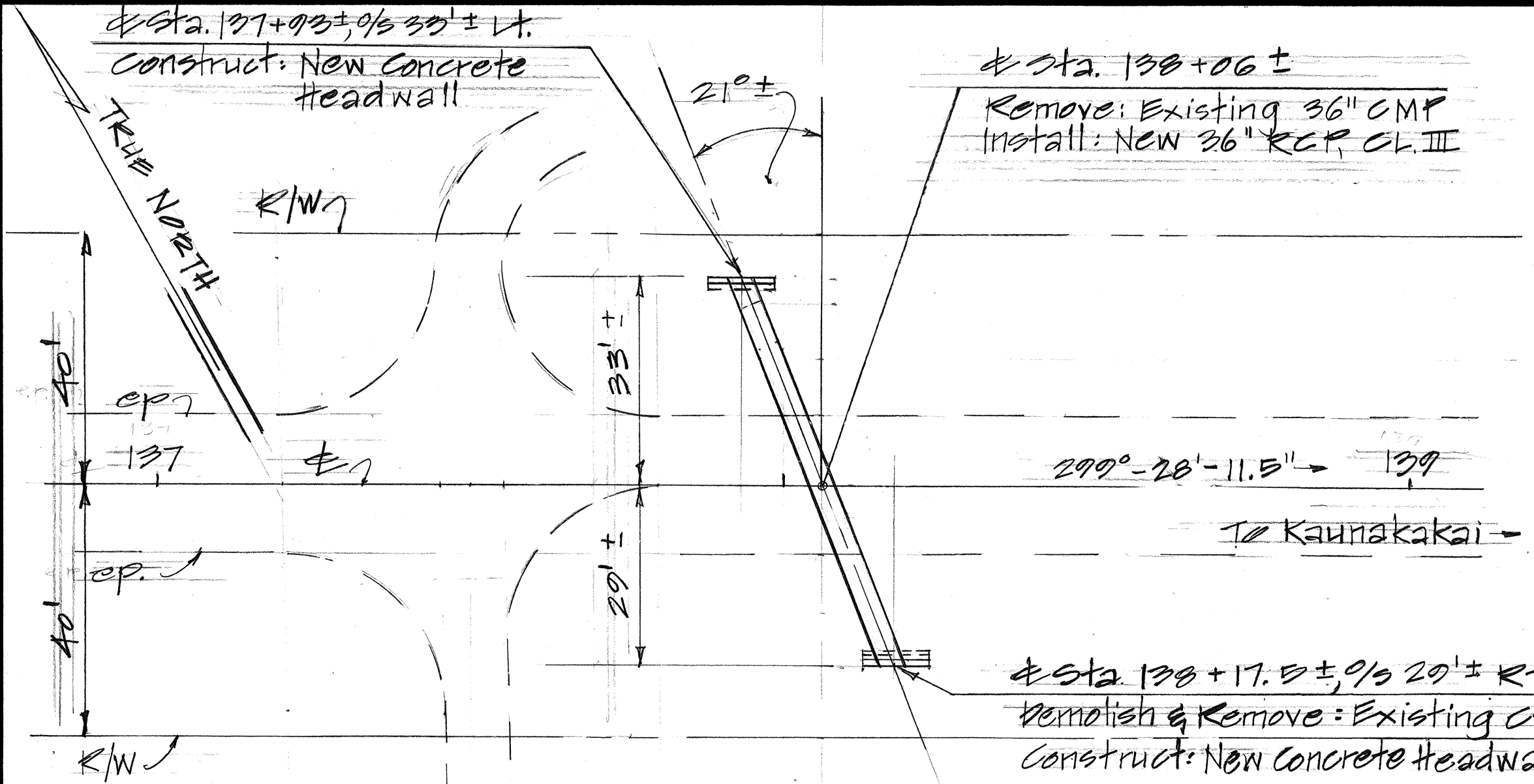


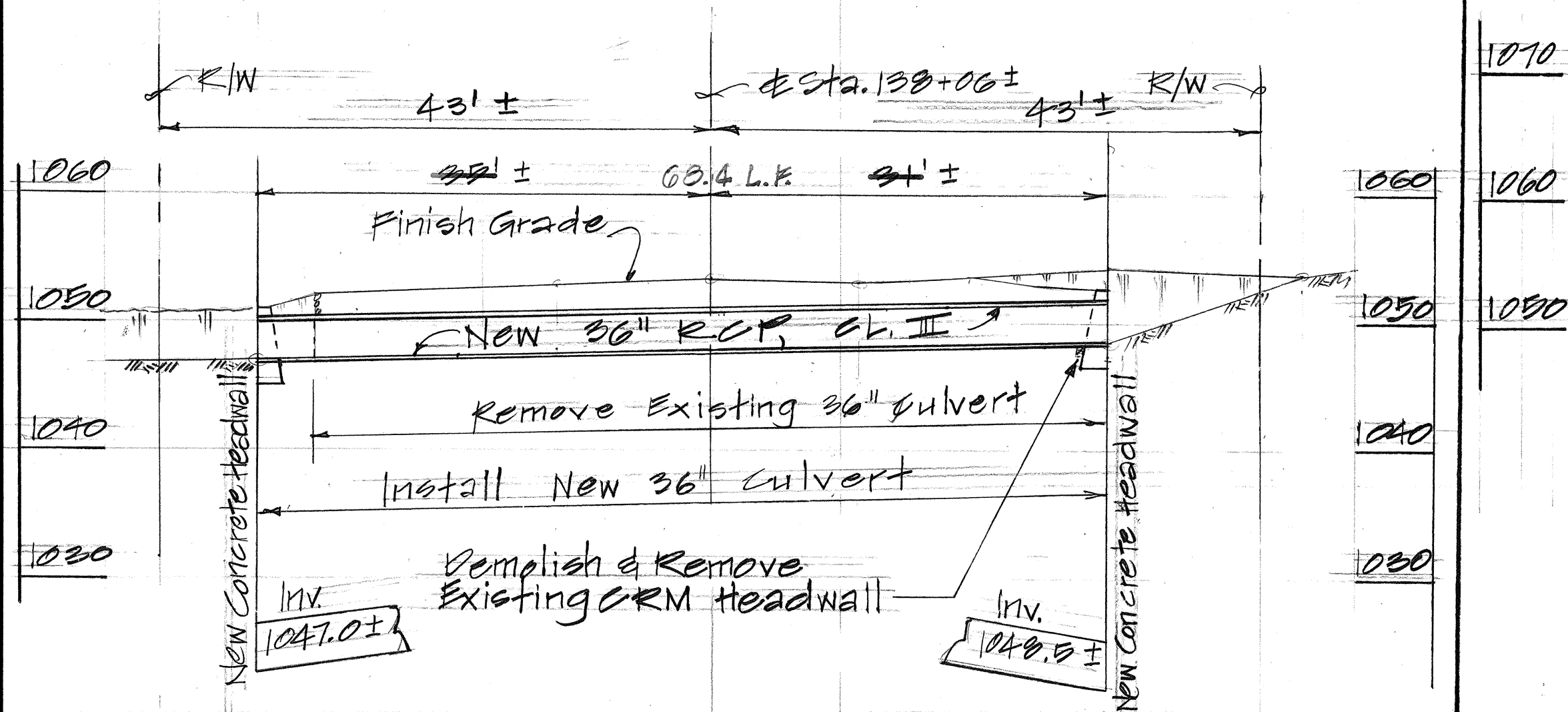
PROJECT: MAUNALOA HIGHWAY, REPLACE CULVERTS BETWEEN
MAUNALOA VILLAGE TOWARDS KAUNAKAKAI, PHASE I
PROJECT NO.: RS-0460 (4)

II

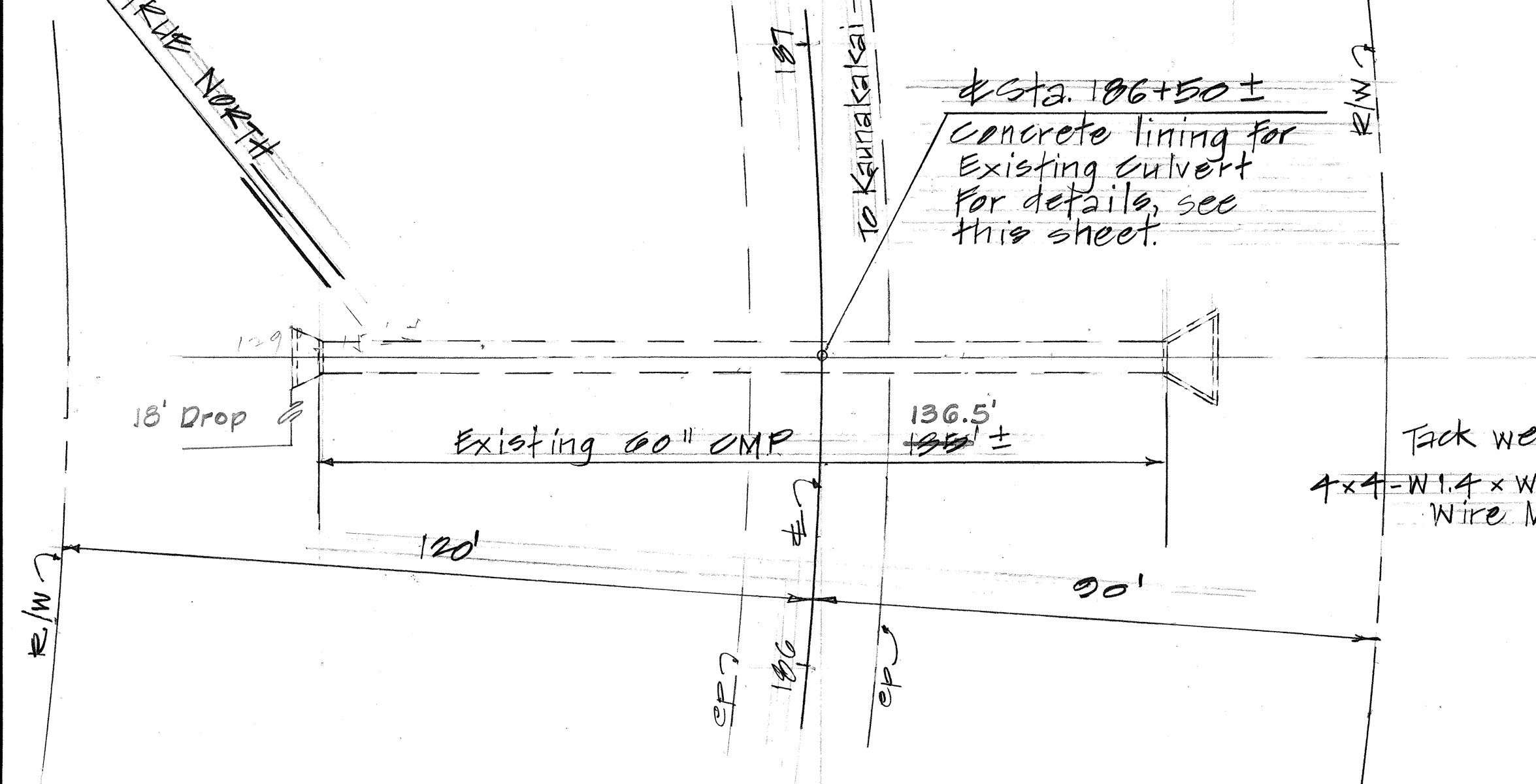
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	12	25



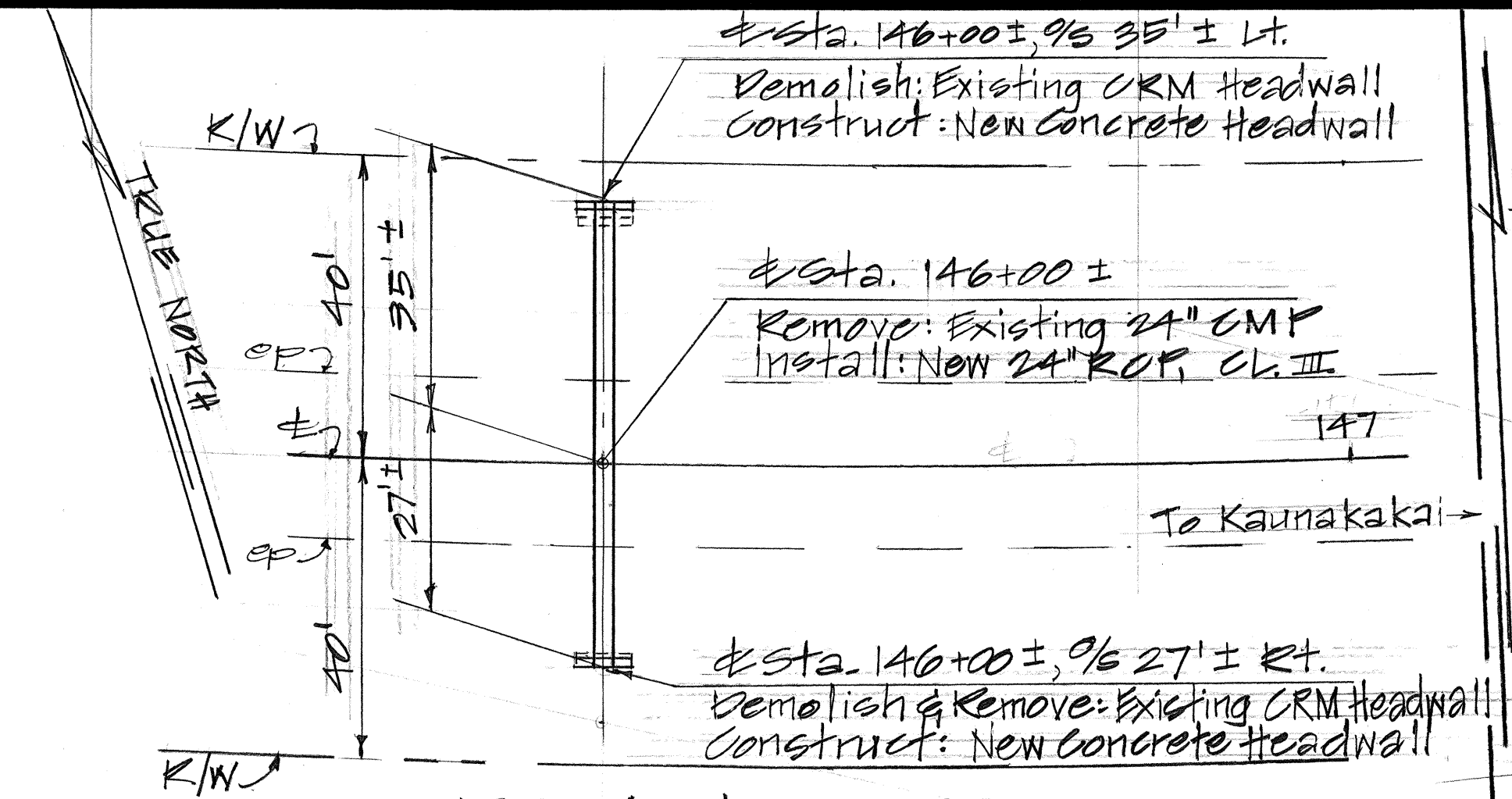
PLAN
Scale: 1" = 20'



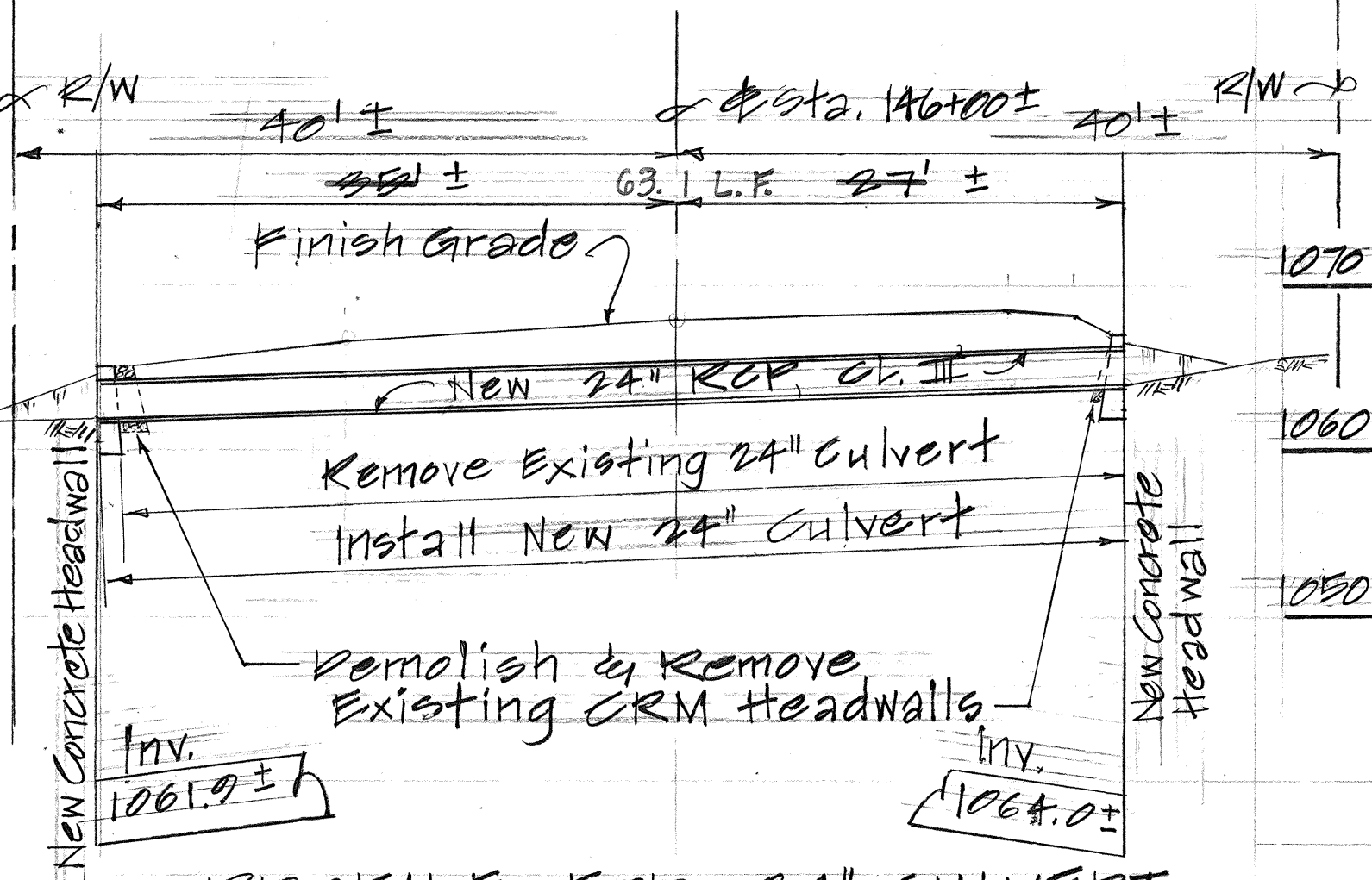
PROFILE FOR 36" CULVERT AT STA. 138+06 ±
Scale: 1" = 10'



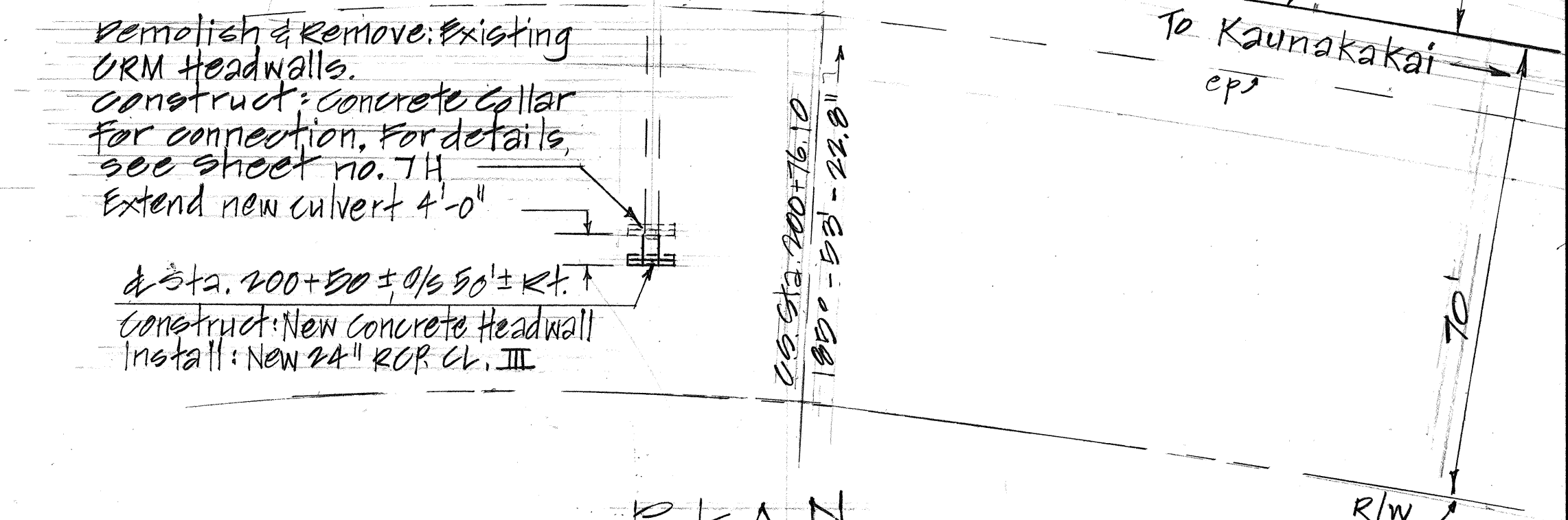
PLAN
Scale: 1" = 20'



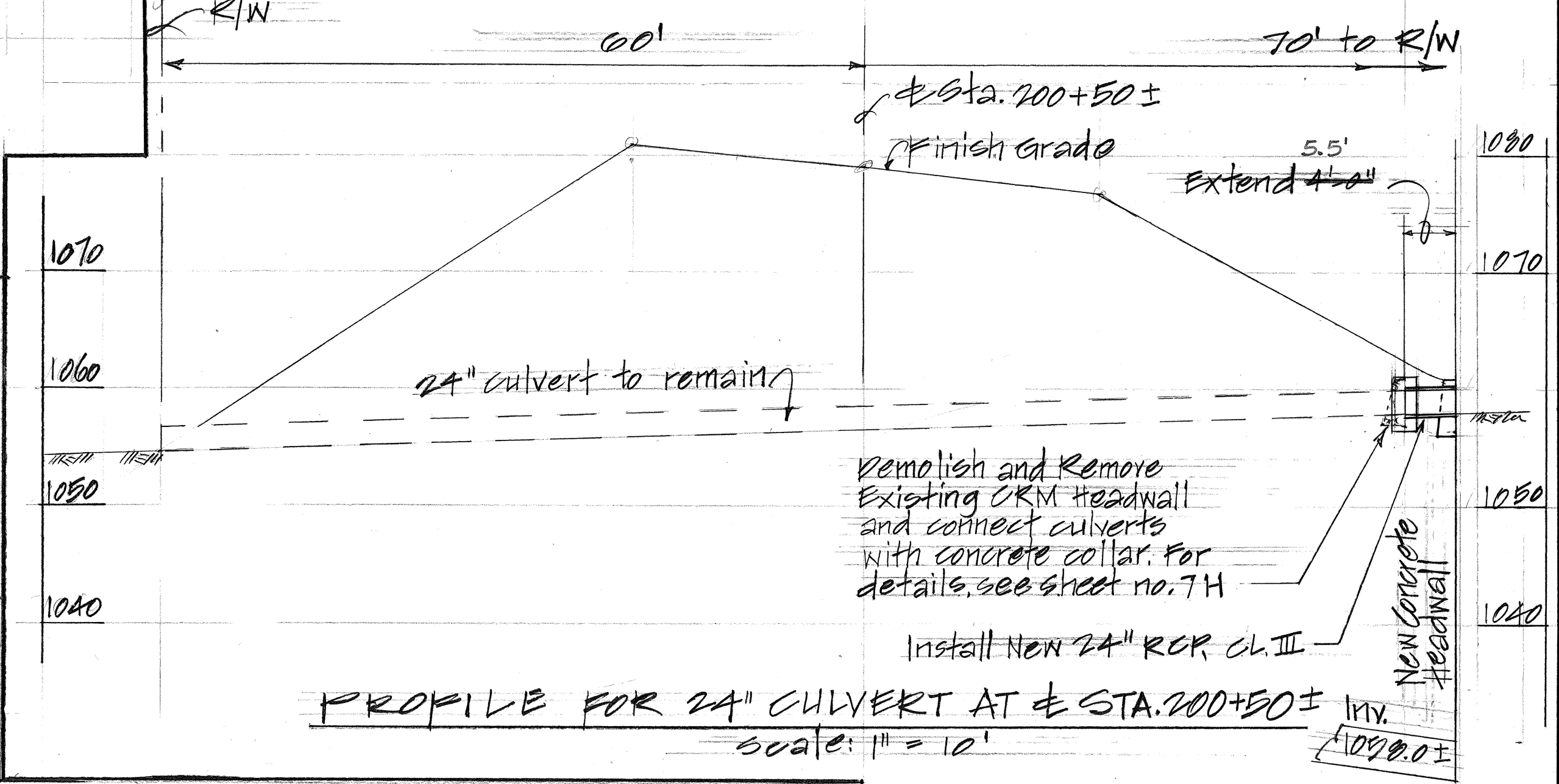
PLAN
Scale: 1" = 20'



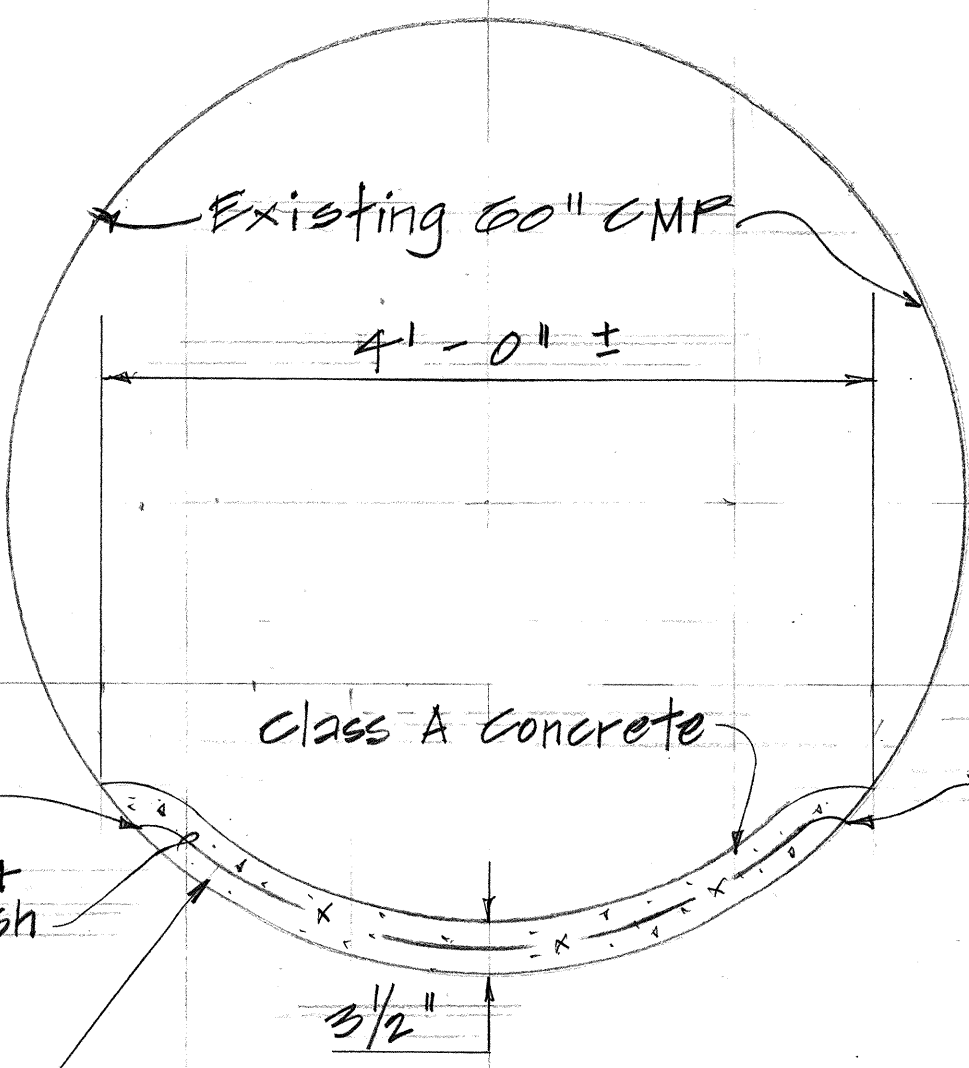
PROFILE FOR 24" CULVERT
AT STA. 146+00 ±
Scale: 1" = 10'



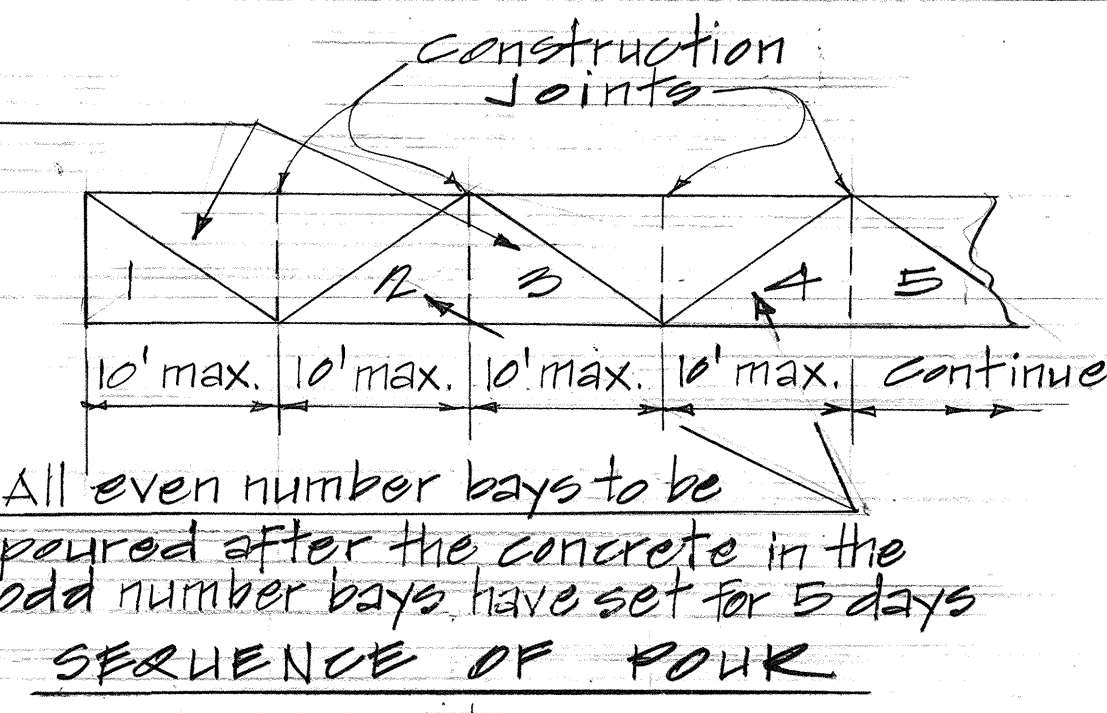
PLAN
Scale: 1" = 20'



PROFILE FOR 24" CULVERT AT STA. 200+50 ±
Scale: 1" = 10'



DETAIL-CONCRETE LINING FOR STA. 186+50 ±
Scale: 1" = 1'-0"



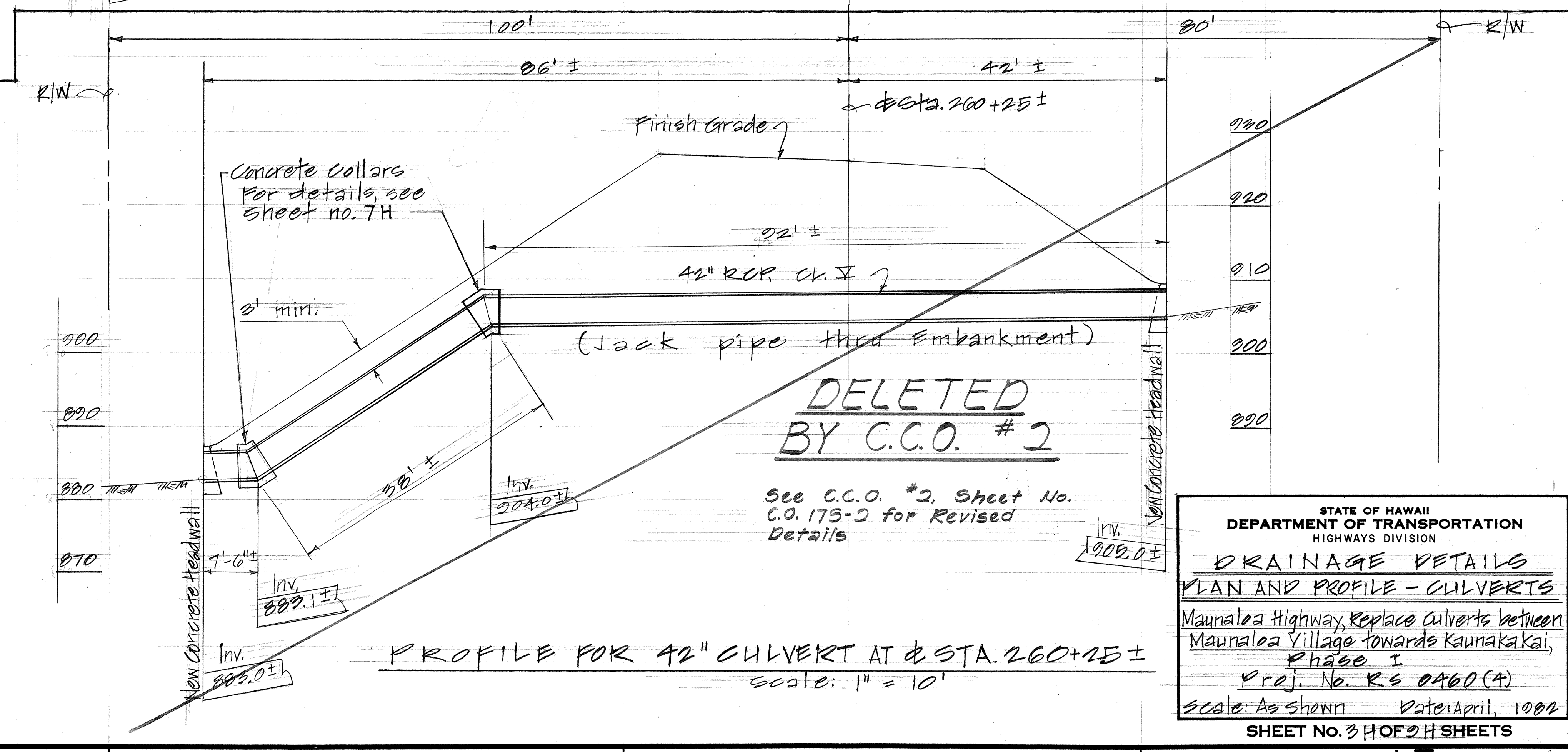
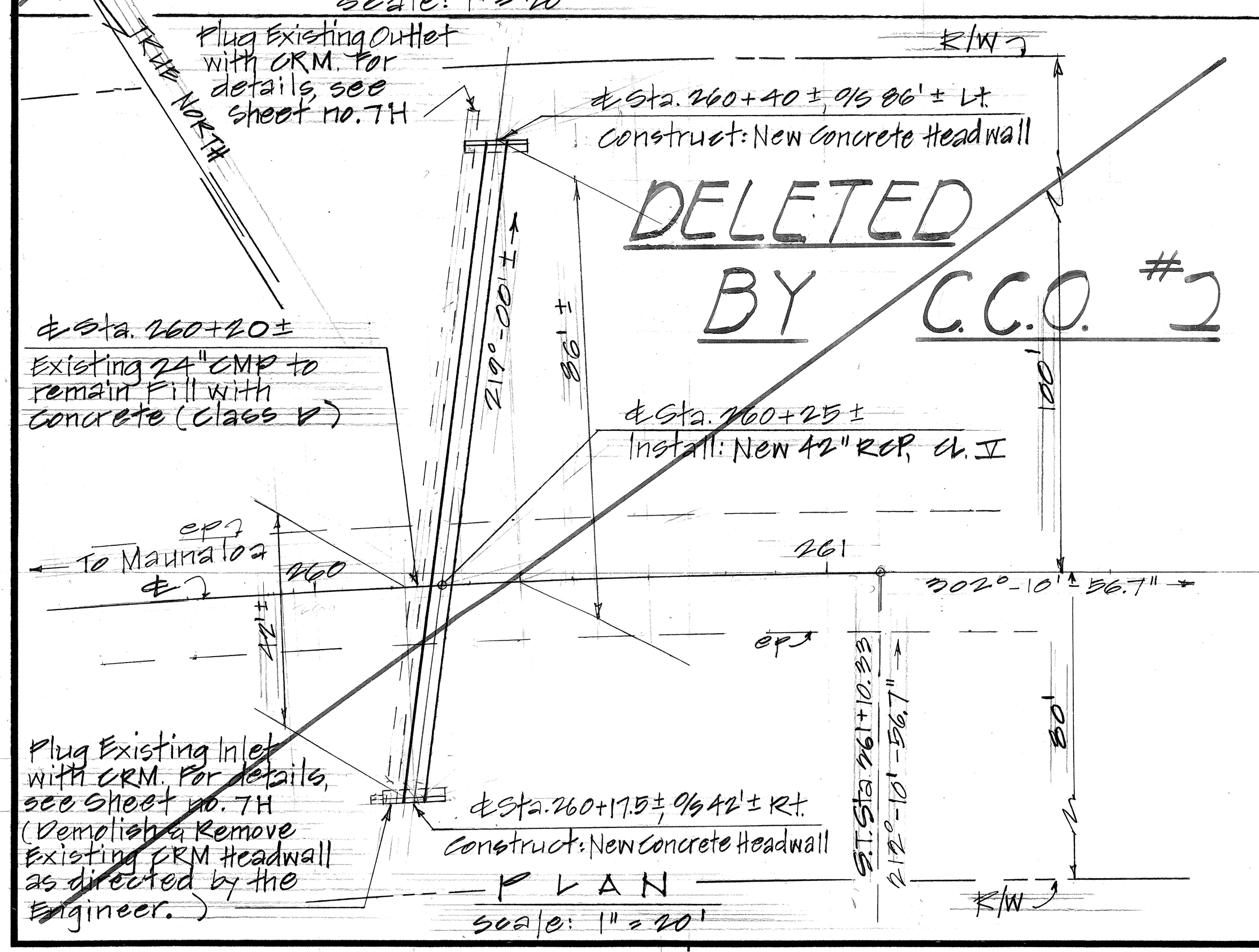
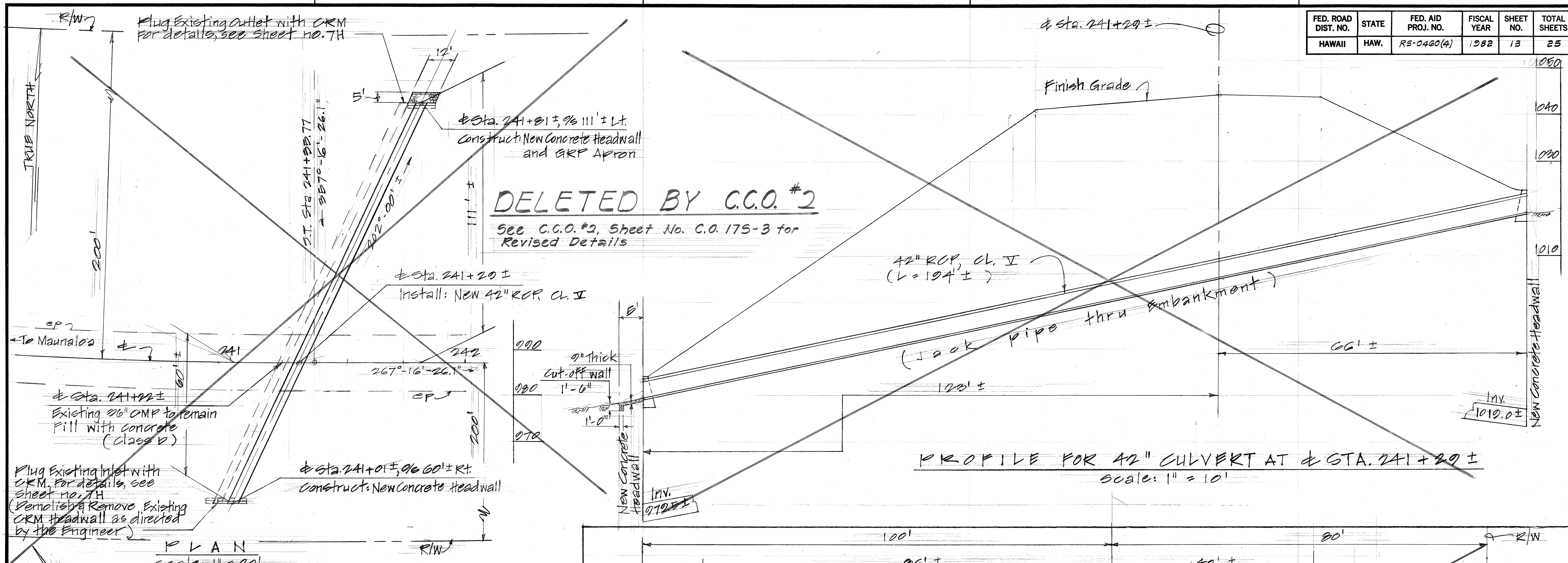
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN, PROFILE AND DETAIL
FOR CULVERTS

Maunaloa Highway, Replace Culverts between Maunaloa Village, towards Kaunakakai, Phase I
Proj. No. RS 0460 (4)
Scale: As Shown Date: April, 1982
SHEET NO. 2 HOF 2 H SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	13	25



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE - CULVERTS

Maunaloa Highway, Replace Culverts between Maunaloa Village towards Kaunakakai, Phase I

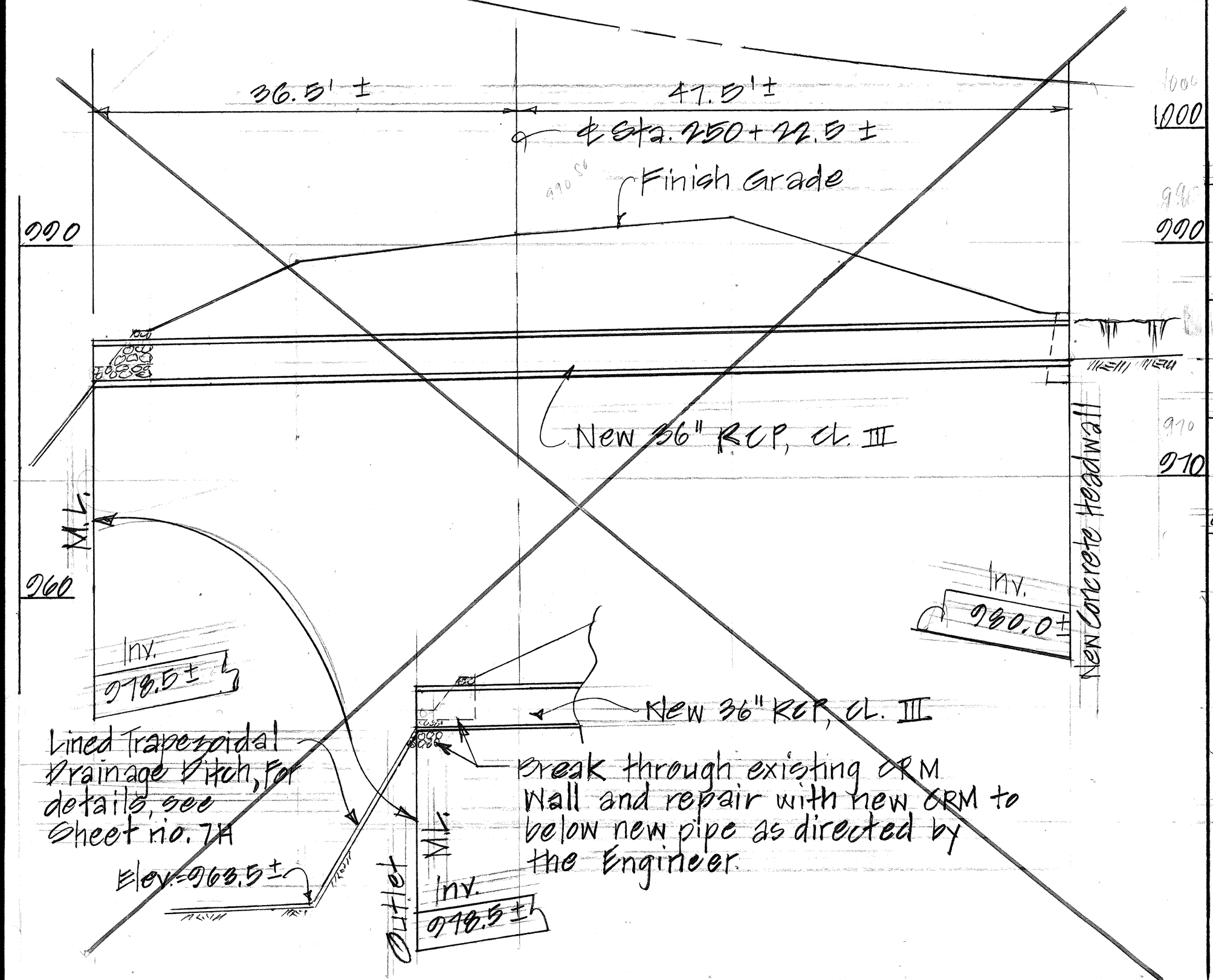
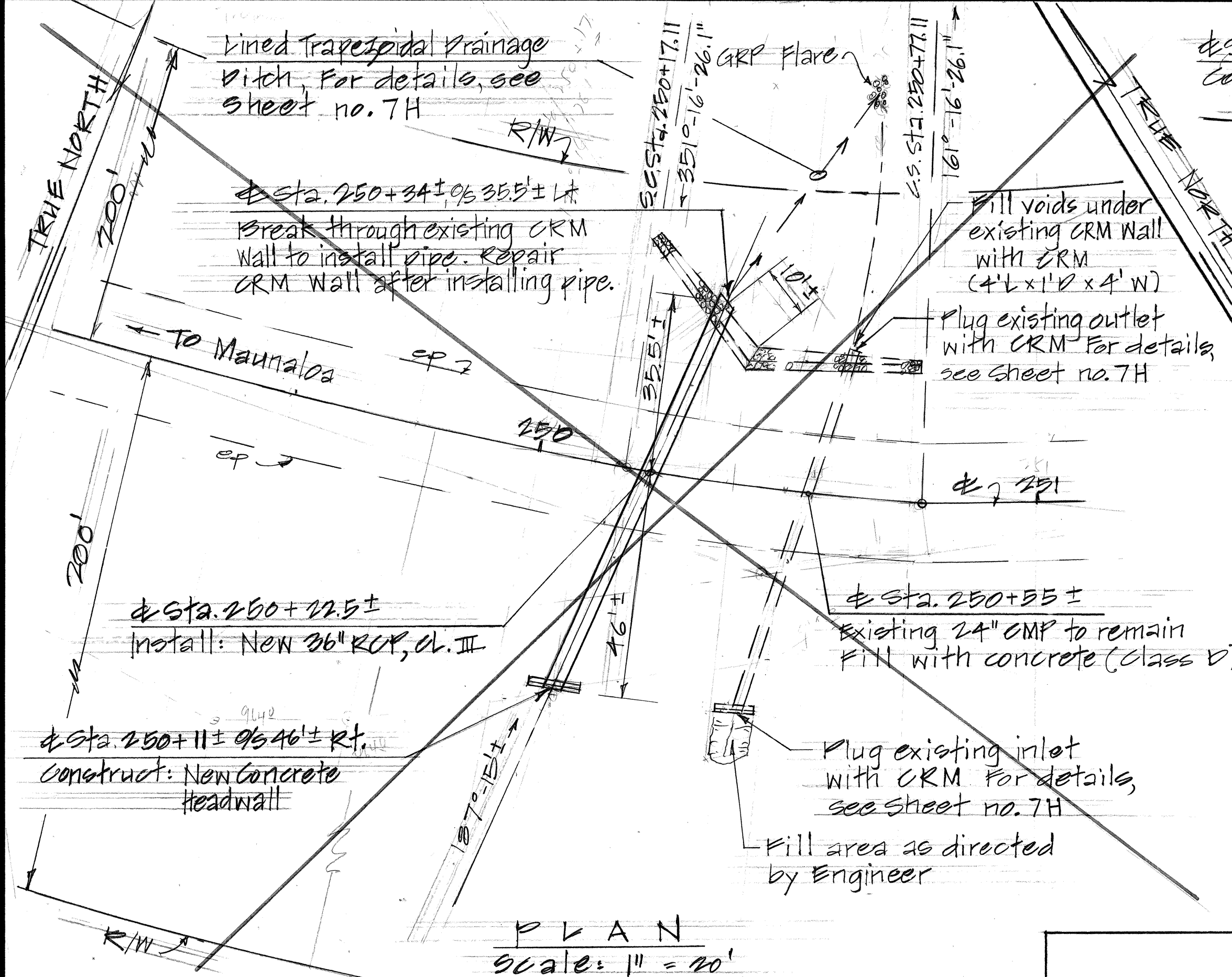
Proj. No. RS 0460(4)

Scale: As Shown Date: April, 1982

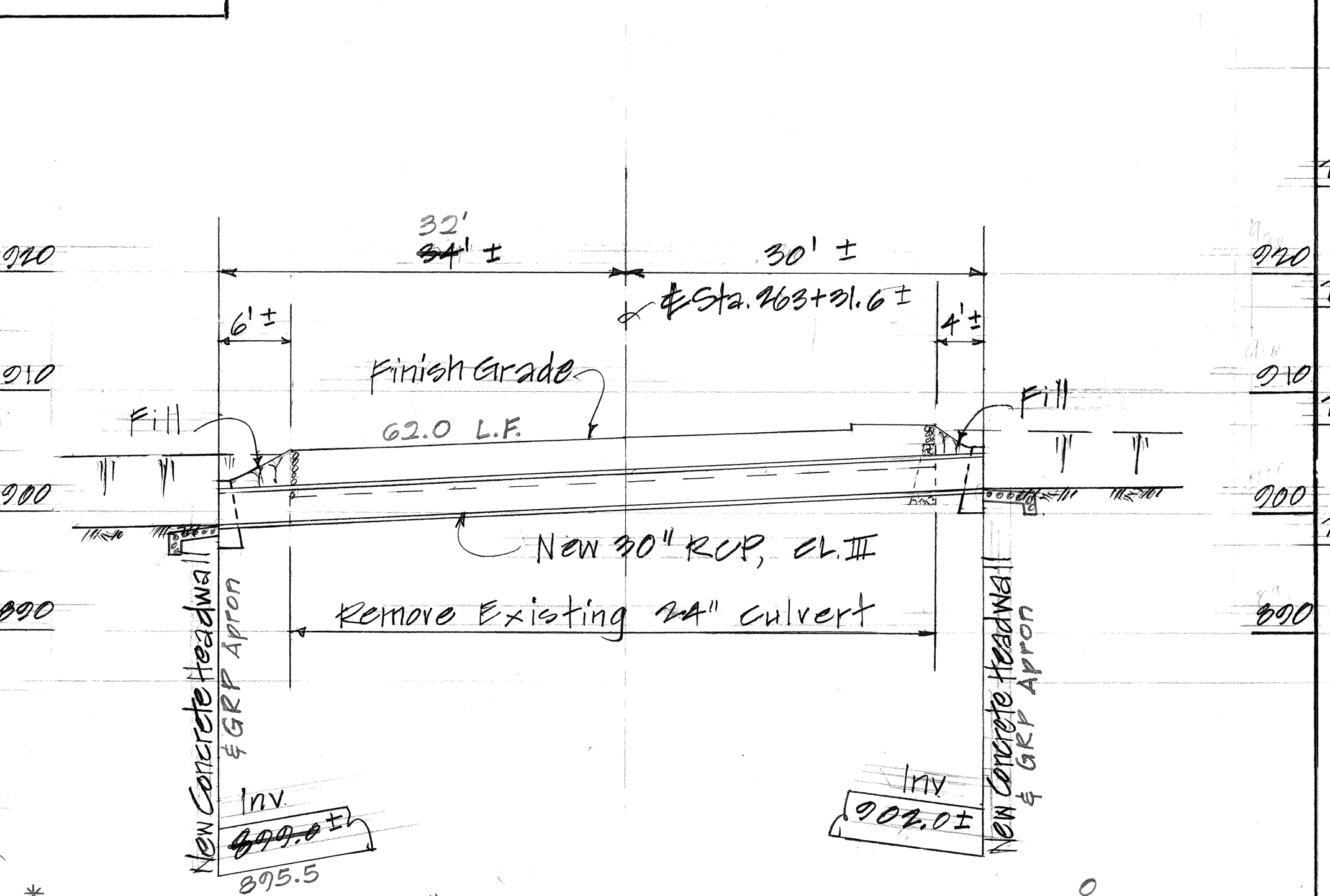
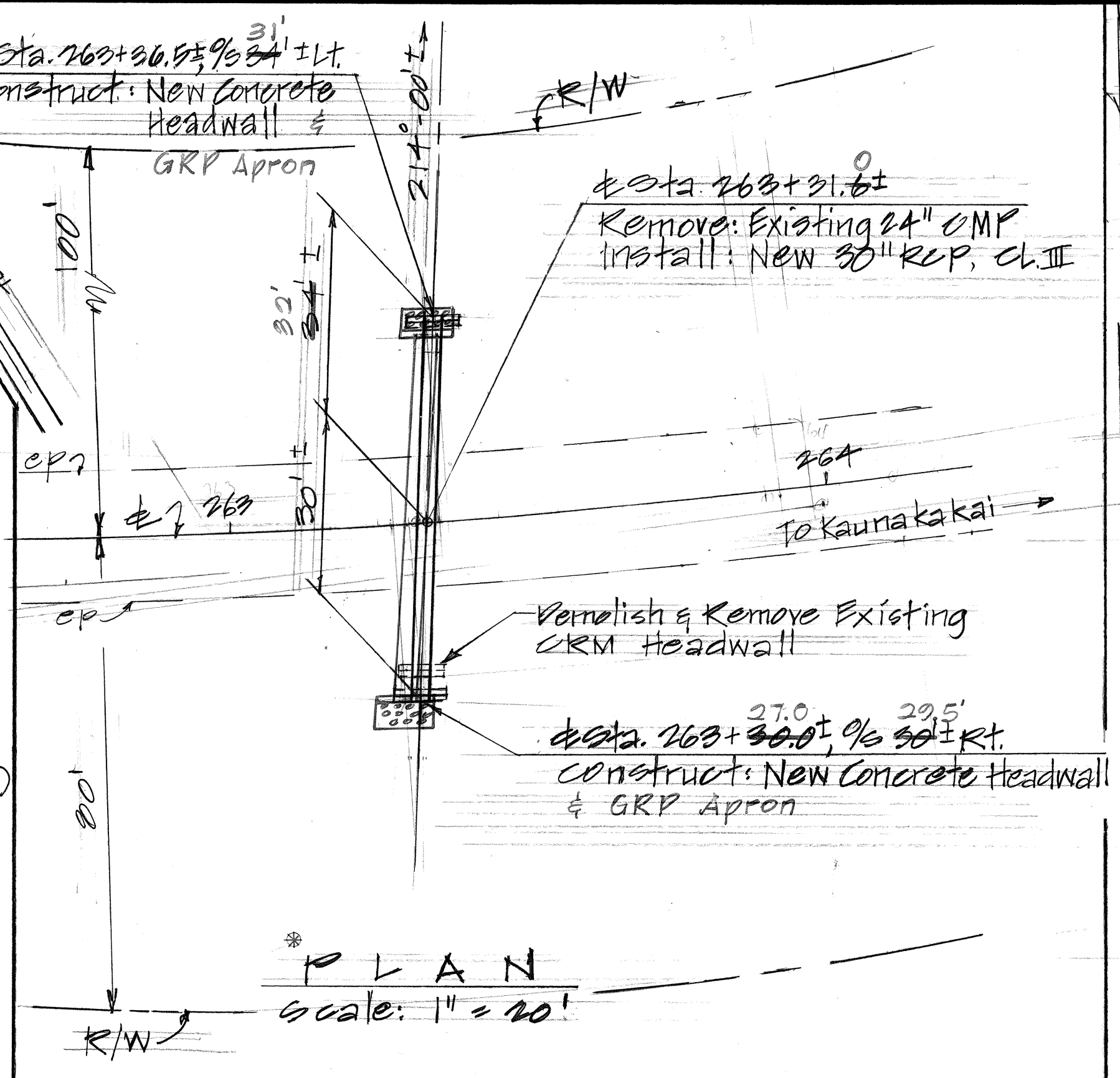
SHEET NO. 13 OF 25 SHEETS

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

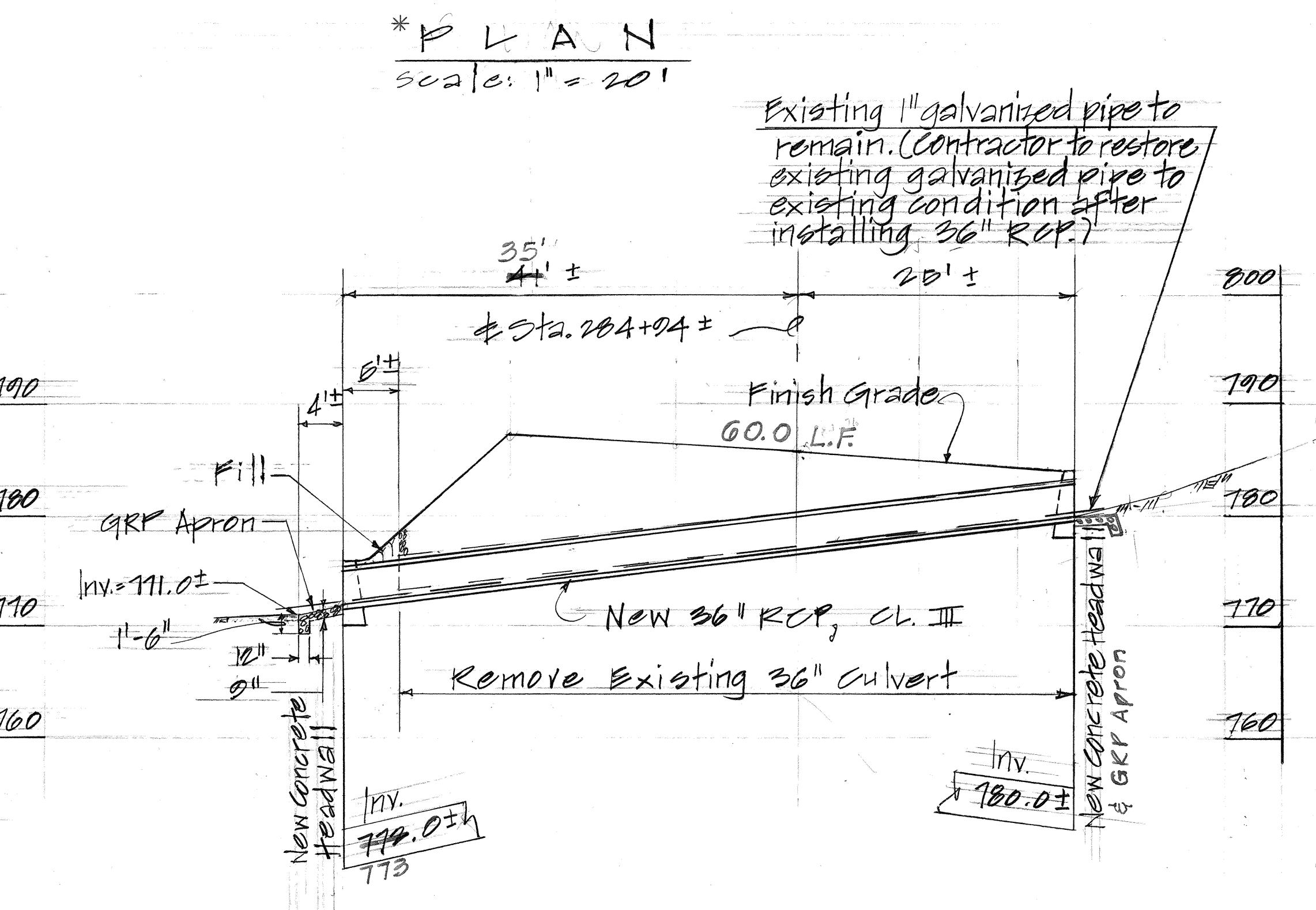
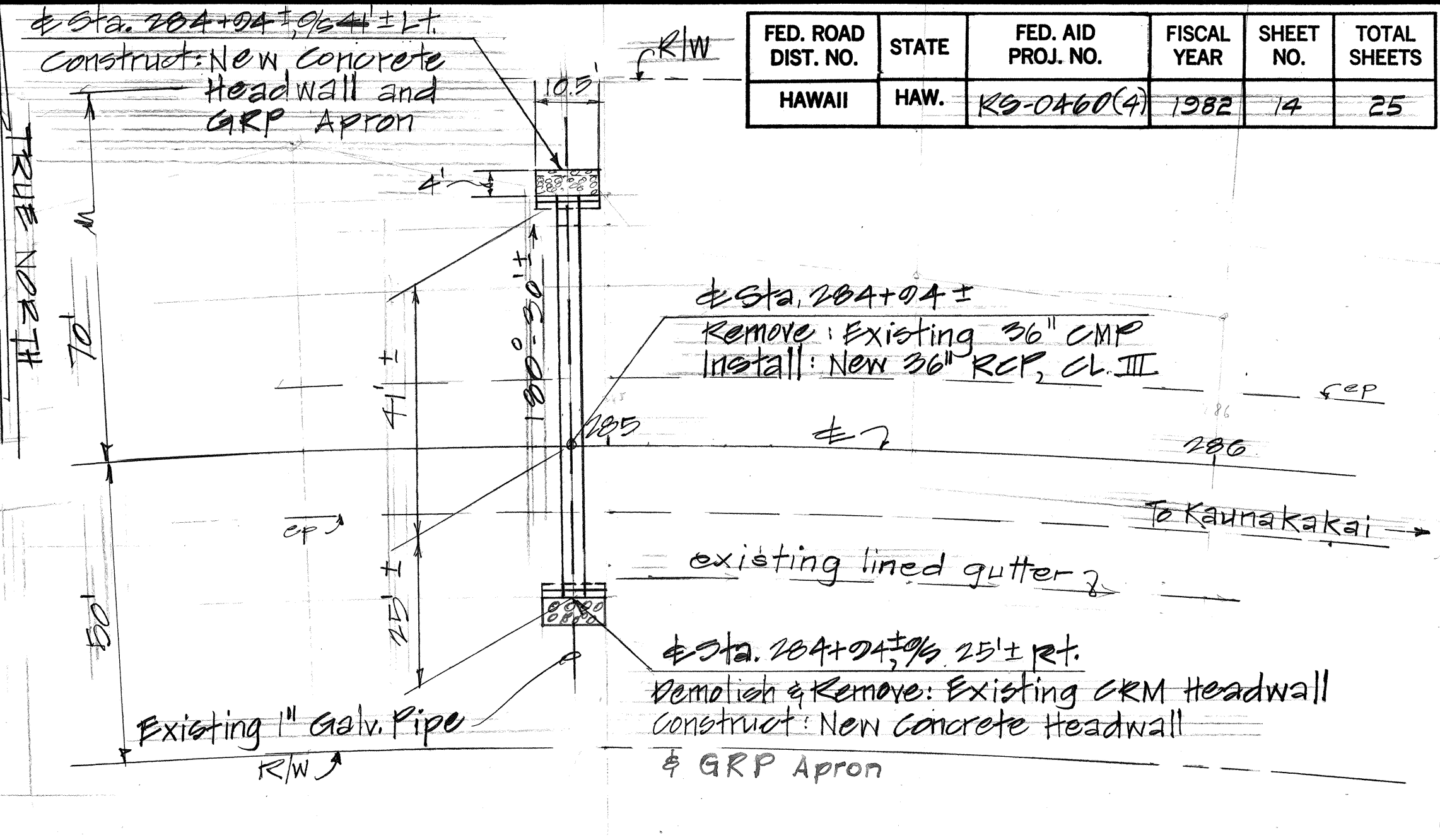
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	14	25



PROFILE FOR 36" CULVERT AT STA. 250+22.5 ±
Scale: 1" = 10'



PROFILE FOR 30" CULVERT AT STA. 263+31.6 ±
Scale: 1" = 10'



PROFILE FOR 36" CULVERT AT STA. 264+04 ±
Scale: 1" = 10'

*For more note and details, see C.C.O. #1 & 2, sheet No. C.O. 175-2.

*See C.C.O. #1 & 2, Sheet No. C.O. 175-2, for more details.

DELETED BY C.C.O. #1

See C.C.O. #1, Sheet No. C.O. 175-1 for Revised Details

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
PLAN AND PROFILE - CULVERTS

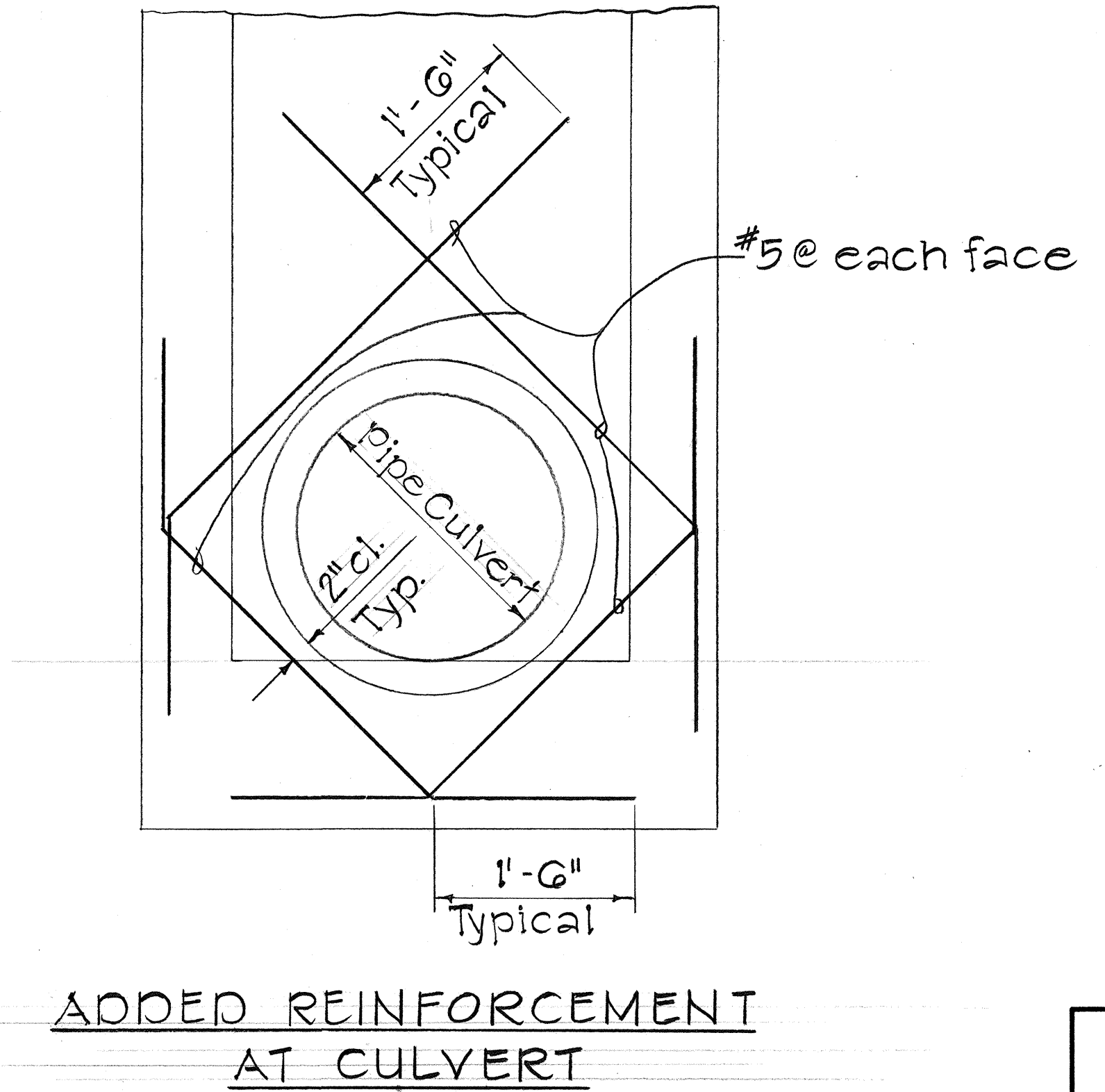
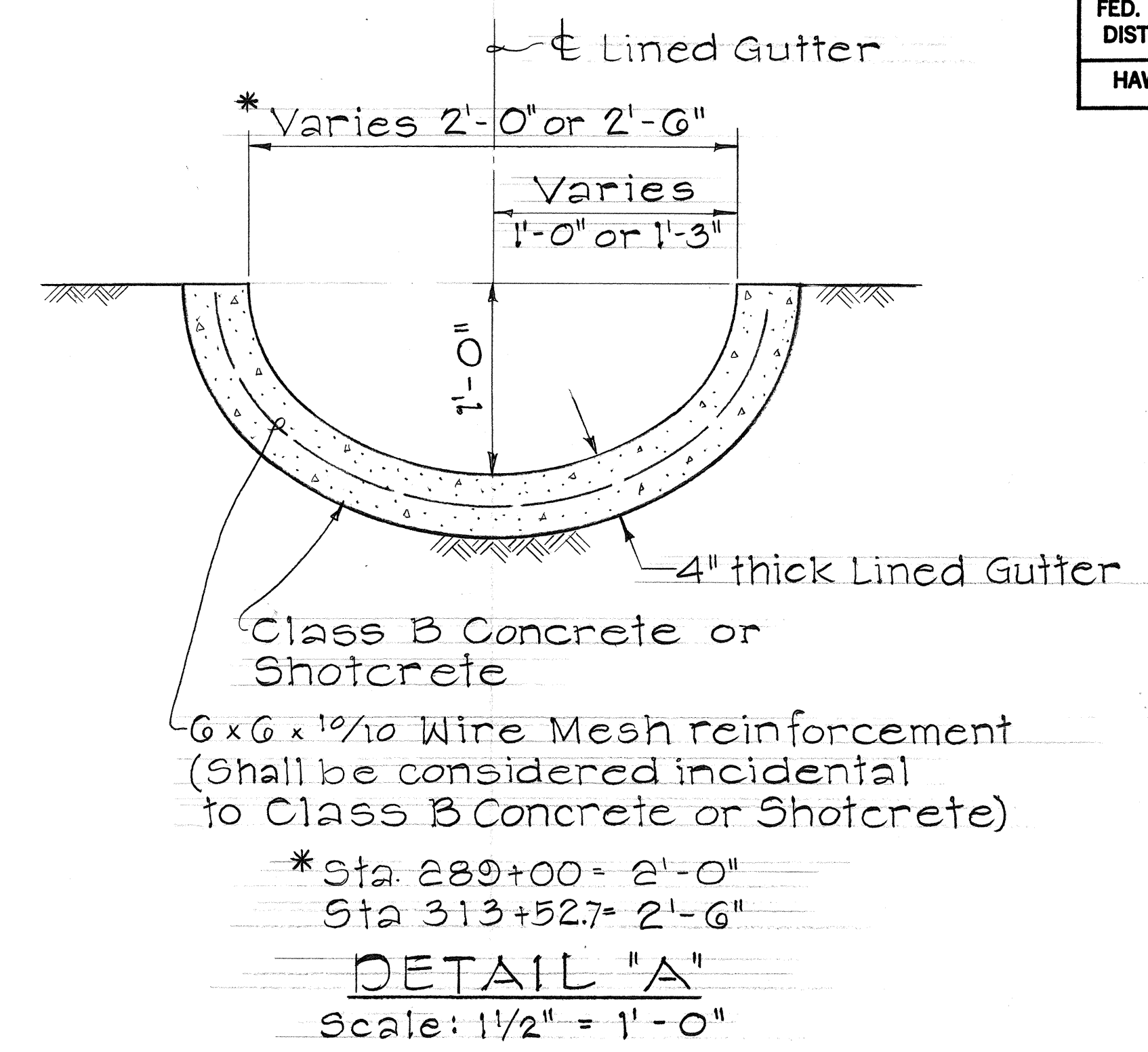
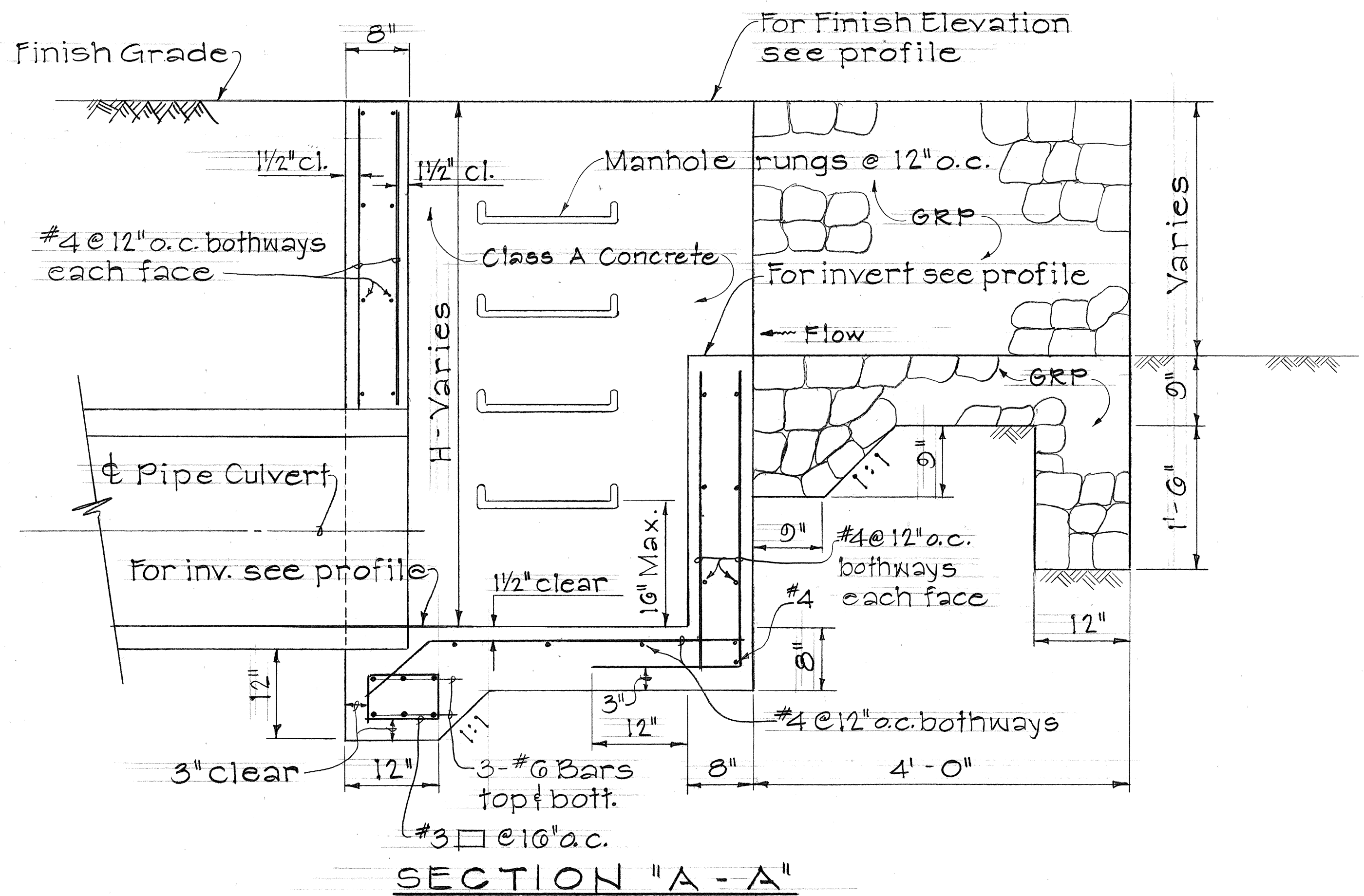
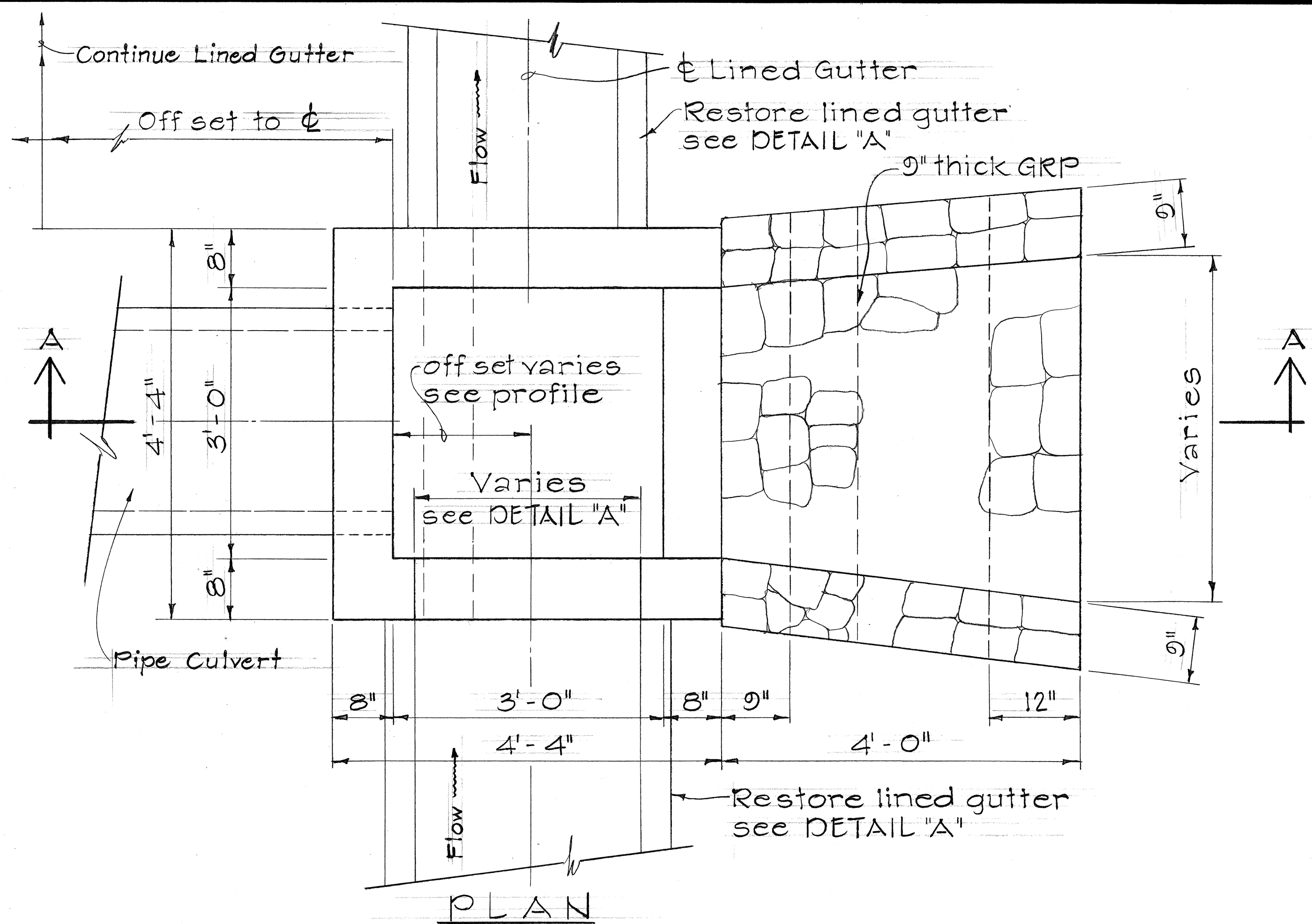
Maunaloa Highway, Replace Culverts between Maunaloa Village towards Kaurakakai, Phase I

Proj. No. RS 0460 (4)

Scale: As Shown Date: April, 1982

SHEET NO. 14 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	16	25



DETAILS OF CONCRETE DROP INTAKE @ STA. 289+00 & 313+52.7
Scale: 1" = 1'-0"

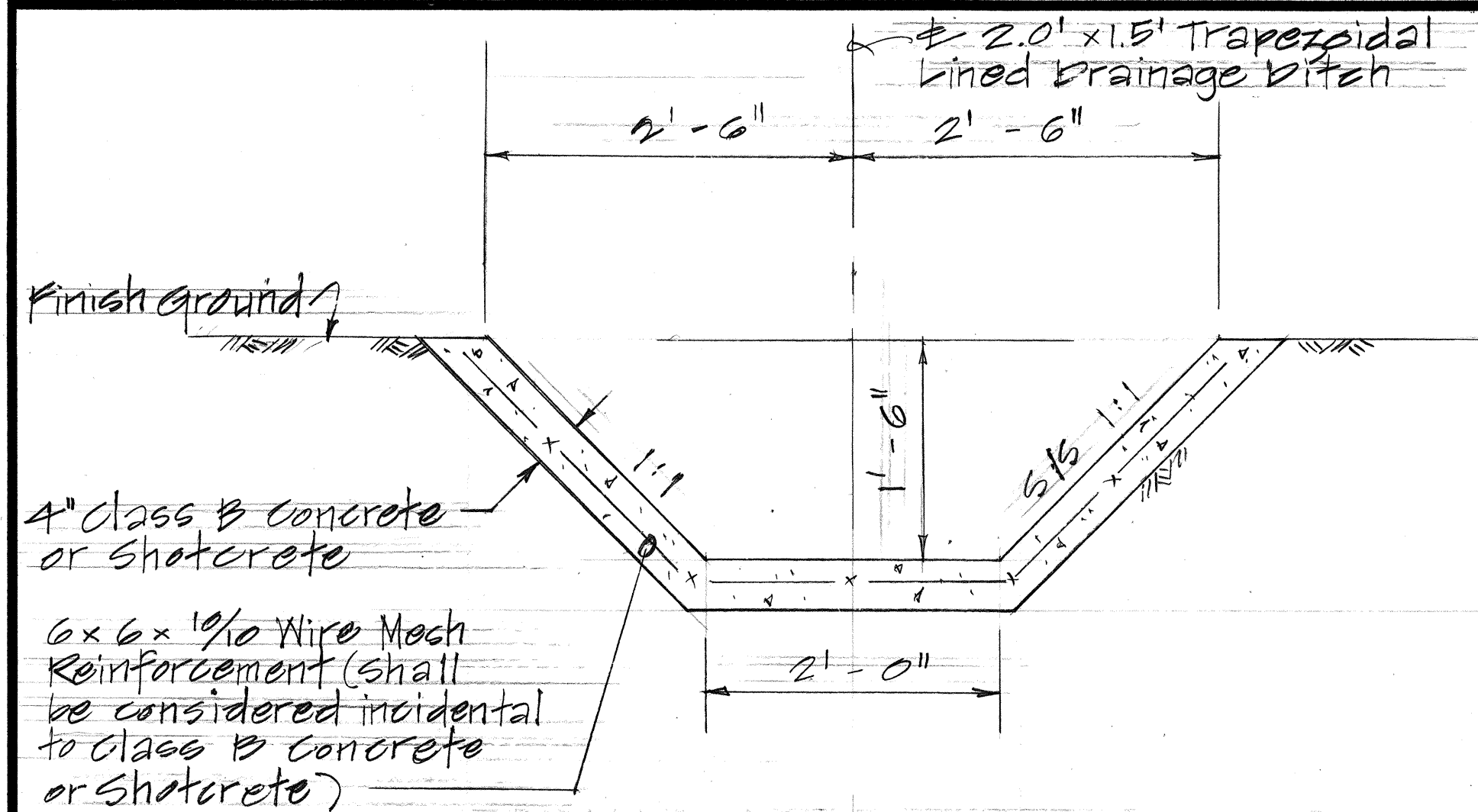
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
CONCRETE DROP INTAKE LINED
GUTTER, & REINFORCEMENT AT CULVERT
Maunaloa Highway, Replace Culverts between
Maunaloa Village towards Kaunakakai,
Phase I
Proj. No. RS-0460 (4)
Scale: As shown Date: April, 1982

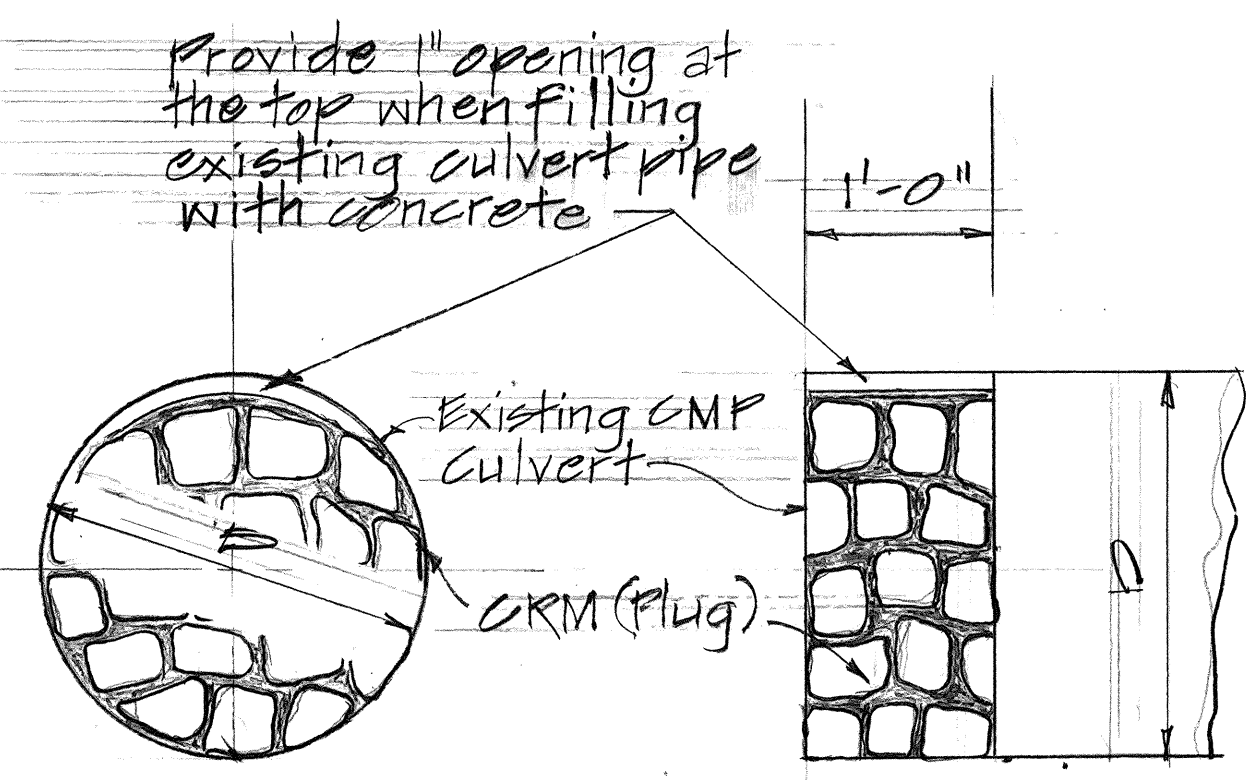
SHEET NO. 64 OF 94 SHEETS

DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	
PLANNED BY	
ORIGINAL PLAN	

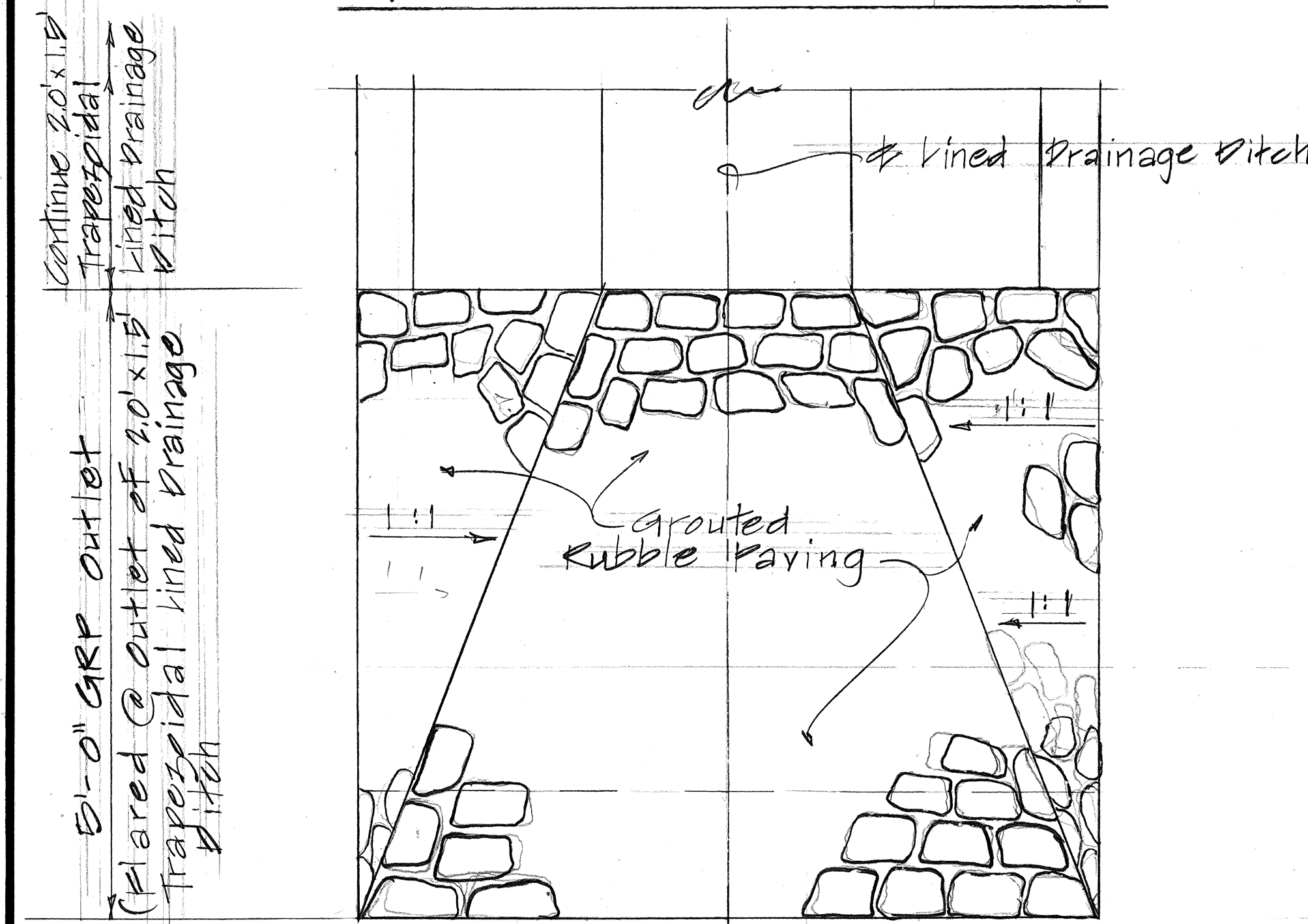
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	17	25



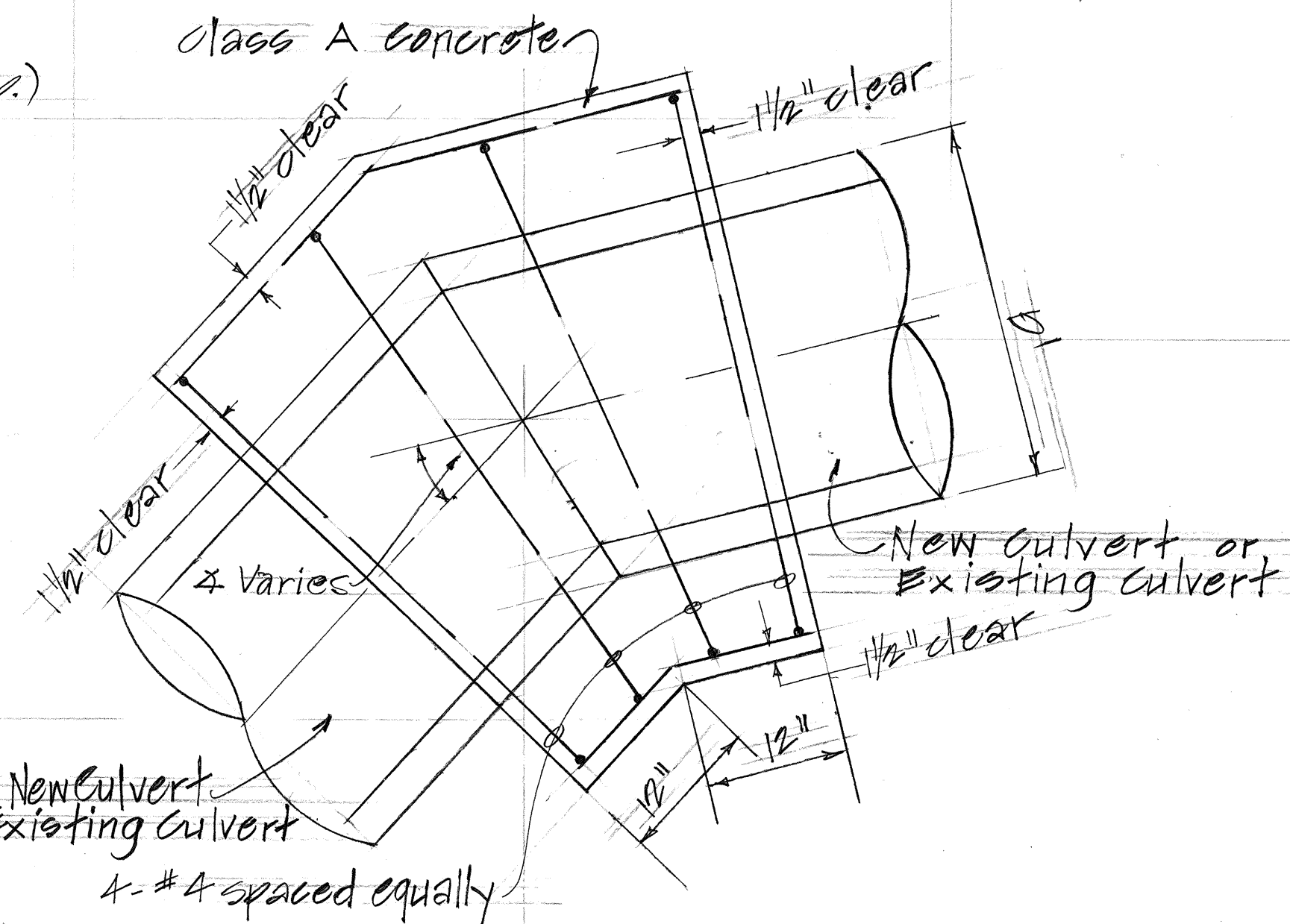
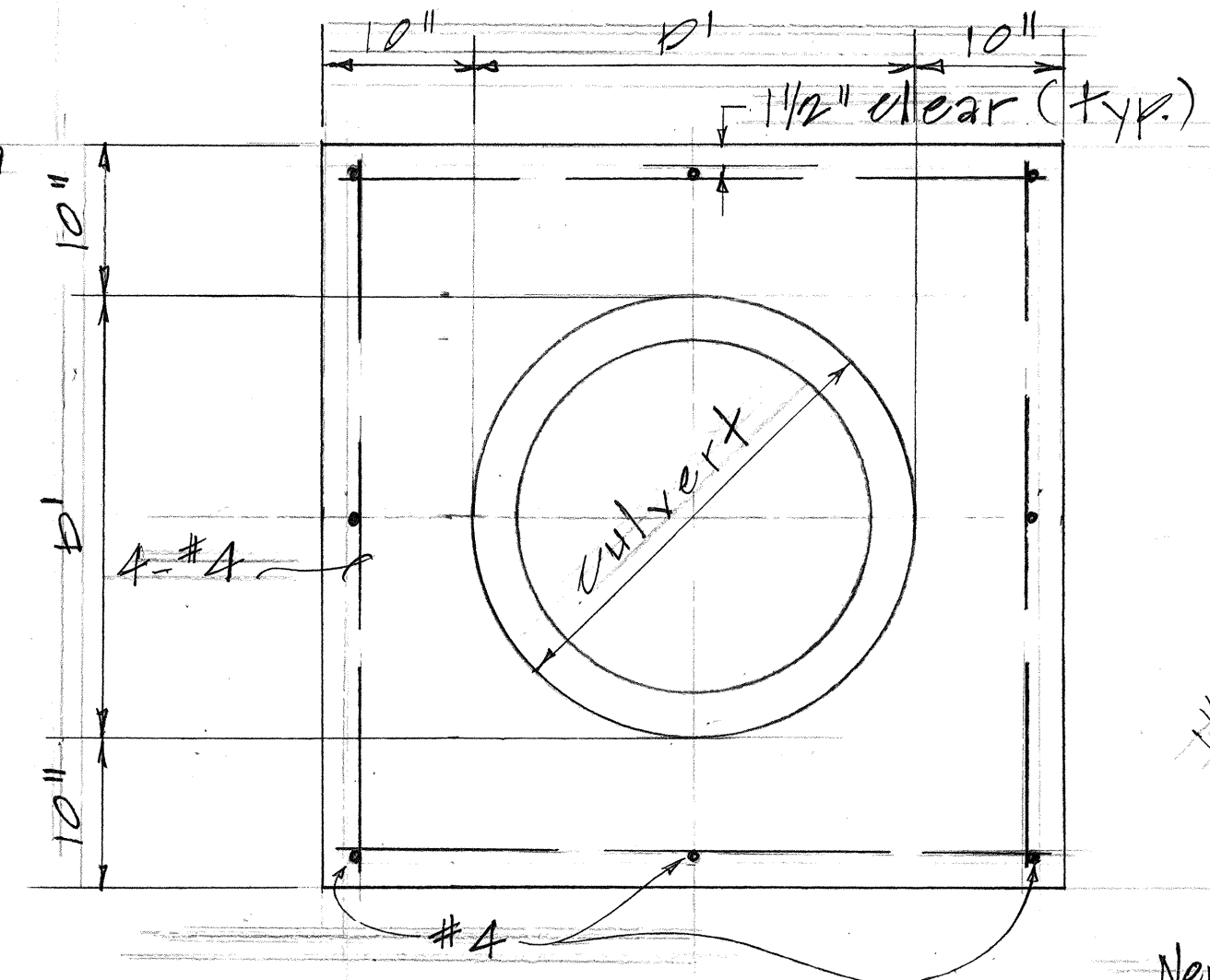
TYPICAL - ELEVATION



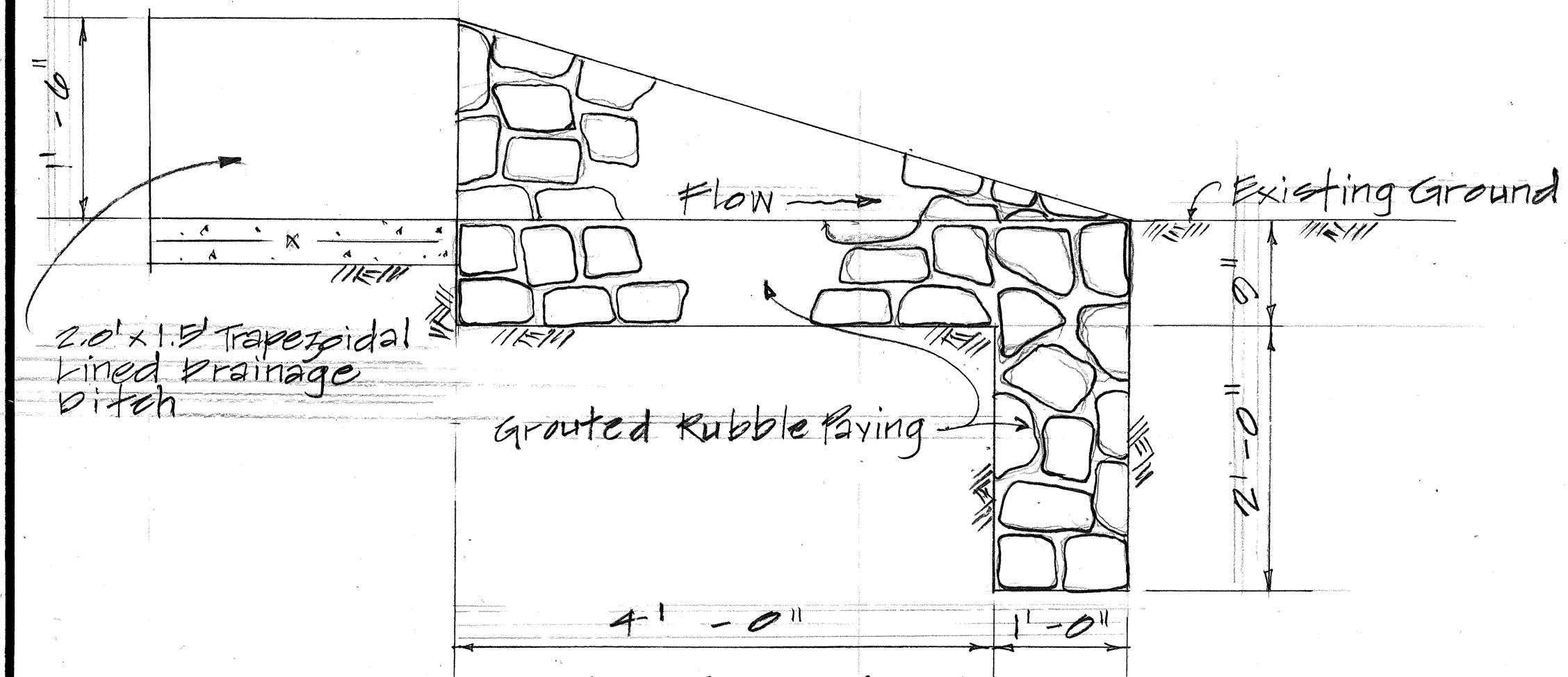
FRONT VIEW SIDE VIEW
DETAILS FOR PLUGGING ENDS OF EXISTING CMP WITH CRM



A
PLAN



FRONT VIEW SIDE VIEW
DETAIL OF CONCRETE COLLAR



SECTION A
DETAIL OF GRP OUTLET FOR 2.0' x 1.5' TRAPEZOIDAL LINED DRAINAGE DITCH

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

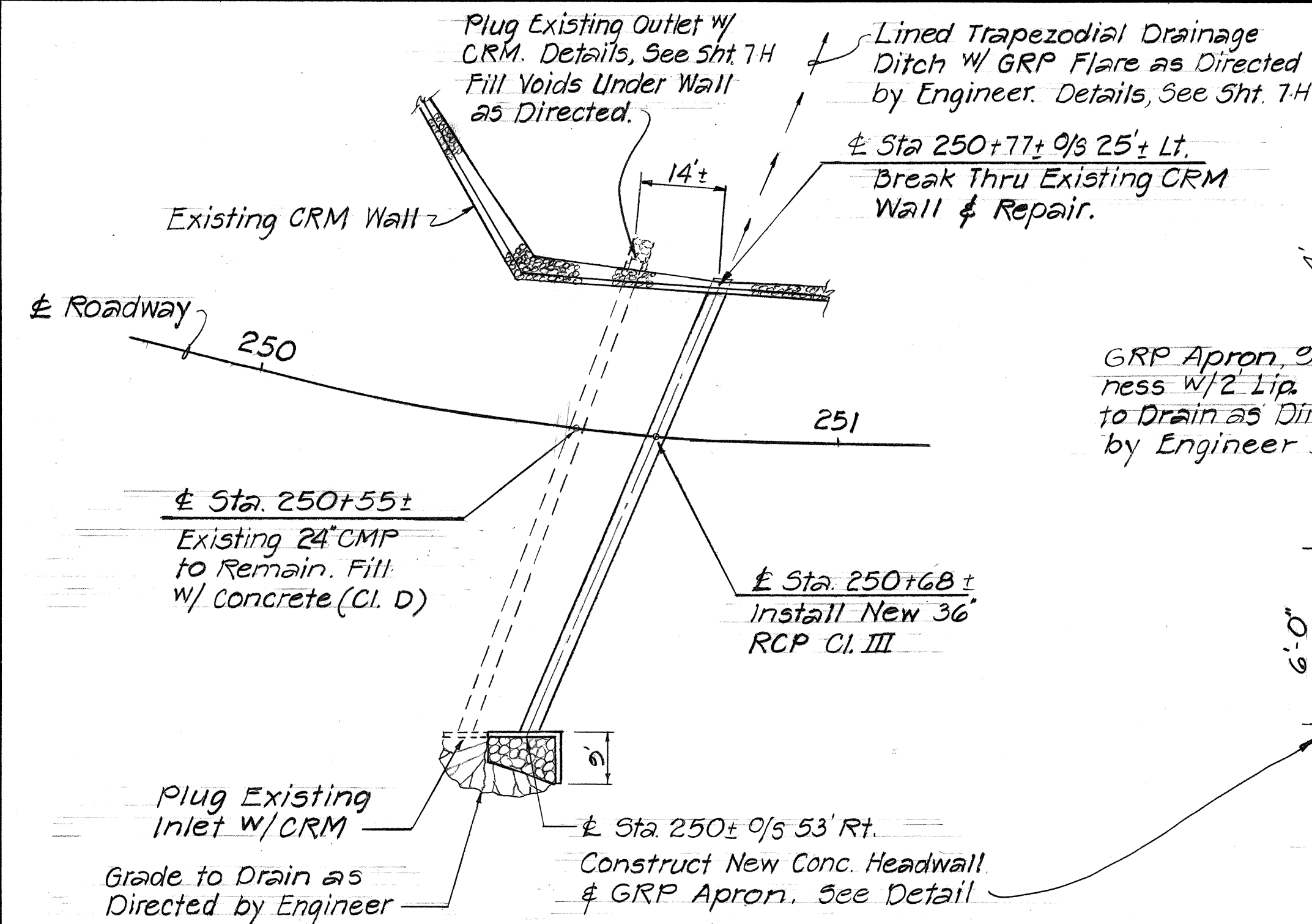
LINED DRAINAGE DITCH, GRP OUTLET,
CONCRETE COLLAR AND PLUGGING

Maunaloa Highway, Replace Culverts between
Maunaloa Village and Kaunakakai,
Phase I

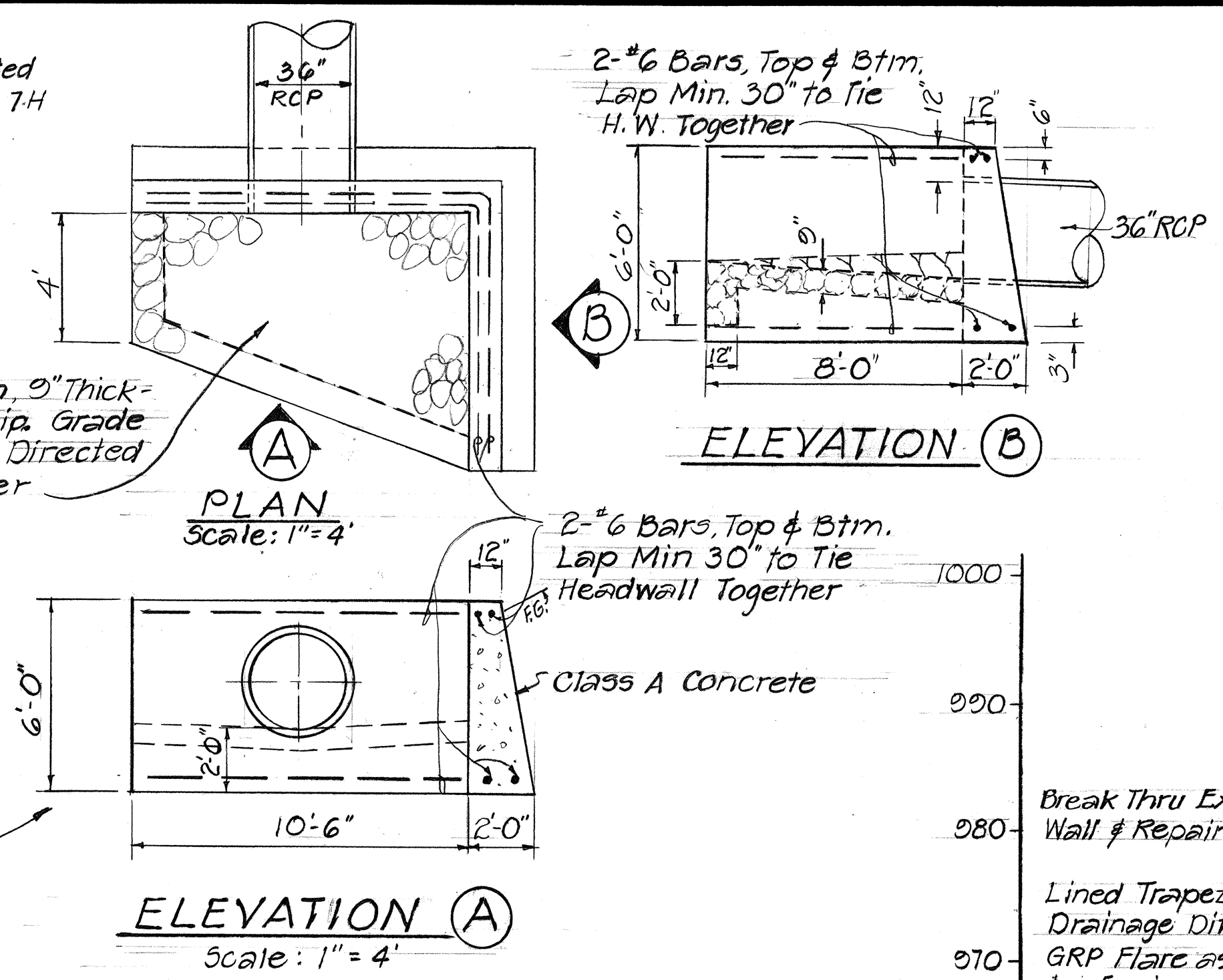
Proj. No. RS-0460(4)
Scale: 1" = 1'-0" Date: April, 1982

SHEET NO. 17 OF 24 SHEETS

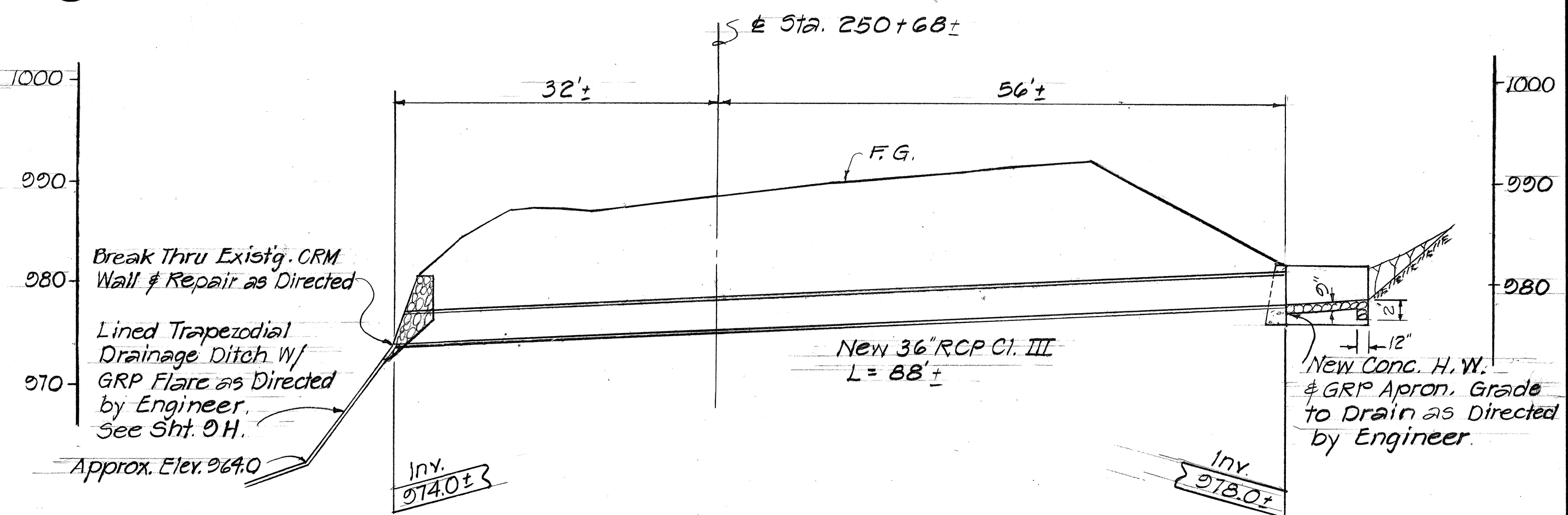
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	C.O.175-1	25



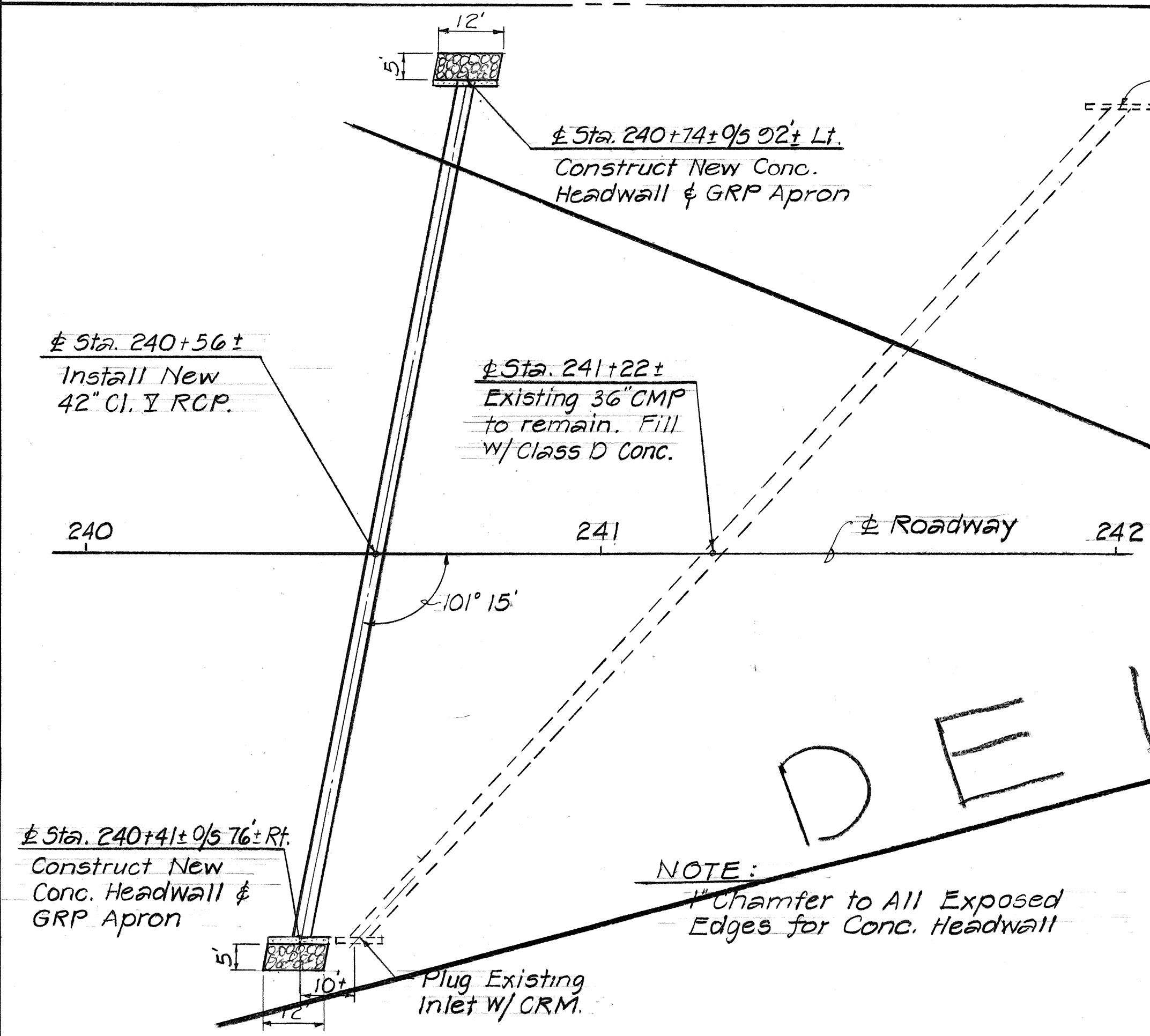
PLAN
Scale: 1" = 20'



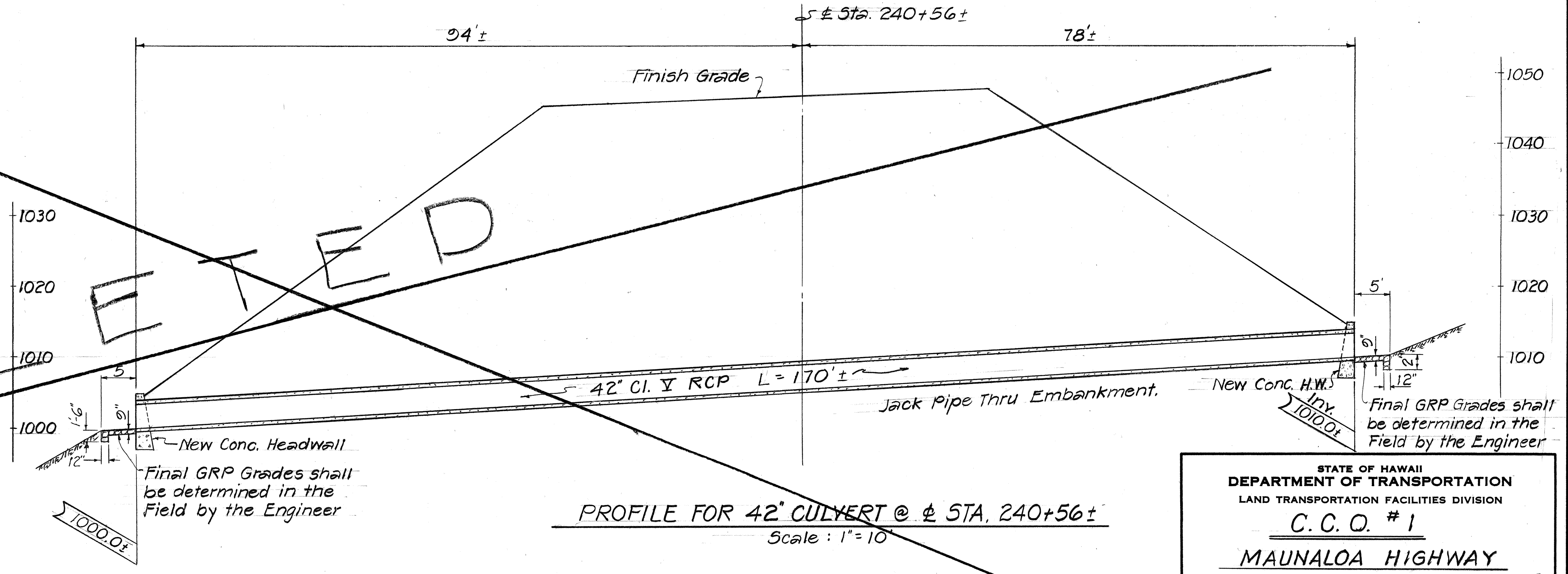
NOTE:
1" Chamfer to All Exposed Edges for Conc. Headwall.



PROFILE FOR 36" CULVERT @ ± STA. 250+68±
Scale: 1" = 10'
CULVERT No. 7 - C.C.O. NO. 1



PLAN
Scale: 1" = 20'



PROFILE FOR 42" CULVERT @ ± STA. 240+56±
Scale: 1" = 10'

DELETED

NOTE:
1" Chamfer to All Exposed Edges for Conc. Headwall

CULVERT NO. 6

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

C.C.O. # 1

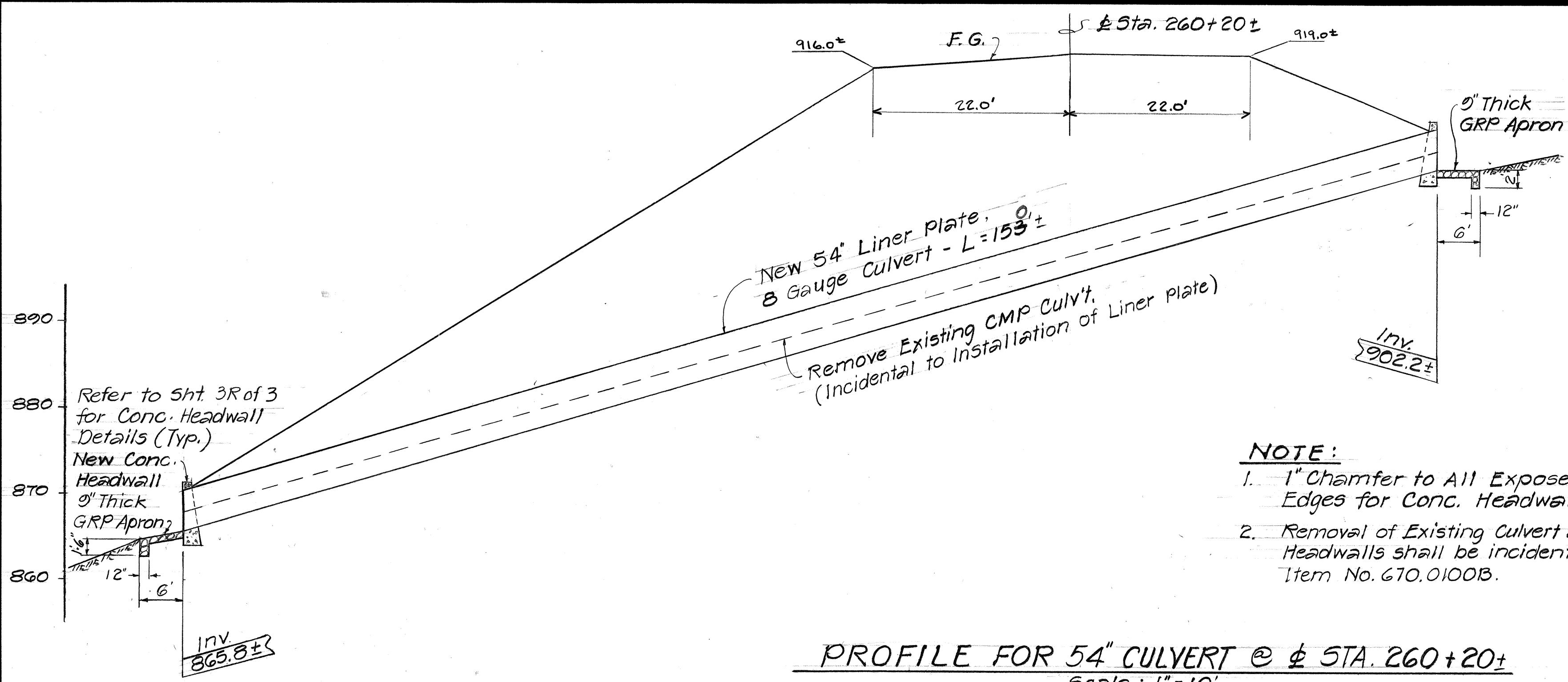
MAUNALOA HIGHWAY
Replacement of Culverts, Phase I
F.A. Proj. No. RS-0460(4)

Scale: As Noted

Oct. 1982

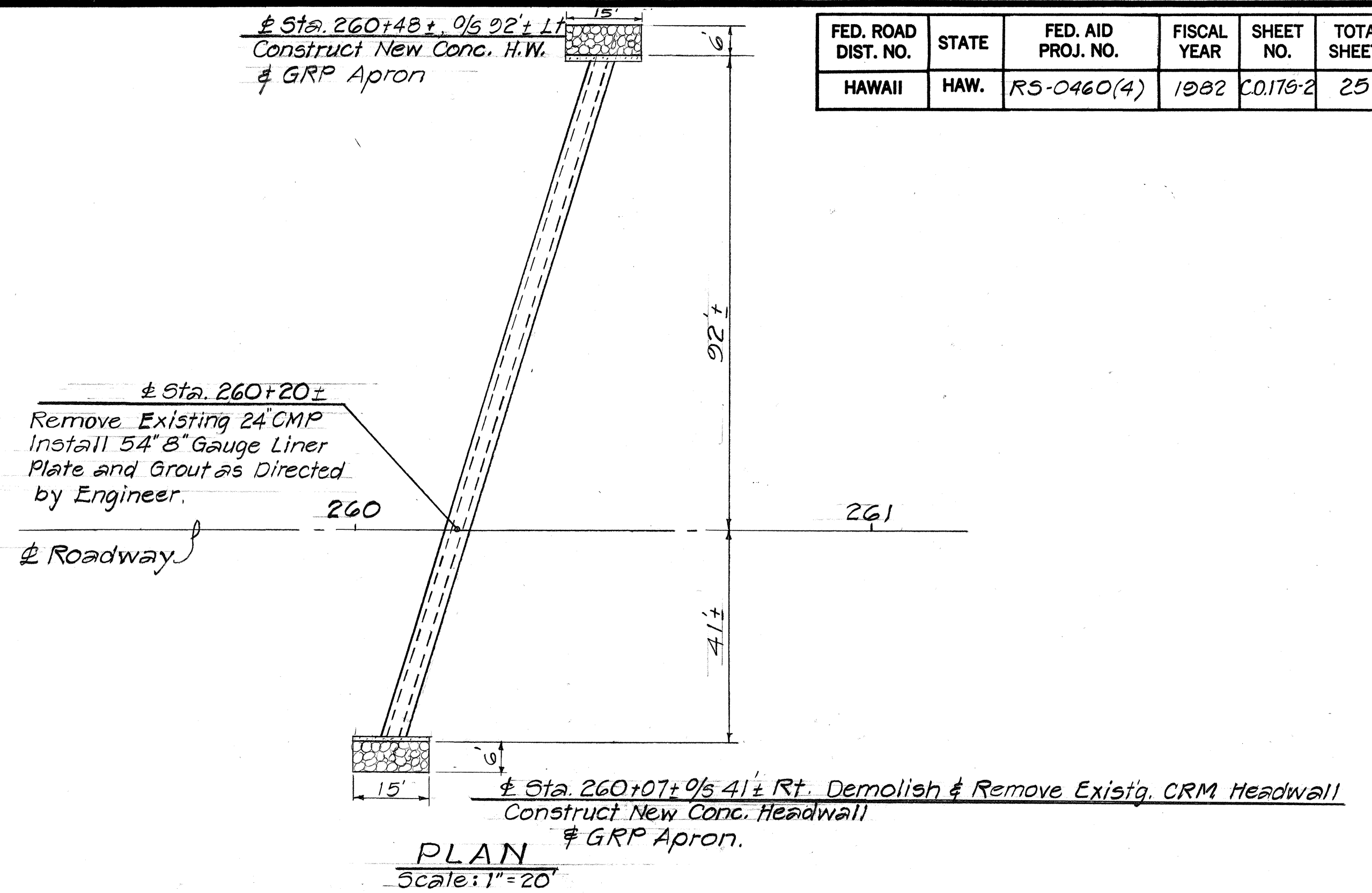
SHEET NO. 7H OF 9H SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	C.O.175-2	25

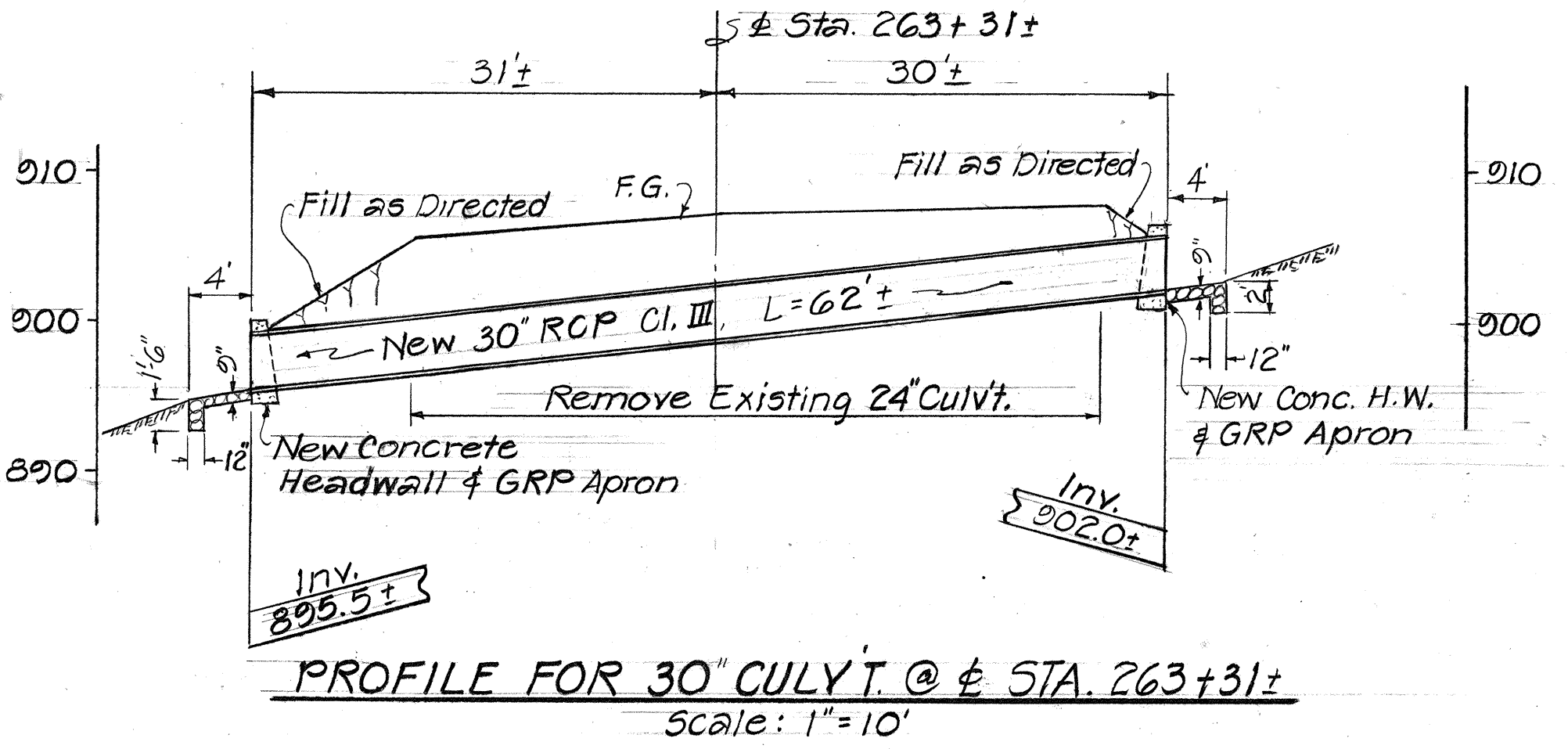


NOTE:
 1. 1" Chamfer to All Exposed Edges for Conc. Headwall
 2. Removal of Existing Culvert and Headwalls shall be incidental to Item No. 670.0100B.

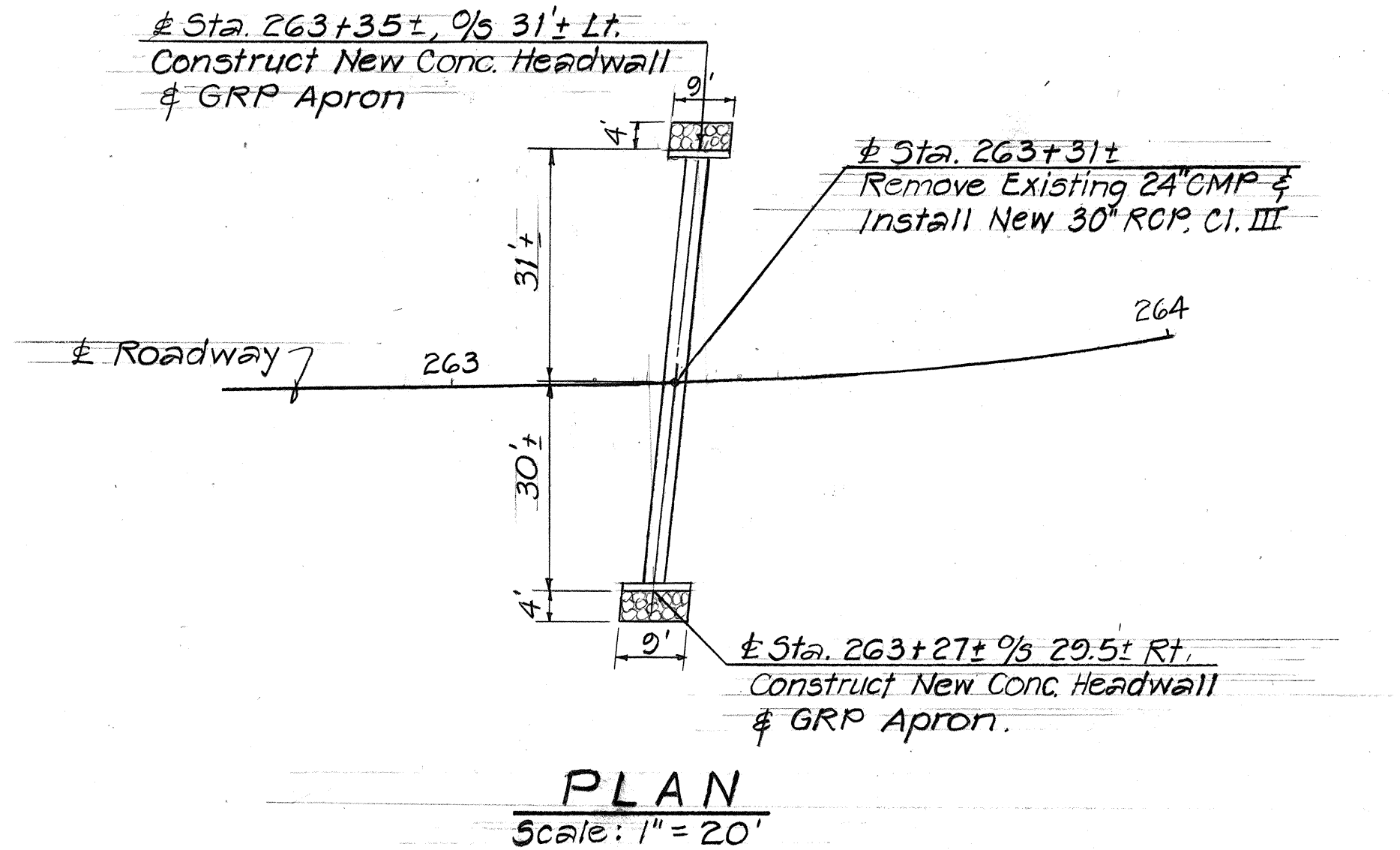
PROFILE FOR 54" CULVERT @ STA. 260+20±
 Scale: 1"=10'



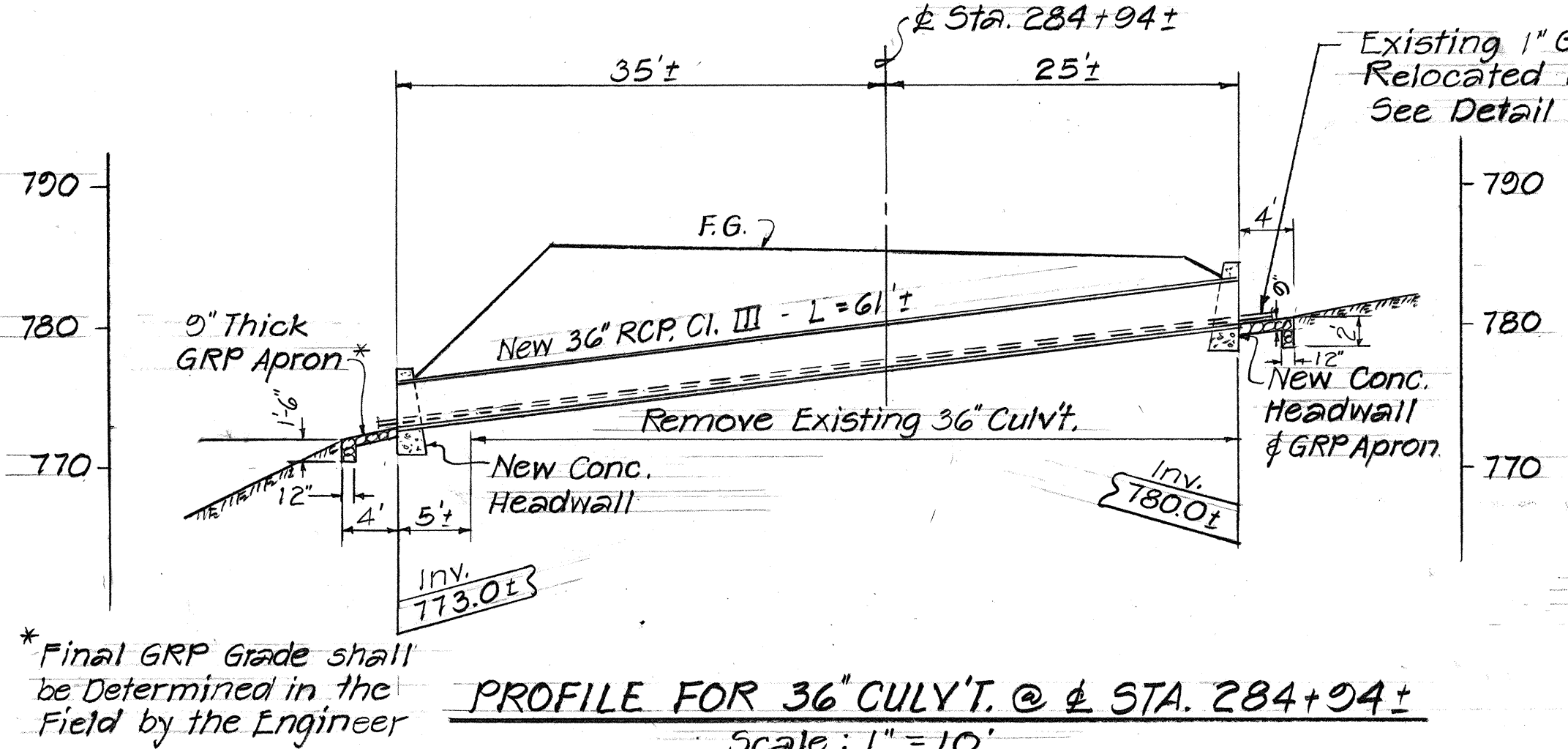
PLAN
 Scale: 1"=20'



PROFILE FOR 30" CULVERT @ STA. 263+31±
 Scale: 1"=10'

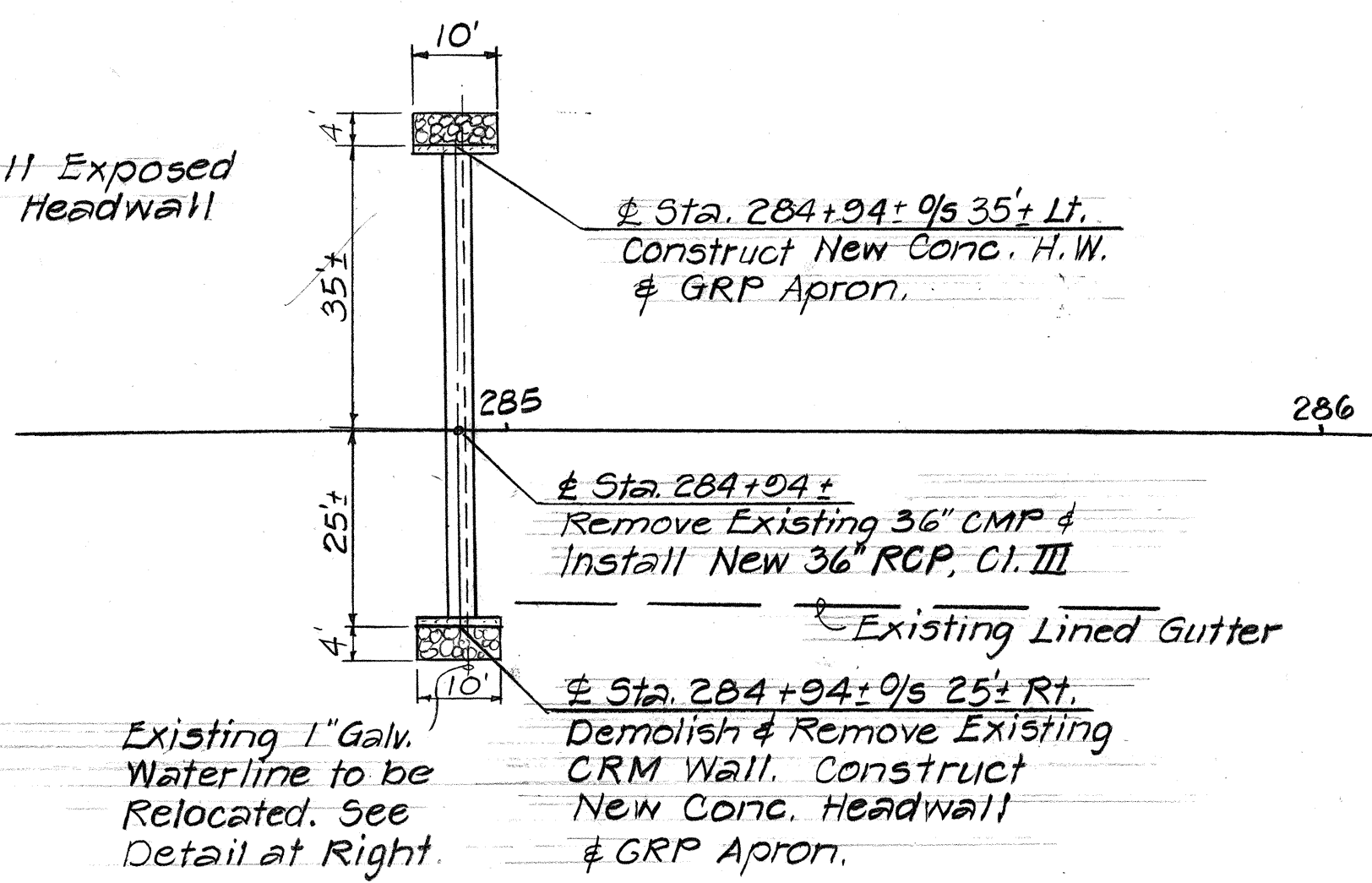


PLAN
 Scale: 1"=20'

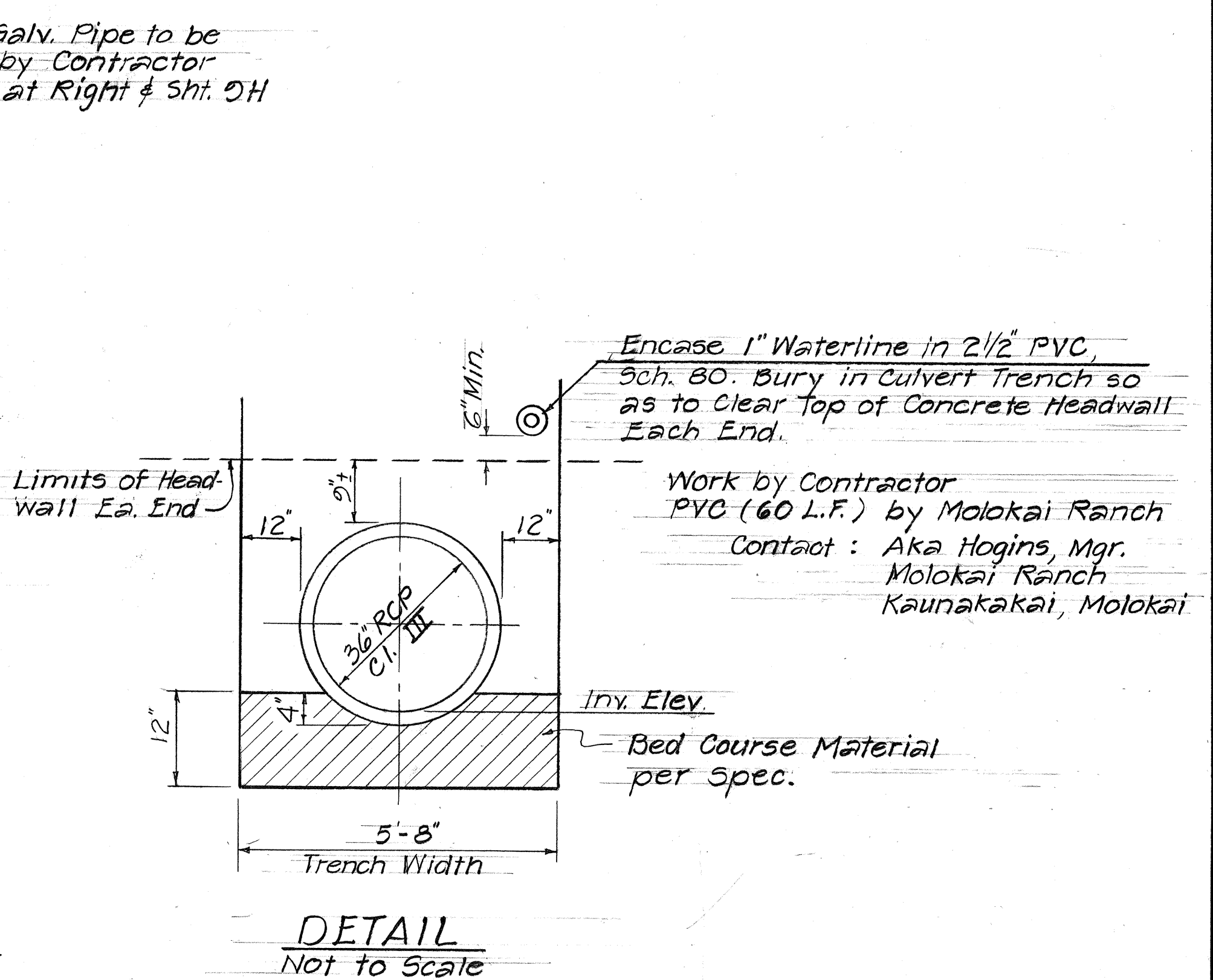


PROFILE FOR 36" CULVERT @ STA. 284+94±
 Scale: 1"=10'

*Final GRP Grade shall be Determined in the Field by the Engineer



PLAN
 Scale: 1"=20'



DETAIL
 Not to Scale

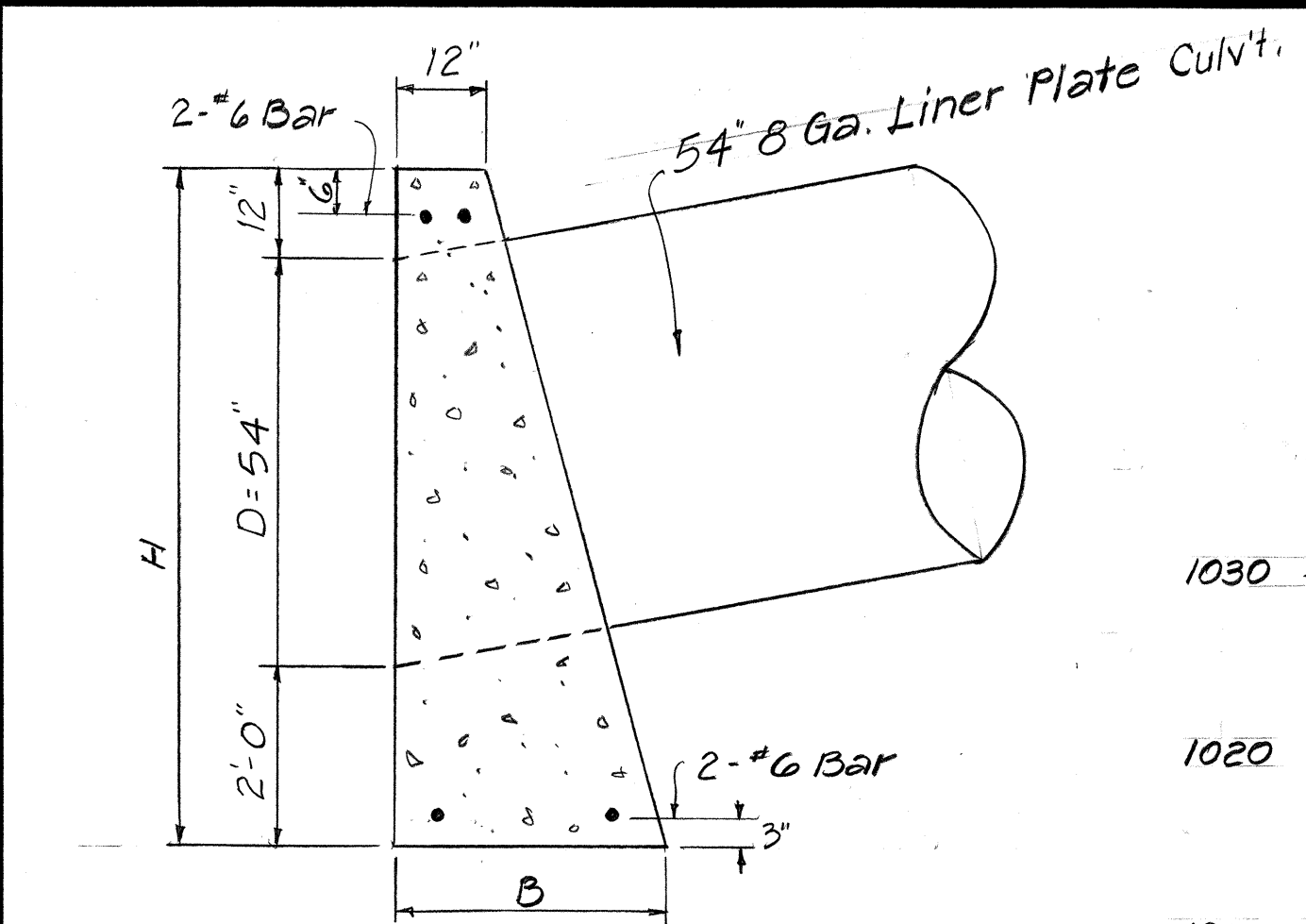
Encase 1" Waterline in 2 1/2" PVC, 5ch. 80. Bury in Culvert Trench so as to Clear Top of Concrete Headwall Each End.
 Work by Contractor
 PVC (60 L.F.) by Molokai Ranch
 Contact: Aka Hogins, Mgr.
 Molokai Ranch
 Kaunakakai, Molokai

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION
C.C.O. #1 & #2
MAUNALO A HIGHWAY
 Replacement of Culverts, Phase I
 F.A. Proj. No. RS-0460(4)
 Scale: As Noted
 Oct. 1982
 SHEET No. 7H of 9H SHEETS

CULVERT NO 12 - C.C.O. #1

CULVERT NO 11 - C.C.O. #1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	C.O.17S-3	25

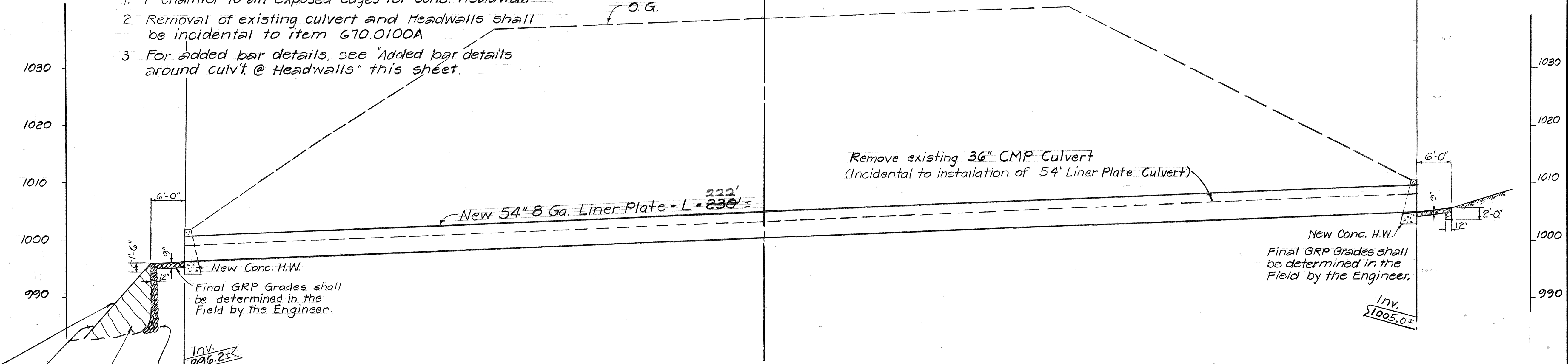


DATA FOR CONC. HEADWALL

D	B	L	H	CLASS A CONC.
54"	3'-0"	15'-0"	7'-6"	7.72 CY

NOTES:

- 1" Chamfer to all exposed edges for Conc. Headwall
- Removal of existing culvert and Headwalls shall be incidental to item 670.0100A
- For added bar details, see "Added bar details around culv't. @ Headwalls" this sheet.



PROFILE FOR 54" CULVERT @ STA. 241+22±

Scale: 1" = 10'

NOTE:

- The bottom quarter of the liner plate culvert circumference shall be lined with 3 1/2-inches of Class A concrete as directed.
- A minimum clear distance of 1 1/2-inches cover of Class A concrete shall be constructed above the liner plates at the culvert invert.
- Concrete paved inverts shall be constructed at both liner plate culverts at Sta. 241+22± and 260+20±.

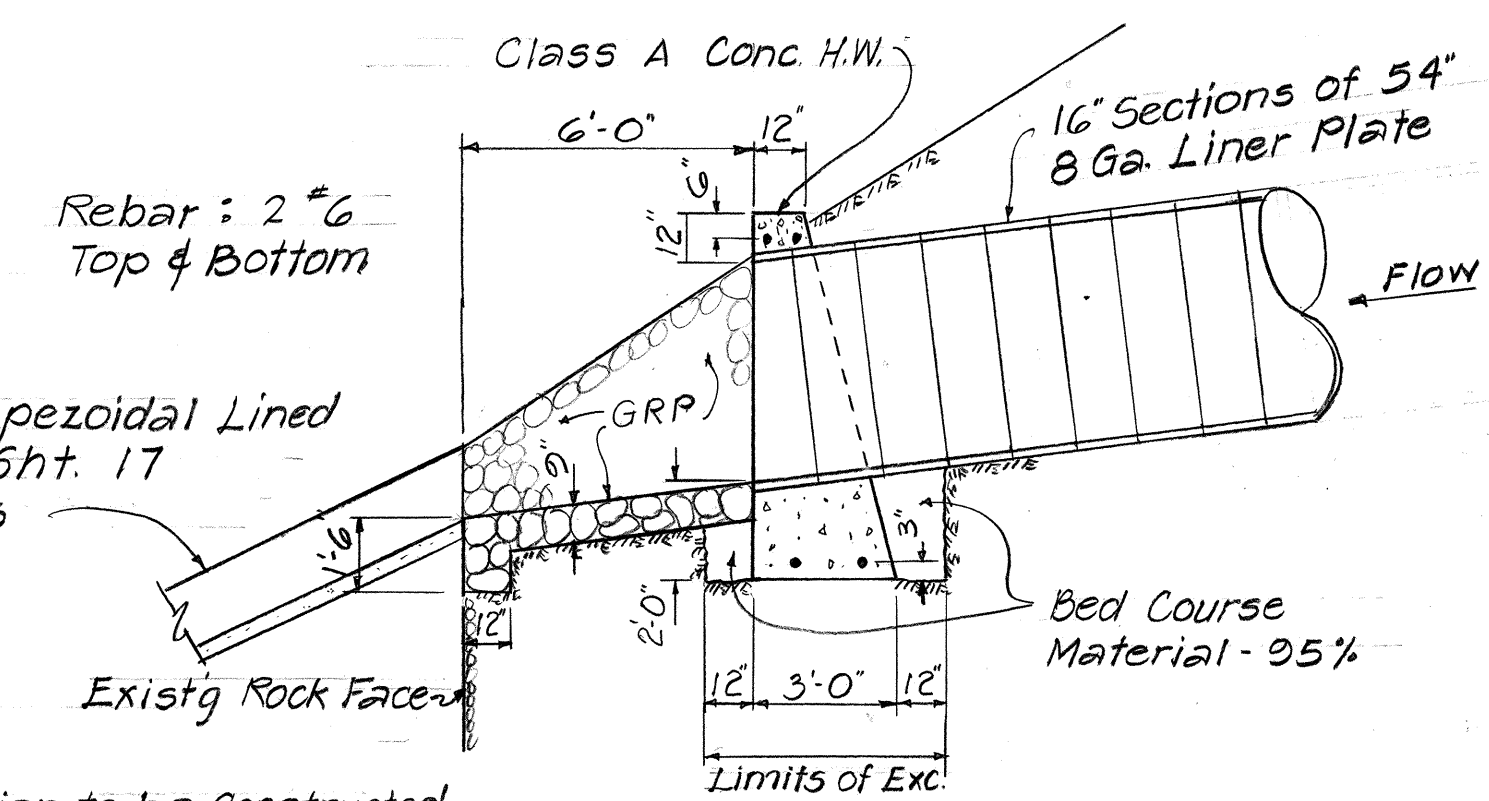
Slope as Directed by Engr.

Construct Lined Trapezoidal Drainage Ditch. Payment shall be made under Item No. 640.2100.

Embank to Desired Finish Grade or as Directed by the Engineer. This Work is Incidental to Item 206.1000

See Sheet 17 for Details
Construct Trapezoidal Lined Ditch to Daylight as Directed.
± Sta. 242+00± 0/5 87± Lt. Demolish & Remove Existg CRM H.W. - Construct New Conc. H.W. & GRP Apron. See Details at Right Side

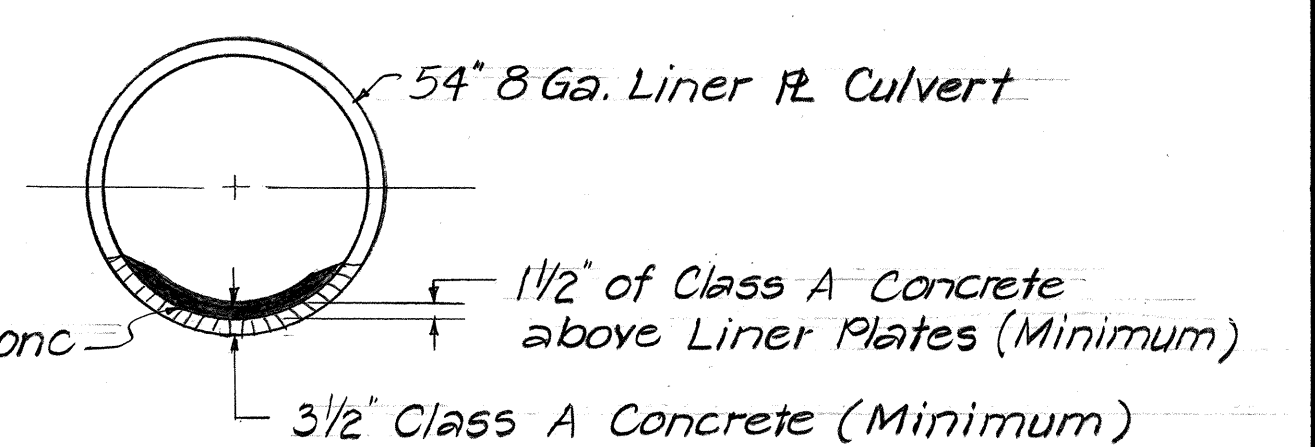
Construct Trapezoidal Lined Ditch. See Sh. 17 for Details



SECTION

NOTES

- GRP Flared Section to be Constructed as Directed by the Engineer.
- Rockwall shall be Repaired Prior to Backfilling Operation.



PAVED INVERT OF 54-INCH LINER PL. CULV'T.

Not to Scale

CULVERT NO. 6 - C.C.O. #2

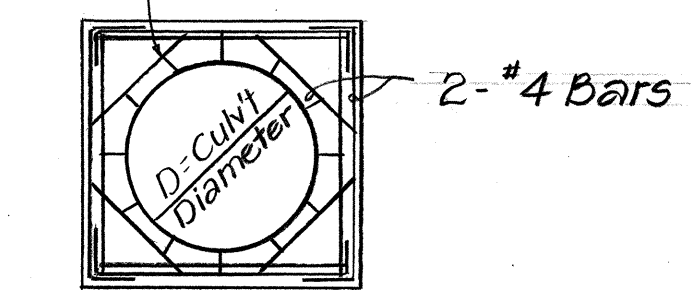
± Sta. 241+22±
Remove Existing 36" CMP & Install 54" Liner Plate, 8 Gauge as Directed

241 242

PLAN

Scale: 1" = 20'

ADDED BAR DETAILS AROUND CULVERT @ H.W.



Embank this Area

Trapezoidal Lined Ditch to Daylight

54" 8 Ga. Liner PL.

Conc. H.W.

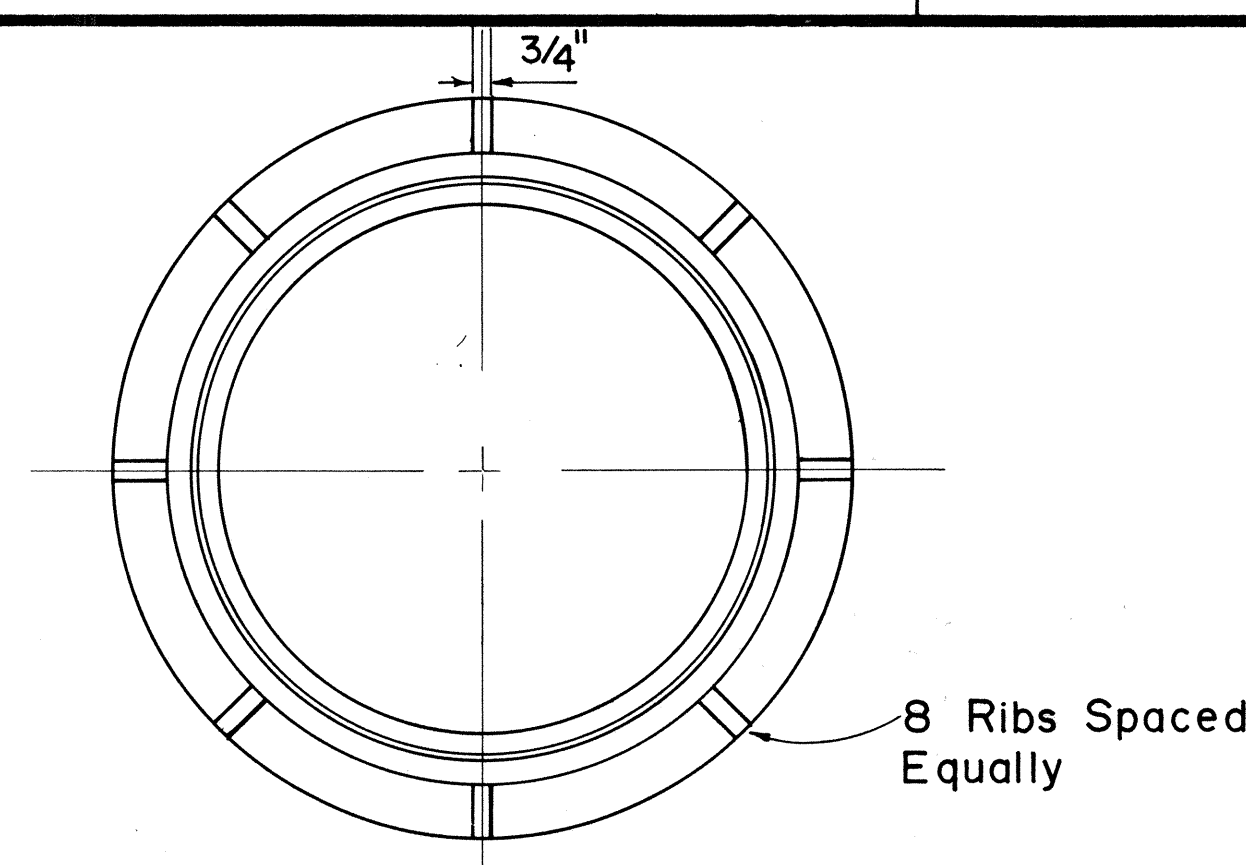
PLAN

DETAIL OF OUTLET STRUCTURE @ ± STA. 242+00± 0/5 87± Lt.

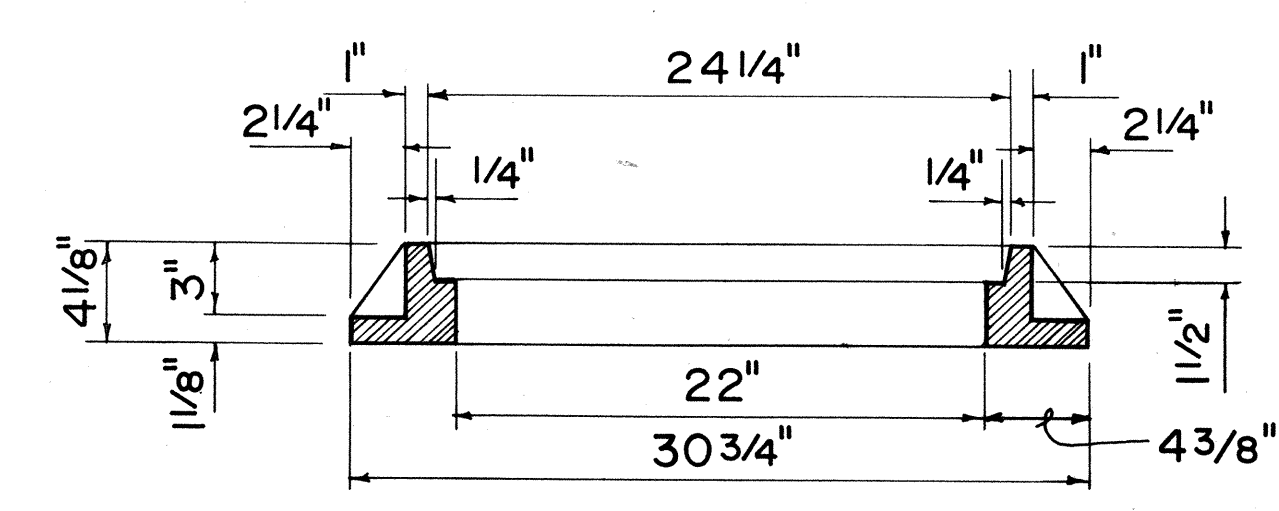
Scale: 1/4" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
C.C.O. #2
MAUNALOA HIGHWAY
Replacement of Culverts, Phase I
F.A. Proj. No. RS-0460(4)
Scale: As Noted Mar. 1983
SHEET NO. 7HC OF 9H SHEETS

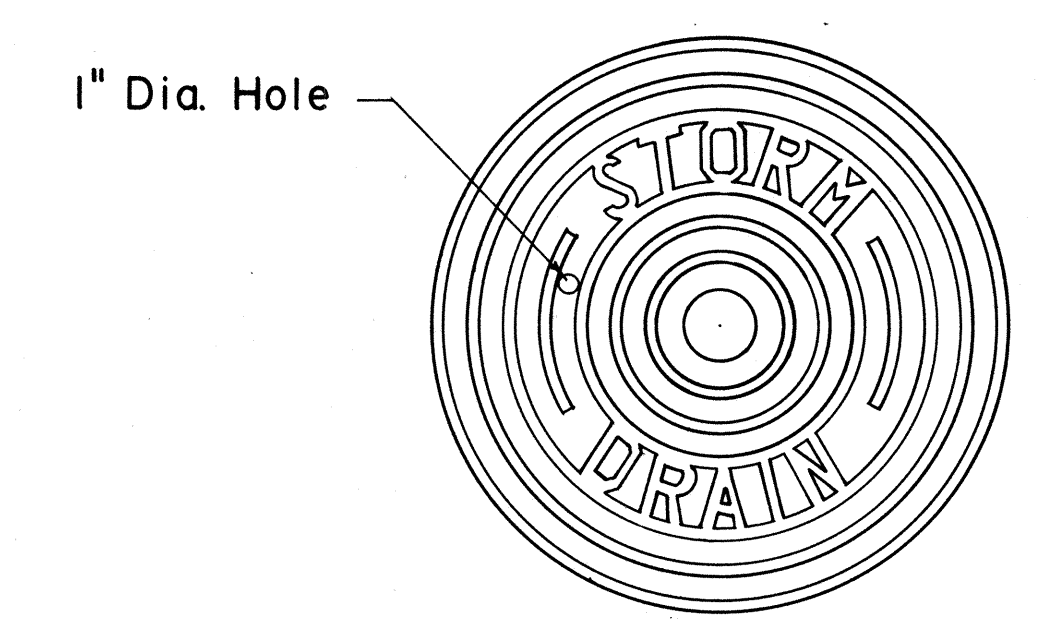
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	18	25



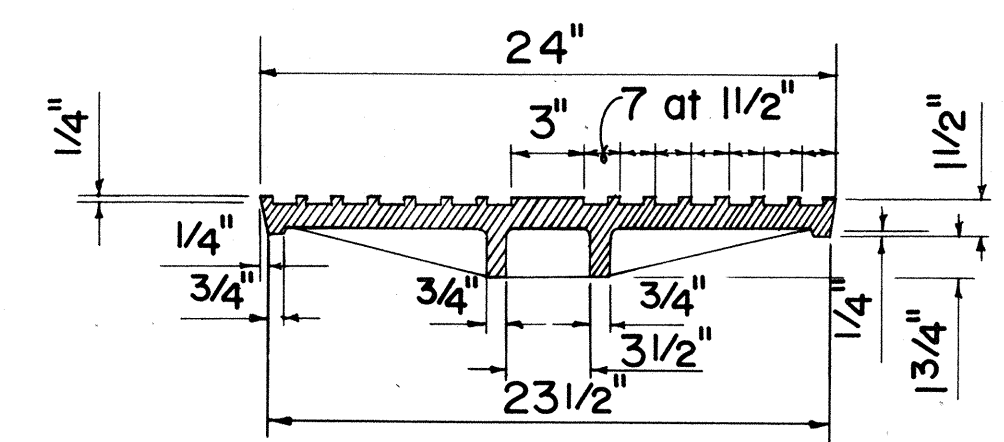
PLAN OF FRAME



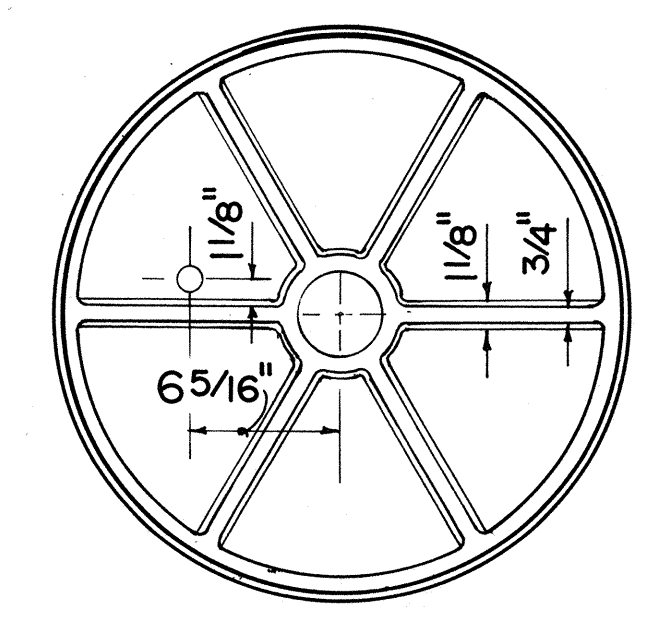
SECTION OF FRAME



TOP VIEW OF COVER

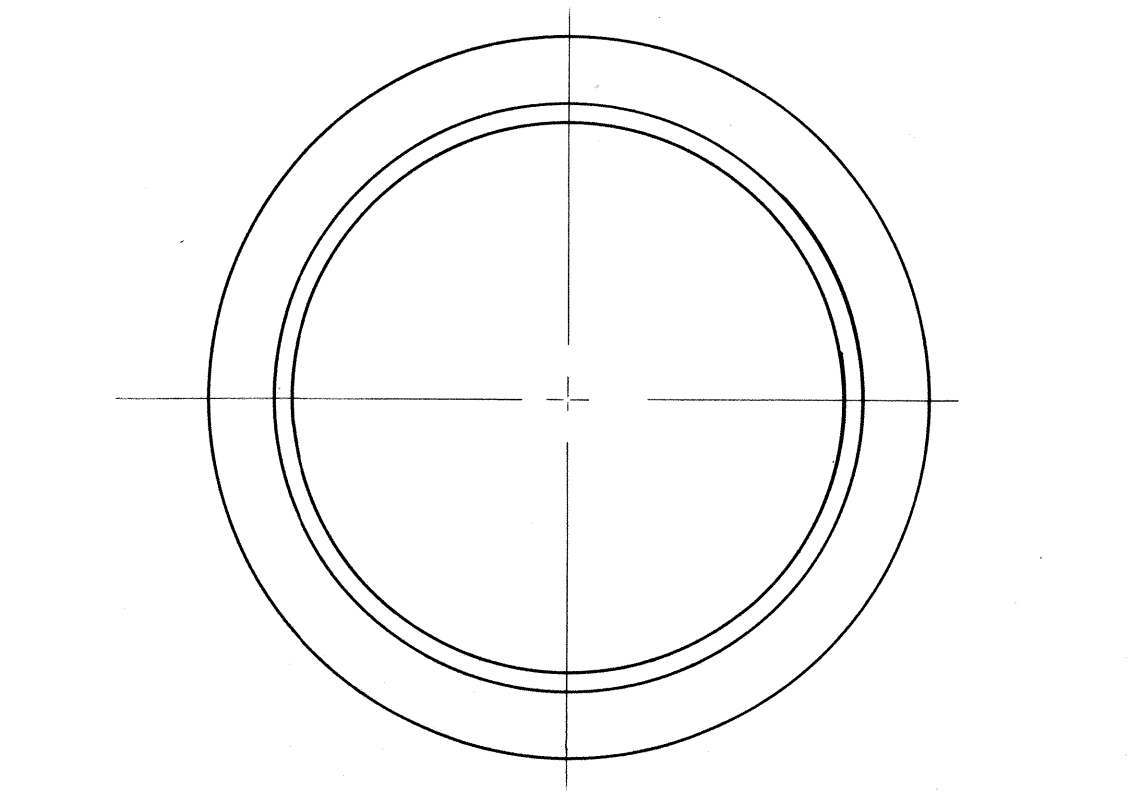


SECTION

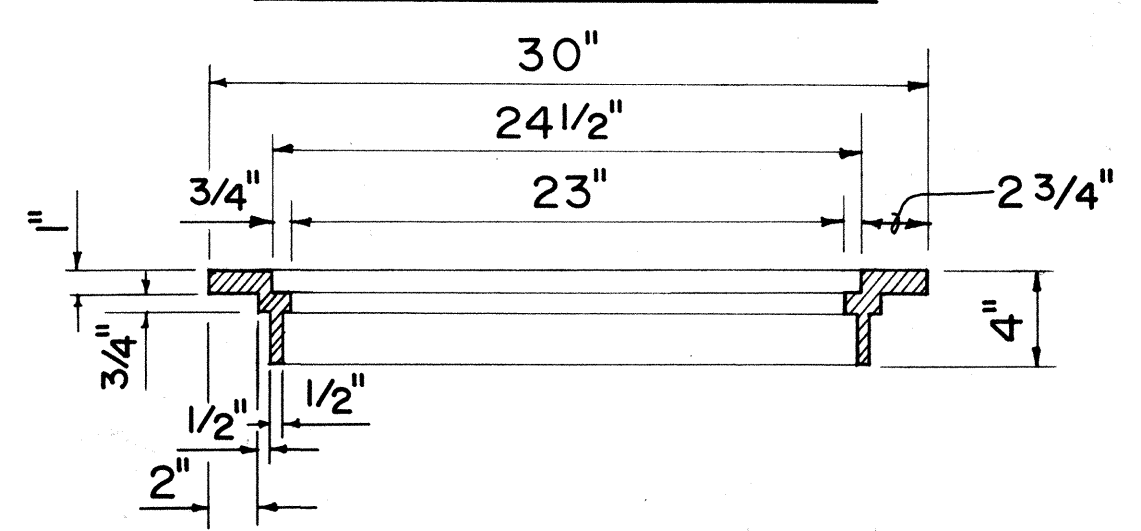


BOTTOM VIEW OF COVER

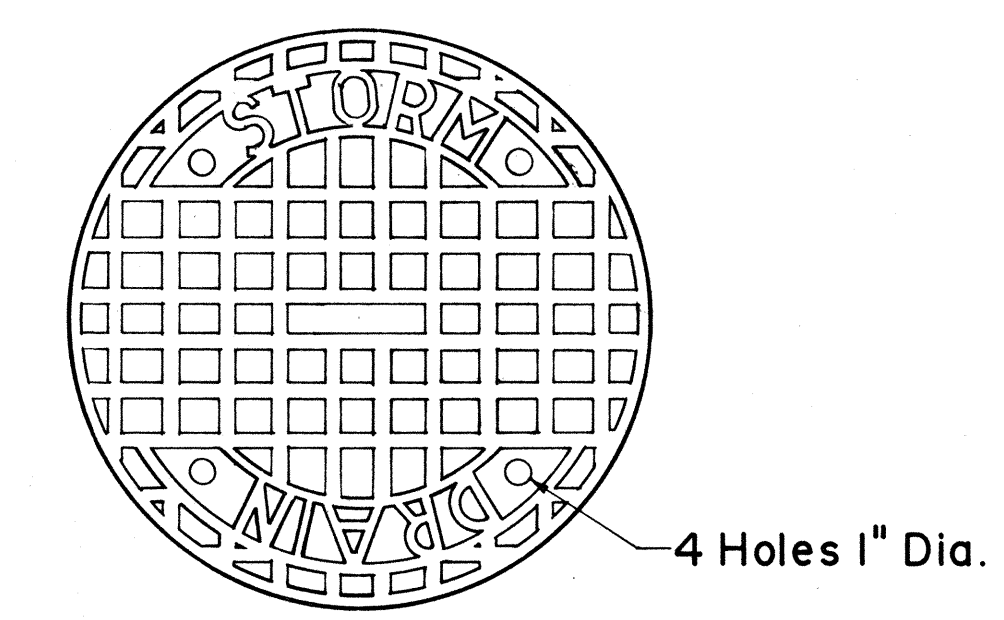
TYPE "P" CAST IRON FRAME AND COVER



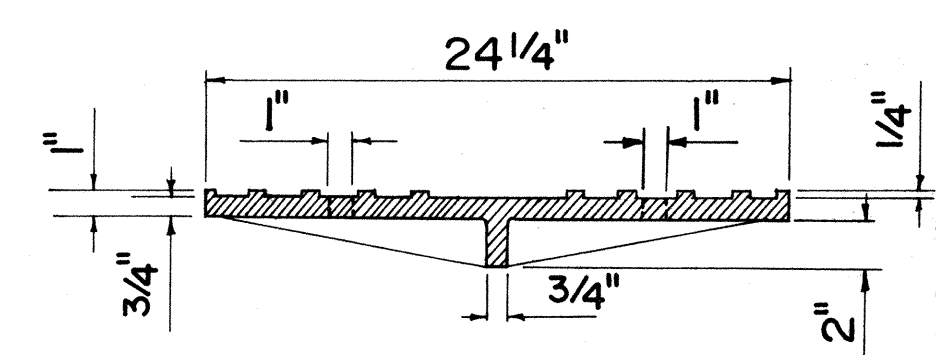
PLAN OF FRAME



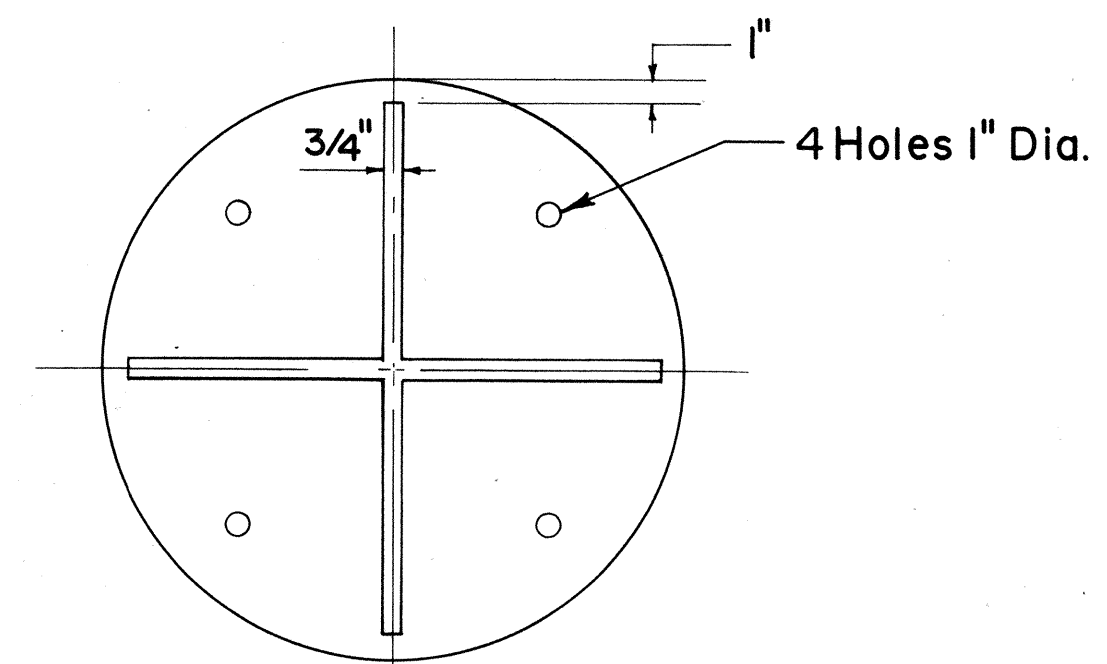
SECTION OF FRAME



TOP VIEW OF COVER

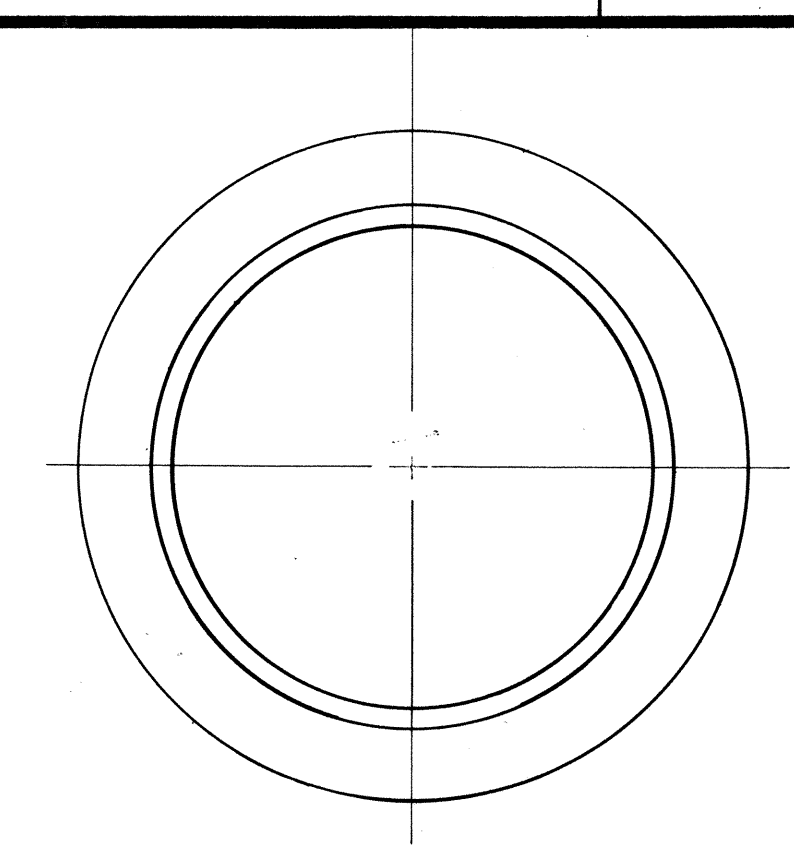


SECTION

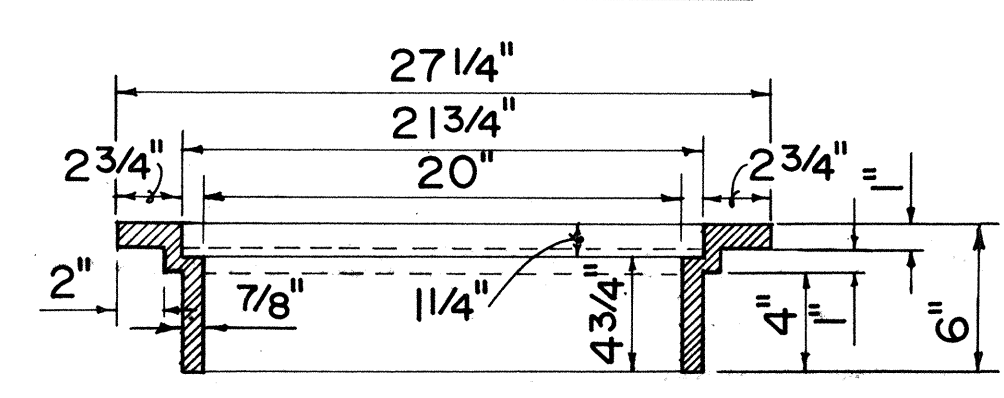


BOTTOM VIEW OF COVER

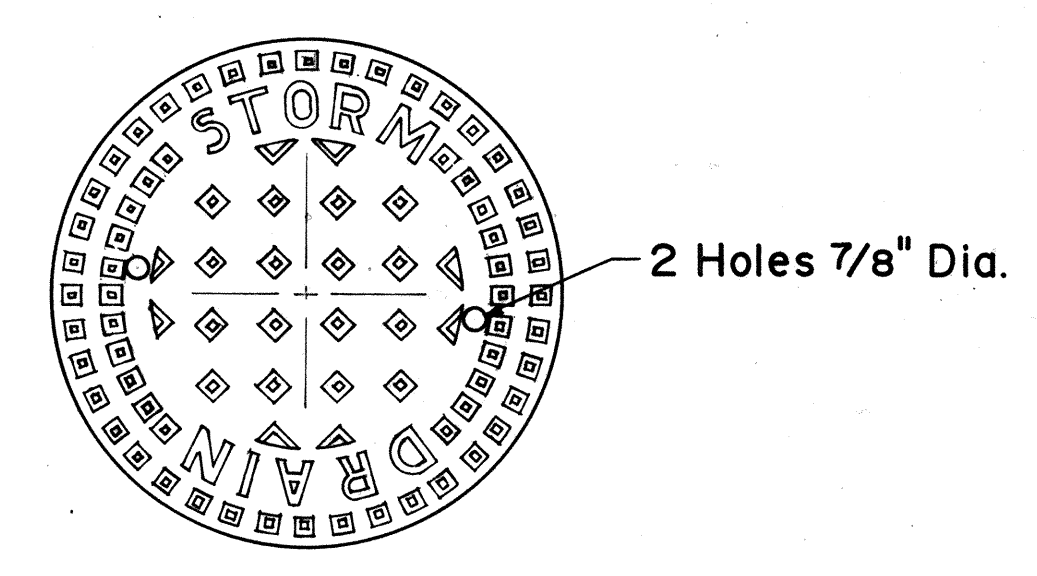
TYPE "B" CAST IRON FRAME AND COVER



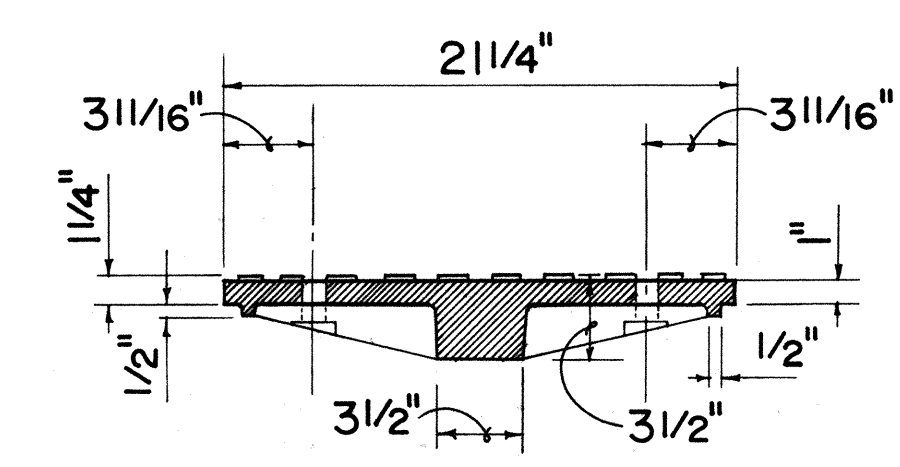
PLAN OF FRAME



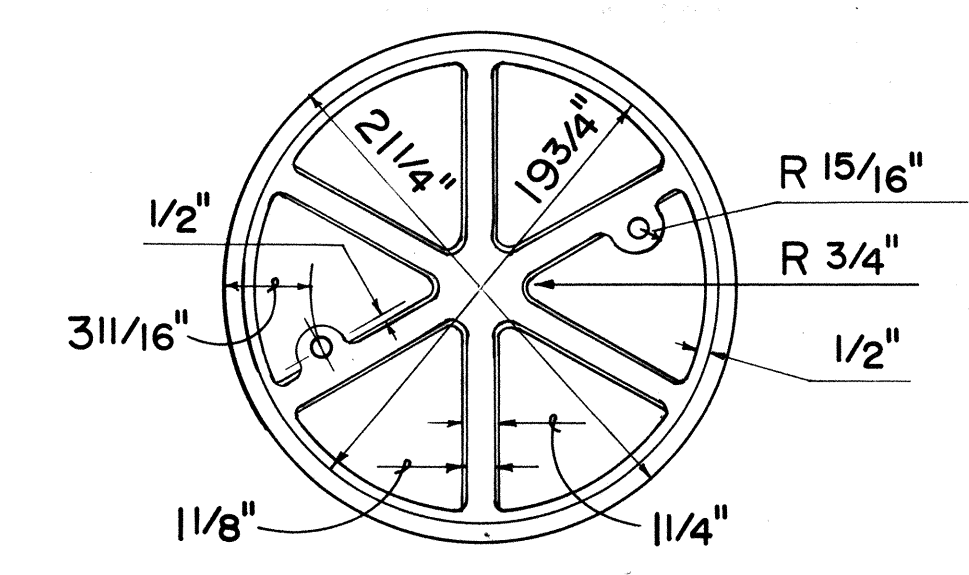
SECTION OF FRAME



TOP VIEW OF COVER

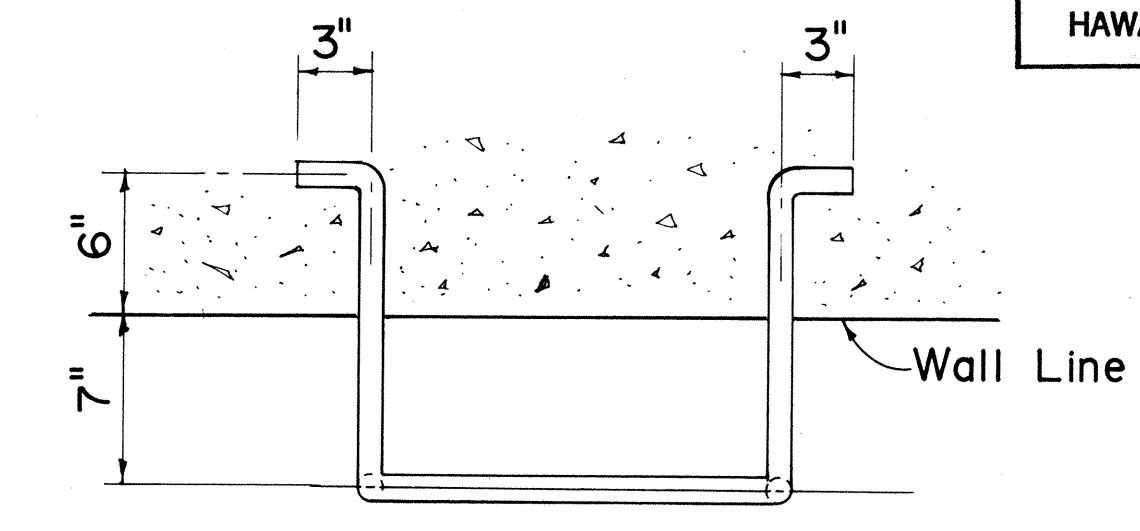


SECTION

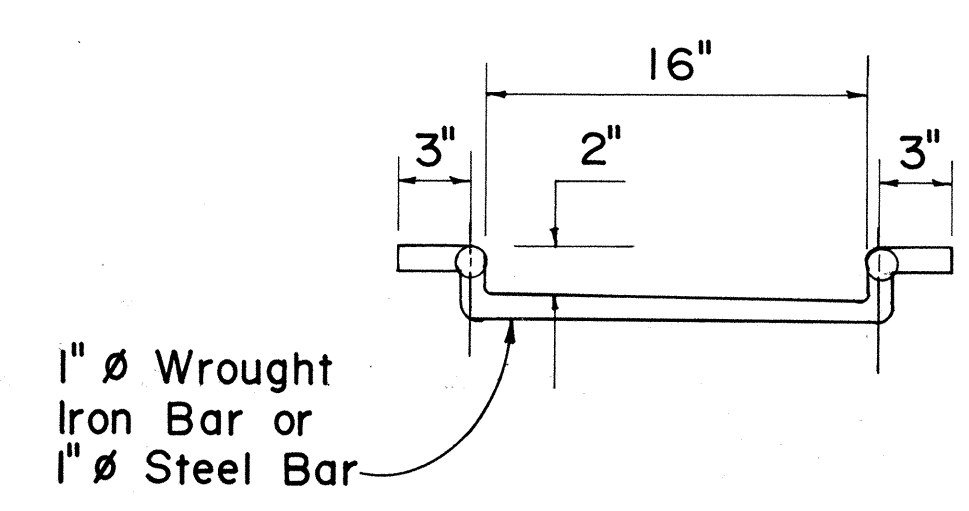


BOTTOM VIEW OF COVER

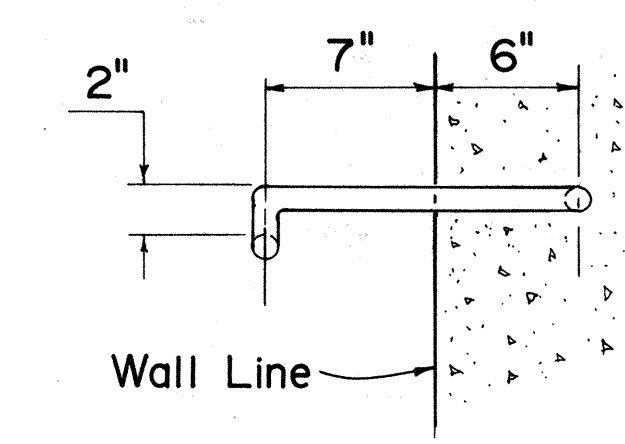
TYPE "A" CAST IRON FRAME AND COVER



PLAN



FRONT VIEW



SIDE VIEW

MANHOLE RUNG

APPROVAL RECOMMENDED:
Takano
 HYDRAULIC DESIGN ENGINEER 6-19-79 DATE
 APPROVED:
Herbert Zakeishi
 ASSISTANT CHIEF, ENGINEERING 6-22-79 DATE

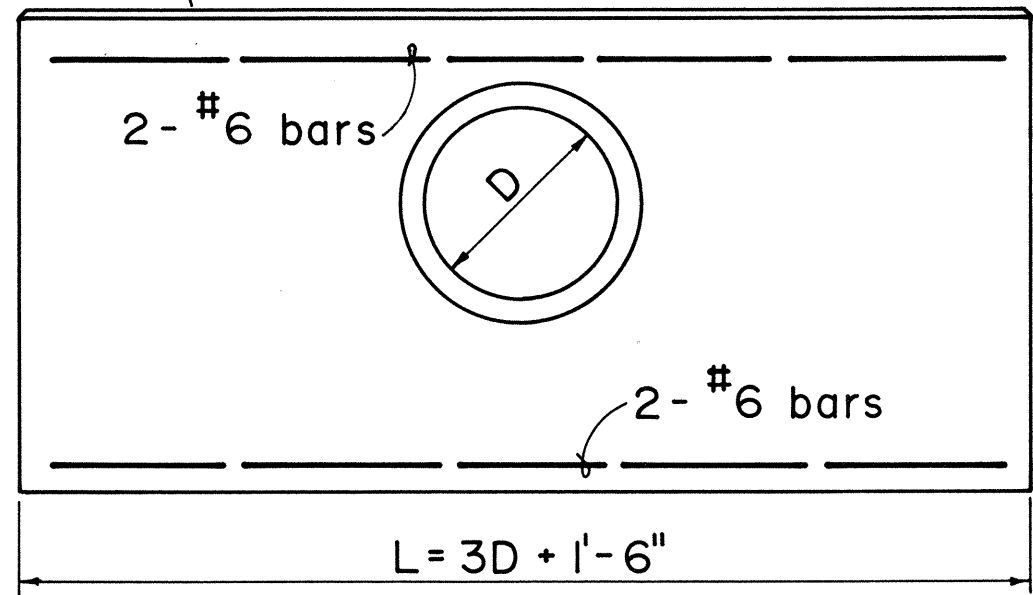
NO.	REVISION	APPROVED BY	DATE
1.	Supersedes Sht. DH 6 approved 12-17-69	H.P.	6/22/79

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 STANDARD DETAILS
 CATCH BASIN AND
 MANHOLE CASTINGS
 Not To Scale Date: Dec. 1977

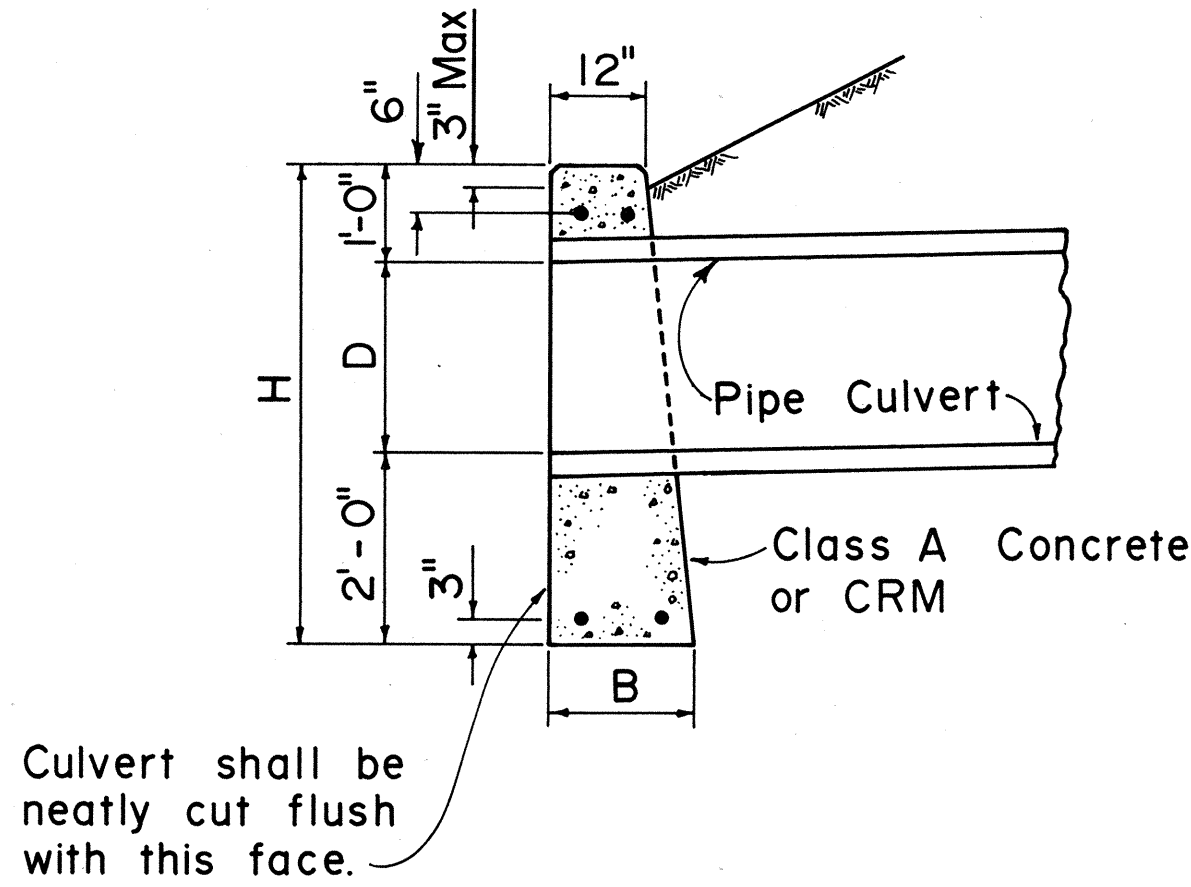
ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(4)	1982	19	25

Chamfer all exposed
edges one inch



ELEVATION



SECTION

DATA FOR CONC. HDWL.			
D	B	L	H
18"	1'-6"	6'-0"	4'-6"
24"	1'-6"	7'-6"	5'-0"
30"	2'-0"	9'-0"	5'-6"
36"	2'-0"	10'-6"	6'-0"
42"	2'-6"	12'-0"	6'-6"
48"	2'-6"	13'-6"	7'-0"

DATA FOR CRM HDWL.			
D	B	L	H
18"	1'-9"	6'-0"	4'-6"
24"	2'-0"	7'-6"	5'-0"
30"	2'-3"	9'-0"	5'-6"
36"	2'-6"	10'-6"	6'-0"

CONCRETE OR CRM HEADWALL

APPROVAL RECOMMENDED:
T. Takano 6-19-79
 HYDRAULIC DESIGN ENGINEER DATE
 APPROVED:
Harold Zaleishi 6-22-79
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1.	Supersedes Sht. DH 10 approved 12-17-69	H.T.	6/22/79
2.	Change Class of concrete	H.T.	12/4/80

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE OR CEMENT
RUBBLE MASONRY HEADWALLS

Not To Scale
Date: June 1979

SHEET No. 19 OF 25 SHEETS DH 10