Strip Footing under a Wall: Width, Moment and Shear

Width of a wall strip footing from load per metre and allowable pressure, and the factored cantilever moment at the wall face and shear at a depth d from it.

Method: One-way cantilever action of wall footings

Input parameters

Unit system: SI

Parameter	Value	Unit
Wall load per metre (service)	180.00	kN/m
Footing self-weight allowance	10.000	%
Allowable soil pressure	150.00	kPa
Load factor	1.5000	
Wall thickness	230.00	mm
Effective depth of footing	250.00	mm

Calculated results

Parameter	Value	Unit
Footing width	1.3200	m
Factored net upward pressure	204.55	kPa
Cantilever projection	0.54500	m
Factored moment at wall face per metre	30.378	kN
Factored shear at d from wall face per metre	60.341	kN/m

Notes for this case

• B = w(1 + f_sw)/q_a; the footing's own weight does not bend it, so design uses the net factored pressure q_u = γ_f·w/B. M_u = q_uc²/2 at the face of a concrete wall (masonry walls are often taken at a quarter of the wall thickness inside the face); V_u = q_u(c − d). Check depth and steel to the user's concrete code.

Formula and method

$$B = \frac{w(1+f_{sw})}{q_a}, \quad q_u = \frac{\gamma_f w}{B}, \quad M_u = \frac{q_u c^2}{2}, \quad V_u = q_u(c-d)$$

Variables

w	Wall load per metre (service)	N/m
f_{sw}	Footing self-weight allowance	-
q_a	Allowable soil pressure	Pa
γ_f	Load factor	-
t_w	Wall thickness	m
d	Effective depth of footing	m
B	Footing width	m
q_u	Factored net upward pressure	Pa
c	Cantilever projection	m
M_u	Factored moment at wall face per metre	N
V_u	Factored shear at d from wall face per metre	N/m

Method and standards

Wall footing.

Assumptions and limits

- Concentric wall load; uniform pressure; one-way action.

References

One-way cantilever action of wall footings

Report details

Report reference	FCC-G3Z6-ECSD (the same inputs always give the same reference)
Generated	23 November 2026, 18:00 UTC
Calculator	Strip Footing under a Wall: Width, Moment and Shear
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/foundations/strip-footing-wall

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.