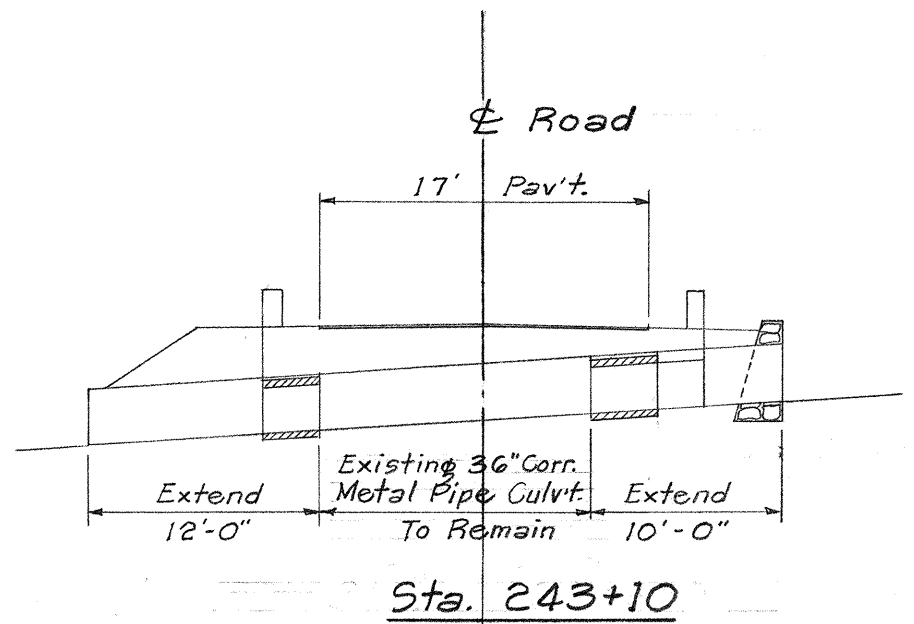
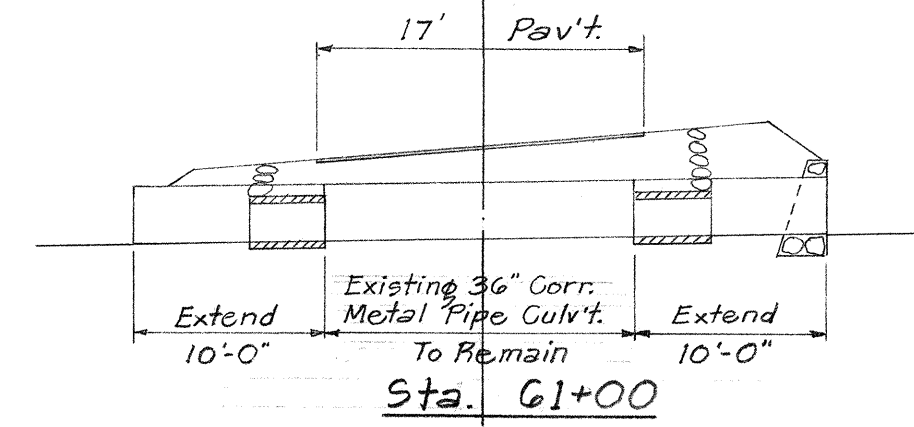


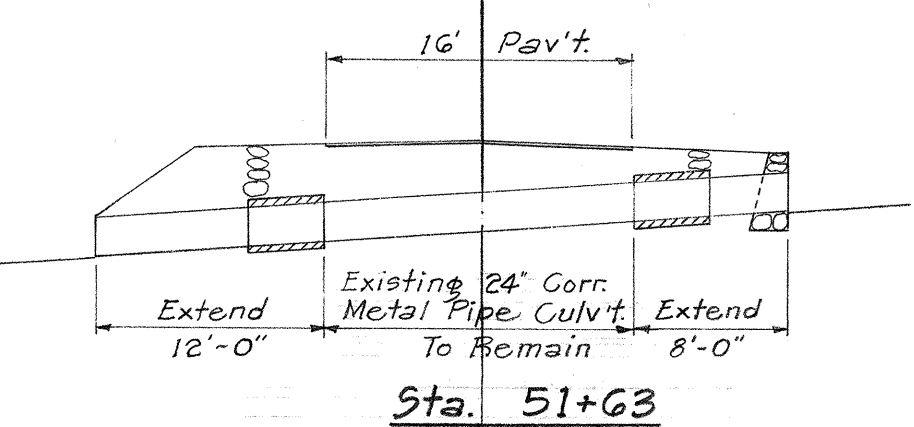
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	19DE-01-68	1968	5	13



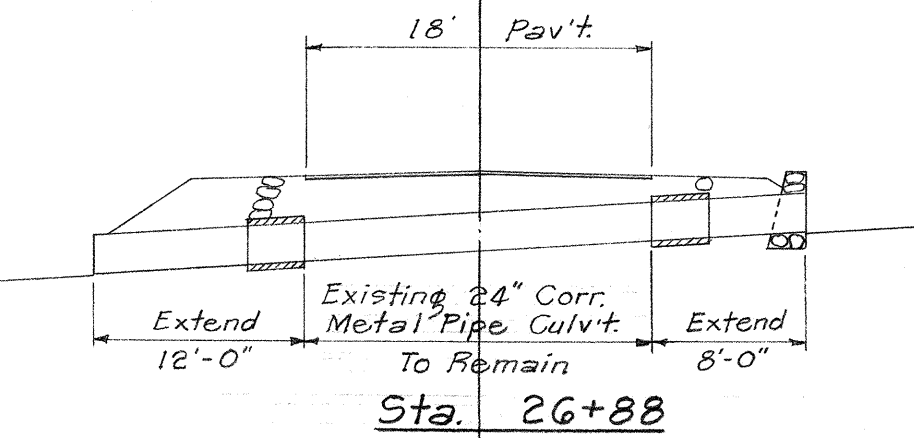
Sta. 243+10 - Remove existing 30" Circ. Conc. Pipe and 30" Corr. Metal Pipe and extend 36" Corr. Galv. Metal Pipe Culvert 22 lin. ft. (12 Ga.) 1-CRM Headwall CRM = 2.72 c.y. Structure Exc = 13.3 c.y.



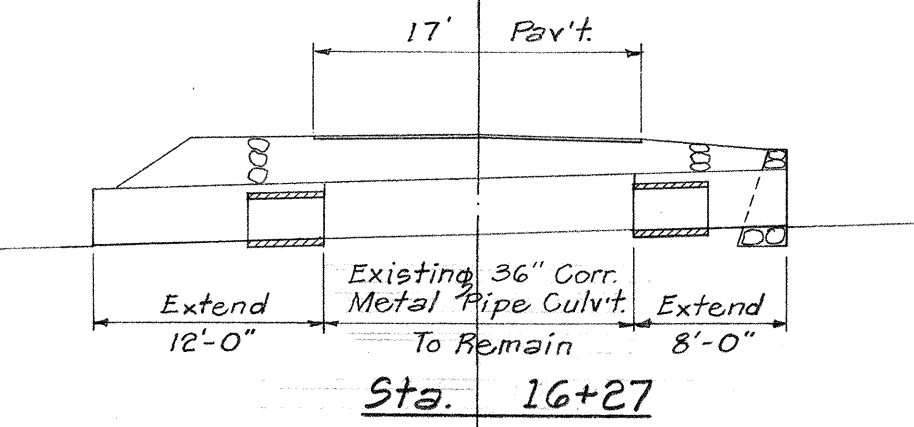
Sta. 61+00 - Remove existing 24" Circ. Conc. Pipe and extend 36" Corr. Galv. Metal Pipe Culvert 20 lin. ft. (12 Ga.) 1-CRM Headwall CRM = 2.72 c.y. Structure Exc = 11.4 c.y.



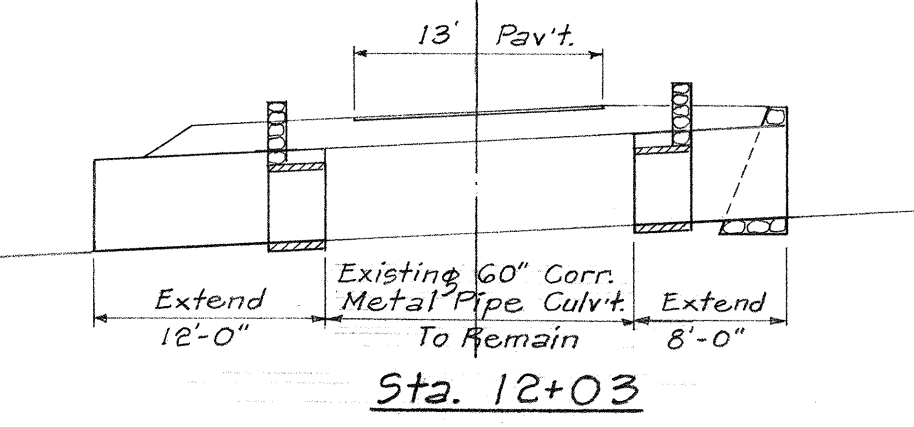
Sta. 51+63 - Remove existing 24" Circ. Conc. Pipe and extend 24" Corr. Galv. Metal Pipe Culvert 20 lin. ft. (14 Ga.) 1-CRM Headwall CRM = 1.41 c.y. Structure Exc = 7.8 c.y.



Sta. 26+88 - Remove existing 24" Circ. Conc. Pipe and extend 24" Corr. Galv. Metal Pipe Culvert 20 Lin. Ft. (14 Ga.) 1-CRM Headwall CRM = 1.41 c.y. Structure Exc = 5.8 c.y.



Sta. 16+27 - Remove existing 24" Circ. Conc. Pipe and extend 36" Corr. Galv. Metal Pipe Culvert 20 lin. ft. (12 Ga.) 1-CRM Headwall CRM = 2.72 c.y. Structure Exc = 11.4 c.y.



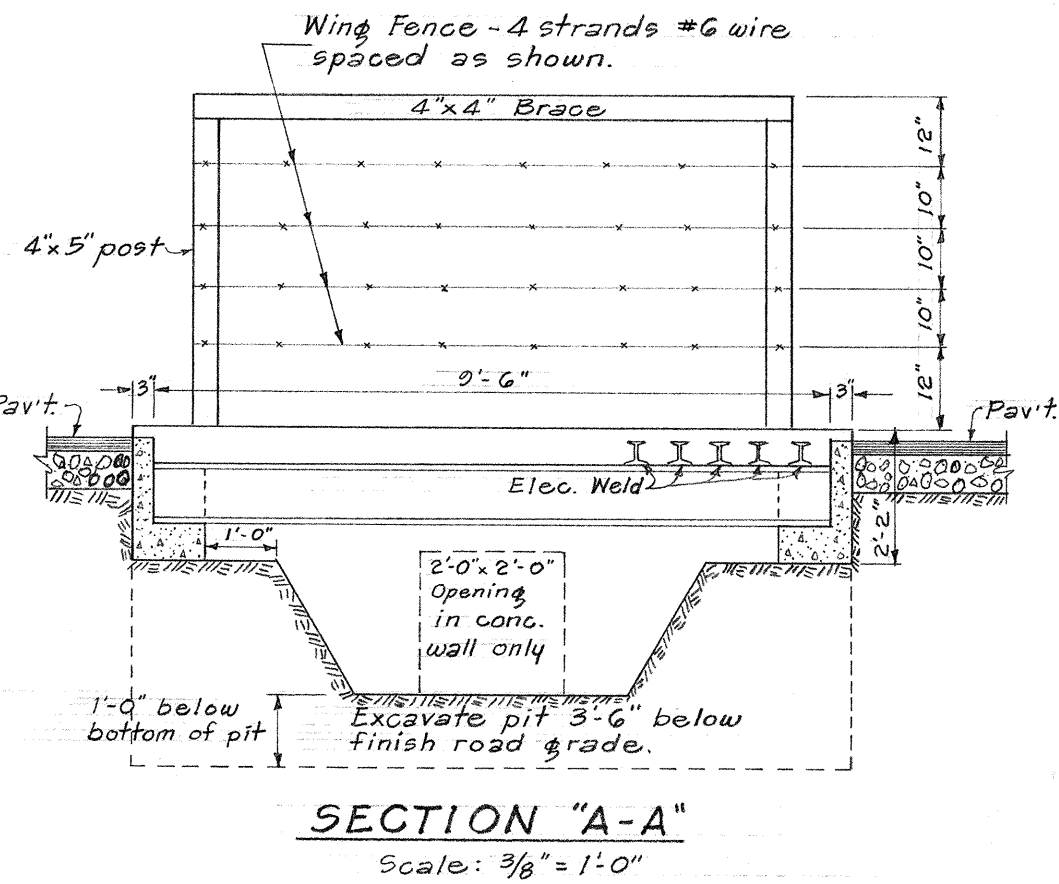
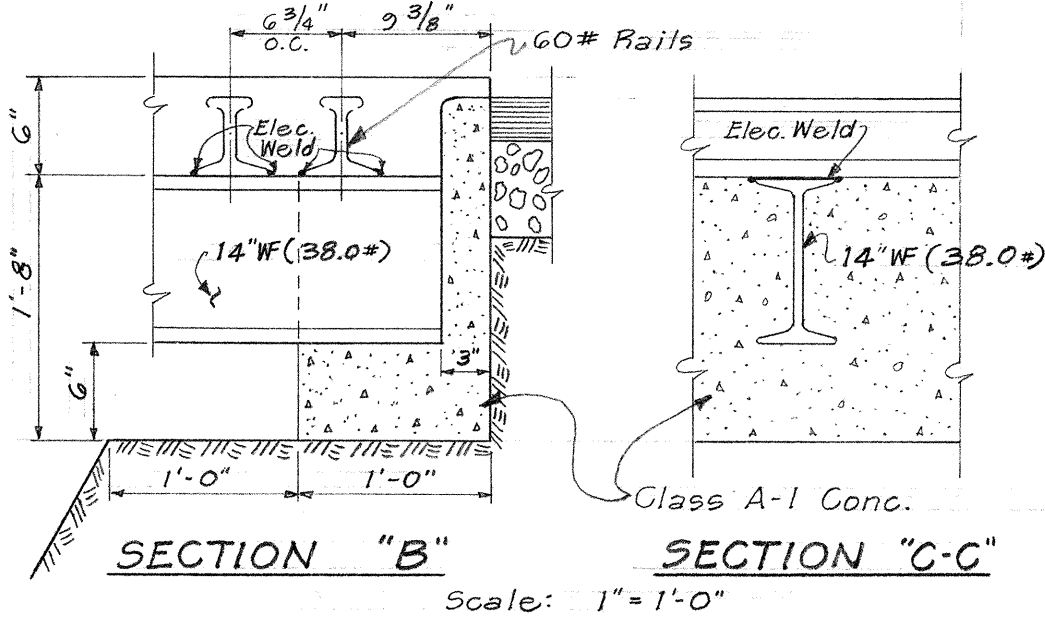
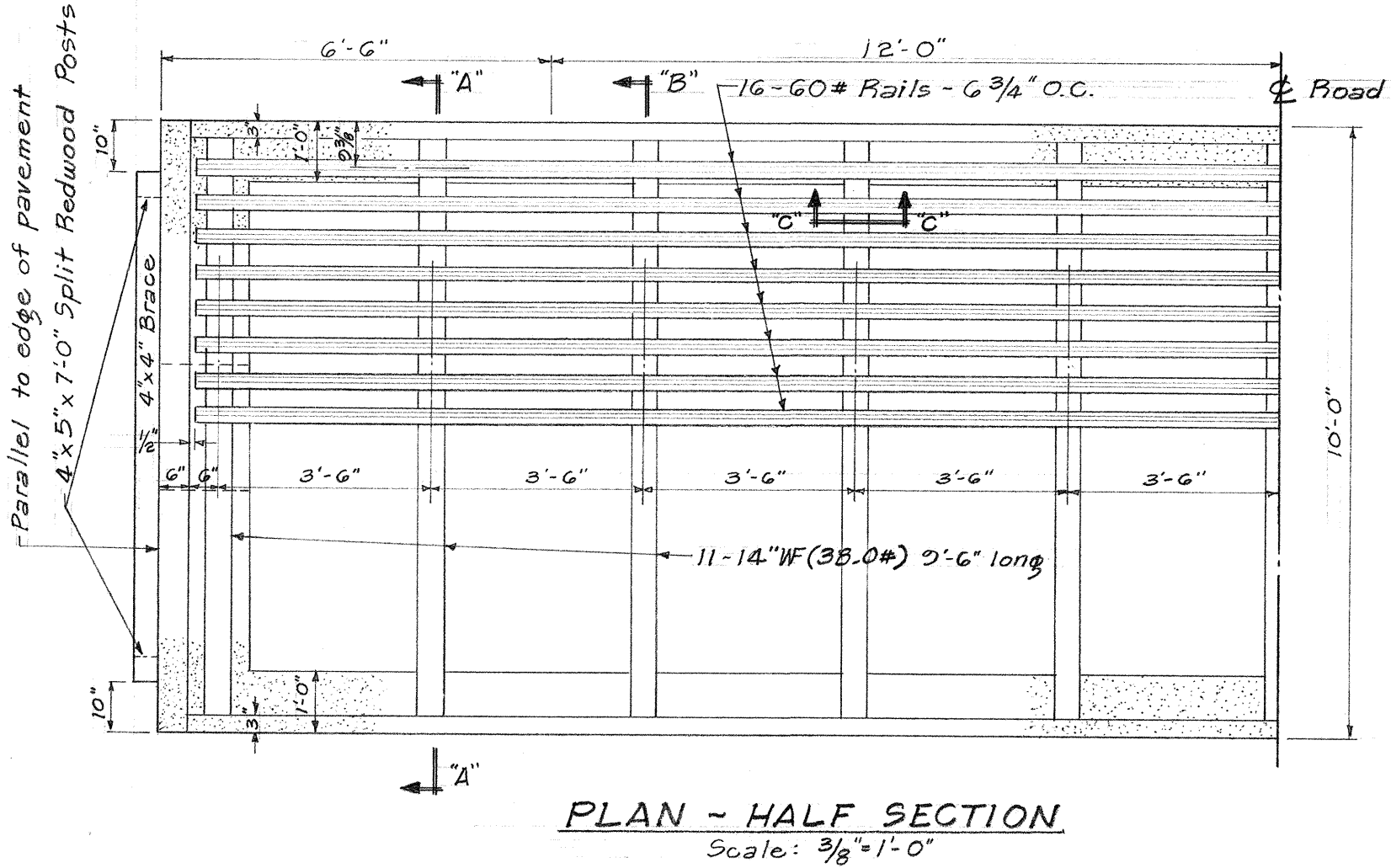
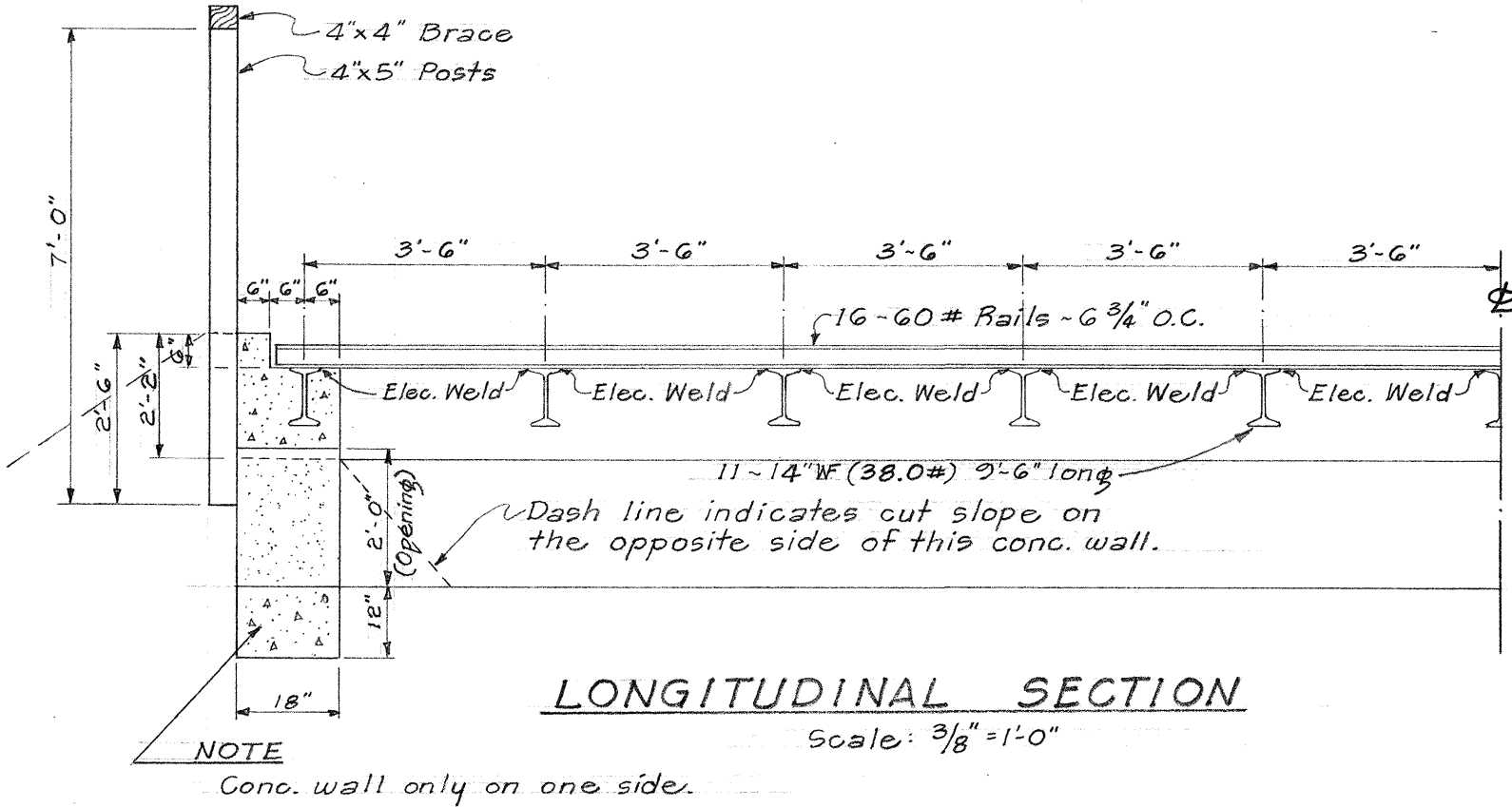
Sta. 12+03 - Remove existing 48" Circ. Conc. Pipe and extend 60" Corr. Galv. Metal Pipe Culvert 20 lin. ft. (10 Ga.) 1-CRM Headwall CRM = 2.63 c.y. Structure Exc = 17.3 c.y.

SECTION THRU ϕ OF CULVERTS

Scale: Hor. 1"=10'
Ver. 1"=10'

CULVERT NOTES

- Remove existing Circ. Conc. Pipes and stockpile as directed by the Engineer.
- Payment for removing and stockpiling existing circ. conc. pipes shall not be paid for separately, but shall be included in the various items of work.
- Shaded portions indicate culvert to be extended.



CATTLE GUARD DETAILS

Scale: as noted

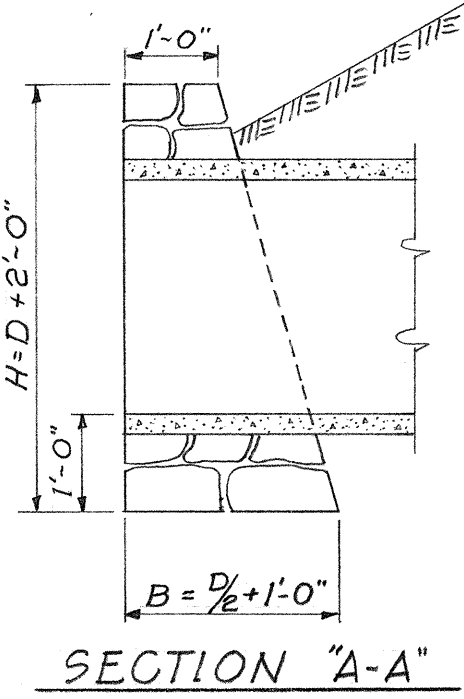
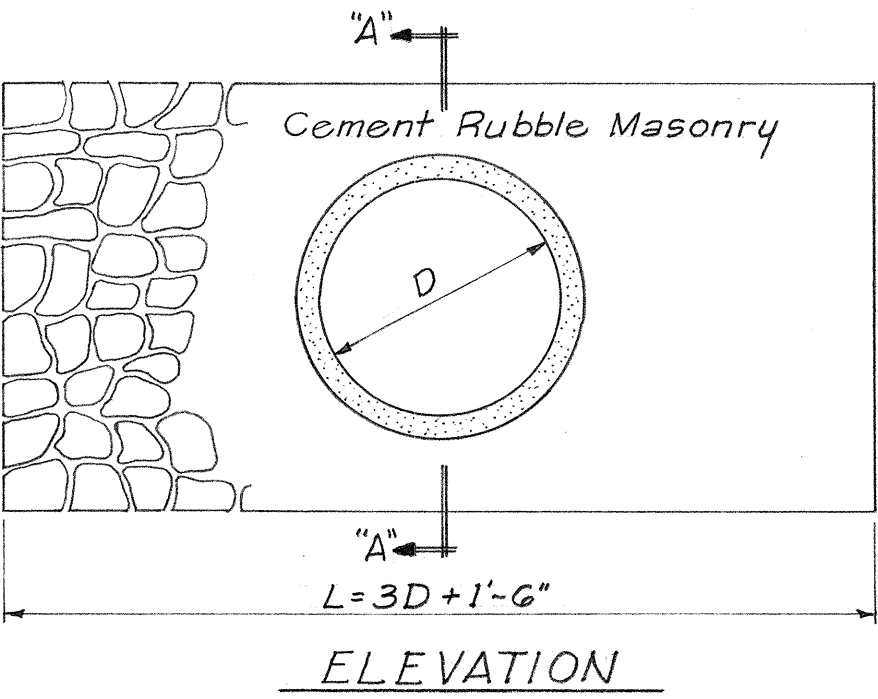
CATTLE GUARD NOTES

- Existing cattle guards at Sta. 43+89 and Sta. 222+06 shall be demolished and new cattle guards constructed in their place. Steel rails are to be salvaged and reused on new cattle guards.
- Demolishing existing cattle guards and salvaging and reusing steel rails shall be considered incidental to contract pay item No. 92.01 "Cattle Guard", and no extra payment shall be made.
- For new cattle guards, 14" WF beams and additional rails are available at no cost to the contractor at the State Highway, Waimea Baseyard. The Contractor shall load, haul to jobsite, unload and install these State furnished materials and the cost thereof shall be included in the contract pay item No. 92.01.
- The cost of loading, hauling, unloading and reusing salvaged steel rails from demolished cattle guard at Station 420+30 shall be incidental to item 13.01.
- All metal joints shall be welded continuously with 3/8" fillets.
- Debris resulting from demolishing cattle guard and Contractor's operations shall be removed, and work area left in a neat and presentable condition. (Incidental to new cattle guard)

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STATE OF HAWAII
PLAN SHOWING
CULVERT & CATTLE GUARD DETAIL
PROJECT NO 19DE-01-68
SOUTH KOHALA, HAWAII

SCALE: AS SHOWN DATE: Jan. 10, 1968

DATA - MASONRY HEADWALL				Cast-in-Place Conc. Culv't	Conc. Pipe Culvert	Corrugated Pipe Culv't
D	H	B	L	Cu. Yds.	Cu. Yds.	Cu. Yds.
18"	3'-6"	1'-0"	6'-0"	0.85	0.05	0.03
24"	4'-0"	2'-0"	7'-6"	1.28	1.45	1.41
30"	4'-6"	2'-3"	9'-0"	1.83	2.06	2.00
36"	5'-0"	2'-6"	10'-6"	2.47	2.84	2.72



DETAIL OF MASONRY HEADWALL

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