The "Vancouver" Bin-Building Guide

A design originally published by Metro Vancouver and modified by the New York City Compost Project Hosted by Queens Botanical Garden (New York City)

Description
The New York City Compost Project Hosted by Queens Botanical Garden (QBG) developed this open source bin-building guide for a 3-bin style system. This design is called the "Vancouver" as it is based on the open source design published by Metro Vancouver (British Columbia).* Over the years of building many of these bins, QBG has tweaked the design. According to Vanessa Ventola, the former Outreach Coordinator for the New York City Compost Project Hosted by QBG, this model of compost bin is very sturdy and has a longer lifespan than some of the lighter 3-bins. The removable panels and lids make it easy to repair these parts since they tend to need changing more often than the frame. Like for all bins, careful construction to avoid any unnecessary gaps, and switching from ½" to ¼" galvanized hardware cloth is essential for the best rodent prevention.

Estimated Cost
If you make this bin from knotty cedar with full cedar lids, you can expect the cost to be $600-900. Less expensive types of wood are of course an option too depending on the preference of the garden.

Crew and Prep
The bin is easy to use but building it is a project. Vanessa recommends a group of 4 to 8 handy volunteers, and pre-cutting as much wood as possible, to make the project day run smoothly. Like with many of the 3-bin designs, there are some pieces you can prepare in advance and some which must be measured and cut on the day you are building the bin.

Building Tip
Towards the end of this guide, you'll see a hand-drawn diagram showing the proper spacing across the back of the bin for the dividers. This is really the key to construction and often the trickiest part.

*QBG corrected a few measurements and made some adjustments in the design. For example, in this QBG guide, the bin does not stand on feet as shown in the original Vancouver design pdf here: http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/CompostBinConstructionPlan-ThreeBin.pdf

Materials

Lumber

Lumber Dimension	Wood order if lumber yard has materials available in 10' boards	Wood order if lumber yard has materials available in 12' boards
2x4's	7 boards	6 boards
1x4's	11 boards	9 boards
2x2's	8 boards	7 boards
1x6's	23 boards	18 boards

Hardware:

- boxes bell wire insulated staples (5/8" – 100/box) or 5/8" poultry staples
- 2 lb. 2" exterior screws
- 1 lb. 3" exterior screws
- 80 1 ¼" exterior screws
- 50' x 36" galvanized 1/4" hardware cloth

This length includes additional hardware cloth.

Tools:
- Measuring tape
- Drills
- Bit for pre-drilling
- Bit for drilling
- Clamps
- Hammer
- Tin Snips
- Circular Saw or Miter Saw
- (Optional) Hand Saw
- Carpenter's Square
- Level

Lumber Cut List and Labels					
Label	Quality	Length	Dimension	Pre-cut?	Purpose
A	5	9'	1x6	yes	Step 1: Back
B	1	9'	1x4	yes	Step 1: Back
C	20	3'	1x6	yes	Step 2: Sides
D	4	3'	1x4	yes	Step 2: Sides
E	8	3'	2x4	yes	Step 2: Sides
F	1	9'	2x4	yes	Step 4: Front Cross Piece
G	6	3'	2x2	yes	Step 4: Base Railes (depth wise)
H	6	~30"	2x2	no	Step 4: Base Rails (width wise)
I	6	34"	2x4	yes	Step 4: Top rails
J	6	~31"	1x2	no	Step 4: Vertical Slider Guides
K	2	~32.5"	1x4	no	Step 5: Front Slider Guides
L	2	~32.5"	1x6	no	Step 5: Front Slider Guides
M	12	~32.25"	1x6	no	Step 5: Front Removable Slats
N	6	~32.25"	1x4	no	Step 5: Front Removable Slats
O	12	~16.875"	1x4	no	Step 5: Front Removable Slats
P	1	9'	1x6	yes	Step 6: Top
Q	1	9'	1x4	yes	Step 6: Top
R	5	~38"	1x6	no	Step 6: Lids
S	10	~35"	1x6	no	Step 6: Lids
T	6	~30"	1x4	no	Step 6: Lid Arms

6 Step Construction Plan

1. Build the Back
2. Build the 4 Sides
3. Attach Back to Sides
4. Install Supporting Rails and Bottom
5. Install Three Fronts
6. Build and Install Three Tops and Lids

0. Prepare Materials

0.1 Pre-cut and label wood as indicated in the "Lumber Cut List and Labels" figure at the beginning of this guide.
0.2 Pre-cut hardware cloth:
• 2 pieces at 9"
• 4 piece at 35"
• 6 pieces at 16" x 31"

1. Build the Back

A	5	9'	1x6	Back
B	1	9'	1x4	Back

1.1 Lay out 5 A Pieces on level surface with roughly an inch between each board and then add the B Piece to the bottom. Ensure all boards are parallel.

1.2 Lay out one piece of 3'x 9' of hardware cloth over the boards, ensuring that the boards are flush with the edges of the hardware cloth. Staple the mesh to the boards.

Notes:
Make sure hardware cloth is bubble free. The hardware cloth is 3' –top and bottom. Boards should line up exactly with the edge of the cloth. Start at one corner and work your way across.

The back of the bin being held in position.

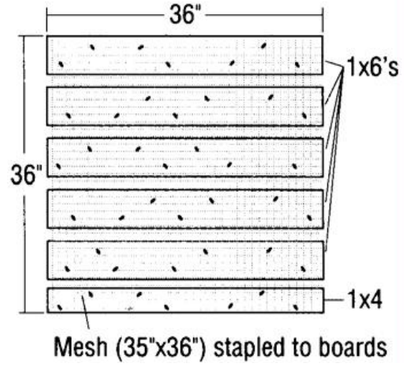
2. Build the 4 Sides

C	20	3'	1x6	Sides
D	4	3'	1x4	Sides
E	8	3'	2x4	Sides

The four sides are identical.

2.1 On a level surface, lay 5 C Pieces with a D Piece at the bottom with approximately 1" between each board.
2.2 Lay a 35"x35" piece of hardware cloth on top of the boards. Before stapling, double check that boards and hardware cloth are square and staple the mesh to the boards. **See Figure 1.** Repeat to create a total of 4 sides. Having many hands and clamps, and an elevated working surface is useful to keep the boards from moving while stapling the mesh.

Figure 1 - A side. Wire mesh stapled to 5-1x6's and a 1x4.



Notes:
Make sure hardware cloth is bubble free. The hardware cloth is 3' – top and bottom boards should line up exactly with the edge of the cloth. Securing the top or bottom board first is helpful.

2.3 Lay **2 E Pieces** on level surface 36" apart. Lay the mesh and board panels on top with the mesh between boards and posts. Ensure that everything is square and attach with **2" screws**. Repeat for 3 other sides. **See Figure 2.** Clamps should be used tosecure the **E Pieces** to the **C** and **D Pieces** while drilling. (Move the clamps so you are clamping the board you are drilling into.) This will prevent gaps between the boards.

Repeat on all four dividers.

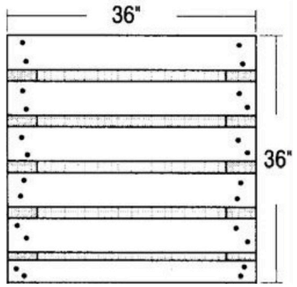
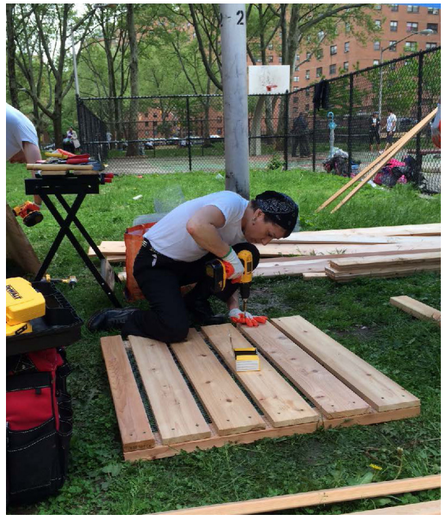


Figure 2 - A side panel nailed to 2 posts with the mesh between boards and posts.



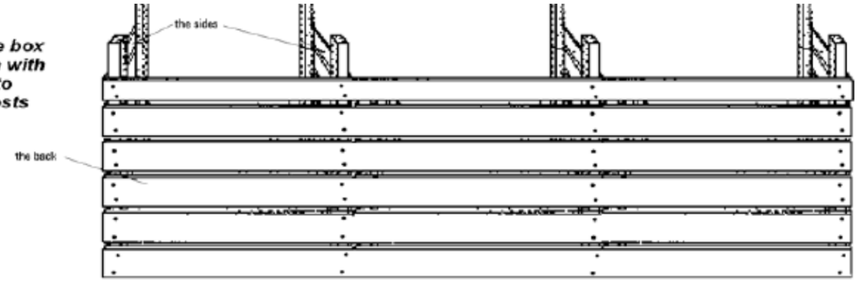
3. Attach Back to Sides

3.1 Stand the back upright in position (the **D Piece** is the bottom). Line up the two outer sides so that the **E Pieces** are facing each other. Make sure the sides are square with the back. (All hardware cloth should be on the inside of the bin.)

3.2 Screw 3" screws through the back and into the **E Pieces.** Use two screws per board across the back as shown in **Figure 3.** You will need several people supporting the back and the sides during the process to ensure they do not shift while attaching the walls.

Double check for squareness by measuring across the front of the bin. **It should total 108".**

Figure 3 - the box upside down with back nailed to sides and posts



3.3 Across the back measure 36.75" from both ends and mark on the backboard.

3.4 Stand the remaining two sides with the **E Pieces** facing inward towards each other. Align the remaining two dividers so that the middle of the **E Pieces** lines up with each 36.75" mark.

3.5 Use two 3" screws per backboard and screw the back into the center of the **E Pieces.** See the sketch at the end of this document for clarification if necessary.

4. Install Supporting Rails and Bottom

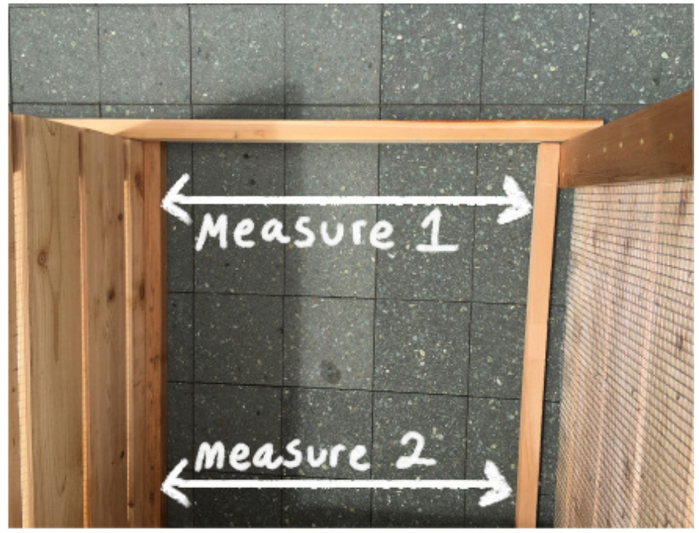
F	1	9'	2x4	Front Cross Piece
G	6	3'	2x2	Base Rails (depthwise)
H	6	~26"	2x2	Base Rails (widthwise)
I	6	34"	2x4	Top Rails
J	6	~31"	1x2	Vertical Slider Guides

4.1 Make sure bin is right side up.

4.2 Front Cross Piece Installation: Ensure the boxes are square in all planes and screw the **F Piece** to the **D Pieces** at the bottom.

4.3 Base Rails installation: Fit 2 **G Pieces** into the bottom of each bin going from front to back (depthwise). Screw into sides using 3" screws if screwing into the **F Piece** and 2" screws if screwing into a **D Piece.**

4.4 Cut **H Pieces** to fit the side-wall to side-wall dimension in each bin (widthwise). Measure the distance between the front-to-back base rails in the front and back of each bin. Then, measure and cut **H Pieces** (approx. 30") and fit into place across the bottom of the bin.

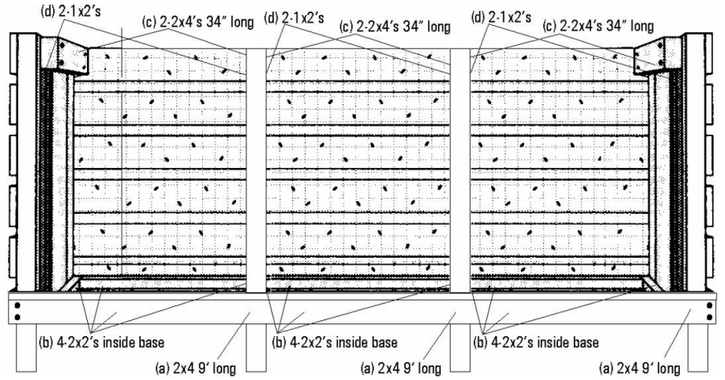


4.5 Screw one **H Piece** into the front and screw the second **H Piece** into the back cross piece to secure the base rails. Repeat for each bin.

4.6 Top Rails – Align the 6 **I Pieces** on each side of the dividers, flush with the top and back walls. Using 3" screws, screw rails into **E Pieces.** Note that they will end two inches from the front edge of front posts to allow for sliding front.

4.7 Vertical Slider Guides – Measure vertically from the inside of the **H Piece** to the bottom of the **I Piece** (approx. 31"). Cut, place, and screw **J Pieces** 2" back from the front of the bin to guide removable front sections. Repeat for all bins.

Figure 4 -
The box right side up with front cross-piece, base and top rails, and vertical slider guides.



4.8 Bottom – Turn system upside down. Staple the second 9' hardware cloth to the base. Hammer poultry staples into the corners and primary pressure points and use a staple gun to secure the rest.

5. Install Three Fronts

K	2	~32.5"	1X4	Front Slider Guides
L	2	~32.5"	1X6	Front Slider Guides
M	12	~32.25"	1X6	Front Removable Slats
N	6	~32.25"	1X4	Front Removable Slats
O	12	~16.875"	1X4	Front Removable Slats

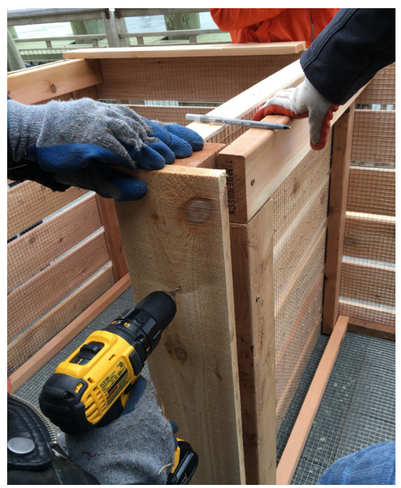
The front is made with two front guides **(K and L Pieces)** nailed to the front posts and two removable front panels per bin. Each removable panel should be approximately 32.25" wide and 16 7/8" high and is built to slide in and out of the top of the box.

5.1 Front Slider Guides

5.1.1 Measure vertically the distance between the top of the bin and the top of the front cross piece **(F Piece)** on the bottom for each front slider guide **(K and L Pieces)** approx. 32 ½".

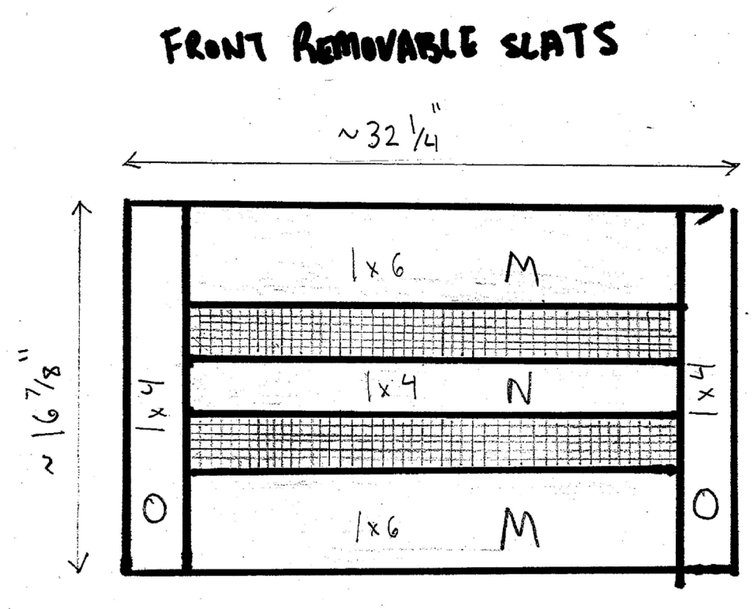
5.1.2 Cut **2 K Pieces** to fit on either end and **2 L Pieces** for the center slider guides. Each piece should be individually measured and cut.

5.1.3 Screw each piece to the correct divider at the front facing **E Piece** with 2" screws.



5.2 Front Removable Slats

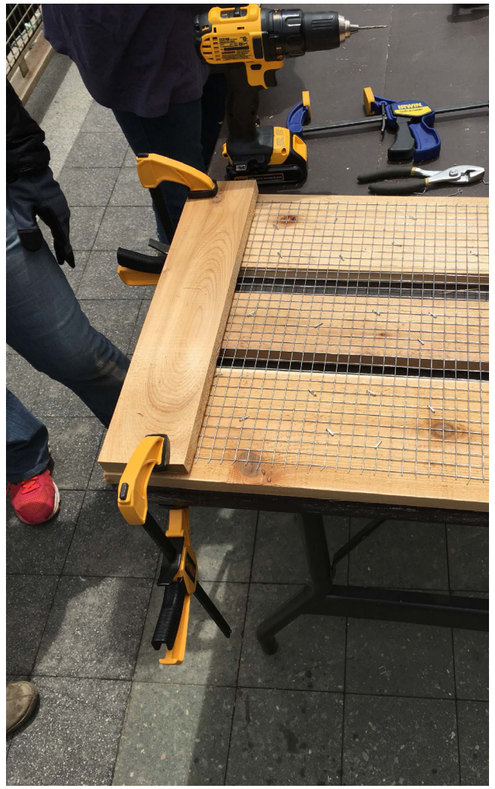
5.2.1 Measure the inside of each bin at the front. (See value "x" on the sketch at the end of this document for clarification if necessary.) If you have perfectly squared and secured the 4 walls this measurement should be 29" for all three bins. If the measurements are different, you will need to customize the front panels to the correct size of each bin.



5.2.2 Cut **12 M Pieces** and **6 NPieces** to fit. These should becut 1" shorter than the inner bin measurement to allow slats to slide.

5.2.3 Staple mesh (31" x 16") to the **M and N Pieces**. Repeat for theother 5 front sections.

5.2.4 Cut 12 **O Pieces** to fit (approx. 16 7/8”). Using 1.25” screws, screw an **O Piece** to each end of the front sliders with hardware cloth in between the boards.



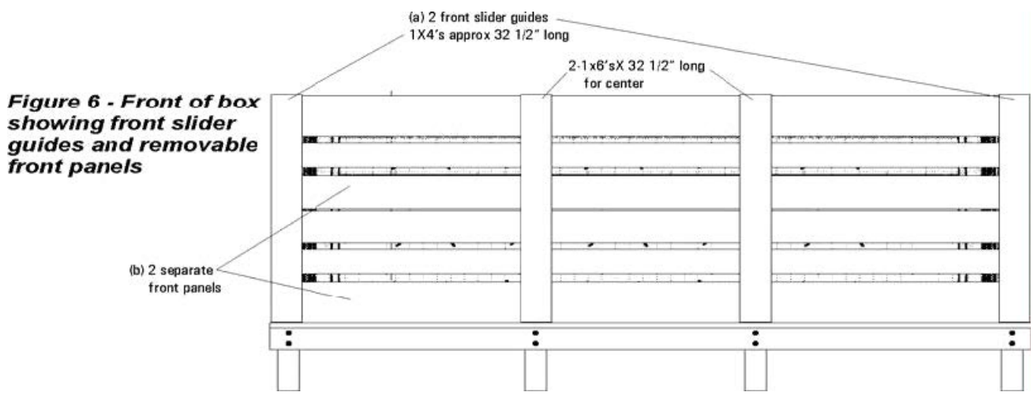


Figure 6 - Front of box showing front slider guides and removable front panels

6. Build and Install Tops and Lids

P	1	9’	1X6	Top
Q	1	9’	1X4	Top
R	5	~38”	1X6	Lids
S	10	~35”	1X6	Lids
T	6	~30”	1X4	Lid Arms

The top is formed from two sections –2 boards fixed at the back and 3 removable lids.

6.1 For the fixed section screw the **P and Q Piece** across the top of the back using 1.25” screws.

6.2 The lids need to line up with the point where the top rail touches the uppermost **C Piece** of the walls.Measure the distance from the outside of the bin to the first point where the **I Piece (top rail)** touches the uppermost **C Piece** of the side. This should be ~35”. From the other side of the bin take the samemeasurement. Hopefully they match! If not, you will again want to customize.
Measure from both points across the middle bin. This measurement should be ~38”

6.3 Cut 5 **R Pieces** at 38” or your middle measurement.

6.4 Cut 10 **S Pieces** at 35” or your outer measurements.

6.5 Lay the set of **R or S Pieces** edge to edge on a flat surface. Ensure they are square. For each lid attach 2 **T Pieces** across the 5 boards so that a few inches stick off the edge. This part will slide under the fixed section to keep the lids on. Use 1.25” screws to attach the 30”pieces to the **R or S Pieces.** Flip over your finished lids and slide into place!

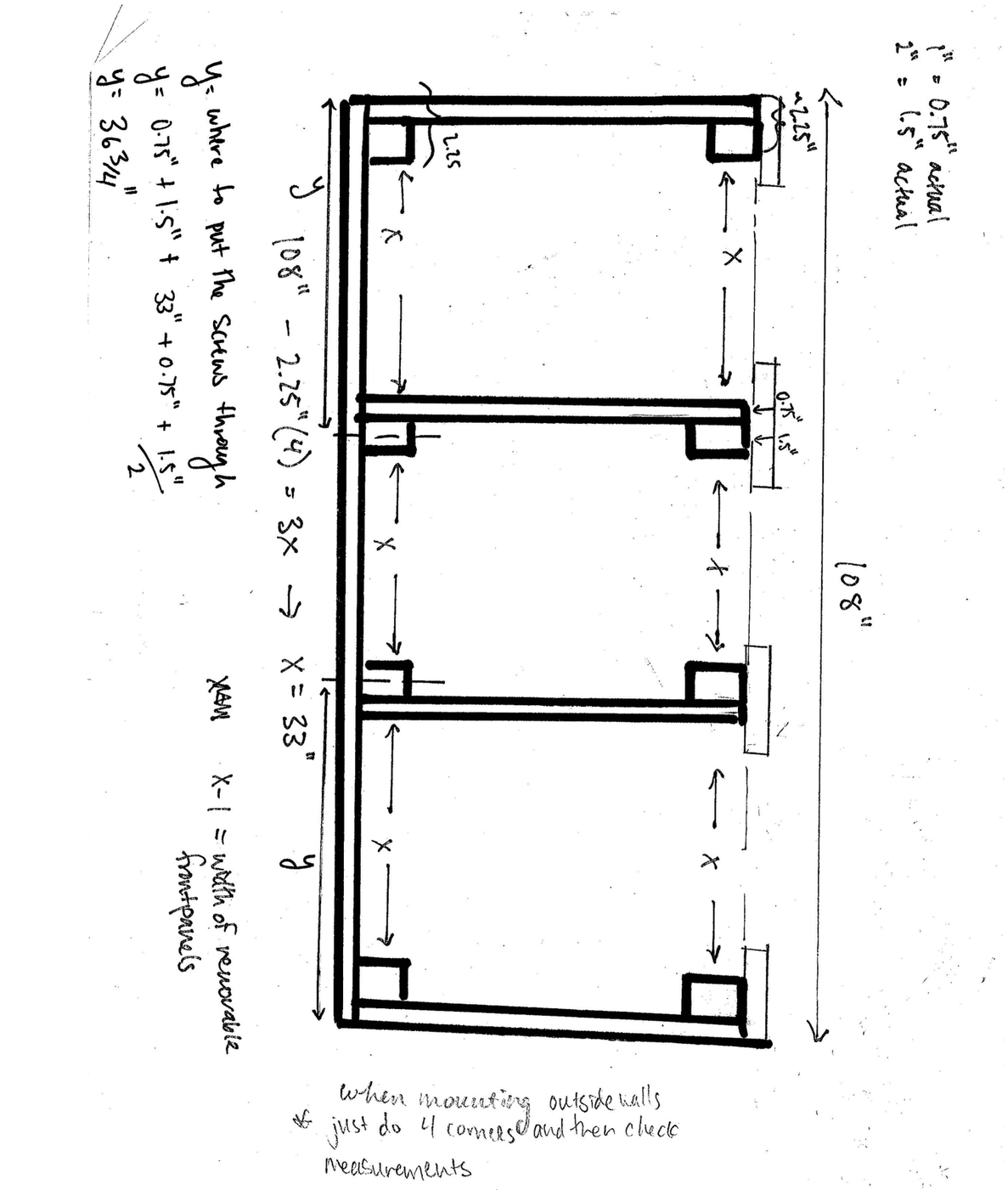


Figure 10 - The completed compost box planted in position and ready for work.