

HOUSE BUILDING MANUAL
FASTBLOC HOUSE

1MISSION



Version 3.2 10/28/2025
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To ensure that you have the current version of the manual, refer to the table and ensure that the date matches the bottom of the page of the phase that you are constructing. 10/28/2025

Phase	Description	Comments	Date
Introduction	Introduction and Safety Information		10/28/2025
Phase 1	Pad and Slab Installation	Performed by 1M staff	10/28/2025
Phase 2	Install Septic System	Performed by 1M staff	10/28/2025
Phase 3	Construct Wall Support Frames	Performed by 1M staff	10/28/2025
Phase 4	Exterior Door Opening Form	Performed by 1M staff	10/28/2025
Phase 5	Install Rows 1 to 4 Block		10/28/2025
Phase 6	Install Rows 5 to 8 blocks		10/28/2025
Phase 7	Construct Roof Trusses		10/28/2025
Phase 8	Install Roof Trusses		10/28/2025
Phase 9	Install Roof Coating		10/28/2025
Phase 10	Exterior Wall Coating		10/28/2025
Phase 11	Electrical Feed	Performed by 1M staff	10/28/2025
Phase 12	Install Interior Wall Coating	Discontinued	10/28/2025
Phase 13	Interior Wall Framing		10/28/2025
Phase 14	Electrical Installation		10/28/2025
Phase 15	Insulation and Sheetrock		10/28/2025
Phase 16	Pre-hang Door	Performed by 1M staff	10/28/2025
Phase 17	Install exterior door and windows		10/28/2025
Phase 18	Exterior paint		10/28/2025
Appendix-Puebla	Puebla House Model		10/28/2025
Appendix-Sierra	Sierra House Model		10/28/2025
Appendix-Cortez	Cortez House Model		10/28/2025
Appendix-Pinacate	Pinacate House Model		10/28/2025

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INTRODUCTION

I. WELCOME

Welcome (bienvenido) to your 1MISSION house (casa) building project! This is your guide to the construction process. If this is your first project, we recommend that you keep this entire manual handy, it contains vital information and helpful tips for building your house successfully and efficiently.

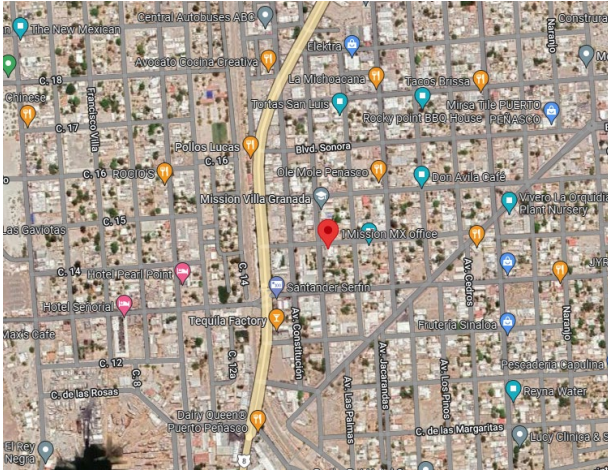
House construction is normally done by trained professionals and you may not be one. However, if you follow the instructions carefully, under the direction of the 1MISSION team, you will be able to complete the home successfully and provide this family with safe, secure housing that will provide shelter and a valuable asset to set them on a trajectory for future success in life.

To that end, take your responsibilities seriously but have fun and get to know the family. Build with them, not for them!

Foremost, remember that 1MISSION is not a construction company, we are a community development organization, and developing strong, healthy relationships is central to our mission.

What do you do if someone approaches you about receiving a house from 1MISSION?

All house applicants must submit an application at the 1MISSION office in Puerto Peñasco. They can write down the following information or take a picture of it with their phone.

<p>La Oficina de 1MISSION</p> <p>Esquina Ignacio Comonfort y Francisco I. Madero</p> <p>Teléfono: 638-110-1153</p> <p>Horario Para Solicitud de Vivienda:</p> <p>Martes, Miércoles y Jueves De 10:00 AM a 1:00 PM</p>	
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HOW TO USE THIS MANUAL

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This manual clearly describes the construction process tasks. However, there may be times when you do not understand a task as it is described. When this happens, don't hesitate to ask a 1MISSION team member for assistance. Do not proceed with any task unless you are certain how to complete it safely and properly.

In order to help ensure that no steps are missed, the manual has clear indicators to draw your attention to specific things to pay close attention to.



When you see the STOP sign, this indicates that you are at a stage of construction where you need to stop and check that the tasks have been completed, or have a 1MISSION team member inspect and approve the work. This will ensure that you don't move forward to a task that is dependent on the previous task being fully completed.

Stop signs indicate a 'point of no return' meaning that if you continue without inspecting your work, the only remedy may be to demolish portions of the house and start again.



When you see the YIELD sign, this indicates that you have reached a step that has sometimes caused others to make errors.

These steps require particularly close attention because they involve measurements or procedures that are more technical in nature and require extra attention.

II. CHANGES TO THE CONSTRUCTION METHODS

It is 100% critical that you do not make changes to the construction methods described in this manual without prior approval of the 1MISSION construction team. The plans used in the construction have been approved by the city and any changes could jeopardize that approval.

Demonstrate humility; no matter how much experience you have, you have not constructed more of these houses than the 1MISSION team has.

In addition, if you make changes the next team will not know what to expect when they arrive at the job site and may not have the experience to make the necessary modifications.

Keep in mind that we use construction materials that are locally available and we construct these homes using unskilled volunteers. Although there may be a 'better' or 'easier' way to do some aspect of construction, the materials may not be available to us, and the techniques may not be conducive to being done by unskilled workers.

We welcome any suggestions that you have and will make changes to the methods if 1MISSION deems that the methods and materials result in a better home for the family.

III. PRINT HOUSE MODEL APPENDIX PAGES

The family has chosen one of four house model plans. You should know which house model you are building. Print the appropriate pages from the appendix using the following links:

20'8" x 20'8" Models

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[Puebla House](#)

[Sierra House](#)

20'8" x 26'8" Models

[Cortez House](#)

[Pinacate House](#)

IV. EMERGENCY CONTACT NUMBERS



Life Threatening Emergencies - Dial 911

Non-medical emergencies or those that require medical attention:

Pedro Tapia	638-112-1340	MX
Mirla Yochim	480-363-8476	US
Greg Yochim	480-205-5725	US

If your call to a US cell does not go through, dial 001 before the 10 digit cell number.

If you are unable to make contact by phone, try texting.

<p>Coordinates for important locations:</p>	<p>Scan the QR code with your phone to open a Google Maps location of the Emergency Service, or enter the latitude and longitude in the Search bar.</p> <p>Don't miss the – sign in the longitude.</p> <p>We recommend San Jose Clinic for most medical problems, including non-life threatening situations.</p>		
DESCRIPTION	LATITUDE	LONGITUDE	QR CODE
<p>San Jose Clinic Best Option</p>	<p>31.3208</p>	<p>-113.53670</p>	
<p>Emergency Room</p>	<p>31.3407</p>	<p>-113.5170</p>	

V. EMERGENCY SERVICES MAP



VI. SAFETY PROTOCOLS

At 1MISSION safety is of utmost importance.

We believe that with proper practices all work site safety incidents are preventable. All participants on 1MISSION work sites have a duty to conduct themselves in a safe manner at all times. One of the best ways to prevent accidents is for everyone to be diligent in identifying and correcting any potential hazards.

A foreman will be assigned to each work site and the foreman is responsible for overall job site safety.

Follow these important safety pointers:

TOOLS

The use of power saws on the work site is prohibited unless expressly allowed by a 1MISSION representative.

This includes circular saws, reciprocating saws, jig saws... anything that uses electricity or battery and has the word saw in it.

The use of power saws on the job site may result in that person being dismissed from the job site.

The use of air or battery powered nail guns is prohibited. There are plenty of people on your team who want the opportunity to pound nails. Please don't deny them the opportunity.

The use of drills and power screw drivers is allowed when the task requires it. If you don't have your own 1MISSION will provide them.

THE RISK OF INJURY IS HIGH DUE TO THE PRESENCE OF INEXPERIENCED PEOPLE AND LOCAL CHILDREN IN THE JOB SITE AREA.

WORK AREA

- WATCH FOR OVERHEAD POWERLINES!
- DOES THE SITE HAVE POWER INSTALLED? Many times the homeowner has installed underground wire from the power supply pole to their home. Use extreme caution when digging or pounding in form stakes.
- Create an organized work area.
- Remove any trash or hazards from the work area.
- Maintain a clean work area.
- Don't leave trash lying around.
- Be aware of your surroundings.
- Be aware of others – where they are and what they are doing.
- Do not leave nails sticking out of boards.

CLOTHING

- Clothing should be comfortable but not too loose or baggy.
- Wear thick soled shoes.
- Gloves are recommended to prevent cuts, scrapes and blisters.
- Safety glasses are recommended.
- Wear a hat for protection from the sun.
- Remove jewelry and wrist watches.

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HEALTH CONCERNS

- Be sure to wear plenty of sunscreen to avoid sunburn.
- Drink plenty of fluids to avoid dehydration.
- Take regular rest breaks to avoid exhaustion.
- Practice the 'buddy system' and look out for each other.

LADDERS

- When working on ladders work together with someone. Have one person on the ladder while the other person steadies it.
- Do not use the top two steps of the ladder.

SCAFFOLDING

- When using floor scaffolding, be sure to properly assemble the scaffold and lock the brakes on the wheels when someone is on the scaffold.
- Sweep the floor clear of debris in order to be able to move the scaffold safely.

WORKING ON THE ROOF

- LIMIT THE NUMBER OF PEOPLE ON THE ROOF TO 5 or 6 PEOPLE MAXIMUM.
- Use extreme caution when working on the roof.
- Only work on the roof when absolutely necessary.
- Be aware of people working below you.
- Do not step on plywood that is not nailed down.

There is no way to cover every situation that you may encounter on the worksite. However, one of the best ways to prevent accidents is for everyone to be diligent in identifying and correcting any potential hazards.

By making **SAFETY** your **#1 PRIORITY** you ensure a safe and rewarding experience for all involved.

Extension ladders can easily fall.

Use screws or nails on each side of the ladder to prevent it from sliding and falling.

Have one person hold the ladder when climbing to the roof.



VII. EXTERIOR DOORS AND WINDOWS

We will provide the following doors and windows for the house:

20' 8" x 20' 8" House

- 1 - Exterior Door
- 1 - 4' wide X 3' high window
- 2 - 2' wide X 3' high windows
- 1 - 2' wide X 2' high bathroom window

20' 8" x 26' 8" House

- 1 - Exterior Door
- 1 - 4' wide X 3' high window
- 3 - 2' wide X 3' high windows
- 1 - 2' wide X 2' high bathroom window

If the family requests an additional exterior door opening, you can allow for an extra exterior door. However, 1MISSION will only provide a single exterior door. The family will be responsible for providing the additional door.

VIII. CONSTRUCTION TERMS / TERMINOS DE CONSTRUCCION

'	'	The common symbol for "feet", for example 11' is eleven feet	El símbolo común para "pies" por ejemplo 11' es once pies.
"	"	The common symbol for "inches", for example 6" is six inches	El símbolo común para "pulgadas", por ejemplo 6" es seis pulgadas
7' – 4"	7' – 4"	This is the common way of designating a measurement in both feet and inches. This example tells one to measure seven feet and four inches.	Este es la forma común de escribir una medida en pies y en pulgadas, te dice que la medida es siete pies y cuatro pulgadas.
Floor plan	Plano de piso	The layout of the building showing the locations for all walls, windows and doors looking straight down on a building as if the roof were invisible.	El diseño del edificio muestra la ubicación de las paredes, ventanas y puertas, mirándose de arriba hacia abajo como si el techo es invisible.
Slab	Losa (plancha)	The concrete floor of the house.	Típicamente el piso de una estructura hecha de concreto, incluyendo cemento.
Concrete	Concreto	A mixture of cement, sand, rock and water mixed together to form a hard, stable, structural foundation for a facility.	

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Cement	Cemento	A key ingredient in concrete. It is proper to say a “concrete floor” but it is improper to say a “cement floor”. Remember that flour is to cake as cement is to concrete.	Ingrediente básico en el concreto. Se dice “piso de concreto”, pero no es propio decir “piso de cemento”. Harina es para pastel, así como cemento es para concreto.
2X4	2X4	A piece of lumber that is nominally 2 inches wide by 4 inches deep. (The finished size is actually about 1 ½” by 3 ½”, similarly a 2X6 is 1 ½” by 5 ½”.)	un trozo de madera que es usualmente 2 pulgadas de ancho por 4 pulgadas de ondo. (profundidad)
Form	Forma	The guide or walls for a concrete mixture to “form” up to or set. A kitchen analogy might be a cake mold.	guía para colar / guía para vaciar concreto.
Footing	Cimiento (Zapata)	The thickened edge of a concrete pad or the bottom of a concrete foundation that provides the structural strength for the weight of the structure.	El grosor de la orilla del piso de concreto, o lo ondo de la cimentación de concreto que soporta el peso de la estructura.
☉	☉	The common symbol for “centerline” indicating that a measurement is taken from the centerline of the object.	Es el símbolo común para “centro”, indicando que una medida se está tomando desde el centro del objeto.
Level	Nivel	To make a surface flat horizontally is to level it.	emparejar horizontalmente una superficie es Nivelar.
Plumb	Plomada	To make a surface true vertically is to make it plumb.	hacer una superficie total vertical es que esta plomada.
Rebar	Varilla	Rebar is a steel reinforcing rod placed in concrete.	es una barra de acero reforzado colocada en el concreto.
Wire Mesh	Malla extendida	Wire mesh is a steel reinforcing mesh placed in the concrete floor.	es una malla de acero reforzado colocada en el piso de concreto. o malla metálica

IX. MATERIALS LIST – LISTA DE MATERIALES

Various materials will be used at different phases of construction and will be provided at your worksite by 1MISSION staff.

It will be your responsibility to ensure that you inventory the materials on site to ensure that you have sufficient materials to complete the tasks assigned for each day.

Varios materiales serán usados en las diferentes fases de construcción y será provisto en tu lugar de trabajo por el equipo de 1MISSION.

Sera' responsabilidad de usted asegurarse de inventariar (contar) los materiales en tu lugar de trabajo, para asegurarse que tienen lo suficiente para completar sus tareas asignadas para cada día.

Improper storage of materials can lead to materials being damaged and unusable resulting in additional cost, not just in materials but lost time, extra fuel costs, etc.

PLEASE TAKE CARE TO HANDLE AND STORE THE MATERIALS PROPERLY.



X. HOUSE LAYOUT

The 1MISSION team has already met with the family to determine the placement of the house on the property and to determine the location of the windows and doors. Please respect the wishes of the family and do not make changes to the house layout unless directed to by the family or a 1MISSION staff member.

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Remember, this is **their** home!

DISEÑO (ACOMODO) DE CASA

El equipo 1MISSION ha visto a la familia para determinar la ubicación de la casa dentro de la propiedad y determinar la ubicación de las ventanas y puertas. Favor de respetar la decisión de la familia y no haga cambios al menos que la familia indique.

Recuerda, es la casa de ellos!

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PHASE 3	CONSTRUCT WALL SUPPORT FRAMES
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PHASE 5	INSTALLATION OF ROWS 1 TO 4 OF BLOCK WALLS
PHASE 6	INSTALL FASTBLOC ROWS 5 TO 8
PHASE 7	CONSTRUCT ROOF TRUSSES
PHASE 8	INSTALL ROOF TRUSSES
PHASE 9	INSTALL ROOF COATING
PHASE 10	EXTERIOR WALL COATING
PHASE 11	ELECTRICAL FEED
PHASE 12	THIS PHASE INTENTIONALLY LEFT BLANK
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PHASE 15	CEILING INSULATION AND SHEETROCK
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PHASE 1 PAD AND SLAB INSTALLATIONS

Phase 1 has been completed by 1MISSION field staff.

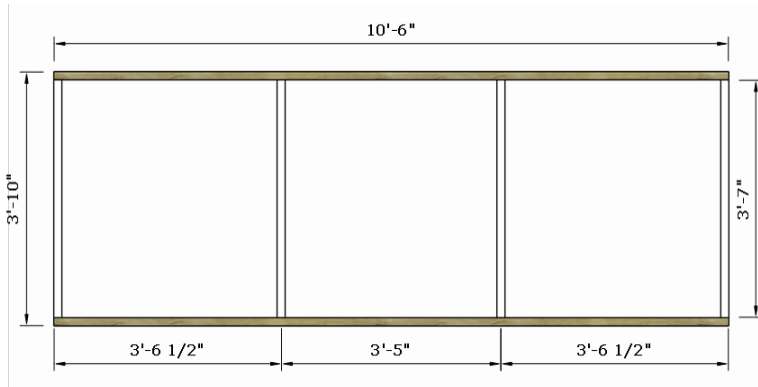
PHASE 2 INSTALL SEPTIC SYSTEM

Phase 2 has been completed by 1MISSION field staff.

PHASE 3 CONSTRUCT WALL SUPPORT FRAMES

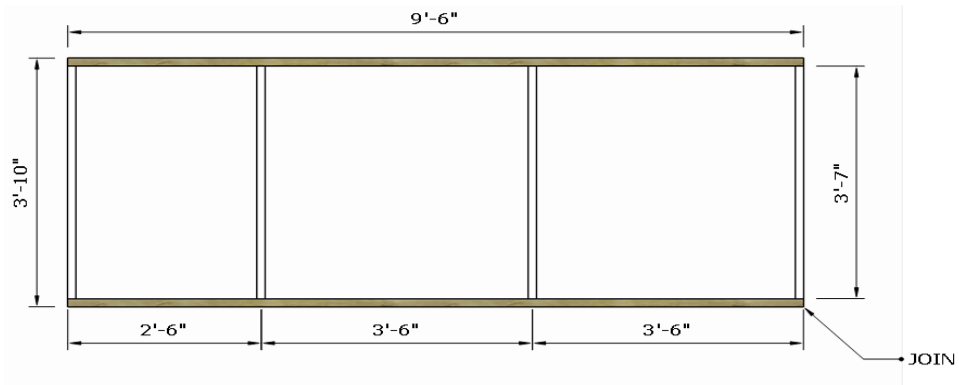
The wall support frames have been constructed by 1MISSION staff, so there is no need to complete this phase.

These sketches are for reference only, so that you can differentiate between the various wall support frames.



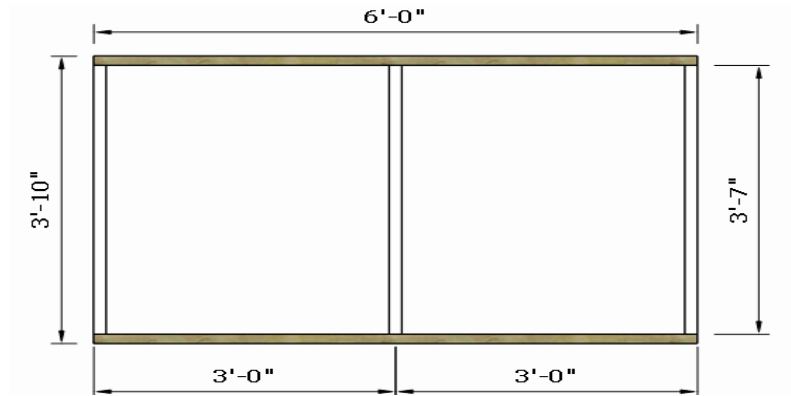
'A' WALL SUPPORT FORM DETAIL

'A' FORMAS DE SOPORTE DE PARED



'B' WALL SUPPORT FORM DETAIL

'B'FORMA DE SOPORTE DE PARED



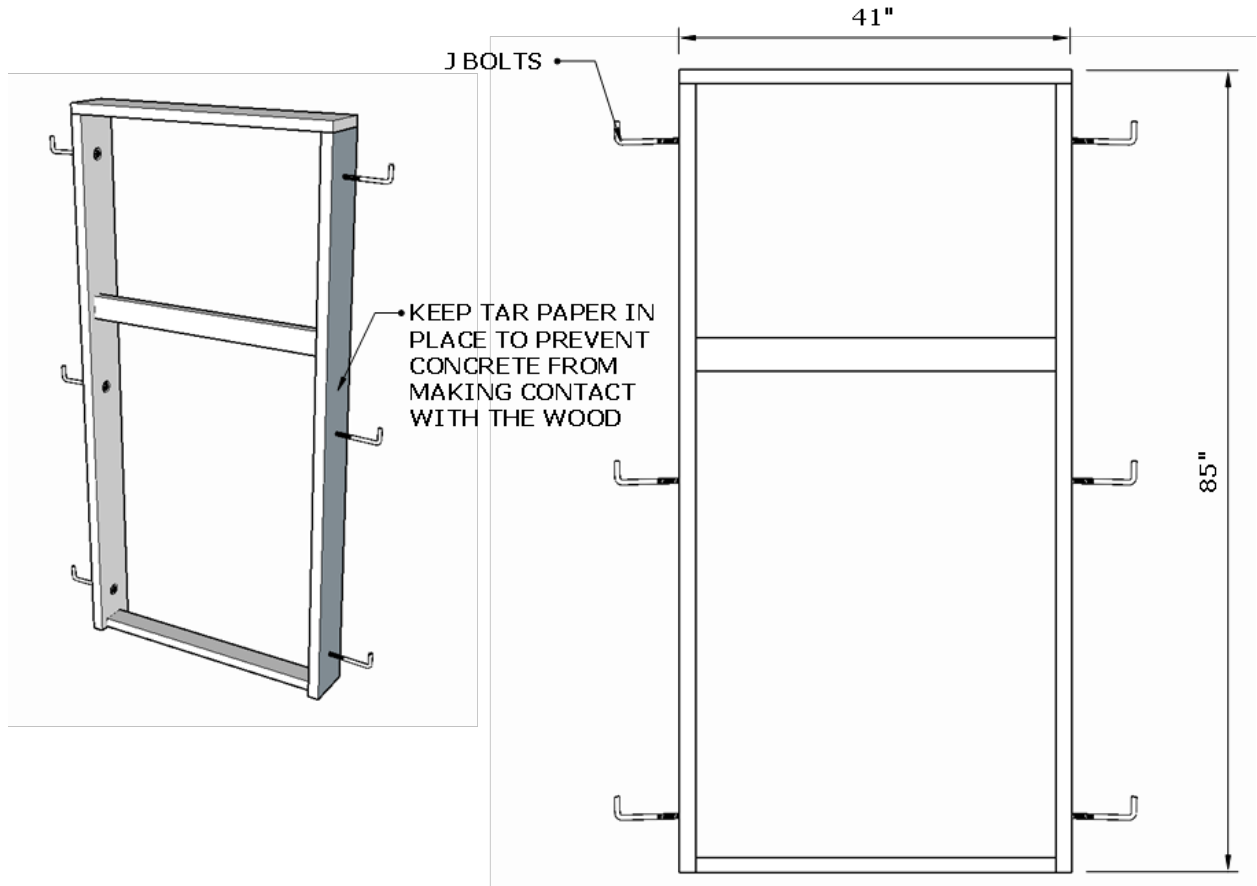
'C' WALL SUPPORT FORMS (DOUBLE HOUSE ONLY)

'C' FORMA DE SOPORTE DE PARED

PHASE 4 EXTERIOR DOOR OPENING FORM

PHASE 4.1 DOOR OPENING FORM DETAIL

The door form will be provided and may have slightly different dimensions.



PHASE 5 INSTALLATION OF ROWS 1 TO 4 OF BLOCK WALLS

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. Take the time to ensure the rebar is in the correct location and is the correct height.
2. Be sure the wall across the door opening is exactly 20' 8" wide. Check it often.
3. When joining the frames together, don't drive the screws out of site, otherwise it will be very difficult to take the frames apart later.
4. Before nailing frames to stakes, square the house and make sure the walls are straight.
5. Tie frames together 8" up from the bottom of the block in row 4.
6. Tighten wire at all locations.
7. Ensure that the 1 ¼" grey electrical conduit is to the inside of the #4 rebar in the 4th row of block, otherwise we won't be able to connect it to the electrical panel later.
8. Don't spread the gravel pile out. Keep it together so you don't waste it. We use the gravel to complete construction of the septic tank.
9. The water lines for the shower **MUST** be placed on the side of the lintel rebar toward the interior of the house, otherwise the lines can't be accessed later.

Here is a link to a helpful video that will explain the steps in this phase:



In this phase of the construction, you will be constructing the first four rows of Fastblocs for the exterior walls. If you organize your team well, you should be able to complete this phase in one day.

It is likely that you have also been assigned Phase 7 – building trusses so you can divide into four teams with two working on Phase 5 and two smaller teams working on Phase 7.

However, completing Phase 5 on the first day should be your number 1 priority.

This table will help the foreman to organize tasks that can be completed simultaneously between teams. The tasks in the Foreman column are things that the foreman should be doing prior to the Team performing the tasks listed on the same row.

We only provide 1 exterior door, 2 - 2'x3' windows, 1 – 4'x3' window and 1 – 2'x2' bathroom window. (The 20' 8" x 26' x 8" house has 3 – 2'x3' windows. If the family requests an extra door or window opening, you can make an allowance for it, but don't create the opening. They can do that later. However, refer to the instructions at the end of Phase 5 in this manual to see what to do to accommodate the extra opening.

NOTE: It is critical that Phase 5 and 6 be completed in two days, so priority should be given to those phases over Phase 7. Phase 7 is to be done if you have time, or have team members needing tasks to work on.

FOREMAN	TEAM 1	TEAM 2	TEAM 3
Phase 5.1	Phase 5.3	Phase 5.2	Phase 7.1
	Phase 5.4	Phase 5.5	Phase 7.2
	Phase 5.7	Phase 5.6	Phase 7.3
	Phase 5.9	Phase 5.8	Phase 7.4
	Phase 5.10		Phase 7.5
	Phase 5.11		Phase 7.6
	Phase 5.12	Phase 5.13	
	Phase 5.14	Phase 5.19	
	Phase 5.15		
	Phase 5.17	Phase 5.16	
	Phase 5.18		
	Phase 5.20	Phase 5.20	
	Phase 5.22	Phase 5.22	5.22

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PHASE 5.1 REVIEW HOUSE LAYOUT SKETCH

CROQUIS DEL DISEÑO DE CASA

You were provided with the name of the house model that your family selected and a drawing showing where the family would like the windows and doors located.

It is important to follow the steps outlined here in order to complete the construction properly.

Ideally you will complete pouring concrete on your first day, but it is more important that the Fastblocs are set properly, all rebar is correct and tied properly and the walls are plumbed and secured prior to starting concrete.

If you are only able to do a portion of the concrete, fill the walls to the same level all the way around, rather than completely filling one section and not doing any concrete in other parts. This will help facilitate moving on to Phase 6 more quickly.

You were provided with the name of the house model that your family selected.

Print the appropriate pages for your house model from the Appendix to this manual.

20'8" x 20'8" Models

[Puebla House](#)

[Sierra House](#)

20'8" x 26'8" Models

[Cortez House](#)

[Pinacate House](#)

PHASE 5.2 ORGANIZE TOOLS AND MATERIALS

Take the time to locate all tools and materials that you will need for the work to be completed. You may be also building the trusses in Phase 7, so create a separate work area where that can be performed.

Organizing the site and letting your team know where to find the proper tools and materials will make the task go much quicker and avoid mistakes.

Remove any building materials that are on the concrete slab so that you have a clear workspace. Stack Fastblocs

Identify any hazards on the job site.

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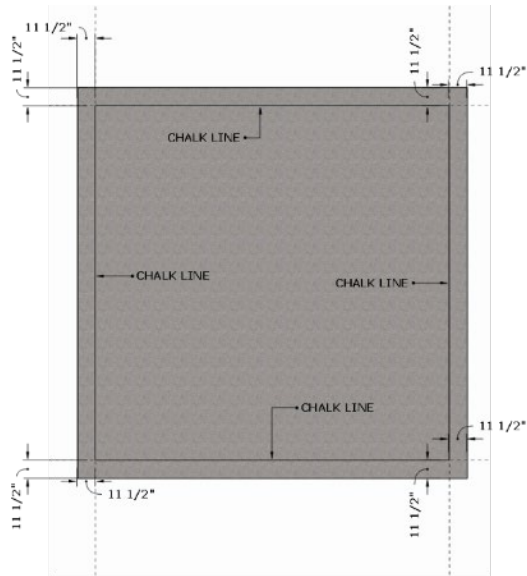
PHASE 5.3 CHALKLINE WALL LOCATIONS ON SLAB

MARCA LAS COLOCACIÓN DE LAS PAREDES SOBRE LA PLANCHA DE CONCRETO CON EL HILO DE COLOR.

Mark a chalk line on the concrete floor where the inside edge of the interior support wall frames will be located.

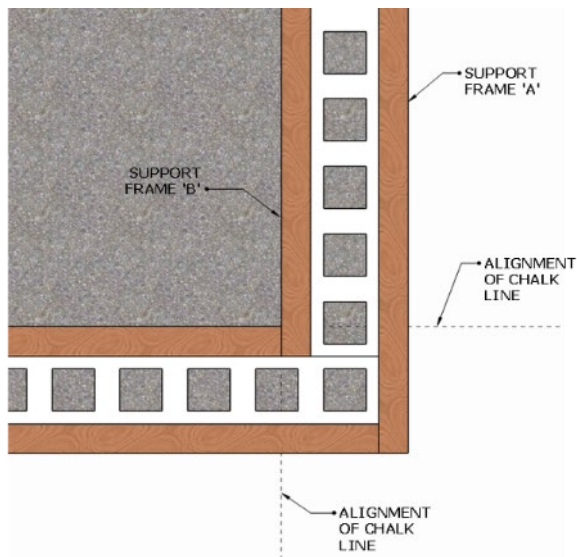
At each corner of the concrete slab measure in 11 1/2" from the edge of the slab and then snap a chalk line on the concrete on all four sides.

Measure the diagonal distances from the corners of the chalk lines. The measurements should be within 2" of each other.



A few steps from now, you will set the support frames.

Note that there should be no space between the support frames and the Fastbloc at the corners. The 'A' support frames have been designed 1/2" long and the 'B' frames 1/2" short in order to allow for variations in the blocks.



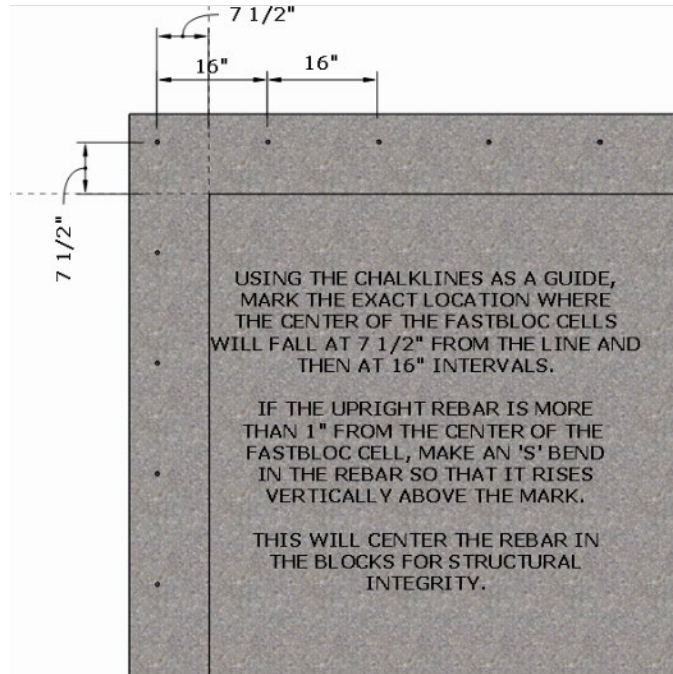
PHASE 5.4 MARK REBAR CENTERS

CHECAR ESPACIOS ENTRE VARILLA



Many people skip this step and then the pay for it later in time wasted trying to get the rebar to stay in the center of the block.

Take the time now and you'll reduce frustration and time later.



MARK THE LOCATION WHERE THE REBAR SHOULD BE



The rebar bending tool shown to the right works really well to make an 'S' bend in the rebar to re-center the rebar vertically over the 'x.'

One end of the tool is for 3/8" (#3) rebar and the other end is for 1/2" (#4) rebar.



BEND THE REBAR TO THE CORRECT LOCATION



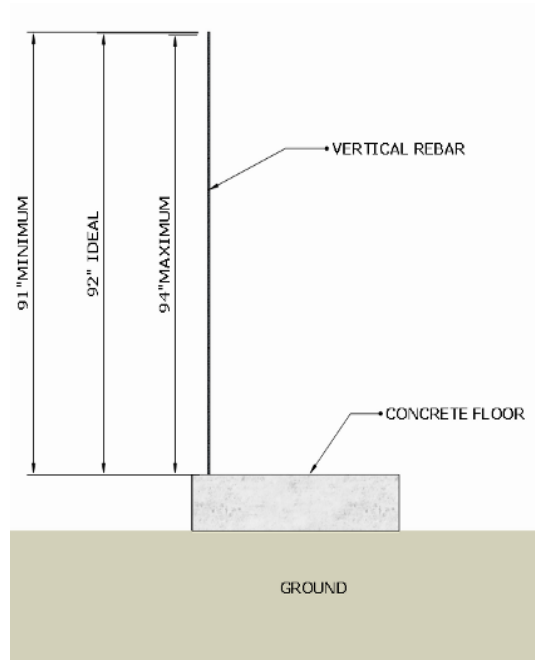
PHASE 5.5 CHECK VERTICAL REBAR HEIGHT

CHECAR LA ALTURA DE LA VARILLA VERTICAL

The vertical rebar should extend 91 to 94 inches above the concrete floor and must not be above 94". The ideal length is 92" above the floor.

If a rebar is less than 91" above the floor you will have to add an extra piece of rebar in order to extend the vertical rebar to 92" above the concrete floor. The piece you add on should overlap the existing rebar by at least 18" and be wired firmly in place to the existing rebar.

If a rebar extends above 94" above the concrete floor cut the rebar off at exactly 92" above the concrete floor.



If any rebar need to be cut you can simply bend them down to the floor and use the rebar cutter/bender tool to cut them.

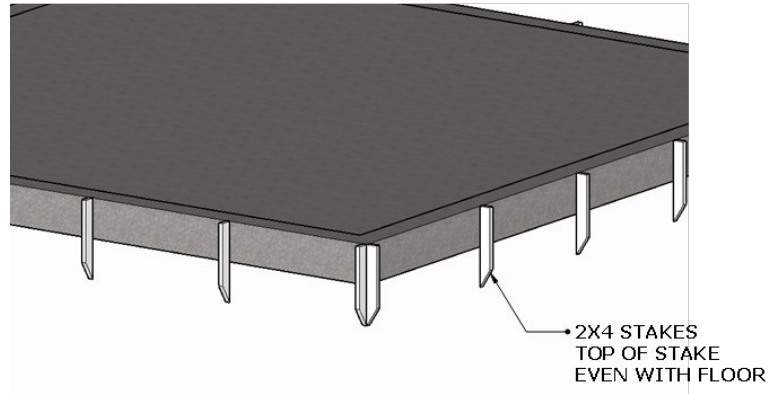
The cutter has two cutting locations, one for #3 rebar and one for #4 rebar.



PHASE 5.6 INSTALL SUPPORT FRAME STAKES

INSTALAR ESTACAS PARA LA FORMA DE SOPORTE

At approximately 4' intervals along the edge of the concrete slab, drive in 2X4 stakes to support the exterior support frames. The top of the stake should be even with the concrete floor.



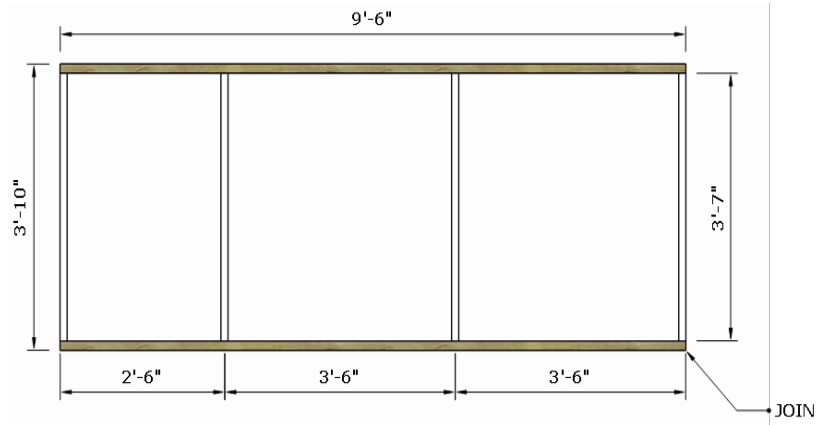
{En espacios de aproximadamente 4' por la orilla de la plancha de concreto, clava las estacas de 2"x 4" para que sirvan de base a la forma de soporte exterior. las estacas deben quedar al nivel de la plancha de concreto }



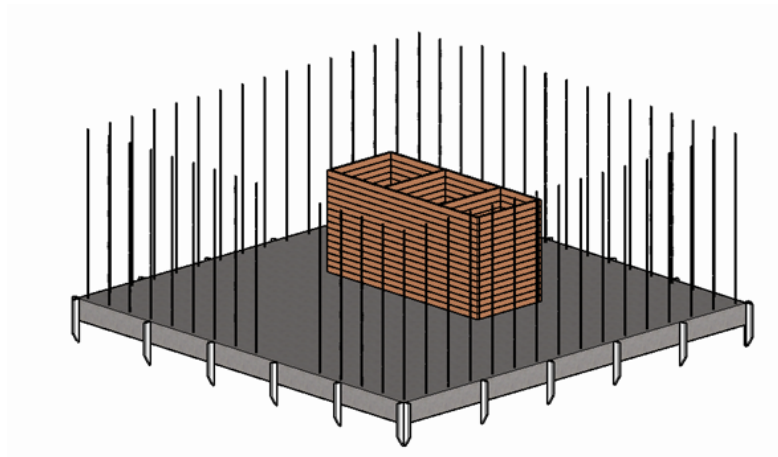
PHASE 5.7 STACK INTERIOR SUPPORT (B) FRAMES ON FLOOR

ACOMODAR LAS FORMAS DE SOPORTE INTERIOR (B) SOBRE LA PLANCHA

Identify the 8 B Support Frames.



Stack the 8 Interior Support (B) frames in the center of the floor for later installation, otherwise you will have to lift them over the walls later.



PHASE 5.8 PREPARE LENGTHS OF TIE WIRE

Prepare sections of tie-wire for tying the A and B frames together.

You will need 40 pieces 48" long (56 for the 20' 8" x 26' 8" house) and 8 pieces about 72" long.

DON'T LET THIS HAPPEN TO YOUR ROLE OF TIE-WIRE.



The best technique is to roll out about 60' of wire and double it back and twist the entire length together before cutting.

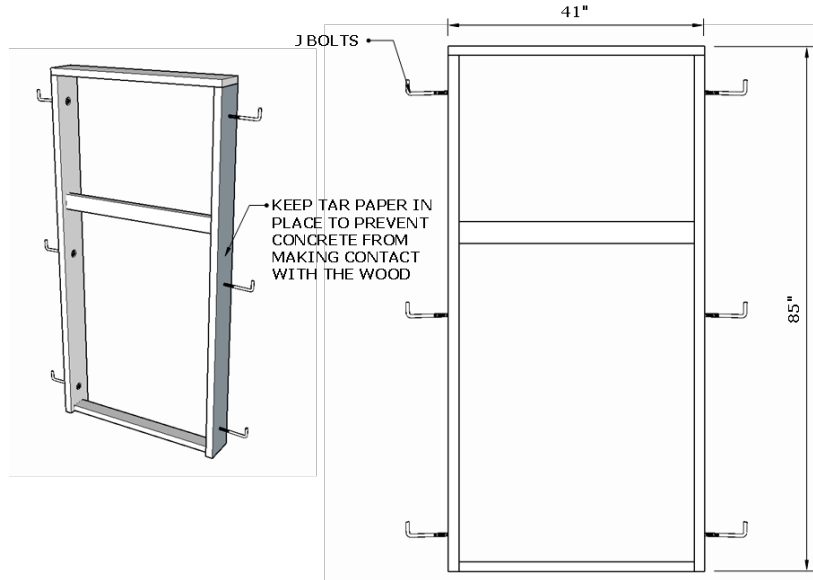
Check out this [video](#) of a technique for twisting the tie-wire into a double strand:



PHASE 5.9 INSTALL FIRST AND SECOND ROW OF BLOCK

INSTALAR PRIMERA FILA DE BLOCK

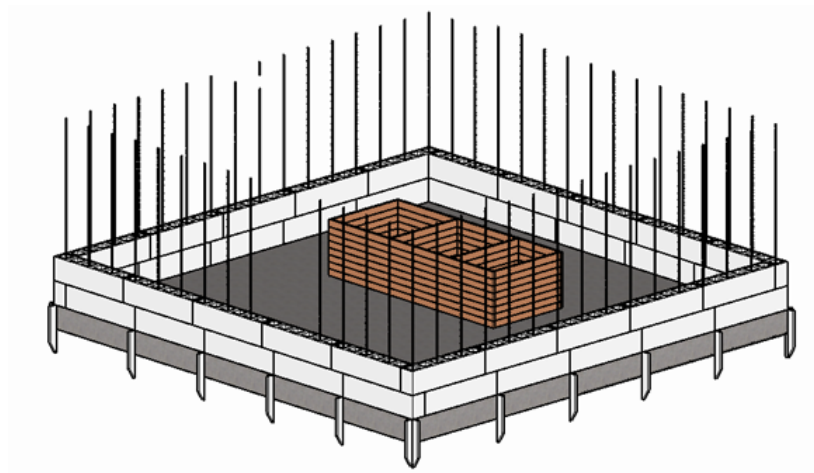
Locate the pre-constructed door form.



THE HOUSE IS
DESIGNED TO USE
COMPLETE BLOCKS.

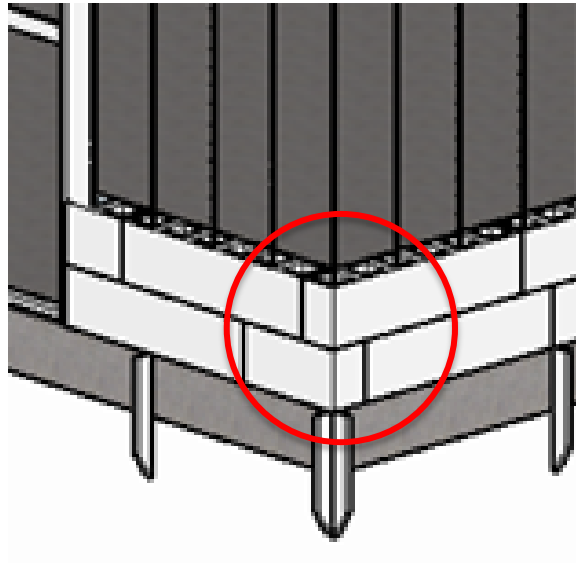
THE ONLY PLACE YOU
WILL NEED TO CUT
BLOCKS IS AT THE
DOOR OPENING!

Install the first two rows
of block around the
perimeter of the house.
Be sure to overlap the
block at the corners so
that the second row
locks the first row in
place.





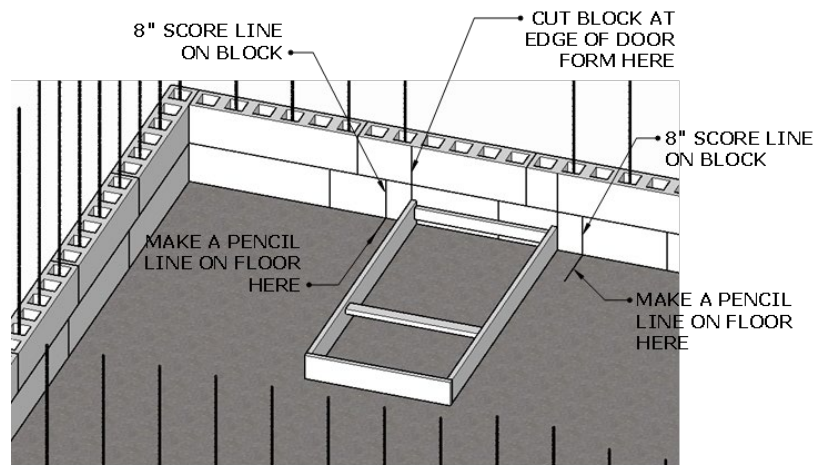
Be sure that the blocks are staggered in order to lock the corners together.



Lay the door form on the floor centered between the vertical rebar located on either side of the door opening.

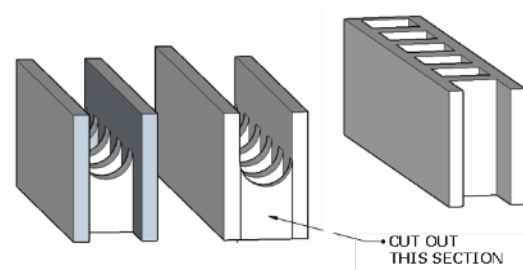
Mark the two rows of Fastblocs where they need to be cut in order to fit the door form in the opening.

Make a mark on the floor on either side of the door opening at the nearest score line on the first row of block. This will give you an easy way to check if the blocks move after cutting the opening.



The blocks at the door openings must have the ends cut out so that concrete comes into contact with the door frame that you will insert a few steps later.

The opening should look like as pictured here.

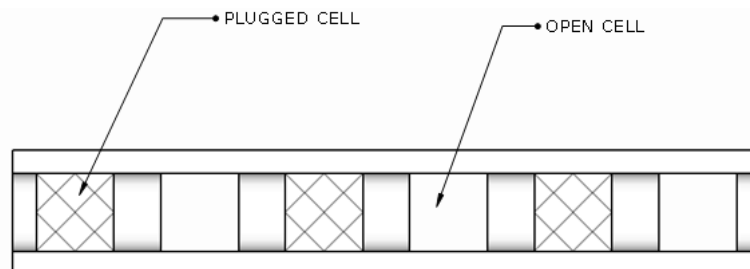


PHASE 5.10 INSTALL DOOR OPENING FORM

If you want to plan ahead, now that you have some scraps of Fastblocs that were cut out at the door, you can look forward to Phase 5.19 (CUT AND INSTALL HOLLOW CELL PLUGS) and cut and pre-install the plugs in the lintel blocks.

You will plug the 1st, 3rd and 5th cells in each block.

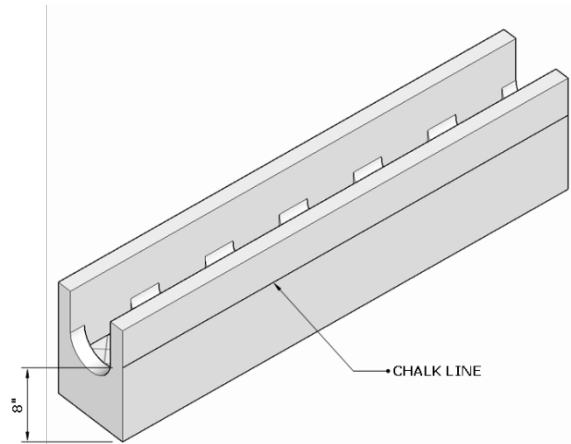
It's much easier to do this now.



[Go To Table of Contents](#)

It is also helpful to make a chalk line on both sides of the lintel blocks 8" up from the bottom.

This is where you will tie wire through the block later.

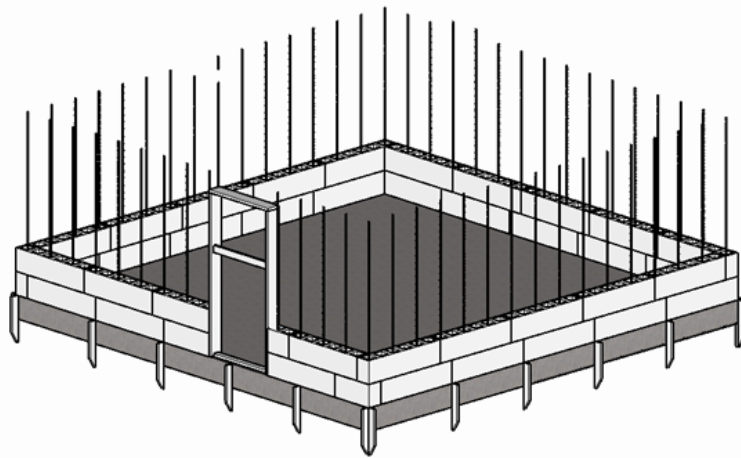


Stand the door opening form in the opening in the blocks as shown.

With the door form in place, measure the entire width of the house for confirmation. It must be 20' 8".

If the house is more than 20' 8" wide, you will have to trim the opening a bit bigger.

THIS IS IMPORTANT.





Note the additional piece of block that was inserted above the door.

This is because the total width of the house was not checked when installing the door opening form, causing the house to be too wide for the top lintel block to fit.

Take care to avoid this problem.



PHASE 5.11 INSTALL THIRD AND FOURTH (LINTEL) ROWS

INSTALAR SEGUNDA, TERCERA Y CUARTA FILA (DALA)



When installing the #4 (1/2") rebar in the 4th row of block, be sure that the 1 1/4" grey electrical conduit pipe is to the inside of the rebar, not the outside.

PUSH THE CONDUIT UP AGAINST THE FASTBLOC AND SECURE IT IN PLACE WITH A PIECE OF WIRE TOWARD THE INTERIOR OF THE HOUSE.

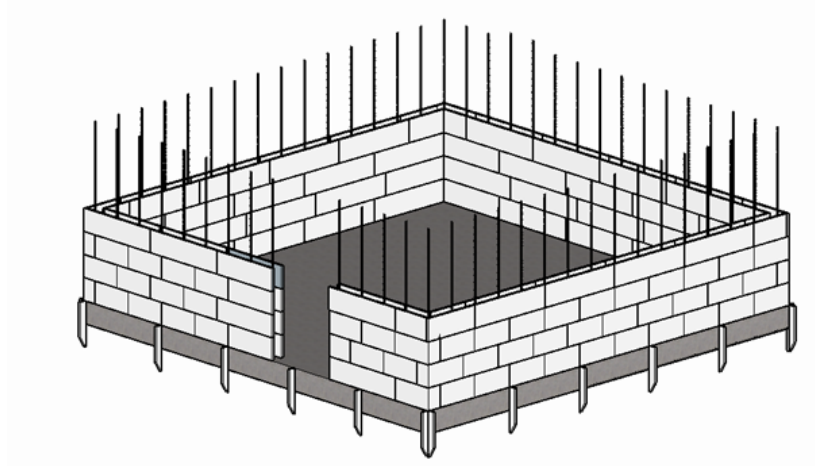
This ensures that the conduit can enter the bottom of the electrical panel that will be installed on the inside of the wall.



Install the third and fourth row of block cutting the block on either side of the door form to accommodate the door form.

Make sure that the opening is the correct size to maintain a total wall length of 20'8".

Note that the fourth row is not the standard block, but is a lintel block that has a channel in the top.



At the corners, carefully cut the piece of lintel block that is blocking the corner of the adjacent block.

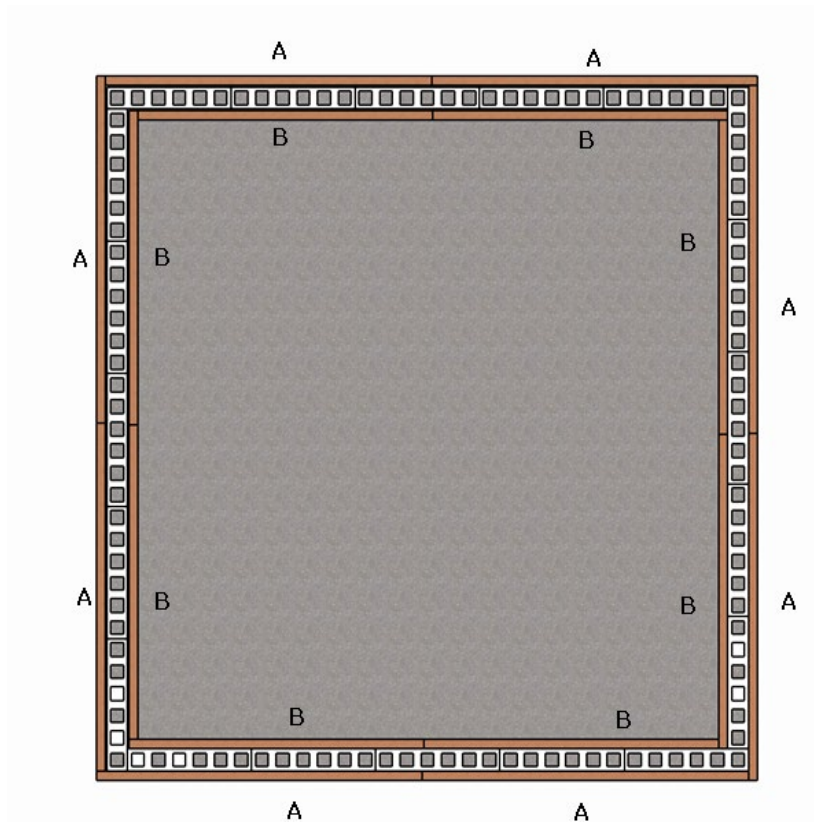
Use this piece to fill the open end of the block as shown.



PHASE 5.12 INSTALL INTERIOR (B) WALL SUPPORT FRAMES

INSTALAR MARCO DE SOPORTE DE PARED INTERIOR

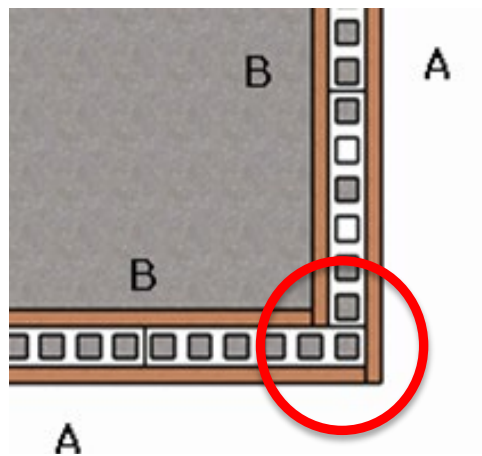
Start by installing the 'B' support frames on the inside of the house. There are two options depending on the size of the concrete slab.

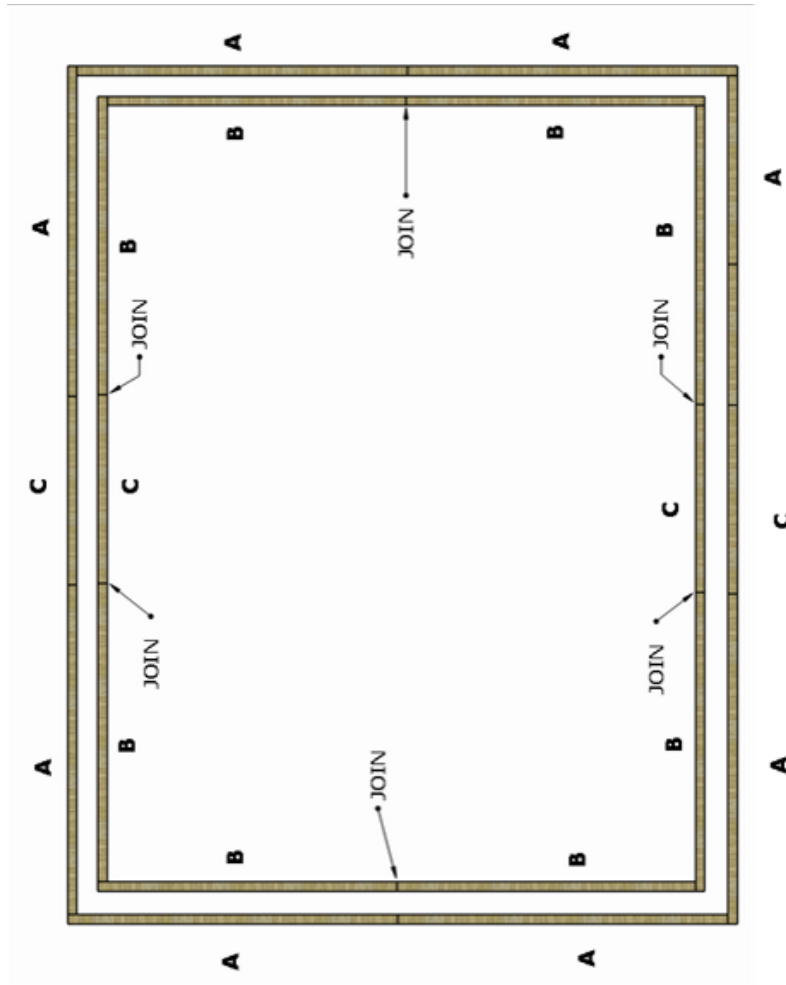


OPTION 1– 20'8" X 20'8" House

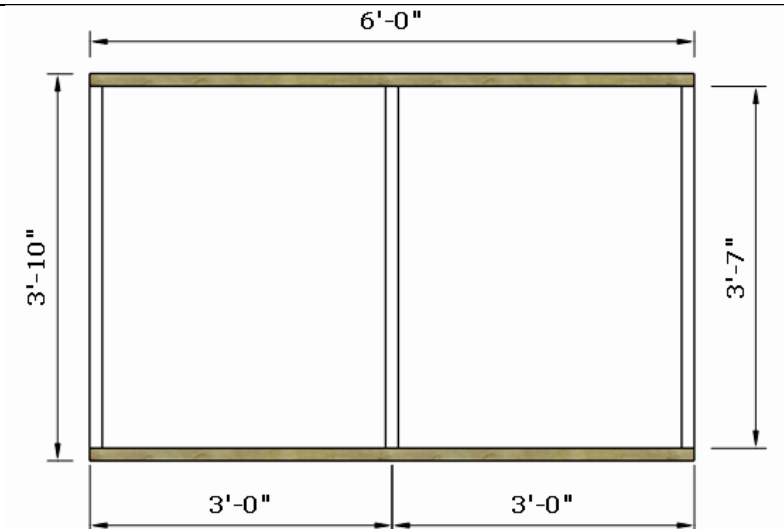
NOTE THE POSITION OF THE FRAMES AT THE CORNERS.

THE LAYOUT OF THE A AND B FRAMES SHOULD MATCH SO THAT THE VERTICAL 2 X 4 ON THE SIDE WILL MATCH BETWEEN THE A's and B's.





OPTION 2 – 20'8" X 26'8" House

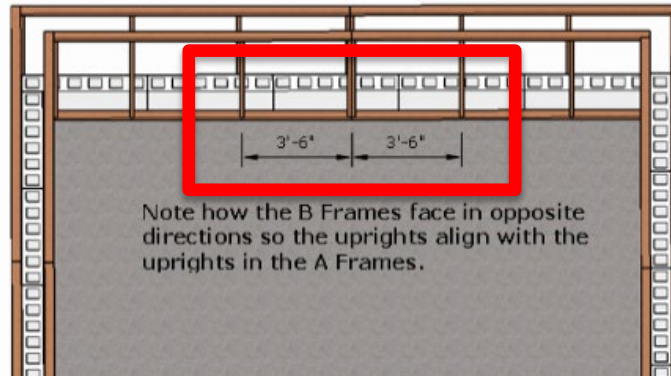


'C' SUPPORT FRAME

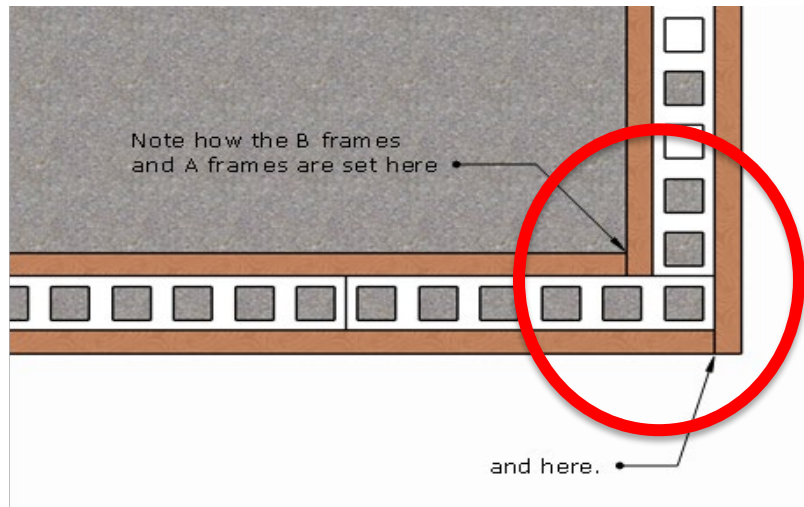


IT'S VERY IMPORTANT THAT THE 'B' SUPPORT FRAMES BE INSTALLED SO THAT THE UPRIGHT SUPPORTS WILL ALIGN WITH THE UPRIGHT SUPPORTS ON THE 'A' FRAMES. PAY ATTENTION TO THE FOLLOWING DETAIL SKETCH.

Note the placement of the B Support Frames. They face opposite directions to ensure that the upright 2X4s of the A and B Support Frames are aligned with each other.

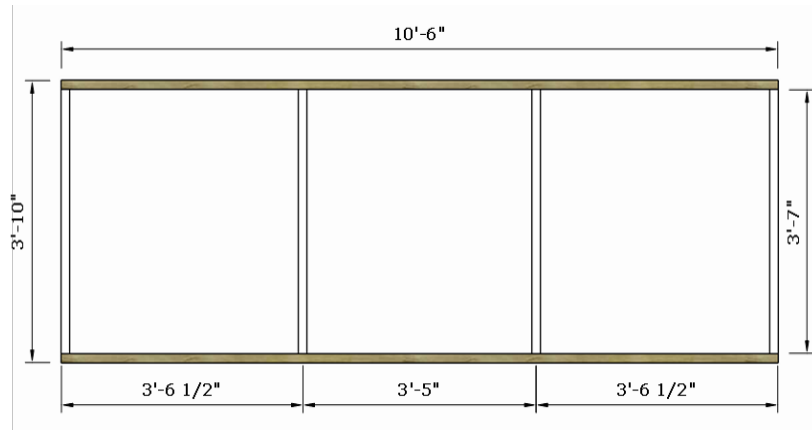


Note that there should be no space between the support frames and the Fastblocs at the corners. The 'A' support frames have been designed $\frac{1}{2}$ " long and the 'B' frames $\frac{1}{2}$ " short in order to allow for variations in the blocks.



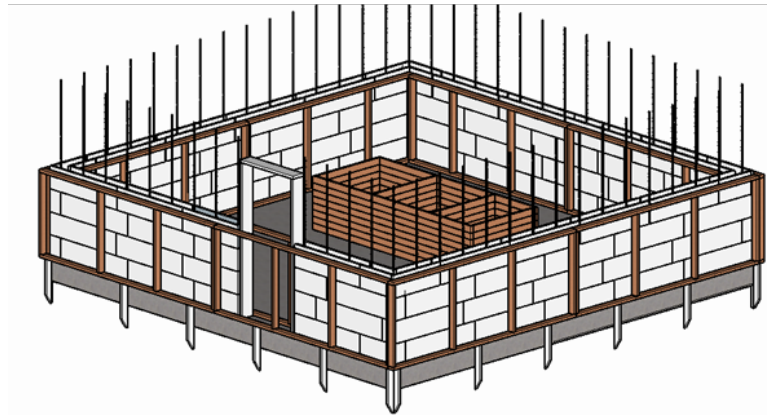
PHASE 5.13 INSTALL EXTERIOR (A) SUPPORT FRAMES

Install the A Frames around the perimeter of the block walls and screw or nail them together. If nailing, leave the nail head sticking out slightly so that the frames can be easily dismantled and reused later.



The A and B support frames installed.

Note that there won't be a stack of frames on the floor at this point. They are all in use.

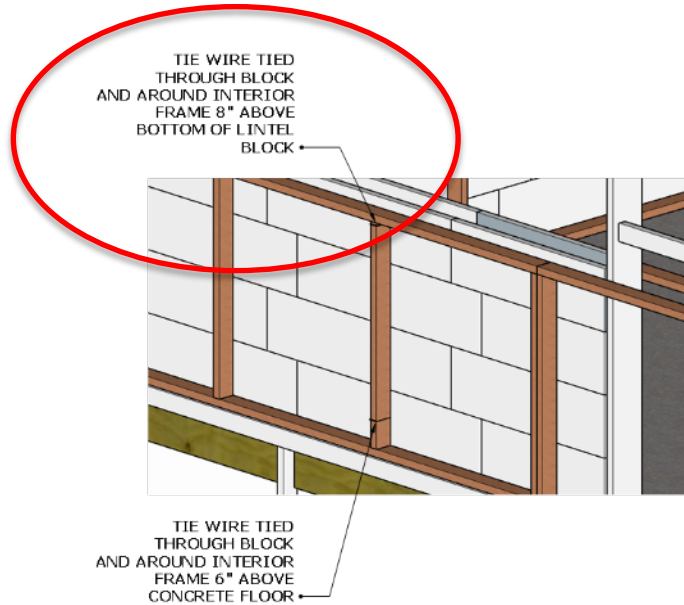


PHASE 5.14 TIE EXTERIOR AND INTERIOR SUPPORT FRAMES TOGETHER

Tie the exterior and interior support frames together at every upright 2X4 in the locations as shown using the twisted double wire you made earlier.

TIE THE TOP WIRE 8" UP FROM THE BOTTOM OF THE LINTEL BLOCK. THIS WILL ALLOW THE WIRE TO SUPPORT THE #4 REBAR LATER. THIS IS A TIME SAVER.

Tie the frames together at the corners as well. The Fastblocs should be tightly secured between the frames.



Fold a 48" length of wire in half and poke each side through the Fastbloc.

Normally the double strand of wire is rigid enough, but if you need to, you can use a piece of #3 rebar to make a hole through the block.



In the small tool box, locate a tool that looks something like this for twisting and tightening the tie-wire.



On the opposite side, twist the wire together.

Using the tie-wire twisting tool, pry the wire snug and then twist it until tight.



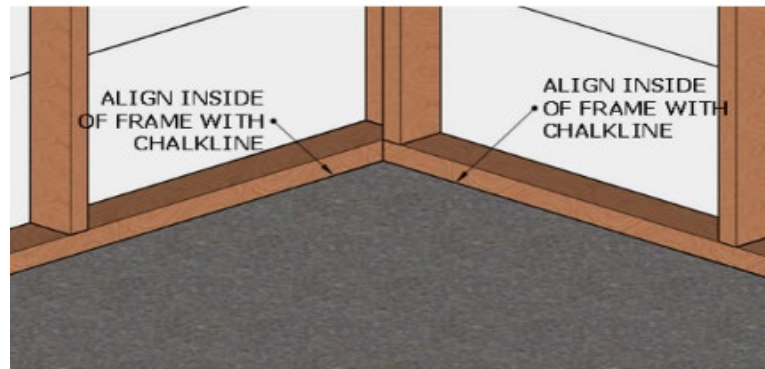
Don't move on to the next step until the frames have been securely tied together.



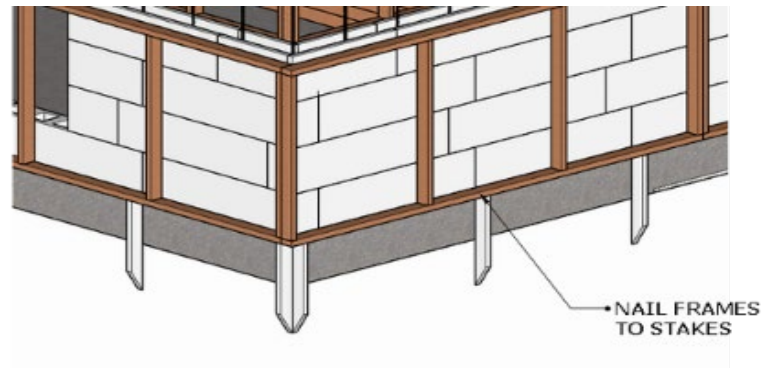
PHASE 5.15 ALIGN FASTBLOC WALLS

Align the interior edge of the 'B' Support frames with the chalk line that you marked earlier.

Once the 'B' Frames are aligned with the chalk line and the 'A' support frames are snug against the blocks, nail the 'A' support frames to the support stakes.



MAKE SURE THE B FRAMES ARE ALIGNED WITH THE CHALK LINE THE ENTIRE LENGTH OF THE WALL, OR AT LEAST PARALLEL TO THE CHALK LINE IF THERE IS SLIGHT VARIATION.



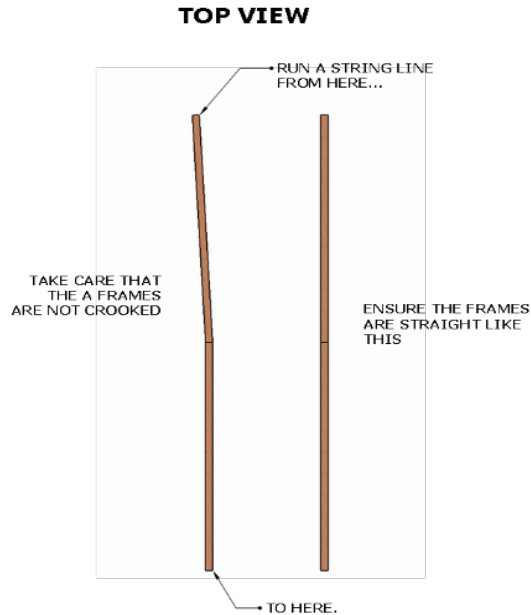
PHASE 5.16 THIS PHASE LEFT BLANK INTENTIONALLY

PHASE 5.17 PLUMB AND BRACE FRAMES

PLOMEAR Y APUNTALAR, SUJETAR LOS MARCOS DE SOPORTE DE PARED

CHECK THAT ALL FOUR WALLS ARE STRAIGHT.

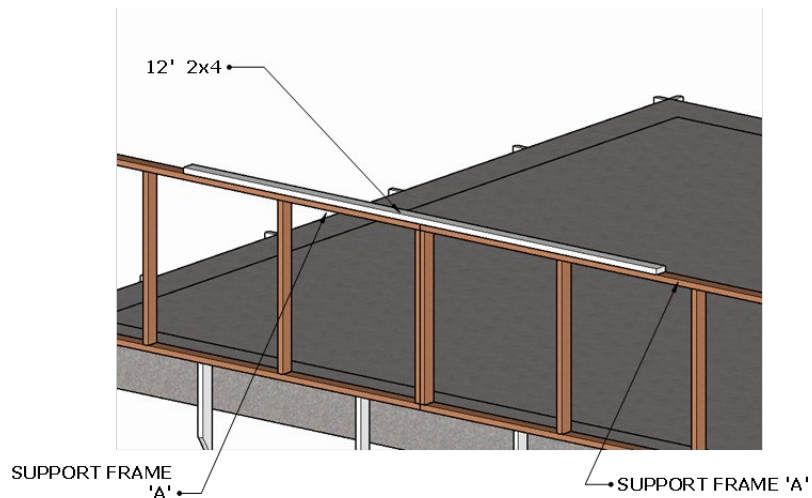
USE THE STRING LINE RUN FROM END TO END ALONG THE SUPPORT FRAME.



The support frames tend to hinge where they join, causing the wall to bow in or out.

In order to make the wall straight, use a 12' 2x4 placed across the joint between the two 'A' Support Frames on all four sides to force the wall straight.

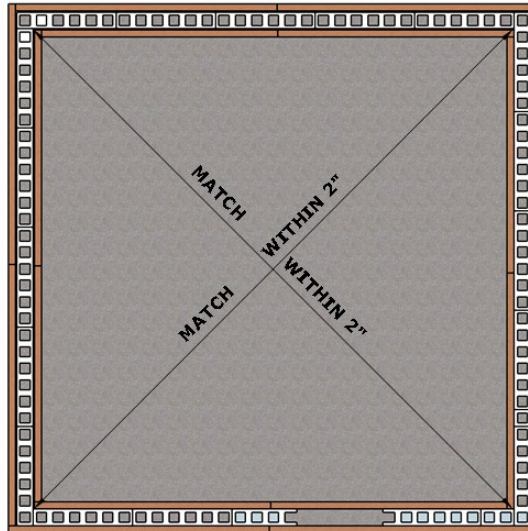
Force the Support Frames into alignment and screw (or nail) the 2x4 to them. Use about 3 screws spaced out on each Support Frame.



Run a string line along the edge of A Frames from corner to corner to ensure the walls are perfectly straight.

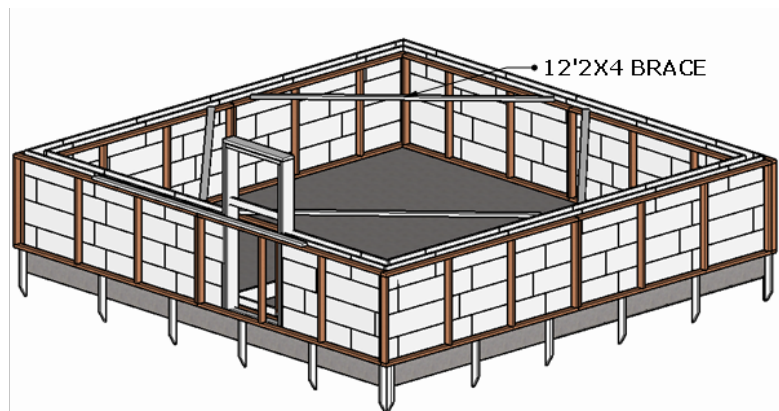


Measure the two diagonal distances across the entire house from corner to corner to ensure that they are equal. They should be within 2" of each other.



Brace across the corners with a 12' 2x4.

Ensure that all four sides of the house are straight and then brace with a 12' 2x4 across the corner as shown.



PHASE 5.18 ADD 2X4 RETAINERS AT DOOR OPENING

Because the Fastbloc beside the door has been cut to allow concrete to fill the cell adjacent to the door, the strength of the block has been compromised and needs some additional support to prevent it from breaking when the concrete is poured in.

Add a 2X4 brace to each side of the door form on the inside and outside using screws or 3" nails.



PHASE 5.19 CUT AND INSTALL HOLLOW CELL PLUGS

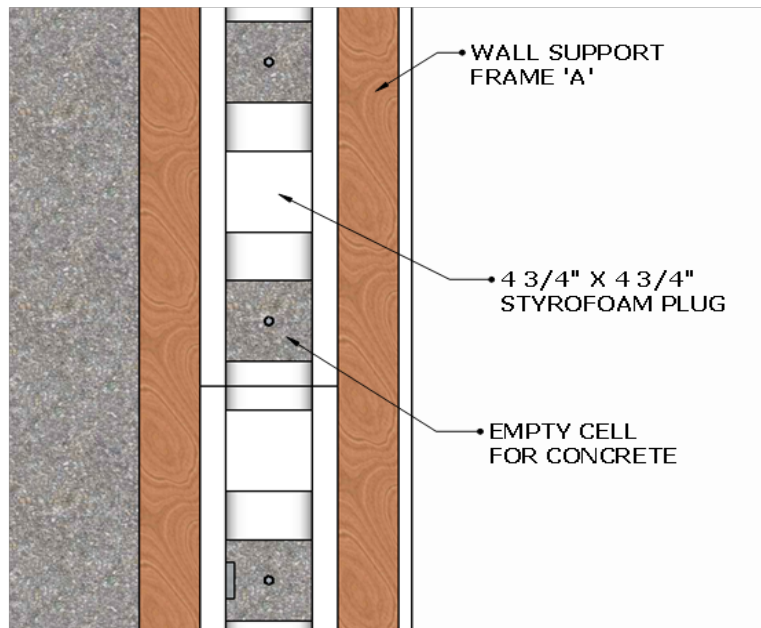
CORTAR E INSTALAR TAPAS PARA CELDAS VACIAS

Using the scrap pieces of Fastbloc that were cut from the door opening, cut 60 4 3/4' x 4 3/4' 'plugs.'

Install one plug in each cell that does not contain a vertical rebar.

It should take a fair bit of force to insert the plug in the cell.

THEY MUST BE ABLE TO SUPPORT THE WEIGHT OF THE CONCRETE THAT WILL BE POURED IN THE LINTEL.



PHASE 5.20 INSTALL LINTEL BLOCK REBAR

INSTALAR VARILLA EN EL BLOCK DALA



DON'T FORGET TO PLUG THE HOLLOW CELLS BEFORE PLACING THE LINTEL REBAR!

WHEN PLACING THE #4 REBAR IN THE LINTEL, BE SURE THAT THE PLUMBING PIPES FOR THE SHOWER ARE PLACED TO THE INSIDE OF THE LINTEL REBAR.

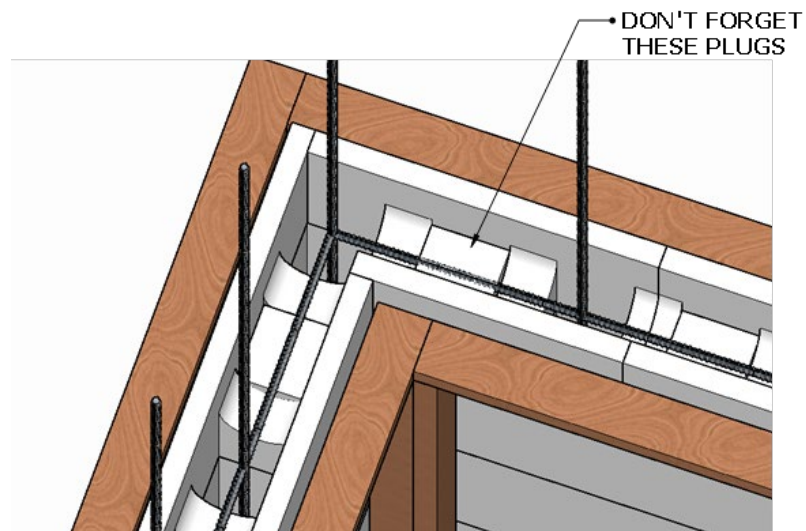
IF THE WATER LINES ARE PLACED TO THE OUTSIDE OF THE REBAR, THEY WILL BE UNUSABLE.

Install a #4 (1/2") rebar around the entire perimeter of the lintel block 3" below the top of the block. The rebar should rest on the tie wire that holds the interior and exterior wood support frames together.

If rebar must be joined allow at least 18" of overlap of rebar pieces.

At the doorway bend the rebar at a vertical 90 degree angle 18" from the end and attach to the vertical rebar adjacent to the door opening.

Tie the #4 rebar to every upright rebar using double thickness tie wire and twist together securely.



Use the rebar cutter/bender to create the necessary 90 degree bend at corners.

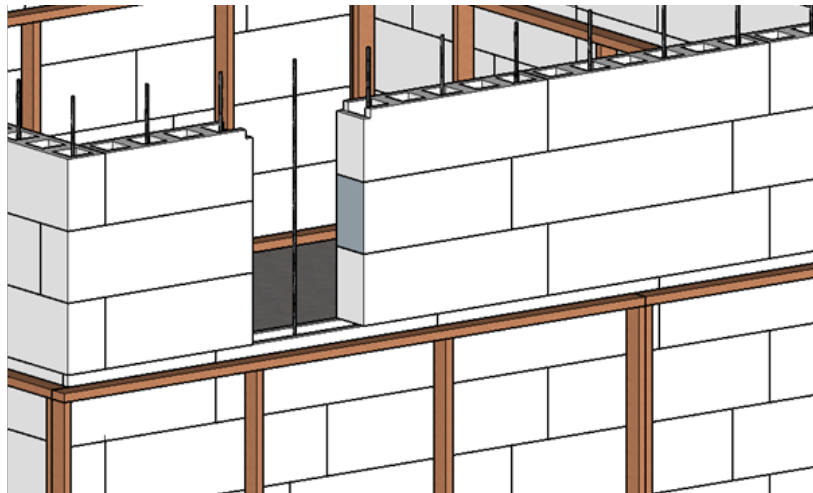
To bend the rebar, lift the handle up, place the rebar at the desired bend location beneath the bushing on the left hand side and pull the handle toward you to achieve a 90 degree bend



PHASE 5.21 CUT UPRIGHT REBAR FROM WINDOW LOCATIONS

Note: at the window locations, if you don't cut out the vertical rebar, it will be in the way of installing the window.

You can either cut the vertical rebar off below the top of the lintel block, or bend the rebar down and fasten it to the #4 rebar with tie wire.



PHASE 5.22 EXPOSE WATER PIPES

At each location where there is a PVC pipe inside the hollow cells, cut a small hole (2"x 2") in the block near the end of the pipe so that the pipe inside the wall is visible.

This will allow the plumbers to find the pipe at a later date.

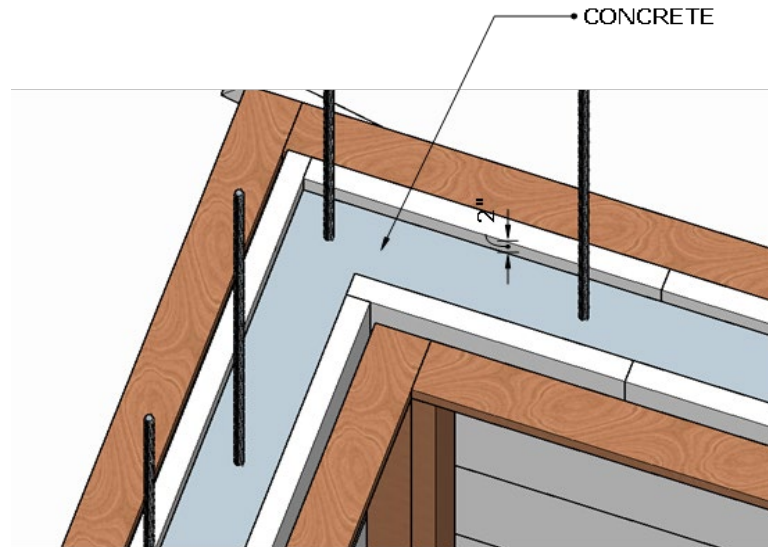
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PHASE 5.23 FILL CONCRETE TO LINTELBLOCK

VERTER CONCRETO EN LA PRIMERA MITAD DEL BLOCK

Mix concrete and fill the cells to within 2" of the top of the lintel block.

If you don't have enough time to completely fill the block walls with concrete, but have time to do a portion of the concrete, fill the blocks to the same level all the way around the perimeter of the house, rather than filling all the way in only one section.



In wheelbarrows, mix 10 parts gravel directly from the gravel pile and 2 parts cement powder. Remove any rocks over 1 1/2" in diameter. **BE SURE YOU ARE USING CEMENT. SOMETIMES WE HAVE CEMENTBOND ON SITE THAT IS IN 20KG BAGS. CEMENT IS IN 40 OR 50 KG BAGS.**

TAKE CARE TO MIX THE PROPORTIONS CAREFULLY.

Dry mix the above ingredients before adding water.

Add water and mix to the consistency of mashed potatoes. Of course that depends on how you like your mashed potatoes.

Using buckets pour concrete into the lintel block and cells with rebar until the lintel block is filled to about 2" below the top of the block.

AS YOU FILL THE BLOCKS, TAP THE BLOCK WITH YOUR HAND OR A SCRAP PIECE OF 2X4. THIS WILL ENSURE THERE ARE NO VOIDS IN THE CONCRETE.

PHASE 6 INSTALL FASTBLOC ROWS 5 TO 8

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. There are exactly enough lintel blocks to go around the house without cutting them. **Make sure that your team isn't needlessly cutting the lintel blocks.**
2. When joining the frames, don't drive the screws out of site.
3. Tighten wire at all locations.
4. Above the door and windows, the block must be trimmed so that there is a solid concrete fill across the top.
5. After the sill plate and j-bolts are installed tap the blocks to ensure that concrete surrounds any void around the j-bolt.
6. We only provide a certain number of windows, so check the correct number for the house model that they family has chosen.

Here is a link to a helpful video that will explain the steps in this phase:





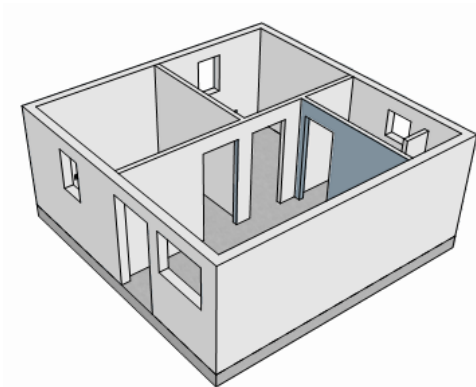
Allow concrete to set for at least two hours before proceeding with the next step. Overnight is preferable.

Small families have the option to choose the Puebla or Sierra model (20' 8" x 20' 8").

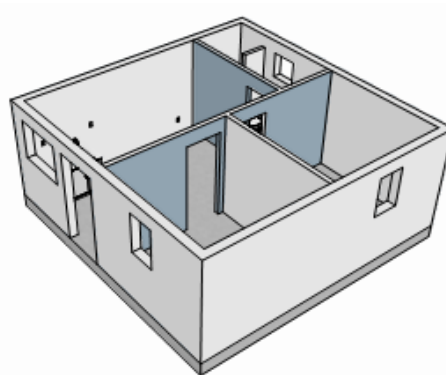
For these models we only provide 1 exterior door, 2 - 2'x3' windows, 1 - 4'x3' window and 1 - 2'x2' bathroom window.

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.

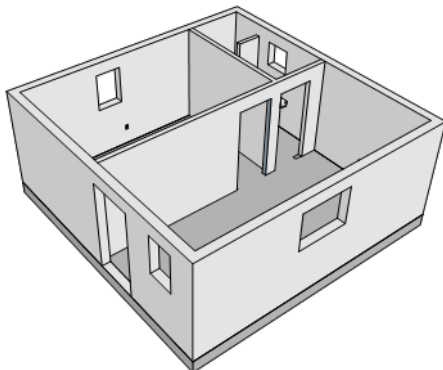
PUEBLA A



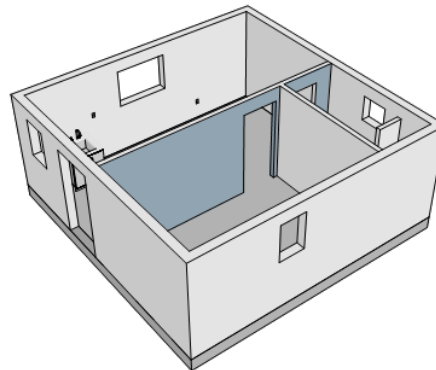
PUEBLA B



SIERRA A



SIERRA B



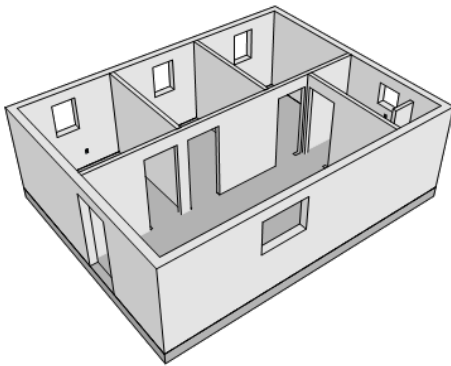
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Larger families can select either the Cortez or Pinacate Model (20' 8" x 26' 8").

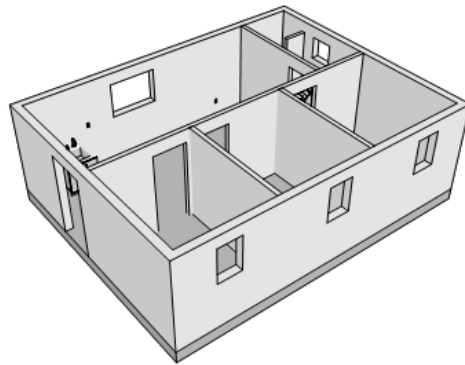
For these models we only provide 1 exterior door, 3 - 2'x3' windows, 1 - 4'x3' window and 1 - 2'x2' bathroom window.

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.

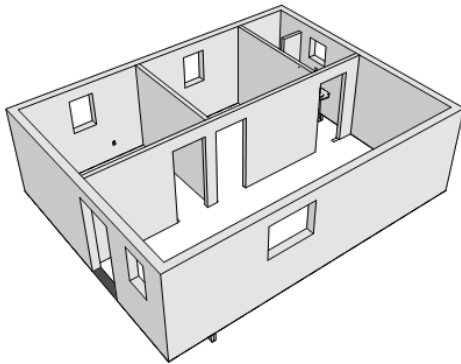
CORTEZ A



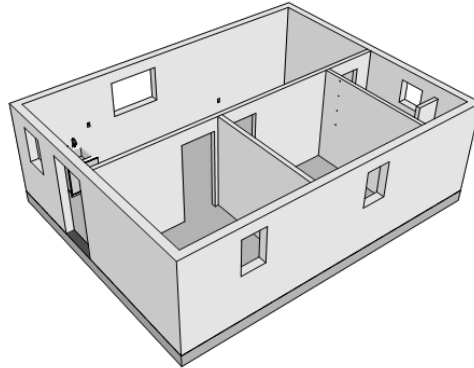
CORTEZ B



PINACATE A



PINACATE B



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This table will help the foreman to organize tasks that can be completed simultaneously between teams.

The tasks in the Foreman column are things that the foreman should be doing prior to the Team performing the tasks listed on the same row.

FOREMAN	TEAM 1	TEAM 2	TEAM 3
	Phase 6.2	Phase 6.1	Phase 7
		Phase 6.3	
	Phase 6.4		
	Phase 6.5	Phase 6.7	
	Phase 6.6	Phase 6.7	
	Phase 6.8	Phase 6.10	
	Phase 6.9	Phase 6.11	
	Phase 6.12	Phase 6.12	Phase 6.12
	Phase 6.13		

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Phase 6.4	INSTALL ROW 8 LINTEL BLOCK	12
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PHASE 6.1 PREPARE DOUBLE STRANDS OF TIE WIRE

Prepare sections of tie-wire for tying the A and B frames together.

You will need 40 pieces 48" long (56 for the 20' 8" x 26' 8" house) and 8 pieces about 72" long.

DON'T LET THIS HAPPEN TO YOUR ROLE OF TIE-WIRE.



The best technique is to roll out about 60' of wire and double it back and twist the entire length together before cutting.

Check out this [video](#) of a technique for twisting the tie-wire into a double strand:



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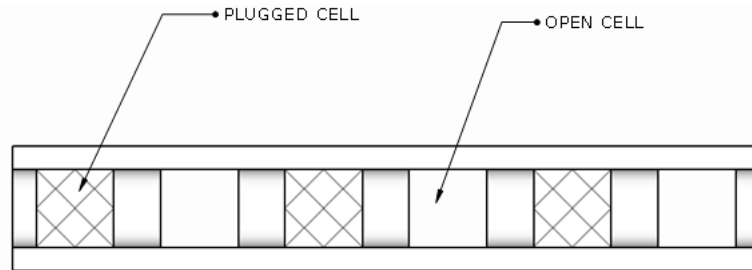
PHASE 6.2 INSTALL BLOCK ROWS 5, 6, 7 & 8 (TOP LINTEL)

INSTALAR LAS FILAS DE BLOCK SIGUIENTES, 5,6, 7 Y 8 (DALA)

If you want to plan ahead, you can look forward to Phase 6.7 (CUT AND INSTALL HOLLOW CELL PLUGS) and cut and pre-install the plugs in the lintel blocks.

You will plug the 1st, 3rd and 5th cells in each block.

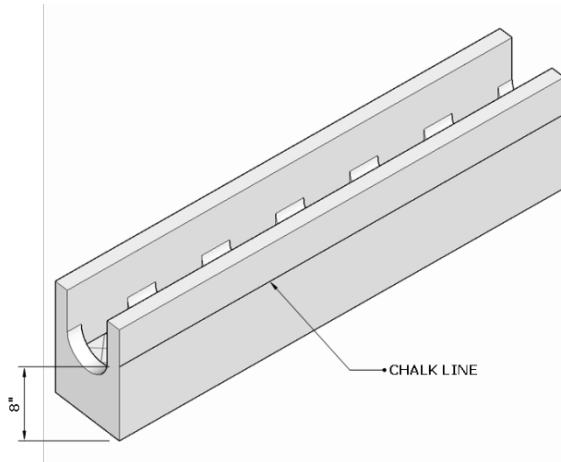
It's much easier to do this now.



It is also helpful to make a chalk line on both sides of the lintel blocks 8" up from the bottom.

This is where you will tie wire through the block later.

DO NOT CUT THE BLOCKS ON THIS LINE!

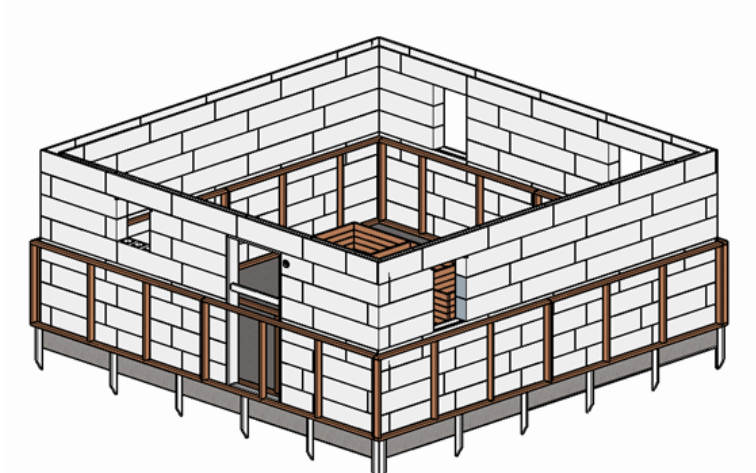


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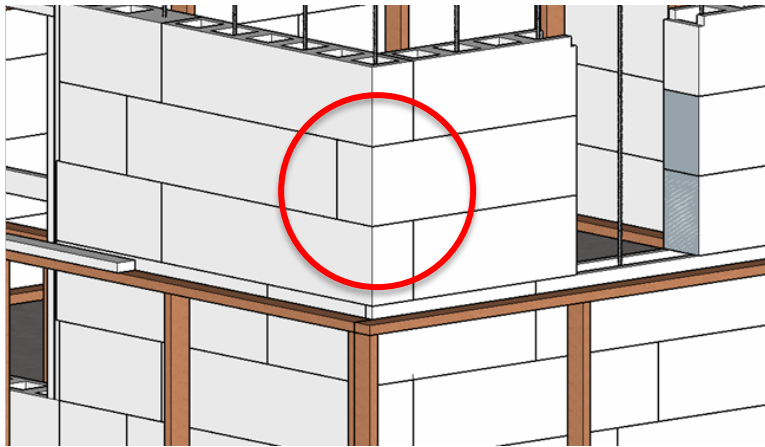
Add row 5 to 7 and then row 8 lintel block.

THE HOUSE IS DESIGNED TO USE FULL BLOCKS.

THE ONLY PLACE YOU NEED TO CUT BLOCKS IS AT THE DOOR AND WINDOW OPENINGS.



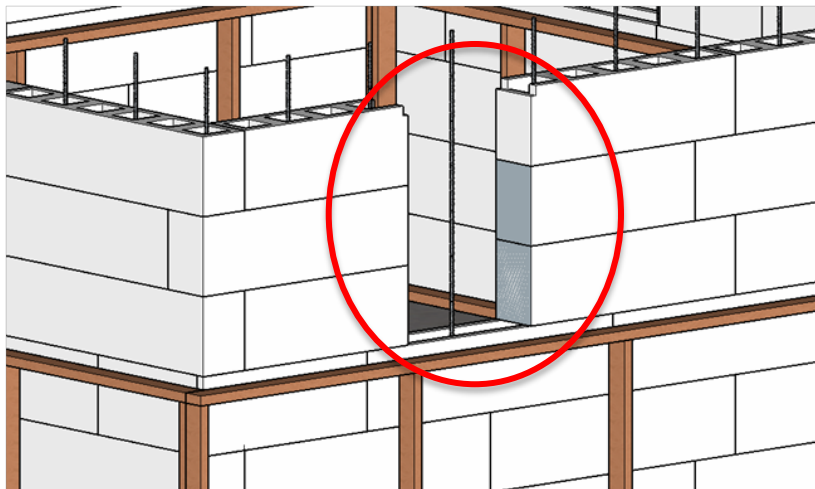
Stagger the blocks at the corner so that the corners are locked together.



Cut out the window openings using the 8" spacing marks in the blocks as cutting guides.

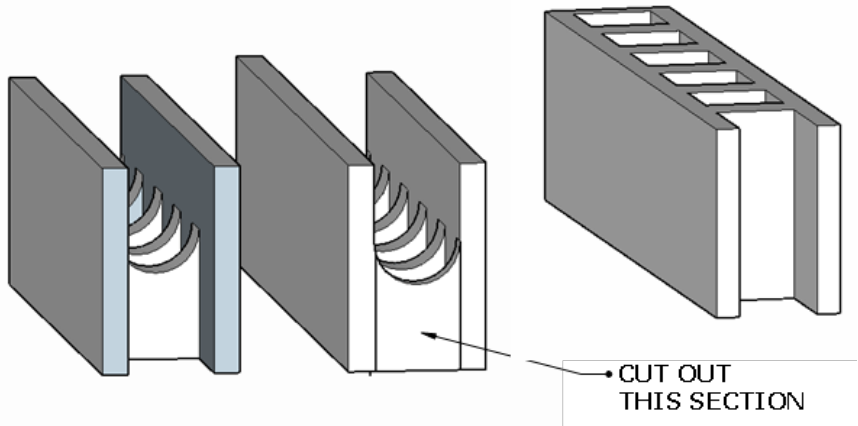
CUT ONLY AT THE SCORE LINES IN THE BLOCKS.

THE WINDOW OPENINGS ARE EITHER 24" OR, IN THE CASE OF THE LIVING ROOM WINDOW, 48".



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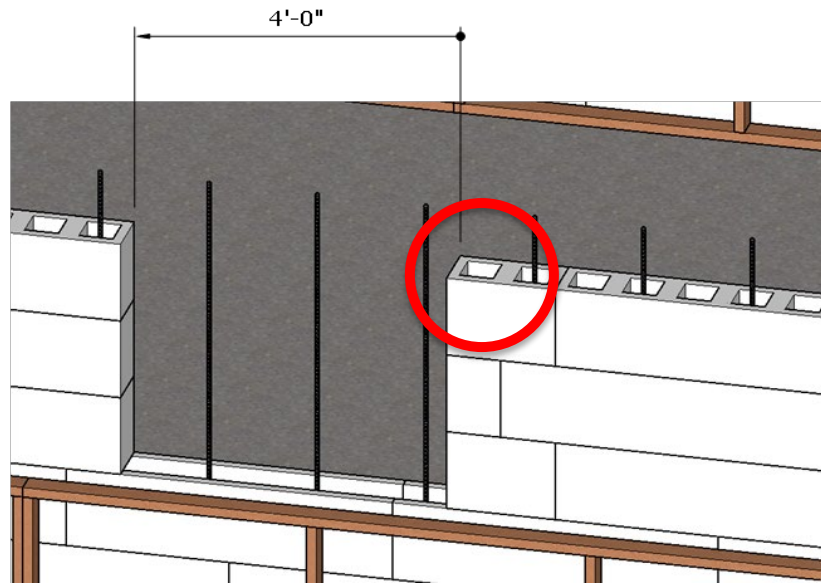
Cut the blocks at the door opening to expose the rebar.





Note that to one side of the 4' window, there is not vertical rebar.

You need to place a vertical rebar in this cell to reinforce the concrete in this cell.



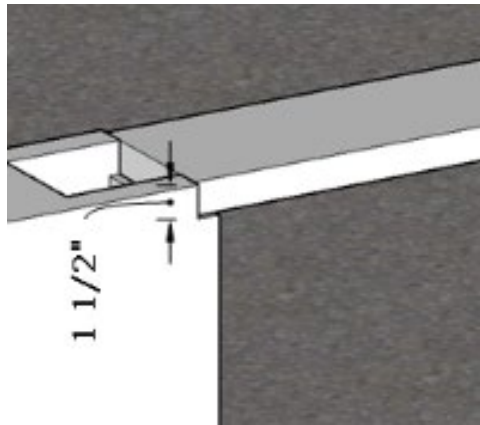
PHASE 6.3 INSTALL FORM ABOVE WINDOW OPENINGS

Locate the 2x8 window form pieces. These pieces may have been used on a previous construction site. In some cases the window form is a metal form and in other cases you will have to measure and cut the form from 2x8 that is provided on site.

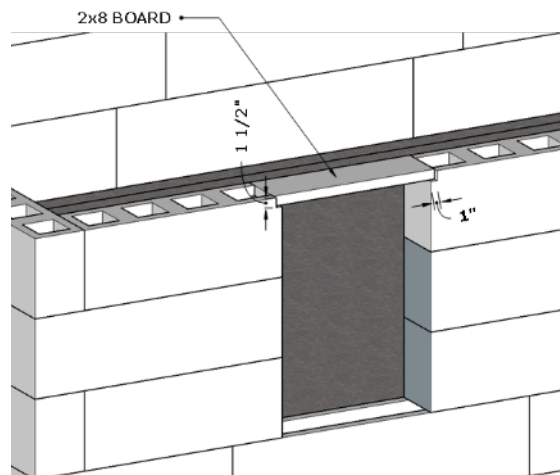


DON'T CUT THE 10' 2X8 THAT ARE PROVIDED FOR THE TOP SILL PLATE!

If you don't have 2X8, you can use 2 2x4 side by side.



In the 7th row of block at the window openings, cut a notch through the block 1 1/2" high and 1" wide in the upper corner as shown.

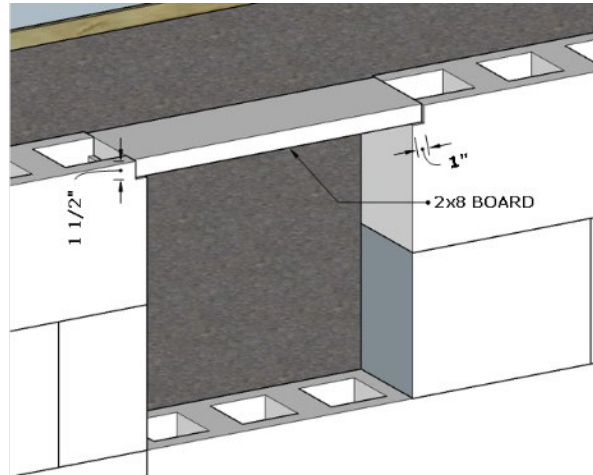


Install the window form across the opening as shown.

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Note that the bathroom window is only 2 blocks high rather than 3 blocks like the other windows.

The bathroom window opening is in rows 6 and 7.



CUT A 1" WIDE 'SEAT' IN THE BLOCK TO ALLOW THE 2X8 FORM TO SIT. THIS FORM IS TEMPORARY AND WILL BE REMOVED ONCE THE CONCRETE CURES.

Plug the space beside the window openings with scrap Fastbloc in order to prevent concrete from spilling out later.

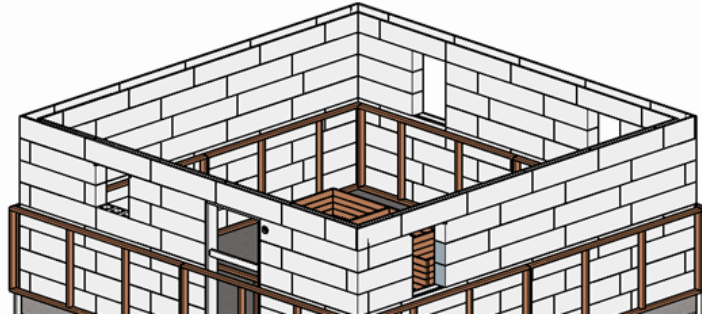


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PHASE 6.4 INSTALL ROW 8 LINTEL BLOCK

Install the top row of block around the entire house.

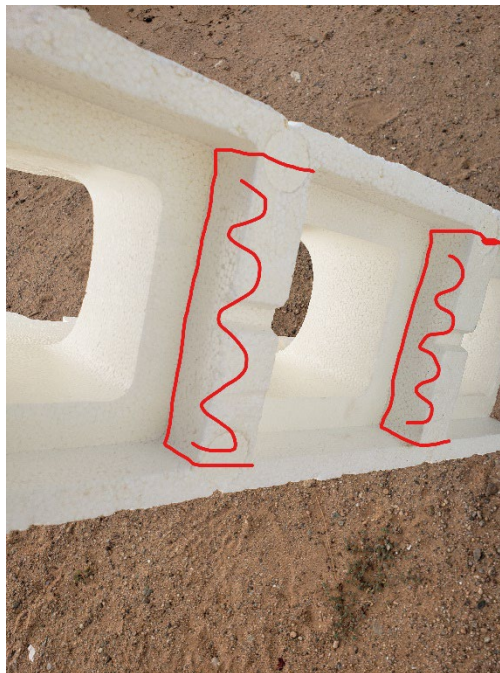
There are some important details to watch for over the door and windows.



The lintel blocks above the window openings must be modified in order to create a void that will be completely filled with concrete.

Cut out or break off the sections of the lintel block as shown in this photo.

THIS IS ONLY ABOVE THE WINDOWS.



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After the concrete is poured and the form removed the concrete will look like this.



This what happens when the block is not prepared in the correct manner.

The cells above this window were plugged so concrete didn't fill the area above the window.

THIS IS A HUGE PROBLEM, AND MUST BE AVOIDED.



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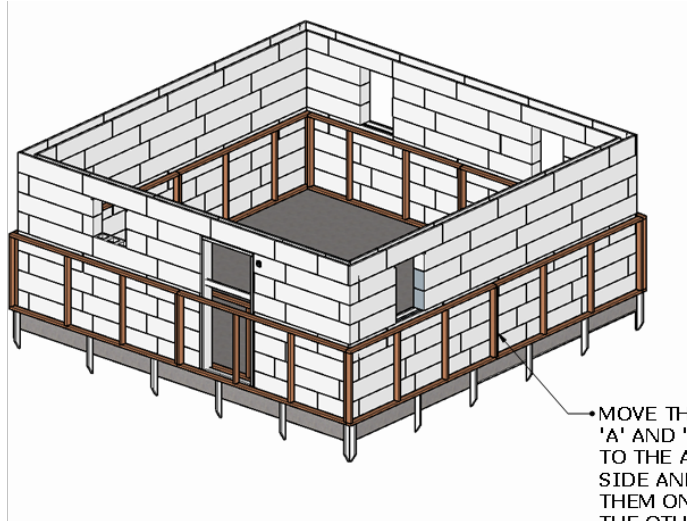
Note that the door form extends about 1 ½” above the 7th row of block. This requires you to cut the lintel block to fit down on top of the form.



PHASE 6.5 INSTALL TOP SUPPORT FRAMES 'A' AND 'B'

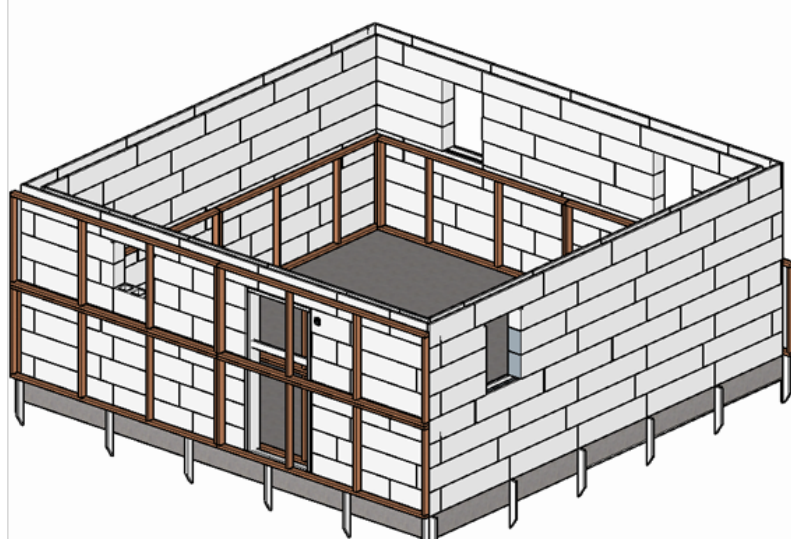
NOTE: The wooden support frames get used over and over, from one house to the next, so it is important that you take care not to damage them. Use enough people to carry the forms so you don't damage the boards or break them apart.

Cut the wires holding the A and B frames together on one wall.



MOVE THE LOWER 'A' AND 'B' FRAMES TO THE ADJACENT SIDE AND PLACE THEM ON TOP OF THE OTHER FRAME

Move the frames to an adjacent wall and place them on top of the existing frames.

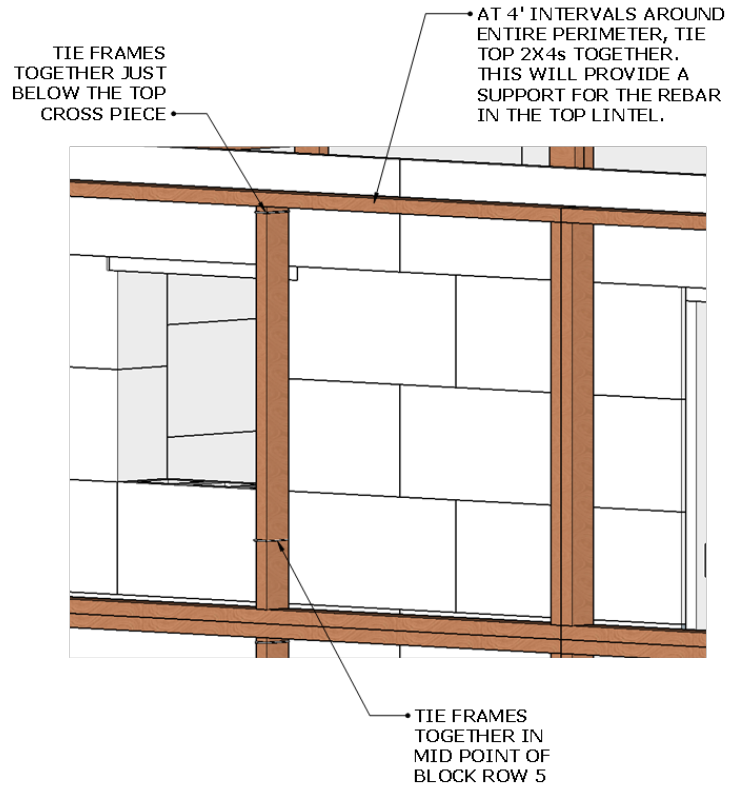


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Tie the exterior and interior support frames together at every upright 2X4 in the locations as shown using the twisted double wire you made earlier.

TIE THE TOP WIRE 8" UP FROM THE BOTTOM OF THE LINTEL BLOCK. THIS WILL ALLOW THE WIRE TO SUPPORT THE #4 REBAR LATER. THIS IS A TIME SAVER.

Tie the frames together at the corners as well. The Fastblocs should be tightly secured between the frames.



Fold a 48" length of wire in half and poke each side through the Fastbloc.

Normally the double strand of wire is rigid enough, but if you need to, you can use a piece of #3 rebar to make a hole through the block.



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In the small tool box, locate a tool that looks something like this for twisting and tightening the tie-wire.



On the opposite side, twist the wire together.

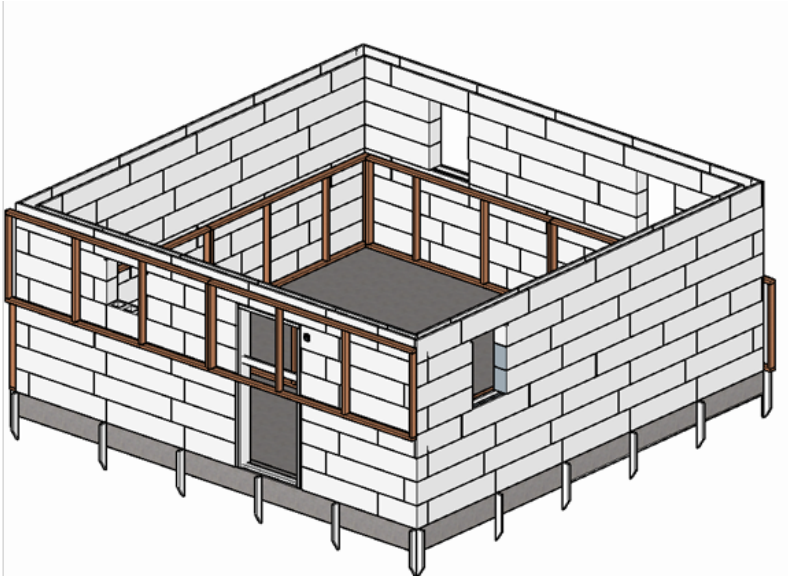
Using the tie-wire twisting tool, pry the wire snug and then twist it until tight.



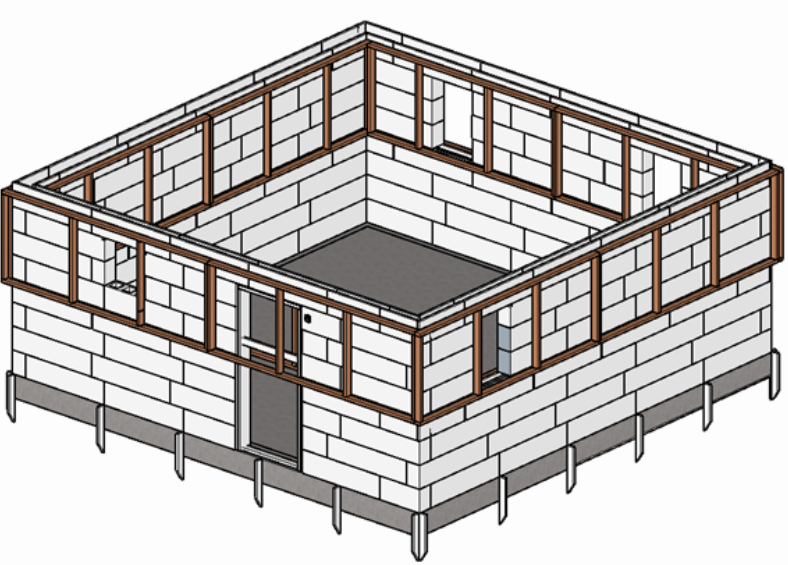
Don't move on to the next step until the frames have been securely tied together.

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Now that the top frames are secured, remove the bottom A and B frames from under them and move those to the other side, repeating this process for the other walls.



When you get to the final wall you won't have anything to set the support frames on, so you will have to use additional people to hold them in place while you secure the frames.

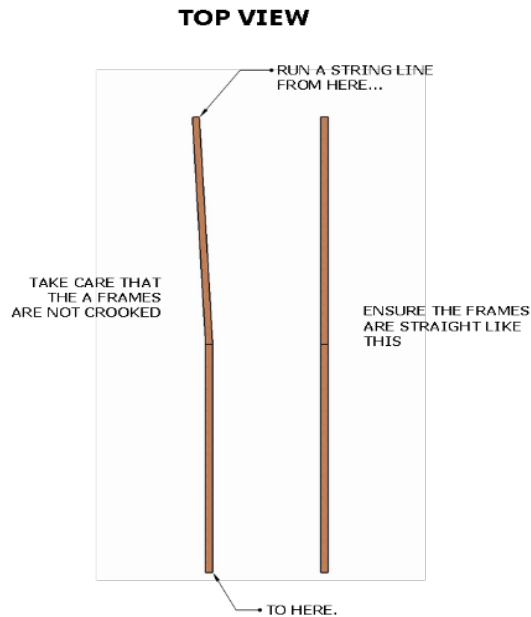


PHASE 6.6 SQUARE AND BRACE THE SUPPORT FRAMES

THERE IS A TENDENCY FOR THE SUPPORT FRAMES TO HINGLE AT THE POINT WHERE THEY ARE JOINED TOGETHER.

CHECK THAT ALL FOUR WALLS ARE STRAIGHT.

USE A STRING LINE RUN FROM END TO END ALONG THE SUPPORT FRAME.

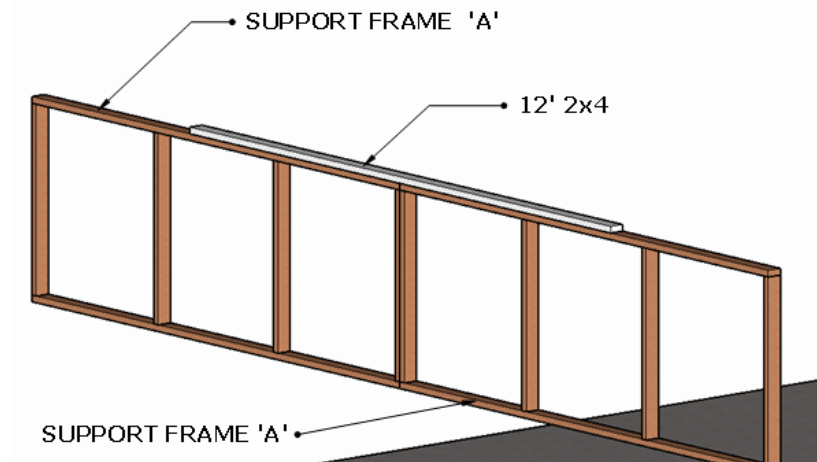


The support frames tend to hinge where they join, causing the wall to bow in or out.

In order to make the wall straight, use a 12' 2x4 placed across the joint between the two 'A' Support Frames on all four sides to force the wall straight.

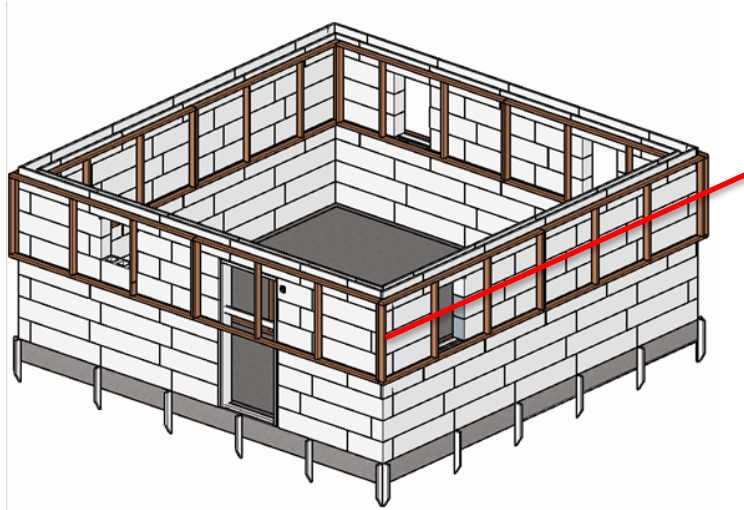
Force the Support Frames into alignment and screw (or nail) the 2x4 to them. Use about 3 screws spaced out on each Support Frame.

NOTE: Walls not shown for clarity.

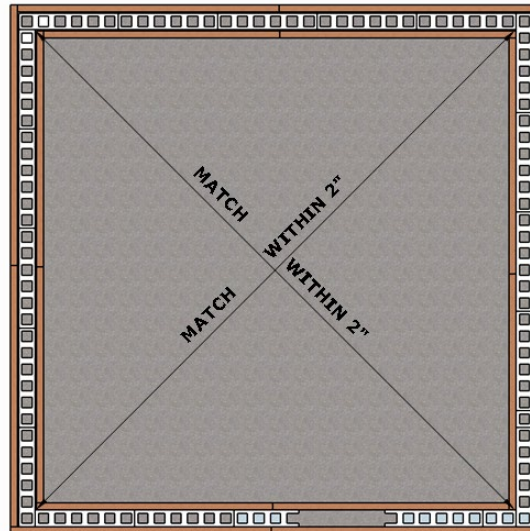


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Run a string line along the edge of the A Frames from corner to corner to ensure the walls are perfectly straight.

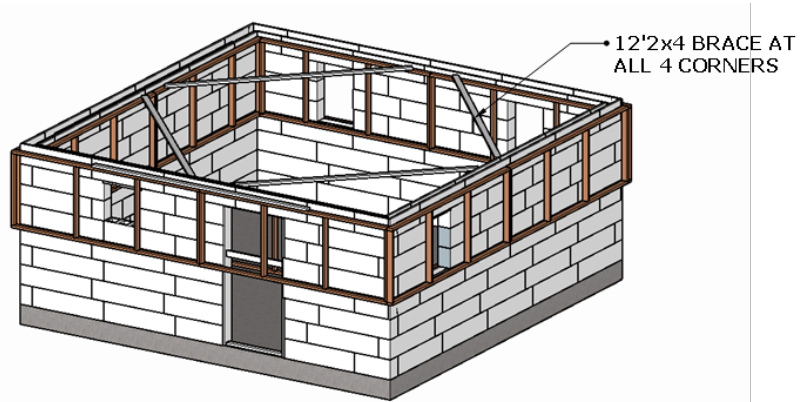


Measure the two diagonal distances across the entire house from corner to corner to ensure that they are equal. They should be within 2" of each other.



Brace across the corners with an 8' or 12' 2x4.

Ensure that all four sides of the house are straight and then brace with a 12' 2x4 across the corners as shown.



PHASE 6.7 CUT AND INSTALL HOLLOW CELL PLUGS

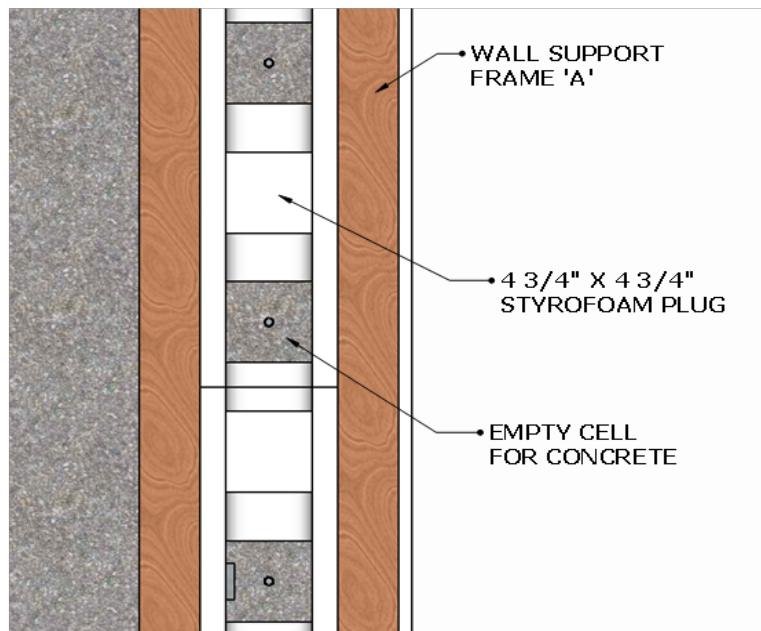
CORTAR E INSTALAR TAPAS PARA CELDAS VACIAS

Using the scrap pieces of Fastbloc that were cut from the window openings, cut 60 4 3/4' x 4 3/4' 'plugs.'

Install one plug in each cell that does not contain a vertical rebar.

It should take a fair bit of force to insert the plug in the cell.

THEY MUST BE ABLE TO SUPPORT THE WEIGHT OF THE CONCRETE THAT WILL BE POURED IN THE LINTEL.



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DO NOT PLUG THE
HOLLOW CELLS
ABOVE THE DOORS
AND WINDOWS.
THE CELLS MUST BE
FILLED WITH
CONCRETE.



TAKE CARE THAT YOU
DON'T PLUG CELLS
THAT HAVE REBAR.

THIS CELL WAS
DISCOVERED TO NOT
HAVE CONCRETE
CAUSING A
SIGNIFICANT AMOUNT
OF WORK TO REPAIR
LATER.



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PHASE 6.8 INSTALL TOP LINTEL REBAR

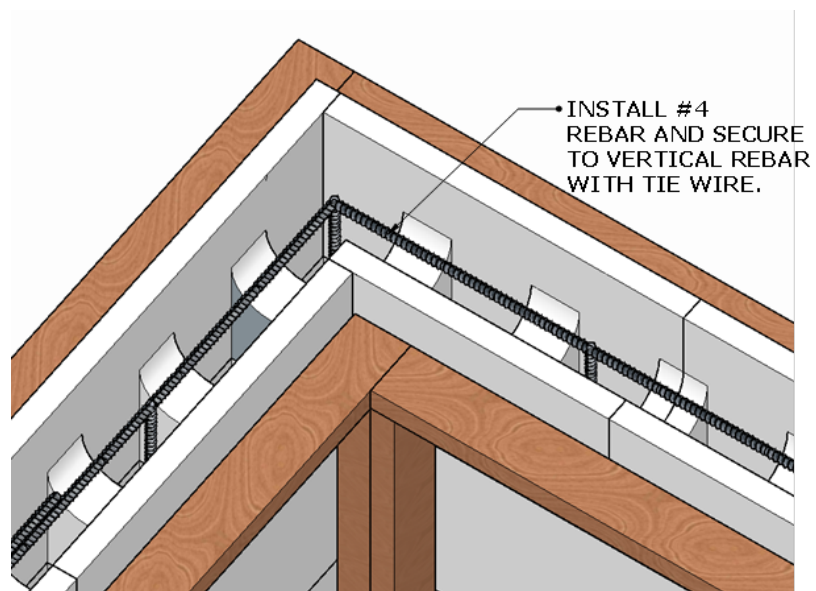


**DON'T FORGET TO
PLUG THE HOLLOW
CELLS BEFORE
PLACING THE LINTEL
REBAR!**

Install a #4 (1/2") rebar around the entire perimeter of the lintel block 3" below the top of the block. The rebar should rest on the tie wire that holds the interior and exterior wood support frames together.

If rebar must be joined allow at least 18" of overlap of rebar pieces.

Tie the #4 rebar to every upright rebar using pre-looped tie-wire provided in small tool box.



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Use the rebar cutter/bender to create the necessary 90 degree bend at corners.

To bend the rebar, lift the handle up, place the rebar at the desired bend location beneath the bushing on the left hand side and pull the handle toward you to achieve a 90 degree bend



PHASE 6.9 TRIM TOP LINTEL BLOCK

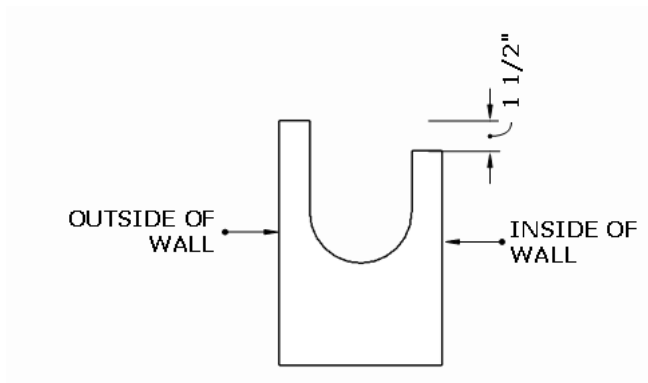


This is a very important step. When done properly it will save a lot of time installing the roof.

The objective is to cut the inside edge of the lintel block lower than the outside by about 1 1/2".

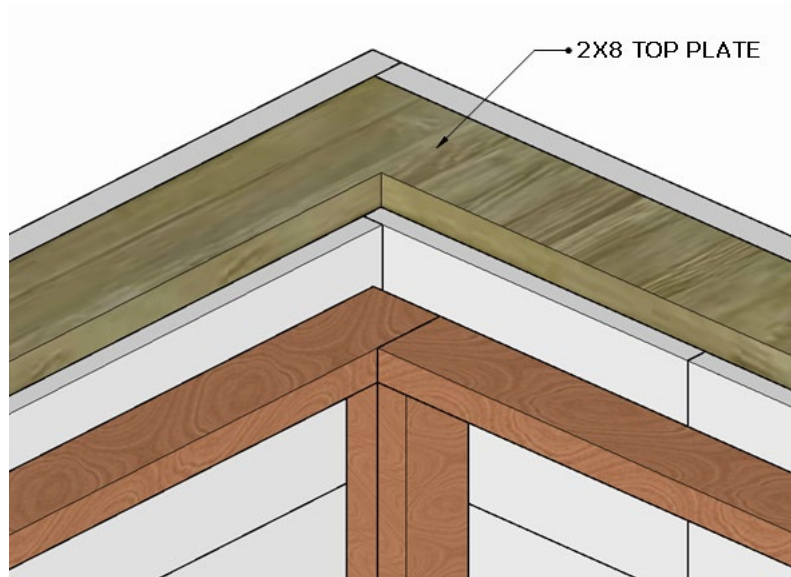
The cut should be straight from one end of the wall to the other, and an equal distance above the floor.

Cut the interior edge of the block ONLY! Do not cut the exterior edge if the block.

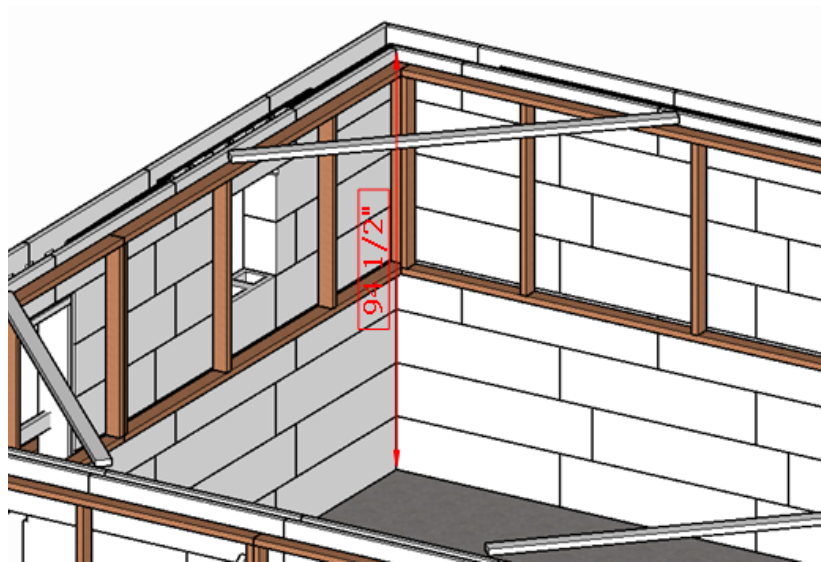


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The purpose is to accommodate a 2X8 top plate after the concrete is poured:



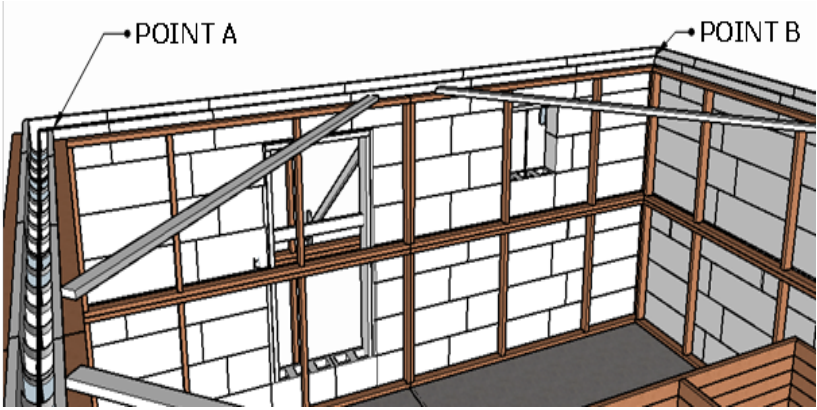
Measure up from the floor 94 1/2" at each corner of the house and make a mark on the Fastbloc.



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Snap a chalk line from Point A to Point B. Be sure to hold the chalk line tight so the line doesn't sag in the middle.

Take care to cut the blocks as straight as possible.



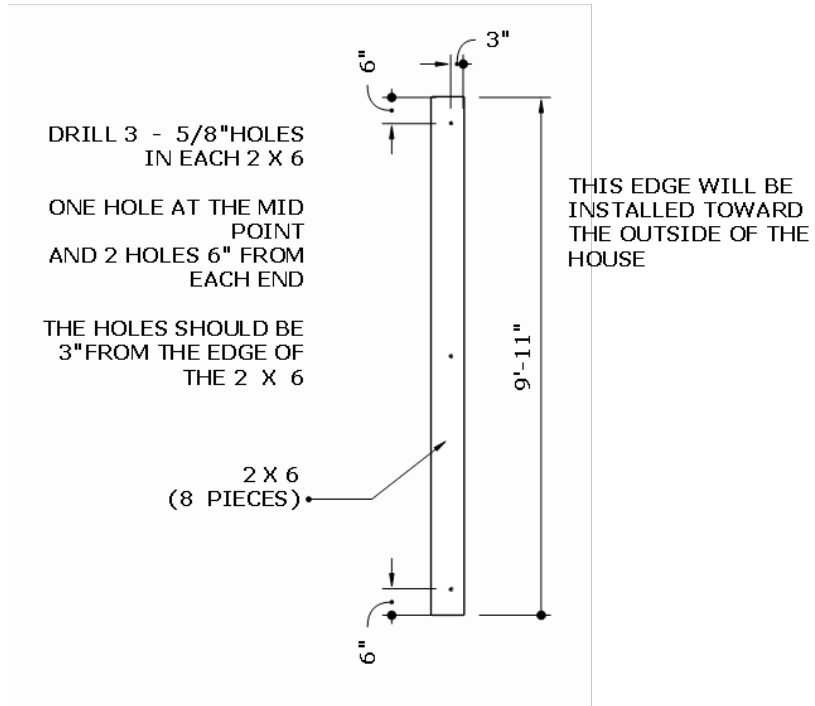
Lintel block after being cut.



PHASE 6.10 PREPARE TOP SILL (LEDGER) PLATE BOARDS

Before pouring concrete in the top lintel, prepare the top sill plate 2X6 boards. Cut the 2X6 9' 11" long and drill 5/8" holes in the boards at the intervals and distance from the edge of the board as shown.

NOTE: There is an additional 12' piece of 2x6 that you can use to fill out the extra 6' of sill plate on the 20' 8" x 26' 8" house.



Install a 6" J bolt in each hole as shown. Leave about 1/4" of thread sticking up above the nut.



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PHASE 6.11 POUR CONCRETE IN TOP LINTEL

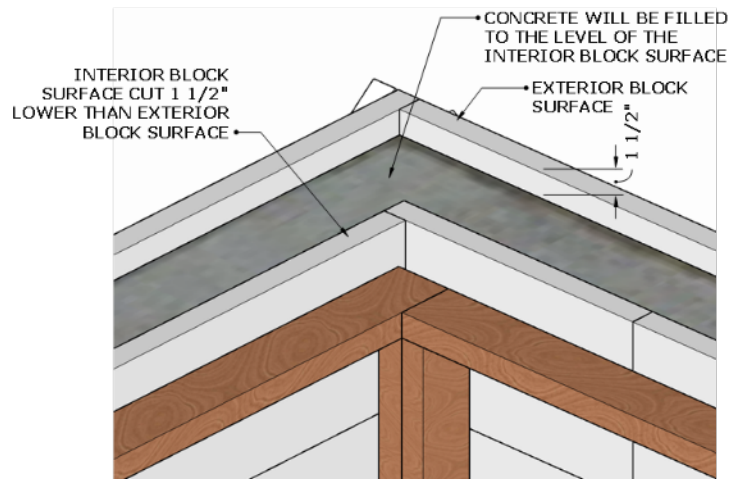


- Before pouring concrete ensure that you have:
- Installed the top lintel rebar
- Braced the forms
- Installed plugs in the hollow cells
- DID NOT plug hollow cells above the door and windows.

Mix concrete and fill the cells to within 2" of the top of the lintel block.

If you don't have enough time to completely fill the block walls with concrete, but have time to do a portion of the concrete, fill the blocks to the same level all the way around the perimeter of the house, rather than filling all the way in only one section.

DO NOT fill any part of the lintel as you will need to install the top sill plate when the concrete is wet and the J bolts extend 6" down into the concrete.



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Consolidate the gravel in a single pile so that you don't waste it.



In wheelbarrows, mix 10 parts gravel directly from the gravel pile and 2 parts cement powder. Remove any rocks over 1 ½" in diameter. **BE SURE YOU ARE USING CEMENT. SOMETIMES WE HAVE CEMENTBOND ON SITE THAT IS IN 20KG BAGS. CEMENT IS IN 40 OR 50 KG BAGS.**

TAKE CARE TO MIX THE PROPORTIONS CAREFULLY.

Dry mix the above ingredients before adding water.

Add water and mix to the consistency of mashed potatoes. Of course that depends on how you like your mashed potatoes.

Using buckets pour concrete into the lentil block and cells with rebar until the lintel block is filled to the top.

AS YOU FILL THE BLOCKS, TAP THE SIDE WITH YOUR HAND OR A SCRAP PIECE OF 2X4. THIS WILL ENSURE THAT THERE ARE NO VOIDS IN THE CONCRETE.



Take care to ensure that the concrete is even with the top of the inside edge of the Fastblocs and as smooth as possible. This will make it much easier to set the top sill plate at the next Phase.

Don't allow the concrete to set up too much before setting the sill plate, as this will prevent the anchor bolts from securing properly in the concrete.

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At approximately 4' intervals install an 8 or 10" spike from the top of the inside edge of the Fastbloc and into the outside edge of the Fastbloc.



This will hold the sill plate at the proper height and prevent it from settling in to the wet concrete.



**CONTINUE TO THE
NEXT STEP BECAUSE IT
HAS TO BE DONE
WHEN THE CONCRETE
IS STILL WET.**

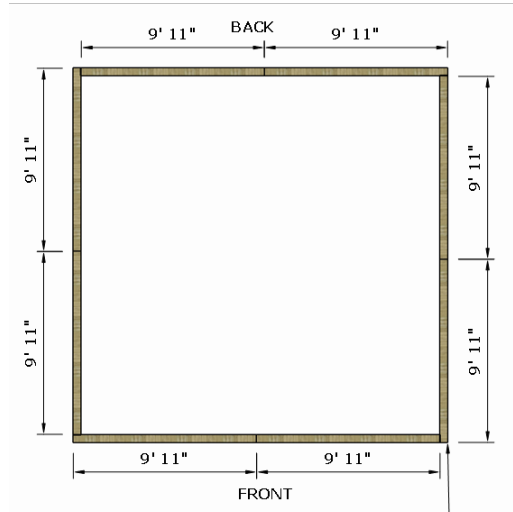
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PHASE 6.12 INSTALL TOP SILL (LEDGER) PLATE

CUT 8 - 2X6 BOARDS 9' 11" LONG
FOR THE TOP SILL (LEDGER)

While the concrete is still wet, install the top sill plates as shown. Push the anchor bolts down into the concrete ensuring that the 2x6 sits on top of the wires placed at the top of the concrete in the previous step.

The 20' 8" x 26' 8" house requires an extra 6' length of sill plate on the sides.



NOTE THE POSITION OF THE 2X6 AT THE CORNER

Scan the QR code to watch a video for placing the sill plate.



Sill Plate set in place with J bolts set in the concrete.



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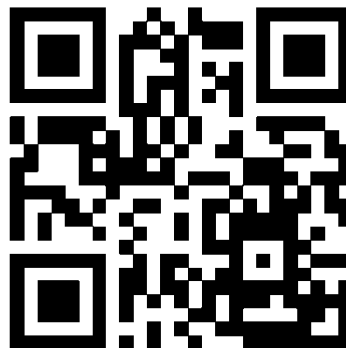
PHASE 7 CONSTRUCT ROOF TRUSSES

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. For the 20' 8" x 20' 8" house, build a total of 12 trusses. 10 regular and 2 gable ends.
2. For the 26' 8" x 20' 8" house, build a total of 15 trusses. 13 regular and 2 gable ends.
3. Cut the king posts to the exact same size.
4. Use the same jig for every truss.
5. Spread the glue for the gussets, don't just use a bead of glue.
6. Make sure the gussets don't extend beyond the 2x4 chords.
7. Nail according to the nailing pattern.
8. Cut the notch out of the center gusset before installing the gusset. This ensures the opening is wide enough for the ridge board.
9. Make sure a 2x4 will fit in the opening for the ridge board.
10. Don't lean the finished trusses, lay them flat, either on the floor, or on top of 2x4 blocks, so the trusses are supported a few inches above the ground.
11. Remember, the trusses are an important structural component of the house, so take care when building them. Not only that, the trusses are also the ceiling, so any defects in construction will be seen in the finished interior of the house.

Here is a link to a helpful video that will explain the steps in this phase:



PHASE 7.1	ORGANIZE WORK AREA, TOOLS AND MATERIALS	3
PHASE 7.2	SETUP METAL TRUSS JIG	5
PHASE 7.3	CREATE A TOP CHORD TEMPLATE AND CUT THE TOP CHORD PIECES	6
PHASE 7.4	CREATE A KING POST TEMPLATE AND CUT KING POST PIECES.....	8
PHASE 7.5	CREATE A CENTER (A) GUSSET TEMPLATE AND CUT CENTER GUSSETS ..	11
PHASE 7.6	ASSEMBLE THE TRUSSES	13

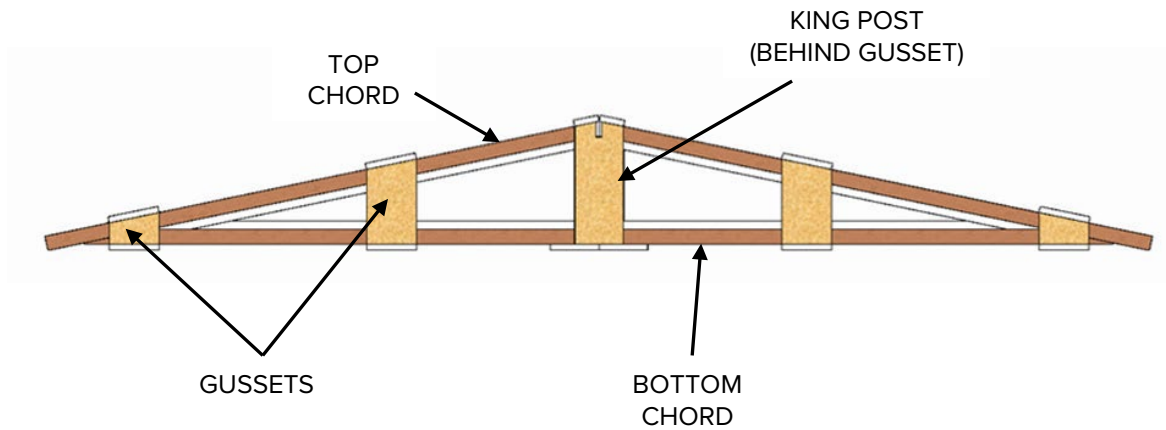
PHASE 7.1 ORGANIZE WORK AREA, TOOLS AND MATERIALS

Familiarize yourself with the names of the various parts of the truss.

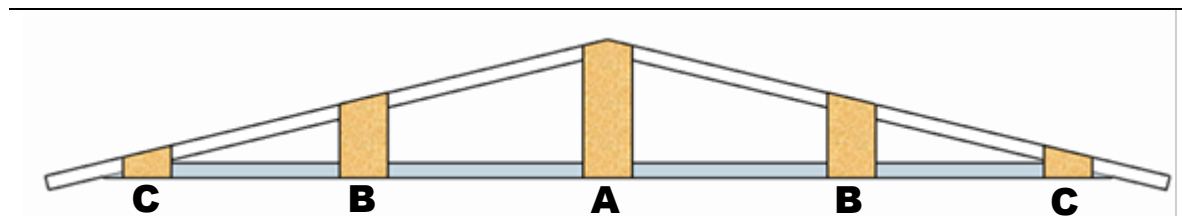
Proper construction of the trusses is critical to the structural integrity of the house.

TAKE THIS SERIOUSLY. Improper construction of the trusses may result in the next group needing to rebuild the trusses and a waste of expensive materials, not to mention a poorly constructed roof.

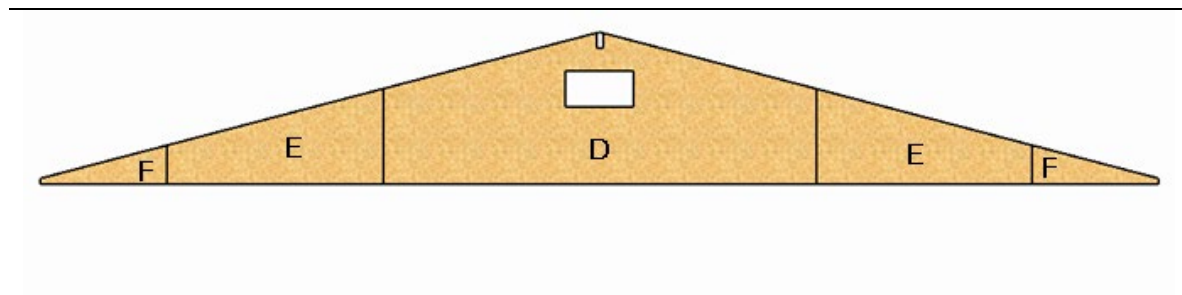
It is important that all the trusses are constructed identically to each other. This is achieved by the use of a jig and cutting various templates to use rather than measuring every piece of material separately.



GLOSSARY OF TRUSS PARTS



GUSSET LABELS



GABLE END SHEATHING LABELS

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Create a clear workspace, preferably with a cutting area and an assembly area will make this task go much more efficiently.

Locate and arrange your materials. The materials vary depending on the house size:

20'8"x 20' 8" model	20'8"x 26' 8" model	Description
24	30	Pre-cut Bottom Chord pieces 2x4 x 10' 4" in length with a long angle cut at one end
24	30	Top chord pieces: cut 2x4x12' to correct length with 15 degree angle.
4	6	2x4x8' to cut for king posts
22	28	A Gussets (Center Gusset)
44	56	B Gussets
44	56	C Gussets
2	2	D Gable End OSB Pieces
4	4	E Gable End OSB Pieces
4	4	F Gable End OSB Pieces
13	16	Tubes of Glue
20 lbs	30 lbs	2" nails

For the 20' 8" x 20' 8" house, build a total of 12 trusses. 10 regular and 2 gable ends.

For the 20' 8" x 26' 8" house, build a total of 15 trusses. 13 regular and 2 gable ends.

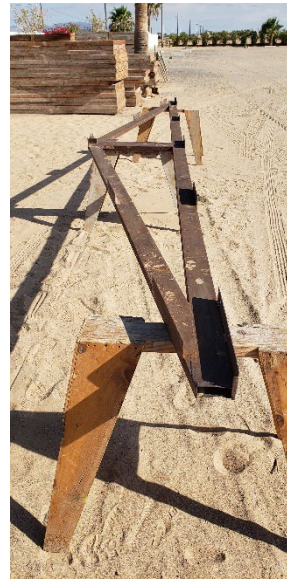
PHASE 7.2 SETUP METAL TRUSS JIG

Locate the two pieces of the truss jig.

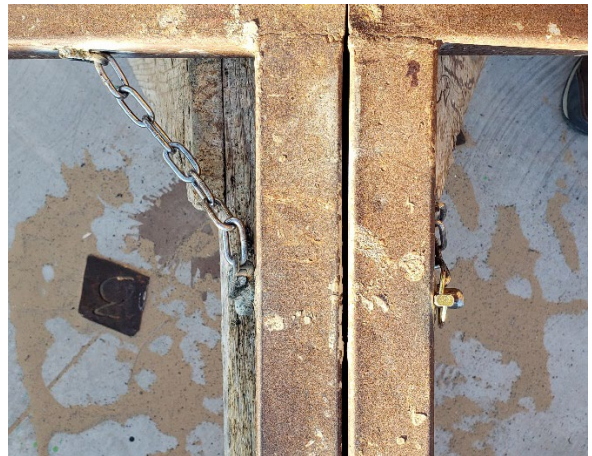
Because 1MISSION only has four jigs, you may be provided with a sample truss and metal plates to create a jig from the sample truss. See instructions on how to use the sample truss and metal plates to create a jig at the end of Phase 7 pages.



Using three sawhorses to support the jig, line up the two halves of the jig and attach together using the pins that are connected to the jig.



Jig pieces connected using provided pins.



PHASE 7.3 CREATE A TOP CHORD TEMPLATE AND CUT THE TOP CHORD PIECES

Measure 11' 10" (142") on a 12' 2x4.



Using a speed square as shown, line up the corner of the square with the mark you made at 11' 10". Rotate the square until the '15' mark is aligned with the edge of the 2x4 and mark a pencil line along the other edge of the square.

This creates the necessary 15 degree angle.

Cut the 2x4 at the line you marked.



After cutting, place this 2x4 in the jig to ensure that the angle you cut matches the jig as shown.



Check that the length is 11' 10".

If the length and angle are correct, write template on it.



Lay the template on top of the next 2x4, align the far end and mark the remaining top chords as shown.

This will ensure that they are all the same.

NOTE: The 2x4s may not be exactly 12' long, so you must align the far end to ensure your cuts are 11' 10" long.



PHASE 7.4 CREATE A KING POST TEMPLATE AND CUT KING POST PIECES

Once you have two top chord pieces cut, place them in the jig as shown.



Each jig is slightly different, so the king post length has been marked on the jig.

Measure and cut a 2x4 for the king post to the length indicated.



Place the bottom chord pieces in the jig and insert the king post.

It should fit tightly enough that the top and bottom chords are snug against the metal guides.



You may find that the precut long, angular cut on the bottom chord is not perfectly finished.

If this is the case, you may have to trim the excess using a handsaw in order for the chord to fit in the jig.



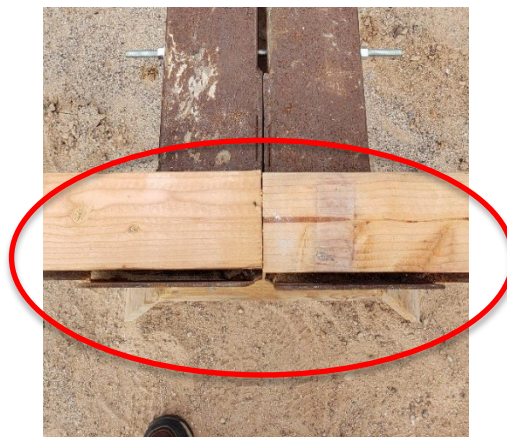
WHEN MEASURING THE KING POST, DON'T MAKE THIS MISTAKE.

THE TOP CHORD IS NOT PUSHED TIGHT AGAINST THE JIG.



WHEN MEASURING THE KING POST, DON'T MAKE THIS MISTAKE.

THE BOTTOM CHORDS ARE NOT PUSHED TIGHT AGAINST THE JIG.



Note that the king post is not cut on an angle to fit the top chords.

It is sufficient for it to just be tight against the chords.

Use this king post as a template to cut the remaining king posts.

EVERY KING POST SHOULD BE EXACTLY THE SAME LENGTH!



Sometimes the 2x4 chords are slightly less than 3 1/2" wide, and there is a bit of space between the top and bottom chord.

If that happens, push the bottom chord to fit tight against the top chord at the low end of the truss, even if it results in a slight space between the two bottom chords where they meet at the center.



PHASE 7.5 CREATE A CENTER (A) GUSSET TEMPLATE AND CUT CENTER GUSSETS

The center gusset pieces need to be cut to fit properly.

Locate the gusset pieces that are approximately 12" wide by 32" long.



Make a mark 32" from one end and at the mid-point as shown.



The angled lines are determined by matching the angle of the top chord on the jig.



Mark the rectangular cutout. This cutout needs to be deep enough so that the entire king post is visible when the gusset is set on the truss.



The gusset should fit something like this. No part of the gusset should extend above the top chord or into the space above the king post.

Check the gusset on the bottom chord as well. No part of the gusset should extend below the bottom chord.

Use this gusset as a template to mark and cut the remaining center gussets.



PHASE 7.6 ASSEMBLE THE TRUSSES



Here are some things to pay attention to, since others have missed them. Missing these things will result in a lot of extra work!

- Glue the gussets to the chords using tubes of glue and caulking gun.
- Do not allow gussets to extend above or below the gussets.
- Install gussets on both sides of the truss.
- Nail the gussets in the proper pattern. Using too few nails is a problem!

These are the 5 2x4 parts of the truss.

King post, 2 top chords and 2 bottom chords.



The top and bottom chord fit in the jig like this.

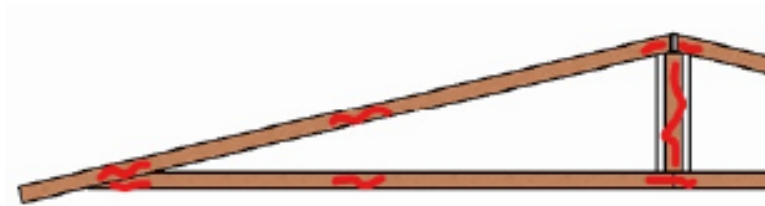


Cut the nozzle of the glue tube so that there is about a 1/4" hole. Then push a nail through the opening to puncture the seal inside the tube.

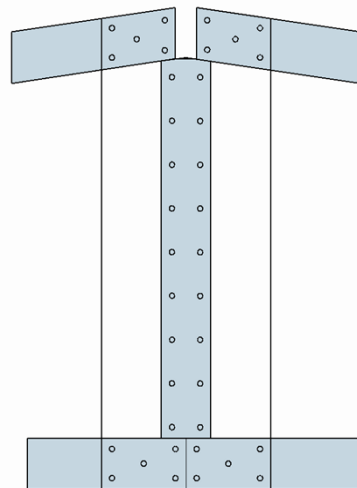
Apply glue to the chords at location of A, B and C gussets.

SPREAD THE GLUE OUT WITH A SCRAP PIECE OF WOOD.

YOU SHOULD BE USING NO MORE THAN 1 TUBE PER TRUSS.

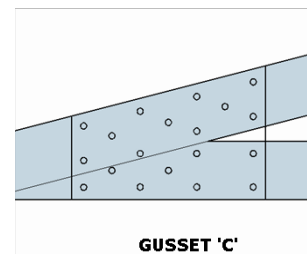
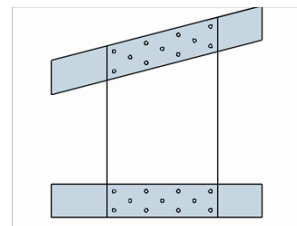


**Use 2" nails
Nail 3/4" from edge of plywood
approximate 3 1/2" spacing.
Replicate the patterns as shown.**



**GUSSET 'A'
NAILING PATTERN**

**GUSSET 'B'
NAILING PATTERN**



**GUSSET 'C'
NAILING PATTERN**

Nail the A, B and C gussets to the chords taking care that the gussets DO NOT extend above the top chord or below the bottom chord.

THIS IS THE
NUMBER 1
PROBLEM THAT
WE ENCOUNTER
WITH THE TRUSS
CONSTRUCTION.

DON'T DO THIS!

THE GUSSET
MUST NOT
EXTEND ABOVE
THE 2X4.



Center gusset
placement
showing that a
2x4 scrap fits
easily in the
opening at the
top.



After the gussets
are all nailed in
place, carefully
turn the truss over
and glue and nail
the gussets to the
opposite side.

Stack the trusses laying flat on a level place.

However, don't set the trusses directly on the ground, use scraps of wood at the ends and center to support them off the ground.



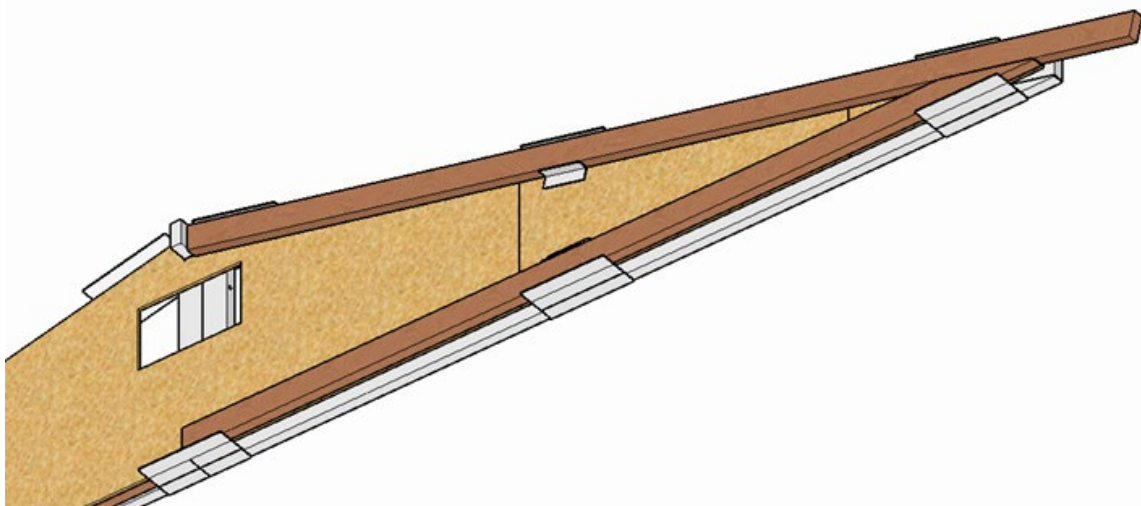
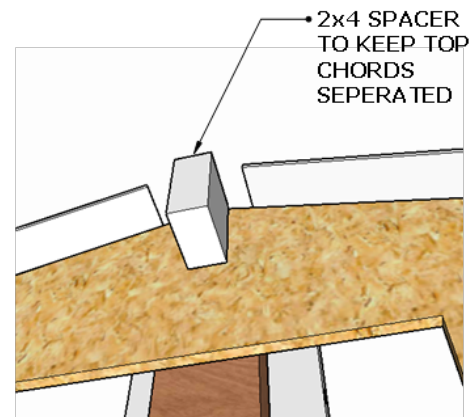
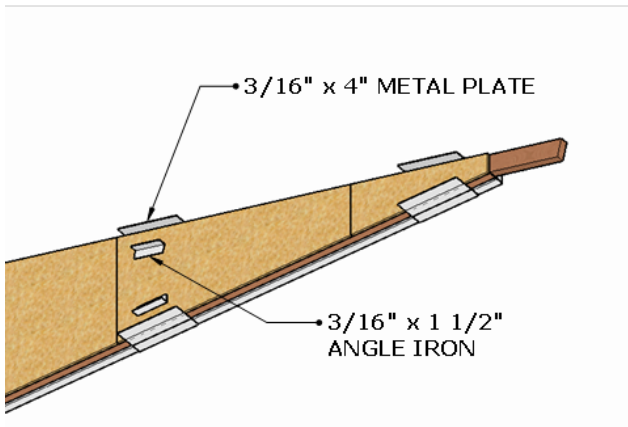
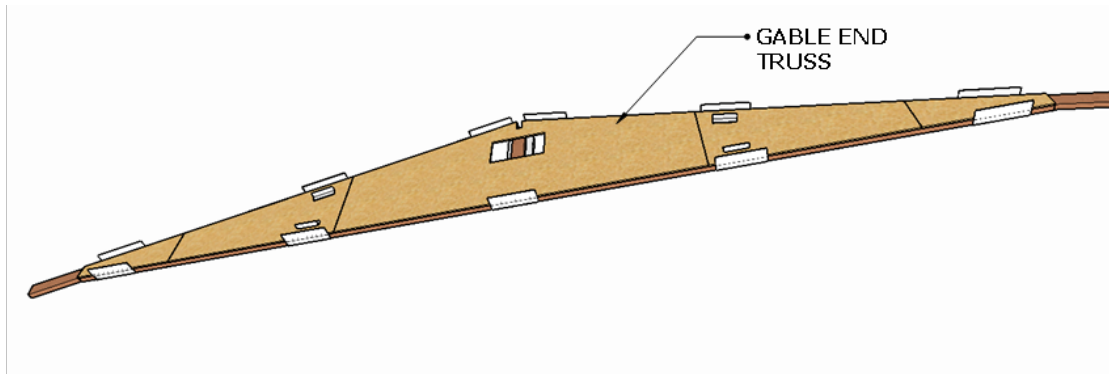
The best location to stack the trusses is on the floor of the house prior to leaving the site the final time.

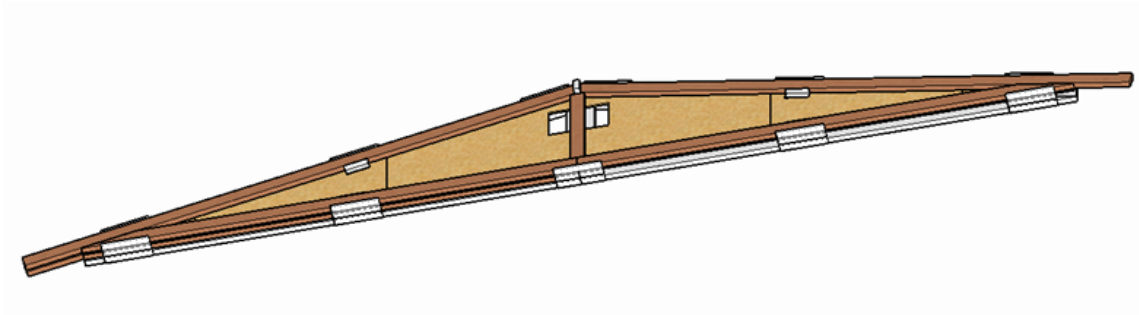


INSTRUCTIONS FOR BUILDING TRUSSES WITHOUT A TRUSS JIG

At times you may only have the metal truss jig available to build your first truss, and then you'll use that truss as a template for the remaining trusses. Use the metal jig to build a gable end truss to use as your template.

You will be provided with 11 metal plates and 4 metal angle brackets to attach to the gable end truss as shown. The plates and brackets will serve as guides in completing the remaining trusses.





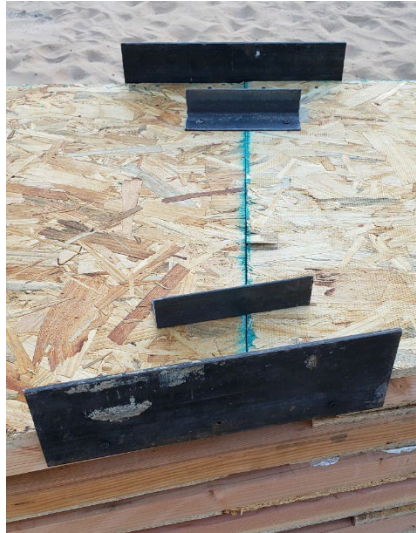
Trim this excess wood off the bottom chords with a handsaw.

If you leave the wood in place the chord pieces won't fit in the jig, or will alter the shape of the truss.



The angle iron are screwed in place leaving a space 3 5/8" between the angle iron and the metal plate.

This will allow the 2x4 to fit, but not too tightly.



The 2x4 truss pieces will fit snugly between the metal plates as shown.



The upper and lower chord pieces fit between the metal plates near the tail end of the truss.

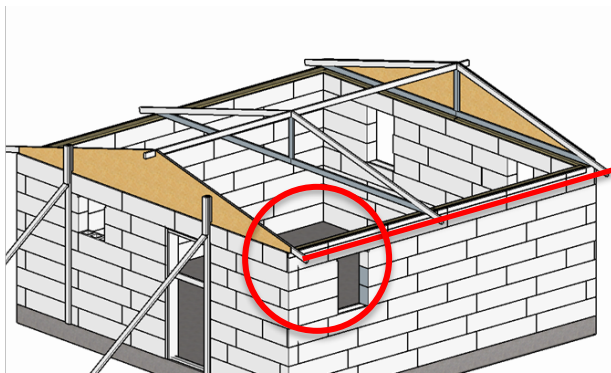


PHASE 8 INSTALL ROOF TRUSSES

FOREMAN NOTES:

These are some areas to take extra care during this Phase. This Phase is the most technically challenging on the entire house, so don't be afraid to ask questions or ask for help from the 1MISSION construction team.

1. Pay close attention to the truss layout instructions!
2. The sill plate does not have to be level, but it does need to be flat from one end to the other.
3. Follow the instructions to create a baseline for the fifth truss from the front of the house. The remaining trusses are laid out at 2 foot centers from this truss.
4. Mark the sill plate where the trusses will land and place the shims at those locations.
5. **Don't overtighten the J-bolts** or you will break the concrete and cause a major problem.
6. The metal drip edge only goes on the sides, not on the front and back.
7. Cut and mark the fascia boards before standing the trusses. Marking both sides of the truss locations instead of just the center is helpful.
8. Install the 1 ½" foam on the gable ends before installing them.
9. Before putting standing the trusses, make sure a 2x4 will fit in the notch where the ridge board goes.
10. Run a string line from the tail end of the gable end and line the trusses with the string.



11. Install the blocking between the trusses vertically, don't lay them flat.



12. **WARN YOUR TEAM NOT TO STEP ON THE 2X4 BLOCKS WHEN SHEATHING THE ROOF. THEY WILL NOT SUPPORT YOUR WEIGHT!**
13. Start the roof sheathing at the low side and work toward the peak.
14. Gable end foam; lubricating the screws with soap helps them to go in easier.

Here is a link to a helpful video that will explain the steps in this phase:



The following table shows the various tasks in this Phase. Each column of tasks can be completed by different teams. Tasks in the column must be performed in the order given.

FOREMAN	TEAM 1	TEAM 2	TEAM 3
	Phase 8.1	Phase 8.2	Phase 8.7
	Phase 8.4	Phase 8.3	
		Phase 8.5	
		Phase 8.6	
		Phase 8.8	
		Phase 8.9	Phase 8.14
		Phase 8.10	
	Phase 8.11	Phase 8.12	
	Phase 8.13	Phase 8.15	
		Phase 8.17	Phase 8.16
		Phase 8.18	

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Phase 8.3	INSTALL SILL PLATE FLASHING	7
Phase 8.4	SILL PLATE GABLE END BACKING BOARDS	8
Phase 8.5	TRUSS LOCATION LAYOUT.....	9
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Phase 8.18	INSTALL METAL DRIP EDGE.....	30
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PHASE 8.1 REMOVE EXTERIOR AND INTERIOR SUPPORT FORMS

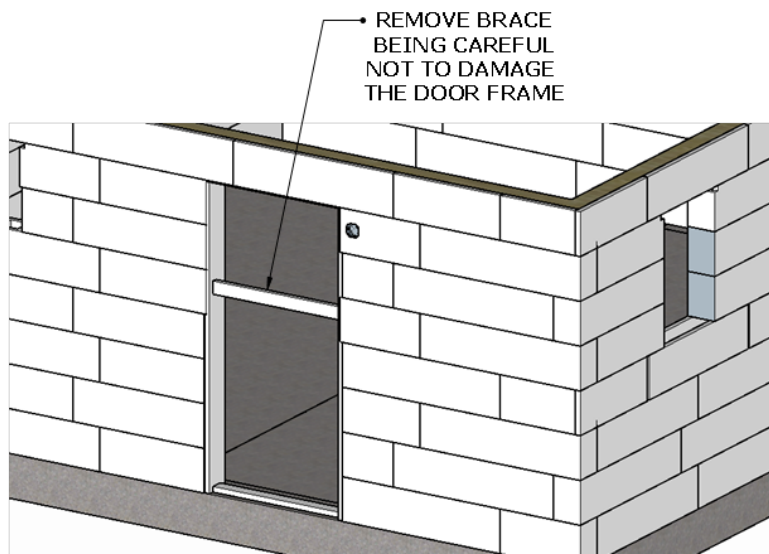
NOTE: ALLOW CONCRETE TO SET OVERNIGHT BEFORE REMOVING SUPPORT FORMS.

NOTE: The support frames will be reused for the next house so be careful not to damage them. Stack them neatly to the side of the job site. Don't set them directly on the ground, use scraps of 2x4 to support them.

Cut the wire holding the interior and exterior support frames together.

TIGHTEN ANY LOSE SCREWS HOLDING THE FORMS TOGETHER, AND REMOVE ANY SCREWS OR NAILS THAT ARE STICKING OUT AND COULD CAUSE AN INJURY TO SOMEONE HANDLING THE FORMS.

Remove the brace across the door frame, being careful not to damage the door frame.

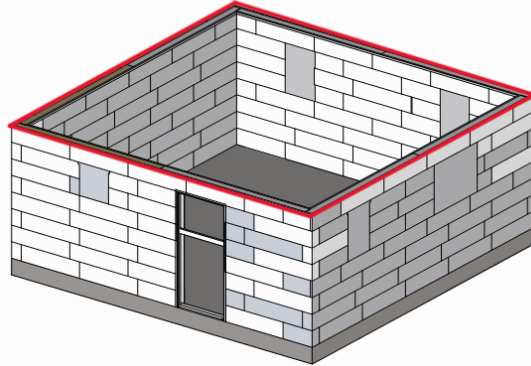


PHASE 8.2 LEVEL THE SILL PLATE AND TIGHTEN BOLTS

It is important that the sill plate is flat so that the trusses are all even. THE SILL PLATE DOES NOT NECESSARILY NEED TO BE COMPLETELY LEVEL, BUT IT SHOULD BE FLAT FROM ONE END TO THE OTHER.

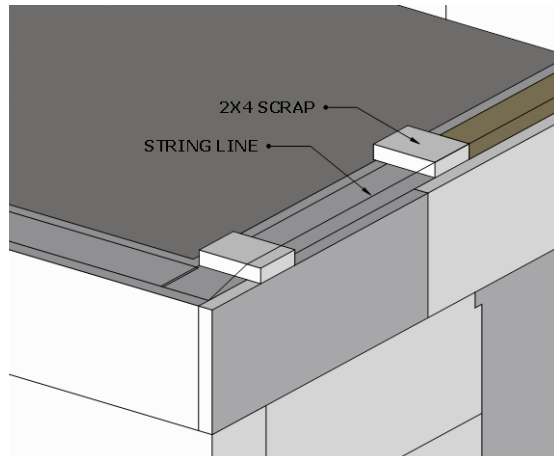
Run a string line from one end of the sill plate to the other on all four sides of the house.

Pound a 3" nail into the sill plate at each corner and tie the string to the nail.



It works best to use scrap pieces of 2x4 to hold the string above the sill plate at each end and then use a third piece of 2x4 to check the height of the sill plate.

You are trying to get the sill plate flat, and if the string is laying directly on top of the sill plate, you'll have no way to know if it is flat.



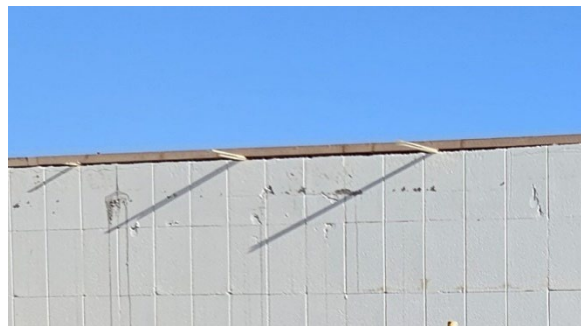
Use wood shims to raise the low spots.

If there is any point that is too high, then you'll need to raise the sill plate at the corner at start again.

Tighten the anchor bolts as you go in order to secure the sill plate.

DON'T OVERTIGHTEN THE BOLTS, AS IT IS POSSIBLE TO BREAK THE CONCRETE.

You should find a wrench in the small, black, toolbox.



PHASE 8.3 INSTALL SILL PLATE FLASHING

Note: Prior to installing the sill plate flashing, cut off any Fastblocs that protrudes above the wood sill plate so the flashing will be even with the sill plate.

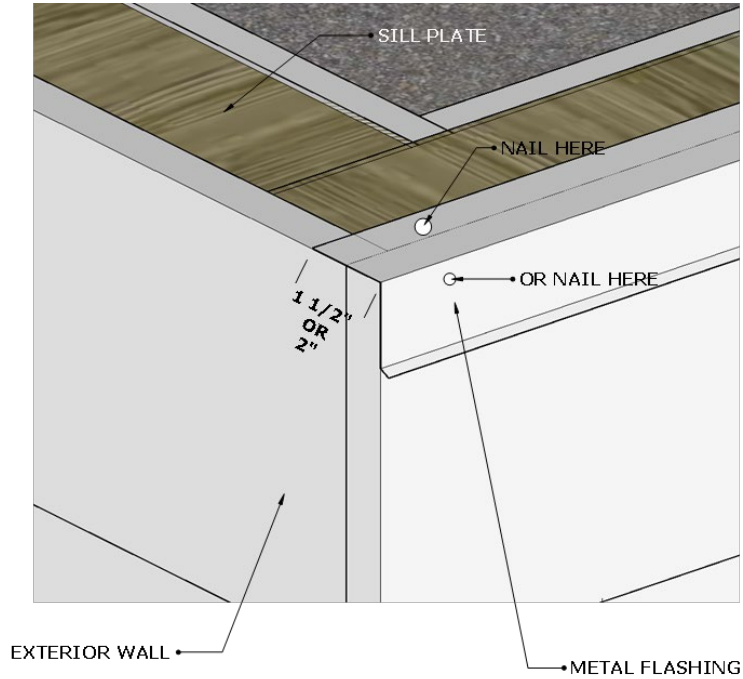
You are provided with 10' lengths of metal drip edge to use as flashing along the side walls.

This flashing will provide a tidy edge for the wall coating.

The top edge of the flashing will be either 1 1/2" or 2" wide. If it is 1 1/2" wide you may not be able to nail it from the top.

If the flashing doesn't reach the sill plate, nail it from the side using 2" or 3" nails.

Nail at 18" intervals.



Note: The metal flashing is only installed on the side walls, beneath where the trusses will sit. This may seem pointless because no water will reach the flashing. However, it serves the purpose of providing a 'backstop' for the wall coatings.

Do not install metal flashing on top of the sill plate on the gable end walls.

PHASE 8.4 SILL PLATE GABLE END BACKING BOARDS

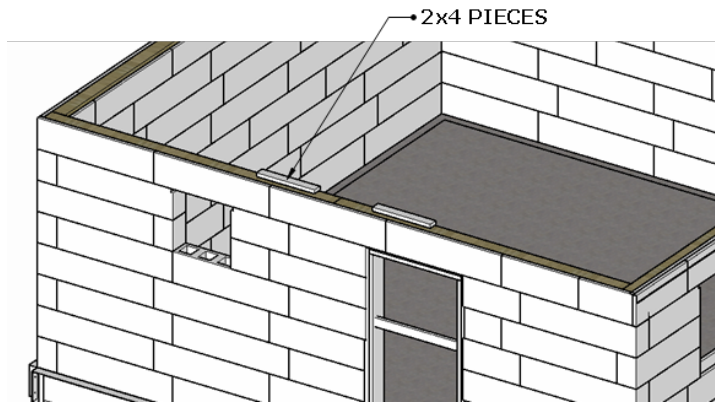
On the front and back of the house, where the gable ends will be installed, install 2X4 backing boards to provide a nailing surface for the gable ends, as shown in the following details. The 2X4 pieces should be about 24" long, but the exact length and location is not critical.

Cut 4 scrap pieces of 2x4, approximately 24" long (the length isn't important.)

Do this on the front and back walls.

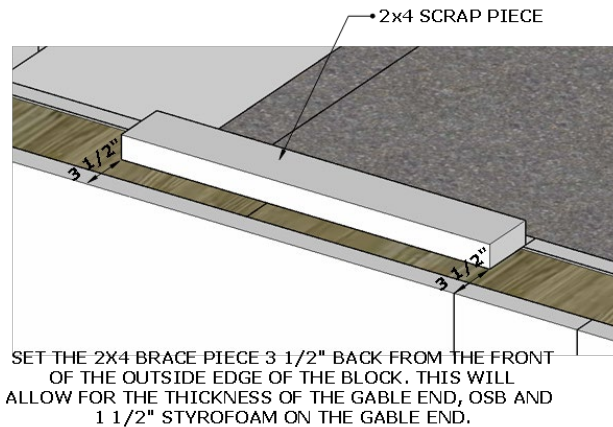
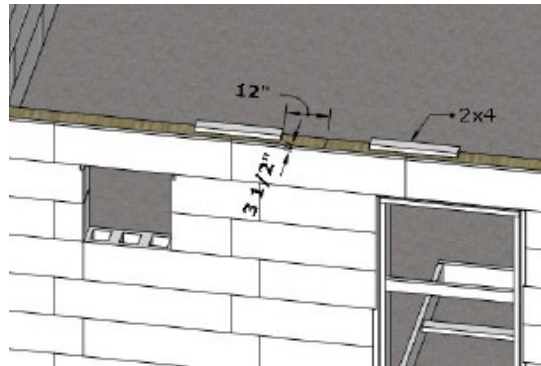
This will provide a surface to nail the gable end to.

BE CAREFUL THAT YOU DON'T USE YOUR PRECUT ROOF BLOCKS



Nail the 2x4 pieces to the sill plate 3 1/2" from the outside edge of the Fastbloc and 12" on each side of the centerline of the wall.

Use 3 or 3 1/2" nails.



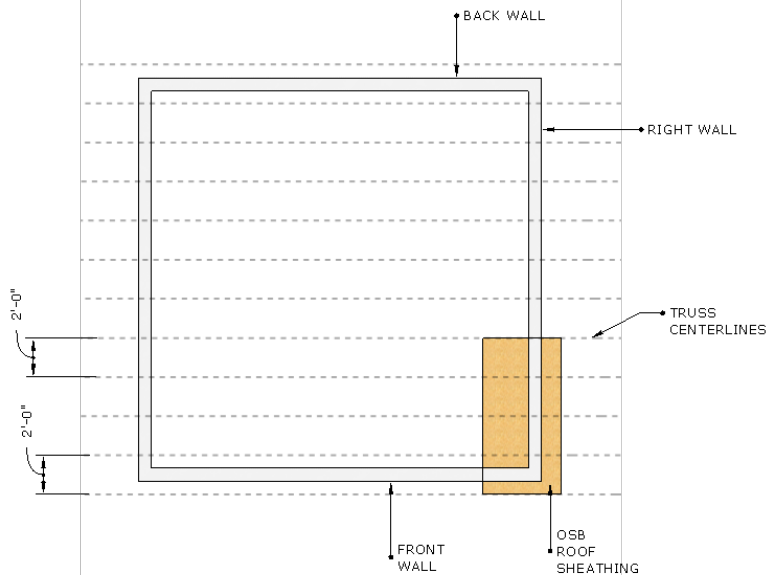
PHASE 8.5 TRUSS LOCATION LAYOUT

When installing the roof, many people face challenges when they install the OSB sheathing. They encounter problems with the end of the OSB not aligning with the trusses, making it impossible to nail the OSB to the truss. The problem is caused by the trusses not being parallel to each other, and perpendicular to the centerline of the trusses.

The following illustrations should help you to layout the trusses so that you don't encounter problems with the OSB later.

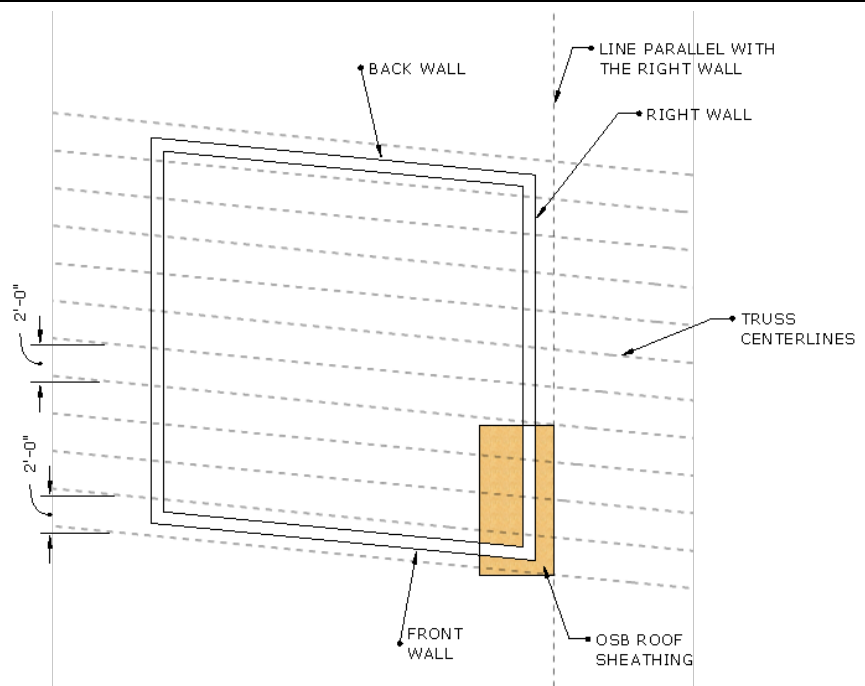
This illustration shows a top-down view of a perfectly square house. Note in the perfect world, the OSB sheet aligns perfectly with the truss centerlines. The OSB is parallel and perpendicular to the truss centerlines.

The house is rarely perfectly square.



This real world illustration is exaggerated so that it is easier to see the problem. The real world illustration is skewed so that the house is off square by about 16 inches.

In reality, you won't see a house out of square by this much, but you can encounter problems if the house is out of square by even one inch.



In order to establish a baseline for setting the trusses parallel to each other and perpendicular to the side walls, follow these instructions.

On the sill plate at the front of the house, measure the distance A to B and mark Point C midway between A and B.

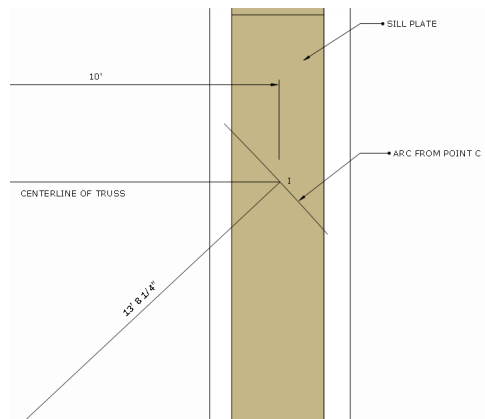
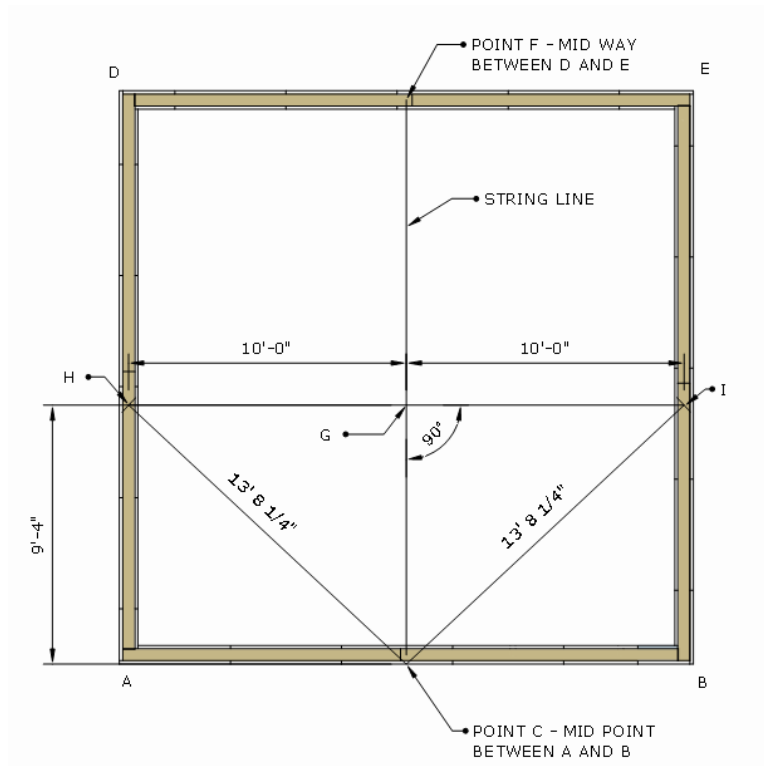
Measure D to E at the back of the house and mark Point F midway between.

Pound a 3" nail in the sill plate and run a string line between Points C and F.

Measure 13' 8 1/4" from Point C to each sill plate and draw an arc across the sill plate at that distance.

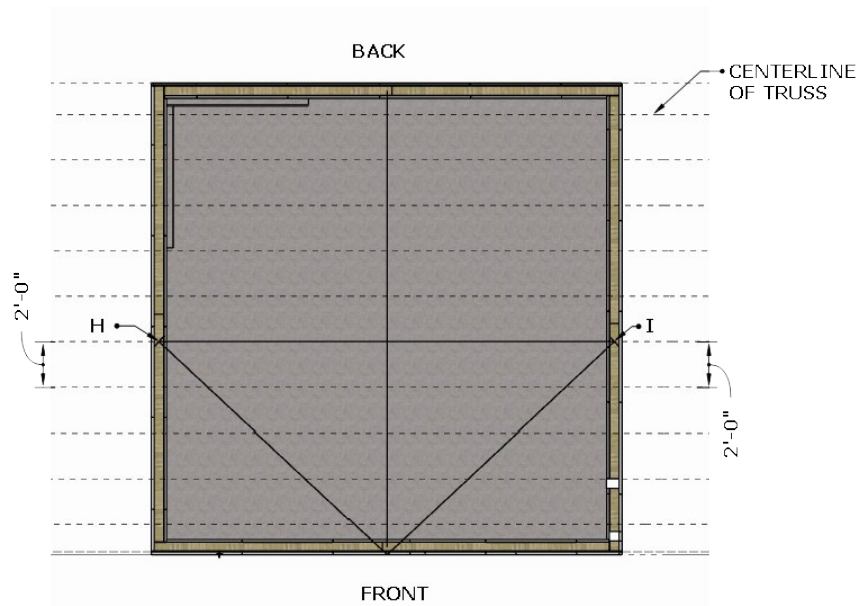
Measure 9' 4" from Point C along the string line to Point G. From Point G, measure 10' to the sill plate and make a mark where this distance intersects the arc that you drew.

Now you've established a baseline H to I that is perpendicular to C to F.



From Points H and I, mark out the rest of the truss locations at 2' (24") along each sill plate.

It's actually easier to layout the centerline of each truss and then mark both edges of the truss, since you won't be able to see the centerline mark once they are standing.



PHASE 8.6 HANG TRUSSES INSIDE HOUSE

Set the trusses on top of the walls as shown.

Set 5 trusses toward the front of the house and 5 toward the back.

Carry the trusses through the doorway, DO NOT lift them over the walls.

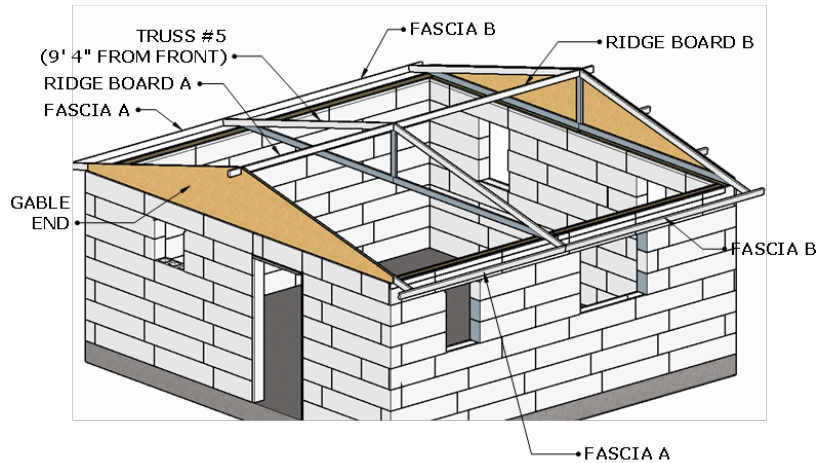


PHASE 8.7 MARK RIDGE AND FASCIA BOARDS

INSTALLATION FOR 20' 8" X 20' 8" HOUSE

The image to the right shows the various parts referred to in this phase.

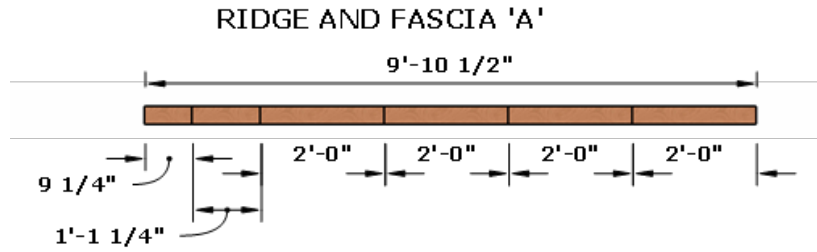
You'll mark 6 – 12' 2x4 that will serve as the ridge boards and fascia.



Mark 3 - 12' 2x4 as shown to the right.

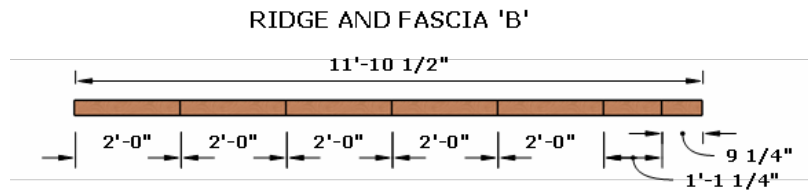
One will serve as the ridge board at the peak of the roof and the other are the fascia at the ends of the trusses on the sides.

It is helpful to mark the boards on all 4 sides.



Mark 3 - 12' 2x4 as shown to the right.

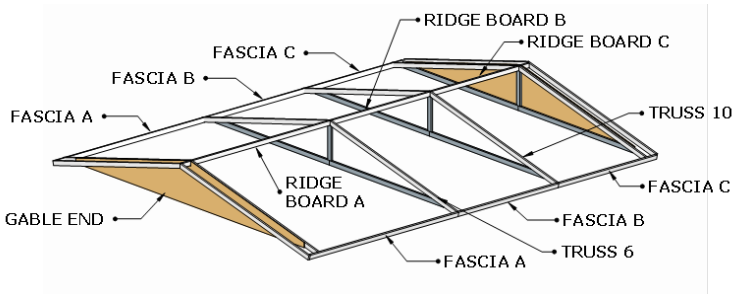
One will serve as the ridge board at the peak of the roof and the other are the fascia at the ends of the trusses on the sides.



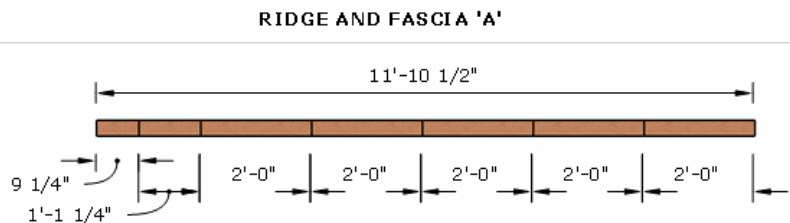
INSTALLATION FOR 20' 8" X 26' 8" HOUSE

The image to the right shows the various parts for the roof on the 20' 8" x 26' 8" house.

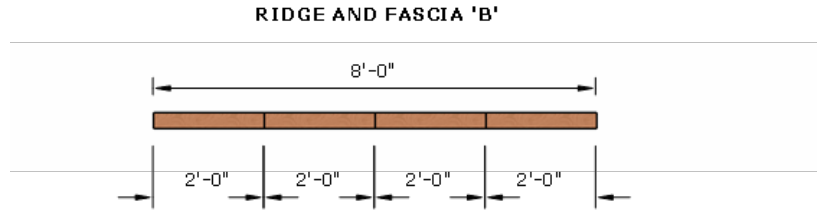
Mark the 9 pieces for the ridge board and fascia as indicated below.



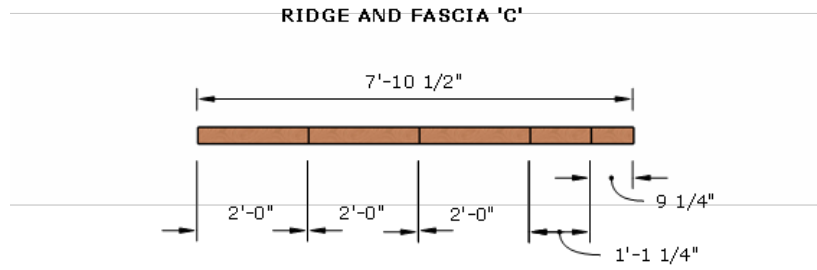
Using 12' 2x4, cut and mark 3 pieces for 'A' ridge and fascia boards.



Using 8' 2x4,
cut and mark
3 pieces for
the 'B' ridge
and fascia
boards.

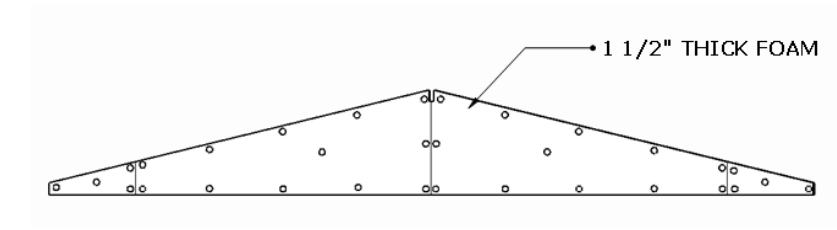


Using 81 2x4,
cut and mark
3 pieces for
the 'C' ridge
and fascia
boards.



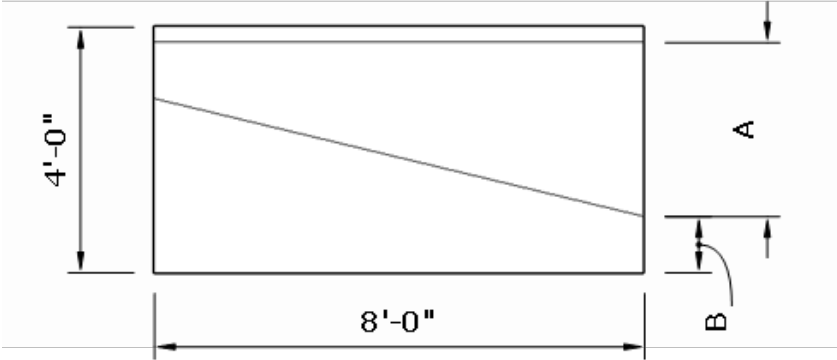
PHASE 8.9 INSTALL 1 1/2" FOAM ON GABLE ENDS

Prior to installing the roof trusses, install the 1 1/2" foam to the gable ends as shown.



You are provided with 3 4'x 8' sheets of 1 1/2" thick Styrofoam.

Cut the larger pieces per this cut sheet to ensure that you have enough to cover both gable ends.



Attach the foam to the gable end using screws with washers at the locations shown with small circles.

The screws should be at least 2" in length, preferably 2 1/2".

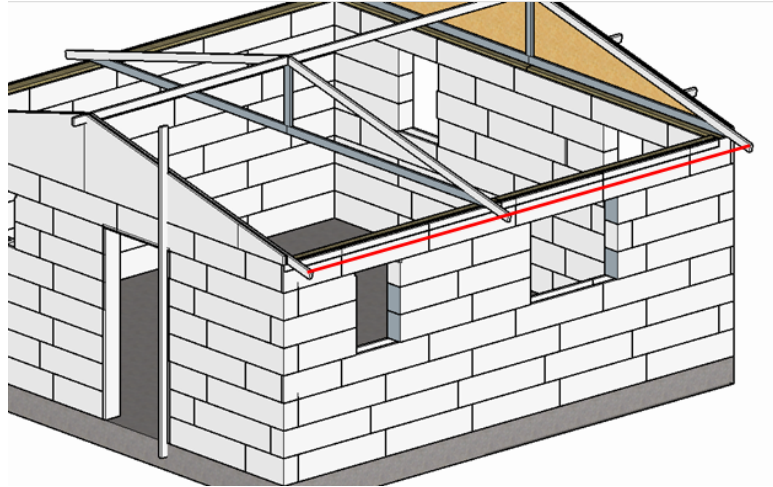


Using a nail at end of each gable end, attach a string line to the tail end of the gable ends as shown in red.

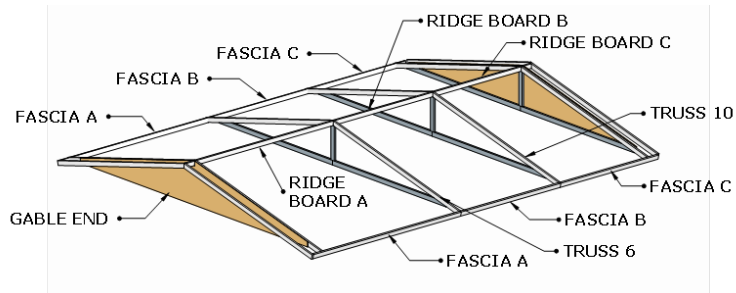
Aligning the end of the truss with this string line will ensure that the tail end of the trusses will be aligned with each other.

Stand the 5th truss and secure in place with the ridge board pieces A and B as shown, ensuring that the tail end is aligned with the string line.

Tack the 5th truss to the sill plate at the 2' center spacing marks made earlier.

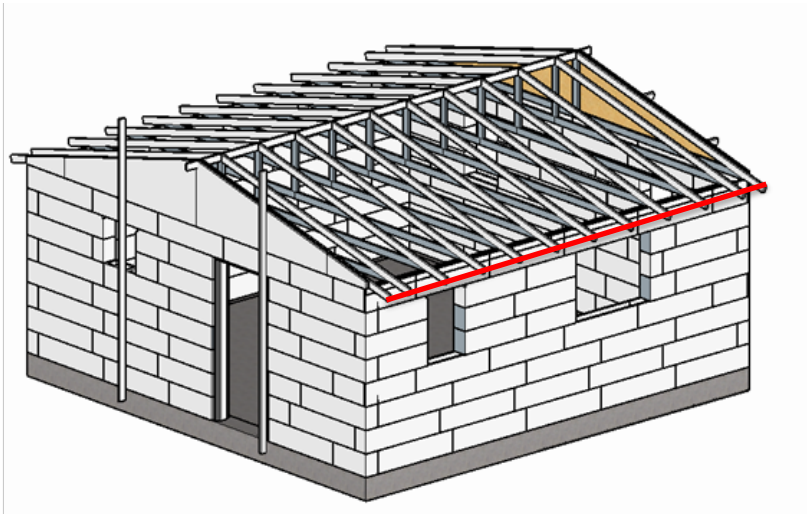


For the 20' 8" x 26' 8" house install the 6th and 10th trusses first.



Stand the remaining trusses, tacking them in place to the ridge board and sill plate, taking care to ensure that the center of each truss is aligned with the 2' center marks on the ridge board and sill plate.

Just tack the trusses to the sill plate at this time. In other words, don't pound the nails all the way in.



Run a string line between the tail ends of the gable ends on the other side of the house to determine if the truss tail ends are aligned.

If the trusses were constructed properly they should be in alignment with each other.

If the trusses are not in a straight line you will need to mark them and cut off any excess.

Run a string line to make the trusses all match the shortest truss.



Note how this team did not take care to ensure that the trusses were aligned, causing the roof overhang to be crooked.

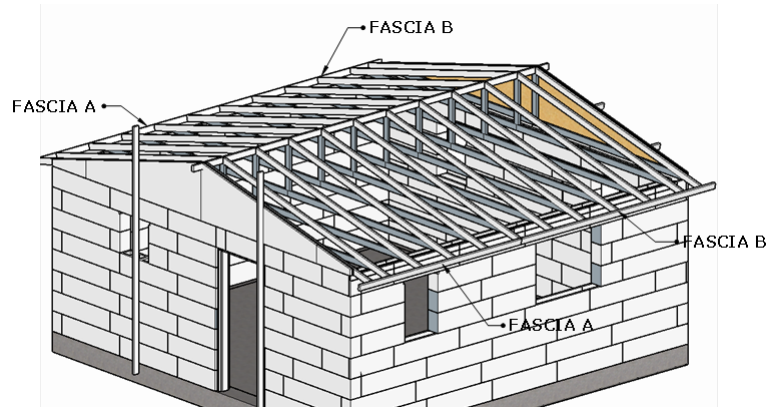
PHASE 8.11 INSTALL TRUSS END FASCIA

Install 2x4 fascia A and B on the end of the trusses as shown.

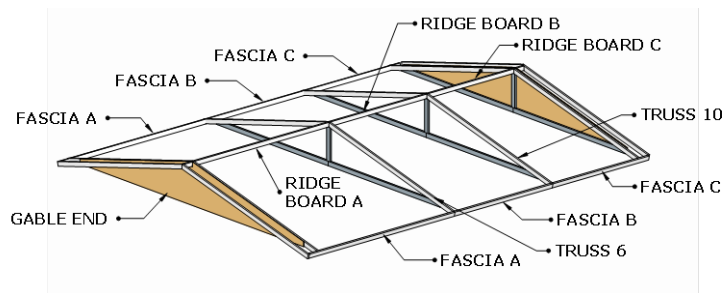
Ensure that the center of the trusses line up with the 2' center marks on the fascia.

If the trusses don't line up, pull the nails from the sill plate, align the truss on the fascia board and then tack to the sill plate again.

This will ensure correct spacing of the trusses.



Note the additional fascia piece for the 20' 8" x 26' 8" house.

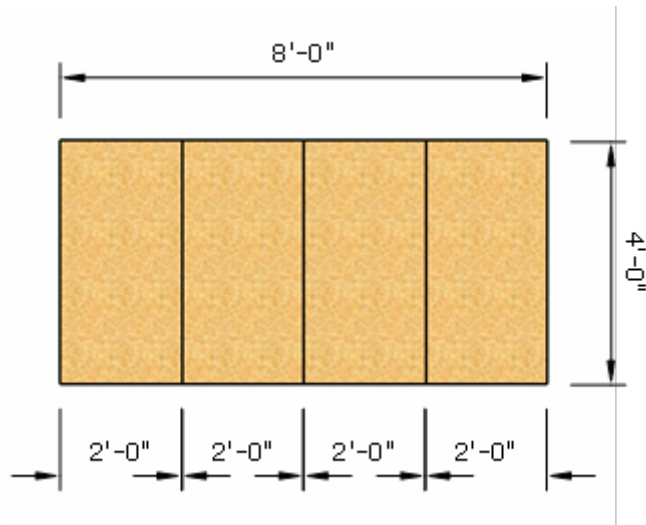


PHASE 8.12 INSTALL TRUSS BLOCKING

While the blocking is being installed the OSB sheets can be premarked for later installation.

Snap a chalk line across the sheets at 2' intervals as shown.

The lines will serve as guides for nailing.

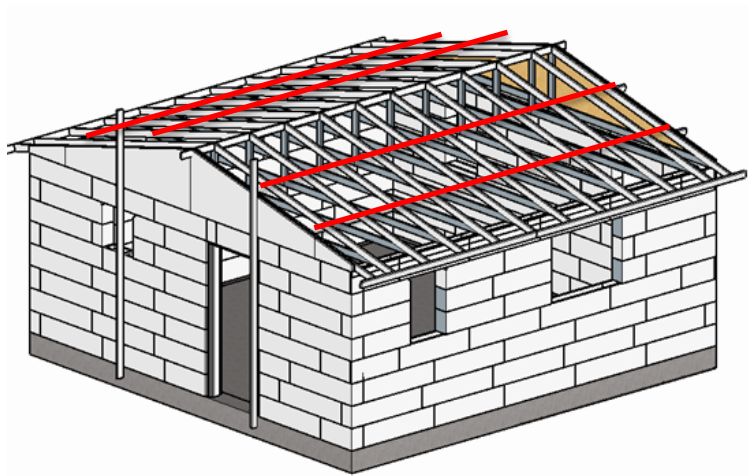


At the gable ends measure towards the roof peak 48" and 96" and strike chalk lines between the gable ends as shown.

Do this on both sides.

This will mark the location where you will install blocking between the trusses.

This will also mark the alignment of the roof sheathing.



Install the precut roof blocking pieces, centering them on the chalk lines that you made previously.

The pieces are 22 3/8" in length. The actual distance between trusses is 22 1/2" but the blocks are cut slightly short so that distance between trusses can be adjusted to fit the sheathing.

This is correct. The blocking is installed vertically between the trusses.

DO NOT STEP ON THE 2X4 BLOCKS. THEY WILL NOT SUPPORT YOUR WEIGHT!





THIS IS INCORRECT.
2x4 should not be
lying flat, and the 2x4
should be in a straight
line.



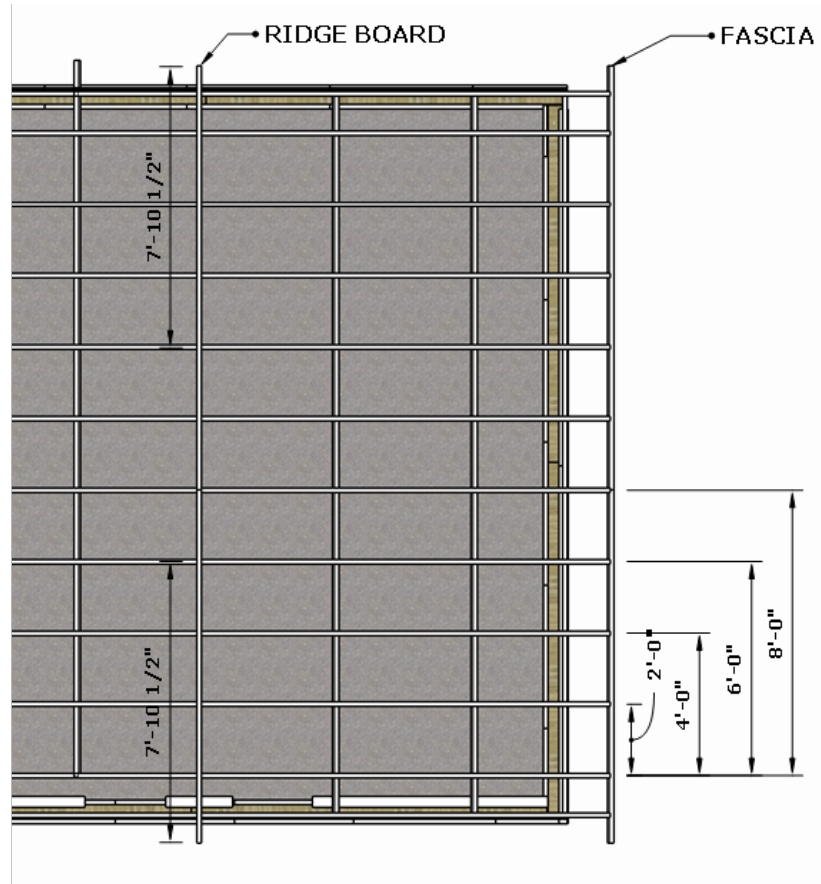
Once the blocks are installed, check to make sure that the distance between the centerline of the trusses is 24". Measure about half way between the fascia and the ridge board.

It is best to hook your tape measure at the first truss and then check that this distance at each truss is a 2' interval, and that any error is not accumulating over distance.

If one truss is slightly off, it's not that important, as long as the 2' measurement is falling on the truss.

Also check the distance from the 4th truss on each end to the end of the ridge board. The distance should be 7' 10 1/2".

If all these measurements are correct, your roof sheathing should fit properly.



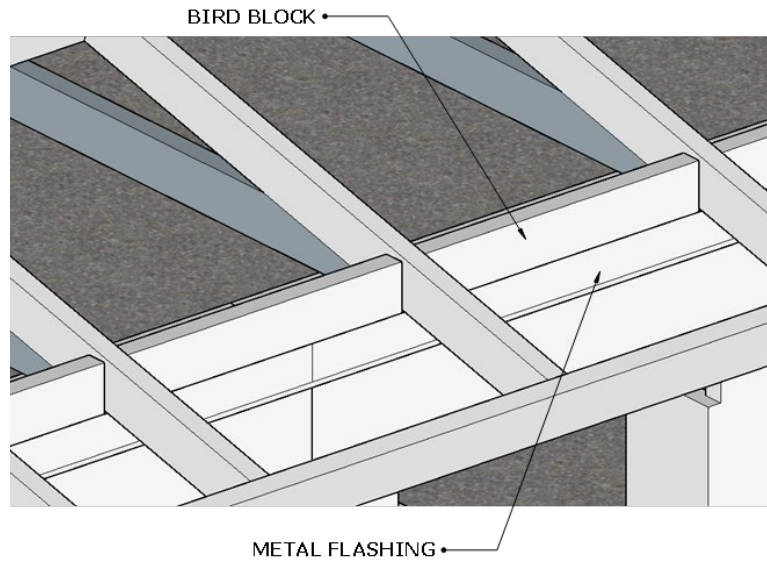
PHASE 8.13 INSTALL BIRD BLOCKING

The bird blocks have been cut and are approximately 22 ½" in length.

Install blocking between the trusses on top of the metal flashing on the side walls and nail in place with 3" nails.

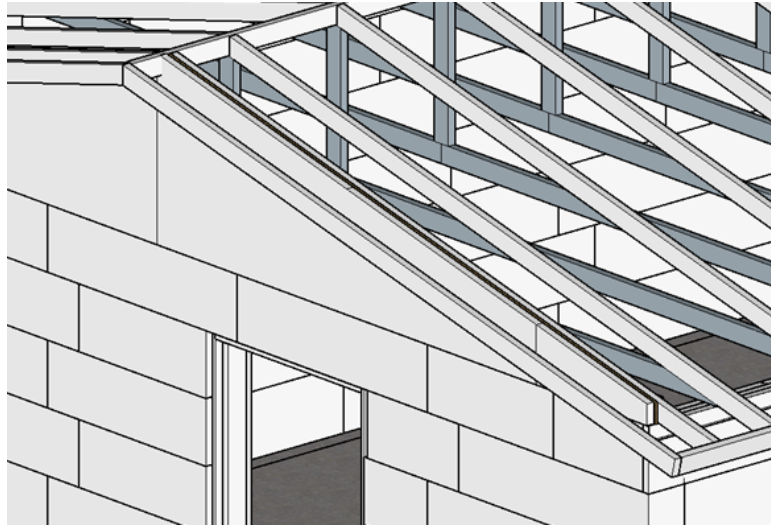
Some nails will have to be nailed in at an angle through the top of the truss and into the block.

The outside edge of the bird block should be aligned with the outside edge of the metal flashing, and sit on top of the metal flashing.

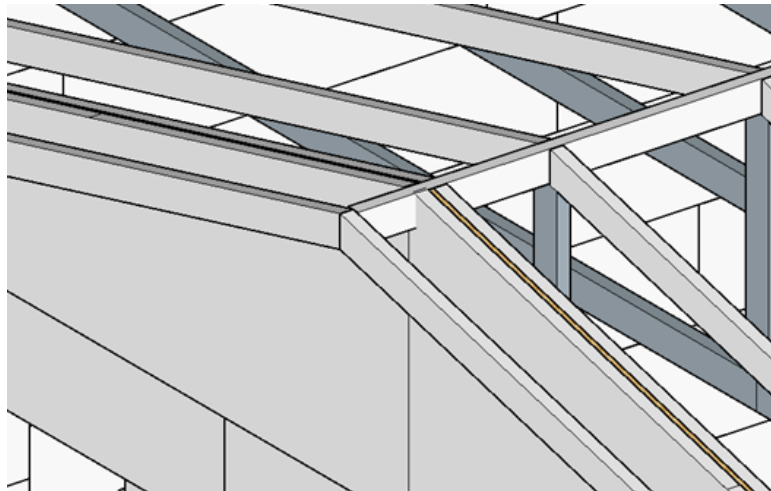


PHASE 8.14 INSTALL THE FASCIA ON THE FRONT AND BACK OF THE HOUSE

Install the fascia on the front and back of the house as shown.

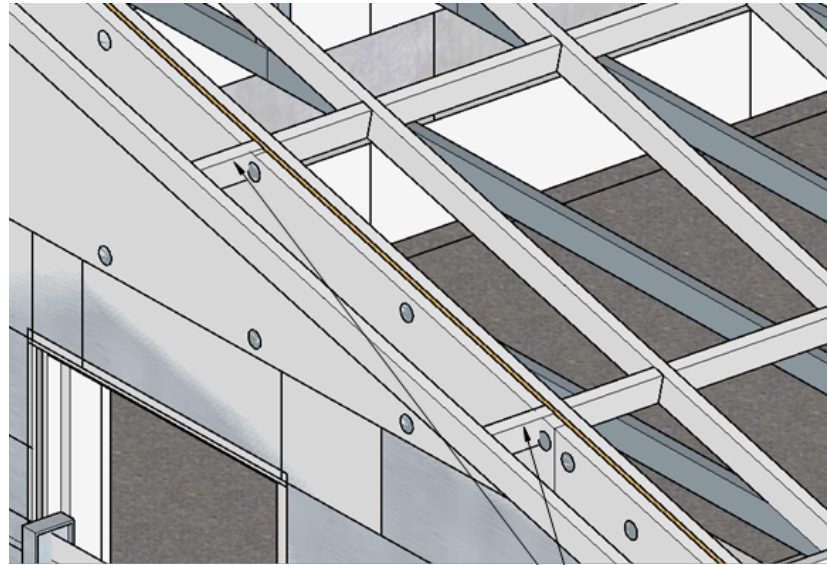


The fascia must be cut at a 15 degree angle at the top end in order to join in the center of the ridge board.



Install blocks between the gable end and the fascia board to finish out the blocking.

These blocks should be about 8" long. Measure the distance from the end of the ridge board to the face of the gable end and cut these blocks to that measurement.



THESE BLOCKS SHOULD BE 8" LONG

Use 12' 2x4 from ridge board to side fascia.

THIS PHOTO SHOWS ONE THING YOU SHOULDN'T DO.



PHASE 8.15 INSTALL H25 (HURRICANE) TIES

Locate the H25 ties from your materials.



On each truss, attach a tie from the side of the truss to the face of the sill plate using 2" nails. Nail through as many holes in the ties as possible.



PHASE 8.16 SHEATHING THE ROOF

EXTENSION LADDERS TEND TO SLIDE SIDeways, AND CAN EVEN BE BLOWN OVER BY THE WIND, CREATING A SAFETY HAZARD. ALWAYS PROVIDE A BRACE TO PREVENT THE LADDER FROM SLIDING SIDeways.



DO NOT STEP ON THE 2X4 BLOCKS. THEY WILL NOT SUPPORT YOUR WEIGHT!

Install ½" thick OSB (petatillo) on the roof.

Note the placement of the sheets in order to stagger the joints between rows.

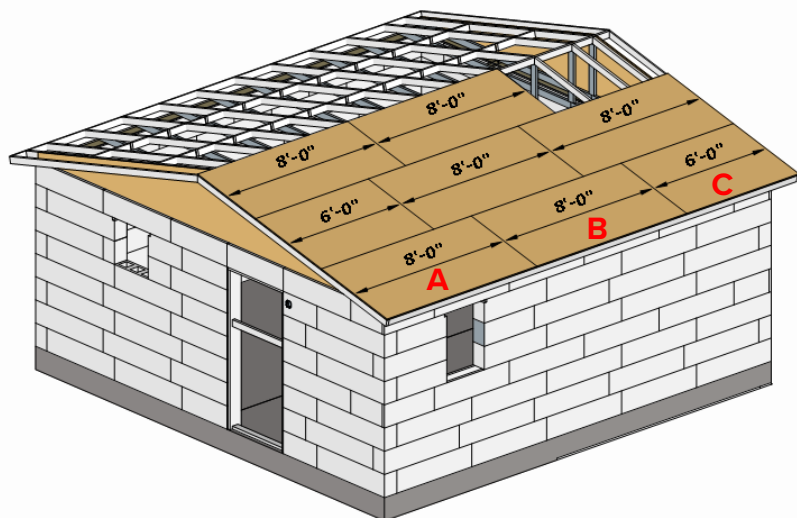
Start with sheet A, but don't start at the front of the house. Start by lining the far end of sheet A on the center of the truss.

Also line the top of the sheet along the chalk line that is 48" up from the fascia.

Tack in place with 3 or 4 nails along the top edge. Do the same with Sheet B and C to see how they line up with the trusses.

If everything fits, nail the plywood at 8" intervals along each truss using 2" nails.

On the 20' 8" x 26' 8" house you will run 3 8' sheets and then a 4' sheet for a total of a 28' roof.



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PHASE 8.17 INSTALL METAL SCREEN BETWEEN TRUSSES

From the inside of the house you will notice that there is a small ventilation space between the top of the bird block and the bottom of the roof OSB sheathing. In order to prevent insects from entering the attic space you will need to cover this space with metal screen.

Cut pieces of screen about 7" wide and the exact width between the trusses (typically 22 1/2"). Place the screen against the bird block, curve it up against the roof sheathing and staple it in place to the bird block. Ensure that there is no space where insects can pass through.



PHASE 8.18 INSTALL METAL DRIP EDGE



Before installing the metal drip edge, inspect the perimeter of the roof to ensure that no sheathing extends past the fascia. If it does you need to trim it off so the drip edge is even with the fascia.

Install the metal drip edge around the entire perimeter of the roof and nail in place using 2" nails. Nail only from the top. There is no need to nail the flashing on the side.



PHASE 8.19 INSTALL METAL FLASHING AT ROOF PEAK

There are three pieces of metal flashing which you will nail on the peak of the roof. This is the same flashing you used along the top of the walls and along the perimeter of the roof.

Using a hammer pound the metal flashing to flatten it and then fit it over the peak where the OSB joins together and nail it in place using 2" nails on every truss.



Nail the peak
flashing over the
edge flashing as
shown.



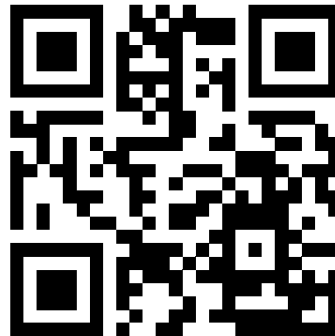
PHASE 9 INSTALL ROOF COATING

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. Extension ladders must be braced so they can't fall.
2. Apply a generous coating of elastomeric to the OSB.
3. Watch the video of the process for applying the mesh and coating.
4. Use the roller more like a squeegee, otherwise it's difficult to get the coating thick enough.
5. By the last coat, you should have used almost the entire supply of elastomeric.

Here is a link to a helpful video that will explain the steps in this phase:



PHASE 9.1 APPLY SEAL COAT TO ROOF SHEATHING

EXTENSION LADDERS
TEND TO SLIDE
SIDEWAYS, AND CAN
EVEN BE BLOWN OVER
BY THE WIND,
CREATING A SAFETY
HAZARD. ALWAYS
PROVIDE A BRACE TO
PREVENT THE LADDER
FROM SLIDING
SIDEWAYS.



Locate the 5 gallon
buckets of elastomeric
roof coating, extension
handles and paint
rollers with sleeves.



BE CAREFUL! THE ELASTOMERIC IS SLIPPERY, AND IF YOU STEP ON IT WHEN IT IS WET, YOU COULD SLIP AND FALL.

Be sure roof surface is completely clean and free of dirt.



Apply a coat of elastomeric coating to the sheathing.

APPLY A GENEROUS COAT TO COMPLETELY SEAL THE WOOD. THIS SHOULD USE BETWEEN 1 AND 1.5 BUCKETS OF COATING.

START ON ONE SIDE AND WORK BACK TOWARDS YOUR LADDER.



PLACE THE ROLLERS IN A BUCKET OF WATER OVERNIGHT TO KEEP THEM FROM DRYING OUT.

PHASE 9.2 APPLY FIBER MESH TO ROOF

Once the seal coat is dry you can proceed with the next layer of coating followed immediately by a layer of the cloth mesh.

Beginning at the bottom edge of the roof, apply a heavy coat of elastomeric and immediately roll the mesh over the elastomeric.

It's best to go in short stretches so that the elastomeric is wet.

At the same time, follow behind with another coat of elastomeric.

USE THE ROLLER MORE LIKE A SQUEEGEE, applying a generous amount of elastomeric, but not so much that the mesh is lumpy and wrinkled.

The goal is to stick the elastomeric down and create an impermeable seal WITHOUT creating bubbles in the mesh.

Here is a helpful video on applying the mesh.



When you get to the end of the roof, begin another row of mesh being sure to overlap the previous row by about 6”.

Stop before you reach the peak of the roof and do the other side.

Once you reach the peak on the second side, apply a layer over the roof peak.

NOTE: the photo shows a few wrinkles. Do your best to avoid wrinkles, but it may not be possible to completely avoid them.



THE FABRIC ON THE ROOF PICTURED HERE IS EXCESSIVELY WRINKLED AND SHOULD NOT HAVE BEEN LEFT LIKE THIS!



Allow the elastomeric to dry overnight and apply a final (4th) coat.

Prior to applying the final coat, look for any large wrinkles in the fabric. These can be cut with a utility knife to flatten the fabric and apply elastomeric to stick it down.

Once the repaired areas are dry, apply a coat to the entire roof.

PHASE 10 EXTERIOR WALL COATING

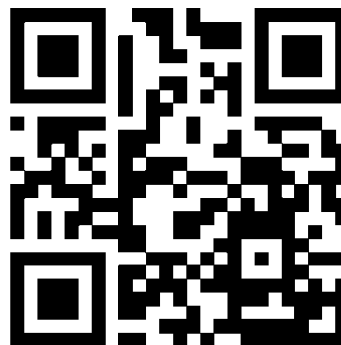
FOREMAN NOTES:

In this phase you will be applying a scratch coat of Cement Bond to fix imperfections, self adhesive mesh to strengthen the surface, and then 3 additional coats of Cement Bond. The Cement Bond coats should be thin, with the final coat being sponged to create a smooth finished surface.

These are some areas to take extra care during this Phase:

1. If the homeowner doesn't have a source of electricity, you will be provided with a small electric generator to operate the mixing drill. It is your responsibility to **CHECK THE OIL** in the generator prior to using it.
2. When mixing Cement Bond, take care to measure out 4 liters of water per bag. **DON'T ALLOW THE MATERIAL TO SET UP IN THE BUCKETS, KEEP MIXING IT ABOUT EVERY 10 MINUTES.**
3. **CLEAN THE BUCKETS AFTER EACH BATCH IS USED. IF YOU CONTINUE TO ADD NEW POWDER TO EXISTING MIX, THINGS WILL NOT GO WELL FOR YOU, MY FRIEND.**
4. **DON'T** skip the patch coat, please. You must smooth the wall and fill any large voids. These are typically at the corners. There is no need to fill all of the natural grooves in the Fastblocs.
5. Keep a wheelbarrow full of water and clean the tools regularly. Leave them in the water when not in use.
6. Keep the self-adhesive mesh out of the sun. The warmer it gets, the stickier it gets.
7. Apply the mesh so that it extends below the block wall about an inch over the concrete foundation. If it doesn't stick to the concrete, trim it off and just apply Cement Bond over the joint between the block and the foundation. Apply mesh to the foam on the gable ends also.
8. Apply the mesh over the window openings, and then trim it about 1" outside of the window opening prior to applying Cement Bond. No mesh should extend into the window opening.
9. Did we mention, **DON'T LET THE CEMENTBOND SET UP IN THE BUCKET. MIX IT EVERY 10 MINUTES.**

Here is a link to a helpful video that will explain the steps in this phase:



Successfully completing this phase and providing a nice looking finished exterior house is dependent on proper preparation of the Fastbloc surface. You want the Fastbloc to be relatively smooth with no major imperfections prior to starting.

For example, is there a nice transition from the Fastbloc to the foam on the gable ends? If the foam on the gable end sticks out past the Fastbloc wall, you'll want to trim or shave back the foam on the gable end to match the Fastbloc.

As well, at the corners of the house the lintel block typically has a patch on the end that isn't flush with the rest of the wall. You may need to add several thin layers of Cement Bond to those areas to build them up. Thin layers works better, because it dries faster. Trying to apply one thick layer will actually take longer to complete since the drying time will be extended exponentially.

Remember, we want this home to be something the family is proud of.

It's not necessary to apply the patch coat to every groove as was done in this photo.



PHASE 10.1 SMOOTH THE EXTERIOR WALL



WHY DO PEOPLE INSIST ON SKIPPING THIS STEP??

PLEASE DON'T BE THOSE PEOPLE. THIS IS IMPORTANT.

IF YOU CONTINUE WITHOUT DOING THIS STEP, YOU ARE NOT GOING TO BE ABLE TO DO A NICE JOB OF THE FINISH COATS ON THE HOUSE.

In this step you will ensure that the exterior wall of the house is flat with no bulges or deep holes.

- Work with a partner with one person standing near the corner of the house and looking along the edge of the house.
- Note any bulges in the wall and direct your partner to those locations.
- Using the tooth edge of a handsaw, your partner can shave off any bulges until the wall of the house is completely flat.
- You should only have to shave off small areas.

Here is a [video link](#) showing the technique for smoothing the wall.



PHASE 10.2 APPLY PATCH COAT OF CEMENTBOND TO EXTERIOR WALL

If you haven't completed Phase 10.1, go back and do it!

The purpose of the patch coat is to fill in any holes or imperfections at the corners of the house. Small holes, up to ½" in diameter do not require patching, as the mesh that you apply in the next step will easily cover small imperfections.

IMPORTANT: Cement Bond is not like typical cement or stucco. It is extremely difficult, if not impossible, to clean from tools once it has hardened. While working with the Cement Bond, scrape and clean your trowel and hawk as you work.

Keep a wheelbarrow with water in it close by, so that you can regularly clean the tools before continuing to work.

If Cement Bond is allowed to harden on the tools, the tools will be ruined. Hawks and trowels cost between \$20 and \$30 each, and if they aren't cleaned properly, they can only be used once.

Cement Bond is more like glue than stucco, so if you get it on your hands and don't wash it off rather quickly, you'll be living with it for a while.

DO NOT ALLOW CEMENT BOND TO DRY
KEEP A WHEELBARROW FILLED WITH WATER,
CLEAN TOOLS EVERY 30 MINUTES OR SUBMERGE
THEM IN WATER WHEN NOT IN USE.



Patch any areas that need to be repaired.

- You are provided with an electric mixer, extension cord and generator if power is not available. **Be careful when using the electric mixer and unplug it when not in use.**
- Mix the Cement Bond (in 40 lb paper sacks) in buckets, NOT IN WHEELBARROWS. Mixing in wheelbarrows causes the cement bond to dry too quickly. Remix the cement bond frequently to keep it thin and smooth.

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- Add 4 liters (slightly more than 1 gallon) of water to the bucket. Add half the bag of Cement Bond and mix thoroughly, adding Cement Bond until the entire bag has been added. Once you have added the correct amount of water, don't add more water. If the mixture begins to dry, mix it again.
- Scoop the cement bond with a triangular trowel onto a round cornered trowel and apply to the block with a round cornered trowel.
- Scrape Cement Bond from the inside of the bucket so avoid having a buildup of Cement Bond on the sides of the bucket.
- **DON'T ALLOW THE CEMENT BOND TO DRY ON THE TOOLS. CEMENT BOND IS GLUE AND CAN'T BE WASHED OFF EASILY.**

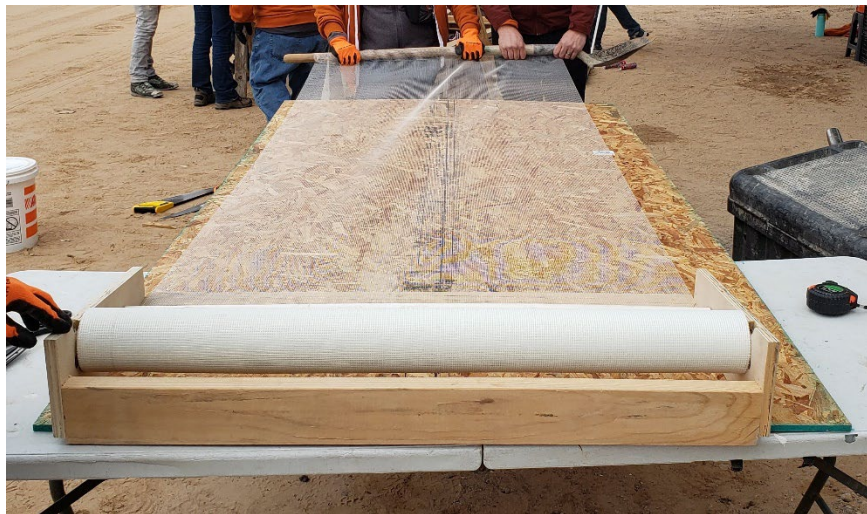
PHASE 10.3 APPLY EXTERIOR FIBER MESH

HAVING COMPLETED THE PREVIOUS PHASE, in this phase you will apply the self-adhesive fiber mesh. You have two types of fiber mesh on the job site. One is a cloth mesh for the roof and the other is a self-adhesive mesh for the walls. The mesh is packaged in a clear plastic wrap.

Be sure you use the correct mesh. The wall mesh is very sticky.

Use the dispenser to roll out the mesh, typically in 96" (8') lengths. Wrap the end of the mesh around a roller handle, broom handle or shovel and pull with even pressure.

THE MESH GETS VERY STICKY IN THE SUNSHINE, SO PLACE IT IN THE SHADE IF POSSIBLE.



When applying the mesh to the wall, it works best to start the roll at the top of the wall, at the metal flashing, roll the mesh down the wall and then cut it off at the bottom of the wall at the base of the Styrofoam block.

The mesh should be wrapped around the corners of the house.

The mesh does not have to overlap but leave as small a gap as possible between rows.

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Apply the mesh up to the window opening, stopping just before the window opening. There is no need to wrap the mesh inside the window opening.

Use a dry concrete trowel to flatten the mesh and ensure that it is stuck to the wall.

Only apply as much fiber mesh so that you are able to cover it with Cement Bond (next phase) the same day.

You should find that the window opening has already been grouted with concrete as shown here.

Apply the mesh up to about 1" from the window opening.



PHASE 10.4 APPLY CEMENT BOND TO EXTERIOR WALL

Refer to **Phase 10.2** for information on mixing Cement Bond.

- You will apply a thin layer of Cement Bond over the fiber mesh, just enough to cover the mesh. It is fine if there are small areas where the mesh is visible. This will be covered with a second coating of Cement Bond.
- Scoop the cement bond with a triangular trowel onto a round cornered trowel and apply to the block with a round cornered trowel.
- Work on one wall at a time working from top to bottom.
- Hold the trowel at a shallow enough angle that you are not scraping the Cement Bond off of the Fastblocs.
- Work in small sections (about 3' x 4') with people not too close together.

This [video](#) demonstrates one technique for applying the cement bond over the mesh.

The video is shot on the interior of the house, but the technique is the same.



You can't see the mesh in this video as it is white and blends in with the Fastblocs.

PHASE 10.5 APPLY SECOND EXTERIOR CEMENT BOND COAT

After the first coat has dried, apply a second coat to the entire exterior of the house. This coat should be troweled smooth, but does not have to be sponge finished because you will sponge the next coat.

If there are any bubbles in the fiber mesh they can be cut and flattened using a utility knife.

PHASE 10.6 APPLY THIRD (FINAL) EXTERIOR CEMENT BOND COAT

The third, or final coat of Cement Bond will be the finished surface of the house, and it will be painted later.

For that reason, it's important that you take your time and make it as smooth as possible.

We know that you'll want to do this in such a manner that the family will be proud of the final product.



An Example of a Beautiful Finish

PHASE 11 ELECTRICAL FEED

This phase is completed by 1MISSION staff.

PHASE 12 THIS PHASE INTENTIONALLY LEFT BLANK

PHASE 13 INTERIOR WALL FRAMING

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. Follow the floor layout for the house model that the family has chosen.
2. The metal stud framing material is sharp, so be careful when handling it.
3. You will be provided with a laser level to assist in marking the ceiling channel locations.
4. Make sure that the studs are laid out on 2' centers so that the sheetrock can be attached properly.
5. Once the floor channel location is marked, a 1MISSION team member fasten the channel to the floor with a Ramset gun.
6. Make sure that the studs framing the door openings are plumbed using the 4' level.
7. Interior bedroom door rough openings are 32 ½" x 80 ½".
8. Interior bathroom door rough opening is 26 ½" x 80 ½".

You were provided with the name of the house model that your family selected.

Print the appropriate pages for your house model from the Appendix to this manual.

20'8" x 20'8" Models

[Puebla House](#)

[Sierra House](#)

20'8" x 26'8" Models

[Cortez House](#)

[Pinacate House](#)

PHASE 13.1 INSTALL FLOOR AND CEILING METAL CHANNEL

In this phase you will install the metal channel on the floor and ceiling for the interior walls.

The channel is nailed to the floor using concrete nails and attached to the roof trusses with screws.

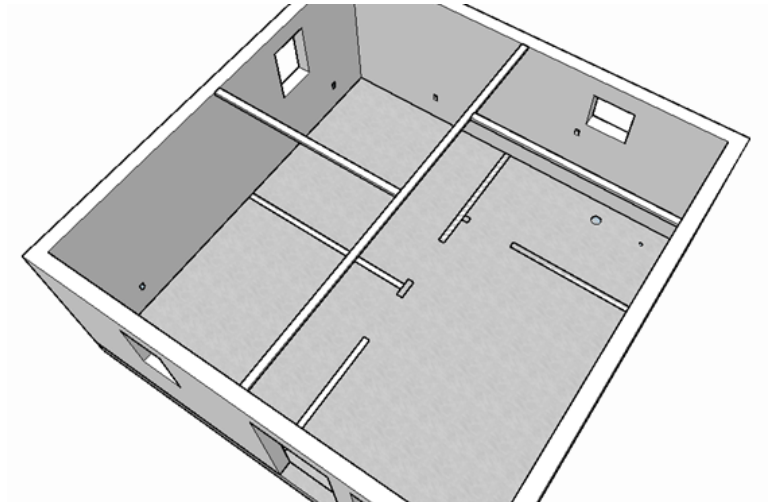
A 1MISSION team member will nail the channel with a Ramset gun.

The channel holds the wall studs in place as shown.



Refer to the plan set for your house model for wall location details.

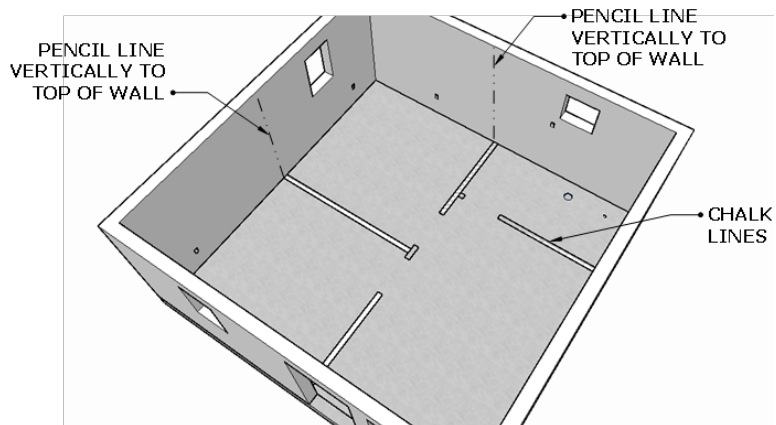
The bottom channel is cut for door openings, whereas the ceiling channel runs from wall to wall.



On the floor, measure and chalk line each side of where the walls will be located.

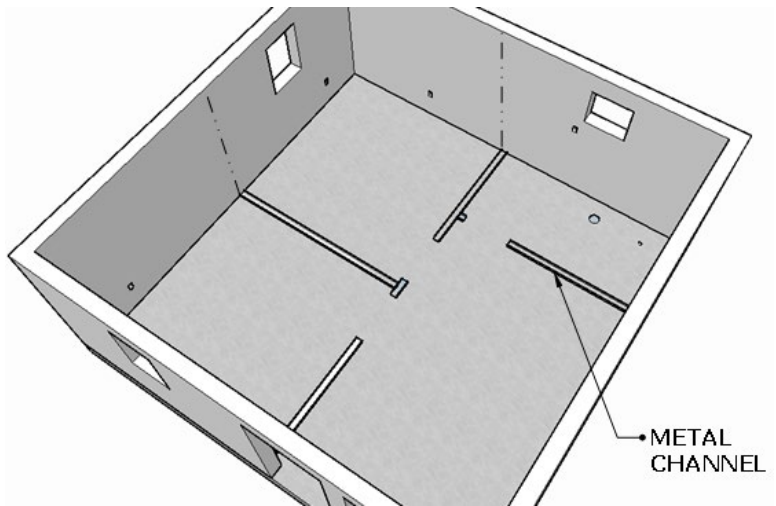
MARKING BOTH SIDES OF THE CHANNEL HELPS TO ENSURE EVERYTHING IS LINED UP PERFECTLY.

The channel is 3 5/8" wide.



Install the metal channel on the floor on the chalk lines.

Cut the channel for the door openings as indicated on the house model plan set.



You can temporarily place a scrap 2x4 in the channel to protect the sharp corners at the door openings.

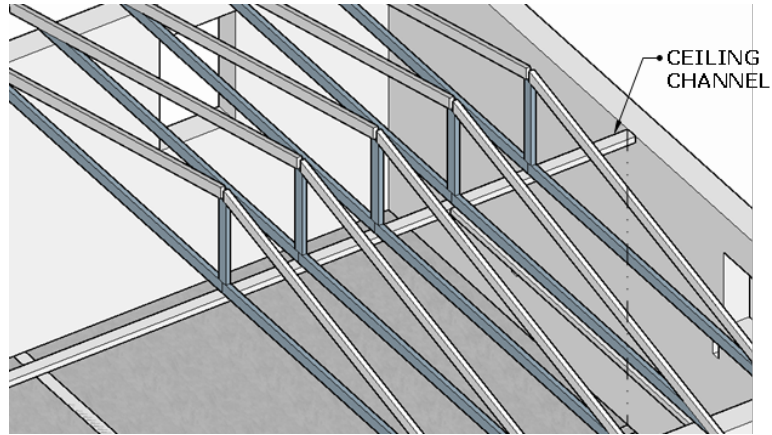


Use the provided laser level to mark the location of the ceiling channel.

Install the center wall ceiling channel to the trusses using 1 ¼" screws as shown.

The ceiling channel must be directly above the floor channel, but runs the full length.

There are no cut outs for the door locations.

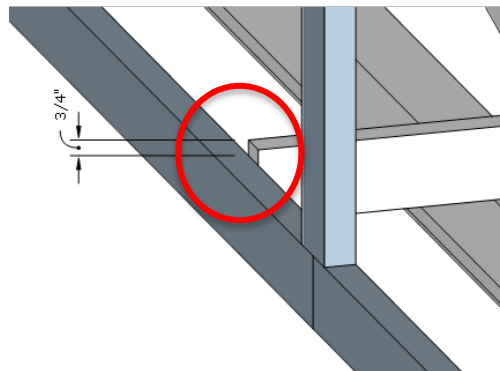
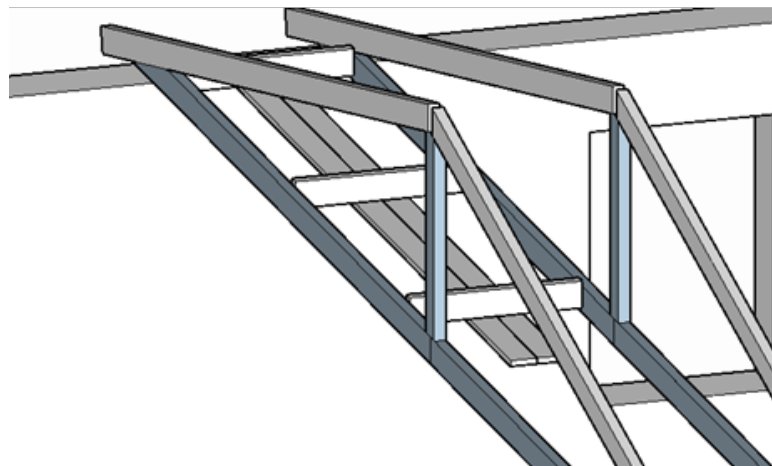


Install 2x4 blocking between the trusses where the bedroom and bathroom walls run perpendicular to the trusses. See next sketch for location of the blocks.

Install two 10' long 1x4 furring strips under the blocking as show. The strips should be centered where the wall will be.

The ceiling channel will be screwed to the 1x4 furring strip.

THE BOTTOM OF THE 1X4 MUST BE FLUSH WITH THE BOTTOM OF THE TRUSS.



Here is a little trick to ensure that the 1x4 is installed at the correct height.

Use a straight edge, such as the 4' level, to ensure that the 1x4 is aligned with the bottom of the trusses.



This is a clear example of how the 2x4 blocking sits $\frac{3}{4}$ " above the bottom of the truss, the 1x4 is attached below, and the metal channel is fastened underneath.

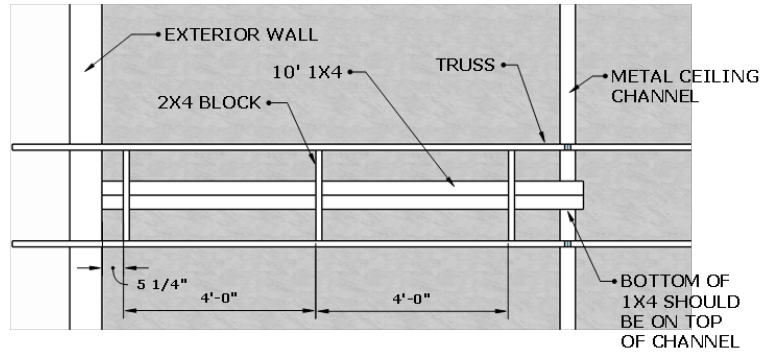


The top of the metal channel is level with the bottom of the trusses.

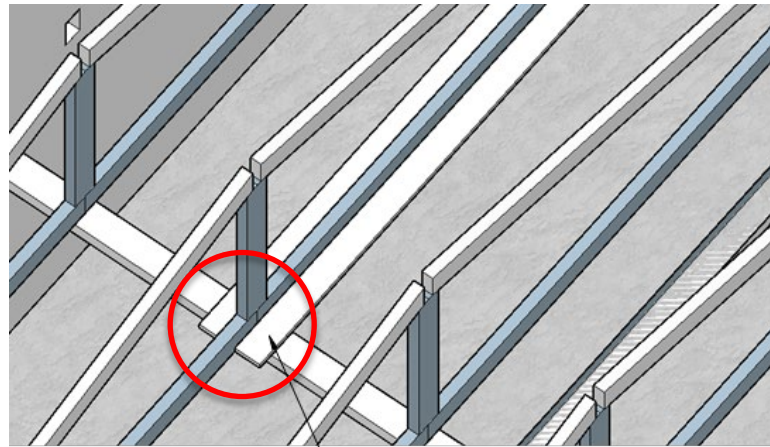


Plan (top) view of location of truss blocking and 1x4 furring strip.

Location varies by house plan.



Install two 10' lengths of 1x4 on top of the metal channel, one of each side of the truss. Attached from the bottom with 1 1/4" screws.



1x4 STRIP

PHASE 13.2 MARK WALL STUD LOCATIONS ON FLOOR

Refer to your house model floor plan for actual wall locations.

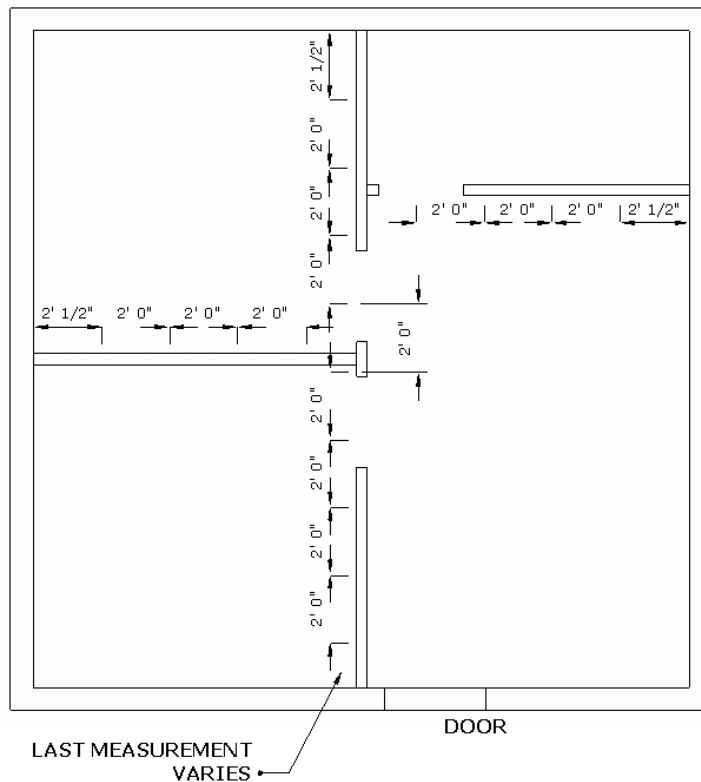
Along each floor channel mark the centerline of the vertical stud locations.

Mark EVERY 2' interval, even in the doorways.

START ½" FROM THE EXTERIOR WALLS TO ALLOW FOR SHEETROCK INSTALLATION ON THE EXTERIOR WALLS.

These marks are the same for every house model to ensure the easiest installation of sheetrock later.

WHEN YOU INSTALL SHEETROCK LATER, START YOUR SHEETS FROM THE EXTERIOR AND RUN IN THE SAME DIRECTION AS YOUR MEASUREMENTS.



PHASE 13.3 INSTALL METAL AND WOOD STUDS

In this step you will install the metal wall studs.

Both sides and the top of the door openings use wood 2x4.

Bedroom doors rough opening is 32 1/2" x 80 1/2".

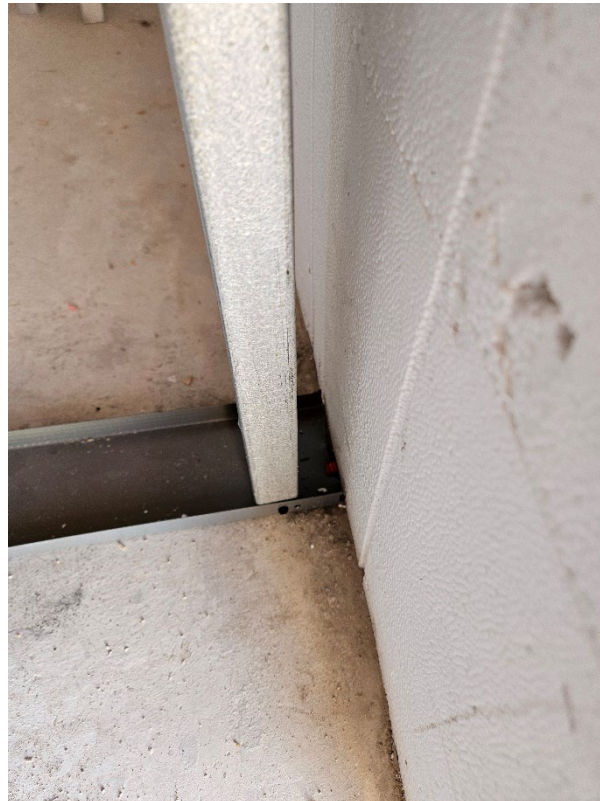
Bathroom door is 26 1/2" x 80 1/2".



Cut and install a metal stud at each location marked along the metal channel. Remember the marks are the centerline of each stud.

Use the short self-tapping screws, one screw on each side through the channel.

Note the first stud starts 1/2" from the exterior wall, with the open side facing into the room.



Note the framing of the door openings is with wood 2x4.

The cripple stud above the door is not necessarily in the center, rather it falls on the normal 2' interval spacing.



The door openings are framed with wood 2x4 and the header above the door is wood 2x4 as well.

Bedroom doors rough opening is 32 1/2" x 80 1/2".

Bathroom door is 26 1/2" x 80 1/2".



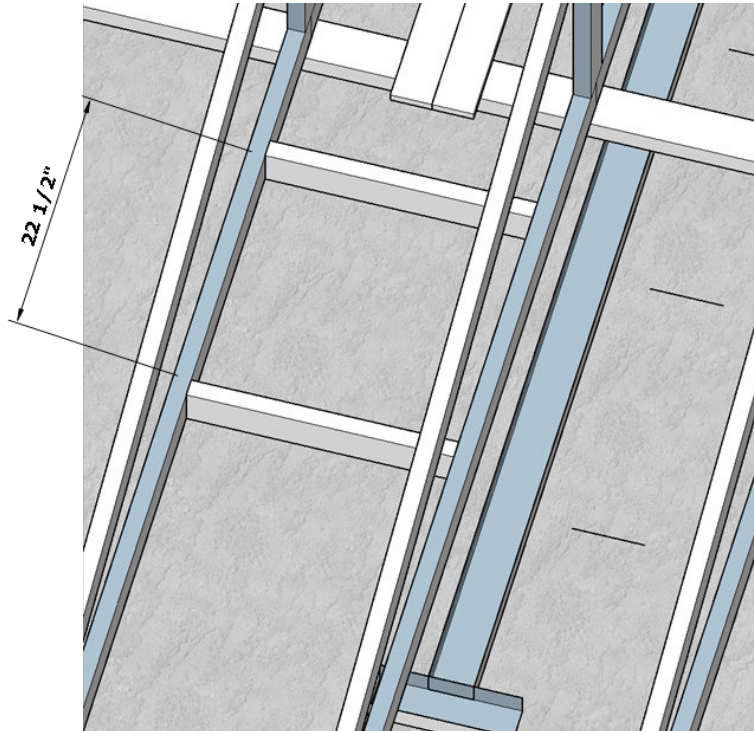
Where the interior walls meet, there should be a stud place so that the sheetrock can be attached in the corners.



If the 2' stud spacing falls within a doorway, you need to add a 2x4 at above the door at the 2' interval as shown.



Frame a 22 1/2" attic access opening near the center wall in either the living room or one of the bedrooms. The home owner can choose the preferred location.



PHASE 14 ELECTRICAL INSTALLATION

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. Allow for ½” sheetrock thickness when setting the light switch box.
2. Make sure to drill a hole in the metal channel and drop the wire down through the hole and through the top of the metal light switch box.

PHASE 14.1 INSTALL LIGHT SWITCH BOXES

The electric wiring has been installed by the 1MISSION staff, but you will still need to install a few light switches and run the wires to them.

In each room, find the wire that comes out of the electrical box and doesn't run to the breaker panel or to any outlets. This is the wire that goes to the light switch box.

Here are a few other pointers for installing the electrical boxes.

Drill a ½" hole through the top channel and pass the wire for the light switch down through the hole.



Install the light switch box between 8 and 10 inches from the door opening in each room, on the side where the door knob will be.



The switch is mounted on the same wall as the door, on the opposite side of where the door will swing. The door typically swings against the perpendicular wall.



Install the switch box 48" above the floor.



The box should be installed 1/2" out from the framing to allow for the installation of the 1/2" thick sheetrock.



PHASE 15 CEILING INSULATION AND SHEETROCK

FOREMAN NOTES:

These are some areas to take extra care during this Phase:

1. Use a bar of hand soap to lubricate long screws. Really...it works.
2. The ceiling insulation only needs 5 screws or nails to hold it in place.
3. Run sheets perpendicular to trusses on the ceiling.
4. Foam doesn't have to end on trusses. Sheetrock does.
5. Watch the sheetrock video.
6. Install the ceiling first. Install the sheetrock vertically to the Fastbloc walls. On the framed walls, install the top row of sheetrock horizontally, and finally the bottom row. Cut it ½" short so that it isn't touching the floor.



PLEASE DON'T STACK SHEETROCK
ON THE WORKBENCHES.
THEY ARE NOT DESIGNED TO HOLD THIS MUCH WEIGHT.
IF ONE BREAKS SOMEONE WILL GET HURT!

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PHASE 15.1 INSTALL CEILING INSULATION



NOTE: Prior to installing ceiling foam insulation, check that

the metal screen has been installed to cover the ventilation space between the trusses above the bird block as shown in this photo. This screen will prevent insects from entering the attic space. This is normally done in Phase 8, but may not have been completed.

The screen is installed on the inside of the house to cover the small ventilation space between the top of the bird block and the bottom of the roof OSB sheathing. This prevents insects from entering the attic space.

Cut pieces of screen about 7" high by the exact width between the trusses (typically 21 1/2" to 22 1/2".) Place the screen against the bird block, curve it up against the roof sheathing and staple it in place to the bird block. Ensure that there is no space where insects can pass through.



Install the ceiling foam
3" nails with the
provided metal
washers. You can also
use 4" screws if
preferred.

You only need to
secure it in about 5
places since the
sheetrock that is
installed below it will
be secured with
screws.

Put one nail (or screw)
and washer about 6
inches from each
corner and one in the
center. If you put the
nail and washer too
close to the corner,
you will hit it when
attaching the
sheetrock later.



You only need to
secure the sheets in 4
or 5 places since the
sheetrock will be
installed later and will
hold the foam in place.

Don't put the washers
too close to the edge
or they may be in the
way when you attach
the sheetrock.



If using screws,
lubricate them with
soap (jabón) from a
bar of soap. They will
screw in much easier.

You can buy this at
any local store.



PHASE 15.2 INSTALL CEILING SHEETROCK

This is a good [video](#) on the basics of cutting and installing sheetrock if you've never done it.



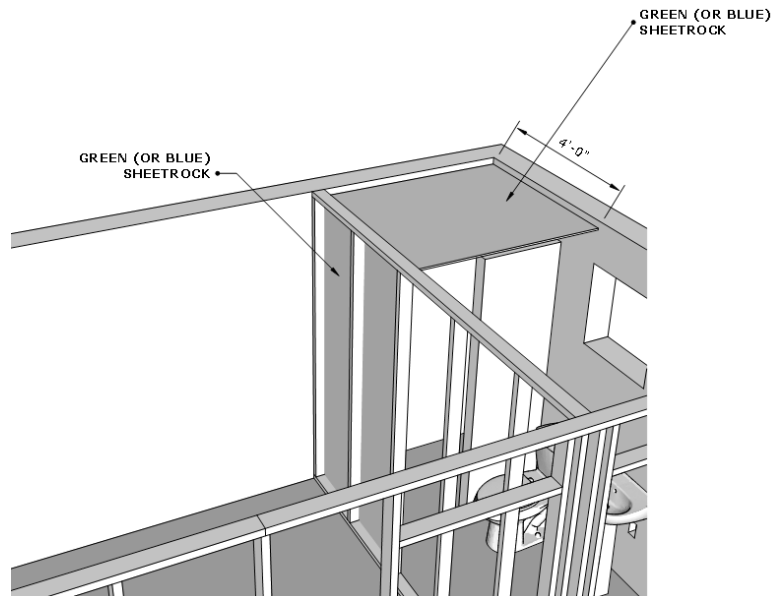
Lubricating the screws with soap (jabón) from a bar of soap will make the screws go in much easier.

You can buy this at any local store.



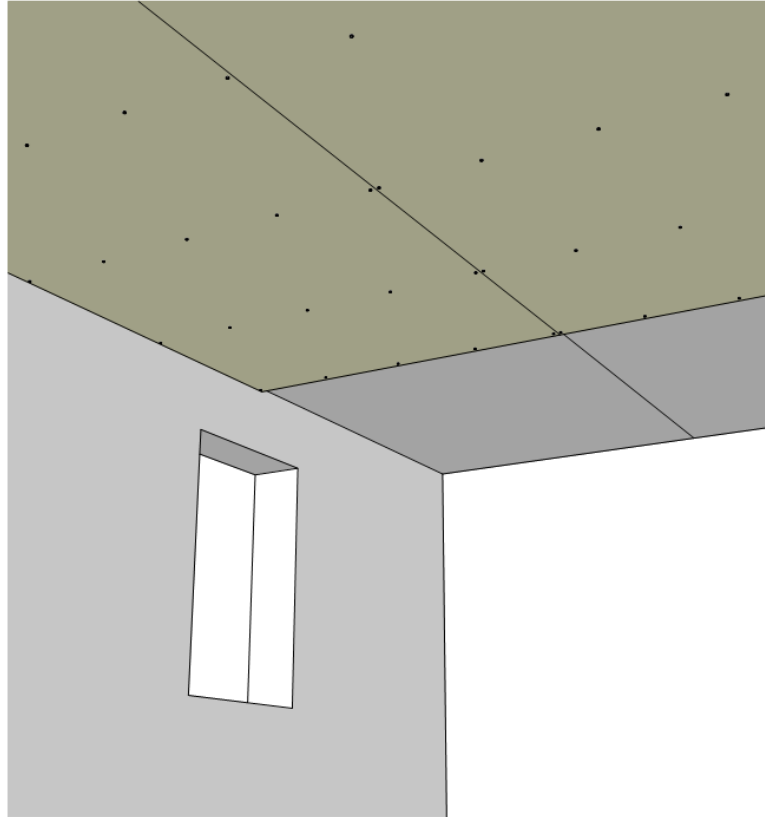
Install sheetrock in the shower area using the 4 provided blue or green sheets as shown.

Use as much of the blue or green board as possible in the bathroom.



Install the ceiling sheetrock perpendicular to the trusses in the same direction as the ceiling foam.

However, the ceiling sheetrock **MUST** be cut to end on a truss so that the end of the sheet can be properly secured.



PHASE 15.3 INSTALL SHEETROCK OVER FASTBLOC WALLS

Install sheetrock on the Fastbloc walls. The sheetrock will be installed vertically with the factory edge up against the ceiling sheetrock, and the cut edge towards the floor. The sheets will be glued to the Fastbloc using a coat of Redi-mix over the entire sheet.

Apply Redi-mix from the box directly to the back of the sheetrock. You'll use the provided trowels, first applying the Redi-mix with the flat edge of the trowel, using pressure to ensure the Redi-mix adheres to the sheetrock, then using the notched side to remove any excess.



The Redi-mix should look something like this when is spread correctly.

THE REDI-MIX MAKES THE SHEET HEAVY, AND IT'S POSSIBLE FOR IT TO BREAK UNDER THE WEIGHT. USE CAUTION WHEN LIFTING IT.



Once the back of the sheet is covered with an even layer of Redi-mix, lift the sheet and press it against the wall.

Use scrap pieces of wood or sheetrock to support the bottom of the sheet.

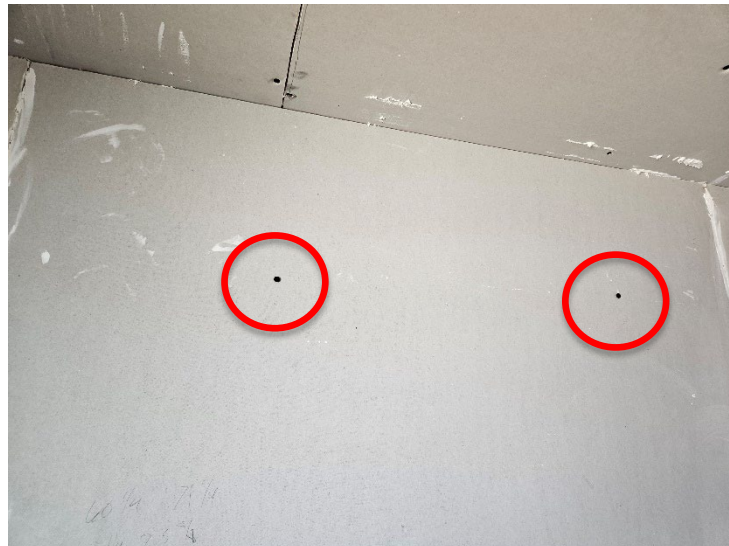


Use 3 1/2" screws to help hold the sheetrock against the Fastbloc, so it doesn't come loose and fall off.

You'll have to install the screws so that they are in the manufactured vertical score marks in the Fastbloc. At these score marks the Fastbloc is 8" thick so the screws will go all the way in.

INSTALL THE SCREWS ON A DOWNWARD ANGLE, SO THE SHEET GRAVITY PULLS THE SHEET TOWARD THE WALL. DON'T OVERTIGHTEN THE SCREWS. JUST SCREW THEM IN GENTLY TO THE POINT WHERE THEY HOLD THE SHEETROCK.

The screws are only temporary and will be removed after the glue dries.



PHASE 15.4 INSTALL INTERIOR WALL SHEETROCK

This is a good [video](#) on the basics of cutting and installing sheetrock if you've never done it.



Ensure that the electrical boxes and electrical wiring have been installed on the interior walls prior to installing the sheetrock.

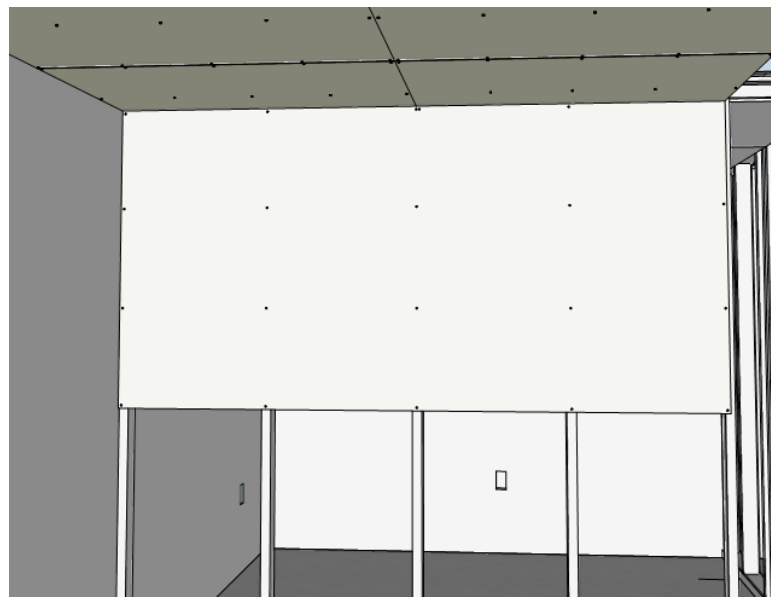


Install the sheetrock horizontally with the sheets being pushed up against the ceiling sheetrock.

Install the top section first and then the lower section after. Cut the lower section so that it sits about 1/2" above the floor.

Fasten the sheetrock with 1 1/2" screws at 16" intervals along the wall studs.

The sheet MUST end on the centerline of a stud.





Note how the paper is torn along the cut?

This is from using a dull knife.

Take a few minutes to put a fresh blade the utility knife.



PHASE 16 PREHANG EXTERIOR DOOR

This phase is completed by 1MISSION staff.

PHASE 17 INSTALL EXTERIOR DOOR AND WINDOWS

For this Phase of construction, you are provided with a small tool box with the following tools and supplies. Please use each tool in the proper manner and return the entire tool kit to basecamp when you have finished using it.

- 1 Tool Box



- 1 Wood counter sink bit
(Only drill the door frame
with this bit)



- 3 Drywall bits



- 1 1/2" metal drill bit



- 1 11/32" metal drill bit



- 2 1/4" concrete bit



- 2 #2 phillips head bit
- 1 Torpedo level

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- 1 Wood chisel
- 26 Plastic wall anchors
- 26 #10 stainless screws

PHASE 17.1 ~~INSTALL DOOR FRAME STOP~~

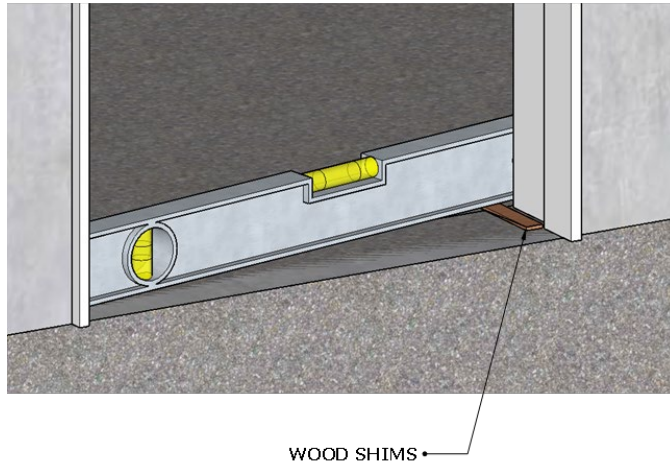
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PHASE 17.2 INSTALL EXTERIOR DOOR

Check with the family if they want the door flush with the inside or outside wall.

Use a level to check that the floor is level across the door opening.

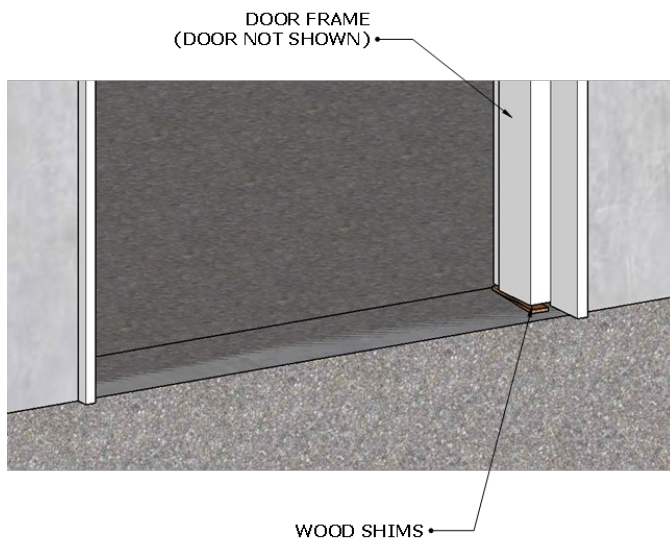
If it's not, place wood shims on one side so that it is level. You just need shims right next to the door opening.



Drill 1/8" holes through the door frame on the outside of the door midway between the door and outside of the frame. After the door frame is plumb, you'll run screws through these holes.

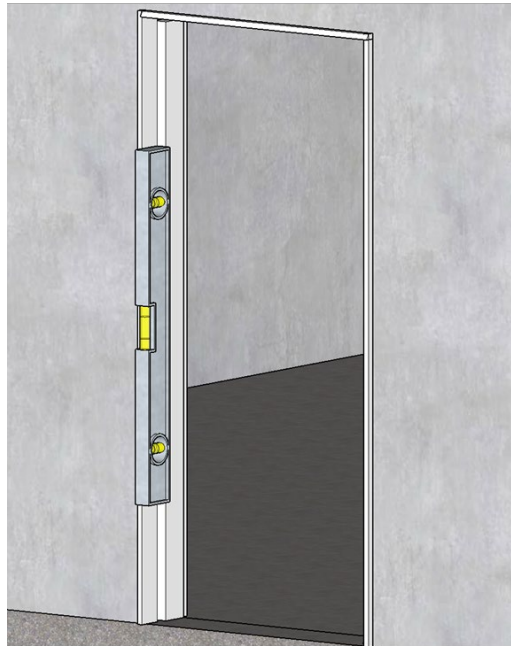
Set the door and frame in the opening with the frame on top of the shims (if shims were used.)

The door frame should fit up against the 1x4 trim piece.



Center the door frame in the opening and use the 4' level to check that the door frame is plumb on both the inside face and the hinge side.

Screw the frame in place through the holes you drilled earlier, but don't tighten them completely.

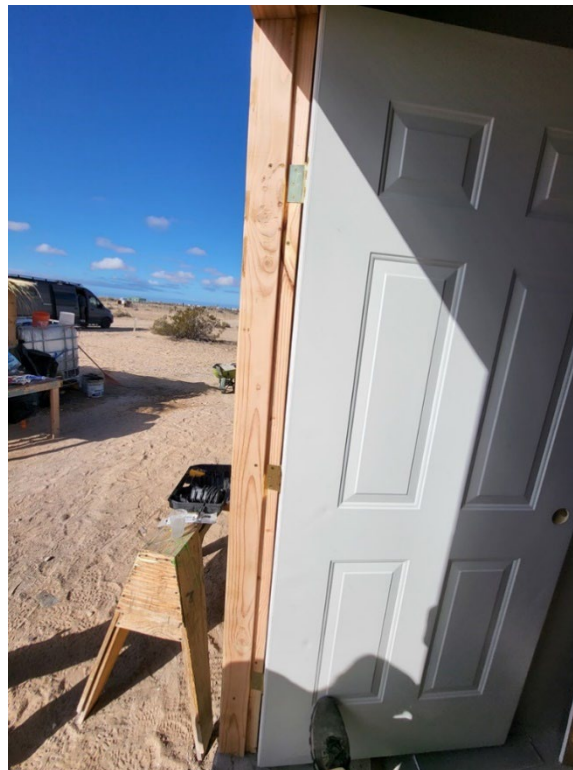


Check that the door swings freely without striking the floor.

Tighten or loosen the screws to ensure it works properly.

Once the door swings properly, place shims in the frame near the screws and tighten the screws.

Check the door again.



Drill 3 holes on the opposite side (the latch side), close the door and check that the door fits well within the frame.

Use shims to ensure that the gap between the door and the frame is equal from top to bottom.

Screw the door frame in place.



Install the door knob then mark the latch location, drill a hole in the frame and install the strike plate.

Check that the door swings properly, latches and locks.

Apply caulking at the gap where the frame and 2x8 form meet.

GIVE THE SET OF KEYS TO THE HOMEOWNER.

PHASE 17.3 WINDOW INSTALLATION – GENERAL INSTRUCTIONS

These are general instructions for installation of the windows. The instructions vary for the bedroom windows vs living room and bathroom windows, so refer to those sections for specific instructions.

Drill holes in the window frames at locations where screws will be placed.

Screw locations vary depending on the window type.



The windows will be installed mid-way between the interior and exterior walls.

In each window opening, mark the mid-point between the inside and outside wall.

Make marks on either side the same width as the window frame.



Snap a chalk line along the inside edge to use as a guide.



Place the window in the opening aligned with the chalk line and use a level to ensure the window is plumb.



Using one of the masonry bits, drill pilot holes through the holes in the frame that you made earlier.



Remove the window and finish drilling the holes deep enough to fit the plastic anchors.



Insert a plastic anchor in each hole and reinsert the window.



Fasten the window into the anchors with screws.

Don't overtighten as you could pull the frame apart.

Check that the window opens and closes properly.

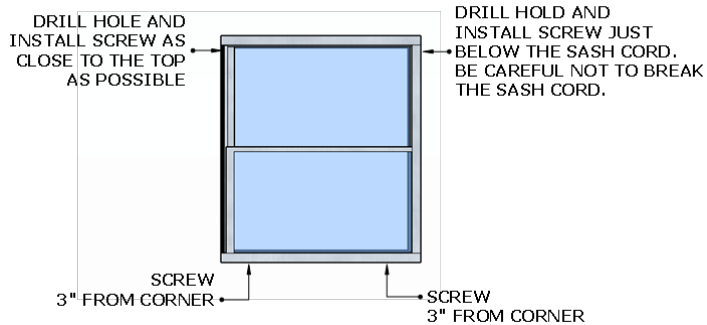


PHASE 17.4 INSTALL BEDROOM WINDOWS

Because the bedroom window opens upwards and has a mechanism to hold it open, the holes must be drilled in the proper location for it to work properly.

Prepare the windows by drilling a 11/32" (approx.) hole on each side of the window frame about 6" from the bottom of the window.

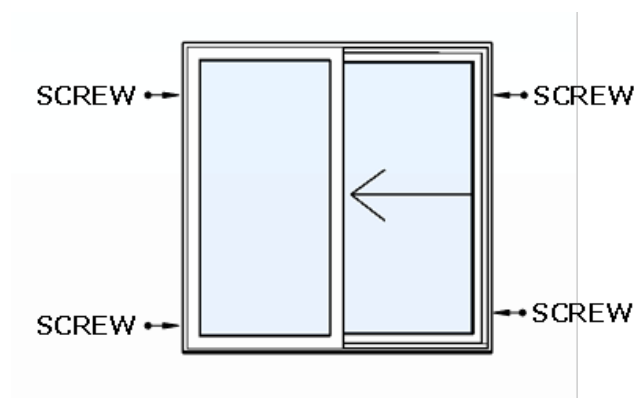
Also, drill a hole on each side of the window frame as close to the top as possible. This will allow the window to slide upwards without being impeded by the screw head.



PHASE 17.5 INSTALL BATHROOM WINDOW

Since the bathroom window opens to the side, the screws are installed on the sides so the window functions properly.

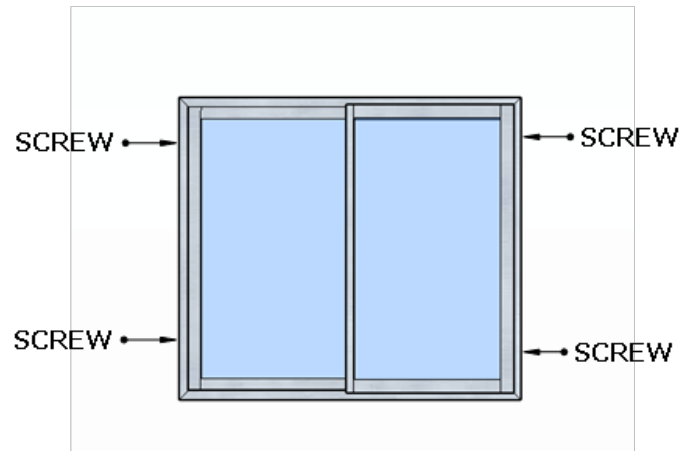
Drill the holes about 3" up from the corners using the 11/32" metal bit.



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PHASE 17.6 INSTALL LIVING ROOM WINDOW

Since the living room window opens to the side, the screws are installed on the sides about 3" from the top and bottom, so the window functions properly.



PHASE 17.7 APPLY CAULKING AROUND WINDOWS

Apply caulking along the window edge on the inside and outside.

If the gap is quite large apply a bead of caulking along the edge of the concrete first, then apply along the window frame.

Spread the caulking evenly with your finger.



The finished window.



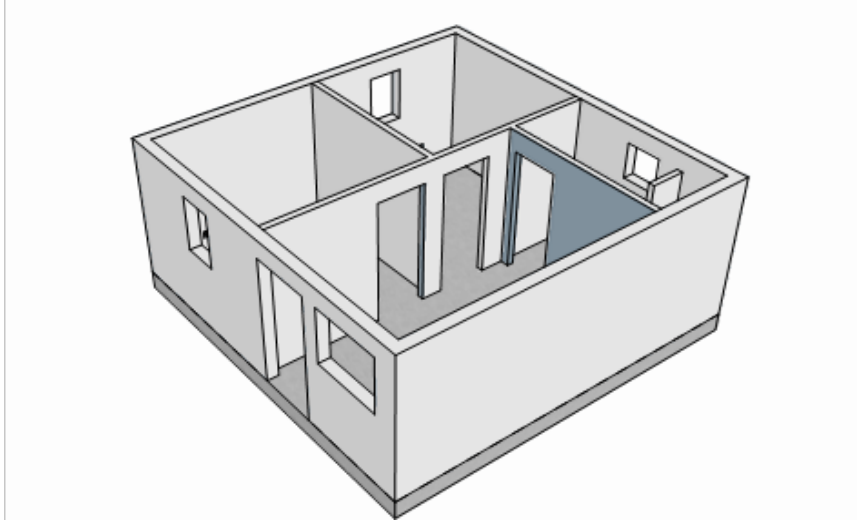
PHASE 18 EXTERIOR PAINTING

This phase is completed by 1MISSION staff.

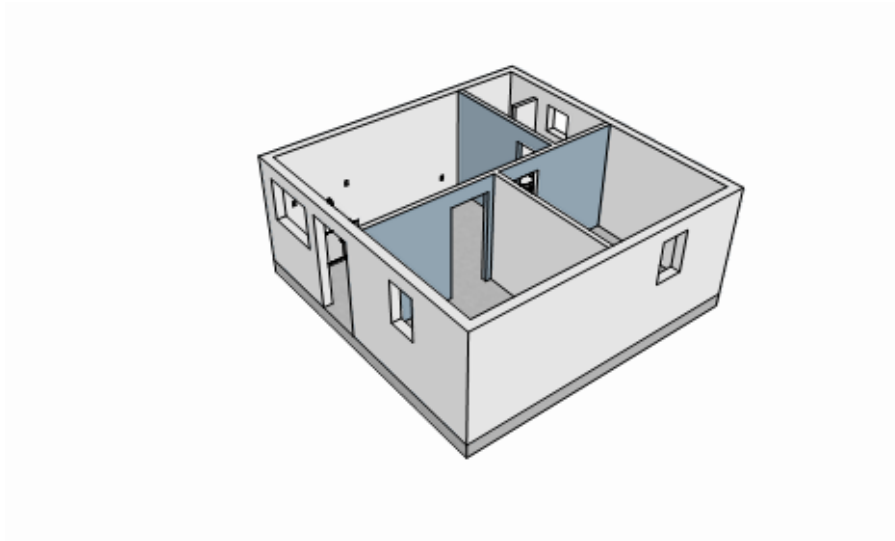
APPENDIX – PUEBLA MODEL

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.

The Puebla model is a 20' 8" x 20' 8" two bedroom house. There are two versions: Puebla A has the bedrooms on the left and Puebla B has the bedrooms on the right.

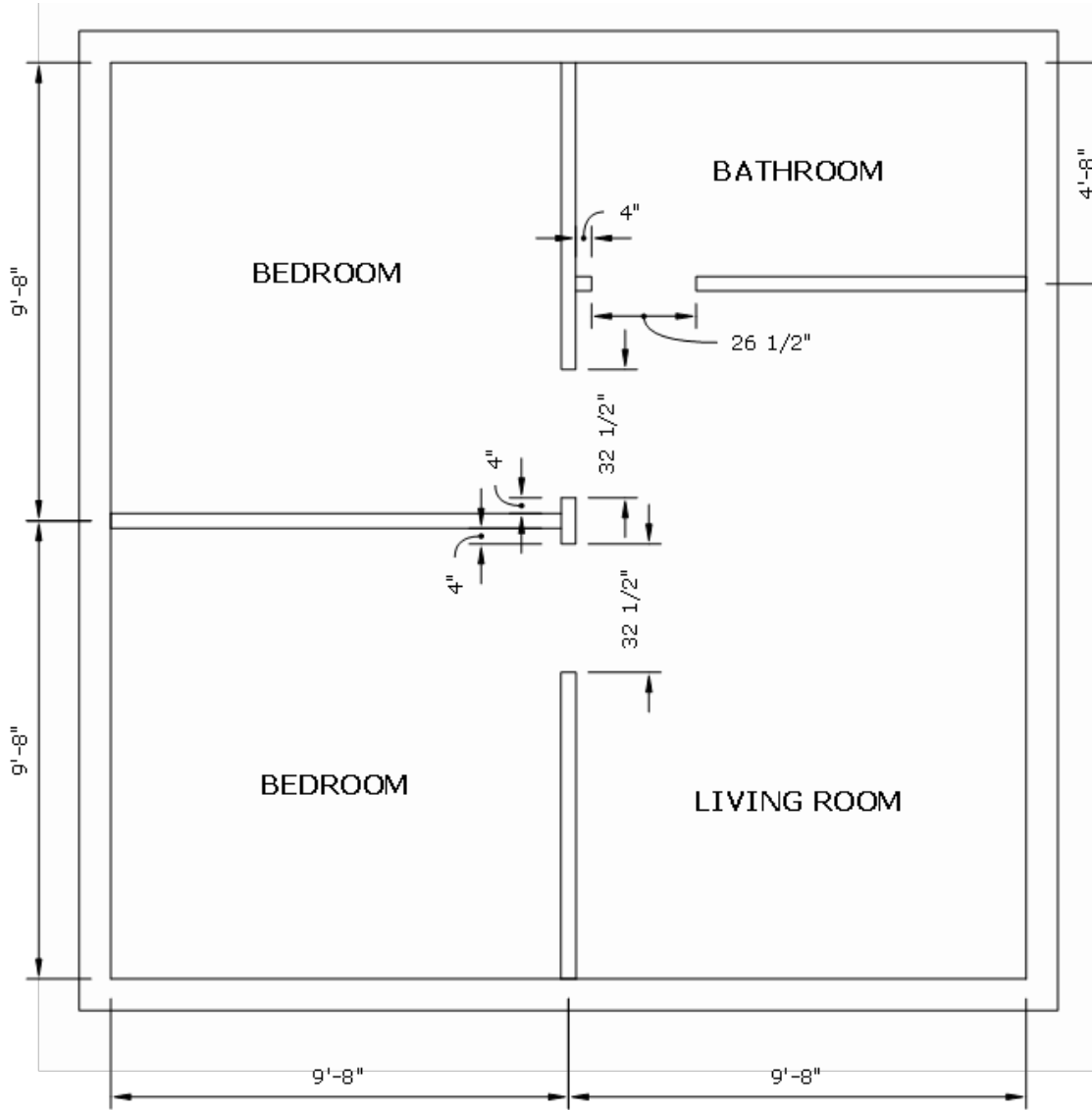


PUEBLA A



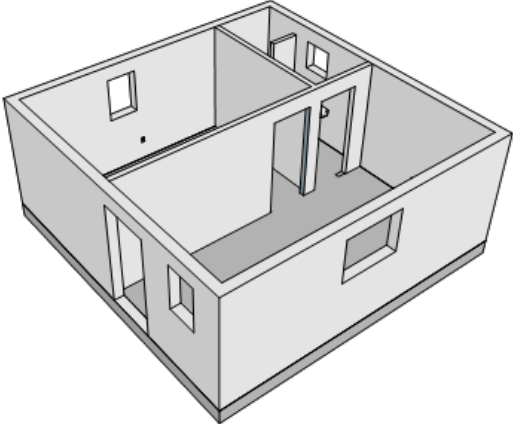
PUEBLA B

Dimensions shown are to the centerline of the interior walls.
Door opening dimensions are to the inside edge of the opening. Door opening height is 80 1/2".

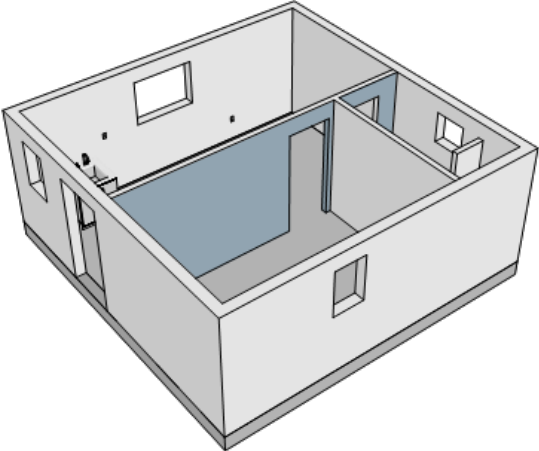


APPENDIX – SIERRA MODEL

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.

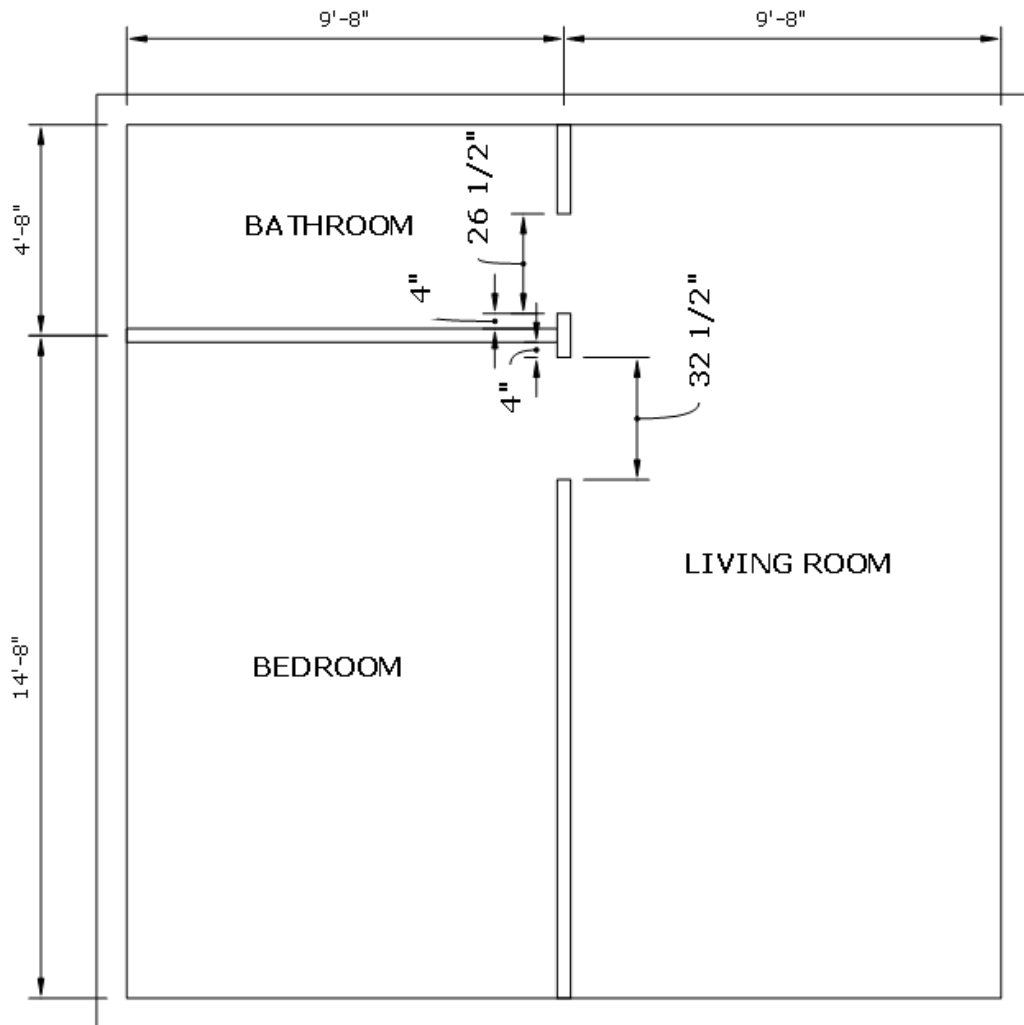


SIERRA A



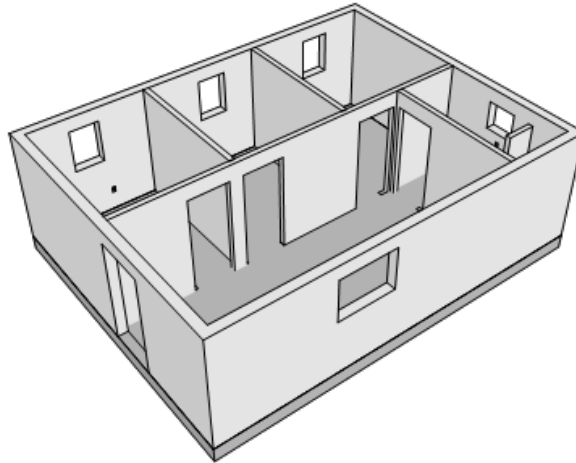
SIERRA B

Dimensions shown are to the centerline of the interior walls.
Door opening dimensions are to the inside edge of the opening. Door opening height is 80 1/2".

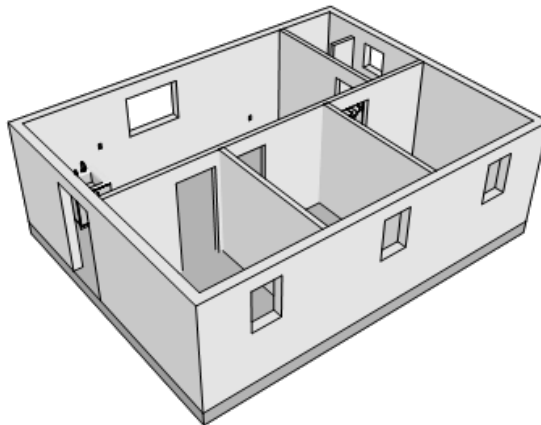


APPENDIX – CORTEZ

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.



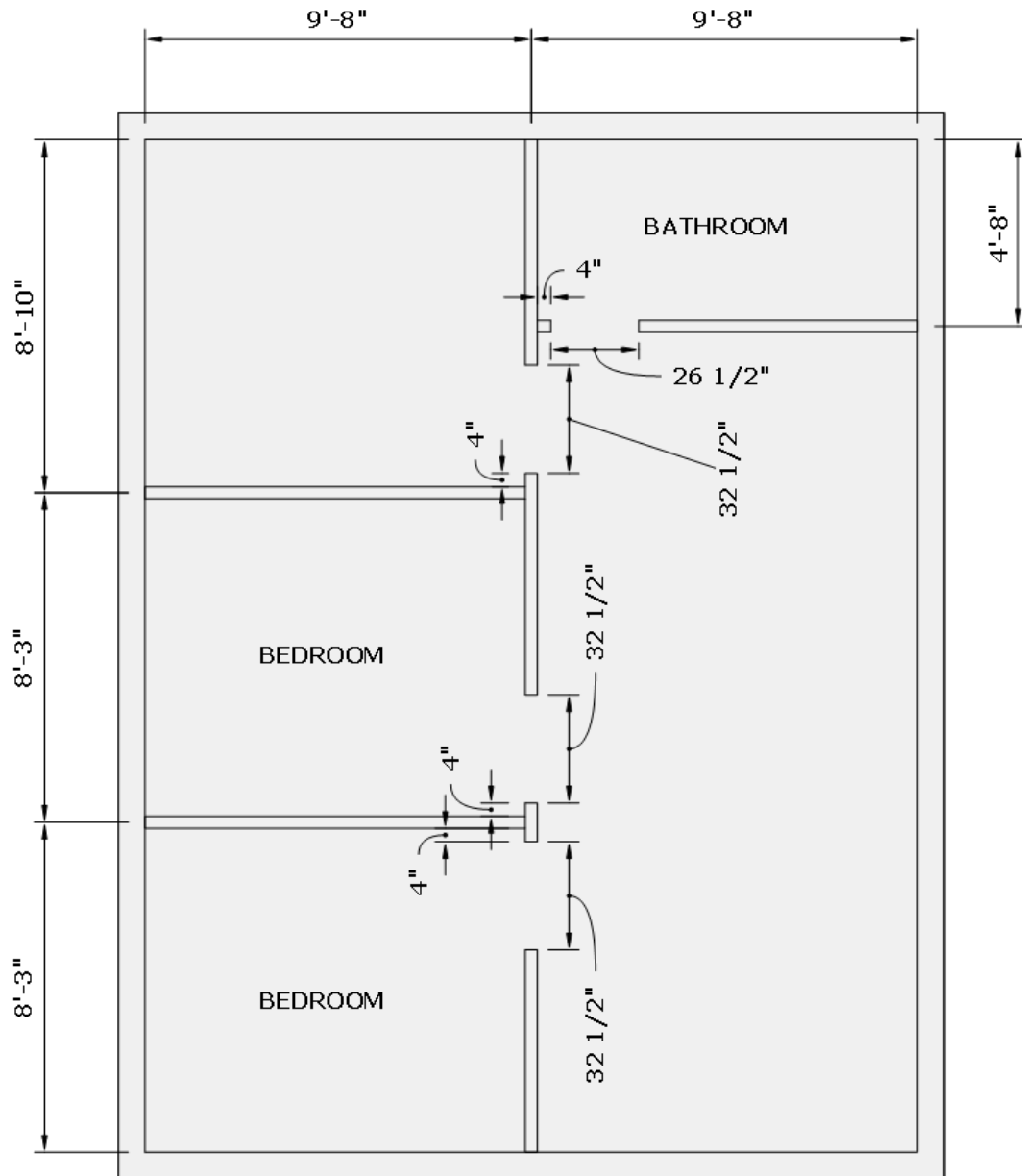
CORTEZ A



CORTEZ B

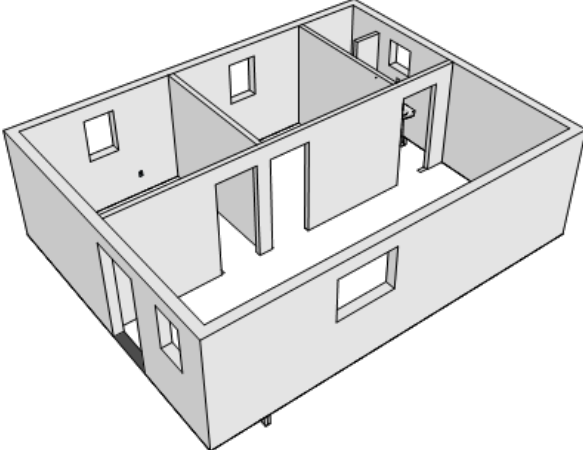
Dimensions shown are to the centerline of the interior walls.
Door opening dimensions are to the inside edge of the opening. Door opening height is 80 1/2".

NOTE: IF THE HOMEOWNER WANTS TO CHANGE THE BEDROOM SIZES, THE 8' 10" ROOM MUST BE 8' 4" OR BIGGER IN ORDER FOR THE BEDROOM DOOR TO FIT.

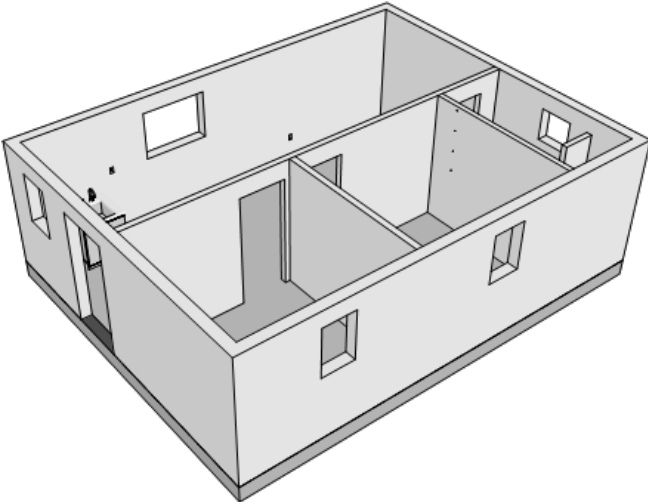


APPENDIX – PINACATE MODEL

NOTE: The window locations are only shown as an example. The family can choose different locations (with the exception of the bathroom window), so please confirm the locations with them.



PINACATE A



PINACATE B

Dimensions shown are to the centerline of the interior walls.
 Door opening dimensions are to the inside edge of the opening. Door opening height is 80 1/2".

