3.4. SEISMIC DESIGN REQUIREMENTS FOR REINFORCED CONCRETE STRUCTURAL WALLS

3.4.1. Geometrical requirements

3.4.1.1 – Structural walls are the vertical elements of the structural system where the ratio of length to thickness in plan is equal to at least 4.

3.4.1.2 – Web thickness of structural walls, b_{wo} , (in metres) should satisfy the following expression:

$$b_{wo} \geq \max\{0.15\,,\ h_s/20\} \qquad \textbf{(3.18)}$$

Additional requirements apply with respect to the thickness of the confined boundary elements of walls, as specified in **3.4.3.3**.

3.4.1.3 – Normalised axial force of column, ν_d , shall satisfy the condition of $\nu_d < 0.40$.

3.4.1.4 – Composite wall sections consisting of connected or intersecting rectangular segments (L-, T-, U-, I- or similar sections) should be taken as integral units, consisting of a web or webs parallel or approximately parallel to the direction of the acting seismic shear force and a flange or flanges normal or approximately normal to it. For the calculation of flexural resistance, the effective flange width on each side of a web should be taken to extend from the face of the web by the minimum of (a) the actual flange width; (b) one-half of the distance to an adjacent web of the wall; and (c) 25% of the total height of the wall above the level considered.

3.4.1.5 – Discontinued structural walls shall not rely for their support on beams or slabs.

3.4.2. Design bending moments and shear forces of structural walls

3.4.2.1 – In walls with $H_w / \ell_w \leq 2.0$, design bending moments and shears determined using appropriate q factor given in **3.1.3** shall be amplified by a factor of $[3 / (H_w / \ell_w)]$. However this factor shall exceed 2.

3.4.2.2 – In walls satisfying the condition $H_w / \ell_w > 2.0$, design bending moments along the critical wall height determined according to **3.4.3.1** shall be taken as a constant value being equal to the bending moment calculated at the wall base. Above the critical wall height, a linear bending moment diagram shall be applicable which is parallel to the line connecting the moments calculated at the base and at the top of the wall.

3.4.2.3 – In walls satisfying the condition $H_w / \ell_w > 2.0$, design shear forces at any cross section shall be calculated with **Eq.(3.19)**.

$$V'_{Ed} = \varepsilon\ V_{Ed} \qquad \textbf{(3.19)}$$

where shear amplification factor ε is defined as

$$\varepsilon = \sqrt{2 + \left(\frac{M_{Rd,W}}{M_{Ed,W}}\right)^2} \leq \frac{q}{I} \qquad \textbf{(3.20)}$$