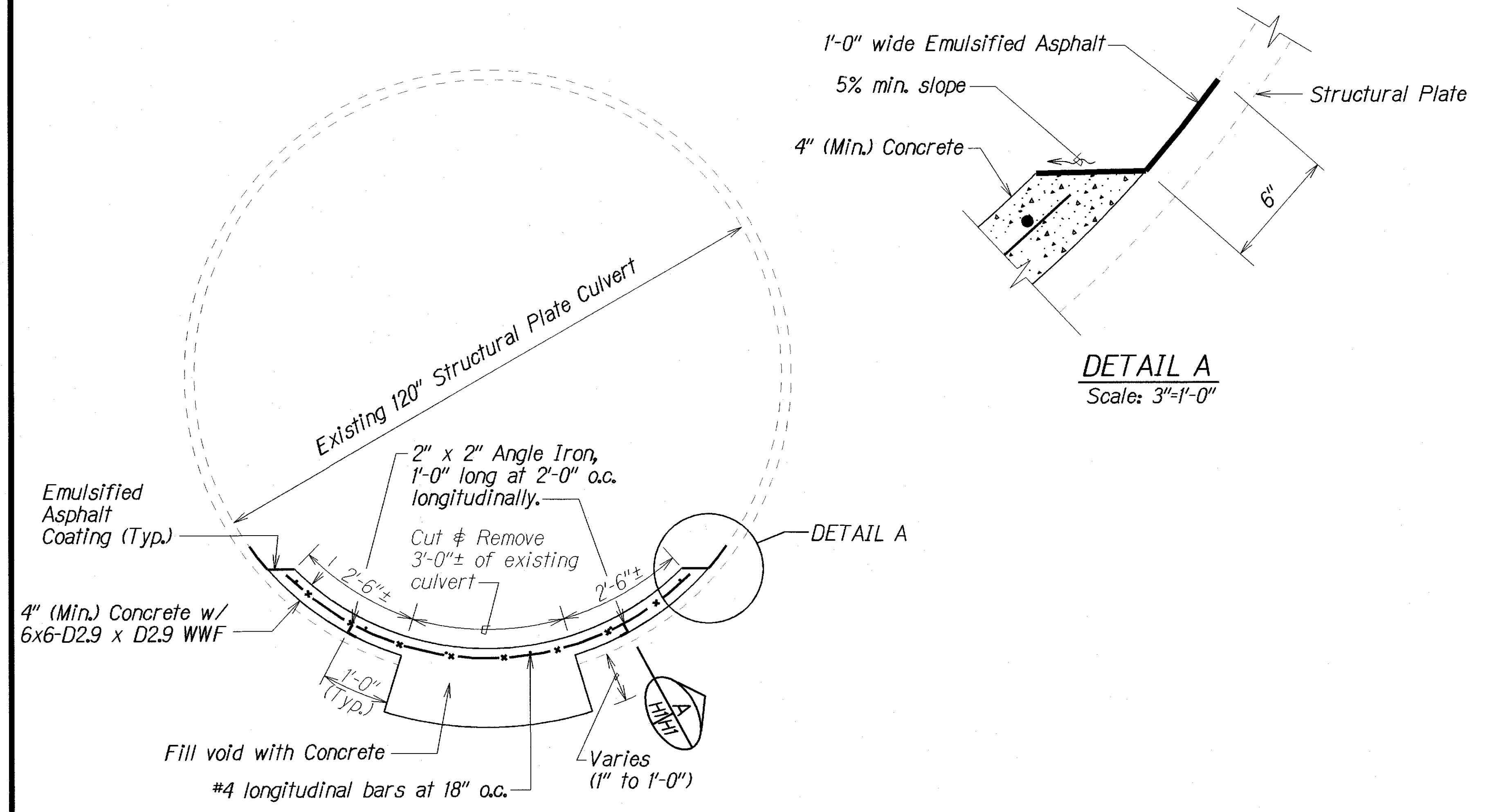


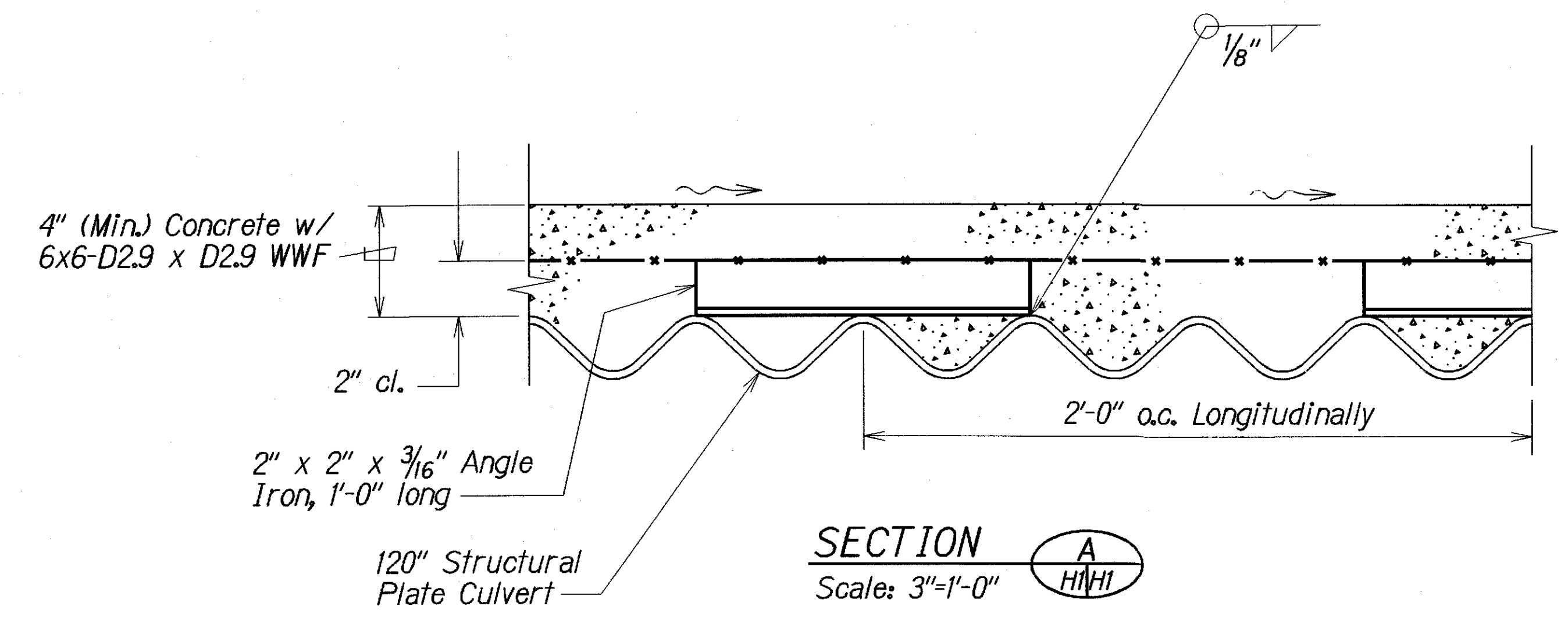
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIA-01-99	2001	6	7

DRAINAGE NOTES

1. The culvert surface shall be cleaned of all dirt, rust, scale, and other foreign materials. Corroded sections shall be cut and removed, not to exceed 50-feet in length.
2. The Contractor shall provide adequate bracing for the culvert. The Contractor shall, at his own expense, consult with a Geotechnical Engineer to determine the required amount of bracing based on his construction methodology.
3. Angle irons shall be welded to the structural plate culvert at two-foot on-centers longitudinally. Welded wire fabric steel reinforcement shall be placed two inches above the crest of the corrugations. The welded wire fabric shall be lapped a minimum of six inches.
4. #4 rebar shall be placed longitudinally at 18-inches on-center and shall be lapped a minimum of 18-inches between concrete pours.
5. The culvert surface to be in contact with the epoxy shall be clean and dry. The epoxy bonding agent shall be applied just before the placement of the concrete. Any excess bonding agent that collects in pockets shall be removed.
6. The concrete for the culvert lining shall have a minimum 28-day strength of 4,000 psi. Coarse aggregate no. 67 (3/4 inch to No. 4) shall be used. The total free water shall not exceed 285 pounds per cubic yard of concrete and the water cement ratio shall not exceed 0.45. The slump of concrete shall be 3 to 5 inches. The Contractor shall proportion the concrete lining mix to provide a workable mix of uniform composition and consistency. Water-reducing, water-reducing and retarding, or high range water reducing admixtures may be used as needed to achieve the desired slump and workability. No water shall be added at the jobsite.
7. Voids under the structural plate shall be filled with concrete. The concrete shall be troweled to form a smooth, dense surface finish.
8. The concrete culvert lining shall be scored 3/4-inch deep laterally along the crest of the corrugations, 20 feet (max) on-center.
9. Apply one-foot wide coating of Emulsified Asphalt to the score lines on the existing concrete lining, to both edges of the new concrete lining, and to the 3/4-inch scores after the new concrete lining has cured. The finished coating shall be a continuous film free of voids, gaps or pin holes.
10. All construction joints shall be perpendicular to the surface and to the full depth of the concrete lining.



TYPICAL SECTION OF 120" CULVERT
Scale: 3/4"=1'-0"



SECTION A
Scale: 3"=1'-0"

DETAILS OF 120" CULVERT LINING

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
DATE	_____
CHECKED BY	_____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

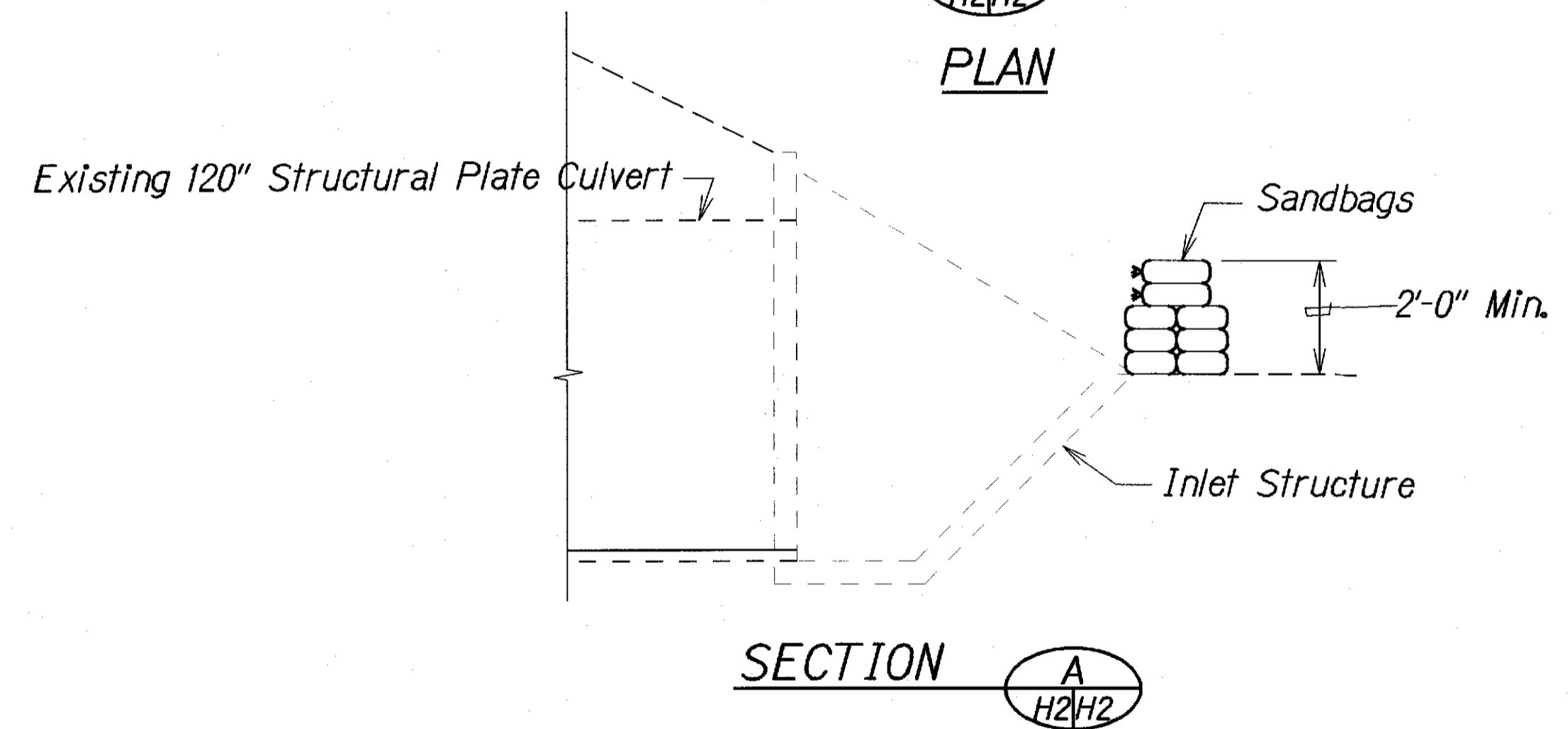
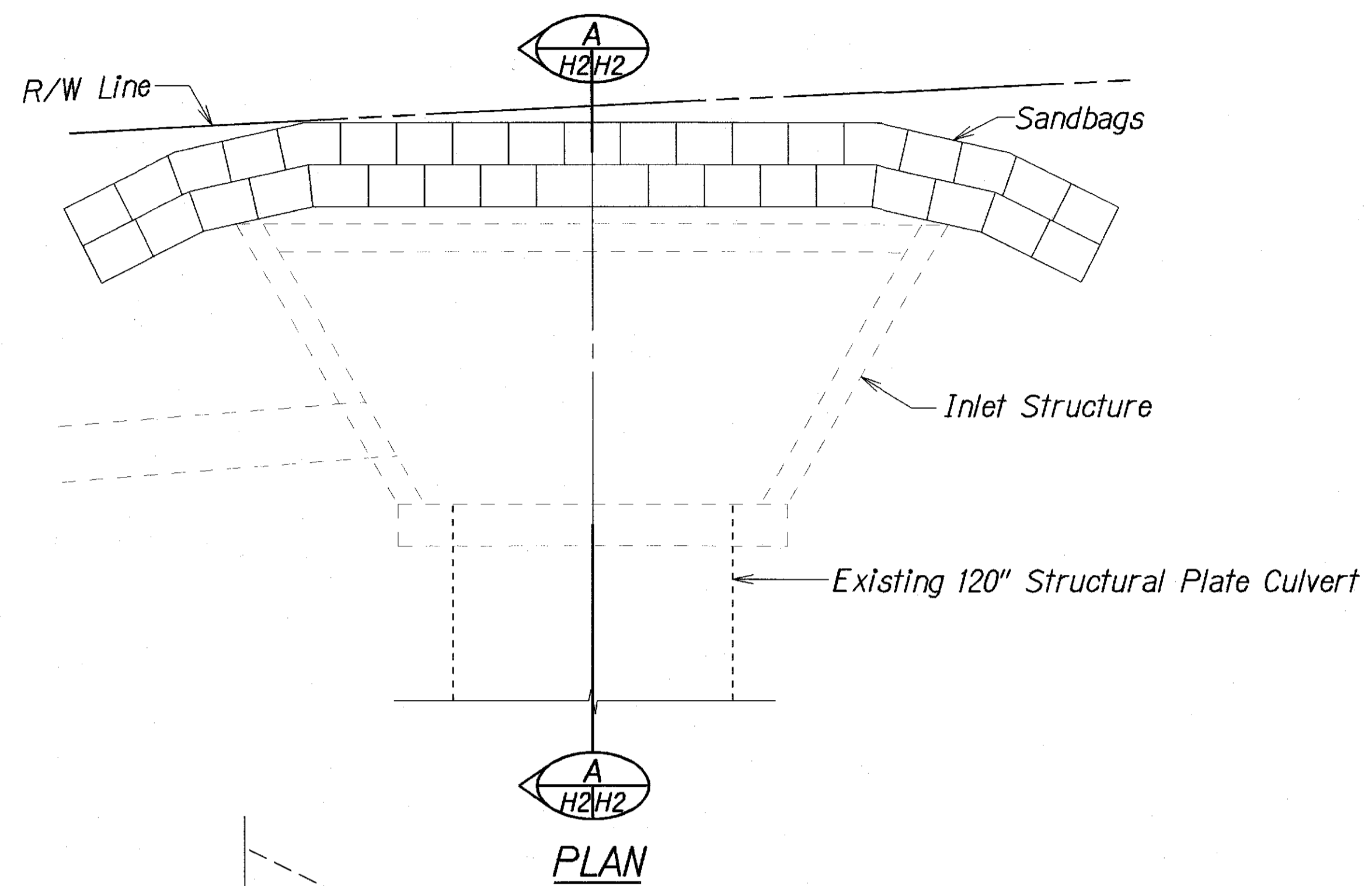
DRAINAGE DETAILS
INTERSTATE ROUTE H-1
DRAINAGE IMPROVEMENTS

Re-line 120" Culvert, Vicinity of Makakilo Interchange
Project No. HIA-01-99

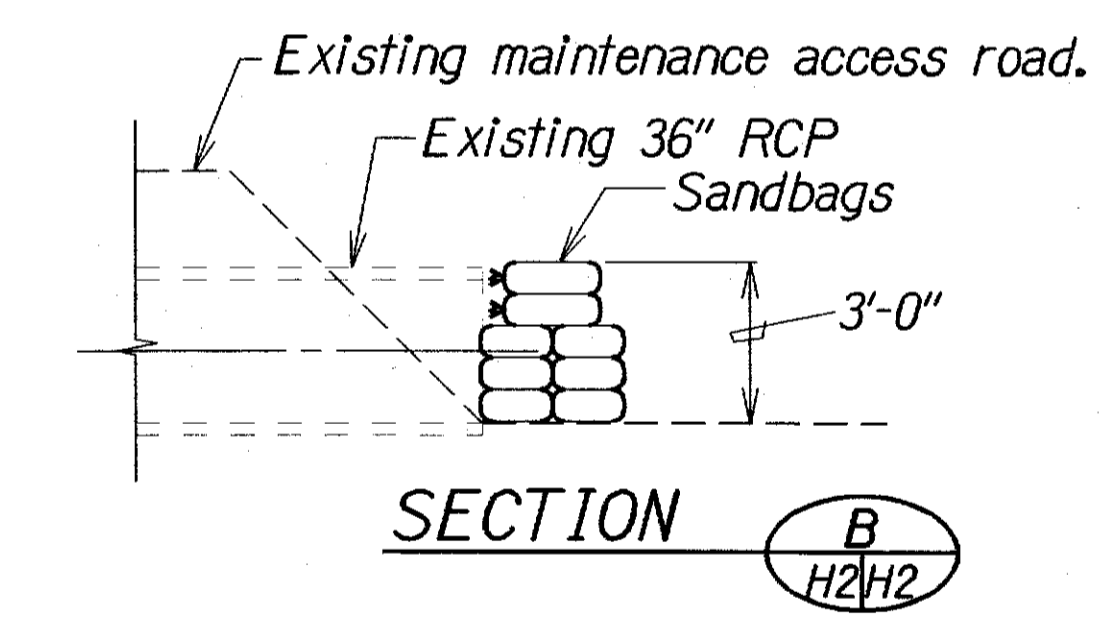
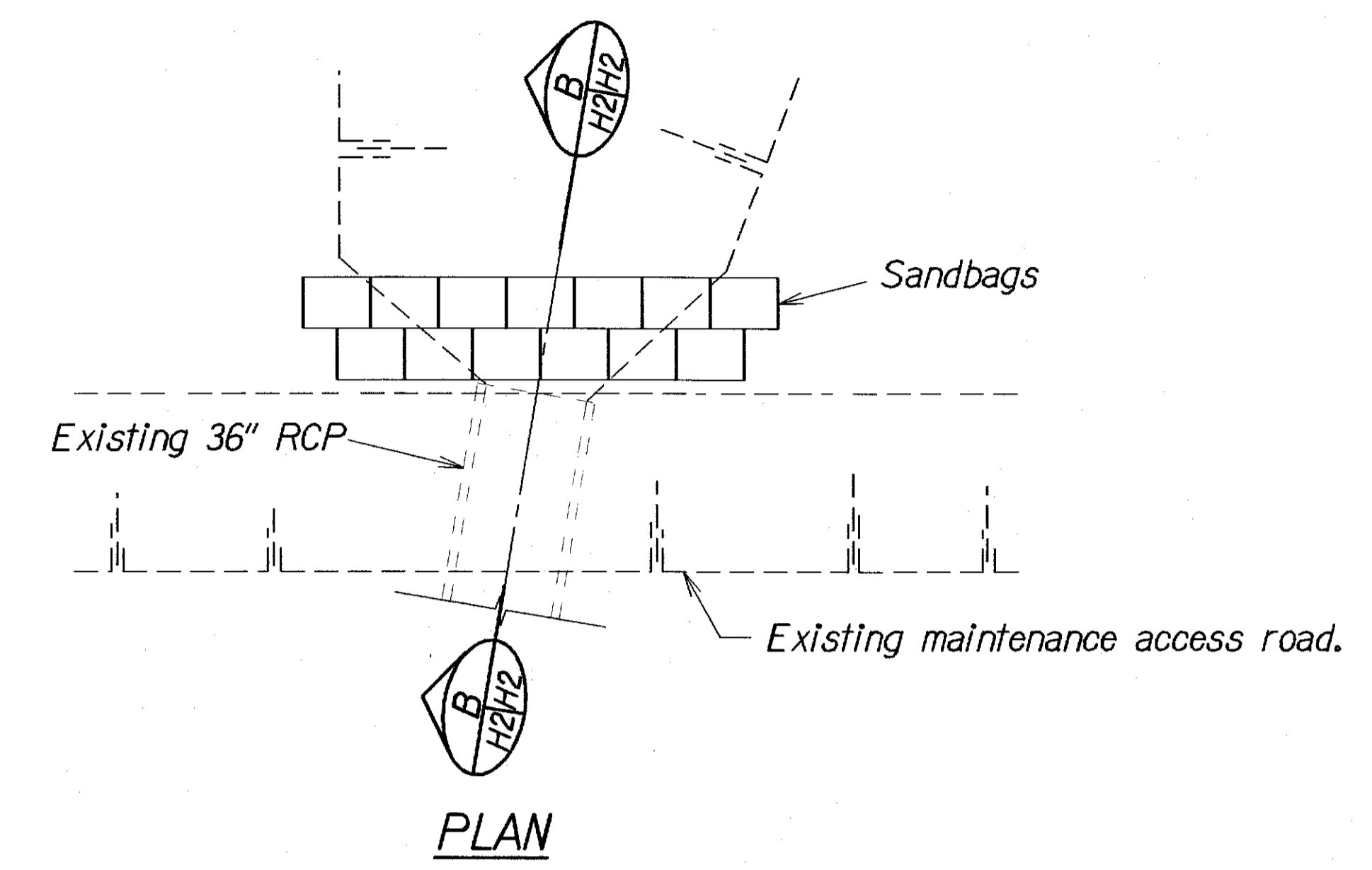
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SHEET No. HI OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H1A-01-99	2001	7	7



INLET AT 120" STRUCTURAL PLATE CULVERT



INLET AT 36" CULVERT

DETAIL OF STORMWATER RETENTION STRUCTURE AT CULVERT INLETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
NOTED BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
INTERSTATE ROUTE H-1
DRAINAGE IMPROVEMENTS

Reline 120" Culvert, Vicinity of Makakilo Interchange
Project NO. H1A-01-99
Scale: 1/4"=1'-0" Date: Sep, 2000

SHEET No. H2 OF 2 SHEETS