

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

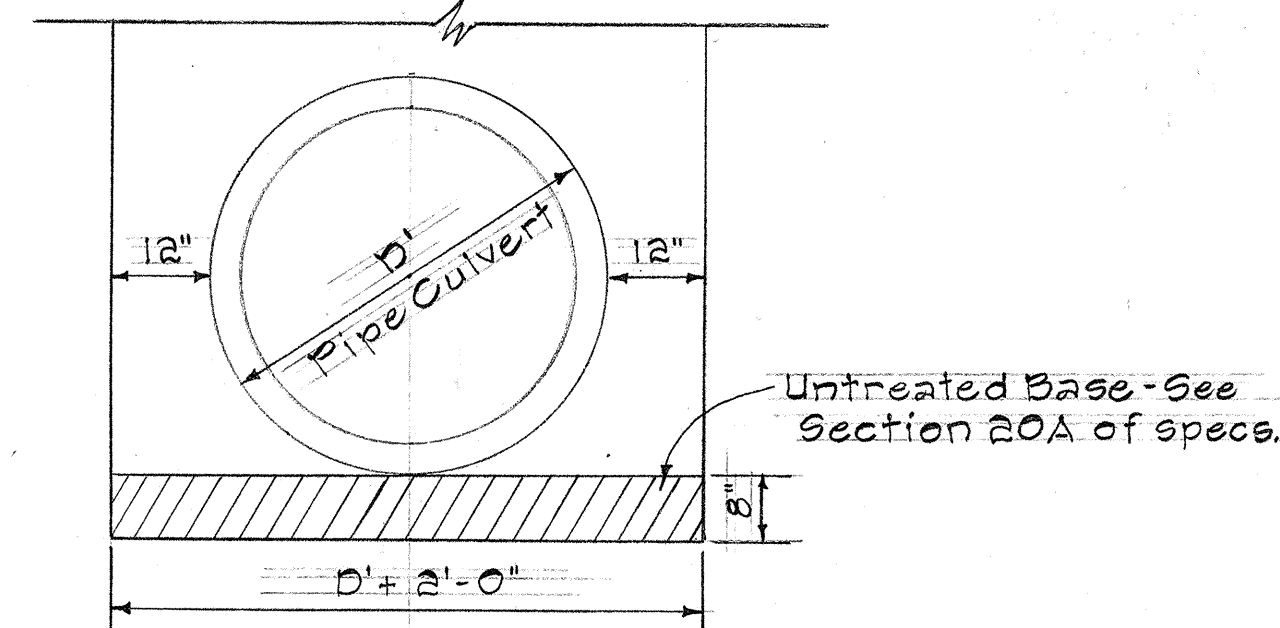
PROFILE	SURVEYED	DATE
NO.	BY	
NOTE BOOK	PLOTTED	
	GRADES CHECKED	
	STRUCTURE NOTATIONS CHD.	

GENERAL NOTES

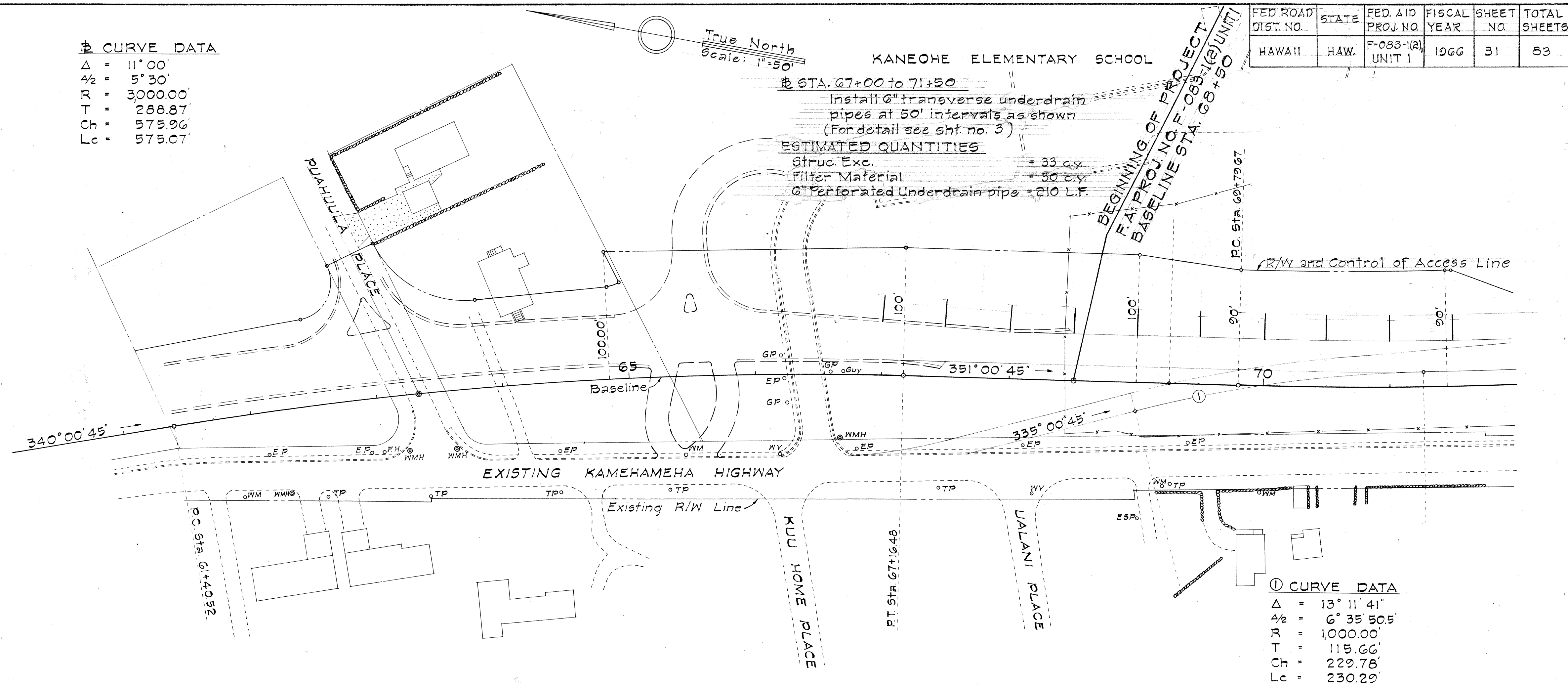
- Demolishing, removing and abandoning existing facilities shall be considered incidental to Structure Excavation.
- For details of standard concrete headwall (Std. C.H.W.), see sheet no. 43

CURVE DATA

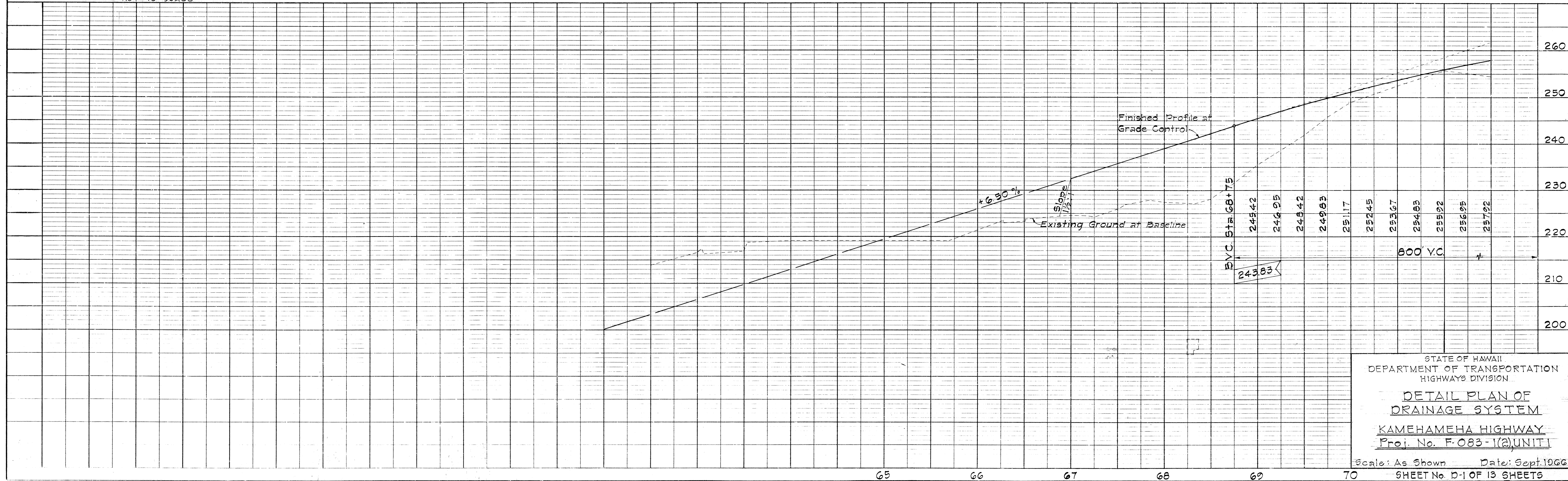
$\Delta = 11^{\circ}00'$
 $\frac{\Delta}{2} = 5^{\circ}30'$
 $R = 3000.00'$
 $T = 288.87'$
 $Ch = 575.96'$
 $Lc = 575.07'$



DETAIL OF UNTREATED BASE FOR
PIPE FOUNDATION
NOT TO SCALE



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	31	83



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**DETAIL PLAN OF
 DRAINAGE SYSTEM**
KAMEHAMEHA HIGHWAY
 Proj. No. F-083-1(2) UNIT 1

Scale: As Shown Date: Sept. 1966
 SHEET No. D-1 OF 13 SHEETS

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

PROFILE	DATE
SURVEYED	BY
NOTE BOOK	NO.
GRADES CHECKED	
B.M.S. NOTED	
STRUCTURE NOTATIONS C.V.M.	

Sta. 71+75 to 73+25
Construct 1 Underdrain cleanout
(For detail see sht. no. 41)
Install 6" Longitudinal Underdrain
Pipe (For detail see sht. no. 2(41))
ESTIMATED QUANTITIES
Struc. Exc. = 44 c.y.
Filter Material = 43 c.y.
Cleanout = 1 Ea.
6" Perforated Underdrain
Pipe = 100 L.F.

Sta. 74+00 to 77+00
Install 6" transverse underdrain
pipes at 50' intervals as shown
(For details see sht. no. 3)
ESTIMATED QUANTITIES
Struc. Exc. = 23 c.y.
Filter Material = 21 c.y.
6" Perforated
Underdrain Pipe = 148 L.F.

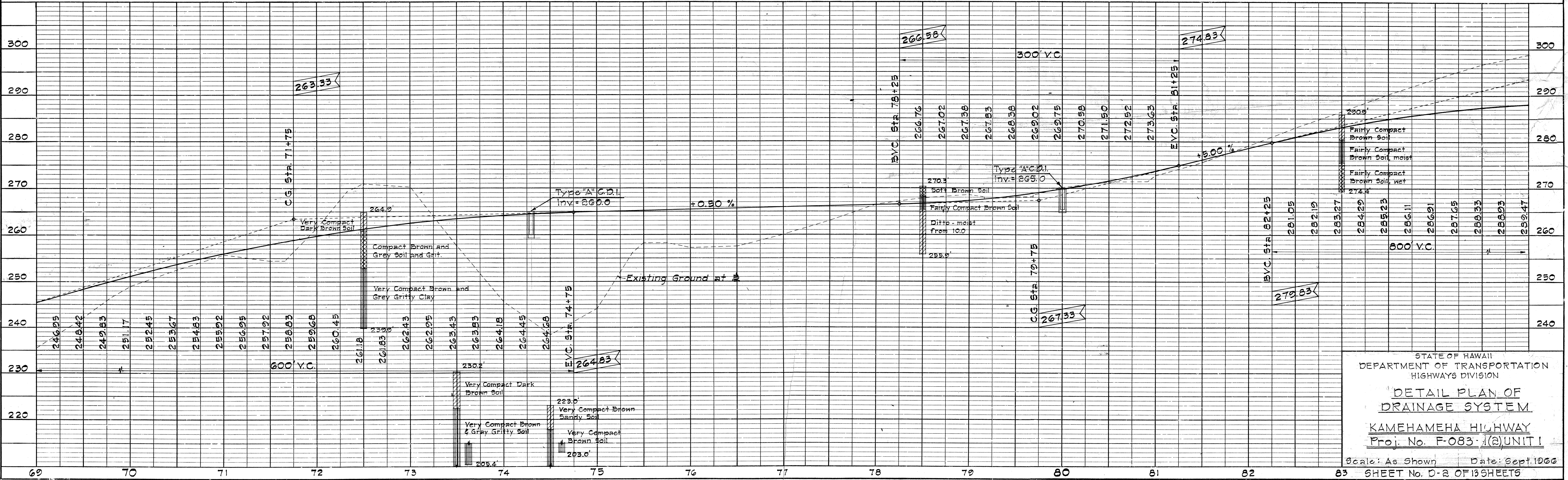
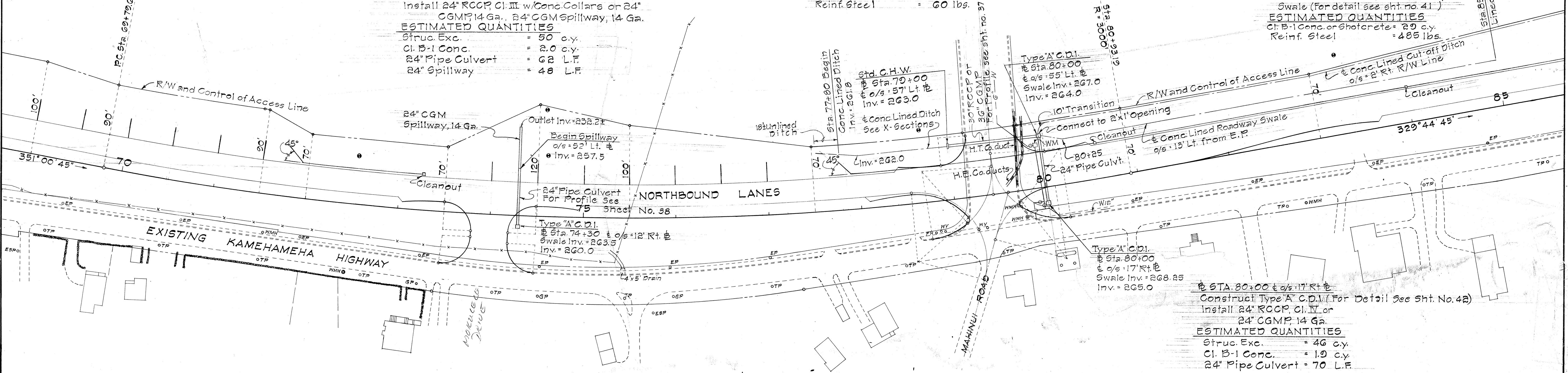
Sta. 77+80 to 79+00
Construct Conc. Lined Ditch
(For detail see sht. no. 41)
ESTIMATED QUANTITIES
Cl. B-1 Conc. or Shotcrete = 17 c.y.
Reinf. Steel = 270 lbs.
Ditch & Channel Exc. = 6 c.y.

Sta. 77+75 to 87+00
Construct 3 Underdrain cleanouts
(For details see sht. no. 41)
Install 6" Longitudinal Underdrain
Pipe (For detail see sht. no. 2(41))
ESTIMATED QUANTITIES
Struc. Exc. = 272 c.y.
Filter Material = 270 c.y.
Cleanout = 3 Ea.
6" Perforated Underdrain
Pipe = 930 L.F.

Sta. 80+00 to 86+50
Construct Type "A" C.D.I. (For
detail see sht. no. 42)
Std. Concrete Headwall
Install 30" RCCP Cl. IV or
36" CGMP, 8 Ga.
ESTIMATED QUANTITIES
Struc. Exc. = 136 c.y.
Cl. B-1 Conc. = 5.0 c.y.
30" RCCP or
36" CGMP = 100 L.F.
Reinf. Steel = 60 lbs.

Sta. 80+00 to 86+50
Construct Conc. Lined Cut-Off
Ditch (For detail see sht. no. 41)
ESTIMATED QUANTITIES
Cl. B-1 Conc. or Shotcrete = 31 c.y.
Reinf. Steel = 660 lbs.
Ditch & Channel Exc. = 90 c.y.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	32	83



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**DETAIL PLAN OF
DRAINAGE SYSTEM**
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2) UNIT 1
Scale: As Shown Date: Sept. 1966
SHEET No. D-2 OF 13 SHEETS

PLAN	DATE	BY
SURVEYED		
PLANNED		
NOTE BOOK		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		
NO.		

PROFILE	DATE	BY
SURVEYED		
PLANNED		
NOTE BOOK		
GRADES CHECKED		
S. M. S. NOTED		
STRUCTURE NOTATIONS CHG.		
NO.		

Sta. 87+00 to 93+05
Construct 2 Underdrain cleanouts
(For details see sht. no. 41)
Install 6" Longitudinal Underdrain
Pipe (For detail see sht. no. 214)
ESTIMATED QUANTITIES
Struc. Exc. = 210 c.y.
Filter Material = 203 c.y.
Cleanout = 2 Ea.
6" Perforated Underdrain Pipe = 700 L.F.

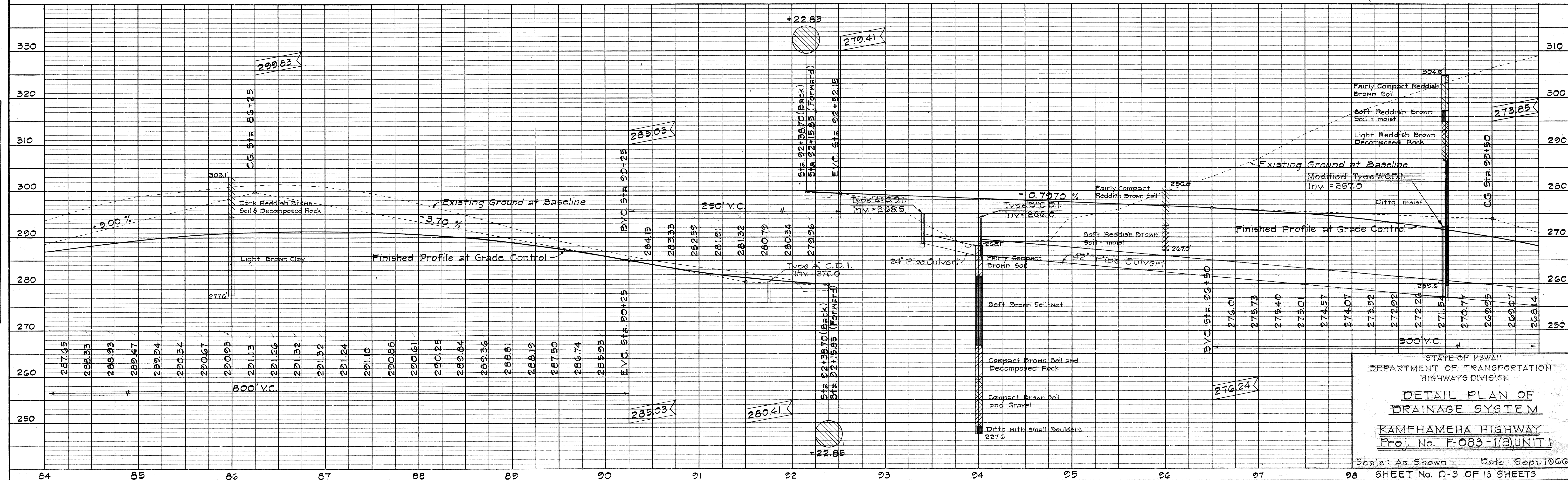
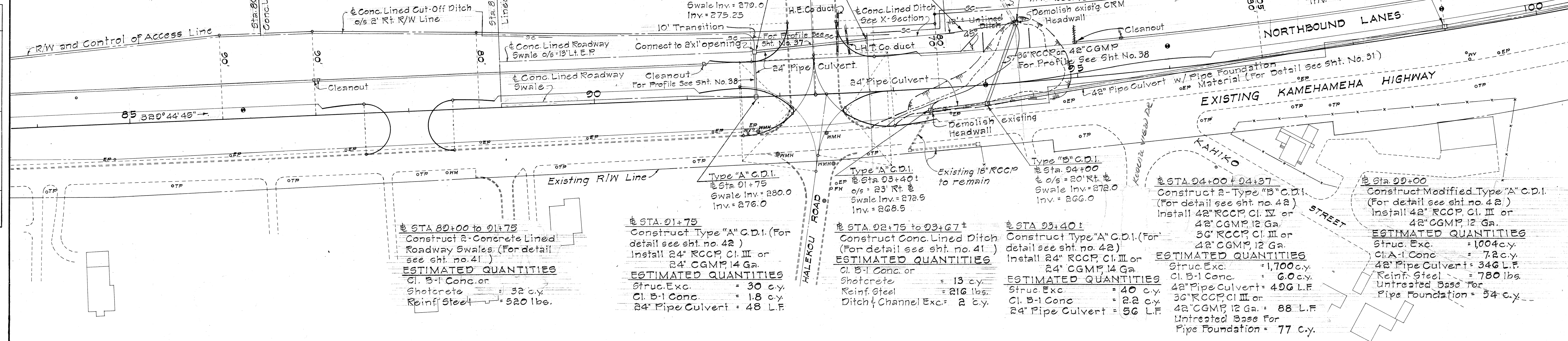
Sta. 86+50 to 92+00
Construct Conc. Lined Cut-Off Ditch
(For detail see sht. no. 41)
ESTIMATED QUANTITIES
Cl. B-1 Conc. or Shotcrete = 26 c.y.
Reinf. Steel = 445 lbs.
Ditch & Channel Exc. = 70 c.y.

Sta. 91+75 o/s 40' Lt. E
Construct Type "A" C.D.I. (For
detail see sht. no. 42)
Std. Conc. Headwall
Install 24" RCCP, Cl. IV or
24" CGMP, 12 Ga.
ESTIMATED QUANTITIES
Struc. Exc. = 90 c.y.
Cl. B-1 Conc. = 3.6 c.y.
24" Pipe Culvert = 122 L.F.
Reinf. Steel = 42 lbs.

CURVE DATA
Δ = 13° 24' 15"
A2 = 6° 42' 07.5"
R = 5729.58'
T = 673.28'
Ch = 1,337.36'
L = 1,340.42'

Sta. 94+00 to 95+00 94+50
Install 6" transverse underdrain
pipes at 50' intervals as shown
(For details see sht. no. 3)
ESTIMATED QUANTITIES
Struc. Exc. = 10 c.y.
Filter Material = 9 c.y.
6" Perforated Underdrain Pipe = 64 L.F.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	33	83

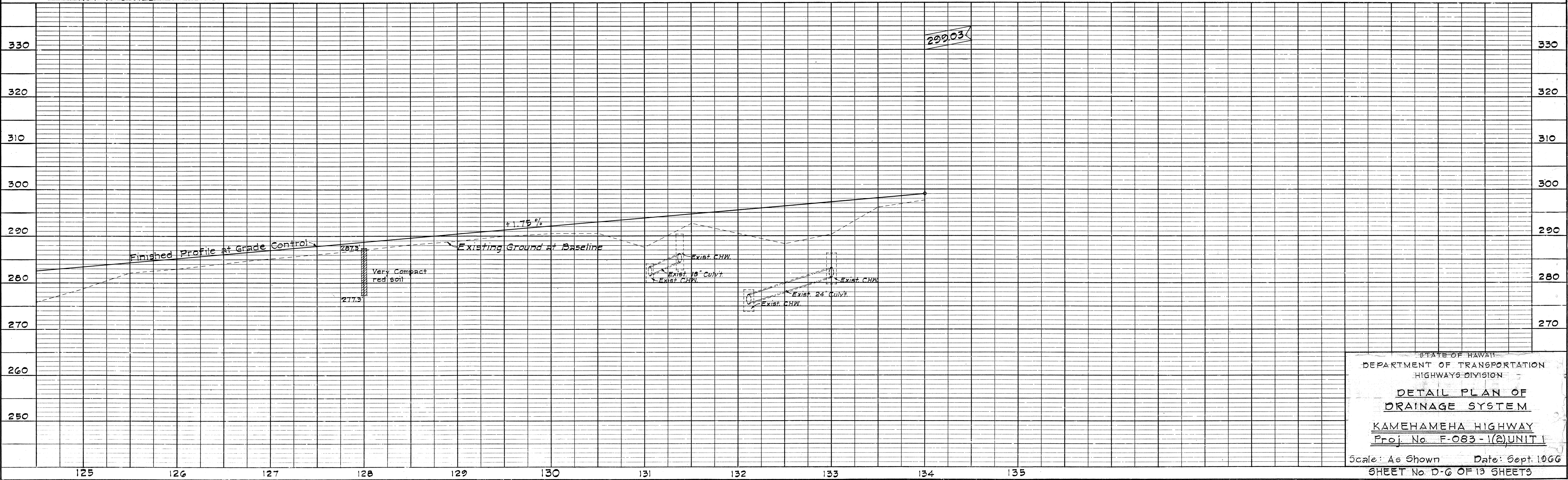
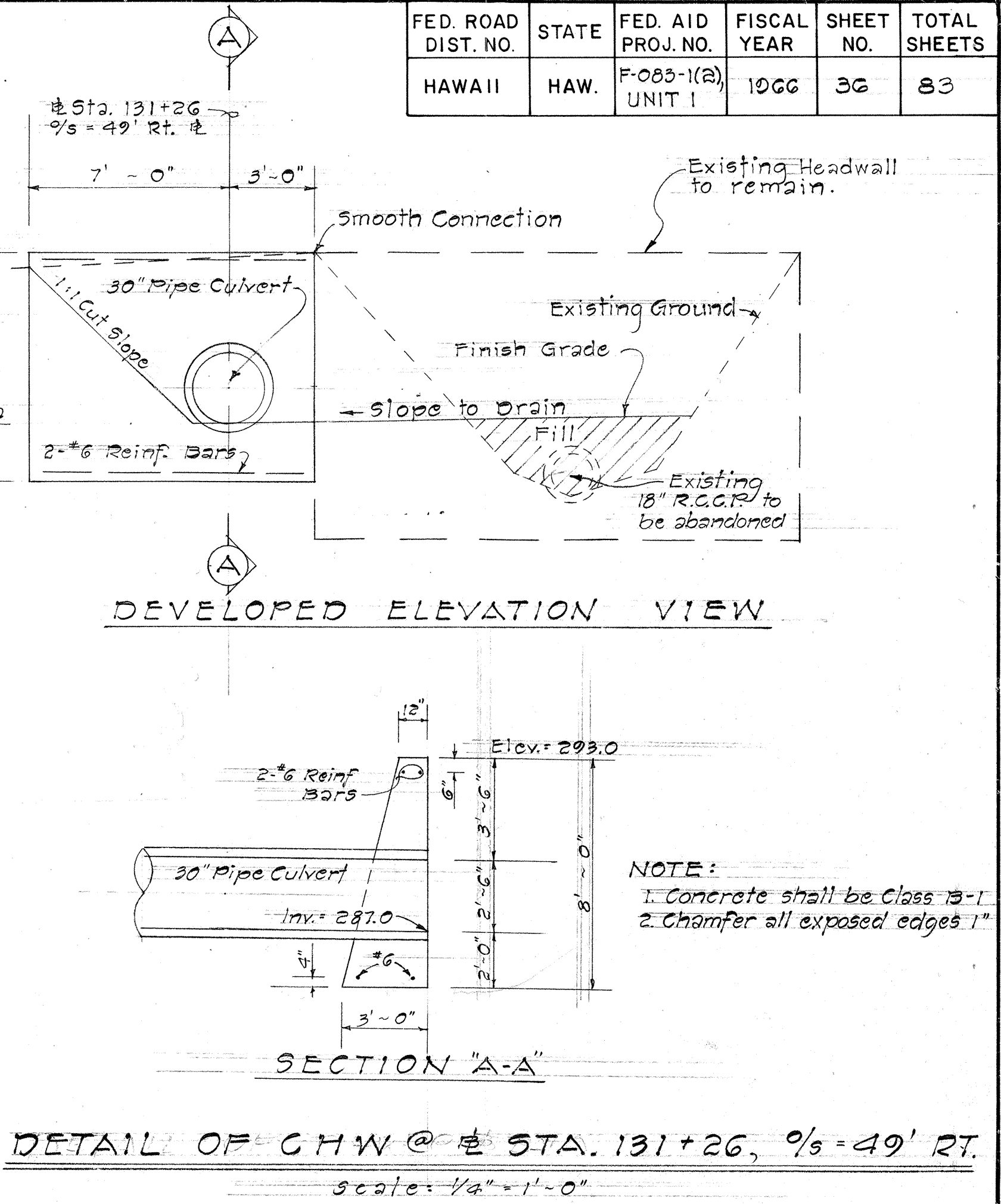
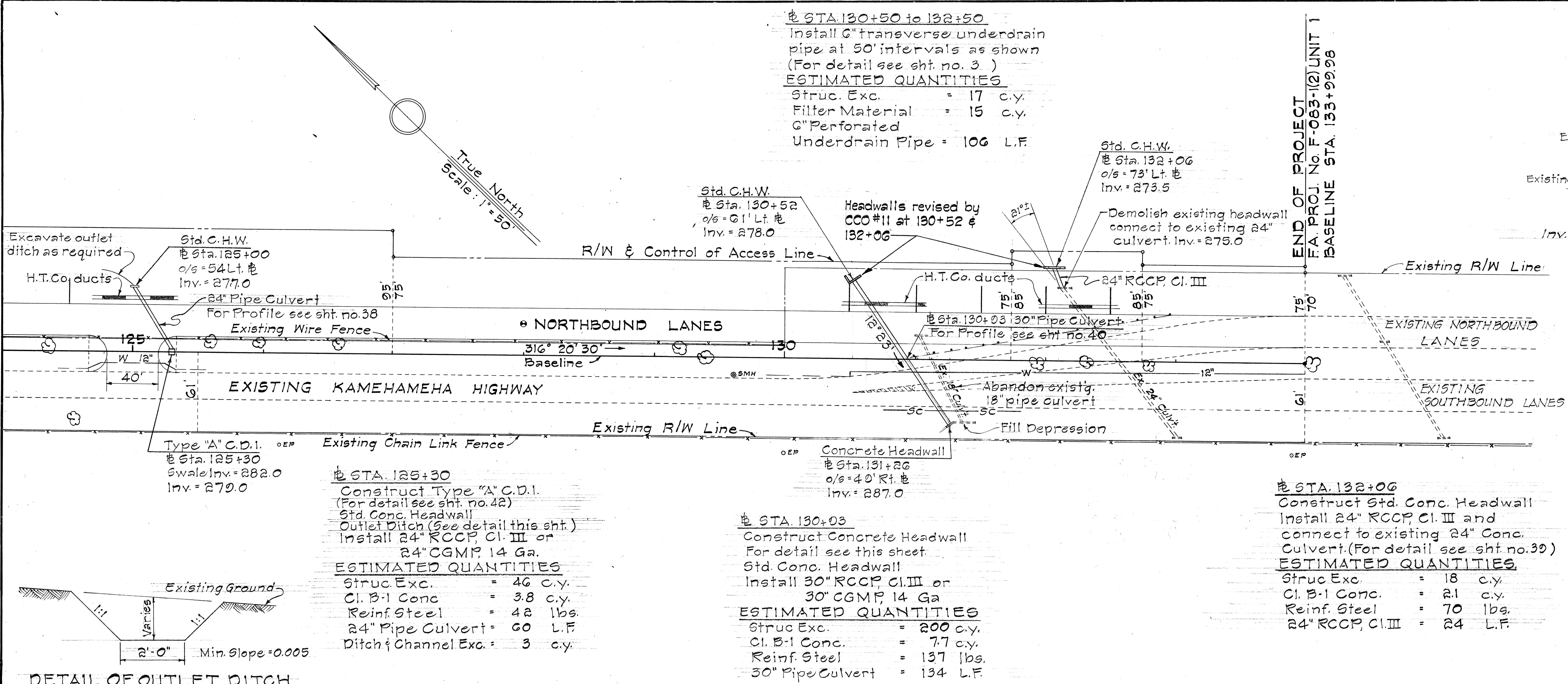


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**DETAIL PLAN OF
DRAINAGE SYSTEM**
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2) UNIT 1
Scale: As Shown Date: Sept. 1966
SHEET No. D-3 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	36	83

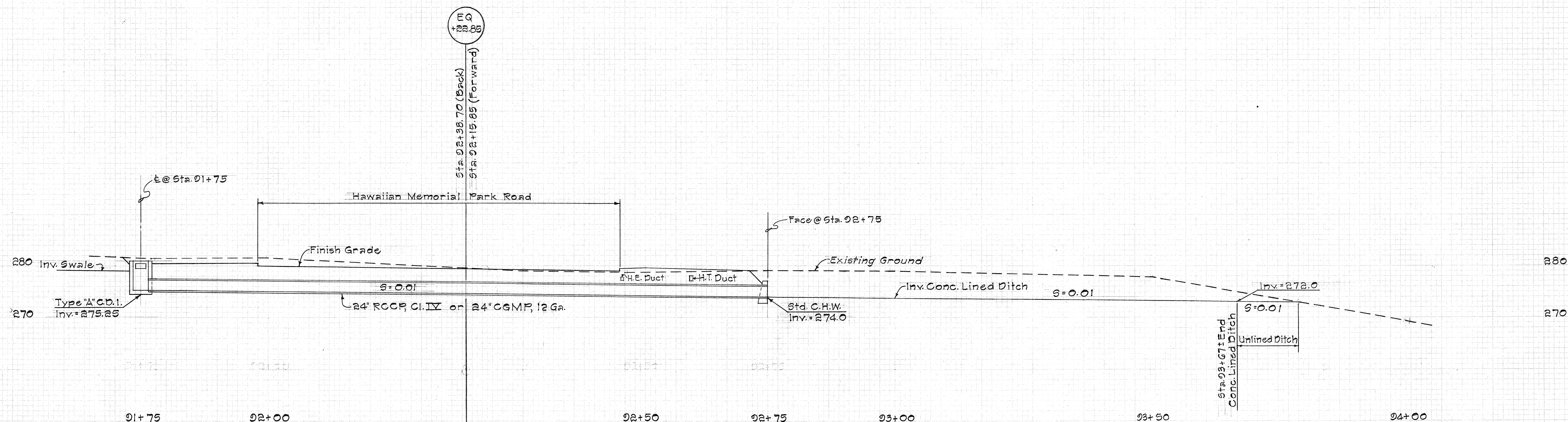
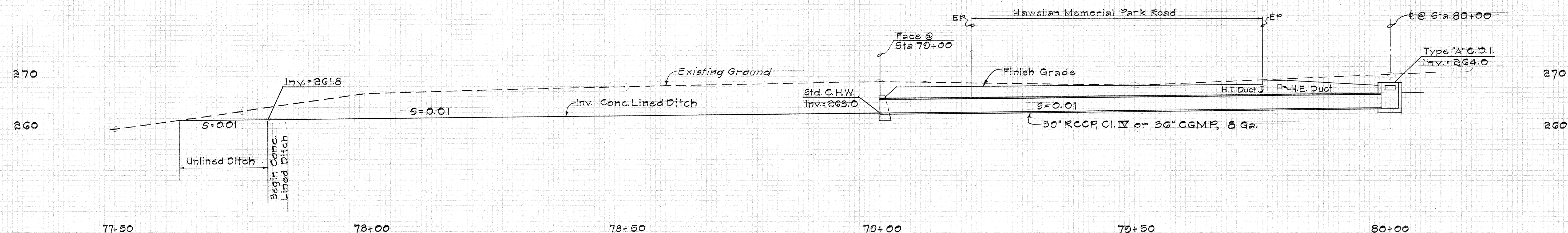
PLAN	DATE	BY
SURVEYED		
NOTED		
PLOTTED		
GRADES CHECKED		
STRUCTURE NOTATIONS CHECKED		
NO.		

PROFILE	DATE	BY
SURVEYED		
NOTED		
PLOTTED		
GRADES CHECKED		
STRUCTURE NOTATIONS CHECKED		
NO.		



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DETAIL PLAN OF DRAINAGE SYSTEM
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2) UNIT 1
Scale: As Shown Date: Sept. 1966
SHEET No. D-6 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	37	83



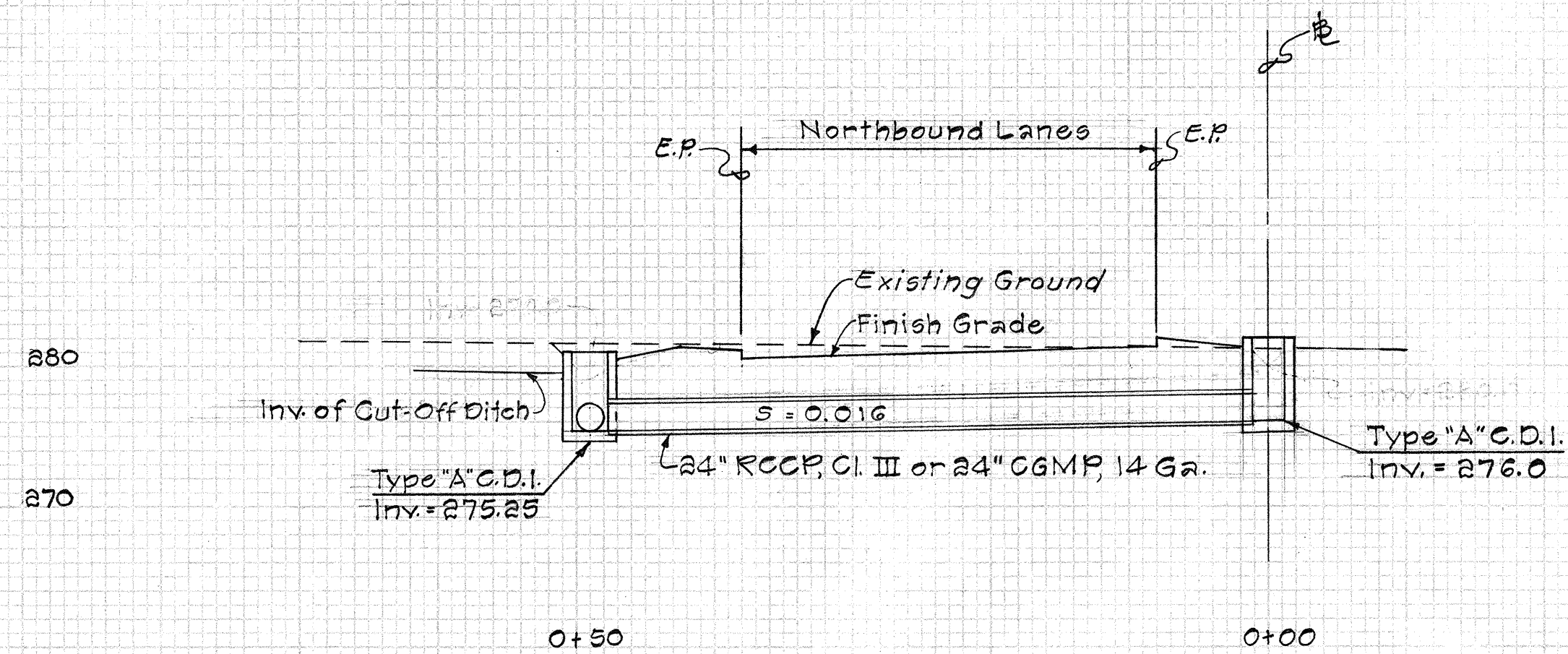
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DRAINAGE DETAILS
CULVERT PROFILES

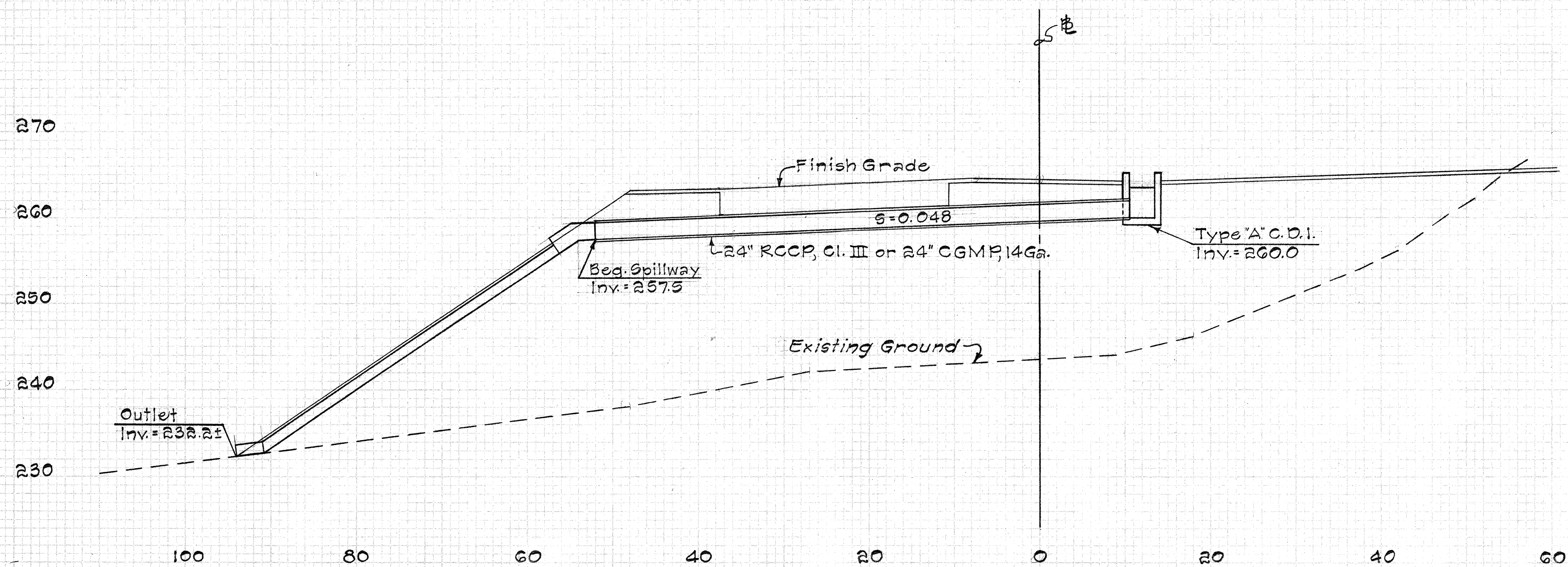
KAMEHAMEHA HIGHWAY
 Proj. No. F-083-1(2) UNIT 1

Scale: 1" = 10' Date: Sept. 1966
 SHEET No. 37 OF 13 SHEETS

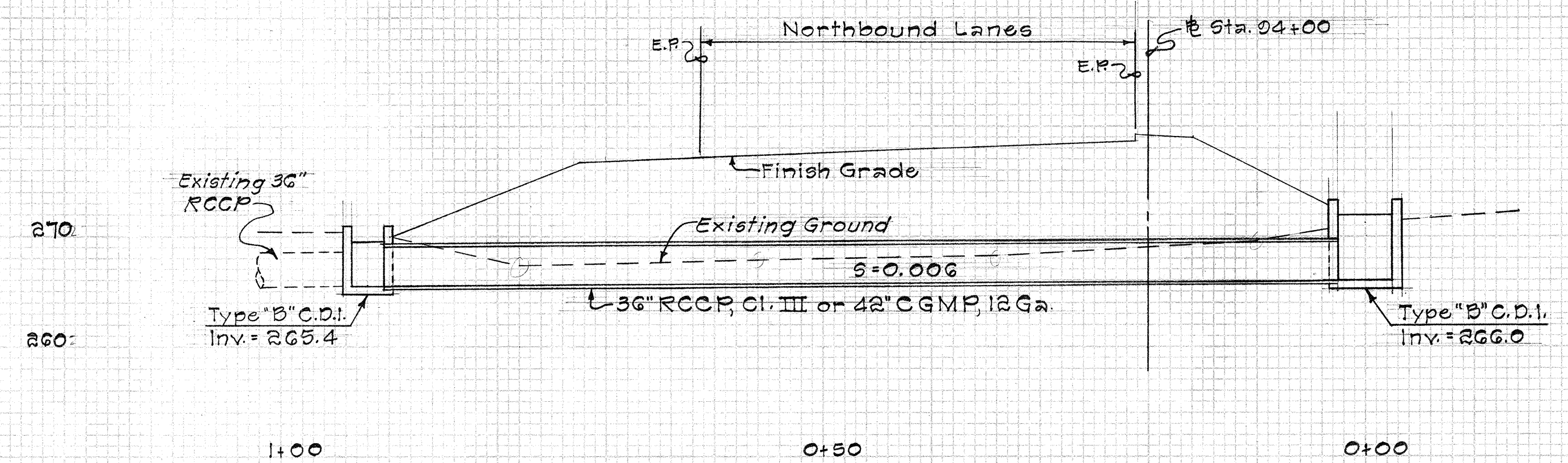
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), UNIT 1	1966	38	83



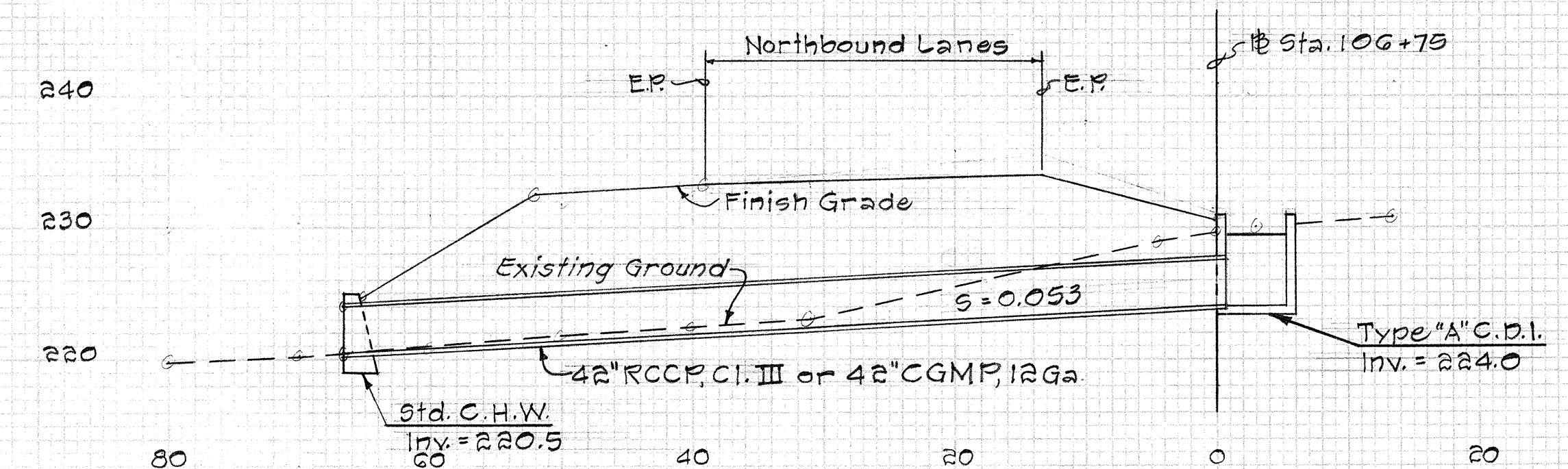
PROFILE OF 24" PIPE CULVERT
AT STA. 01+75
Scale: 1" = 10'



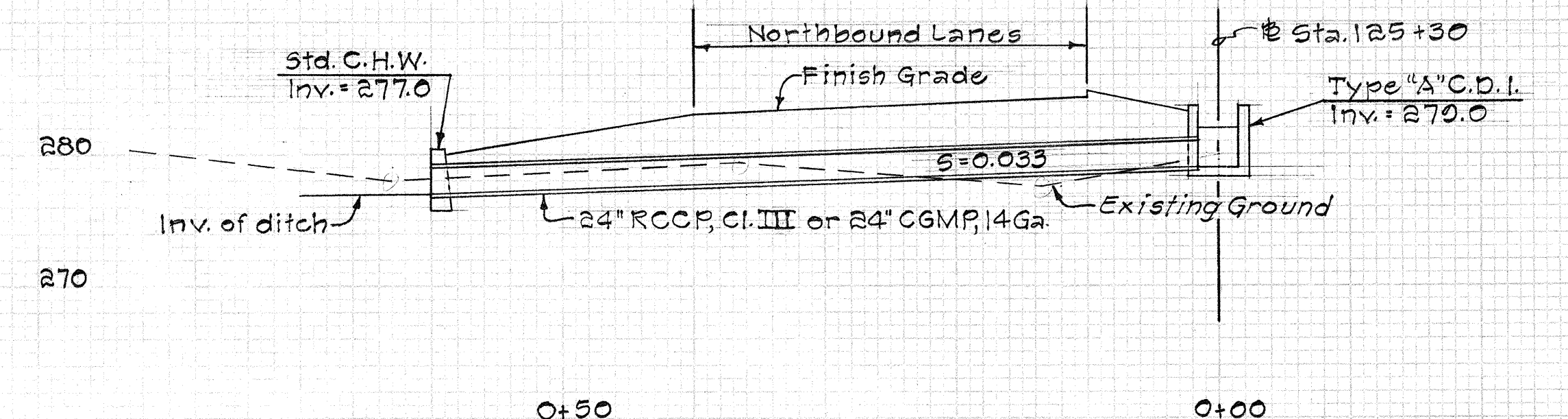
PROFILE OF 24" PIPE CULVERT AND 24" CGM SPILLWAY
AT STA. 74+30
Scale: 1" = 10'



PROFILE OF 36" RCCP or 42" CGMP
AT STA. 04+00 to 04+37
Scale: 1" = 10'



PROFILE OF 42" PIPE CULVERT
AT STA. 106+75
Scale: 1" = 10'



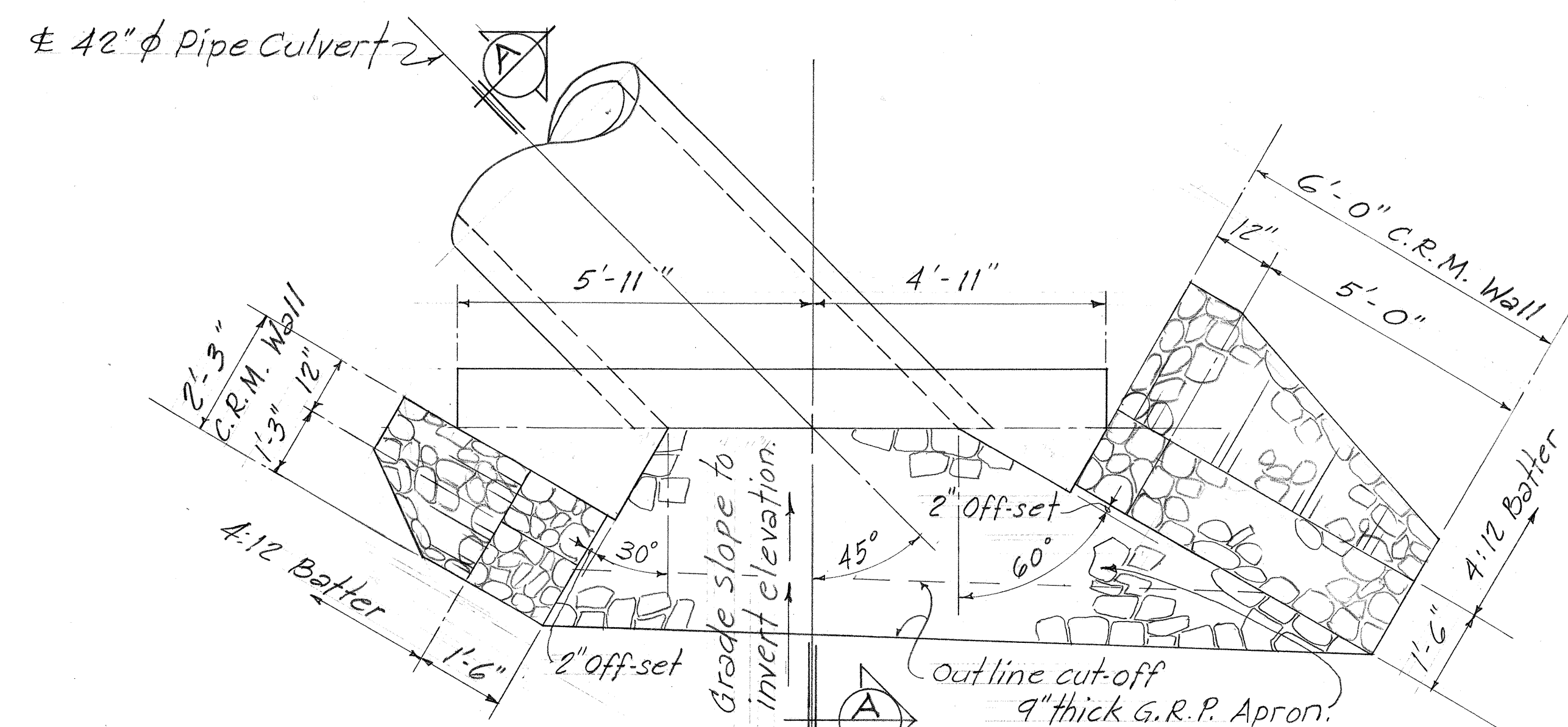
PROFILE OF 24" PIPE CULVERT
AT STA. 125+30
Scale: 1" = 10'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
CULVERT PROFILES
KAMEHAMEHA HIGHWAY
Proj No. F-083-1(2), UNIT 1

Scale: 1" = 10' Date: Sept. 1966
SHEET No. D-80F 13 SHEETS

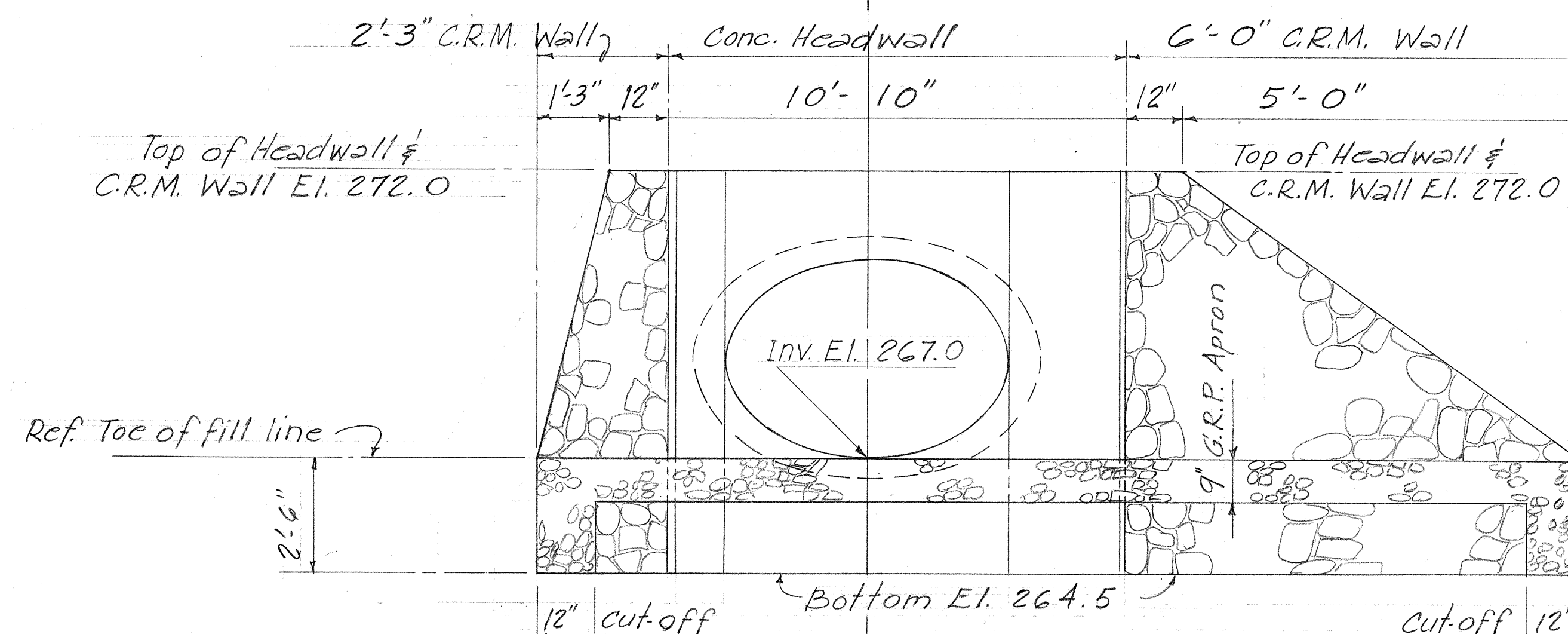
33 33

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2)	1966	39	83



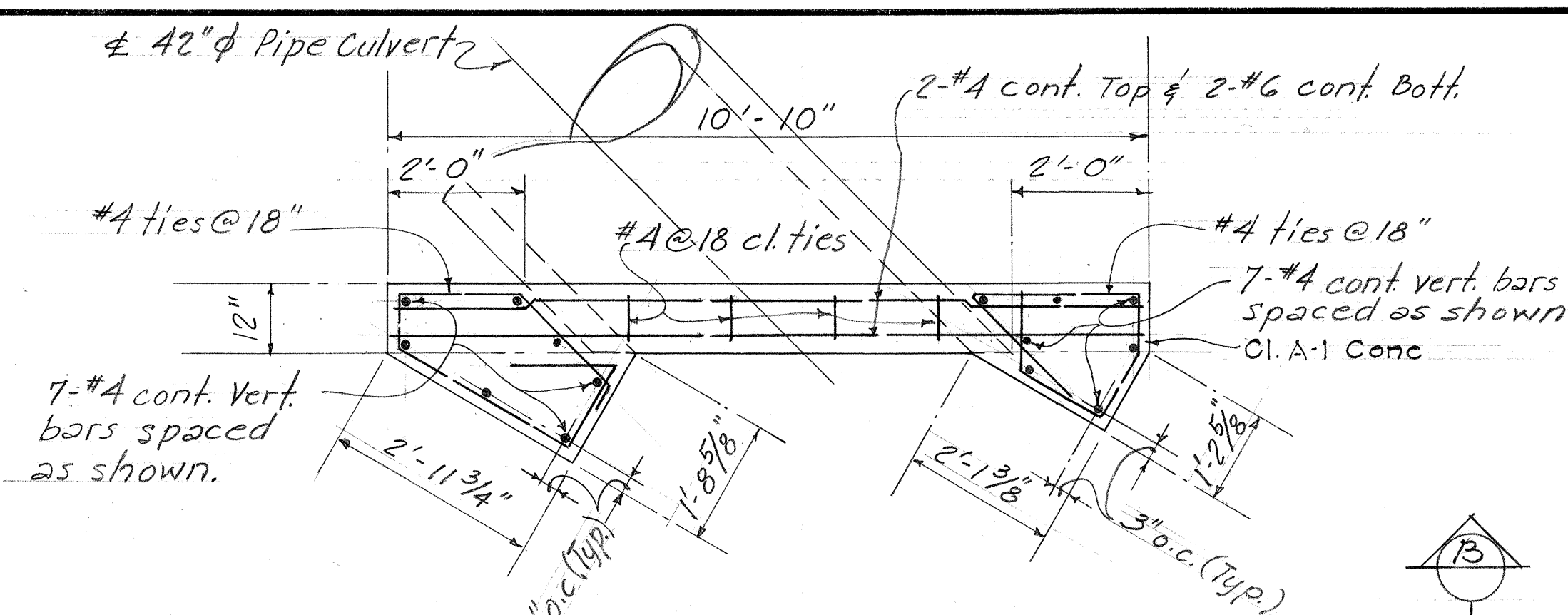
INTAKE HEADWALL PLAN

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

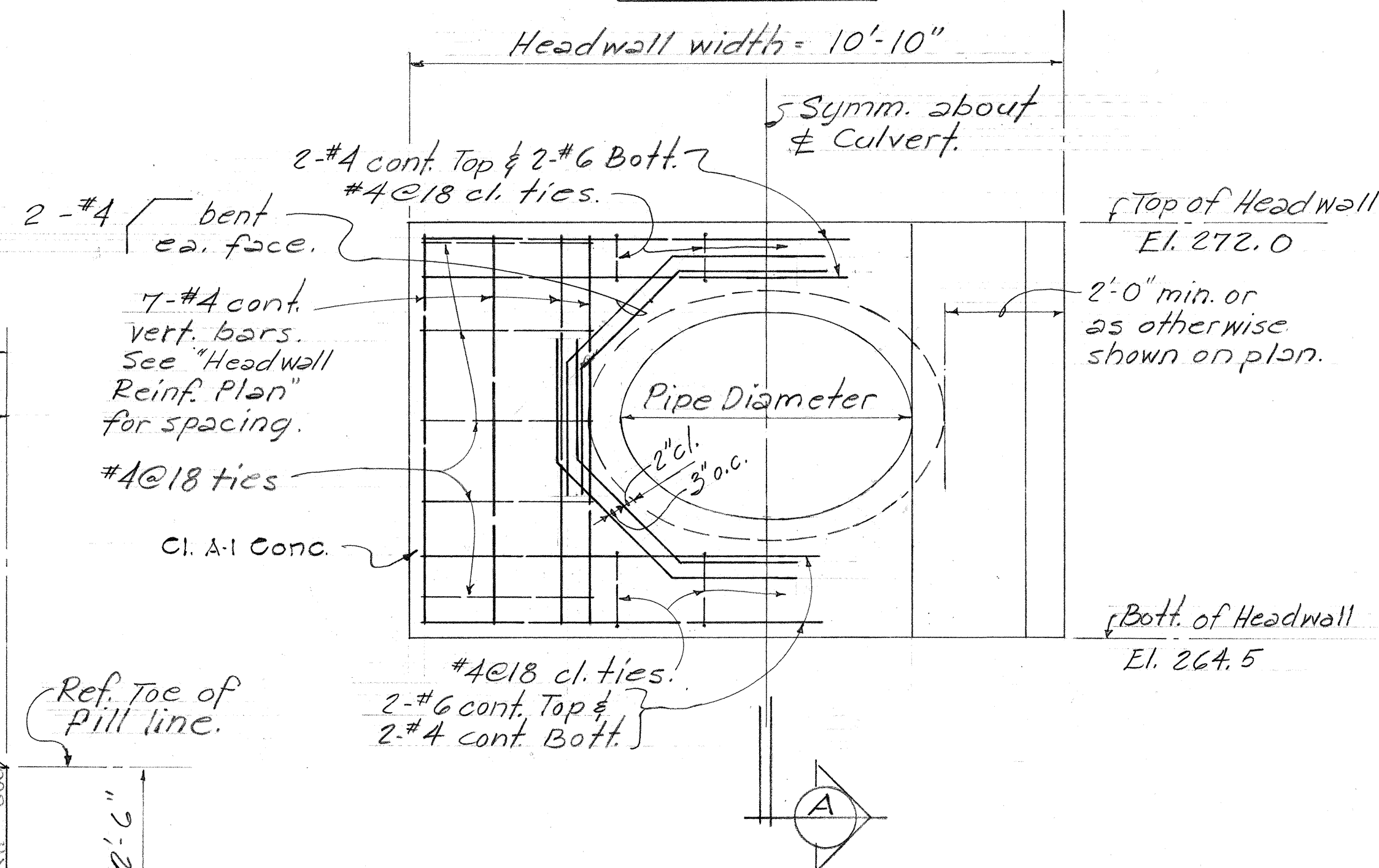


INTAKE HEADWALL ELEVATION

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



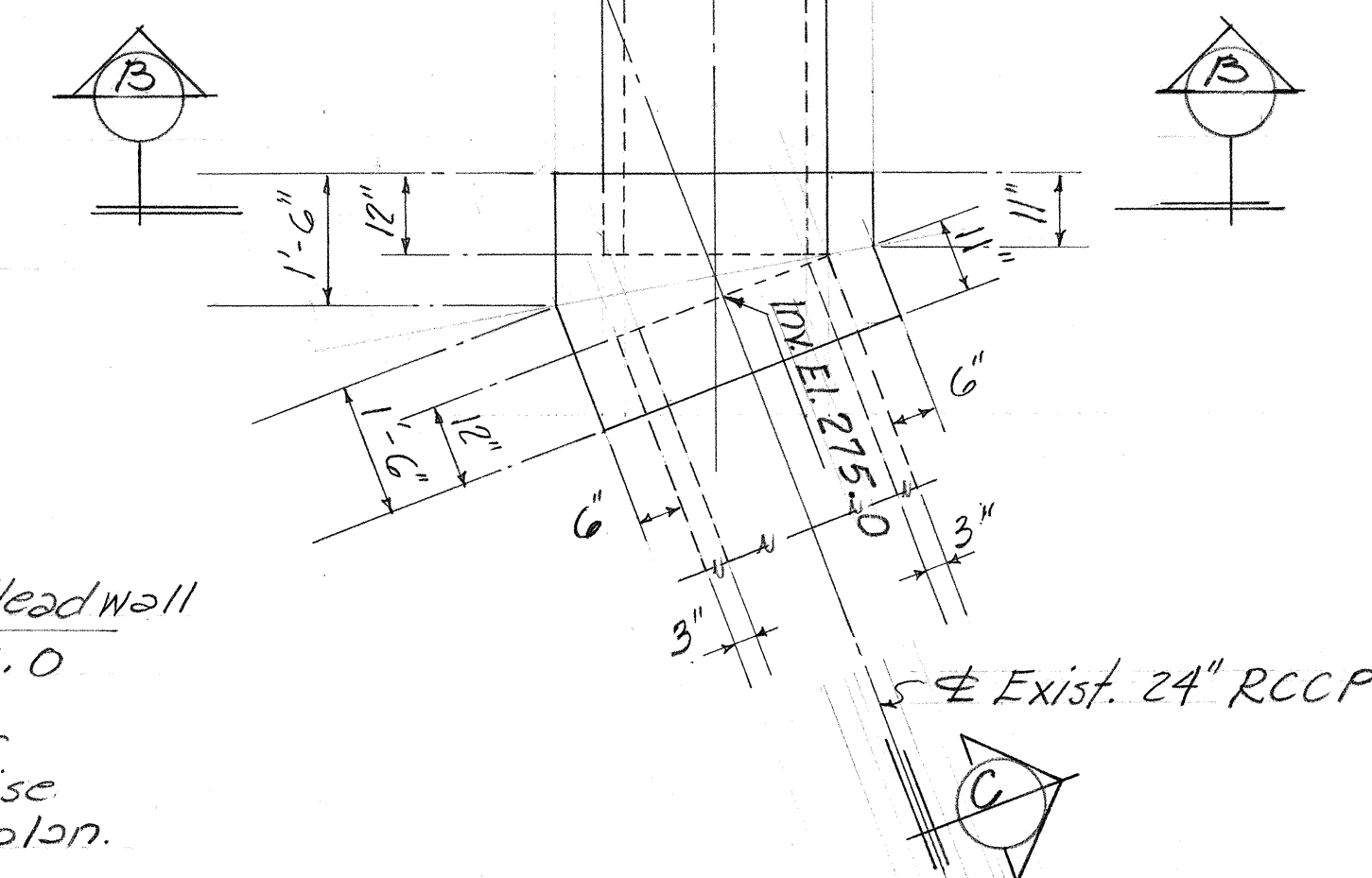
PLAN



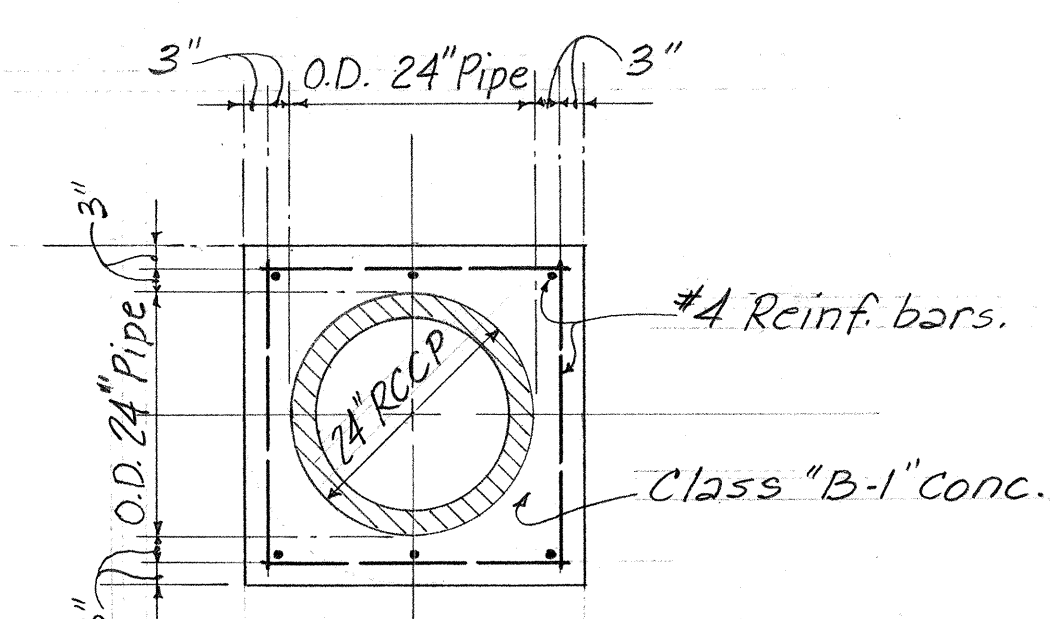
ELEVATION

HEADWALL REINF. DETAILS

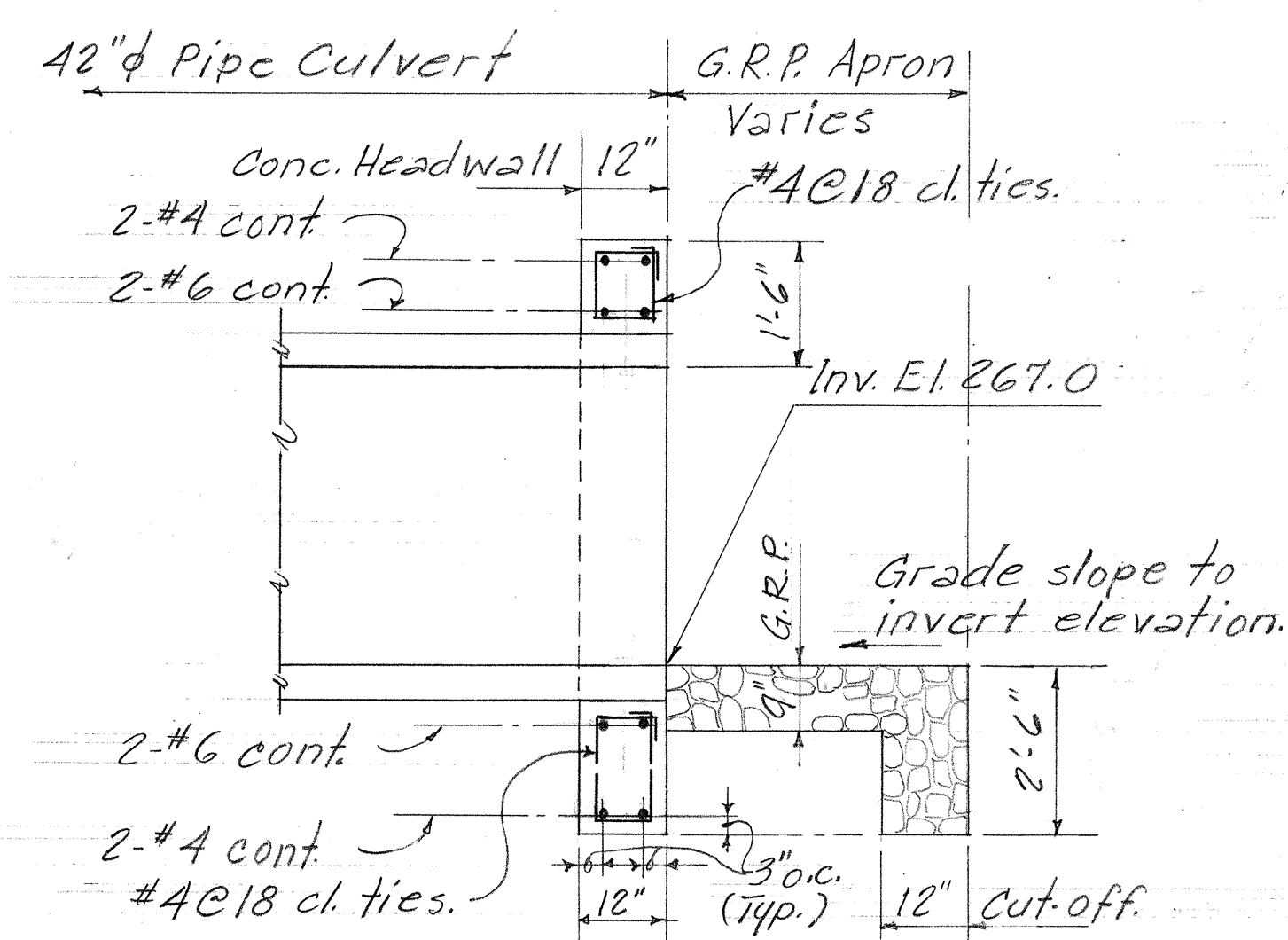
Scale: 1/2" = 1'-0"



PLAN

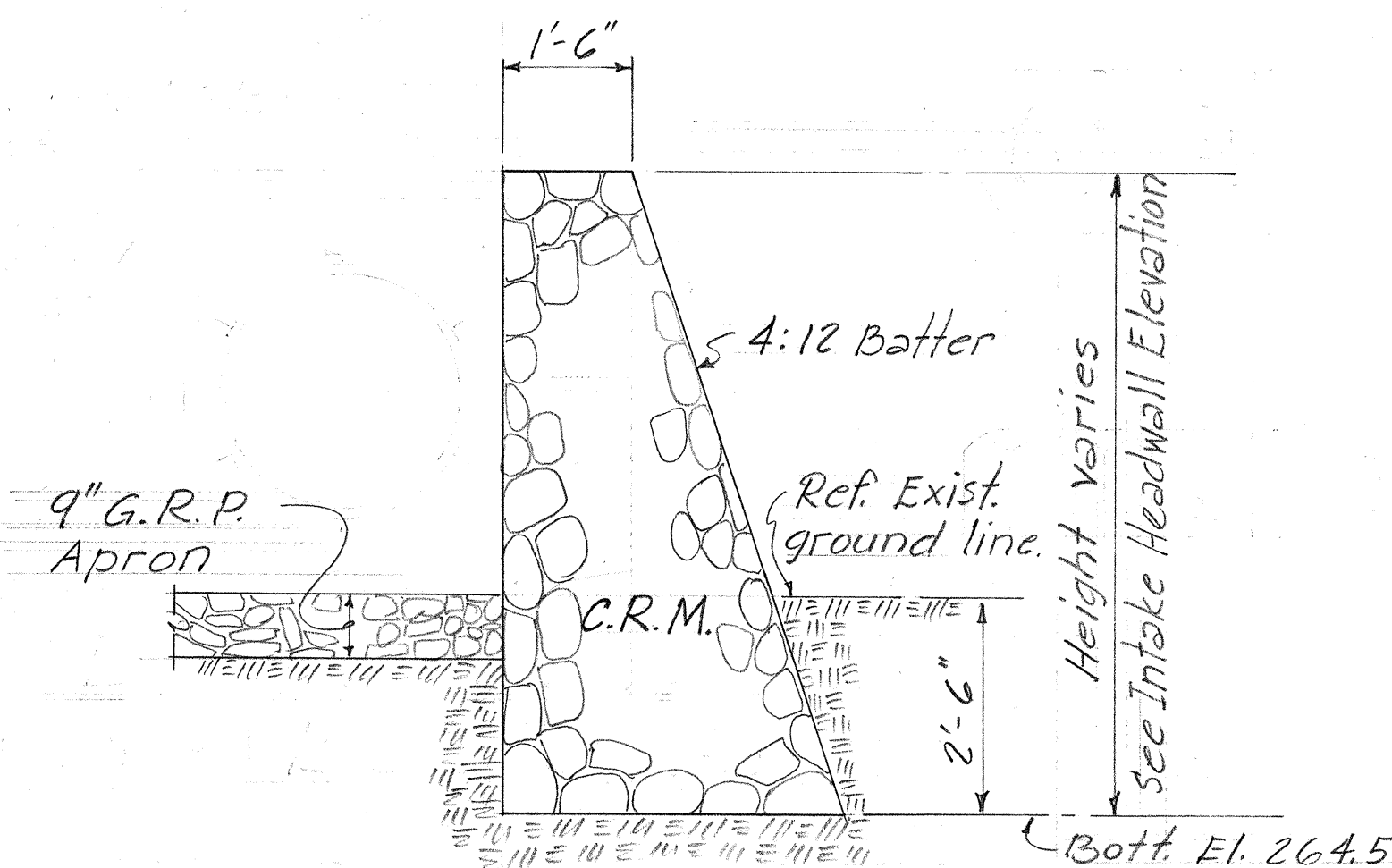


SECTION B



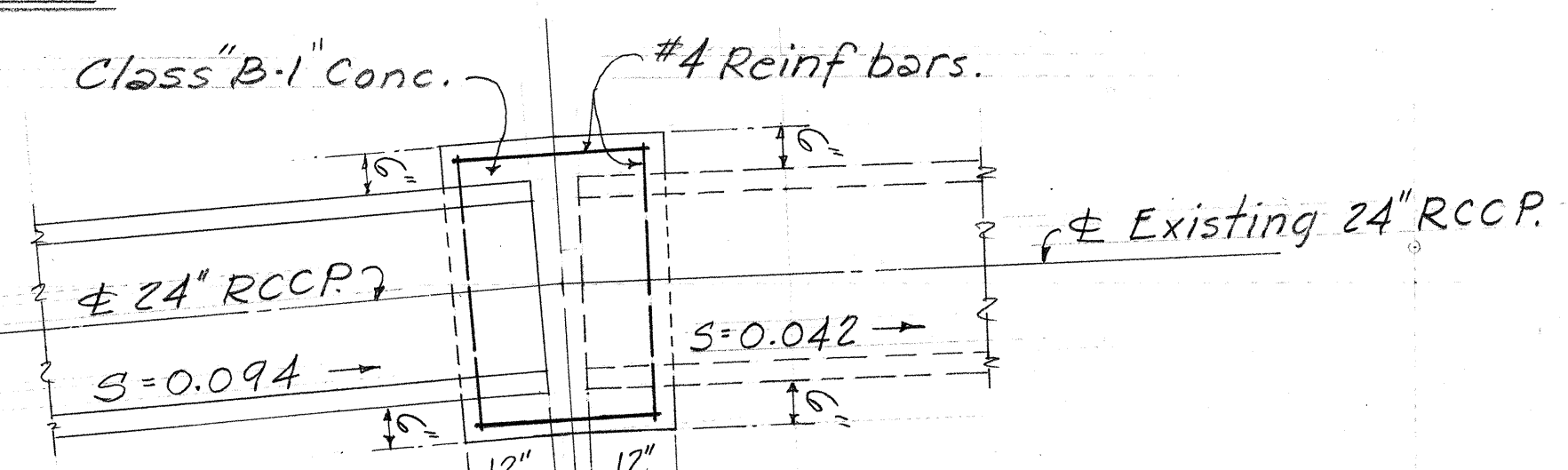
SECTION A

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



TYP. C.R.M. WALL SECTION

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



SECTION C

CONNECTION DETAIL FOR 24" RCCP, CI. III

AT STA. 132+06

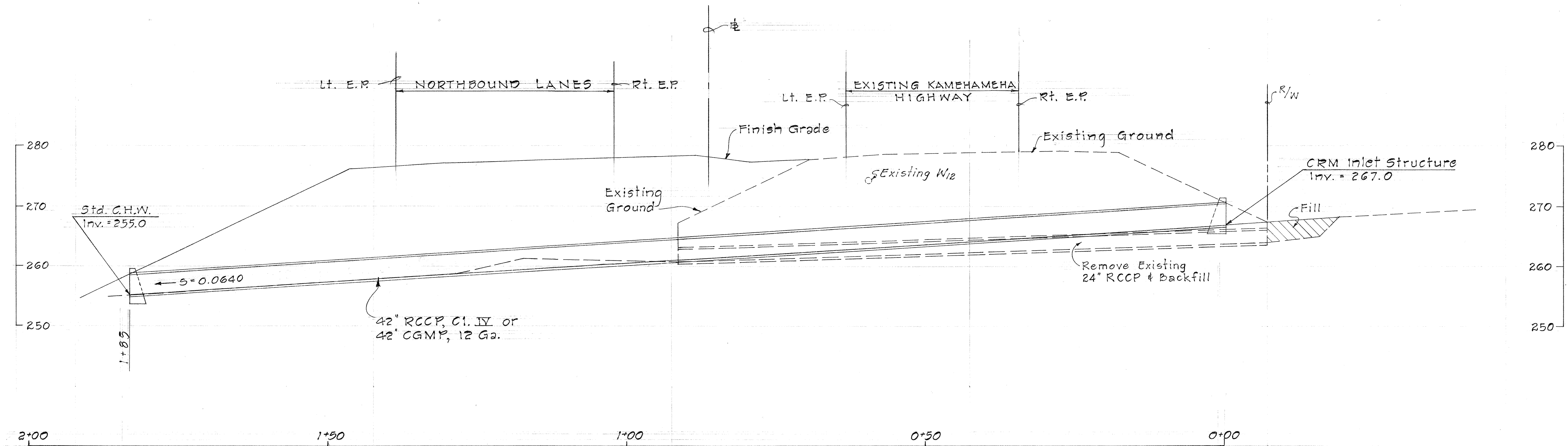
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
INTAKE HEADWALL
CONNECTION DETAIL
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2), UNIT 1

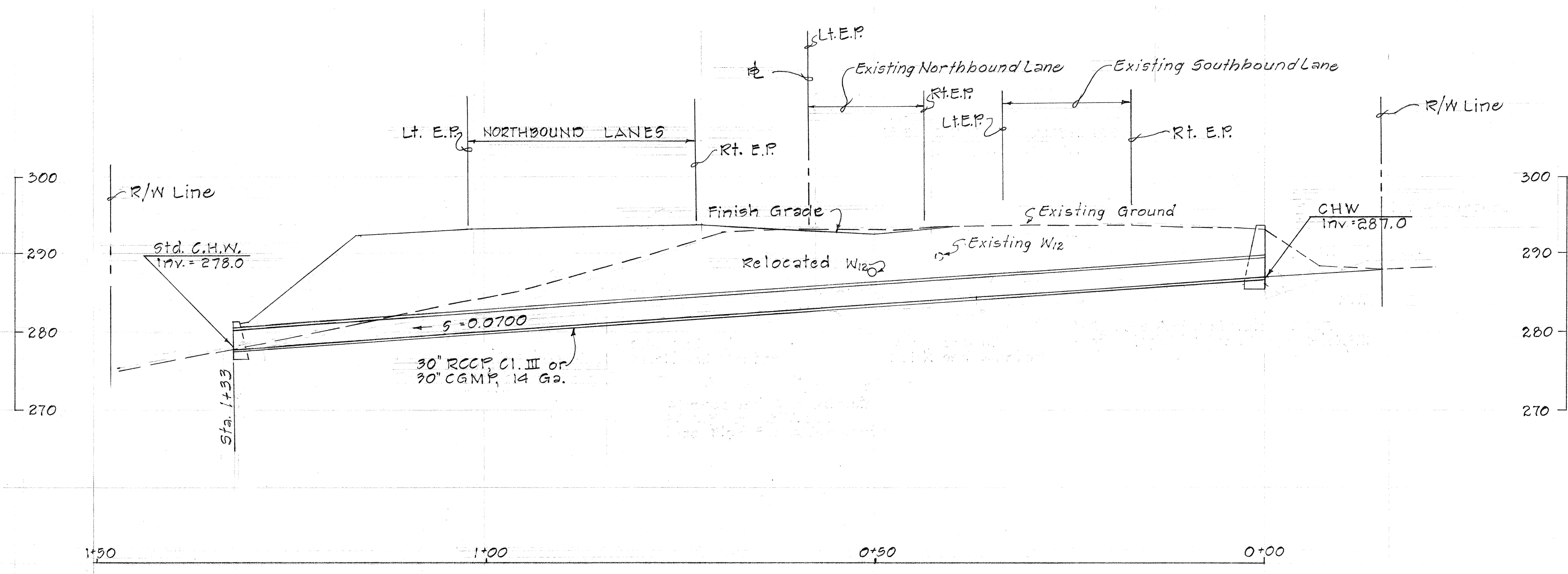
Scale: As Shown Date: Oct. 1966

SHEET NO. 0-0 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), UNIT 1	1966	40	83



± PROFILE OF 42" PIPE CULVERT AT ± STA. 122+80
Scale 1"=10'-0"



± PROFILE OF 30" PIPE CULVERT AT ± STA. 130+03
Scale 1"=10'-0"

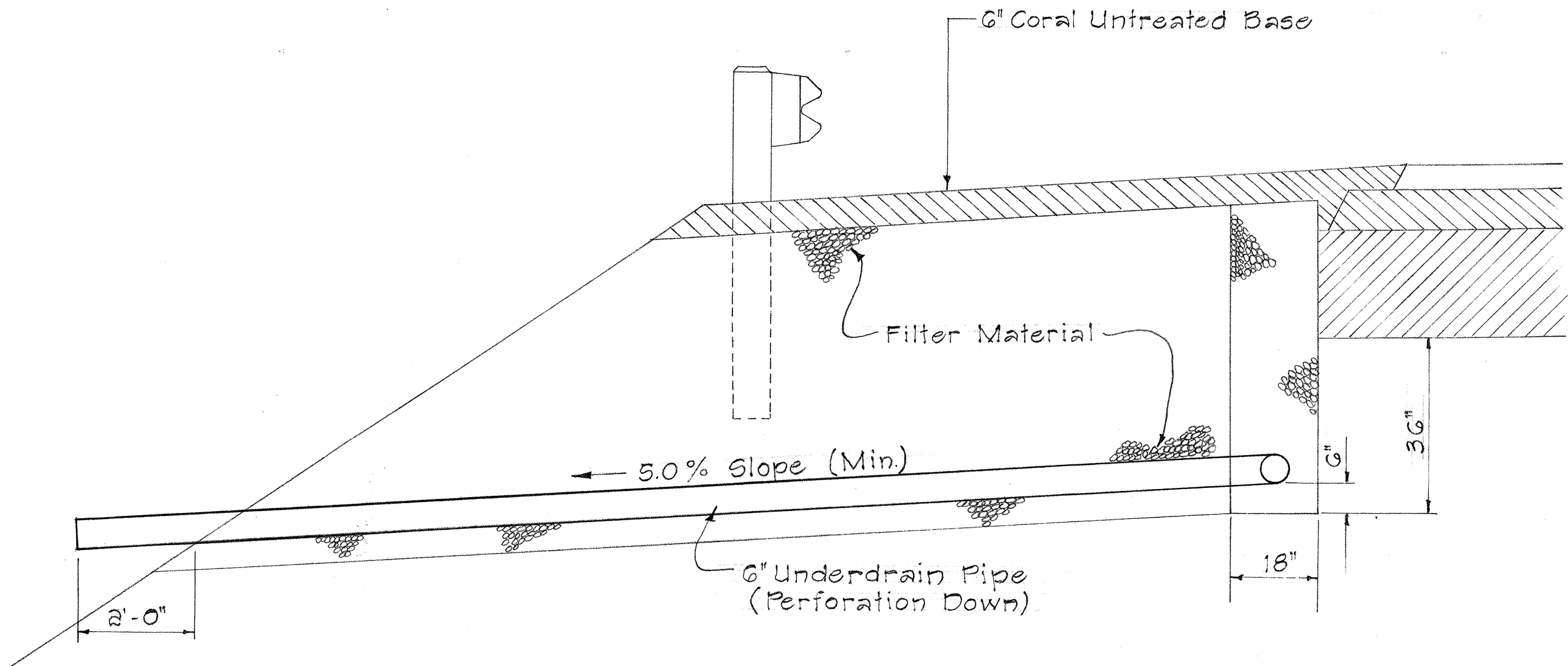
ORIGINAL	DATE
PLAN	
DESIGNED BY	
NOTED BY	
CHECKED BY	
NO.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

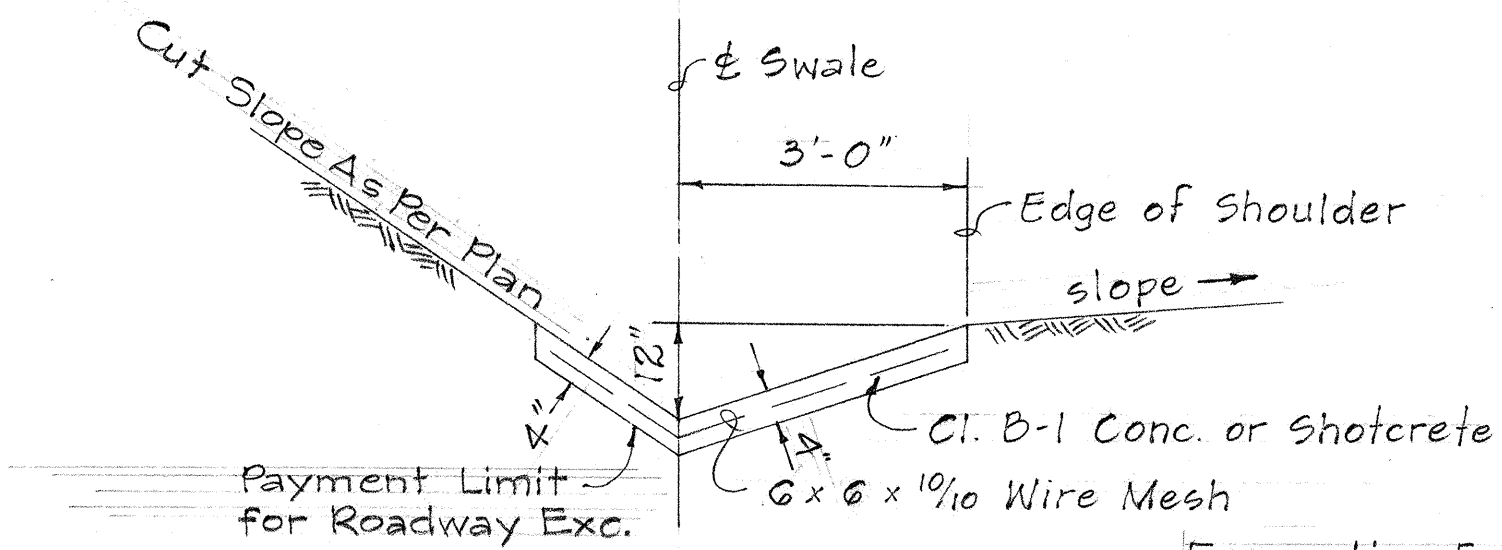
DRAINAGE DETAILS
@ ± STA. 122+80 ± 130+03
KAMEHAMEHA HIGHWAY
Proj No. F-083-1(2), UNIT 1

Scale: 1"=10'-0" Date: Sept. 1966
SHEET No. 10 OF 13 SHEETS

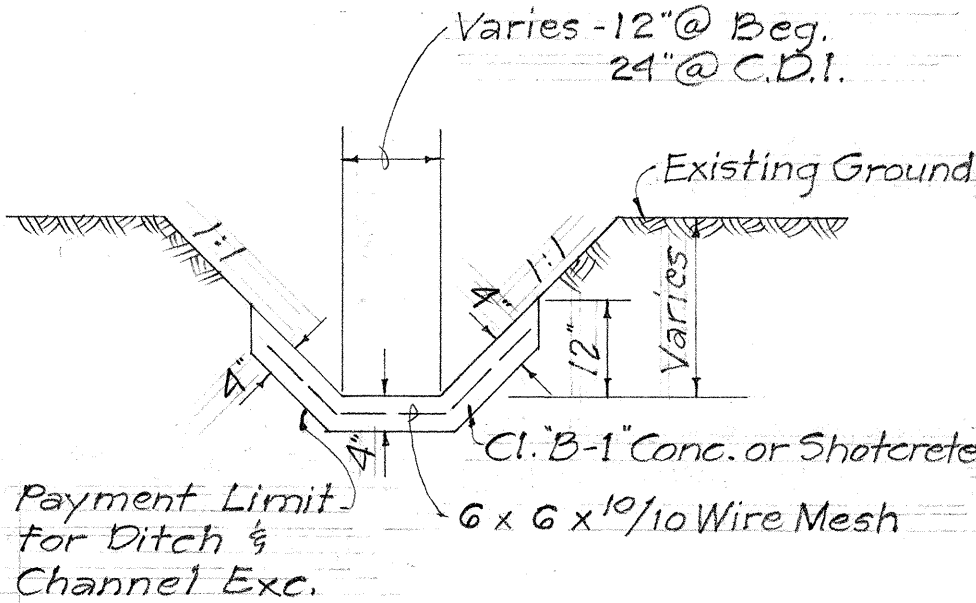
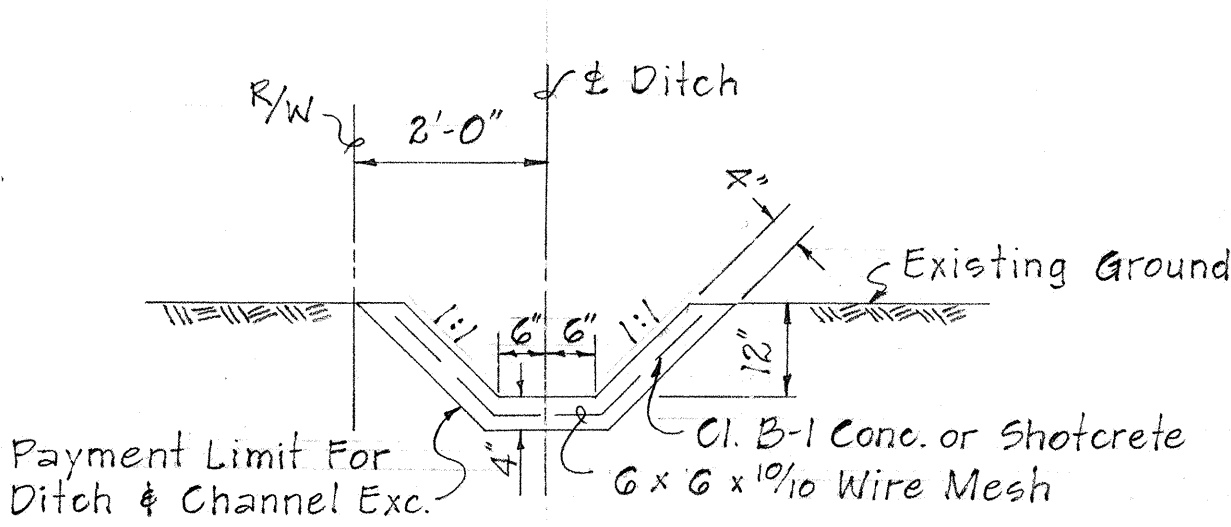
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT I	1966	41	83



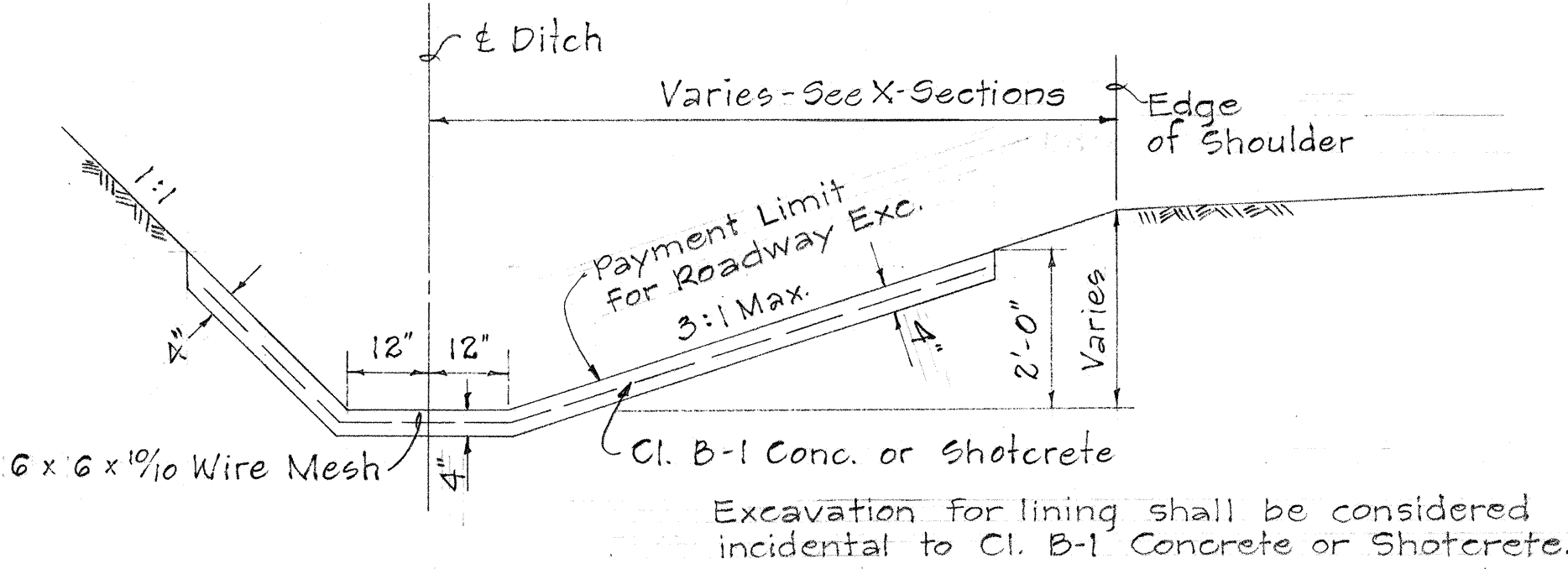
TYPICAL UNDERDRAIN OUTLET SECTION
Scale: 1/2" = 1'-0"



DETAIL OF CONCRETE LINED ROADWAY SWALE
Scale 1/2" = 1'-0"



TYPICAL SECTION
DETAIL OF CONCRETE LINED CUT-OFF DITCH
Scale: 1/2" = 1'-0"



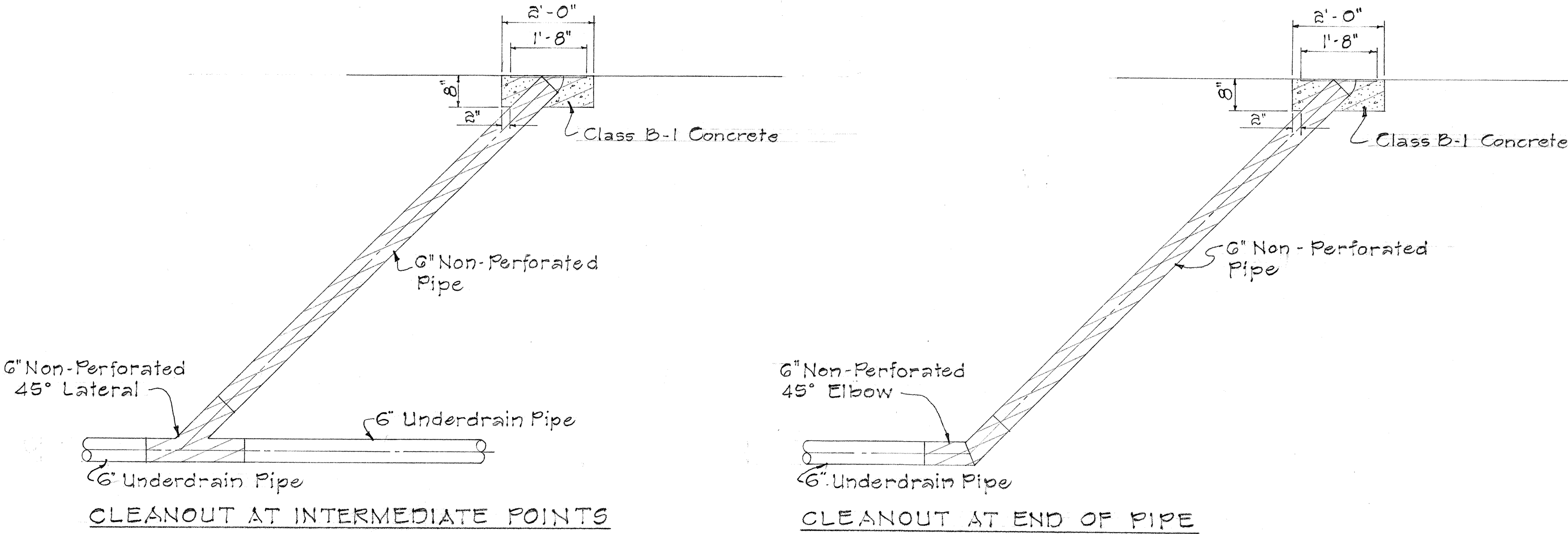
DETAIL OF CONCRETE LINED DITCH
± STA. 77+80 to 79+00
± STA. 92+75 to 93+60
Scale 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

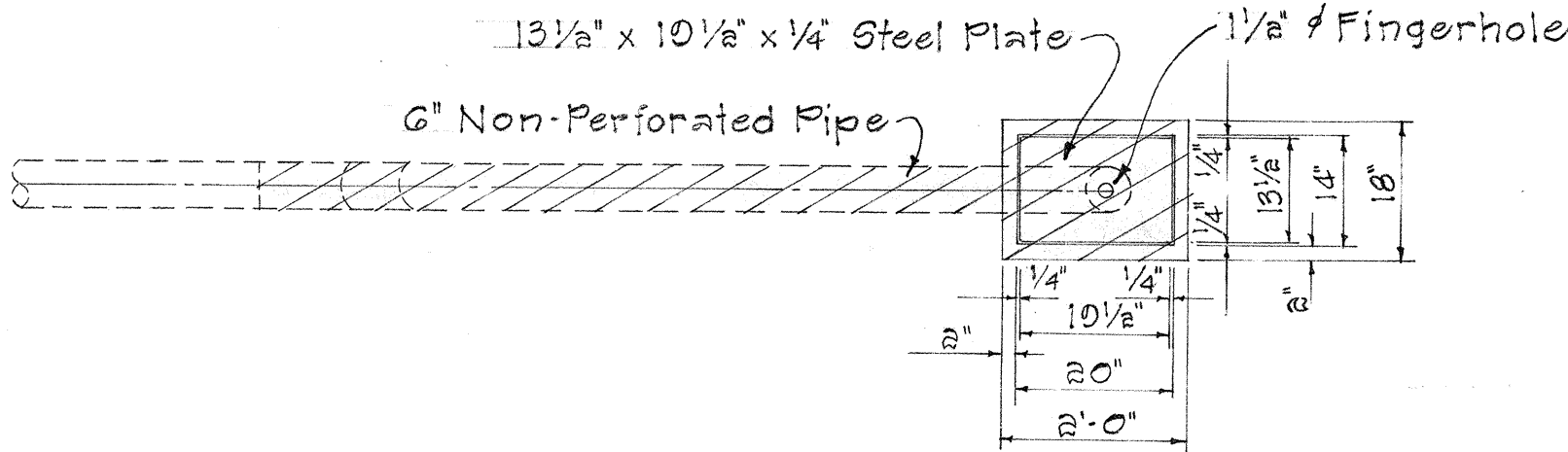
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2) UNIT I

Scale: 1/2" = 1'-0" Date: Sept. 1966
SHEET No. 0-11 OF 13 SHEETS



ELEVATIONS

- NOTES:
- Steel plate shall be thoroughly cleaned and painted with one coat of high grade asphaltum.
 - Hatched area denotes limit of payment for cleanouts.

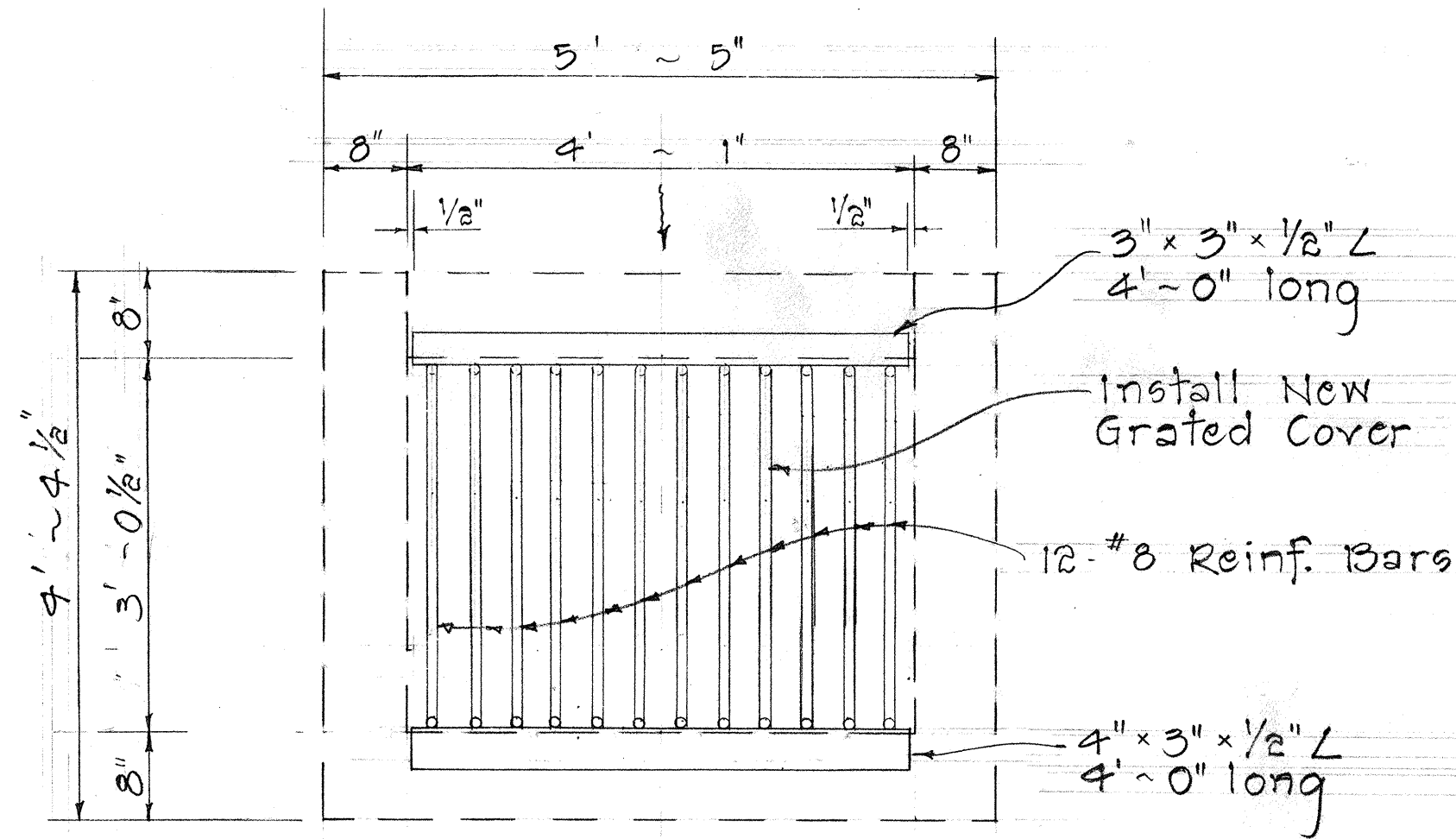


PLAN

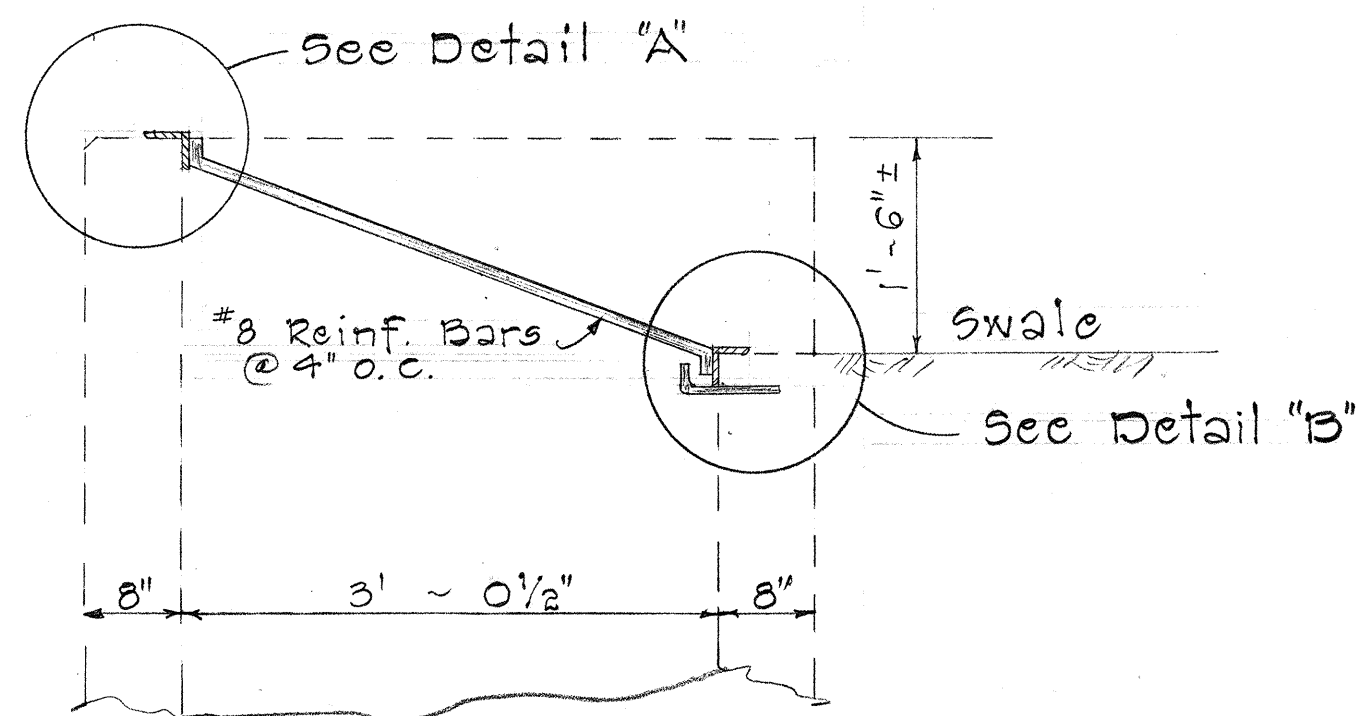
DETAIL OF CLEANOUT AND CONCRETE BLOCKS FOR UNDERDRAINS
Scale: 1/2" = 1'-0"

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 1	1966	C.O. 42 S	83

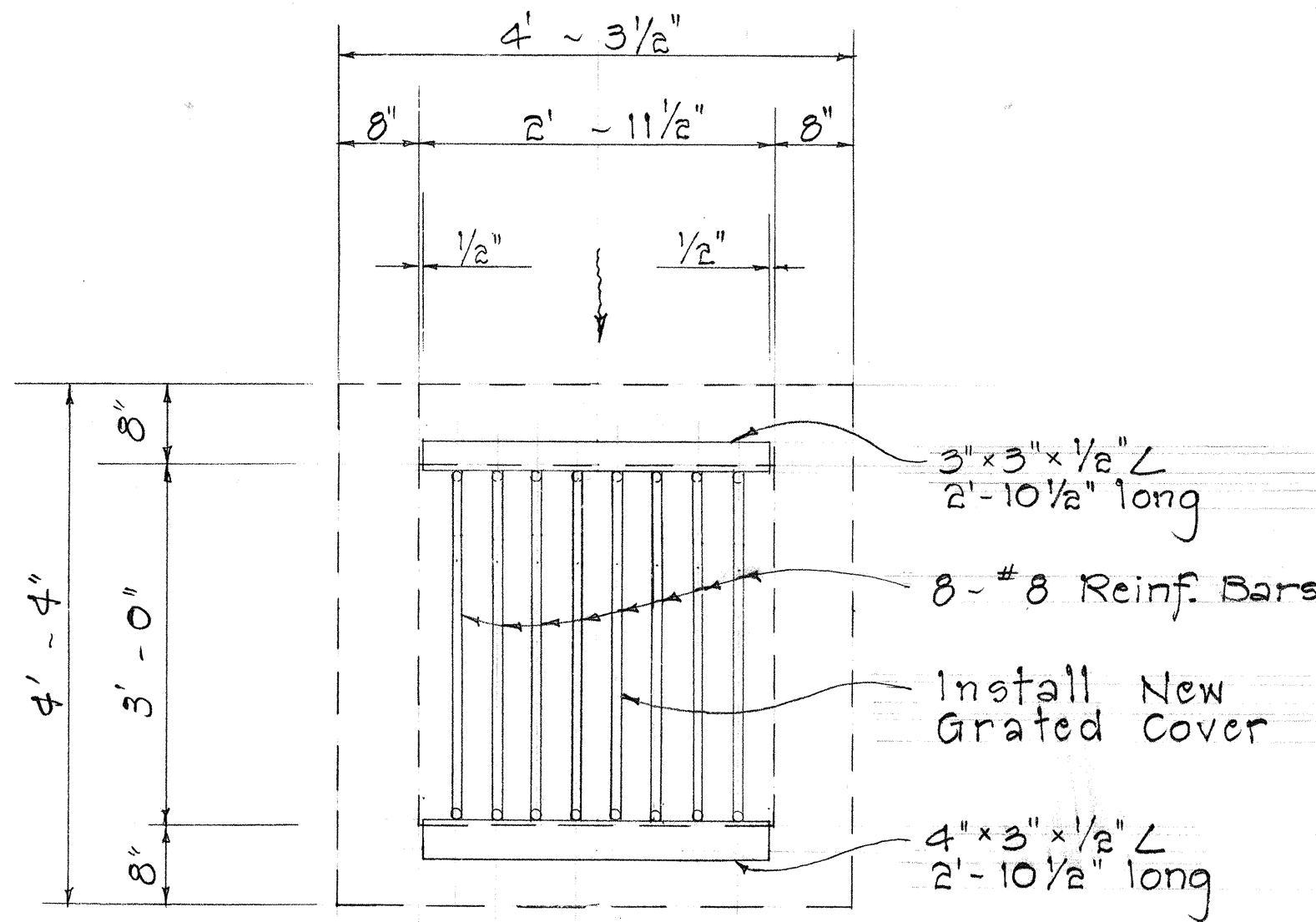


PLAN

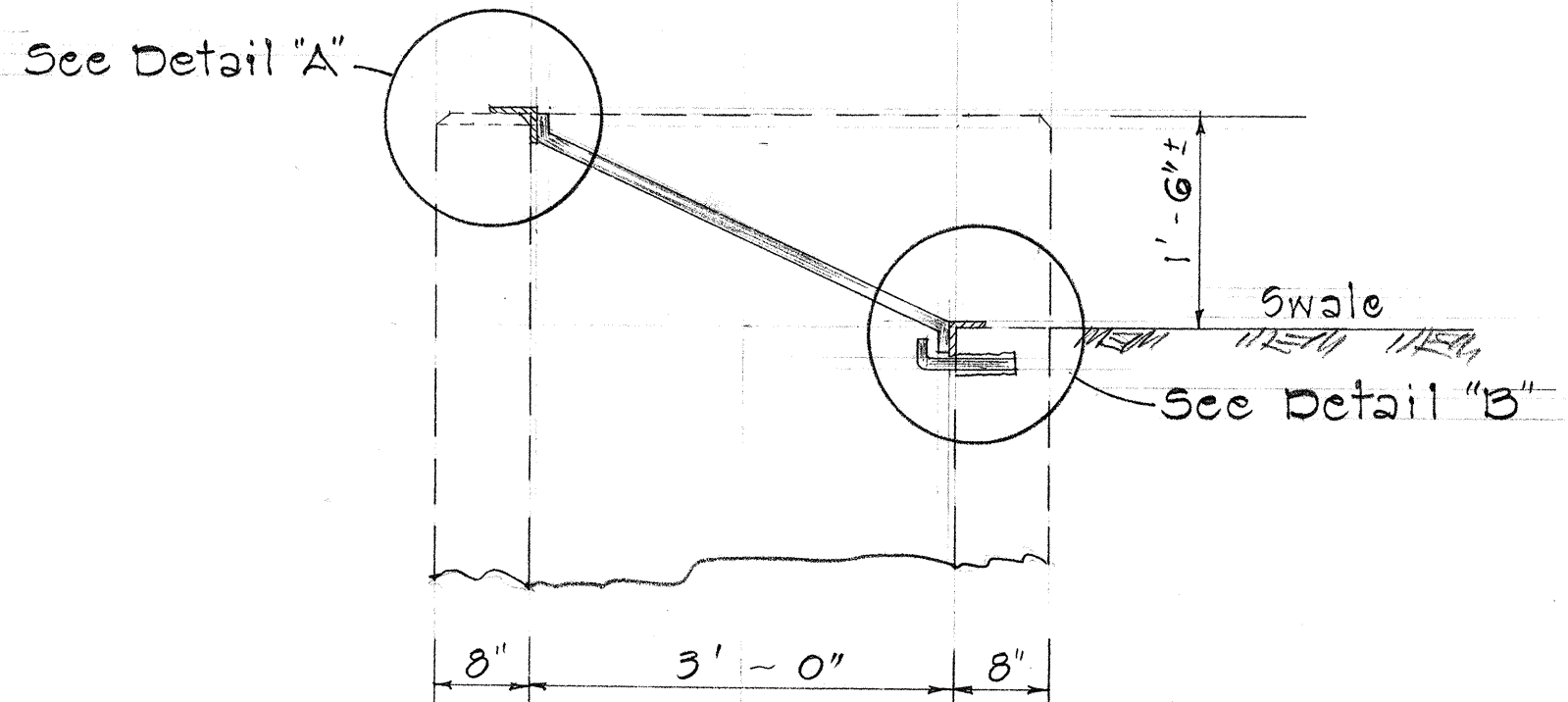


ELEVATION

EXISTING C.D.I. @ STA. 99+00
Scale: 3/4" = 1' - 0"

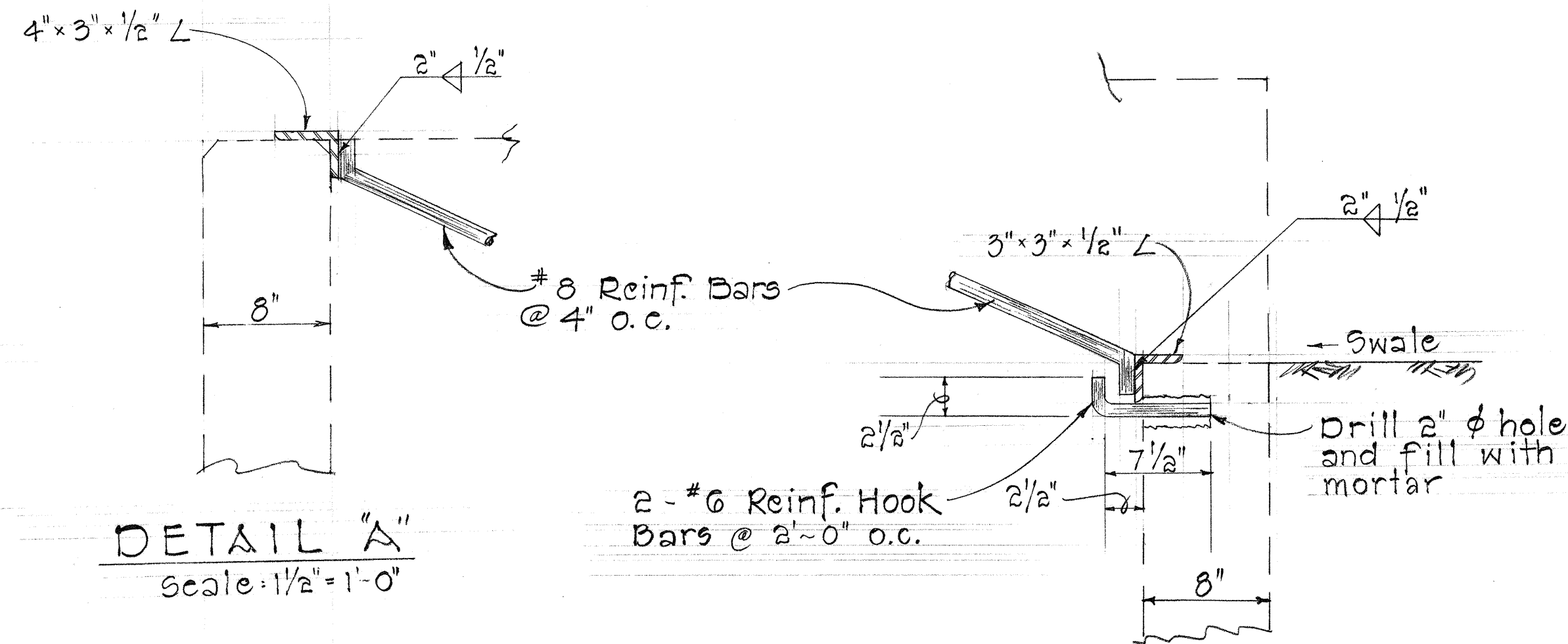


PLAN



ELEVATION

EXISTING C.D.I. @ STA. 125+00
Scale: 3/4" = 1' - 0"



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

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

DETAILS OF GRATED COVER

ORIGINAL PLAN	DATE
NOTED BY	7/27/66
DESIGNED BY	7/27/66
CHECKED BY	7/27/66
QUANTITIES BY	7/27/66
NO.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS OF
GRATED COVER FOR C.D.I.
AT STA. 99+00 & STA. 125+00
KAMEHAMEHA HIGHWAY
PROJ. No. F-083-1(2) UNIT 1

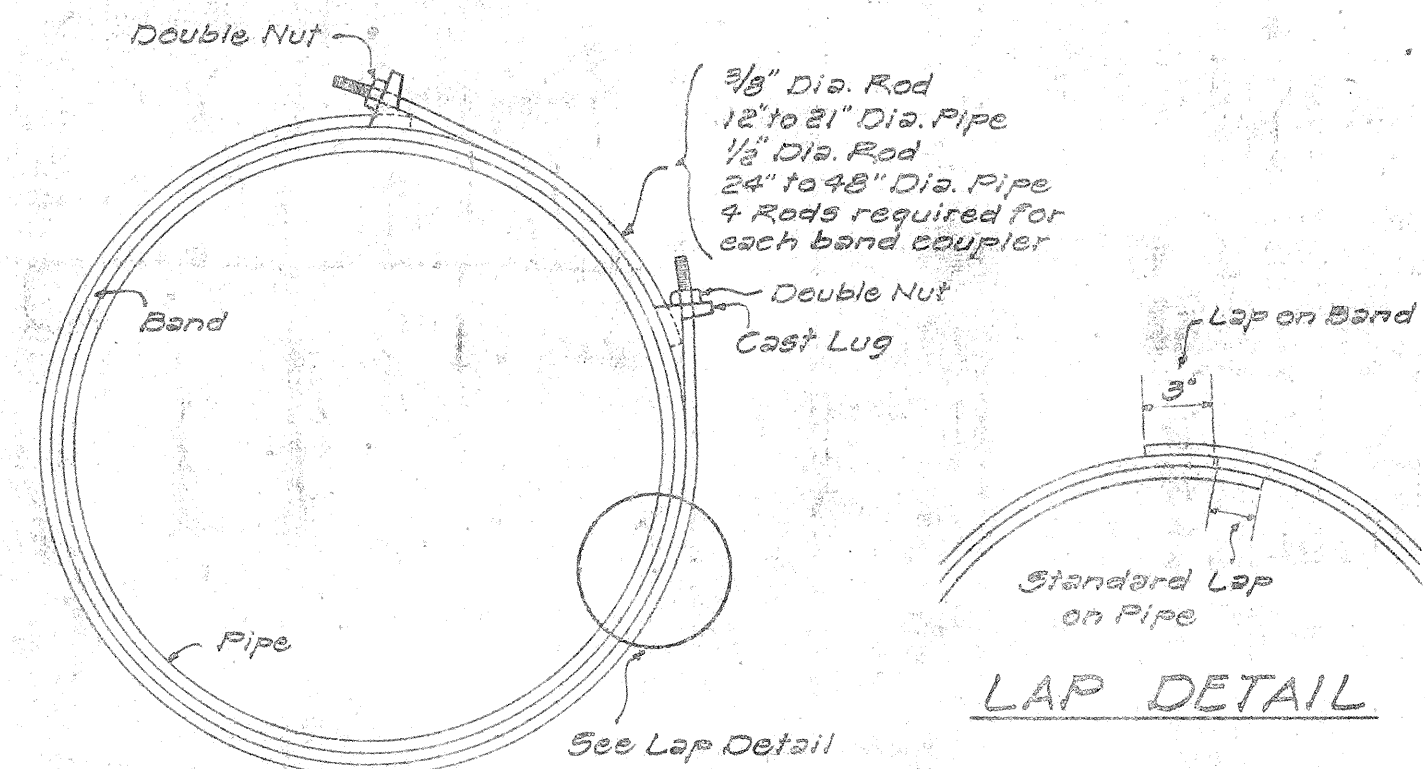
Scale: As Shown
Date: July, 1968

SHEET No. OF SHEETS

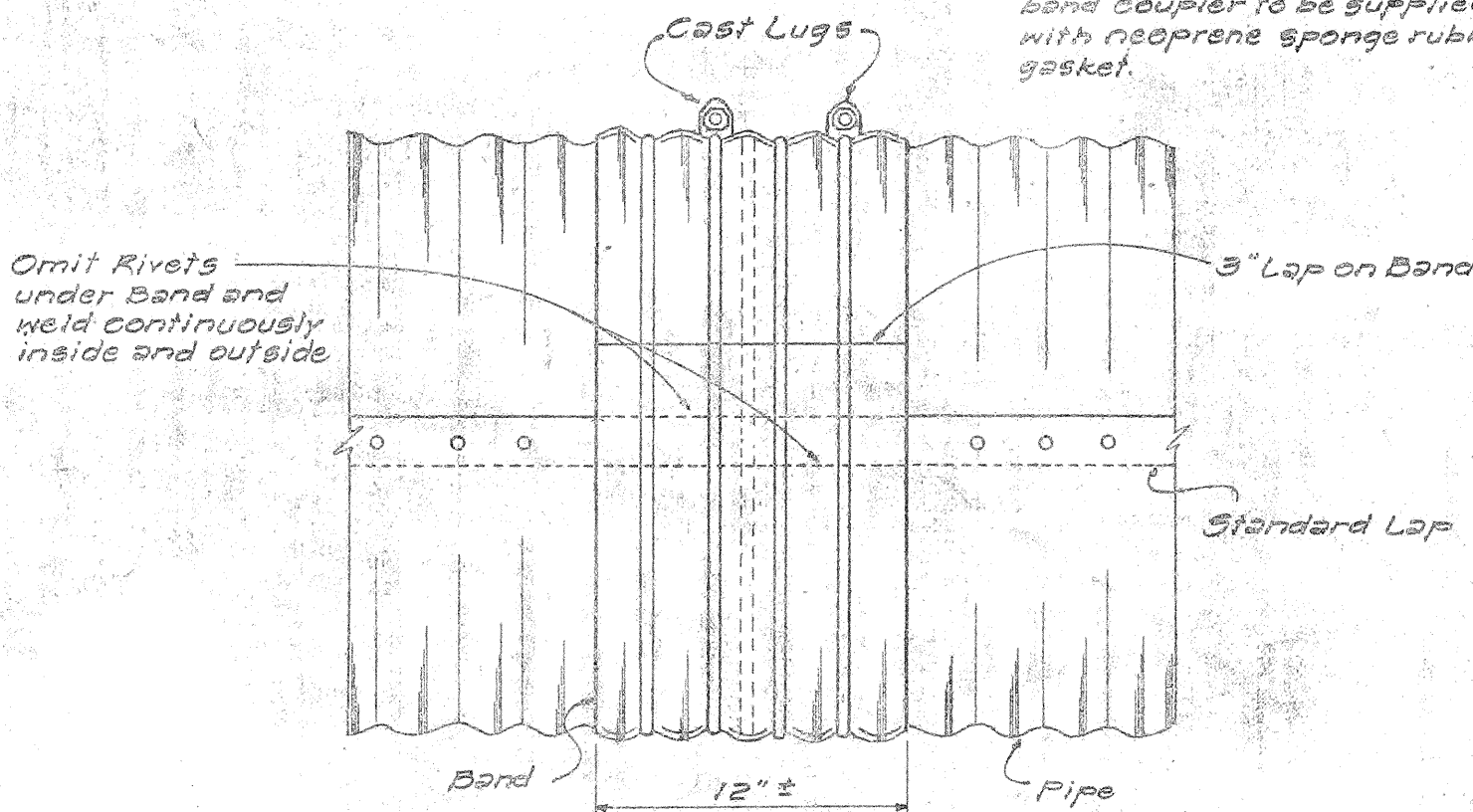
THIS SHEET IS A
SUPPLEMENT TO SHEET 42

C.O. 42 S

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) UNIT 1	1966	43	83

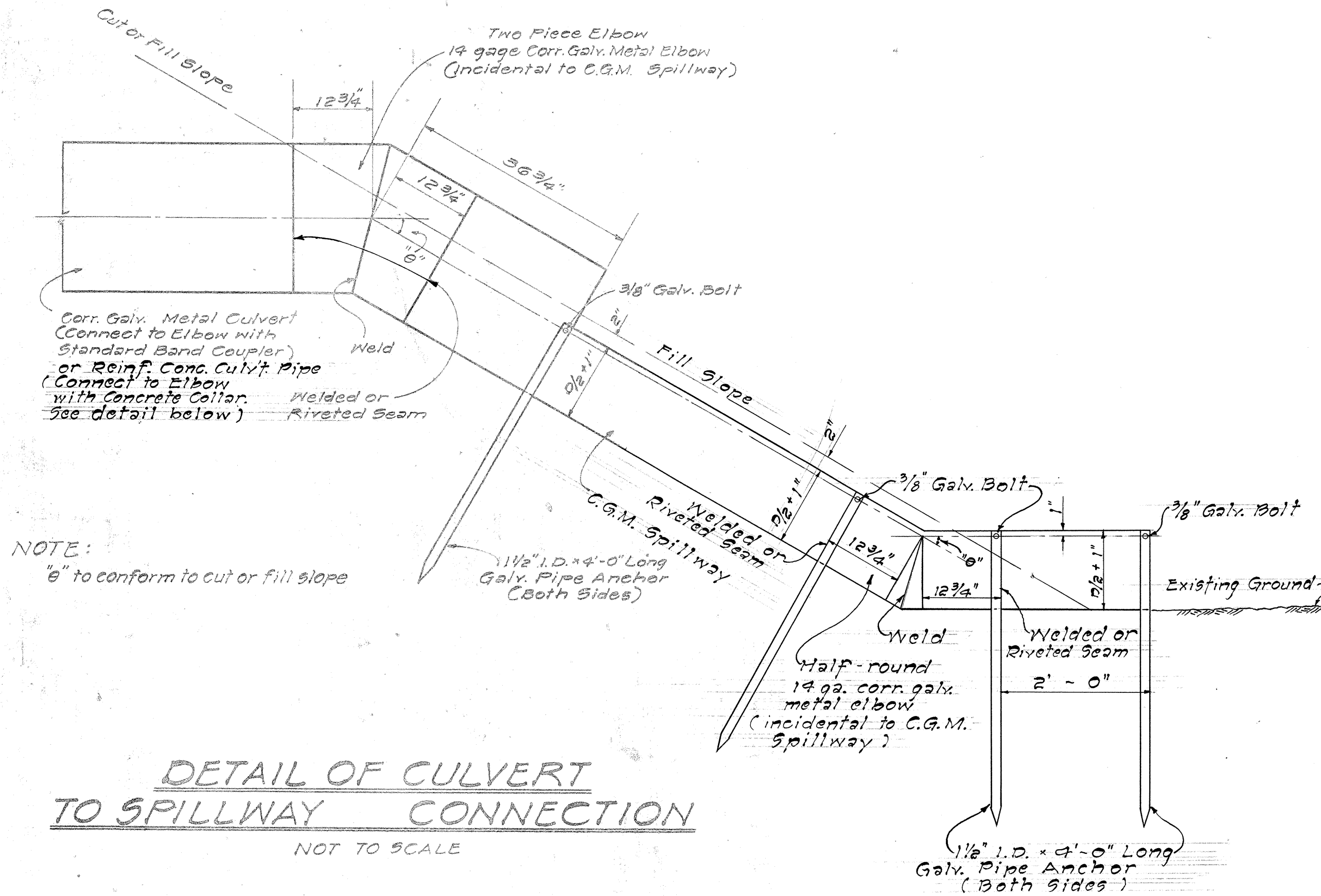


END VIEW

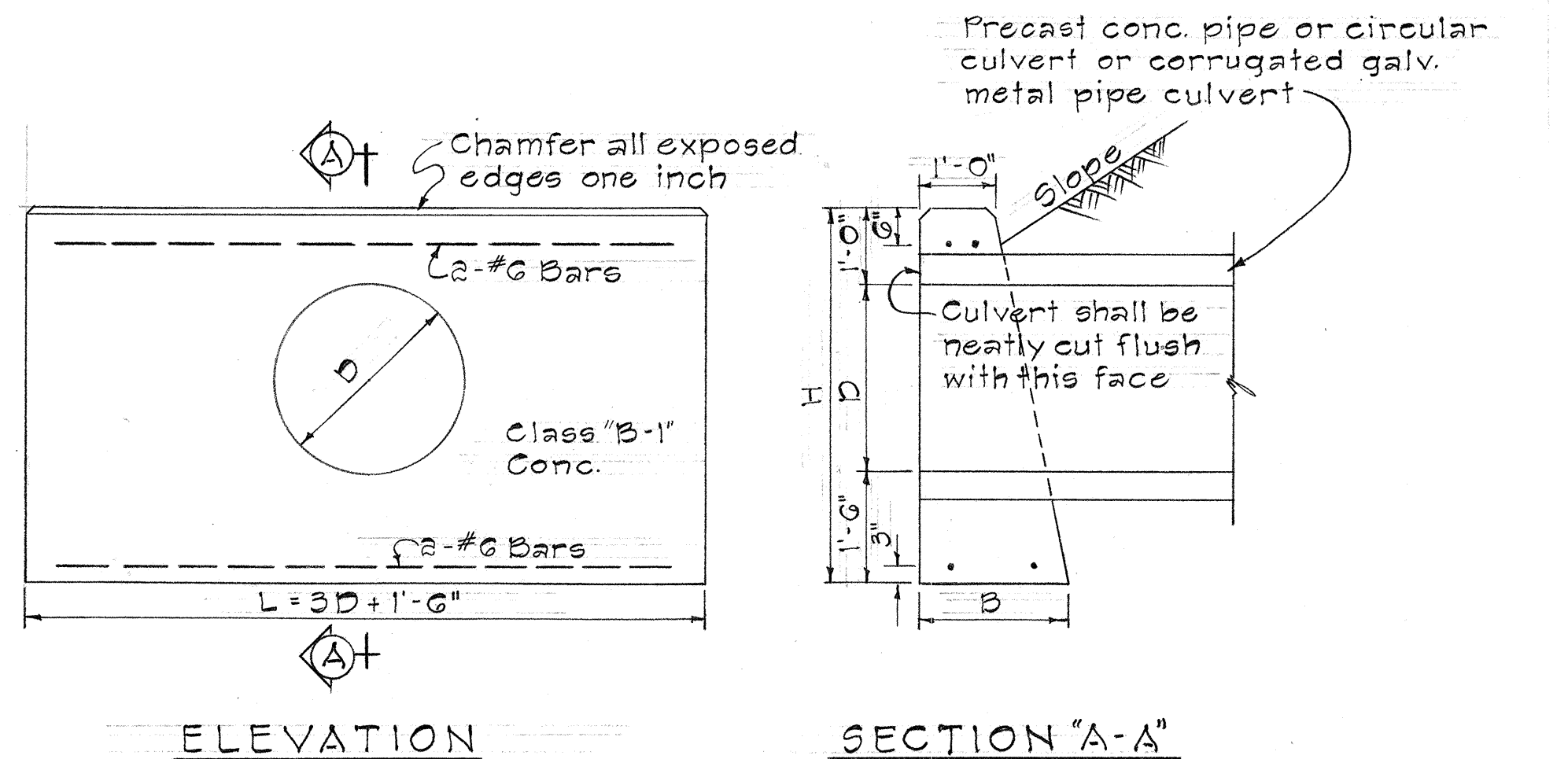


SIDE VIEW

DETAIL OF WATERTIGHT BAND COUPLER
NOT TO SCALE

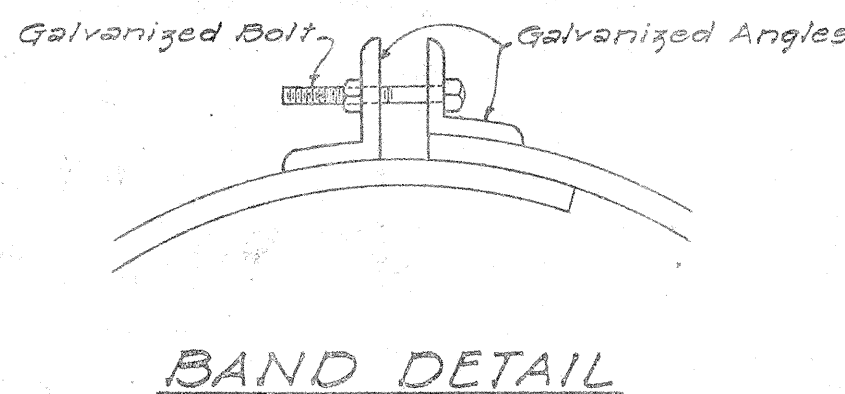


DETAIL OF CULVERT
TO SPILLWAY CONNECTION
NOT TO SCALE

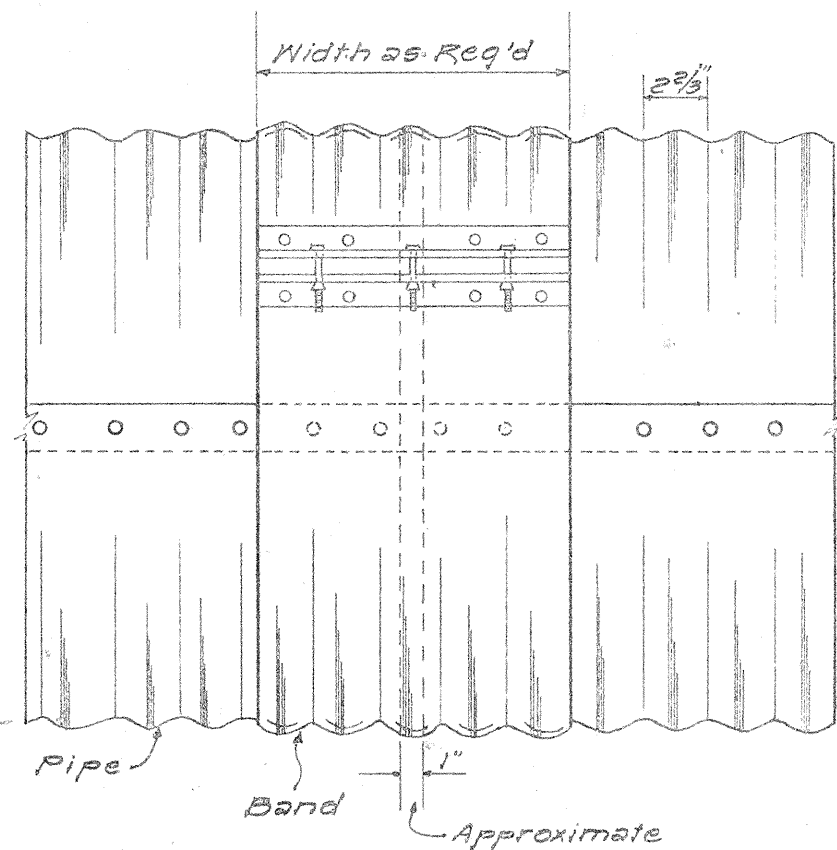


DATA FOR CONG. HEADWALL				Conc. Pipe Culvert	Steel for One Headwall			
D	B	L	H	Cu. Yd.	No. of Bars	Size	Length	Lbs.
18"	1'-6"	6'-0"	4'-0"	1.00	4	#6	5'-6"	33
24"	1'-6"	7'-6"	4'-6"	1.38	4	#6	7'-0"	42
30"	2'-0"	9'-0"	5'-0"	2.17	4	#6	8'-6"	51
36"	2'-0"	10'-6"	5'-6"	2.74	4	#6	10'-0"	60
42"	2'-6"	12'-0"	6'-0"	3.87	4	#6	11'-6"	69
48"	2'-6"	13'-6"	6'-6"	4.66	4	#6	13'-0"	78

DETAIL OF STANDARD CONCRETE HEADWALL
Scale: 1/2" = 1'-0"

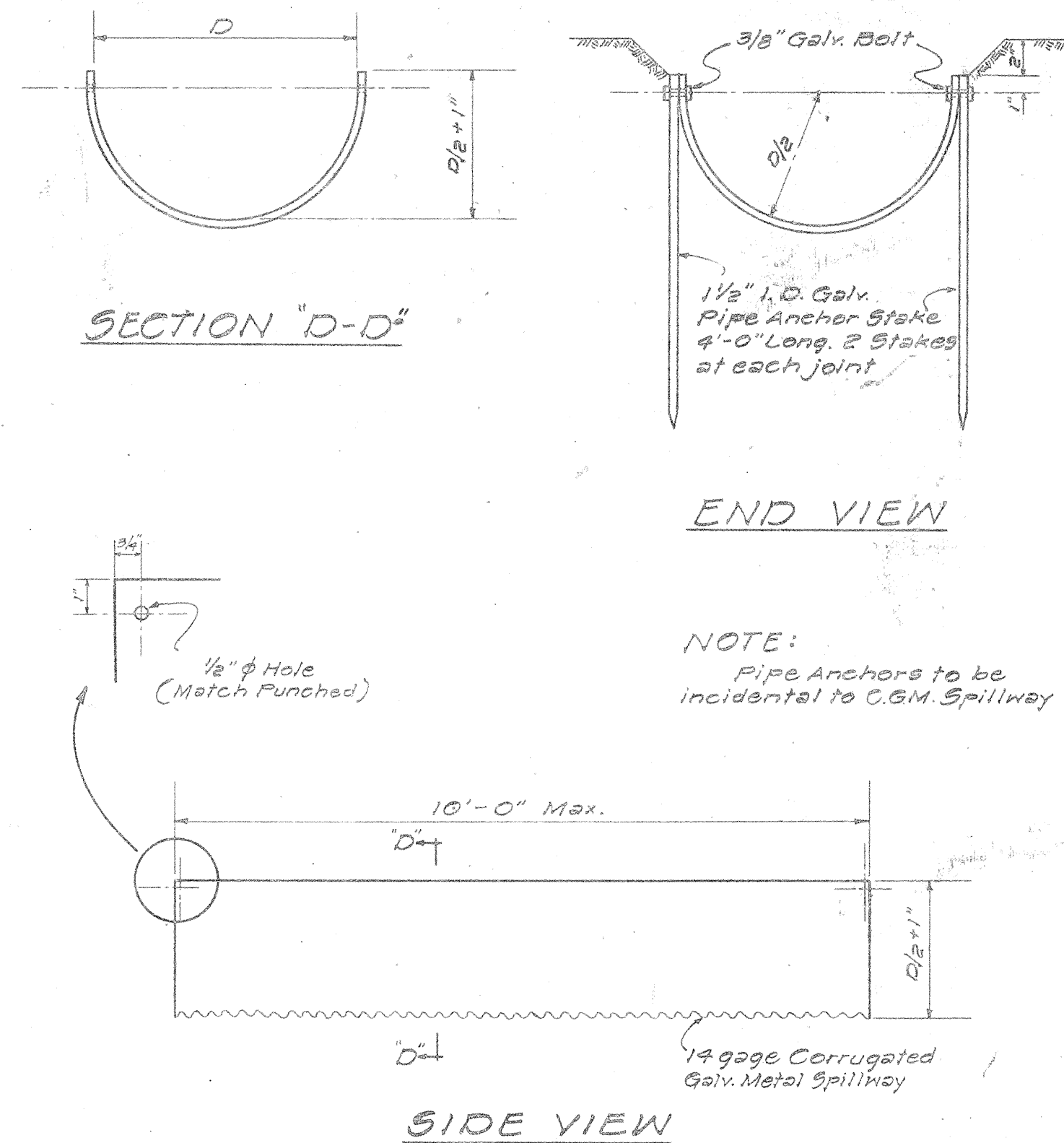


BAND DETAIL



SIDE VIEW

DETAIL OF STANDARD BAND COUPLER
NOT TO SCALE

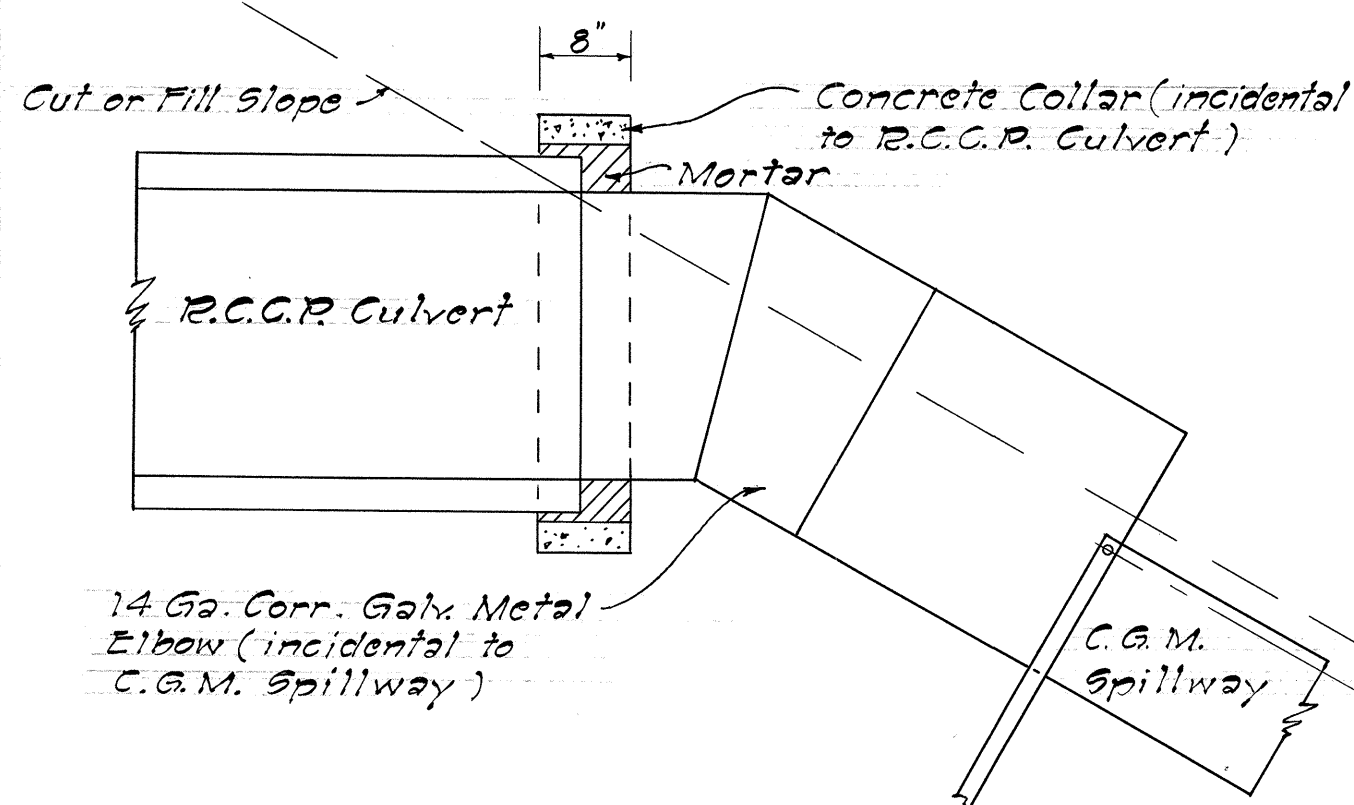


END VIEW

NOTE:
Pipe Anchors to be incidental to C.G.M. Spillway

SIDE VIEW

C.G.M. SPILLWAY
NOT TO SCALE



DETAIL OF CONNECTION
OF R.C.C.P. CULVERT TO
C.G.M. SPILLWAY
NOT TO SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
OF STANDARD CONG. HEADWALL, CGM
COUPLERS, AND C.G.M. SPILLWAY
KAMEHAMEHA HIGHWAY
Proj. No. F-083-1(2) UNIT 1
Scale: As Shown Date: August, 1966
SHEET No. D-13 OF 13 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	5-24-66
NOTED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NO.	