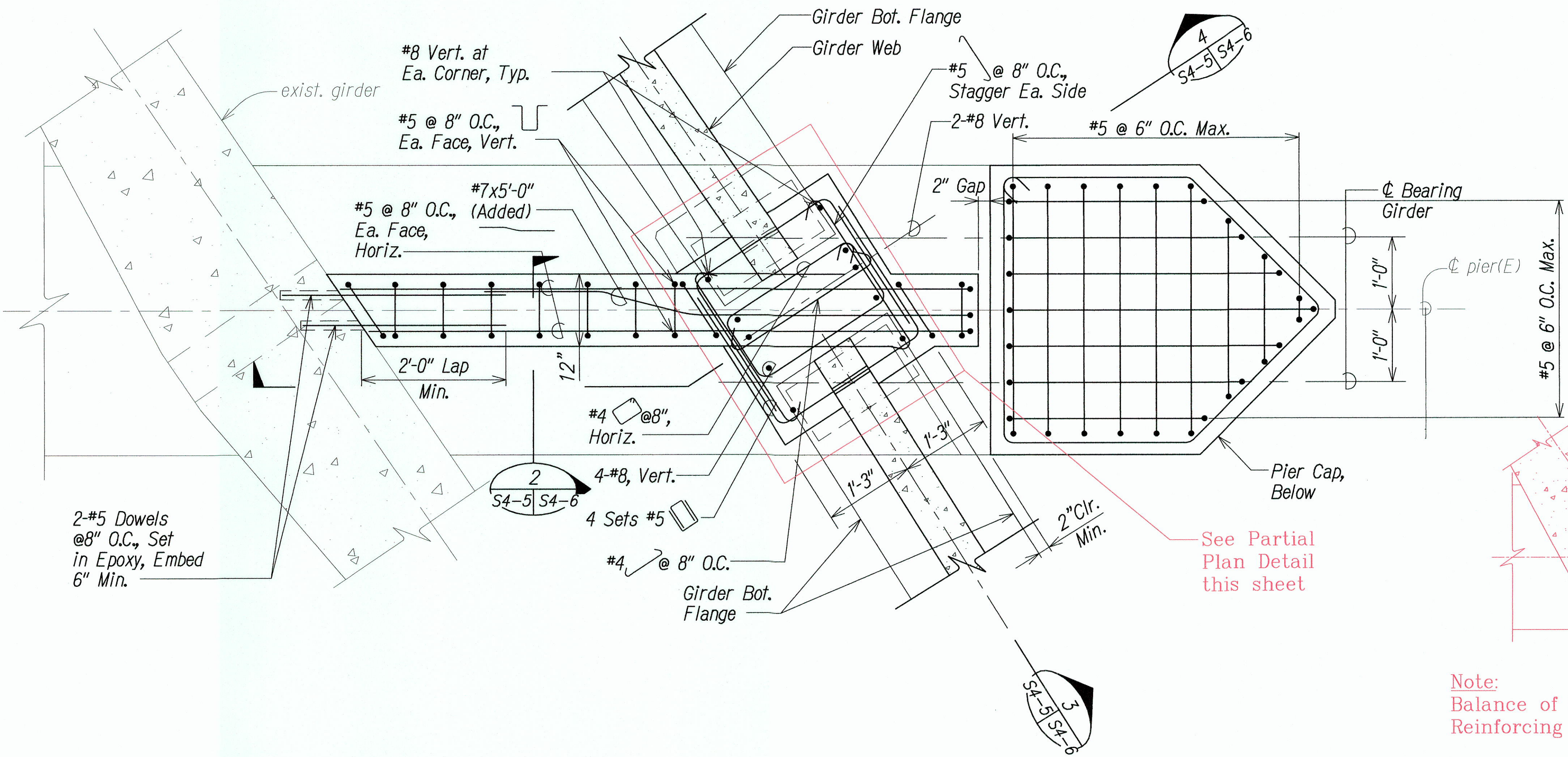
WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012



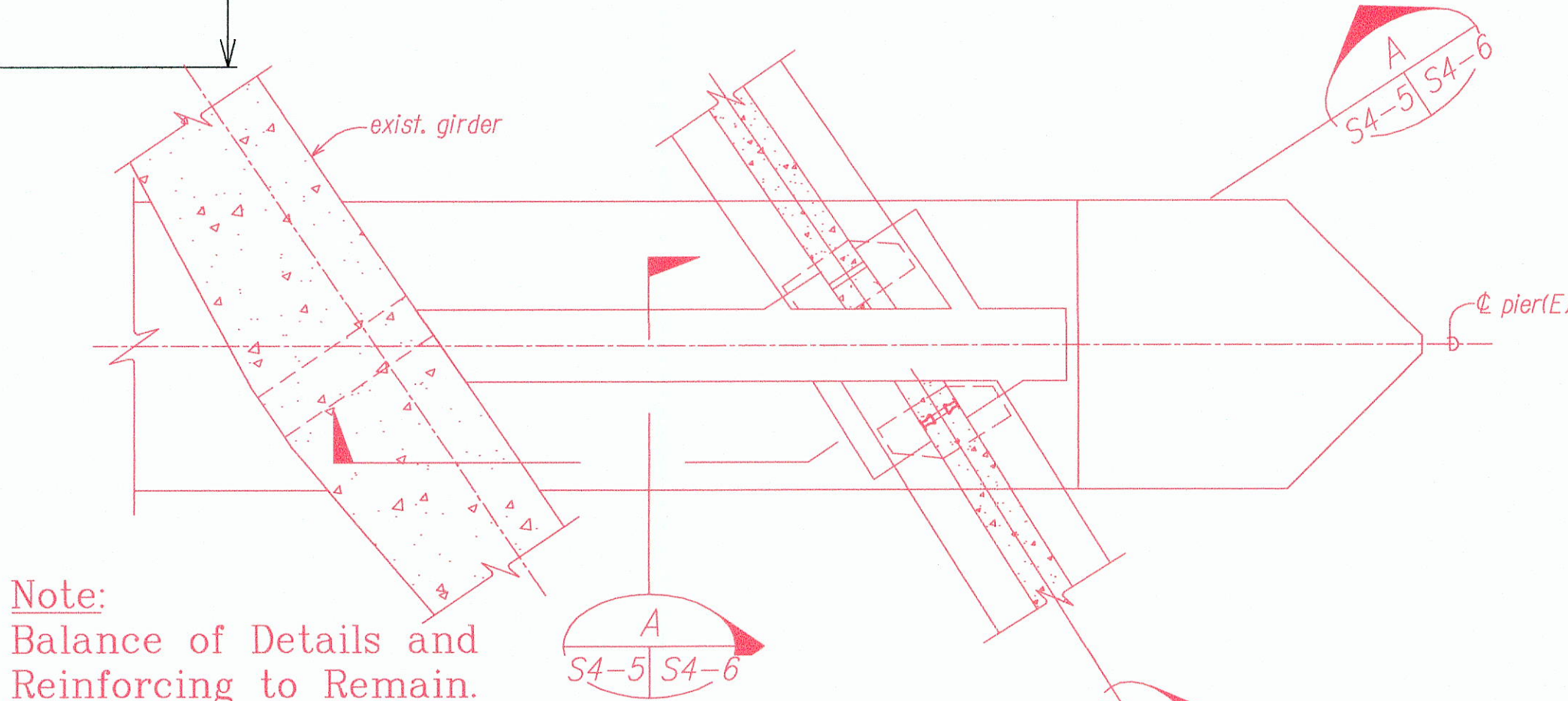






PARTIAL PLAN - DETAIL  
Scale: 1"=1'-0"

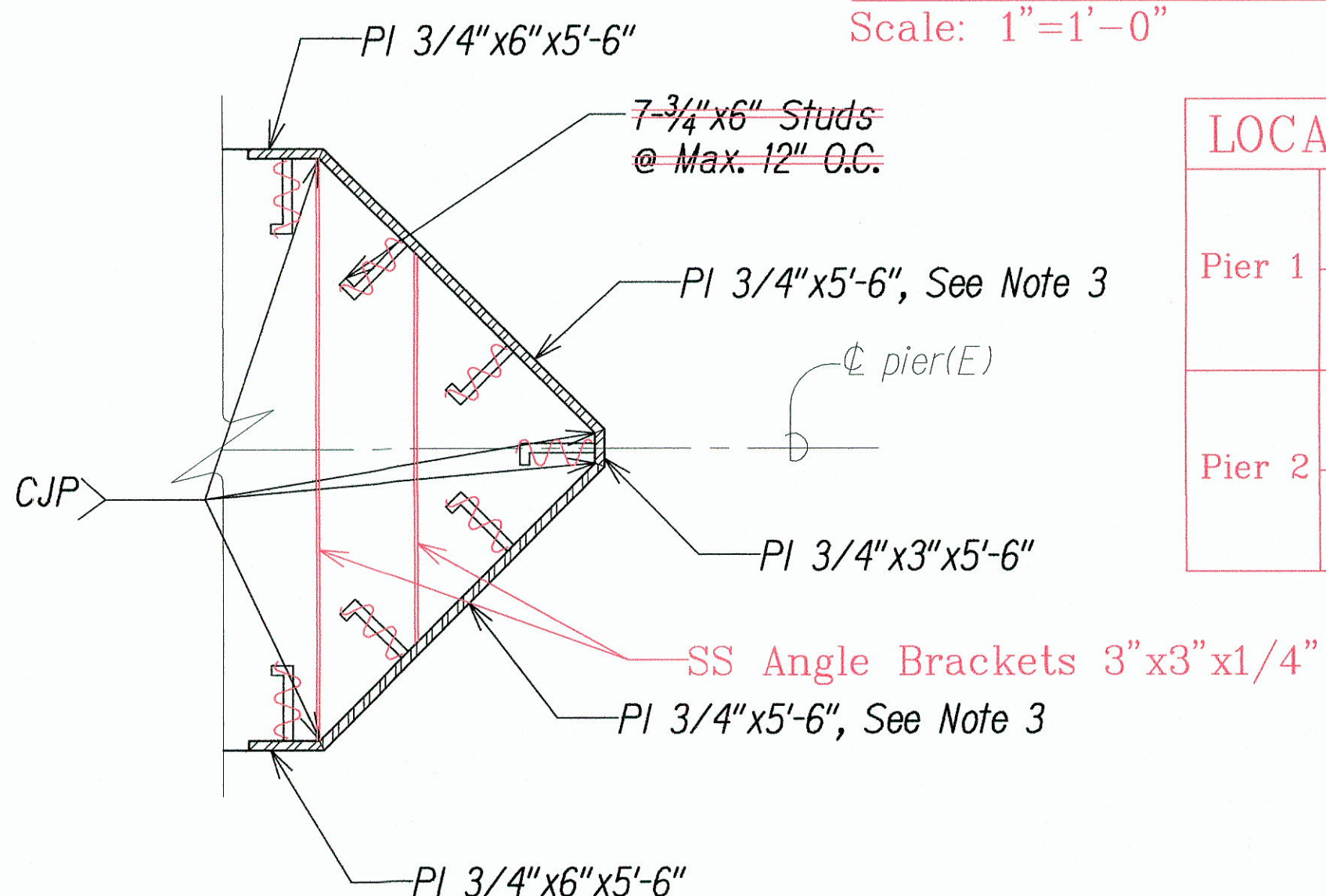
1  
S4-1 S4-5  
S4-2



PARTIAL PLAN - DETAIL  
Scale: 1"=1'-0"

1  
S4-1 S4-5  
S4-2

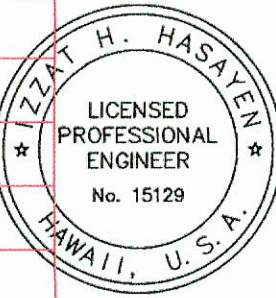
- NOTES:
1. All Plate shall be Stainless Steel.
  2. 6" below Channel to 4'-0" Above Channel (Incidental to Reinforcing Steel). Plate Dimensions shown assume 1'-0" thick Channel. Contractor to verify actual Thickness and adjust Dimensions prior to Fabrication.
  3. Plate Width varies with Depth.
  4. Contractor shall submit Shop Drawing prior to Fabrication.



ARMOR PLATE - DETAIL  
Scale: 1"=1'-0"

2  
S4-1 S4-5  
S4-2, S4-3, S4-4

| LOCATION |       |      | DIST. TO CL OF PIER* |     |
|----------|-------|------|----------------------|-----|
| Pier 1   | Mauka | PG-1 | 7.21                 | In. |
|          |       | PG-3 | 7.43                 | In. |
|          | Makai | PG-2 | 7.31                 | In. |
|          |       | PG-4 | 7.54                 | In. |
| Pier 2   | Mauka | PG-3 | 7.43                 | In. |
|          | Makai | PG-5 | 7.68                 | In. |
|          |       | PG-4 | 7.55                 | In. |
|          |       | PG-6 | 7.82                 | In. |



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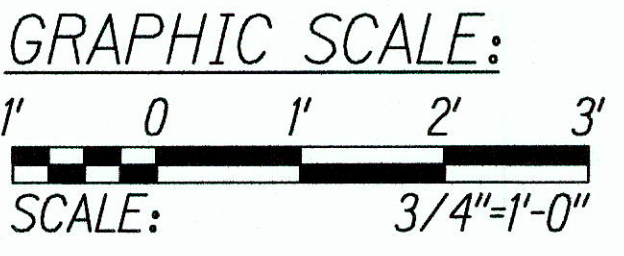
APRIL 30, 2016  
CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PIER DETAILS 1**

**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012



LEGEND FOR AS-BUILT POSTINGS

~~~~~ Squiggly line for as-built deletion

== Double line for as-built deletion

Roadway Text for as-built posting

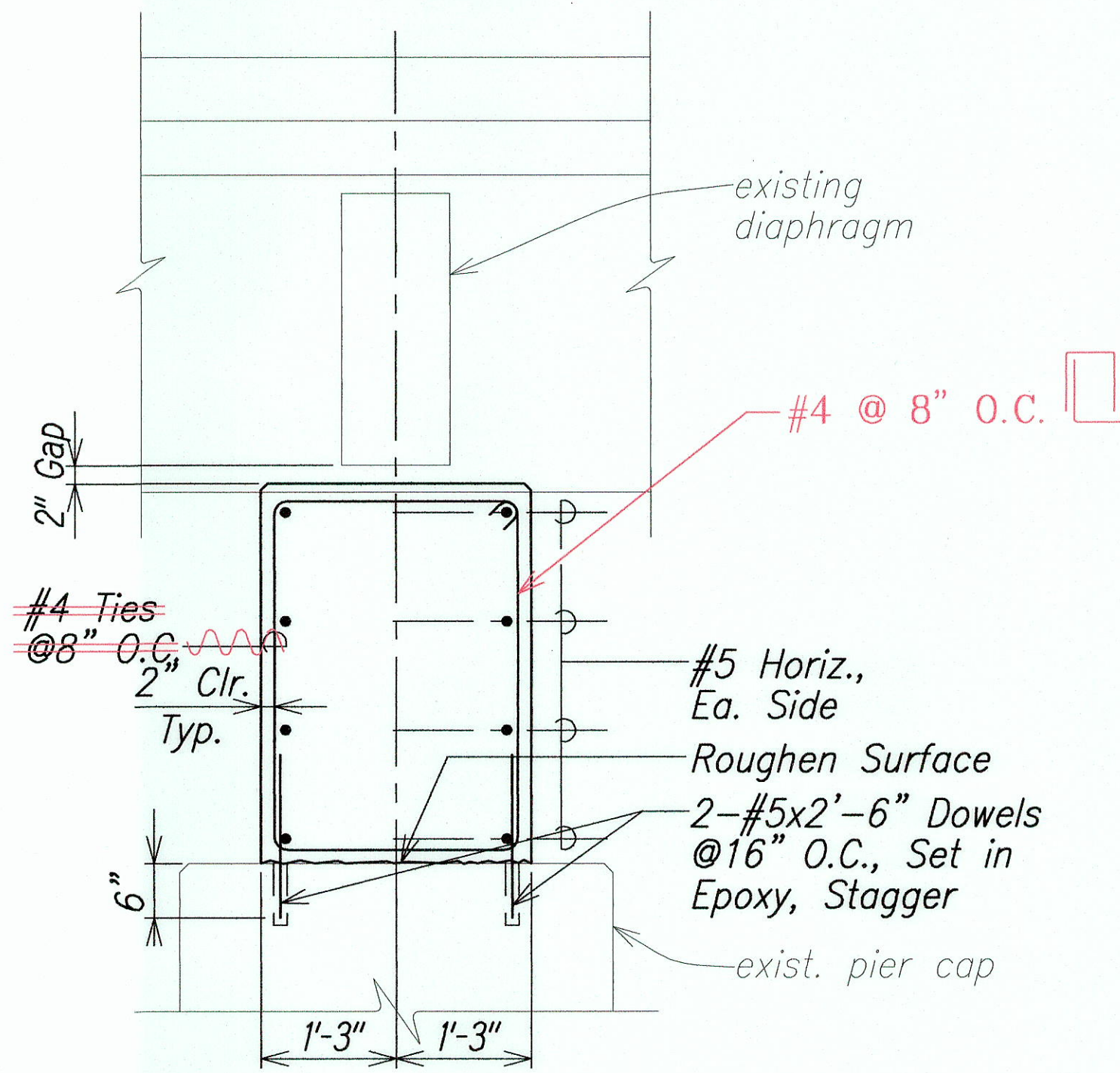
|                   |  |
|-------------------|--|
| DATE              |  |
| SURVEY PLOTTED BY |  |
| DRAWN BY          |  |
| TRACED BY         |  |
| NOTED BY          |  |
| CHECKED BY        |  |
| ORIGINAL PLAN     |  |
| NOTE BOOK         |  |
| No.               |  |

Path: L:\W04\7213-01 Iao\CVL\As-Built\KFF As-Bui File Name: IAO\_S4-5 Plot date: Mar 10, 2016-11:07:51am CAD User: etakchoshi Xref File Name: DOTBOARD AUTODRAW

"AS-BUILT"

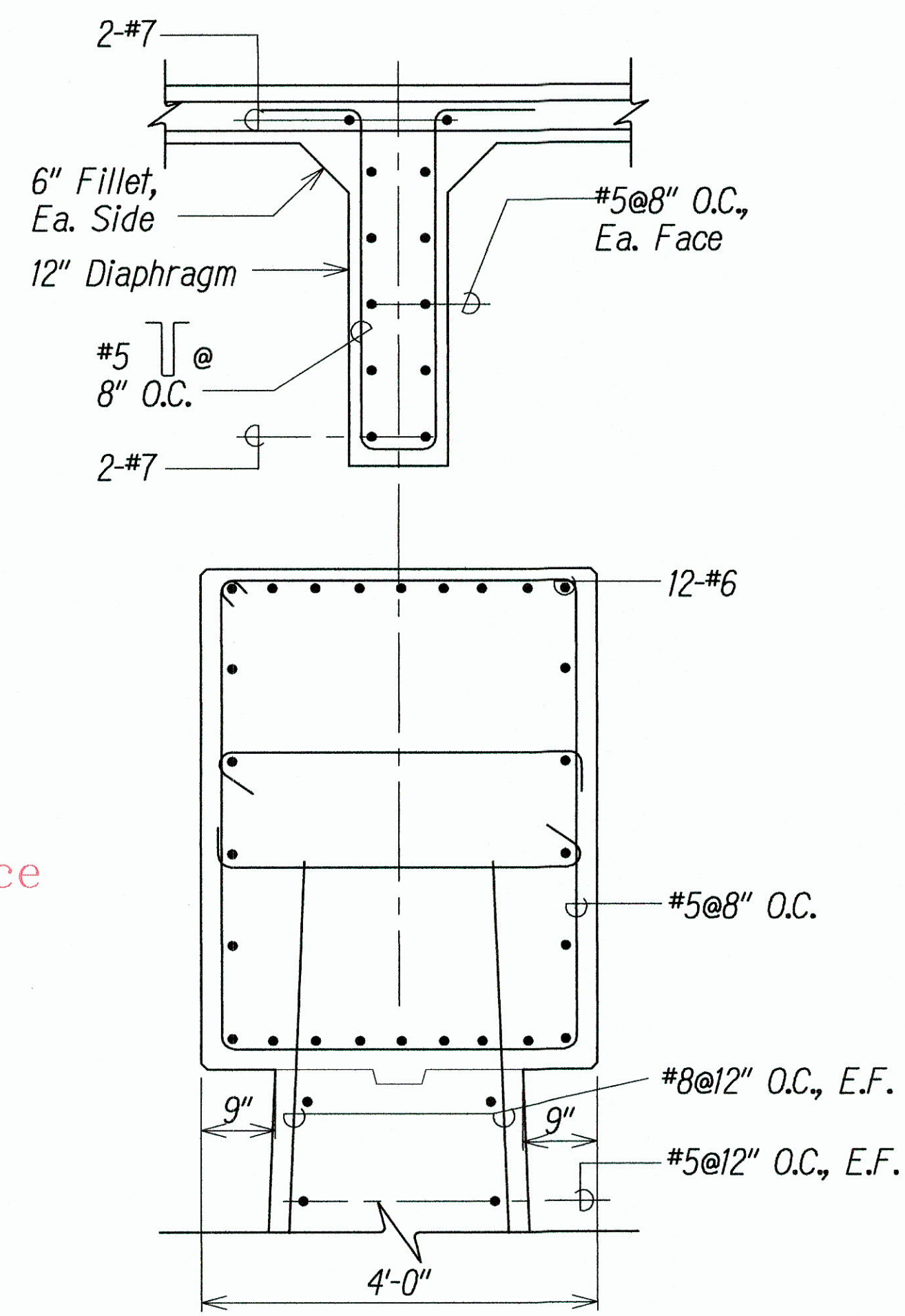


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 96        | 108          |

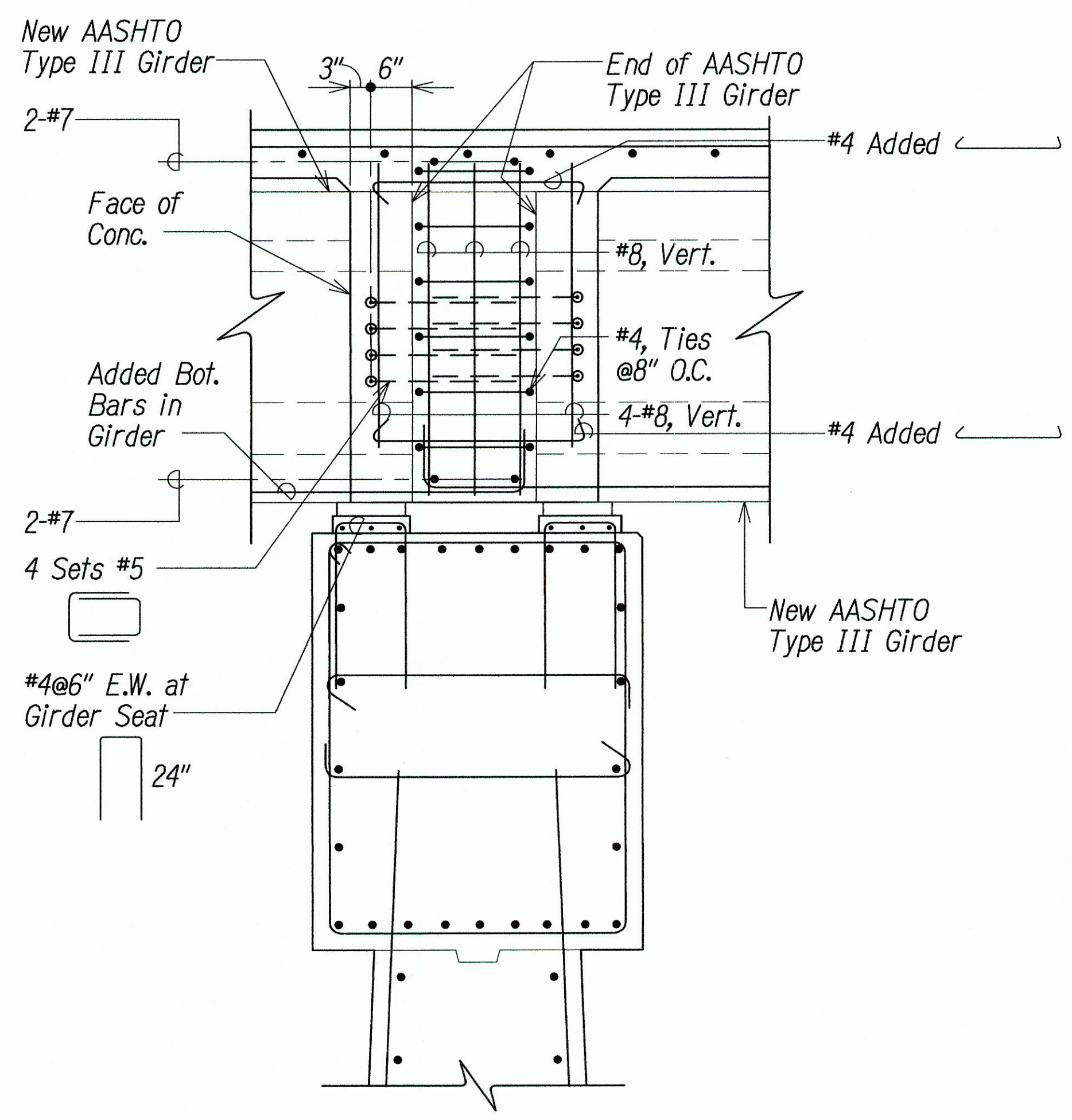


**NEW DIAPHRAGM CATCH BLOCK  
@ PIER BETWEEN  
EXISTING GIRDER DETAIL**  
Scale: 3/4"=1'-0"

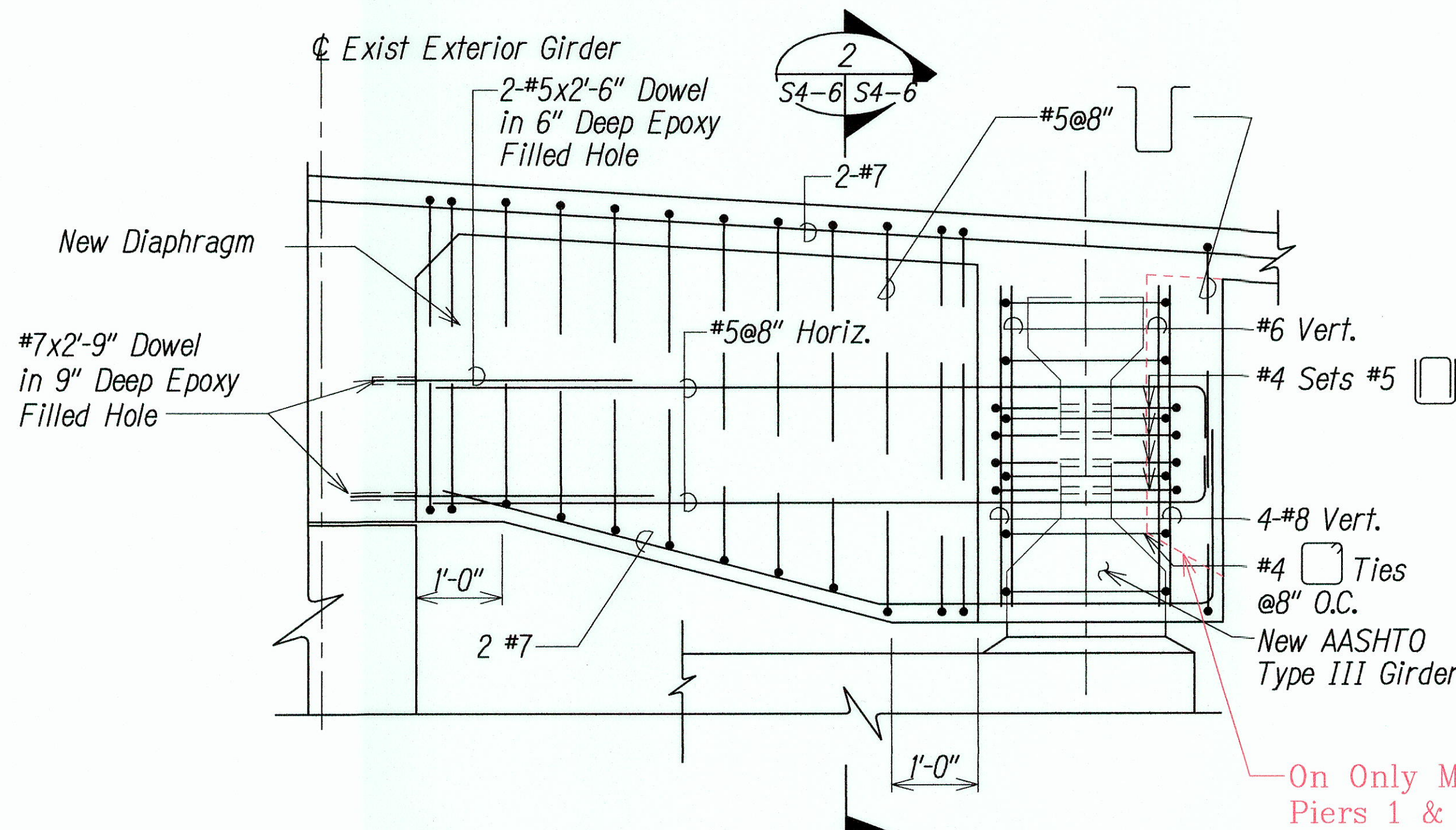
See Below for Lap Splice of Rebar



**DIAPHRAGM & CAP BEAM  
@ NEW PIER**  
Scale: 3/4"=1'-0"



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



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

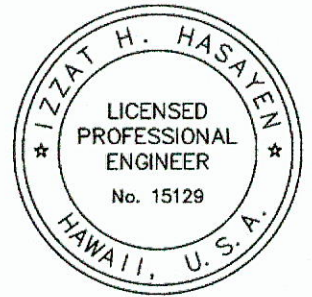
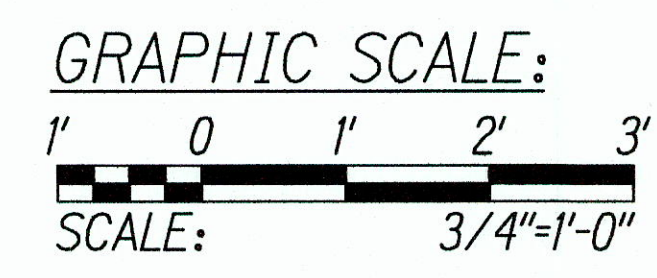
On Only Mauka Side at Piers 1 & 2, Cut Back Beam 1 Foot to Allow for Future Sewer Line

**LEGEND FOR AS-BUILT POSTINGS**

~~~~~ Squiggly line for as-built deletion

== Double line for as-built deletion

Roadway Text for as-built posting



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

*[Signature]* APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PIER DETAILS II**  
  
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
Date: October 2012



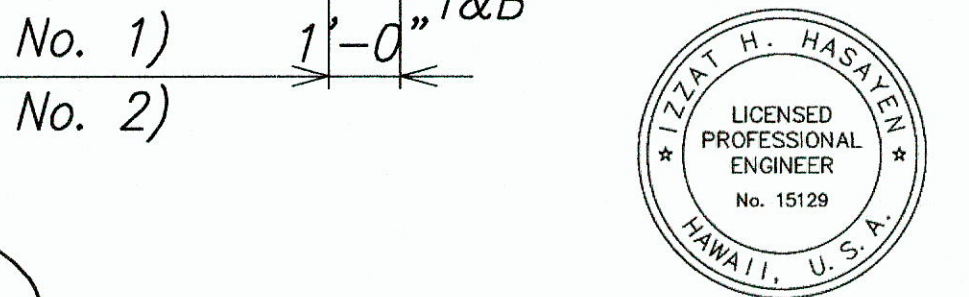
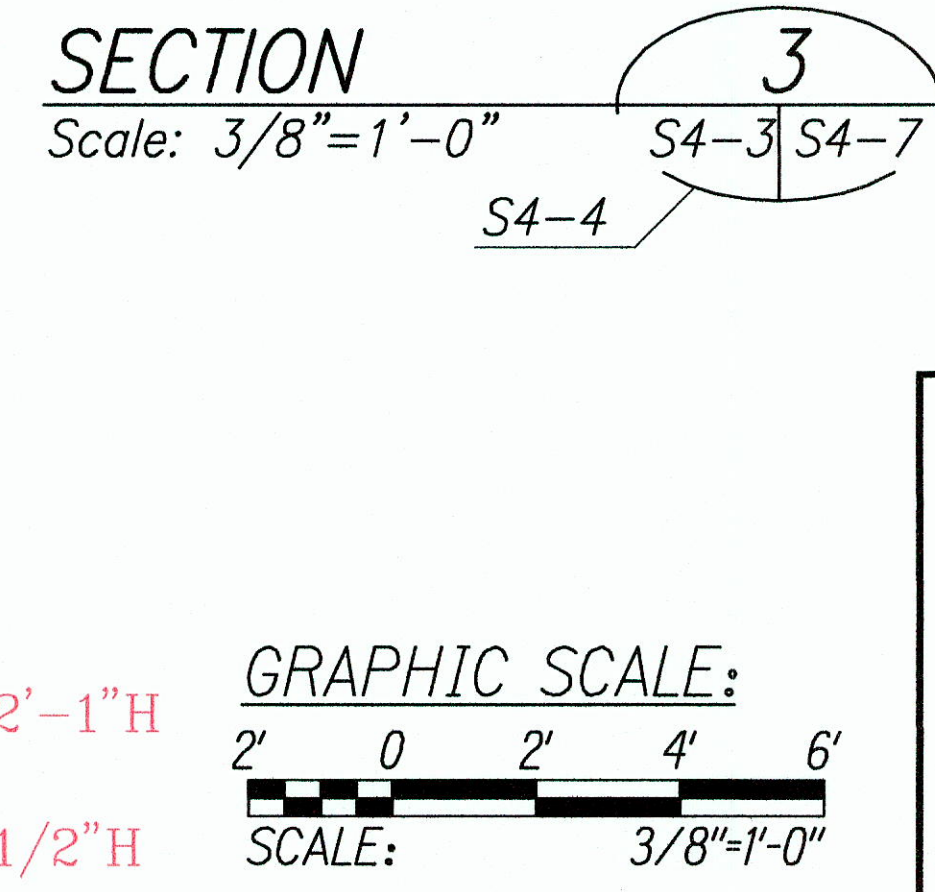
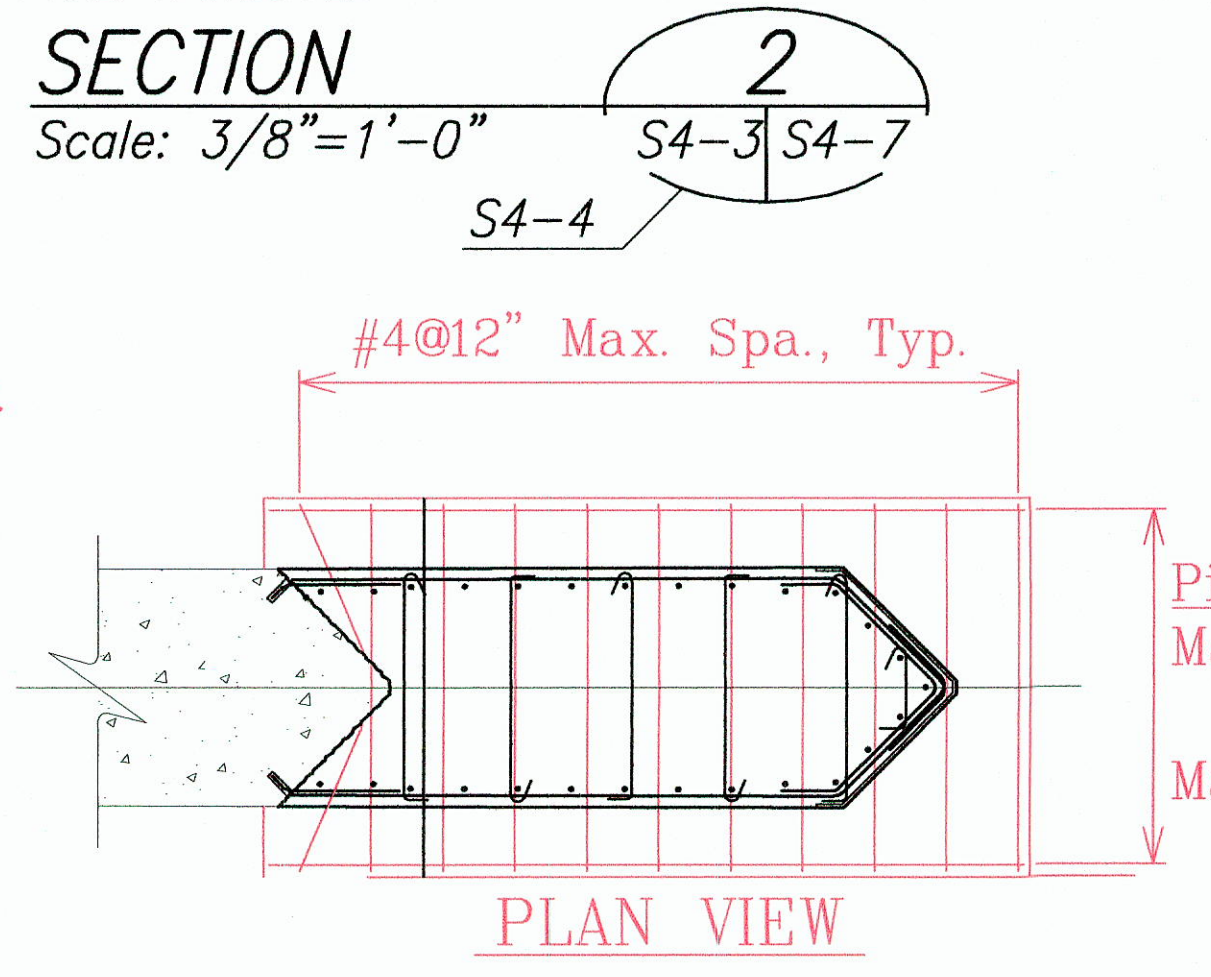
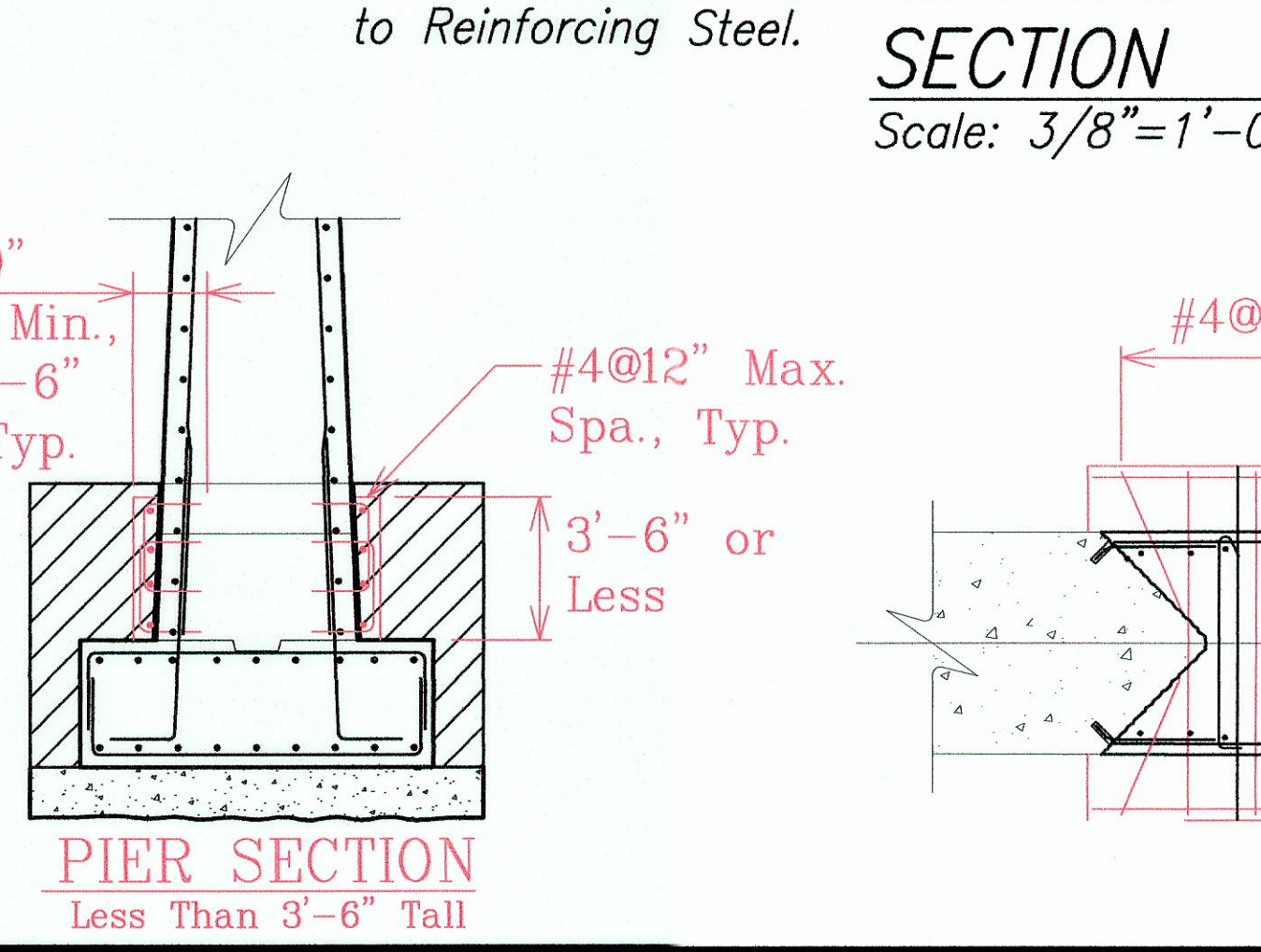
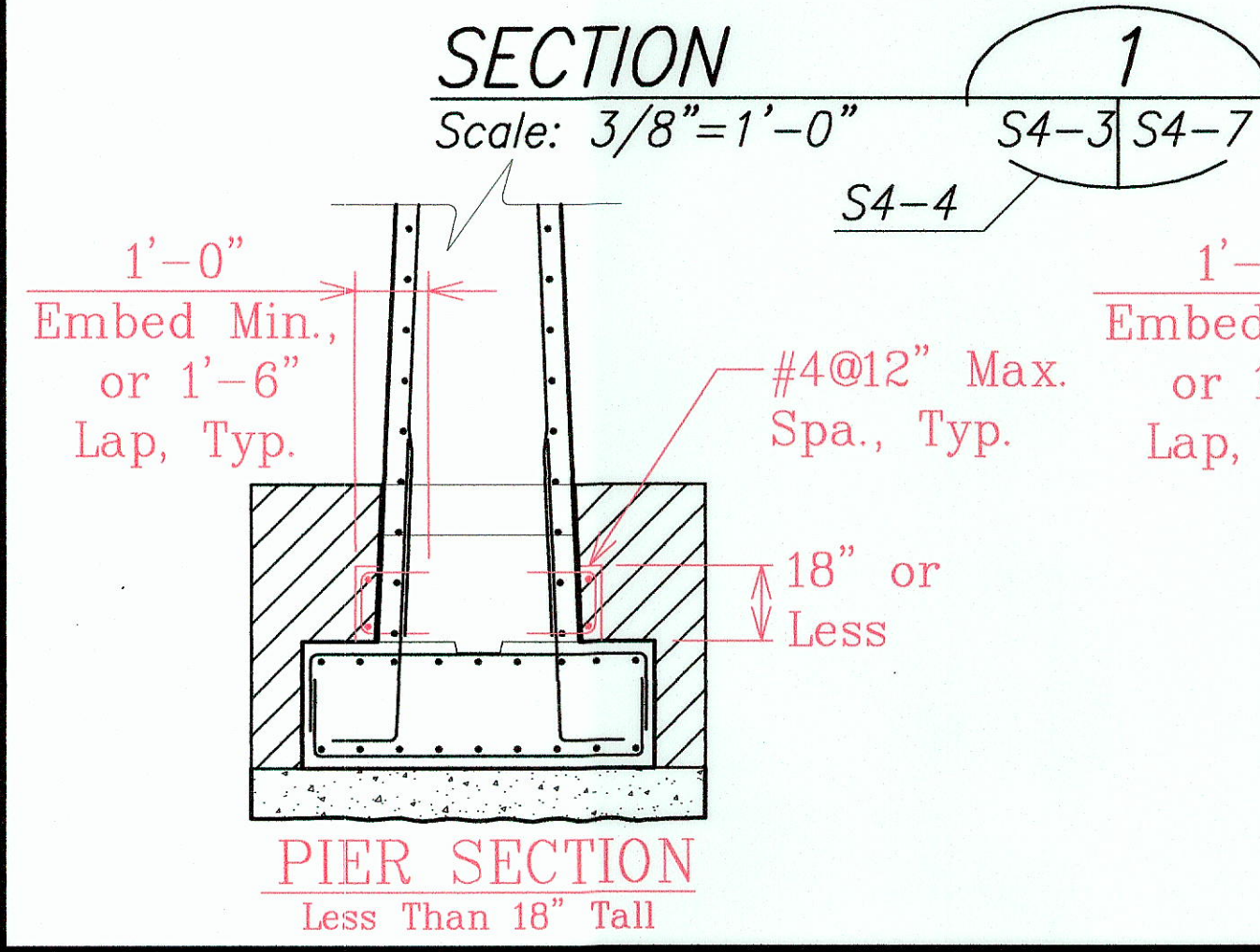
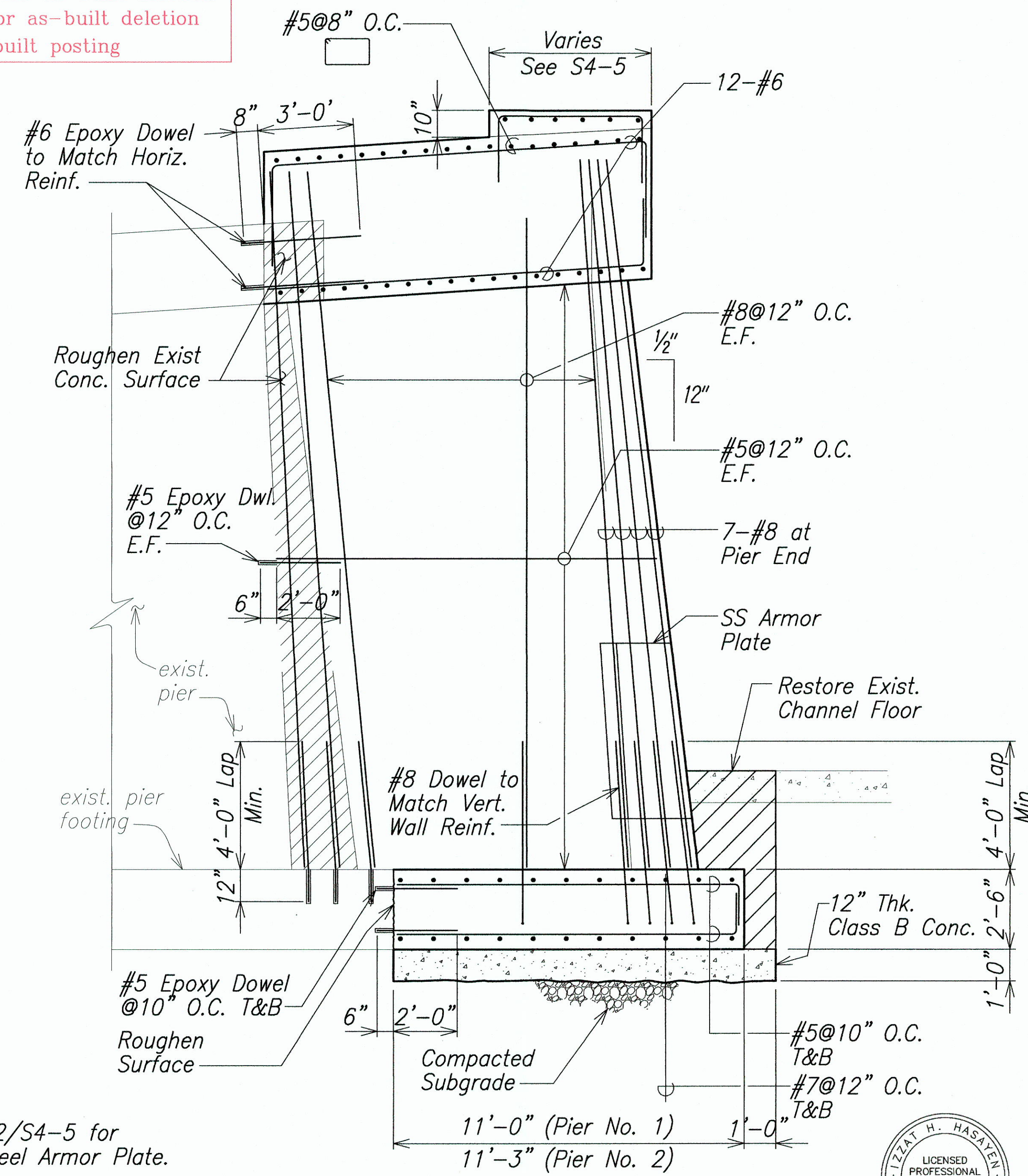
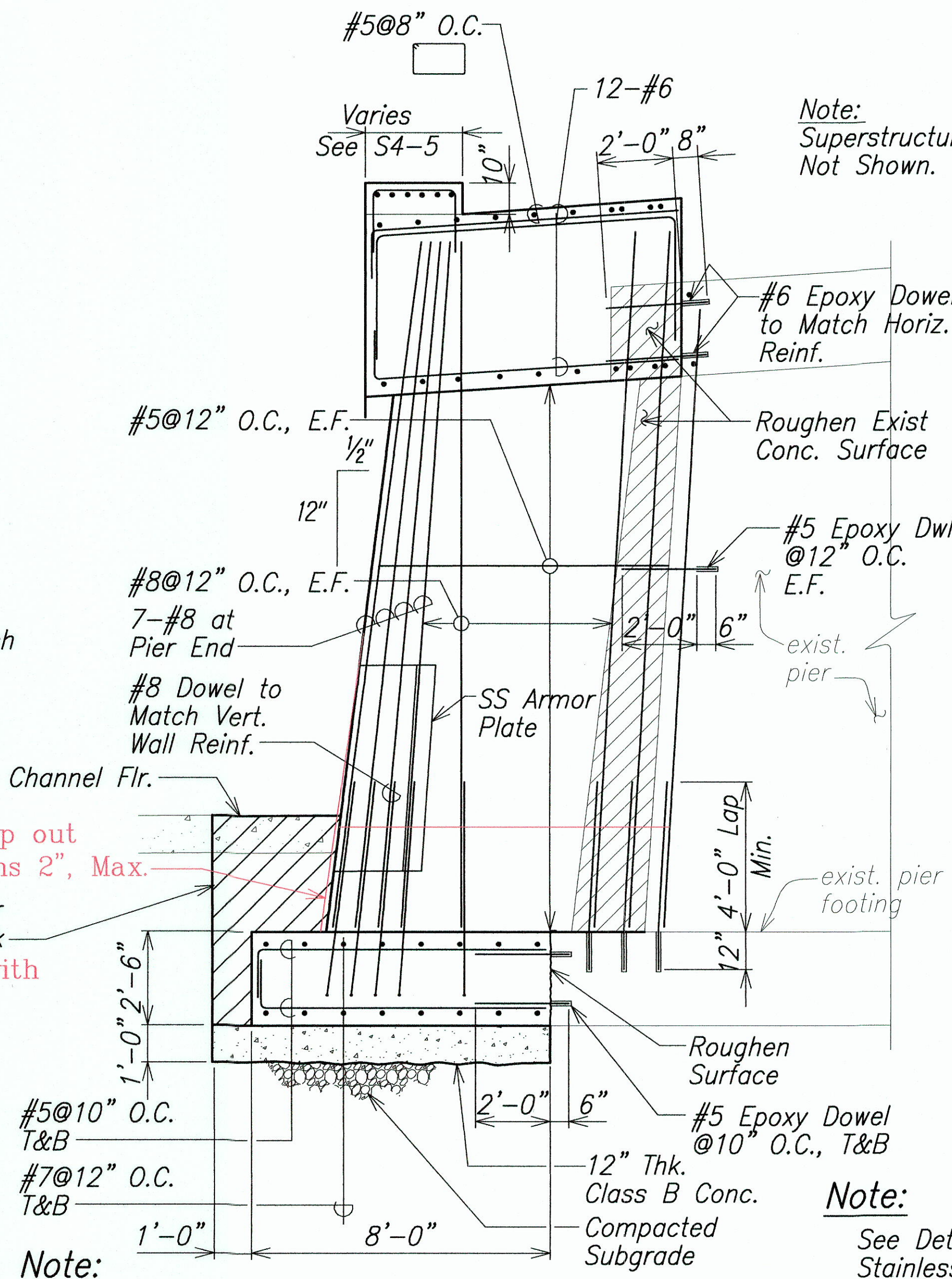
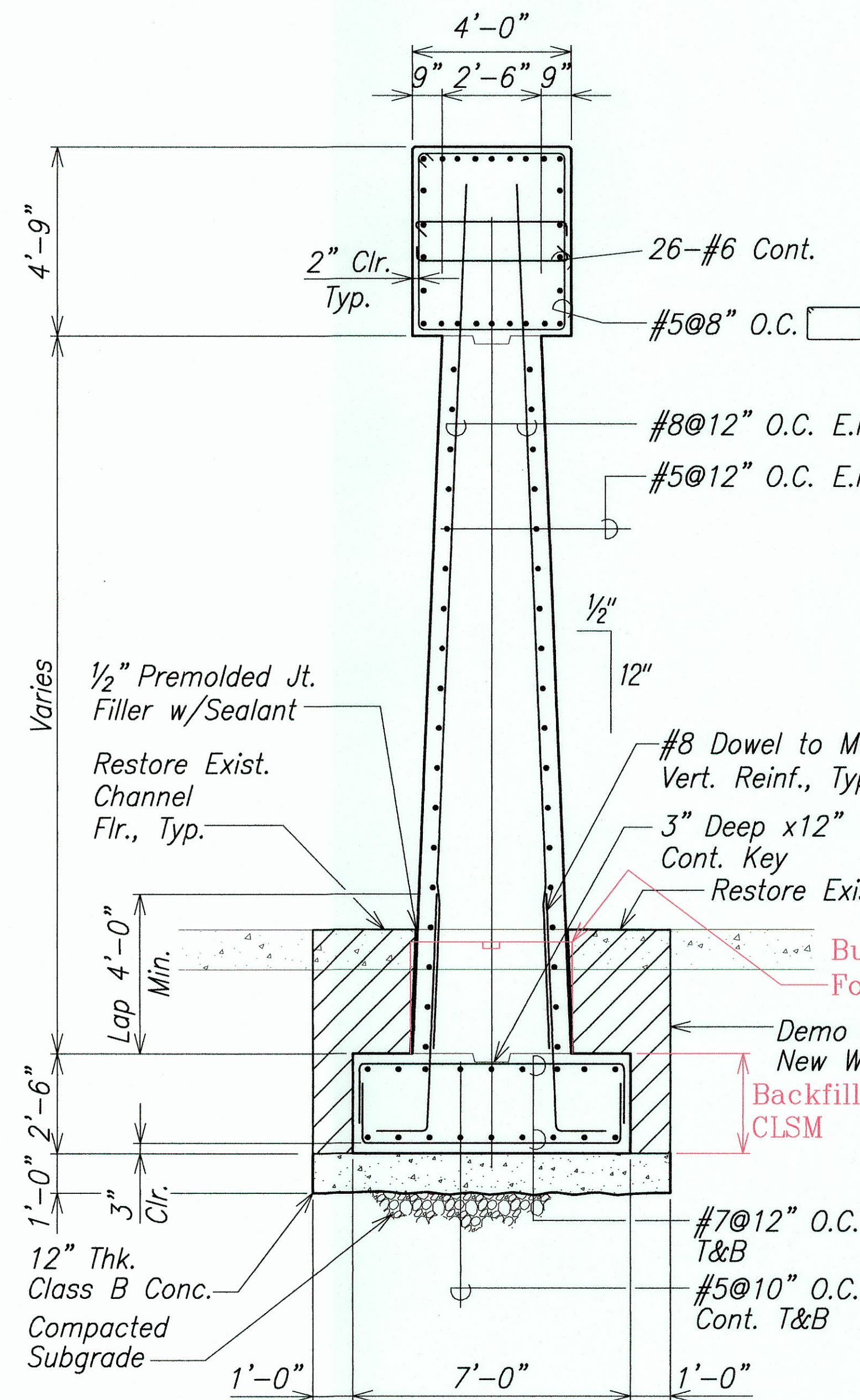
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 97        | 108          |

LEGEND FOR AS-BUILT POSTINGS

~~~~~ Squiggly line for as-built deletion

== Double line for as-built deletion

Roadway Text for as-built posting



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*Izat H. Hasayen*

APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**PIER DETAILS III**

**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S4-7 OF SHEETS

"AS-BUILT"



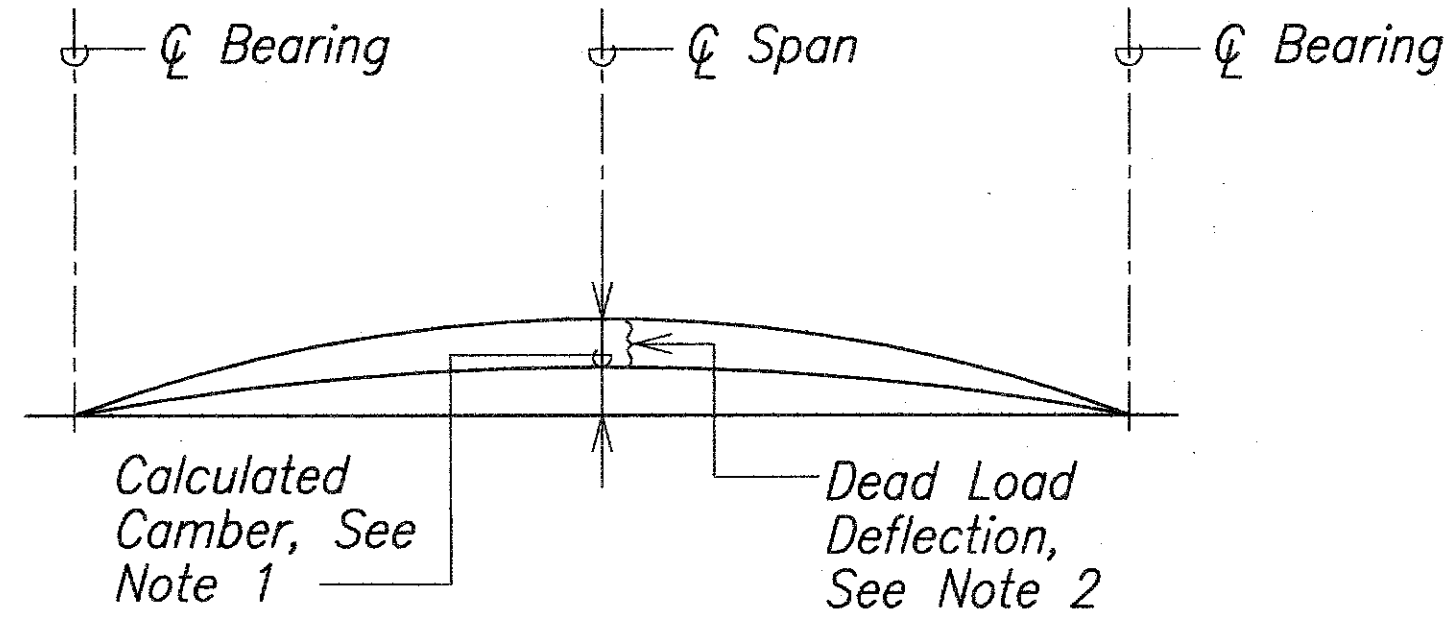
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 98        | 108          |

### PRESTRESSED GIRDER NOTES:

- Concrete Minimum Compressive Strength  $f'_{ci}$  and  $f'_c$  are shown in Table on Sheet S5-2. Girder Plan Length Shall be Increased as Necessary to Compensate for Shortening due to Prestress and Shrinkage.
- Prestressing Strands are 0.5" diameter, 7 wire low-relaxation steel strands (Area = 0.1531 in<sup>2</sup>) with an ultimate strength of 270 KSI, and shall conform to ASTM A416.
- Total long term losses due to creep, shrinkage, elastic shortening and relaxation of steel determined per AASHTO LRFD, Bridge Design Specifications, Fifth Edition, 2010, Section 5.9.5.
- Strands shall be released in such a manner as to minimize lateral eccentricity.
- Care shall be taken during curing, Lifting, transportation and erection to avoid any lateral deflection of the girder.
- Lifting devices or other embedded items used to lift and transport the girders shall be located as Indicated on this Sheet. The girder supplier shall submit details indicating the adequate type, and location of lifting devices for approval. Approval by the Engineer does not relieve the contractor of his responsibilities if the girder is damaged due to failure of the lifting devices.
- Reinforcing steel to conform with ASTM A615, Grade 60.
- Strand pattern shall be symmetrical about the longitudinal centerline of the girders.
- The Contractor shall submit his proposed strand pattern and releasing sequence to the Engineer for approval.
- The Contractor shall incorporate all holes, inserts, and other embedded items required in girders during fabrication of the girders.
- End of girder shall be plumb after erection.
- Top of concrete seat shall be within 1/16" of the theoretical elevation and slope indicated.  
For prestressed concrete girders, the Contractor shall measure and record strand slippage of strands. Slippage is the amount of movement that a point on the strand at the end of the girder recedes into the member after detensioning. For slippage monitoring purposes, prior to detensioning, reference marks shall be made on the strands not more than 2 inches from the surface of the member end. The movement of the reference mark shall be measured to one sixteenth of an inch.
- After detensioning, the strand reference marks shall be preserved to permit measurements of strand movement to the time the strands are made flush with the member. The Contractor shall submit his proposed method of strand slippage measurement with the shop drawings. The Engineer will monitor the Contractor's method of measurement and the slippage values obtained.
- Measurement and recording of slippage of strands shall be incidental to prestressed girders.
- Contractor is responsible to provide adequate lateral bracing of girders during all phases of construction including transporting, placing erecting and casting of other members.

### GIRDER CAMBER NOTES:

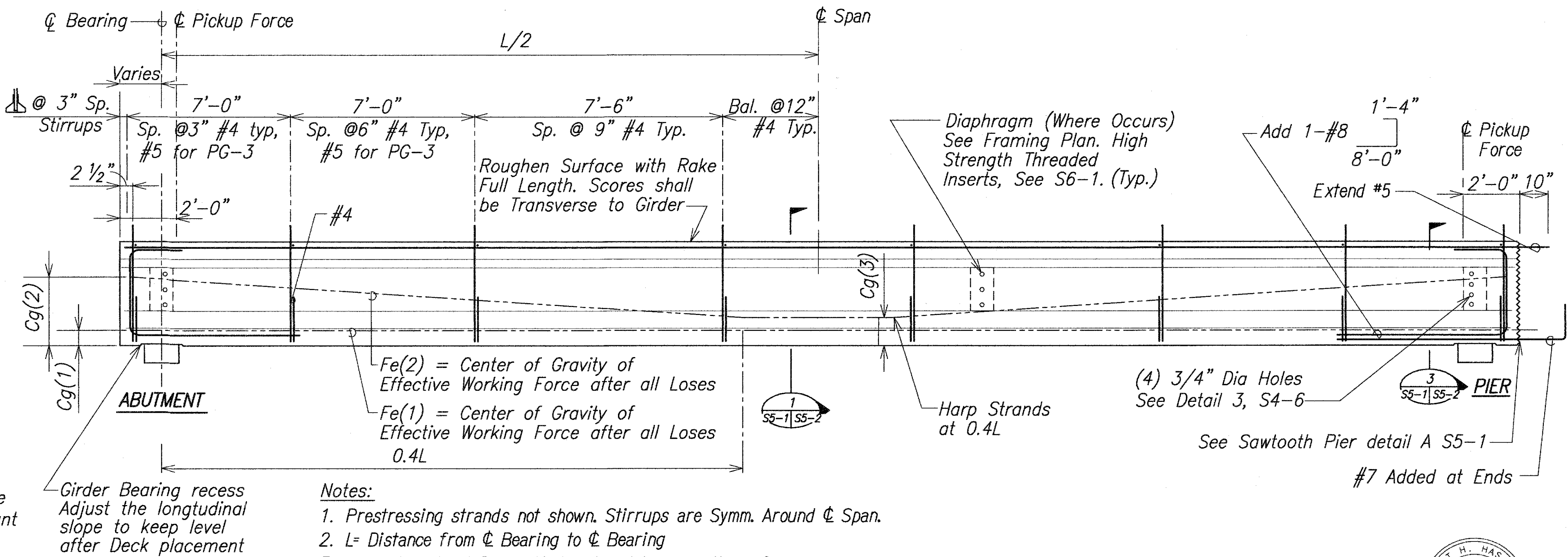
- The calculated camber includes the effect of the initial prestress force and the weight of the girder after removal from the bed. Negative values shown for calculated camber indicated a net upward deflection. The calculated camber value has been multiplied by appropriate factors as indicated in the PCI Design Handbook 6th Edition to approximate the effect of camber growth and concrete creep. The actual camber shall not exceed the calculated camber by more than 1/2". See table on S5-2.
- The dead load deflection includes the combined effects of the weight of slab, haunches, Barriers and diaphragms as applicable. See table on S5-2.
- Contractor shall camber the deck formwork as required to account for the calculated dead load deflection in order to provide the specified finish deck elevations.
- All cambers and deflections are in inches.



### GIRDER CAMBER DIAGRAM

Scale: None

2  
S5-1 S5-1



### Notes:

- Prestressing strands not shown. Stirrups are Symm. Around  $\phi$  Span.
- L = Distance from  $\phi$  Bearing to  $\phi$  Bearing
- Sawteeth only at Piers. Abutment end has smooth surface.

### AASHTO TYPE III GIRDER LONGITUDINAL SECTION

Scale: None

1  
S5-1 S5-1

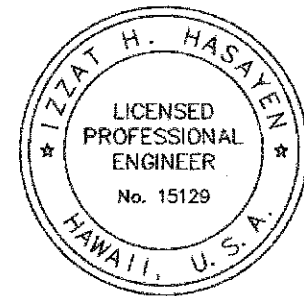
### Note:

- Remove for Ends at Abutments.
- Omit at Termination of Harped Strands.

### SAWTOOTH DETAILS

Scale: None

A  
S5-1 S5-1



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HIGHWAYS DIVISION

### AASHTO TYPE III PRESTRESSED CONCRETE GIRDER 1

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

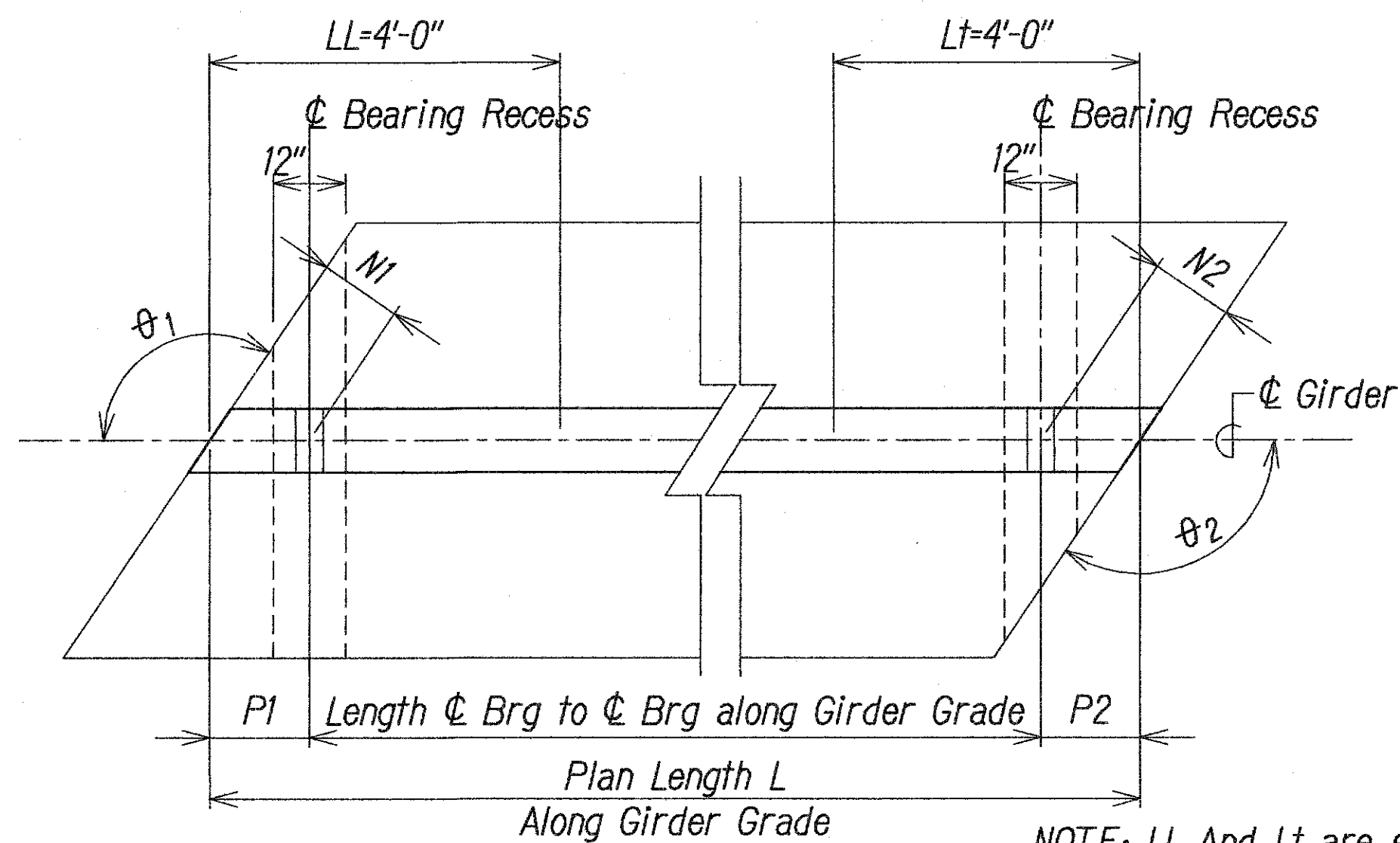
SHEET No. S5-1 OF SHEETS



| Girder | End 1 Type | End 2 Type | Skew Angle |          | N1 (in) | N2 (in) | P1 (in) | P2 (in) | Plan Length along girder grade (ft) | CL BRG * to CL BRG Length along girder grade (ft) | Girder Seat Elev. (Top of Bearing Pad) |       | Min. Conc. Comp. Strength |                     | Straight             |   |   | Harped             |   |   |   | Calculated Camber at 40 Days (in) | Calculated Dead Load Deflection (in) |
|--------|------------|------------|------------|----------|---------|---------|---------|---------|-------------------------------------|---|--|-------|---------------------------|---------------------|----------------------|---|---|--------------------|---|---|---|-----------------------------------|--------------------------------------|
|        |            |            | θ1 (DEG)   | θ2 (DEG) |         |         |         |         |                                     |   | End 1                                  | End 2 | @Final F'C (ksi)          | @Release F'CI (ksi) | No. Straight Strands | Straight Strands Force at mid span (kips) | Straight Strands Ecc. to Girder Bot. (in) | No. Harped Strands | Harped Strands Force at mid span (kips) | Harped Strands Ecc. to Girder Bot. at girder end (in) | Harped Strands Ecc. to Girder Bot. at mid span (in) |                                   |                                      |
| PG-1   | Abut.      | Pier       | 123.83     | 123.83   | 10      | 6       | 12.04   | 7.22    | 54.19                               | 52.56   | 40.57                                  | 39.14 | 7.0                       | 5.5                 | 14                   | 364.3                                     | 2.857                                     | 14                 | 364.3                                   | 37.0  | 12  | -0.93                             | 0.40                                 |
| PG-2   | Abut.      | Pier       | 124.92     | 124.92   | 10      | 6       | 12.20   | 7.32    | 54.90                               | 53.25   | 37.42                                  | 35.92 | 7.0                       | 5.5                 | 8                    | 218.9                                     | 2   | 6                  | 164.2                                   | 41.0  | 4   | -0.57                             | 0.25                                 |
| PG-3   | Pier       | Pier       | 126.25     | 126.25   | 6       | 6       | 7.44    | 7.44    | 66.25                               | 64.99   | 39.07                                  | 37.31 | 7.0                       | 6.8                 | 26                   | 676.8                                     | 4.308                                     | 16                 | 416.5                                   | 36.0  | 13  | -1.89                             | 0.95                                 |
| PG-4   | Pier       | Pier       | 127.44     | 127.44   | 6       | 6       | 7.56    | 7.56    | 67.30                               | 66.01   | 35.86                                  | 34.01 | 7.0                       | 5.5                 | 14                   | 370.8                                     | 2.857                                     | 12                 | 317.8                                   | 38.0  | 14  | -1.00                             | 0.59                                 |
| PG-5   | Pier       | Abut.      | 128.65     | 128.65   | 6       | 10      | 7.68    | 12.81   | 53.98                               | 52.25   | 37.24                                  | 35.81 | 7.0                       | 5.5                 | 14                   | 364.2                                     | 2.857                                     | 14                 | 364.2                                   | 37.0  | 12  | -0.93                             | 0.39                                 |
| PG-6   | Pier       | Abut.      | 129.96     | 129.96   | 6       | 10      | 7.83    | 13.05   | 55.00                               | 53.24   | 33.94                                  | 32.44 | 7.0                       | 5.5                 | 8                    | 219.0                                     | 2   | 6                  | 164.3                                   | 41.0  | 4   | -0.57                             | 0.25                                 |

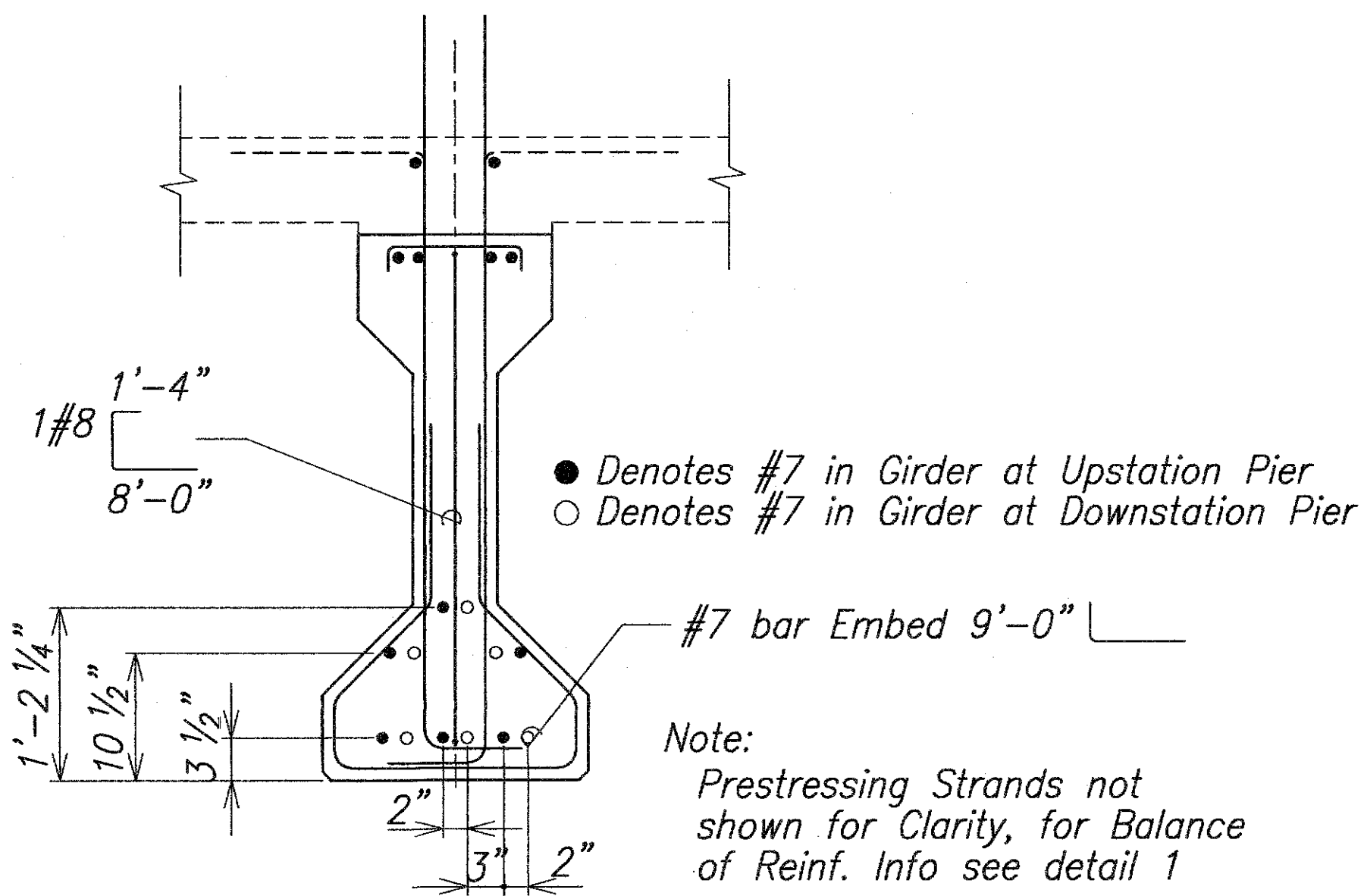
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 99        | 108          |

\* Contractor to verify Length by Surveying before Placing Girders. See Sheet S5-3 for in Field Adjustment.

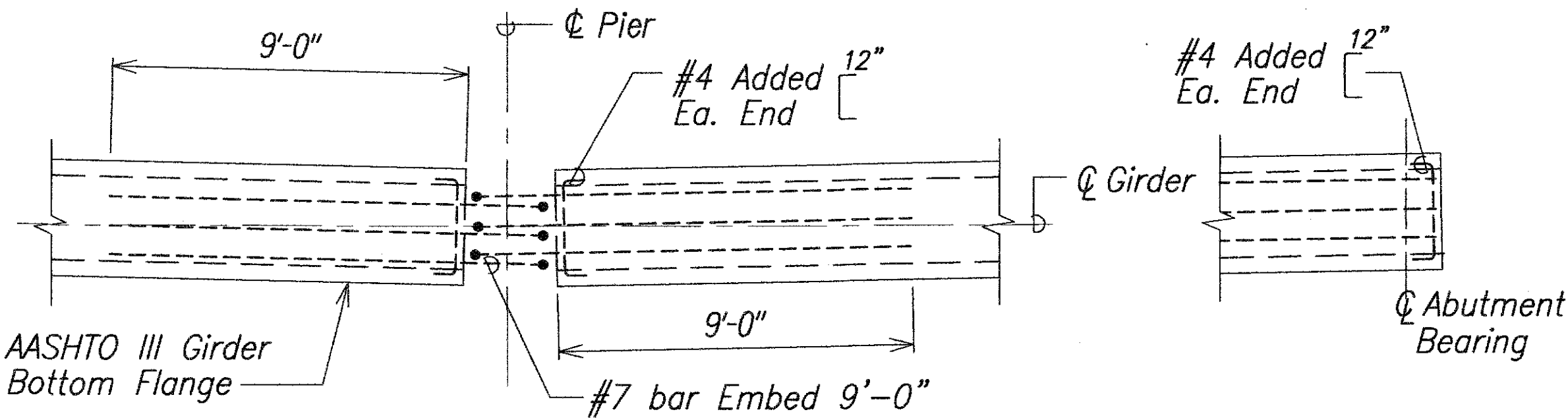


DETAIL A  
Scale: 3/4"=1'-0"

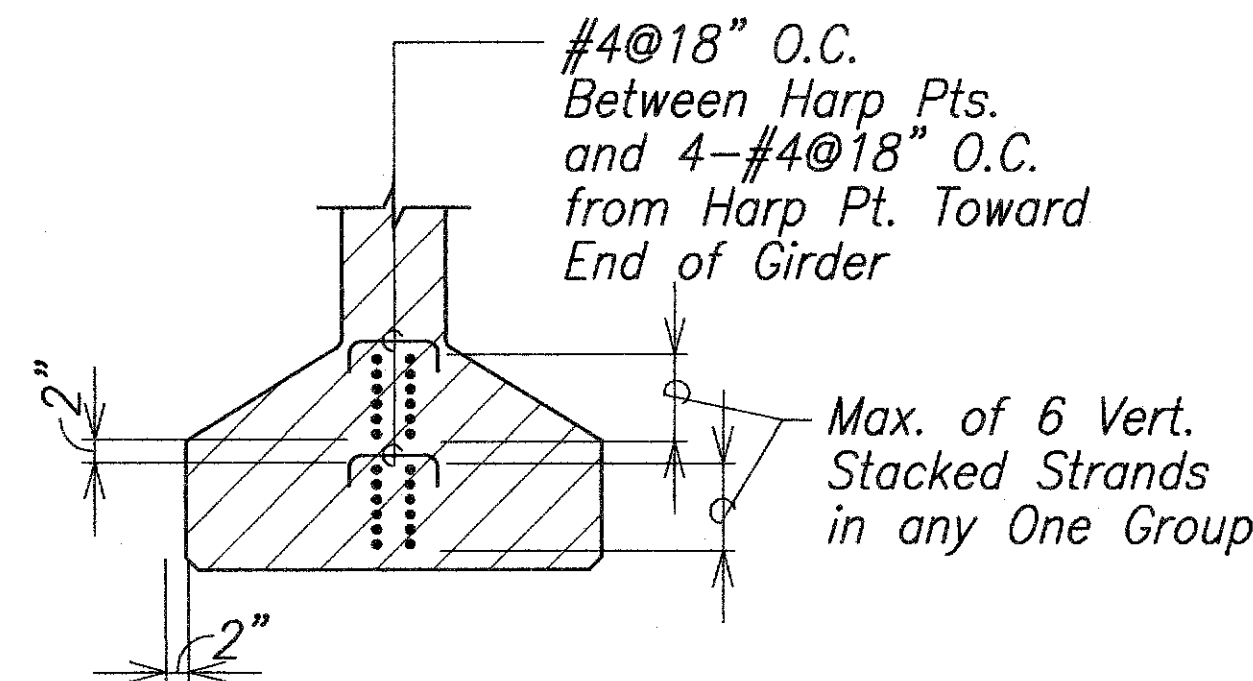
NOTE: LL and Lt are shipping support locations at Leading and Trailing ends respectively



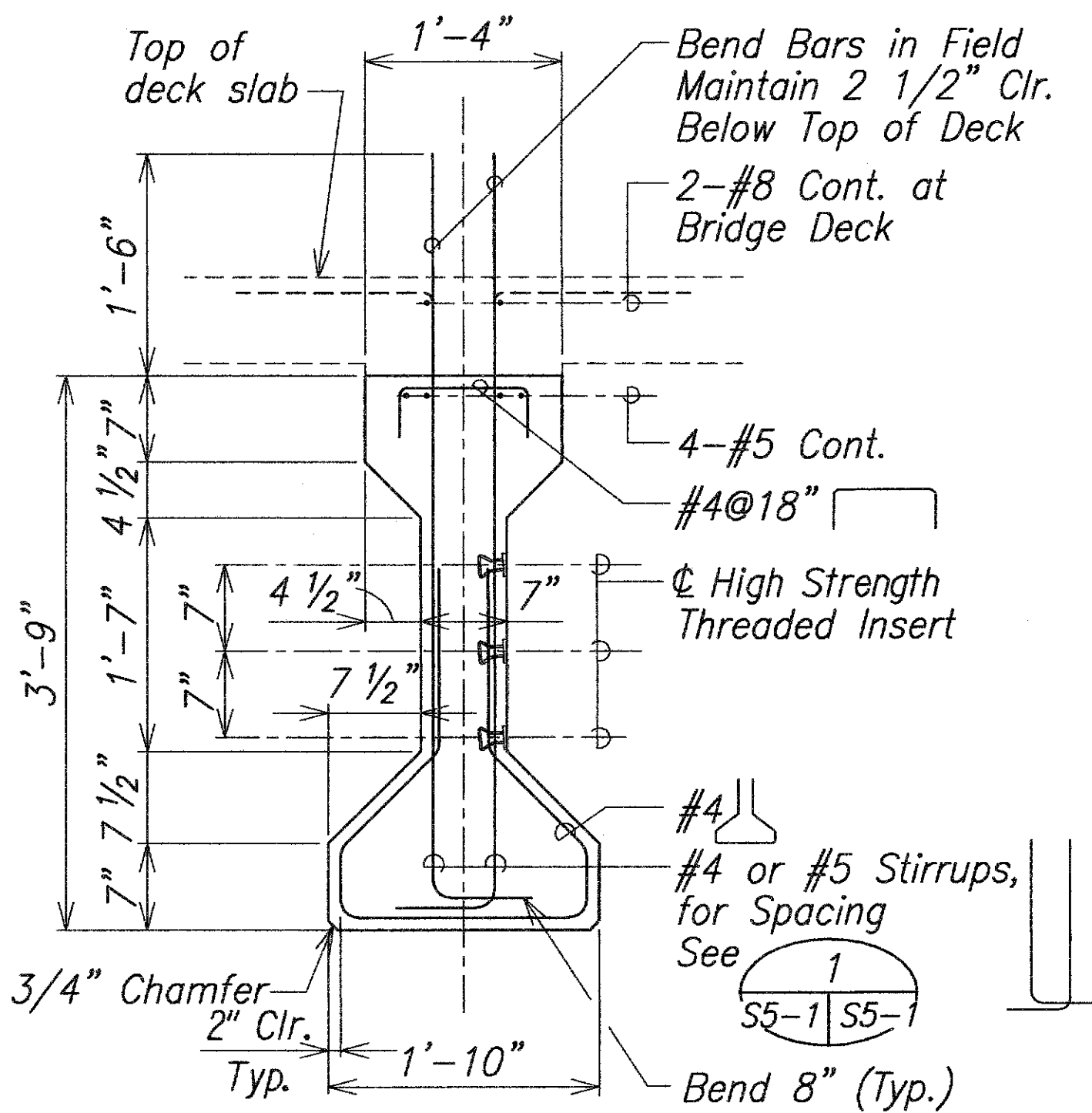
GIRDER END VIEW  
Scale: 1"=1'-0"



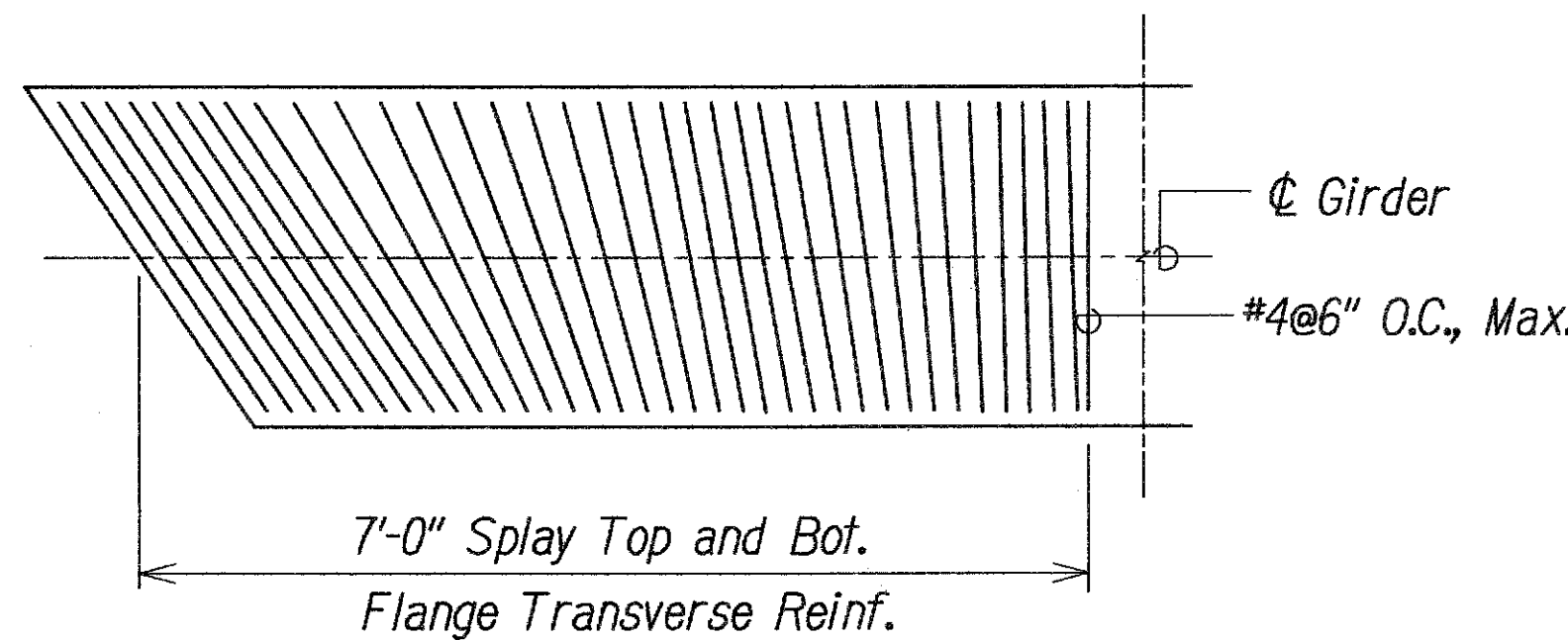
TYPICAL GIRDER END DETAIL (PLAN)  
Scale: None



BUNDLED PRESTRESSING REINFORCEMENT DETAIL  
Scale: 1"=1'-0"

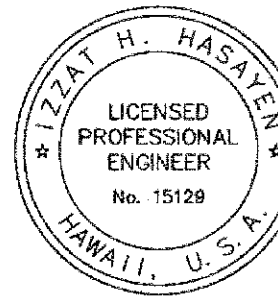
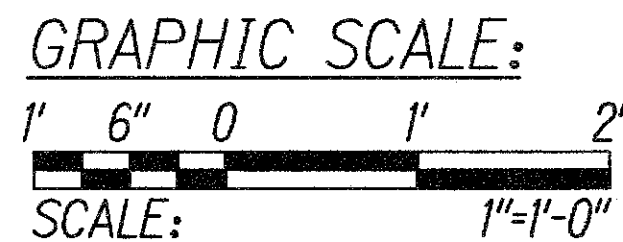


AASHTO TYPE III SECTION  
Scale: 1"=1'-0"



Notes: 1. Only Transverse Reinf. Shown

TRANSVERSE REINFORCING SKEWED ENDS  
Scale: None



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HIGHWAYS DIVISION

**AASHTO TYPE III PRESTRESSED CONCRETE GIRDER II**

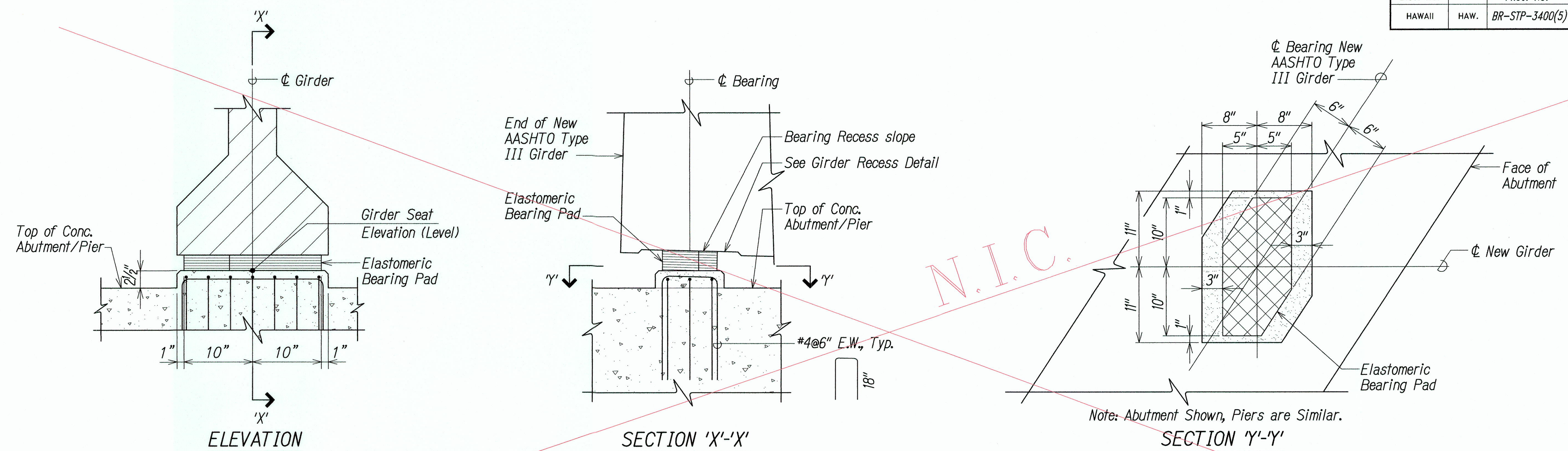
**WAIIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S5-2 OF SHEETS



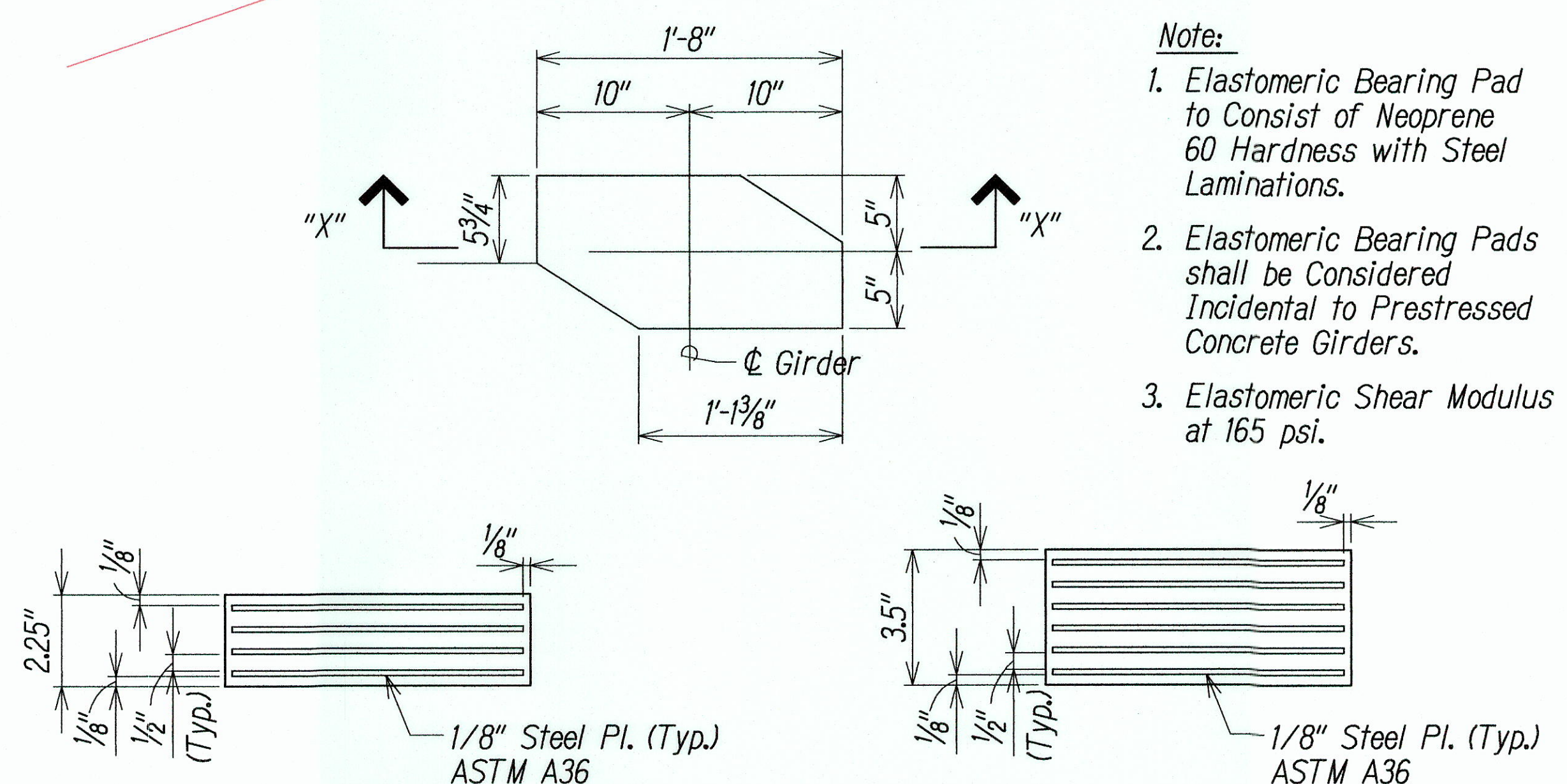
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 100       | 108          |



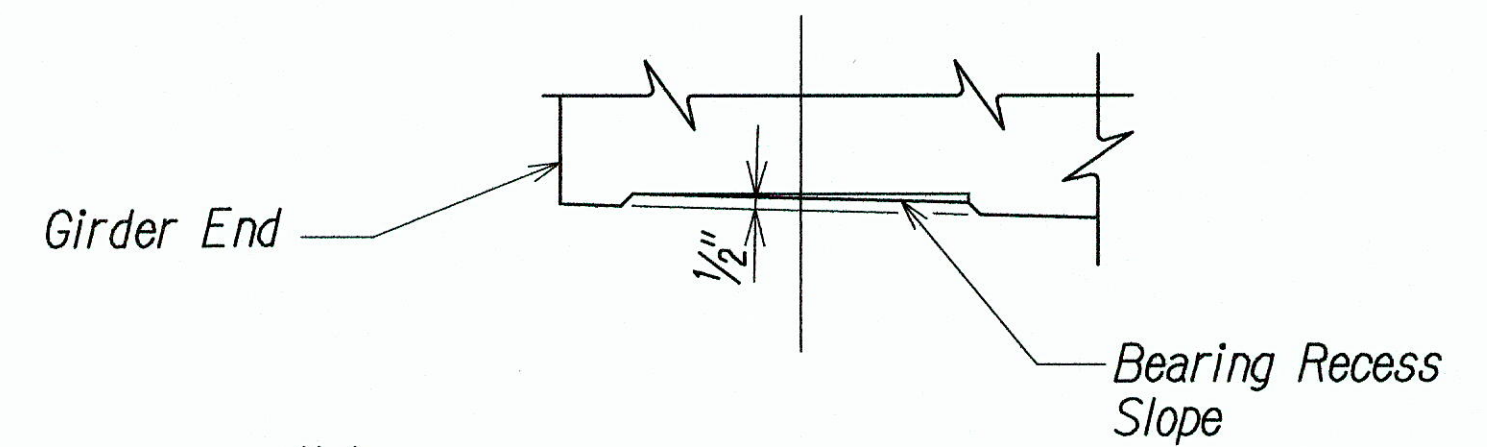
**BEARING DETAIL AT ABUTMENTS AND PIERS** 1  
Scale: 1 1/2"=1'-0" S5-3 S5-3

**BEARING PAD ADJUSTMENT**

After  $\phi$  Bearing to  $\phi$  Bearing Actual Distance Has Been Surveyed, Adjust Location of Bearing Pads Along Centerline Girder so that the Girder Recess Will Fit Over the Bearings. Tolerance Along the Centerline Girder is  $\pm 2$  Inches.



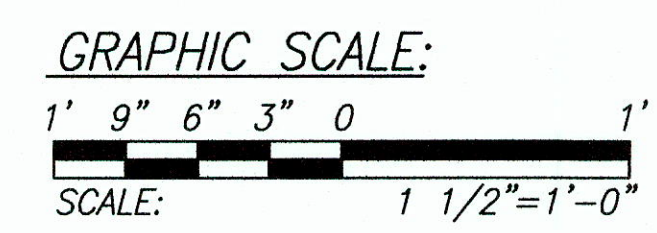
**ELASTOMERIC BEARING PAD DETAILS** 2  
Scale: None S5-3 S5-3



Note:  
Bearing Recess Slope = Girder Slope + Excess Camber Slope.  
Girder Bearing Interface Shall be Level under Dead Load.

**GIRDER RECESS DETAIL** 3  
Scale: None S5-3 S5-3

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



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HIGHWAYS DIVISION

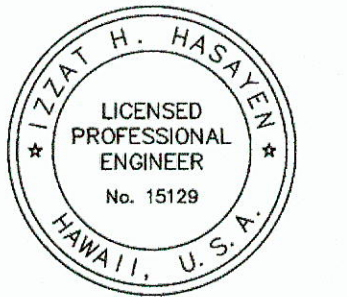
**AASHTO TYPE III PRESTRESSED CONCRETE GIRDER III**

**WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE**

Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S5-3 OF SHEETS

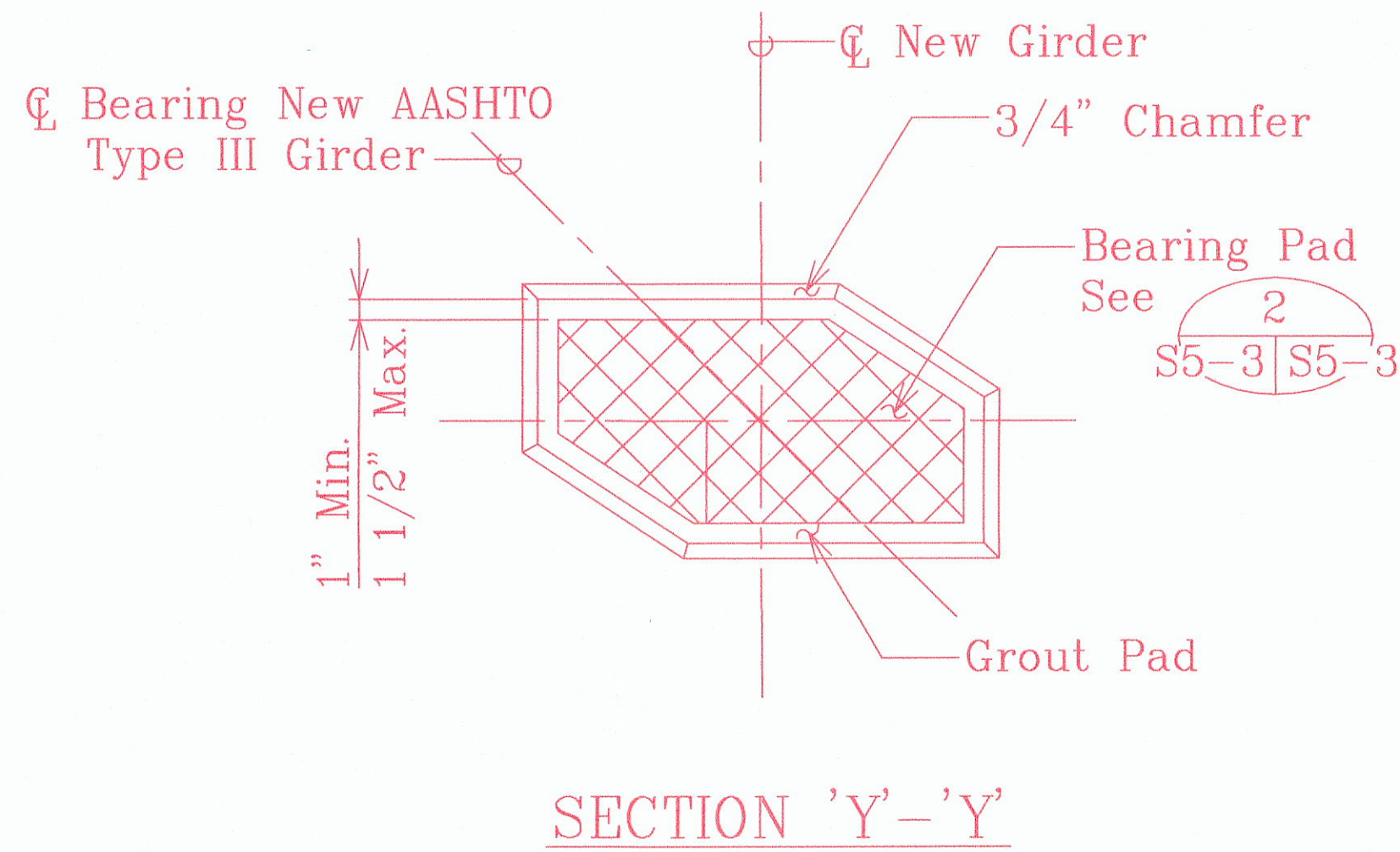
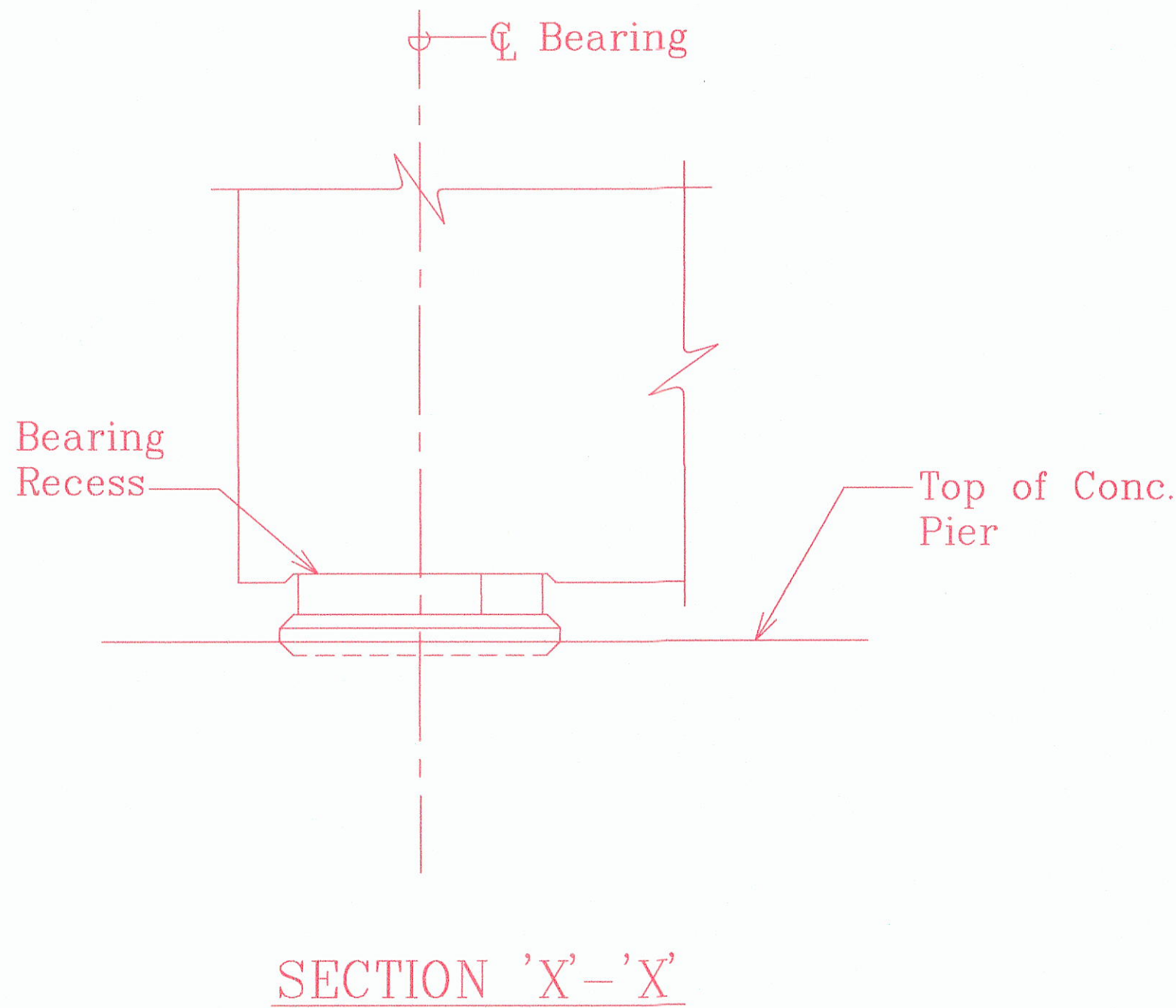
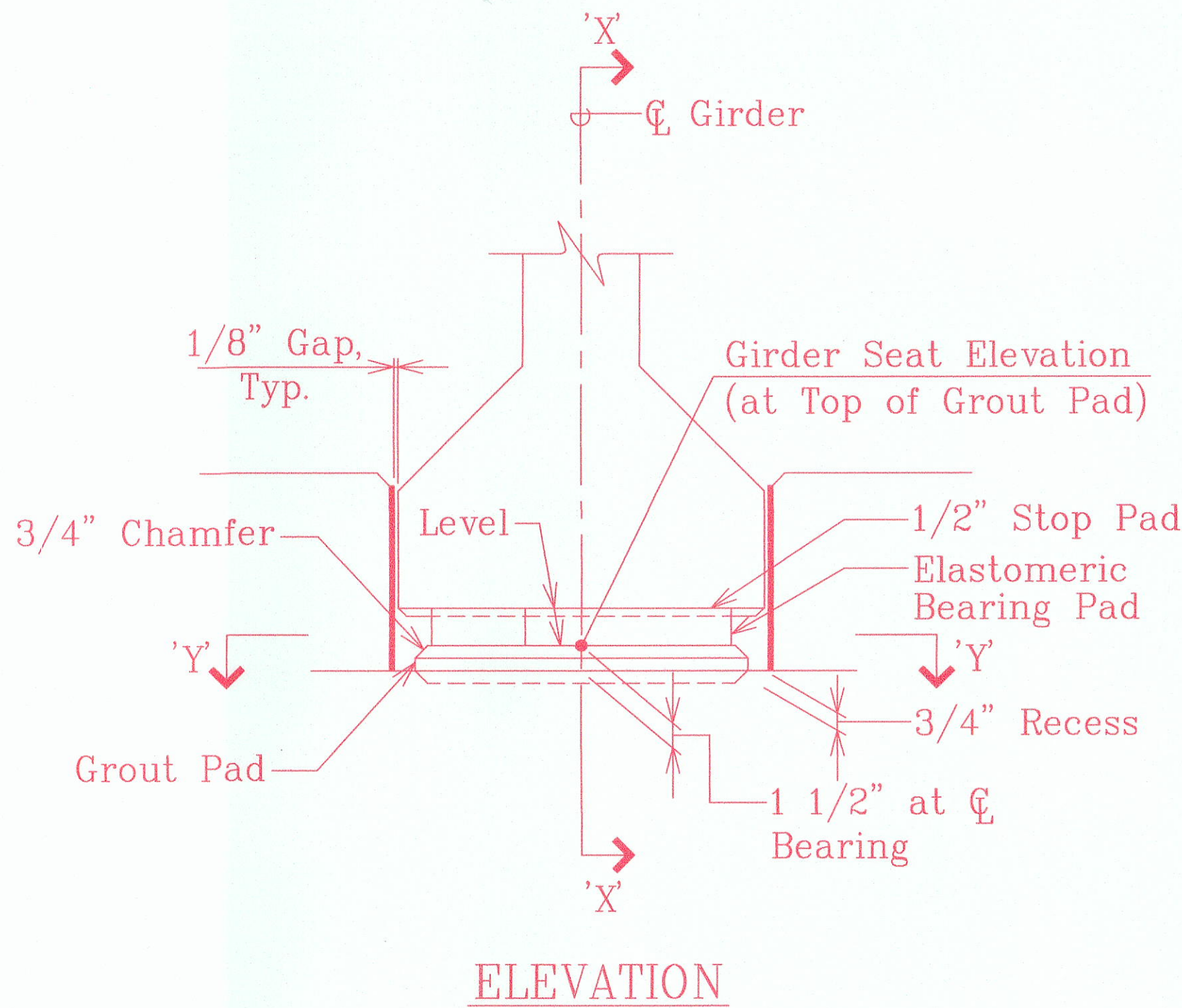


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APRIL 30, 2016  
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"AS-BUILT"



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| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 1005-1    | 108          |



## BEARING DETAIL AT ABUTMENTS AND PIERS

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

S3-4, S3-15, S4-1, S4-2

1  
S5-3 | S5-3

### NOTE:

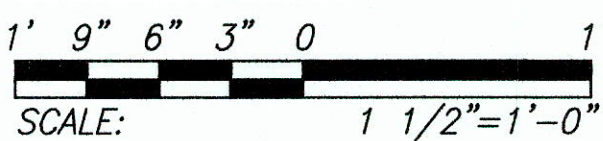
1. Grout Shall be Non-Shrink Grout in Accordance with Hawaii STD. Spec. Section 712.04(A).

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

### LEGEND FOR AS-BUILT POSTINGS

- Squiggly line for as-built deletion
- Double line for as-built deletion
- Roadway Text for as-built posting

### GRAPHIC SCALE:



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CONSULTING ENGINEERS  
LIC. EXP. DATE

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HIGHWAYS DIVISION

**AASHTO TYPE III PRESTRESSED  
CONCRETE GIRDER III**

**WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)**

Date: October 2012

SHEET No. S5-340F SHEETS

"AS-BUILT"

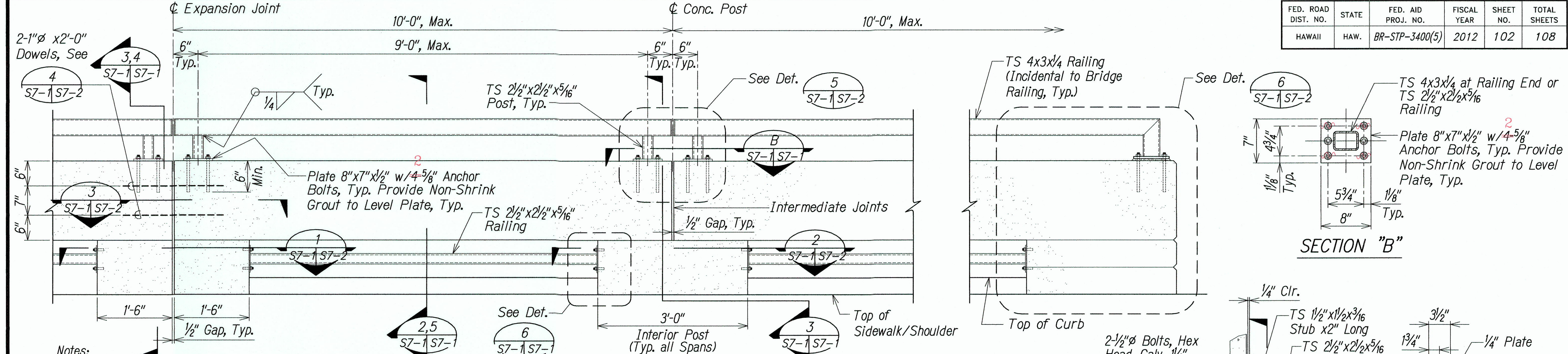
1005-1







| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 102       | 108          |



- Notes:
- Bridge Railing Expansion Joint shall be at 40'-0" Max. and at Bridge Piers unless Specifically shown or noted.
  - Pipe Railings, Base Plates, Anchor Bolts and Nuts shall be Hot-dipped Galvanized after Fabrication, Typical for both Upper and Lower Railings. See Sheet SI-3 Paint Notes for Painting of Metal Railing.
  - The Contractor shall ensure that the Traffic-side Face of the Bridge Railing at all Expansion Joints, Corners and other discontinuities shall be made Flush and Smooth.
  - Chamfer all Concrete Edges 3/4".

**TYPICAL CONCRETE BRIDGE RAILING ELEVATION**  
Scale: 1"=1'-0"

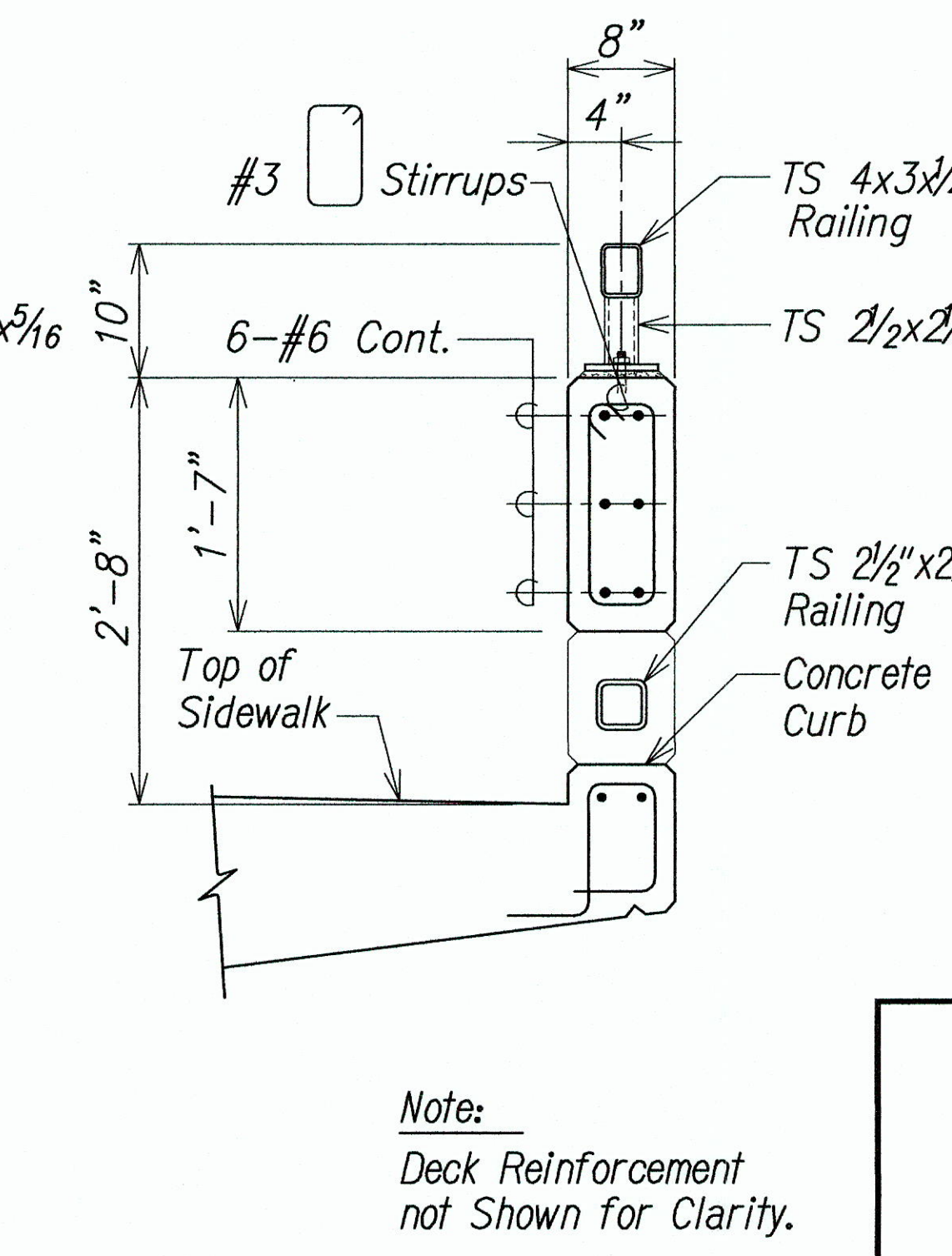
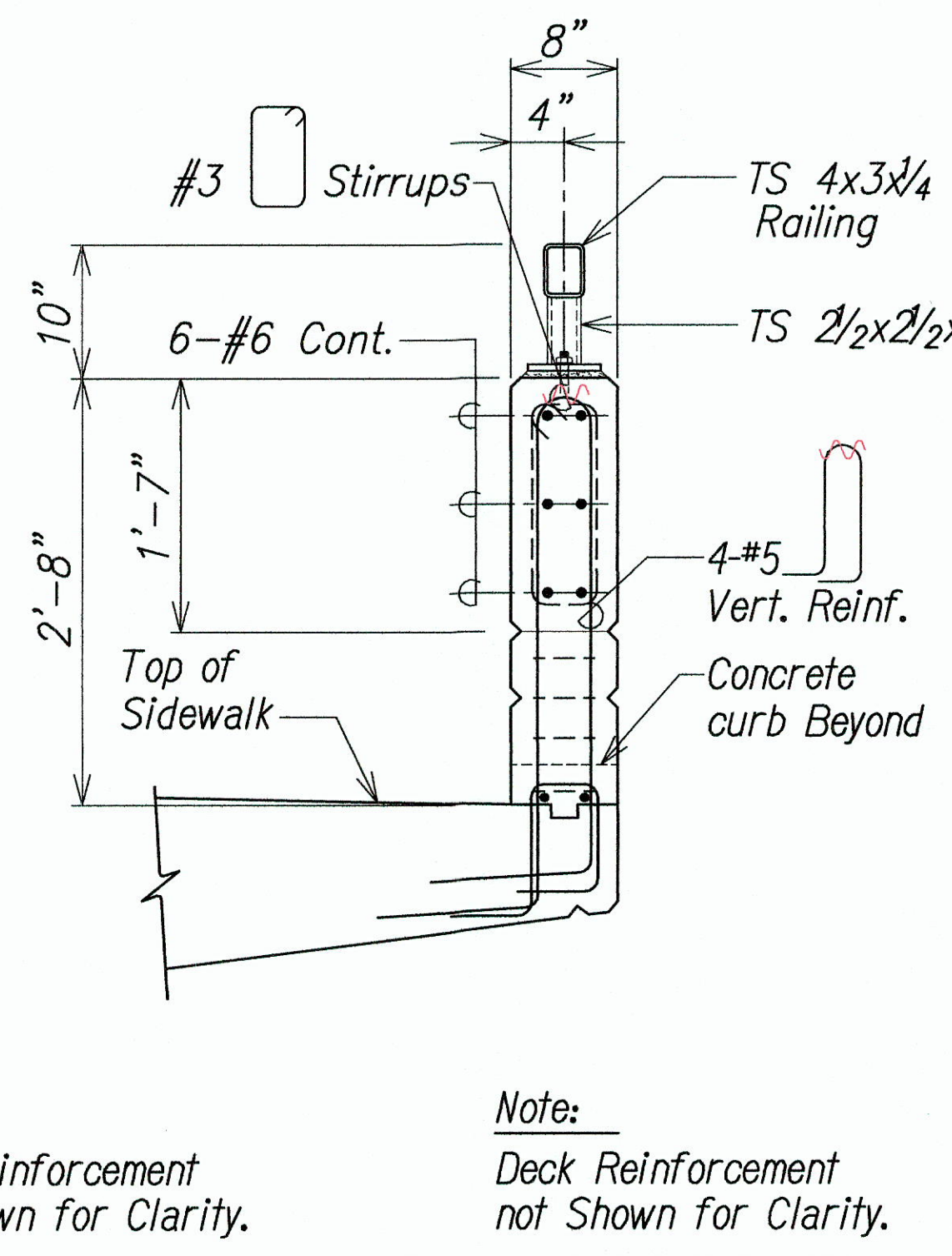
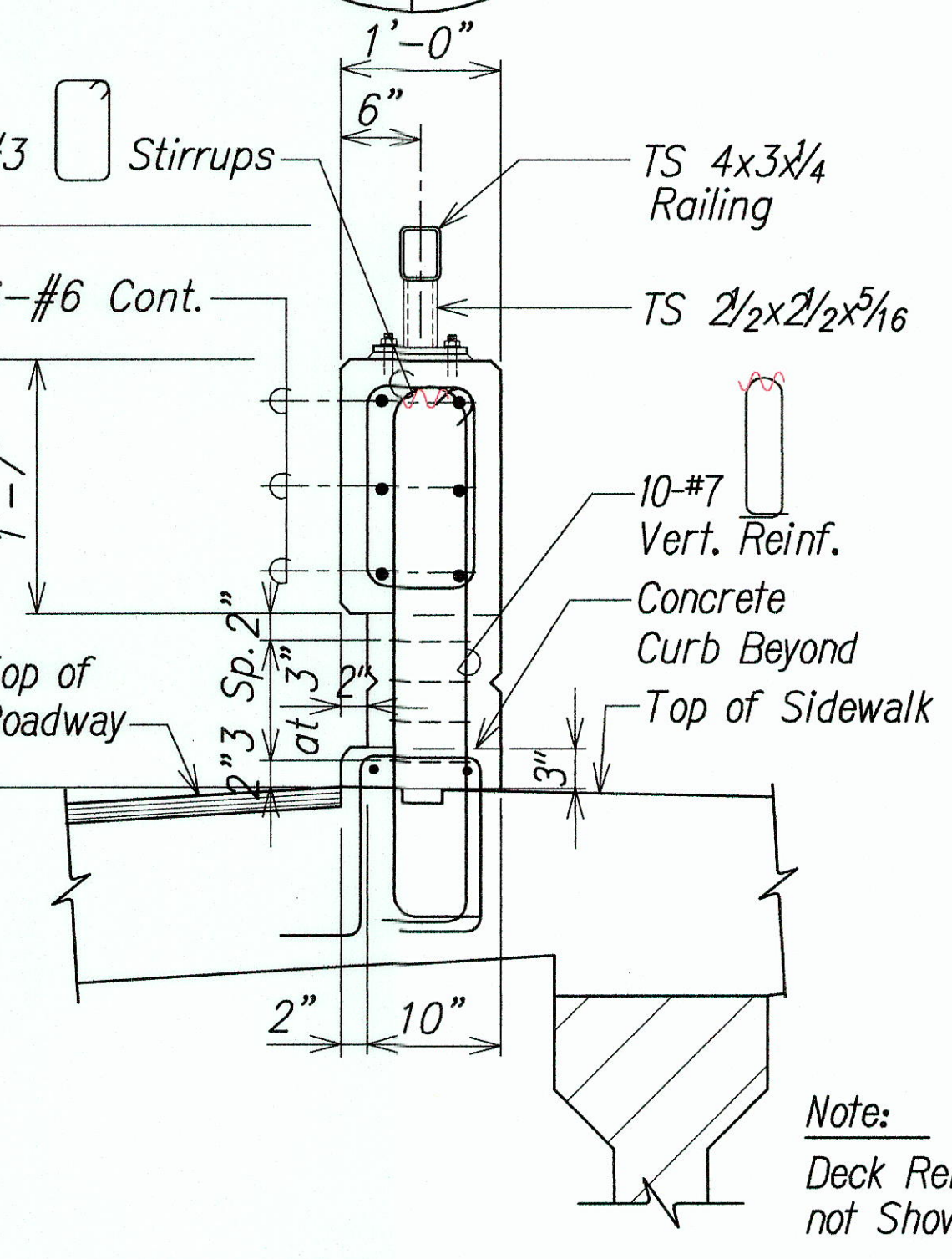
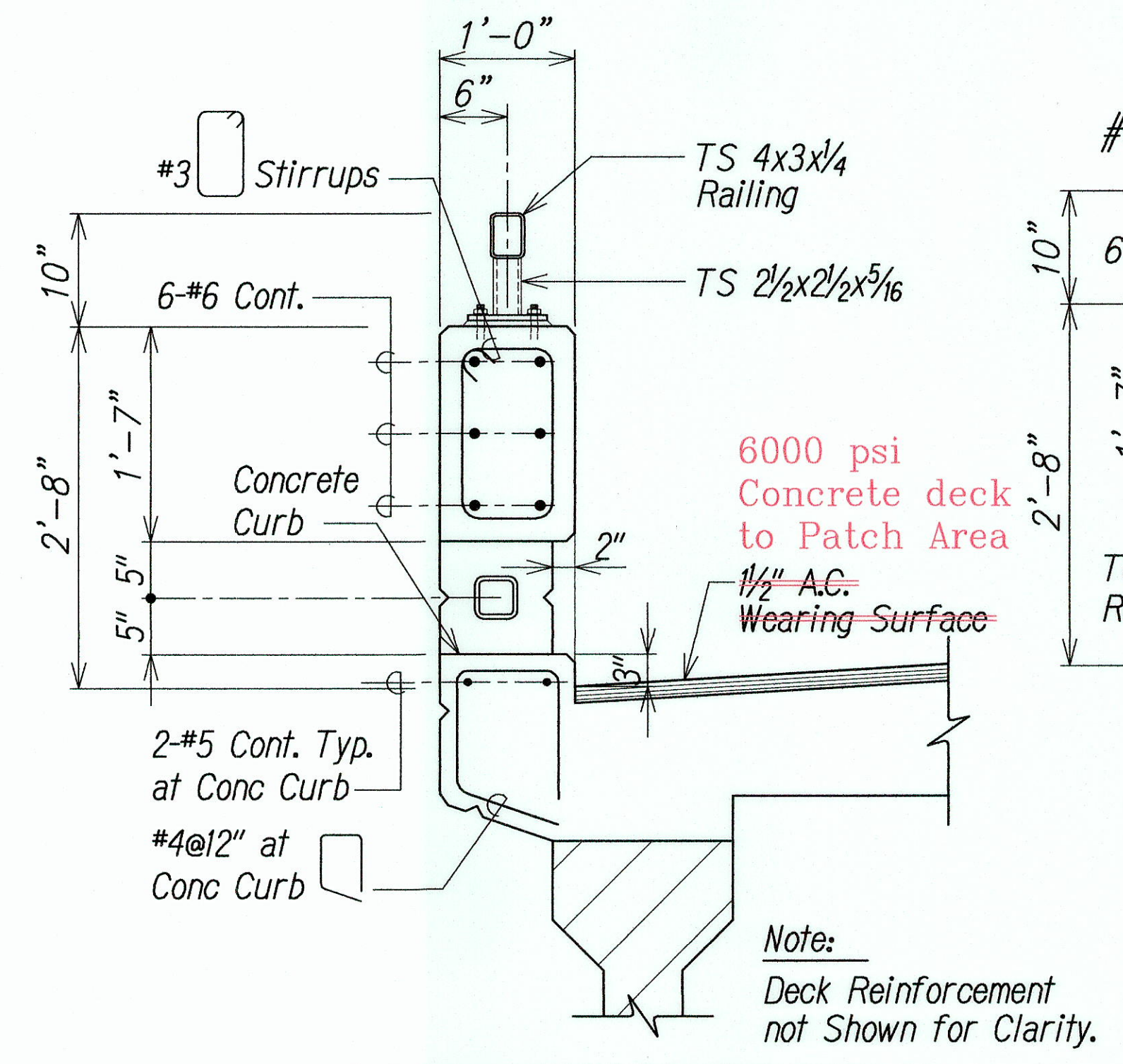
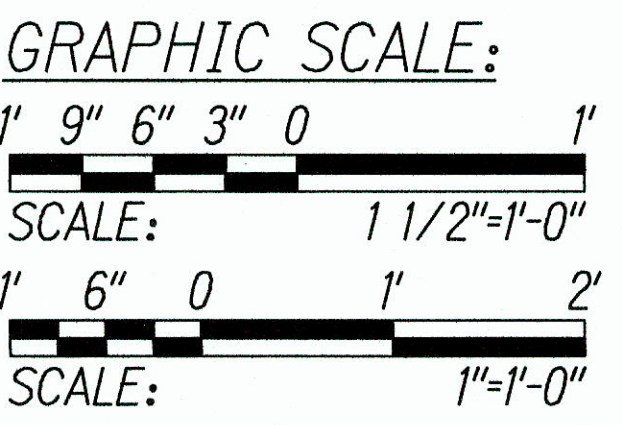
**LEGEND FOR AS-BUILT POSTINGS**

Squiggly line for as-built deletion

Double line for as-built deletion

Roadway Text for as-built posting

**RAILING CONNECTION PLATE**  
Scale: 1 1/2"=1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CONCRETE BRIDGE RAILING  
SECTIONS AND DETAILS**

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

Date: October 2012

SHEET No. S7-1 OF SHEETS

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |

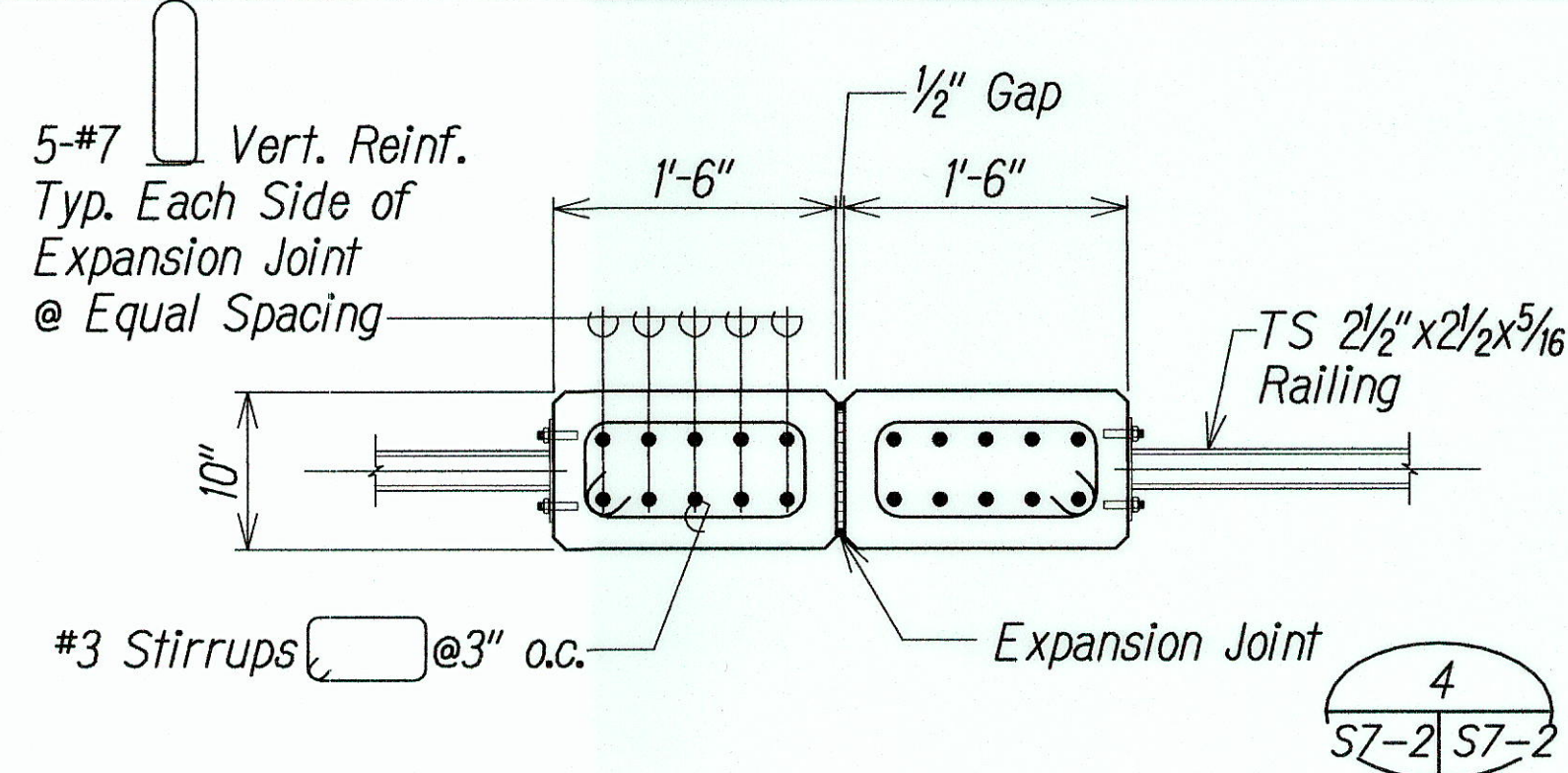
|               |     |
|---------------|-----|
| ORIGINAL PLAN | No. |
| NOTE BOOK     |     |

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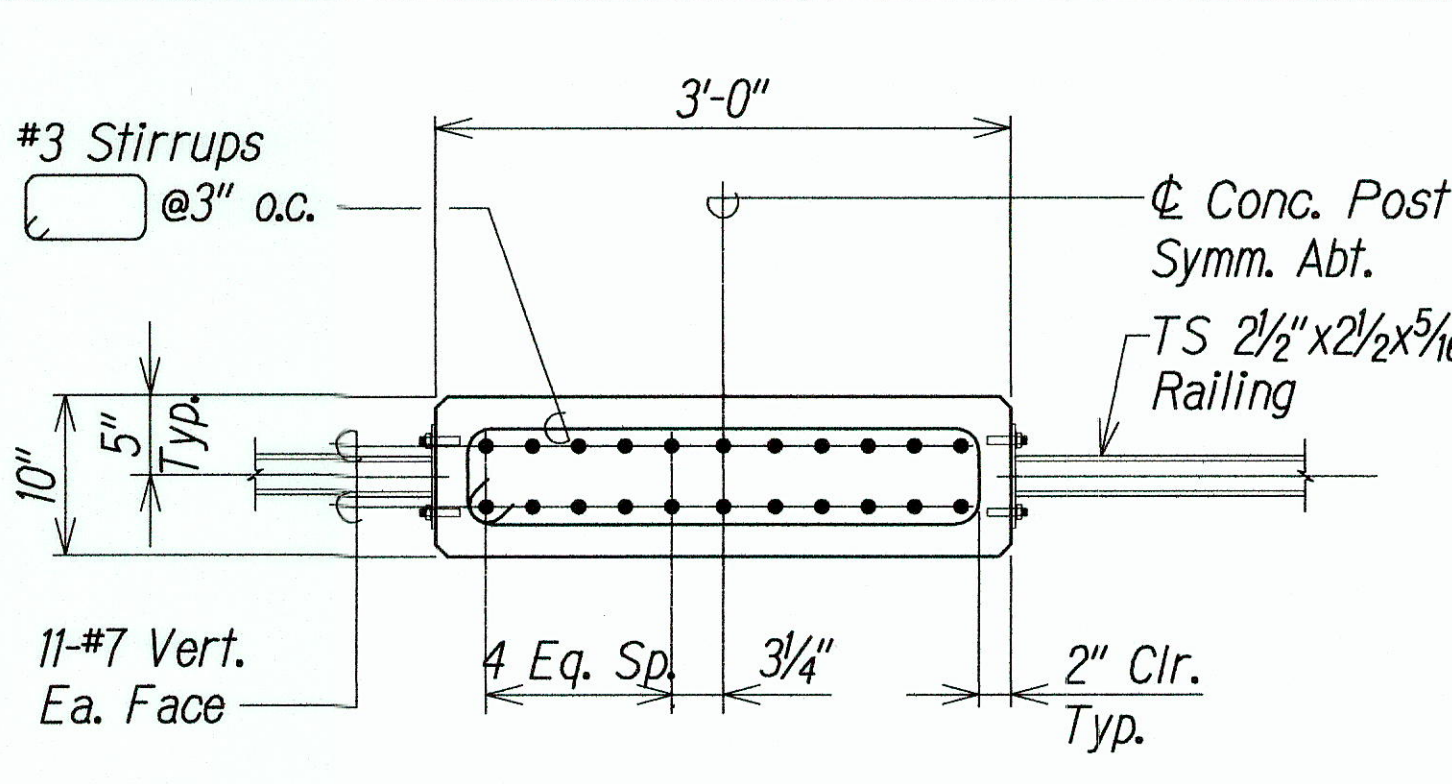
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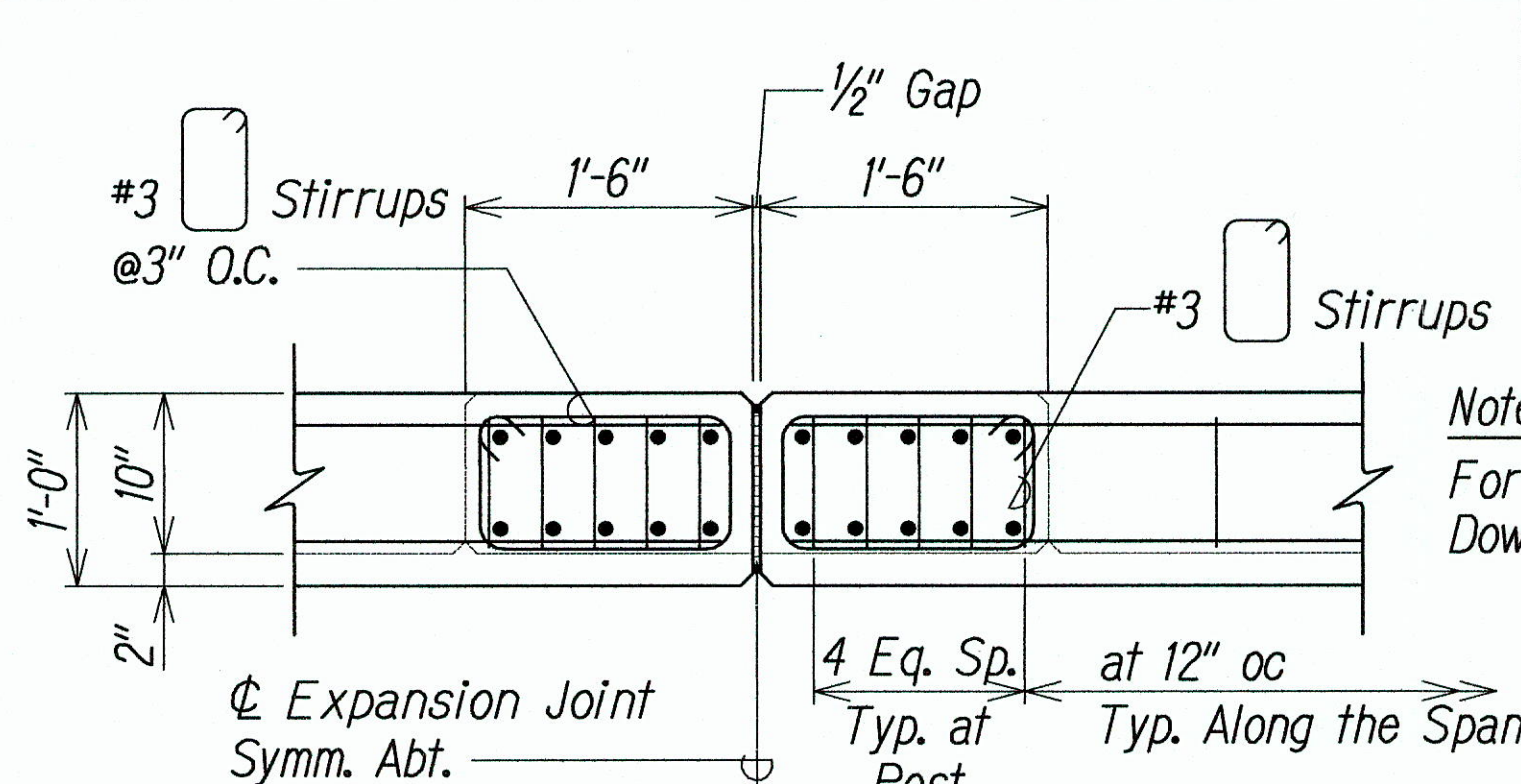
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 103       | 108          |



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

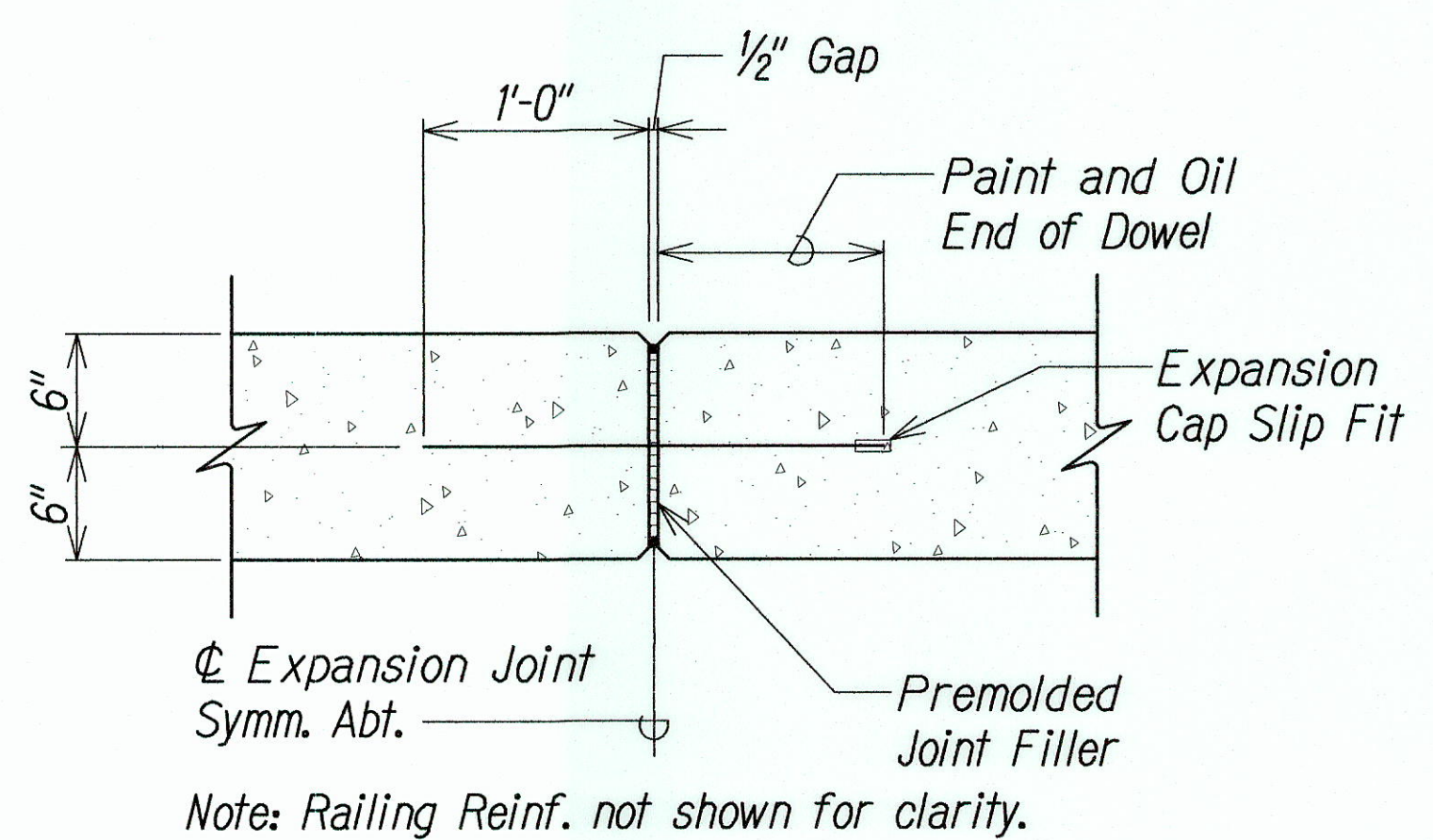


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Scale: 1"=1'-0"

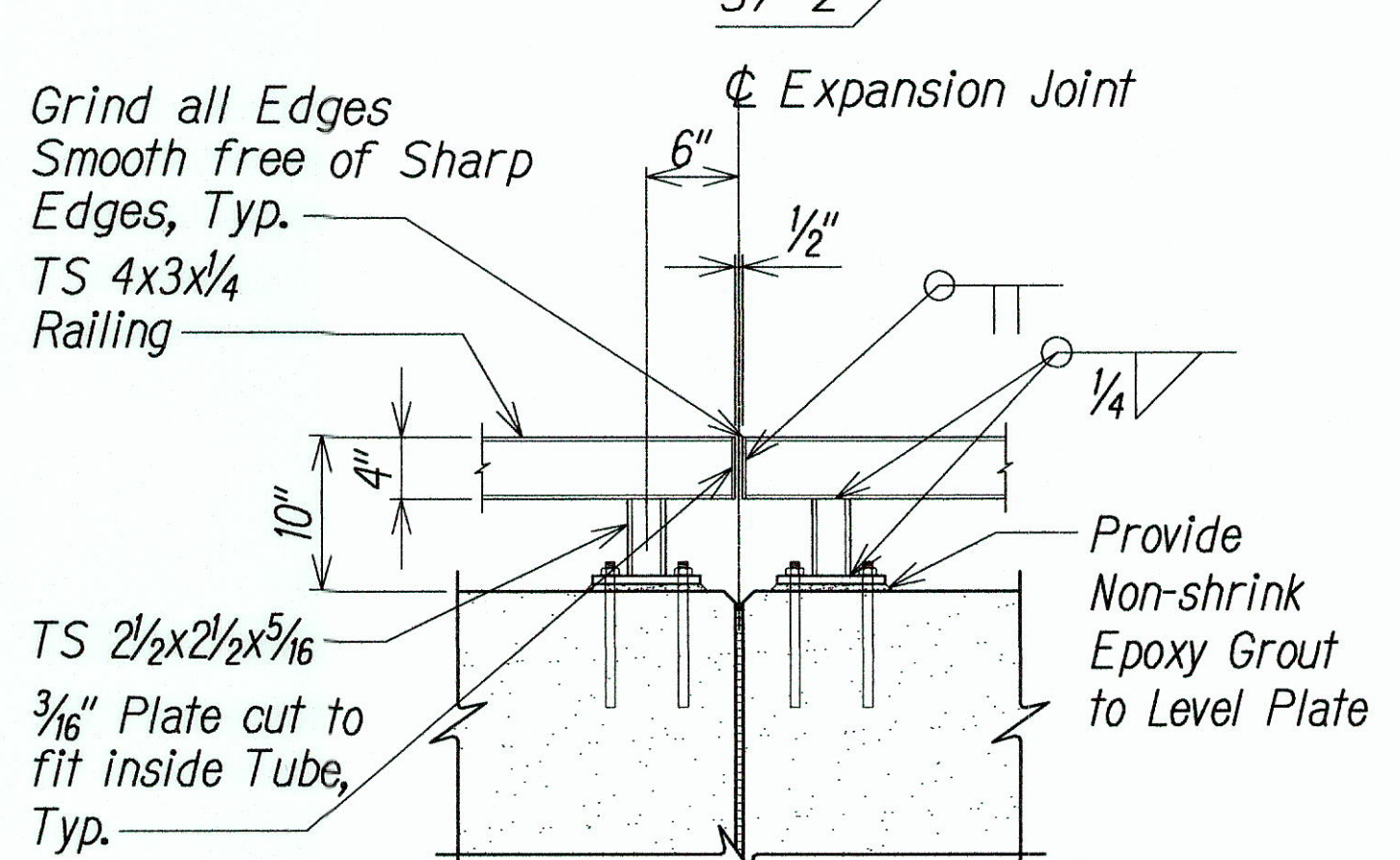


SECTION 3  
Scale: 1"=1'-0"

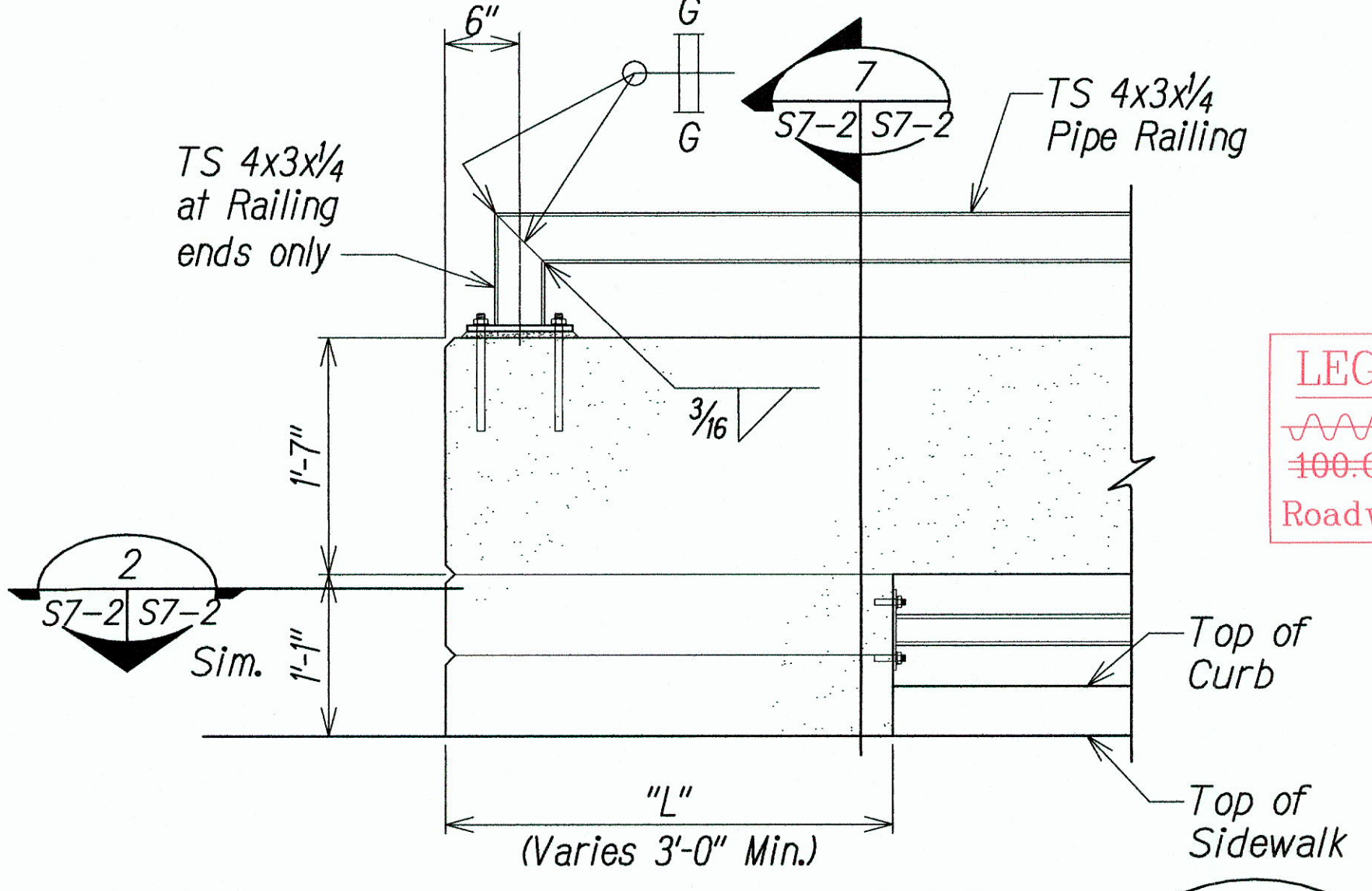
Note:  
For Typ. Expansion Joint  
Dowel Details, See  
4  
S7-2 S7-2



PLAN SECTION 4  
TYP. EXPANSION JOINT  
Scale: None

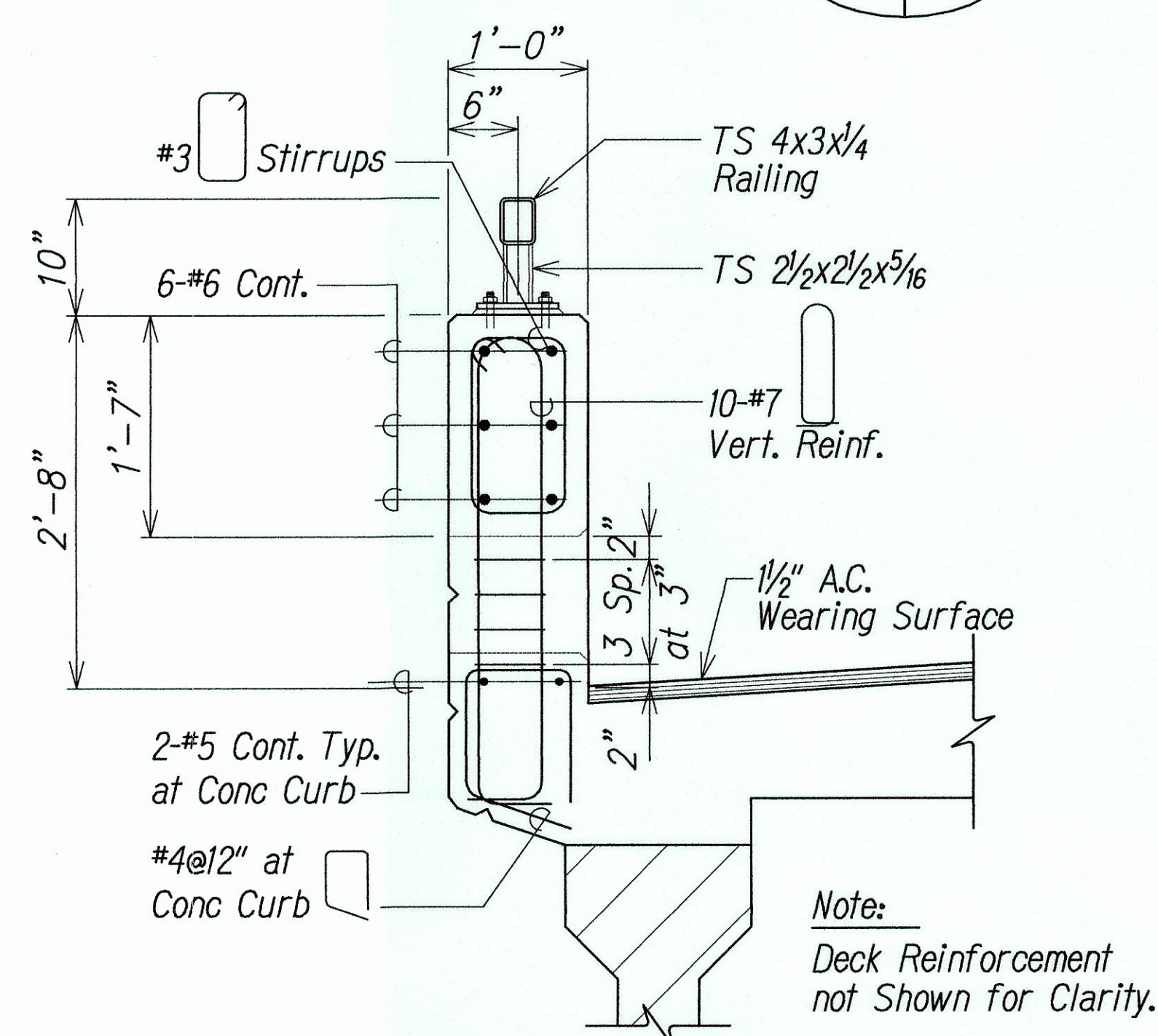


DETAIL 5  
Scale: 1"=1'-0"

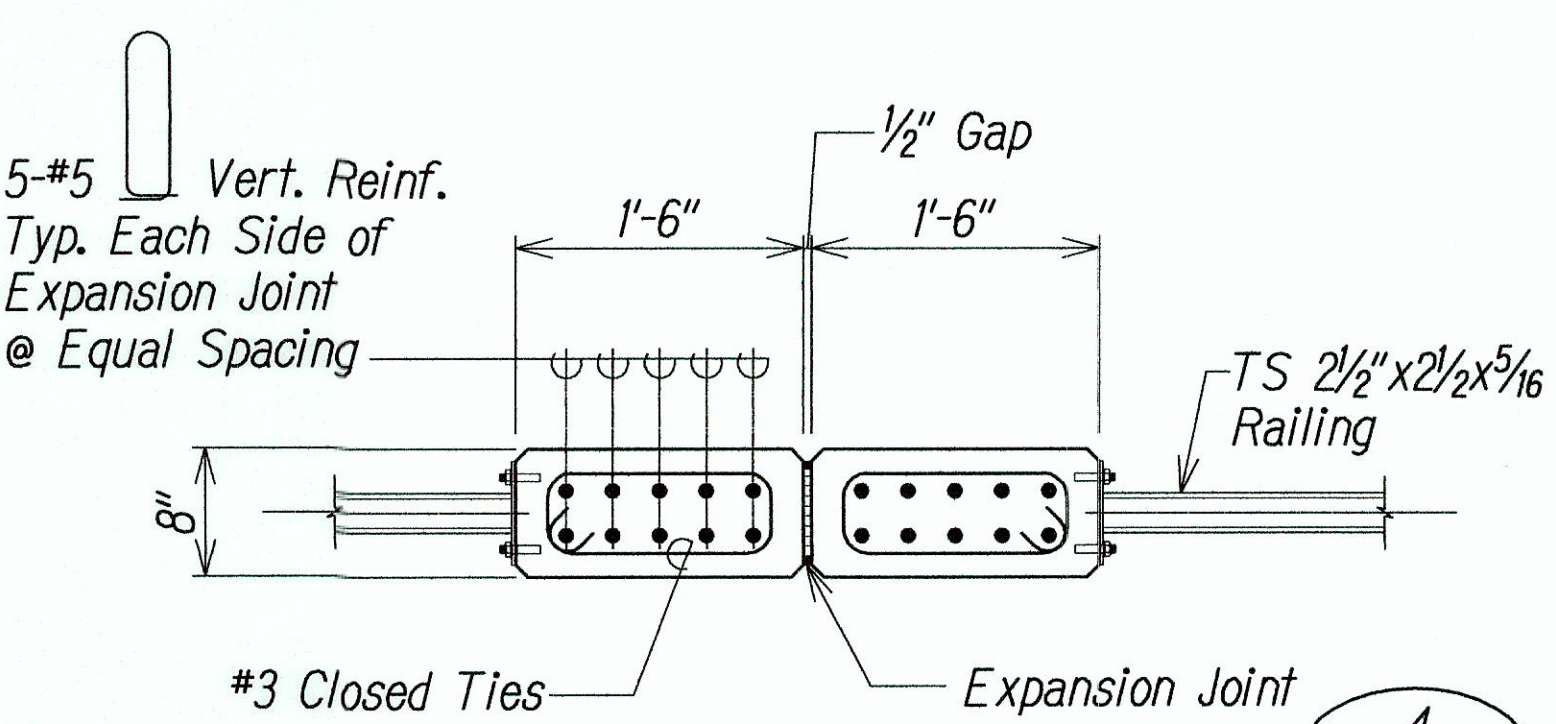


TYPICAL RAILING END ELEVATION 6  
Scale: 1"=1'-0"

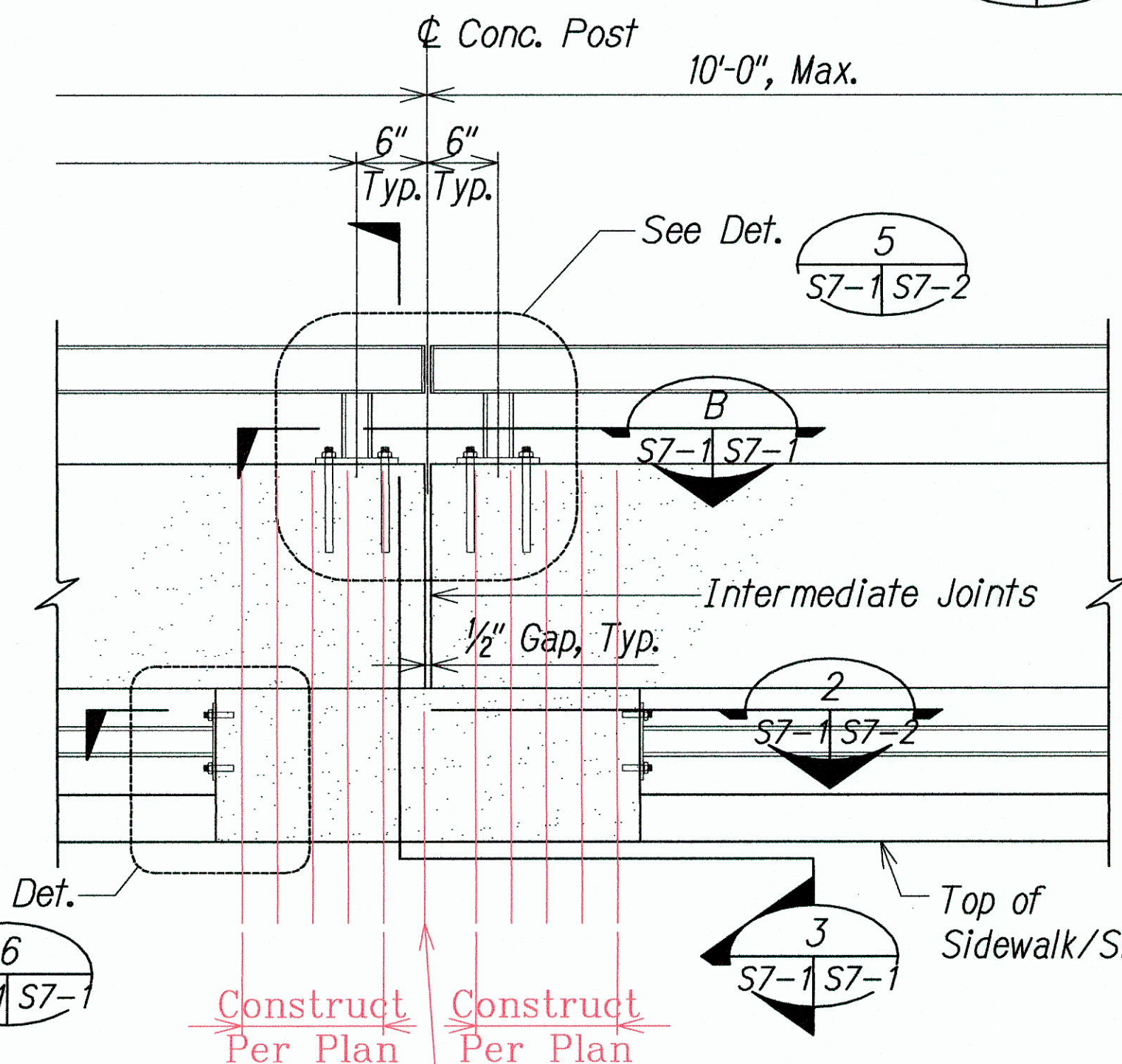
LEGEND FOR AS-BUILT POSTINGS  
Squiggly line for as-built deletion  
Double line for as-built deletion  
Roadway Text for as-built posting



SECTION 7  
CONDITION AT EDGE OF BRIDGE  
Scale: 1"=1'-0"

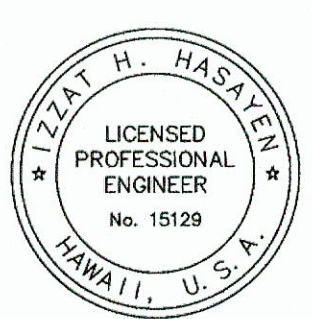


SECTION 8  
Scale: 1"=1'-0"



SECTION 9  
Scale: 1"=1'-0"

GRAPHIC SCALE:  
1' 6" 0 1' 2'  
SCALE: 1"=1'-0"



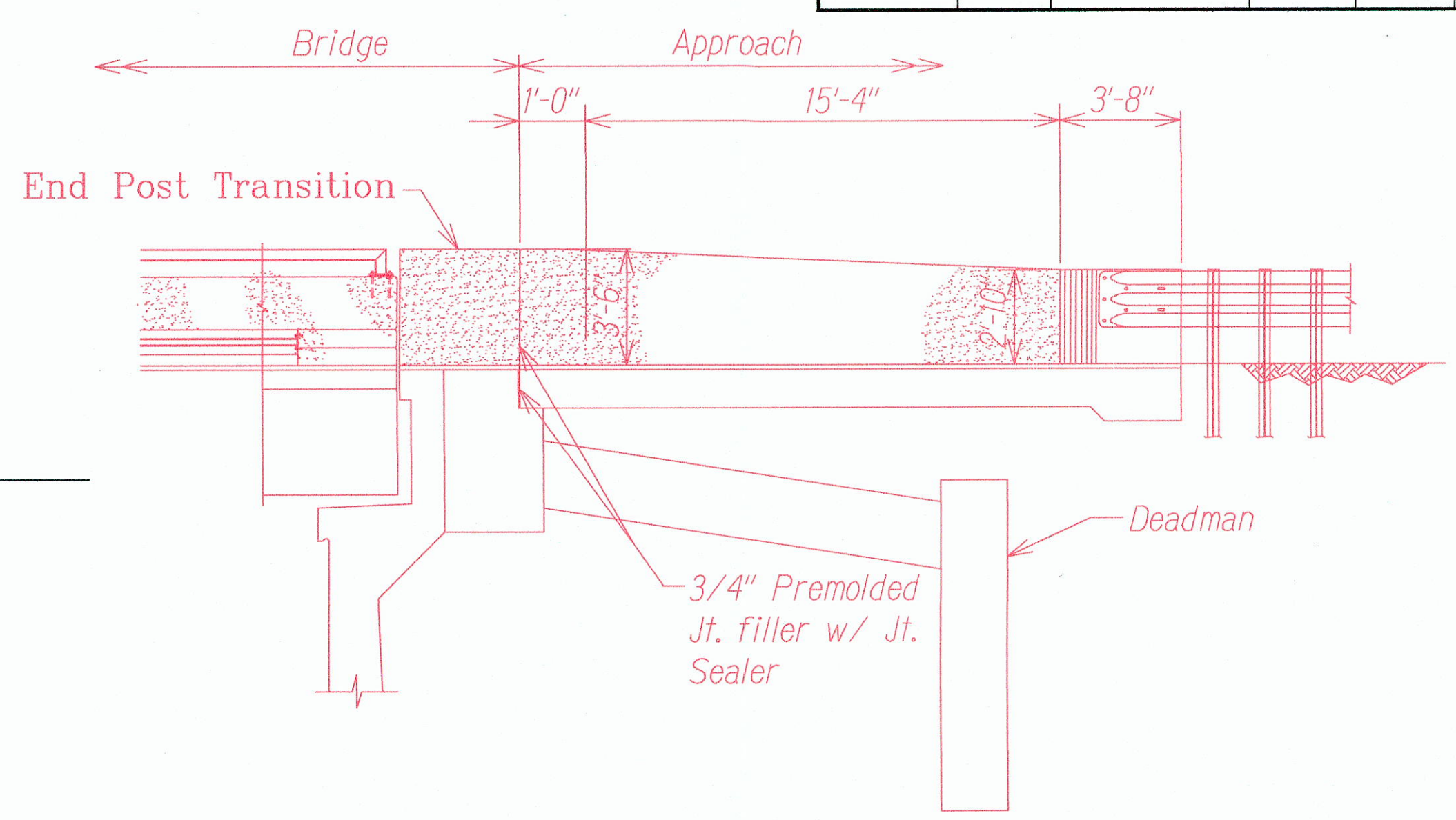
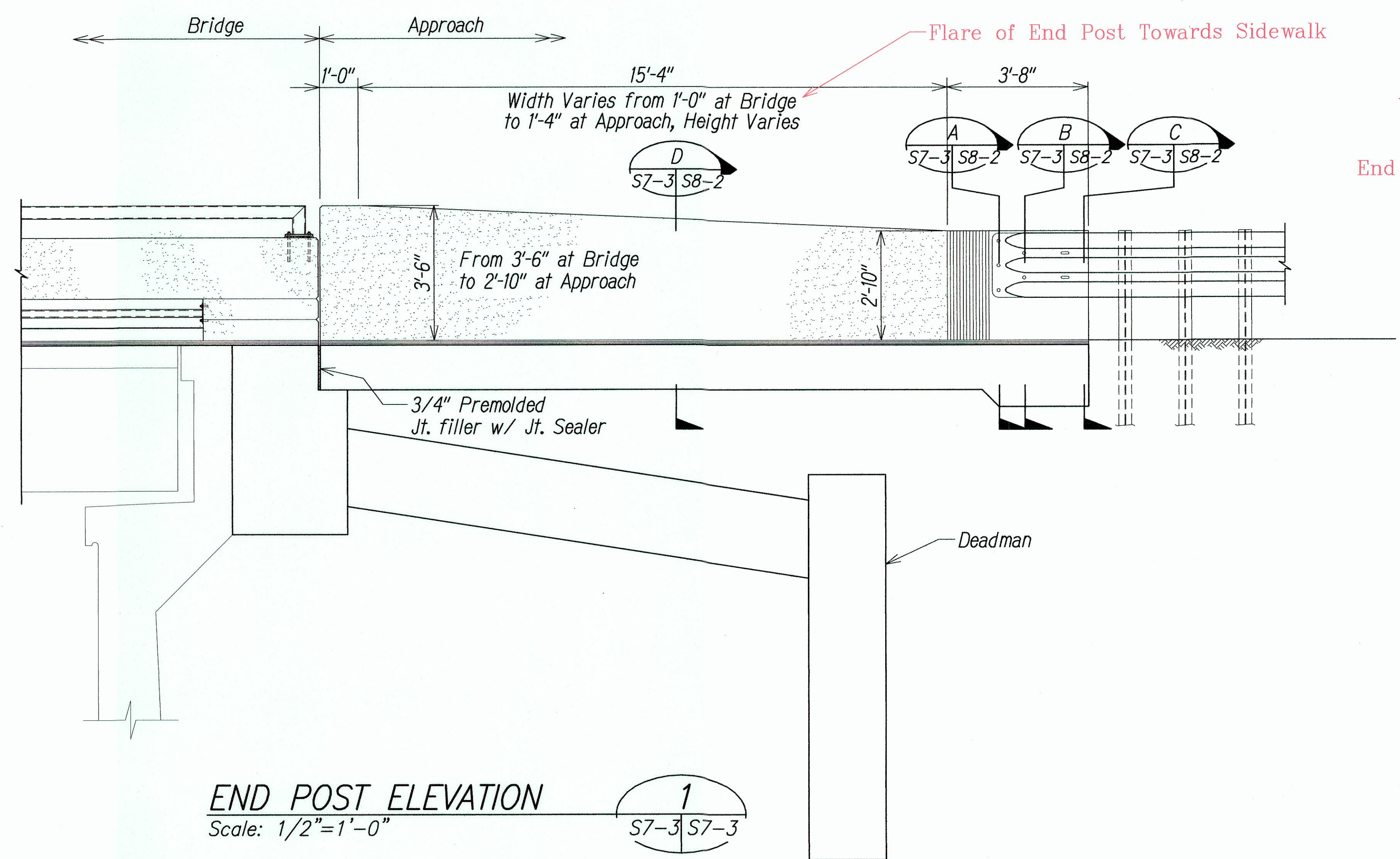
THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.  
Date: October 2012

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**CONCRETE BRIDGE RAILING**  
**SECTIONS AND DETAILS**  
WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)  
Date: October 2012  
SHEET No. S7-2 OF SHEETS

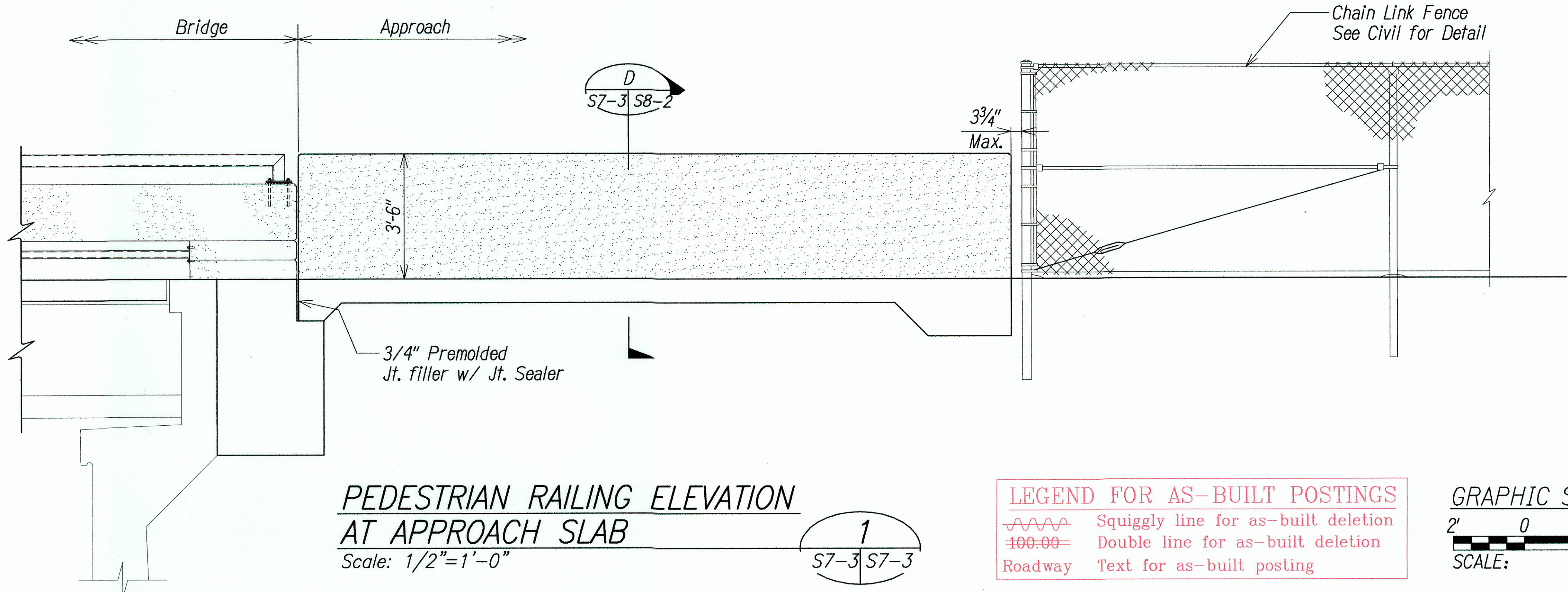
"AS-BUILT"



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 104       | 108          |



\*See Contract Plan GR1



**LEGEND FOR AS-BUILT POSTINGS**

~~~~~ Squiggly line for as-built deletion

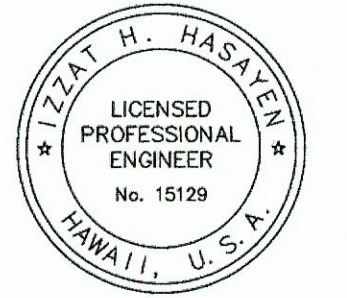
== Double line for as-built deletion

Roadway Text for as-built posting

**GRAPHIC SCALE:**

2' 0 2' 4'

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



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*Izat H. Hasiyen* APRIL 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**END POST ELEVATION**  
  
**WAIEHU BEACH ROAD**  
**REHABILITATION OF IAO STREAM BRIDGE**  
**Federal Aid Project No. BR-STP-3400(5)**  
  
Date: October 2012

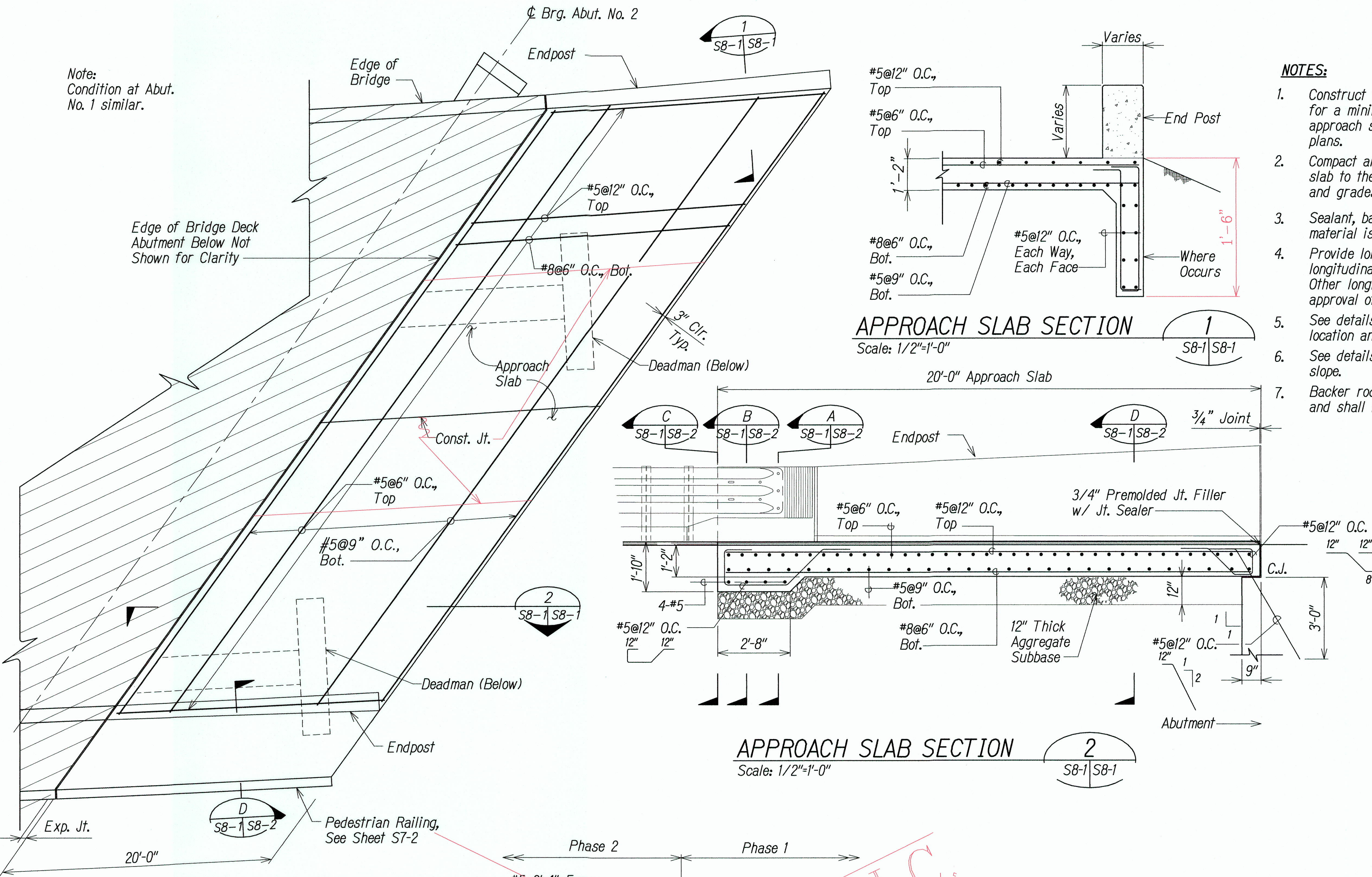
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| ORIGINAL PLAN | DATE |
| DRAWN BY      |      |
| TRACED BY     |      |
| CHECKED BY    |      |
| NO. 1         |      |

Path: L:\W04\7213-01 Iao\CD\1\As-Built\VPFF As-Bui File Name: IAO\_S7-3 Plot Date: Mar 10, 2016 11:08:20am CAD User: etokushashi Xref File Name: DOTB080 AUTODATE



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 105       | 108          |

Note:  
Condition at Abut.  
No. 1 similar.

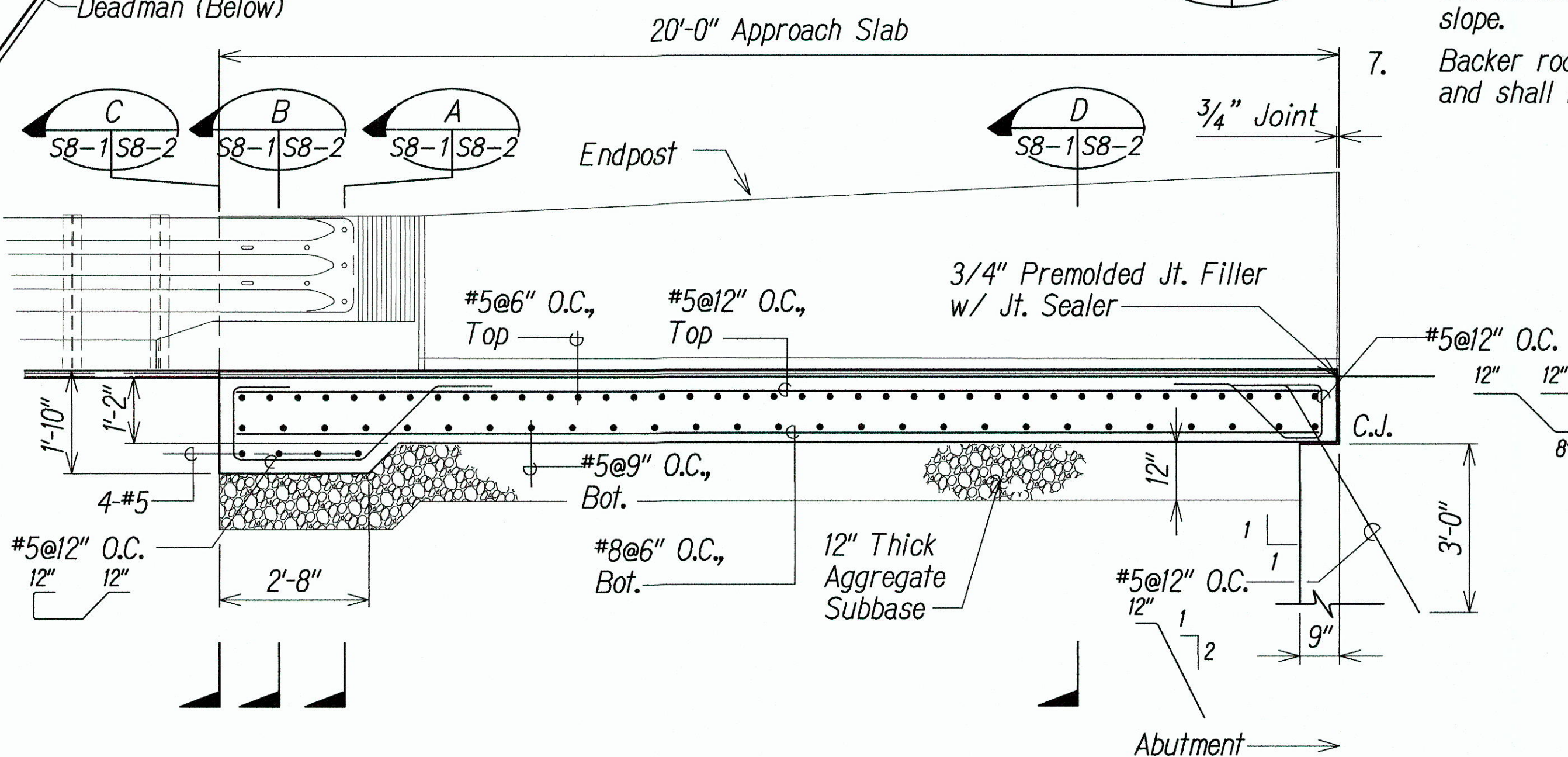


NOTES:

- Construct the subgrade or subbase from the bridge for a minimum distance of 100 feet prior to the approach slab, unless otherwise indicated on the plans.
- Compact and finish the subbase for the approach slab to the typical cross-section and to the lines and grades shown on the plans.
- Sealant, backer rod, and preformed bituminous fiber material is incidental to approach slab concrete.
- Provide longitudinal construction joints that align with longitudinal construction joints in the bridge slab. Other longitudinal construction joints must receive approval of the Engineer.
- See details elsewhere in plans for shoulder drain location and details.
- See details elsewhere in plans for required cross slope.
- Backer rod shall be 25% larger than joint opening and shall be compatible with the sealant.

APPROACH SLAB SECTION 1

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

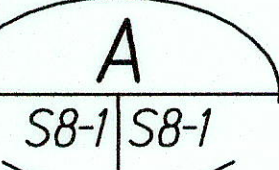


APPROACH SLAB SECTION 2

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

APPROACH SLAB PLAN

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

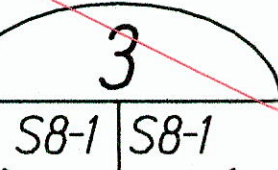


LEGEND FOR AS-BUILT POSTINGS  
~~~~~ Squiggly line for as-built deletion  
= Double line for as-built deletion  
Roadway Text for as-built posting

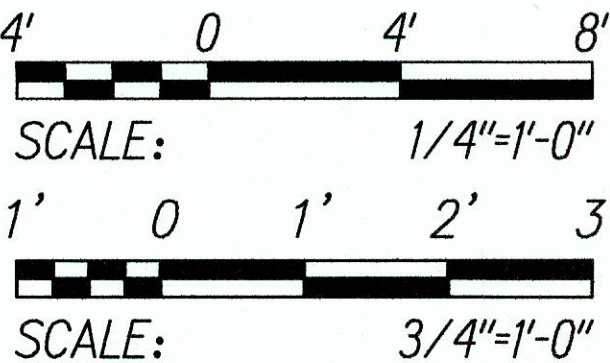
See DOT Standard Plans  
for Balance of Details.

LONGITUDINAL CONSTRUCTION JOINT

Scale: None



GRAPHIC SCALE:



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OR UNDER MY SUPERVISION.

APR 30, 2016  
OFF CONSULTING ENGINEERS LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

APPROACH SLAB PLAN  
AND SECTIONS

WAIIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)

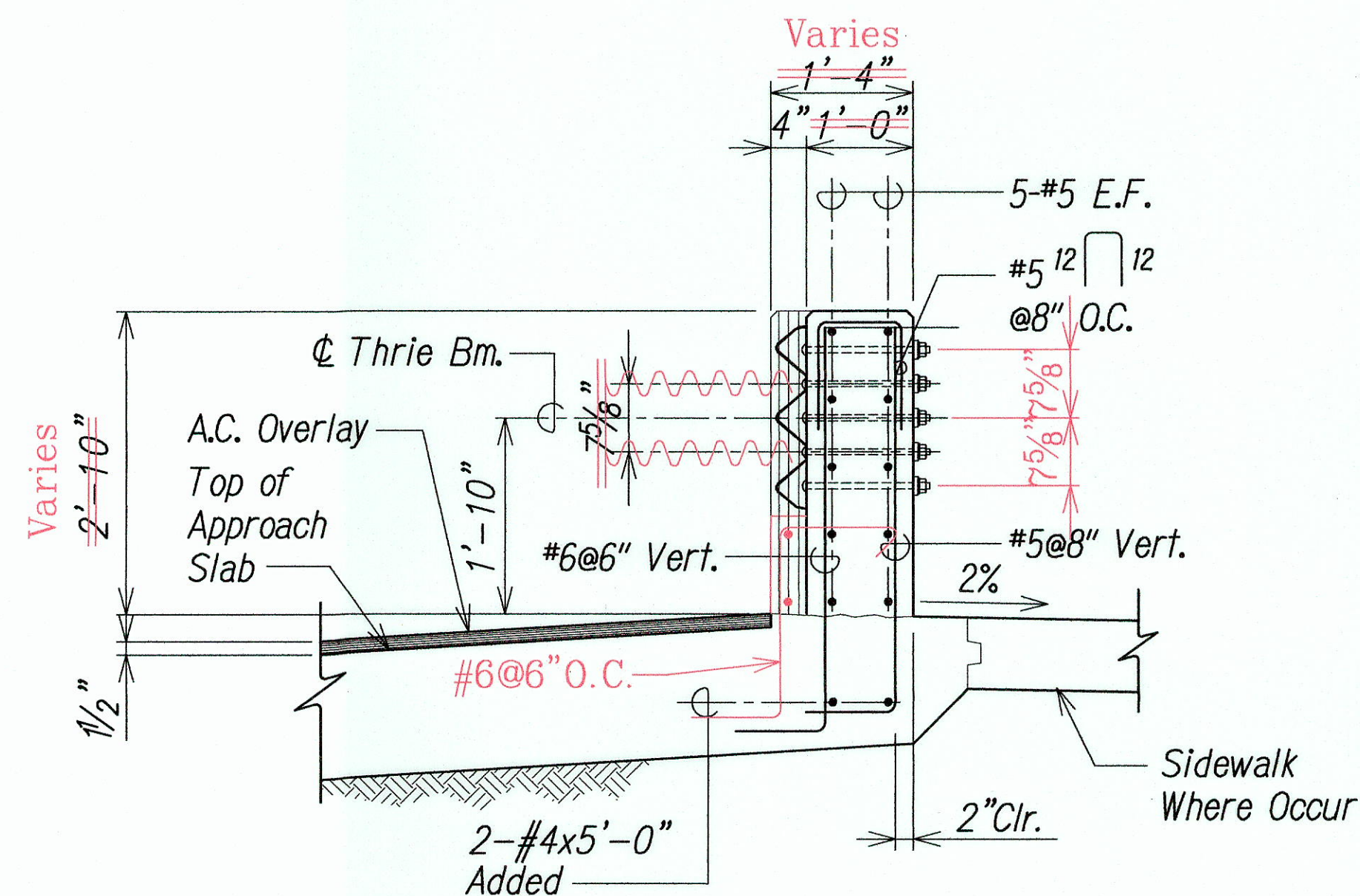
Date: October 2012

SHEET No. S8-10F

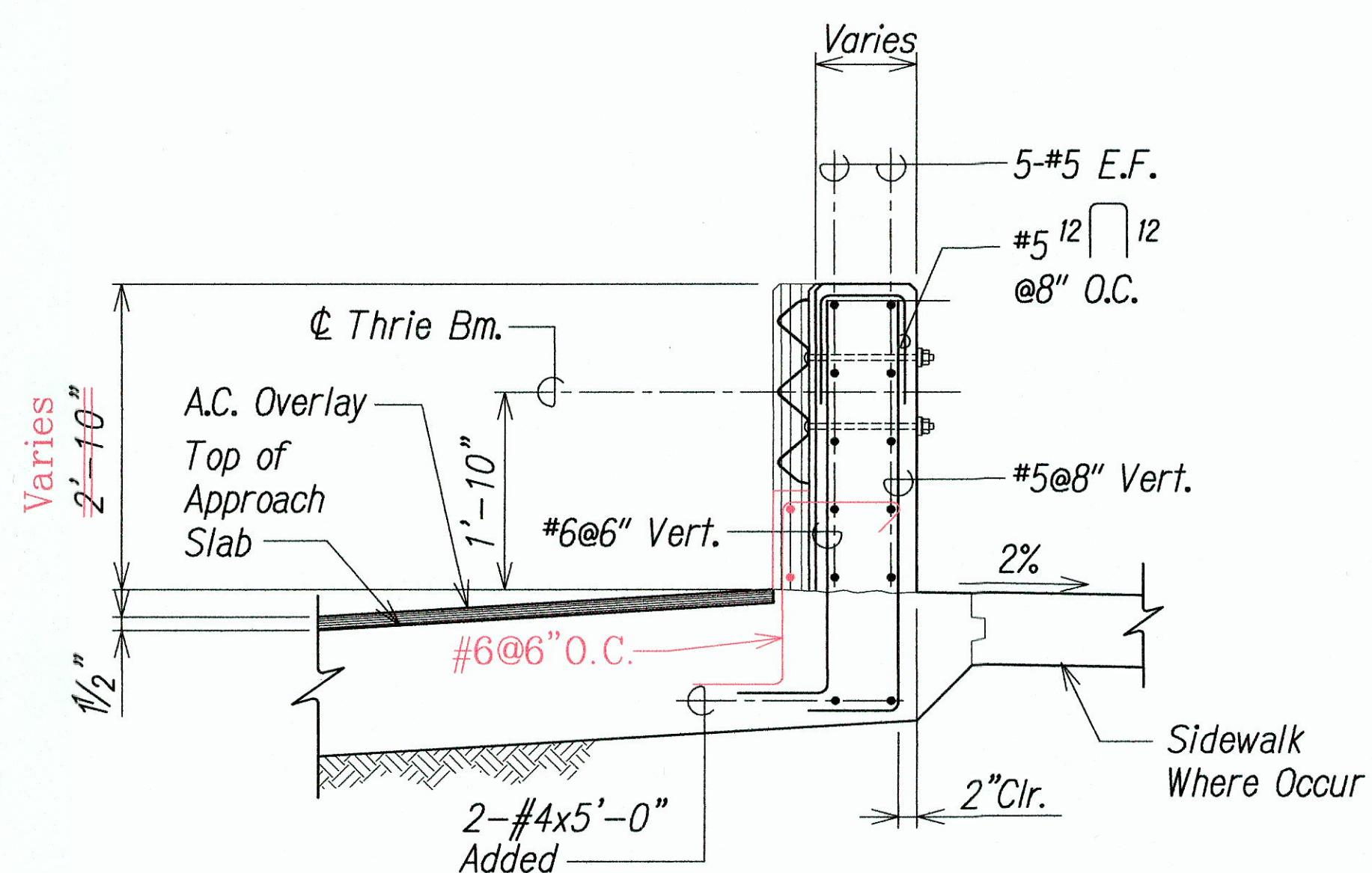
SHEETS



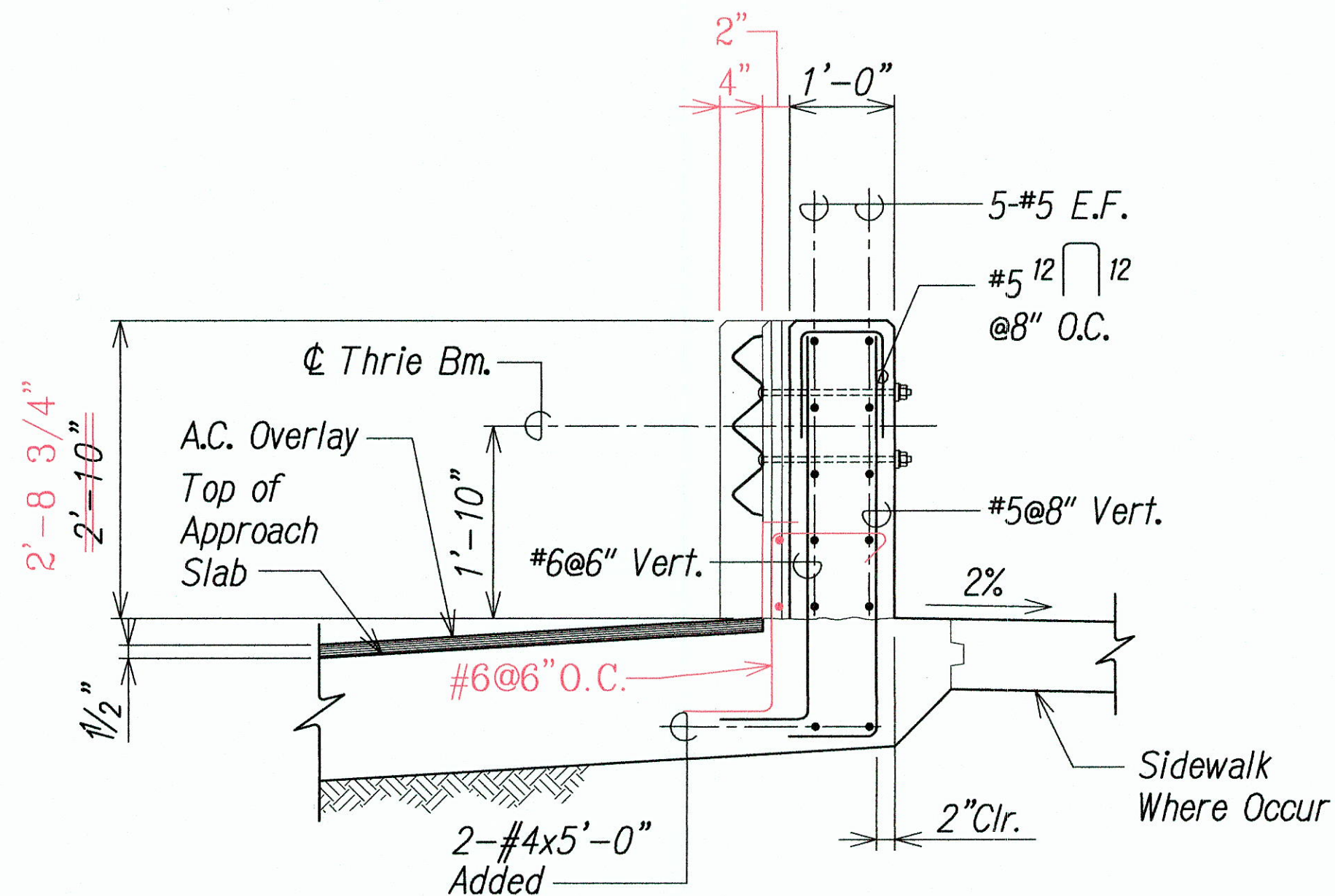
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-STP-3400(5)     | 2012        | 106       | 108          |



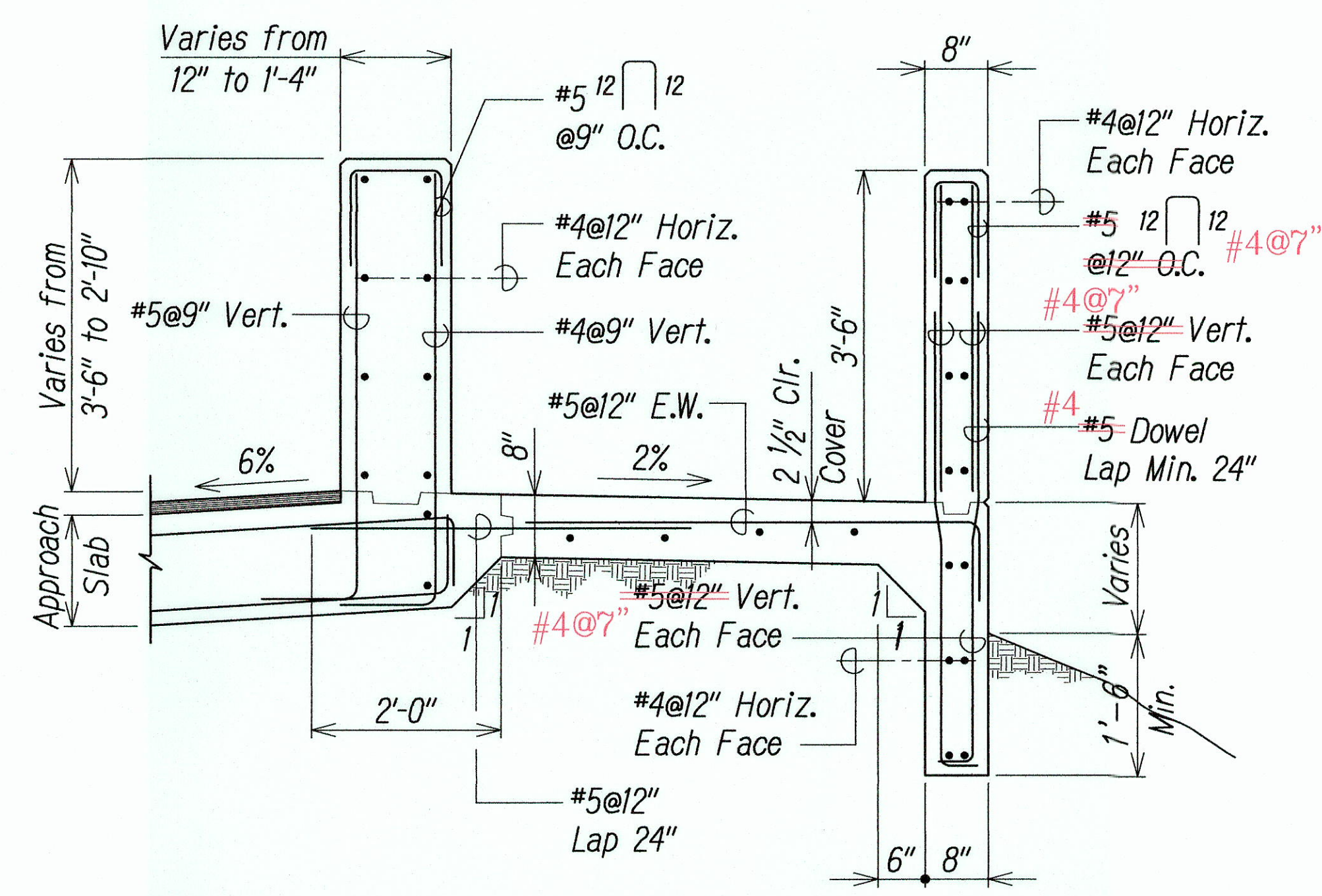
SECTION A  
Scale: 3/4"=1'-0"  
S8-1 S8-2  
S7-3



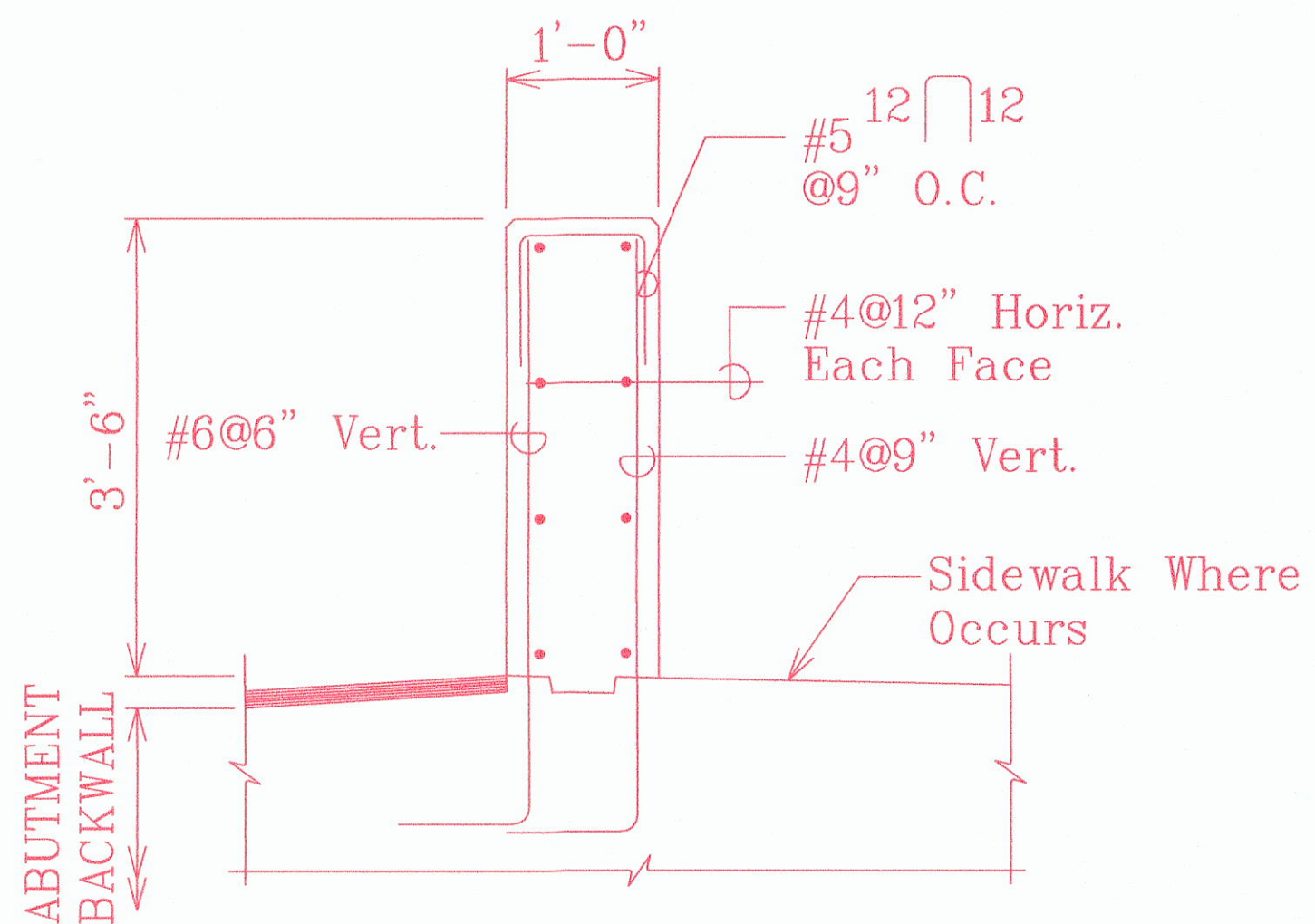
SECTION B  
Scale: 3/4"=1'-0"  
S8-1 S8-2  
S7-3



SECTION C  
Scale: 3/4"=1'-0"  
S8-1 S8-2  
S7-3

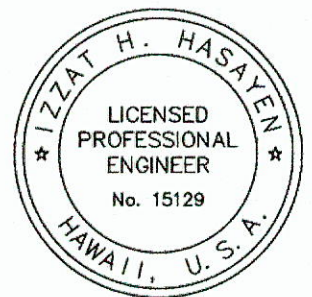
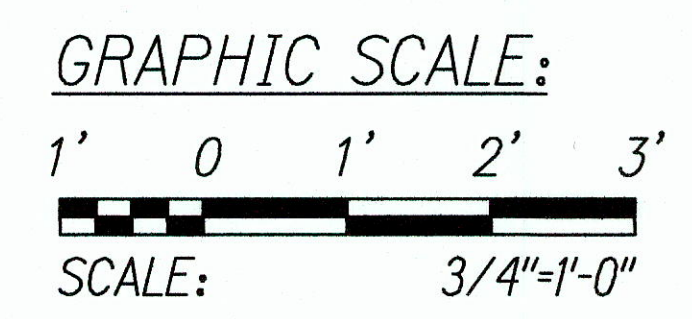


SECTION D  
Scale: 3/4"=1'-0"  
S8-1 S8-2  
S2-1, S7-3



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

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



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APRIL 30, 2016  
LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**ENDPOST DETAILS AND TYPICAL SECTIONS**  
WAIEHU BEACH ROAD  
REHABILITATION OF IAO STREAM BRIDGE  
Federal Aid Project No. BR-STP-3400(5)  
Date: October 2012  
SHEET No. S8-20F SHEETS

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| CHECKED BY        |      |
| NOTED BY          |      |
| QUANTITIES BY     |      |
| NO.               |      |

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"AS-BUILT"