

RECOMMENDED TOOLS AND MATERIALS

TOOLS LIST

- Laser level, transit, or water level
- Tape measure
- Chalk line
- Hand saw/pruning saw for blocks
- Circular saw for window buck
- Cordless drill and correct bits
- Keyhole saw for utility sleeves
- Table saw (optional)
- Hammer drill for re-bar dowel corrections
- Re-bar tie tool and wire
- Mason line and blocks for top of wall
- Hammer
- Framing square
- Level for bracing and buck frames
- Foam gun
- Bracing and scaffold planking
- Pencil vibrator max. 1" head
- Re-bar bender cutter
- Stakes for bracing
- Hard hats, gloves, safety glasses
- Hot knife for outlets and wire
- Electric chainsaw for outlets and wire
- Shovels
- Trowels for inside window and top of wall

MATERIALS LIST

- Canned foam and cleaner
- Screws for window buck and bracing
- Horizontal and vertical re-bar
- Lintel re-bar and stirrups as required
- Tie wire
- Anchor bolts, hangers, hold-downs
- Sleeves for utility penetrations
- Strapping for standing seams and weak areas
- Utility sleeve pipe

RECOMMENDED CONCRETE MIX

(See strongholdicf.com for mix designs and more information)

- Minimum 3000psi, 4" – 5" slump at wall placement in 10 inch to 12 inch core block max ¾" aggregate, fly ash as a recommended option.
- Minimum 3000psi, 5" – 6" slump at wall placement in 4 inch to 8 inch core block max ¾" chip or pea gravel aggregate, fly ash as a recommended option.

This guide is intended for a contractor or installer of Stronghold Insulated Concrete Forms. It is intended to supplement the basic construction knowledge of a professional.

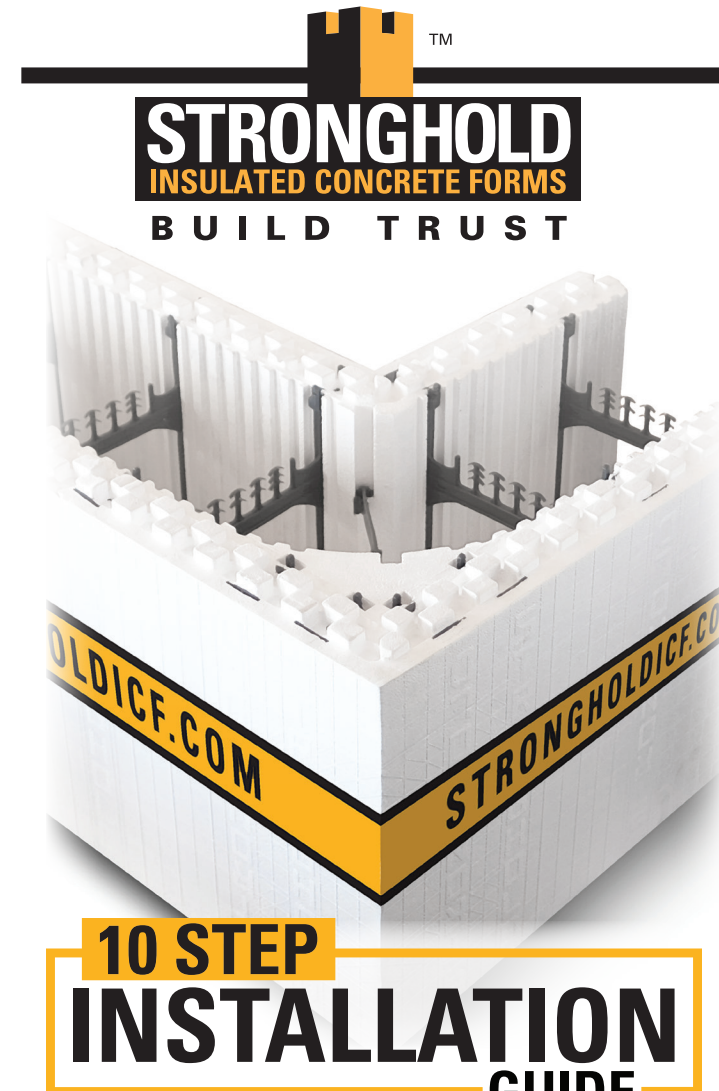
For the latest version of this publication and our complete Installation & Technical Manual visit strongholdicf.com.

PRIOR TO POUR CHECKLIST

- Are walls straight, level, plumb and square?
- Is all required reinforcing steel installed correctly, vertical and horizontal, lintels?
- Are all standing seam cut blocks reinforced with wood strapping?
- Are all window and door bucks correctly sized and positioned?
- Are windows properly braced for both lateral and vertical loads?
- Is wall alignment and bracing system properly installed with required planking?
- Are all utility penetrations, sleeves and blockouts all properly placed and secured?
- Has a string line been installed around the top perimeter of the wall for keeping it straight?
- Has the proper concrete mix been ordered that meets code requirements?
- Have all beam pockets been cut out and prepped?
- Have all anchor bolts and hangers been laid out and prepped for installing?
- Is adequate freeze protection available for exposed concrete when below freezing temps?
- Is there enough help to take care of the different tasks during the pour, pouring, vibrating, screeding, wall straightening, anchor bolts?



STRONGHOLD REPRESENTATIVE:



10 STEP INSTALLATION GUIDE

This installation field guide is a condensed version of the full Stronghold Installation Manual. This guide is meant as an on-site tool and reminder for the different steps involved in building a quality Stronghold project. This guide is a supplement to the basic construction skills of a contractor. Stronghold also offers an in-class training course as well as on-line training videos. Stronghold Regional Sales Managers are also an invaluable resource for answering questions and assistance.

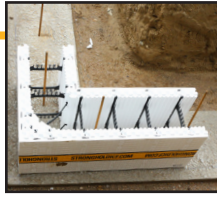
01 STEP ONE

- Footing or slab must be level within +/-1/4" for best results.
- Either use the flat top block for the first course or trim foam nobs and locks off to eliminate settling.
- Make step footings in increments of 16" for easiest install, or 8" by using half blocks.
- Make sure dowels have been properly placed in footings or slab as per code.
- Mark out and chalk line all wall locations on footings or slab including window and door rough openings. Spray lines with clear coat to waterproof.
- Place blocks, re-bar, bracing, and tools inside perimeter of building.



02 STEP TWO

- Place first corner blocks on chalk lines with first course corner all one orientation.
- Place adjacent blocks next to first corner block and zip tie or wire together end to end without bowing cross ties/webs.
- Install horizontal re-bar in blocks re-bar clips, either contact or non-contact splices.
- If a standing seam is required due to the wall length, then best to place seam in a door or window opening.
- The standing seam needs to be strapped with a piece of wood fastened into the closest webs, both sides of wall.



03 STEP THREE

- Install second course of block, again starting in a corner. Reverse the corner block so it has 16" overlap to the block below.
- Once all second course blocks are set, level the wall by trimming or shimming the bottom of the blocks with a hand saw, or cut wedges of foam and spray foam.
- When the two courses of blocks are set and levelled, use canned foam insulation to glue the bottom of the blocks to the concrete footing or slab.
- All vertical joints between blocks will be closed and tight when the wall is level.



- Install horizontal re-bar as required for balance of wall, maintaining a staggered pattern so the vertical re-bar will be held in place between them.

04 STEP FOUR

- Transfer window and door locations up the wall onto the foam.
- Make any required cuts for the window or door opening.
- Set pre-built window and door buck frames onto marked locations on the blocks.
- Brace openings both horizontally and vertically to withstand concrete loading.
- Brace all openings closer than 48" to a corner to keep corner plumb.



05 STEP FIVE

- Install balance of wall blocks and horizontal re-bar to the top of the wall.
- Identify and cut locations for through wall utility sleeves, and install sleeves.
- Stack wall to top of finished wall height, or beyond for multi-level floor systems, as for a second story connection.
- Place window and door lintel reinforcement as per engineering or code.
- Typically block vertical joints are offset by 16", 8" minimum.



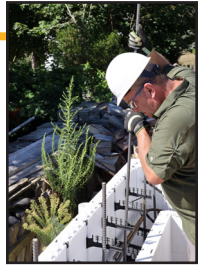
06 STEP SIX

- Typically install ICF wall bracing to wall forms at three course high, fastening into the plastic webs of the blocks.
- Attach bracing solidly to wall, soil, slab, or floor system.
- Install a string line around entire perimeter of wall, near top of wall, typically on exterior to avoid conflict with the bracing. Wall should be perfectly plumb or slightly leaning in.
- Bracing should be placed 4'-6' apart depending on safety requirements and the type of planking used.



07 STEP SEVEN

- Cut vertical re-bar so it maintains a minimum cover of 2".
- Install vertical re-bar so it weaves between alternating courses of the horizontal re-bar throughout the wall.
- In multi-story installs, protect foam interlock with tape or track.
- Use canned foam in any gaps where concrete will seep out.
- Protect interior of wall forms from construction debris, leaves, and snow.



08 STEP EIGHT

- Use a pump truck or conveyor truck to pour walls for less work in filling walls.
- As per ACI 318, pour concrete in lifts of 3'-4' per hour.
- Concrete should be 4"-5" slump at wall placement in 10 inch to 12 inch core and 5"-6" slump at wall placement in 4 inch to 8 inch core.
- Maximum internal vibrator pencil head size should be 1" to eliminate voids.
- Check straightness and plumb of wall as concrete is placed.



09 STEP NINE

- Screed top of concrete and check for level.
- Add anchor bolts, brackets, hangers, embedments as per specifications and code.
- Clean off bracing while concrete is still wet.



10 STEP TEN

- Remove bracing after concrete is cured, and if backfilling a basement wall, make sure floor system is in place.
- Scrape off any dried concrete on exterior of blocks.
- Remove string line.



Be sure to leave bracing / alignment system on walls for at least 48 hours. Vertical window and door lintel shoring must remain for a minimum of one week.

FOR MORE INFORMATION SEE OUR INSTALLATION & TECHNICAL MANUAL OR YOUR STRONGHOLD ICF DISTRIBUTOR.