



Installation Manual



Building a better future.

superformicf.com

We are **building a better future.**

SuperForm produces high-quality and sustainable **Insulated Concrete Forms** that bring our customers confidence and peace of mind by providing them efficient, reliable products with the ability to withstand some of the most extreme elements mother nature has to offer. We hold ourselves accountable to the SuperForm standard through our dedication to our product and our passion for quality, sustainability, and continuous improvement.

SuperForm ICF is intended to replace conventionally poured concrete foundation walls in residential and commercial construction. The rigid EPS provides both the form for the retention of wet concrete and thermal insulation for the exterior & interior walls. The EPS also provides superior sound barrier insulation for interior party walls. The plastic ties in the blocks (which are slightly recessed to prevent thermal bridging) are a threefold unit. First, they provide the “tie” member of the forms that holds the two panels of EPS the correct distance apart while the concrete is being poured. Secondly, they allow for proper placement of reinforcing bar by the way of 3 or 4 slotted pockets into which rebar is snapped. Thirdly, the 'T' shaped portion at each end of the tie is the member to which inside and outside finishes are attached. Thus, the Superform wall system accomplishes forming, framing and insulating in one step, providing a finished wall far superior to any other building method.

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DISCLAIMER

The information contained in this manual is for instructional purposes only. Superform Products Ltd. is not liable for any personal injury, loss of profit or other commercial damage resulting from the use of this guide. It is the full responsibility of the user to follow local safety codes and building codes.

What's the Outcome?

The outcome of this manual is for you and your team to have an efficient, hassle free experience installing Superform ICF. We understand there are numerous personal preferences in the way ICF can be stacked and the following content is our recommendations. At Superform one of our values is quality and ultimately, straight, square, plumb and level Superform walls is the desired result.

SuperForm ICF Benefits

Energy Savings

Up to 60% energy savings.

Disaster Resilient

3-4 hour fire rating depending on core thickness. Withstand mother nature's wrath, reinforced concrete is one of the strongest building options available

Sound Resistant

Quiet, a STC rating of 54.

Indoor Air Quality

Up to 60% less air infiltrates a SuperForm home.

Environmentally Sustainable

Less maintenance and trouble for generations to come.

Rot and Mold Free

Concrete, steel, and EPS are all inert materials that do not rot or support mildew.

6 Building Steps in 1

- ▶ Continuous Insulation
- ▶ Wall Structure (rebar & concrete)
- ▶ Forming System
- ▶ Air Barrier
- ▶ Vapour Barrier
- ▶ Interior & exterior attachment points.

ICF Building Types

- ▶ Schools
- ▶ Churches
- ▶ Industrial
- ▶ Agricultural
- ▶ Commercial
- ▶ Houses
- ▶ Office buildings
- ▶ Multistory
- ▶ Dog Houses

SuperForm ICF Codes and Standards

Whenever applying code to ICFs the most ideal approach is to think of an ICF wall as a monolithic flat reinforced concrete wall with foam plastic insulation and attachment points applied to both sides of the concrete core.

NBCC- National Building Code of Canada

Above and below grade walls are covered for buildings not greater than 600 sq meters(6458 sq ft.) with a max floor to floor height of 3 meters and a building limit of 2 storeys above the basement foundation. Minimum concrete core for above grade walls is 140mm.

See for below grade

See for above grade

If your project falls outside of these parameters either you will need a stamp of a licensed engineer or prescriptive engineering tables from Superform with an engineered stamp.

The standard governing ICF's in Canada is CAN/ULC-S717.1-12 "STANDARD FOR FLAT WALL INSULATED CONCRETE FORM (ICF) UNITS". Refer to CSA A23.3 "Design of Concrete Structures" for concrete structural design.

USA code compliance - IRC Section R611

Maximum building size - 60' in plan dimensions.

Floor clear span limit - 32 ft

Roof clear span limit - 40 ft.

Maximum building height - 2 stories above grade or 35' in roof mean height.

Maximum wall height - 10 ft/story with concrete core thickness ranging from 4"-10"

Maximum wind speed - 130 miles/hour exposure B, 110 miles/hour exposure C and a 100 miles per hour exposure C

Floor/ceiling dead loads - cannot exceed 10 pounds/ sq ft.

Roof/ceiling deadloads - cannot exceed 15 pounds/ sq ft.

Attic live loads- cannot exceed 20 pounds/sq ft.

Maximum Roof overhang - 2 ft beyond exterior wall

Maximum dead load of overhang - 8 lbs/sq ft.

For applications falling within the parameters of the IRC Section R611, the stamp of a licensed engineer will not be required for code approval in jurisdictions that have adopted the International Residential Code, or for walls designed to PCA 100 or ACI 318.

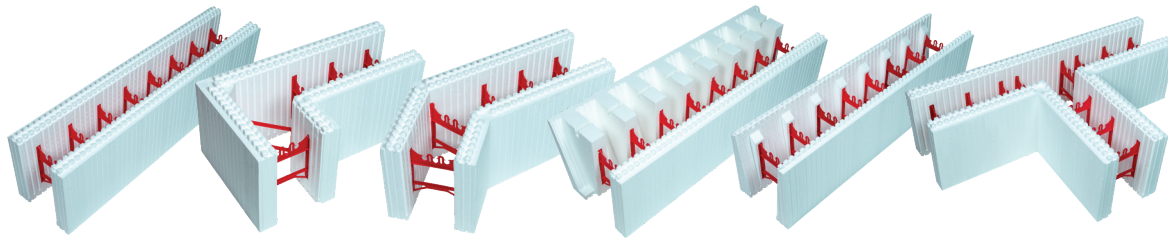
For applications falling outside of these guidelines you will need the stamp of a licensed engineer or engineer stamped prescriptive drawings.

The standard governing ICF's in the USA is ASTM E2634, "Standard specification for flat wall insulating concrete systems" Refer to ACI 318 'Building code requirements for Structural Concrete' for the design of the concrete wall.

Superform uses QAI for third party testing to make sure we meet building code and quality control testing requirements.



SuperForm Block Family



Standard Sizing

Our standard sizing of 4' long x 1' makes building and estimating extremely simple. Our light weight block is very easy to handle by yourself, making it super easy to work in trenches or up on the scaffolding. Due to the standard sizing very rarely do you need to cut it in half horizontally to make it suit your needs.

Interlocking Knobs

With our highly designed square knob design, we offer a whopping 35% more surface to surface. This gives you a straighter, stronger wall that keeps your blocks securely locked in, while reducing your need for tape or glue. This also results in a horizontal block connection so tight there is no spreading of the block and there is no need for ties blocks to each other(horizontally tie). speeding up your installation.

Grooved Inside Panel

Our grooved inside panel is designed for better concrete adherence. our panels are locked into the concrete when it's set up creating an extremely tight wall system that will not allow any insects or air gaps to get between the concrete and the foam if the concrete shrinks slightly. Also built in to the panel is our anti-lift technology, locking blocks down during concrete placement. This design works so well you eliminate your need to tie or lock each row down, making your installation faster.

1" Increments

SuperForm ICFs are designed with maximum design freedom, with a 1" repeating interlock pattern, so during construction the least necessary is cut off. This creates less waste and makes it easier to recycle the scrap. Any portion of SuperForm ICFs with at least 1 web in them, can be filled in to any part of a wall, resulting in the lowest waste reduction possible.

Bulletproof Corners

SuperForm's bullet proof corner blocks have a corner tie with 3" backing stretching from the inside panel to the outside panel eliminating blowout potential.

Maximum Bearing Surface

Superform ICF is non reversible. This creates a maximum bearing on your footing. making your ICF block hug your footing so tight, there is no need to glue your block to your footing or install a kicker.

No Accessories Needed

Superform is so strong, there is no need for accessories (minus the top row). While other Blocks require zip ties, wire ties, gluing every row, or even applying plywood to every corner, Superform does not need these. Due to the unmatched strength of our knob system, virgin tie material, and tie spacing, we create a faster simpler installation for builders ultimately putting more money in your pocket.

Rules to the Game

Make your install as smooth and fast as possible.

1

Everything must have a home (tools, info, materials)

2

All resources must be placed where and when they are needed (minutes, daily, weekly, annually)

3

Never pass the ball when someones not looking (poor quality)

4

If it's not visual its not important

5

Everyone must know...

- ▶ Where to get their work from
- ▶ What to do with their work
- ▶ Where to put there work when they are done

6

Do not let best get in the way of better

7

Don't pass poor quality to your customer (internal and external)

8

Blame the process, not the people

Tools

Below is a list of standard construction tools required on most Superform ICF job sites

1. Saws (pruning or hand saws)
2. Rebar Cutter and Bender
3. Typical construction tools-tape measure, level, markers, stringlines, hammer, chalk lines, utility knife.
4. Laser level
5. Cordless drill set with cordless circular saw, reciprocating saw, and of course a cordless drill.
6. Ladders (step ladders)
7. Tie wire and pliers
8. Spray foam gun
9. Concrete rake, concrete vibrator and concrete trowel



Materials

Below is a list of most construction materials found on a typical Superform ICF jobsite.

1. SuperForm ICF Blocks
2. Rebar
3. Footing Form Material
4. Window buck material (Foam Buck, 2"x12" treated lumber, or LVL)
5. ICF scaffolding and scaffold Planks
6. Damp proofing
7. Spray Foam
8. Rebar wire ties or wire
9. Anchor Bolts
10. Simpson hangers
11. Burmon truss connectors
12. 2" ICF screws
13. 3" ICF screws
14. Additional form support material (7/16" OSB/ 1"x4")



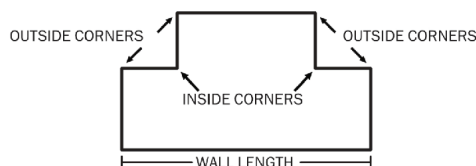
Estimating

There are a few different ways to estimate your SuperForm block, concrete and rebar.

The image shows a screenshot of the SuperForm Estimator spreadsheet. It includes sections for 'Job Features' (wall height, length, corners), 'Block Counts' (standards, specials, T-blocks), 'Material Takeoffs' (concrete, rebar, formwork), and 'Notes'. The spreadsheet is organized into columns for different materials and their respective quantities.

Option 1

Use Superforms Estimating spread sheet. This will give you takeoffs for rebar and concrete as well. **Available on the website or request a version by email for you to keep on your desktop.**



Option 2

1. Calculate lineal feet of wall. (add up all the wall lengths) add 1' to the lineal footage for every inside corner.
2. Multiply the lineal feet by the height of the wall.
3. This will give you the wall square footage.
4. Subtract the square footage of openings (windows and doors) from the wall square footage.
5. Divide the square footage of the wall by 4 sq. ft. for the amount of blocks needed.
6. Multiply this number by 5 percent for a little extra waste around openings etc.
7. Multiply the number of courses by the number of corners in the floor plan. This will give you the amount of corner blocks needed.
8. Subtract the total number of corners from the total amount of standards to get your standard block count.
9. If a top block is required take the lineal footage of the wall and divide by 4. Subtract any corners. This will give you your top block count. Be sure to subtract your top blocks from the standard block count.

Option 3

1. Calculate the lineal feet of the wall and figure out how many corners and standards will be needed on the first row.
2. Multiply by the number of rows required to get your total block count.
3. Take the opening sq. footage and divide it by 4 to figure out how many blocks to subtract for them.
4. Add 5 % to the standards for waste around windows and doors.

Estimating Time

An average house basement should take approximately 160 man hours to get footings in and SuperForm stacked, poured and cleaned up. As far as estimating time and man hours required, keep track of your crew's time. After a few jobs you will have an idea how many man hours go into an Superform ICF project. The more complicated jobs with lots of corners etc. will require more time so there will always be variables that affect man hours.

Estimating Soprema Peel and Stick

Take your lineal footage of foundation and multiply it by your height of damp proofing required to get your total sq. ft. required. Do not forget to add approximately 1 foot to your height to account for the Soprema wrapping over and down the footing. Divide the square footage by 225 sq. ft. per roll to get the number of rolls required. Round up and order.

Job Site Preparation

First and foremost you and your crew's safety is the most important. Follow all local building safety standards.

As with all projects jobsite preparation is critical to have a smooth, safe and efficient run jobsite. Preplanning where excavated soil will be placed at the time of excavation will help as the project progresses. Have an idea where all the building materials will be kept if just in time delivery is not an option.



Your Superform ICF may also be delivered on a semi and enough room should be a priority to get a large truck and trailer into the site.



Concrete trucks and pump trucks will need access for pours as well. Be aware of overhead lines and any safety hazards that may be present.



Layout and Excavation

The layout and excavation of a foundation will be the same as traditional construction. You may or may not be required to prepare the excavation as a contractor.

Layout site in accordance with construction drawings and specifications. Make sure to locate all underground lines before you dig. Always follow local protocol before you dig.



Calculating the height of the basement or frostwall you will be building will determine the depth of the excavation. You will need to figure in the thickness of the footing as well. This calculation is very important for drainage and landscaping purposes. The right elevation will save the homeowner a lot of trouble.



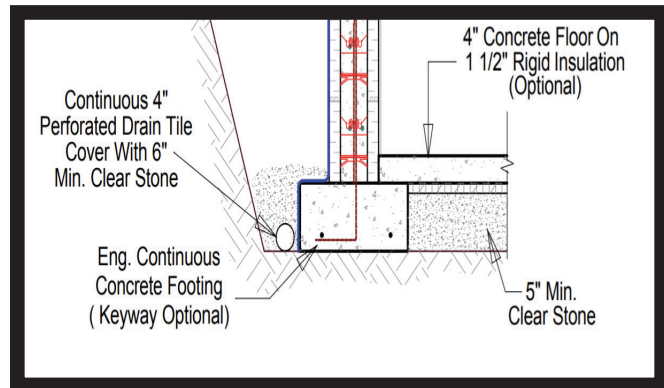
Take into account soil conditions. In most cases footings need to be on virgin undisturbed soil if a excavation needs compaction contact your local engineer to discuss and possibly get a compaction test before proceeding if there is doubt or concern.



Footings

Footings are an important part of foundation construction. They are typically made of concrete with rebar reinforcement that has been poured into an excavated trench. The purpose of footings is to support the foundation and prevent settling. Footings are especially important in areas with troublesome soils.

The most common footing is pictured to the right. However piles, bedrock and an engineered mono slab are all options.



Rebar dowels are required to connect footings to ICF, typically at 4' on center and approximately 24" to 30" high for noncontact lap length. Follow building local code and/or site engineering.

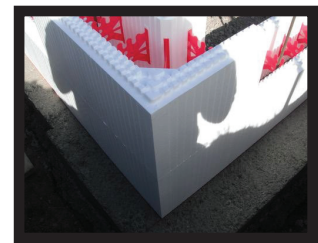


Forming Footings

Install footing forms and rebar as required by plans and building code. Typically wood or aluminum forms with steel or wood stakes are used. Your footing forms need to be straight!



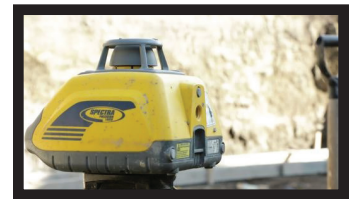
Make sure to double check measurements as your footings will run 4"- 6" outside of your foundation wall for the SuperForm ICF to be centered on.



Use a laser level to get a near perfect elevation.

Spending an extra 30 minutes leveling your footing will save you a lot more time when you start stacking Superform. Footings need to be within an 1/8" of level. Screw or nail your forms to stakes at the desired height.

VERY IMPORTANT - your footing's need to be within an eighth inch of level.



Use a concrete pump truck or a wheelbarrow to fill the forms with concrete.



Forming Footings

Place concrete into the formwork and use a screed (typically a 2x4) to level it off. Be sure to keep the screed tight to the forms so there are no humps in the concrete.

Block out any utility cavity's in the footing before the pour as needed and per code.

Wetset dowels to building specification and then let the concrete dry.

Congratulations on getting the pour done!



Step Footings

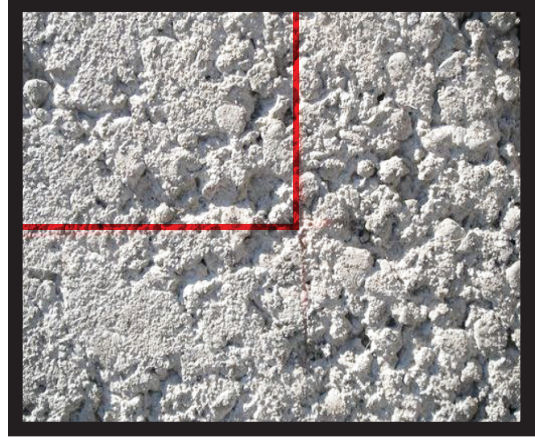
Building on a slope or going from a 8' basement to a 4' garage wall may require a step footing. Superform is 12" tall and the typical step footing is 2'. This lets the 3rd row go directly over the step and continue on down the wall. Take into account local building code regulations.



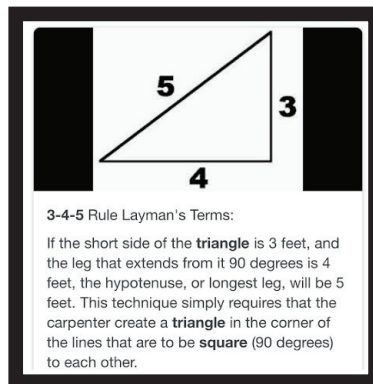
Wall Layout

The layout of the wall is very important. It sets the standard for a square foundation.

Measure lines onto footings according to the plans. Layout accurate and precise 90 degree corners. Start layout on a long wall or a wall that has strict setback requirements.



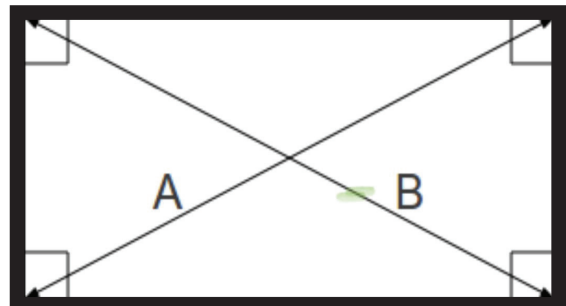
Use the 3-4-5 method as an option to check squareness.



Another option with a perfect rectangle or square is to check your diagonals. A and B will always be the same exact measurement so you can check it this way as well.

Apply chalk lines when you are confident that measurements and layout is square.

- Layout door openings and mark them on the footing so you know where they are when you start stacking blocks.



Fill The Hole

Gravel can be brought into the hole using a bobcat or a rock slinger before you start setting blocks. Use care not to damage fresh concrete footings.



Fill the hole with SuperForm, rebar and bracing and any tools you need. In the top picture prebent corner bars are put at all the corners. Use care when handling SuperForm, blocks shouldn't be thrown or dropped aggressively. If blocks are mistreated it could damage blocks and if this goes unnoticed it could cause an issue/blowout during the pour.



Keep the SuperForm 6'- 7' back to allow for diagonal bracing to be installed. Typically you will work from the inside of your project for jobsite efficiency instead of walking around the exterior.



SuperForm ICF - Getting Started

In this chapter you will learn all about stacking the ICF. Let's get started, this is where the fun begins.

Always start with a corner and proceed to lay standard blocks towards the center of a wall keeping the block on the chalk line. You need to ensure that there is an equal amount of left and right corners on the first row level, it takes a couple minutes to lay them out at each corner.

- ▶ Avoid cutting corner blocks unless it is necessary for a short jog in the footing/foundation.
 - ▶ Kickers or foam are not required to put down the first row because SuperForm ICF sits snug and stable on the footing.
-



At some point in the wall the blocks from either corner will have to meet and a block will have to be cut. This cut block is called a filler block. This joint should go at a door or window opening in the wall if there is one, it will save time and extra work. Before cutting this piece make sure your corner blocks are on the line and all standard blocks are tight together so you can get an accurate measurement.



Filler Block

Over a long wall if blocks are 1/16 to 1/8 apart this adds up fast. The second row will tighten everything up. If there is no rebar in the first row the second row can be run behind it to keep the blocks tight. This is one way of ensuring you get an accurate cut dimension for the filler block on the first row.

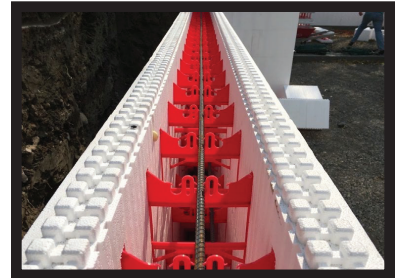
Efficiency Tip - Write the measurement of the filler blocks on the first and second row for future reference.



1st Row Continued

Due to the strength of SuperForms block and interlocking system no clips, zip ties, foam adhesive** or formlock is needed.

** foam adhesive can be used to fill cracks and/or glue down the top row.



Superform has cutlines every 1". For the blocks to stack over each other the cutlines and ties need to line up. It typically doesn't make sense to cut through a tie if your measurement lands in the middle of a tie so skip to the next cutline and then take 1" off of the other side if this happens.



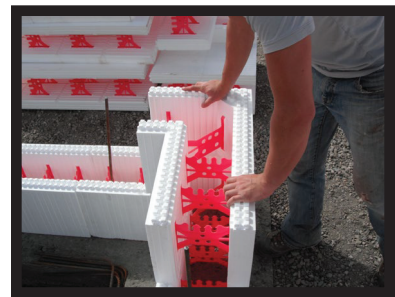
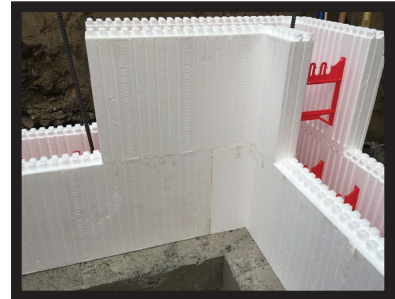
An installer is using a typical handsaw to cut the filler block. Very likely every wall length in the house will have 1 filler block.



SuperForm ICF - 2nd Row

Start the second row at the corner. Put the opposite corner then the first row has to maintain a 12" offset. Maintain a 12" offset as much as possible throughout the build.

- ▶ Always alternate corner blocks
- ▶ Horizontal rebar may be required in your first row of SuperForm before continuing on with the second row. See rebar on page 23.



Again work your way down the wall. Make sure blocks are firmly seated. The block offset should be 12" locking the 2 rows together.

VERY IMPORTANT - the ties should line up with the first row.



The first and second row determine the layout for the rest of the courses. Every other course will line up.

After the third course is done check the for dips or humps in the walls incase the footing wasn't quite level and shim or cut blocks to ensure the ICF blocks are level. Shimming will be easier than cutting. The joints of the blocks should be snug all the way from top to bottom. If there are gaps the blocks are out of level.

