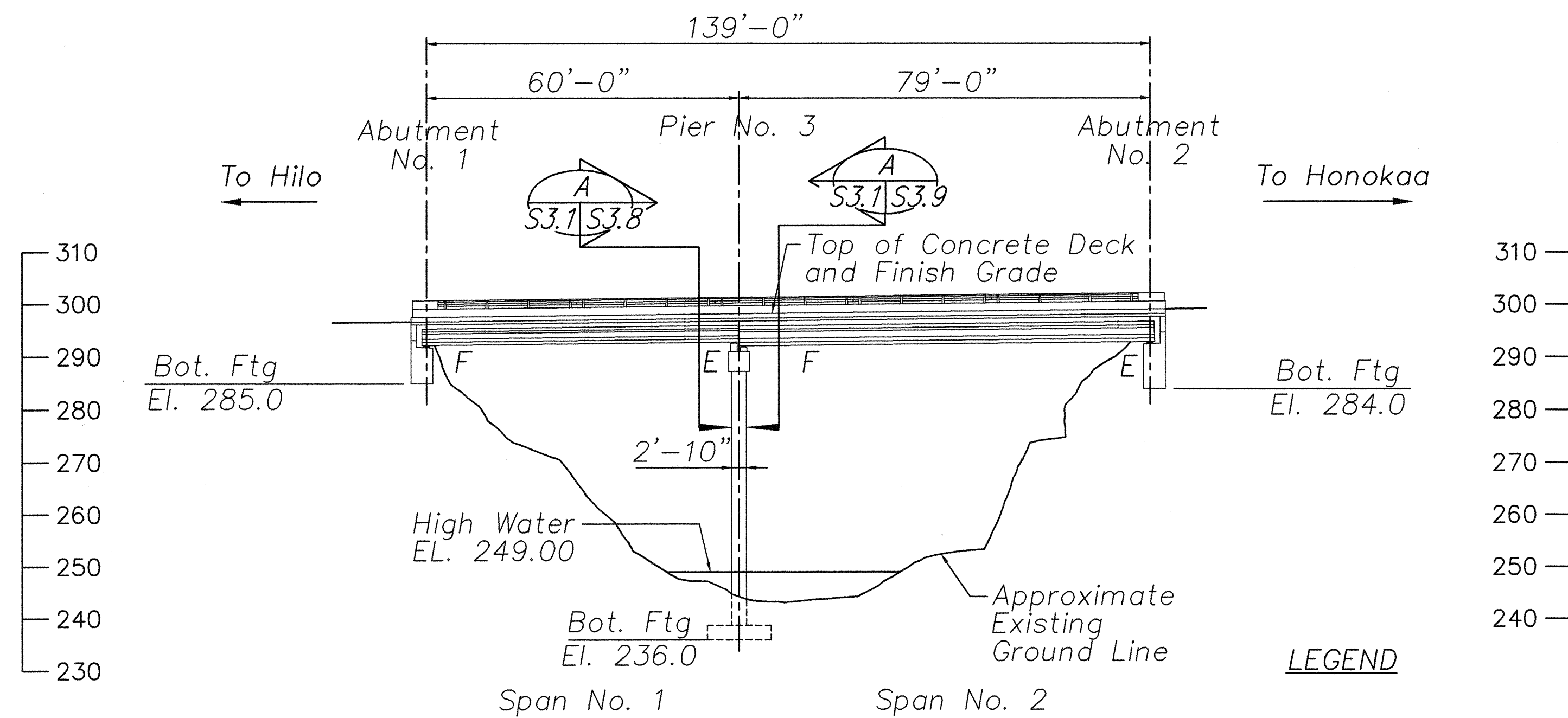


DECK FRAMING PLAN

Scale: 1" = 20'

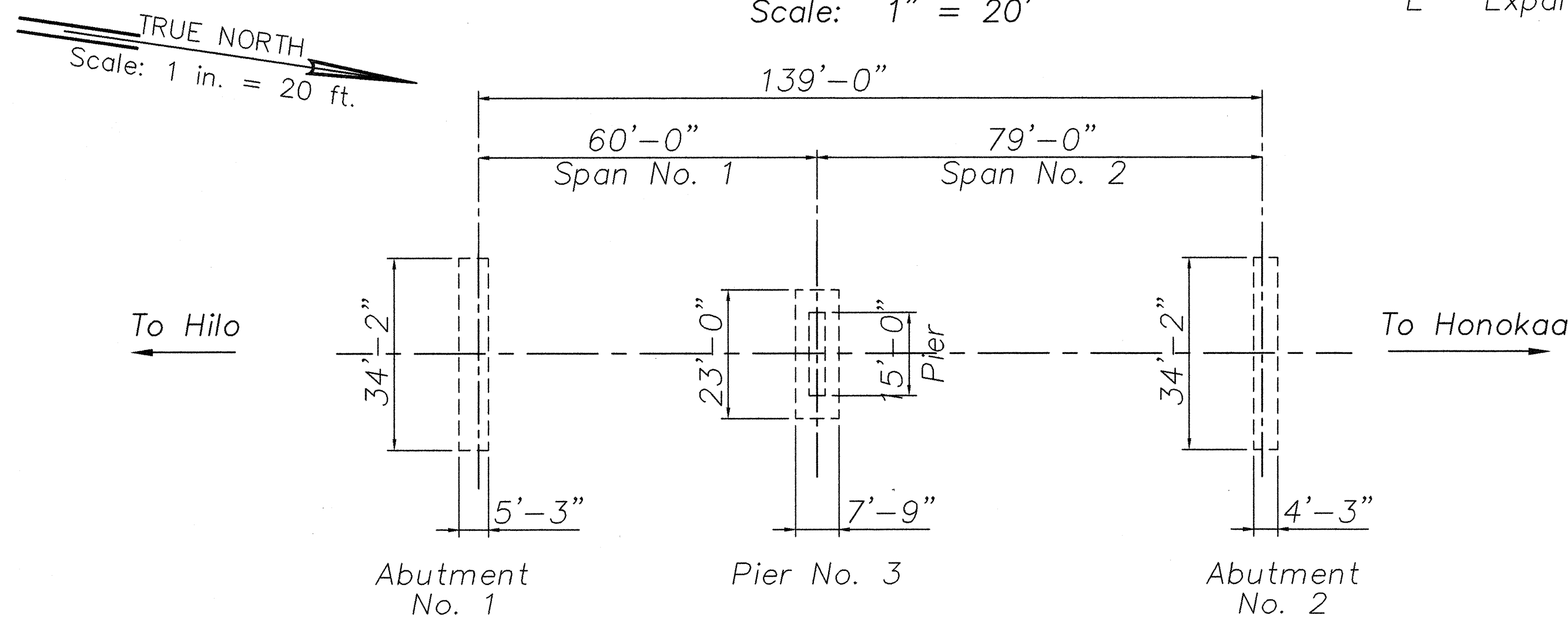


ELEVATION

Scale: 1" = 20'

LEGEND

- F Fixed End
E Expansion End



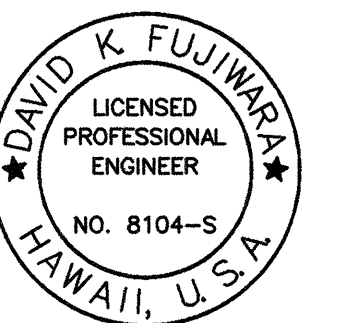
FOUNDATION PLAN

Scale: 1" = 20'

KALAOA BRIDGE RETROFITS

ITEM	LOCATION	QUANTITY		REFERENCE DRAWINGS
		PER LOC.	TOTAL	
Seat Extender	Abutments No. 1, No. 2	1	2	S3.2, S3.3, S3.4 S3.5, S3.6
Creep Block	Abutments No. 1, No. 2	5	10	S3.2, S3.3, S3.4 S3.5, S3.6
Creep Block	Pier No. 3	10	10	S3.7, S3.8, S3.9 S3.10, S3.11
Seat Extender	Pier No. 3	12	12	S3.7, S3.8, S3.9 S3.10, S3.11
Type II Dual Cable Restrainer	Pier No. 3	10	10	S3.12, S5.2, S5.4 S5.5
Diaphragm	Abutments No. 1, No. 2	5	10	S3.3, S3.4, S3.5 S3.6
Diaphragm	Pier No. 3	10	10	S3.8, S3.9, S3.10
Longitudinal Bumper	Abutments No. 1, No. 2	6	12	S3.2, S3.4, S3.6

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
No.	



David K. Fujiwara

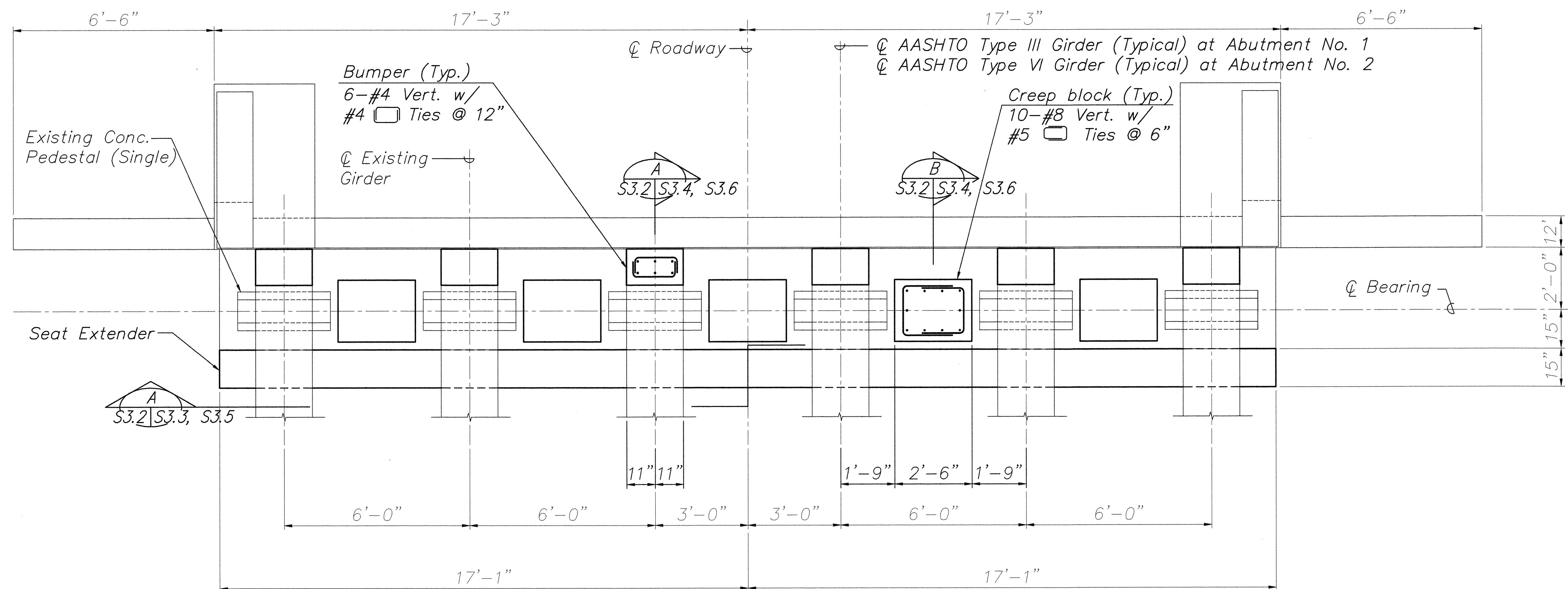
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE
DECK PLAN, ELEVATION
AND FOUNDATION PLAN
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPA'IKOU, HAWAII
PROJECT NO. BR-019-2(43)

SCALE: AS NOTED DATE: August 12, 1999

SHEET No. S3.1 OF 59 SHEETS

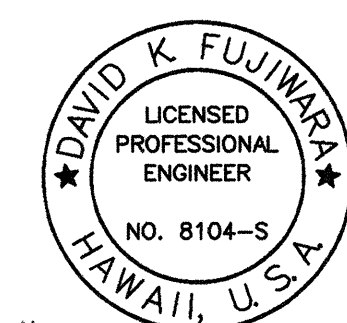
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	29	65



ABUTMENTS NO. 1 AND NO. 2 - PLAN

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

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

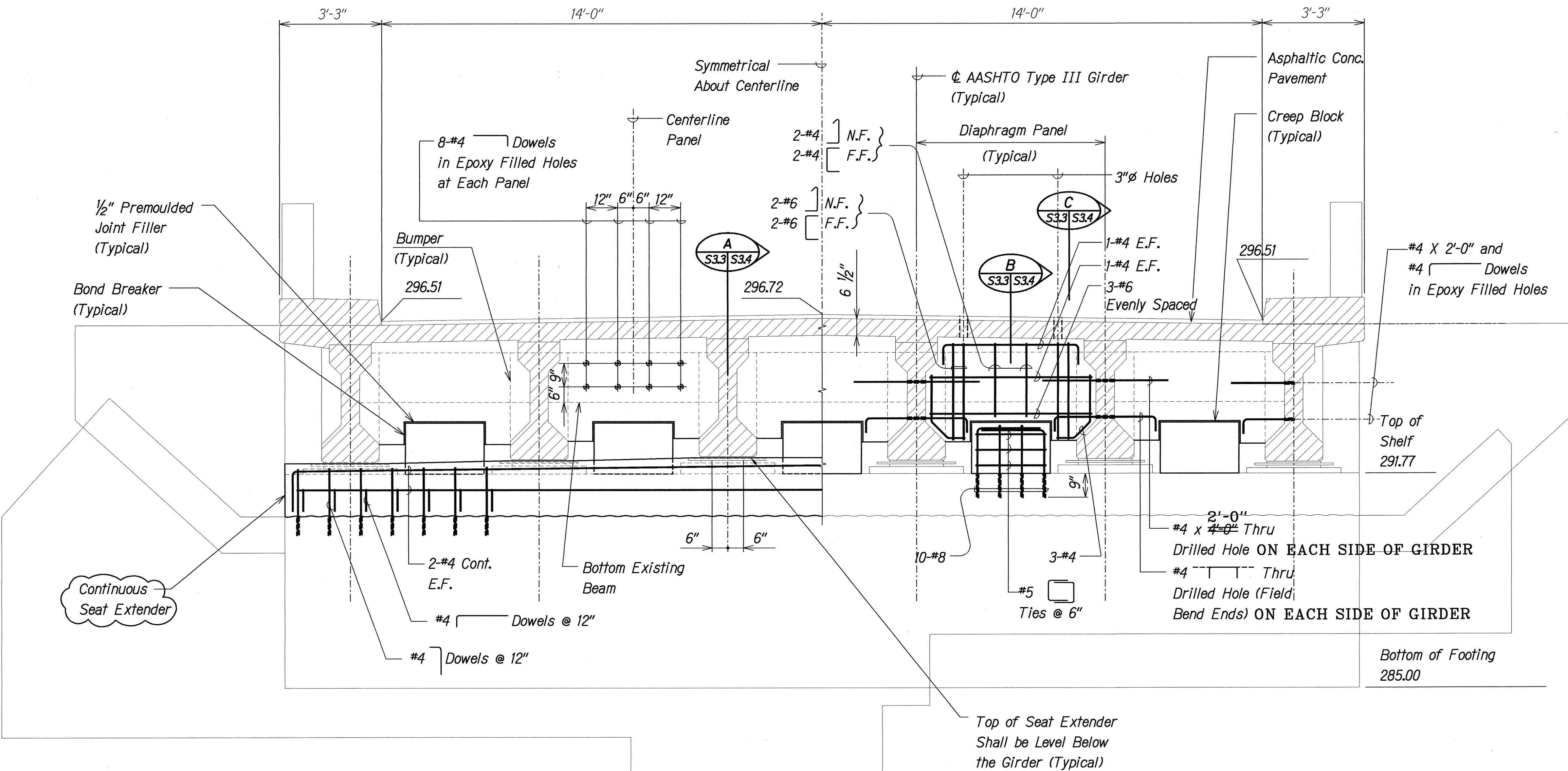


David K. Fujiwara

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE
ABUTMENTS NO. 1 AND NO.2
PLAN
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPAIKOU, HAWAII
PROJECT NO. BR-019-2(43)
SCALE: AS NOTED DATE: August 12, 1999
SHEET No. S3.2 OF 59 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	30	65



NOTE:
 1. SEAT EXTENDER DETAIL WAS REVISED DUE TO EXISTING CONCRETE BEING HIGHER THAN SHOWN. (SEE DETAILS, SHEET 38)

ABUTMENT NO. 1 - ELEVATION

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

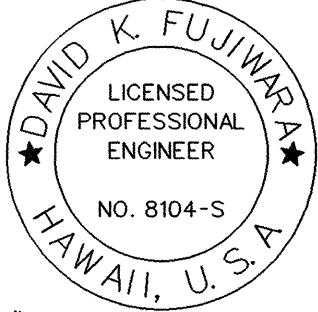


NOTES:

- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
- Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.

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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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
KALAOA BRIDGE

ABUTMENT NO. 1 ELEVATION

HAWAII BELT ROAD
 SEISMIC RETROFIT OF VARIOUS BRIDGES
 VICINITY OF PAPAIOLOU, HAWAII
 Project No. BR-019-2(43)

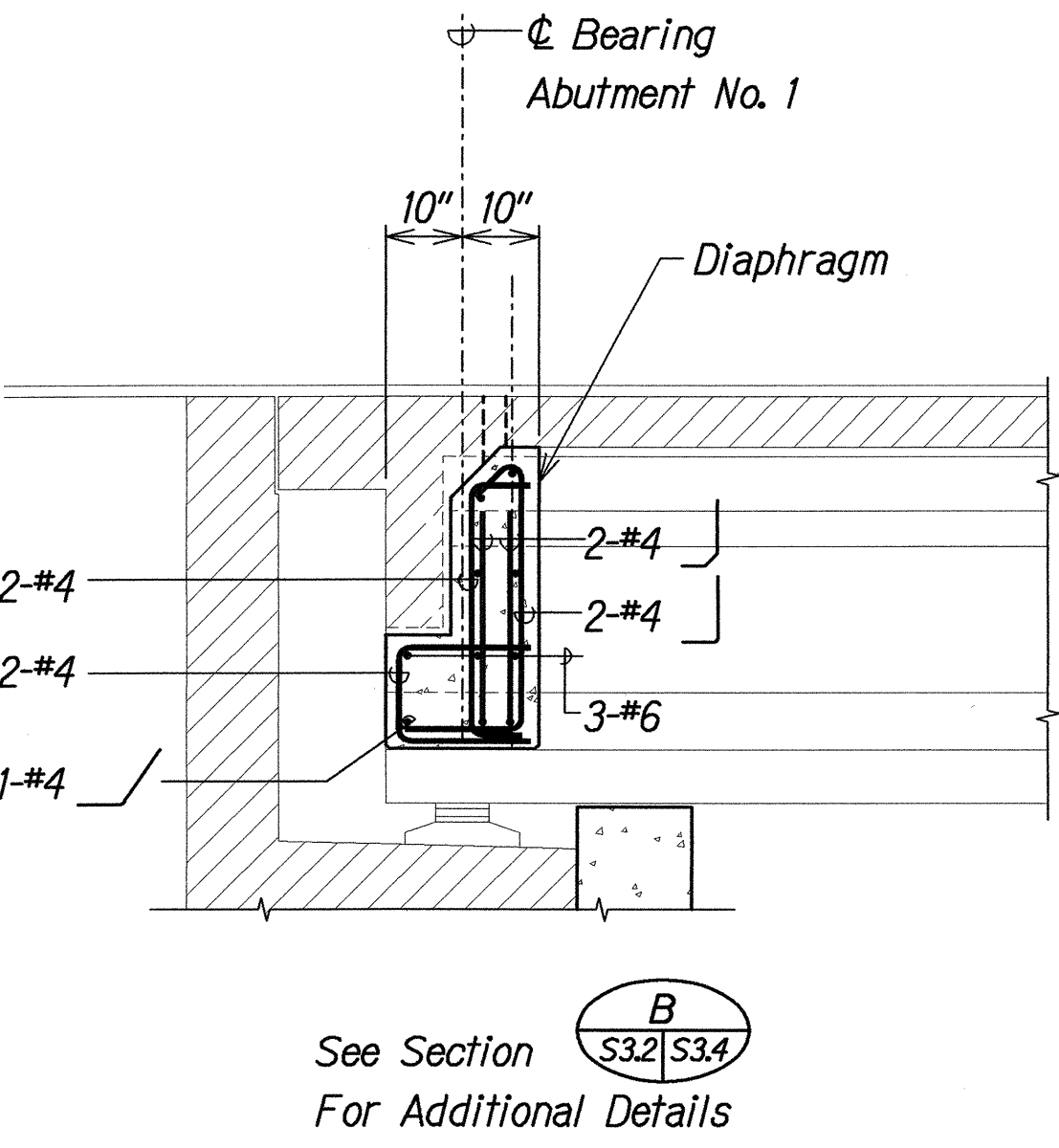
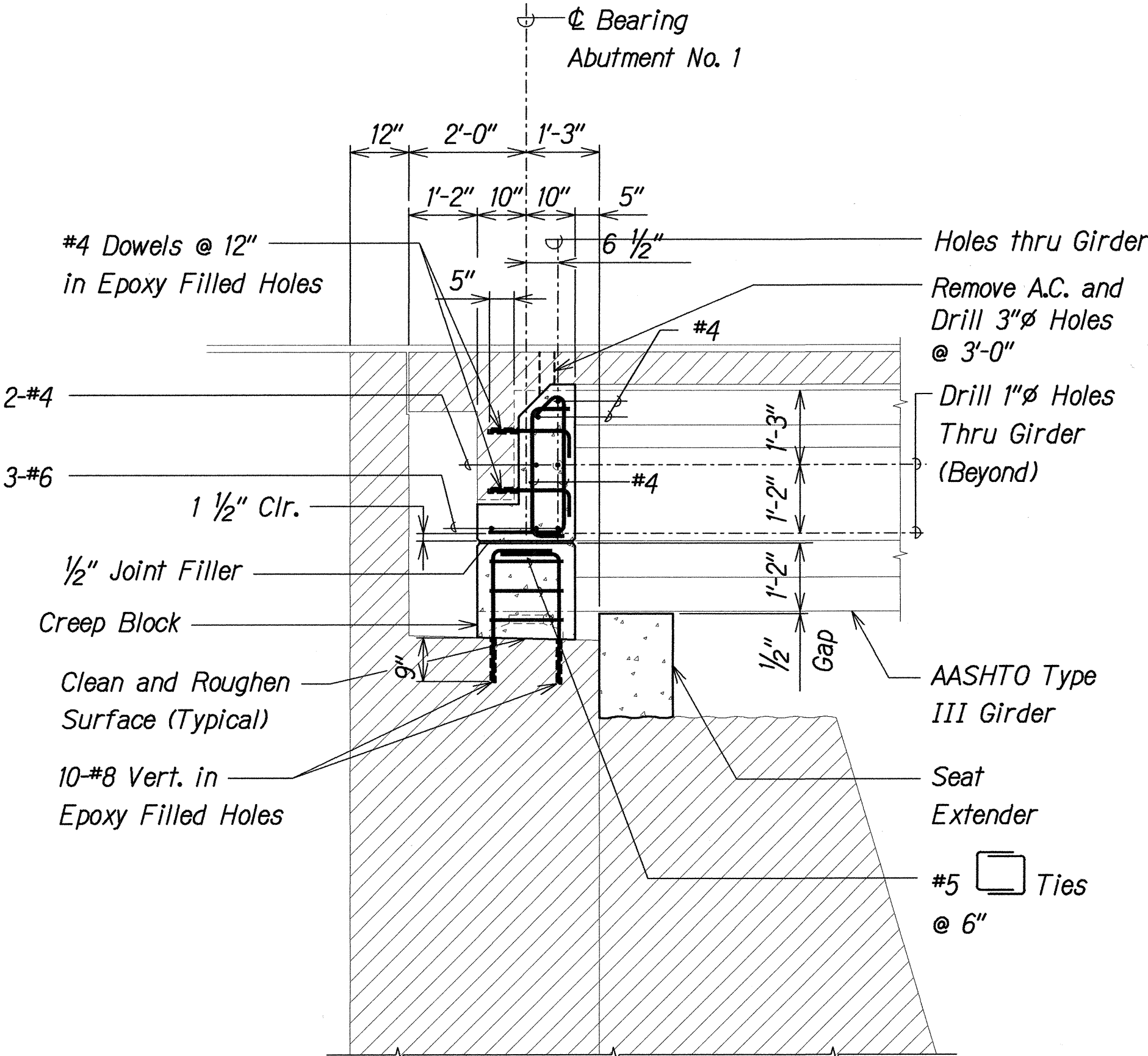
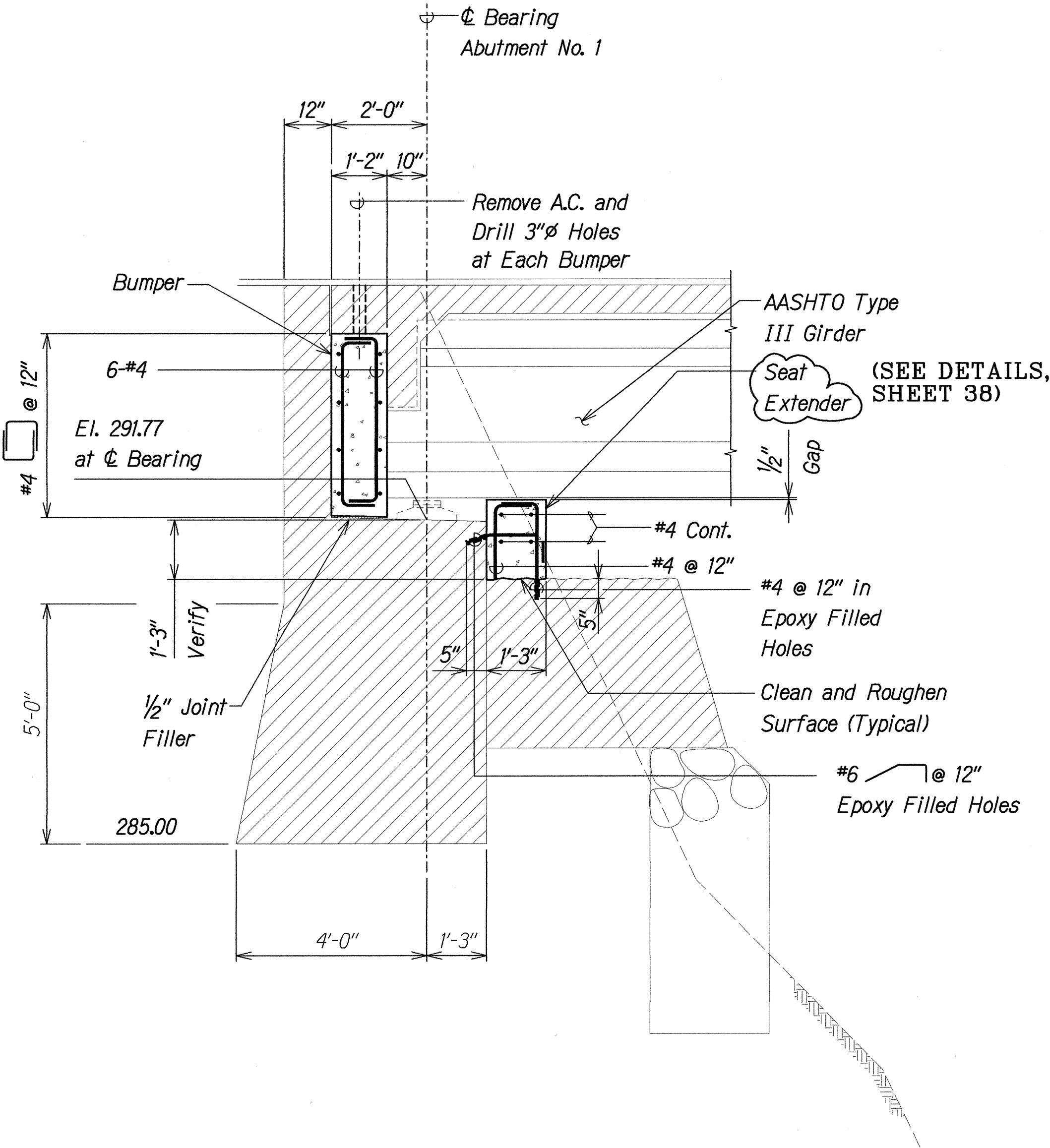
Scale: As Noted Date: August 12, 1999

SHEET No. S3.3 OF 59 SHEETS

"AS-BUILT" 30

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	31	65



SECTION A

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

S3.3

SECTION B

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

S3.3

NOTES:

- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
- Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.
- When Pouring Concrete Thru 3" Diameter Holes There Shall Be No Void Spaces, Entrapped Air, or Entrapped Water.
- After Pouring Concrete to Top of Deck, A.C. shall be Replaced to Original Elevation. Do not Place A.C. Until Concrete has Sufficiently Hardened.
- For Lane Closures, see Specifications.

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
KALAOA BRIDGE

ABUTMENT NO. 1 SECTIONS

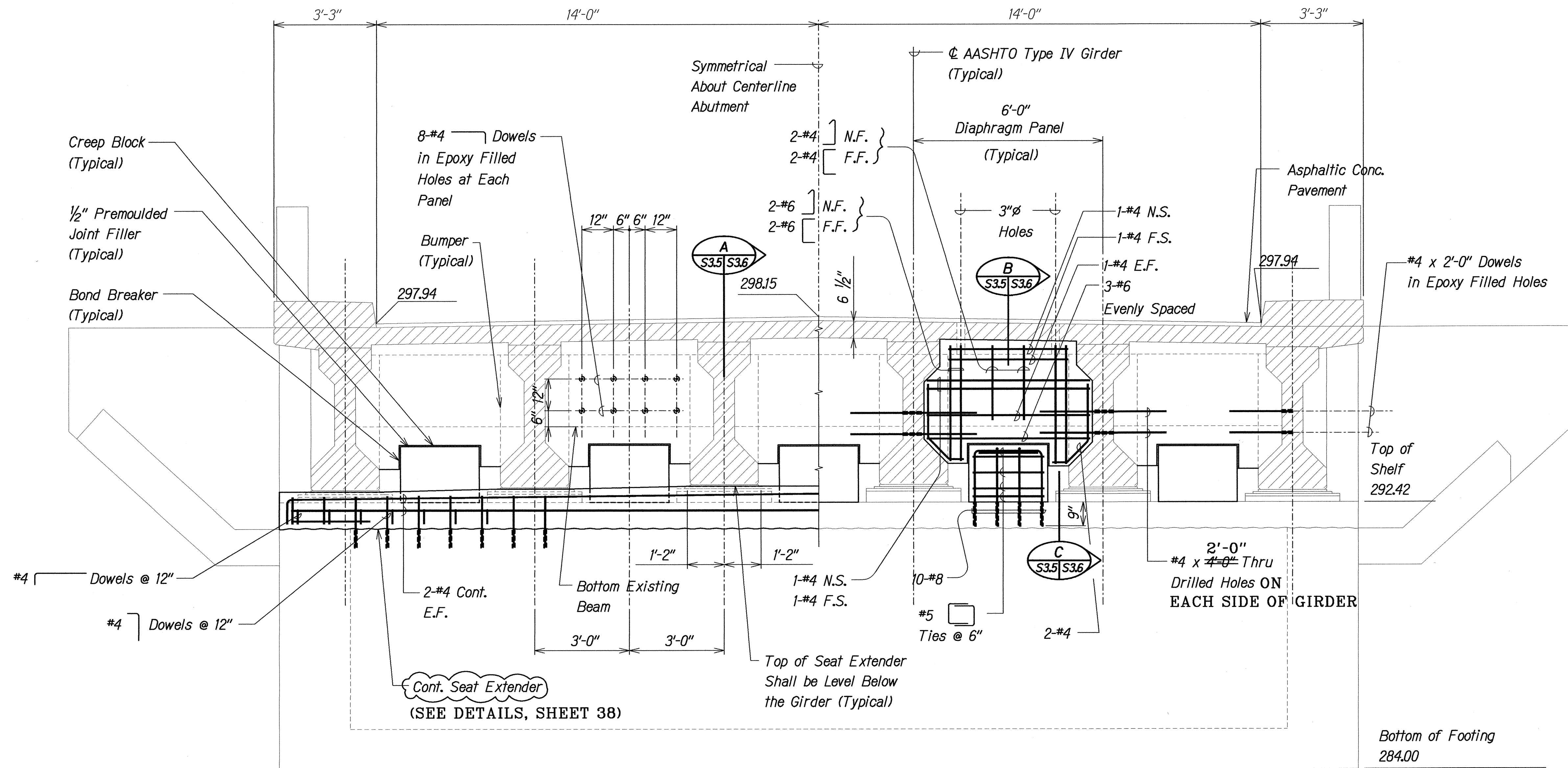
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPA'IKOU, HAWAII
Project No. BR-019-2(43)

Scale: As Noted Date: August 12, 1999

SHEET No. S3.4 OF 59 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	32	65



ABUTMENT NO. 2 - ELEVATION

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

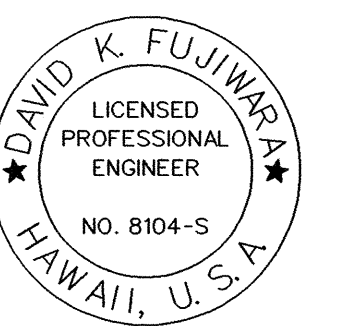
A
S3.2 S3.5

NOTES:

- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
- Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.

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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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE

ABUTMENT NO. 2 ELEVATION

HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPAIOLOU, HAWAII
Project No. BR-019-2(43)

Scale: As Noted

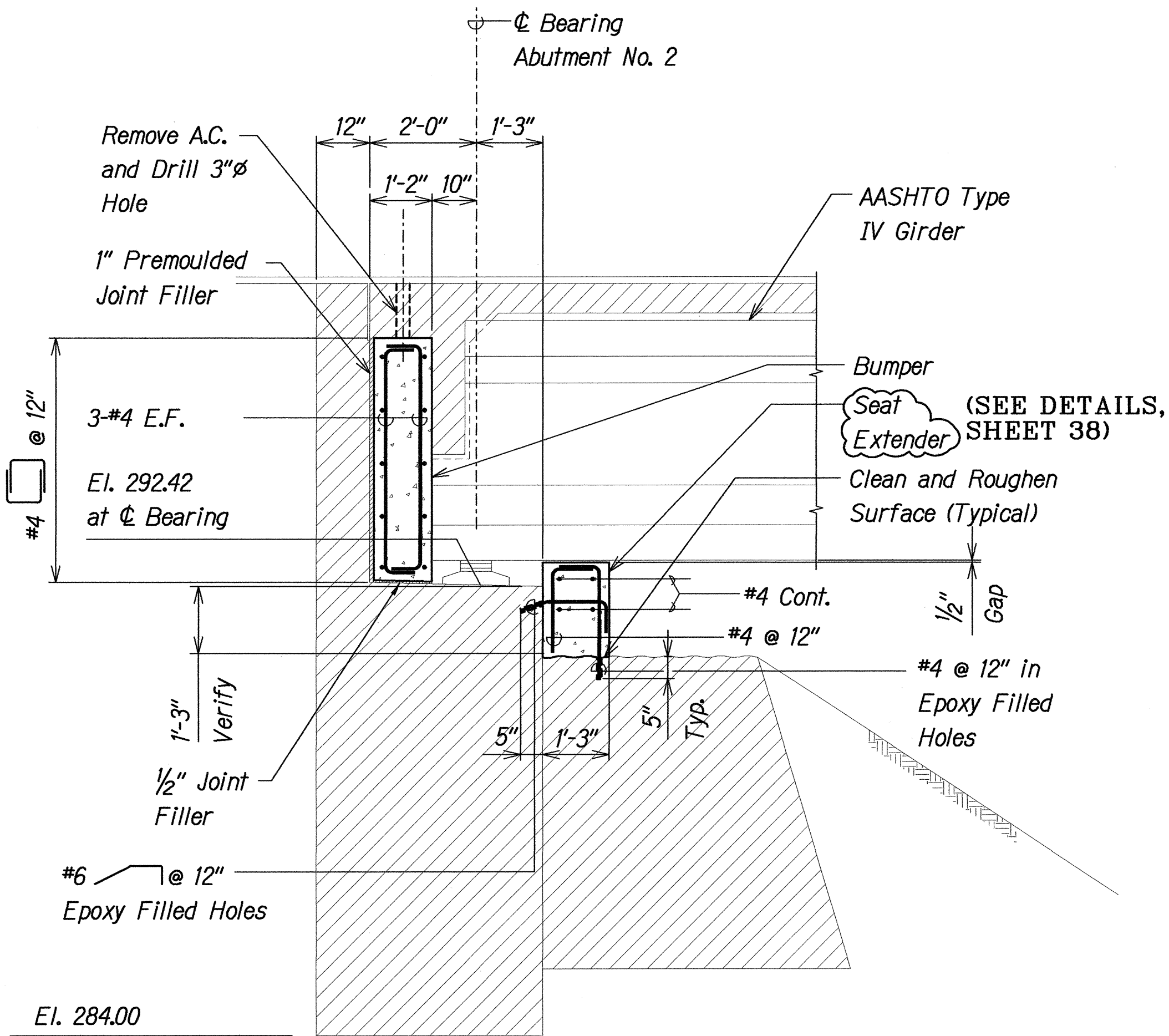
Date: August 12, 1999

SHEET No. S3.5 OF 59 SHEETS

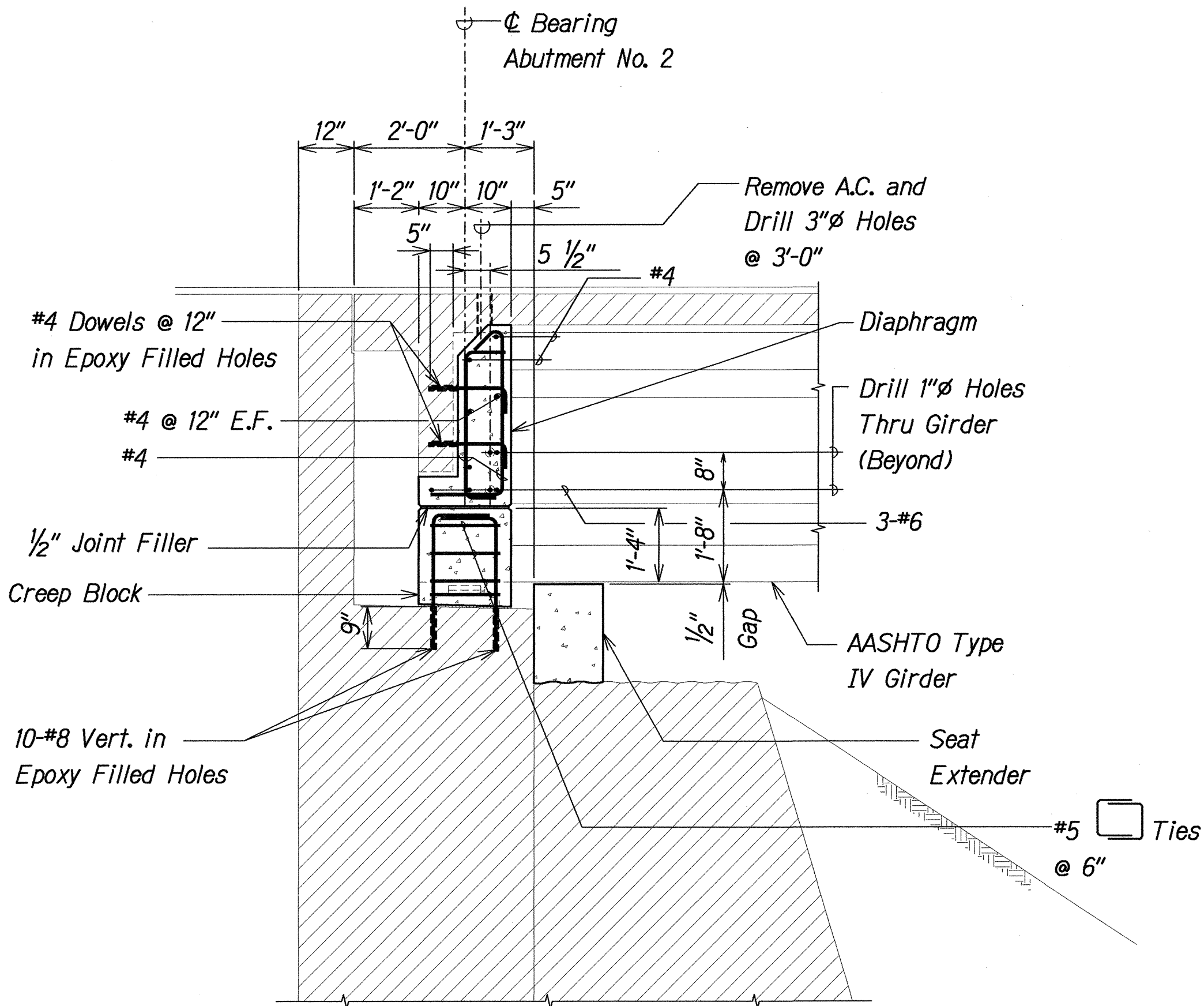
"AS-BUILT" 32

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
NOTE BOOK	
CHECKED BY	

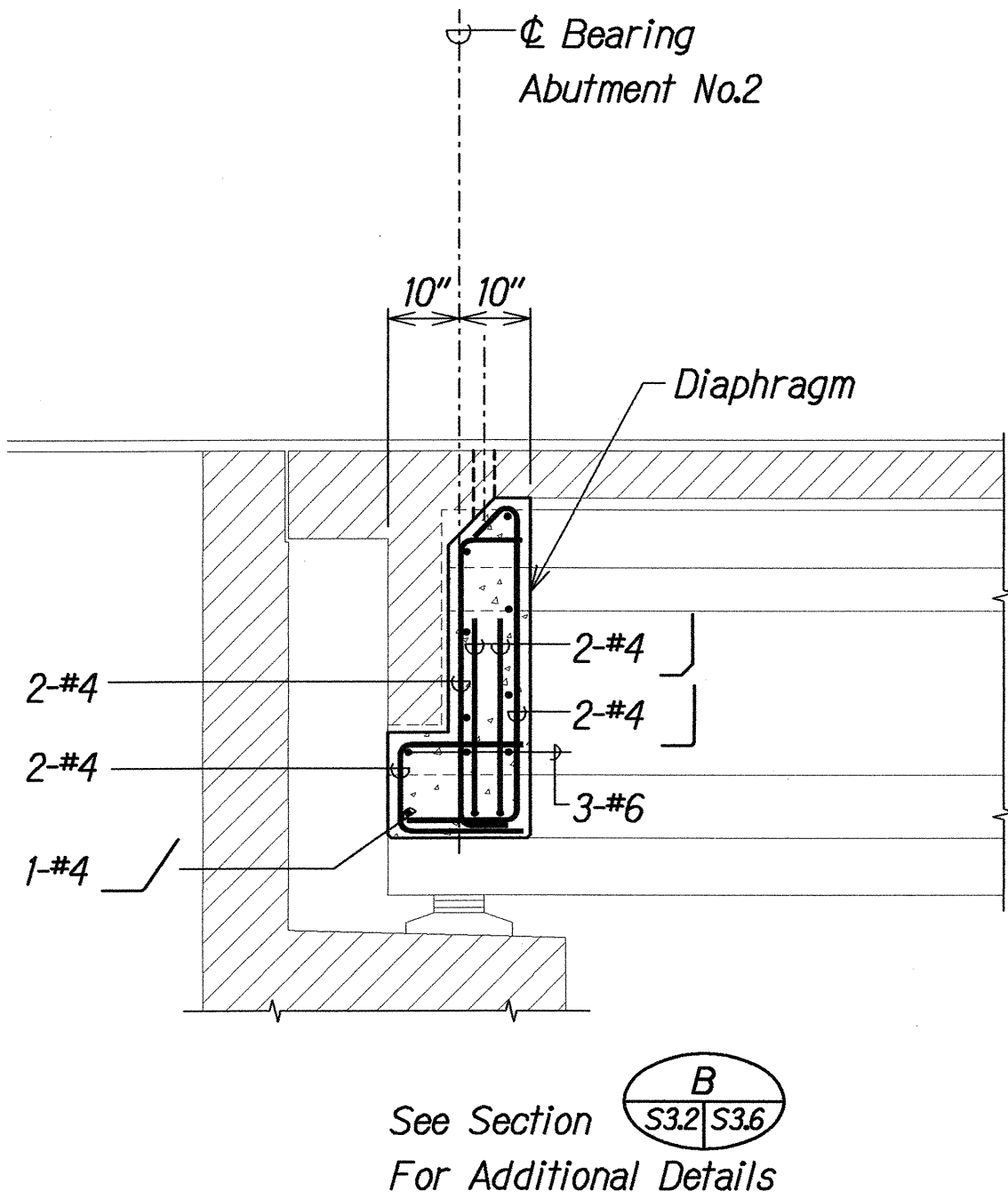
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	33	65



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



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

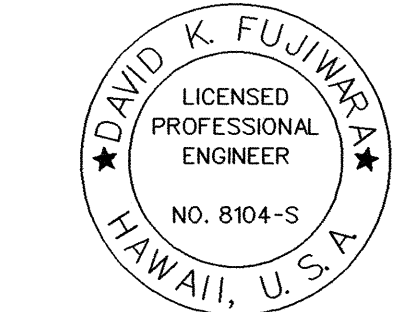


SECTION C
Scale: 1/2" = 1'-0"

NOTES:

- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
- Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.
- When Pouring Concrete Thru 3" Diameter Holes There Shall Be No Void Spaces, Entrapped Air, or Entrapped Water.
- After Pouring Concrete to Top of Deck, A.C. shall be Replaced to Original Elevation. Do not Place A.C. Until Concrete has Sufficiently Hardened.
- For Lane Closures, see Specifications.

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



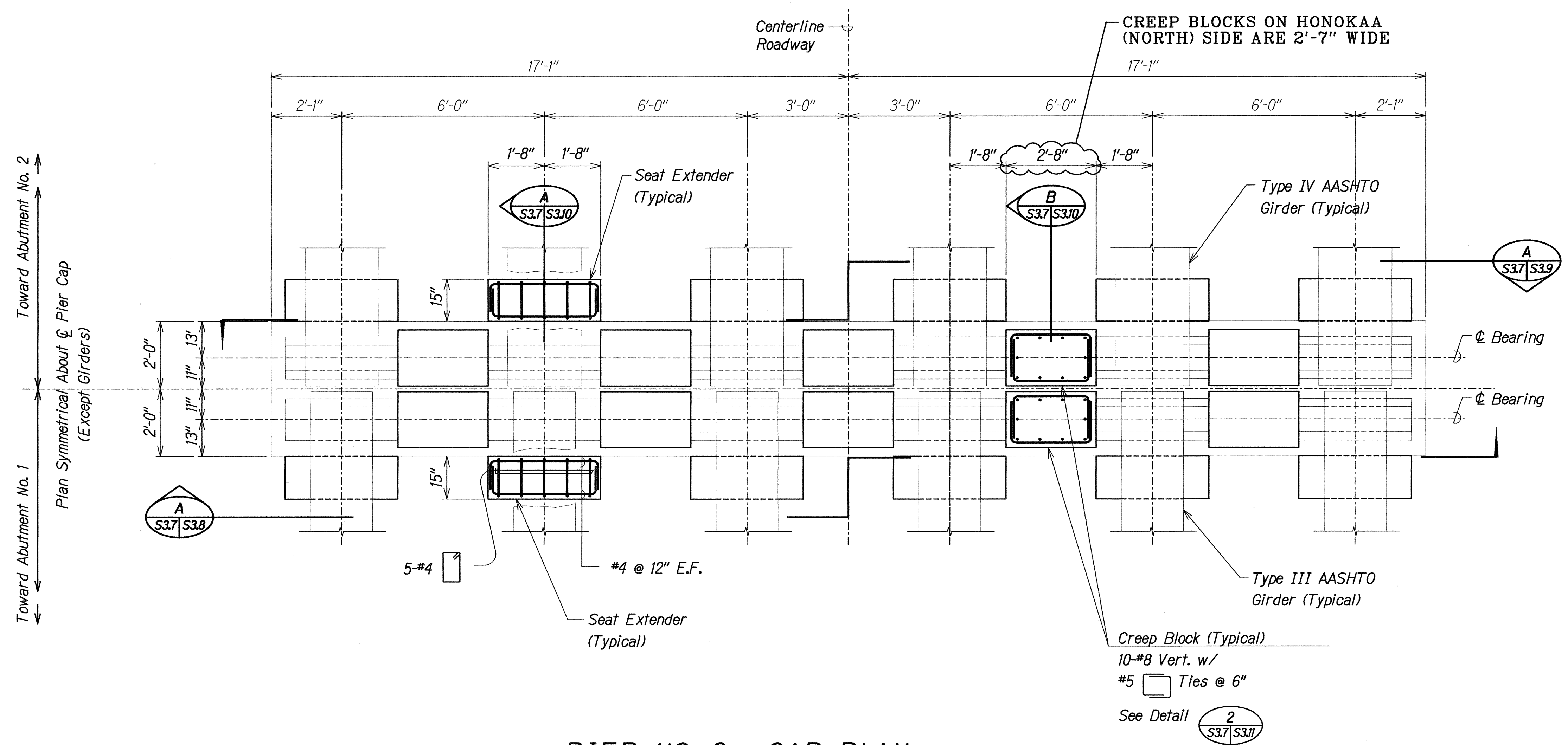
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE
ABUTMENT NO. 2 SECTIONS
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPAIOLOU, HAWAII
Project No. BR-019-2(43)
Scale: As Noted Date: August 12, 1999

SHEET No. S36 OF 59 SHEETS

"AS-BUILT" 33

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	34	65



PIER NO. 3 - CAP PLAN

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

NOTES:

1. The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
2. Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.

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

KALAOA BRIDGE

PIER NO. 3 CAP PLAN

HAWAII BELT ROAD

SEISMIC RETROFIT OF VARIOUS BRIDGES

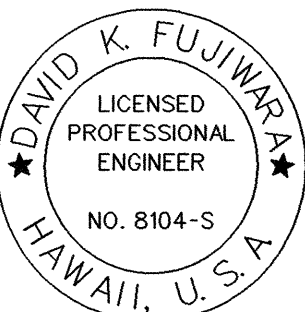
VICINITY OF PAPAIKOU, HAWAII

Project No. BR-019-2(43)

Scale: As Noted

Date: August 12, 1999

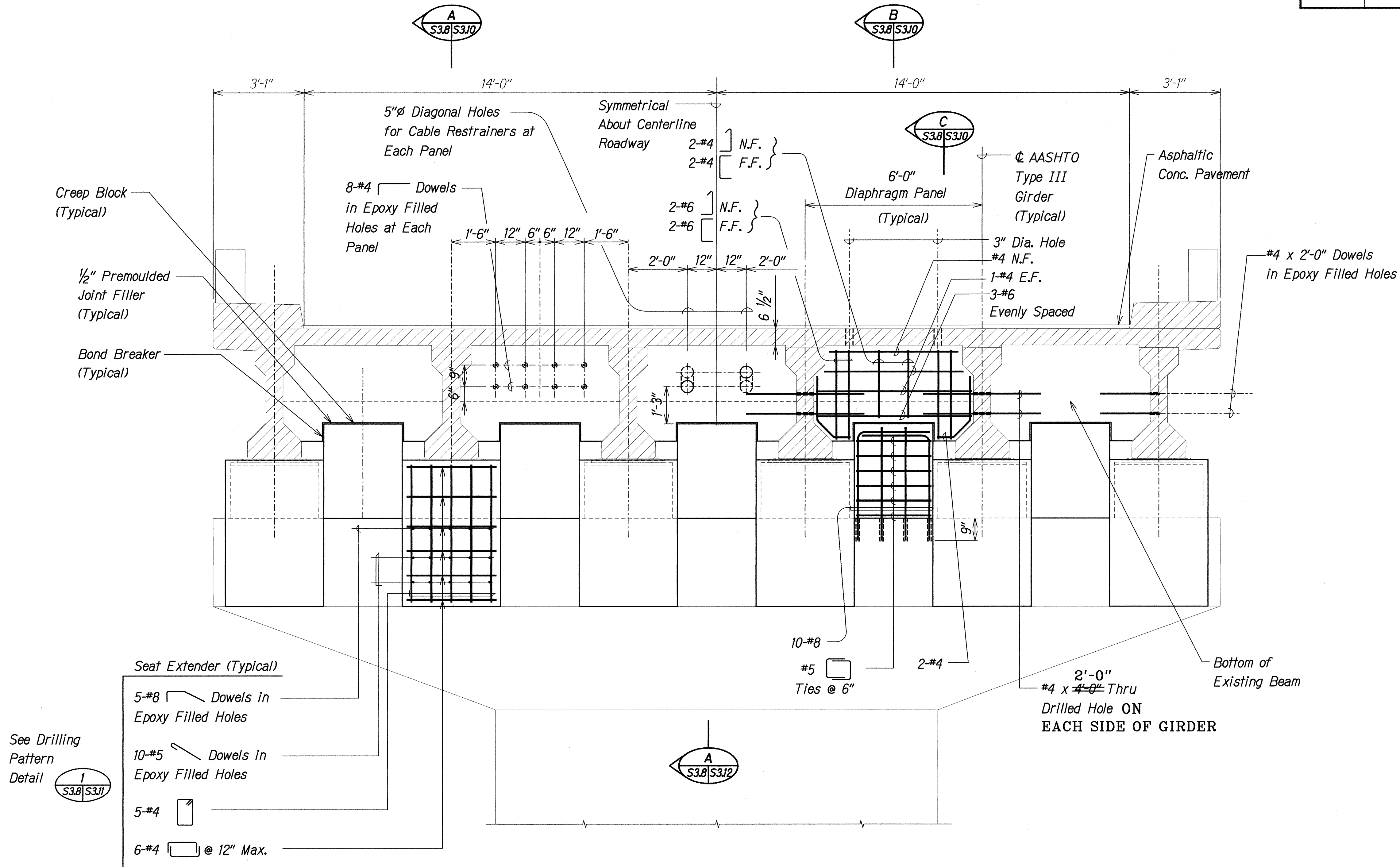
SHEET No. S3.7 OF 59 SHEETS



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SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
26	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	35	65



- NOTES:**
- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
 - Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.

PIER NO. 3 - CAP ELEVATION
Scale: 1/2" = 1'-0"

A
S3.8/S3.7

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

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

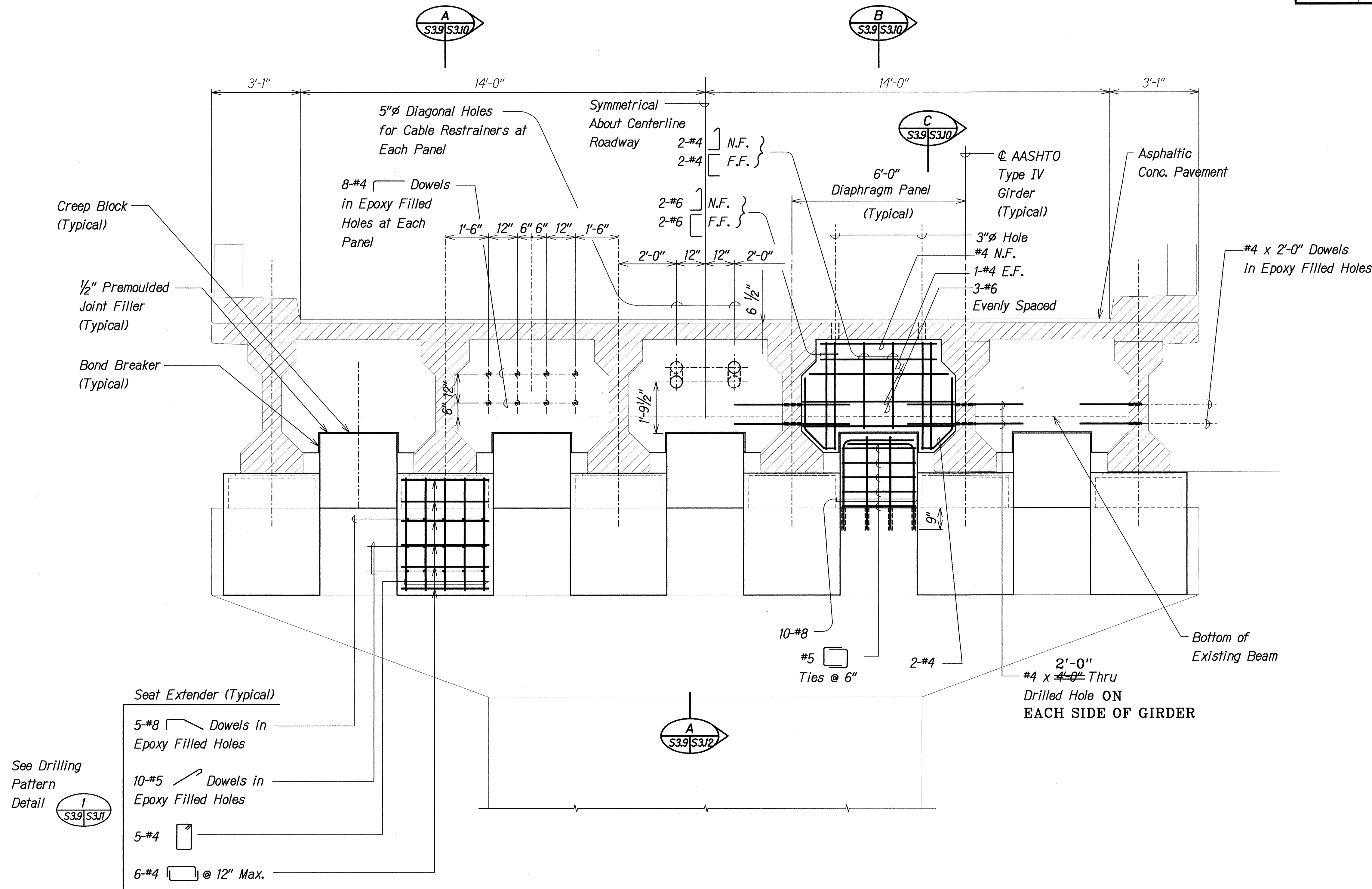
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE
PIER NO. 3 CAP ELEVATION
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPA'IKOUL, HAWAII
Project No. BR-019-2(43)
Scale: As Noted Date: August 12, 1999
SHEET No. S3.8 OF 59 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
N.	

FILE: 70083502EN
PLOT: 1/2" = 1'-0"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	36	65



NOTES:

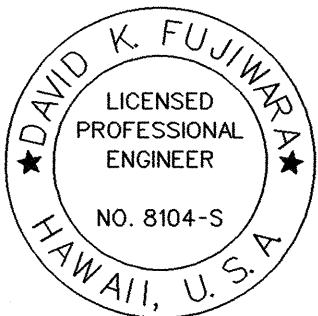
- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
- Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.

PIER NO. 3 - CAP ELEVATION

Scale: 1/2" = 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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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAOA BRIDGE

PIER NO. 3 CAP ELEVATION

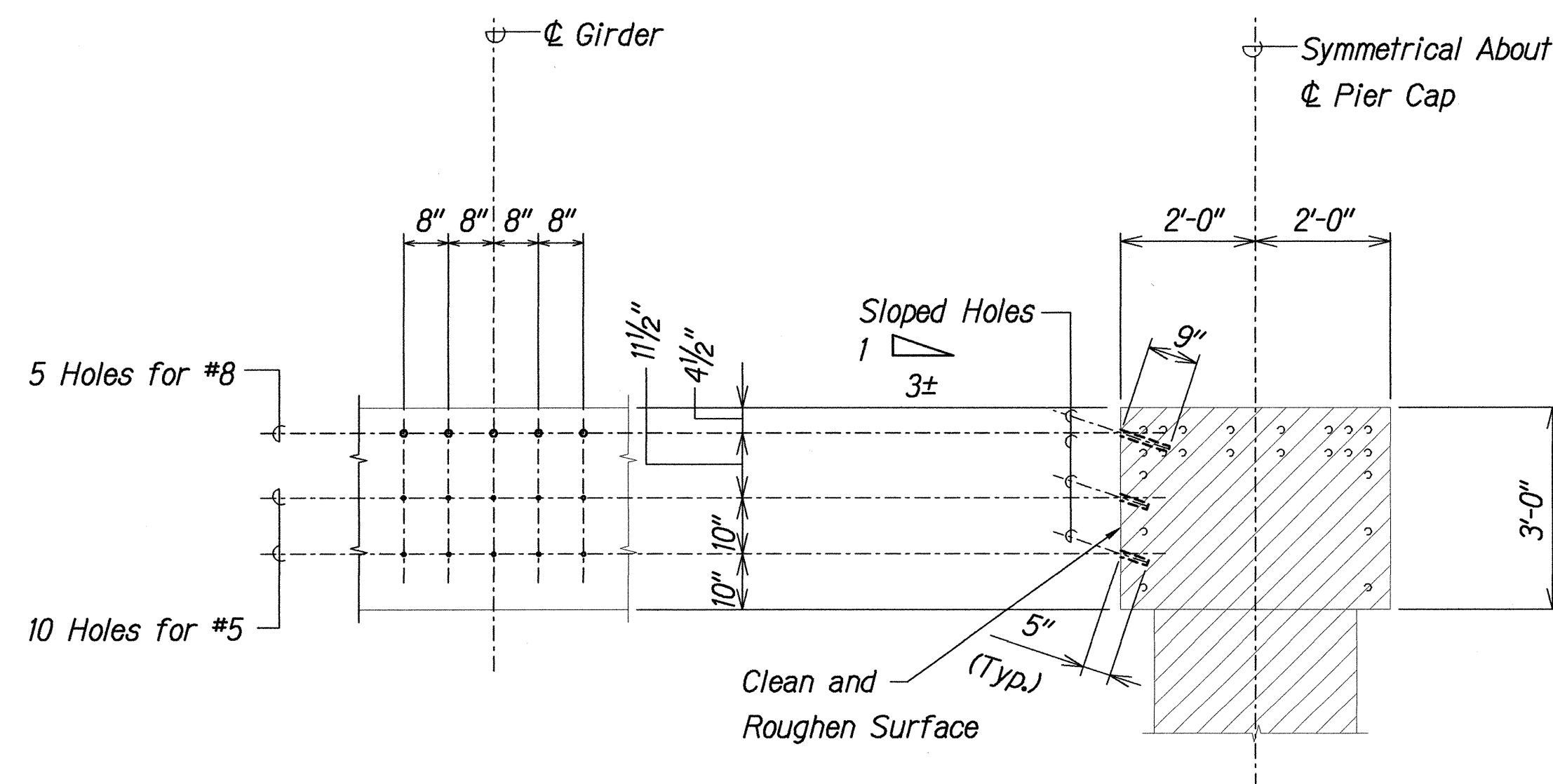
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PAPAIOLOU, HAWAII
Project No. BR-019-2(43)

Scale: As Noted Date: August 12, 1999

SHEET No. S3.9 OF 59 SHEETS

"AS-BUILT" 36

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	38	65

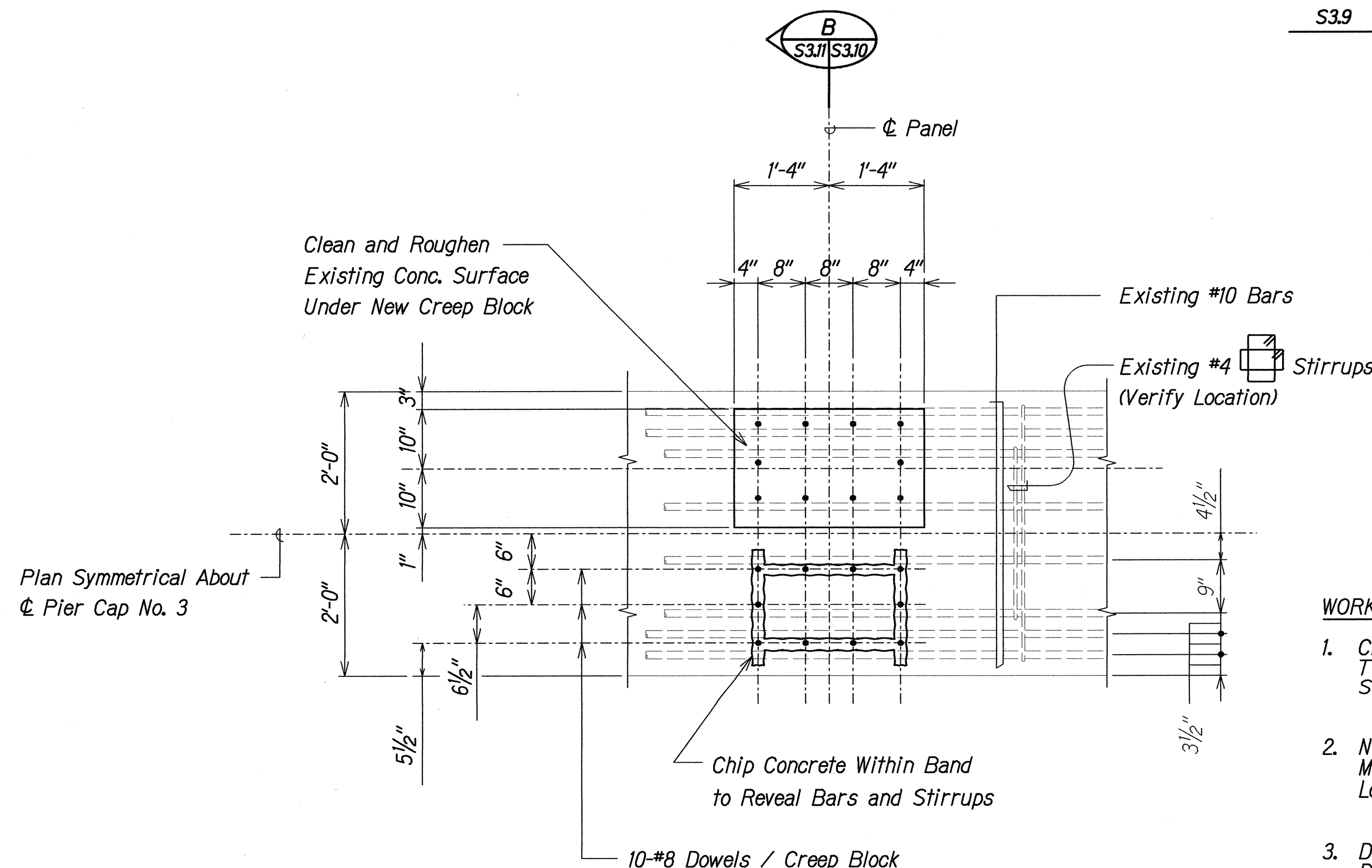


ELEVATION

SECTION

TYPICAL DRILLING PATTERN AT EACH SEAT EXTENDER

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



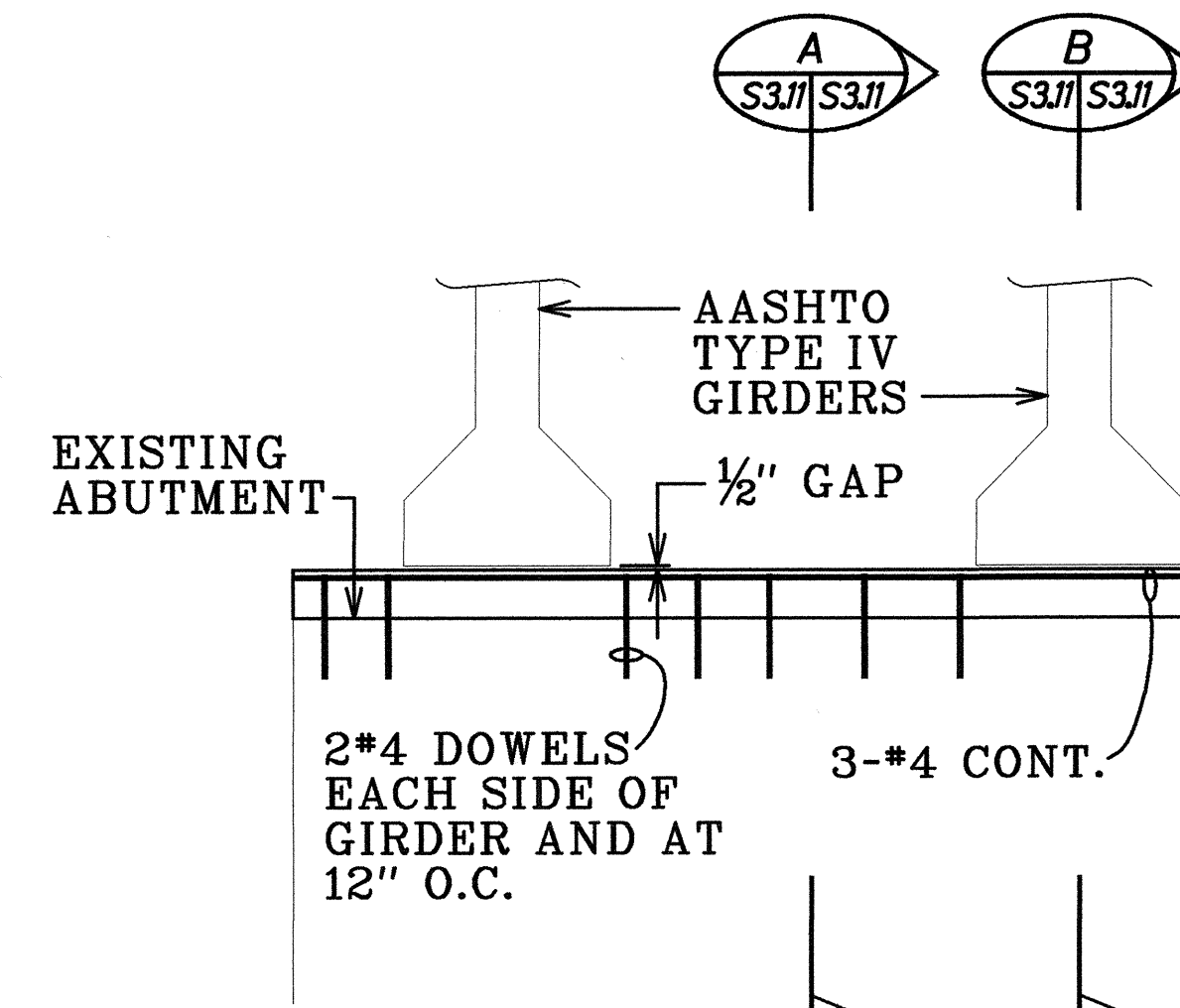
CREEP BLOCK DOWEL REINF. DETAIL

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

WORK SEQUENCE

1. Chip Surface Concrete to Reveal Location of Top Bars and Stirrups. Existing Reinforcing Shall Remain Intact.
2. Notify Engineer Before Proceeding. He Will Make Necessary Adjustments to the Exact Location of the Dowels.
3. Drill Holes, Apply Epoxy Adhesive and Insert Dowels According to Manufacturer's Recommendations. The Full Strength of the Bars Shall be Developed.
4. Remove Excess Adhesive from Concrete Surface and Proceed with Remaining Work.

S3.8, S3.9 | S3.11
S3.9



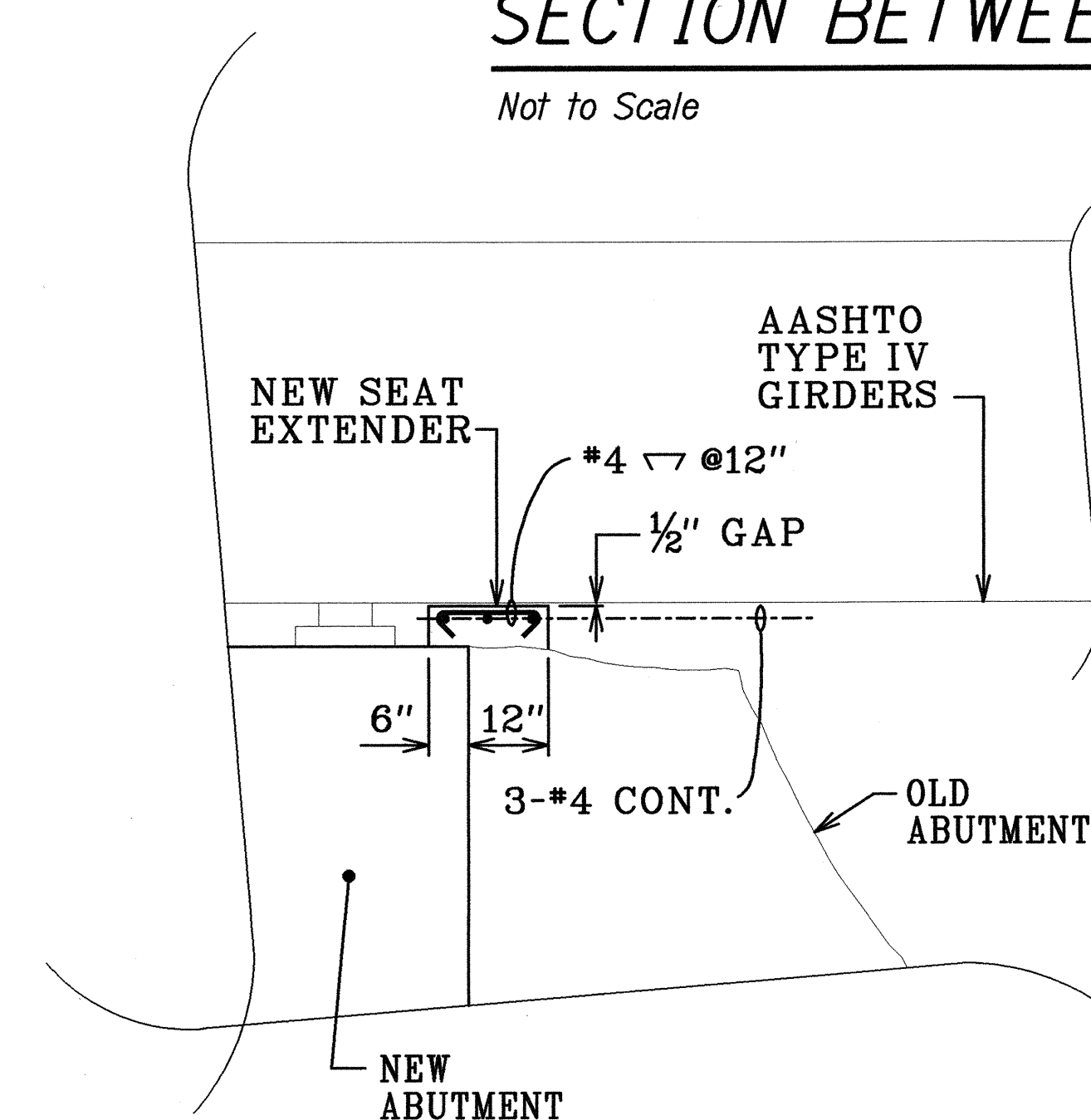
ELEVATION

Not to Scale

3
S3.6 | S3.11

SECTION BETWEEN GIRDERS

Not to Scale



SECTION UNDER GIRDERS

Not to Scale

B
S3.11 | S3.11

LEGEND FOR AS-BUILT POSTINGS

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
KALAOA BRIDGE

## DETAILS

HAWAII BELT ROAD  
SEISMIC RETROFIT OF VARIOUS BRIDGES  
VICINITY OF PAPAIOLO, HAWAII  
Project No. BR-019-2(43)

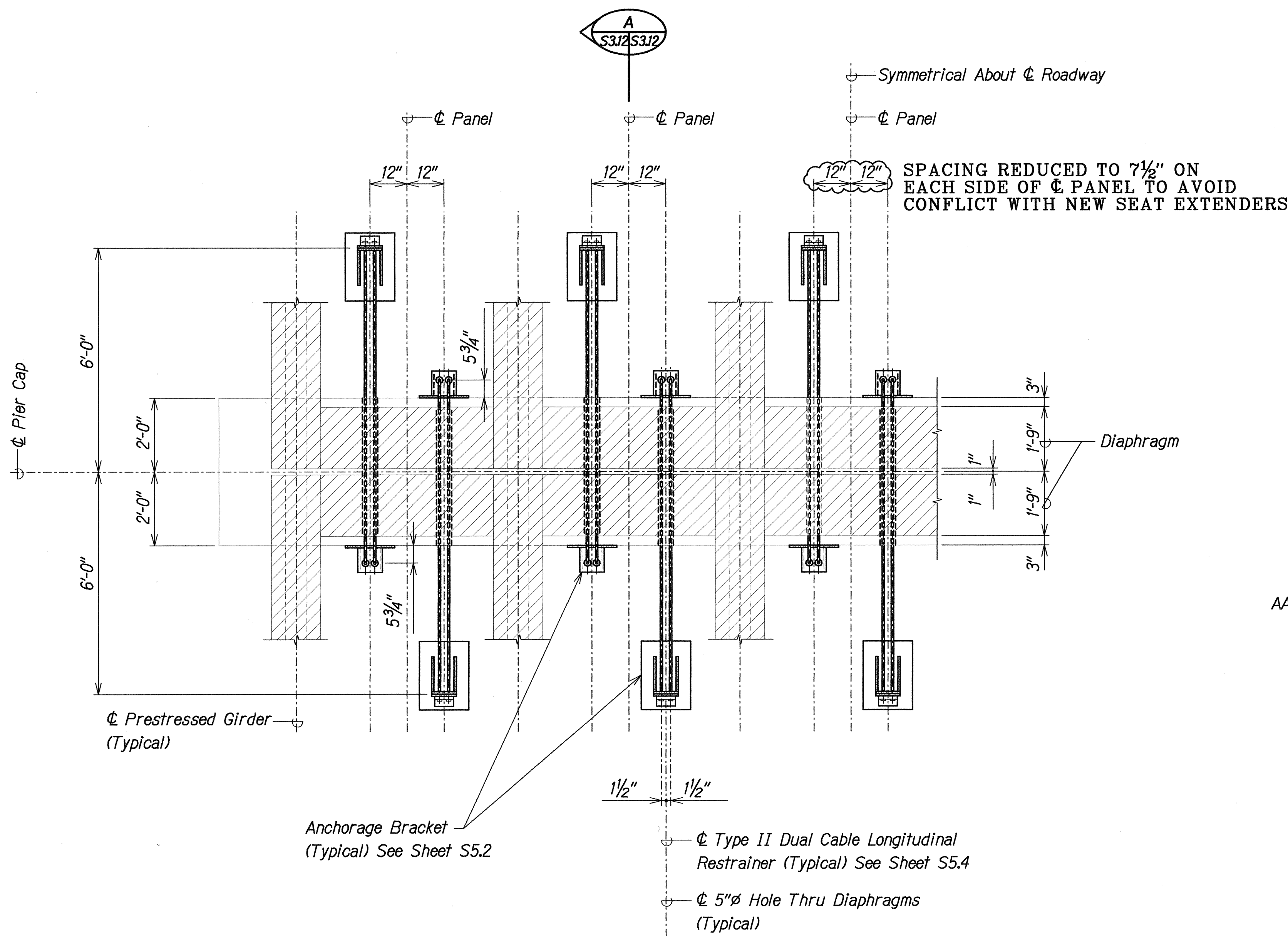
Scale: As Noted Date: August 12, 1999

SHEET No. S3.11 OF 59 SHEETS

"AS-BUILT" 38

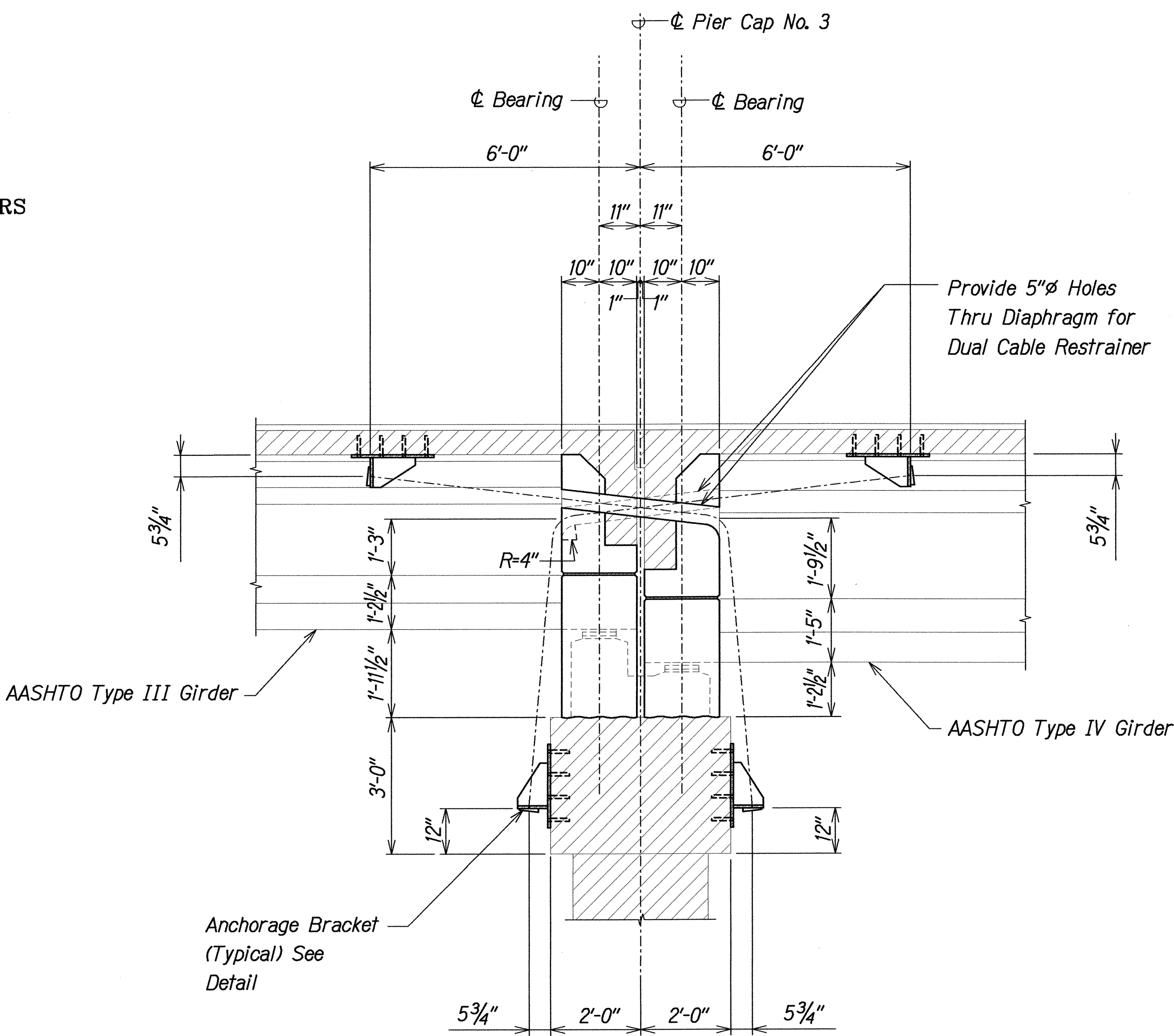
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(43)	2000	39	65



**PLAN - PIER CAP RESTRAINER**  
 Scale: 1/2" = 1'-0"

- NOTES:**
- The Contractor Shall Verify All Controlling Field Dimensions Before Ordering or Fabricating Material.
  - Location of Drilled Dowel Holes Shown in Plans are Approximate. Prior to Placing Holes in Concrete, the Contractor Shall Locate All Reinforcing Steel and Adjust the Location of the Holes to Clear All Reinforcing Bars. Final Hole Locations are Subject to the Approval of the Engineer.



**SECTION**  
 Scale: 1/2" = 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

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

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**KALAOA BRIDGE**  
**CABLE RESTRAINER SECTIONS**  
 HAWAII BELT ROAD  
 SEISMIC RETROFIT OF VARIOUS BRIDGES  
 VICINITY OF PAPAIOU, HAWAII  
 Project No. BR-019-2(43)  
 Scale: As Noted Date: August 12, 1999

SHEET No. S3J2 OF 59 SHEETS

"AS-BUILT" 39