



Common Carpentry Terms and Best Practices



Introduction

The fields of carpentry and stage carpentry share a significant amount of similarities. The same tools, the same hardware, same materials, same techniques, and many of the same terms and definitions. However, while stage carpentry runs parallel to the field of construction carpentry, it is often filled with slight variations or different usages of terminology that can be confusing to someone who is new to theatrical construction.

It is important to understand these differences, not only to better educate one's self on proper vocabulary, but also to make it easier to communicate with people who might be assisting you in your work (i.e. parents who might have traditional carpentry experience, but who are not familiar with the theater side of things.)

Materials

Common Materials

Lumber: wood material consisting of pure Hardwood. Ideal for framing and structural construction.

An individual board of lumber can be referred to as a "stick". They use "nominal" dimensions such as 2x4 (two by four) to indicate the stick's profile height and width, but the actual dimension is usually half an inch smaller. For example, a piece of 2x4 is actually 1 1/2" x 3 1/2".

Plywood: Consists of alternating layers of glued hardwood or wood product.

Ideal for covering large areas, making walls, or the tops of platforms. Available in a variety of thicknesses, they almost always are 4'x8' in size (48 inches, by 96 inches).

The benefit of plywood is that it (usually) resists warping and twisting that can be common in hardwood lumber, and since it is a manufactured wood product it can be cut and assembled using almost all the same techniques as hardwood.



PRO TIP: The most common thickness used for making platforms is 3/4" thick, also commonly referred to as "three quarter ply", as in "three quarters of an inch thick plywood"

Luan or Lauan: (Pronounced Loo-an or Lau-an) is thin plywood consisting only a single core layer with a thin veneer layer on the outsides.

Luan is usually used for covering Flats or building lightweight scenery when you need to cover a large area without adding significant weight to the piece. Traditionally, Luan is roughly 1/4" thick. Note: Actual Luan (made from Brazilian Mahogany) is virtually nonexistent these days, instead lumber yards will sell this product under the name "plywood underlayment".



PRO TIP: Regardless of what it's called, the key feature to look for in Luan or Luan substitutes is a lightweight rigid plywood material that can be cut, glued, and worked with like standard plywood.

MDF: (Technical Name: Medium Density Fibreboard) Sheets of wood like material made by compressing and gluing shredded wood filaments together and pressing them into flat sheets.

Can be cut and assembled with many of the same tools and techniques as hardwoods, but requires additional preparation when painting or gluing it as the nature of the material can make it soak up liquid like paint.

PRO TIP: If you're trying to get an even coat of paint on MDF, an undercoat is almost always required, and paint will soak into the edges of the board much faster than the surface of it.



Actions

Joinery

While there are many ways to join two pieces of material together, these are the most commonly used in Theatrical Construction.

Glue - To join two pieces of material together using the appropriate adhesive.

PRO TIP: For optimal adhesion, it's important to apply pressure to joint with clamps (if possible) or by using screws or nails to increase the bond of the joint while the glue dries.



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Fig 1

Nail - Joining two pieces of material together using a hammer and nails or a nail gun (electric or air powered)

PRO TIP: Alternate nail locations (avoid lining them up) to prevent cracking.

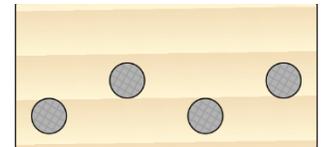


Fig 2

Toenailing - Driving a screw in at an angle in order to complete an otherwise difficult to achieve joint.

PRO TIP: The key to success is driving at a little more than 45 degrees – try 50 degrees for the win.

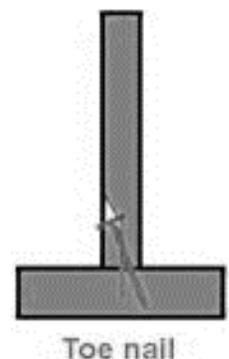


Fig 3

Screw - Joining two pieces of material together using screws and a drill or screwdriver.

Sink - to drive a screw into a piece of material far enough that the head of the screw is slightly inset into the material. Especially when assembling framing for platforms or flats it is extremely important to ensure that the screws are "sunk" slightly into the material to guarantee that the joint between the two pieces of wood is as secure as possible.



Fig 4

PRO TIP: The easiest way to do this is with an inexpensive countersink drill bit that creates a pilot hole and the countersink at the same time.

Types of Joints

Construction and furniture carpentry use a wide variety of types of joints to achieve specific looks and styles that are far beyond what is required for theatrical construction. However, there are several basic types of joints that are commonly used in theatrical construction.

Butt Joint - Joining two pieces of wood together where one end meets the horizontal face of the other. This is usually joined with a screw or nail driven through the face of the "outer" piece. This is the most common type of joint used in theatrical woodworking.



Fig. 5

Mitered Butt Joint - Joining two pieces of wood (usually at a right angle) where both pieces have been mitered at 45 degrees in order to achieve a right angle join with a clean seam.

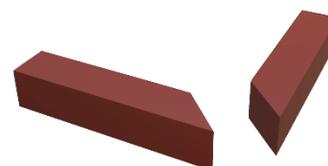


Fig. 6

Scab - Joining two pieces of wood end to end in order to create a longer piece than you have available "off the shelf" by attaching a shorter piece of wood across the seam in order to stabilize it.

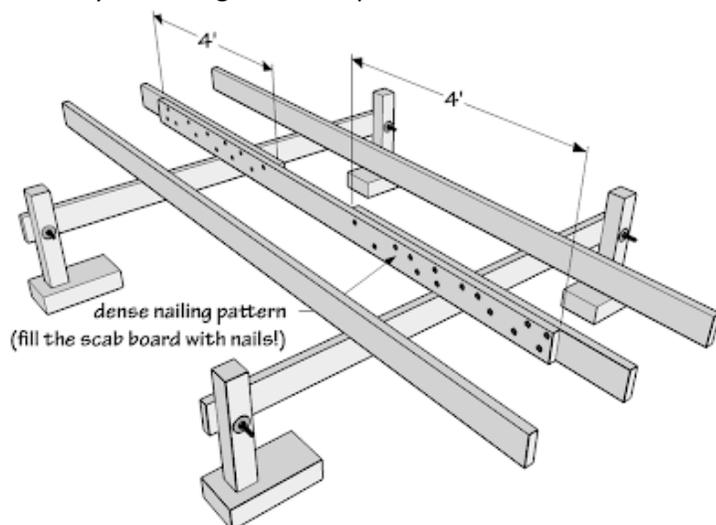


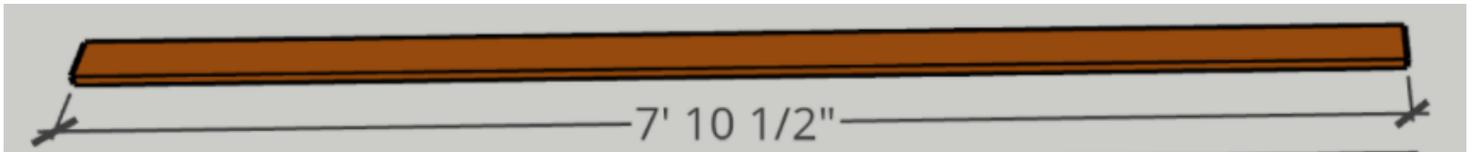
Fig 7

Measuring and Marking

The measuring and marking of lumber are skills as valuable as any other in carpentry. Inaccurately measured lumber is at best a time-waster and at worst, a money waster.

To measure accurately, you will need to know how to read a tape measure, how to mark the board clearly and consistently, and how to notate your measurements.

1. If measuring lumber, always use a pencil to make your marks and notations.
2. Be certain that the tape measure is on a straight line. A slight angle can add to the measured length.
3. Use a straight edge (often a speed square) when marking boards.
4. Indicate the negative/unused (x) part of the board.
5. Be certain to communicate on which side of the marked line you are to cut.
6. Inches are notated as 10 ½", not as 10 - ½".
7. Feet are indicated as 7'. Combining both feet and inches would be 7' 10 ½" (fig.)



There is an old saying in carpentry that still is true: "Measure Twice, Cut Once".

Cutting

There are a wide variety of tools that can be used to make cuts in the common materials used in Theatrical carpentry, they all make the same basic set of cuts.

Rip - A cut made down the length of a piece of material.

Crosscut - A cut made across the narrower length of a piece of material.

Chop - a 90 degree cut made directly across a piece of material, usually accomplished with a miter saw.

Miter Cut - A cross cut made at an angle other than 90 degrees.

Compound Miter Cut - A cut made at an angle other than 90 degrees both horizontally and vertically.

Best practices for making cuts: Always have the appropriate safety gear and use it correctly. Material should be properly secured before making any cut. Ear and Eye protection are required when making any cuts using power tools such as table saws, miter saws, circular saws, jig saws, etc.

PRO TIP:

Have a plan for managing saw dust. Saw dust on a hard surface is more slippery than water, and must be managed regularly throughout the build process via sweeping, vacuuming and mopping.

Relevant Industry Codes

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

Caroline Cross Connection's Online Project Manual

This google site offers illustrated tips for basic carpentry skills; many of which can be applied in a theatrical project.

<https://sites.google.com/a/carolinacrossconnection.org/projectmanual/>

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Figure C- Luan – Amazon.com - https://www.amazon.com/Premium-Baltic-Birch-Plywood-Grade/dp/B016H589HC/ref=asc_df_B016H589HC/?tag=hyprod-20&linkCode=df0&hvadid=198129370765&hvpos=&hvnetw=q&hvrnd=12098459142033129927&hvpone=&hvptwo=&hvgmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9006641&hvtargid=pla-350687643015&psc=1

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Figure 3 – Stack Exchange - <https://diy.stackexchange.com/questions/51314/how-do-i-properly-nail-two-2x4s-at-a-90-degree-angle>

Figure 4 – <https://www.artofmanliness.com/skills/how-to/how-to-countersink-a-screw/>

Figure 5 - Wikimedia Commons - Jomegat at the English Wikipedia, CC BY-SA 3.0 <<http://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Butt_joint.png

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Figure 7 – Google Sites – Reinforcing and Scabbing the Frame

<https://sites.google.com/a/carolinacrossconnection.org/projectmanual/floor-repair/f-reinforcing-and-scabbing-the-frame>

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