Bat House Design

Goal

- Build 6 3-Chamber Bat Houses for the City of Santee and install them at designated sites specified by the City of Santee
- Spending 6~7 hours building and painting for each bat house
- Spend ~1 hour painting
- Spend 1~2 houra installing each bat house and pole in the field with concrete
- Start on June 11, 2016
- Complete by August 27, 2016

Final Mounted Bat Boxes

Installation with Cement

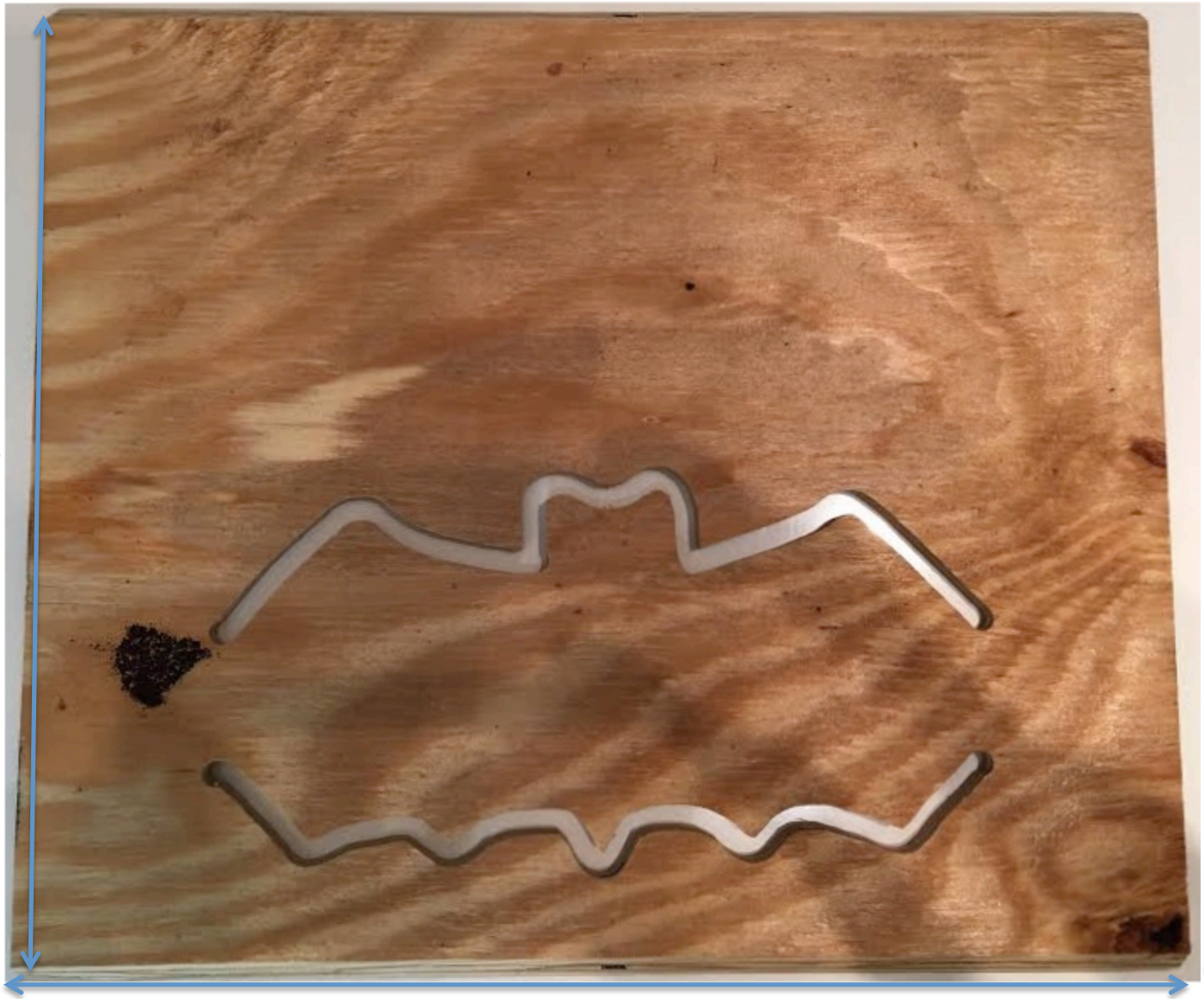
Required Tools

- Circular saw
- Bench or table saw
- Screwdriver, preferably electric cordless drill
- Caulking gun
- Tube of construction adhesive (Liquid Nails, etc)
- Utility knife
- Heavy duty staple gun with 1/4” staples
- Post hole tool
- Digging bar
- Shovel
- Compass
- Gloves

Sample of Tools

Thickness = 0.5”
40^0 angle, two sides
Total = 6

Bat Box Front



TH = 14.9”

BH = 15.5”

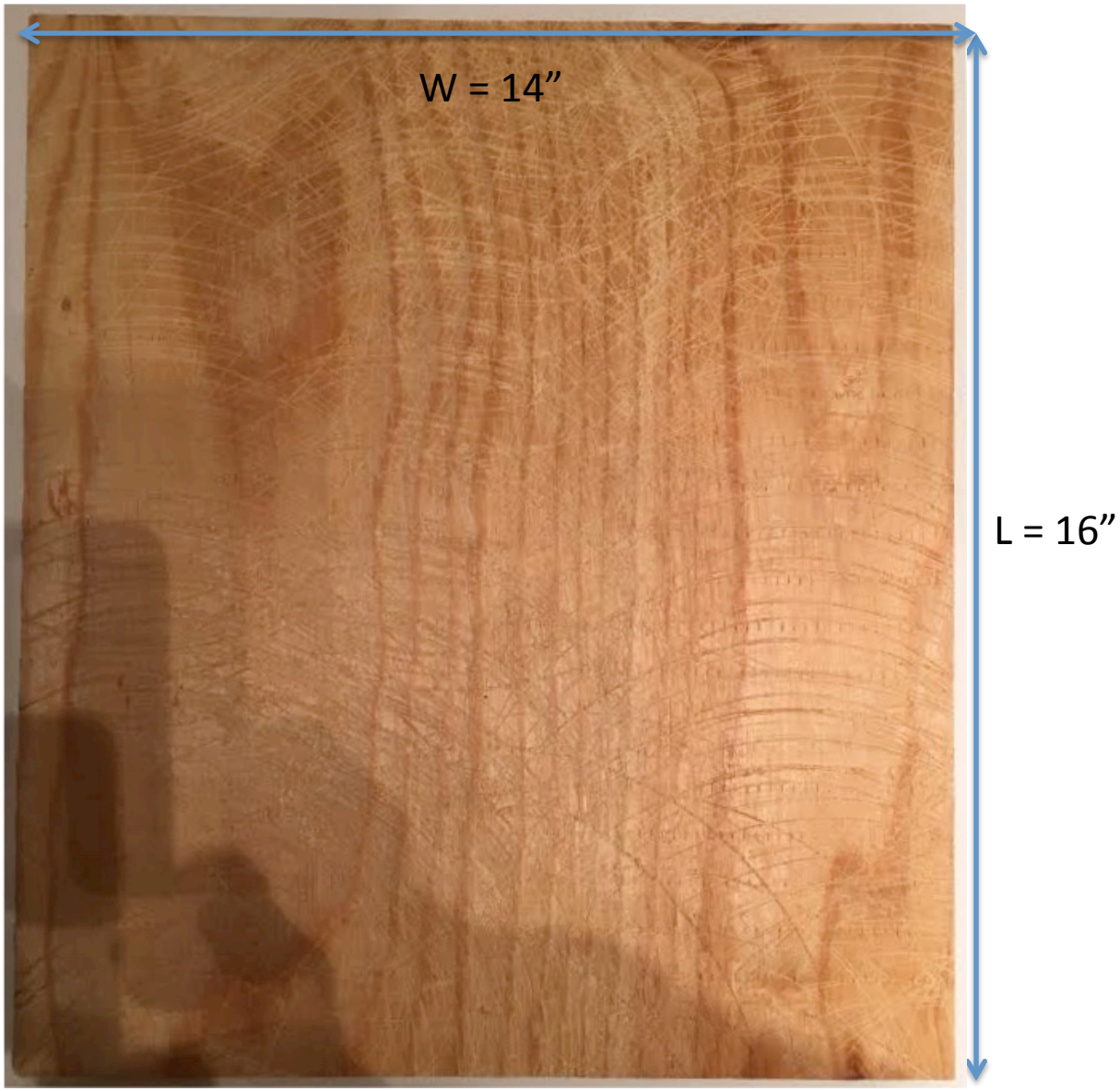
BW = TW = 17.75”

Thickness = 0.5”
Total = 6

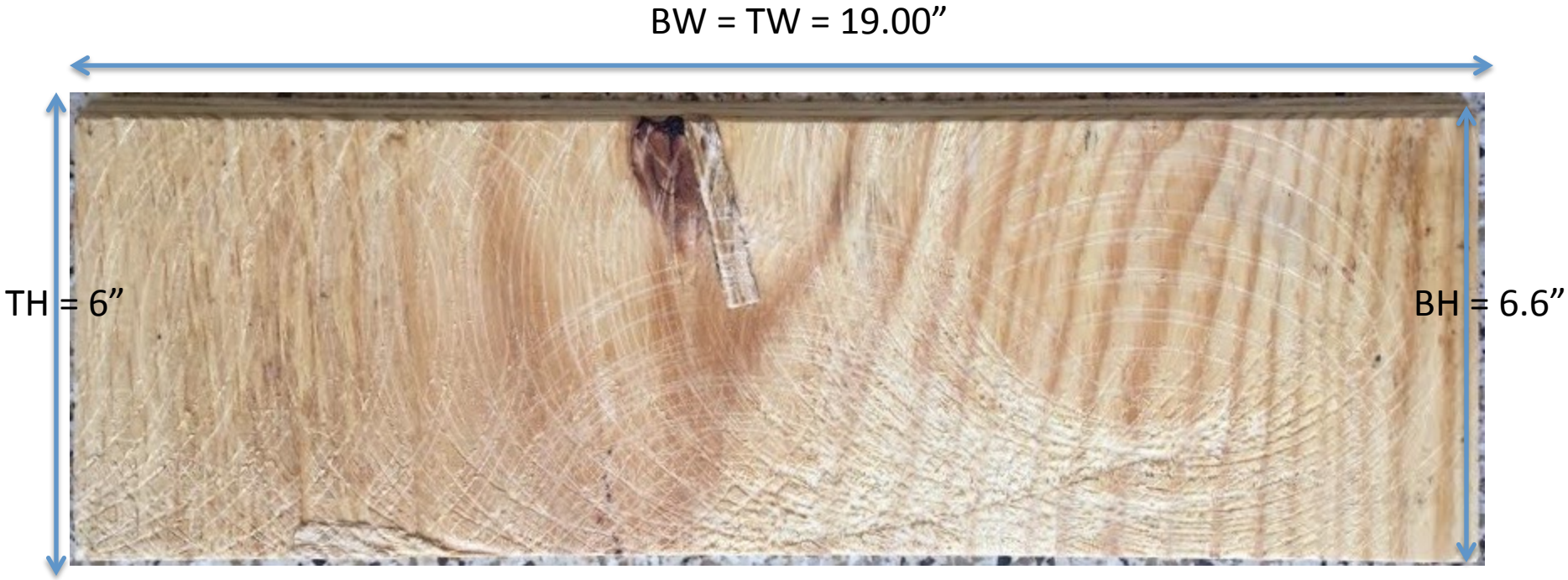
Bat Box Bottom

Bat Box Baffles

Thickness = 0.5”
Total = 12

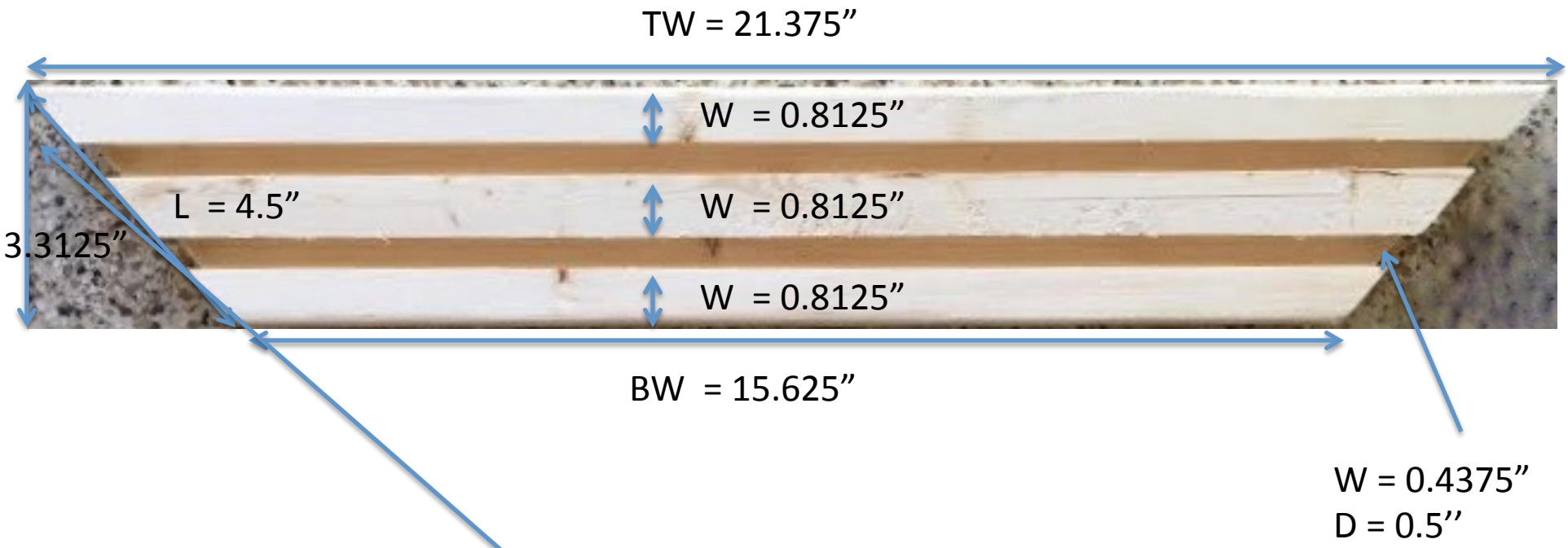


Bat Box Roof

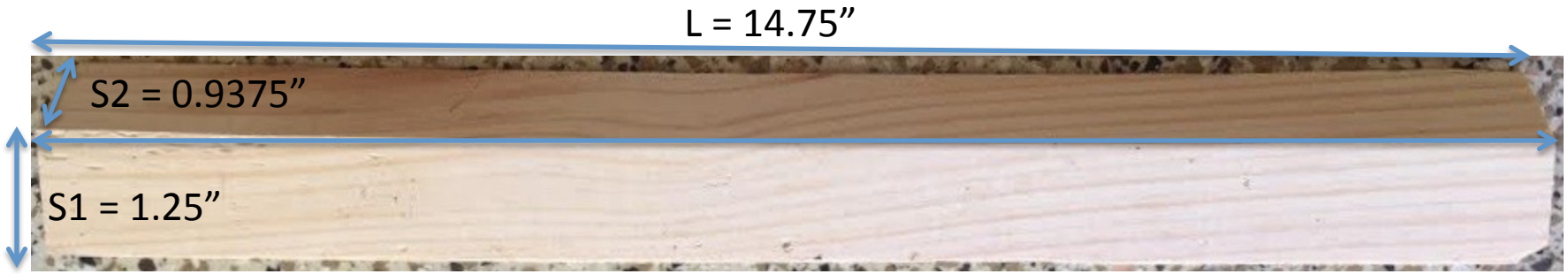


Thickness = 0.5”
40^0 angle, one side
Total = 6

Bat Box Side

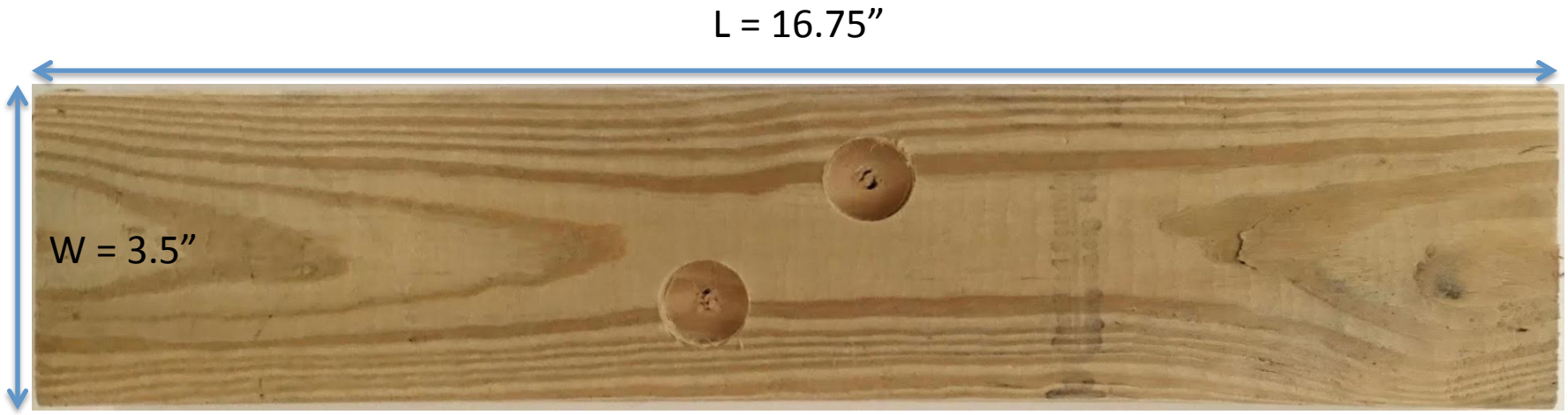

TW = 21.375”
W = 0.8125”
W = 0.8125”
W = 0.8125”
L = 4.5”
3.3125”
BW = 15.625”
W = 0.4375”
D = 0.5’’
Thickness = 1.5”
40⁰ angle, two sides
Total = 12

Roof Support



40^0 angle
Thickness = 0.75’’
Total = 12

Upper and Lower Mounting Face



Thickness = 1.5”
Total = 10

Finished Three Chamber House

Finished Bat House Front View

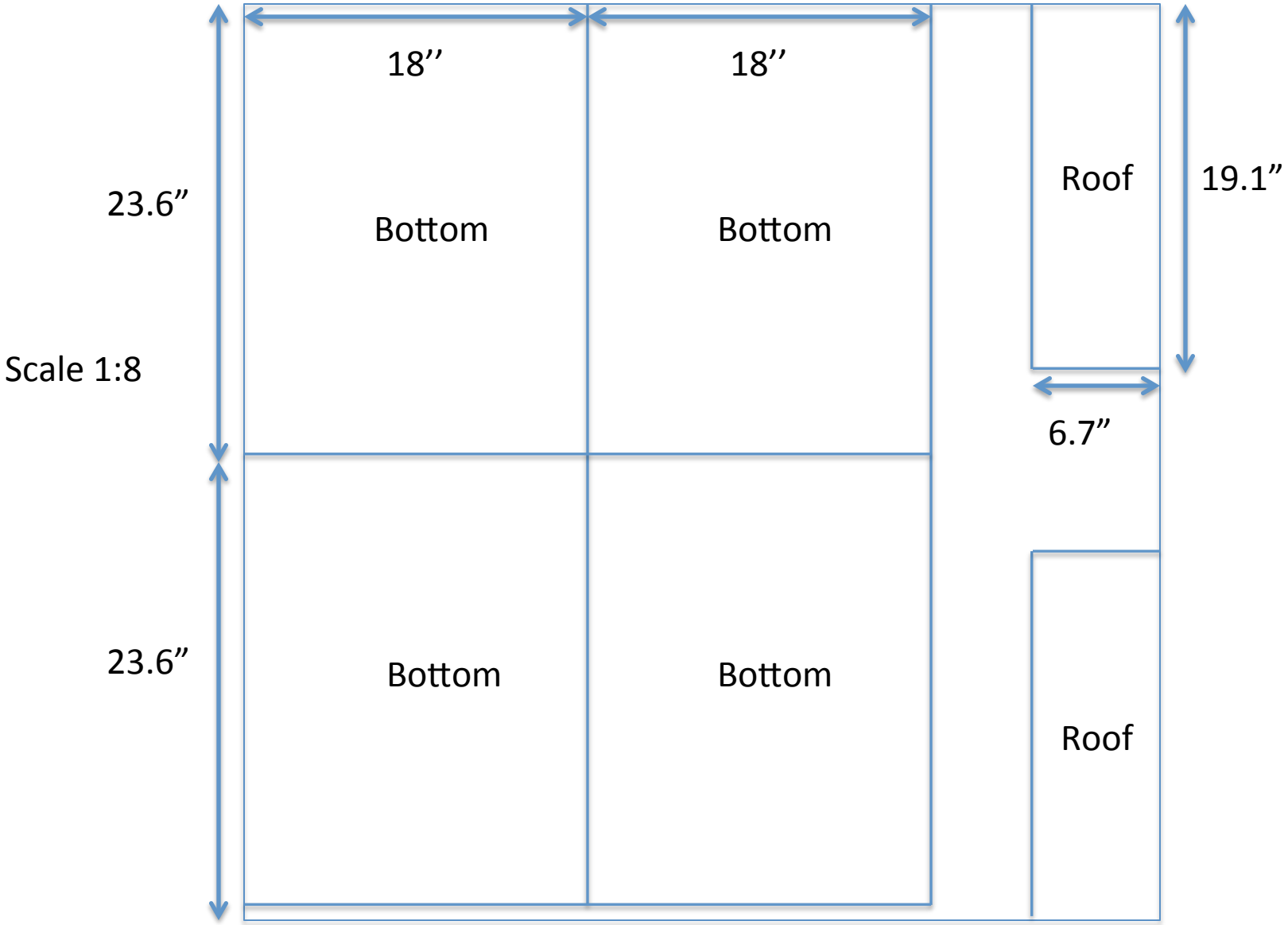
Materials

Type	Cost	Unit Needed	Total
Wood Glue	Titebond III 16 oz. Ultimate Wood Glue	1	$7.97
Exterior stain or paint	Store SKU # 639476. $37.96. BEHR Premium 1-gal. Semi-Transparent Weatherproofing Wood Stain Tint Base with natural wood color	4	$151.84
1 Gallon Outdoor Black Paint	BEHR Premium Plus 1-gal. Pure Black Hi-Gloss Enamel Exterior/Interior Paint	1	$30.98
4’ x 4’ x 1/2“ CDX Exterior Plywood	$21.77 (SKU # 439606, 0.563”x4’x8’)	4	$87.08
3/4”x4”x8’ Tan Composite Trim	$6.14 (SKU # 401371)	1	$6.14
Pressure treated 4 in x 4 in x 16 ft Post	4 in. x 4 in. x 16 ft. Premium #2 and Better Douglas Fir Lumber, Model # 603767, Internet # 202094268, Store SKU # 603767, $17.48	6	$104.88
60 lb bag of premixed concrete	$2.97 (SKU # 929514)	18	$53.46
TOTAL			$442.34

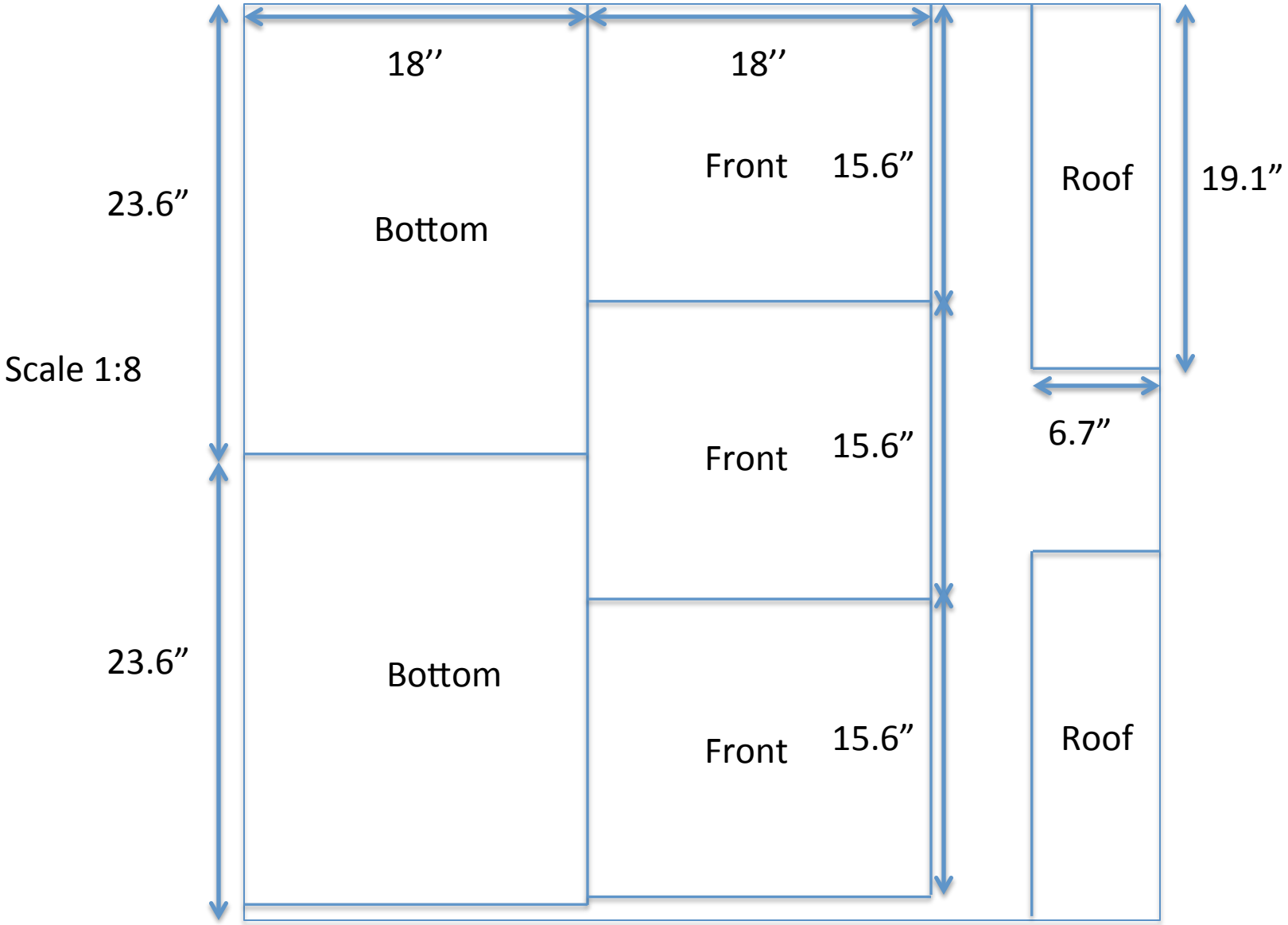
Materials (Continued)

Type	Cost	Unit Needed	Total
Total from last page			$442.34
8 or 10 galvanized screws	$6.47/1 pound bag (SKU 479666)	1	$6.47
4 or 5 Galvanized 3 in Lag Bolts	$28.98/pack (SKU 264664) 3/8 in. x 3 in. Galvanized Hex-Head Lag Screw	1	$28.98
3/8 in. Galvanized Flat Washer	$4.95/bag, (SKU 156727), 3/8 in. Galvanized Flat Washer (25-Piece per Bag)	1	$4.95
1-1/2 in. x 3-1/2 in. x 8 ft. Rough Con Heart Redwood Lumber (4-Pack), Model # 00827, $53.67	4 in. x 4 in. x 8 ft. Premium #2 and Better Douglas Fir Lumber, Store SKU # 441856. Neet to cut to 1.5" x 3.5" x 8', $8.91 each	4	$35.64
TOTAL			$518.38

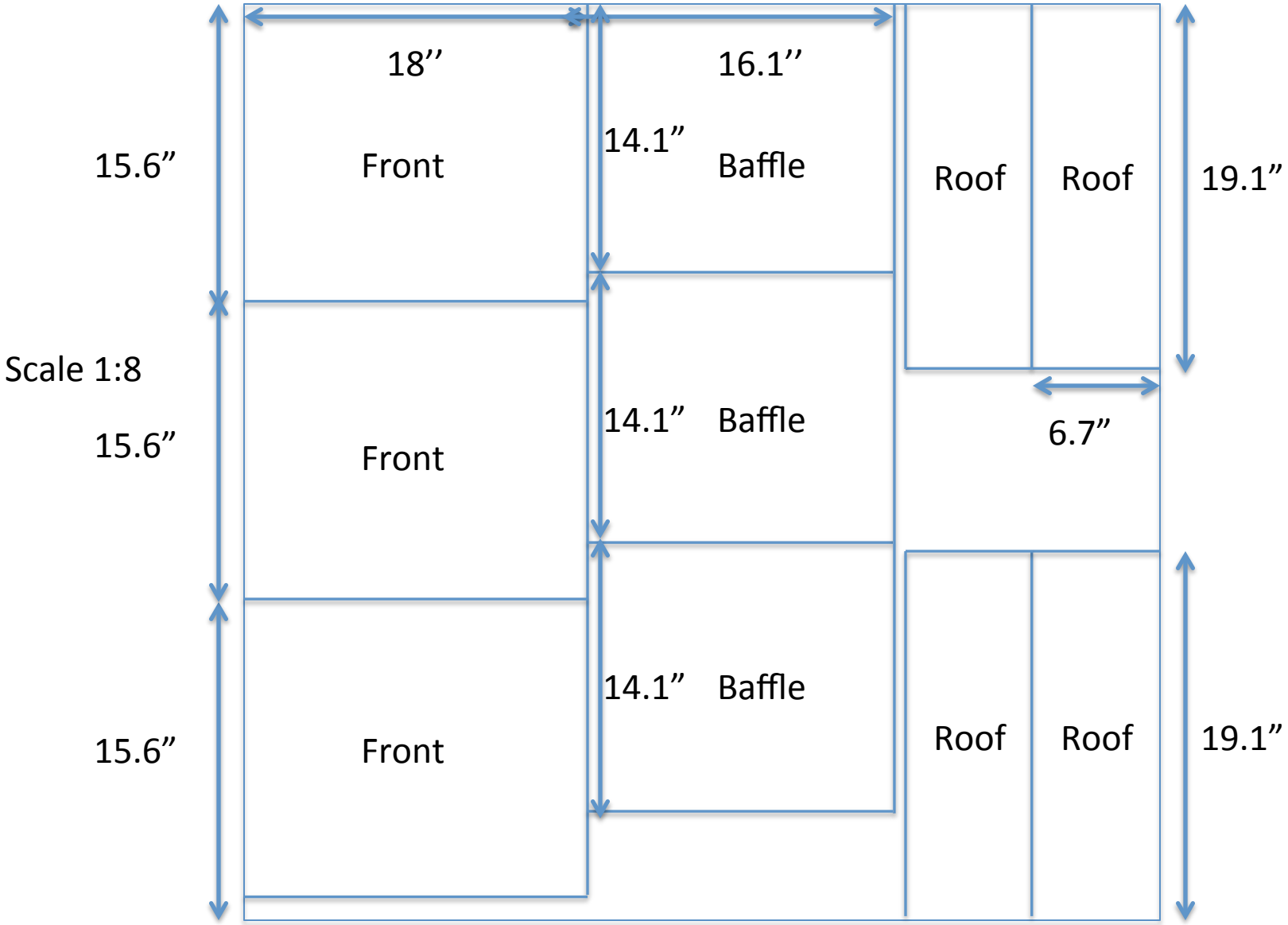
4’ x 4’ x 1/2” CDX Exterior Plywood



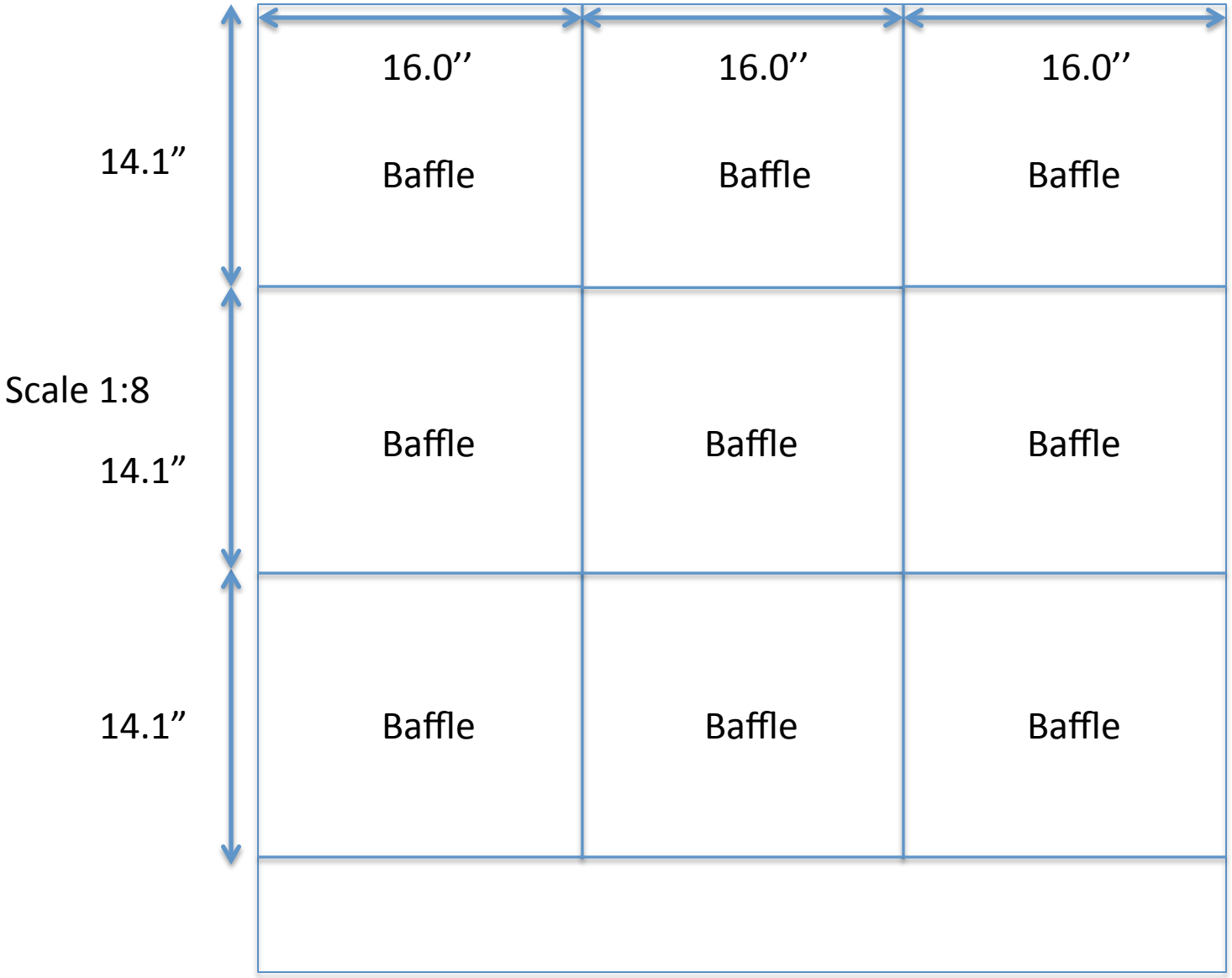
4’ x 4’ x 1/2” CDX Exterior Plywood



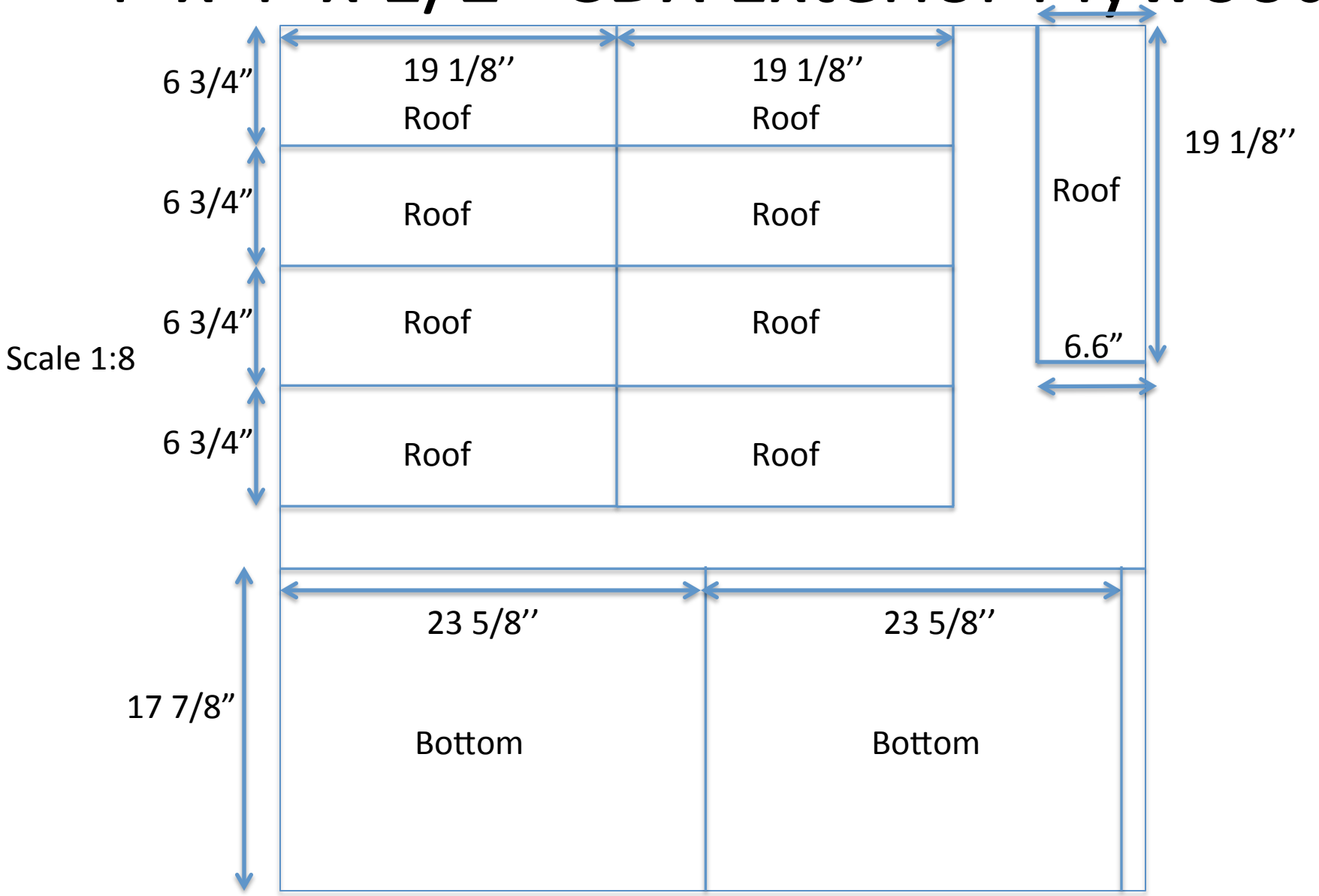
4’ x 4’ x 1/2” CDX Exterior Plywood



4’ x 4’ x 1/2” CDX Exterior Plywood



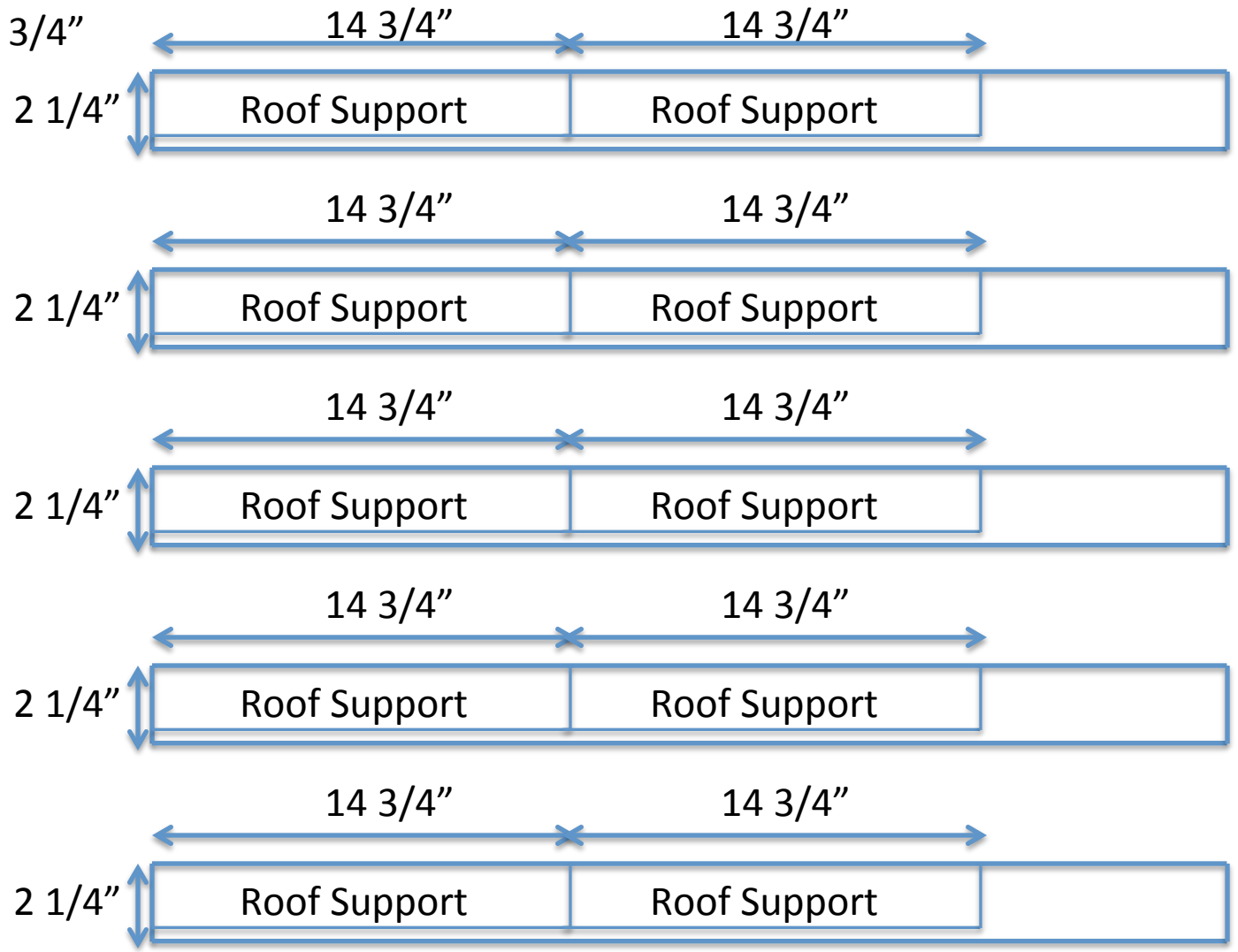
4’ x 4’ x 1/2” CDX Exterior Plywood



3/4” x 2 3/4” x 38” Lumber

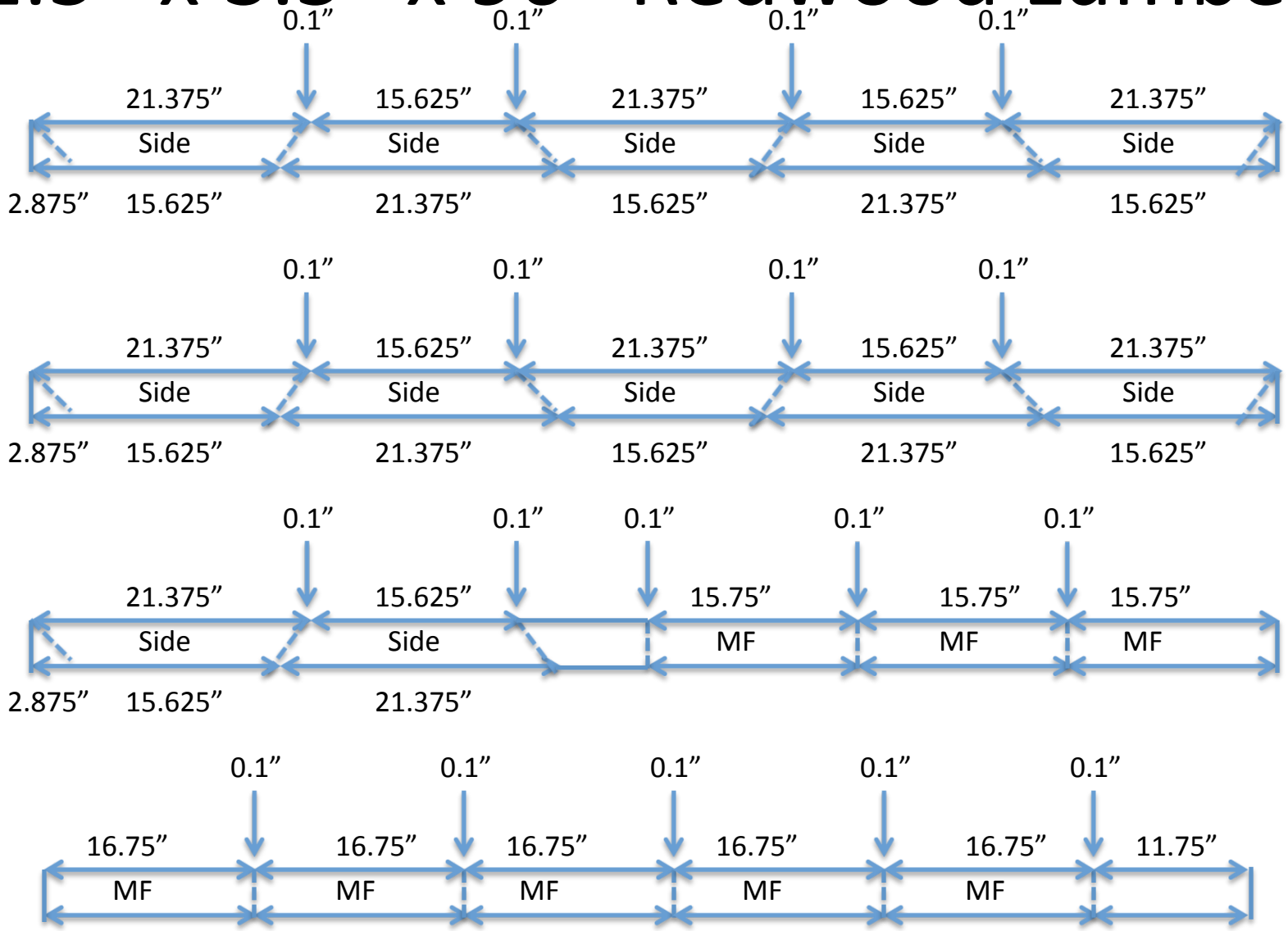
Scale 1:6

Thickness = 3/4”



Scale 1:8

1.5” x 3.5” x 96” Redwood Lumber



Three Chamber Parts

(1) Top: This part is scratched on the inside face and feature a beveled top edge to accommodate the stopping roof. 18” wide x 15.5” tall

(2) Back: this part is scratched on the inside face. 18” wide x 24” tall

Three Chamber Parts (Continued)

(1) Roof: It is scratched on the inside face, and at least one edge is beveled to form the sloped roof. 6.6” x 19”

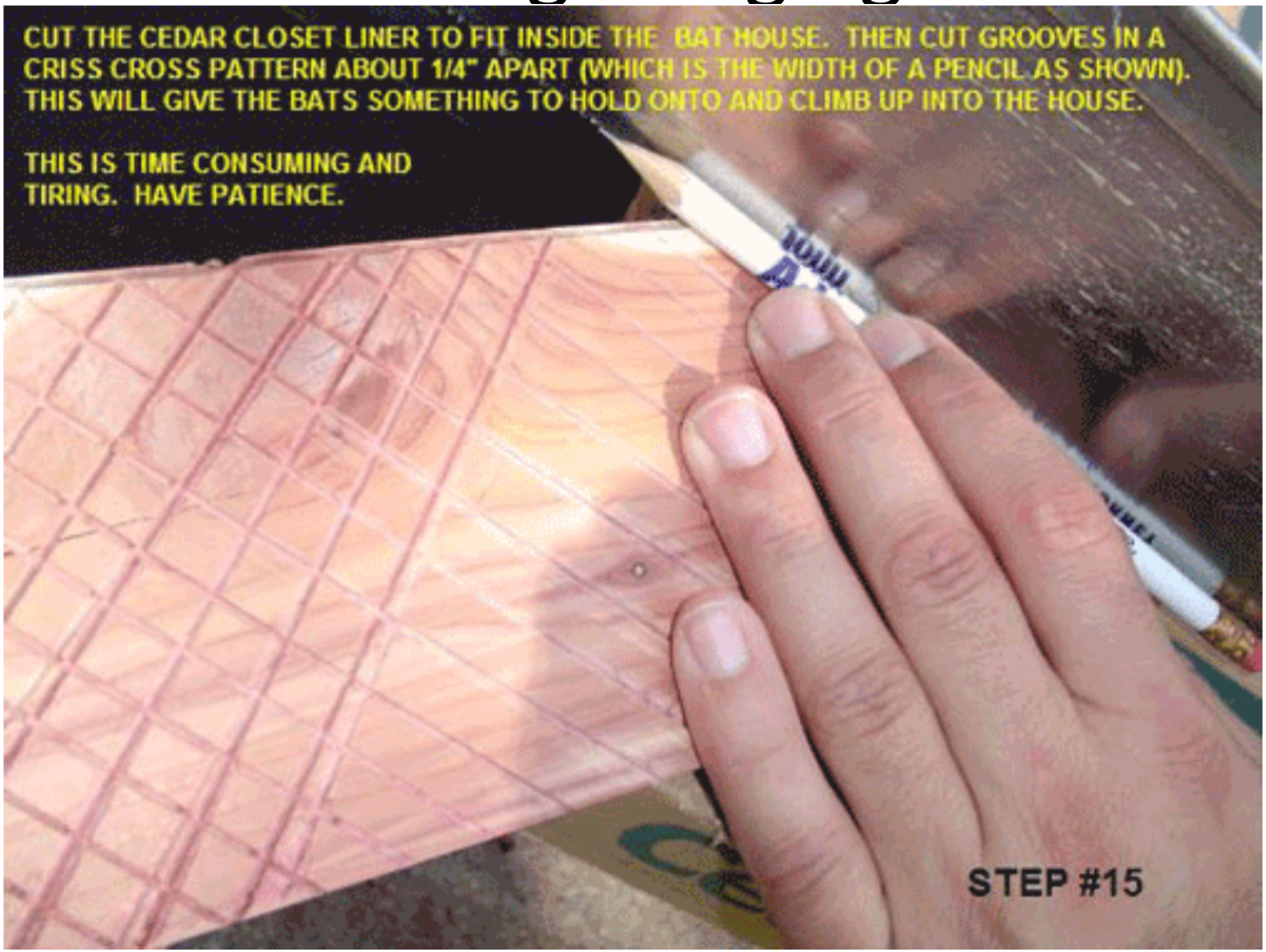
(2) Sides: sturdier 2x can be used by adjusting the baffle dimensions

Three Chamber Parts (Continued)

(1) Baffles: Should be intensely rough-edged on each side. 16” x 14”

(2) Roofing Material: Black rolled roofing is standard. Black shingles may be used as well.

Rough-edging

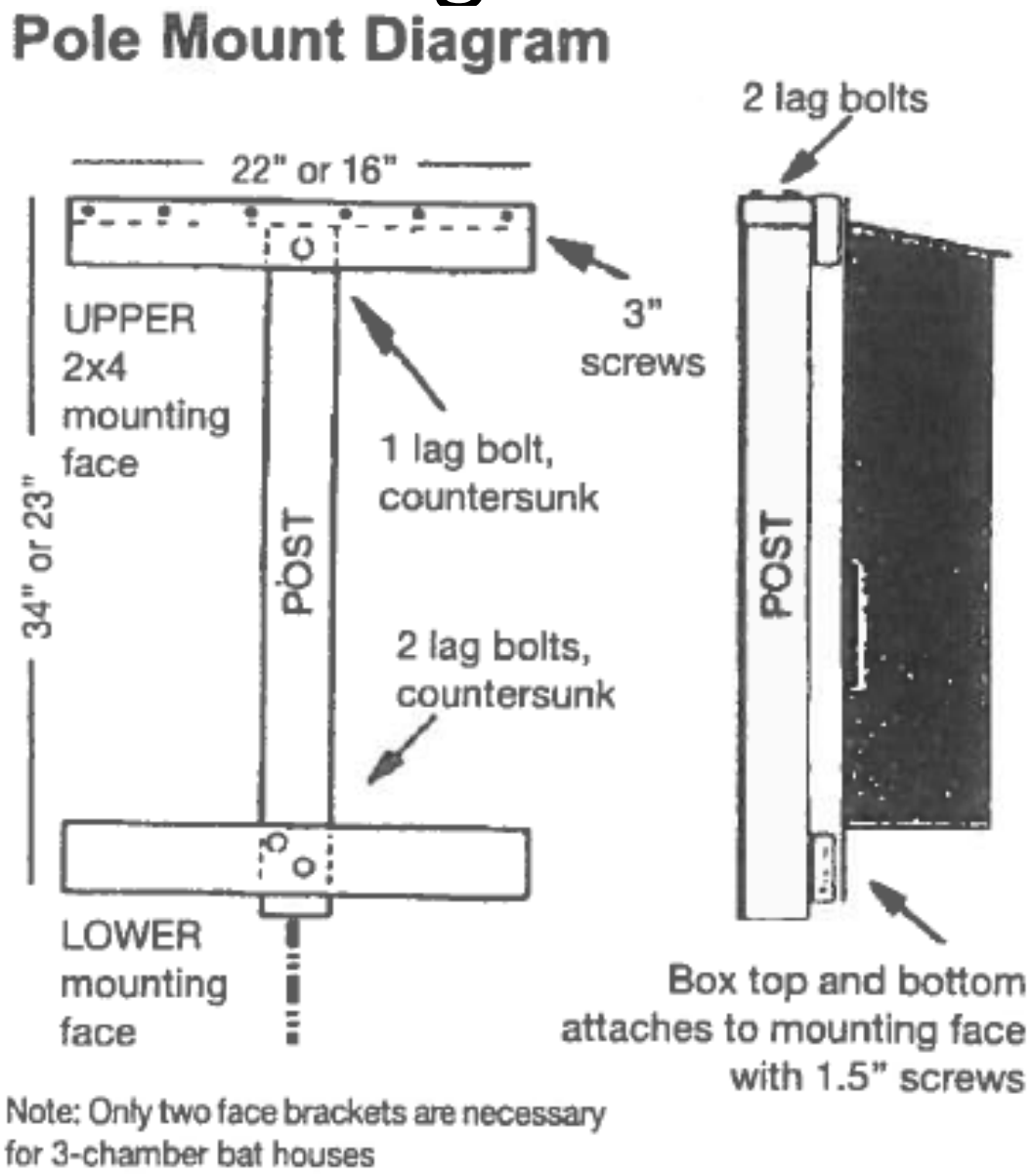


Rough Edging

Assembly Instructions

1. Inspect the Interior Wood
2. Attach Front and Sides
3. Front Roof Striup
4. Add Baffles
5. Attach Back
6. Rear Roof Strip
7. Attach Roof
8. Inspect Seams
9. Apply Stain
10. Finish Roof
11. Finish Landing Plate and Darken Baffles

Installing on a Post



Post Height = 13.27’
3.05”
7.25”

Building a Pole Mount

Raising a Post

Instructions on Installing Post I

- Using the post hole tool and digging bar, excavate a hole at least three feet deep and 8~12 inches in diameter. The hole will be slightly larger than the posthole tool. If the hole was sunk straight and clean only one bag of premixed concrete will be necessary.

Instructions on Installing Post II

- Center the top pole mount on the top of the post and pre-drill one hole to make installing lag bolts easier. Install one lag bolt, then square the bracket before pre-drilling the next hole. Repeat the procedure until all three lag bolts in placed through the front.
- Center the lower pole mount on the post. The bottom of the lower pole mount should be about 23 inches from the top of the upper bracket so the bat house covers the bracket. Affix two lag bolts., again pre-drilling and installing one at a time and checking the bracket with a square.

Schedule

- Get approval from Mrs. Sue Richardson of the City of Santee by May 15, 2016
- Purchase all materials and tools by June 7, 2016
- Start Construction on June 11, 2016
- Install Poles with Bat Boxes from August 13, 2016 to August 28, 2016

Differences from Christopher's Plan

1. Use a model kit to guide design
2. Front of Bat box is one piece instead of two pieces. One piece is easier to build and more table.
3. Can use leftover wood, cement, and nails from Christopher’s project
4. Design is simpler and cheaper

References

1. www.batmanagement.com
2. Building a Better Bat House, Bat Conservation and Management