General Safety Rules

This chapter will give you some background in some tools you've never used before, as well as introduce you to some of the key concepts that you will be teaching volunteers.

As a staff member, you are responsible for setting a **good example for all participants volunteering on the work site.** This means being especially attentive to our safety guidelines so that you can understand, follow, and teach the rules for a productive and accident-free summer!



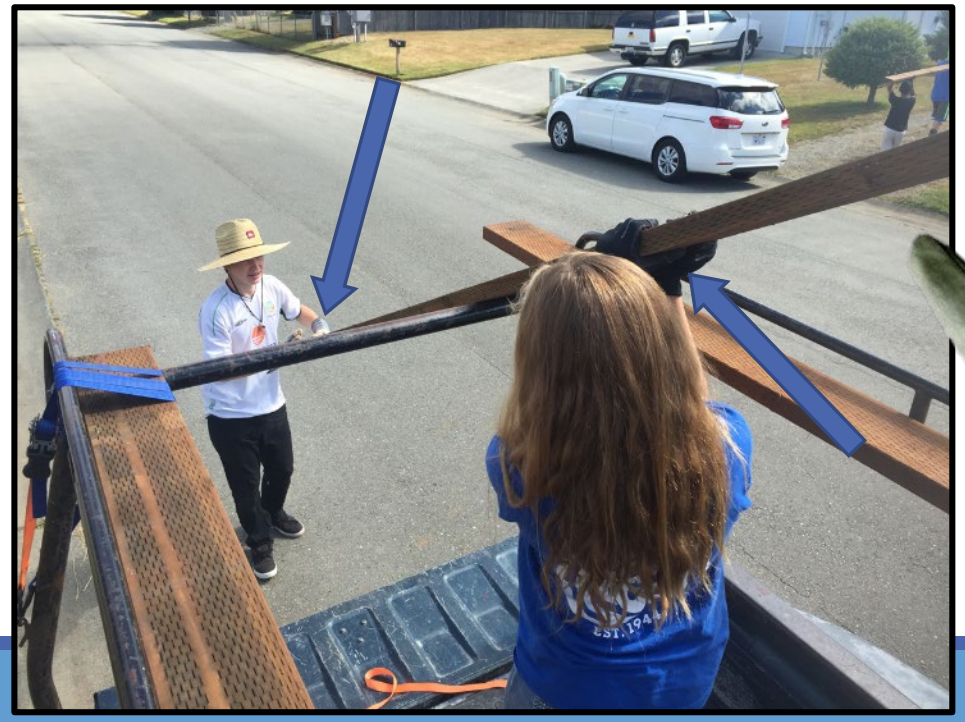
Safety Presentation
Spokane 2018

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Personal Protection Equipment

Personal protection equipment and safety equipment is essential at SSP. This includes gloves, dust masks, safety glasses, and occasionally ear plugs.

Gloves should be worn especially when working **with insulation, roofing, and PT lumber** (and many other times as needed). However, gloves are never worn when using power tools; we don't want anyone's hand to get dragged into moving parts. Make sure your standardized tool buckets have enough matching pairs!





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Personal Protection Equipment

Safety glasses must be worn when using a power saw or drill, working with insulation. Corrective eyeglasses do not offer enough protection; they leave gaps that can allow wood or metal to still get into people's eyes. There are goggles that are big enough to go over eyeglasses.

Dust masks should be worn when mixing concrete, working with insulation, sanding drywall, scraping paint, and using power saws. Make sure that there are enough in your tool buckets to provide one for each volunteer.



Tsaile 2016

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Drills

Drills are one of the most commonly used power tools on our carpentry sites. You must therefore become comfortable using their features. Since it's sometimes hard to follow written instructions for a hands-on tool, please watch the instructional video that our friends at Appalachia Service Project (ASP) have created here (note: SSP doesn't usually use drill handles except with hammer drills).

Take note of how James walks you through each step; you too will have to teach volunteers how these drills are safely operated!



Chiloquin 2018



Tsaile 2017

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Drills

Have volunteers drill **pilot holes**, which bore out wood or metal to make room for screws, bolts, and nails. Keep in mind that the drill bit must be **smaller** than the fastener that is going to be used.

Tip: volunteers (especially middle schoolers) regularly break 1/8” drill bits. Send at least three extra with work teams!



Smith River 2017

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Drill Bits



Variously-sized bits for pilot holes

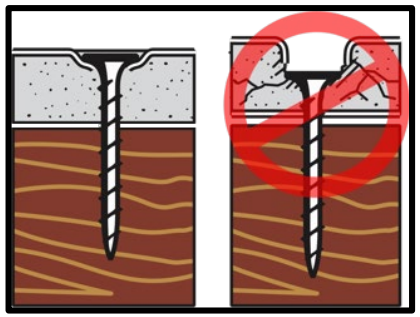


Star bit for driving decking screws



Square bit for driving (old) decking screws





Dimpler bit for protecting the surface of drywall



Masonry bit for drilling into concrete (identification hint: look for the house on the end!)



Philips bit for driving screws into gate hardware



Paddle or spade bit for drilling larger holes (for bolts)

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Squares

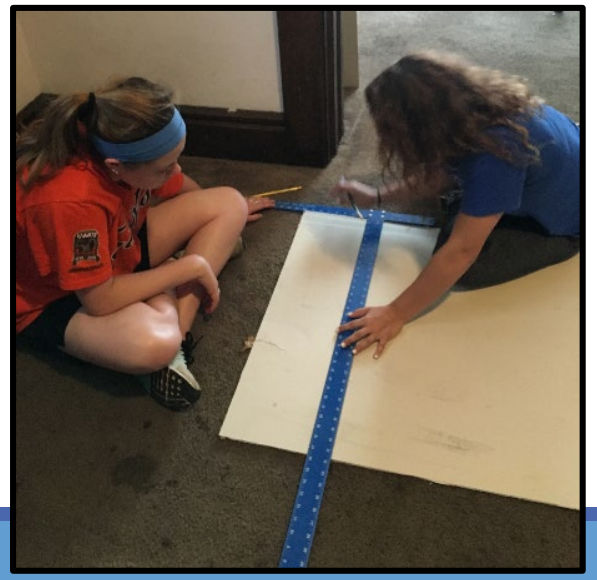
Squares are primarily used to measure and mark cuts.

1. A **speed square** is used to set project layouts and to mark 90° lines.

2. A **drywall square** helps measure drywall or other large surfaces such as plywood or OSB panels. Use the“T” shape as a straight edge to mark and cut lines.

3. A **carpenters square** is made of two perpendicular (90°) rulers that form an “L” shape. These are used for marking the cutouts (stairs) on a 2x12 stringer.

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Saws

A **circular saw** is one kind of power tool used to cut lumber, OSB, and plywood.

There are multiple steps to using this saw correctly. Please watch each step in ASP's instructions:

1. How to prepare your circ saw
   - 0:49 seconds into the video, check your saw blade depth: make sure the valley of the blade just meets the bottom of your material (Fig. 1)
2. How to change a circ saw blade
   - Another way of identifying dull blades: most of the paint will be stripped (Fig. 2)
3. Making a cut

Figure 1



Figure 2



©2018 Sierra Service Project

Saws

Circular saws can be dangerous they're used incorrectly. Volunteers should always wear **safety glasses,** but **gloves** are never worn because they can easily be caught in the blade. **Unplug** the saw when not in use.

Everyone can use power tools at SSP! Incorporate a circular saw station into your Safety Presentation so that every volunteer has a chance to use it.



Regular blade for cutting 2x4s, 2x6s, etc.



Finishing blade (finer teeth) for cutting plywood and OSB



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Saws

Reciprocating saws are extremely helpful for demolition and cutting posts to a 45°angle. The same safety rules for all power saws apply to reciprocating saws; always wear safety glasses, never wear gloves, and unplug when not in use.

Please watch ASP's instructional video to learn the safe way to use the reciprocating saw.



Kayley Adams sure knows how to use a reciprocating saw! Spokane 2016

©2018 Sierra Service Project

Saws

A **reciprocating saw** can have **blades** ranging from **6” to 12” long**. Read packaging and the labels on the blades to make sure you’re using the ideal blade to cut through different materials.

It’s easy to bend blades as you’re cutting. Do not use bent blades. Unplug before changing blades. Different manufacturers have different ways of securing blades, so **make sure you know how to change a blade before sending it out with a team!**





San Diego 2016

©2018 Sierra Service Project

Saws

Chop saws are the safest power saw at SSP because they remain stationary (sitting on the ground or stable table), making it easier to predict where the blade will go. Therefore, use them when possible to cut 2x4s, 2x6s, and 4x4s.

Incorporate a chop saw station into your Safety Presentation so that every volunteer has a chance to use it.

Please watch ASP's instructional video (note: we will not be doing any bevel cuts)



Safety Presentation San Diego 2018

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Table Saws

Table saws are used at SSP to rip balusters and fence boards. However, this year we won't be using them to rip balusters; instead, we will be buying pre-cut 2x2x8s. Only use them when absolutely necessary.



Tsaile 2016



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Post Hole Diggers

Post hole diggers are specifically used to dig holes for concrete footings. They should be used instead of shovels, which often make overly-wide holes for concrete footings (wasting concrete).





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Utility Knives

Utility knives are essential tools on work sites. They are used to cut tar paper, roll roofing, 3-tab shingles, drywall tape, insulation, open concrete bags, score drywall, and many other odds and ends.

Blades are interchangeable and necessary to replace as they chip and become dull. Loosen the screw (indicated with the red circle) to open the knife; there, the blade can be flipped to use the other side or replaced entirely.

Extra blades are stored in the handle. Stock these during your Prep Week Inventory before putting them in tool boxes for work sites.





Hook blade for cutting roofing material.



Replacement blade

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Levels

Levels are used to determine when something is level. There are usually a series of liquid filled vials that each have a bubble inside of them; when the bubble is between two marks, it is considered level, or plumb (depending on what is being measured.)

Levels come in different lengths, from 6” to 6’ long. Treat levels with care and consider them **fragile**; if the liquid filled vial is slightly off, so will the material being leveled.





Volunteers check how level a framing member is

©2018 Sierra Service Project

Levels

SSP uses **post levels** to make sure posts are plumb before they are secured to post bases, making sure that the frame of a deck is level, making sure that the framework for a concrete pad is level and making sure that balusters in a railing are plumb.





A volunteer levels a post
Rancho Cordova 2016

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Wrenches

Wrenches are used to tighten or loosen nuts on bolts. Two wrenches are often used together; one holding a stationary end and the other tightening a nut. This makes sure that the entire bolt doesn't spin when just the nut is intended to move.

- **Crescent** wrenches has a dial that allows the user to change the size of the mouth of the wrench.



- S**ocket set**s are used to tighten or loosen nuts on bolts. In each socket set, there are differently sized attachments to fit various nut and bolt sizes. Often a socket set is ratcheting, which means that it tightens as it is turns in one direction but not in another. This is an important feature for tight spaces where a wrench cannot be turned around the nut 360°.



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Using socket and crescent wrenches to install bolts to connect a post to a post base

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Caring for Paint Tools

Paint bushes are used at SSP for all painting projects and for staining on carpentry projects. It is extremely important to take care of them because we want to use them on more than one painting project!

- A brush should only be dipped about **1” to 1½”** into paint. If paint gets too far up the bristles, it’s really difficult to clean and will dry, ruining the brush.
- Paint brushes (and rollers) must be wrapped in **cellophane** or **bread bags** during breaks so that they don’t dry out.



Great dip!



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Caring for Paint Tools

Paint rollers are used for large surfaces. The permanent part of a paint roller is the **roller cage** or **frame**. This can be reused over and over again (if it's kept clean!).

Roller covers or **naps** fit onto the cages and are the interchangeable part of the roller. Naps come in different thicknesses and finishes; **thick** rough covers are for painting stucco while the **smooth** covers should be used to paint interior walls. **Semi-smooth** covers work well for most applications. Rollers should also be wrapped in **cellophane** or **bread bags** during breaks and should be thrown away at the end of each week.



Naps are cleaned with 5-in-1 tools



San Diego 2016

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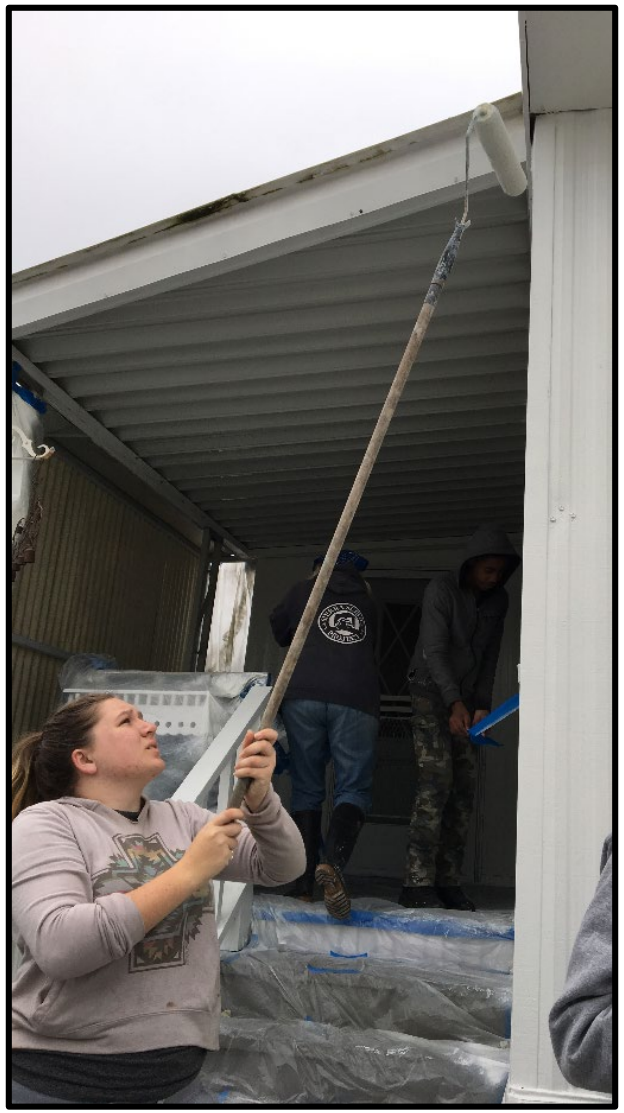
Caring for Paint Tools

Paint trays are used to hold paint and to spread the paint onto the rollers. They are never used for joint compound. Paint trays should be cleaned thoroughly after each use, otherwise dry paint can chip into fresh paint and be applied to surfaces.

Rollers can be attached to **extension poles** to reach heights without the use of a ladder.



Chiloquin 2016



Rancho Cordova 2017

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Ladders

The common ladders used at SSP are **A-frame** and **extension**.

Extension ladders lean against the side of a building to be stable. An A-frame ladder is self supporting; the top two steps should not be stood on.

The general safety rules for ladders are:

a) All of the ladder's legs must be on the ground

b) Only one person on the ladder at a time

c) Do not step on the top step

d) Always have a ladder buddy





Chiloquin 2017

©2018 Sierra Service Project

Ladders

When using an extension ladder for a roofing project, make sure that it extends at least 2’ above the roof.

The base of the ladder should be 1’ out from the wall for every 4’ of height to where the ladder rests on the edge of the roof. For example, a ladder that is resting on the edge of an 8’ roof should be placed 2’ from the wall.



Walker River 2015

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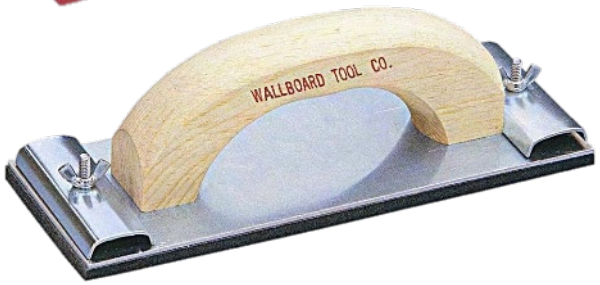
Drywall Tools

1. A **mud tray** is used for joint compound (mud) when finishing drywall. It is never used to hold paint. A mud tray must be cleaned thoroughly after each use.
2. A **hand sander** is used with drywall sanding screens to sand the joint compound after it has dried. The sanding screens are replaceable and are secured onto the hand sanders with wing nut screws.
3. A **mud** or **putty knife** is used to spread joint compound onto the drywall seams. They are also used to put tar on a roof when roll roofing. They come in various widths and in metal or plastic.
4. A keyhole knife is used to cut small holes into drywall, like for outlets and light switches.

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Pliers

1. **Standard pliers** are good for removing old nails, gripping bolts, and bending rebar and hog wire.
2. **Lineman pliers** are good for the same uses, but have longer, flatter gripping points and can cut thin pieces of wire.
3. **Needle nose pliers** are very thin, and are good for bending things, removing nails, etc.
4. **Channel locks** are adjustable, and work much like standard pliers.
5. **Dykes** are good for cutting thin wire. Be careful not to use them on anything else, because they can't be sharpened.

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Demo Tools

Pry Bars are used in the demolition of old structures. They are used at SSP to remove old roofing, demolish walls, remove old flooring, and to take apart carpentry projects like old decks, stairs, ramps, and fences.

- **Cat's paws** are a type of pry bar that are good at getting under old nails for removal. They have a cupped shape at each end.
- **Flat bars** are another type of pry par that are good for wrenching wood away from other pieces of wood.



Cat's Paw



Flat Bar



Crow Bar



Chiloquin 2016

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Chalk Lines

Chalk lines are used when a straight line is required. When the string is pulled out of the chalk line, it should be heavily coated with chalk (usually blue or red). Held taught at two points, the string from the chalk line can be snapped where the chalk will transfer from the string to the surface.

Chalk lines are used at SSP when aligning rows of shingles, screwing drywall into studs, screwing decking into joists, and when cutting OSB and plywood.





Using a chalk line to lay roll roofing
Chiloquin 2016

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Miscellaneous Tools

1. **A 5-in-1** tool can be used to open paint cans, clean roller naps, and scrape paint.
2. **Wire brushes** are also used to remove peeling or flaking old paint. Wire brushes can wear into the wood too much, so it must be explained to work teams that they are only to be used until the loose paint is removed. They can also be used to scrub spilled paint off of asphalt and concrete!
3. **Tin snips** are primarily used to cut thin metal, like flashing for roofs or corner bead for drywall.

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