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Bill Krier
Editor
WOOD® magazine

Adobe Acrobat Troubleshooting Guide

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LUMBER STORAGE RACK

Looking for versatility in a lumber storage rack? This one's got it! Our rack features adjustable supports that attach to vertical 2×4s for holding loads of boards. The unique sheet-goods bin lets you easily sort through heavy sheets and slide out the one you want. There's even between-the-studs storage for short stock and dowels.

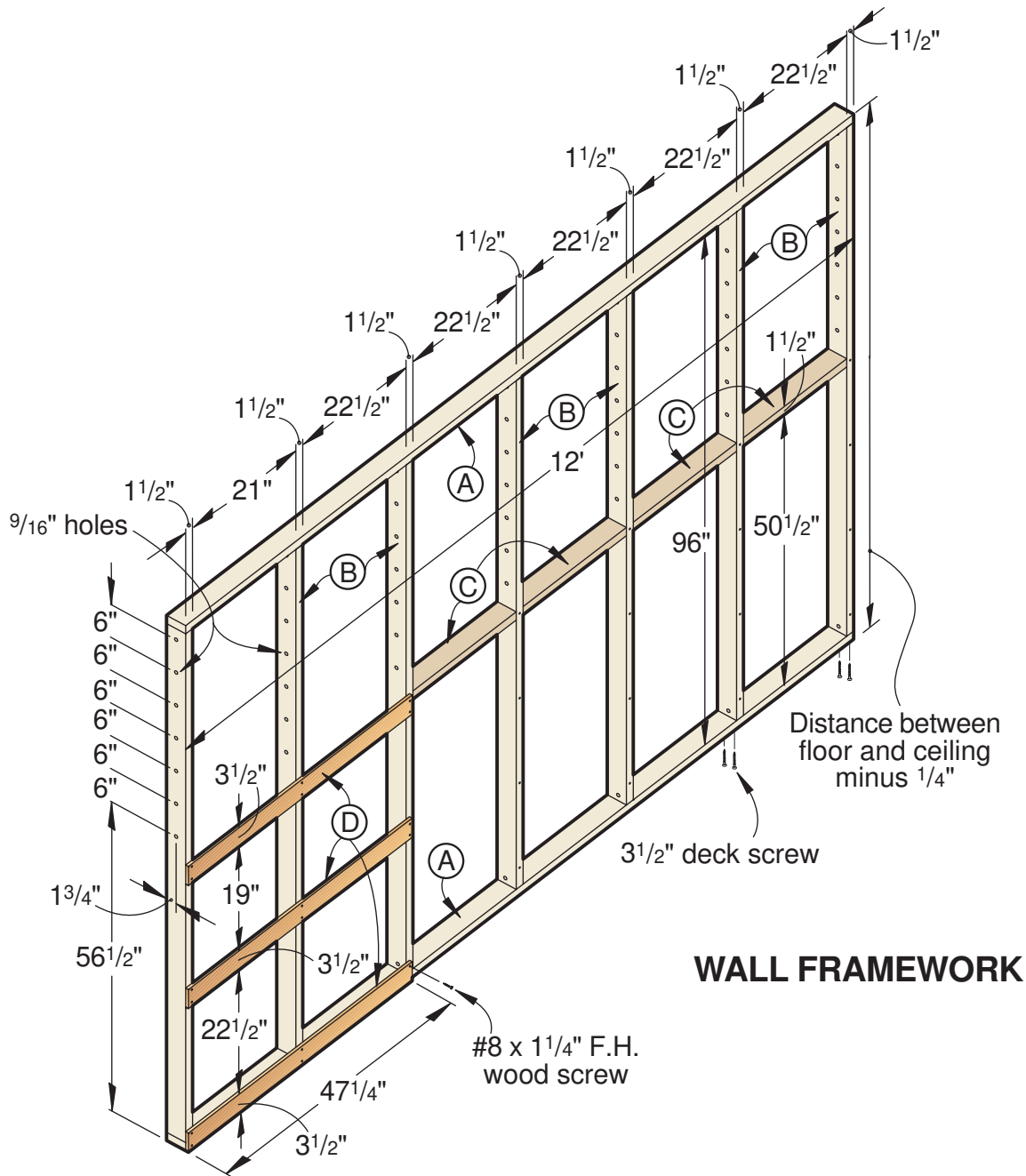
Let's start with the wall framework

Note: We built our rack to fit against an existing drywalled wall. If you have an exposed stud wall and would like to use it, skip this section and build only the storage rack components covered in the later sections.

1 Measure the distance between your floor and ceiling. The overall height of the rack should be $\frac{1}{4}$ " less than the measured distance.

2 From 2x4 stock, crosscut the top and bottom plates (A), uprights (B), and spacers (C) to length. Lay out the holes for the board supports on the uprights (B), where dimensioned on the Wall Framework drawing below. Bore the $\frac{9}{16}$ " holes. **3** Position the pieces on the floor, and screw the framework together in the configuration shown on the Wall Framework drawing. Square the uprights with the bottom plate.

Caution: Considering the amount of weight this unit can hold, you must securely anchor the framework to wall studs and ceiling joists. If the joists run perpendicular to the top plate, screw through the top plate and directly into them. If the joists are parallel to the top plate, install 2x4 blocking between the joists, and screw the top plate to the blocking.



WALL FRAMEWORK

4 With a helper, lift the wall framework into position. Shim the top plate against the ceiling, and firmly secure the top plate to the joists in your shop's ceiling. (We used 1/4" lag screws 3 1/2" long.) If you can hit wall studs, drill 2"-deep counterbored holes through the uprights (B) or spacers (C), and use 3"-long screws to further secure the framework.

5 Secure the bottom plate to your floor. (We drilled holes in the concrete, and used plastic concrete anchors and lag screws; masonry screws also would work.)

6 From 3/4" plywood or 1x4s, cut the short-stock bin stops (D) to size, and screw them in place.

Now, let's build the board supports

1 Referring to the Board Support drawing on page 4, cut 21 center sections (E) and 42 plywood side pieces (F) to size.

2 Spread an even coat of glue on both faces of each center section (E), and clamp it between two of the side pieces (F), with the top edges and outside end flush.

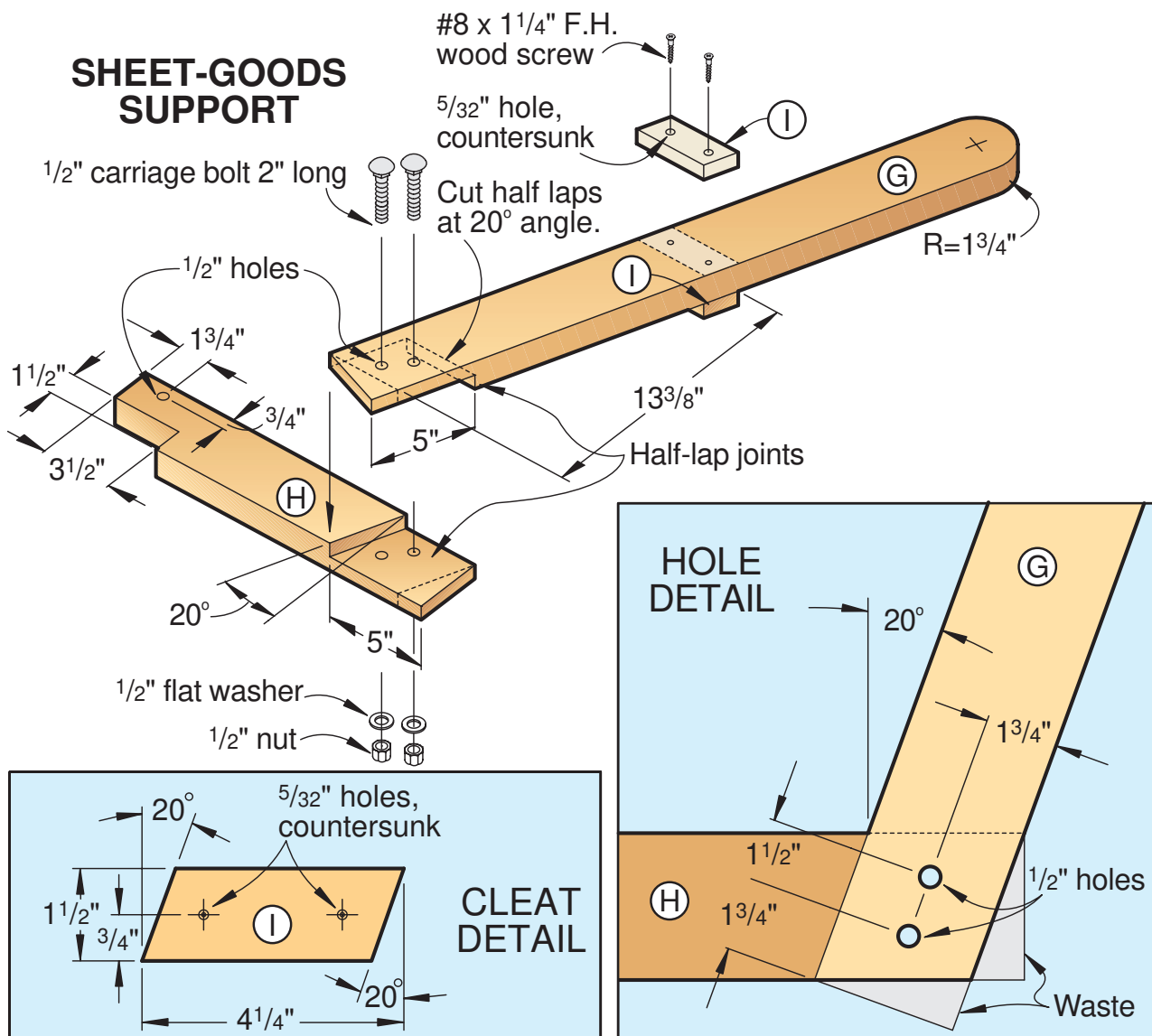
3 After the glue dries, transfer the profile of one of the supports onto one of the laminations. Bandsaw the support to shape, and sand the cut edges smooth to remove the saw marks. Then, use this as a template to mark the profile onto the rest of the supports. Cut and sand them to shape.

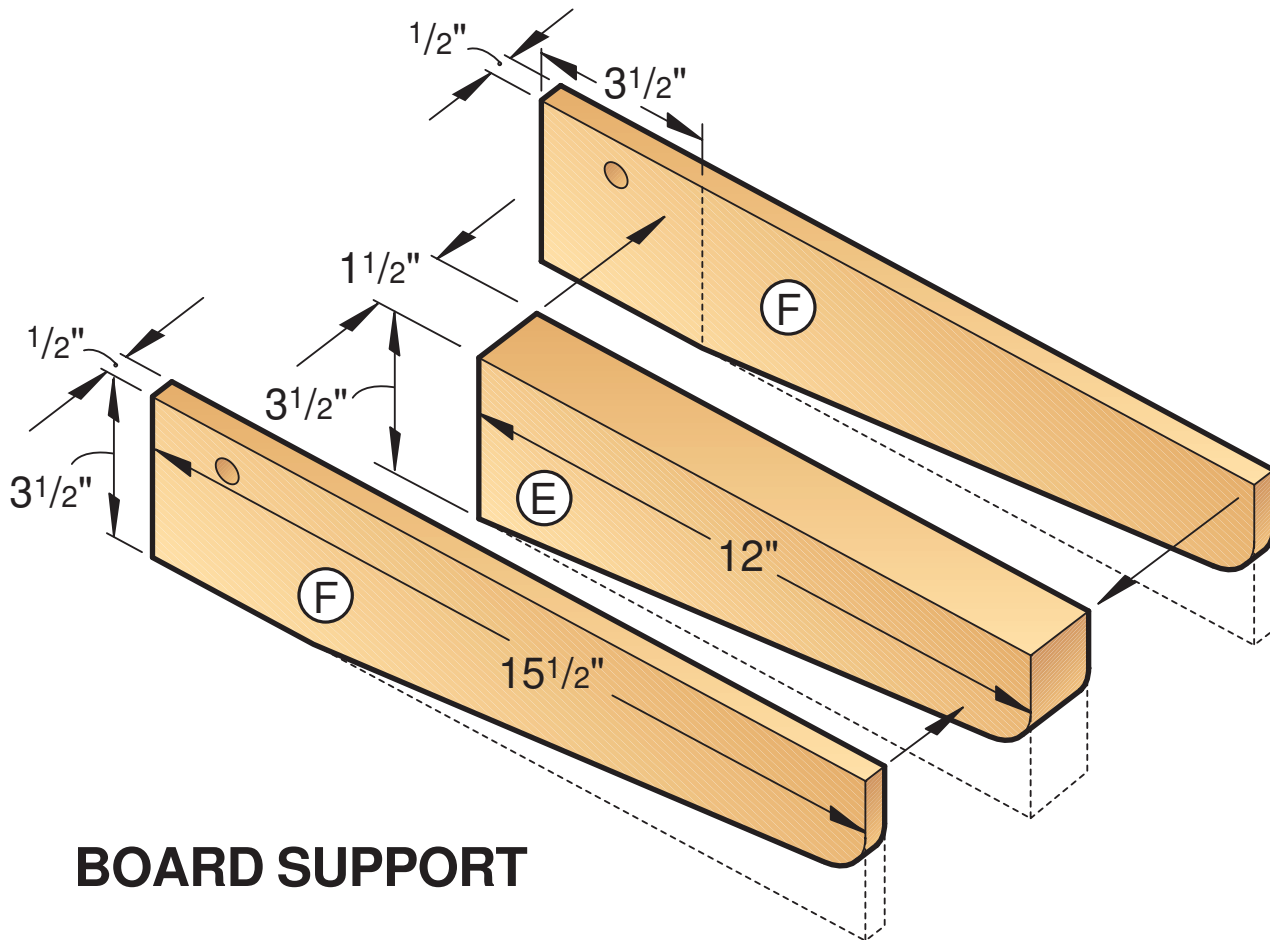
The sheet-goods bin comes next

1 Using the Sheet-Goods Support drawing and accompanying details below, cut the angled supports (G), floor supports (H), and cleats (I) to size. Cut 20° half-lap joints in the H and I pieces, where shown on the drawing. Referring to the Cleat detail, miter the ends of the step cleats (I) at 20°.

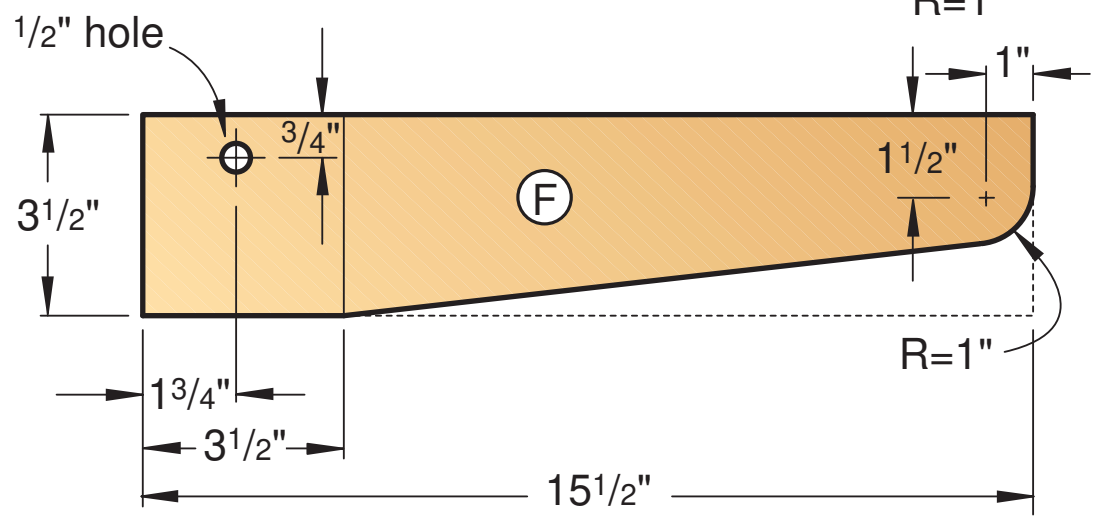
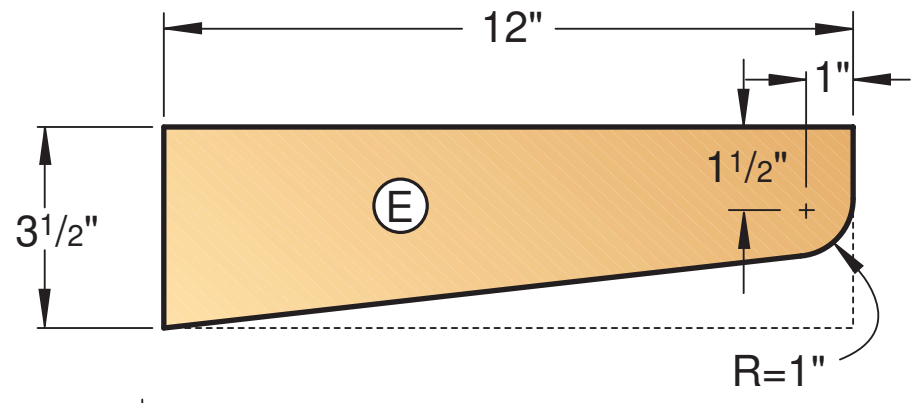
2 Cut a 1 1/2 x 3 1/2" notch in the back of each floor support (H), where shown on the drawing.

3 Glue and clamp the supports together. After the glue dries, cut off the waste areas, where shown on the Hole detail on below.





BOARD SUPPORT



4 Mark the centerpoints, and drill a pair of $\frac{1}{2}$ " holes in each glued half lap and a single $\frac{1}{2}$ " hole above each notch. To strengthen the joints, add a pair of carriage bolts with flat washers and nuts to each half-lap joint.

5 Drill the mounting holes, and glue and screw the stop cleats to the angled supports (G).

6 Clamp the support assemblies (G, H, I) to the uprights (B), where shown on the Exploded View drawing and accompanying Support detail, on *page 6*. Using the previously drilled holes above the notches in H as guides, drill the holes through the uprights. Install carriage bolts to secure the support assemblies to the 2x4 uprights.

7 From 2x4 and 2x6 stock, cut the floor spacers (J, K) and steps (L, M) to length. Drill mounting holes (some need to be angled), and glue and screw the pieces in place. Position each step (L, M), so the back edge won't protrude into the plywood bin and possibly damage any stored sheet goods when pressed against the angled supports.

8 Cut the bin floor (N) and the floor cleat (O) to size. Position the pieces, drill mounting holes, where shown on the Exploded View drawing, and attach them to the floor supports (H). To make the sheet goods slide in and out even easier, rub the bin floor with paraffin wax.

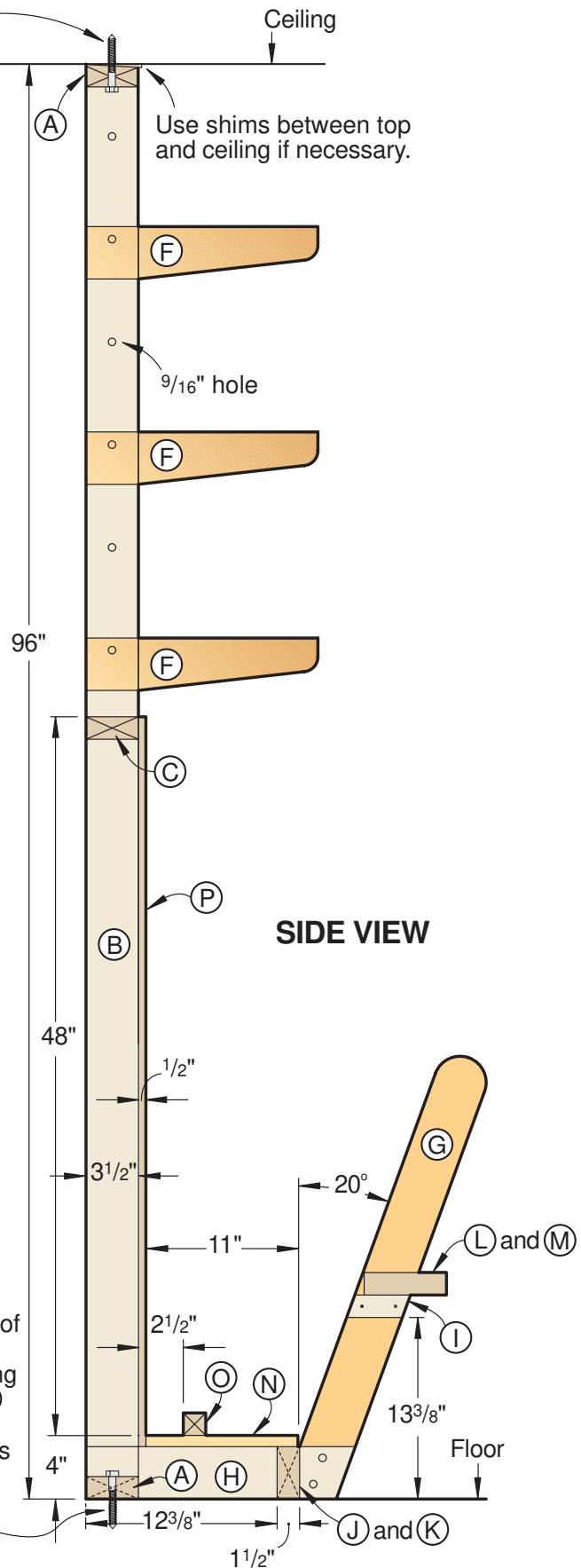
9 Lay out and drill pilot holes on the bin back (P), and attach with wood screws.

10 Using $\frac{1}{2}$ " carriage bolts 3" long with washers and nuts, hang the board supports (E, F) at desired heights on the uprights (B).

Fasten top of lumber rack to ceiling by screwing top plate (B) into ceiling with $\frac{1}{4}$ " lag screws $3\frac{1}{2}$ " long.

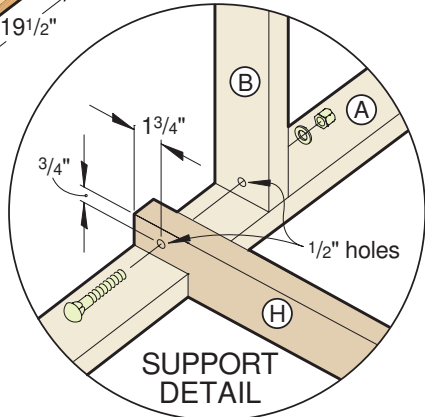
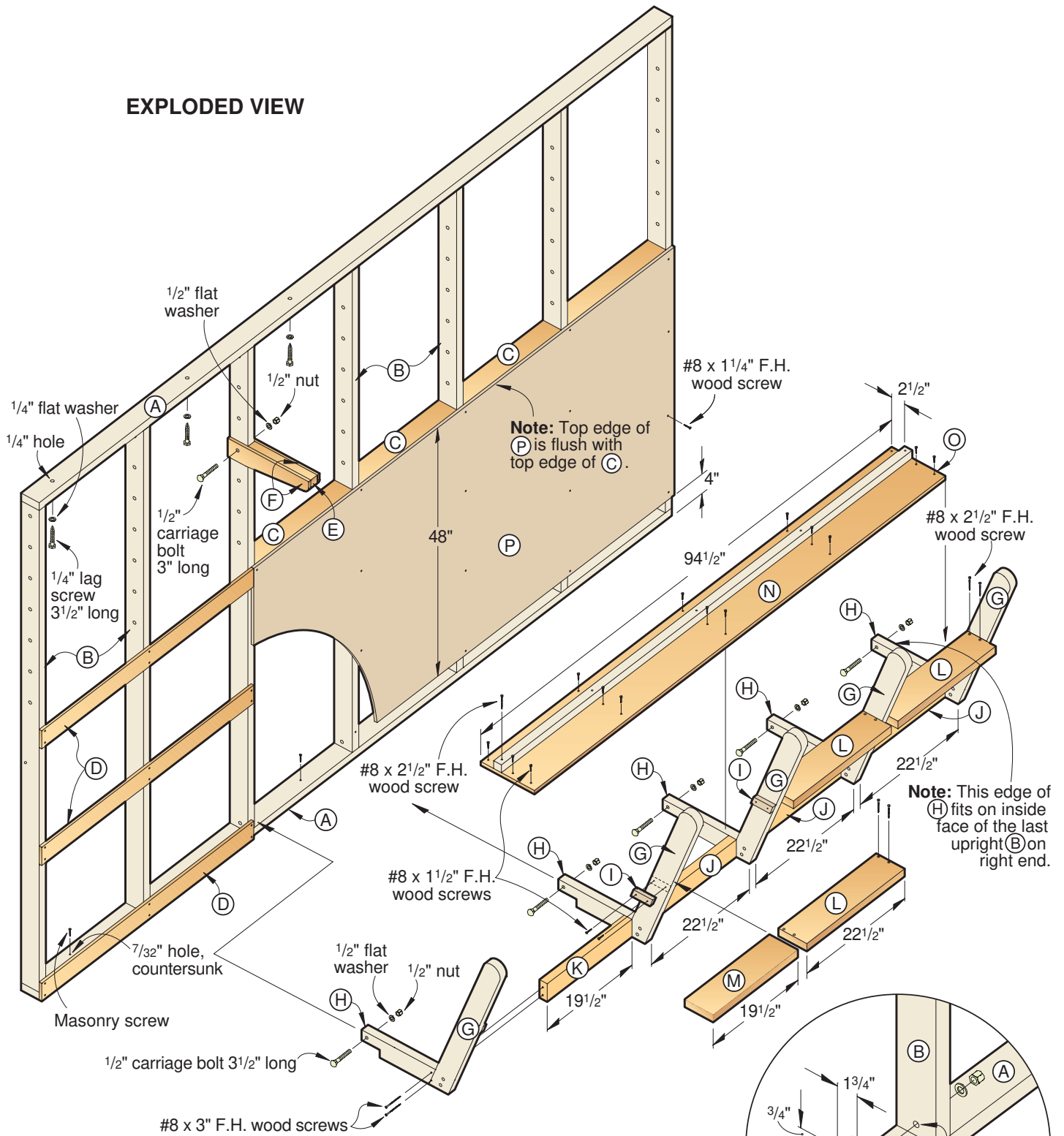
Use shims between top and ceiling if necessary.

Secure bottom of lumber rack to floor by screwing bottom plate (A) to floor with masonry screws or concrete anchors and lag screws.



Produced by Marlen Kemmet
 Project Design: James R. Downing
 Graphic Design: Lorna Johnson
 Illustrations: Kim Downing
 Photograph: Wm. Hopkins
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EXPLODED VIEW



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Bill of Materials

Part	Finished Size			Mati.	Qty.	Part	Finished Size			Mati.	Qty.
	T	W	L				T	W	L		
WALL FRAMEWORK						SHEET-GOODS BIN					
A top & btm plates	1 1/2"	3 1/2"	12'	C	2	G angled supports	1 1/2"	3 1/2"	32"	C	5
B* uprights	1 1/2"	3 1/2"	93"	C	7	H floor supports	1 1/2"	3 1/2"	18"	C	5
C spacers	1 1/2"	3 1/2"	22 1/2"	C	4	I cleats	3/4"	1 1/2"	4 1/4"	C	8
D stops	1/2"	3 1/2"	47 1/4"	PLY	3	J spacers	1 1/2"	3 1/2"	22 1/2"	C	3
BOARD SUPPORTS						K spacer	1 1/2"	3 1/2"	19ft	C	1
E centers	1 1/2"	3 1/2"	12"	C	21	L steps	1 1/2"	5 1/2"	22 1/2"	C	3
F sides	1/2"	3 1/2"	15 1/2"	PLY	42	M step	1 1/2"	5 1/2"	19 1/2"	C	1
Supplies: 3 1/2" deck screws, #8x1 1/4" flathead wood screws, #8x1 1/2" flathead wood screws, #8x2 1/2" flathead wood screws, #8x3" flathead wood screws, 1/4" lag screws 3 1/2" long with flat washers and nuts, 1/2" carriage bolts 2" long with flat washers and nuts, 1/2" carriage bolts 3" long with flat washers and nuts, 1/2" carriage bolts 3 1/2" long with flat washers and nuts, paraffin wax, masonry screws.						N floor	1/2"	11"	94 1/2"	PLY	1
						O cleat	1 1/2"	1 1/2"	94 1/2"	C	1
						P back	1/2"	48"	96"	PLY	1
						*Length will depend on distance from floor to ceiling at chosen rack location. Materials Key: C—choice (fir, pine, spruce). PLY—plywood.					

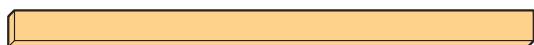
CUTTING DIAGRAM



1 1/2 x 3 1/2" x 12' Fir (2x4s for (A)) (2 needed)



1 1/2 x 3 1/2 x 96" Fir
(2x4s for (B), (C), (E), (G), (H), (I), (J), (K), and (O)) (17 needed)



1 1/2 x 5 1/2 x 96" Fir (2x6s for (L) and (M))



1/2 x 48 x 96" Plywood
(for (D), (F), (N), and (P)) (2 needed)

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