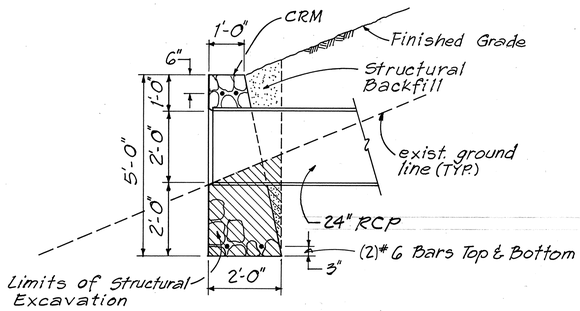
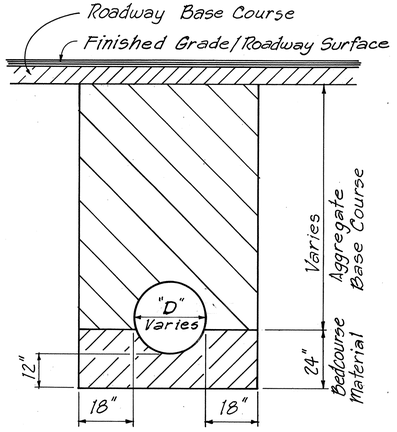
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-019-1(17)	1994	12	23



CRM WALL OUTLET @ STA. 43+50

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

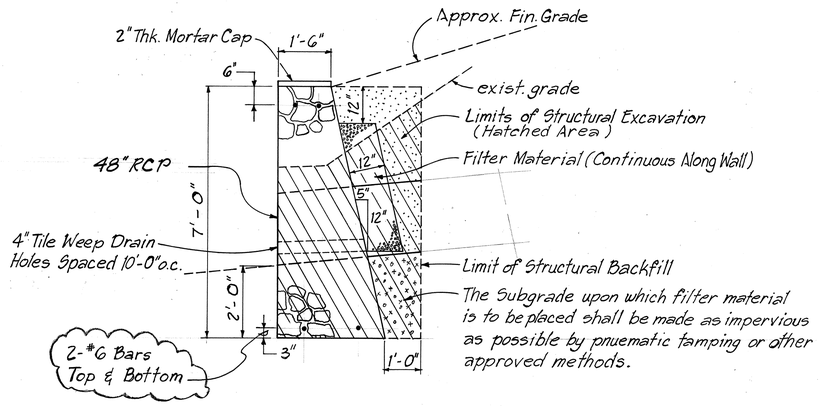


TYPICAL TRENCH DETAILS

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

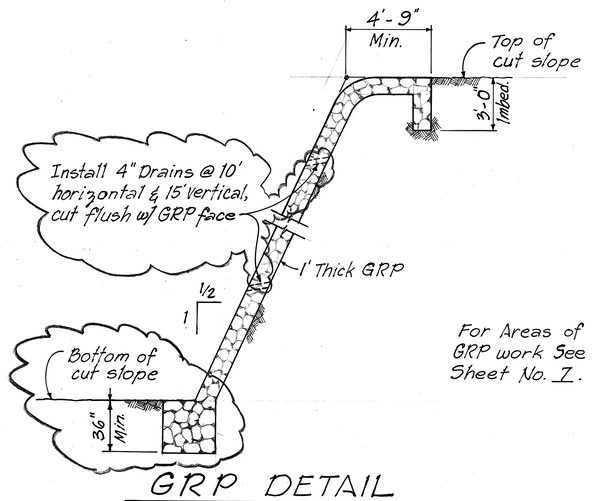
NOTES:

1. Contractor is directed to Standard Specifications Item 105.02 Control of Work, Contract Plans and Working and Shop Drawings and Item 602.03 Reinforcing Steel, Order Lists and Bending Diagrams. The Contractor shall submit (3) copies of Working Plans or Shop Drawings to the Engineer for his review and approval prior to starting work on any reinforced concrete structure.
2. All exposed head and wing wall concrete edges to be chamfered 1".
3. All concrete cover over reinforcing steel to be 3" minimum.
4. Any changes to these plans or specifications based on unforseen field conditions are to be submitted to the Engineer for review and approval prior to implementation.
5. It is the Contractor's responsibility to provide adequate temporary shoring and bracing of the structures for any loads that may be imposed upon it during construction. Damage to the structure caused by or as a direct result of the contractor's operations shall be repaired by the Contractor at his own expense.
6. Demolition and removal of the necessary portions of the existing structures shall be considered as incidental to the various contract items.
7. Foundations shall rest on well compacted material or bedrock. Soft spots shall be removed and replaced with compacted granular backfill material.
8. Existing drainage system will be maintained and kept functional at all times during construction. Contractor shall furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. The cost for this work shall be incidental to the various contract items.
9. Structural Concrete to be Class "A" concrete, f'c = 3,000 psi, 28 day strength.
10. Grade Tops of New CRM Walls to match adjacent roadway profile.
11. During the removal of portions of Culvert at Station 52+15 the Contractor shall not jackhammer against existing reinforcing steel. Reinforcing steel shall be removed with cutting torch or other method approved by the Engineer.



CRM WALL @ CULVERT OUTLET STA. 54+50

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



For Areas of GRP work See Sheet No. 7.

GRP DETAIL

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

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

DATE	REVISION
1/23/95	Modify Culvert and GRP Details.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CRM CULVERT DETAILS & NOTES

CULVERT STA. 43+50 & STA. 52+15

HAWAII BELT ROAD RESURFACING

PAKALANA ST. TO KAHAWAILILII GULCH

F.A. PROJ. NO. STP-019-1(17)

Scale: As Shown Date: Mar. 1994

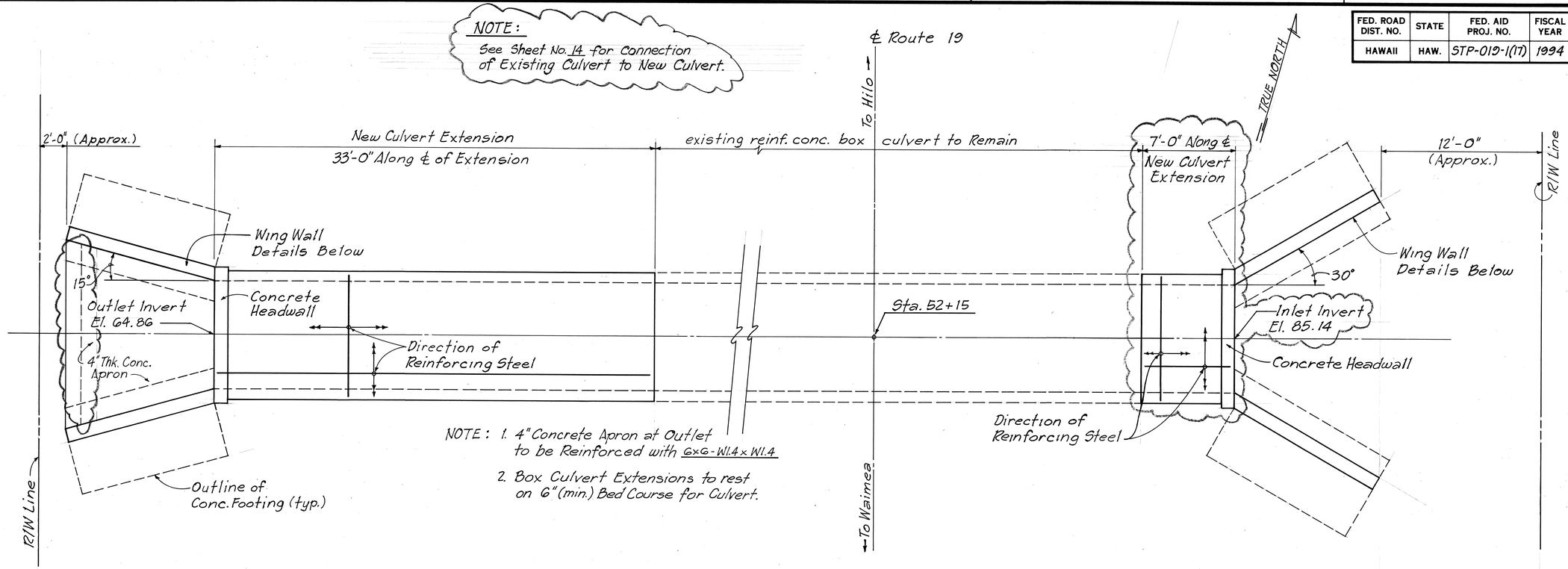
SHEET No. 1 OF 3 SHEETS

C.O. 12

137218

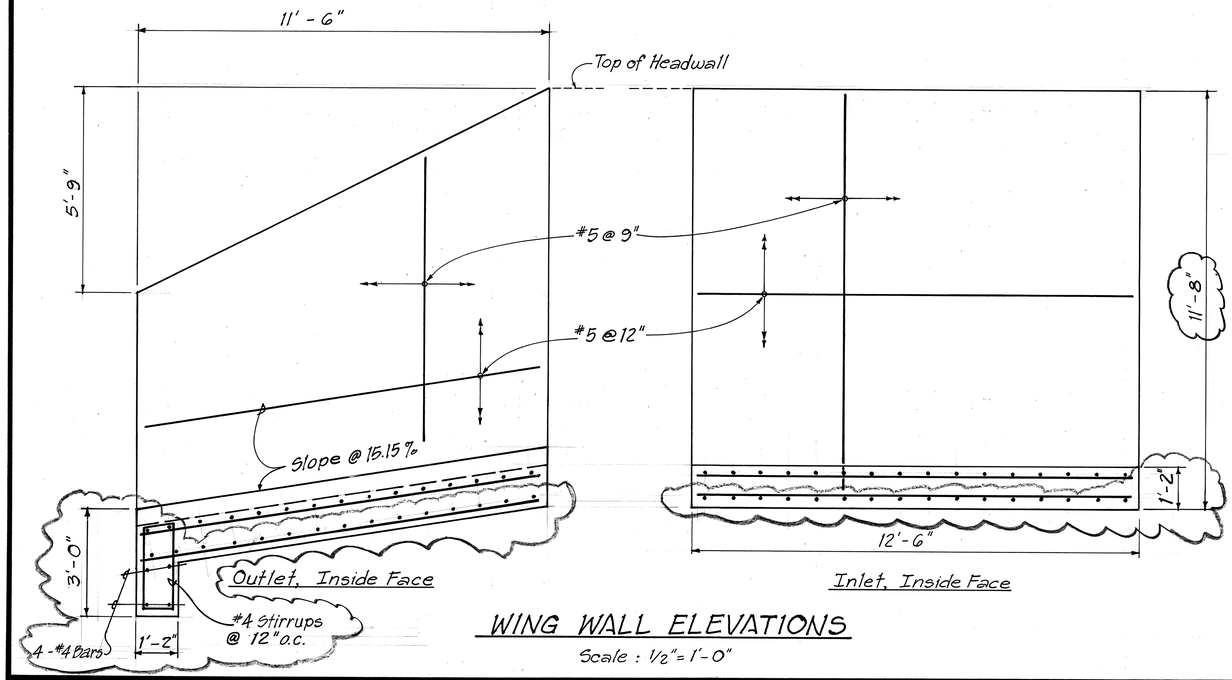
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-019-1(17)	1994	13	23

NOTE:
See Sheet No. 14 for Connection of Existing Culvert to New Culvert.



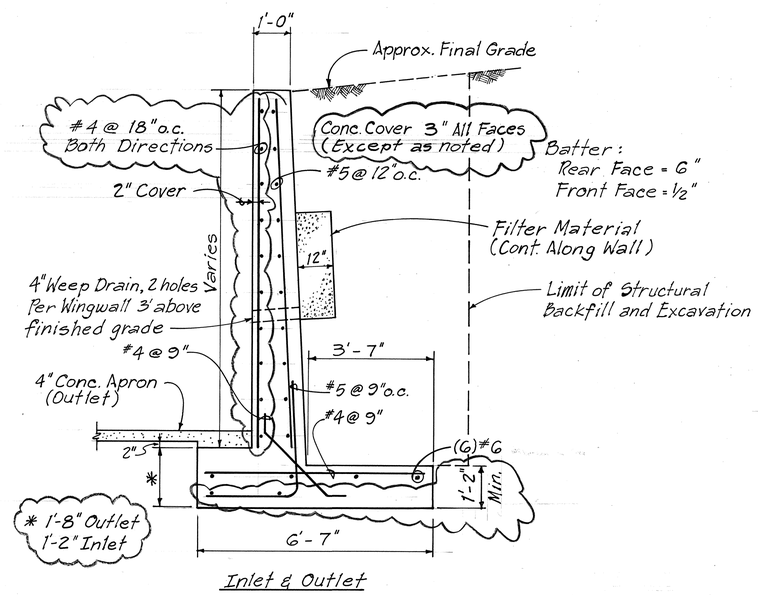
8'-0" x 8'-0" CONCRETE BOX CULVERT @ STA. 52+15

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



WING WALL ELEVATIONS

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



TYPICAL WING WALL SECTION

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

DATE	REVISION
1/23/95	Modified Culvert Outlet Apron.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

8'x8' CONCRETE BOX CULVERT DETAILS @ STA. 52+15

HAWAII BELT ROAD RESURFACING
PAKALANA ST. TO KAHAWAILIILII GULCH
F.A. PROJ. NO. STP-019-1(17)

Scale: As Shown Date: Mar. 1994

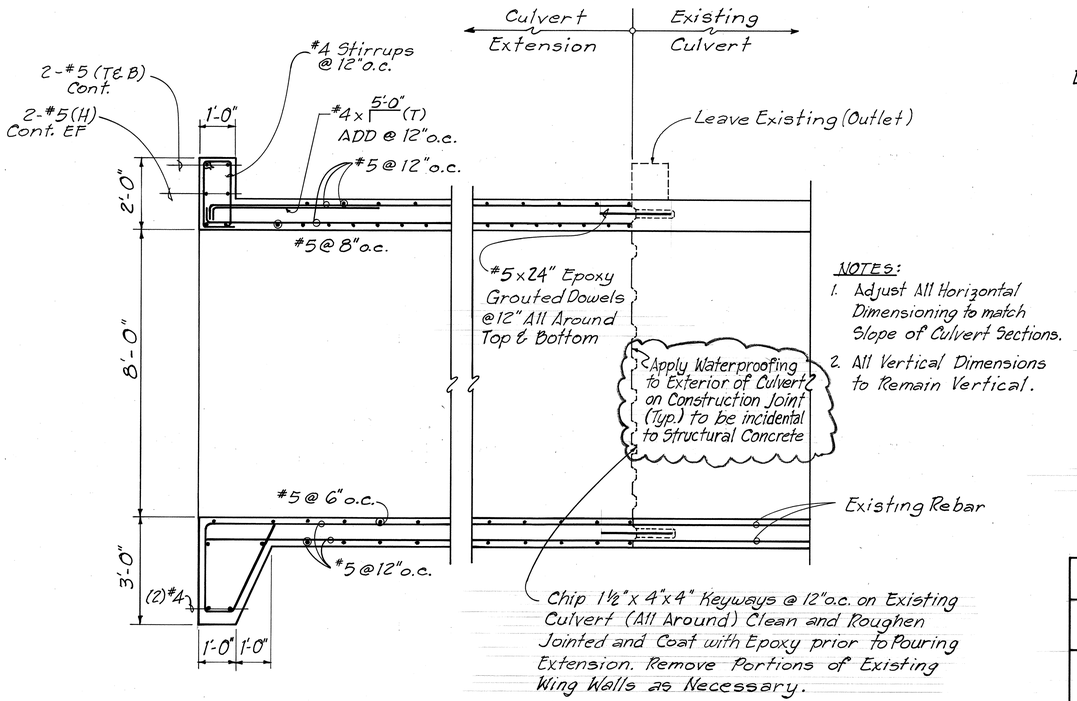
SHEET No. 2 OF 3 SHEETS

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

137218

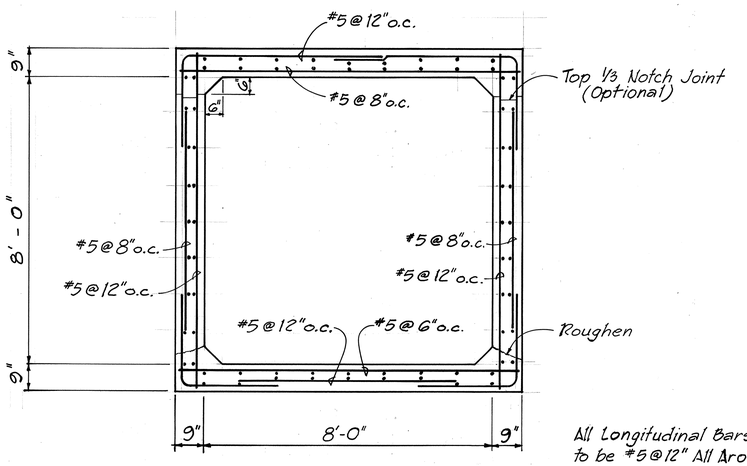
C.O. 13

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-019-1(17)	1994	14	23



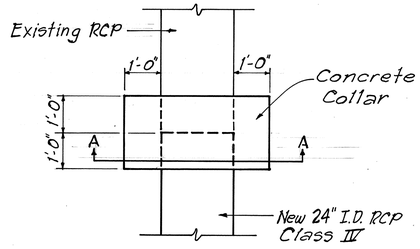
NOTES:
1. Adjust All Horizontal Dimensioning to match Slope of Culvert Sections.
2. All Vertical Dimensions to Remain Vertical.

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

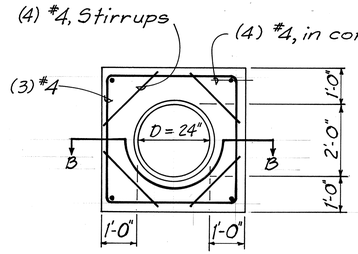


All Longitudinal Bars to be #5@12" All Around

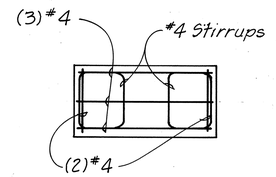
TYPICAL SECTION BOX CULVERT EXTENSION
Scale: 1/2" = 1'-0"



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



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



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

NOTES:
1. Remove existing Headwall and Clean RCP Prior to Constructing Collar.

REINFORCED CONCRETE COLLAR DETAILS

ESTIMATED QUANTITIES

DESCRIPTION	UNITS	CULVERTS			TOTALS
		STA. 43+50	STA. 52+15	STA. 54+50	
Imported Borrow	Cu.Yd.	10	140	50	200
Structural Excavation for Drainage System	Cu.Yd.	70	0	25	95
Structural Excavation for Box Culverts	Cu.Yd.	0	480	0	480
Structural Backfill	Cu.Yd.	28	480	25	533
Aggregate Basecourse for Trench Backfill	Cu.Yd.	30	0	10	40
Class "A" Concrete other than in Bridges, Including Reinforcing Steel.	Cu.Yd.	2	0	0	2
Concrete in Box Culvert, Including Reinforcing Steel in Box Culvert.	Cu.Yd.	0	105	0	105
Grouted Rubble Paving	Cu.Yd.	0	40	0	40
Cement Rubble Masonry	Cu.Yd.	5	0	37	42
Bed Course Material for Culvert	Cu.Yd.	6	80	2	88
24 Inch Reinforced Concrete Pipe, Class III	Lin.Ft.	14	0	0	14
Grated Drop Inlet, State Standard TYPE G1214	EA.	1	0	0	1
Manhole Rungs	EA.	0	7	0	7

NOTE :

Item	Culvert @ Sta. No.	Limits for Estimated Quantities
603.9043	43+50	Sta. 43+42 to Sta. 43+58
603.9052	52+15	Sta. 51+88 to Sta. 52+47
603.9054	54+50	Sta. 54+25 to Sta. 54+75

DATE	REVISION
1/23/95	Add Waterproofing note to Typical Inlet/Outlet Section detail.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CULVERT DETAILS

HAWAII BELT ROAD RESURFACING
PAKALANA ST. TO KAHAWAILIILII GULCH
F.A. PROJ. NO. STP-019-1(17)
Scale: 1/2"=1'-0" Date: Mar. 1994

SHEET No. 3 OF 3 SHEETS

C.O. 14

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

137218