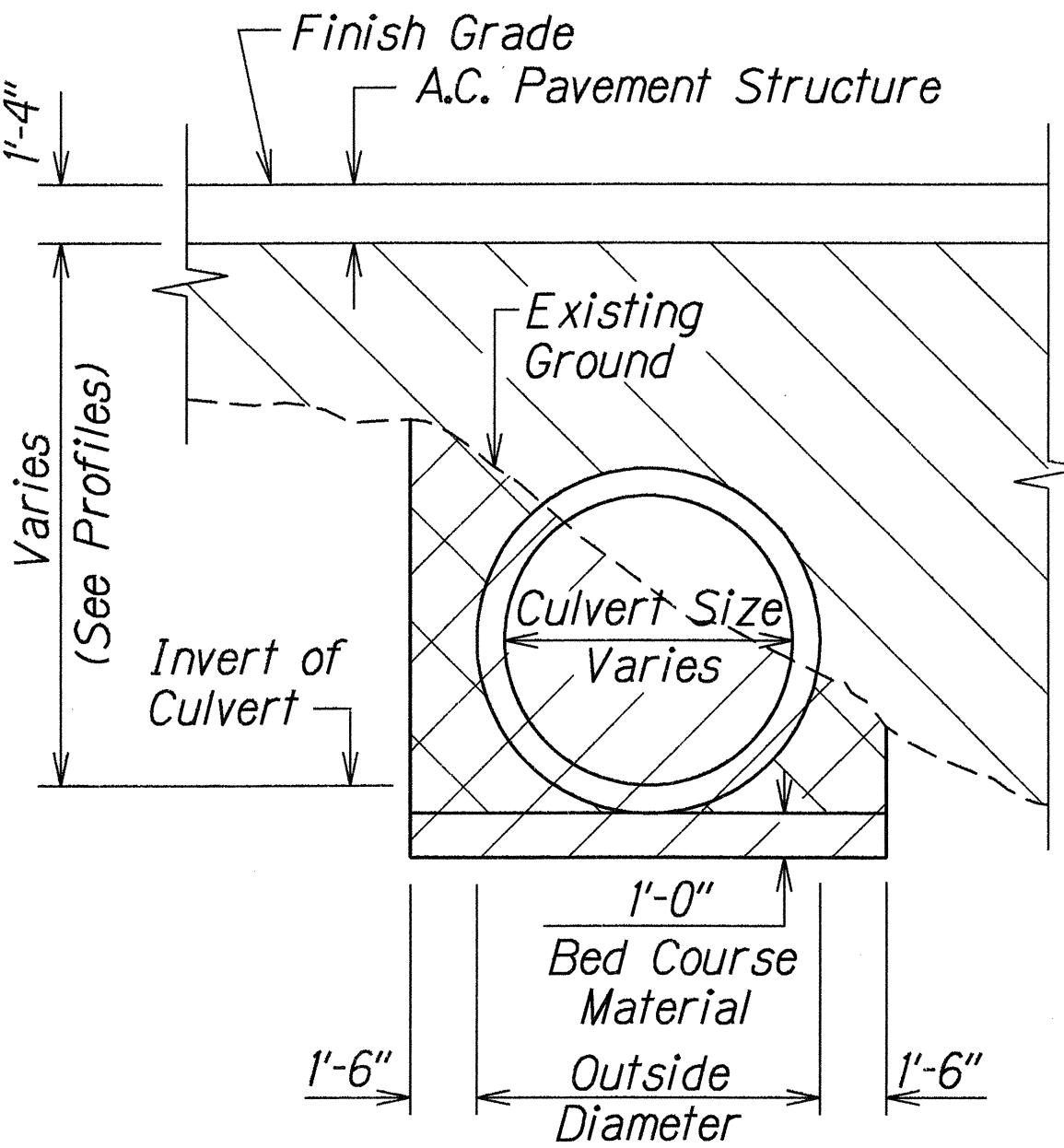


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	25	58

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.
- The Contractor shall verify the locations of all existing culverts and utilities in the field. Any existing culverts and utilities damaged during construction shall be repaired or replaced by the Contractor at his own expense.
- Demolishing, removing, and disposing existing 24" CMP and concrete jacket shall not be paid for separately, but shall be considered incidental to Item 206.8000-Trench Excavation for Culvert Systems.



LEGEND

- Limits of Imported Borrow Fill Material
- Limits of Trench Excavation for Culvert System

TYPICAL CULVERT TRENCH AND BACKFILL DETAIL

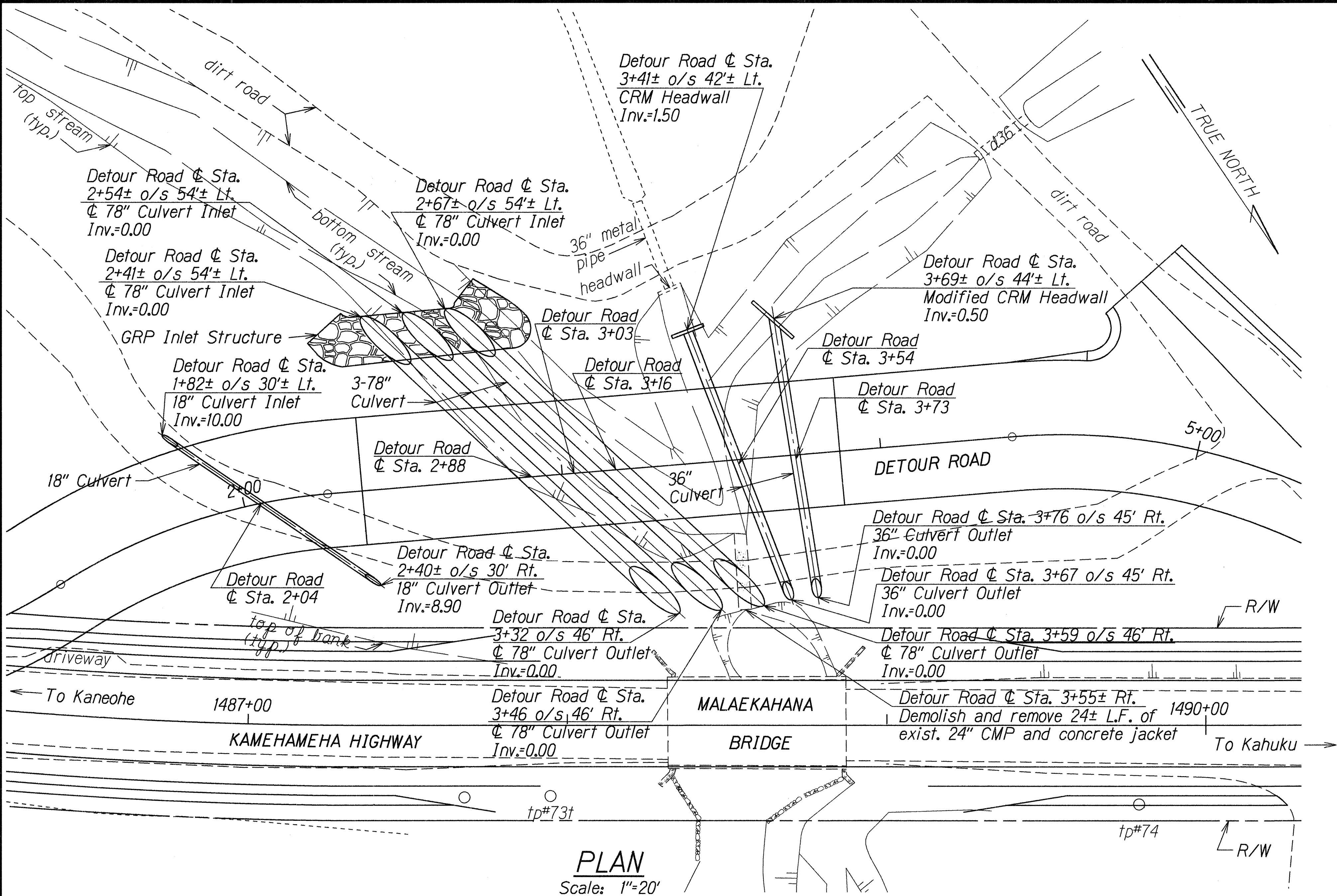
Scale: 1/4"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
KAMEHAMEHA HIGHWAY
Replacement of Malaekahana Bridge
Project No. BR-083-1(27)

Scale: As Shown Date: Feb. 1998

SHEET No. **HI** OF **9** SHEETS



PLAN
Scale: 1"=20'

Detour Road @ Sta. 2+04
Install: 18" Culvert
(For Profile see Sht. No. H3)

Estimated Quantities
Trench Excavation = 15 C.Y.
Bed Course Material = 14 C.Y.
18" Culvert = 84 L.F.

Detour Road @ Sta. 2+88
Install: 78" Culvert
(For Profile see Sht. No. H3)
Construct: GRP Inlet Structure
(For Details see Sht. No. H5)

Estimated Quantities
Trench Excavation = 336 C.Y.
Bed Course Material = 48 C.Y.
78" Culvert = 136 L.F.
GRP = 55 C.Y.

Detour Road @ Sta. 3+03
Install: 78" Culvert
(For Profile see Sht. No. H3)

Estimated Quantities
Trench Excavation = 172 C.Y.
Bed Course Material = 48 C.Y.
78" Culvert = 136 L.F.

Detour Road @ Sta. 3+16
Demolish and Remove: Existing 24"
culvert and concrete jacket
Install: 78" Culvert
(For Profile see Sht. No. H4)

Estimated Quantities
Trench Excavation = 91 C.Y.
Bed Course Material = 48 C.Y.
78" Culvert = 137 L.F.

Detour Road @ Sta. 3+54
Install: 36" Culvert
(For Profile see Sht. No. H4)
Construct: CRM Headwall
(For Details see Std. Plan H-16)

Estimated Quantities
Structure Excavation = 4 C.Y.
Trench Excavation = 48 C.Y.
Cement Rubble Masonry = 4 C.Y.
Bed Course Material = 20 C.Y.
36" Culvert = 90 L.F.

Detour Road @ Sta. 3+73
Install: 36" Culvert
(For Profile see Sht. No. H4)
Construct: Modified CRM Headwall
(For Details see Sht. No. H6)

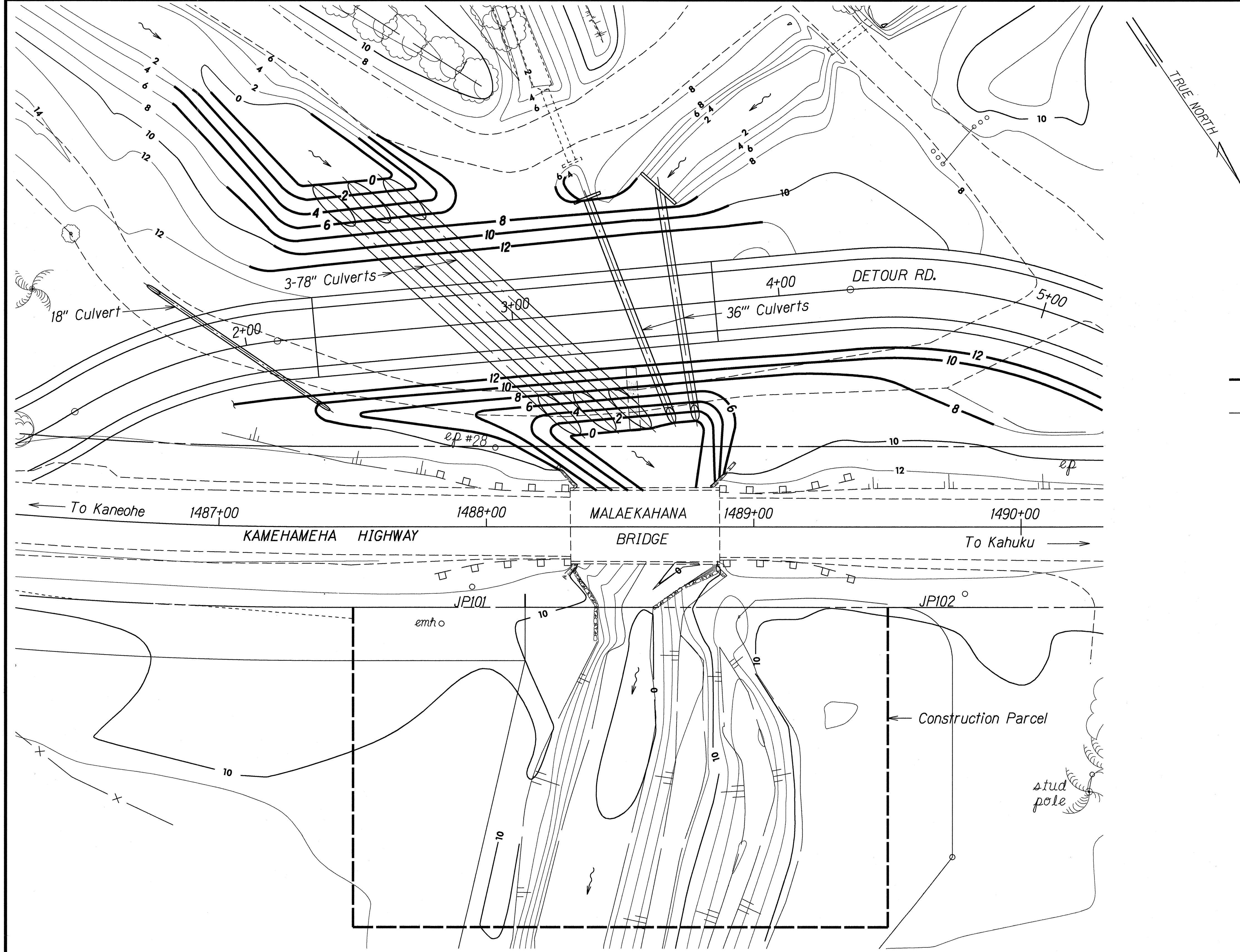
Estimated Quantities
Structure Excavation = 6 C.Y.
Trench Excavation = 149 C.Y.
Cement Rubble Masonry = 8 C.Y.
Bed Course Material = 19 C.Y.
36" Culvert = 89 L.F.

DRAINAGE PLAN FOR DETOUR ROAD

7/17/98 Revised Detour Road @ Stationing

DATE REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	26	58



LEGEND

- 10 — Finish Grade Contour Line
- 8 — Existing Contour Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY A. Nomura	5/25/98
DESIGNED BY C. Matsuda		
CHECKED BY		

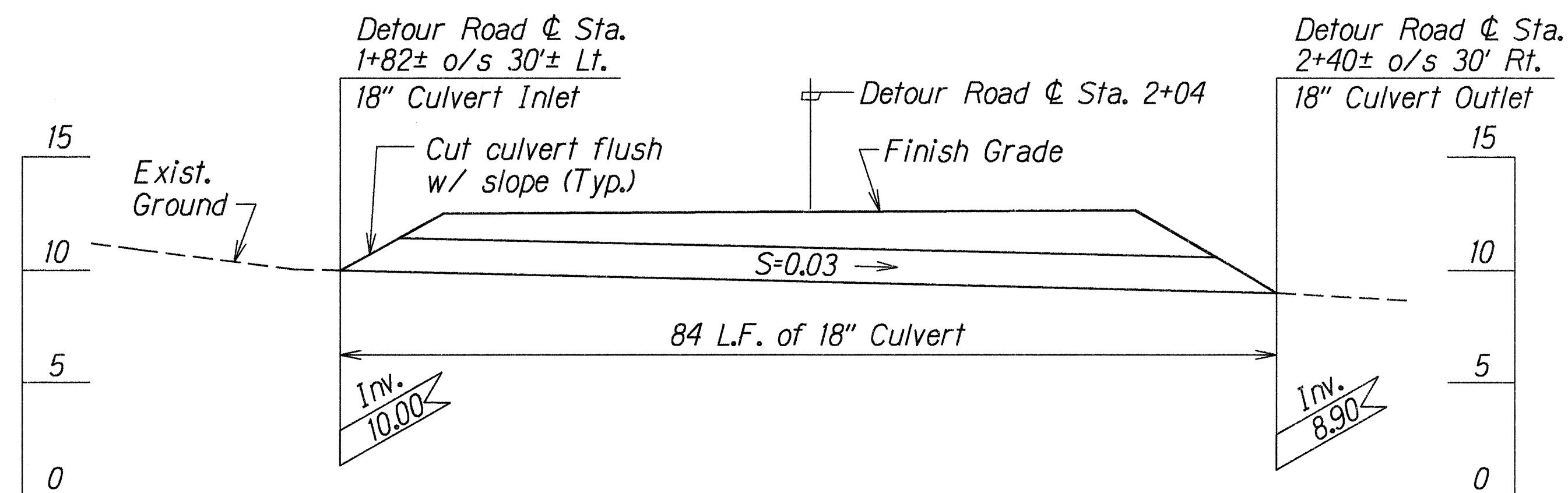
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
KAMEHAMEHA HIGHWAY
Replacement of Malaekahana Bridge
Project No. BR-083-1(27)

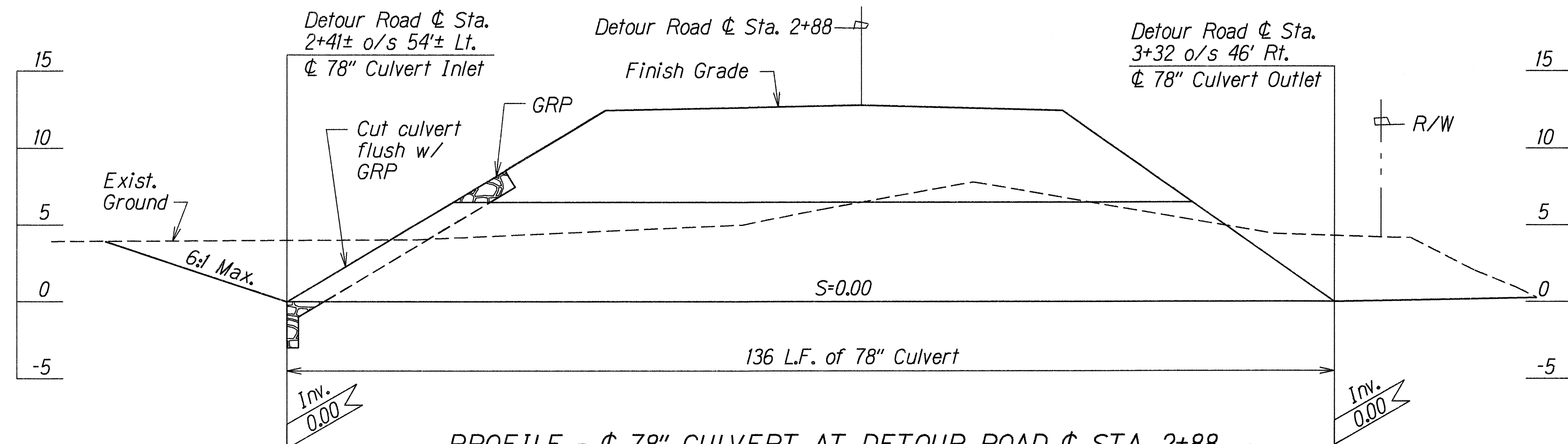
Scale: 1"=20'
Date: Feb. 1998

SHEET No. H2 OF 9 SHEETS

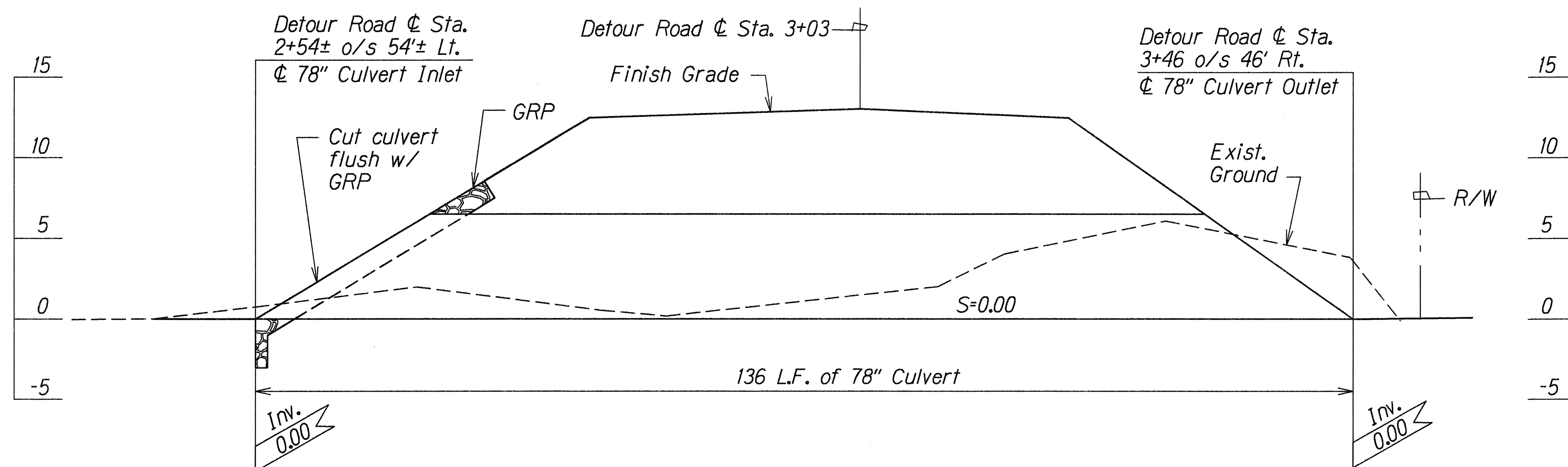
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	27	58



PROFILE - 18" CULVERT AT DETOUR ROAD $\oslash$ STA. 2+04
Scale: Horiz.= 1"=10'
Vert.= 1"=5'



PROFILE - $\oslash$ 78" CULVERT AT DETOUR ROAD $\oslash$ STA. 2+88
Scale: Horiz.= 1"=10'
Vert.= 1"=5'



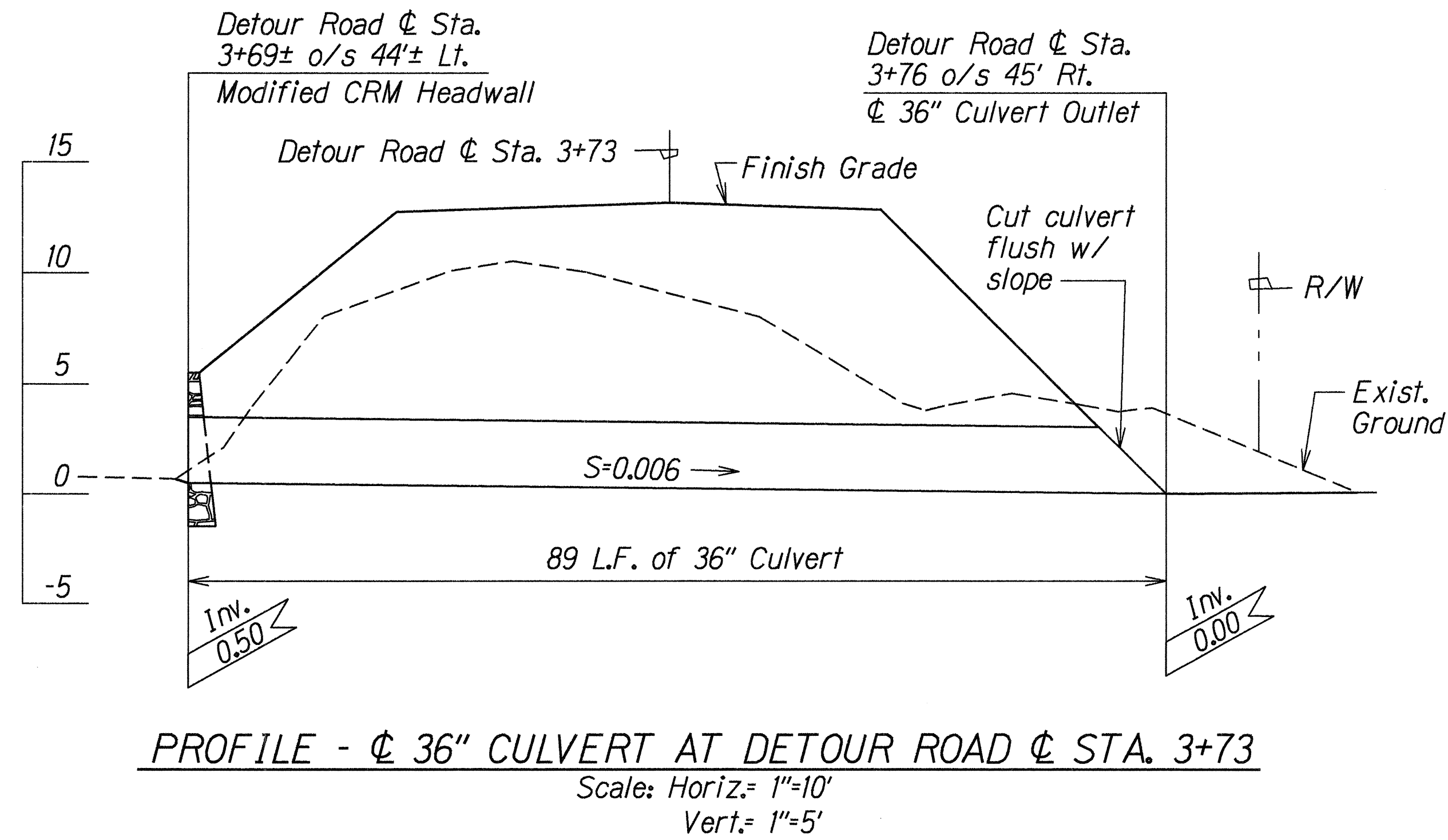
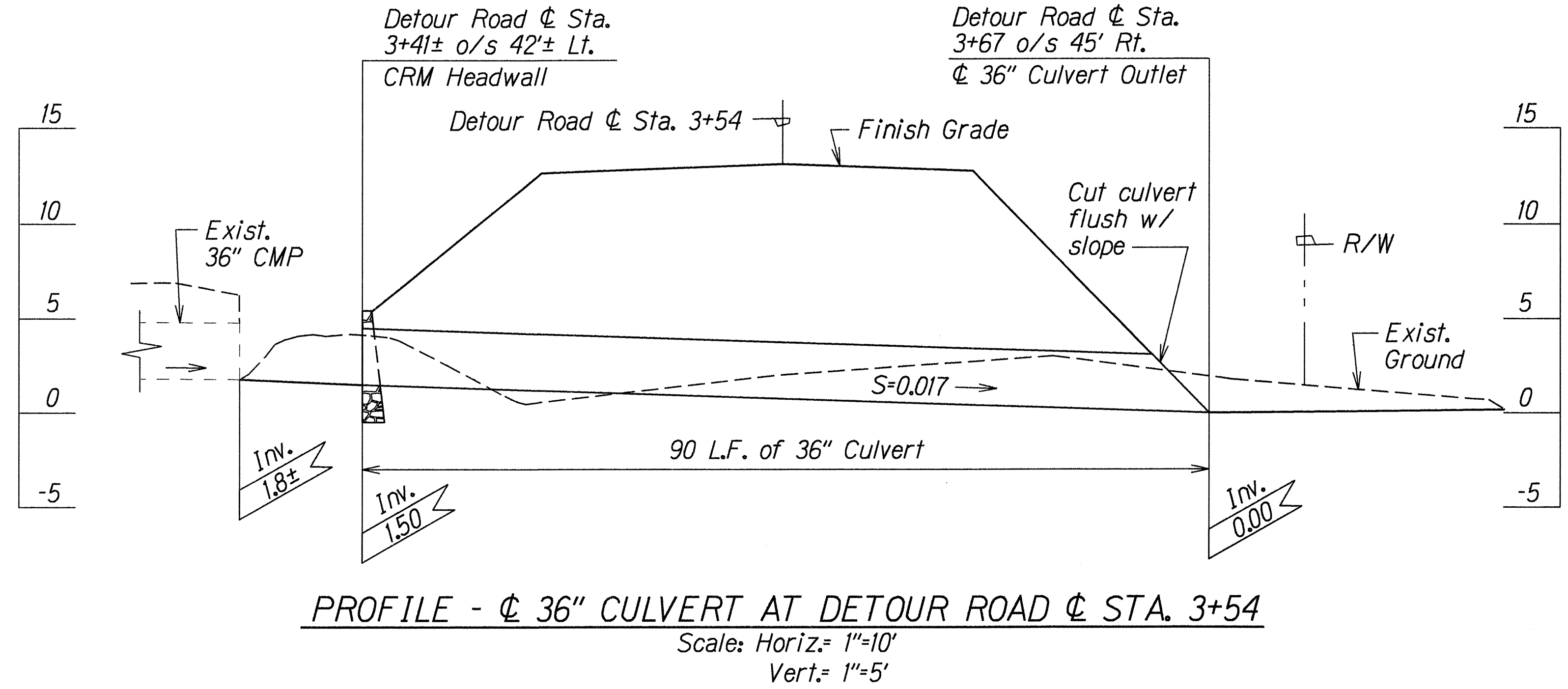
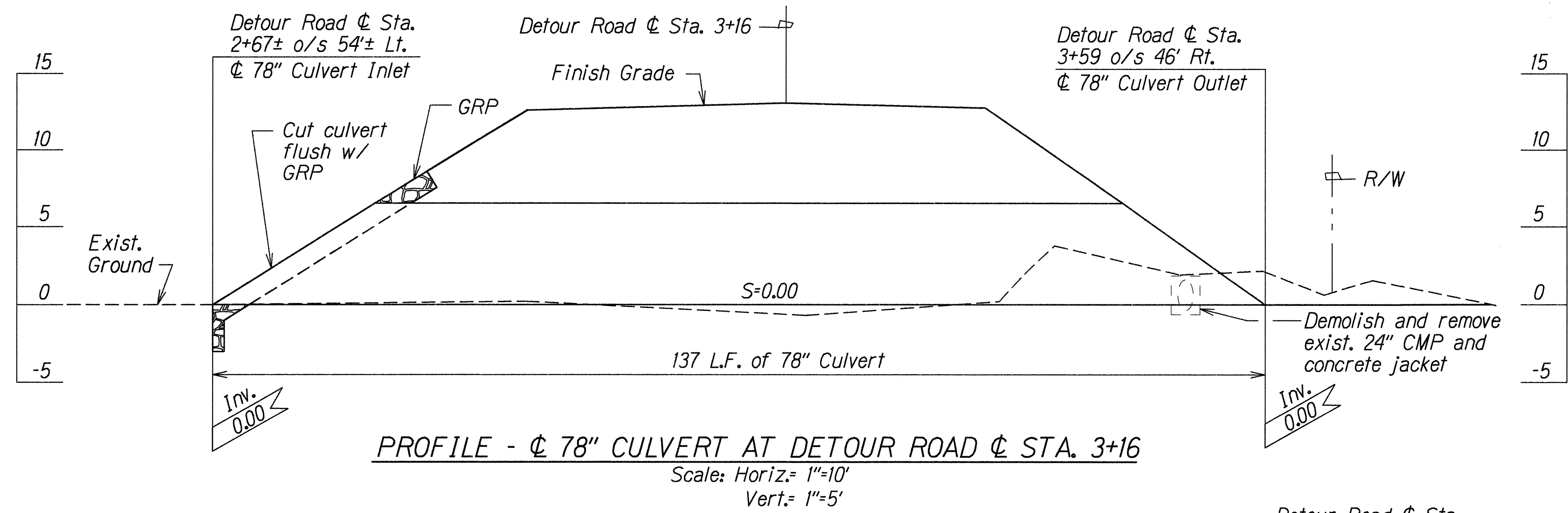
PROFILE - $\oslash$ 78" CULVERT AT DETOUR ROAD $\oslash$ STA. 3+03
Scale: Horiz.= 1"=10'
Vert.= 1"=5'

DRAINAGE PROFILES FOR DETOUR ROAD

ORIGINAL PLAN	DATE	4/17/98
DRAWN BY	H. S. A. V. V. V.	
CHECKED BY	C. M. S. A. V. V. V.	
NOTED BY	C. M. S. A. V. V. V.	
QUANTITIES BY	C. M. S. A. V. V. V.	
NO.		

7/17/98	Revised Detour Road $\oslash$ Stationing
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>DRAINAGE PROFILES</u>	
<u>KAMEHAMEHA HIGHWAY</u>	
<u>Replacement of Malaekahana Bridge</u>	
<u>Project No. BR-083-1(27)</u>	
Scale: As Noted	Date: Feb. 1998
SHEET No. H3 OF 9 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	28	58

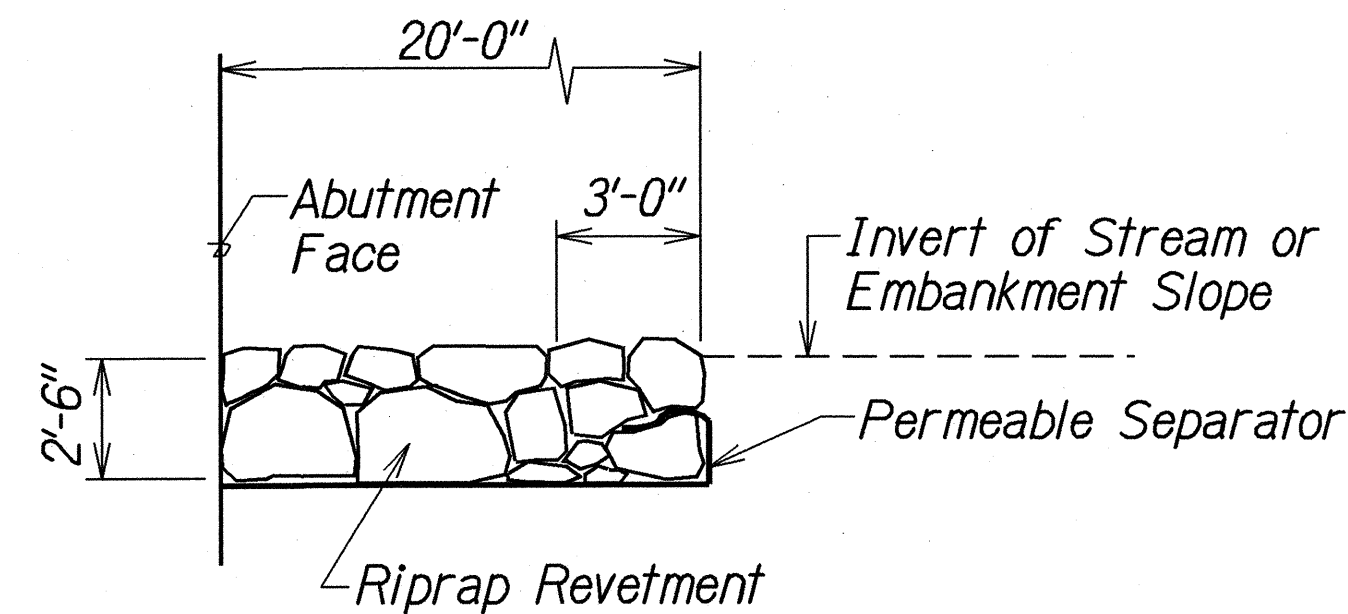


DRAINAGE PROFILES FOR DETOUR ROAD

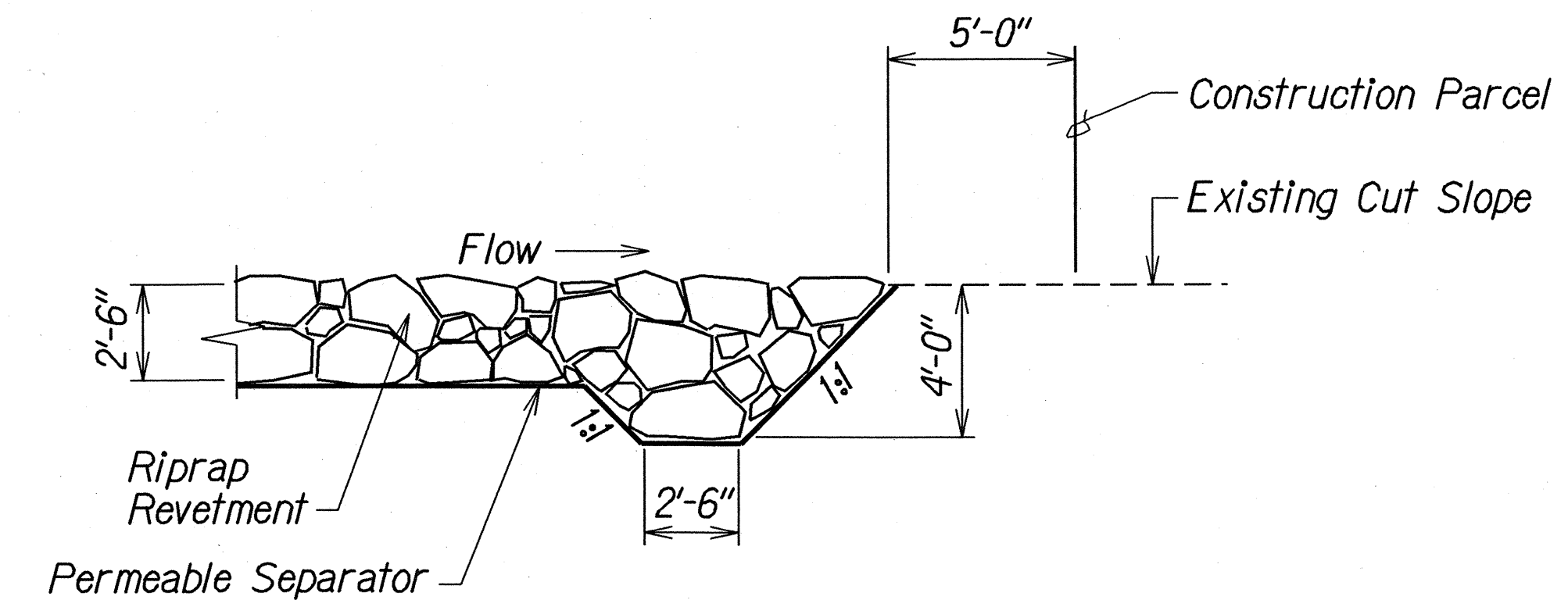
ORIGINAL PLAN	DATE	4/17/96
SURVEY PLOTTED BY	DATE	4/17/96
DRAWN BY	DATE	4/17/96
CHECKED BY	DATE	4/17/96
NOTED BY	DATE	4/17/96
QUANTITIES BY	DATE	4/17/96
CHECKED BY	DATE	4/17/96

7/17/98	Revised Detour Road stationing
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DRAINAGE PROFILES	
KAMEHAMEHA HIGHWAY	
Replacement of Malaekahana Bridge	
Project No. BR-083-1(27)	
Scale: As Noted	Date: Feb. 1998
SHEET No. H4 OF 9 SHEETS	

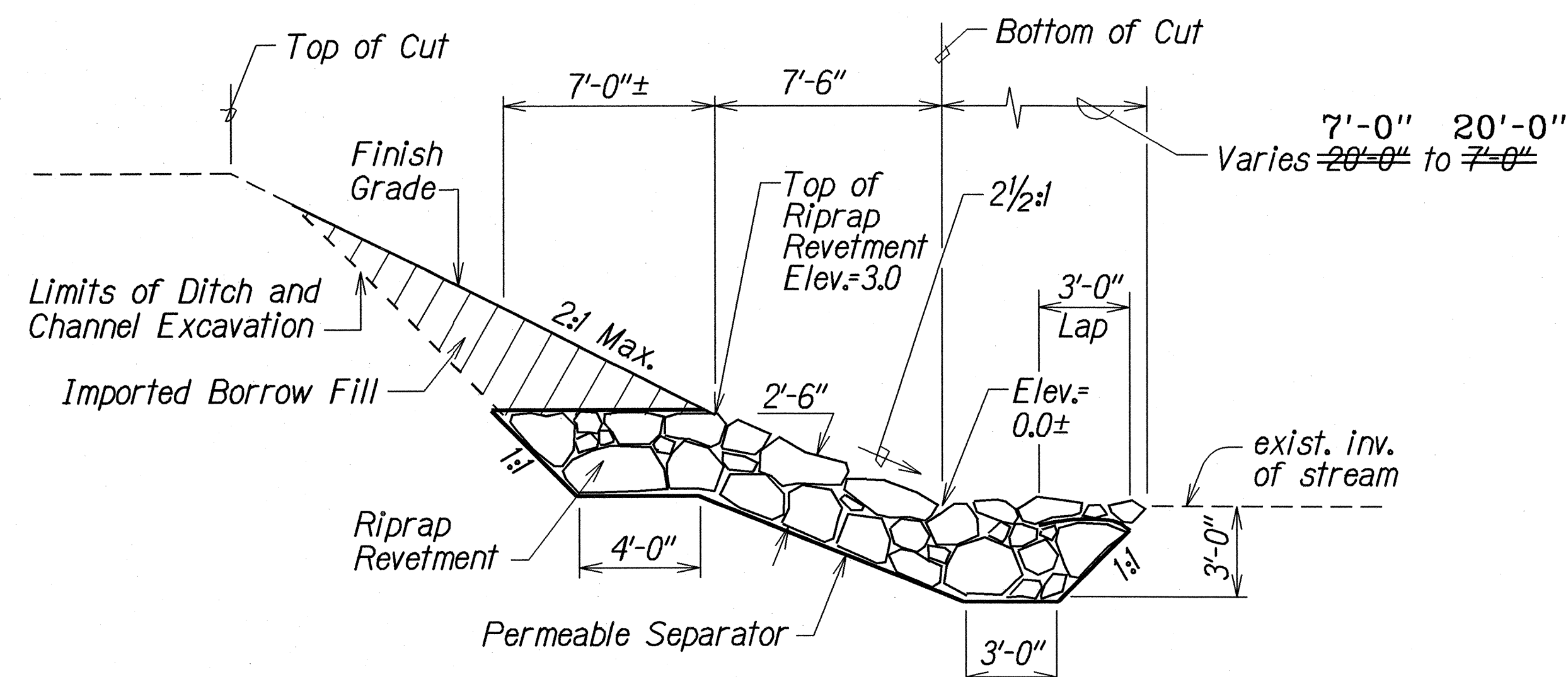
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	C.O.32	58



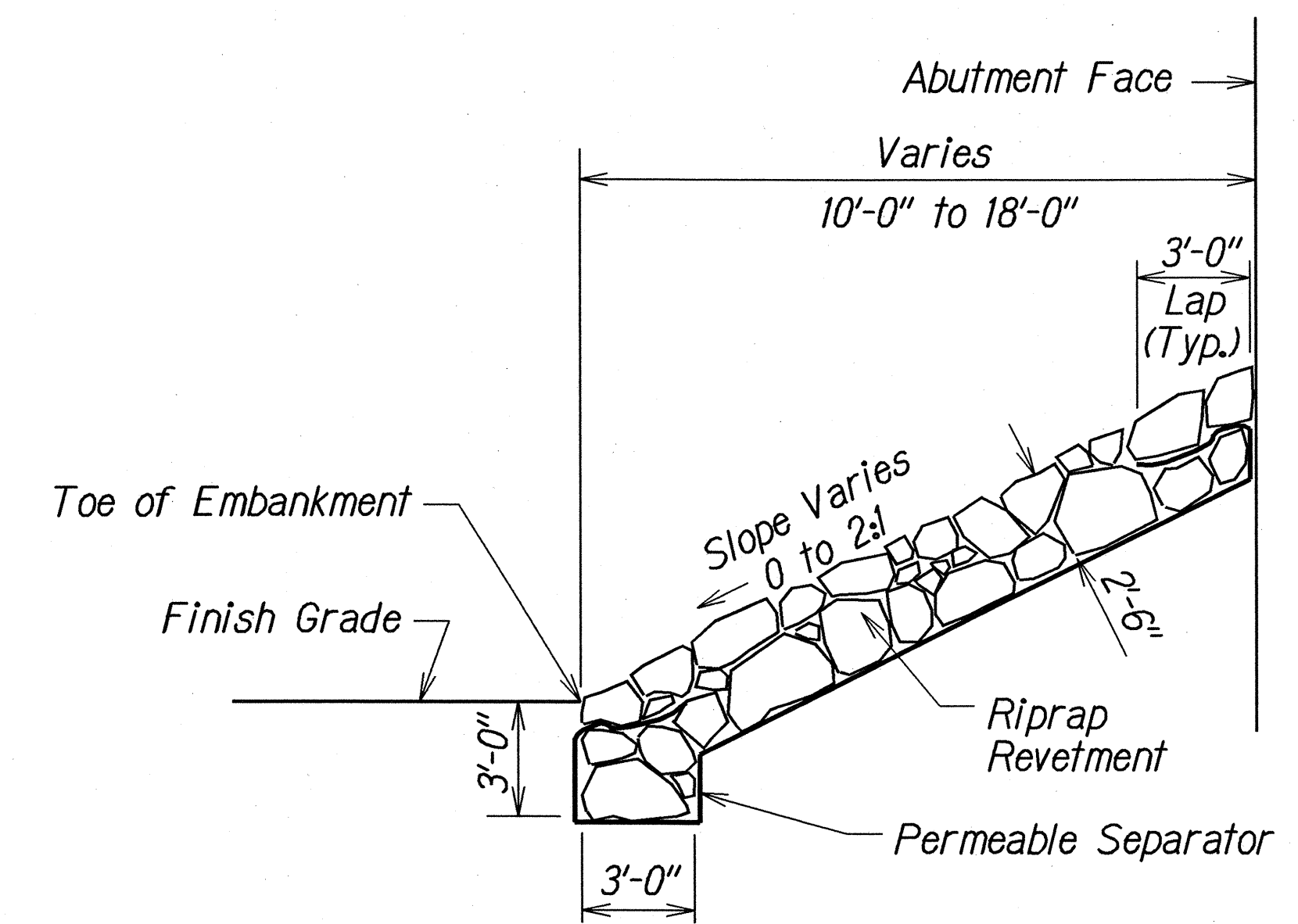
TYPICAL SECTION OF RIPRAP REVETMENT
DRAIN STA. 0+45 TO DRAIN STA. 1+00
 Scale: 1/4"=1'-0"



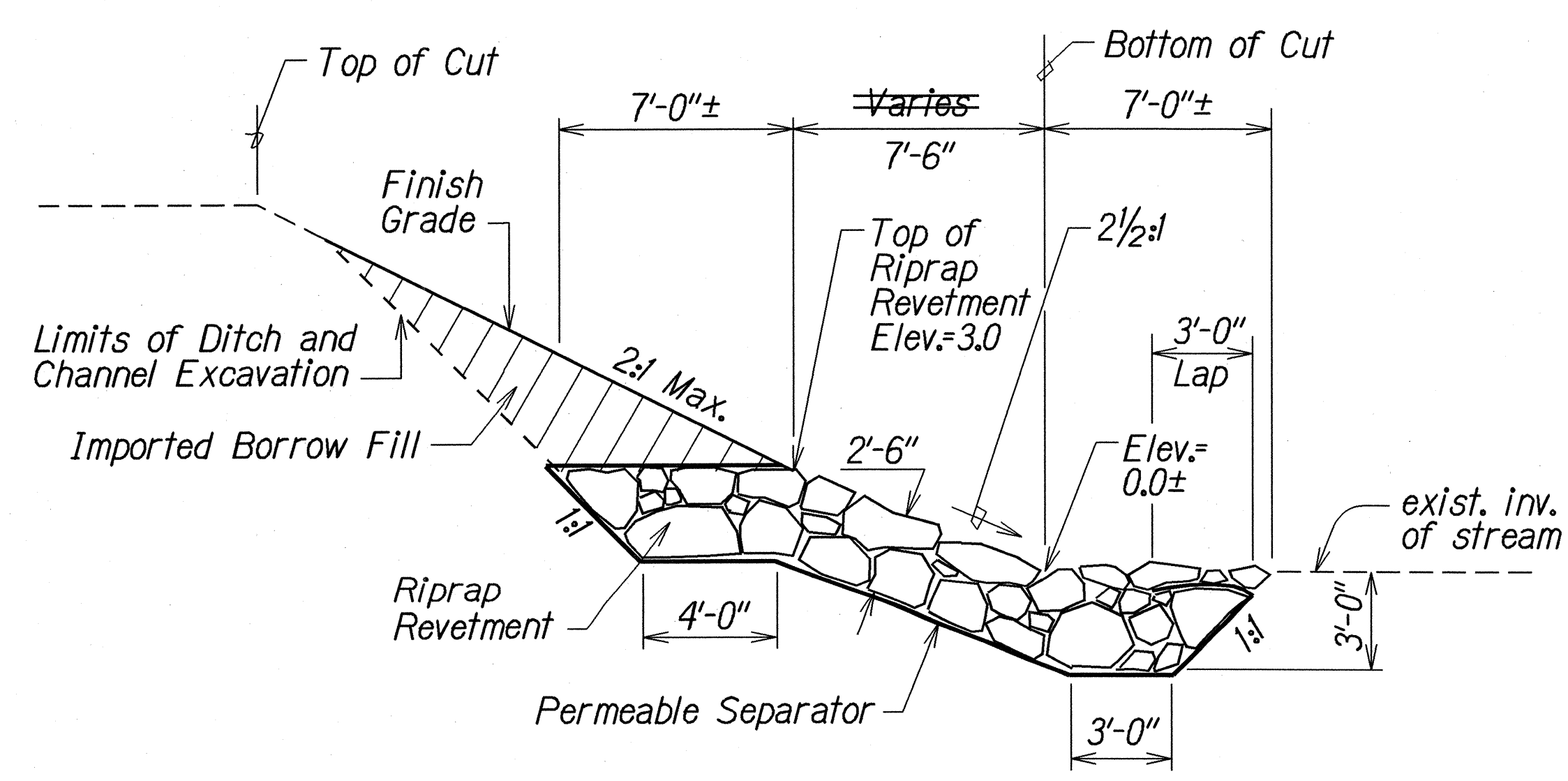
SECTION A
 Scale: 1/4"=1'-0" H7/H8



TYPICAL TRANSITION SECTION OF RIPRAP REVETMENT
DRAIN STA. 1+00 TO DRAIN STA. 1+30
 Scale: 1/4"=1'-0"



SECTION B
 Scale: 1/4"=1'-0" H7/H8



TYPICAL SECTION OF RIPRAP REVETMENT
DRAIN STA. 1+30 TO DRAIN STA. 2+17±
 Scale: 1/4"=1'-0"

LEGEND FOR AS-BUILT POSTINGS	
	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

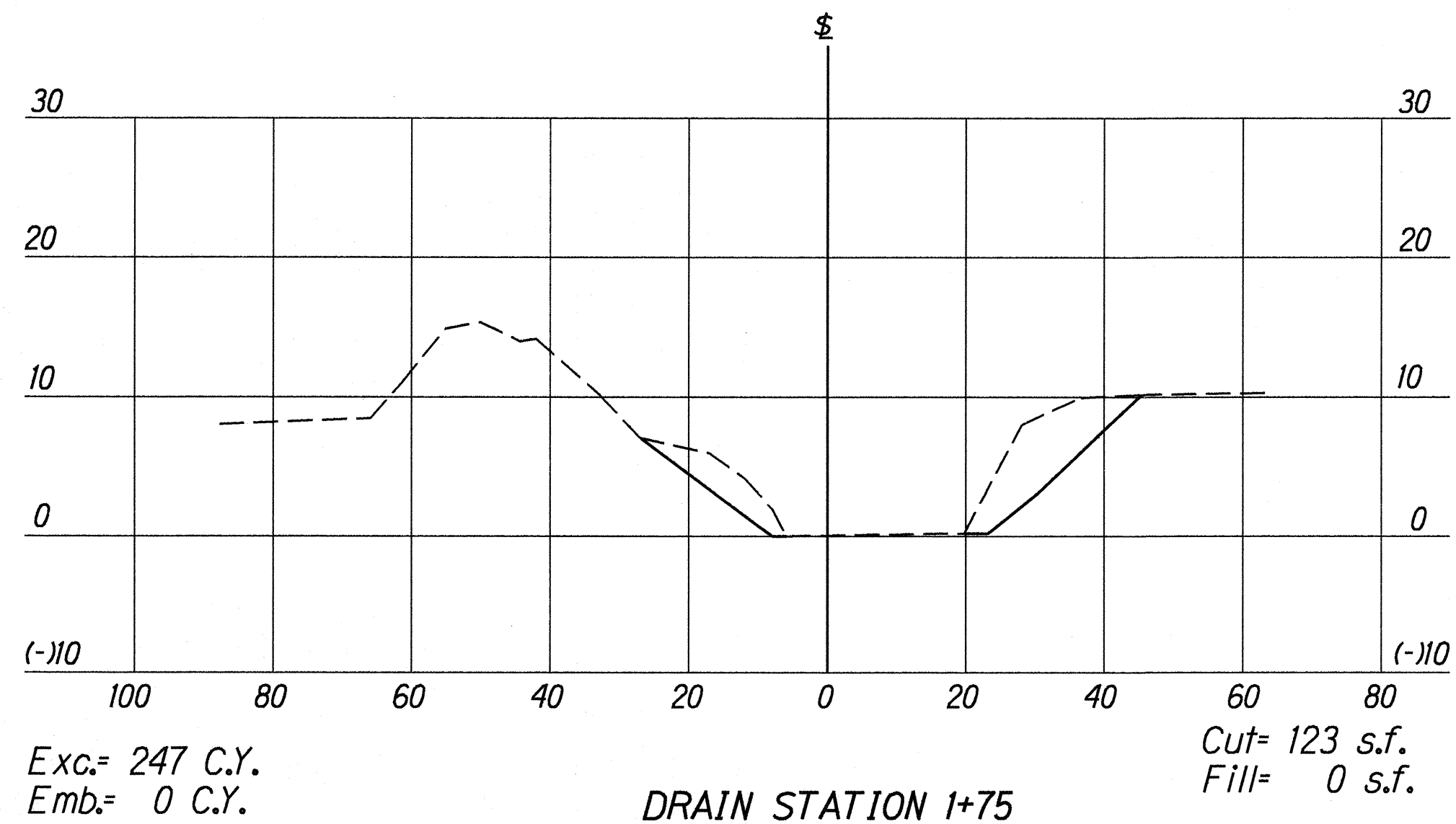
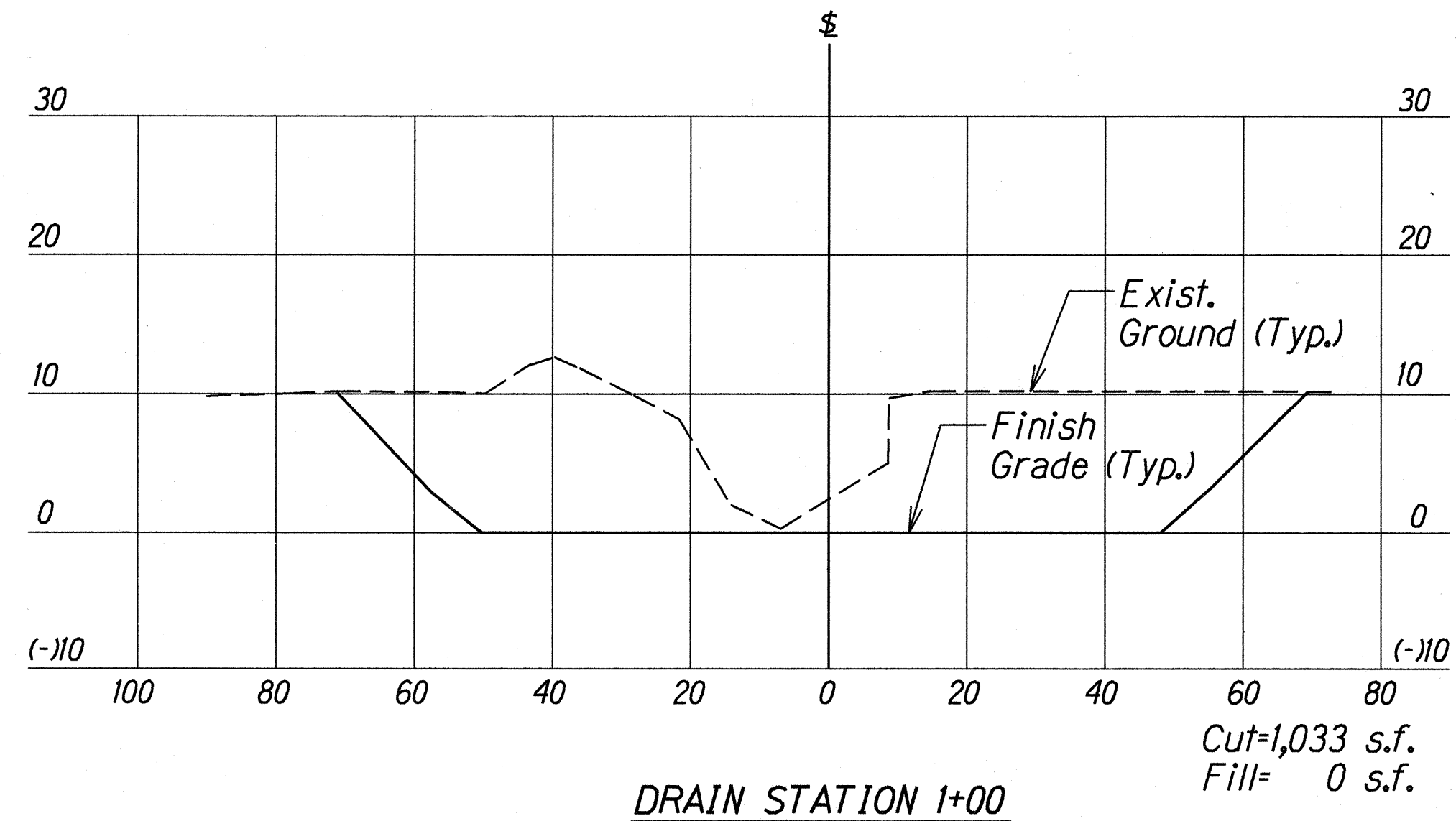
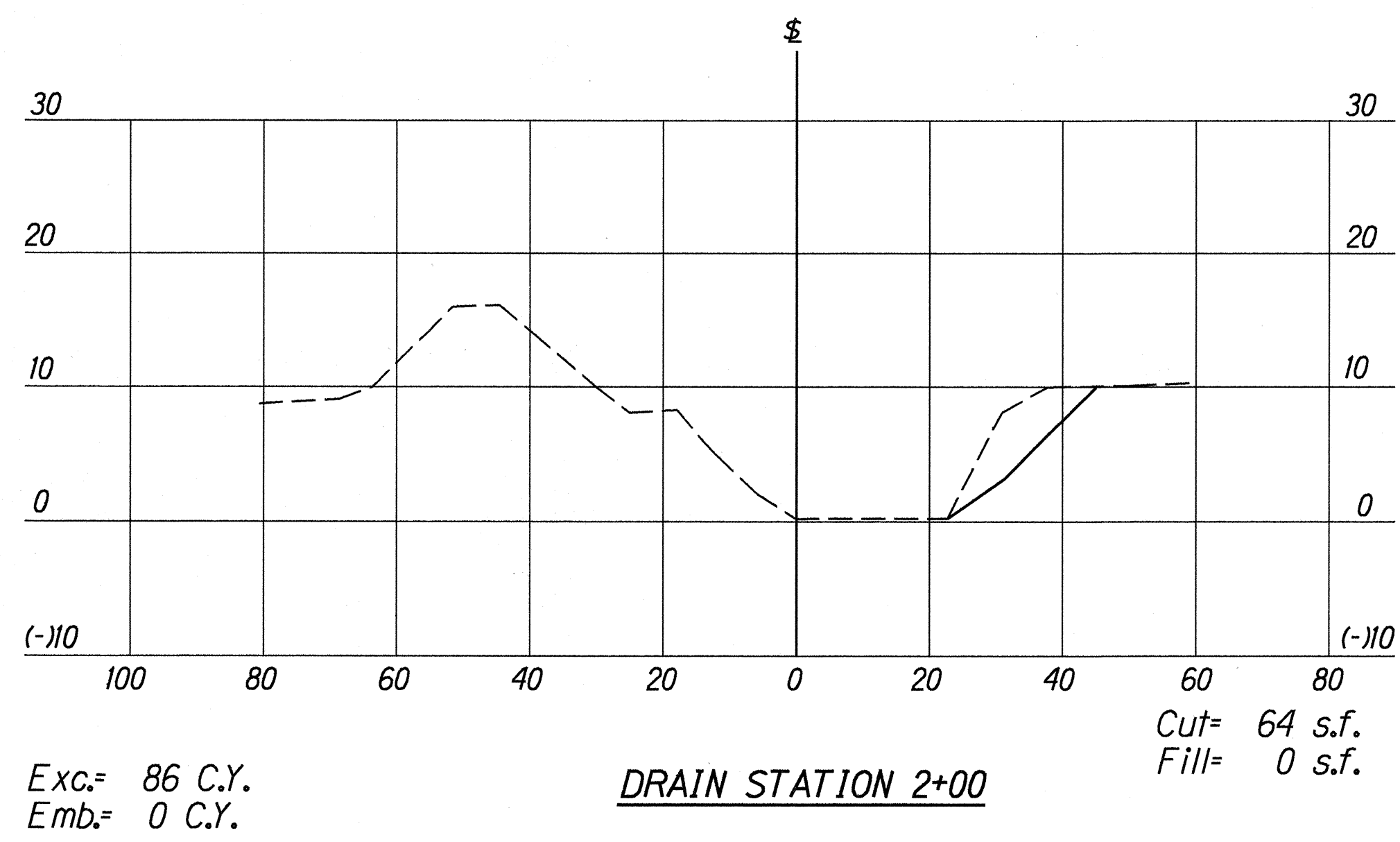
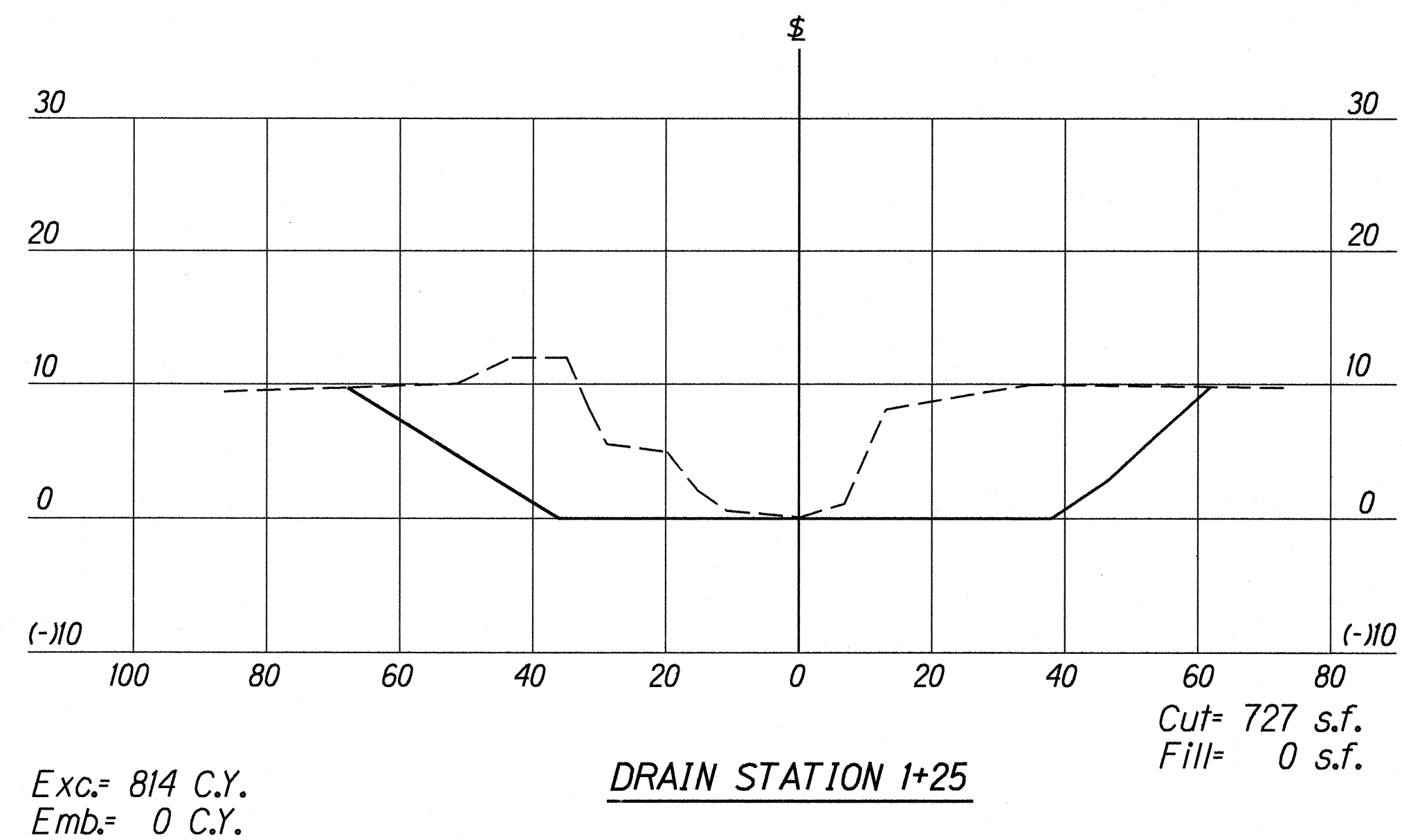
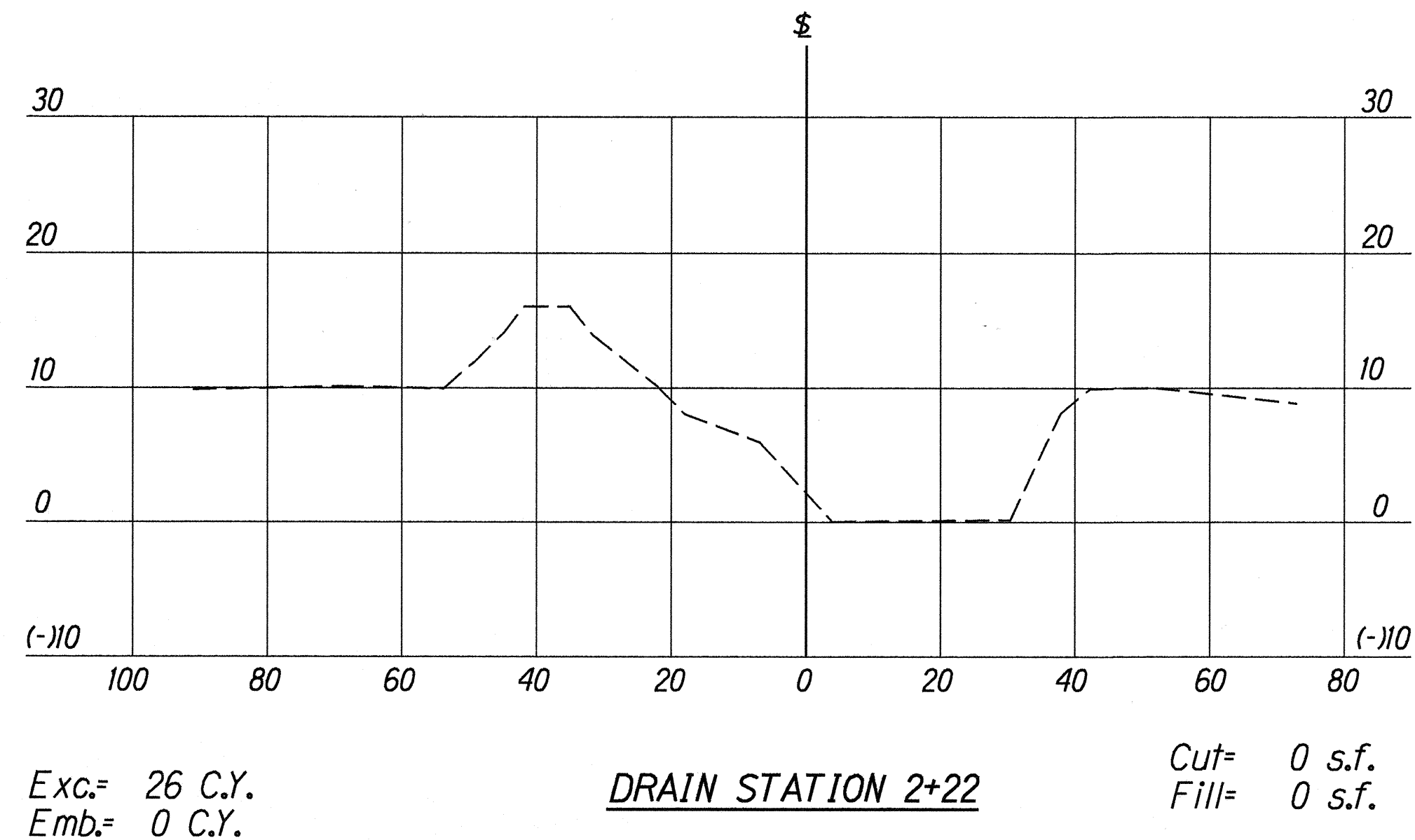
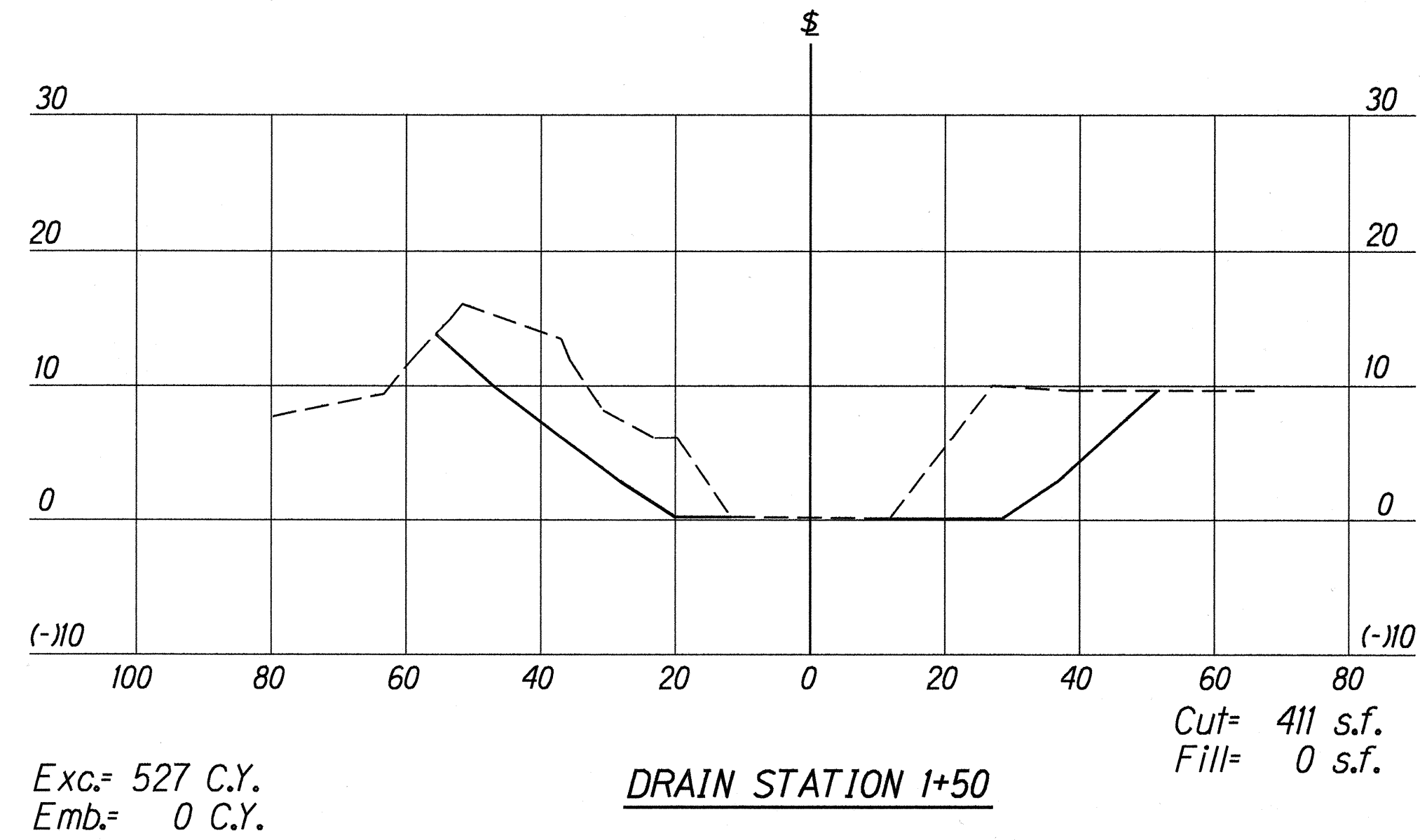
07/06/99	Revised Rip-rap details.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DRAINAGE DETAILS	
KAMEHAMEHA HIGHWAY	
Replacement of Malaekahana Bridge	
Project No. BR-083-1(27)	
Scale: As Noted	Date: Feb. 1998
SHEET No. H8 OF 9 SHEETS	

ORIGINAL PLAN	DATE
DESIGNED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
DESIGNED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	

"AS-BUILT"

C.O. 32

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(27)	1998	33	58



CROSS SECTIONS ALONG $\pm$ DRAIN STATION

Scale: Horiz. 1" = 20'
Vert. 1" = 10'

DATE: 5/15/98
SURVEY PLOTTED BY: [Signature]
DRAWN BY: A. Manuwa
DESIGNED BY: C. Matsuda
CHECKED BY: [Signature]
ORIGINAL PLAN: [Signature]

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE CROSS SECTIONS
KAMEHAMEHA HIGHWAY
Replacement of Malaekahana Bridge
Project No. BR-083-1(27)

Scale: As Noted
SHEET No. H9 OF 9 SHEETS

Date: Feb. 1998