

ESTIMATING

3.1 How to Estimate Blocks for Your Project

Follow the instructions below to estimate how many BuildBlock forms you'll need for your construction project. Or, download our automated estimator program from our website at: <http://www.buildblock.com/support/estimate.asp>.

1. Divide wall height by 16" and round up. This is the **number of courses** required. (Keep in mind that BuildBlock is reversible. This feature allows you to cut the block in half and use an 8" high section instead of the full 16" tall block. For example, if you were figuring a 10' wall height, you could use a full 7 courses plus 1/2 of 1 course to achieve 10'. (Example: 7 courses = 9'-4" plus 1/2 of 1 course = 8" of height to make 10'.)
2. Multiply the # of 90° corners in the structure by the # of courses required. This is the number of **90° corner forms** required.
3. Multiply the # of 45° corners in the structure by the # of courses required. This is the number of **45° corner forms** required.
4. Use the chart below to determine the **total square footage** of all **90° forms** to be used. (Number of **90° forms** multiplied by sq. ft. per form.) Do the same for the 45° forms.
5. Determine the **total square foot area of wall** being formed (perimeter in feet x height, minus 80% of window and door openings). Subtract total square foot of all **90° forms** and all **45° forms** to be used.
6. Divide the remaining square footage of the wall by 5.33 to determine the **number of straight forms required**. Add a small number of forms for possible waste. You do not want to be short on material. Expect some mistakes, mis-cuts, or special areas that require additional waste, so have a few extra forms on hand.

3.2 Estimating Buck Materials

To estimate buck materials for windows or other openings, calculate height of opening x 2 plus width of opening x 2. To estimate door openings, calculate height of opening x 2 plus width of opening x 1, since there is usually no bottom to a door opening. Note: Window and door openings are usually created slightly larger than the actual window or door size so we recommend adding a couple of inches to each leg of an opening for your material purchases. V-Buck comes in lengths of 8 ft. or 16 ft. Dimensional lumber comes in lengths starting at 8 ft. and every 2 ft. additional lengths up to a maximum of usually 18 ft. to 24 ft. You do not want to use cut pieces unless properly braced so figure carefully. Cross bracing of bucks is important. See notes on building and bracing bucks in Section 8 of this manual.

3.3 Estimating Concrete Volume

Estimate the required **concrete volume** by the following calculation: Divide total square footage of wall to be formed, including corners, by 53 or 40 (for 6" or 8" forms, respectively). This equals the **number of cubic yards** of concrete required. Add 1½ to 2 additional yards for waste and the pump. (You do not want to be short on concrete. Delays are too expensive on manpower and pump costs.) See Section 10.2 of this manual for concrete mix design.




Square Feet Per Block

Form Type	4"	6"	8"
Straight	5.33	5.33	5.33
90° Corner	5.56	6.00	6.44
45° Corner	4.89	4.89	4.89
Brick Ledge	NA	5.33	5.33

3.4 Choosing The Right Rebar

Rebar comes in two standard grades, 40 and 60. This refers to the tensile strength in thousands of pound per square inch, so grade 60 has a tensile strength of 60,000 psi. The size of rebar is indicated in increments of 1/8" (inch), so a #3 rebar is 3/8" in diameter and so forth. While grade 60 rebar is stronger than grade 40, it is also harder to bend (which is why grade 40 is so widely used). The pricing may vary depending on your supplier, but either grade may work fine. In the engineering of steel, the size and grade must be taken into account. Make sure you figure steel size and grade according to engineering tables or your engineer's specifications.

REBAR

SIZE		GRADE
#3 (3/8")		40, 60
#4 (1/2")		40, 60
#5 (5/8")		40, 60

3.5 Estimating Rebar

Reinforcing rebar is placed vertically and horizontally in an ICF wall. The size and spacing of the reinforcement is called for by one of two methods -- your structural engineer or our engineered rebar tables. BuildBlock also recommends the "Prescriptive Method for Insulating Concrete Forms in Residential Construction, Second Edition," as a guide to help assist you with reinforcement and other construction details. This can be found on our website under Support.

The basic formula to figure rebar is as follows. *(In this example, the reinforcing was specified as 1/2" (or #4) rebar on 18" on center (or 1.5') vertically, and in each course horizontally with a 2' overlap on the horizontal ends.)* Make sure you overlap all steel ends no less than 48 diameters of steel size used.

Example: #4 (1/2") x 48 diameters = 24"
 #5 (5/8") x 48 diameters = 30"

Horizontal Rebar Formula — Linear ft. of perimeter of structure / 18 ft. (covers 2' overlap) x number of courses for horizontal. This gives you the number of 20 ft. sticks of rebar (standard length available from most suppliers). **(Note:** Depending on engineering, horizontal rebar may be used every other course, but must be on first and last courses.)

Vertical Rebar Formula — Linear ft. / 1.5' plus 1 bar extra for each 90° corner and 2 bars on each window and door opening side.

Examples: 350 lineal ft. project / 18 x 8 courses = 144 horizontal 20' bars
 350 lineal ft. / 18" = 234 vertical rebar + number of corners + windows and doors x 2 = total vertical rebar

Lintel Formula — Lintels require extra rebar and we use 3/8" or #3 rebar to make stirrups. Order enough bulk #3 rebar to meet your needs according to the tables you are using. Figure horizontal lintel bars from engineering tables or prescriptive method tables. Note: Lintel steel needs to be wider than opening width by 18" into each side of wall.

Always order a few extra bars of rebar.

Note: Cut your **vertical rebar** 1 1/2 - 2" short of the wall height to avoid rebar coming up through your top plate. If building another level on top of this level, cut the rebar 2' longer for overlap into the next floor. Some installers cut rebar to wall height less 1 1/2 - 2" for the first level regardless if another level is installed. They believe the rebar impedes pouring the wall. Once poured, they stab 4' vertical rebars in the wet concrete for tying the next level together. This requires additional steel but may be helpful.