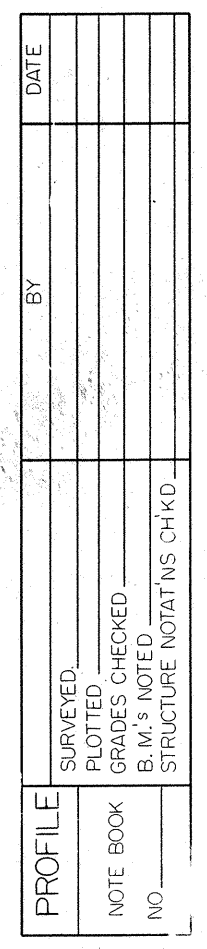
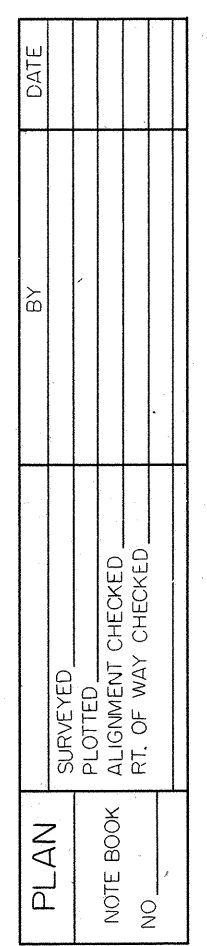
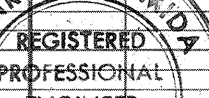


NO.	DATE	REVISION
1	10-2-78	Relocated Structure 51 D1 Type C
2	1-18-79	Added Grading Approval Block
3	6-18-79	Revised Drains 52, 53, & 54
4	8-29-80	Revised Drainage Str. No. 34



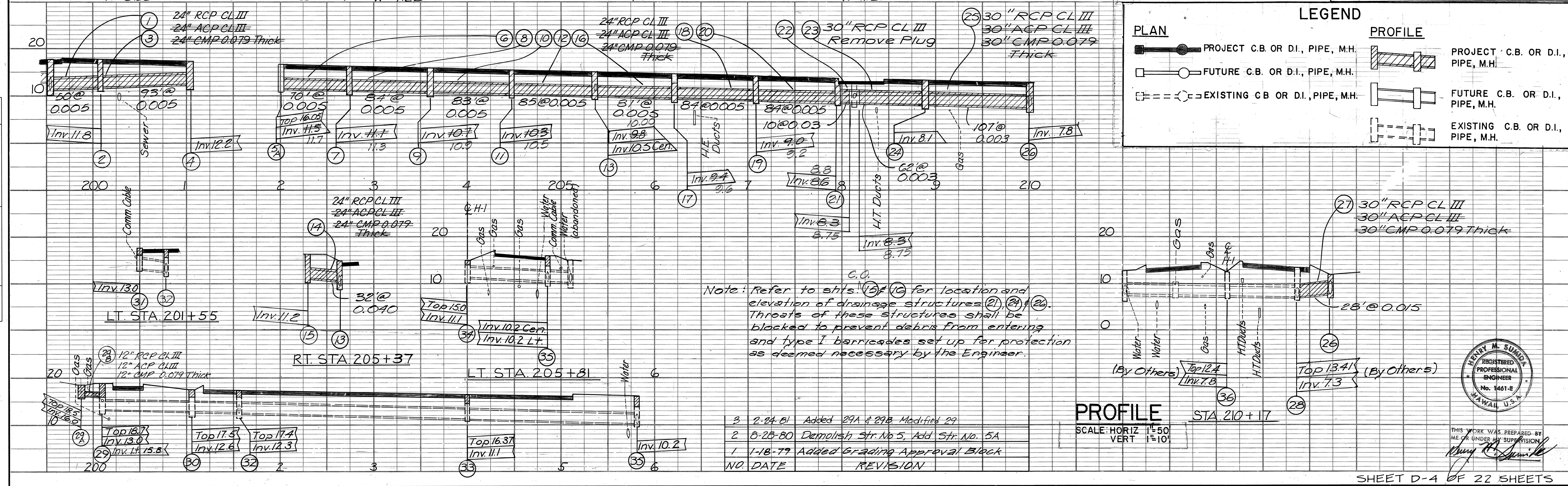

 16
 REGISTERED
 PROFESSIONAL
 ENGINEER
 No. 1401-E
 HAWAII, U.S.A.
STA. 108+75
 THIS WORK WAS PREPARED BY
 ME OR UNDER MY SUPERVISION.
Henry M. Sumida

SHEET D-1 OF 22 SHEETS

CO ADD 23

PLAN		BY	DATE
SURVEYED			
PLOTTED			
NOTE BOOK			
ALIGNMENT CHECKED			
PT. OF WAY CHECKED			
NO			

PROFILE		BY	DATE
	SURVEYED		
	PLOTTED		
	GRADES CHECKED		
	B.M.'S NOTED		
NO	STRUCTURE NOTATIONS CHECKED		



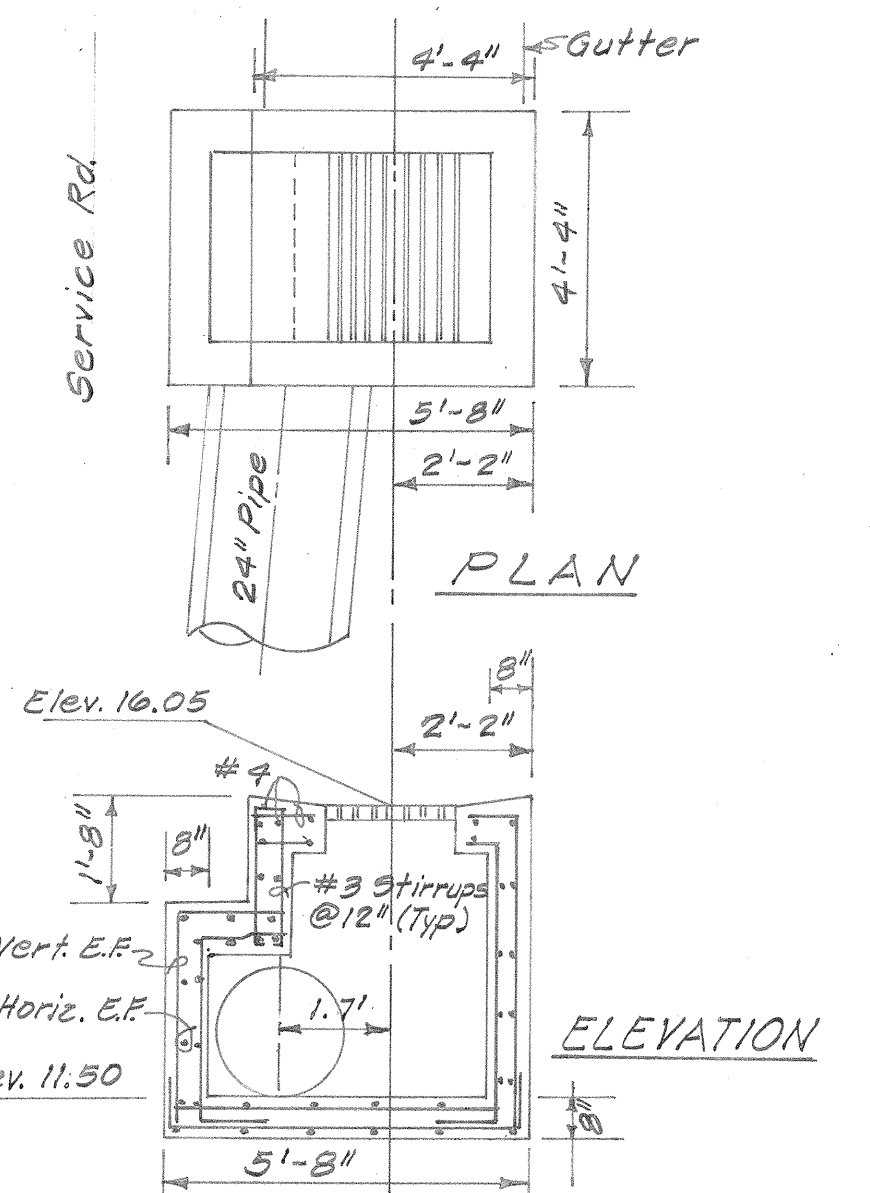
SHEET D-4 OF 22 SHEETS

CO 26

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(84)-16	1978	27	466

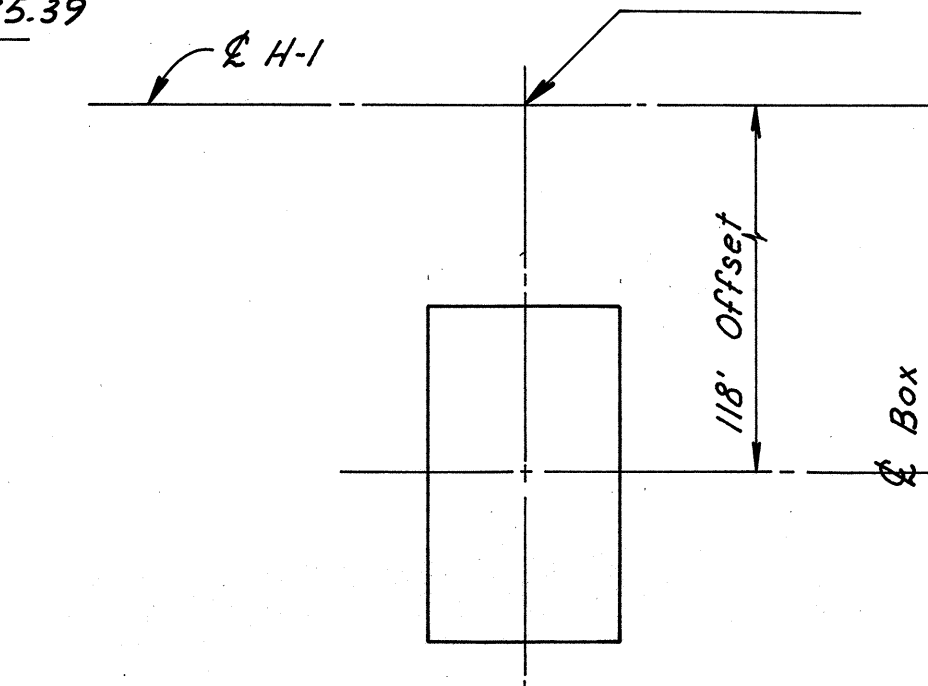
NOTES

- See also, Special Provisions and Specifications.
- See Hawaii Standard Details including: Dwg. No. DH6 "Catch Basin and Manhole Castings."
- All concrete shall be Class "A" Reinforced Concrete Design Data: $f'_c = 3,000$ p.s.i. (28 Days) $f_s = 20,000$ p.s.i. Deformed Bars
- All Reinforcing shall meet requirements of ASTM A615 Grade 40.
- Provide 1" chamfer for all exposed edges.
- Maintain 2" clear on all Reinforcing Steel unless otherwise noted.



DRAINAGE STRUCTURE #5A
At Sta. 202+00 RT. Sht. C.O. 26

Sta. 173+63



ELEVATION

118' Offset

Box

See Sht. No. 80 for Reinforcing Steel

MODIFIED D.I. TYPE C

STA. 202+00-106' RT.

Scale: 1" = 1'-0"

See Sht. No. 80 for Reinforcing Steel

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Scale: 1" = 1'-0"

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See Sht. No. 80 for Reinforcing Steel

MODIFIED D.I. TYPE C

STA. 202+00-106' RT.

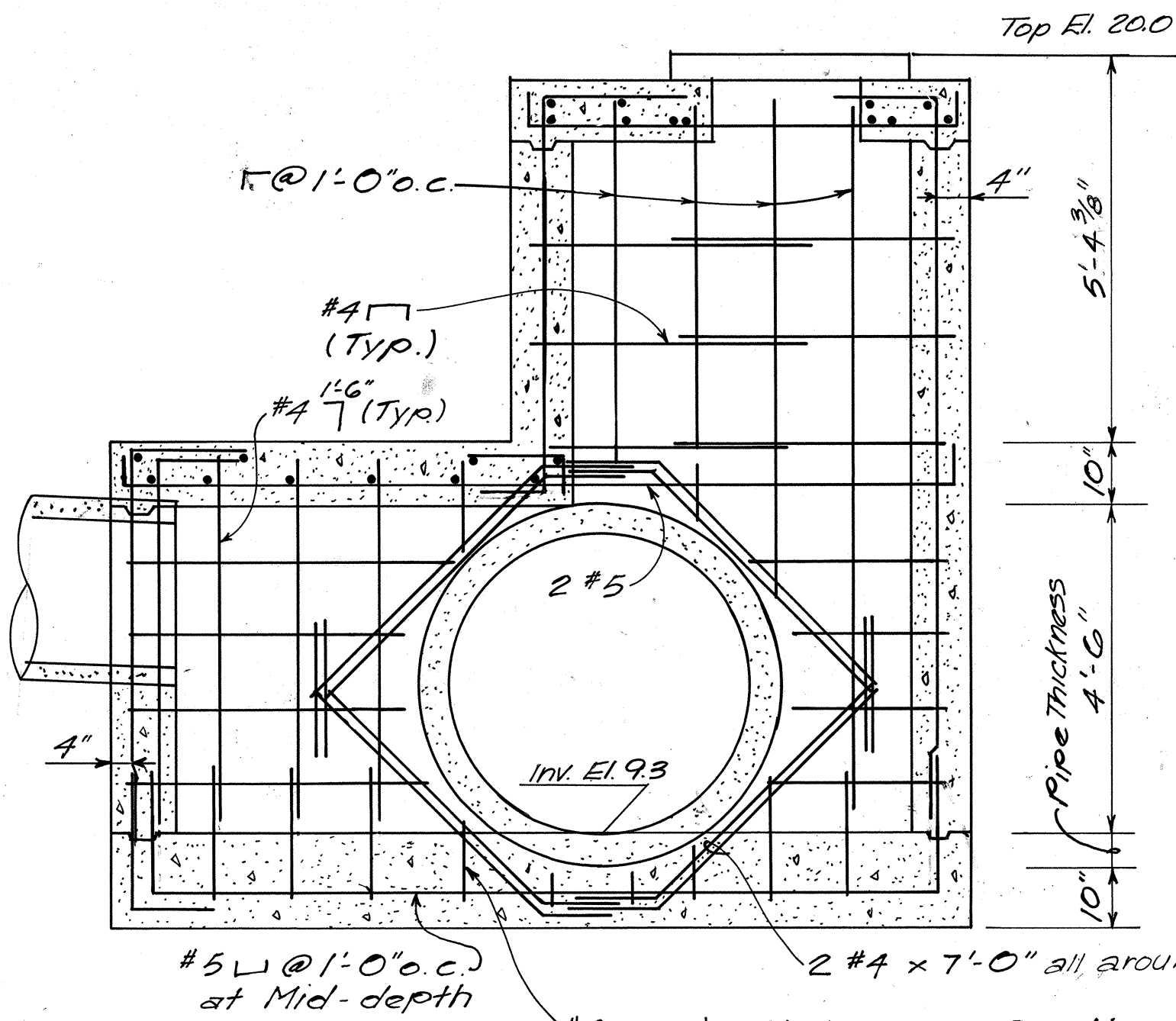
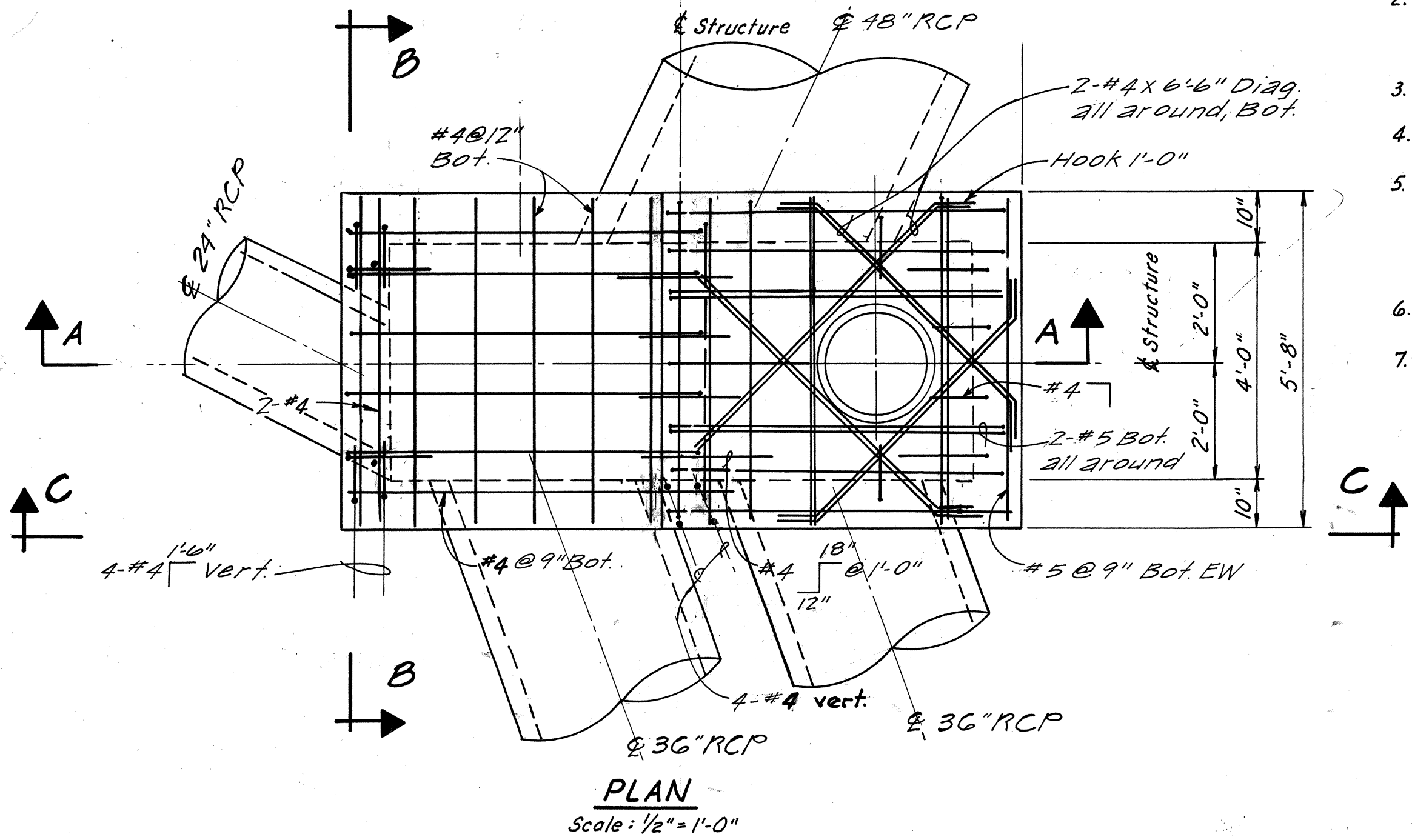
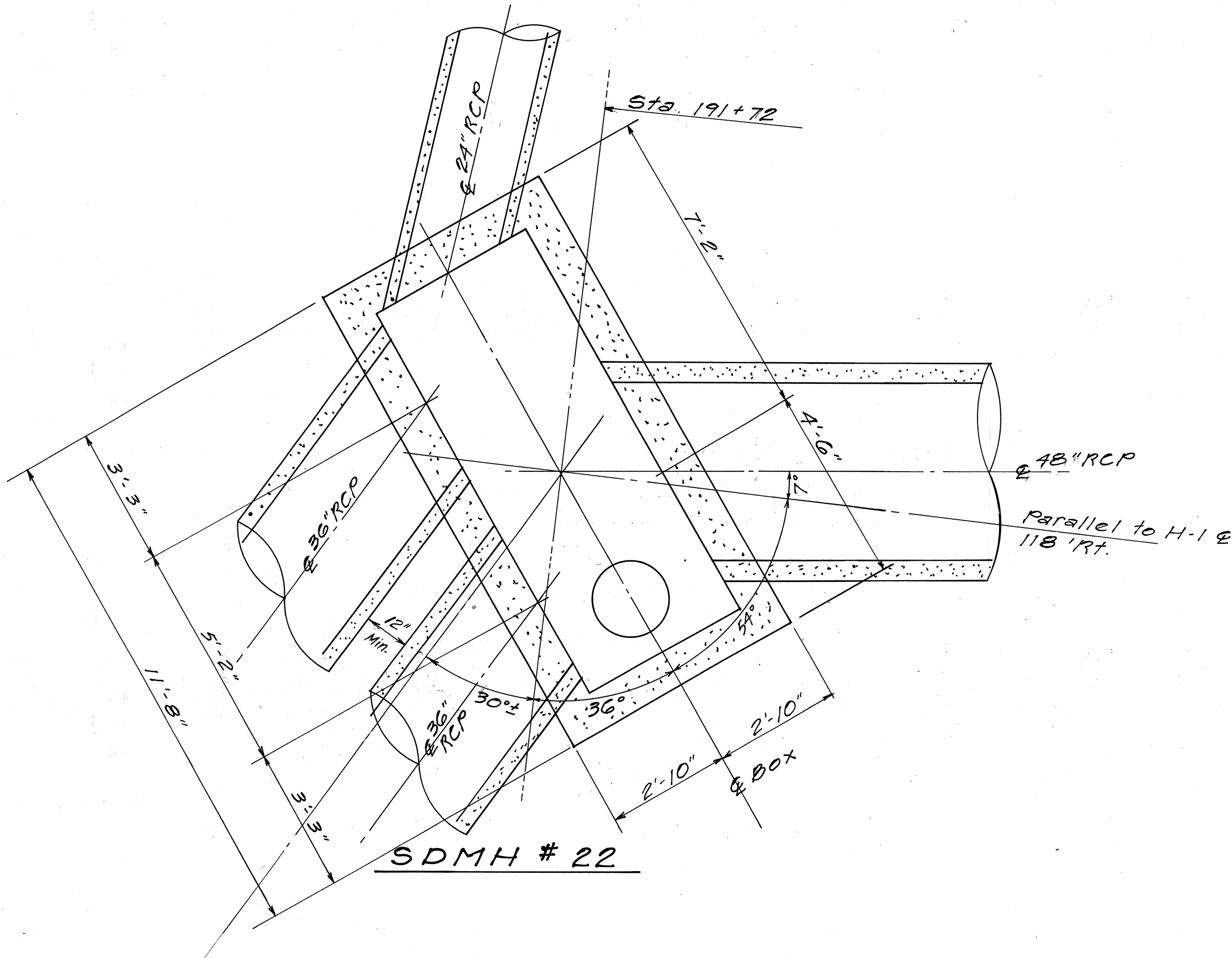
Scale: 1" = 1'-0"

See Sht. No. 80 for Reinforcing Steel

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HH(84)16	1979	27A	

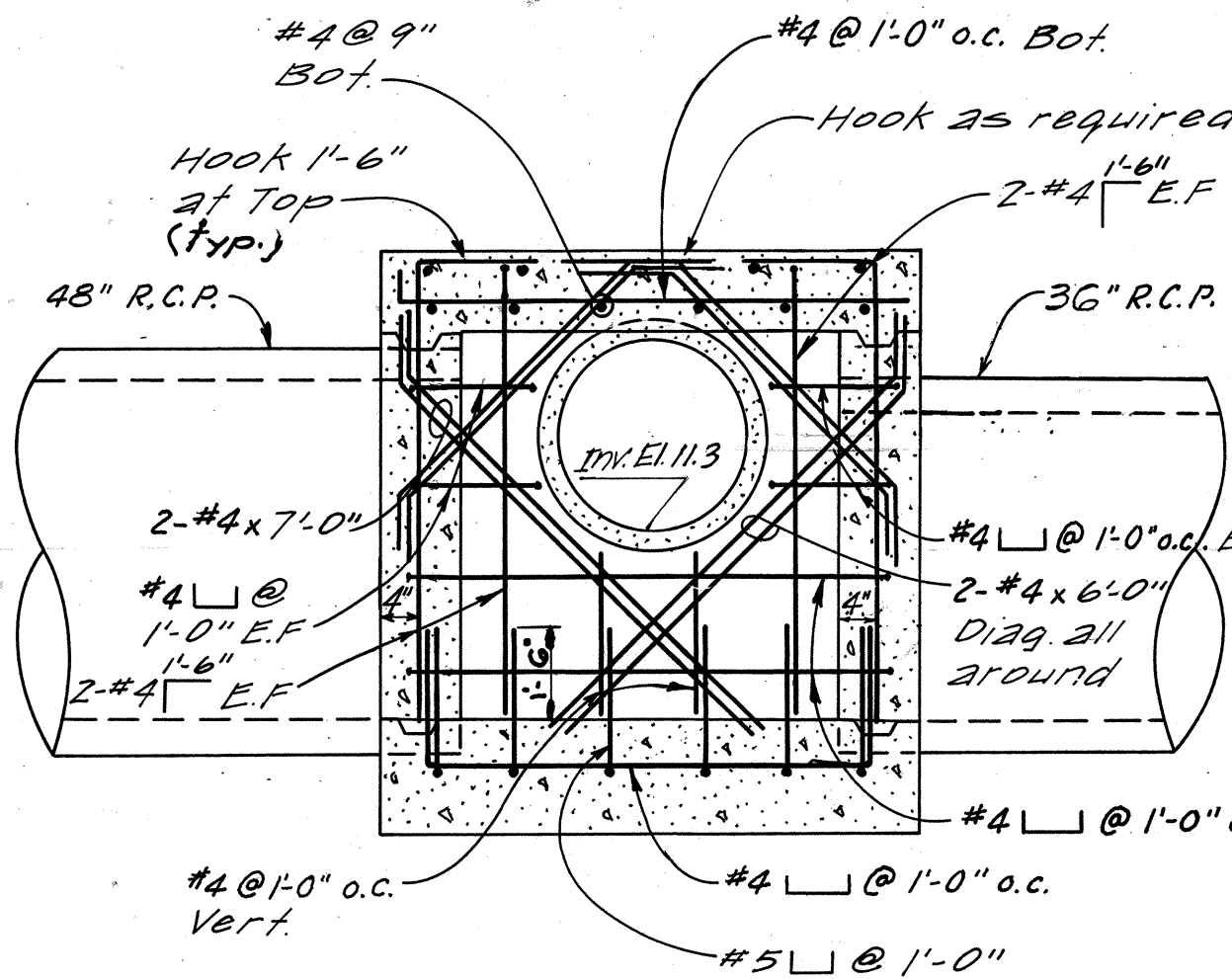
NOTES

- See also General Notes, Special Provisions & Specifications.
- See Hawaii Standard Details including: Dwg. No. DH6 "Catch Basin and Manhole Castings."
- Provide 1" Chamfer for all exposed edges.
- All concrete shall be Class A.
- Reinforced Concrete Design Data:
 $f'_c = 3,000$ p.s.i. (28 Days)
 $f_y = 40,000$ p.s.i. { Deformed Bars
 $f_s = 20,000$ p.s.i.
- Maintain 2" cl. on all Reinforcing Steel.
- Unless shown otherwise all hooks are standard.



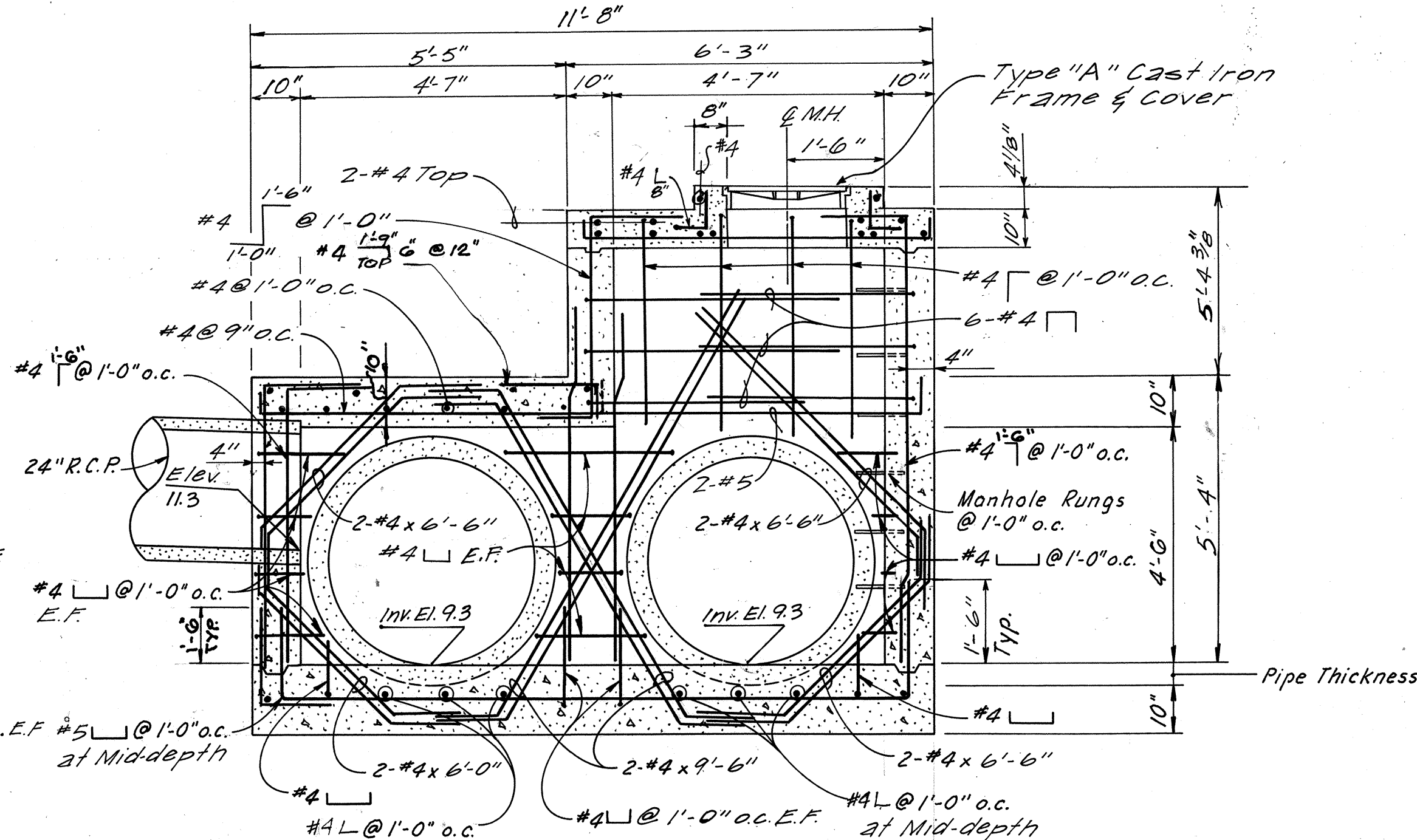
SECTION A-A

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



SECTION B-B

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



SECTION C-C

DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	
ORIGINAL	

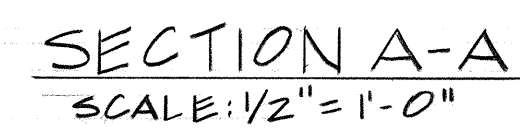
1	10-25-79	Added Sheet
No.	DATE	REVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MANHOLE DETAILS SDMH #22	
AIRPORT INTERCHANGE F.A.I. PROJ. NO. I-HI-1 (84) 16	
SCALE AS SHOWN DATE: OCT. 25, 1979	
SHEET NO. OF SHEETS	

C027A

C027 7.4 20

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



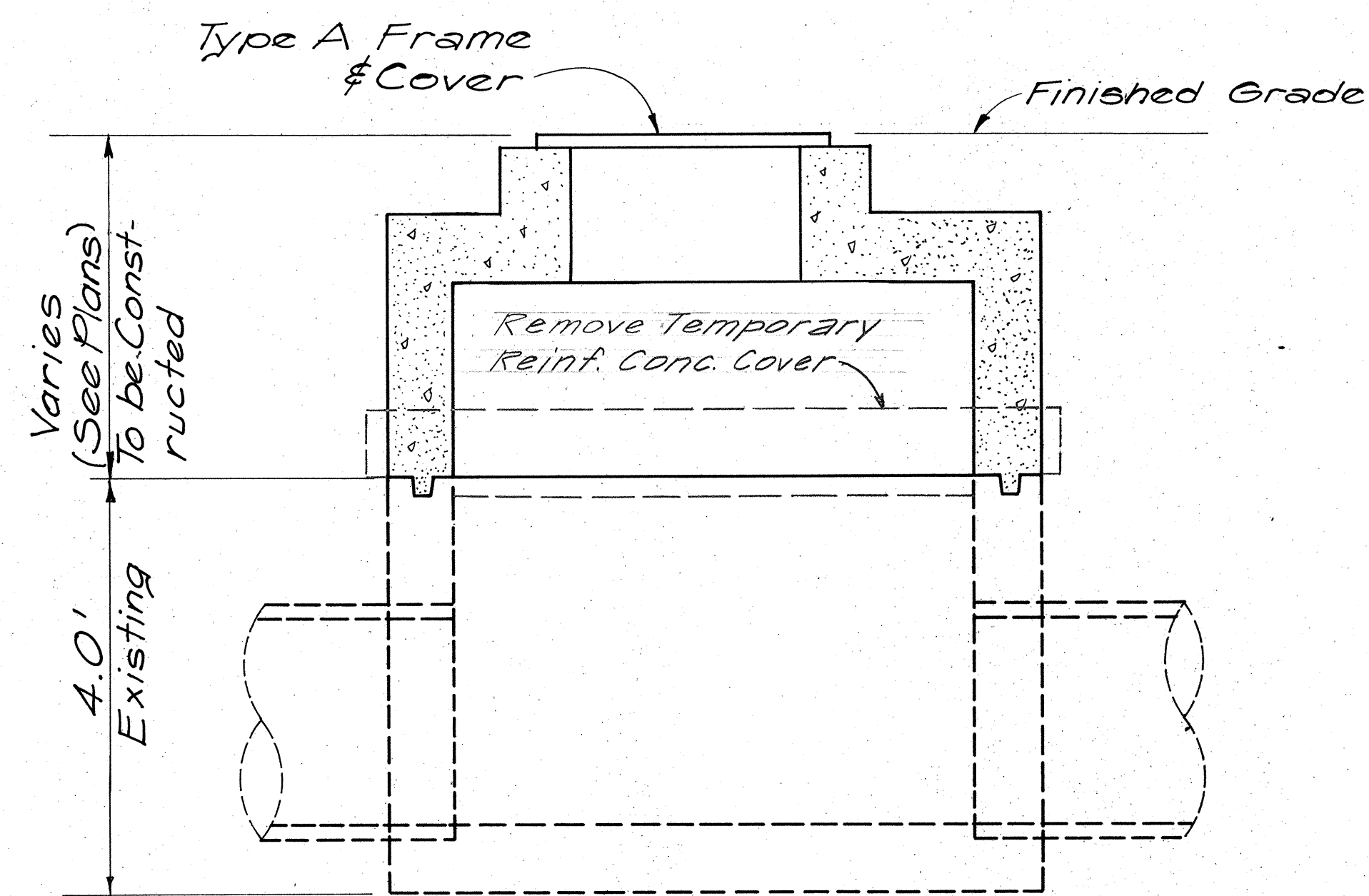
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION
Harold Nijar

- ADD 29

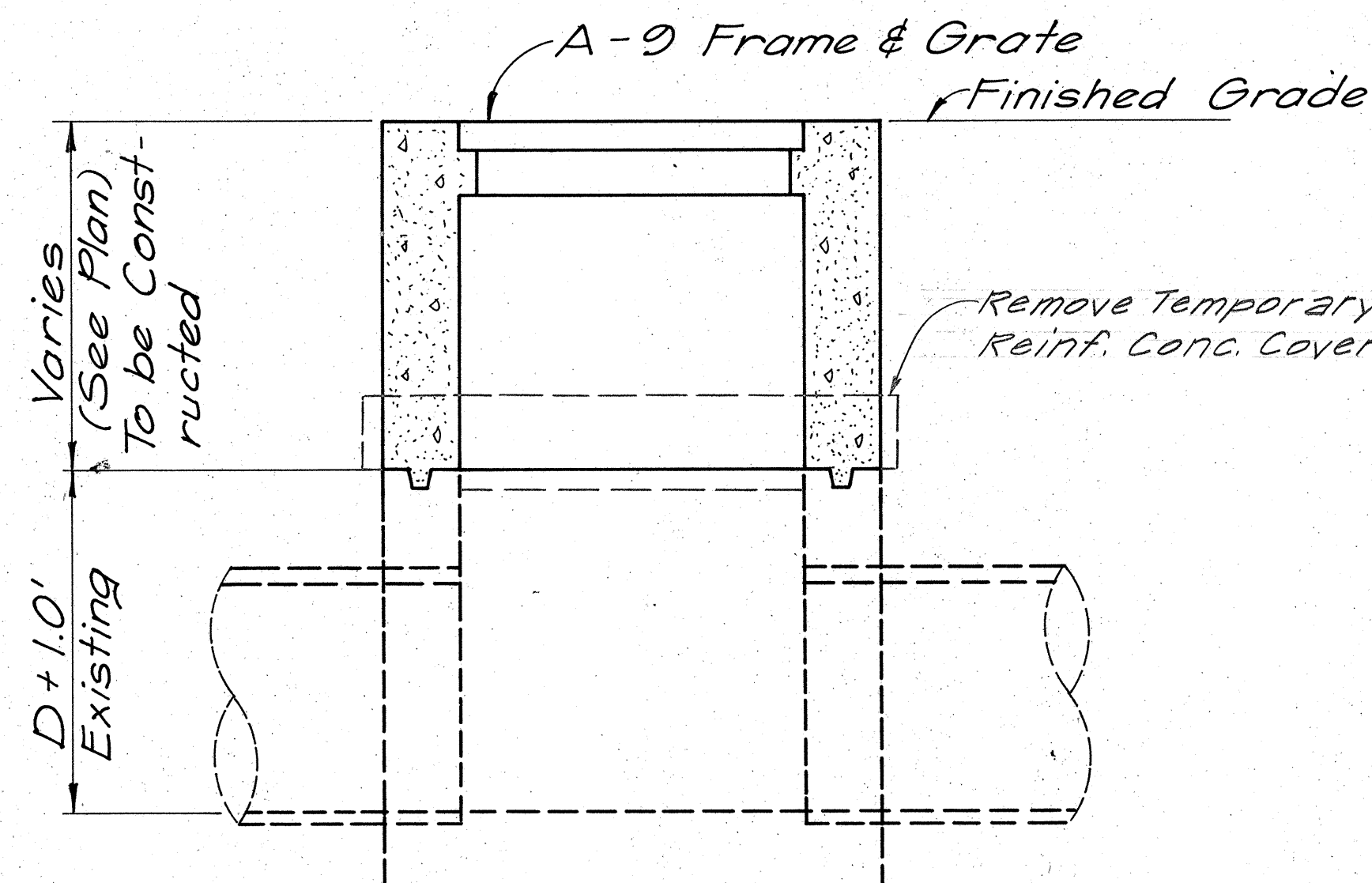
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHI-1(84)16	1978	30	466

Drainage Sht. No.	Structure No.
1	39, 63
2	24, 46, 53, 54
3	10, 36, 51, 53
4	29, 30, 34

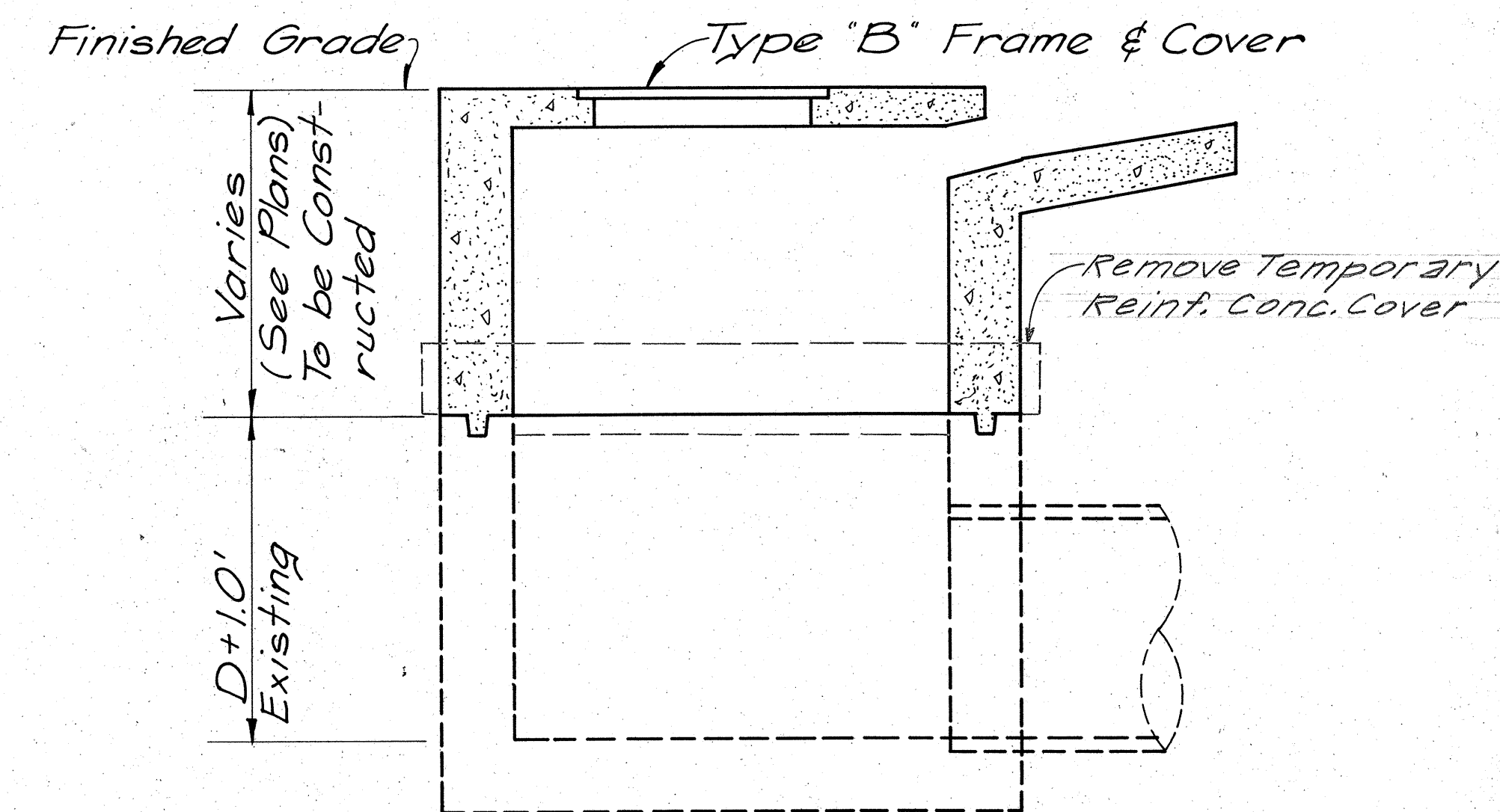
Drainage Sheet No.	Structure No.
1	37, 61
2	23, 47, 52, 55
3	17, 37, 52
4	31, 35



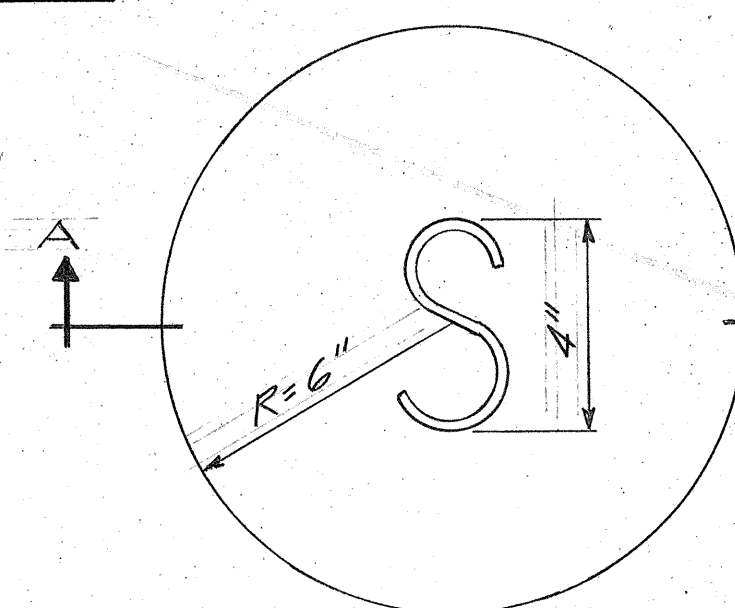
TYPE "A" STORM DRAIN MANHOLE
NO SCALE
Drainage Sheet No. 4
Structure No. 32 & 33



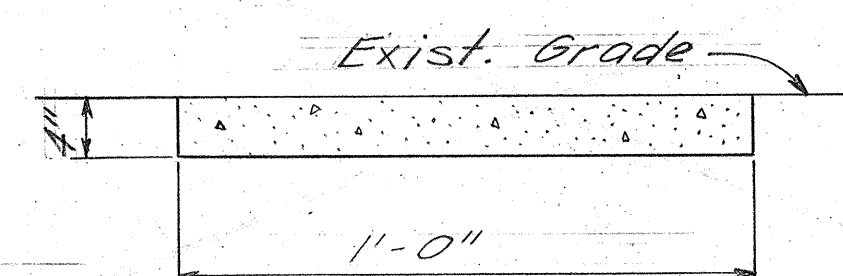
TYPE "C" CONCRETE DROP INTAKE
NO SCALE



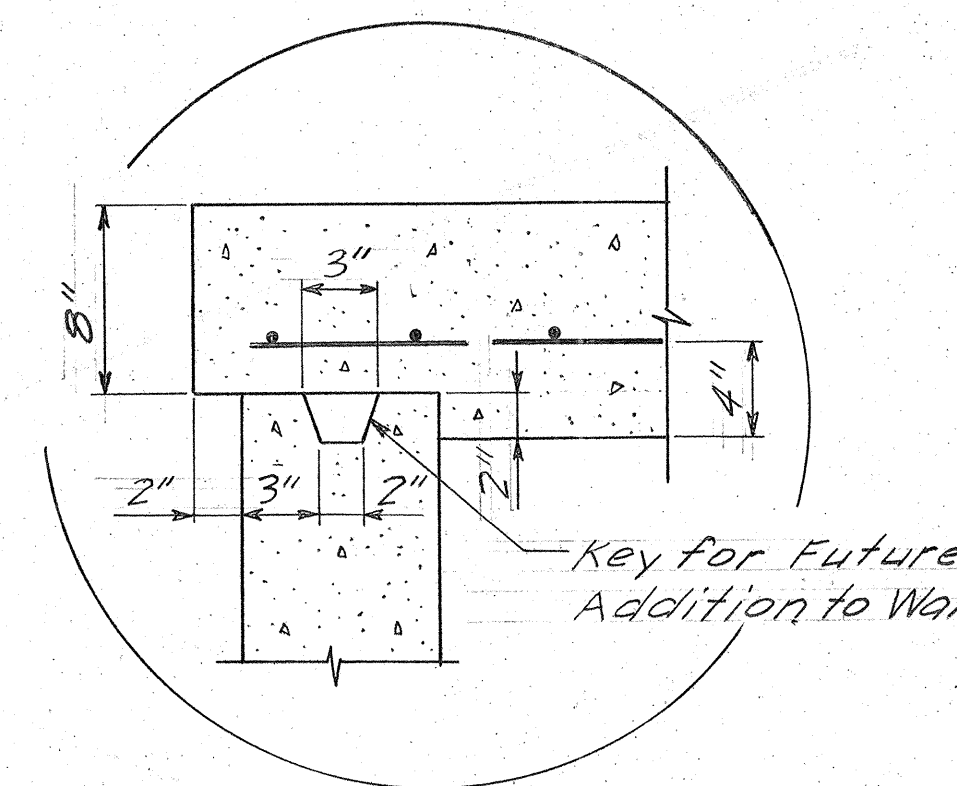
TYPE "D" CATCH BASIN
NO SCALE



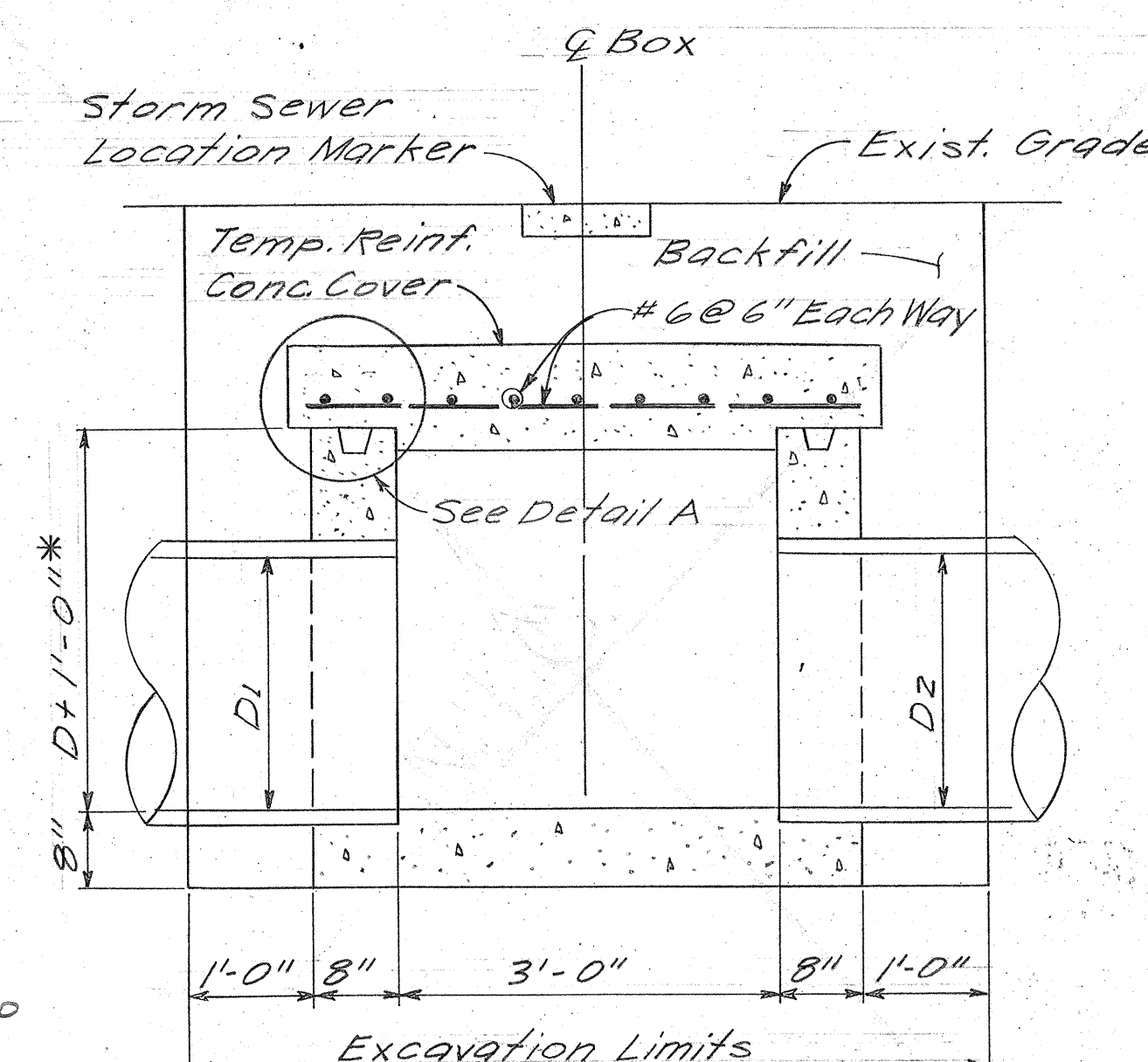
STORM SEWER CONCRETE LOCATION MARKER
Note: Incidental to Drainage Items



SECTION A-A

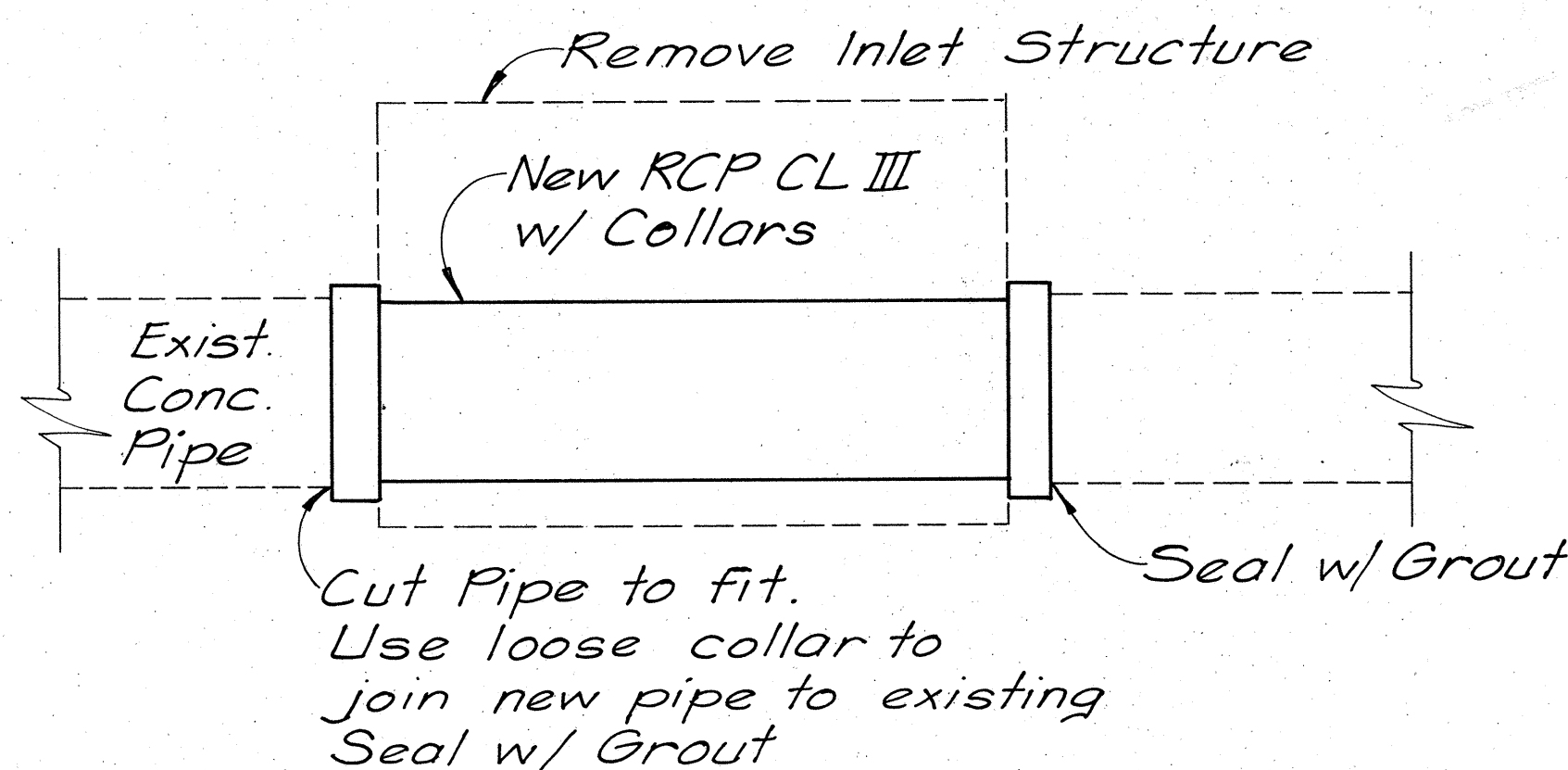


DETAIL A
TEMPORARY COVER FOR DRAINAGE BOXES
NO SCALE



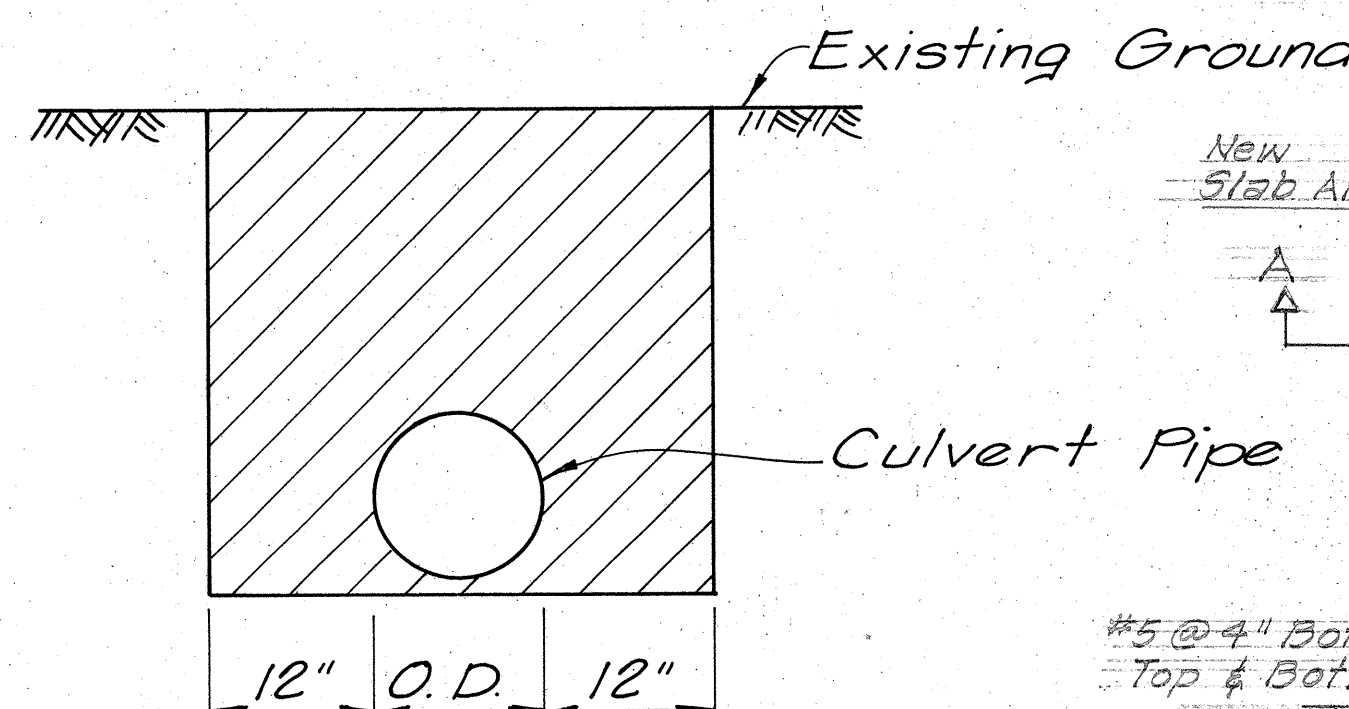
TEMPORARY REINFORCED CONC. COVER FOR TYPE F CATCH BASIN
NO SCALE

Drainage Sht. No. 4
Structure No. 17, 19, 21, 24, & 26

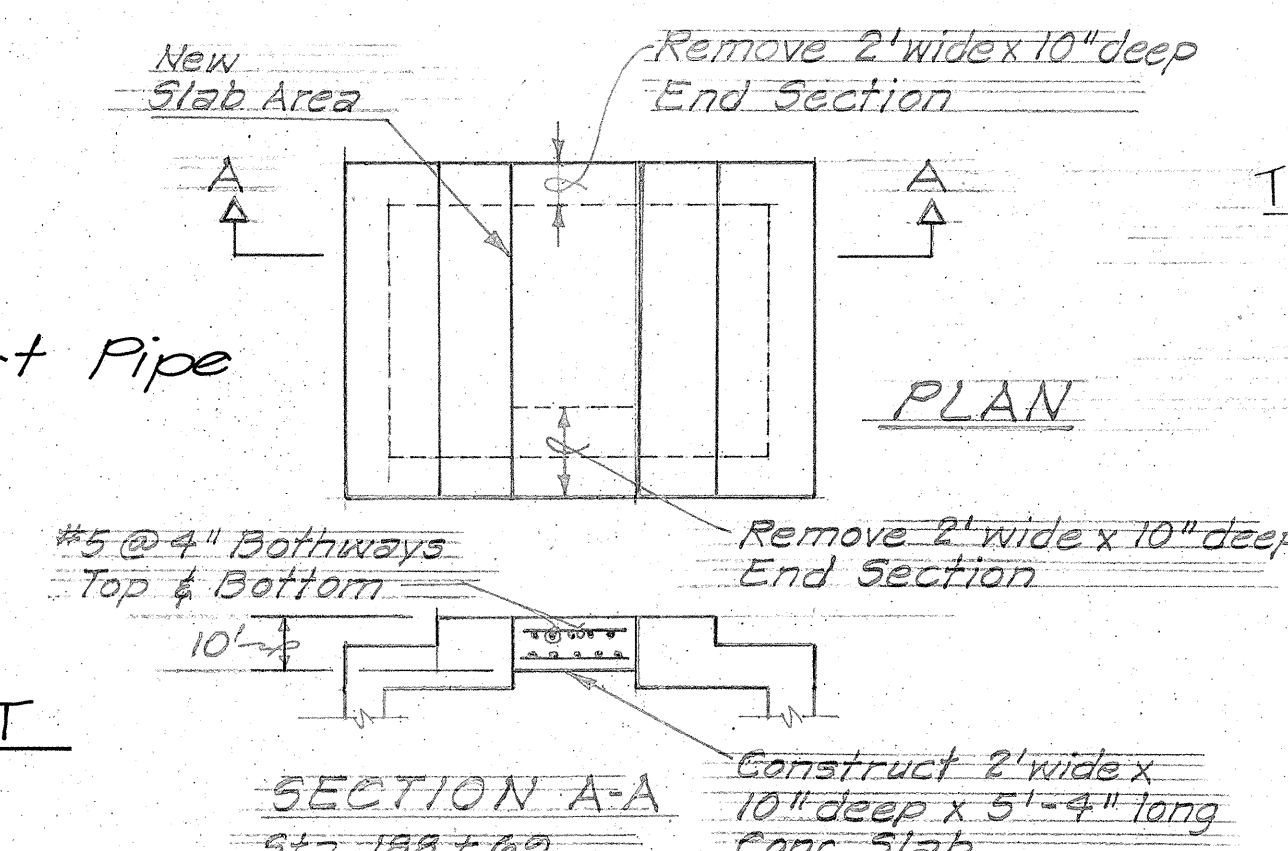


- NOTES:**
1. Bed Course Material shall be incidental to cost of various drainage items.
 2. The removal of existing inlet structures shall be included in Bid Item 202.0100.
 3. Pipe and collars to be paid for by Bid Item 603.1019.

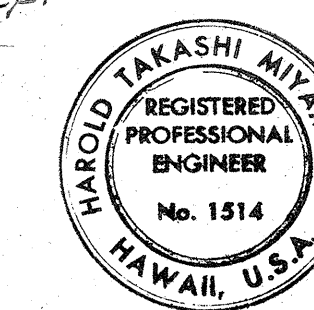
PIPE CONNECTION AT REMOVED INLETS
NO SCALE



TRENCH EXCAVATION LIMIT
NO SCALE



DRAINAGE STRUCTURE MODIFICATION
CCO #79



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Harold Takashi Miyamoto

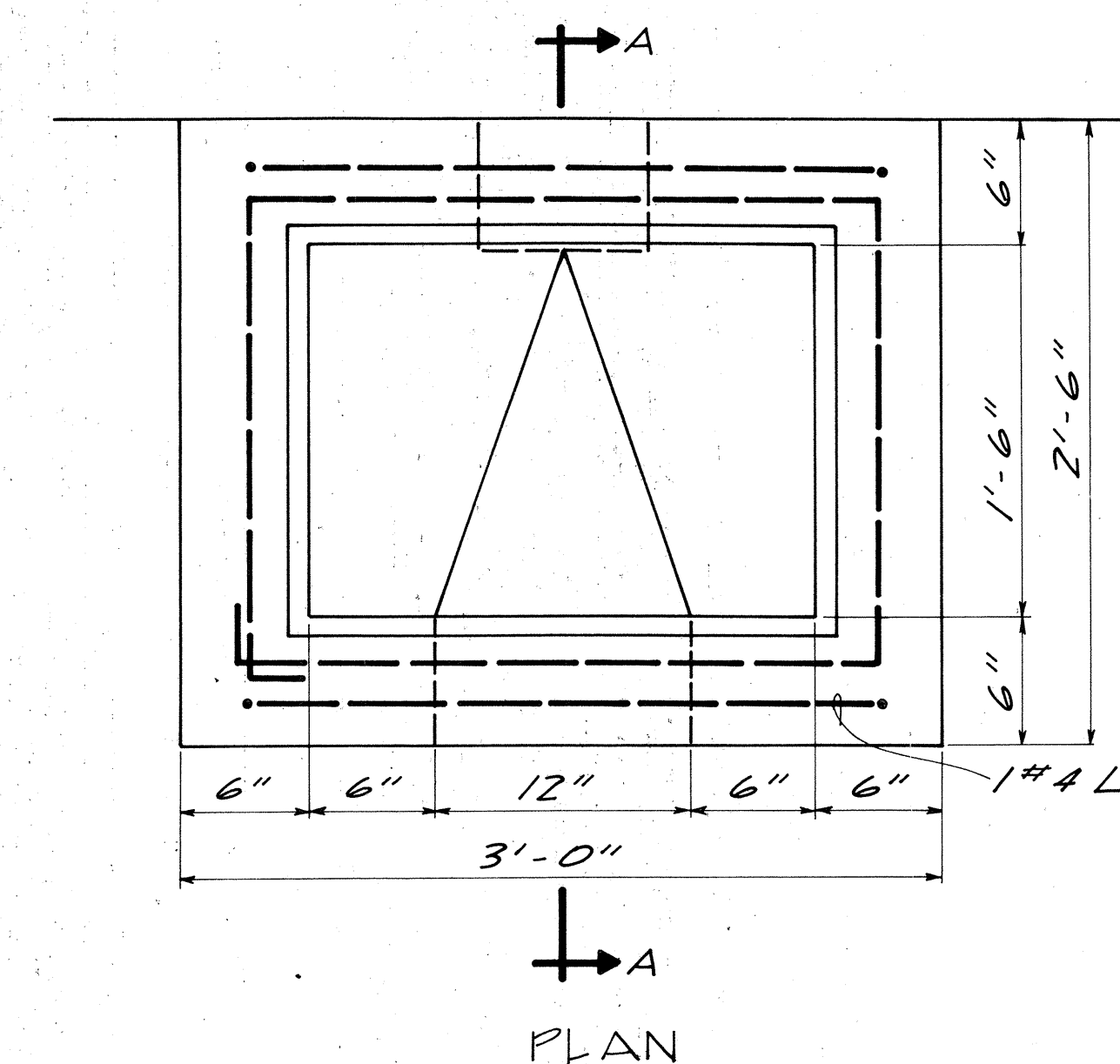
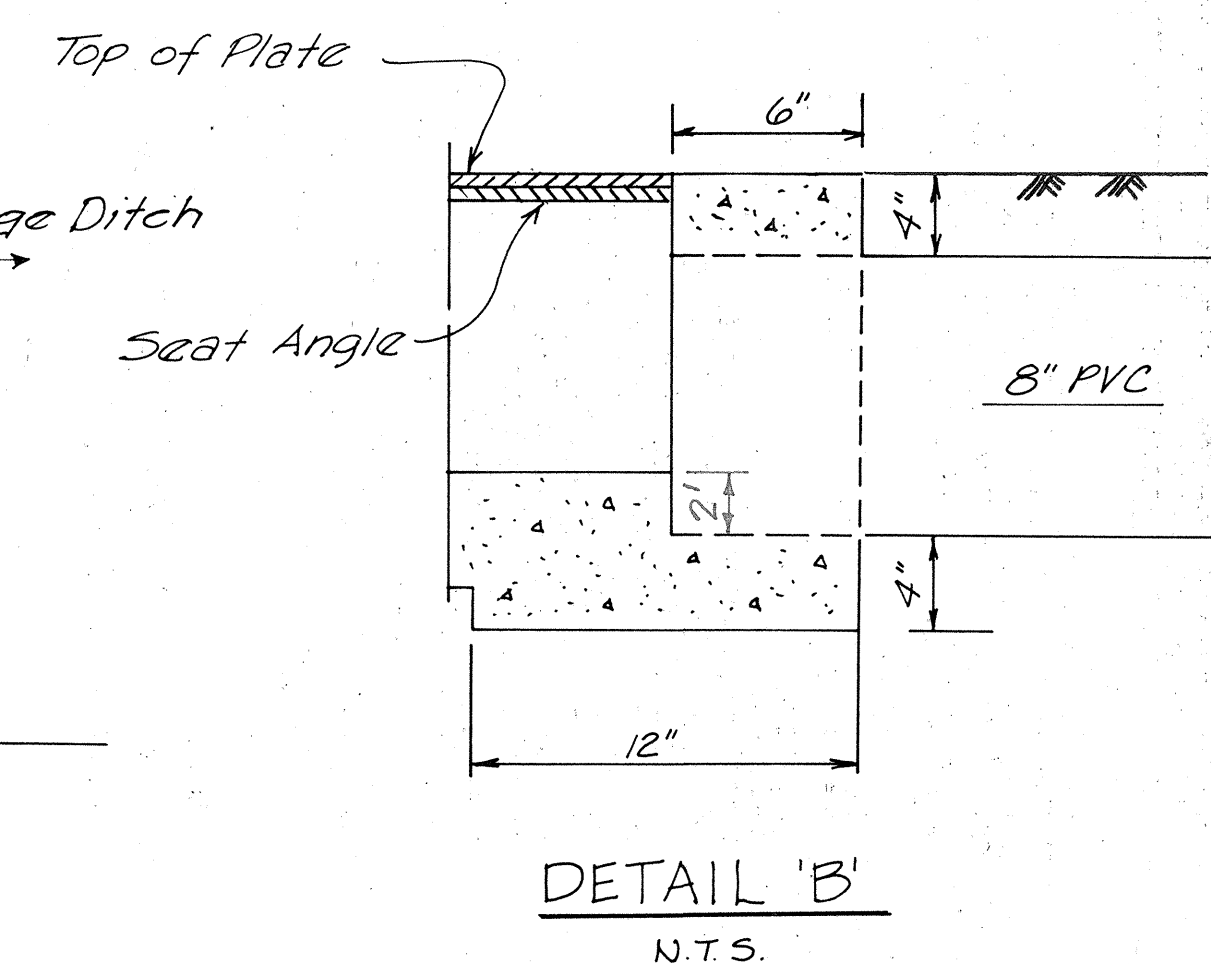
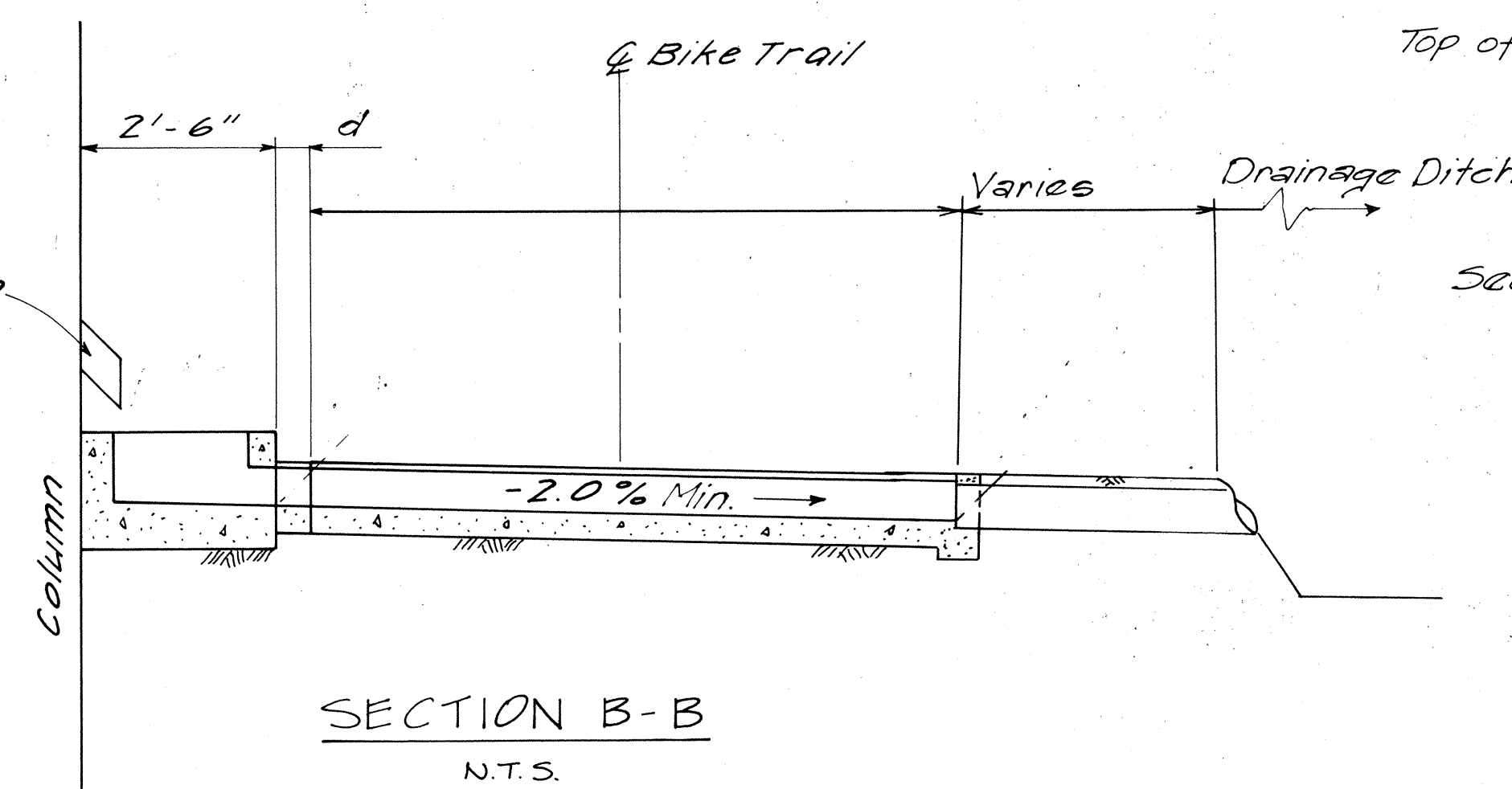
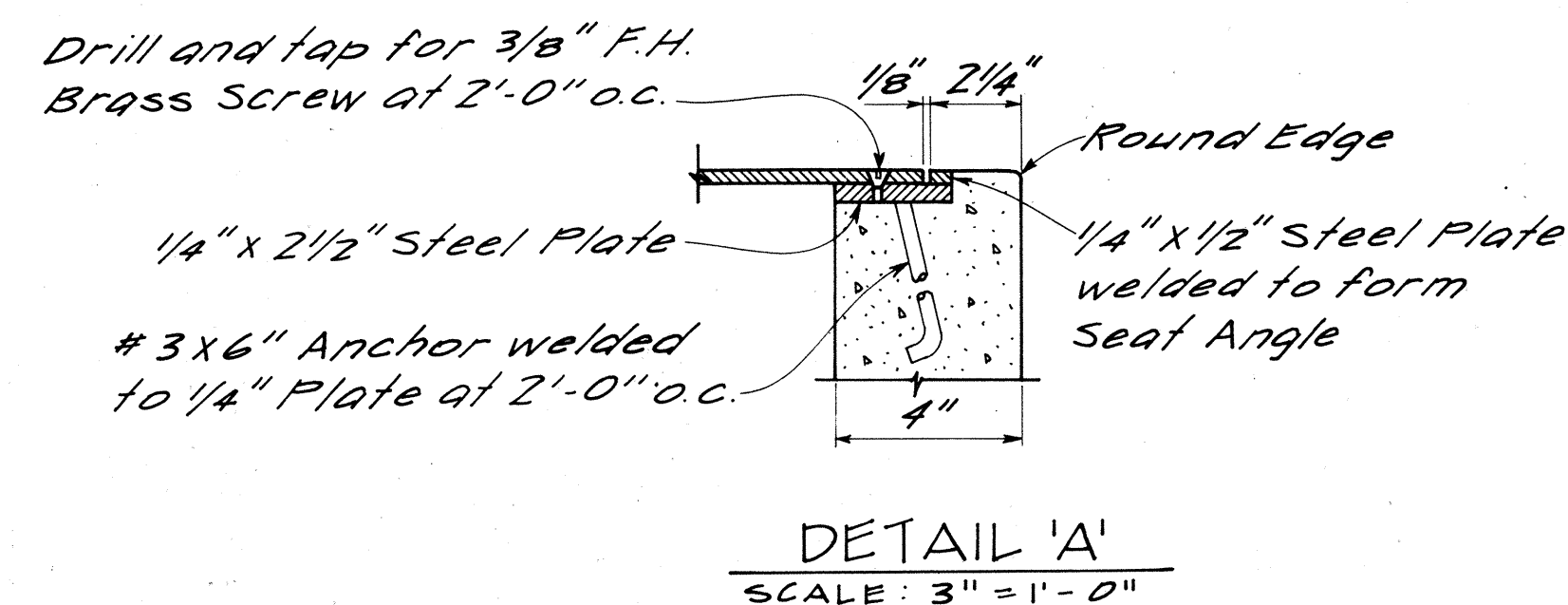
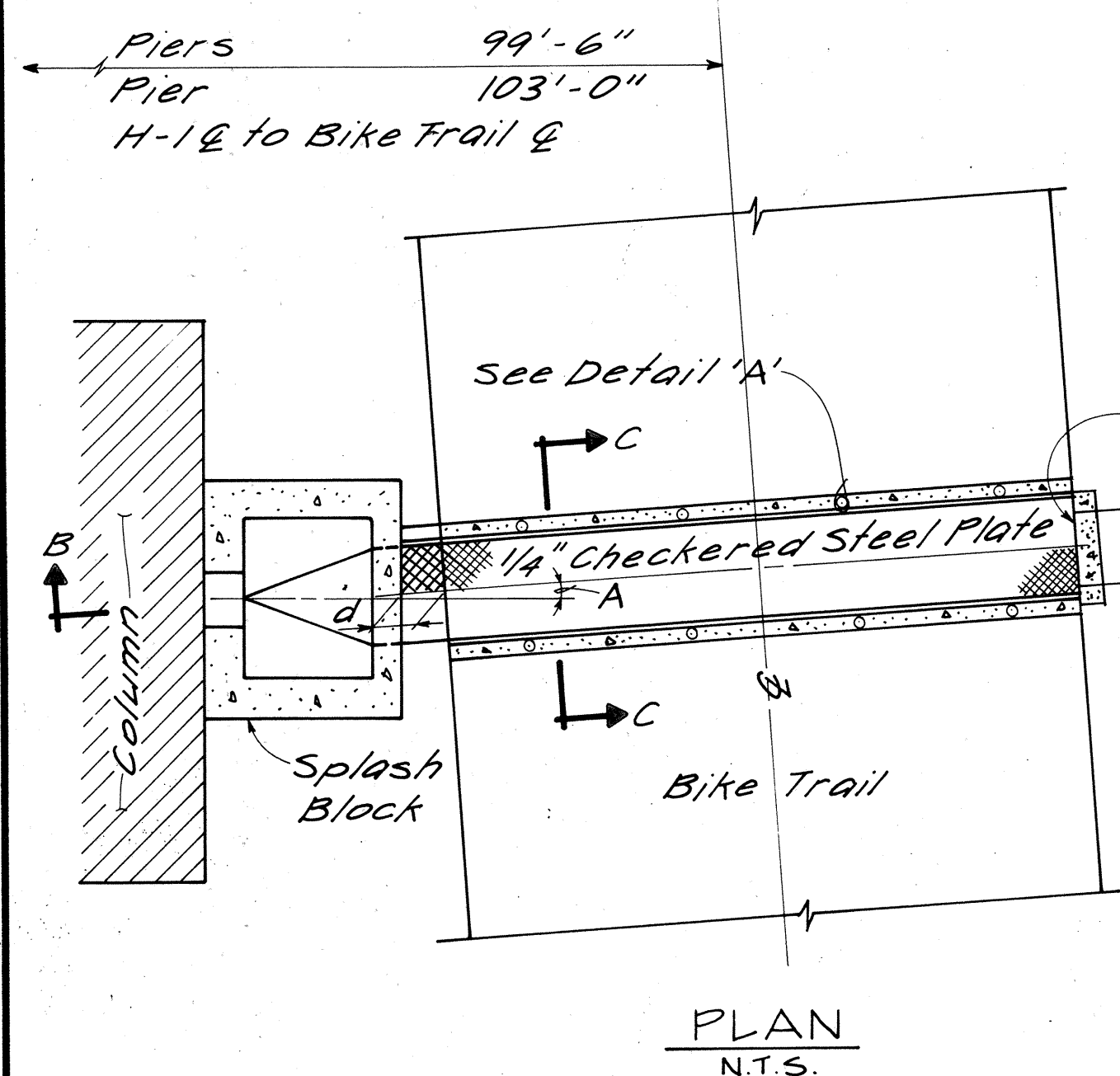
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

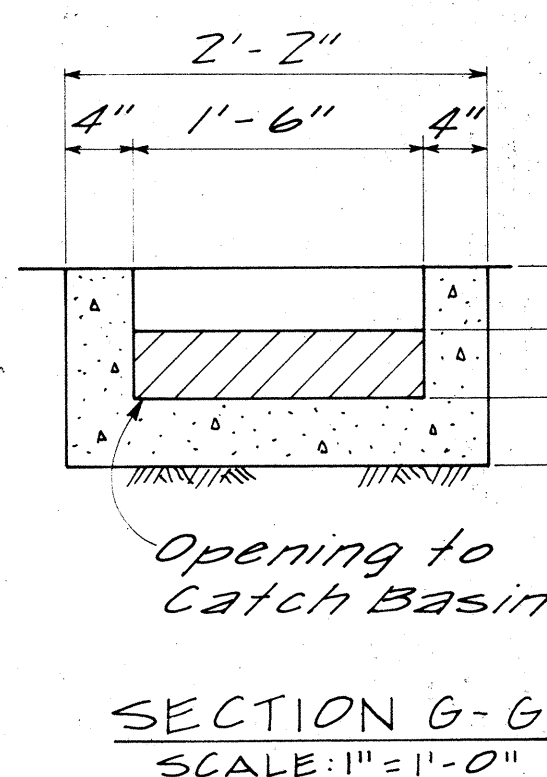
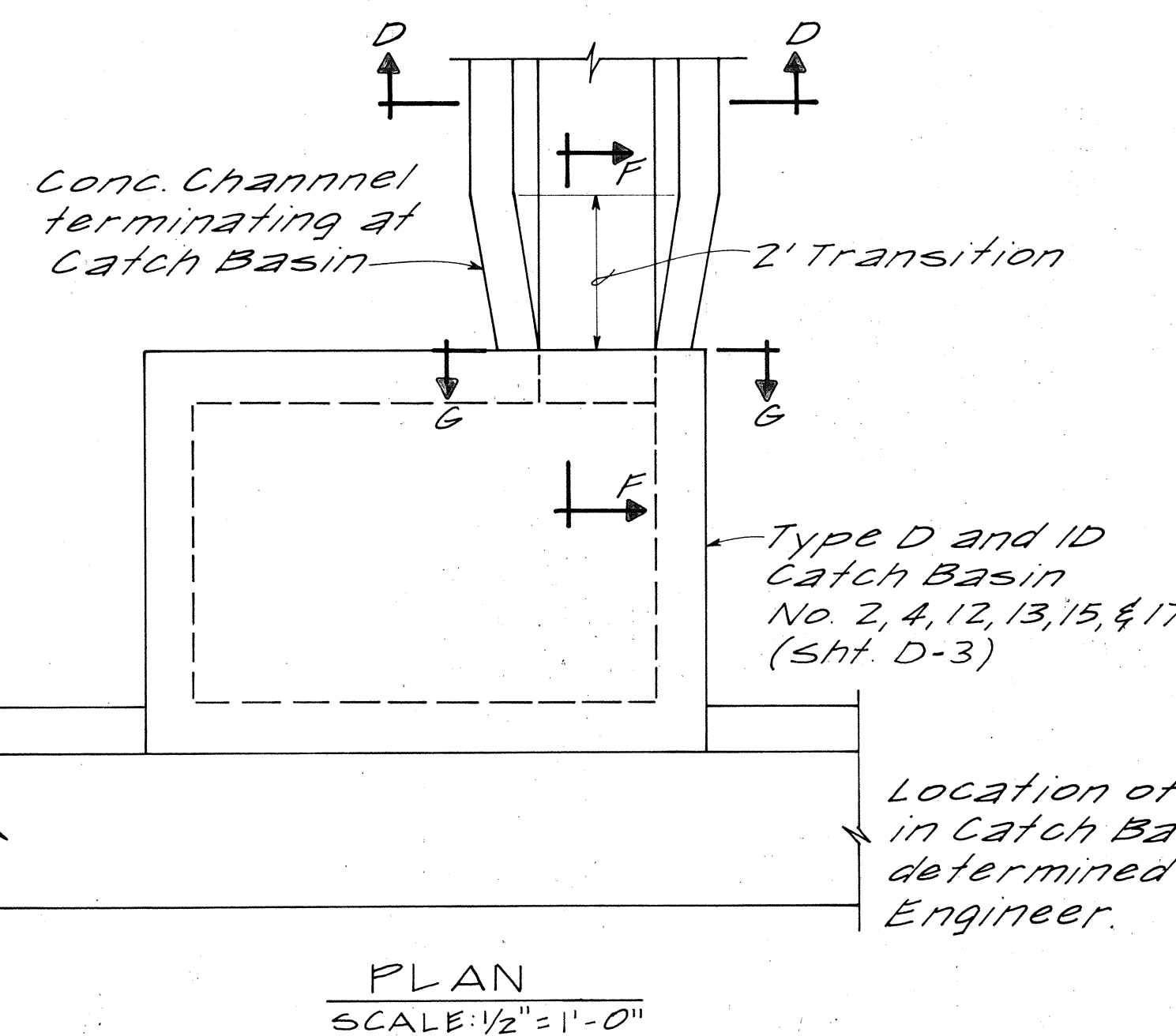
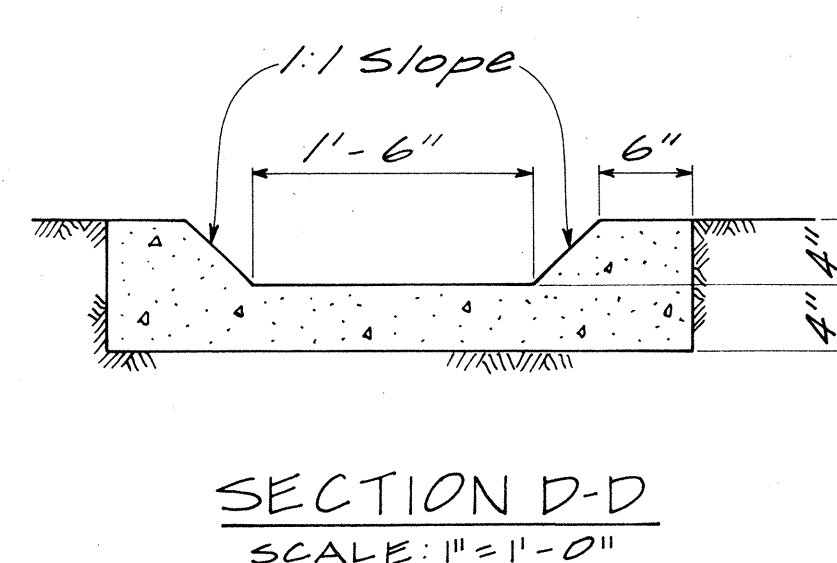
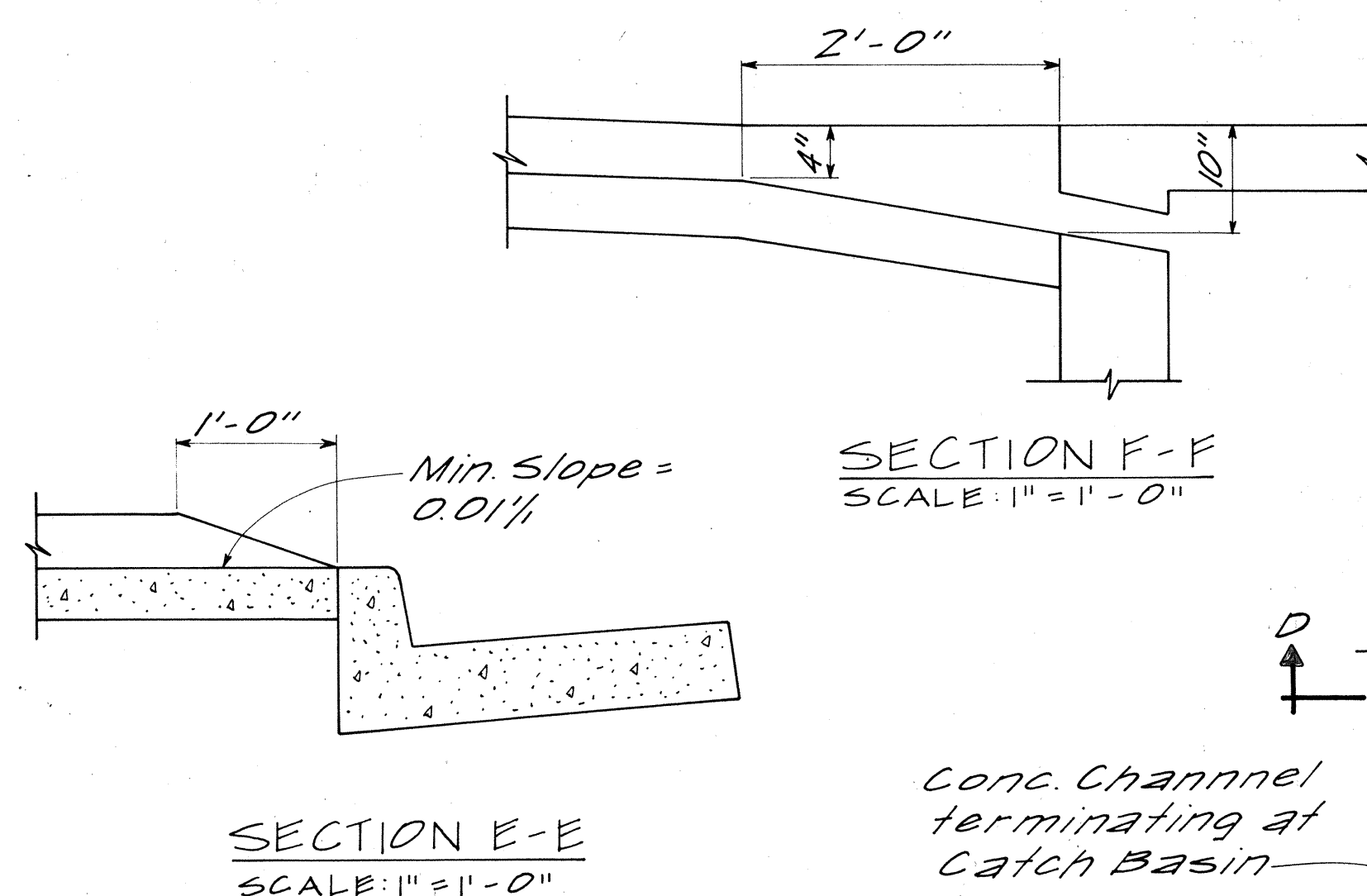
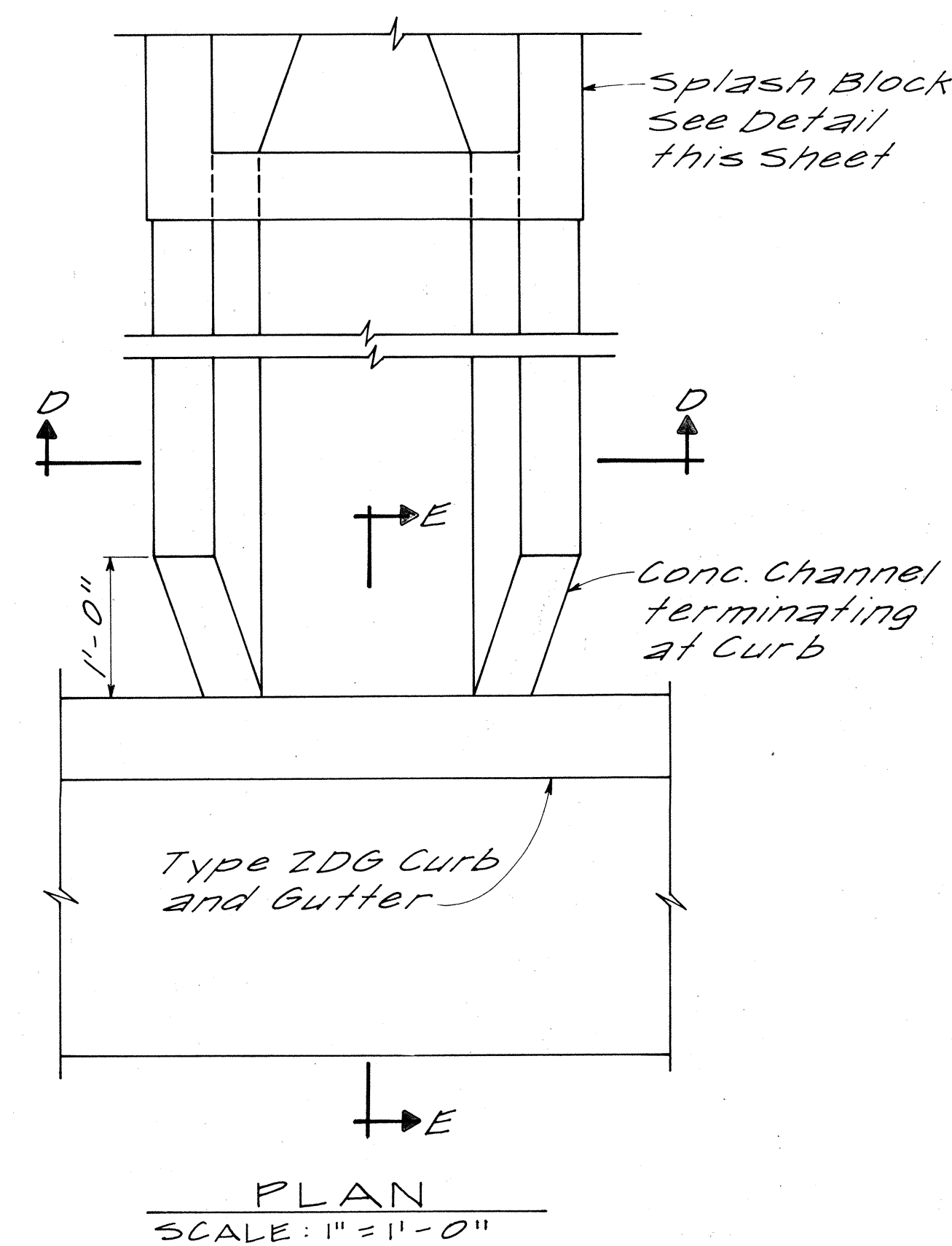
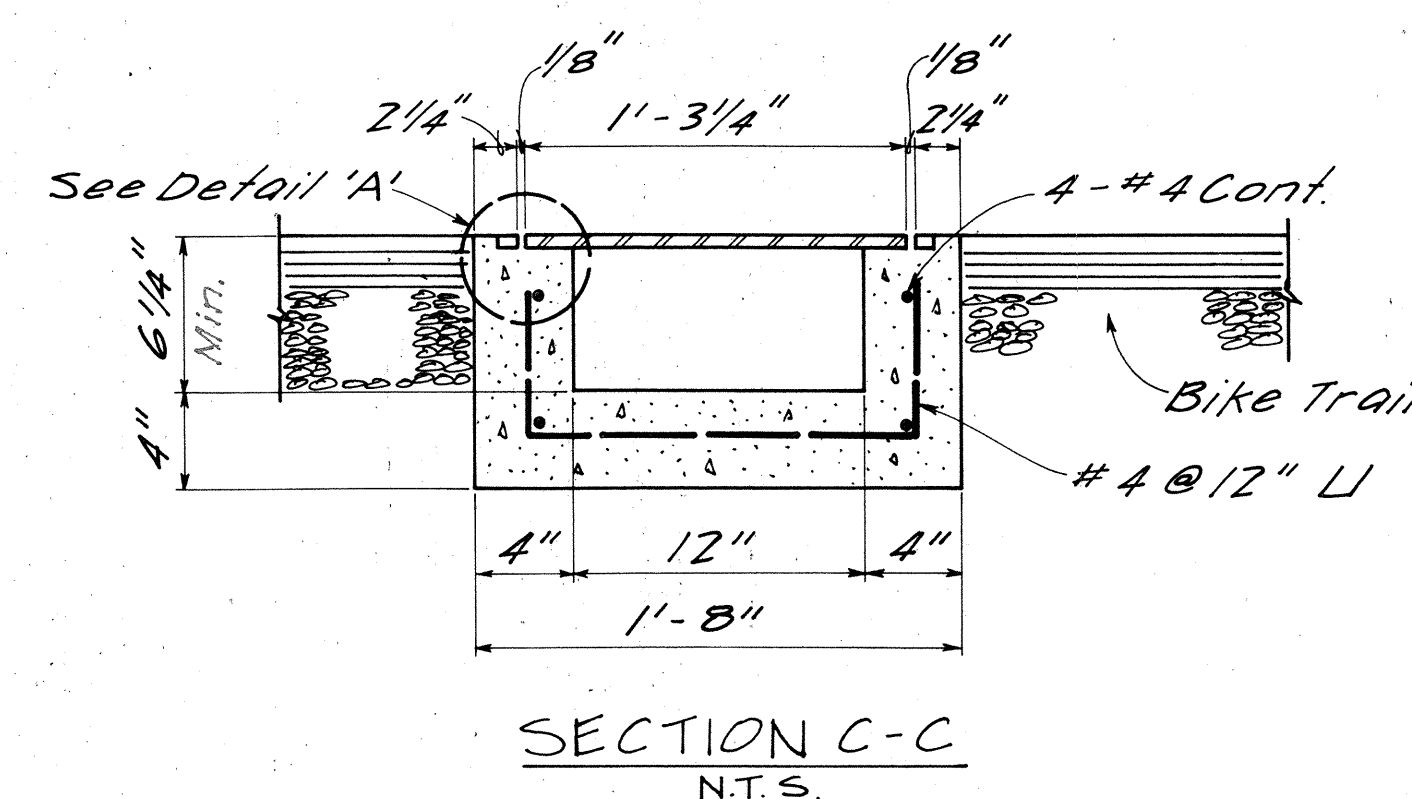
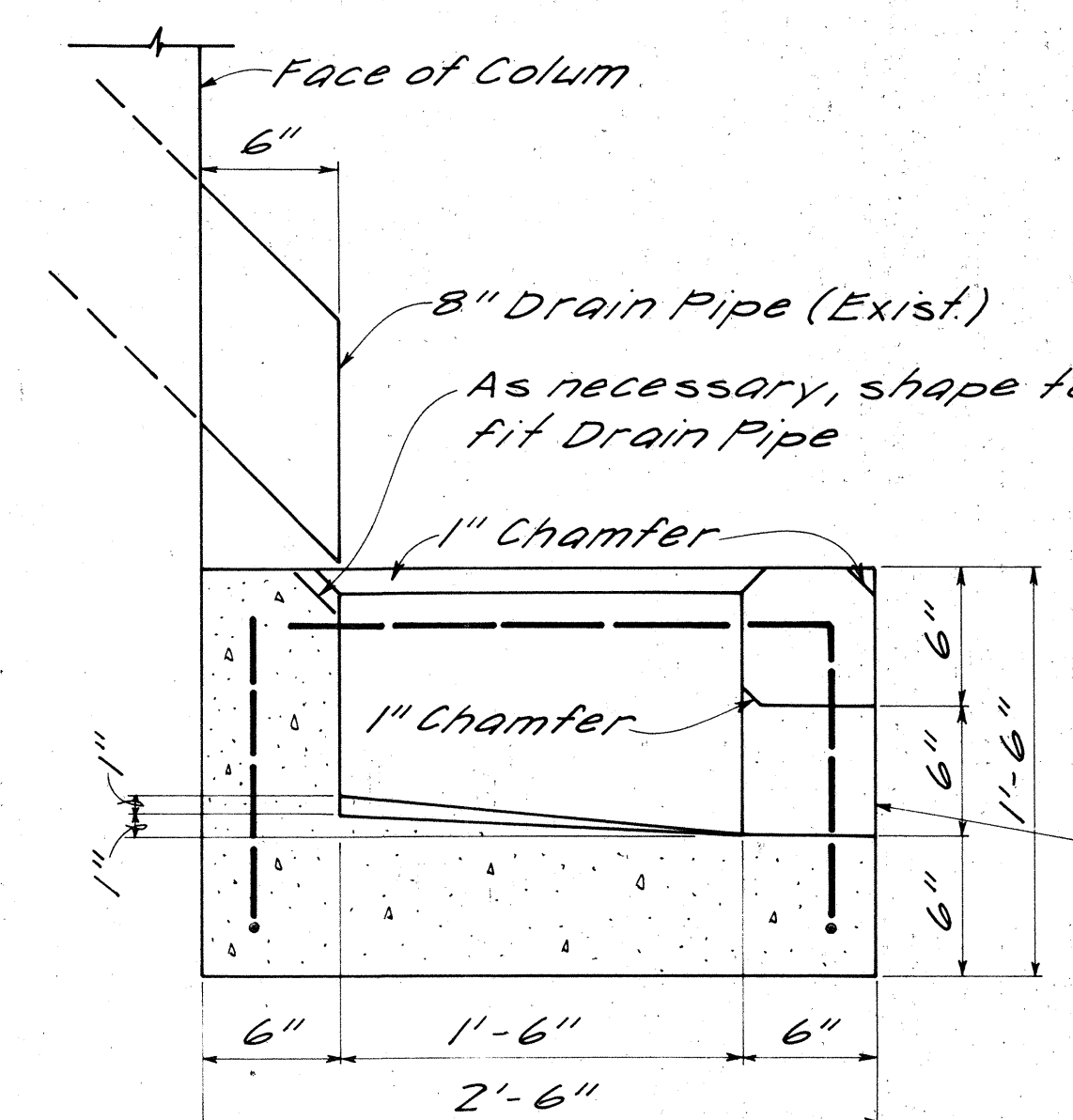
AIRPORT INTERCHANGE
F.I.A. PROJ. NO. I-HI-1(84):16

SCALE: AS SHOWN DATE: JULY 10, 1978
SHEET No. D-8 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(84):16	1978	31A	466



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



ME OF HAWAII
REGISTERED
PAINTER
EX-100
No. 141

ME OF HAWAII
REGISTERED
PAINTER
EX-100
No. 141

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES

DRAINAGE DETAILS

AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(84):16

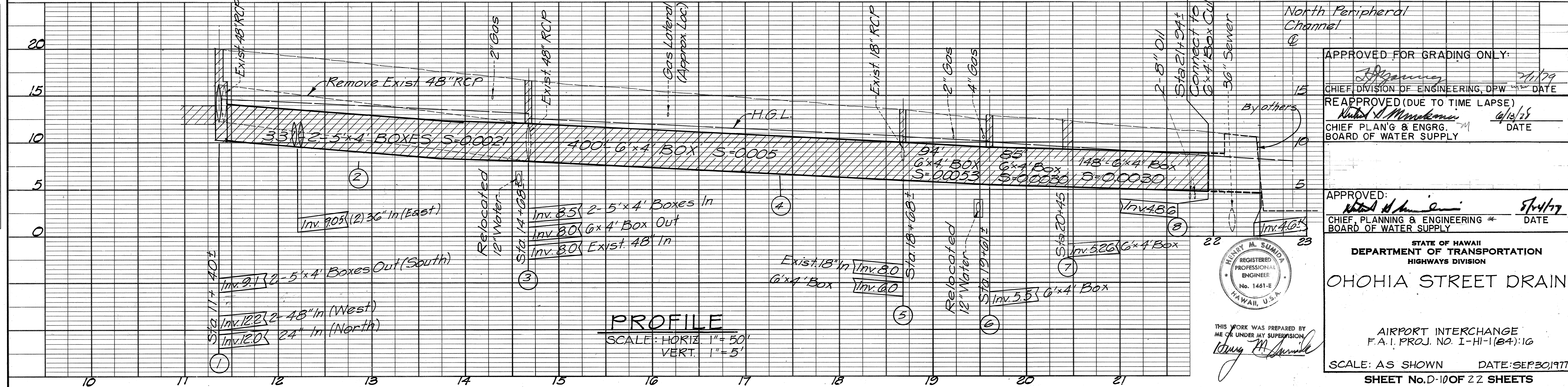
SCALE: AS SHOWN DATE: _____

SHEET No. OF SHEETS

NO.	DATE	REVISION
1-4-98		Added Sheet

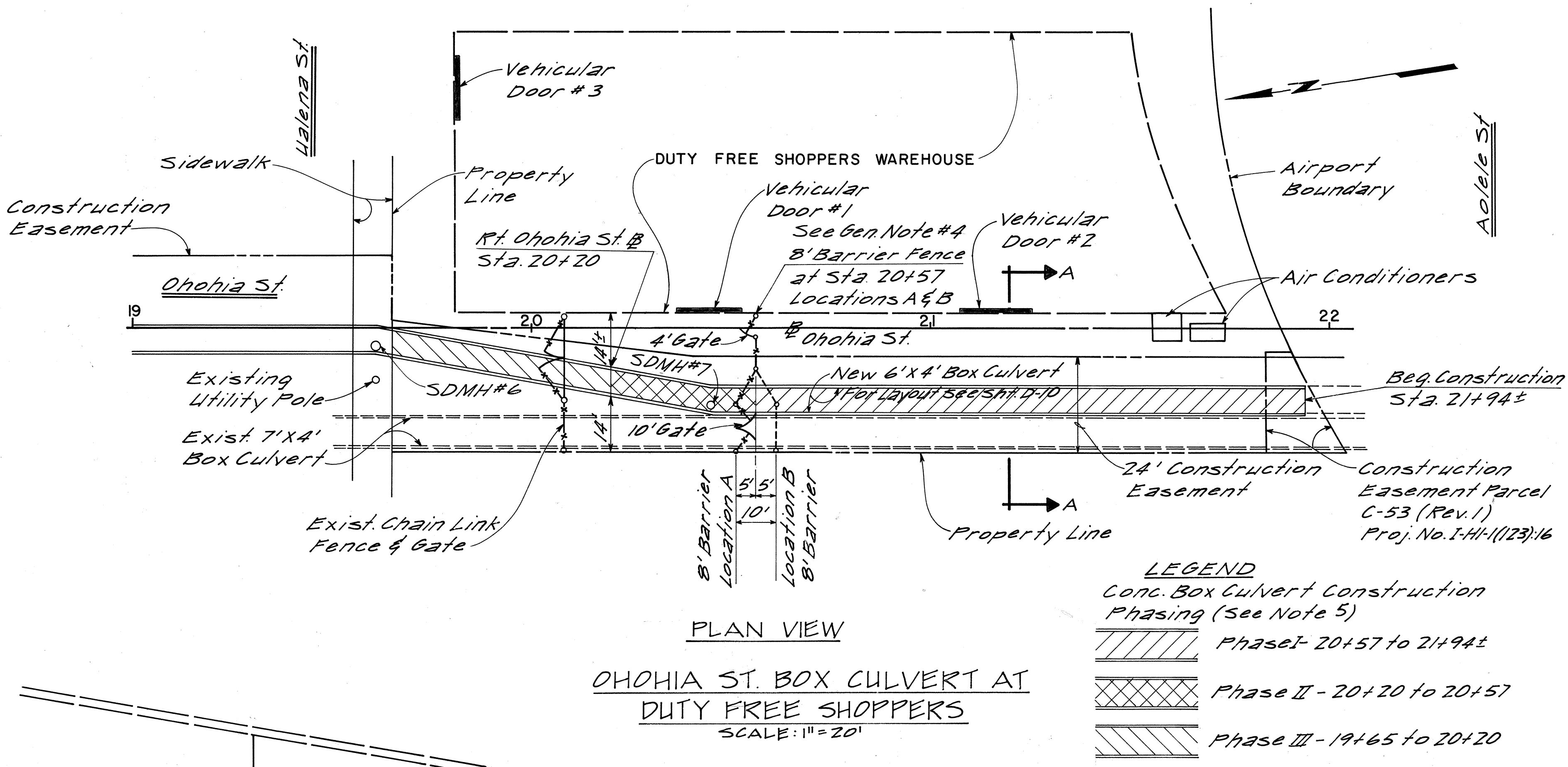
PROFILE		BY	DATE
SURVEYED			
PLOTTED			
NOTE BOOK			
GRADES CHECKED			
B. M.'s NOTED			
NO.			
STRUCTURE NOTATIONS CHK'D.			

FED. ROAD DIST. NO.	STATE	FED. AID ¹⁴ PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-11-184-10	1978	32	466

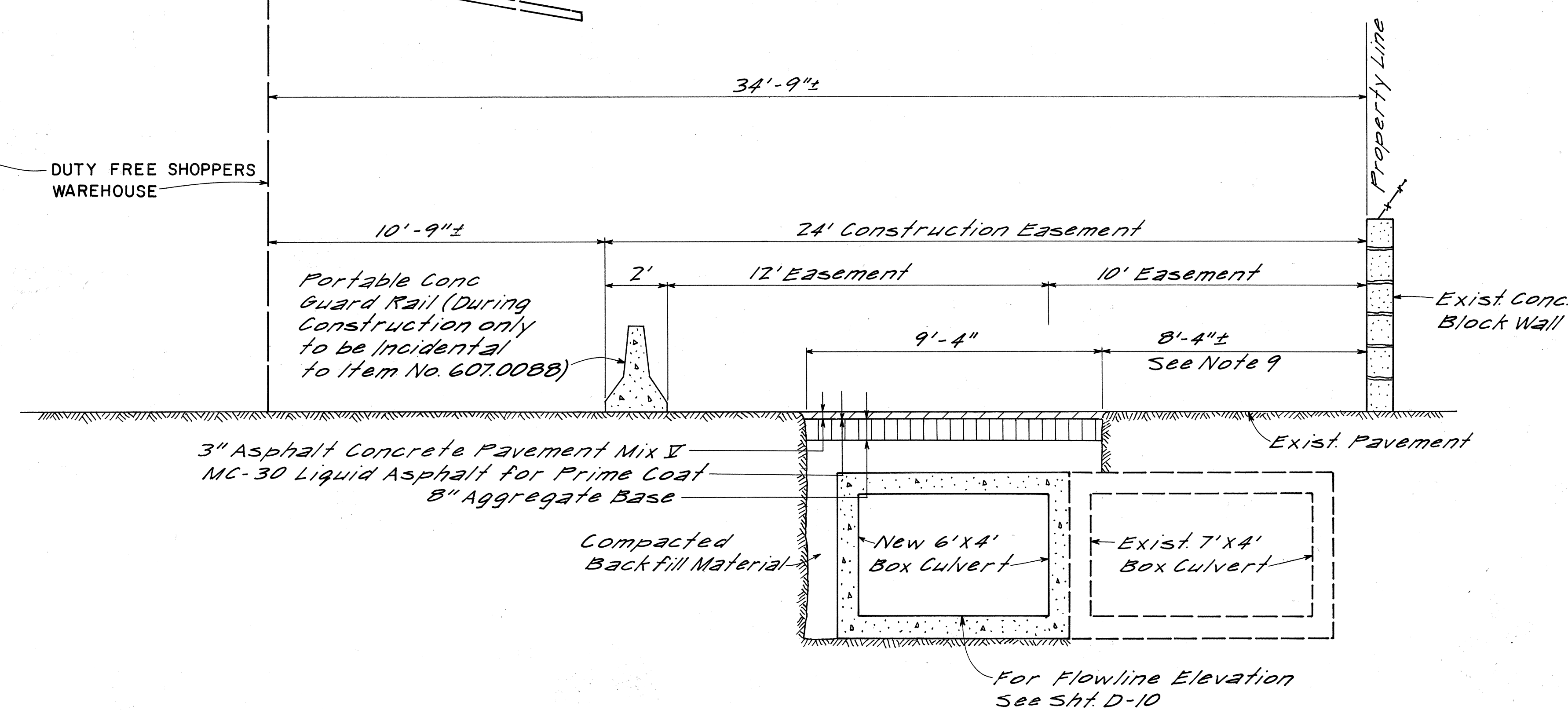


COADD32

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(84):16	1978	33	466

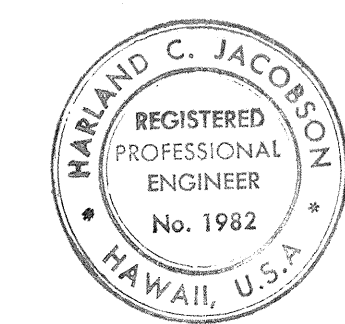


- LEGEND**
- Conc. Box Culvert Construction Phasing (See Note 5)
- Phase I - 20+57 to 21+94±
 - Phase II - 20+20 to 20+57
 - Phase III - 19+65 to 20+20



- GENERAL NOTES**
- CONTRACTOR SHALL PROVIDE DUTY FREE SHOPPERS, LTD. A TWO (2) WEEK NOTICE BEFORE STARTING ANY WORK WITHIN THEIR PROPERTY.
 - CONTRACTOR SHALL COOPERATE WITH DUTY FREE SHOPPERS TO REDUCE, AS MUCH AS POSSIBLE, ANY CONFLICT BETWEEN EACH OTHER'S OPERATION. DUTY FREE SHOPPERS' HOURS OF OPERATION ARE AS FOLLOWS:
SATURDAYS AND MONDAYS - 8:00 A.M. TO 4:30 P.M.
TUESDAY THROUGH FRIDAY - 7:00 A.M. TO 4:30 P.M.
THE CONTRACTOR SHALL PROVIDE CONTINUOUS ACCESS TO UALENA STREET FROM AT LEAST ONE VEHICULAR DOOR LOCATED ON WEST (EWA) SIDE OF DUTY FREE SHOPPERS' WAREHOUSE (SEE GENERAL NOTE #5).
 - FOR SECURITY REASONS, NO ACCESS SHALL BE PERMITTED FROM AOOLE STREET.
 - THE 8' BARRIER FENCE SHALL BE CONSTRUCTED OF 2-INCH MESH CHAIN LINK FABRIC USING ALL NECESSARY STANDARD DETAILS FOR THAT OF A 6-FOOT CHAIN FENCE, AS SHOWN ON STANDARD DETAILS DD 607.1 - SHEET NO. SD 1, EXCEPT THE HEIGHT OF FENCE INCLUDING GATES SHALL BE INCREASED TO 8 FEET. EACH GATE LOCKING DEVICE SHALL BE MADE OF HEAVY DUTY CHAIN AND PADLOCK. THE WAREHOUSE MANAGER SHALL BE PROVIDED WITH TWO (2) SETS OF KEYS. ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY FOR CONSTRUCTION, MAINTENANCE, ADJUSTMENTS, RESTORATION, AND DISPOSAL OF THE 8' BARRIER AND/OR EXISTING FENCE AND PAVEMENT SHALL BE PAID FOR BY THE LUMP SUM BID ITEM, "8' BARRIER FENCE", ITEM NO. 607.0088.
 - CONSTRUCTION OF BOX CULVERT WITHIN DUTY FREE SHOPPERS' PROPERTY SHALL HAVE THE FOLLOWING ORDER OF WORK:
 - CONSTRUCT AND MAINTAIN 8' BARRIER FENCE (LOCATION A) AT STATION 20+57, OHOHIA STREET BASELINE, INCLUDING, ONE 10' GATE AND ONE 4' GATE, AS SHOWN IN PLAN VIEW THIS SHEET.
 - BEGIN CULVERT AND REPAVING CONSTRUCTION AT STATION 21+94± AND CONTINUE TOWARD UALENA STREET IN DIRECTION OF DECREASING STATION. VEHICULAR DOOR #2 WILL BE CLOSED AND SECURED BY DUTY FREE SHOPPERS.
 - UPON COMPLETION OF BOX CULVERT AND REPAVING BETWEEN STATIONS 20+57 AND 21+94±, THE 8' BARRIER FENCE SHALL BE ADJUSTED TO "LOCATION B". PAYMENT FOR THIS WORK IS INCIDENTAL TO "8' BARRIER FENCE", ITEM NO. 607.0088.
 - UPON COMPLETION OF BOX CULVERT AND REPAVING BETWEEN STATIONS 20+20 AND 20+57, DUTY FREE SHOPPERS' TRAFFIC SHALL BE SHIFTED TO THE EWA (WEST) SIDE OF THE CONSTRUCTION AREA AND SHALL HAVE CONTINUOUS ACCESS BETWEEN UALENA STREET AND THE NEW 10' GATE. THE CONTRACTOR SHALL REMOVE, AS REQUIRED, ANY PORTION OF THE EXISTING CHAIN LINK FENCE (20+08±). THIS WORK IS INCIDENTAL TO "8' BARRIER FENCE", ITEM NO. 607.0088. VEHICULAR DOOR #1 WILL BE CLOSED AND SECURED BY DUTY FREE SHOPPERS.
 - UPON COMPLETION OF BOX CULVERT AND REPAVING CONSTRUCTION BETWEEN STATIONS 19+65± AND 20+20, THE CONTRACTOR SHALL RESTORE THE EXISTING CHAIN LINK FENCE (STATION 20+08±) BACK TO A CONDITION EQUAL OR BETTER THAN THE EXISTING CONDITION. PAYMENT FOR THIS WORK IS INCIDENTAL TO "8' BARRIER FENCE", ITEM NO. 607.0088.
 - FOLLOWING RESTORATION OF EXISTING CHAIN LINK FENCE (STATION 20+08±), THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE 8' BARRIER FENCE (STATION 20+57). ANY EXISTING PAVEMENT DISRUPTED BY THIS BARRIER SHALL BE RESTORED TO A CONDITION EQUAL OR BETTER THAN THE EXISTING CONDITION. PAYMENT FOR THIS WORK IS INCIDENTAL TO "8' BARRIER FENCE", ITEM NO. 607.0088.
 - NO CONSTRUCTION WORK SHALL BE PERMITTED WITHIN DUTY FREE SHOPPERS' PROPERTY DURING THE MONTHS OF APRIL, NOVEMBER, DECEMBER, AND JANUARY OF ANY YEAR (THEIR BUSY MONTHS); UNLESS SPECIAL WRITTEN PERMISSION IS RECEIVED FROM DUTY FREE SHOPPERS.
 - ALL CONSTRUCTION INCLUDING CLEAN-UP WITHIN DUTY FREE SHOPPERS' PROPERTY SHALL BE COMPLETED IN 21 CALENDAR DAYS.
 - THERE SHALL BE NO INTERFERENCE WITH THE AIR-CONDITIONING UNITS LOCATED WITHIN DUTY FREE SHOPPERS' PROPERTY.
 - CONTRACTOR SHALL VERIFY ANY LOCATION OF EXISTING BOX CULVERT WHICH IS AFFECTED BY THE NEW BOX CULVERT AND SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE NEW ALIGNMENT UPON APPROVAL OF THE ENGINEER.

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



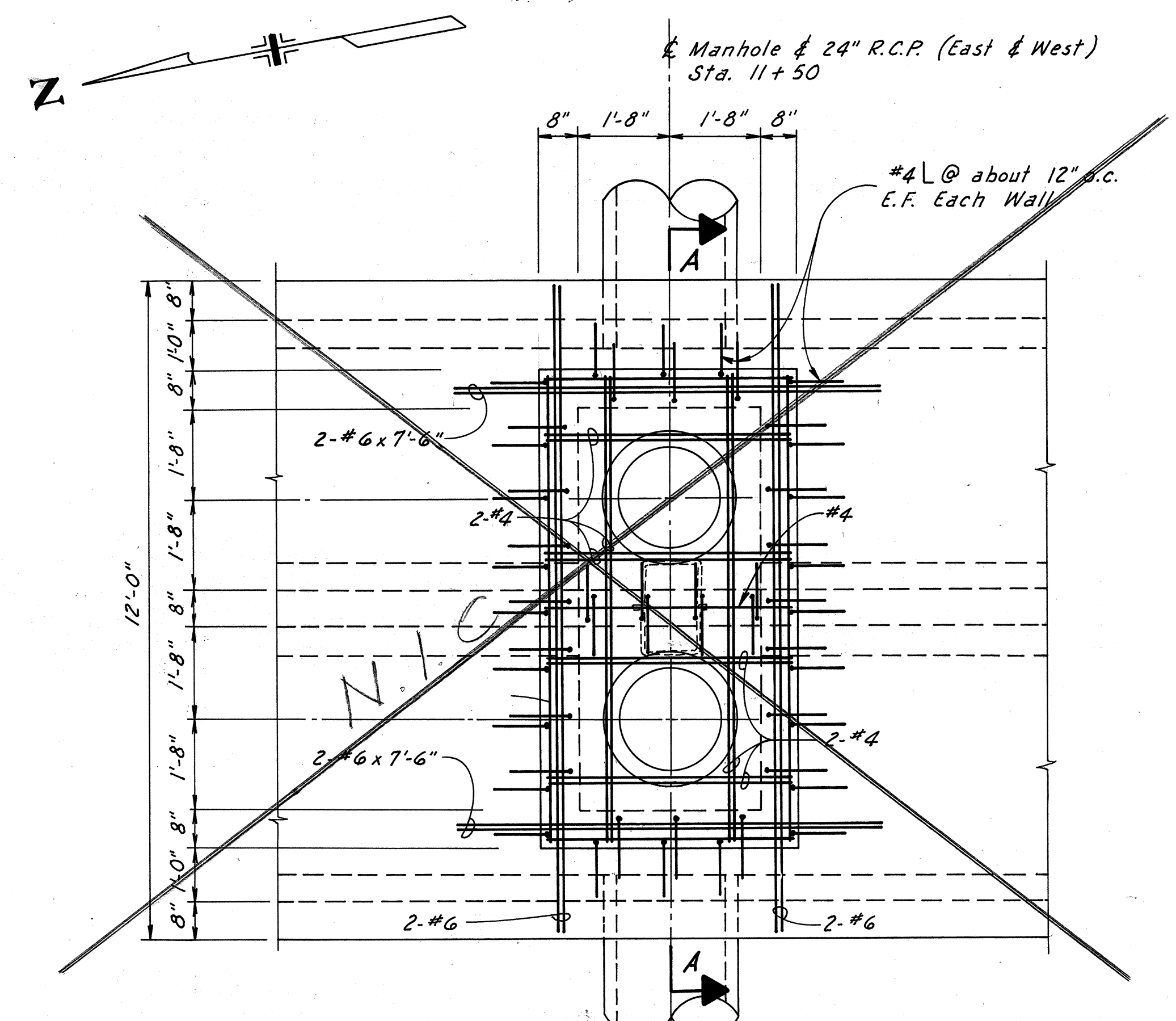
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Harland C. Jacobson
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

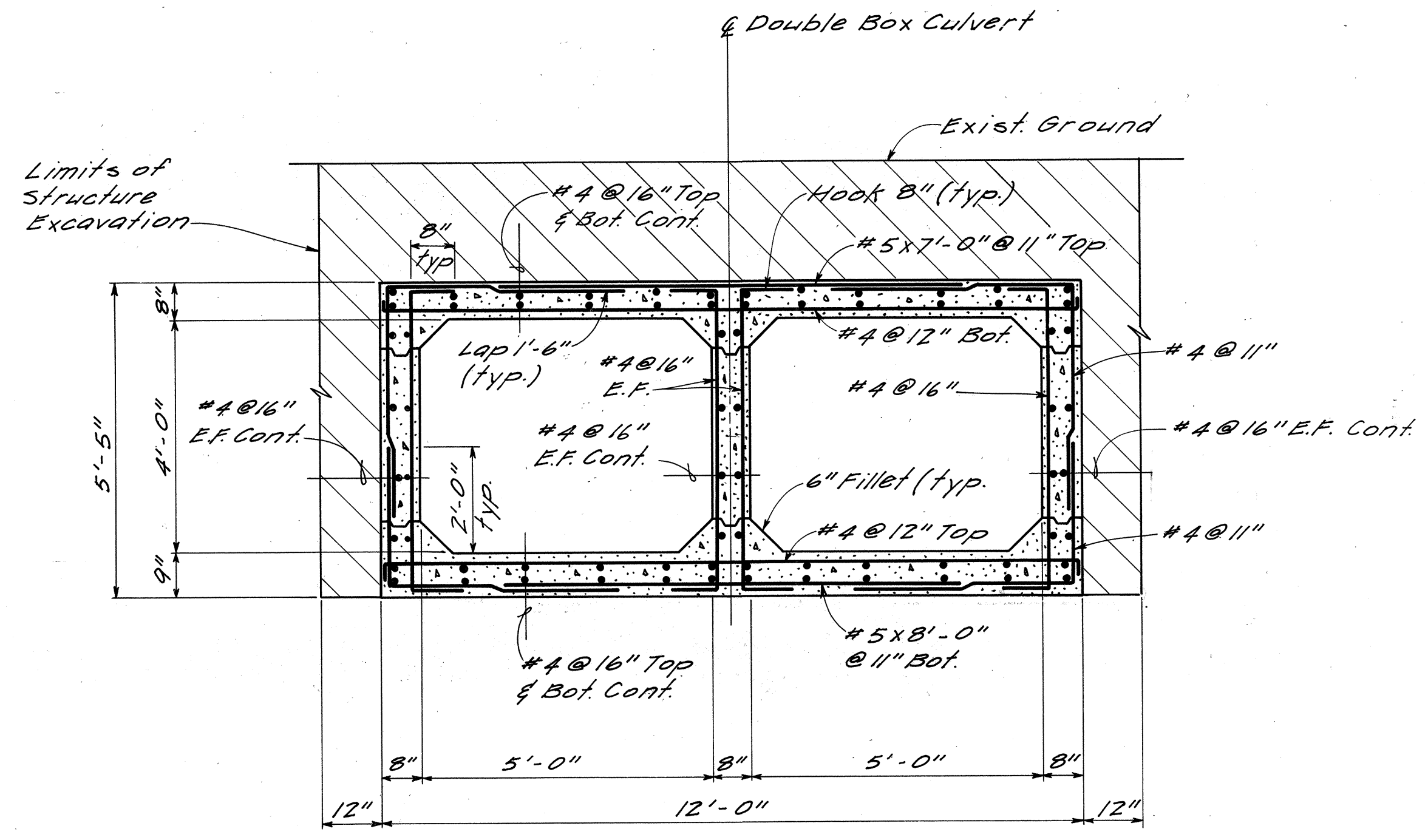
OHOHIA ST. DRAIN
8' BARRIER FENCE
AT DUTY FREE SHOPPERS LTD.
AIRPORT INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(84):16

SCALE AS SHOWN DATE: APRIL 10, 1978
SHEET No. D-11 OF 22 SHEETS

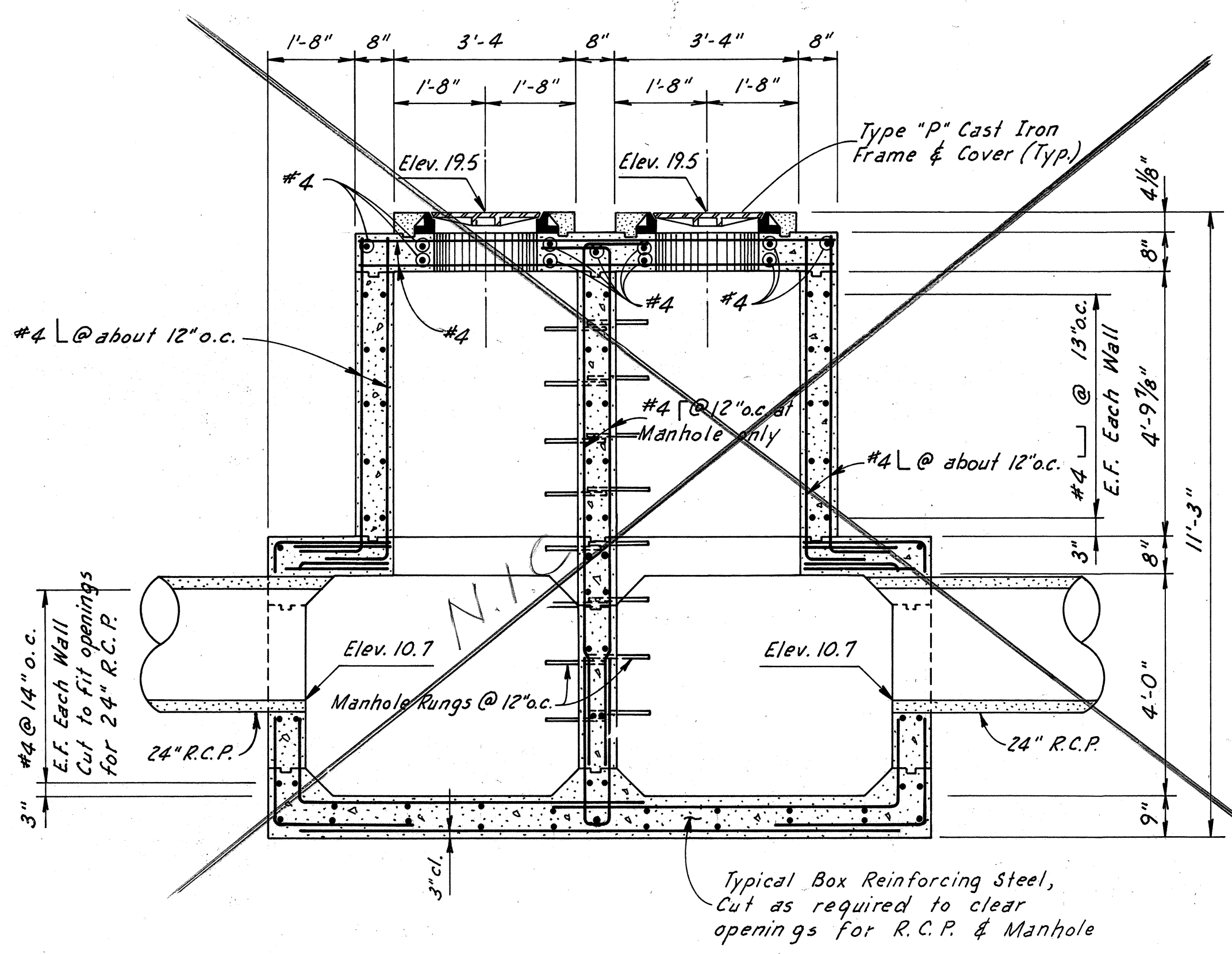
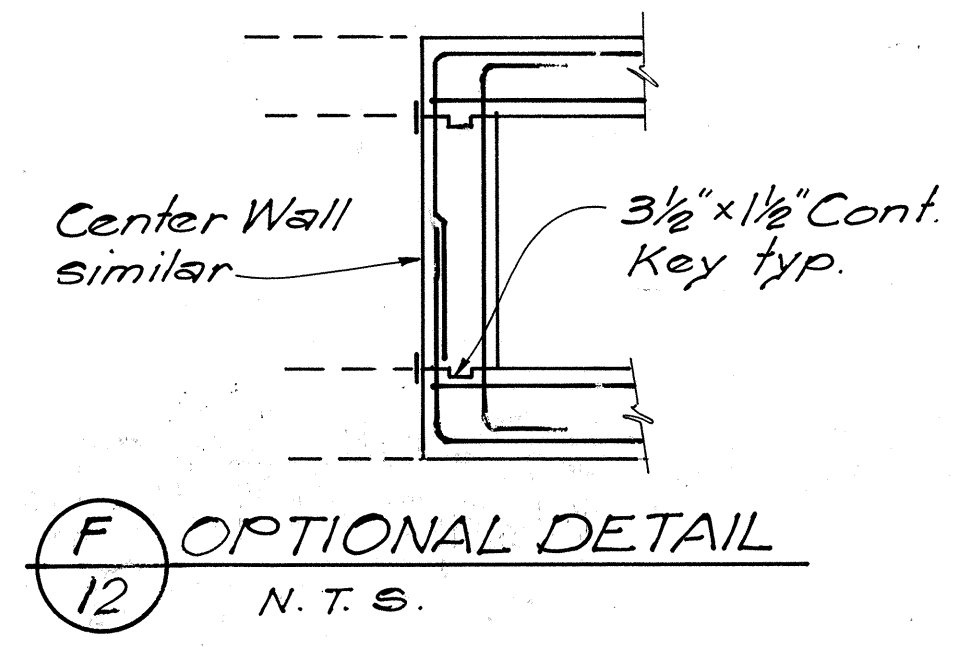
5'x4' BOX CULVERT



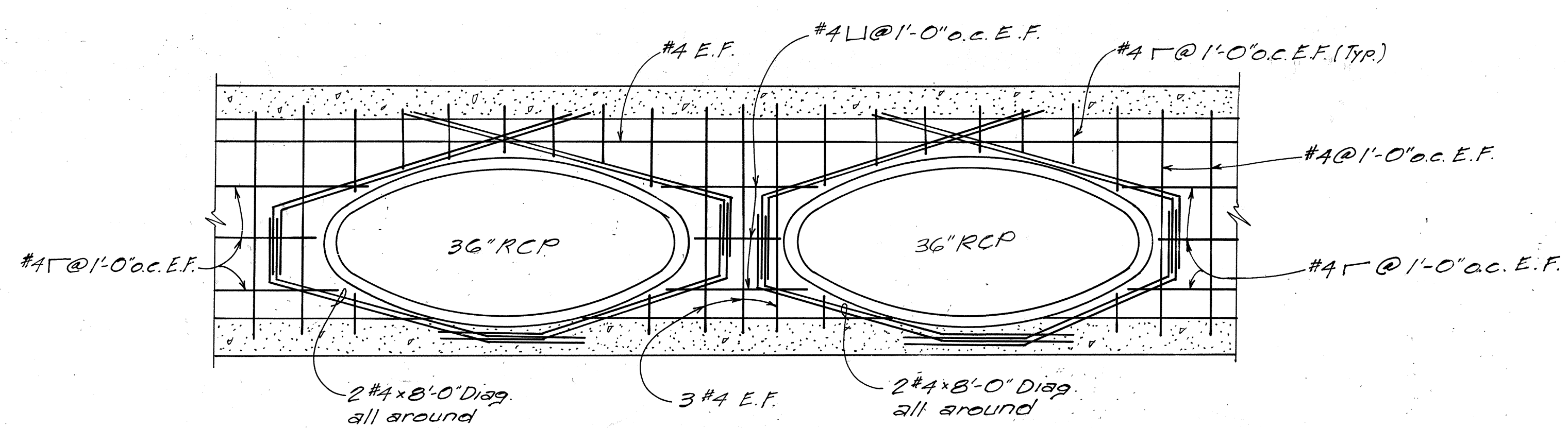
PLAN
Scale: 1/2" = 1'-0"



TYPICAL BOX CULVERT SECTION
Scale: 1/2" = 1'-0"
STA. 11+40 TO STA. 14+68



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

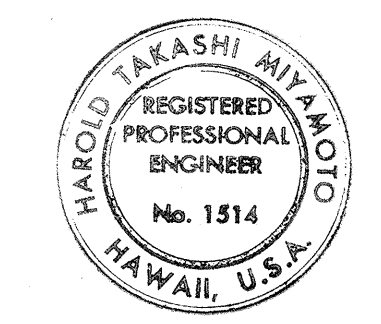


OHOHIA ST. STA. 11+88±

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(84)-16	1978	34	466

NOTES

- See also, Special Provisions and Specifications.
- See Hawaii Standard Details including: Dwg. No. DH6 "Catch Basin and Manhole Castings."
- All Concrete shall be Class "A" Reinforced Concrete Design Data: $f_c = 3,000$ p.s.i. (28 Days) $f_s = 20,000$ p.s.i. Deformed Bars
- Provide 1" chamfer for all exposed edges.
- All Reinforcing shall meet requirements of ASTM A615 Grade 40
- Structural Steel incidental to Class "A" Concrete.
- Unless shown otherwise all hooks are standard.
- Maintain 2" clear on all Reinforcing Steel unless otherwise noted.
- For Culvert Plan and Profile see Sht. No. D-10
- For Joint Details see Reinforced Concrete Box Culvert Details Sta. 14+68 to Sta. 21+94. See Sht. No. D-15
- Precast reinforced concrete box culvert sections with tongue and groove joints may be used as an alternate to cast-in-place box culvert. Contractor shall submit prior to installation a detail design of the alternate box culvert to the Engineer for written approval.
- Contractor may omit 6-inch fillet in culverts as an option. Use Optional Detail F/12 on Sheet D-12, including the reinforcing steel arrangement.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Z. H. Miyamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
REINFORCED CONCRETE BOX CULVERT DETAILS
(OHOHIA STREET)
AIRPORT INTERCHANGE I-HI-1(84)-16
SCALE: AS SHOWN DATE: SEP. 30, 1977
SHEET No. D-12 OF 22 SHEETS

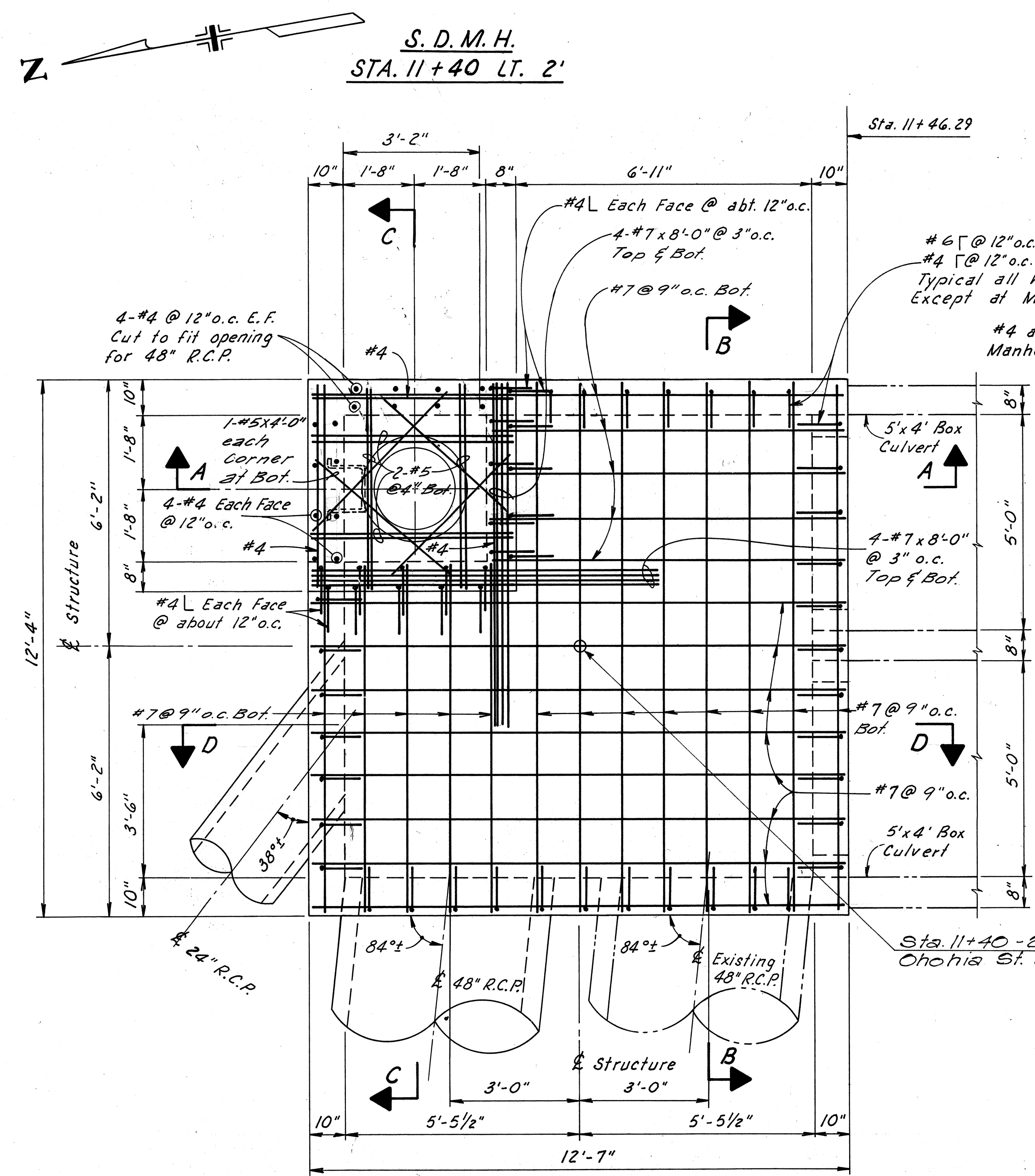
No	DATE	REVISION
1	11-2-79	Added Detail - Ohohia St. Sta. 11+88

C034

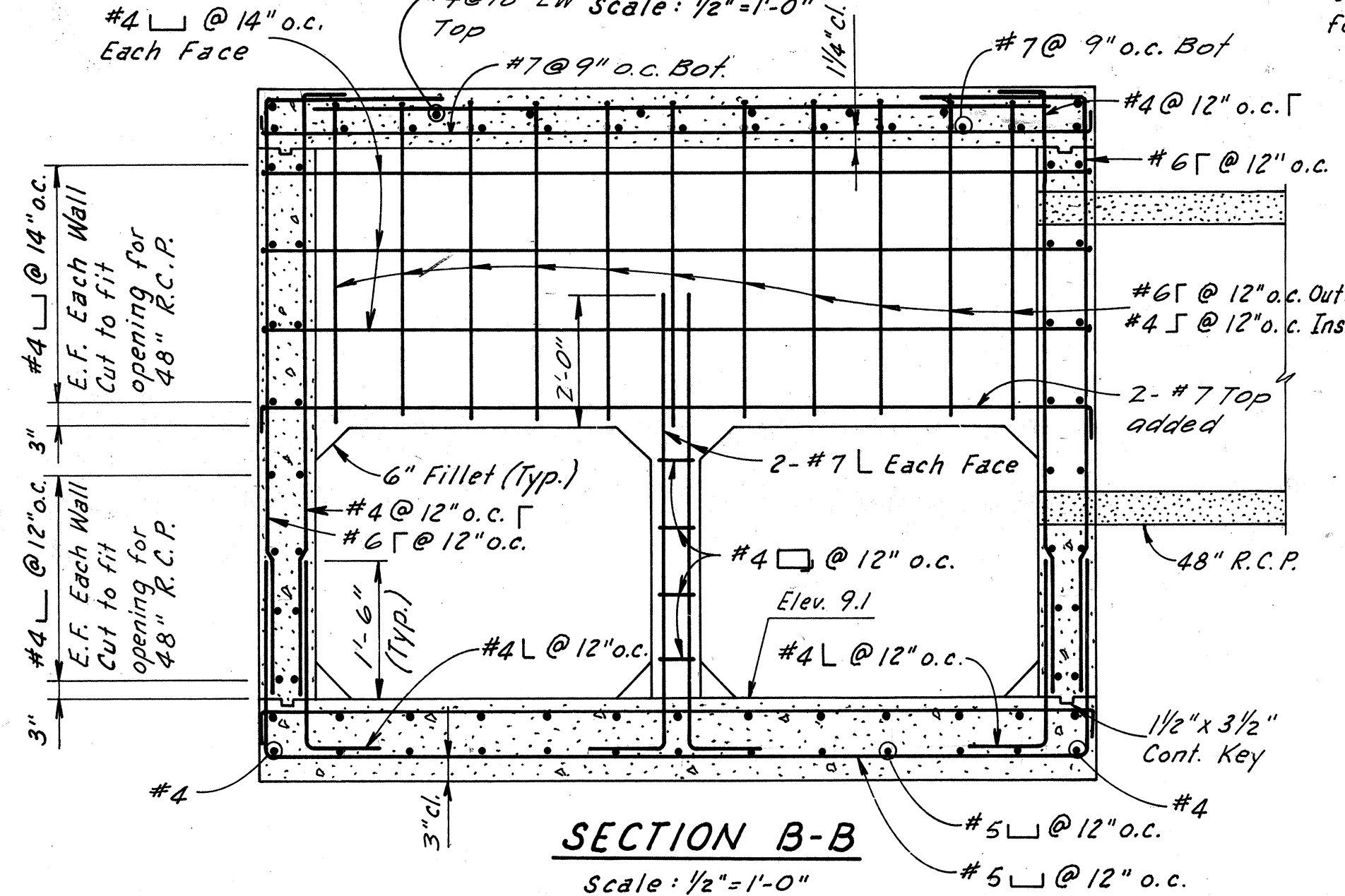
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(84)-10	1978	35	466

NOTES

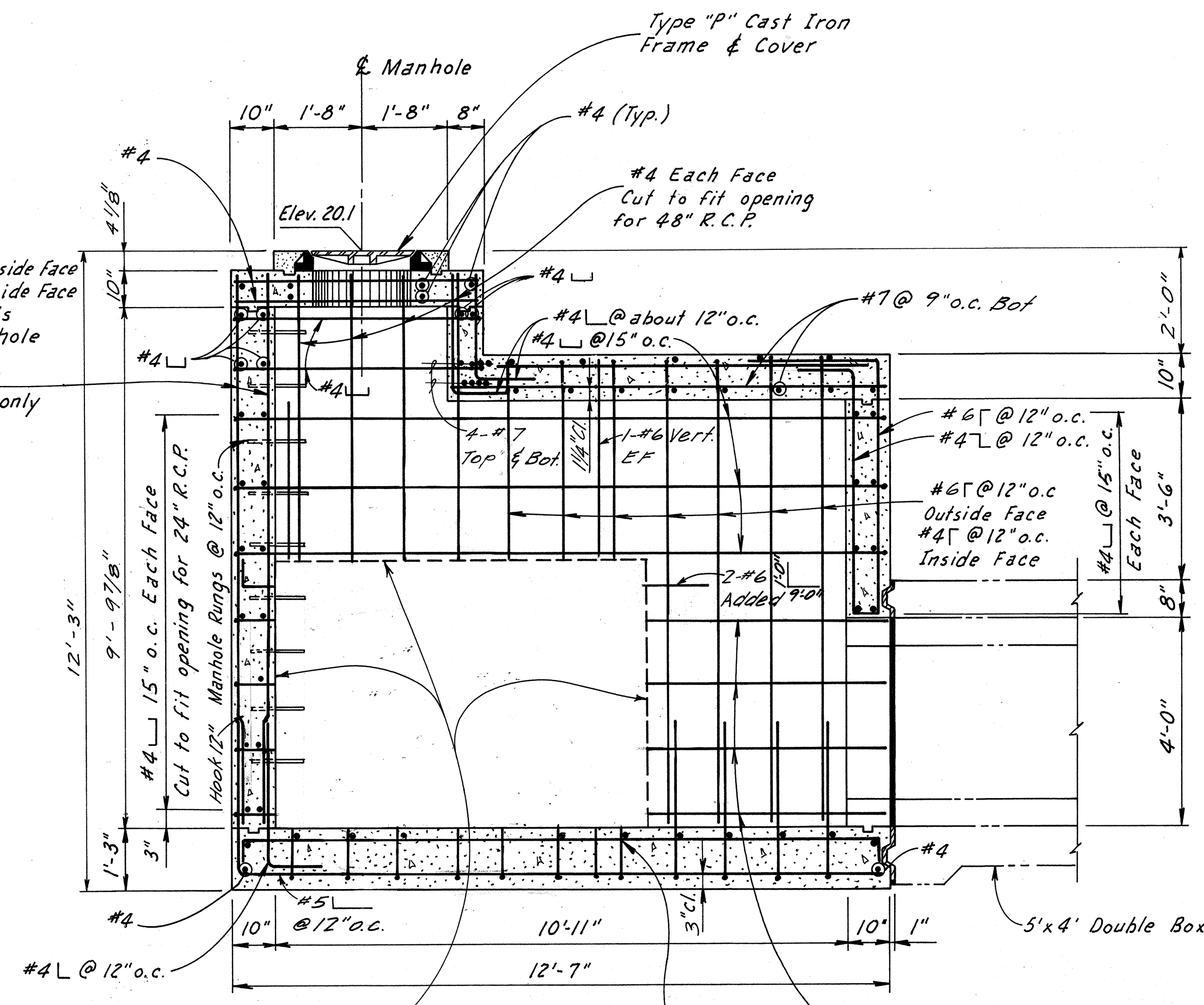
- See also, Special Provisions and Specifications.
- See Hawaii Standard Details including: Dwg. No. DHG "Catch Basin and Manhole Castings."
- Provide 1" Chamfer for all exposed edges.
- All concrete shall be Class "A" Reinforced Concrete Design Data:
 $f_c = 3,000$ p.s.i. (28 Days)
 $f_s = 20,000$ p.s.i. Deformed Bars.
- All Reinforcing shall meet requirements of ASTM A615 Grade 40.
- Structural Steel incidental to Class "A" Concrete.
- Unless shown otherwise all hooks are standard.
- Maintain 2" clear on all Reinforcing Steel unless otherwise noted.



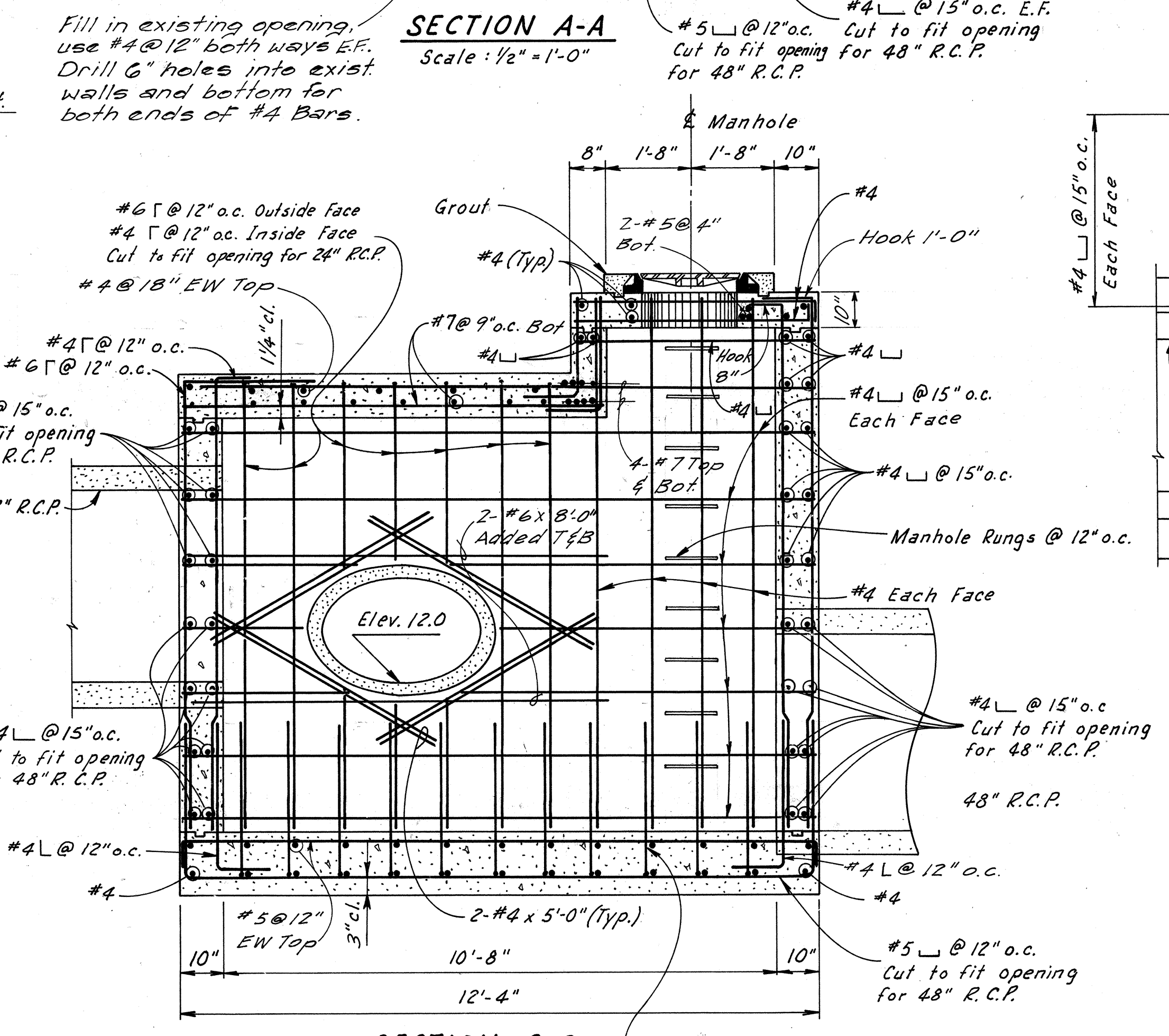
PLAN



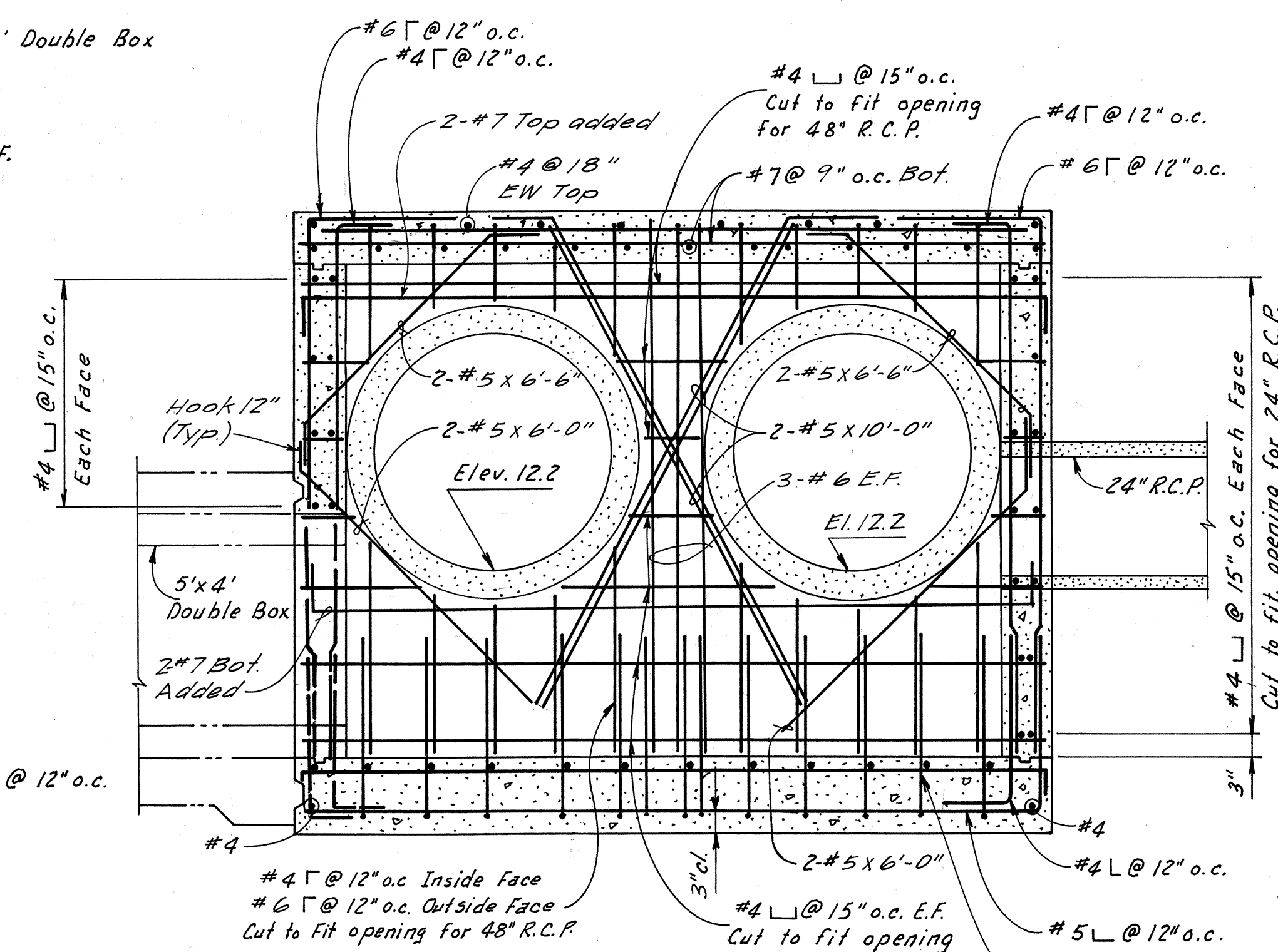
SECTION B-B
Scale: 1/2" = 1'-0"



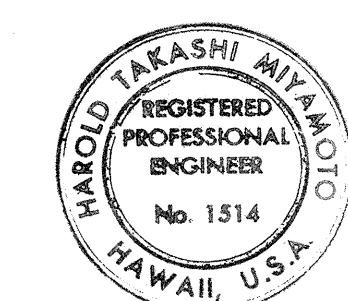
SECTION A-A
Scale: 1/2" = 1'-0"



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



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



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
 Harold C. Miyamoto

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 S.D.M.H.
 STA. 11+40 LT. 2'
 (OHOKIA STREET)
 AIRPORT INTERCHANGE I-HI-1(84)-10
 SCALE: AS NOTED DATE: SEP. 30, 1977
 SHEET NO. 13 OF 22 SHEETS

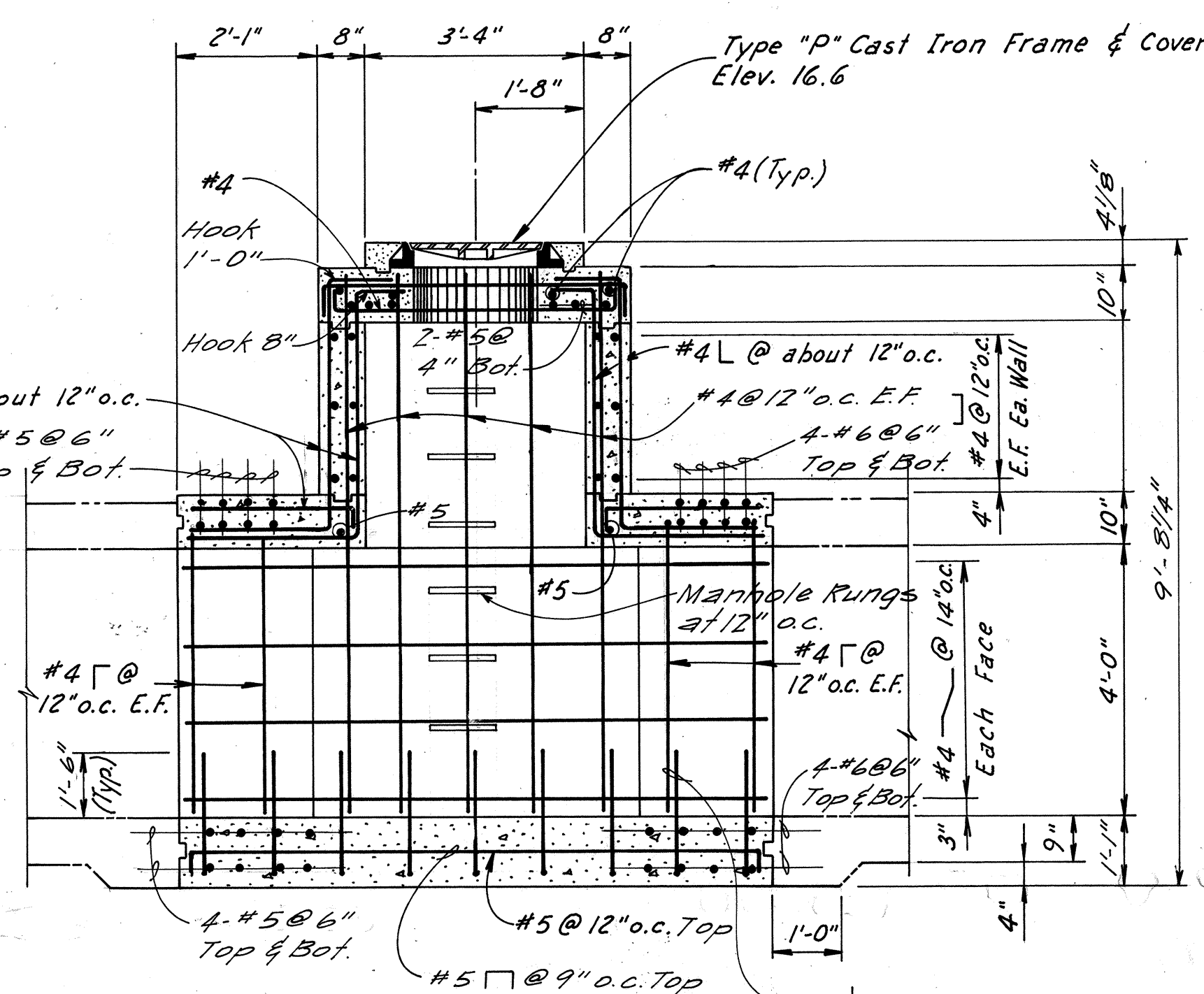
NO.	DATE	REVISION
1	11-1-79	Revised Plan & Sect. A-A

NOTES

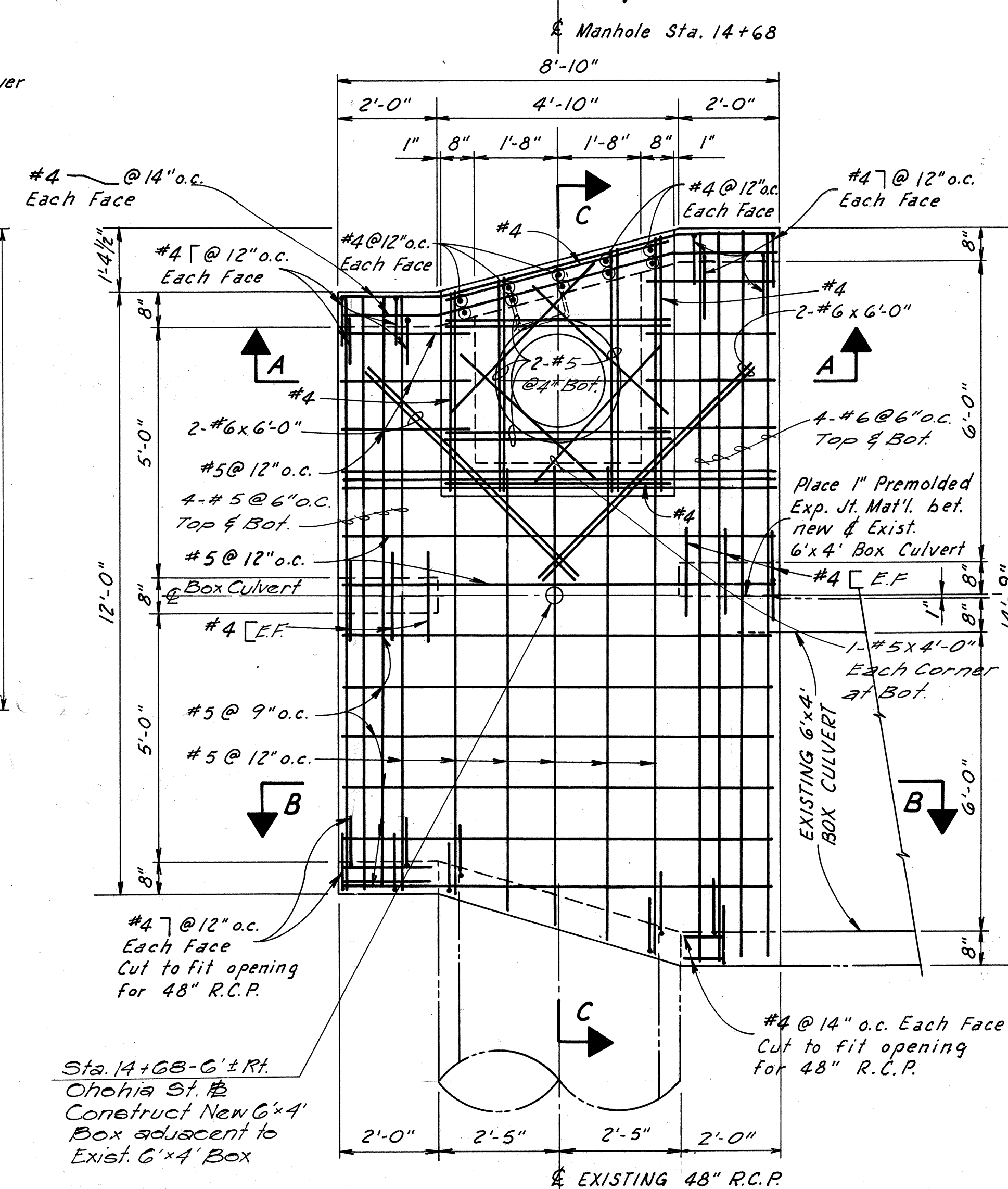
-

SECTION B-B
Scale : $\frac{1}{2}" = 1'-0"$

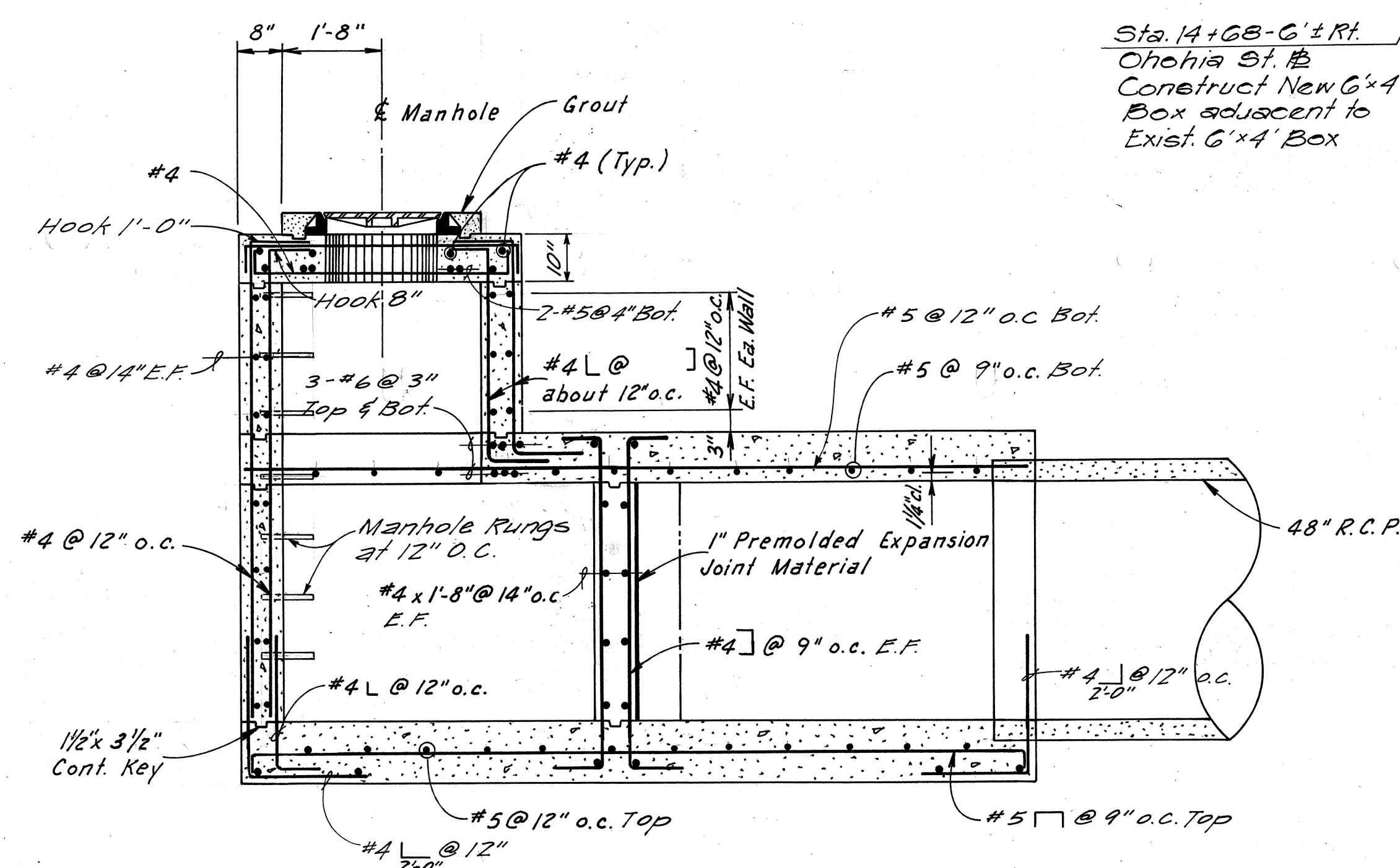
#5 x 2'-0" Dowel
Grouted into Existing Box-
Space @ 1'-0" o.c. on Walls
and Top & Bottom slabs.



SECTION A-A
Scale: $\frac{1}{2}" = 1'-0"$



PLAN
Scale: $\frac{1}{2}" = 1'-0"$



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



THIS WORK WAS PREPARED BY A
OR UNDER MY SUPERVISION

Handwritten signature: Hall, Merian

S.D.M.H.
STA. 14+68 RT. 6'
(OHOHIA STREET)

AIRPORT INTERCHANGE I-HI-1 (84):16

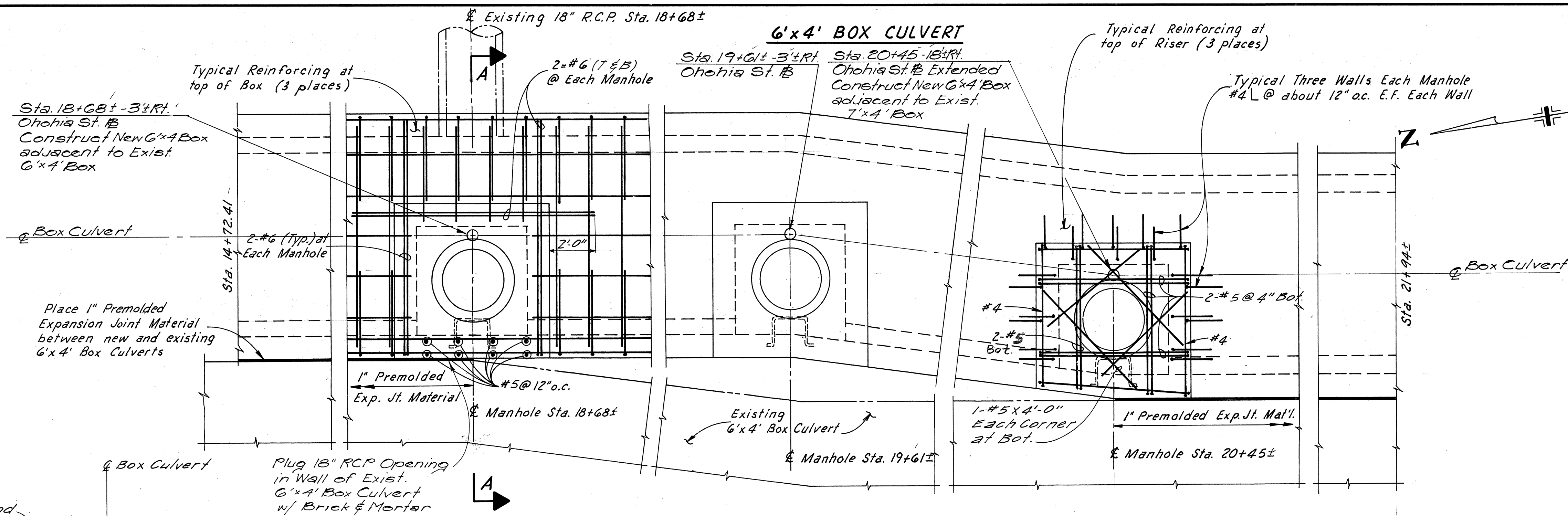
SCALE: AS NOTED DATE: JULY 14, 1978

SHEET No.D-14 OF 22 SHEETS

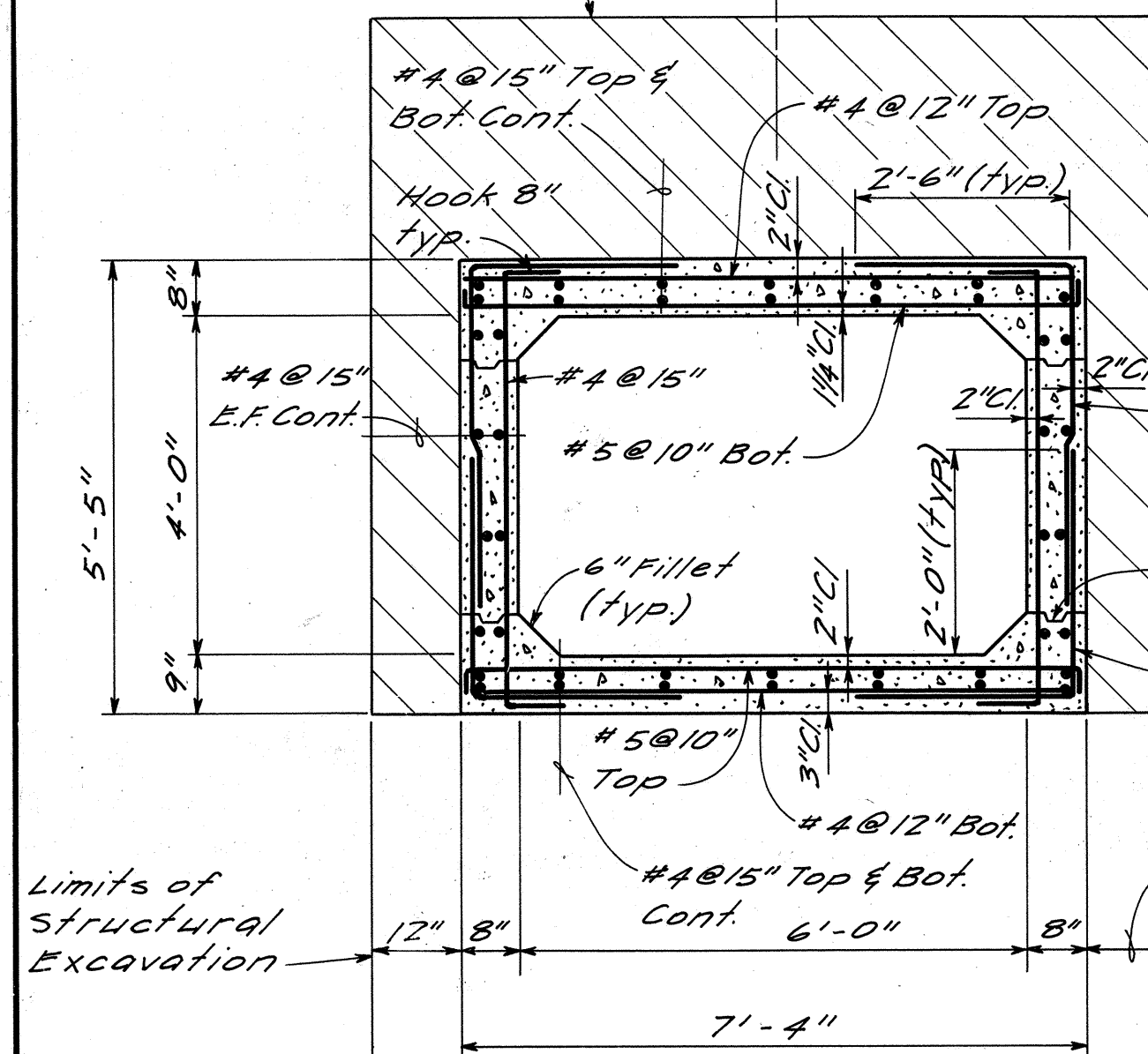
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(84)-16	1978	37	466

NOTES

1. See also, Special Provisions and Specifications.
2. See Hawaii Standard Details including :
Dwg. No. DH6 "Catch Basin and
Manhole Castings.
3. All concrete shall be Class "A"
Reinforced Concrete Design Data :
 $f_c = 3,000$ p.s.i. (28 Days)
 $f_s = 20,000$ p.s.i. Deformed Bars
4. Provide 1" chamfer for all exposed edges.
5. All Reinforcing shall meet requirements
of ASTM A615 Grade 40.
6. ~~Structural Steel incidental to Class "A"
concrete.~~
7. Unless shown otherwise all hooks are
standard.
8. Maintain 2" clear on all Reinforcing Steel
unless otherwise noted.
9. For Culvert Plan and Profile see Sht. No. D-10

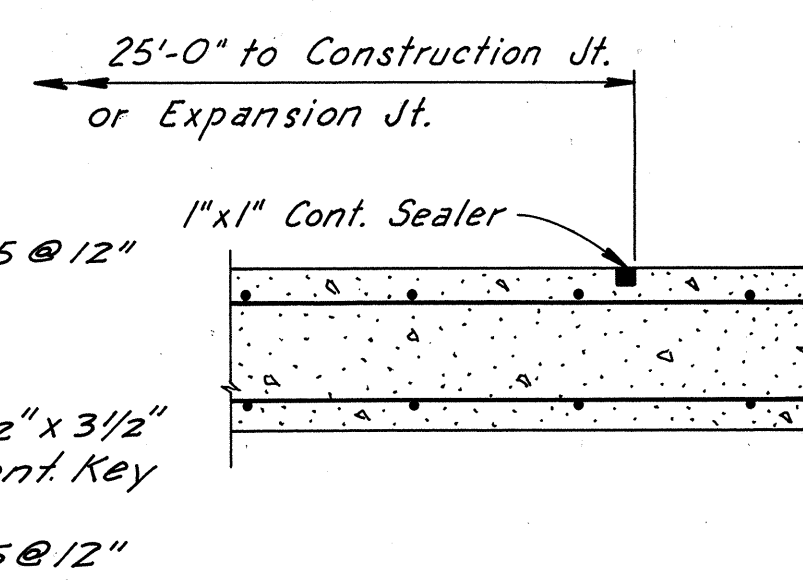


PLAN
Scale : $\frac{1}{2}" = 1'-0"$

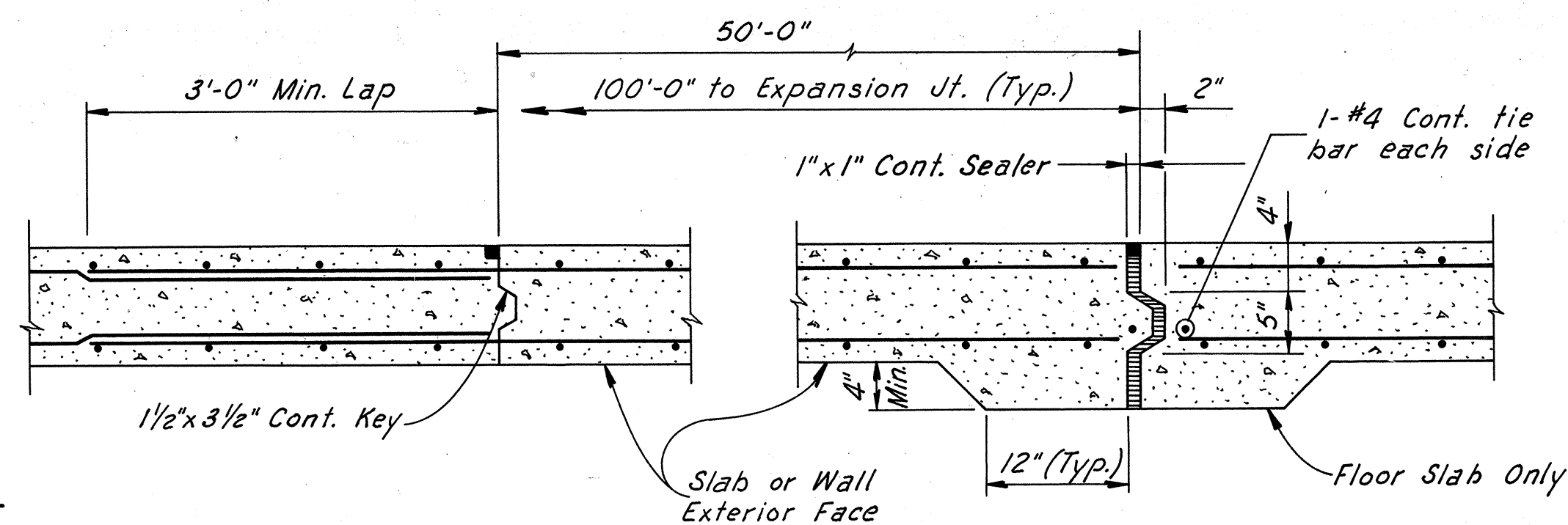


TYPICAL BOX CULVERT SECTION

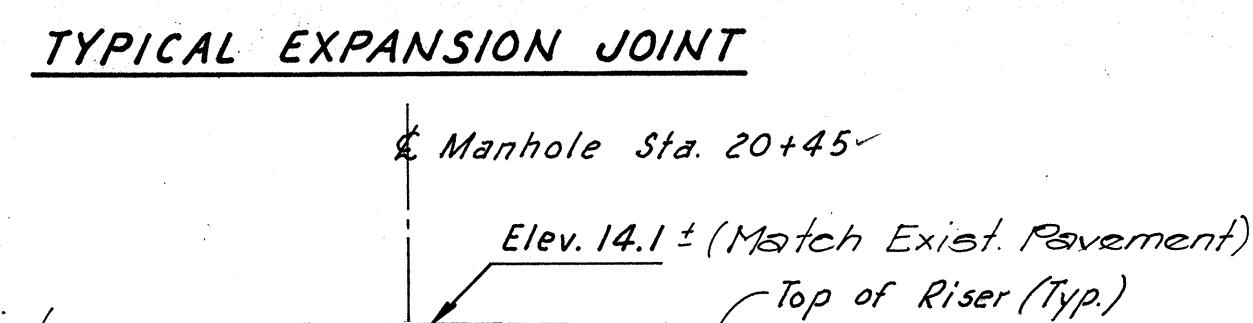
Scale: $\frac{1}{2}" = 1' - 0"$
STA. 14+68 TO STA. 21+94



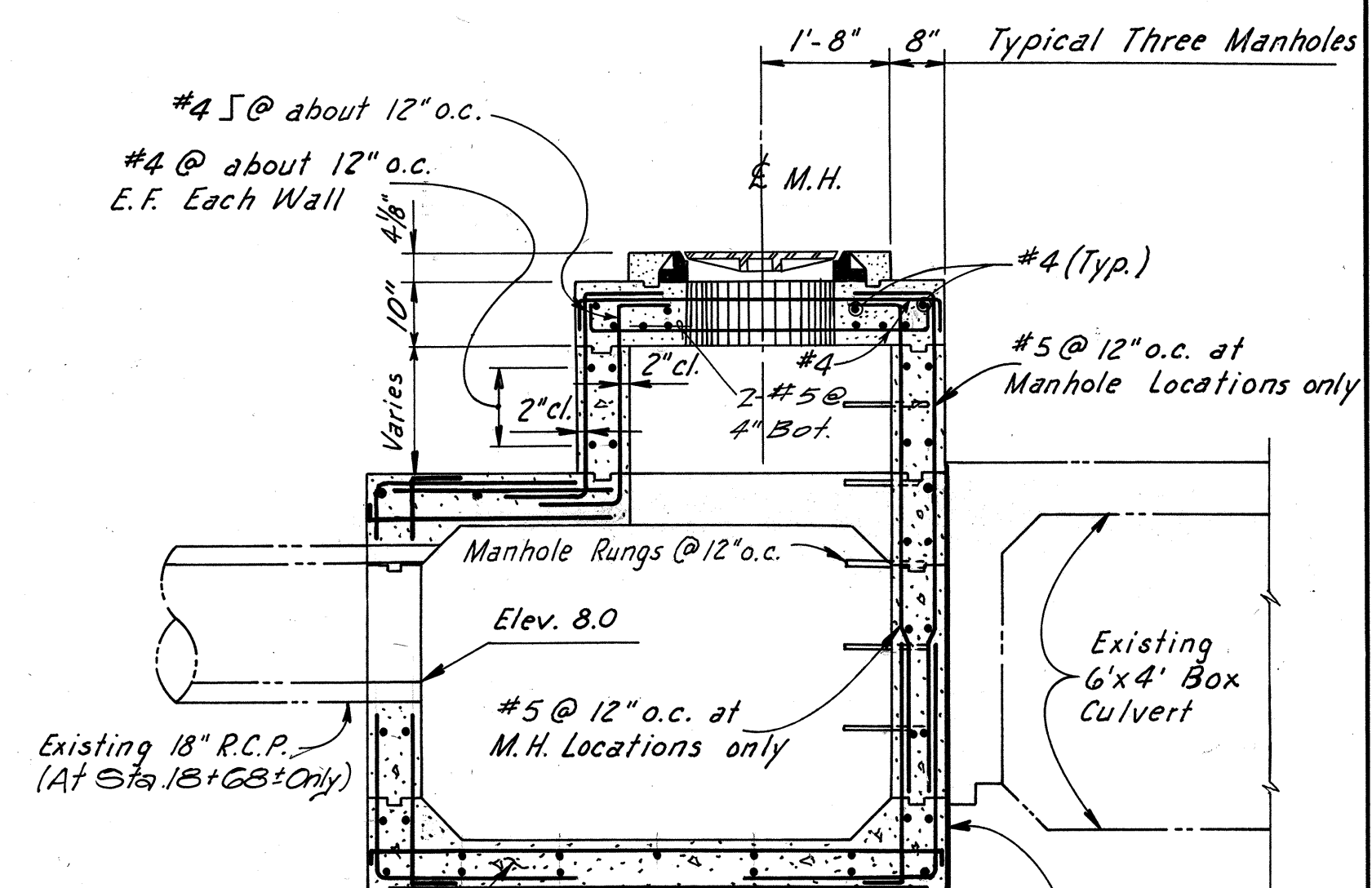
TYPICAL CRACK CONTROL JOINT



TYPICAL CONSTRUCTION JOINT



TYPICAL EXPANSION JOINT



SECTION A-A

Scale : $\frac{1}{2}'' = 1'-0''$

**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

REINFORCED CONCRETE
BOX CULVERT DETAILS
(OHOHIA STREET)

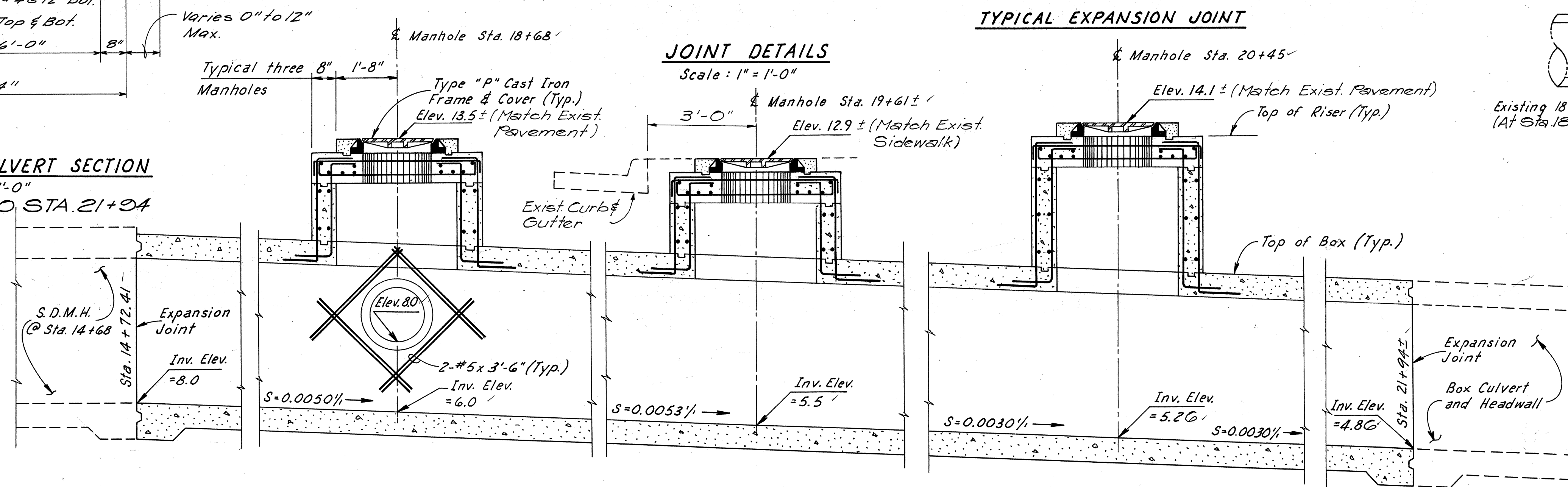
AIRPORT INTERCHANGE I-HI-1(84):16

SCALE: AS SHOWN

DATE: JULY 14, 1978

SHEET No.D-15 OF 22 SHEETS

37



LONGITUDINAL SECTION

Scale: $\frac{1}{2}" = 1'-0"$

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DRAINAGE SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(84)-16	1978	38	466

DRAINAGE STRUCTURES			ESTIMATED QUANTITIES																								ITEM NUMBER		DRAINAGE SHEET												
STRUCTURE	SHEET NUMBER	CONTRACT ITEM NO.	TYPE	UNIT	206	206			207	503			503	602			602	603			603	603			603	603			603	604			604	604		604	604				
					2020	4000			0100	1035			1030	0030			1021	1010			1012	1018			1019	1024			1200	1320			1440	2150			2160	2170		2310	2320
					STRUCTURE EXCAVATION FOR DRAINAGE SYSTEM	STRUCTURE EXCAVATION FOR BOX CULVERTS			DITCH AND CHANNEL EXCAVATION	CONCRETE FOR DRAINAGE SYSTEM			CONCRETE IN BOX CULVERT	REINFORCING STEEL IN BOX CULVERTS			REINFORCING STEEL FOR DRAINAGE SYSTEM	24-INCH REINF. CONCRETE PIPE CLASS II			30-INCH REINF. CONCRETE PIPE CLASS III	48-INCH REINF. CONCRETE PIPE CLASS III			48-INCH REINF. CONC. PIPE WITH CONC. COLLARS CLASS III	66-INCH REINF. CONC. PIPE CLASS III			24-INCH CMP SHEET THICKNESS 0.079 OR 24-INCH RCP CL III OR 24-INCH ACP CL III	30-INCH CMP SHEET THICKNESS 0.079 OR 30-INCH RCP CL III OR 30-INCH ACP CL III			36-INCH CMP SHEET THICKNESS 0.109 OR 36-INCH RCP CL III OR 36-INCH ACP CL III	TYPE A CAST IRON FRAME AND COVER			TYPE B CAST IRON FRAME AND COVER	TYPE P CAST IRON FRAME AND COVER			TYPE A-9 STEEL FRAME AND GRATE
CLYD	CLYD			CLYD	(CLYD)			(CLYD)	(LB.)			(LB.)	L.F.			L.F.	L.F.			L.F.	L.F.			L.F.	L.F.			L.F.	EACH			EACH	EACH		EACH	EACH					
1	26A	24" Pipe		7													8																								
1	26	CB Type ID		15					5.2					420																											
1	27	24" Pipe		70																							74														
1	28	CB Type ID		15					5.2					420																											
1	29	24" Pipe		74																								79													
1	30	CB Type ID		15					5.2					420																											
1	31	24" Pipe		81																																					
1	32	CB Type ID		15					5.2					420																											
1	33	24" Pipe		60																																					
1	34	CB Type ID		15					5.2					420																											
1	35	24" Pipe		68																																					
1	36	CB Type ID		15					5.2					420																											
1	37	CB Type D		7					2.5					78																											
1	39	DI Type C		6					2.4					11																											
1	40	24" Pipe		102													88																								
1	41	24" Pipe		31																																					
1	42	DI Type C		8					2.9					11																											
1	43	24" Pipe		26																																					
1	44	DI Type C		11					3.6					11																											
1	45A	24" Pipe		64																																					
1	45	DI Type C		7					2.5					11																											
1	46	24" Pipe		19													24																								
1	47	DI Type C		11					3.7					11																											
1	48	24" Pipe		92																																					
1	49	CB Type ID		18					5.6					420																											
1	50	24" Pipe		51																																					
1	51	DI Type C		7					2.6					11																											
1	52	CB Type F		17					6.1					1250																											
1	53	24" Pipe		11																																					
1	54	Special CB Type D		12					2.2					136																											
1	55	24" Pipe		44																																					
1	56	CB Type F		18					6.3					1260																											
Sub Total				1019					71.6					5730	120													829													

S U M M A R Y

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-1-1(84)16	1978	39	406

[illegible]

SHEET D-17 OF 22 SHEETS

39

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



1

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Henry M. Sumida

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Henry M. Grundel

DRAINAGE SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(24)16	1978	40	406

DRAINAGE STRUCTURES			ESTIMATED QUANTITIES																												ITEM NUMBER												
SHEET	DRAINAGE STRUCTURE	NUMBER	CONTRACT ITEM NO.																													DRAINAGE	SHEET										
				TYPE																																							
					UNIT																																						
				206	206			207	503			503	602			602	603			603	603			603	603			603	604			604	604			604							
				2020	4000			0100	1035			1030	0030			1021	1010			1012	1018			1019	1024			7200	7320			7440	2150			2160	2170			2310			
				STRUCTURE EXCAVATION FOR DRAINAGE SYSTEM	STRUCTURE EXCAVATION FOR BOX CULVERTS			DITCH AND CHANNEL EXCAVATION	CONCRETE FOR DRAINAGE SYSTEM			CONCRETE IN BOX CULVERT	REINFORCING STEEL IN BOX CULVERTS			REINFORCING STEEL FOR DRAINAGE SYSTEM	24-INCH REINF. CONCRETE PIPE CLASS III			30-INCH REINF. CONCRETE PIPE CLASS III	48-INCH REINF. CONCRETE PIPE CLASS III			48-INCH REINF. CONC. PIPE WITH CONC. COLLARS CLASS III	66-INCH REINF. CONC. PIPE CLASS III			24-INCH CMP SHEET THICKNESS 0.079 OR 24-INCH RCP CL III OR 24-INCH ACP CL III	30-INCH CMP SHEET THICKNESS 0.079 OR 30-INCH RCP CL III OR 30-INCH ACP CL III			36-INCH CMP SHEET THICKNESS 0.109 OR 36-INCH RCP CL III OR 36-INCH ACP CL III	TYPE A CAST IRON FRAME AND COVER			TYPE B CAST IRON FRAME AND COVER	TYPE P CAST IRON FRAME AND COVER			TYPE A-9 STEEL FRAME AND GRATE			
				CUYD	CUYD			CUYD	(CUYD)			(CUYD)	(LB.)			(LB)	L.F.			L.F.	L.F.			L.F.	L.F.			L.F.	L.F.			L.F.	EACH			EACH	EACH			EACH			
2	29	24" Pipe		85																								78															
2	30	CB Type F		26				8.1							1450																1												
2	31	24" Pipe		104																								93															
2	32	CB Type F		25				8.2							1450																1												
2	33	24" Pipe		103																								91															
2	34	SDMH Type A-1		9				5.9							162																1												
2	34A	CB Type D		16				4.9							77																					1							
2	35	24" Pipe		103																								95															
2	35A	24" Pipe		9																								13															
2	36	SDMH Type A-1		9				5.9							162																1												
2	36A	CB Type D		16				4.9							77																					1							
2	37	24" Pipe		100																								95															
2	37A	24" Pipe		10																								15															
2	38	SDMH Type A-1		9				5.9							162																1												
2	38A	CB Type D		16				4.9							77																					1							
2	39	24" Pipe		142																								128															
2	39A	24" Pipe		12																								17															
2	42	SDMH Type A-1		9				5.9							162																1												
2	42A	CB Type D		16				4.9							77																					1							
2	43	24" Pipe		26																								26															
2	43A	24" Pipe		15																								18															
2	44	CB Type D		18				5.0							78																					1							
2	45	24" Pipe		72												64																											
2	46	D Type C		7				1.5							11																												
2	47	CB Type D		5				1.7							78																					1							
2	48	24" Pipe		101																								102															
2	49	SDMH Type A-1		9				5.9							162																				1								
2	50	24" Pipe		13																								18															
2	51	CB Type D		15				3.9							78																					1							
2	52	CB Type D		8				2.1							78																					1							
2	53	D Type C		5				1.1							11																												
2	54	D Type C		4				1.1							11																												
2	55	CB Type D		6				2.1							78																					1							
		Sub-Total		1123				83.9							4441	64												789			7				9					3			

HENRY M. SUNG

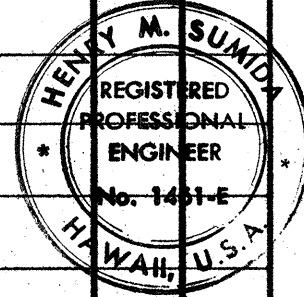
REGISTERED PROFESSIONAL ENGINEER

No. 1491-E

HA, WAH, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SHEET D-18 OF 22 SHEETS



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Henry M. Sunda

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(84)-16	1978	41	466

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

ME OR UNDER MY SUPERVISION

SHEET D-14 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-(84)-16	1978	42	466



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION,
Henry M. Lennick

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(84)-16	1978	43	466

A circular professional engineer seal for Henry M. Sumida. The outer ring contains the text "HENRY M. SUMIDA" at the top and "HAWAII, U.S.A." at the bottom, separated by two small stars. The inner circle contains the text "REGISTERED PROFESSIONAL ENGINEER" and "No. 1461-E".

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

	9-28-78	Revised Excavation Quantity for Structure 2 on sheet 10	<table border="1"> <tr> <th>FED. ROAD DIST. NO.</th> <th>STATE</th> <th>FED. AID PROJ. NO.</th> <th>FISCAL YEAR</th> <th>SHEET NO.</th> <th>TOTAL SHEETS</th> </tr> <tr> <td>HAWAII</td> <td>HAW.</td> <td>111-1(84)16</td> <td>1978</td> <td>44</td> <td>466</td> </tr> </table>					FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS	HAWAII	HAW.	111-1(84)16	1978	44	466
	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS													
HAWAII	HAW.	111-1(84)16	1978	44	466														
NO	DATE	REVISION																	

[illegible]

SHEET D-22 OF 22 SHEETS

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



WORK WAS PREPARED BY
OR UNDER MY SUPERVISION