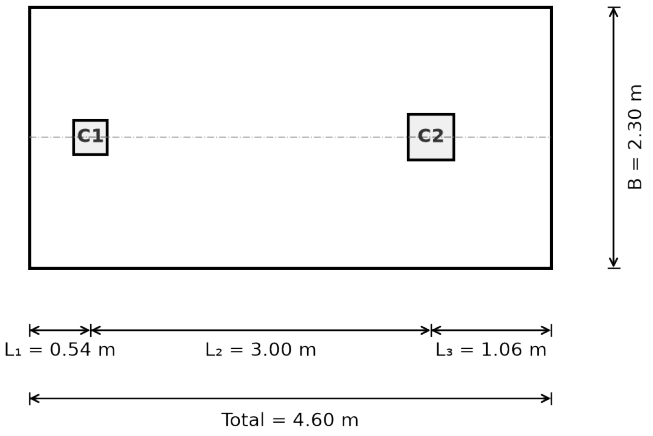
COMBINED FOOTING ANALYSIS REPORT

Element: Combined Footing Analysis

Design Code: EN 1992-1-1:2004 | Date: 28 October 2026

REFERENCE	CALCULATIONS	OUTPUT
§Input Parameters	**COMBINED FOOTING – INVERTED BEAM** Soil pressure q_{soil} = 377.0 kN/m² Footing width B = 2.3 m **Equivalent line load:** $w_{line} = q_{soil} \cdot B = 377.0 \times 2.3 = 867.10 kN/m$ Left column load P = 1650.0 kN Right column load P = 2340.0 kN Left overhang a = 0.54 m Centre-to-centre spacing b = 3.0 m Right overhang c = 1.06 m Left column b × h = 300 × 300 mm Right column b × h = 400 × 400 mm **Plan View**  	**w_{line} = 867.10 kN/m** **L = 4.60 m**
§Shear Key Shear Points	Shear force at key points along the beam: $V(x) = w_{line} \cdot x - \sum P_i \cdot H(x - x_i$ **Location x (m) / Shear V (kN) / Remark** 0.00 / 0.00 / Left edge 0.54 / 468.00 / Just left of column 0.54 / -1182.00 / Just right of column 3.54 / 1420.00 / Just left of column 3.54 / -920.00 / Just right of column 4.60 / -1.00 / Right edge	**V_{max} = 1420.0 kN**
§Moment Longitudinal Bending	**LONGITUDINAL BENDING MOMENTS** Bending moment at any point: $M(x) = \frac{1}{2} \times w_{line} \cdot x^2 - \sum P_i (x - x_i$ Moment at left column: $M(x = 0.54) = 126 kNm$ Moment at right column: $M(x = 3.54) = 483 kNm$ Zero-shear (peak moment) location: $x_{zero} = \frac{P_1}{w_{line}} = 1.903 m$ Max mid-span moment: $M_{max} = 679 kNm$	**$M_{left\ col}$ = 126 kNm** **$M_{right\ col}$ = 483 kNm** **$M_{mid\text{-}span}$ = 679 kNm** **$x_{zero\text{-}shear}$ = 1.903 m**

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§Moment Transverse Bending	**TRANSVERSE BENDING MOMENT** Critical section is at the column FACE,the column itself doesn't bend, so the cantilever is the projection beyond it: $p = \frac{B - h_c}{2}$ Left column projection: $p_L = \frac{2.30 - 0.300}{2} = 1.000m$ Right column projection: $p_R = \frac{2.30 - 0.400}{2} = 0.950m$ Governing projection: $p_{trans} = \max(p_L, p_R) = 1.000m$ Transverse moment per metre strip: $M_{trans} = \frac{1}{2} \times q_{soil} \times p_{trans}^2$ $M_{trans} = \frac{1}{2} \times 377.0 \times 1.000^2 = 188kNm$	**p_{trans} = 1.000 m** **M_{trans} = 188 kNm**

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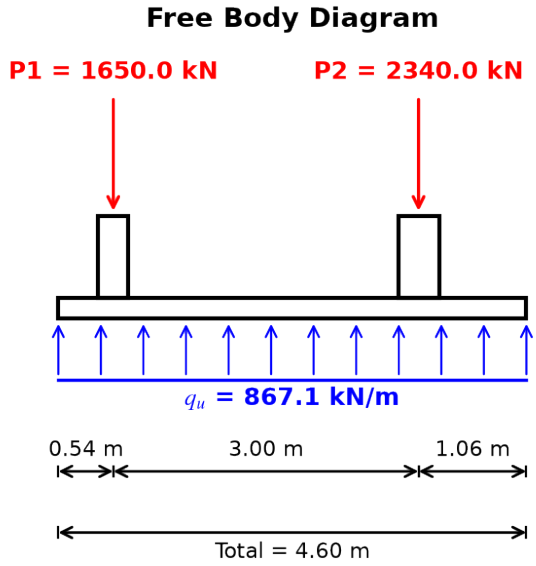
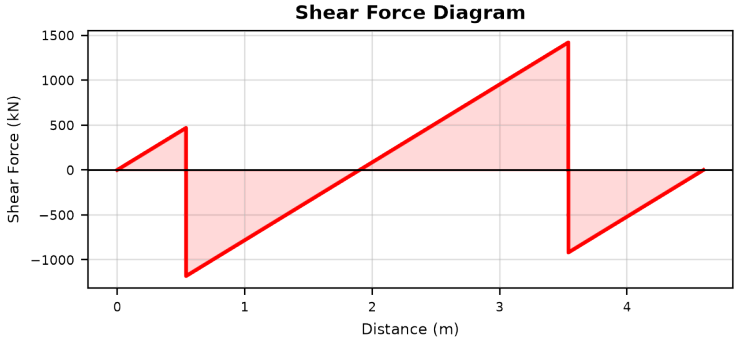
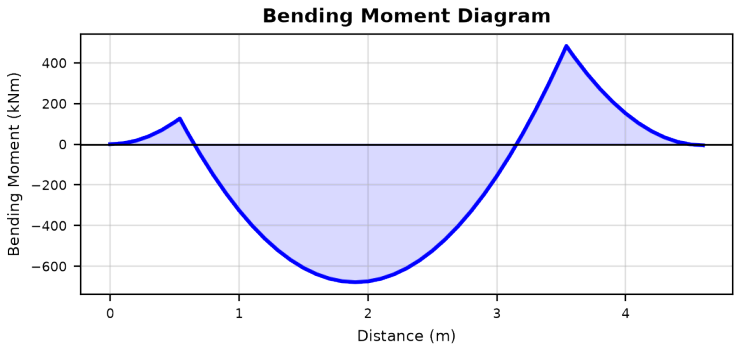
§Diagrams FBD · SFD · BMD	Free Body Diagram  Shear Force Diagram  Bending Moment Diagram  	**FBD · SFD · BMD**