

The Catio with “Treehouse” at Nahimana Forest Kitten Rescue



Plans and Considerations

Part 1 - The Catio

Thank you for supporting Nahimana Forest through your purchase of these catio plans. A percentage of plan sales goes directly to the rescue for support and care of these deserving feline friends. We're grateful for you!

Please consider:

Safety First! - Our catio is a substantial structure constructed with the same dimensional lumber used to build decks and other outdoor structures. That said, it was designed to be used by cats rather than people. As needed, an adult enters our catio for cleaning or retrieving toys that cannot be reached from the window entry. If your cats intend to share this space with their humans, please have these plans reviewed by a licensed contractor who can advise on options for attachment to your home and anchoring the posts.

Dimensions: When we designed our catio, we did put some thought into its scale compared to the size of the cat cottage to which it was to be attached. As an example, the height and width were drawn with consideration of the window that would be used for access. That location also determined how high off the ground our catio needed to be. These plans provide a materials list and step-by-step instructions for assembly. Before you begin construction, please consider the window the catio will surround and determine whether you will need to change any dimensions - especially of the 4x4 posts that support the outside corners.

Lumber, Roofing & Finish: We used pressure treated lumber for our construction, though, as we finished the catio with two coats of exterior paint and have no direct ground contact, we could have used non-treated material. You might consider other options as well - Cedar, as an example, if you prefer the look, or if it better blends with the design aesthetic of your home.

We chose corrugated metal roofing as it coordinated with the roof of our cat cottage. It also went up more quickly and added less weight than had we used plywood sheathing and asphalt shingles. Clear polycarbonate panels would be another lightweight option that would let in more light... many options!

Power Tool Safety: Our plans list the tools we used to cut and assemble the materials that make up our catio. Before using any power tool, please make sure you are familiar with its operation and follow all safety guidelines provided by the manufacturer.

Our Drawings: Our images are *roughly* to scale - meaning, should you build a catio for your feline friends using these dimensions and instructions, it will look very much like the pictures and drawings within. That said, some of the dimensional lumber in the drawings are not perfectly to scale.

We hope you enjoy creating this special place for your feline friends. The majority of the kittens here at Nahimana Forest spend a large part of their day in theirs! We'd love to see pictures of yours when completed!

Tools:

Drill/Driver

Circular Saw or Miter Saw

Speed Square

Framing Square

Pencil

Hammer

Chisel

2' & 4' Levels

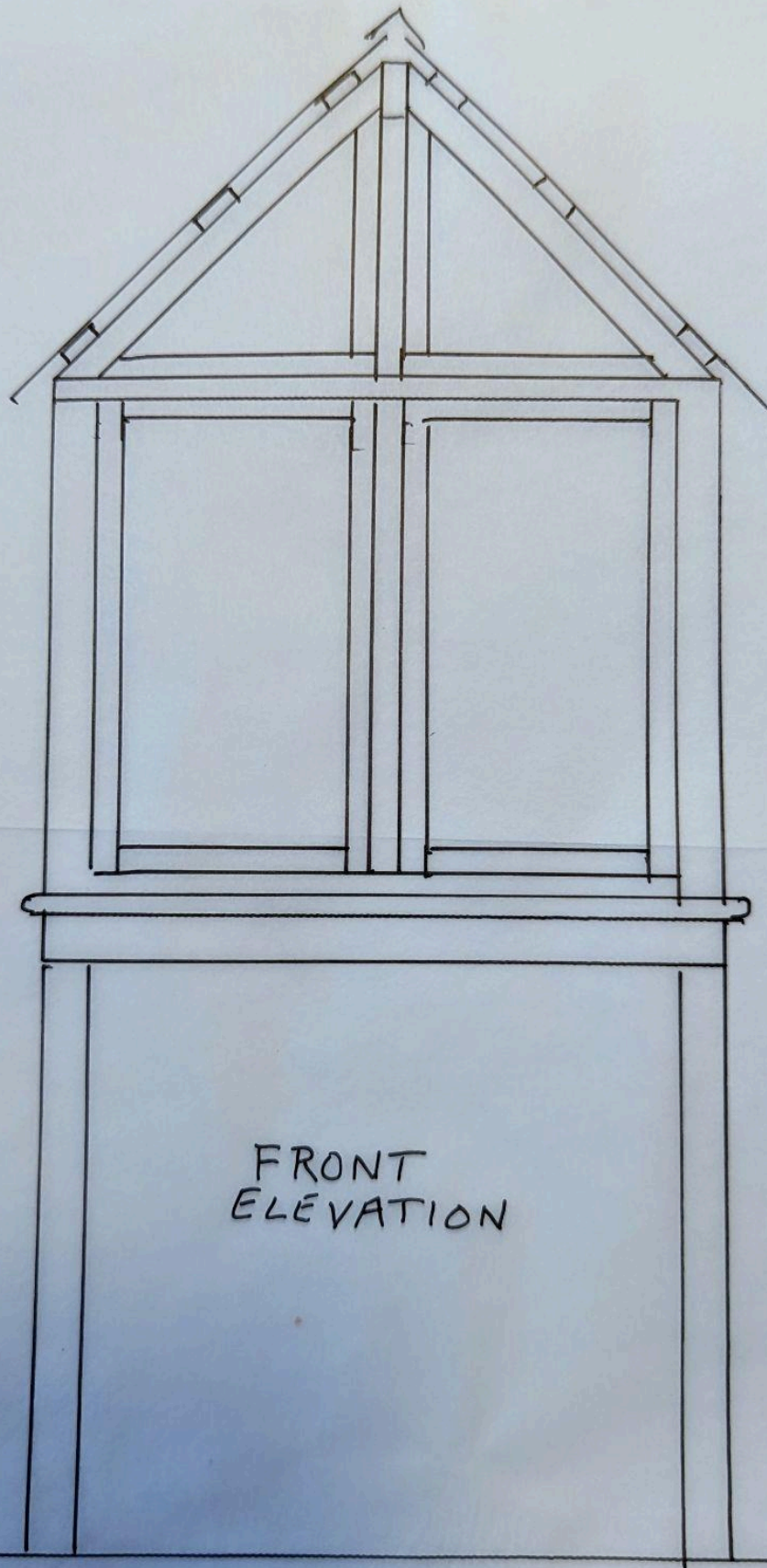
Safety Glasses / Hearing Protection

Materials List:

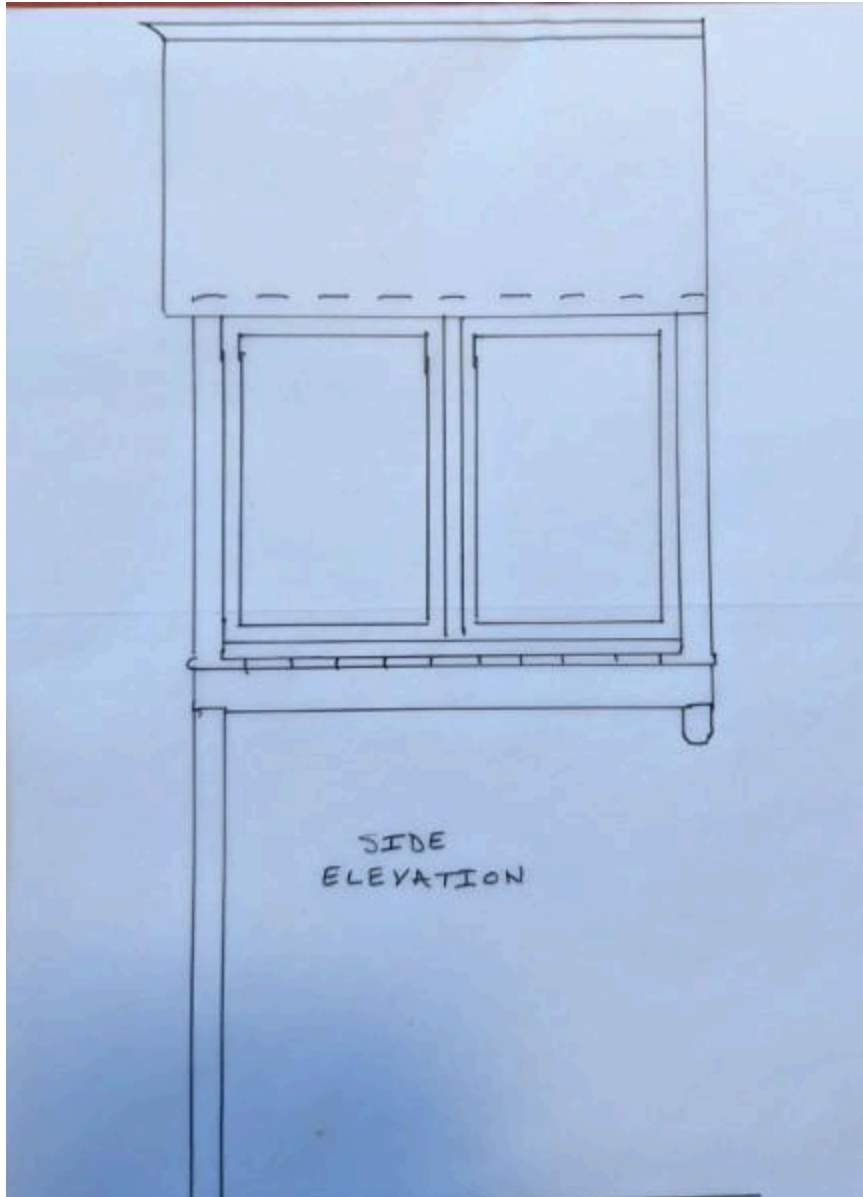
Material	Quantity	Cost*	Total*
4 x 4 x 10	3	\$14.78	\$44.34
2 x 6 x 8	5	\$6.78	\$33.90
2 x 4 x 10	4	\$6.38	\$25.52
2 x 4 x 8	6	\$5.08	\$30.48
2 x 2 x 8	28	\$3.68	\$103.04
1 x 4 x 8	6	\$4.18	\$25.08
1 x 6 x 8	1	\$5.48	\$5.48
5/4 x 6 x 12'	6	\$9.58	\$57.48
5/4 x 6 x 8	3	\$6.18	\$18.54
1/4" Hardware Cloth 36" x 10'	3	\$18.92	\$56.76

Roof Panel 2.16 x 8	3	\$19.98	\$59.94
Roof Ridge	1	\$32.98	\$32.98
HeadLOK 4 1/2" Screw	5	\$1.98	\$9.90
HeadLOK 2 7/8"	1 box	\$24.98	\$24.98
HeadLOK 6"	4	\$2.48	\$9.92
3" Deck Screws	1 lb	\$9.78	\$9.78
2 1/2" Deck Screws	5 lb	\$35.98	\$35.98
2" Deck Screws	1 lb	\$9.78	\$9.78
1" Roofing Screws	1 box	\$14.98	\$14.98
Estimated Total (pre tax)			\$608.86

*Cost estimates were taken from Lowe's Home Improvement website on 11/30/2023 and are to provide rough estimates only.



FRONT
ELEVATION



SIDE
ELEVATION

Instructions:

Step 1: Assemble the floor joists and set the corner posts.

Gather:

- 2x6x62" - 2 each
- 2x6x69" - 2 each
- 2x2x54 $\frac{3}{4}$ " - 2 each
- 2x4x66" - 2 each
- 4x4x55 $\frac{1}{2}$ " - 2 each
- 4x4x10' - 2 each
- 2 $\frac{1}{2}$ " deck screws
- 3" deck screws
- 4 $\frac{1}{2}$ " HeadLOK screws
- 2 $\frac{7}{8}$ " HeadLOK screws

- Assemble the ledger board and band joists - essentially a box that the rest of the structure will be built upon. See Figure 1 (The ledger attaches to your house and the other three boards are the band, or rim, joists.) Use three 3" screws at each corner. We built this frame on the ground and lifted it in place, supporting it with two temporary braces at the outside corners, and, after leveling, secured it to the cottage structural members with 4 $\frac{1}{2}$ " HeadLOK screws.
- **Your attachment system will depend upon the exterior finish of your home and to what structural members you're attaching the ledger. Prefer not to drill into your house? Please see another consideration at the end of these plans.**

- Gather the 4x4 corner posts, measuring down from the top of each post, mark a line at 46 ½" and 52". Carry this line across 2 adjacent surfaces. The area in between these lines will be removed to a depth of 1 ½" - these will be the notches that accept the outside corners of your joists. We cut our notches with a circular saw with the blade set to a depth of 1 ½", and cleaned them up with a chisel. See Figure 2

Note: Leave the lower section (below the notch) of the two outer 4x4's long until their final length is determined in the steps below.

- Working from the inside of the joist framing, slide each of the notched 4x4x55 ½" posts over the inside corner of the ledger and rim joist. Plumb posts and secure to the joists and your house using HeadLOK screws or similar.
- Determine how your outside posts will meet the ground. (We used concrete deck post blocks but they could also be buried below the frost line and set in concrete.) Check your rim joists for level, adjusting your temporary bracing as necessary. Determine the distance from your ground attachment point and the bottom the rim joists at each corner. Trim the bottom of the 4x4s and attach to the inside corners of the rim joists using HeadLOK screws or similar.
- Measure down 3 ½" from the top of the ledger board and the opposite rim joist. Mark a line and fasten a 2x2x54 ¾" cleat between the 4x4 posts with 2 ½" deck screws. This cleat will support the 2x4x66" floor joists. Set the 2x4x66 joists on the

cleats with 17 1/4" spacing and secure with 3" deck screws.
See Figure 3

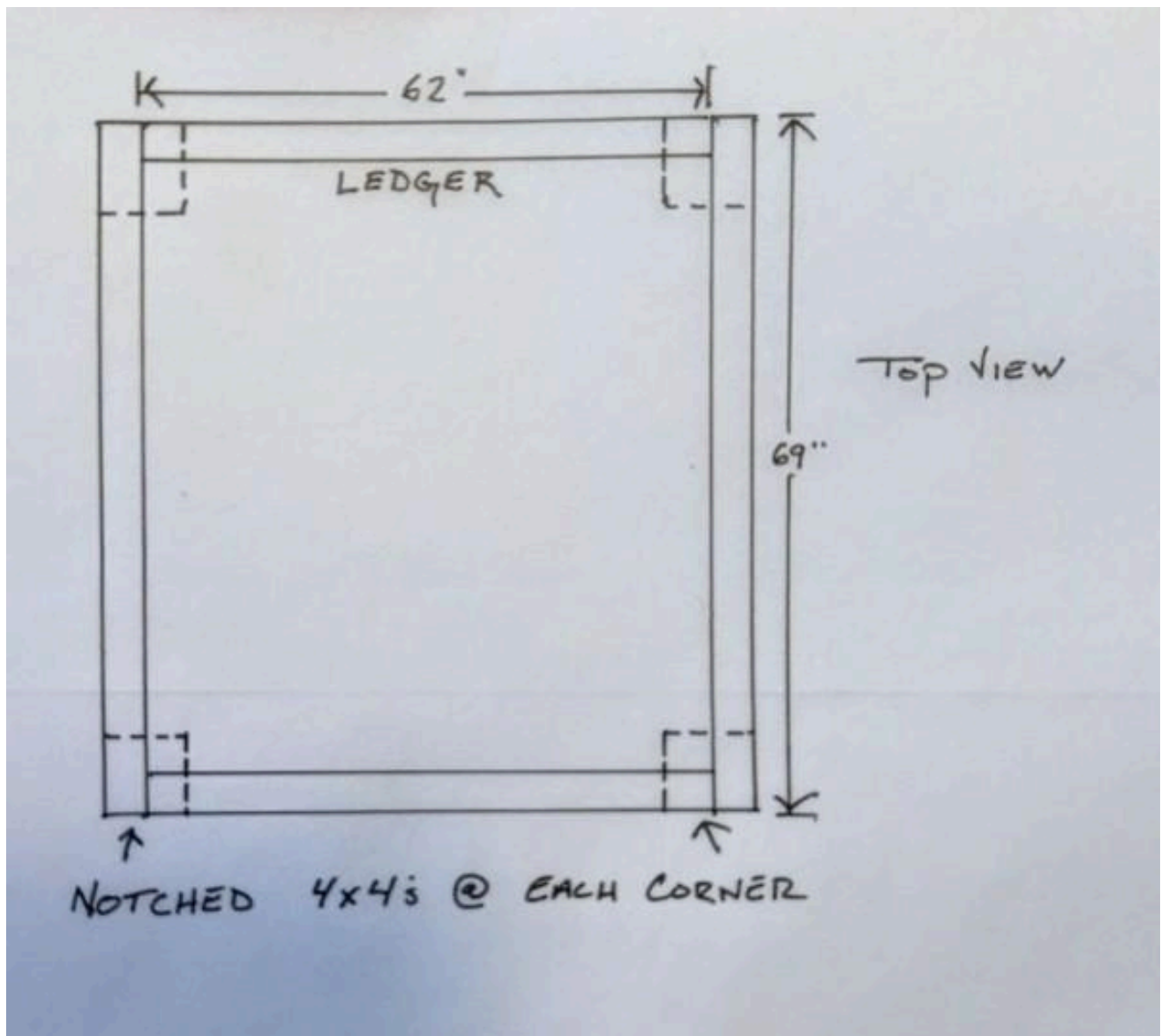


Figure 1

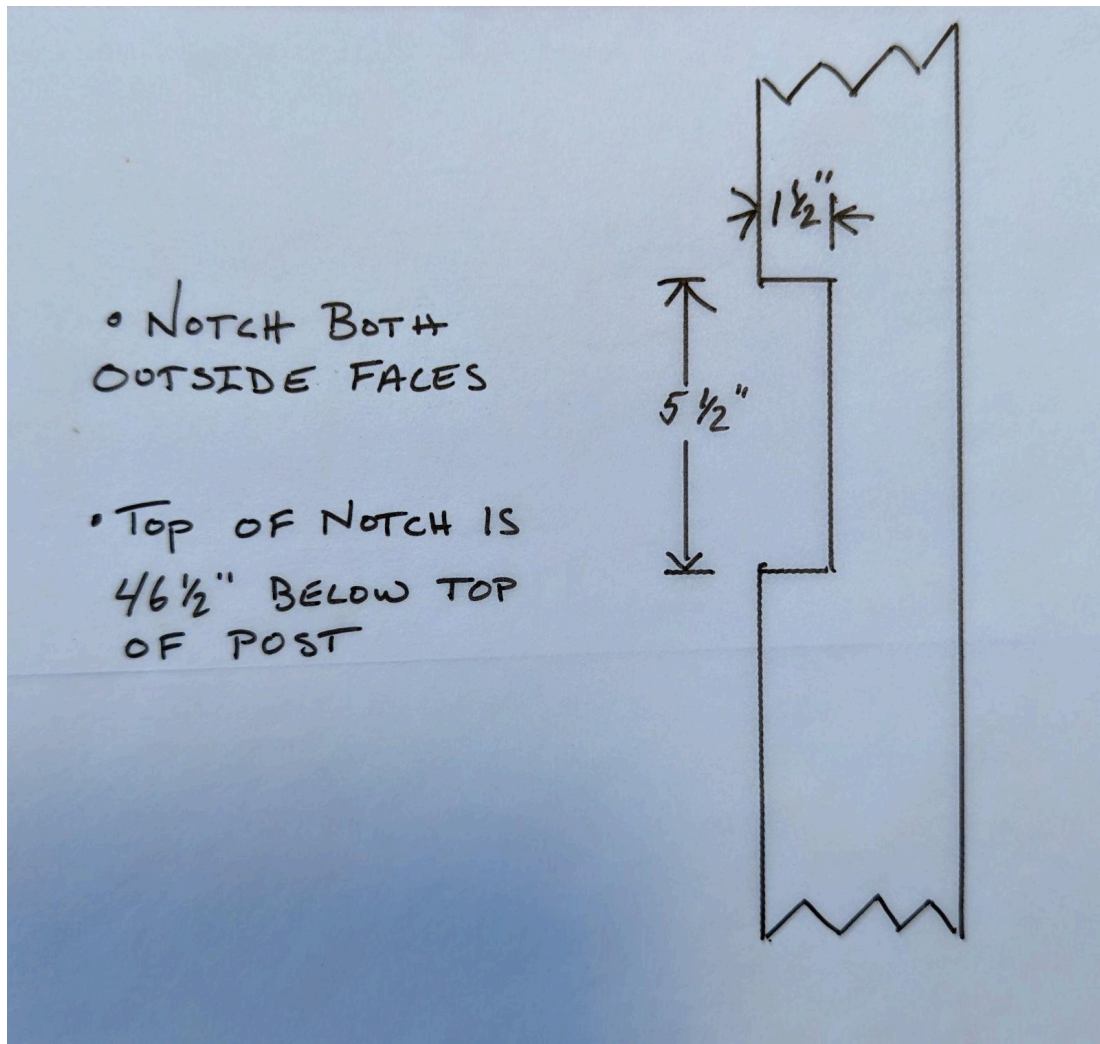


Figure 2

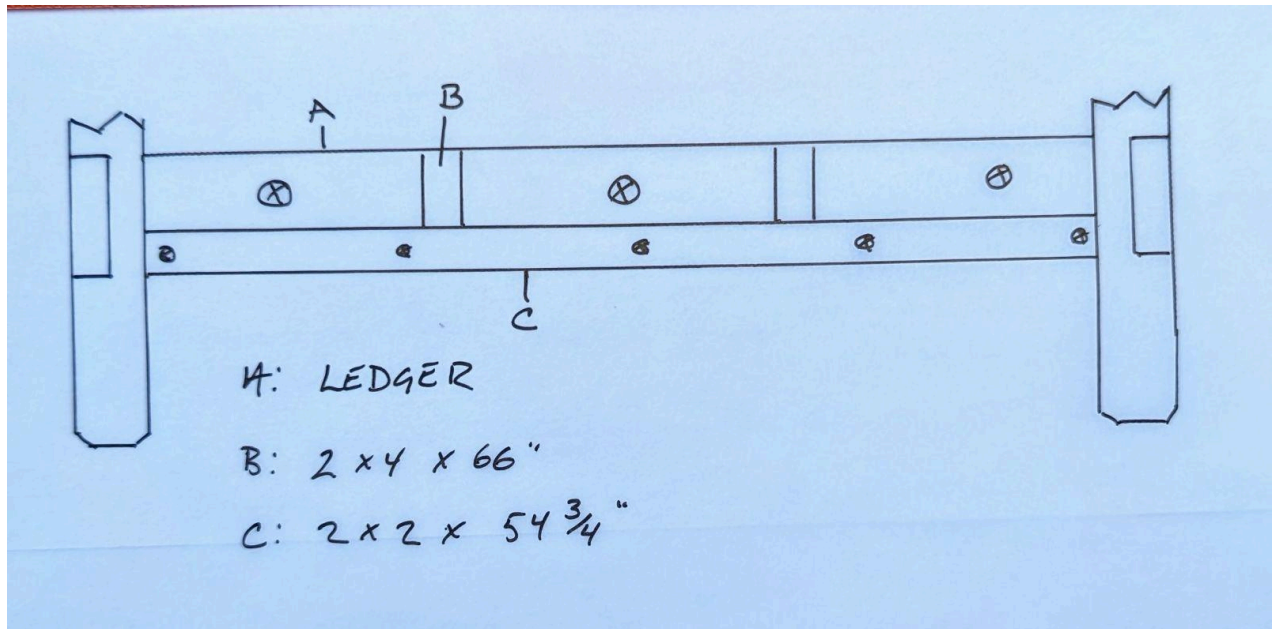


Figure 3

Step 2: Cut and fasten the deck floor boards.

Gather:

5/4 x 6 x 12' deck boards - 12 each

2" deck screws

- Starting from the ledger side, lay the deck boards perpendicular to the floor joists and secure to each joist using 2" deck screws. Leave a $\frac{1}{4}$ " gap between each board and cut notches on the first and last boards to fit around the corner posts. (If using pressure treated lumber that is still very wet, close your gap to an $\frac{1}{8}$ " as the boards will shrink across their width as they dry.)

Step 3: Cut and frame the wall sections.

Gather:

- 2x4x69" - 2 each
- 2x4x62" - 3 each
- 2x4x55" - 1 each
- 2x4x42 1/2" - 3 each
- 2 1/2" and 3" deck screws

- The front and side wall sections are framed with 2x4's and create the openings that will accept the screened panels in the steps below. See Figures 4&5
- Beginning with the top plates, cut two 2x4x69" and one 2x4x62", fasten these to the corner posts with 3" deck screws. The joints atop the outer posts will require a half lap joint.
- Cut two 2x4x62" and one 2x4x55" for the bottom plates and fasten these atop the deck boards between the corner posts with 2 1/2" deck screws.
- Find and mark your centerline on the top and bottom plates of each opening, fasten a 2x4x42 1/2" stud in the center of each opening.

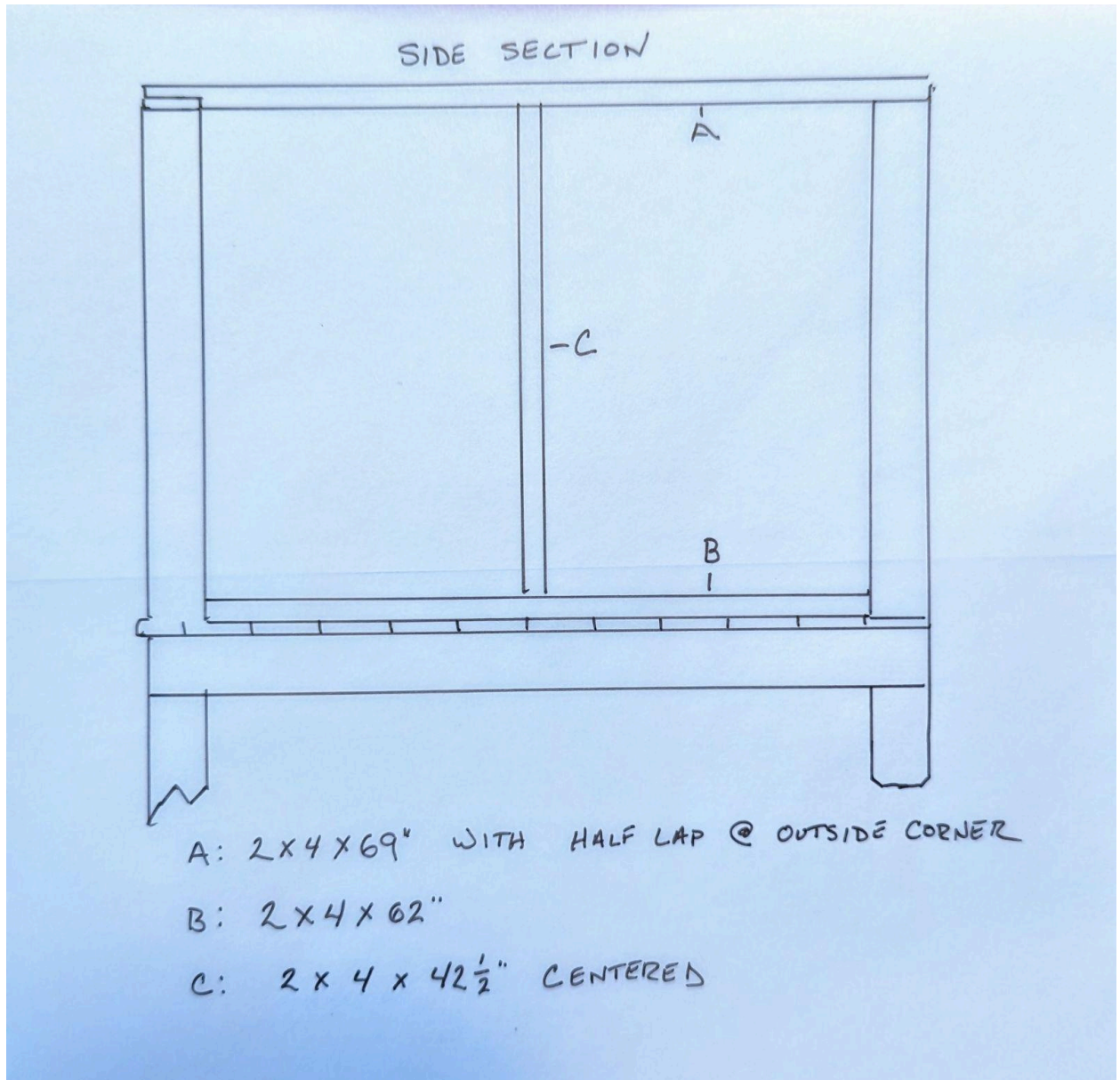


Figure 4

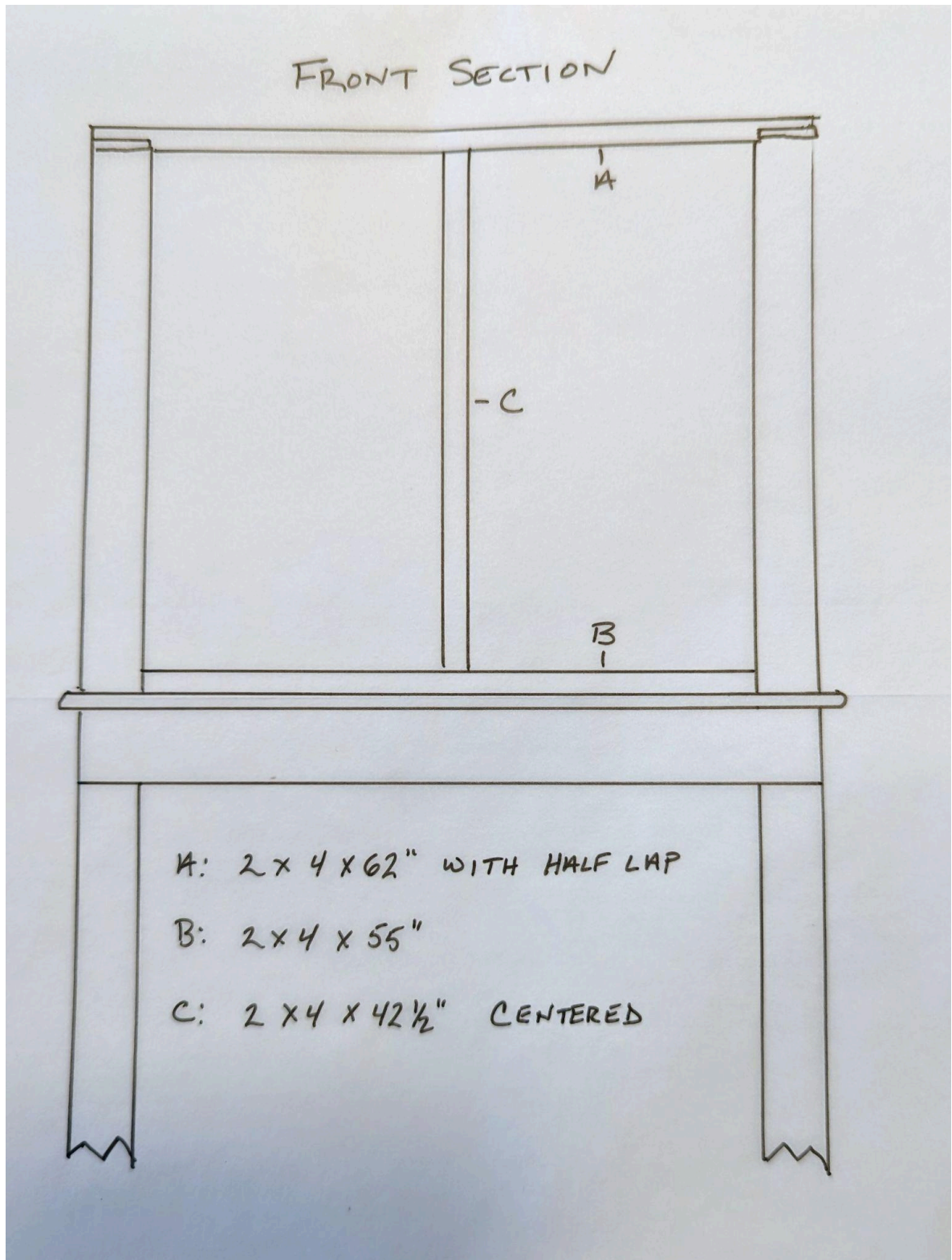


Figure 5

Step 4: Cut and assemble the screen sections.

Gather:

- 2x2x8' - 24 each
 - 2" deck screws
 - Hardware Cloth
-
- The screen panel sections consist of 2x2's secured inside the openings of the wall sections. (Please check the measurements of your openings and adjust lengths as necessary.) Once your 2x2's are cut to length, screw the first four around the inside perimeter of the wall section. Set them 1/2" in from the outer edge using 2 1/2" deck screws and fasten them through the top. See Figure 6

 - Note: The screen sections in the gable end of the roof will go together in similar fashion with a slight variation. Those details will be shared below after you have your roof completed.

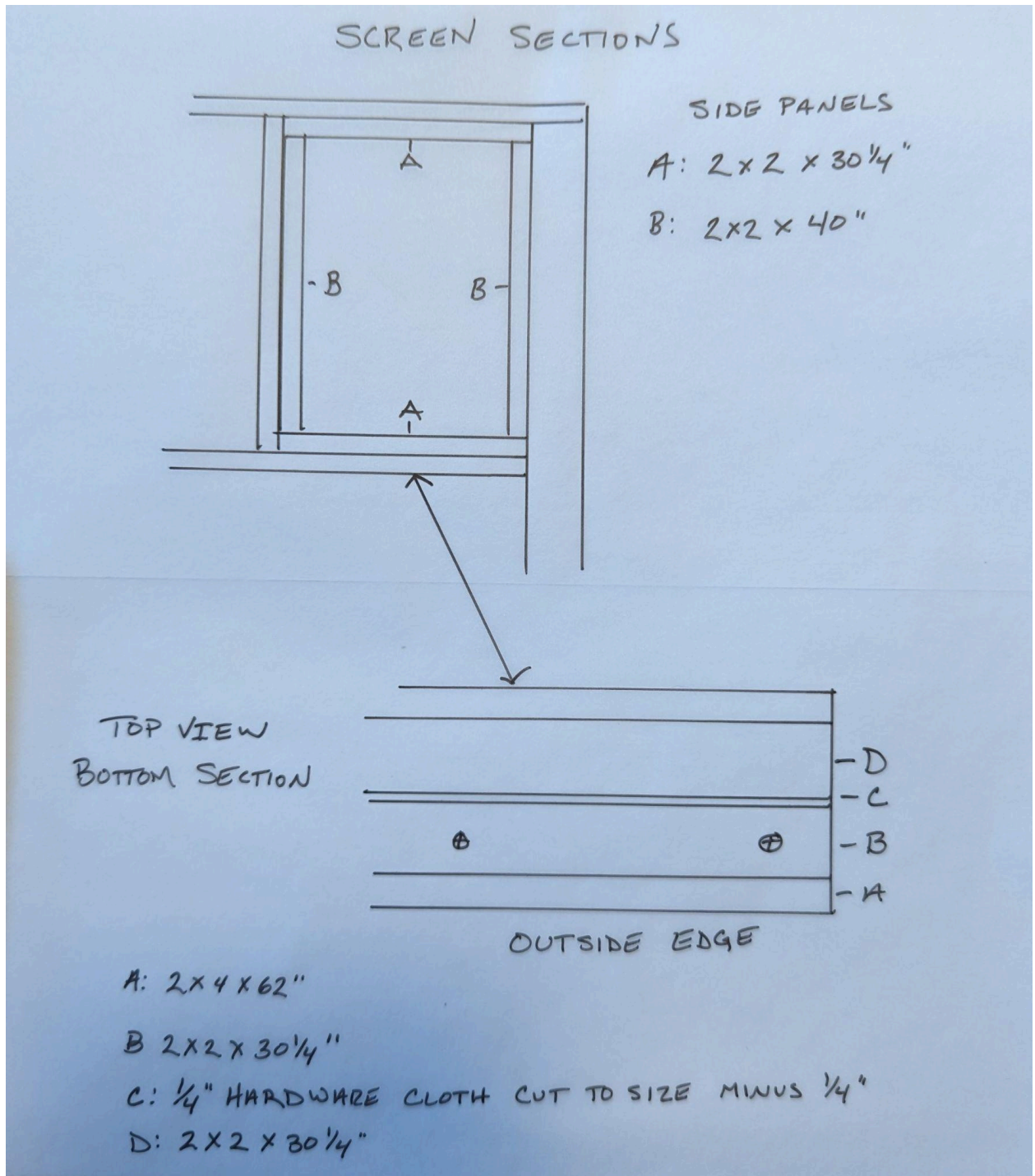


Figure 6

- Cut a hardware cloth panel to fit within this opening - make the panel $\frac{1}{4}"$ less than the length and width. (Tip: Hardware

cloth edges will be sharp - gloves will be helpful. Once cut, the panel will want to roll back onto itself. Carefully rolling it in the opposite direction will help flatten it and make it easier to work with.) Place the hardware cloth panel into the opening you've just framed - working from the inside of the patio. Beginning with the top, use 2" deck screws to fasten a 2x2 to the corresponding 2x2 you attached in the previous step. You'll be pinching the hardware cloth between the two 2x2's. Repeat for the bottom and then the sides. (Though the hardware cloth will be secure when pinched between the 2x2's, the deck screws will keep them very secure.) Repeat this process for the other 5 openings.

Step 5: Assemble the roof section. See Figure 7

- Gather the 2x4x25 ½" (post) and 2x6x71" (ridge beam) and a joist hanger. Find and mark the center of the top plate of the front wall section and toe screw the post to the top plate at your centerline mark.
- Find and mark the center of the wall (of your house) between - and level with the top of - the two back corner posts. Using a level, extend the center point up the wall 25 ½" from the plane created from the top of the posts. This mark will identify the position of the bottom of the joist hanger - fasten it to your wall. Rest one end of the ridge beam in the joist hanger and the opposite end atop the post, secure with deck screws.

- Gather six 2x4x44" rafters. (When cutting each end at a 45 degree angle, the 44" measurement represents the long edge of the 2x4.) Using 3" deck screws secure the rafters to the ridge beam and the top plate of the side wall sections. The tops of the outer rafters will set back 2" from the front of the ridge beam and the bottoms will align with the outer edge of the wall plate. Along both sides of the ridge beam and the top plate of the walls, measure back 31 1/4" from the inside of the first rafters and mark a line. Fasten the next set of rafters, aligning the outside edge with these marks. Repeat with the next set of rafters. (Note: the rafters closest to your house will fall 2" off the wall so as not to interfere with the joist hanger securing the ridge beam.
- Gather six 1x4x71" purlins. From the peak of each rafter, measure down and mark lines at 1", 20 1/4", and 39 1/2". Align the upper edge of your purlins to these lines and fasten to the rafters with two 2" deck screws at each rafter.
- Cut the corrugated roof panels in half across their widths, ending with 6 panels at 4' x 2.16'. Starting against the house, align the first panel with the top edge of the top purlin and secure with roofing screws through the top of every third corrugation and into each purlin. When overlapping corrugations, make sure to screw through the overlap. Once completed, cut the ridge roll to length and fasten with roofing screws to the upper purlins of each side. (Note: Typically, any roof structure that meets the side of a house would be flashed to redirect rainwater. As our goal was to provide protection and shelter for our rescue kittens and cats, we did

not cut into our siding to flash the roof of the catio. We left an $\frac{1}{8}$ " gap between the edge of the corrugated roofing panel and the siding of the cat cottage.)

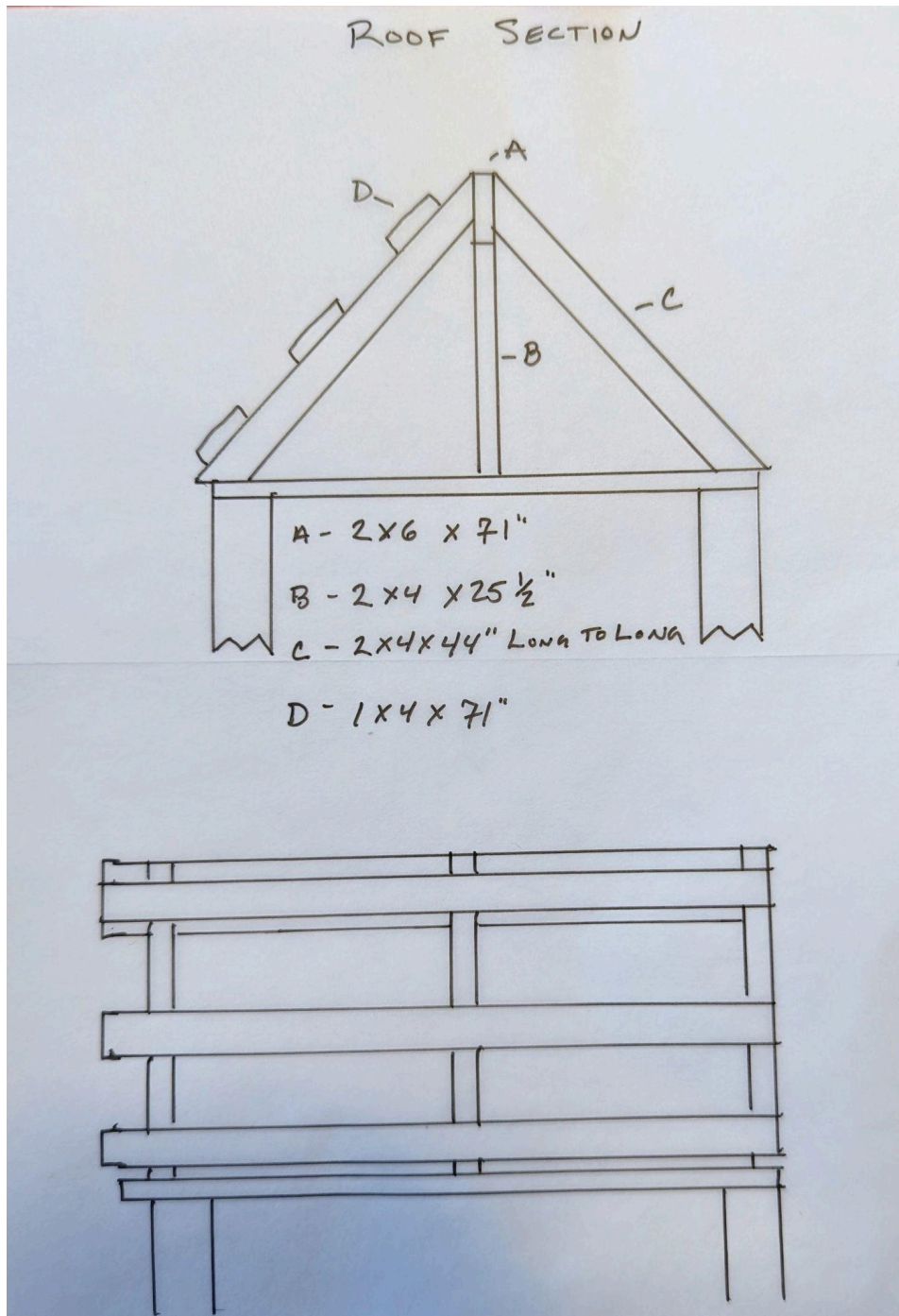


Figure 7

Step 6: Gable end screen sections.

Gather:

- Hardware Cloth
 - 2" deck screws
 - 2 x 2 x 26 ½" - 4 each
 - 2 x 2 x 28 ⅝" - 4 each
 - 2 x 2 x 29" - 2 each
-
- The screen sections in the gable end are very similar to those in the wall section - the hardware cloth will be pinched between the "frame" made of 2 x 2 lumber. In this case, though, the rafter will act as the outer frame along the hypotenuse edge of the right triangle opening. See Figure 8.
 - As with the screen sections for the walls, be sure to check your measurements for any variations that may have happened in cutting along the way.
 - When assembling these screen sections, pieces A & B will be aligned with the interior edge of the rafter and fastened to the post and top plate with 2" deck screws. Cut the hardware cloth to cover the opening and then fasten pieces A, B, and C to their mates as seen in Figure 8.

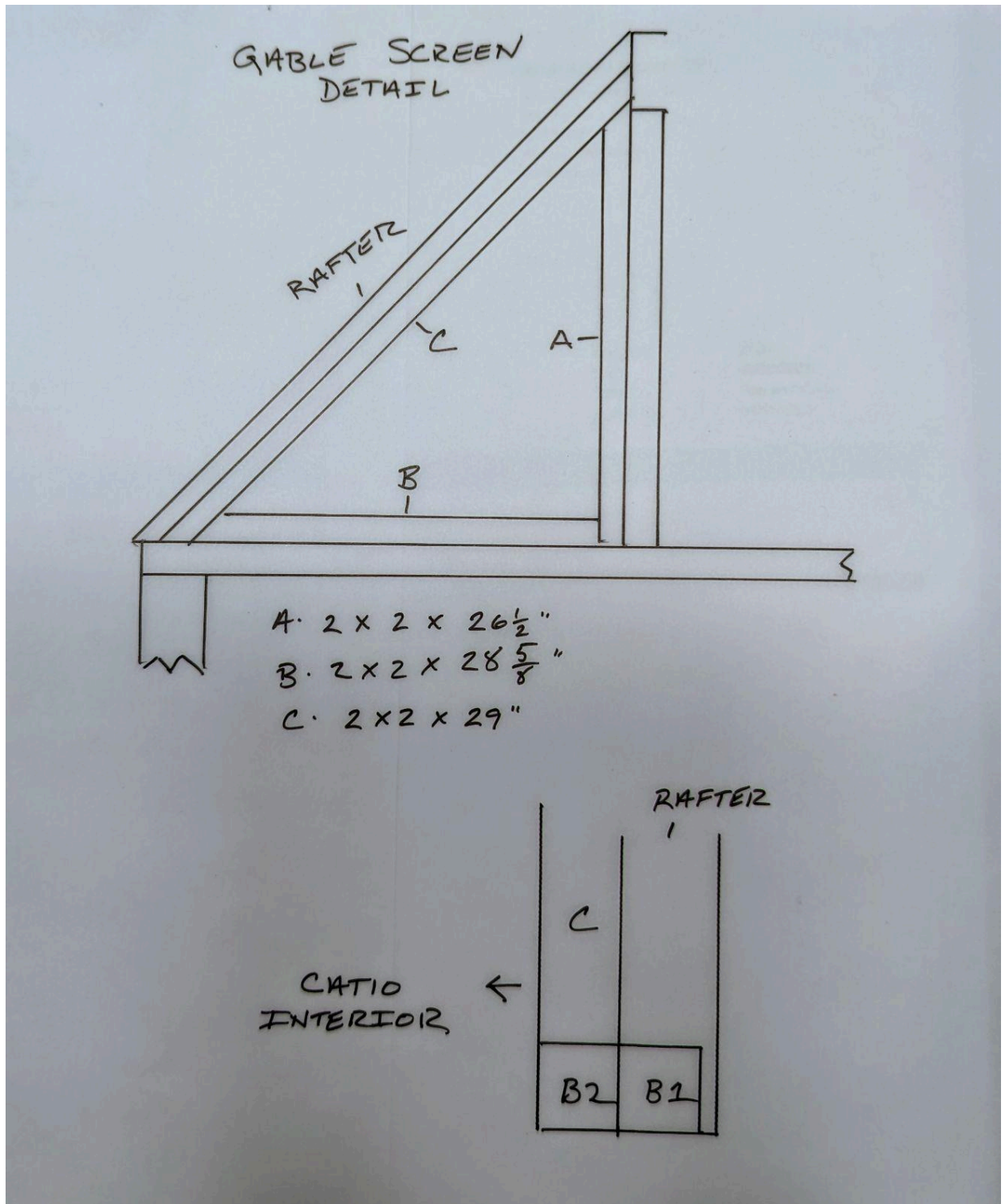


Figure 8

Step 7: The Loft.

Gather:

- 5/4 x 6 x 55" - 3 each
- 5/4 x 6 x 16 1/2" - 1 each
- 2 x 2 x 16 1/2" - 3 each
- 1 1/2" or 2" Deck Screws

- The loft is placed at the same level of the top plates of the wall sections and consists of three 5/4 x 6 x 55" deck boards, two 2 x 2 x 16 1/2" cleats, and a center support made from a 16 1/2" deck board and a 2 x 2 brace.
- From the outer corners of the left and right wall top plates, measure and mark a line 1" down from the top plate. Fasten a 2 x 2 x 16 1/2" cleat below this line on each side with 2" deck screws.
- Using 1/4" spacing, place the deck boards atop the cleats and secure on each end with two 2" deck screws. Find and mark the center of the underside of the loft deck boards. Align the center support from below and secure with 2" deck screws. (Note: The thickness of a 5/4" deck board is actually 1", so please be careful not to set these screw heads or you risk having the points break through your loft floor. You can either use a shorter screw, or drive them in at an angle to avoid penetrating the loft floor surface.) Cut the 16 1/2" x 2 x 2 with opposing 45 degree angles at each end. Secure this brace

to the center of your loft support and the wall stud with 2 ½" deck screws. See Figure 9

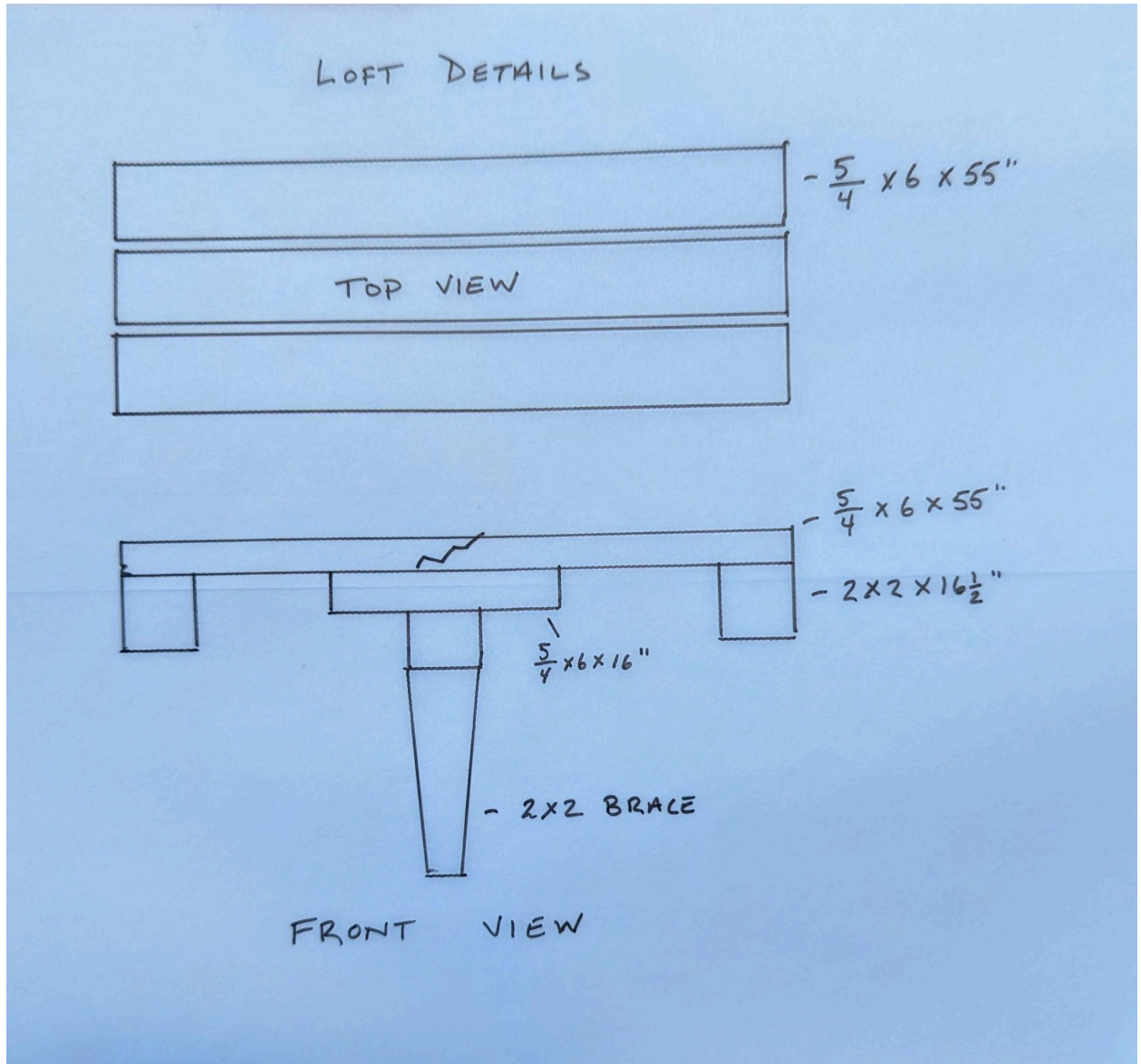


Figure 9

Step 8: The Steps.

When our catio was first constructed, the kittens in our rescue at that time were a bit older - we had several in the 6-8 month-old range and a few that were full grown. The adult cats could readily jump from the deck floor to the loft - about 43" - but that was a bit high for the younger ones. We had a wooden box that we set in the center of the catio floor and this was perfect. As kitten season arrived, so did the tiny friends in the 4-6 week old range. We don't give kittens access to the catio until they're eight weeks old - even then, they could not make the leap to the loft. This realization was what brought about the idea for some stairs. Depending on the ages of your feline friends, you might stack some wooden crates, or something similar, if you don't want to commit to stairs.

Gather:

- 1 x 6 x 7 ¼" - 7 each
- 1 x 6 x 4 ½" - 7 each
- 1 ½" Deck Screws
- Braces - 4 each as in Figure 10

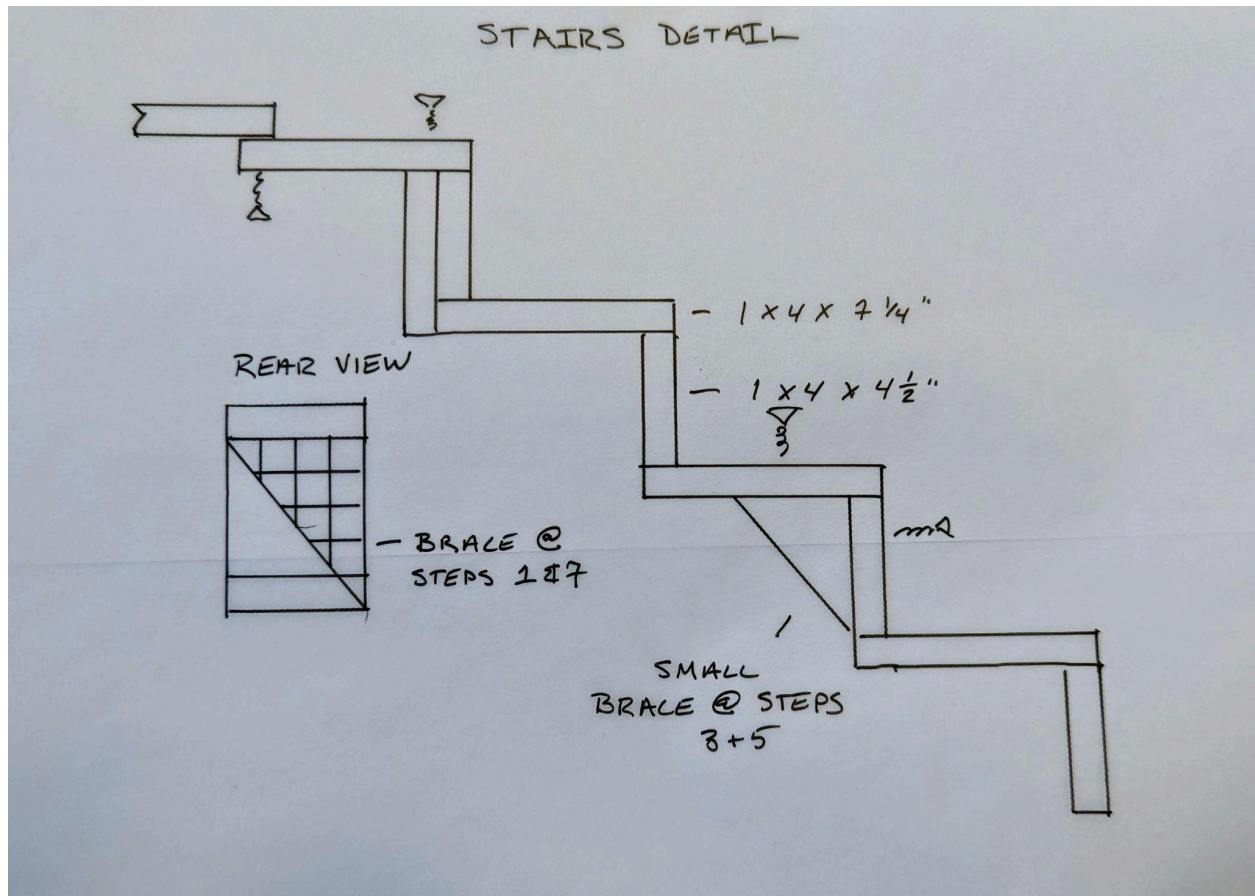


Figure 10

- In the back of each riser, drill 4 pocket holes (two at the top, and two at the bottom) in the back side of each riser. Using Figure 10 as a guide, glue and screw the first riser to the bottom of the first tread and the top of the second tread. Repeat for all seven stairs.
- The two larger braces are placed flat against the back of the first and seventh risers. Apply glue to the top edge and fasten with two 2" deck screws through the top of the tread.

- The two smaller braces provide support under the 3rd and 5th treads. Glue and screw these through the center of the tread and riser.
- Let the glue set up overnight.
- Position the stairs - your attachment points will be the underside of the outermost loft board, the center stud of the wall section, and the 2 x 2 screen frame closest to your home. Using two 1 ½" or 2" (at an angle) deck screws, attach the first tread to the underside of the front of the loft floor. Using 2 ½" deck screws, attach the large braces to the sections mentioned above. (Note: If you're having trouble screwing through the braces, drilling a pilot hole can be helpful.)

Additional considerations:

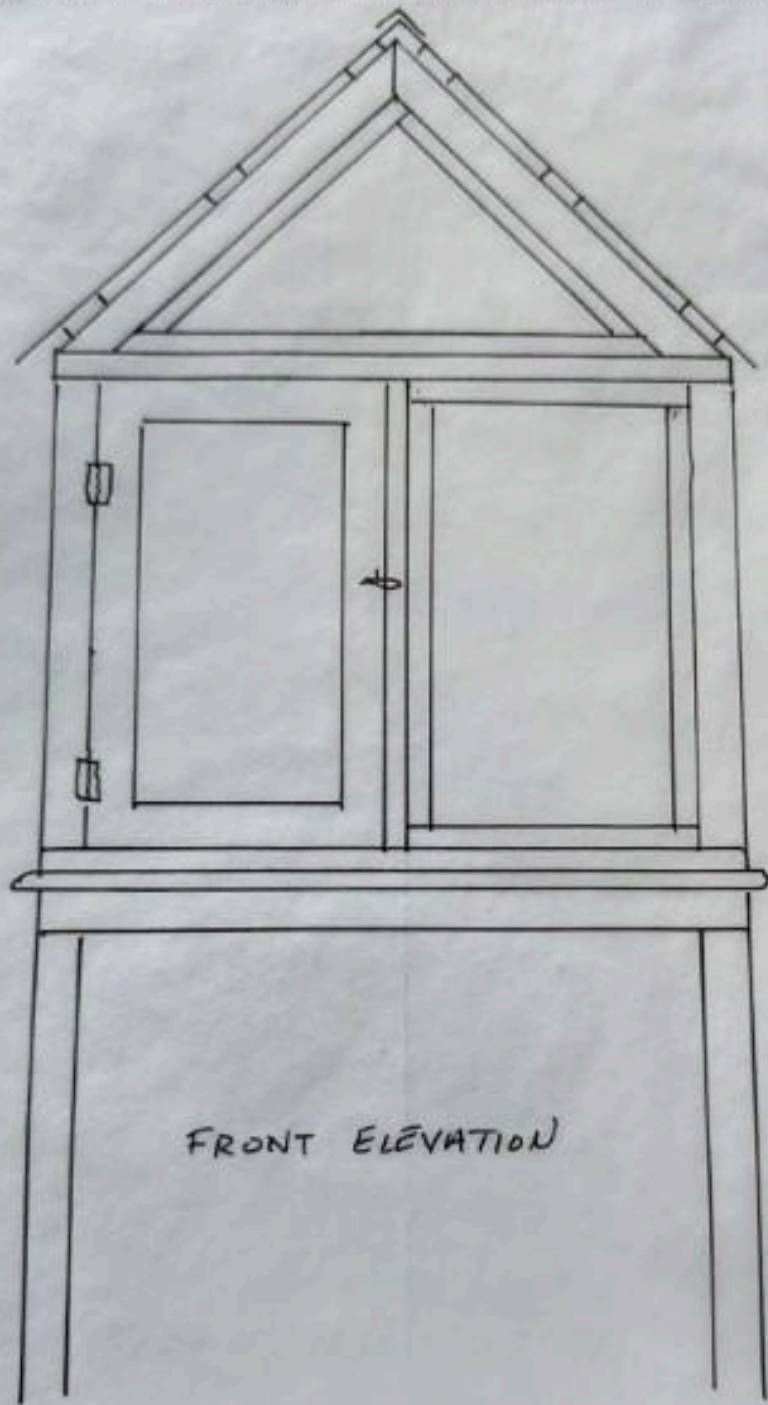
- Our kittens access their catio through a cat door set into a wooden panel. When we “open up the cottage” each morning, we open the lower sash of the window and secure the cat door panel into it giving them free access throughout the day. We remove this panel and close and lock the window each evening. Our cat door has latches on each side of the swinging door that would allow us to leave this panel in at all times while securing the swinging door to keep the kittens in the cottage. When we’ve tried this, it seems to confuse the kittens and they end up pawing at the door to try to open it. So, if the door is in, they know they can go into the catio. Often in the mornings - they jump through the window before we get the cat door panel in place. They sure love their catio and we really hope yours will, too!
- Nervous about attaching the catio to your house? You have options, one being setting the 4x4 corner posts into the ground and embedding them in concrete. The back side of the structure facing the house could have a small clearance of an 1” or so - this would keep cats in and unwanted visitors out.



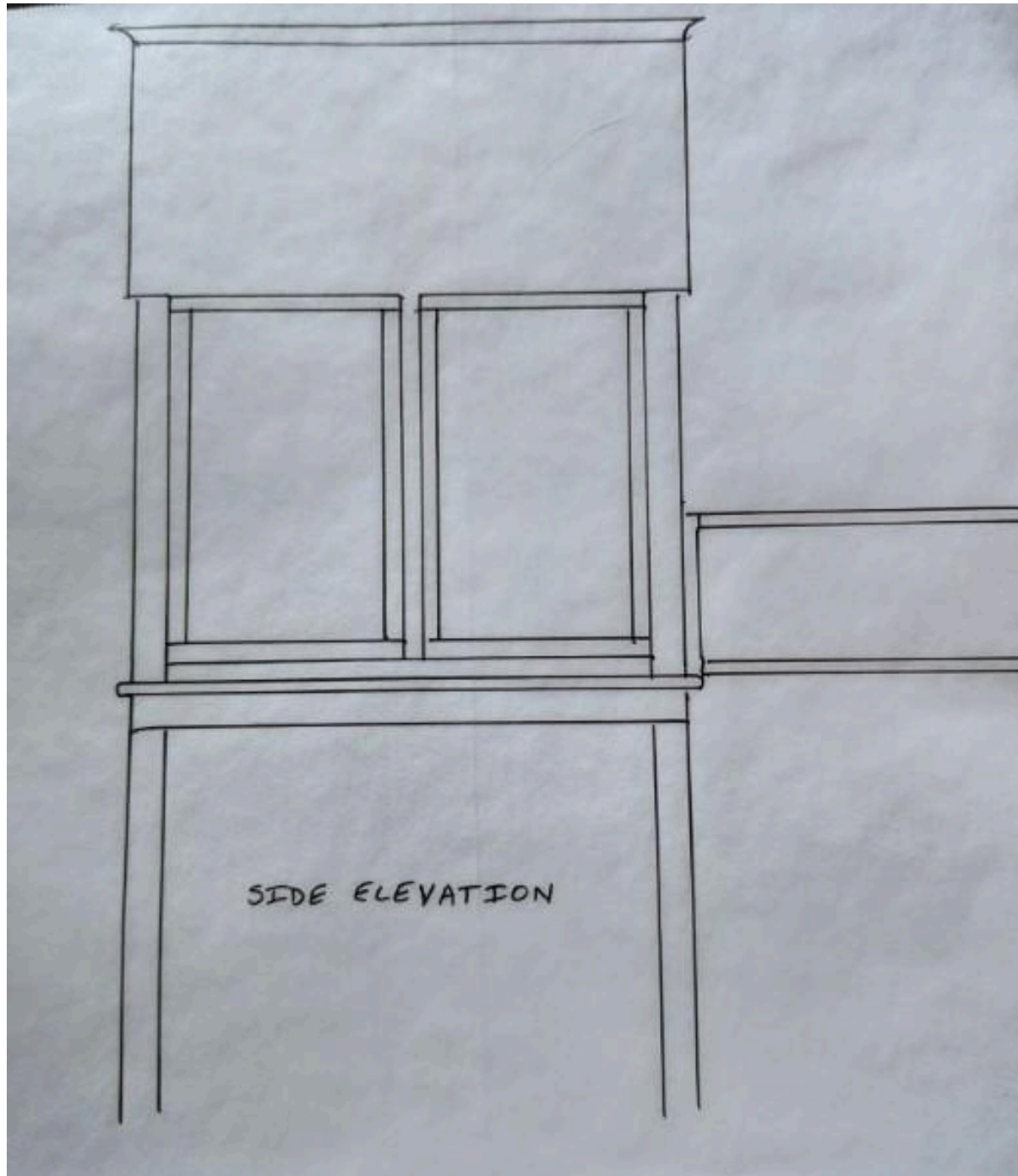
Part 2 - The Treehouse and Catwalk



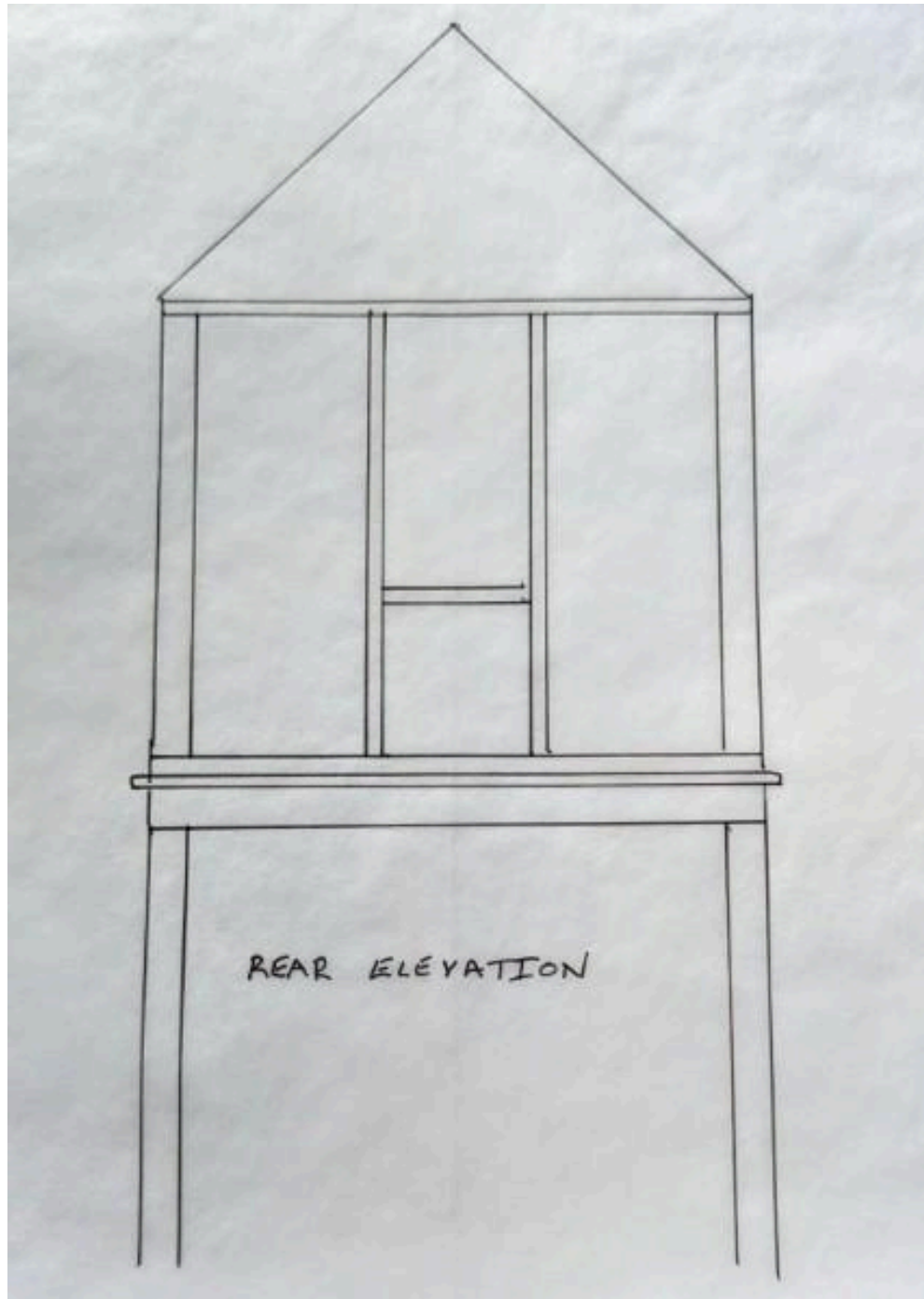
Realizing that not everyone will have a fitting tree within ten feet of their catio, these plans are drawn assuming the “treehouse” will be supported by corner posts, or stilts, sunken into the ground. If you happen to have the perfect tree, a description on how this structure could be adapted is included.



FRONT ELEVATION



SIDE ELEVATION



A Note on Materials: The treehouse was designed to minimize weight and be painted with a better quality exterior paint. For the framing components, we used untreated, dimensional lumber -

the 4 x 4 posts and deck boards being two exceptions. If you choose to use pressure treated lumber, be sure that the 2 x 2 furring strips are untreated as the hardware cloth will be fastened to them with lath screws which are not intended to be exposed to the chemicals in PT lumber. They will corrode over time.

Materials List:

Material	Quantity	Cost*	Total*
4 x 4 x 10	4	\$14.78	\$59.12
2 x 4 x 8	20	\$5.08	\$101.60
2 x 2 x 8	19	\$3.68	\$69.92
1 x 4 x 10	1	\$11.09	\$11.09
1 x 6 x 10	2	\$7.60	\$15.20
5/4 x 6 x 10	4	\$8.94	\$35.76
1 x 2 x 8	10	\$1.58	\$15.80
1/4" Hardware Cloth 48" x 10'	2	\$31.33	\$62.66
Roof Ridge	1	\$32.98	\$32.98
2.16 x 8' Roof Panels	2	\$19.98	\$39.96
HeadLOK 2 7/8"	1 box	\$24.98	\$24.98
3" Deck Screws	1 lb	\$9.78	\$9.78

2 ½" Deck Screws	5 lb	\$35.98	\$35.98
2" Deck Screws	1 lb	\$9.78	\$9.78
1" Roofing Screws	1 box	\$14.98	\$14.98
#8 x ¾" Lath Screws	1 box	\$13.98	\$13.98
#8 x 2 ½" Exterior Trim Screws	1 box	\$10.98	\$10.98
⅛" Galv Steel Wire	50'	\$.55/ft	\$27.50
2 ⅝" Eye Screw Hillman	5	\$1.78	\$8.90
⅛" Ferrule and Stop	2	\$2.78	\$5.56
Exterior Hinges and Latch		Varies	
Estimated Total (pre tax)			\$606.51

Notes on Location: Before digging the holes for your corner posts, consider how the catwalk will run between, and attach to, the patio and the treehouse. In our design, the bottom “planks” of the catwalk floor are secured to the top plate of the patio wall and the

bottom plate of the treehouse wall. The rear wall of the treehouse is framed in such a way that the catwalk enters the center of the wall. See photos below. The height of the bottom plate of the treehouse wall, then, is roughly the same height as the top plate of the patio wall. The distance between the outside walls of our two structures - 9' 8" - determined the use of 1 x 6 x 10's for the catwalk planks. More details follow in the related step.



Notes on Building Process: When we built our structure, the majority of work was completed by one person with occasional help, or an extra “set of hands” when necessary. Some of the

processes described, then, are due to working alone and other methods will certainly produce a similar result.

Notes on Finishing: If you will be painting your “treehouse” and catwalk, consider painting all of your materials before starting the build process. The inside of the treehouse is a bit tight - it will be much easier to caulk seams and touch-up raw edges after assembly than crouching inside the structure to paint once it has been constructed.

Step 1: Assemble the Deck Frame

Gather:

- 4 x 4 x 10' - 4 each
- 2 x 4 x 45" - 4 each
- 2 x 4 x 48" - 2 each
- 3" deck screws

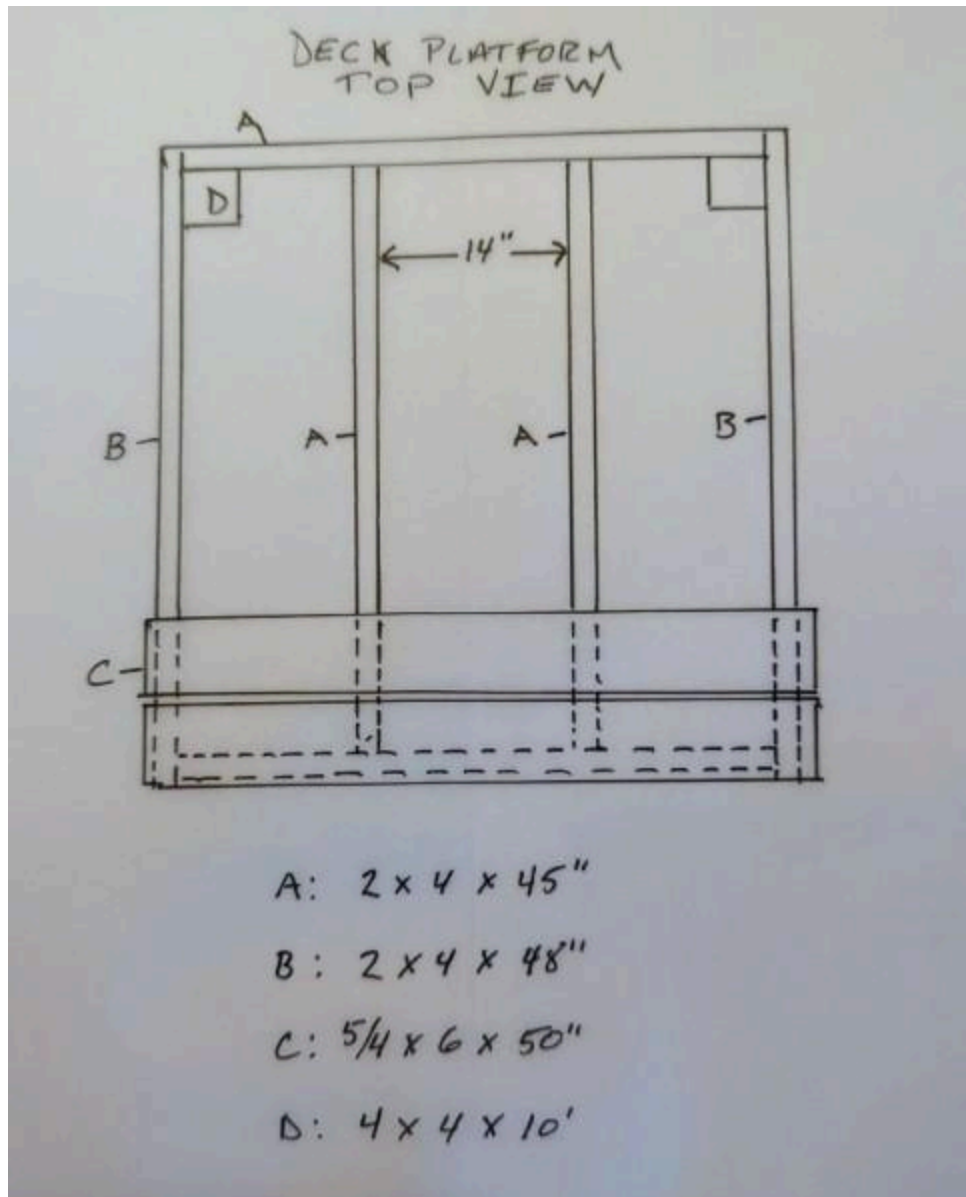


Figure 11

- Assemble the rim and deck joists as shown in Figure 11.
- To aid in determining the location of the corner post holes, position the assembled deck frame on the ground, square to the patio. Mark the corners and dig your post holes at least two feet deep and to a depth below your local frostline.

- Now that your holes are dug, reposition the deck frame over the corner post holes and square the frame to the patio. Keep in mind that the catwalk will extend from one side of the gable end to the center of the treehouse wall. Set the 4 x 4 posts into the holes, keeping them inside the deck frame.
- Working on one corner at a time, use a level to plumb each 4 x 4 corner post. You can use clamps or a couple of 3" deck screws to secure the 4 x 4 to the inside corners of the deck frame.
- To keep your posts plumb, clamp, or screw 2 x 4's to the outside faces of the 4 x 4 posts. You will do this on each of the four sides, between 3 and 4 feet above the ground. Ensure the posts should be plumb and each side should measure 4 feet from outside edge to outside edge.
- We recommend filling the post holes with Quikrete Post Hole mix or similar, and filling the rest of the hole with the earth that was removed. Follow the instructions of your concrete mix related to cure time before moving on to the next step.

Step 2: Raise the Deck Frame and Finish Deck Floor

Gather:

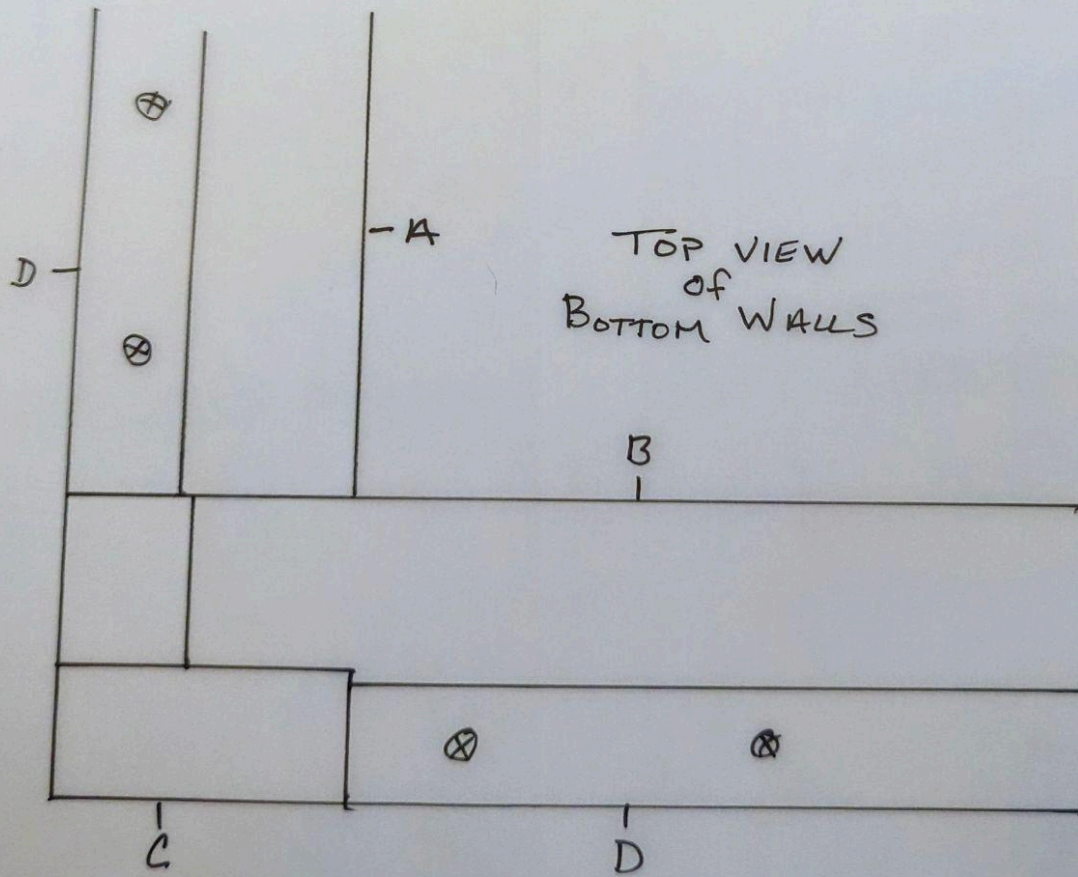
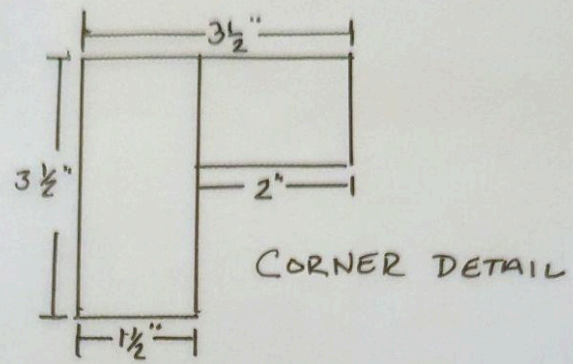
- 5/4 x 6 x 50" - 8 each
- 2" deck screws

- Remove the clamps or temporary screws holding the deck frame to the 4 x 4 corner posts.
- Determine the height of the deck platform. The top of the deck frame should be within 2 inches of the top plate of the patio wall. *Tip:* Rest the edge of a 2 x 4 x 10 on the top plate of the patio wall. Let the other end rest along the inside edge of a 4 x 4 corner post. Use a level to mark a line on the corner post - this will be the height of the deck frame.
- Using an extra set of hands, raise the deck frame so the top of one corner aligns with the mark you just made on the corner post. Secure with clamps or temporary screws. Use a level to adjust the height of each side of the deck frame. Once all four sides are level, secure the deck frame to the corner posts with 2 $\frac{7}{8}$ " HeadLok screws. Use 2 in each corner.
- Cut the 4 x 4 corner posts flush with the top of the deck frame.
- Use 2" deck screws to secure the 5/4 x 6 x 50" deck boards to the frame. Leave a 1 inch overhang on each side of the first deck floor board and secure the rest with a $\frac{1}{8}$ " gap.

Step 3: Assemble the Walls (Refer to Elevation Drawings Above)

Gather:

- 2 x 4 x 48" - 6 each
 - 2 x 4 x 41" - 2 each
 - 2 x 4 x 33" - 13 each (Rip 4 of these to a 2" width)
 - 2 ½ " deck screws
-
- Secure two 2 x 4 x 48"s (bottom plates) to opposite sides of the deck floor. Set the outer edge of the first plate 1" in from the outer edge of the deck floor. Be careful to screw the bottom plates into the deck frame components to avoid exposed screws on the underside of the deck floor. When securing the opposite bottom plate, ensure that the outer edges of the two plates are 48" apart.
 - Secure two 2 x 4 x 41"s to the deck floor on the opposite sides to complete the bottom wall plates.
 - Glue and screw 2 x 4 x 33" and the 2 (1 ½) x 2 x 33" into 4 corner posts as shown in Figure 12. Toe screw each corner post to the outside corners of the bottom plates. See Figure 12.
 - Cut 3 ½" half lap joints into the ends of four 2 x 4 x 48"s. Secure them to the tops of the corner posts.



Figures 12 & 13

- Let's define the walls: The rear wall will face the patio and accept the catwalk, the front wall will have an access door, and the two side walls will simply be fixed, screen panels. Find the center point of the top and bottom plates in the two side walls and the front wall. Secure a 2 x 4 x 33" stud at each center point by toe screwing the bottom and screwing through the top of the top plate. As seen in the Rear Elevation drawing below, the rear wall is divided into four sections. The outer openings have a rough opening of 13 ½" by 33" which will leave a rough opening in the center section of 11" by 33". Cut and secure a 2 x 4 x 11" brace 13" up from the bottom plate, leaving an opening that is 11" wide by 13" tall. See Elevation Drawings above.

Step 4: Assemble the Roof (See Figure 14 Below)

Gather:

- 2 x 4 x 8' - 3 each
 - 1 x 4 x 48" - 6 each
 - Corrugated Roof Panels - 2 each
 - Ridge Roll
 - 3" Deck Screws
 - Roofing Screws
- Cut 6 rafters. Each end will be cut at a 45 degree angle and the short side will be 27" long. Glue and screw two rafters together to form the peak of the roof.

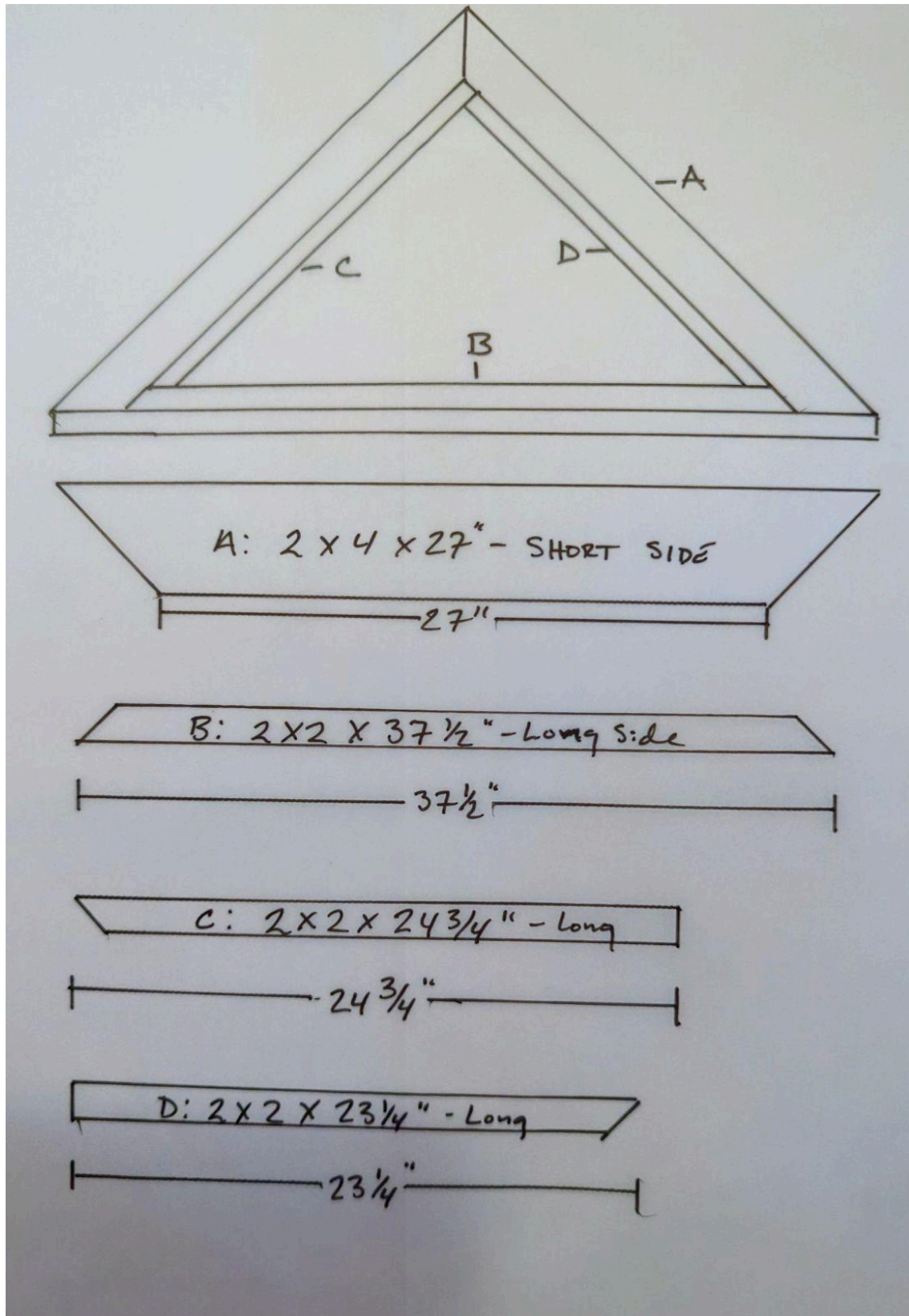


Figure 14

- Once assembled, secure one set of rafters flush with the top plate of the front and rear wall. Find and mark the center of the two top plates of the side walls (24") and center the 3rd rafter set on this line.
- Secure the purlins to the rafters - 3 per side. The first will fall 2" below the peak, the next will fall 2" above the tail end, and the third will be centered between the two.
- Cut the corrugated roof panel in half across it's width. Position the first panel on the purlins - 1" down from the peak and with a 1" overhang on the front rafter. Secure with roofing screws into the middle and lower purlin. Set the second panel in place, overlapping the corrugation, and fasten to the middle and lower purlins. Repeat on the opposite side.
- Cut the ridge roll to a length of 52 - 54" and center it over the peak of the rafters. Secure the ridge roll to the first purlin on both sides. (Note: Cut the ridge roll longer (54") if you want to cut a decorative angle into each end.)

Step 5: Assemble the Screen Panels

Gather:

- 2 x 2 x 8's
- Hardware Cloth
- Lath Screws
- 2 ½" Trim Screws

Note: The screen panels are assembled differently than those in the catio to minimize weight and material use. When assembled initially, they will be flimsy. Their rigidity comes when they are screwed into the wall openings.

- Cut 2 x 2 s to fit the 4 openings of the side walls. It's best to measure the opening, if your cuts and wall frame components are exact to the drawing, the top and bottom pieces should be 19 $\frac{3}{4}$ " long, and the side pieces should be 33" long.
- Build the screen frame by screwing top and bottom pieces to the side pieces as seen in the Side Elevation drawing. One trim screw is enough, you just need to hold the frame together before attaching the hardware cloth. (If you have a brad nailer, this would work well.)
- Lay the panel on a flat surface and cut the hardware cloth to the outside dimensions less $\frac{1}{4}$ ". Use lath screws to attach the hardware cloth to the frame. (Tip: Start at the top and work your way down the sides, finishing on the bottom. By screwing at a slight outward angle, you can effectively pull the hardware cloth taut, removing any wrinkles.)
- Repeat the process for one section of the front side - the opposite section will contain the door, the three sections of the rear (keep the 11" x 13" open for the catwalk), and the gable ends.

Step 6: Assemble the Door

Gather:

- 1 x 4 x 10'
 - Pocket Screws
 - Lath Screws
 - Hardware Cloth
 - Hinges
 - Gate or Barrel Latch
-
- From the 1 x 4 x 10, cut two lengths at 27 ¼" and two lengths at 19 ½". Rip these four boards to a width of 2 ¾". (The horizontal - top and bottom - boards are the rails, the vertical boards are the stiles.)
 - Drill two pocket holes in each end of the stiles. Glue and screws the four boards into the door frame.
 - Attach hardware cloth to the back of the door frame using the same process as the wall panels.
 - Attach the door to the corner post of the front wall opening with two exterior hinges. Attach the gate or barrel latch to the opposite side. (Tip: The door frame should be ¼" smaller than the opening in the wall. When centered, this will leave an even ⅛" gap on all four sides. If helpful, from your scrap 1 x 4 material, rip a few ⅛" strips and use them to shim the door in place while attaching the hinges.)

Step 7: Assemble the Catwalk (See Figure 15 Below)

Gather:

- 2 x 4 x 8' - 1 or 2 each
- 2 x 2 x 8' - 1 or 2 each
- 1 x 6 x 10' - 2 each
- 1 x 2 x 8' - 10 each
- Hardware Cloth
- Lath Screws
- 3" Deck Screws
- 2" Deck Screws
- 1/8" Braided Steel Cable
- Eye Screws

- Measure from the outside edge of the top plate of the gable opening of the catio to the outside edge of the bottom plate of the framed catwalk opening of the treehouse to determine the length of the catwalk. If less than 8' in length, you can divide this element into two sections. If over 8', you will divide it into thirds in the following steps.
- Adding four inches to the measurement taken above, cut the 1 x 4 x 10's to length.
- Make 3 (if catwalk is under 8'), or 4 (if catwalk is over 8') frames. The end frames will be constructed of 2 x 2's and the inner frame(s) will be constructed of 2 x 4's. See Figure XX - each frame will consist of two 11" pieces and two 13" pieces. Secure these frames with 3" deck screws.

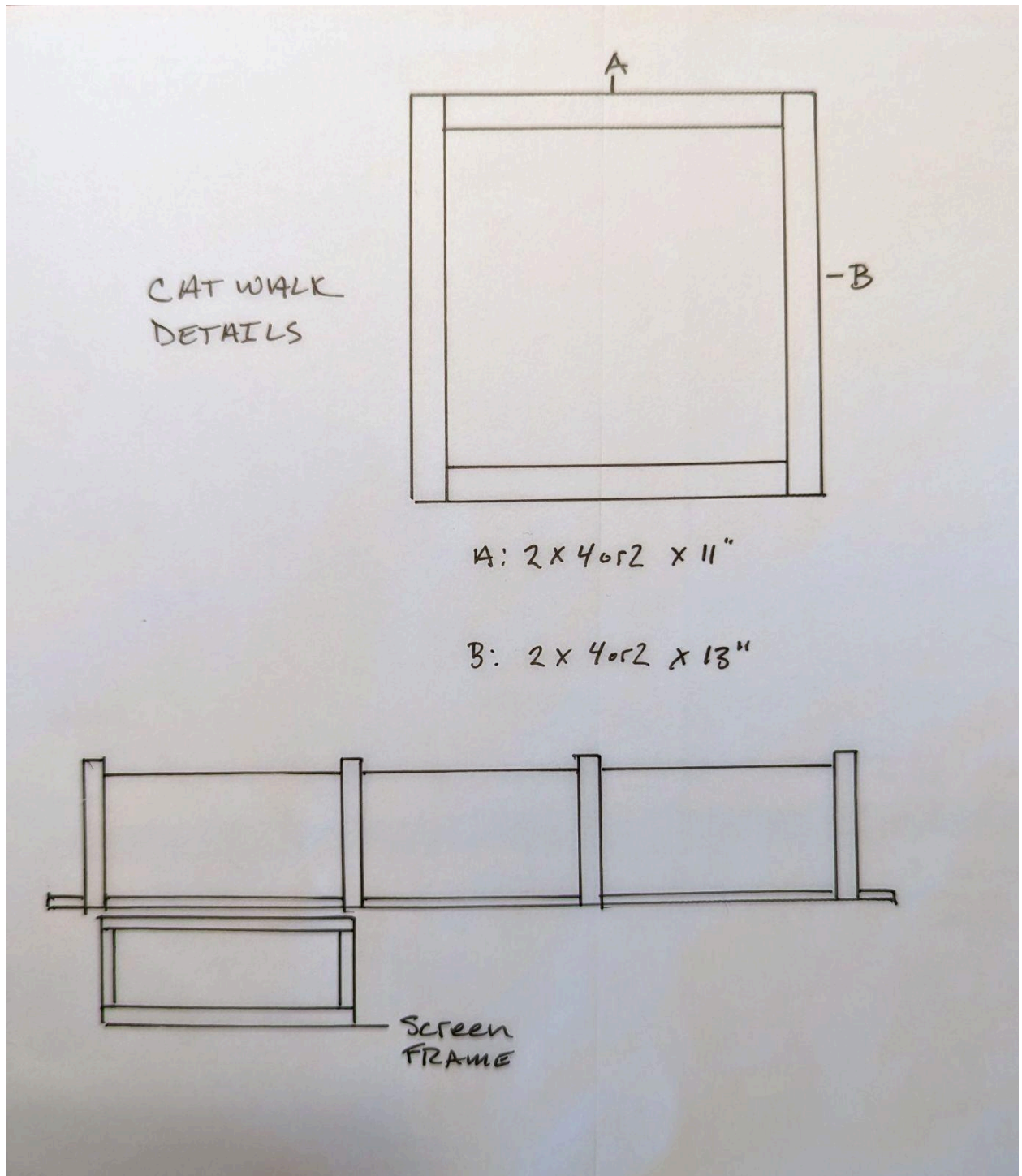


Figure 15

- Based on the number of sections you will use, measure and mark the 1 x 4's. For instance, if less than 8' long, find and

mark the centerline of the length. If longer than 8', divide into thirds and mark these locations.

- Slide the 2 x 2 and 2 x 4 frames over the 1 x 4's - the 2 x 2 frames will be on the ends, and the 2 x 4 frame(s) will be in the center. The 2 x 2 frames will be set back 2" from the ends of the 1 x 4's and the 2 x 4 frames will be centered on your marks. *Important: Do not fasten the 2 x 2 frame on the end that will connect to the treehouse. Let it float or hold it 5" or 6" back with a spring clamp.* Screw the 1 x 4's to the frames at your marked locations using 2" deck screws.
- The screen panels for the catwalk will be constructed in the same manner as those for the treehouse. These, however, will be constructed of furring strips rather than 2 x 2's. Build the side panels first. Measure from the top of the catwalk planks (1 x 4's) to the underside of the top of the 2 x frames - they should be roughly 10 $\frac{3}{4}$ " (Deducting an $\frac{1}{8}$ " from the height will make assembly much easier). Then measure the distance between your 2 x frames and add 1 $\frac{1}{2}$ ". These measurements are the dimensions of your side panels. Cut and nail/screw them together and use lath screws to attach hardware cloth to the inside edge. (Like the screen panels for the treehouse walls, these frames will be flimsy until secured to the catwalk structure.
- Once completed, insert the panels inside the frames. (See pictures of catwalk above.) To fasten, screw 2" deck screws through the bottom edge of the 1 x 4 into the bottom edge of the screen panel. Then screw the panels from the inside into

the 2 x frames using 2" deck screws. (Regarding the side panels closest to the treehouse, fasten the bottom and inner edge now, but do not secure to the floating 2 x 2 frame yet.)

- *Note on enclosing the top of the catwalk: On our catwalk, we cut sections of hardware cloth to enclose the top. If you choose this option, cut the hardware cloth to the width of the opening and add 2" to the length. Bend 1" of the ends upward at 90 degrees and fasten these sections to the top of the side panels and the inside edges of the 2 x frames. Alternatively, you can make additional panels as you did for the sides and fasten them with 1 ½" deck screws to the side panels. Do not enclose the top of the catwalk closest to the treehouse until after the following steps.*
- Screw an eye screw into the peak of the treehouse gable end facing the patio. Also screw eye screws to the outer edges of the 2 x 4 frame(s).
- Using an extra set of hands, slide the treehouse end of the catwalk into the opening in the rear wall. It will need to slide in slightly past your 2" overlap. Resting the edge of the catwalk within the opening, lift and slide the opposite end into place within the gable end of the patio. Use a 2 x 4 brace to support the bottom of the catwalk, then secure the 1 x 4 planks to the top plate of the patio and bottom plate of the treehouse with 2" deck screws. Now slide the floating 2 x 2 frame to its final position against the treehouse, fasten it to the treehouse wall with 2 1/2" deck screws. Fasten the side

panels into the 2 x 2 frame, and enclose the top of this section.

- Loop the 1/8" cable through the eye screw in the gable end of the treehouse and secure it with a ferrule. Next, run the cable to the closest eye screw in the 2 x 4 frame, back to the gable, then to the opposite side of the frame. Pull taut and secure with a ferrule. (Repeat this process if using more than one 2 x 4 frame.

Step 8: Release the Felines!

Notes on building the “treehouse” around a tree: When we built our catio, we were quite fortunate that we just happened to have a very large tree in a great position to accommodate our treehouse. Every tree is unique, so it would not be possible to draw specific plans that would accommodate every possible tree scenario. With that in mind, the following factors should be considered if building the treehouse in a tree.

- Trees continue to grow. Though your tree may have reached it's final height, their diameter will continue to expand. It may be very gradual, but plan that there will be a time when adjustments to the treehouse structure will have to be made to accommodate tree growth.
- If connecting to a mature tree like the one in our photos, use HeadLok screws to attach the 2 x 4 joists to opposite sides

of the trunk. Then cut 2 x 4 braces (target 45 degrees) to support the center of each side.

- When laying out the floor boards, start on one side and work toward the tree. You may need to scribe the last full board around the tree before cutting shorter sections to work your way around the trunk.
- Your center set of rafters might need to be moved if the trunk of your tree falls in the center of the treehouse structure. In some cases, a fourth set of rafters may be required.
- If working around a tree, as in our photos, forego using purlins and use ½" plywood sheathing instead. Slide a 4' x 4' section of sheathing - square to your outer sets of rafters - and begin scribing the sheathing where it meets the tree. Depending upon the size of your tree, you may need to do this several times before the sheathing will fit. Before fastening to the rafters, use your sheathing as a template to cut the corrugated roof panels to fit. It's much easier to do this on the ground.