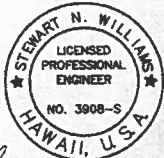



INDEX TO DRAWINGS

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SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION
S0.1	INDEX TO DRAWINGS	S5.1	PLAN AND SECTION - PIER 1		
S0.2	ESTIMATED QUANTITIES	S5.2	PLAN AND SECTION - PIER 2		
S0.3	BRIDGE GENERAL NOTES	S5.3	PLAN AND SECTION - PIER 3		
S0.4	SYMBOLS AND ABBREVIATIONS	S5.4	PLAN AND SECTION - PIER 4		
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S4.2	ABUTMENT NO. 1 ELEVATION, PLAN SECTIONS				
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S4.14	APPROACH SLAB DETAILS				
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S4.16	END POST DETAILS	S11.1	CONSTRUCTION SEQUENCE		

ORIGINAL SURVEY PLOTTED BY DATE 1/10/2000
 DRAWN BY
 TRACED BY
 NOTE BOOK DESIGNED BY ASE
 QUANTITIES BY
 CHECKED BY
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INDEX TO DRAWINGS
 MAMALAHOA HIGHWAY
 REPLACEMENT OF
 KEAIWA STREAM BRIDGE
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BRIDGE GENERAL NOTES

- General Specifications: Hawaii Department of Transportation, Standard Specifications for Road and Bridge Construction, 1994, together with Special Provisions prepared for this contract.
- Design Specifications: AASHTO 1998 LRFD Bridge Design Specifications (Second Edition) and its subsequent interim specifications with interim supplements and modifications by the Highways Division, Department of Transportation, State of Hawaii.

- Loads:
 - Dead Load: An allowance of 25 PSF for future wearing surface of asphalt concrete has been provided in the design.
 - Live Load: AASHTO HL-93 Truck Loading
 - Seismic Loads: Acceleration coefficient - 0.8
Seismic Performance Zone - 4
Importance Category - Essential

- Materials:
 - All concrete strengths shall be as noted below:

Item No.	Structural Parts	Classes of Concrete	Specified Compressive Strength, f'c (28 Days)
(1)	Pre-stressed planks	-	7000 PSI
(2)	Abutment footings, Pier, Pier Footings	-	5000 PSI
(3)	Abutment walls Retaining walls including foundations	-	5000 PSI
(4)	Rails	-	4000 PSI
(5)	Bridge deck	-	5000 PSI
(6)	Approach Slab	-	4000 PSI
(7)	Except as noted otherwise all others	A	3000 PSI

All concrete with the exception of Class A and Class D concrete shall have a maximum W/C Ratio of 0.45. The W/C Ratio for Class A and Class D concrete shall follow the standard specifications.

- All reinforcing steel shall be ASTM A 615 Grade 60 unless otherwise noted.
- Reinforcing steel shall be ASTM A 706 where welded connections are required.
- All structural steel shall be ASTM A 36 hot dip galvanized after fabrication, unless otherwise noted.
- All anchor bolts, washers and nuts shall be ASTM A 307 hot dip galvanized after fabrication, unless otherwise specified.
- For materials of prestressed concrete planks see applicable prestressed concrete notes.
- Concrete for bridge deck shall have a maximum size aggregate of 3/8 of an inch and shall use a hi-range water reducer.

- Reinforcement:
 - The minimum covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:
 - Deck slabs
 - Top bars = 2"
 - Bottom bars = 1 1/2" except as otherwise noted.
 - For prestressed concrete planks see prestressed concrete plank details.
 - Abutments and retaining walls = 2"
 - Piers = 3" to ties

- Approach slab bottom bars = 3"
All others unless otherwise noted = 2" Clear
 - Concrete cast against and permanently exposed to earth = 3"
 - All others unless otherwise noted = 2"
- Reinforcing bars shall be detailed in accordance with the latest edition of the A.C.I. Detailing Manual unless otherwise noted.
 - Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate.
 - All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.
 - 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.
 - Vertical wall bars shall be arranged in such a manner as to avoid interference with plank and topping bars above as directed by the Engineer.

- Plank Bearings:
 - Plank concrete seats receiving elastomeric pads shall be poured monolithically with supporting structure. Top of concrete seat receiving elastomeric bearing pads shall be finished with a steel trowel to a smooth level surface to the elevation shown on the plans. Grind down high spots as needed to provide an even bearing surface to 1/16"± tolerance.
 - Elastomeric pads: To prevent displacement, the bottom of bridge bearing pads shall be secured to the concrete seats with adhesives approved by the Engineer.

- Construction Notes:
 - See Standard Specifications and Special Provisions.
 - In general, top of concrete deck slab shall be constructed to follow the roadway vertical and horizontal curves and superelevations.
 - Except as otherwise noted, all vertical dimensions are measured plumb.
 - The Contractor shall verify all site conditions and not rely upon these plans for stream location, etc. Conditions may differ from those shown.
 - The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.
 - For concrete finish see Standard Specifications and Special Provisions.
 - Construction joints may be relocated or additional ones added subject to the approval of the Engineer.
 - Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4" x 3/4".

- General:
 - All items noted incidental will not be paid for separately.
 - 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.

- Foundation:
 - For boring logs and other geotechnical information, see foundation report by Geolabs, Inc. and Sheets G1 through G6.
 - General:
 - Many footings are located in or near the Stream. Construction at these locations may be complicated by the presence of water and cobbles or boulders. Additionally, the stream is subject to flash flooding. Shoring of the excavation may be required for the construction of these footings.

- Concrete footings from the previous bridge that was demolished may complicate excavation. If required excavation of the concrete footings which includes removal of the reinforcing steel shall be considered incidental to Section 206 - Excavation and Backfill for Conduits and Structures of the Specifications.
 - The pay limits for excavation for the Bridge, shown on sheets no. S4.8 and S5.7 should not be considered as indicative of actual excavation requirements.
 - Prior to structure excavation at Abutment No. 1, provide soldier piling and lagging at the existing power pole shown on sheet S4.4.
- Design Soil / Rock Parameters:
 - Bearing pressure on basalt rock
 - Extreme event limit state = 60 ksf
 - Strength limit state = 36 ksf
 - Service limit state = 20 ksf
 - Passive resistance of intact rock
 - Extreme event limit state = 35 ksf (rectangular distribution)
 - Strength limit state = 17.5 ksf (rectangular distribution)
 - Coefficient of friction of basalt rock
 - Extreme event limit state = 0.75
 - Strength limit state = 0.64
 - Side shear between concrete and intact basalt rock
 - Extreme event limit state = 2 ksf
 - Static lateral earth pressure
 - Active condition, level backfill = 35 pcf
 - Active condition, 2H : 1V backfill = 50 pcf
 - At-rest condition, level backfill = 50 pcf
 - At-rest condition, 2H : 1V backfill = 65 pcf
 - Dynamic lateral earth pressure
 - Level backfill = 74H psf (rectangular distribution) (for abutment walls)
 - Level backfill = 36H psf (rectangular distribution) (for wingwalls and site retaining walls)
 - Blasting will not be allowed on this project.
- Reference Drawings:
 - For construction sequence, see Sheet S-11.1.

DATE: 10/20/00
DESIGNED BY: [Signature]
CHECKED BY: [Signature]
NO. [Blank]

GEOLABS, INC.
2008 KALANI STREET
HONOLULU, HAWAII 96819

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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

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DATE: [Blank]

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HIGHWAYS DIVISION

BRIDGE GENERAL NOTES

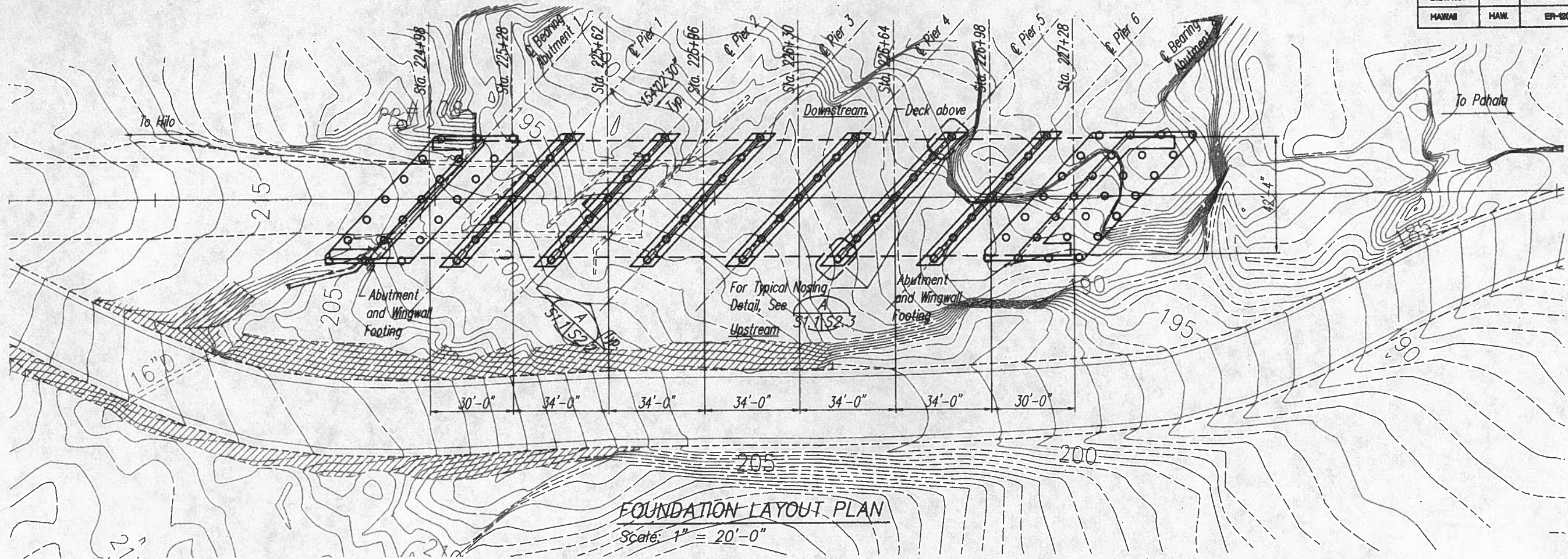
**MAMALAOHA HIGHWAY
REPLACEMENT OF
KEAIIWA STREAM BRIDGE**

Federal Aid Project No. ER-12(1)R

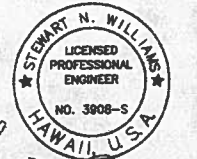
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SHEET No. 50.3 OF 50 SHEETS

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FOUNDATION LAYOUT PLAN
Scale: 1" = 20'-0"

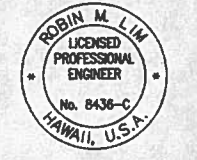


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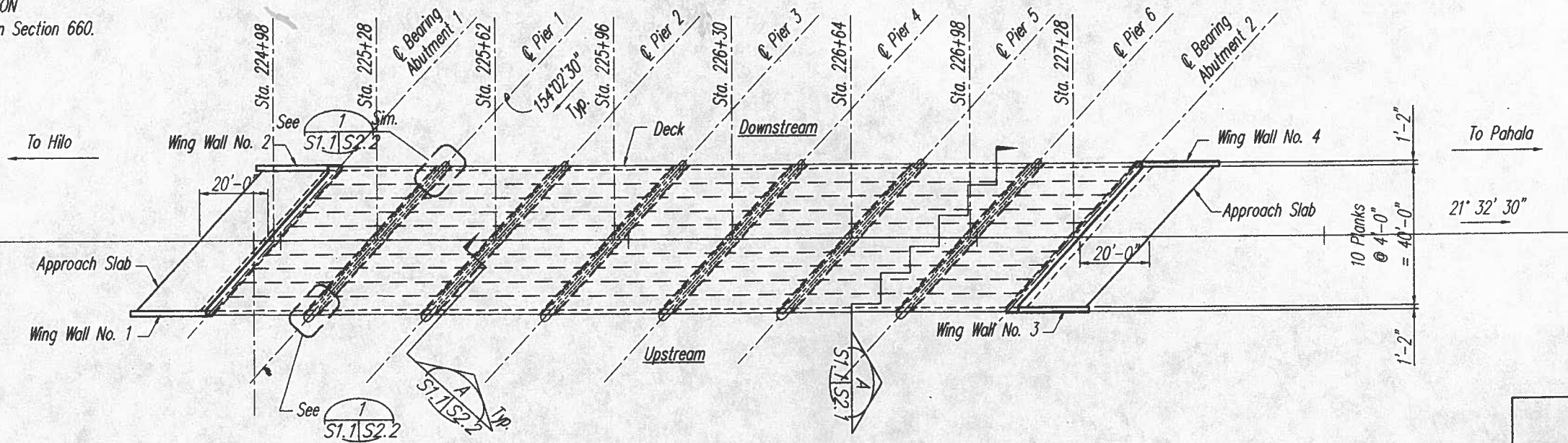
GEOLABS, INC.
2008 KALANI STREET
HONOLULU, HAWAII 96819



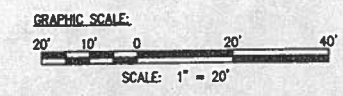
Robin M. Lim
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LEGEND:

- PROBE HOLE LOCATION
See Special Provision Section 660.



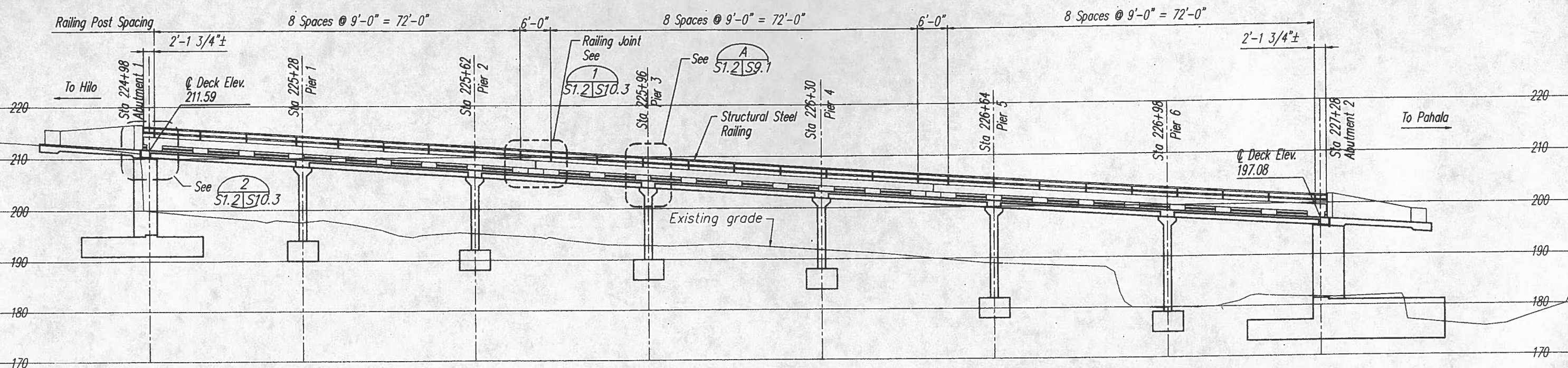
DECK LAYOUT PLAN
Scale: 1" = 20'-0"




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**FOUNDATION LAYOUT PLAN
AND DECK LAYOUT PLAN**
MAMALAHOA HIGHWAY
REPLACEMENT OF
KEAIIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R
Scale: As Shown Date: January 2001
SHEET No. S1.1 OF 50 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	DEC 2000
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(1)R	2001	15	77

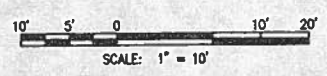


LONGITUDINAL SECTION ALONG CENTERLINE ROAD
 Scale: 1" = 10'-0"


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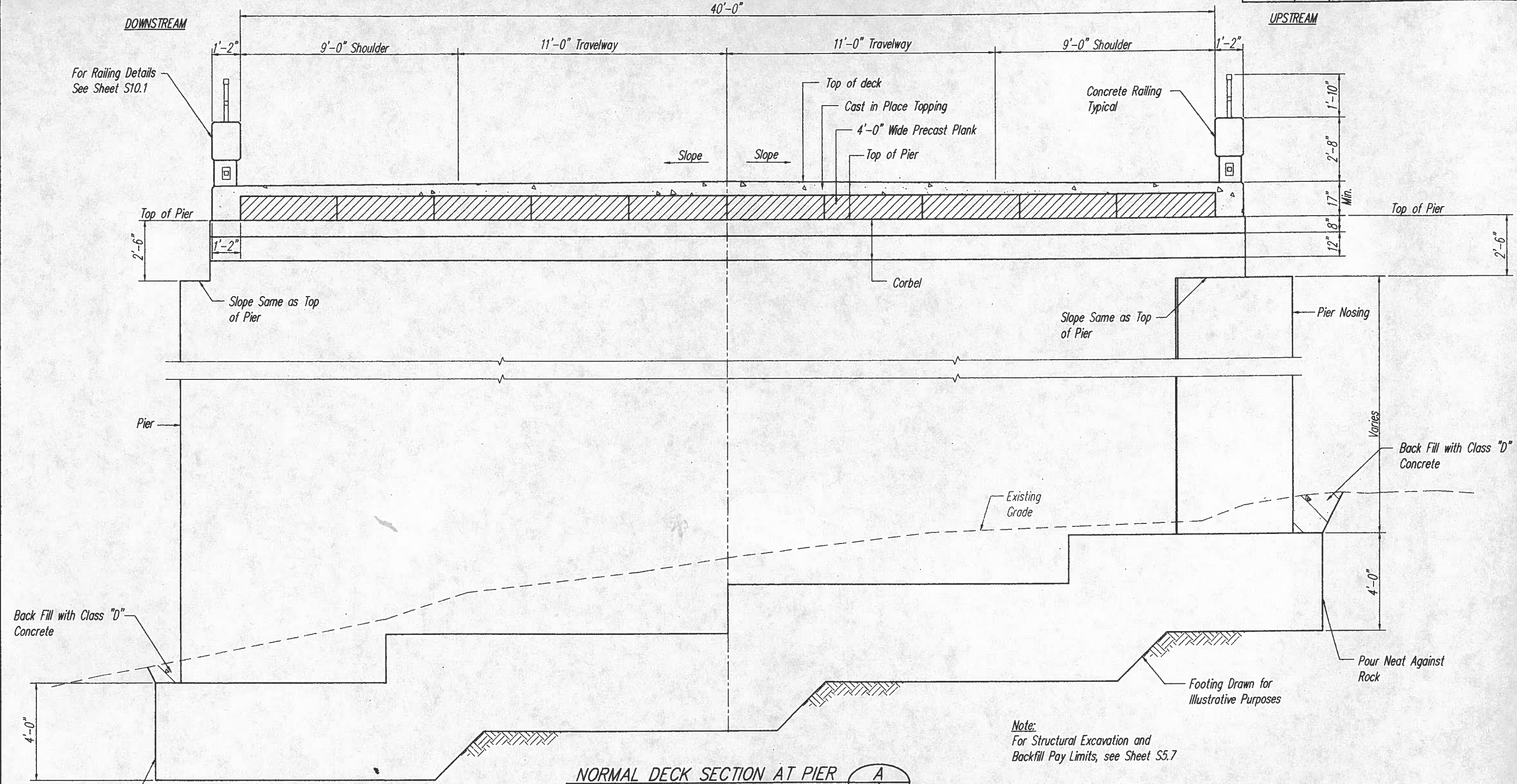
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 SURVEY PLOTTED BY _____ DATE _____
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 DESIGNED BY _____
 QUANTITIES BY _____
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
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LONGITUDINAL SECTION
MAMALAHOA HIGHWAY
REPLACEMENT OF
KEAIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R
 Scale: As Shown Date: January 2001
 SHEET No. S1.2 OF 50 SHEETS

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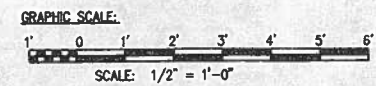


Note:
For Structural Excavation and
Backfill Pay Limits, see Sheet S5.7

NORMAL DECK SECTION AT PIER A
Scale: 1/2" = 1'-0" S1.1/S2.1



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ORIGINAL PLAN
NO. _____
DATE _____
DESIGNED BY _____
CHECKED BY _____
SURVEY PLATTED BY _____
DRAWN BY _____
NOTE BOOK NO. _____
QUANTITIES BY _____
CHECKED BY _____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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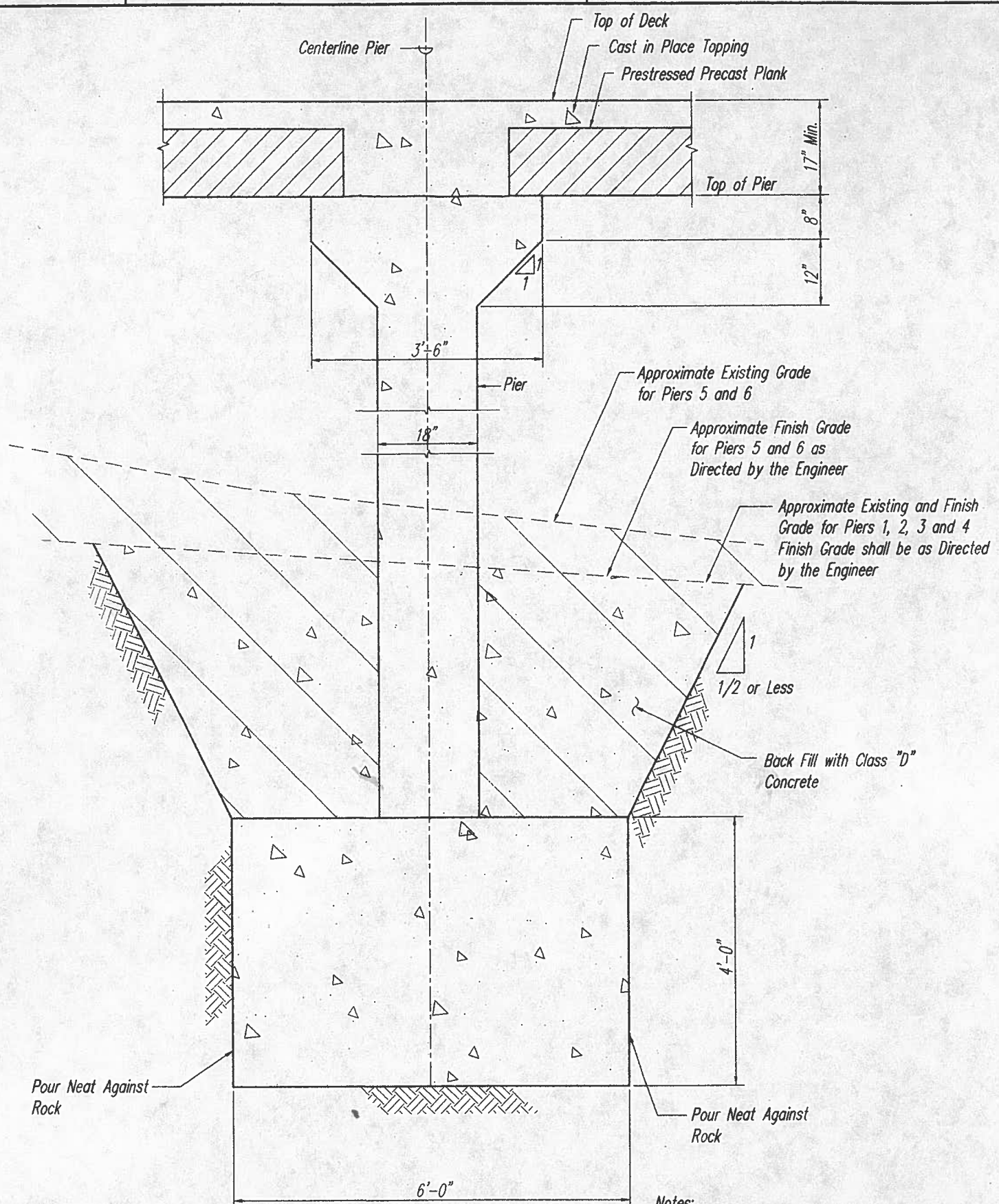
NORMAL DECK SECTION AT PIER

MAMALAOA HIGHWAY
REPLACEMENT OF
KEAIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R

Scale: As Shown Date: January 2001

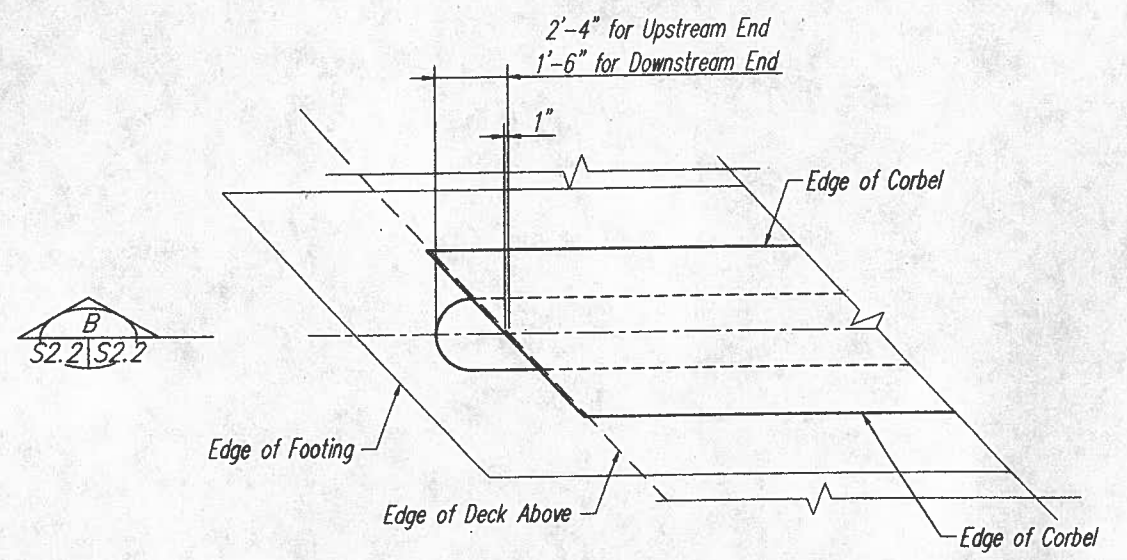
SHEET No. S2.1 OF 50 SHEETS

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HAWAII	HAW.	ER-120R	2001	18	77

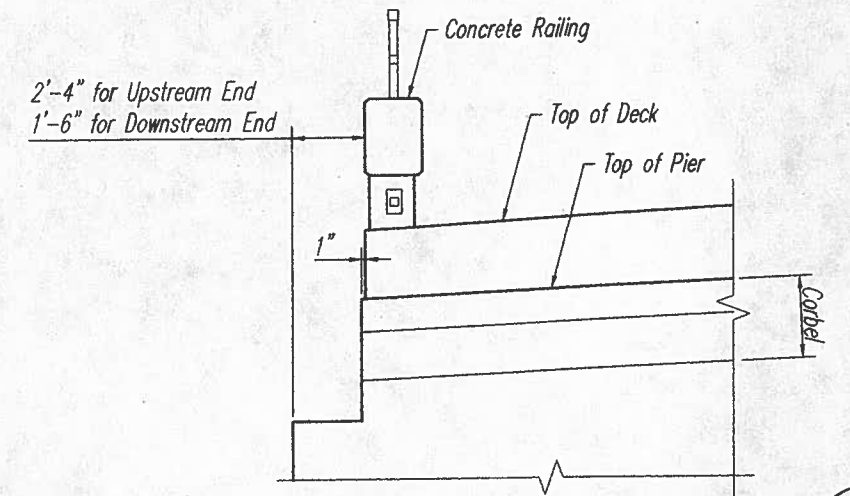


SECTION A
Scale: 1" = 1'-0" S1.1/S2.2

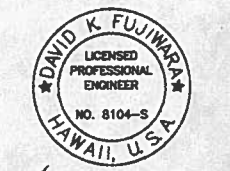
- Notes:**
1. For Structural Excavation and Backfill Pay Limits, see Sheet S5.7
 2. Finish Grade for All Piers shall be As Directed by the Engineer.



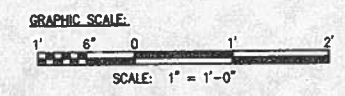
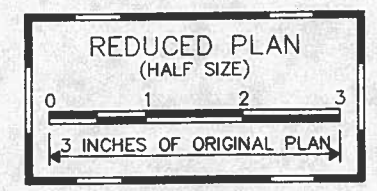
CORBEL DETAIL
Scale: 1/2" = 1'-0" S1.1/S2.2



SECTION B
Scale: 1/2" = 1'-0" S2.2/S2.2



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TYPICAL SECTIONS

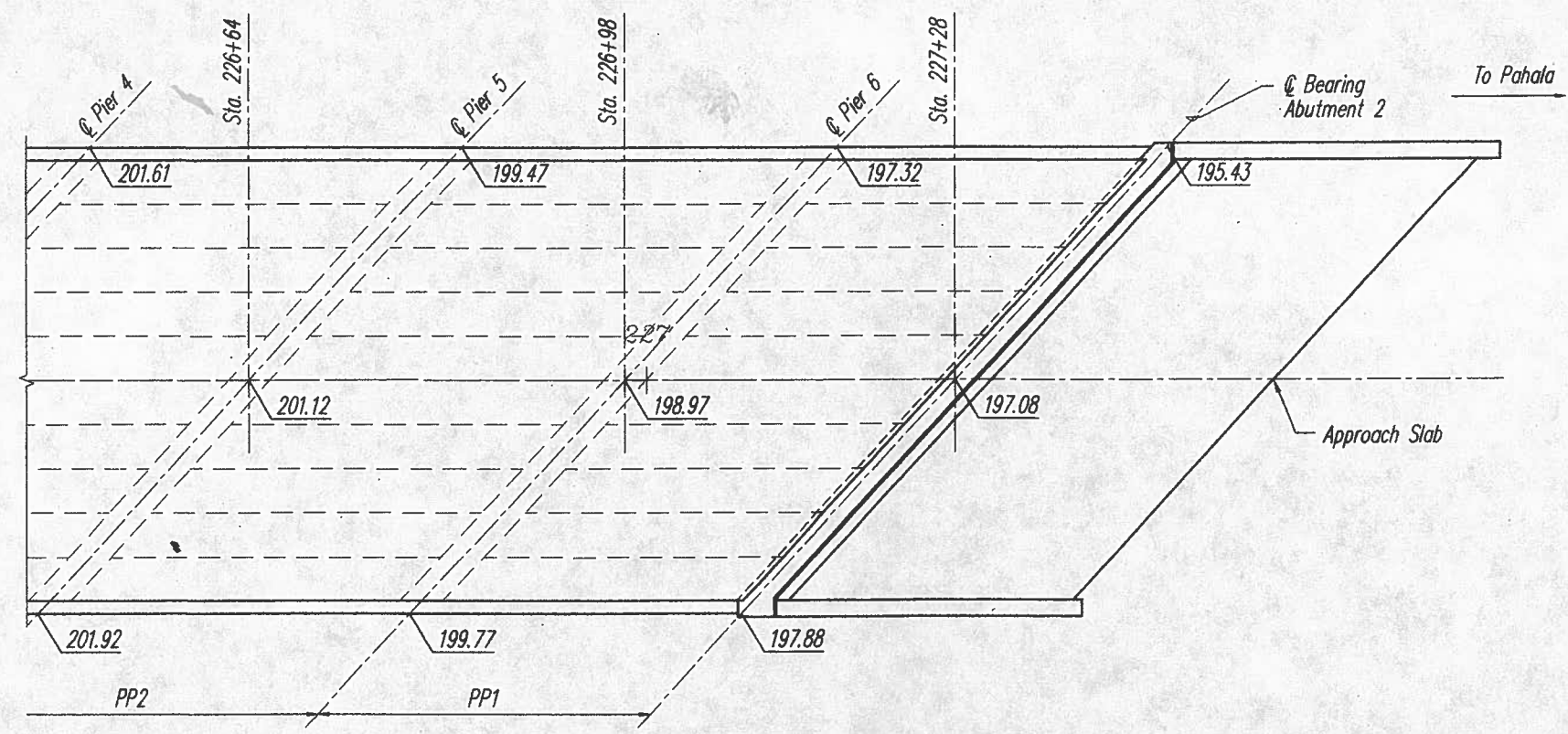
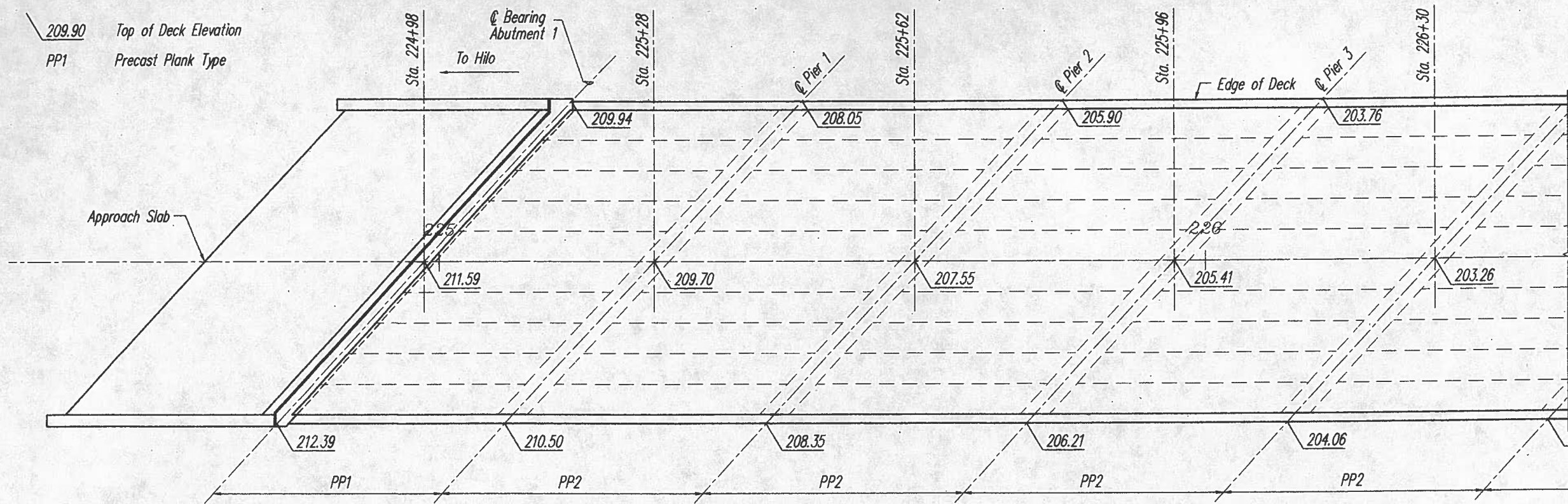
**MAMALAHOA HIGHWAY
REPLACEMENT OF
KEIWA STREAM BRIDGE**
Federal Aid Project No. ER-12(1)R
Scale: As Shown Date: January 2001

SHEET No. S2.2 OF 50 SHEETS

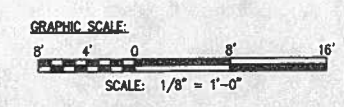
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-200R	2001	20	77

LEGEND:
 209.90 Top of Deck Elevation
 PP1 Precast Plank Type



TOP OF DECK ELEVATION PLAN
 Scale: 1/8" = 1'-0"



DATE: NOV 2000
 SURVEY PLOTTED BY: []
 DRAWN BY: []
 CHECKED BY: []
 ORIGINAL PLAN
 NOTE BOOK
 No. []



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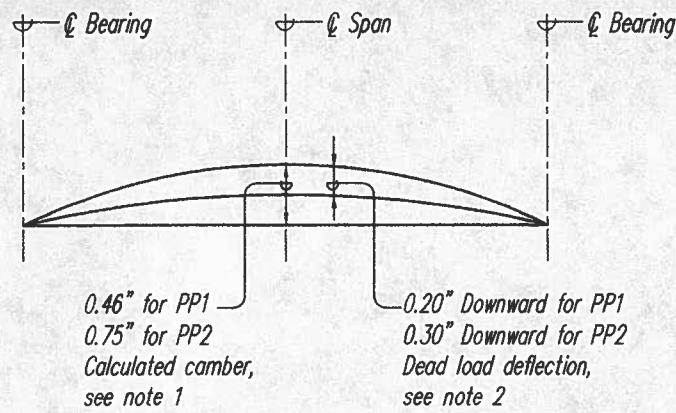
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TOP OF DECK ELEVATION

MAMALAHOA HIGHWAY
 REPLACEMENT OF
 KEAIIWA STREAM BRIDGE
 Federal Aid Project No. ER-12(1)R

Scale: As Shown Date: January 2001

SHEET No. S3.1 OF 50 SHEETS

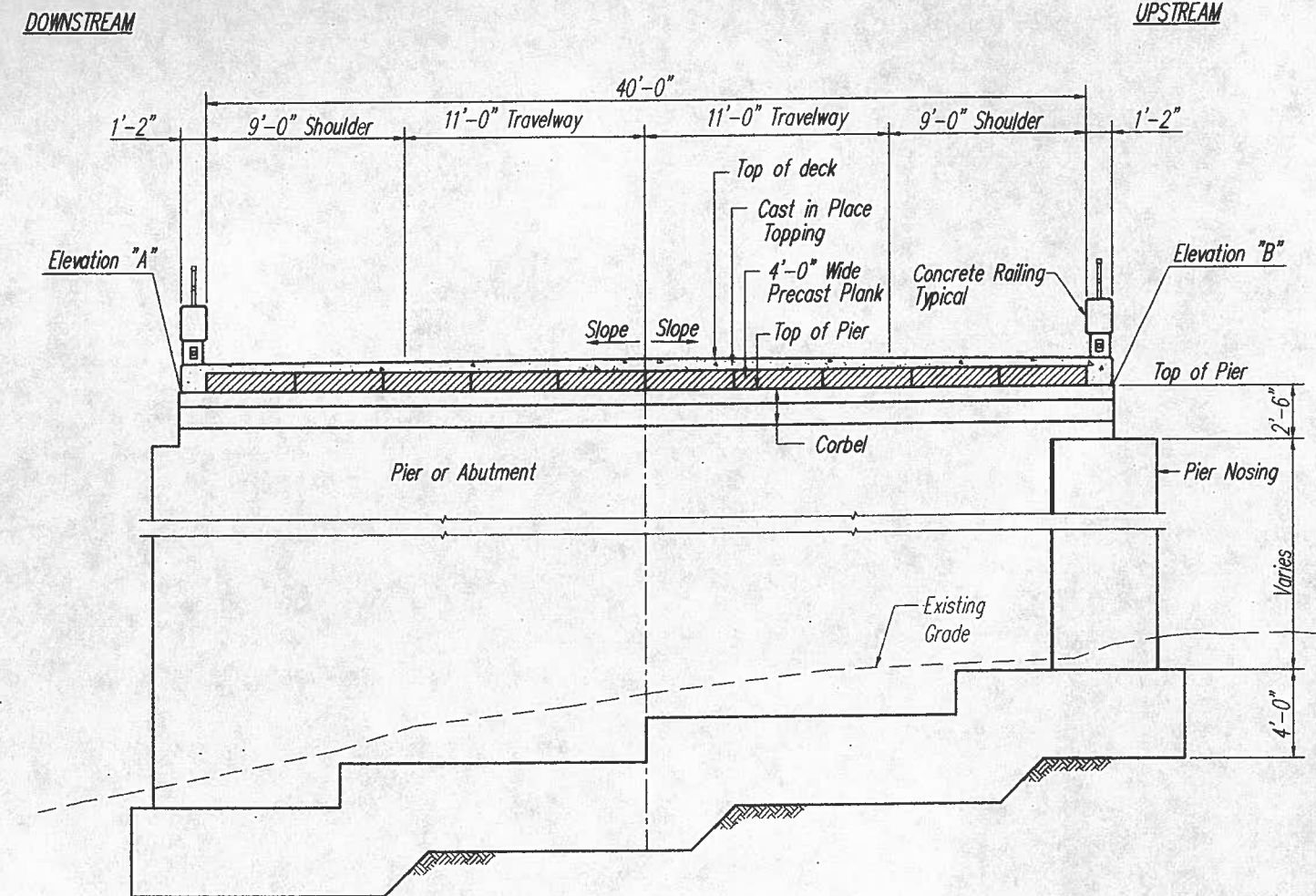


LOCATION	ELEVATION "A"	ELEVATION "B"
ABUT. NO.		
1	208.38	210.83
2	193.87	196.32
PIER NO.		
1	206.55	209.00
2	204.40	206.85
3	202.26	204.71
4	200.11	202.56
5	197.97	200.42
6	195.82	198.27

CAMBER AND DEFLECTION NOTES:

- The calculated camber includes the effect of the prestress force and the weight of the girder after removal from the bed. Positive values shown for calculated camber indicate a net upward deflection. The calculated camber value has been multiplied by creep factors to approximate the effect of camber growth and concrete creep. The actual camber shall not exceed the calculated camber by more than 1/2".
- The dead load deflection for the weight of the topping.
- All cambers and deflections are in inches.

GIRDER CAMBER DIAGRAM 1
Not to Scale S3.2/S3.2



NOTES:

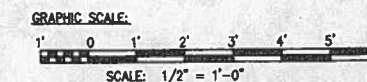
- Top of pier and abutment slopes shall be constant from Elevation "A" to Elevation "B".
- Top of pier and abutments also slope parallel with the bridge and shall have a constant slope of 6.31% in that direction. The higher elevation is on the Hilo side.
- Elevations "A" and "B" accounts for camber
- Elevations are at centerline pier and centerline bearing at abutments.
- Abutment elevations account for the bearing pad thickness.

NORMAL DECK SECTION AT PIER A
Scale: 1/4" = 1'-0" S3.2/S3.2

SURVEY PLOTTED BY	DATE
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
NO.	



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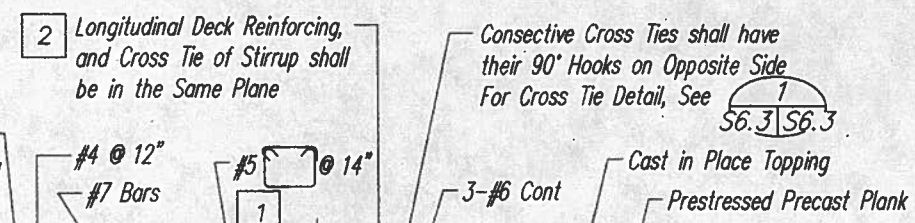


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TOP OF PIER ELEVATIONS
AND CAMBER DIAGRAM**
MAMALAHOA HIGHWAY
REPLACEMENT OF
KEIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R
Scale: As Shown Date: January 2001

SHEET No. S3.2 OF 50 SHEETS

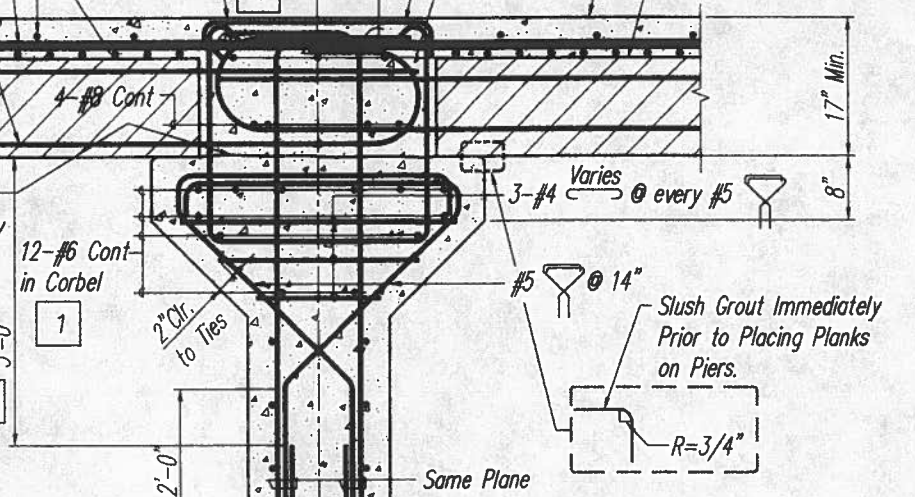
Note:
For Topping Reinforcing Plan, See Sht. S9.1



For Plank Reinforcing, Refer to Sht. S7.1

#9 Added Long. Topping Reinf.

Surface shall be Clean, Free of Laitance and shall be Intentionally Roughened to 1/4" Amplitude



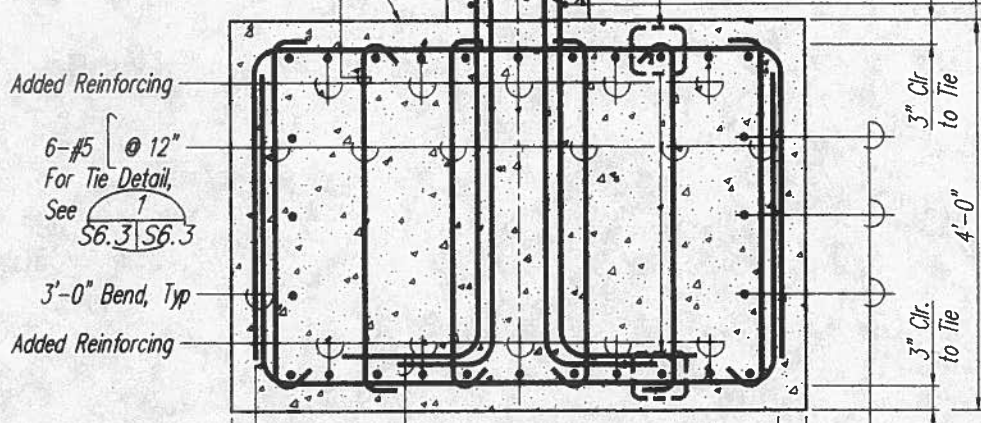
Note:
Consecutive Cross Ties Engaging the Same Longitudinal Bars Shall have Their 90 Degree Hooks on Opposite Sides of Pier or Top and Bottom of Footing.

For Tie Spacing, See S6.2 | S6.2
For Tie Details, See S6.3 | S6.3 and S6.3 | S6.3

#11 @ 14" EF Vert. #6 @ 8" EF Horiz

Add #8 @ 14" EF Vert. for Piers 1 and 6 Only. Terminate Reinf. 3'-0" Below Top of Pier

See Sheet S6.3 for Reinforcing



Added Reinforcing

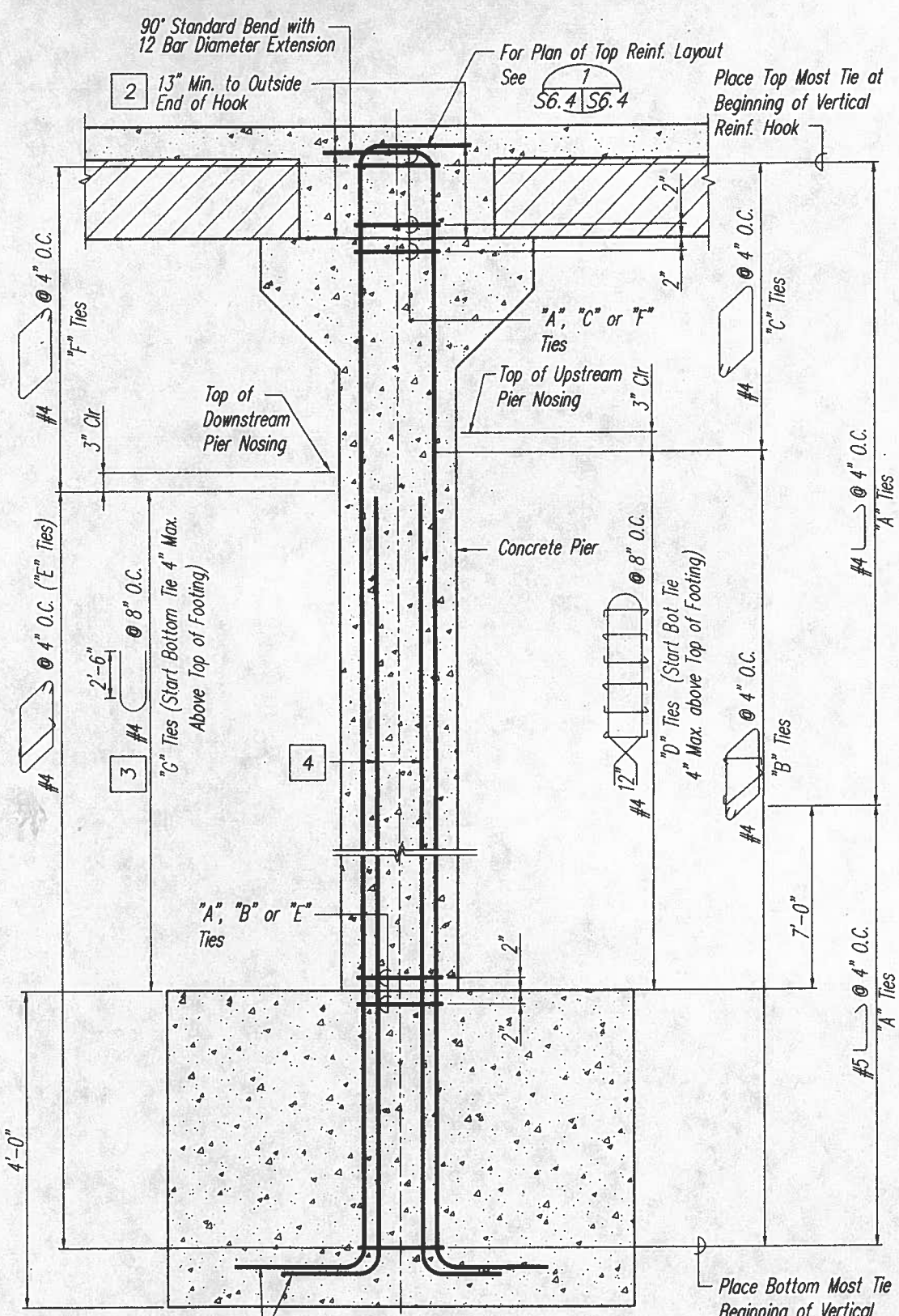
6-#5 @ 12" For Tie Detail, See S6.3 | S6.3

3'-0" Bend, Typ

Added Reinforcing

PIER SECTION A
Scale: 1" = 1'-0" S6.1 | S6.2 S6.3, S6.4

3-#7 Cont. Runner Bars Each Side (6 Total) Equally Spaced. Spliced Length and Locations Similar To A S6.1 | S6.3



90° Standard Bend with 12 Bar Diameter Extension

2 13" Min. to Outside End of Hook

For Plan of Top Reinf. Layout See S6.4 | S6.4

Place Top Most Tie at Beginning of Vertical Reinf. Hook

Top of Downstream Pier Nosing

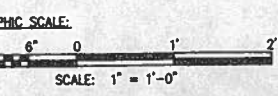
Top of Upstream Pier Nosing

Concrete Pier

"A", "B" or "E" Ties

90° Standard Bend with 12 Bar Diameter Extension

SECTION B
Scale: 1" = 1'-0" S6.2 | S6.2 S6.4



Notes:

1. For Types "A", "B", "C", "D", "E" and "F" Ties, See Sht. S6.4

2. For Tie Details, See S6.3 | S6.3 and S6.3 | S6.3



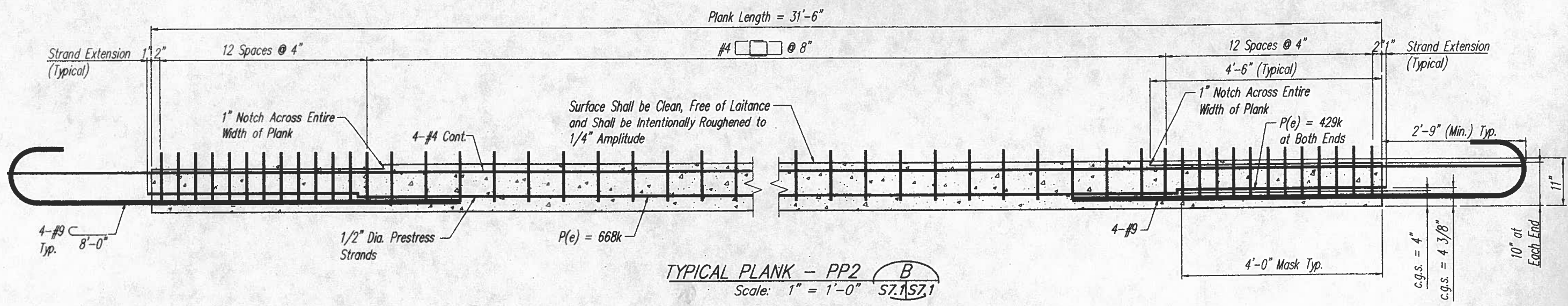
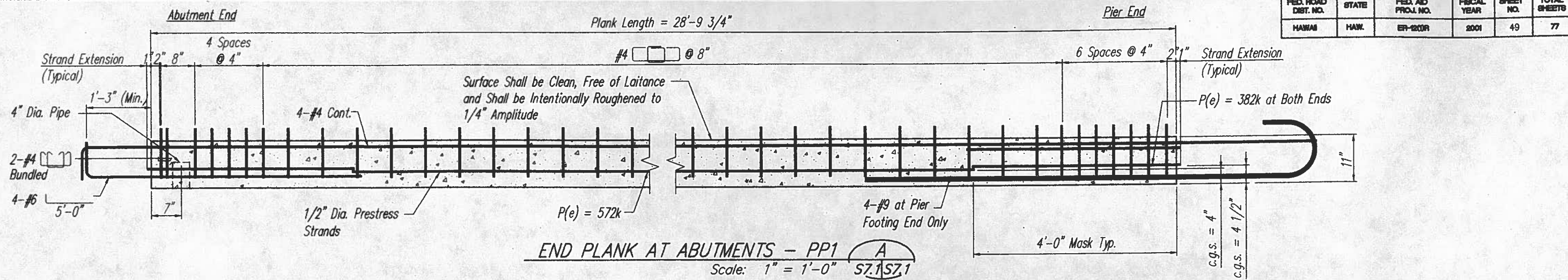
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

01-29-01	1	Modified Corbel Reinf.
01-29-01	2	Clarified dimension of Vert. Pier Reinf. from Top of Pier to Outside End of Hook
01-29-01	3	Added "G" Ties
01-29-01	4	Added Vert. Reinf. for Piers 1 and 6 Only

DATE	DESCRIPTION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
PIER SECTION	
MAMALAHOA HIGHWAY REPLACEMENT OF KEAIIWA STREAM BRIDGE Federal Aid Project No. ER-12(1)R	
Scale: As Shown	Date: January 2001
SHEET No. S6.2 OF 50 SHEETS	

CHECKED BY: DATE: JEC/2000
 DRAWN BY: DATE: JEC/2000
 DESIGNED BY: DATE: JEC/2000
 QUANTITIES BY: DATE: JEC/2000
 ORIGINAL NOTE BOOK No.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-200R	2001	49	77



PRESTRESSED PLANK NOTES

- Prestressed concrete 28 day strength $f'c = 7,000$ PSI. Prestressed concrete strength at time of release $fci = 4,500$ PSI.
- Pretensioned strands shall be 7 wire 1/2" ϕ low relaxation steel strands (Area = 0.153 in²) with an ultimate tensile strength of 270 KSI. For properties, see "State Standard Specifications."
- Non-prestressed reinforcing steel shall be grade 60. For properties, see "State Standard Specifications."
- Strand pattern shall be symmetrical about the longitudinal ϕ of the plank.
- Strand release sequence shall not induce any lateral deflection of the plank.
- Contractor shall submit shop drawings indicating proposed strand pattern, releasing sequence, reinforcing details & hold down device details to the Engineer prior to fabrication.
- During curing, care shall be taken to avoid any lateral deflection of the plank due to improper orientation. Steam curing may be used to accelerate strength gain.
- Lifting devices shall be placed as close as possible to the centerline of bearings of the plank. Details and locations of lifting devices shall be submitted to the Engineer for approval. Such approval does not relieve the Contractor of his responsibilities if beam is damaged due to failure of the lifting device.
- See Sheet S3.1 for location of plank mark numbers.



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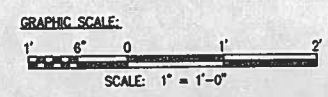
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRECAST PLANK SECTION AND DETAILS

MAMALAOHA HIGHWAY
REPLACEMENT OF
KEAIIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R

Scale: As Shown Date: January 2001

SHEET No. S7.1 OF 50 SHEETS

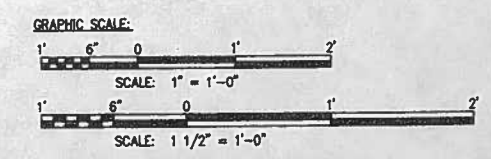
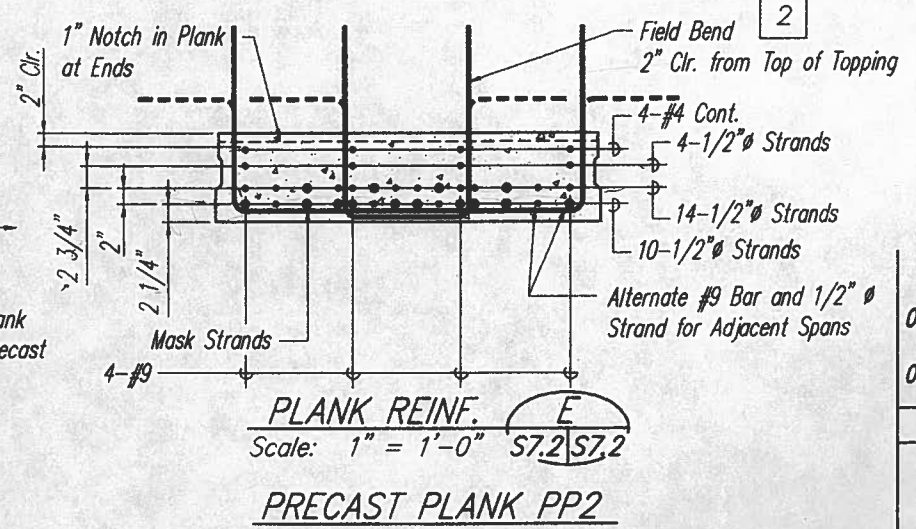
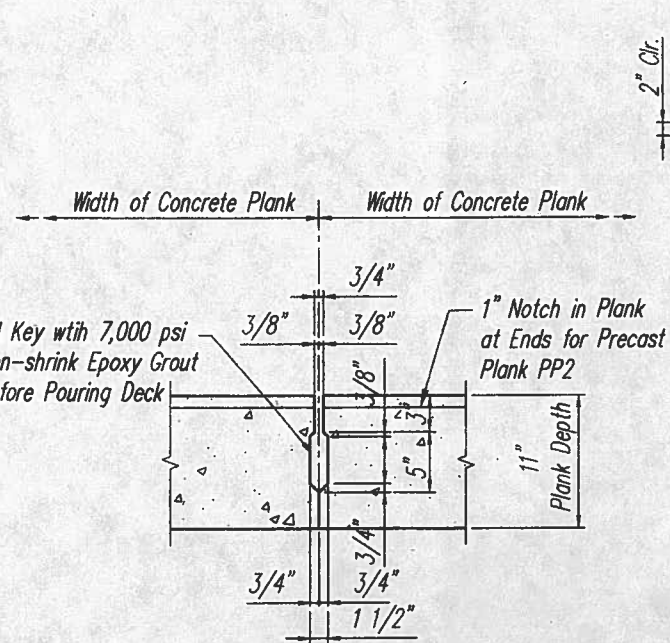
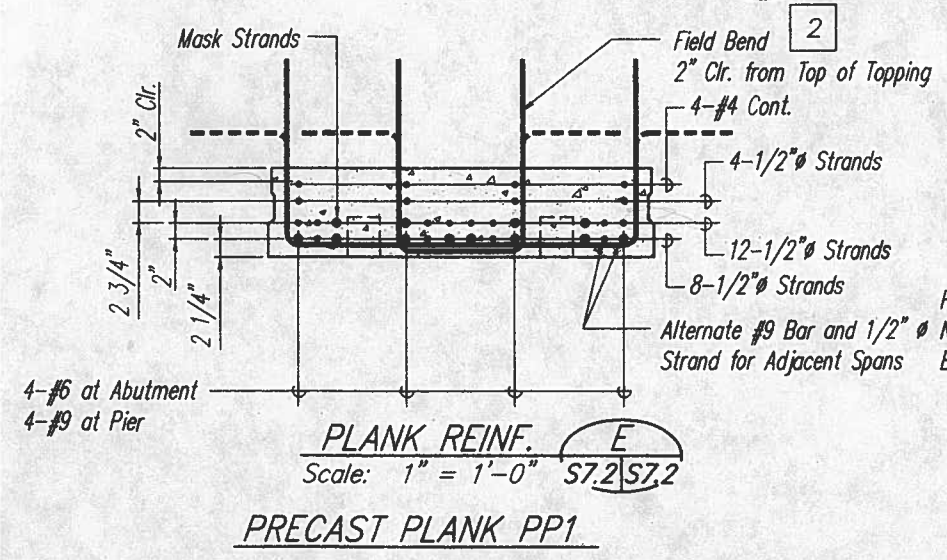
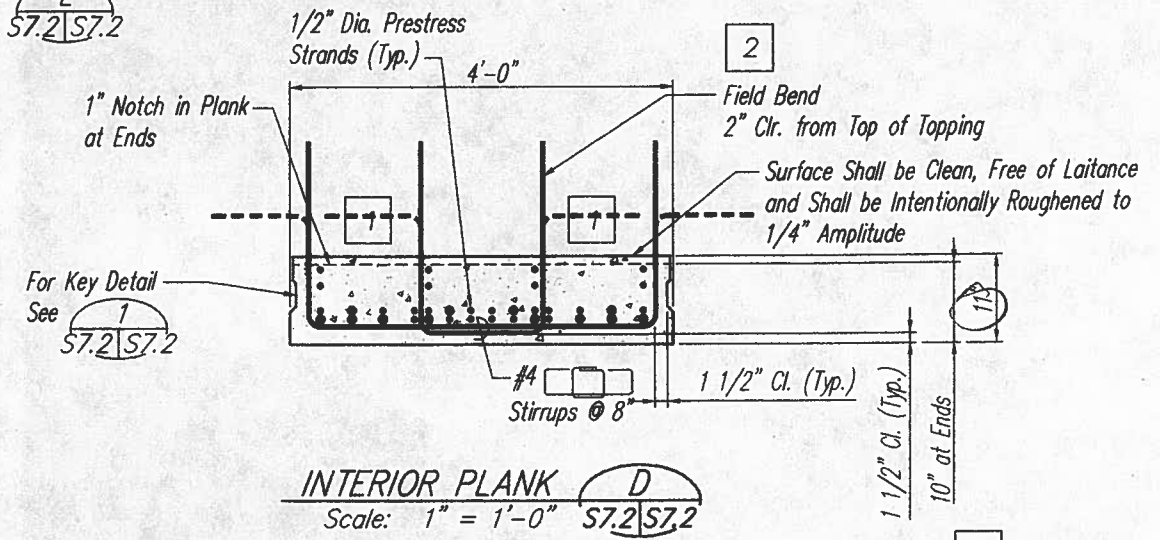
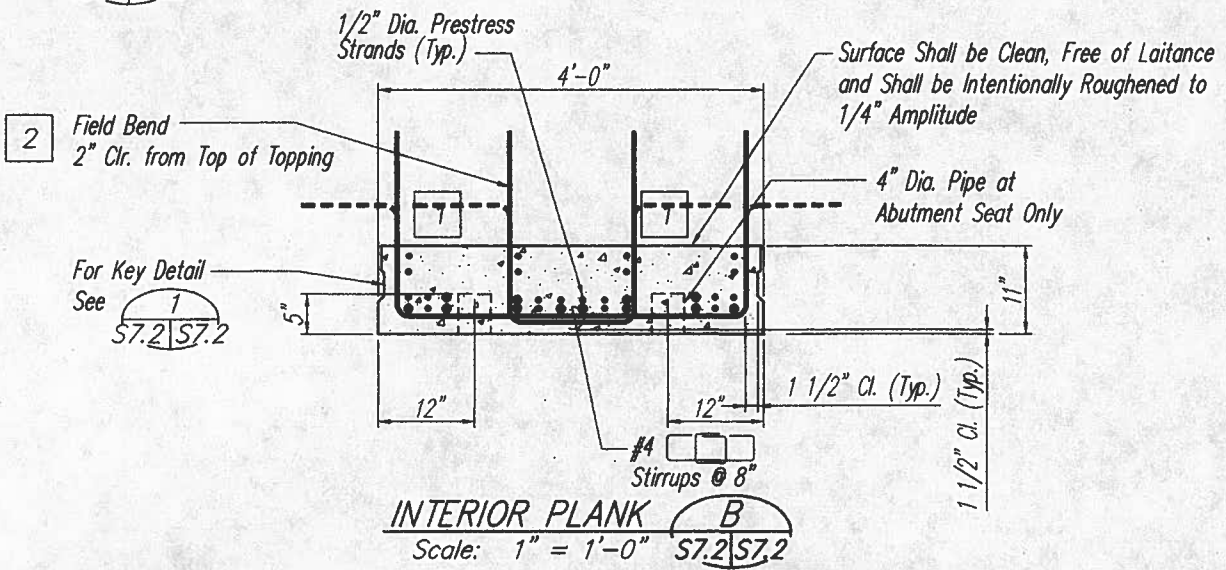
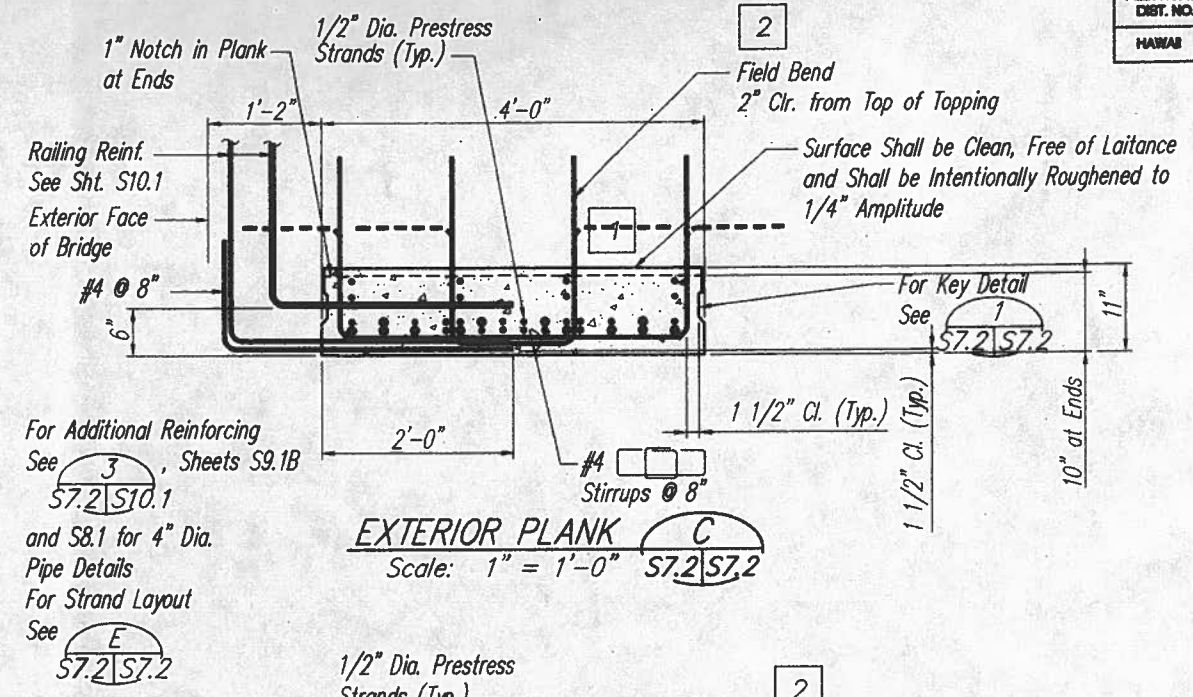
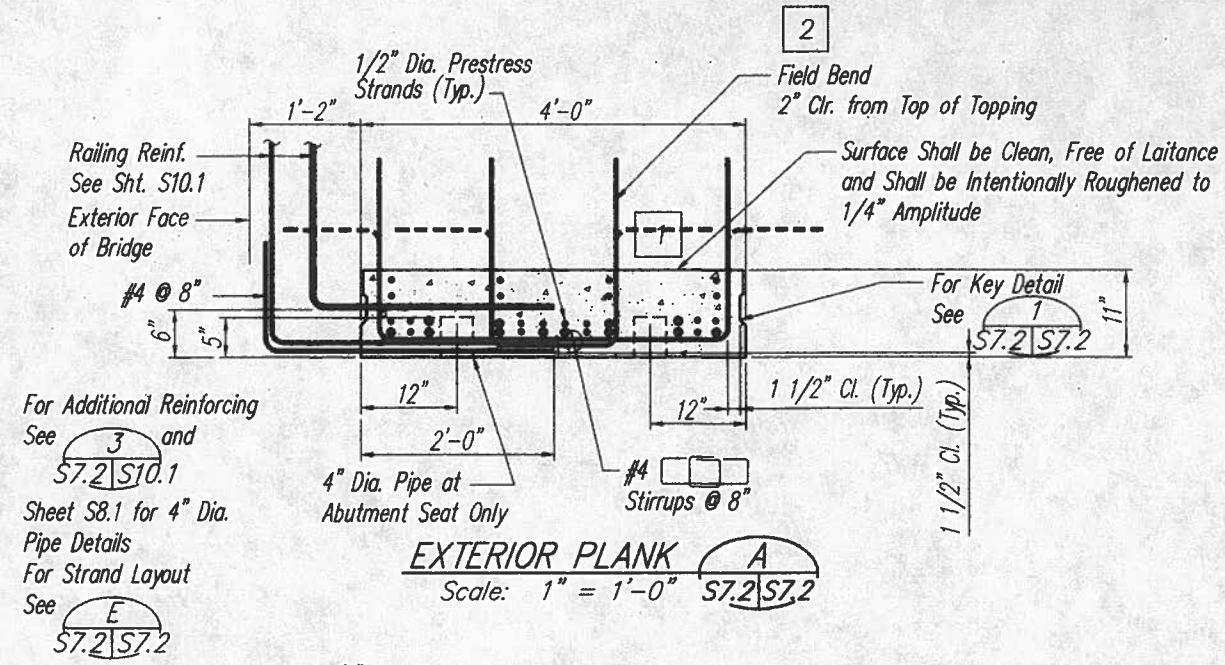


DATE	DEC 2000
SURVEY PLOTTED BY	
DRAWN BY	LSY
DESIGNED BY	ASF
NOTED BY	ASF
CHECKED BY	
ORIGINAL PLAN	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-120R	2001	50	77



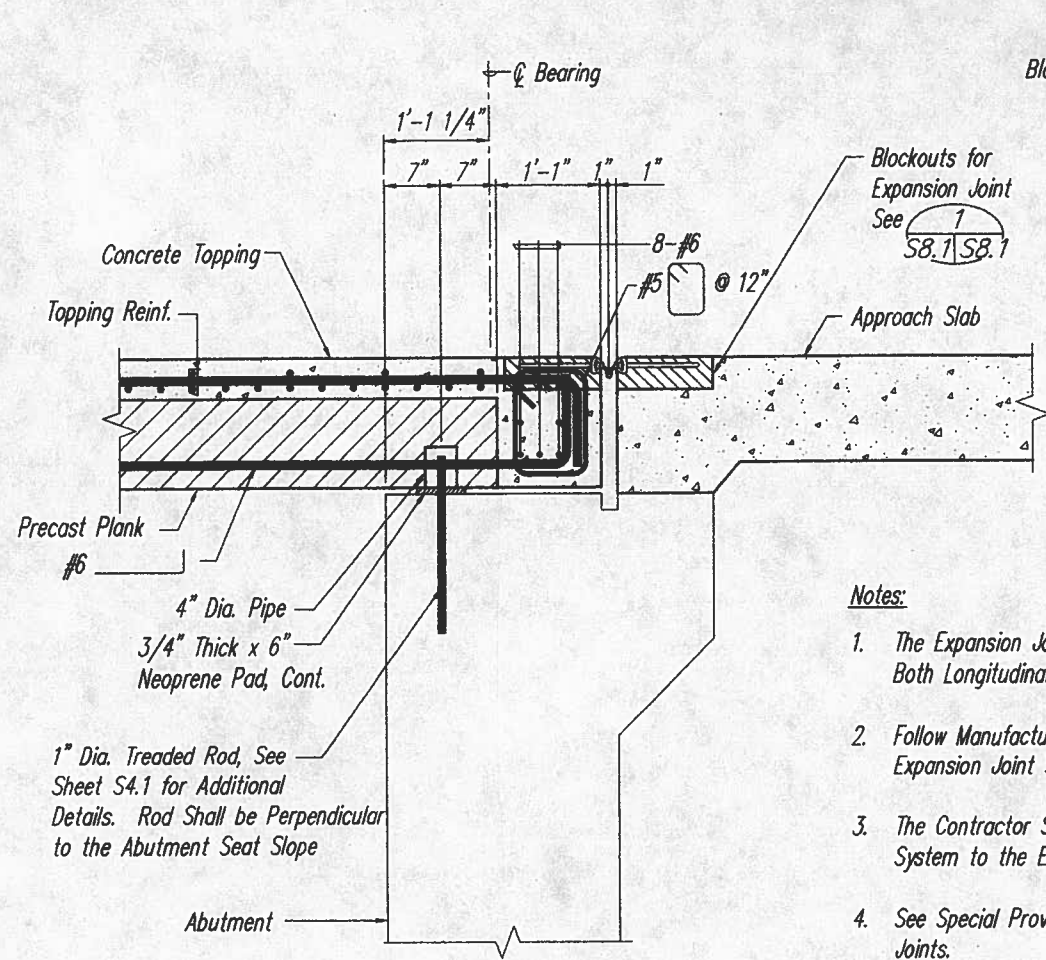
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.



DATE: DEC 2000
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 DRAWN BY: []
 CHECKED BY: []
 ORIGINAL PLAN NO. []

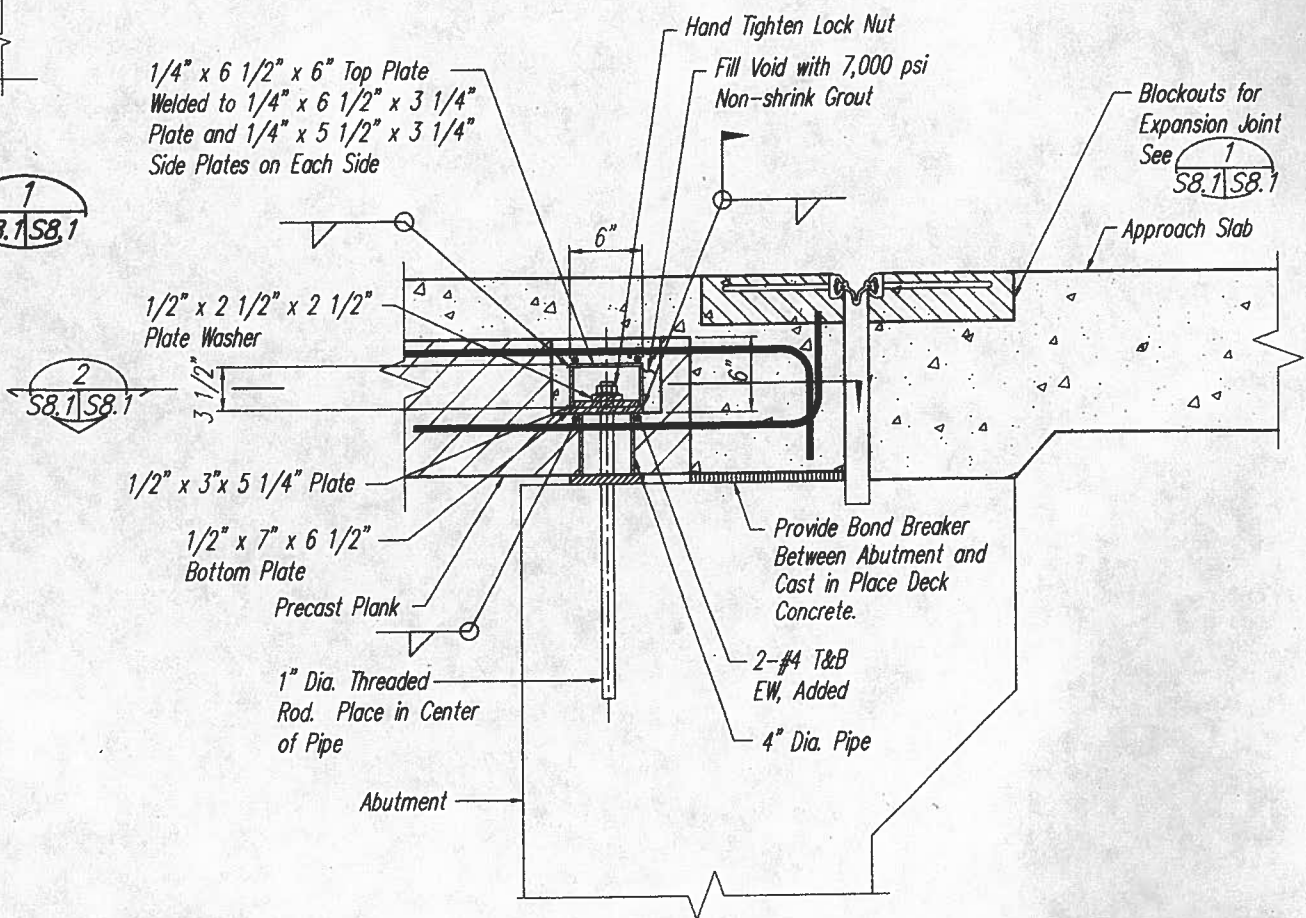
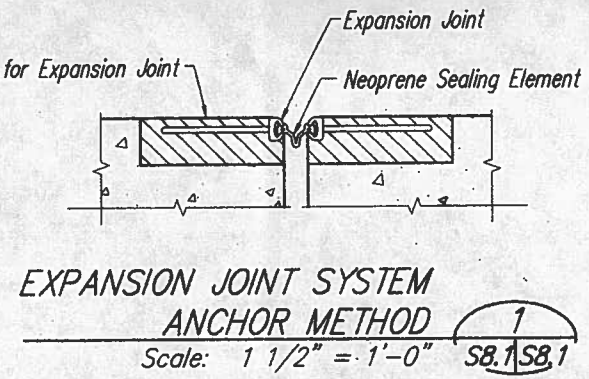
01-29-01	1	Remove Cross Ties
01-29-01	2	Added Note
DATE	DESCRIPTION	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION		
PRECAST PLANK SECTION AND DETAILS		
MAMALAHOA HIGHWAY REPLACEMENT OF KEAIIWA STREAM BRIDGE Federal Aid Project No. ER-12(1)R Scale: As Shown Date: January 2001		
SHEET No. S7.2 OF 50 SHEETS		

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(1)R	2001	51	77

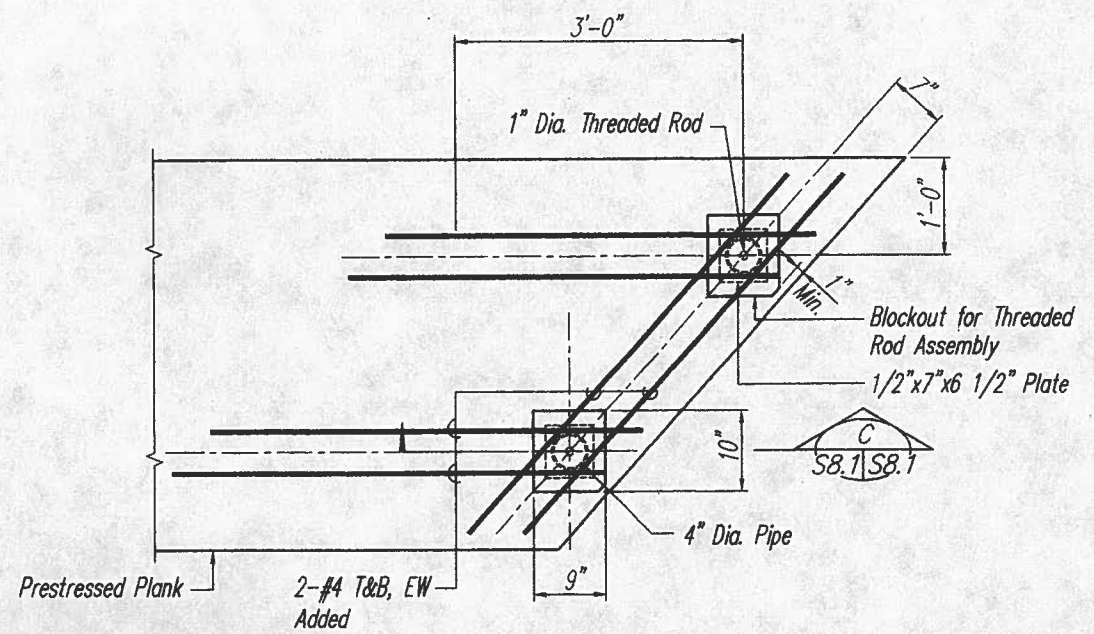


SECTION A
Scale: 1" = 1'-0" S8.1/S8.1

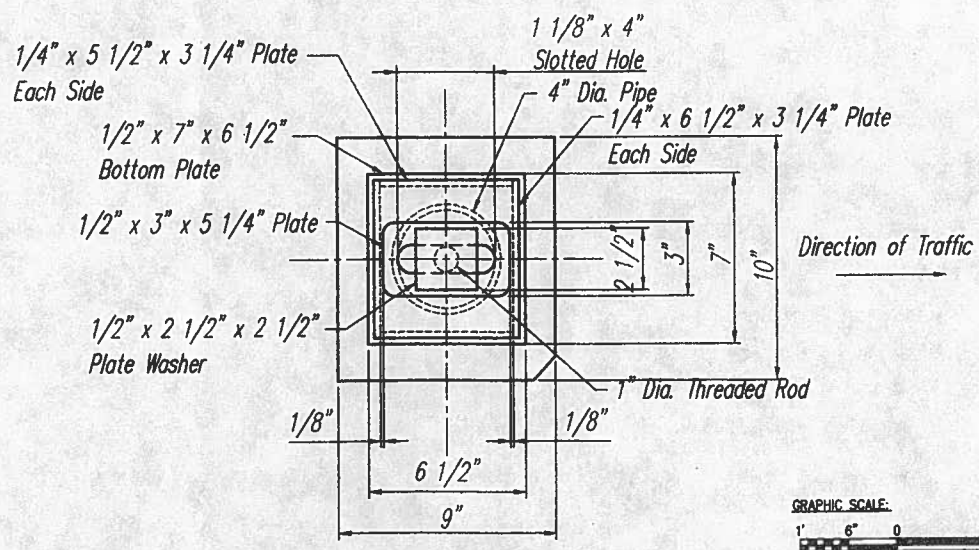
- Notes:
1. The Expansion Joint Shall Allow $\pm 2"$ Movement in Both Longitudinal and Transverse Directions.
 2. Follow Manufacturer's Recommendations for Expansion Joint System.
 3. The Contractor Shall Submit the Expansion Joint System to the Engineer for Approval.
 4. See Special Provision Section 585 Expansion Joints.



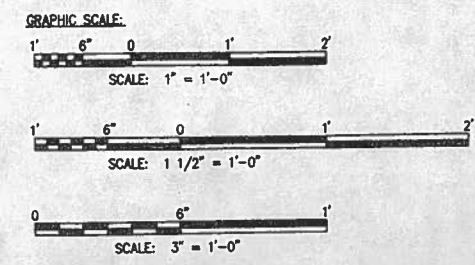
SECTION C
Scale: 1 1/2" = 1'-0" S8.1/S8.1



SECTION PLAN B
Scale: 1" = 1'-0" S8.1/S8.1



DETAIL 2
Scale: 3" = 1'-0" S8.1/S8.1



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HIGHWAYS DIVISION

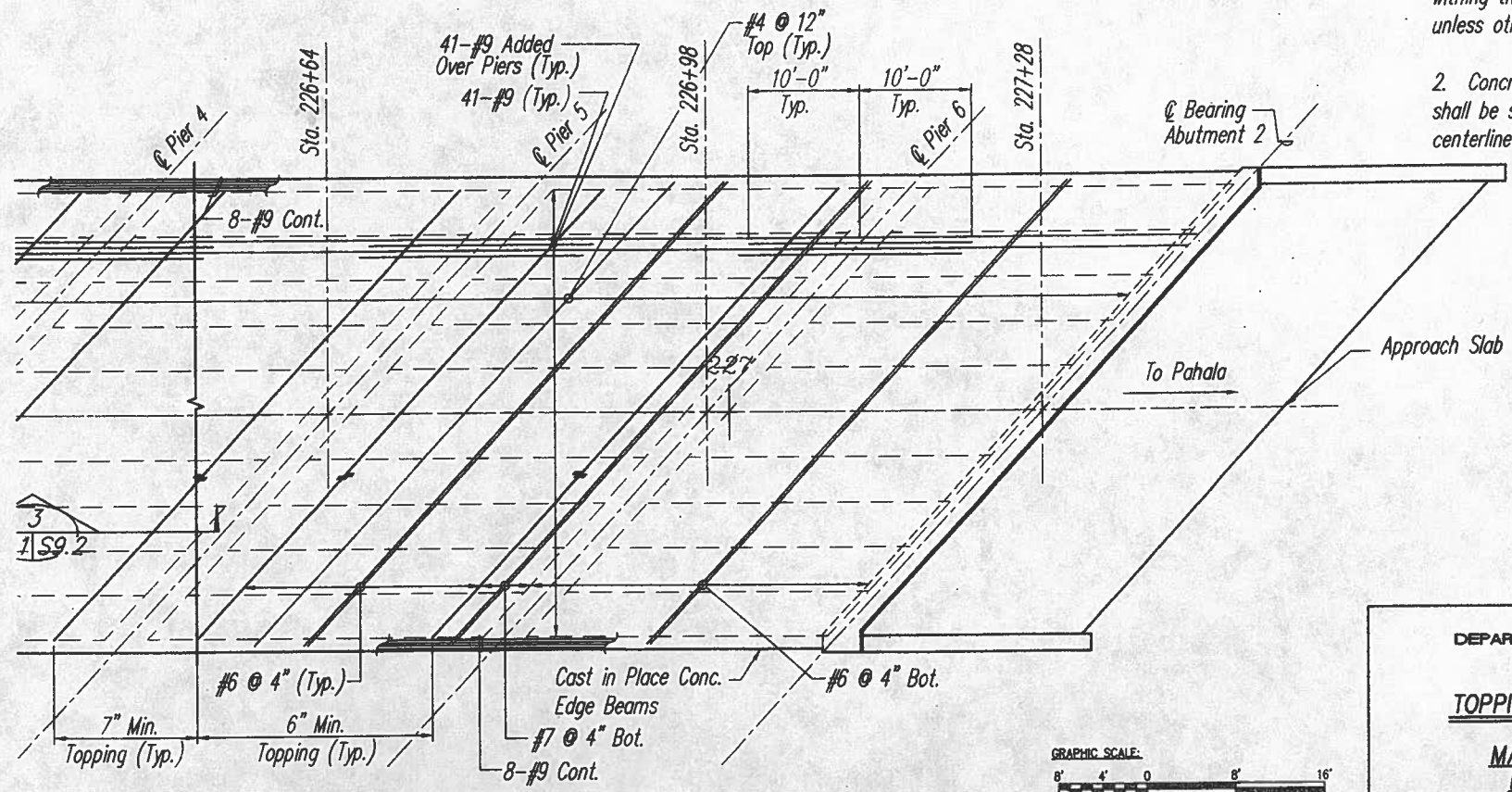
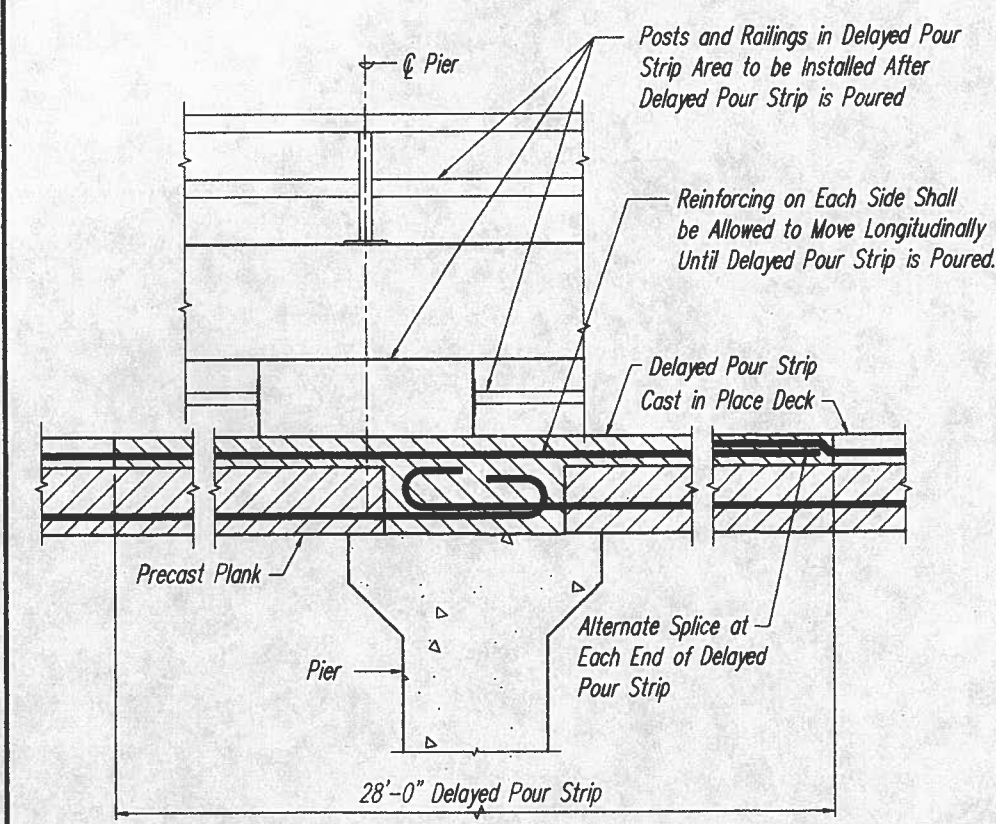
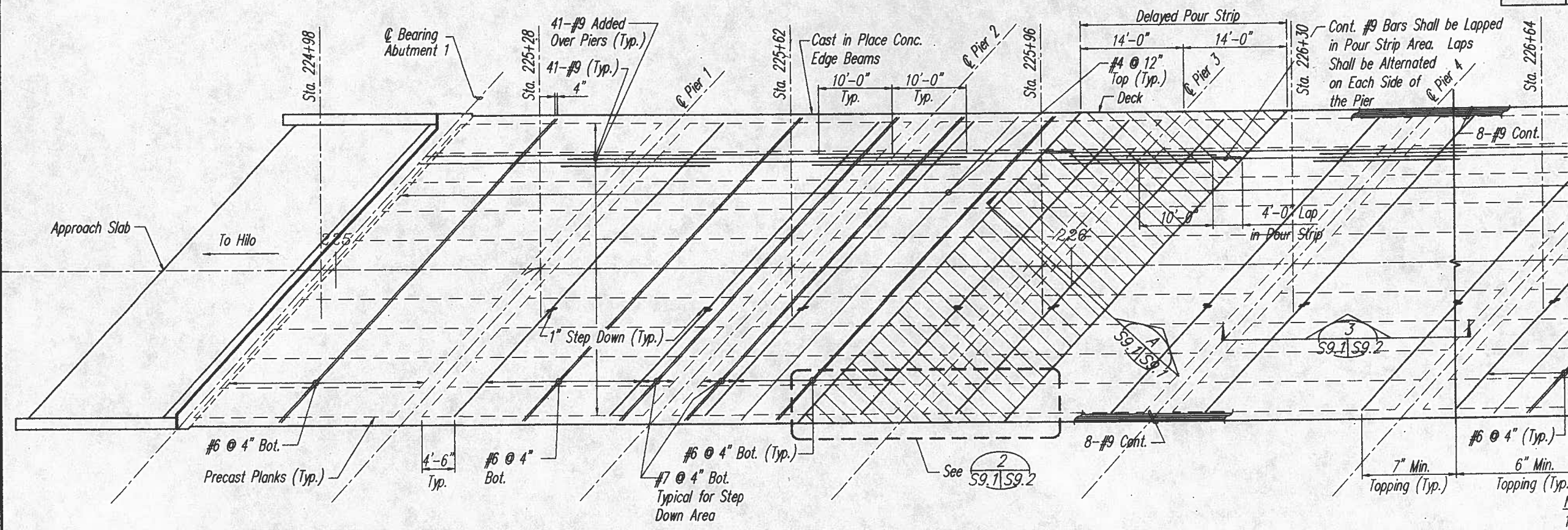
SECTIONS AND DETAILS

**MAMALAHOA HIGHWAY
REPLACEMENT OF
KEAIWA STREAM BRIDGE**
Federal Aid Project No. ER-12(1)R
Scale: As Shown Date: January 2001

SHEET No. S8.1 OF 50 SHEETS

DATE RECORDED	
DATE REVISION	
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
DESIGNED BY	
NO. _____	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-12(1)R	2001	52	77

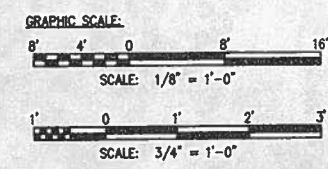


- NOTES:**
1. Top deck reinforcing and concrete edge beam top reinforcing shall be spliced with the middle 1/2 of the span unless otherwise noted.
 2. Concrete edge beam bottom reinforcing shall be spliced 6 to 10 feet from centerline pier unless otherwise noted.

DATE: NOV 2000
 ORIGINAL DRAWING BY: [Blank]
 CHECKED BY: [Blank]
 QUANTITIES BY: [Blank]
 DESIGNED BY: [Blank]
 TRACED BY: [Blank]
 PLAN NO. [Blank]

SECTION A
 Scale: 3/4" = 1'-0"
 S9.1S9.1
 S1.2

TOPPING REINFORCING PLAN
 Scale: 1/8" = 1'-0"



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 HIGHWAYS DIVISION

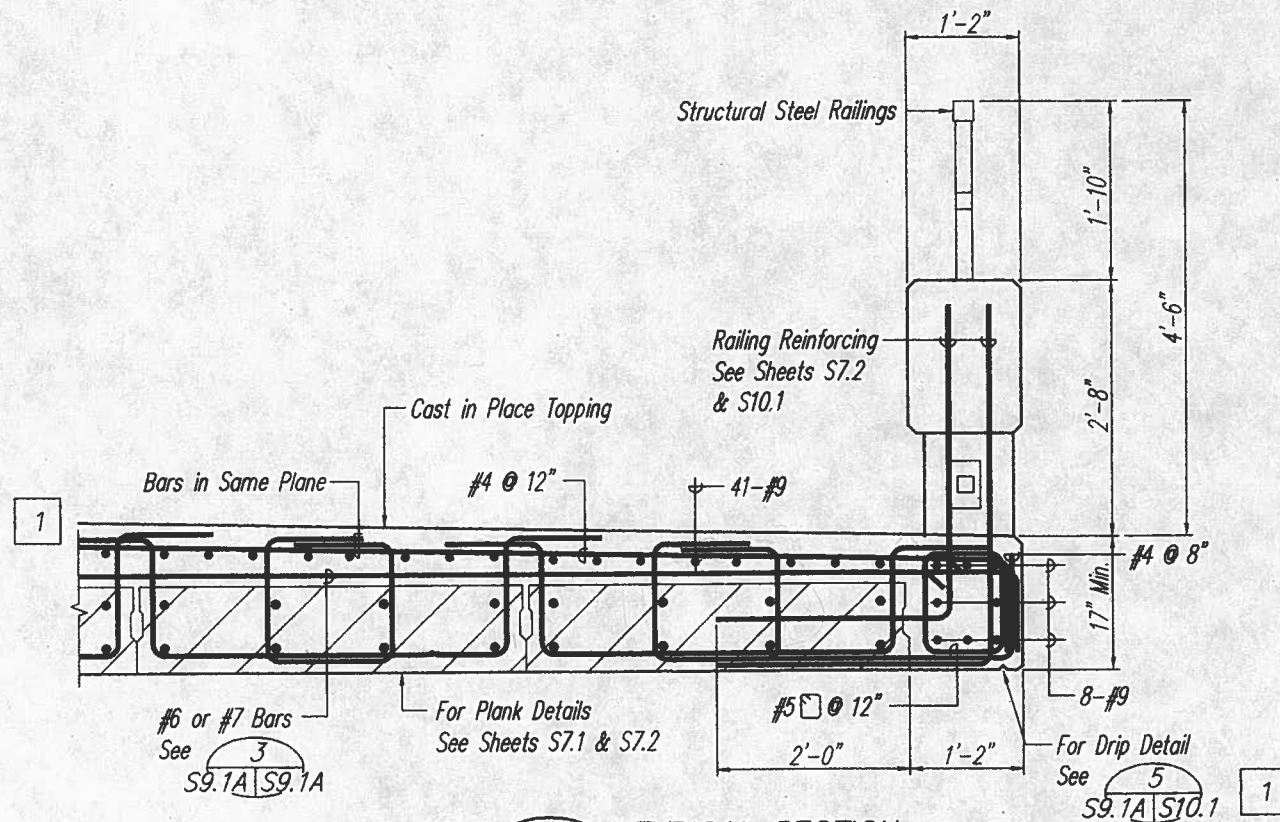
TOPPING REINFORCING PLAN

MAMALAHOA HIGHWAY
 REPLACEMENT OF
 KEAIIWA STREAM BRIDGE
 Federal Aid Project No. ER-12(1)R

Scale: As Shown Date: January 2001

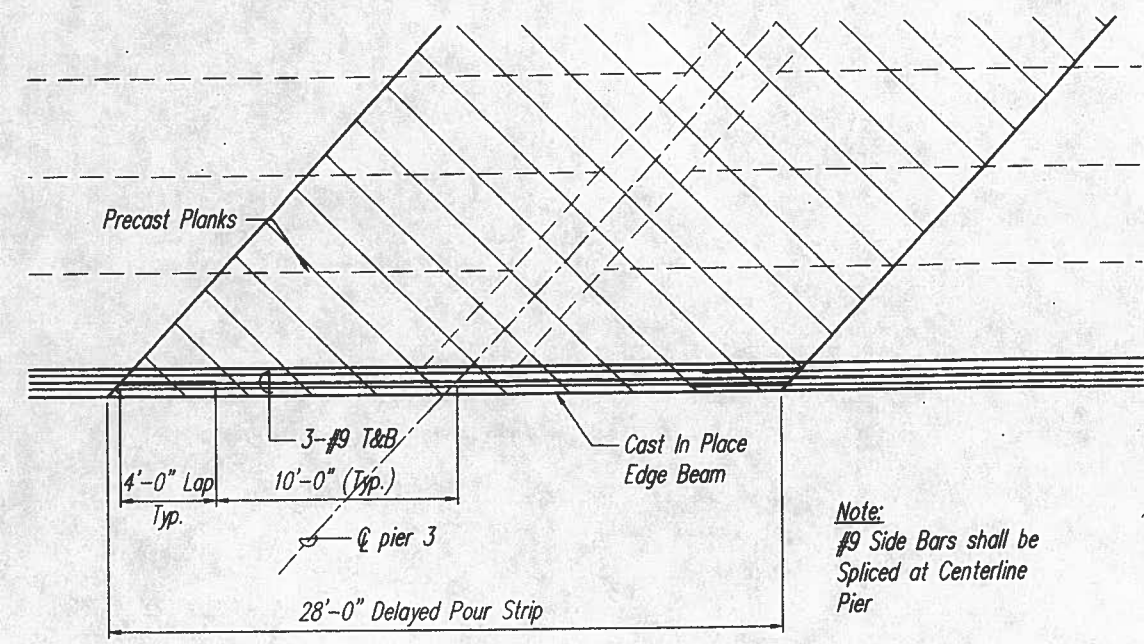
SHEET No. S9.1 OF 50 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-200R	2001	53	77



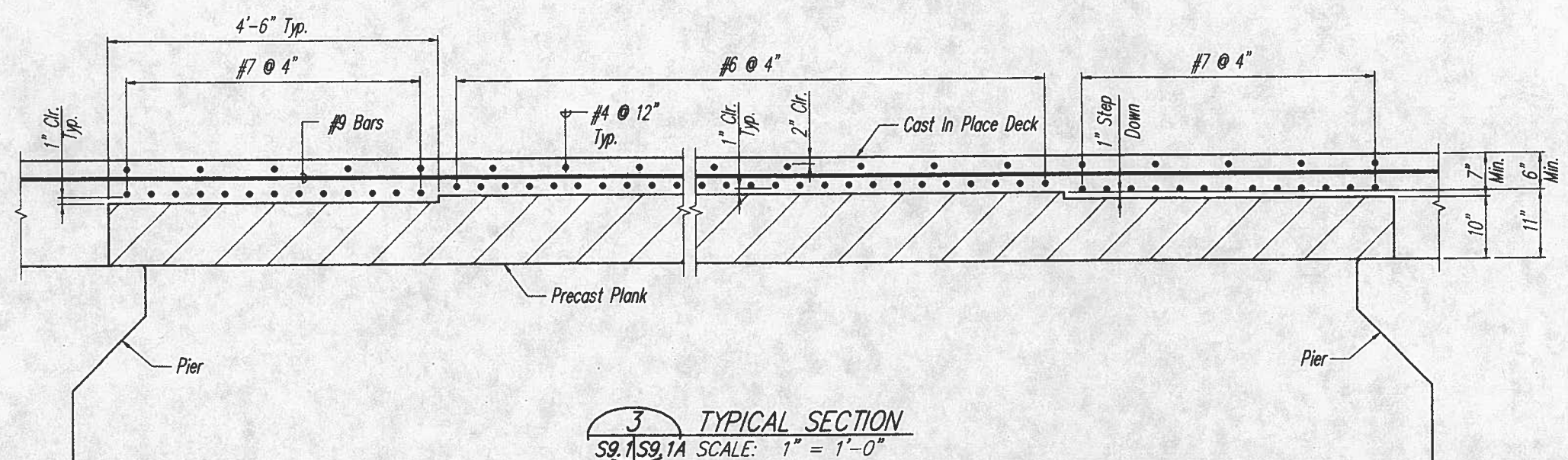
1 TYPICAL SECTION
S9.1C|S9.1A SCALE: 1" = 1'-0"
S9.1B

Note:
#4 @ 12" and 41-#9 Bars Shall be in the Top Mat of the Topping Reinforcing and Shall Follow the Slope of the Topping.

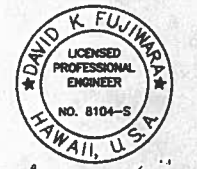


2 POUR STRIP DETAIL
S9.1|S9.1A SCALE: 1/4" = 1'-0"

Note:
#9 Side Bars shall be Spliced at Centerline Pier



3 TYPICAL SECTION
S9.1|S9.1A SCALE: 1" = 1'-0"



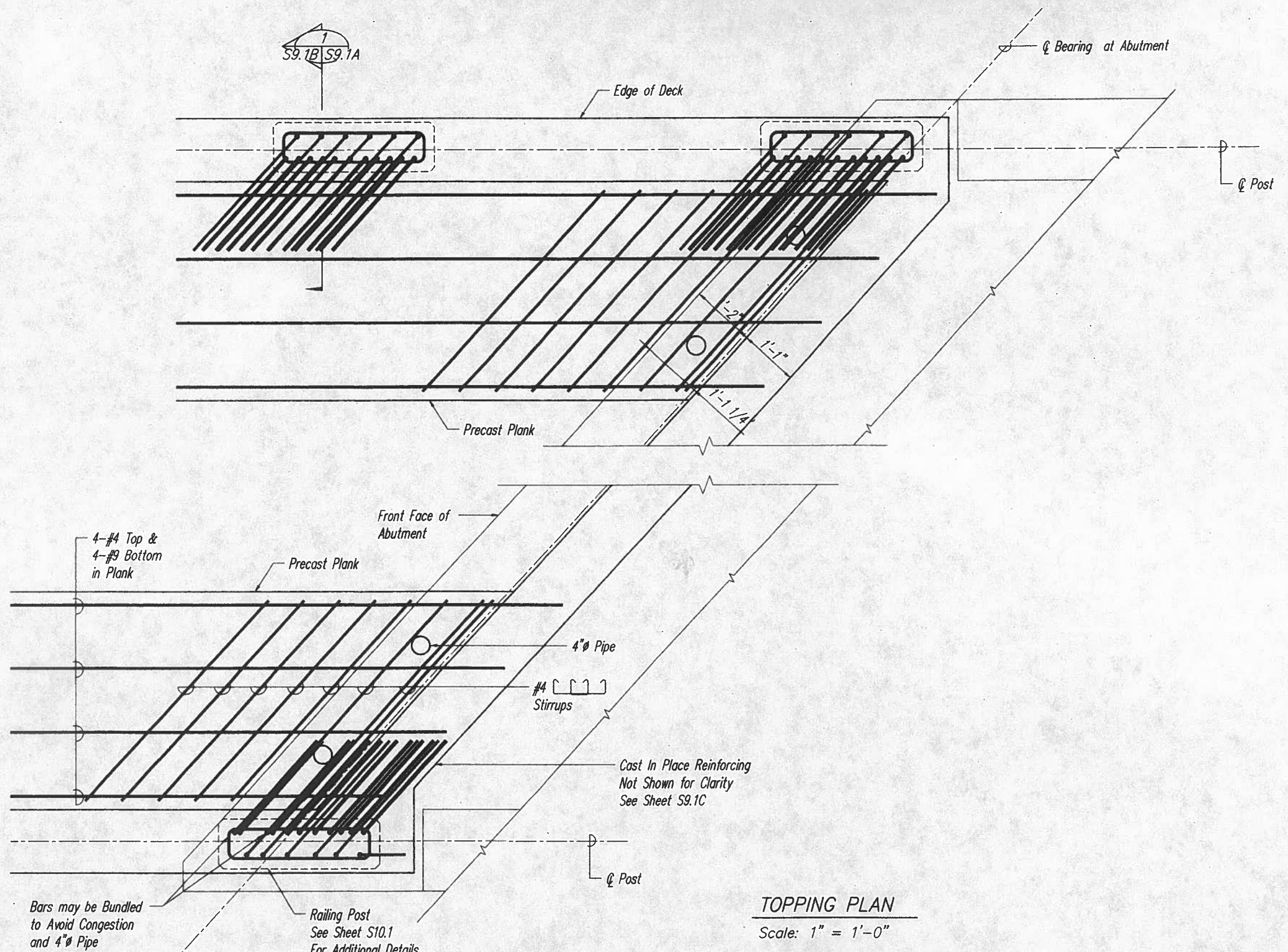
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SURVEY PLANNED BY	DATE	REVISION
DRAWN BY		
NOTE BOOK		
QUANTITIES BY		
CHECKED BY		
No.		

01-29-01	1	Added Deck Slope
01-29-01	2	Added Note
01-29-01	3	Revised Detail Number

DATE	DESCRIPTION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
SECTIONS AND DETAILS	
MAMALAHOA HIGHWAY REPLACEMENT OF KEAIIWA STREAM BRIDGE	
Federal Aid Project No. ER-12(1)R	
Scale: As Shown	Date: January 2001

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-120R	2001	54	77



SURVEY PLOTTED BY: _____ DATE: _____
 DRAWN BY: _____
 CHECKED BY: _____
 NOTE BOOK No. _____

Bars may be Bundled to Avoid Congestion and 4" Pipe

Railing Post See Sheet S10.1 For Additional Details

Cast In Place Reinforcing Not Shown for Clarity See Sheet S9.1C

TOPPING PLAN
Scale: 1" = 1'-0"

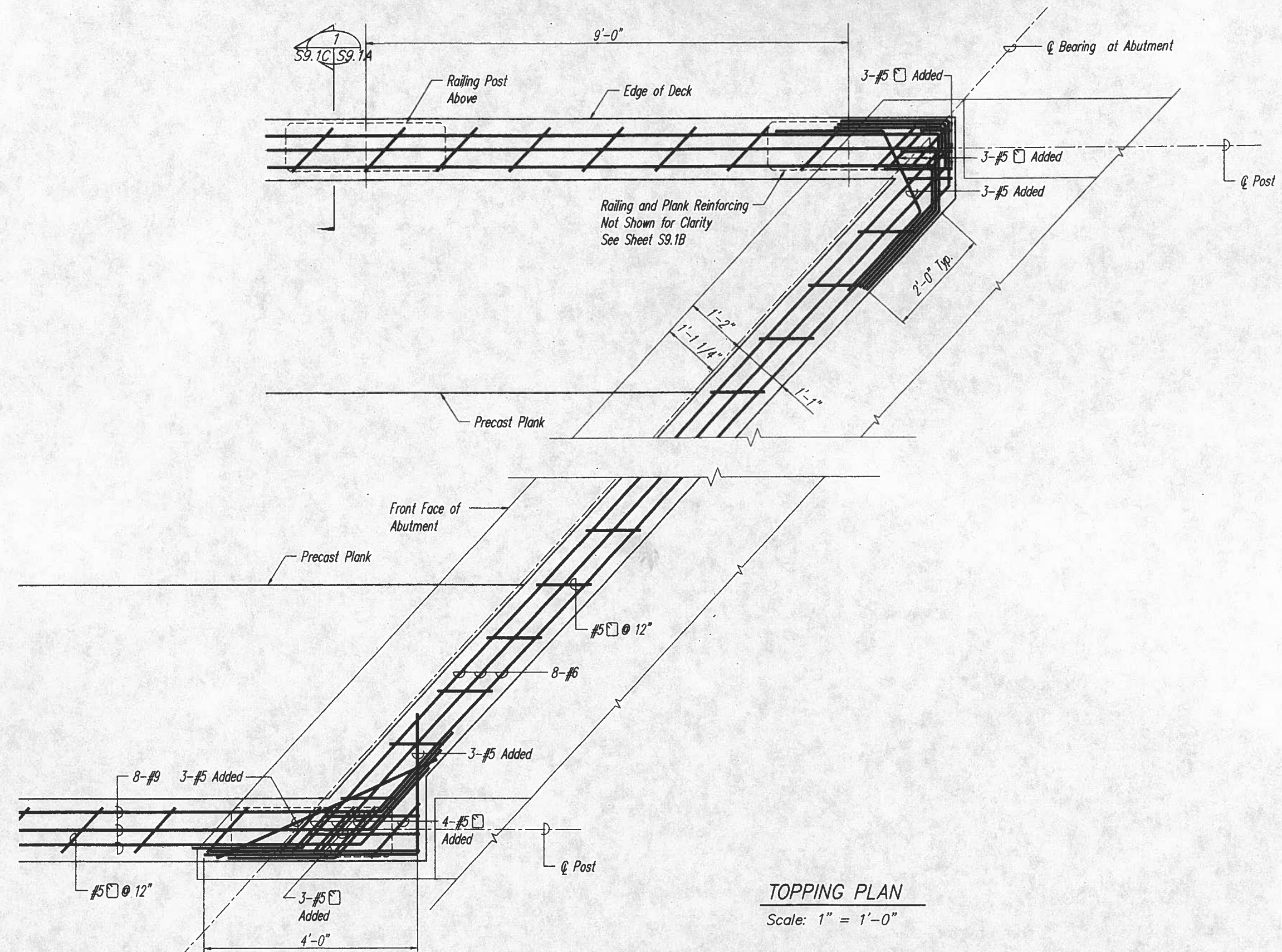
Note:
Plank Stirrups and Railing Post Reinforcing shall be Placed Parallel to the Skew of the Bridge



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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
TOPPING PLAN
MAMALAHOA HIGHWAY
REPLACEMENT OF
KEAIIWA STREAM BRIDGE
 Federal Aid Project No. ER-12(1)R
 Scale: As Shown Date: January 2001
 SHEET No. S9.1B OF 50 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-201R	2001	55	77



TOPPING PLAN
Scale: 1" = 1'-0"

Note:
Cast In Place Beam Stirrups shall be Placed Parallel to the Skew of the Bridge

ORIGINAL PLAN
DATE: NOV 2000
DESIGNED BY: [blank]
CHECKED BY: [blank]
NO. [blank]



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TOPPING PLAN

MAMALAHOA HIGHWAY
REPLACEMENT OF
KEAIWA STREAM BRIDGE
Federal Aid Project No. ER-12(1)R

Scale: As Shown Date: January 2001

SHEET No. S9.1C OF 50 SHEETS