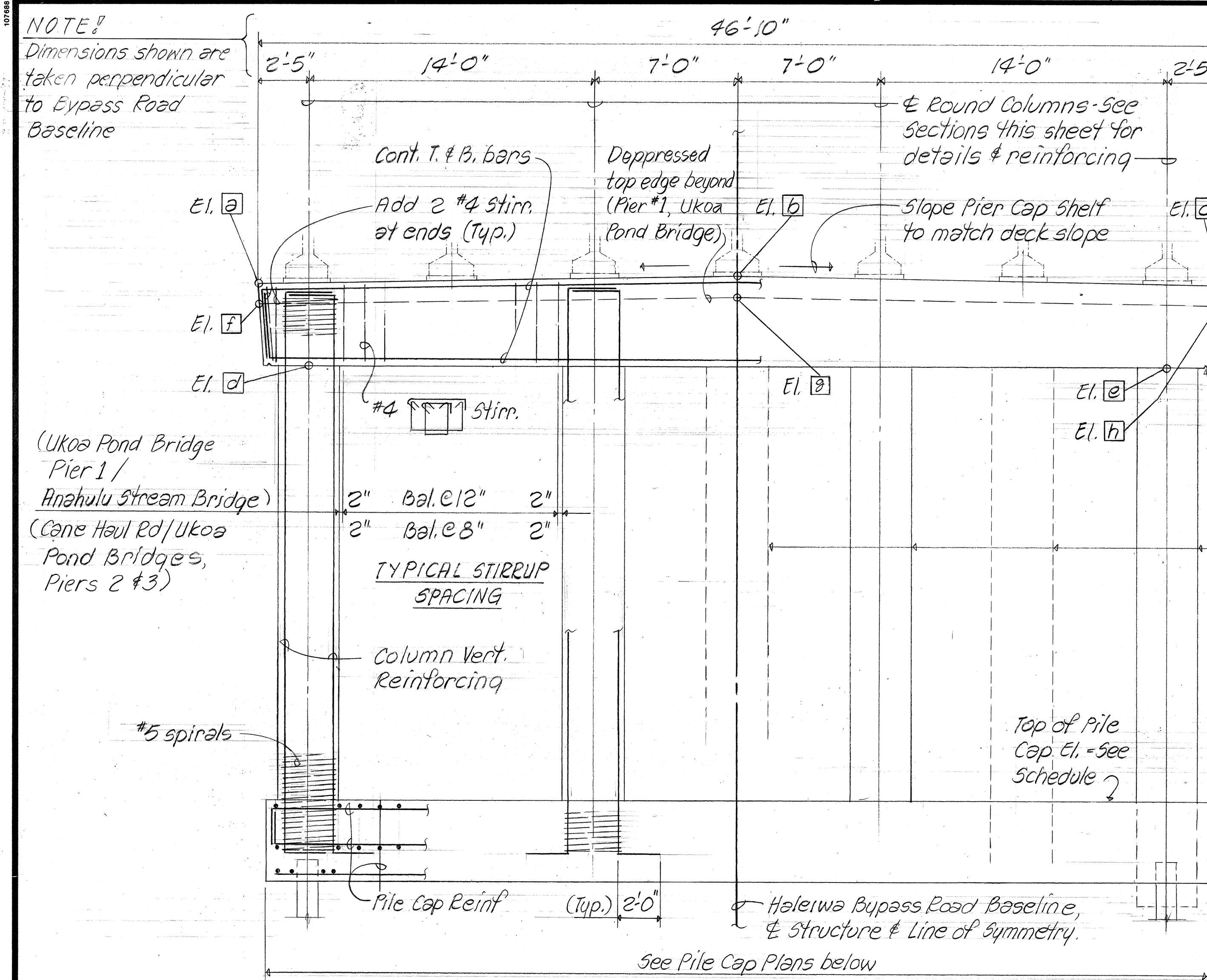
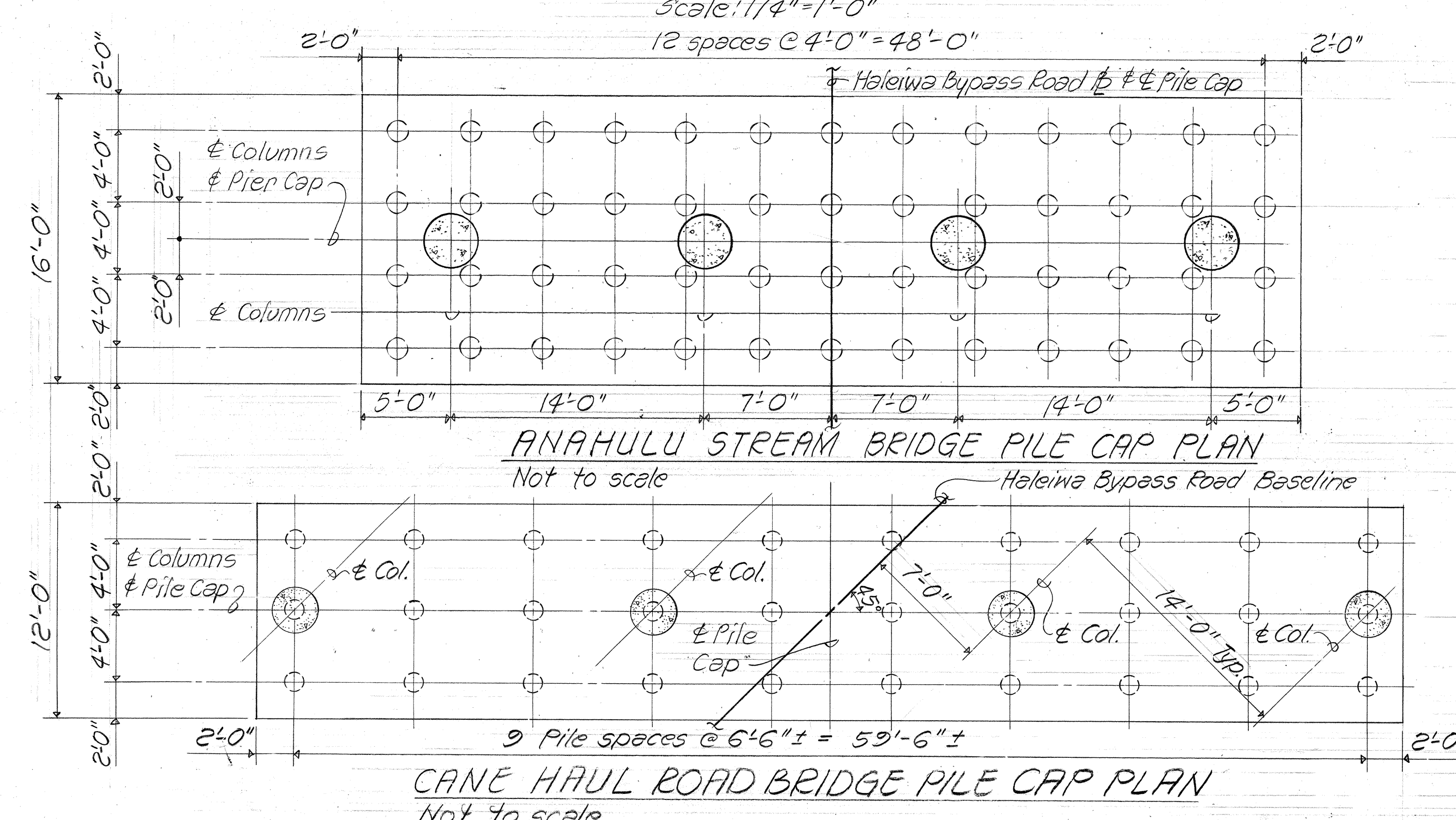
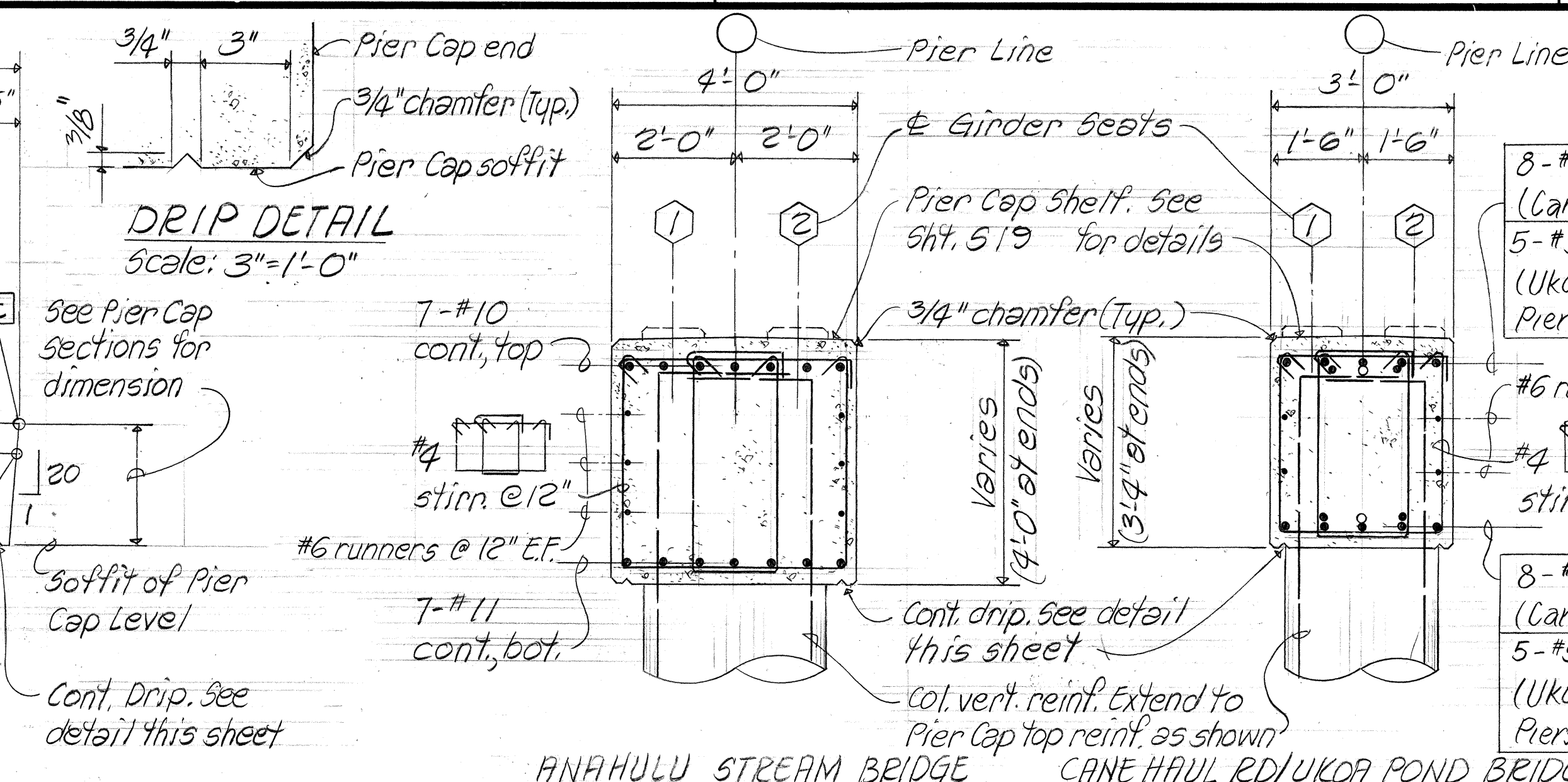




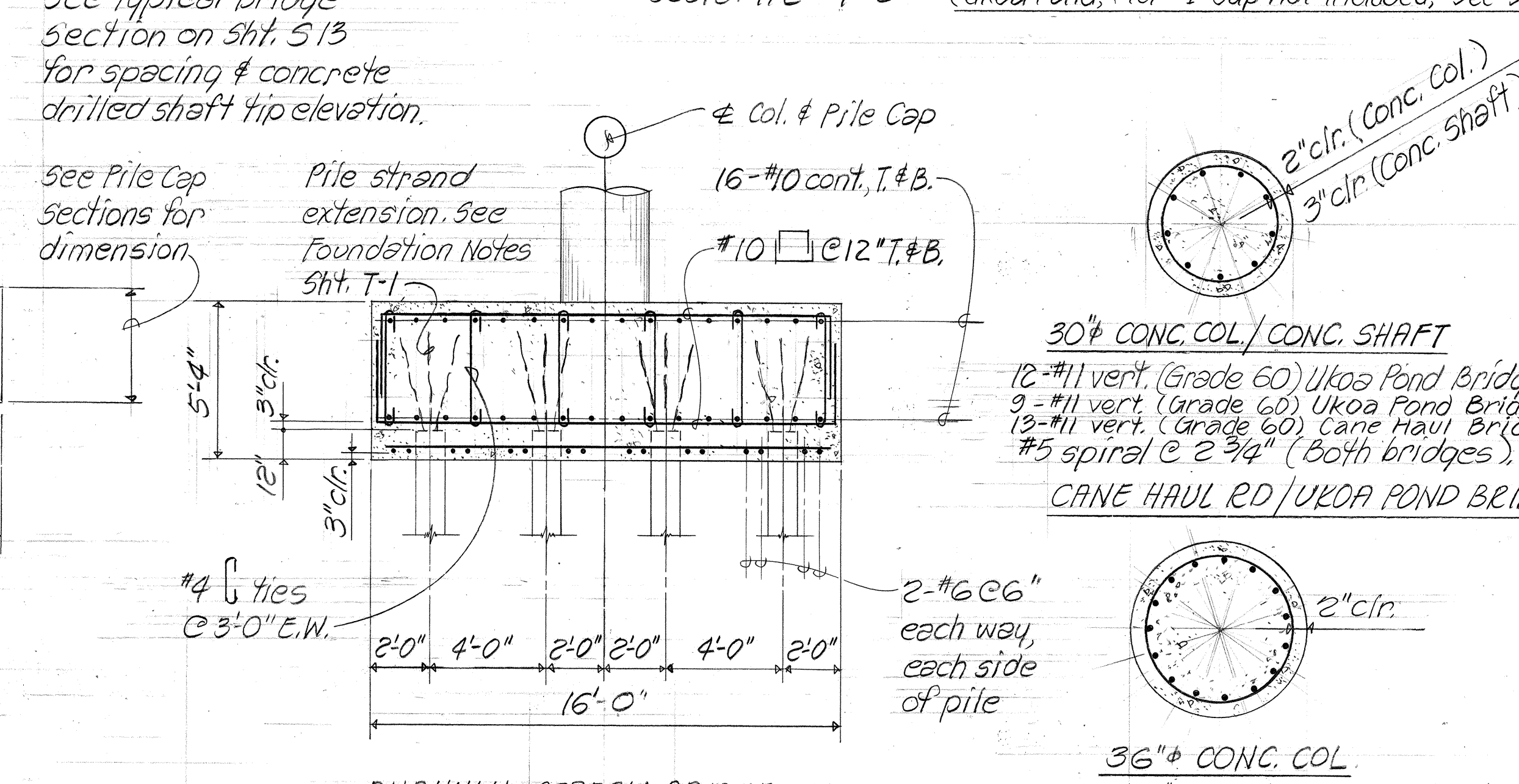
TYPICAL PIER SECTION
Scale: 1/4" = 1'-0"



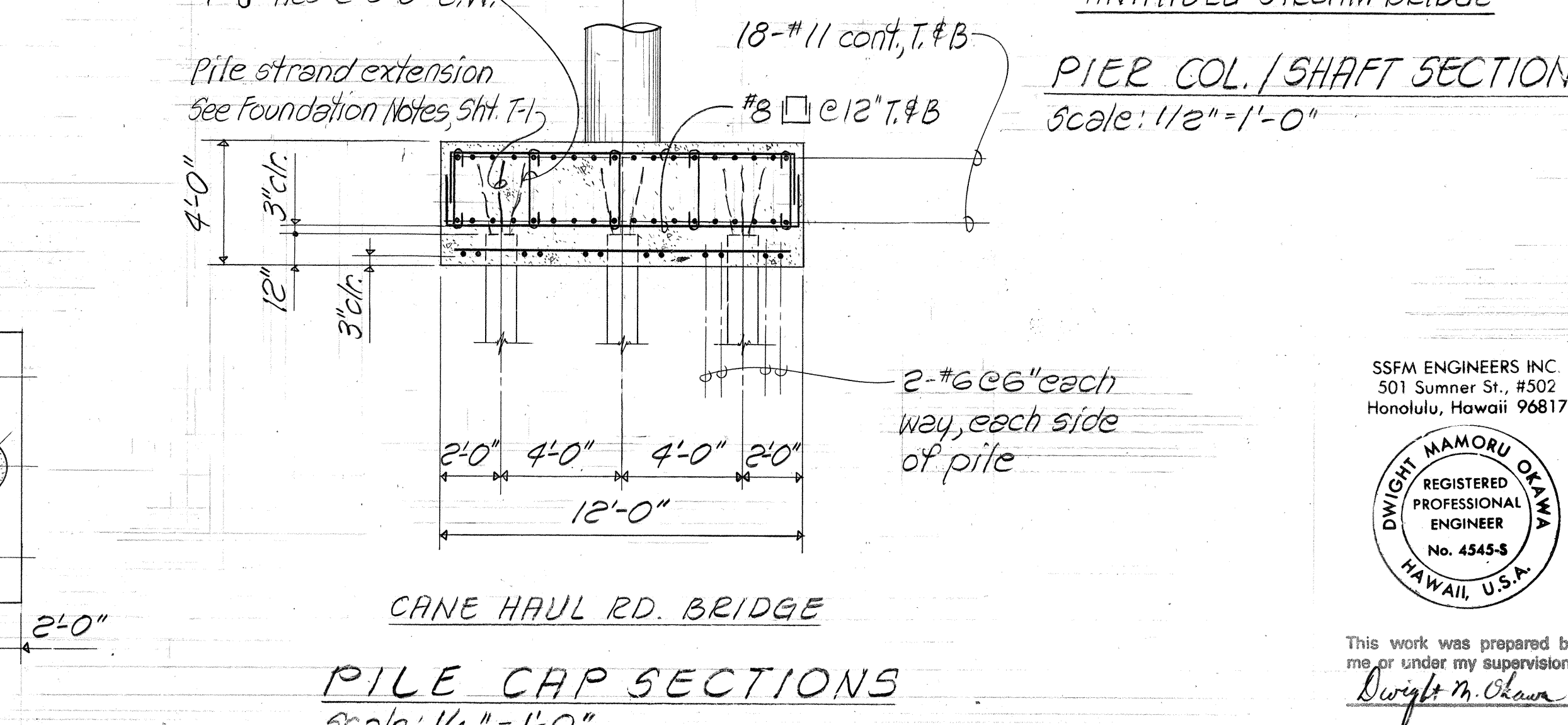
CANE HAUL ROAD BRIDGE PILE CAP PLAN
Not to scale



TYPICAL PIER CAP SECTIONS
Scale: 1/2" = 1'-0" (Ukoa Pond, Pier #1 Cap not included, See Sheet S27)



PIER COL. / SHAFT SECTIONS
Scale: 1/2" = 1'-0"



PILE CAP SECTIONS
Scale: 1/4" = 1'-0"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	108	125

SCHEDULE OF PIER ELEVATIONS				
BRIDGE	PIER	PIER CAP ELEVATIONS	TOP PILE CAP EL.	
CANE HAUL ROAD	#1	a 43.98	18.0'	
		b 44.34		
		c 44.17		
	#2	a 44.36	18.0'	
		b 45.22		
		c 45.06		
UKOA POND	#1	a See Sheet S-27	-	
		b 8.34		
		c 8.34		
	#2	a 8.34	-	
		b 8.34		
		c 5.34		
ANAHULU STREAM	#1	a 8.04	-6.0'	
		b 8.51		
		c 8.04		
	#2	a 18.22	-6.0'	
		b 18.69		
		c 18.22		

Note "A":
Lap splicing of Spiral Reinforcing within the top and bottom 4'-0" of columns and top 4'-0" of drilled concrete shafts shall not be permitted. Spirals shall be spliced by full length Lap Welds in accordance with AWS D14. The weld splice shall develop at least 125% of the tensile strength of the spiral reinforcement.

7-30-91

6-12-91

DATE

Changed Pier Elevation

Changed Pier Cap Elevation, Conc. Shaft Reinf.

REVISION

SSFM ENGINEERS INC.

501 Sumner St., #502

Honolulu, Hawaii 96817

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

TYPICAL PIER FOUNDATION, COLUMN & CAP DETAILS

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA JUNCTION TO HALEIWA BEACH PARK (STRUCTURES)

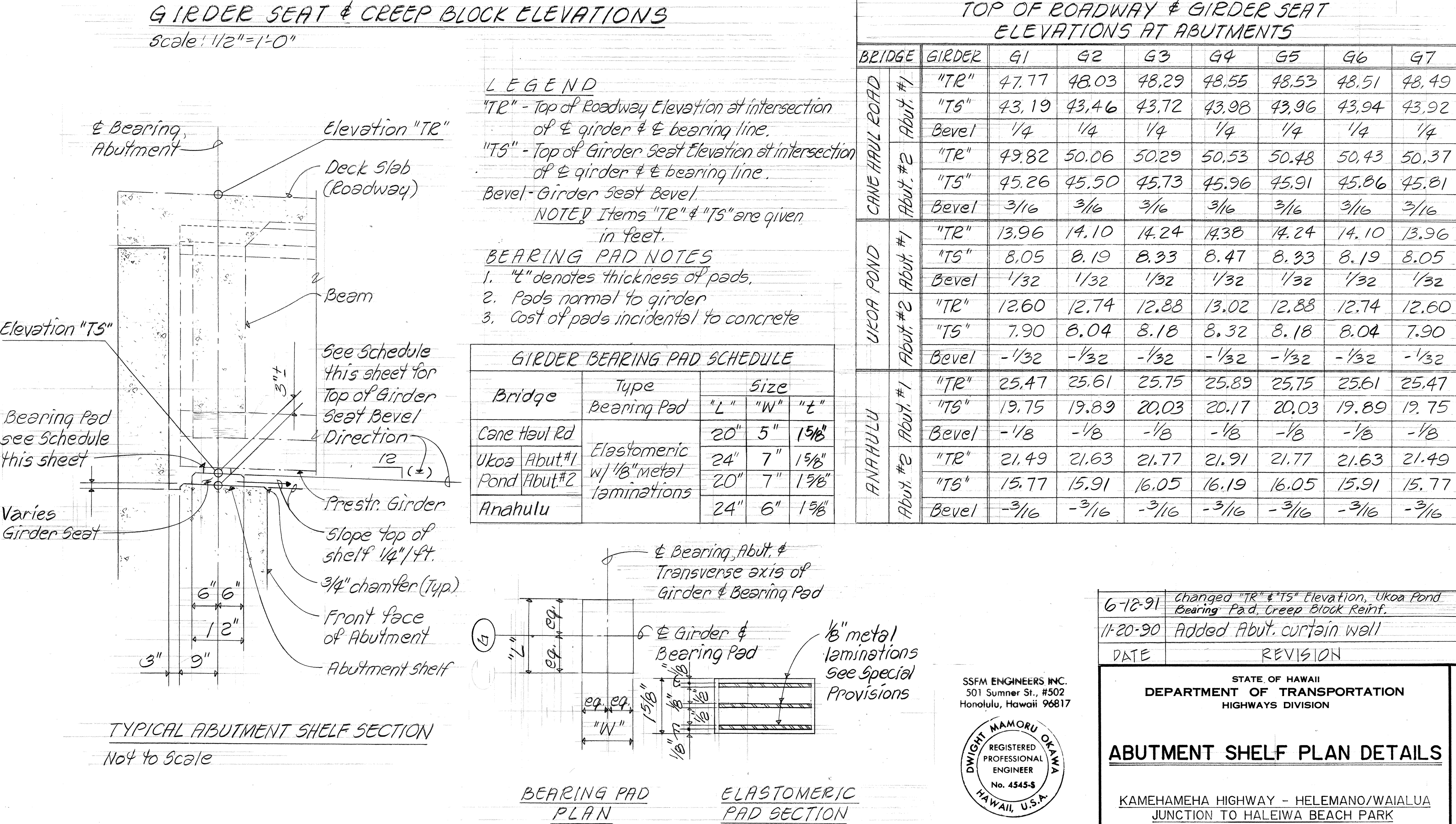
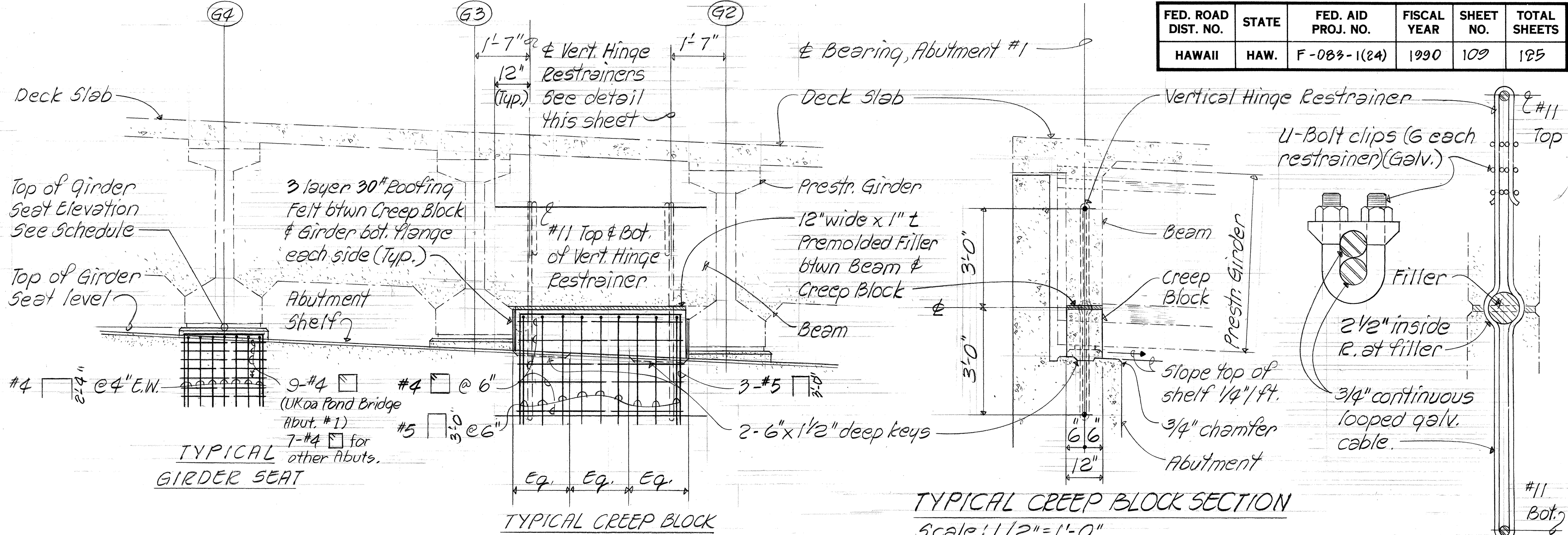
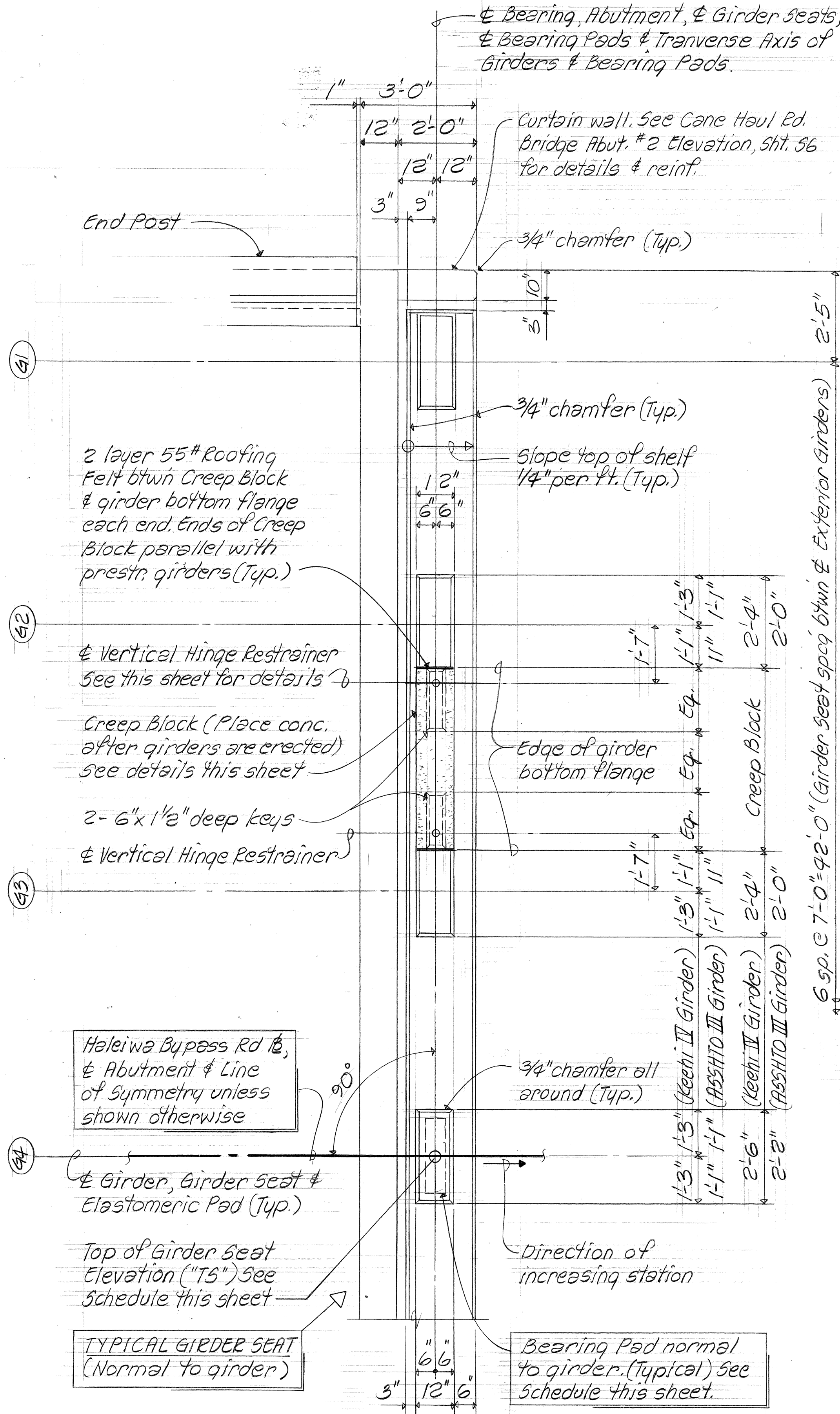
FAP NO. F-083-1(24)

SHEET No. 3170F

SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	109	125



UKOA POND & ANAHULU BRIDGES
PARTIAL ABUTMENT SHELF PLAN
WITH GIRDER SEATS & CREEP BLOCK
Scale: 1/2" = 1'-0"

GIRDER SEAT & BEARING PAD SCHEDULES & DETAILS

6-12-91	changed "TR" & "TS" Elevation, Ukoa Pond Bearing Pad, Creep Block Reinf.
11-20-90	Added Abut. curtain wall
DATE	REVISION

SSFM ENGINEERS INC.
501 Summer St., #502
Honolulu, Hawaii 96817

DWIGHT MAMORU OKAWA
REGISTERED PROFESSIONAL ENGINEER
No. 4545-S
HAWAII, U.S.A.

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Dwight M. Okawa

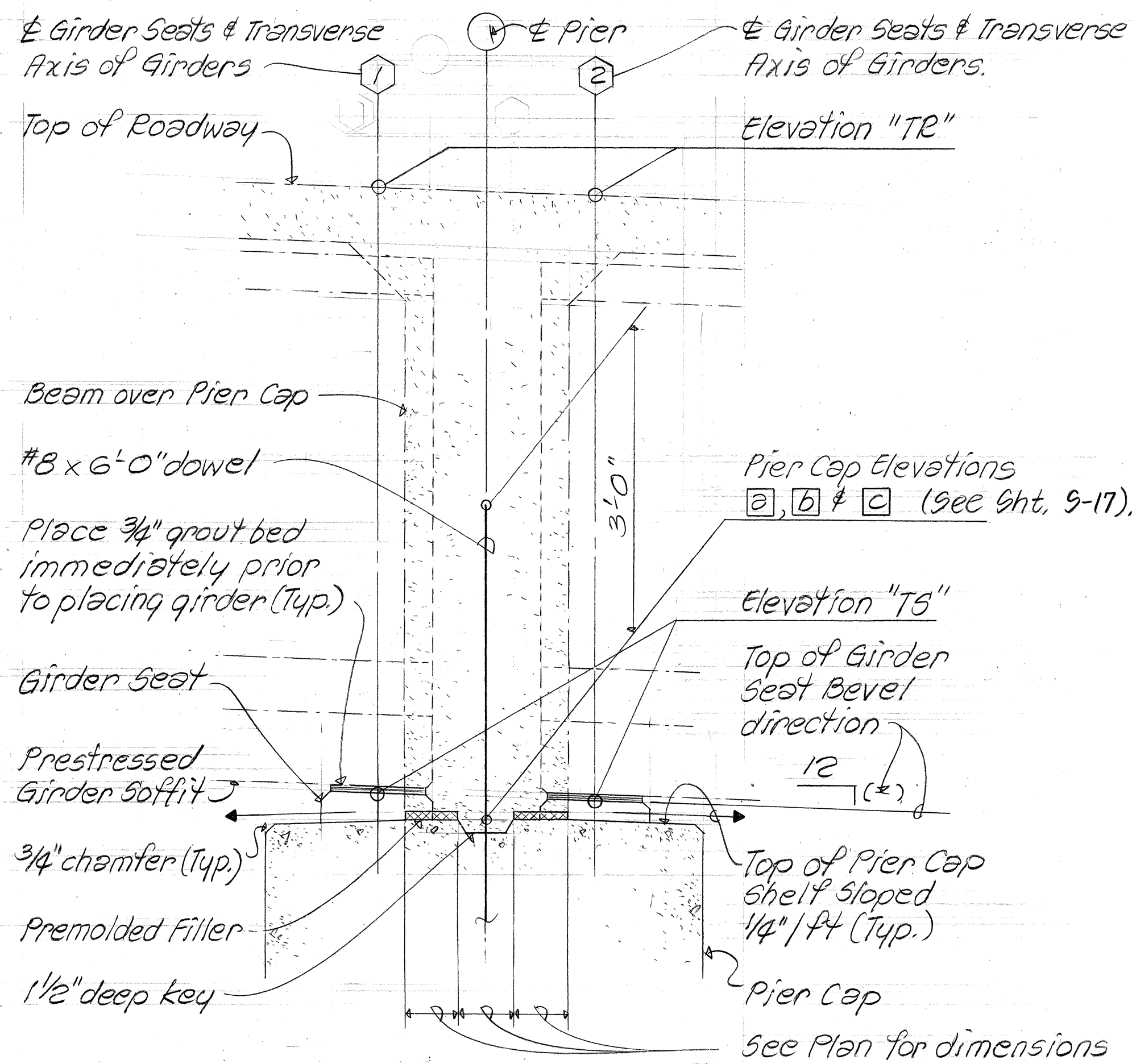
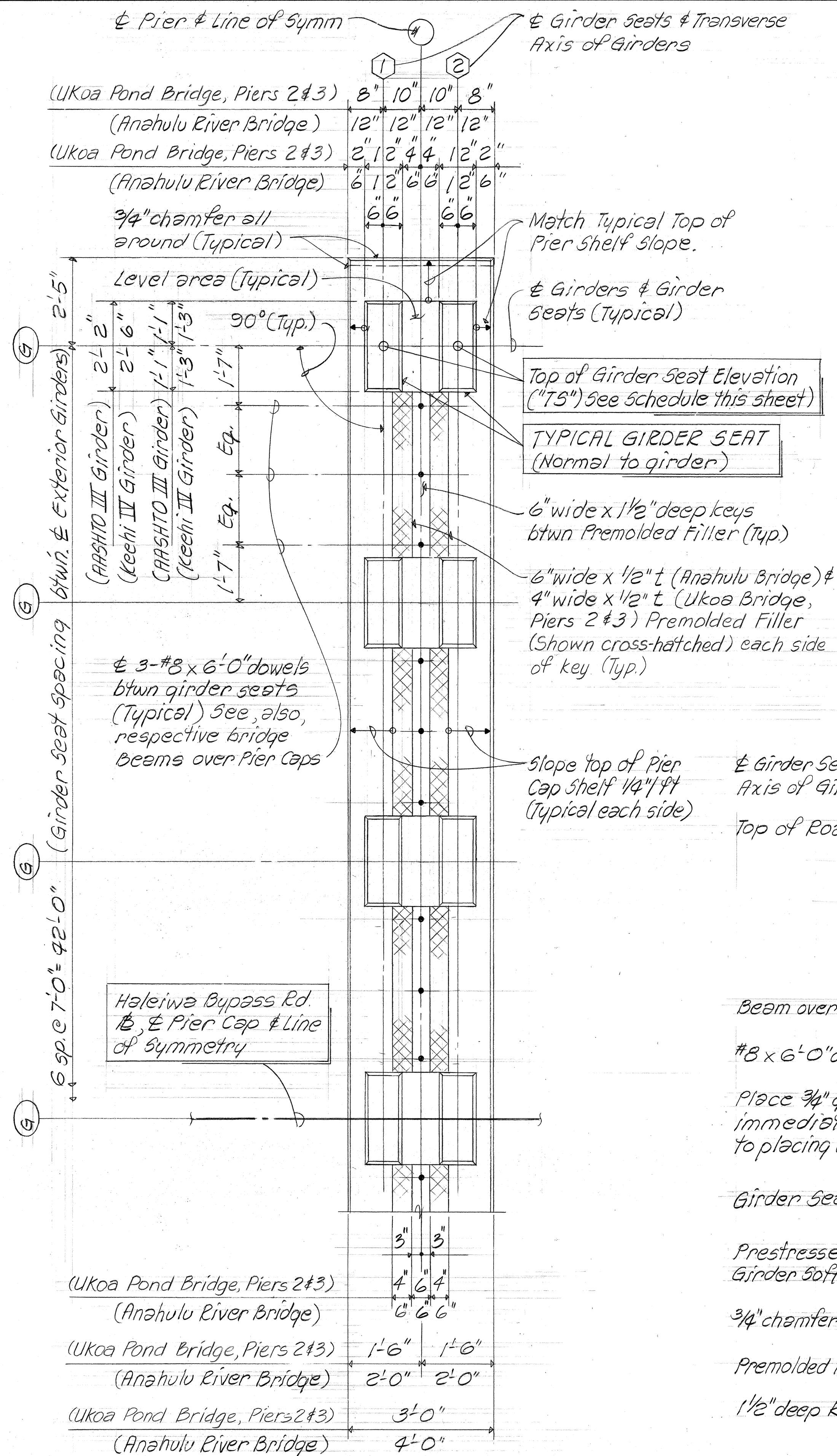
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT SHELF PLAN DETAILS

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA JUNCTION TO HALEIWA BEACH PARK (STRUCTURES)
FAP NO. F-083-1(24)

SHEET No. 518 OF SHEETS

DATE
DESIGNED BY
CHECKED BY
QUANTITIES BY
NO.



UKOA POND & ANAHULU STREAM BRIDGES
TOP OF ROADWAY & TOP OF GIRDER SEAT ELEVATIONS AT PIERS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	110	125

GIRDER		Pier ①						Pier ②						Pier ③					
		Bearing Line						Bearing Line						Bearing Line					
		①	②	③	④	⑤	⑥	①	②	③	④	⑤	⑥	①	②	③	④	⑤	⑥
UKOA POND BRIDGE	G1	13.51	7.74	-1/16	13.50	8.94	1/32	13.21	8.65	-1/32	13.20	8.64	1/32	12.91	8.35	-1/32	12.90	8.34	1/32
	G2	13.65	7.88	-1/16	13.64	9.08	1/32	13.35	8.79	-1/32	13.34	8.78	1/32	13.05	8.49	-1/32	13.04	8.48	1/32
	G3	13.79	8.02	-1/16	13.78	9.22	1/32	13.49	8.93	-1/32	13.48	8.92	1/32	13.19	8.63	-1/32	13.18	8.62	1/32
	G4	13.93	8.16	-1/16	13.92	9.36	1/32	13.63	9.07	-1/32	13.62	9.06	1/32	13.33	8.77	-1/32	13.32	8.76	1/32
	G5	13.79	8.02	-1/16	13.78	9.22	1/32	13.49	8.93	-1/32	13.48	8.92	1/32	13.19	8.63	-1/32	13.18	8.62	1/32
	G6	13.65	7.88	-1/16	13.64	9.08	1/32	13.35	8.79	-1/32	13.34	8.78	1/32	13.05	8.49	-1/32	13.04	8.48	1/32
	G7	13.51	7.74	-1/16	13.50	8.94	1/32	13.21	8.65	-1/32	13.20	8.64	1/32	12.91	8.35	-1/32	12.90	8.34	1/32
ANAHULU RIVER BRIDGE	G1	24.29	18.71	-1/8	24.25	18.52	-1/8	22.70	16.97	-1/8	22.67	17.09	-3/16						
	G2	24.43	18.85	-1/8	24.39	18.66	-1/8	22.84	17.11	-1/8	22.81	17.23	-3/16						
	G3	24.57	18.99	-1/8	24.53	18.80	-1/8	22.98	17.25	-1/8	22.95	17.37	-3/16						
	G4	24.71	19.13	-1/8	24.67	18.94	-1/8	23.12	17.39	-1/8	23.09	17.51	-3/16						
	G5	24.57	18.99	-1/8	24.53	18.80	-1/8	22.98	17.25	-1/8	22.95	17.37	-3/16						
	G6	24.43	18.85	-1/8	24.39	18.66	-1/8	22.84	17.11	-1/8	22.81	17.23	-3/16						
	G7	24.29	18.71	-1/8	24.25	18.52	-1/8	22.70	16.97	-1/8	22.67	17.09	-3/16						

LEGEND

"TR" - Top of roadway elevation at intersection of girder & bearing line.
"TS" - Top of girder seat elevation at intersection of girder & bearing line.
Bevel - Girder seat bevel

NOTE

- Items "TR" & "TS" are given in feet.
- For Kane Haul Road Bridge Pier Shelf Plan see Sht. S9.

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DATE	REVISION
6-12-91	Changed "TR" & "TS" Elevations

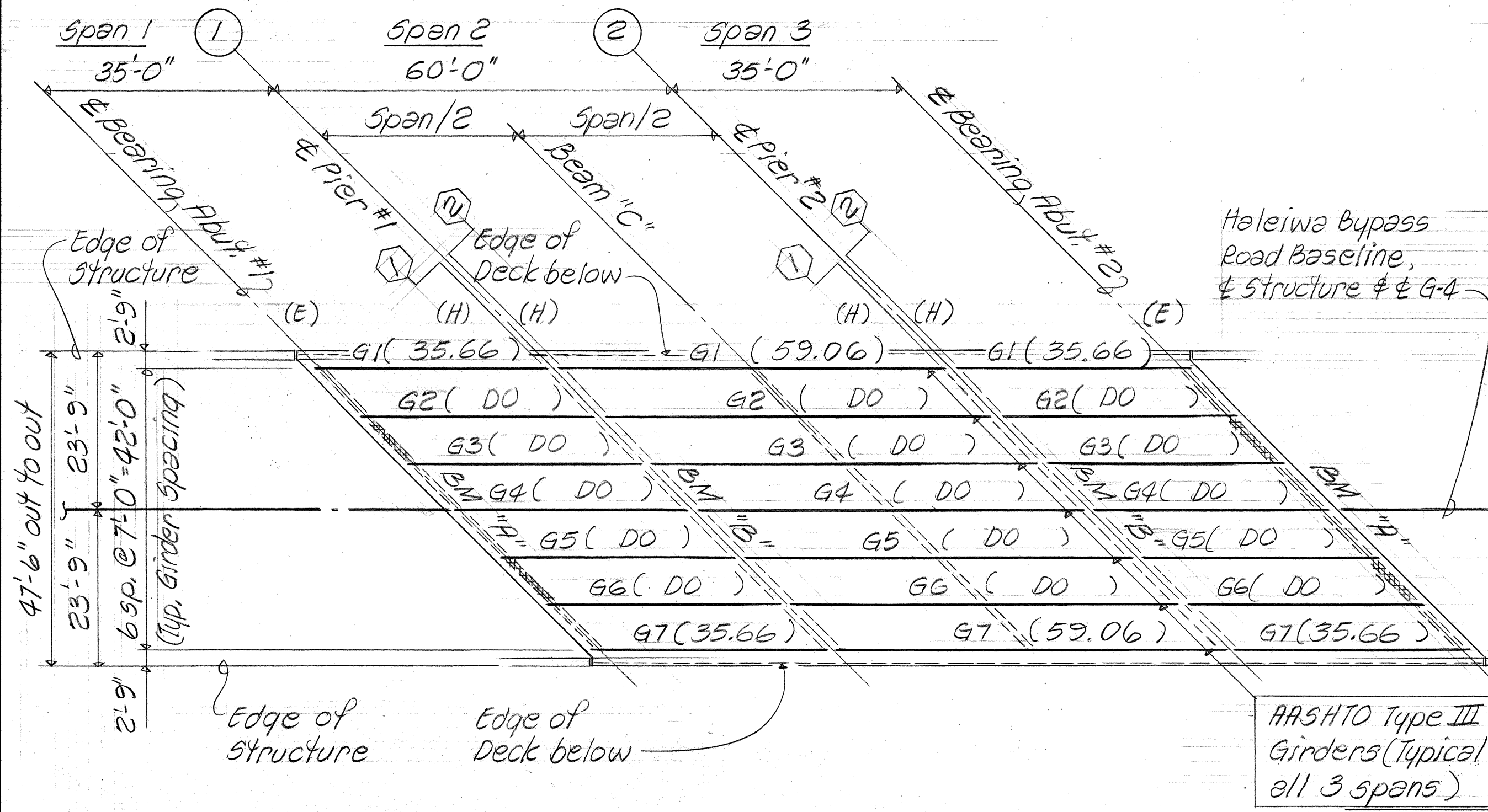
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PIER SHELF PLAN DETAILS

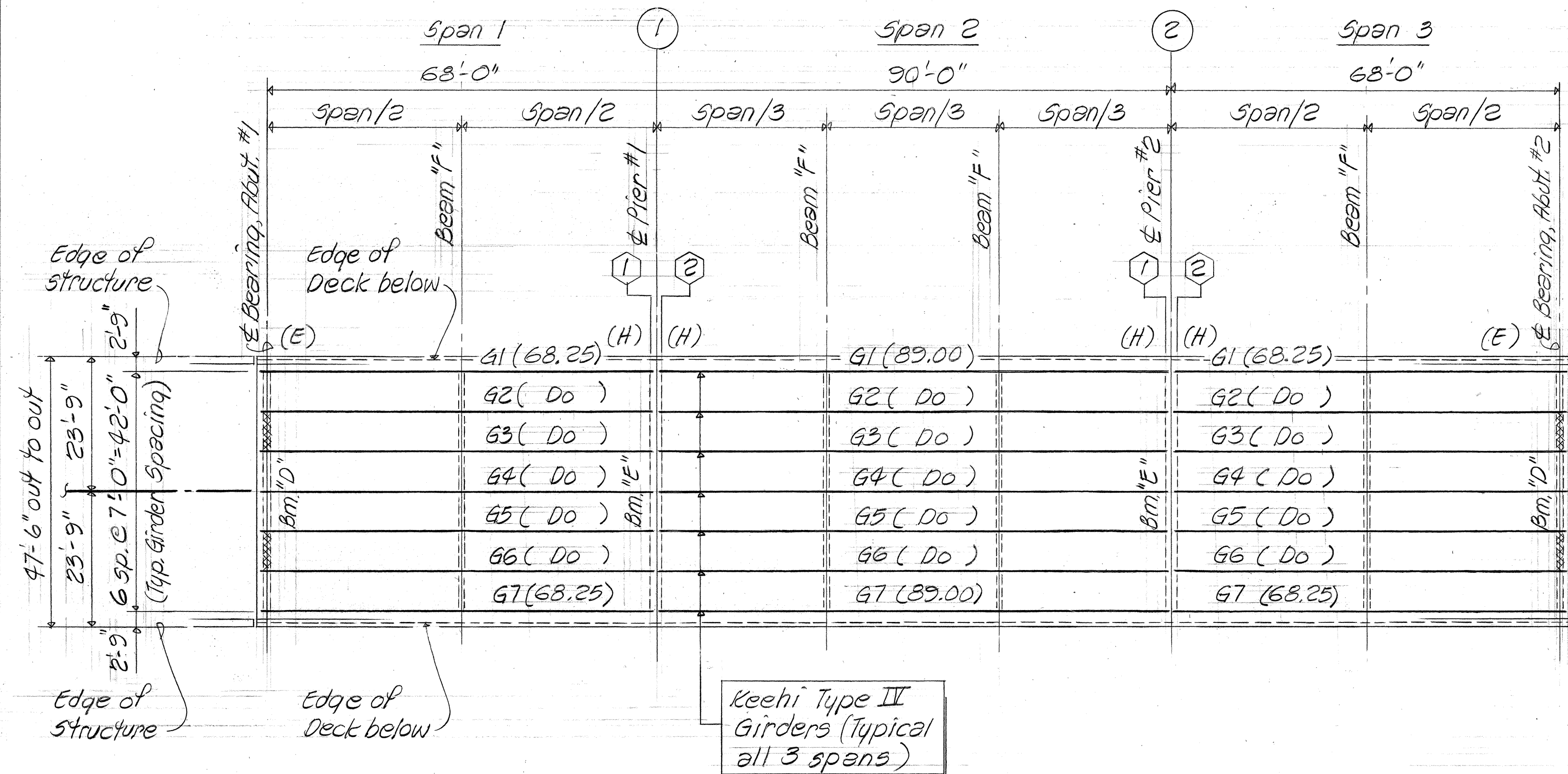
KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA
JUNCTION TO HALEIWA BEACH PARK
(STRUCTURES)
FAP NO. F-083-1(24)

SHEET No. 519 OF SHEETS

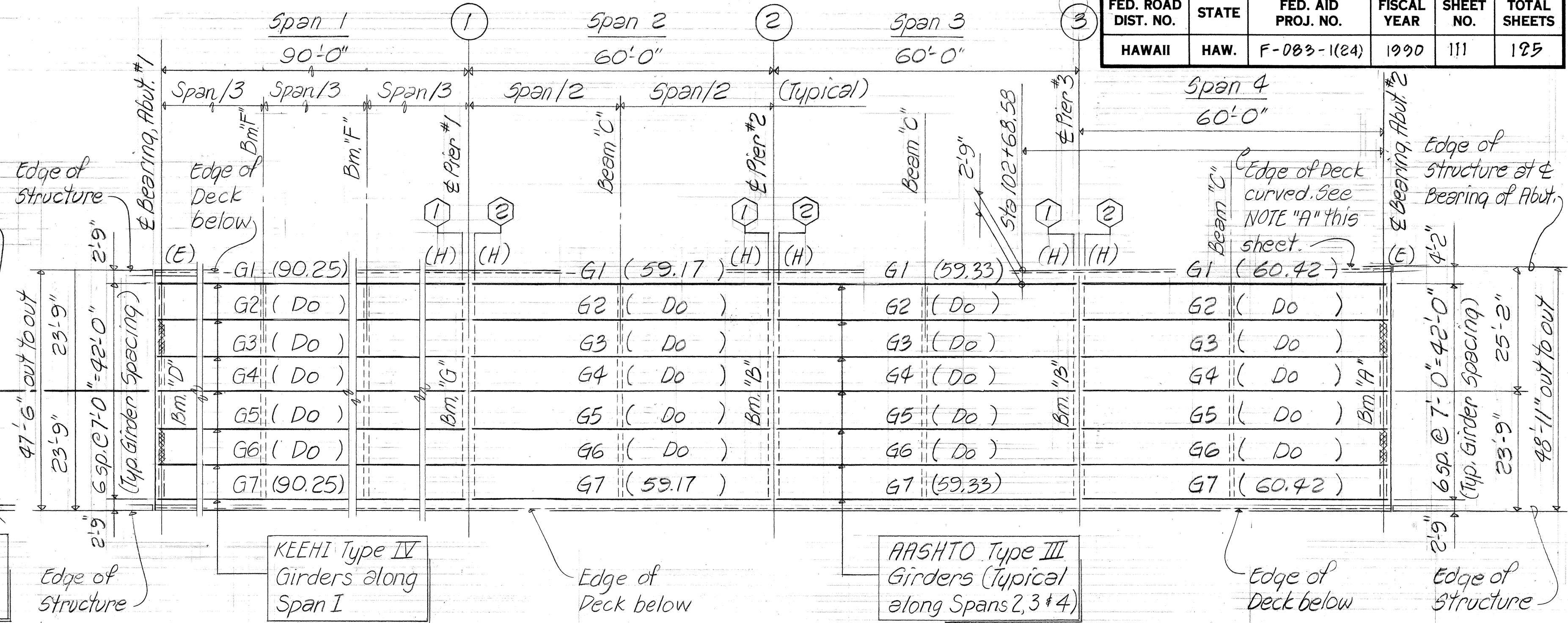
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	
No.		



CANE HAUL ROAD BRIDGE
Scale: 1/16" = 1'-0"



ANAHULU RIVER BRIDGE
Scale: 1/16" = 1'-0"



UKOUA POND BRIDGE
Scale: 1/16" = 1'-0"

REFERENCE DRAWINGS

1. Prestressed Girder Details --- T3
2. Prestressed Girder schedule --- T3
3. Deck Slab Reinf. Schedule --- S22
4. Deck Slab Reinf. Layout Plan --- S23
5. Creep Block Details --- S18
6. Beam "A" --- S24
6. Beams "B" & "C" --- S25
7. Beams "D", "E" & "F" --- S26
8. Beam "G" --- S27

LEGEND

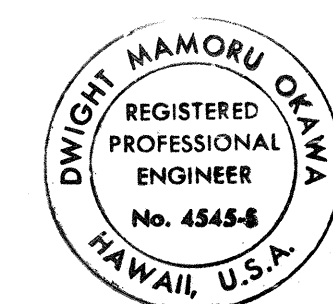
G1 () = Prestressed Girder Mark w/ girder lengths shown in (). Girder lengths are measured along E of girders end to end in plan.

(E) = Expansion end of girders

(H) = Hinged end of girders

Creep Block w/ vertical hinge restrainers

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6-18-91	Changed Ukoua Pond & Cane Haul Road Bridge Framing Plan
DATE	REVISION

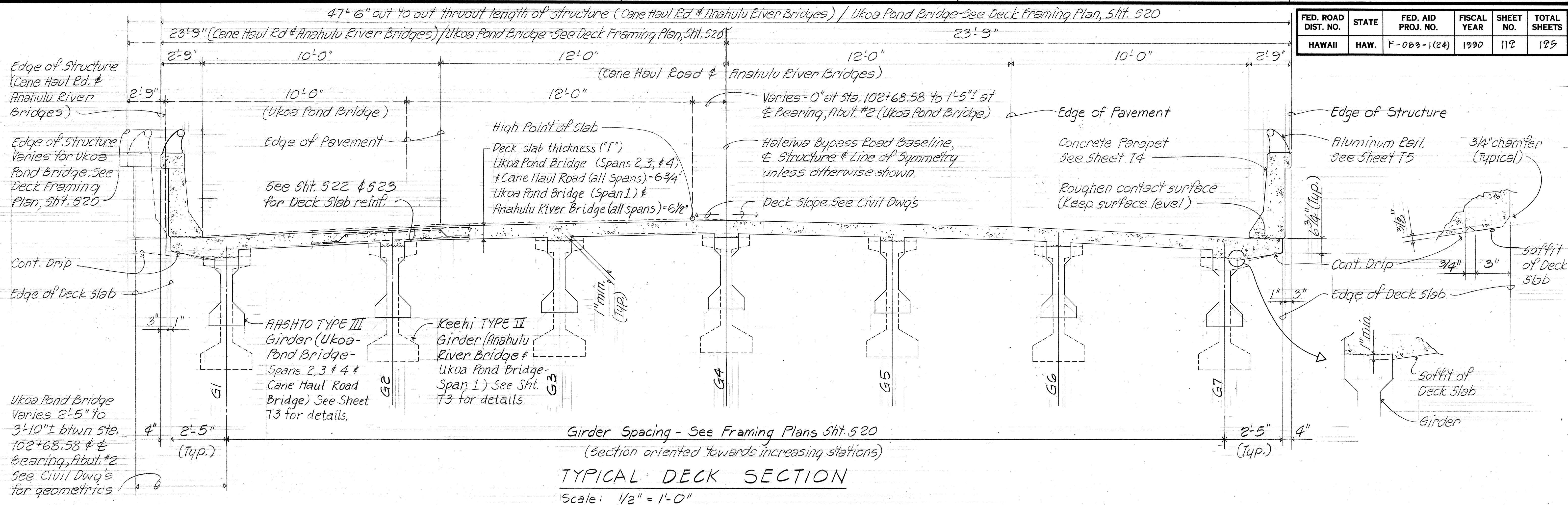
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DECK FRAMING PLANS

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA
JUNCTION TO HALEIWA BEACH PARK
(STRUCTURES)
FAP NO. F-083-II(24)

SHEET No. 520 OF SHEETS

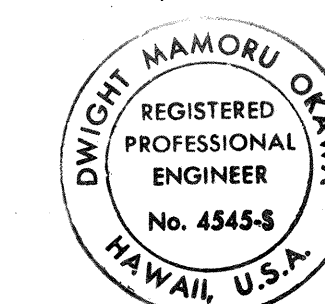
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NO.	DRAWN BY	
	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	112	125

6-12-91	Changed Section, Ukoa Pond Bridge, Span 1
DATE	REVISION

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HIGHWAYS DIVISION

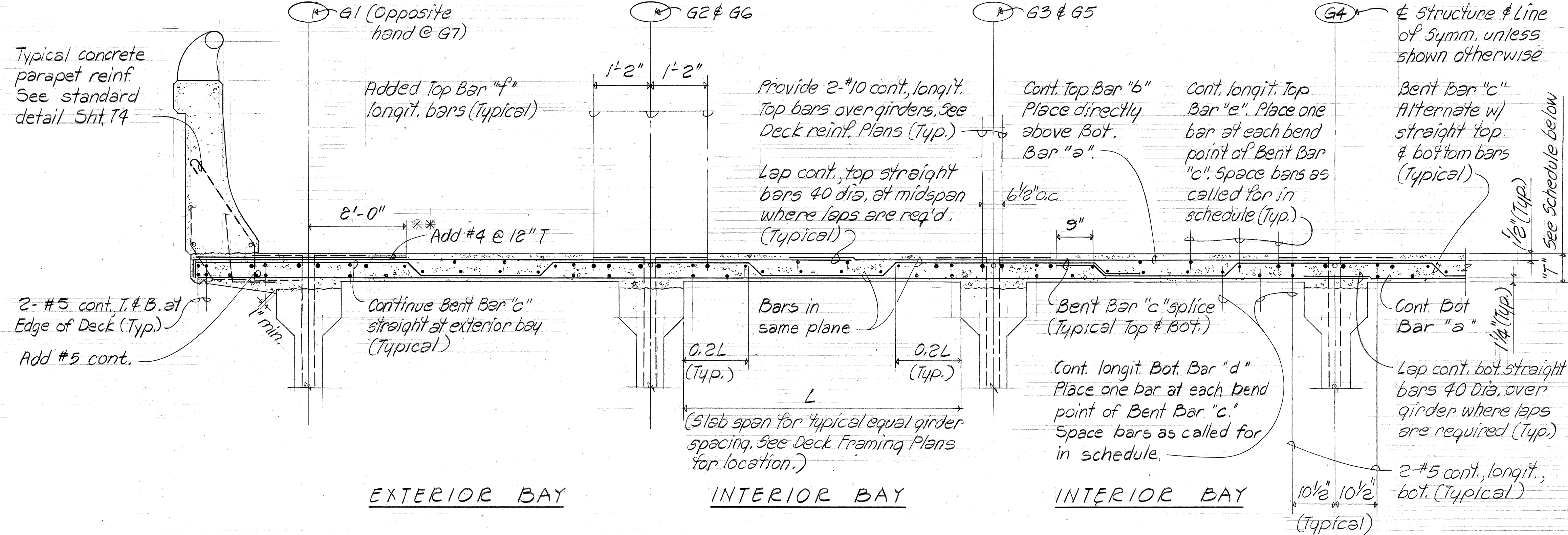
TYPICAL DECK SECTION

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA
JUNCTION TO HALEIWA BEACH PARK
(STRUCTURES)
FAP NO. F-083-1(24)

SHEET NO. 521 OF SHEETS

0.0.112

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	113	125



- NOTES:
- Deck slab clear cover to main reinforcement shall be as follows:
Top of slab 1 1/2" Typical
Bottom of slab 1 1/4" Typical
 - Lap continuous, top straight bars 40 diameters at midspan where laps are required, typical.
 - Lap continuous, bottom straight bars 40 diameters at supports where laps are required, typical.
 - Splice top and bottom bars as required at interior bays only. Alternate bars shall be spliced at the same location.
 - Top and bottom transverse deck slab reinf. shall be placed normal to girders. See Deck Slab Reinf. Layout Plans Sht. 523
 - All deck slab concrete, except diaphragm and parapet, shall be Class BD.
 - For added top longitudinal bars across supports, see Deck Slab Reinf. Layout Plans, Sht. 523

PARTIAL DECK SECTION SHOWING TYPICAL DECK SLAB REINFORCING
Not to scale

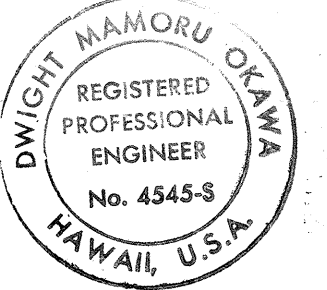
**Special Note for Ukoa Pond Bridge:
Added #4 @ 12" top bars occurs between
Sta. 108+68.58 to End of Bridge Deck
Slab at Abut. No. 2 where width of Bridge
Deck Slab varies along Girder G1.

BRIDGE STRUCTURE	TRANSVERSE REINF.			LONGITUDINAL REINF.			DECK SLAB THICKNESS "T"
	CONT. BOT BAR "a"	CONT. TOP BAR "b"	BENT BAR "c"	CONT. BOT BAR "d"	CONT. TOP BAR "e"	ADDED TOP BAR "f"	
CANE HAUL ROAD BRIDGE	#5@12"	#5@12"	#5@12"	#5@9"	#5@12"	2-#8	6 3/4"
ANAHULU RIVER BRIDGE	#5@12"	#5@12"	#5@12"	#5@9"	#5@12"	3-#10	6 1/2"
UKOA OUTLET POND BRIDGE (SPAN 1)	#5@12"	#5@12"	#5@12"	#5@9"	#5@12"	2-#10	6 1/2"
UKOA OUTLET POND BRIDGE (SPANS 2,3,4)	#5@12"	#5@12"	#5@12"	#5@9"	#5@12"	2-#10	6 3/4"

* See Deck Slab Reinf. Plans Sht. 523 for layout of added Top Bar "f" along longitudinal reinf.

6-18-91	Changed Reinf. & Section, Ukoa Pond Bridge, Span 1
DATE	REVISION

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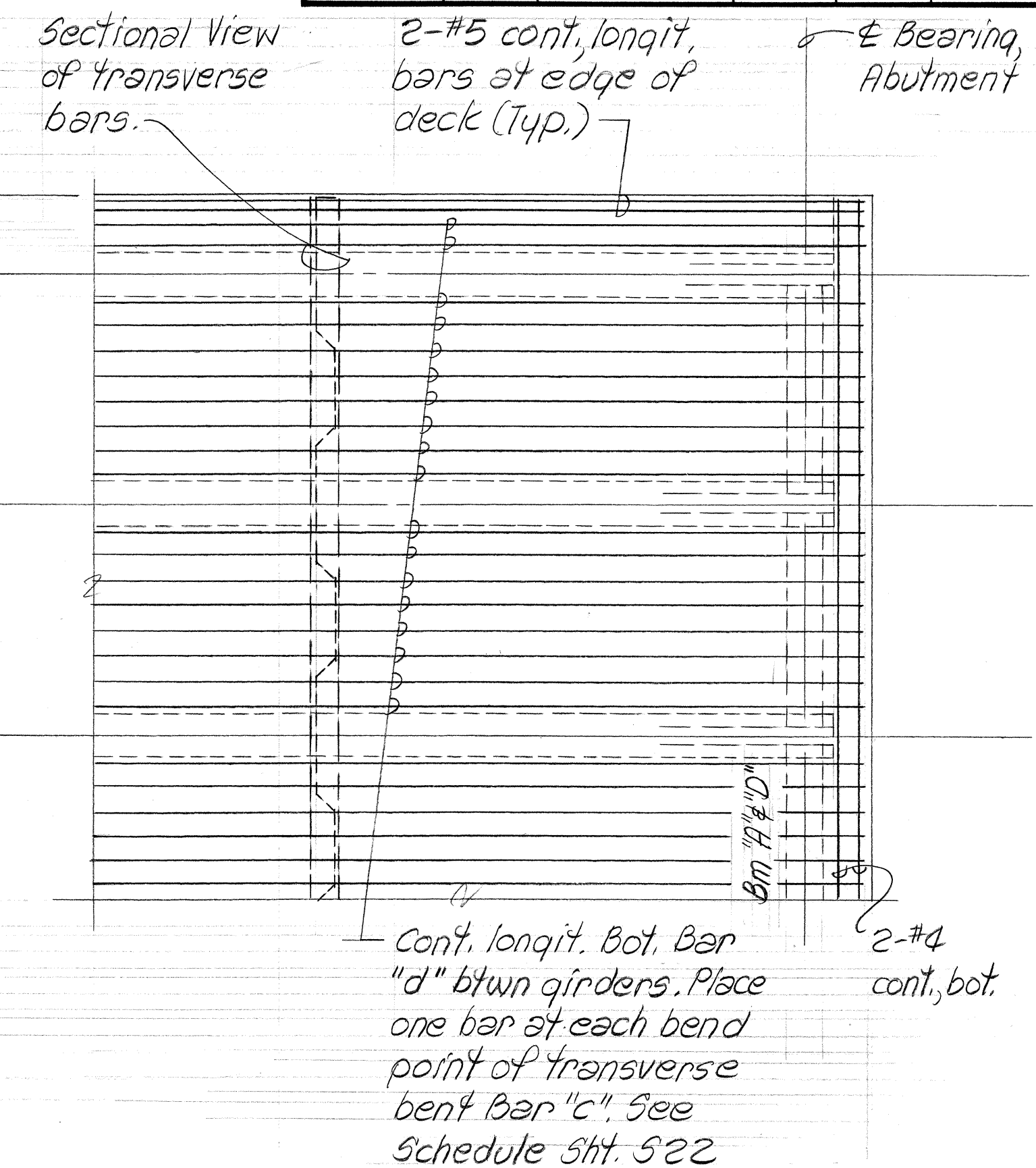
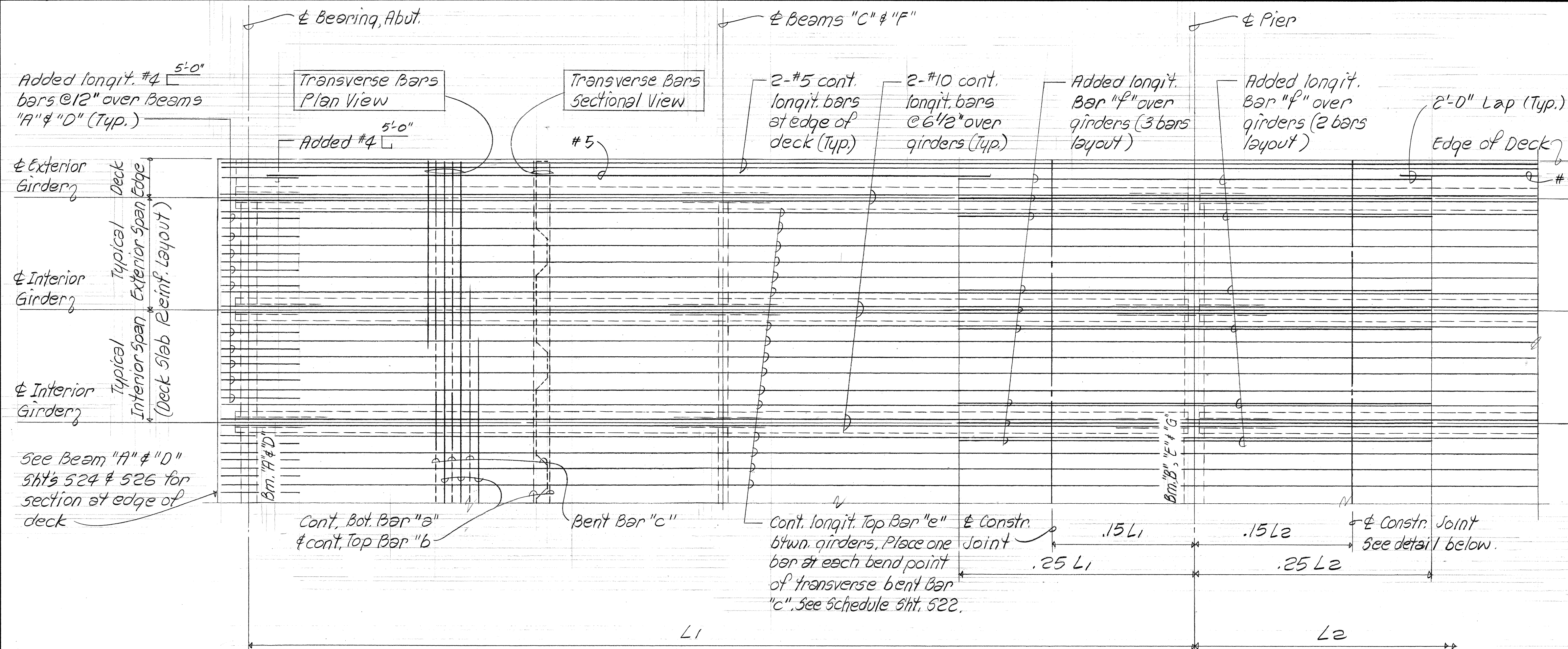
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DECK REINFORCING SCHEDULE

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA JUNCTION TO HALEIWA BEACH PARK (STRUCTURES)
FAP NO. F-083-1(24)

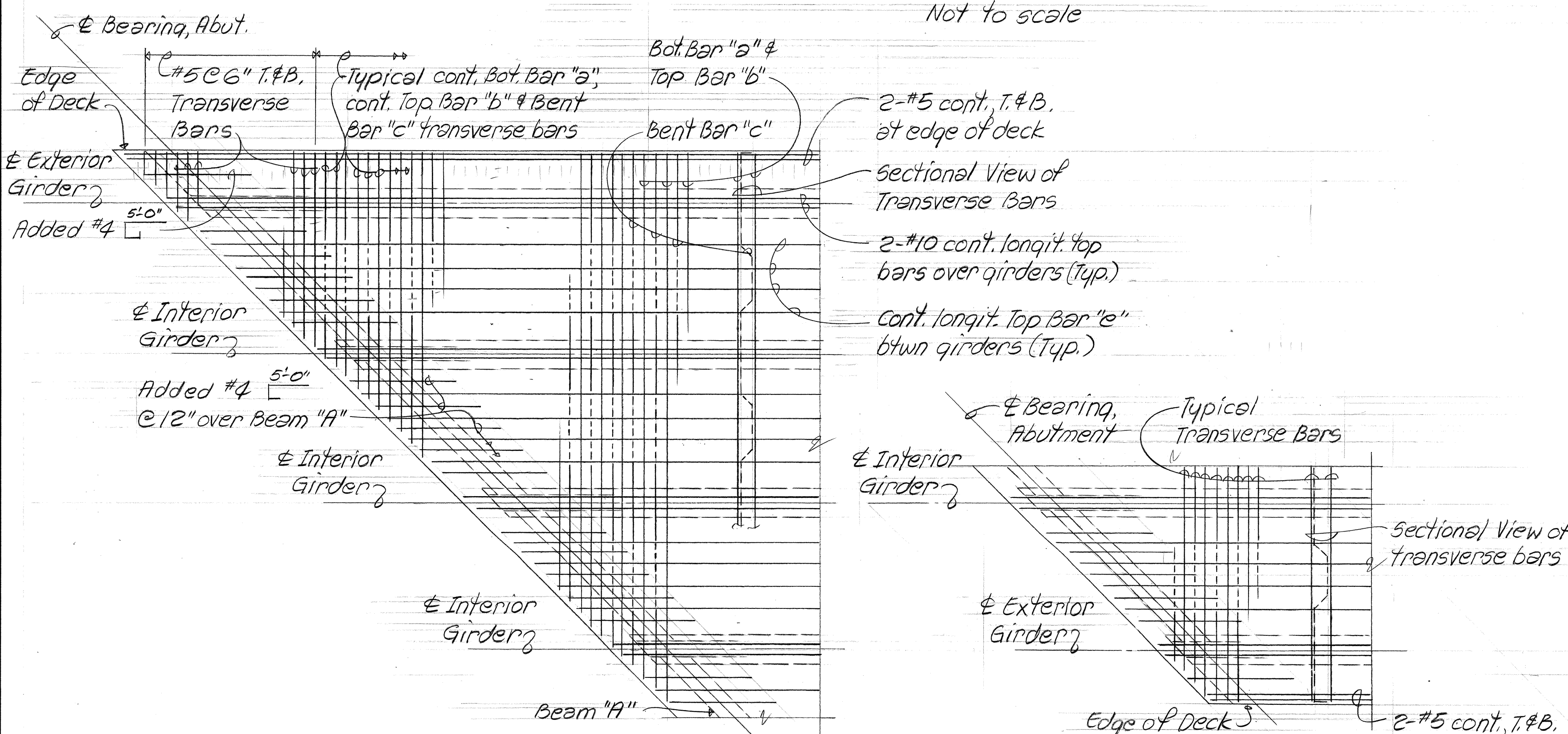
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	114	125

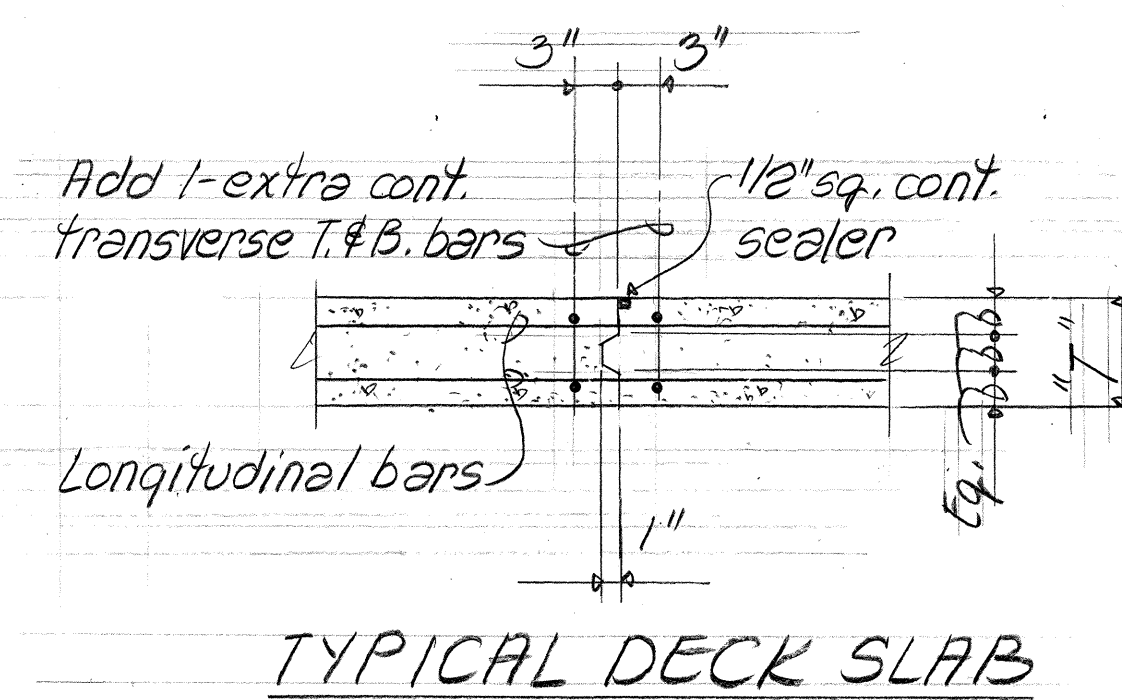


LONGITUDINAL TOP BARS & TRANSVERSE BARS
PLANS SHOWING DECK SLAB REINFORCING LAYOUT
Not to scale

LONGITUDINAL BOTTOM BARS



SKEWED PLAN SHOWING DECK SLAB REINFORCING LAYOUT
Not to scale



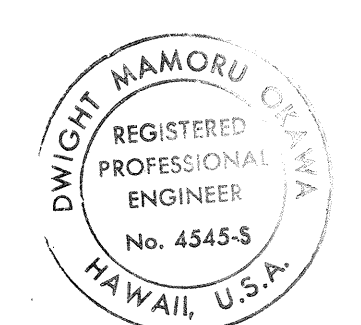
TYPICAL DECK SLAB TRANSVERSE CONSTR. JOINT
Not to scale

NOTES:

1. Unless otherwise shown, see Deck slab reinf. Schedule Sht. 522 for slab reinf. not shown.
2. See Deck Section, Sht. 522 for transverse & longitudinal bar placement & extent & bends of transverse bars.
3. See Shts 524, 525 & 526 for Beams "A", "B", "C", "D", "E", "F", & "G", respectively.

DATE	REVISION
6-12-91	Added Beam "G" in Plan

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Honolulu, Hawaii 96817



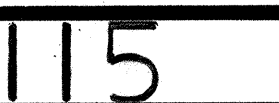
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Dwight Mamoru Oshima

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

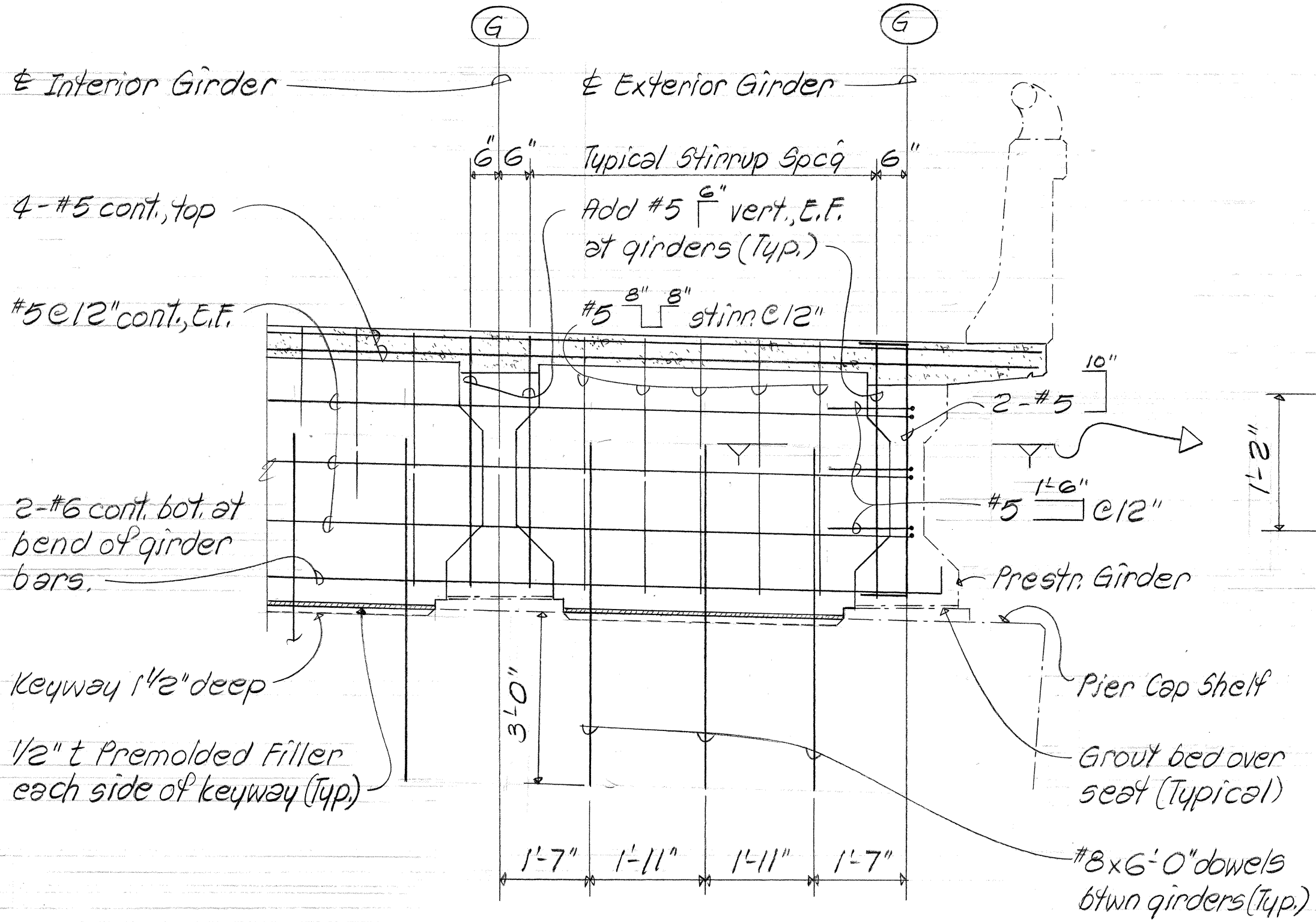
TYPICAL DECK REINFORCING LAYOUT PLANS

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA JUNCTION TO HALEIWA BEACH PARK (STRUCTURES)
FAP NO. F-083-1(24)

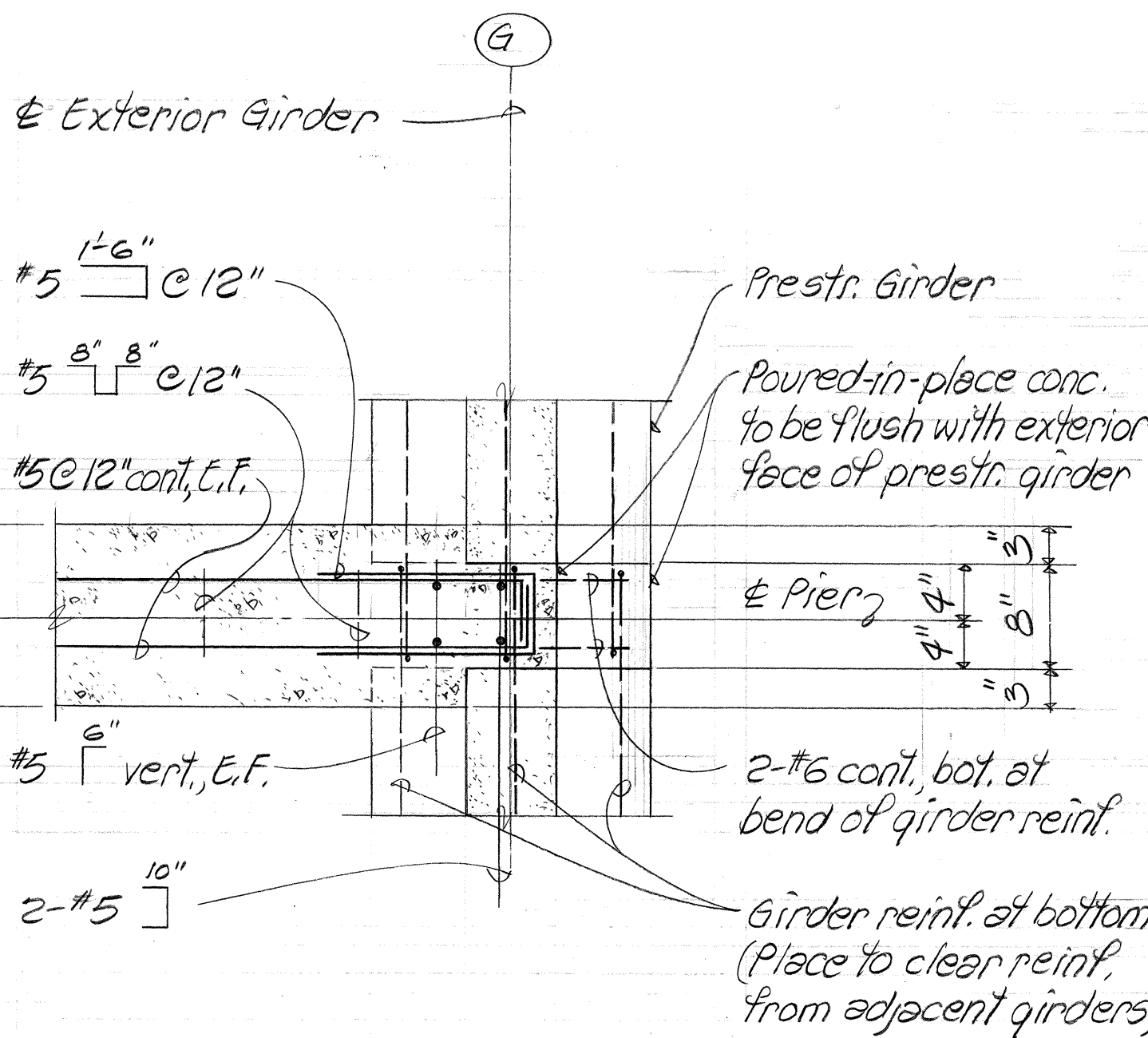
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NOTE BOOK	DRAWN BY _____	*
	TRACED BY _____	*
	DESIGNED BY _____	*
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No. _____	CHECKED BY _____	*



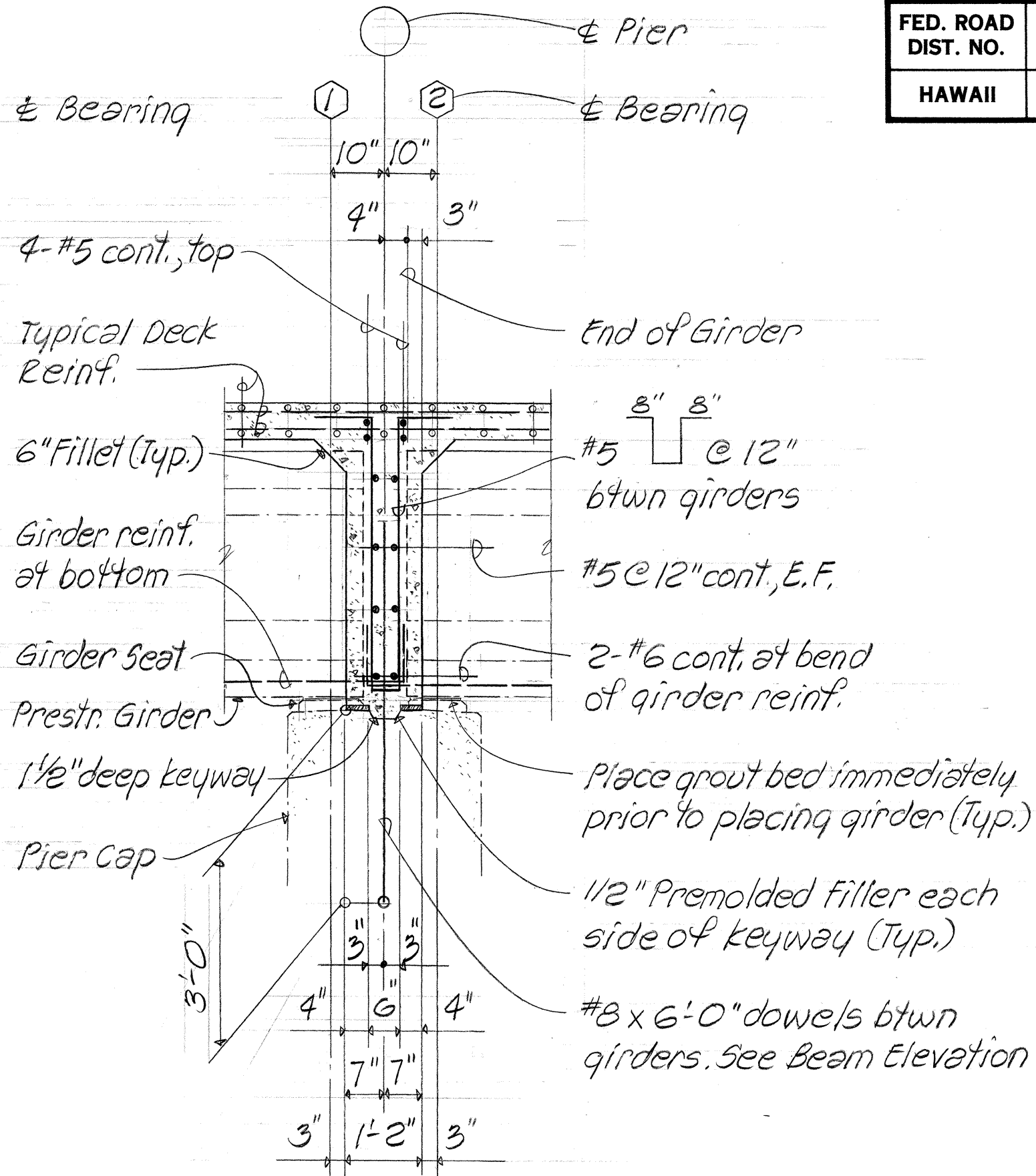
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(24)	1990	116	125



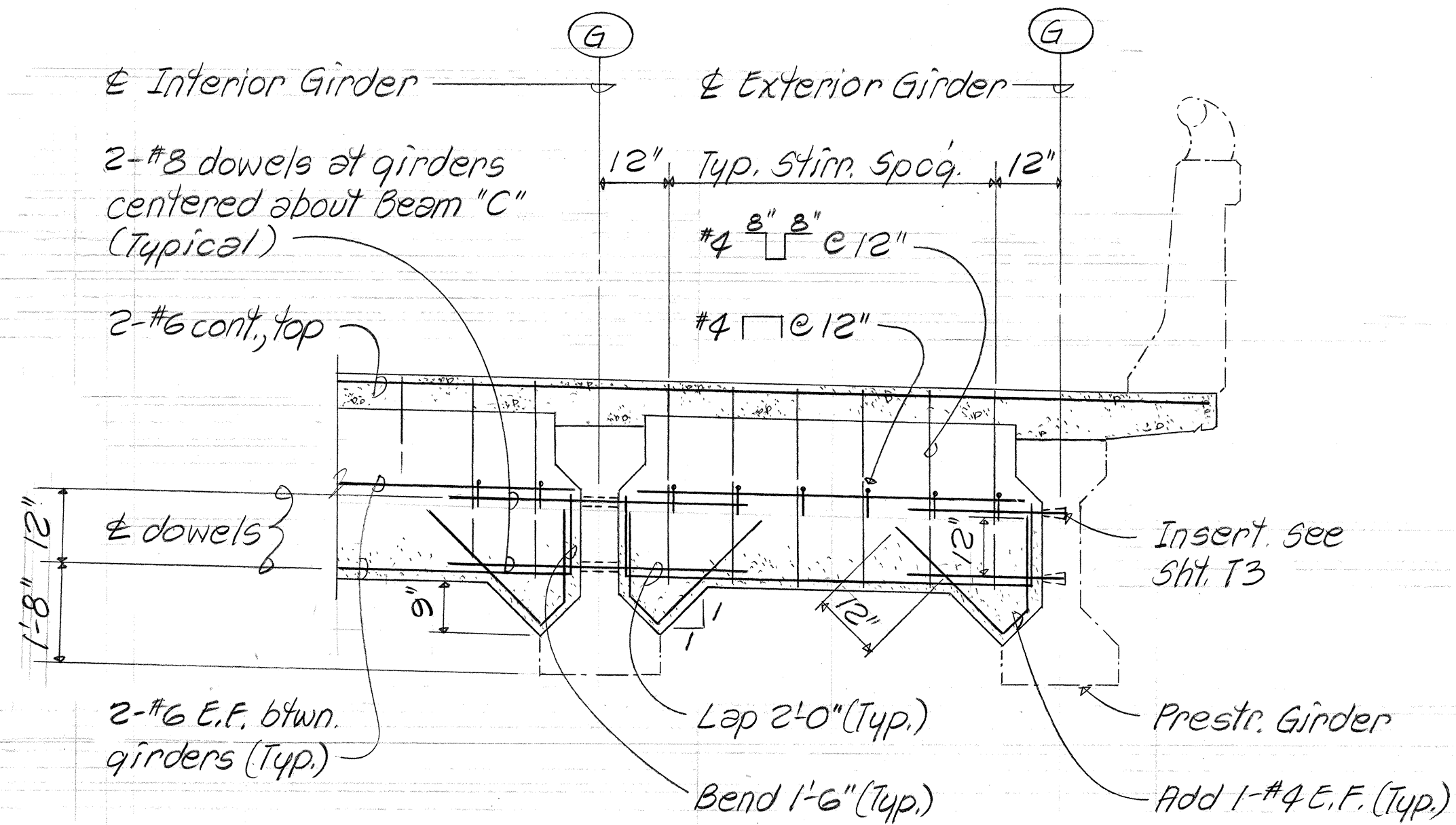
BEAM "B" ELEVATION
 Scale: 1/2" = 1'-0"



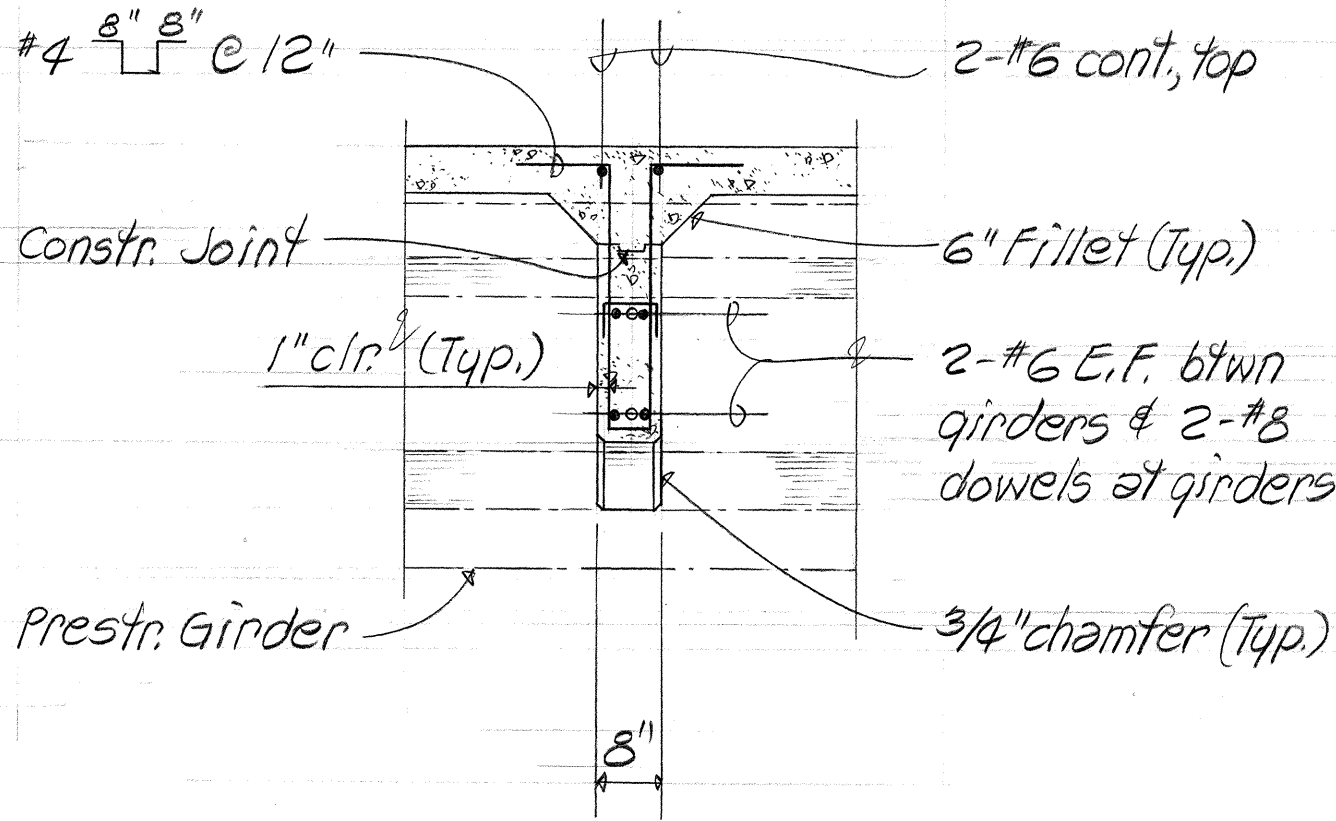
Scale: 1" = 1'-0"



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



BEAM "C" ELEVATION
 Scale: 1/2" = 1'-0"



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

- SPECIAL NOTES
1. Pour Beam "B" monolithic with deck
 2. Beam "C" shall be poured at least 7 days prior to pouring deck slab
 3. See Sht. S 19 for top of Pier Cap shelf details
 4. Bars in preformed holes shall be grouted in place before pouring end & intermediate beams

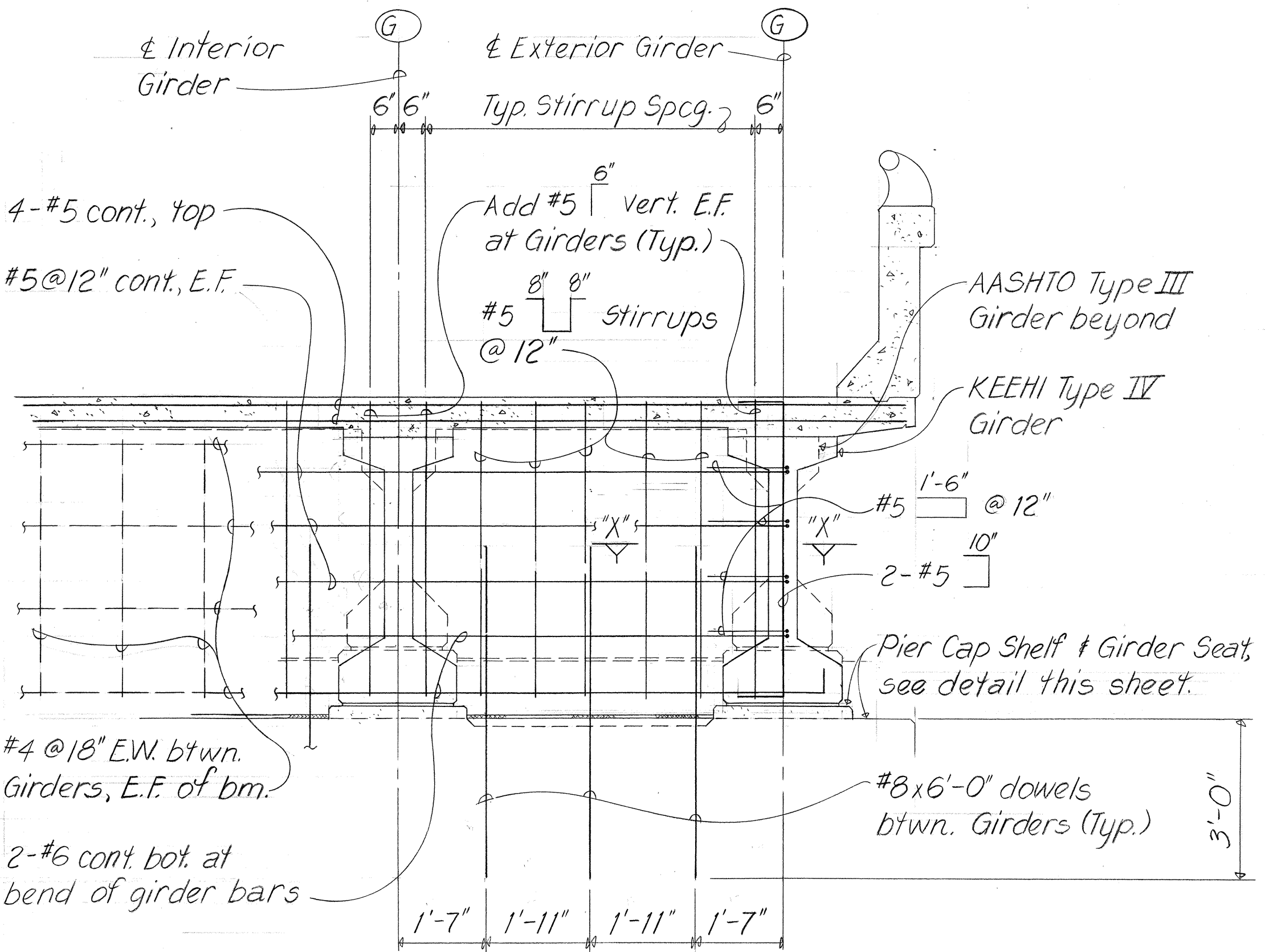
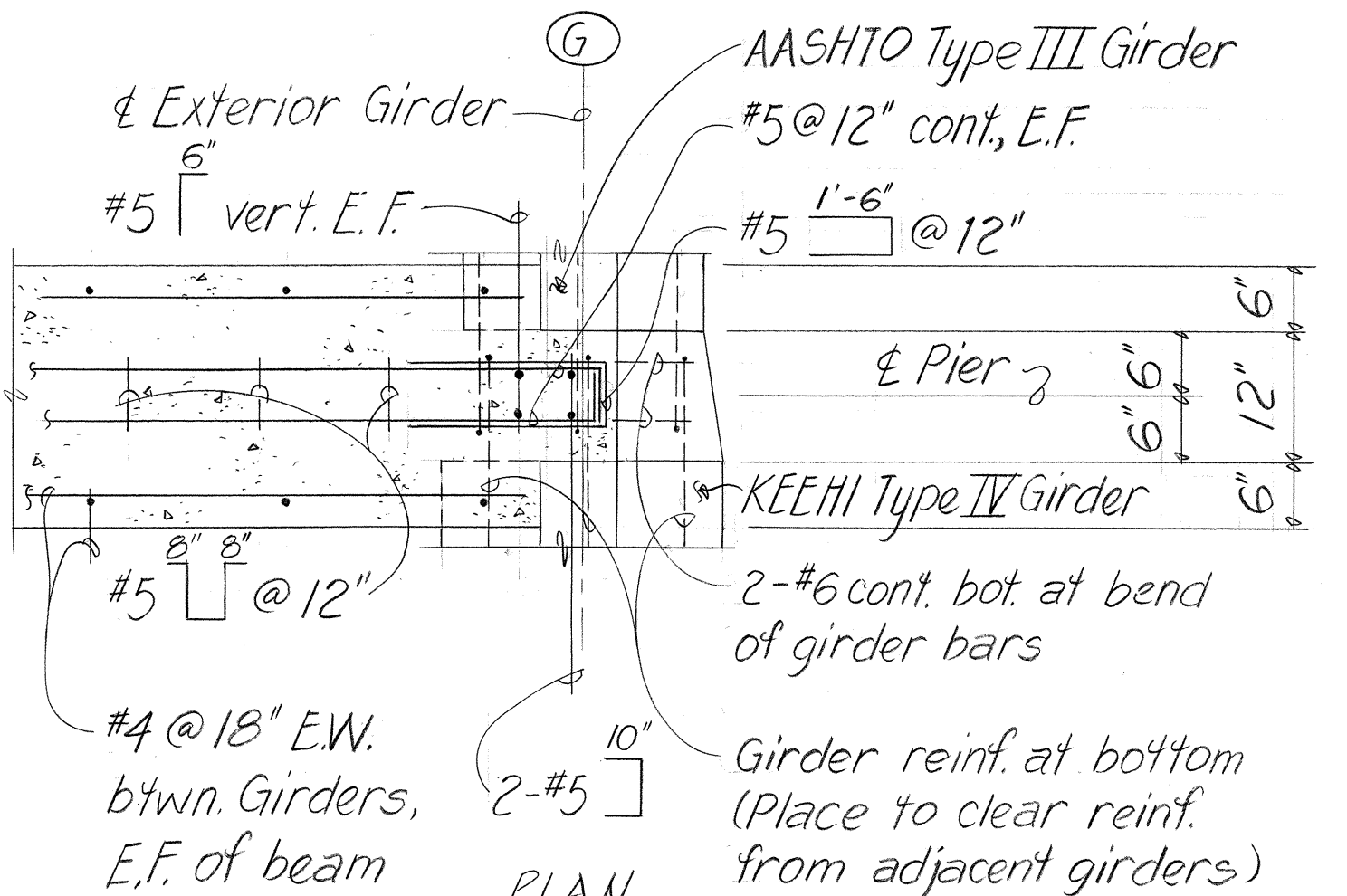
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
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NO.	

SSFM ENGINEERS INC.
 501 Summer St., #502
 Honolulu, Hawaii 96817
 DWIGHT MAMORU OKAWA
 REGISTERED PROFESSIONAL ENGINEER
 No. 4545-S
 HAWAII, U.S.A.
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 Dwight Mamoru Okawa

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 BEAMS "B" & "C" DETAILS
 KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA
 JUNCTION TO HALEIWA BEACH PARK
 (STRUCTURES)
 FAP NO. F-083-1(24)
 SHEET No. 325 OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				

BRIDGE	PIER	PIER CAP ELEVATIONS	TOP PILE ELEVATIONS
UKOA POND	#1	a	8.64
		b	9.11
		c	8.64
		d	4.44
		e	4.44
		f	7.44
		g	7.91
		h	7.44



SPECIAL NOTES:
1. Pour Beam "G" Monolithic with Deck.

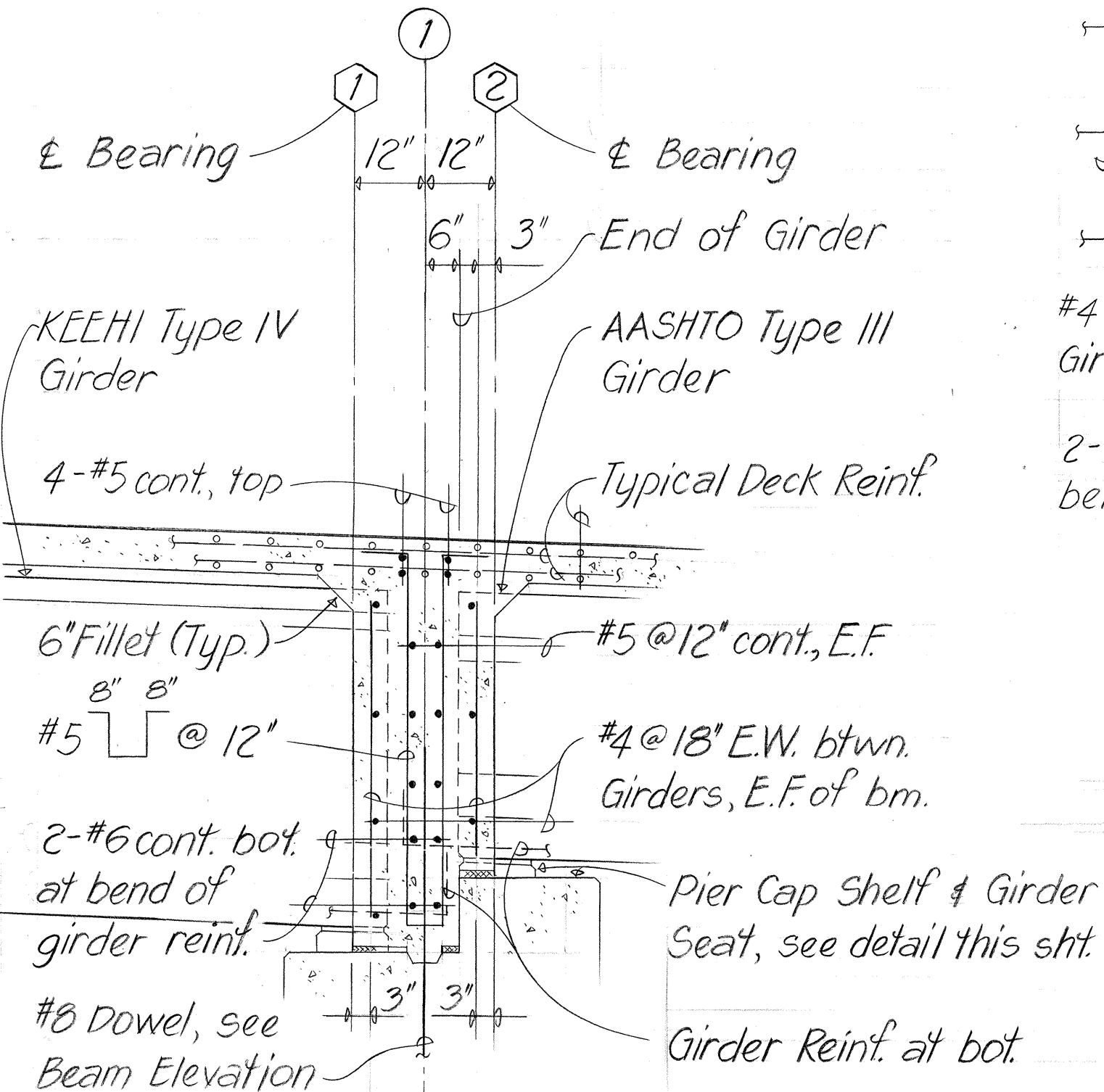
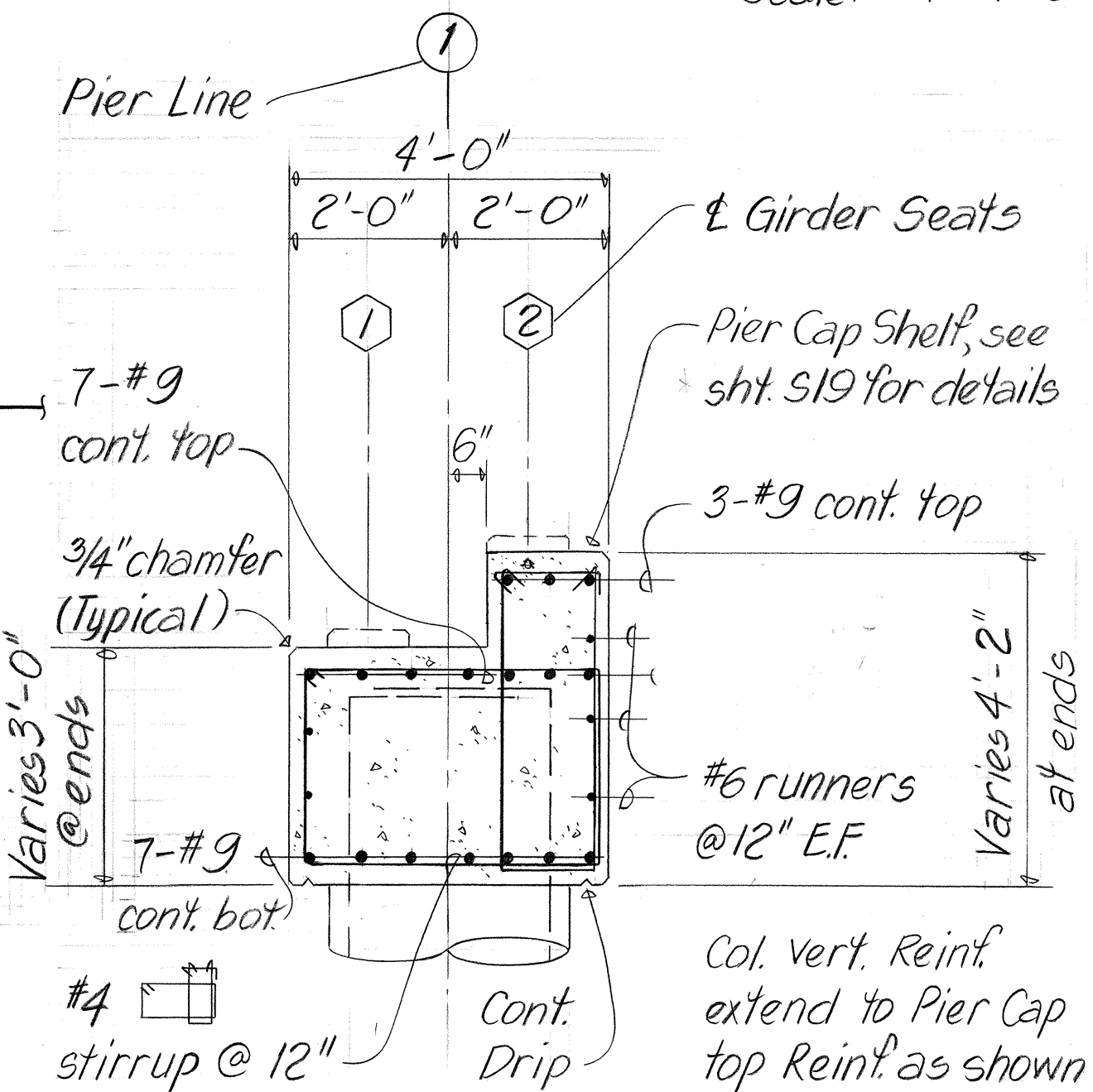
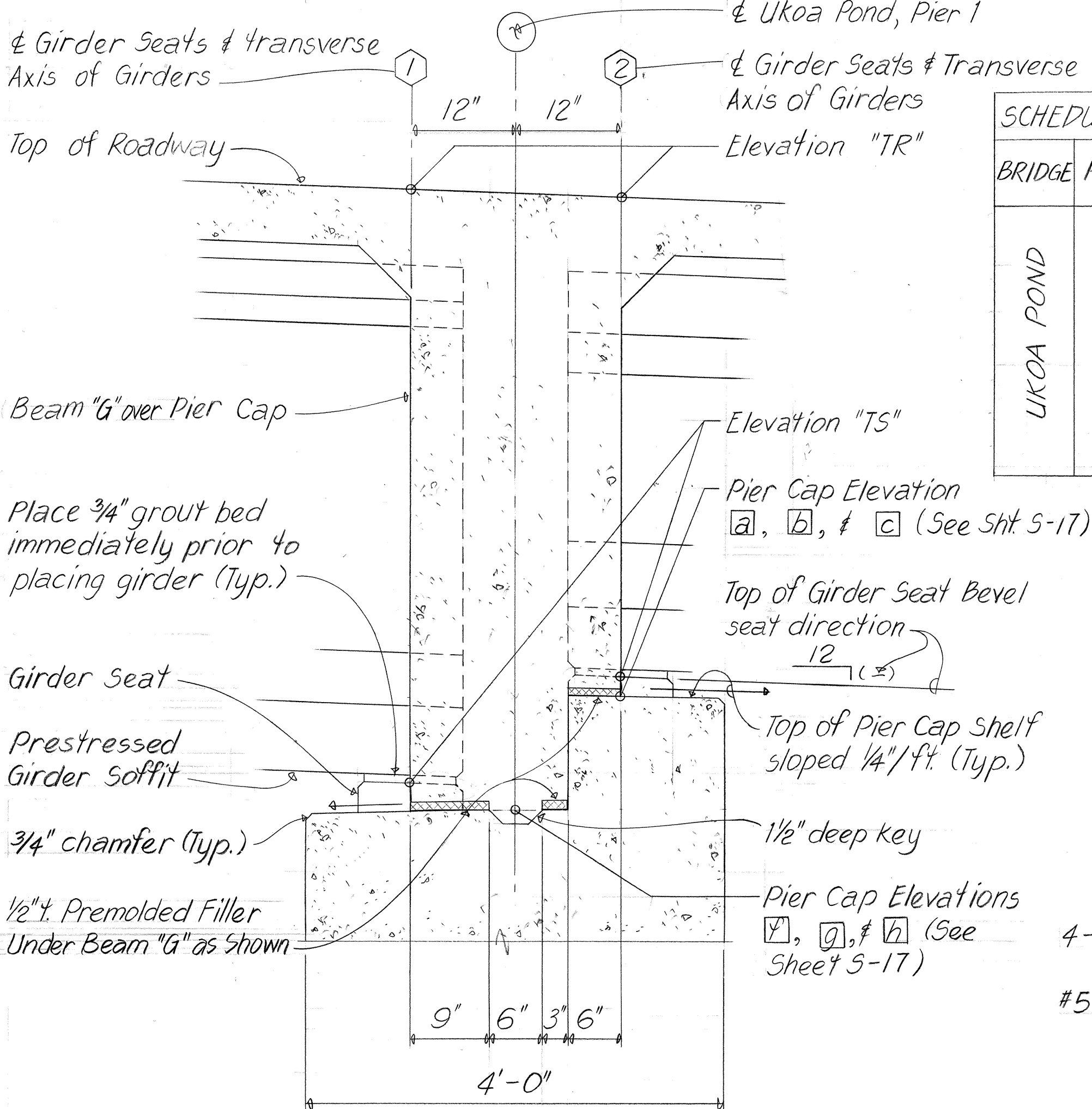
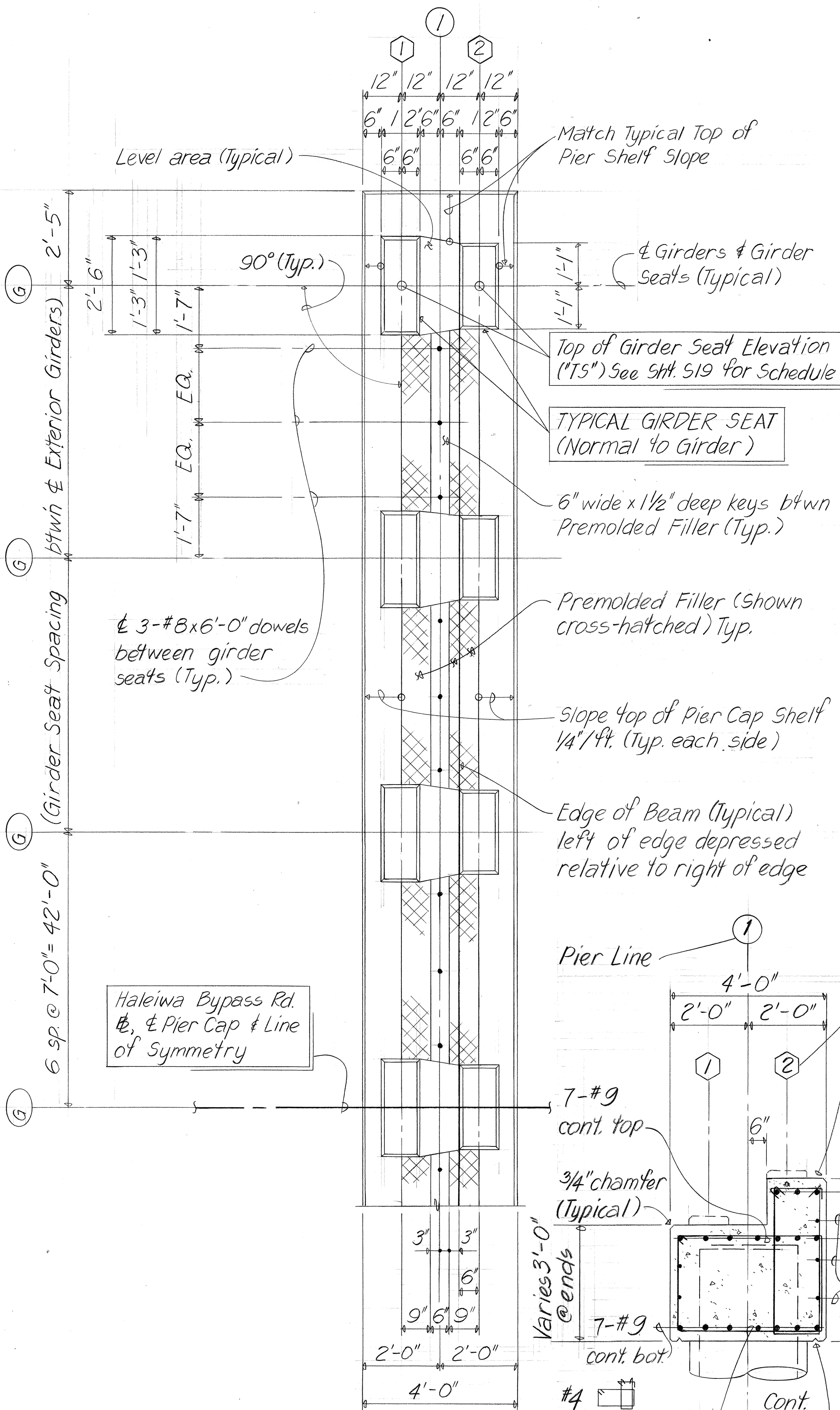
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UKOA POND BRIDGE, PIER No. 1
PLAN & DETAIL

KAMEHAMEHA HIGHWAY - HELEMANO/WAIALUA
JUNCTION TO HALEIWA BEACH PARK
(STRUCTURES)
FAP NO. F-083-1(24)

SHEET No. 527 OF SHEETS

17A



UKOA POND, PIER #1 - PARTIAL PIER CAP SHELF PLAN

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

UKOA POND BRIDGE, PIER CAP #1 SECTION

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

BEAM "G" SECTION

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

ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	