



THE Fastener Center

MADE IN U.S.A.

1.5' STANLEY

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1700

STANLEY No. 5500C MADE IN U.S.A.

Chapter Two

Benchwork

While you don't need to be an expert carpenter to build a well-constructed train board, some basic woodworking skills and tools are necessary to do the job right. You will need a tape measure, a 7-inch circular saw with a new blade, a drill, a Phillips-head screwdriver tip, a ½- to 1-inch wood drill bit, a carpenter's square, a hammer, a sanding block with 150-grit paper, a level, two wood clamps, a box of 3-inch deck screws, a pencil, and most important, safety glasses. If you do not have a circular saw, a drill, a level, or wood clamps, you can usually rent them for a nominal fee for a day. With these essential tools, you can build just about anything.

Wood supplies are pretty straightforward. To build the layout pictured in this book, you will need one 4 x 8-foot sheet of either 1/2-inch or 5/8-inch B/C grade plywood, a 15-inch-wide x 45-inch-long sheet of 12-inch B/C grade plywood for the control surface, and ten to twelve 2 x 4s, 8 feet long. The B/C grade means that the plywood has one side that is semi-finished and smooth. The 2 x 4s, which come in 8-foot lengths, will form the framing for the plywood as well as the legs. The best way to cut the smaller sheet of plywood for the control board is to have it done right there in the store.

When you go to your local building and wood supply store, check your wood selections carefully. Sweep your hands across the smooth plywood face to be sure there are no rough spots, cracks, splits, or bumps. The edges should be square and undamaged, and the plywood sheet should not be bowed or warped.

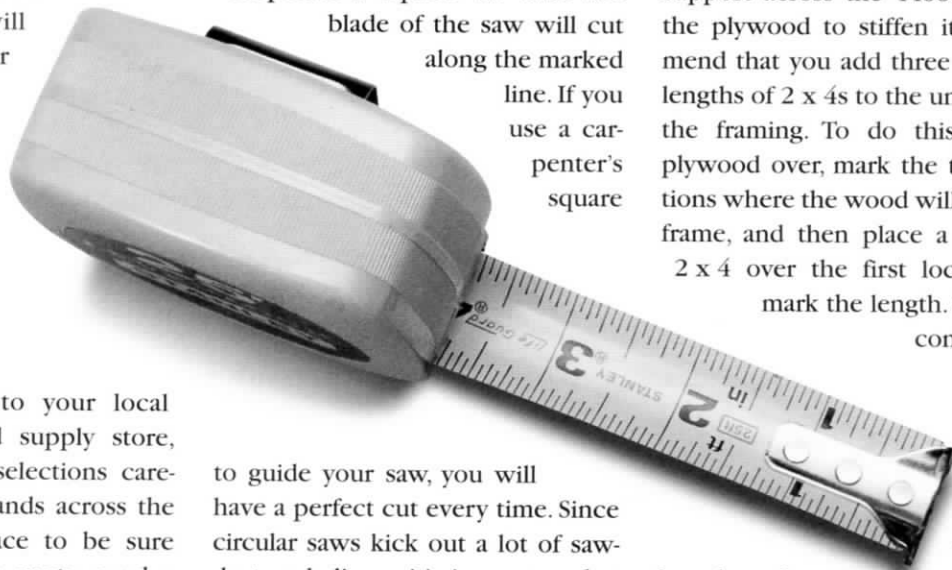
When selecting the 2 x 4s, don't be surprised if you have to sort through several layers of wood before you find 10 or 12 good ones. Always check the 2 x 4 for splits, knot holes, and warps. Also check all four planes—front, back, top, and bottom—to ensure that each length of lumber is straight. The easiest way to do this is pull a length out of the pile, lay one end on the floor, and sight down its entire length as you rotate the wood. Once you have selected your wood and assembled your tools, you are ready to get started.

The easy way to measure the plywood framing lengths is to position the 2 x 4 beneath the plywood

and mark the lengths. Work on the 4-foot sides of the plywood first and be sure that one end of the 2 x 4 is butted up against the edge of the plywood.

When cutting the wood, prop up the end to be cut and use the carpenter's square as a guide for the circular saw. You may want to make several practice cuts. Then you'll get the feel of the saw as well as the placement and adjustment of the carpenter's square so that the blade of the saw will cut

along the marked line. If you use a carpenter's square



to guide your saw, you will have a perfect cut every time. Since circular saws kick out a lot of sawdust and slivers, it's important that you wear those safety glasses. After each cut run the sanding block across the cut edges to smooth them out.

Once you have cut both ends, secure them in place, making sure the smooth side of the plywood is facing you. I like to use 3-inch deck screws. The screws hold the wood together tighter and stronger, and if you decide to dismantle the board some day you just simply back out the screws. Nails do too much damage to the wood when you try to remove them.

Position both lengths beneath the plywood edges and then, using that time-and-wrist-saving Phillips-head screwdriver-equipped drill, carefully screw one piece in place. Then go on to the other side and screw the other 2 x 4 in place. Drive screws into both ends, about

an inch from the edge of the plywood, and then space more screws 6 to 8 inches apart. Once the ends are done, measure the lengths, which should be approximately 7 feet 9 inches long, and then secure these lengths to the plywood. To secure the ends of the 2 x 4s to each other, run two screws at each of the four ends into the wood. This will really stiffen the frame.

The next step is to add additional support across the 4-foot width of the plywood to stiffen it. I recommend that you add three additional lengths of 2 x 4s to the underside of the framing. To do this, flip the plywood over, mark the three locations where the wood will go on the frame, and then place a length of 2 x 4 over the first location and mark the length. Since the

control board (added later) is 45 inches long, the two outer additional lengths of framing also need to be this width apart because you will attach the framing of the control board to them. When you measure the three locations on the frame, be sure you start from the same end for the front and back locations. Cut these lengths one at a time, and secure them in place with two screws at each end.

Once all three lengths are in place, flip the plywood over again and mark the locations of the screws that hold these three lengths in place on the surface of the plywood. Use the edges of the level to run a line that connects the marked locations, and then add a few screws to each length. Be sure to measure the locations of the screws because you will need to mark them on the underside.

Again turn the plywood over, mark the locations of the screws on

the three interior frames so that the drill bit will not hit them, and then drill some holes into the three lengths of wood with your large-bore drill bit. To prevent the wood from splintering on the opposite side of where you are drilling, clamp an additional piece of wood to this surface. These holes will channel the electrical wires, help secure them, and also prevent them from dangling down.

Now you are ready to make and attach the legs. Cut eight equal lengths of 2 x 4s for the legs. A good length for legs is approximately 36 inches. This height is great for children between the ages of 6 and 9 because the height of the train board will be just about level with their eyes. This is also a good height for sitting on a stool at the control board. To ensure that all the legs are cut the same length, cut one length, mark it as the master, and then use it to mark the additional lengths so that all the leg lengths are the same.

Assemble the four legs by using several screws to attach two lengths together on an edge so that the leg forms an L. Be sure that the ends and edges are butted together. To make the screw assembly easier, place another length of wood under the other side so that the 2 x 4s form a box. Once the legs are assembled, position them one by one onto the inside ends of

the frame. Use a level to be sure they are straight, and then screw them in place. Between the legs (and on the 4-foot side of the train board) add a length of wood along the frame. This will provide a flush surface for the angled brace. To stiffen the legs, cut lengths of 2 x 4s at 45-degree angles using the carpenter's square and screw one into each leg and then into the frame. Each length should be about 24 to 30 inches long. One angle support for each leg usually does the trick.

Now you are ready for the last step, which is to add the control board. Cut two lengths of 2 x 4s approximately 36 inches long, and then cut six lengths 7 inches long. Mark 21 inches on each of the 36-inch lengths, and then position them onto the outer two underside frames of the train board so that the lengths of wood are stacked on top of one another and the marks line with the outer edge of the train board frame. There should be exactly 15 inches of wood sticking

out from the face of the train board frame, which is also the exact width of the piece of plywood that you had cut for the control board surface. Position the 7-inch lengths of wood onto the sides of the stacked 2 x 4s. You should have two on one side, one on the other.

Next, screw them into place, being sure to use four screws in each 7-inch length. Once this is done, complete the framing on the control board by adding the front and rear frame members. These should be 42 inches long.

Next, position the control board top and screw it into place. Once you decide where you want to position the transformer, accessory controls, and switch controls, you can drill access holes in the control board surface for the wires. Now you are ready for the last step, painting the train and control board surfaces. I recommend a medium- to dark-green paint, which will help blend the surface of the train board into the scenery that you will add later.



Tabletop and Framing

Having carefully selected the wood you'll need, begin by placing 2 x 4s under both sides to balance the plywood and to provide for an accurate mark. Also mark which 2 x 4 goes where, as sometimes plywood sheets can have slightly different dimensions.



After cutting (wearing safety glasses, of course) the 2 x 4s to your marked lengths, position the cut 2 x 4s under the 4-foot ends of the plywood and mark the locations for the screws.





Use 3-inch deck screws to secure the plywood to the frame. Start the deck screws by hammering them slightly into place.



Use a drill with a Phillips-head attachment to turn the screws into place. The end screws should be an inch or so from the ends, and the rest should be about 8 inches apart.

To cut and fit the longer sides of the frame, which should measure out close to 7 feet 9 inches, turn the plywood over, position the 2 x 4s, mark and cut the lengths, and then fit them in place. To secure the longer 2 x 4s in place, drive two screws through each end of the 2 x 4s, thus securing the frame together. Now you can flip the train board over again and add screws along the plywood surface to really secure the plywood to the frame.



To complete the frame, flip the train board over again and add three additional interior lengths. Be sure to mark the locations of these interior frame members on the ends of the outer frame so that you can transfer the marked locations to the plywood surface. Since the control board length is 45 inches, the distance between the outer faces of the two end frame members needs to be this distance.





Use a level to connect the marks for the interior frames along the surface of the plywood. Measure locations for the screws along the lines and then screw them into place. Now you will have a strong train board.



To facilitate and help hide the electrical wiring, drill holes in the interior frames using a large wood bit. To prevent the wood from splintering where the drill comes out, clamp an additional piece of wood on the back side of the frame where you plan to drill.

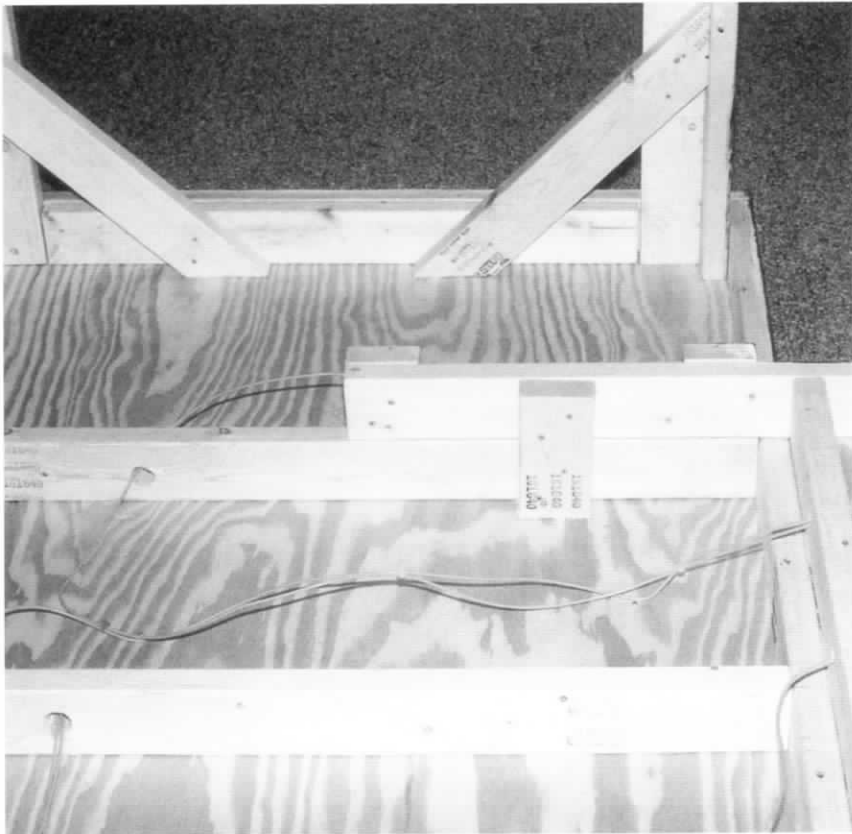
Legs and Control Panel

Here the first leg (assembled by securing together two 36-inch lengths of 2 x 4 at a 90-degree angle) is being positioned. Once the leg is perfectly perpendicular, screw it into place with 3-inch deck wood screws.



At this point angle braces, cut at 45-degree angles at both ends, have been added. This end is now done, and pretty soon it will be time to add the control board. Note that in order for the 45-degree braces to sit flush against the frame you have to add an additional length of wood to the back side of the frame.





Using the instructions in the introduction to the chapter, assemble the control panel and attach it to the table. Note how the control board frame is attached to the interior frame members with 7-inch lengths of 2 x 4. This is why I stated earlier that the interior frame members needed to be 45 inches apart.



The control panel and train board surfaces have been painted dark green, and we're now ready to lay out track and run some trains. The construction techniques used to build this train board are very simple, yet the board is so strong and stable that you can stand on it.