

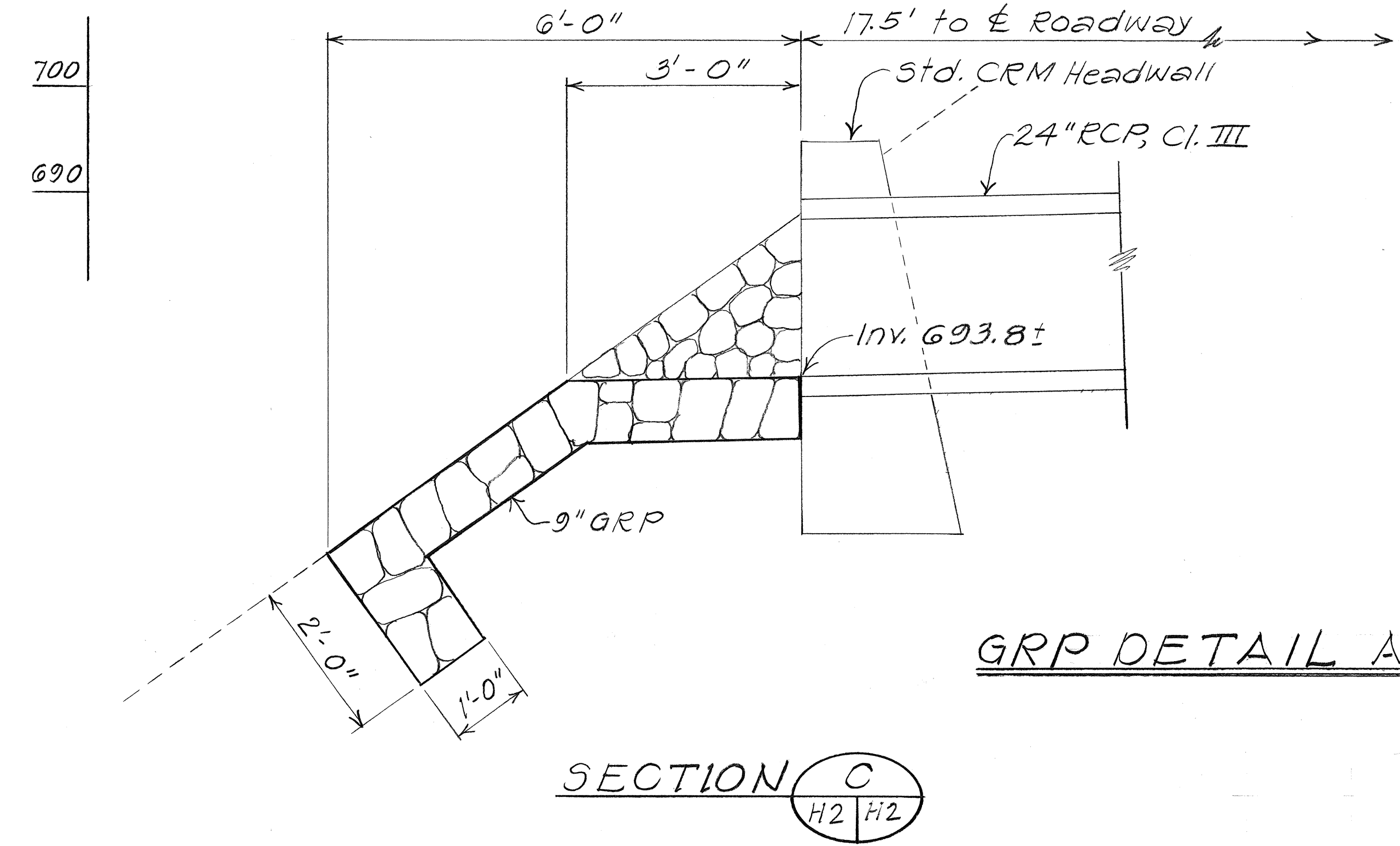
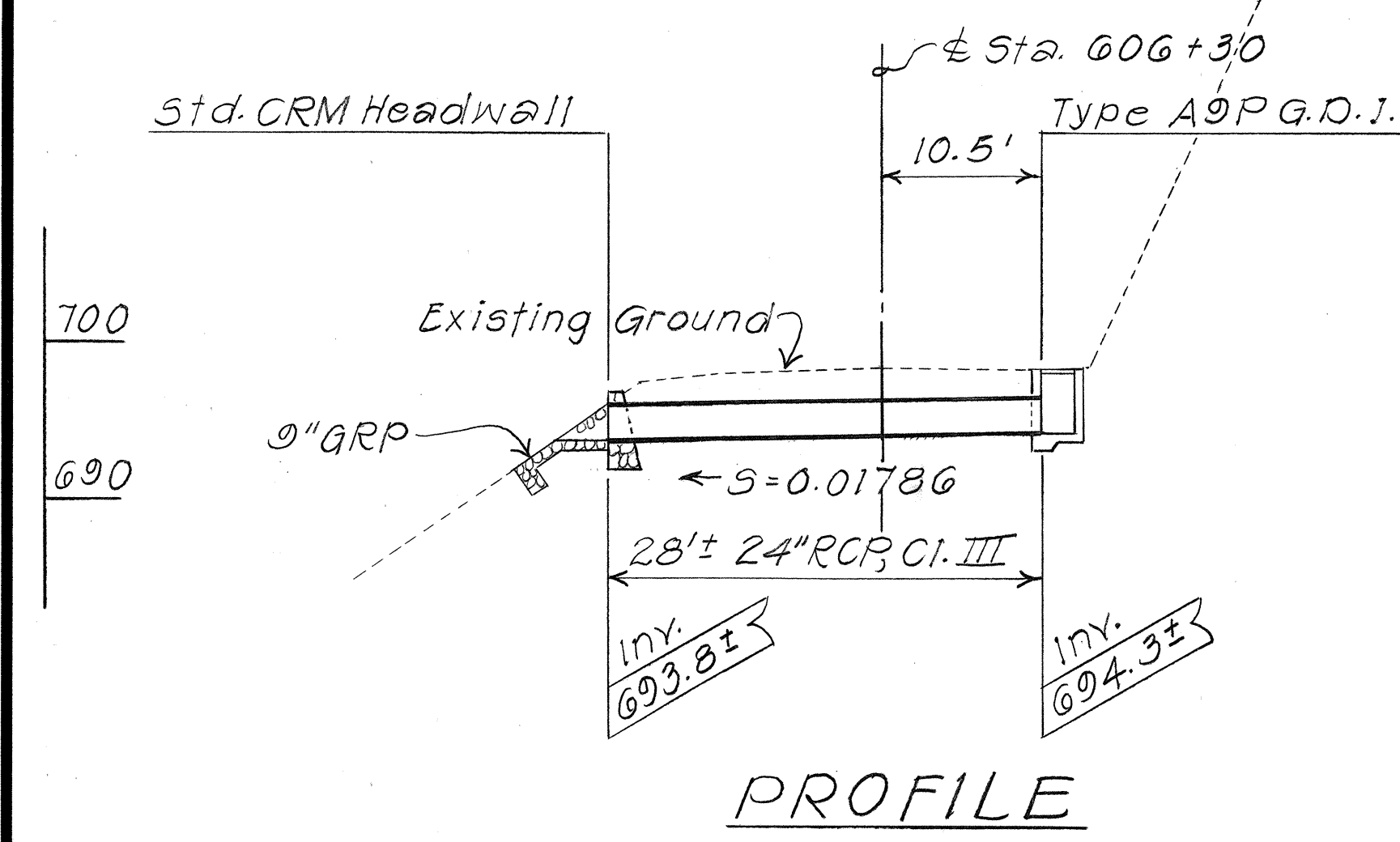
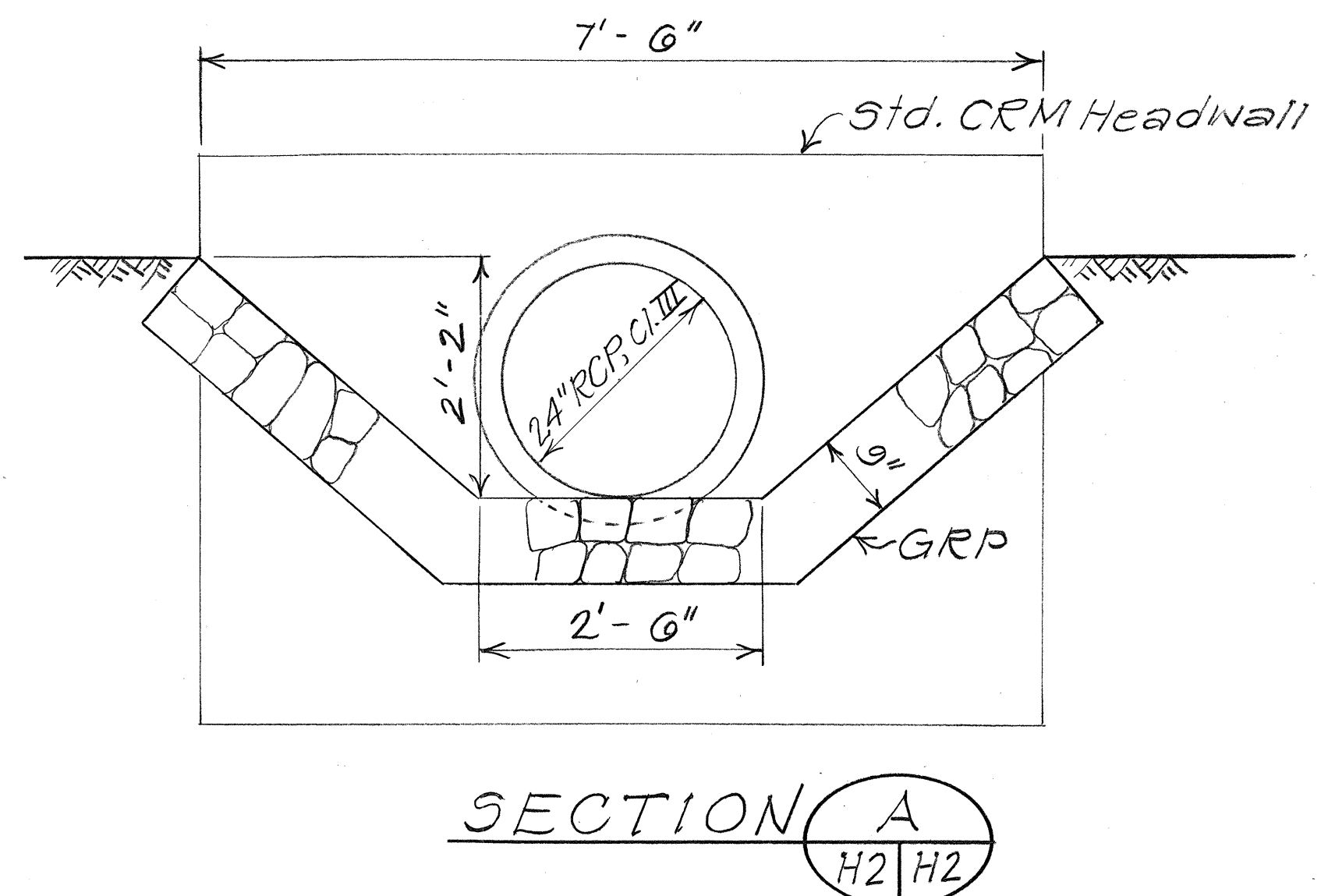
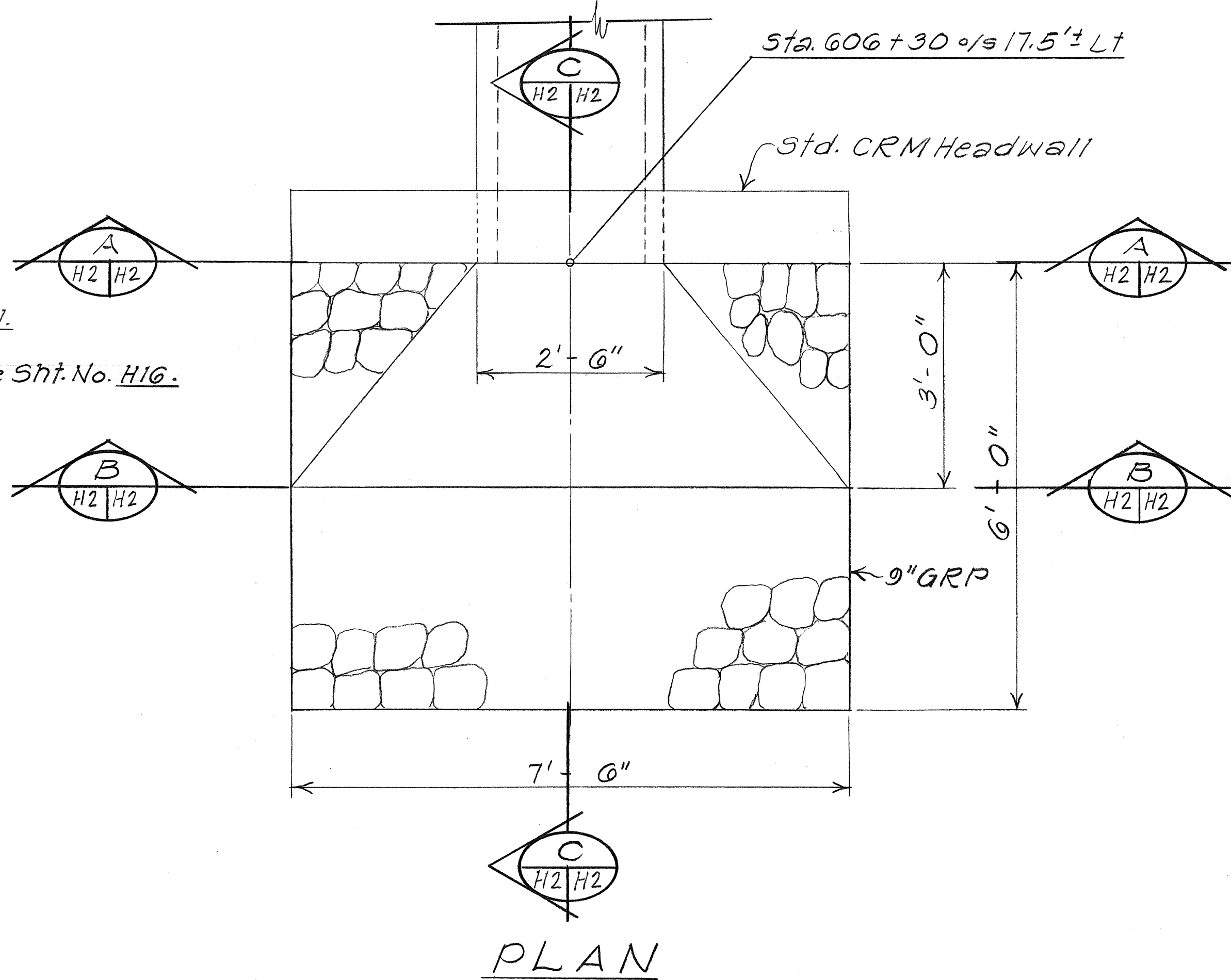
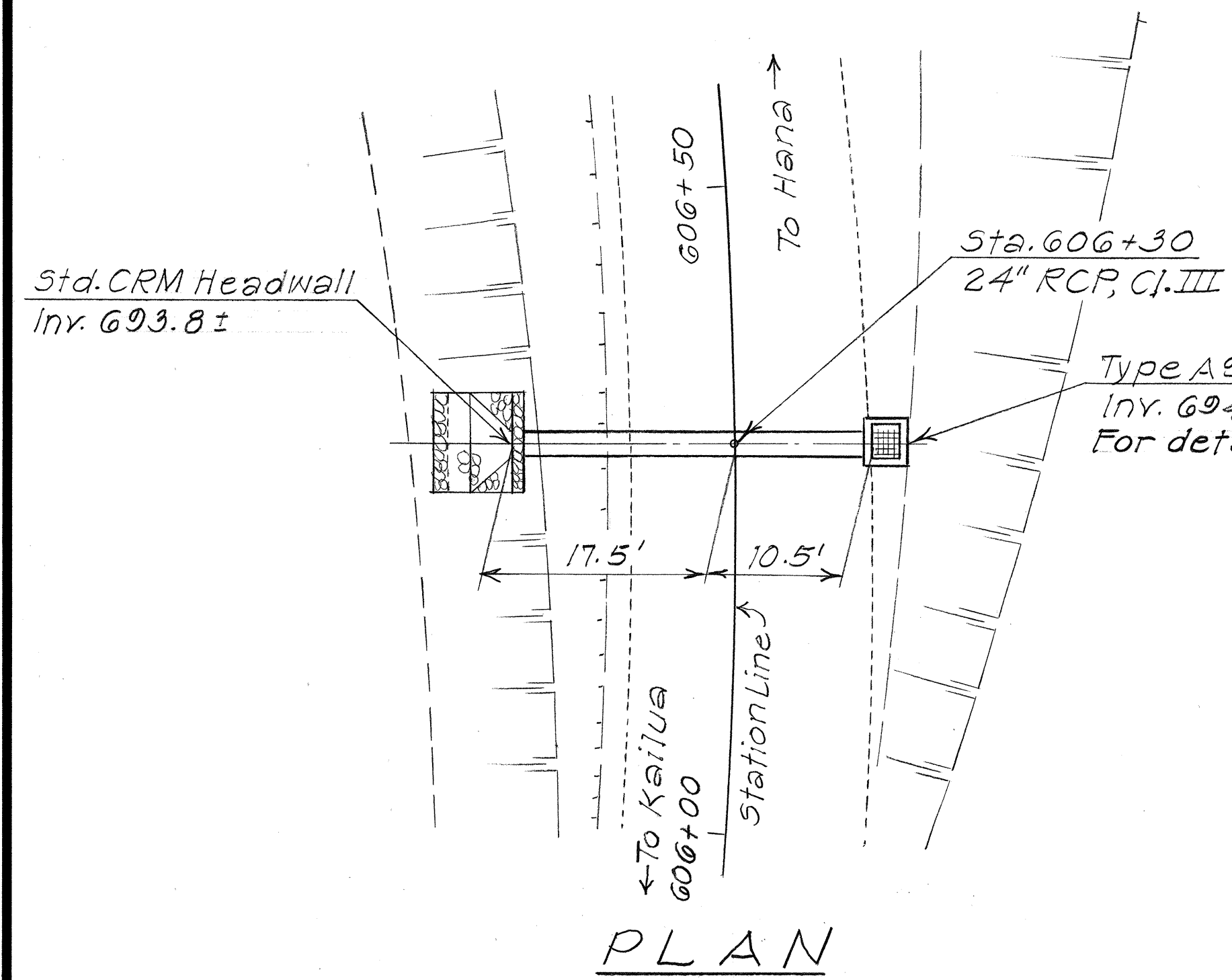
PROJECT: HANA HIGHWAY IMPROVEMENTS
KEANAE - NAHIKU SECTION
PROJECT NO.: 360AB - 01 - 88

* See Drainage Note No. 6 on sht. H16
** See Drainage Note No. 7 on sht. H16

ITEM NO		*604.
UNIT USED		7850
EXISTING STRUCTURE	STATION	(C.Y.)
24" CMP, 24" RCP	610+43 ±	3.25
30" CMP	614+14 ±	2.00
24" CMP	637+07 ±	5.25
4'x4' Box, 48" GSP	643+71 ±	1.00
24" CMP	655+00 ±	2.50
24" RCP	685+11 ±	1.50
18" RCP	694+58 ±	1.50
18" RCP, 1.5'x1.5' Box	705+65 ±	1.80
18" RCP	712+15 ±	2.75
24" RCP	716+18 ±	2.00
24" RCP	721+47 ±	2.50
24" RCP	724+60 ±	2.00
2'x2' Box, 24" CMP	733+03 ±	1.75
24" RCP	737+42 ±	2.00
24" RCP	743+17 ±	1.00
24" RCP	746+90 ±	1.00
24" RCP	784+22 ±	1.30
24" RCP	801+91 ±	2.00
2.5'x3.0' Box	817+90 ±	1.00
2'x3' Box	834+35 ±	2.00
2'x3' Box	840+96 ±	1.75
2'x3' Box	847+62 ±	1.75
18" CMP	871+85 ±	2.00
12" RCP	1103+18 ±	2.00
2'x4' Rock Culv.	1108+42 ±	2.00
2'x2' Rock Culv.	1111+16 ±	2.00
2.5'x3.0' Rock Culv.	1112+89 ±	2.00
2'x4' Rock Culv.	1114+20 ±	2.00
2'x1' Rock Culv.	1138+25 ±	2.00
TOTAL		57.60

SHEET NO. H1 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	13	35



DETAILS OF 24" CULVERT AT STA. 606+30
Scale: 1" = 10'

GRP DETAIL AT STA. 606+30 o/s 17.5'± LT.
Scale: 3/4" = 1'-0"

SECTION C

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

DRAINAGE DETAILS

HANA HIGHWAY IMPROVEMENTS

KEANAE & NAHIKU SECTIONS

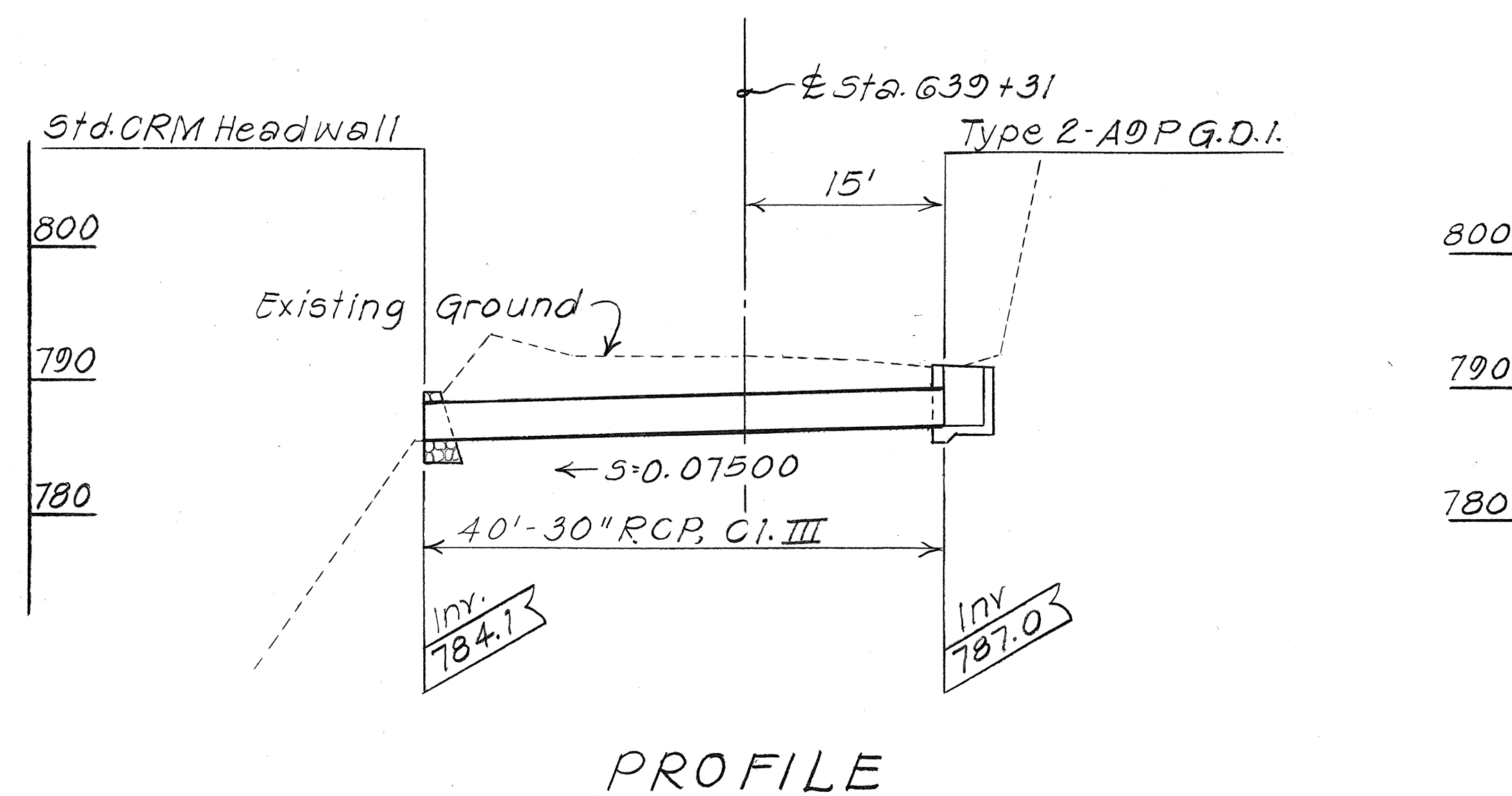
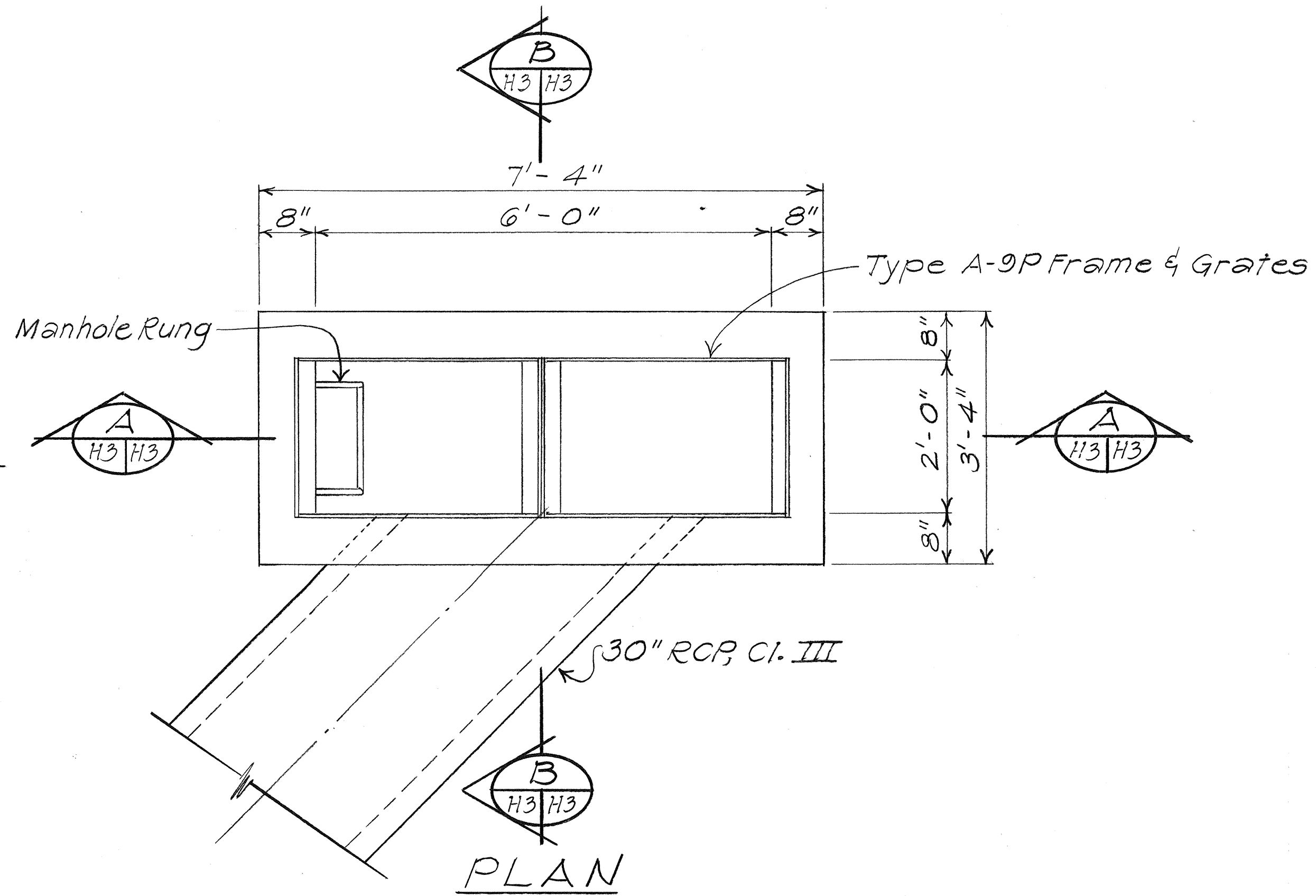
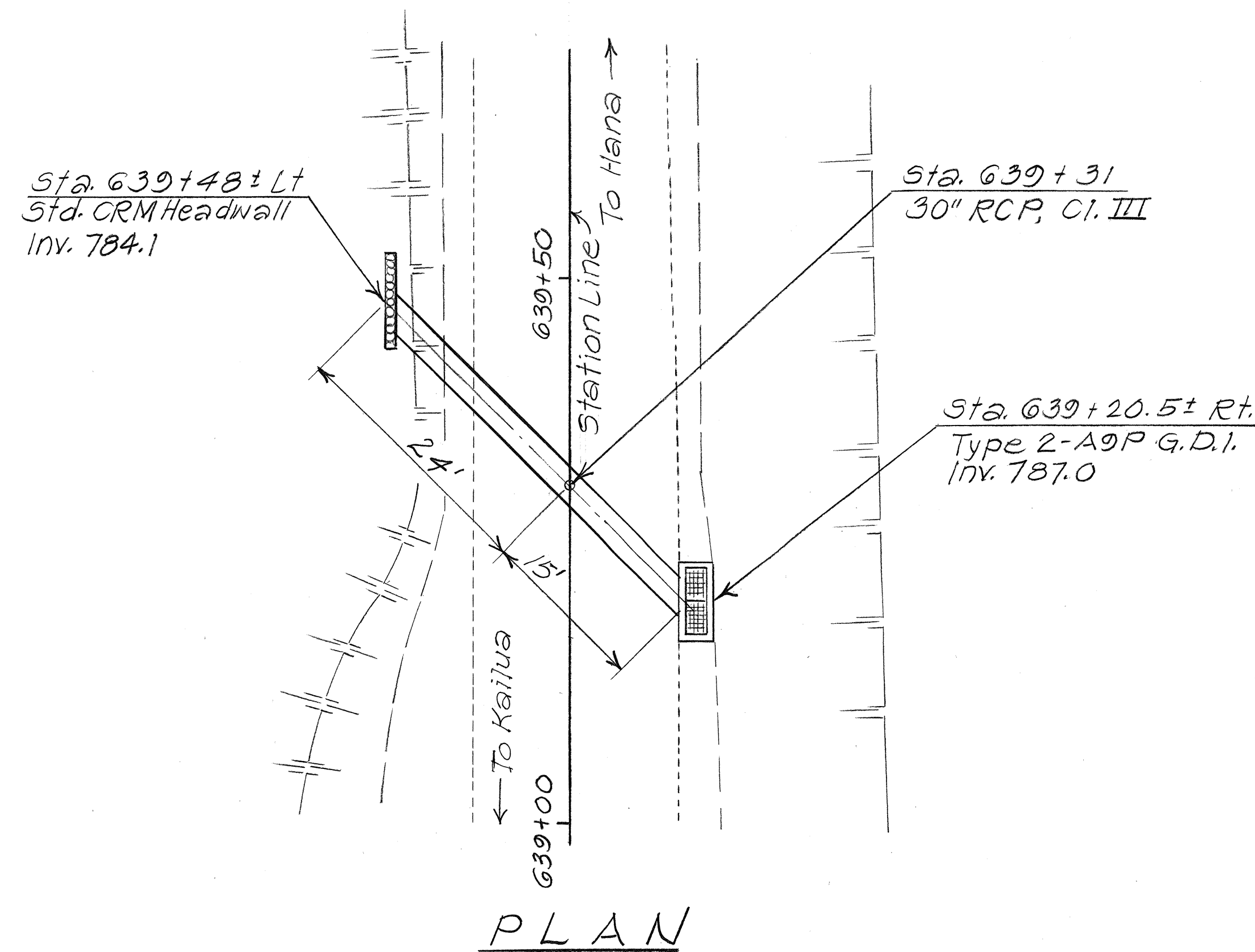
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988

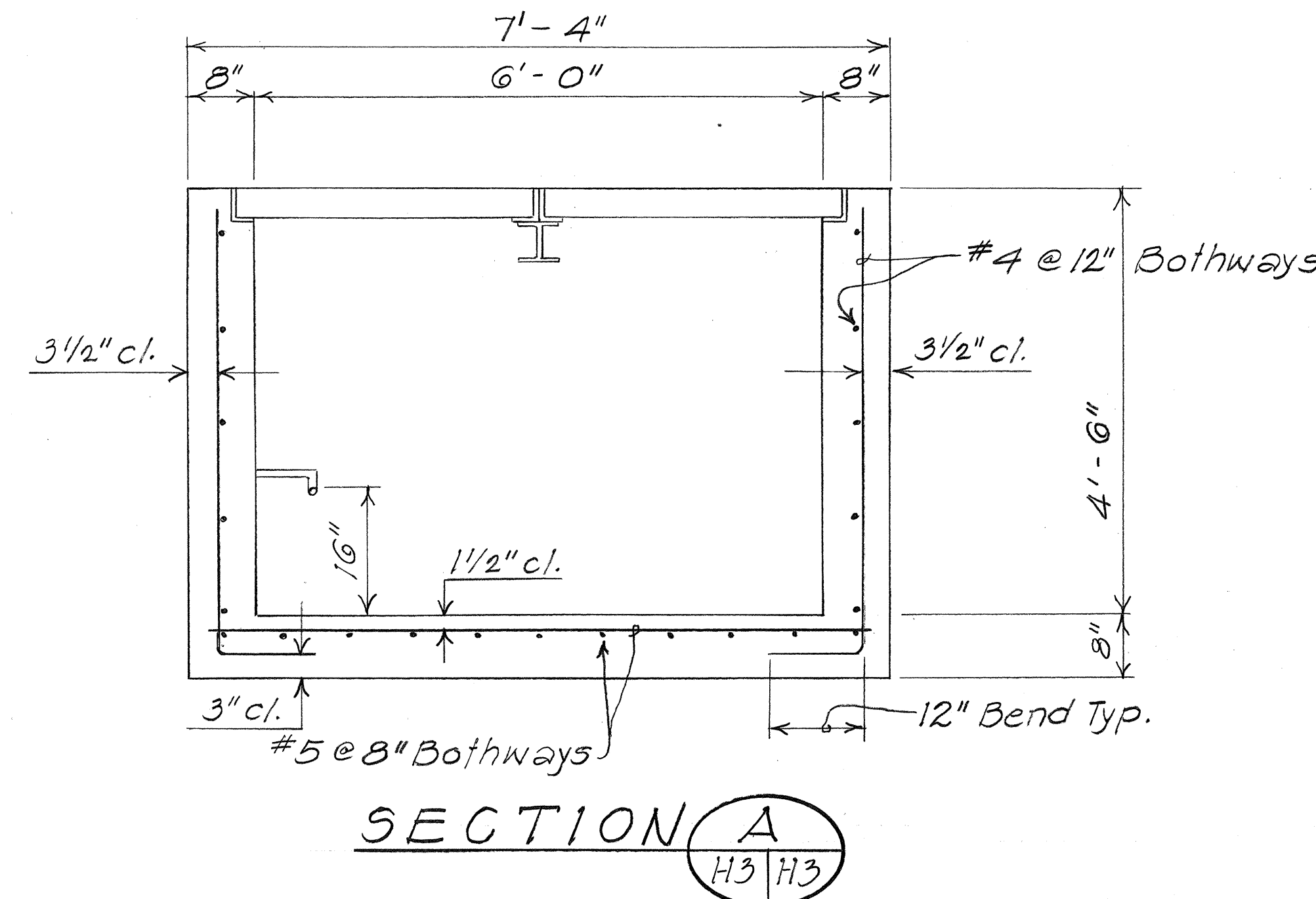
SHEET NO. H2 OF 16 SHEETS

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

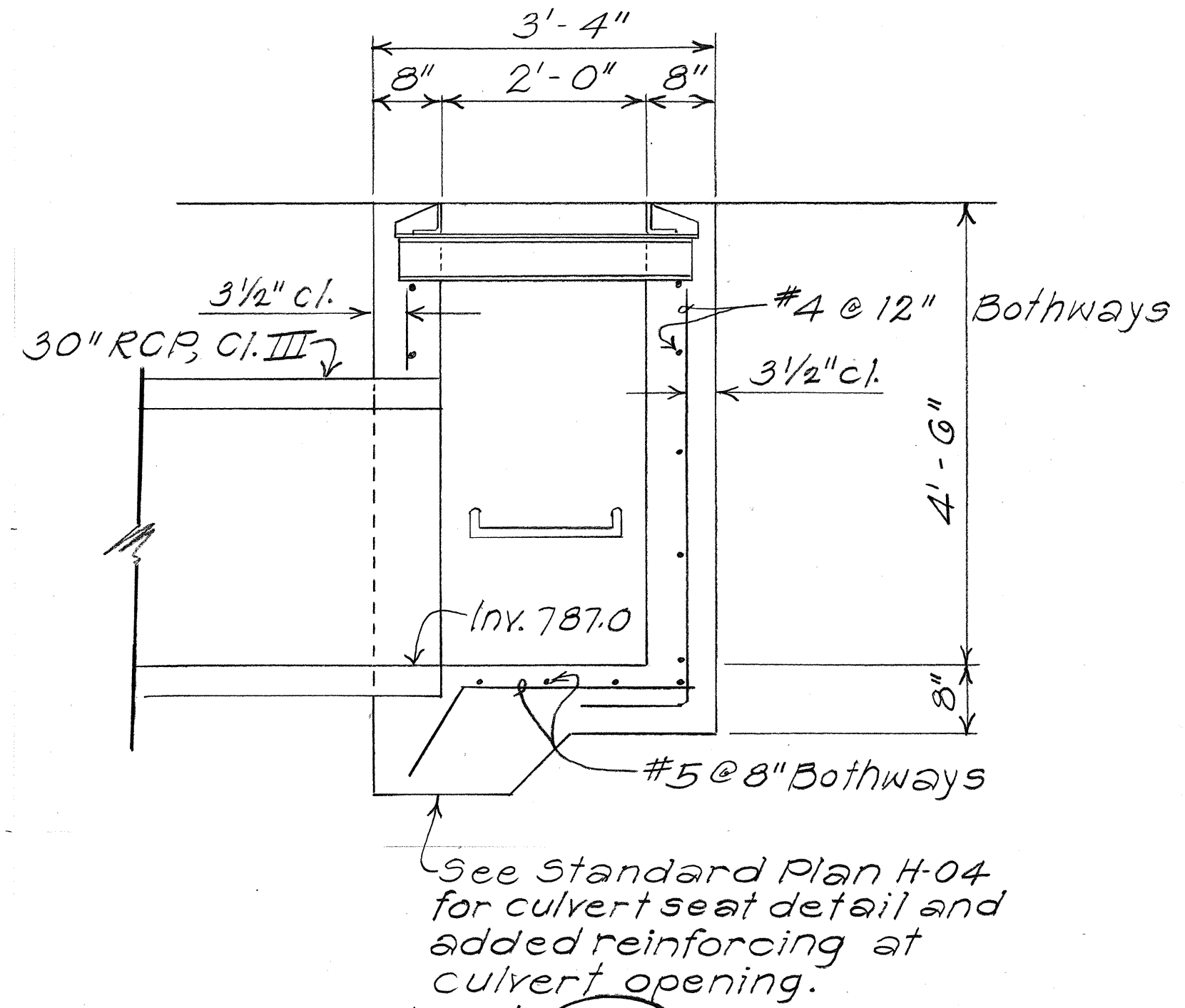
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	14	35



DETAILS OF 30" CULVERT AT STA. 639+31
Scale: 1" = 10'



DETAIL OF TYPE 2-A9P G.D.I. AT STA. 639+20.5± RT.
Scale: 3/4" = 1'-0"



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

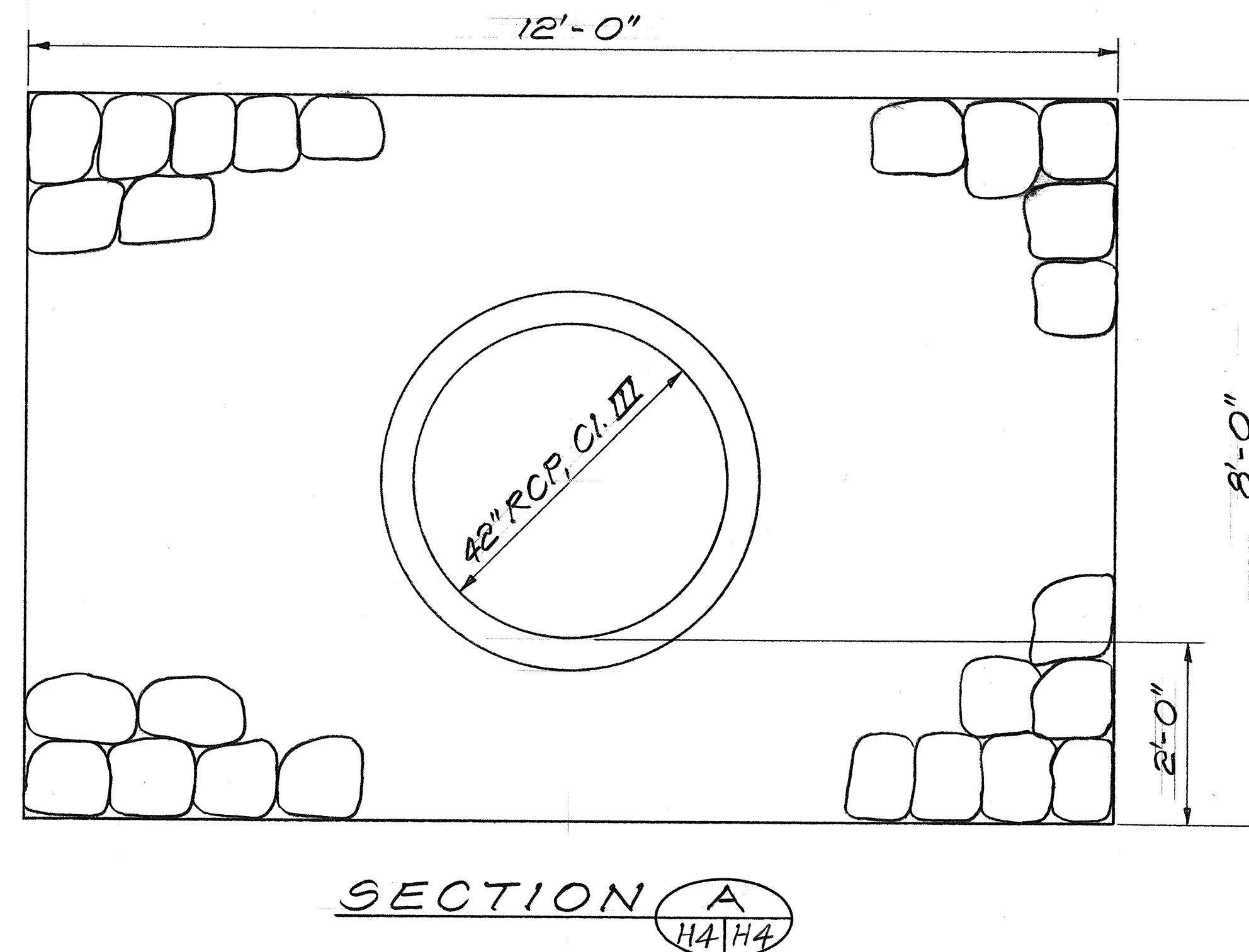
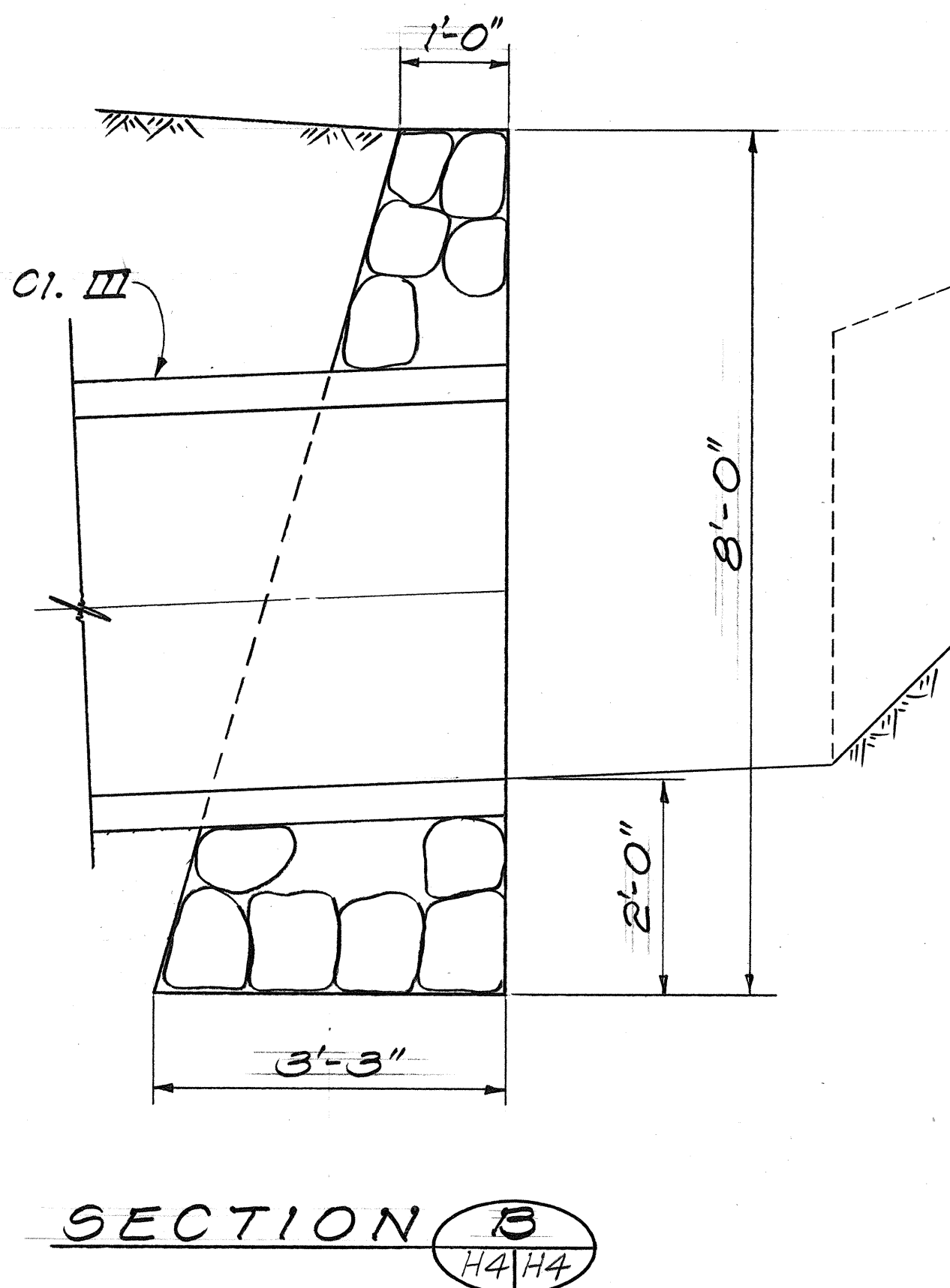
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988

SHEET No. H3 OF 16 SHEETS

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

Plan view diagram of a railroad crossing. The diagram shows the alignment of the tracks and the station line. The crossing is located between station 674+50 and 675+00. The crossing width is 20.0' on the left and 22.0' on the right. The CRM Headwall is shown with an elevation of 664.7. The 42" RCP, C.I. III pipe is shown with an elevation of 666.2. The diagram also shows the station line and the direction of travel (To Kailua and To Hana).



DETAILS OF 42" CULVERT AT STA. 674+82±
Scale: 1"=10'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

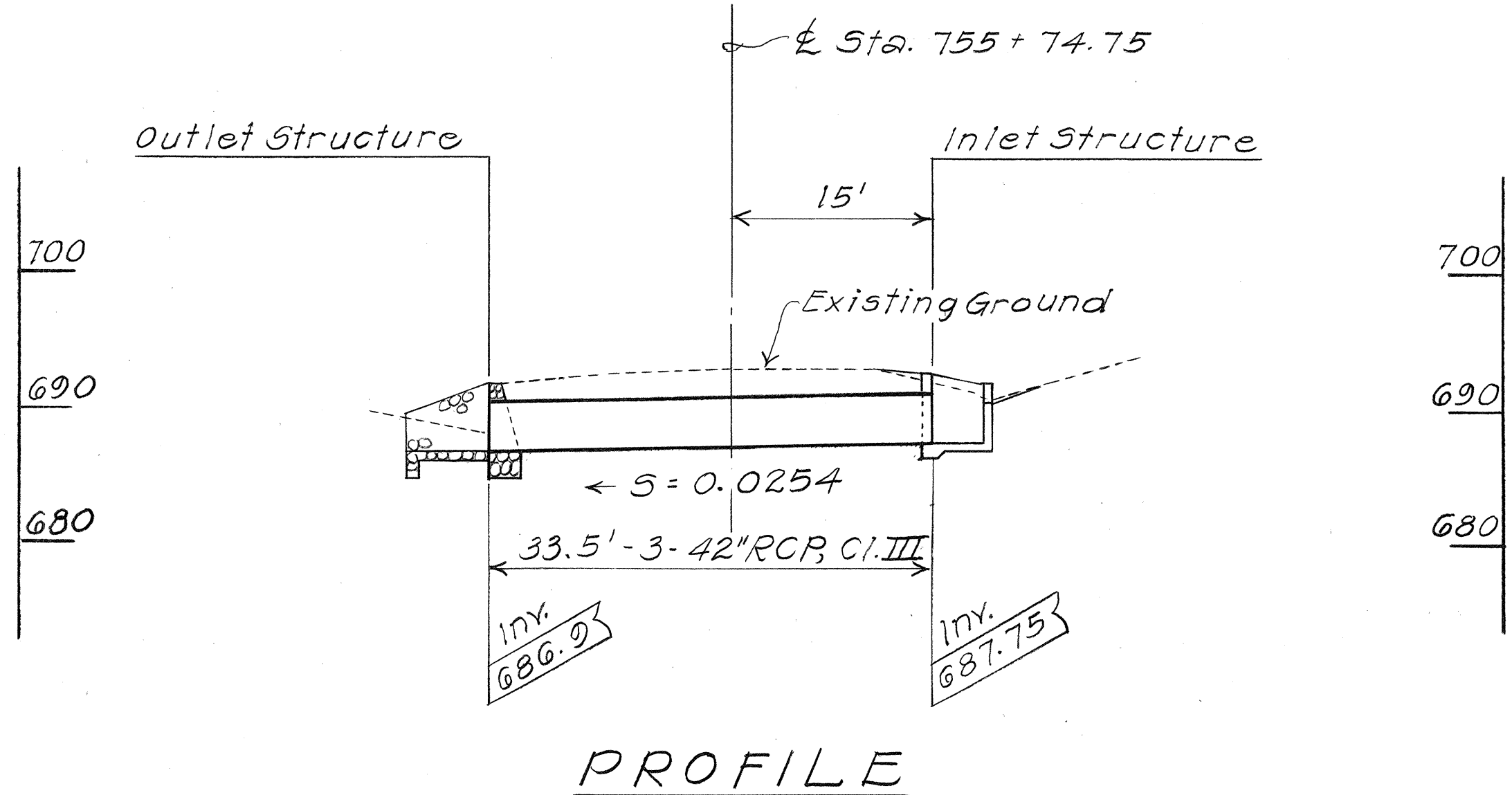
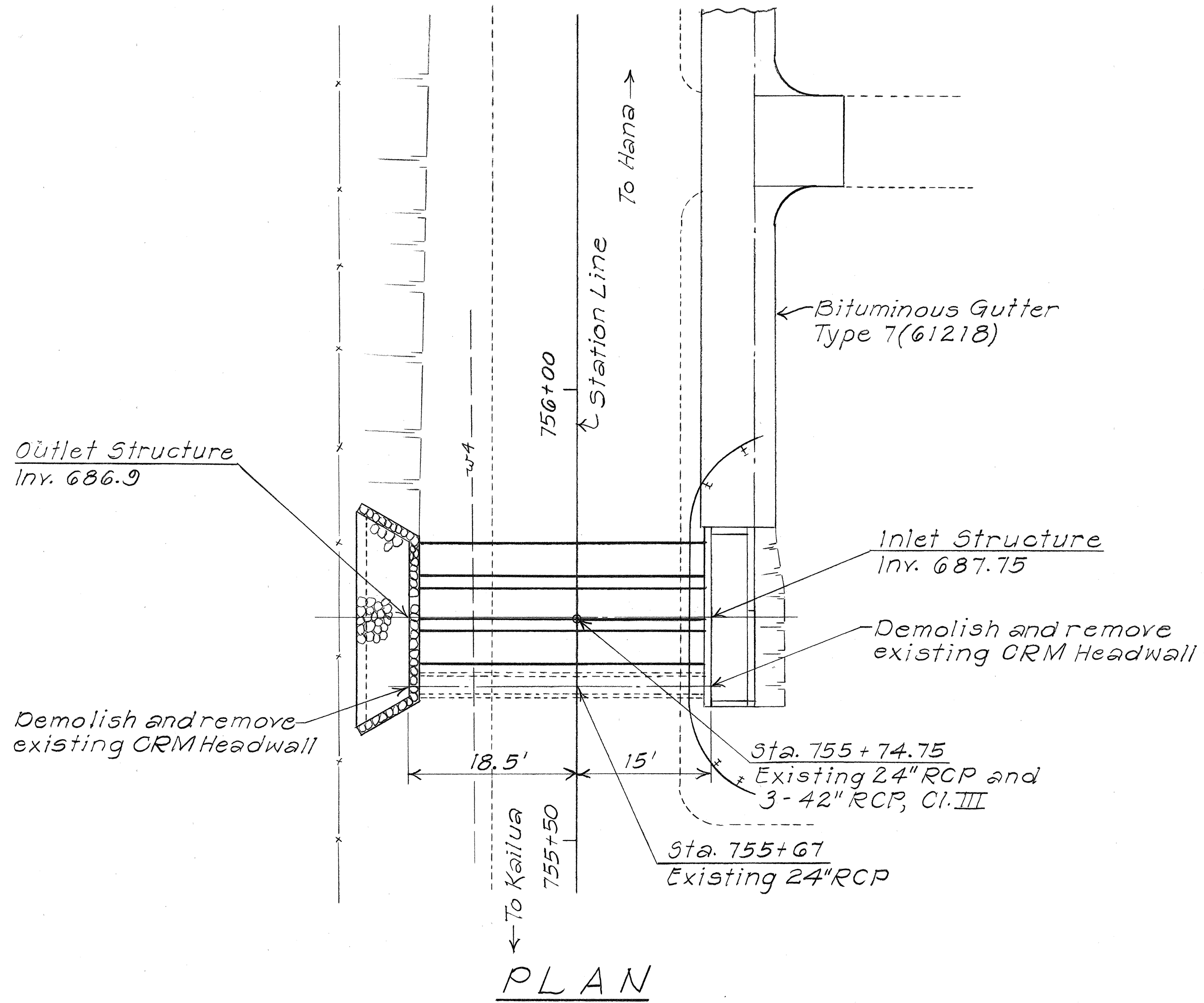
DRAINAGE DETAILS

HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

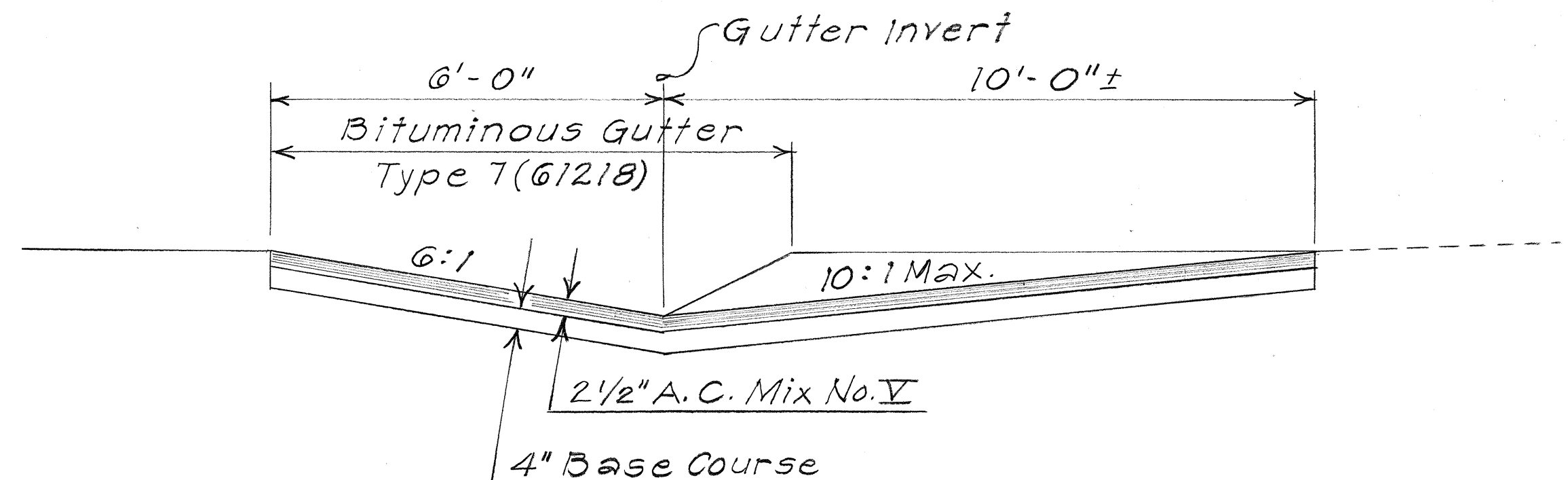
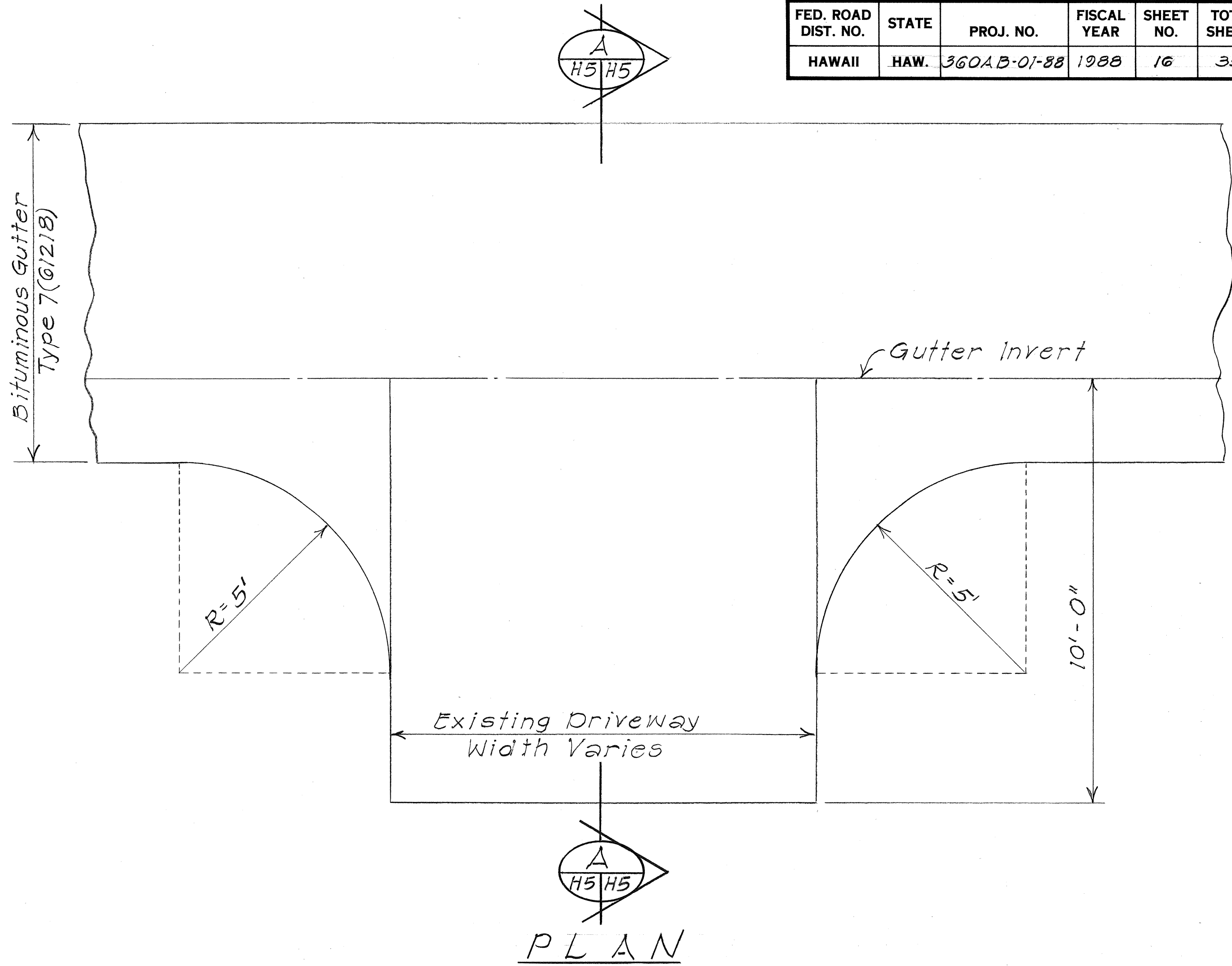
Scale: As Noted Date: Mar. 1988

SHEET No. 44 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	16	35



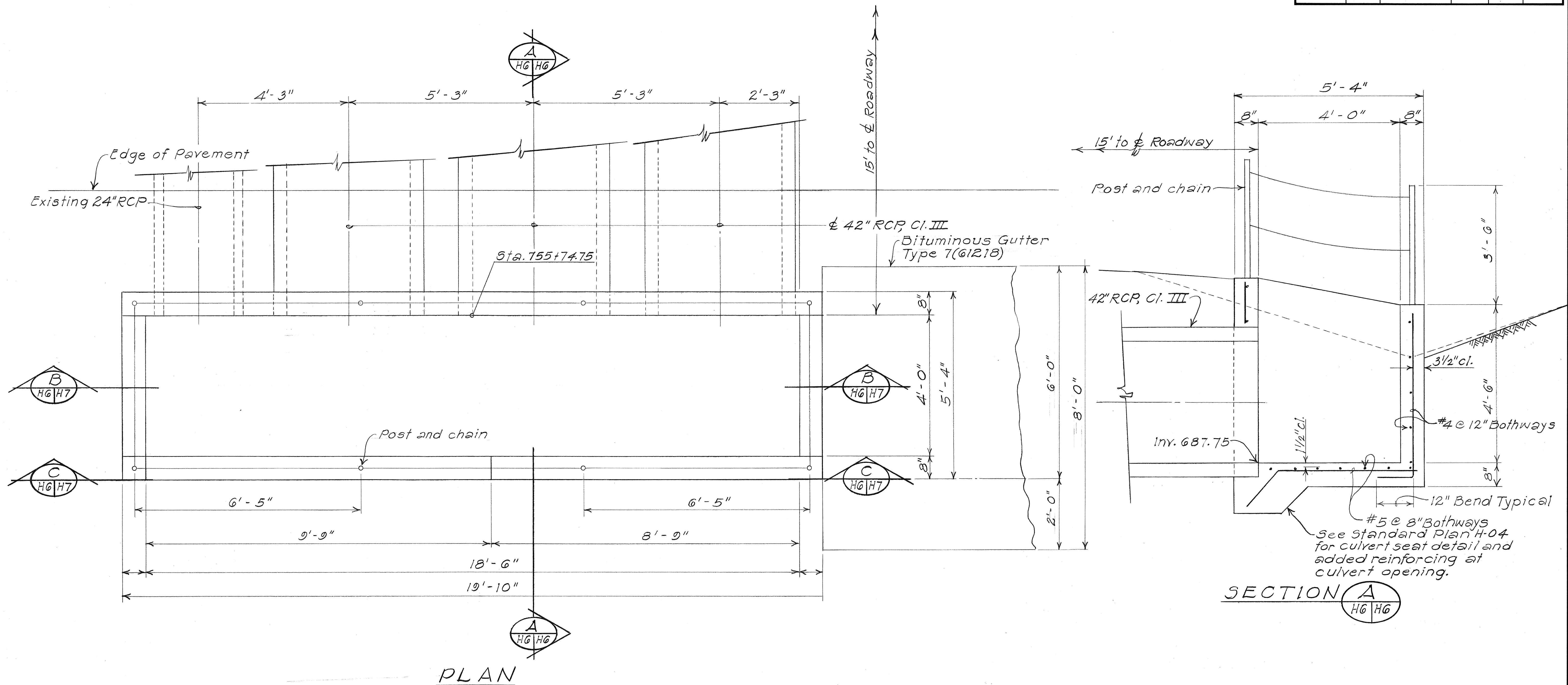
DETAILS OF 42" CULVERT AT STA. 755 + 74.75
Scale: 1" = 10'



SECTION A
DRIVEWAY ADJUSTMENT DETAIL
FOR 61218 GUTTER
Scale: 1/2" = 1' - 0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88
Scale: As Noted Date: Mar. 1988
SHEET NO. H5 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	17	35



INLET STRUCTURE AT STA. 755 + 74.75 RT.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

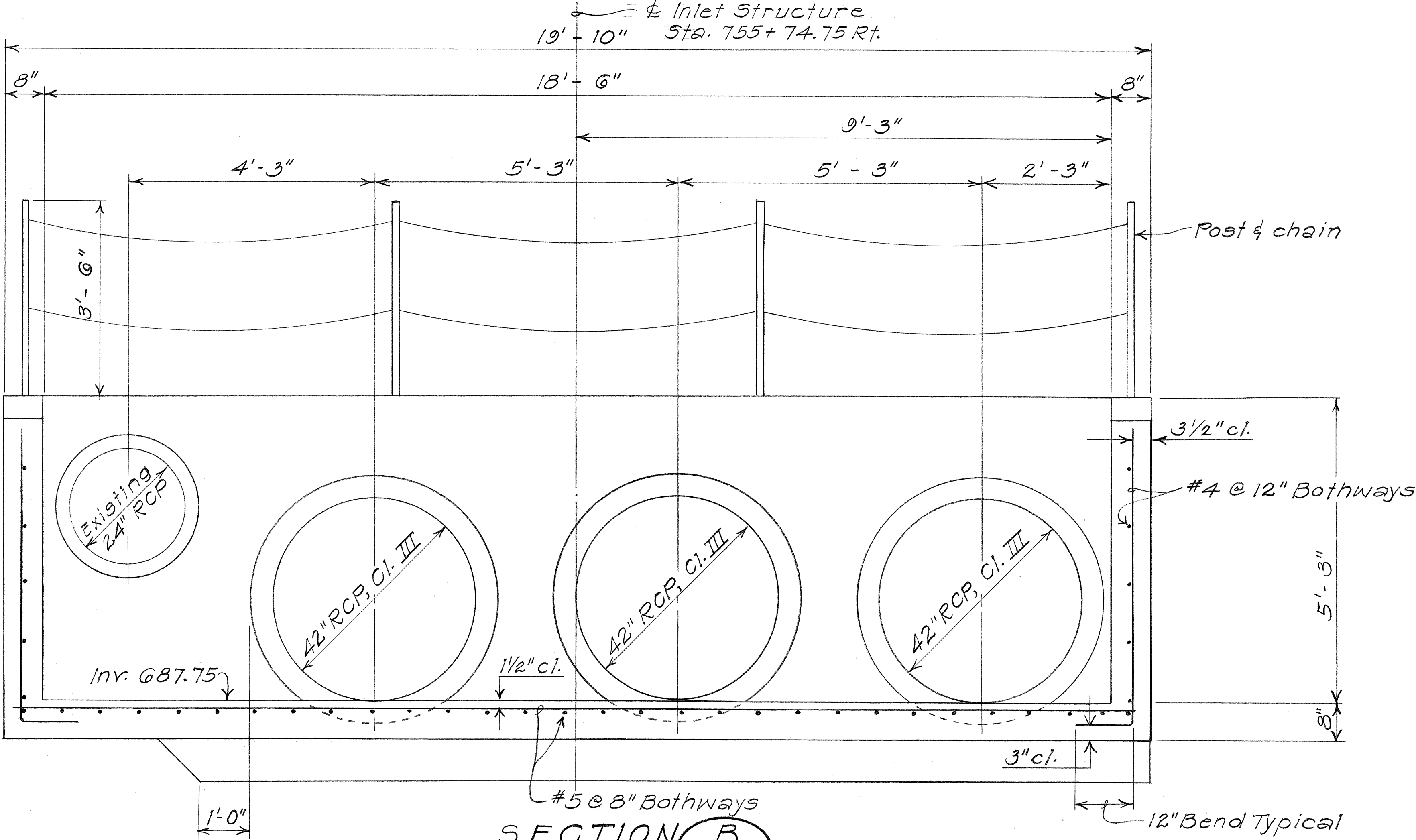
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: 3/4" = 1'-0" Date: Mar. 1988

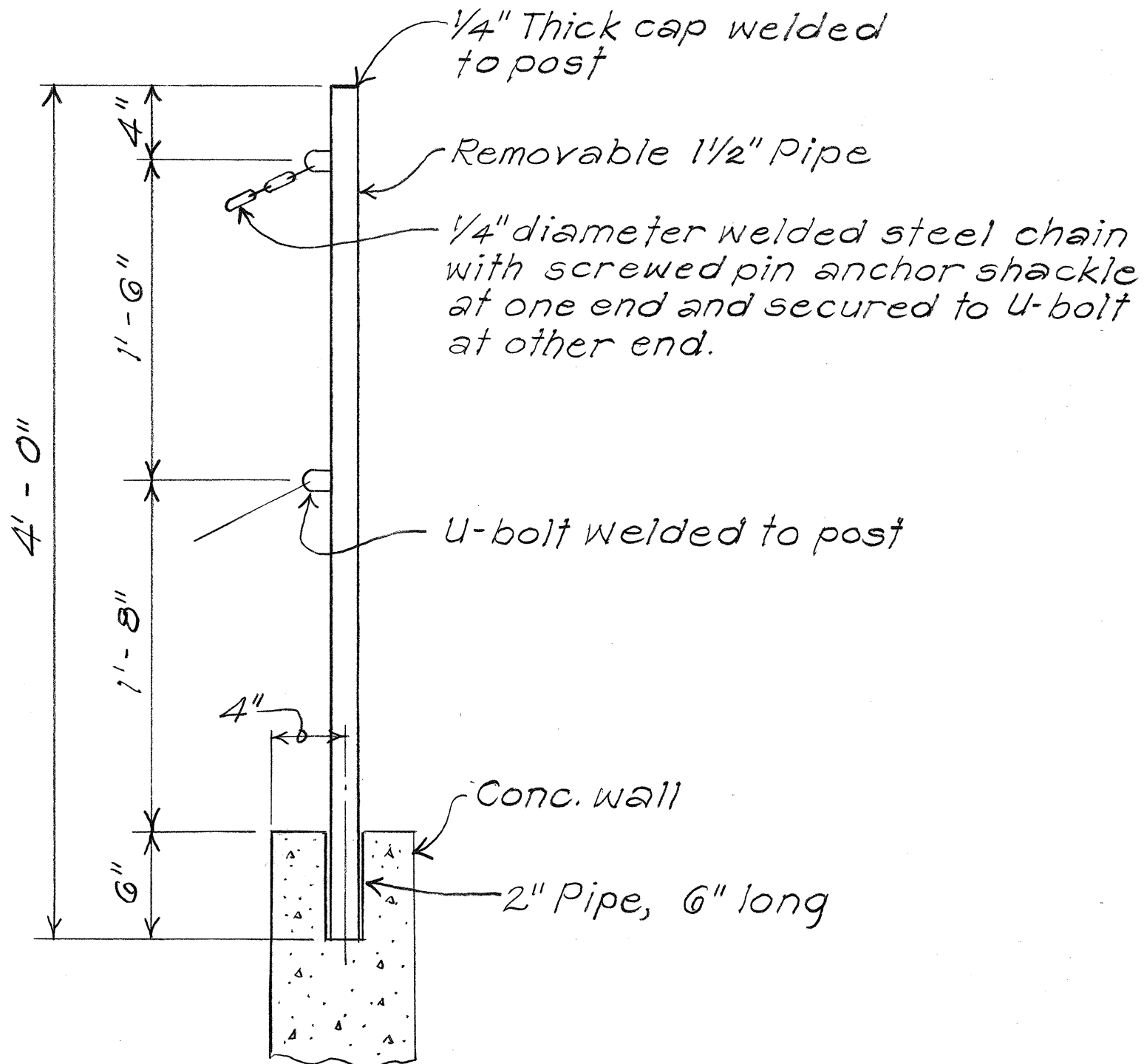
SHEET No. H6 OF 16 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN 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.	360AB-01-88	1988	18	35

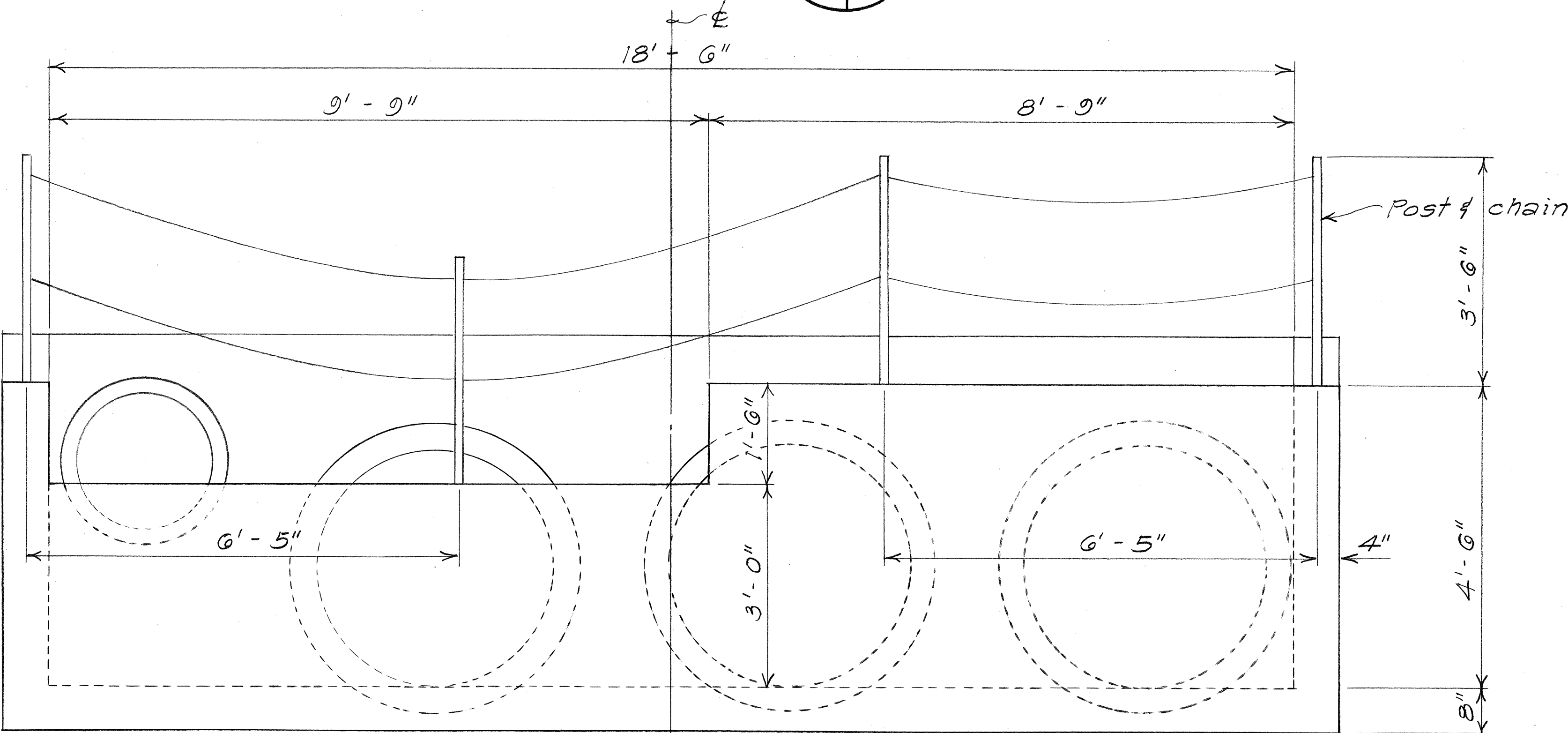


SECTION B
HG H7



TYPICAL POST & CHAIN DETAIL
Scale: 1 1/2" = 1' - 0"

- NOTES:
1. Pipe shall conform to ASTM A-53 Grade B.
 2. Hot-dip galvanize steel assemblies and hardware after fabrication.
 3. All dimensions shall be verified by the contractor before fabrication and any discrepancy shall be promptly reported to the Engineer.
 4. Post and chain shall be considered incidental to the various contract items and will not be paid for separately.



SECTION C
HG H7

INLET STRUCTURE AT
STA. 755 + 74.75 RT.

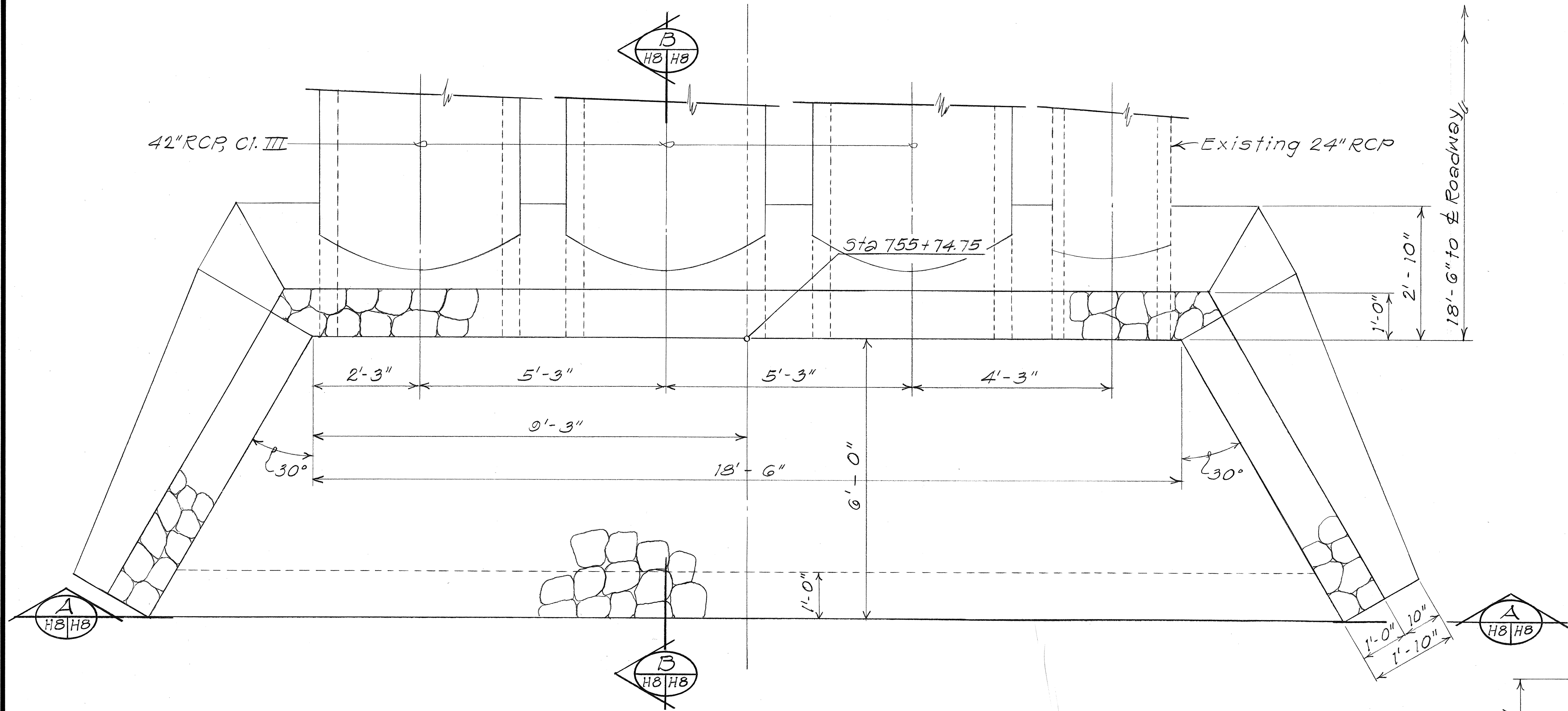
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88
Scale: As Noted Date: Mar. 1988
SHEET No. H7 OF 16 SHEETS

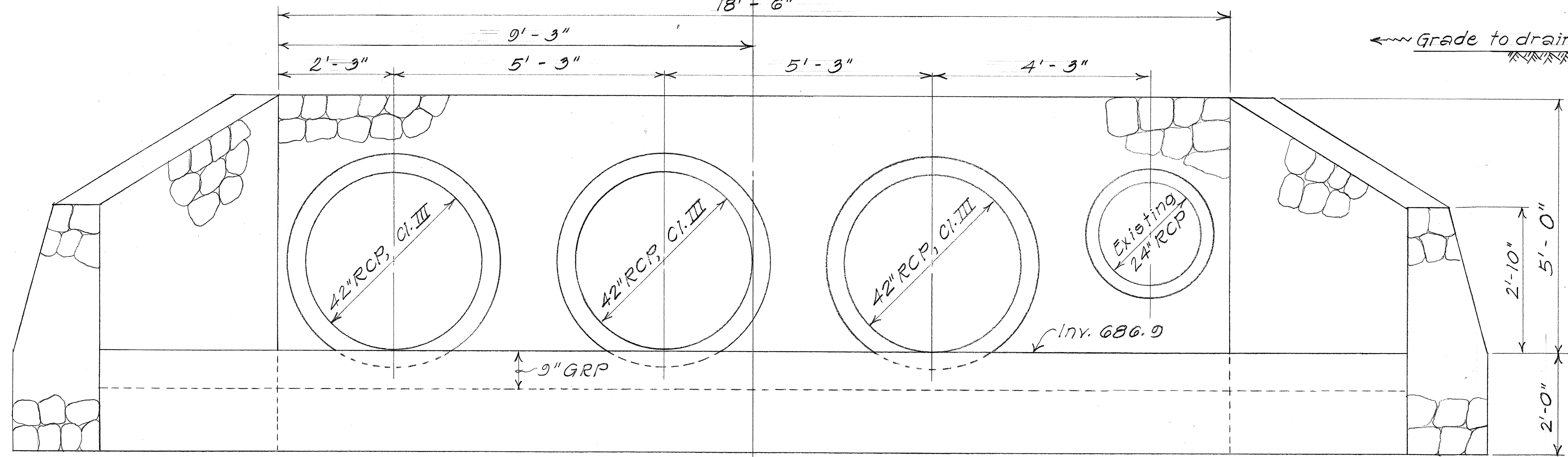
6/21/88	Added Note No. 4 per Addendum No. 1.
DATE	REVISION

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	19	35



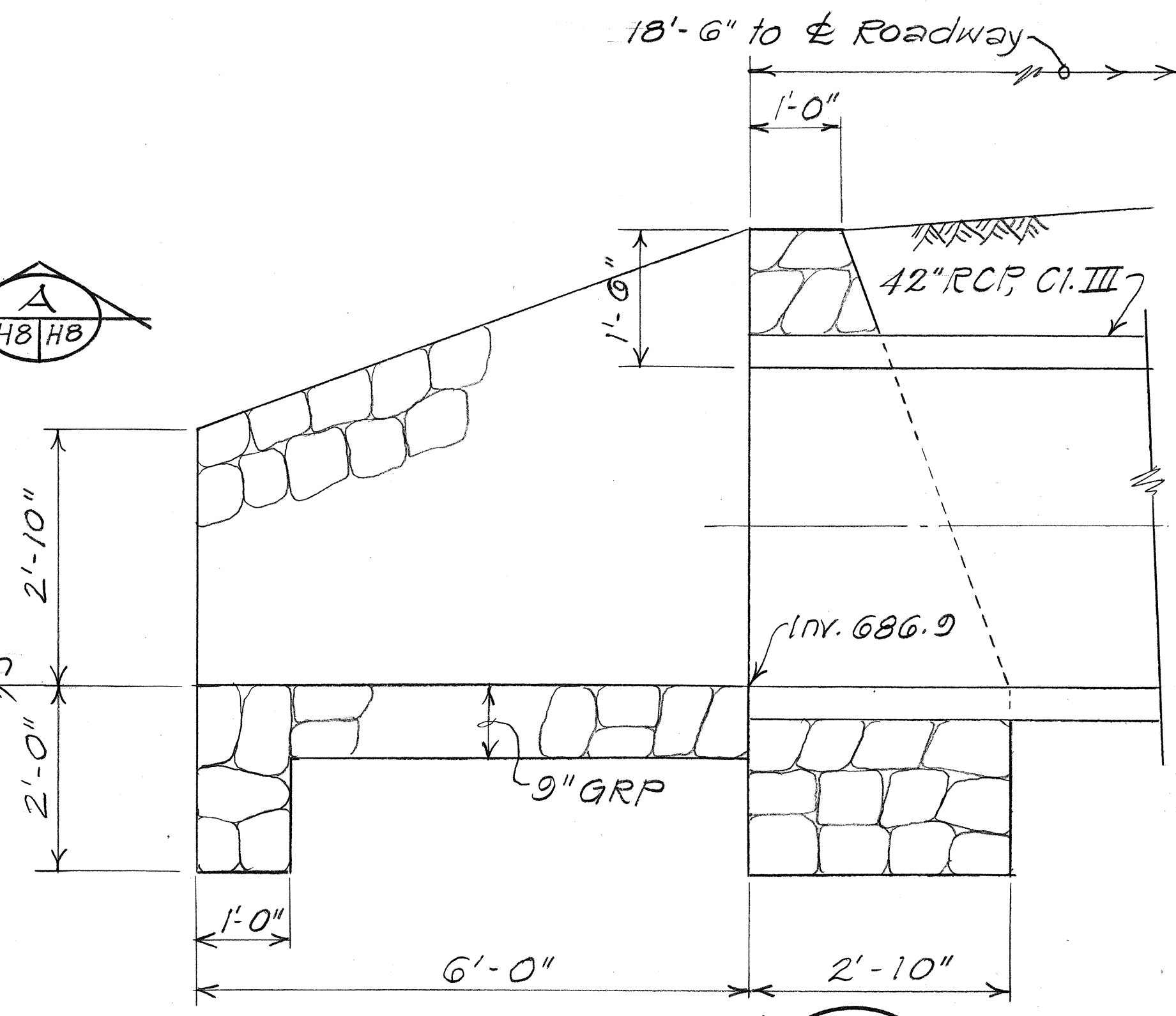
PLAN



SECTION A
HB/HB

OUTLET STRUCTURE AT STA. 755+74.75 LT.

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



SECTION B
HB/HB

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

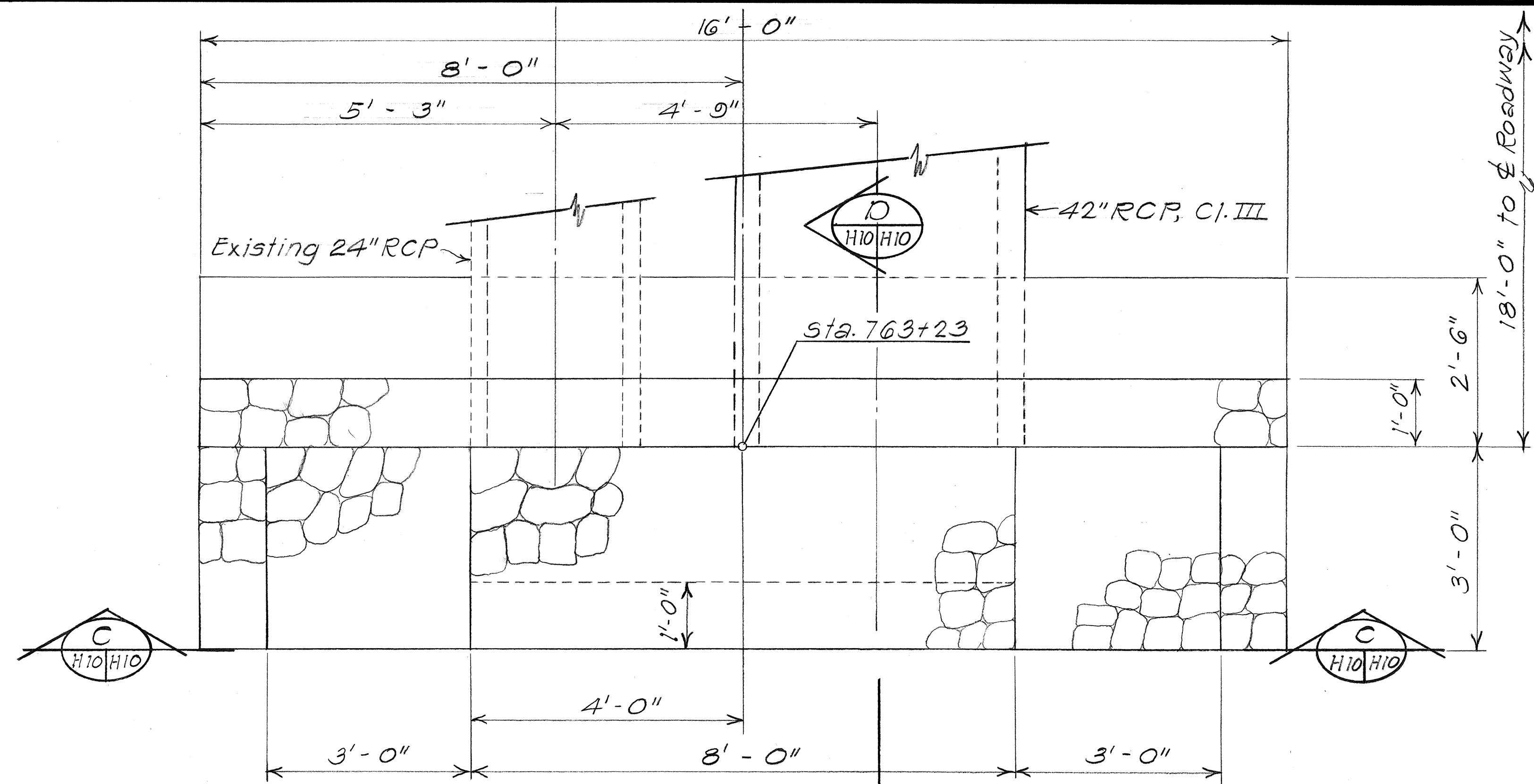
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988
SHEET NO. HB OF 16 SHEETS

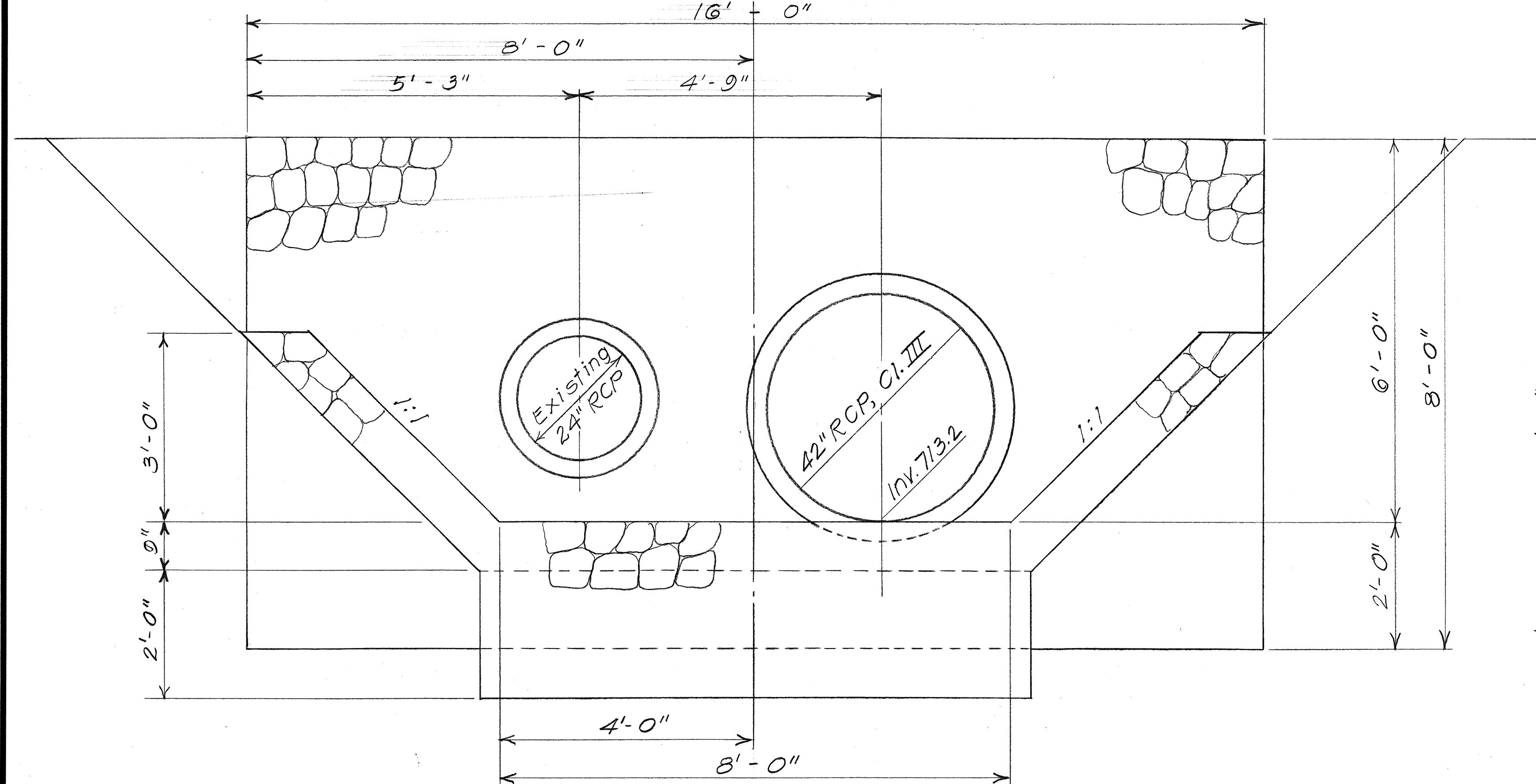
SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	21	35



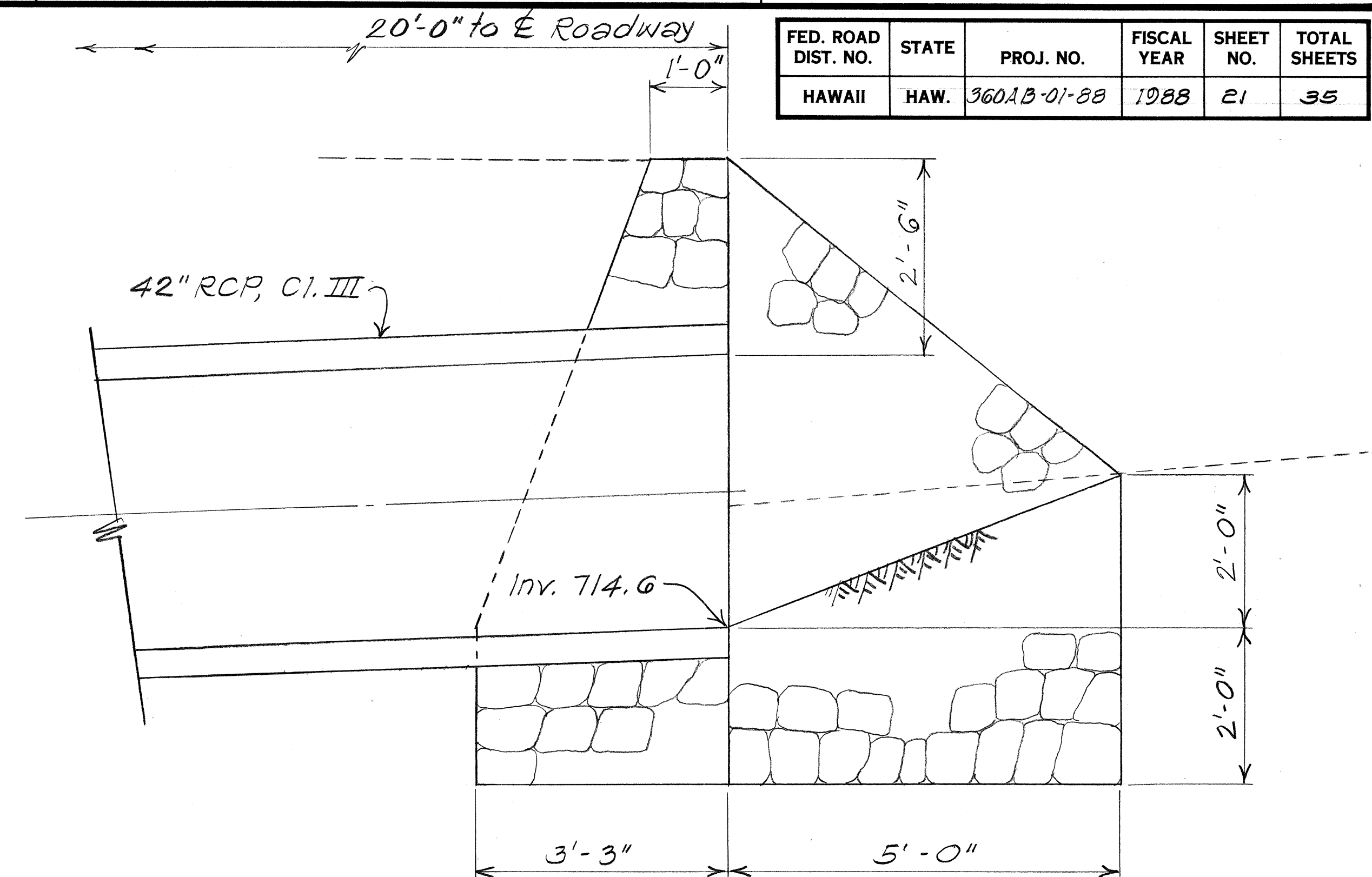
PLAN



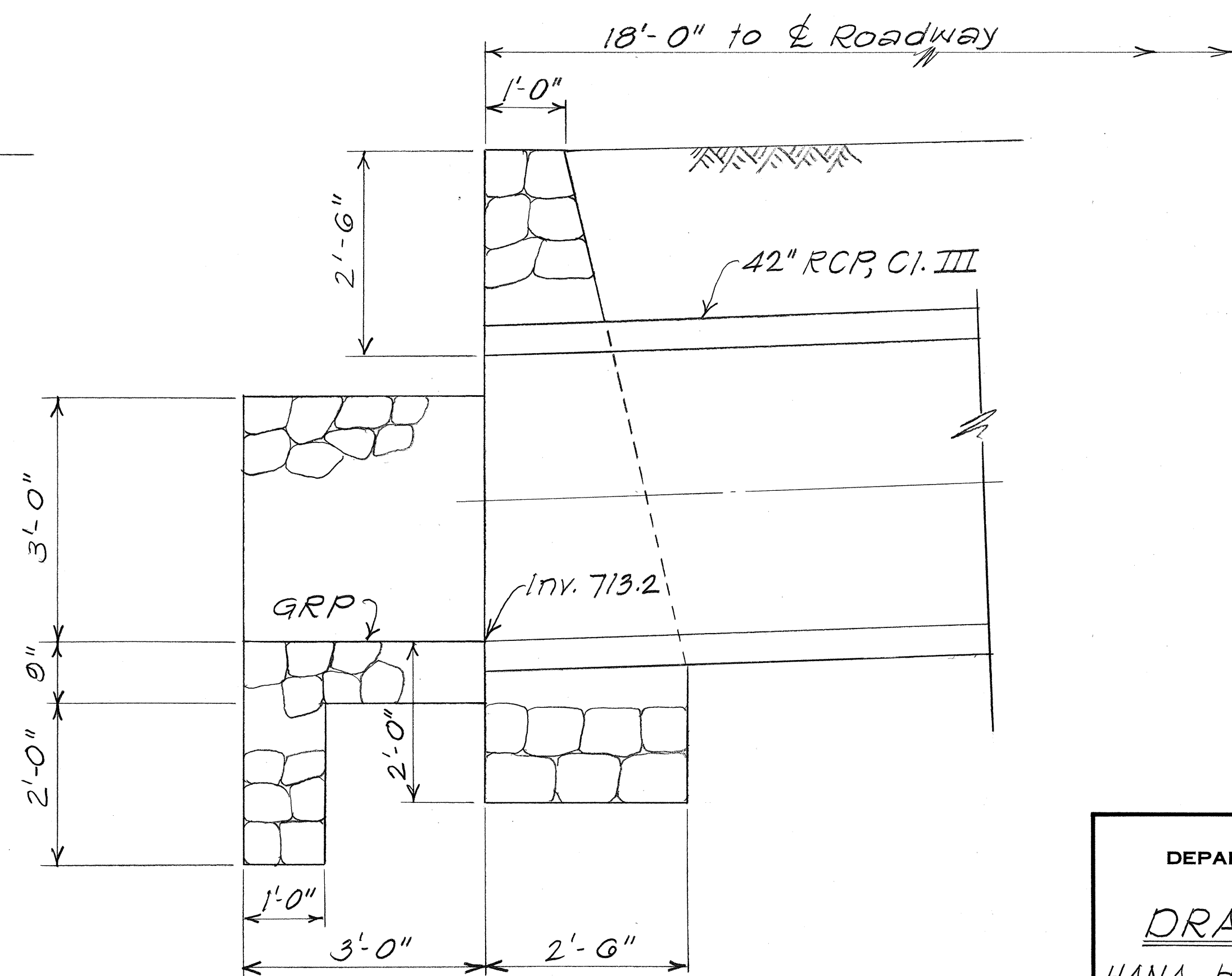
SECTION C
H10/H10

OUTLET STRUCTURE AT STA. 763+23 LT.

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



SECTION B
H9/H10



SECTION D
H10/H10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

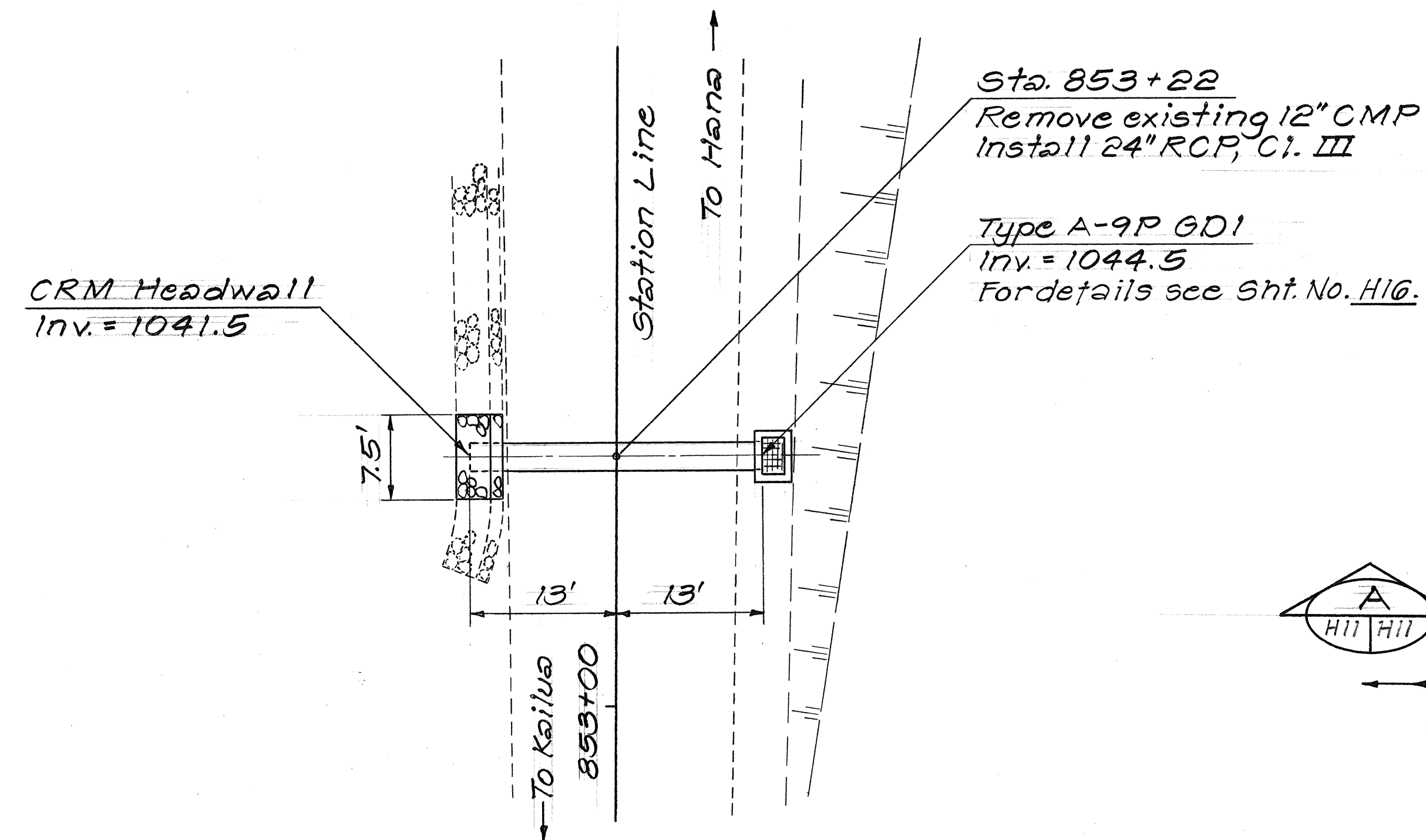
DRAINAGE DETAILS

HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

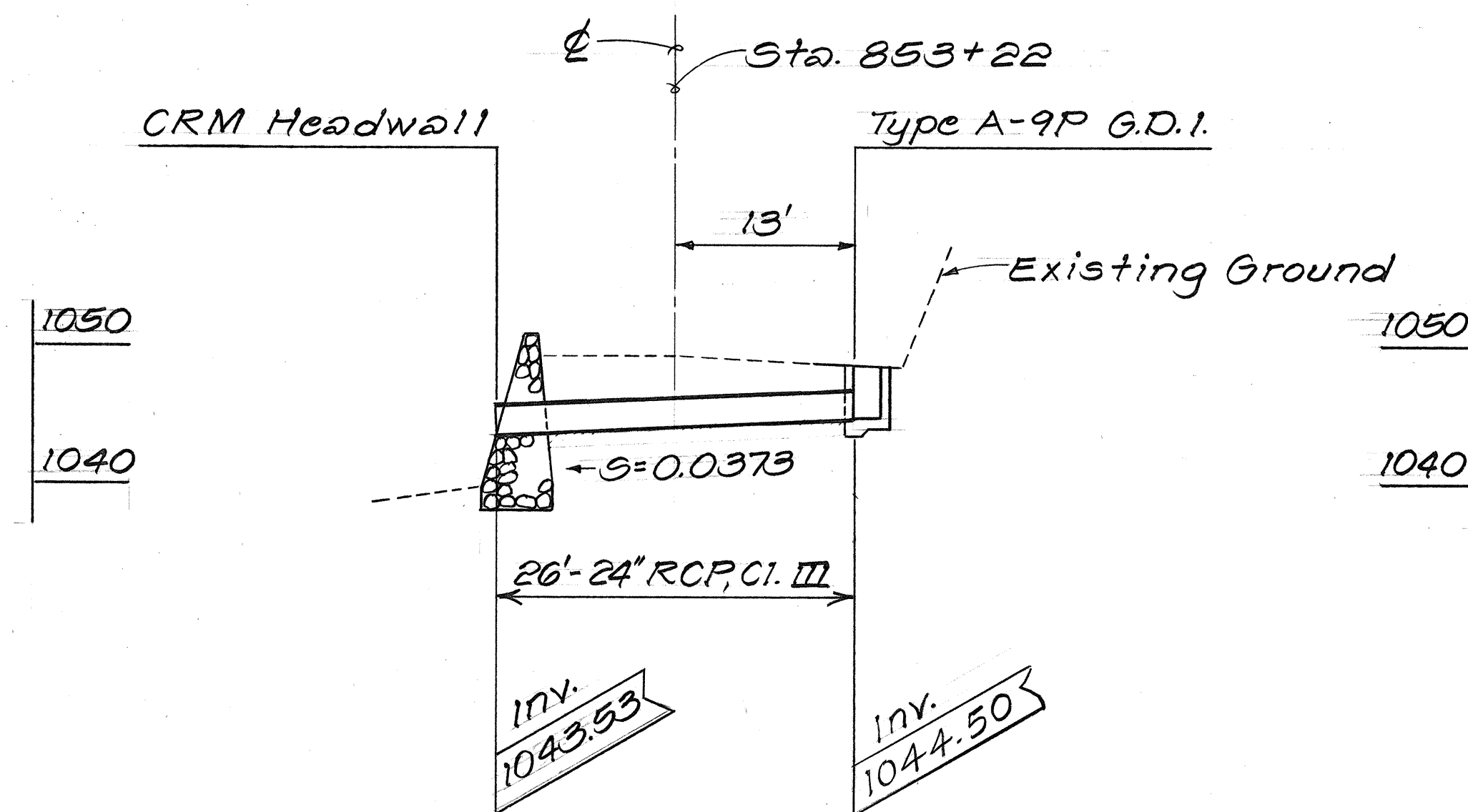
Scale: As Noted Date: Mar. 1988
SHEET NO. H10 OF 16 SHEETS

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

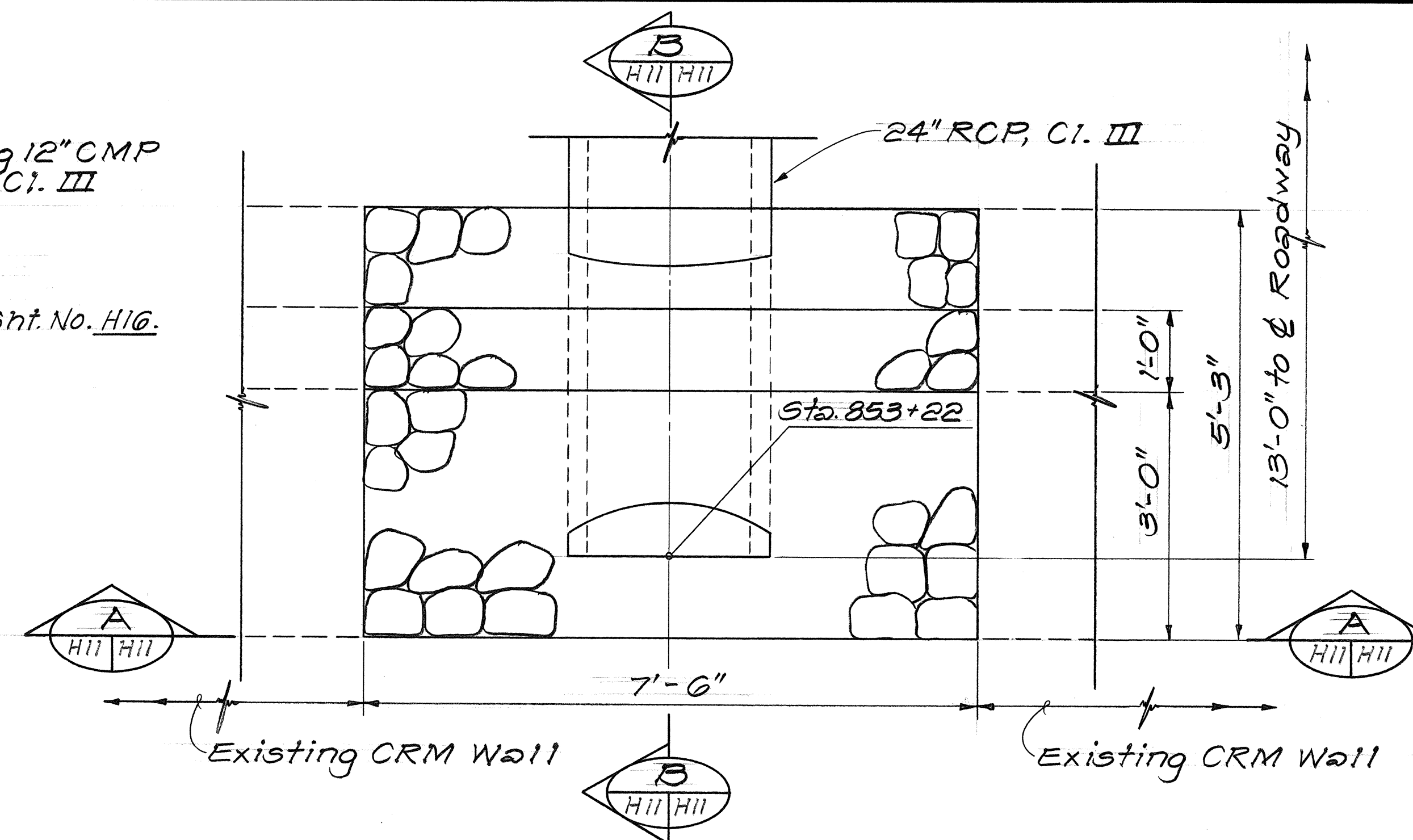
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	22	35



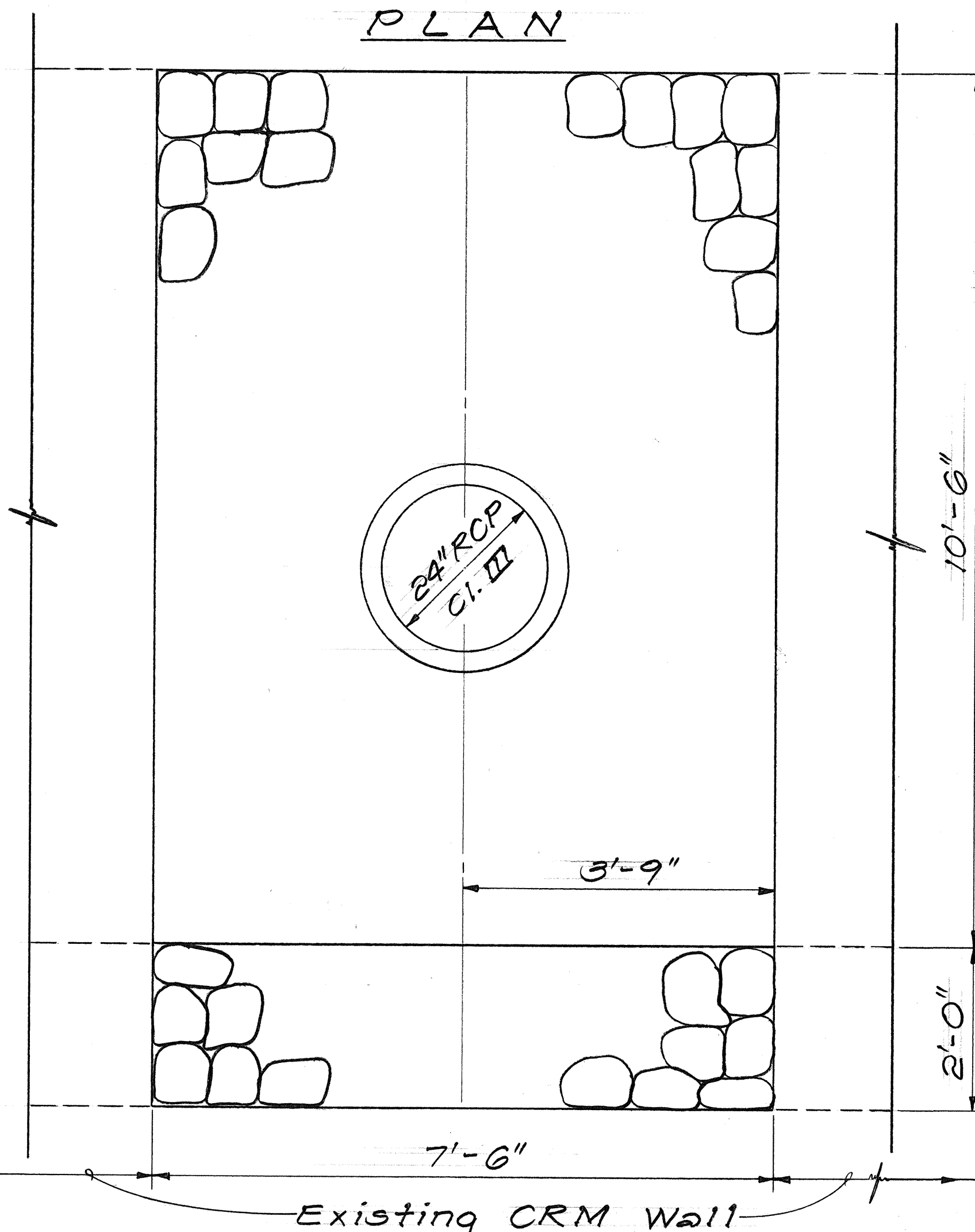
PLAN



PROFILE



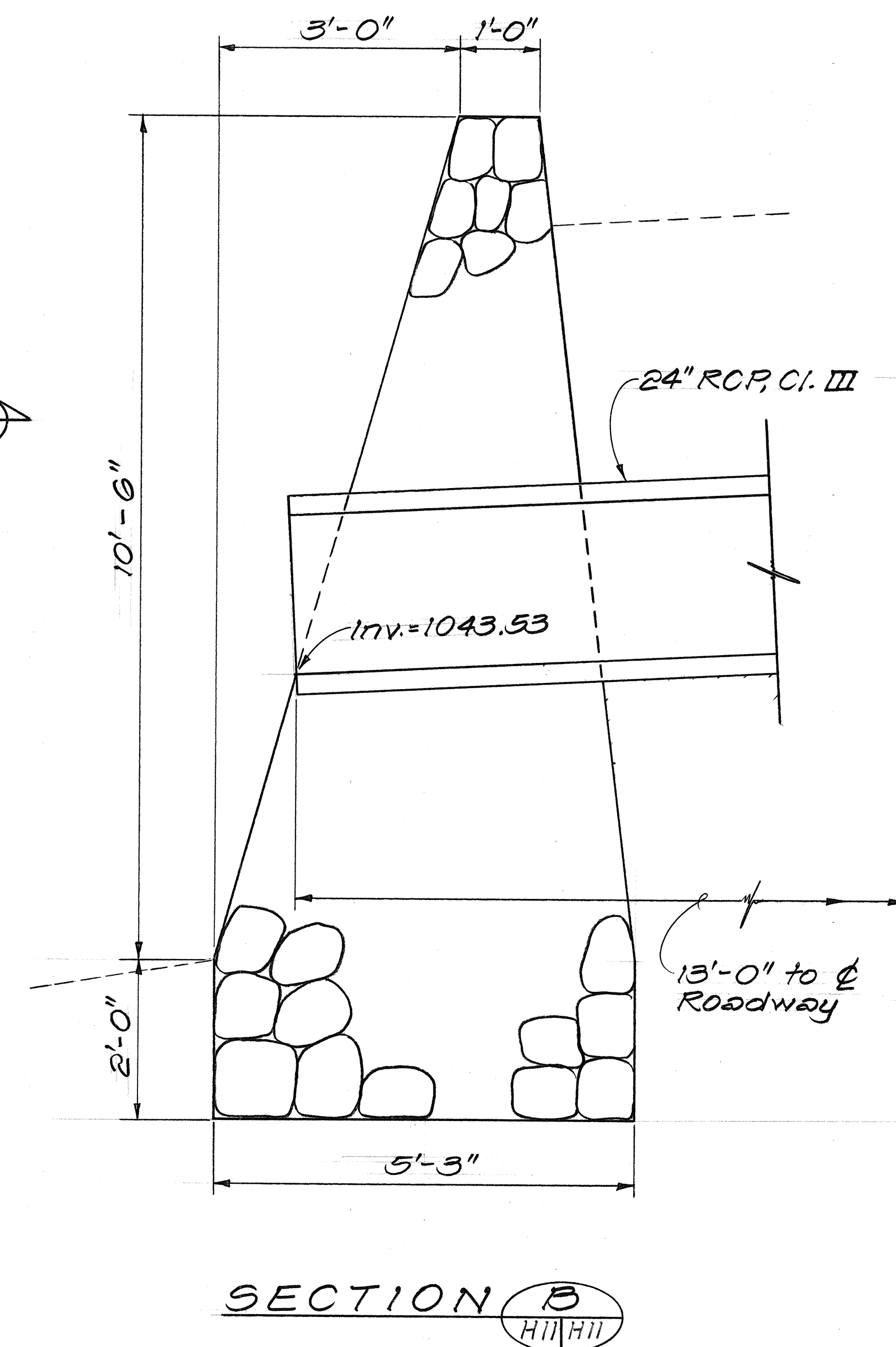
PLAN



SECTION A

CRM HEADWALL AT STA. 853+22±

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



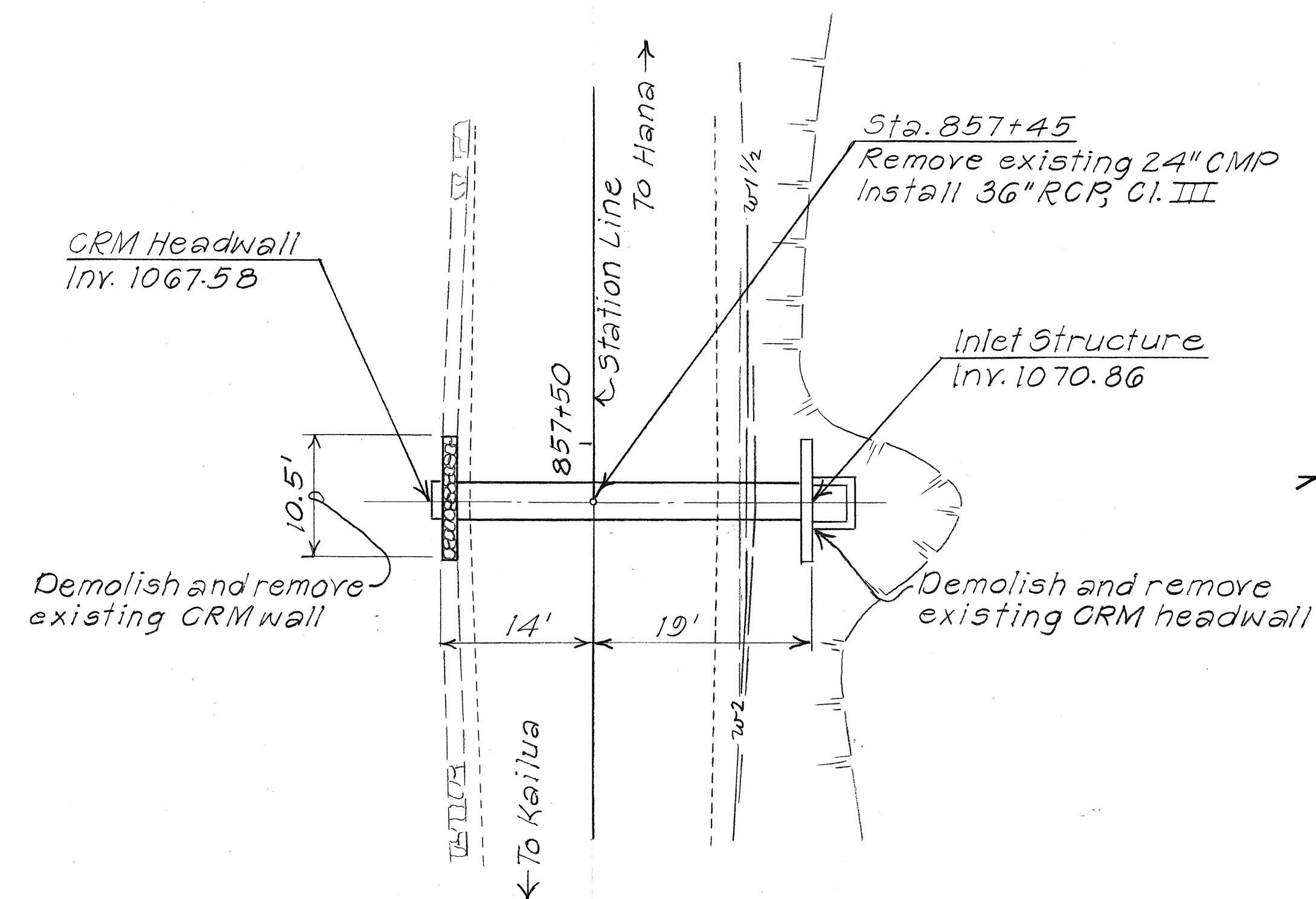
SECTION B

DETAILS OF 24" CULVERT AT STA. 853+22±

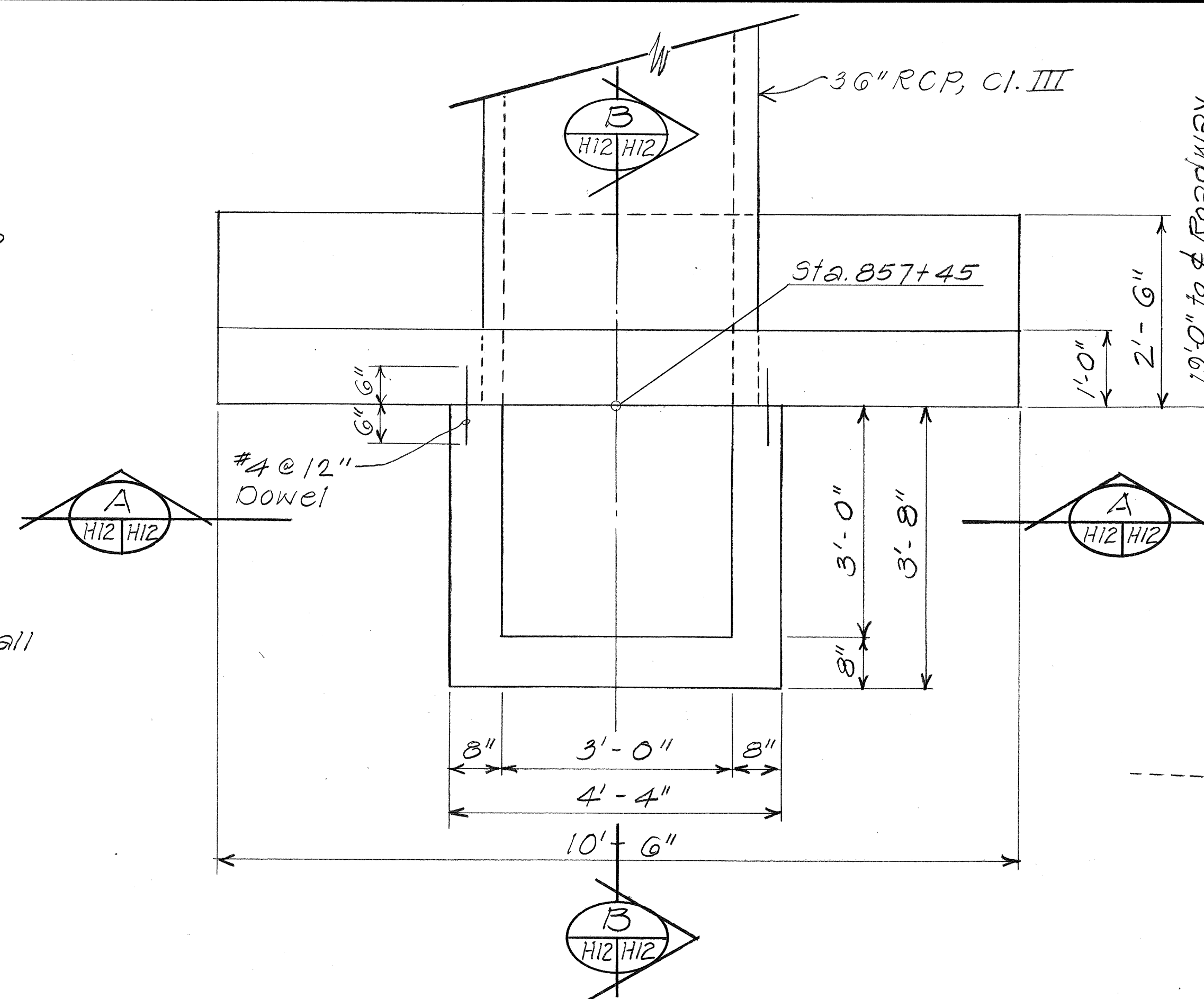
Scale: 1" = 10'

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
DRAINAGE DETAILS
HANA HIGHWAY IMPROVEMENTS KEANAE & NAHIKU SECTIONS PROJ. NO. 360AB-01-88
Scale: As Noted Date: Mar. 1988
SHEET NO. H11 OF 16 SHEETS

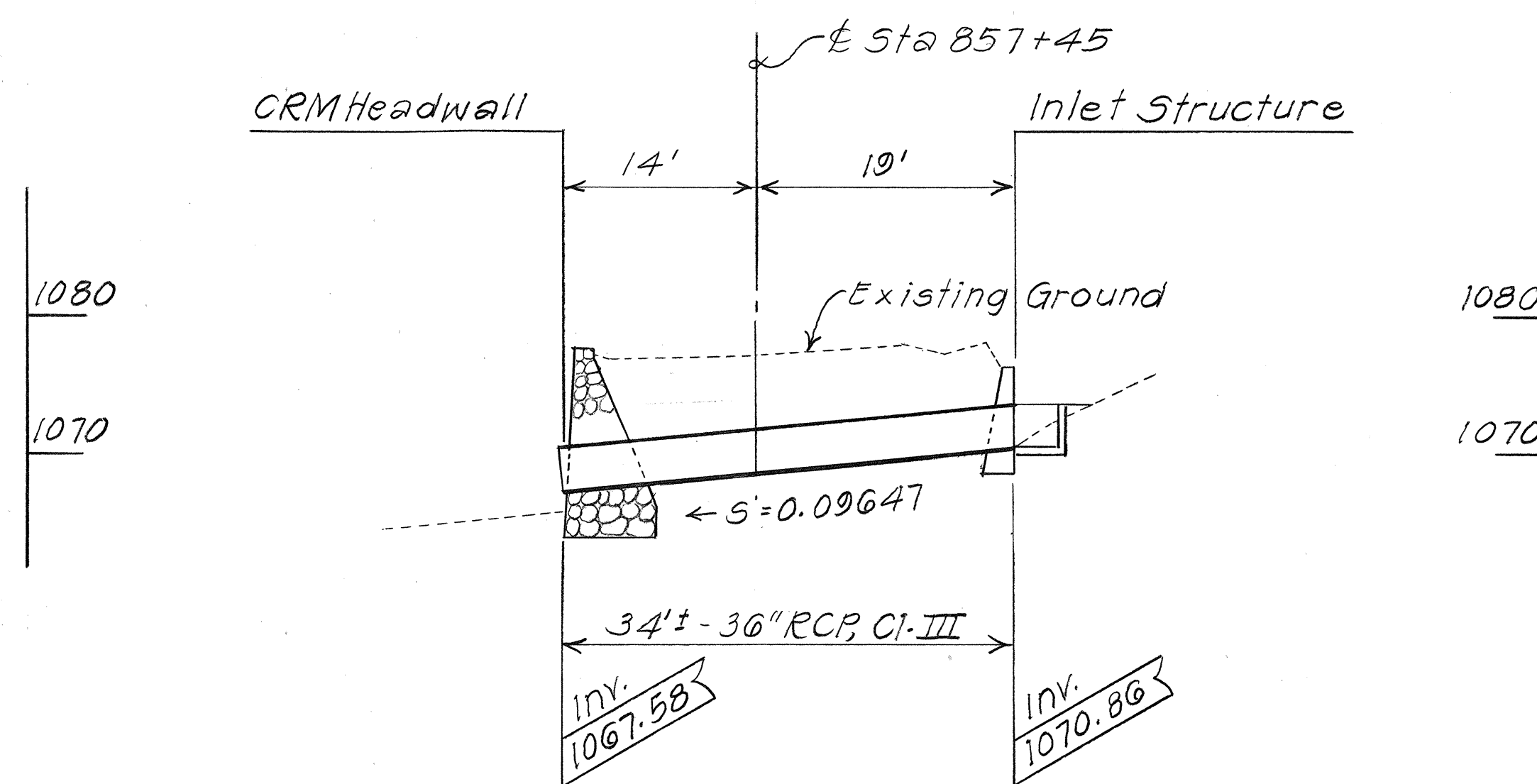
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	23	35



PLAN

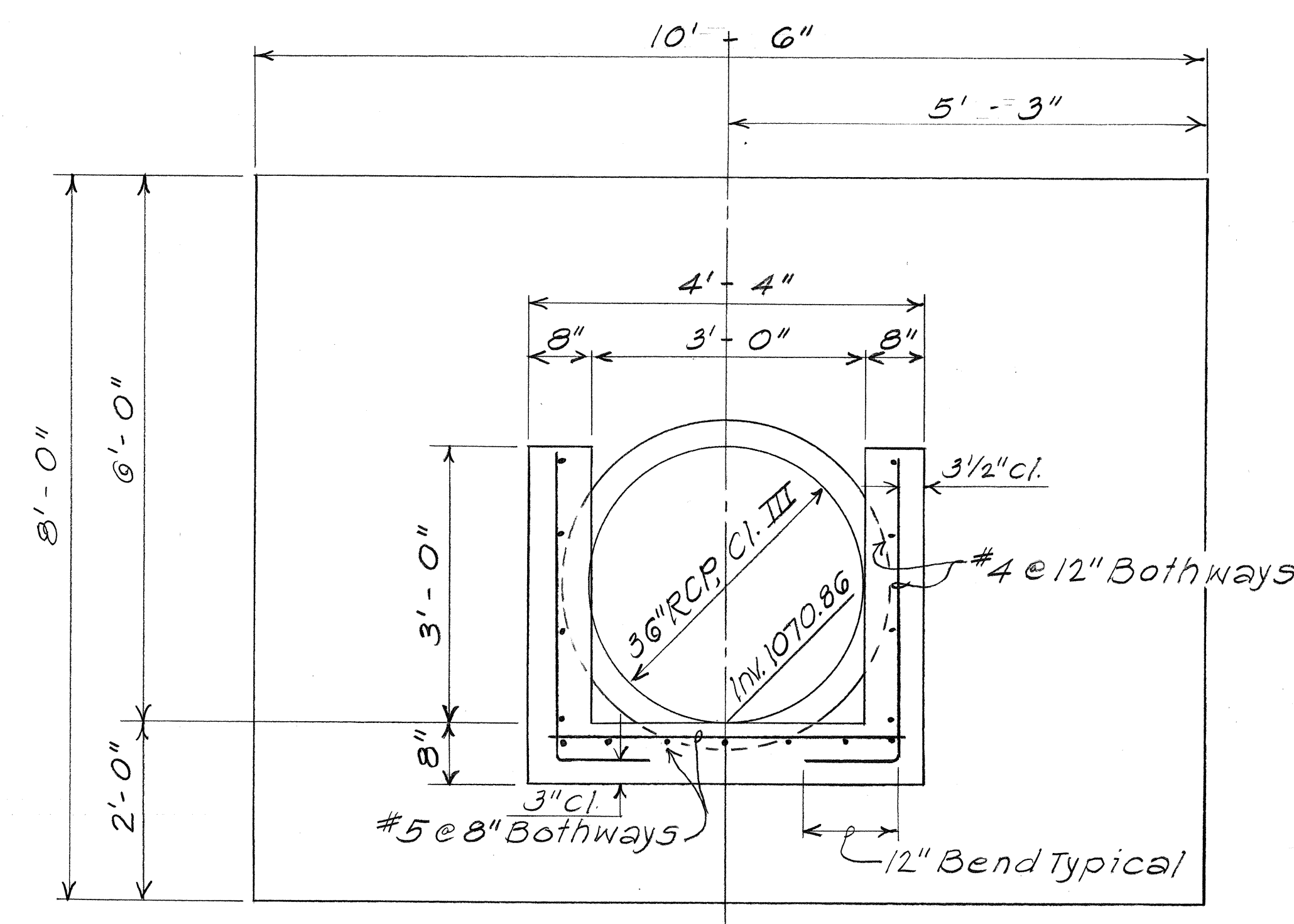


PLAN



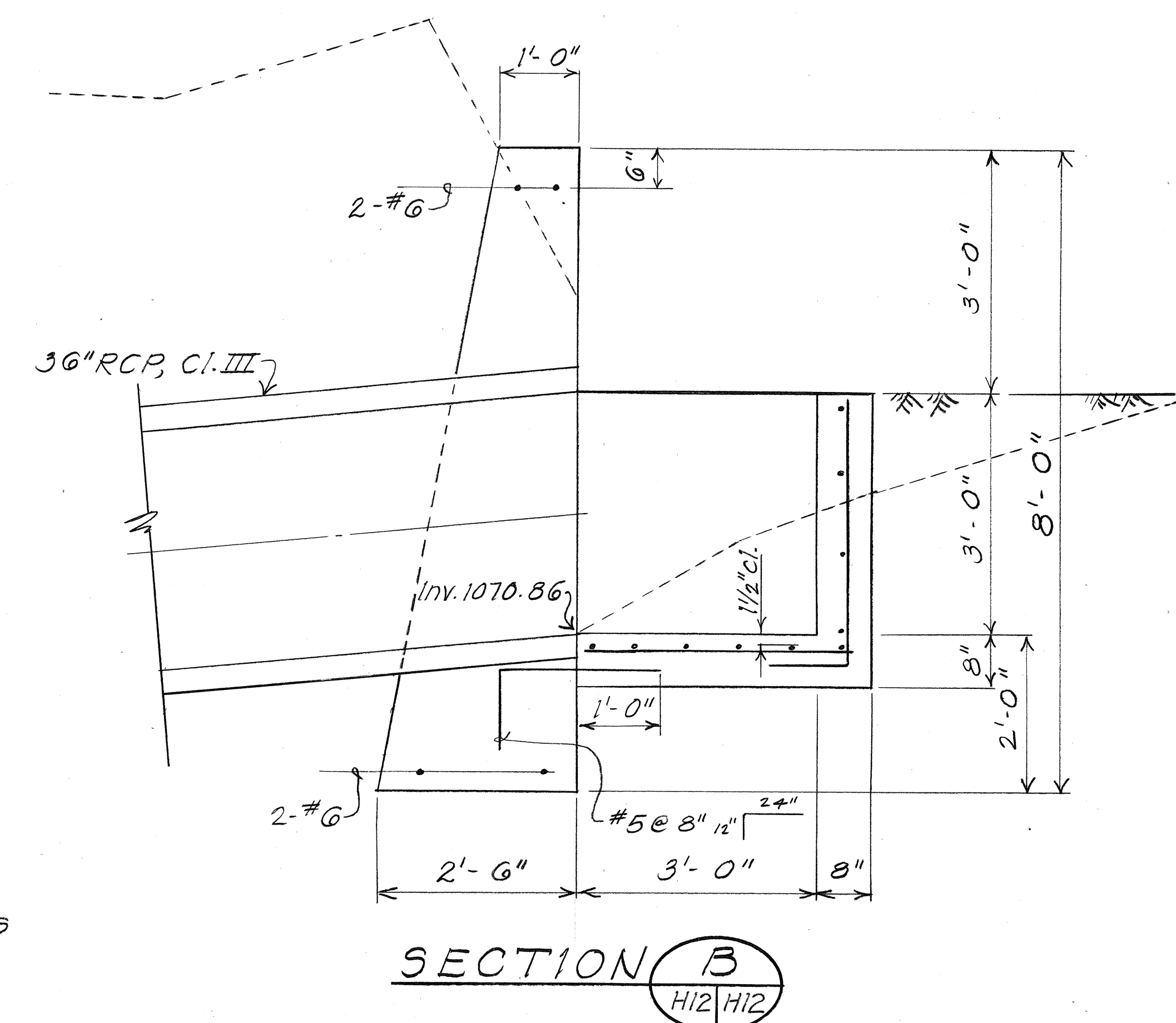
PROFILE

DETAILS OF 36" CULVERT AT STA. 857+45
Scale: 1" = 10'



SECTION A
H12 H12

INLET STRUCTURE AT STA 857+45 RT.
Scale: 3/4" = 1' - 0"



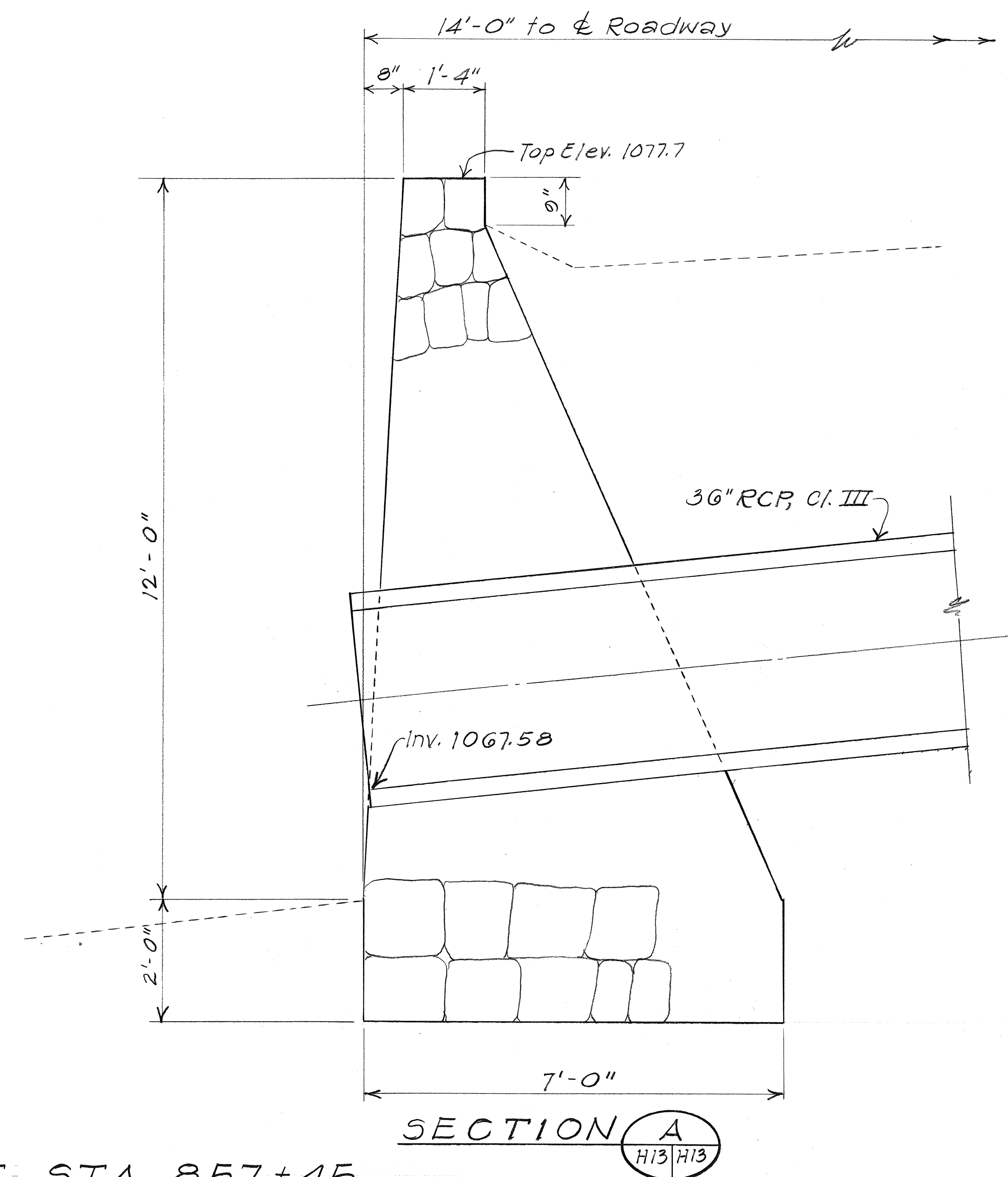
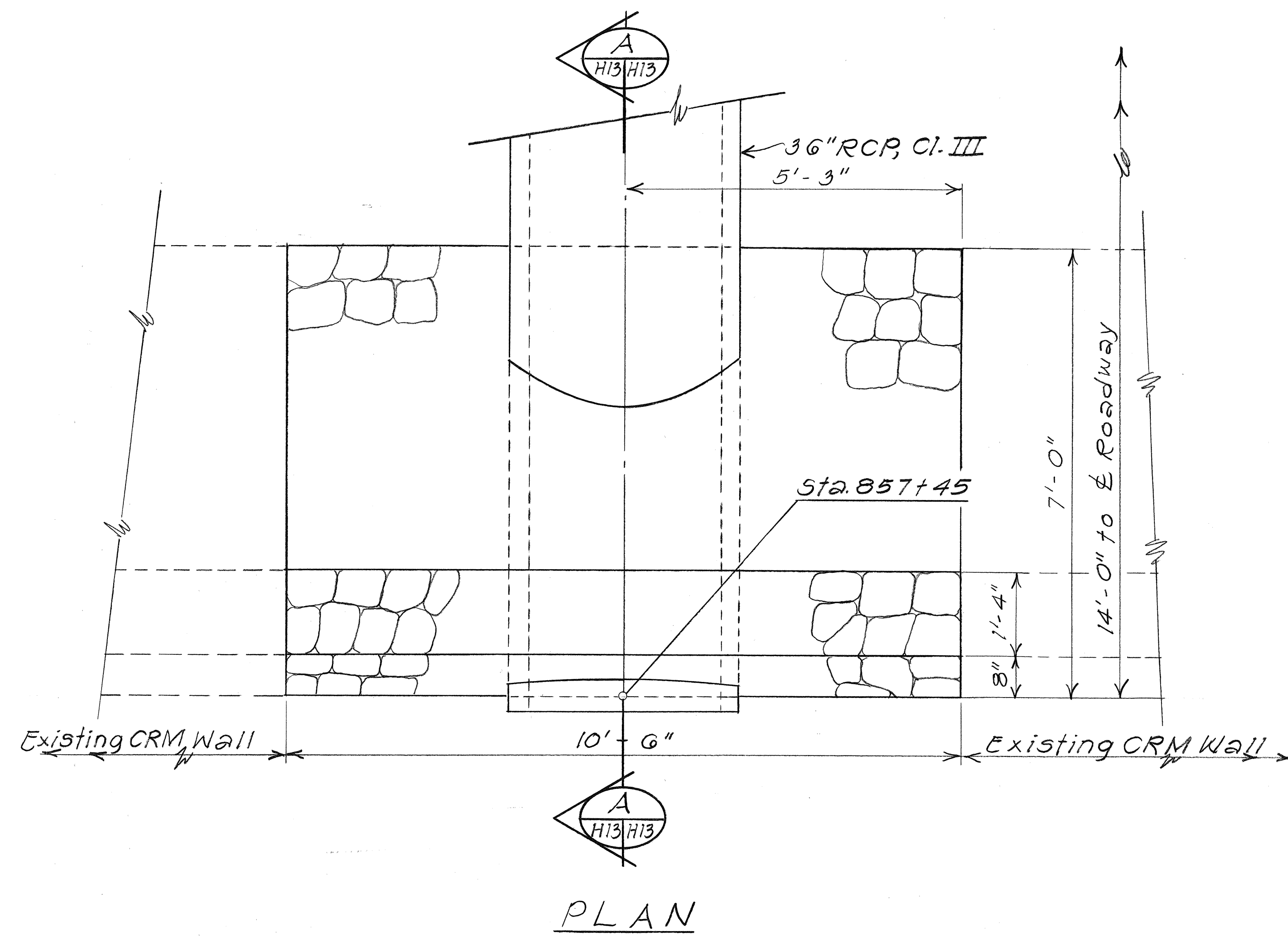
SECTION B
H12 H12

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988
SHEET No. H12 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	24	35



CRM HEADWALL AT STA. 857+45
Scale: 3/4" = 1'-0"

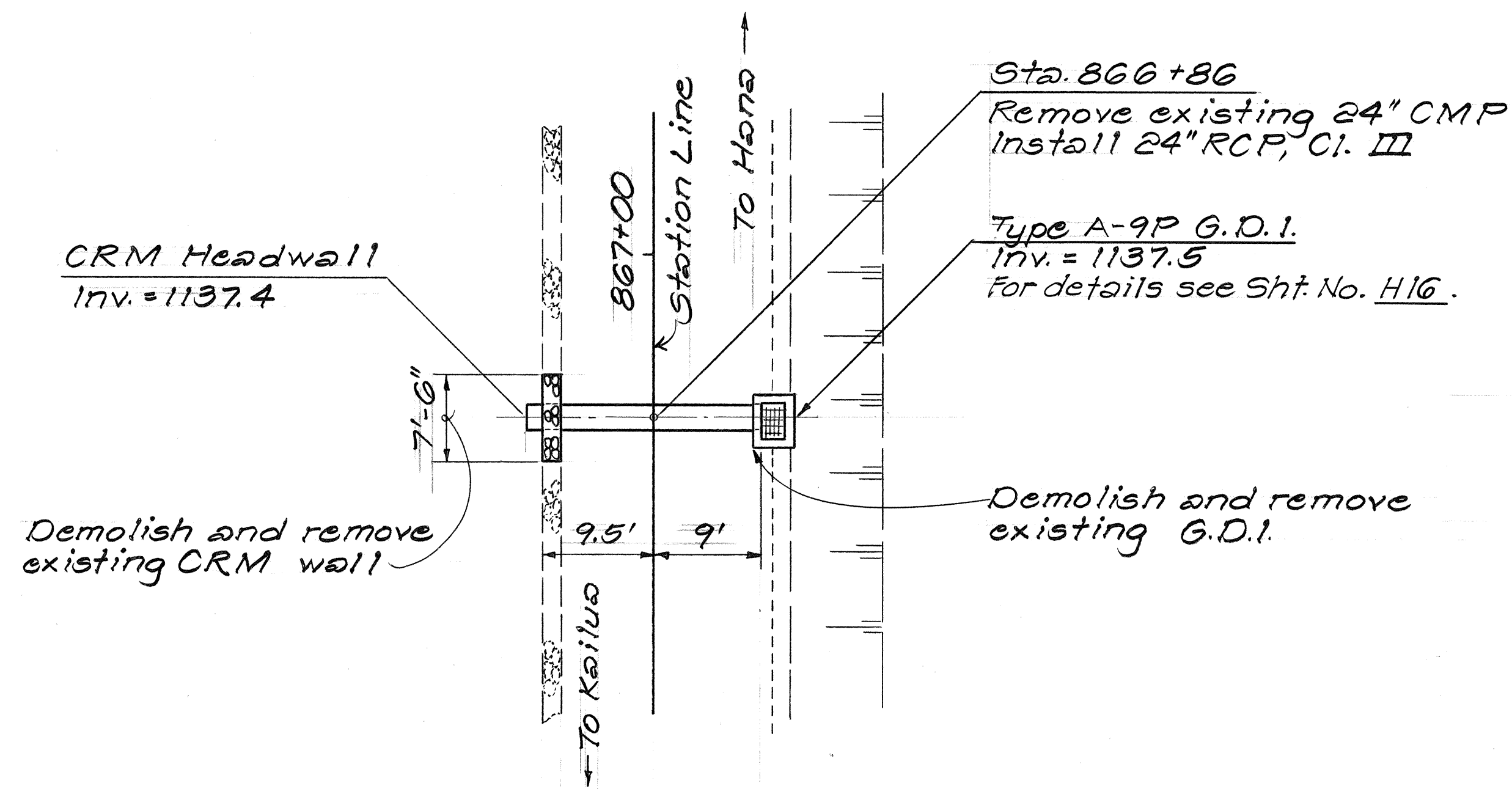
SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
DESIGNED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

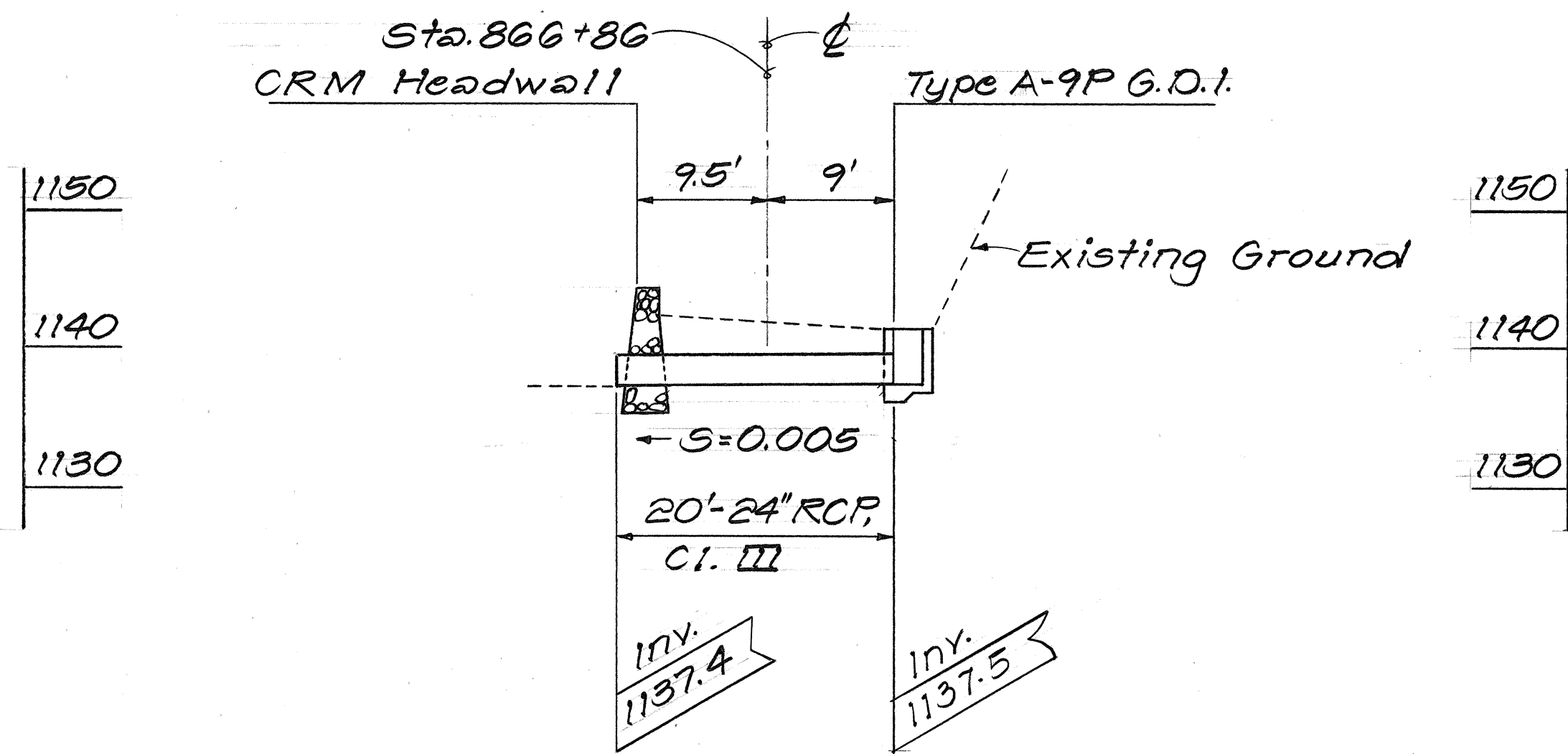
DRAINAGE DETAILS
HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988
SHEET NO. H13 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	25	35

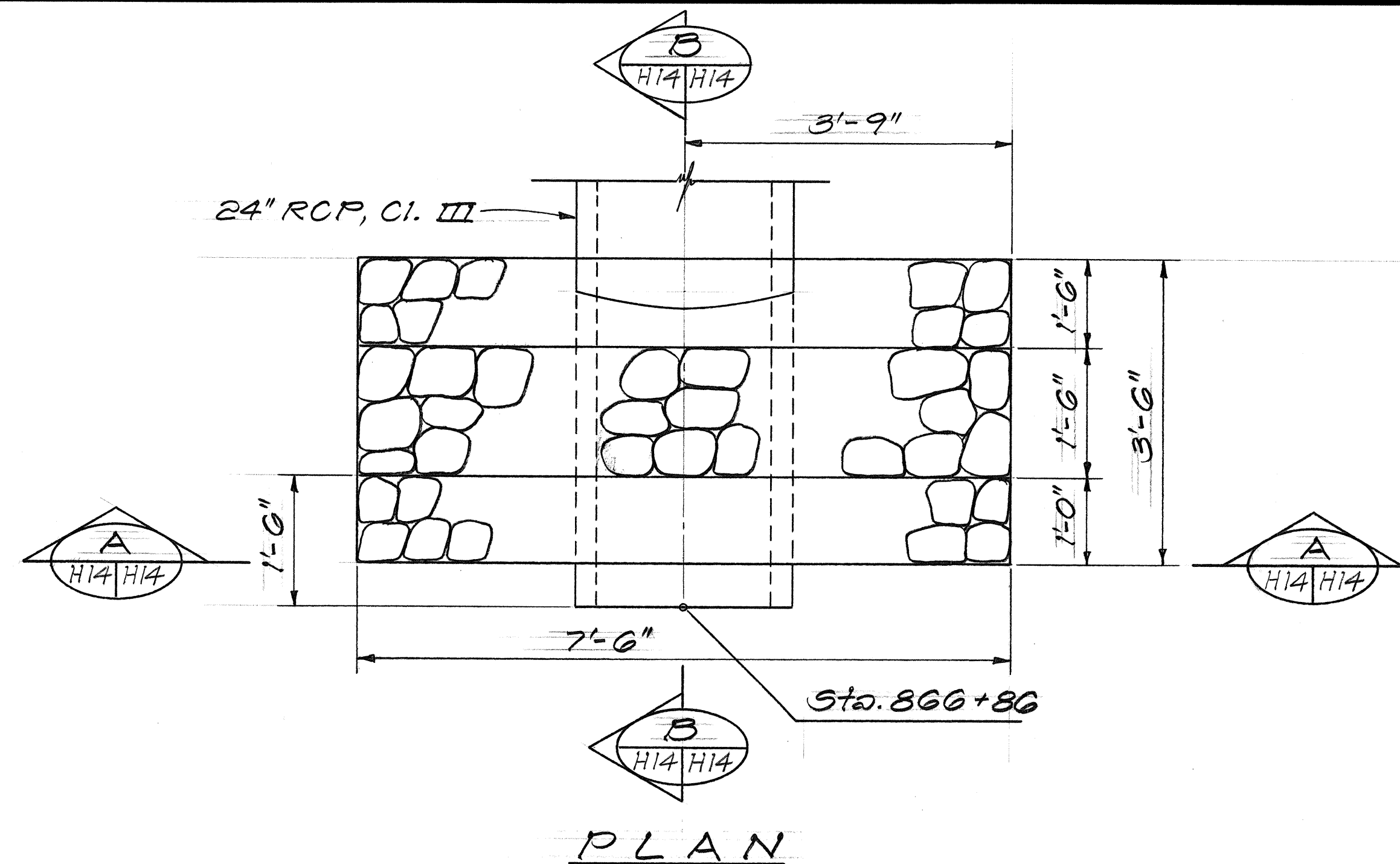


PLAN

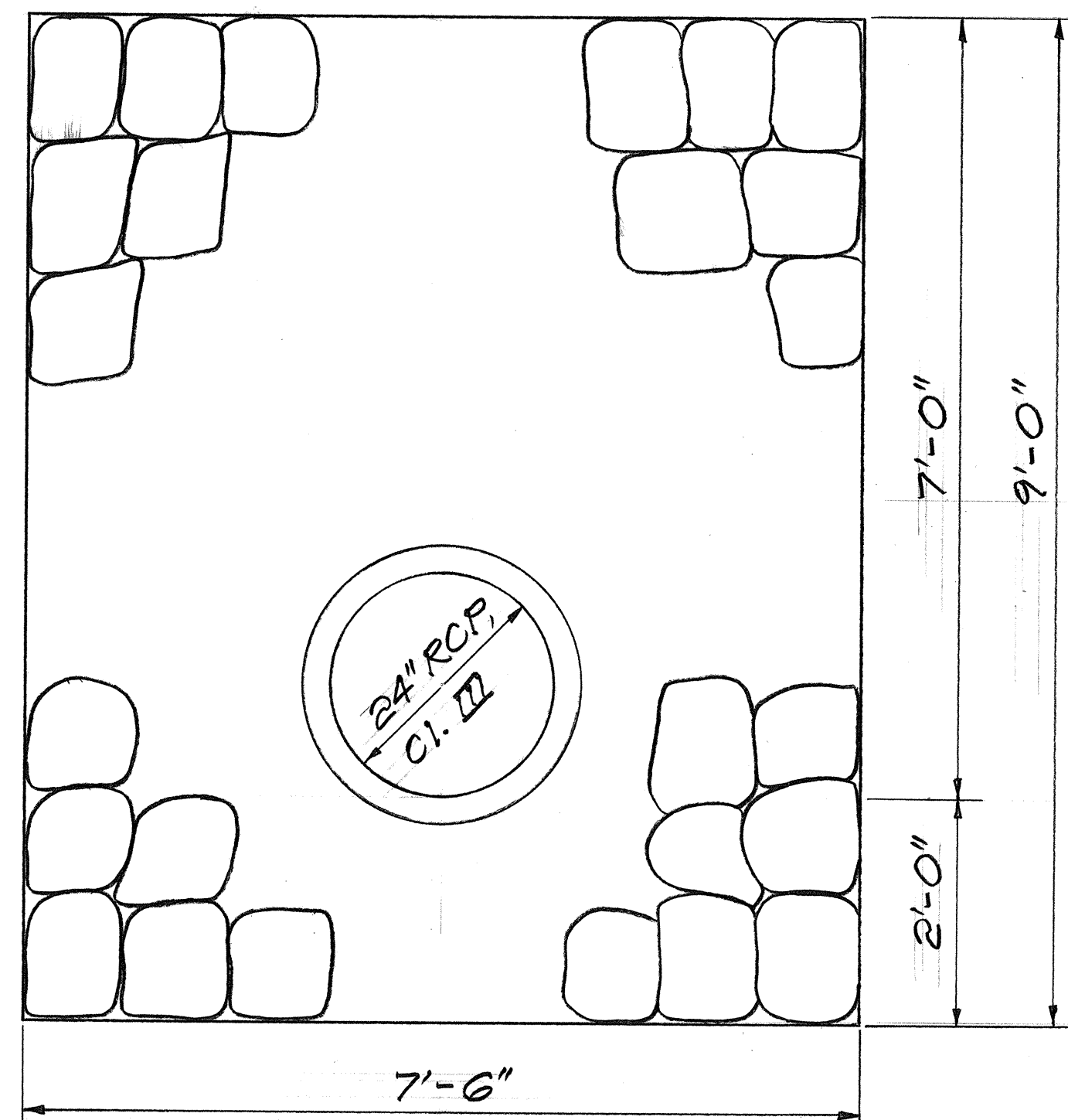


PROFILE

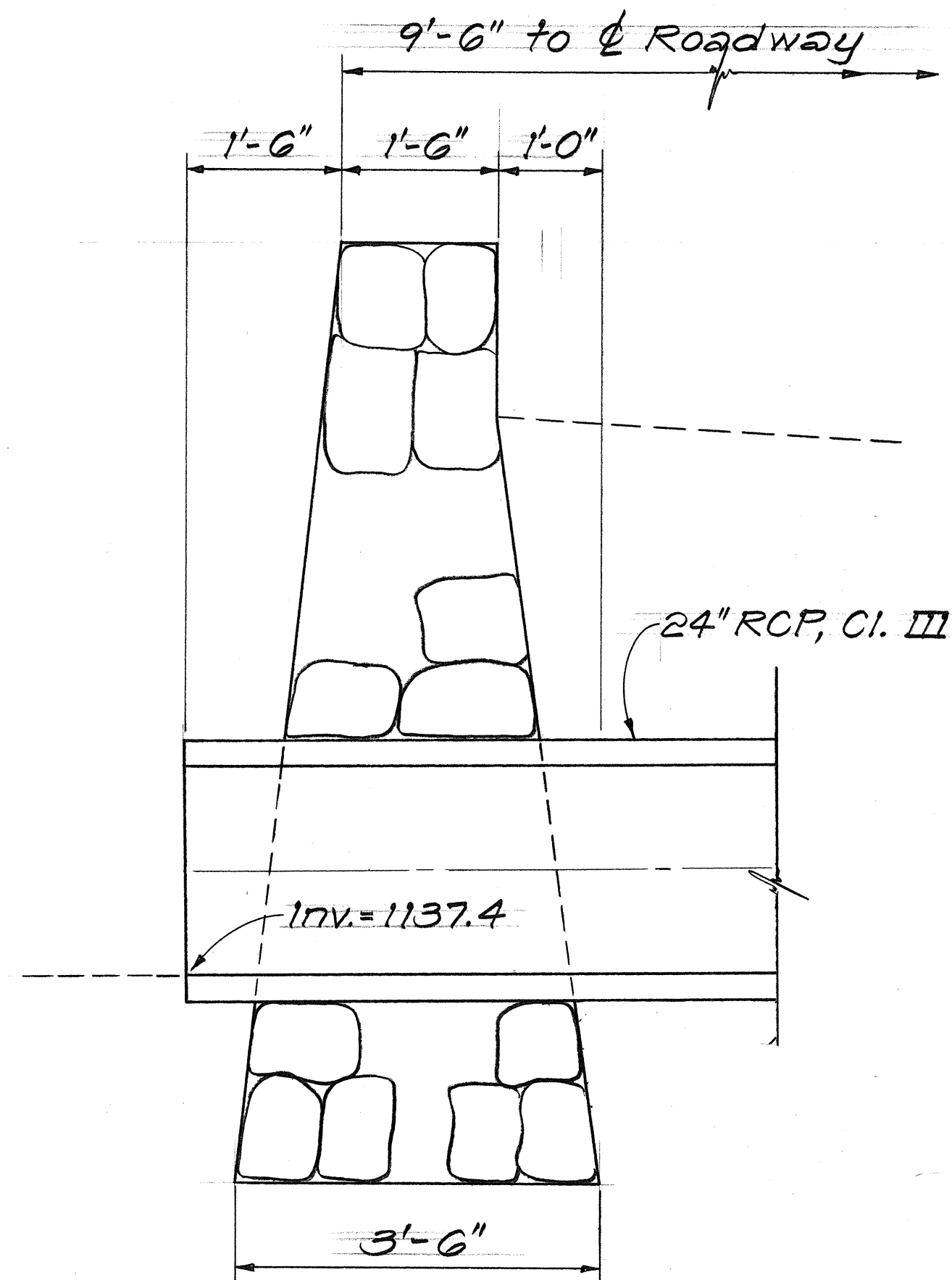
DETAILS OF 24" CULVERT AT STA. 866+86 ±
Scale: 1" = 10'



PLAN



SECTION A
H14/H14



SECTION B
H14/H14

CRM HEADWALL AT STA. 866+86 ±
Scale: 3/4" = 1'-0"

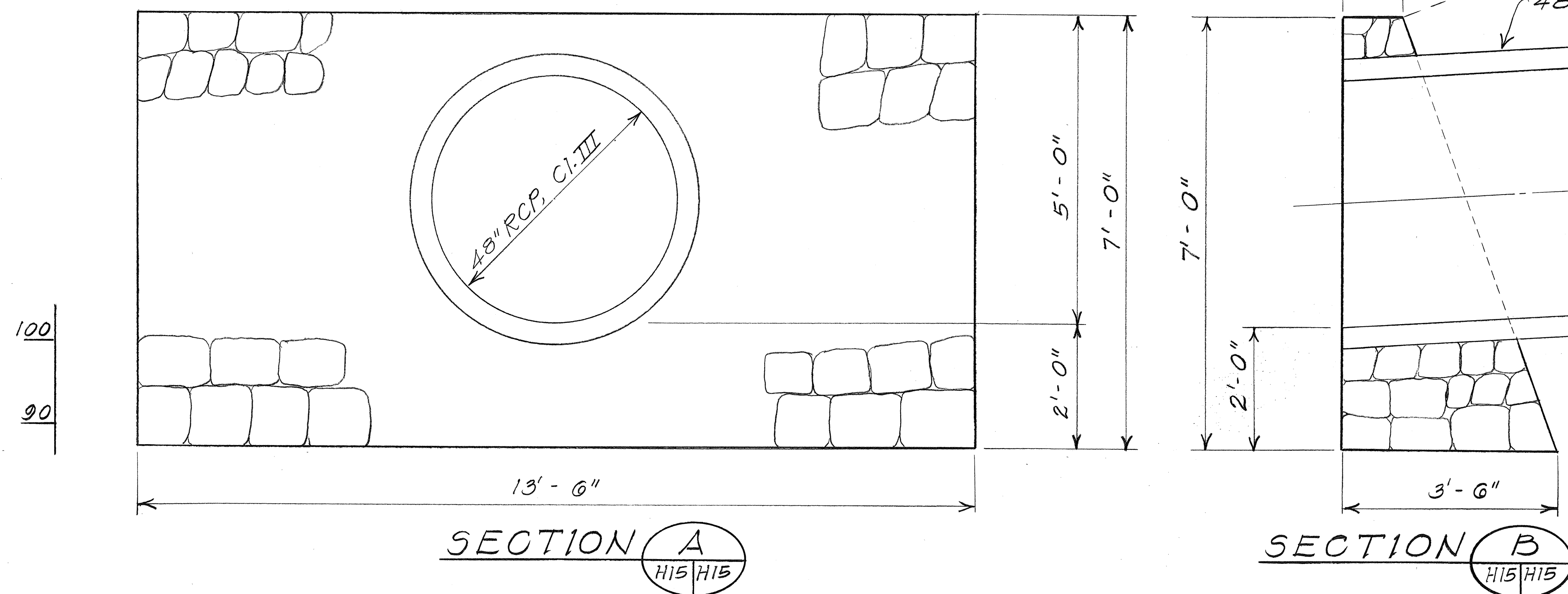
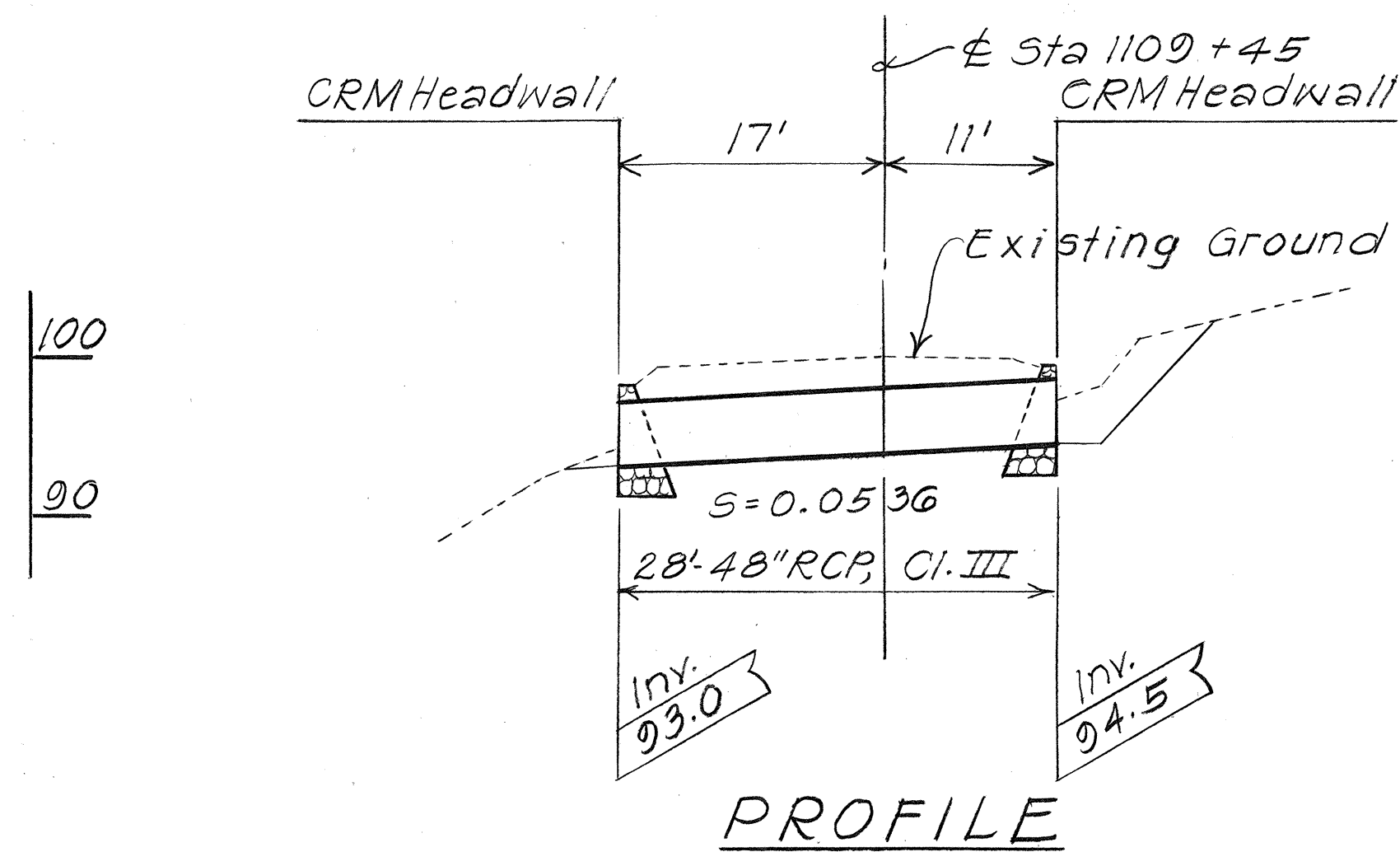
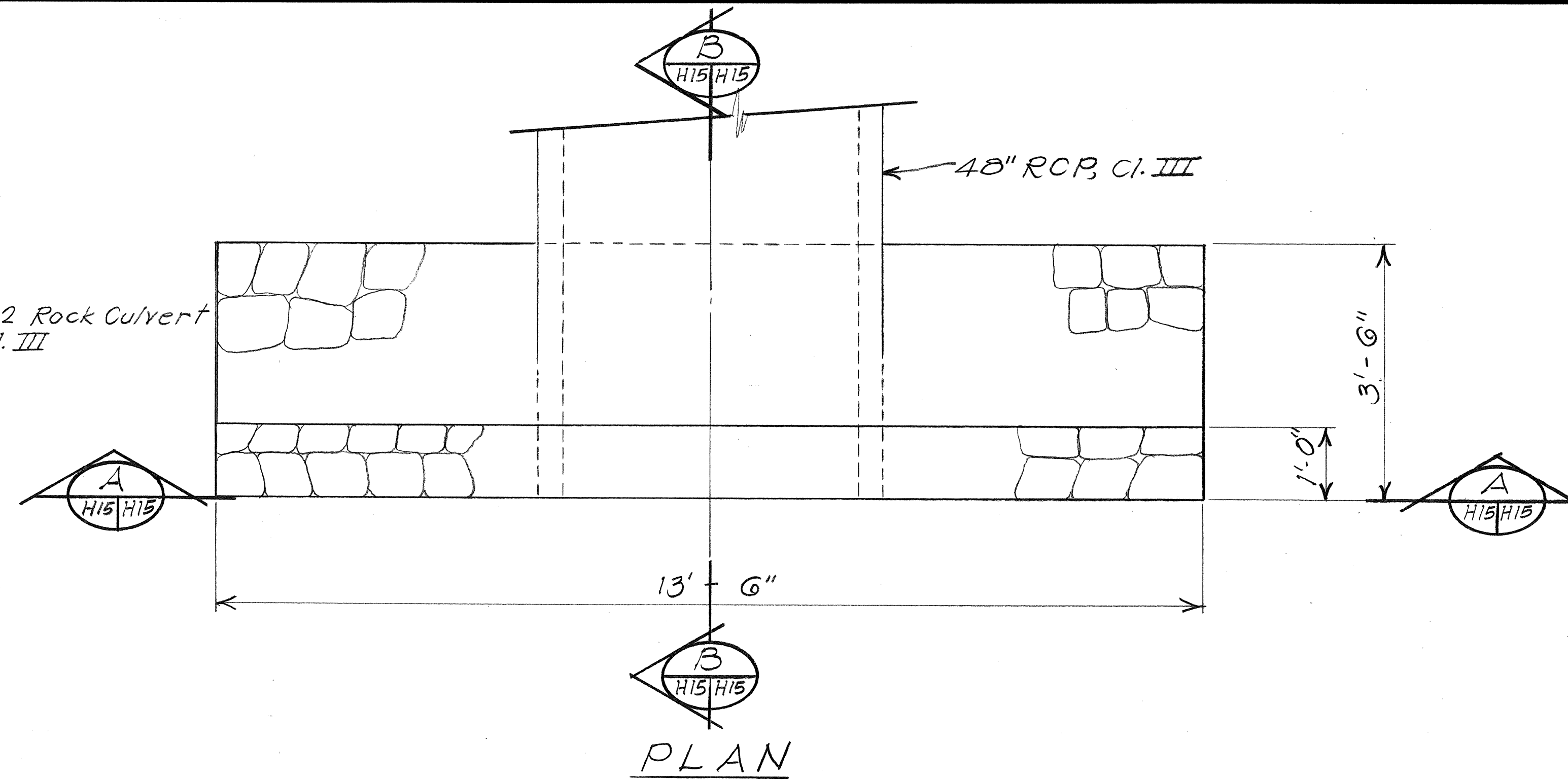
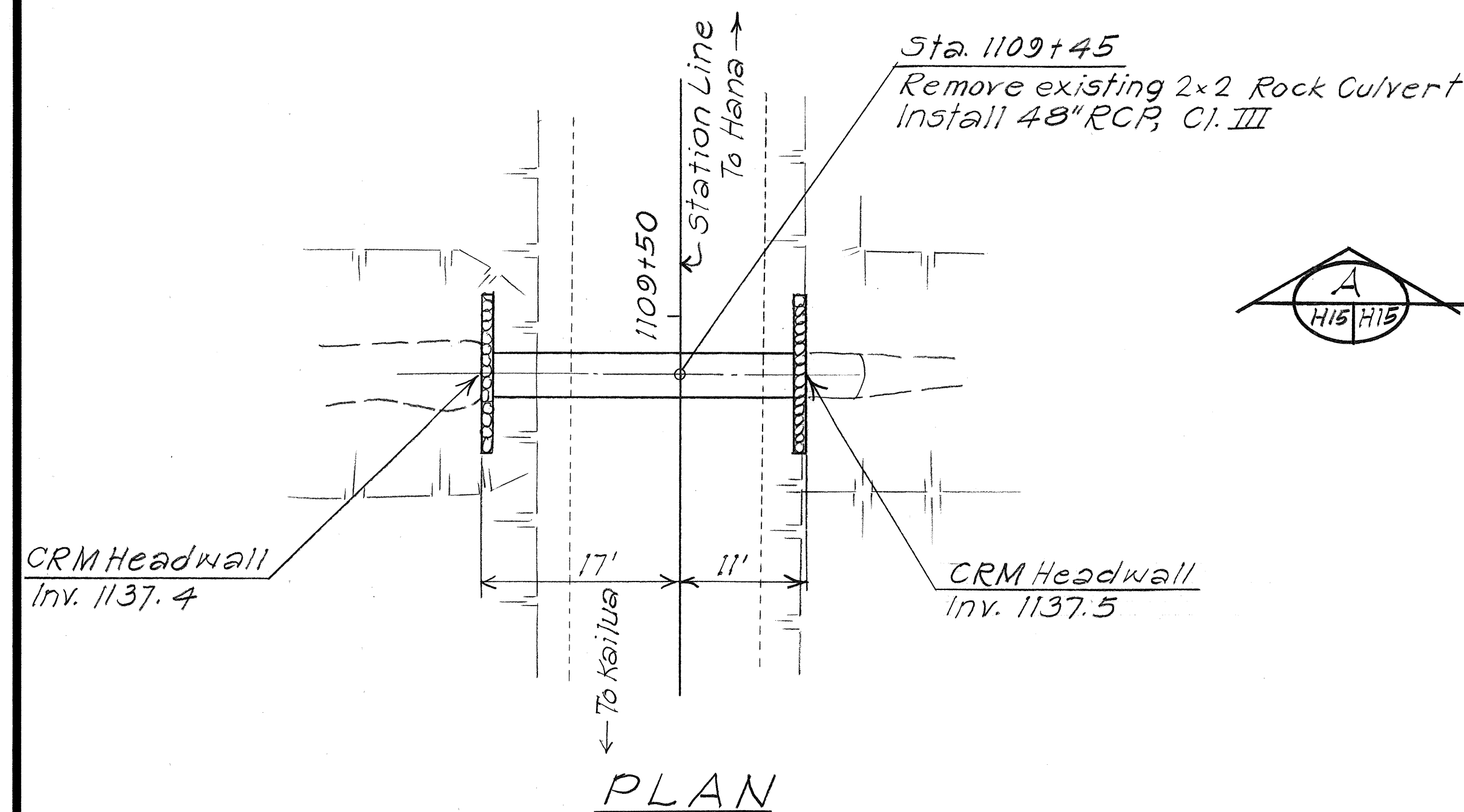
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

HANA HIGHWAY IMPROVEMENTS
KEANAE & NAHIKU SECTIONS
PROJ. NO. 360AB-01-88

Scale: As Noted Date: Mar. 1988
SHEET NO. H14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	26	35



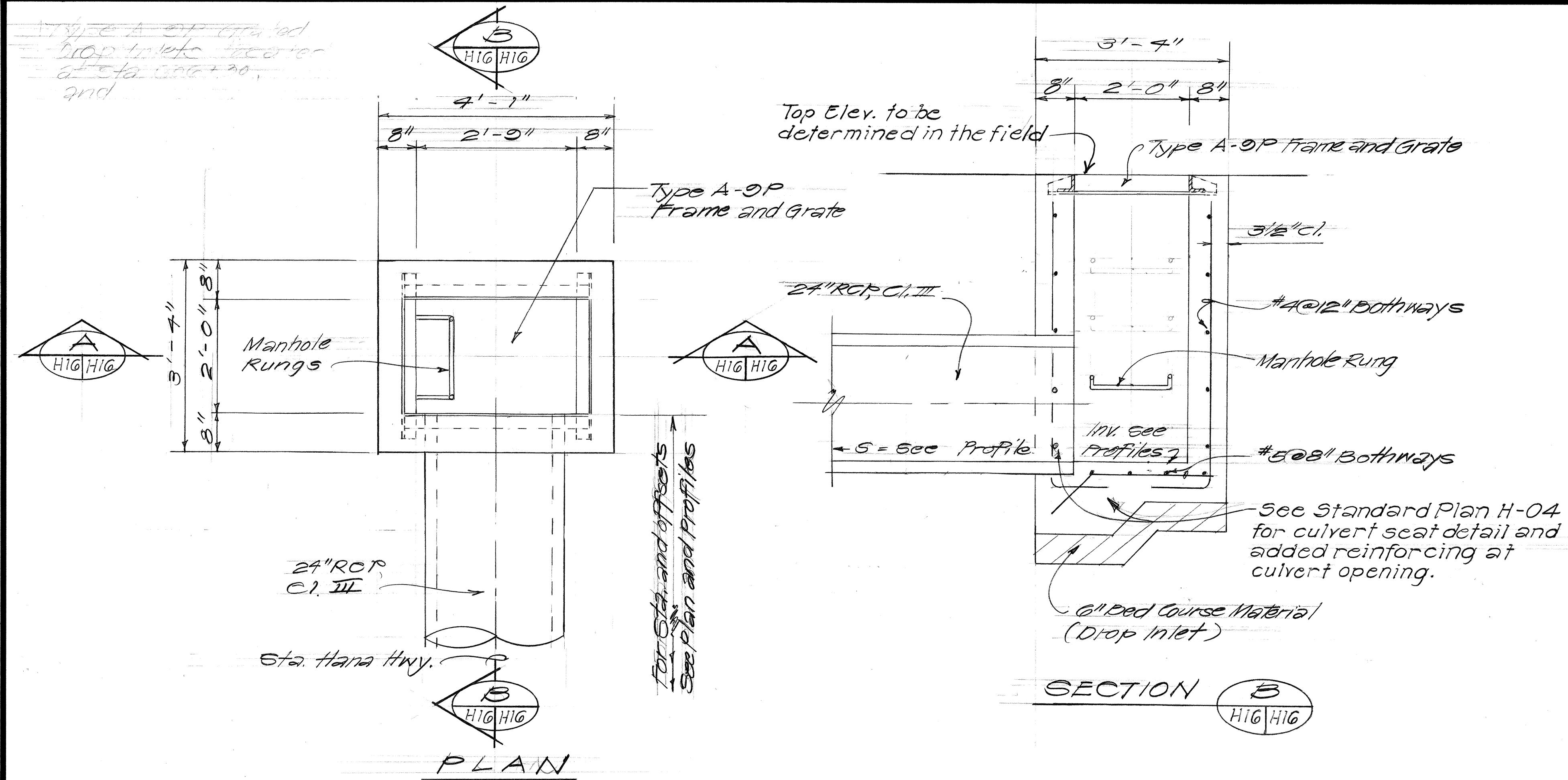
DETAILS OF 48" CULVERT AT STA. 1109+45
Scale: 1" = 10'

CRM HEADWALL AT STA. 1109+45
Scale: 3/4" = 1'-0"

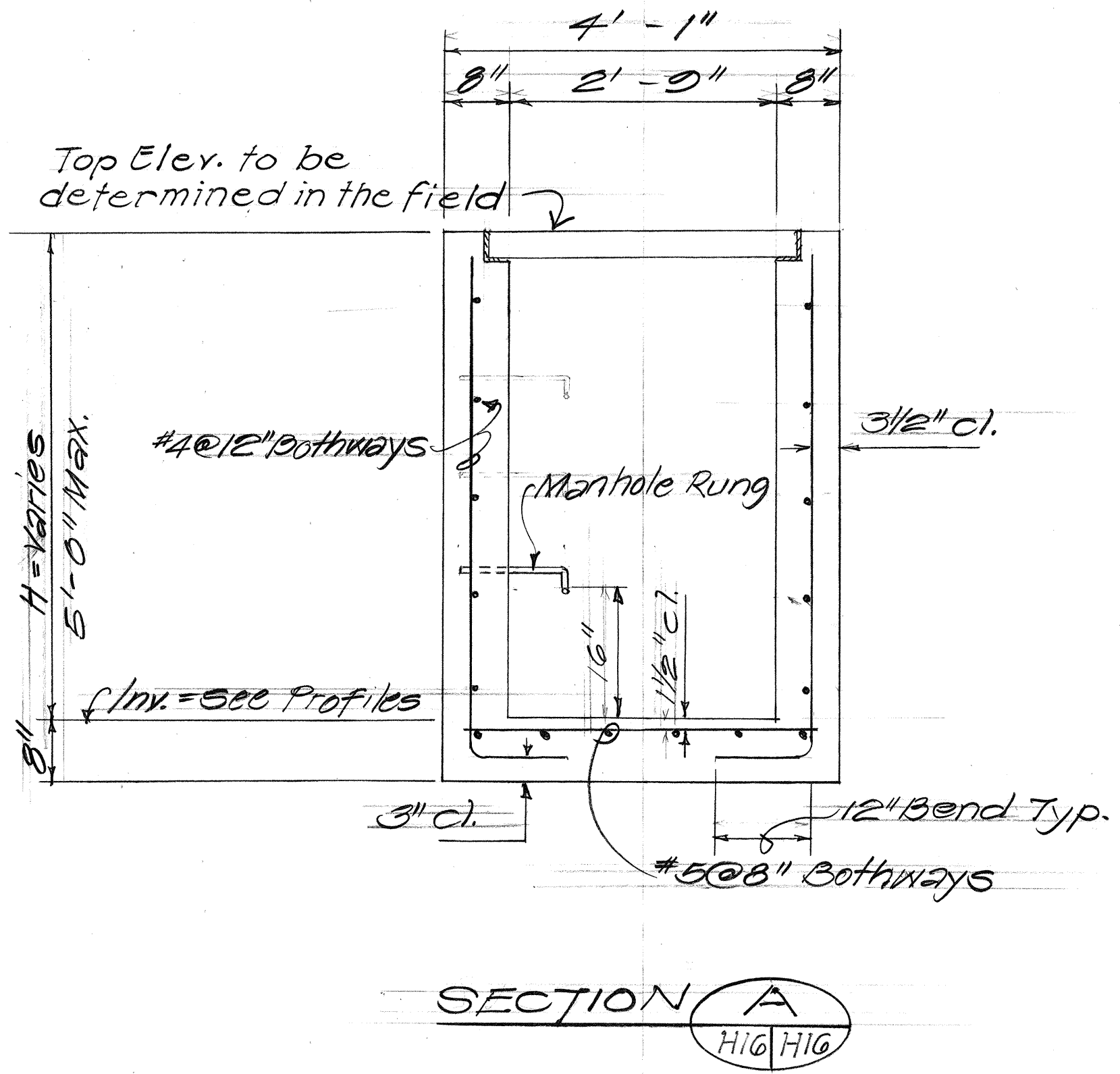
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
<u>DRAINAGE DETAILS</u>
HANA HIGHWAY IMPROVEMENTS KEANAE & NAHIKU SECTIONS PROJ. NO. 360AB-01-88
Scale: As Noted Date: Mar. 1988
SHEET No. H 15 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-88	1988	27	35



- Drainage Notes:
- Existing drainage systems will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance of flow. The cost shall be incidental to the various contract items.
 - Demolishing, removing and disposing a portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to the various contract items.
 - Concrete shall be Class A unless otherwise noted.
 - Chamfer all exposed concrete edges 1".
 - Cast-in-place or precast drainage structure alternative is optional with the Contractor. Contractor to submit shop drawing for precast alternative for approval by the Engineer.
 - In the event of plan alterations causing increase or decrease to the quantity of specified lump sum work, the estimated quantities shall be used to determine theoretical unit price as define in Subsection 104.02(e) lump sum items.
 - Bed Course Material shall be installed in accordance with the Standard Specifications and with the approval of the Field Engineer.



DETAIL OF TYPE A-9P GRATED DROP INLET
AT STA. 606+30±RT, 853+22±RT. AND 866+86±RT.
 Scale: 3/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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