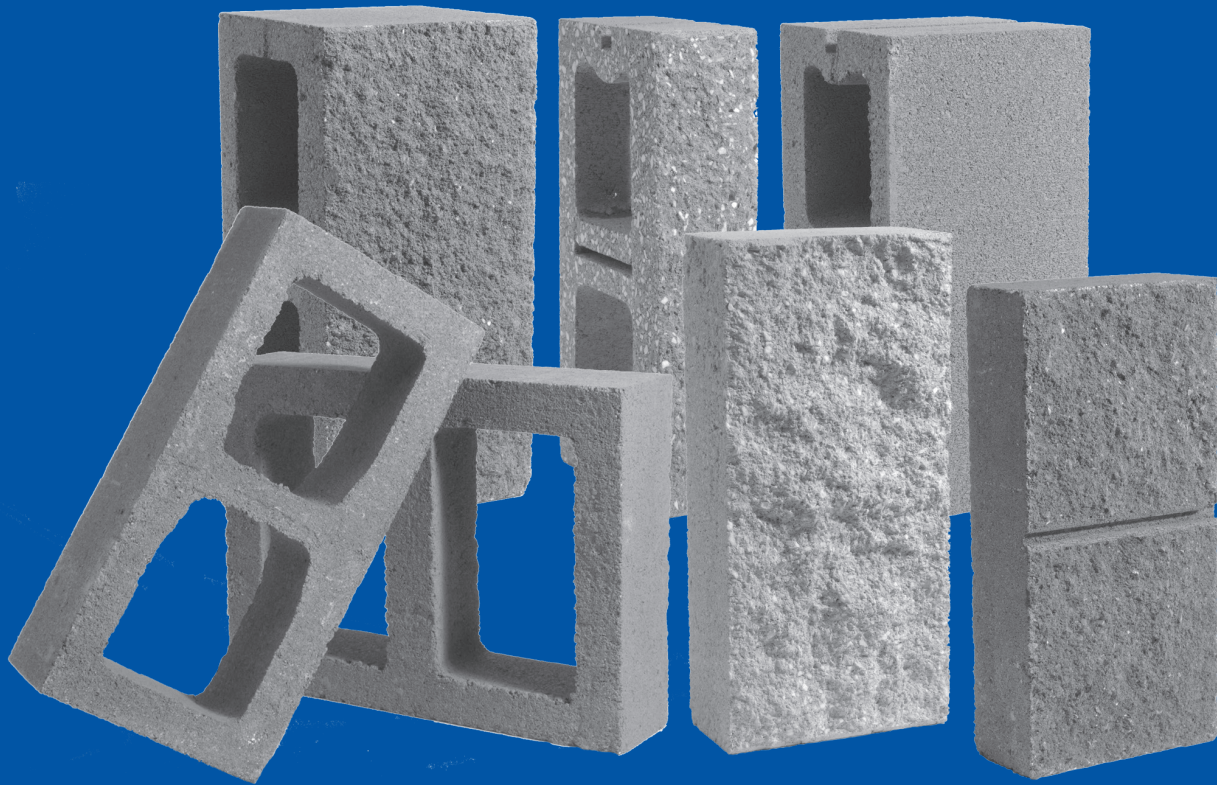


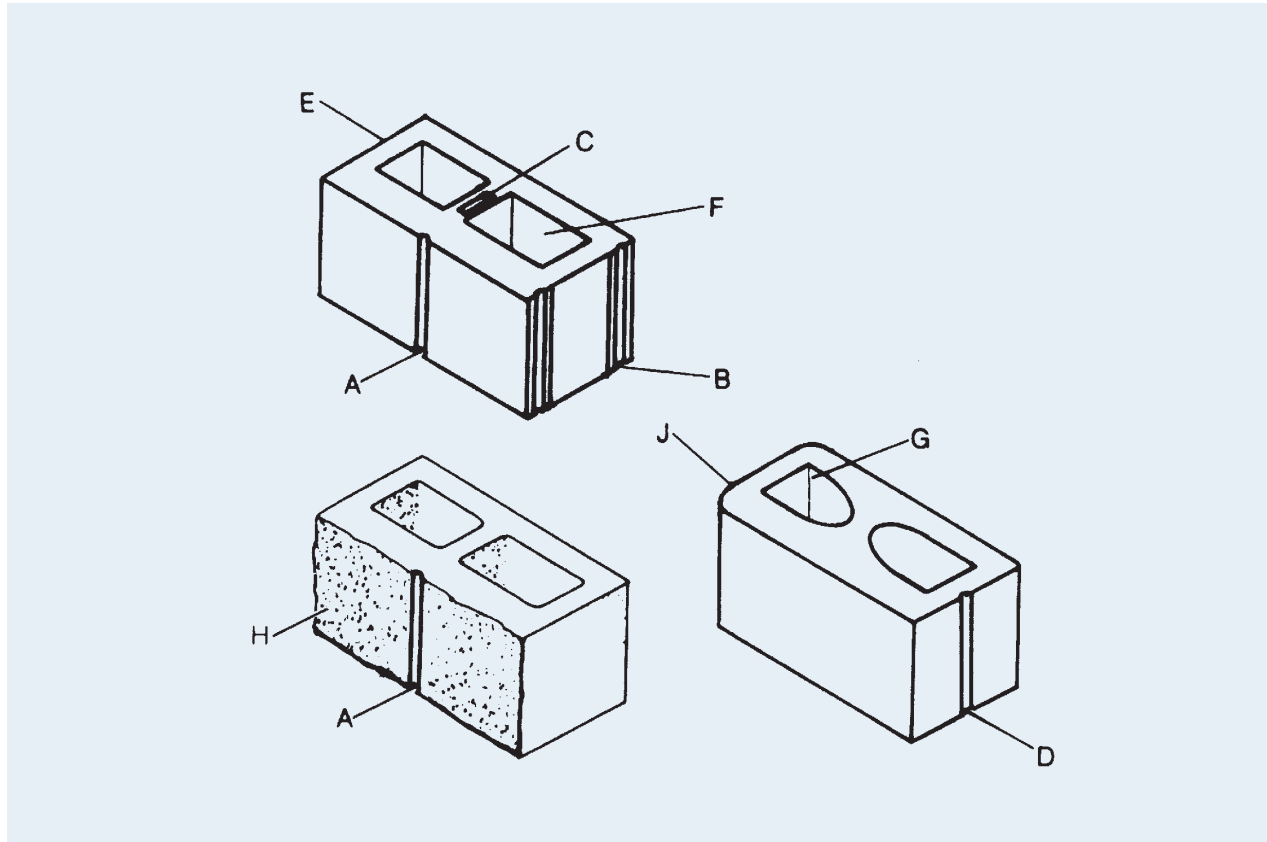
FRANKLIN SERIES GRAY CONCRETE MASONRY • JEFFERSON SERIES ARCHITECTURAL COLOR MASONRY

Concrete Masonry Units Size and Shape Guide



Block USA
A CEMEX COMPANY

Concrete Block Concrete Masonry Unit Terms



Concrete Blocks are commonly referred to as “CMUs” (Concrete Masonry Units), “Grey Block” or simply “Concrete Block.” The following are key terms commonly used to further describe different types of concrete block.

- A. Scored/Concave Flute
- B. Stretcher End (Mortar Groove)
- C. Breaker
- D. Sash Groove
- E. Plain End
- F. Rectangular Core
- G. Pear Core
- H. Split Face*
- J. Bullnose (Double shown)

**All split-face masonry units are available in grey and architectural colors.*

How to Calculate Fire Ratings for Concrete Block

International Standard Building Code

721.3.2 The fire resistance ratings of walls and partitions constructed of concrete masonry units shall be determined from Table 721.3.2. The rating shall be based on the equivalent thickness of the masonry and type of aggregate used.

*Values between those shown in the table can be determined by direct interpolation.

**Contact producer to verify aggregate and net volume. Certifications provided by each producer member as requested.

Table 721.3.2				
Minimum Equivalent Thickness (Inches) of Loadbearing or Nonloadbearing Concrete Masonry Walls*				
Fire Resistance Rating (hours)				
Type of Aggregate	1.0	2.0	3.0	4.0
Expanded Shale, Clay**				
or Slate	2.6	3.6	4.4	5.1

Thickness shown for concrete masonry is equivalent thickness defined as the average thickness of solid material in the wall and is represented by the the formula:

$$T_E = \frac{V_n}{L \times H}$$

Where:

T_E = Equivalent thickness, in inches

V_n = Net volume (gross volume less volume of voids), in cubic inches*

L = Length of block, in inches

H = Height of block, in inches

Source: ISBC

Compressive Strength of Concrete Masonry (PSI*)

Comment: ASTM C-90 is the standard of masonry production specifications in the United States. With the approval of ACI 530.1-88 specifications and the issue of ASTM C-90-91, there is one major specification change to note. In the past, block compressive strength (psi) was based on gross area requiring an average 1000 psi. The strength requirements have not changed but the measurements have. All new specifications now are based on net area of 1900 psi.

To assist you in calculating the net area, please follow the formula below.

Given the gross area compressive strength, you may determine the net area by knowing:

- (1) percent solids of unit, or
- (2) equivalent thickness of unit.

Gross Area to Net Area Conversion

*Based on average of 3 units 4" height and above

Example: 8" cmu with a known 1100 psi gross area at 52% solids.

$$\frac{\text{Compressive Strength (Gross Area)} \times 100}{(\%) \text{ Percent Solids}} = \text{Compressive Strength (Net Area)}$$

$$\frac{1100 \text{ psi}}{52\%} \times 100 = 2115 \text{ psi}$$

Example: 8" cmu (7.625 actual size) with a known 1100 psi gross area with an equivalent thickness of 4.0".

$$\frac{\text{Compressive Strength (Gross Area)}}{\text{Equivalent Thickness}} \times \text{Actual Thickness} = \text{Compressive Strength (Net Area)}$$

$$\frac{1100 \text{ psi}}{4.0} \times 7.625 = 2097 \text{ psi}$$

Block manufacturers have gross-area psi data as well as solids and equivalent strength numbers. Most will have the net-area compressive strength psi with future test results.

TABLE 1 Minimum Face Shells and Web Requirements ^A			
Nominal Width (W) of Units, in. (mm)	Face Shell Thickness (t _{fs}), min. in. (mm) ^{B,C}	Webs	
		Web Thickness ^C (t _w), min. in. (mm)	Normalized Web Area (A _{nw}) min. in. ² /ft ² (mm ² /m ²) ^D
3 (76.2) and 4 (102)	¾ (19)	¾ (19)	6.5 (45,140)
6 (152)	1 (25)	¾ (19)	6.5 (45,140)
8 (203) and greater	1¼ (32)	¾ (19)	6.5 (45,140)

^A Average of measurements on a minimum of 3 units when measured as described in Test Methods C140.

^B When this standard is used for units having split surfaces, a maximum of 10% of the split surface is permitted to have thickness less than those shown, but not less than ¾ in. (19.1 mm). When the units are to be solid grouted, the 10% limit does not apply and Footnote C establishes a thickness requirement for the entire face shell.

^C When the units are to be solid grouted, minimum face shell and web thickness shall be not less than 5/8 in. (16 mm).

^D Minimum normalized web area does not apply to the portion of the unit to be filled with grout. The length of that portion shall be deducted from the overall length of the unit for the calculation of the minimum web cross-sectional area.

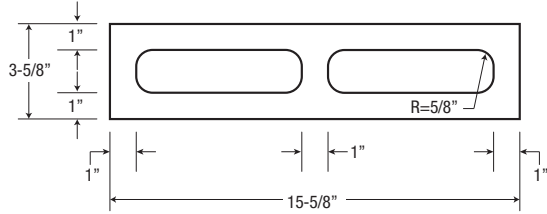


TABLE 2 Strength, Absorption, and Density Classification Requirements

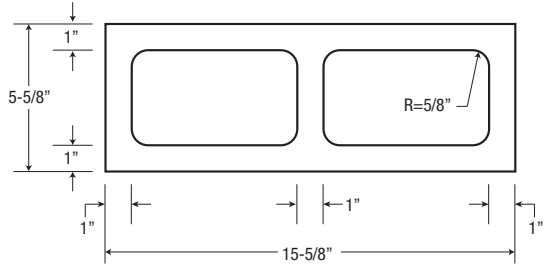
Density Classification	Oven-Dry Density of Concrete, lb/ft ³ (kg/m ³)	Maximum Water Absorption, lb/ft ³ (kg/m ³)		Minimum Net Area Compressive Strength, lb/in ² (MPa)	
	Average of 3 Units	Average of 3 Units	Individual Units	Average of 3 Units	Individual Units
Lightweight	Less than 105 (1680)	18 (288)	20 (320)	1900 (13.1)	1700 (11.7)
Medium Weight	105 to less than 125 (1680–2000)	15 (240)	17 (272)	1900 (13.1)	1700 (11.7)
Normal Weight	125 (2000) or more	13 (208)	15 (240)	1900 (13.1)	1700 (11.7)

Dimensions

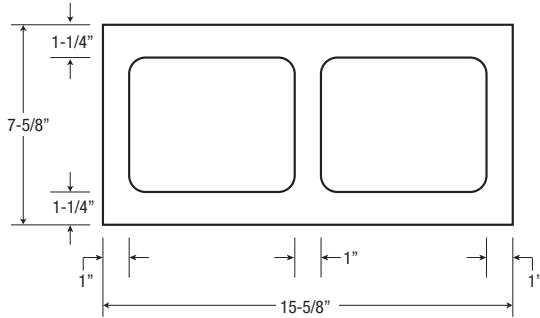
4-Inch Unit Configurations



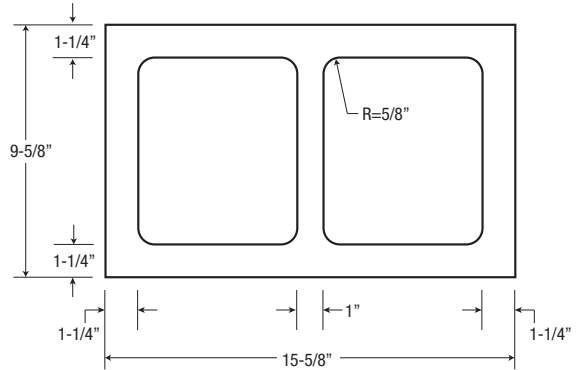
6-Inch Unit Configurations



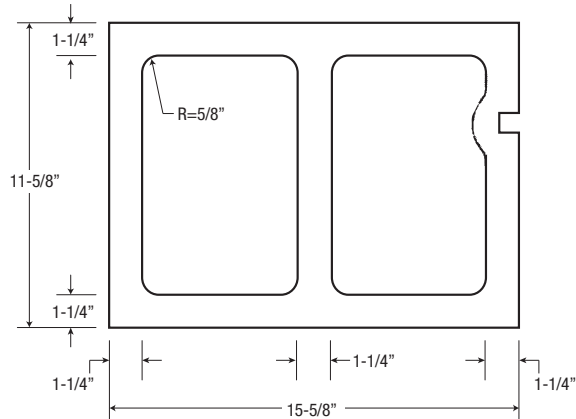
8-Inch Unit Configurations



10-Inch Unit Configurations




12-Inch Unit Configurations



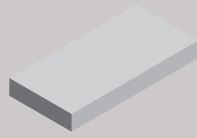
2" Units

2x4x8



Concrete Brick

2 1/4x8x16




Solid



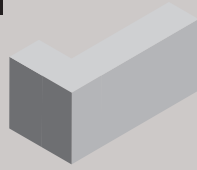
4" Units

4x8x16



Solid

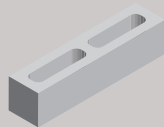
4x8x16



Return Corner

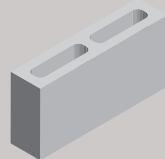
Single Score Available

4x4x16



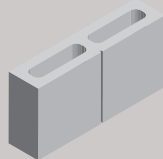
Half-High

4x8x16




Regular

4x8x16



Single Score

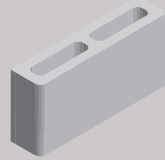
4x8x8



Half

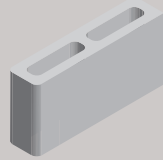
SBN & DBN Available

4x8x16



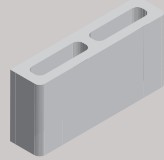
Single Bullnose

4x8x16



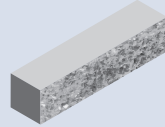
Double Bullnose One End

4x8x16



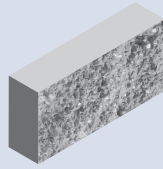
Double Bullnose One Side

4x4x16



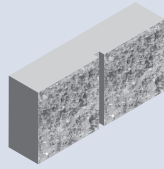
Half-High Split Face

4x8x16



Split Face

4x8x16



Split Face Single Flute

Single Score Available

4x8x16



Split Face Return Corner

4x8x16



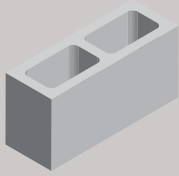
Split Face Return Corner Single Flute

Single Score Available



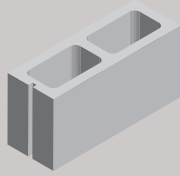
6" Units

6x8x16



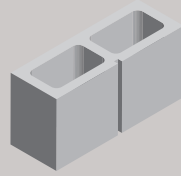
Square End Regular

6x8x16



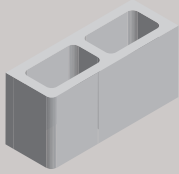
Regular w/Sash

6x8x16



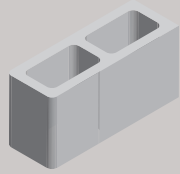
Single Score

6x8x16



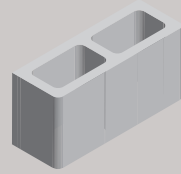
Single Bullnose

6x8x16



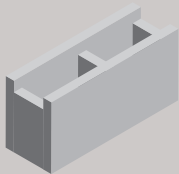
Double Bullnose
One End

6x8x16



Double Bullnose
One Side

6x8x16



Restricted Open
Bottom Lintel

6x8x16



Solid Bottom Lintel

6x8x8



Half w/ Sash

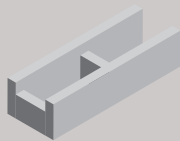
SBN &
DBN
Available

6x8x8



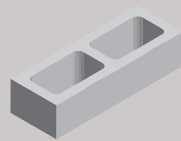
Sill Block Smooth

6x4x16



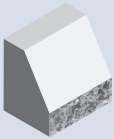
Half-High Restricted
Open Bottom Lintel

6x4x16



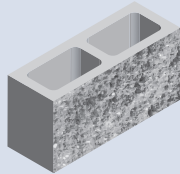
Half-High

6x8x8



Split Face
Sill Block

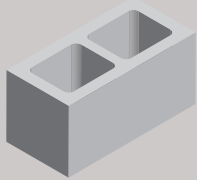
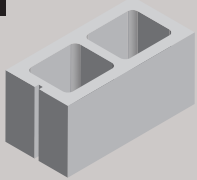
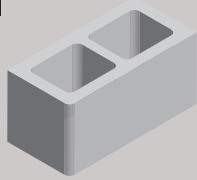
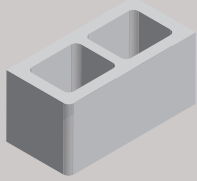
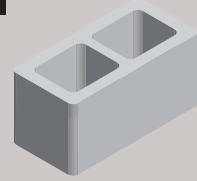
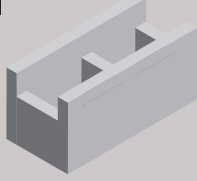
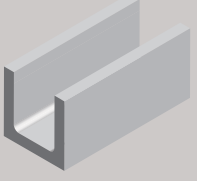

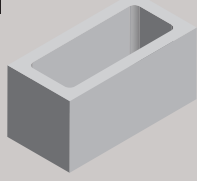
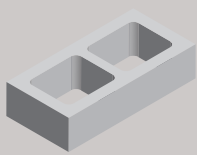
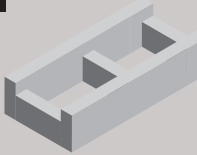
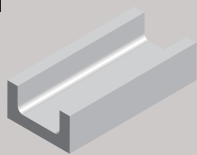
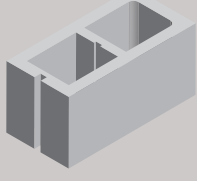
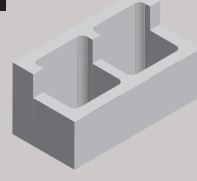

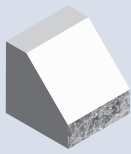
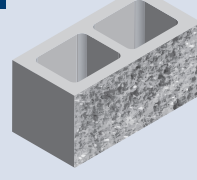
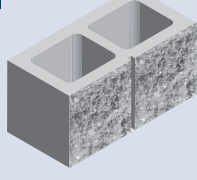
6x8x16



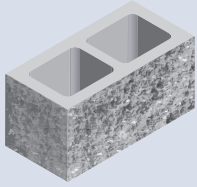
Split Face



8" Units

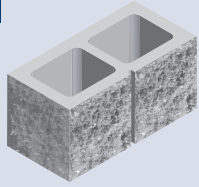
<p>8x8x16</p>  <p>Square End Regular</p>	<p>8x8x16</p>  <p>Regular w/Sash</p>	<p>8x8x16</p>  <p>Single Bullnose</p>
<p>8x8x16</p>  <p>Double Bullnose One End</p>	<p>8x8x16</p>  <p>Double Bullnose One Side</p>	<p>8x8x16</p>  <p>Restricted Open Bottom Lintel</p>
<p>8x8x16</p>  <p>Solid Bottom Lintel</p>	<p>8x8x8</p>  <p>Half w/Sash</p> <p>SBN & DBN Available</p>	<p>8x8x16</p>  <p>Pilaster (Call for Availability)</p>
<p>8x4x16</p>  <p>Half High</p>	<p>8x4x16</p>  <p>Half-High Restricted Open Bottom Lintel</p>	<p>8x4x16</p>  <p>Half-High Solid Bottom Lintel</p>
<p>8x8x16</p>  <p>Conduit Block With Knockout Webs</p>	<p>8x8x16</p>  <p>Cut Header</p>	<p>8x8x8</p>  <p>Sill Block Smooth</p>
<p>8x8x8</p>  <p>Split Face Sill Block</p>	<p>8x8x16</p>  <p>Split Face</p>	<p>8x8x16</p>  <p>Split Face Single Flute</p> <p>Single Score Available</p>

8x8x16



Split Face
Corner

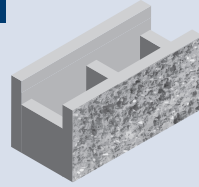
8x8x16



Split Face Corner
Single Flute

Single
Score
Available

8x8x16

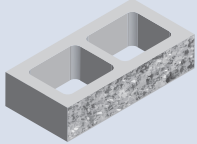


Split Face Lintel
Open/Solid Bottom

Available
With
Flutes &
Score

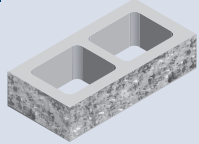
8" Units

8x4x16



Half-High
Split Face

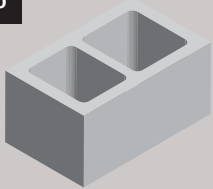
8x4x16



Half-High
Split Face Corner

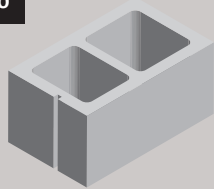


10x8x16



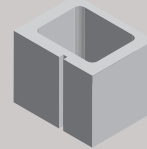
Square End Regular

10x8x16



Regular w/Sash

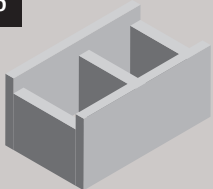
10x8x8



Half w/Sash

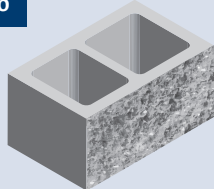
10" Units

10x8x16



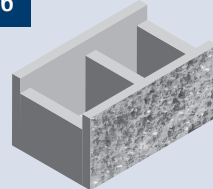
Restricted Open/Solid
Bottom Lintel

10x8x16



Split Face

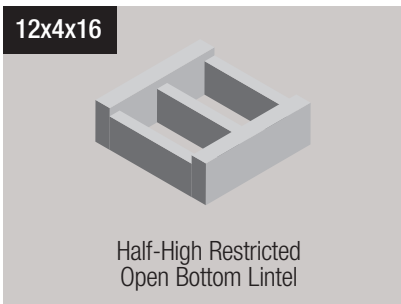
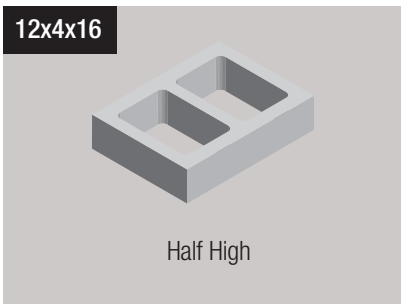
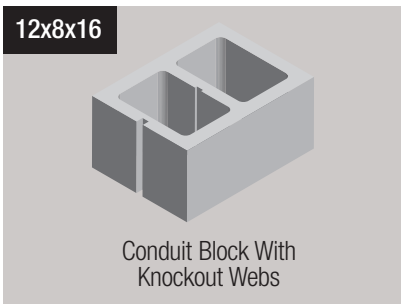
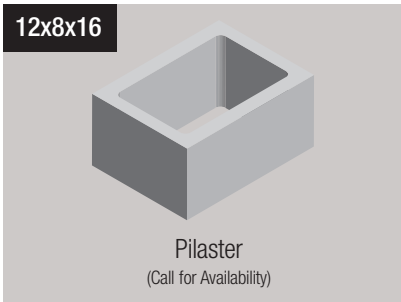
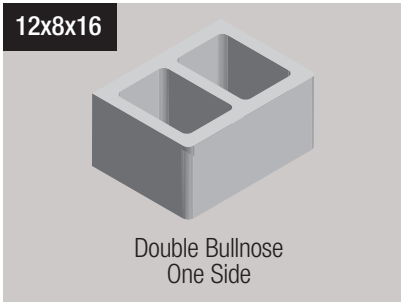
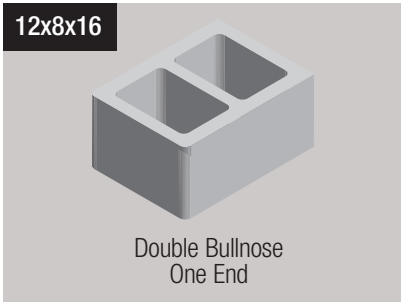
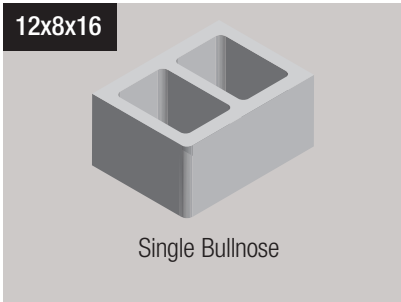
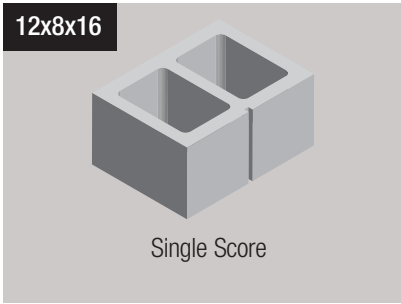
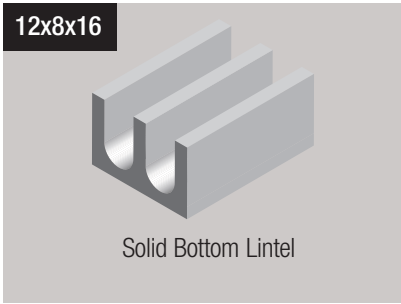
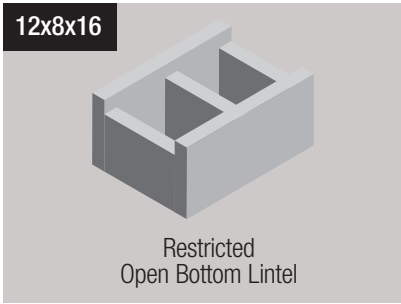
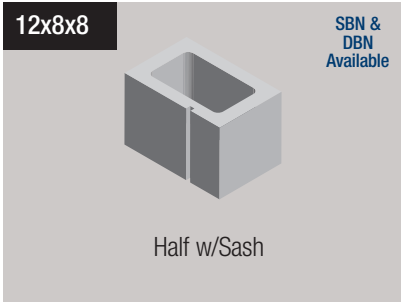
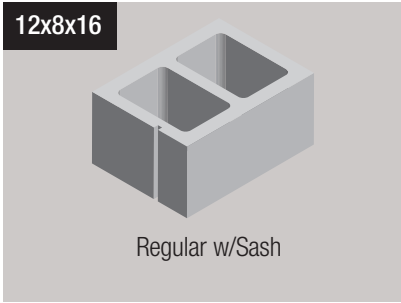
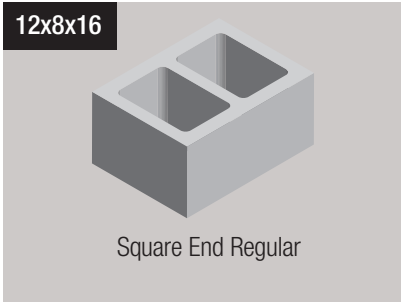
10x8x16



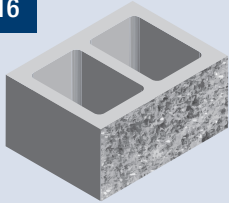
Split Face Lintel
Open/Solid Bottom

Notes

12" Units

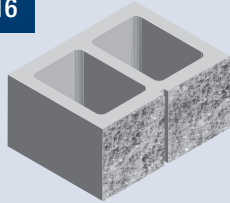


12x8x16



Split Face

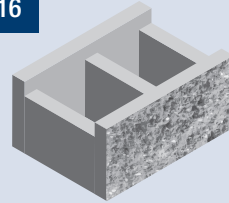
12x8x16



Split Face
Single Flute

Single
Score
Available

12x8x16

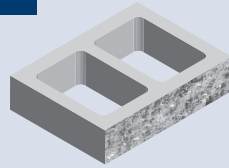


Split Face
Open/Solid Bottom Lintel

Available
With
Flutes &
Score

12" Units

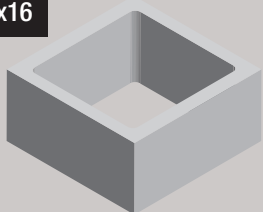
12x4x16



Half-High
Split Face

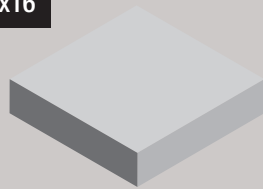


16x8x16



Pilaster
(Call for Availability)

16x4x16

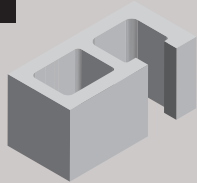


Pier Pad

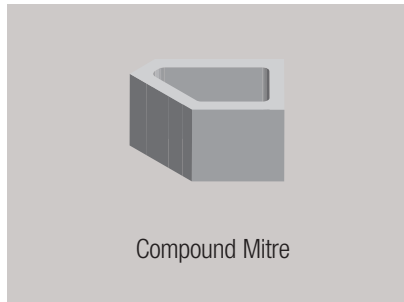


16" Units

8x8x16



Inspection Block

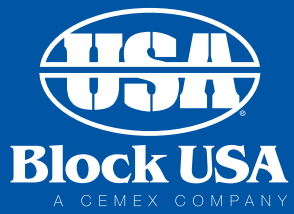


Compound Mitre



Special Units

Notes



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Gulf Coast Region

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