 Ecos Maclean Ltd <i>Engineering - materials, energy, structure</i>	Job no.	Revision	
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	Project description: Retaining Wall for Lightwell		
Job Title: 53 Platt's Lane	Done By: SP	Date: 21/06/2017	Checked by:

Stepoc RW for lightwell

Loading:

RW Vertical Forces: Taking moment about corner of the base

Wall $W_w =$	25	kN/m^3	\times	0.256	\times	2.528	$=$	16.2	kN/m	\times	$(1.0 + (0.256/2))$	$=$	18.3	kNm	
Base $W_b =$	25	kN/m^3	\times	1.356	\times	0.25	$=$	8.48	kN/m	\times	$1.356/2$	$=$	5.75	kNm	
Total SLS													=	24.0	kNm

RW Horizontal Forces:

Surcharge =	10	kN/m^2													
$k_a =$	0.5														
Soil $\gamma_c =$	20	kN/m^3													
$h =$	2.5	m													
Surcharge $P_{su} =$	0.5	\times	10.0	\times	2.5	$=$	12.6	kN/m	\times	1.26	m	$=$	15.98	kNm/m	
Soil $P_s =$	0.5	\times	20	\times	$2.5^2/2$	$=$	32	kN/m	\times	0.84	m	$=$	32.0	kNm/m	
Total SLS													=	47.9	kNm/m
Total ULS													=	67.1	kNm/m

Temporary Stability

$$\frac{M_{res}}{M_{over}} \geq 2$$

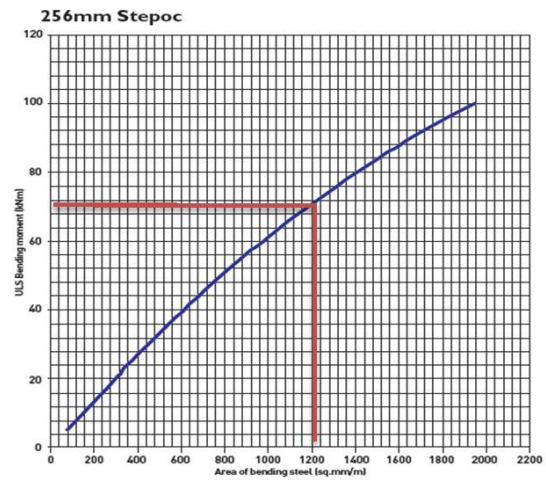
$$\frac{24.0}{47.9} = 0.5 \text{ Temporary props will be necessary to avoid overturning effects}$$

$$F_{prop} = \frac{2 \times M_{over} - M_{res}}{h} = \frac{(2 \times 47.9) - 24.0}{2.528} = 28.4 \text{ kN}$$

Reinforcement Design:


$$M_{ULS} = 67.1 \text{ kNm}$$

From Anderton Stepoc brochure
 Area of required reinforcement $\approx 1180 \text{ mm}^2/\text{m}$
 Hence 16mm bar @ 133 c/c , 1512 mm^2/m



Area of reinforcement (mm^2/m) for various bar diameters and centres.

BAR DIAMETER (mm)	10	12	16	20	
BAR CENTRES	133	591	851	1512	2363
	266	295	425	756	1181

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