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REFERENCE NOTES:
Refer to Standard Detail Drawings for additional details not covered by detailed plans.

CONSTRUCTION METHODS:
1. See Standard Specifications and Special Provisions.
2. In general, top and edge of concrete deck of superstructure shall be constructed to follow the finish roadway vertical and/or horizontal curves, grade, slopes and elevations.
3. For Concrete finish see Special Provisions. Girder Concrete Seats and Drop Panels to be poured monolithically with the main structure. Top surfaces of concrete seats to have steel trowel finish.
4. See details for additional surface finish.
5. Except as otherwise noted, all vertical dimensions are measured plumb.
6. Piles shorter than 100 ft. shall not be spliced. For longer piles, one splice per pile will be permitted. For any spliced pile, the in-place length above the splice shall be at least 50% of the total length or as directed by the Engineer.
(See additional notes on Sht. No. 43B)

CONSTRUCTION PROCEDURE:
1. ABUTMENT CONSTRUCTION SEQUENCE;
a. Pour abutments up to girder seats first.
b. Form, pour, cure and stress bridge girders.
c. Remove forms and shoring from bridge girders.
d. Form and pour counterfort, abutment and wing walls last.

2. BRIDGE GIRDER CONSTRUCTION SEQUENCE;
a. Form, pour, cure and stress exterior spans first between abutments and expansion joints.
b. Form, pour, cure and stress interior span last between expansion joints.
c. Remove forms and shorings from exterior spans first between abutments and expansion joints.
d. Remove forms and shorings from interior span last between pier line (3) and (4)
e. Stress using the following sequences:
1. Jack cables 1 and 2 of BG #1 and #3.
2. Jack cables 1, 2, and 3 of BG #2.
3. Jack balance of cables in BG #1 and #3.
4. Jack balance of cables in BG #2.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	42	104

GENERAL NOTES

DESIGN SPECIFICATIONS AASHO:
Standard Specifications for Highway Bridges (10th Edition) with subsequent Interim Specifications.

DESIGN LOADS:
HS-20-44 or Interstate loading

DESIGN STRESSES:
1. R.C. Beam & Slabs - See AASHO Specifications and Special Provisions except as otherwise noted.

Class A	Class E	Pier Beams
f'c = 3,000 psi	4,500 psi	5,000 psi
fc = 1,200 psi	1,800 psi	2,000 psi
n = 9.2	8.0	7.1

fs = ASTM A615, see Special Provisions

2. Post Tensioned Girders
f'c = 5000 psi
f'ci = 4000 psi | Tensioning load = see Schedule on Sht. No. 35B

3. Pile Capacity - 50 Tons

MATERIAL:
1. All concrete shall be Class A except as otherwise noted on plan. Concrete for Post Tensioned Girders see Standard Specifications and as noted under Design Stresses.
2. See Special Provisions for admixture in concrete.
3. All piles to be prestressed concrete piles Type I or cast-in-place concrete piles. For Prestressed conc. piles see Standard Detail Sht. Nos. DB-300-1, DB-300-2 & for C.I.P. piles see Det. A/18B
4. Concrete in Post-tensioned Girders shall have a cement content of not less than 8.0 sacks nor more than 8.5 sacks cement per cubic yard.
(See additional notes on Sht. No. 43B)

NOTE:
For additional General Notes, Symbols and Abbreviations see Sheet No. 43B

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
INDEX TO DRAWINGS AND GENERAL NOTES
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2 1(10):6
June 1973

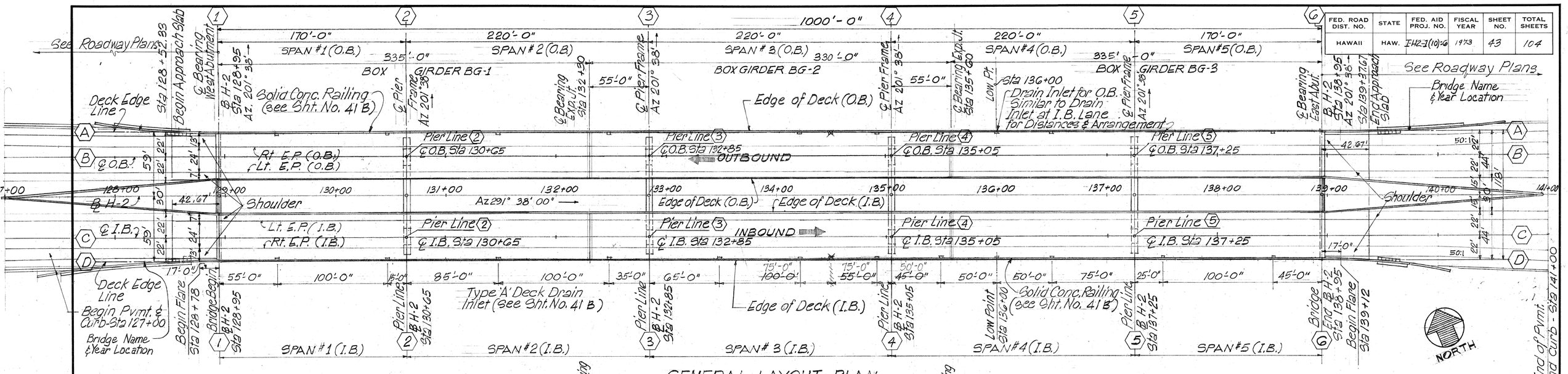
SHEET No. 1B OF 43B SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT

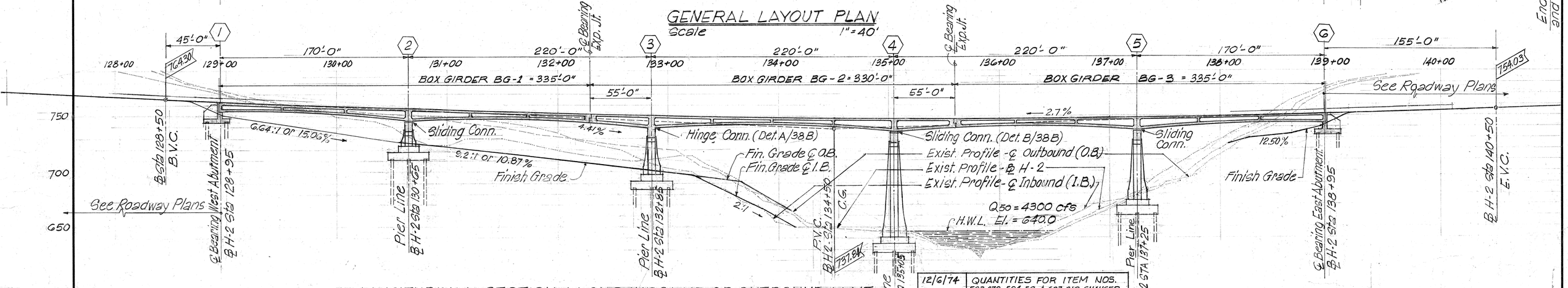
42

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):G	1973	43	104



GENERAL LAYOUT PLAN

Scale 1" = 40'



LONGITUDINAL SECTION ALONG INBOUND OR OUTBOUND LANE

SCALE: 1" = 40'

DATE	REVISION
12/6/74	QUANTITIES FOR ITEM NOS. 503.070, 504.50 & 602.010 CHANGED
7/18/74	QUANTITIES FOR ITEM NOS. 503.070, 504.50 & 602.010 Changed

ABBREVIATIONS AND SYMBOLS

Abut.	Abutment	E.F.	Each Face	No.	Number
AF	Abutment Footing	E.V.C.	End Vertical Curve	O.F.	Outside Face
Az	Azimuth	Exp. Jt.	Expansion Joint	O.B.	Outbound
℄	Baseline	Ext.	Exterior	o.c.	On Centers
B-1	Boring number	Ea. or @	Each	ϕ	Diameter
BG	Box Girder	Ft.	Feet	PF	Pile Foundation
B.V.C.	Begin Vertical Curve	G	Girder	P.V.C.	Point of Vertical Curve
℄	Centerline	G.B.	Grade Beam	R	Radius
C.G.	Center of Gravity	H.P.	High Point	Sht.	Sheet
Det.	Detail	H.W.L.	High Water Level	Sta.	Station
El.	Elevation	I.B.	Inbound	T.O.D.	Top of Deck
E.D.	Edge of Deck	Int.	Interior	T.O.S.	Top of Slab
E.P.	Edge of Pavement	Lt.	Left	T.O.W.	Top of Wall
E.S.	Edge of Shoulder	Max.	Maximum	I.F.	Inside Face
E.W.	Each Way	Min.	Minimum	(See Sht. No. 43B for additional Abbreviations and Symbols)	
		N.I.C.	Not in Contract		

1 — Location Pier Line and Abutment Line Number

A — Location Center line Column or Exterior Deck Edge Layout Line

A / 7B — Detail or Section Designation / Sheet Number where drawn

Vertical Pile

Battered Pile 3:1

Test Pile

Load Test Pile

00.00 or 00.00 — Existing or Finish Elevation

(123) — Finish Grading

123 — Existing Grade

ESTIMATED QUANTITIES			
ITEM NO.	ITEM	UNIT	QUANTITIES
206.60	Structure Excavation for Bridges	C.Y.	12,484 C.Y.
206.71	Structure Backfill for Abutments	C.Y.	1,194 C.Y.
206.81	Filter Material for Structures	C.Y.	90 C.Y.
503.070	Concrete in Bridges	L.S.	12328 C.Y.
503.071	Concrete in Bridge Footings	L.S.	5,460 C.Y.
504.50	Post-tensioning Operation for Cast-in-place structs.	L.S.	491,300 lbs.
505.001	Pile Load Tests	Ea.	12
505.002 A1	Driving Precast, Prestressed Concrete Test Piles	L.F.	250 L.F.
505.003 A1	Predrilled holes for Precast, Prestressed Conc. Test Piles	L.F.	3778 L.F.
505.040 A1	Precast, Prestressed Concrete Piles Furnished	L.F.	115,072 L.F.
505.061 A2	Cast-in-Place Conc. Piles in Driven Steel Shells	L.F.	108,237 L.F.
505.062 A2	Cast-in Place Conc. Test Piles in Driven Steel Shells	L.F.	4,023 L.F.
505.400 A1	Precast; Prestressed Conc. Piles, driven	L.F.	6,830 L.F.
505.700 A1	Predrilled holes for Precast, Prestressed Conc. Piles	L.F.	101,407 L.F.
506.03	P.T.F.E. and Stainless Steel Bearing and Exp. Plates	S.F.	448 S.F.
507.50	Concrete Railing	L.F.	4,108 L.F.
511.01	Steel Reinf. Elastomeric Expansion Joint Seal	L.F.	162 L.F.
602.010	Reinforcing Steel in Bridges	L.S.	3,472,100 lbs.

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
GENERAL LAYOUT PLAN & LONG. SECT.
STA 128+95 TO STA 138+95
INTERSTATE ROUTE H-2
F.A.I. PROJ. No. I-H2-1(10):G
Scale: 1" = 40' June 1973

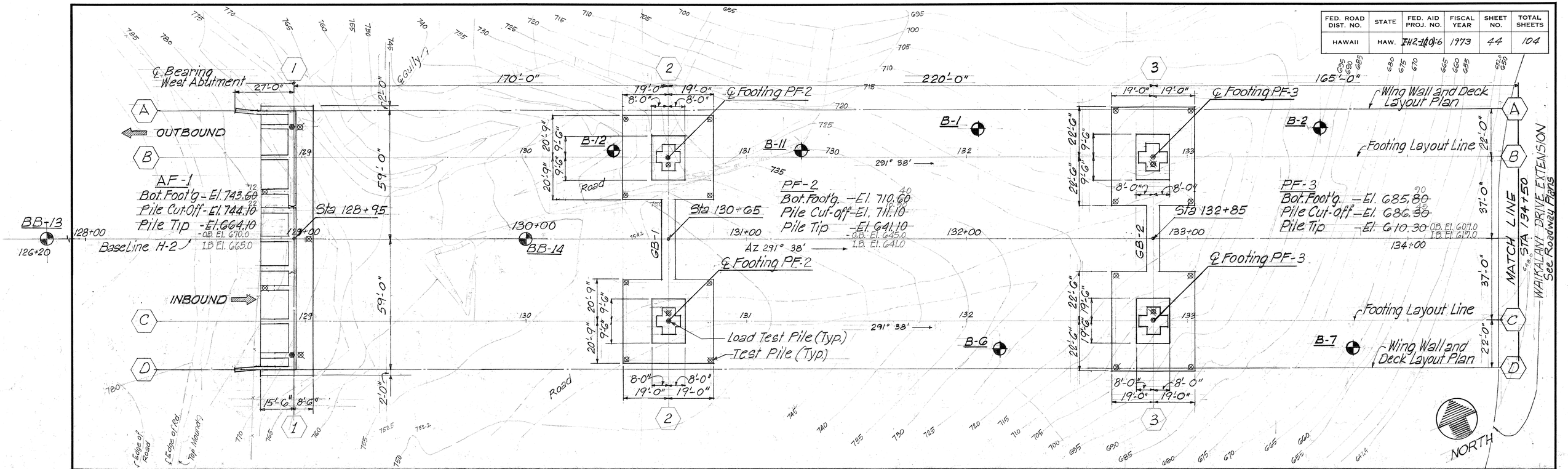
SHEET No. 2B OF 43B SHEETS

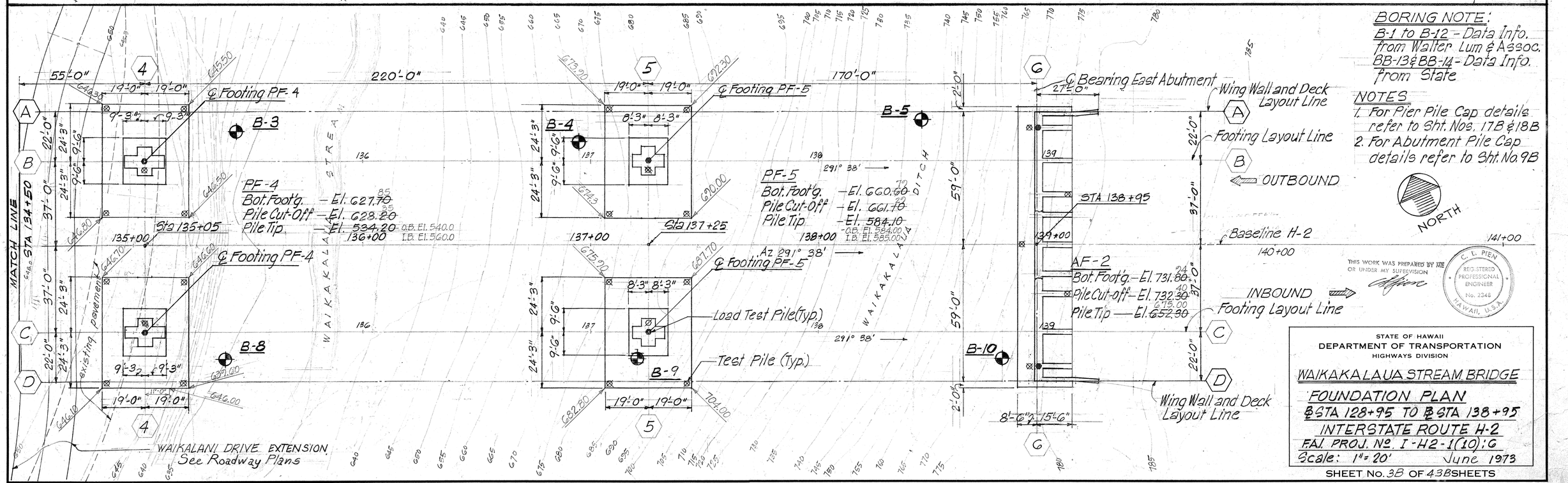
C.O. 43

PRINTED ON NO. 1000H CLEARPRINT

R-4-6

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	44	104





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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
FOUNDATION PLAN
℄ STA 128+95 TO ℄ STA 138+95
INTERSTATE ROUTE H-2
FAI. PROJ. NO. I-H2-1(10);6
Scale: 1" = 20' June 1973

SHEET NO. 38 OF 43 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-G	1973	45	104

BORING #1
Elev. 718 ±

TYPE OF BORING: AUGER (CP-15)

Medium to stiff reddish brown clayey silt	16 Blows/ft.
	30 Blows/ft.
Red and brown clayey silt and decomposed rock	
Medium, mottled dark red-brown clayey silt (Decomposed rock)	12 Blows/ft.
Red and brown clayey silt	
Medium red and tan clayey silt	
Med. red, gray & brown clayey silt	22 Blows/ft.
Stiff, mottled tan brown clayey silt	
Stiff, reddish brown clayey silt w/ decomposed rock	
Med. mottled brown clayey silt (Dec. rock)	23 Blows/ft.
Stiff, red and light brown clayey silt (Dec. rock)	
Stiff, mottled brown clayey silt.	10 Blows/ft.
Stiff, grayish red Clayey silt	15 Blows/ft.
Tan, decomposed rock (Some crushes to clayey silt)	50 Blows/.3 ft.
Stiff, mottled gray-brown clayey silt (Dec. rock)	40 Blows/ft.
	28 Blows/ft.
Tan and black decomposed rock (Some crushes to clayey silt)	19 Blows/ft.
Mottled gray decomposed rock	46 Blows/ft.
	62 Blows/ft.
END OF BORING @ 111.50'	

BORING #2
Elev. 668.5

TYPE OF BORING: AUGER (CP-15)

Medium purple clayey silt (Dec. rock)	7 Blows/ft.
	9 Blows/ft.
Medium red and tan clayey silt	
Stiff, light gray-brown clayey silt (Dec. rock	41 Blows/ft.
Stiff, red clayey silt	22 Blows/ft.
Stiff, light red & brown clayey silt	20 Blows/ft.
Grayish brown dec. rock	45 Blows/.5 ft.
Tannish brown clayey silt (Dec. rock)	
Stiff, mottled gray clayey silt (Dec. rock)	34 Blows/ft.
Stiff, dark gray & brown clayey silt (Dec. rock)	29 Blows/ft.
	40 Blows/ft.
Stiff, mottled brown clayey silt	38 Blows/ft.
	20 Blows/0.0 ft No recovery Hammer bounces
	30 Blows/ft.
Brown decomposed rock	50 Blows/.2 ft. Hammer bounces
Lava rock	
Stiff brown clayey silt w/ decomposed rock	28 Blows/ft.
Grayish brown dec. rock (Some crushes to clayey silt)	51 Blows/ft.
Gray decomposed rock (Some crushes to sandy silt)	33 Blows/ft.
	55 Blows/.5 ft.
Gray boulder chips	50 Blows/.2 ft.
	30 Blows/0.0 ft. No recovery Hammer bounces
Gray & tan dec. rock (Some crushes to clayey silt)	60 Blows/.5 ft. Hammer bounces
Water (11-24-71)	30 Blows/0.0 ft No recovery Hammer bounces
Stiff mottled brown clayey silt w/ gray clay pockets and decomposed rock	53 Blows/ft.
Stiff gray & brown clayey silt w/ dec. rock	34 Blows/ft.
Gray-brown dec. rock w/ (some crushes to clayey silt	50 Blows/.3 ft. Hammer bounces
	50 Blows/0.1 ft No recovery Hammer bounces
Gray, dense basalt rock, slightly vesicular (large vesicles)	50 Blows/0.1 ft No recovery Hammer bounces
	RUN #3 cored: 5.0' Recov.: 4.6'
	RUN #4 cored: 5.0' Recov.: 5.0'
END OF BORING @ 150'	

BORING #3
Elev. 636 ±

TYPE OF BORING: AUGER & ROTARY (B-61)

	13 Blows/ft.
Stiff, brown silty clay	16 Blows/ft.
Water (11-24-71)	
Soft, tan-brown clayey silt w/ gray clay, dec. rock & river gravel	2 Blows/ft.
	hydraulic push (150 psi/1.5 ft)
Tan-gray clayey silt	7 Blows/ft.
Medium gray-brown clayey silt (Decomposed rock)	
Medium to stiff mottled tan, clayey silt & dec. rock	15 Blows/ft.
Stiff red & brown clayey silt (Decomposed rock)	31 Blows/ft.
Stiff gray-brown clayey silt w/ decomposed rock	
Stiff, mottled dark gray clayey silt (Dec. rock)	11 Blows/ft.
Tannish gray clayey silt w/ decomposed rock	
Stiff gray & brown clayey silt (Decomposed rock)	77 Blows/ft.
Brown decomposed rock (Some crushes to clayey silt)	50 Blows/0.3 ft.
	40 Blows/ft.
Dark gray & tan dec. rock (Some crushes to clayey silt)	27 Blows/ft.
	19 Blows/ft.
Tan-gray decomposed rock (Some crushes to clayey silt)	33 Blows/ft.
	83 Blows/ft. Hammer bounces
	69 Blows/ft.
Reddish gray clayey silt w/ decomposed rock	15 Blows/ft.
	8 Blows/ft.
Gray decomposed rock (Some crushes to clayey silt)	86 Blows/ft.
	35 Blows/ft.
END OF BORING @ 116.50'	

BORING #4
Elev. 609.5

TYPE OF BORING: AUGER (CP-15)

Stiff, reddish brown silty clay	25 Blows/ft.
	45 Blows/ft.
Stiff, reddish brown silty clay w/ traces of tan dec. rock	33 Blows/ft.
Stiff, mottled brown clayey silt	23 Blows/ft.
	20 Blows/ft.
Stiff, red clayey silt	20 Blows/ft.
Stiff, brown clayey silt	
Medium light brown clayey silt (Dec. rock)	
Medium to stiff mottled tan-gray clayey silt (Dec. rock)	20 Blows/ft.
Medium to stiff, mottled red clayey silt (Dec. rock)	20 Blows/ft.
Medium, mottled brown clayey silt (Decomposed rock)	
Light brown decomposed rock (Crushes to clayey silt)	
Medium, tan & gray clayey silt	17 Blows/ft.
	18 Blows/ft.
Tan-gray & red clayey silt	
Medium to stiff, light brown & gray clayey silt	23 Blows/ft.
	30 Blows/0.5 ft.
	20 " /0.0 ft. Hammer bounces
Tan & gray decomposed rock w/ boulder (Some crushes to clayey silt	41 Blows/ft.
	50 Blows/0.4 ft Hammer bounces
Gray, dense basalt rock w/ some large vesicles	RUN #1 cored: 4.0' Recov.: 3.8'
Gray, fractured basalt rock w/ some vesicles	RUN #2 cored: 5.0' Recov.: 2.5'
Dark gray dec. rock (Some crushes to silty sand)	74 Blows/0.9 ft.
	31 Blows/ft.
Gray & brown dec. rock (Some crushes to silty sand)	50 Blows/0.3 ft.
	50 Blows/0.4 ft. Hammer bounces
Medium to stiff mottled brown clayey silt w/ dec. rock	32 Blows/ft.
Brown decomposed rock	22 Blows/ft
Gray-tan decomposed rock	30 Blows/0.0 ft
Gray, dense basalt rock w/ some large vesicles	RUN #3 No recovery cored: 5.0' Recov.: 5.0'
	RUN #4 cored: 5.0' Recov.: 5.0'
Gray & brown, clinker lava rock	RUN #5 cored: 5.0' Recov.: 0.8'
END OF BORING @ 150.40'	70 Blows/0.4 ft Hammer bounces

BORING #5
Elev. 745 ±

TYPE OF BORING: AIR DRILLING (CP-8)

Soft, reddish brown clayey silt	2 Blows/ft.
Medium, light red-brown clayey silt w/ traces of dec. rock	6 Blows/ft.
Med. Light brown clayey silt	
Stiff, reddish brown clayey silt	22 Blows/ft.
Medium, mottled brown clayey silt w/ decomposed rock & boulder	10 Blows/ft.
Medium, brown clayey silt (Decomposed rock)	
Stiff, mottled brown clayey silt w/ dec. rock	
Med., mottled tan clayey silt (Dec. Rock)	50 Blows/0.5 ft Hammer bounces
Boulder	
Medium, red clayey silt (Dec. rock)	14 Blows/ft.
Medium, red & gray clayey silt	
Brown decomposed rock	12 Blows/ft.
Medium, mottled red clayey silt w/ dec. rock	
	12 Blows/ft.
Stiff, black & gray clayey silt (Dec. Rock)	30 Blows/0.5 ft 50 Blows/0.4 ft.
Stiff, gray-red clayey silt	29 Blows/ft.
Stiff, mottled brown clayey silt	33 Blows/ft.
	22 Blows/ft.
Stiff, mottled gray clayey silt w/ dec. rock	44 Blows/ft.
	39 Blows/ft. No recovery
Gray, decomposed rock (Some crushes to clayey silt)	30 Blows/ft.
END OF BORING @ 101.50'	71 Blows/ft.

BORING #6
Elev. 724 ±

TYPE OF BORING: AUGER (CP-8)

Medium to Stiff mottled brown clayey silt w/ dec. rock	12 Blows/ft.
Medium, brown clayey silt	
Medium, red & gray clayey silt	
Medium, mottled tan clayey silt & dec. rock	12 Blows/ft.
Medium, mottled tan clayey silt w/ dec. rock	10 Blows/ft.
	17 Blows/ft.
Stiff, mottled red clayey silt	
	9 Blows/ft.
Medium, mottled gray-brown clayey silt	11 Blows/ft
Medium, red & gray clayey silt (Dec. rock)	
Medium, reddish gray clayey silt	11 Blows/ft.
	8 Blows/ft.
Stiff, mottled brown-red clayey silt	
	16 Blows/ft.
Stiff, dark gray-red clayey silt	12 Blows/ft.
Stiff, red & gray clayey silt	24 Blows/ft.
Mottled gray dec. rock	30 Blows/ft. Ham
Dark gray & brown dec. rock	30 Blows/ft.
Gray decomposed rock	
Gray & brown dec. rock	34 Blows/ft.
Stiff, reddish brown dec. rock	26 Blows/ft.
Dark, mottled brown dec. rock (Some crushes to silty clay)	45 Blows/ft.
Tan dec. rock	42 Blows/ft.
Dark dec. rock	50 Blows/0.1 ft
Gray, puka puka (lava) rock w/ brown dec. rock	RUN #1 Ham. Bounces cored: 5.00' Recov.: 2.00'
	30 Blows/ft.
Reddish brown & brown dec. rock (Some crushes to clayey silt)	23 Blows/ft.
Gray dec. rock	37 Blows/ft.
Gray-brown dec. rock	60 Blows/5' Ham. Bounces
	30 Blows/0.0'
Decomposed rock	50 Blows/0.1' No recovery Ham. Bounces
END OF BORING @ 150.10'	

ORIGINAL PLAN | NOTE BOOK | No.

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

DISCLAIMER CLAUSE:

The boring data furnished in these plans are the results of the facts gathered at the specific locations indicated to primarily aid in the design of the structure, and does not necessarily typify conditions at other locations. The Department assumes no responsibility for the sufficiency of the boring data, or the prevalence of conditions similar to that indicated by the boring data.

BORING NOTE:

Boring #1 to #12 - Data Information from Walter Lum & Assoc.

Boring #13 & #14 - Data Information from Highways Division State of Hawaii

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BORING LOGS

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):G

Not to Scale June 1973

SHEET No. 43 OF 438 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	46	104

BORING # 7

Elev. G72.5±

TYPE OF BORING : AUGER (CP-15)

Medium to Stiff mottled brown clayey silt	12 Blows/ft.
Stiff, mottled tan brown clayey silt	15 Blows/ft.
Stiff, mottled reddish brown clayey silt	21 Blows/ft.
	14 Blows/ft.
Stiff, reddish brown & tan clayey silt	18 Blows/ft.
Stiff, tan brown & black clayey silt (Dec. rock)	32 Blows/ft.
Stiff, mottled red & gray clayey silt (Dec. rock)	22 Blows/ft.
Stiff, mottled brown-gray clayey silt	13 Blows/ft.
Soft to medium mottled light brown clayey silt w/ traces of dec. rock	4 Blows/ft.
Medium to stiff, light gray & orange clayey silt (Dec. rock)	
Stiff, brown & red clayey silt	18 Blows/ft.
Light tannish gray dec. rock (Some crushes to clayey silt)	70 Blows/0.3 ft. Hammer bounces
Gray & brown dec. rock (Some crushes to clayey silt)	64 Blows/ft.
Brown black & gray dec. rock (Some crushes to clayey silt)	39 Blows/ft.
Mottled dark brown clayey silt (Dec. rock)	28 Blows/ft.
Gray-brown dec. rock (Some crushes to clayey silt)	50 Blows/0.6 ft.
Mottled tan clayey silt (Dec. rock)	30 Bl/0.5'; 50/0.4' Hammer bounces
Decomposed rock	50 Blows/0.2 ft. Hammer bounces

END OF BORING @ 100.20'

BORING # 8

Elev. G34±

TYPE OF BORING : AUGER (CP-15)

Stiff to soft brown silt clay	12 Blows/ft.
	2 Blows/ft.
Medium, tan, red & gray clayey silt	
Medium, gray & tan clayey silt	
Soft tan clayey silt	5 Blows/ft.
Soft gray & tan clayey silt	
Medium, dark gray & red clayey silt	7 Blows/ft.
Medium, mottled gray clayey silt	
Medium, gray & tan clayey silt	11 Blows/ft.
Medium, brown & red clayey silt (dec. rock) w/ gray clay	18 Blows/ft.
Med. to stiff mottled gray dec. rock (Some crushes to silty clay	15 Blows/ft.
Stiff, mottled dark gray & red silty clay w/ traces of dec. rock	15 Blows/ft
	28 Blows/ft.
	35 Blows/ft.
Stiff, gray brown & tan clayey silt w/ dec. rock	41 Blows/0.5 ft. Hammer bounces
	37/0.5'; 40/0.3'
	22 Blows/ft.
Stiff, mottled dark gray & tan silty clay w/ dec. rock	31 Blows/ft.
	40 Blows/ft.
Gray-brown, dense basalt rock slightly altered and vesicular	RUN #1 CORED: 5.0' RECOV.: 5.0'
	RUN #2 CORED: 5.0' RECOV.: 5.0'
	RUN #3 CORED: 5.0' RECOV.: 5.0'
Gray, dense basalt rock (olivine), slightly vesicular	RUN #4 CORED: 5.0' RECOV.: 5.0'
	RUN #5 CORED: 5.0' RECOV.: 5.0'
	RUN #6 CORED: 5.0' RECOV.: 4.0'
Reddish brown, porous basalt rock, moderately altered	RUN #7 CORED: 5.0' RECOV.: 5.0'
Gray, vesicular basalt rock	RUN #8 CORED: 5.0' RECOV.: 5.0'

END OF BORING @ 140.0'

BORING # 9

Elev. G83±

TYPE OF BORING : AUGER (B-61)

Stiff reddish brown & tan clayey silt	12 Blows/ft.
Stiff, tan, red & gray clayey silt (Dec. rock)	22 Blows/ft.
Medium, red-gray clayey silt	22 Blows/ft.
	9 Blows/ft.
Medium to stiff, mottled red clayey silt	13 Blows/ft.
	17 Blows/ft.
	12 Blows/ft.
Stiff, dark red & gray clayey silt (Dec. rock)	20 Blows/ft.
	20 Blows/ft.
Stiff, brown & red clayey silt (Dec. rock)	22 Blows/ft.
	11 Blows/ft.
Medium to stiff, mottled brown & red clayey silt (Dec. rock)	9 Blows/ft
Stiff, mottled brown clayey silt (Dec. Rock)	
Black & tan dec. rock	50 Blows/0.4 ft.
Light gray, slightly altered and vesicular basalt rock	10 Blows/ft.
Medium, mottled brown, clayey silt (Dec. rock)	
Stiff, red & brown clayey silt w/ dec. rock	20 Blows/ft.
	22 Blows/ft.
Stiff light gray brown clayey silt (Dec. rock)	47 Blows/ft.

END OF BORING @ 106.5'

BORING BB-13

Elev. 789.50

℄ Sta 126+20

ELEV.

790 — Very stiff red silty clay

780 — Shelby - 0.7' recovery 70 Blows/ft

770 — Stiff brown silty clay

760 — Firm brn. clay w/ traces of very soft rock

750 — Firm brown clay

Firm red clay

740 — Shelby - 1.0' recovery 36 Blows/ft.

730 — Firm brown clay w/ traces of very soft rock

720 — Firm red clay

Firm brown clay

710 — Firm red clay

Firm dark brown clay

700 — Shelby - 1.3' recovery 35 Blows/ft.

Stiff brown clay

BORING BB-14

Elev. 760.40

℄ Sta 130+00

ELEV.

760 — Firm red silty clay

755 — Firm light brn. silty clay

750 — Shelby - 1.2' recov. - 18 Blows/ft.

Stiff brownish gray clay

745 — Stiff red silty clay

740 — Shelby - 0.6' recovery 14 Blows/ft.

735 — Stiff light brn. gray

730 — Shelby - 1.5' recovery 18 Blows/ft.

725 — Firm light brn. & Dark brn. clay

720 — Shelby - 1.5' recov. - 38 Blk/ft.

715 — Firm red clay & stiff brn. silty clay

710

BORING # 10

Elev. 775.5±

TYPE OF BORING : AUGER & ROTARY (B-52)

Soft, reddish brown clayey silt	26 Blows/ft.
Stiff, mottled brown clayey silt	20 Blows/ft.
Stiff, reddish brown clayey silt	
	15 Blows/ft.
Stiff, red clayey silt	
	22 Blows/ft.
	15 Blows/ft.
Stiff, dark red & gray clayey silt	
	17 Blows/ft.
Stiff, mottled brown clayey silt Mottled brown dec. rock (Some crushes to clayey silt)	34 Blows/ft.
Mottled brown clayey silt	11 Blows/ft.
Stiff, reddish tan clayey silt	30 Blows/ft.
Stiff, mottled brown clayey silt w/ dec. rock	38 Blows/ft.
Stiff, mottled dark brown & red clayey silt	12 Blows/ft.
Gray rock or boulder	50 Blows/0.1 ft. Hammer bounces
Stiff, red clayey silt w/ dec. rock	16 Blows/ft.
Mottled dark red-gray clayey silt (Dec. rock	12 Blows/ft.
	81 Blows/ft.
Mottled gray dec. rock (Some crushes to clayey silt)	24/0.5'; 50/0.3' Hammer bounces
	76 Blows/ft.
Brown w/ dec. rock (Some crushes to clayey silt)	21 Blows/ft.
	50 Blows/0.1 ft. Ham. Bounces
Gray, dense basalt rock w/ large vesicles	RUN #1 CORED: 5.0' RECOV.: 4.0'
Brown-gray, slightly altered basalt rock large vesicles	RUN #2 CORED: 5.0' RECOV.: 1.1'
Gray, decomposed porous basalt rock	RUN #3 CORED: 5.0' RECOV.: 3.4'
Gray-brown, slightly altered basalt rock w/ large vesicles	RUN #4 CORED: 5.0' RECOV.: 4.3
Gray-brown, slightly altered basalt rock w/ medium size vesicles	RUN #5 CORED: 5.0' RECOV.: 3.7'

END OF BORING @ 135.0'

BORING # 11

Elev. 735 ±

TYPE OF BORING : AUGER (CP-15)

Stiff, mottled brown clayey silt	14 Blows/ft.
	14 Blows/ft.
	12 Blows/ft
Stiff, mottled purple gray clayey silt	
	19 Blows/ft.
Stiff reddish tan clayey silt Stiff reddish brown clayey silt (Dec. rock)	22 Blows/ft.
Stiff gray - red brown clayey silt	
	18 Blows/ft
	21 Blows/ft.
Stiff, mottled reddish gray clayey silt	
	23 Blows/ft.
Stiff, reddish brown clayey silt	20 Blows/ft.
Stiff, red & gray clayey silt	
	30 Blows/ft.
Stiff, mottled red clayey silt.	23 Blows/ft.
	32 Blows/ft.
Gray w/ black dec. rock w/ pocket of voids (Some crushes to clayey silt)	27/0.5'; 50/0.3'
	63 Blows/ft.
	53 Blows/ft.
Mottled gray dec. rock (Some crushes to clayey silt)	63 Blows/ft.
	60 Blows/ft.
	40 Blows/ft.
	24 Blows/ft.
Mottled brown clayey silt w/ decomposed rock	29 Blows/ft.
Mottled gray dec. rock (Some crushes to clayey silt)	21 Blows/ft.
	21 Blows/ft.
Greenish gray dec. rock	50 Blows/0.4 ft.

END OF BORING @ 130.9'

BORING # 12

Elev. 747±

TYPE OF BORING : AUGER (CP-15)

Stiff, brown clayey silt w/ traces of dec. rock	16 Blows/ft.
Stiff, reddish brown clayey silt	11 Blows/ft.
Stiff, mottled brown clayey silt Stiff, reddish orange clayey silt	16 Blows/ft.
Medium, red, brown & gray clayey silt	
	21 Blows/ft.
Stiff, mottled tan brown clayey silt	28 Blows/ft.
Stiff, dark red brown & gray silty clay (Dec. rock)	19 Blows/ft.
Stiff, red clayey silt	13 Blows/ft.
Stiff, mottled red clayey silt (Dec. rock)	15 Blows/ft.
Medium to stiff, mottled tan brown clayey silt (Dec. rock)	30 Blows/0.1' Ham. Bounces
Stiff, tan gray clayey silt (Dec. rock)	50 Blows/0.2'
Stiff, red clayey silt	18 Blows/ft.
Brown decomposed rock (Some crushes to clayey silt)	
Water 12-7-71	20 Blows/ft.
Stiff, gray - brown clayey silt (Decomposed rock)	20 Blows/ft.
	40 Blows/ft.
Gray decomposed rock (Some crushes to silty sand)	40 Blow/0.4'
Stiff, gray - brown clayey clayey silt (Dec. rock)	40 Blows/ft.
	36 Blows/ft
Mottled gray dec. rock (Some crushes to clayey silt)	
END OF BORING @ 121.0'	45 Blows/0.5' Ham. Bounces

ORIGINAL PLAN

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

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BORING NOTE:

Boring #1 to #12 - Data Information from Walter Lum & Assoc.

Boring #13 & #14 - Data Information from Highways Division, State of Hawaii

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BORING LOGS
INTERSTATE ROUTE H-2

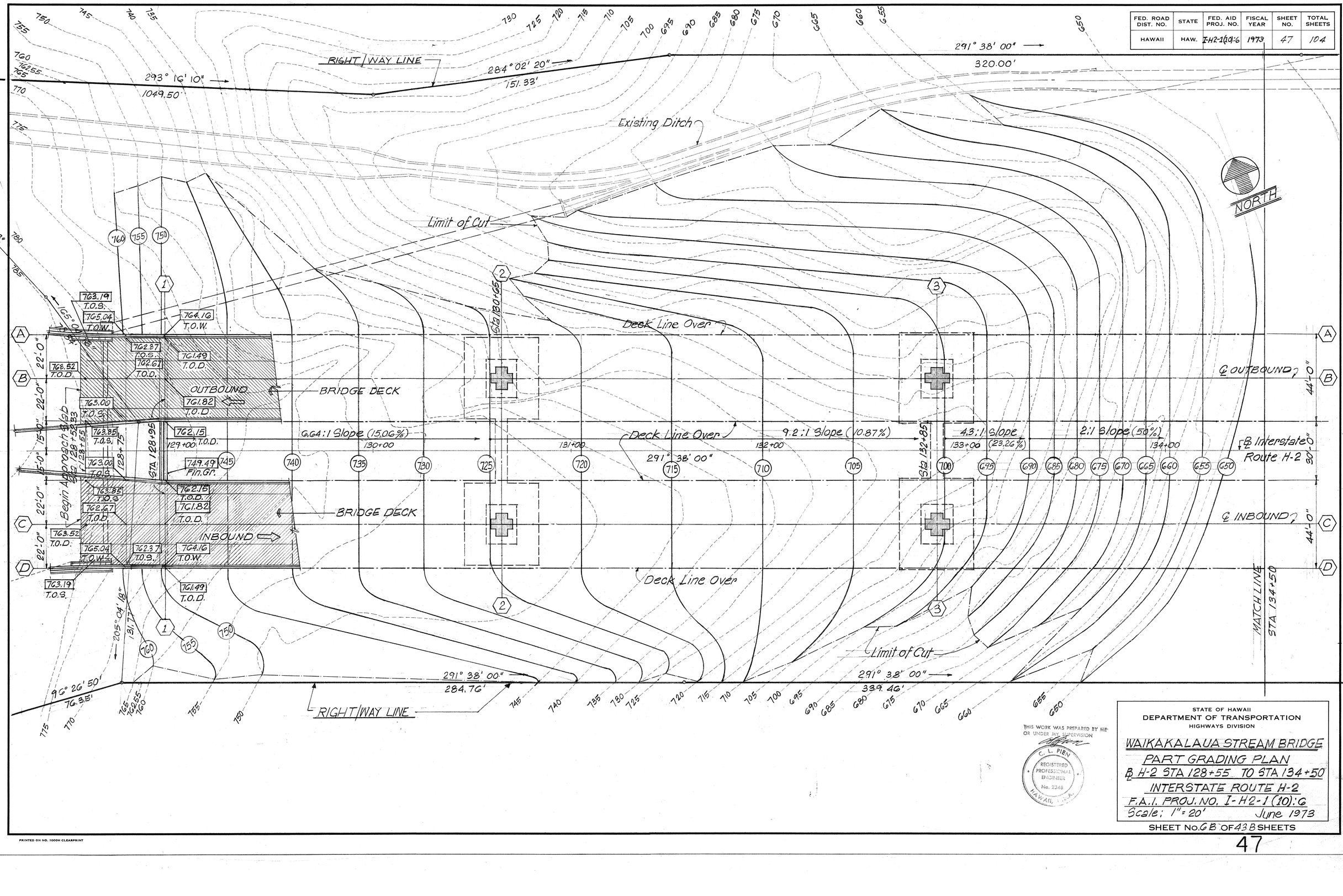
F.A.I. PROJ. NO. I-H2-1(10):G

Not to Scale June 1973

SHEET No. 5B OF 438 SHEETS

46

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	47	104



ORIGINAL PLAN

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

NOTE BOOK

No.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
PART GRADING PLAN
℄ H-2 STA 128+55 TO STA 134+50
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):6
Scale: 1" = 20' June 1973

SHEET No. 6B OF 43B SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	48	104

RIGHT/WAY LINE
Exist. 10'x8' Box Culvert
320.00
60.00'
70.00'
291° 38
259.40'
296° 00' 00"
244° 07' 00"
135.26'
177.55'
323° 58' 50"
Limit of Cut
24" Culvert
NORTH
Deck Line Over
WAIKAKALAUA STREAM
DRIVE EXT.
BRIDGE DECK
OUTBOUND
INBOUND
℄ OUTBOUND
℄ Interstate Route H-2
℄ INBOUND
Ext. Edge of Deck
Int. Edge of Deck
End Approach Slab Sta 139+37.67
8:1 Slope (12.50%)
8:1 Slope (12.5%)
(3.33%)
749.67 T.O.S.
749.70 T.O.S.
750.23 T.O.S.
750.46 T.O.S.
750.89 T.O.S.
751.12 T.O.S.
752.87 T.O.W.
752.34 T.O.W.
752.38 T.O.W.
752.87 T.O.W.
750.00 T.O.D.
750.56 T.O.D.
750.79 T.O.D.
737.67 P.N.G.md.
44'-0"
30'-0"
22'-0"
15'-0"
118'-0"
135+00
136+00
137+00
138+00
139+00
140+00
STA 139+25
STA 139+35
STA 138+95
MATCH LINE STA 134+50
℄ Road WAIKALANI
Ex. St. A.C. Road
STA 135+05
Existing Ret. Wall
Exist. Ditch
339.46'
48.30'
291° 38' 00"
178.79'
27.39'
161° 49' 40"
41.63'
47.59'
90°
98° 30' 00"
154.03'
107° 36'
100.01'
RIGHT/WAY LINE
Limit of Cut
36" 24" Culvert

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
PART GRADING PLAN
℄H-2 Sta 134+50 TO Sta 139+35
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):G

Scale: 1"=20' June 1973

SHEET No. 7B OF 438 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	40	104

STA 134+00 MATCH LINE

55'-0" ℄ Exp. Jt.

Lt. Edge Deck (O.B.)

Rt. Edge Deck (O.B.)

Lt. Edge Deck (I.B.)

Rt. Edge Deck (I.B.)

℄ H-2

E.P.(Lt.)

℄ O.B.

E.P.(Rt.)

℄ I.B.

E.P.(Rt.)

OUTBOUND

Outbound Grade Control

Inbound Grade Control

INBOUND

NORTH

Beg. of Approach Slab

End of Approach Slab

BRIDGE BEGIN STA 128+95

BRIDGE END STA 138+95

B.V.C. STA 128+50

E.V.C. STA 140+50

MATCH LINE STA 134+00

P.T. STA 134+50

℄ H-2 STA 134+50 C.G.

55'-0" ℄ Bearing Exp. Jt.

1200' V.C.

LOW Point STA 136+00

-4.41%

+2.7%

763.97

764.30 at ℄

762.05

737.51

737.84 at ℄

753.70

754.02 at ℄

PROFILE O.B. & I.B. GRADE CONTROL LINE

No Scale

DECK FINISH GRADING PLAN

Scale 1" = 20'

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C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
DECK FINISH GRADE PLAN
STA 128+55 TO STA 139+35
INTERSTATE ROUTE H-2

F.A.I. PROJ. No. I-H2-1(10):6

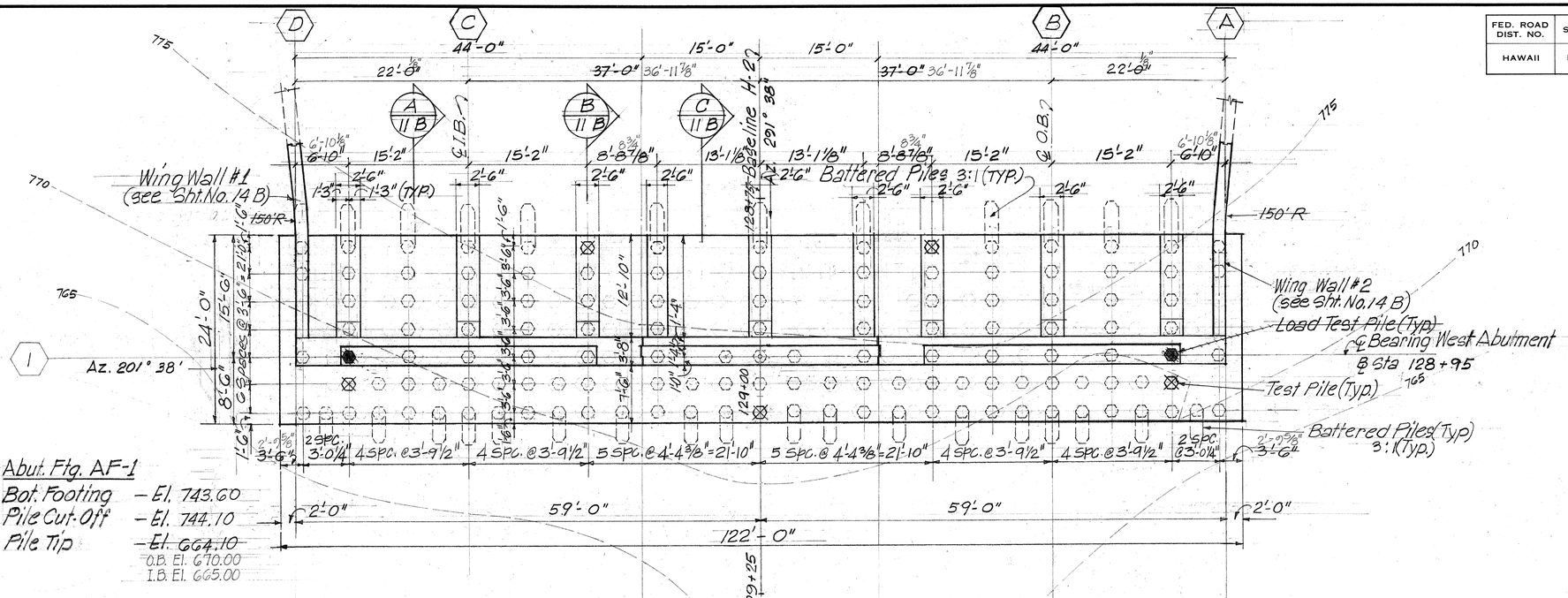
Scale: 1"=20' June 1973

SHEET No. 88 OF 438 SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	50	104



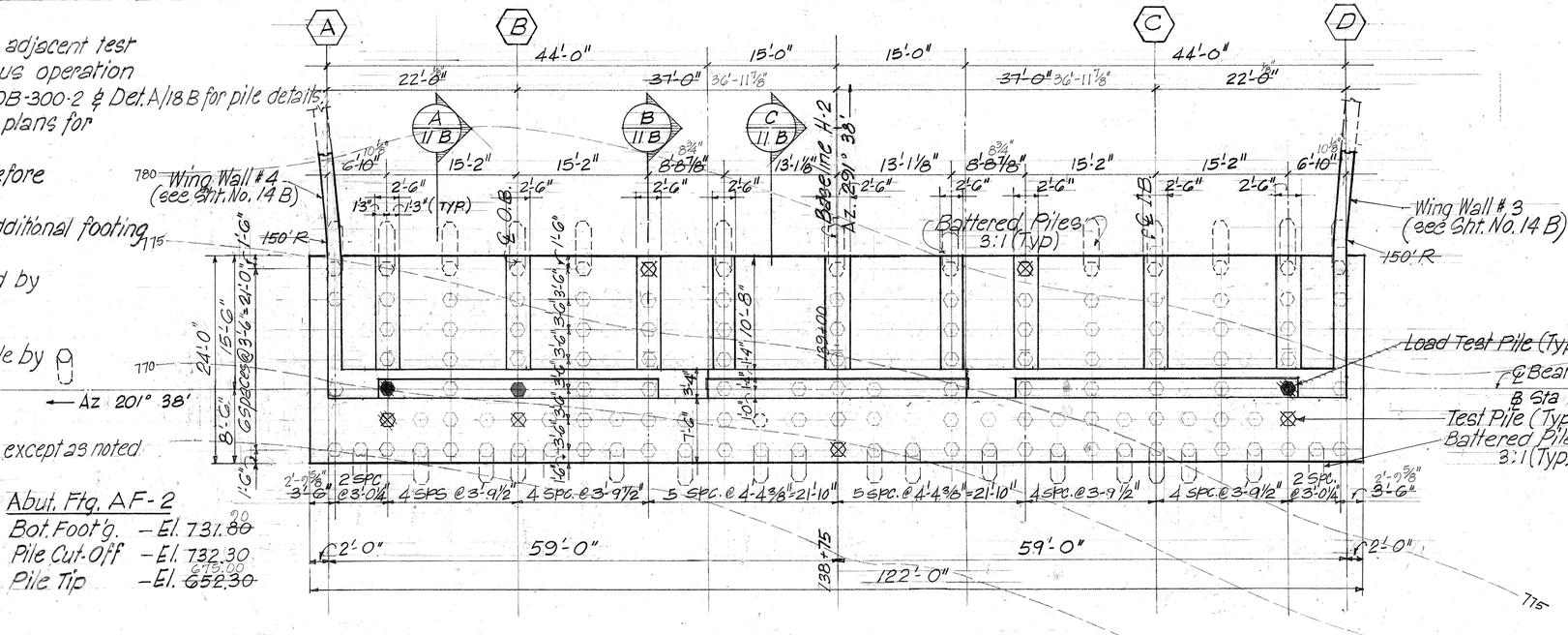
Abut. Ftg. AF-1
Bot. Footing – El. 743.60
Pile Cut-Off – El. 744.10
Pile Tip – El. 664.10
O.B. El. 670.00
I.B. El. 665.00

FOUNDATION PLAN-WEST ABUTMENT ℄ STA 128+95
Scale 1/8" = 1'-0"

TOTAL NO OF PILES = 131

REFERENCE NOTES:

1. Driving Load Test Piles and adjacent test Piles shall be a continuous operation
2. See Standard Sht. # DB-300-1, DB-300-2 & Det. A/18 B for pile details.
3. Drive test piles indicated on plans for length determination.
4. Test piles shall be driven before balance of piles.
5. Refer to Sht. Nos. 3B & 11B for additional footing and Foundation details.
6. Load Test Pile is indicated by this symbol ⬢
   Test Pile is indicated by this symbol ⊗ ; battered pile by ⓟ
7. For Pile Cap
   fc' = 3000 psi @ 28 days.
   For all Walls
   fc' = 4500 psi @ 28 days except as noted on Section C/11B
   For walls and Caps
   fs = 20,000 psi



Abut. Ftg. AF-2
Bot. Foot'g. – El. 731.80
Pile Cut-Off – El. 732.30
Pile Tip – El. 652.30

FOUNDATION PLAN-EAST ABUTMENT ℄ STA 138+95
Scale 1/8" = 1'-0"

TOTAL NO OF PILES = 131

NORTH
Sc. 1/8" = 1'-0"

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

FOUNDATION PLAN-WEST ABUTMENT AT STA 128+95 & EAST ABUTMENT AT STA 138+95 INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):6

Scale: 1/8" = 1'-0" June 1973

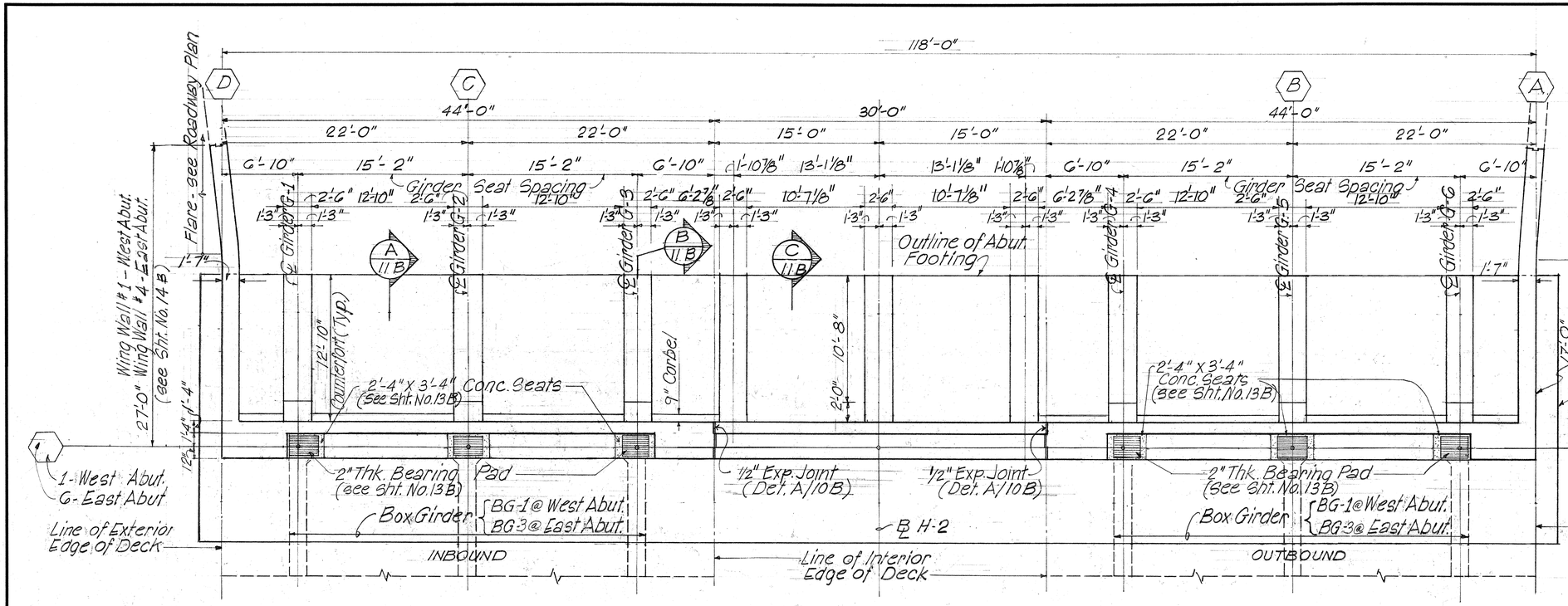
SHEET No. 9B OF 43B SHEETS

50

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

PRINTED ON NO. 1000H CLEARPRINT

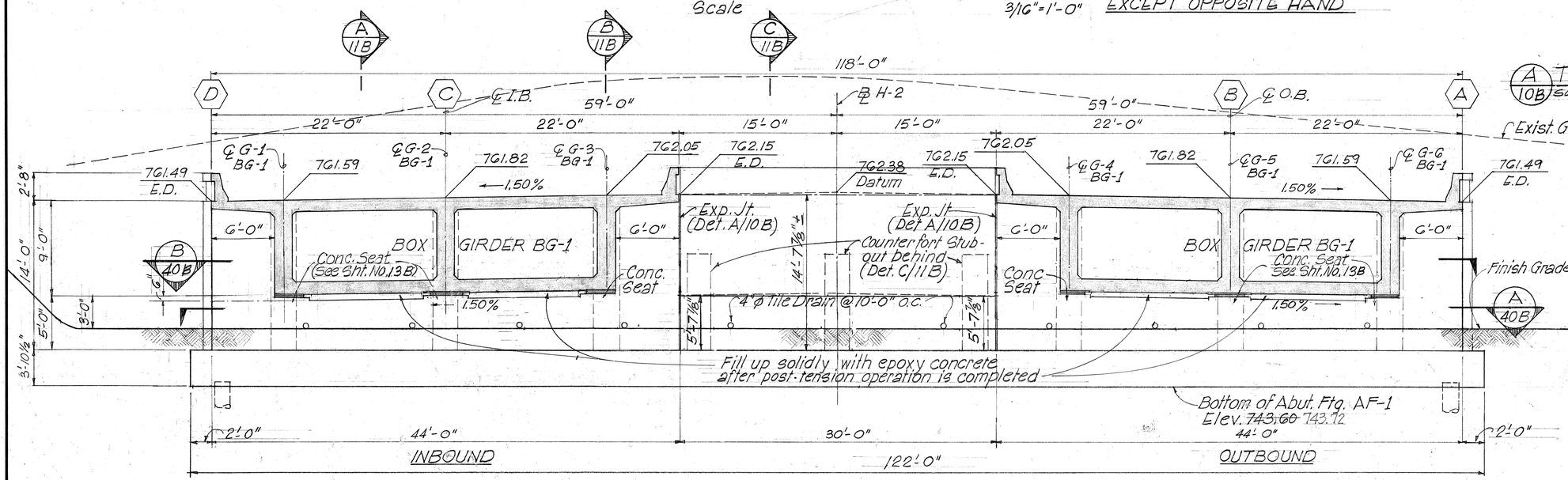
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HR-1(10)6	1973	51	104



TOP LAYOUT PLAN - WEST ABUTMENT

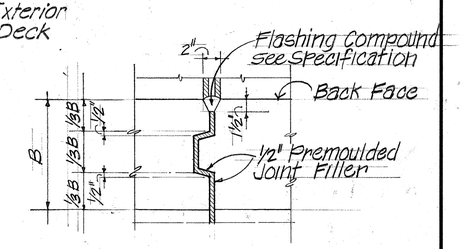
Scale 3/16"=1'-0"

EAST ABUTMENT SIMILAR EXCEPT OPPOSITE HAND



ELEVATION - WEST ABUTMENT

Scale 3/16"=1'-0"



A 10B TYP. WALL EXPANSION JOINT DETAIL

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

C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TOP LAYOUT PLAN - EAST & WEST ABUTMENTS; ELEVATION - WEST ABUTMENT INTERSTATE RTE. H-2

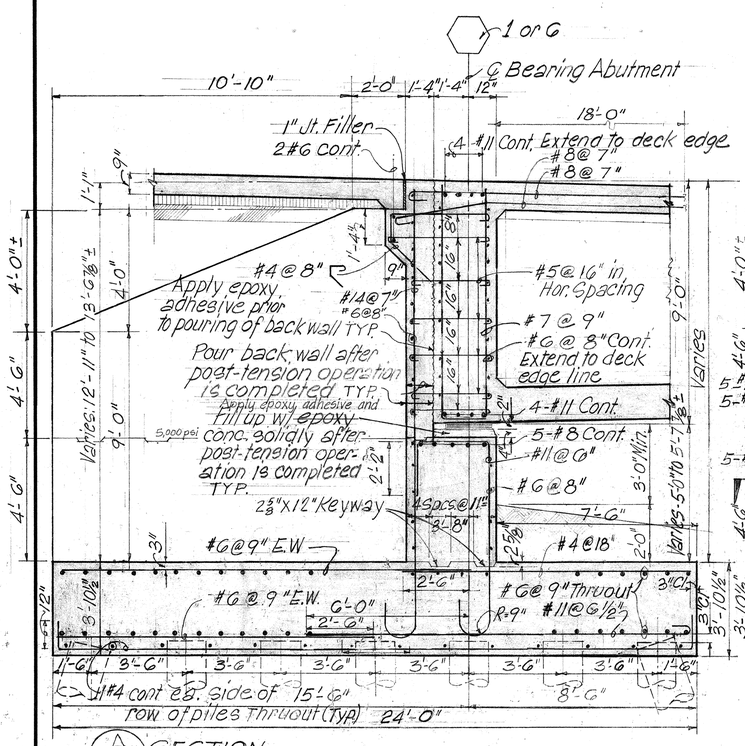
F.A.I. PROJ. NO. I-H2-1(10)6

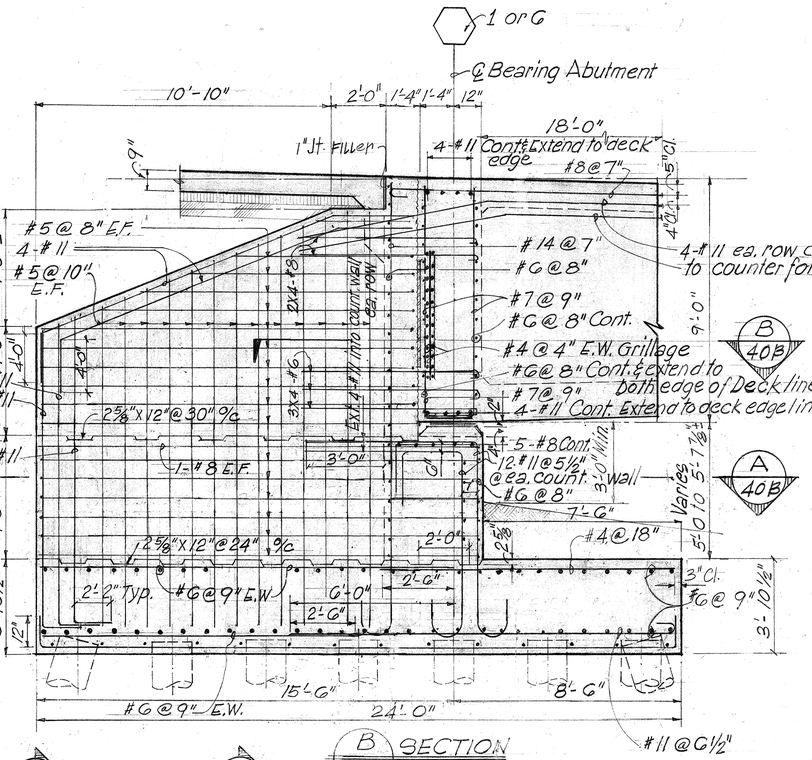
Scale: 3/16"=1'-0" June 1973

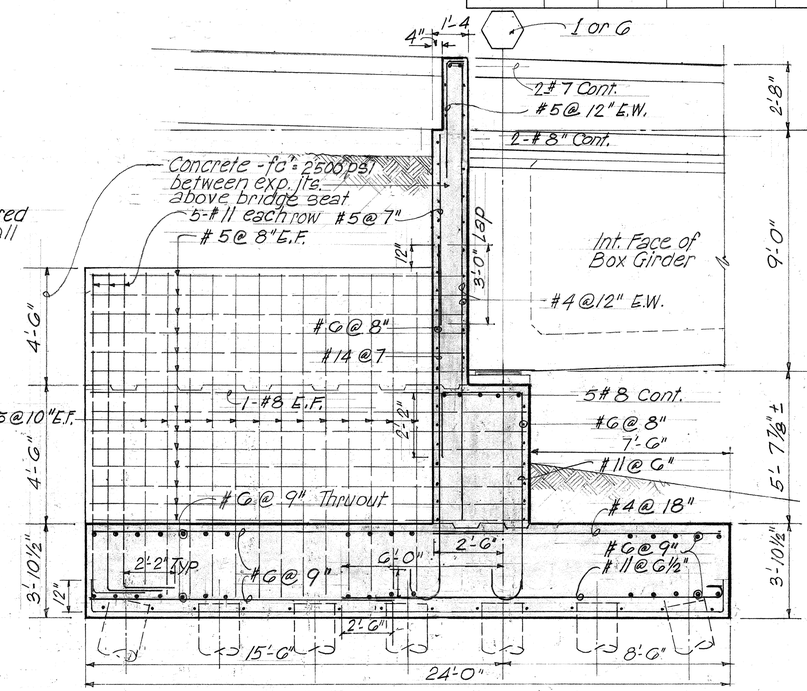
SHEET No. 10B OF 43B SHEETS

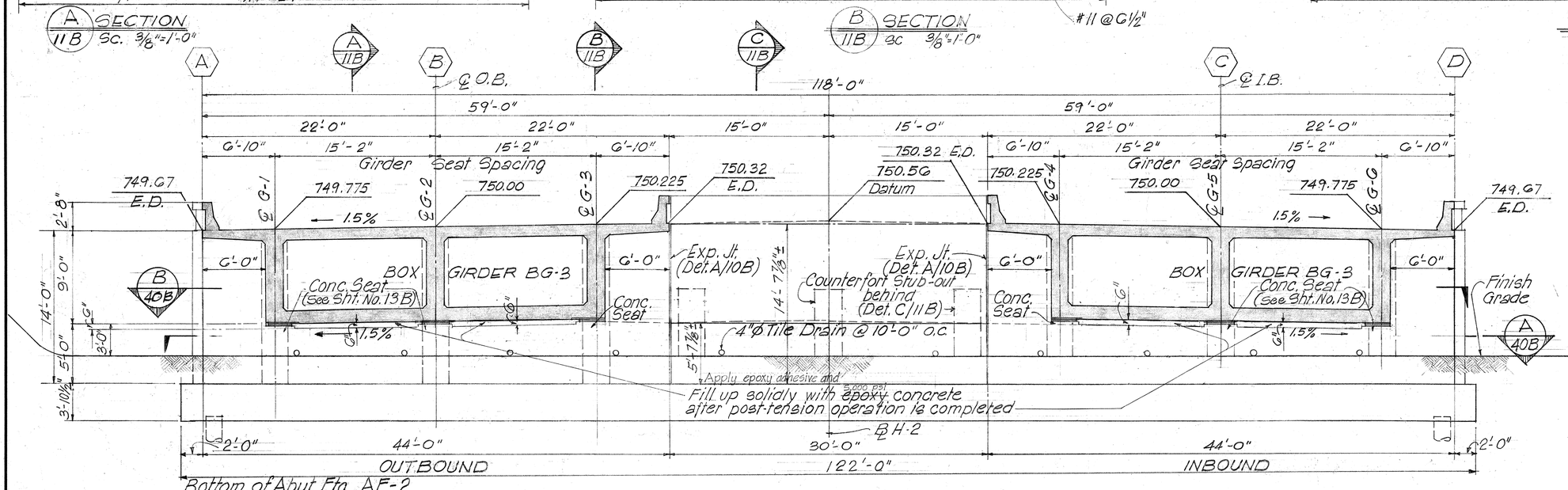
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-6	1973	52	104









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C. L. PIEN
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No. 2348
HAWAII, U.S.A.

ELEVATION - EAST ABUTMENT
Scale 3/16"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
ELEVATION - EAST ABUTMENT
SECTION - EAST & WEST ABUTS.
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):6
Scale As Noted June 1973

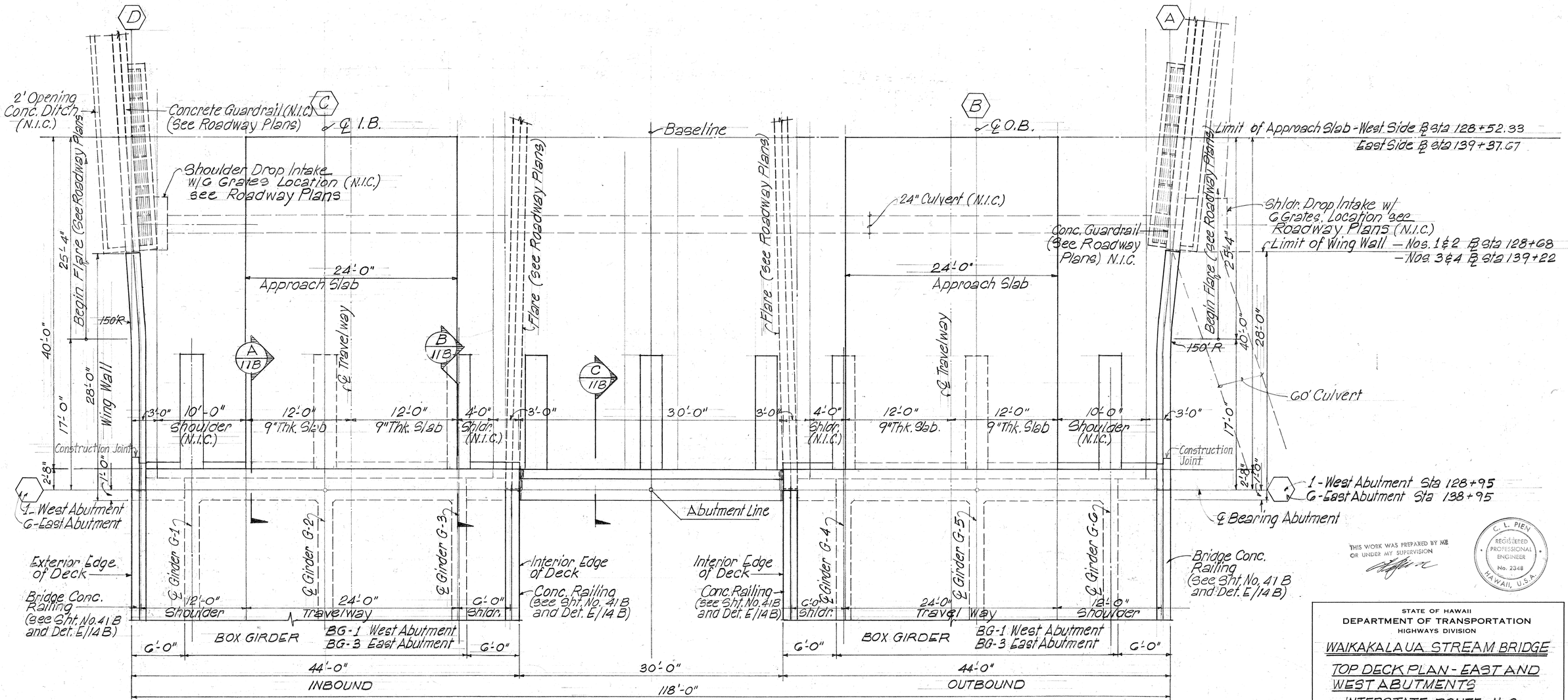
SHEET No. 11B OF 43B SHEETS

52

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	53	104



TOP DECK PLAN - WEST ABUTMENT
Scale 3/16"=1'-0"

EAST ABUTMENT SIMILAR EXCEPT OPPOSITE HAND

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TOP DECK PLAN - EAST AND WEST ABUTMENTS

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):G

Scale: 3/16"=1'-0" June 1973

SHEET No. 12B OF 43B SHEETS

ORIGINAL PLAN
SURVEY PLOTTED BY
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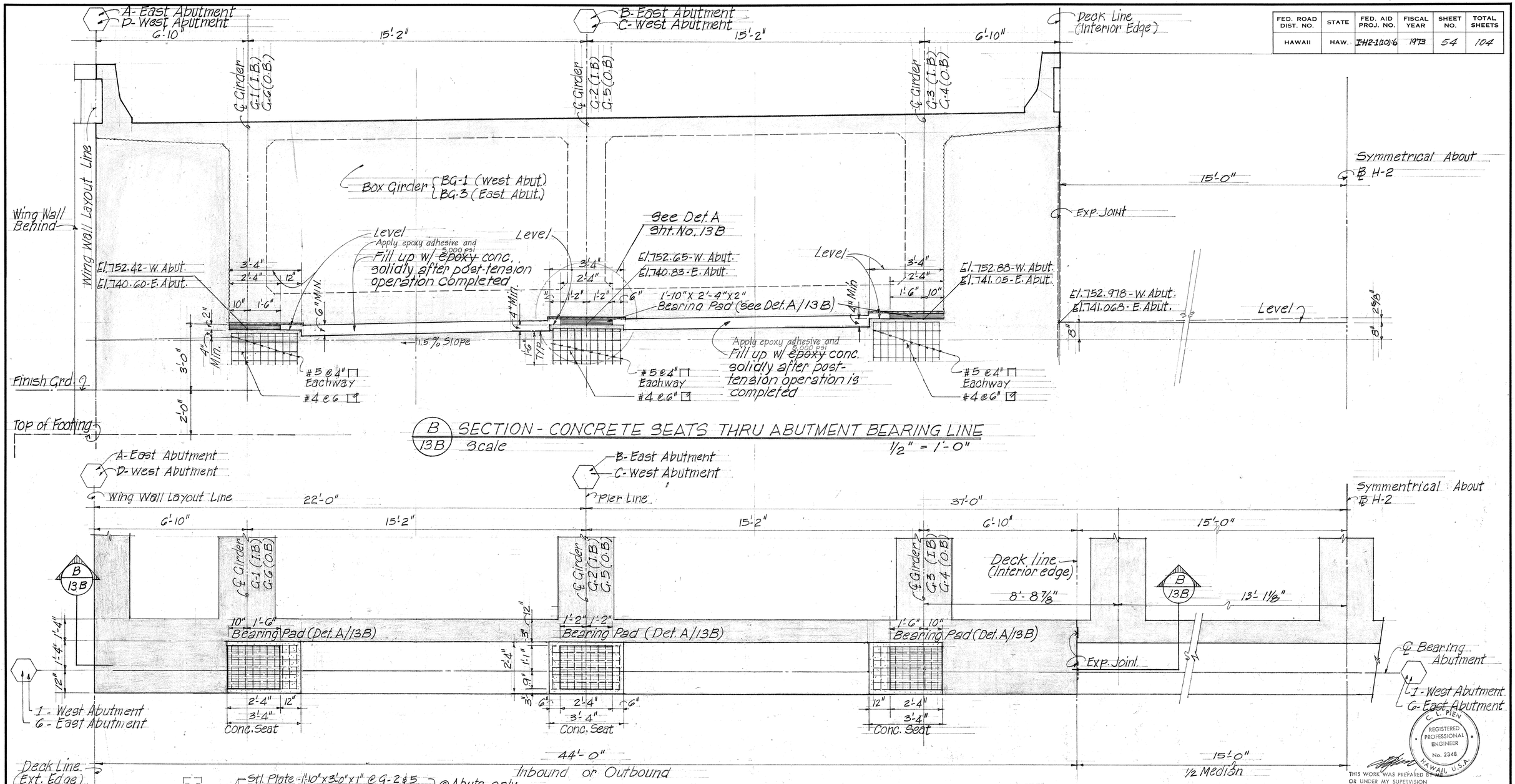
CHECKED BY
DATE
NOTE BOOK
No.

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IH2-1(10)6	1973	54	104



B / 13B SECTION - CONCRETE SEATS THRU ABUTMENT BEARING LINE

Scale 1/2" = 1'-0"

1 - West Abutment
6 - East Abutment

Stl. Plate - 1'-10" x 3'-0" x 1" @ G-2 & 5
1'-10" x 2'-8" x 1" @ G-1, 3, 4 & 6 } @ Abuts. only
@ Pier Bm. see Det. B/21B
with stud anchors

Structural expansion bearing pad

Conc. Seat Fin. Elevation see Schedule Sht. No. 21B for Pier Beam

20 ga. stainless steel ℄ P.T.F.E.

Epoxy adhesive (Colma dur gel)

A / 13B TYPICAL DET. OF BEARING PAD ASSEMBLY

NOT TO SCALE

LAYOUT PLAN - TYPICAL ABUTMENT GIRDER CONC. SEAT DETAILS

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

GIRDER CONC. SEATS DETAILS AT ABUTMENTS AND BEARING PAD DET.

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):6

Scale: 1/2" = 1.0' June 1973

SHEET NO. 13 B OF 43B SHEETS

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

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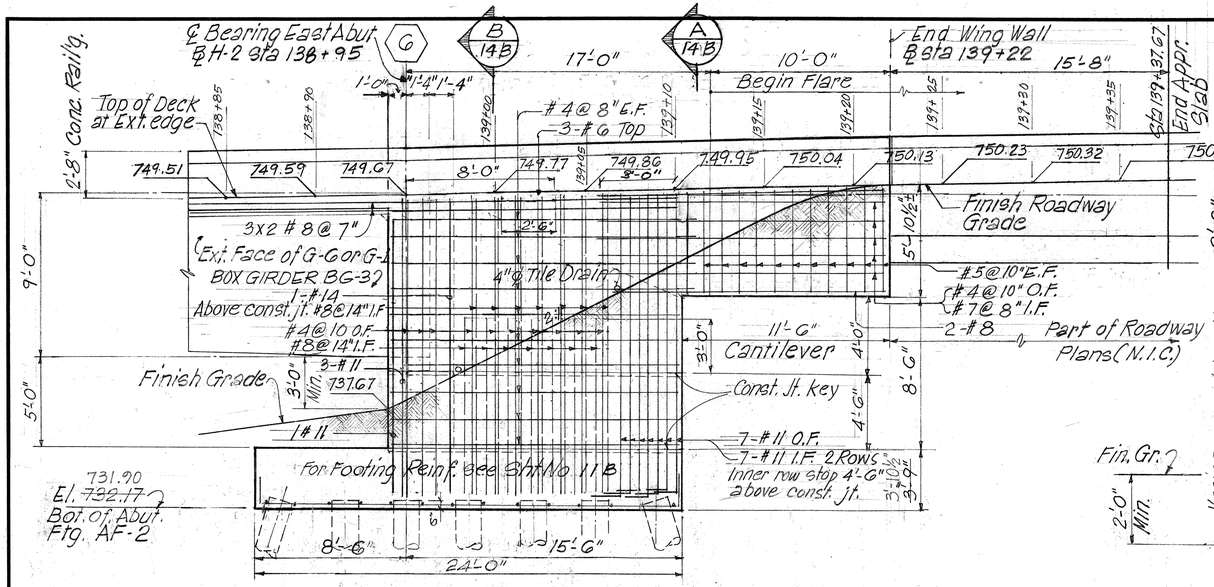
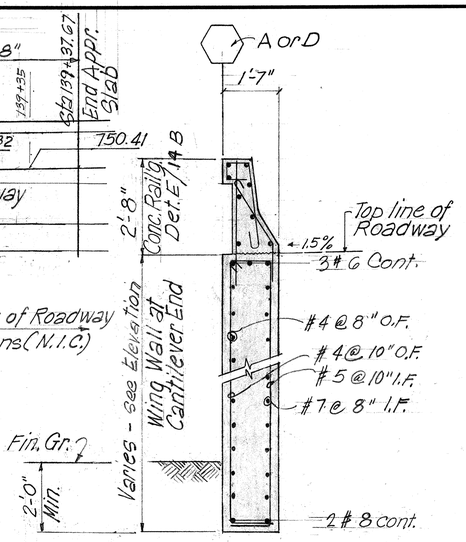
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	55	104

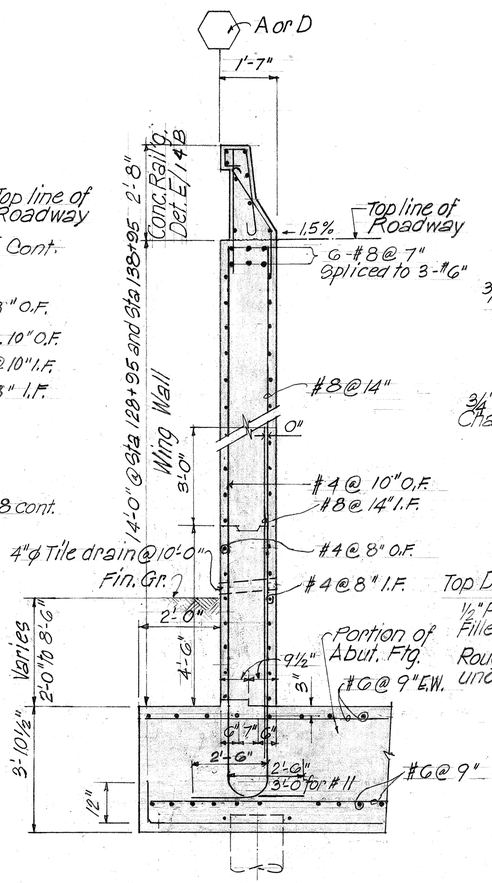


ELEVATION - WING WALL #3
Scale 1/4" = 1'-0"

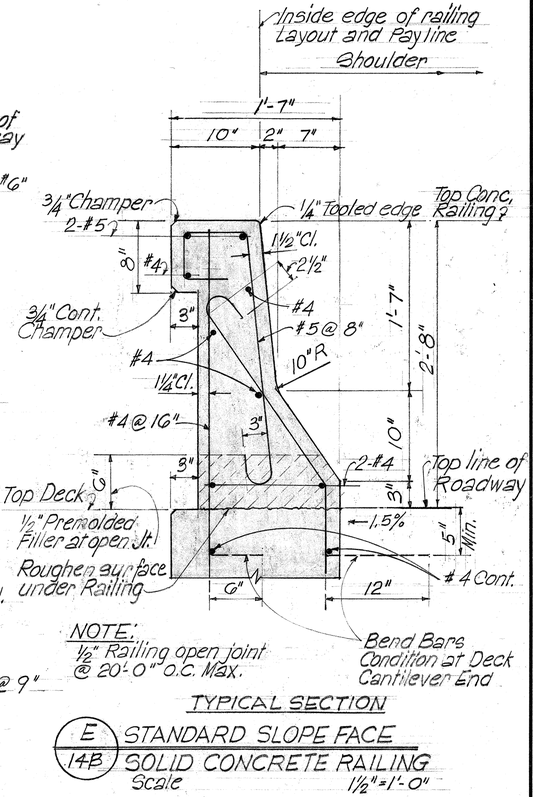
WING WALL #4 SIMILAR EXCEPT OPPOSITE HAND



A SECTION
14B Sc. 1/2" = 1'-0"



B SECTION
14B Sc. 1/2" = 1'-0"

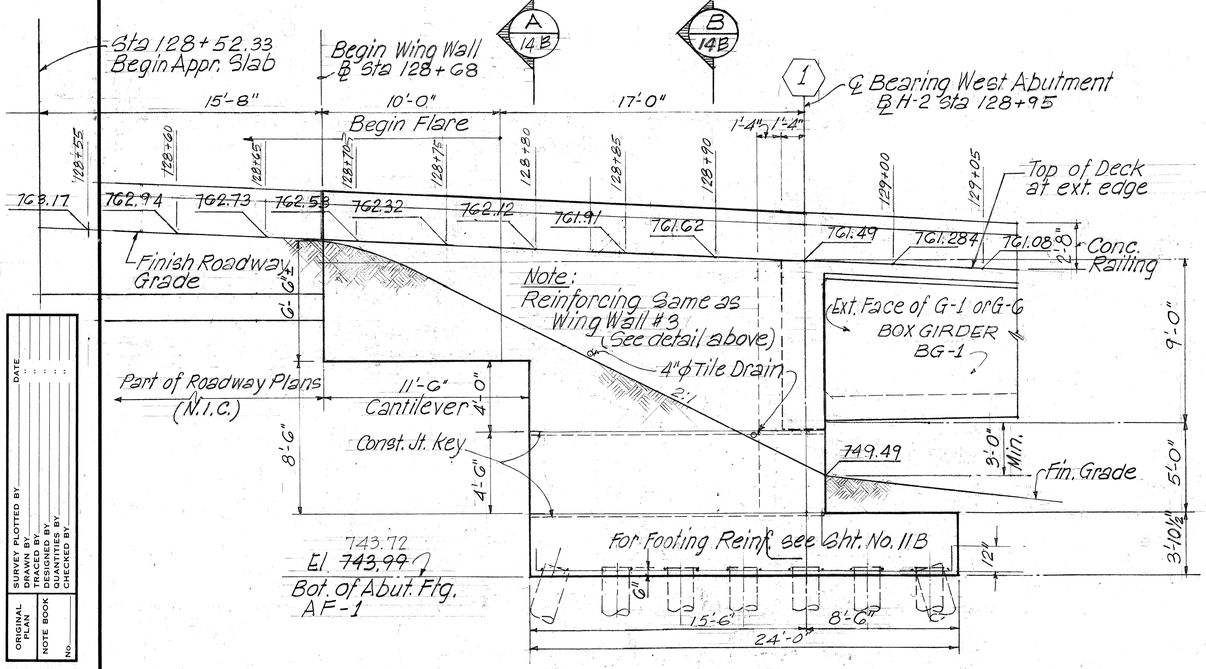


NOTE:
½" Railing open joint @ 20'-0" o.c. Max.

TYPICAL SECTION

E / 14B STANDARD SLOPE FACE SOLID CONCRETE RAILING
Scale 1½" = 1'-0"

NOTE:
For arrangement of Wing Wall reinforcement see Sht. No. 40B



ELEVATION - WING WALL #1
Scale 1/4" = 1'-0"

WING WALL #2 SIMILAR EXCEPT OPPOSITE HAND

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QUANTITIES BY
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No. 2348
HAWAII, U.S.A.

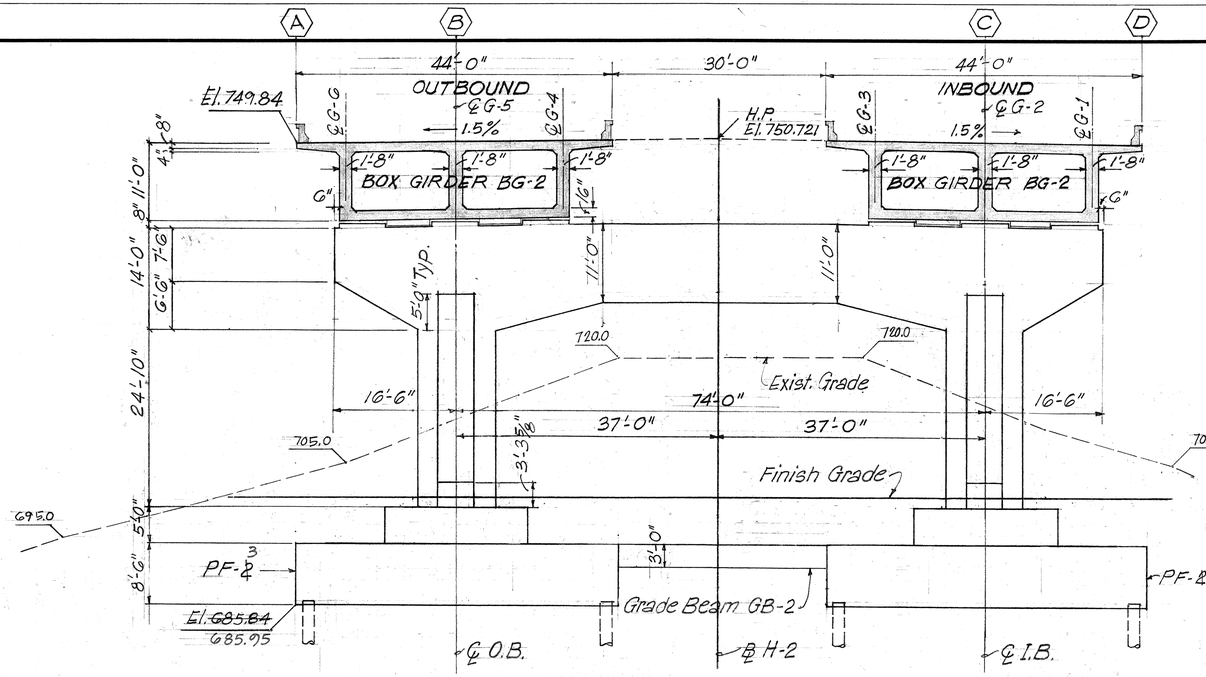
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
ELEVATION AND SECTION WING WALL NOS. 1, 2, 3 & 4
INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):G
Scale As Noted June 1973
SHEET No. 14 B OF 43B SHEETS

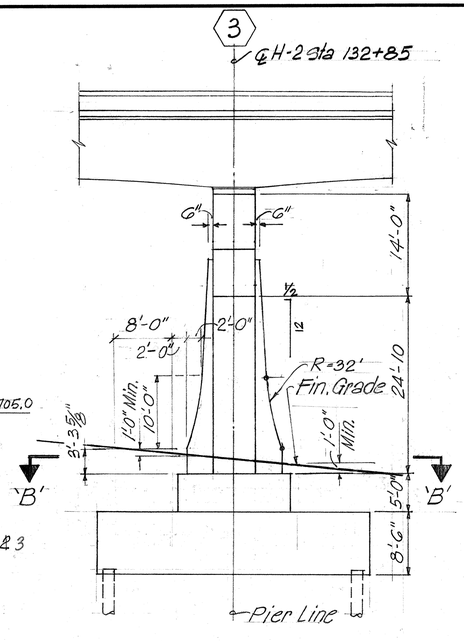
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HR1(10)-6	1973	56	104

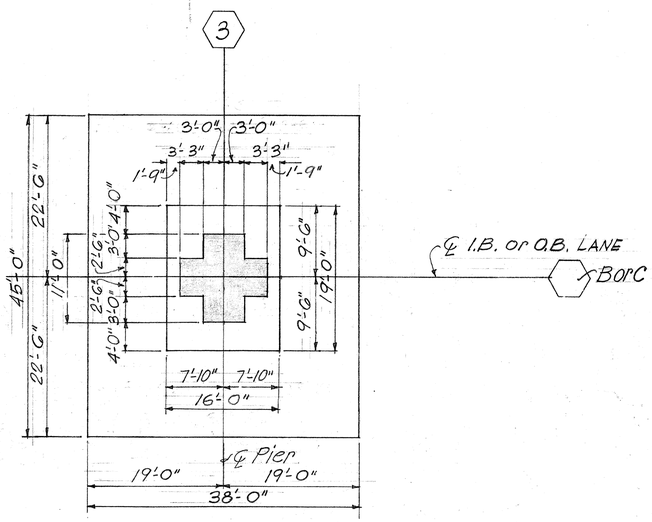


BENT ELEVATION - ℄ H-2 STA 132+85

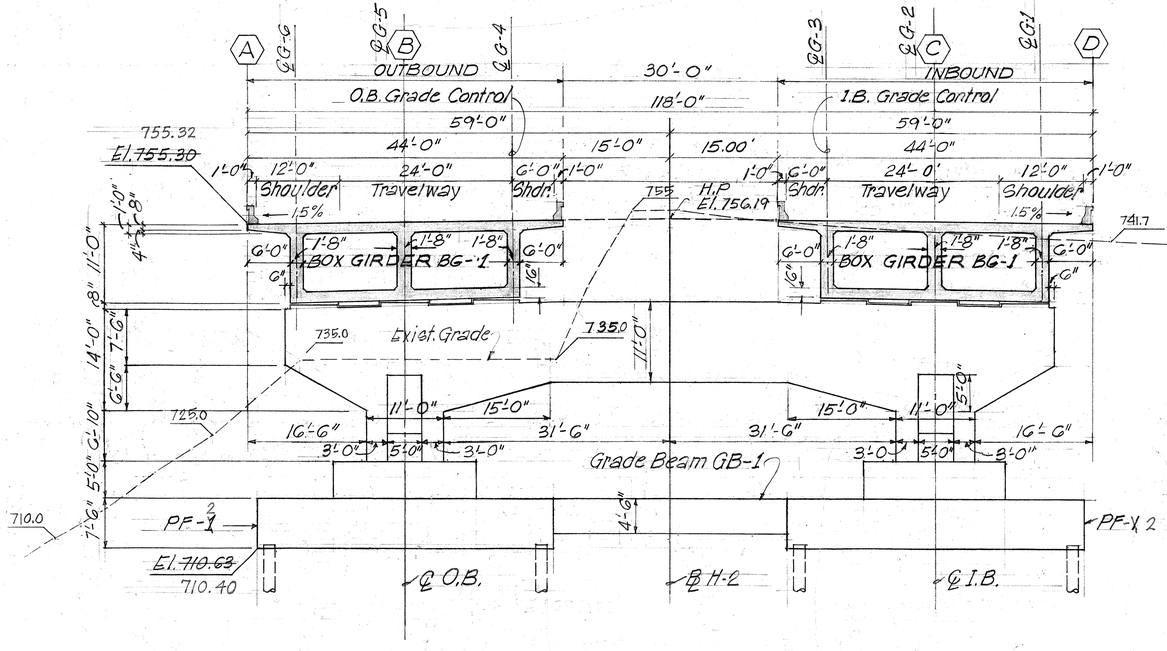
Scale 1"=10'



SIDE VIEW

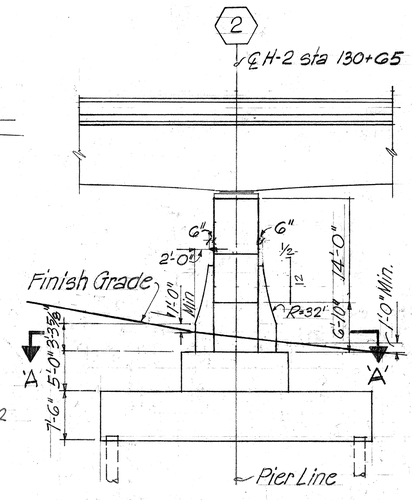


SECTION B-B

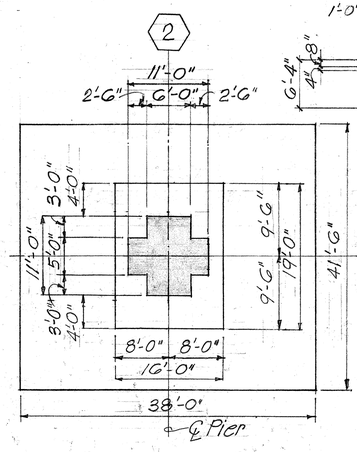


BENT ELEVATION - ℄ H-2 STA 130+65

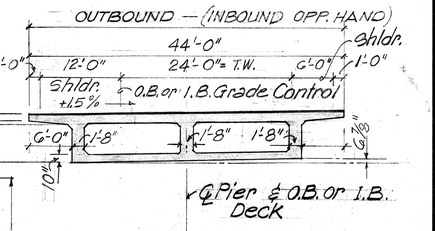
Scale 1"=10'



SIDE VIEW



SECTION A-A



DECK SECTION @ MIDSPAN

Scale 1"=10'

B or C

℄ I.B. or O.B. Lane

C. L. PIEN
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No. 2348
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BENT ELEVATIONS AT ℄ STA 130+65 AND ℄ STA 132+85

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):6

Scale: 1"=10' June 1973

SHEET No. 15B OF 43B SHEETS

DATE	REVISION
8/21/73	Revised to conform with Item A-2 & A-3 of Add. No. 1

ORIGINAL DRAWING
FINAL

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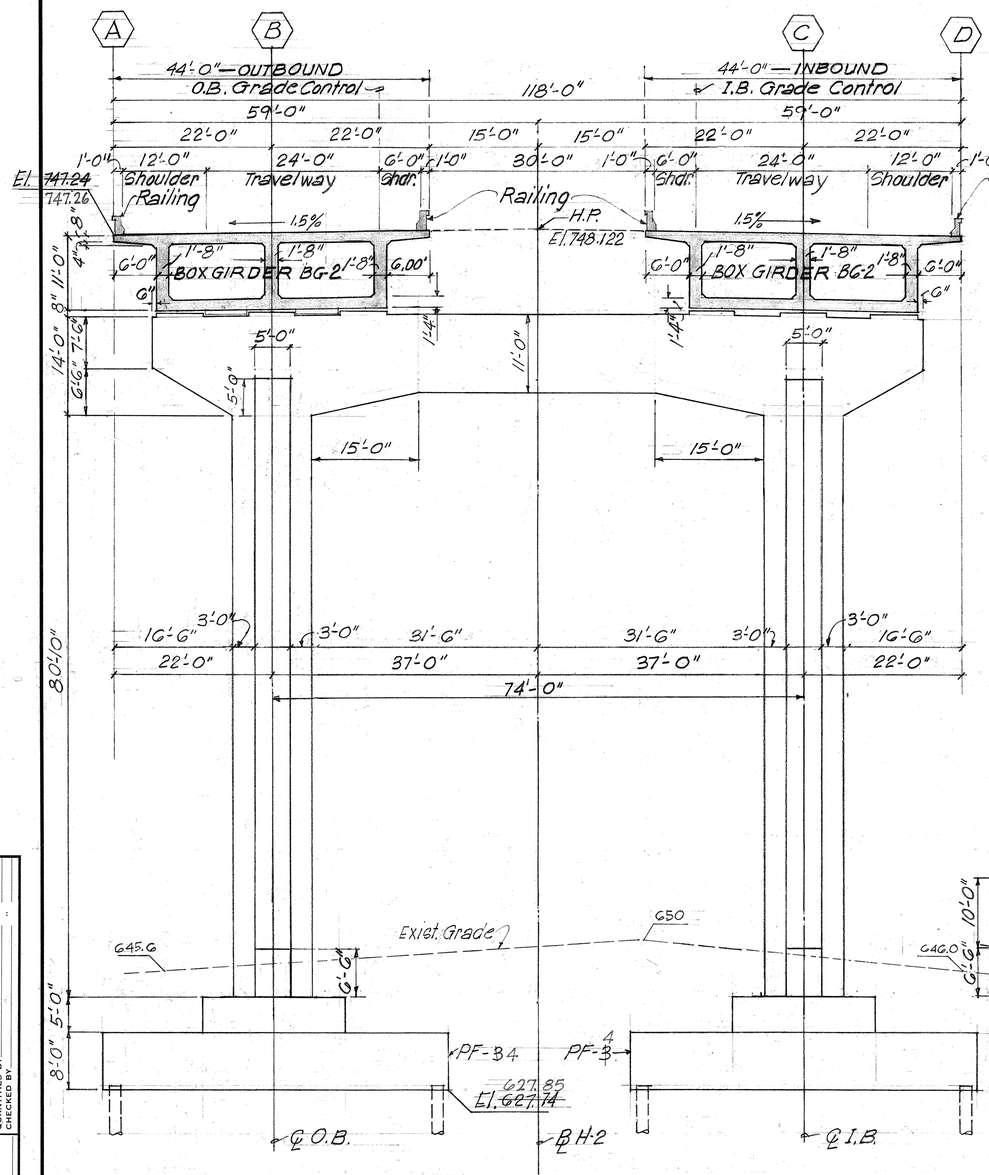
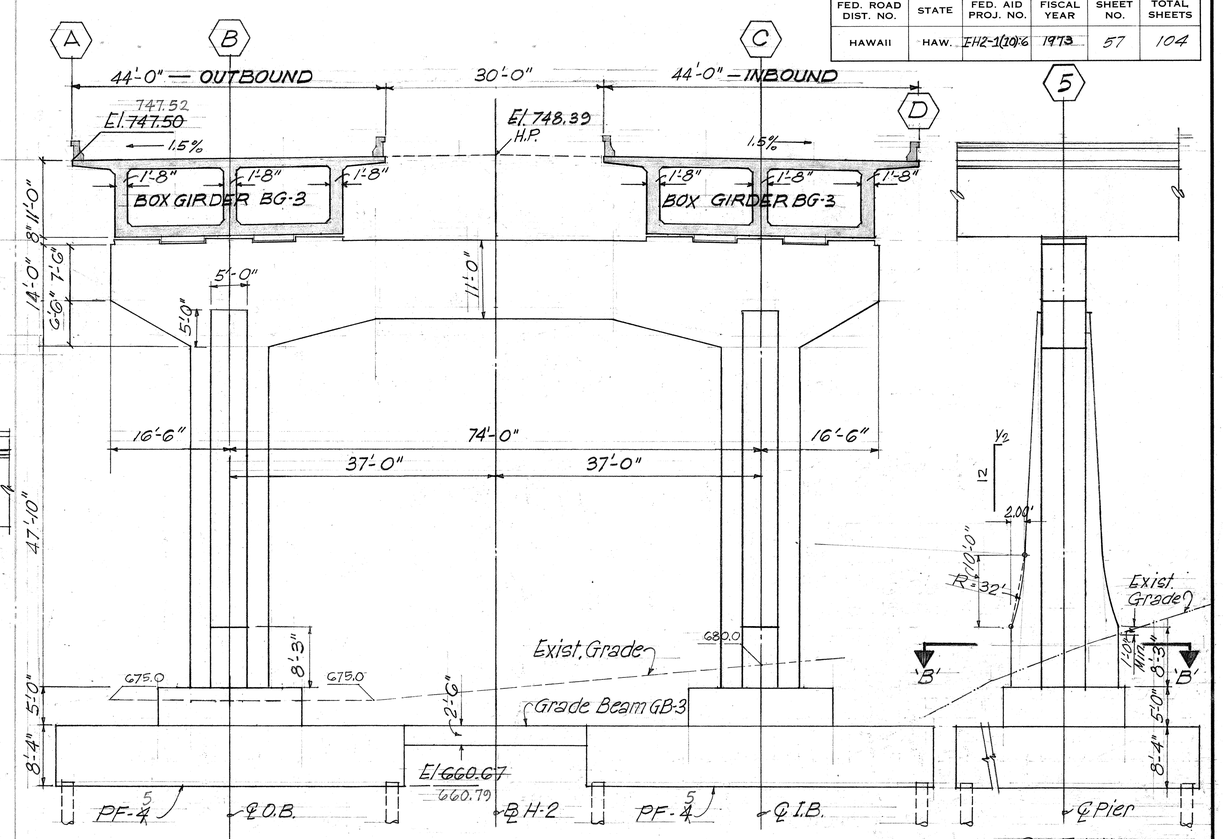
DATE	REVISION
8/21/73	Revised to conform with Item A-2 of Add. No. 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FH2-1(10)6	1973	57	104

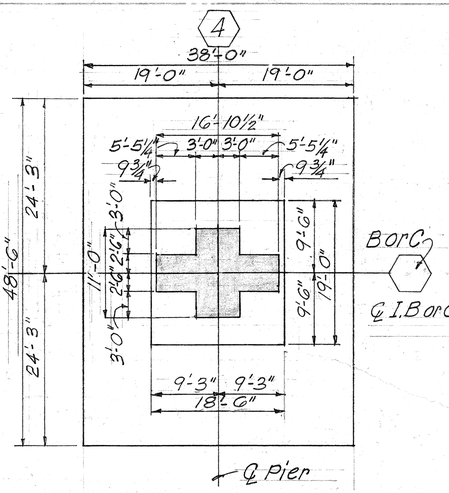


BENT ELEVATION — ℄ H-2 STA 135+05
Scale 1" = 10'

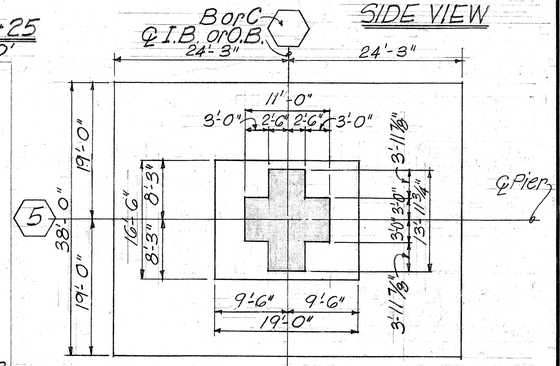
SIDE VIEW



BENT ELEVATION — ℄ STA 137+25
Scale 1" = 10'



SECTION A-A



SECTION B-B

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
BENT ELEVATIONS AT STA 135+05 AND STA 137+25
INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10)6
Scale: 1" = 10' June 1973

SHEET No. 16B OF 43B SHEETS

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HAWAII, U.S.A.

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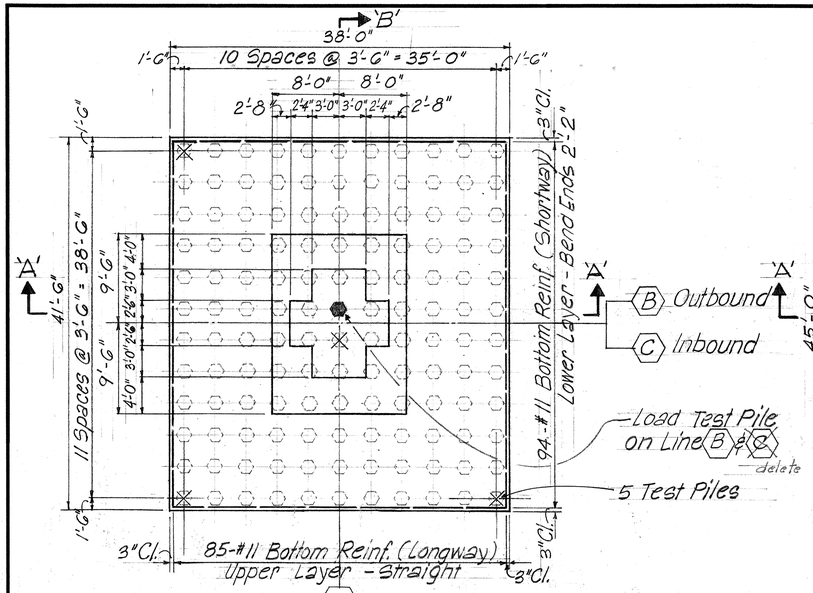
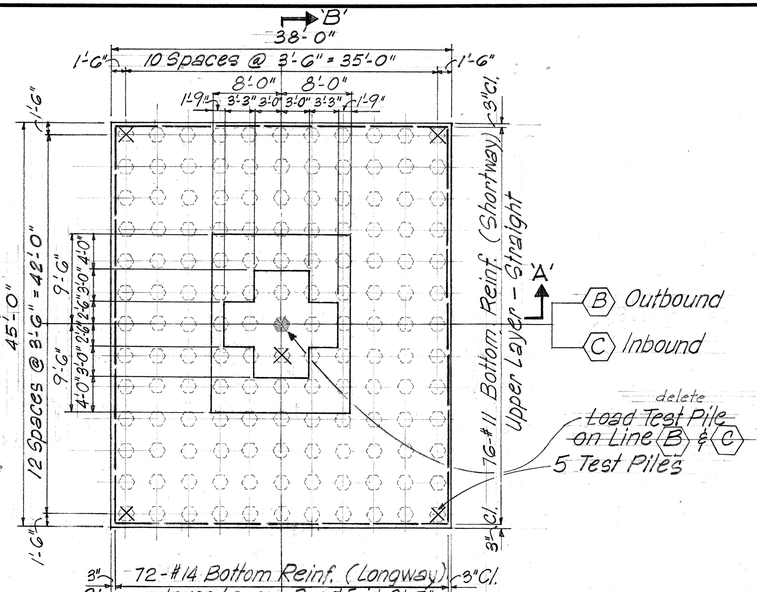
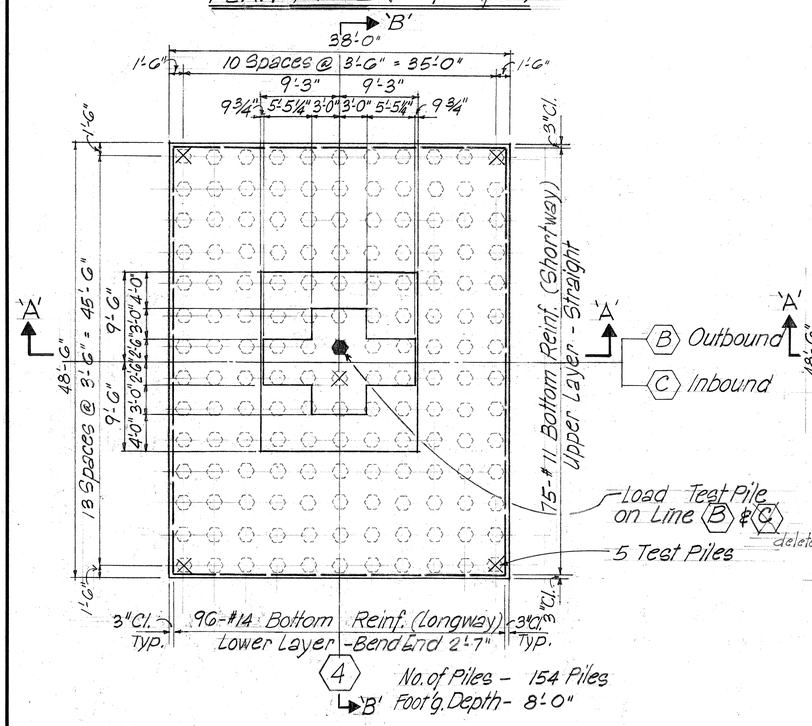
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	58	104



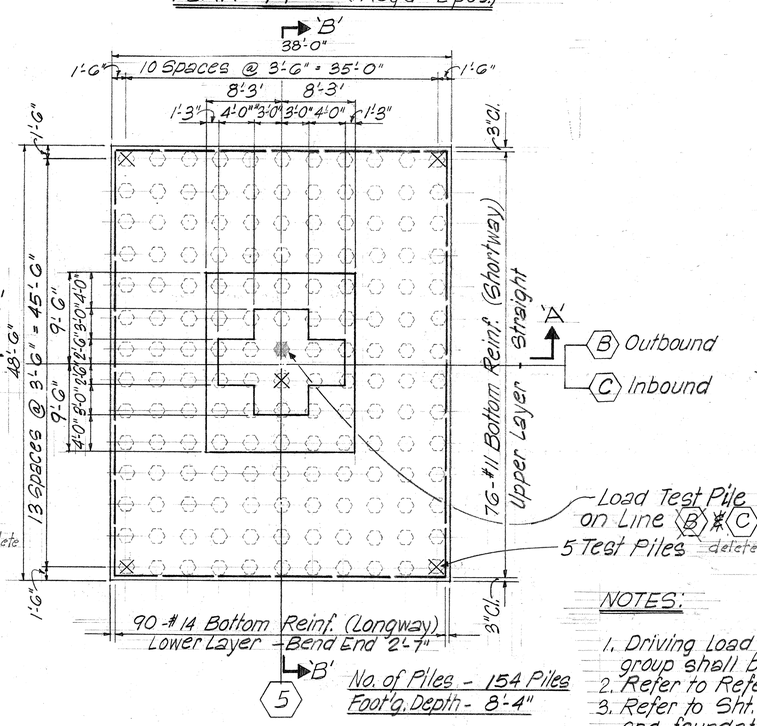
PLAN-PF-2 (Req'd-2 pcs.)



PLAN-PF-3 (Req'd-2 pcs.)

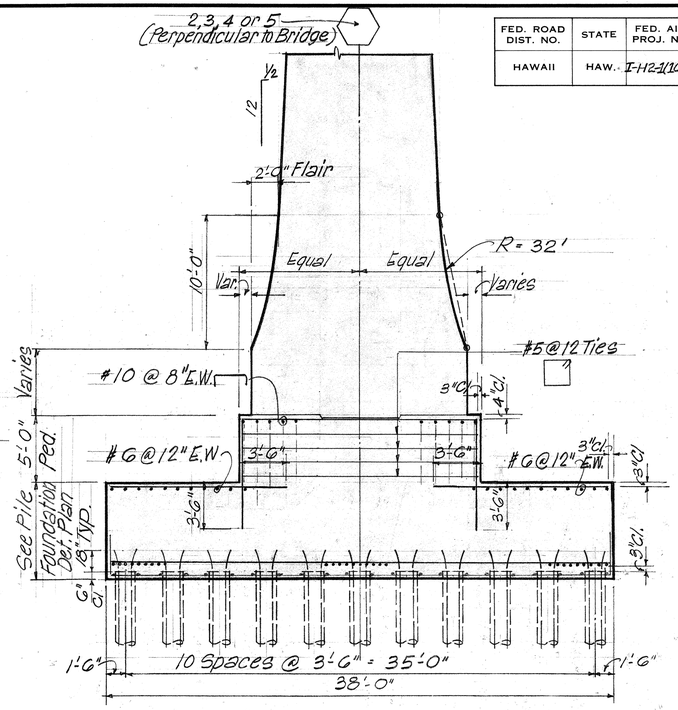


PLAN-PF-4 (Req'd-2 pcs.)

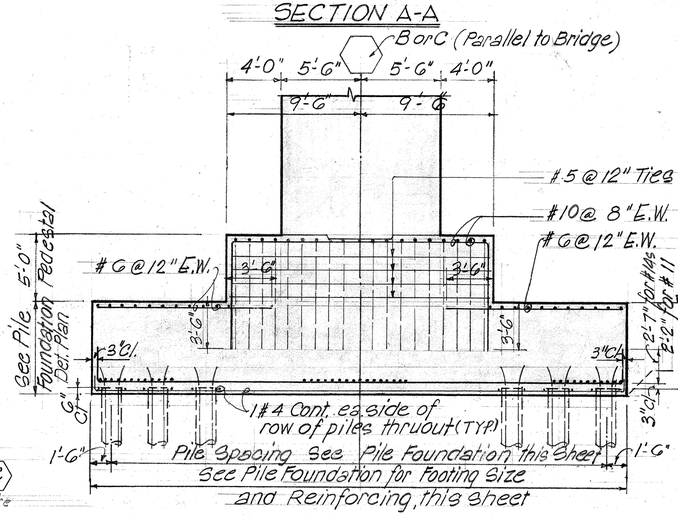


PLAN-PF-5 (Req'd. - 2pcs.)

PILE FOUNDATION DETAIL PLAN
Scale 1/8"=1'-0"



SECTION A-A



SECTION B-B
Scale 3/16"=1'-0"

C. L. PIEN
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No. 2348
HAWAII, U.S.A.

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NOTES:

1. Driving Load test pile and adjacent test piles in each group shall be in one continuous operation.
2. Refer to Reference Note Nos. 2, 3, 4, & 6 on Sht. No. 9B.
3. Refer to Sht. Nos. 3B and 18B for additional footing and foundation details.
4. For Pile Cap – f'c = 3000 psi @ 28 days; fs = 20,000 psi
   For Columns – f'c = 4500 psi @ 28 days; fs = 24,000 psi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

PILE FOUNDATION AT
PIER LINES (2), (3), (4) & (5)

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):6

Scale: As Noted June 1973

SHEET No. 17B OF 43B SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	QUANTITIES BY	
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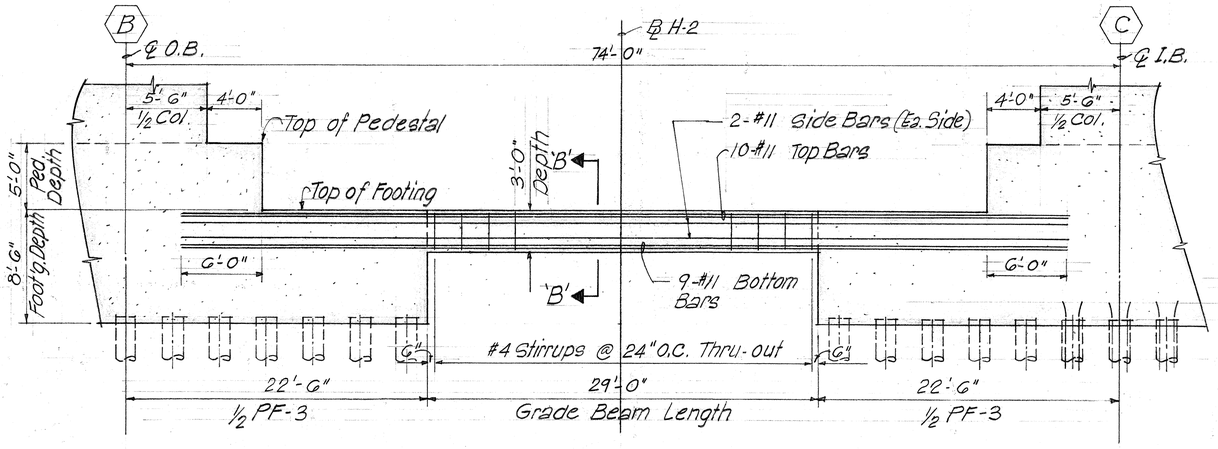
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	50	104

NOTES: (C.I.P. Piles)

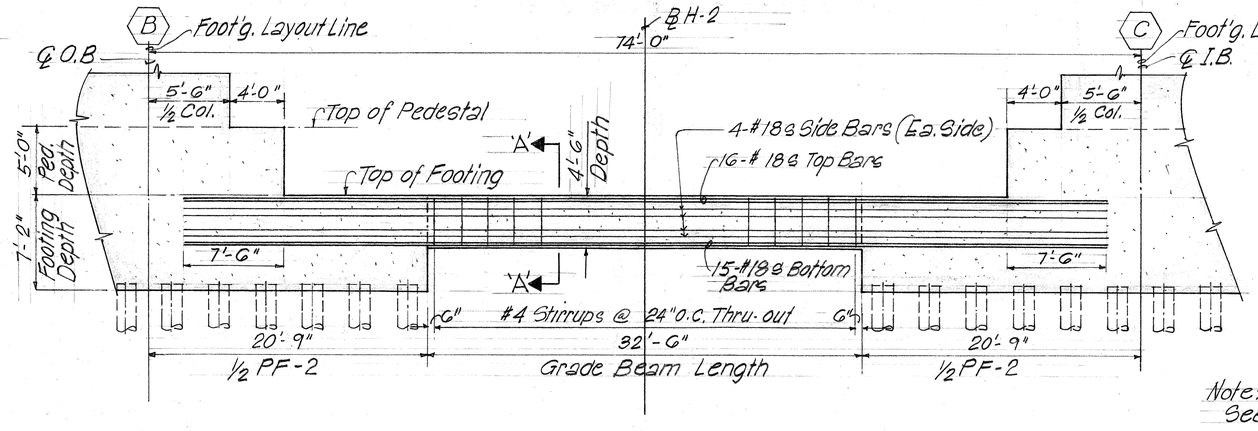
1. Max. increment length of steel shell = 10 ft. Increase diameter by 1" per increment.
2. Splicing will be done in accordance with Manufacturer's standards.
3. Load test on C.I.P. Piles will be performed only after test shows concrete has reached its specified strength, but no earlier than seven days.
4. Min. gauge of the bottom section to be 14 gauge.

GENERAL PILE NOTES:

Load tests will be conducted only for verification of loads and not for increasing pile capacity.

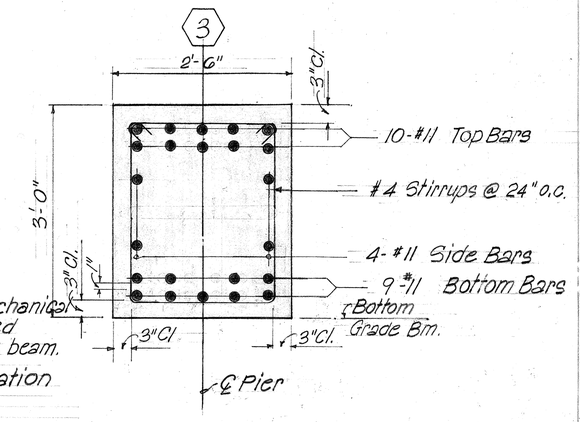


GRADE BEAM GB-2 DETAIL



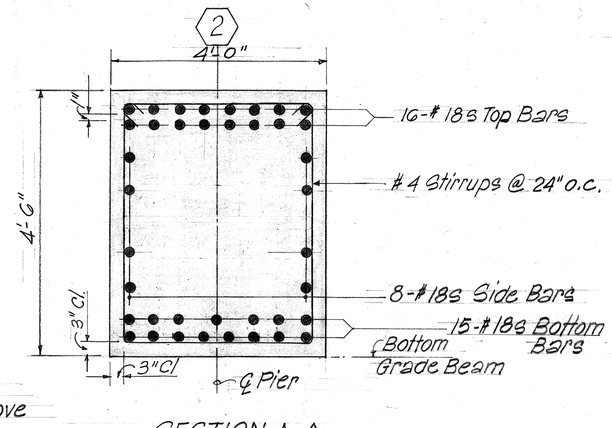
GRADE BEAM GB-1 DETAIL

NOTES:
1. Use only mechanical or butt-welded splicing in tie beam.
2. Stagger location of splicing.

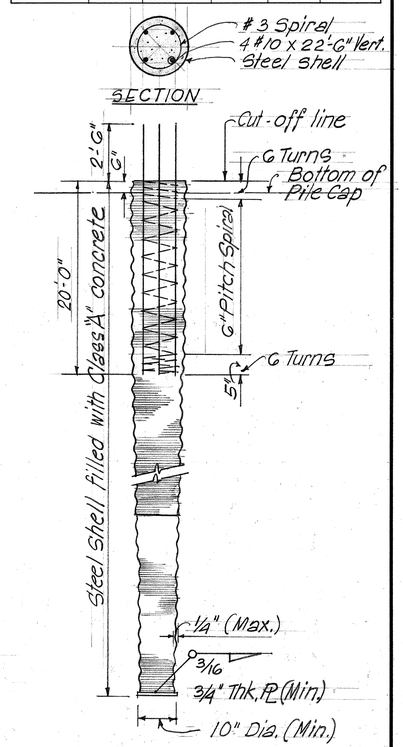


SECTION B-B
Sc. 1"=1'-0"

Note: See Notes above



SECTION A-A
Sc. 3/4"=1'-0"



A (18B) CAST-IN-PLACE CONC. PILE IN STEEL SHELL DETAIL (ALT.)
Scale: N.T.S.

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No. 2348
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

GRADE BEAM DETAILS

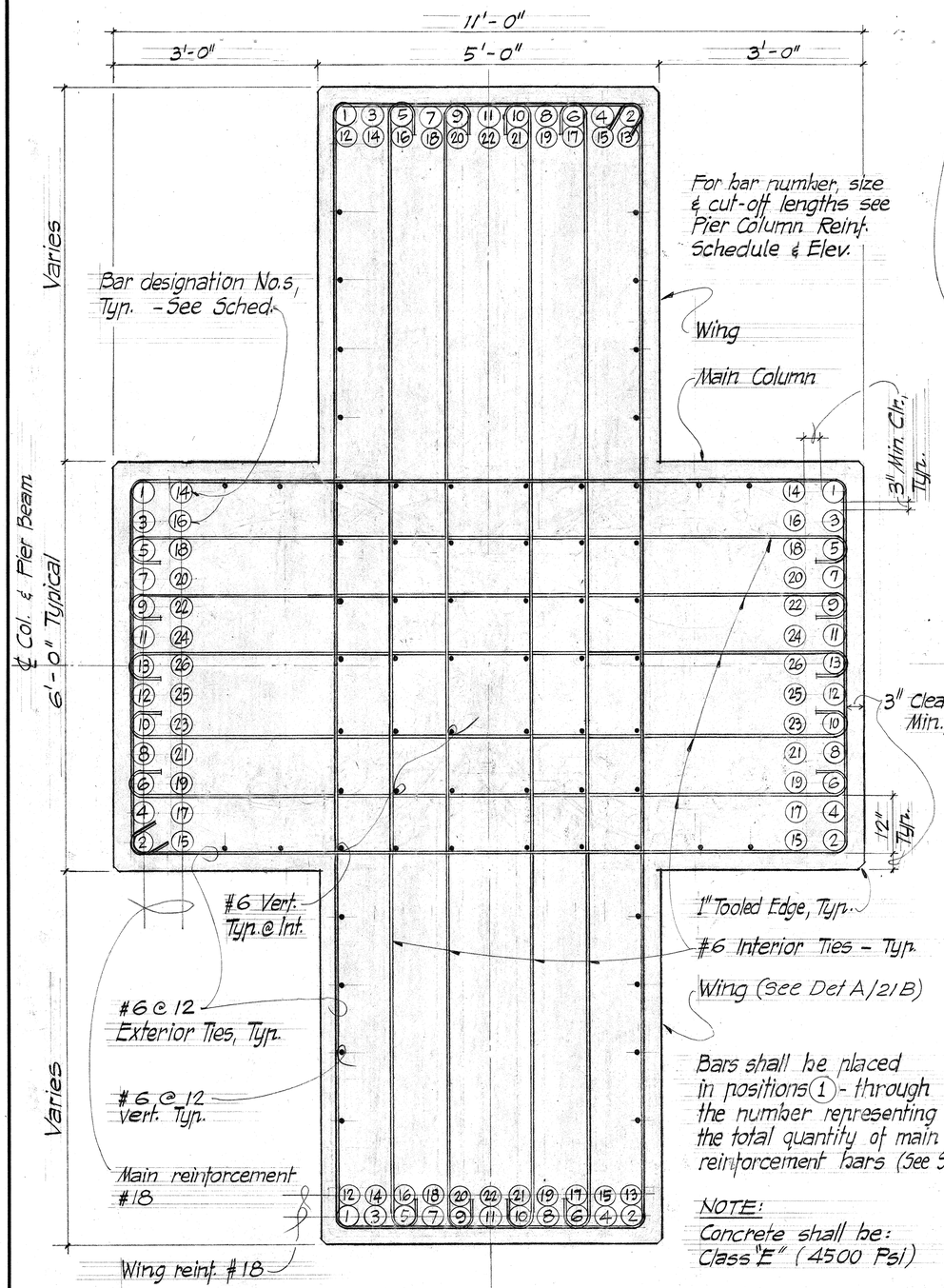
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10);G
Scale: As Noted June 1973

SHEET NO. 18 B OF 43B SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	60	104

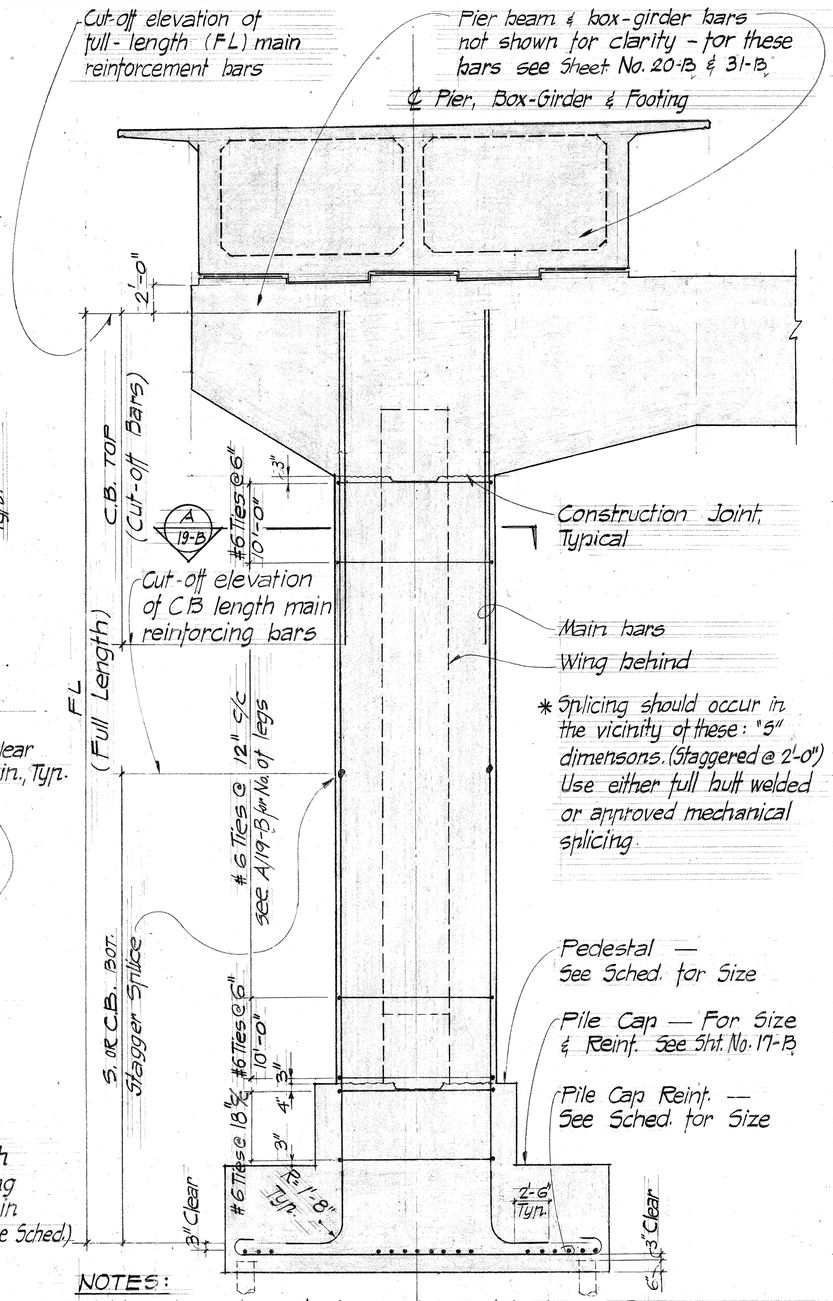


A TYPICAL PIER COLUMN SECTION

19B

Typ. Bar Pattern — Typ. Reinf.

Scale: 1" = 1'-0"



NOTES:
Welding to conform to Am. Welding Society Recom. D 12.1
Stagger Splices
Place no more than 4 splices in one section. - Concrete shall be 4,500 Psi.

B TYP. PIER COLUMN REINF'G ELEVATION

19B

Scale: 3/16" = 1'-0"

PIER COLUMN REINFORCEMENT SCHEDULE

COLUMN LOCATION	BAR SIZE & QUANTITY MAIN	BAR SIZE & QUANTITY WING	BAR DESIGNAT'N MAIN	BAR DESIGNAT'N WING	C.B. TOP	C.B. BOT.	* SPLICE "S"	TIES SIZE & SPACING	REMARKS
Pier (2) STA. 130+65	26#18	20#18	(1)-(13)	(1)-(10)	FL			#6@4"	No splice
Pier (3) STA. 132+85	26#18	34#18	(1)-(13)	(1)-(10)	FL			#6@6 & #6@12"	No splice
				(11)-(17)	25'-0"				
Pier (4) STA. 135+05	52#18		(1)-(6)		FL		40'-0"	#6@6 & #6@12"	Splice where indicated & stagger at 3'-0" Intervals (Max 4 in one plane)
			(7)-(13)		FL		68'-0"		
			(14)-(19)		40'-0"				
			(20)-(25)		50'-0"				
		42#18		(1)-(10)	FL		40'-0"		
				(11)-(17)	45'-0"				
				(18)-(21)	25'-0"				
Pier (5) STA. 137+25	38#18		(1)-(6)		FL		25'-0"	#6@6 & #6@12"	Splice as above
			(7)-(13)		FL		30'-0"		
			(14)-(19)		38'-0"				
		38#18		(1)-(10)	FL				
				(11)-(17)	25'-0"				
				(18)-(19)	35'-0"				

ORIGINAL PLAN
SURVEY PLOTTED BY
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C. L. RIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TYP. PIER COLUMN REINFORCEM'T

INTERSTATE ROUTE H-2

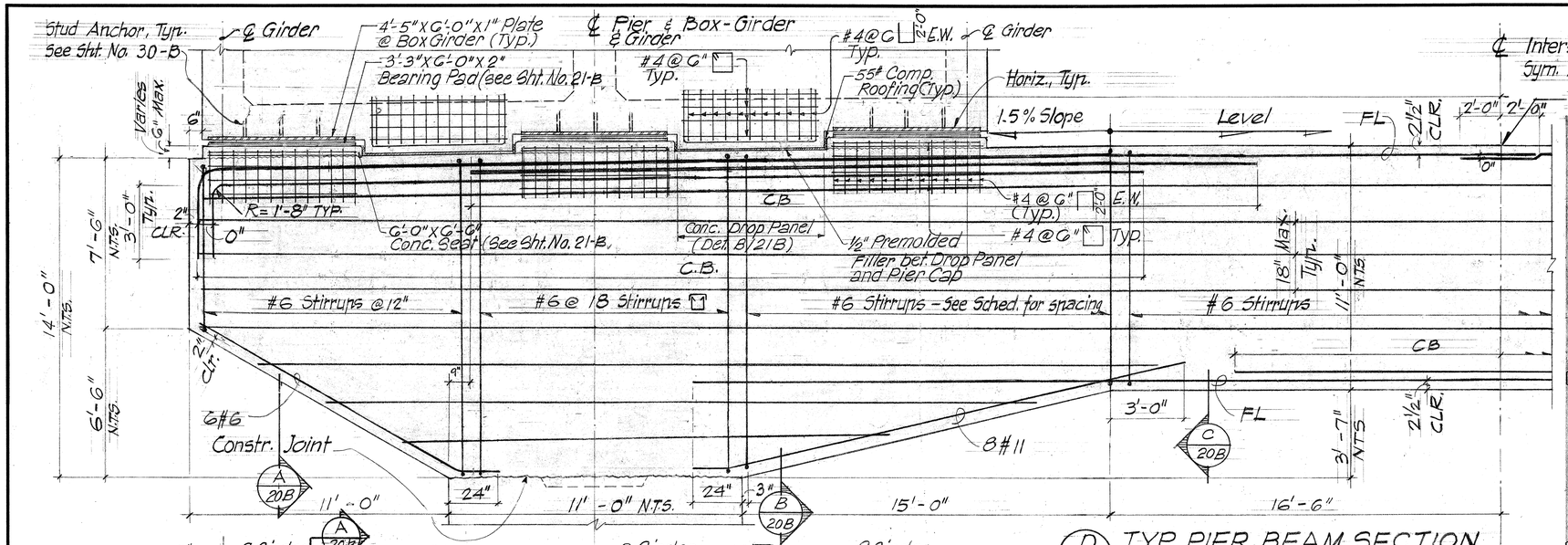
FAI PROJECT NO. I-H2-1(10):6

Scale: As noted June 1973

SHEET No. 19B OF 43B SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	61	104



PIER BEAM REINFORCEMENT SCHEDULE

PIER BEAM LOCATION & ELEVATION	MAIN REINFORCEMENT: QUANTITY & SIZE of BARS TOP	MAIN REINFORCEMENT: QUANTITY & SIZE of BARS BOT.	MAIN REINFORCEMENT: BAR DESIGNATION No.	MAIN REINFORCEMENT: C|B	STIRRUPS: CANTILEVER No. LEGS PER SET	STIRRUPS: CANTILEVER SPAC'G	STIRRUPS: SPAN No. of LEGS PER SET	STIRRUPS: SPAN SPAC'G	REMARKS
PIER (2) Sta. 130+85 Elev.: 744.46		15#18	(1) - (15)	FL	4	@12	8	30@6	Straight
		15#18	(16) - (30)	28'-0"			8	10@9	Do.
		15#18	(31) - (45)	22'-0"			4	10@12	Do.
		2#18	(46) & (47)	18'-0"			2	Rest@18	Do.
	15#18		(1) - (15)	FL					w/ Bend
	15#18		(16) - (30)	46'-0"					Straight
	17#18		(31) - (47)	40'-0"					w/ Bend
PIER (3) Sta. 132+85 Elev.: 739.00		15#18	(1) - (15)	FL	4	@12	8	30@6	Straight
		15#18	(16) - (30)	28'-0"			8	14@9	Do.
		15#18	(31) - (45)	22'-0"			4	10@12	Do.
		9#18	(46) - (54)	18'-0"			2	Rest@18	Do.
	15#18		(1) - (15)	FL					w/ Bend
	15#18		(16) - (30)	46'-0"					Straight
	19#18		(31) - (49)	40'-0"					w/ Bend
PIER (4) Sta. 135+05 Elev.: 736.40		15#18	(1) - (15)	FL	4	@12	8	30@6	Straight
		15#18	(16) - (30)	28'-0"			8	14@9	Do.
		15#18	(31) - (45)	22'-0"			4	10@12	Do.
		9#18	(46) - (54)	18'-0"			2	Rest@18	Do.
	15#18		(1) - (15)	FL					w/ Bend
	15#18		(16) - (30)	46'-0"					Straight
	19#18		(31) - (49)	40'-0"					w/ Bend
PIER (5) Sta. 137+25 Elev.: 736.66		15#18	(1) - (15)	FL	4	@12	8	30@6	Straight
		15#18	(16) - (30)	28'-0"			8	10@9	Do.
		17#18	(31) - (47)	22'-0"			4	10@12	Do.
		2#18	(48) - (49)	18'-0"			2	Rest@18	Do.
	15#18		(1) - (15)	FL					w/ Bend
	15#18		(16) - (30)	46'-0"					Straight
	17#18		(31) - (47)	40'-0"					w/ Bend

NOTE: FL = Full length — CB = Cut bars

1. Concrete shall be Class 5000 Psi
2. For Pier Column details see Sht. No. 19-B
3. See Sheet No's 21-B & 38-B for additional details & Info.
4. Beam bottom bars shall be spliced only @ ¼ span w/ staggered, welded splicing.

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C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

MAIN REINFORCEMENT PLACEMENT

- Bars shall be placed in pattern positions (1) through the number representing the required quantity of bars - See Schedule.
- All main reinforcing bars to be #18
- All stirrups shall be #6.

DATE	REVISION
8/21/73	Revised to conform with Item A-4 of Add. No. 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TYP. PIER BEAM REINFORCEMENT

INTERSTATE ROUTE H-2

FAI PROJECT NO. I-H2-1(10):6

Scale: 3/8"=1'-0" June 1973.

SHEET No. 20B OF 498 SHEETS

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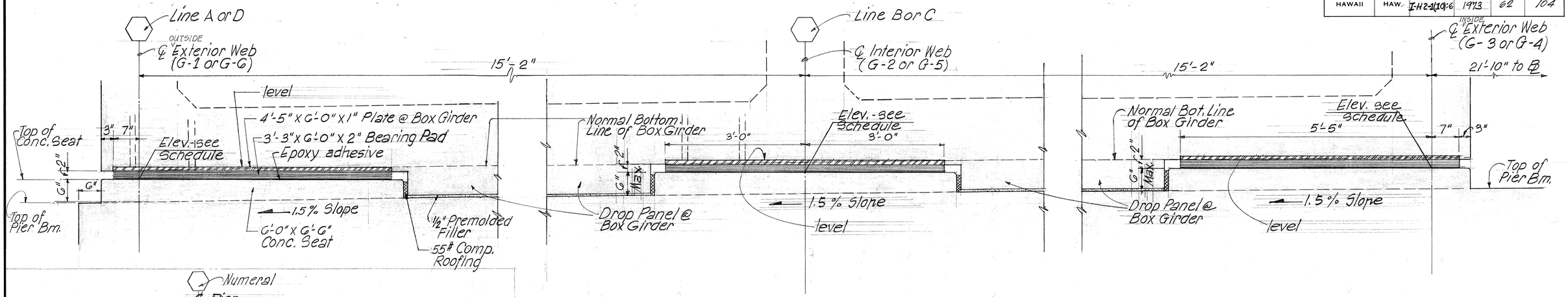
PRINTED ON NO. 1000H CLEARPRINT

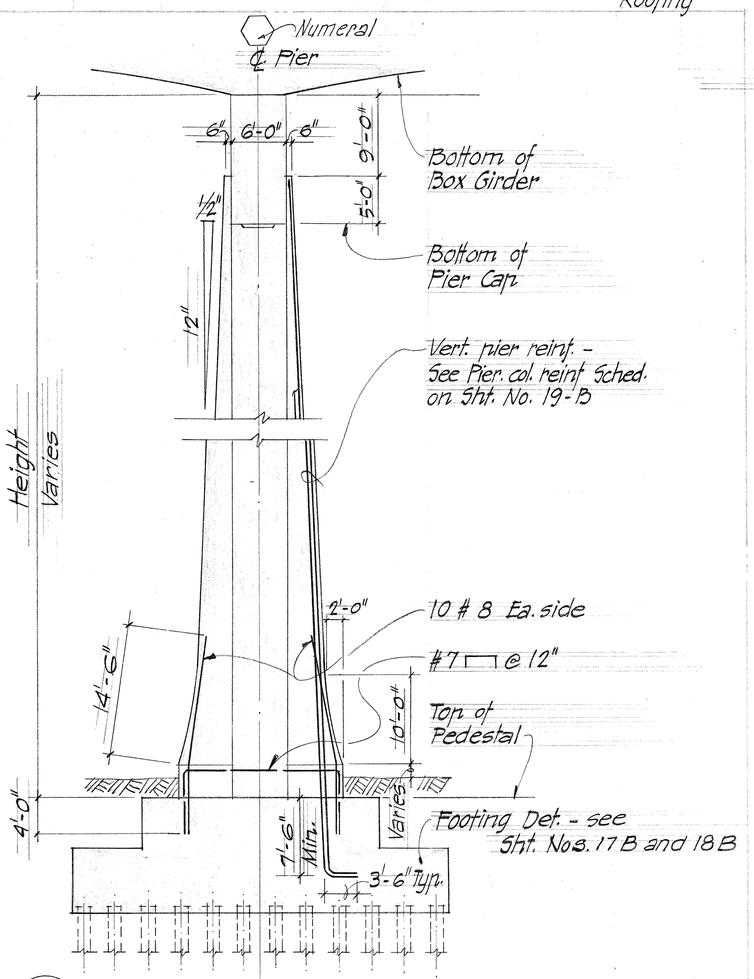
61R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	62	104



B / 21-B TYP. CONC. SEATS AND DROP PANEL DETAIL @ PIER BEAM - (I.B. or O.B.)

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



A / 21-B TYP. PIER COL. WING REINF.

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

BEARING SEAT ELEVATION SCHEDULE

LOCATION	OUTSIDE EXTERIOR AT INTERIOR WEB	INTERIOR AT CENTER WEB	INSIDE AT EXTERIOR WEB
Sta. 128 + 95	~~752.112~~ 752.43	752.65	752.88
Sta. 130 + 65	744.23	~~744.49~~ 744.46	~~744.82~~ 744.68
Sta. 132 + 30	747.54 *	747.32 *	
Sta. 132 + 85	738.77	~~739.07~~ 739.00	~~739.29~~ 739.22
Sta. 135 + 05	736.17	736.39	736.61
Sta. 135 + 60	743.64 *	743.42 *	
Sta. 137 + 25	736.43	~~736.65~~ 736.67	~~736.87~~ 736.89
Sta. 138 + 95	740.60	740.83	741.05

*At bolster of Expansion Joint

NOTES

1. For drop panel reinf. see Sht. No. 20-B
2. For typ. Bearing Pad Detail see Det. A/13B & Sht. No. 30B
3. For stud anchor size, No., & layout, and bearing Plates see Sht. No. 30-B

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C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TYP. BEARING SEAT DETAILS & SCHEDULE

INTERSTATE ROUTE H-2

F.A.I. PROJECT NO. I-H2-1(10):6

Scale as noted. June 1973

SHEET NO. 21 B OF 43 B SHEETS

62

ORIGINAL PLAN | NOTE BOOK | No.

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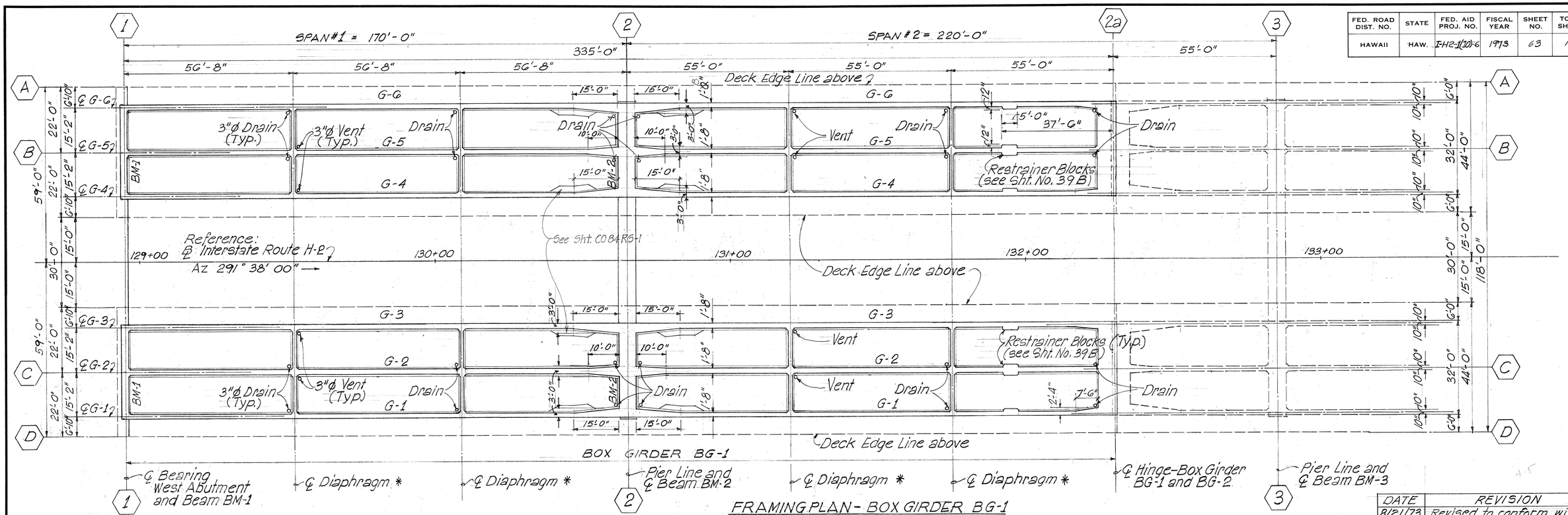
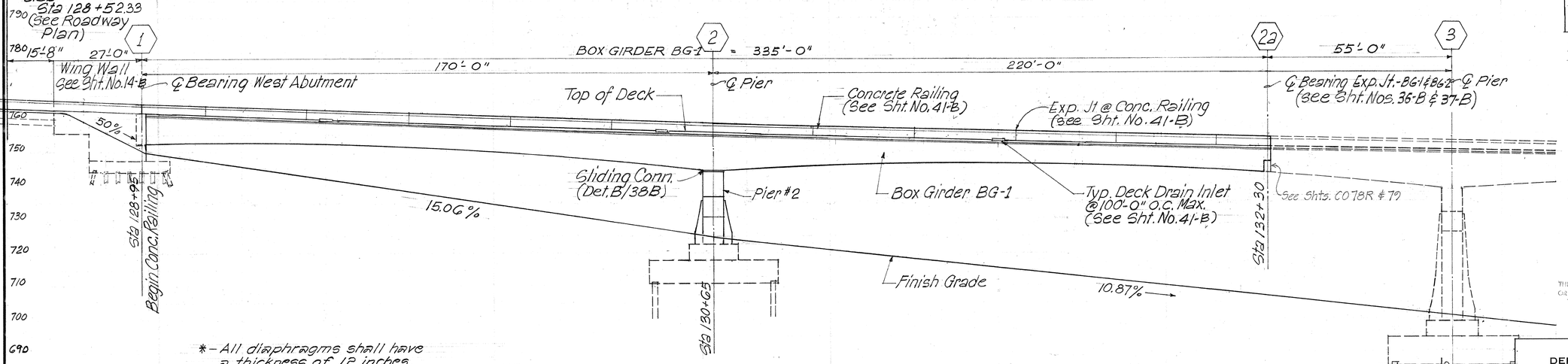
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-6	1973	63	104



FRAMING PLAN - BOX GIRDER BG-1
Scale: 1/16"=1'-0"

DATE	REVISION
8/21/73	Revised to conform with Item A-5 of Add. No. 1
12/6/74	Additional Flare at Support-Pier Line 2



*- All diaphragms shall have a thickness of 12 inches.

PART ELEVATION - STA 128+72 TO STA 132+30
Scale: 1/16"=1'-0"

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HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
FRAMING PLAN - BOX GIRDER BG-1 & PART ELEVATION - ℄ STA 128+52.33 TO STA 132+30
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):6
Scale: 1/16"=1'-0" June 1973

SHEET No. 22 B OF 43 B SHEETS

C.O. 63R

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

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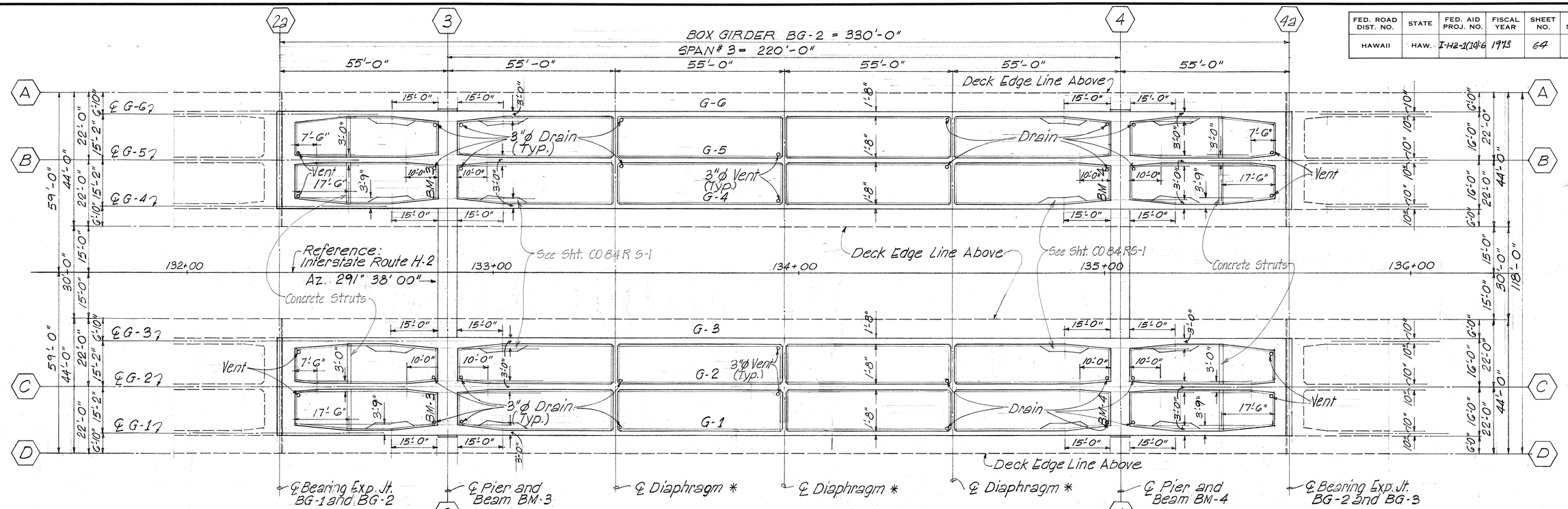
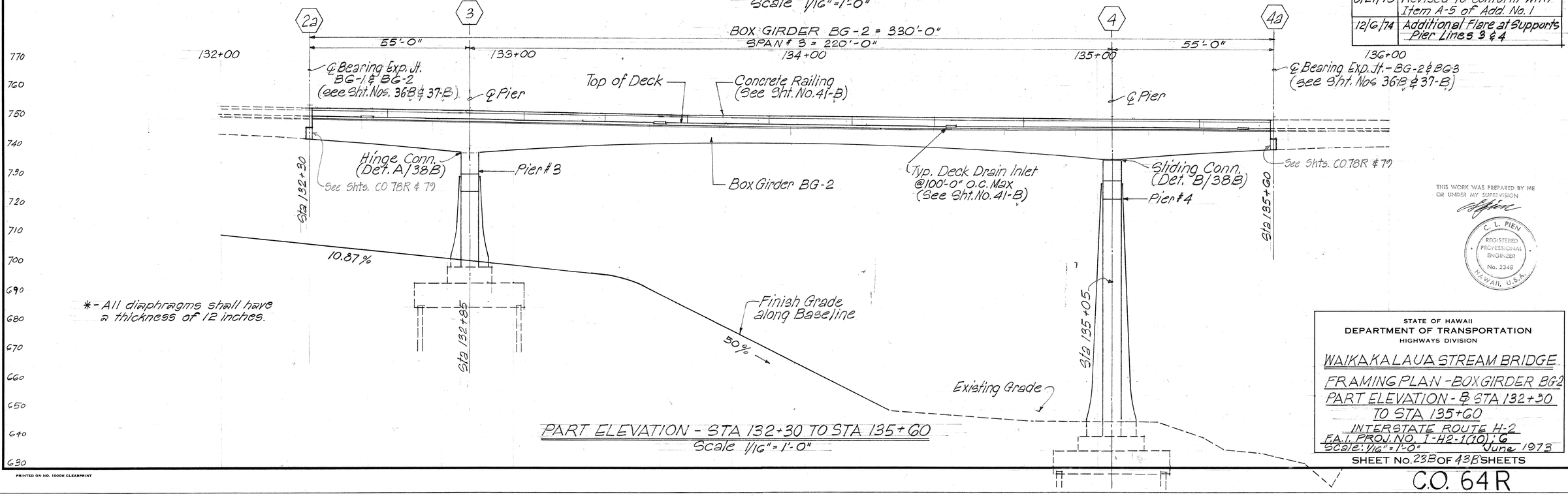
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	64	104



FRAMING PLAN - BOX GIRDER BG-2
Scale 1/16"=1'-0"



* - All diaphragms shall have a thickness of 12 inches.

PART ELEVATION - STA 132+30 TO STA 135+60
Scale 1/16"=1'-0"

DATE	REVISION
8/21/73	Revised to conform with Item A-5 of Add. No. 1
12/6/74	Additional Flare at Supports Pier Lines 3 & 4

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C. L. PIEN
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

FRAMING PLAN - BOX GIRDER BG-2
PART ELEVATION - ℄ STA 132+30 TO STA 135+60
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10)6
Scale: 1/16"=1'-0" June 1973

SHEET NO. 23B OF 43B SHEETS

C.O. 64 R

ORIGINAL PLAN | NOTE BOOK | No.
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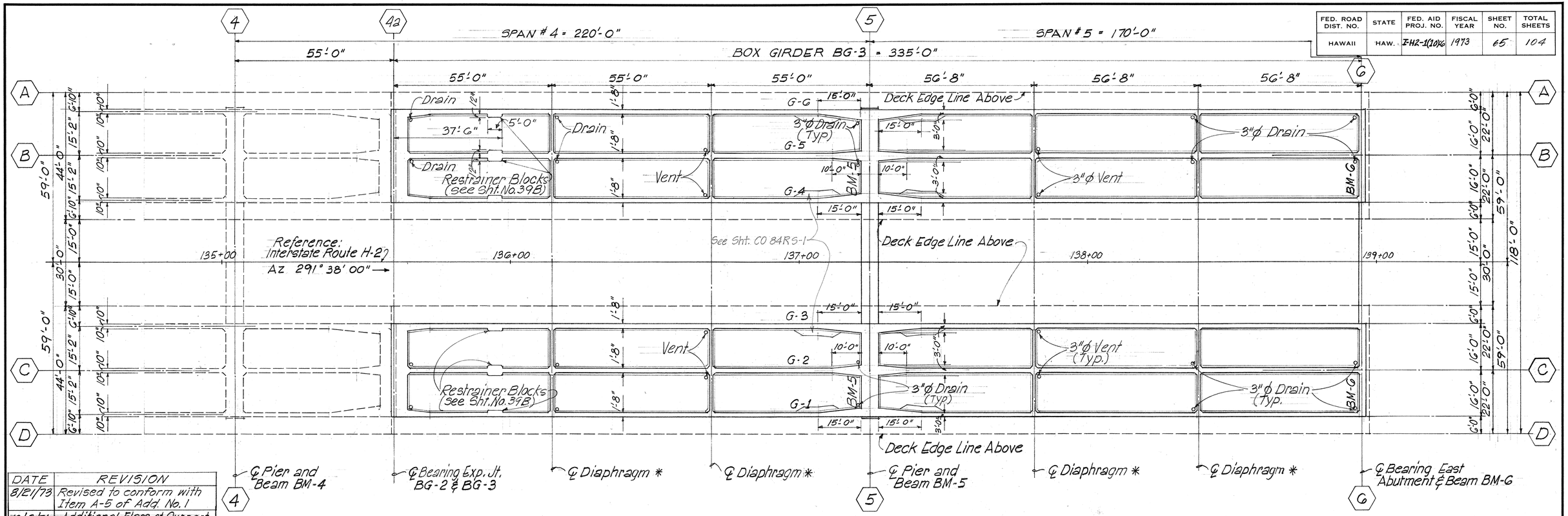
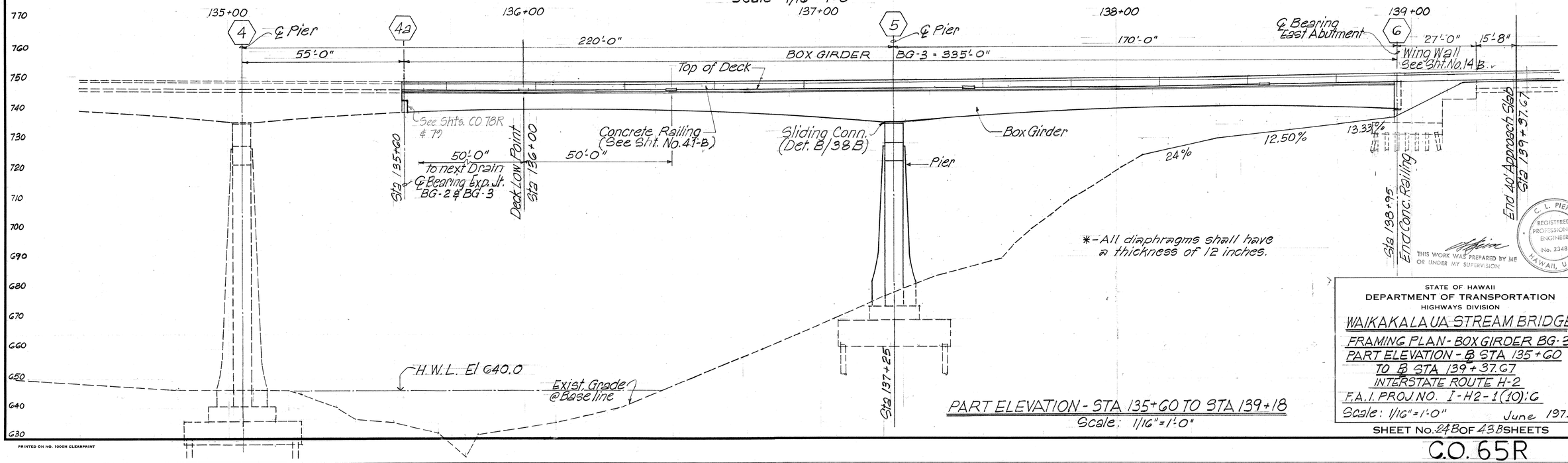
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	65	104



DATE	REVISION
8/21/73	Revised to conform with Item A-5 of Add. No. 1
12/6/74	Additional Flare at Support-Pier Line 5

FRAMING PLAN - BOX GIRDER BG-3
Scale 1/16" = 1'-0"



PART ELEVATION - STA 135+60 TO STA 139+18
Scale: 1/16" = 1'-0"

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ORIGINAL PLAN
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

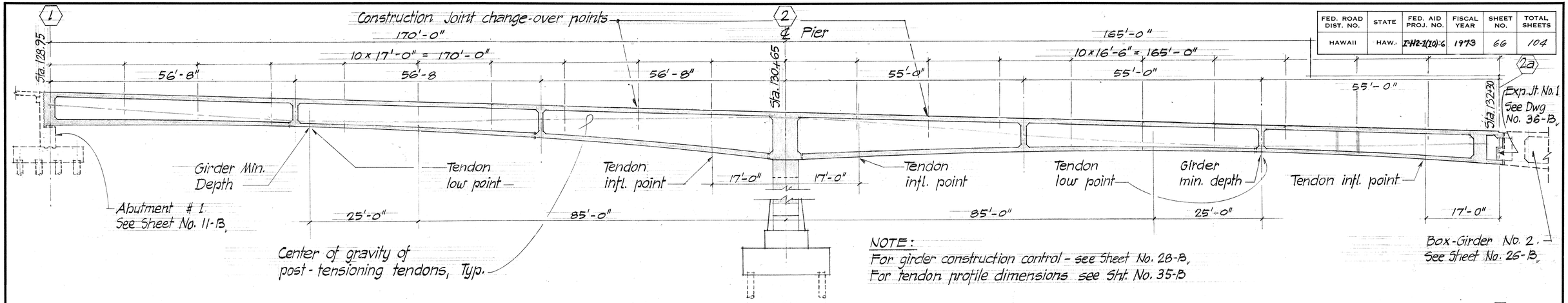
FRAMING PLAN - BOX GIRDER BG-3
PART ELEVATION - ℄ STA 135+60 TO ℄ STA 139+37.67
INTERSTATE ROUTE H-2
F.A.I. PROJ NO. I-H2-1(10)G
Scale: 1/16" = 1'-0" June 1973

SHEET NO. 24B OF 43B SHEETS

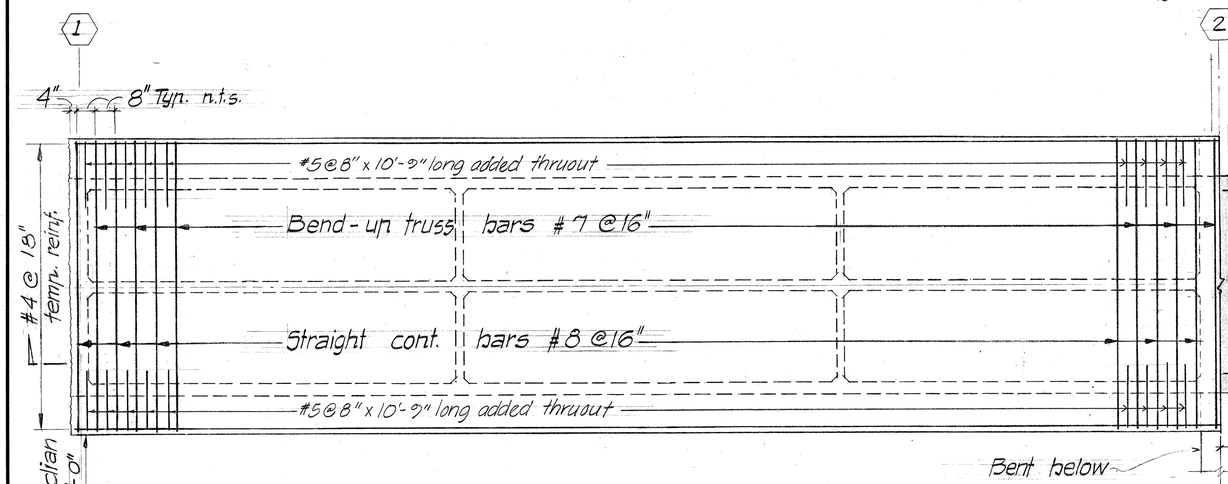
C.O. 65R

PRINTED ON NO. 1000H CLEARPRINT

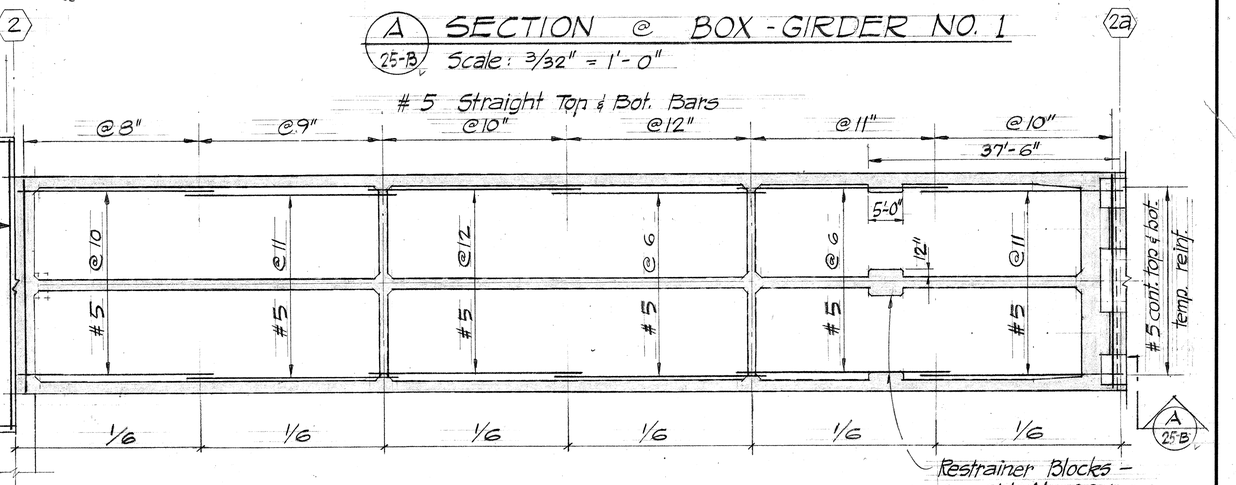
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	66	104



NOTE:
For girder construction control - see Sheet No. 28-B,
For tendon profile dimensions see Sht. No. 35-B



TOP SLAB, TOP REINFORCING PLAN

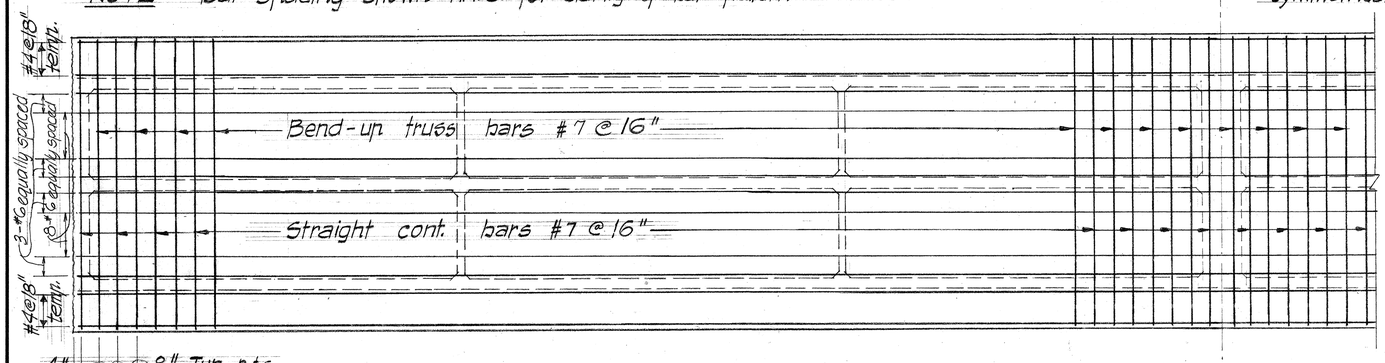


BOTTOM SLAB, TOP & BOT. REINFORCING PLAN

A 25-B SECTION @ BOX-GIRDER NO. 1
Scale: 3/32" = 1'-0"
#5 Straight Top & Bot. Bars

NOTE: Bar spacing shown n.t.s. for clarity of bar pattern

Slab and Slab Reinforcing shown symmetrical about Line 2



TOP SLAB, BOTTOM REINFORCING PLAN

DATE	REVISION
	Added note at line 2
12/6/74	Bot. slab reinforcement changed
June 20, 1974	Top slab reinforcement changed

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BOX-GIRDER No. 1.
SECTION & REINFORCING PLAN

INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale: 3/32" = 1'-0" June 1973

SHEET No. 25B OF 43 B SHEETS

ORIGINAL PLAN
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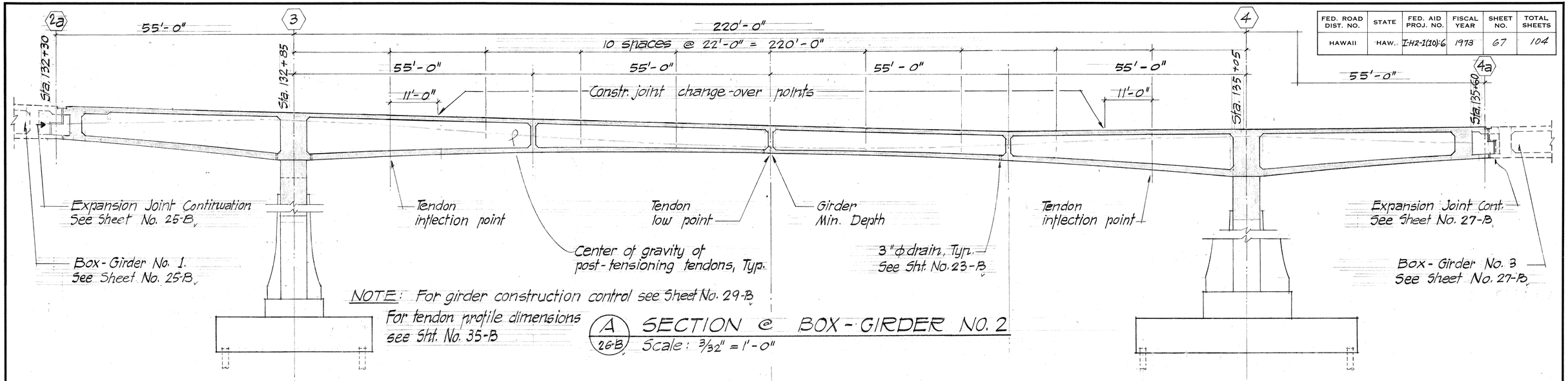
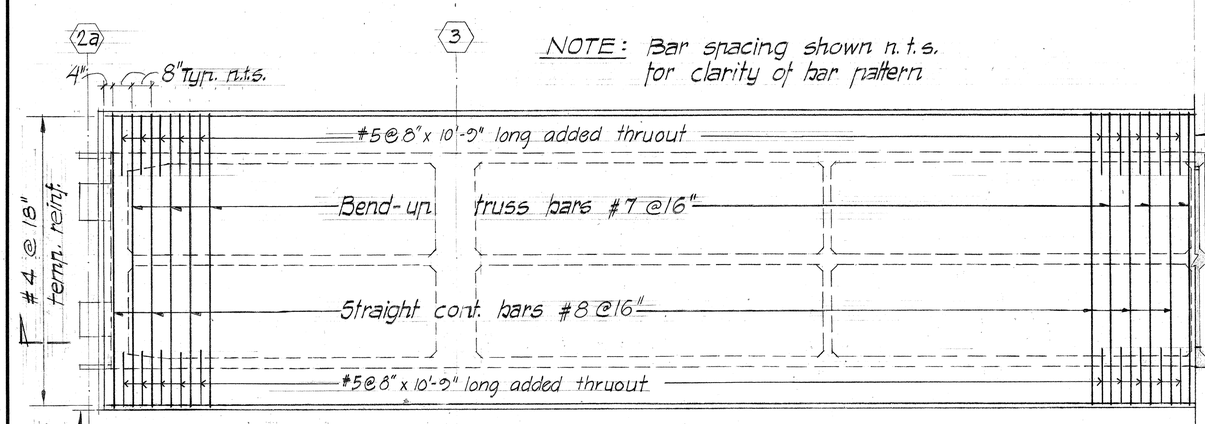
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	67	104



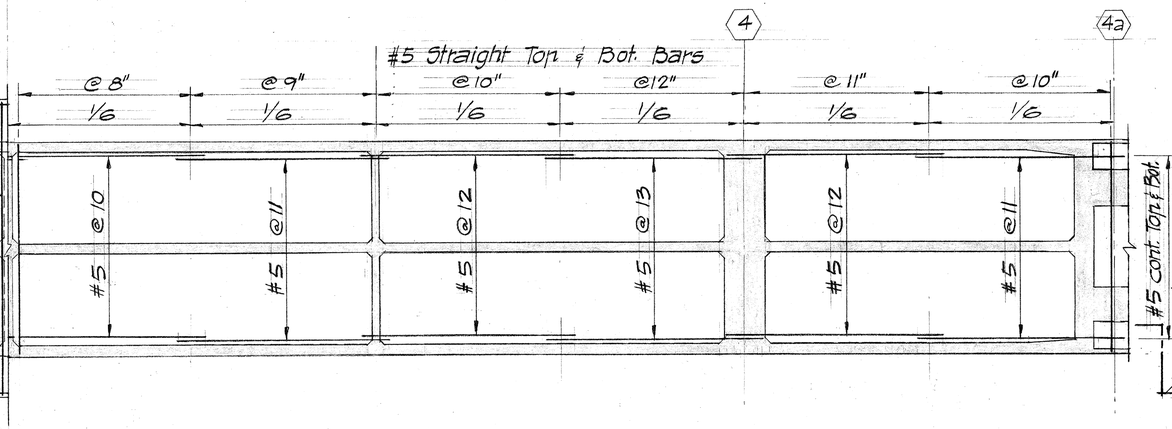
NOTE: For girder construction control see Sheet No. 29-B
For tendon profile dimensions see Sht. No. 35-B

A 26-B SECTION @ BOX-GIRDER NO. 2
Scale: 3/32" = 1'-0"



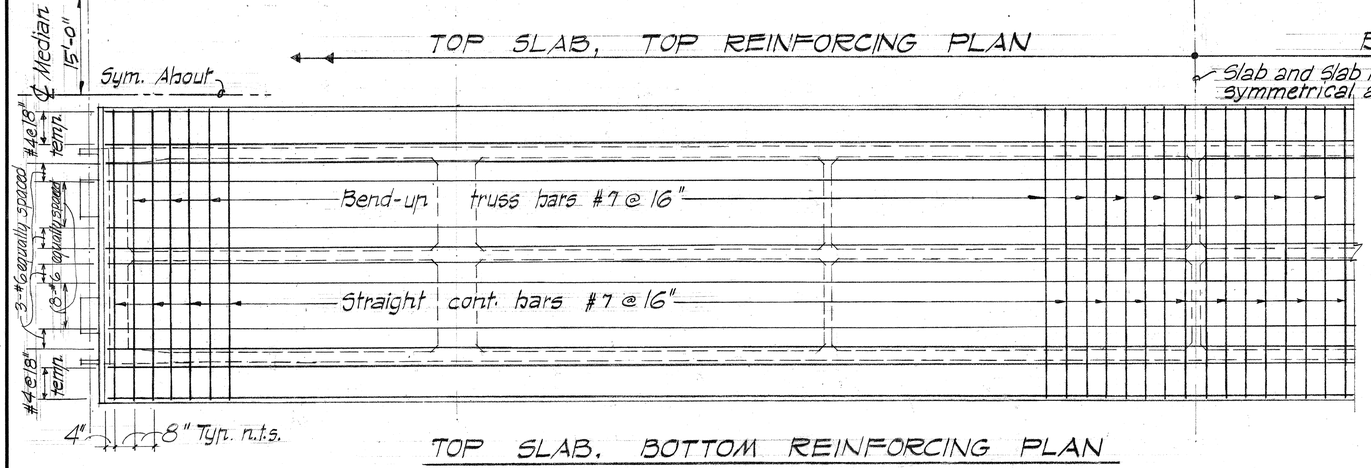
NOTE: Bar spacing shown n.t.s. for clarity of bar pattern

TOP SLAB, TOP REINFORCING PLAN



BOTTOM SLAB, TOP & BOT. REINFORCING PLAN

Slab and Slab Reinforcing shown symmetrical about this line



TOP SLAB, BOTTOM REINFORCING PLAN

ORIGINAL PLAN
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WAIKAKALAUA STREAM BRIDGE
BOX GIRDER NO. 2.
SECTION & REINFORCING PLAN
INTERSTATE ROUTE H-2
FAI PROJ. NO.: I-H2-1(10):6
Scale: 3/32" = 1'-0" June, 1973

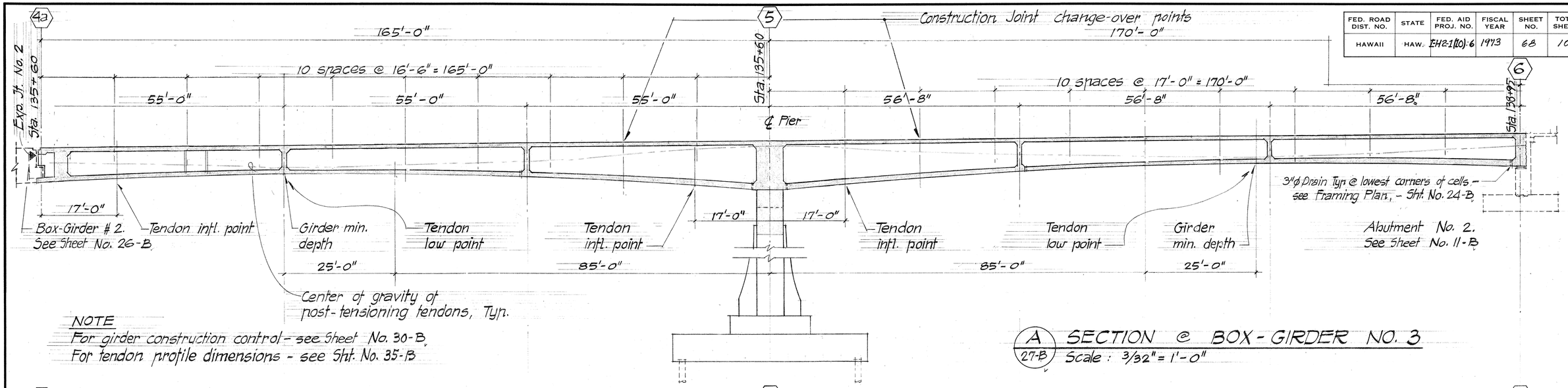
SHEET No. 26B OF 43B SHEETS

C.O. 67

DATE	REVISION
12/6/74	Added note at Line 3½
June 20, 1974	Top slab reinforcement changed

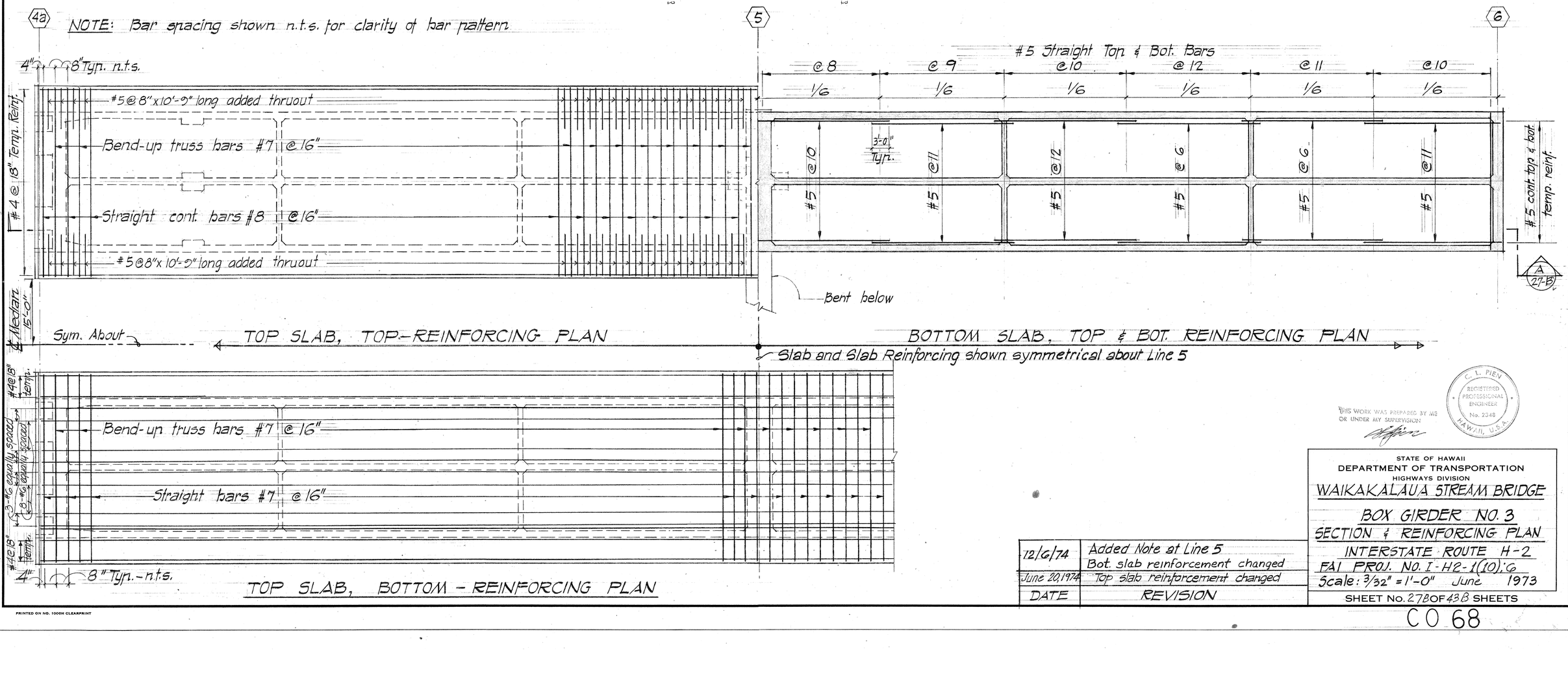
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-6	1973	68	104



NOTE
For girder construction control - see Sheet No. 30-B
For tendon profile dimensions - see Sht. No. 35-B

A / 27-B SECTION @ BOX-GIRDER NO. 3
Scale : 3/32" = 1'-0"



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

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C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

DATE	REVISION
12/6/74	Added Note at Line 5 Bot. slab reinforcement changed
June 20,1974	Top slab reinforcement changed

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BOX GIRDER NO. 3

SECTION & REINFORCING PLAN

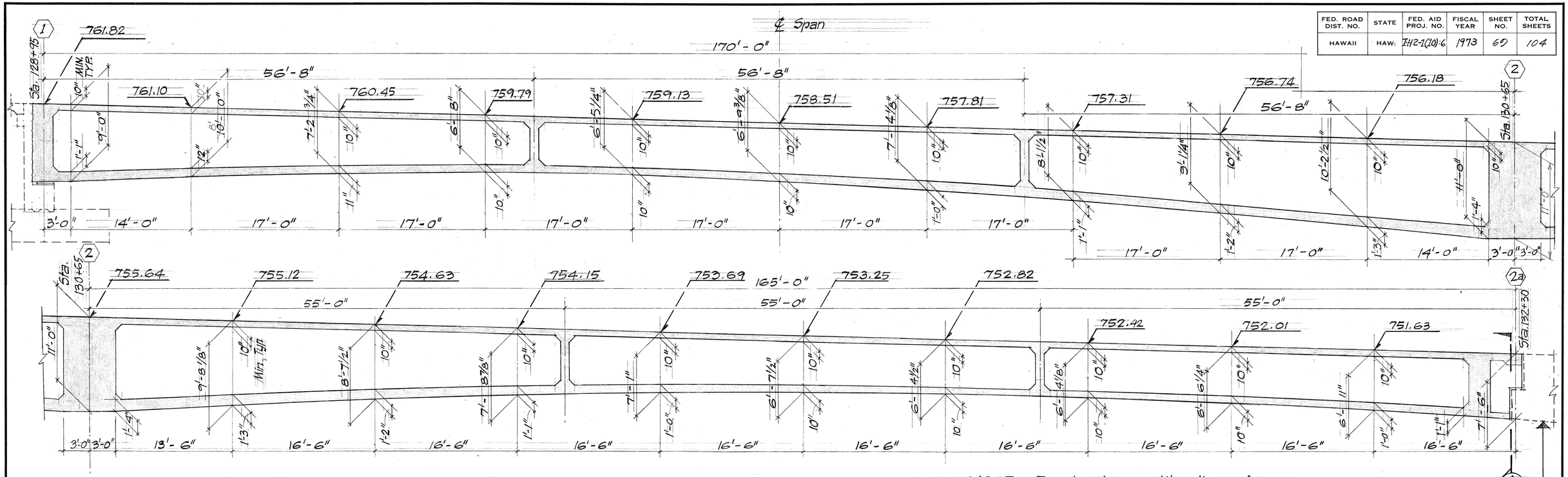
INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale: 3/32" = 1'-0" June 1973

SHEET NO. 27B OF 43B SHEETS

C0 68

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-6	1973	69	104



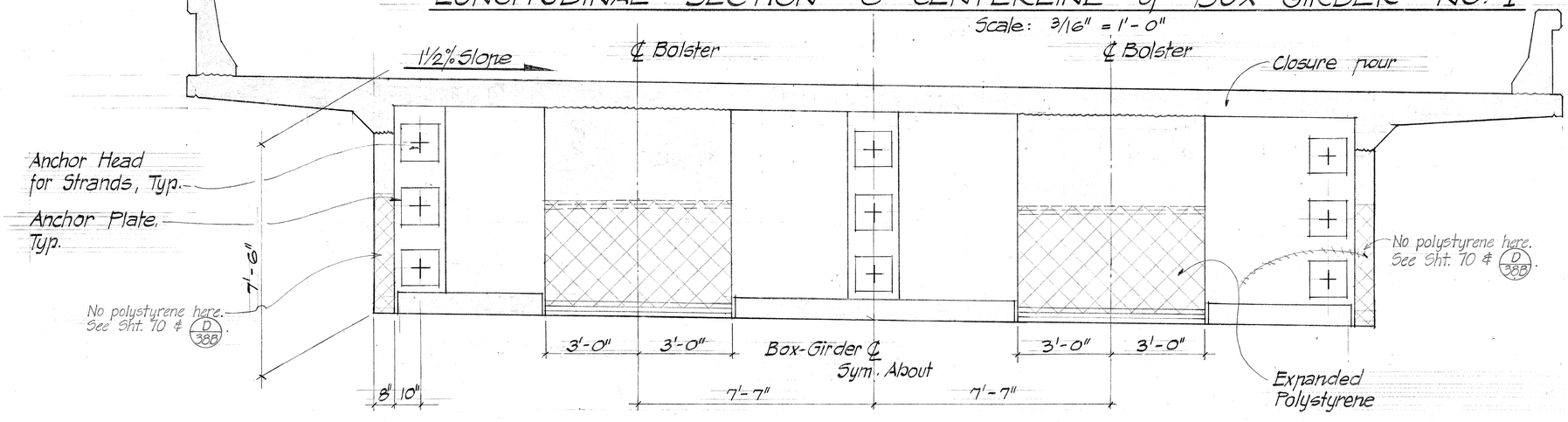
NOTE: For tendon profile dimensions see Sheet No. 32-B, For camber see Sht. No. 43-B

For continuation of Box Girder see Sheet No. 29-B,

GIRDER CONSTRUCTION CONTROL

LONGITUDINAL SECTION @ CENTERLINE of BOX-GIRDER NO. 1

Scale: 3/16" = 1'-0"



A 28-B END ELEVATION @ EXPANSION JOINTS 2a or 4a

Scale: ½" = 1'-0"

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

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REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

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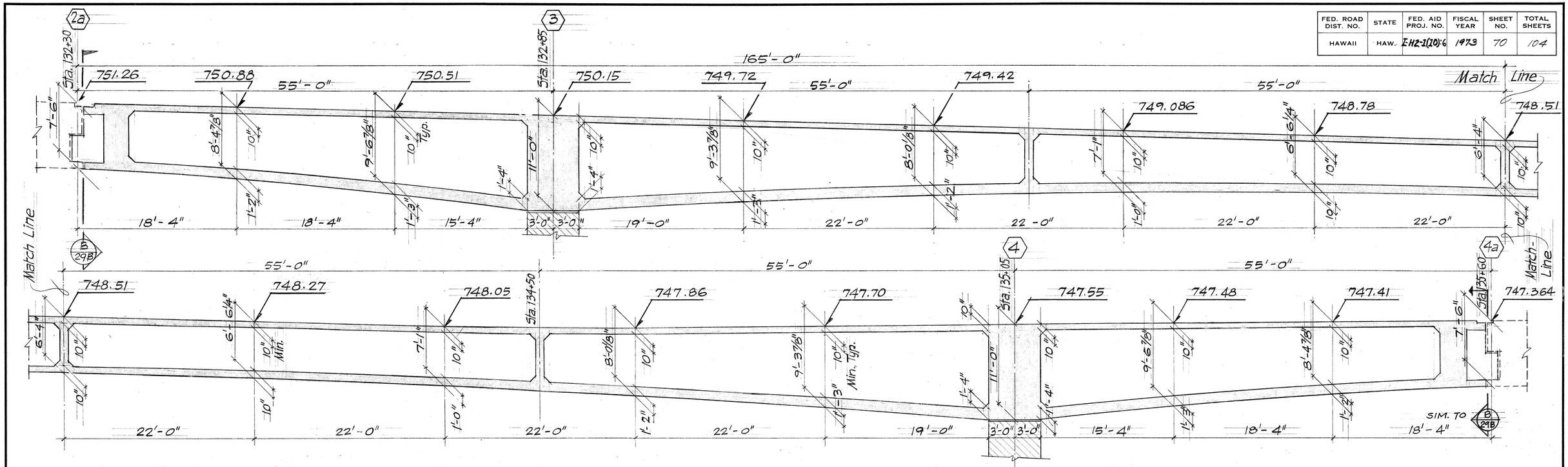
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
BOX-GIRDER NO. 1.
CONSTRUCTION CONTROL
INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale: As noted June 1973

SHEET No. 28-B OF 43B SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(20):6	1973	70	104

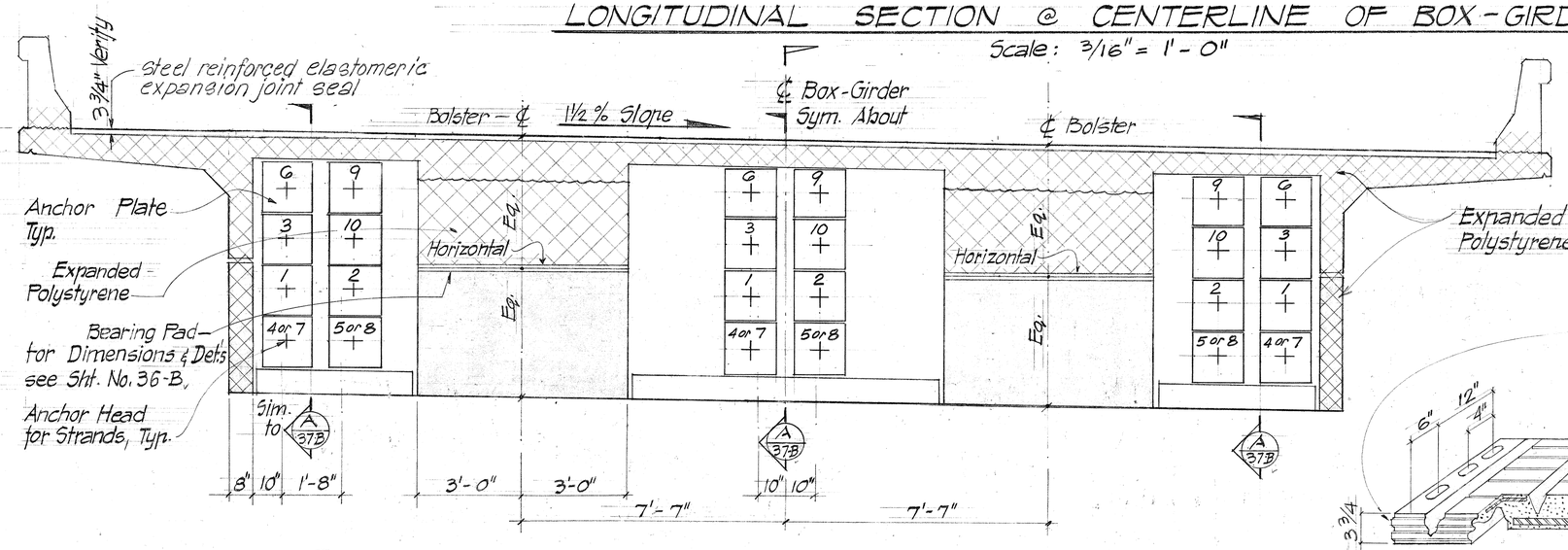


For tendon profile Dim's see Sheet No. 33-B,
For camber see Sht. No. 43-B

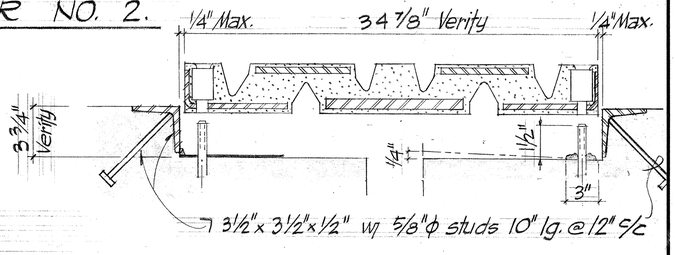
GIRDER CONSTRUCTION CONTROL

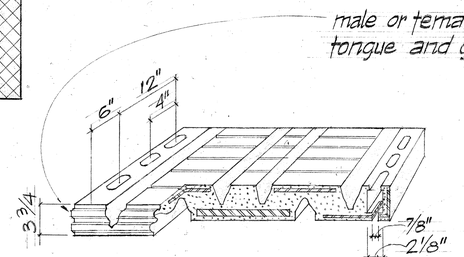
LONGITUDINAL SECTION @ CENTERLINE OF BOX-GIRDER NO. 2.

Scale: 3/16" = 1'-0"



B / 29B END ELEVATION @ EXPANSION JOINTS 2a or 4a
Scale: ½" = 1'-0"





A / 29B JOINT SEAL DET'S.

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REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

BOX-GIRDER NO. 2.

CONSTRUCTION CONTROL, DETAILS

INTERSTATE ROUTE H-2

FAI PROJECT NO. I-H2-1(10):6

Scale: As noted June 1973

SHEET No. 29B OF 43 B SHEETS

DATE	REVISION
12/6/74	Anchor Plates rearranged on Sect. B/29B due to added cables No. 9 and No. 10

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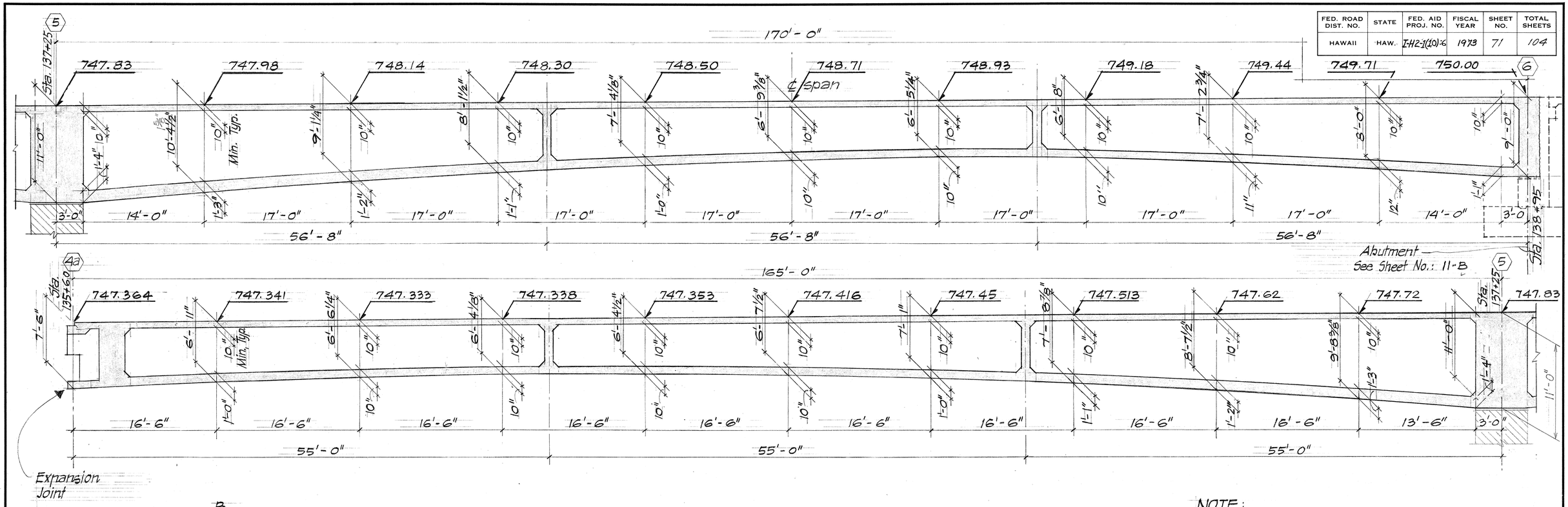
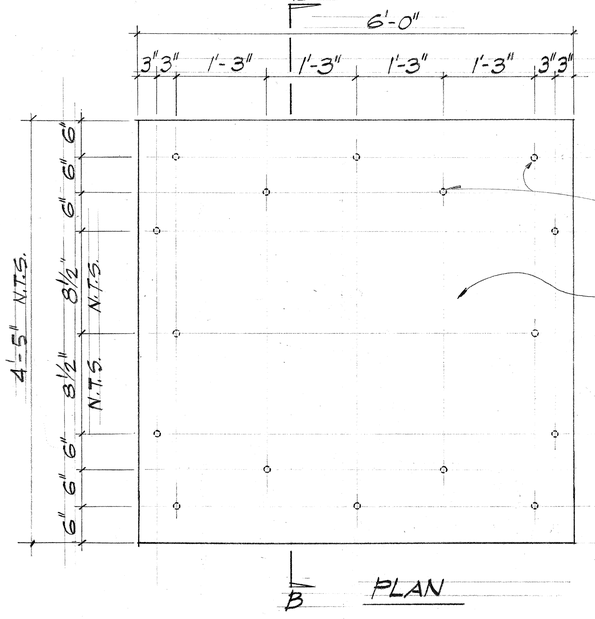
QUANTITIES BY
CHECKED BY
DATE

PRINTED ON NO. 1000H CLEARPRINT

C.O. 70

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	71	104



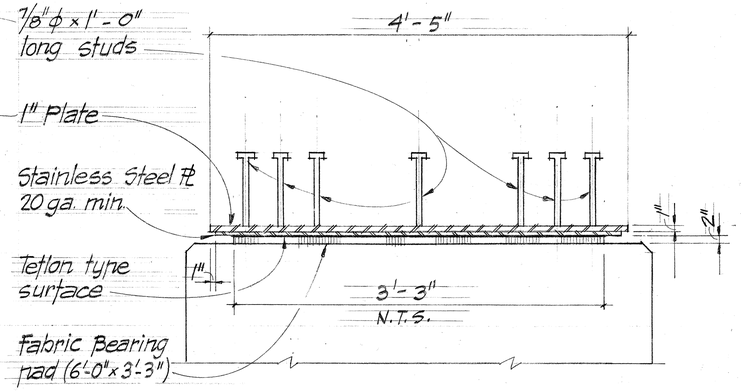


PLAN

GIRDER CONSTRUCTION CONTROL

LONGITUDINAL SECTION @ CENTERLINE OF BOX-GIRDER NO. 3.

Scale: 3/16" = 1'-0"



SECTION B-B
(Sliding Type)

NOTE:
Section at hinge similar except replace Teflon-type sliding plate & stainless steel plate with 1/16" thick Asbestos sheet packing

NOTE:
For tendon profile Dim's see Sheet No. 34-B
For camber see camber diagram on Sht. No. 43-B

Ⓐ (5-30) BEARING PLATE & PAD DETAILS @ PIER
Scale: 1" = 1'-0"

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

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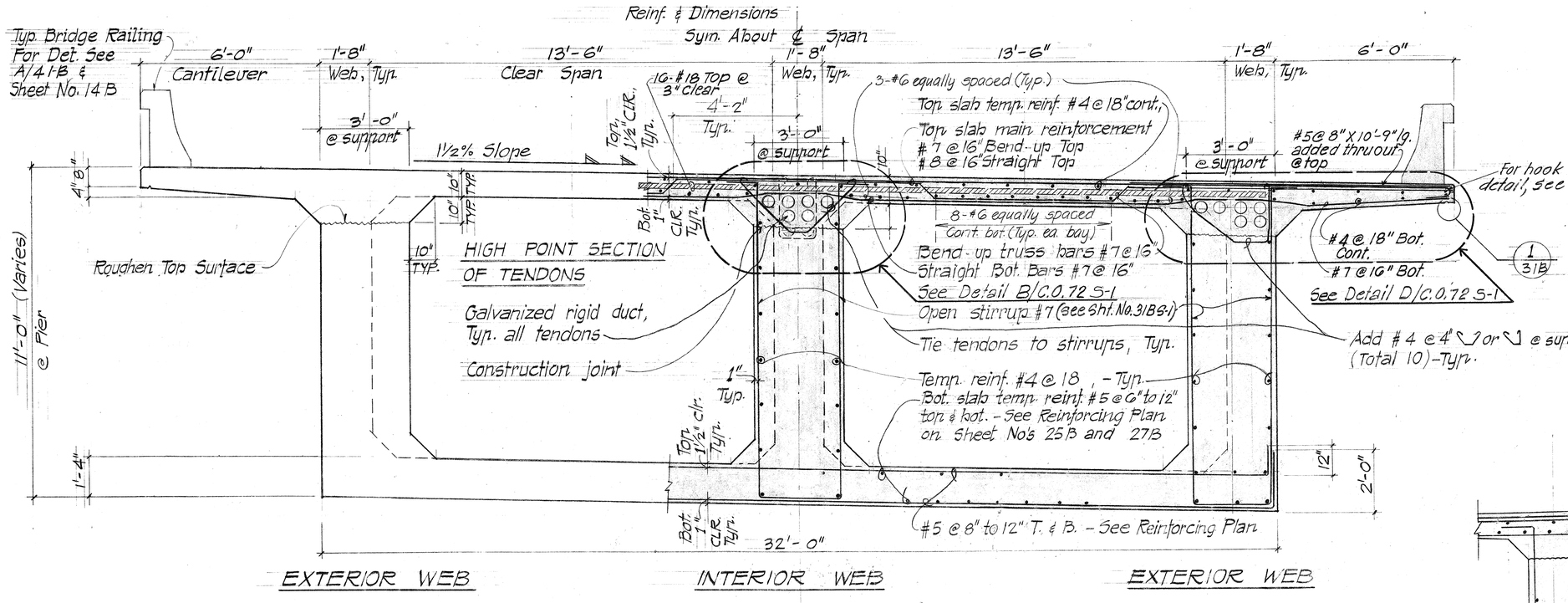
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKAKALAUA STREAM BRIDGE
BOX-GIRDER NO. 3.
CONSTRUCTION CONTROL
INTERSTATE ROUTE H-2
FAI PROJECT NO. I-H2-1(10):6
Scale: As noted June 1973
SHEET NO. 30 OF 43 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	72	104

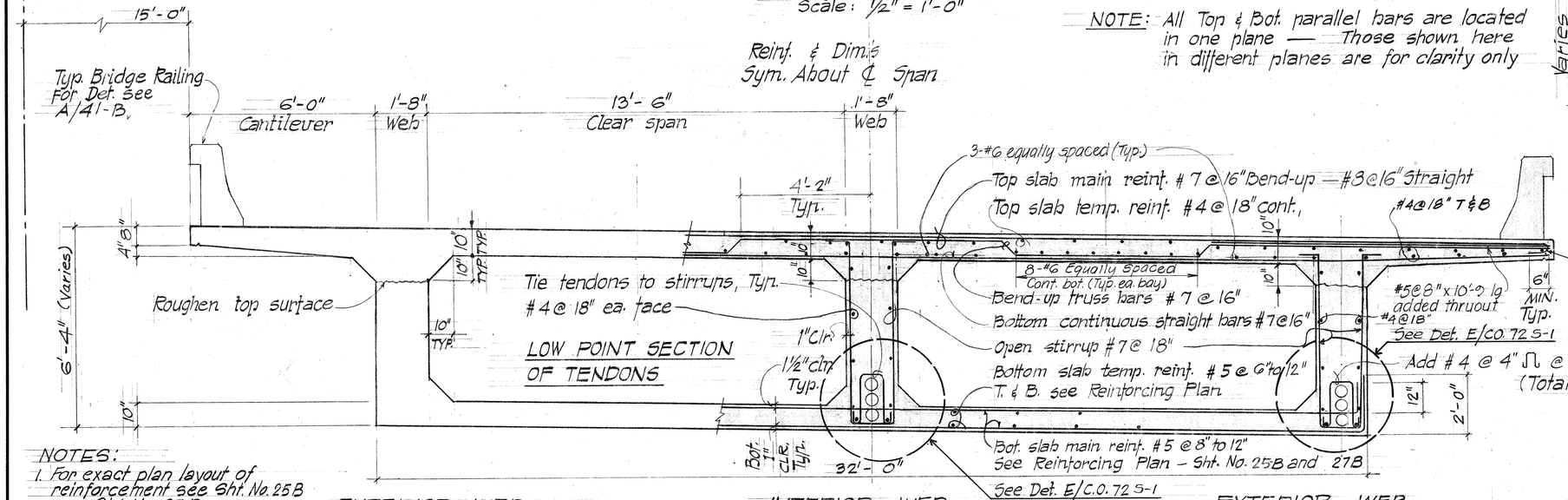
DATE	REVISION
6-20-74	Top slab reinforcement changed
7-18-74	Cable locations rearranged, web-thickness increased @ support
12/6/74	This sheet re-designated for Box Girder #1 & #3 only



TYPICAL NORMAL BOX-GIRDER #1 SECTION @ PIER (BOX GIRDER #3 SIMILAR)

Scale: ½" = 1'-0"

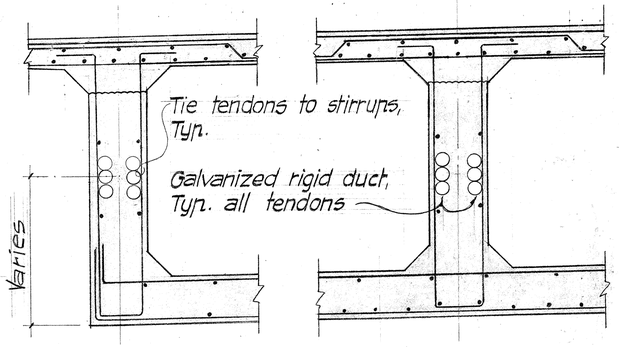
NOTE: All Top & Bot. parallel bars are located in one plane — Those shown here in different planes are for clarity only



TYPICAL NORMAL BOX GIRDER #1 SECTION @ LOW POINT

Scale: ½" = 1'-0" BOX GIRDER #3 SIMILAR

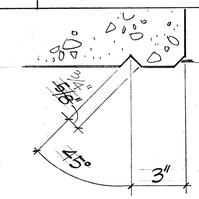
NOTES:
1. For exact plan layout of reinforcement see Sht. No. 25B and Sht. No. 27B
2. For tendon profile data see Sht. No. 35B
3. See Dets. A/43B, B/43B & C/43B
4. See new added Sht. No. 31B8-1 (C.O. 72-S-1)



EXTERIOR WEB INTERIOR WEB

INTERMEDIATE POINT SECTION OF TENDONS

Scale: ½" = 1'-0"



1/31-B DETAIL
Scale: 3" = 1'-0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

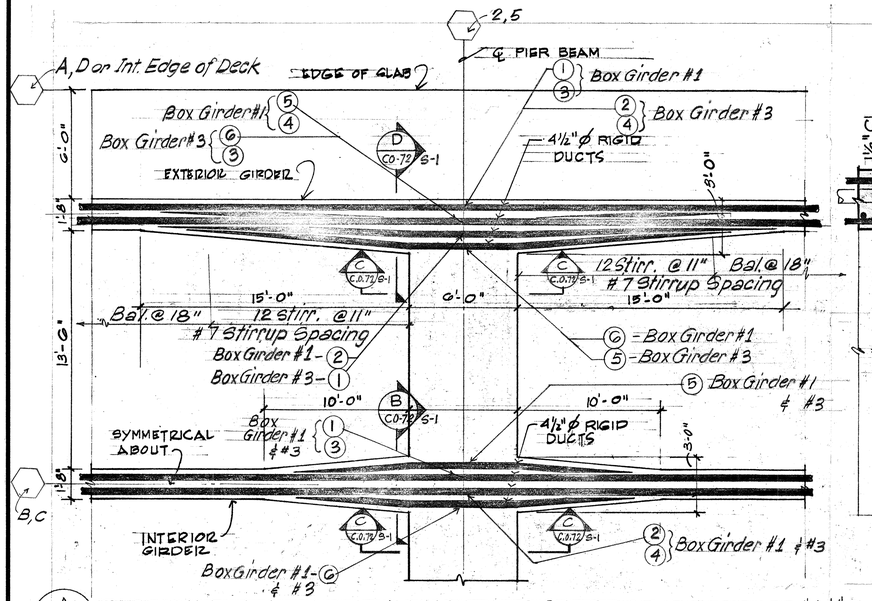
WAIKAKALAUA STREAM BRIDGE
TYP. NORMAL CONC. BOX GIRDER #1 & 3 & STANDARD DETAILS
INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10)6
Scale: as noted June 1973
SHEET No. 31B OF 43B SHEETS

C.O. 72

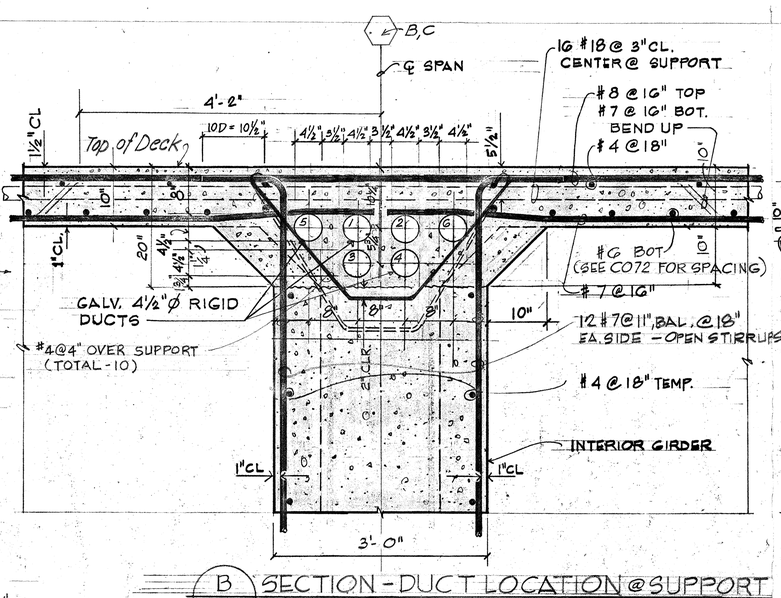
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.

PRINTED ON NO. 1000H CLEARPRINT

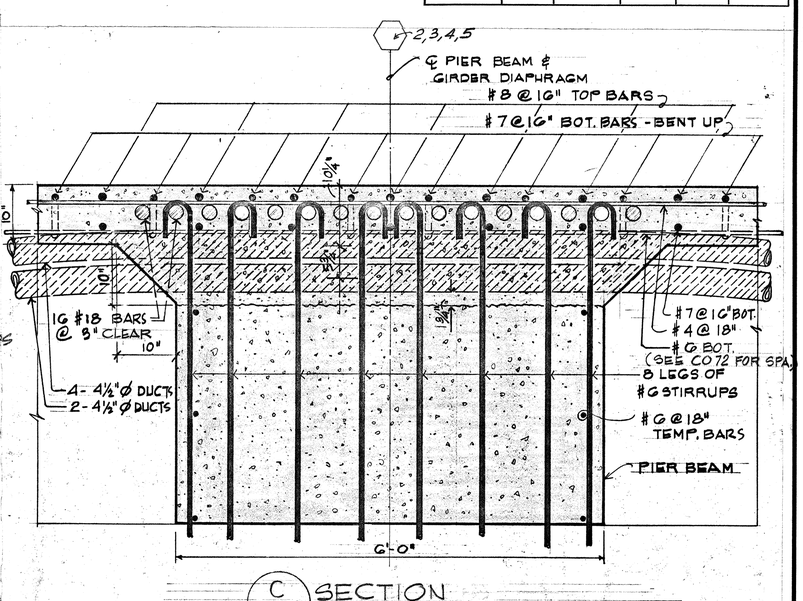
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	CO72S-1	104



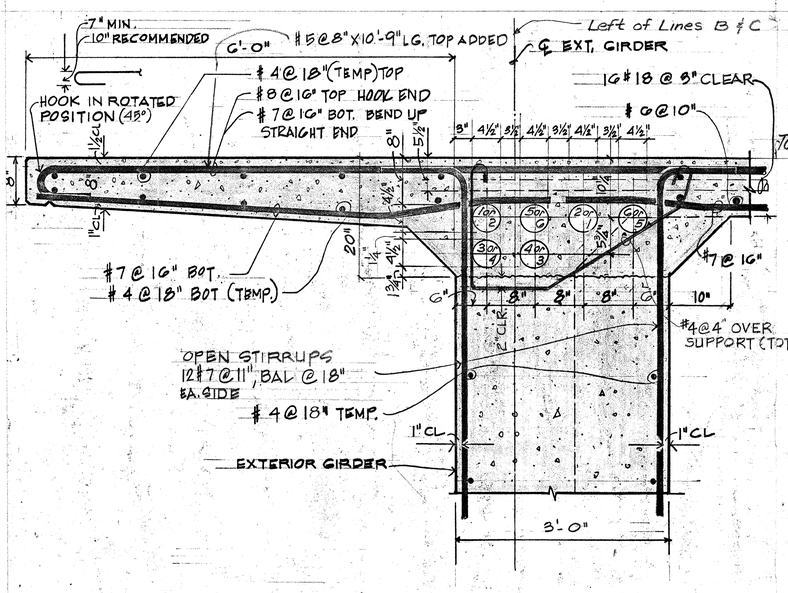
A CO.72.S-1 PARTIAL PLAN - CABLE LAYOUT AT SUPPORT - BOX GIRDER #1 ℄ #3
SCALE 1/4" = 1'-0"



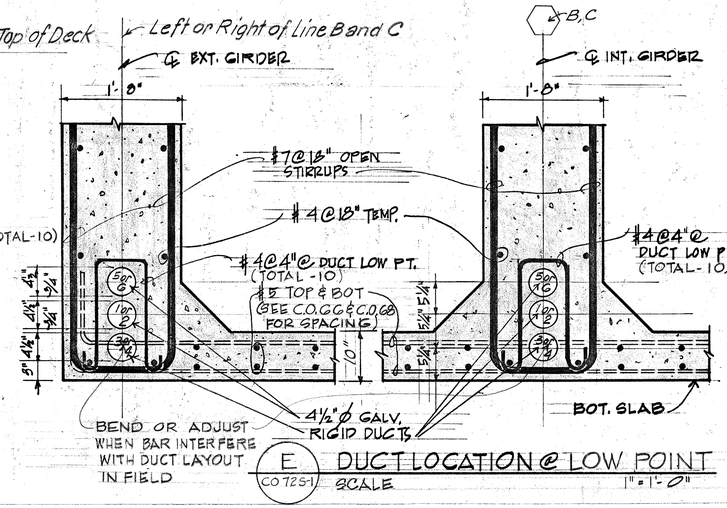
B CO.72S-1 SECTION - DUCT LOCATION @ SUPPORT OF INTERIOR GIRDER SCALE 1" = 1'-0"



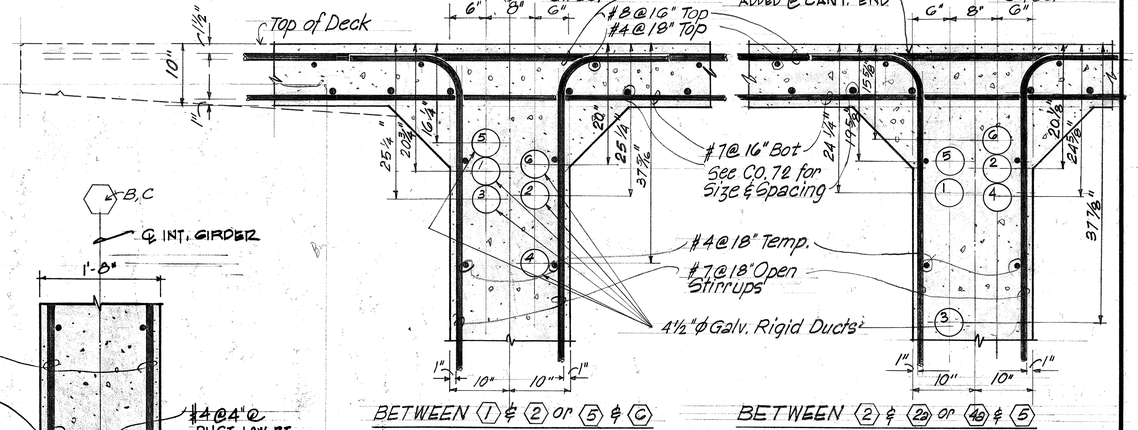
C CO.72S-1 SECTION
SCALE 1" = 1'-0"



D CO.72S-1 SECTION - DUCT LOCATION @ SUPPORT OF EXTERIOR GIRDER SCALE 1" = 1'-0"



E CO.72S-1 DUCT LOCATION @ LOW POINT
SCALE 1" = 1'-0"



BETWEEN ① & ② or ⑤ & ⑥ BETWEEN ② & ②a or ④b & ⑤

F CO.72S-1 SECTION - CABLE LOCATION @ INFLECTION POINT OF EXT. OR INT. GIRDER SCALE 1" = 1'-0"

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C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

DATE	REVISION
12/6/74	This sheet re-designed for Box Girder #1 ℄ #3 only
7/18/74	New Added Sheet - Rearrangement of Cables

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

DETAILS OF RIGID DUCTS IN GIRDERS #1 and #3 (AT SUPPORT, INFLECTION PT. & LOW PT.)

INTERSTATE ROUTE H-2

FAI PROJ. NO I-H2-1(10):6

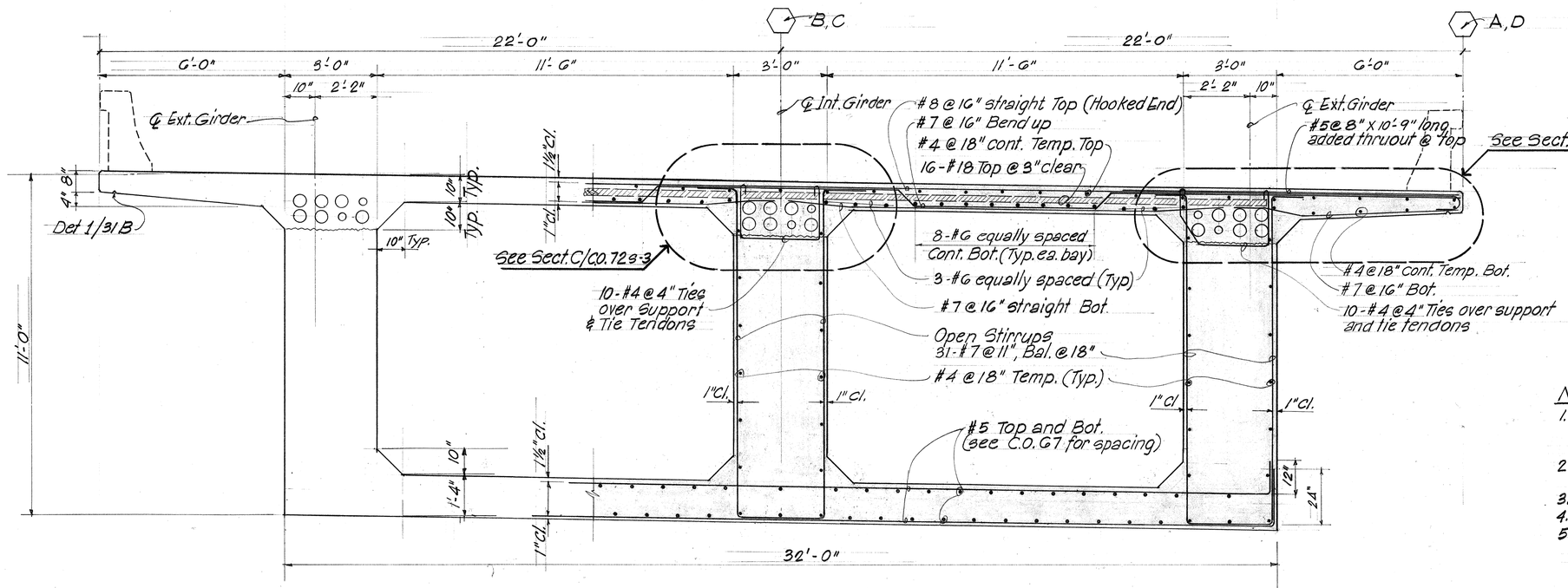
Scale: As noted

SHEET NO. 3/8 S-1 OF 488 SHEETS

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

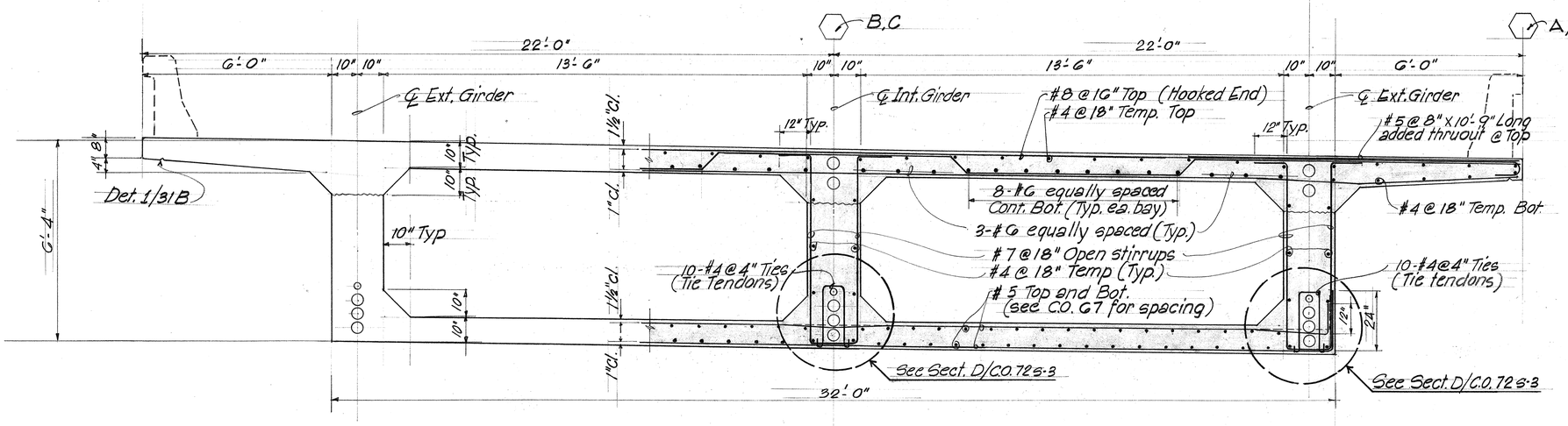
C.O. 72 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):G	1973	C0728-2	104



TYPICAL NORMAL BOX-GIRDER #2 SECTION @ PIER
Scale ½" = 1'-0"

NOTE:
1. All Top and Bot. parallel bars are located in one plane. Those shown in different planes are for clarity only.
2. For exact plan layout of reinforcing see Sht. No. 26B
3. For tendon profile data see Sht. No. 35B
4. See Dets. A/43B, B/43B & C/43B
5. See Sht No. 31B & 3 (C.O. 728-3) for more detailed drawings.



TYPICAL NORMAL BOX-GIRDER #2 SECTION @ LOW POINT
Scale ½" = 1'-0"

DATE	REVISION
12/6/74	New added sheet - Typical Normal Box Girder #2 sections

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TYP. NORMAL CONC. BOX GIRDER #2

INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):G
Scale; ½" = 1'-0"

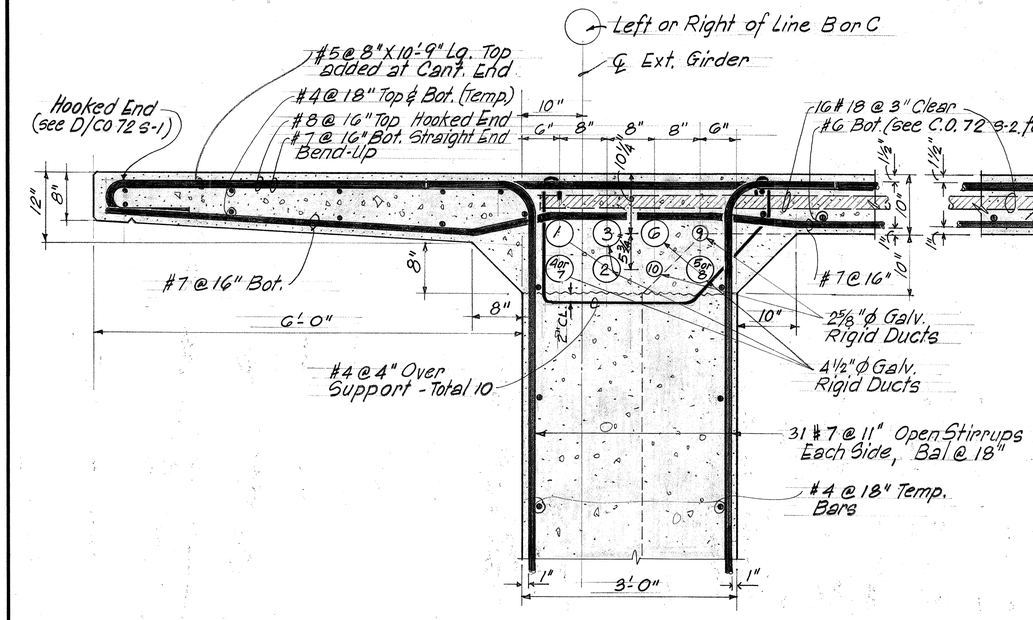
SHEET No. 31B/3-2 OF SHEETS

C.O. 728-2

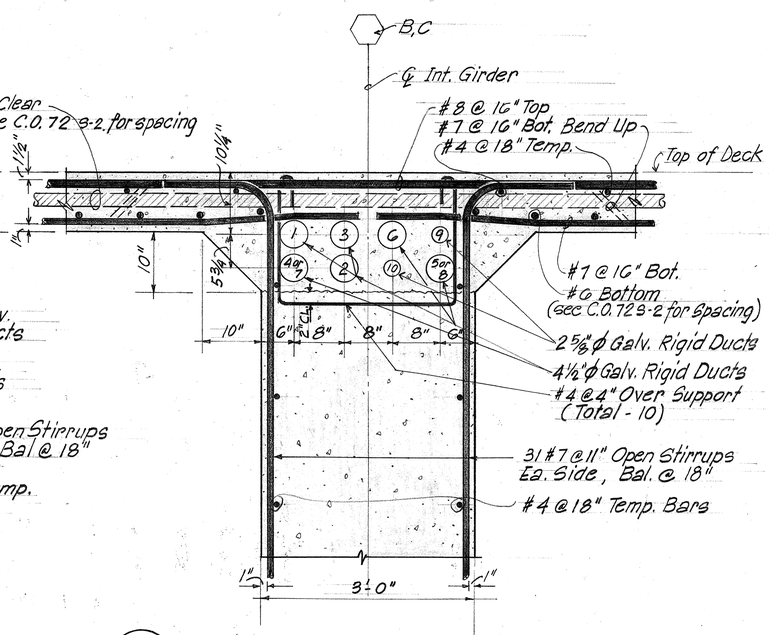
ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY	"
	TRACED BY	"
	DESIGNED BY	"
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY	

K+E TRACING PAPER

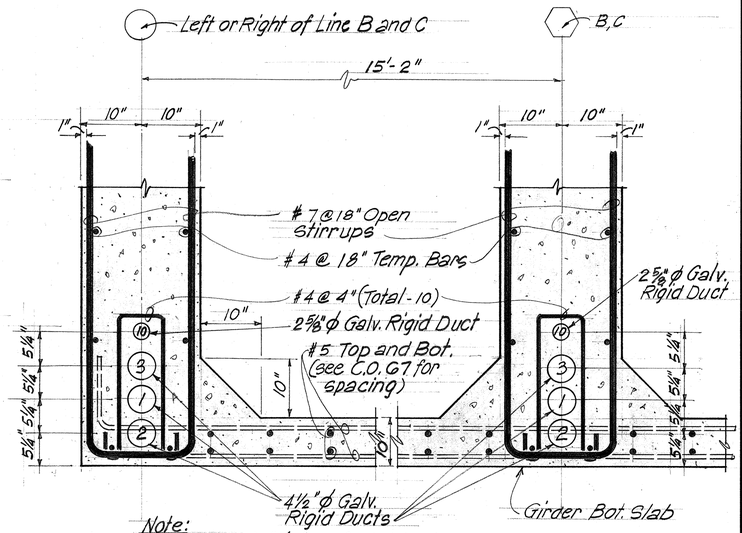
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	CO-72 S-3	104



B CO-72 S-3 SECTION - DUCT LOCATION @ SUPPORT OF EXT. GIRDER SCALE 1" = 1'-0"

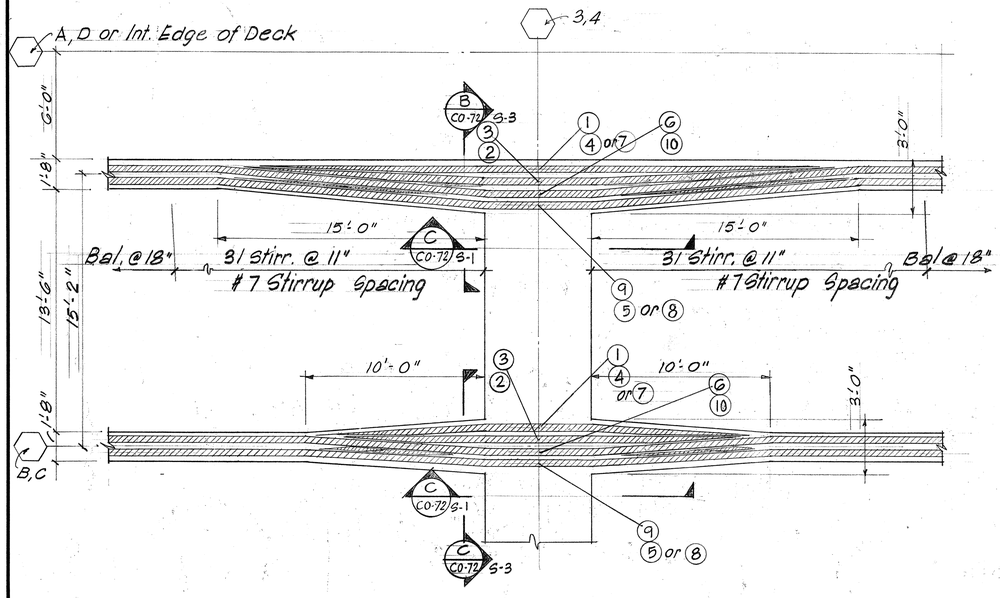


C CO-72 S-3 SECTION - DUCT LOCATION @ SUPPORT OF INTERIOR GIRDER SCALE 1" = 1'-0"

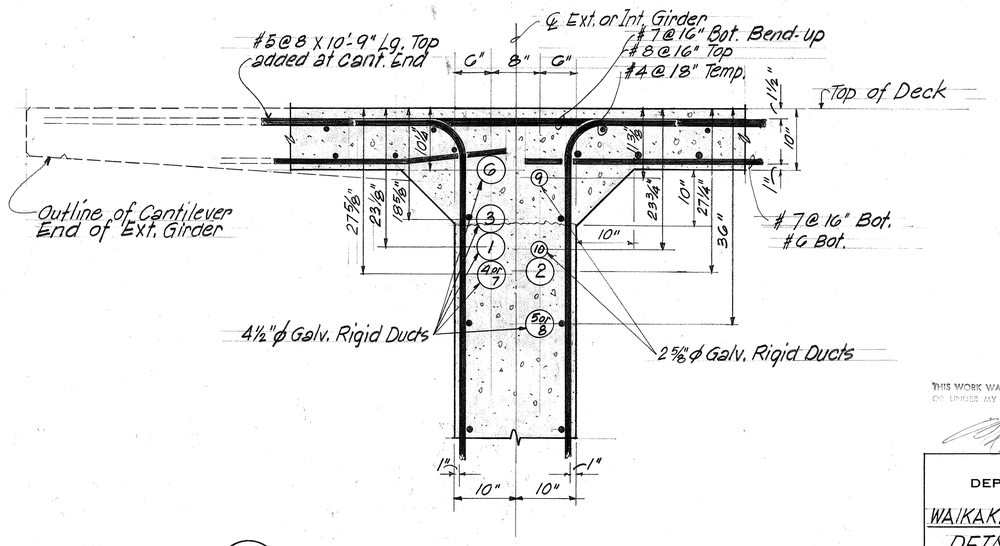


Note:
1. For more reinf. info. refer to Sht. No. 2G B.
2. Bend or adjust when reinf. bars interfere with duct layout in field.

D CO-72 S-3 SECTION - DUCT LOCATION @ LOW POINT OF INTERIOR AND EXTERIOR GIRDER SCALE 1" = 1'-0"



A CO-72 S-3 PARTIAL PLAN - CABLE LAYOUT for BOX GIRDER #2 @ SUPPORT SCALE 1" = 1'-0"



E CO-72 S-3 SECTION - CABLE LOCATION @ INFLECTION POINT OF EXT. OR INT. GIRDER SCALE 1" = 1'-0"

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

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C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

DETAIL OF RIGID DUCTS IN GIRDER #2 (AT SUPPORT, LOW PT. AND INFLECTION POINT)

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO I-H2-1(10):6

Scale: As Noted

SHEET No. 31B S-3 OF 438 SHEETS

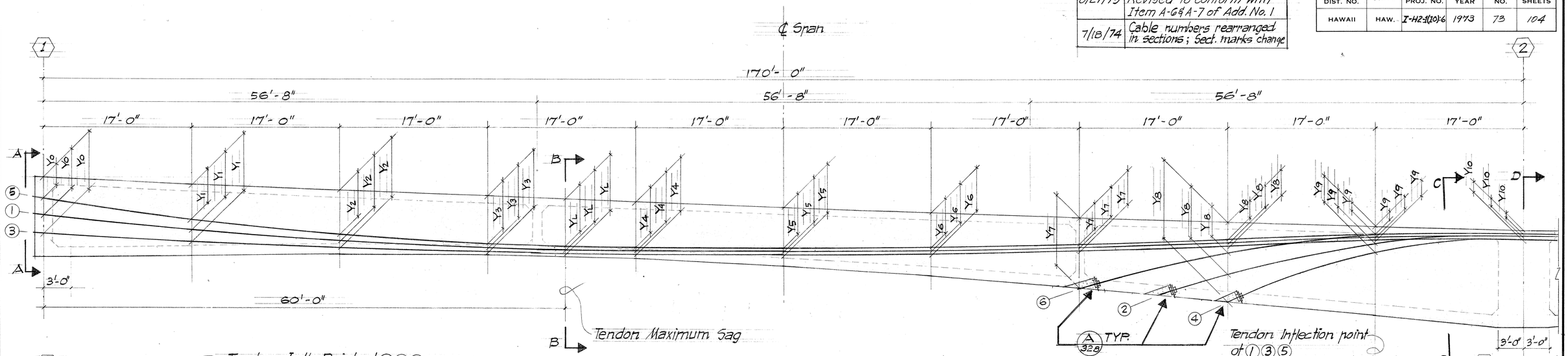
DATE	REVISION
12/6/74	New Added Sheet - Cable Arrangement @ B.G. #2

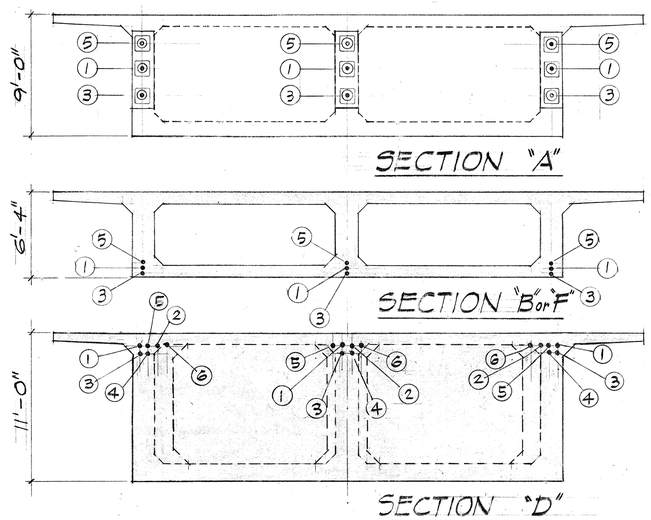
C.O. 72 S-3

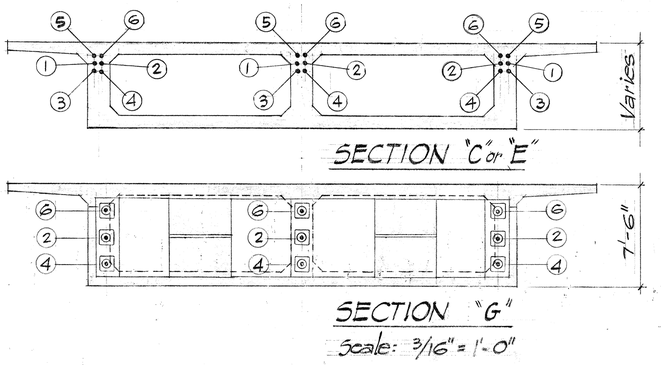
PRINTED ON NO. 1000H CLEARPRINT

DATE	REVISION
8/21/73	Revised to conform with Item A-6 & A-7 of Add. No. 1
7/18/74	Cable numbers rearranged in sections; Sect. marks change

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)-6	1973	73	104





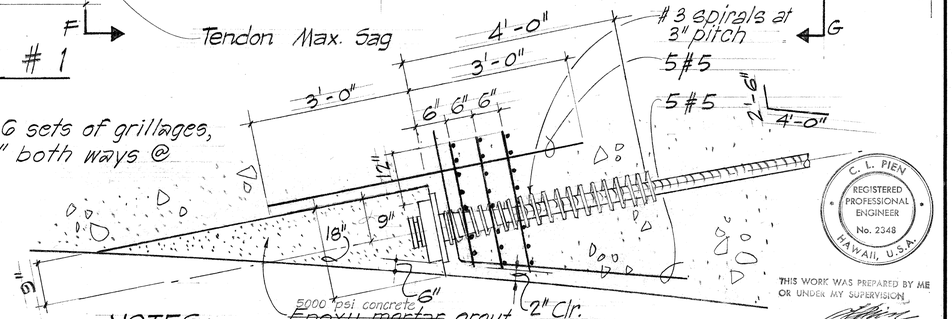


CABLE PROFILE DIAGRAMS # 1

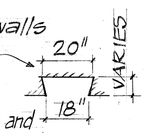
Scale: 3/16" = 1'-0"

NOTE:
For profile dimensions see Sheet No. 35-B

Install 6 sets of grillages, #4 @ 4" both ways @ 6" o.c.



NOTES:
1. Pockets are 18" wide – Taper side walls by 1" @ top
2. ~~Grout pockets w/ epoxy mortar~~ Apply epoxy adhesive & fill with 5,000 psi concrete.
3. Pocket forms should be bolted to end anchor and not attached to main forms until final location of tendons



A 32B TYP. SOFFIT CABLE ANCHOR POCKET
Scale: 3/4" = 1'-0"

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKAKALAUA STREAM BRIDGE
CABLE PROFILE DIAGRAMS # 1 & SECTIONS
INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale: 3/16"=1'-0" June 1973

SHEET No. 32B OF 43B SHEETS

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

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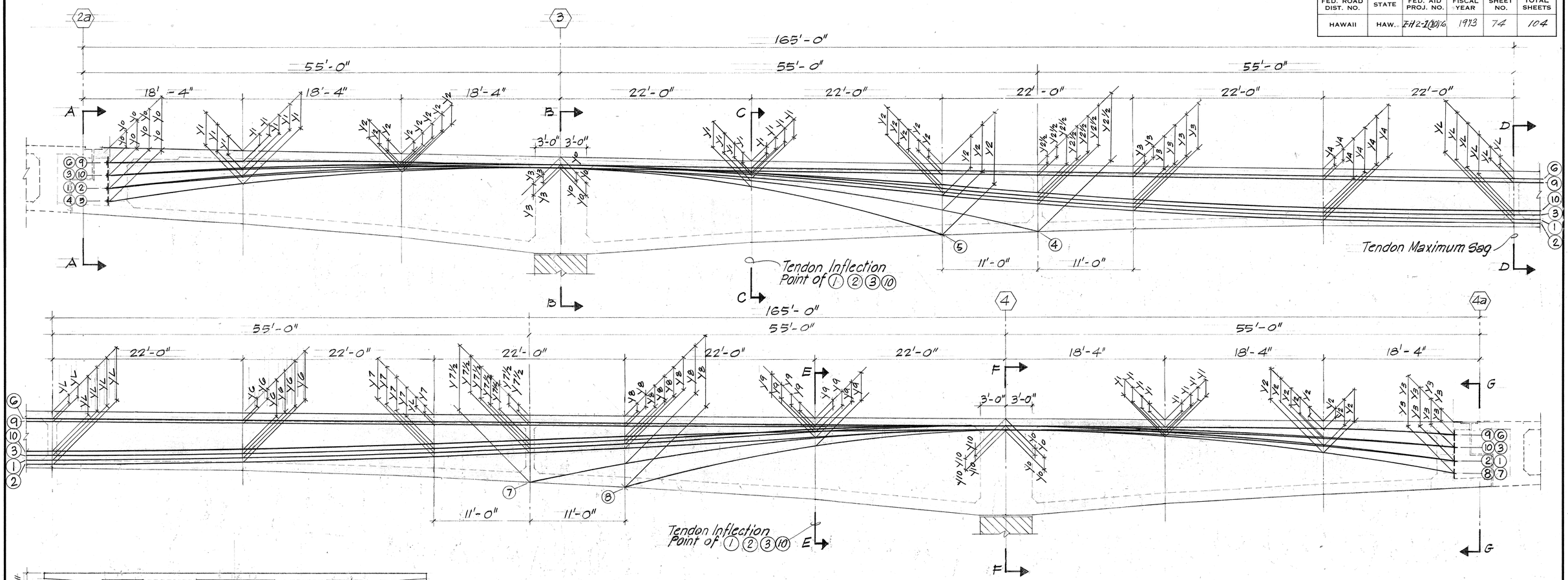
C.O. 73R

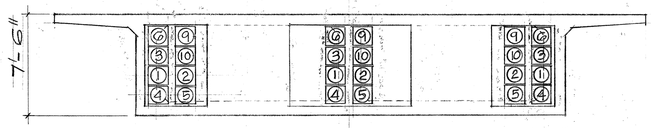
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	74	104



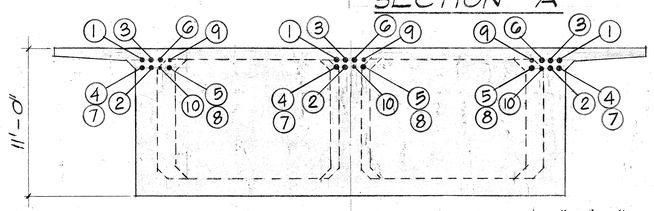
CABLE PROFILE DIAGRAMS #2

Scale: 3/16" = 1'-0"

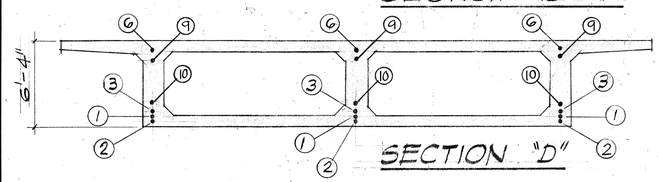
NOTE :
For profile dimensions see Sht. No. 35-B



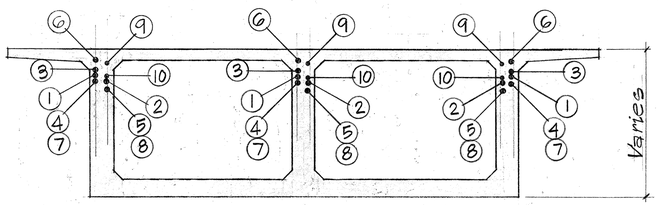
SECTION "A"



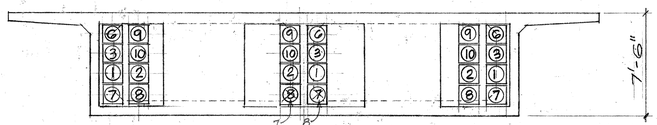
SECTION "B" or "F"



SECTION "D"



SECTION "C" or "E"



SECTION "G"

Scale: 3/16" = 1'-0"

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
CABLE PROFILE DIAGRAMS #2 & SECTIONS
INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):G
Scale: 3/16" = 1'-0" June 1973

SHEET No. 33 B OF 43 B SHEETS

DATE	REVISION
12/6/74	Cables No. 9 and 10 added; Cable layout rearranged in profile and section drawings.
7/18/74	Cable numbers rearranged in sections, section marks changed

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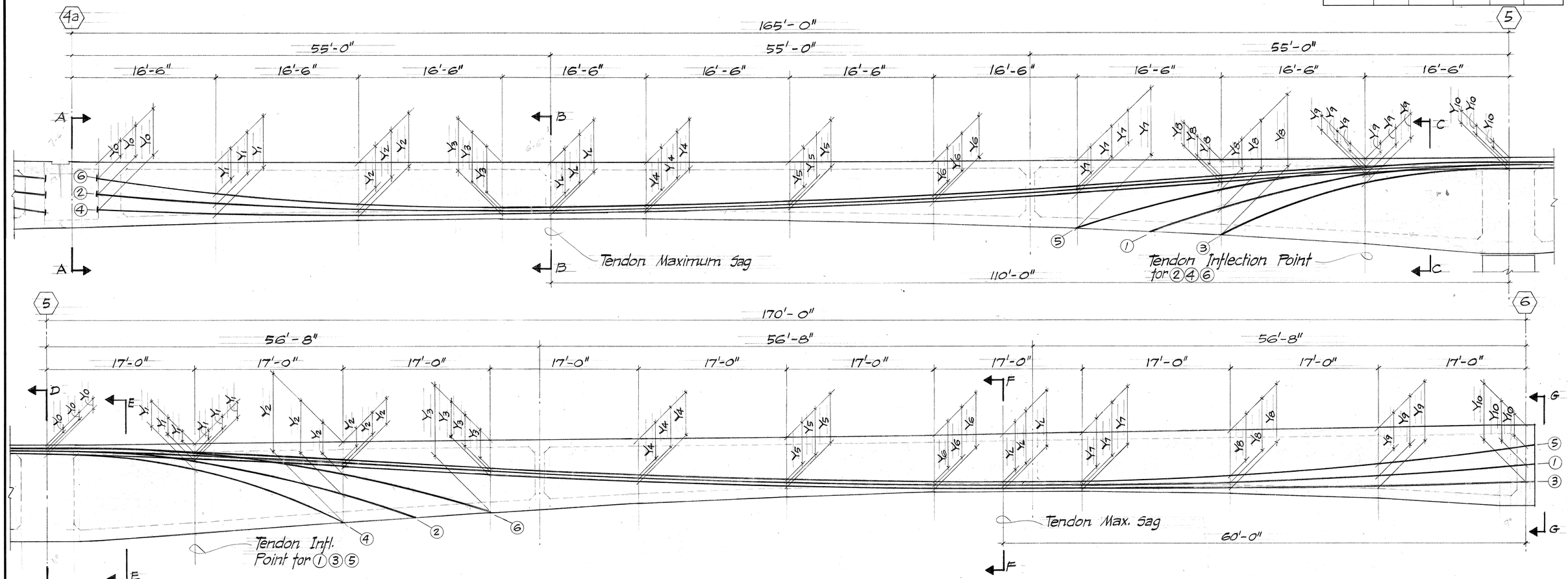
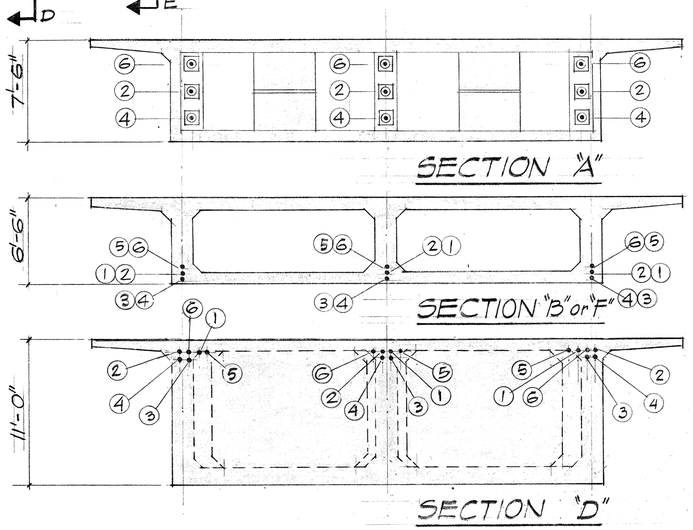
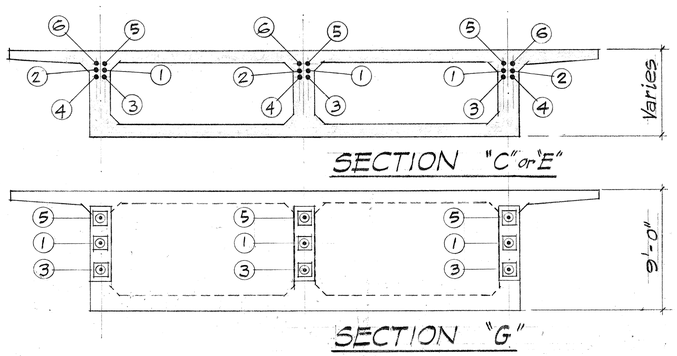
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	75	104







CABLE PROFILE DIAGRAMS # 3

Scale: 3/16" = 1'-0"

NOTE:
For profile dimensions see Sht. No. 35B

DATE	REVISION
7/18/74	Cable numbers rearranged in sections, section marks changed.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
CABLE PROFILE DIAGRAMS #3
& SECTION
INTERSTATE ROUTE H-2
FAI. PROJ. NO. I-H2-1(10):6
Scale: 3/16" = 1'-0" June 1973

SHEET No. 34A OF 43B SHEETS

C.O. 75

ORIGINAL PLAN
SURVEY PLOTTED BY
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QUANTITIES BY
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No.

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PRESTRESSING CONTROL SCHEDULE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)G	1973	76	104

GIRDER DESIGNATION		① - ②						② - ②a						②a - ③								③ - ④										④ - ④a								④a - ⑤						⑤ - ⑥					
GIRDER LENGTH IN FEET (SPAN)		170						165						55								220										55								165						170					
CABLE DESIGNATION		①	②	③	④	⑤	⑥	①	②	③	④	⑤	⑥	①	②	③	④	⑤	⑥	⑨	⑩	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	①	②	③	⑦	⑧	⑥	⑨	⑩	①	②	③	④	⑤	⑥	①	②	③	④	⑤	⑥
Quantity of ½"Ø 270 k strands per cable		←						31	→					←					→	3	13	←					→	3	13	←					→	3	13	←							→					
Anchor ℄ distance from left support-or cantilever end-	in ft.	0	127.5	0	136	0	119	41.25	165	33	165	49.5	165	0	0	0	0	0	0	0	0	—	—	—	55	44	—	165	176	—	—	55	55	55	55	55	55	55	55	123.75	0	132	0	115.5	0	170	42.5	170	34	170	51
Maximum sag distance from left support - in feet		60	—	60	—	60	—	—	110	—	110	—	110	—	—	—	—	—	—	—	—	110	110	110	—	—	—	—	—	110	110	—	—	—	—	—	—	—	—	—	55	—	55	—	55	110	—	110	—	110	—
Inflection point distance from left support in feet		153	—	153	—	153	—	—	16.5	—	16.5	—	16.5	—	—	—	—	—	—	—	—	22/198	22/198	22/198	—	—	—	—	—	—	22/198	—	—	—	—	—	—	—	—	—	148.5	—	148.5	—	148.5	17	—	17	—	17	—
	y_0	50		74		26		10.25	10.25	16.0	16.0	10.25	10.25	54.0	54.0	36.0	72.0	72.0	18.0	18.0	36.0	10.25	16.0	10.25	16.0	16.0	10.25			10.25	16.0	10.25	16.0	16.0	10.25	10.25	16.0		44.64		70.9		13.10	10.25	10.25	16.0	16.0	10.25	10.25
	y_1								20.16		24.66		15.66									23.09	27.0	18.59						11.4	23.76															20.79		25.29		16.29	
	y_2							98		103.5															89.5	96.12																				103.5		103.25			
	y_3											32.87		10.25	16.00	10.25	16.0	16.0	10.25	10.25	16.0											54.0	54.0	36.0	72.0	72.0	18.0	18.0	36.0													97.5
Profile elevation of cables	y_4																																																
from top of deck in inches	y_L	68.25	—	73.5	—	63.0	—	—	65.5	—	70.75	—	60.25									65.5	70.75	60.25						16.0	55.0										65.5		70.75		60.25	68.25	—	73.5	—	63.0	—
at 1/10th points of span & @ sag (y_L)	y_5																																															
	y_6																																															
	y_7						97.5																				89.5															92.87								
	y_8		103.5		109.25																						96.12													98		103.5								
	y_9	20.79		25.29		16.29																23.09	27.0	18.59						11.4	23.76										20.16		24.66		15.66						
	y_{10}	10.25	10.25	16.0	16.0	10.25	10.25		44.64		70.9		19.10									10.25	16.0	10.25			10.25	16.0	16.0	10.25	16.0										10.25	10.25	16.0	16.0	10.25	10.25	50		74		26	
Jack to total force at left end then at right end, ea. cable - Kips		←						960.3	→					←					→	92.9	402.7	—	—	—	←	960.3	→					←					→	960.3	92.9	402.7	—	—	—	—	—	—	—	—	—	—	—	—
Jack to total force at right end then at left end, ea. cable - Kips		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	←	960.3	→					←					→	960.3											
Slack to total force at left end then at right end, ea. cable - Kips		←						896.3	→					←					→	86.7	375.9	—	—	—	←	896.3	→					←					→	896.3	86.7	375.9	—	—	—	—	—	—	—	—	—	—	—	—
Slack to total force at right end then at left end, ea cable - Kips		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	←	896.3	→					←					→	896.3											
Set anchor in above sequence, ea cable - inches		←						0.625	→					←					→	—	—	—	—	—	←	0.625	→	←	0.625	→	—	—	←					→	0.625											
Effective prestress at supports & hinges (after all losses) Kips		6070						12165				5907		12760						13050										13050								12760	5907					12165					6070

NOTES:

1. Prestressing cables shall conform to ASTM A-416.
2. Numbers in circles identify the cables and the required sequence of jacking. Cables with the same sequence number shall be jacked simultaneously from both ends.
3. For cable profile diagram see Sht. Nos. 32B, 33B and 34B.
4. The bearing area of anchor plates shall be at least 235 sq. inches for cable consisting of 31-½"Ø K strands.
5. Stressing Procedure:
   a. Stress all cables from both ends in the required sequence to .75 f's.
   b. Slack to .70 f's.
   c. Anchor set both ends 5/8".
6. All forces are in thousands of pounds/cable.
7. Prestressing loss = 35.0 ksi

POST-TENSIONING NOTES:

1. The minimum clear spacing of post-tensioning ducts at end of beams shall be 1½" or 1½ times the minimum size of the aggregate, whichever is greater.
2. When post-tensioning steel is draped or deflected, post-tensioning ducts may be bundled in groups of three maximum, provided that the spacing specified in Note #1 is maintained in the end three feet of the member.
3. Tendons are placed in rigid metal ducts after bridge concrete placement is completed.
4. Ducts shall be placed to the trajectory as shown in the drawings.
5. Ducts shall be securely tied at 5 ft., plus centers to the vertical stirrups to prevent displacement during concreting.
6. Bearing plates must be placed tight against forms. Centerline of tendons are to be normal to plates. Form shall be braced and anchored to support the weight of the bearing plates.
7. Reinforcing steel shall be adjusted or relocated during the installation of prestressing ducts, as required, to provide planned clearances to the prestressing tendons, anchorages, jacks and equipments.
8. During stressing no persons shall be directly behind either end of tendons.
9. All works shall conform to Standard Specifications and Special Provisions.

DATE	REVISION
12/6/74	Prestressing Control Schedule revised and Cable 9 and 10 added.
7/18/74	Post-tensioning Note No. 8 deleted & P.T. Notes No. rearranged; Revised Prestressing Control Schedule
8/27/73	Revised to conform with Item A-8 of Add. No. 1

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
PRESTRESSING CONTROL SCHED.

INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10); G

June 1973

SHEET No. 35B OF 498 SHEETS

C.O 76R

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
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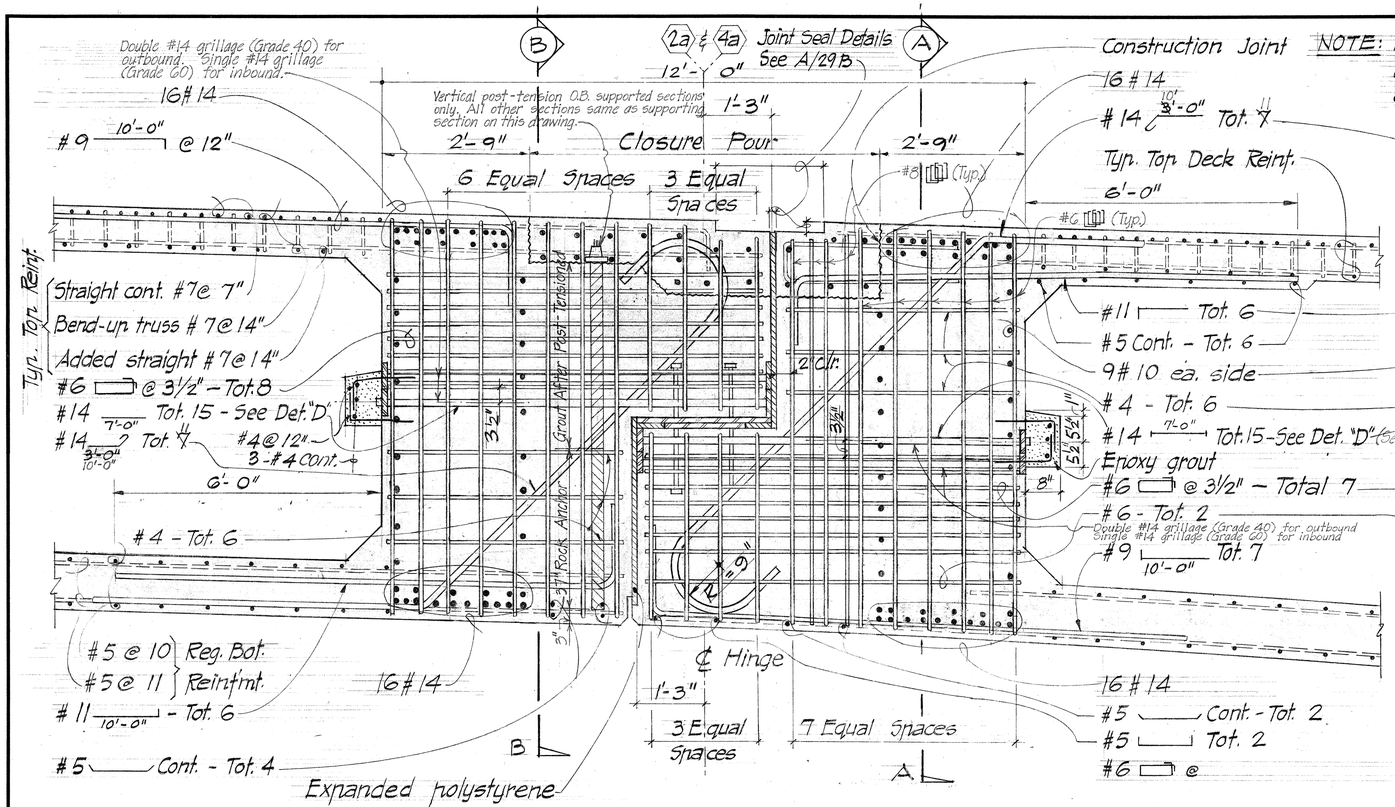
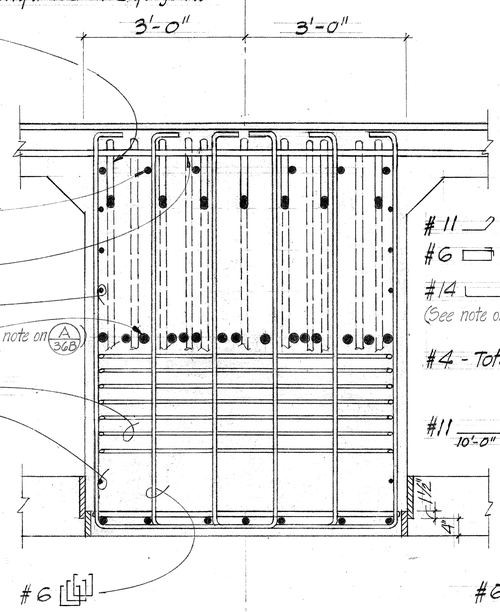
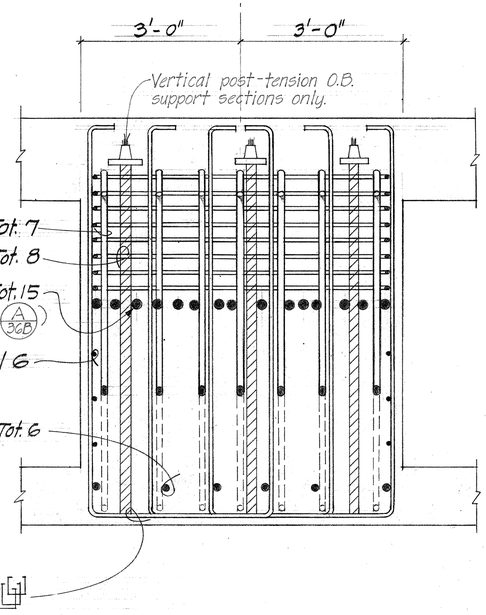
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IH2-1(10):6	1973	77	104



NOTE: Pour closure pour last after all tensioning completed at exp. joint

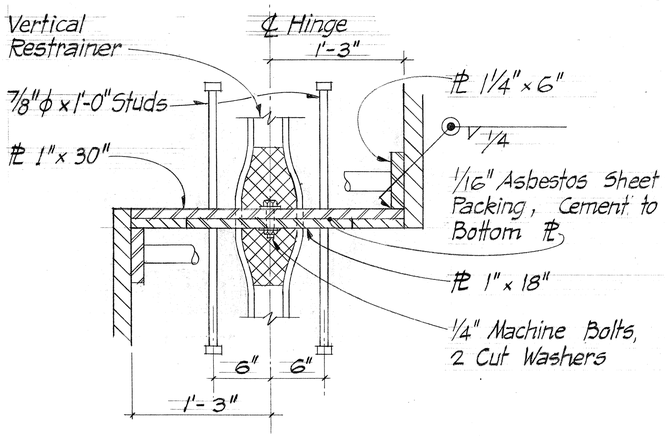


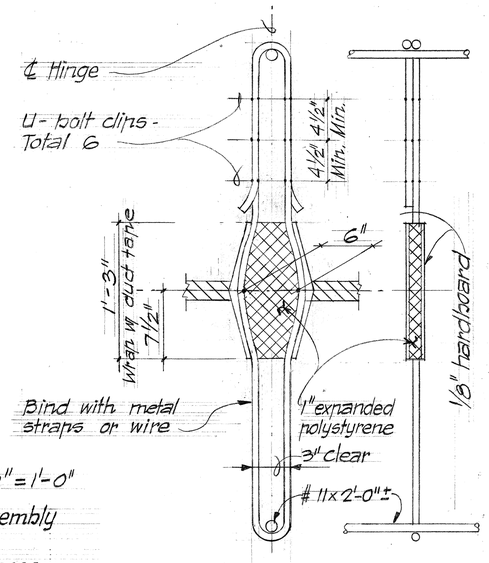


SECTION A-A — Scale: 3/4"=1'-0" — SECTION B-B

(A 36-B) TYP. BOLSTER REINFORCEMENT DET. @ EXPANSION JOINT

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





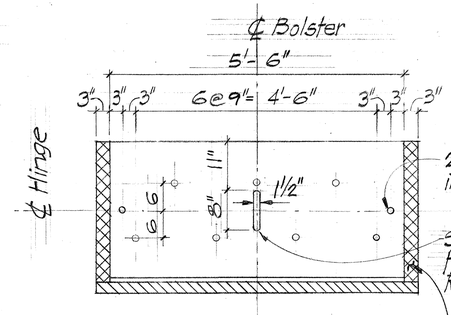
SECTION THRU EXPANSION ASSEMBLY Scale: 1½" = 1'-0"

VERTICAL RESTRAINER

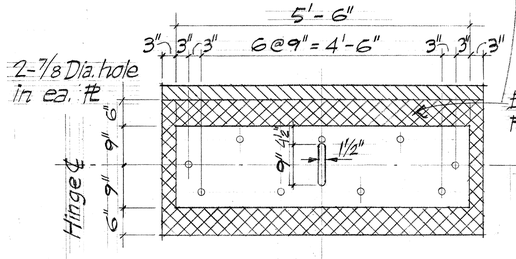
Scale: 1½" = 1'-0"

NOTE: Remove sharp corners and burrs from plates. Galvanize hinge assembly after fabrication.

To provide for free movement of the completed hinge, abutting surfaces shall be separated w/ expanded polystyrene. Caulk & tape the joints between steel plates and all remaining openings to prevent grout or concrete seepage between abutting surfaces of hinge.

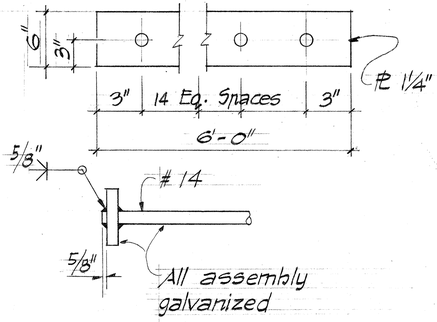


TOP BEARING PLATE



BOT. BEARING PLATE

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



DETAIL "D"

Scale: 1½" = 1'-0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

EXPANSION JOINT DET'S NO 1.

INTERSTATE ROUTE H-2
FAI. PROJ. NO. I-H2-1(10):6
Scale: 3/16" = 1'-0" June 1973

SHEET NO. 36 B OF 43 B SHEETS

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

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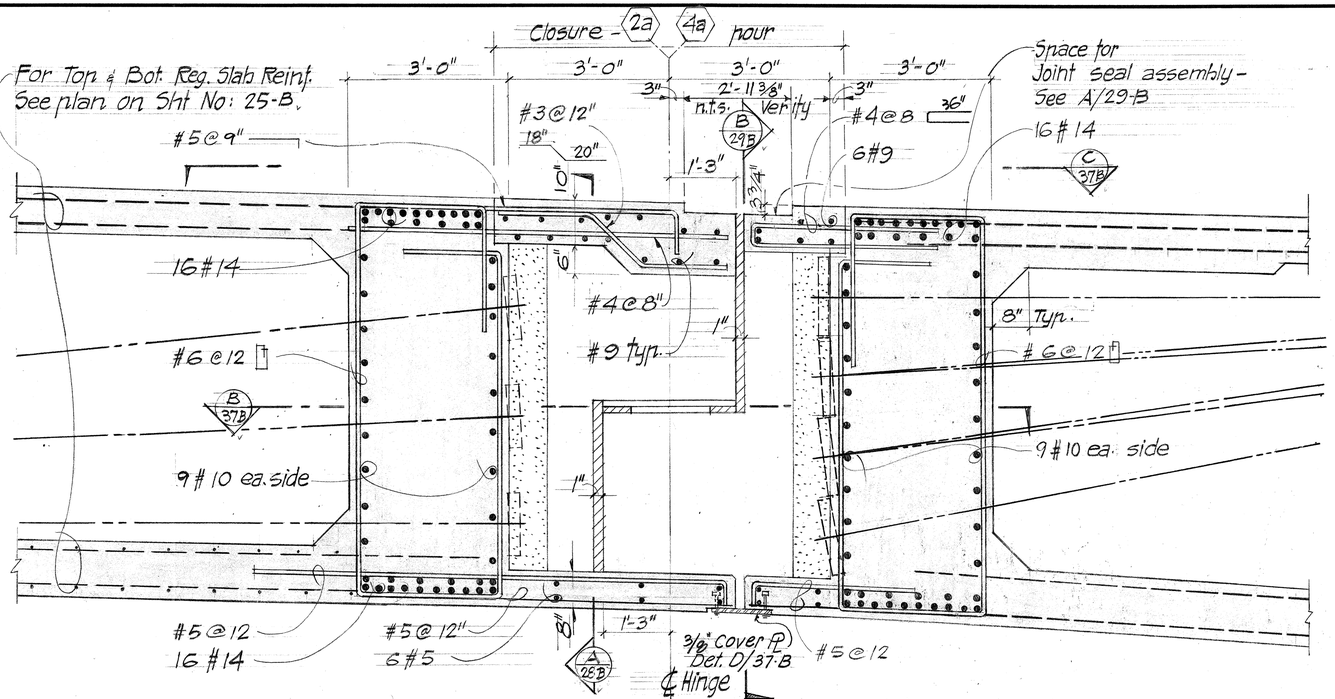
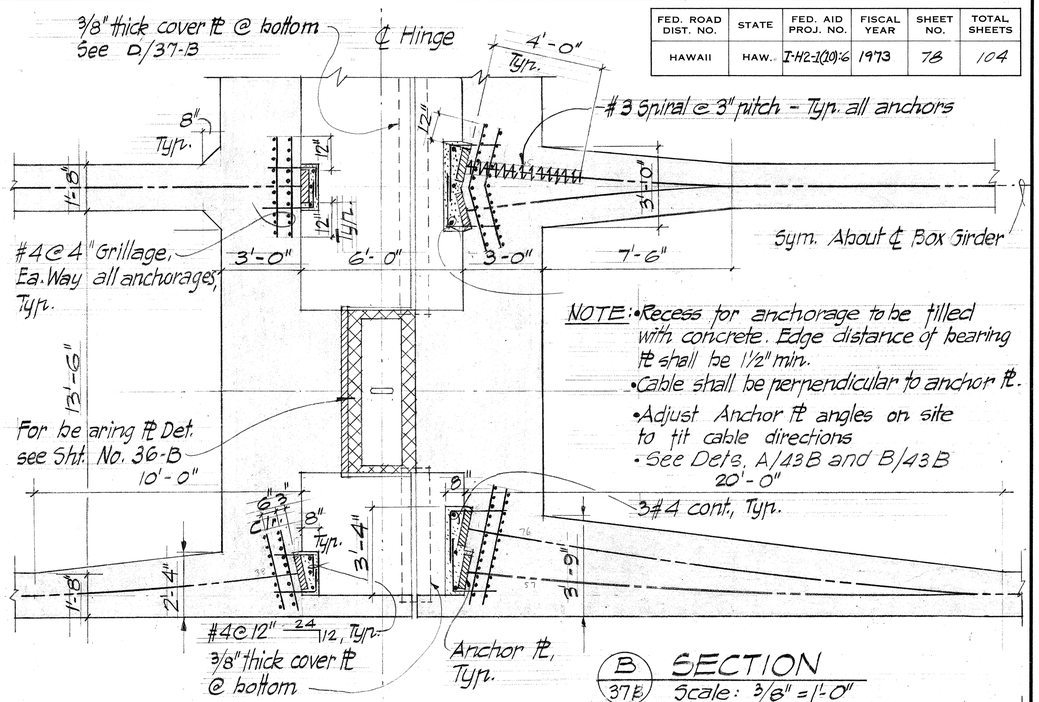
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	78	104



A 37-B TYP. EXPANSION JOINT SECTION

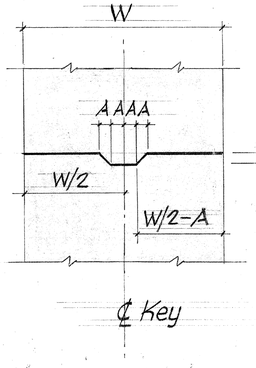
Scale: 3/4" = 1'-0"



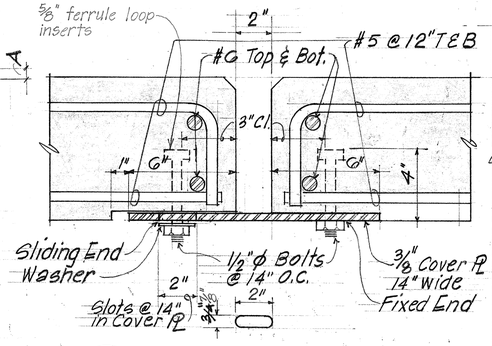
B 37B SECTION

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

W	A
8" to 12"	1"
13" to 17"	1½"
18" to 22"	2"
23" to 35"	3"
36" to 47"	4"
48" to 59"	6"
Above 60"	8"



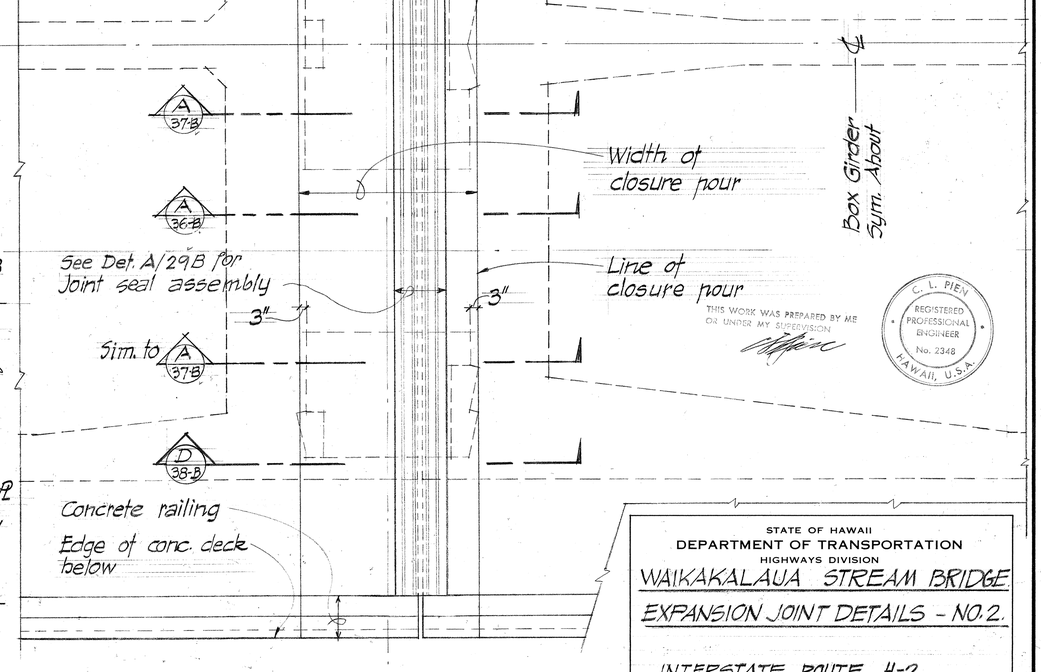
Note for Typical Section (B 37B): "Install 5 sets of grillages (#4 @ 4" both ways @ 6" o.c.) in lieu of 2 sets shown."



D 37-B COVER PL CONN. DETAIL

Scale 3" = 1'-0"

TYPICAL CONSTRUCTION KEY DETAIL for Slabs, Girders, Columns and Walls Except Otherwise Noted



C 37-B PLAN VIEW @ EXPANSION JOINT

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

DATE	REVISION
12/6/74	Det. D/37-B added Sect. A/37B - Cables layout rearranged
8/21/73	Revised to conform with Item A-9 of Add. No. 1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

EXPANSION JOINT DETAILS - NO. 2.

INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale as noted June 1973

SHEET No. 37B OF 43 B SHEETS

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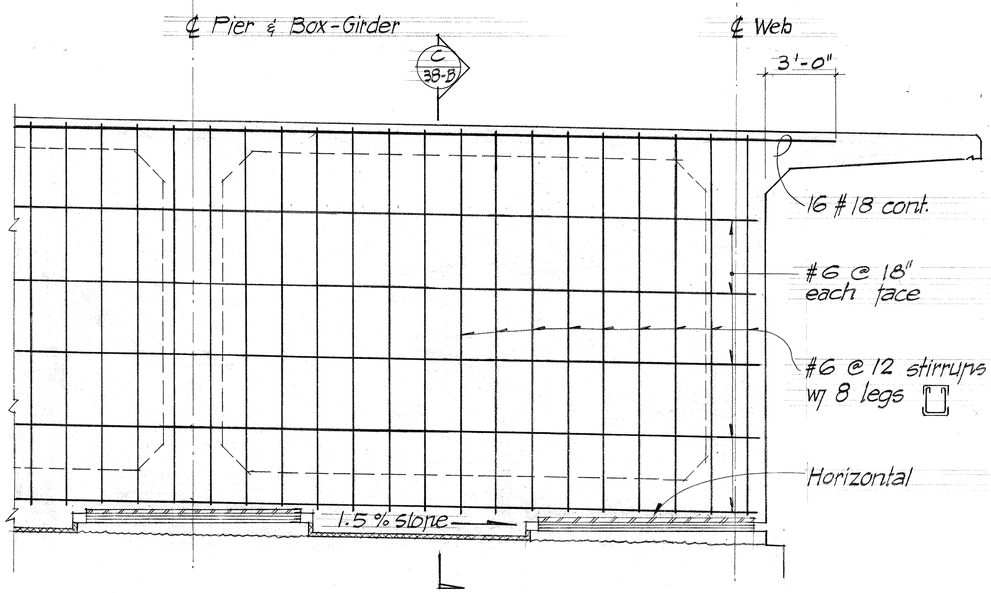
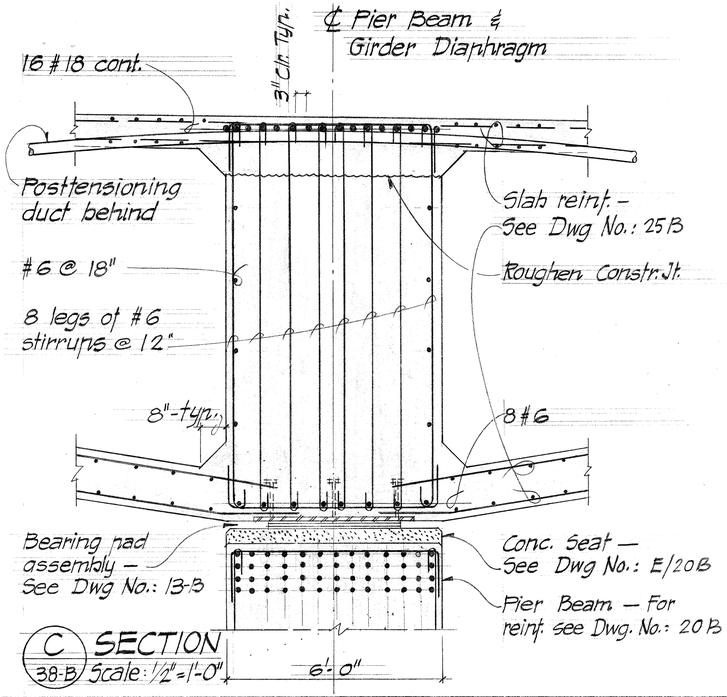
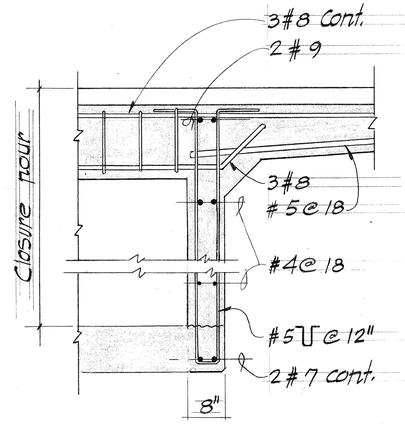
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)6	1973	70	104



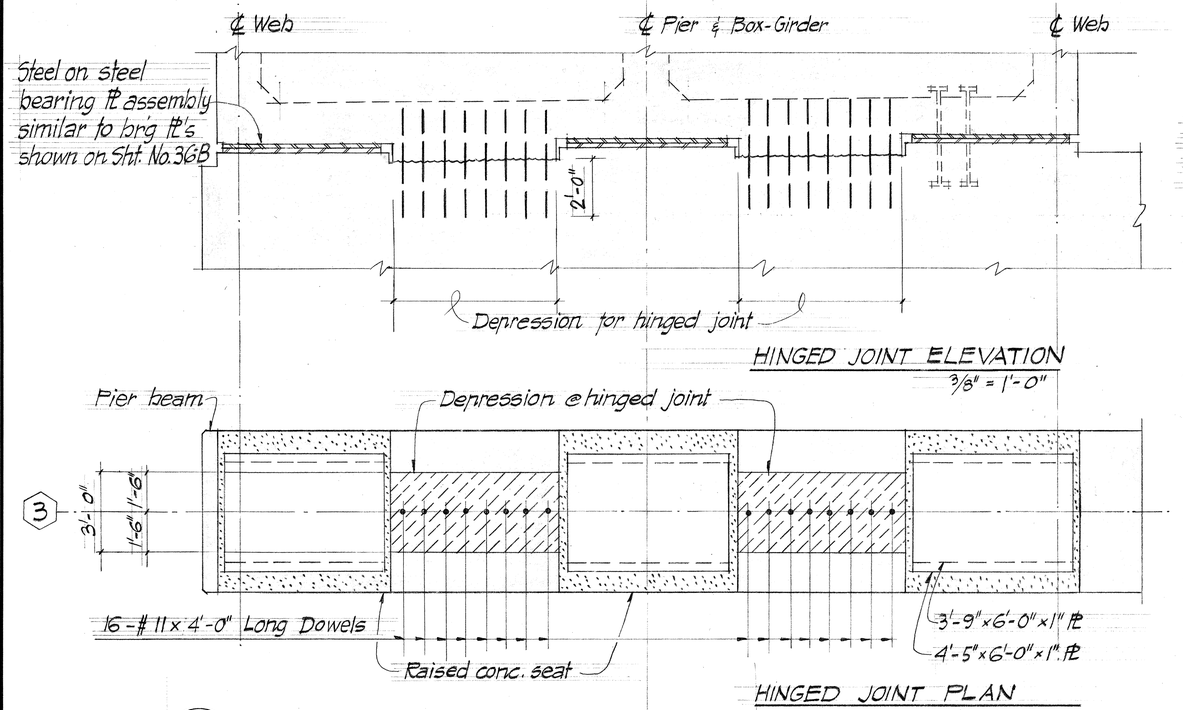
B 38-B TYP. BOX-GIRDER DIAPHRAGM DETAILS ABOVE PIER BEAM
Scale: ½"= 1'-0"



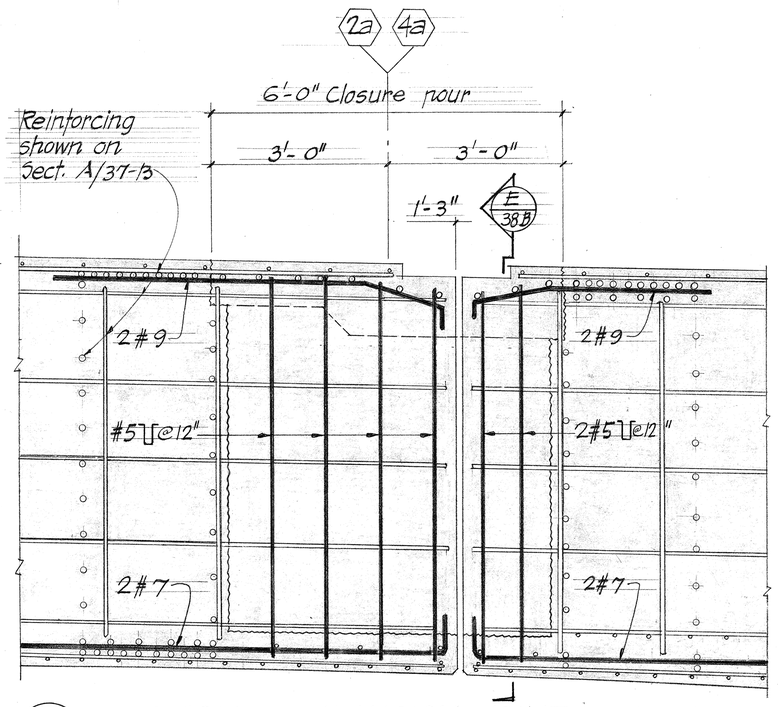
C 38-B SECTION
Scale: ½"=1'-0"



E 38-B SECTION
Scale: ¾"= 1'-0"



A 38-B HINGED JOINT DETAILS
Scale: ⅜" = 1'-0"



D 38-B SECTION @ EXPANSION JOINT
Scale: ¾" = 1'-0"

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HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

MISCELLANEOUS DETAILS @ PIER BEAM

INTERSTATE ROUTE H-2
FAI PROJECT NO. I-H2-1(10):6
Scale as noted June 1973

SHEET NO. 38B OF 43 B SHEETS

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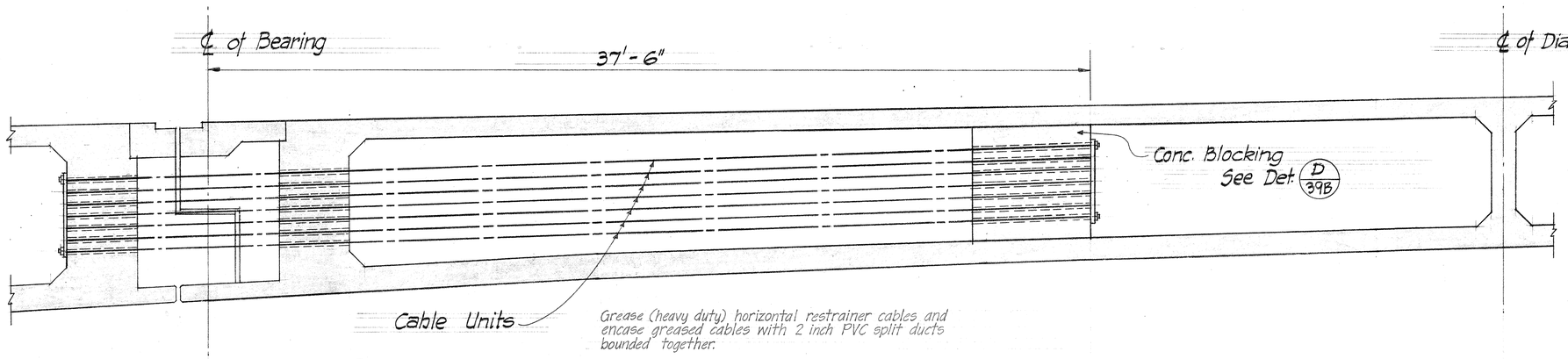
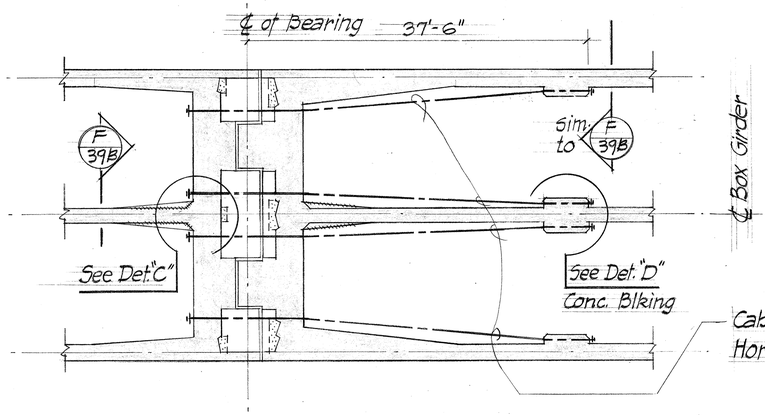
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IH2-1(10):6	1973	80	104

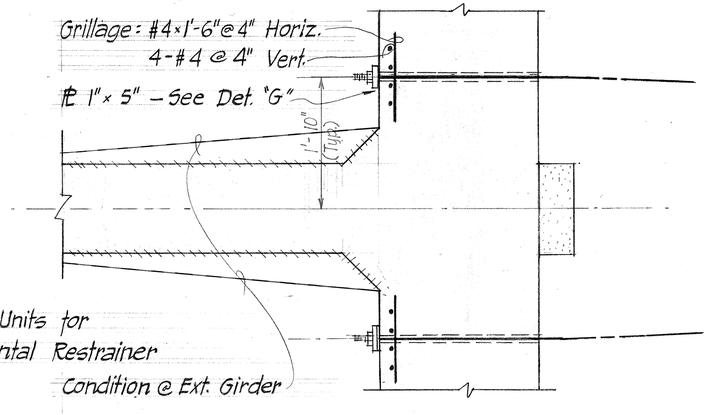


A 39B HORIZONTAL RESTRAINER ELEVATION
Scale: 3/8" = 1'-0"

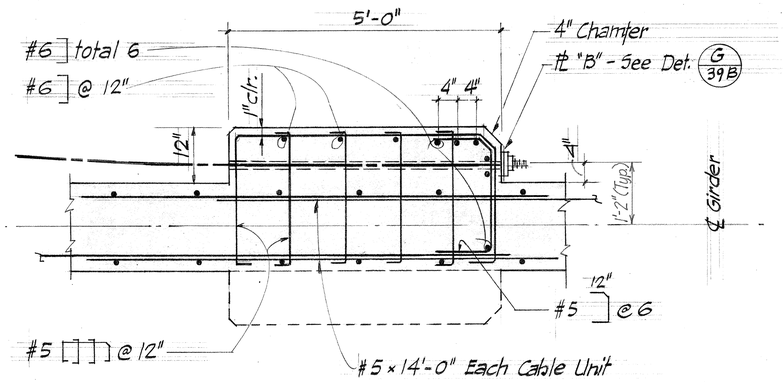
2a 4a



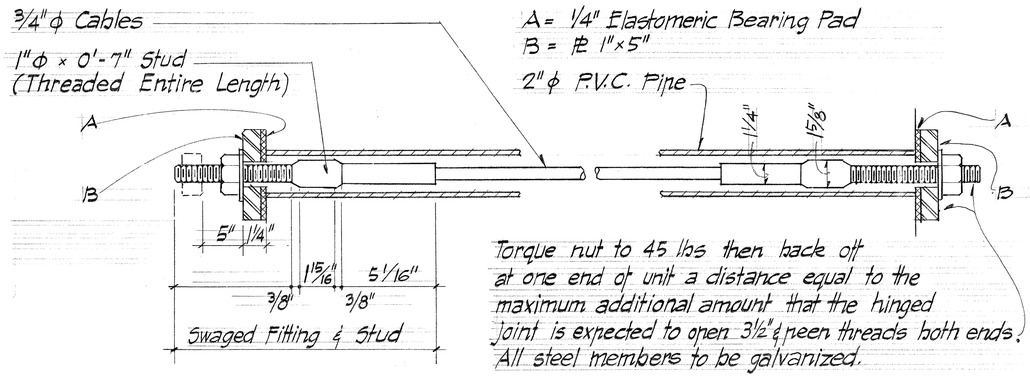
B 39B HORIZONTAL RESTRAINER PLAN
Scale: 1/8" = 1'-0"



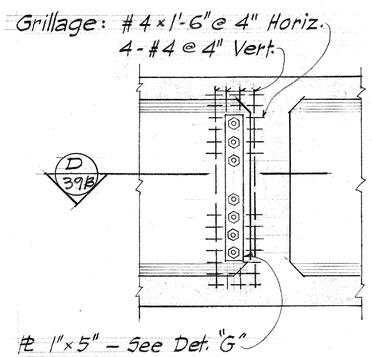
C 39B DETAIL @ SUPPORT SIDE
Scale: 3/4" = 1'-0"



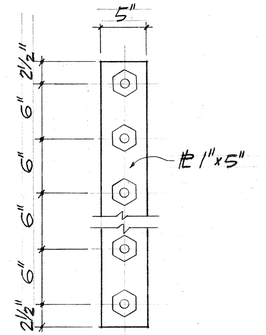
D 39B DETAIL @ SUSPENDED SIDE
Scale: 3/4" = 1'-0"



E 39B CABLE UNIT
Scale: No



F 39B SECTION
Scale: No



G 39B DETAIL – ℄ "B"
Scale: 1 1/2" = 1'-0"

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HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

HINGE RESTRAINER DETAILS

INTERSTATE ROUTE H-2
FAI PROJ. NO. I-H2-1(10):6
Scale as noted 1973

SHEET No. 39 OF 43B SHEETS

ORIGINAL PLAN
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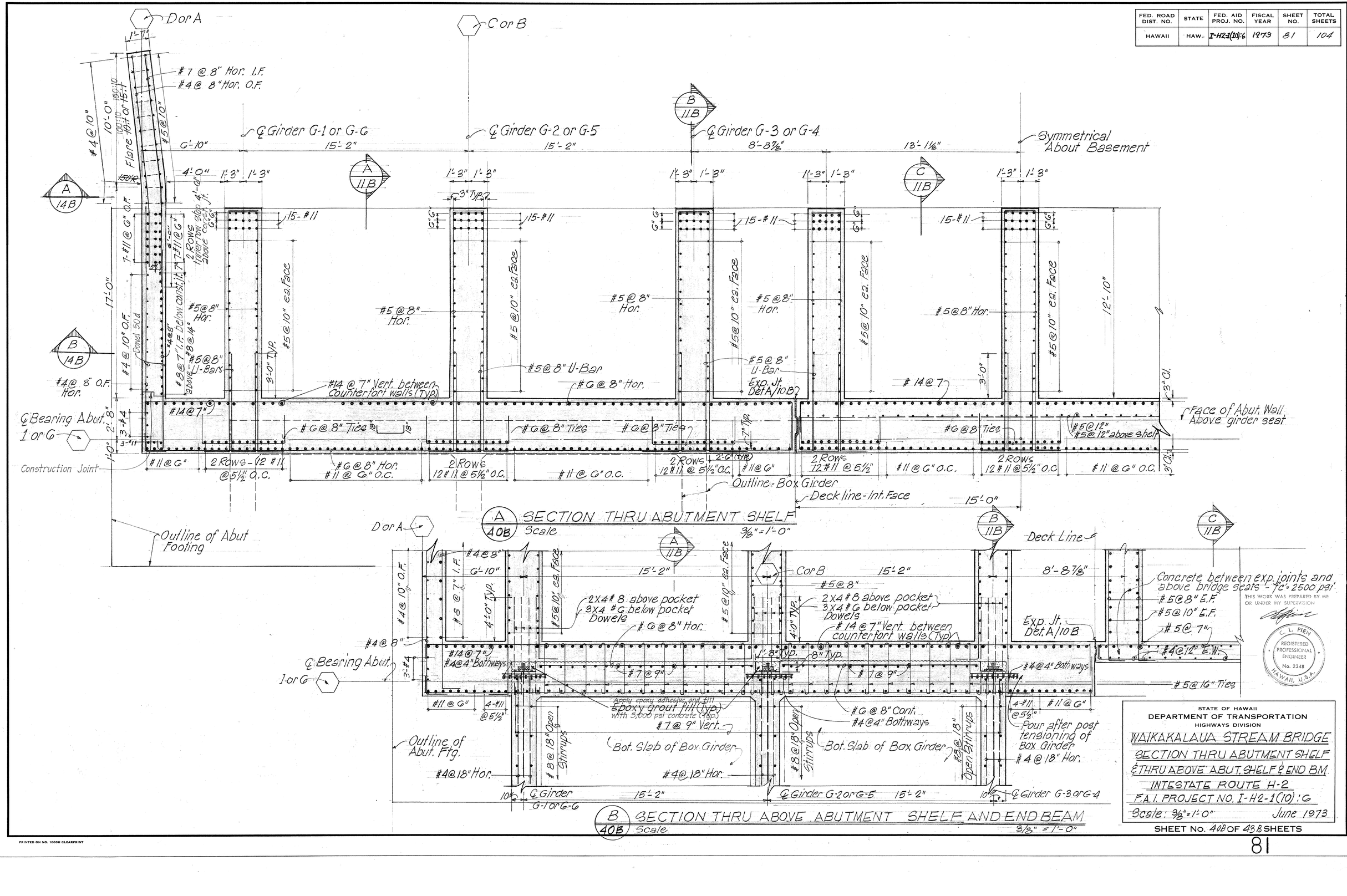
HAWAII	HAW.	I-H2-1(10):6	1973	81	104



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HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE
SECTION THRU ABUTMENT SHELF & THRU ABOVE ABUT. SHELF & END BM.
INTERSTATE ROUTE H-2
F.A.I. PROJECT NO. I-H2-1(10):6
Scale: 3/8" = 1'-0" June 1973

SHEET No. 40B OF 43B SHEETS

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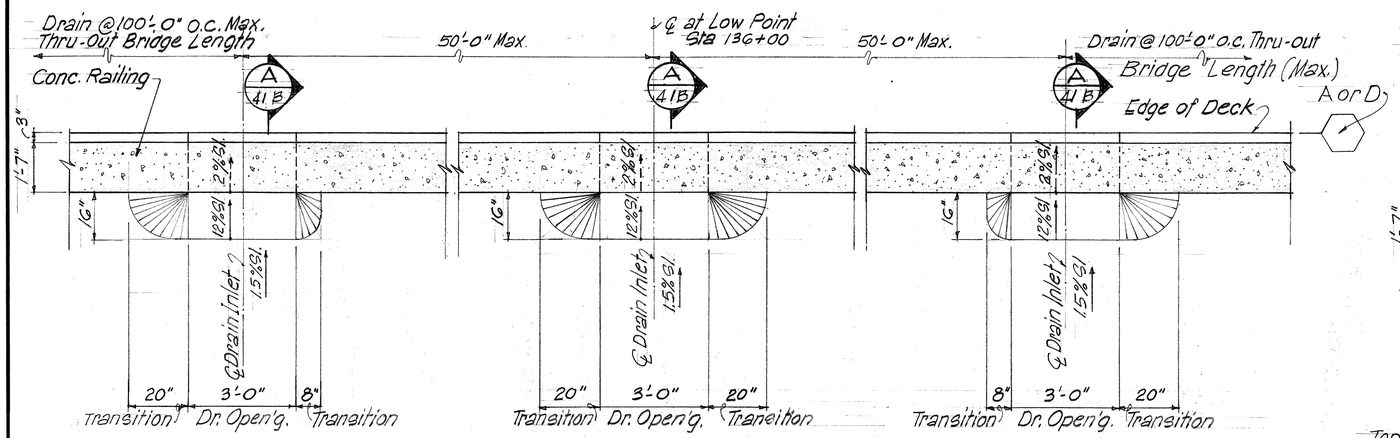
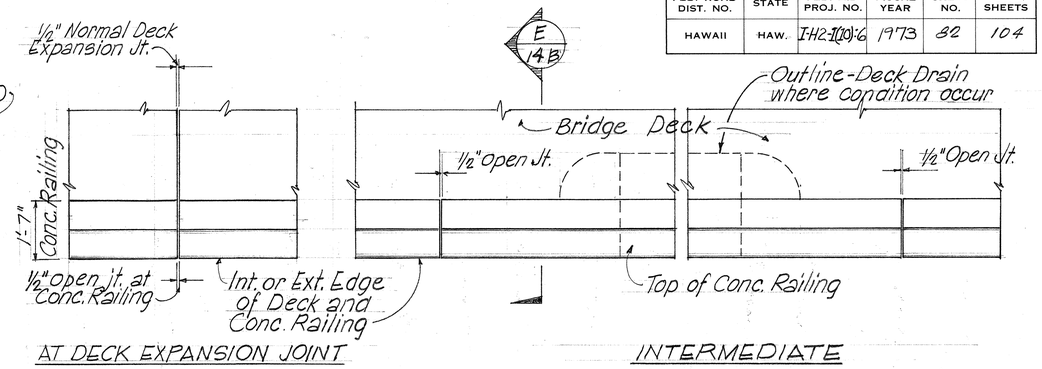
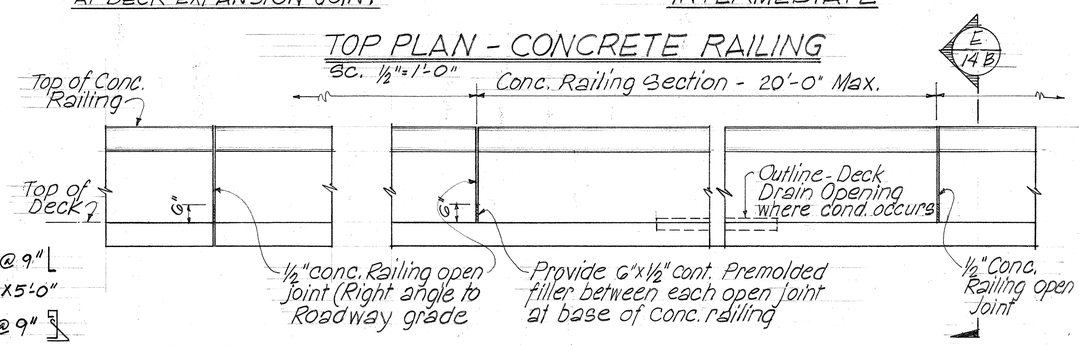
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	32	104





TOP PLAN - CONCRETE RAILING

Sc. ½"=1'-0"

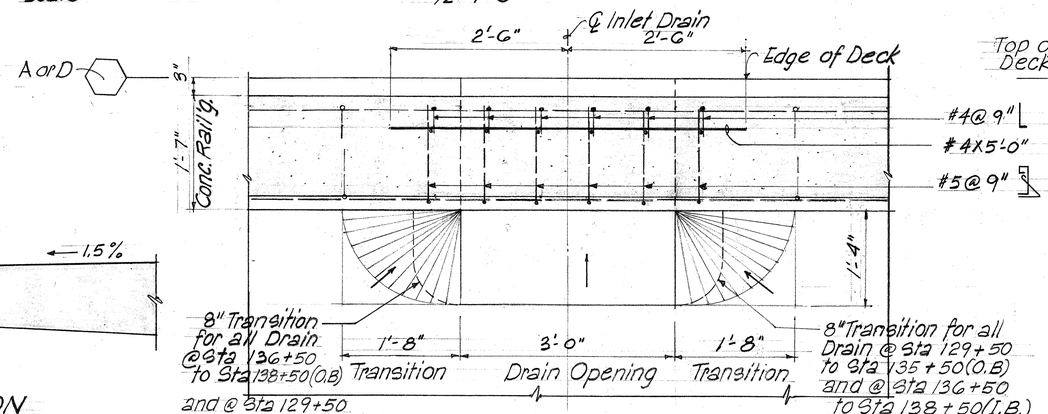


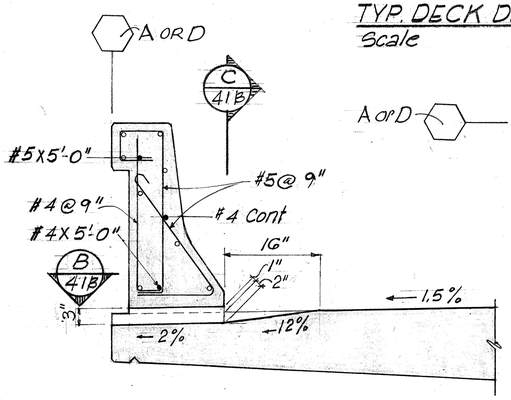
EXTERIOR ELEVATION

Scale ½"=1'-0"

TYP. DECK DRAIN INLET LAYOUT PLAN

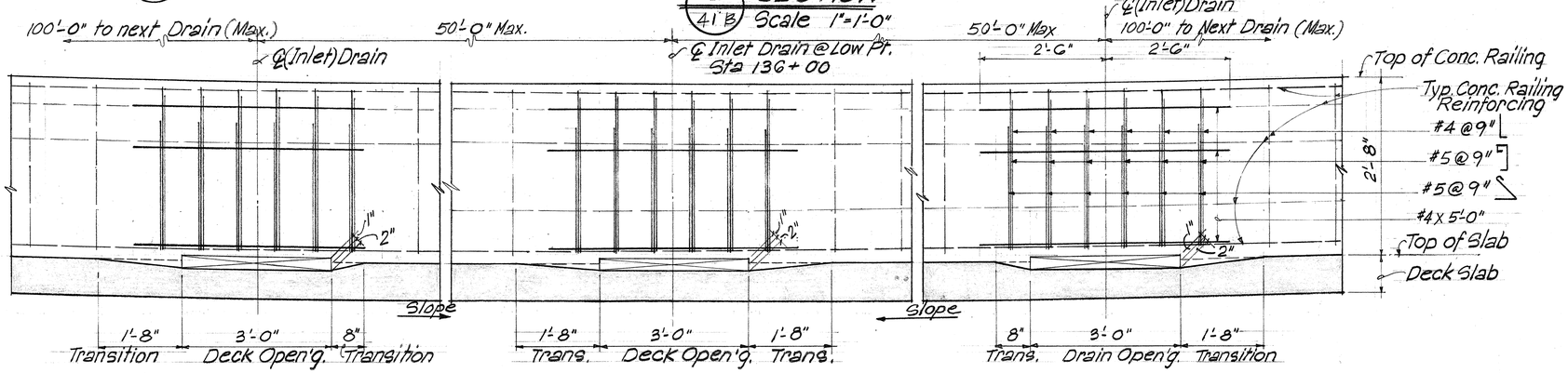
Scale ½"=1'-0"





A 41B SECTION
Scale: 1"=1'-0"

B 41B SECTION
Scale 1"=1'-0"



C 41B SECTION
Scale 1"=1'-0"

TYPICAL DECK DRAIN INLET DETAIL - TYPE "A"

Scale as shown

TYPICAL CONCRETE RAILING DETAILS

Scale as shown

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HIGHWAYS DIVISION

WAIKAKA LAUA STREAM BRIDGE

TYP. DECK DRAIN INLET AND CONCRETE RAILING DETS.
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):6
Scale As Noted June 1973

SHEET NO. 41B OF 438 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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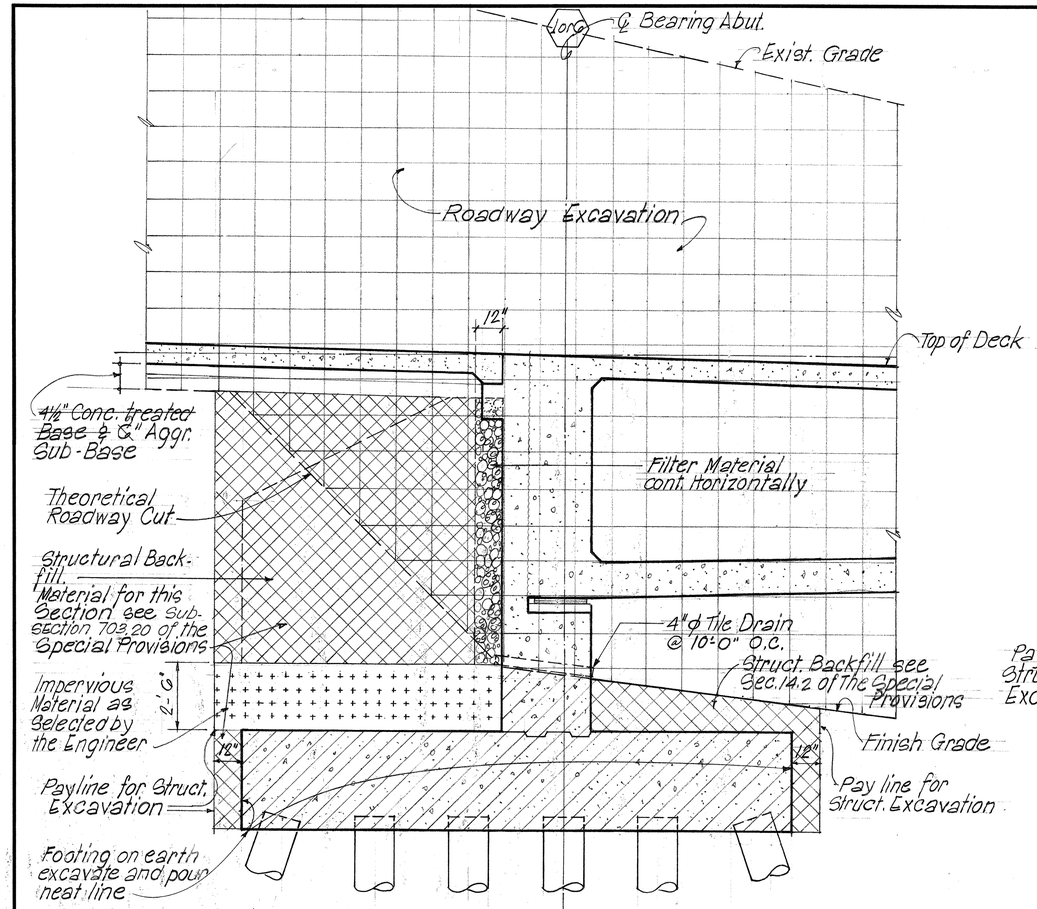
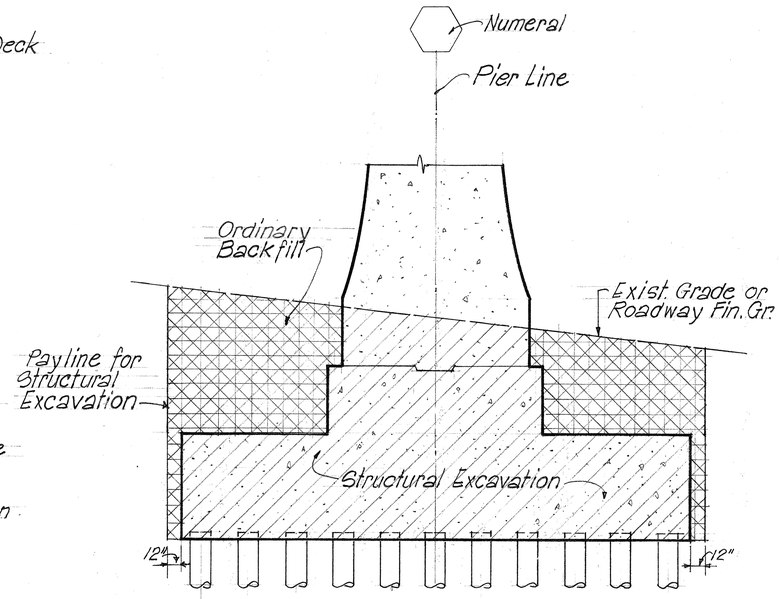
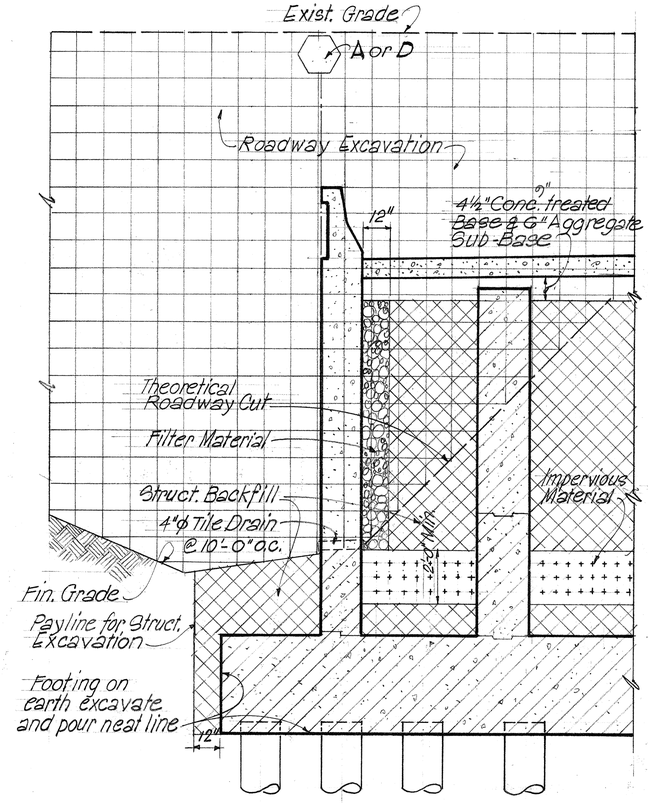
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1973	83	104



STRUCTURAL EXCAVATION AND BACKFILL AT EAST AND WEST ABUTMENTS



STRUCT. EXCAVATION AND BACKFILL AT PIER FOOTING



STRUCT. EXCAVATION AND BACKFILL AT WING WALL

TYPICAL LIMIT OF STRUCTURAL EXCAVATION PAYLINE AND STRUCTURAL BACKFILL

Not to Scale

STRUCT. EXCAVATION AND BACKFILL SCHEDULE

ITEM	WEST ABUT. INC. WING WALL	PIER @ LINE 2	PIER @ LINE 3	PIER @ LINE 4	PIER @ LINE 5	EAST ABUT. INC. WING WALL
STRUCTURAL EXCAVATION	1102 c.y	1953 c.y.	2256 c.y.	2843 c.y.	2918 C.y.	1102 C.y.
CONCRETE	543 C.y	1056 C.y.	1324 C.y.	1464 c.y.	1536 C.y.	543 C.y.
STRUCTURAL BACKFILL	559 c.y	0*	0*	0*	0*	559 C.y.

* No Structural Backfill for Piers

NOTE:

1. Impervious material as selected by the Engineer incidental to structural excavation.
2. The subgrade upon which Filter material is to be placed shall be made as impervious as possible by pneumatic tamping or other approved methods.
3. Impervious material shall be incidental to roadway excavation or imported borrow when used in embankment area.

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HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

TYP. LIMIT OF STRUCT. EXC. PAY LINE AND STRUCT. BACKFILL

INTERSTATE ROUTE H-2

F.A.I. PROJ. NO. I-H2-1(10):6

Scale: Not to Scale June 1973

SHEET No 42B OF 43B SHEETS

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HAWAII	HAW.	I-H2-1(10)G	1973	84	104

ADDITION TO GENERAL NOTES

ADDITIONAL NOTES TO MATERIALS:

1. All concrete shall be Class A except as follows:
   a. Girders, flanges and pier caps - f'c = 5000 psi
   b. Piers - f'c = 4500 psi
2. Reinforcing steel shall be ASTM A-615 Grade 40 up to #6 and Grade 60 for #7 and larger bars.
3. Concrete clear cover for reinforcing shall be as follows unless noted otherwise:
   a. Top of slab - 1½"
   b. Bottom of slab - 1¼"
   c. Stirrups on side of beams - 1½"
   d. Footings in contact with ground - 3"
   e. Walls not exposed to ground - 1½"
   f. Walls exposed to ground - 2"
   g. To stirrups of pier caps - 2"
   h. To ties and spirals of pier - 3"
4. Strands for post tension concrete work to be ½"ø seven-wire type with f's = 270,000 psi comforming to ASTM A-416
5. Girder and flange concrete strength shall be f'c = 4000 psi minimum at tensions.
6. Miscellaneous steel shall be A-36. All exposed steel shall be galvanized after fabrication.

ADDITIONAL NOTES TO CONSTRUCTION METHODS:

1. Reinforcing shall be detailed in accordance with ACI Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
2. Minimum spacing between parallel bars shall be 1½ times the diameter of bars, but in no case shall the clear distance between the bars be less than 1½ times the minimum size of the course aggregate nor 1½".
3. All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
4. Reinforcing bars shall be securely tied at all intersections and bar splices and shall be held in place during pouring to maintain their proper locations as shown on plans.
5. Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
6. Except as otherwise noted on drawings all exterior corners and re-entrant angles in concrete work shall be chamfered ¾" x ¾".
7. Concrete seats receiving steel plate or neoprene pads shall be poured monolithically with supporting structures and top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
8. Elastomeric Pads: Bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer.
9. Forms for all exposed surfaces of separation structures and surfaces of abutment walls visible from a traveled way or from a populated area shall be plywood. Metal forms, however may be permitted providing a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for column shall be made of material that will give a smooth finish and true dimensions as given on the plans. Forms for prestressed concrete members shall be either metal or plywood.
10. Gothic letters and figures approximating dimensions will be acceptable if approved by the Engineer.
11. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
12. Standard Detail Drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to corresponding detailed drawings.
13. Counterforts behind abutment walls shall be poured after bridge spans adjacent to abutments are stressed.

CAMBER:

Obtain camber by forming and shoring concrete surfaces above profile grades amount shown in camber diagram.

GENERAL:

1. The Contractor shall furnish shop placement and detail drawings for all structural work including bearing plates. The Contractor shall also furnish shop placement and detail drawings for all post-tension work including ducts, bearing plates and other accessories.
2. Deck drain shall be incidental to concrete.
3. Bottom soffit of box girder shall be a smooth parabolic curve.

ADDITION TO SYMBOLS AND ABBREVIATIONS

Bm or BM	Beam
Bot.	Bottom
C.B.	Cut Bar
c/c	Center to center
Cl. or Clr.	Clear
Conn.	Connection
Cont.	Continuous
C.Y.	Cubic Yard
Dia. or Diam.	Diameter
Dim.	Dimension
Drwg.	Drawing
Eq.	Equal
Fin.	Finish
F.L.	Full length
Inf.	Inflection
Lbs.	Pounds
L.F.	Linear Foot
L.S.	Lump Sum
Long.	Longitudinal
N.T.S.	Not to scale
Pl	Plate
P.V.C.	Polyvinyl Chloride
Q	Storm Flow
Reinf.	Reinforcing or Reinforcement
R.C.	Reinforced Concrete
Sim.	Similar
Symm.	Symmetrical
Temp.	Temperature
Tot.	Total
Typ.	Typical
W/	With
W.S.	Welded Splice

NOTE:
For additional General Notes, Symbols and Abbreviations see Sheet Nos. 1B & 2B

REVISION	DATE
Revised to conform with Item A-10 of Add. No. 1	8/21/73
Def. C/43B - Camber Diagram revised	12/6/74

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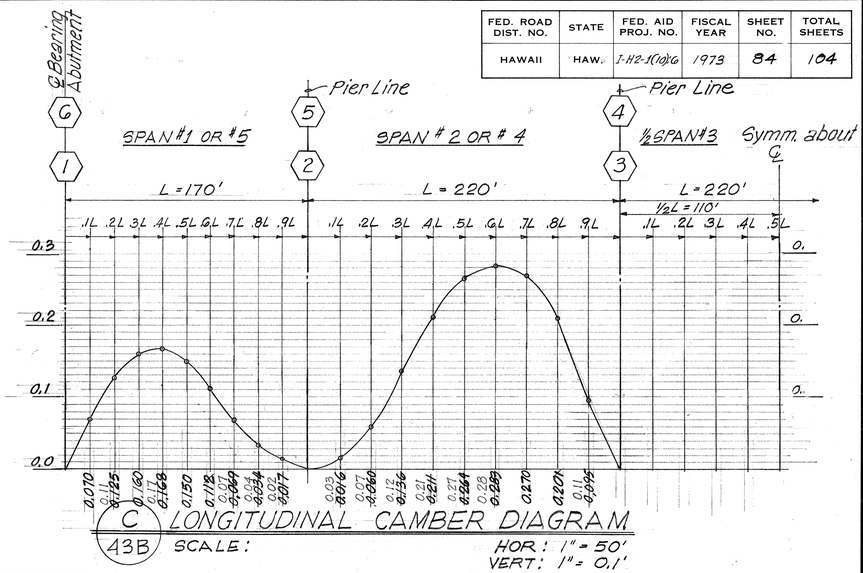
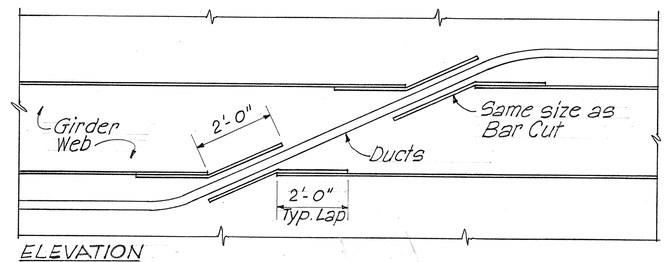
ORIGINAL PLAN / NOTE BOOK / No.

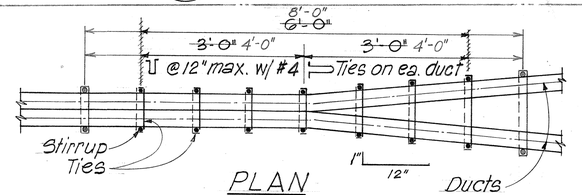


C / 43B LONGITUDINAL CAMBER DIAGRAM
SCALE: HOR: 1" = 50'
VERT: 1" = 0.1'



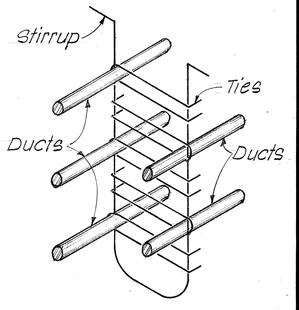
ELEVATION

B / 43B ADJUSTMENT OF WEB REINF. CONFLICTING WITH DUCTS
Not To Scale



PLAN

NOTE: Place closed end of duct ties in direction of flare



A / 43B STIRRUP REINFORCEMENT AT FLARE OF GIRDER STEM N.T.S.

C. L. PIEN
REGISTERED PROFESSIONAL ENGINEER
No. 2348
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKAKALAUA STREAM BRIDGE
ADDITION TO GENERAL NOTES, SYMBOLS & ABBREVIATIONS, CAMBER DIAGRAM & DETAILS
INTERSTATE ROUTE H-2
F.A.I. PROJ. NO. I-H2-1(10):G
Scale as Shown June 1973

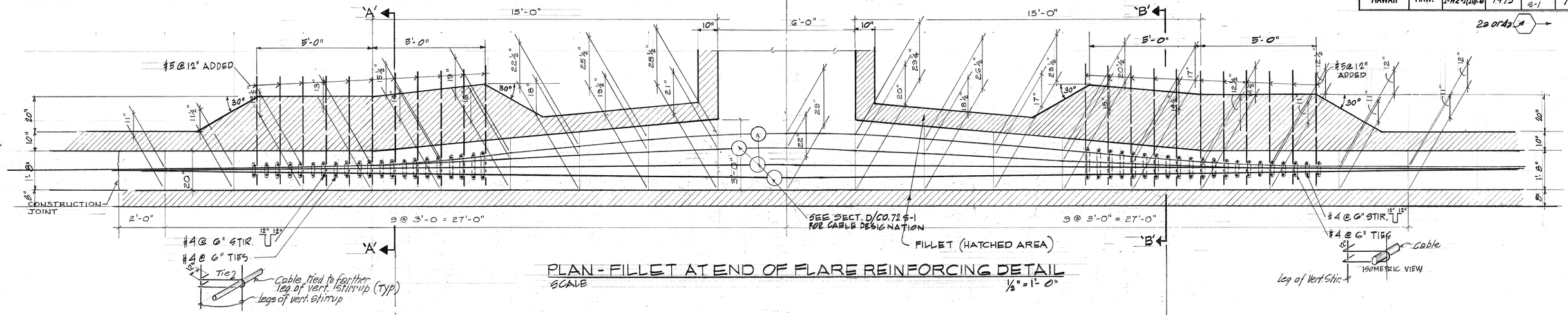
SHEET No. 43B OF 43B SHEETS

C.O. 84R

PRINTED ON NO. 1000H CLEARPRINT

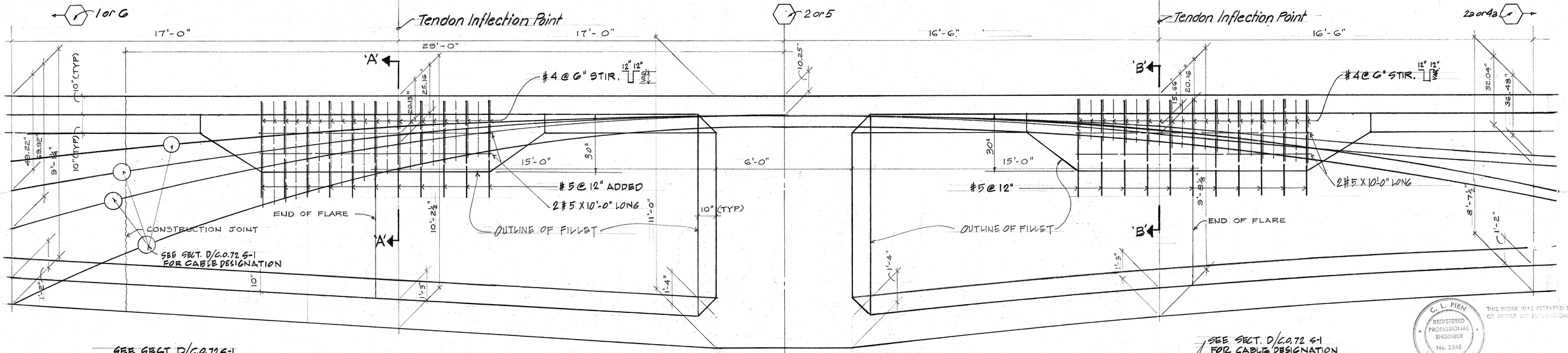
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10):6	1975	C.O. 84R S-1	104

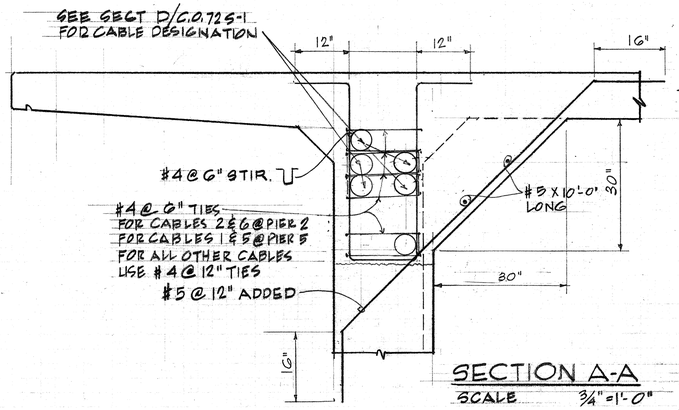
1 or 6
2 or 5
2 or 4a



PLAN - FILLET AT END OF FLARE REINFORCING DETAIL

SCALE 1/2" = 1'-0"





SECTION A-A

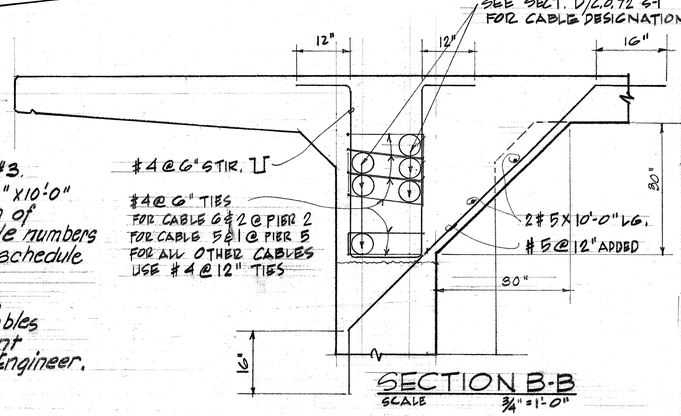
SCALE 3/4" = 1'-0"

REFLECTED ELEV - FILLET AT END OF FLARE REINFORCING DETAIL

SCALE 1/2" = 1'-0"

NOTE:

1. Drawings shown are for Box Girders #1 and #3.
2. For Box Girder #2 provide the same 30"x30"x10'-0" long fillet and reinforcing at the flared area of exterior girders on Pier Nos. 3 and 4. For cable numbers and arrangement see prestressing control schedule on Sht. No. C.0.76R and section E/C.0.72 S-3
3. Typical girder reinforcement not shown.
4. Where cables cannot be tied individually, cables may be grouped and tied with the equivalent steel area subject to the approval of the Engineer.



SECTION B-B

SCALE 3/4" = 1'-0"

C. L. PIEN REGISTERED PROFESSIONAL ENGINEER No. 2348 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE	REVISION
3/27/75	Sheet added for revised fillet details & reinf. at end of flare

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIKAKALAUA STREAM BRIDGE

FILLET DETAIL AT FLARED AREA OF EXTERIOR GIRDERS ON PIERS

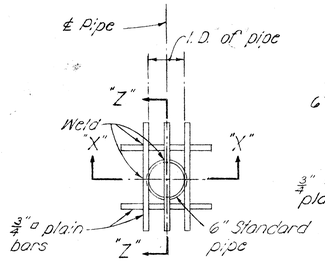
INTERSTATE ROUTE H-2
F.A.I. PROJECT NO. I-H2-1(10):6

scale as noted — March 1975

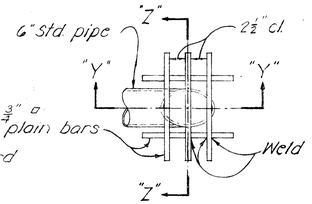
SHEET No. 43B-1 OF 43B SHEETS

C.O. 84R S-1

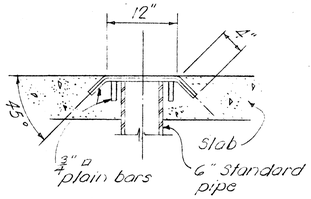
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-112-1(18)E	1973	85	104



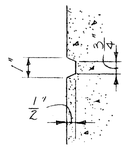
PLAN



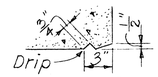
PLAN



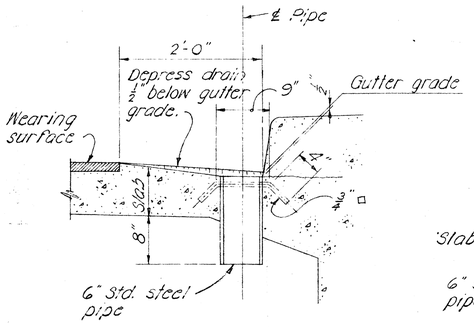
SECTION "Z-Z"



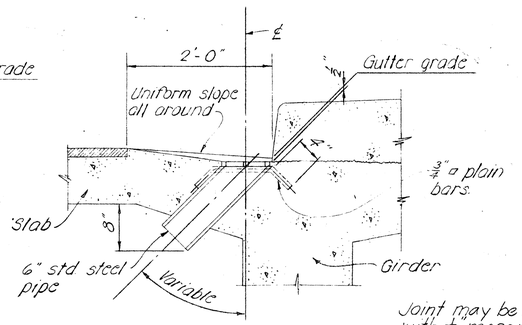
TYPICAL CONCRETE GROOVE DETAIL



DRIP DETAIL



SECTION "X-X"



SECTION "Y-Y"

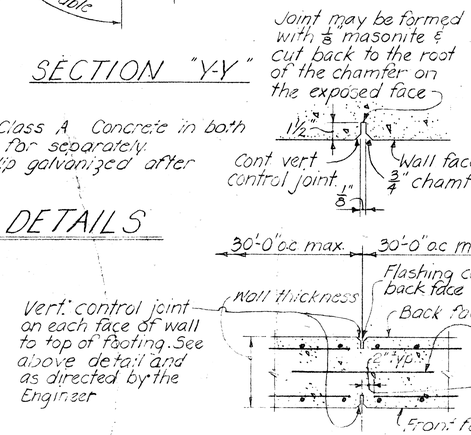
NOTE:

Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately.

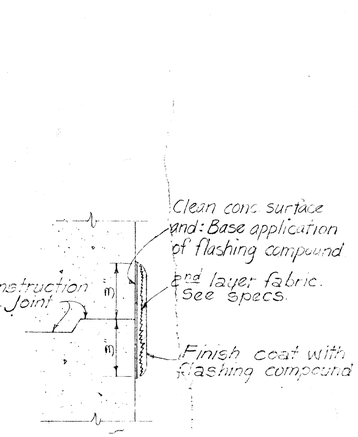
Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS

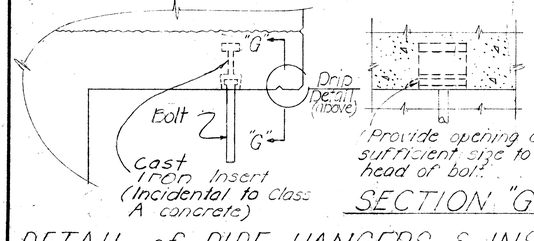
INSERT DETAIL



CONTROL JOINT DETAILS



TYP. FLASHING COMPOUND WATERPROOFING DETAIL



SECTION "G-G"

DETAIL of PIPE HANGERS & INSERTS

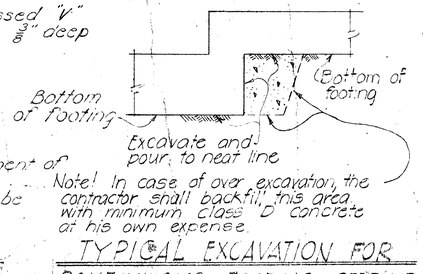
3" NAME ½" DATE

Use correct name of bridge — Date of Year built

NOTE: Refer to corresponding detail drawings for placement of such names & dates at end post.

Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note #12

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



Note! In case of over excavation, the contractor shall backfill this area with minimum class "D" concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

GENERAL NOTES

1 - All concrete shall be Class A unless otherwise noted.
2 - Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
3 - Clearance for reinforcing bars shall be as follows, unless otherwise noted:
  a - 1½" For stirrups of beams & pier caps.
  b - 2" For ties of columns.
  C - 2" For formed walls.
  d - 3" For footings.
4 - Minimum spacing between parallel bars shall be 2½ times the diameter of bars, but in no case shall the clear distance between the bars be less than 1½ times the maximum size of the coarse aggregate.
5 - All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
6 - Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
7 - Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
8 - Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered ¾"x ¾".
9 - Concrete seats receiving steel plates, leadplates or neoprene pads shall be poured monolithically with supporting structures & top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
10 - Elastomeric Pads: Bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer. Pads shall be incidental to concrete and will not be paid for separately.
11 - Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood except that metal forms may permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.
12 - Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.
13 - The contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
14 - 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.

APPROVAL RECOMMENDED:
Paul T. Yamashita — BRIDGE DESIGN ENGINEER — 1-23-70 DATE

APPROVED
Paul T. Yamashita — For ASSISTANT CHIEF, ENGINEERING — 1-28-70 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
NOTES AND MISCELLANEOUS DETAILS

Date: October 1969

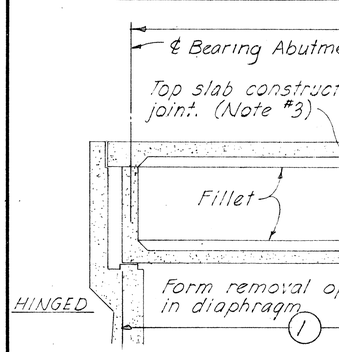
SHEET No. 1 OF 1 SHEETS DB-100

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

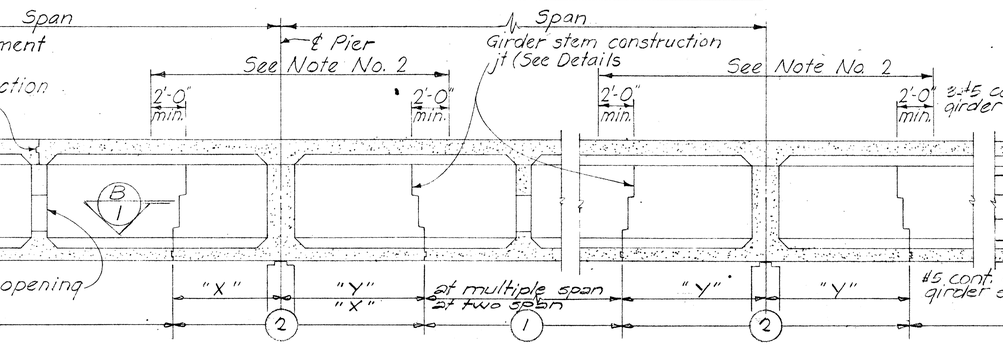
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHE-1(10)6	1973	86	104

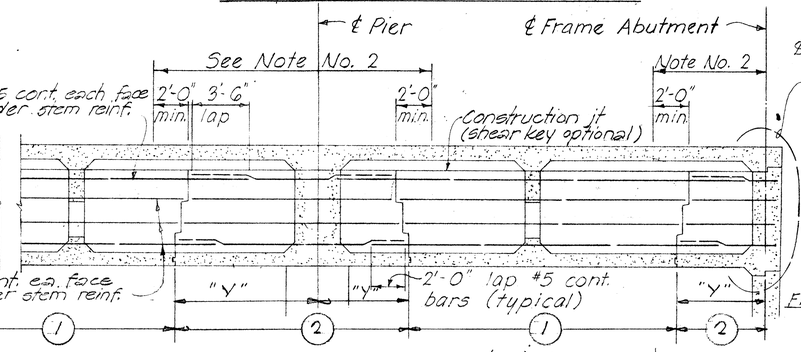
AT 1ST SPAN-HINGED SUPPORT

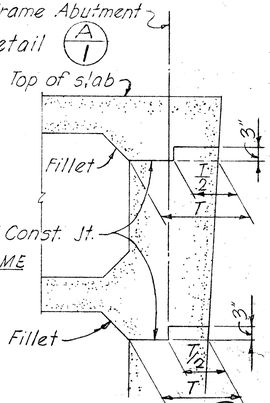


AT INTERMEDIATE SPAN SUPPORT



AT 1ST SPAN-FRAME SUPPORT

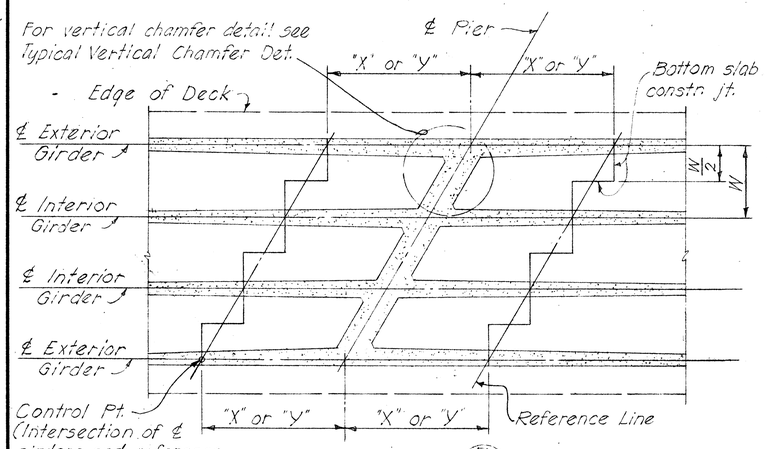




PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE

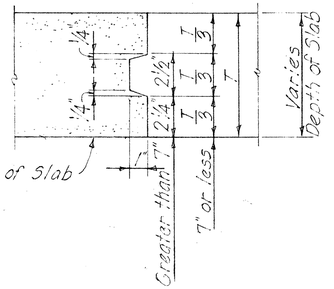
NOTE:

1. Numbers ① & ② indicate sequence of placing bottom slab & girder stem concrete. ② may be placed with ① when approved by the Engineer provided that the ① sections adjoining the ② sections are placed in this pour. For any deviation from the above the Contractor shall submit a diagram to the Engineer for approval.
2. No top slab construction joint or form removal opening shall be located in the region over the piers as noted, nor in the supporting section of a hinged span.
3. When top slab is not poured continuously, and top slab forms are not removed, construction joint in top slab shall be located over an intermediate diaphragm.
4. Top slab concrete shall be placed separately from the stem. Top slab concrete may be placed continuously or in parts as approved by the Engineer, providing pour is not in conflict with the above notes.
5. Dimension "X" = 1/4 span. "Y" = 1/5 span.
6. No lapping of main bars shall be permitted at construction joints.



SECTION B 1

TREATMENT OF CONSTRUCTION JOINT BRIDGES ON SKEW

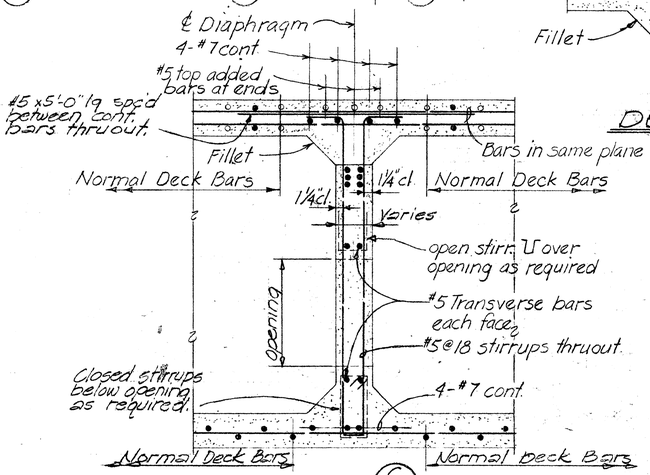


TYPICAL SLAB CONSTRUCTION JOINT DETAIL

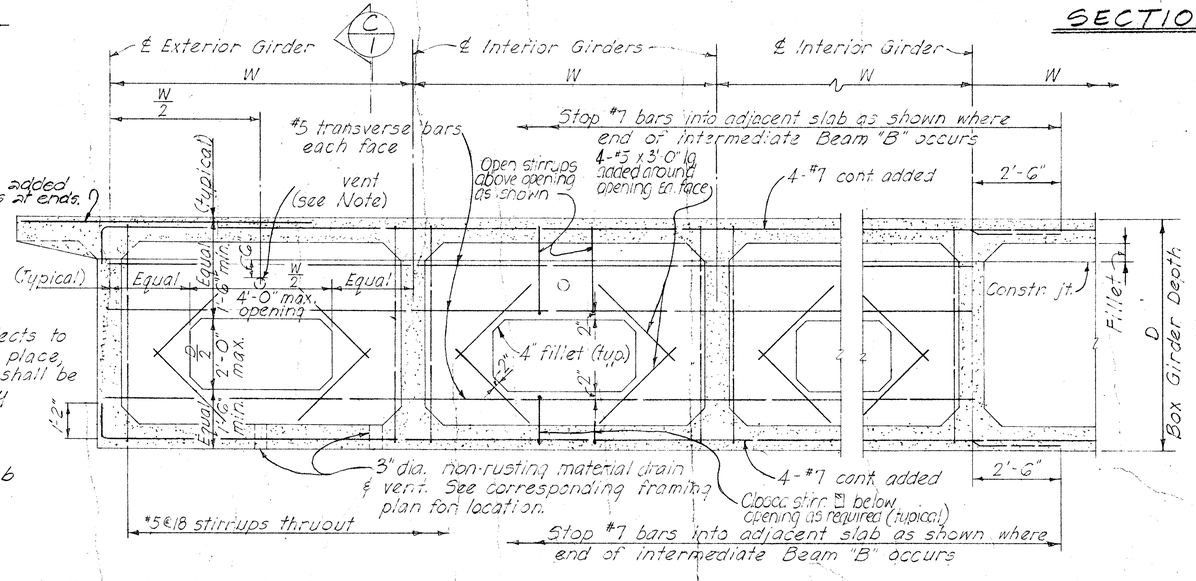
NOTE:

If the Contractor elects to leave top slab forms in place, form removal opening shall be omitted and replaced by 3" vent.

No vertical shoring shall be placed in the center half of top slab span W.



SECTION C 1



AT NON-CONTINUOUS ENDS TYPICAL INTERIOR SPAN

TYPICAL BEAM "B" DETAILS

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Paul T. Uyamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED
Paul T. Uyamashita 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

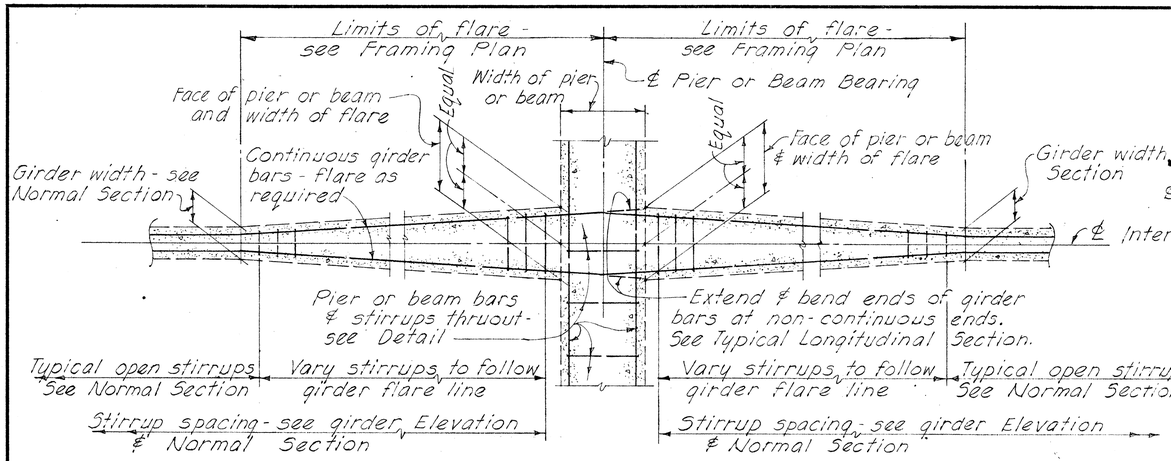
Date

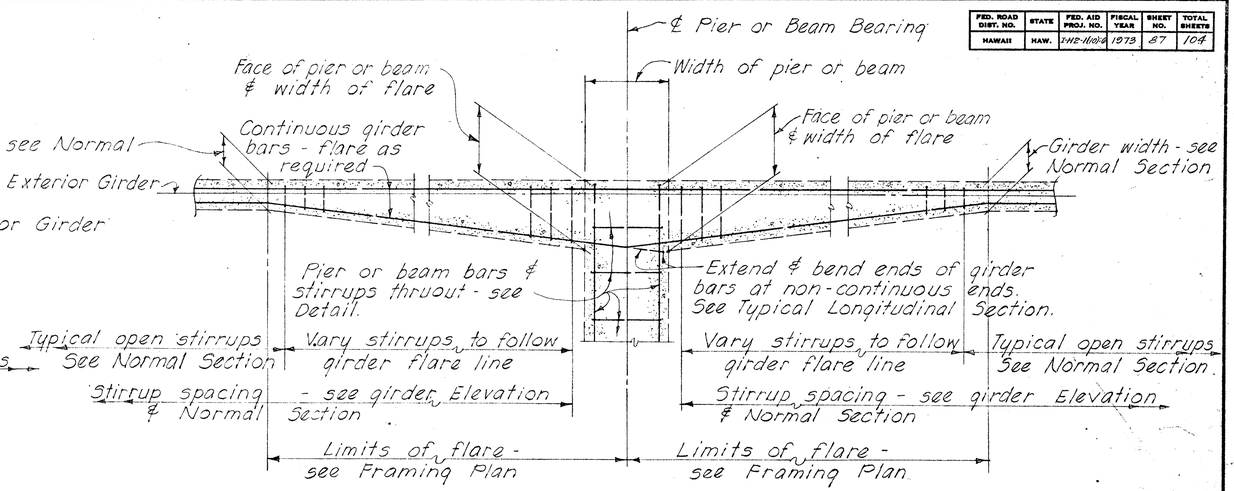
SHEET No. 1 OF 3 SHEETS DB-101-1

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	THE-1101(6)	1973	87	104



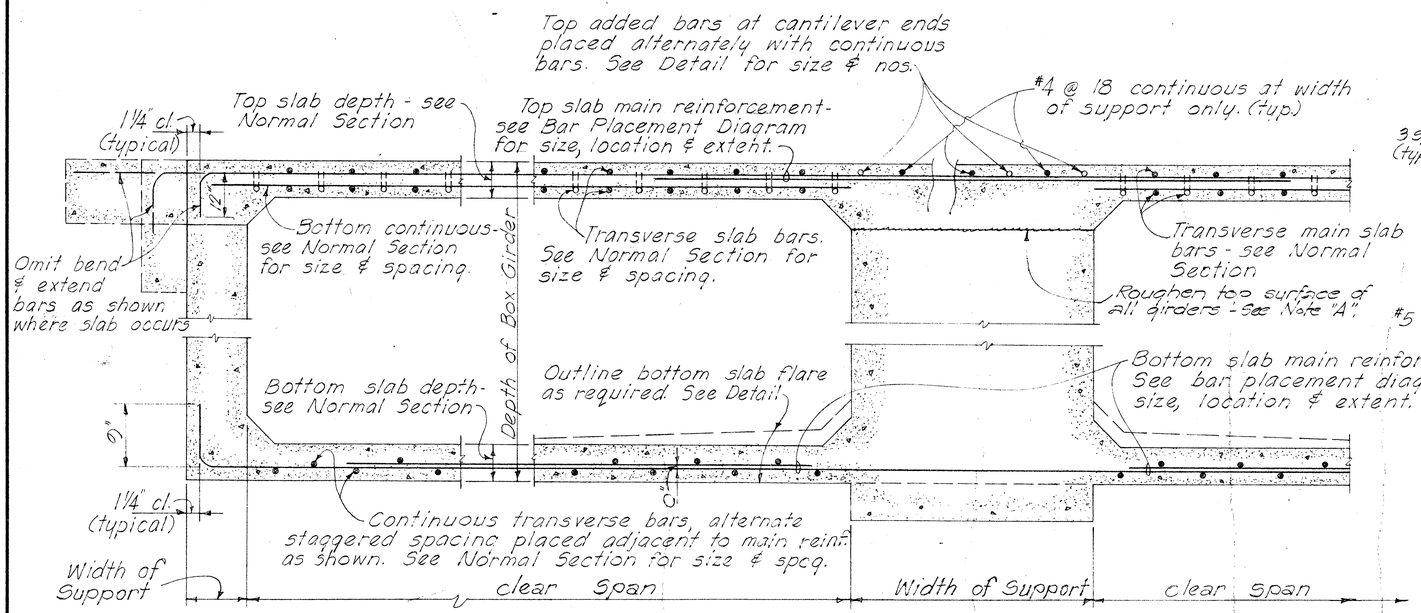


INTERIOR GIRDER

TYPICAL DETAILS OF GIRDER FLARE AT NORMAL OR RADIAL SUPPORTS — CONTINUOUS ENDS AS SHOWN

(NON-CONTINUOUS ENDS SIMILAR EXCEPT AS OTHERWISE NOTED)

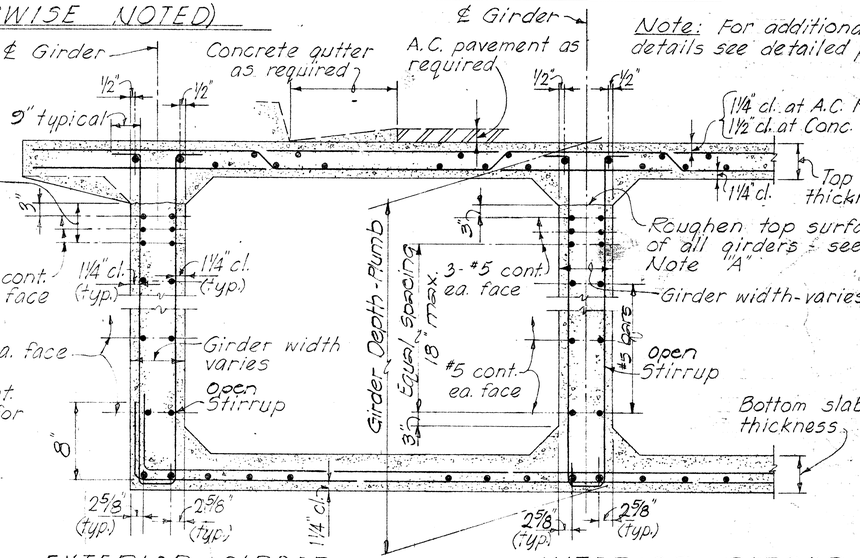
EXTERIOR GIRDER



AT NON-CONTINUOUS END — AT CONTINUOUS SUPPORT

TYPICAL LONGITUDINAL DECK SECTION ALONG GIRDER AT NORMAL OR RADIAL SUPPORTS

Note "A" The entire surface of the joint shall be thoroughly cleaned of surface laitance, curing compound, and other material foreign to the concrete, and clean aggregate be exposed by abrasive blast cleaning after the curing period or immediately before placing concrete at the joint.



EXTERIOR GIRDER — INTERIOR GIRDER

TYPICAL NORMAL BOX GIRDER SECTION

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED
Paul T. Yamashita — 1-23-70
BRIDGE DESIGN ENGINEER — DATE

APPROVED
Paul T. Yamashita — 1-28-70
For ASSISTANT CHIEF, ENGINEERING — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

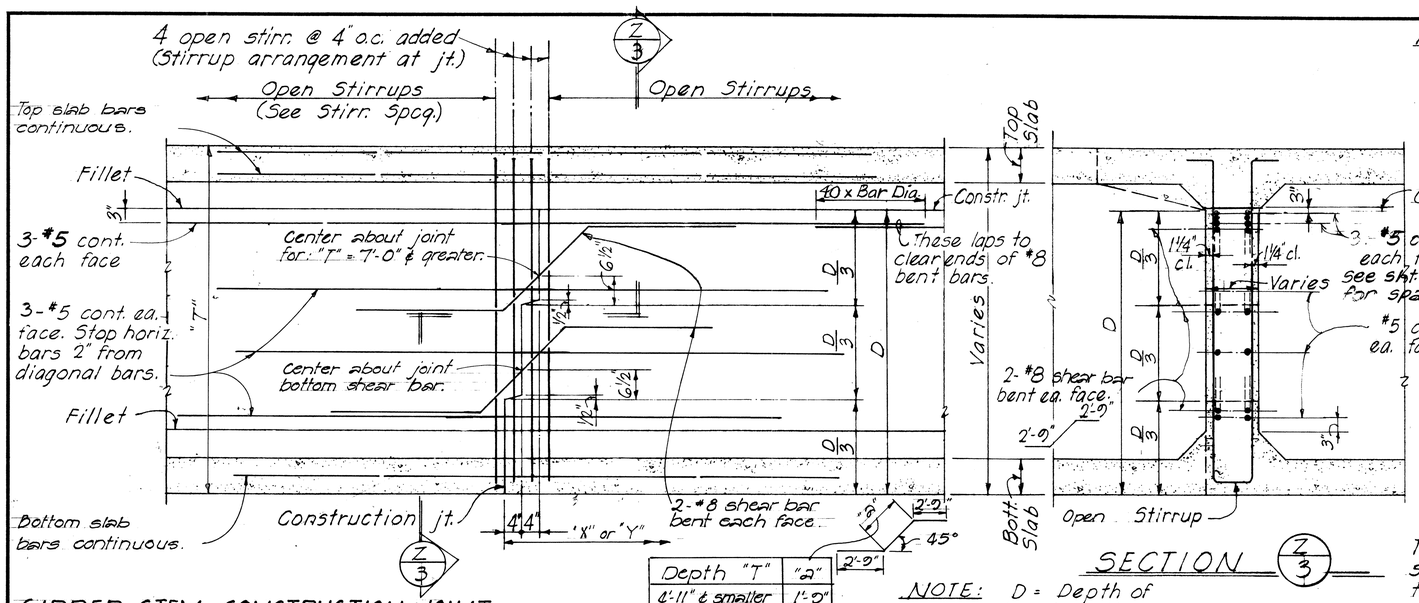
Date

SHEET No. 2 OF 3 SHEETS DB-101-2

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(108)6	1973	88	104



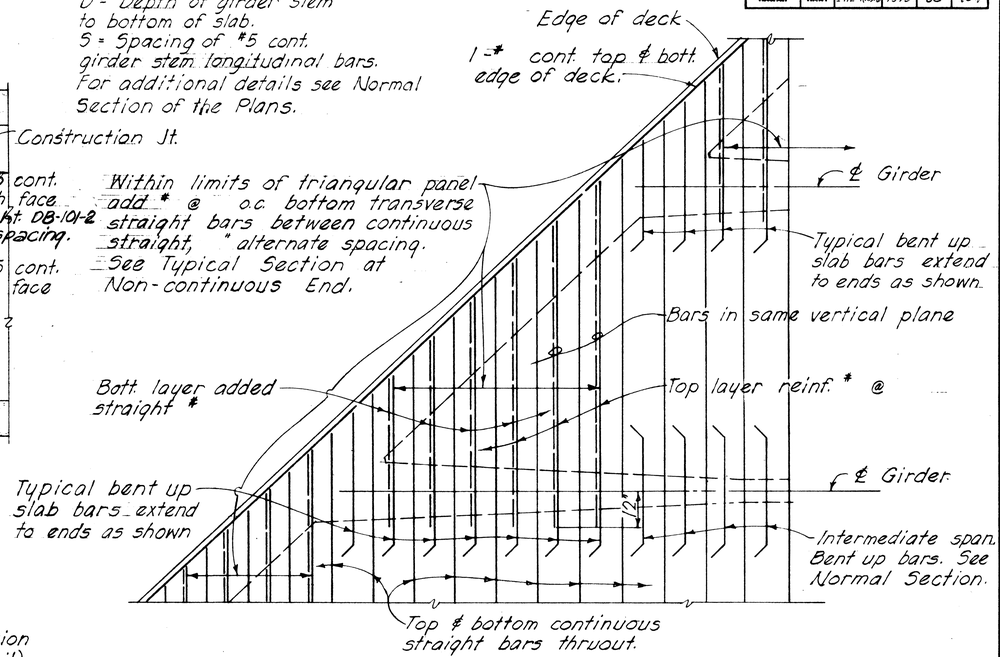
Depth "T"	"Z"
4'-11" & smaller	1'-9"
5'-0" to 5'-11"	2'-0"
6'-0" to 6'-11"	2'-3"
7'-0" & greater	3'-0"

GIRDER STEM CONSTRUCTION JOINT

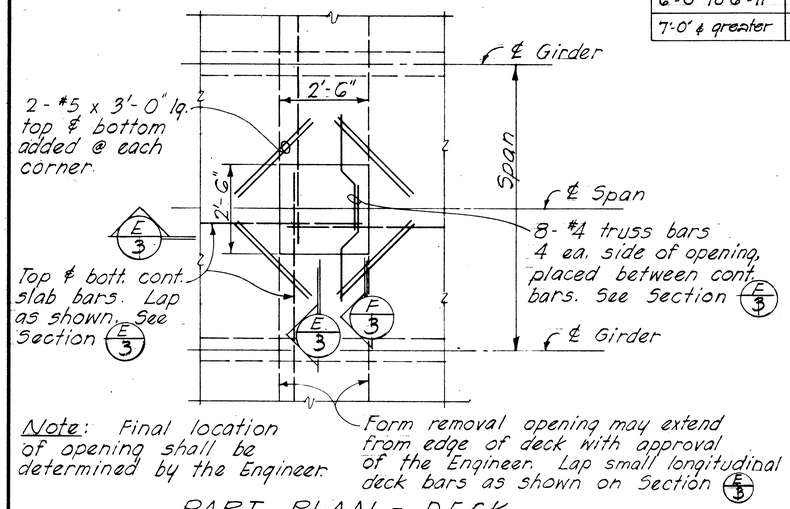
NOTE: D = Depth of girder stem to bott. of slab.

SECTION Z/3

NOTE:
D = Depth of girder stem to bottom of slab.
S = Spacing of #5 cont. girder stem longitudinal bars.
For additional details see Normal Section of the Plans.

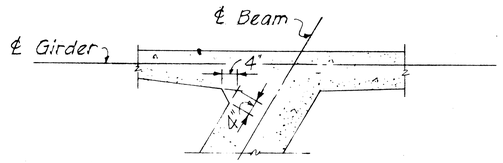


PART PLAN - TYPICAL ARRANGEMENT OF TOP SLAB REINFORCEMENT AT SKEWED ENDS

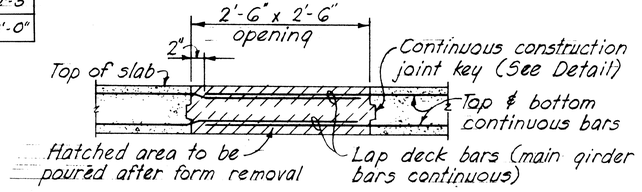


Note: Final location of opening shall be determined by the Engineer.

PART PLAN - DECK SHOWING FORM REMOVAL OPENING

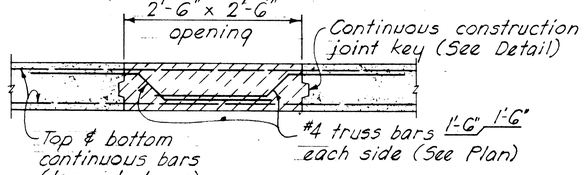


TYPICAL DETAIL OF VERTICAL CHAMFER AT ACUTE INTERSECTION OF SKEWED CONCRETE MEMBER



SECTION E/3

Note: Form removal opening at top slab shall not be located where main girder bars occur.



SECTION F/3

APPROVAL RECOMMENDED:
Paul T. Yamashita — BRIDGE DESIGN ENGINEER — 1-23-70 DATE

APPROVED
Paul T. Yamashita — For ASSISTANT CHIEF, ENGINEERING — 1-28-70 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE BOX GIRDER

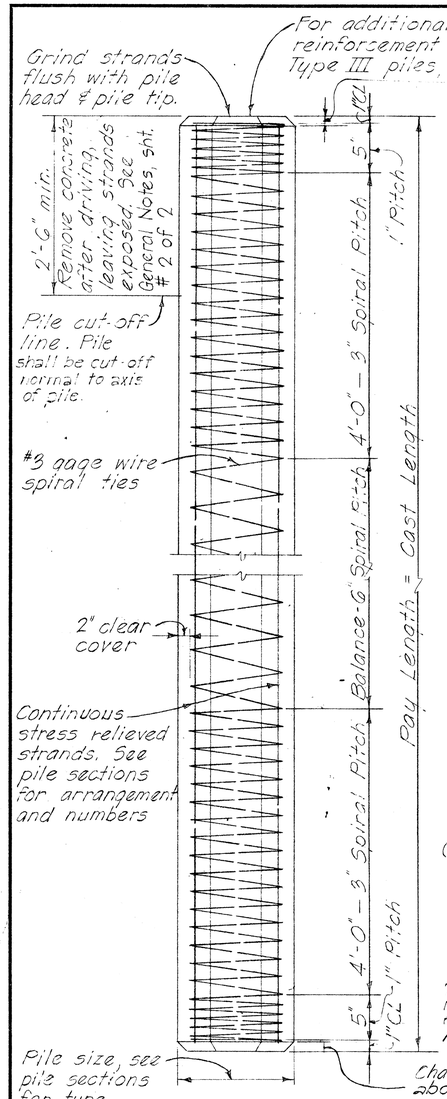
SCALE AS NOTED

SHEET No. 3 OF 3 SHEETS DB-101-3

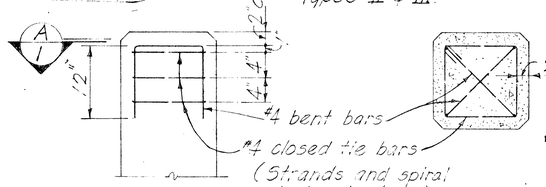
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | NOTE BOOK | QUANTITIES BY | CHECKED BY | DATE | No.

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(10)16	1973	89	104

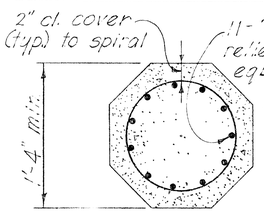


TYPICAL PILE DETAIL



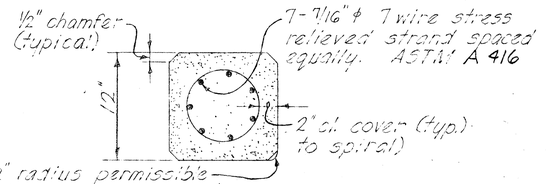
PART ELEVATION SECTION A/1

TYPICAL ADDED REINFORCEMENT PILE ENDS - TYPE II & III ONLY

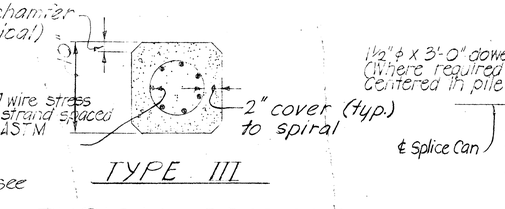


Note: All types of pile spiral reinforcement shall be cold drawn steel wire ASTM A 82

TYPE I



TYPE II



TYPE III

TYPICAL SECTIONS THRU PILES

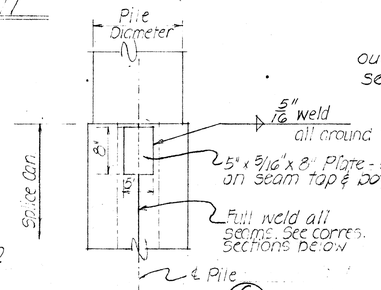
Max. Length "L"*	Max. Length "L"*	Length "L"*
Type I "L" = 53'-0"	Type I "L" = 75'-0"	Type I "L" over 75'-0"
12" Type II "L" = 50'-0"	12" Type II "L" = 72'-0"	12" Type II "L" over 72'-0"
10" Type III "L" = 46'-0"	10" Type III "L" = 66'-0"	10" Type III "L" over 66'-0"
0.30 L 0.70 L	0.21 L 0.58 L 0.21 L	0.15 L 0.35 L 0.35 L 0.15 L

*The length "L" is the distance end to end of pile.

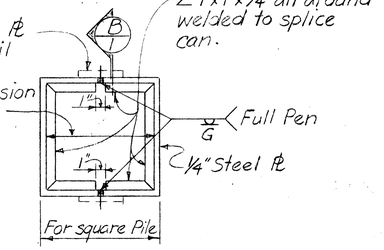
1 POINT PICK-UP 2 POINT PICK-UP 3 POINT PICK-UP

NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points.
The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method of pick-up shall be subject to approval by the Engineer.

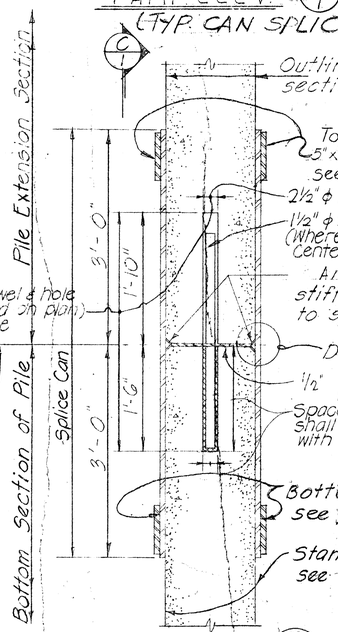
NOTE:
Concrete in pile build-ups without driving shall be Class A Concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength f'c of 5000 p.s.i. at 28 days. Build-ups may be driven if the specimen of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.



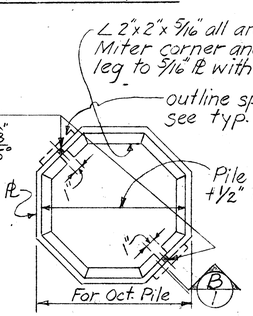
PART ELEV. C/1 (TYP. CAN SPLICE ℄)



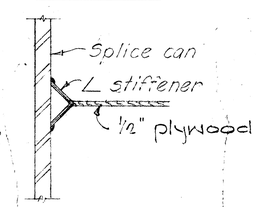
TYPE II & III



SECTION B/1



TYPE I



DETAIL "X"

NOTE:
1. Splice detail shown above shall not be used except for pile length in excess of 100'-0" long.
2. Structural steel for splice can shall be ASTM A36.

TYPICAL PILE SPLICE DETAILS (FOR PRESTRESSED CONCRETE PILES WHEN CAST IN TWO OR MORE SECTIONS)

NOTE: All welding shall conform to the Specifications for "Welded Highway and Railway Bridges" of the American Welding Society.

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Paul T. Yamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED
Paul T. Yamashita 1-28-70
for ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
PRESTRESSED CONCRETE PILES

SHEET No. 1 OF 2 SHEETS DB-300-1

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	TRACED BY	
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No.	QUANTITIES BY	
	CHECKED BY	

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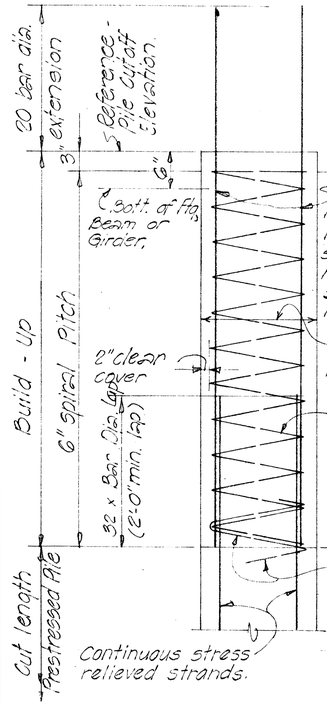
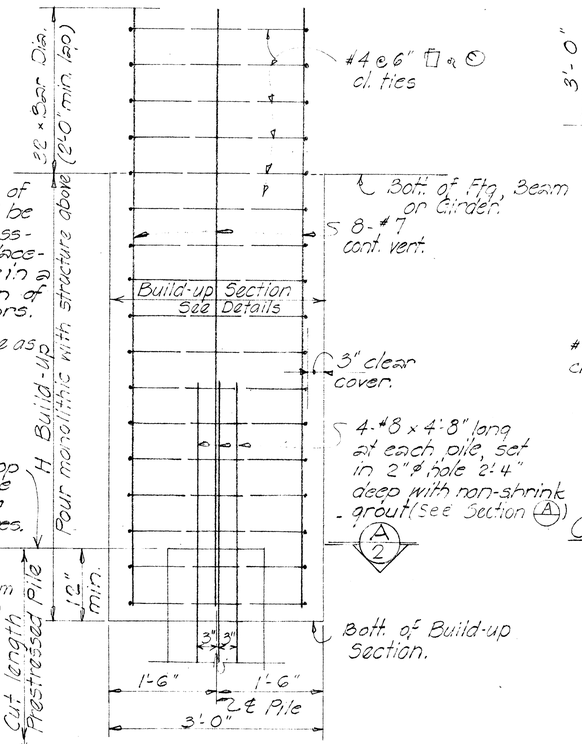
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(10)6	1973	90	104



TYPE A



TYPE B

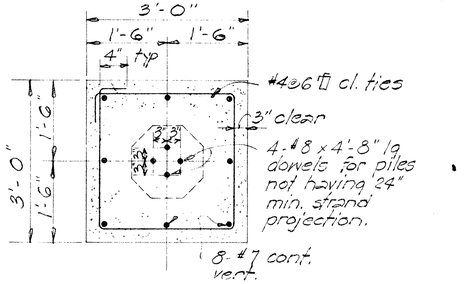
Notes:

Selection of pile build-up type without driving to be determined by the Engineer.

When height of depressed portion of footing (H) exceeds 4', the depressed section shall be poured separately from the main body of the footing.

Depressed portion of footing may be omitted for pile heads embedded at least 4" into footing provided at least 90% of the piles in each footing have the minimum embedment into footing as shown in contract plans.

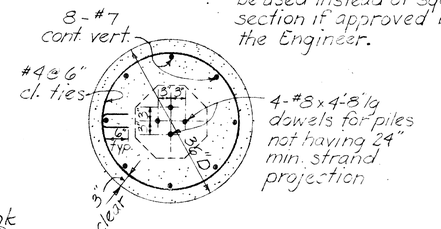
WITHOUT DRIVING
TYPICAL PILE BUILD-UP DETAILS



SQUARE BUILD-UP

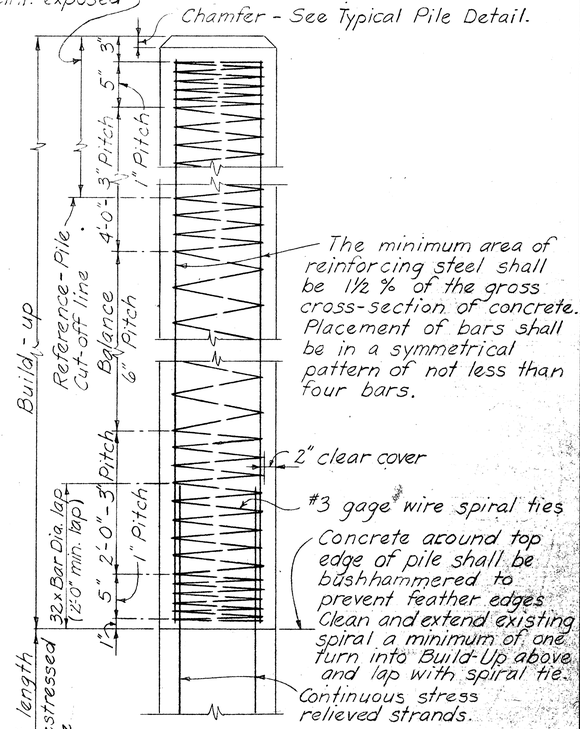
Note:

Circular section may be used instead of square section if approved by the Engineer.



CIRCULAR BUILD-UP SECTION (A/2)

2'-6" min. unless otherwise directed by the Engineer. Remove concrete after driving, leaving reinf. exposed



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL

GENERAL NOTES

1. Work of cutting off prestressed conc. piles or concrete build-ups shall be performed in such a manner as to avoid spalling or damaging the pile below cut-off. In case of such damage, the pile shall be replaced or repaired by the Contractor at his expense as directed by the Engineer.
2. Portion of pile embedded into footing shall be of sound concrete. Damaged portions shall be removed and pile cut-off elevation lowered as required by the Engineer.

APPROVAL RECOMMENDED:
Paul T. Yamashita — BRIDGE DESIGN ENGINEER — 1-23-70 DATE

APPROVED Paul T. Yamashita For ASSISTANT CHIEF, ENGINEERING — 1-28-70 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PRESTRESSED CONCRETE PILES

Date: Oct. 1968

SHEET No. 2 OF 2 SHEETS DB-300-2

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