

LOCATION	CALCULATIONS	OPTIONS
	<p><u>MAGENTA WALL (FRONT / REAR FACADE OF No. 54)</u></p> <p>LENGTH : 10.30 m HEIGHT : 10.50 m (FROM FFL BASEMENT TO EAVES) LENGTH / HEIGHT RATIO : (L/H) : ≈ 1.0 RC WALL HEIGHT : c. 2.00 m (PROPOSED EXCAVATION DEPTH TO No. 52) STIFFNESS : HIGH (i.e. top-down construction, temp props installed before permanent props @ High level)</p> <p>→ From Ciria C760 table 6.3 % x 'd'</p> <ul style="list-style-type: none"> Horizontal surface Movement : $0.15 \times 2.0m = 3mm$ Vertical Surface Movement : $0.1 \times 2.0m = 2mm$ <p>DISTANCE BEHIND WALL TO NEGLIGIBLE MOVEMENT (MULTIPLE OF MAX EXCAVATION DEPTH)</p> <ul style="list-style-type: none"> HORIZONTAL : $4 \times 2m = 8m$ VERTICAL : $3.5 \times 2m = 7m$ <p>* Allow for additional 5mm of Vertical Settlement to Wall due to Construction.</p> <p>∴ Vertical Surface Movement : $2mm + 5mm \approx 7mm$</p> <p>Horizontal Strain : $E_h = \delta_h / L = 3mm / 10,300mm \approx 0.03\%$ E_h Vertical Strain : $E_v = \delta_v / H = 7mm / 10,500mm \approx 0.07\%$ E_v</p> <p>FOR DAMAGE CATEGORY 1 (Very Slight) FROM CIRIA GUIDANCE ON EMBEDDED RETAINING WALLS DESIGN TABLE 6.4</p> <p>Limiting Tensile Strain $E_{lim} = 0.05\%$ to <u>0.075%</u></p> <p>$E_h / E_{lim} = 0.07 / 0.075 = 0.89$</p> <p>FROM GRAPH b of Fig 6.27, $\Delta/L/E_{lim} = -0.13$</p> <p>Therefore : $\Delta/L = -0.13 \times 0.075 = -0.00975$</p> <p>FROM GRAPH c of Fig 6.27;</p> <p>DAMAGE CATEGORY 0/1 → NEGLIGIBLE / VERY SLIGHT</p>	

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<p>MAGENTA WALL (FRONT/REAR FAÇADE) No. 54</p> <p>of $\Delta/L/E_{lim} = -0.13$ (From Previous) then; $\Delta/L = -0.13 \times E_{lim}$ (0.075%) $\hookrightarrow \Delta/(10,300) = 0.00975\%$ $\hookrightarrow \Delta$ (differential) = $(0.00975/100) \times 10,300$ mm Δ (differential) = 1mm</p> <p>$4.67 + 1 = 5.67$ mm</p>			
Distance from wall* (m)	0 (Near Side)	10.3 (Far Side)	Max Vertical Movement
Horizontal Movement (mm)	3	0	
Vertical Movement (mm)	2 (+5mm*)	0	~ 7mm @0m from the basement wall

* Allowance for vertical settlement during/arising from the construction of underpins.

Orange Wall (Front/Rear Façade's of No. 50)

Length (L): 10.3 m

Height (H): 10.5 m (from FFL of existing basement)

Length/Height ratio (L/H): 1.0

RC wall height: c. 2.00 m (Proposed Excavation depth to No. 52)

Stiffness: High (i.e. top down construction, with temporary props installed before permanent props at high level)

Distance from wall* (m)	2 (Near Side)	+12.3m (Far Side)	Max Vertical Movement
Horizontal Movement (mm)	3	0	
Vertical Movement (mm)	1.5 (+5mm*)+ (1mm**)	0	~ 7.5mm @ 2m (near corner)

* Allowance for vertical settlement during/arising from the construction of underpins.

** Differential settlement Δ as calculated from Ciria C760