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Brief

To design a suitable reinforced concrete slab to provide a cross over of existing watercourse

Ground Slab

Span in both directions

200224

Loading

Vehicle Load	=		=	14.95
Brickwork	=		=	5.34
Self Wt	=	0.15 x 24 x 1.40	=	5.04
			n	= 25.33 Kn

$$M_x = M_y \quad \text{Therefore} \quad \frac{M_x}{M_y} = 1$$

Table 3.14 BS8119

$$M = 0.062nl^2 \text{ Knm} \quad 0.062$$

$$M = 6.28 \text{ KNm}$$

Sketch of proposed floor slab (100mm thick)



$$d = 120 \text{ mm}$$

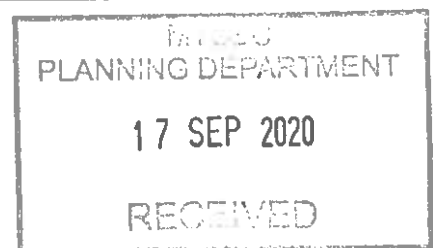
$$z = 114 \text{ mm}$$

Area of Steel required

$$A_s = 253 \text{ mm}^2$$

But

$$\begin{aligned} \text{Minimum area of steel} &= 0.13\% bd \\ &= 156 \text{ mm}^2 \end{aligned}$$



It is proposed to use 2Nr layers of A292 Reinforcing mesh

292

Area of Steel = 584 mm²

Since 584 > 156

<i>Satisfactory</i>

Summary:

Use 2Nr layers of A292 Reinforcing Mesh placed in a 150mm thick C20 concrete slab with 25mm cover top and bottom.

The culvert base has been constructed as per calculations. The type of steel grid used is to be of verified by the supplier as capable of supporting a vehicle loading.

Brickwork Load

Length 2.3

Width 0.215

Height 0.45

Volume 0.22

Weight 5.34 Kn

Vehicle Load

Length 2.3

Width 0.9

Area of Grid 2.3 m²

Weight 14.95 Kn

