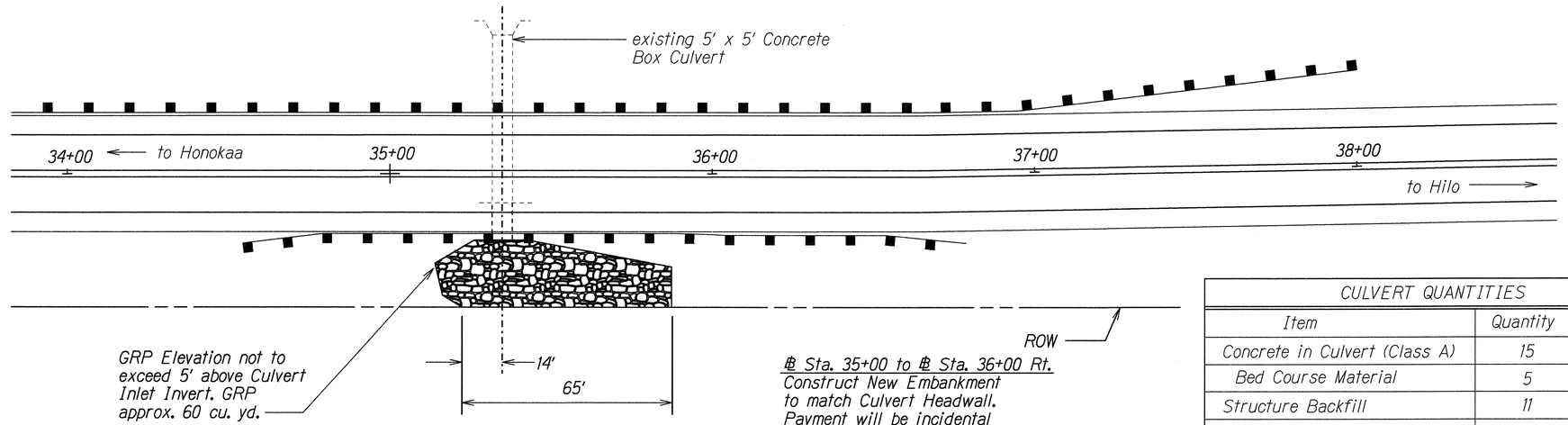
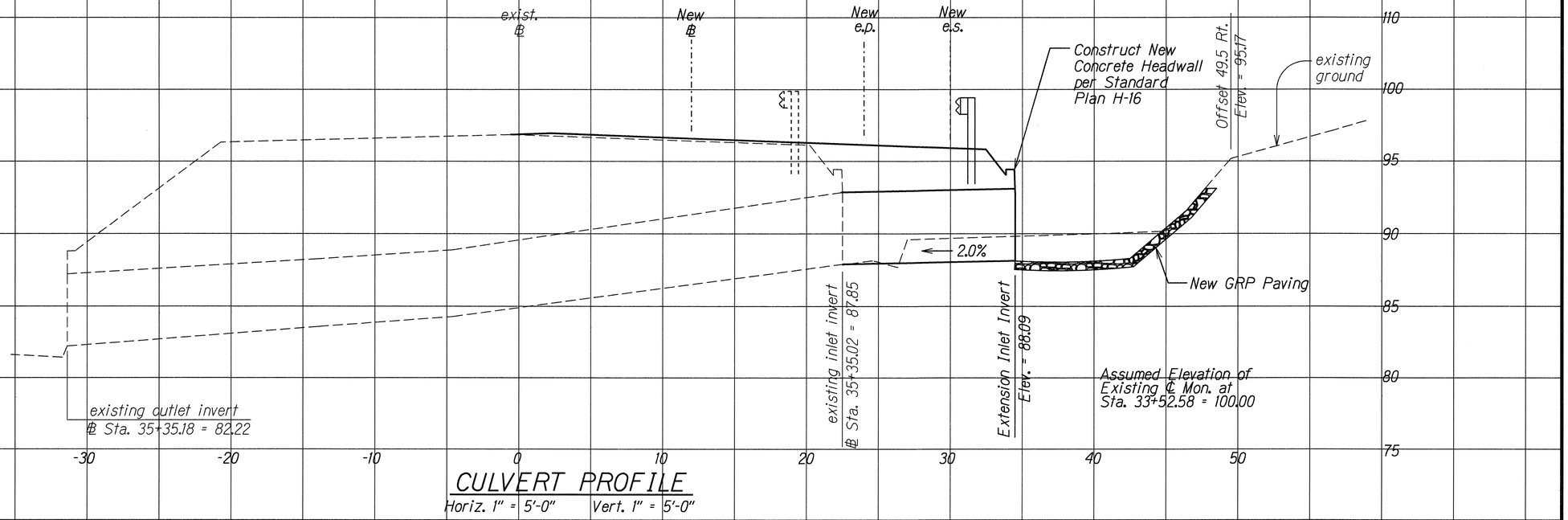
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	19H-01-00M	2000	15	19



CULVERT QUANTITIES		
Item	Quantity	Unit
Concrete in Culvert (Class A)	15	Cu. Yd.
Bed Course Material	5	Cu. Yd.
Structure Backfill	11	Cu. Yd.
Structure Excavation	26	Cu. Yd.
Borrow Excavation	132	Cu. Yd.
Concrete in Headwall (Class A)	8	Cu. Yd.

CULVERT INLET GRP DETAIL

Scale: 1" = 20'

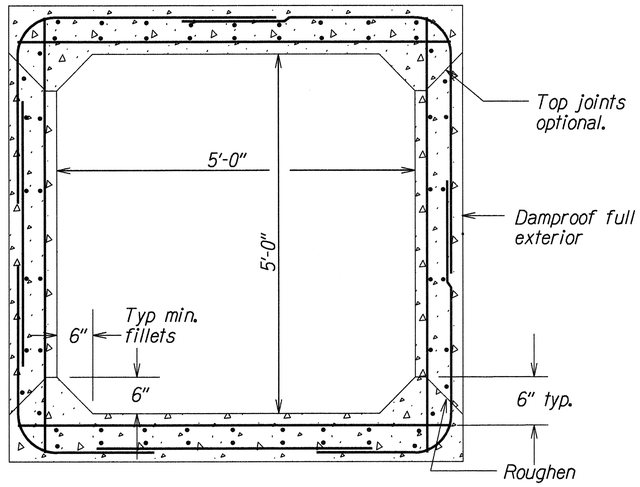


CULVERT PROFILE

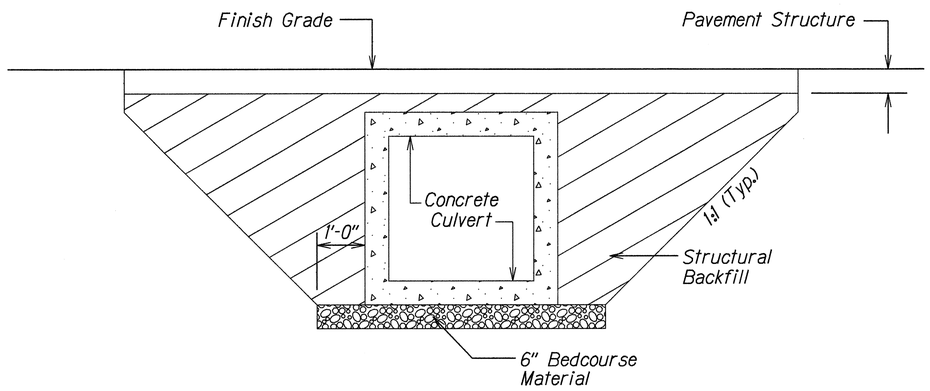
Horiz. 1" = 5'-0" Vert. 1" = 5'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY X	
NOTE BOOK 2hbred	TRACED BY X	
No. dgn	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAI'I	HAW.	19H-01-00M	2000	16	19



Typical Culvert Extension Cross Section
Scale: 1" = 1'-0"



Typical Culvert Trench Detail
Scale: None

NOTES FOR CONSTRUCTION

1. Contractor shall prepare and submit, for review and acceptance, design plans for the culvert shown.
   - A. The design of the Culvert shall meet or exceed AASHTO HS-20 loading criteria with less than 2 feet of cover.
   - B. Reinforcing steel is shown for illustrative purposes only. The Contractor shall submit design plans and, after review and acceptance by the Engineer, submit shop drawings stamped by a Structural Engineer, prior to beginning construction.
   - C. All construction shall conform to State Standards. Items include but are not limited to: Bedcourse for Culvert, Structural Excavation, Structural Backfill, Concrete Structures, Water Proofing, Reinforcing Steel, Erosion Control, Drainage Structures, Grouted Rubble Pavement, and any other methods or materials for the construction of the culvert extension and inlet.
2. Lap splices of reinforcing steel and all other reinforced concrete details shall meet ACI, AASHTO and State Design Standards.
3. Minimum thickness of side walls, top and bottom slabs shall be twelve (12) inches. Minimum concrete cover over reinforcing steel shall be three (3) inches.
4. Culvert may be a precast structure. The portion of the Culvert adjacent to and tied into the existing culvert with doweled-in reinforcing steel, shall be cast in place.
5. The cost of the design and layout work as well as the preparation and submission of Shop Drawings by the Contractor shall be considered incidental to the Contract Items.
6. Construct Concrete Headwall per Standard Plans H-16.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY JL	
	TRACED BY	
	DESIGNED BY JL	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CULVERT EXTENSION DETAILS

HAWAII BELT ROAD
EMERGENCY REALIGNMENT
VICINITY OF OPEA STREAM
PROJECT NO. 19H-01-00M

Scale: Noted Date: March, 2000

SHEET No. 2 OF 2 SHEETS