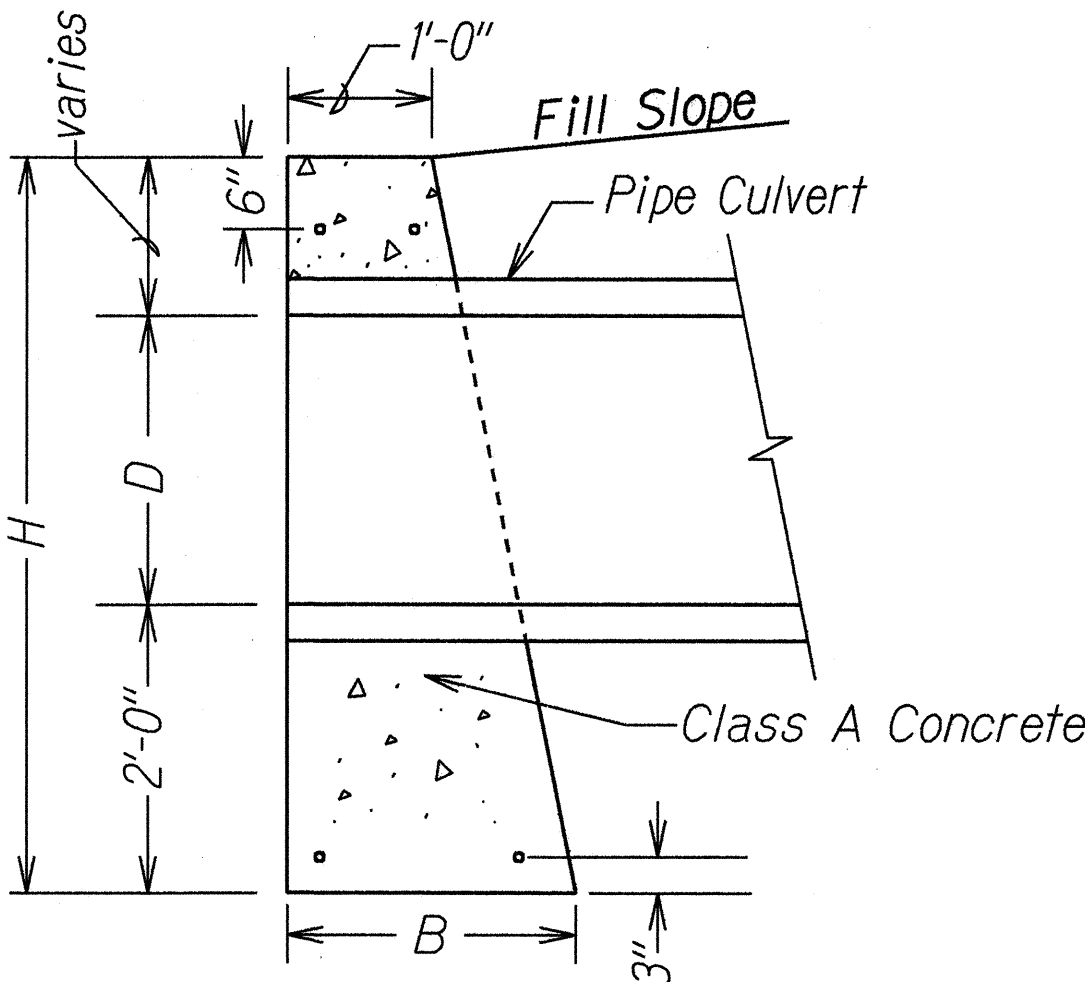
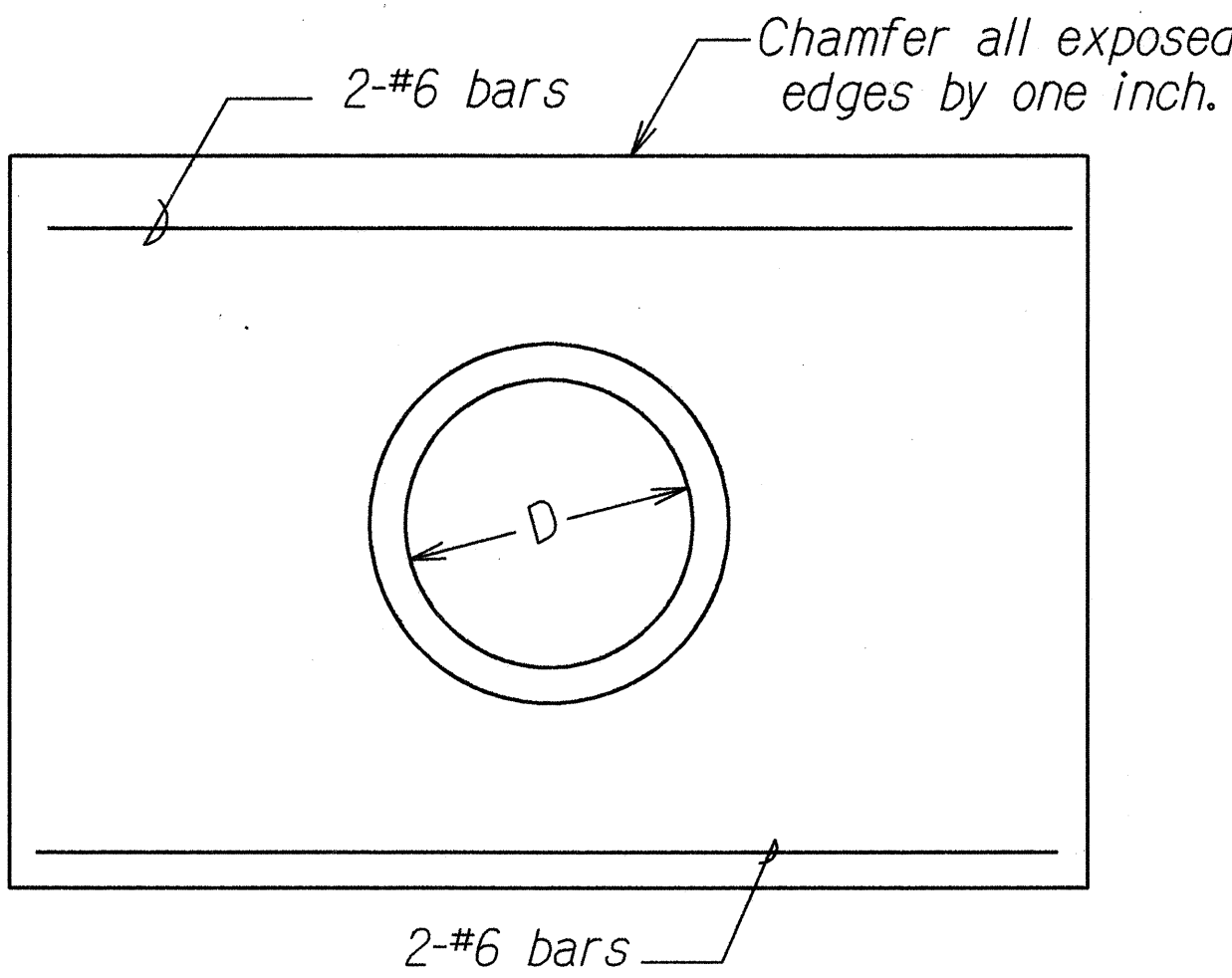


NOTES:

- Modified Concrete Headwall shall generally conform with all the dimensions shown in Standard Plan H-16.
- Fill slope shall be ten (10) percent or flatter.



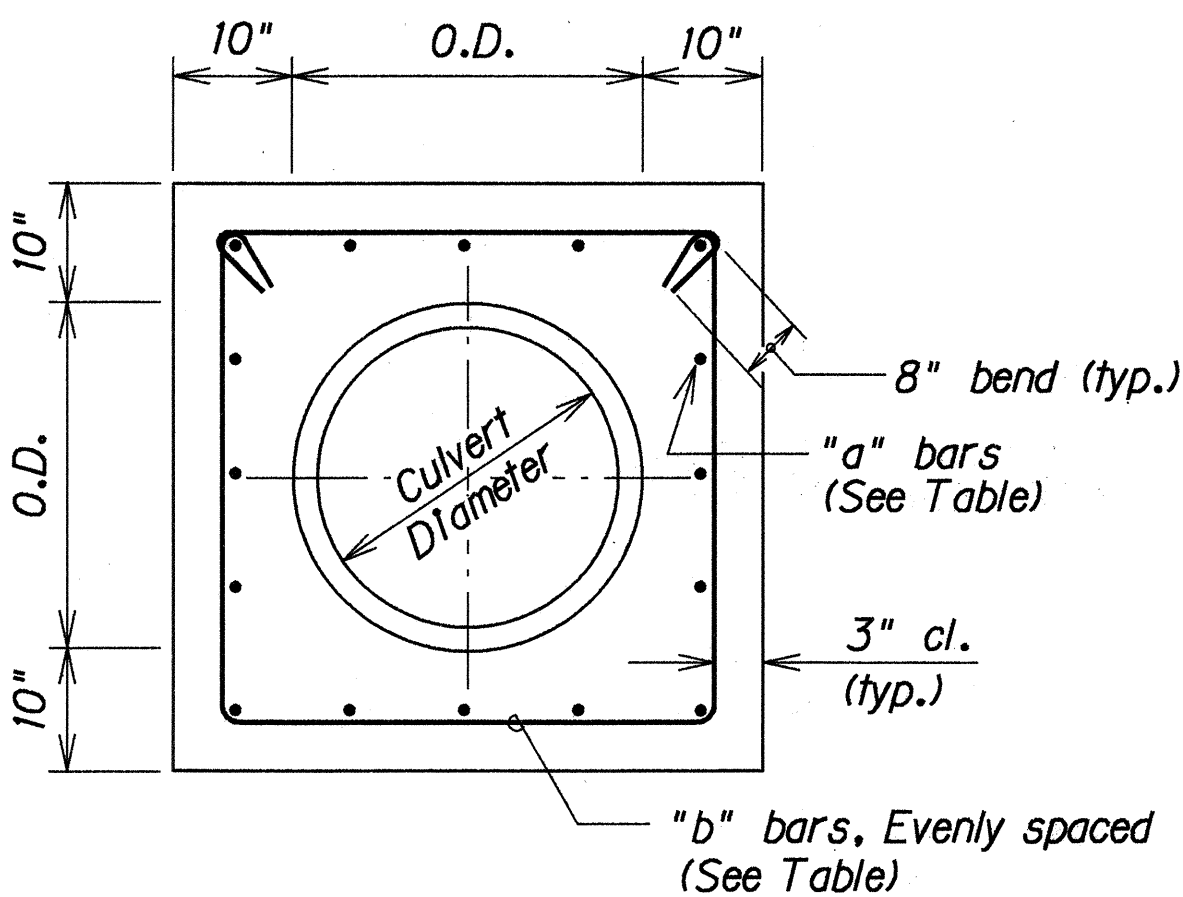
SECTION
Scale: 3/4"=1'



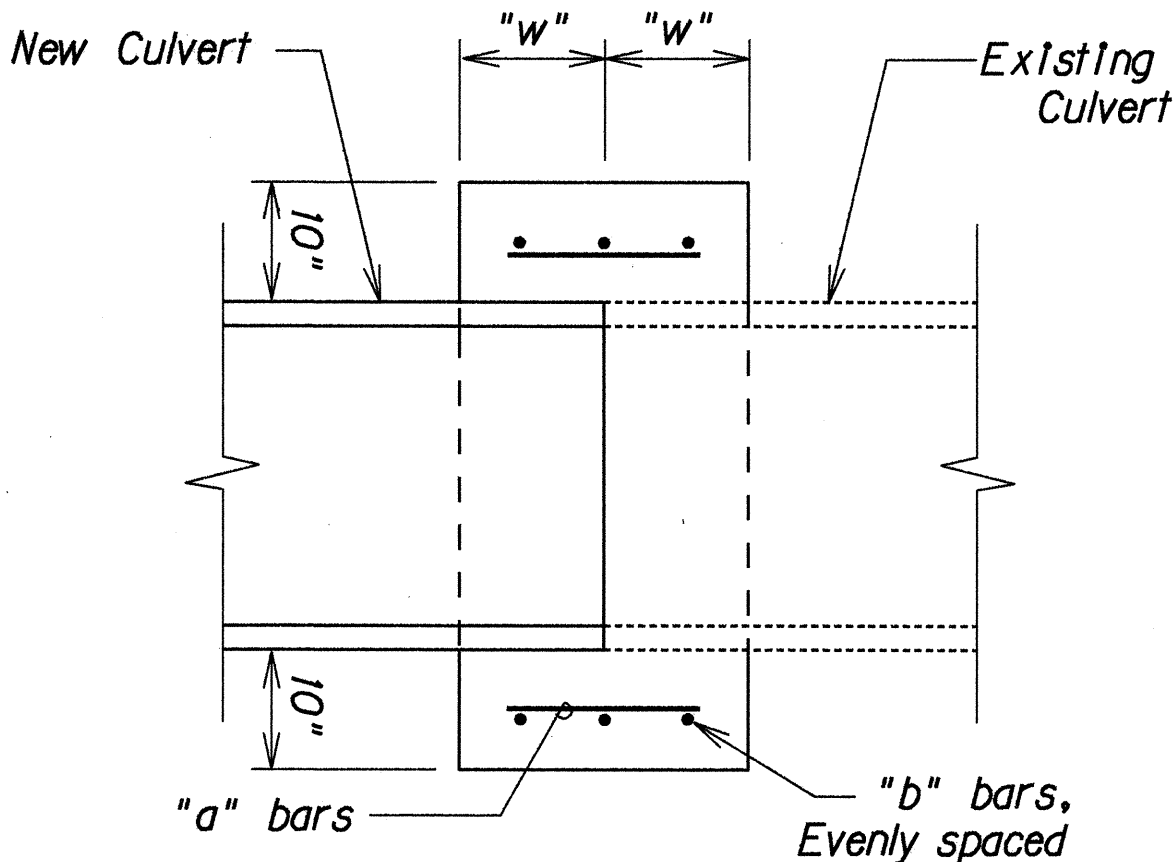
ELEVATION
Scale: 3/4"=1'

MODIFIED CONCRETE HEADWALL

Scale: 3/4"=1'



ELEVATION

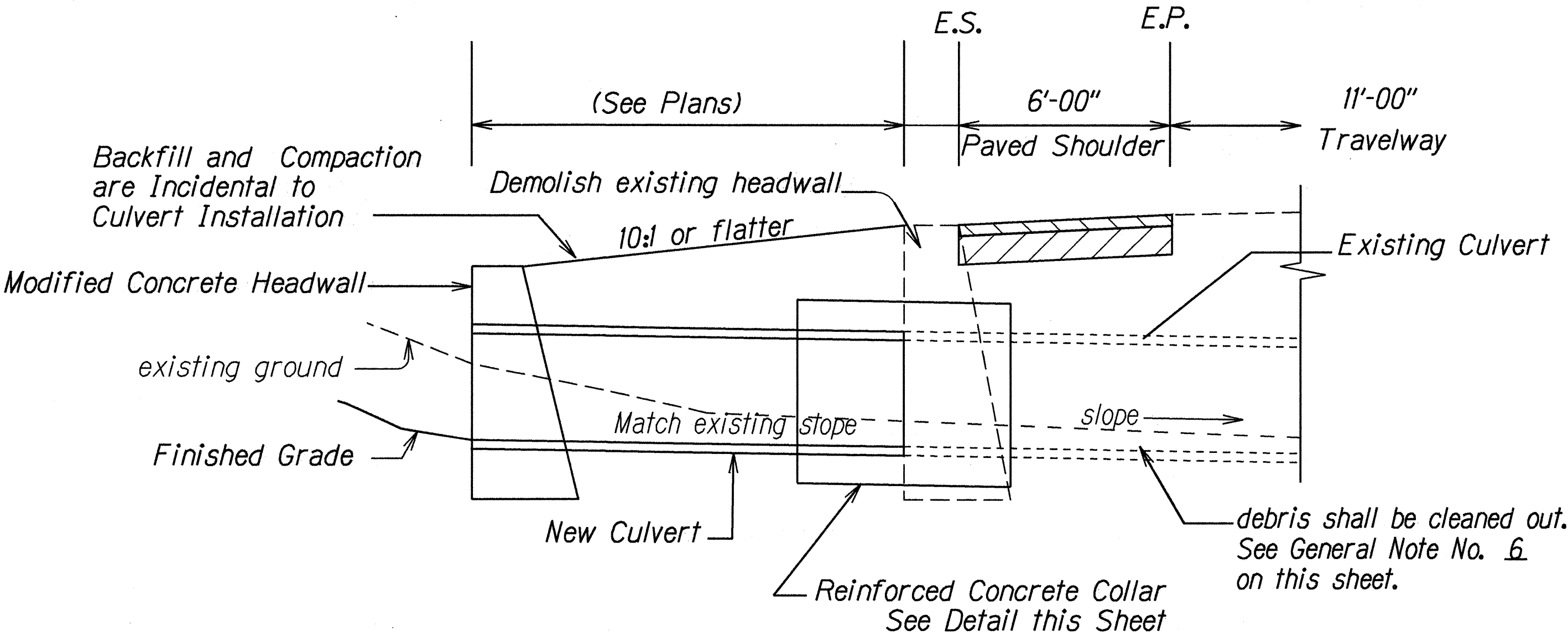


SECTION

Culvert Diameter	"a" bars	"b" bars	"w"
18" to 30"	#4 @ 9"	3- #4	12"
36" to 48"	#5 @ 9"	4- #4	15"

Note: Reinforcing Steel for Concrete Collar shall conform to the requirements of ASTM 615-Grade 60.

TYPICAL DETAILS OF REINFORCED CONCRETE COLLAR



TYPICAL CULVERT EXTENSION DETAIL

Scale: 1/2"=1'

MISCELLANEOUS DRAINAGE NOTES:

- Existing drainage system will be functional at all times during construction. Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance of flow, the cost of which shall be incidental to the various contract items.
- Demolishing, removing, and/or disposing portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to various contract items.
- Contractor shall verify the locations of all culverts in the field. Any culvert damaged during construction shall be repaired or replaced by the Contractor at his expense.
- Concrete for headwalls and other structures shall be Class "A".
- Inlet and Outlet conditions shall be graded to permit free flow of run-off or as directed by the Engineer. Grading shall be to the satisfaction of the Engineer. Above work shall be considered incidental to the various contract items.
- Culvert extension shall include complete removal of any debris that maybe present in the existing culvert. Cleaning of culverts shall not be paid for separately but shall be considered incidental to culvert extension.
- The Contractor shall provide bedding materials for culvert, Class "C" bedding. Payment for this work will not be paid for separately but will be considered incidental to the appropriate culvert pay items.
- The Contractor's attention is directed to Section 102.05 of the Standard Specifications. It is anticipated that borrow materials will be used to backfill the new drainage structures; culverts, etc. Payment for this work will be considered incidental to various culvert pay items.
- Reinforcing Steel for Concrete Structures will not be paid for separately but shall be considered incidental to Contract Item 503.0020.
- Location and elevations of new structures must be laid out in the field for the Engineer's approval.
- Chamfer all exposed edges by 1".
- Quantities are approximate only. Contractor shall conduct an independent survey of worksites to verify and validate pay quantities.
- Reinforced concrete collar will not be paid for separately but shall be considered incidental to installation of culverts.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS AND NOTES

KAMEHAMEHA V HIGHWAY,
GUARDRAIL & SHOULDER IMPROVEMENTS,
Kamiloloa to Kapuokoolau
Federal Aid Project No. STP-0450(7)

Scale: As Shown Date: March, 1997

SHEET No. 1 OF 1 SHEETS

DESIGNED BY	DATE
TRACED BY	4-1-97
NOTED BY	
CHECKED BY	