Area Calculations

$$\text{Area}_{\text{Total}} = L_x * L_y$$

$$\text{Area}_{\text{SFRS}} = 0.5 * \text{Area}_{\text{Total}}$$

$$\text{Area}_{\text{1Wall}} = 0.5 L_{\text{Bay},y} * L_{\text{Bay},x}$$

$$\text{Area}_{\text{LC}} = \text{Area}_{\text{SFRS}} - n * \text{Area}_{\text{1Wall}}$$

Force Calculations

$$P_{\text{1w}} = \text{Area}_{\text{1Wall}} * W_{u,\text{Floor}}$$

$$P_{\text{P.Walls}} = L_{\text{P.Walls}} * H_{\text{story}} * W_{u,\text{P.Walls}}$$

$$P_{\text{Floor}} = \text{Area}_{\text{LC}} * W_{u,\text{Floor}}$$

$$P_{\text{LC}} = P_{\text{Floor}} * P_{\text{P.Walls}}$$

$$q_{\text{CB}} = (50\%) * H_{\text{story}} * W_{u,\text{P.Walls}}$$

Mass Calculations

$$\text{Mass}_{\text{Story}} = (P_{\text{LC}} + n * P_{\text{1w}})/g$$

Length Calculations

$$L_{\text{P.Walls}} = L_y + L_x - n * L_w - (n-1) * L_{\text{CB}}$$

Gravity Load Calculations

$$W_{u,\text{Floor}} = DL_{\text{Floor}} + 0.25 * LL_{\text{Floor}}$$

$$W_{u,\text{P.Walls}} = DL_{\text{P.Wall}}$$