

2020 UPDATED FISHER DEN BOX DESIGN DRAWINGS

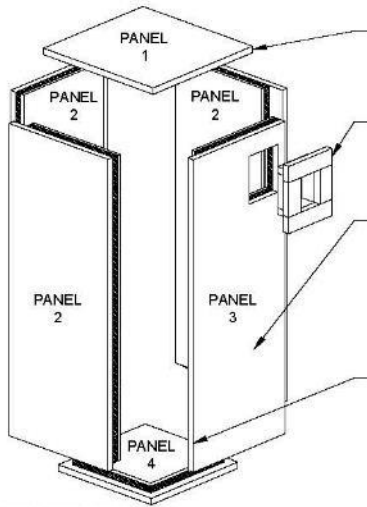


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The attached drawings are a redesign on the previous 2016 version with the 2018 addendum¹ that decreases the boxes weight by 20%, has a lower material cost, and provides a more secure system of fastening the den box to the tree.

¹ Davis, L. 2016. Fisher (*Pekania pennanti*) artificial reproductive den box study; with 2018 addendum. Unpublished report prepared for Fish and Wildlife Compensation Program and the Habitat Conservation Trust Foundation.



PANEL 1:
2 LAYERS $\frac{3}{4}$ " PLYWOOD. FASTEN LAYERS TOGETHER WITH $1\frac{1}{2}$ " SCREWS @6" O.C. SPACING. OVER HANG ON LOW SIDE

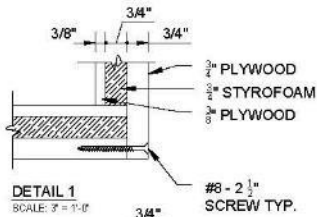
REPLACEABLE MOULDING AND DOOR JAMB

PANEL 2 THROUGH 4:
1 LAYER $\frac{3}{4}$ " PLYWOOD
1 LAYER $\frac{3}{4}$ " EXPANDED STYROFOAM INSULATION
1 LAYER $\frac{3}{4}$ " PLYWOOD

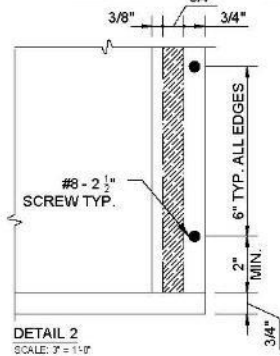
LAMINATE THROUGH ALL LAYERS WITH $1\frac{1}{2}$ " SCREWS @6" O.C. SPACING. MIN 1" EDGE DISTANCE

FASTEN ALL PERPENDICULAR EDGES WITH #8 X $2\frac{1}{2}$ " DECK SCREWS @6" O.C. STAGGERED (SEE DETAIL 02)

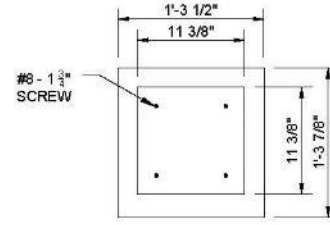
EXPLODED VIEW
SCALE: NTS



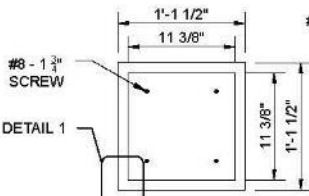
DETAIL 1
SCALE: 3" = 1'-0"



DETAIL 2
SCALE: 3" = 1'-0"



PANEL 1
SCALE: 1" = 1'-0"

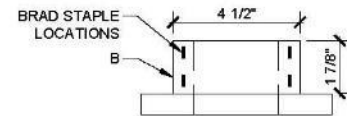


PANEL 4
SCALE: 1" = 1'-0"

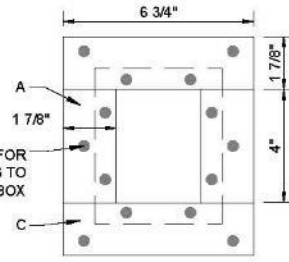
CUT ROOF SLOPE AFTER SIDES ARE ASSEMBLED.
#8 - $1\frac{3}{8}$ " SCREW FOR INTERIOR OF PANELS



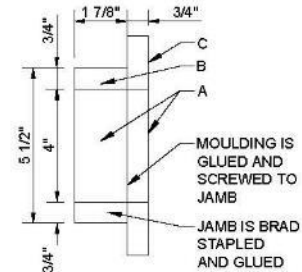
PANEL 2
SCALE: 1" = 1'-0"



REPLACEABLE MOULDING / JAMB - TOP VIEW
SCALE: 3" = 1'-0"



REPLACEABLE MOULDING / JAMB - FRONT VIEW
SCALE: 3" = 1'-0"



REPLACEABLE MOULDING / JAMB - SIDE VIEW
SCALE: 3" = 1'-0"

NOTE:
MOULDING IS GLUED TO THE JAMB BUT NOT TO THE BOX.

Construction Notes:

- Use Deck screws on all panels
- Assemble the 4 side panels (panels 2&3) with foam cores. Keep screws at least 2" from the top and bottom of the panels.
- Use carpenters glue and $2\frac{1}{2}$ " screws to fasten the four sides of the box together.
- The top of the box is cut approximately 5 degree slope to shed water. One way to do this is to measure down $\frac{1}{2}$ " at the high side and $1\frac{5}{8}$ " on the low side (e.g. away from the door) Draw a line through these marks and cut the sides with the circular saw. Then angle the saw blade at 5 degrees and cut across the front and back to meet the side cuts.
- Assemble the bottom (#4) panel which is designed to sit inside the side panels. Fasten with $2\frac{1}{2}$ " screws.
- Cut the entrance hole. Use a $\frac{3}{4}$ " wood bit to make each corner of the door hole and finish with a jig saw.
- Make top panel (#1) which can be fastened in place with $4 - 1\frac{3}{8}$ " screws.
- Put approximately 6" wood shavings in bottom for insulation.
- Use a water based stain to help preserve the box.

Replaceable Door Moulding and Jamb assembly instructions.

- Pre-drill all holes with $\frac{1}{8}$ " bit and counter sink with $\frac{1}{8}$ " bit.
- Assemble jamb using $1\frac{1}{4}$ " brad staples and glue
- Add door moulding using $1\frac{3}{4}$ " screws. Inner 8 holes are for attaching moulding to jamb.
- Outer 6 holes are for attaching jamb and moulding to the den box.

Material List:

- 1 - Sheet $\frac{3}{4}$ " plywood
- 1 - Sheet $\frac{3}{8}$ " Plywood
- 58 - $1\frac{3}{8}$ " Screws
- 29 - $2\frac{1}{2}$ " Screws
- 4 - $1\frac{1}{4}$ " Screws
- Door moulding and jamb assembly
- 4 - (A) $4\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{4}$ "
- 2 - (B) $4\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{4}$ "
- 2 - (C) $6\frac{3}{4}$ " x $1\frac{1}{2}$ " x $\frac{3}{4}$ "

PREPARED FOR:				
Davis Environmental Ltd.				
TITLE: FISHER DEN BOX				
SCALE: AS SHOWN	DATE: 1/7/2020	ISSUED: JS	DESIGNED: N/A	PAGE: 1
PROJECT NO.	DRAWING NO.	REVISION	1	OF 1



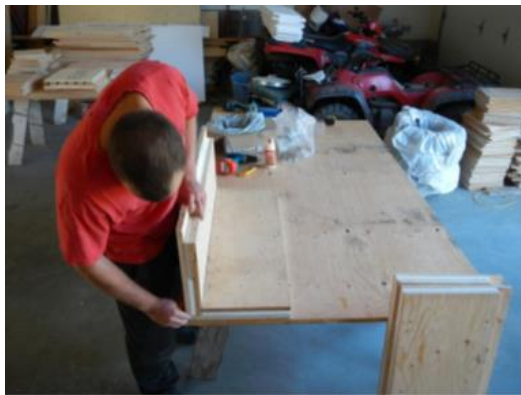
Assemble panels



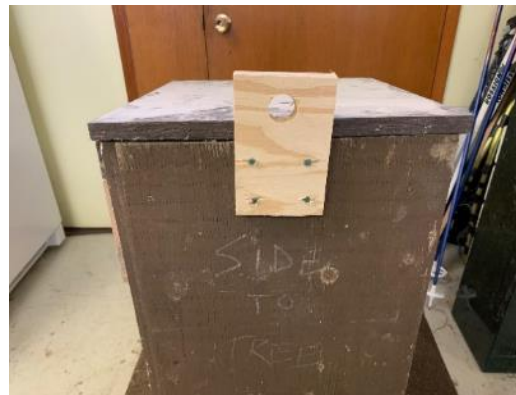
Cutting entrance hole



Attaching access branch between tree and box



Screw panels together



Attach lifting plate to back top of box



Cut sloped roof



Attach 4' - 2x2" batons to box

Den box installation notes:

- Use 4 - 2.5" deck screws to attach 4x6" lifting plate with 1" hole to back top of box.
- Attach 2 - 4' 2x2" batons to tree side of box with 5 2.5" deck screws on each baton. Batons should be spaced to prevent box rocking on tree.
- Attach ratchet strap at ~12ft on tree with carabiner and pulley to use when lifting the box into position.
- Use bowline knot to tie rope to box and thread rope through pulley.
- Pull box up to ~10.5' on tree and fasten rope securely to adjacent tree.
- Use second ratchet strap to pull box tightly against tree.
- Lag bolt box to tree using 4 - 6" galvanized lag bolts and washers attached 2" from either end of batons. Do not overly tighten.
- Attach a ~3" diameter branch between the tree and just below the entrance using 4" screws to aid fisher entering the box. This is not required where there is an existing branch on the tree near the entrance.
- Attach a scent string to the center of the bottom of the box using a 1.5" screw. Add lure to the scent string to attract fishers.