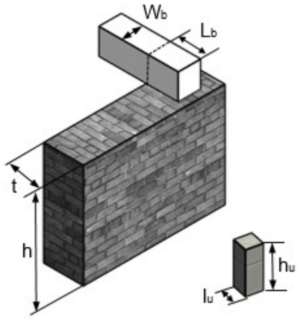
1.0 INPUT

1.1 Masonry Wall

Wall Type			**Solid**
Load Bearing Leaf Thickness	t	=	**100** mm
Height	h	=	**2400** mm
Effective Height	h_{eff}	=	**2400** mm

1.2 Pier

Width	W_p	=	**100** mm
Thickness	t_p	=	**100** mm
Spacing	W_s	=	**1000** mm



1.3 Masonry Properties

Type	**Clay and Calcium silicate bricks**		
Compressive Strength	p_u	=	**30** N/mm^2
Mortar Designation	M	=	**M12/(i)**

1.4 Masonry construction

Masonry Unit category	MC	=	**Category I**
Construction Control Category	CC	=	**Normal**

1.5 Bearing

Beam Spanning			**Across Wall**
Edge Distance	b_{ed}	=	**0** mm
Width	W_b	=	**100** mm
Length	L_b	=	**100** mm
Eccentricity at Top of Wall	e_x	=	**0** mm

1.5.1 Spreader **No**

1.6 Loads

1.6.1 Concentrated Load

Characteristic Dead Load	G_k	=	**10** kN
Characteristic Imposed Load	Q_k	=	**8** kN

1.6.2 Distributed Load

Characteristic Dead Load	g_k	=	**0** kN/m
Characteristic Imposed Load	q_k	=	**0** kN/m

2.0 OUTPUT

Ref: BS 5628 - Part 1

2.1 Masonry Bearing Design

Stiffness Coefficient	K	= **1**	*cl.24.4.1*
Effective Thickness of Masonry Wall	t_{eff}	= **100** mm	*cl.24.4*
Characteristic Compressive Strength	f_k	= **8.3** N/mm^2	*Table 2*
Partial Safety Factor for Material Strength	Υ_m	= **3.1**	*Table 4*

2.2 Design Loads

Design Concentrated Load	F	$= (G_k * 1.4) + (Q_k * 1.6) =$ **26.8** kN
Design Distributed Load	f	$= (g_k * 1.4) + (q_k * 1.6) =$ **0** kN/m

2.3 Bearing Check Without Spreader

Bearing Safety Factor	Υ_{bear}	= **1.25**	*Cl. 30*
Design Bearing Stress	f_{cap}	$= F / (W_b * L_b) + f / t =$ **2.68** N/mm^2	
Allowable Bearing Stress	f_{cpp}	$= \Upsilon_{bear} * f_k / \Upsilon_m =$ **3.347** N/mm^2	

2.3.1 Bearing check at 0.4 * h below the level of bearing

Additional Eccentricity	e_a	$= t * (((h_{eff} / t_{eff})^2 / 2400) - 0.015) =$ **22.5** mm	
Eccentricity at Top of Wall	e_x	= **0** mm	
Total Eccentricity	e_t	$= (0.6 * e_x) + e_a =$ **22.5** mm	
Design Eccentricity	e_m	$= \max(e_x, e_t, 0.05 * t) =$ **22.5** mm	
Capacity Reduction Factor	β	$= 1.1 * (1 - (2 * e_m / t)) =$ **0.61**	*Table 7*
Bearing Length Distributed at 0.4 * h	L_d	$= W_b + 0.4 * h + \min(0.4 * h, b_{ed}) =$ **1060** mm	
Design Bearing Stress	$f_{ca(0.4h)}$	$= F / (L_d * t) + f / t =$ **0.253** N/mm^2	
Allowable Bearing Stress	$f_{cp(0.4h)}$	$= \beta * f_k / \Upsilon_m =$ **1.62** N/mm^2	

3.0 SUMMARY

3.1 Bearing Check Without Spreader

Description	Required	Available	Status
Bearing stress (N/mm^2)	f_{cap} = **2.68**	f_{cpp} = **3.347**	**PASS**

3.2 Bearing Check at 0.4 * h Below the Level of Bearing

Description	Required	Available	Status
Bearing Stress (N/mm^2)	$f_{ca(0.4h)}$ =**0.253**	$f_{cp(0.4h)}$ = **1.62**	**PASS**