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PLAN OVERVIEW

about these plans

I began making top bar hives for our own apiary in 2008. I had little woodworking experience and few tools, but I found some rudimentary plans online and got to work. I made a lot of mistakes on my first hive, but the bees didn't care. They seemed to like it just as much as our professionally made hives we sell today. Since we sold our first hive in 2009, we've continued to modify the design, factoring in our own experience, as well as the feedback of our customers. We created these plans so that you can build the same fantastic hives that we produce at our mill in Portland, Oregon. With these plans you can utilize local materials and modify the design in any way you see fit. We offer suggestions based on years of manufacturing thousands of hives. Take them or leave them, but whatever you do, have fun and enjoy your beautiful hive!

sourcing materials

Customers are successfully using our hives all over the world. With these plans, however, you can use locally-sourced lumber and other materials to build the perfect hive for your family and climate, all while avoiding the costs (financial and environmental) of shipping. We urge you to use salvage or Forest Stewardship Council (FSC) certified lumber if it is available in your area. We use Western Red Cedar to build our hives because it lasts a long time, doesn't require paint, is readily available in our location (the Pacific Northwest), is lighter and insulates better than pine. In the Southern United States, cypress is a good alternative; in the Northeastern United States, Eastern White Cedar. If pine is all you can find, by all means, use that! The bees won't complain. If you are using pine or similar wood, you will likely need to paint the exterior (never paint or seal the interior of a bee hive).

When sourcing wood, look for a wood that is relatively light, does well in outdoor applications, and can easily be cut with the tools you have.



TOP BAR HIVE

Plans & Instructions

use these woods

The best woods to use for these plans are:

Western Red Cedar
Eastern White Cedar
Juniper (though wide boards can be very hard to find)
Cypress
Douglas Fir (though a bit heavy)
Eucalyptus
Pine

avoid these woods for the hive body

Woods to avoid for the hive body:

(the roof or legs could utilize these materials)
Pressure treated lumber
Plywood

We use full 1" thick (not nominal $\frac{3}{4}$ " lumber like you find in most hardware stores) lumber for the body of our top bar hive because we build thousands of hives and are able to get it custom cut to our specifications. If you have the ability to get custom cut lumber, it can sometimes be less expensive and waste less wood than you will buying pre-cut boards. 1" boards are stronger and insulate better than $\frac{3}{4}$ " boards. We've written these plans to accommodate for varying thickness (1" and $\frac{3}{4}$ ") lumber for the hive body. The only parts that should need to be adjusted if you're using $\frac{3}{4}$ " lumber instead of 1" is the hive body window side and entrance side. The dado/rabbet cut out of the ends should be changed from 1" to $\frac{3}{4}$ "

if you can't find the wood we specify, get creative!

If you can't find lumber in the widths specified in our plans you can get creative. If the plans call for an 11" wide board and all you can find are 6" or 8", you can always glue two boards together on the long side to get a board of the width you need! Again, the bees won't complain. When it comes to the wood quality, this usually refers to the number of knots and the tightness of the knots in the lumber. Tight knots are knots that don't fall out when you push on them. Clear wood has no knots. #2 lumber usually has very tight knots, and this is the lumber we recommend and use for the hives we build. You can get away with lumber with more and larger knots, but you may end up with more wasted wood. Knots are places on the board where limbs of the tree

PLANS:
Top Bar Hive

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TOP BAR HIVE

Plans & Instructions

use caution with power tools

once were. Boards with many knots will warp and crack more than boards without knots. If your hive ends up with a few knots that fall out you may find that the bees prefer to use these holes as entrances over the holes you cut for them! I wouldn't worry too much about this.

When I built my first hive, I borrowed a table saw and a chop (miter) saw and made a lot of mistakes. Thankfully none of them caused injury. Power tools are very dangerous if used without training and experience. The table saw is the most dangerous tool in most workshops. I highly encourage anyone planning to use power tools to find a mentor and/or take a woodworking class before trying their hand at building bee hives. This will not only make you a better woodworker, but will absolutely keep you safer.

understand basic woodworking

For liability reasons, we are writing these plans with the assumption that you understand basic woodworking methods and safety practices.

USE THESE PLANS AT YOUR OWN RISK!

tool list

We recommend the following tools to build the top bar hive described in these plans:

Table Saw
Miter/Chop Saw (ideally one that can cut 11" wide boards)
Band Saw
Power drill
Hole saw bit (1-2")
2-4 wood clamps
Router

The hive can be built using alternative tools, and we leave that up to you to figure out. You could get by with a simple hand saw, but this will make the process significantly more time consuming and likely to have issues. As long as you end up with boards cut to the right size, the path you take to get there is up to you!



TOP BAR HIVE

Plans & Instructions

Throughout these plans we'll provide you the exact angles and specifications of the hives we build and sell. We'll note when certain cuts are done only for aesthetics rather than functionality and you can decide whether or not to do the extra steps.

hardware

Much like the rest of the hive, the bees don't care what hardware you use. Use whatever hardware is well-made and readily available in your area.

assembly

Our top bar hives can easily be assembled by anyone with the ability to operate a power drill and match parts together. We highly recommend pre-drilling all parts prior to screwing together. This will significantly decrease the chance of cracking boards. You can use nails instead of screws, but we recommend and use screws ourselves for the increased strength and longevity your hive will receive.

sealing & painting

Whether you seal or paint your hive depends on the type of wood you used and how you constructed your roof. If you go with the wooden roof as described in these plans, we recommend sealing the exterior of the wood used on the roof with tung oil or paint. If the hive body is pine or another wood that doesn't do well unprotected in the elements, seal the exterior of the hive body, too. If you used plastic or other material for the roof covering, you may not need to seal any part of the hive, as the roof keeps off the majority of the rain and snow.

CONSTRUCTION

complete parts list

QTY	Hardware
50	2" #8 Screws (58 with stand)
10	1/2" screws with 3/8" head
2	2 1/2" x 3/8" Bolts
2	3/8" Nuts
4	3/8" Washers
2	1/2" by 3/8" Bushings (only for hinging, removable roof)
2	Hinges
3	2" Bungs (Or sized to match the entrance holes)
3	1" Corks (Or sized to match the ventilation holes)
1	41 7/8" x 6 7/16" Plexiglas
1	2"x 6" 1/8" hardware cloth/screen (aluminum or other metal)
Lumber	
3/4" stock	
2	8'x12" nominal boards If you're making the stand + legs, an additional 3'x7"x3/4" board is required
1" stock	
2	8'x12" boards If you're making top bars, an additional 6'x12"x1" board is required
2x3" or 2x4" stock	
For feet: 3'	
For stand + legs: 12'	

the roof



The primary purpose of the roof is to keep the hive protected from the elements. We make a peaked, easily-removable, hinged roof primarily for aesthetics and ease of use. It by no means needs to be this complicated. Many top bar beekeepers use a simple piece of plywood or corrugated plastic on top of the hive and it works just as well. Due to the size of the boards and the amount of wood used, the roof is one of the most expensive components. Since the bars of a top bar hive are always butted together, the bees will not have direct access to the underside of the roof. If you're looking to save money and wood, the roof is the place to do so.

Our roof hinges on two plastic bushings – one screwed into each end of the hive. An “L” shaped slot is routed out of each end of the roof that corresponds with the bushing. This simple system allows for easy attachment and removal of the roof, without expensive and complex hinges. This is the easiest and best way we've found to attach a roof to a top bar hive. *SEE DETAILED VIEW ON PAGE 13.*

Cut List

$\frac{3}{4}$ " lumber (use 1" if you want):

1 Roof Peak - 47" x 1 $\frac{1}{2}$ "

2 Roof Panels - 47" x 10 $\frac{3}{4}$ "

1 Long Roof Frame Side Front - 44 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ "

1 Long Roof Frame Side Back - 44 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ "

2 Short Roof Frame Sides - 20 $\frac{1}{2}$ " x 4 $\frac{1}{2}$ "

the hive body



The hive body is the area in which the bees will be living, and thus is a very important component. Our hive bodies are 42" long internally, but you can adjust this size based on your preference and material you're using. Just be sure to properly adjust the length of the roof and the number of bars you make. We do not recommend making a top bar hive smaller than 42" long as this won't provide enough volume for a strong colony to thrive.

Our hives use side entrances for a number of reasons:

Side entrances allow you to start the colony at whichever end you prefer. ALWAYS start your colony at one end of your top bar hive – never in the center. If you start them in the center and allow them to build out in both directions, they often end up with honey stores at both ends, and thus starve due to difficulty accessing the other end.

With side entrances and two dividers, you can easily access either side of the colony. Place one divider up against the end the colony started at. This one won't move unless you're doing an inspection of that end. The other divider will start 12 bars toward the center and you'll install your package or swarm of bees in between. Continue moving the center divider down toward the empty space as the colony grows. Now when you need to access the starting side, you don't have to go through all of the new combs. Instead, you can simply lift up the divider you left at the front, check for comb attachment, and inspect the brood nest.

You can place your entrance(s) anywhere you want. Some beekeepers don't even add entrances, but instead leave a small gap between the last bar and the end of the hive. We use 1 15/16" diameter holes so that a 2" bung will properly close them. You can also use 3/4" holes and used wine corks in pairs down the side.

We also put 3 ventilation holes down the side of the hive. They are closeable with corks, and sometimes the bees will use these for ventilation, and others they will seal them up with propolis and even re-open them later in the season! *SEE DETAILED VIEW ON PAGE 14.*

Cut List

1" lumber (Use 3/4" if you must):

1 Entrance Side - 44" x 11"

1 Window Side Top - 44" x 3 1/8"

1 Window Side Bottom - 44" x 3 3/4"

1 Window Cover - 44" x 4 7/8"

2 Ends - 15 9/16" x 9 3/4"

the window



We highly recommend you add a window to your top bar hive. It is extra work, but well worth it. For years we routed out a hole down the side of the hive covered it with Plexiglas from the inside. Then one day a customer called to say they'd prefer it if the window ran the full length of the hive. This way they could see the colony wherever they were inside. All of our top bar hives now come with a full length window. It takes a bit more Plexiglas, but the process is actually much easier, as no routing is involved. We use two hinges and a single latch to keep the window shut, but you can do it without hinges and use only latches to keep it in place. As long as the window remains covered when you're not inspecting, it doesn't matter how you do it.

SEE DETAILED VIEW ON PAGE 18.

Cut List

41 $\frac{7}{8}$ " x 6 $\frac{7}{16}$ " Plexiglass secured with 10, $\frac{1}{2}$ " screws

top bars & dividers



The top bars are one of the most important components in the hive. They require the most accuracy, and they are the hardest part to cut with basic woodworking tools. Ours are made on a moulder with special blades that make the process very quick. Most woodworkers don't have a moulder, and thus will make them on a table saw, passing the bars through multiple times to get the wedge comb guide cut properly.

They are $1 \frac{3}{8}$ " wide to accommodate bee space between each comb. They have wedge guides that come to a point because bees usually build straight combs from such points. If they were much thinner the bees would likely build their combs across multiple bars from the start. If they are wider, they'll put multiple combs on a single bar. This width is a good compromise to minimize cross comb, but it isn't foolproof. The bees don't ask permission before they build crooked comb. At some point you may need to leave $\frac{1}{8}$ " gaps between the bars in the surplus honey stores, as honey combs are often wider than brood combs.

We use one-piece wedge guides because we can make them easily, they are strong and work well. However, before we had a moulder we ripped $17 \frac{1}{4}$ " x $1 \frac{3}{8}$ " boards and simply cut a $\frac{1}{8}$ " deep kerf down the center of the bar and glued in two popsicle sticks we got from a craft store. This worked very well, and we recommend this method if you don't have the skills or inclination to cut wedges. *DETAILED VIEW ON PAGES 15 & 17.*

Cut List

Top Bars

(At least 1" lumber if making wedge bars. $\frac{3}{4}$ " for bars with kerfs):

28 Top Bars - $17 \frac{1}{4}$ " x $1 \frac{3}{8}$ "

Divider Boards/Follower Boards ($\frac{3}{4}$ "-1" lumber):

2 Divider Boards - $15 \frac{1}{4}$ " x $9 \frac{3}{4}$ "

2 Divider Tops - $17 \frac{1}{4}$ " x $1 \frac{3}{8}$ " x $\frac{1}{2}$ "

the hive stand



The stand, like the roof, isn't as important as the rest of the hive and its purpose can be fulfilled in numerous ways. Its main purpose is to elevate the hive up to around 36" to give you easy access without straining your back, and to keep skunks and other pests out. Many top bar beekeepers simply make a couple feet, attach them to the bottom like skis, and set the hive on some cinder blocks. The feet we offer (instead of the leg stand) are made from a 17 1/2" long piece of 1 3/8"x2 1/4". They can just as easily be made from a 17 1/2" nominal 2x4. If you don't want to go through the difficult process of making the lap joint hive stand, these feet will work just as well!

The legs described in these plans require very accurate cuts. If any cut is off, even by 1/16", you will likely run into problems. It uses half lap joints on each pair of legs, and two brace boards set into notches toward the bottom. This stand is meant to cradle the hive so you can easily remove it if needed. If you don't ever plan to move your hive, this is unnecessary. *SEE DETAILED VIEW ON PAGE 16.*

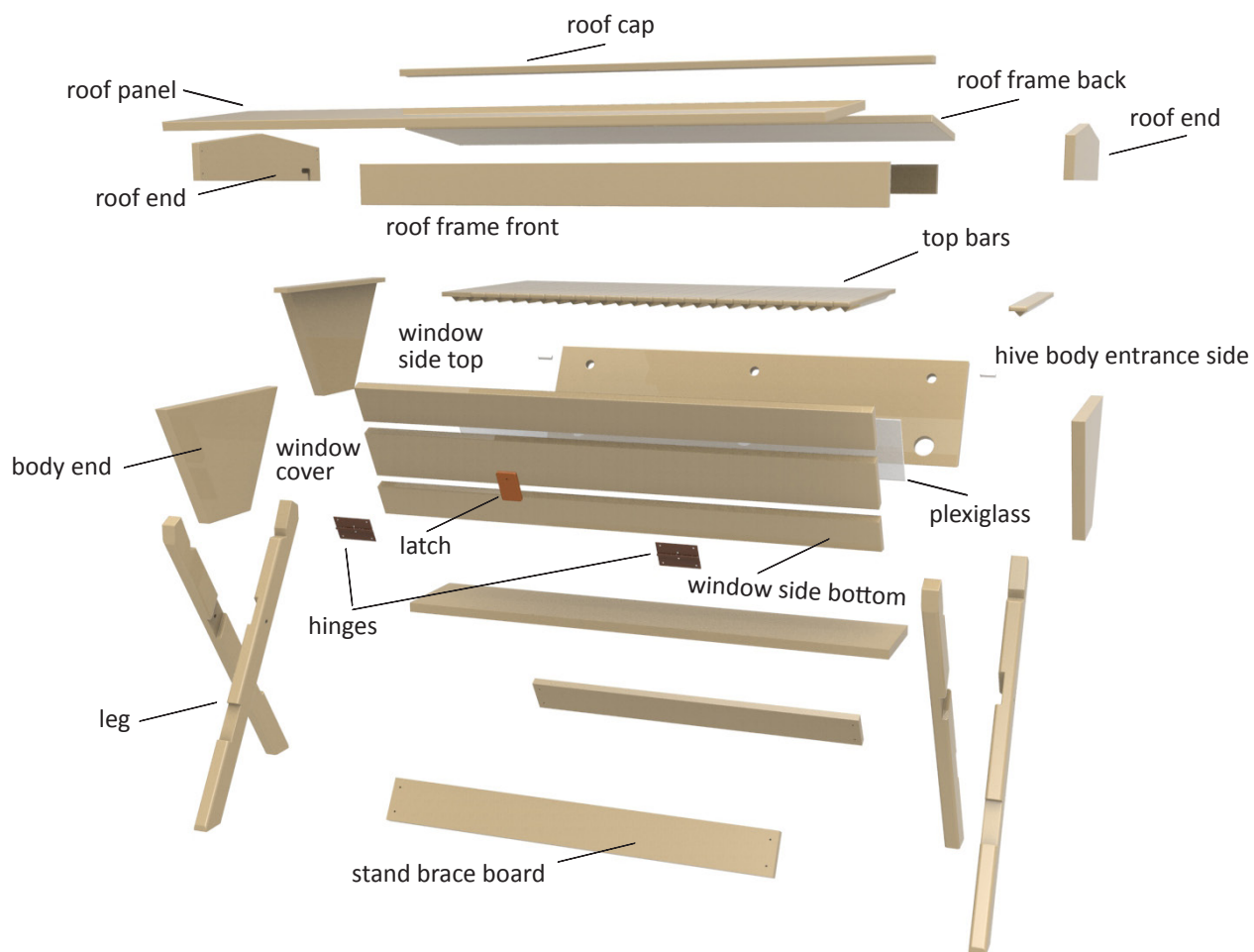
Cut List

2"x3" for legs and 3/4"-1" for brace boards:

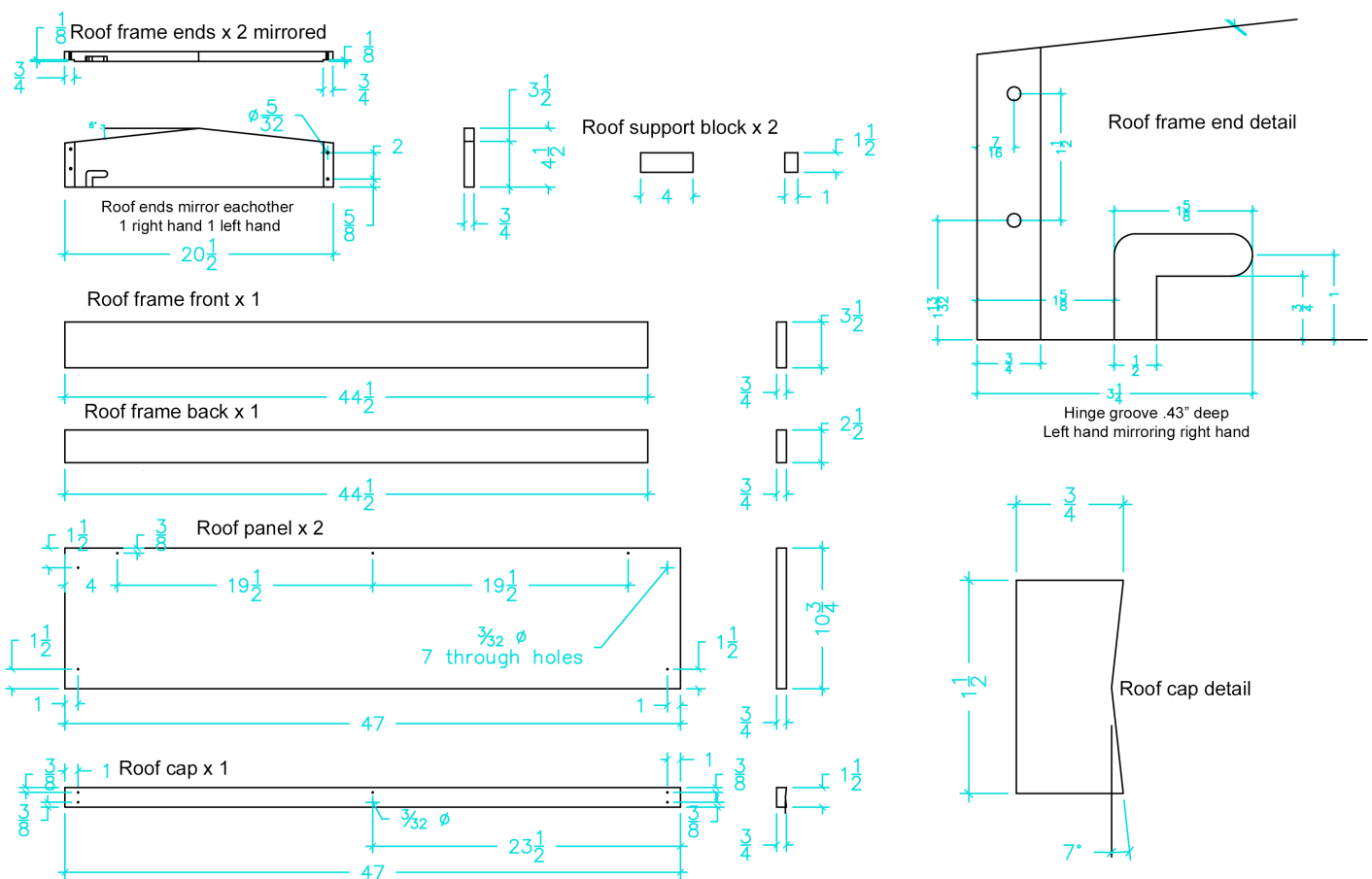
4 Stand Legs - 32 1/2"x2 1/4"

2 Stand Brace Boards - 33"x3 1/2"

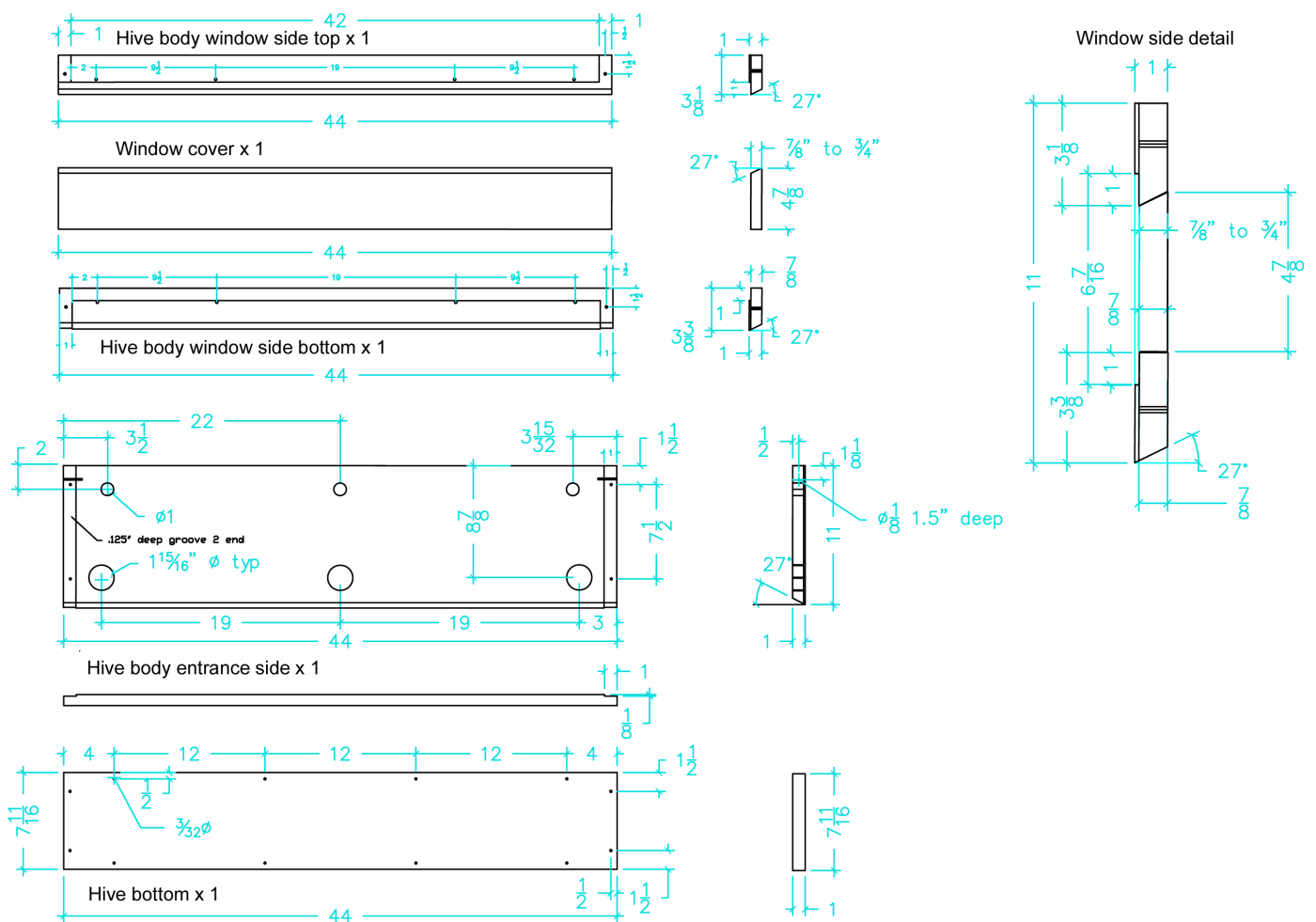
DETAILED VIEWS



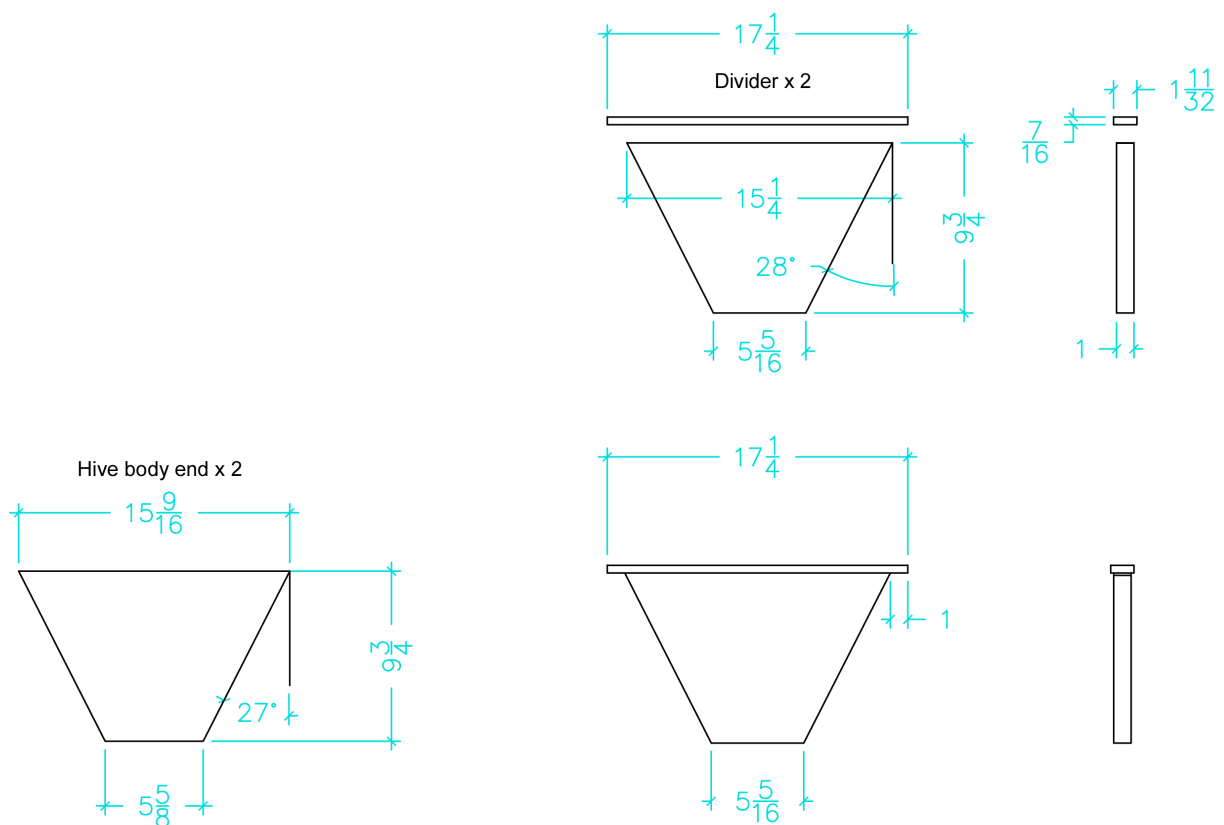
roof detail



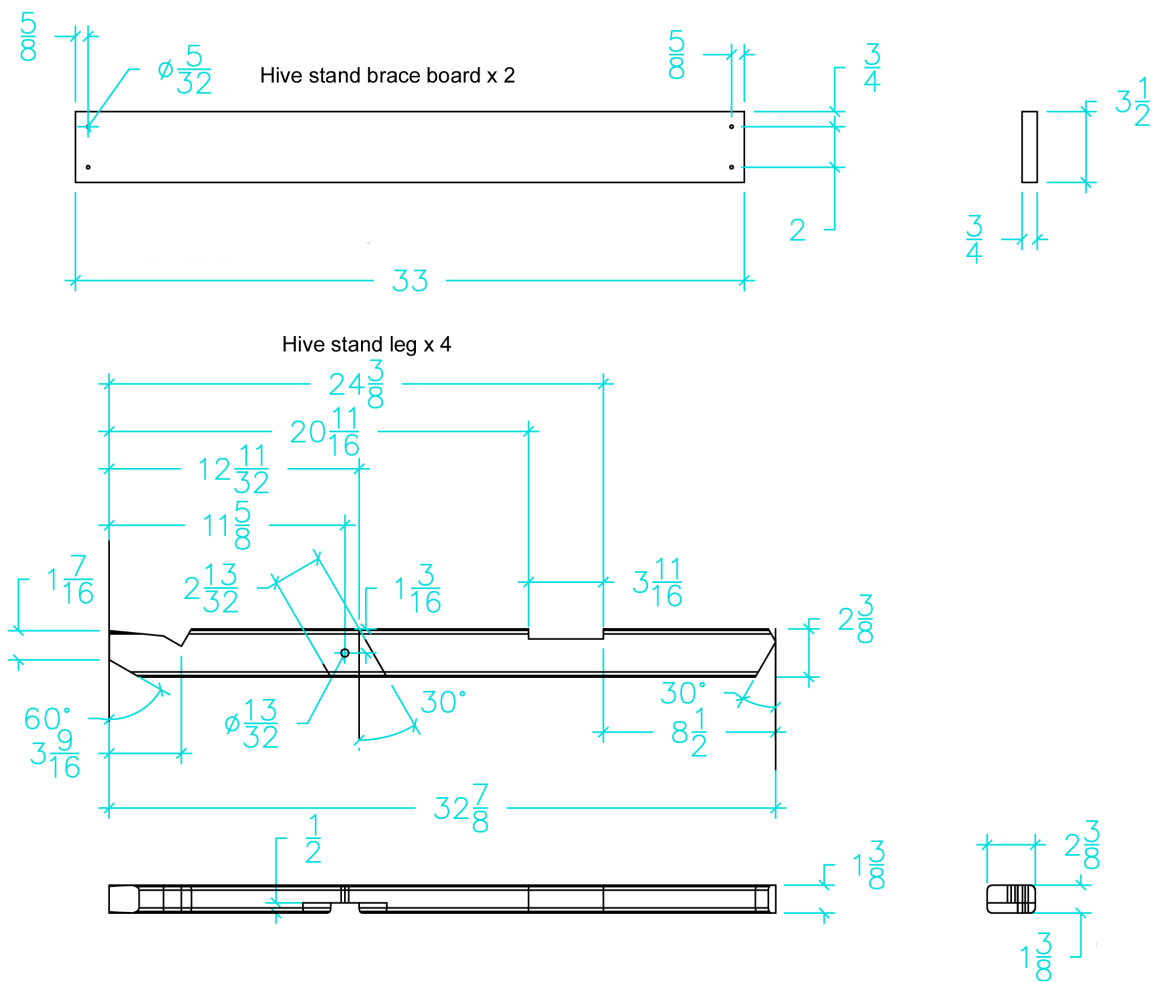
hive body detail



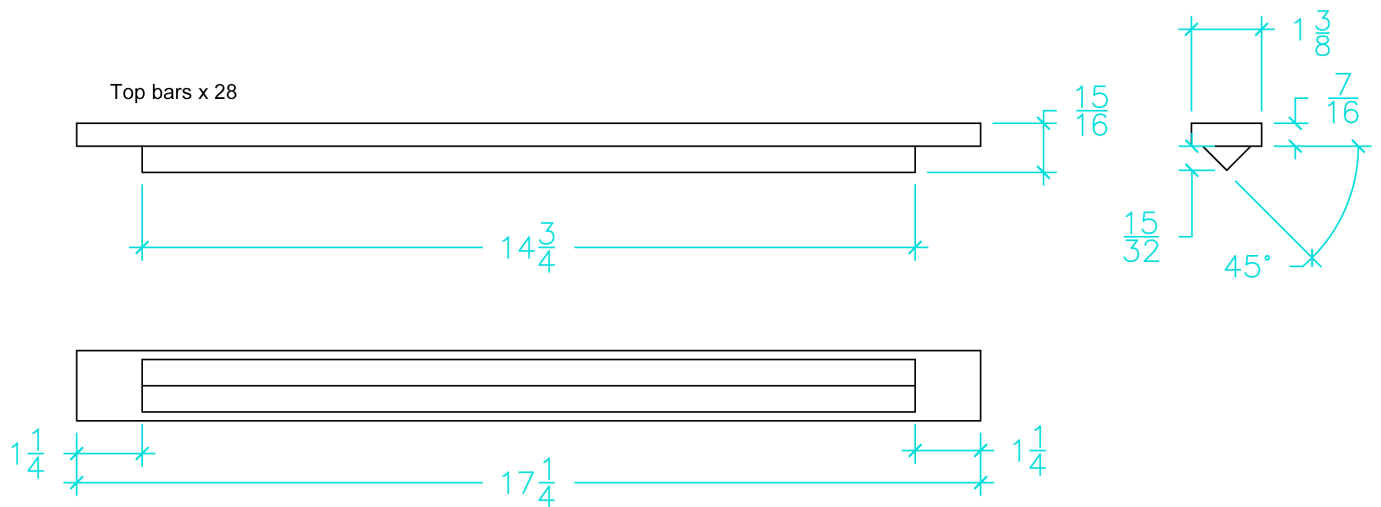
hive end & divider detail



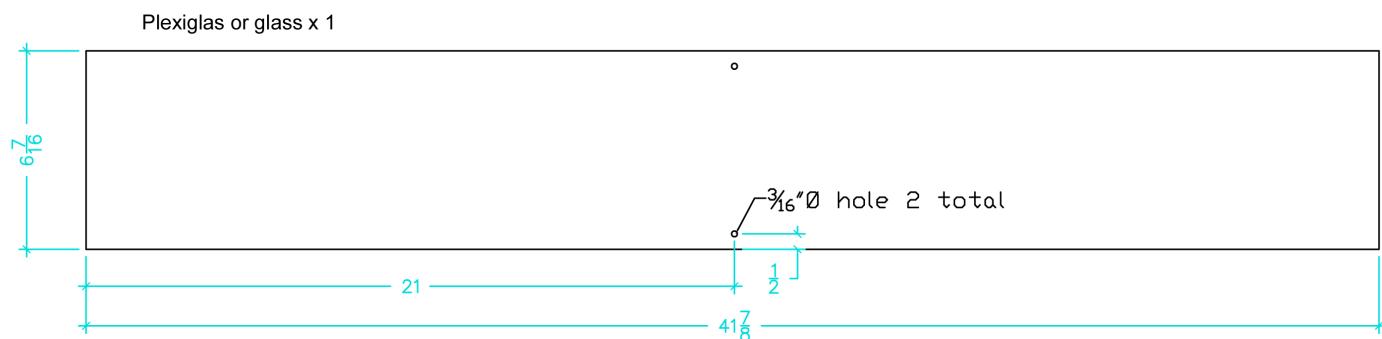
hive stand detail



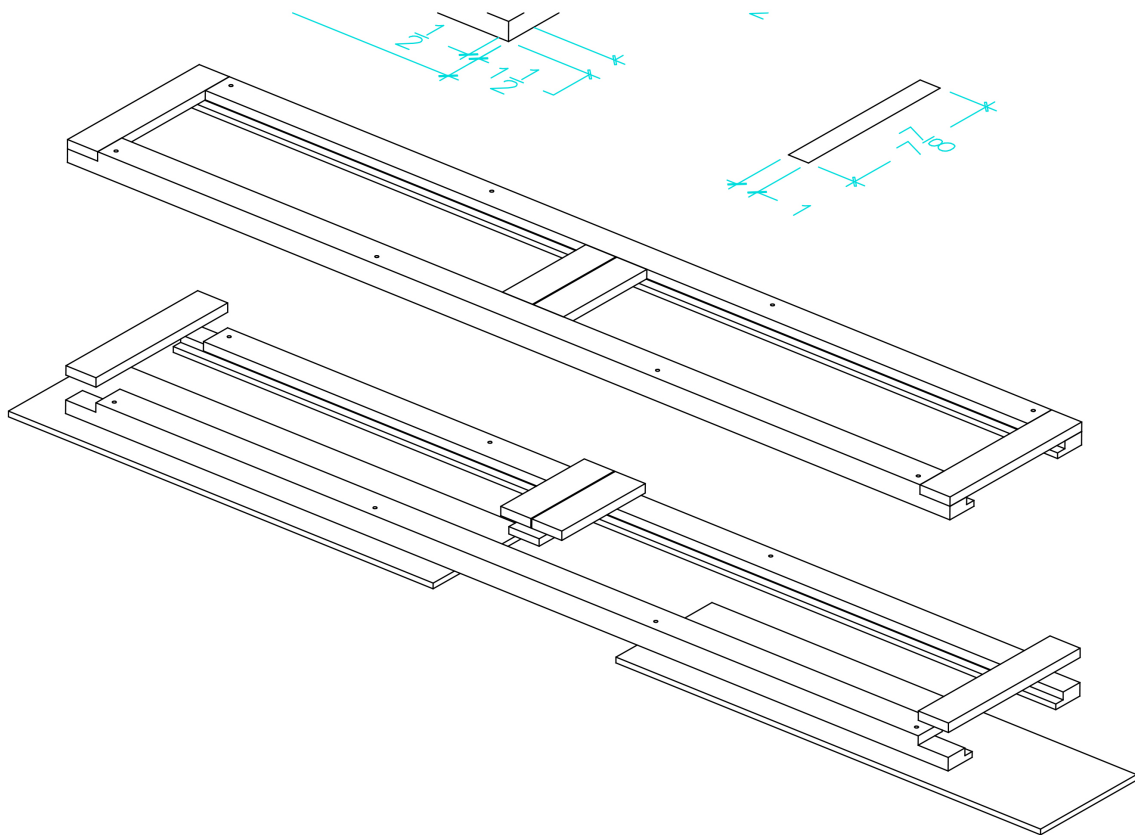
hive top bar detail



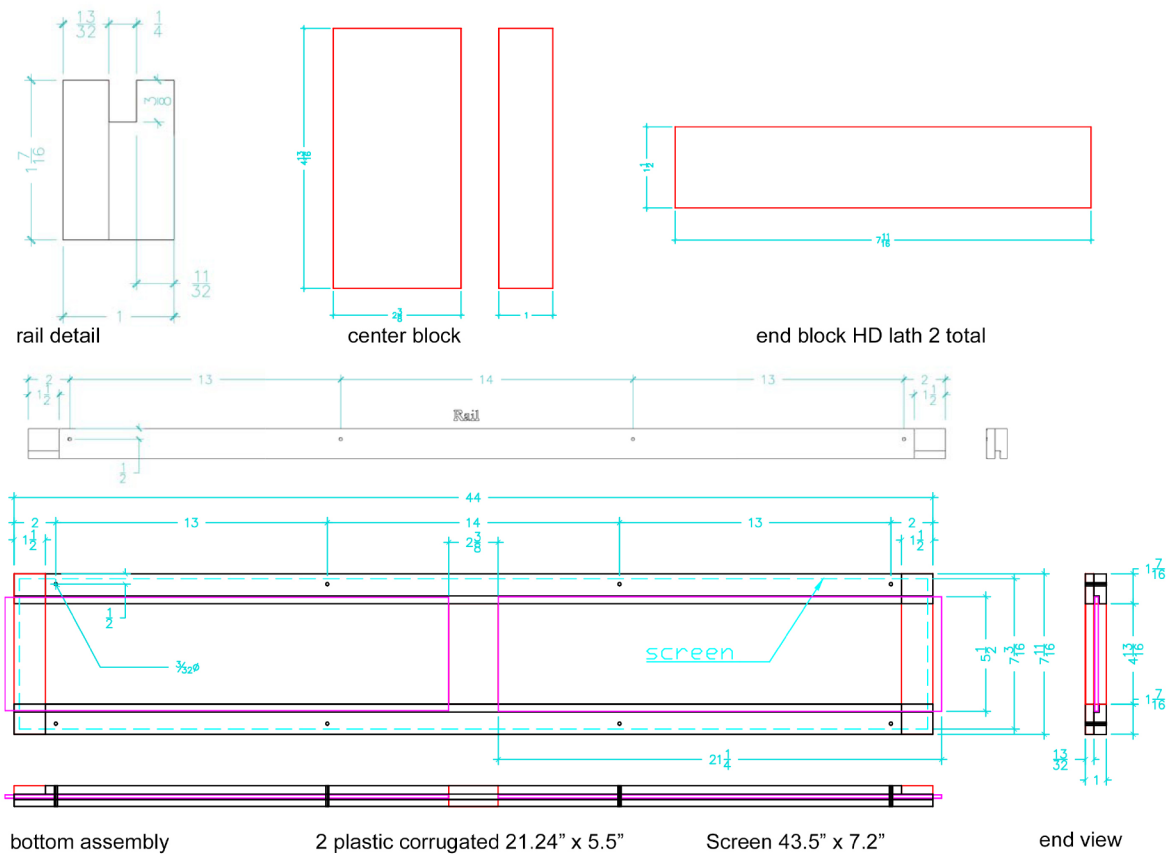
hive window detail



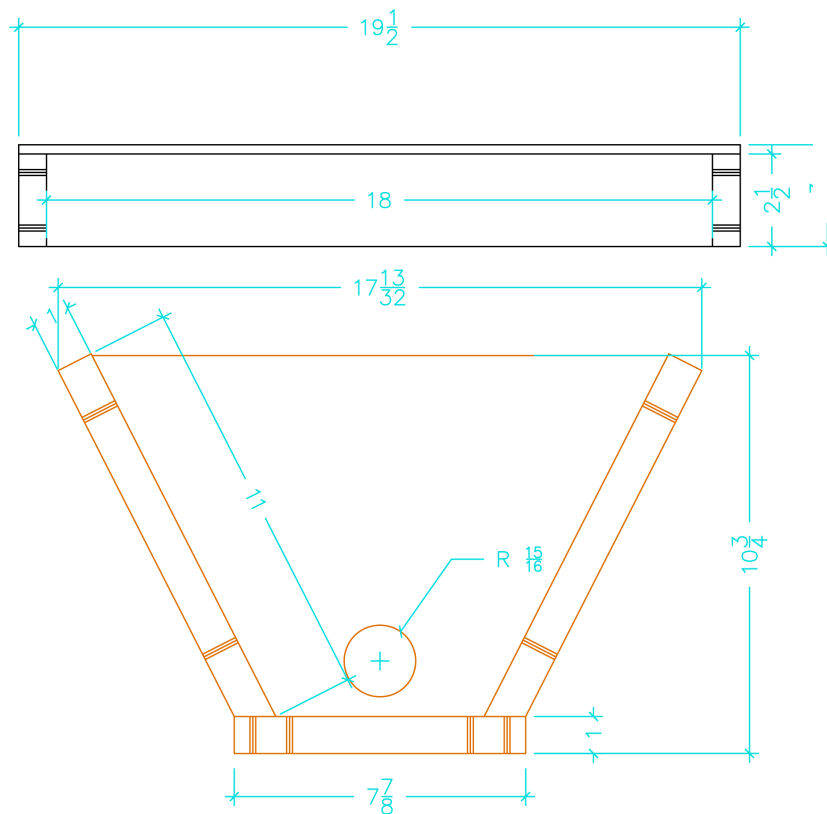
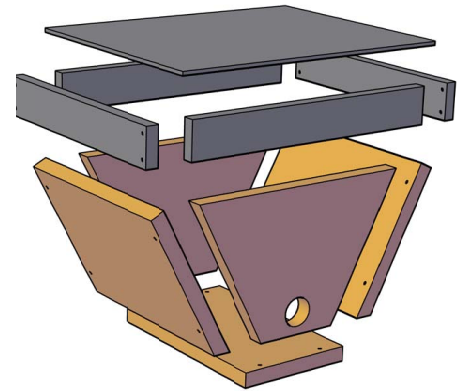
screened bottom board



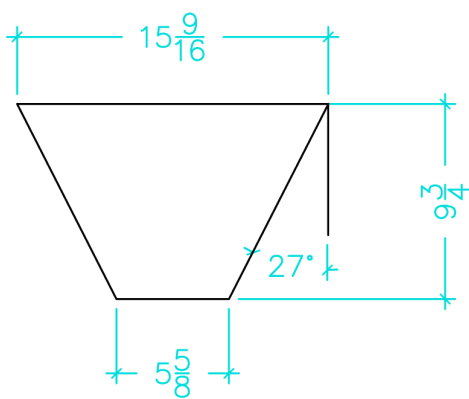
screened bottom board detail



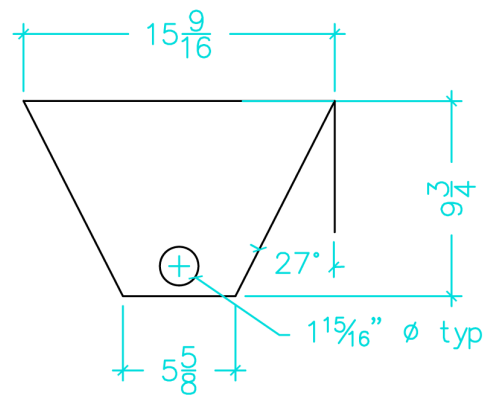
nucleus box detail



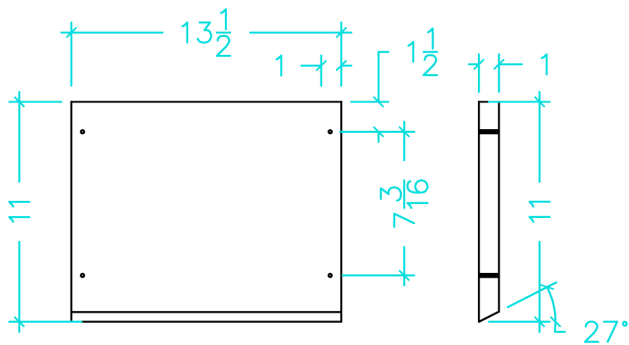
nucleus box body detail



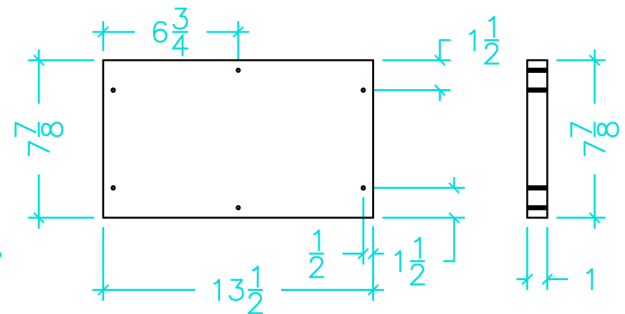
Nucleus Box ends



Nucleus Box end with hole

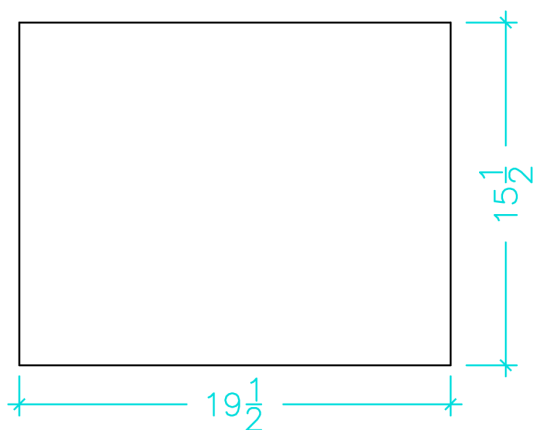


Nucleus Box sides 2 total



Nucleus Box bottom

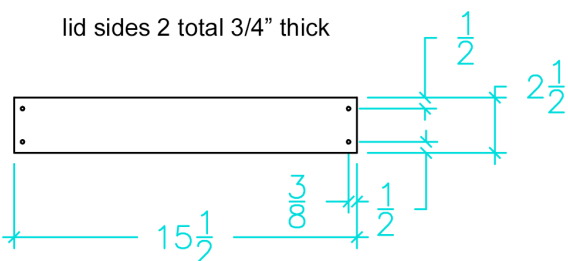
nucleus box roof detail *Add metal or paint to seal.*



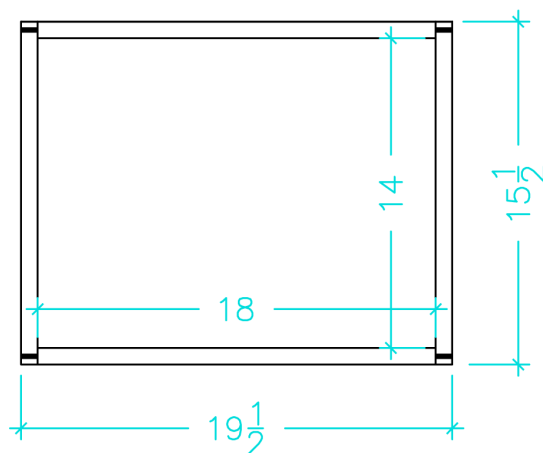
1/4" plywood top lid



lid sides 2 total 3/4" thick



lid ends 2 total 3/4" thick



Lid Assembly