

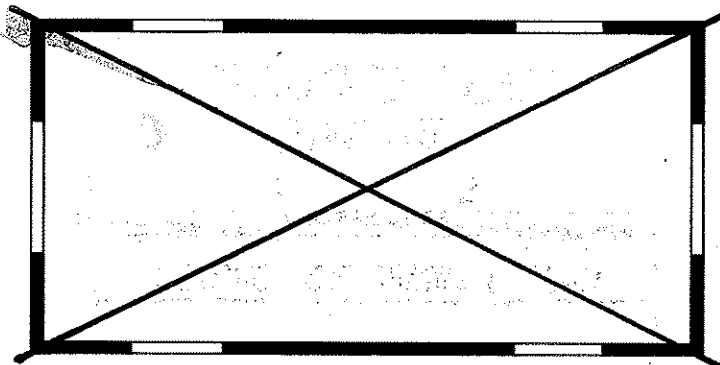
DRAINAGE SUMMARY

PROJECT: FARRINGTON HIGHWAY LANDSCAPING
KAMEHAMEHA HIGHWAY TO FORT WEAVER ROAD

PROJECT NO: 7101A-01-98

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	23	80

ITEM NO.		206.	503.	603.	603.	603.	604.	604.	604.	604.	604.	604.	604.	604.	604.	604.	
		2020	6000	0010	1006	1010	1430	5011	5012	5020	5021	5022	5023	5030	5051	5052	5053
UNIT USED		C.Y.	L.F.	C.Y.	L.F.	L.F.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.
BASELINE STATION LOCATION		Structure & Trench Excavation and Backfill	Reinforced Concrete Jacket for 18-inch Culvert	Bed Course Material for Culvert	18-inch Culvert	24-inch Culvert	RCP Connection to Existing Drainage Structure	Type "A-9" Grated Drop Inlet 4.00 feet to 4.99 feet	Type "A-9" Grated Drop Inlet 5.00 feet to 5.99 feet	Type "A-9p" Grated Drop Inlet 3.00 feet to 3.99 feet	Type "A-9p" Grated Drop Inlet 4.00 feet to 4.99 feet	Type "A-9p" Grated Drop Inlet 5.00 feet to 5.99 feet	Type "A-9p" Grated Drop Inlet 6.00 feet to 6.99 feet	Type "A-9p" Grated Drop Inlet 9.00 feet to 9.99 feet	Type "A-9p" Modified" Grated Drop Inlet 4.00 feet to 4.99 feet	Type "A-9p" Modified" Grated Drop Inlet 5.00 feet to 5.99 feet	Type "A-9p" Modified" Grated Drop Inlet 6.00 feet to 6.99 feet
FROM	TO																
57+92 Lt.	57+78 Rt.	53		8		33	1								1		
59+12 Lt.	59+25 Rt.	47		7		27	1								1		
59+90 Lt.	60+80 Lt.	125		21		85										1	
60+80 Lt.	61+72 Lt.	139		21		87										1	
61+72 Lt.	61+72 Lt.	23		2		7			1								
61+72 Lt.	61+72 Rt.	50		6		24	1										1
67+97 Lt.	67+97 Rt.	29	24	5	24 35		1			1							
72+80 Lt.	72+80 Rt.	72		9		35	1					1					
74+52.5 Lt.		21												1			
76+43 Lt.	76+43 Rt.	49	47	10	47		1			1							
82+97 Lt.	82+97 Lt.	17		2	8		1				1						
120+30 Lt.	120+30 Rt.	27	23	5	23		1			1							
124+02 Lt.	124+02 Rt.	40		6		23	1				1						
125+52 Lt.	125+52 Lt.	20		3		11		1									
125+52 Lt.	125+52 Rt.	44		6		23	1					1					
150+89 Lt.	150+89 Lt.	82		16		63	1				1						
	Total	838	94	127	102	418	11	1	1	3	53	42	1	1			



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE SUMMARY

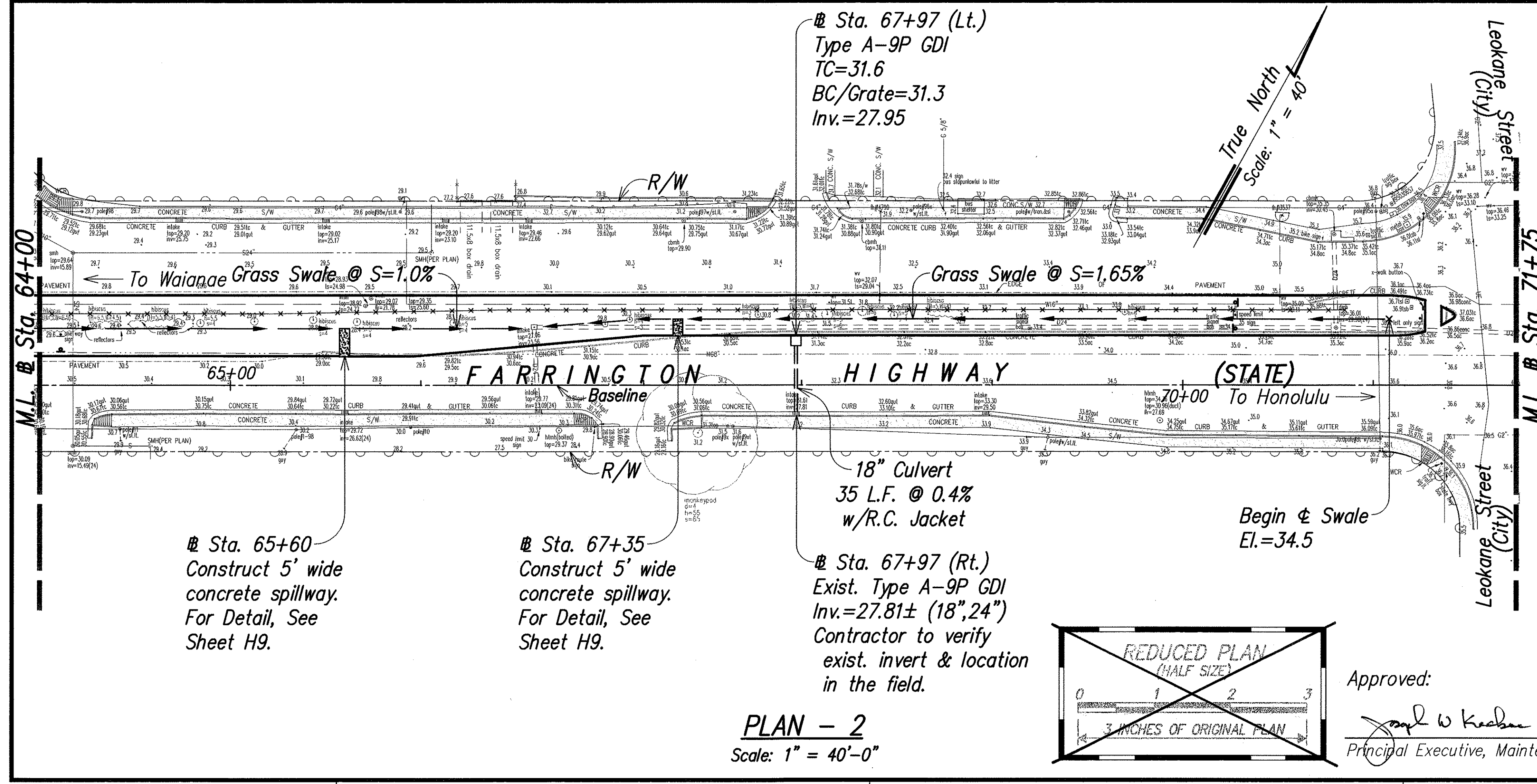
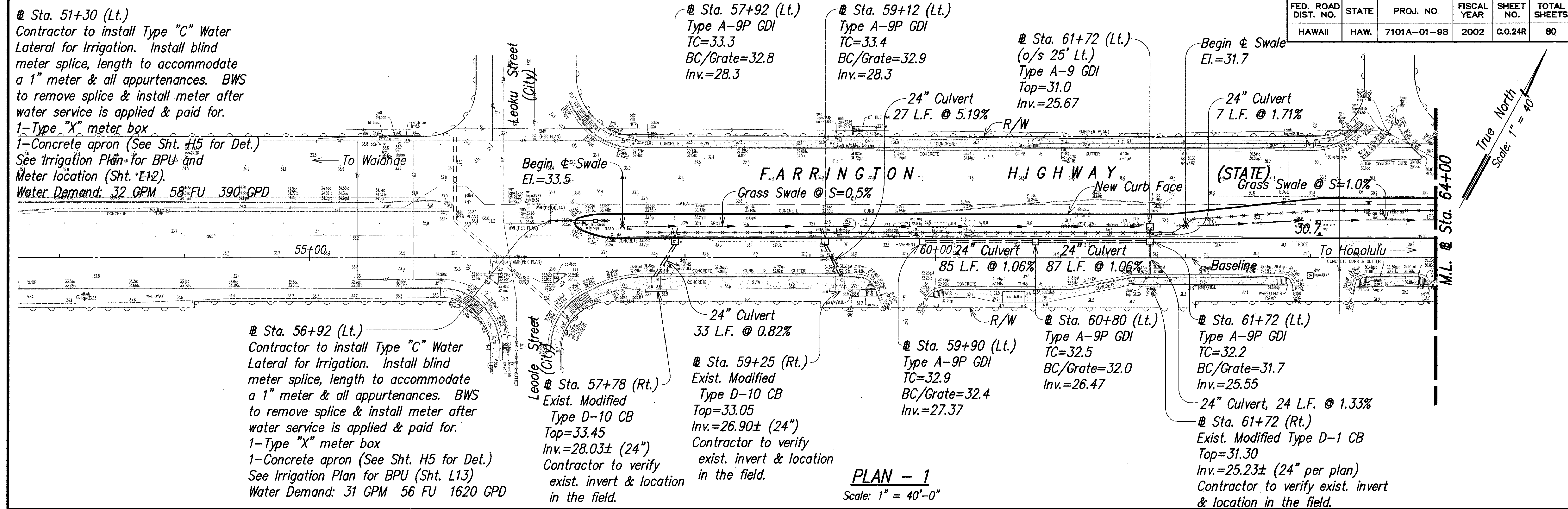
FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002

SHEET No. H1 OF 12 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	C.O.24R	80



FOR ESTIMATING PURPOSES ONLY

DESCRIPTION OF WORK	ESTIMATE
1 1/2" cu DOMESTIC SERVICE FOR IRRIGATION	
NINE (9) 1" Meter (109+180) =	\$ 289.00
Installation Charge	\$ 2601.00
WATER SYSTEM FACILITIES CHARGES	
CHARGES One (31 gpm = 56 FU) @ \$ 32,364.24	\$ 32,364.24
Three (32 gpm = 58 FU) @ \$ 32,804.82	\$ 98,414.46
Four (34 gpm = 63 FU) @ \$ 33,906.27	\$ 135,625.08
One (35 gpm = 67 FU) @ \$ 34,787.43	\$ 34,787.43
One (36 gpm = 70 FU) @ \$ 35,448.30	\$ 35,448.30
*CREDIT S/N	NA
S/N	NA
FIRE SERVICE	NA
Meter Installation Charge	NA
One-time Charge	NA
TOTAL.....	\$ 339,240.51

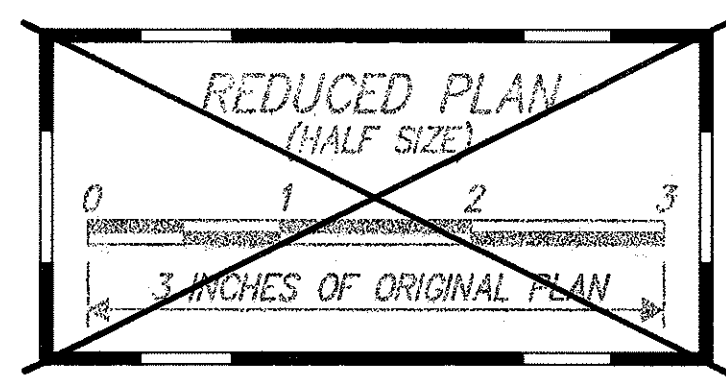
*CREDITS WILL BE DETERMINED WHEN THE BUILDING PERMIT APPLICATION IS SUBMITTED FOR BWS REVIEW AND APPROVAL.

THIS ESTIMATE IS SUBJECT TO CHANGE. A FORMAL WRITTEN QUOTATION MAY BE OBTAINED AND ALL PAYMENTS FOR THE CHARGES SHOWN ON ON QUOTATION MADE WITHIN 30 DAYS AFTER THE CONSTRUCTION PLAN IS APPROVED BY BWS. IF PAYMENTS ARE NOT RECEIVED WITHIN THE 30 DAY PERIOD, THE PROJECT WILL BE SUBJECT TO THE PREVAILING RATES.

STATION	GPM	FU	GPD
Sta. 51+30	32	58	390
Sta. 56+92	31	56	1620
Sta. 78+50	32	58	580
Sta. 84+20	34	63	390
Sta. 91+10	35	67	1880
Sta. 110+80	32	58	1810
Sta. 124+95	34	63	520
Sta. 137+00	34	63	320
Sta. 139+40	34	63	1160
Sta. 150+15	36	70	3170

GPM (Gallons Per Minute)
FU (Fixture Units)
GPD (Gallons Per Day)

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



Approved: *[Signature]* Date: 4/24/03
Principal Executive, Maintenance Unit, BWS



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE AND WATER PLAN-1

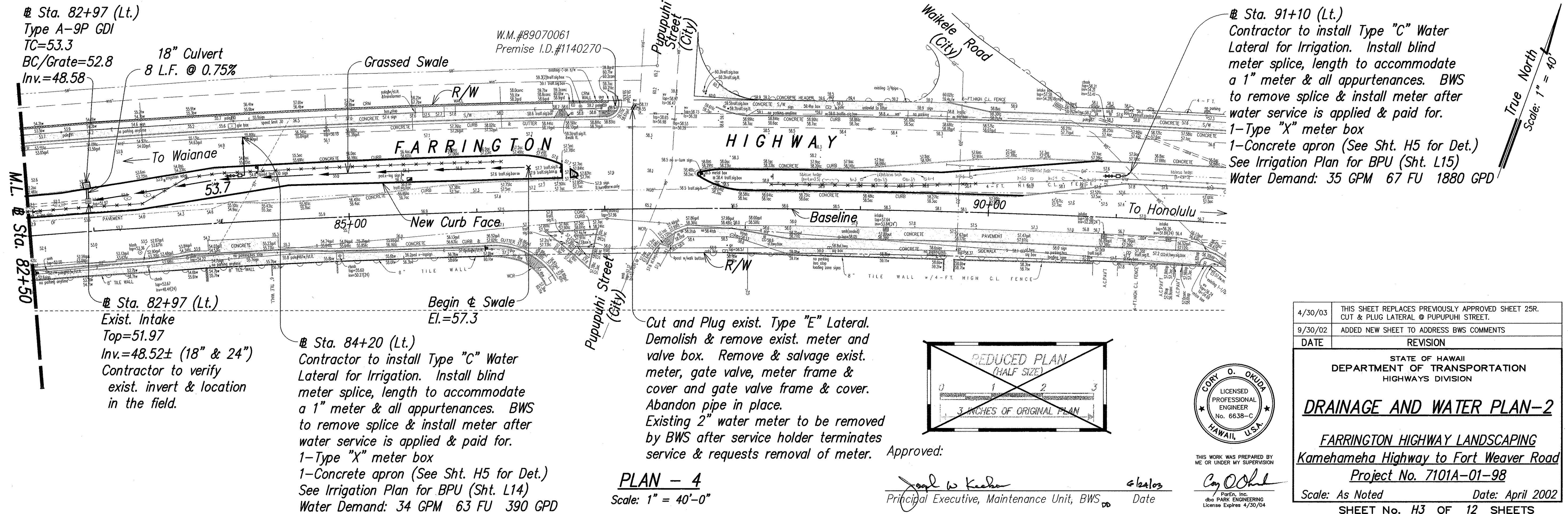
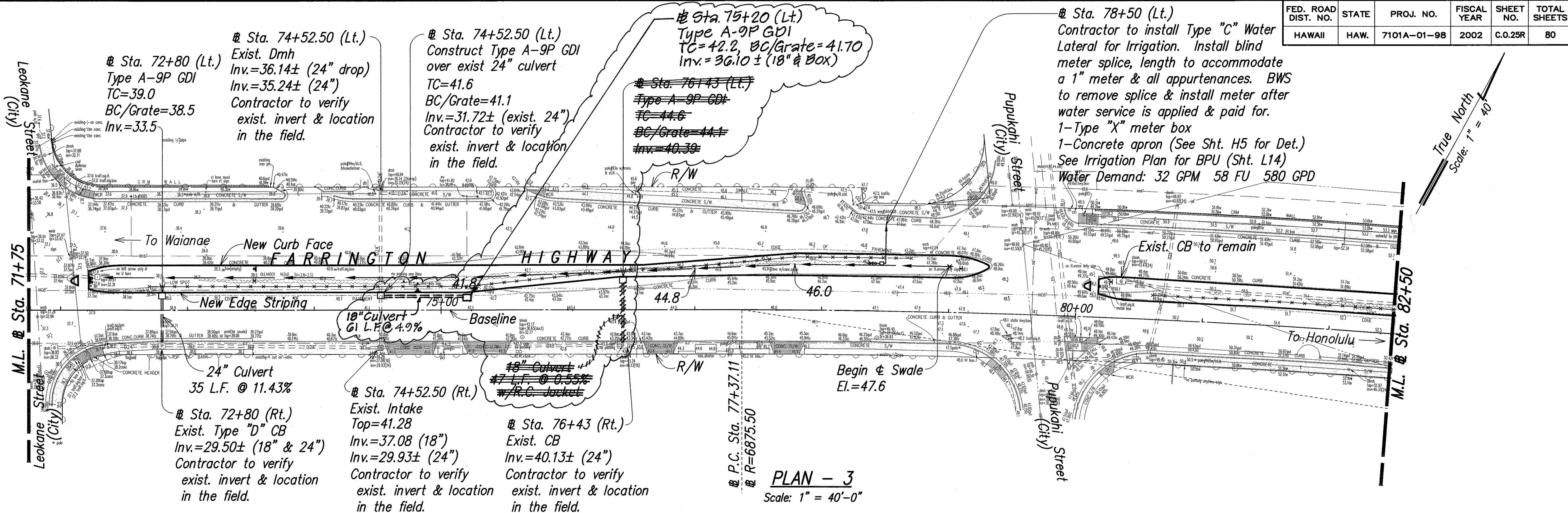
FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002

SHEET No. H2 OF 12 SHEETS

AS-BUILT C.O. 24R

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	C.O.25R	80



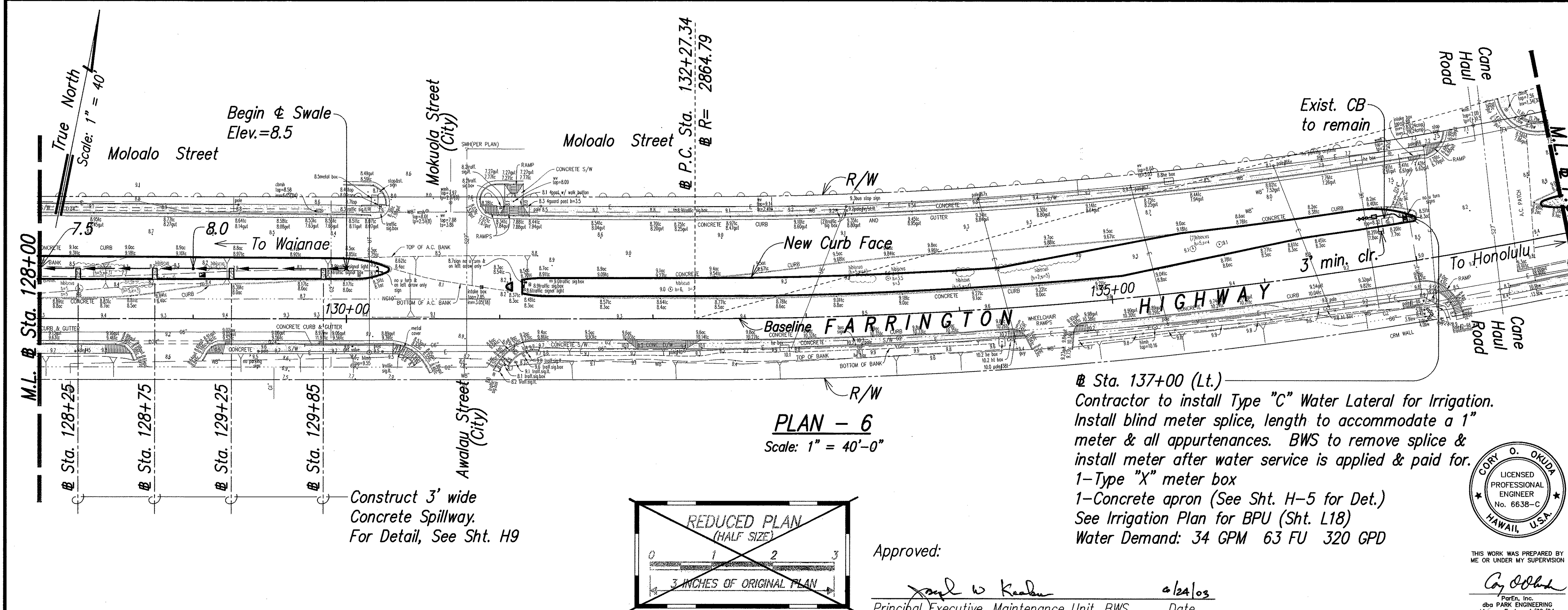
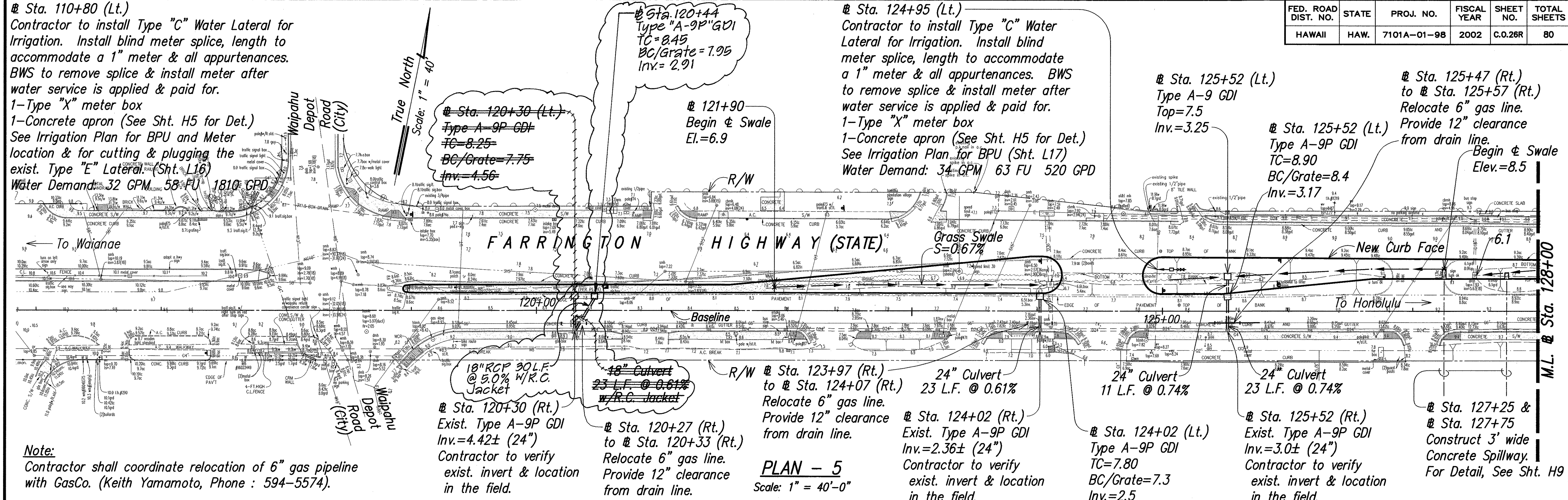
4/30/03	THIS SHEET REPLACES PREVIOUSLY APPROVED SHEET 25R. CUT & PLUG LATERAL @ PUPUPUHI STREET.
9/30/02	ADDED NEW SHEET TO ADDRESS BWS COMMENTS
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**DRAINAGE AND WATER PLAN-2**FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98
Scale: As Noted Date: April 2002

SHEET No. H3 OF 12 SHEETS

AS-BUILT C.O. 25R

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	C.O.26R	80



DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____

4/30/03 THIS SHEET REPLACES PREVIOUSLY APPROVED SHEET 26R. DELETE WATER LATERAL AT STA. 137+48 (LT.)

9/30/02 ADDED NEW SHEET TO ADDRESS BWS COMMENTS

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

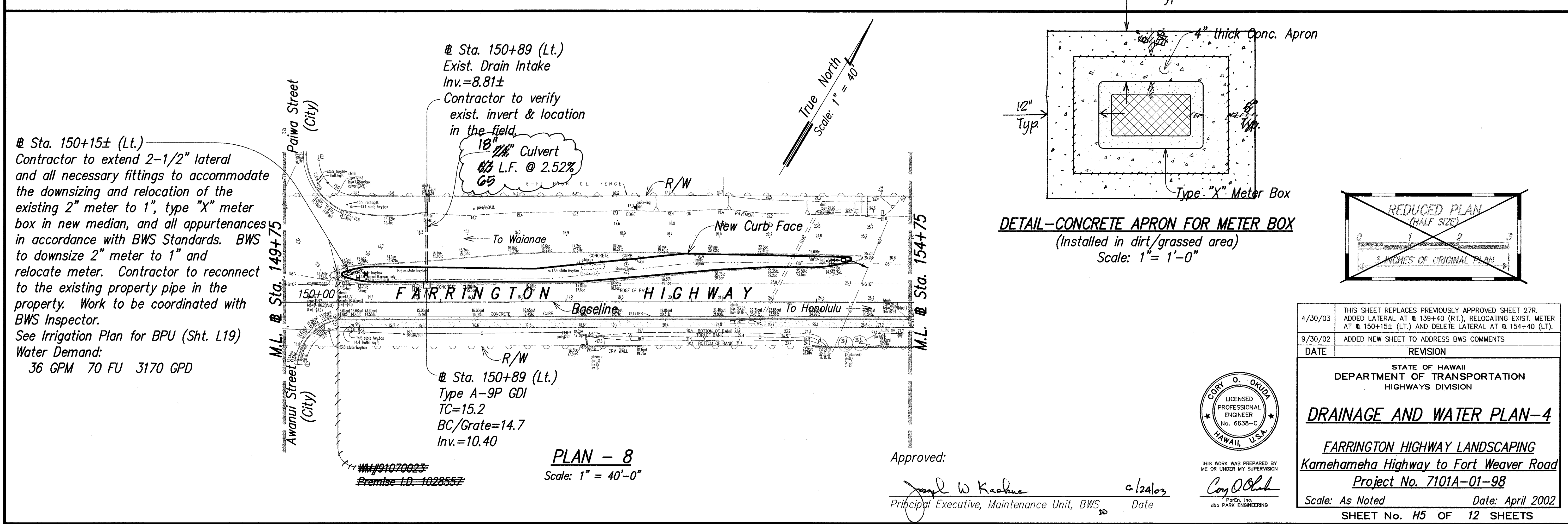
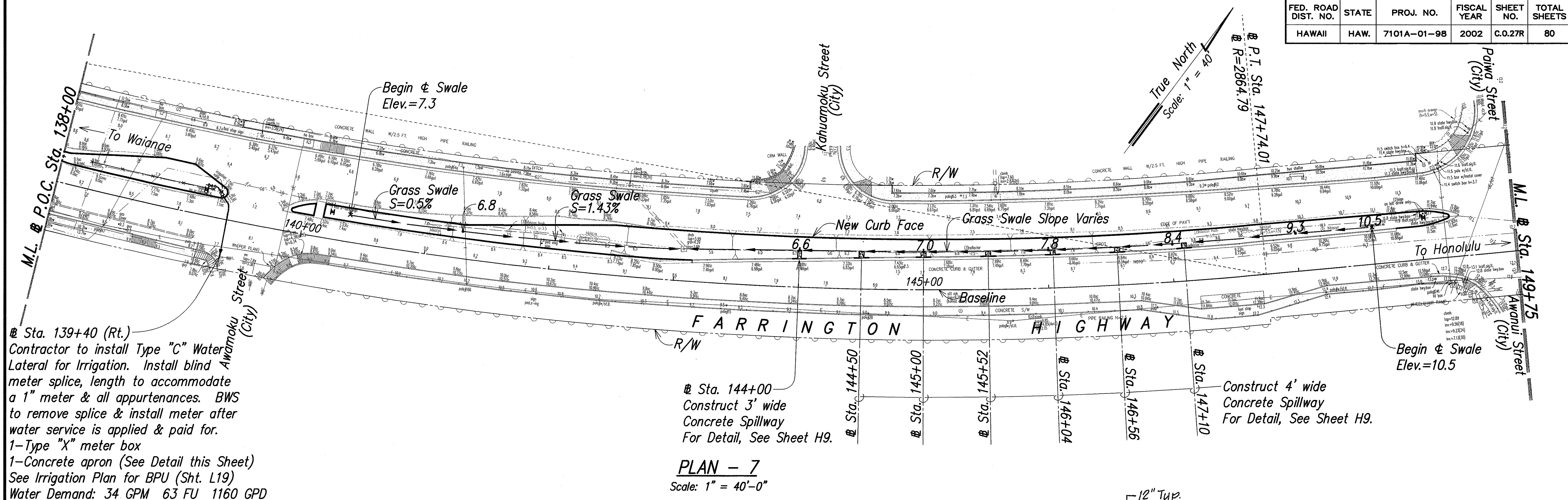
DRAINAGE AND WATER PLAN-3

FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002

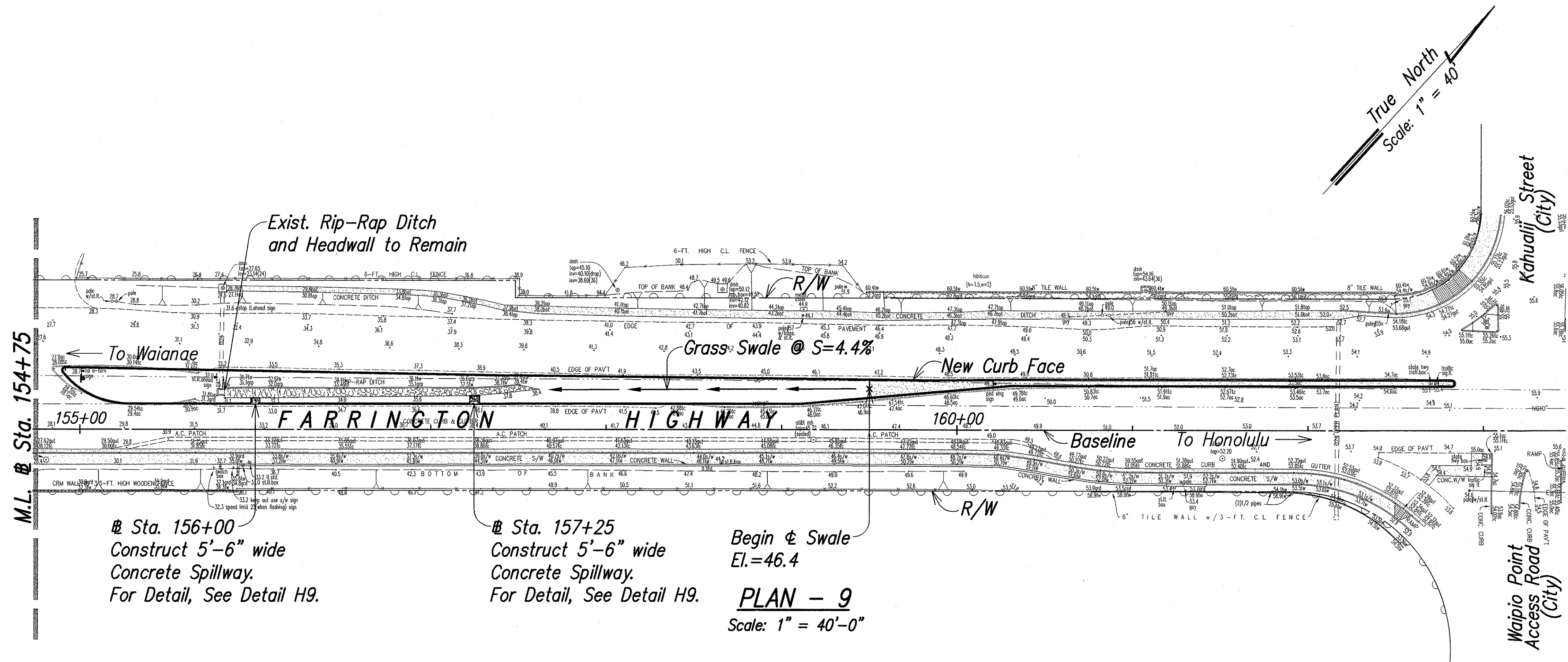
SHEET No. H4 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	C.O.27R	80



4/30/03	THIS SHEET REPLACES PREVIOUSLY APPROVED SHEET 27R. ADDED LATERAL AT STA. 139+40 (RT.), RELOCATING EXIST. METER AT STA. 150+15± (LT.) AND DELETE LATERAL AT STA. 154+40 (LT.)
9/30/02	ADDED NEW SHEET TO ADDRESS BWS COMMENTS
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DRAINAGE AND WATER PLAN-4	
FARRINGTON HIGHWAY LANDSCAPING Kamehameha Highway to Fort Weaver Road Project No. 7101A-01-98	
Scale: As Noted	Date: April 2002
SHEET NO. H5 OF 12 SHEETS	

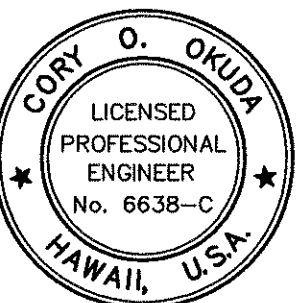
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	28	80



Begin & Swale
El.=46.4

PLAN - 9
Scale: 1" = 40'-0"

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



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dba PARK ENGINEERING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE AND WATER PLAN-5

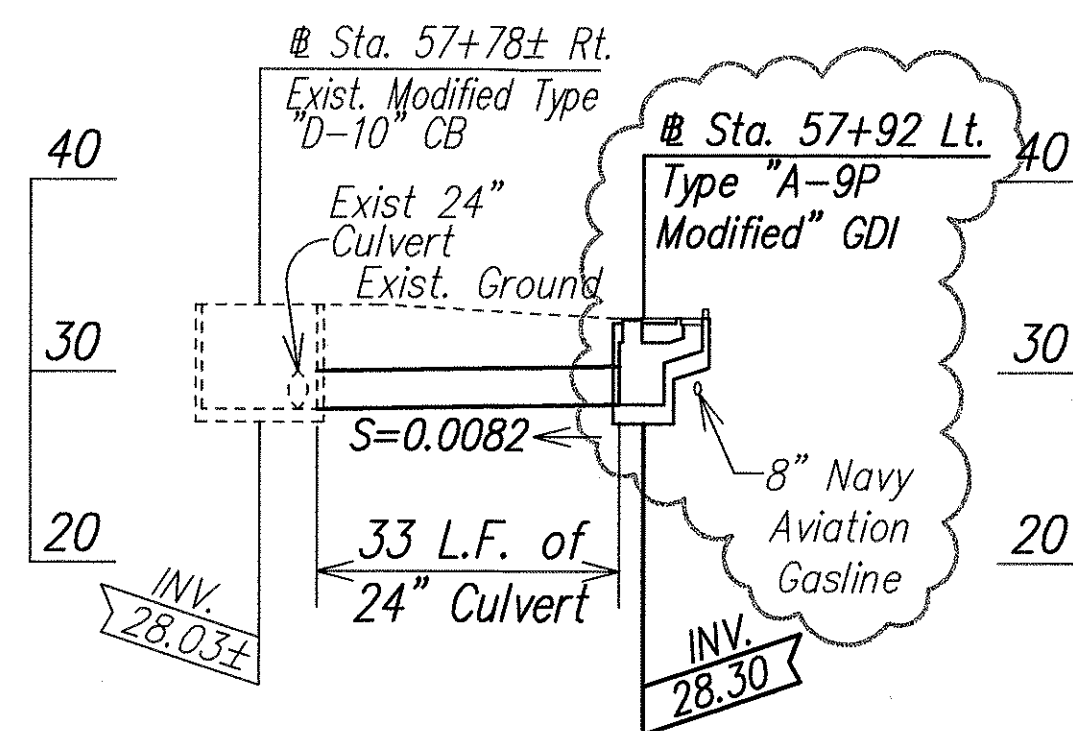
FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002
SHEET No. H6 OF 12 SHEETS

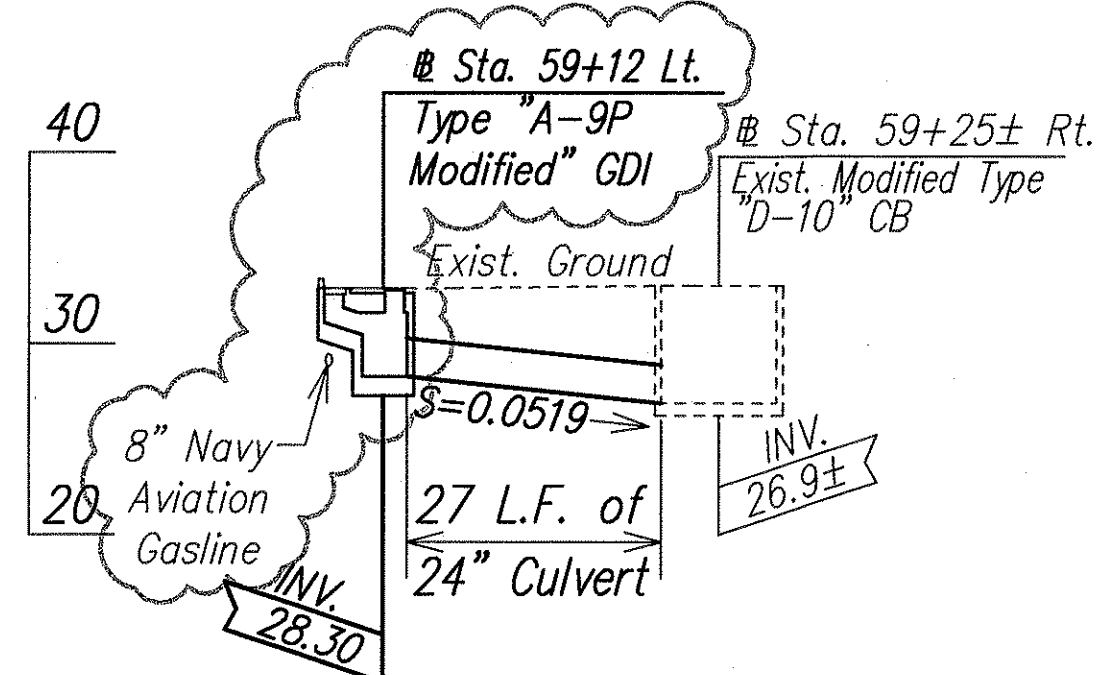
AS-BUILT

28

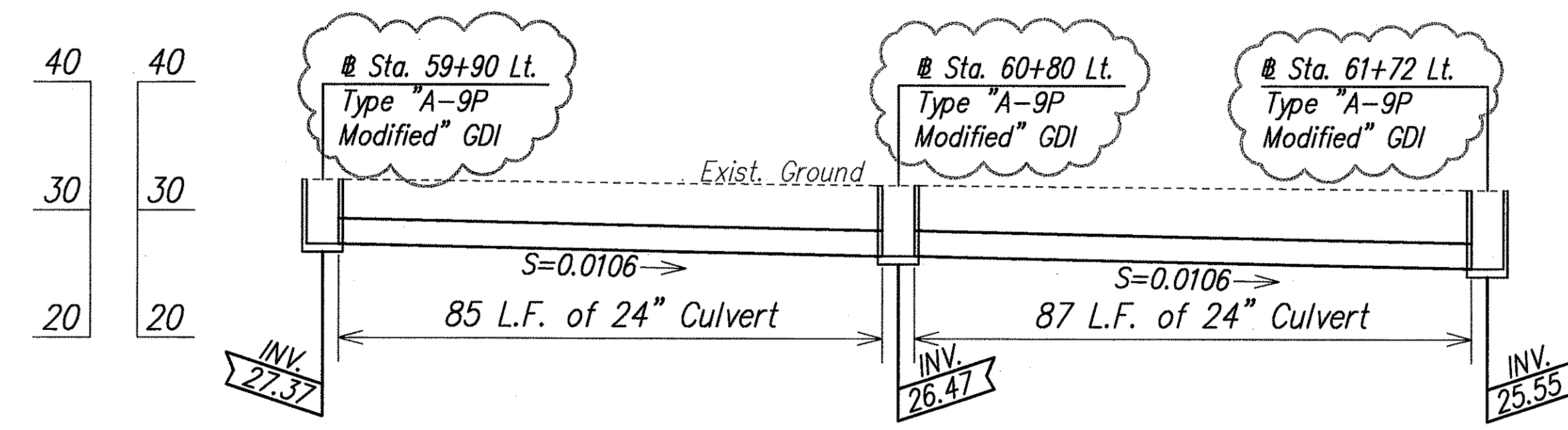
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	29	80



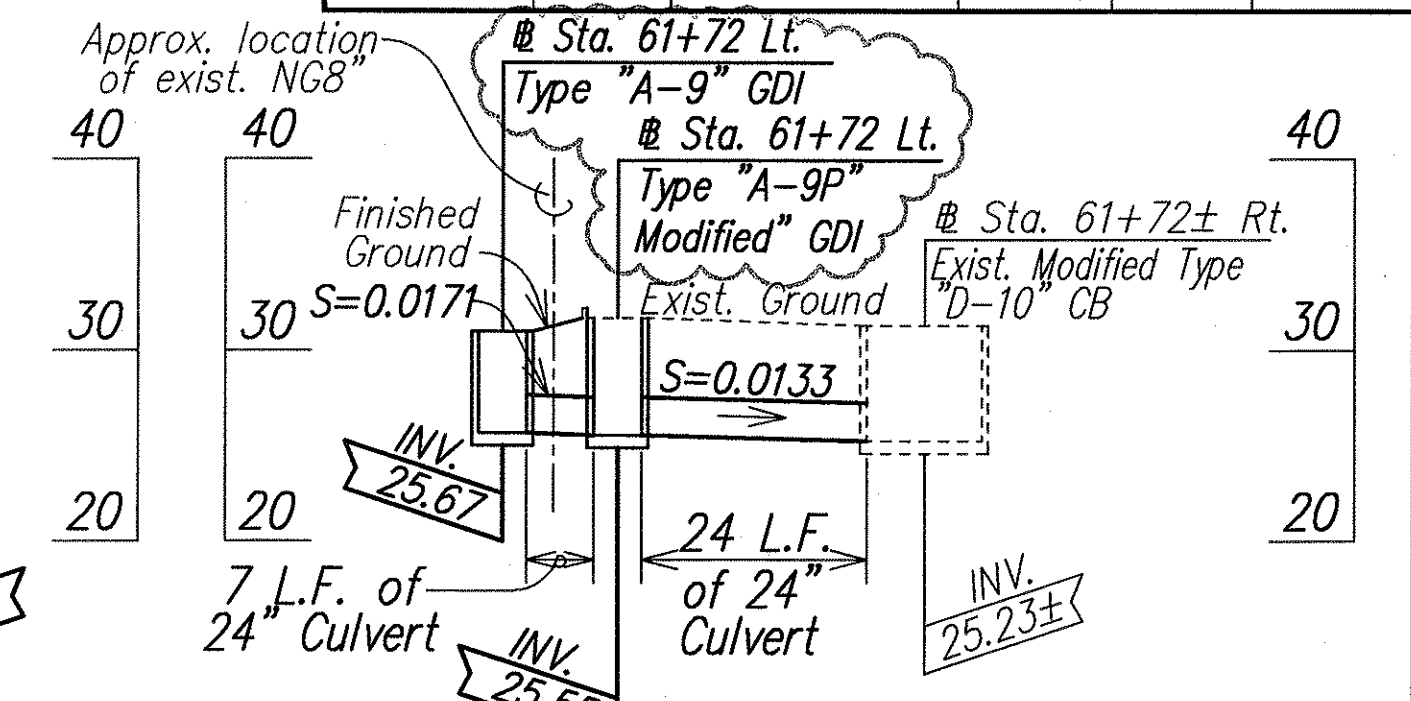
Profile - Farrington Highway
Sta. 57+78± Rt. to Sta. 57+92 Lt.
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



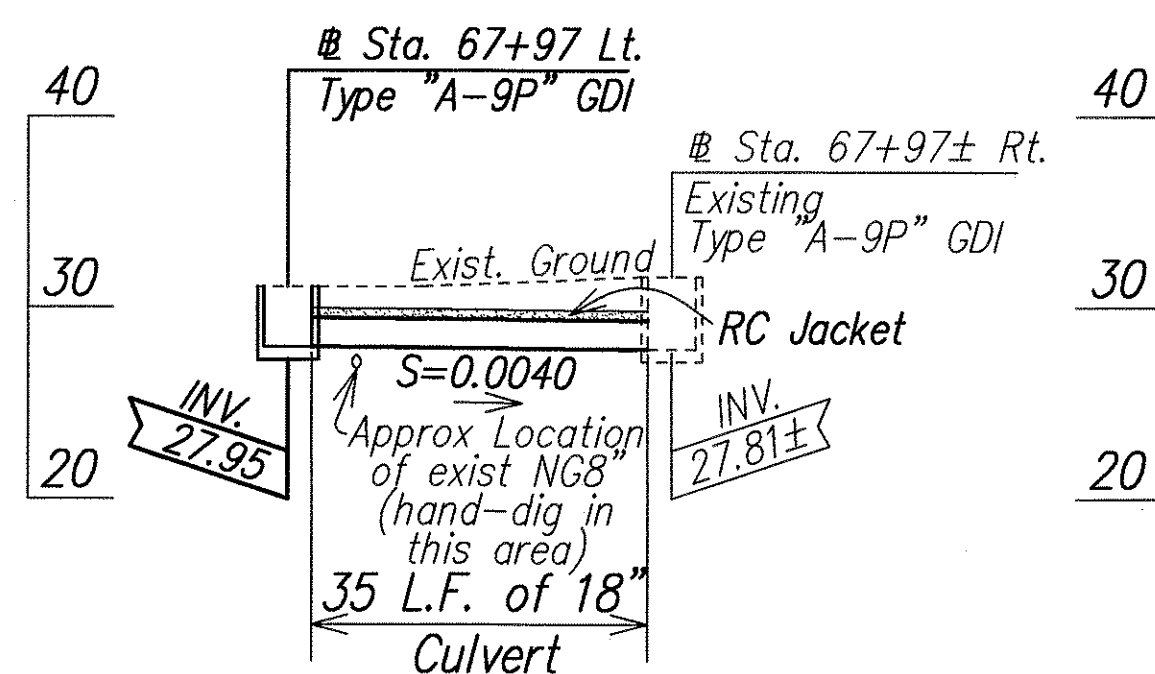
Profile - Farrington Highway
Sta. 59+12 Lt. to Sta. 59+25 Rt.
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



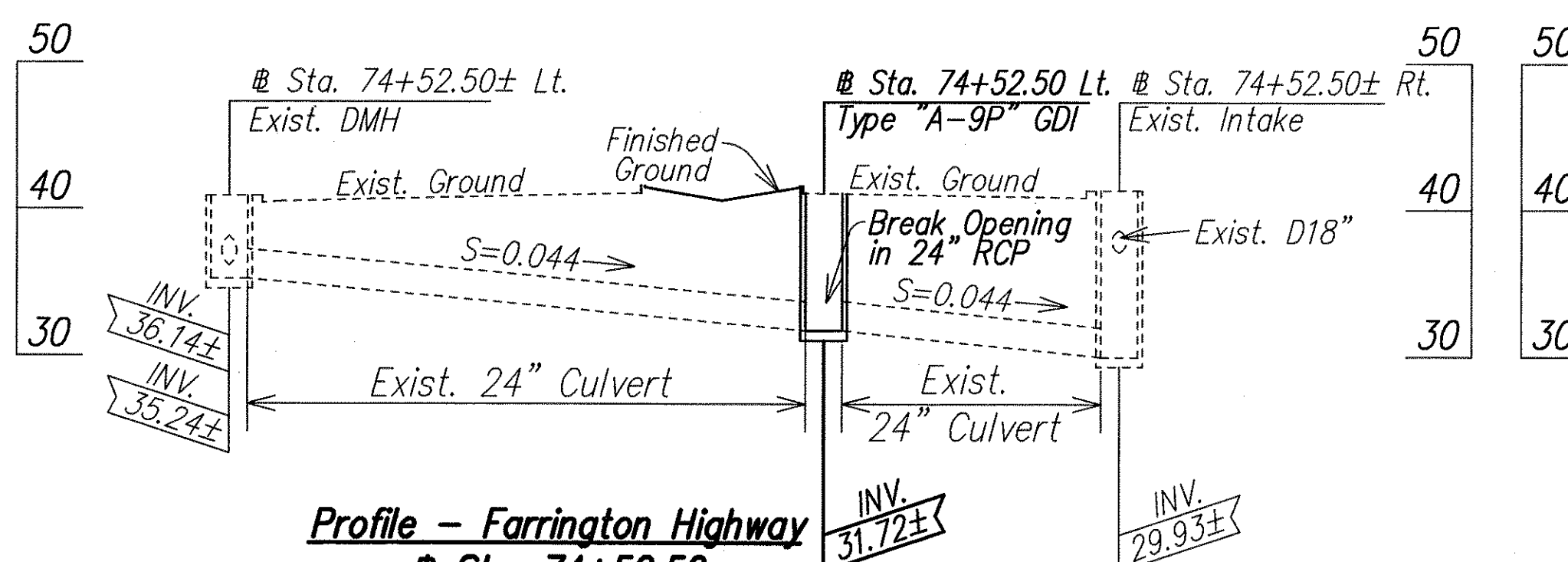
Profile - Farrington Highway
Sta. 59+90 Lt. to Sta. 61+72 Lt.
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



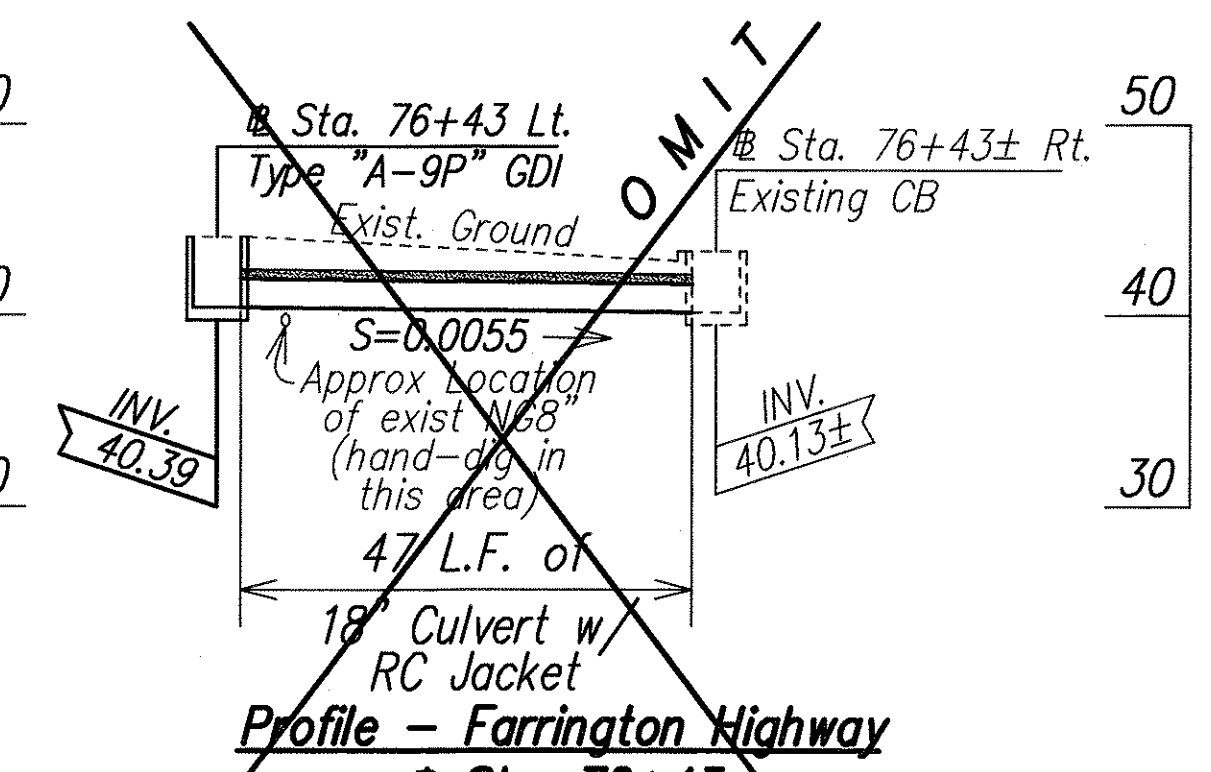
Profile - Farrington Highway
Sta. 61+72
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



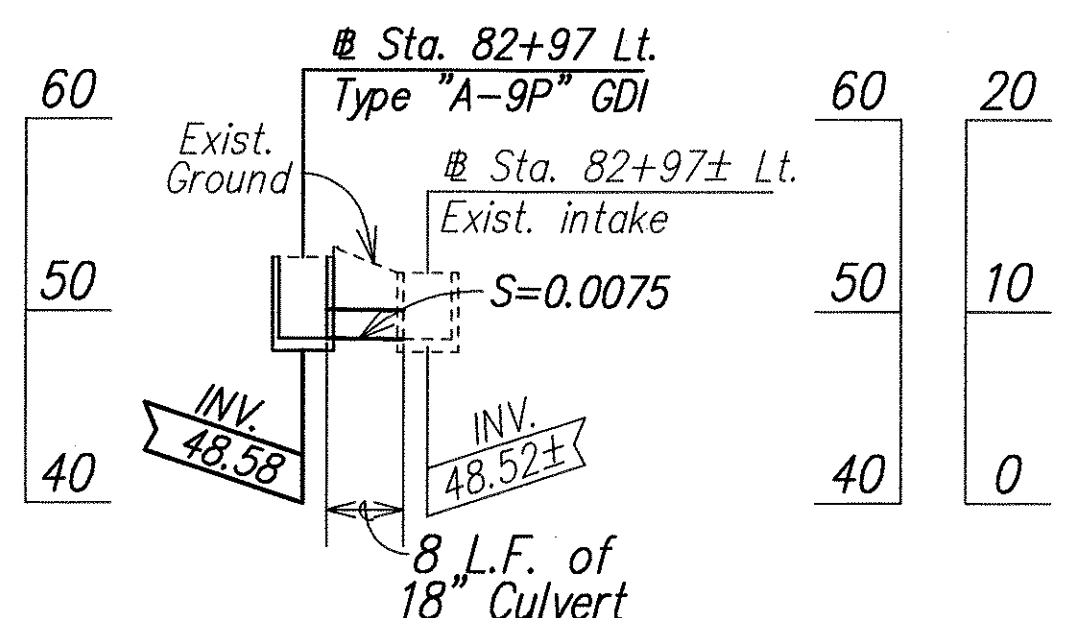
Profile - Farrington Highway
Sta. 67+97
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



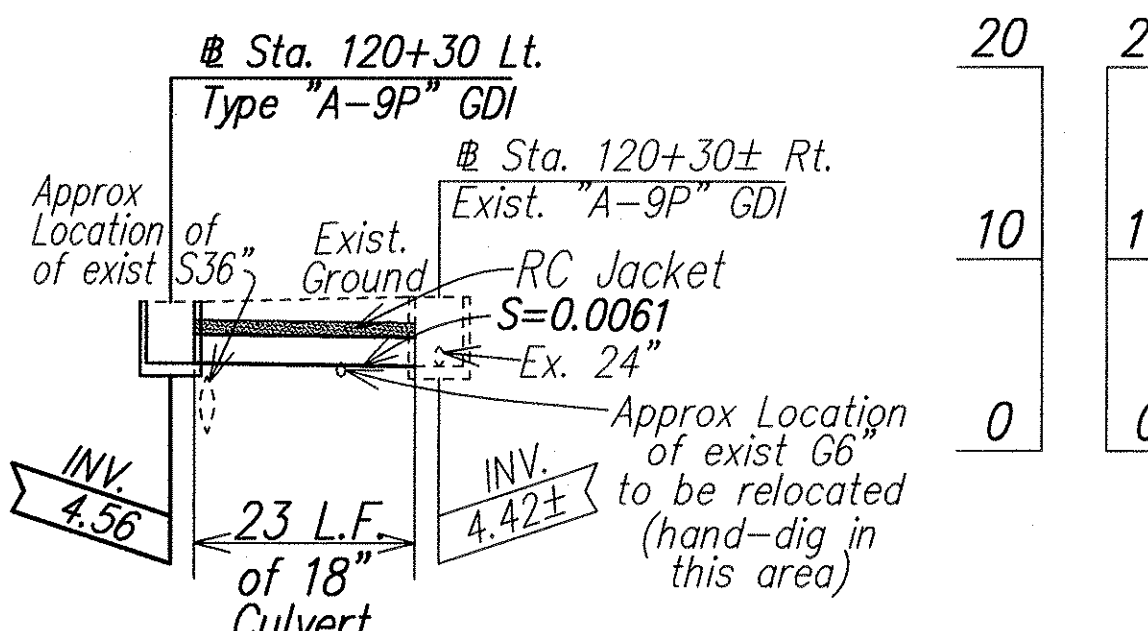
Profile - Farrington Highway
Sta. 74+52.50
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



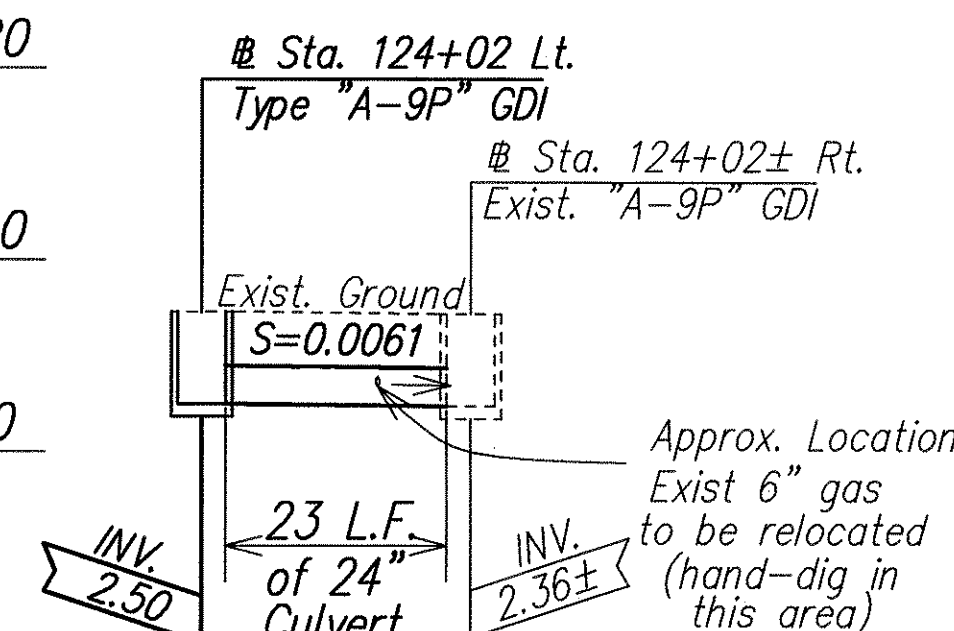
Profile - Farrington Highway
Sta. 76+43
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



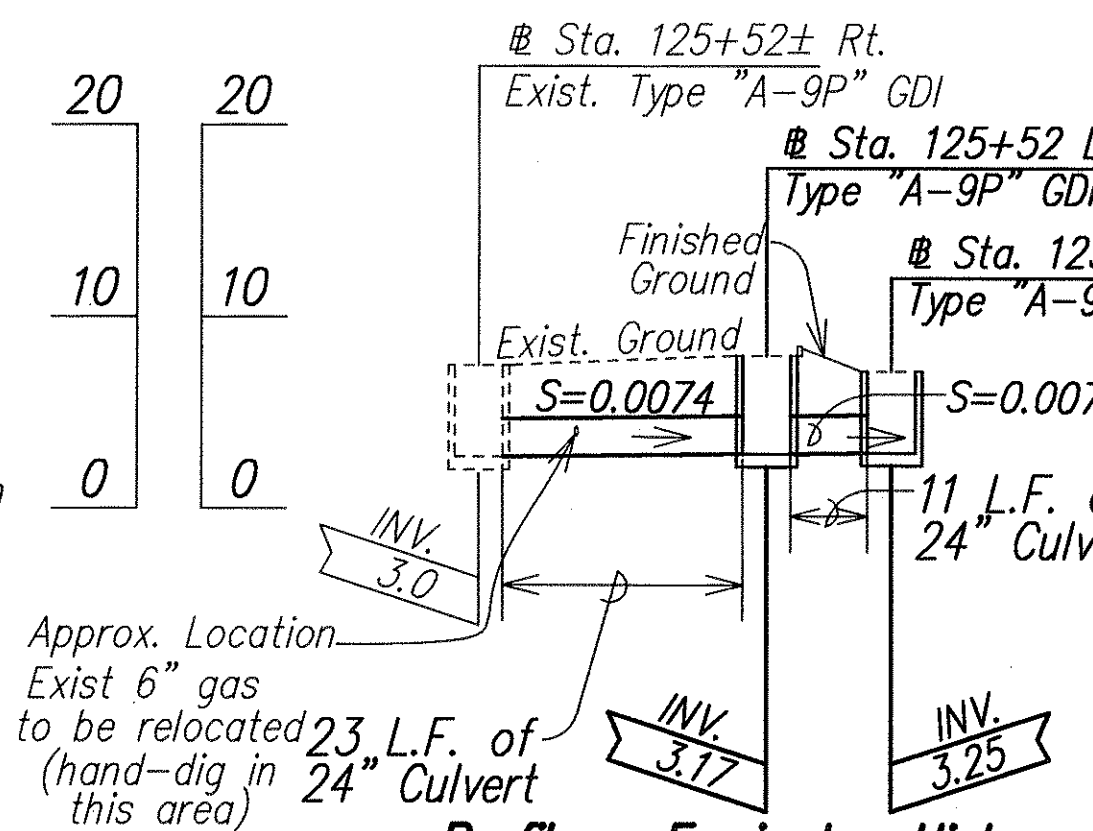
Profile - Farrington Highway
Sta. 82+97
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



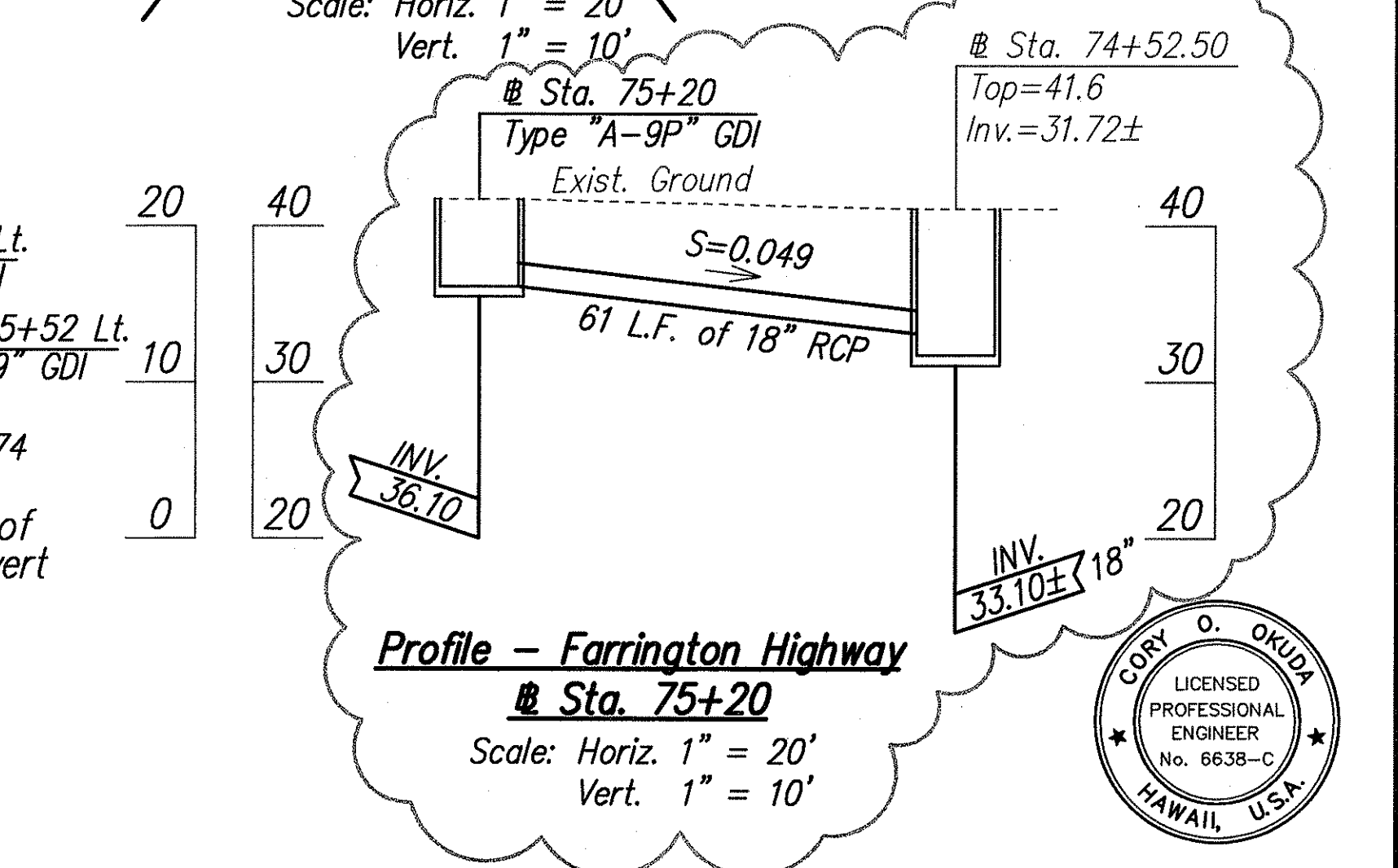
Profile - Farrington Highway
Sta. 120+30
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



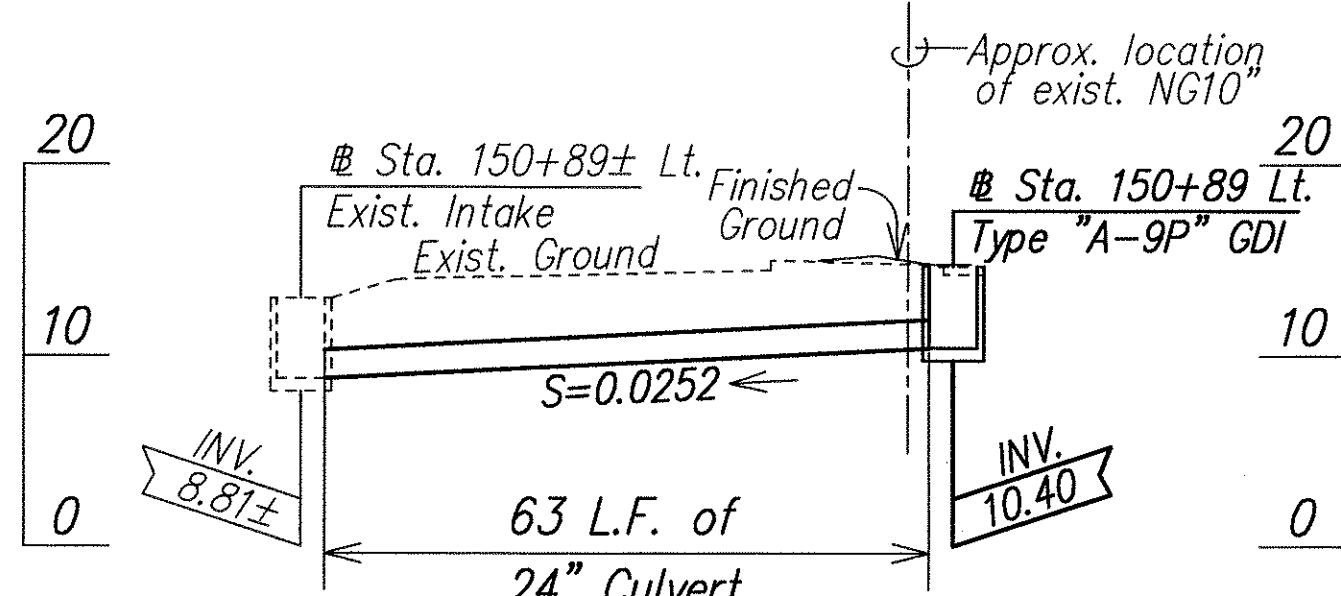
Profile - Farrington Highway
Sta. 124+02
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



Profile - Farrington Highway
Sta. 125+52 (Rt.)
Scale: Horiz. 1" = 20'
Vert. 1" = 10'

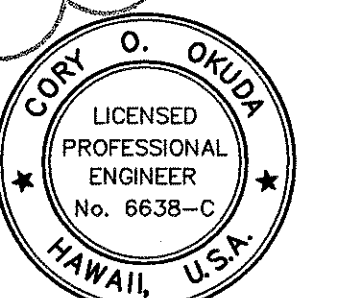


Profile - Farrington Highway
Sta. 75+20
Scale: Horiz. 1" = 20'
Vert. 1" = 10'



Profile - Farrington Highway
Sta. 150+89
Scale: Horiz. 1" = 20'
Vert. 1" = 10'

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



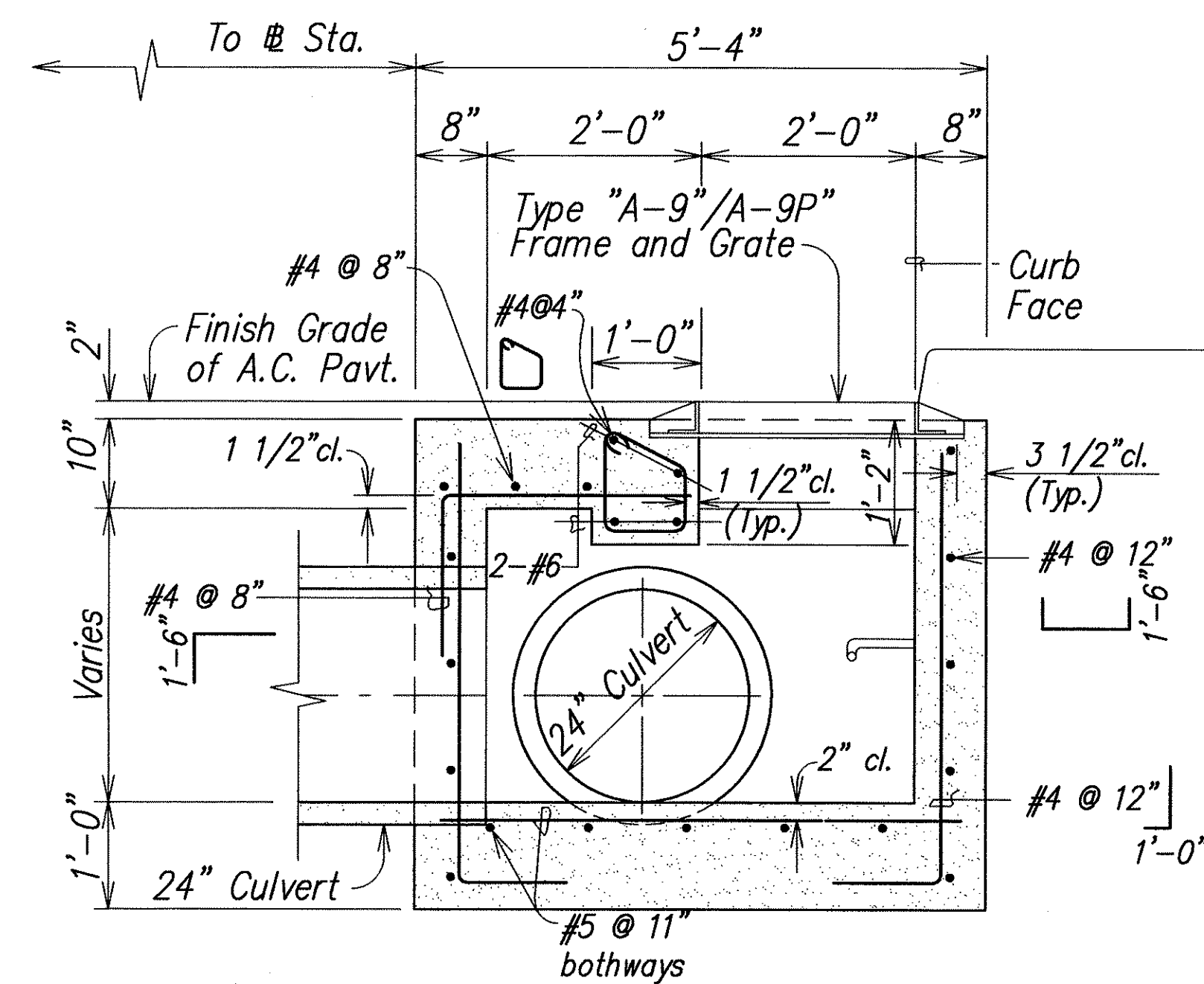
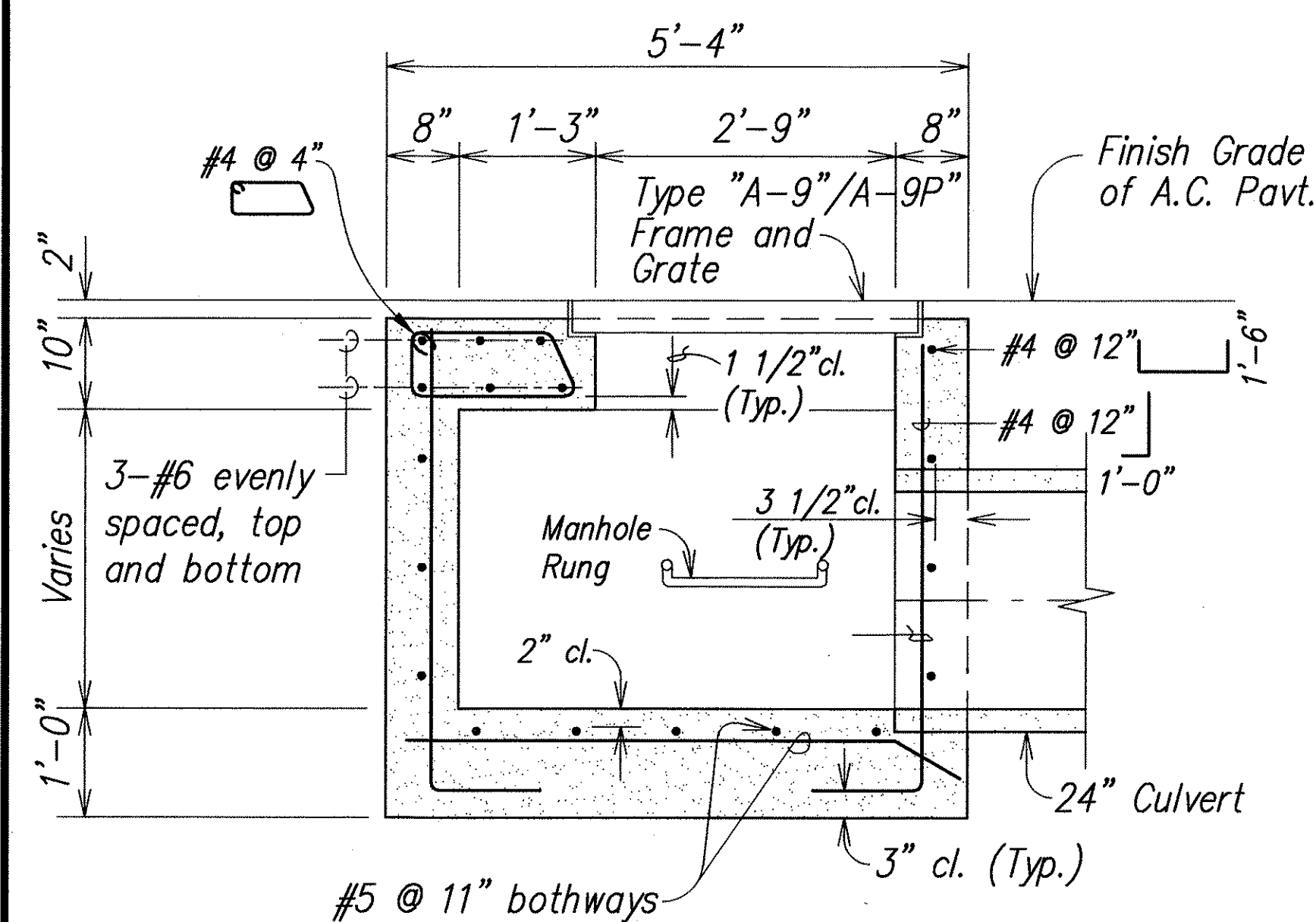
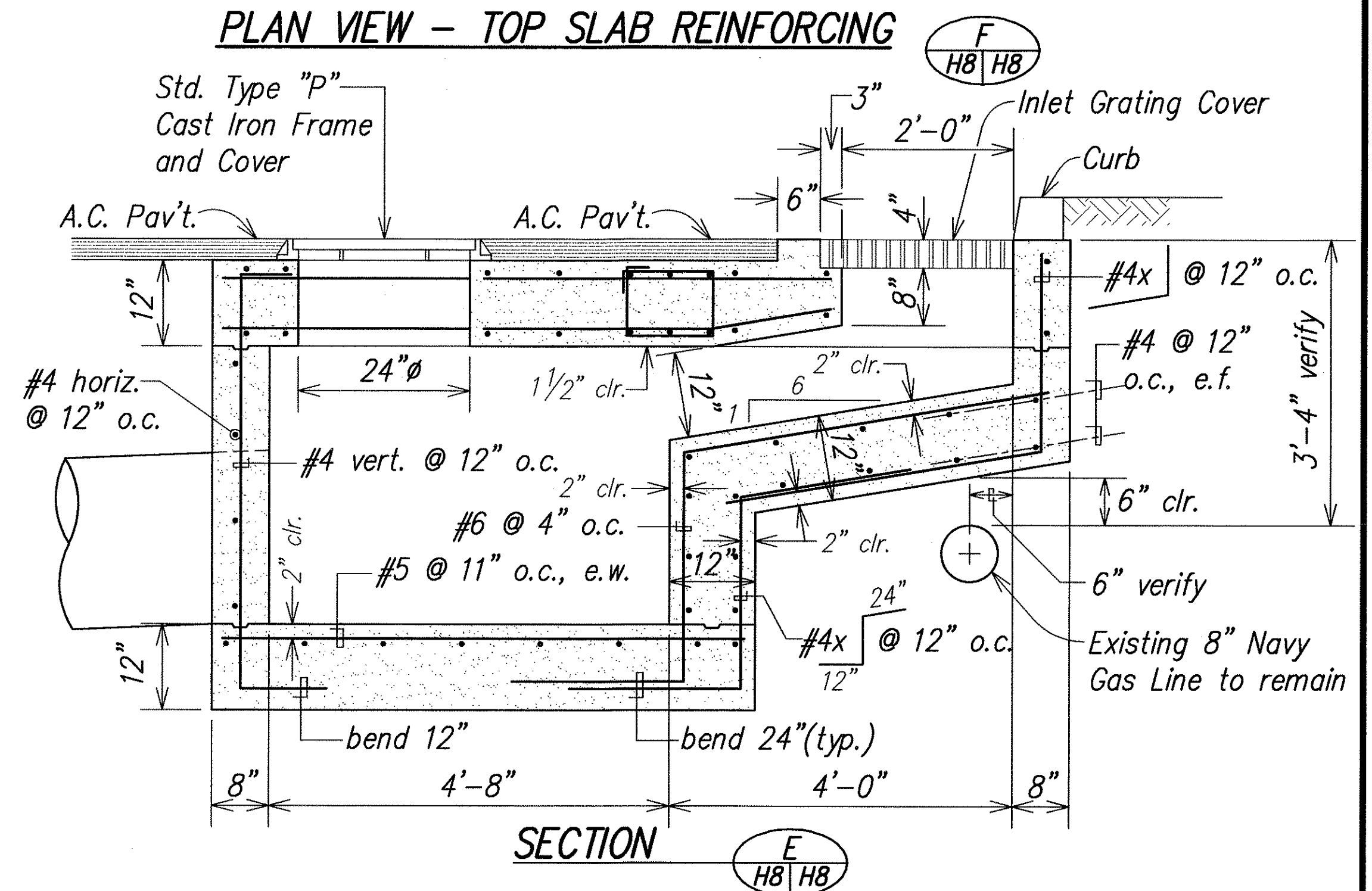
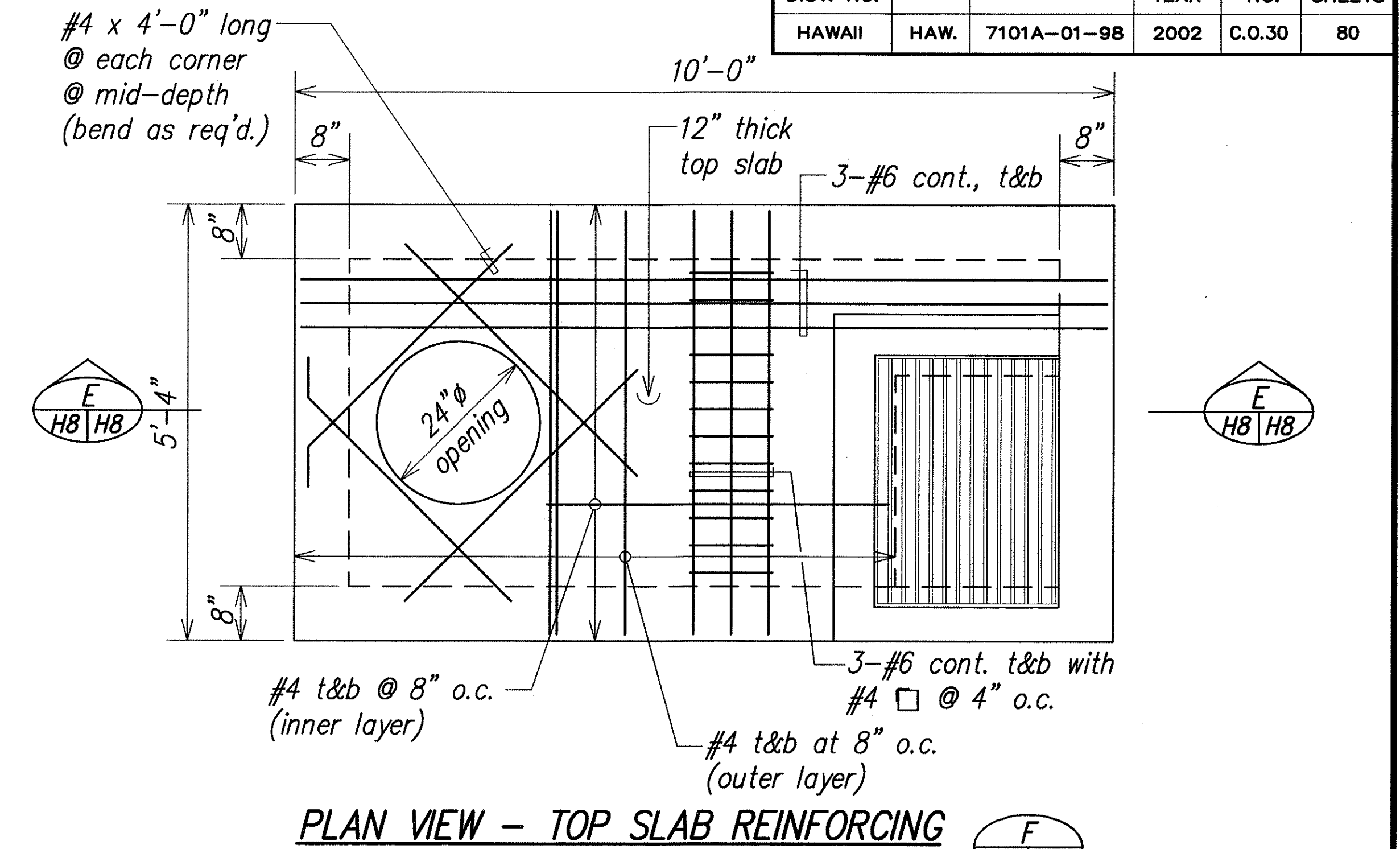
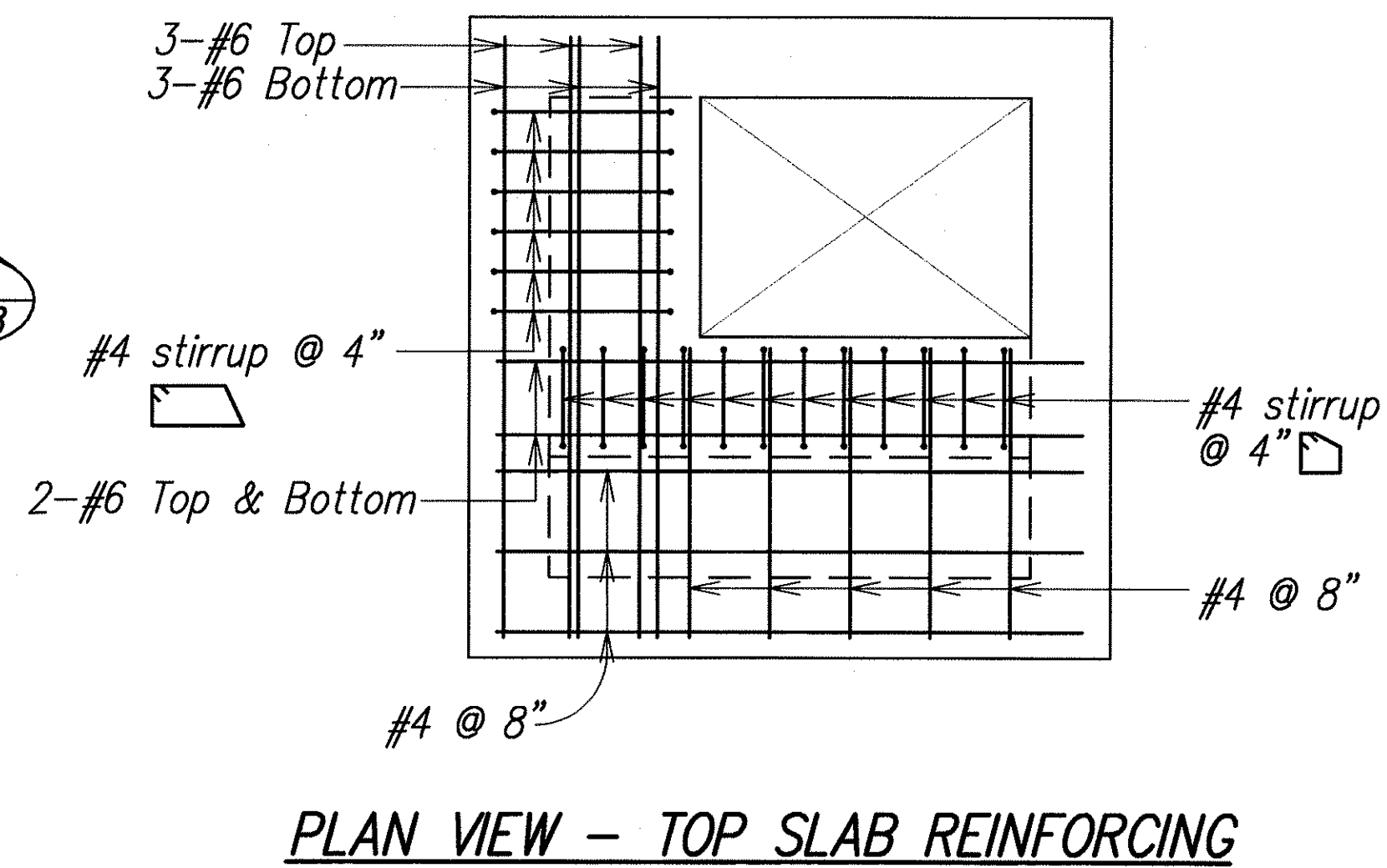
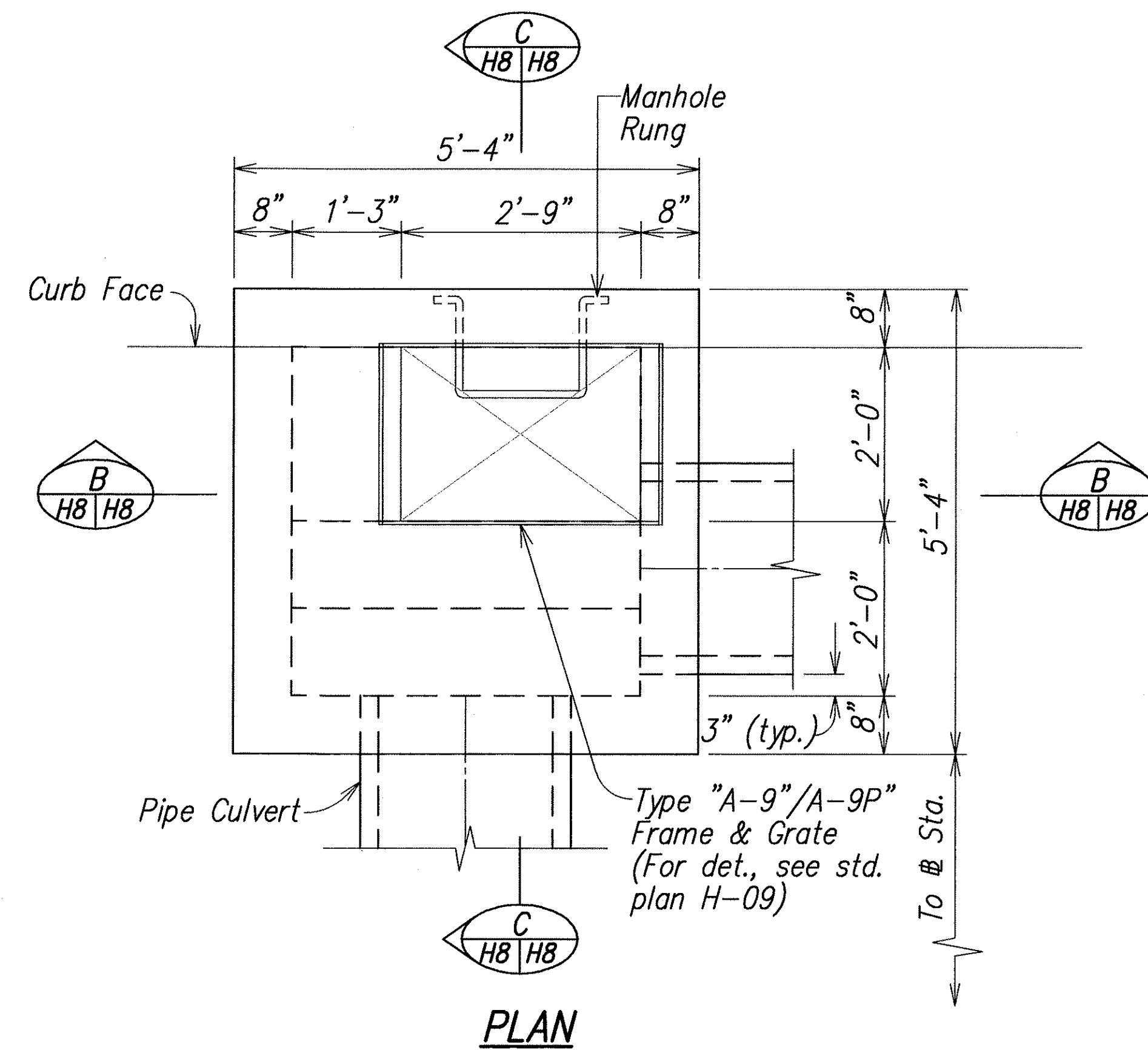
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dba PARK ENGINEERING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PROFILES

FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002
SHEET No. H7 OF 12 SHEETS



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

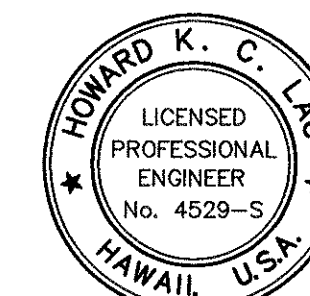
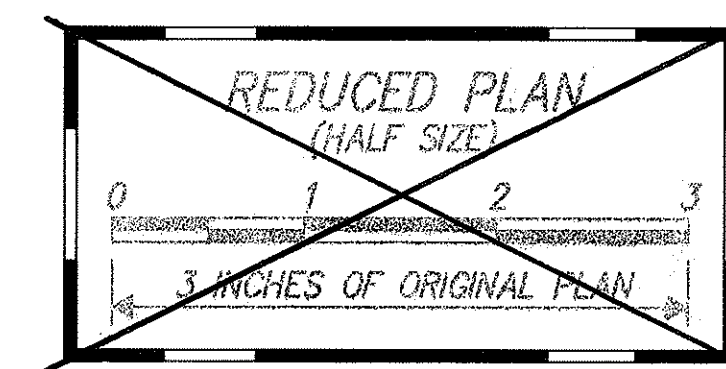
SECTION B
H8 | H8

SECTION C

TYPICAL DETAILS OF TYPE "A-9" AND "A-9P" GRATED DROP INLET

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

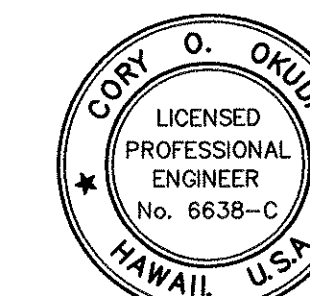
H2, H3, H4, H5



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SHIGEMURA, LAU, SAKANASHI
HIGUCHI AND ASSOCIATES, INC.
License Expires 4/30/04

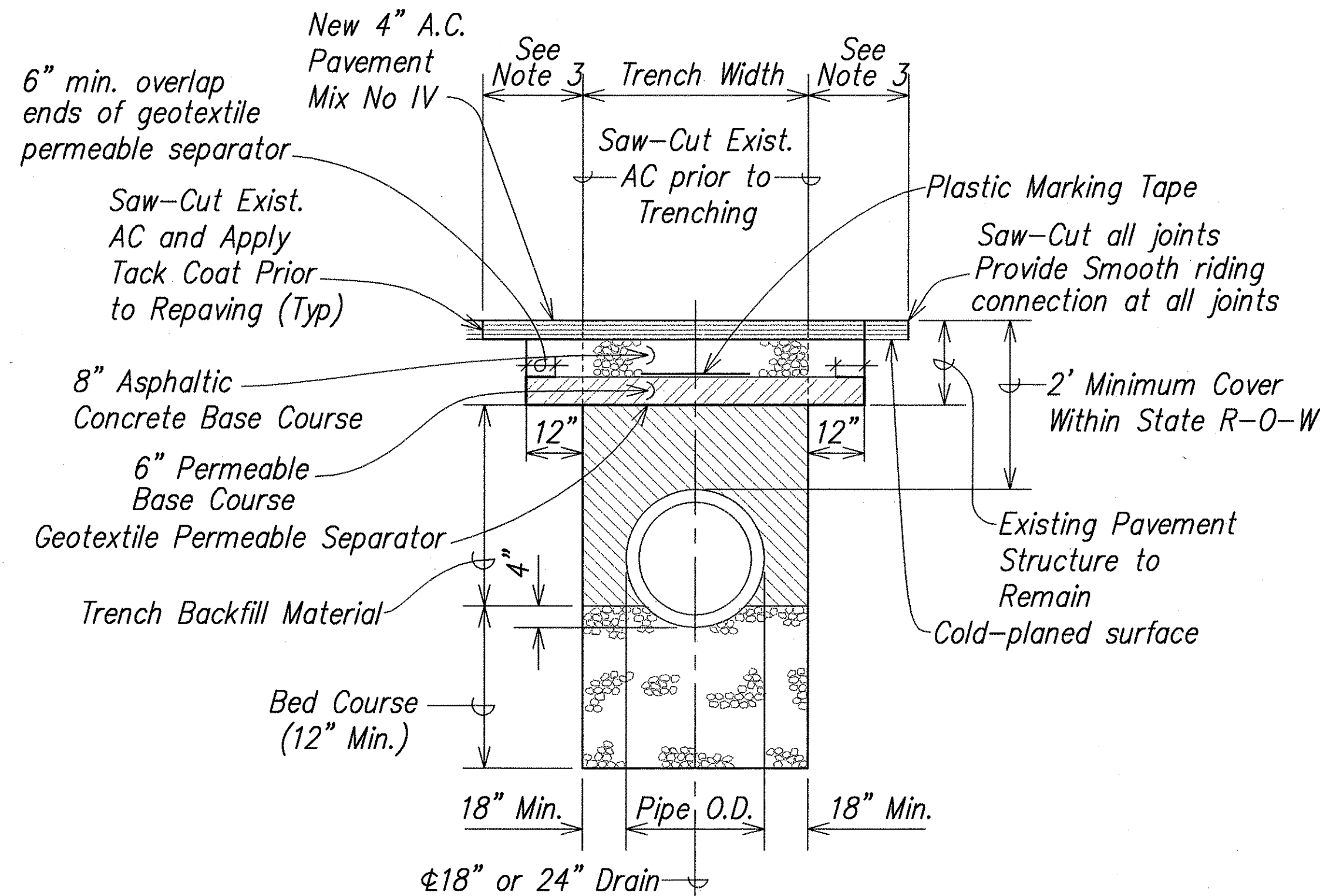


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ParEn, Inc.
dba PARK ENGINEERING
License Expires 4/30/0

4/30/03	THIS SHEET REPLACES SHEET 30. ADDED DETAILS FOR MODIFIED DRAIN INLET.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION <u><i>DRAINAGE DETAILS - 1</i></u> <u><i>FARRINGTON HIGHWAY LANDSCAPING</i></u> <u><i>Kamehameha Highway to Fort Weaver Road</i></u> <u><i>Project No. 7101A-01-98</i></u> <i>Scale: As Noted</i> <i>Date: April 2002</i>	
SHEET No. <i>H8</i> OF 12 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	31	80

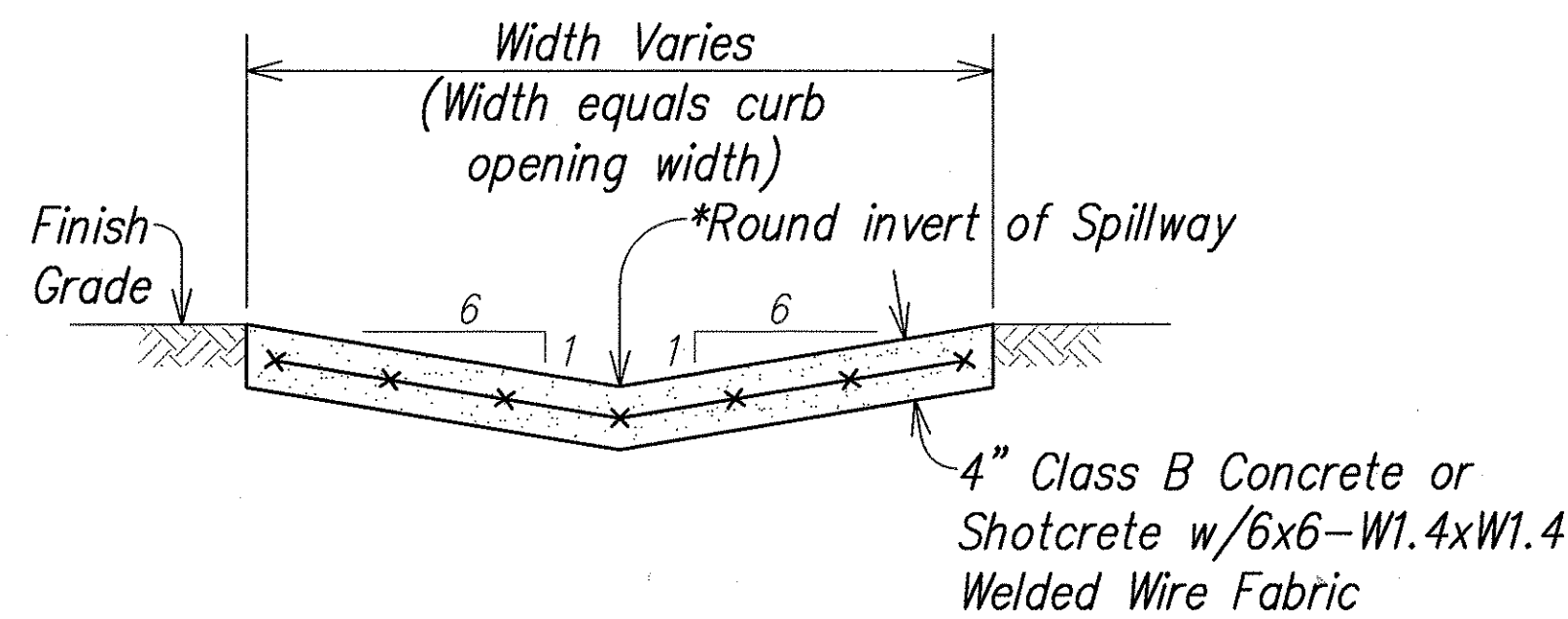


**Typical Trench Restoration Detail
Within State Highway Right of Way**

Not To Scale

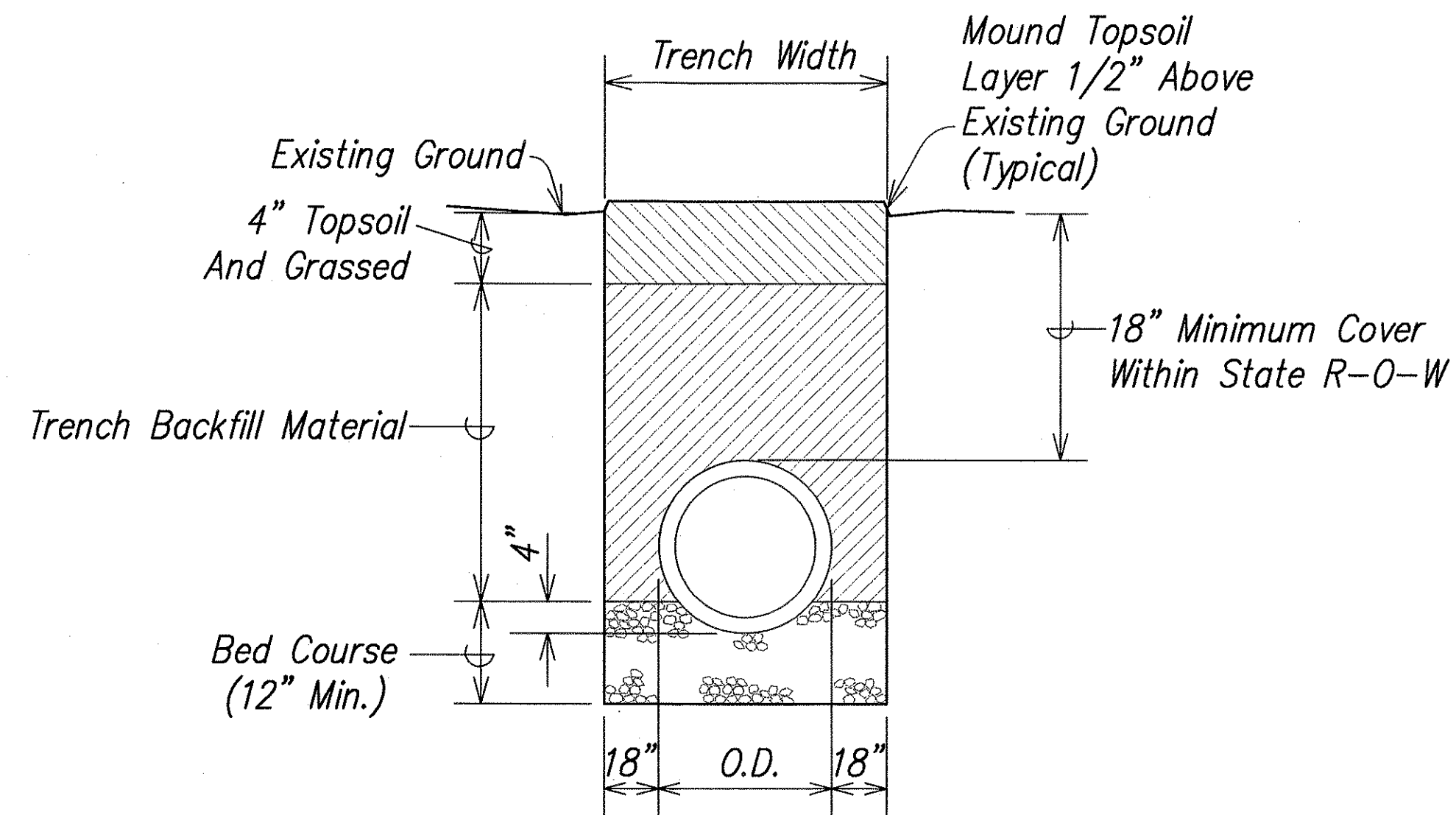
Note:

1. Provide Pavement Structure as shown, or match existing, whichever is greater.
2. @ 122+00 to @161+00 : 12" Aggregate Subbase Course
3. For trenches aligned along the longitudinal direction of the roadway or skewed at angle of less than 45 degrees to the longitudinal direction of the roadway, restore the roadway surface for the full lane width. For trenches aligned transverse to the longitudinal direction of the roadway or skewed at angles of 45 degrees or greater to the longitudinal direction of the roadway, restore the pavement surface for a minimum of 6 feet away from the edges of the trench.



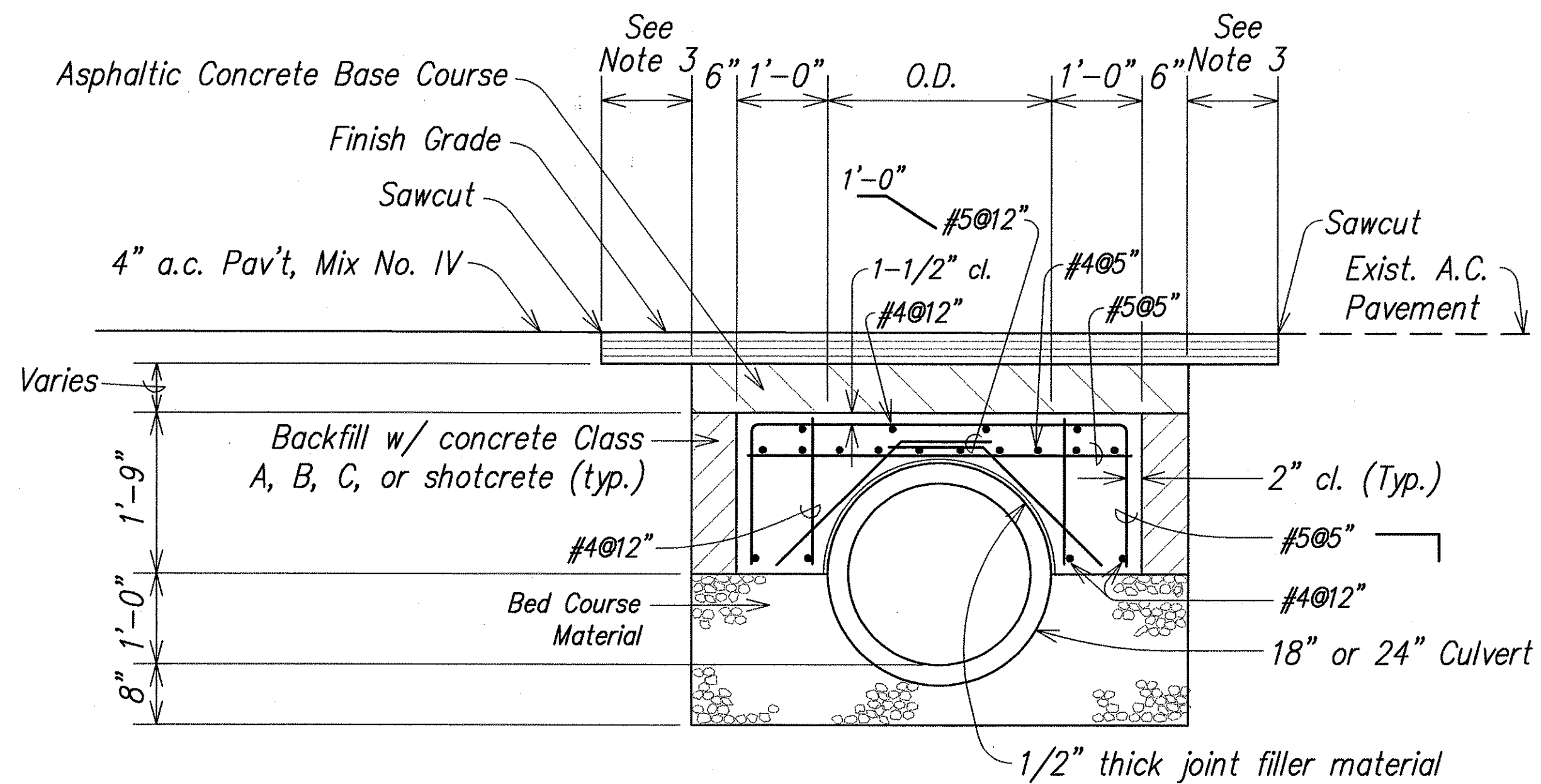
Concrete Spillway Detail

Not To Scale



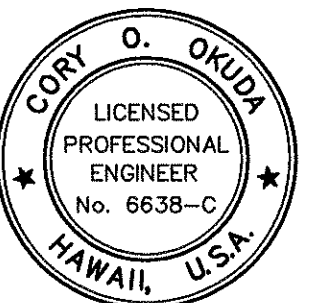
**Typical Grassed Area Trench Restoration Detail
Within State Highway Right of Way**

Not To Scale



**Typical Details Of Culvert Trench Restoration
With Reinforced Concrete Jacket**

Not To Scale



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Cory O. Okuda

aka PARK ENGINEERING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS - 2

FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002

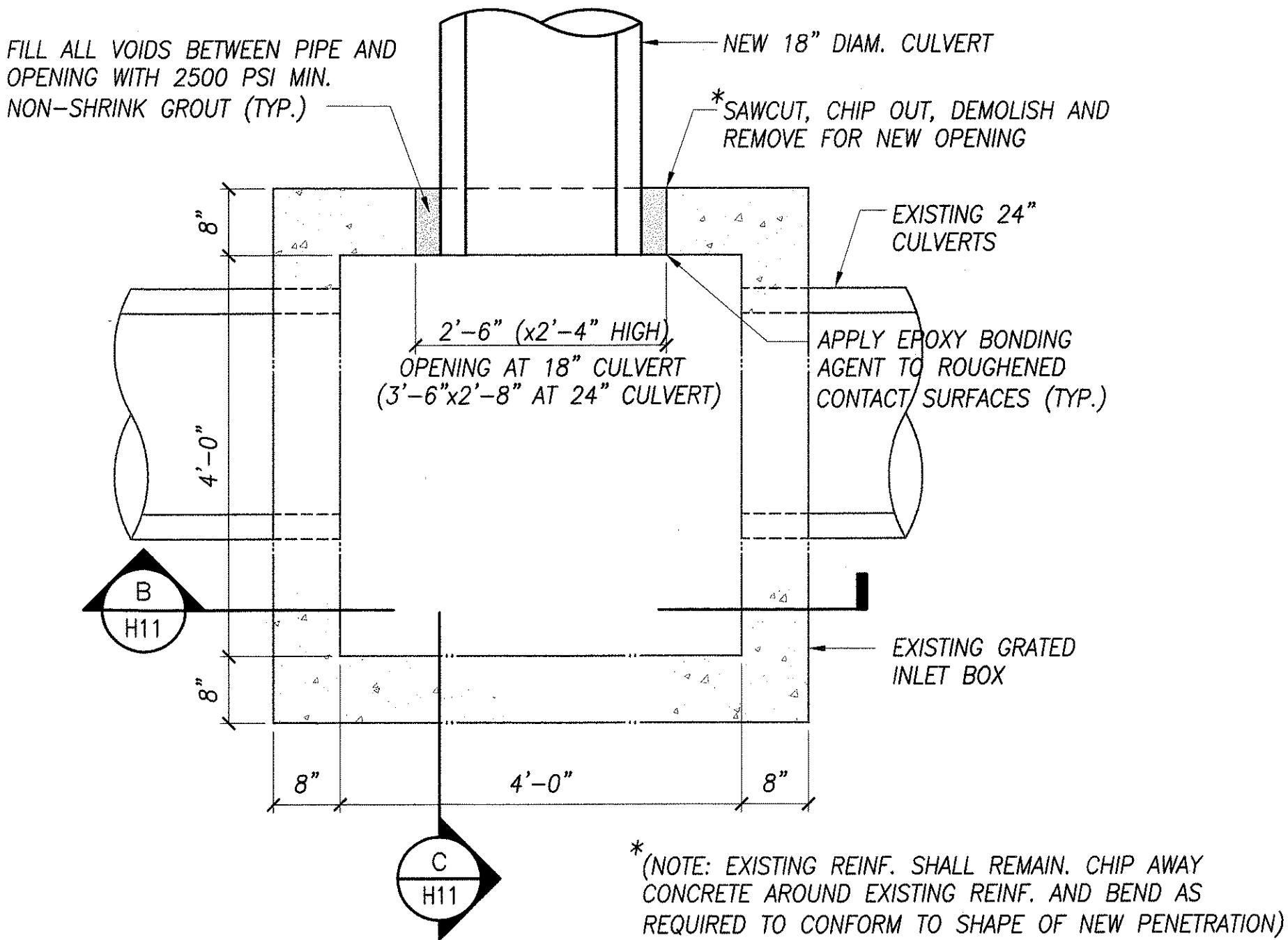
SHEET No. H9 OF 12 SHEETS

AS-BUILT

31

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

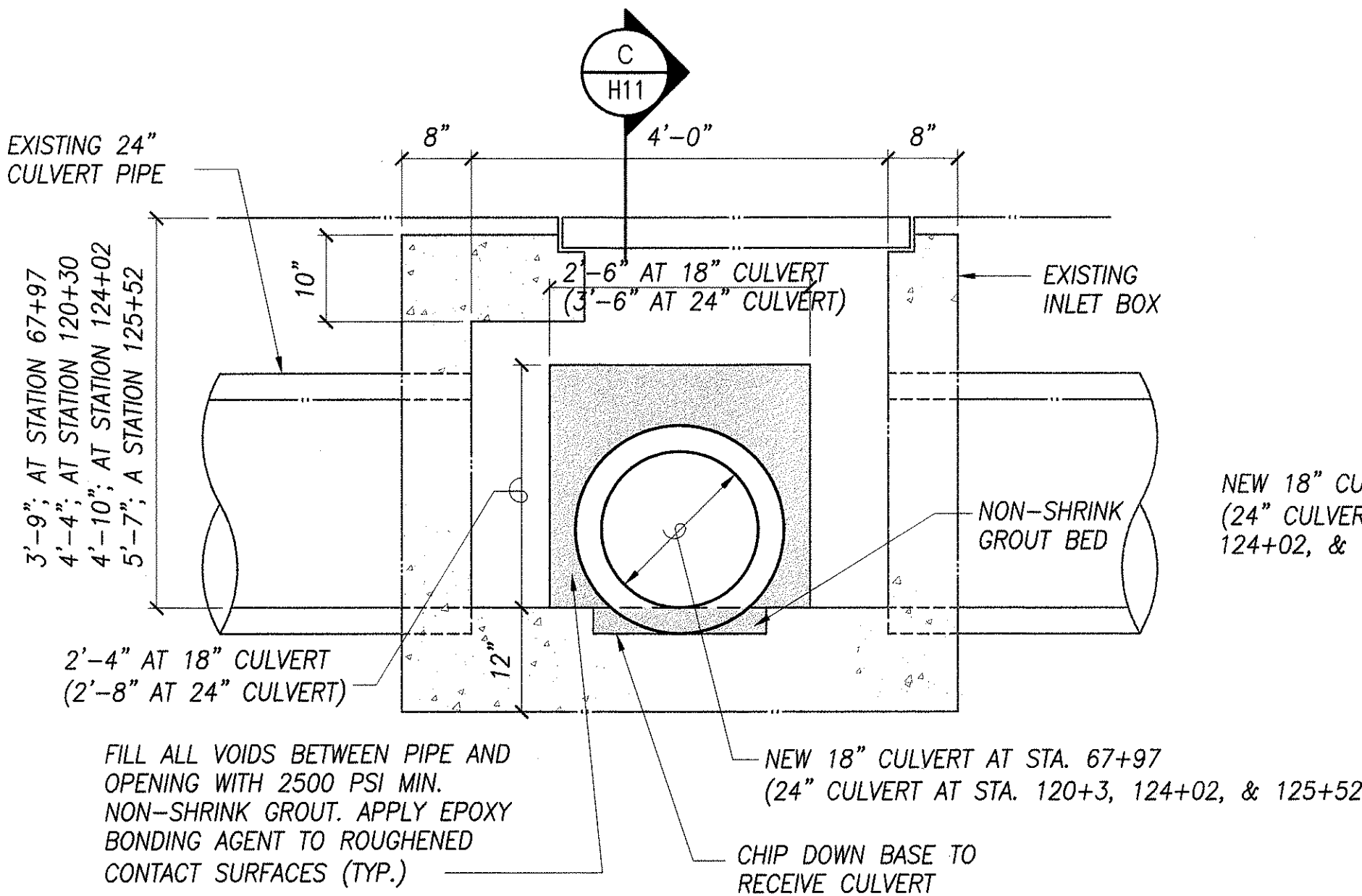
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	33	80



PLAN DET. AT 18" & 24" CULVERT PENET. AT "A-9P" GRATED DROP INLET AT STAS. 67+97, 120+30, 124+02, & 125+52

A
H11

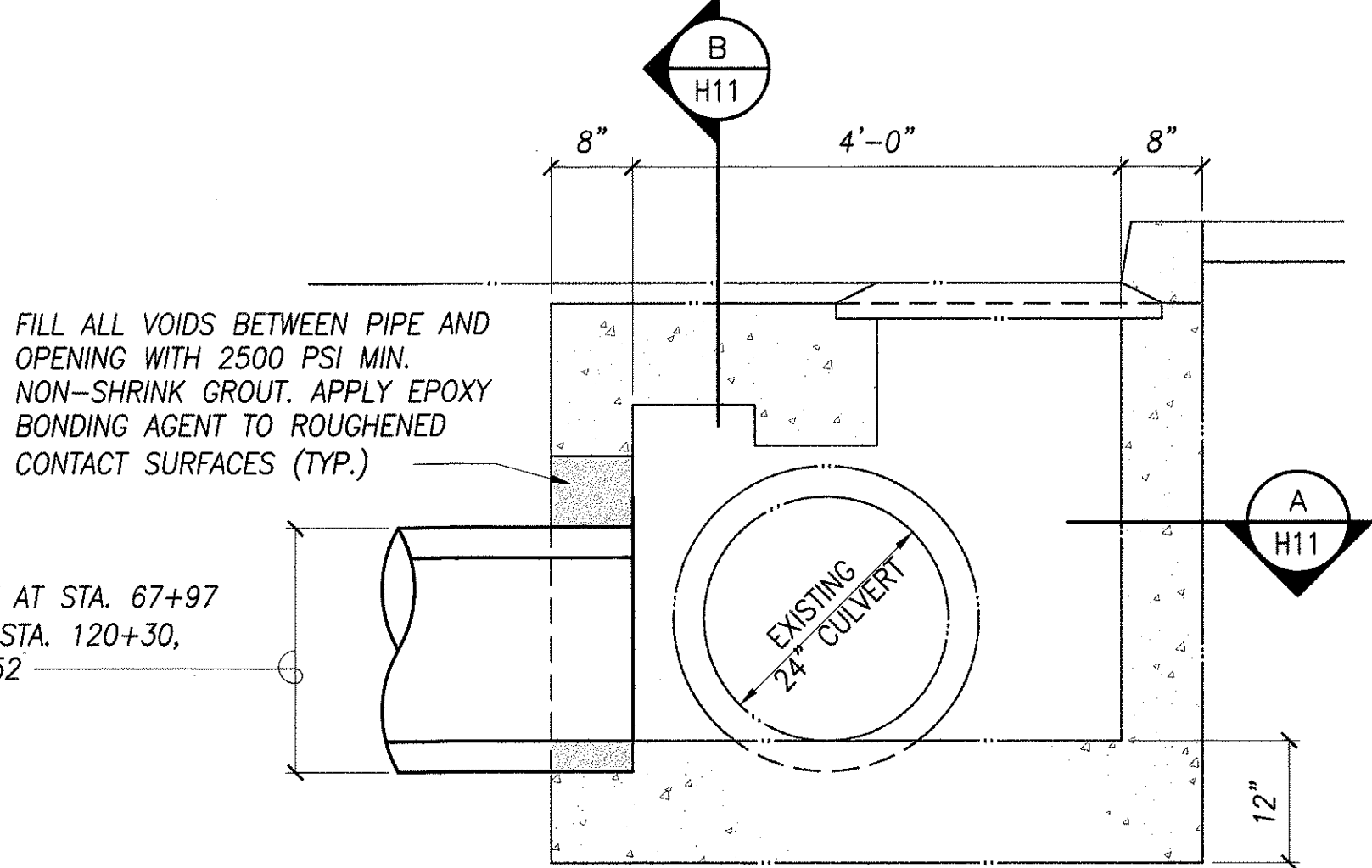
SCALE: 3/4" = 1'-0"



NEW PENET. DET. FOR 18" CULVERT AT EXISTING "A-9P" GRATED DROP INLET AT STA. 67+97, 120+30, 124+02, & 125+52

B
H11

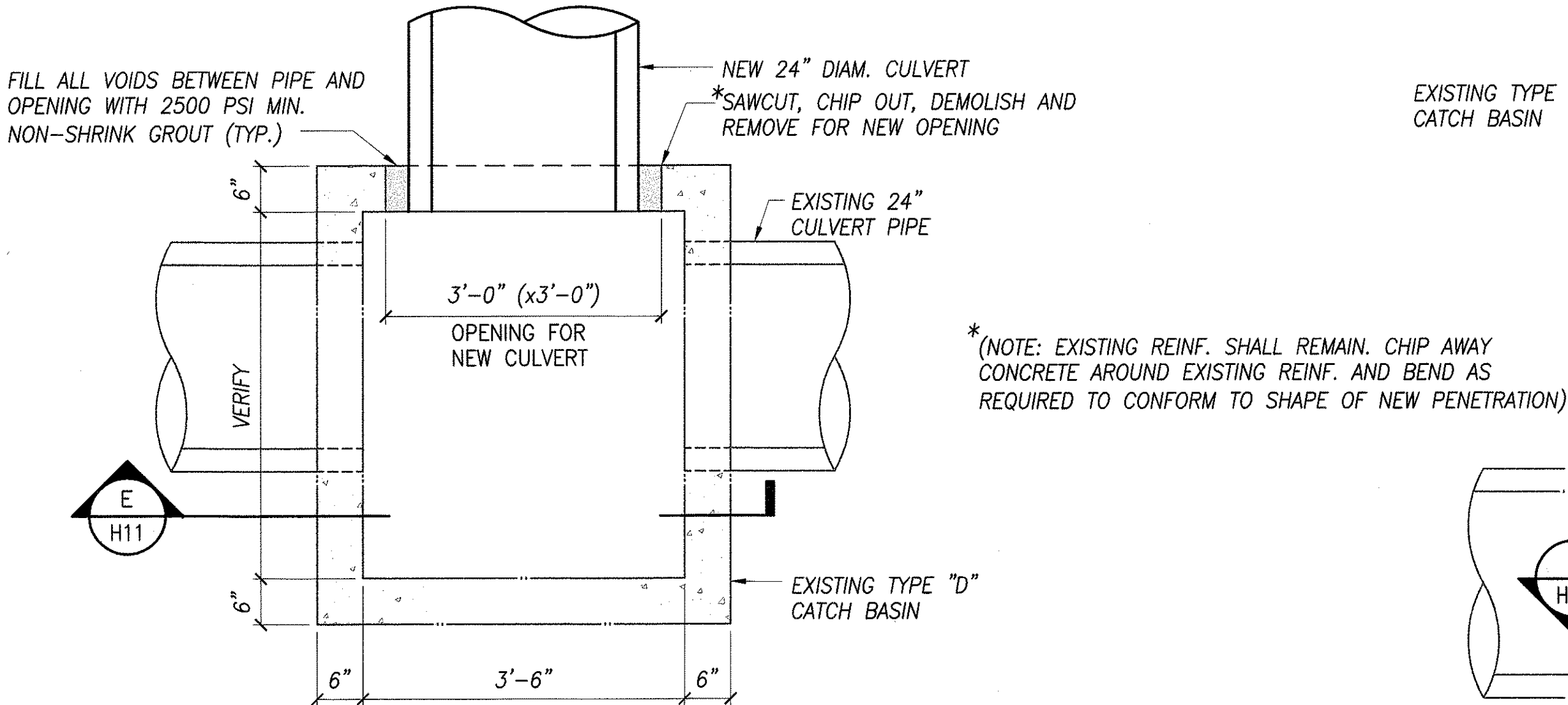
SCALE: 3/4" = 1'-0"



NEW PENET. DETAIL FOR 18" CULVERT AT EXISTING "A-9P" GRATED DROP INLET AT STATION 67+97, 120+30, 124+02, 125+52

C
H11

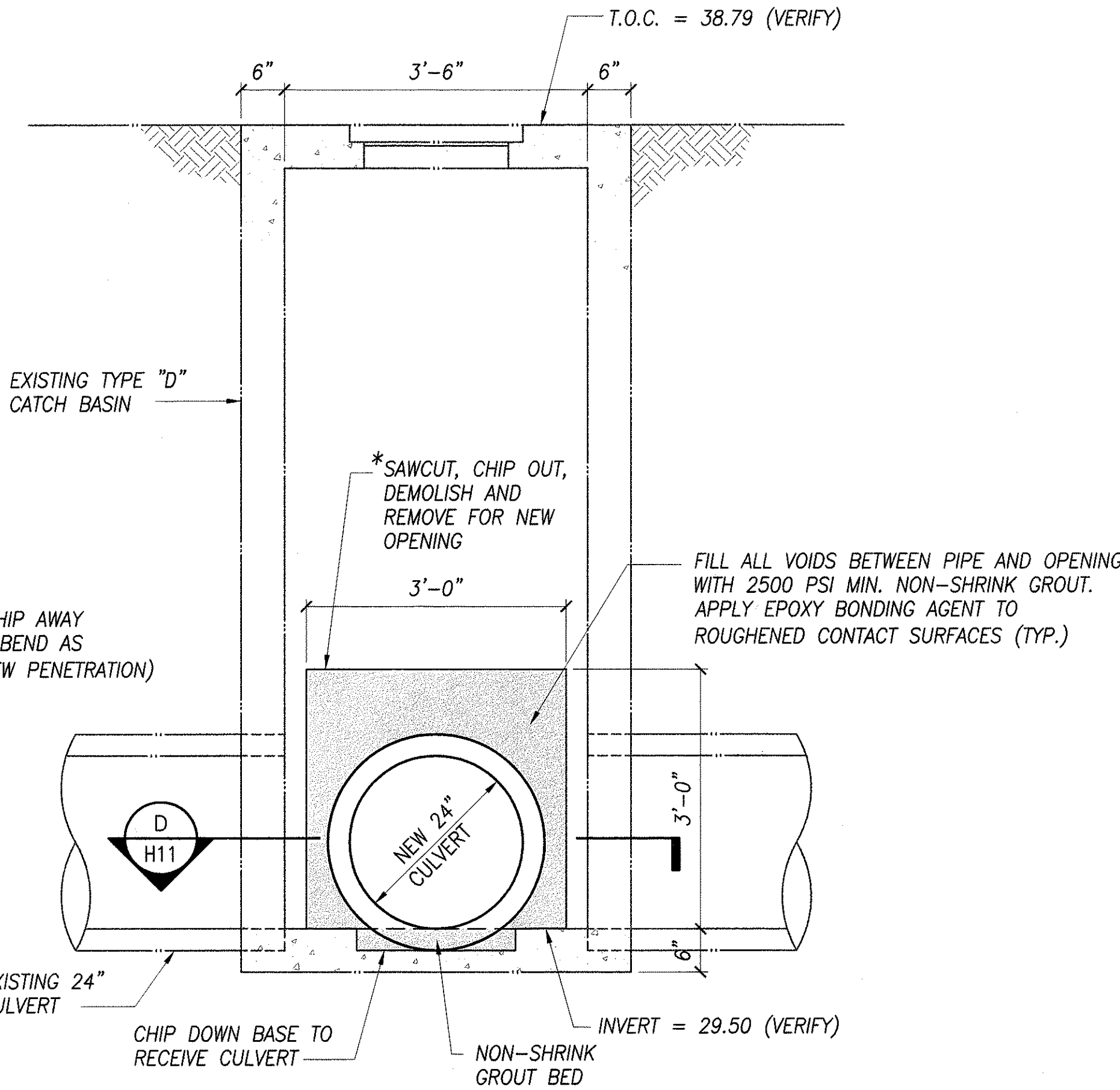
SCALE: 3/4" = 1'-0"



PLAN VIEW DETAIL AT 24" CULVERT PIPE PENETRATION AT EXISTING TYPE "D" CATCH BASIN AT STATION 72+80

D
H11

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

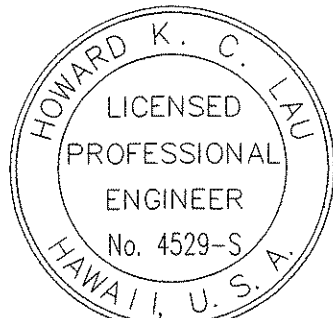


NEW PENETRATION DETAIL AT EXISTING TYPE "D" CATCH BASIN AT STATION 72+80

E
H11

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

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	

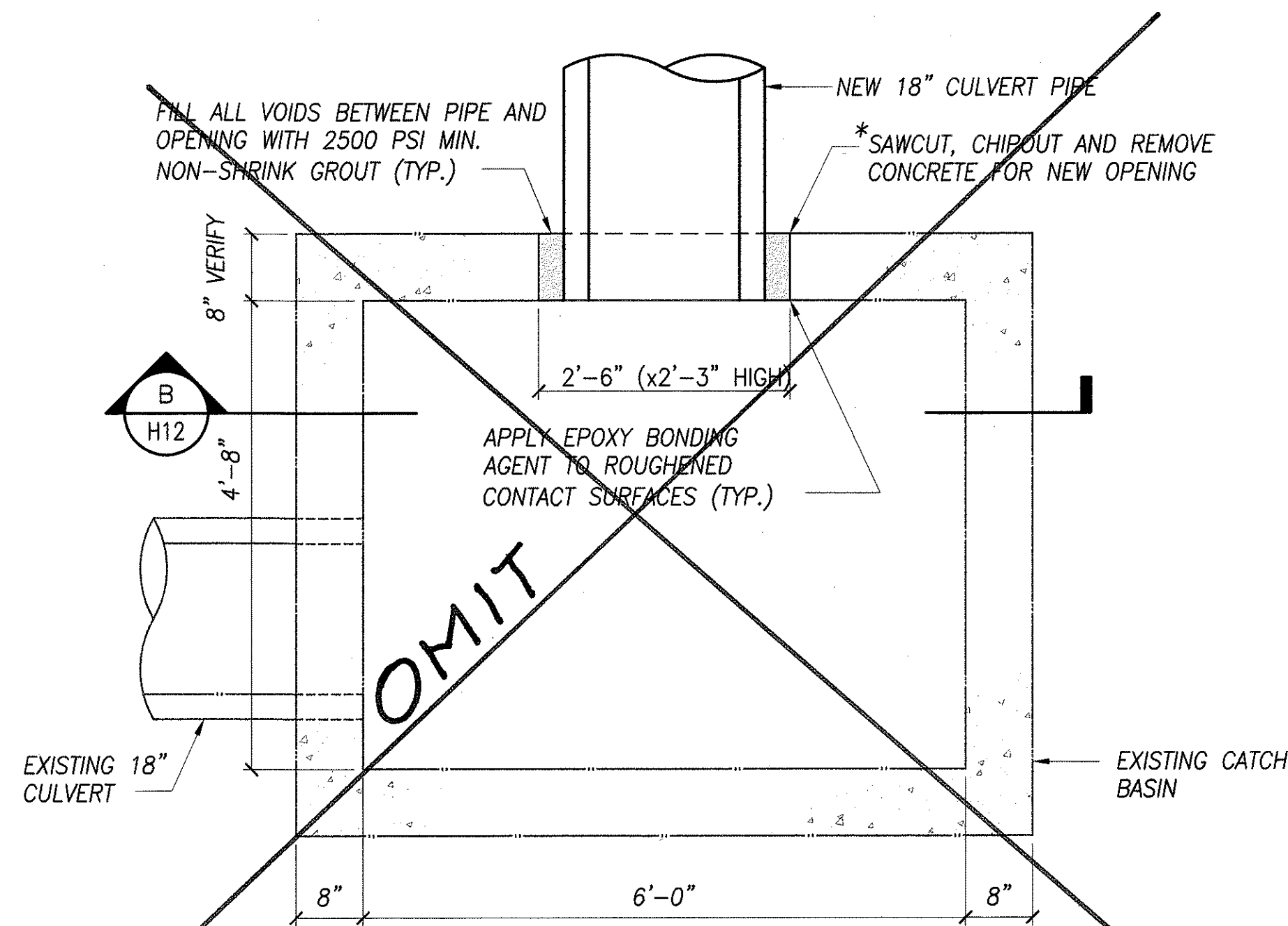


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

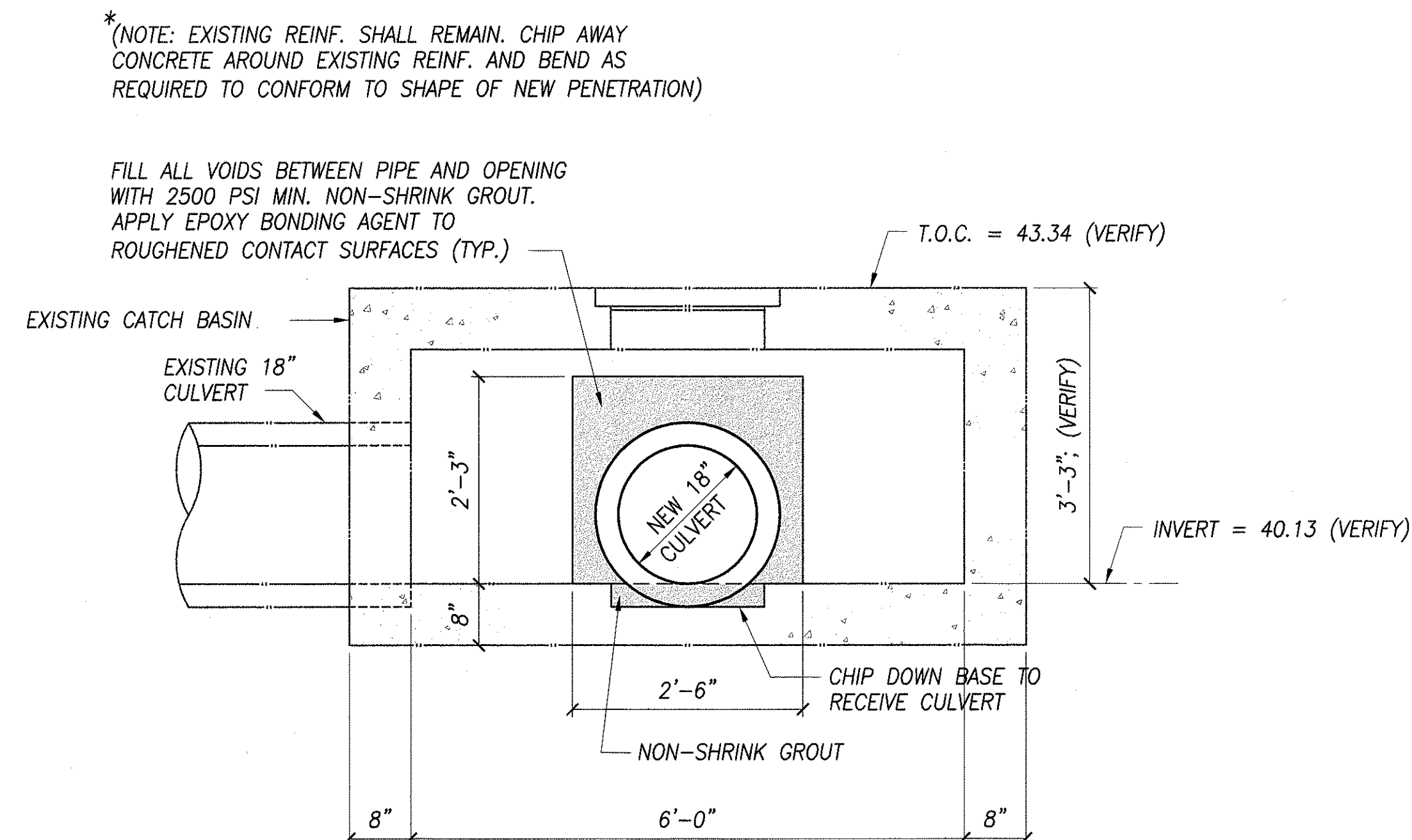
DRAINAGE DETAILS-4
FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98
Scale: As Noted
Date: April 2002
SHEET No. H11 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7101A-01-98	2002	34	80



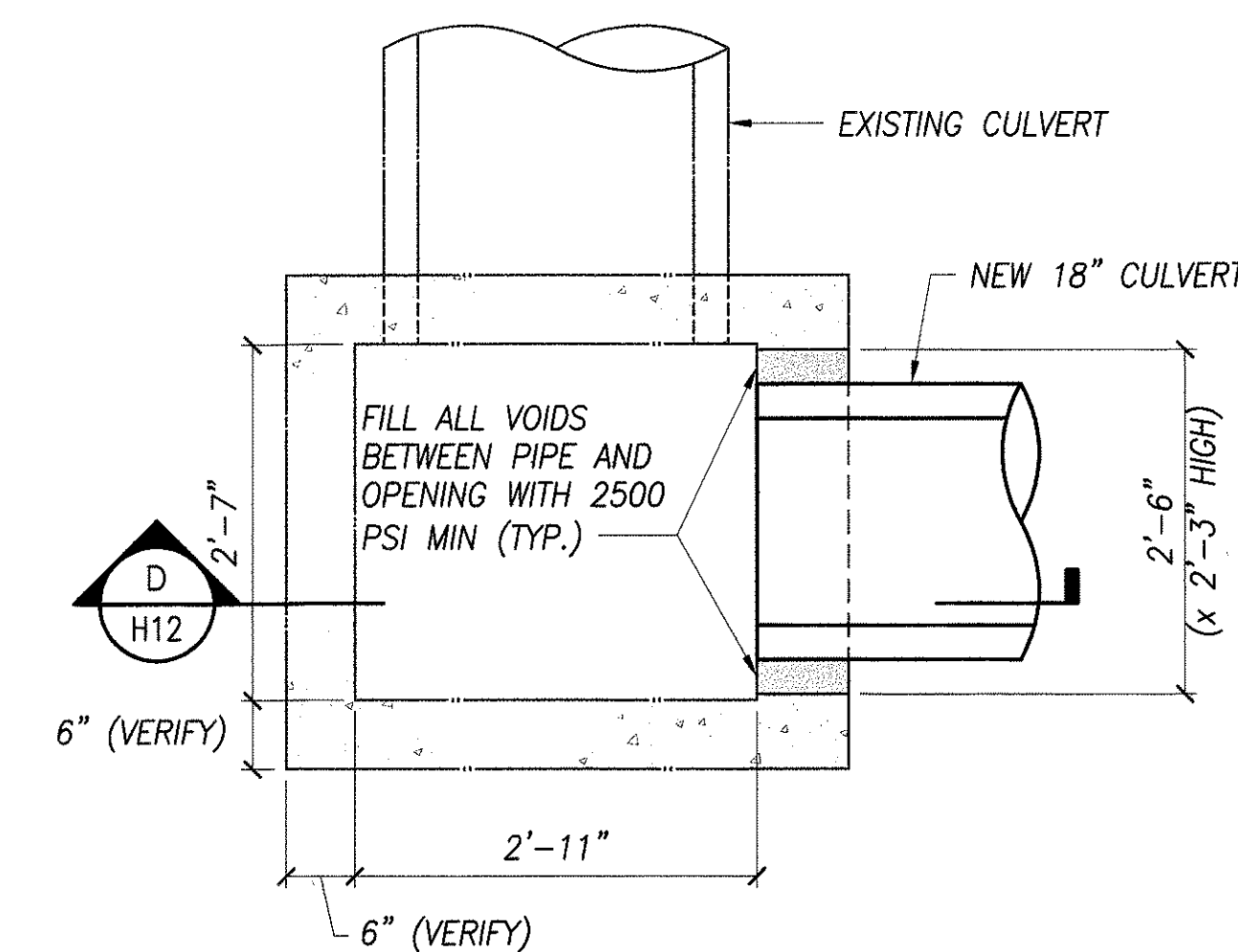
PLAN VIEW DETAIL AT 18" CULVERT PENETRATION
THRU EXISTING CATCH BASIN AT STATION 76+43

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



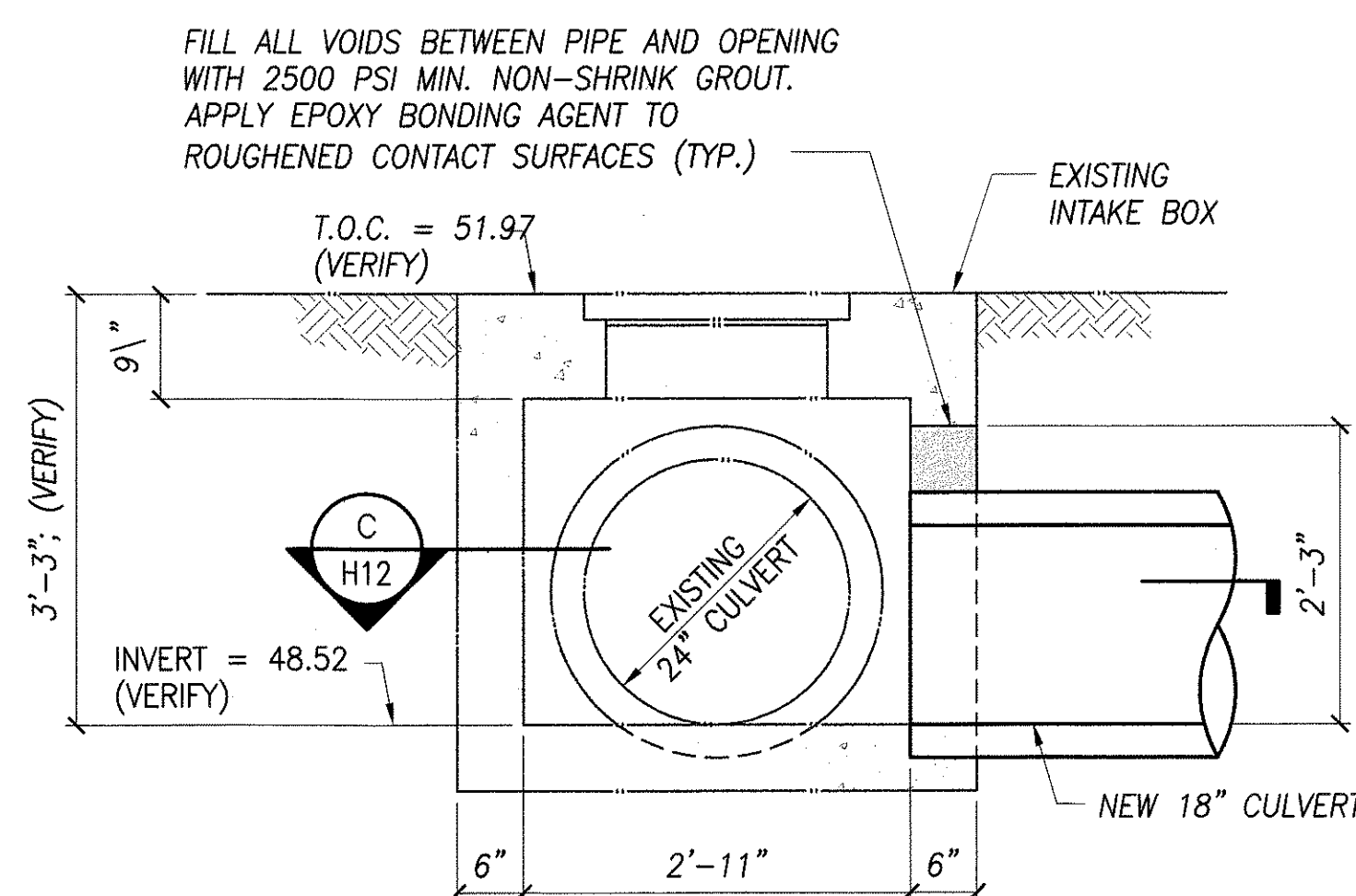
ELEVATION DETAIL AT 18" CULVERT PENETRATION
THRU EXISTING CATCH BASIN AT STATION 76+43

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



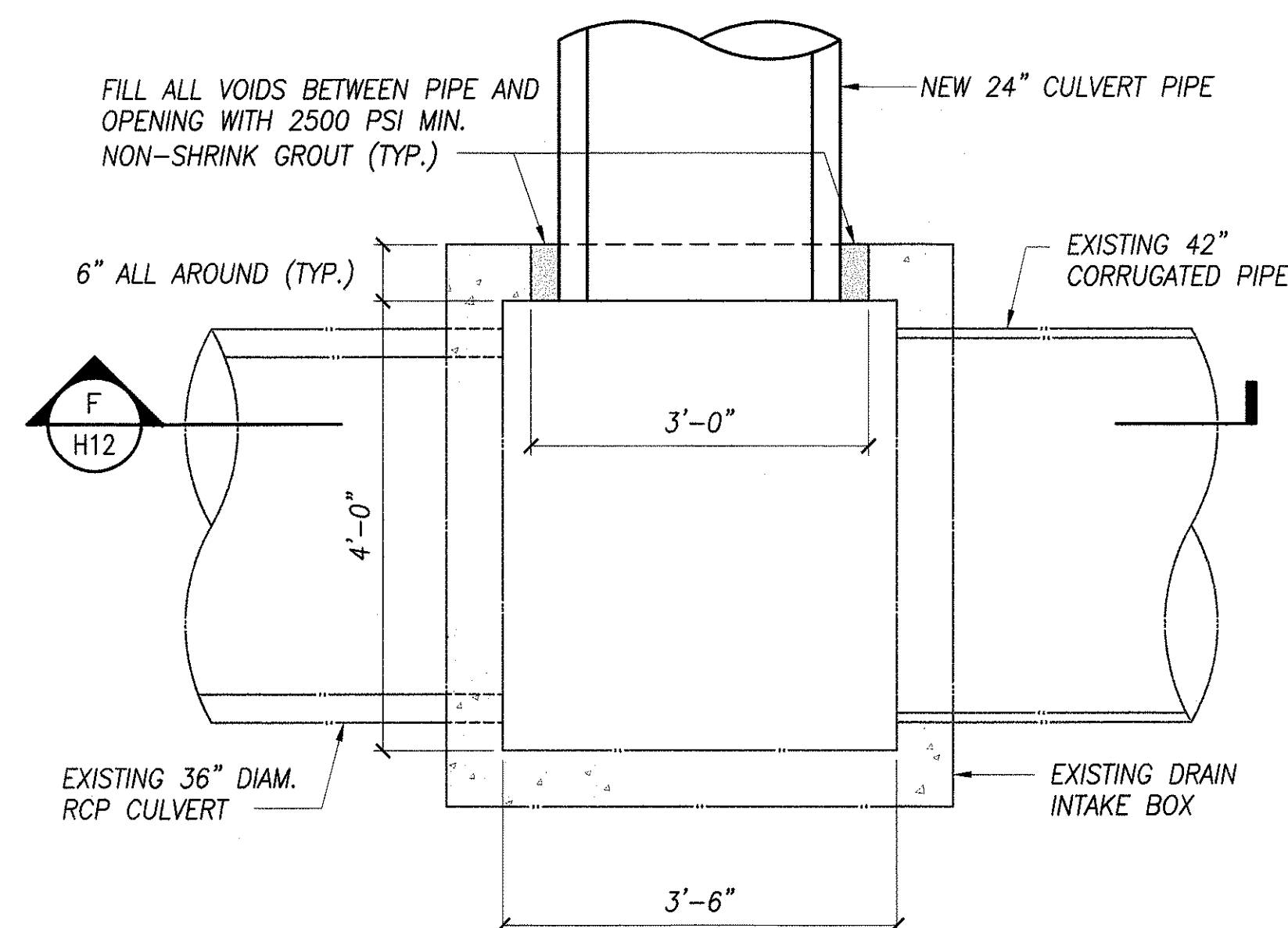
PLAN VIEW DET. AT NEW 18" CULVERT PENET.
AT EXISTING INTAKE BOX AT STA. 82+97

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



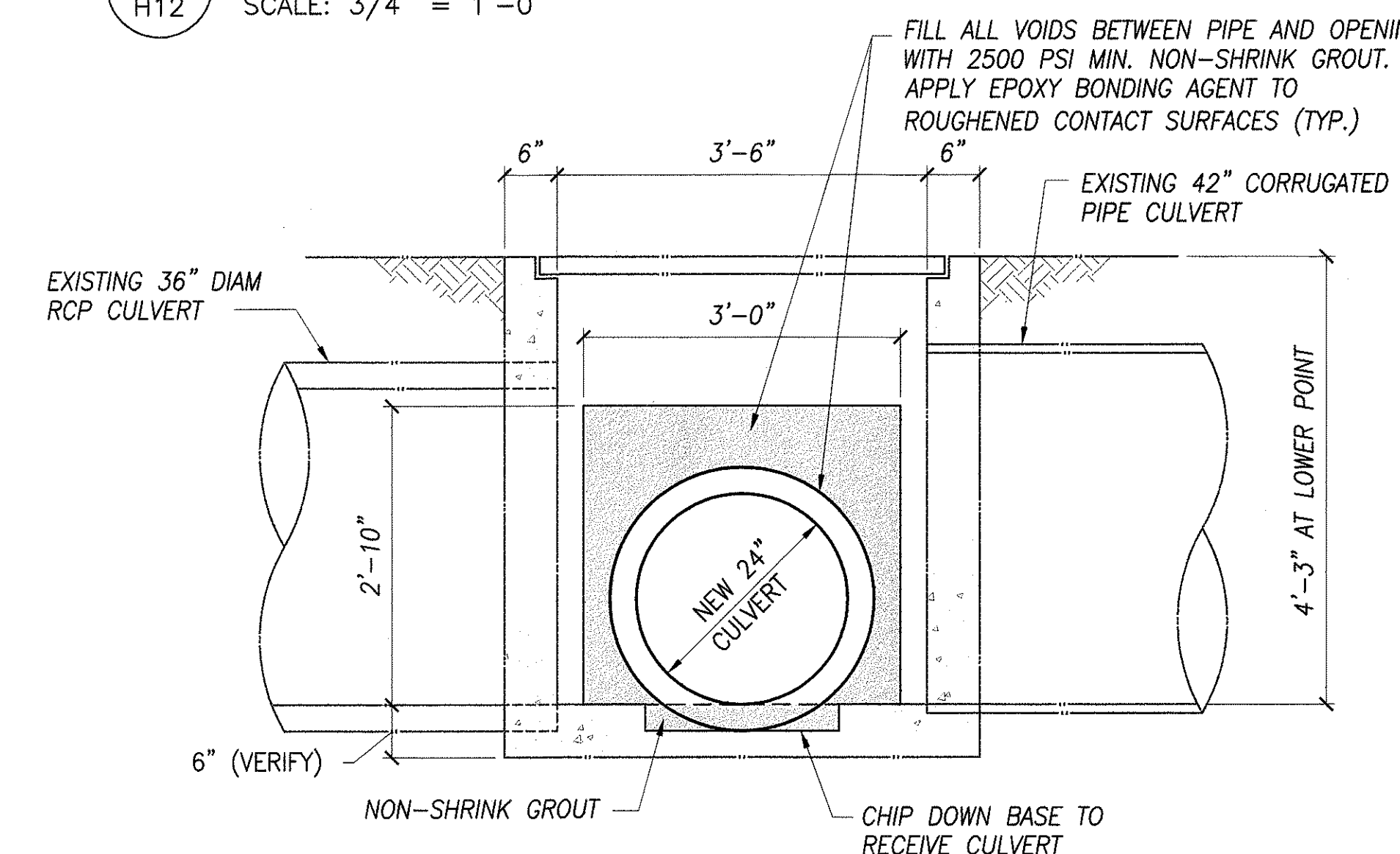
SECTION AT 18" CULVERT PENETRATION
THRU EXISTING INTAKE BOX AT STA. 82+97

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



PLAN VIEW DETAIL AT 24" CULVERT PENETRATION
THRU EXISTING DRAIN INTAKE BOX AT STA. 150+89

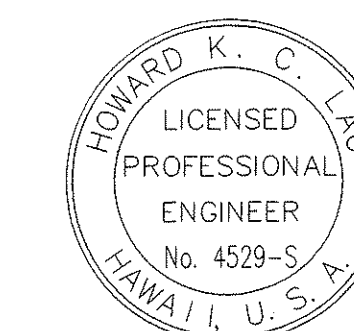
SCALE: 3/4" = 1'-0"



ELEV. DETAIL AT NEW 24" CULVERT PENET. THRU
EXISTING DRAIN INTAKE BOX AT STA. 150+89

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

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



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS-5

FARRINGTON HIGHWAY LANDSCAPING
Kamehameha Highway to Fort Weaver Road
Project No. 7101A-01-98

Scale: As Noted Date: April 2002

SHEET No. H12 OF 12 SHEETS