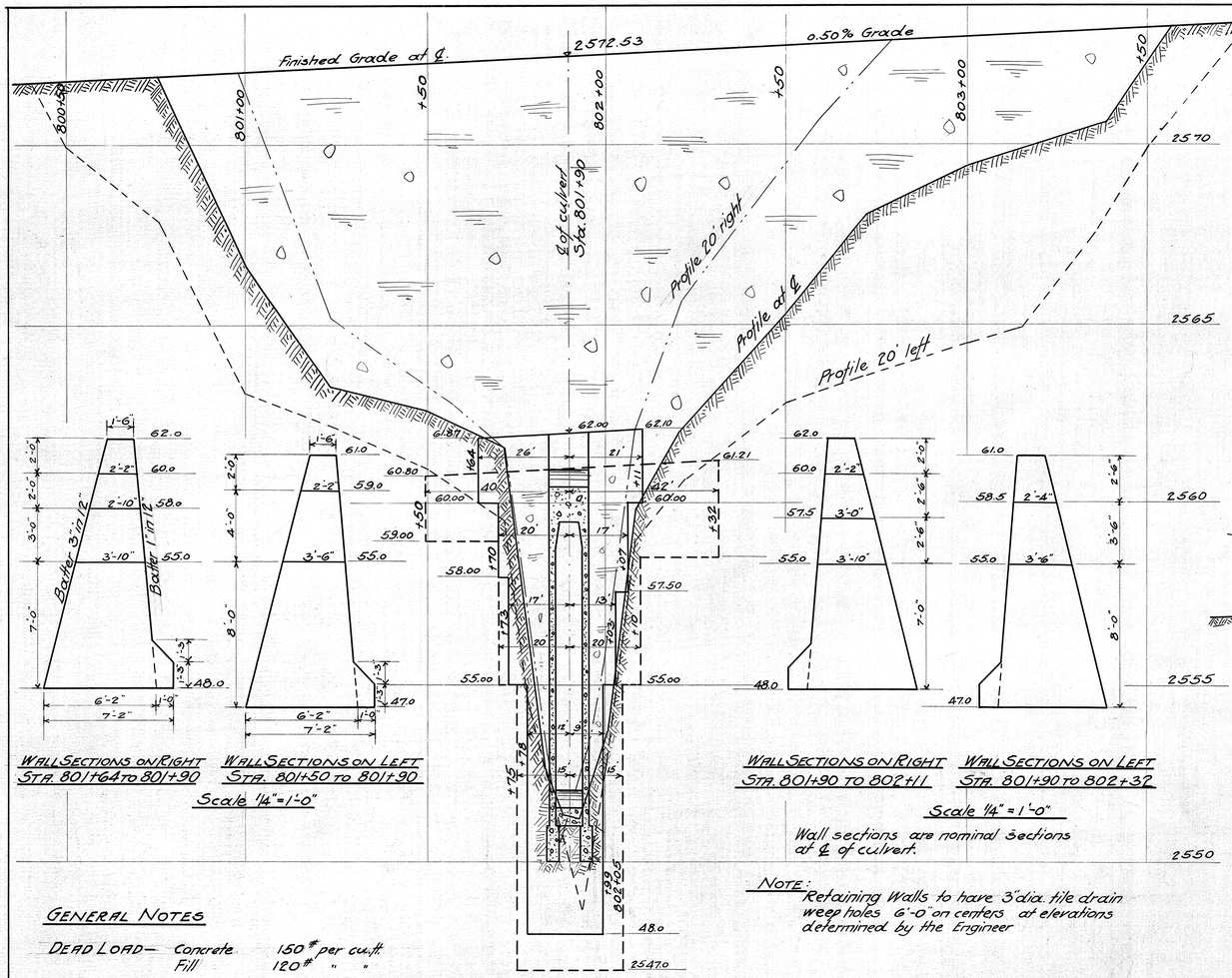
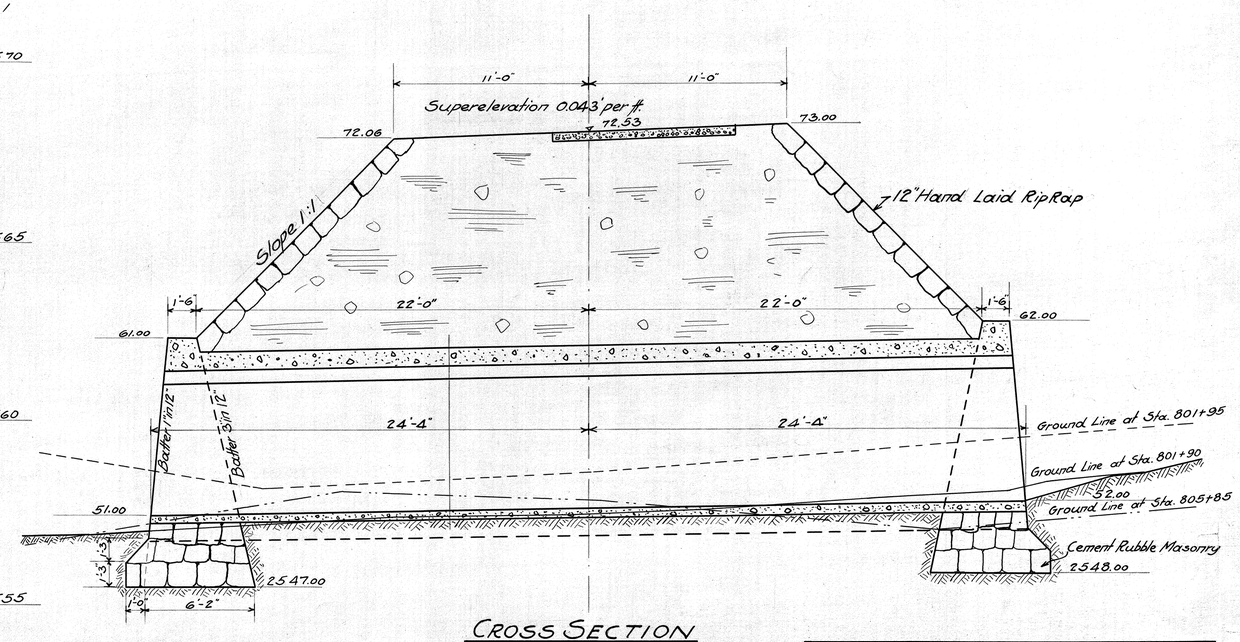
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	E-10B	1932	11	29



NOTE: Retaining Walls to have 3" dia. tile drain weep holes 6'-0" on centers at elevations determined by the Engineer

PROFILE AT CULVERT

Scales: Horizontal 1" = 20'
Vertical 1/2" = 1'-0"



CROSS SECTION

Scale 1/4" = 1'-0"

GENERAL NOTES

DEAD LOAD— Concrete 150# per cu. ft.
Fill 120# " "

SURCHARGE— 300# per sq. ft.

CONCRETE— All Class "A" Concrete (1:2:4 mix) with all exposed corners chamfered. Allowable compression 650# per sq. in.

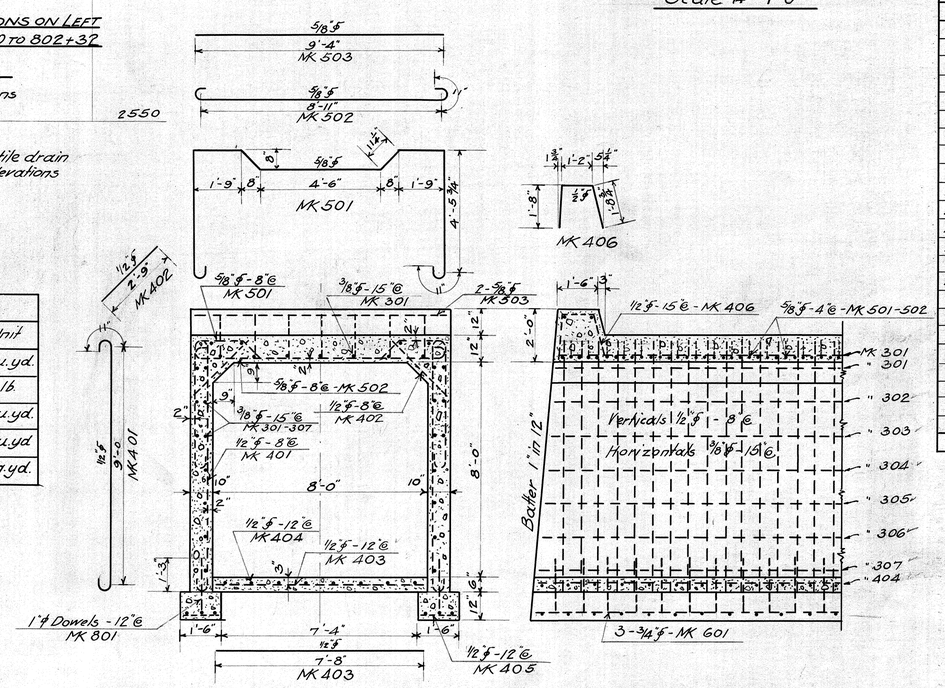
REINFORCING STEEL— Allowable tensile stress 16000# per sq. in. All steel to be deformed bars, twisted bars not to be considered deformed. All dimensions relating to reinforcement are to centers of bars. Where location of bars is not given they are to be placed 2" from the adjacent concrete surface. Lengths of all bars, unless given, are to be such as to reach a point 2" from the concrete face at their ends. Splices must be approved by the Engineer and shall have a lap of 40 diameters with splices staggered. Extra weight of steel required for splices will not be included in quantities for payment.

FOUNDATION— Retaining walls and culvert are founded on lava rock. Safe bearing capacity has been taken as 4.0 tons per sq. ft.

DESIGN— The culvert has been designed as a rigid frame by the theory of elasticity.

QUANTITIES

	Culvert	Retaining Wall Left	Retaining Wall Right	Fill Slope Left	Fill Slope Right	Totals	Unit
Class "A" Concrete	55.5					55.5	cu. yd.
Reinf. Steel	6007					6007	lb.
Structure Excav.	39	65	35			139	cu. yd.
Cem. Rubble Masonry		61	41			102	cu. yd.
Hand Laid Rip Rap				410	255	665	sq. yd.



SECTION THRU CULVERT

LONGITUDINAL SECTION

Scale 3/8" = 1'-0"

BILL OF REINFORCING STEEL

MK	Size	No.	Length	Total Length	Wt. per ft.	Total Wt.
301	5/8" ϕ	15	47'-0"	705.00		
302	"	4	47'-3"	189.00		
303	"	4	47'-6"	190.00		
304	"	2	47'-9"	95.50		
305	"	2	47'-11"	95.83		
306	"	2	48'-1"	96.17		
307	"	2	48'-4"	96.67		
				1468.17	0.38	558
401	1/2" ϕ	142	10'-10"	1538.33		
402	"	142	2'-9"	390.50		
403	"	49	7'-8"	375.67		
404	"	8	48'-4"	386.67		
405	"	98	1'-2"	114.33		
406	"	14	4'-6 3/4"	63.88		
				2869.38	0.68	1951
501	5/8" ϕ	70	20'-8"	1446.67		
502		71	10'-9"	763.25		
503		4	9'-4"	37.33		
				2247.25	1.06	2382
601	3/4" ϕ	6	48'-6"	291.00	1.52	442
801	1" ϕ	98	2'-0"	196.00	3.44	674
Total Weight						6007

F.A. PROJECT E-10B

DETAILS OF STRUCTURES AT STATION 801+90

4273.11