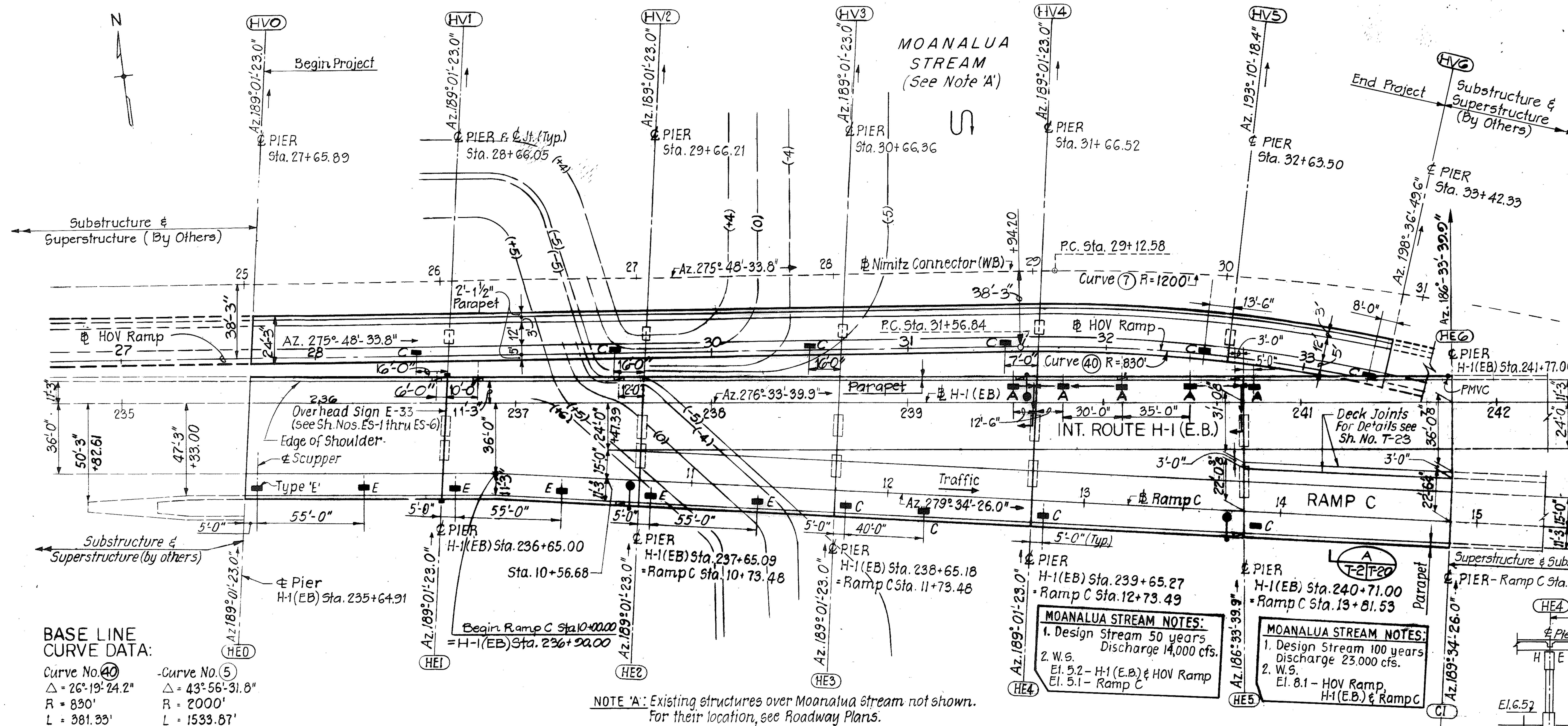
FED. ROAD DIST. NO.	STATE	FED. AID. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(180):17	1982	7	47

NOTES:

1. For Scupper Details, see Sheet Nos. SD-8 & SD-9.
2. For Footing Location Plan, see Sheet Nos. T-5 & T-6.
3. For Transverse Joint Details, see Sheet Nos. SD-6 & SD-7.
4. For General Notes, see Sheet No. SD-1.
5. See Electrical Plans for locations and number of conduit.
6. Location of Scuppers shown on plans is approximate. In order to clear the obstructions or to facilitate the construction of the Viaduct, the location of scuppers may be adjusted by 2 to 3 feet, but total number of scuppers in each span shall remain the same as shown on plans.



BASE LINE CURVE DATA:

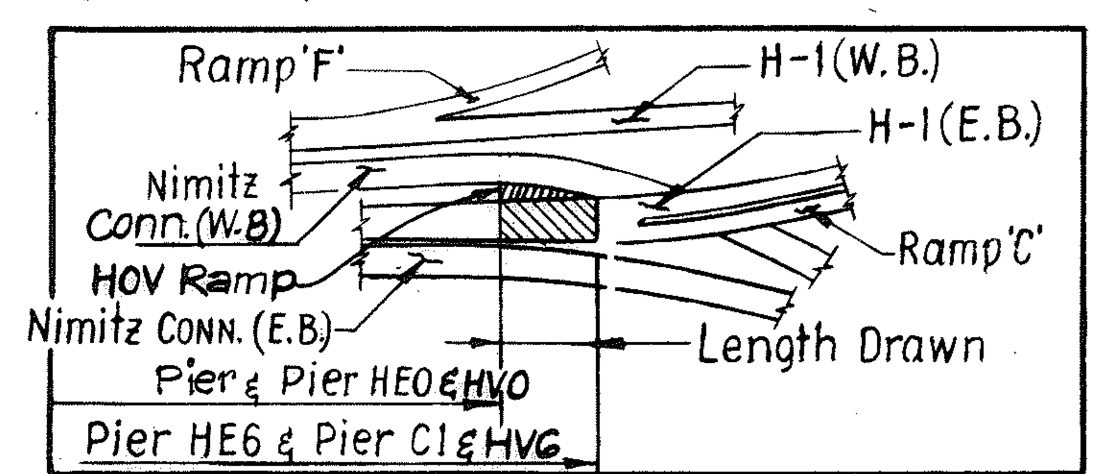
Curve No. 40	Curve No. 5
Δ = 26°-19'-24.2"	Δ = 43°-56'-31.8"
R = 830'	R = 2000'
L = 381.33'	L = 1533.87'
T = 194.09	T = 806.88'

Note: All azimuths are measured from the south.

NOTE 'A': Existing structures over Moanalua Stream not shown. For their location, see Roadway Plans.

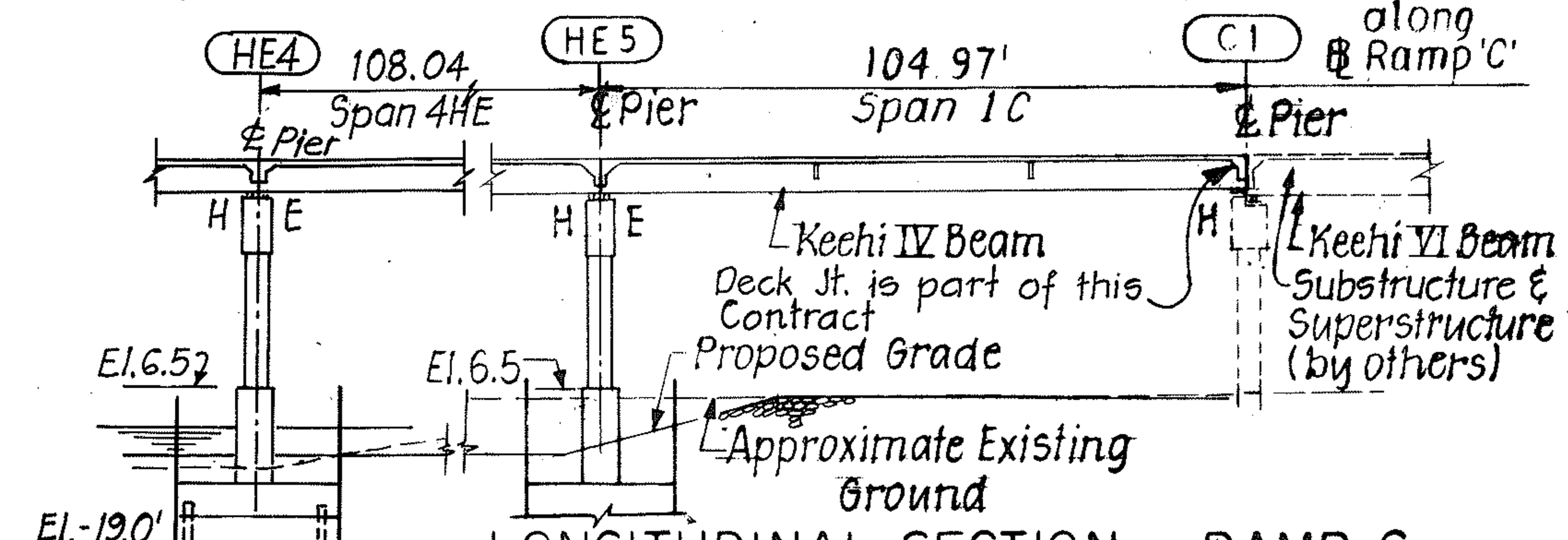
PLAN - NIMITZ CONNECTOR (W.B.), INT. ROUTE H-1 (E.B.) & RAMP C

SCALE: 1" = 30'-0"



LOCATION PLAN

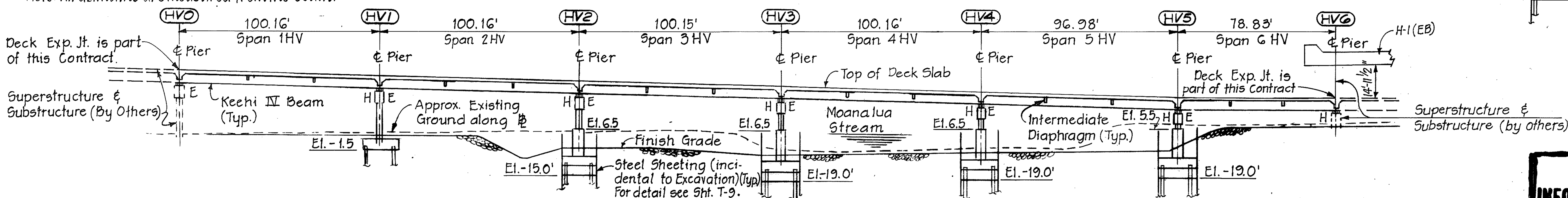
Scale: 1" = 400'



LONGITUDINAL SECTION - RAMP C

Scale: 1" = 30'

(Taken at Baseline)



LONGITUDINAL SECTION - HOV RAMP (TAKEN AT BASELINE)

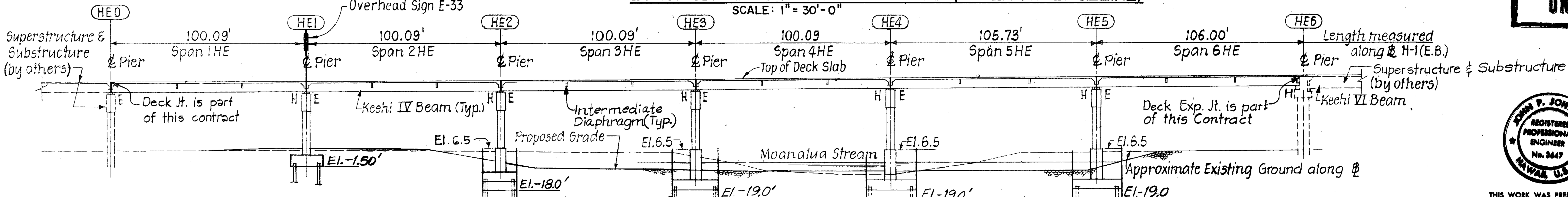
SCALE: 1" = 30'-0"

LEGEND:

H = Hinge Bearings
E = Expansion Bearings
▬ = Scuppers
6'-0" 5'-6" ℄ Pier (Unless Noted)
℄ Pull Box (See Electrical Plans)
℄ Lighting Standard

PMVC = Point of Minimum Vertical Clearance

FOR INFORMATION ONLY



LONGITUDINAL SECTION - INT. ROUTE H-1 (E.B.)

(Taken at Baseline) Scale: 1" = 30'

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

GENERAL PLAN AND LONGITUDINAL SECTION

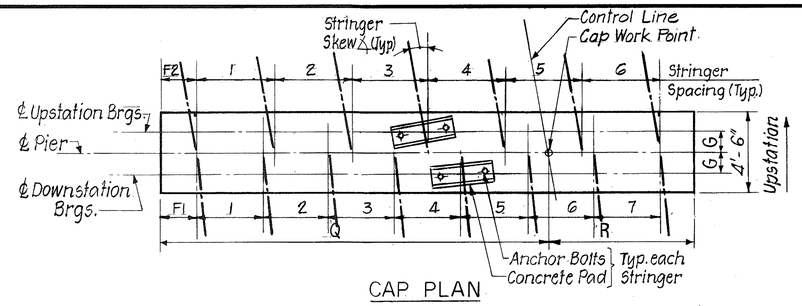
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-H1-1 (180):17

SCALE: AS SHOWN DATE: 8/17/81

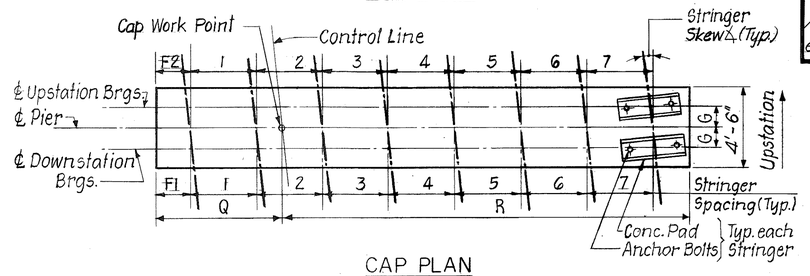
SHEET No. T-2 OF T-23 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY / DRAWN BY PATRICIA MALKIN / TRACED BY / DESIGNED BY C.Y. / QUANTITIES BY / CHECKED BY	DATE
NOTE BOOK No.		

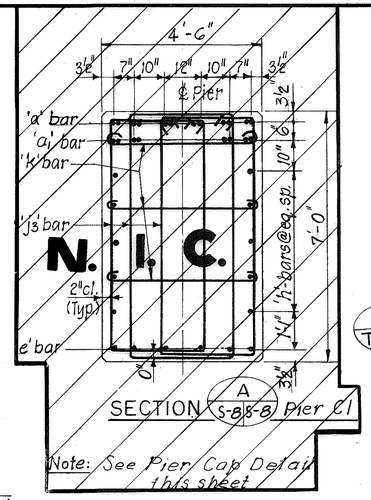
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180)17	1982	8	47



CAP PLAN

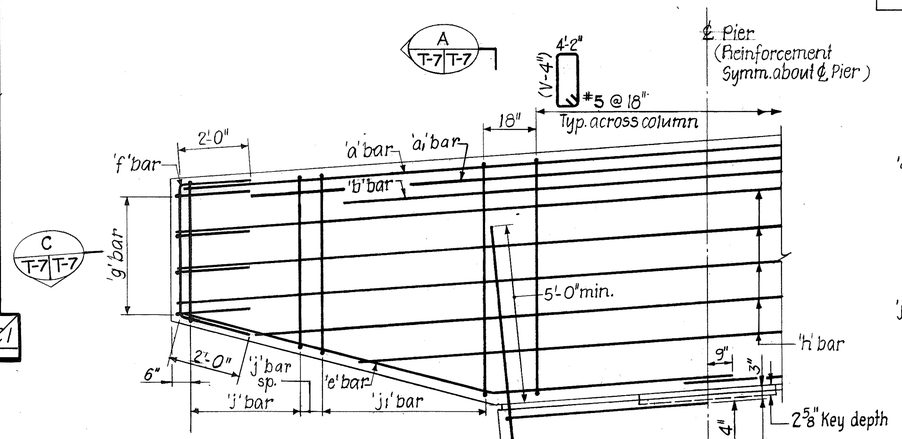


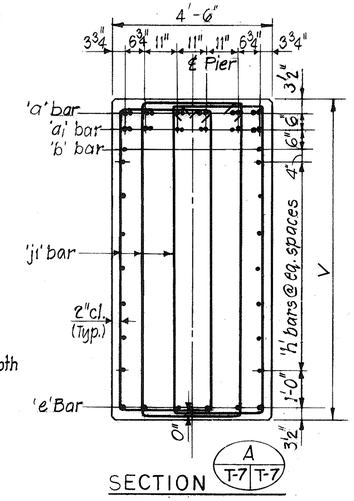
CAP PLAN



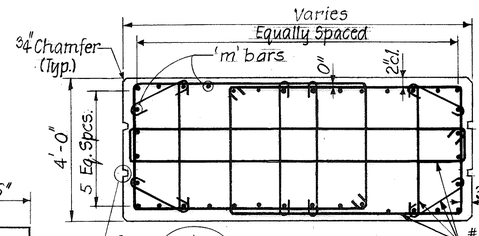
SECTION A (S-8 | S-8) Pier ℄

Note: See Pier Cap Detail this sheet



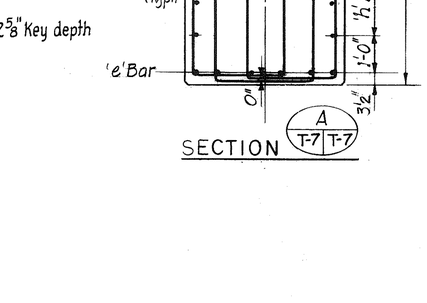


SECTION A T-7 | T-7



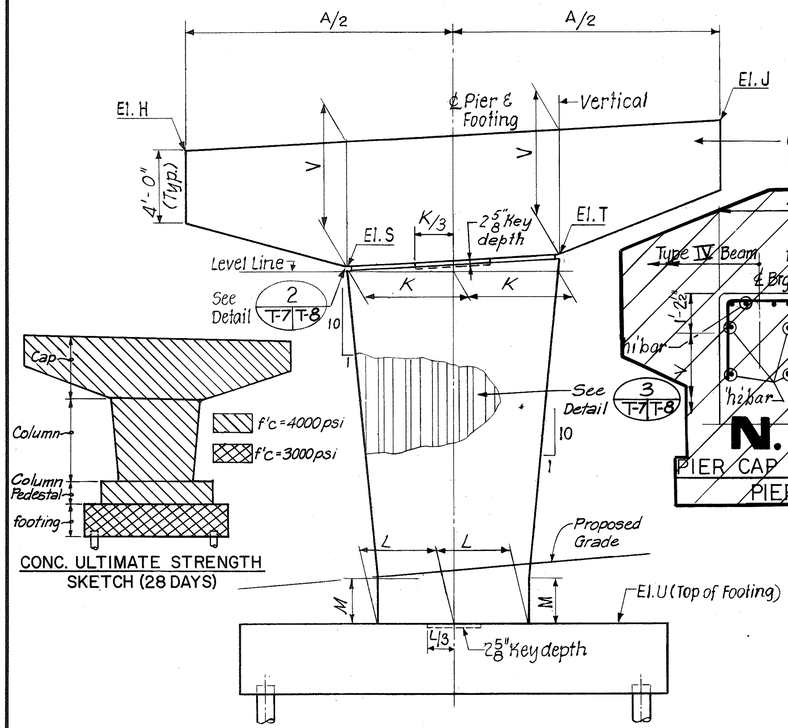
SECTION B T-7 | T-7

SECTION C T-7 | T-7



REINFORCEMENT DETAIL

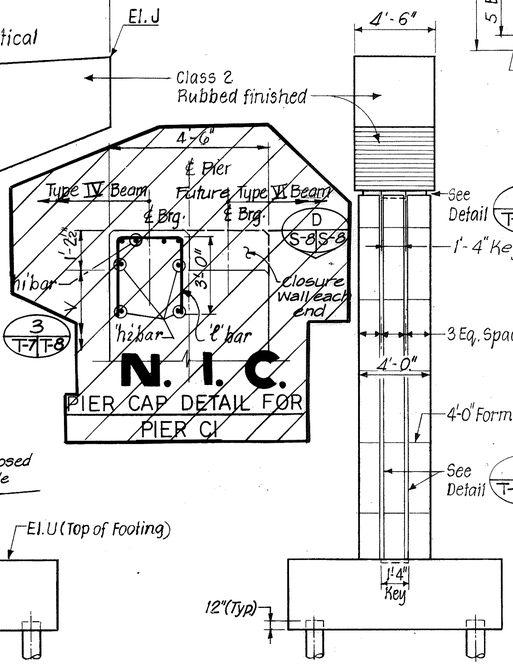
N.T.S.



CONC. ULTIMATE STRENGTH SKETCH (28 DAYS)

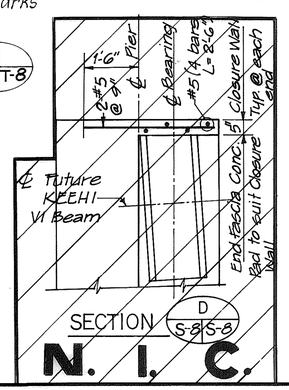
ELEVATION

Looking Upstation



END VIEW

TYPE I PIER



SECTION D S-8 | S-8

NOTES:

1. Concrete — Above Footings: Ult. Strength (28 days) f'c... 4000 psi; Extr. Fiber in Compression... 1600 psi. Footings: 3000 psi; 1200 psi. See Concrete Strength Sketch this sheet.
2. Reinforcement Steel, see Schedule Sheet No. T-12 & T-13.
3. Pier geometry, see tables Sheet Nos. T-10 & T-11.
4. For Concrete Pad and Anchor Bolt details, see Sheet No. T-14.
5. For footing details, see Sheet Nos. T-5 & T-6.
6. For Reinforcement of Footing & Pedestal of Piers HE2 Thru HE5, HV2 Thru HV5, See Sheet No. T-9.
7. For Payment Limits see Sheet No. T-9.
8. All Costs for Formwork support shall be incidental to Concrete Cost.

FOR INFORMATION ONLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

DETAILS OF TYPE I PIER

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180):17
SCALE: N.T.S. DATE: 8/17/81

SHEET NO. T-7 OF T-23 SHEETS

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII U.S.A.

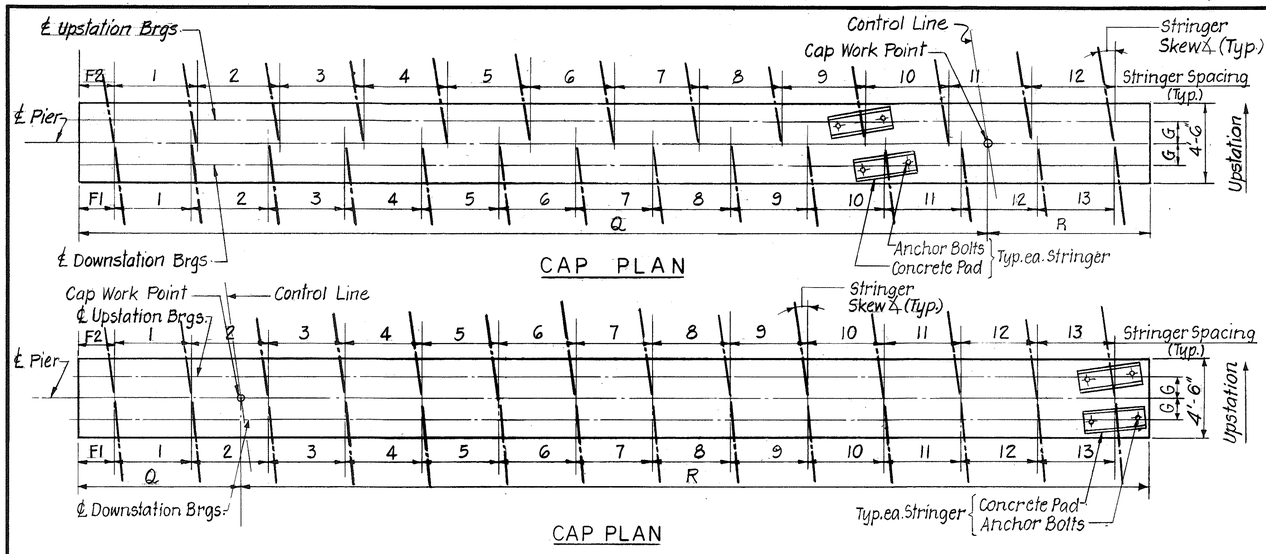
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

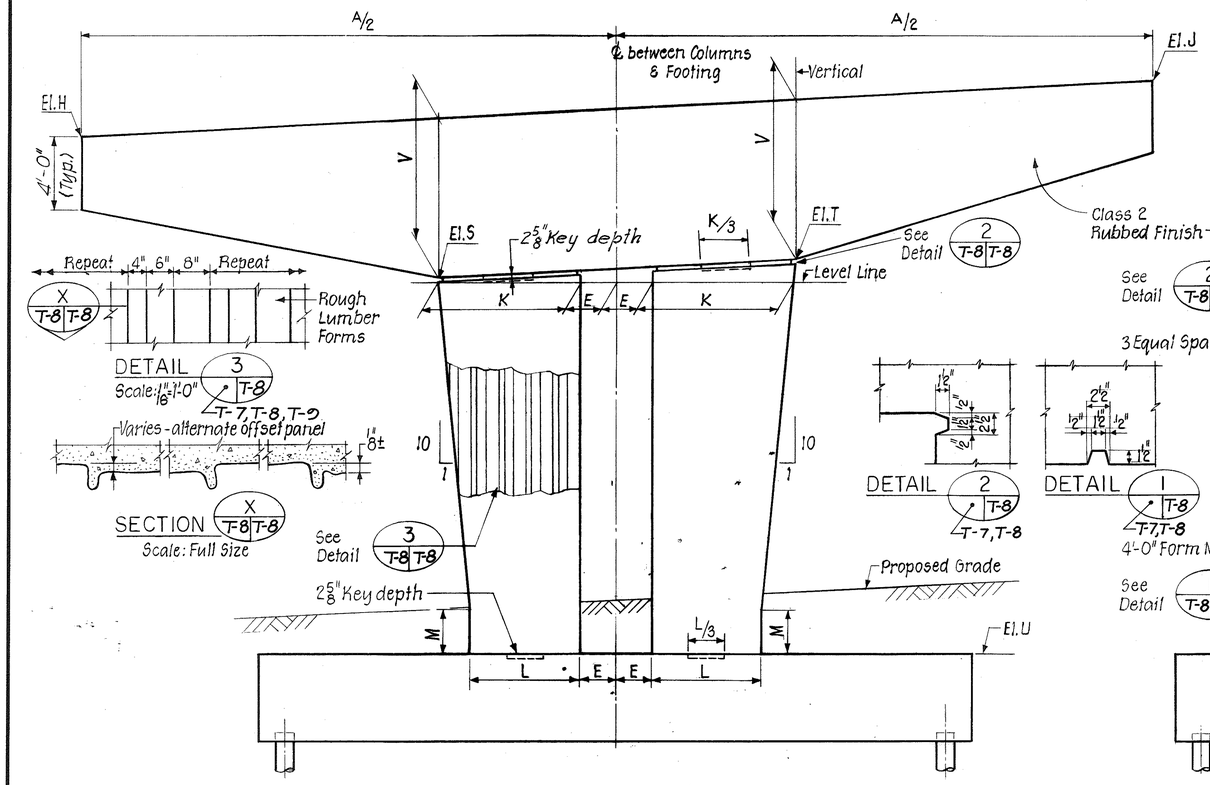
John P. Johnson

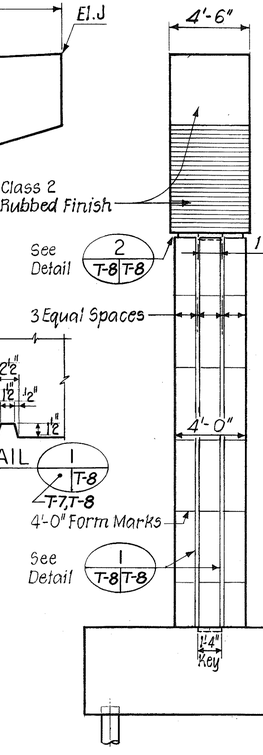
ORIGINAL PLAN
SURVEY PLOTTED BY: DATE:
DRAWN BY: PATRICIA WALKIN
TRACED BY:
DESIGNED BY: DREW GILSTAD
QUANTITIES BY:
CHECKED BY: HABIB NOORATA
NOTE BOOK
No.

8

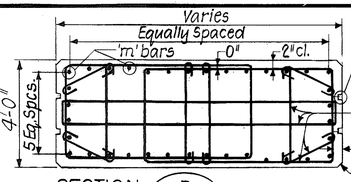
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180)17	1982	9	47



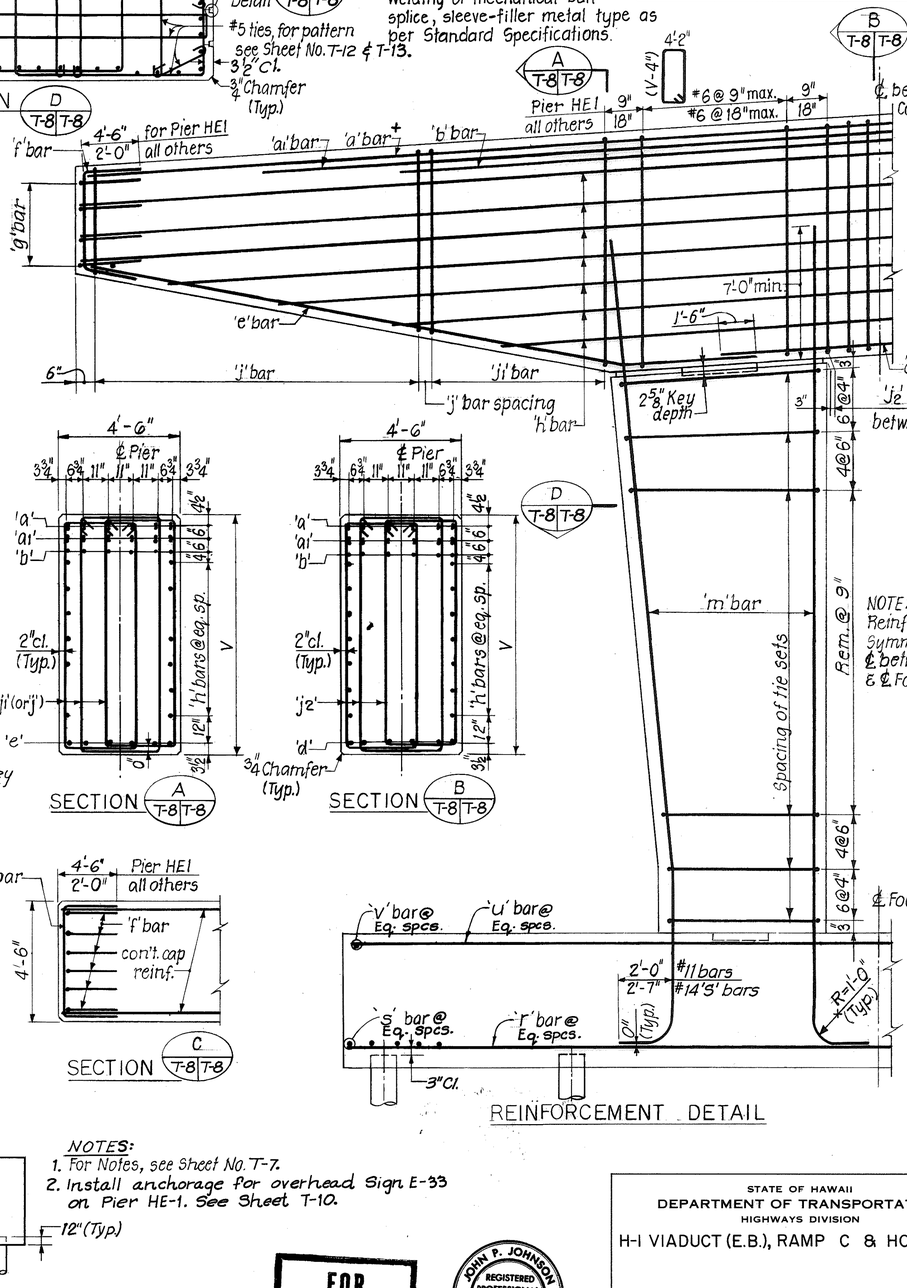




TYPE II PIER



+ 'a' bars greater than 60' in length shall be spliced by welding or mechanical butt splice, sleeve-filler metal type as per Standard Specifications.



REINFORCEMENT DETAIL

NOTES:
1. For Notes, see Sheet No. T-7.
2. Install anchorage for overhead Sign E-33 on Pier HE-1. See Sheet T-10.

FOR INFORMATION ONLY

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

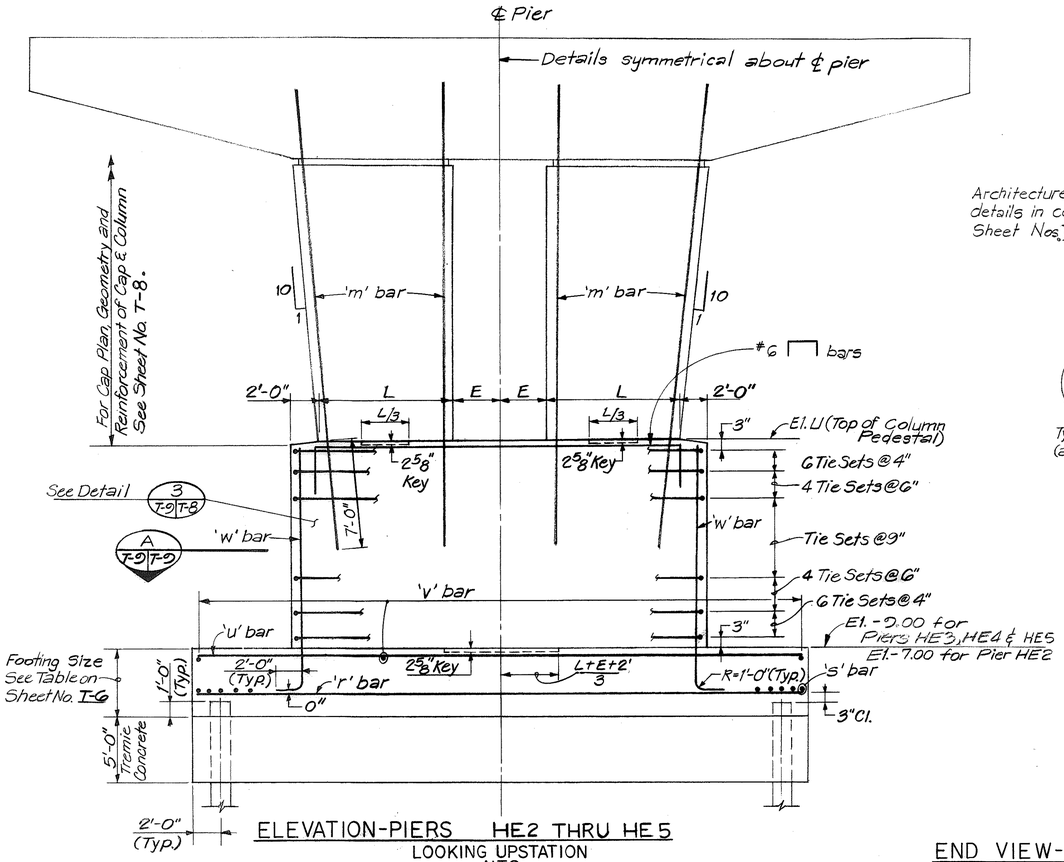
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

DETAILS OF TYPE II PIER

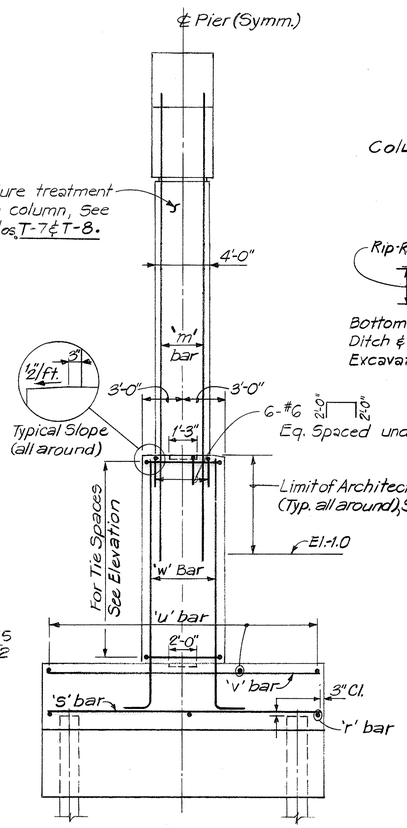
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180):17
SCALE: N.T.S. DATE: 8/17/81
SHEET No. T-8 OF T-23 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.
SURVEY PLOTTED BY
DRAWN BY PRICE/MALKIN
TRACED BY
DESIGNED BY DRELL GILSTAD
QUANTITIES BY
CHECKED BY HABIB NOORATA
DATE

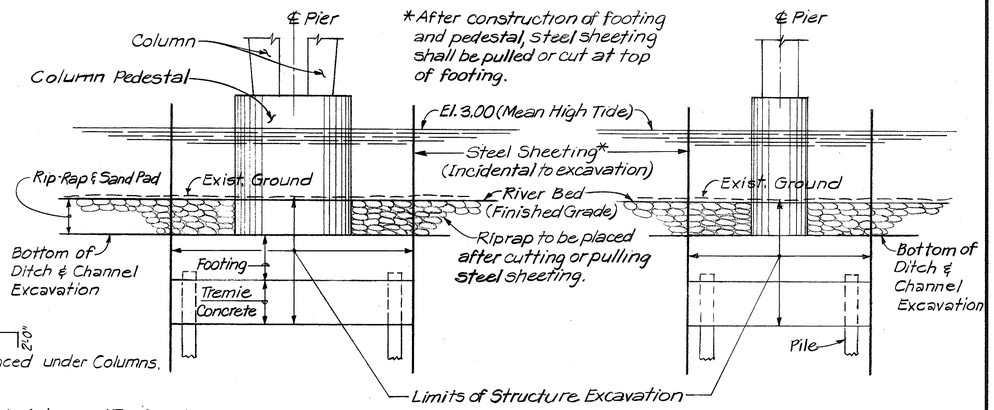
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180):17	1982	10	47



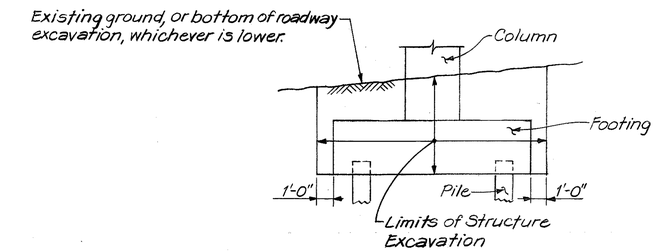
ELEVATION-PIERS HE2 THRU HE5
LOOKING UPSTATION
N.T.S.



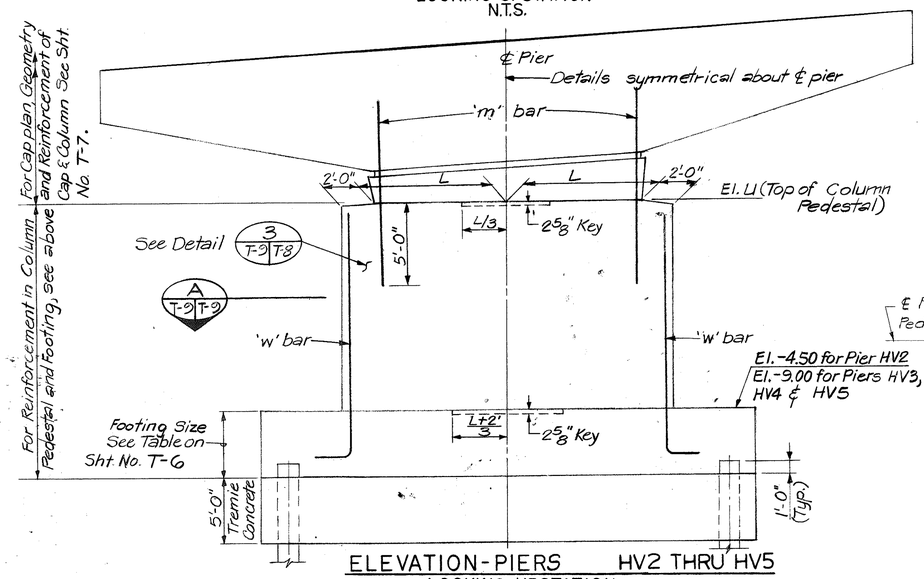
END VIEW-PIERS HV2 THRU HV5, HE2 THRU HE5
N.T.S.



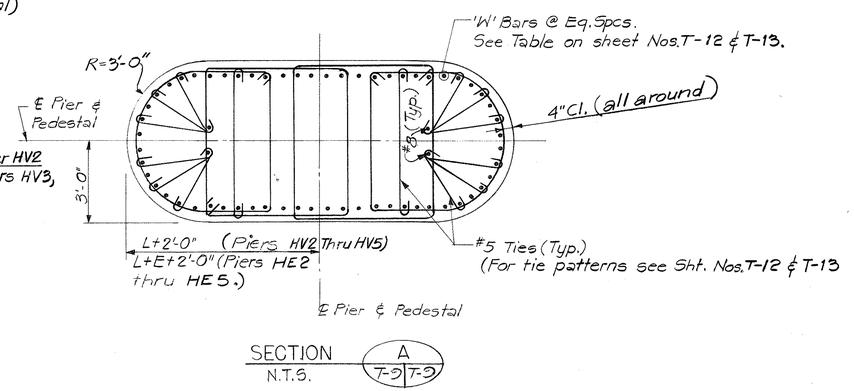
PAYMENT LIMITS
(PIERS HE2 THRU HE5, HV2 THRU HV5
N.T.S.



PAYMENT LIMITS
PIERS HE1 & HV1
N.T.S.



ELEVATION-PIERS HV2 THRU HV5
LOOKING UPSTATION
N.T.S.



SECTION A T-9 T-9
N.T.S.

NOTES:

1. For Notes, see Sheet No. T-7.
2. For footing location plan & footing details, see Sheet Nos. T-5 and T-6.

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John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

DETAILS OF TYPE III PIER

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180):17

SCALE: AS SHOWN DATE: 8/17/81

SHEET NO. T-9 OF T-23 SHEETS

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

TABLE OF PIER DIMENSIONS AND ELEVATIONS

PIER NAME			HE1		HE2		HE3		HE4		HE5		HE6 (BY OTHERS)		C1 (BY OTHERS)		HE 0 (BY OTHERS)	
PIER TYPE			II		III		III		III		III							
WORK POINT STA. OF ℄ PIER			236 + 65.00		237 + 65.09		238 + 65.18		239 + 65.27		240 + 71.00		241 + 77.00		14 + 86.50		235 + 64.91	
SOUTH AZIMUTH OF ℄ PIER			189° - 01' - 23.0"		189° - 01' - 23.0"		189° - 01' - 23.0"		189° - 01' - 23.0"		186° - 33' - 39.9"		186° - 33' - 39.9"		189° - 34' - 26.0"		189° - 01' - 23.0"	
CAP	LENGTH OF CAP "A"		70'-6 1/2"		64'-7"		70'-9"		76'-0"		81'-7 3/4"							
	DIST. ℄ BRGS. TO ℄ PIER "G"		11"		11"		11"		11"		11"							
	DEPTH "V"		9'-0"		9'-0"		9'-6"		9'-6"		9'-6"							
	DIMENSION "F1"	DIMENSION "F2"	6'-5 1/2"	6'-5 1/2"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"						
	DISTANCE "Q"	DISTANCE "R"	17'-3 15/16"	53-3 3/8"	12'-9 5/8"	51'-9 3/8"	12'-9 5/8"	57'-11 3/8"	12'-9 5/8"	63'-2 3/8"	12'-9 1/2"	68'-10 1/4"						
	ELEVATION "H"	ELEVATION "J"	35.92	34.85	36.39	35.46	36.85	36.14	37.23	37.01	37.61	38.24						
COLUMN	DIMENSION "K"	DIMENSION "E"	11'-0"	1'-3 1/4"	11'-0"	1'-3 1/2"	12'-0"	3'-4 1/2"	14'-0"	4'-0"	16'-0"	4'-10"						
	BOTTOM WIDTH "L"		8'-11"		9'-0"		9'-11"		11'-10"		13-9"							
	DIMENSION "M"	ELEVATION "U"	1'-4"	4.00	—	6.50(P)	—	6.50(P)	—	6.50(P)	—	6.50(P)						
	ELEVATION "S"	ELEVATION "T"	26.57	26.20	27.10	26.75	27.15	26.84	27.67	27.57	28.26	28.59						
STRINGER SPACING DISTANCE MEASURED ALONG ℄ PIER	DOWN STA. 1	UP STA. 1	6'-3 5/8"	6'-3 5/8"	6'-8 3/4"	6'-0 11/16"	6'-8 1/8"	6'-0 7/8"	6'-6 9/16"	5'-6 1/2"	5'-11 5/8"	5'-8 3/16"	6'-4 7/8"		6'-3 3/16"		6'-3 5/8"	
	DOWN STA. 2	UP STA. 2	↑	↑	6'-8 13/16"	↑	6'-8 1/16"	6'-0 13/16"	↑	5'-6 7/16"	5'-11 11/16"	5'-8 1/4"	6'-4 15/16"		6'-3 1/8"		↑	
	DOWN STA. 3	UP STA. 3			6'-8 3/4"		6'-8 1/8"	6'-0 13/16"		5'-6 1/2"	↑	↑	↑		6'-3 1/8"			
	DOWN STA. 4	UP STA. 4			6'-8 3/4"		6'-8 1/8"	6'-0 13/16"		5'-6 7/16"					6'-3 1/8"			
	DOWN STA. 5	UP STA. 5			6'-8 13/16"		6'-8 1/16"	6'-0 13/16"		5'-6 1/2"					6'-3 3/16"			
	DOWN STA. 6	UP STA. 6			6'-8 3/4"		6'-8 1/8"	6'-0 13/16"		5'-6 1/2"		5'-8 1/4"	6'-4 15/16"					
	DOWN STA. 7	UP STA. 7			6'-8 3/4"		6'-8 1/8"	6'-0 13/16"		5'-6 7/16"		5'-8 3/16"	6'-4 7/8"				↓	
	DOWN STA. 8	UP STA. 8			6'-8 13/16"		6'-8 1/8"	6'-0 13/16"		5'-6 1/2"		7'-0 1/8"						
	DOWN STA. 9	UP STA. 9	6'-3 5/8"	6'-3 5/8"	6'-8 3/4"	6'-0 11/16"	6'-8 1/16"	6'-0 13/16"		5'-6 1/2"		6'-2"						
	DOWN STA. 10	UP STA. 10				6'-0 3/4"	6'-8 1/8"	6'-0 13/16"		5'-6 7/16"		6'-2"						
	DOWN STA. 11	UP STA. 11						6'-0 7/8"	6'-6 9/16"	5'-6 1/2"		6'-2 1/16"						
	DOWN STA. 12	UP STA. 12								5'-6 7/16"	5'-11 11/16"	6'-2"						
	DOWN STA. 13	UP STA. 13								5'-6 1/2"	5'-11 5/8"	6'-2"						
	DOWN STA. 14	UP STA. 14																
DOWN STATION ℄ BRGS.	(1) STRINGER	BRG. TYPE	1HE1	3H	2HE1	3H	3HE1	3H	4HE1	3H	5HE1	3H	6HE1		1C1			
	STR. SKEW X	PAD ELEV.	-1/2"	36.14	-1/2"	36.68	-1/2"	37.14	-1/2"	37.52	0"	37.93	0"	38.26	+1/16"	39.97		
	(2) STRINGER	BRG. TYPE	1HE2	2H	2HE2	2H	3HE2	2H	4HE2	2H	5HE2	2H	6HE2		1C2			
	STR. SKEW X	PAD ELEV.	-1/2"	36.05	-7/16"	36.58	-7/16"	37.09	-7/16"	37.56	+1/16"	38.04	+1/16"	38.46	+1/16"	40.13		
	(3) STRINGER	BRG. TYPE	1HE3	2H	2HE3	2H	3HE3	2H	4HE3	2H	5HE3	2H	6HE3		1C3			
	STR. SKEW X	PAD ELEV.	-1/2"	35.95	-7/16"	36.48	-3/8"	37.04	-3/8"	37.59	+1/8"	38.15	+3/16"	38.66	+1/16"	40.05		
	(4) STRINGER	BRG. TYPE	1HE4	2H	2HE4	2H	3HE4	2H	4HE4	2H	5HE4	2H	6HE4		1C4			
	STR. SKEW X	PAD ELEV.	-1/2"	35.85	-3/8"	36.37	-5/16"	36.99	-3/8"	37.62	+1/8"	38.26	+1/4"	38.87	0"	39.97		
	(5) STRINGER	BRG. TYPE	1HE5	2H	2HE5	2H	3HE5	2H	4HE5	2H	5HE5	2H	6HE5		1C5			
	STR. SKEW X	PAD ELEV.	-1/2"	35.76	-5/16"	36.27	-1/4"	36.93	-5/16"	37.65	+3/16"	38.37	+3/16"	39.07	0"	39.89		
	(6) STRINGER	BRG. TYPE	1HE6	2H	2HE6	2H	3HE6	2H	4HE6	2H	5HE6	2H	6HE6		1C6			
	STR. SKEW X	PAD ELEV.	-1/2"	35.66	-1/4"	36.17	-1/8"	36.88	-1/4"	37.68	+1/4"	38.48	+7/16"	39.27	0"	39.81		
	(7) STRINGER	BRG. TYPE	1HE7	2H	2HE7	2H	3HE7	2H	4HE7	2H	5HE7	2H	6HE7					
	STR. SKEW X	PAD ELEV.	-1/2"	35.57	-3/16"	36.08	-1/16"	36.83	-3/16"	37.72	+5/16"	38.59	+1/2"	39.48				
	(8) STRINGER	BRG. TYPE	1HE8	2H	2HE8	2H	3HE8	2H	4HE8	2H	5HE8	2H	6HE8					
	STR. SKEW X	PAD ELEV.	-1/2"	35.47	-1/8"	35.99	0"	36.75	-1/8"	37.75	+3/8"	38.71	+9/16"	39.68				
	(9) STRINGER	BRG. TYPE	1HE9	2H	2HE9	2H	3HE9	2H	4HE9	2H	5HE9	2H						
	STR. SKEW X	PAD ELEV.	-1/2"	35.37	-1/8"	35.90	+1/16"	36.65	-1/16"	37.64	+3/8"	38.82						
	(10) STRINGER	BRG. TYPE	1HE10	3H	2HE10	3H	3HE10	2H	4HE10	2H	5HE10	2H						
	STR. SKEW X	PAD ELEV.	-1/2"	35.28	-1/16"	35.81	+1/8"	36.56	0"	37.53	+7/16"	38.86						
	(11) STRINGER	BRG. TYPE					3HE11	3H	4HE11	2H	5HE11	2H						
	STR. SKEW X	PAD ELEV.					+1/4"	36.47	+1/16"	37.42	+1/2"	38.78						
	(12) STRINGER	BRG. TYPE							4HE12	3H	5HE12	2H						
	STR. SKEW X	PAD ELEV.							+1/8"	37.31	+9/16"	38.70						
	(13) STRINGER	BRG. TYPE									5HE13	2H						
	STR. SKEW X	PAD ELEV.									+9/16"	38.61						
	(14) STRINGER	BRG. TYPE									5HE14	3H						
	STR. SKEW X	PAD ELEV.									+5/8"	38.53						
UP STATION ℄ BRGS.	(1) STRINGER	BRG. TYPE	2HE1	3E	3HE1	3E	4HE1	3E	5HE1	3E	6HE1	3E	7HE1	1E	2C1	1E	1HE1	
	STR. SKEW X	PAD ELEV.	-1/2"	36.15	-1/2"	36.69	-1/2"	37.15	-1/2"	37.53	0"	37.93	+1/16"	37.07	-1/16"	38.77	-1/2"	35.65
	(2) STRINGER	BRG. TYPE	2HE2	2E	3HE2	2E	4HE2	2E	5HE2	2E	6HE2	2E	7HE2	1E	2C2	1E	1HE2	
	STR. SKEW X	PAD ELEV.	-7/16"	36.05	-7/16"	36.60	-7/16"	37.10	-7/16"	37.56	+1/16"	38.04	+1/8"	37.28	-1/16"	38.94	-1/2"	35.56
	(3) STRINGER	BRG. TYPE	2HE3	2E	3HE3	2E	4HE3	2E	5HE3	2E	6HE3	2E	7HE3	1E	2C3	1E	1HE3	
	STR. SKEW X	PAD ELEV.	-7/16"	35.96	-3/8"	36.51	-3/8"	37.06	-7/16"	37.59	+3/16"	38.15	+3/16"	37.48	-1/16"	38.86	-1/2"	35.46
	(4) STRINGER	BRG. TYPE	2HE4	2E	3HE4	2E	4HE4	2E	5HE4	2E	6HE4	2E	7HE4	1E	2C4	1E	1HE4	
	STR. SKEW X	PAD ELEV.	-3/8"	35.86	-5/16"	36.42	-3/8"	37.01	-3/8"	37.62	+1/4"	38.26	+5/16"	37.69	0"	38.78	-1/2"	35.36
	(5) STRINGER	BRG. TYPE	2HE5	2E	3HE5	2E	4HE5	2E	5HE5	2E	6HE5	2E	7HE5	1E	2C5	1E	1HE5	
	STR. SKEW X	PAD ELEV.	-5/16"	35.77	-1/4"	36.32	-5/16"	36.97	-5/16"	37.65	+5/16"	38.36	+3/8"	37.90	0"	38.70	-1/2"	35.27
	(6) STRINGER	BRG. TYPE	2HE6	2E	3HE6	2E	4HE6	2E	5HE6	2E	6HE6	2E	7HE6	1E	2C6	1E	1HE6	
	STR. SKEW X	PAD ELEV.	-1/4"	35.67	-1/8"	36.23	-1/4"	36.92	-1/4"	37.67	+7/16"	38.47	+7/16"	38.11	0"	38.62	-1/2"	35.17
	(7) STRINGER	BRG. TYPE	2HE7	2E	3HE7	2E	4HE7	2E	5HE7	2E	6HE7	2E	7HE7	1E			1HE7	
	STR. SKEW X	PAD ELEV.	-3/16"	35.58	-1/16"	36.14	-3/16"	36.87	-1/4"	37.70	+1/2"	38.58	+1/2"	38.31			-1/2"	35.08
	(8) STRINGER	BRG. TYPE	2HE8	2E	3HE8	2E	4HE8	2E	5HE8	2E	6HE8	2E	7HE8	1E			1HE8	
	STR. SKEW X	PAD ELEV.	-1/8"	35.48	0"	36.06	-1/8"	36.82	-3/16"	37.73	9/16"	38.69	+9/16"	38.52			-1/2"	34.98
	(9) STRINGER	BRG. TYPE	2HE9	2E	3HE9	2E	4HE9	2E	5HE9	2E	1C1	2E					1HE9	
	STR. SKEW X	PAD ELEV.	-1/8"	35.38	+1/16"	35.98	-1/16"	36.74	-1/8"	37.76	+9/16"	38.82					-1/2"	34.89
	(10) STRINGER	BRG. TYPE	2HE10	3E	3HE10	2E	4HE10	2E	5HE10	2E	1C2	2E					1HE10	
	STR. SKEW X	PAD ELEV.	-1/16"	35.29	+1/8"	35.90	0"	35.65	-1/16"	37.71	+9/16"	38.90					-1/2"	34.79
	(11) STRINGER	BRG. TYPE			3HE11	3E	4HE11	2E	5HE11	2E	1C3	2E						
	STR. SKEW X	PAD ELEV.			+1/4"	35.81	+1/16"	36.57	0"	37.61	+5/8"	38.81						
	(12) STRINGER	BRG. TYPE					4HE12	3E	Continued at		Continued at							
	STR. SKEW X	PAD ELEV.					+1/8"	36.48	right		right							

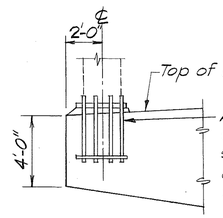
N. I. C.

CONTINUATION OF PIER HE4 UPSTA. ℄ BRGS.				
(12)	STRINGER	BRG. TYPE	5HE12	2E
	STR. SKEW X	PAD ELEV.	0"	37.52
(13)	STRINGER	BRG. TYPE	5HE13	2E
	STR. SKEW X	PAD ELEV.	+1/16"	37.43
(14)	STRINGER	BRG. TYPE	5HE14	3E
	STR. SKEW X	PAD ELEV.	+1/8"	37.33

CONTINUATION OF PIER HE5 UPSTA. ℄ BRGS.				
(12)	STRINGER	BRG. TYPE	1C4	2E
	STR. SKEW X	PAD ELEV.	+5/8"	38.72
(13)	STRINGER	BRG. TYPE	1C5	2E
	STR. SKEW X	PAD ELEV.	+5/8"	38.64
(14)	STRINGER	BRG. TYPE	1C6	3E
	STR. SKEW X	PAD ELEV.	+5/8"	38.55

NOTE:
For Notes and Definition of Str. Skew X, See Sheet No. T-11.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(180):17	1982	11	47



ANCHORAGE FOR OVERHEAD SIGN E-33 ON PIER HE 1

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

FOR INFORMATION ONLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

PIER GEOMETRY TABLE
SHEET 1 OF 2

KEEHI INTERCHANGE
F.A.I. PROJ NO. I-HI-1 (180):17

SCALE: DATE: 8/17/81

SHEET No. T-10 OF T-23 SHEETS

ORIGINAL PLANS | SURVEY PLOTTED BY: J. H. | DRAWN BY: | TRACED BY: | DESIGNED BY: DELU GILSTAD | QUANTITIES BY: | CHECKED BY: HABIB NOORATA | DATE | NOTE BOOK | No.

PRINTED ON NO. 1000H CLEARPRINT

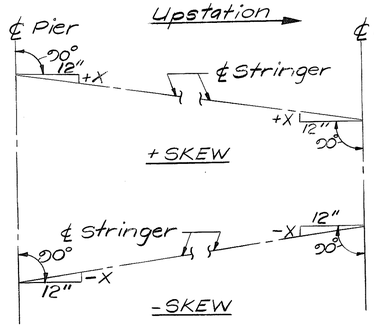
11

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180):17	1982	12	47

TABLE OF PIER DIMENSIONS AND ELEVATIONS

			HV1		HV2		HV3		HV4		HV5		HV6 (BY OTHERS)		HV0 (BY OTHERS)	
PIER NAME			HV1		HV2		HV3		HV4		HV5		HV6 (BY OTHERS)		HV0 (BY OTHERS)	
PIER TYPE			I		II		III		III		III					
WORK POINT STA. OF ℄ PIER			28+66.05		29+66.21		30+66.36		31+66.52		32+63.50		33+42.33		27+65.89	
SOUTH AZIMUTH OF ℄ PIER			189°-01'-23.0"		189°-01'-23.0"		189°-01'-23.0"		189°-01'-23.0"		193°-01'-18.4"		198°-36'-49.6"		189°-01'-23.0"	
CAP	LENGTH OF CAP "A"		23'-4"		23'-4"		23'-4"		23'-4"		23'-4"					
	DIST. ℄ BRGS. TO ℄ PIER "G"		11"		11"		11"		11"		11"					
	DEPTH "V"		6'-0"		6'-0"		6'-0"		6'-0"		6'-0"					
	DIMENSION "F1"	DIMENSION "F2"	2'-0 5/16"	2'-0 5/16"	2'-0 5/16"	2'-0 5/16"	2'-0 5/16"	2'-0 5/16"	2'-0 3/8"	2'-0 3/8"	2'-0 3/8"	2'-0 3/8"				
	DISTANCE "Q"	DISTANCE "R"	21'-8 3/16"	1'-7 13/16"	21'-8 3/16"	1'-7 13/16"	21'-8 5/16"	1'-7 13/16"	21'-7 1/2"	1'-8 1/2"	21'-7 1/2"	1'-8 1/2"				
	ELEVATION "H"	ELEVATION "J"	27.58	27.28	23.58	23.28	19.56	19.07	16.16	14.03	13.84	12.33				
COLUMN	DIMENSION "K"	DIMENSION "E"	5'-2"	—	5'-2"	—	5'-2"	—	5'-2"	—	5'-2"	—				
	BOTTOM WIDTH "L"		3'-6"		4'-1"		4'-6"		4'-11"		5'-0"					
	DIMENSION "M"	ELEVATION "U"	1'-9"	3.50	2'-0"	(6.5) P	—	6.5(P)	—	6.5(P)	—	5.5(P)				
	ELEVATION "S"	ELEVATION "T"	21.50	21.36	17.50	17.37	13.43	13.22	9.82	9.40	7.42	6.75				
STRINGER SPACING DISTANCE MEASURED ALONG ℄ PIER	DOWN STA. 1	UP STA. 1	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	5'-11"	5'-11"	5'-11"	5'-11"	6'-1"		6'-5 1/8"	
	DOWN STA. 2	UP STA. 2	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑		↕	
	DOWN STA. 3	UP STA. 3	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑		↕	
	DOWN STA. 4	UP STA. 4	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	6'-5 1/8"	5'-11"	5'-11"	5'-11"	5'-11"	6'-1"		6'-5 1/8"	
	DOWN STA. 5	UP STA. 5														
	DOWN STA. 6	UP STA. 6														
	DOWN STA. 7	UP STA. 7														
	DOWN STA. 8	UP STA. 8														
	DOWN STA. 9	UP STA. 9														
	DOWN STA. 10	UP STA. 10														
	DOWN STA. 11	UP STA. 11														
	DOWN STA. 12	UP STA. 12														
	DOWN STA. 13	UP STA. 13														
	DOWN STA. 14	UP STA. 14														
DOWN STATION ℄ BRGS.	(1) STRINGER	BRG. TYPE	1HV1	3H	2HV1	3H	3HV1	3H	4HV1	3H	5HV1	3H	6HV1			
	STR. SKEW X	PAD ELEV.	-1 1/16"	28.07	-1 1/16"	23.94	-1 1/16"	20.08	-1 1/16"	16.63	-1 1/16"	14.11	-9/16"	13.17		
	(2) STRINGER	BRG. TYPE	1HV2	2H	2HV2	2H	3HV2	2H	4HV2	2H	5HV2	2H	6HV2			
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.98	-1 1/16"	23.86	-1 1/16"	19.95	-3/4"	16.33	-1 1/16"	13.72	-9/16	12.78		
	(3) STRINGER	BRG. TYPE	1HV3	2H	2HV3	2H	3HV3	2H	4HV3	2H	5HV3	2H	6HV3			
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.90	-1 1/16"	23.78	-1 1/16"	19.82	-13/16"	16.02	-1 1/16"	13.34	-1/2"	12.38		
	(4) STRINGER	BRG. TYPE	1HV4	3H	2HV4	3H	3HV4	3H	4HV4	3H	5HV4	3H	6HV4			
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.82	-1 1/16"	23.69	-1 1/16"	19.69	-7/8"	15.71	-1 1/16"	12.96	-1/2"	11.99		
	(5) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(6) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(7) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(8) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(9) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(10) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(11) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(12) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(13) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(14) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
UP STATION ℄ BRGS.	(1) STRINGER	BRG. TYPE	2HV1	3E	3HV1	3E	4HV1	3E	5HV1	3E	6HV1	3E	7HV1	3E	1HV1	
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.87	-1 1/16"	23.87	-1 1/16"	19.84	+3/16"	16.43	+9/16"	14.28	+9/16"	13.22	-1 1/16"	31.35
	(2) STRINGER	BRG. TYPE	2HV2	2E	3HV2	2E	4HV2	2E	5HV2	2E	6HV2	2E	7HV2	2E	1HV2	
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.79	-1 1/16"	23.78	-3/4"	19.70	+3/16"	16.12	+5/8"	13.90	+9/16"	12.83	-1 1/16"	31.26
	(3) STRINGER	BRG. TYPE	2HV3	2E	3HV3	2E	4HV3	2E	5HV3	2E	6HV3	2E	7HV3	2E	1HV3	
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.71	-1 1/16"	23.70	-13/16"	19.57	+3/16"	15.81	+5/8"	13.51	+9/16"	12.43	-1 1/16"	31.17
	(4) STRINGER	BRG. TYPE	2HV4	3E	3HV4	3E	4HV4	3E	5HV4	3E	6HV4	3E	7HV4	3E	1HV4	
	STR. SKEW X	PAD ELEV.	-1 1/16"	27.62	-1 1/16"	23.62	-7/8"	19.44	+3/16"	15.50	+5/8"	13.13	+9/16"	12.03	-1 1/16"	31.09
	(5) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(6) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(7) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(8) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(9) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(10) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(11) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														
	(12) STRINGER	BRG. TYPE														
	STR. SKEW X	PAD ELEV.														

N.I.C.



STRINGER SKEW X

NOTES:

1. (P) indicates that Elevation is given at top of column pedestal. For details, see Sheet No. T-9.
2. The words 'Beam' and 'Stringer' are used interchangeably.
3. Pad Elevations shown in Table are Concrete Seat Elevations.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

FOR INFORMATION ONLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

PIER GEOMETRY TABLE
SHEET 2 OF 2

KEEHI INTERCHANGE
F.A.I. PROJ NO. I-HI-1 (180):17

SCALE: —— DATE: 8/17/81

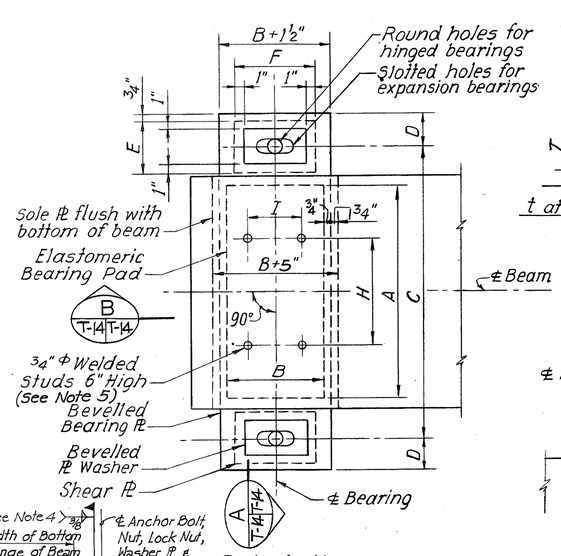
SHEET No. T-11 OF T-23 SHEETS

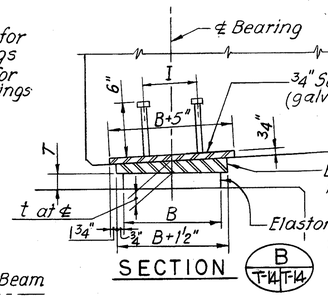
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	CHECKED BY	DREW GILSTAD
No.	QUANTITIES BY	
	CHECKED BY	HABIB NOORATA

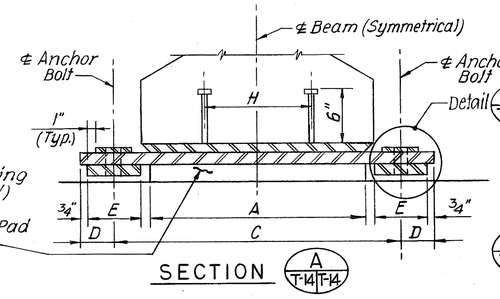
PRINTED ON NO. 1000H CLEARPRINT

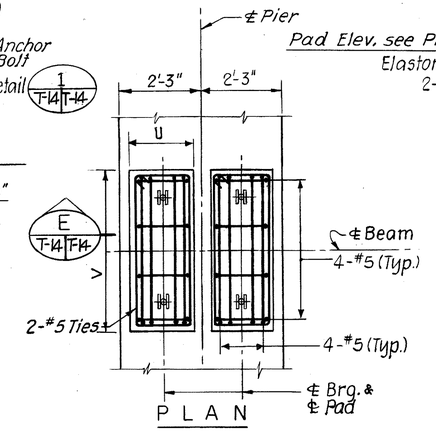
12

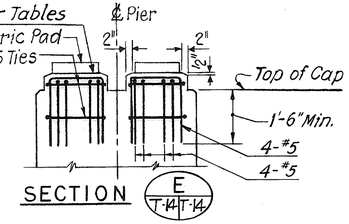
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180)17	1982	13	47







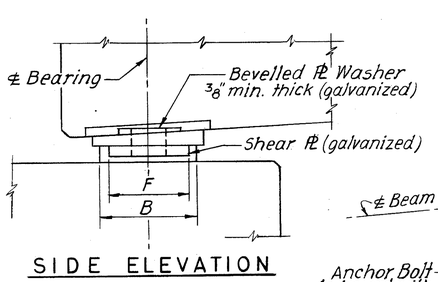


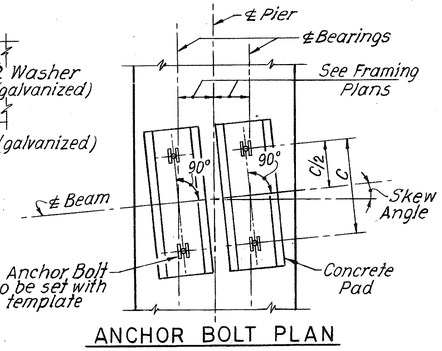


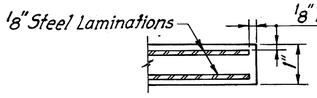
CONCRETE PAD DIMENSIONS		
BEARING TYPE	U	V
1H & E	1'-7"	4'-3"
2H & E	1'-2"	3'-10"
3H & E	1'-5"	3'-5"
6H & E	1'-2"	3'-2"

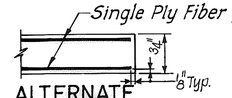
CONCRETE PAD DETAILS

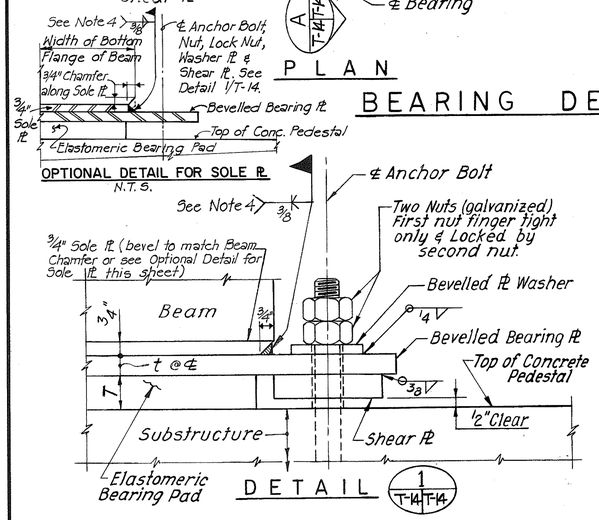
Shown for 0° Skew Angle.

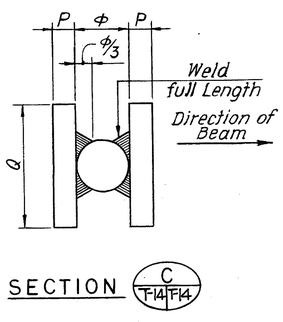


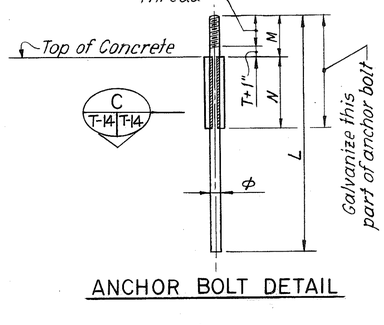


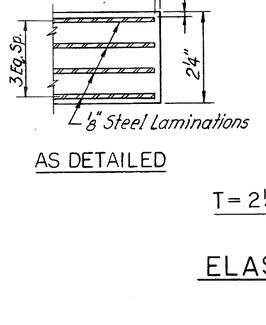


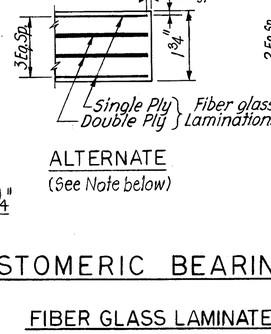


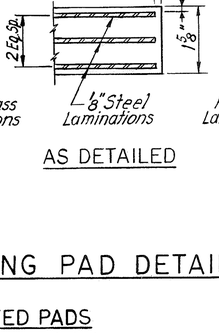


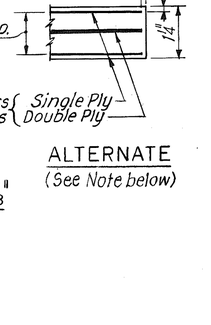












BEARING AND ANCHOR BOLT TABLE

BEARING TYPE	ELASTOMERIC BEARING PAD A	B	T	STEEL DIMENSIONS C	D	E	F	t	STUD SPACING H	I	ANCHOR BOLT HOLES HINGED BRGS.	EXP. BRGS.	ANCHOR BOLT Φ	L	M	ANCHOR PLATES N	Q	P
2H / 2E	24"	8"	1⅝"	32"	3¾"	6"	8"	See beam table on Sh. No. T-17	12"	6"	1¾" Φ / —	— / 1¾" × 4"	1½"	33"	9"	8"	4"	5⅝"
3H / 3E	19"	12"	1⅝"	27"	3¾"	6"	8"		8"	6"	2" Φ / —	— / 2" × 4"	1¾"	39"	9"	8"	4½"	5⅝"
6H / 6E	16"	8"	1"	24"	3¾"	6"	7"		8"	6"	1½" Φ / —	— / 1½" × 3"	1¼"	32"	8"	6"	3"	½"
1H / 1E	24"	14"	2¼"	33"	4¼"	7"	10"		12"	9"	2¼" Φ / —	— / 2¼" × 5"	2"	45"	10"	9"	5"	¾"

NOTES:

1. Elastomeric Bearing Pads, Anchor Bolts and Bevelled Bearing Pl's are incidental to concrete in Bridges.
2. Sole Pl's and Welded Studs are incidental to beams.
3. Durometer harness of Elastomeric Pad shall be 60± 5.
4. The Contractor shall minimize and dissipate the heat generated during the field welding of the ¾" sole plate to the bevelled bearing plate and during the field galvanizing of the weld. The Contractor shall take all necessary precautions to avoid burning the elastomeric bearing pad during welding & galvanizing. Welding of the sole plate to the bearing plate shall be done prior to the pouring of diaphragm and deck. Temporary wooden shims (A x B x ¾" min. thickness) shall be placed between the beveled bearing plates & the elastomeric bearing pads during field welding and galvanizing. Shims shall be removed.
5. Studs shall be welded to Sole Plate with automatically timed welding equipment.

ELASTOMERIC BEARING PAD DETAILS

FIBER GLASS LAMINATED PADS

All bearing seat elevations (Denoted also as bush hammer or pad elevations) are based on steel laminated elastomeric bearing pads. If the contractor elects to use fiber glass laminated elastomeric pads, instead of steel laminated elastomeric pads, he shall comply with the following requirements:

a. The fiber glass laminated elastomeric pads shall comply with the details shown on the plans and the requirements of the Special Provisions.

b. Appropriate revisions shall be made to the bearing seat elevations and Shear Pl to reflect the reduction in thickness for the fiber glass laminated bearing pads. Any such revisions shall be approved by the engineer.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

BEARING DETAILS

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180):17

SCALE: N.T.S. DATE: 8/17/81

SHEET NO. T-14 OF T-23 SHEETS

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

13

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180)+17	1982	14	47

N

NW0 — ℄ Pier & Abt. (Typ.) — Begin Project — Sta. 25+05.40 — Az. 189°-01'-23.0"

NW1 — Sta. 26+05.55 — Az. 189°-01'-23.0"

NW2 — Sta. 27+05.71 — Az. 189°-01'-23.0"

NW3 — Sta. 28+05.87 — Az. 189°-01'-23.0"

NW4 — Sta. 29+06.03 — Az. 189°-01'-23.0"

N. I. C.

Existing Substructure & Superstructure (by others)

End Diaphragm (Typ.)

Intermediate Diaphragm (Typ.)

℄ Brgs. (Typ.)

3 Eq. Spcs. @ 1NWG — 3 Eq. Spcs. @ 2NWG — 3 Eq. Spcs @ 3NWG — 3 Eq. Spcs @ 4NWG

9 equal spaces = 57'-10⅛"

1NW1 1NW2 1NW3 1NW4 1NW5 1NW6 1NW7 1NW8 1NW9 1NW10

2NW1 2NW2 2NW3 2NW4 2NW5 2NW6 2NW7 2NW8 2NW9 2NW10

3NW1 3NW2 3NW3 3NW4 3NW5 3NW6 3NW7 3NW8 3NW9 3NW10

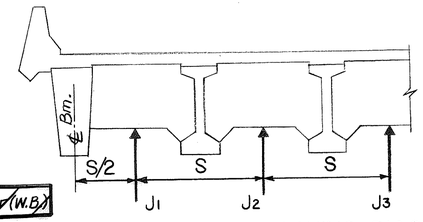
4NW1 4NW2 4NW3 4NW4 4NW5 4NW6 4NW7 4NW8 4NW9 4NW10

25 — 26 — 27 — 28 — 29

Az. 275°-48'-33.87"

Span 1NW = 100'-1⅞" — Span 2NW = 100'-1⅞" — Span 3NW = 100'-1⅞" — Span 4NW = 100'-1⅞"

℄ Nimitz Connector (W.B.) — P.C. Sta. 29+12.58 — R = 1200 — Measured along ℄ Nimitz Connector (W.B.)



TYPICAL FUTURE JACKING DIAGRAM
N.T.S. (NOT IN CONTRACT)

LEGEND: J = Jacking Force
S = Beam Spacing

Note: Place jacks under the end diaphragms as shown above for any lifting of the superstructure.

See below for HOV Ramp Framing Plan

Span 1HE = 100'-1⅞" — Span 2HE = 100'-1⅞" — Span 3HE = 100'-1⅞" — Span 4HE = 100'-1⅞"

Measured along ℄ H-1(EB)

9 equal spaces = 56'-8⅝" — 9 equal spaces = 56'-5⅝" — 9 equal spaces = 60'-6⅛" — 10 equal spaces = 66'-3⅛" — 11 equal spaces = 72'-0⅜"

1HE1 1HE2 1HE3 1HE4 1HE5 1HE6 1HE7 1HE8 1HE9 1HE10

2HE1 2HE2 2HE3 2HE4 2HE5 2HE6 2HE7 2HE8 2HE9 2HE10

3HE1 3HE2 3HE3 3HE4 3HE5 3HE6 3HE7 3HE8 3HE9 3HE10 3HE11

4HE1 4HE2 4HE3 4HE4 4HE5 4HE6 4HE7 4HE8 4HE9 4HE10 4HE11 4HE12

236 — 237 — 238 — 239

Az. 276°-33'-39.9" — Az. 279°-34'-26.0"

℄ H-1(EB)

Match Line See Sheet No. T-16

℄ Ramp C

Substructure & Superstructure (by others)

3 Eq. Spcs. @ 1HE6 — 3 Eq. Spcs @ 2HE6 — 3 Eq. Spcs. @ 3HE6 — 3 Eq. Spcs. @ 4HE 7

Begin Ramp C Sta. 10+00.00 = H-1(EB) Sta. 236+90.00

Az. 189°-01'-23.0"

H-1(EB) Sta. 235+64.91 — Begin Project — ℄ Pier (Typ.)

H-1(EB) Sta. 236+65.00

H-1(EB) Sta. 237+65.09 = Ramp C Sta. 10+73.48

H-1(EB) 238+65.18 = Ramp C. Sta. 11+73.48

H-1 (EB) Sta. 239+65.27 = Ramp C. Sta. 12+73.49

HE0 — HE1 — HE2 — HE3 — HE4

NOTES:

1. All Azimuths are measured from the South.
2. The ℄s of the Bearings are parallel to the ℄s of the Piers.
3. Diaphragms shall be parallel to downstation Pier unless noted.

LEGEND:

H = Hinge Bearings
E = Expansion Bearings

HV0 — Sta. 27+65.89 — HV1 — Sta. 28+66.05 — HV2 — Sta. 29+66.21 — HV3 — Sta. 30+66.36 — HV4 — Sta. 31+66.52

3 Equal Spaces = 19'-3⅜" — 3 Eq. Spcs. = 19'-3⅜" — 3 Eq. Spcs. = 19'-3⅜" — 3 Eq. Spcs. = 171'-9"

Az. 189°-01'-23.0"

Span 1 HV = 100'-1 15/16" — Span 2HV = 100'-1 15/16" — Span 3HV = 100'-1 15/16" — Span 4HV = 100'-1 15/16"

1HV1 1HV2 1HV3 1HV4

2HV1 2HV2 2HV3 2HV4

3HV1 3HV2 3HV3 3HV4

4HV1 4HV2 4HV3 4HV4

28 — 30 — 31

Measured along ℄ HOV Ramp

MATCH LINE See Sheet No. T-16

℄ HOV Ramp

Curve ℄ R = 830'

P.C. Sta. 31+56.84

4½" — 11" — 1-10½"

℄ Brg. (Typ.)

Substructure & Superstructure (By Others)

3 Eq. Spcs. @ 1HV3 — 3 Eq. Spcs. @ 2HV3 — 3 Eq. Spcs. @ 3HV3 — 3 Eq. Spcs. @ 4HV3

Begin Project

FOR INFORMATION ONLY

JOHN P. JOHNSON — REGISTERED PROFESSIONAL ENGINEER — No. 3647 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

John P. Johnson

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY A.R.M. — TRACED BY H. SAXER — DESIGN BY — QUANTITIES BY — CHECKED BY J. Johnson — DATE — NOTE BOOK — No.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

FRAMING PLAN
SHEET 1 OF 2

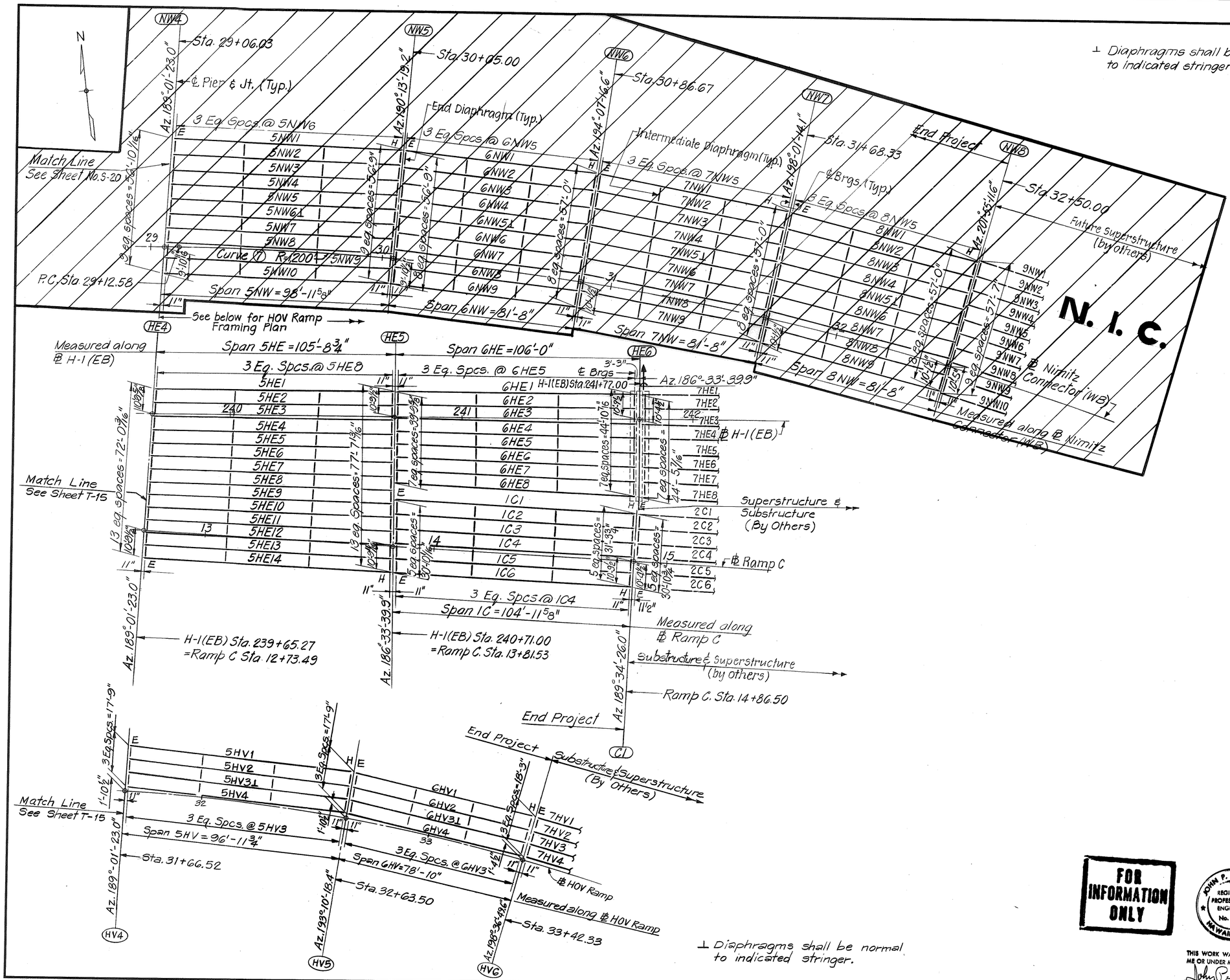
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180)+17

SCALE: 1" = 20'-0" — DATE: 8/17/81

SHEET NO. T-15 OF T-23 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-I(180)-17	1982	15	47

⊥ Diaphragms shall be normal to indicated stringer



⊥ Diaphragms shall be normal to indicated stringer.

NOTES:
1. For Notes & Legend see Sheet No. T-15.
2. For Future Jacking Diagram see sheet No. T-15.

ORIGINAL PLAN
SURVEY PLOTTED BY — DATE
DRAWN BY M. M.
TRACED BY
NOTE BOOK
DESIGNED BY H. SAXER
QUANTITIES BY
No.
CHECKED BY

FOR INFORMATION ONLY

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

FRAMING PLAN
SHEET 2 OF 2

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180)-17
SCALE: 1"=20'-0" DATE: 8/17/81

SHEET No. T-16 OF T-23 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180):17	1982	16	47

BEAM MARK	LGTH. ℄ TO ℄ BRG.	t1	t2	BEVEL	BEAM TYPE
1NW1	98.32	1¼"	1¼"	-⅜:12	IVF-A
2				-⅜:12	IV-A
3				-⅜:12	
4				-3/16:12	
5					
6					
7					
8				-3/16:12	
9				-¼:12	IV-A
1NW10	98.32	1¼"	1¼"	-¼:12	IVF-A
2NW1	98.32	1¼"	1¼"	-3/16:12	IVF-A
2					IV-A
3					
4				-3/16:12	
5				-¼:12	
6					
7					
8					
9					IV-A
2NW10	98.32	1¼"	1¼"	-¼:12	IVF-A
3NW1	98.32	1¼"	1¼"	-¼:12	IVF-A
2					IV-A
3					
4				-¼:12	
5				-5/16:12	
6					
7					
8					
9				-5/16:12	IV-A
3NW10	98.32	1¼"	1¼"	-⅜:12	IVF-A
4NW1	98.32	1¼"	1¼"	-5/16:12	IVF-A
2	98.33				IV-A
3	98.33				
4	98.34				
5	98.35			-5/16:12	
6	98.35			-⅜:12	
7	98.36				
8	98.37				
9	98.37				IV-A
4NW10	98.38	1¼"	1¼"	-⅜:12	IVF-A
5NW1	98.09	1¼"	1¼"	-¼:12	IVF-A
2	97.96			-5/16:12	IV-A
3	97.83				
4	97.70				
5	97.56			-5/16:12	
6	97.43			-⅜:12	
7	97.30				
8	97.17				
9	97.04				IV-A
5NW10	96.91	1¼"	1¼"	-⅜:12	IVF-A
6NW1	83.01	1¼"	1¼"	-5/16:12	IVF-D
2	82.82				IV-E
3	82.04				
4	81.55			-5/16:12	
5	81.07			-⅜:12	
6	80.59				
7	80.10				
8	79.62				IV-E
6NW9	79.14	1¼"	1¼"	-⅜:12	IVF-D
7NW1	83.01	1¼"	1¼"	-⅜:12	IVF-D
2	82.52				IV-E
3	82.04				
4	81.55			-5/16:12	
5	81.07			-5/16:12	
6	80.58				
7	80.10				
8	79.61				IV-E
7NW9	79.13	1¼"	1¼"	-⅜:12	IVF-D
8NW1	83.01	1¼"	1¼"	-5/16:12	IVF-D
2	82.52				IV-E
3	82.04				
4	81.55				
5	81.07				
6	80.58				
7	80.10				
8	79.61				IV-E
8NW9	79.13	1¼"	1¼"	-5/16:12	IVF-D

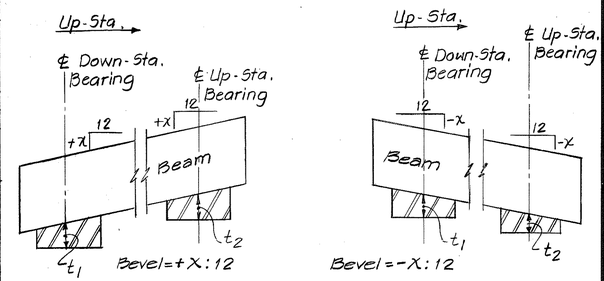
N. I. C.

BEAM MARK	LGTH. ℄ TO ℄ BRG.	t1	t2	BEVEL	BEAM TYPE
1HE1	98.26	1¼"	1¼"	+1/16:12	IVF-A
2					IV-A
3					
4					
5					
6					
7					
8					
9					IV-A
1HE10	98.26	1¼"	1¼"	+1/16:12	IVF-A
2HE1	98.26	1¼"	1¼"	+1/16:12	IVF-A
2	98.24				IV-A
3	98.22				
4	98.21				
5	98.20				
6	98.19				
7	98.18				
8	98.17				
9	98.17				IV-A
2HE10	98.17	1¼"	1¼"	+1/16:12	IVF-A
3HE1	~~98.26~~ 97.41	1¼"	1¼"	+1/16:12	IVF-A
2	~~98.23~~ 97.39				IV-A
3	~~98.21~~ 97.41				
4	~~98.20~~ 97.40				
5	~~98.18~~ 97.38				
6	~~98.17~~ 97.37				
7	~~98.17~~ 97.37				
8	~~98.17~~ 97.37				
9	~~98.17~~ 97.37				
10	~~98.17~~ 97.37				IV-A
3HE11	~~98.18~~ 97.38	1¼"	1¼"	+1/16:12	IVF-A
4HE1	~~98.26~~ 97.06	1¼"	1¼"	+1/16:12	IVF-A
2	~~98.24~~ 97.04			+1/16:12	IV-A
3	~~98.22~~ 97.02				
4	~~98.21~~ 97.01				
5	~~98.19~~ 97.00				
6	~~98.18~~ 96.98				
7	~~98.18~~ 96.98			+1/16:12	
8	~~98.17~~ 96.97			+⅛:12	
9	~~98.17~~ 96.97				
10	~~98.17~~ 96.97				
11	~~98.17~~ 96.97				IV-A
4HE12	~~98.17~~ 96.97	1¼"	1¼"	+⅛:12	IVF-A
5HE1	103.43	1¼"	1¼"	+1/16:12	IVF-L
2	103.67			+1/16:12	IV-M
3	103.91				
4	104.15				
5	104.39				
6	104.64			+1/16:12	
7	104.89			+⅛:12	
8	105.14				
9	105.39				
10	105.64				
11	105.90				
12	106.15				
13	106.41				IV-M
5HE14	106.67	1¼"	1¼"	+⅛:12	IVF-L
6HE1	101.83	1¼"	1¼"	+1/16:12	IVF-L
2	101.84			+1/16:12	IV-M
3	101.84			+1/16:12	
4	101.85				
5	101.87				
6	101.89			+1/16:12	
7	101.92			+⅛:12	
6HE8	101.95	1¼"	1¼"	+⅛:12	IV-M
1C1	104.19	1¼"	1¼"	+⅛:12	IV-M
2	103.87				
3	103.54				
4	103.22				
5	102.89				IV-M
1C6	102.57	1¼"	1¼"	+⅛:12	IVF-L

BEAM MARK	LGTH. ℄ TO ℄ BRG.	t1	t2	BEVEL	BEAM TYPE
1HV1	98.32	1¼"	1¼"	-⅜:12	IVF-A
2	98.32			-⅜:12	IV-A
3	98.32			-⅜:12	
1HV4	98.32			-⅜:12	IVF-A
2HV1	98.32	1¼"		-½:12	IVF-A
2	98.32				IV-A
3	98.32				IV-A
2HV4	98.32				IVF-A
3HV1	98.32				IVF-A
2	98.32				IV-A
3	98.32				IV-A
3HV4	98.32	1¼"	1¼"	-½:12	IVF-A
4HV1	98.32	1¼"	1¼"	-⅜:12	IVF-A
2	98.35			-1/16:12	IV-A
3	98.38			-1/16:12	IV-A
4HV4	98.41			-1/16:12	IVF-A
5HV1	96.51			-5/16:12	IVF-C
2	96.08			-5/16:12	IV-A
3	95.65			-5/16:12	IV-A
5HV4	95.22	1¼"	1¼"	-5/16:12	IVF-C
6HV1	78.82			-3/16:12	IVF-D
2	78.26			-3/16:12	IV-H
3	77.69			-3/16:12	IV-H
6HV4	77.12	1¼"	1¼"	-3/16:12	IVF-D

BEAM MARK	LGTH. ℄ TO ℄ BRG.	t1	t2	BEVEL	BEAM TYPE

BEAM MARK	LGTH. ℄ TO ℄ BRG.	t1	t2	BEAM TYPE



BEARING PLATE BEVEL
N.T.S.

NOTES:

1. t1 is the bearing plate thickness at the downstation bearing.
   t2 is the bearing plate thickness at the upstation bearing.
2. For bearing types, see Sheets No. T-10 & T-11.
3. For bearing details, see Sheet No. T-14.
4. Beam lengths have been determined along level lines.
5. For the conditions where bevels are ¼":12" or less, the contractor has the option to use bearing plates of uniform thickness of "t1" or "t2" specified in Table this sheet. In these instances, the concrete seats shall be bevelled to compensate for the bearing plates being of uniform thickness.

ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY
DRAWN BY JOSHUA MALKIN DATE
TRACED BY
DESIGNED BY HABIB NOORZAIA
QUANTITIES BY
CHECKED BY
No.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

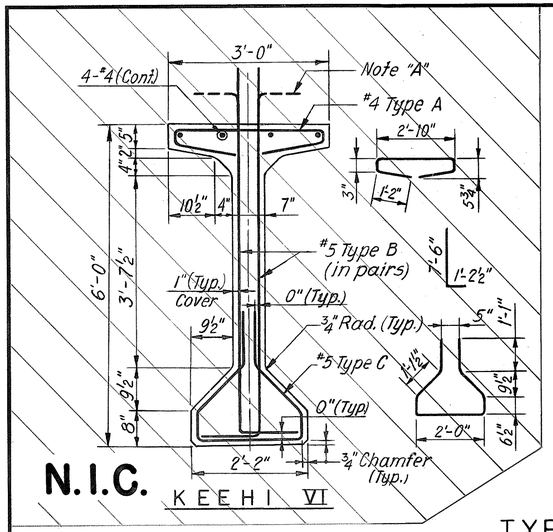
BEAM TYPE SCHEDULE

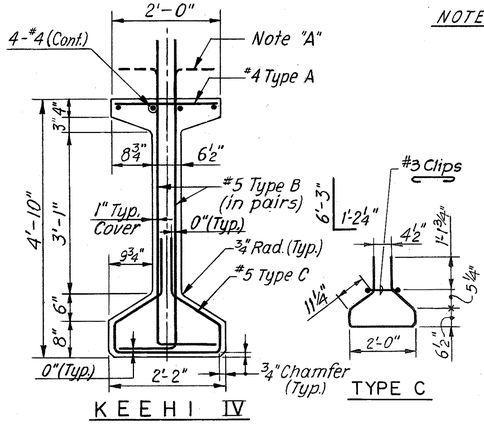
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (180):17
SCALE: None DATE: 8/17/81

SHEET NO. T-17 OF T-23 SHEETS

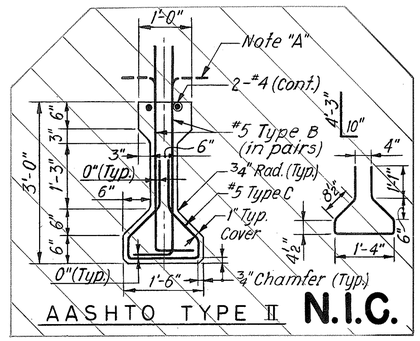
16

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(180)17	1982	17	47



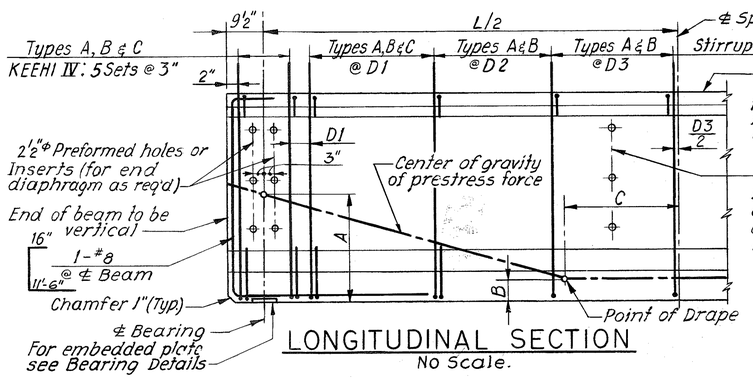


NOTE "A": Bend bars in field 1½" below top of deck. All reinforcing dimensions are out to out.



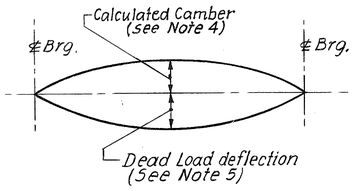
TYPICAL BEAM SECTION

Scale ¾" = 1'-0"

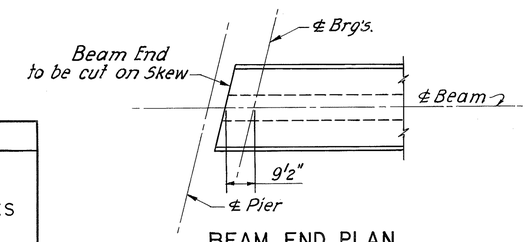


LONGITUDINAL SECTION

No Scale.



CAMBER DIAGRAM



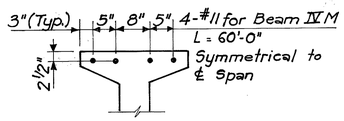
BEAM END PLAN

No Scale

BEAM SCHEDULE

BEAM TYPE	INITIAL* PRESTRESS FORCE (KIPS)	WORKING** FORCE (KIPS)	CALCULATED CAMBER SEE NOTE 4	DEAD LOAD DEFLECTION SEE NOTE 5	LOCATION OF CENTER OF GRAVITY OF PRESTRESS FORCE			STIRRUPS			REQUIRED MIN. ULT. CONC. STRENGTH BEFORE RELEASE OF STRANDS (P.S.I.)	REMARKS
					DIST A	DIST B	DIST. TO PT. OF DRAPE C	NO. OF STIRRUPS @ SPACING D1	NO OF STIRRUPS @ SPACING D2	SPACING D3		
IV-A	1279	990	-1½"	1"	1'-4½"	4¼"	10'-0"	11 @ 12"	10 @ 18"	18"	4700	
IV-M	1400	1084	-1½"	1⅜"	1'-5¾"	5¾"	11'-0"	15 @ 9"	16 @ 12"	18"	5000	See Detail 'A'
IV-H	852	660	-⅝"	½"	1'-6"	5"	8'-0"	12 @ 10"	8 @ 18"	18"	4700	

** After all losses



DETAIL 'A'

Scale: ¾" = 1'-0"

NOTES FOR PRESTRESSED BEAMS

PRETENSIONING

1. Concrete shall have a minimum 28 day compressive strength of 6,000 psi.
2. Pretensioned strand shall be 7 wire ½"Φ stress-relieved steel strands (area = 0.153 in²) with an ultimate strength of 270 ksi. For properties see State Standard Specifications. ~~Initial strand stress (before any losses): 199 ksi.; Initial loss = 20,000 psi.~~ Total loss due to creep, shrinkage, elastic shortening and relaxation of steel = 45,000 psi.
3. Non-prestressed reinforcing steel shall be Grade 40 unless otherwise noted. For properties see State Standard Specifications.
4. The calculated camber includes the effect of the initial prestress force and the weight of the beam after removal from bed. Negative values shown for calculated camber indicate a net upward deflection. Calculated camber values shown do not account for any camber growth of the beam. The actual camber shall not exceed the calculated camber shown on the plans by more than 100% at time of installation.
5. The dead load deflection includes the combined effects of the weight of slab, haunch & diaphragm.
6. Strand pattern shall be symmetrical about the longitudinal ℄ of the beam.
7. Strand release sequence shall not induce any lateral deflection of the beam.
8. Contractor shall submit his proposed strand pattern and releasing sequence to the Engineer for approval.
9. During curing care shall be taken to avoid any lateral deflection of the beam due to improper orientation.
10. Lifting devices shall be placed as close as possible to the center line of bearings of the beam. Details and locations of lifting devices shall be submitted to the Engineer for approval. Such approval does not relieve the Contractor of his responsibilities if beam is damaged due to failure of the lifting device.
11. See Framing Plans for locations of diaphragms & beam mark numbers. For beam types and lengths see beam type schedule. Lengths shown do not include effect of elastic shortening.
12. In lieu of the 7 wire ½" dia. stress-relieved steel strands (area 0.153 in²) with an ultimate strength of 270 ksi, the Contractor at his option may use 7 wire 7/16" dia. stress-relieved steel strands (area 0.115 in²) with an ultimate strength of 270 ksi. For propreties of 7/16" dia. strand see special provisions. However, the working force and its center of gravity, as stated, shall not be revised, unless approved by the Engineer.

POST-TENSIONING

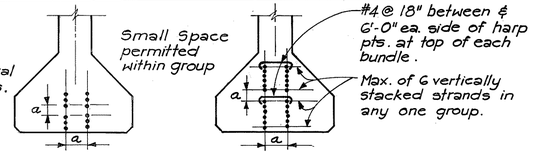
(Contractor's Option for Long Beams)

a. The ultimate 28-day compressive strength of concrete shall be a minimum of 6000 psi.
b. Post-tensioning steel shall consist of either ½"Φ, 270 ksi S/R multistrand tendons or high strength alloy steel bars. Sheathing shall be galvanized rigid duct (coef. of friction μ = 0.25 and wobble coef. K = 0.0002) for strands and galvanized metal sheathing (μ = 0.15 and k = 0.0002) for bars.
c. Loss due to creep, shrinkage, elastic shortening and relaxation of steel to be assumed = 35,000 psi.
d. Contractor shall submit the post-tensioned beam design including elongation, jacking and deflection computation to Engineer for approval. Estimate of losses (apart from that listed above) peculiar to post-tensioning shall be part of the calculations.
e. Contractor shall submit the tendon pattern and profile, sequence of stressing and anchorage details to Engineer for approval. Tendons location and post-tensioning shall be symmetrical about the longitudinal ℄ of the beam.
f. Pretensioning notes 3, 9, 10 and 11 also apply to post-tensioning.

BUNDLING OF PRESTRESSING REINFORCEMENT

ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS

1. Strands may be bundled in groups as shown.
2. The minimum distance "a" between groups or individual strands is 2" for ½" strands.
3. "a" is measured between centers of adjacent strands.



CASE I CASE II

ARRANGEMENT AND CLEARANCE FOR POST TENSIONED STRANDS

1. Horizontal clearance between units equals 2" minimum.
2. Units may be bundled vertically in groups of 3 maximum.
3. Vertical clearance between bundled units equal 3" minimum.
4. Approval of the Engineer is required for deviation.

ORIGINAL PLANS — SURVEY PLOTTED BY — DRAWN BY: M. Nishida — TRACED BY — DESIGNED BY: HABIB NOORATA — QUANTITIES BY — CHECKED BY: J. Hasegawa — NOTE BOOK — No. — DATE

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

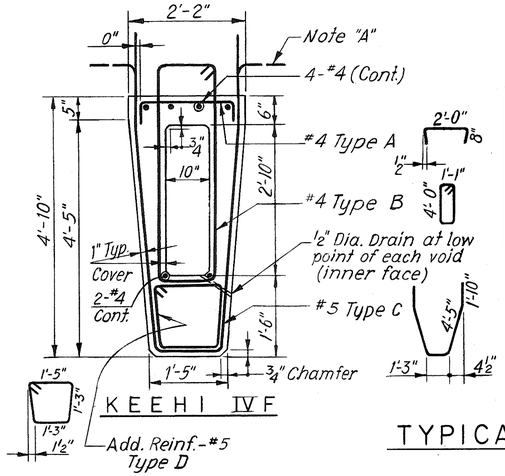
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

PRESTRESS BEAM DETAILS
SHEET 1 OF 2

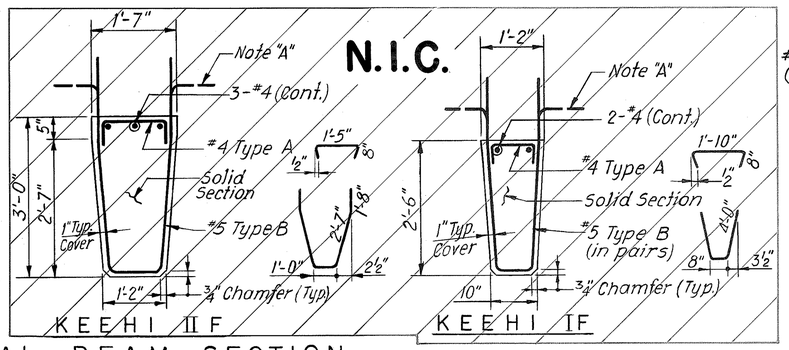
KEEHI INTERCHANGE
F.A.I. PROJECT NO. 1-HI-1(180)+17
SCALE: AS SHOWN DATE: 8/17/81

SHEET No. T-18 OF T-23 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(180)-17	1982	18	47

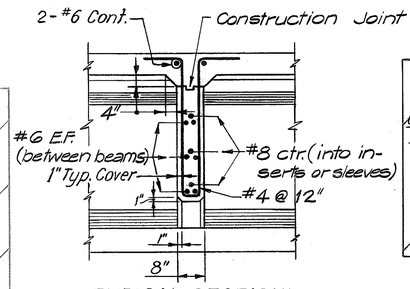


NOTE "A": Bend bars in field 1½" below top of deck. All reinforcing dimensions are out to out.



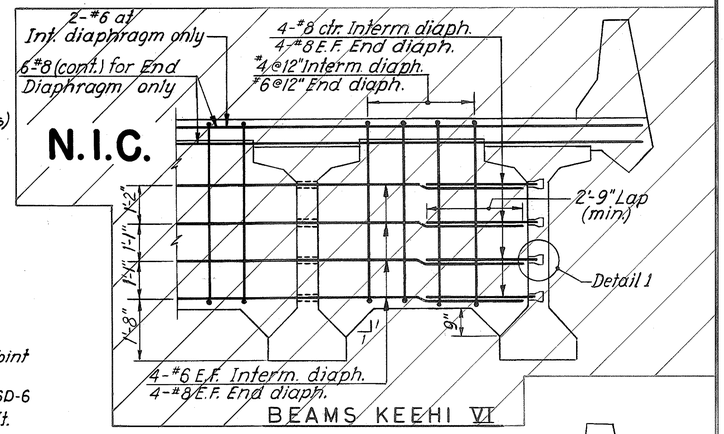
TYPICAL BEAM SECTION

Scale 3/4"=1'-0"

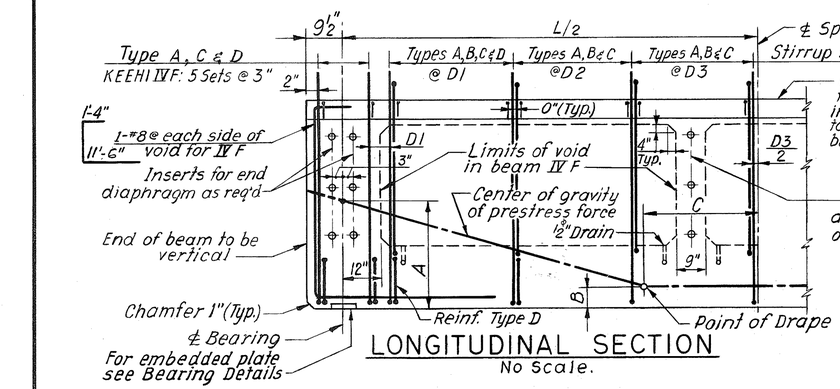


TYPICAL SECTION INTERMEDIATE DIAPHRAGMS

Scale 1/2"=1'-0"

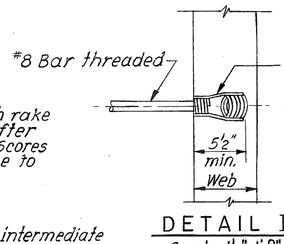


BEAMS KEEHI VI



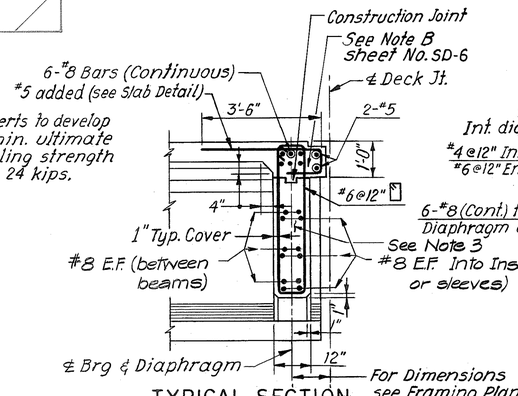
LONGITUDINAL SECTION

No Scale.



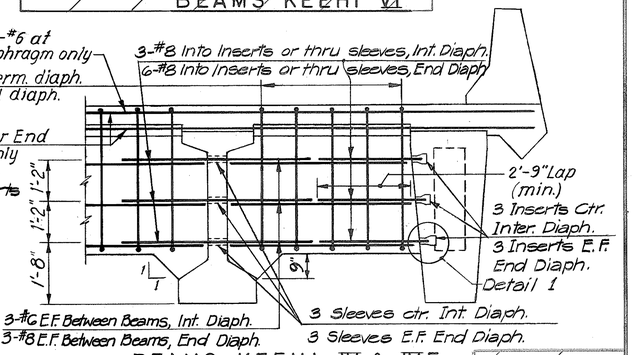
DETAIL I

Scale 1½"=1'-0"



TYPICAL SECTION END DIAPHRAGMS

Scale 1/2"=1'-0"



BEAMS KEEHI IV & IVF

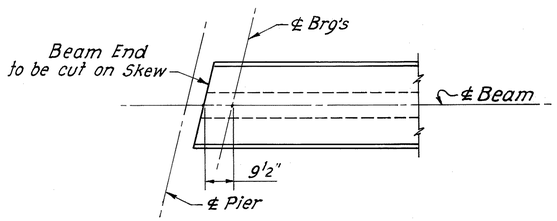
BEAM SCHEDULE

BEAM TYPE	* INITIAL PRESTRESS FORCE (KIPS)	WORKING ** FORCE (KIPS)	CALCULATED CAMBER SEE NOTE 4	DEAD LOAD DEFLECTION SEE NOTE 5	LOCATION OF CENTER OF GRAVITY OF PRESTRESS FORCE DIST. A	DIST. B	DIST. TO PT. OF DRAPE C	STIRRUPS NO. OF STIRRUPS @ SPACING D1	NO. OF STIRRUPS @ SPACING D2	SPACING D3	REQUIRED MIN. ULT. CONC. STRENGTH BEFORE RELEASE OF STRANDS (P.S.I.)	REMARKS
IVF-A	1461	1131	-1 1/2"	1 1/4"	1'-8"	8"	10'-0"	11 @ 12"	11 @ 18"	18"	4700	
IVF-D	1096	848	-1"	5/8"	1'-7 1/4"	6 1/2"	9'-0"	9 @ 14"	9 @ 18"	18"	4500	
IVF-L	1644	1272	-1 3/4"	1 1/2"	1'-10 1/2"	7 3/4"	11'-0"	12 @ 12"	12 @ 18"	18"	5100	
IVF-C	1522	1178	-1 3/4"	1 1/2"	1'-9"	7"	10'-0"	11 @ 12"	11 @ 18"	18"	5100	See Detail 'B'

** After all losses.

NOTES:

1. For Prestress Notes and Camber Diagram see Sh. No. T-18
2. Intermediate and End Diaphragms shall be Class A Concrete.
3. Apply Epoxy Bonding Compound to contact area on all fascia Beams before placing diaphragm concrete. Epoxy Bonding Compound incidental to concrete in Bridges.
4. Bars in sleeves shall be grouted in place before pouring the diaphragms.
5. Inserts and Sleeves are incidental to prestressed concrete beam.

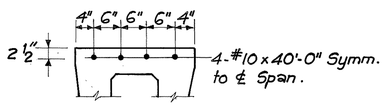


BEAM END PLAN KEEHI IVF

No Scale

NOTES, Cont'd.:

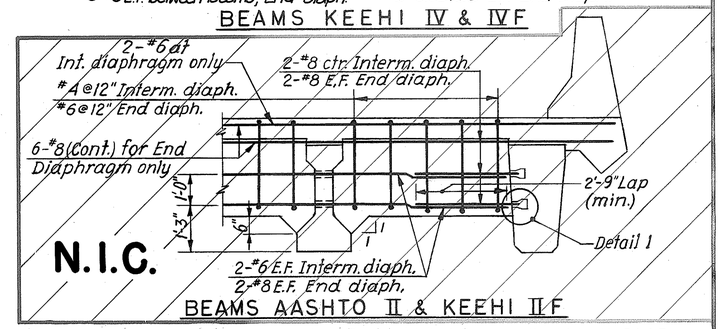
6. Diaphragm bars thru sleeves or threated into inserts shall be paid under "Reinforcing in Bridges, ____".



DETAIL 'B'

(Beam IVF-C)

Scale 3/4"=1'-0"



BEAMS AASHTO II & KEEHI IIF

TYPICAL INTERMEDIATE AND END DIAPHRAGMS

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

ORIGINAL PLAN
SURVEY PLOTTED BY: DATE
DRAWN BY: M. Tashiro
TRACED BY: HABIB NOORATA
DESIGNED BY:
QUANTITIES BY:
CHECKED BY: J. Pleasants
NOTE BOOK
No.

JOHN P. JOHNSON REGISTERED PROFESSIONAL No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
H-1 VIADUCT (E.B.), RAMP C & HOV RAMP

PRESTRESS BEAM DETAILS
SHEET 2 OF 2

KEEHI INTERCHANGE
F.A.I. PROJECT NO. 1-HI-1(180)-17
SCALE: AS SHOWN DATE: 8/17/81

SHEET No. T-19 OF T-23 SHEETS