ECO BUILDING SYSTEMS CORP.

8960 W. Larkspur Drive, Ste. 105, Peoria, AZ 85381 Ph: 888.623.4223 info@theperfectblock.com

EXCERPTS FROM THE EBS
TECHNICAL CONSTRUCTION BUILD
MANUAL

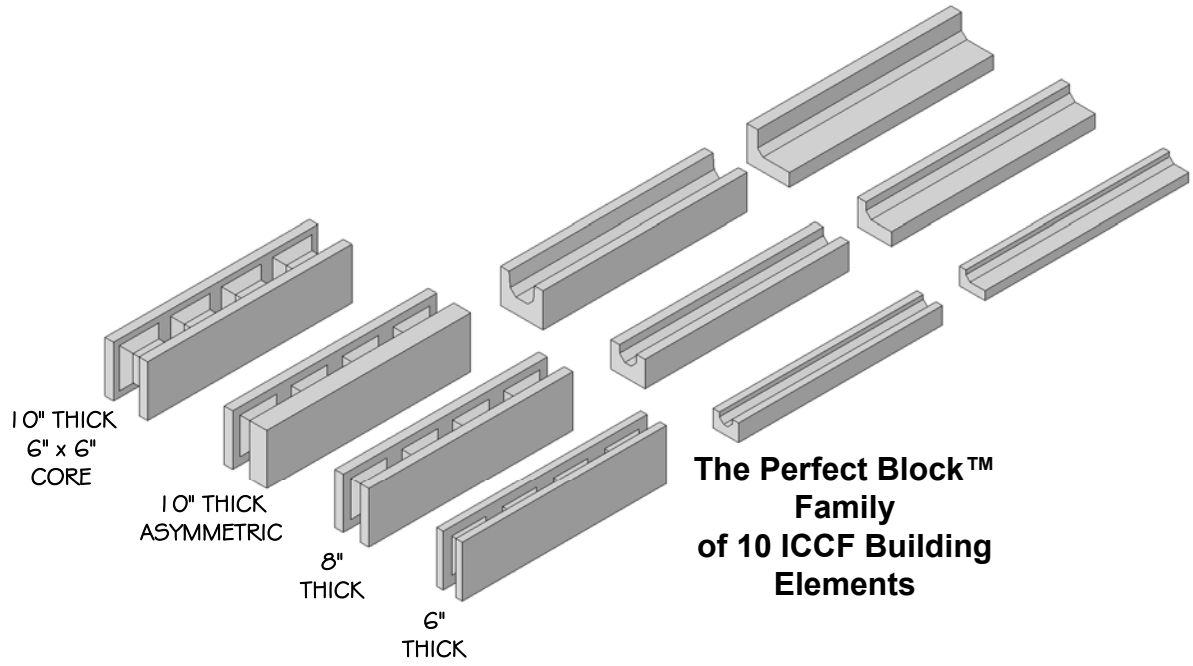
JUNE 2020 EDITION

SEQUENTIAL PICTORIAL of ICCF CONSTRUCTION

For additional ICCF construction information using The Perfect Block™ systems or questions concerning the EBS ICCF Building Guide contact Rick Tindal/EBS Senior Draftsman, M-F, 8am-5pm, @ 888.623.4223 ext 2.

For architects and designers specifying The Perfect Block™ in their future designs, CAD details are available upon request for virtually all building applications using The Perfect Block™. If needed, EBS will create new CAD details for unique applications upon request.

Eco Building Systems
The Perfect Block™



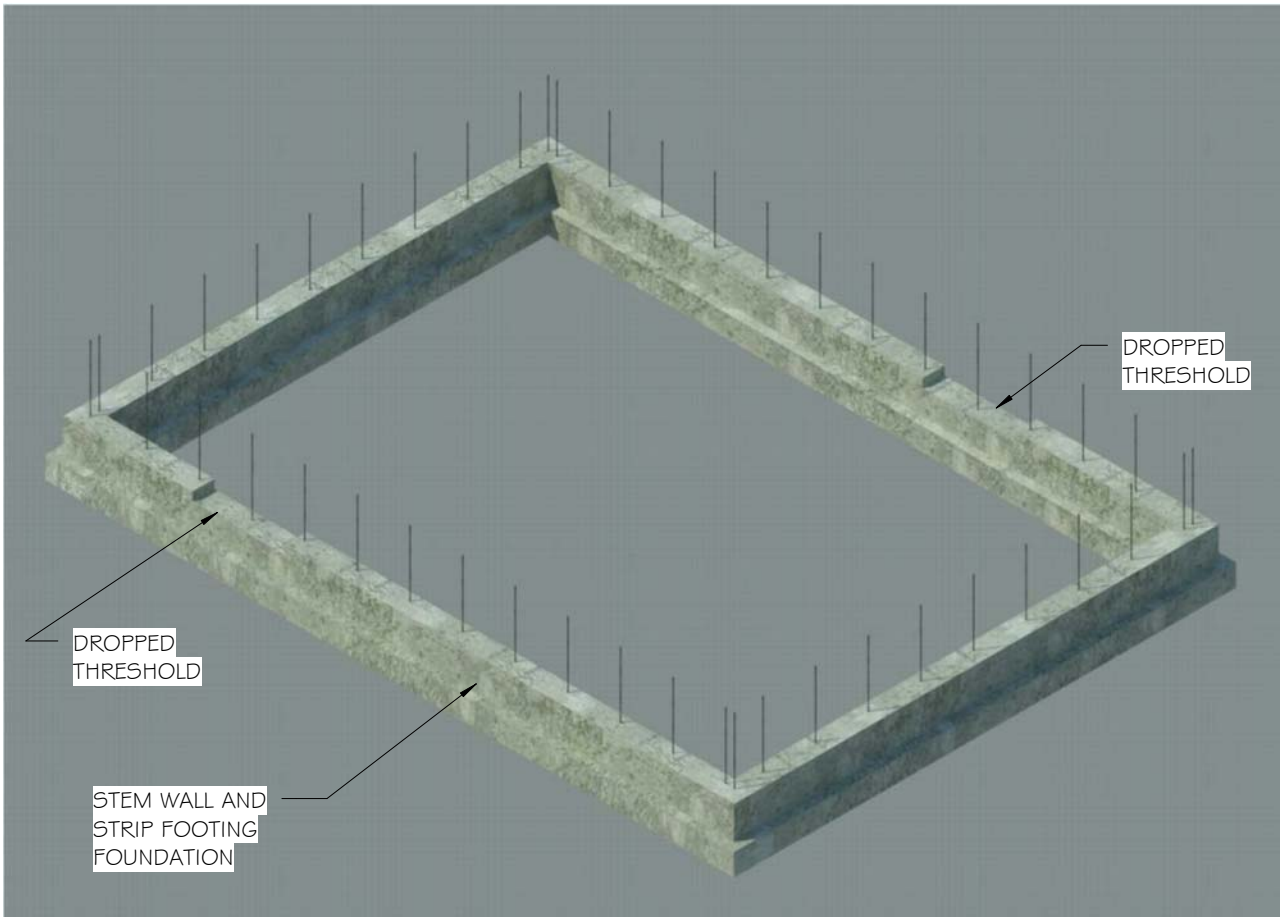
The Perfect Block™ Family of 10 ICCF Building Elements

Sequential Pictorial of Insulated Composite Concrete Form (ICCF) Construction

FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

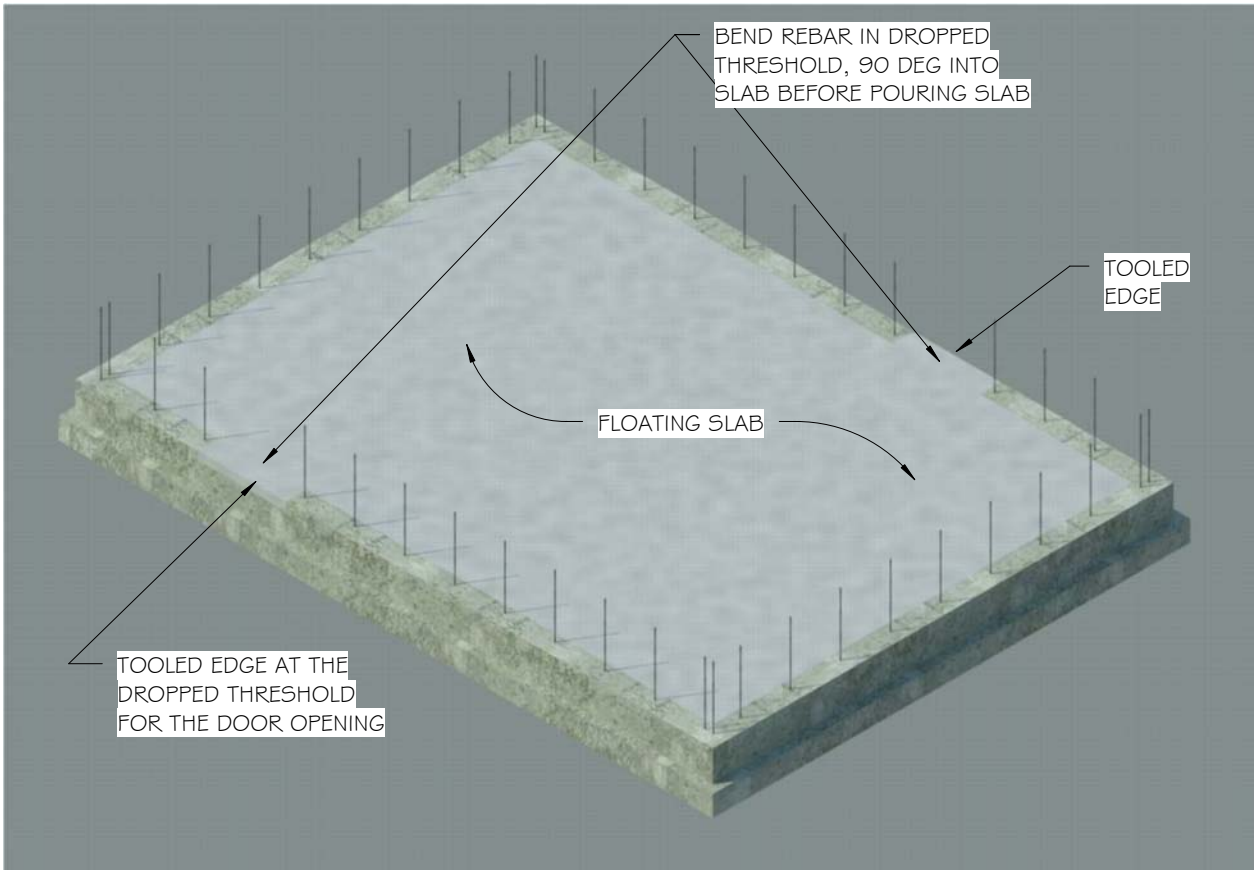
The rendering below shows a 3D view of properly placed vertical rebar in a strip footing and stem wall footing without a slab. Note the dropped thresholds in the stem wall at the door locations.



FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

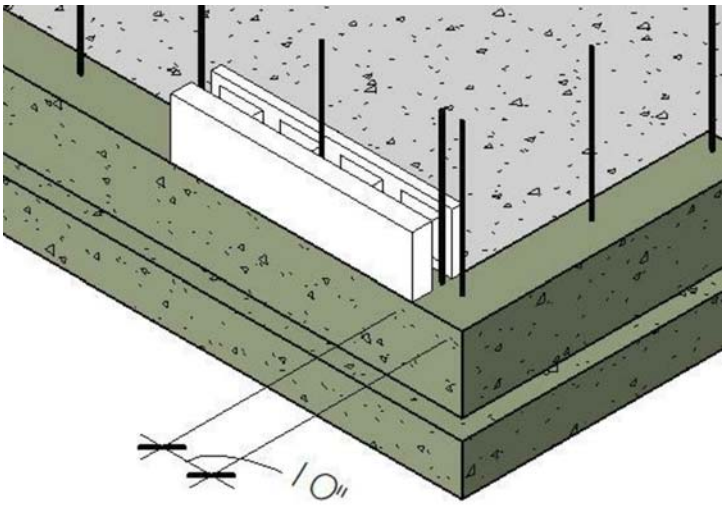
The rendering below shows a 3D view of the strip footing and stem wall foundation with a floating slab. Note the slab creating the thresholds at the door locations.

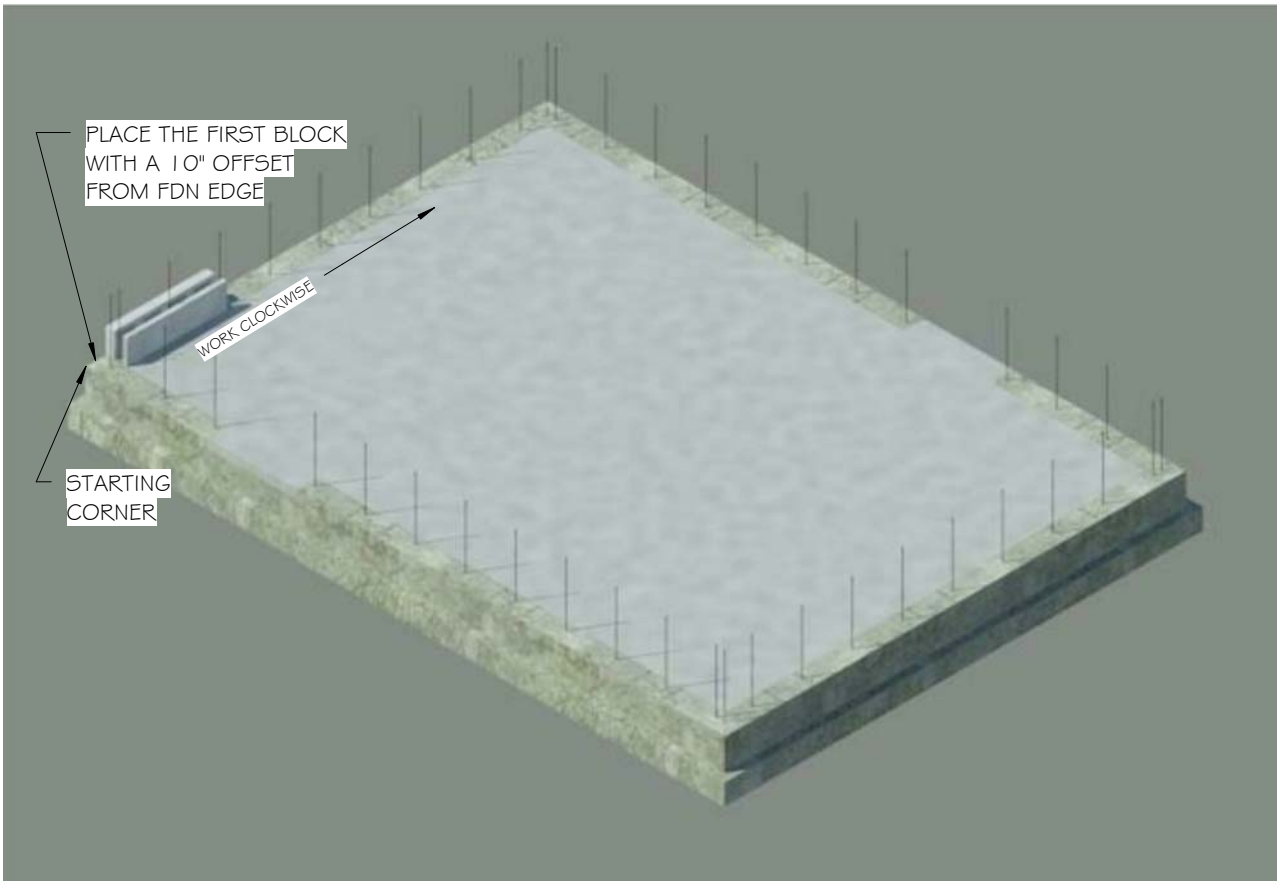


FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

The rendering below show a 3D view of a properly placed first block of the first course of a 10" Asymmetric ICCF wall. Subsequent block is placed one after the other to the next corner.





FOUNDATION CONSTRUCTION

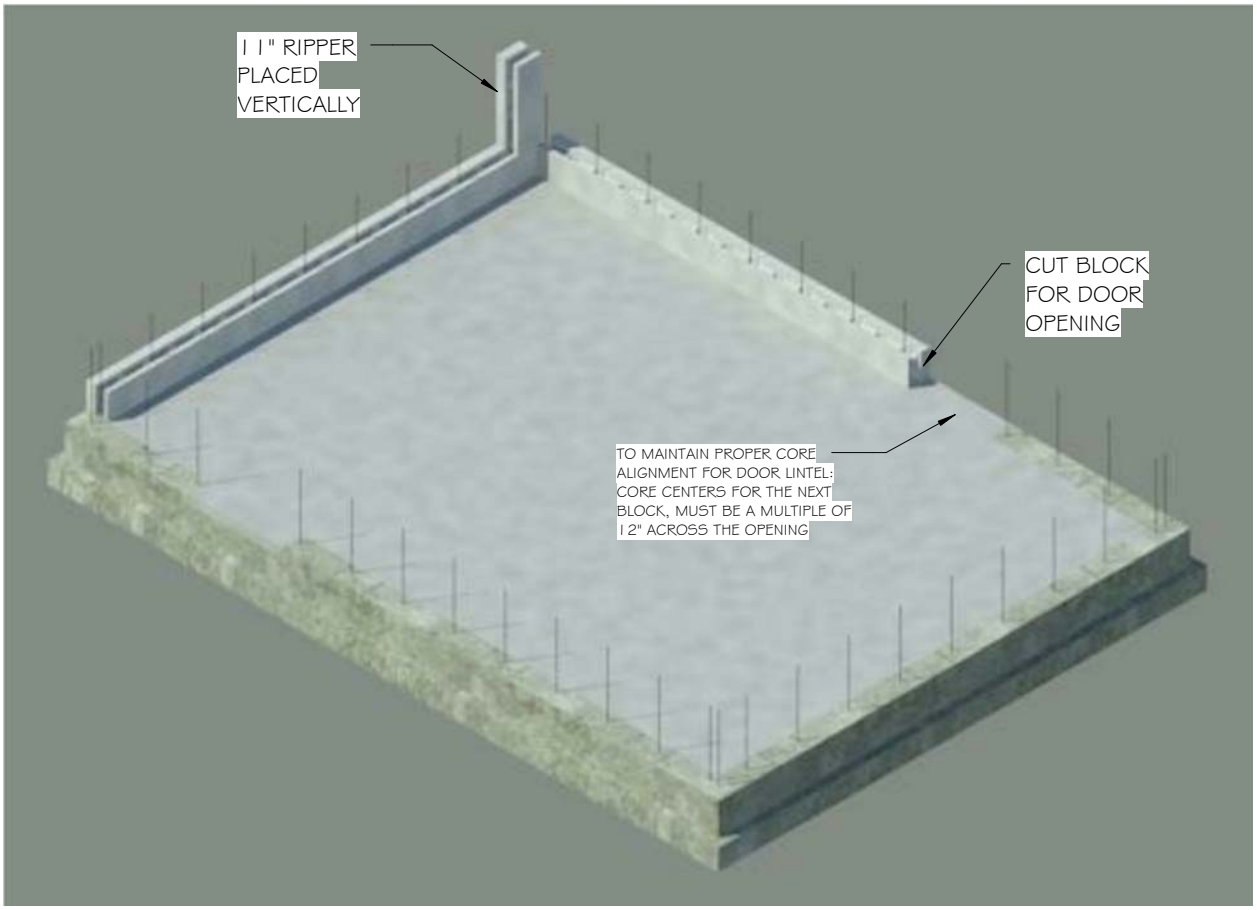
Footing and Stem Wall Construction (Cont.)

The start block from the next corner is placed with 10" offset, just like the first wall. The gap left for the last block is 11", leaving an offset of 8" to accommodate the 8" leg of a 10" corner block on end, to be installed vertically.

FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

The 11" gap will accept a "ripper" block (a block with 1" of height ripped off lengthwise with a circular saw and guide fence) placed vertically. Using a standing ripper in a gap of less than 12" will cover four courses and save from cutting four 11" long blocks for four courses.



FOUNDATION CONSTRUCTION

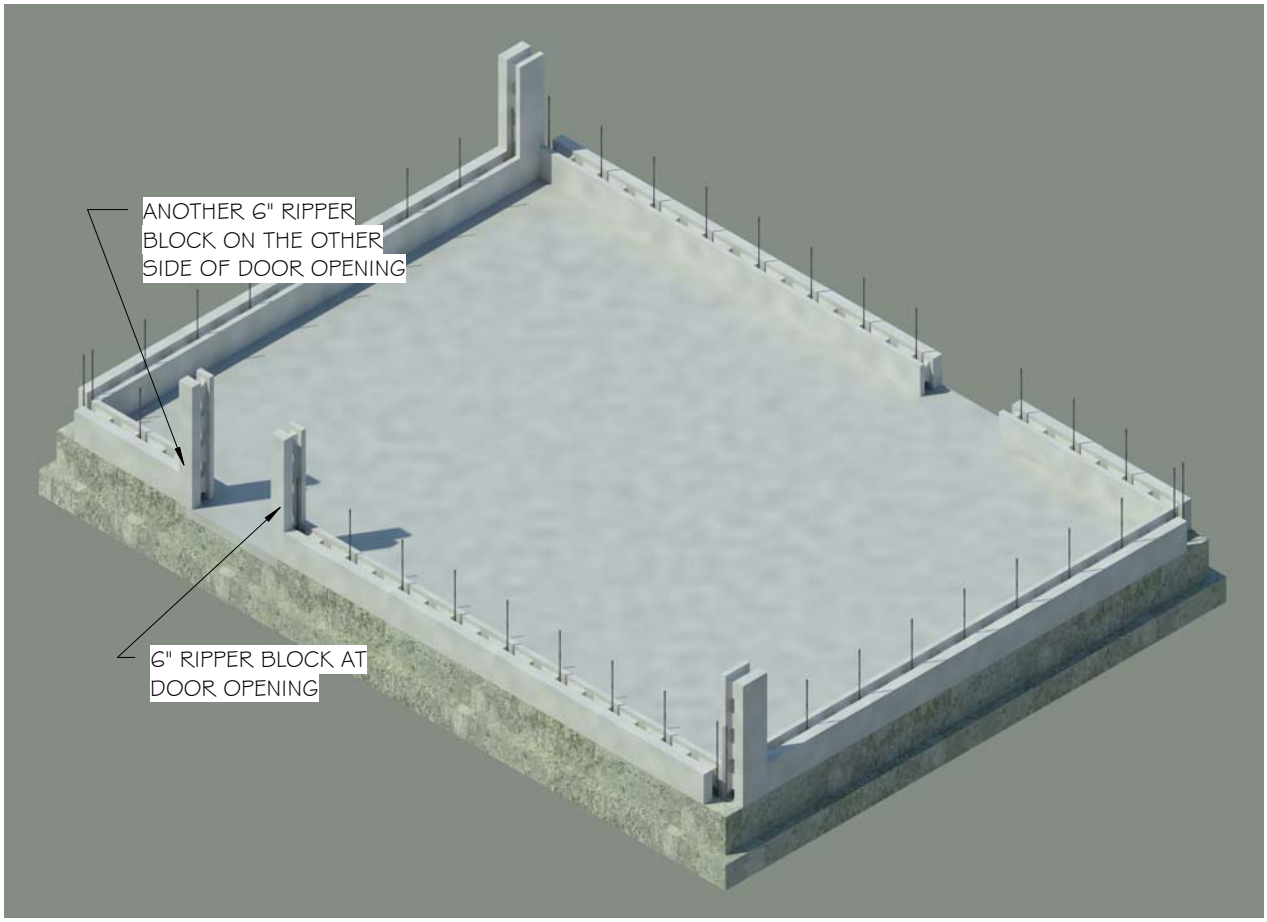
Footing and Stem Wall Construction (Cont.)

On the second wall, the left edge of the door (looking from the inside), a cut block was needed to the left edge of door opening. Measure the opening width, and another cut block is needed. The far end of the cut block on the other side of the door must equal a multiple of 12" from the factory edge of the cut block left of the door (in this case, it is 8') to ensure the 12" on center vertical core alignment across the door lintel.
Possibly a simpler method is to stack uncut block end to end, measure the door center point, mark the edges and cut out the block for the door opening. Then use the cut out piece, later in the build.
The end block of the second wall ended with a full block, so there was no need for a cut block or standing ripper. The third wall started with same offset and ended with another 11" ripper like the first wall.

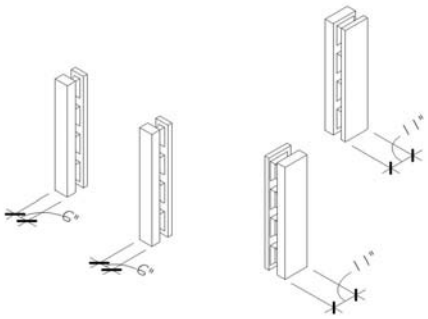
FOUNDATION CONSTRUCTION

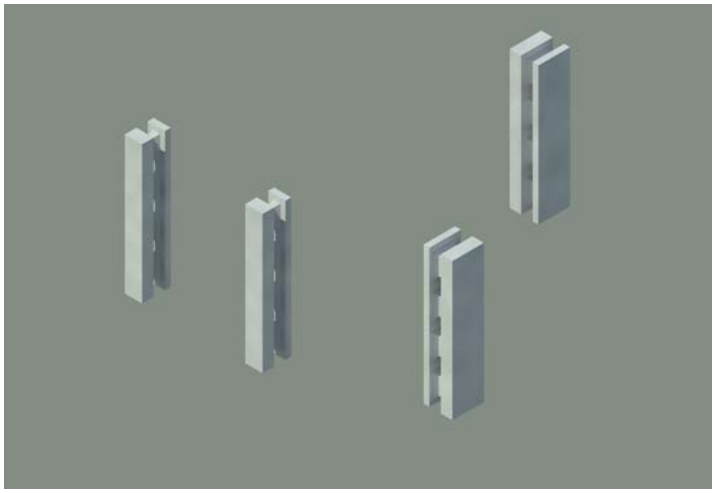
Footing and Stem Wall Construction (Cont.)

The first course is now complete. Note the 6" ripper at the door opening and another 6" ripper at the end of the fourth wall.



Ripper examples in this model

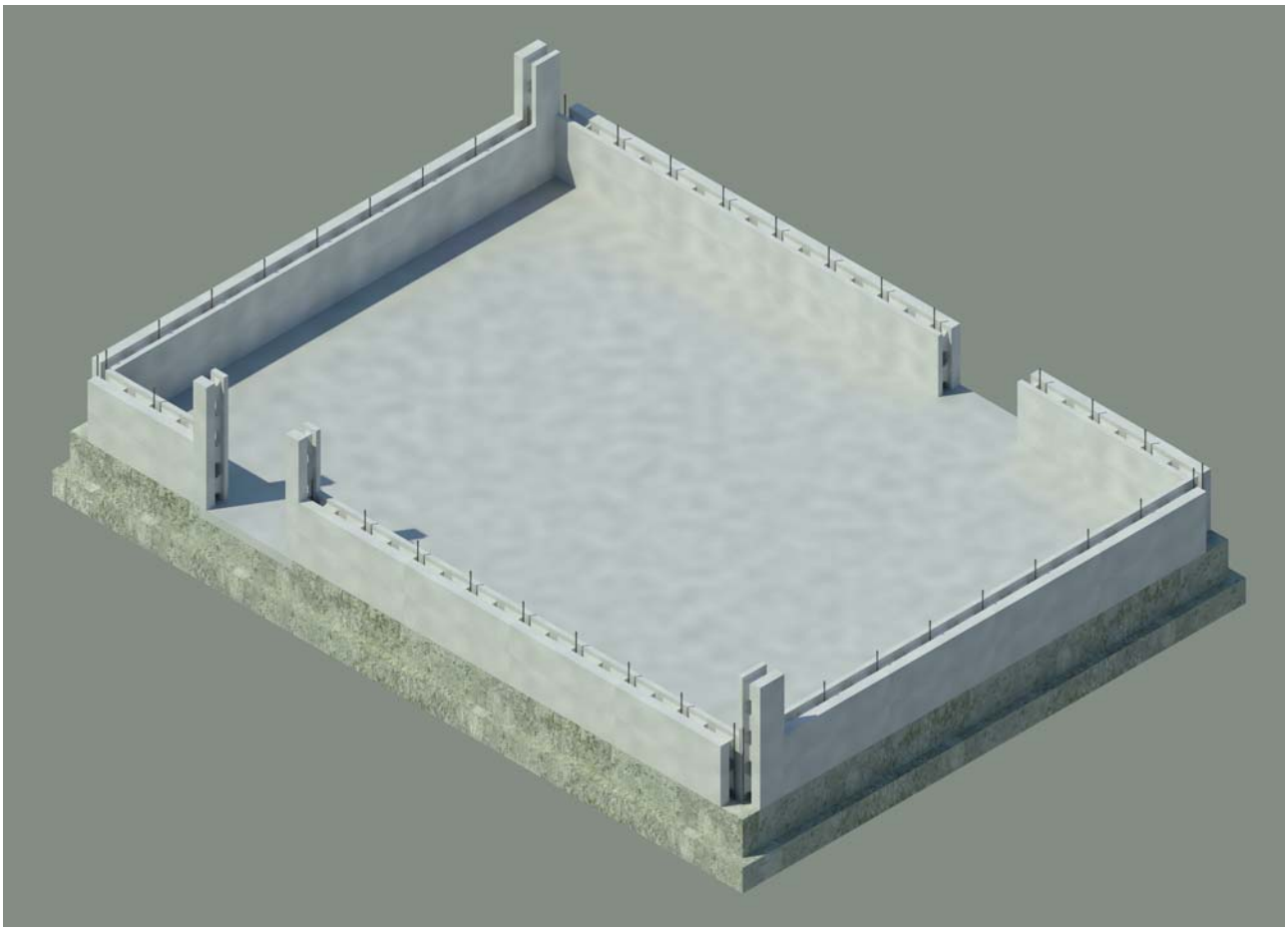




FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

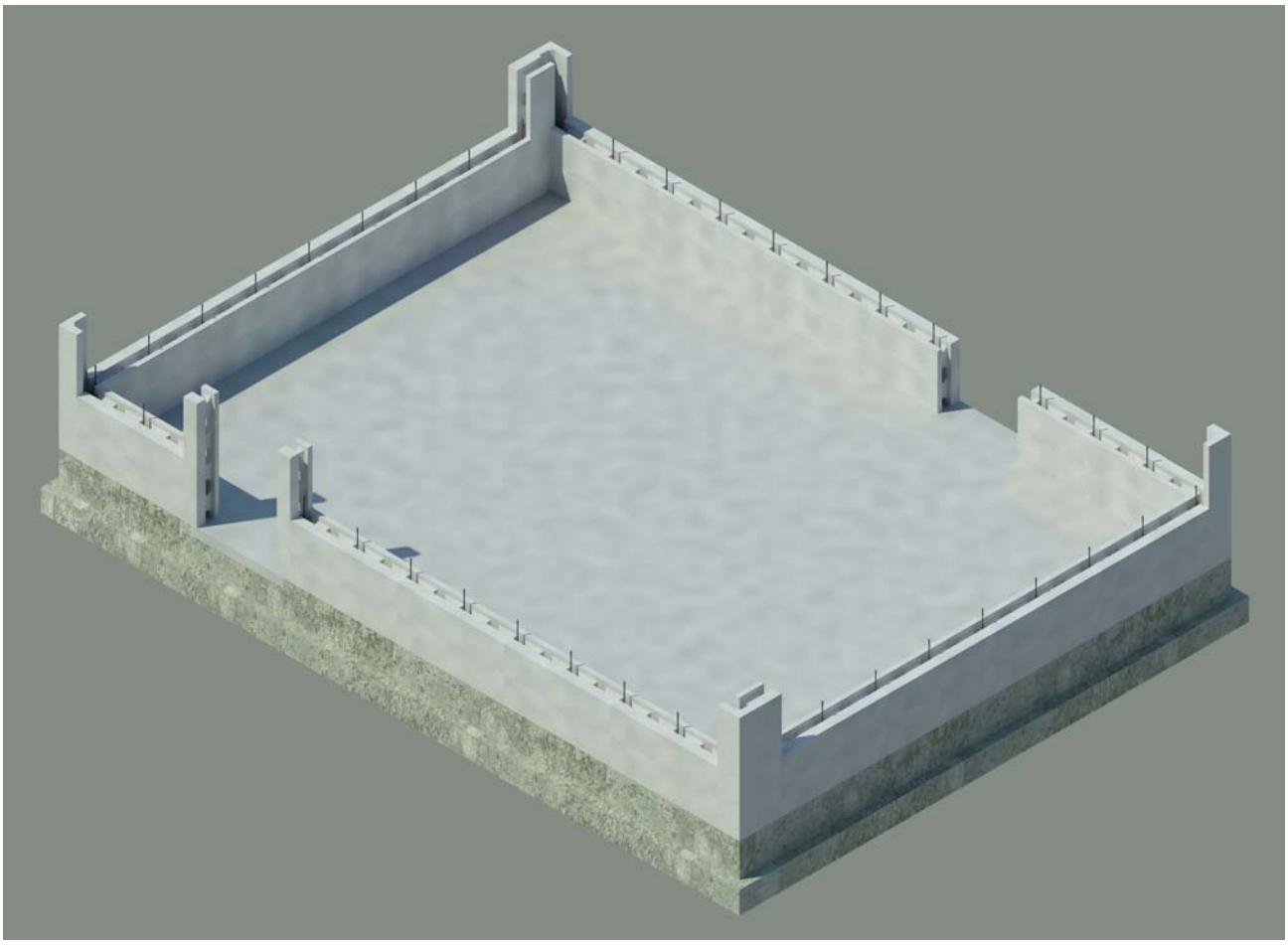
The second course should go much quicker using a "stack bond" since the second course will be identical to the course below.



FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

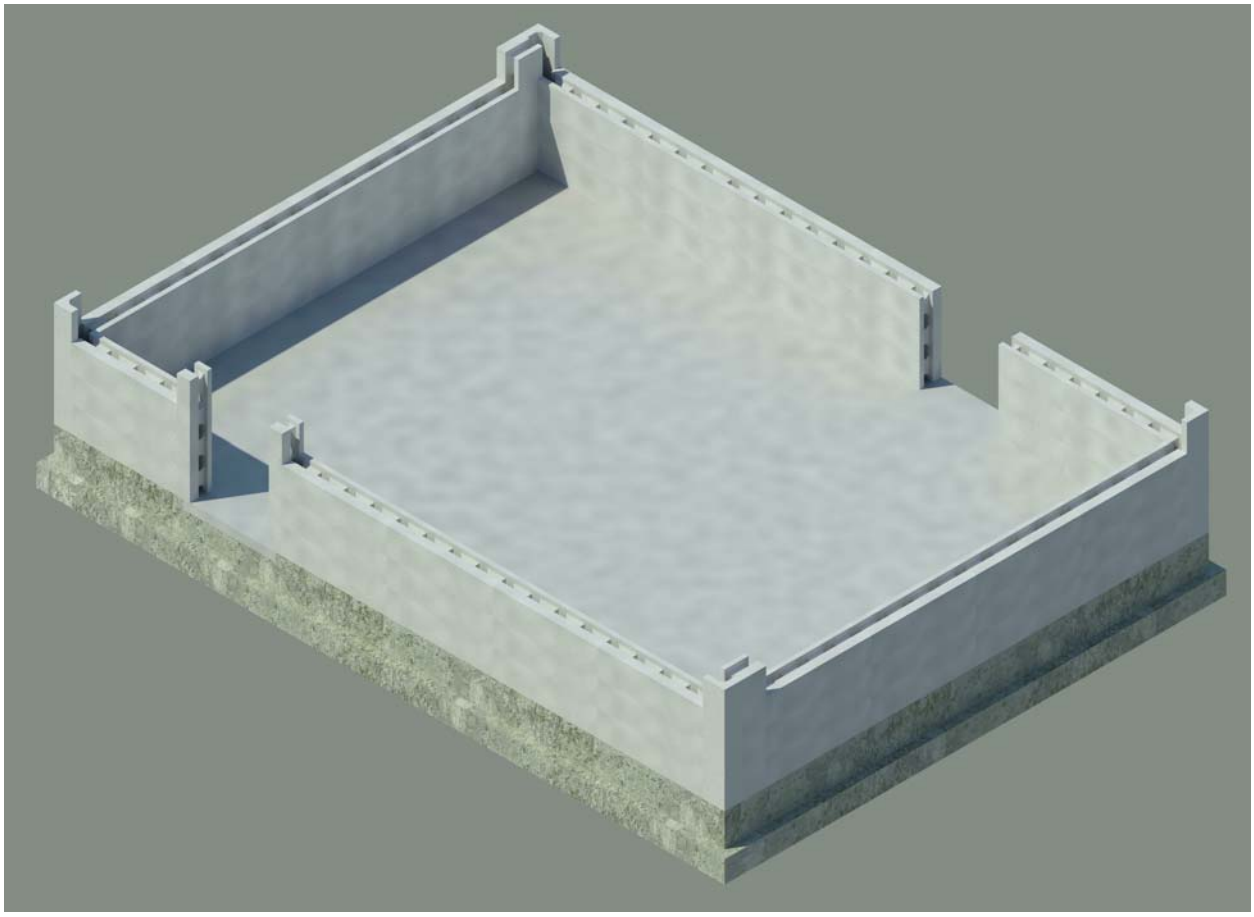
Now that at least 2 courses are set. Let's add 10" corner blocks to all four corners.



FOUNDATION CONSTRUCTION

Footing and Stem Wall Construction (Cont.)

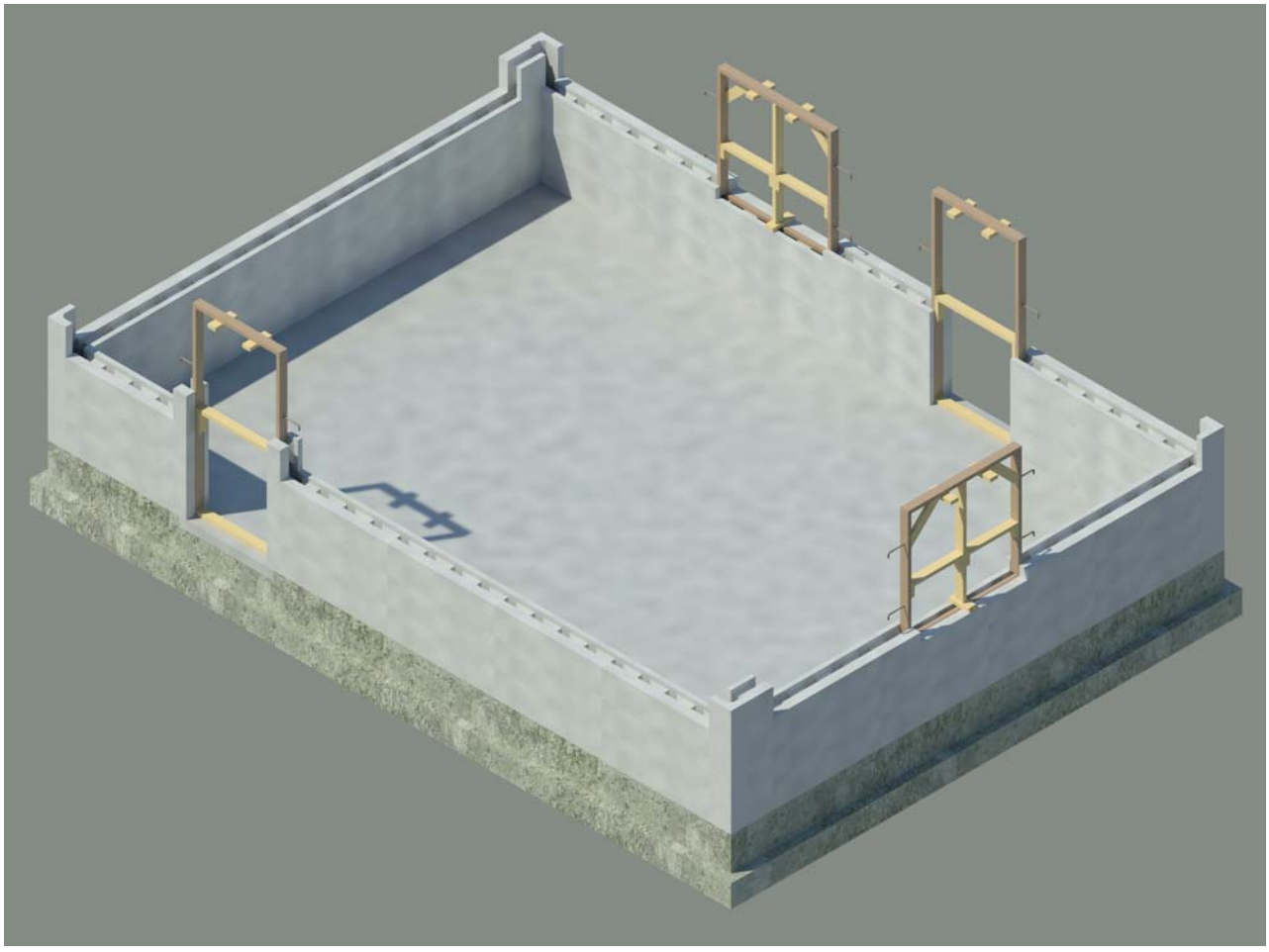
The third course is placed and complete.

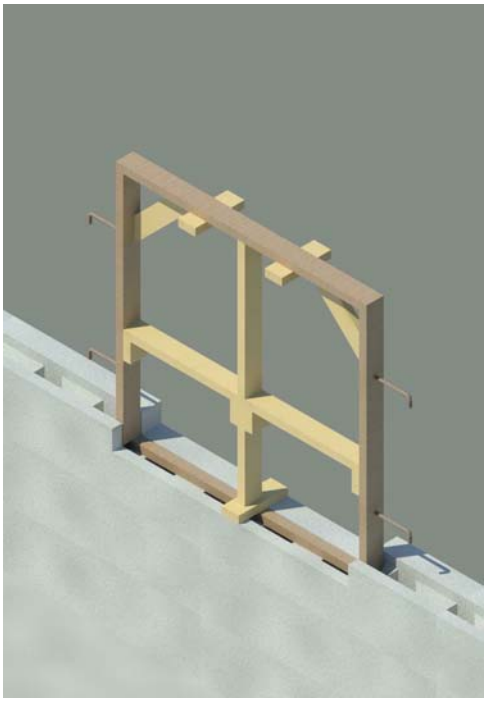


The sequential pictorial of this building construction continues from the third course to the ninth course, grout, and placement of the top plate on page 7.5a.

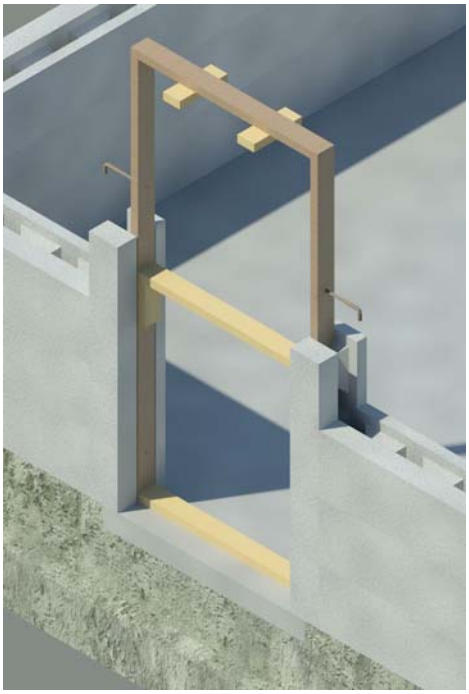
WALL CONSTRUCTION

This is a continuation of the sequential contruction pictorial for the small house on pages 6.4b - 6.4f.



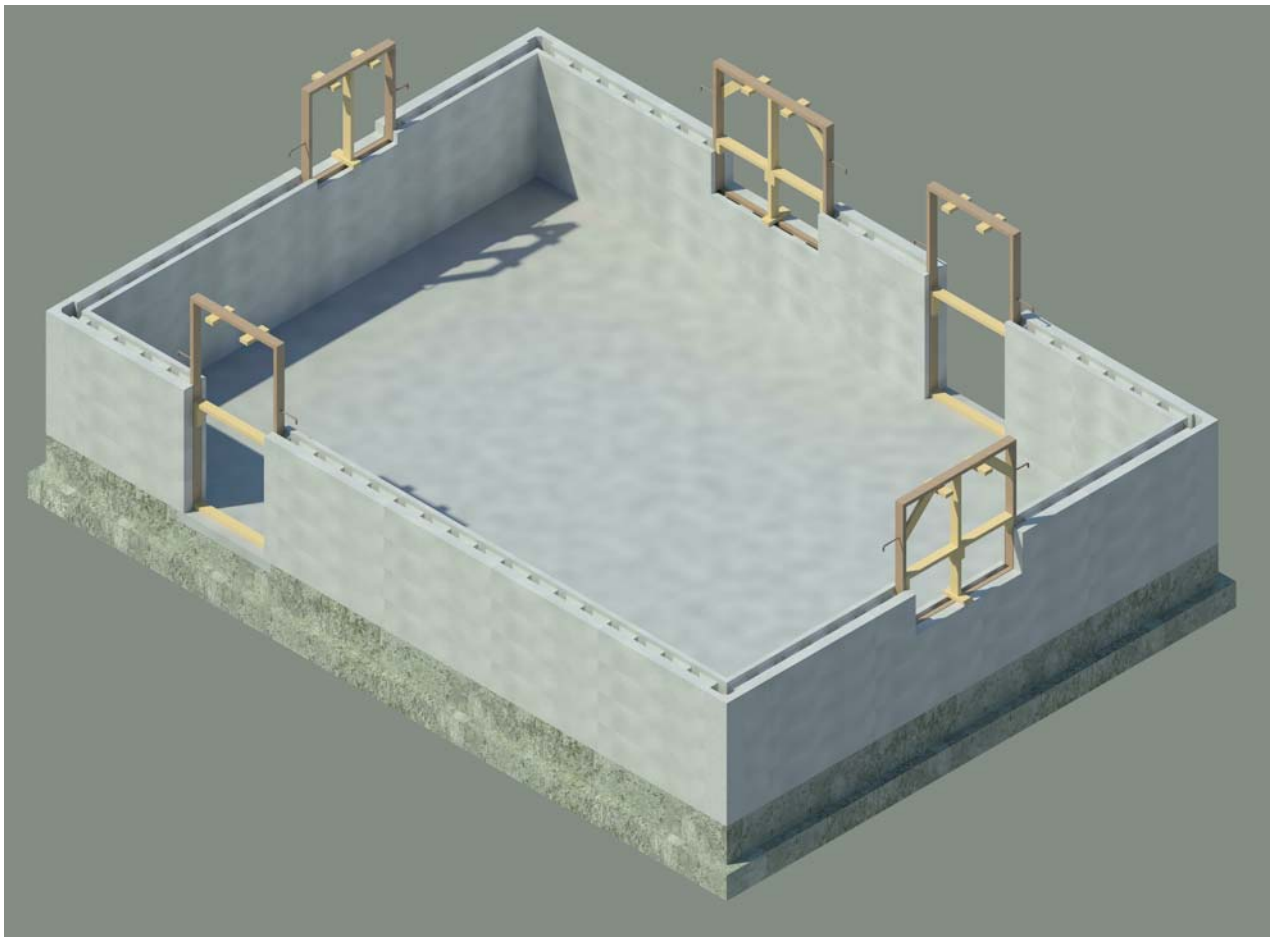


After placing the third course, the third course is a good place to begin to set the door and window bucks. Note that the 4040 window sill is at 32", and the top of the third course block must be cut down 4" to have the door and window head heights align.



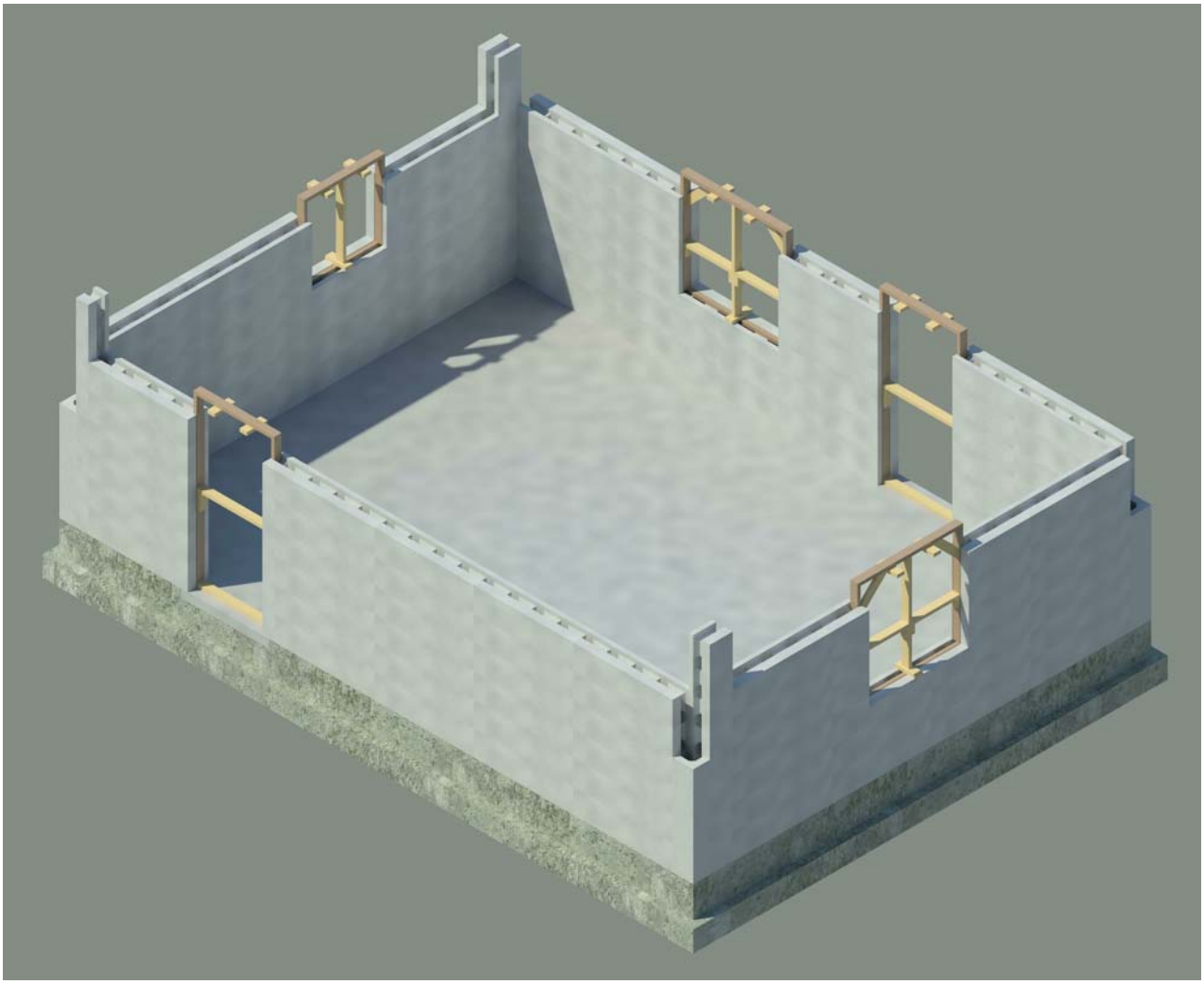
WALL CONSTRUCTION

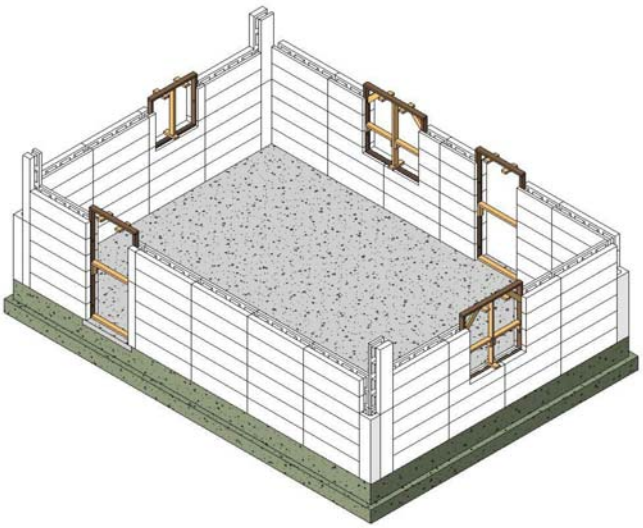
The fourth course is placed and the 3030 window for placement over the kitchen sink is set at a sill height of 44".

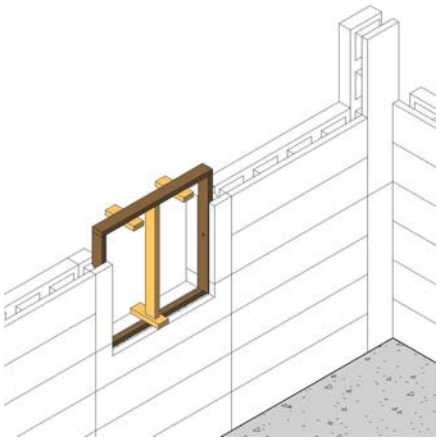


WALL CONSTRUCTION

The fifth and sixth courses are placed. Note the two foot long 6" wide rippers on each side of the kitchen window.

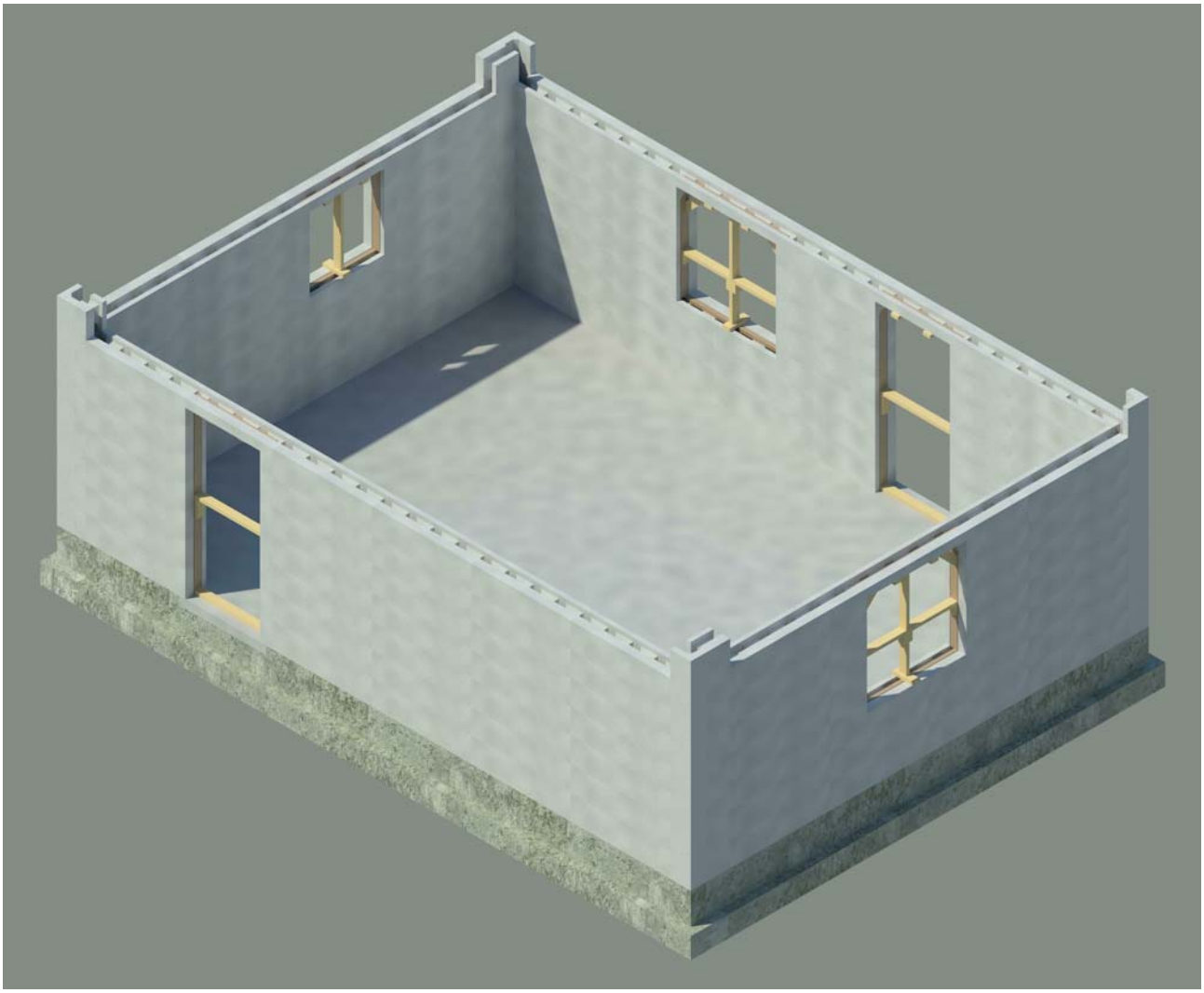


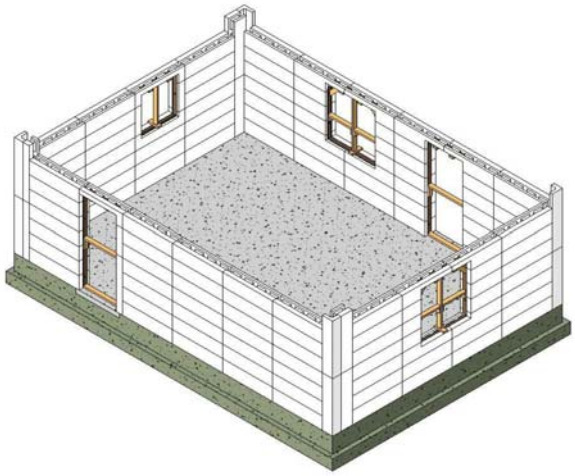


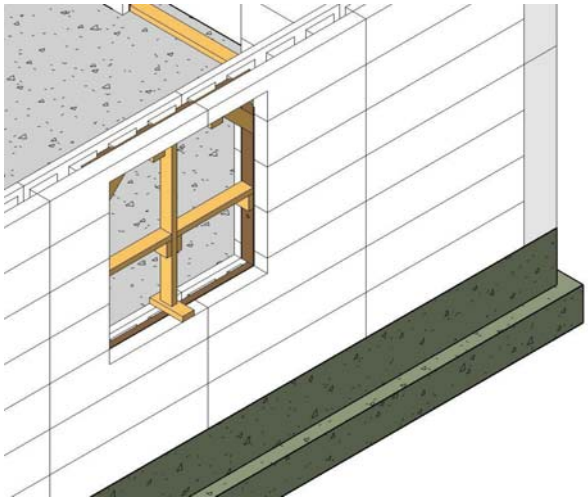


WALL CONSTRUCTION

The seventh course is placed, and 4 more 10" corner blocks are placed vertically at the building corners.

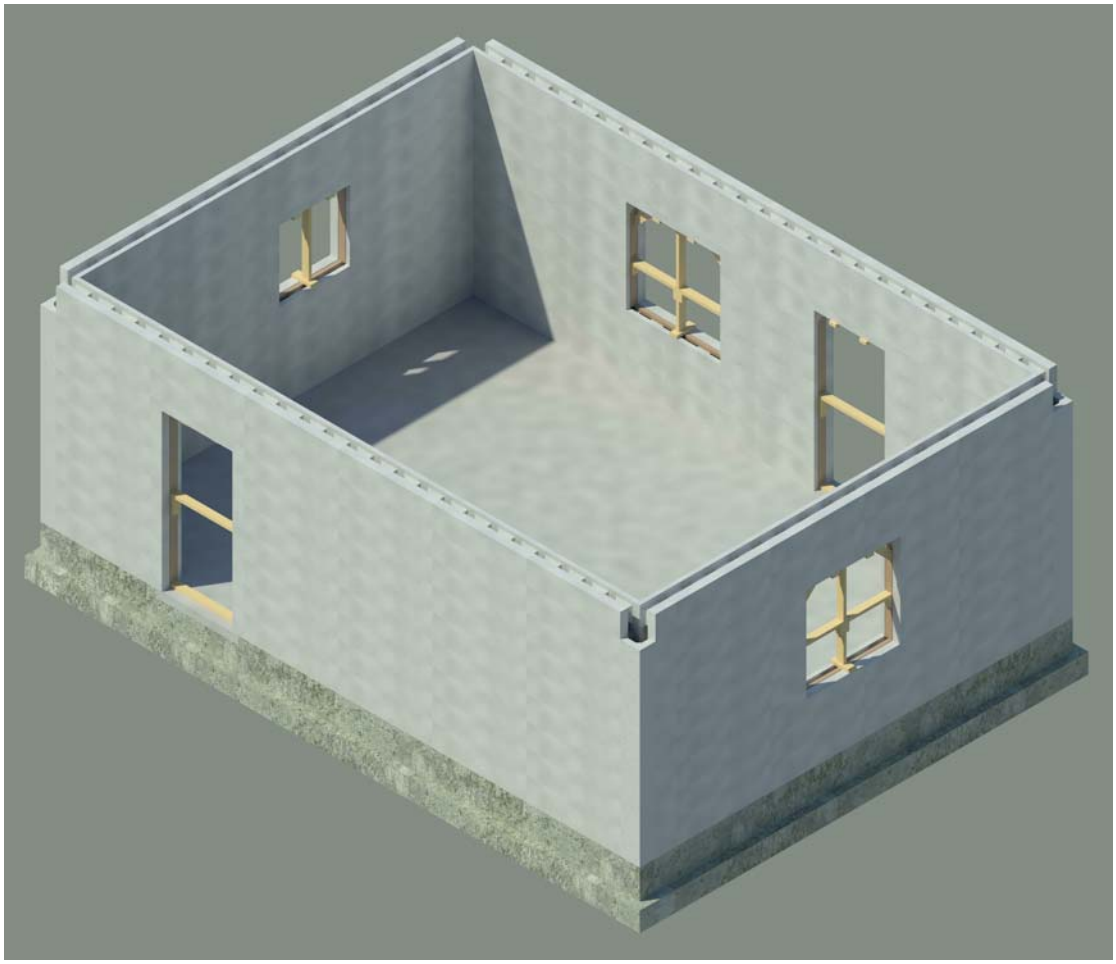


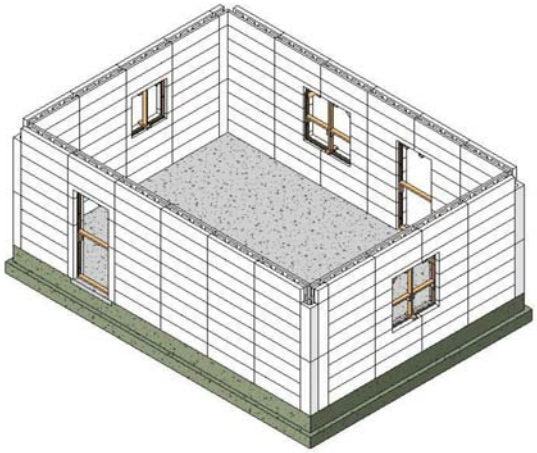


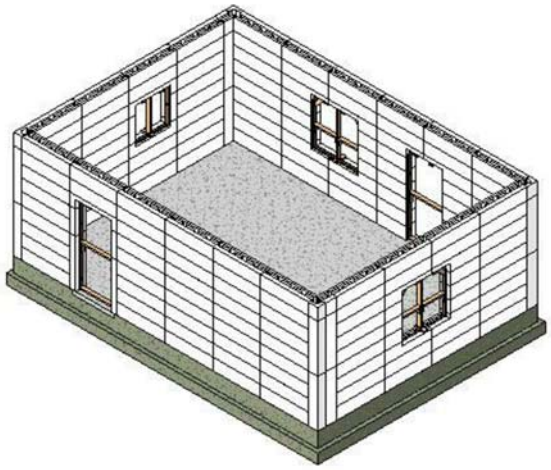


WALL CONSTRUCTION

The eighth and ninth courses are placed. The top plate height is 9’ 0” plus 1 ½” for the thickness of a single 2x10 top plate, from the finished floor. Four 1’ pieces of 10” corner block need to be placed and then the walls will be complete and ready to drop the vertical rebar in from the top course at the proper design interval, and then grout. After grouting and while the concrete is fluid, anchor bolts are placed @ 36” on center or IAW design requirements.

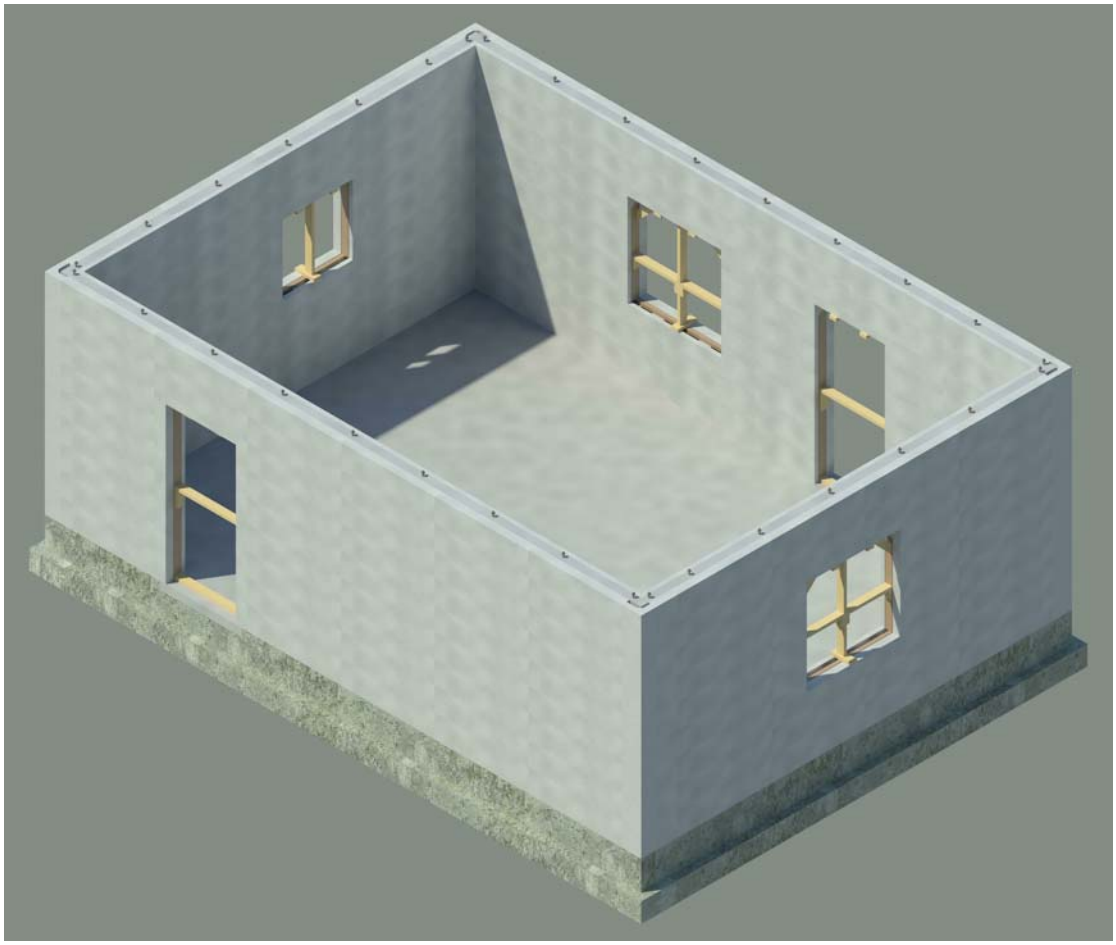






WALL CONSTRUCTION

The building walls are complete to nine courses, 9' 1 1/2" height of wall, and fully grouted with anchor bolts in place at 36" on center. The anchor bolts are set to receive a single thickness 2x10 with miter cuts at the corners. Typically the inside edge of the 2x10 top plate is aligned with the interior face of the wall.

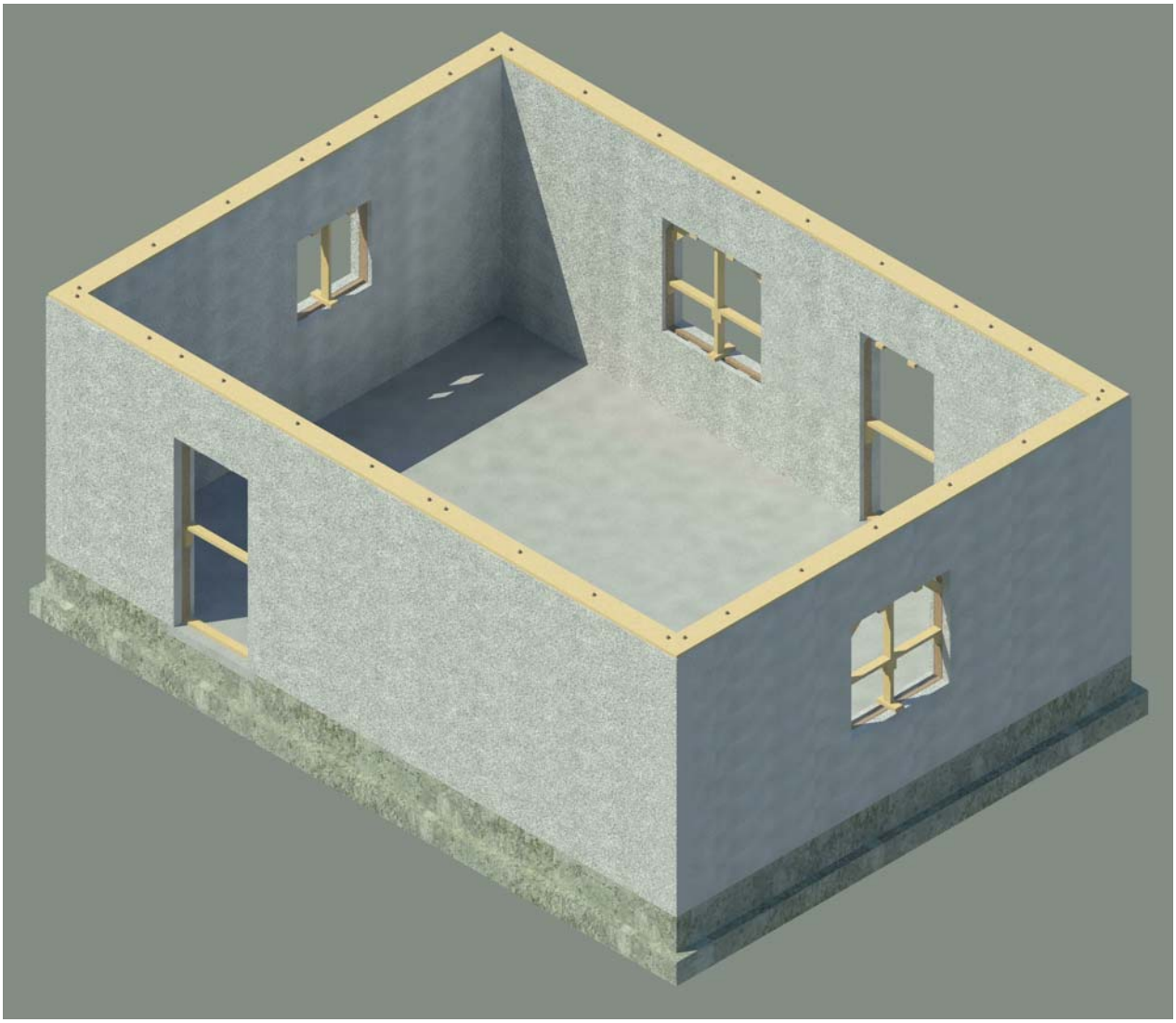


WALL CONSTRUCTION

Now that the walls are complete and grouted. Place sill gasket between the top of wall and top plate. Place the top plate boards with the inside board edge aligned with the interior face of the ICCF wall. Tighten the anchor bolt nuts.

Builder's Tip: Decide whether to miter or butt the top plate boards at the corners prior to grouting. That decision will determine how you place the anchor bolts at the corners. If you know the length of the top plate boards that you will be using, you can calculate and mark the placement for the anchor bolts before pouring the grout. This will allow you to place anchor bolts for securing the butt ends of the boards IAW code.

The use of a wood top plate is for placing any wood truss or rafter roof on the top plate and securing the roof to the building top plate with several types of hurricane tie and strap connectors. The wood top plate is, of course, secured to the wall itself with anchor bolts embedded into the concrete filling the ICCF walls. There are many other types and material roofs that can be used with an ICCF wall but only wood truss roofs are discussed here. If you would like to use a different roof, please feel free to to call us for guidance.



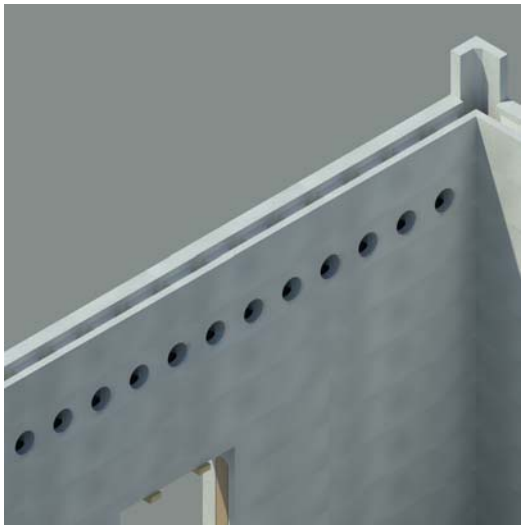
WALL CONSTRUCTION

Installing Roof Trusses on Top Plate

This example is just but one type of roof that can be attached to the top plate. This example is a wood pitched truss roof with gable ends. Many types and different materials and methods of attachment can be used on the top of ICCF walls.

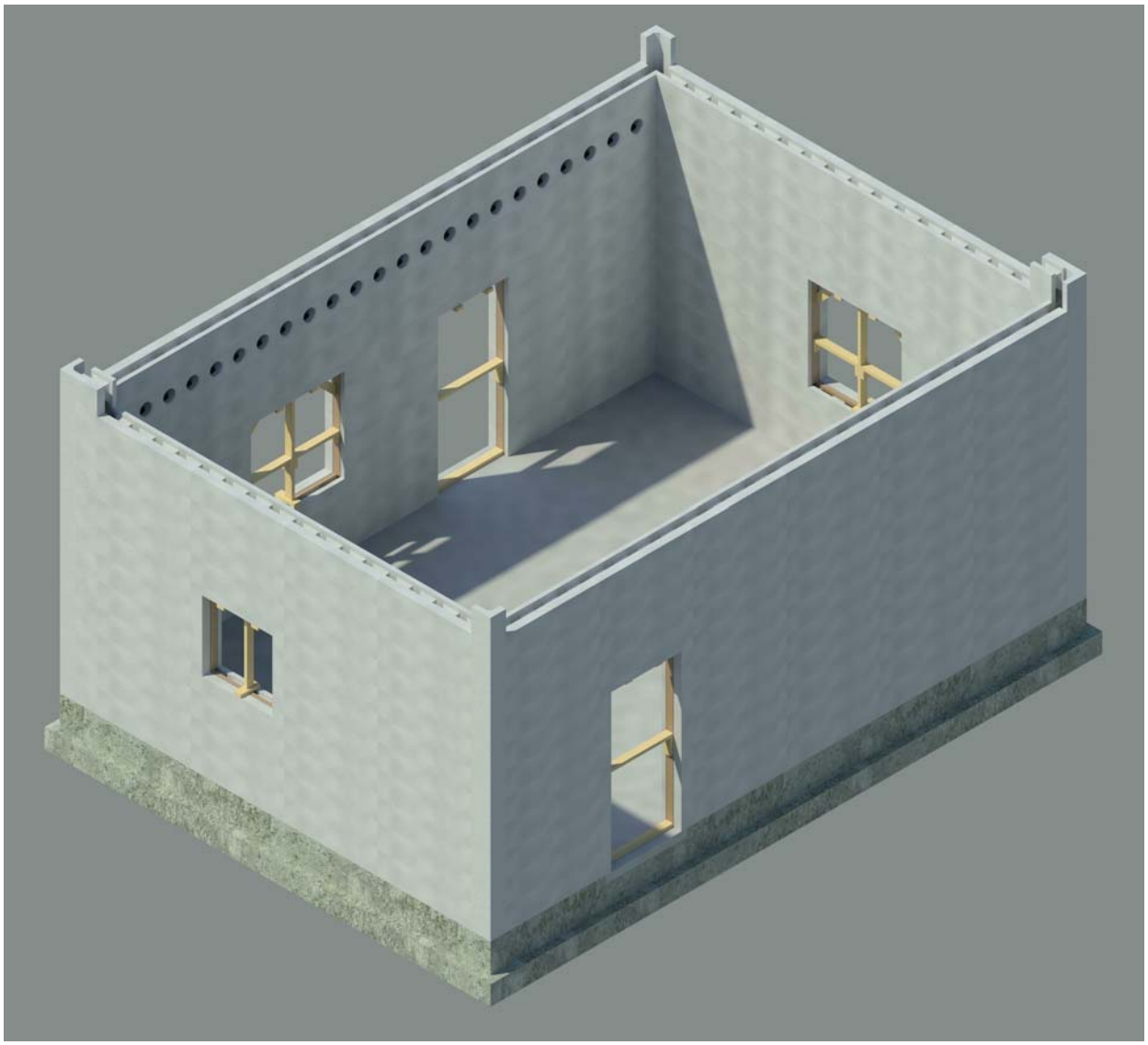
WALL CONSTRUCTION

If you choose to go beyond one story, then a floor can be supported by a ledger. The next story can be built from the sheathed floor.



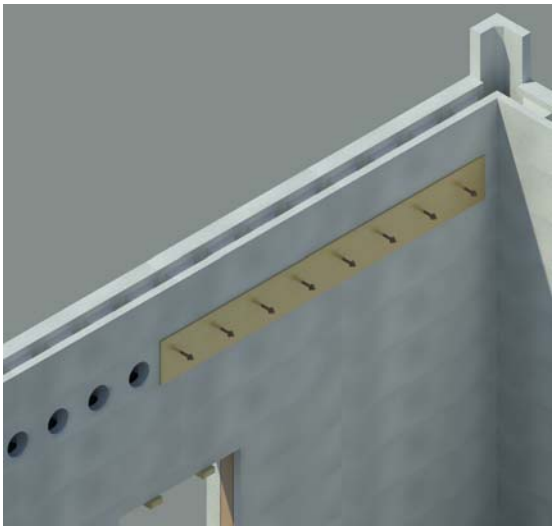
Installing a Ledger (Cont.)

Once the top of the ledger is accurately determined based on the desired finished floor height and type and method of support for the floor, cut 6" diameter holes (code) that your anchor bolts will be placed and held into position by an OSB or plywood "buck" cut to the same height as the ledger board that you will use. (the holes can be cut with a keyhole saw if you don't have a 6" diameter hole saw bit).

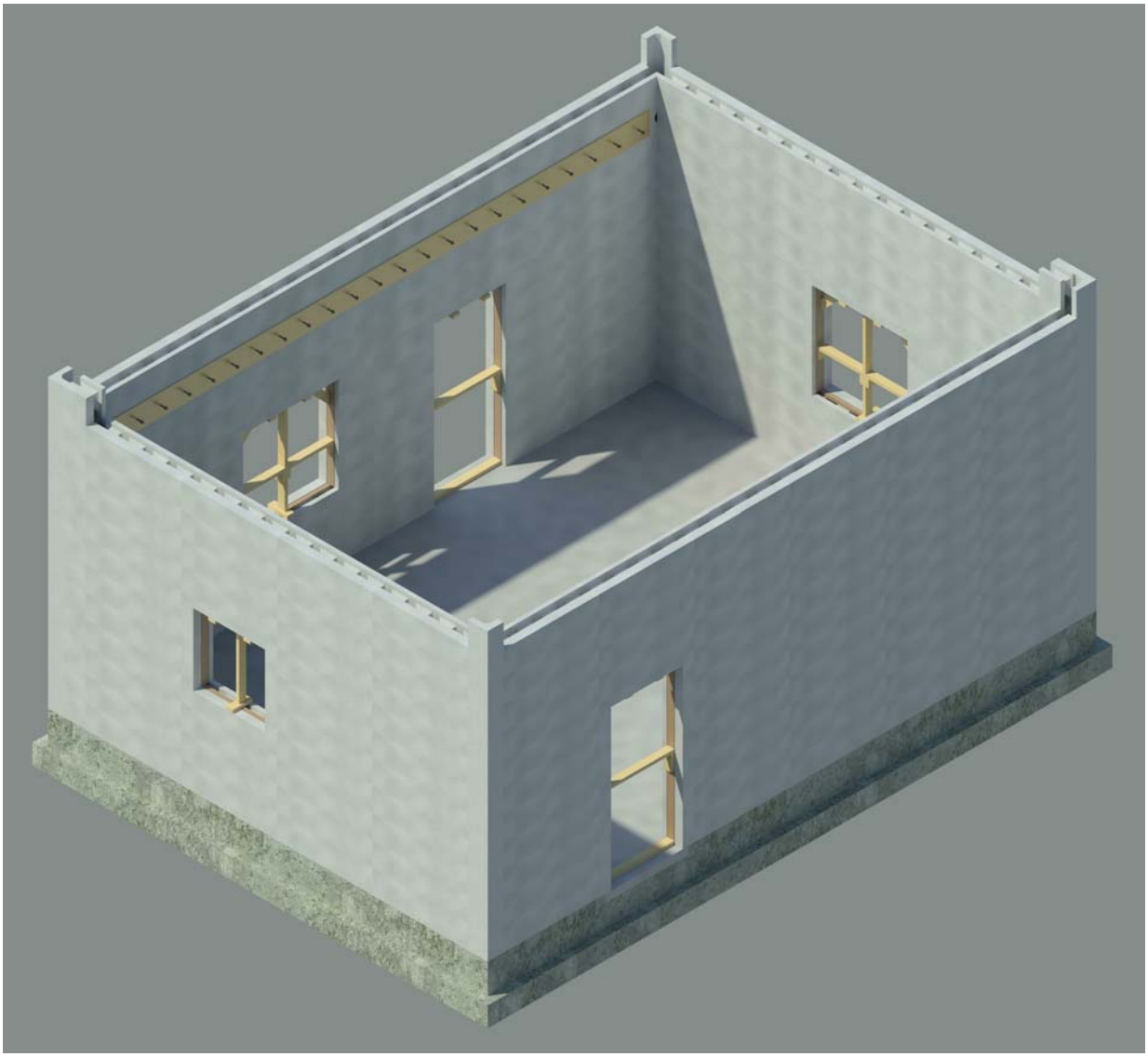


WALL CONSTRUCTION

Installing a Ledger (Cont.)



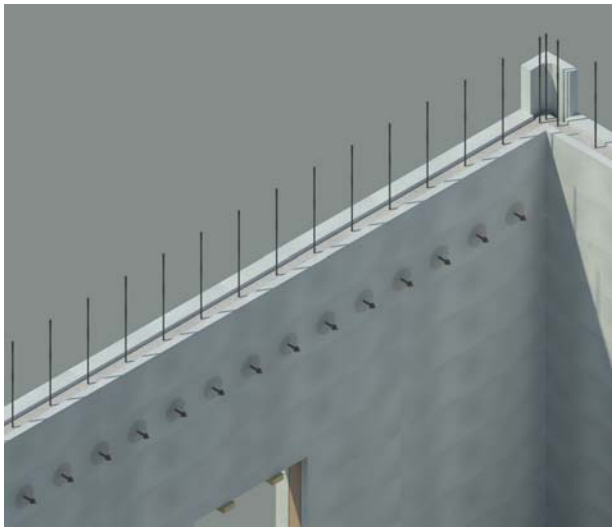
The ledger "buck" is cut to the height of the ledger and holes drilled at the diameter of the anchor bolts (AB) to tightly hold the AB's at the center of the holes inthe wall and at the depth for proper embedment and exposure to hold the ledger. The buck is held in its proper place with threaded rod, (1/4" or 3/8" diameter) bolted through the ICCF wall at 36" on center until the wall is fully grouted and the AB's are concreted in place. After grout, take off the buck and use it as a template for accurately drilling the mounting holes in the ledger. Mount the ledger on the wall.

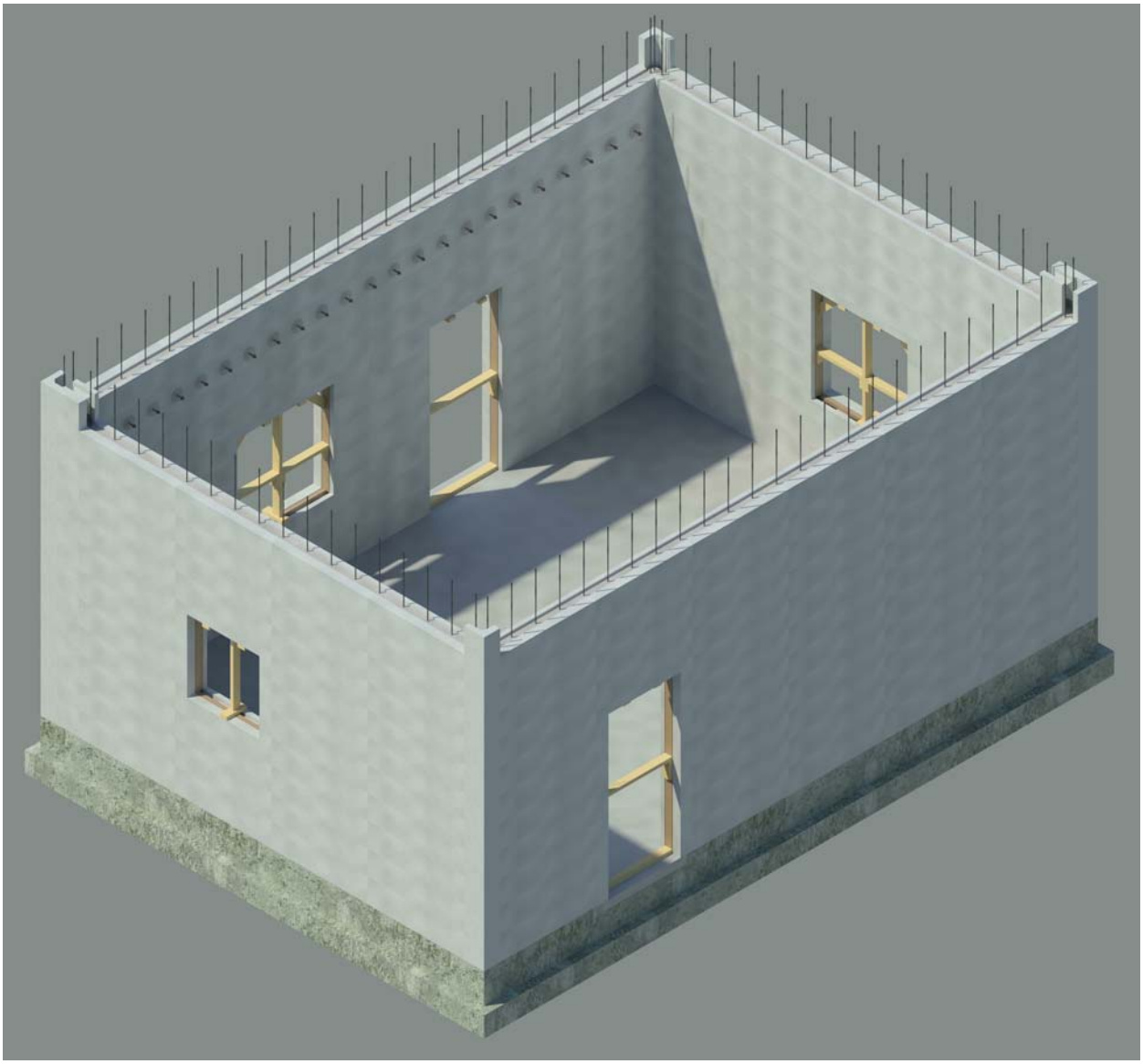


WALL CONSTRUCTION

Installing a Ledger (Cont.)

This is a view of the ledger buck removed and the anchor bolts concreted into the wall.

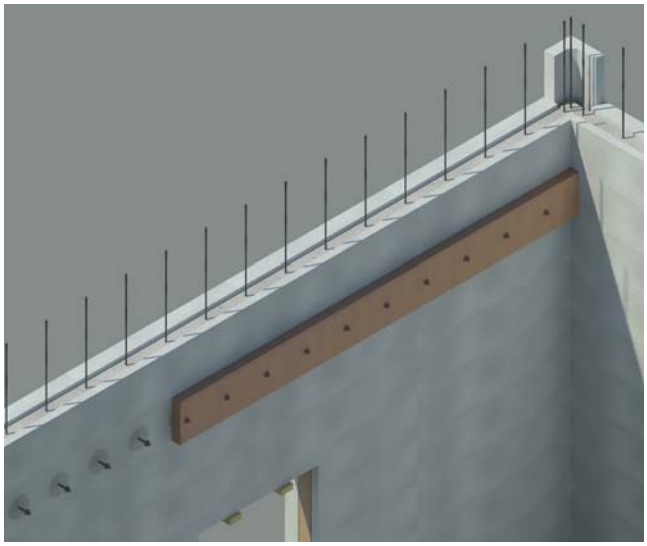




WALL CONSTRUCTION

Installing a Ledger (Cont.)

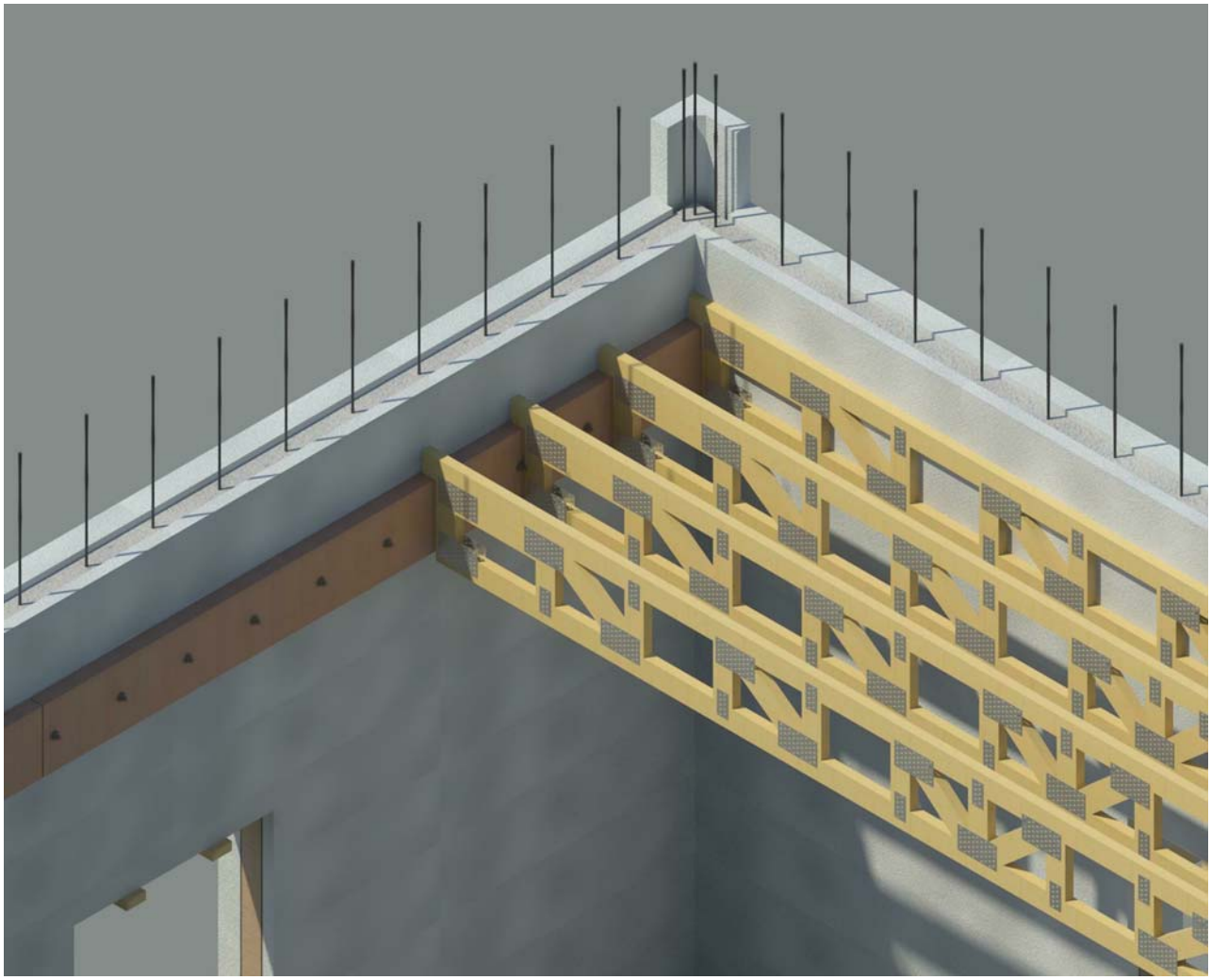
This is a view of a 3x12 ledger board installed on the wall.



WALL CONSTRUCTION

Installing a floor trusses

This is a view of the beginning of installing top chord bearing, open web floor trusses at 16" on center on the 3x12 ledger board installed on the wall.



WALL CONSTRUCTION

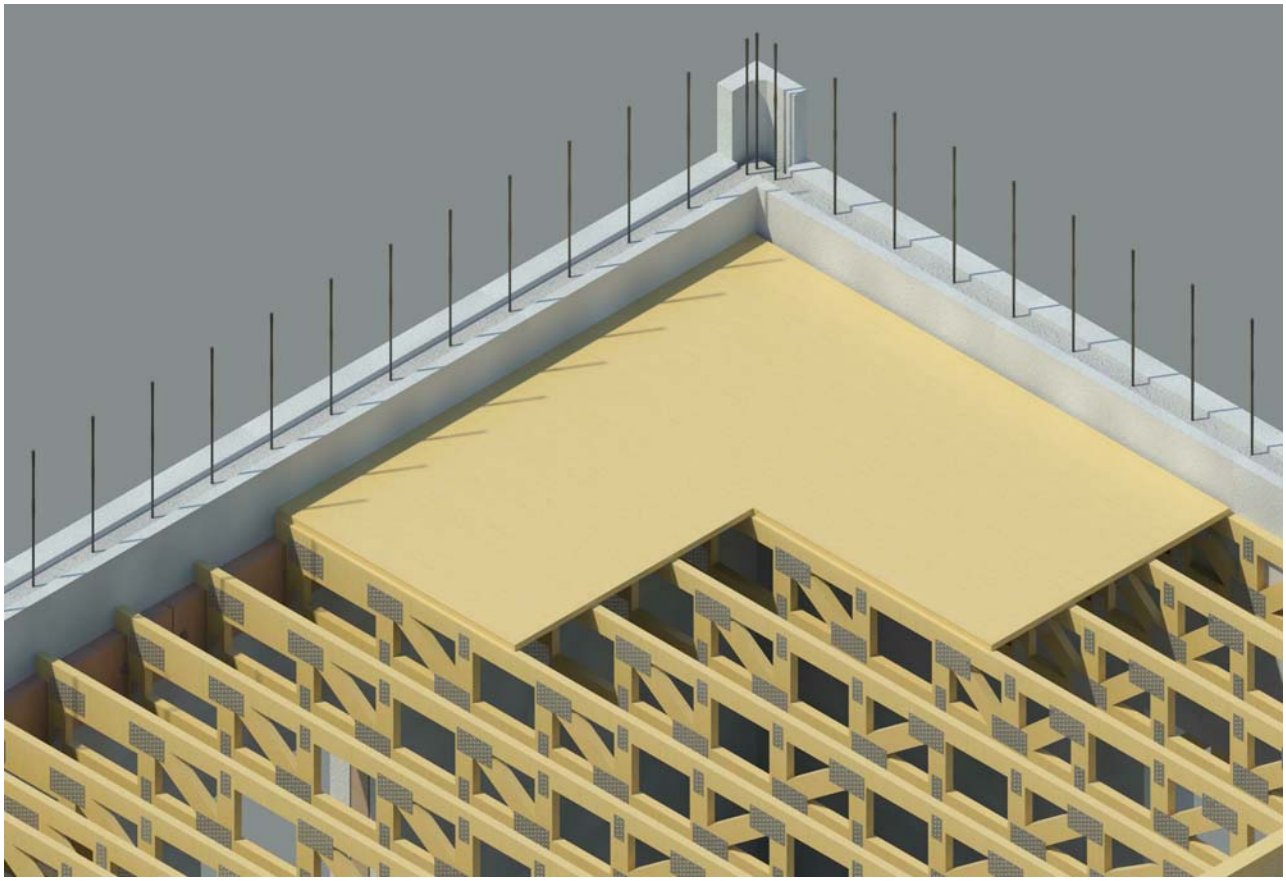
Installing a floor trusses (Cont.)

Installation of the second floor trusses is complete. From this point in construction, the floor sheathing can be installed.

WALL CONSTRUCTION

Installing a floor sheathing

This is the beginning of the installation of the second floor sheathing on the floor trusses.



WALL CONSTRUCTION

Installing a floor sheathing (Cont.)

Once the floor sheathing is complete, work installing the second floor ICCF wall blocks can begin. Be certain that all hazards, like the stairwell opening, is safely covered or adequate borders are in place before beginning wall construction.