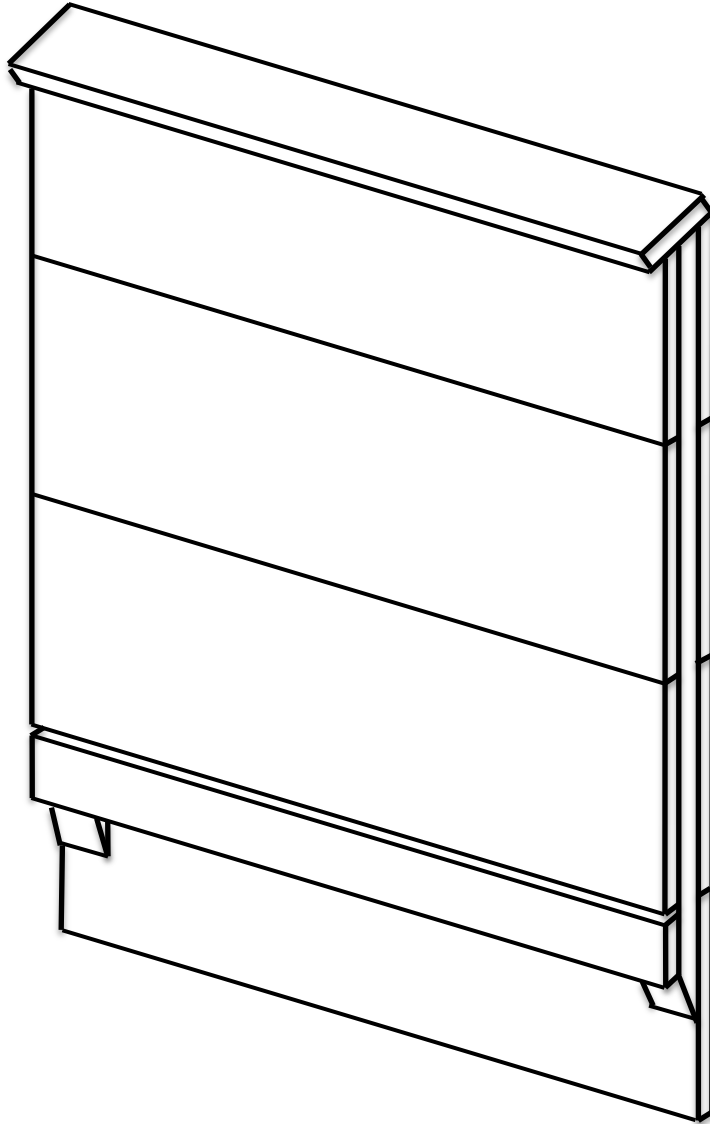


## SINGLE-CHAMBER BAT BOX

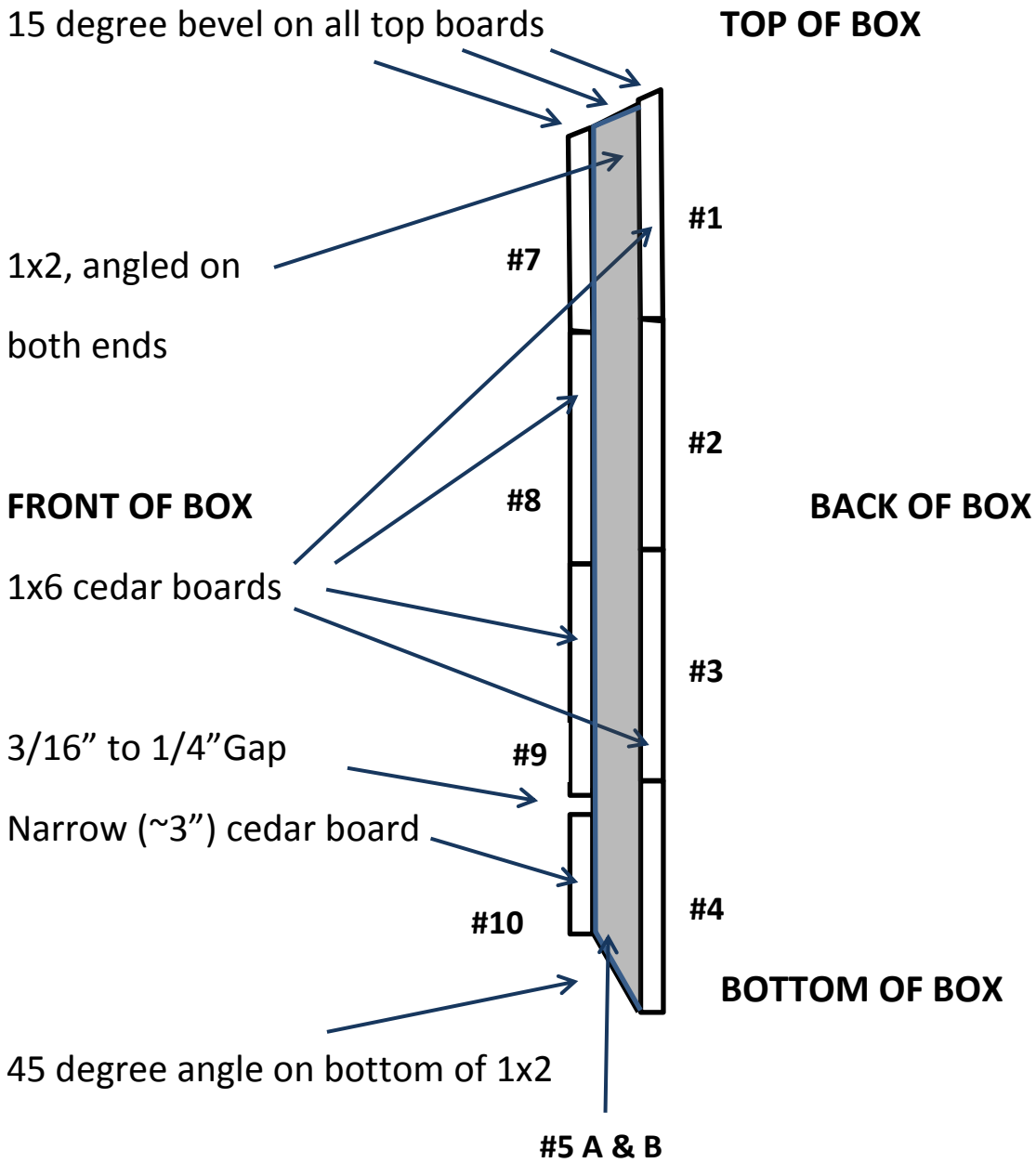


**Fig.1**

**Materials:** 1x6 cedar boards, 1x2 pine furring strips or 2x4 strips, exterior screws, wood glue, caulk, stain

**Size:** 22  $\frac{3}{4}$ " tall, 16  $\frac{3}{4}$ " wide, 3" deep

**View from side (without roof piece) – NOT TO SCALE**



**Fig. 2 – all components are labeled # 1 through # 10**

## MATERIALS:

- 1x2, 13" – 1 (furring strip or part of 2x4, ripped to 3/4" thickness) – 15 DEGREE BEVEL ON ONE LONG SIDE
- 1x2, 21" – 2 (furring strip or part of 2x4, ripped to 3/4" thickness) – 15 DEGREE ANGLE ON ONE END, 45 DEGREE ANGLE ON THE OTHER
- 1x6, 16" (cedar fence boards) – 7 (15 DEGREE BEVEL ON ONE LONG SIDE OF **2 OUT OF 7** BOARDS)
- 1x3, 16 3/4" (cedar fence board) – 1 (1x6 ripped to 2 3/4" width)
- 1X3, 16" (cedar fence board) – 1 (use leftover from above piece)
- 1 1/4" exterior grade screws – ~47 (1x6 to frame); Phillips or star-drive
- 3 1/2" exterior grade screws – 2-4 (attaching box through predrilled holes at side 1x2's)
- Wood Glue, waterproof
- Latex Caulk, paintable

## SUPPLIES & TOOLS:

- Tape measure
- Pencil
- Carpenter's square
- Circular saw or chop saw
- Goggles
- Work gloves
- Drill
- Assorted drill bits – 1/8", 3/8"
- Masking Tape
- Caulk gun
- Assorted clamps
- Drop cloth/plastic sheathing
- Brushes
- Plastic/latex gloves
- Sandpaper
- Wood rasp
- Rags
- T-20/25 or Phillips bits
- Eraser
- Tongue depressors
- Hammer

## PREPARATION

- Cut all materials to the dimensions listed above
- Sand edges as needed to remove splinters; INTERIOR WALLS NEED TO REMAIN ROUGH
- Optional – cut horizontal grooves (1/16" to 1/32" deep) into interior surfaces, 1/4" to 1/2" apart

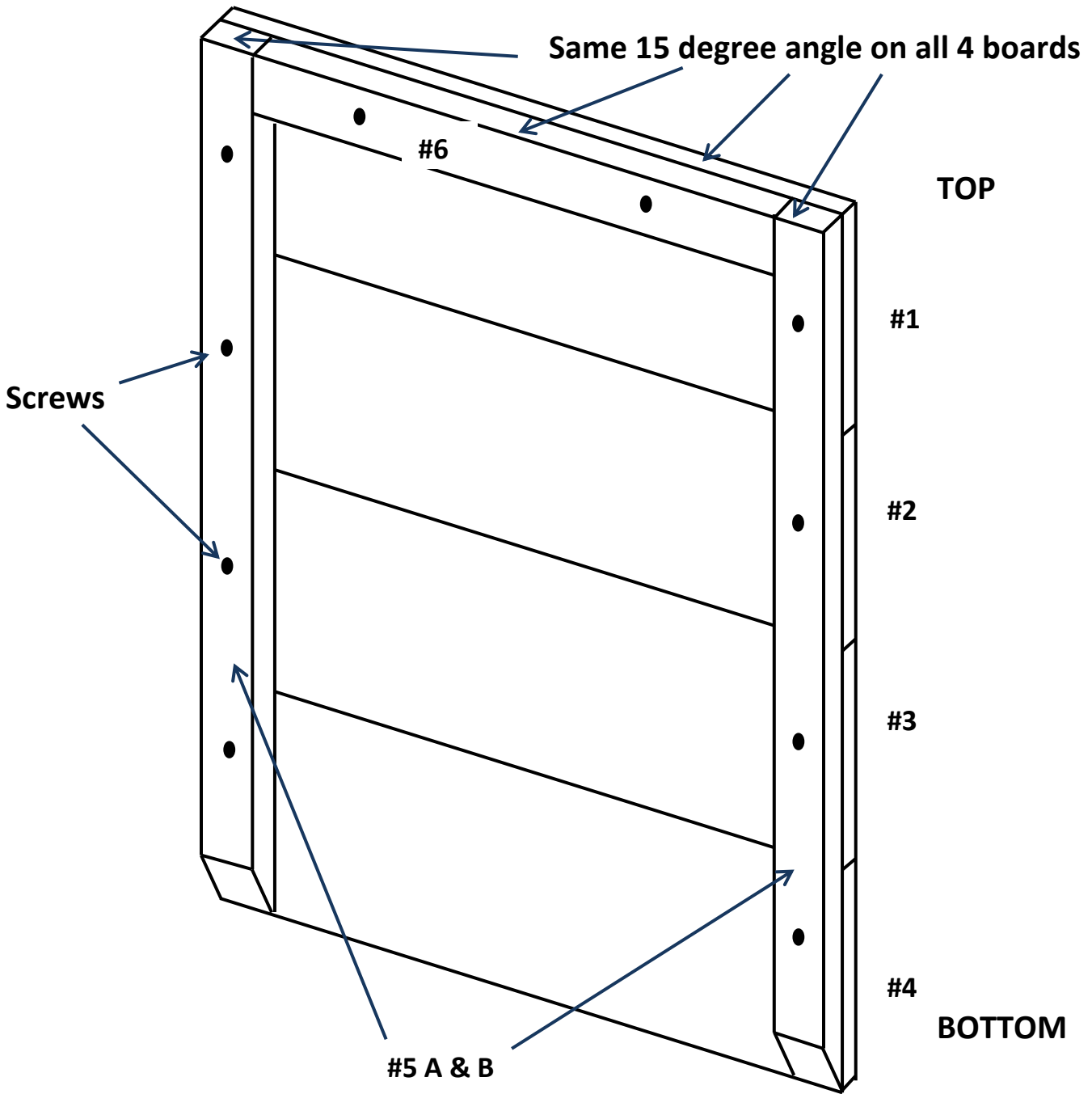


Fig. 3

## CONSTRUCTION – Fig. 3

Lay out four back boards (# 1 through # 4) on your worktable

- Make sure board # 1 is the one with the angle along the top edge
- Boards should butt up tight against each other (no gaps)
- Use wood rasp & sandpaper to remove “high” spots for tighter fit

Lay 1x2 frame (# 5 A, # 5 B and # 6) on top of back boards, aligned with edges

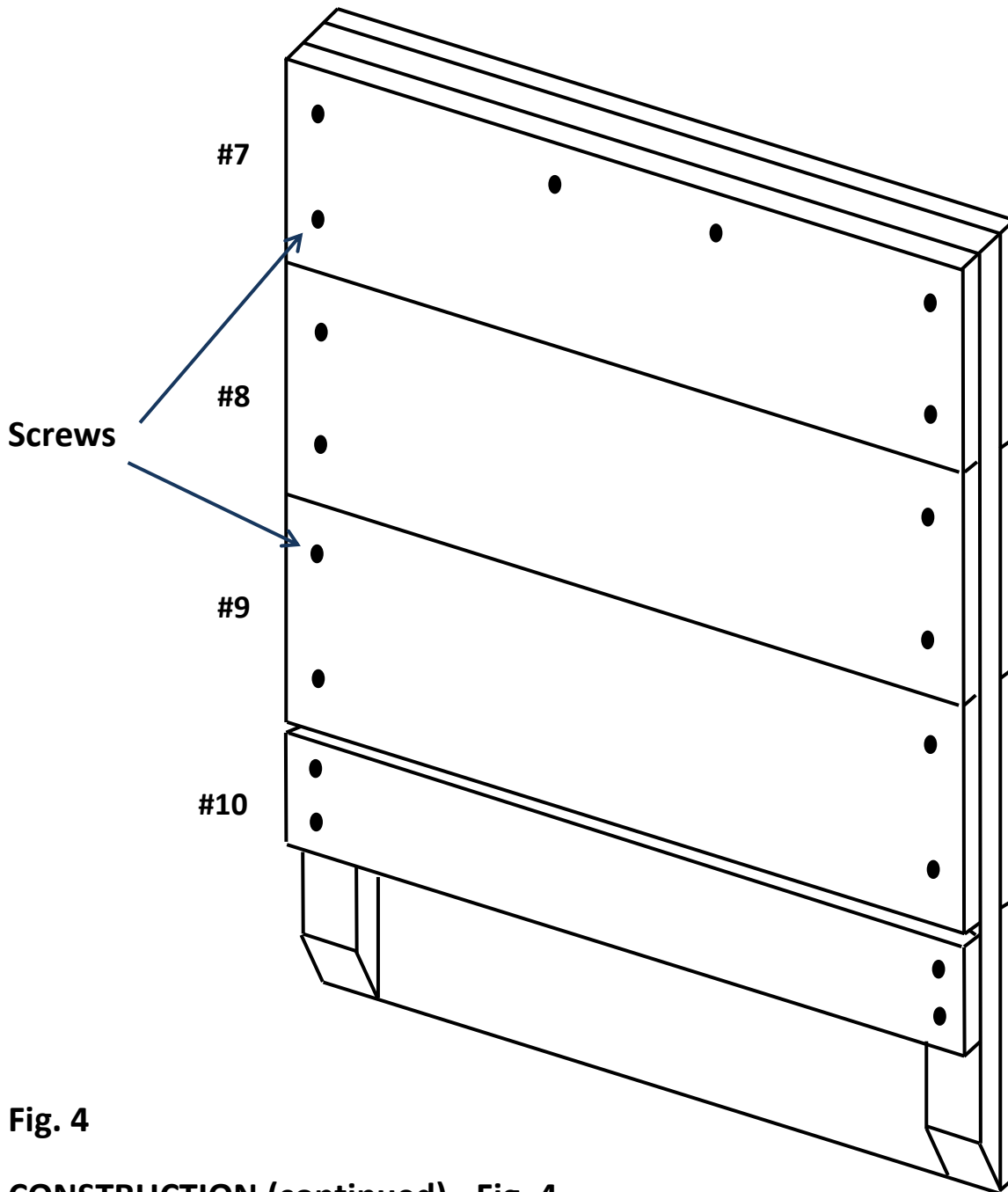
- Angle on # 6 matches angle on back board # 1
- Angles to # 5 A & B match angle on back board # 1

Attach 1x2 frame to back boards

- Use clamps as needed to hold pieces in place
- Make sure box is square
- Pre-drill holes
  - Two holes across top frame
  - Eight holes along the side frames, centered on boards
  - Use 1/8” bit, drill down less than length of screw (Mark depth with tape on drill bit)
  - Countersink holes – 3/8” bit **DRILL IN REVERSE**
- Apply waterproof wood glue before attaching screws
- Use two (2) screws (1 ¼”) on top board (# 6)
- Use eight (8) screws (1 ¼”), one on each side for each of 4 back boards (# 1 through # 4)
- Screw heads need to be counter-sunk/flush with surface of frame
- Wipe off excess glue squeezed out
- Mark location of screws with pencil along each side and along top of box

***Turn the box over (front side down)***

- Install sixteen (16) additional screws (1 ¼”) into the four backboards (# 1 through # 4), four screws per board, pre-drill and countersink screw heads
- Avoid placing screws in same exact location as previously-installed screws (check existing marks, mark new locations on side of box as you go)



**Fig. 4**

**CONSTRUCTION (continued) - Fig. 4**

***Turn the box back over (back side down again)***

Lay out four front wall boards (# 7 through # 10) on top of 1x2 frame

- Angle on top of # 7 matches angle on frame
- Make sure edges line up
- Should have 3/16" to 1/4" gap between # 9 and # 10 boards (for ventilation)

## CONSTRUCTION (continued) - Fig. 4

Attach front boards to frame

- Use clamps as needed to hold pieces in place
- Pre-drill with 1/8" bit, drill down less than length of screw (Mark depth on drill bit)
- Avoid placing screws in same exact location as previously-installed screws (check existing marks, mark new locations on side of box as you go)
- Countersink holes – 3/8" bit **DRILL IN REVERSE**
- Apply waterproof wood glue before attaching screws
- Use sixteen (16) screws (1 ¼"), two on each side for each of the boards (# 7 through # 10) and 2 additional screws (1 ¼") along top of # 7 board
- Screw heads need to be counter-sunk
- Wipe off excess glue squeezed out

Attach 1x 2 ¾" roofing board to top frame, flush with back edge, equal overhang on both sides – Fig. 1

- Pre-drill holes, countersink head
- Apply glue first
- Use three (3) screws (1 ¼" long)
- Avoid placing screws in same exact location as previously-installed screws
- Wipe off excess glue

Drill two to four mounting holes near edge of frame for 3" – 3 ½" mounting screws (avoid existing screws – check marks on sides of box)

Caulk all gaps except the ventilation gap between boards # 9 and # 10. Use as little caulk as needed and wipe off excess with damp rag; allow 1-2 hrs of drying time for caulk before staining

Remove all temporary pencil marks

Sand down any areas with excess glue or caulk

Apply single coat of stain to the exterior

- # of coats depends on type of stain used
- allow 1-4 hrs drying time

## INSTALLATION GUIDELINES

- Place box 12-20' off the ground or above nearest vegetation
- Attach to a building (preferred over tree), under the eaves (for protection from rain)
- Near water source (stream, creek, pond, bird bath) preferred
- Facing south or east, with 6-8 hours of direct sunlight exposure 20-30' away from nearest tree branches (easy access)
- If your average July temperatures are greater than 80°F, mount your bat house where it will receive at least 6 hours of sun.
- If your average July temperatures are less than 80°F, mount your bat house where it will receive at least 10 hours of sun.

## Resources

**Bat Conservation International** - <http://www.batcon.org/>

Four-chamber bat house -

<http://www.batcon.org/files/FourChamberNurseryHousePlans-3.pdf>

**Bat World Sanctuary** - <http://batworld.org/bat-house-information/>

**Optional Metal roof** – aluminum flashing, 16 ½" x 4", bent along two long sides to fit over 1x3 roof section, attached with roofing screws (rubber washer around base); no sharp edges exposed!

### **For two-chamber house**

- Add interior baffle - 3/8" plywood, 16" x 20"
  - Plywood is sandwiched between 2 sets of 1x2 framing; must add horizontal grooves (1/16" to 1/32" deep) on both sides, ¼" to ½" apart
- Add second set of framing
  - 1x2, 13" – 1 (furring strip or part of 2x4, ripped to 3/4") – 15 DEGREE ANGLE ON ONE LONG SIDE
  - 1x2, ~ 20" – 2 (furring strip or part of 2x4, ripped to 3/4") – 15 DEGREE ANGLE ON ONE END, 45 DEGREE ANGLE ON THE OTHER
- Need larger roof piece – 16 ¾" x 3 ½" - 4"
- Additional screws