

CIRIA C580 DAMAGE CAT. ASSESSMENT

- ESTIMATE OF INWARD GROUND FIELD MOUND EXCAVATION

$D = 1.5m.$

LIKELY INWARD YIELD = $1.5 \times 0.16\% \times 1000$
 = 2.4mm.

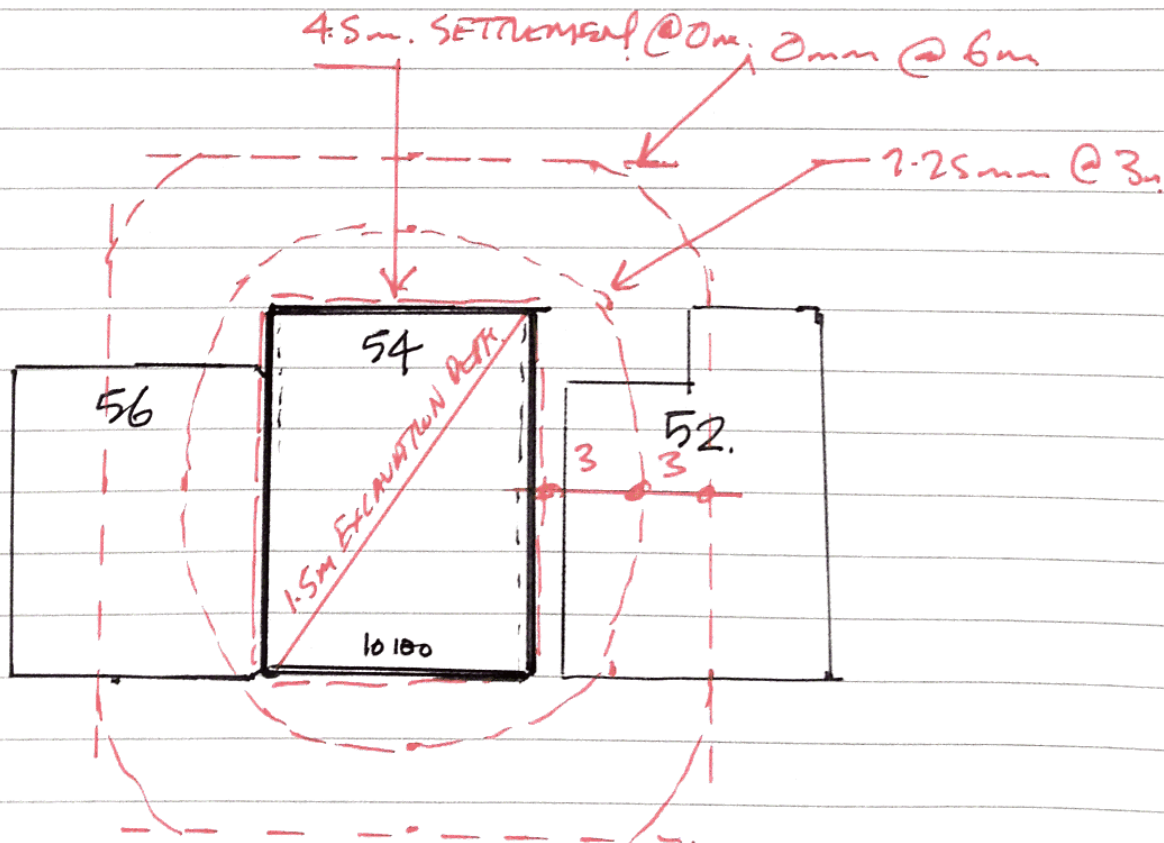
- ESTIMATE OF SURFACE SETTLEMENT MOUND EXCAVATION.

$D = 1.5$

SETTLEMENT = $1.5 \times 0.3\% \times 1000$
 = 4.5mm.

GENERALLY IT IS EXPECTED THAT SETTLEMENT PROFILE WILL EXTEND A DISTANCE OF $4.0 \times D$ IN A LINEAR FASHION. I.E. $4.0 \times 1.5 = 6.0m.$

∴ SETTLEMENT CONTOUR PROFILE ESTIMATE 1/300.



* BASED ON PUBLISHED DATA FOR EMBEDDED WALLS - ∴ CONSERVATIVE APPROACH.
 (NOT UNDERPINNING 1.5m HIGH)

BASED ON ESTIMATE OF EXCAVATION SETTLEMENT
DETERMINE CATEGORY OF DAMAGES PER BELOW
TABLE. CS80.

$$L/H = 101000 / 13500 = 0.75$$

$$\epsilon_{lim} = 0.15\% = \text{TABLE 2.5 CAT2 MAX.}$$

$$\text{SAY MAXIMUM V. SETTLEMENT} = 10\text{mm. (CONSERVATIVE)} \\ \text{AMOUNT WORKMANSHIP})$$

$$\frac{\Delta/L}{\epsilon_{lim}} = \frac{10/10100}{0.15\%} = \underline{0.66.}$$

$$\epsilon_h / \epsilon_{lim} = 0.5 \therefore \text{for CAT2} = 0.5 \times 0.00075 \\ = \underline{0.000375.}$$

$$\Delta_h = 101000 \times 0.000375 = \underline{3.40\text{mm}}$$

$$\underline{3.4\text{mm.}} > 2.4\text{mm} \therefore \text{likely CAT2 (MAX)}$$

→ HORIZONTAL MOVEMENT WILL BE LIMITED AND NOT EXPECTED
> 2mm. IF AT ALL.

- IT SHOULD BE CONSIDERED THAT EXCAVATIONS ARE SHALLOW AND UNDERPINNING WILL BE CARRIED OUT IN A HIT/MISS SEQUENCE WHICH WILL SIGNIFICANTLY REDUCE ANY POTENTIAL LATERAL MOVEMENTS. THE EXCAVATION METHODS ARE TRADITIONAL & DO NOT INVOLVE COMPLEX TEMPORARY WORK SYSTEMS, ACCORDINGLY HORIZONTAL MOVEMENTS WILL BE MINIMAL ($< 1.0\text{mm}$).

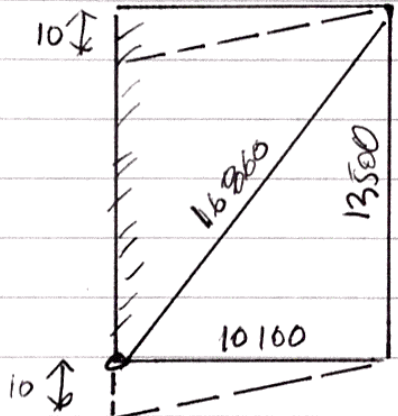
MOVEMENT TRIGGER LEVELS	AMBER	RED
VERTICAL	3	8
LATERAL	2	4.

CIRIA C580 CATEGORY DAMAGE ASSESSMENT FROM 1.50m EXCAVATION DEPTH

→ CONSIDER DAMAGE CATEGORY FROM EXCAVATION WORKS AT SARPR TAKE THE FOLLOWING ESTIMATES OF VERT & HORIZ MOVEMENTS DUE TO SHORT & LONG TERM SETTLEMENTS AND VERTICAL WORKMANSHIP SETTLEMENT.

- VERTICAL SETTLEMENT = 10mm (CONSERVATIVE)
- HORIZONTAL YIELD = 0.5mm.

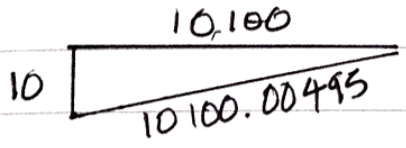
CONSIDER SPINE WALL TO 54/56 PERPENDICULAR TO P.WALL



DEFORMATION VERTICAL COMP ONLY. TENSILE STRAIN AN DIAGONAL.

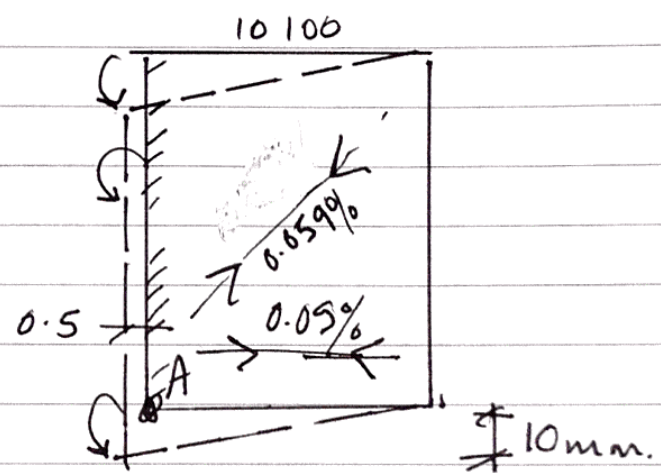
$$10 / 16.866 \times 100 = \underline{\underline{0.059\%}}$$

TENSILE ON HORIZONTAL.

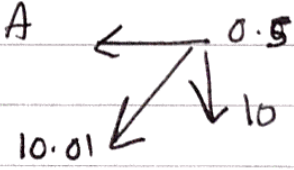


$$0.00495 \times 100 = \underline{\underline{0.000495\%}}$$

Both values Burland Category 0 → 1.



DEFORMATION OF VERT COMP @ A



TENSILE STRAIN DIAGONAL =

$$10.01 / 16.866 \times 100 = \underline{\underline{0.059\%}}$$

TENSILE HORIZONTAL =

$$10.01 + 0.0049 \times 100 / 10.100 = \underline{\underline{0.095\%}}$$

Both values Burland Category 1 ≠ 2.