

## **ADVANTAGES OF MODULAR LAYOUT**

Where possible, it is desirable to lay out the brickwork according to the module of the brick being used - both in length and in height. Proper layout will minimize the cutting of bricks, thereby reducing costs. A good layout will also improve appearance by avoiding small cut pieces, mitres, and uneven bonds. It also allows for uniformity in the mortar joints, avoiding unusually large or small joints. In sufficiently large panels, the mason can adjust joint thicknesses to suit required panel heights and widths. (See also *Section 2.1.4 – Layout Considerations*)

For all brick laid in 1/2 bond the module is determined as follows:

**Horizontal module** = 1/2 (brick length + joint)

**Vertical module** = brick height + joint

## **CONSIDERATIONS WHEN CHOOSING A BRICK SIZE**

The larger the brick size the more economical the cost of the wall.

<u>Unit</u>	<u>Cost Factor</u>
Standard	1.00
Modular	+ 5 to 10%
Norman, Econ/Saxon, Giant	- 10 to 15%

As a *general rule* – the larger the brick size the more economical the cost of the wall (see *Section 1.3.3 - Cost Guide*). The key to realizing these savings is proper layout both at the design and construction phases.

The choice of unit size impacts more than just the module and cost:

- With **soldier courses** (usually found above windows or as accent banding) where the unit is laid vertically, the soldier course doesn't always bond with the horizontal units.
- **Corners** may require special units (either cut on site or specially manufactured) to maintain 1/2 bond.

Special units such as L-corners and 214mm soldier units should be clearly identified in the specifications and masonry details.

**Other brick sizes than those shown below may be available, check with local brick manufacturers.**

## STANDARD BRICK

Metric "Standard" brick and Imperial "Standard" brick are identical in size. "Standard" brick are the same size whether specified as metric or imperial since these sizes fall safely within manufacturing tolerances. The difference in the module is entirely reflected in the size of the mortar joint.

<b>Horizontal</b>	<b>Module:</b>	<b>100mm (4")</b>
	Brick:	188mm (7 1/2")
	Joint:	12mm (1/2")
<b>Vertical</b>	<b>Module:</b>	<b>75mm (3")</b>
	Coursing	4c=300mm (12")
	Brick:	63mm (2 1/2")
	Joint:	12mm (1/2")

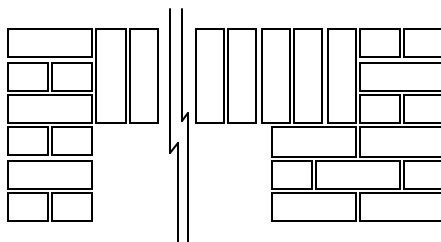
With "Standard" brick:

**Soldiers:** "Standard" brick used in soldier courses do not have the same height as 3 courses of brick. A special, longer 214mm (8 1/2") brick can be used successfully to match regular coursing.

**Bond:** 1/2 bond is maintained around corners

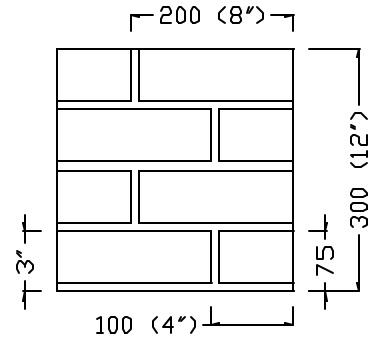
If a soldier course is used above an opening, remember the following points:

- Jams can be cut to suit to accept lintel angles
- A 214mm unit can be used to course out vertically
- A soldier course can be carried around the whole building to eliminate this coursing problem. A banding or horizontal effect will result.
- A soldier lintel looks better if it is extended beyond the jam. It will then appear to "bear" on the surrounding masonry.

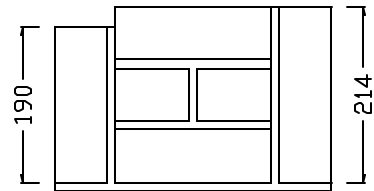


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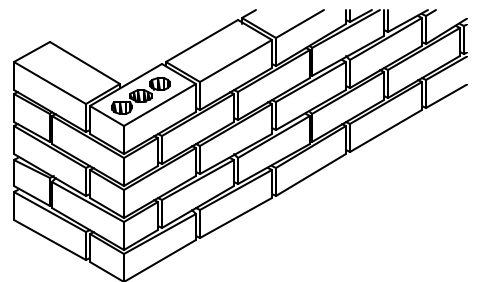
**Cost Factor = 1.00**  
(Base)



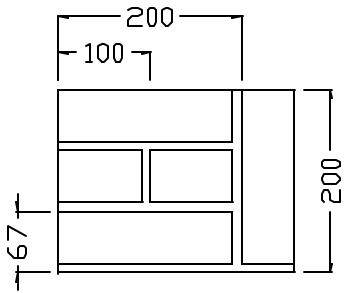
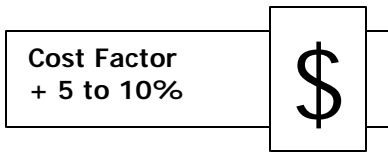
Standard bricks are the same size whether specified as metric or imperial



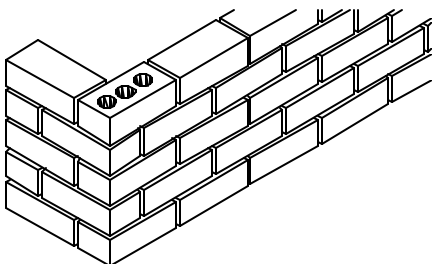
"Standard" soldiers will not line up with horizontal courses (left). When needed, special 214mm units can be used (right).



1/2 bond



- A "Modular" brick courses evenly as a soldier.



1/2 bond

## MODULAR BRICK

"Modular" brick are designed so that 3 vertical courses equal 200mm or 8 inches. This permits using the brick vertically as a soldier course lining up with 3 horizontal courses.

"Modular" brick walls are generally slightly less economical than "Standard" brick walls because of the smaller unit size. However, they can be more economical if there are a lot of details where their modularity is advantageous (soldier courses, basketweave, etc.)

<b>Metric</b>	<b>Horizontal</b>	<b>Module:</b>	<b>100mm</b>
		Brick:	190mm
		Joint:	10mm
<b>Metric</b>	<b>Vertical</b>	<b>Module:</b>	<b>67mm</b>
		Coursing	3c=200mm
		Brick:	57mm
		Joint:	10mm

<b>Imperial</b>	<b>Horizontal</b>	<b>Module:</b>	<b>4"</b>
		Brick:	7-5/8"
		Joint:	3/8"
<b>Imperial</b>	<b>Vertical</b>	<b>Module:</b>	<b>2-2/3"</b>
		Coursing:	3c=8"
		Brick:	2 1/4"
		Joint:	3/8"+

With "Modular" brick:

**Soldiers:** "Modular" brick courses evenly as a soldier

**Bond:** 1/2 bond is maintained around corners

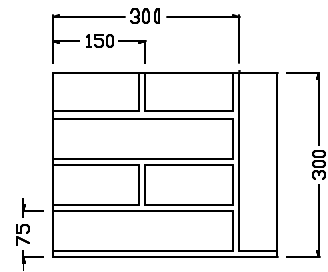
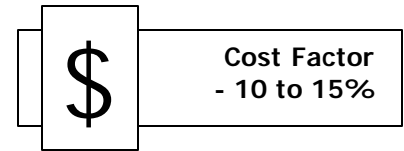
## NORMAN BRICK

“Norman” brick are usually the same height as a “Standard” brick, but 100mm (4”) longer giving a more horizontal look to a wall as well as reducing overall wall cost.

The cost factor shows the decrease of the in-the-wall cost due to the larger size of this unit, assuming the wall is laid out to the appropriate module.

Normans can be laid in either 1/2 bond or 1/3 bond. In 1/2 bond special L-corner units are recommended to maintain bond around corners without cutting small pieces. Soldiers are modular, one equals 4 brick courses.

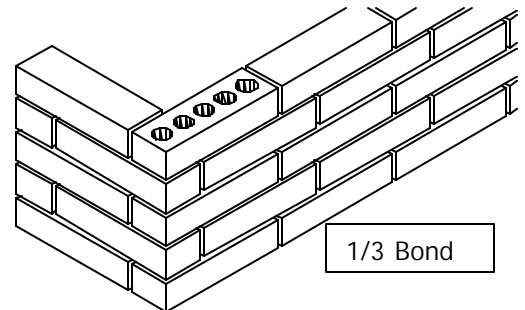
1/2 bond can also be accomplished using alternating 240mm (9-1/2”) closer bricks at corners and wall ends but this alters the module and can result in additional cutting in other locations.



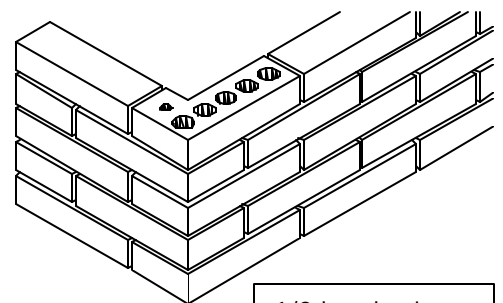
Imperial similar

<b>Metric</b>	<b>Horizontal</b>	<b>Module:</b>	<b>150mm</b>
		Brick:	288mm
		Joint:	12mm
<b>Vertical</b>	<b>Module:</b>	<b>75mm</b>	
	Coursing	4c=300mm	
	Brick:	63mm	
	Joint:	12mm	

<b>Imperial</b>	<b>Horizontal</b>	<b>Module:</b>	<b>6"</b>
		Brick:	11 1/2"
		Joint:	1/2"
<b>Vertical</b>	<b>Module:</b>	<b>3"</b>	
	Coursing:	4c=12"	
	Brick:	2 1/2"	
	Joint:	1/2"	



1/3 Bond



1/2 bond using an L-Corner unit

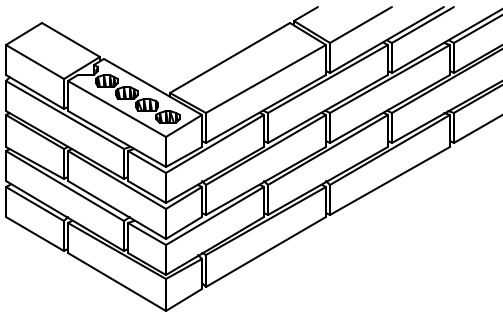
Notes:

- Horizontal module changes from 100 (4”) for “Standards” to 150 (6”) for “Normans”
- The length of imperial and metric “Normans” are **not** equal.
- A 2 1/2” height “Norman” is commonly used in BC.
- 2 1/4” height “Normans” are available, but at a higher in-the-wall cost.

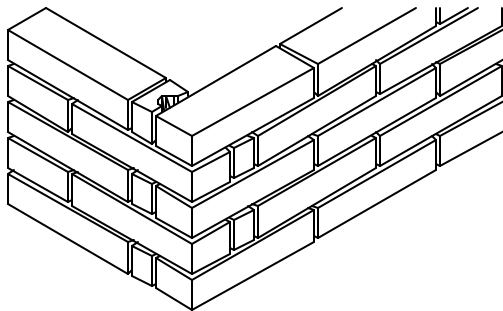
With "Norman" bricks:

**Bond:** 1/3 bond is the natural bond around corners. Special units can be used to achieve 1/2 bond.

**Soldiers:** Match the height of 4 courses.



1/2 bond using  
a Closer unit



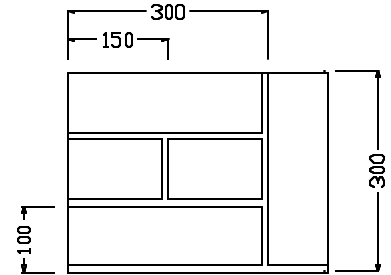
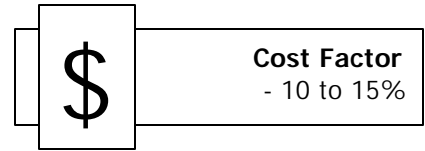
1/2 bond using a Bat

## ECON / SAXON BRICK

(“Econ” and “Saxon” are proprietary names for this size of unit in BC.)

These units are economical alternatives to “Standard” brick.

“Econ” or “Saxon” brick have the same height to length ratio as “Standard” brick ( 1:3 ) and therefore have a similar appearance. These units can be laid in either 1/2 bond or 1/3 bond. In 1/2 bond special L-corner units are recommended to maintain bond around corners without cutting small pieces. If laid in 1/2 bond, L-corner or 9 1/2” (240mm) closer units are generally used. If the job is laid out to a 150mm module this can be an economical alternative to “Standard” brick because only half as many units are laid. Soldiers are modular, one equals 3 brick courses.



- Units used as soldiers course out evenly.

<b>Metric</b>	<b>Horizontal Module:</b> <b>150mm</b>
	Brick: 290mm Joint: 10mm
<b>Vertical</b>	<b>Module:</b> <b>100mm</b>
	Coursing: 2c=200mm
	Brick: 90mm
	Joint: 10mm

<b>Imperial</b>	<b>Horizontal Module:</b> <b>6"</b>
	Brick: 11 1/2" Joint: 1/2"
<b>Vertical</b>	<b>Module:</b> <b>4"</b>
	Coursing: 2c=8"
	Brick: 3 1/2"
	Joint: 1/2"

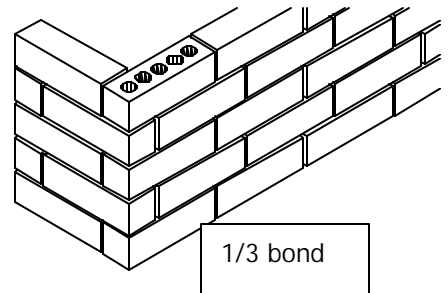
Note: Imperial and metric lengths are not equal

With “Econ” or “Saxon” bricks:

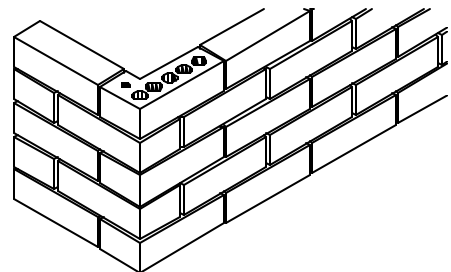
**Bond:** 1/3 bond is the natural bond around corners. An L-corner or closer can be used to maintain 1/2 bond around corners

**Soldiers:** Match the height of 3 courses

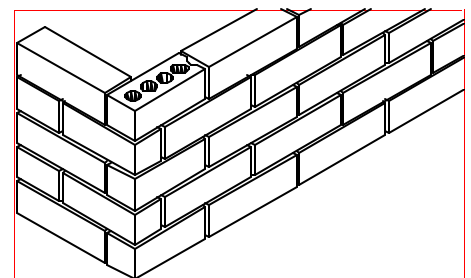
Note: Closers alter the module. Using them may result in forcing cuts elsewhere.



1/3 bond



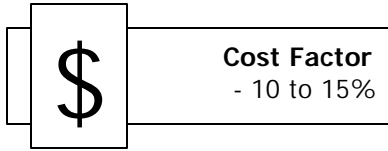
1/2 bond using L-corners



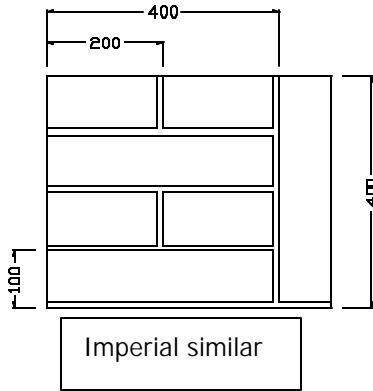
1/2 bond using Closer units

## GIANT BRICK

("Giant Brick" is a proprietary name for this size of unit in BC.)



Giants, like Normans, have a 1:4 height to length ratio. They are generally laid in 1/2 bond but can also be laid in 1/4 bond. Corners in 1/2 bond require cut pieces (Bats).

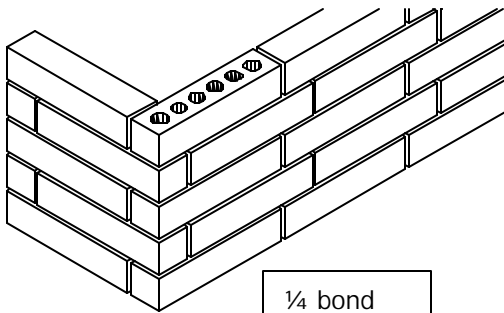


Imperial similar

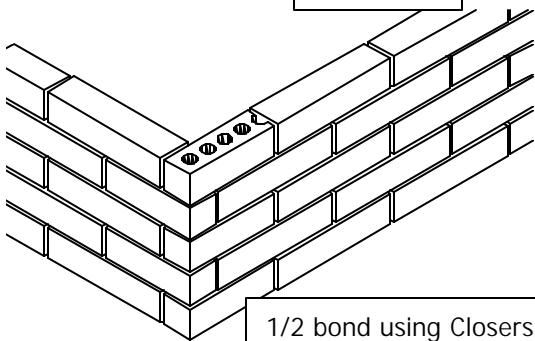
<b>Metric</b>	<b>Horizontal Module:</b>	<b>200mm</b>
	Brick:	390mm
	Joint:	10mm
	<b>Vertical Module:</b>	<b>100mm</b>
<b>Imperial</b>	Coursing	2c=200mm
	Brick:	90mm
	Joint:	10mm

<b>Imperial</b>	<b>Horizontal Module:</b>	<b>8"</b>
	Brick:	15 1/2"
	Joint:	1/2"
	<b>Vertical Module:</b>	<b>4"</b>
<b>Imperial</b>	Coursing:	2c=8"
	Brick:	3 1/2"
	Joint:	1/2"

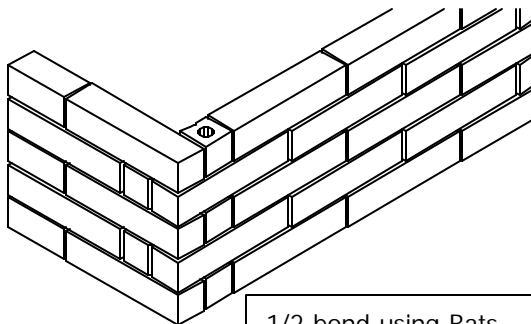
Note: Imperial and Metric lengths are not equal.



1/4 bond



1/2 bond using Closers



1/2 bond using Bats

With "Giant" bricks:

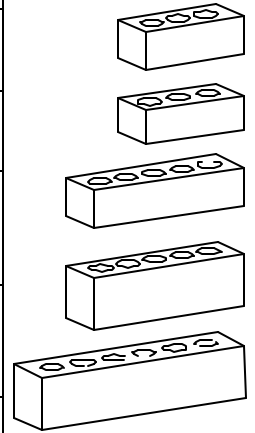
**Bond:** 1/4 bond is the natural bond around corners. Brick Closers or Bats (cut pieces) are used to maintain 1/2 bond around corners

**Soldiers:** Match the height of 4 courses. Half units are often used to match the height of two courses (200mm).

## BRICK MODULE SUMMARY TABLES

For metric bricks:

Brick	Module (l x h)	Cost Factor	Natural Bond	1/2 Bond Corners	Soldiers
Standard	100x75	1.00	1/2 bond	Natural	Special 214mm unit matches 3 courses
Modular	100x67	+ 5 to 10%	1/2 bond	Natural	3 courses
Norman	150x75	- 10 to 15%	1/3 bond	L-corner: 140mm return Closer: 240mm	4 courses
Econ / Saxon	150x100	- 10 to 15%	1/3 bond	L-corner: 140mm return Closer: 240mm	3 courses
Giant	200x100	- 10 to 15%	1/4 bond	Closer: 290mm Bat: 90mm	4 courses (2 for half units)



For imperial bricks:

Brick	Module (l x h)	Cost Factor	Natural Bond	1/2 Bond Corners	Soldiers
Standard	4"x3"	1.00	1/2 bond	Natural	Special 8 1/2" unit matches 3 courses
Modular	4"x2 2/3"	+ 5 to 10%	1/2 bond	Natural	3 courses
Norman	6"x3"	- 10 to 15%	1/3 bond	L-corner: 5 1/2" return Closer: 9 1/2"	4 courses
Econ / Saxon	6"x4"	- 10 to 15%	1/3 bond	L-corner: 5 1/2" return Closer: 9 1/2"	3 courses
Giant	8"x4"	- 10 to 15%	1/4 bond	Closer: 11 1/2" Bat: 3 1/2"	4 courses (2 for half units)

