

## WALL HEIGHTS & ICF FRIENDLY DIMENSIONS

Wall heights should be based on 8 inch or 16 inch increments. These may be adjusted based on floor system thickness.

Floor heights may also be adjusted to natural points along an ICF wall with block size transitions. These generally occur within the floor system, and are unnoticed from floor to floor. The goal is to avoid cutting blocks which adds additional labor and waste increasing cost.

## FOOTINGS & FOUNDATIONS

Footing size, rebar reinforcement, and other specifications should be based on prescriptive engineering or project specific engineering.

## MODIFYING EXISTING DESIGNS

Existing plans can easily be converted to ICF in several ways. The preferred method is to place the inside edge of the ICF block on the inside edge of the framed wall so the growth

in the thickness of the wall is moved to the outside preserving the interior space. You can also align the centerline of the ICF to the centerline of the wall, or align the interior or exterior face of the ICF to the wall centerline or to the interior or exterior faces.

Remember that the wall thickness may affect closely spaced walls, especially in stairwells and bathrooms. Adjustments will have to be made to meet codes and standard sizes for these areas.

## REDUCING WASTE & INCREASING SPEED

Walls designed for ICFs can easily be laid out in a manner that eliminates cuts or waste. Jogs in the wall should be a minimum of 18". Adding the length of two corners together (long side + short side) in addition to 4-foot block lengths is the most efficient increment for working with ICFs and eliminates most cuts.

## ICF MYTHS

There are many half-truths, myths, and misconceptions about building with ICFs.

### ICFS ARE TOO EXPENSIVE...

ICFs cost 3%-7% more on average compared to using traditional wood construction. This difference can be reduced by smaller HVAC requirements, energy-efficiency tax breaks, and lower utility bills.

### ICFS ARE TOO COMPLICATED TO USE...

Building with ICFs is like any other technology. Make sure your ICF installer is well trained and is familiar with the product. ICFs in general are simple enough for DIY and even simpler than building with wood.

### I CAN GET THE SAME EFFICIENCY WITH WOOD...

Wood structures can be built with high energy-efficiency ratings, but they cannot achieve the same low level of air infiltration or thermal mass ICF walls provide. ICFs also resist natural disasters like fire, earthquakes, tornadoes, high winds and hurricanes unlike wood structures.

### ONLY UNDERGROUND SAFE ROOMS WILL PROTECT MY FAMILY...

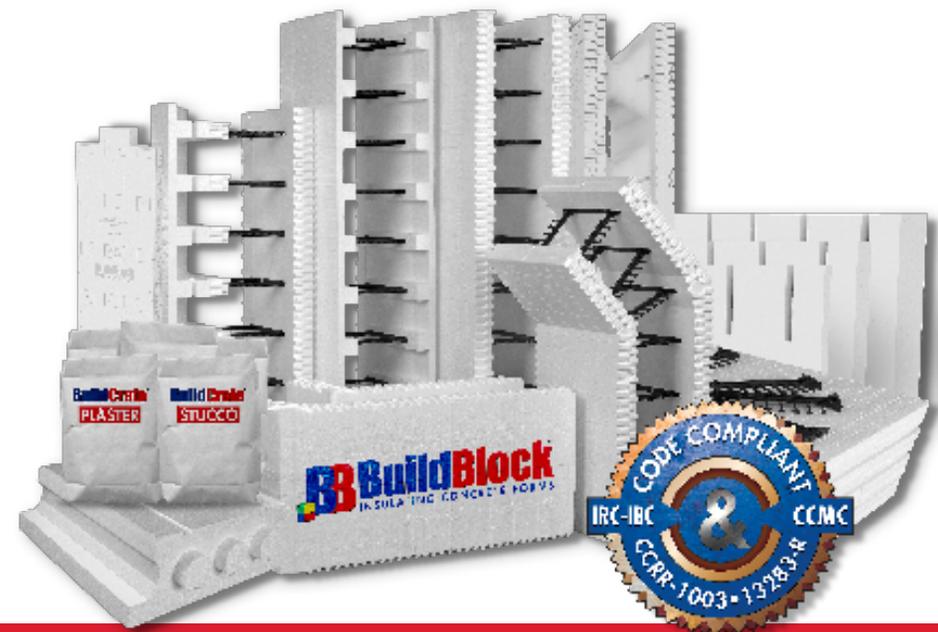
This myth has been circulating for years in the media and has no basis in fact. Scientific testing at Texas Tech University and by FEMA proves that shelters built to FEMA guidelines are capable of easily withstanding an F5 Tornado.

### ICFS ARE ONLY GOOD IN REALLY COLD CLIMATES...

ICFs are excellent in all types of climates. They provide not only exceptional insulating value, but are safer, quieter, and disaster resistant. ICFs are future-proofed for tomorrow's building codes today.

### CONCRETE HOUSES ARE UGLY AND UNATTRACTIVE...

ICF homes look like any other home. The outside uses the same brick, rock, stucco, or siding and the inside is even more inviting and comfortable. The only noticeable difference will be slightly deeper window sills and door jambs. Oh, and lower utility bills every month.



# BUILD YOUR ICF DREAM HOME

## HOME PLAN DESIGN SERVICES

*Learn about the ICF home design process and BuildBlock Home Plan Design Services.*

*Build it once. Build it **for life.***



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# ICF HOME DESIGN

## BUILDBLOCK HOME PLAN DESIGN SERVICES

### YOUR ICF DREAM HOME

Building your ICF dream home is a once in a lifetime experience. BuildBlock believes in our motto, Build it once, Build it for life. We are committed to assisting you through the design process to ensure you have the most cost effective and satisfying project experience.

BuildBlock offers home design services to convert your existing plans to ICF or to create custom home plans for your project. Contact us today for more information.

### ABOUT ICF HOME PLANS

Almost any home plan can be converted to ICF construction either by your builder or the plan's designer. Because of the increasing popularity of ICF homes, many architects and design companies may have an assortment of home plans ready to use for ICF construction, saving you the time and cost of conversion. If you have a plan or design, we would love to help you.

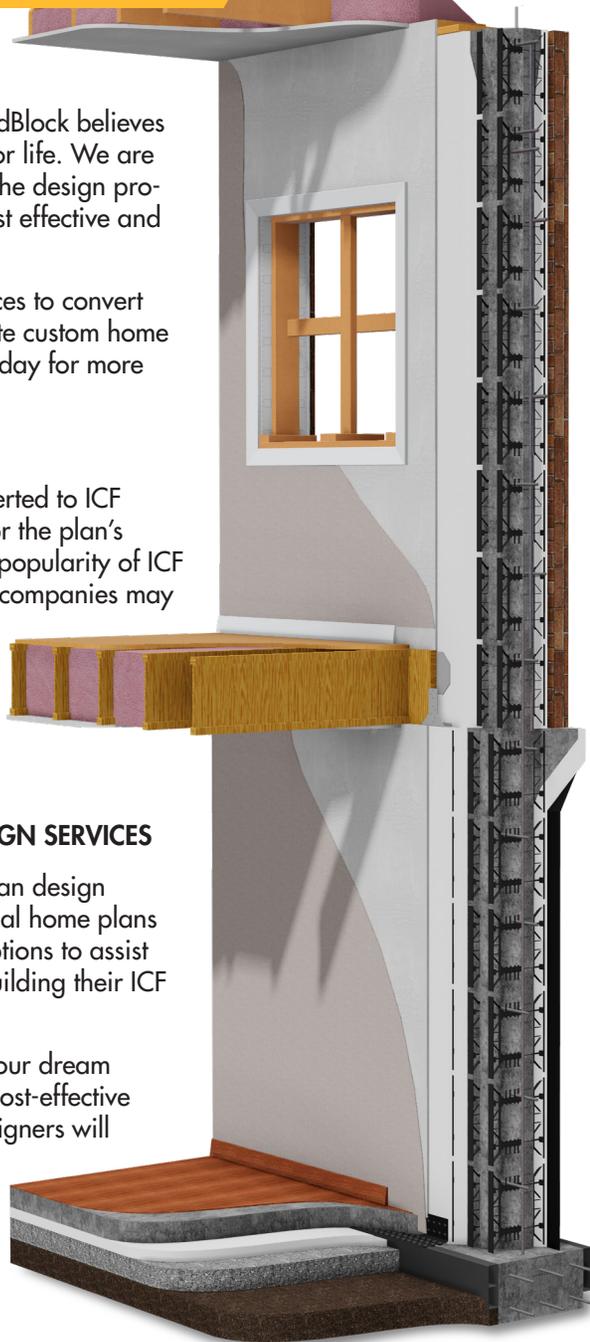
### BUILDBLOCK ICF HOME PLAN DESIGN SERVICES

BuildBlock provides custom home plan design services and can convert conventional home plans to ICF for a fee. We have several options to assist any customer with designing and building their ICF dream home.

Contact us today about designing your dream home today and let us design with cost-effective construction in mind. BuildBlock designers will discuss your needs and ideas, create an initial design and preliminary drawing, refine the plans based on your feedback, finalize the design and provide digital plans for your project.

Email [plans@buildblock.com](mailto:plans@buildblock.com) or visit <http://buildblock.com/plans> for more information.

ICF basement and floor above using BuildBlock ICFs to provide extreme energy efficiency, comfort, and disaster resistance.



## Designing Your Dream Home with BuildBlock ICFs

Minor differences and considerations from standard home designs.

### HOW DO ICFs WORK?

ICFs are basically a stay in place form for concrete. The structural portion of the wall isn't the foam, it is the reinforced concrete core inside. ICFs are simply a structural concrete wall, already insulated with furring attachment points in place every 6-inches horizontally.

The prescriptive method of design is based on ACI-318 for slender wall concrete.

### WALL THICKNESS

ICF walls are thicker than wood or metal stud framed walls. If redesigning a plan for ICFs, wall thickness will affect interior and/or exterior dimensions. The preferred strategy is to place the inside edge of the ICF block on the inside edge of the framed wall so the growth in the thickness of the wall is moved to the outside preserving the interior space.

### IN'S & OUT'S

Some walls with bump-outs or bump-ins, may become too short to be useful living spaces. These walls should be straightened. These type of features around corners can also shift the placement of windows. Omitting the bump in/out is one solution as corners and specialty blocks do increase cost.

If the feature is architecturally, stylistically, or aesthetically desired, a minimum of an 18" offset is recommended. It can also be built as a facade, using brick, block, or lumber.

### STAIRWELLS

Pay close attention to stairwells and bathrooms as these are locations where changes in interior space can cause potential issues. Moving the difference in wall thickness to the outside will prevent any issues.

Not compensating for thicker walls could prevent a staircase on an outside wall in a basement to be too narrow and not meet code. Maintaining interior dimensions will alleviate this concern.

### PLUMBING & VENTING LOCATIONS

Plumbing locations and venting need to be considered. Typically 2.5" of foam thickness is available to run water pipes, electrical wire or conduit, and plumbing vents. Water

closet vents require a pipe with a larger diameter than the ICF foam thickness. These vents must be installed in an interior wall partition or in the concrete core itself.

### DOOR AND WINDOW OPENINGS

Spacing between openings is recommended to be 12-inches or greater. This ensures proper flow and consolidation of concrete and creation of a structural column.

If more closely spaced openings are desired, they should be mulled and treated as a single opening. Lumber can be used within these openings to create smaller spacing.

### HEADERS & LINTELS

Header thicknesses are typically 12-inches or larger, and often 16 or 24-inches. Working in increments of 8-inches will reduce waste and using 16-inches matches the full BuildBlock ICF block height, keeping the process simple.

Lintel design should be based on product engineering, prescriptive engineering or project specific engineering.

### PLATE HEIGHTS

ICF walls are typically single plated. Double plates may be used if it is necessary to raise the wall height for a specific reason. This is better accomplished by using the ICF itself.

### WALL LENGTHS

When using BuildBlock ICFs, choose even inch increments where possible for wall lengths. The connection pattern repeats every inch and stacking will be much easier with this spacing.

Drawings working in 6" increments will ensure all embedded attachment points in BuildBlock forms are vertically aligned. This will ensure adding finishes is smooth and simple.

If a vertical or stack joint will be required, place it over an opening, such as a door or window, will minimize the length of the stack joint. Proper bracing and strapping is critical at these points.

While it is possible to design a structure with zero cuts in an ICF block, it is not necessary. The use of a common seam often eliminates layout problems and speeds the build.