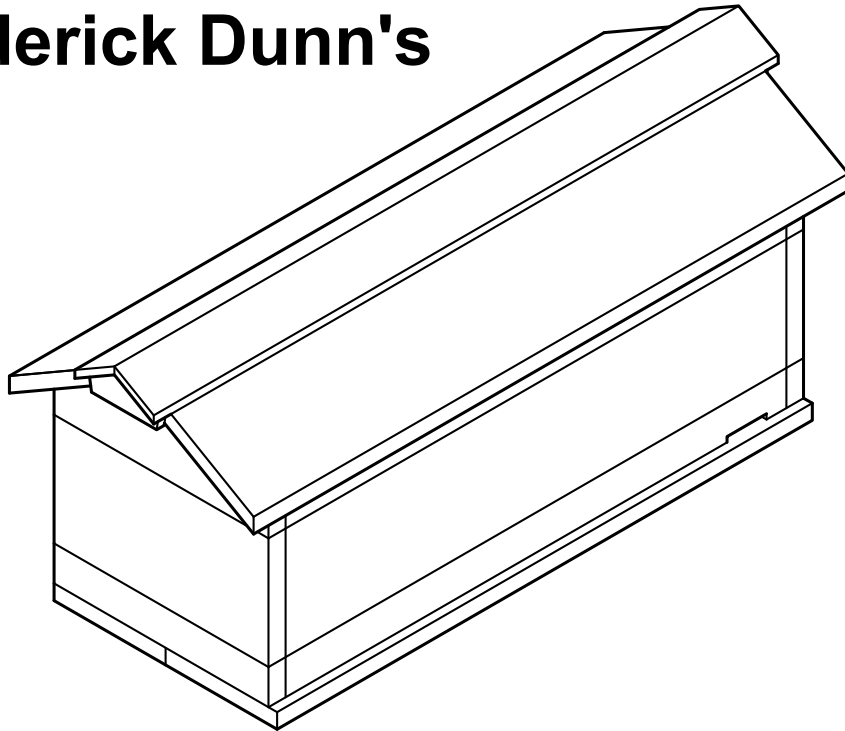




Frederick Dunn's



Horizontal - Long Langstroth Hive

Designed to hold 30 DEEP Langstroth frames

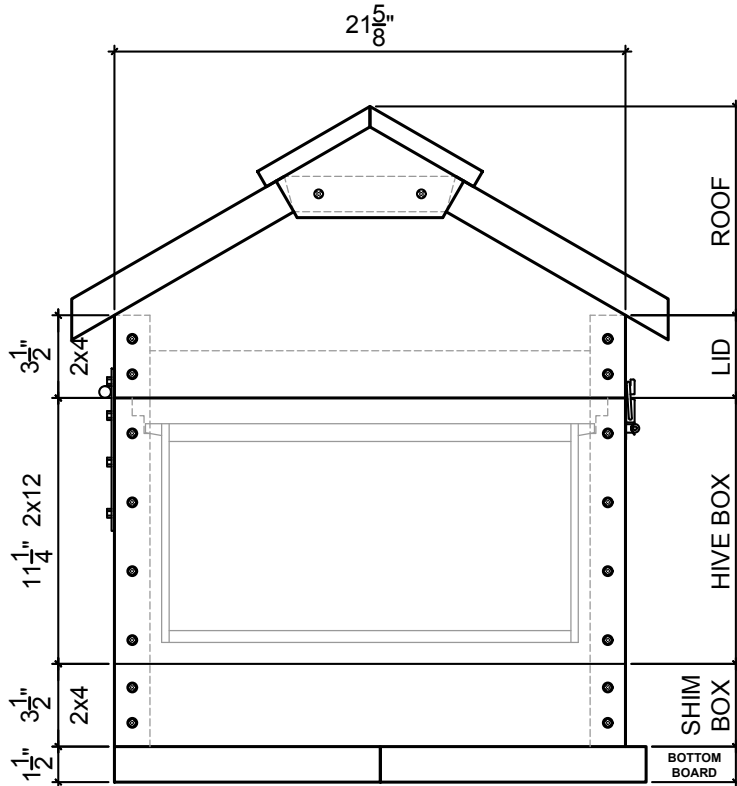
Hive Designed by: Fredrick Dunn

- Holds up to 30 Deep frames
- Solid Wood 2x material Wall & Roof Construction
- Optional Ridged Foam Insulated Roof Cavity
- Designed to hold Hive Top Feeders
- Optional 'Shimmed' Entrance Cavity Below the Frames

Construction Documents by: Ross Millard & Suburban Hive Co.
Ross@suburbanhivecompany.com

Frederick Dunn's - Long Langstroth Hive

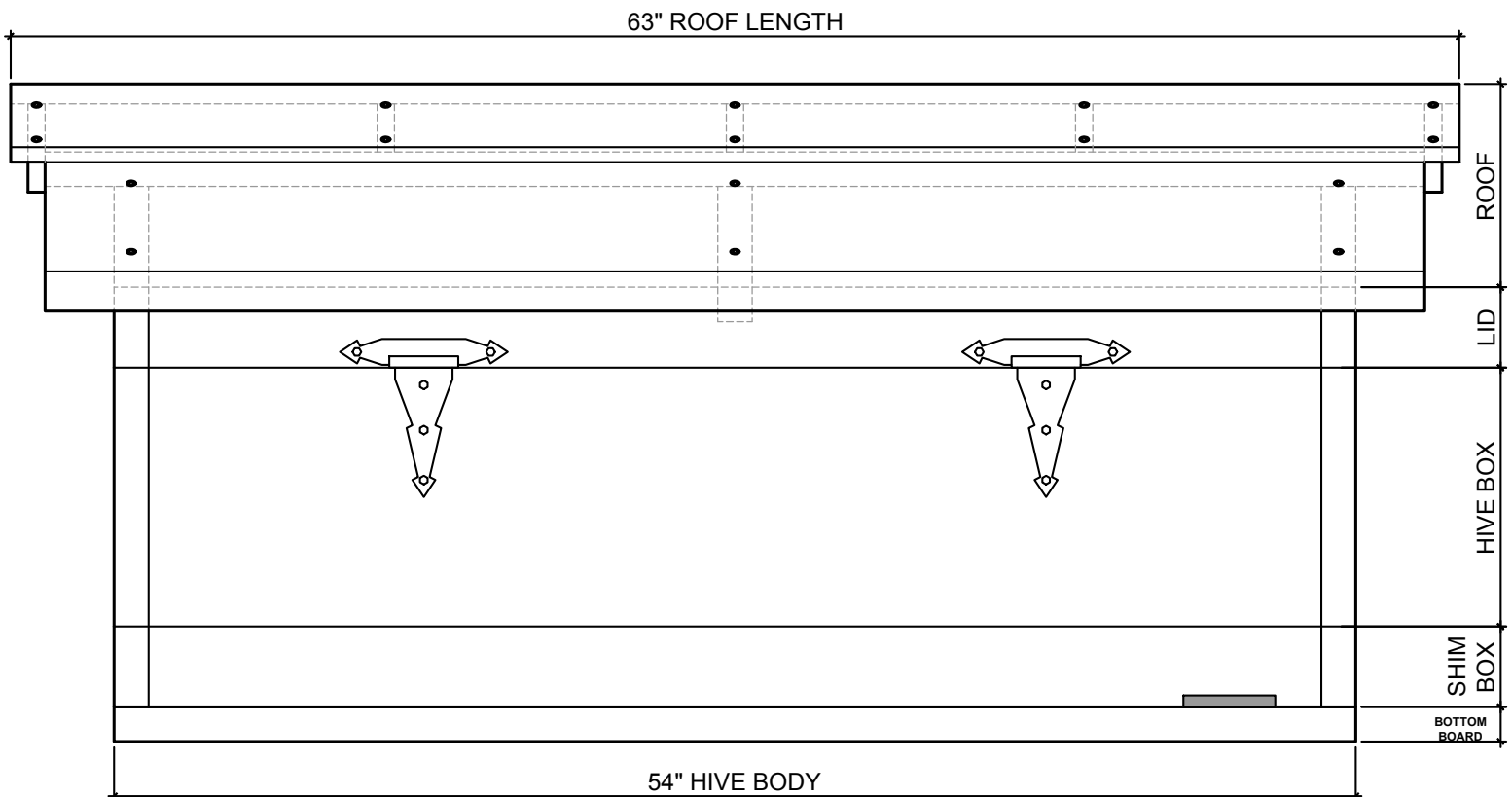
Hive Section



SIDE ELEVATION

Advantages of a Fred's Long Hive

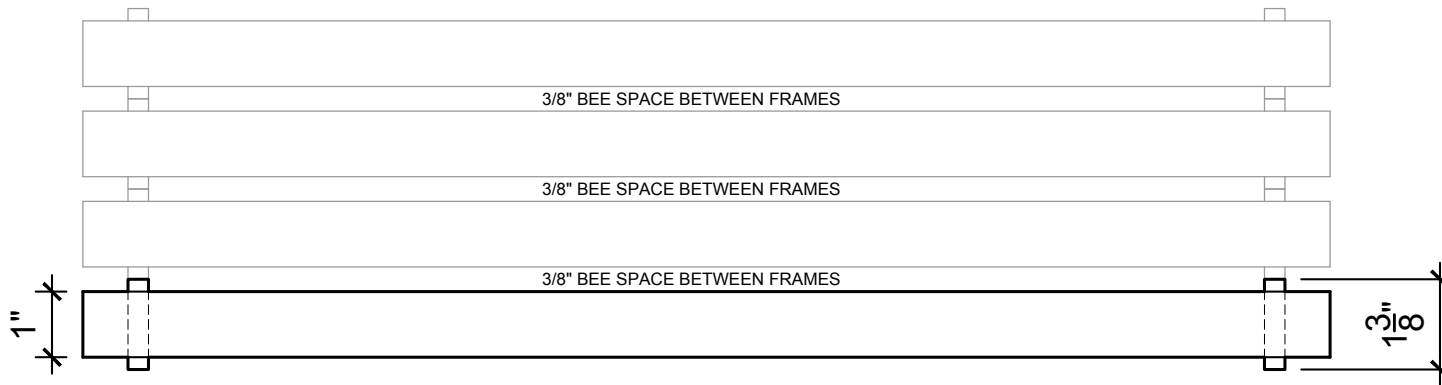
- Utilizes standard Langstroth deep frames
- Built with easily obtained materials.
- Simple design is easily customized
- Insulated qualities recreate natural hive environment
- Horizontal format makes the hive easily accessible
- No lifting boxes
- Add frames as many or as few needed
- Fits most Top Feeders
- Shim Box reduces swarming, increases production



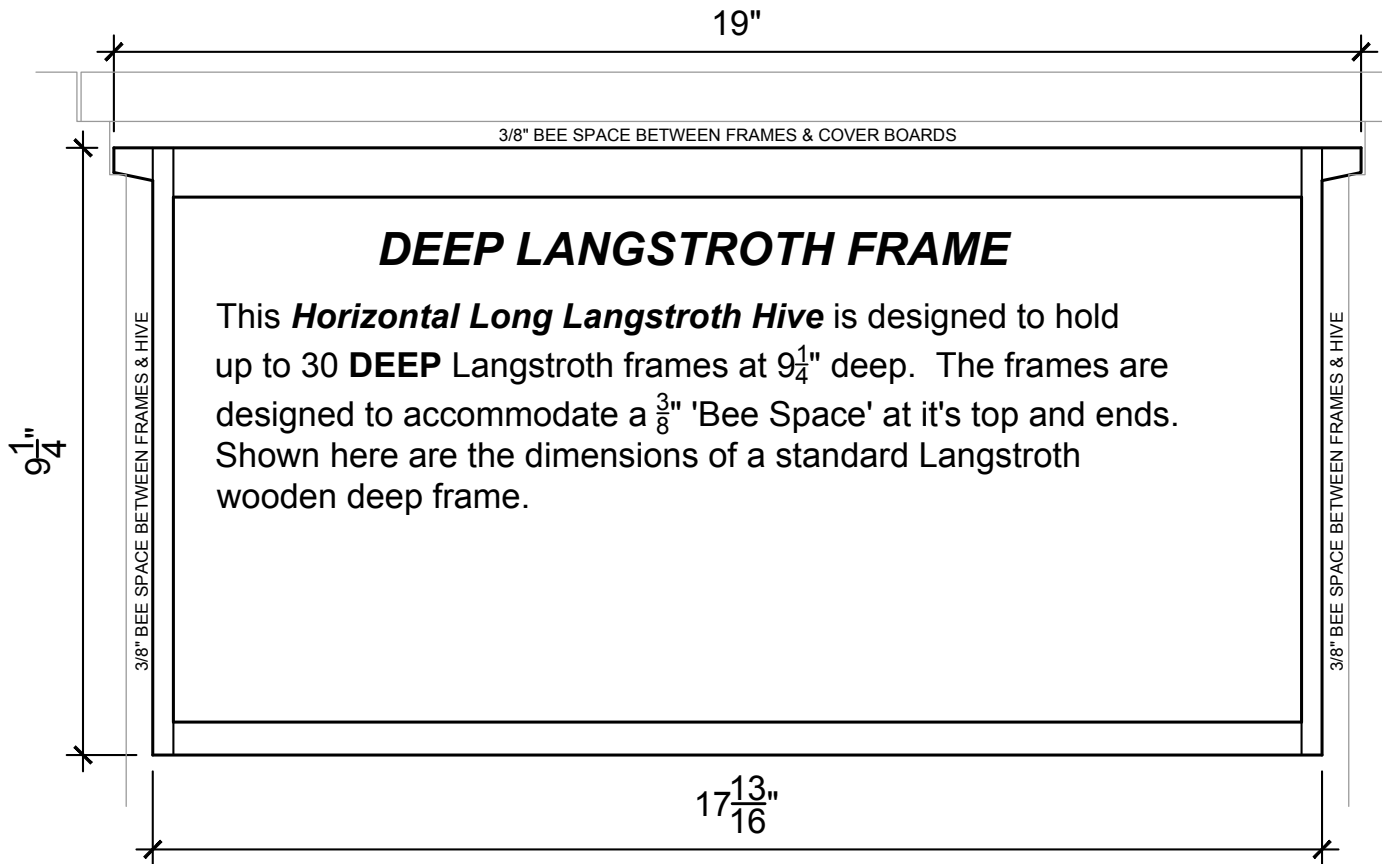
FRONT ELEVATION

Frederick Dunn's - Long Langstroth Hive

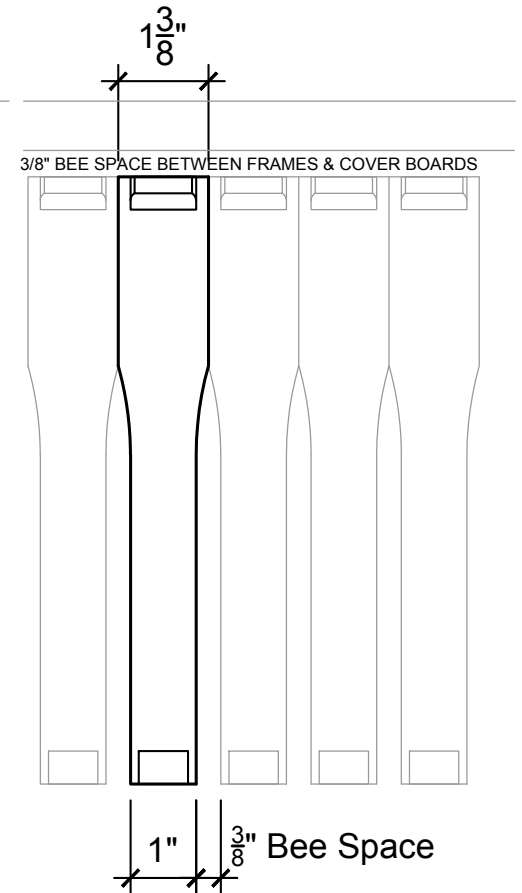
Deep Langstroth Frame



TOP VIEW



SIDE VIEW



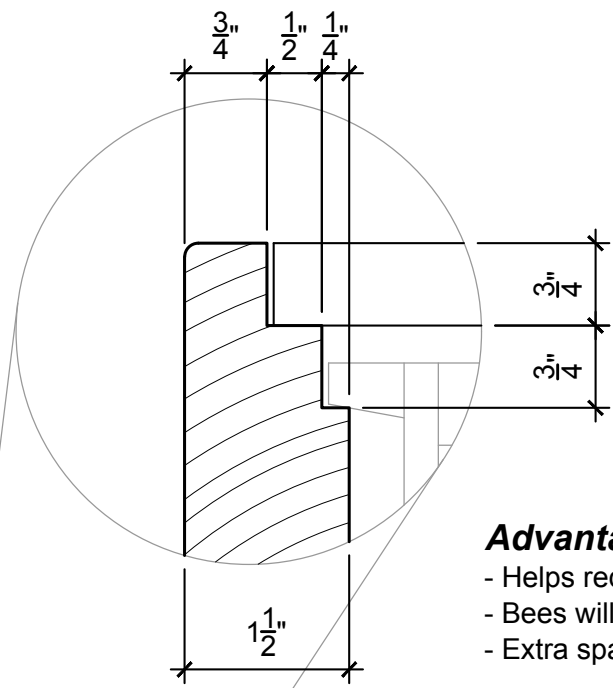
END VIEW

DEEP LANGSTROTH FRAME

This *Horizontal Long Langstroth Hive* is designed to hold up to 30 **DEEP** Langstroth frames at $9\frac{1}{4}$ " deep. The frames are designed to accommodate a $\frac{3}{8}$ " 'Bee Space' at it's top and ends. Shown here are the dimensions of a standard Langstroth wooden deep frame.

Frederick Dunn's - Long Langstroth Hive

Hive Body Section

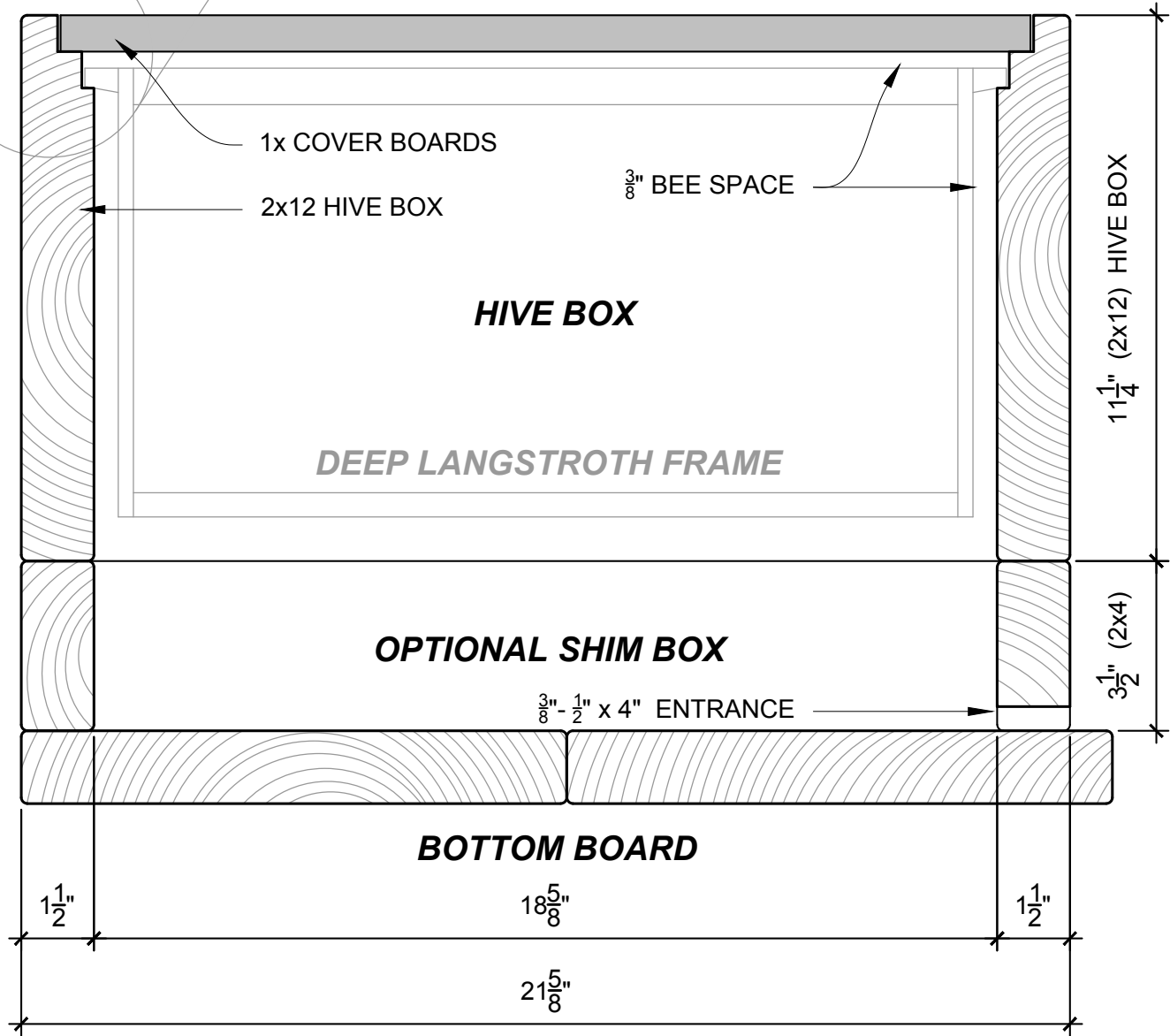


Advantages of a 2x Material

2x wall construction doubles the R-value of the walls of the hive from R-1 to above an R-2, Assisting the bees in regulating the temperature and humidity in the hive

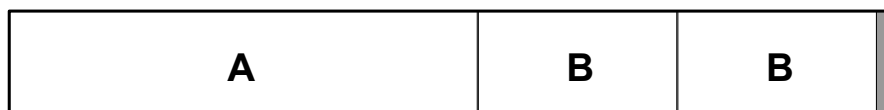
Advantages of a Shim Box

- Helps reduce robbing
- Bees will utilize more of the frame with space below it.
- Extra space reduces swarming



Frederick Dunn's - Long Langstroth Hive

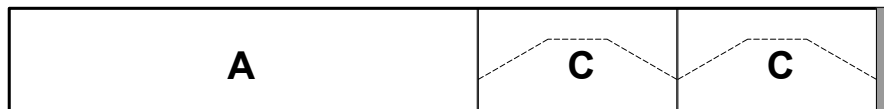
Lumber Cut-sheet Diagram



(1) 2x12 - 8'-0"

(A) 11 $\frac{1}{4}$ " x 4'-3" BACK (1)

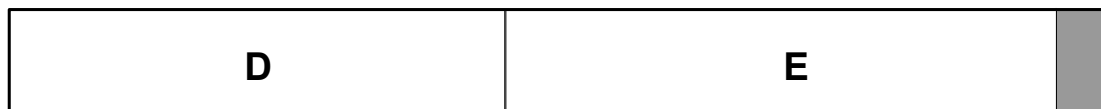
(B) 11 $\frac{1}{4}$ " x 21 $\frac{5}{8}$ " SIDES (2)



(1) 2x12 - 8'-0"

(A) 11 $\frac{1}{4}$ " x 4'-3" FRONT (1)

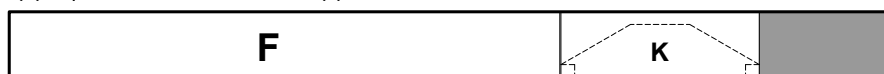
(C) 11 $\frac{1}{4}$ " x 21 $\frac{5}{8}$ " LID SIDES (2)



(2) 2x12 - 10'-0"

(D) 11 $\frac{1}{4}$ " x 4'-6" BOTTOM BOARDS (2)

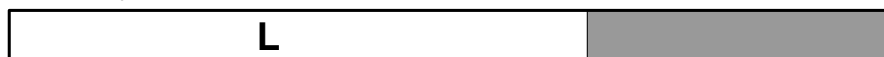
(E) 11 $\frac{1}{4}$ " x 5'-0" ROOF BOARDS (2)



(1) 2x8 - 8'-0"

(F) 7 $\frac{1}{4}$ " x 5'-0" ROOF BOARD (1)

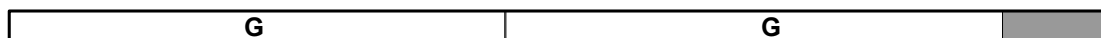
(K) 7 $\frac{1}{4}$ " x 21 $\frac{5}{8}$ " ROOF TRUSS (1)



(2) 1x6 - 8'-0"

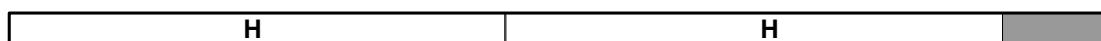
(L) 5 $\frac{1}{2}$ " x 5'-3" RIDGE BOARDS (2)

USE SCRAP WOOD FOR SUPPORTS & END CAPS



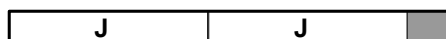
(1) 2x4 - 10'-0"

(G) 3 $\frac{1}{2}$ " x 4'-3" LID FRONT & BACK (2)



(1) 2x4 - 10'-0"

(H) 3 $\frac{1}{2}$ " x 4'-3" SHIM FRONT & BACK (2)



(1) 2x4 - 4'-0" *

(J) 3 $\frac{1}{2}$ " x 21 $\frac{5}{8}$ " SHIM SIDES (2)

 WASTE MATERIAL

* Some lumber companies sell 2' &/or 4' 2x4's.
If unavailable, purchase an 8'

Material List:

(2) Boxes of 2 $\frac{1}{2}$ " Deck Screws

(1) Box of 1 $\frac{1}{2}$ " Deck Screws

(1) Bottle of Titebond III Glue

(2) Heavy Gate Hinges

18" of Chain

(2) 3"x $\frac{1}{4}$ " Hex Bolts - (1) fully threaded

(6) $\frac{1}{4}$ " Washers (1) $\frac{1}{4}$ " Nut (1) $\frac{1}{4}$ " Cap Nut

LUMBER:

(2) 2x12 - 8'-0"

(2) 2x12 - 10'-0"

(1) 2x8 - 8'-0"

(2) 2x4 - 10'-0"

(1) 2x4 - 4'-0"

(2) 1x6 - 8'-0"

Frederick Dunn's - Long Langstroth Hive

Assembly Instructions

1. Purchase the lumber and hardware listed at the bottom of the *Lumber Cut-Sheet Diagram* page.
2. Cut all parts as listed on the *Lumber Cut-Sheet Diagram*. If you do not have the tools or skills to cut all necessary parts. Seek a local craftsman who can cut all the parts for you.

Before Proceeding, Review the Optional Screen Bottom Board & Tray Page (Final Page) before locating & cutting the entrance.

3. Cut a 1/2" x 4" hive opening through **Part H**. The hive entrance is typically at the south east corner of the hive so think about this hive's final location before positioning the board during construction. The opening is on the outer edge and bottom of the 2x4 (as shown)
4. Construct the **Shim Box**

Attach the (2) **Part J** end walls to the (2) **Part H** front and rear walls using (2) 2 1/2" deck screws and glue at each corner. Remember, the (2) **Part H** goes between the (2) **Part J**. The boxes final dimensions should be 21 5/8" x 4'-6". Don't forget to verify the hive 's entrance.

5. Attach the **Shim Box** to the **Bottom Boards**

The (2) **Bottom Board** and **Shim Box** should be the same length. Flip the **Shim Box** over so the entrance is facing up and align the outer edges of a **Bottom Board** with the outer edges of the rear of the **Shim Box**. (Side opposite entrance)

Attach the **Bottom Board** with 2 1/2" deck screws every 4"-6" and glue.

Now align and attach the second **Bottom Board**. This board should stick out past the **Shim Box** approximately an inch. This creates a landing board for the bees. Be sure the landing board is on the same side as the entrance. As you glue and screw, be careful to align the screws with the **Shim Box** below.

Now flip over up-right. This is the base of your hive. Set aside for now.

6. Build the **Hive Box**

If you have not already, cut the support lips into the front and back of the **Hive Box** (2) **Parts A**. See *Hive Box Assembly* Pages.

Attach the (2) **Part B** end walls to the (2) **Part A** front and rear walls using (4) 2 1/2" deck screws and glue at each corner. Remember the support lips should be facing into the box and on the same side (Top) of the box.

7. Attach the **Hive Box** to the **Shim Box** and **Bottom Board**

Align the **Hive Box** and **Shim Box**. Attach the two together with wood glue. Be sure to use wood clamps to create a tight bond.

8. Building the Lid

If you have not already, cut the sides, (2) **Part C** and the roof truss **Part K** using the **Lid & Roof Construction** page as a guide.

Attach the (2) **Part C** sides to the (2) **Part G** front and rear stretchers using (2) 2 ½" deck screws and glue at each corner. Remember the **Lid** should match the dimensions of the box, 21 5/8" x 4'-6".

Attach the truss, **Part K** to the mid-point of the stretchers with (1) 2 ½" deck screw and glue.

9. Attach the Roof to the Lid

*Before attaching the **Roof** to the **Lid**, check for proper fit of (1) **Part F** and (2) **Part E**

Carefully align and attach **Part F** to the Lid using (2) 2 ½" deck screw and glue at the 3 support points.

Align and attach (2) **Part E** to the **Lid** using (2) 2 ½" deck screw and glue at the 3 support points.

Align and attach the **Struts** to **Part F** using (2) 1 ½" deck screw and glue at the 3 support points. See page **Lid & Roof Construction** as a guide

Align and attach (2) **Part L** to the **Struts** using (2) 1 ½" deck screw and glue. Remember to glue the (2) **Part L** to one-another.

Attach the **End Caps** to (2) **Part L** and the **Lid** using (2) 1 ½" deck screw and glue. (a total of 6 screws per **End Cap**)

10. Attach hinges, latches, and chain assembly.

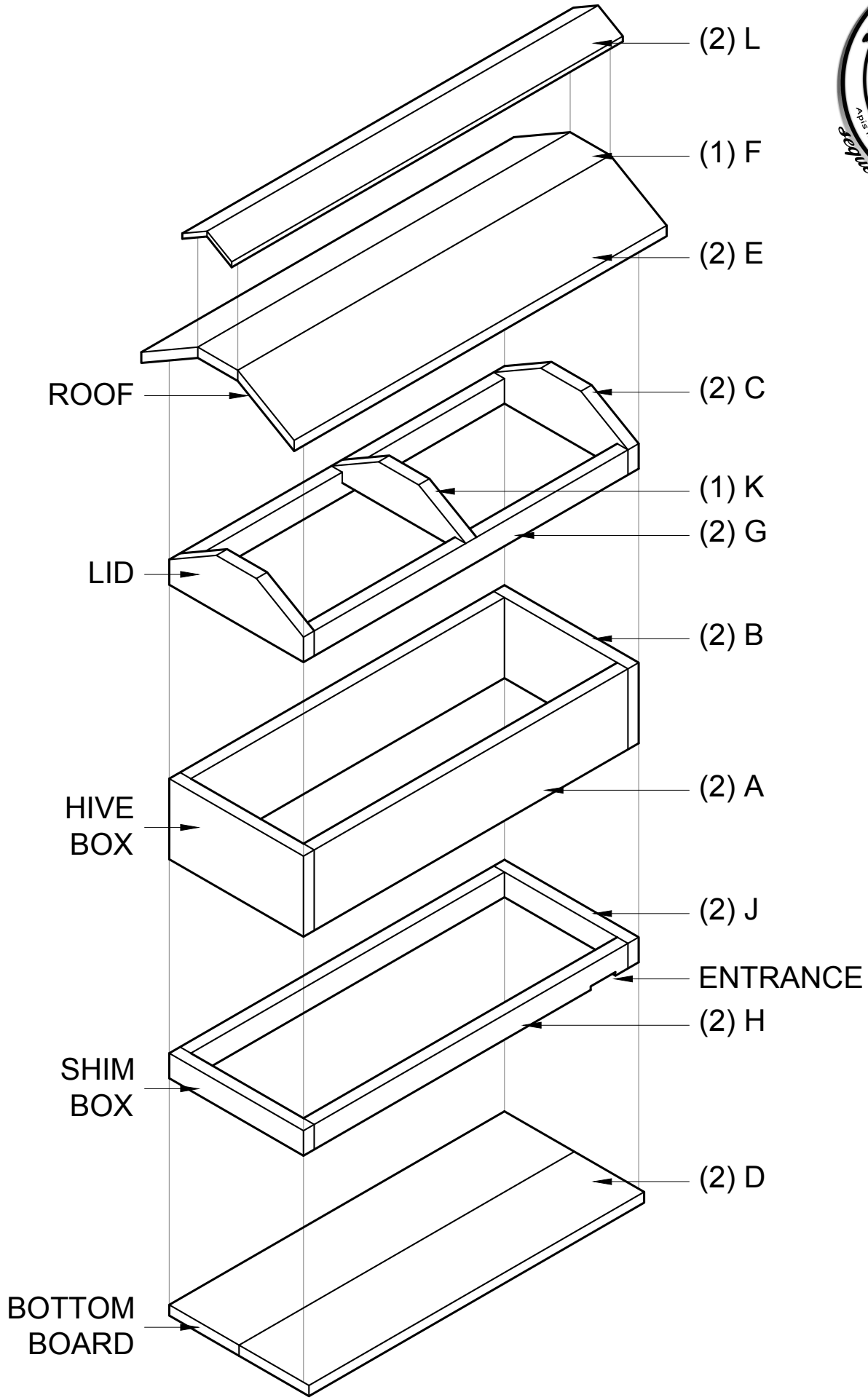
Protecting you hive from the Elements

Fred finishes his hives in one of two ways:

1. **Eco-wood** is a mineral based wood treatment that never has to be reapplied. It is clear and penetrates the wood which darkens with age. You can apply it to all surfaces of the hive, inside and out. You can find out more about **Eco-wood** at ecowoodtreatment.com
2. When it comes to painting a hive, Valspar Paints from Lowes rank very high with Fred and are affordable. Keep in mind, The Gloss Paint is more expensive but will last longer. Fred paints all the surfaces except for the interior of the hive. To find out more about Valspar Paints, go to their website at valspar.com

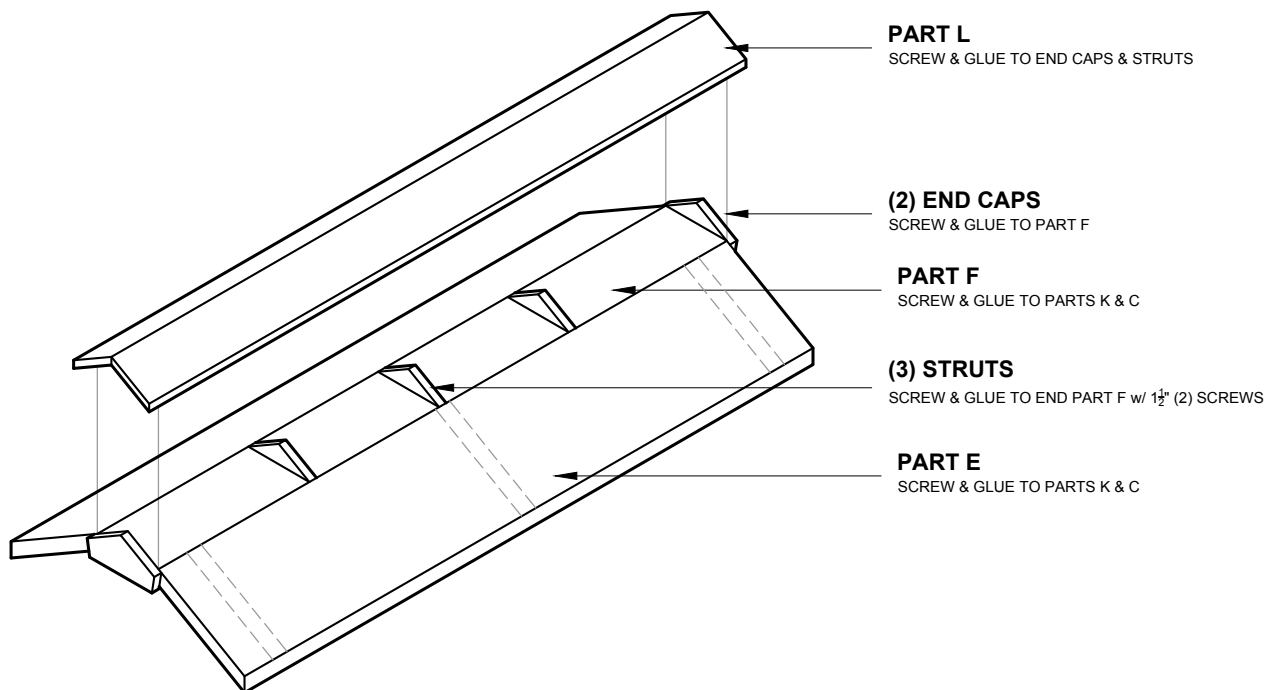
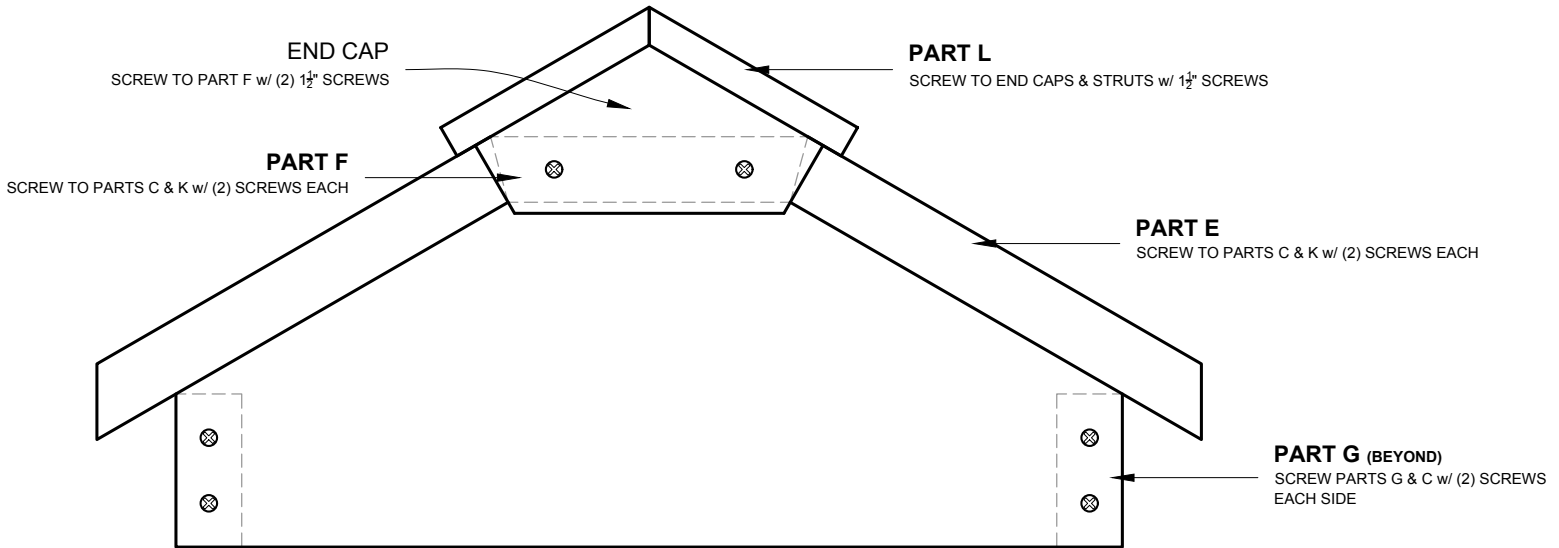
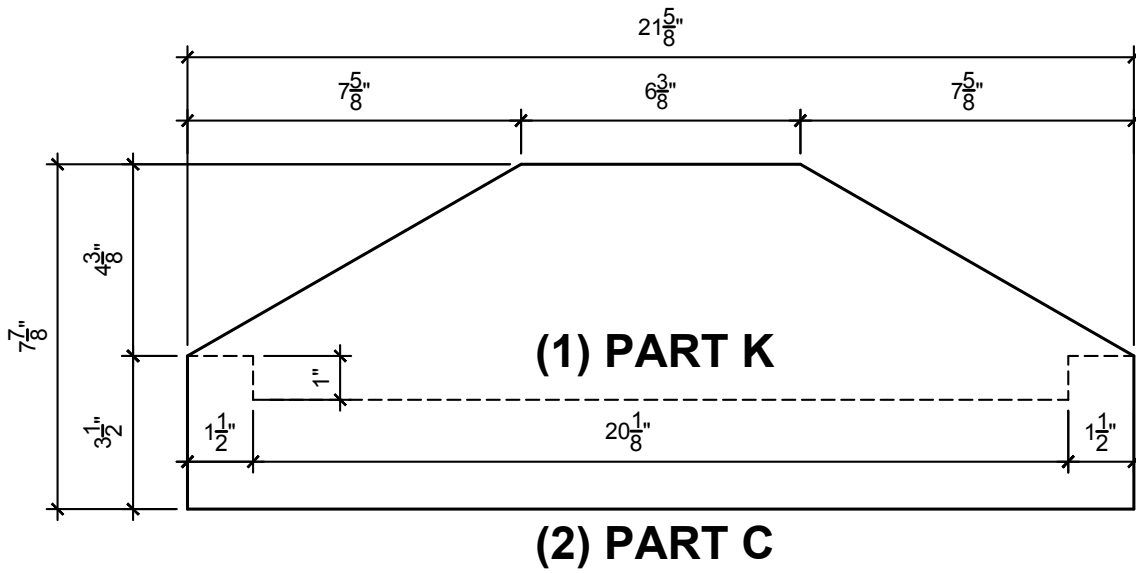
Frederick Dunn's - Long Langstroth Hive

Assembly Diagram



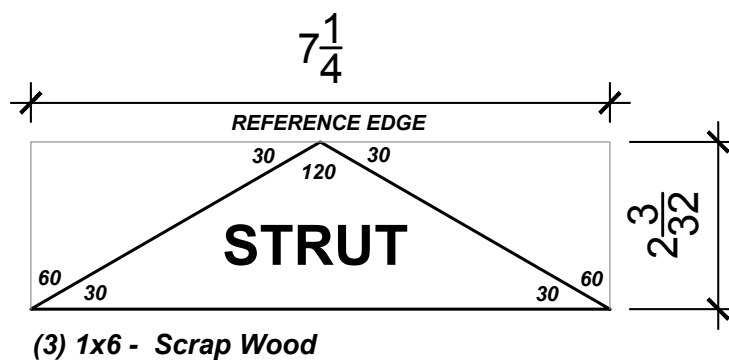
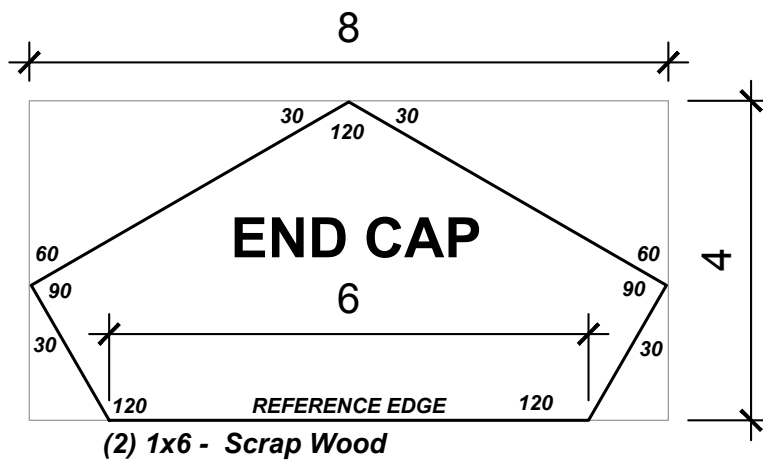
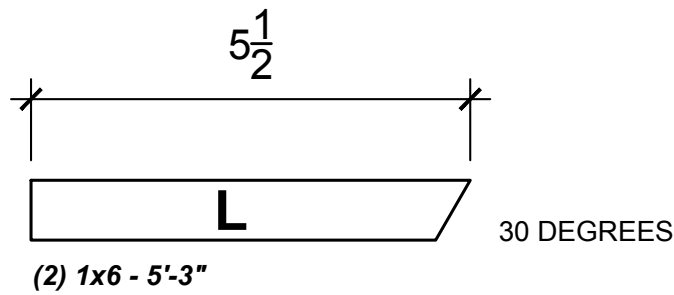
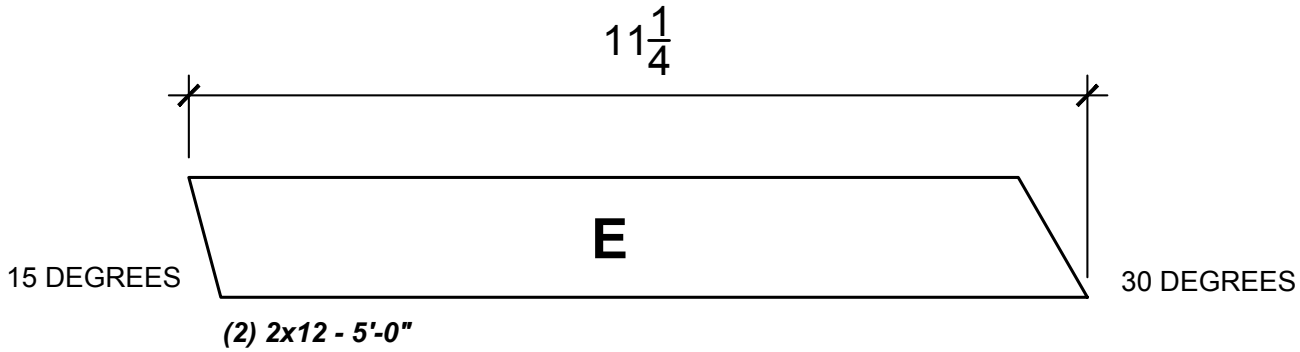
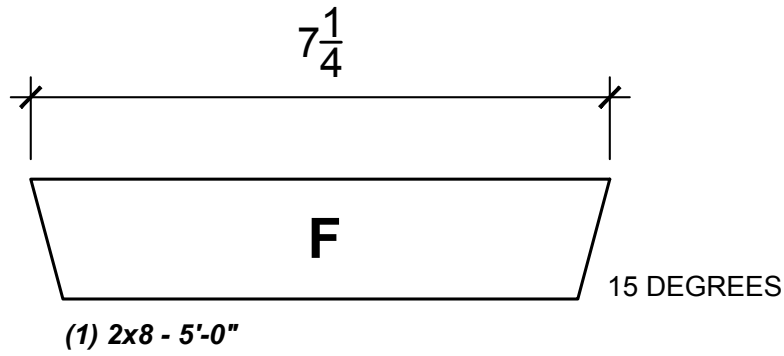
Frederick Dunn's - Long Langstroth Hive

Lid & Roof Construction



Frederick Dunn's - Long Langstroth Hive

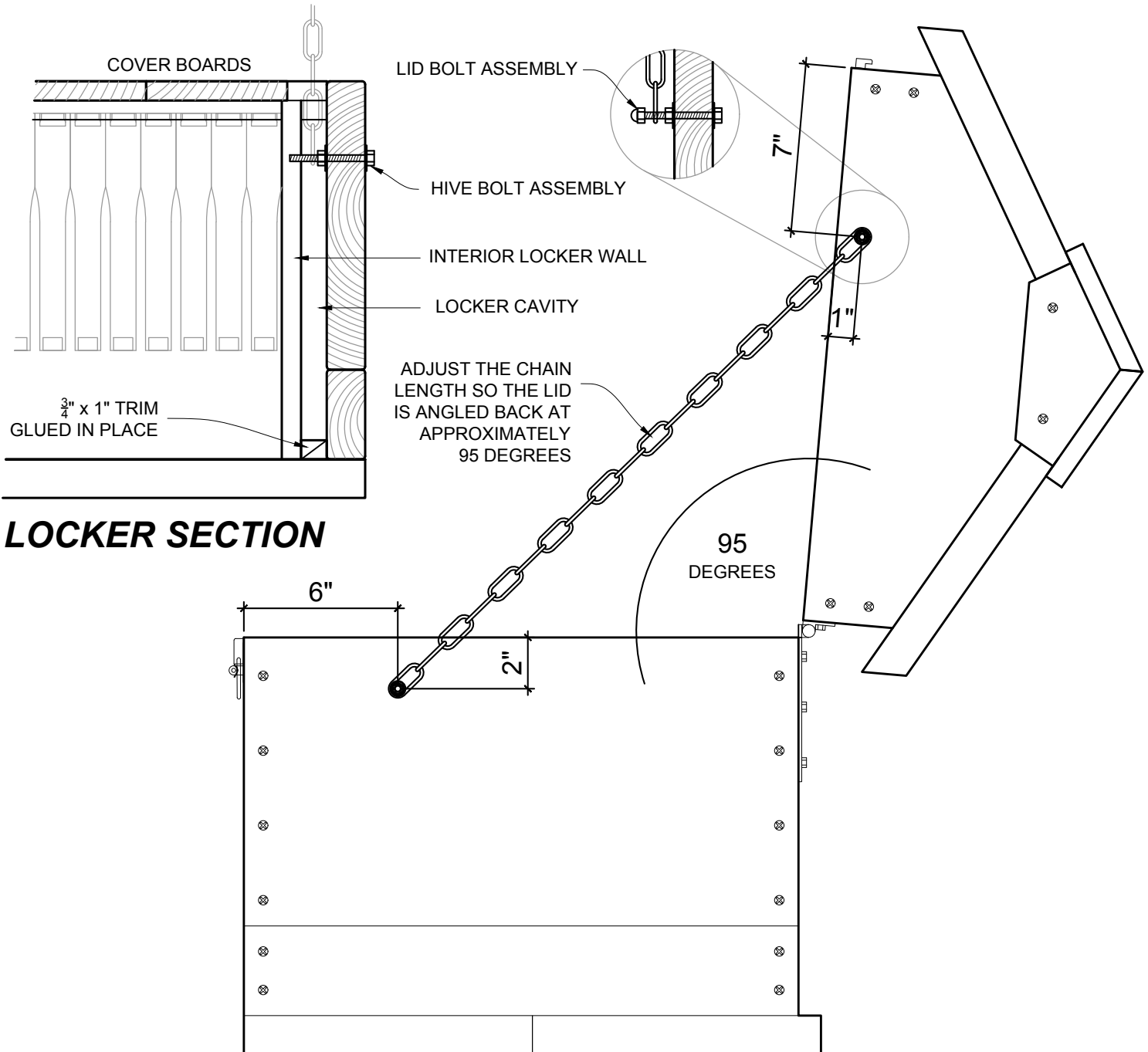
Roof Cut Diagrams



Frederick Dunn's - Long Langstroth Hive Chain Locker Detail

A Chain Locker creates a cavity for the chain to slide into so it slides out of the way as the Lid is shut.

1. Plan to locate the Locker on the opposite end to the bee entrance.
2. Cut trim pieces $\frac{3}{4}$ " x 1"
3. Glue to the bottom & sides of the hive.
4. Use 1x scrap to create the interior wall of the Locker.
5. Use the Divider Board template as a guide to build the Locker wall.
6. Drill (2) $\frac{1}{4}$ " holes as indicated on the elevation below.
7. The hole through the hive wall should go through the locker wall as shown.
8. In each hole insert a 3" x $\frac{1}{4}$ " bolt and washer.
9. Slide the chain through the hive bolt as it is inserted & it's nut is threaded
10. Nut & Washer the other side of each bolt.
11. Place the chain on the Lid bolt and add the cap nut.



SIDE ELEVATION

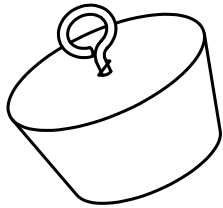
Frederick Dunn's - Long Langstroth Hive Cover Boards

Cover Boards are a necessity in a Long Hive to contain the bees in the hive space

- Cover Boards allow an upper "bee space" for bees to move between frames
- This space can be utilized by beekeepers to feed the hive without disturbing them.
- Cover Boards are typically made of 1x4 or 1x6 material*
- The lid is designed to accommodate hive top feeders

* Fred likes to use Rough sawn lumber to promote propolise production.

Rough saw lumber is thicker than the $\frac{3}{4}$ " deep shelf cut to accommodate the Cover Boards so he "shaves" the edges down to just under $\frac{3}{4}$ ". They must be shaved at least as wide as the lid.



A PROPERLY SIZED CORK OF RUBBER STOPPER IS THE PERFECT WAY TO SEAL THE HOLE IN THE FEEDER COVER WHEN NOT FEEDING THE BEES

FRED HAS DESIGNED THE LID SPACE TO ACCOMMODATE HIS FAVORITE TOP FEEDERS - THE RAPID-ROUND & 3 SEASON FEEDER BY BETTER BEE

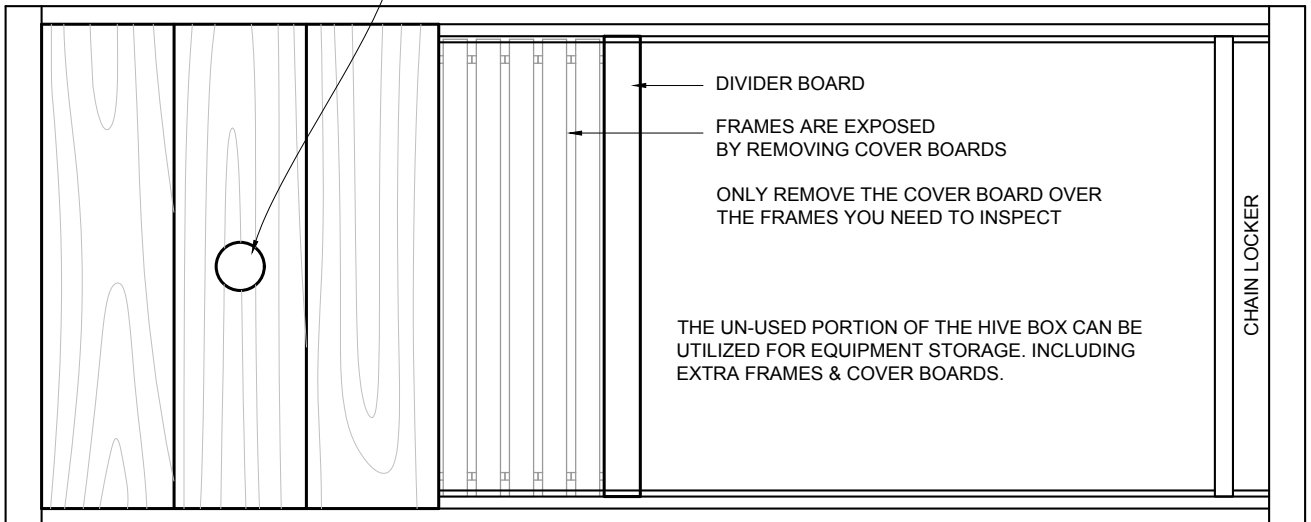
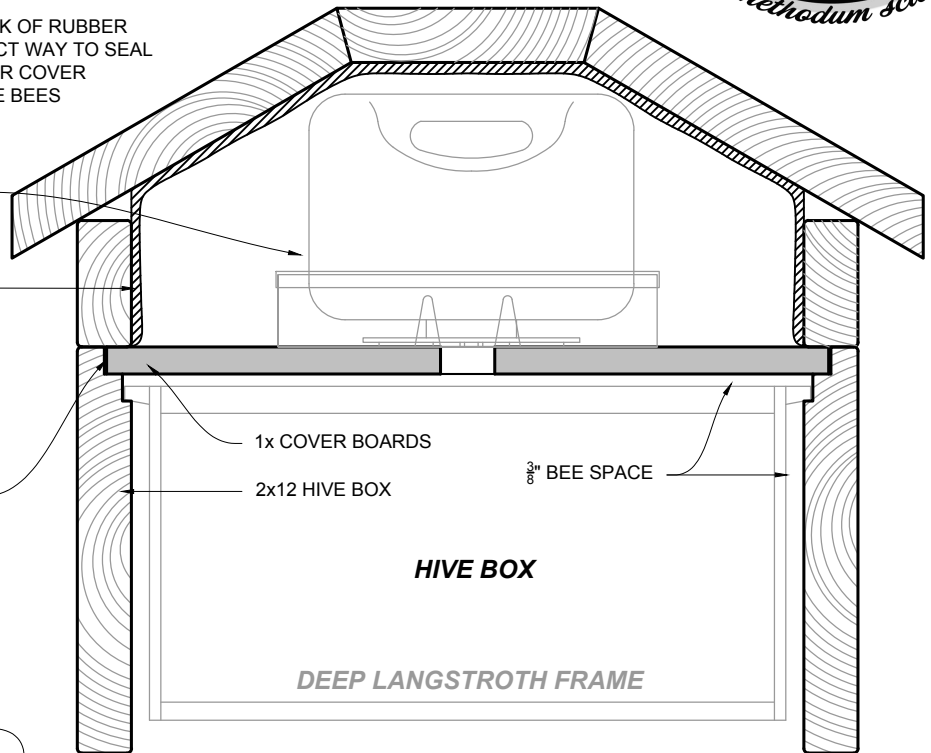
THIS HIVE IS SET UP TO BE AN UN-VENTED CONDENSING HIVE

LINE THE LID WITH A RADIANT BARRIER (DOUBLE BUBBLE, REFLECTIX) WRAP THE BOTTOM EDGE UNDER THE BOTTOM OF THE LID TO CREATE A SEAL

COVER BOARDS NEED TO BE PRECISELY SIZED TO ALLOW FOR THE LID TO CLOSE PROPERLY ON THE HIVE BOX
COVER BOARDS THICKER THAN $\frac{3}{4}$ " NEED TO BE "SHAVED" TO SIZE

COVER BOARDS CAN BE REMOVED INDIVIDUALLY TO ACCESS SPECIFIC FRAMES WITHOUT DISTURBING THE ENTIRE COLONY

DRILL A $1\frac{1}{2}$ " HOLE* IN ONE OF THE COVER BOARDS TO ACCOMMODATE TOP FEEDERS
* VERIFY YOUR FEEDERS HOLE SIZE

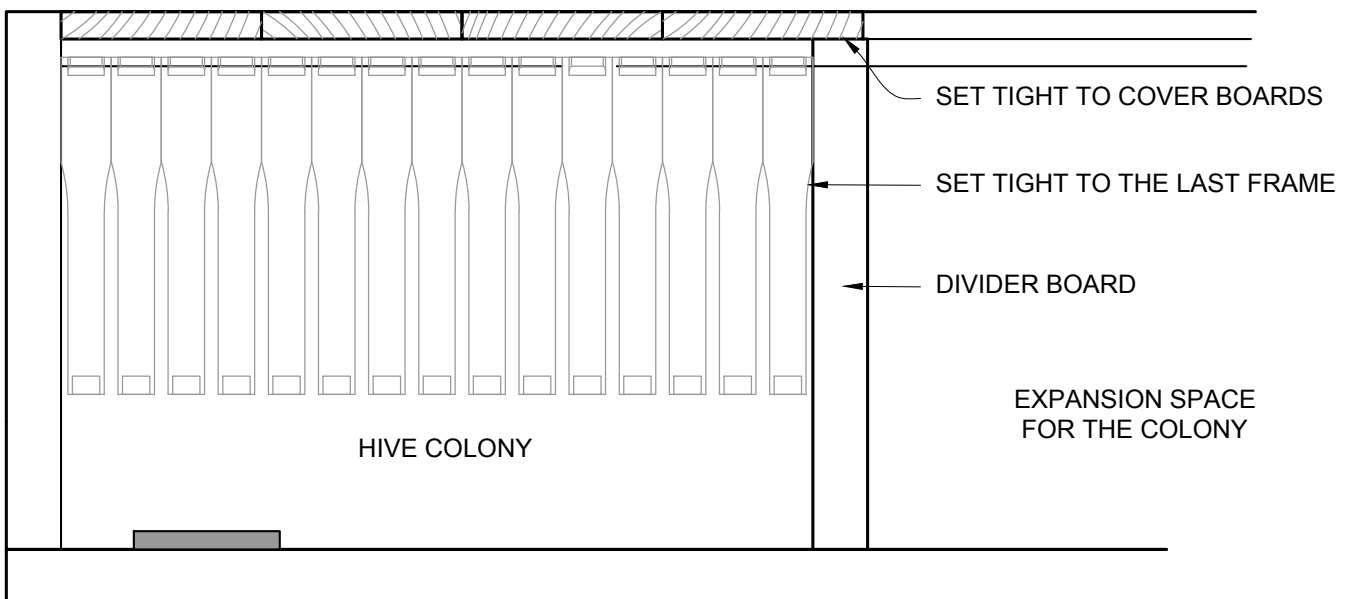
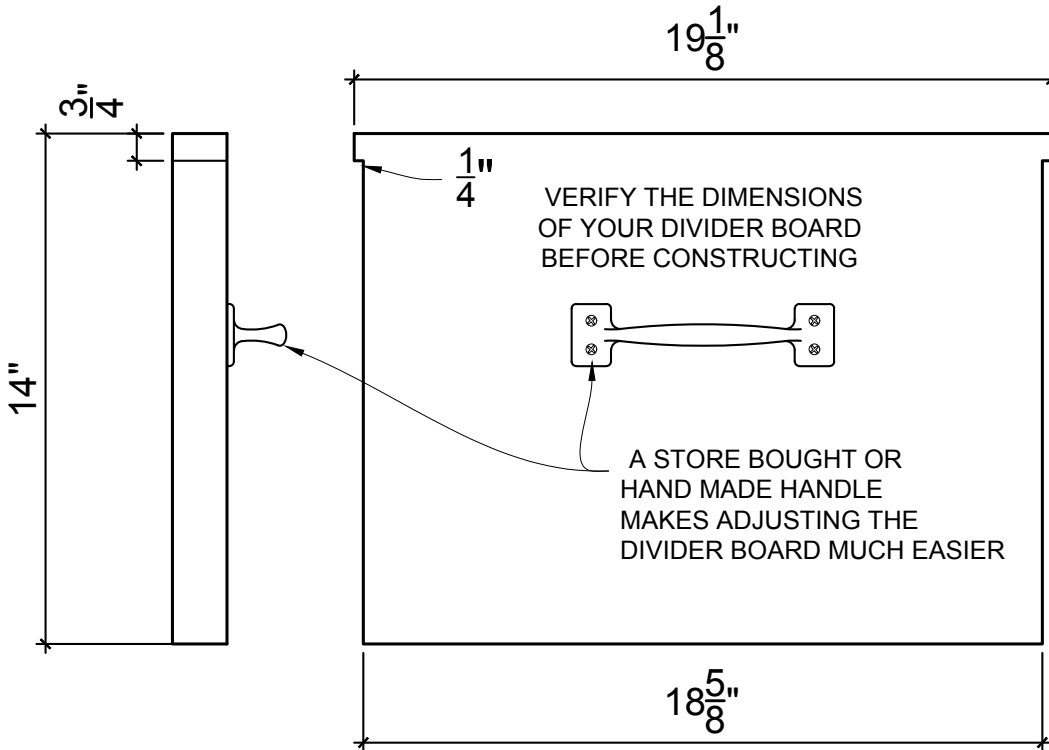


OVERHEAD VIEW OF HIVE BOX

Frederick Dunn's - Long Langstroth Hive Divider Board (Sometimes called Follower Boards)

The Divider Board is used to control the size of the colony. As the colony is expanded & frames are added the Divider Board is repositioned to be the interior wall of the hive.

1. Use 1x or 2x scrap material to build your Board.
2. Trim the pieces to size, glue and screw together.
3. Fred usually uses some scrap wood to make a handle but you can purchase one.
4. Be sure the divider board fits under the Cover Boards tightly.
5. Do not allow any "Bee Space" around the Divider Board, It should fit snugly.



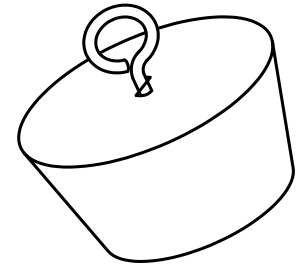
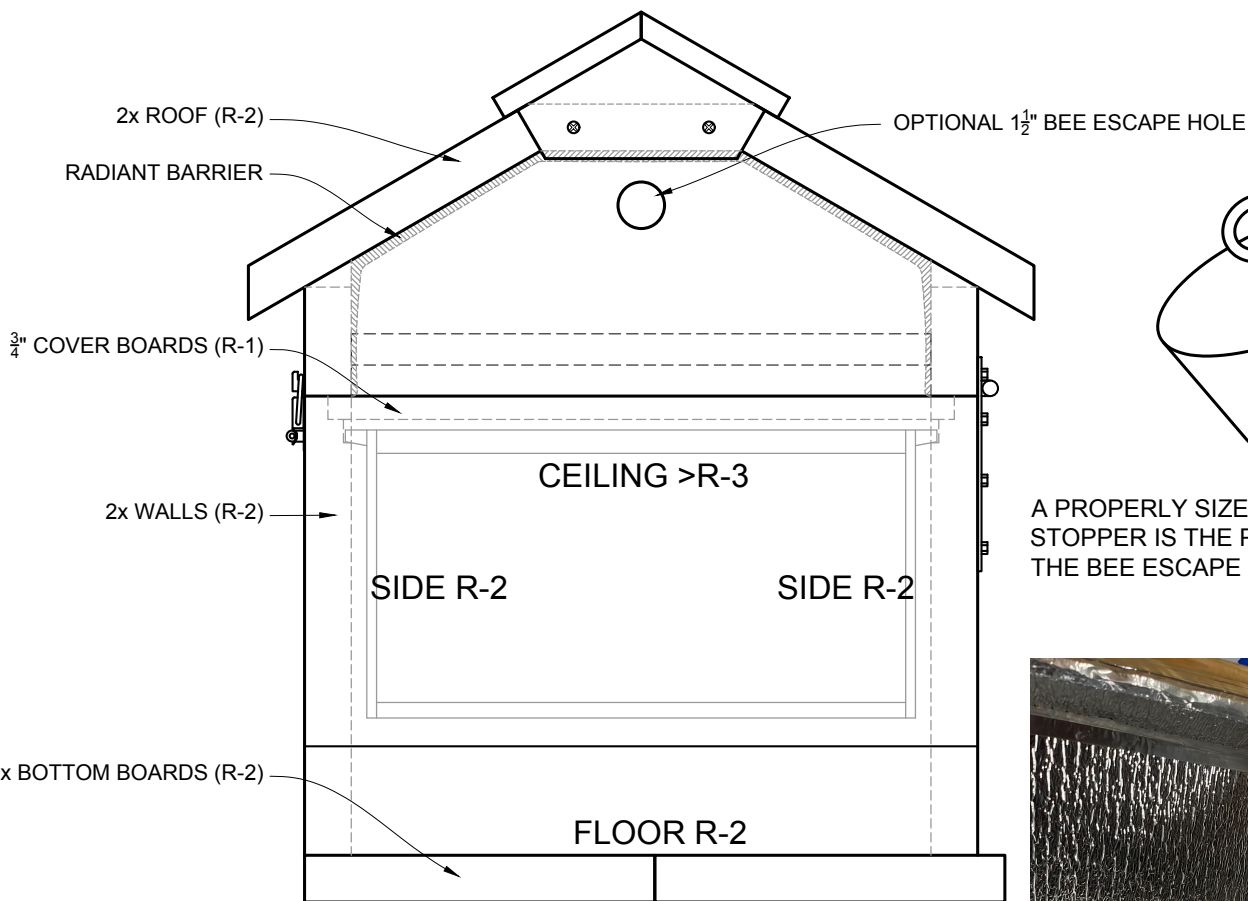
Frederick Dunn's - Long Langstroth Hive

Ventilation & Insulation

Fred's Long Hive is designed to mimic the insulative properties of a tree hive. This allows the bees to better regulate the climate with-in the hive & in doing so promote a healthier colony & honey production.



- Fred designed this hive out of 2x material due to its insulative properties.
- A radiant barrier (Double Bubble) is wrapped inside the lid and sealed with aluminum foil tape. Radiant heat is "blocked" and does not escape. Hot air is trapped at the top of the hive, cooler air near the bottom. Any moisture in the hive is below the bees and is a source of drinking water.
- A Bee Escape Hole is used to allow bees trapped in the lid during inspections to escape after the lid is closed.



A PROPERLY SIZED CORK OF RUBBER STOPPER IS THE PERFECT WAY TO SEAL THE BEE ESCAPE HOLE WHEN NOT IN USE

R-VALUE is the capacity of an insulating material to resist heat flow. the higher the R-value, the greater the insulating power

For reference, a typical houses walls have an R-value of 13-19

A material 's R-value works in both directions, slowing heat transmittal in to out, in winter & out to in, in summer. In other words, insulation is beneficial to bees in summer & winter.



Double Bubble on the inside of a hive lid

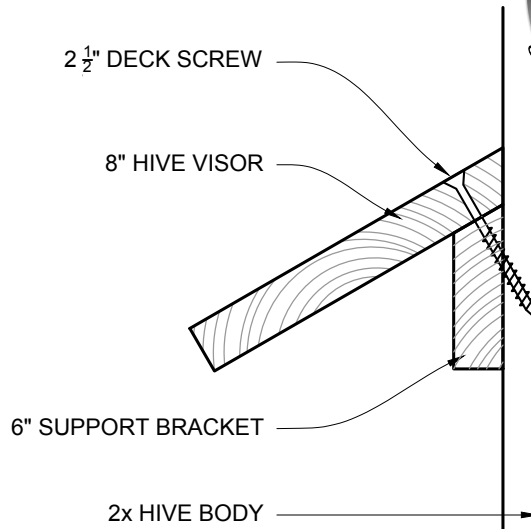
Frederick Dunn's - Long Langstroth Hive

Hive Visor Detail

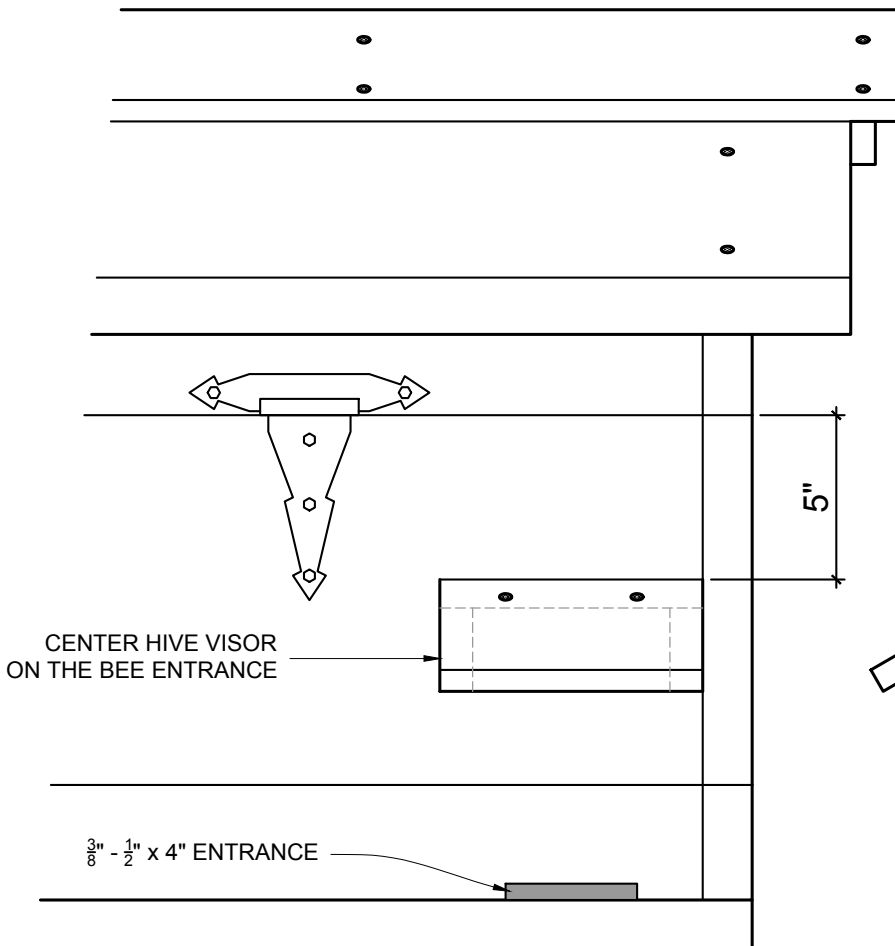
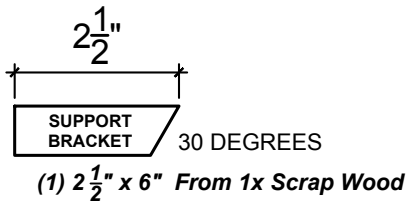
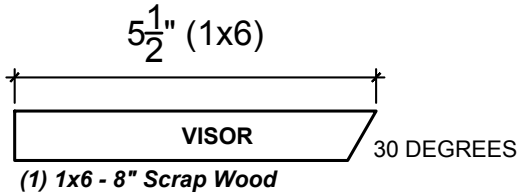
Hive Visors are a simple way to help keep rain & snow away from the entrance of the hive

1. Use Scrap 1x lumber from the hive build
2. Cut a 30 degree edge on a 14" Piece of 1x6
3. Cut the Visor & Bracket to size
4. Center the Bracket under the visor as shown in Section
5. Glue and Screw* the two together w/ a 1 1/2" deck screw
6. Allow the glue to dry then remove the 1 1/2" deck screw
7. Use the Visor as a guide to drill pilot holes in the Hive
8. Use 2 1/2" Deck Screws to attach the Visor

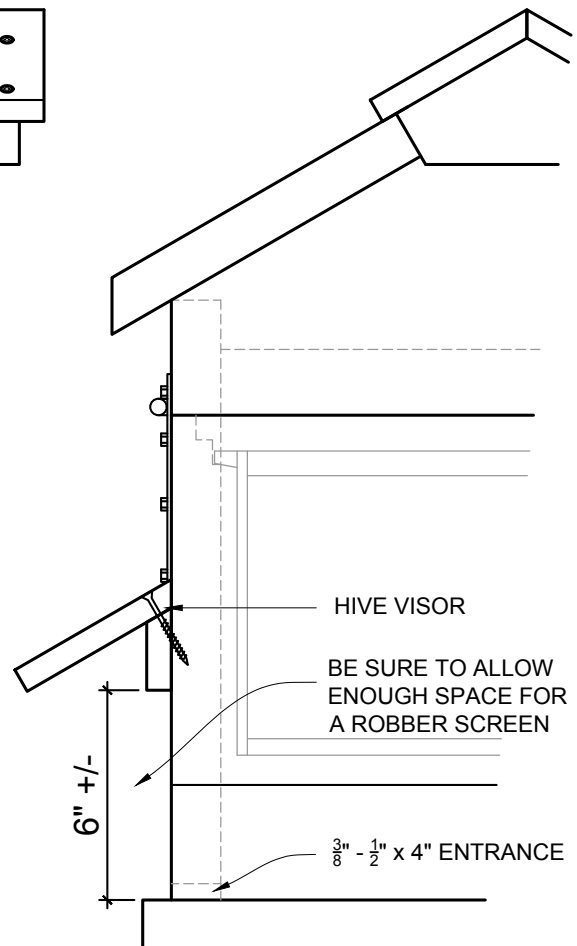
* always drill a pilot hole before driving a screw into wood



SECTION



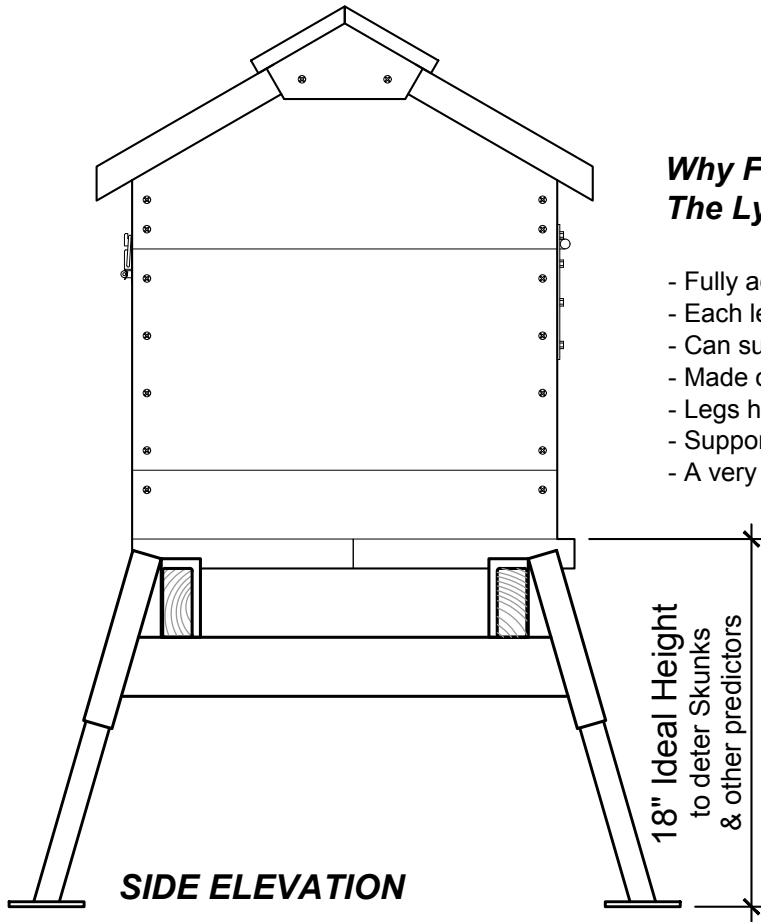
FRONT ELEVATION



SIDE ELEVATION

Frederick Dunn's - Long Langstroth Hive

Lyson Hive Stand Brackets

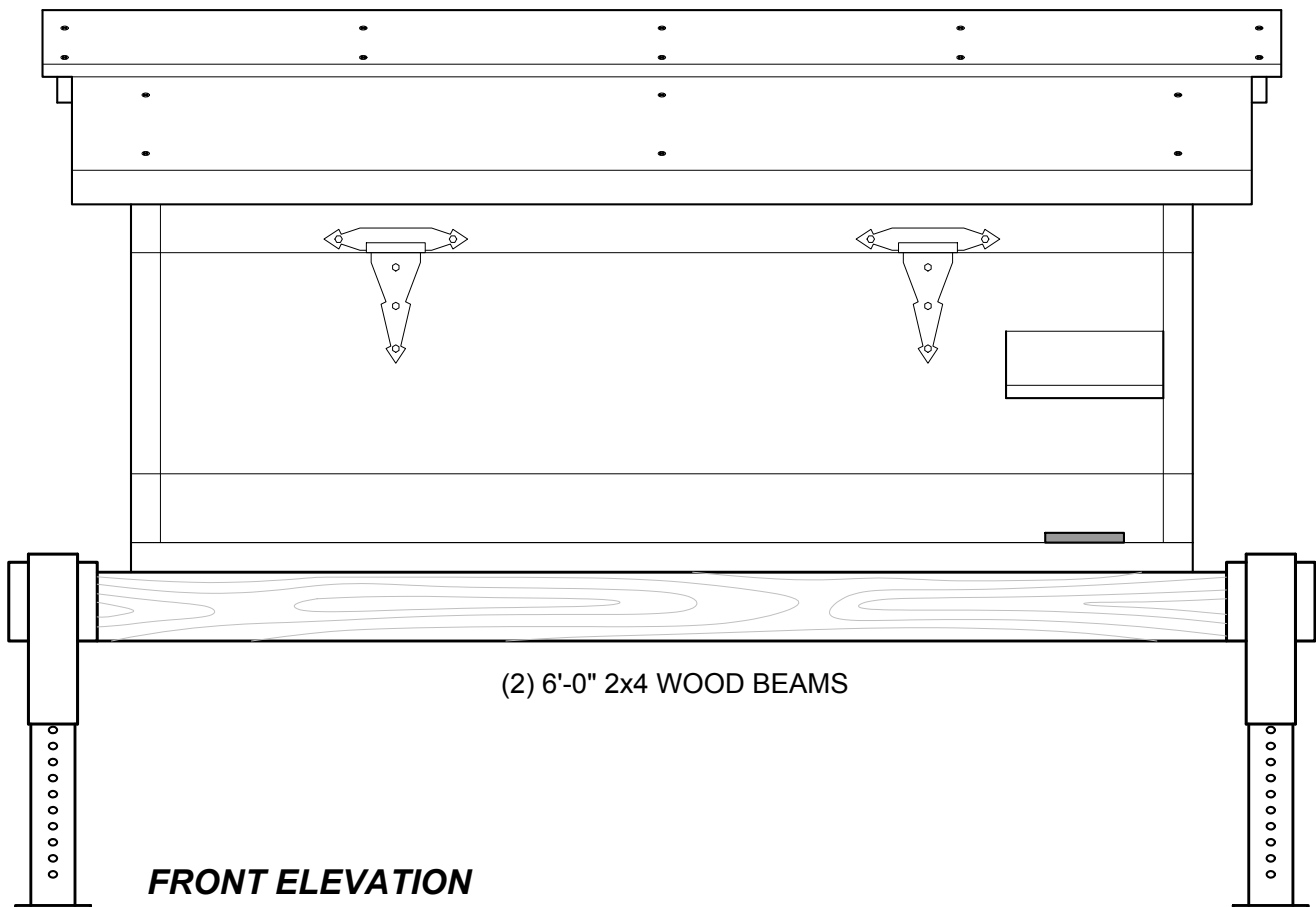


Why Fred Prefers: The Lyson Hive Stand Brackets

- Fully adjustable height, 9" - 23"
- Each leg is height adjustable for leveling.
- Can support 1100 lbs.
- Made of Galvanized Steel
- Legs have locking pins
- Support beams are locked in place with a bolt
- A very stable and ridged design

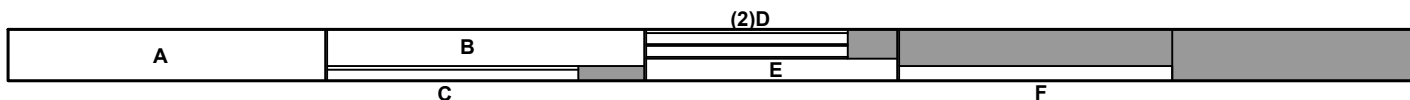


A set of Lyson hive stand brackets being set up in Fred's Apiary



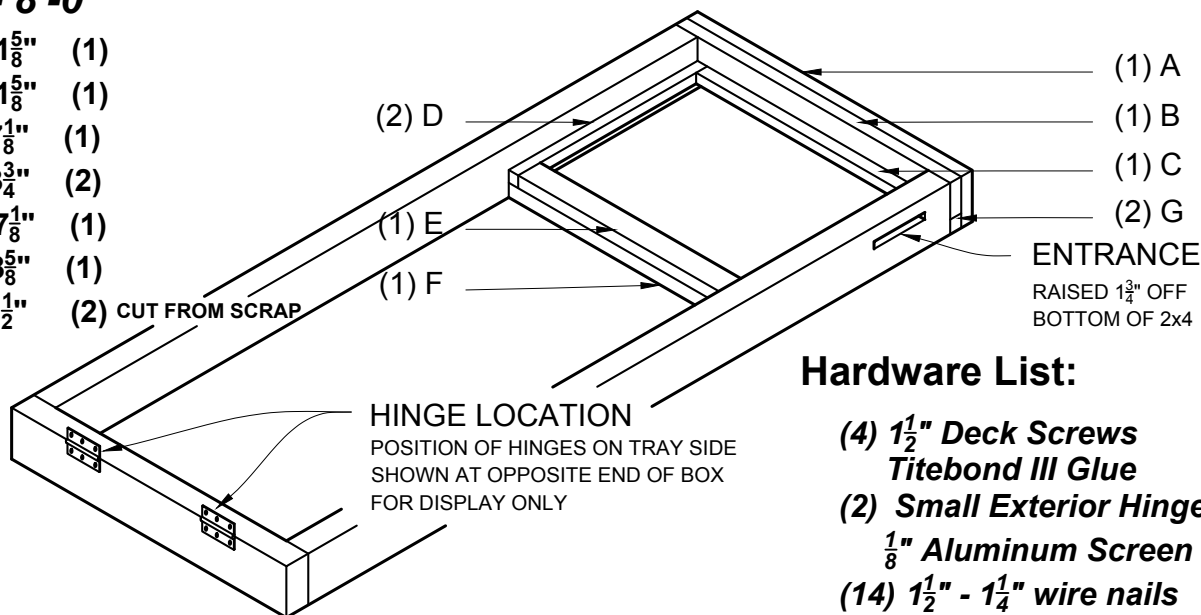
Frederick Dunn's - Long Langstroth Hive

Optional Screen Bottom Board & Tray



(1) 1x4 - 8'-0"

- (A) $3\frac{1}{2}$ " x $21\frac{5}{8}$ " (1)
- (B) $2\frac{1}{2}$ " x $21\frac{5}{8}$ " (1)
- (C) $\frac{3}{4}$ " x $17\frac{1}{8}$ " (1)
- (D) $\frac{3}{4}$ " x $13\frac{3}{4}$ " (2)
- (E) $1\frac{1}{2}$ " x $17\frac{1}{8}$ " (1)
- (F) 1" x $18\frac{5}{8}$ " (1)
- (G) 1" x $1\frac{1}{2}$ " (2) CUT FROM SCRAP



Hardware List:

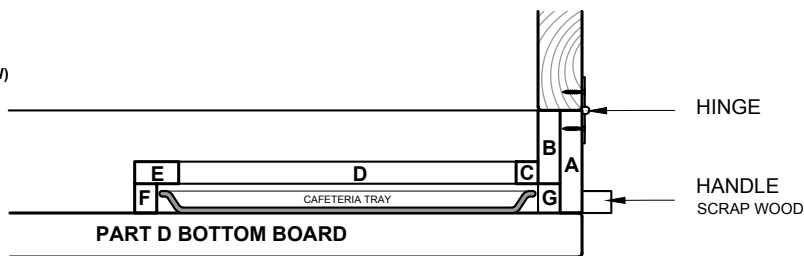
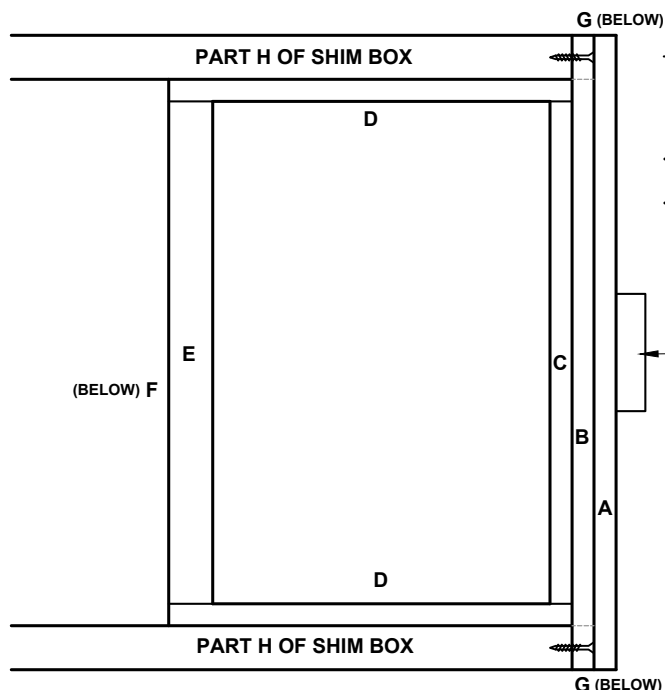
- (4) $1\frac{1}{2}$ " Deck Screws
- Titebond III Glue*
- (2) *Small Exterior Hinges*
- $\frac{1}{8}$ " *Aluminum Screen*
- (14) $1\frac{1}{2}$ " - $1\frac{1}{4}$ " *wire nails*
- (1) 13 " x 18 " *Cafeteria Tray*
- (18) $\frac{1}{2}$ " *Staples*

READ THESE INSTRUCTIONS BEFORE BUILDING THE SHIM BOX

1. REMOVE ONE END OF THE SHIM BOX. PART J
2. CUT THE BEE ENTRANCE IN PART D 2" FROM THE END & $1\frac{3}{4}$ " FROM THE BOTTOM OF THE 2x4 ($\frac{3}{8}$ " - $\frac{1}{2}$ " x 4")
3. CONSTRUCT PARTS B-F AS SHOWN IN THE DIAGRAMS BELOW USING NAILS & GLUE.
4. INSTALL THE BOTTOM BOARD IN THE SHIM BOX & ATTACH USING (2) SCREWS EACH SIDE. BE SURE TO DRILL PILOT HOLES FIRST

A STANDARD CAFETERIA TRAY WILL WORK WITH THIS DESIGN, VERIFY THE SIZE BEFORE YOU PURCHASE

A SMALL SHEET OF WIRE MESH CAN BE PURCHASED THROUGH BLYTH WOOD BEE COMPANY FOR A FEW DOLLARS



SECTION CUT

5. COVER THE BOTTOM BOARD WITH MESH AND STAPLE INTO PLACE
6. INSTALL PARTS G USING GLUE & NAILS.
7. ATTACH HANDLE TO PART A
8. ATTACH THE ACCESS FLAP, PART A USING EXTERIOR HINGES.

VIEW FROM ABOVE

