

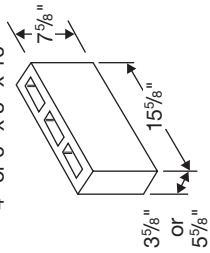
# CHAPTER 1

## *Concrete and Masonry*

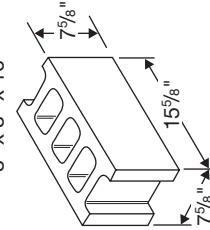
<b>MATERIAL QUANTITIES PER CUBIC FOOT OF MORTAR</b>				
<b>Material</b>	<b>Quantities by Volume</b>			
	<b>ASTM Mortar Type and Proportions by Volume</b>			
	M 1:¼:3	S 1:½:4½	N 1:1:6	O 1:2:9
Cement	0.333	0.222	0.167	0.111
Lime	0.083	0.111	0.167	0.222
Sand	1.000	1.000	1.000	1.000
<b>Material</b>	<b>Quantities by Weight</b>			
	<b>ASTM Mortar Type and Proportions by Volume</b>			
	M 1:¼:3	S 1:½:4½	N 1:1:6	O 1:2:9
Cement	31.33	20.89	15.67	10.44
Lime	3.33	4.44	6.67	8.89
Sand	80.00	80.00	80.00	80.00

**STANDARD SIZES AND SHAPES OF CONCRETE BLOCKS**

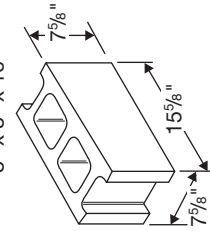
4" or 6" Partition  
4" or 6" x 8" x 16"



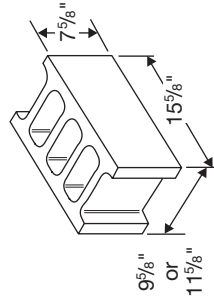
Stretcher (3 core)  
8" x 8" x 16"



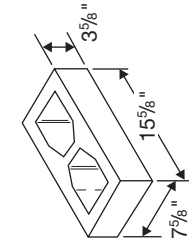
Stretcher (2 core)  
8" x 8" x 16"



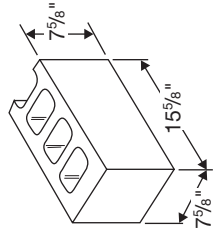
10" or 12" Stretcher  
10" or 12" x 8" x 16"

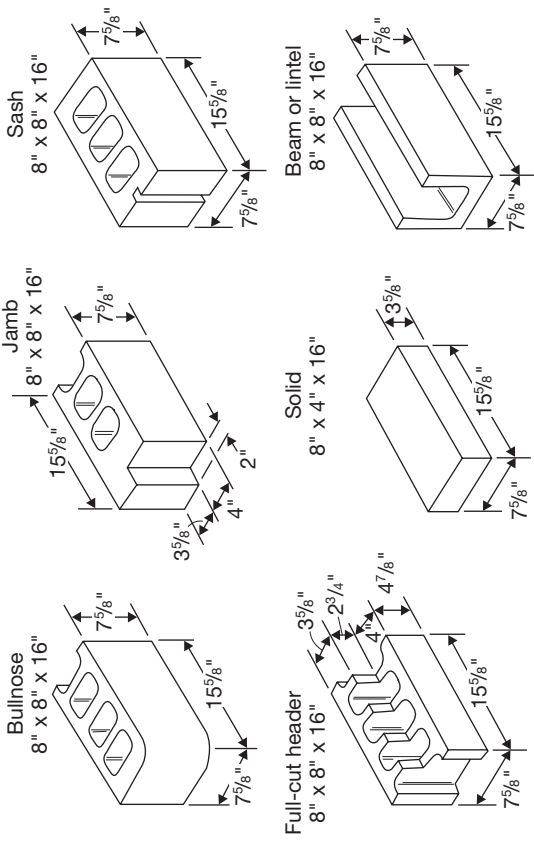


Stretcher  
8" x 4" x 16"



Corner  
8" x 8" x 16"





<b>ALLOWABLE HEIGHT AND MINIMUM NOMINAL THICKNESS FOR CONCRETE MASONRY BEARING WALLS</b>						
For buildings up to three stories in height with walls of hollow or solid concrete masonry units. For buildings over three stories, see Building Code. (Thickness in inches)						
Wall	Residential			Nonresidential		
	One-story	Two-story	Three-story	One-story	Two-story	Three-story
3rd story	—	—	8	—	—	12 8 <sup>d</sup>
2nd story	—	8	8	—	12 8 <sup>d</sup>	12
1st story	8 6 <sup>a</sup>	8	8	12 8 <sup>d</sup>	12	12 16 <sup>c</sup>
Basement or foundation		12 or 8 <sup>b</sup>		12 or 8 <sup>b</sup>	12	12 or 16

<sup>a</sup>May be 6 inch for one-story single-family dwellings and one-story private garages when not more than 9 feet in height, with an allowance of 6 feet additional for any gable.

<sup>b</sup>When foundation wall does not extend more than 4 feet into the ground, the wall may be 8 inches thick. With special approval of the building official, this depth may be extended to 7 feet where soil conditions warrant such an extension. In no case shall the total height of 8 inch or 10 inch concrete masonry walls, including the foundation wall, exceed 35 feet.

<sup>c</sup>Must be at least 16 inches if the total height of the first, second, and third stories above the foundation wall, or from a girder or other intermediate supports, is more than 35 feet.

<sup>d</sup>Top story may be 8 inches when not more than 12 feet in height and roof beams are horizontal and total height of masonry wall is not more than 35 feet.

<b>ALLOWABLE HEIGHT AND MINIMUM NOMINAL THICKNESS FOR CONCRETE MASONRY BEARING WALLS (cont.)</b>						
For buildings up to three stories in height with walls of hollow or solid concrete masonry units. For buildings over three stories, see Building Code. (Thickness in inches)						
Wall	Cavity Residential			Cavity Nonresidential		
	One-story	Two-story	Three-story	One-story	Two-story	Three-story
3rd story	—	—	10	—	—	12 10 <sup>f</sup>
2nd story	—	10	10	—	12 10 <sup>f</sup>	12
1st story	10	10	12 or 10 <sup>e</sup>	12 10 <sup>f</sup>	12	12 <sup>g</sup>
Basement or foundation	12, 10 or 8 <sup>h</sup> (not cavity)			12 or 10 (not cavity)		

<sup>a</sup>In no case shall total height of a 10 inch cavity wall above the foundation wall exceed 25 feet.

<sup>b</sup>Top story may be 10 inches when not more than 12 feet in height and roof beams are horizontal and total weight of wall is not more than 35 feet.

<sup>c</sup>In no case shall total height of a cavity wall exceed 35 feet above the foundation wall, regardless of thickness.

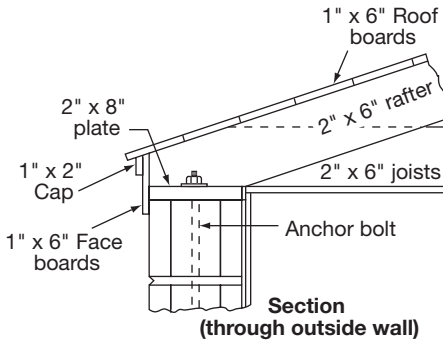
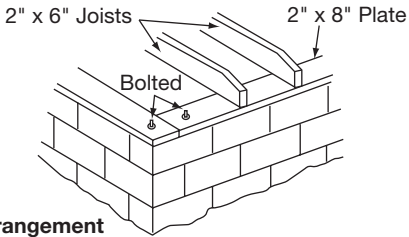
<sup>d</sup>May be 8 inches for 1½-story single-family dwellings having a maximum height, including the gable, of not over 20 feet and having nominal 10 inch cavity walls. Such 8 inch foundation walls shall be corbelled to provide a bearing the full thickness of the wall above. Total projection not to exceed 2 inches with top course a full header course not higher than the bottom of the floor joists. Individual projections in corbelling shall not be more than one-third the height of the unit.

NUMBER OF CONCRETE BLOCKS BY LENGTH OF WALL											
Length of Wall	No. of Units	Length of Wall	No. of Units	Length of Wall	No. of Units	Length of Wall	No. of Units	Length of Wall	No. of Units	Length of Wall	No. of Units
0' 8"	1/2	20' 8"	15 1/2	40' 8"	30 1/2	60' 8"	45 1/2	80' 8"	60 1/2	100' 8"	75 1/2
1' 4"	1	21' 4"	16	41' 4"	31	61' 4"	46	81' 4"	61	101' 4"	76
2' 0"	1 1/2	22' 0"	16 1/2	42' 0"	31 1/2	62' 0"	46 1/2	82' 0"	61 1/2	102' 0"	76 1/2
2' 8"	2	22' 8"	17	42' 8"	32	62' 8"	47	82' 8"	62	102' 8"	77
3' 4"	2 1/2	23' 4"	17 1/2	43' 4"	32 1/2	63' 4"	47 1/2	83' 4"	62 1/2	103' 4"	77 1/2
4' 0"	3	24' 0"	18	44' 0"	33	64' 0"	48	84' 0"	63	104' 0"	78
4' 8"	3 1/2	24' 8"	18 1/2	44' 8"	33 1/2	64' 8"	48 1/2	84' 8"	63 1/2	104' 8"	78 1/2
5' 4"	4	25' 4"	19	45' 4"	34	65' 4"	49	85' 4"	64	105' 4"	79
6' 0"	4 1/2	26' 0"	19 1/2	46' 0"	34 1/2	66' 0"	49 1/2	86' 0"	64 1/2	106' 0"	79 1/2
6' 8"	5	26' 8"	20	46' 8"	35	66' 8"	50	86' 8"	65	106' 8"	80
7' 4"	5 1/2	27' 4"	20 1/2	47' 4"	35 1/2	67' 4"	50 1/2	87' 4"	65 1/2	107' 4"	80 1/2
8' 0"	6	28' 0"	21	48' 0"	36	68' 0"	51	88' 0"	66	108' 0"	81
8' 8"	6 1/2	28' 8"	21 1/2	48' 8"	36 1/2	68' 8"	51 1/2	88' 8"	66 1/2	108' 8"	81 1/2
9' 4"	7	29' 4"	22	49' 4"	37	69' 4"	52	89' 4"	67	109' 4"	82
10' 0"	7 1/2	30' 0"	22 1/2	50' 0"	37 1/2	70' 0"	52 1/2	90' 0"	67 1/2	110' 0"	82 1/2

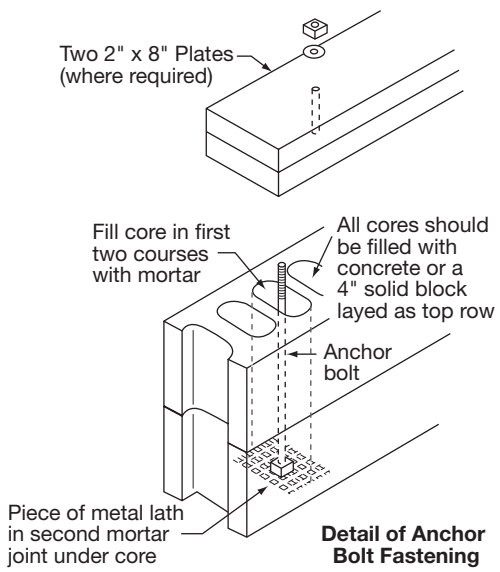
10' 8"	8	30' 8"	23	50' 8"	38	70' 8"	53	90' 8"	68	110' 8"	83
11' 4"	8 1/2	31' 4"	23 1/2	51' 4"	38 1/2	71' 4"	53 1/2	91' 4"	68 1/2	111' 4"	83 1/2
12' 0"	9	32' 0"	24	52' 0"	39	72' 0"	54	92' 0"	69	112' 0"	84
12' 8"	9 1/2	32' 8"	24 1/2	52' 8"	39 1/2	72' 8"	54 1/2	92' 8"	69 1/2	112' 8"	84 1/2
13' 4"	10	33' 4"	25	53' 4"	40	73' 4"	55	93' 4"	70	113' 4"	85
14' 0"	10 1/2	34' 0"	25 1/2	54' 0"	40 1/2	74' 0"	55 1/2	94' 0"	70 1/2	114' 0"	85 1/2
14' 8"	11	34' 8"	26	54' 8"	41	74' 8"	56	94' 8"	71	114' 8"	86
15' 4"	11 1/2	35' 4"	26 1/2	55' 4"	41 1/2	75' 4"	56 1/2	95' 4"	71 1/2	115' 4"	86 1/2
16' 0"	12	36' 0"	27	56' 0"	42	76' 0"	57	96' 0"	72	116' 0"	87
16' 8"	12 1/2	36' 8"	27 1/2	56' 8"	42 1/2	76' 8"	57 1/2	96' 8"	72 1/2	116' 8"	87 1/2
17' 4"	13	37' 4"	28	57' 4"	43	77' 4"	58	97' 4"	73	117' 4"	88
18' 0"	13 1/2	38' 0"	28 1/2	58' 0"	43 1/2	78' 0"	58 1/2	98' 0"	73 1/2	118' 0"	88 1/2
18' 8"	14	38' 8"	29	58' 8"	44	78' 8"	59	98' 8"	74	118' 8"	89
19' 4"	14 1/2	39' 4"	29 1/2	59' 4"	44 1/2	79' 4"	59 1/2	99' 4"	74 1/2	119' 4"	89 1/2
20' 0"	15	40' 0"	30	60' 0"	45	80' 0"	60	100' 0"	75	120' 0"	90

Note: Based on units 15 5/8 inches long and half units 7 5/8 inches long with 3/8-inch thick head joints.

## ANCHORING SILLS AND PLATES TO CONCRETE BLOCK WALLS



### ANCHORING SILLS AND PLATES TO CONCRETE BLOCK WALLS (cont.)



# INSTALLATION OF ELECTRICAL SWITCHES AND OUTLET BOXES IN CONCRETE BLOCK WALLS

