

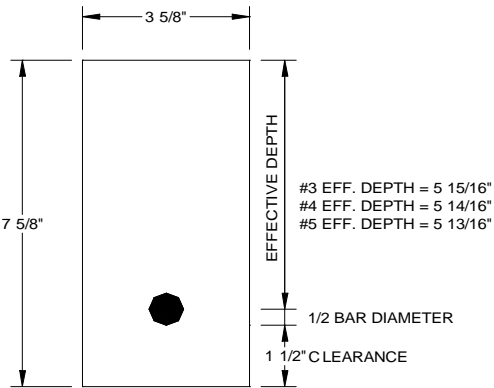
YORK LINTEL & CAST STONE, INC.

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4"X8" LINTELS

Design Data

$f'_c = 3,000$ psi (minimum)
 $f_y = 60,000$ psi (per ASTM-A615)
 Average weight per linear foot of beam - 28 lbs.



Load Calculation

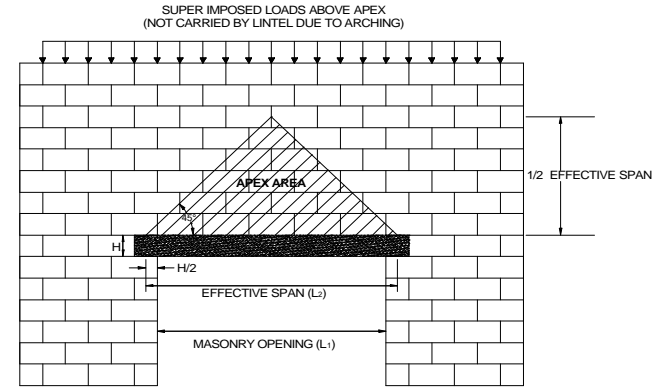
As a minimum, the lintels carry the apex area above the span. For example:

Given:

4" block weight = 18 psf (Hollow)
 Equivalent load of apex area = .33WL
 Effective span "L₂" of lintel (centerline of bearing to centerline of bearing)

Example:

Equivalent apex load for 4"x8" lintel with an effective span of 48"
 Apex Load = (.33) (W) (L) = .33 (18 psf) (48")(1/12") = 23.8 lbs./ft.
 $W_u = (\text{Apex Load} + \text{Lintel Weight})(1.4) = (23.8+28)(1.4) = 72.52$ lbs./ft.
 Capacity of 4"x8" lintel with an effective span of 48" (from load table) = 501 lbs./ft.
 Therefore, the lintel has significant excess capacity. If superimposed loads are located within the apex area, then refer to the load tables to ensure sufficient capacity.



Reinforcement	Top	Not Required						1#3																					
	Bottom	1#3			1#4			1#3						1#4			1#5												
Nominal Lintel Length (inches)		32	36	40	42	44	48	54	56	60	64	66	72	78	80	84	88	90	96	102	104	108	112	114	120	128	132	136	144
Masonry Opening L ₁ (inches)		16	20	24	26	28	32	38	40	44	48	50	56	62	64	68	72	74	80	86	88	92	96	98	104	112	116	120	128
Effective Span L ₂ (inches)		24	28	32	34	36	40	46	48	52	56	58	64	70	72	76	80	82	88	94	96	100	104	106	112	120	124	128	136
Maximum Load W _u ** (lbs./ft.)		1002	859	752	707	668	595	523	501	462	429	415	376	344	334	316	301	290	271	250	245	235	226	222	210	192	178	164	142
Shear Strength V _u (lbs.)		1002	1002	1002	1002	1002	992	1002	1002	1002	1002	1002	1002	1002	1002	1002	1002	992	992	981	981	981	981	981	981	981	981	981	981
Bending Moment M _u (ft.-lbs.)		2762	2762	2762	2762	2762	4703	2762	2762	2762	2762	2762	2762	2762	2762	2762	2762	4703	4703	6705	6705	6705	6705	6705	6705	6705	6705	6705	6705
Long-Term Deflection (Inches)		0.002	0.002	0.003	0.003	0.004	0.005	0.008	0.009	0.011	0.014	0.016	0.021	0.027	0.030	0.035	0.041	0.043	0.054	0.069	0.076	0.092	0.110	0.120	0.154	0.198	0.206	0.211	0.225
Length / Deflection Ratio		12000	14000	10667	11333	9000	8000	5750	5333	4727	4000	3625	3048	2593	2400	2171	1951	1907	1630	1362	1263	1087	945	883	727	606	602	607	604

Design formulas per ACI 318-99

M_u = Maximum bending moment governed by ultimate strength = $\phi (A_s)(f_y)(d-a/2)$
 V_u = Shear force governed by ultimate strength $\leq 1/2 \phi (2 \cdot f_c \cdot bd)$
 M_n = Moment generated by factored live and dead loads = $1/8 W_u (L_2)^2$
 V_n = Shear force generated by factored live and dead loads = $1/2 W_u L_2$
 δ_{max} = Maximum allowable deflection = $L_2/600$
 ** Maximum uniformly distributed factored load.

Design Notation per ACI 318-99

W_u = Factored load per unit length of beam
 A_s = Area of tension reinforcement
 d = Distance from extreme compression fiber to centroid of tension reinforcement
 a = Depth of equivalent rectangular stress block as defined in 10.2.7.1
 b = Beam width
 ϕ = Strength reduction factor as defined in 9.3

For additional technical information please contact our office at 800-784-6112.