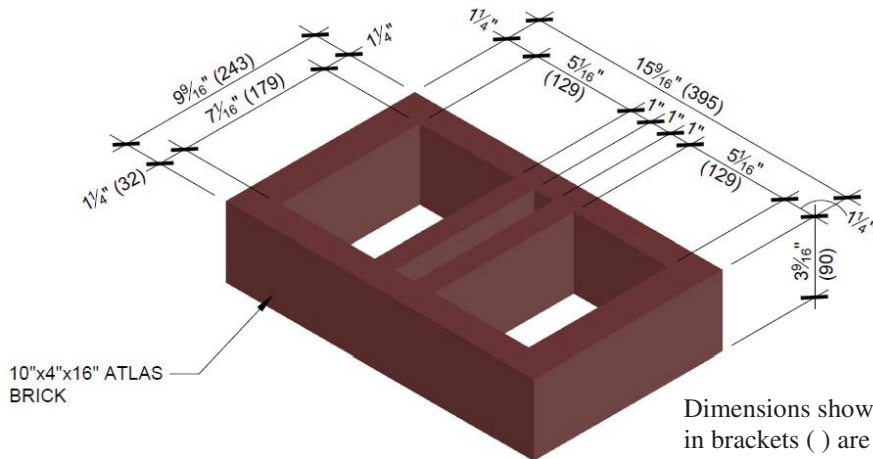


10 inch Atlas™ Structural Brick Technical Data Sheet



Atlas™ is Interstate Brick's brand of hollow clay structural brick

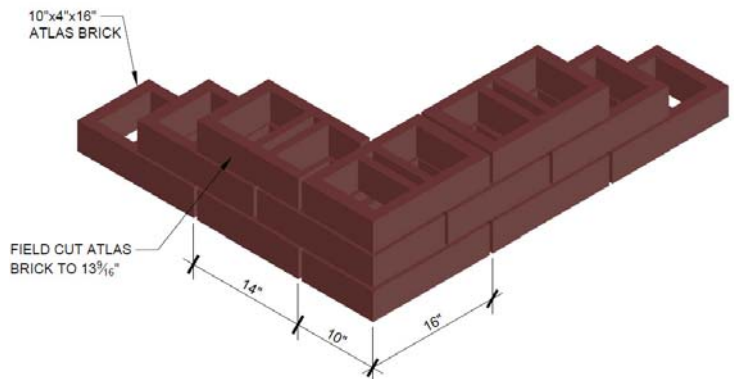
Note:
This document is an addendum to the Atlas Technical Data brochure and is to be used in conjunction with the same. Refer to the Atlas Technical brochure for information on compressive strength, engineering design, quality assurance and details.

ENGINEERING DATA

Grout Spacing		Weight of Wall		Fire rating			Design Properties			
				Equivalent Thickness		Fire Rating	Moment of Inertia		Radius of Gyration	
in.	mm	psf	Kg/M ²	in.	mm	Hrs	in. ⁴ /ft.	mm ⁴ /M x 10 ⁻⁸	in.	mm
Hollow		45	219.60	4.83	123	3	639.94	3.44	3.34	84.86
48	1219	52	254.68	5.29	134	3	673.88	3.62	3.20	81.38
40	1016	54	261.69	5.43	138	3	680.67	3.66	3.18	80.77
32	813	56	272.21	5.63	143	3	690.85	3.71	3.15	79.91
24	610	59	289.75	5.98	152	3	707.82	3.81	3.09	78.59
16	406	67	324.83	6.67	169	4	741.76	3.99	3.00	76.25
Solid		88	430.05	9.56	243	4	874.41	4.70	2.76	70.12

STC Rating (Decibels)	Hollow 53	Solid 65

Thermal Conductance	U Value	R Value
Hollow W/Air in Cells	0.43	2.35
Solid Grouted	0.50	2.00
Polystyrene Insert	0.21	4.87
Zonolite in Cells	0.14	7.14
Foam Bead in Cells	0.13	7.68
Core-fill500	0.11	8.75
Polyurethane in Cells	0.12	8.49



CORNER DETAIL



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10 inch Atlas Structural Brick Technical Data Sheet

STRUCTURAL DESIGN

Out of Plane Earthquake Loading per ASCE 7

Assumption: Site Class D

$$F_p = 0.40 I S_{DS} W_w$$

I = Importance Factor

W_w = Wall Weight

F_p = Design Out of Plane Earthquake Load

Seismic Design Category ▶	SDC A	SDC B	SDC C	SDC D	SDC E	SDC F
I	1	1	1	1	1.25	1.5
S_{DS}	0.167	0.25	0.42	0.63	0.75	0.75

Grout Spacing, in., (m)	10 in. Atlas - F_p in psf (Kg/M ²)						
	Wall Wt.	SDC A	SDC B	SDC C	SDC D	SDC E	SDC F
	I	1	1	1	1	1.25	1.5
	S_{DS}	0.167	0.25	0.42	0.63	0.75	0.75
Solid	88(429)	5.9(29)	8.8(43)	14.8(72)	22.2(109)	33.0(162)	39.6(194)
16(0.41)	67(327)	4.5(22)	6.7(33)	11.3(55)	16.9(83)	25.1(123)	30.2(148)
24(0.61)	59(288)	3.9(19)	5.9(29)	9.9(49)	14.9(73)	22.1(108)	26.6(130)
32(0.81)	56(273)	3.7(18)	5.6(27)	9.4(46)	14.1(69)	21.0(103)	25.2(123)
40(1.02)	54(263)	3.6(18)	5.4(26)	9.1(44)	13.6(67)	20.3(99)	24.3(119)
48(1.22)	52(254)	3.5(17)	5.2(25)	8.7(43)	13.1(64)	19.5(96)	23.4(115)

SLENDER WALL TABLES

Area of Reinforcing (in.²/LF Wall)

$f'_m = 3500$ psi Wind or EQ Load = 20 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
43	O	O	O	O	O	O
42	0.9	0.9	0.9	0.9	0.9	0.9
41	0.9	0.9	0.9	0.9	0.9	0.9
40	0.66	0.66	0.66	0.66	0.66	0.66
39	0.59	0.59	0.59	0.59	0.59	0.59
38	0.47	0.47	0.47	0.47	0.47	0.47
37	0.33	0.33	0.33	0.33	0.33	0.33
36	0.33	0.33	0.33	0.33	0.33	0.33
35	0.3	0.3	0.3	0.3	0.3	0.3
34	0.3	0.3	0.3	0.3	0.3	0.3
33	0.3	0.3	0.3	0.3	0.3	0.3
32	0.23	0.23	0.23	0.23	0.23	0.23
31	0.22	0.22	0.22	0.22	0.22	0.22
30	0.22	0.22	0.22	0.22	0.22	0.22
29	0.22	0.22	0.22	0.22	0.22	0.22
28	0.15	0.15	0.15	0.15	0.15	0.17
27	0.15	0.15	0.15	0.15	0.15	0.16
26	0.15	0.15	0.15	0.15	0.15	0.15
25	0.12	0.12	0.12	0.12	0.12	0.12
24	0.11	0.11	0.11	0.11	0.11	0.11

Shaded portion are solid grouted
O - Over reinforced

$f'_m = 3500$ psi Wind or EQ Load = 25 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
39	O	O	O	O	O	O
38	0.9	0.9	0.9	0.9	0.9	0.9
37	0.9	0.9	0.9	0.9	0.9	0.9
36	0.66	0.66	0.66	0.66	0.66	0.66
35	0.59	0.59	0.59	0.59	0.59	0.59
34	0.33	0.33	0.33	0.33	0.33	0.33
33	0.3	0.3	0.3	0.33	0.33	0.33
32	0.3	0.3	0.3	0.3	0.3	0.3
31	0.3	0.3	0.3	0.3	0.3	0.3
30	0.23	0.23	0.23	0.23	0.23	0.23
29	0.23	0.23	0.23	0.23	0.23	0.23
28	0.23	0.23	0.23	0.23	0.23	0.23
27	0.22	0.22	0.22	0.22	0.22	0.22
26	0.17	0.17	0.17	0.22	0.22	0.22
25	0.16	0.16	0.16	0.16	0.16	0.16
24	0.16	0.16	0.16	0.16	0.16	0.16
23	0.12	0.12	0.12	0.12	0.12	0.12
22	0.12	0.12	0.12	0.12	0.12	0.12
21	0.1	0.1	0.1	0.1	0.1	0.1
20	0.1	0.1	0.1	0.1	0.1	0.1

Shaded portion are solid grouted
O - Over reinforced

$f'_m = 3500$ psi Wind or EQ Load = 30 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
38	O	O	O	O	O	O
37	0.9	0.9	0.9	0.9	0.9	0.9
36	0.9	0.9	0.9	0.9	0.9	0.9
35	0.9	0.66	0.66	0.66	0.9	0.9
34	0.66	0.59	0.59	0.59	0.66	0.66
33	0.47	0.47	0.47	0.47	0.59	0.59
32	0.33	0.47	0.47	0.47	0.47	0.47
31	0.33	0.33	0.33	0.33	0.47	0.47
30	0.3	0.3	0.3	0.3	0.33	0.33
29	0.3	0.3	0.3	0.3	0.3	0.3
28	0.3	0.3	0.3	0.3	0.3	0.3
27	0.23	0.23	0.23	0.23	0.23	0.23
26	0.22	0.22	0.22	0.22	0.22	0.22
25	0.22	0.22	0.22	0.22	0.22	0.22
24	0.22	0.22	0.22	0.22	0.22	0.22
23	0.16	0.16	0.16	0.16	0.16	0.16
22	0.16	0.16	0.16	0.16	0.16	0.16
21	0.13	0.13	0.13	0.13	0.13	0.13
20	0.11	0.11	0.11	0.11	0.11	0.11

Shaded portion are solid grouted
O - Over reinforced

10 inch Atlas Structural Brick Technical Data Sheet

Area of Reinforcing (in.²/LF Wall)

$f'_m = 3500$ psi Wind or EQ Load = 35 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
36	O	O	O	O	O	O
35	0.9	0.9	0.9	0.9	0.9	0.9
34	0.9	0.9	0.9	0.9	0.9	0.9
33	0.66	0.66	0.66	0.66	0.66	0.66
32	0.59	0.59	0.59	0.59	0.59	0.59
31	0.47	0.47	0.47	0.47	0.47	0.47
30	0.33	0.47	0.47	0.47	0.47	0.47
29	0.3	0.33	0.33	0.33	0.33	0.33
28	0.3	0.3	0.3	0.3	0.3	0.3
27	0.3	0.3	0.3	0.3	0.3	0.3
26	0.23	0.23	0.23	0.23	0.23	0.23
25	0.23	0.23	0.23	0.23	0.23	0.23
24	0.22	0.22	0.22	0.22	0.22	0.22
23	0.22	0.22	0.22	0.22	0.22	0.22
22	0.17	0.17	0.17	0.17	0.17	0.17
21	0.16	0.16	0.16	0.16	0.16	0.16
20	0.13	0.13	0.13	0.13	0.13	0.13

Shaded portion are solid grouted

O - Over reinforced



Area of Reinforcing (in.²/LF Wall)

$f'_m = 4000$ psi Wind or EQ Load = 20 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
45	O	O	O	O	O	O
44	1.19	1.19	1.19	1.19	1.19	1.19
43	0.9	0.9	0.9	0.9	0.9	0.9
42	0.9	0.9	0.9	0.9	0.9	0.9
41	0.9	0.9	0.9	0.9	0.9	0.9
40	0.59	0.59	0.59	0.59	0.59	0.59
39	0.59	0.59	0.59	0.59	0.59	0.59
38	0.47	0.47	0.47	0.59	0.59	0.59
37	0.33	0.33	0.33	0.47	0.47	0.47
36	0.33	0.33	0.33	0.47	0.47	0.47
35	0.3	0.3	0.3	0.3	0.3	0.3
34	0.3	0.3	0.3	0.3	0.3	0.3
33	0.3	0.3	0.3	0.3	0.3	0.3
32	0.23	0.23	0.23	0.23	0.23	0.23
31	0.22	0.22	0.22	0.23	0.23	0.23
30	0.22	0.22	0.22	0.22	0.22	0.22
29	0.22	0.22	0.22	0.22	0.22	0.22
28	0.15	0.15	0.15	0.17	0.17	0.17
27	0.15	0.15	0.15	0.15	0.15	0.15
26	0.15	0.15	0.15	0.15	0.15	0.15
25	0.12	0.12	0.12	0.12	0.12	0.12
24	0.11	0.11	0.11	0.11	0.11	0.11

Shaded portion are solid grouted

O - Over reinforced

$f'_m = 4000$ psi Wind or EQ Load = 25 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
41	1.19	1.19	1.19	1.19	1.19	1.19
40	0.9	0.9	0.9	0.9	0.9	0.9
39	0.9	0.9	0.9	0.9	0.9	0.9
38	0.9	0.9	0.9	0.9	0.9	0.9
37	0.59	0.59	0.59	0.59	0.59	0.59
36	0.59	0.59	0.59	0.59	0.59	0.59
35	0.47	0.47	0.47	0.47	0.47	0.47
34	0.33	0.33	0.33	0.33	0.33	0.33
33	0.3	0.3	0.3	0.3	0.3	0.3
32	0.3	0.3	0.3	0.3	0.3	0.3
31	0.3	0.3	0.3	0.3	0.3	0.3
30	0.23	0.23	0.23	0.23	0.23	0.23
29	0.23	0.23	0.23	0.23	0.23	0.23
28	0.23	0.23	0.23	0.23	0.23	0.23
27	0.22	0.22	0.22	0.22	0.22	0.22
26	0.17	0.17	0.17	0.17	0.17	0.17
25	0.16	0.16	0.16	0.16	0.16	0.16
24	0.16	0.16	0.16	0.16	0.16	0.16
23	0.12	0.12	0.12	0.12	0.12	0.12
22	0.12	0.12	0.12	0.12	0.12	0.12
21	0.1	0.1	0.1	0.1	0.1	0.1
20	0.1	0.1	0.1	0.1	0.1	0.1

Shaded portion are solid grouted

$f'_m = 4000$ psi Wind or EQ Load = 30 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

HT \ P	0	500	750	1000	1500	2000
39	1.19	1.19	1.19	1.19	1.19	1.19
38	1.19	1.19	1.19	1.19	1.19	1.19
37	0.9	0.9	0.9	0.9	0.9	0.9
36	0.66	0.66	0.66	0.66	0.66	0.66
35	0.66	0.66	0.66	0.66	0.66	0.66
34	0.47	0.47	0.47	0.47	0.47	0.47
33	0.47	0.47	0.47	0.47	0.47	0.47
32	0.33	0.33	0.33	0.33	0.47	0.47
31	0.3	0.3	0.3	0.3	0.33	0.33
30	0.3	0.3	0.3	0.3	0.3	0.3
29	0.3	0.3	0.3	0.3	0.3	0.3
28	0.23	0.23	0.23	0.23	0.23	0.23
27	0.22	0.22	0.22	0.22	0.22	0.22
26	0.22	0.22	0.22	0.22	0.22	0.22
25	0.22	0.22	0.22	0.22	0.22	0.22
24	0.17	0.17	0.17	0.17	0.17	0.17
23	0.15	0.15	0.15	0.15	0.15	0.15
22	0.15	0.15	0.15	0.15	0.15	0.15
21	0.12	0.12	0.12	0.12	0.12	0.12
20	0.11	0.11	0.11	0.11	0.11	0.11

Shaded portion are solid grouted

10 inch Atlas Structural Brick Technical Data Sheet

Area of Reinforcing (in.²/LF Wall)

$f'_m = 4000$ psi Wind or EQ Load = 35 psf

HT = Wall height (ft) P = Roof Load (lbs/ft)

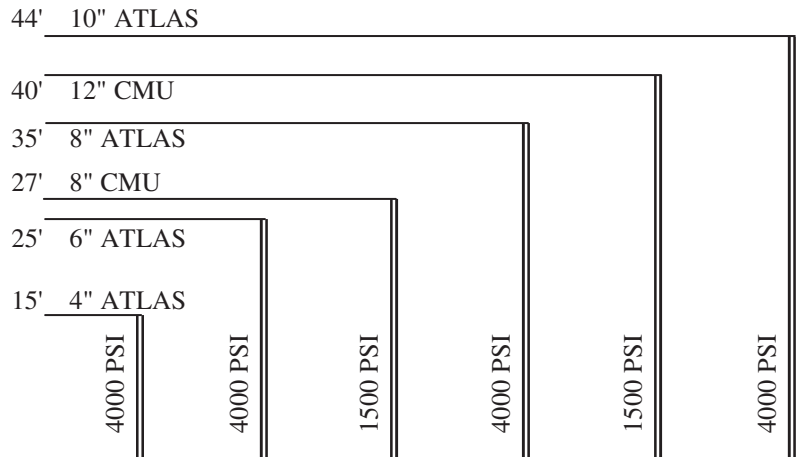
HT \ P	0	500	750	1000	1500	2000
37	1.19	1.19	1.19	1.19	1.19	1.19
36	1.19	1.19	1.19	1.19	1.19	1.19
35	0.9	0.9	0.9	0.9	0.9	0.9
34	0.66	0.66	0.66	0.66	0.66	0.66
33	0.59	0.59	0.59	0.59	0.59	0.59
32	0.47	0.47	0.47	0.47	0.47	0.47
31	0.47	0.47	0.47	0.47	0.47	0.47
30	0.33	0.33	0.33	0.33	0.33	0.47
29	0.3	0.3	0.3	0.3	0.3	0.33
28	0.3	0.3	0.3	0.3	0.3	0.3
27	0.3	0.3	0.3	0.3	0.3	0.3
26	0.23	0.23	0.23	0.23	0.23	0.23
25	0.23	0.23	0.23	0.23	0.23	0.23
24	0.22	0.22	0.22	0.22	0.22	0.22
23	0.22	0.22	0.22	0.22	0.22	0.22
22	0.17	0.17	0.17	0.17	0.17	0.17
21	0.15	0.15	0.15	0.15	0.15	0.15
20	0.12	0.12	0.12	0.12	0.12	0.12

Shaded portion are solid grouted

Allowable heights for Masonry Walls Slender Wall Design

Roof Load with snow

Roof load = 1500 lbs/ft. For wind / EQ load = 20 psf



ATLAS BRICK BEAM TABLES

The following charts are intended to be preliminary design guide. The charts indicate only the flexural capacity of the beam. Shear and deflection requirements must be investigated. Once the designer determine the applied bending moment on the beam, choose the f'_m from the chart and determine the required depth of beam (d) and area of steel (A_s)

$f'_m = 3000$ psi

d (in.)	A_s (in. ²)				
	0.4	0.6	0.8	1	1.2
10	7.29	10.73	13.63	14.68	15.56
14	10.34	15.26	20.08	24.83	27.35
18	13.40	19.82	26.12	32.32	38.45
22	16.49	24.40	32.19	39.86	47.44
26	19.58	29.01	38.29	47.44	56.49
30	22.68	33.63	44.41	55.05	65.58
34	25.79	38.26	50.54	62.69	74.70
38	28.90	42.89	56.70	70.34	83.85
42	32.02	47.54	62.86	78.02	93.02

$f'_m = 3500$ psi

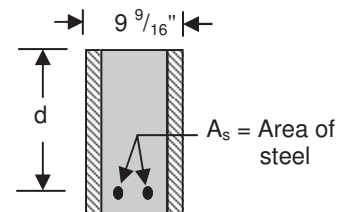
d (in.)	A_s (in. ²)				
	0.4	0.6	0.8	1	1.2
10	7.33	10.81	14.22	16.28	17.28
14	10.39	15.36	20.23	25.02	29.76
18	13.47	19.93	26.29	32.55	38.73
22	16.56	24.53	32.38	40.12	47.77
26	19.66	29.15	38.50	47.73	56.86
30	22.77	33.78	44.64	55.37	65.99
34	25.88	38.43	50.80	63.03	75.15
38	29.00	43.08	56.97	70.71	84.33
42	32.13	47.74	63.15	78.41	93.53

$f'_m = 4500$ psi

d (in.)	A_s (in. ²)				
	0.4	0.6	0.8	1	1.2
10	7.37	10.88	14.31	17.69	18.91
14	10.44	15.44	20.34	25.18	29.96
18	13.52	20.03	26.42	32.74	38.97
22	16.62	24.64	32.54	40.34	48.05
26	19.73	29.27	38.68	47.97	57.17
30	22.84	33.91	44.83	55.63	66.33
34	25.96	38.57	51.01	63.32	75.51
38	29.09	43.23	57.19	71.02	84.72
42	32.22	47.89	63.39	78.73	93.94

NOTES:

- Moments are calculated using Allowable Stress Design Method
- Beams are fully grouted
- Check shear capacity and deflection for all the beams. Table reflects moment capacity only
- Shaded portion controlled by masonry stresses - Ductility of beam may be reduced when masonry stress controls
- Allowable steel tensile stress $f_s = 24,000$ psi



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