FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	51	76

GENERAL STRUCTURAL NOTES:

DESIGN SPECIFICATIONS

AASHTO 1998 LRFD Bridge Design Specifications with Subsequent Interim Specifications.

GENERAL SPECIFICATIONS

Hawaii Standard Specifications for Road, Bridge, and Public Works Construction 1994 and Special Provisions prepared for this project.

DESIGN LIVE LOAD: HL-93

ADDITIONAL LOADS:

25 PSF for Future Asphalt Concrete Wearing Surface.
150 PLF for Future Utilities between Girders G-1 & G-2, G-7 & G-8

SEISMIC ACCELERATION COEFFICIENT:

A=0.25
Seismic zone 3
Importance Category = Essential Bridge

MATERIALS:

Reinforced Concrete: f'c=4000 PSI, unless noted otherwise.
Drilled Shafts: f'c=4500 PSI
Reinforcing Steel: ASTM A615, Grade 60 unless noted otherwise.
Structural Steel: ASTM A36, Hot Dip Galvanized, unless noted otherwise.
Stainless Steel: Type 316.
Anchor Bolts: ASTM A325 Hot Dip Galvanized, unless noted otherwise.
Prestressed Concrete: f'c=6500 PSI f'ci=5000 PSI
All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.
All welding shall be in accordance with the current edition of Reinforcing Steel Welding Code AWS D 1.4.

REINFORCEMENT:

1. The minimum clear cover measured from the surface of the concrete to the face of any reinforcing bar shall be as follows, except as noted otherwise.
   A. Abutments, retaining walls, channel construction. . . . . 2"
   B. Concrete cast against and permanently exposed to earth. . 3"
   C. Bridge Deck: Bottom bars. . . . . 1 1/2"
      Top bars. . . . . 2"
   D. Drilled Shaft: . . . . . 5" to spiral
2. Reinforcing shall be detailed in accordance with the latest editions of CRSI "Placing Reinforcing Bars" and ACI "Manual of Standard Practice" and the "Detailing Manual", unless noted otherwise.
3. Dimensions relating to reinforcing (E.G. spacing of bars) are to center of bars, unless noted otherwise.
4. Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than one foot in each direction, in which case alternate intersections shall be tied.

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. See Standard Specifications and Special Provisions.
2. In general, top of concrete deck slab shall be constructed to follow the roadway vertical and horizontal curves.
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. 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 drilled shafts, including any temporary piling or sheeting. 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. Construction joints may be relocated or additional ones added, subject to the approval of the Engineer.
9. Unless noted otherwise, all exposed concrete edges shall be chamfered 3/4"x3/4".
10. Concrete for closure pours in bridge deck and diaphragms to have admixtures to reduce setting time and drying shrinkage. See special provisions for requirements.

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. For electrical conduit location details, see electrical drawings.

FOUNDATION:

1. General:
   A. The pay 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 to the Engineer for review, although such review will not absolve the Contractor from sole responsibility, as described.
2. A geotechnical report titled, "Geotechnical Engineering Exploration, Kamehameha V Highway, Emergency Replacement of Kawaikapu Bridge, Federal Aid Project No. ER-12(4), Island of Molokai, Hawaii" dated March 2001, by Geolabs, Inc., has been prepared and is available for review at the office of the Engineer.

SUMMARY OF ESTIMATED QUANTITIES

ITEM NO.	CONTRACT ITEM	QUANTITY	UNIT
206.5500	STRUCTURE EXCAVATION FOR BRIDGE ABUTMENTS	475	C.Y.
206.5600	STRUCTURE EXCAVATION FOR CONCRETE CHANNEL	45	C.Y.
206.7500	STRUCTURE BACKFILL FOR BRIDGE ABUTMENTS	215	C.Y.
206.7600	STRUCTURE BACKFILL FOR CONCRETE CHANNEL	50	C.Y.
503.1092	CONCRETE IN BRIDGE ABUTMENTS (EXCEPT FOOTINGS) (33 C.Y.)	L.S.	L.S.
503.1093	CONCRETE IN FOOTINGS FOR BRIDGE ABUTMENTS (101 C.Y.)	L.S.	L.S.
503.1094	CONCRETE IN BRIDGE DECK (63 C.Y.)	L.S.	L.S.
503.1095	CONCRETE IN CONCRETE CHANNEL (145 C.Y.)	L.S.	L.S.
503.1096	CONCRETE IN APPROACH SLAB (67 C.Y.)	L.S.	L.S.
504.4501	AASHTO TYPE II GIRDERS (500 L.F.)	L.S.	L.S.
507.7100	BRIDGE RAILING	123	L.F.
511.1100	FURNISHING DRILLED SHAFT DRILLING EQUIPMENT	L.S.	L.S.
511.2000	UNCLASSIFIED SHAFT EXCAVATIONS	978	L.F.
511.3000	OBSTRUCTIONS	10	HR.
511.4000	DRILLED SHAFTS	978	L.F.
511.5000	TRIAL SHAFT	104	L.F.
511.6000	LOAD TESTS	1	EA.
511.7000	CORING FOR INTEGRITY TESTING	170	L.F.
602.0091	REINFORCING STEEL FOR BRIDGE ABUTMENTS (EXCEPT FOOTINGS) (8,500 LBS.)	L.S.	L.S.
602.0092	REINFORCING STEEL FOR FOOTINGS FOR BRIDGE ABUTMENTS (29,240 LBS.)	L.S.	L.S.
602.0093	REINFORCING STEEL FOR BRIDGE DECK (14,500 LBS.)	L.S.	L.S.
602.0094	REINFORCING STEEL FOR CONCRETE CHANNEL (14,100 LBS.)	L.S.	L.S.
602.0095	REINFORCING STEEL FOR APPROACH SLAB (10,500 LBS.)	L.S.	L.S.

ORIGINAL PLAN
NOTEBOOK No. ____
SURVEY PLOTTED BY ____ DATE
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

MYRON G. OKUBO
LICENSED PROFESSIONAL ENGINEER
No. 4320-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature
April 30, 2004
Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

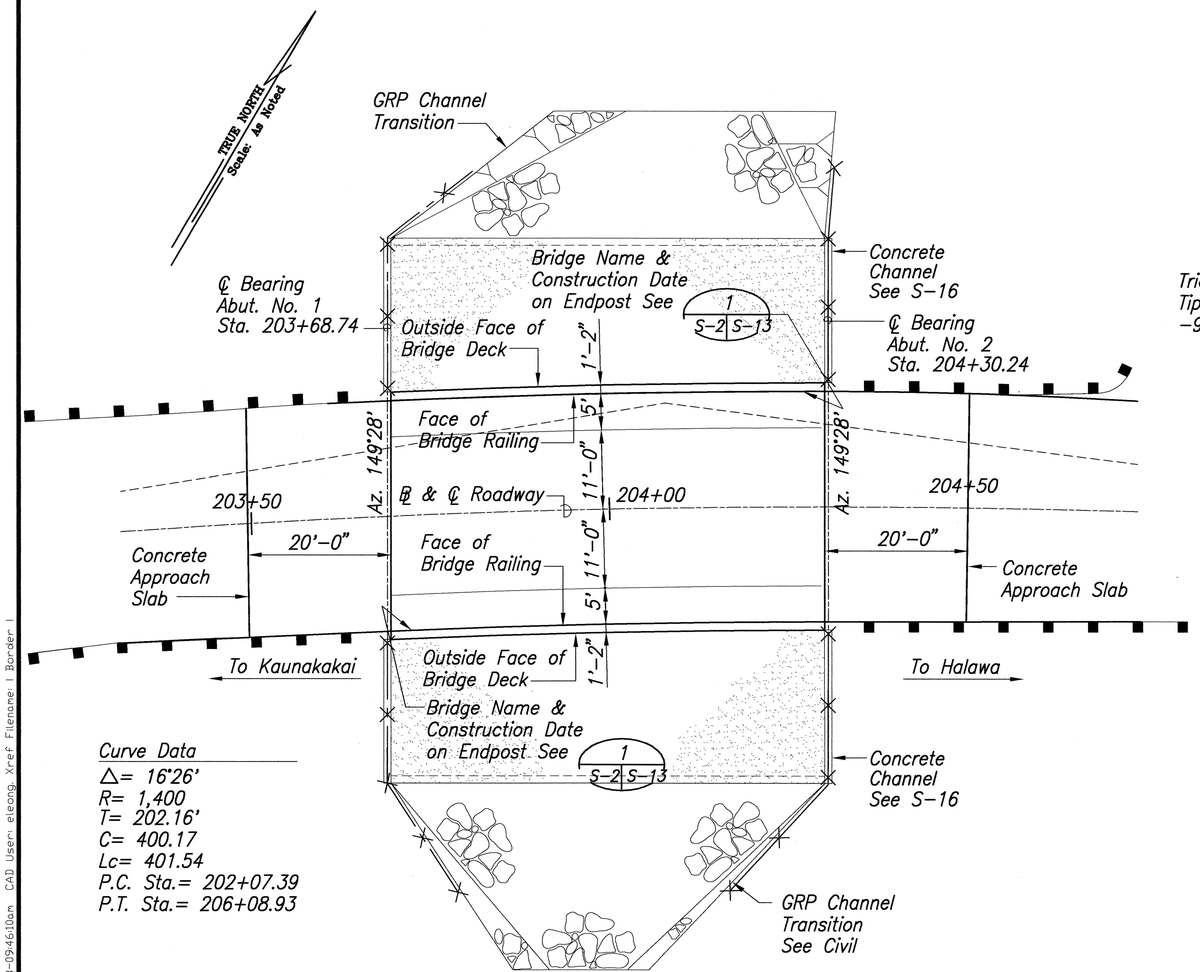
GENERAL NOTES AND SUMMARY OF ESTIMATED QUANTITIES

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-1 OF 16 SHEETS

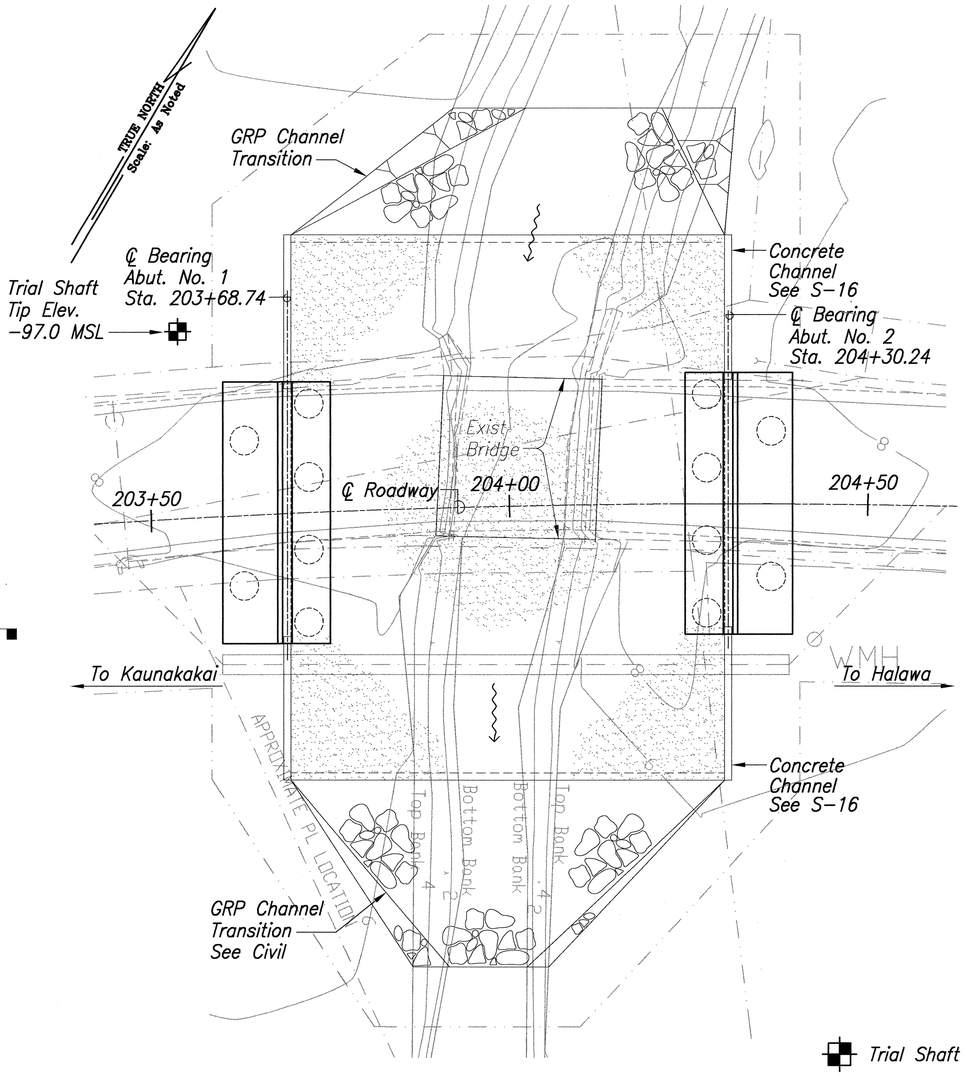
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	52	76



Curve Data
△= 16°26'
R= 1,400
T= 202.16'
C= 400.17
Lc= 401.54
P.C. Sta.= 202+07.39
P.T. Sta.= 206+08.93

STRUCTURAL LAYOUT PLAN

Scale: 1"=10'



FOUNDATION PLAN

Scale: 1"=10'

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No. 4320-S
HAWAII, U.S.A.

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April 30, 2004
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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LAYOUT AND FOUNDATION PLANS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-2 OF 16 SHEETS

ORIGINAL PLAN
SURVEY PLOTTED BY ____ DATE
DATUM SHOWN BY ____
TRACED BY ____
NOTEBOOK DESIGNED BY ____
QUANTITIES BY ____
No. ____ CHECKED BY ____

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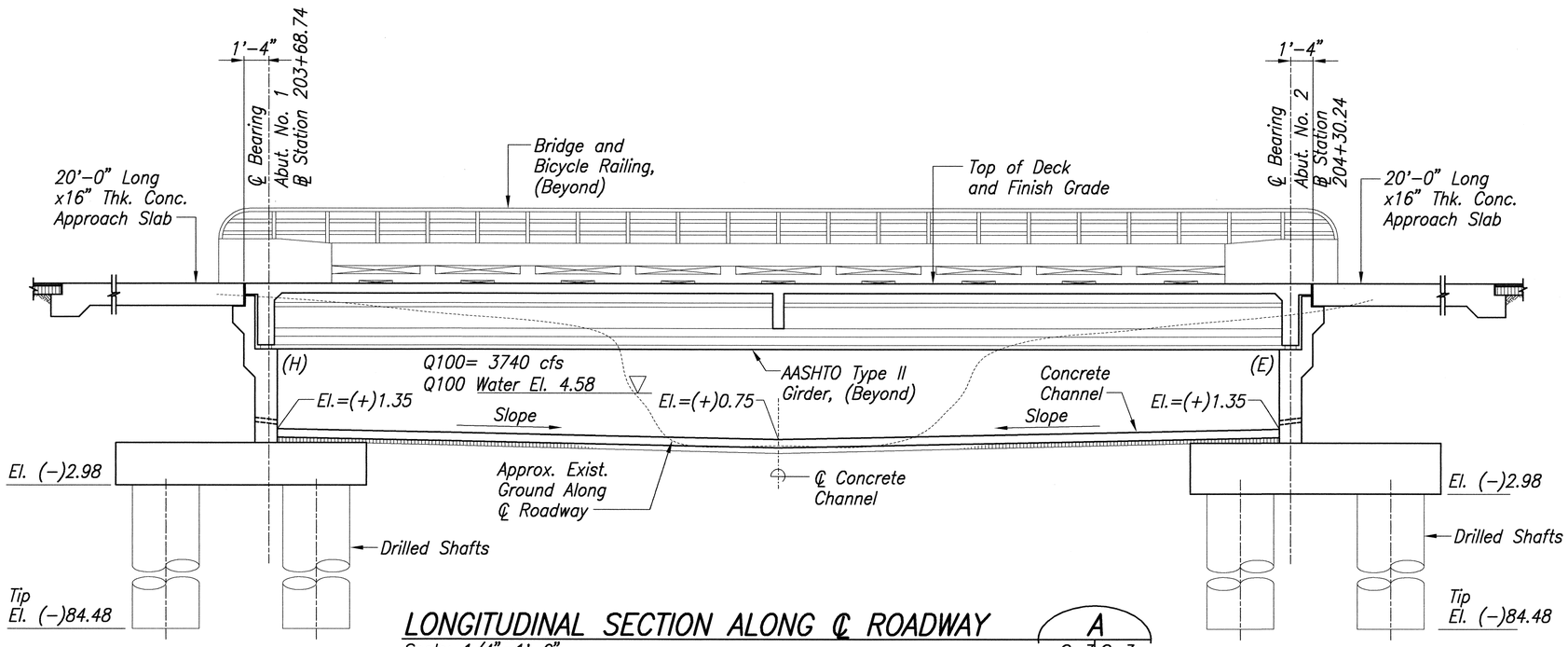
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	53	76

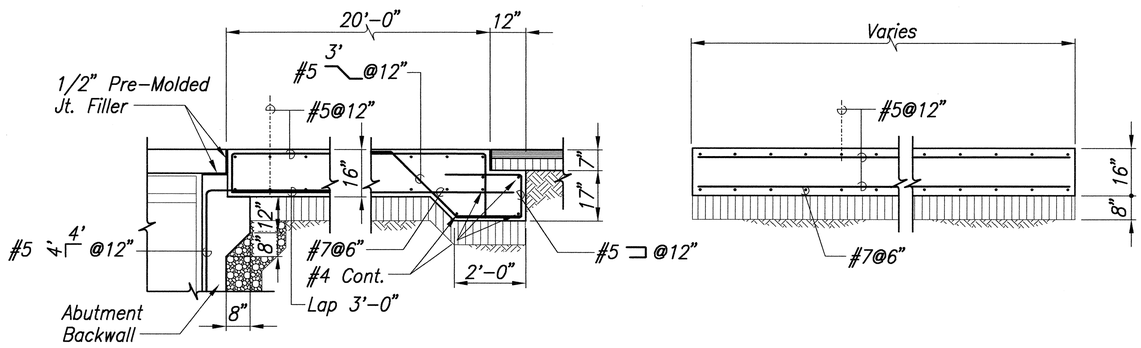
(H) Hinged Girder End
(E) Expansion Girder End



LONGITUDINAL SECTION ALONG ℄ ROADWAY

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

A S-3 | S-3



APPROACH SLAB DETAIL

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

1 S-3 | S-3

APPROACH SLAB TRANSVERSE SECTION

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

2 S-3 | S-3

ORIGINAL PLANS
SURVEY PLOTTED BY
DRAWN BY
NOTEBOOK
TRACED BY
DESIGNED BY
QUANTITIES BY
No.
CHECKED BY
DATE

Path: L:\Woa\6465-01\STR Filename: S3 Plot date: Jan 17, 2003-09:50:55am CAD User: eleong, Xref Filename: | Border |

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

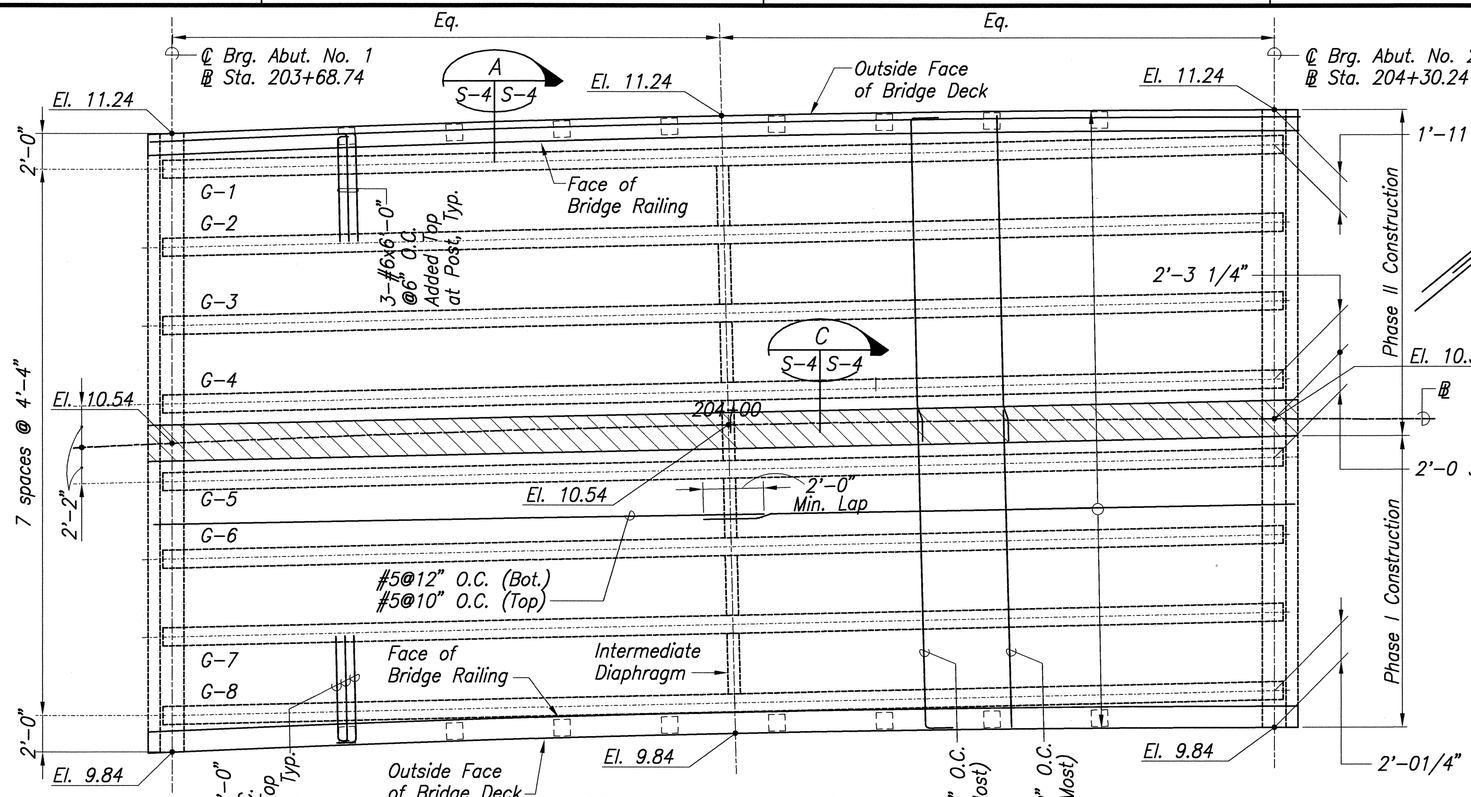
LONGITUDINAL SECTION

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-3 OF 16 SHEETS

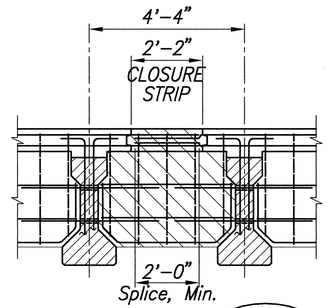
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	54	76



DECK FRAMING PLAN

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

Denotes Deck Closure Strip

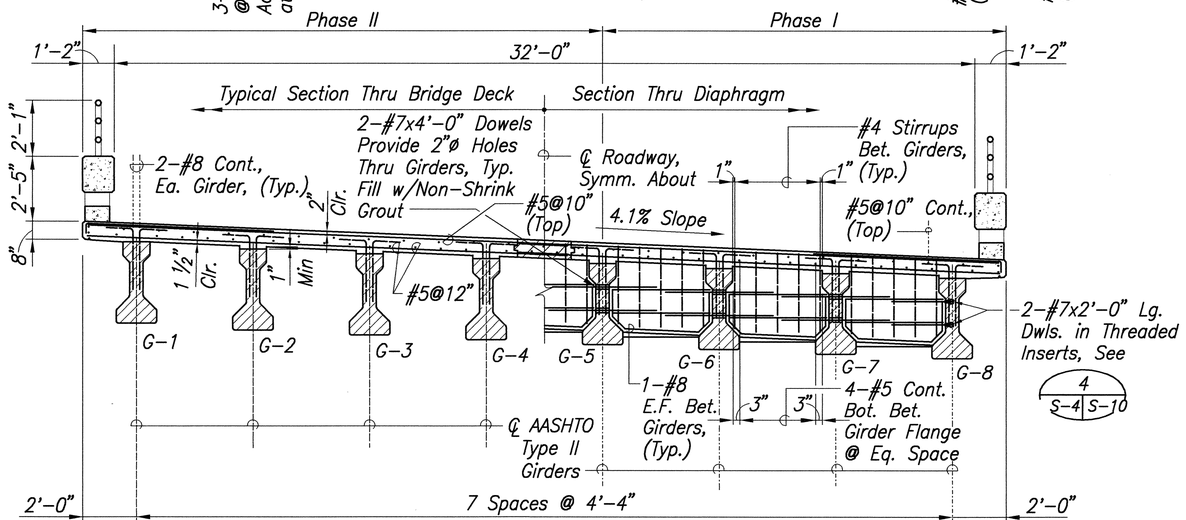


SECTION C

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

S-4 S-4

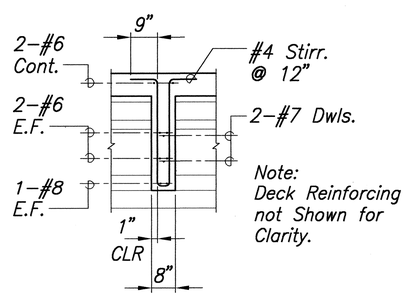
Note:
See Specifications for additional requirements. For Closure Pour Concrete Shall Obtain A Minimum Compressive Strength Of 3500 PSI Before The Bridge Is Opened To General Traffic. Contractor Shall Control Traffic To Be Keep As Far As Practical From Closure Pour And To Keep Vehicle Speed As Slow As Possible.



TYPICAL SECTION A

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

S-4 S-4



Note:
Deck Reinforcing not Shown for Clarity.

INTERMEDIATE DIAPHRAGM SECTION B

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

S-4 S-4

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DECK FRAMING PLAN, SECTIONS AND DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-4 OF 16 SHEETS

ORIGINAL PLAN

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

NOTEBOOK
No. —

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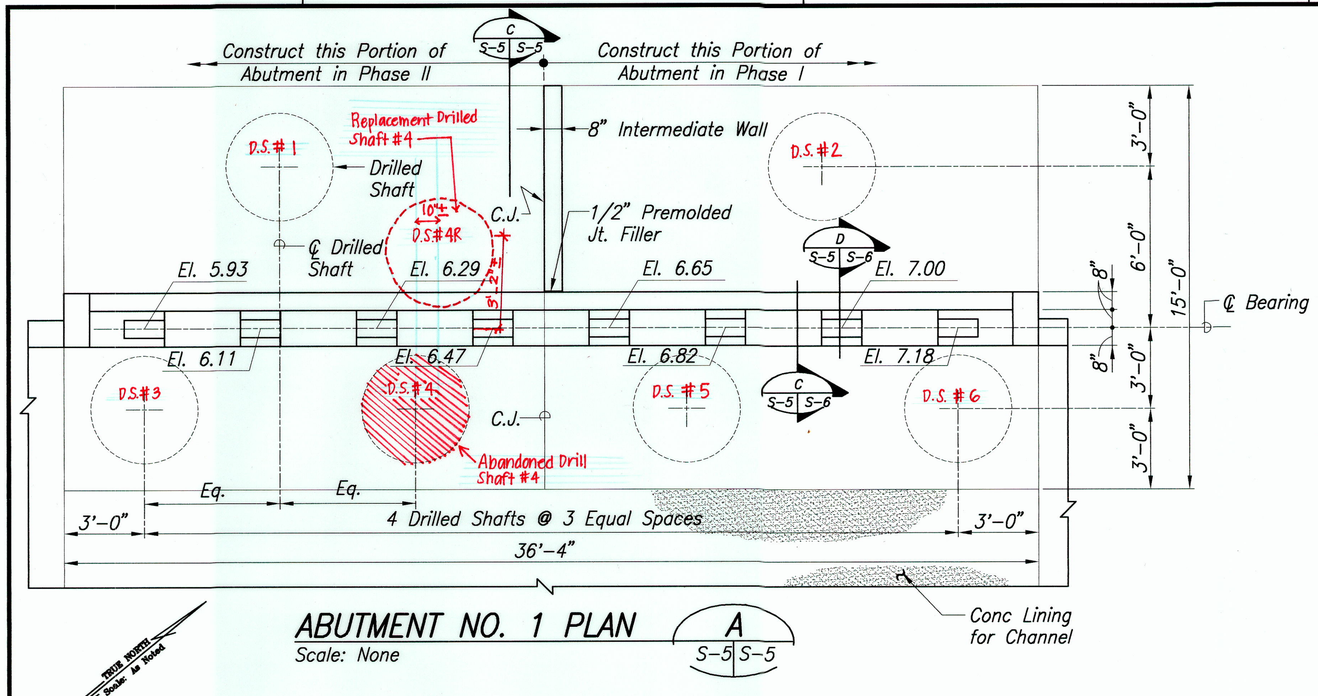
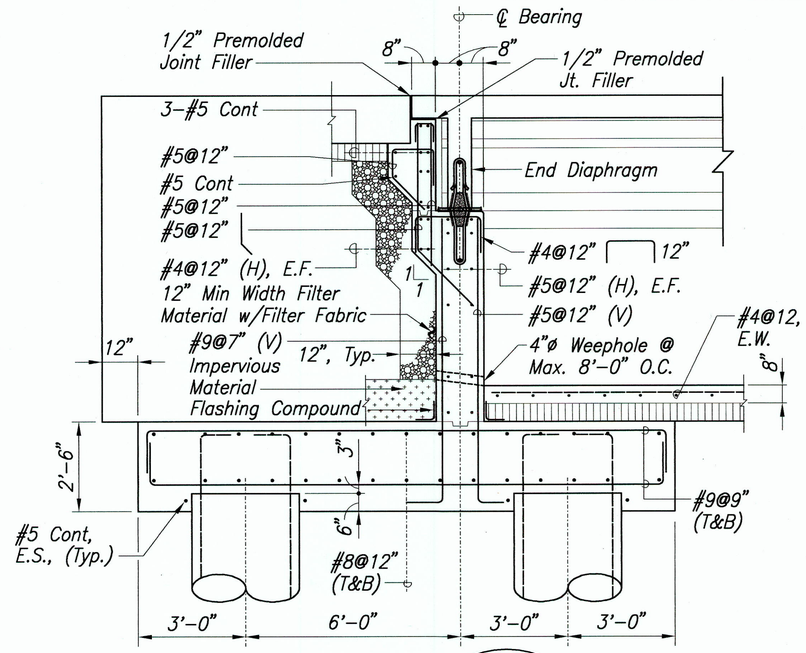
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	55	76



ABUTMENT NO. 1 PLAN

Scale: None

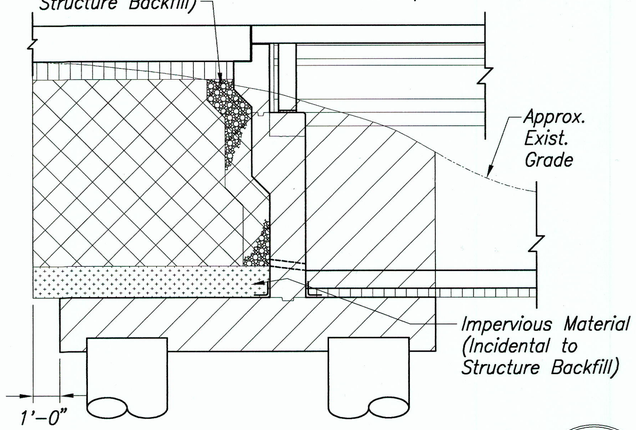
A S-5 S-5



TYPICAL SECTION

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

C S-5, S-6 S-5



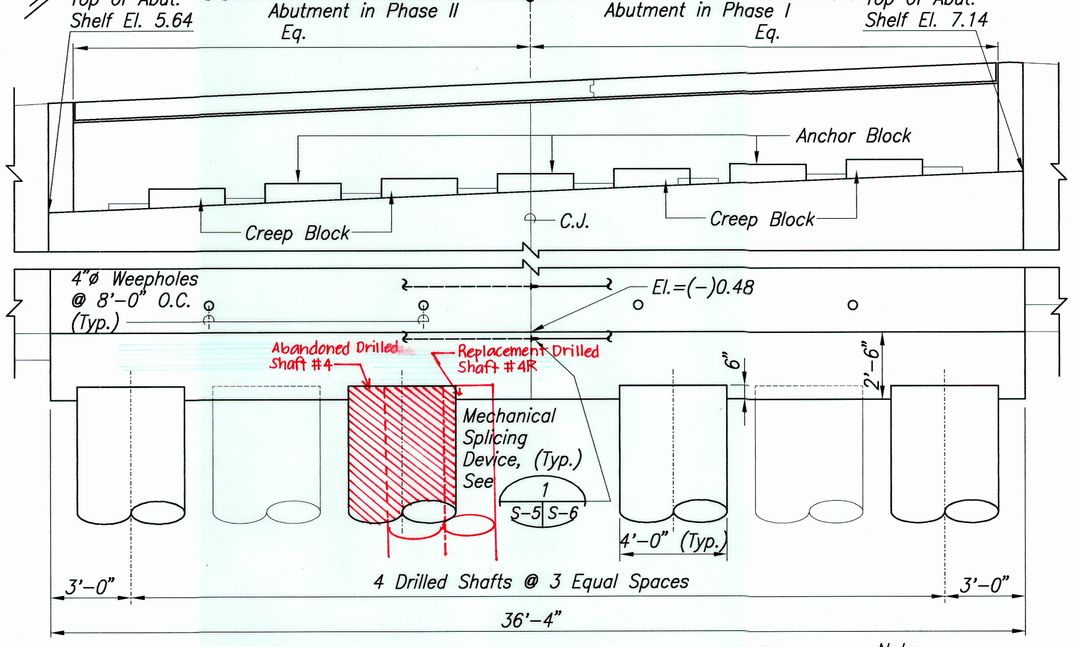
Structure Excavation for Bridge Abutments

Structure Backfill for Bridge Abutments

PAYLIMITS

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

D S-5 S-5



ABUTMENT NO. 1 ELEVATION

Scale: None

B S-5 S-5

Note:
Creep and Anchor block Details Shown on Sheet S-7.

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April 30, 2004

Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT NO. 1 DETAILS AND FOUNDATION PLAN

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-5 OF 16 SHEETS

ORIGINAL PLAN

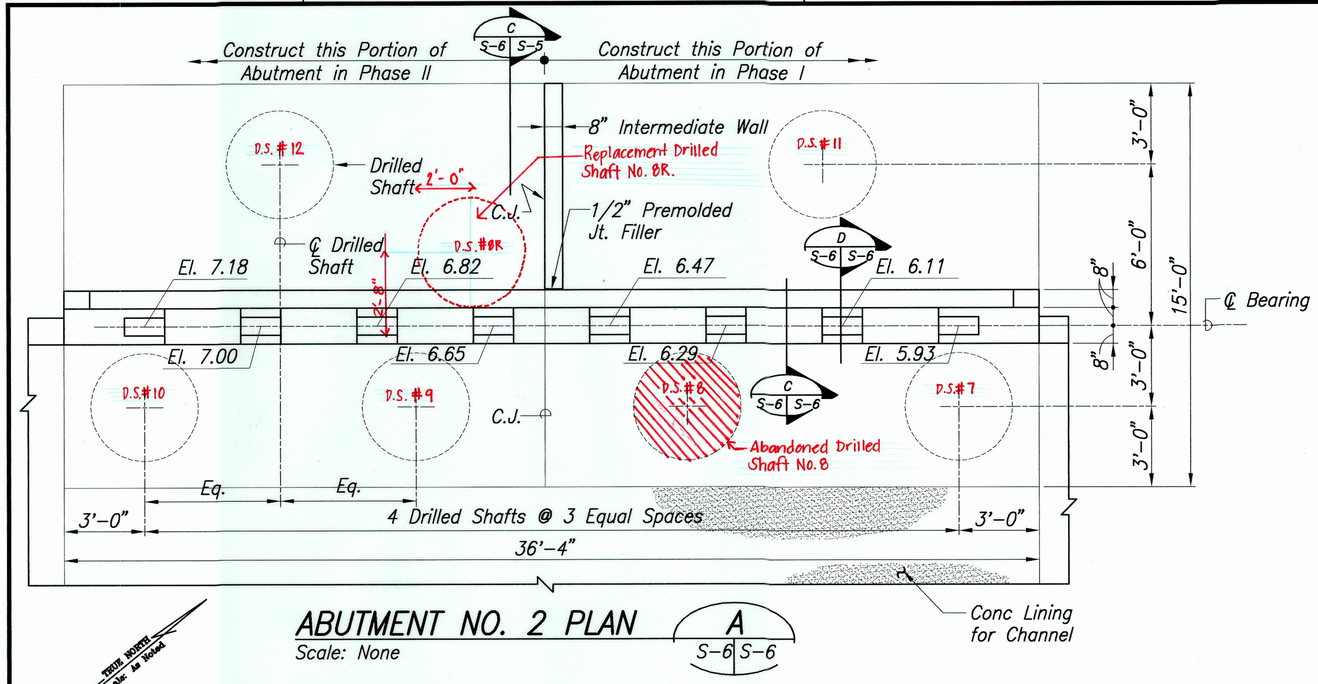
	DATE
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
DESIGNED BY	
NOTEBOOK	
QUANTITIES BY	
CHECKED BY	
No.	

TRUE NORTH Scale: As Noted

Path: L:\Wod\6465-01\STR Filename: S5R Plot date: Jan 17, 2003-10:46:00am CAD User: eleong Xref Filename: ? Border ?

"AS-BUILT"

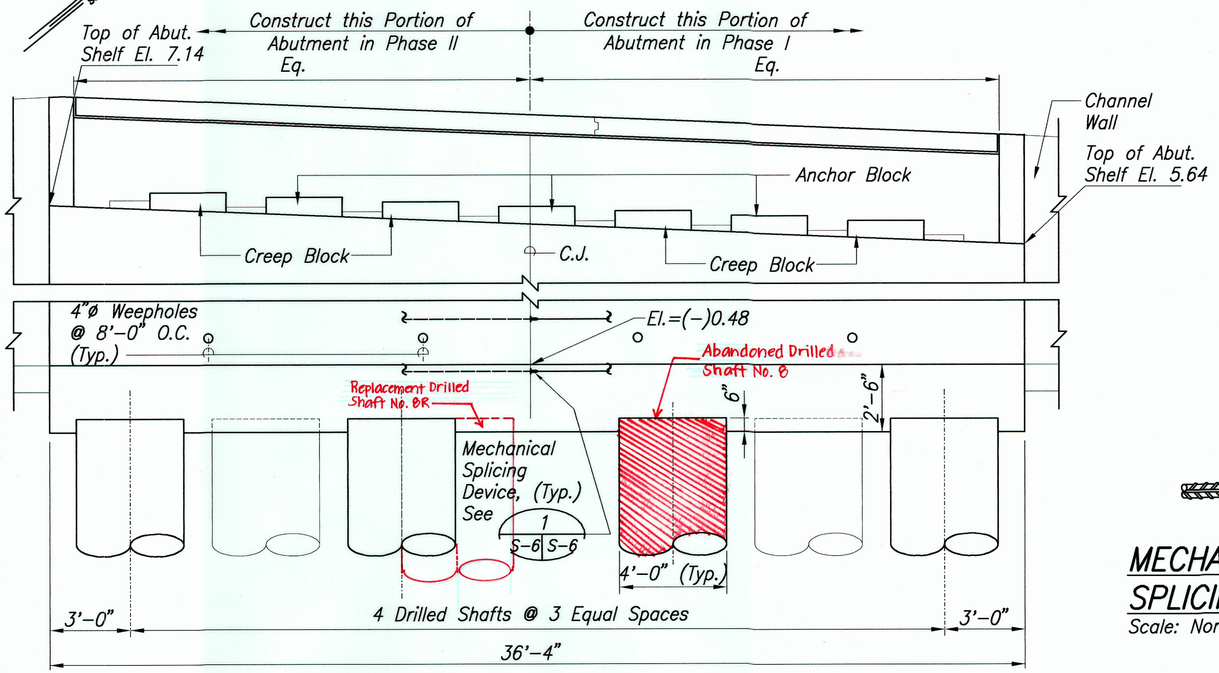
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	56	76



ABUTMENT NO. 2 PLAN

Scale: None

A S-6 S-6

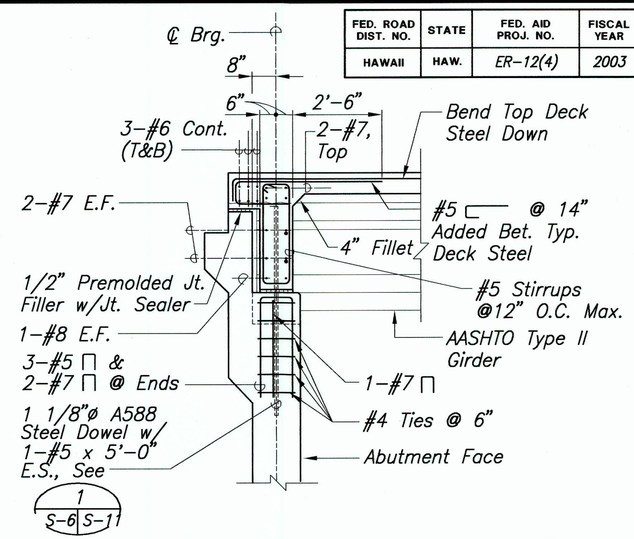


ABUTMENT NO. 2 ELEVATION

Scale: None

B S-6 S-6

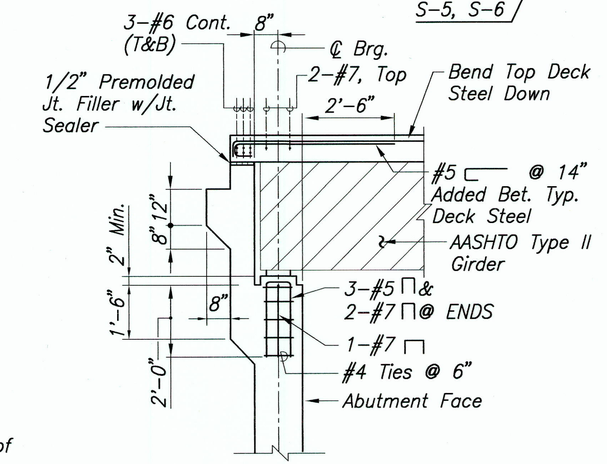
Note:
Creep and Anchor Block Details Shown on Sheet S-7.



SECTION AT ANCHOR/CREEP BLOCK

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

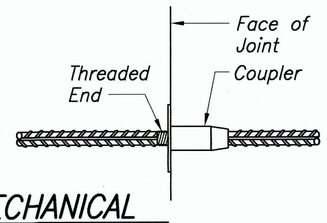
C S-6 S-5, S-6



SECTION AT GIRDER SEAT

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

D S-6 S-5, S-6



MECHANICAL SPLICING DEVICE

Scale: None

1 S-6 S-5, S-6

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MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

Signature

April 30, 2004

Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT NO. 2 DETAILS AND FOUNDATION PLAN

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

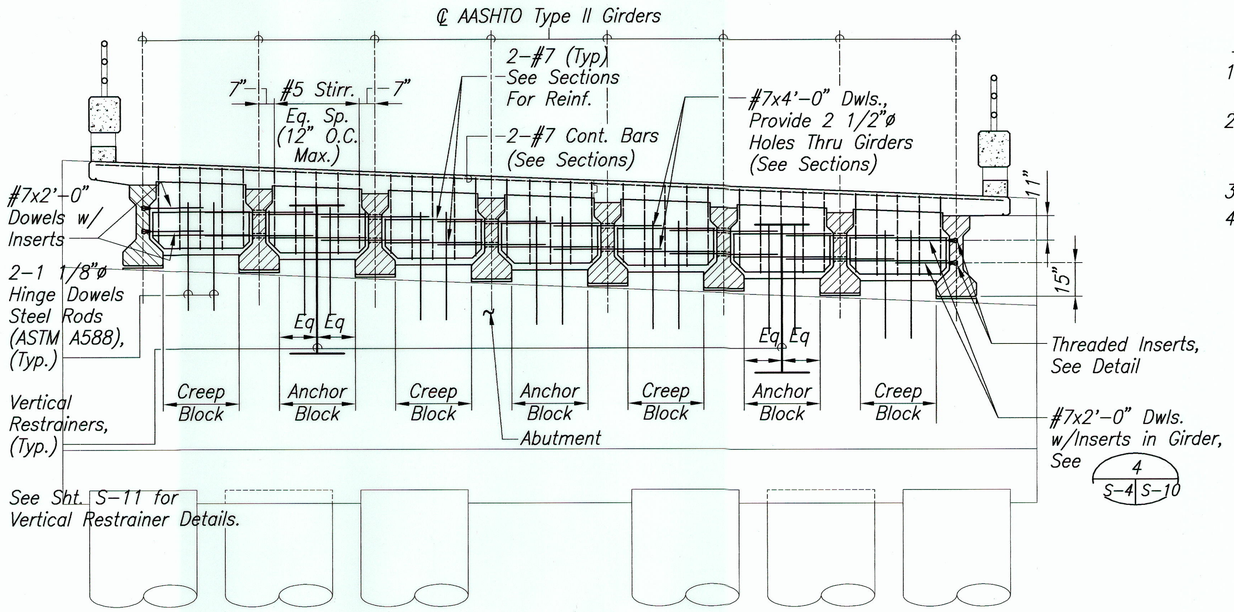
SHEET No. S-6 OF 16 SHEETS

ORIGINAL PLAN PREPARED BY
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NOTEBOOK
No.

Path: L:\Woo\6465-01\STR Filename: S6 Plot date: Jan 17, 2003 09:54:09am CAD User: eleong Xref Filename: ? Border ?

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	57	76

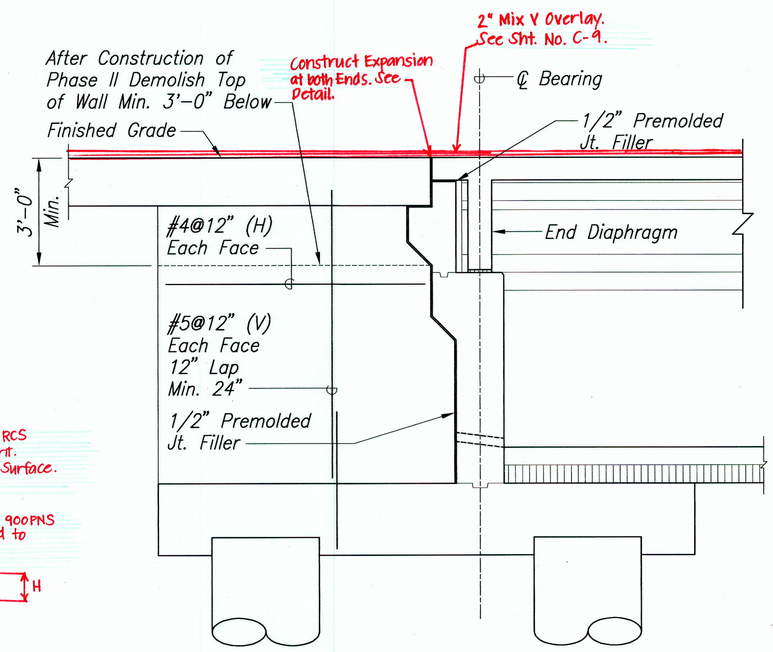


TYPICAL END DIAPHRAGM ELEVATION – TYPE II GIRDERS

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

Notes:

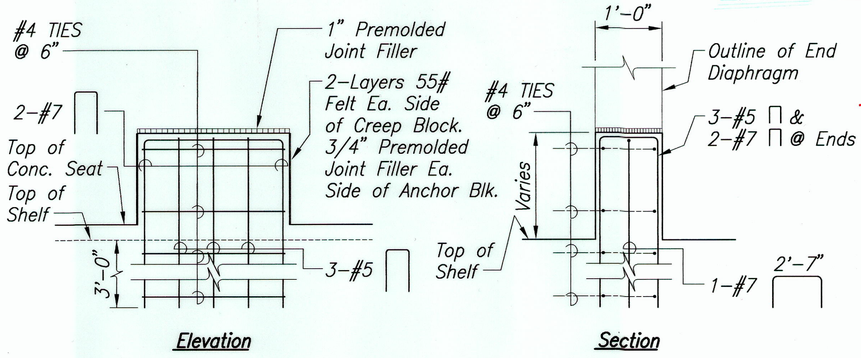
1. All End Diaphragm Stirrups Shall be Plumb and Parallel to the Girders.
2. See Plan for Anchor or Creep Block Location. (See Typical Detail this Sheet).
3. Deck Reinforcing Not Shown for Clarity.
4. Vertical Restrainers and Hinge Dowels Are Located Along ℄ Bearing.



SECTION A

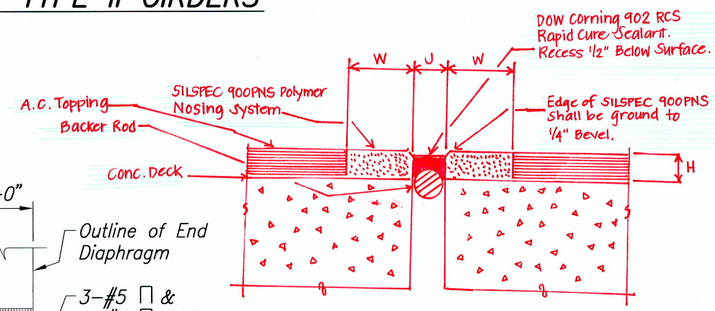
Scale: 1/2"=1'-0"

S-5 | S-7



TYPICAL CREEP OR ANCHOR BLOCK DETAIL

Scale: NONE



NOTES:

H = A.C. Topping Thickness, Varies, 3" Max.
W > 2 X H, Maintain Constant Nosing Width Along Joint
J = Opening in the Nosing Shall Match Existing Joint Minimum shall be 3/8".

1. Follow all Manufacturers Procedures.
2. Saw Cut and Remove A.C. Topping and Clean Block-out.
3. Apply Primer and Install SILSPEC 900 Nosing.
4. Use Backer Rod and Seal Joint with DOW Corning 902 RCS Sealant.
5. A Representative of the Manufacturer shall be Present at the Start of Work to Demonstrate Proper Cleaning and Installation Techniques.

JOINT DETAIL

Scale: NTS

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTEBOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

Path: L:\Wao\6465-01\STR Filename: S7 Plot date: Mar 14, 2003-09:58:59am CAD User: cmorimoto. Xref Filename: ? Border ?

MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

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Myron Okubo
Signature
April 30, 2004
Expiration Date of the License

DATE	REVISION
3/13/03	ADDENDUM NO. 1 REVISED DOWEL NOTE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

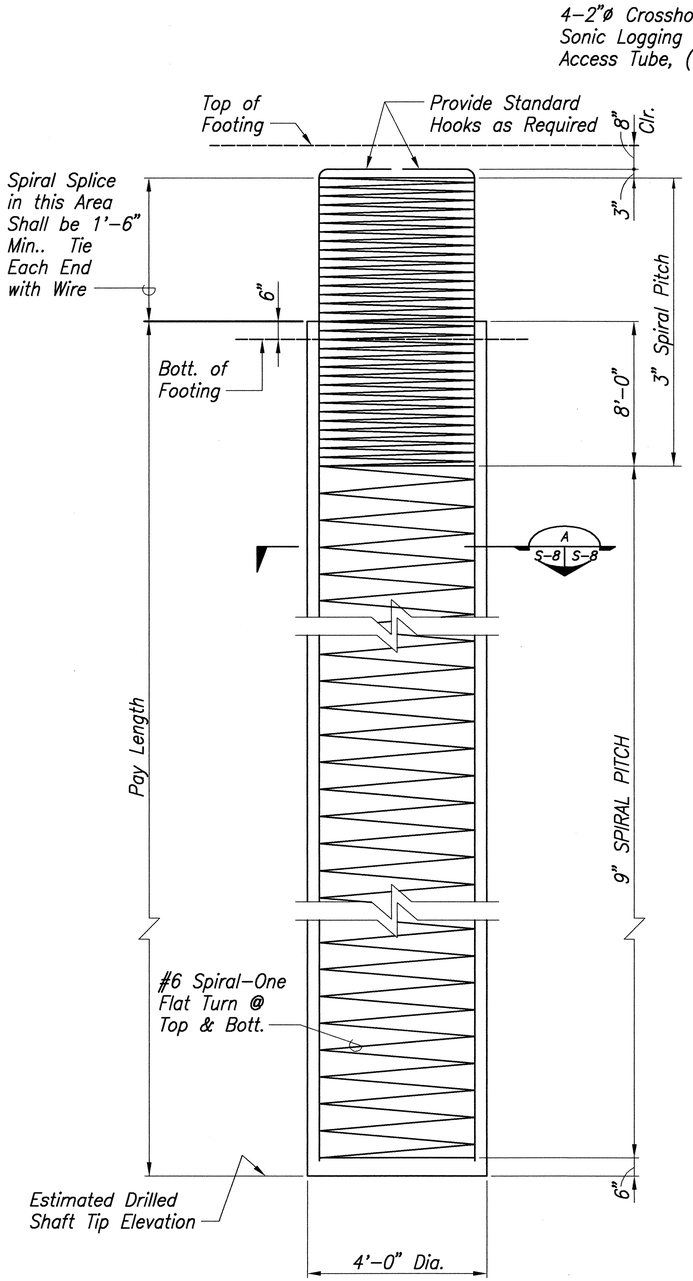
Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-7 OF 16 SHEETS

"AS-BUILT"

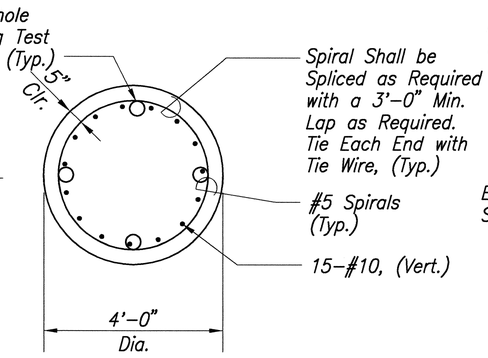
ADD. 57

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	58	76



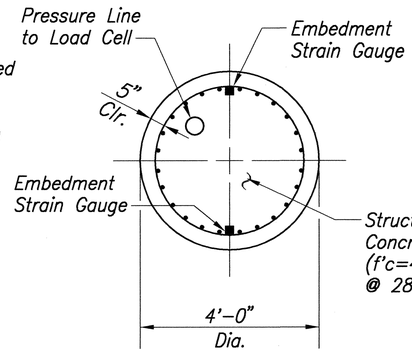
TYP. DRILLED SHAFT ELEVATION

Scale: None



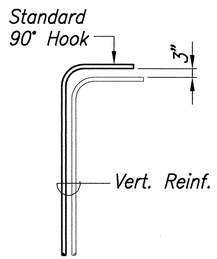
SECTION A

Scale: None

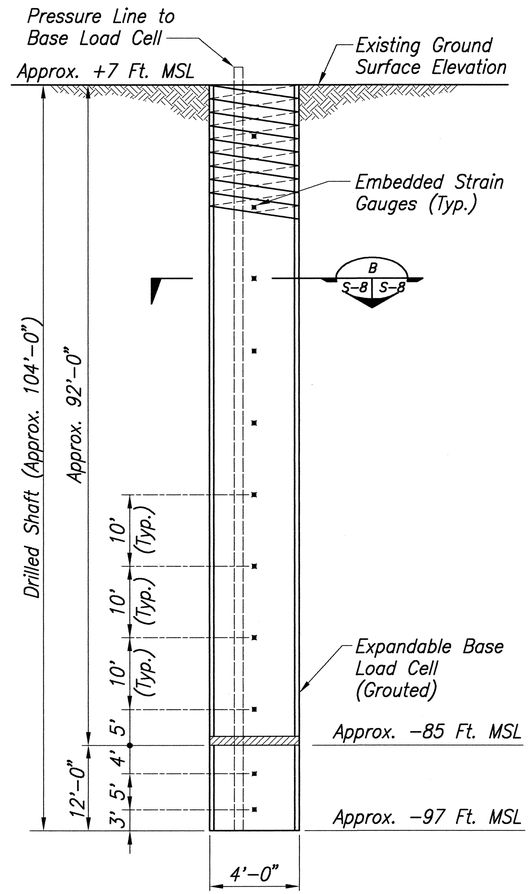


SECTION B

Scale: None



TYPICAL ELEVATION



TYP. TEST SHAFT ELEVATION

Scale: none

NOTES:

1. Drilled Shaft Concrete Shall be f'c=4500 P.S.I. Minimum. Strength at 28 Days.
2. Concrete Spacers Shall be Used to Maintain the Reinforcement Cage in Position within the Shaft.
3. Spirals May be Discontinuous at Footing Reinforcing to Allow for Placement of Reinforcing for Footing. The Discontinuous Spirals Shall be Terminated with a 135° Hook Around Vertical Reinforcing.
4. Bars with Hooked Ends to be Provided at all Drilled Shaft Abutments.
5. Reinforcing Steel for Drilled Shafts to Extend to Top of Footings with 1 1/2" Clear Space Between Footing Top Reinforcing. Drilled Shaft Reinforcing to be Enclosed by Spirals for Full Depth of Embedment in Footings.

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

Path: L:\Woo\6465-01\STR Filename: S8 Plot date: Jan 17, 2003-09:55:29am CAD User: elaong Xref Filename: ? Border ?

MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

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Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRILLED SHAFT DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-8 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	59	76

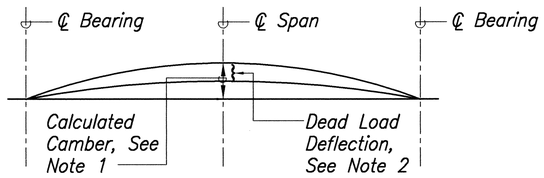
PRESTRESSED GIRDER NOTES:

1. Concrete Shall Have a Minimum Ultimate 28 Day Compressive Strength of 6500 PSI. Minimum Compressive Strength Before Release of Strands is 5000 PSI.
2. Prestressing Stands are One-half Inch Diameter, 7 Wire Low-Relaxation Steel Strands (Area = 0.1531 in^2) with an Ultimate Strength of 270 KSI, and Shall Conform to ASTM A416.
3. Total Long Term Losses Due to Creep, Shrinkage, Elastic Shortening and Relaxation of Steel Determined per AASHTO LRFD, Bridge Design Specifications, Second Edition, 1998, Section 5.9.5.
4. Strands Shall be Released in Such a Manner as to Minimize Lateral Eccentricity.
5. Care Shall be Taken During Curing, Transportation and Erection to Avoid Any Lateral Deflection of the Girder.
6. Lifting Devices or Other Embedded Items Used to Lift and Transport the Girders Shall be Located as Close as Possible to the Girder Centerline of Bearing. 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.
7. Reinforcing to Conform to ASTM A615 Grade 60.
8. Strand Pattern Shall be Symmetrical About the Longitudinal Centerline of the Girders.
9. The Contractor Shall Submit His Proposed Strand Pattern and Releasing Sequence to the Engineer for Approval.
10. The Contractor Shall Incorporate All Holes, Inserts, and Other Embedded Items Required in Girders During Fabrication of the Girders.
11. End of Girder Shall be Plumb After Erection.
12. Top of Concrete Seat Shall be Within One-sixteenth of an Inch of the Theoretical Elevation and Slope Indicated.
13. For AASHTO Type II Girders, the Contractor Shall Measure and Record 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 Two Inches from the Surface of the Member End. The Movement of the Reference Mark Shall be Measured to One-sixteenth of an Inch.
14. 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.
15. Measurement and Recording of Slippage of Strands Shall be Incidental to AASHTO Type II Girders.
16. Contractor is Responsible to Provide Adequate Lateral Bracing of Girders During all Phases of Construction Including Transporting, Placing, Erecting and Casting of Other Members.

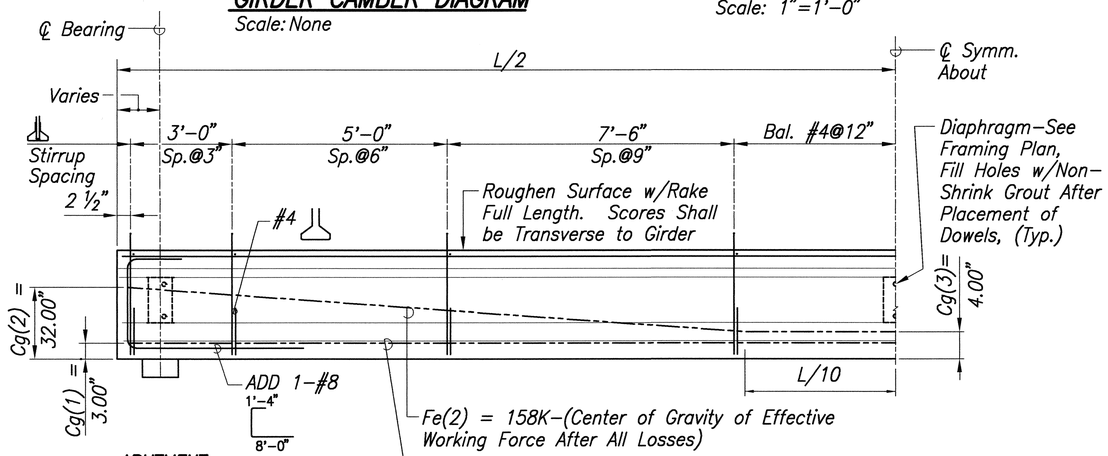
Girder Mark	Length ℄ Brg. to ℄ Brg.	Calculated Camber	Calculated Dead Load Deflection	Conc. Brg. Seat Slope	Remarks
G-1 Thru G-8	61.50'	-1.97"	1.25"	0" / 12"	

GIRDER CAMBER NOTES:

1. 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 Indicate a Net Upward Deflection. The Calculated Camber Value has been Multiplied by Applicable Factors Provided in PCI Handbook Table 4.6.2. to Approximate the Effect of Camber Growth and Concrete Creep. The Actual Camber Shall not Exceed the Calculated Camber by more than One-half inch.
2. The Dead Load Deflection Includes the Combined Effects of the Weight of Slab, Haunches, and Diaphragms as Applicable. See Table this Sheet.
3. Contractor Shall Camber the Deck Form work as Required to Account for the Calculated Dead Load Deflection in Order to Provide the Specified Finish Deck Elevations.
4. All Cambers and Deflections are in Inches.



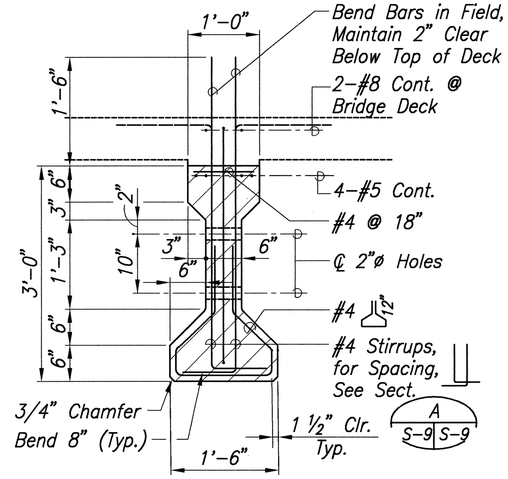
GIRDER CAMBER DIAGRAM
Scale: None



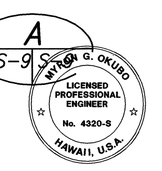
ABUTMENT

Note:
1. Prestressing Strands Not Shown for Clarity.

AASHTO TYPE II GIRDER LONGITUDINAL SECTION A S-9 S-9
Scale: None



TYPICAL AASHTO TYPE II GIRDER SECTION B S-9 S-9
Scale: 1"=1'-0"



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April 30, 2004
Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRESTRESSED GIRDER DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

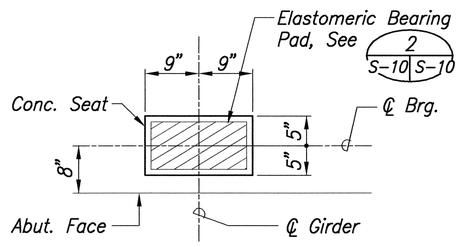
Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-9 OF 16 SHEETS

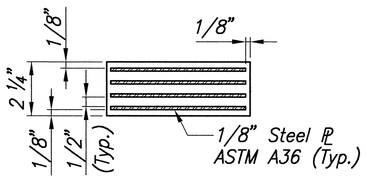
ORIGINAL PLAN | SURVEY PLOTTED BY | DATE
NOTEBOOK | DRAWN BY
TRACED BY
DESIGNED BY
No. | QUANTITIES BY
CHECKED BY

Path: L:\Woa\6465-01\STR Filename: S9 Plot date: Jan 17, 2003-09:56:06am CAD User: eleong. Xref Filename: | Border |

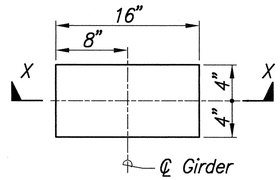
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	60	76



CONCRETE SEAT DETAIL 1
Scale: 1"=1'-0" — S-10 S-10



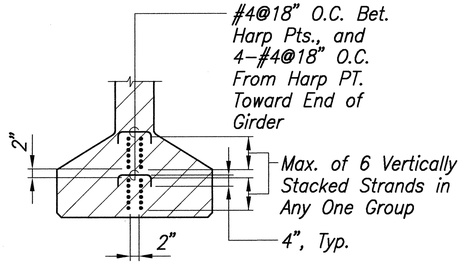
SECTION X-X



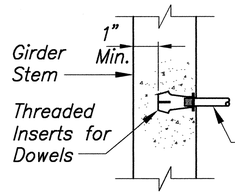
Note:

Elastomeric Bearing Pad to Consist of Neoprene, 60 Hardness with Steel Laminations. Elastomeric Bearing Pads Shall be Considered Incidental to AASHTO Type II Girders.

ELASTOMERIC BEARING PAD DETAILS 2
Scale: None — S-10 S-10



BUNDLED PRESTRESSING REINFORCEMENT DETAIL 3
Scale: 1"=1'-0" — S-10 S-10



Capacity of Inserts		
Dowel Size	Allow. Tension	Allow. Shear
#7	4.8 K	5.0 K

Inserts are Incidental to Reinforcing Steel in Girder.

THREADED INSERT DETAIL 4
Scale: NONE — S-4 S-10

ORIGINAL PLAN
NOTEBOOK No. ____

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

Path: L:\Wor\6465-01\STR Filename: S10 Plot date: Jan 17, 2003-09:56:49am CAD User: eleong Xref Filename: | Border: |

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

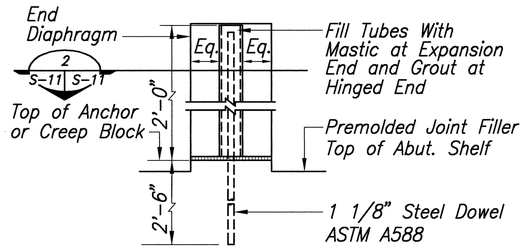
SECTIONS AND DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted — Date: Nov. 25, 2002

SHEET No. S-10 **OF** 16 **SHEETS**

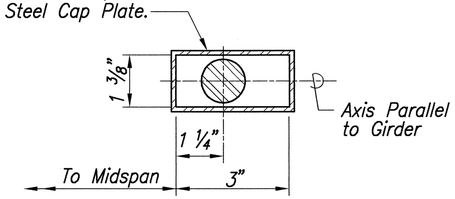
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	61	76



HINGE DOWEL 1
S-6 S-11

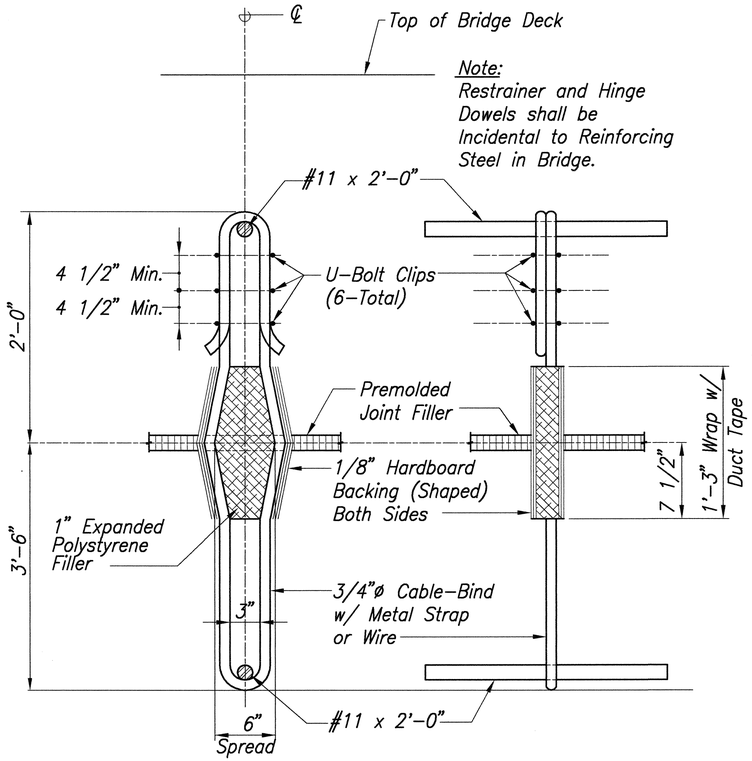
Scale: None

1/8" Galvanized Steel Tube (ASTM A36). Fabricated From Flat Bars Welded Together. Assembly Shall be Incidental Reinforcing Steel in Bridge. Tubes Shall be Capped by Welding a Steel Plate Following Placement of End Diaphragm And After Inspection And Placement of Mastic or Grout. Provide 1/2" Gap Between Top or Dowel And Bottom of Steel Cap Plate.



TUBE ASSEMBLY SECTION 2
S-11 S-11

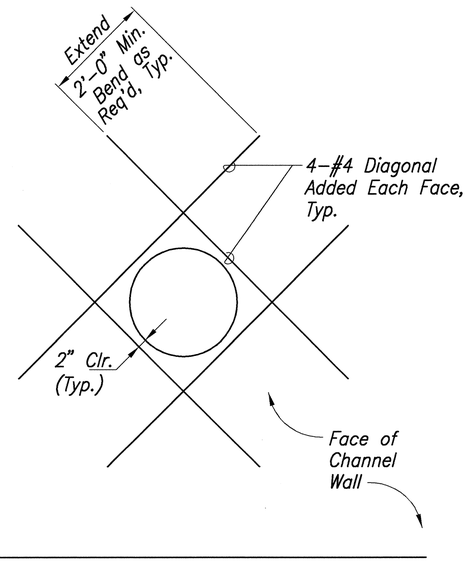
Scale: None



ELEVATION **SECTION**

VERTICAL RESTRAINER DETAIL 3
S-4 S-11

Scale: None



24" DRAINLINE PENETRATION THROUGH CONCRETE CHANNEL WALL 4
S-11 S-11

Scale: None

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

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Signature

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Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

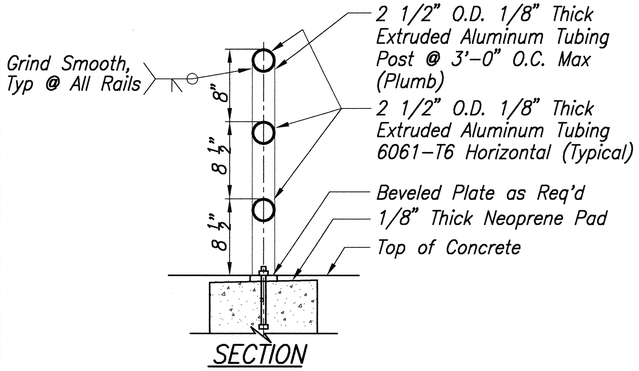
MISCELLANEOUS SECTIONS AND DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

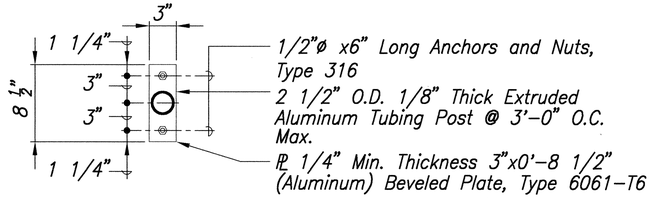
Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-11 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	62	76

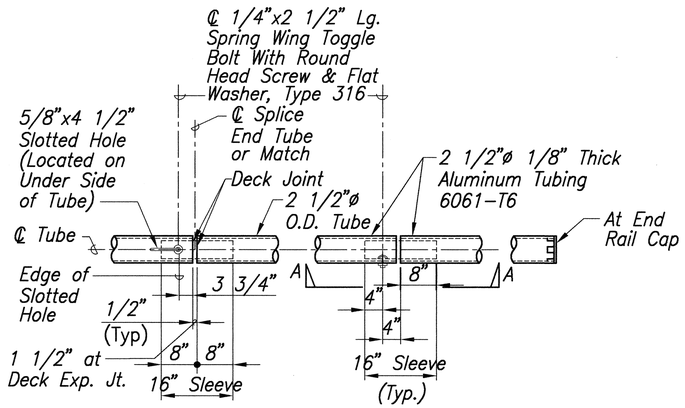


SECTION



ALUMINUM RAILING DETAIL — 1

Scale: 1 1/2"=1'-0" — S-12 | S-12



SECTION A-A SLEEVE-(FRONT VIEW)

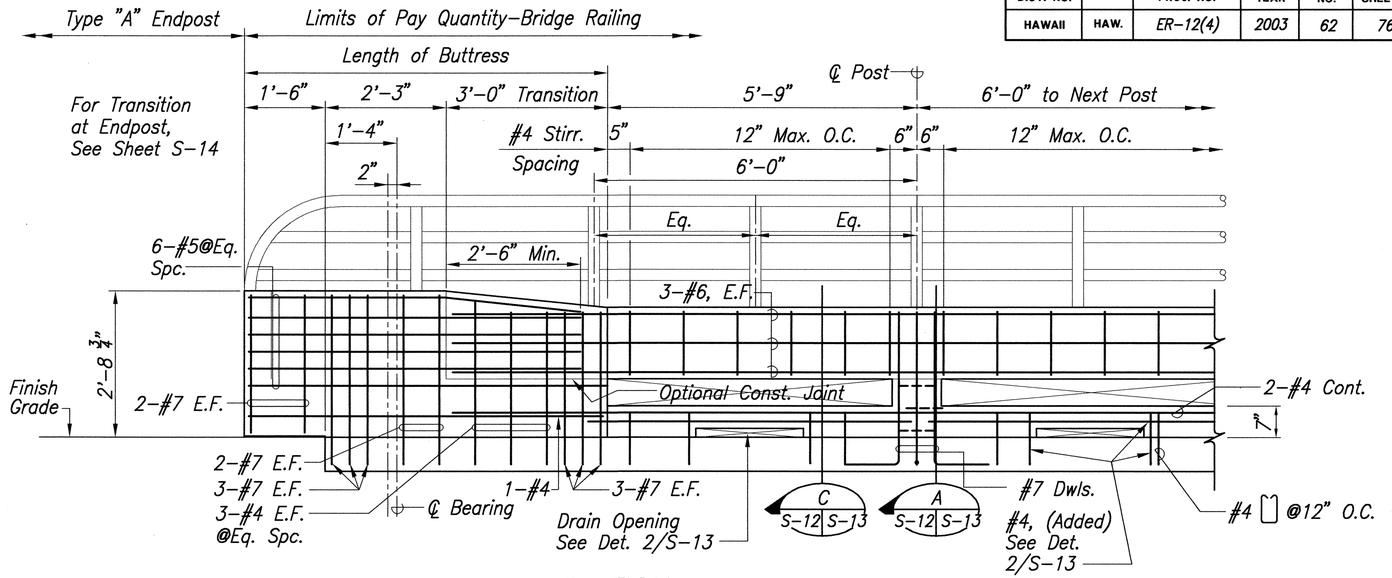
RAIL CAP DETAIL

TUBE SPLICE DETAIL — 2

Scale: None — S-12 | S-12

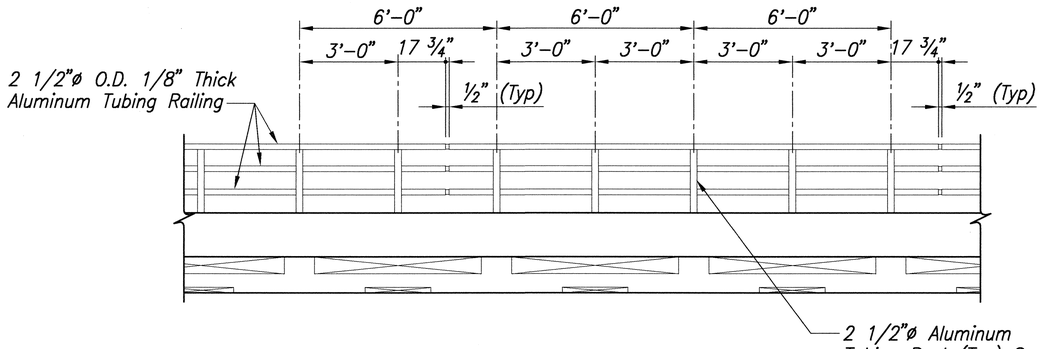
Notes

1. Slotted Hole & Toggle Bolts Shall Be Located On Underside of Tube.
2. Aluminum Railing To Be Considered Incidental to Bridge Railing.
3. Bolts, Nuts, & Washers for Aluminum Railing to be Type 316 Stainless Steel.



PARTIAL ELEVATION- CONCRETE RAIL DETAIL — 4

Scale: 3/4"=1'-0" — S-12 | S-12



RAILING POST SPACING — 3

Scale: None — S-12 | S-12

MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

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Signature

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RAILING DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

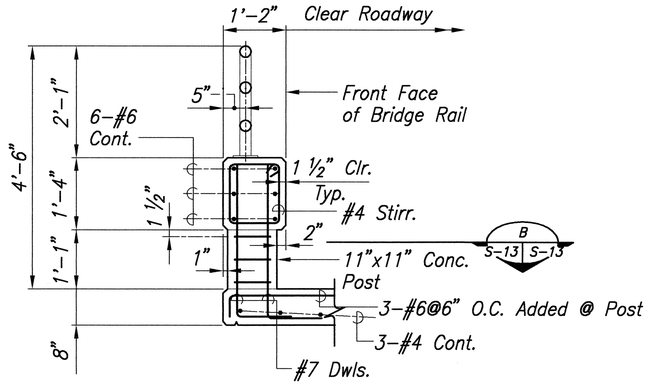
Scale: As Noted — Date: Nov. 25, 2002

SHEET No. S-12 OF 16 SHEETS

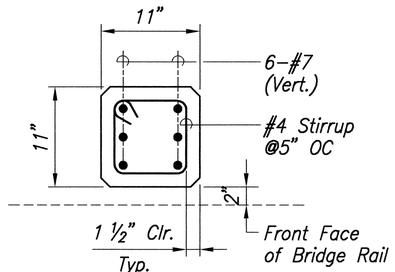
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTEBOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

Path: L:\Woo\6465-01\STR Filename: SI2 Plot date: Jan 17, 2003-09:58:05am CAD User: eleong. Xref Filename: ? Border ?

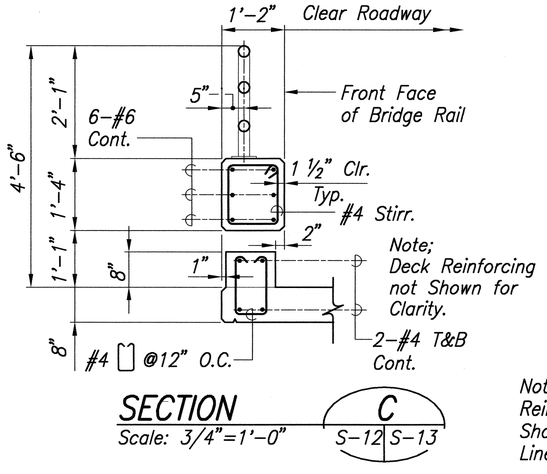
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	63	76



SECTION A
Scale: 3/4"=1'-0" S-12 S-13



SECTION B
Scale: 1 1/2"=1'-0" S-13 S-13



SECTION C
Scale: 3/4"=1'-0" S-12 S-13

Note:
Reinforcing Steel in Bridge Rail Shall be Included in Price Per Lineal Foot of Bridge Railing.

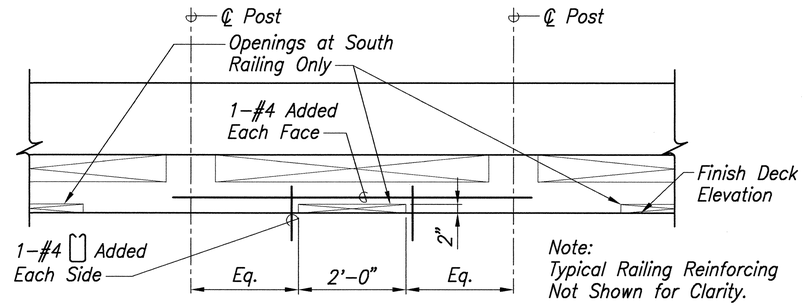
Depressed "V" Letters 3/8" Deep

3" NAME 1/2" DATE

Use Correct Name of Bridge Date of Year Built

Note:
Refer to Corresponding Detail Drawings for Placement Such Names & Dates at End Post.
Exact Details & Spacing of Letters & Figures Shall be as Directed by the Engineer. Gothic Letters and Figures Approximating Dimensions Shown will be Acceptable if Approved by the Engineer.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST 1
Scale: None S-2 S-13



TYPICAL ELEVATION OF SOUTH RAILING 2
Scale: 3/4"=1'-0" S-13 S-13

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

Path: L:\Woo\6465-01\STR Filename: SI3 Plot date: Jan 17, 2003-09:58:55am CAD User: eleong; Xref Filename: ? Border ?

MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

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April 30, 2004
Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

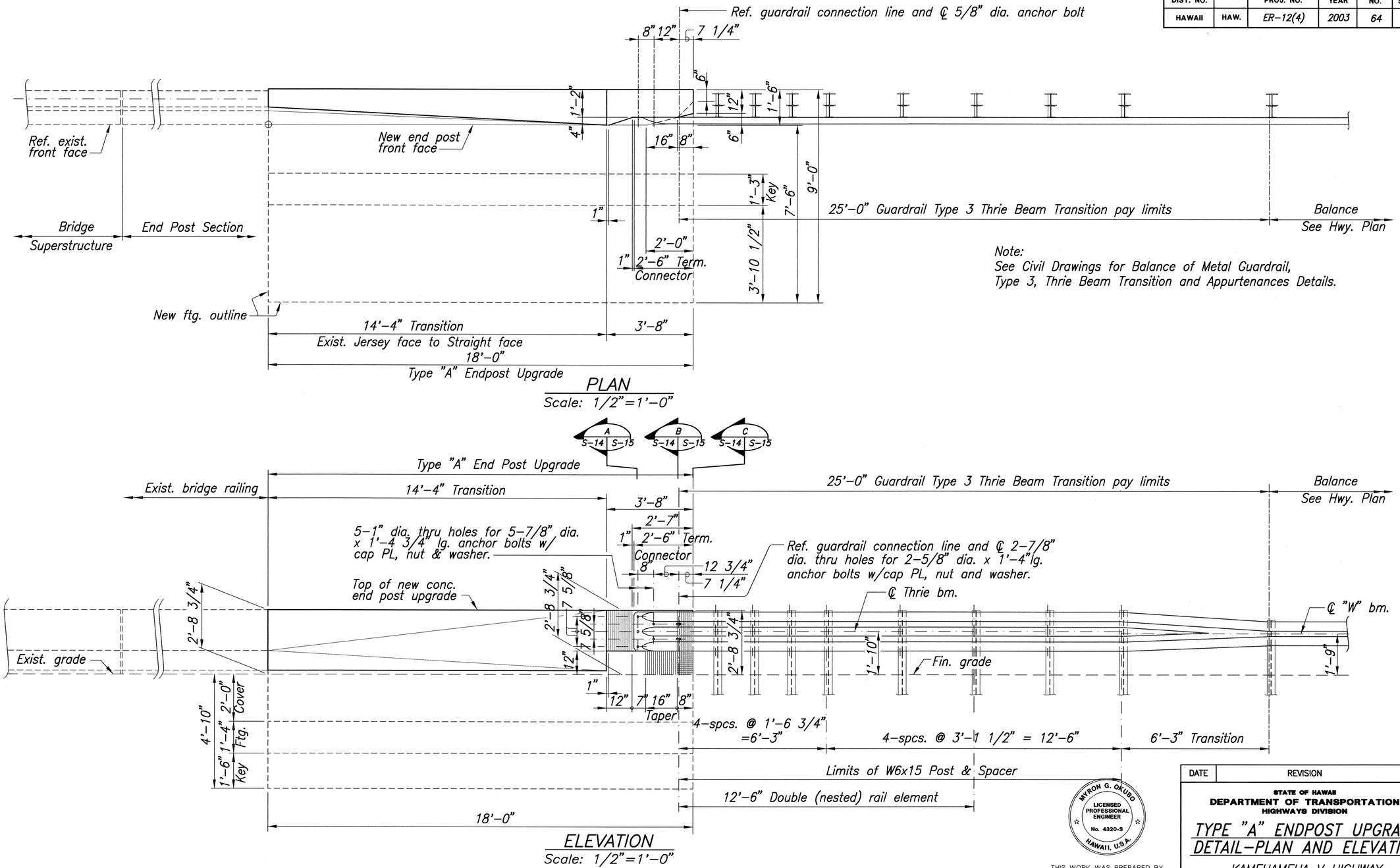
RAILING SECTIONS, DETAILS AND MISC. DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

SHEET No. S-13 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	64	76



Note:
See Civil Drawings for Balance of Metal Guardrail, Type 3, Thrie Beam Transition and Appurtenances Details.

MODIFIED TYPE "A" ENDPOST UPGRADE PLAN AND ELEVATION

ORIGINAL PLAN | NOTEBOOK No. ____

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

Path: L:\Woo\6465-01\STR Filename: S14 Plot date: Jan 17, 2003-09:59:51am CAD User: eleong; Xref Filename: | Border |

MYRON G. OKUBO LICENSED PROFESSIONAL ENGINEER No. 4320-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature
April 30, 2004
Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

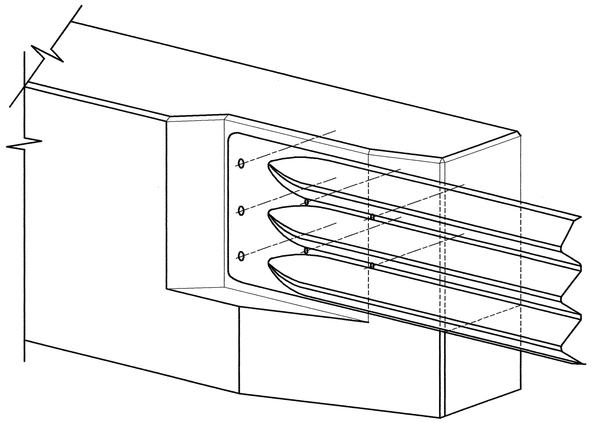
TYPE "A" ENDPOST UPGRADE DETAIL-PLAN AND ELEVATION

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

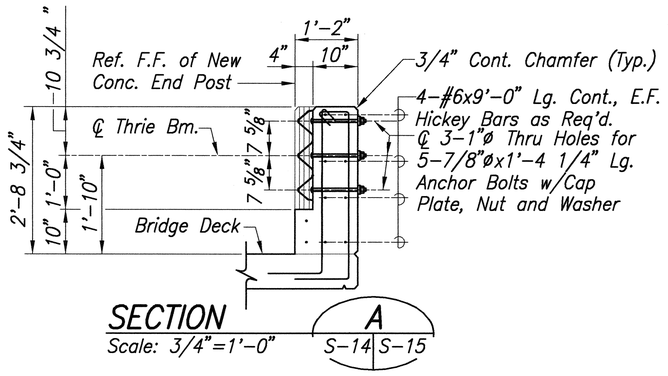
SHEET No. S-14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	65	76



PARTIAL ISOMETRIC VIEW – TYPE "A" ENDPOST UPGRADE

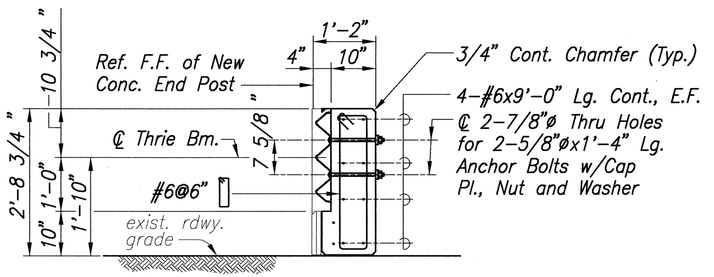
Not to Scale



SECTION A

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

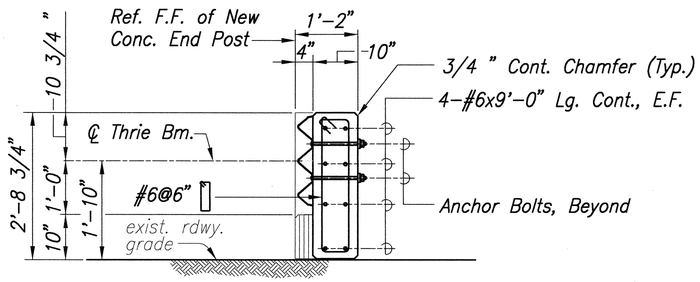
S-14 | S-15



SECTION B

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

S-14 | S-15



SECTION C

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

S-14 | S-15

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

Path: L:\Work\6465-01\STR Filename: S15 Plot date: Jan 17, 2003 10:00:31am CAD User: eleong Xref Filename: | Border |

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Signature

April 30, 2004

Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

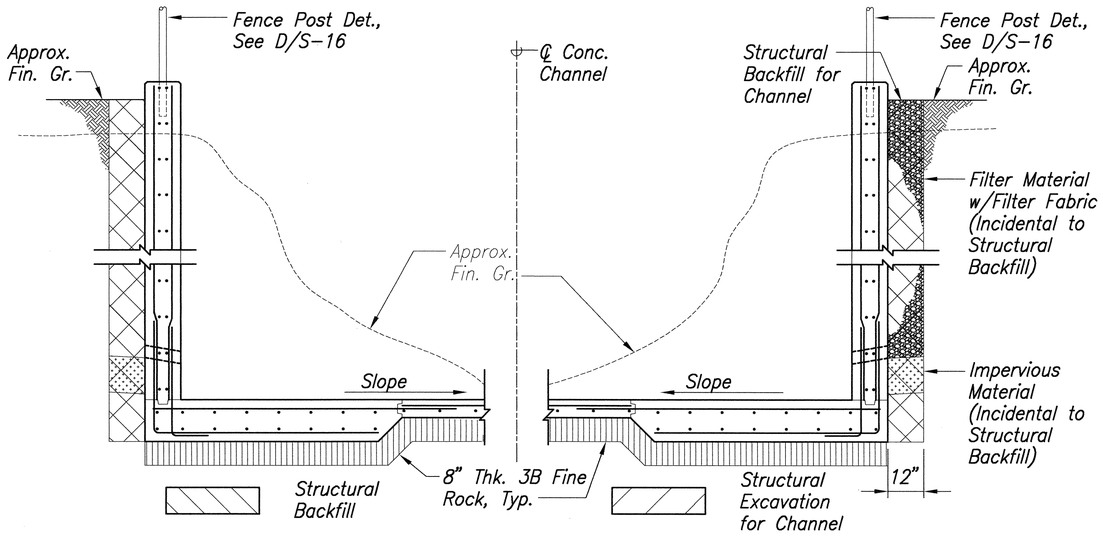
END POST DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted Date: Nov. 25, 2002

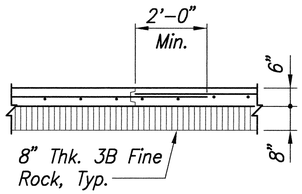
SHEET No. S-15 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(4)	2003	66	76

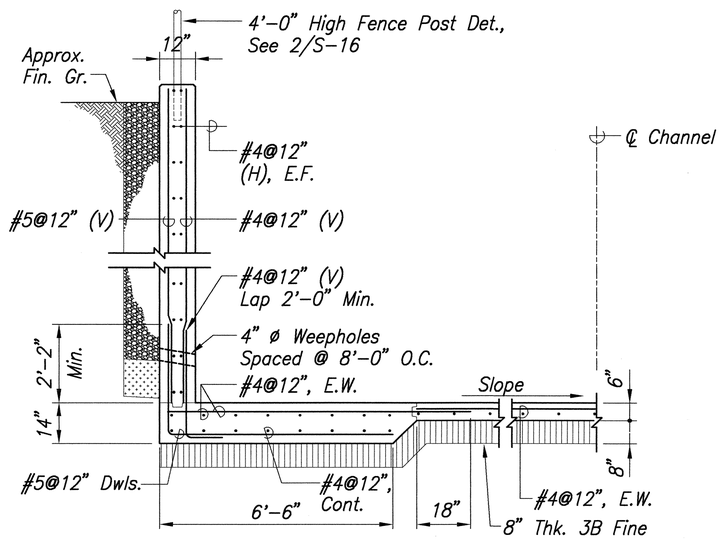


CONCRETE CHANNEL PAYLIMITS
Scale: 1/2"=1'-0"

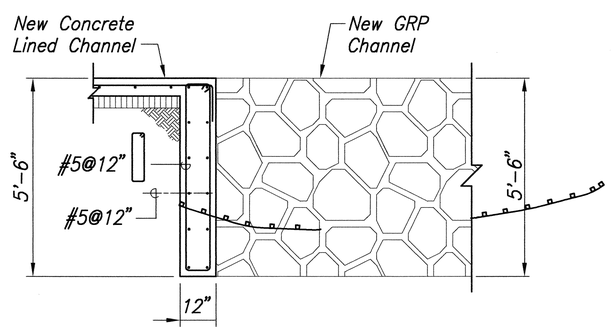
Note:
See Civil Drawings for Concrete Channel Wall Elevations.



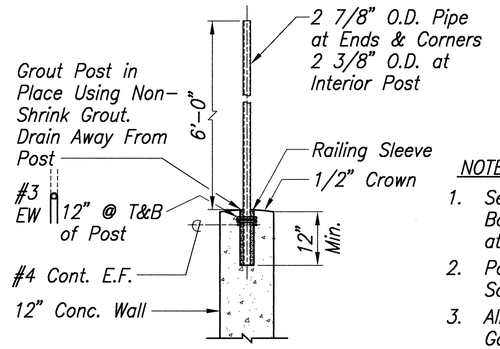
SLAB JOINT DET. 1
Scale: 1/2"=1'-0" — S-16 | S-16



SECTION A
Scale: 1/2"=1'-0" — S-16 | S-16



SECTION B
Scale: 1/2"=1'-0" — S-16 | S-16



(AT CHANNEL WALL)

FENCE POST DETAIL 2
Scale: 3/4"=1'-0" — S-16 | S-16

NOTES:
1. See Standard Plan D-02 for Balance of Details & Footing at GRP Wall.
2. Post & Braces Shall be Schedule 40 Pipe.
3. All Fencing Material Shall be Galvanized Steel.
4. Interior Pipe Braces Shall be 1 5/8" O.D. Pipe.

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

Path: L:\Woa\6465-01\STR Filename: S16 Plot date: Jan 17, 2003-10:01:16am CAD User: eleong Xref Filename: Border

LICENSED PROFESSIONAL ENGINEER — MYRON G. OKUBO — No. 4320-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature
April 30, 2004
Expiration Date of the License

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CHANNEL DETAILS

KAMEHAMEHA V HIGHWAY
EMERGENCY REPLACEMENT OF KAWAIKAPU BRIDGE
FEDERAL AID PROJECT NO. ER-12(4)

Scale: As Noted — Date: Nov. 25, 2002

SHEET No. S-16 OF 16 SHEETS