



TEAM DESIGN- 2nd floor Regal Court, 42-44 High Street, Slough, SL1 1EL
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Project No	Example	Sht. No.	14 of 16
Site Address	Example		
Subject	Extension and alteration works – Supporting Calculations		
Engineer	Peter V	Date:	

Bearing details

Beam spanning in plane of wall

Width of bearing; $B = 203 \text{ mm};$ Length of bearing; $l_b = 140 \text{ mm}$

Loading details

Concentrated dead load; $G_k = 19 \text{ kN};$ Concentrated imposed load; $Q_k = 3 \text{ kN}$
 Design concentrated load; $F = 30.8 \text{ kN}$
 Distributed dead load; $g_k = 0.0 \text{ kN/m};$ Distributed imposed load; $q_k = 0.0 \text{ kN/m}$
 Design distributed load; $f = 0.0 \text{ kN/m}$

Masonry bearing type

Bearing type; **Type 2 ;** Bearing safety factor; $\gamma_{\text{bear}} = 1.50$

Check design bearing without a spreader

Design bearing stress; $f_{\text{cd}} = 1.084 \text{ N/mm}^2;$ Allowable bearing stress; $f_{\text{cp}} = 1.071 \text{ N/mm}^2$

FAIL - Design bearing stress exceeds allowable bearing stress, use a spreader

Spreader details

Length of spreader; $l_s = 330 \text{ mm};$ Depth of spreader; $h_s = 140 \text{ mm}$
 Edge distance; $e_{\text{edge}} = 0 \text{ mm}$

Spreader bearing type

Bearing type; **Type 3 ;** Bearing safety factor; $\gamma_{\text{bear}} = 2.00$

Check design bearing with a spreader

Loading acts eccentrically outside middle third – triangular stress distribution

Design bearing stress; $f_{\text{cd}} = 1.364 \text{ N/mm}^2;$ Allowable bearing stress; $f_{\text{cp}} = 1.429 \text{ N/mm}^2$

PASS - Allowable bearing stress exceeds design bearing stress

Check design bearing at $0.4 \times h$ below the bearing level

Design bearing stress; $f_{\text{cd}} = 0.130 \text{ N/mm}^2;$ Allowable bearing stress; $f_{\text{cp}} = 0.701 \text{ N/mm}^2$

PASS - Allowable bearing stress at $0.4 \times h$ below bearing level exceeds design bearing stress

EXAMPLE

Beam G padstones: Provide 330x215x140mm deep dense concrete padstone or Eng. Bwk as padstone; Beam bearing min 150mm

NOTE: For Building Regulations Submission only, not for ordering materials. Principal Contractor is responsible for taking measurements on site, preparing construction drawings and safely erecting the proposed structural works. Team Design is not responsible for site supervision.

IF IN DOUBT - ASK!