

Counter Drain Relief for Storm  
 Run Vallen Bridge in 3/4" in 24 hours.

= 228'200, 000 cu ft  
 = 2291 acres  
 allowing for 48 hours drainage this then  
 = 1146 acres

Assuming that the water in present storm the stream  
 has 500 acres remain in the details with the  
 bank cut.

bank level in 7' long Street 20' in 1/2  
 = 28'40 sq ft  
 The highest mt. should not be more than 28' 40

1000 3.33 (1 - .24) H<sup>3/2</sup>  
 Top = 3.33 (20 - .24) H<sup>3/2</sup>  
 3.33 (20 - .24) H<sup>3/2</sup>  
 = (400 - 84 + .074 H<sup>3</sup>) H<sup>3/2</sup>  
 = 400 H<sup>3/2</sup> - 84 H<sup>3/2</sup> + .074 H<sup>5/2</sup>

∴ 84 H<sup>3/2</sup> - 84 H<sup>3/2</sup> + 400 H<sup>3/2</sup> - 228'000  
 multiplying with 20' long x 3'0" deep where

Q = 3.33 (20 - .24 x 3) 3<sup>3/2</sup>  
 = 3.33 (20 - .6) 3<sup>3/2</sup>  
 = 3.33 (19.4) 3<sup>3/2</sup>  
 = 3350 acres by 3'0" deep.  
 Q = 3.33 (20 - 1) 3<sup>3/2</sup>  
 = 3300 by 4'0"  
 Q = 3.33 (20 - .8) 4<sup>3/2</sup>  
 = 5113 acres.

1.3224  
 2.0034  
 2.9258

1.6990  
 20920  
 10485

4971  
 14313  
 7156

6021  
 18063  
 9031  
 1.2878  
 7156  
 2.0034

1.2788  
 1.0485  
 3224  
 2.8497

1.3833  
 1.9031  
 3224  
 2.9088

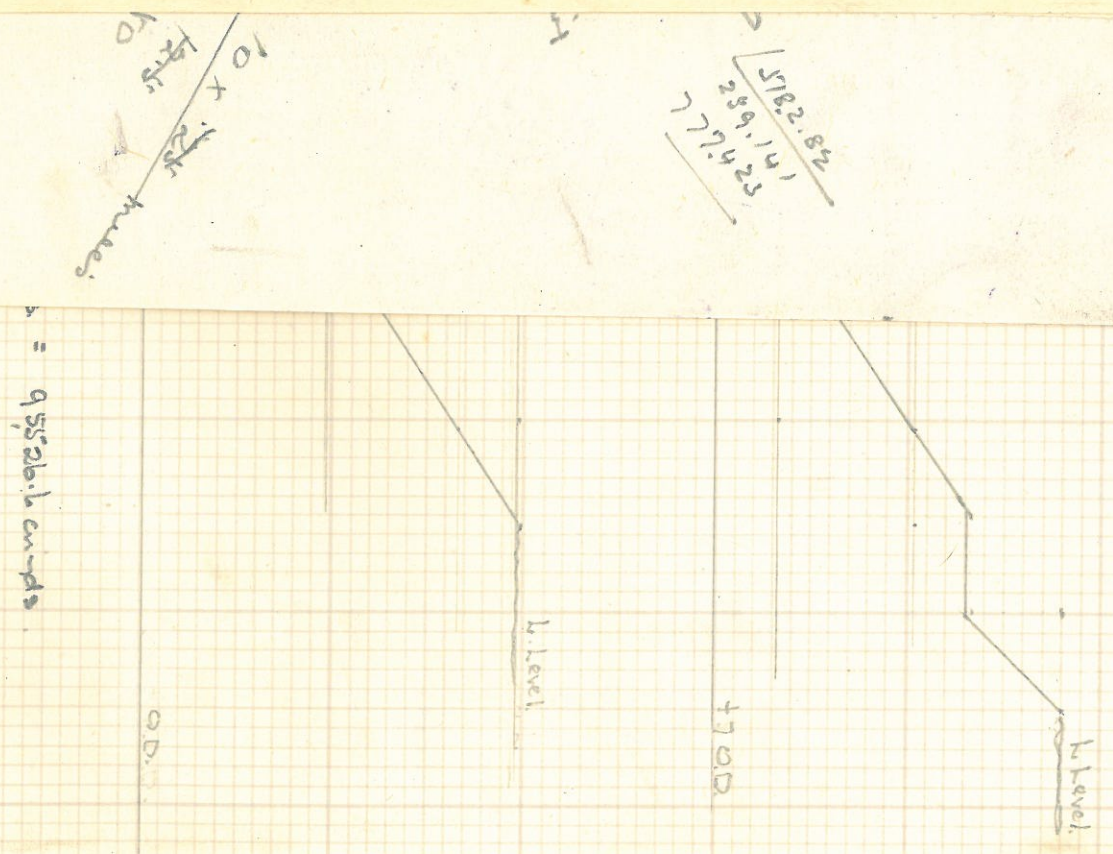
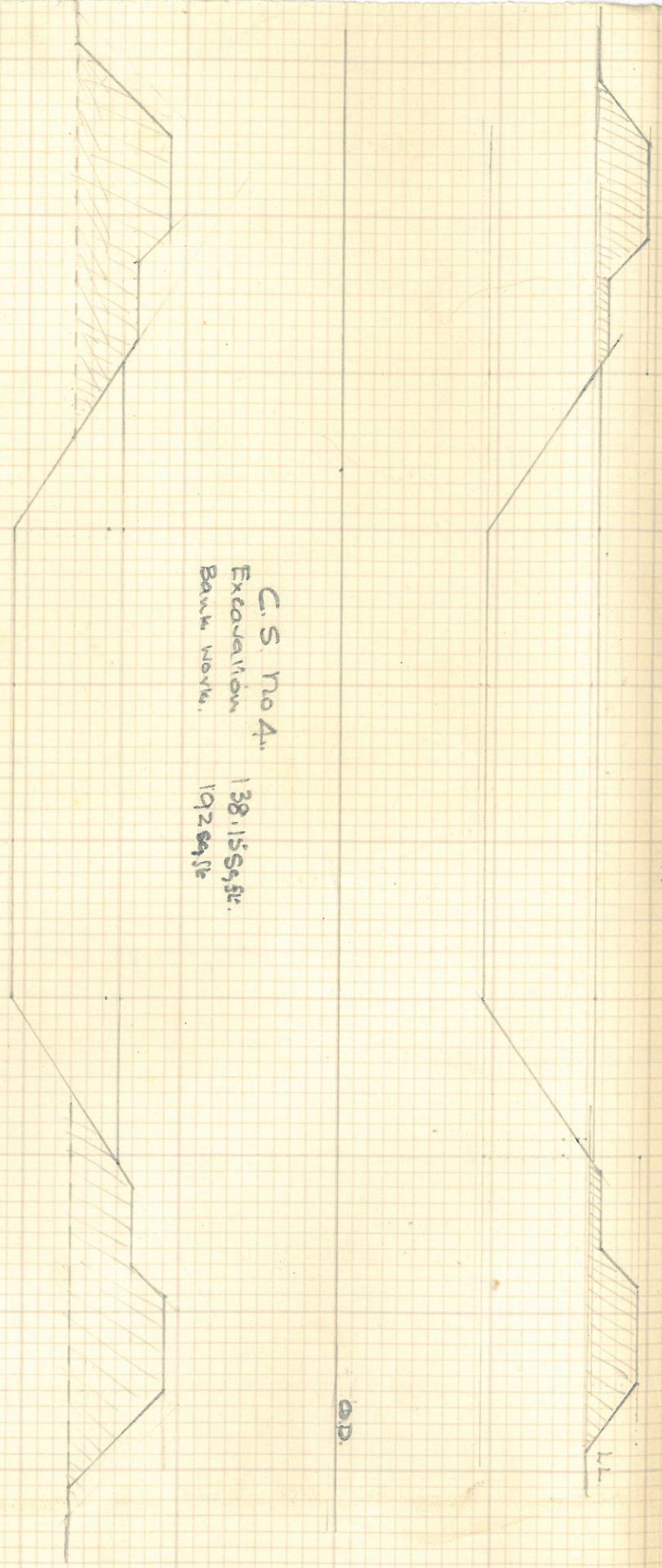
C.S. No 3  
 Excavation 270.84 sq ft.  
 Bank work 67.62 sq ft.

C.S. No 4  
 Excavation 138.15 sq ft.  
 Bank work 192.04 sq ft.

Total Excavation between C.S. No 2 to No 4 = 45720.19 cu yds.  
 " Bankwork between C.S. No 2 to No 4 = 5182.87 cu yds.

TOTAL EXCAVATION 141246.79 cu yds.  
 TOTAL BANKWORK 5182.87

Estimated Cost 21964.440 Excavation Bank  
 2060.686 Purchase of land





$$\sqrt{1 + \frac{2.13^2}{15.2^2}} = \sqrt{1 + \frac{283.69}{231.04}} = \sqrt{2.225} = 1.4916$$

$$2 = \left[ 1 + \frac{187.6}{1039} \right] \sqrt{537} = 2.1816 \times 23.17 = 50.527$$

$$5.1371 = \frac{157.6}{2.039} \times 5.137 = 39.11$$

i = 1.0001301 = 8.241" is angle

for 10' main furrow is 10.5 x 8.241 ft

= 10.305 feet

ix. main surface at bottom

= 17.305 ft

band kerfs 25' OD

Rowden 23' OD

Gravel drain 12' OD

in Section 6' OD

fall in main surface in

low draw = 1.7 x 6.241 inches

= 14 inches

$$\begin{array}{r} 6.241 \\ 3.975 \\ \hline 10.216 \\ 14.0097 \end{array}$$

$$\begin{array}{r} 2.1996 \\ 30.90 \\ \hline 1.8886 \\ 3.7792 \\ \hline .7107 \\ 4.4879 \\ \hline .6081 \\ 4.1142 \\ 3.2455 \\ 4771 \\ \hline 1.0794 \\ 9.160 \end{array}$$

$$\begin{array}{r} 1.687 \\ 6.87 \\ 3435 \\ \hline 16.309 \end{array}$$

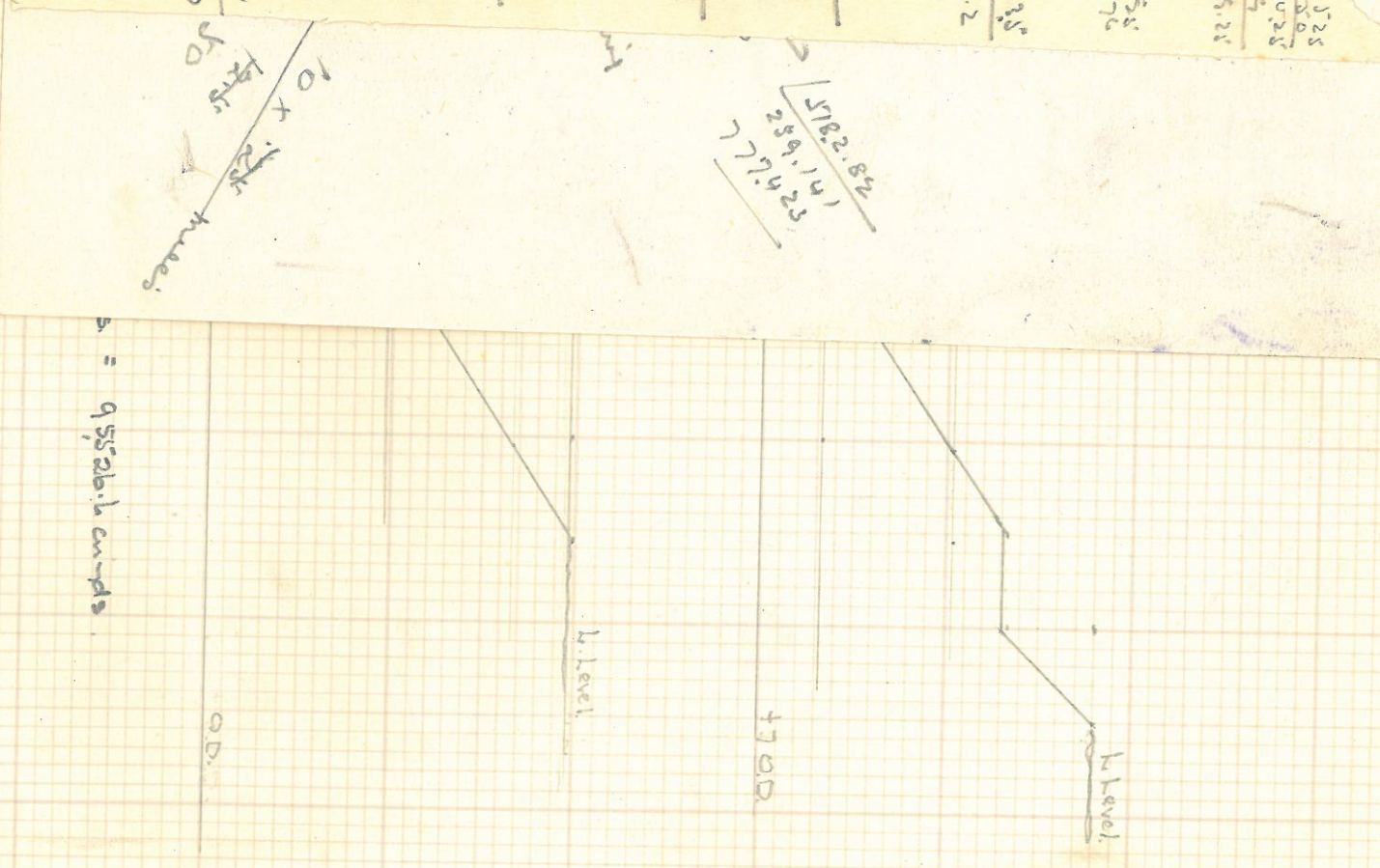
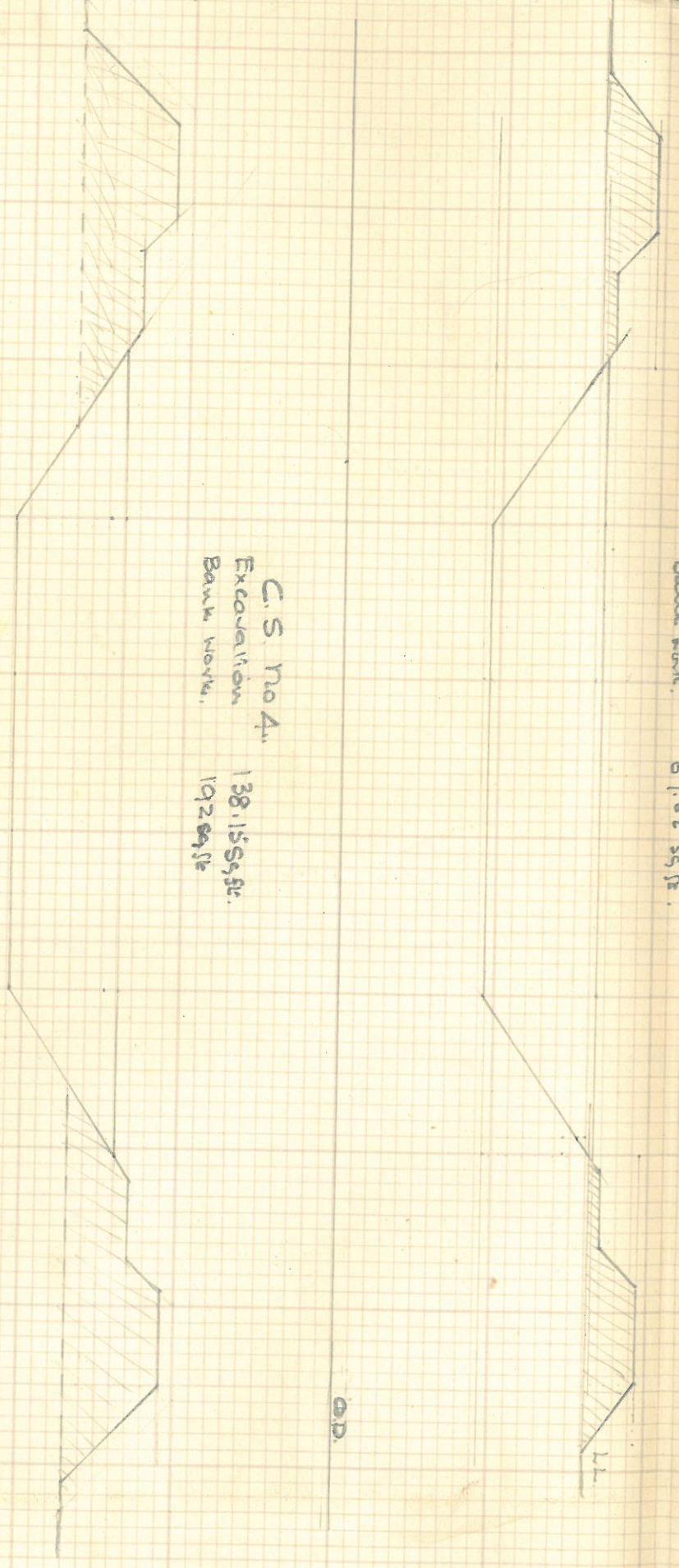
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TOTAL BANKWORK 5182.87

Estimated Cost 21964.440  
Excavation Bank 2060.686  
Purchase of bank 500.00



$$\sqrt{5182.87} = 72.0$$

= 95520.19 cu yds