COOLER CONSTRUCTION GUIDE

DIY 8’ X 8’ WALK-IN COOLER

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BEFORE YOU START

Read this guide entirely and familiarize yourself with the project before you make a trip to the hardware store. Plan your project wisely and make a list of all your materials and tools. Depending on your needs or particular situation, you may want to modify or skip certain parts of this guide.

Please ensure that a **flat level and structurally sound surface is available to place your cooler**.

"TURN KEY" COOLBOT WALK-IN COOLERS

If a DIY cooler project is not your cup of tea, you lack the construction experience necessary for a project like this, or just simply lack the time to complete a DIY cooler, we got you covered! CoolBot offers *turn-key* commercial grade pre-fab coolers in many standard sizes which include the new CoolBot Pro and the A/C. For more information please visit us at:

https://www.storeitcold.com/coolbot-walk-in-cooler/

ECO-COOLER

Your fastest and most economical DIY solution is an "Inside" or covered (out-of-the-rain) cooler room. If you are building your cooler inside AND your cooler will be set to cool above 36°F, a concrete pad (or similar flat level surface) is all you need for a floor. Additionally, you won't need a roof and/or exterior finishing siding panels (just OSB will do). Skip the Floor Foundation and Roof Assembly Sections, and their corresponding materials from the *Materials List*.

FLOOR RECOMMENDATION

If you are building your cooler "Outside" OR on an elevated surface such as a deck, a second floor, above a crawling space, OR if your cooler needs to be at or below 36°F, you SHOULD build an insulated Floor-Base. **A non-insulated wood building floor will not suffice.**

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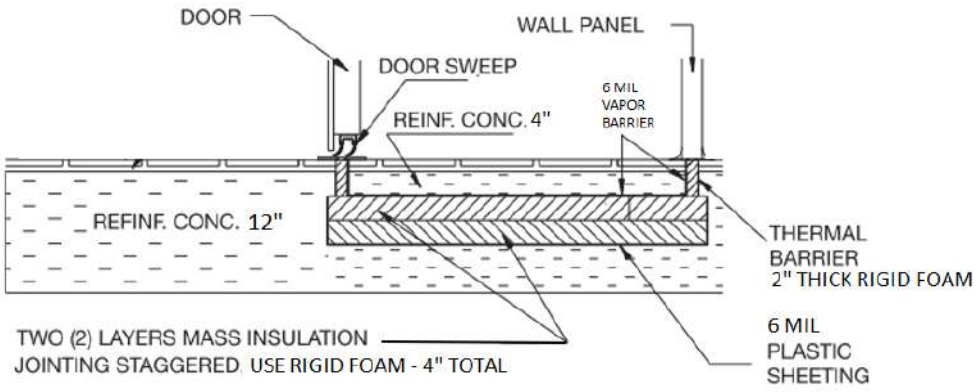
INSULATED CONCRETE SLAB

If you are pouring a concrete slab to place your cooler and want to insulate your slab for added efficiency, here is a diagram of how you should do this.



OUTDOOR COOLER

Outside coolers (Shed-Style) will require an insulated Floor-Base, a roof and exterior siding panels. This guide has instructions for a gabled roof but you are welcome to build any other type of roof for your shed.

SAFETY TIP

At all times wear appropriate personal protective equipment to ensure a safe and enjoyable construction experience.

THRIFTY TIP

Repurpose lumber from a shed or building that is being torn down or purchase reclaimed lumber from a local resale lumber supplier.

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MATERIALS LIST

FOUNDATION- FLOOR BASE	**QTY**	**SIZE**
4" x 4" GROUND CONTACT TREATED LUMBER	3	96"
2" x 6" GROUND CONTACT TREATED LUMBER	9	96"
3/4" GROUND CONTACT TREATED PLYWOOD	4	4' x 8'
BACK WALL (A/C WALL)	**QTY**	**SIZE**
2" x 4" TREATED	1	96"
2" x 4" WHITE WOOD	4	96"
2" x 4" WHITE WOOD	5	92-5/8"
7/16" OSB (*ECO-COOLER*)	2	4' x 8'
SMARTSIDE STRAND PANEL SIDING (*OUTDOOR COOLER*)	3	4' x 8'
FRONT WALL (DOOR WALL)	**QTY**	**SIZE**
2" x 4" TREATED	1	96"
2" x 4" WHITE WOOD	3	96"
2" x 4" WHITE WOOD	6	92-5/8"
7/16" OSB (*ECO-COOLER*)	2	4' x 8'
SMARTSIDE STRAND PANEL SIDING (*OUTDOOR COOLER*)	3	4' x 8'
RIGHT WALL	**QTY**	**SIZE**
2" x 4" TREATED	1	96"
2" x 4" WHITE WOOD	2	96"
2" x 4" WHITE WOOD	7	92-5/8"
7/16" OSB (*ECO-COOLER*)	2	4' x 8'
SMARTSIDE STRAND PANEL SIDING (*OUTDOOR COOLER*)	2	4' x 8'
LEFT WALL	**QTY**	**SIZE**
2" x 4" TREATED	1	96"
2" x 4" WHITE WOOD	2	96"
2" x 4" WHITE WOOD	7	92-5/8"
7/16" OSB (*ECO-COOLER*)	2	4' x 8'
SMARTSIDE STRAND PANEL SIDING (*OUTDOOR COOLER*)	2	4' x 8'
CEILING	**QTY**	**SIZE**
2" x 6" WHITE WOOD *(FOR "HANGING JOISTS" – OPTIONAL)*	4	96"
1/2" PLYWOOD SCRAPS *(FOR "HANGING JOISTS" – OPTIONAL)*	4	5.5" x 5.5"
4 x 4 JOIST HANGERS *(FOR "HANGING JOISTS" – OPTIONAL)*	4	-
2" x 4" WHITE WOOD	1	96"
7/16" OSB *(INDOOR ECO-COOLER ONLY)*	2	4' x 8'
ROOF *(OUTDOOR SHED STYLE COOLER)*	**QTY**	**SIZE**
2" x 4" WHITE WOOD (RAFTERS)	8	120"
2" x 6" WHITE WOOD (RIDGE BOARD)	1	96"
2" x 4" WHITE WOOD (GABLE STUDS)	1	96"
#30 FELT ROOF DECK PROTECTION	1	216 sqft
LAMINATE SHINGLES (32.8 SQFT PER BUNDLE)	4	-
7/16" OSB	5	4' x 8'
18-GAUGE GALVANIZED STEEL ANGLE TIE	4	-

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INSULATION	**QTY**	**SIZE**
RMAX THERMASHEATH POLYISOCYANURATE RIGID R-13.1	22	4' x 8' x 2"
PLASTIC ROUND CAP ROOFING NAILS 1 LB. (117-PACK)	2	#11 x 3 in.
HEAVY DUTY LIQUID NAILS	15	Tube
FOIL HVAC TAPE	2	2.5" x 60 yd.
GREAT STUFF	5	Can
DOOR AND TRIM	**QTY**	**SIZE**
PREHUNG EXTERIOR INSULATED DOOR (**OUTWARD SWING**)	1	36" x 80"
1" X 2" TRIM BOARD PRIMED FINGER JOINT (EXTERIOR CORNERS)	4	96"
1" X 4" TRIM BOARD PRIMED FINGER JOINT (DOOR TRIM, A/C)	7	96"
1" X 6" TRIM BOARD PRIMED FINGER JOINT (SOFFIT)	2	96"
HARDWARE	**QTY**	**SIZE**
16-PENNY GALVANIZED STEEL BOX NAILS (1 LB./BOX) – FOR FLOOR BASE	2	#10 x 3-1/2"
6-PENNY HOT GALVANIZED STEEL BOX NAILS (1 LB./BOX) – FOR FLOOR BASE	1	#12-1/2 x 2"
Z-MAX GALVANIZED 18-GAUGE HURRICANE TIE *(FOR SKIDS - OPTIONAL)*	12	-
POLYMER COATED EXTERIOR SCREW (73/PK)	1	#10 x 3"
PREMIUM EXTERIOR WOOD SCREW (5LB/PK)	1	#10 x 6"
16-PENNY VINYL-COATED STEEL SINKER NAILS (1 LB.-64/BOX)	4	#9 x 3-1/4"
ALUMINUM LOUVERED SOFFIT VENT (*SHED STYLE ONLY*)	2	16" x 18"
DOOR SHIM PACK	1	-
Z-MAX GALVANIZED DOUBLE SHEAR FACE MOUNT JOIST HANGER *(FOR "JOISTS" – OPTIONAL)*	4	4" x 4"
16-PENNY GALVANIZED FRAMING NAILS (1 LB.-71/BOX)	1	1lb box
8-PENNY VINYL-COATED STEEL SINKER NAILS (1 LB.-153/BOX)	1	1lb box
12-PENNY HOT GALVANIZED JOIST HANGER NAILS PACK *(FOR "JOISTS" -OPTIONAL)*	1	#9 x 1-1/2"
ELECTRO GALVANIZED STEEL ROOFING NAILS (5LB PACK)	1	#11 x 1-1/2"
T50 TYPE CROWN GALVANIZED STEEL STAPLES (1,250 PACK)	1	3/8 " Leg x 3/8" Crown

TOOLS YOU WILL NEED

Safety glasses	Ear plugs	Gloves	Pencil	Tape measure
Claw hammer	Drill	4' level	Hand Saw	Paint roller
Caulk gun	Pliers	Chalk line	Trowel	Sawzall
Snap-off blade knife	Circular saw or table saw	Combination or framing square	Phillips screwdrivers	Jigsaw

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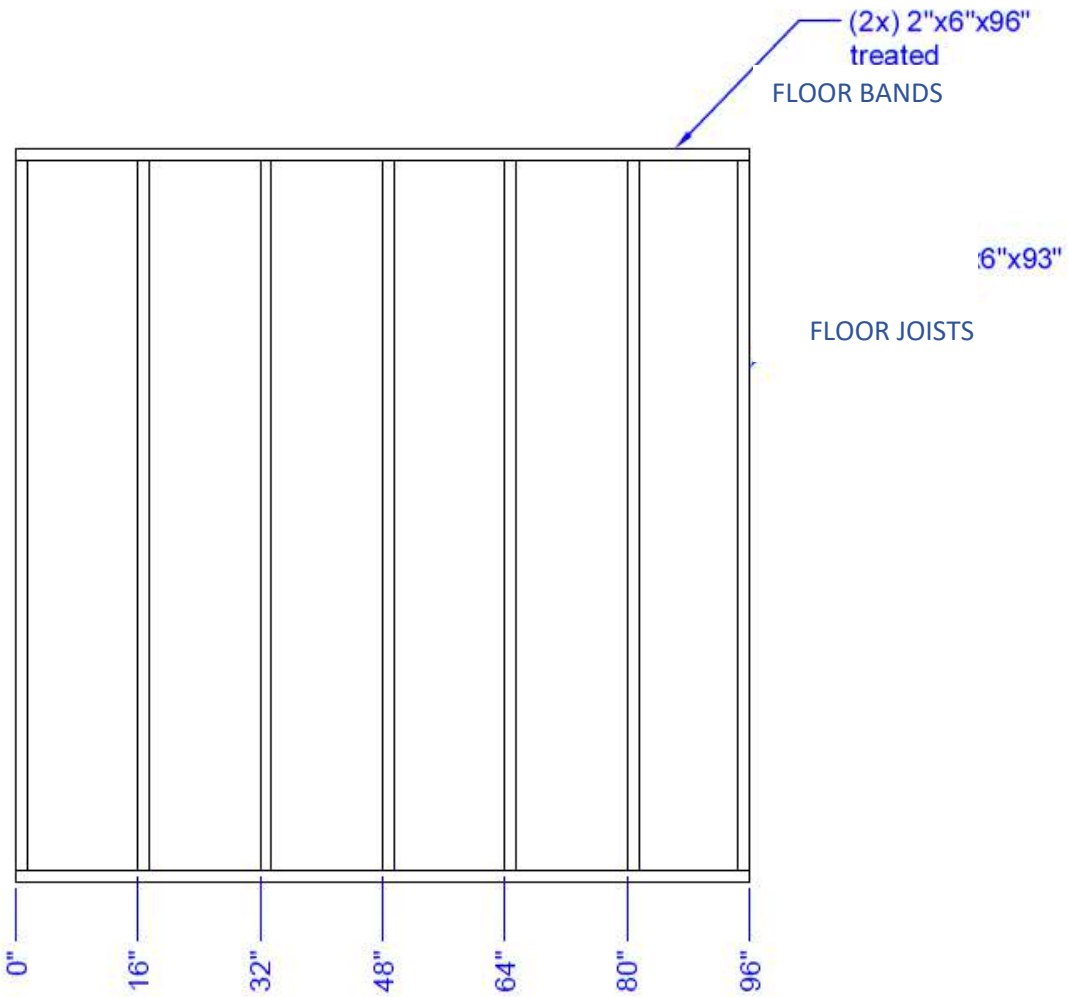
BUILDING THE FLOOR-BASE

See Floor Recommendation on Page 4.

Tips for preparing and planning your cooler foundation:

- If the cooler is to sit outside, mark the area with stakes and dig the area (3-4 inches) to remove all vegetation. Fill the area with 3 to 4 inches of gravel and spread the gravel with a rake.
- Using a **straight** flat board (like a 2x4), spread the gravel evenly and with a level on top of the 2x4 ensure that the surface is level. Repeat as necessary all around the bed pushing the gravel with the board and checking for a level surface all around so that it will be ready to receive the *Floor-Base* of the Cooler.
- We attached our Floor-Base (diagram below) on three 4x4 skids because we wanted to be able to move the shed with a forklift to another location after the build. **You don't have to use the 4x4 skids shown on the pictures of this guide.**
- If you have a concrete pad outside, ensure the surface is level. You can place the base directly on top without using the 4 x 4 skids shown on the pictures of this guide.



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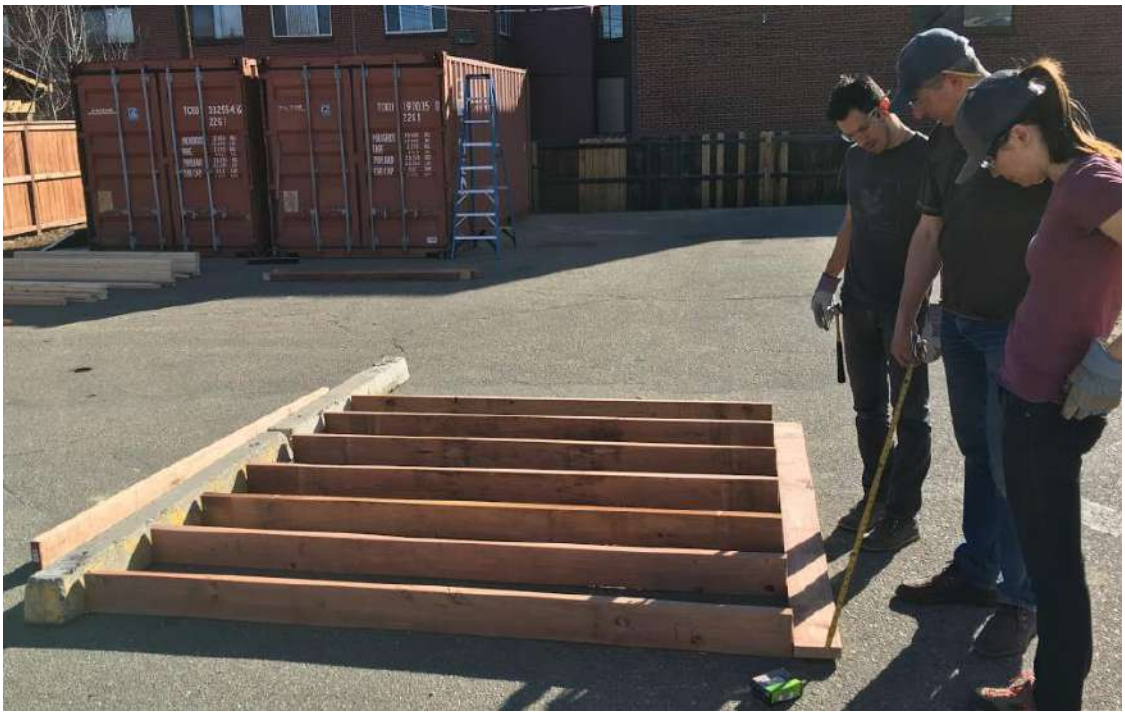
Treated Ground Contact lumber is used for the Floor-Base of the cooler as it will be directly on the floor. White wood is not treated and used for all other boards in construction of the cooler.

- For the FLOOR BANDS we are using two 8 ft 2 x 6s.
- For the FLOOR JOISTS cut seven treated 2x6s to a length of 93 inches.
- Mark all seven 2 x 6s (FLOOR JOISTS) locations on the FLOOR BANDS with a pencil and straight edge to identify the edge of the mating 2 x 6s (FLOOR JOISTS) - see diagram above on p8.
- Mark an "X" on the side of the line that will be covered by the mating 2 x 6.
- On a flat surface with a backstop that will not move layout all seven 2 x 6s (FLOOR JOISTS).



All nails used with treated lumber must be galvanized to prevent corrosion of the nails. Galvanized nails have a rough dull silvery appearance.

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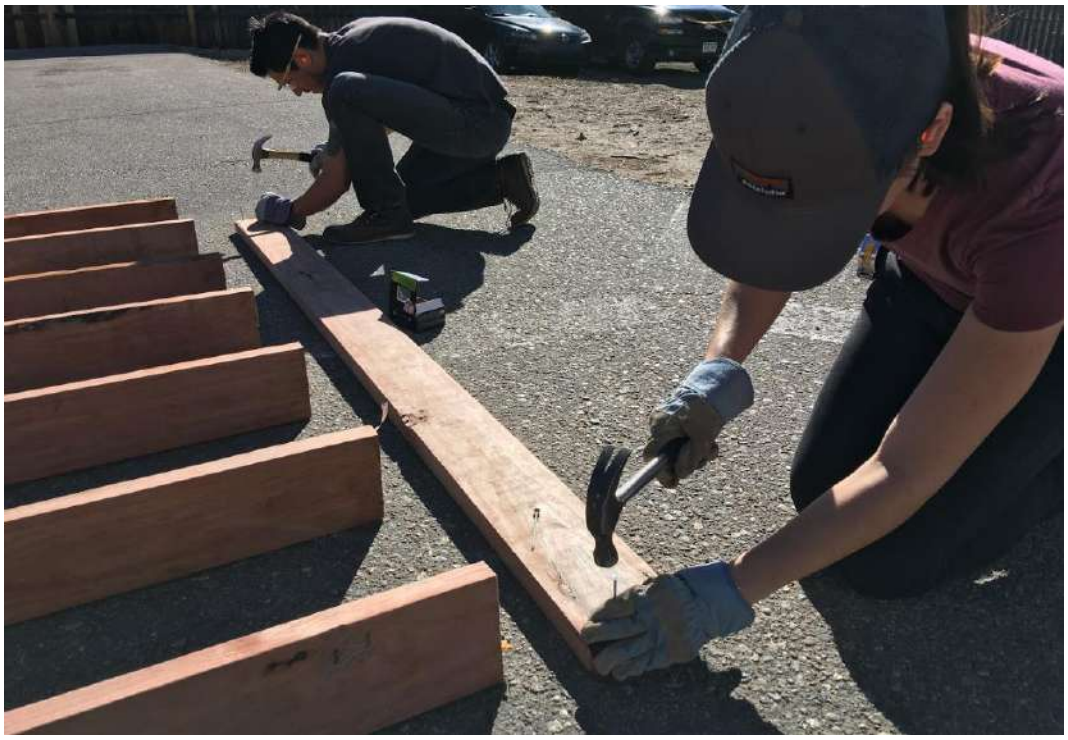
PRO TIP

Starting nails in a board is much easier if the board is lying flat on a rigid surface than if you are trying to hold it in position. Start the nails and pound them until they just break through the backside of the band board.



- Nail the treated FLOOR BANDS to the seven 93” FLOOR JOISTS using two 16 penny galvanized nails into each joist.
- After you nail all FLOOR JOISTS to the first FLOOR BAND, rotate the entire frame 180˚ and place the first FLOOR BAND against the backstop.
- Nail the second FLOOR BAND to the FLOOR JOISTS using two nails into each joist.

4”x4” SKIDS

We attached our base to three 4x4 skids because we wanted to be able to move the shed with a forklift to another location after the build. **You don’t have to use the 4x4 skids shown on the pictures of this guide.** The skids where set perpendicular to the FLOOR JOISTS. We used 12 Z-MAX Galvanized 18-Gauge Hurricane Ties to connect the FLOOR JOISTS to the skids.

Now that the floor frame is complete, it is time to place the first layer of plywood to create a complete flat surface for your Floor-Base.

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- Place two 3/4” pressure treated plywood panels on top of the BASE with the seam in between them perpendicular to the direction of your FLOOR JOISTS

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- Nail the treated plywood panels to the FLOOR BANDS using 6-penny galvanized nails every 16 inches.
- Using a chalk line, mark the location of your FLOOR JOISTS on the boards and nail the boards to the FLOOR JOISTS using 6-penny galvanized nails every 16 inches along the joist direction.

Your Floor-Base is now ready. The walls of the cooler will be anchored to this base.

This is also a good time to ensure that the base **is completely level** before continuing with the room build.

EFIICIENCY PRO TIP

Want to make your cooler more efficient? Flip the base and insulate the bottom of the base in between the FLOOR JOISTS. Rigid foam panels properly cut (sealing all seams with expandable foam) or using Spray Foam insulation are both great alternatives. This will increase the R-Value of the floor to make your cooler more efficient. NOTE: *We will be insulating the floor on the inside with rigid foam panels after the walls are installed.* (DO NOT USE FIBERGLASS!!)

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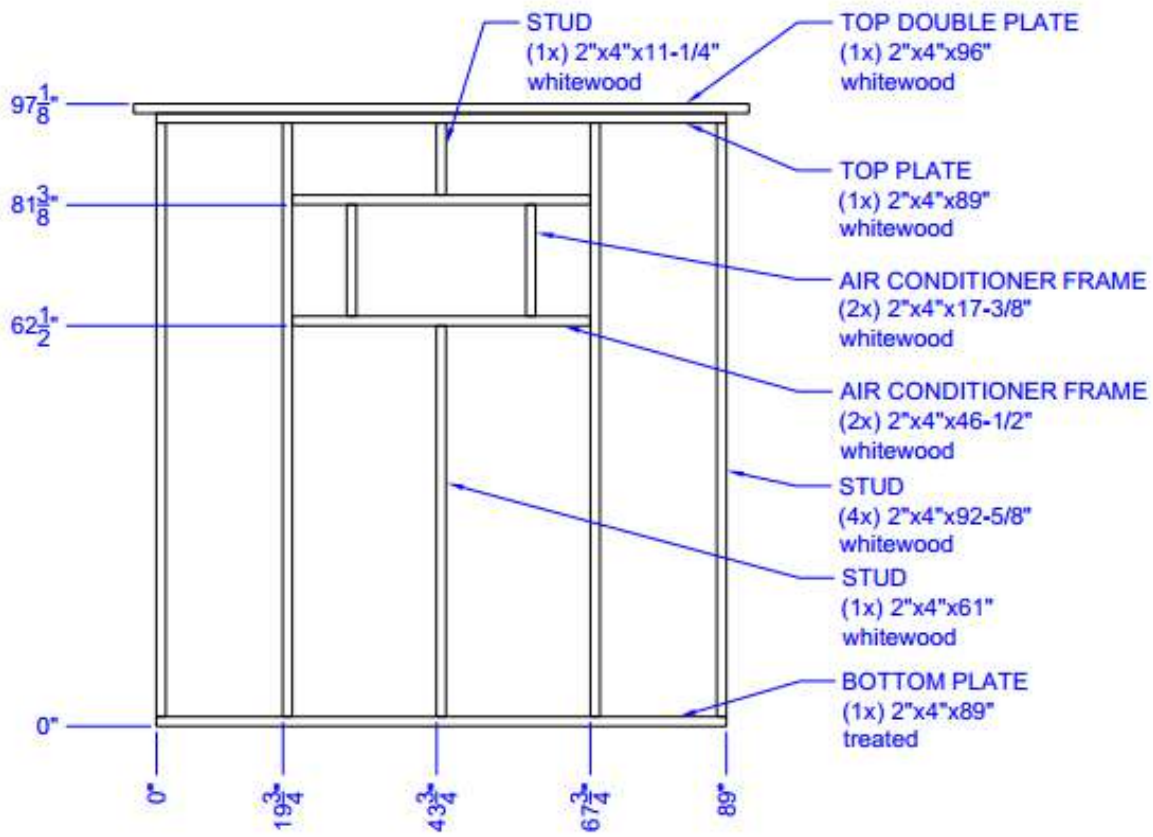
BUILDING THE BACK WALL

This wall is opposite to the door and is where the A/C unit will be installed.

Take extra care to ensure that the air conditioner cutout dimensions are correct for the air conditioner you have selected. Leave a 1/4" gap all around the air conditioner - **make the cutout 1/2" taller and 1/2" wider than your air conditioner. We used a 15K LG A/C for this room.**

Treated lumber is used for the BOTTOM PLATE since the BOTTOM PLATE may be mounted to the concrete *(indoor coolers with no floor)* and on occasion get wet. White wood is not treated and used for all other boards in construction of the cooler.



- Measure twice cut once!
- For the BOTTOM PLATE cut an 8' long treated 2 x 4 to 89" long.
- Mark the location of each wall stud on the 2 x 4.
- Do the same for the TOP PLATE by cutting an 8’ long white wood 2 x 4 to 89" long.
- Mark all 2 x 4s with a pencil and straight edge to identify the edge of the mating 2 x 4s.
- Mark an "X" on the side of the line that will be covered by the mating 2 x 4.

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- On a flat surface with a backstop that will not move layout four 92-5/8" long 2 x 4s.
- Also, cut to length and layout the 2 x 4s for the air conditioner opening.

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All nails used with treated lumber must be galvanized to prevent corrosion of the nails. Galvanized nails have a rough dull silvery appearance.

PRO TIP

Starting nails in a board is much easier if the board is lying flat on a rigid surface than if you are trying to hold it in position. Start the nails and pound them until they just break through the backside of the board.

- Nail the treated BOTTOM PLATE to the four 92-5/8" and one 61" STUDS using two 16 penny galvanized nails into each stud.
- Use two 16 penny vinyl-coated sinker nails per joint for the remaining nailing of the back wall frame.

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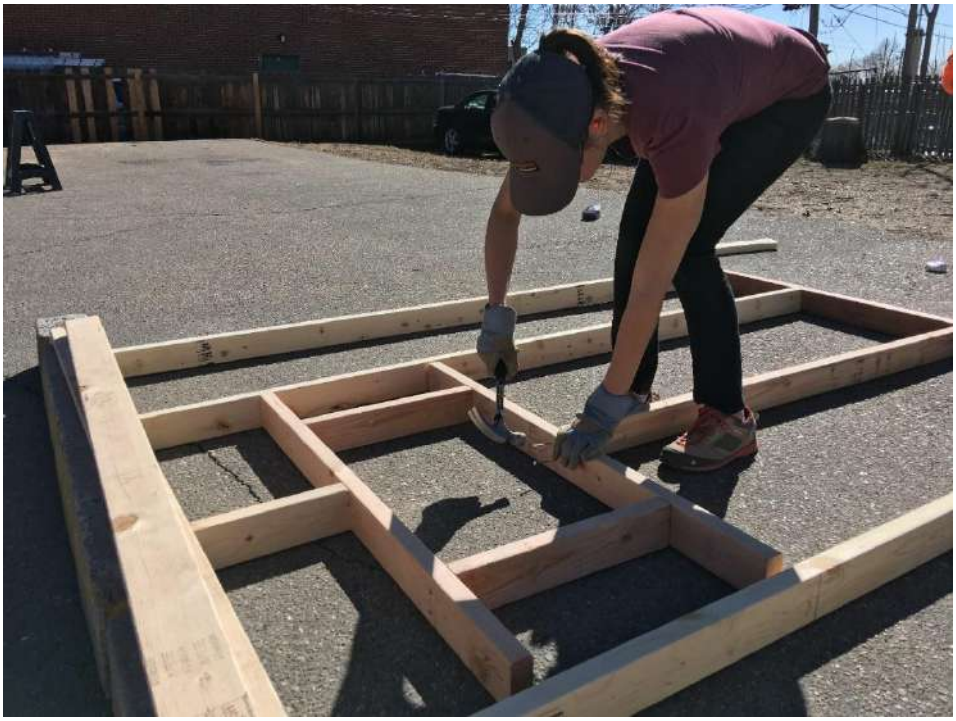
- Nail together the four boards that make up the AIR CONDITIONER FRAME and then nail the frame to the adjacent STUDS.



- Rotate the entire back wall frame 180˚ and place the BOTTOM PLATE against the backstop.
- Nail the TOP PLATE to the STUDS using two nails into each STUD.
- Align the TOP DOUBLE PLATE centered on the TOP PLATE which will leave 3-1/2" overhang on each side. *A 2x4 lying flat on the ground is a good reference for the required overhang*
- Nail the TOP DOUBLE PLATE to the TOP PLATE with nails approximately every 12" staggered side to side.

The back wall is now complete.

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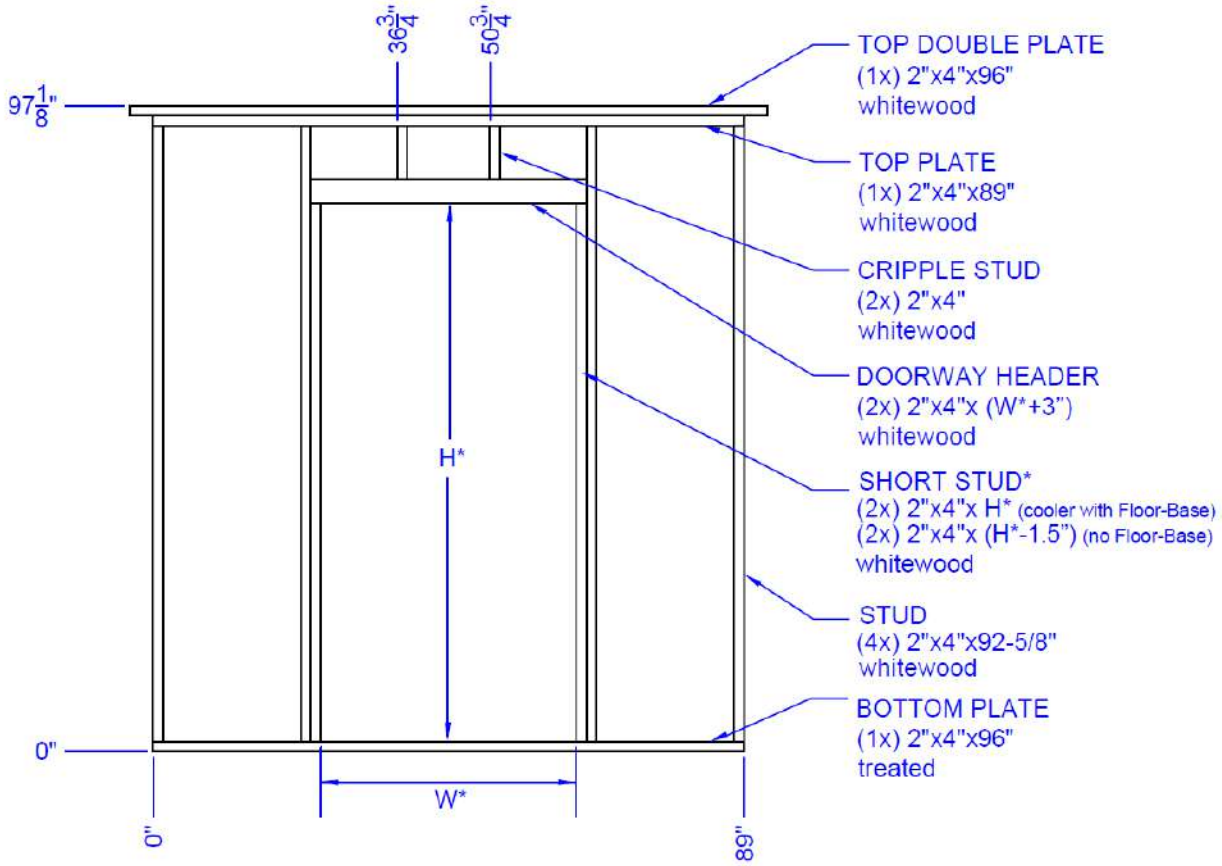
BUILDING THE FRONT WALL

The second wall frame on the process is the front wall frame. This wall has the doorway.



- Find your *Door Manufacturer's Installation Guide* for the dimensions of the **"Rough Opening"** required for your door. **These dimensions are W* and H***
- If you don't have the door's installation guide or if you are installing a used door, a good rule of thumb, is to **make the Rough Opening (W* x H*), 1/2" taller than the height of the door frame and 3/4" wider than the width of the door frame you are installing**. This will ensure you have space to shim and plumb your door frame properly.
- Door opening should be centered in your wall frame.
- SHORT STUD*
  - If you built a Floor-Base for your cooler following this guide, then you won't be cutting the BOTTOM PLATE of the wall frame in between the doorway. The floor of the cooler will be raised because of the insulation so we are leaving the 2x4 to lift the door frame and to avoid having a larger than necessary step when walking into the cooler.
  - If you build an inside cooler over concrete that will not have an insulated Floor-Base (Eco-cooler) then you will be cutting the BOTTOM PLATE in between the doorway, this will drop the door frame and give you an additional 1.5" (hence you are cutting the STUD* at H*- 1.5 inches).
- Measure twice cut once!
- Cut and layout the 2 x 4s for the front wall in a similar manner to the back wall

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- Nail together the two pairs of double STUDS for the doorway using 16 penny vinyl-coated sinker nails staggered every 12". Nailing from the shorter STUD* through the taller 92-5/8” stud will ensure that the protruding nail tips do not face into the doorway.
- Nail the treated BOTTOM PLATE to the six STUDS using two 16 penny galvanized nails in each STUD.

- Rotate the entire front wall frame 180˚ and place the BOTTOM PLATE against the backstop.
- Use two 16 penny vinyl-coated sinker nails per joint for the remaining nailing of the front wall frame.
- Nail the TOP PLATE to the studs.
- To build your HEADER cut a piece of ½”OSB to the same size as the 2x4 headers and sandwich it in between the 2x4s to fill the space in between - nail them together from both sides.
- Nail the DOORWAY HEADER (2 x 4s on edge) to the adjacent STUDS with the faces of the DOORWAY HEADERS flush with the outside of the STUDS. Nail the CRIPPLE STUDS above the doorway header in place.
- Align the TOP DOUBLE PLATE centered on the TOP PLATE which will leave 3-1/2" overhang on each side. *A 2x4 lying flat on the ground is a good reference for the required overhang*
- Nail the TOP DOUBLE PLATE to the TOP PLATE with nails approximately every 12" staggered side to side.

The front wall is now complete.

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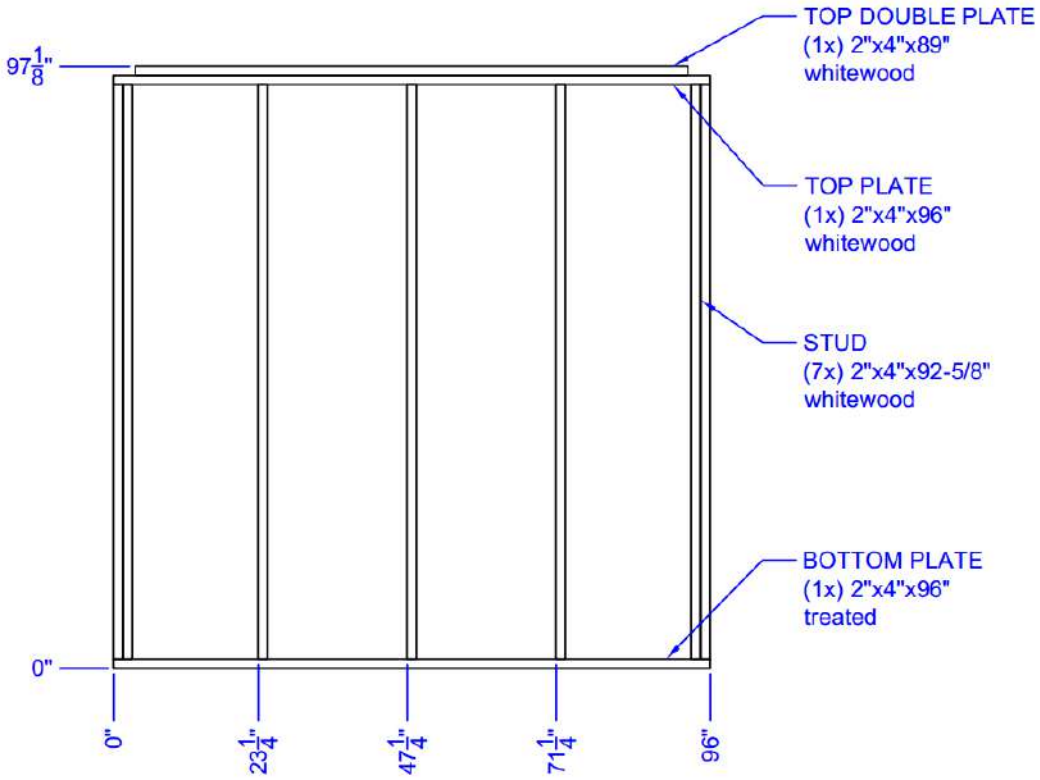
BUILDING THE RIGHT AND LEFT WALLS

Repeat the process for the left and right walls in a similar manner to that done for the back and front walls.



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CONNECTING THE WALLS TO THE FLOOR

FOR COOLERS WITH A FLOOR-BASE BUILT FOLLOWING THE INSTRUCTIONS FROM THIS GUIDE

Go Straight to page 24.

FOR COOLERS WITHOUT A FLOOR-BASE AND BUILT DIRECTLY OVER A LEVEL CONCRETE PAD (ECO-COOLER)

The next step is to lay out a "perfect" 96" by 96" square on the floor you will be placing your cooler.

- Mark and "X" where you would like the front left corner of the cooler.

- Mark another "X" 96" away for the front right corner.

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- Swing an arc 96" from the front left corner for the back left corner.

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- Swing an arc 135-3/4" from the front left corner for the back right corner.

- Swing an arc 96" from the front right corner for the back right corner.

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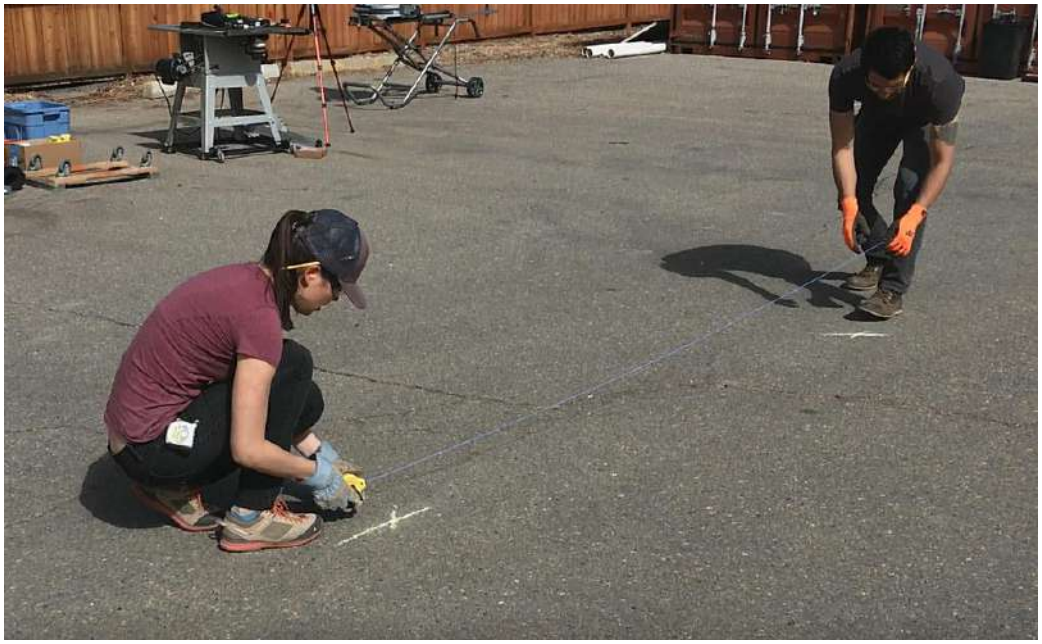
- Swing an arc 135-3/4" from the front right corner for the back left corner.

- Snap chalk lines from the arc intersections to mark the perimeter walls of your cooler.



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- Starting with the back wall, move each wall into place by laying the outside of each wall along the chalk lines (or making sure they are flush with the edge of the *Floor-Base* if you built one).

- Note that the top double plates on the back and front wall overlap the top plates on the left and right walls.

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- Screw the walls together using #10 x 3" long polymer coated exterior screws **staggered** every 12".

PRO TIP

Before anchoring all the walls together and to the floor, ensure that the exterior of the walls align with the chalk lines (or the edges of the Floor-Base) and that they are level and plumb.

A. FOR COOLERS WITH A FLOOR-BASE BUILT FOLLOWING THE INSTRUCTIONS FROM THIS GUIDE

Anchor your walls using #10 x 3 in. long polymer coated screws driving them into the floor base. We recommend screws spaced at least 16” apart along each wall.

B. FOR COOLERS WITHOUT A FLOOR-BASE AND BUILT DIRECTLY OVER A LEVEL CONCRETE PAD (ECO-COOLER)

Anchor the bottom wall plates to the concrete pad using an appropriate anchor. We recommend anchors spaced at least 16" apart along each wall.

NOTE: Your sales person at the hardware store can guide you choosing the proper anchors for the bottom plates. **DON’T FORGET!** Since your cooler walls a directly over concrete, cut the BOTTOM PLATE of the FRONT WALL where the door opening is (W*).

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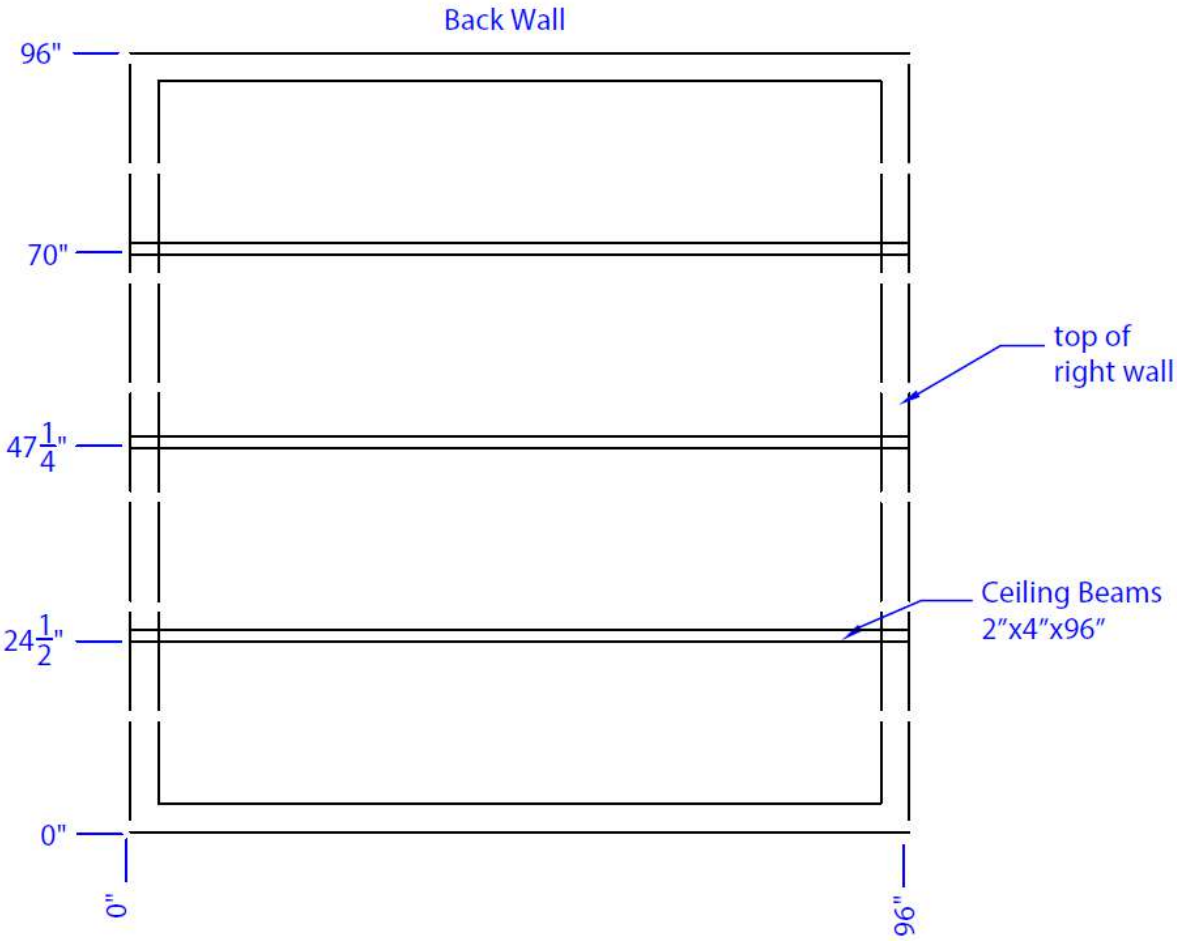
BUILDING THE CEILING

Now that the walls are fastened together and anchored to the floor, we can install the ceiling joists. We used two double ceiling joists made of 2x6s to allow for the hanging of items from the ceiling of the cooler. These stronger "hanging ceiling joists" are optional (subsection B). If you don't need to hang anything from the ceiling then follow the directions on subsection A.

A. FOR COOLERS WITH NO OPTIONAL HANGING JOISTS (with or without roof)

Simply install beams across your ceiling every 24" with 2x4s on their end (the 1.5" side resting on the top plate), from one side wall to the other (parallel to the front and back walls). Place them on top of the TOP PLATES and screw (or nail) them down to the top plates.

This will reinforce the entire structure (whether it has a roof over or not) and it will also give you a frame on the ceiling to install your insulation panels.



Proceed to page 29 (Exterior Sheathing).

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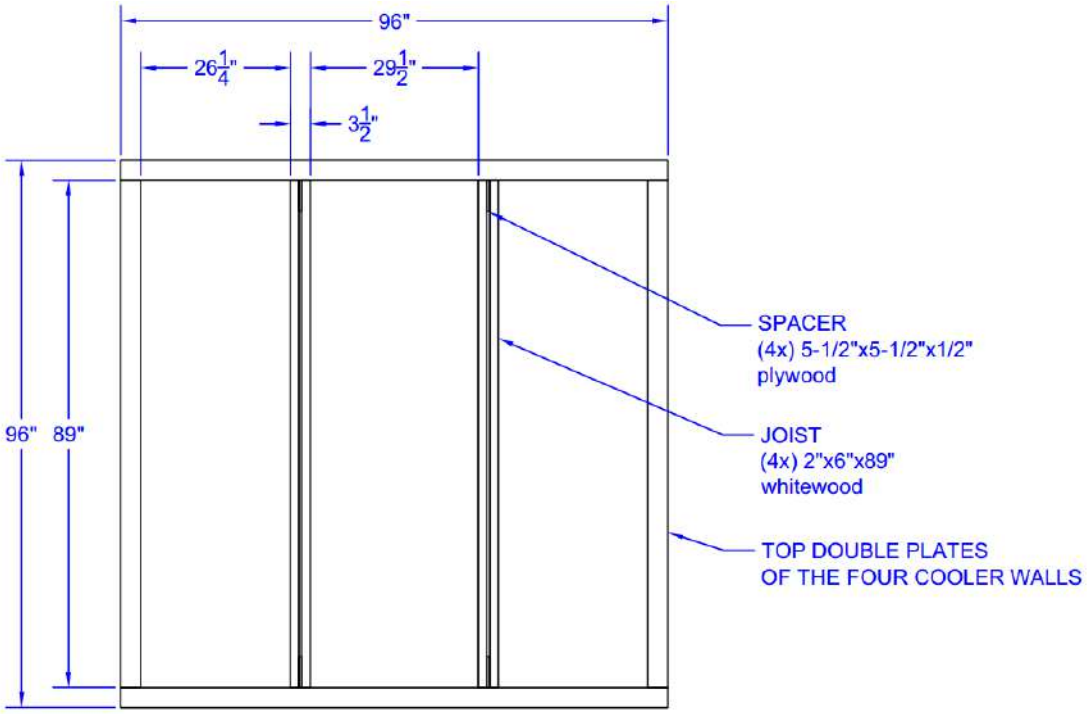
B. FOR COOLERS WITH OPTIONAL HANGING JOISTS (with or without roof)

We used two double ceiling joists made with 2x6s to allow for the hanging of items from the ceiling of the cooler- like mounting a rack for game after hunting.



- Make two double ceiling joists by nailing together two 89 inches long white wood 2 by 6 boards with two pieces of 5-1/2" x 5-1/2" x 1/2" thick plywood spacers – one spacer on each end.

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- Nail four joist hangers to the back and front walls' TOP PLATES to accept the double ceiling joists.

- Place the double joists into the double joist hangers.

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- Nail the double joists in place with two 16 penny vinyl-coated sinker nails per joist hanger.

- In order to support the ceiling light, we will install a 2 by 4 support. Measure the distance between the double joists and cut a 2 by 4 to this length. Nail the 2 by 4 between the double joists centered from front to back of the cooler.

EXTERIOR SHEATHING

Before installing the door and in order to provide structural rigidity to your cooler we recommend sheathing the outside of the cooler.

The outside sheathing also creates an air gap between the insulation, effectively increasing the overall R-factor of your cooler walls.

A. FOR INDOOR COOLERS (ECO-COOLER)

Cut and fit **4'x 8' - 7/16" OSB** boards as necessary depending on the wall (cutting around A/C and door openings) and screw (or nail) them to the walls at the top, bottom and along the studs every 9 - 12 inches.

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B. FOR OUTDOOR COOLERS (SHED STYLE)

- Cut and fit 4’x 8’ **SmartSide Strand Panel Siding** boards as necessary depending on the wall (cutting around A/C and door openings).

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- Nail the panels to the walls at the top, bottom and along the studs every 6 inches using 1 ¼" finishing nails trough the siding and into the studs.

- The siding will be **flush with the second top plate (from top to bottom)** and the bottom part of the siding may hang down past the bottom plate. *Leave the last TOP PLATE free to be able to nail the front and back siding after the roof is installed*

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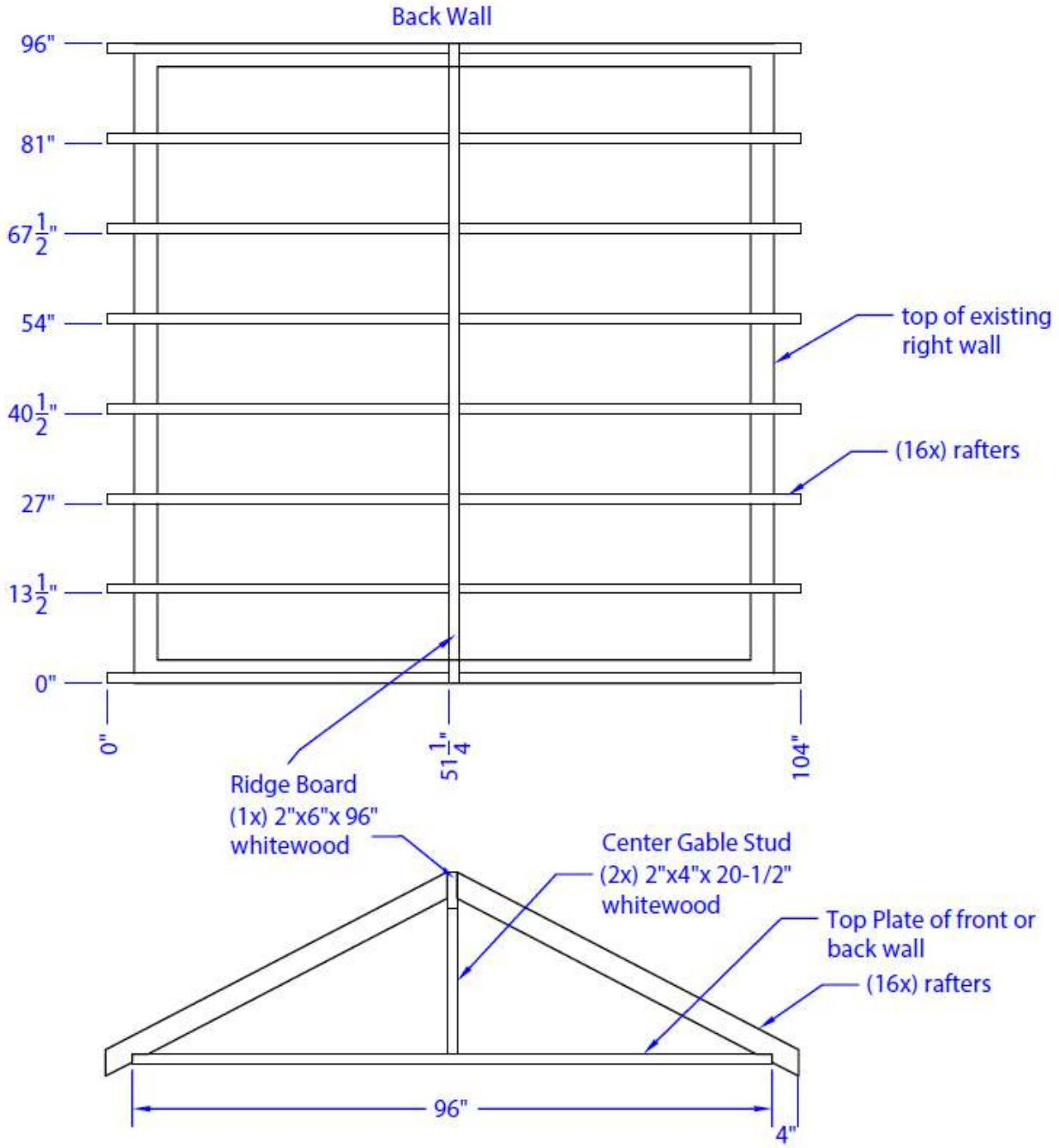
BUILDING THE ROOF ASSEMBLY

The roof of our Shed-Style cooler is a gabled style roof. To make the roof section, first we need to determine the measurements of rafters, ridge-board, center gable stud and rafter overhang.



Rafters Layout and Detail

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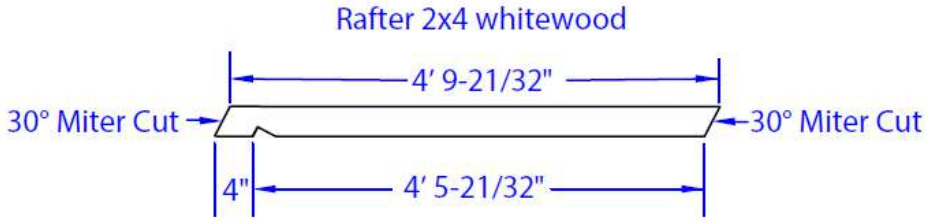
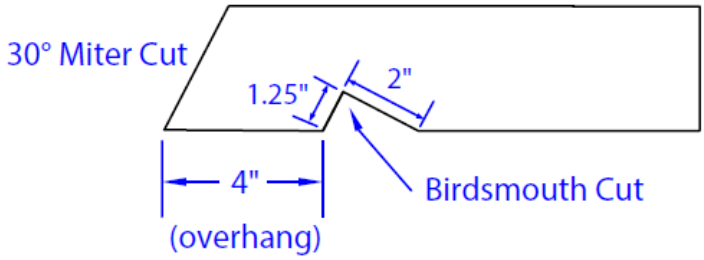
- The first component we will build for the roof is the rafters. We will be building 16 roof rafters with 2x4 10 feet studs. *You will be able to make two rafters (left and right) from a 10 feet stud.*

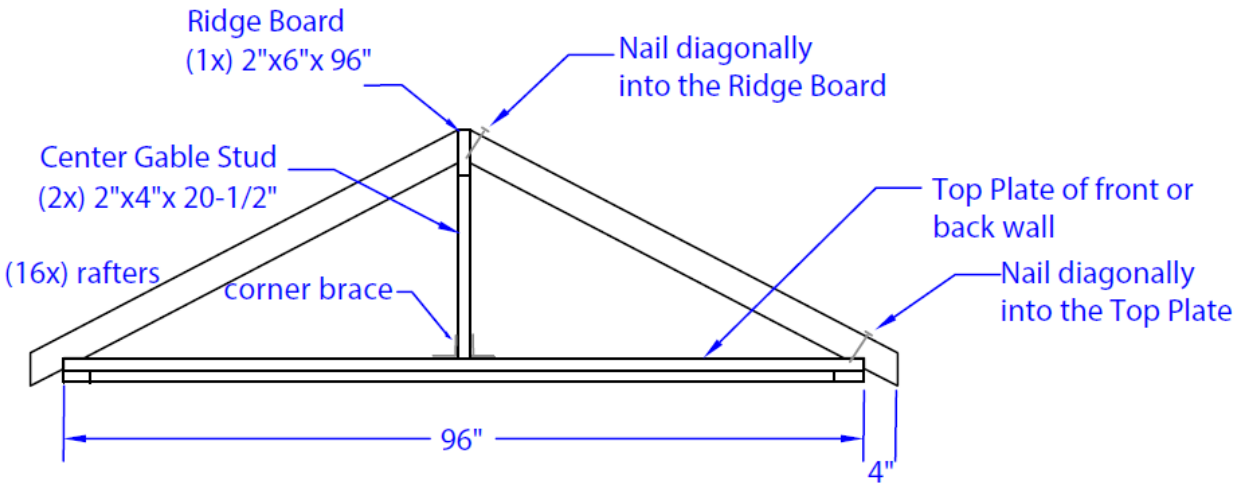
- Cut 2 pieces measuring: **4 feet 9-21/32”** out of each 2x4x10 with a 30° Miter cut on both ends. See picture below for reference. Measure twice cut once!



- Next step is to calculate and make the **birdsmouth** in the rafter, so that it sits on the TOP PLATE of the wall structures. Check illustration below for details about how to calculate and make birds-mouth. **Use set square for this.** Measure twice cut once!



- After building all the rafters cut two 2x4 20-1/2 inches **center gable studs** for front and back side.
- Join the Ridge Board with the Center Gable Studs on each end, by nailing 6 in. nails right through the Ridge Board and into the center gable stud.
- Join the center gable stud with the front and back wall TOP PLATES by using two Corner Braces on each side of the stud and screw with 1-inch wood screws.
- Nail all the rafters following the spacing from the Rafter layout drawing. **Nail them diagonally to the Ridge Board and on the other end to the TOP PLATES of the walls.**



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- Cut and install the 7/16 in. OSB boards to go on top of the rafters. Nail the OSB to the rafters using 3.5” galvanized nails every 6”. Use a chalk line to mark the rafter line on the OSB board to make sure you nail into the rafter and you don’t leave any loose nails.
- We did not install rake boards on the front and back (fascia). When installing the OSB boards, we left and overhang on the front and the back of around ~3” and just finished with the drip edge.
- Measure, cut and install the front and back siding to cover the roof frame. *Do not forget to cut and opening for the Louvered Aluminum Soffit vents.* Nail to the rafters and Top Plate of the walls.

- Next step is to install the **fascia boards on the eves of the roof**.
- Install one 1x4x8 trim board on each side by nailing 2” galvanized nails right into the 2x4 rafters. *Using the flat edge of a framing square sitting on top of the OSB board, align the top of the trim board (1x4) until it touches the flat side of the square and nail it to the rafter.*

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INSTALLING THE ROOF

PRO TIP

Correct roof installation is crucial for your Outdoor Shed. Installing roof felt, shingles, etc. is a 2-person job. If you are new to roofing and lack experience, we would recommend getting professional help or an experienced helper.

There are many resources on the Internet for guidance on how to properly install roof felt and shingles but most important:

FOLLOW THE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION OF ROOF FELT AND SHINGLES - THEY ARE INCLUDED FOR A REASON.

Here are some common tips of the trade when installing the drip edge, roof felt and shingles.

DRIP EDGE

- Install your drip edge on the eaves first - before the felt installation
- The drip edge should be fastened with galvanized nails about 12 inches apart.
- Do not install the drip edge on the front and back sides – do it after the roof felt installation

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ROOF FELT

- Some roofers recommend laying a strip of adhesive rubberized membrane over the drip edge at the eave as an added protection. This should be laid before the first felt layer is applied.
- Start the felt at the bottom, on a corner and work your way up.
- Leave excess fabric to overhang on the front and back of the shed- it will be trimmed later.
- Use a construction stapler or nails with plastic caps for installation.
- Use fasteners at least every 8 inches – some manufacturers recommend every 4 inches.
- Leave the top portion of each sheet loose as you go up. The next layer will overlap and will be stapled on the overlay catching both sheets.
- Overlay your layers at least 2 to 3 inches. ***Follow your manufacturer's recommendation***
- If the roll ends before reaching the other end, overlap the end of the roll 4 inches with the start of the new one and fasten both pieces to the decking.
- Trim the excess felt on the front and back of the shed with a utility knife after installation.
- Install the drip edge on the front and back sides of the shed's roof- over the felt.

ROOF SHINGLES

- All shingles come with instructions printed on the back- PLEASE FOLLOW THEM.
- A common mistake is using the wrong nail pattern or not enough nails. Follow the manufacturer's instructions for how many nails and what pattern should be used for your shingles.
- Avoid too much overhang on the shingles on the eave sides. Please follow manufacturer's instructions - this is commonly no more than ½ to ¾ of an inch.
- In most cases you should avoid using architectural style shingles with a racking pattern installation. **Follow your specific manufacturer's recommendation for the installation pattern of your shingles.**

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INSTALLING THE DOOR

Prior to insulating your Cooler, it is best to install the door frame and door.

THRIFTY TIPS

- Choose an exterior door as it will be insulated reducing the cooling loss through the door area.
- Choose an outward swing door.
- You can also use an insulated door without a frame and either build your own frame or purchase a door frame kit.
- Ensure your NEW exterior rated door comes with weather sealing.
- Be careful to not damage the weather sealing during installation.
- You can repurpose an exterior insulated door or make your own, by building a frame and sandwiching between 2 - 4" of insulation between sheets of plywood or OSB.
- If you choose to repurpose a door or make your own it is important to have good weather sealing in order to maintain cold temperatures within your cooler.
- Plastic curtains at the entrance of your cooler are a great addition to reduce air infiltration on loading times.

IMPORTANT

Whichever method you choose for your door frame and door it is important that the door is installed plumb and square in order to ensure easy opening and closing of your door as well as achieving a good seal. *Follow the manufacturer's instructions for installation or go online and watch many of the online videos available from Hardware stores about "How to Install an Exterior Door". They have great tips for ensuring proper fit, shimming, leveling, etc.*

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OPTIONAL: ELECTRICAL PRE-WIRING

IMPORTANT

Once your cooler is built and before insulating it, you can have a certified electrician run the electrical if you wish to have conduit run along the framed walls so it is not exposed inside (or outside) the cooler. This is a personal choice and it is not necessary. Wiring CAN ALWAYS BE DONE EXTERNALY EVEN AFTER INSULATION IS IN PLACE (with exposed conduit).

- It is ok to run flexible or hard conduit in the walls, next to the framing, but BE AWARE that the outlets WON'T be mounted on the framing at this point.
- **ALL OUTLETS WILL (and should) be surface mounted - on TOP of the insulation**. Your electrician should run the wiring and locate for you the connection points for the outlet boxes to be mounted after you have insulated your cooler. Make sure you mark the locations and keep track of them as you insulate your cooler.
- On occasion, condensation may drip from the front of your air conditioner so make sure all electrical is mounted to the side of the air conditioner and not directly beneath.
- Installing additional 2x4's in between studs may be required to anchor the electrical boxes depending on the location of the particular outlet you plan to have.
- We recommend surface mounting the electrical boxes inside of the cooler to minimize compromising the insulation integrity and the chance for condensation within the electrical box.

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INSULATING YOUR ROOM

Now that you have your cooler built and the door installed you are ready for insulation. Even though the pictures in this guide may reflect otherwise, you should **insulate your cooler in the following order: Floor-> Ceiling -> Walls**

DO NOT USE FIBERGLASS INSULATION!

We recommend that the floor, walls and ceiling of the cooler have **two layers** of 2" Foam Insulation (total added of 4" inches). We used R-Max Thermasheath-3 but there are other alternatives. This is one of the best insulations available. This is a double foiled polyisocyanurate rigid foam insulation that when two 2" layers and a 3-1/2" air space are combined yields a system R-factor great than R-30 for your finished wall!

IMPRTANT NOTE!! *If your insulation does not have paper backing (or foil backing), make sure the adhesive you choose is SAFE to use on foam board.*

THRIFTY TIP

Do not skimp on insulations. The quality, thickness, and tightness of your insulations will impact your electricity bill. Spending a few extra dollars on quality insulation to achieve a higher R-value will help reduce your electricity bills for years to come.

PRO TIP

Cut each piece of Insulation ~1/4" smaller than the measured dimension to take into account any out-of-square construction of the cooler and out-of-square cutting of the insulation. Then dry fit each sheet of insulation prior to applying the liquid nails and trim if necessary.

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FLOOR INSULATION

A. FOR INDOOR COOLERS (ECO-COOLER)

Since you will not be insulating your floor proceed to the ceiling insulation (p. 42)

B. FOR OUTDOOR COOLERS (SHED-STYLE) AND/OR COOLERS WITH A FLOOR-BASE

Cut and place insulation panels on top of the base to fit snug in between the framed walls. The *recommended* thickness of rigid foam for an insulated floor is 4" (just like the walls).

Once your insulation is in place, cut and fit ¾" treated plywood panels to close your floor.

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Screw the top layer of plywood down to the first plywood layer with **long** exterior rated wood screws every 12”.

Finish your floor with any material of your choice (tile, linoleum, vinyl tiles, etc.).

We recommend you to pick a **durable non-slip** material for your cooler floor.

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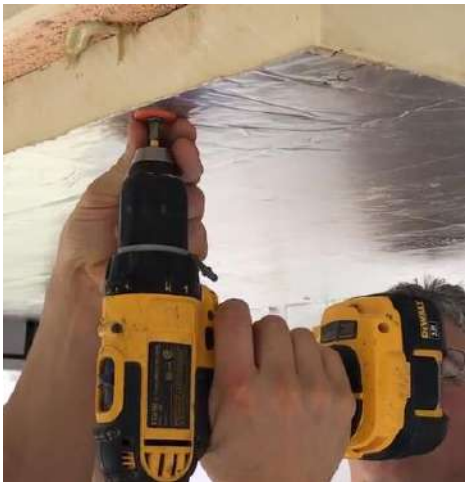
CEILING INSULATION

A. FOR COOLERS WITH NO OPTIONAL HANGING JOISTS (with or without roof)

- Cut and fit insulation panels to go OVER the ceiling joists (not in between!) just as explained in the "WALLS INSULATION" section. Leave the seams in between panels running parallel to the door and back wall. This way the ceiling panels will "sit" on the wall insulation- once it is installed. The wall insulation will provide *extra* support to hold the ceiling panels.
- Using a combination of **proper heavy-duty adhesive (like liquid Nails)** and screws (with plastic caps) install the first layer of insulation to the ceiling.



- Using spray foam and HVAC tape seal all joints and gaps on the first insulation layer. *See how-to tips on page 49 to 51*

- After allowing sufficient time for the adhesive to fully cure on the first layer, cut and dry-fit a second layer of insulation to go over the first one. *NOTE: DO NOT match the seams of your first layer. Install your second layer staggering the seams when compared to the first layer.*

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- Apply heavy duty adhesive (like Liquid Nails) generously to both layers of insulation and glue the second layer of insulation.

- Apply pressure on your panels evenly and all around to ensure proper contact. As done with the first layer of insulation, fill all gaps with spray foam insulation and tape all joints with 2-1/2" wide foil HVAC tape
- It is HIGHLY recommended to brace your ceiling while the adhesive dries and cures to ensure that your panels are properly installed and will not sag or fall down.

- Proceed to page 47 (WALLS INSULATION)

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B. FOR COOLERS WITH OPTIONAL HANGING JOISTS (with or without roof)

- Measure and cut a 2" sheet of R-max to fit between the outer wall top plate and double ceiling joist.
- Install the insulation and use spray foam to fill any gaps from both the inside and outside of the cooler.
- Spray insulation in the gap between the double joists also.

PRO TIP

If the insulation is loose and falls out, drive a few nails or screws on an angle to temporarily hold the insulation in place. Once the spray foam cures the nails can be removed and the insulation will remain in place.

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- Measure and cut a 2" sheet of R-max to fit between the double ceiling joists.
- Measure, cut, and place a 2" piece of R-max above the light support that is at least 8" longer than the gap and center this piece over the gap.

- From the outside of the cooler drive two #12 x 4" long plastic cap nails through this small piece of R-max and into the light support 2 by 4.
- Do not drive the nails all of the way - allow for the R-max to rise 1/2" above the 2 x 4 as shown by the finger gap in the photo.
- Use spray foam insulation to fill the 1/2" gap cementing this piece to the main ceiling insulation.

PRO TIP

Before putting the second layer of insulation on the ceiling, remember to mark on the side walls the location of your joists (to hang the rack system) as well as the 2 by 4 in between the joists that will hold your Light fixture.

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- Cut and dry-fit insulation panels for your second layer on the ceiling.
- Using both adhesive and #12 x 4" long plastic cap nails to hold the ceiling insulation sheets in place. Apply heavy duty (like Liquid Nails) adhesive generously to both layers of insulation.
- As was done for the first layer of insulation, fill all gaps with spray foam insulation and tape all joints with 2-1/2" wide foil HVAC tape. *See Taping tips on page 49 to 51*
- Place 2 x 4 braces from the ceiling to the insulation as appropriate to ensure that the 2nd insulation layer is tight to the first insulation layer. Take care to not put too much pressure on the insulation as to cause permanent damage.

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WALLS INSULATION

PRO TIP

Mark the wall stud locations on the floor and ceiling at least 6" out to make location of the studs easier when installing the insulation.

- Measure and cut two 2" sheets of R-max to fit over the studs of the back wall covering the air conditioner opening.

  NOTE THAT **THE INSULATION GOES OVER THE STUDS AND <u>NOT IN BETWEEN</u> THE STUDS**. THIS IS IMPORTANT TO ENSURE MAXIMUM R-VALUE.

- Flush the edge of the insulation with the exterior of the left and right cooler walls.
- Put the sheets of R-max in place and fasten to the studs with #12 x 3" long plastic cap nails.

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- Use spray foam to fill any gaps and wipe excess spray foam off the insulation face and corners.
- Repeat for the front wall.

- Repeat for the left and right wall.
- Take another look at all joints and fill any gaps with spray foam insulation.

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- To reduce any air leakage, we will tape all joints with 2-1/2" wide foil HVAC tape.
- The butt joints between sheets are the easiest to tape.
- Cut the tape to match the length of the joint being taped and apply from top to bottom by slowly pulling off the backing paper and firmly pressing the tape in place.
- Take care to center the tape on the joint.

- Taping the corners is a bit trickier yet with proper technique is easily achieved.

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- Cut the tape to match the length of the joint and remove the first 12" of backing paper.
- Cup the tape inward toward the wall and apply the tape to only one wall.

- Remove another 24" of backing paper and pull tight and again apply to only one wall.
- Repeat until the entire strip is attached to one wall.
- Go back to the top and with your fingers on the side of the tape that is taped to the wall slide your finger towards but not all of the way to the corner.

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- If the tape contacts the opposite wall gently unstick it from the opposite wall and roll it away from the opposite wall.
- Go back to the top and firmly slide a board from the taped side to the un-taped side allowing the tape to now contact the second side.

- Firmly press the tape in place with the board and your fingers from top to bottom.

(continue on next page)

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Now that we have the first 2" layer of insulation on the entire inside of the cooler, we will put on the second 2" layer.

- Measure and cut two 2" sheets of R-max for both the left and right walls.
- Apply Heavy Duty Adhesive (like Liquid Nails) generously in a thick bead to the installed sheets of insulation on the left and right walls and to the second layer.
- Move the second layer R-max in place and push tightly against the first layer of R-max to ensure adhesion.

- Gently pound each sheet with the flat of your fist up and down and across for several minutes in order to help ensure adhesion.
- Do not pound so hard as to leave marks on the R-max.

(continue on next page)

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Trim the excess insulation of the door opening and to cut out the insulation over the A/C opening follow these steps:

- Using a hand saw, carefully insert the tip of the saw flush with the door frame and start cutting the excess insulation from top to bottom. To finish the cut, flip the saw (teeth facing up) and cut flush against the frame going up until you reach the top part of the frame.
- Follow the same procedure on the other side of the door frame and on the top.

- From the outside back wall, use the A/C cut out on the OSB sheeting as a guide for your saw, and follow the same procedure as in the door opening to cut the insulation out for the A/C opening.

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INTERIOR FINISHING

After your walls and ceiling have been insulated, all gaps have been sealed, all seams and joints have been taped and you have given enough time for the adhesive in between insulation layers to cure, it is time to finish the interior. While not necessary, finishing the walls prevents accidental damage to the insulation keeping the integrity of your cooler walls for years to come.

We used **FRP (Fiberglass Reinforced Plastic)** to finish the walls and ceiling. This material gives a great appearance, is accessible at most hardware stores, is easy to install and easy to clean. This material is very common in the restaurant industry. Some people finish the inside of their coolers with painted plywood as well. We will show you how to finish your cooler with FRP - the process for plywood is similar except that you can aid yourself with long wood screws (catching the studs) to hold the plywood in place. It is also recommended to apply a coat of mildew/mold resistant paint or primer to the wood panels.

- Measure and cut the FRP to cover the walls and ceiling - *cutting a bit undersized as appropriate to allow room for the FRP center and corner strips*

- Following the manufacturer's recommendations, apply **with a trowel** FRP adhesive to either the insulation or the backside of the FRP. ***WARNING! Some FRP adhesives are not intended for use directly over foam, since our rigid foam had foil backing on the front this FRP glue was ok. Please make sure you are using the proper adhesive for your situation!***

  TiteBond Advanced Polymer Adhesive *has been recommended by many customers**.***

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- Place the FRP over the insulation and press firmly to ensure a strong bond.

- Install FRP center and corner strips between the FRP panels.

(continue on next page)

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- Install adjacent panels by interlocking into the FRP center and corner strips.

- If necessary, **brace the FRP in place - especially the ceiling**

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- Finish by cutting and gluing FRP to cover any exposed insulation around the doorway.

ELECTRICAL

Once your cooler is built and insulated, have a certified electrician install the electrical for the air conditioner, CoolBot, lights, and any other accessories you may add to your cooler.

On occasion, condensation may drip from the front of your air conditioner so make sure **all electrical is mounted to the side of the air conditioner** and not directly beneath.

We recommend surface mounting all electrical boxes inside of the cooler to minimize compromising the insulation integrity and to reduce the chance for condensation within the electrical box.

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After your electrical boxes are installed use electrical insulation putty to seal the entrance of the conduit into the electrical boxes to reduce the chances of warm air getting inside and creating condensation due to the lower temperature of the cooler.

OPTIONAL: MOTION DETECTOR LIGHT

A motion detector light is an added convenience and may simplify the electrical installation by avoiding the need for a light switch.

We chose a motion activated LED light fixture made by Lithonia that can hang from the ceiling or can be mounted directly on the 2 by 4 that we installed in between the 2 ceiling joists. The model number for the light is: SGLL 24 80CRI 40K PIR M4. To install the light fixture, follow these steps:

- Carefully remove the clear cover of the front of the light and place to the side.

- Remove the Philips center screw holding the lamp assembly and place aside.

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- Gently squeeze both ends of the metal section in the center of the fixture and flip the metal cover to expose the wires and the mounting holes.

- Locate the position of the 2 by 4 under the ceiling insulation.
- Position the fixture longways along the direction of the entrance and the back wall. Leave the end with the cord plug towards the back wall (A/C unit wall). This will simplify electrical connections as it can be plugged in in the same outlet as the CoolBot and the A/C without having to run additional outlets.
- Using 4” wood screws anchor the fixture to the ceiling panels. It is very important to make sure that the screws are going in the 2 by 4 and not just through the insulation to ensure that the fixture is properly anchored to the ceiling.

- Screw the metal cover back in place using the Philips screw that was removed at the beginning.
- Replace the clear covering of the light fixture.
- Install the electrical cord supplied with the fixture and plug in the power outlet.

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OPTIONAL: CEILING RACK - SLIDING GAMBREL SYSTEM INSTALLATION

You may ask how do I hang this season's deer, elk, or wild boar in my cooler? With a pipe style ceiling rack and gambrel hangers of course!

When we constructed the ceiling, we used double 2" x 6" joists - just so we can hang this season's game meat in our new cooler.

- Materials List for (2) sliding gambrel systems:
  - (4) ½" galvanized floor flanges
  - (4) ½" x 3" galvanized pipe nipples
  - (4) ½" galvanized 90 degree FPT x FPT elbow
  - (2) ½" x 48" long galvanized pipe threaded both ends
  - (6) gambrel hangers that freely slide on ½" galvanized pipe (actual outside diameter of pipe is 0.84")
- Preassemble the two pipe style ceiling racks with up to three gambrel hangers per side.
- It is important to install the gambrel hangers on the pipes prior to mounting them to the ceiling otherwise you will not be able to install the gambrel hangers.

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- Most gambrel hangers will slide on 1/2" galvanized pipe - check your gambrel hangers to ensure a fit prior to construction.
- Center the pipe style ceiling hangers front to back in the cooler and mount them to the double joist hangers using four #14 x 4" long wood screws per pipe floor flange.

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AIR CONDITIONER INSTALLATION

It is now time to install the air conditioner into our new cooler.

For an 8' x 8' walk-in cooler we recommend a 15,000 BTU air conditioner for most applications.

We use an LG LW1516ER for our cooler. LG is our most preferred brand due to reliability and easiness of installation with the CoolBot. For a list of compatible brands for your cooler please visit our website at: https://www.storeitcold.com/ac-selection/

- Carefully remove the air conditioner from its box and read all instructions.
- Remove the 4 screws holding the unit to the housing. Two on the sides and two on the back.

- Pulling from the handle slide the unit out of the housing.

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- Install the housing into the air conditioner cutout so the top bar is resting against the wall.

- Screw the housing to the wall with two wood screws. Make sure the cabinet tilts down at least 1/2" in the back. The weight of the air conditioner is usually sufficient to ensure 1/2" of tilt - if not shim up the front to achieve the recommended tilt.

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- Slide the air conditioner into the housing from inside of the cooler.

- Replace the screws that hold the housing and the air conditioner together.

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COOLBOT INSTALLATION

Now that your air conditioner is installed we can install the CoolBot and start cooling down the cooler.

- Remove the CoolBot from its box and read all instructions. Familiarize yourself with the device and all its functions and parts.

- Mount the CoolBot with two screws alongside your air conditioner - do not plug into the power source.

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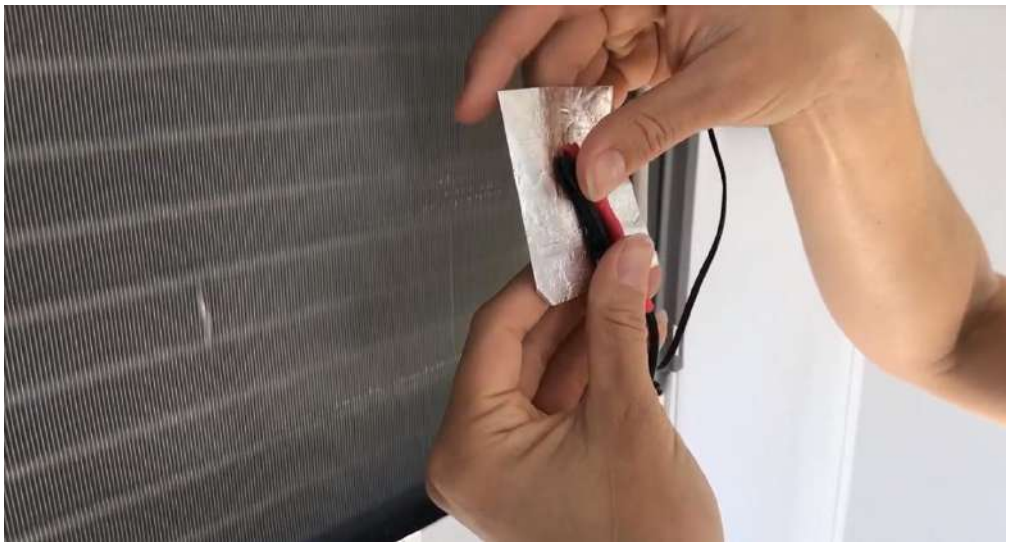
- Locate your A/C's temperature sensor. It is the only thing attached to the front fins of your A/C. If the A/C has a clip holding the sensor into the fins, remove both of them from the fins and then remove the sensor from the clip.

- Install the Heater Cable by laying the red tip and air conditioner temperature sensor alongside of each other. Using the provided aluminum foil wrap both together ensuring that they are in contact.



- Plug the heater cable into the "Heater" port on the CoolBot.
- Let the Heater cable and A/C sensor connection hang free alongside the power cord of the A/C
- You can use a wire tie or zip tie to keep them next to the power cord

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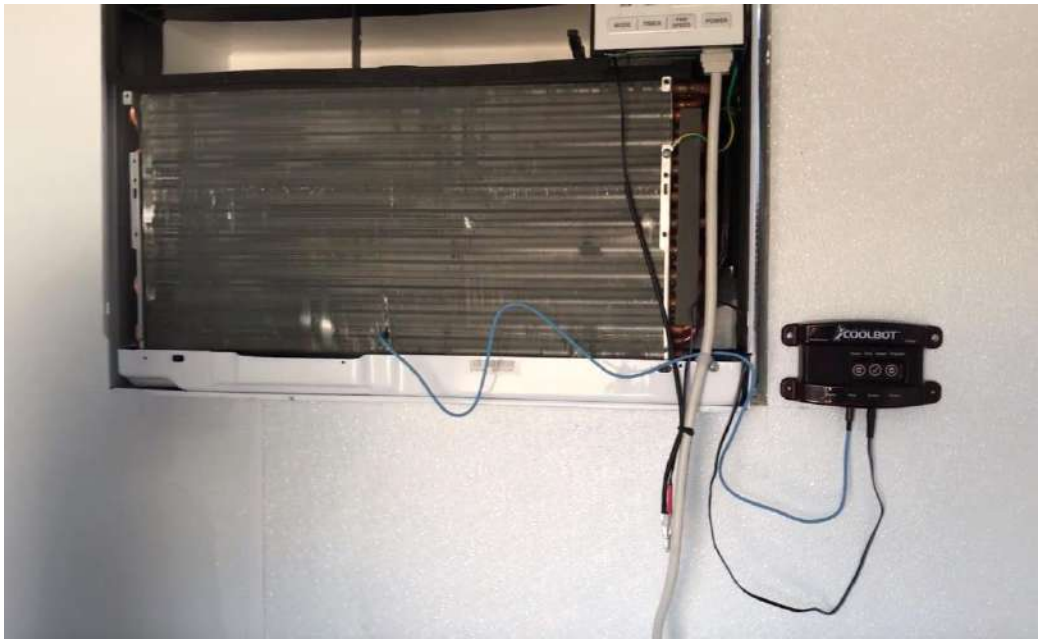
- Ease the fins apart to make a small gap by gently pushing a pencil between the fins in the center of the A/C and within one inch from the bottom.

- Install one of the temperature sensors with the blue cable and black tip into the small gap by gently sliding the sensor in place ¼” only. Route the cable sensor to allow for replacement of the air conditioner front grill without pinching the cable. Plug the temperature sensor cable into the "Fins" port on the CoolBot.



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- Plug the other temperature sensor into the “Room” port of the CoolBot and make sure it is freely hanging in the cooler and not touching anything.

- **PLEASE PROCEED CAREFULLY IN THIS STEP**.
  NOTE: Depending on your A/C model, you do not have to replace the front cover of the A/C if you don’t want to.

  This is for aesthetic purposes only and it won’t affect the functioning or the warranty of your system. An A/C unit with the front cover removed, will give you much easier access to the coil and Fin sensor for troubleshooting purposes and regular maintenance (coil cleaning).

  Some newer LGs have the panel attached to the cover in which case you have to put the cover back.

  Replace the front cover of the A/C starting with the top and then carefully routing the sensor and heater cables through the small opening that the A/C cover has on the right side near the bottom. The A/C power cable and the Heater-A/C sensor connection will be routed through the small opening at the bottom of the front cover. The Fin Sensor and the Heater Cable will go through the notch on the right side of the cover as they make their way to connect with the CoolBot digital controller. After the cover is in place secure it on the front with the 2 screws that came with your A/C installation package.

  IMPORTANT! Ensure that you do not pinch any cables while trying to attach the front of the A/C

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IMPORTANT! After the front cover is in place, visually inspect through the louvres of the cover to ensure that the Fin Sensor end (tip) did not come loose out of the fins

- Plug your air conditioner in and turn it on.
- Set the air conditioner to the lowest temperature, make sure the air conditioner is set to "COOL" mode and the fan is on "HIGH".
- Plug the power supply cable into the "power" jack on the CoolBot and plug the power supply into the cooler electrical outlet.
- To set the temperature on the CoolBot, press the checkmark button - the current set temperature will blink.
- Use the right and left arrows to set the temperature to the desired value.
- Press the checkmark to save the value.

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SHED EXTERIOR FINISHES

Now it is time to put the last touches on our Shed-Style cooler.

EXTERIOR DOOR TRIM

- Measure and cut two 1x4 exterior trim boards to frame your door on the sides. Cut them ~5 ½" longer as you will have to cut the top of your board at 45° to meet the horizontal trim piece.
- Measure and cut one 1x4 trim piece for the top of the door with both ends at 45°.
- Using finishing nails attach the trim to the door frame.

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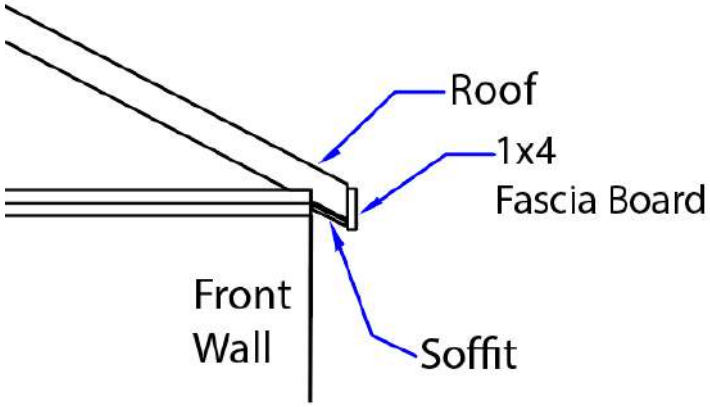
SOFFIT

- We used a 96” 1x6 board for the soffit. If a 1x6 is too wide you can cut a 96” long piece of OSB or plywood to fit in between the fascia board and the wall.
- Nail the soffit board into the rafters using galvanized nails.



- Using a leftover piece of siding panel (or a piece of plywood), measure and cut 4 pieces to cover the rafter, soffit and fascia board edges. This will give a better appearance from the front and back.

EXTERIOR CORNER TRIM

- Measure and cut four 1x4 boards with a miter cut of 30° at the top. These will be the front and back wall corner pieces. The miter cut is because the trim meets the roof at the top.
- Measure and cut 4 1x2 trim pieces with a 30° bevel cut at the top. The bevel cut is because the trim piece will be under the soffit which has a ~30° inclination.
- Starting with one corner, place (without nailing) both pieces of corner trim making a 90° and **leaving the seam on the side**. Once the boards are in place and flush, nail the 1x2 to the side of the shed wall and then nail the front piece to the front wall and the 1x2.

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- Repeat on all four corners

A/C OPENING TRIM

- We installed trim around the A/C opening with 1x4 boards- this is not necessary.
- WARNING! Make sure you do not block the side vents of your A/C.
- Follow a similar procedure as when framing the door cutting all four pieces at 45° on both ends.

PAINTING YOUR SHED

- Painting your shed will give it a great look and will protect the surfaces from deterioration from the environment.
- Choose an exterior latex or an oil-based paint. Apply a couple coats at a minimum.
- Trim can be painted darker or white for good contrast and appearance.

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