Tools and Materials

Material List
- Reinforcing as required plus accessories, (rebar bars, stirrups)
- Screws (1-6/8”, 2-1/2”, #10 Course thread), Concrete screws 1 3/4”
- V Buck window & door buck material
- Sleeves for mechanical, electrical, plumbing

Steps for Accurate Estimating
1. Divide wall height by 16” and round up. This is the number of courses required.
2. Multiply the # of 90° corners in the structure by the # of courses. This is the number of 90° corner forms required.
3. Multiply the # of 45° corners in the structure by the # of courses. 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 (width x height, minus 80% of window and door openings). Subtract total square foot of all 90° forms to be used 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.
7. Estimate the concrete volume required by the following: Divide total square footage of wall to be formed, including corners, by 63 or 40 (for 6” or 8” forms, respectively). This equals the number of cubic yards of concrete required. Add 1.5 additional yardage for waste and the pump.

Block Type | Area | Concrete Volume
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4” Straight | 5.33 | 0.055844 cu. yd.
90° Corner | 5.56 | 0.054574 cu. yd.
45° Corner | 4.89 | 0.054985 cu. yd.
6” Straight | 5.33 | 0.066765 cu. yd.
90° Corner | 6.00 | 0.066528 cu. yd.
45° Corner | 4.89 | 0.080841 cu. yd.
Brick Ledge | 5.33 | 0.134148 cu. yd.
8” Straight | 5.33 | 0.131687 cu. yd.
90° Corner | 6.44 | 0.121517 cu. yd.
45° Corner | 4.89 | 0.105425 cu. yd.
Brick Ledge | 5.33 | 0.157074 cu. yd.

Prior to Pour Checklist
- Are walls straight, plumb, square and level?
- Are window and door openings located correctly? Are they plumb and square? Are they cross-braced sufficiently?
- Is reinforcing steel placed in accordance with local building requirements and/or Project Engineer?
- Is alignment (bracing) and scaffold system installed properly?
- Check all block cuts to make sure there are no loose connections that concrete might push out.
- Screw wood over any such locations to secure.
- Have all penetrations (electric, plumbing, HVAC, dryer vents) been accommodated?
- Is the concrete acceptable for the method of placement and engineering or code requirements (See Recommended Concrete Mix.)
- Have anchor bolts and tie-down straps been located and marked, ready to install?
- Have all beam pockets been located and cutout?
- Is adequate labor prepared for pouring?
- Recommended min. pouring temperature is 15°F (-9°C). Properly handled, specially formulated concrete can be poured at temperatures as low as -15°F (-26°C). Consult your ready mix company. At temperatures below freezing, you must cover all exposed concrete with insulating material.

Recommended Concrete Mix

- 3000 psi: Higher psi can be used but lower psi is not recommended. In Canada, minimum 20 mpa.
- Aggregate: 3/8” (10mm) rock chip or river rock is highly recommended. 1/2” (12mm) aggregate can be used but will require more vibration.
- Slump: 5” - 6” (Keep in mind as the concrete is being pumped under pressure, it loses approximately 1/4-inch of slump.)
Step 1

1. **Footing or Slab**
   - Set corner forms level and plumb. Set straight forms, starting from corners and moving toward center of wall. (Run 1st course of corners with long side in same direction. Reverse every other course in opposite manner. This offsets courses and makes a one foot stagger.)
   - Try cutting blocks on vertical lines (center between corner web for additional strength. corner web fingers of the first course, creating a stagger of the vertical joints. Proceed around perimeter in the same manner as the first course. Make sure blocks are pressed together completely.
   - Once the first three courses have been set, string walls and shim. Dowel #2
   - For out-of-level footings or slabs, use wood door shims to level low areas and trim bottom of block for high areas.
   - Set all courses the same way as the first and second. Cut forms at window openings. Place reinforcement as required.

2. **Door and Window Openings**
   - Have window and door bucks preassembled and corners braced. Please allow at least 1/2” over sizing of bucks in both directions to allow placement of windows and level and at later time. Have height locations determined for setting of bucks. If needed, cut bucks horizontally for setting bucks between block courses. (Bucks may be built out of VBuck or dimensional lumber. VBuck is highly recommended.)
   - Set door bucks in position. Temporarily brace, plumb and level.
   - When stacking forms around window and door Vbucks, leave 3/8” space between VBuck and forms. This allows for adjustment before pouring concrete if out of plumb. (Not required for dimensional lumber bucks.)
   - When filling around window and door bucks, alternate pour from side to side so buck is not moved sideways by concrete pressure.

3. **Reinforcing Steel**
   - 1¼” length rebar collars out of 1½” PVC pipe with file saw. Before stacking second course, place collars over verticalouncils protruding from footing or slab. NOTE: Some code officials do not allow these collars. Check local codes first.
   - Snap horizontal rebar into the web fingers of the first course, alternating rebar course left and right of center. Every other rebar course is placed in the same rebar finger positions.
   - Continue to stagger in this manner. By staggering horizontal rebar, it will hold the vertical bar, once placed, between the horizontal bars.
   - Once entire wall is stacked, thread vertical rebar between horizontal rebar and place end into PVC collar. Tie vertical rebar to top horizontal rebar. (Note: press in 1” BB” attachment points. Horizontal rebar will be 1½” counter to top of wall. This steel can be pre-ordered to length.)
   - Refer to engineering for all header/lintel steel placement and stirrup requirements.

4. **Successive Courses**
   - 1. Second course by reversing direction of course, creating a second set of vertical joints. Proceed around perimeter in the same manner as the first course. Make sure blocks are pressed together completely.
   - 2. Once the first three courses have been set, string walls and shim.
   - 3. For out-of-level footings or slabs, use wood door shims to level low areas and trim bottom of block for high areas.
   - 4. Set all courses the same way as the first and second. Cut forms at window openings. Place reinforcement as required.
   - 5. Gues down final (top) course of blocks 6” from each end.
   - 6. Identify all building service penetrations and install appropriate size pipes.
   - 7. Once wall is completely stacked, pop string line at desired wall height and trim top of wall level.

5. **Wall Bracing**
   - Install wall alignment (bracing system in the following manner after the third or fourth course is completed:
     - 1. Regular Corners: Start 2 feet from inside regular corner going one direction and 3 feet going the opposite direction. This keeps braces from interfering with each other (see diagram below).
     - 2. Inverse Corners: Start 4 inches from inverse corner (see diagram). Attach braces to BuildBlock corner tie.

6. **Finishing the Job**
   - Do not remove vertical bracing on walls for at least 48-96 hours. All vertical window and door header bracing must remain for a minimum of seven days.
   - 1. All walls, bucks, and floors should be brushed and swept clean before concrete hardens. Recheck wall alignment before leaving jobsite.
   - 2. Arches must be protected by code approved materials or methods. Then your wall can be clad with external vapor barriers (above grade) and in regions of heavy termite infestation, EPS insulation must be protected by code approved materials or methods. Then your wall can be clad with external taping especially near top corners of bucks.
   - 3. Concrete should be placed with a constant, moderate and steady flow, using two or three passes for pour heights eight to ten feet.
   - 4. Final alignment of each wall must be performed after the concrete has set.

7. **Concrete Placement**
   - Use **Prior to Pour checklist** (see back).
   - Order/use crêpe mix (see back).
   - When ordering Pump Truck, make sure they have an "S" bend, ram’s horn, or reducer before end of hose. If possible, final size of hose should be reduced to 3”.
   - 4. Order/prep concrete mix (see back).
   - When pouring footing or slab, place reinforcing dowels on 6” increments according to your engineering requirements (i.e. 6, 12, 18, or 24” apart.)

8. **Vapor Barriers and Waterproofing**
   - Proper installation of waterproofing (below grade) and vapor barriers (above grade) according to your local code requirements is vital to the success of your project. In most areas, heavy termite infestation, EPS insulation must be protected by code approved materials or methods. Then your wall can be clad with the exterior finish of your choice, such as EIFS, brick, rock, or siding.
   - For more information on our **Installation & Technical Manual** or your BuildBlock Distributor.