Technical Theatre Educator's Manual

Building Theatrical Platforms

Introduction

Platforms- a basic scenic element.

One of the most immediate needs in constructing any set is a place for actors to stand where they can be seen by the audience. Platforms meet this need by creating levels of playing spaces on the stage. Most theatres keep a stock of several platforms that can be used to create various levels by varying the height of the platform with the appropriate application of legs and braces.

Helpful Tips

The 4x8 Theater platform is probably the most ubiquitous piece of theatre scenery in the world. Versatile, sturdy, and almost infinitely reusable, no traditional theater space is without its own stock of platforms. Platforms are made out of a variety of materials, but all share a common construction of a frame covered by some type of top surface- often a 4' x 8' sheet of plywood.

The following guide is the best possible method for constructing this platform in a way that maximizes structural integrity and resilience and ensures long-term usage if properly cared for.

PRO TIP: Platforms are most often built as 4' x 8' units, since this is the standard size for plywood, however you may want to consider building and stocking other common sizes including 4' x 4' and 4' x 6' units.

Construction

Materials

- **1 - 4' x 8' sheet of medium to high grade ¾" plywood**

This grade of plywood is known as B/C or Sanded Ply. You do NOT need "cabinet grade" plywood for building platforms. If necessary, lower grade plywood can be covered with a layer of Masonite/hardboard, Lauan/Underlayment).

- **4 - 8' long pieces of 2x4 (*two by four*) (actual dimensions 1 ½"x3 ½")**

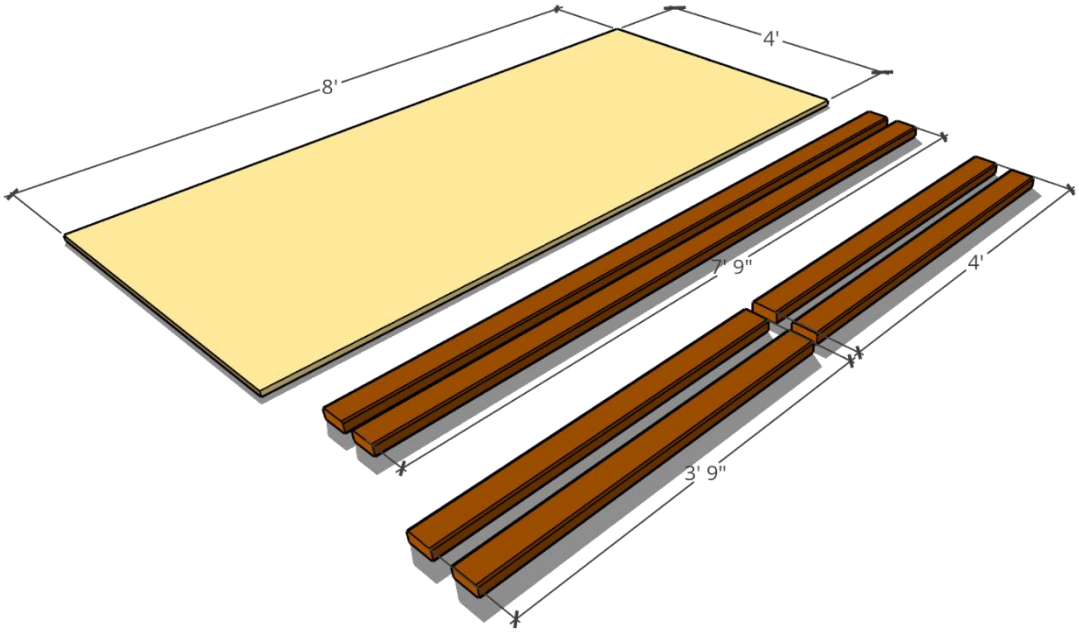
Tools

- Power drill
- 1/8" drill bit
- 20 - 3" wood or drywall screws
- 24 - 2" wood or drywall screws
- Wood glue
- Tape measure
- Miter or Circular saw capable of crosscutting at least 4"

Cut List

Cut the boards to the follow lengths:

- 2 @ 4’ - 0” (48”)
- 2 @ 3’ 9” (45”)
- 2 @ 7’ 9” (93”)



Note about cutting boards to length: When cutting you must account for the Kerf (width) of the saw blade you are using. For example, this means you cannot cut two 4’ lengths from an 8’ board, because one of the boards will wind up slightly shorter than 4’ long.
Instead, plan your cuts so that you have a little extra in each board after your cuts:

- Board 1: 4’ piece and a 3’ 9” piece (with about 3” piece as scrap).
- Board 2: 4’ piece and a 3’ 9” piece (with about 1 ¼” piece as scrap).
- Boards 3 and 4: Cut to 7’ 9”.

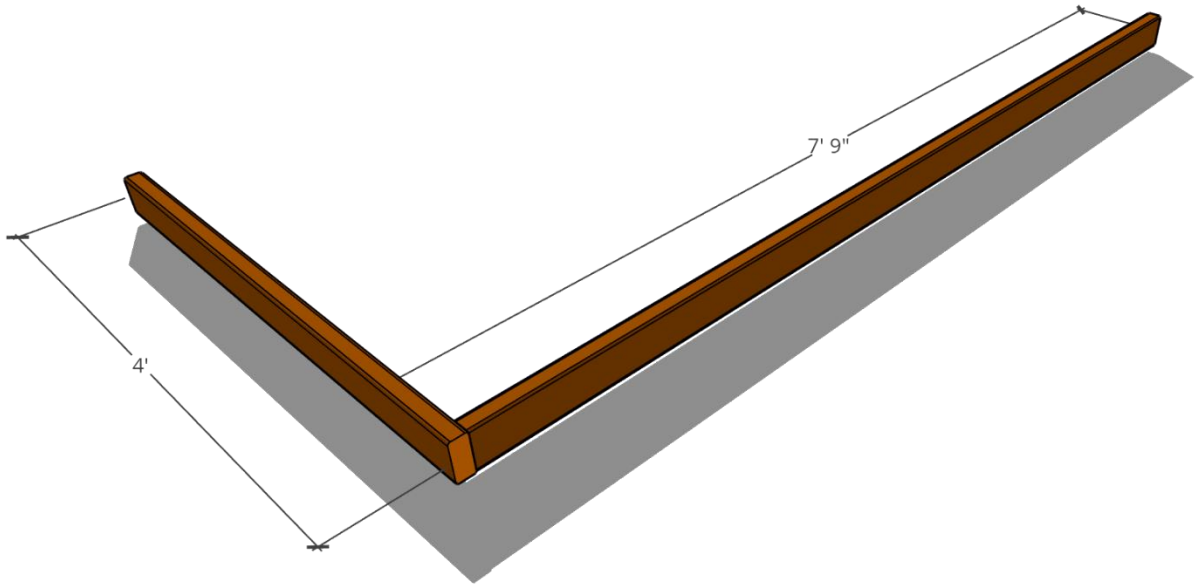
Clearly mark your 3’ 9” pieces and 4’ pieces so that you don’t accidentally get them mixed up during construction. Writing the dimensions on the side of the boards as you cut them is a great way to manage this.
Part names:

- Rail - The 4’ pieces, these will serve as the top and bottom “caps” for the frame.
- Stile - The two 7’ 9” pieces that will serve as the long sides of the frame.
- Toggle - The two 3’ 10 ½” pieces that will sit horizontally between the stiles.

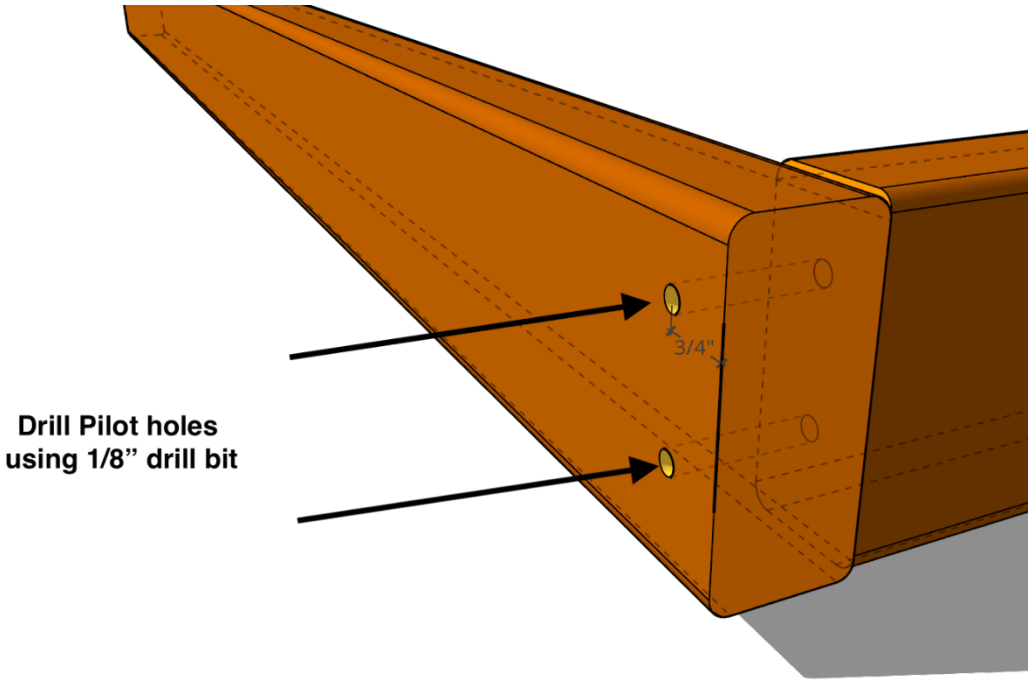
Assembly

Step-by-Step Instructions

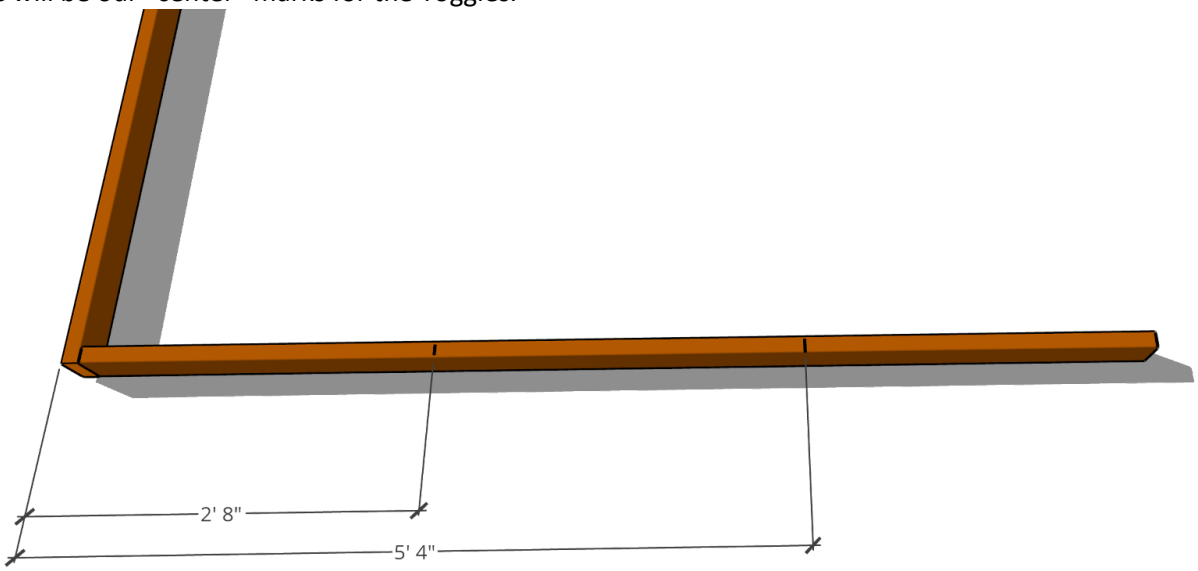
1. Lay out one Rail (4’) and one Stile (7’ 9”) “on edge” (narrow edge against the work surface) so that they form an L shape, with the end of the Stile sitting flush with the face of the Rail.



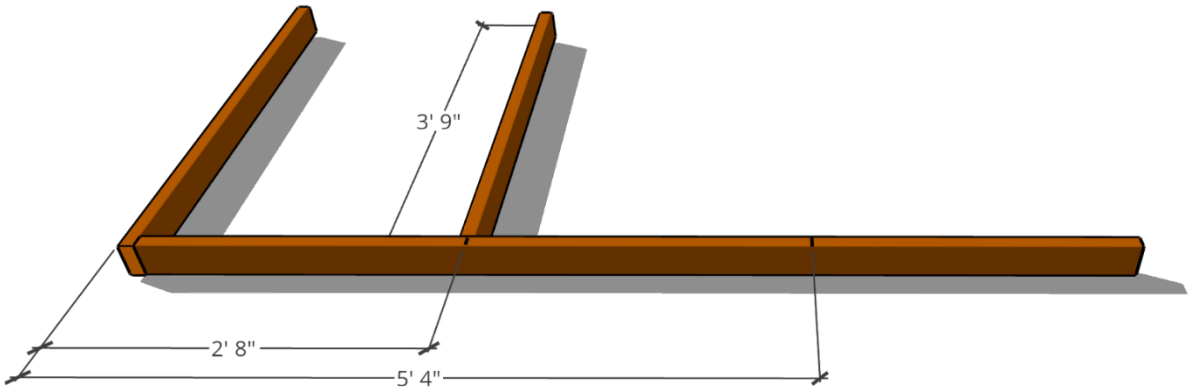
2. Apply glue to the end of the stile and press it into place against the rail. Ensure that the edges of the two boards are parallel and flush with each other. Using the ⅛” drill bit, drill two pilot holes through the Rail and into the end of Stile. Drive a 3” screw into each of the holes, tightening them until the two pieces of wood pull tight to each other.



3. Measure from the outside corner of the rail and make a mark at 2’ 8” (32”), and 5’ 4” (64”) on the top edge of the Stile. These will be our “center” marks for the Toggles.

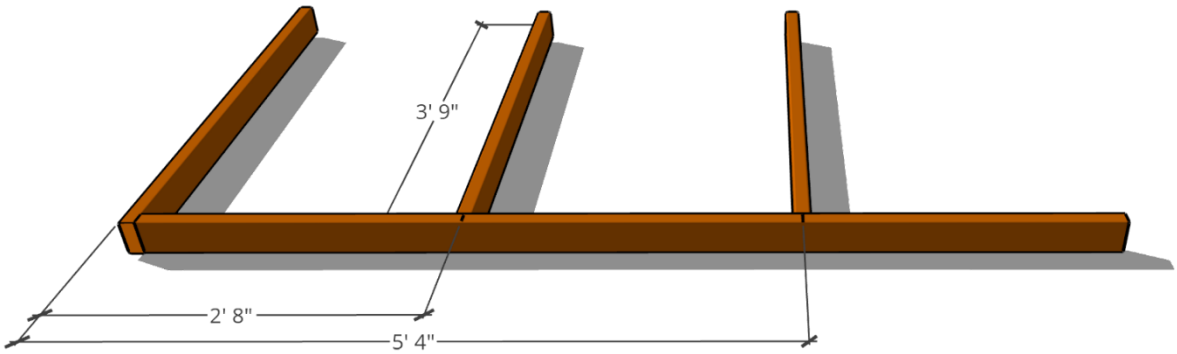


4. Starting at the 2’ 8” (32”) mark, place a Toggle (3’ 9”) on the “inside” of the Stile, so that it is centered on the mark you made.

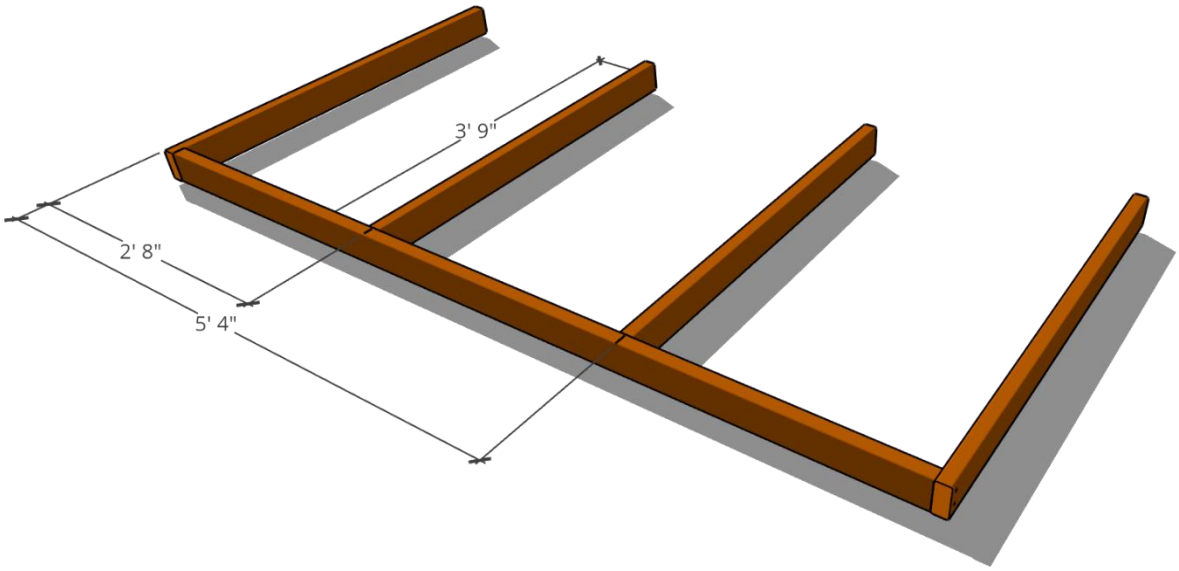


5 - Apply glue to the end of the Toggle and screw into place using the same method described in step 2.

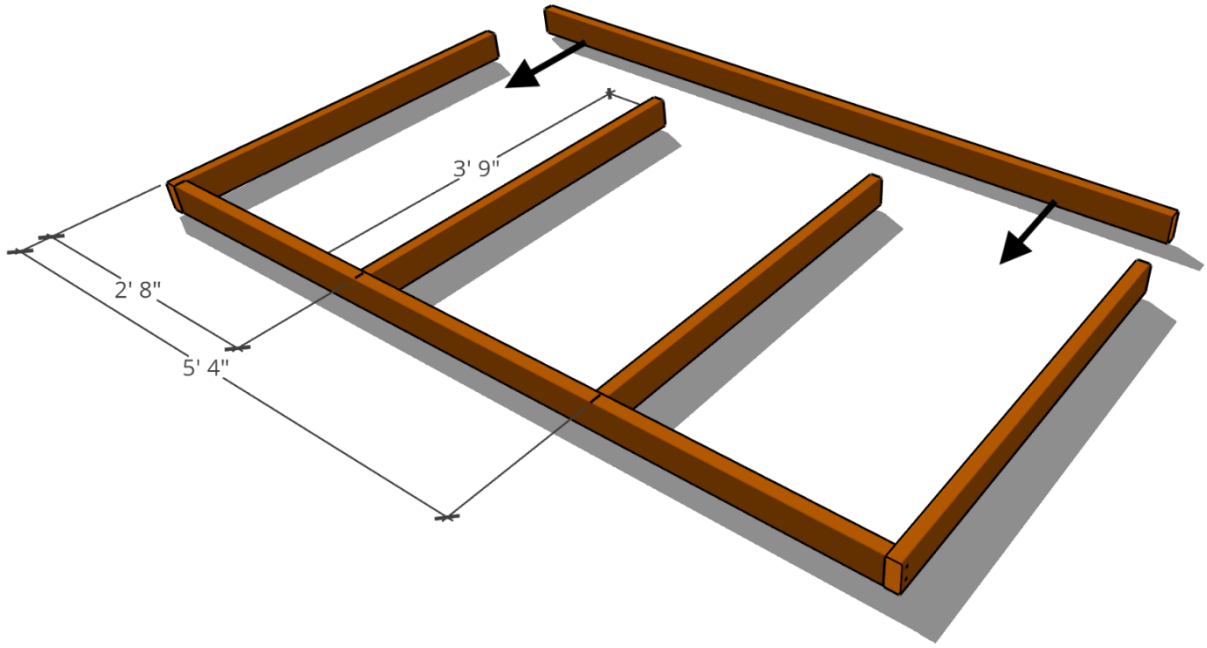
6 - Repeat step 5 on the 64” mark.



7. Place the second Rail at the exposed end of the Stile piece, and glue and screw it into place as you did with the first Rail in Steps 1 and 2.



8. Place the other Stile on the open side of the frame and make the same centering marks on the Stile as you did in Step 3.



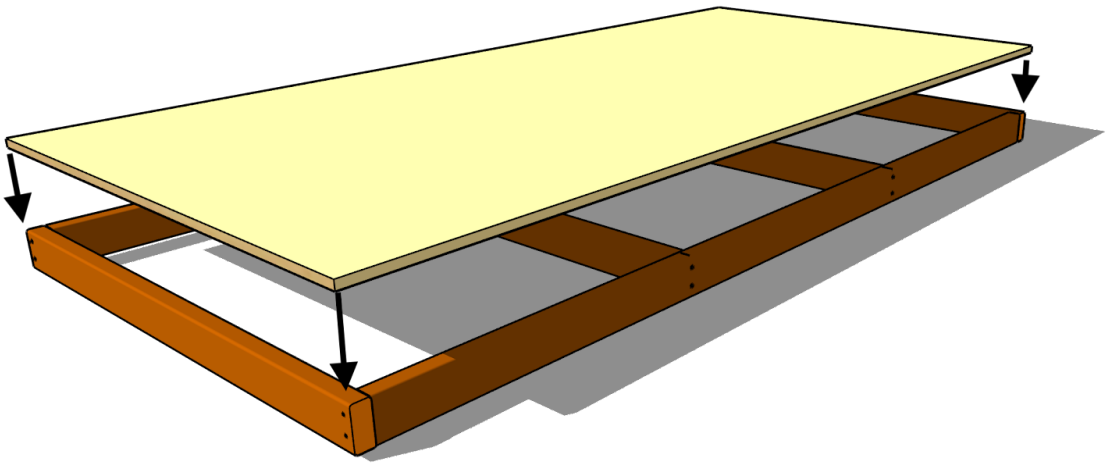
9. Remove the Stile and apply glue to the exposed ends of the toggles and to the ends of the Stile.

10. Fit the Stile into place, being careful not to smear the glue, and get the Toggles as close to centered on their marks as possible.

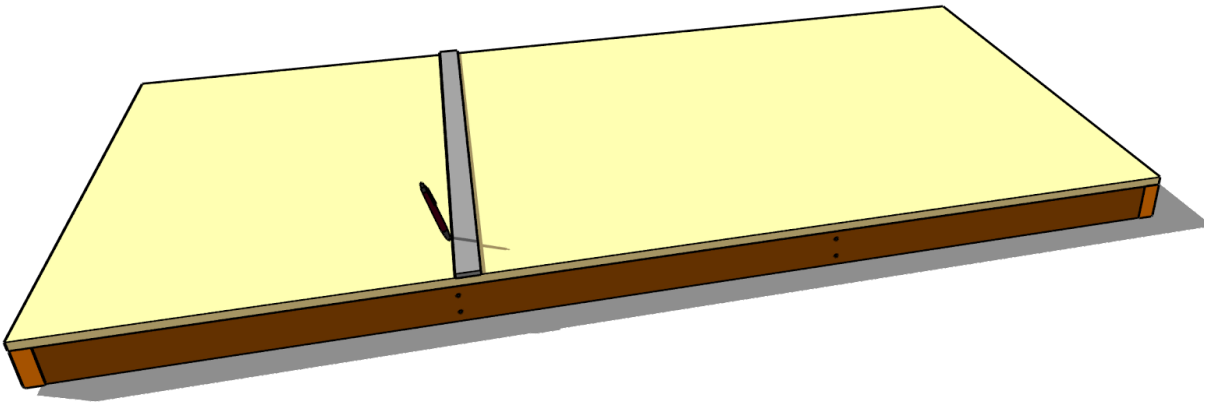
11. Starting at one end where the Stile meets a Rail, screw it into place, then work your way down the board, securing each Toggle in turn.

12. Screw the last corner where the Stile meets the other Rail.

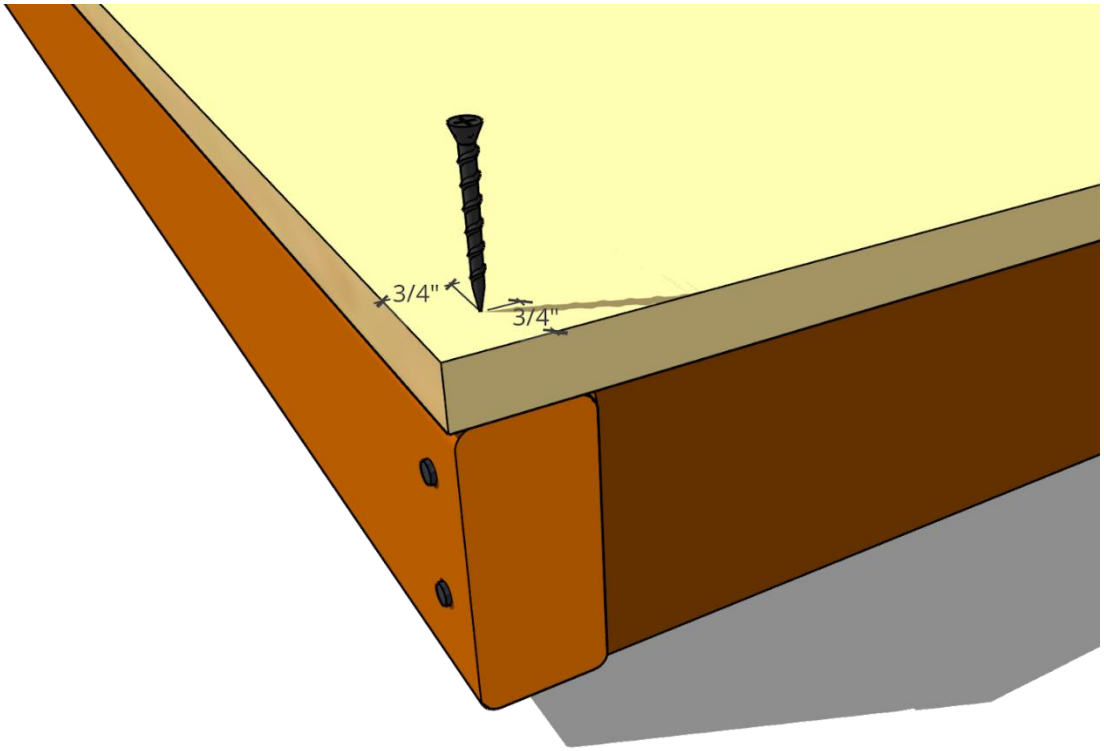
13. Place the sheet of ¾” plywood over the frame and pull the frame square to it if need be.



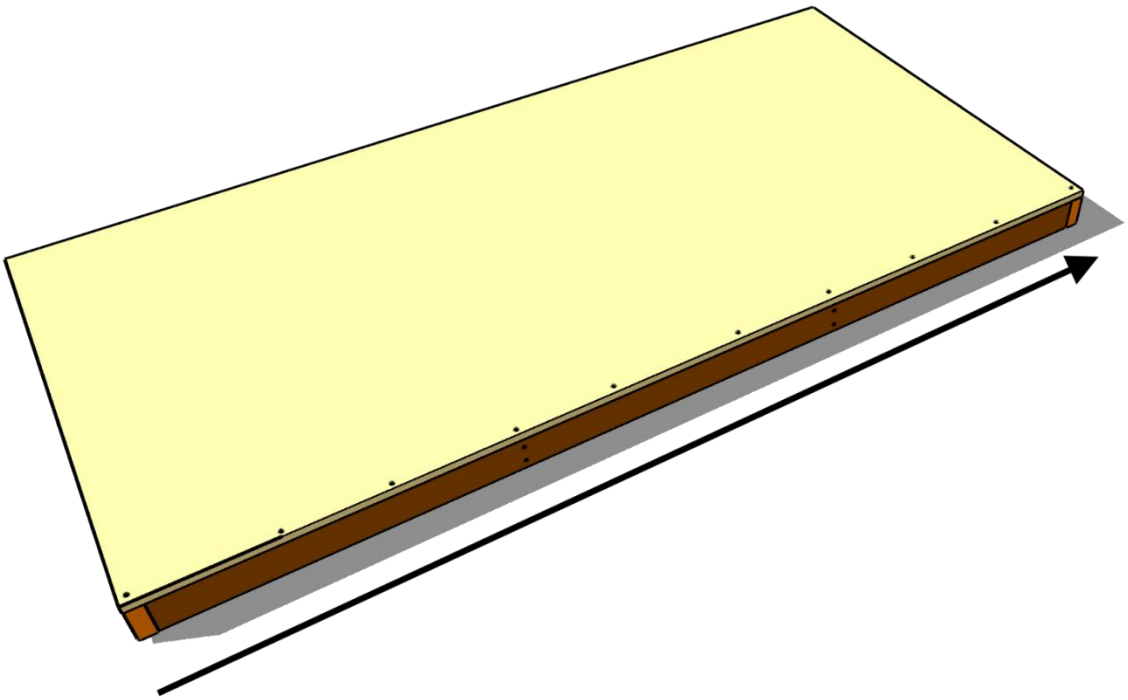
14. With a long straight edge and a pencil and using the visible screws along the stiles as your guides, draw lines across the face of the plywood to mark the center lines of the Toggles underneath. This will make it much easier to screw down through the face of the plywood into the Toggles later.



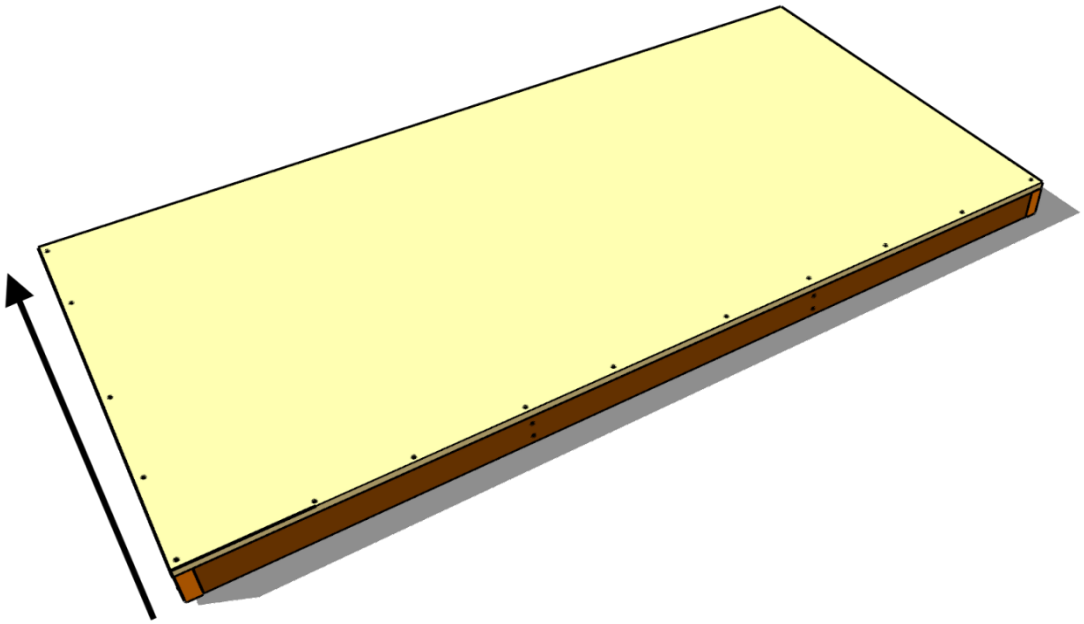
15. Beginning at one corner, make sure that the corner of the plywood and the frame underneath are squared up to each other. Don't worry too much about trying to get the whole frame squared up right away. Drive one 2" screw down through the plywood, driving it as close as possible to center on the frame (roughly ¾" from each edge). You do NOT need to pre-drill holes for these screws.



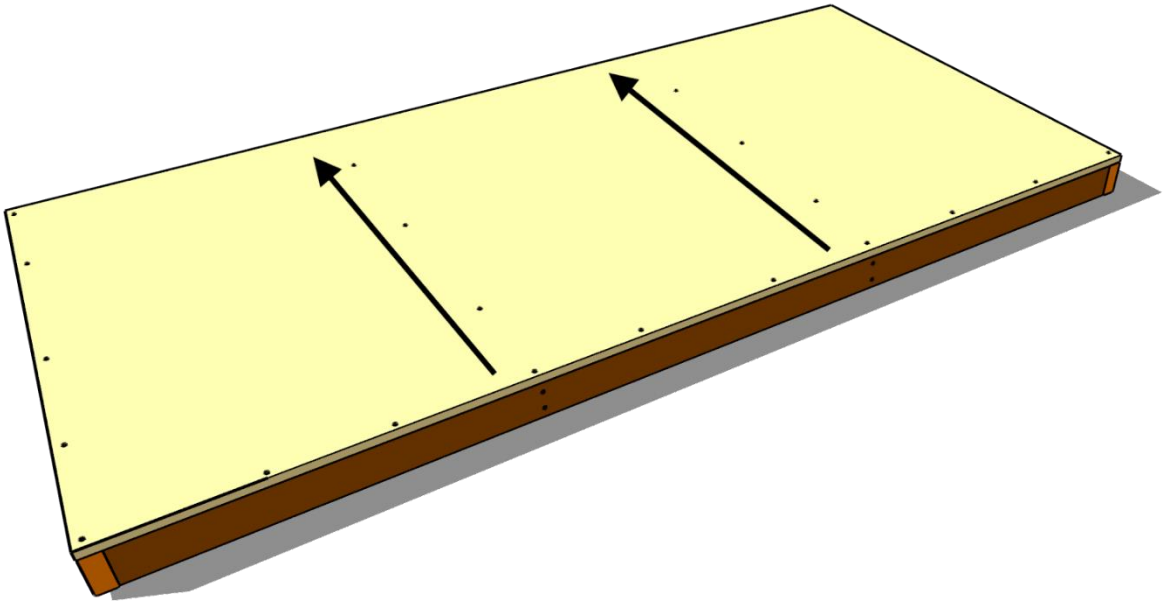
16. Working your way along the stile, place screws every 12" (You do not need to predrill these). Pay close attention to the plywood and the Stile as you do this, they should be flush at the point where you're screwing each time. You can easily shift the frame or the plywood back and forth slightly as you go to make sure that they are being joined as evenly as possible.



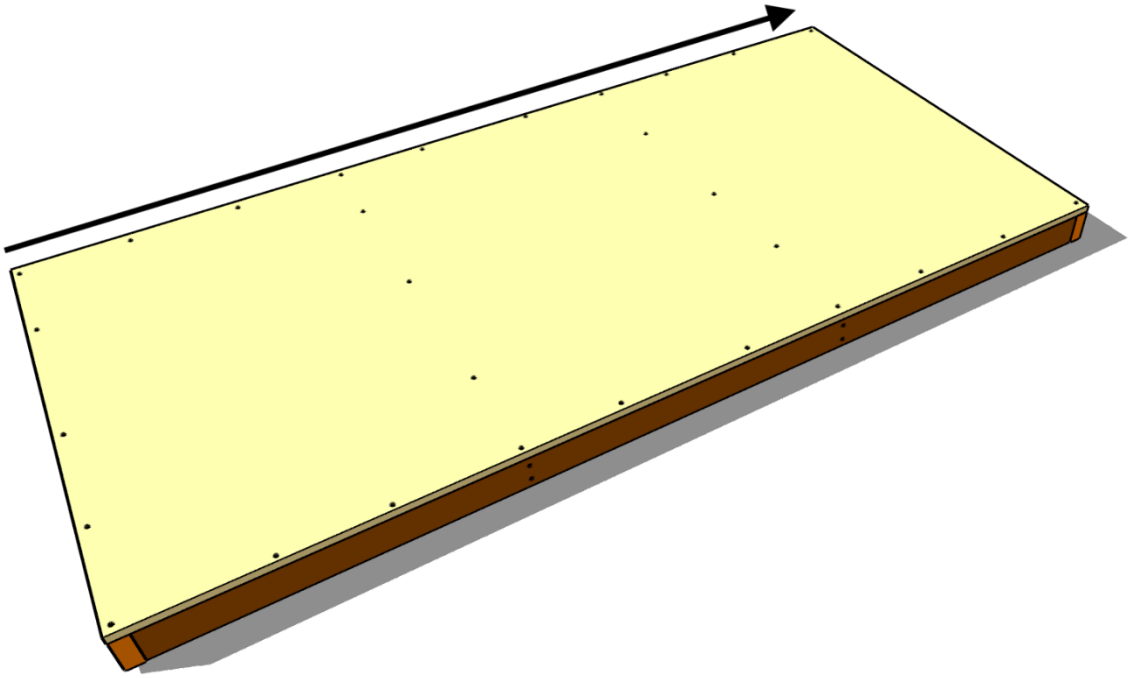
17. Once you complete the Stile side, go back to the point where you started and drive screws along the Rail, using the same method.



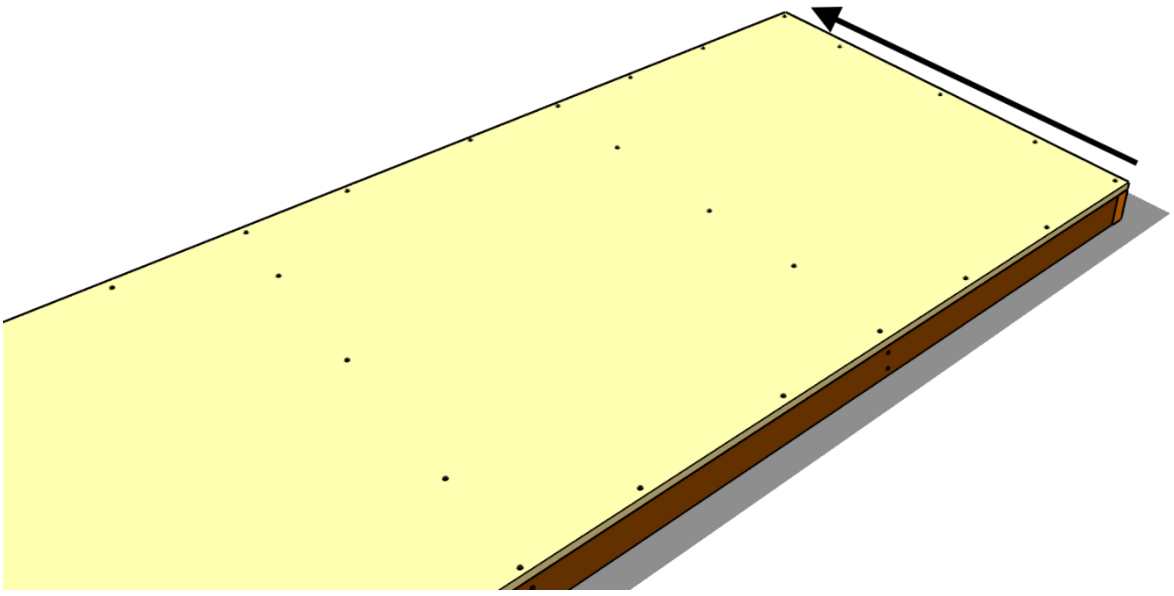
18. By now, the frame should be fairly rigid under the plywood. Work your way along the platform driving 2” screws along the Toggles one at a time, from the secured Stile side toward the unsecured Stile.



19. Repeat step 16, securing the other Stile.



20. Drive screws along the final Rail.



Relevant Code

While there are not specific industry standards or codes that exist for the construction of theatrical platforms, this design has emerged as the most common.

Refer to manufacturer manuals for instructions on specific tool use.

OSHA Standard Number 1926/ Subparts D, E, I, J, K, L, M, N, and X

Links and Resources

For information on legging and bracing platforms see this article by Michael Powers on the Techie Corner website
https://hstech.org/how-to-tech/platforming-things-to-stand-on-stage-decks-etc/platforming-article-1/

Georgia Thespian's demonstrate legging a platform in a tech theatre challenge
https://youtu.be/FX09j4GgX90

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