Safety Manual

for Workcamp Leaders And Volunteers

by Harold B. Confer

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Designed by Larry Clarkberg

With thanks to Stan Hankins, Director of the Presbyterian Church USA Disaster Assistance Office for the funds to print and distribute this book.

This book is dedicated to all of the volunteers who have come to help in the rebuilding of the burned houses of worship in 1996 to 1999. May they all go home with all the body parts with which they came. And may God protect all of her army of peace as we work for her sake to bring justice as well as peace to this world. Since I have a hammer I'll ring out love between my brothers and my sisters all over this world!

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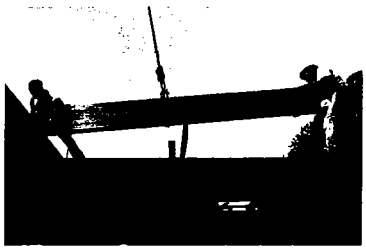
Introduction

Quaker Workcamps International (QWI) is an organization dedicated to practical peacemaking in the Quaker tradition. We affirm the intrinsic worth of all people by providing volunteers to communities with building needs, not only to build physical structures, but to affirm God's love and caring for all people. Through workcamping side by side, we experience the interrelatedness of the human community and our interconnection to the natural world.

What is a workcamp? A workcamp is a voluntary coming together of people to accomplish a task, usually involving construction or renovation. Quakers have been workcamping since World War I. Workcamps have involved war relief, work in soup kitchens or shelters, and recently, rebuilding arson-burned churches. QWI was born to fulfill the ministry to burned churches in 1997. This ministry has been going on under Friends' care since 1996 (originally under the auspices of Washington Quaker Workcamps). If we step back further in history we may see this witness as an extension of 33 Mississippi churches rebuilt by a joint committee of New York and Philadelphia Yearly Meetings in 1964.

Workcamps are led by a diverse team:

- The *Project Director* is the administrative head of the workcamp, coordinating our efforts with the worksite hosts and their building contractor. The Project Director also recruits new volunteers, keep the financial records, and serve as the chief purchasing officer.
- The *Worksite Hosts* appoint an *On-Site Leader* who works directly with the Contractor and Project Director to coordinate tasks, order materials, etc.
- The Worksite Hosts hire a *Contractor* to make all construction decisions. The Contractor may also have skilled workers on-site to direct your efforts. They serve as "crew chiefs" who show you what needs to be done and how best to do it. You will be working with them side-by-side during the week.
- The *Friends in Residence* are our spiritual leaders and guide our silent meditation and other worship together.
- The *Co-Director* or *Volunteer Coordinator* helps make the volunteers' stay engaging with the church and the surrounding community. The Volunteer Coordinator also keeps the work records and write thank you letters. All final volunteer records are the Volunteer Coordinator's responsibility.
- The *Cook* is everyone's friend, as you will discover when you help them cook and clean up. The Cook is also in charge of buying things for the kitchen.
- The *Safety Officer and Tool Steward* sees that you work safely, and that you care for the tools. This person, in concert with the rest of the team, develops the emergency response plan in case of a serious accident or injury.



This safety book was written after many years of accident free workcamps. Unfortunately it is also written after a leader of a partner organization was seriously injured. After that accident, I searched my soul to see if I had set a tone for risk-taking in my leadership style that may have led indirectly to the accident. Convinced that I have always made safety of my working volunteers a top priority, made safety training a part of all training for leaders of weekend workcamps and made job and tool safety a part of every week's orientation in our project workcamps, I then asked myself, what *could I have done* that might have prevented the accident? This safety book is my answer, an answer for the future.

It is designed to be read primarily by workcamp leaders who have to be aware of the risks involved in a procedure that they ask others to undertake. Safety has to be taught. It is best taught by example as volunteers will do everything the leader does, no matter what she or he says. But it also has to be talked about and proper procedures demonstrated before anyone is asked to try a new skill. Questions need to be solicited and answers clearly given. The teaching needs be done by those who have experience and confidence. A job title does not necessarily give a person that experience. Being a contractor does not require passing any proficiency test on working safely. A workcamp organization needs to seek out people with safety training who are also good teachers.

There are certain procedures in construction that lend themselves to hazards. This book is divided into chapters based on those hazards. It provides specific lessons and activities to teach working safely. It recommends certain safety equipment and administrative procedures to prevent accidents or, in a worst case scenario, to deal with accidents in the best manner. It is presented in a loose-leaf format so that new materials and experiences can be added. Thus, it becomes one of the most important parts of what we call the institutional memory of an organization.

Construction sites are, even in the best of all possible worlds, places filled with hazards. Add to this site eager but inexperienced workers and you have two ingredients that can lead to disaster. The safety officer is the only person who can create a working environment in which work can be accomplished with knowledge and understanding to minimize the risks involved.

This safety manual has been compiled from my own memories and working experiences as a fire fighter in the U.S. Forest Service and those of my volunteers in workcamps throughout the world. Although Quaker Workcamps International (QWI) hopes to provide through it some common sense safety tips and to produce an atmosphere of working safely in all workcamps, thereby minimizing risk, QWI does not warrant that following these or any other safety teachings will prevent injury. In no event shall QWI be liable to readers of this manual for any decision made or action taken by the reader in reliance on the information contained herein. The workcamp leader and volunteers must use caution at all times and proceed at his or her own risk.

A safe environment is one in which:

- Workcampers understand the tasks for that day and what they have to know to accomplish those tasks safely.
- Workcampers work as a team with a leader who is in charge. If the leader says yes, go ahead. If the leader says wait until I can check you out on a procedure, you wait patiently. And if the leader says you may *not* carry out a particular task, do not attempt it behind his or her back.
- Workcampers are aware of what they are doing and are also aware of what others are doing around them. The other side of this coin is to tell others working around you if you are about to carry out a procedure that may impact their work or space.
- Workcampers communicate. For safe working to occur, good and clear communications are essential. This is the primary reason we do not allow any radio or boom-box on the job site. The safety officer may have to raise her voice to be heard over the sound of construction tools; she or he should not have to compete with a stereo, especially in an emergency.

How to Use This Book

The first eight chapters of this book describe particular hazards. The Safety Officer should review these chapters before briefing workcampers. Be sure to add copies of power tool owner's manuals to chapter 5. Chapter 9 provides signs that you can post around work site (like "This is a hard hat area") and posters that you can post around the housing site to promote safety. Chapter 10 is the Emergency Response Plan. Be sure to familiarize yourself with the procedures in this chapter. Also write in emergency phone numbers for your worksite, and post a copy of this page by the phone.

Copy me! This book has been designed to be copied and distributed easily (but get permission from QWI before distributing it for profit). We've also left space for you to take notes to customize the book for your worksite and workcampers. If you find anything significant is missing from this book, let us know so that we can add it to the next edition.

Chapter 1

Personal Hazards

Personal hazards are those you may bring, as a worker, into the workplace. Put positively, we want every one to be concerned about the following items:

■ *Good, properly fitted and secure footwear*

Sometimes a leader has to refuse a worker access to the workplace unless and until they change into proper footwear. I have had workers from another country come to work in bedroom slippers. It turned out one worker did not own a good, sturdy pair of work boots or shoes. The first order of work entailed driving to a nearby shoe store and purchasing good work boots.

Too many young people are accustomed to not properly tying their shoes. In particular, tennis shoes with long laces need to be tied properly.

Shoes with appropriate non-slip soles are required for any roof work. Work shoes or boots with steel safety toes are desirable.

■ *Loose fitting shirts or jackets*

A major hazard working around any power machinery is loose clothing that can get sucked into the mechanism, dragging a person into the machine. Unbuttoned long sleeves or ragged clothing can get caught. Jackets needed for warmth need to be zipped or buttoned so that they are not hazardous.

■ *Long, unsecured hair and bracelets, necklaces, etc.*

Male or female long hair must be secured under your hard hat or a suitable head covering. Leave bracelets and dangling necklaces in the dormitory or at home. The reasons should be obvious if you have read the preceding paragraph.

■ *Adequate protection against sunburn*

Long sleeved shirts or appropriate sunblock should be used, even in overcast weather. African Americans can sunburn as badly as Caucasians.

■ *Coming to work sleepy and tired*

Young volunteers, like young people everywhere, like to party, sometimes far into the night. Unfortunately, some young people have developed habits of staying up late and then sleeping late. Construction workers, like farmers, tend to rise early and retire early. No one should ever attempt to accomplish hazardous tasks half-awake.

For this reason, our construction workcamps have curfews. If volunteers violate this "time to bed and lights out" rule, they jeopardize others as well as themselves. A good workcamp leader must insist on the curfew with no personal stereos or other noisemakers allowed. You will never forgive yourself if a volunteer goes home from the workcamp with less fingers than she or he arrived with, just because you could not be the bad guy and insist that they go to bed on time.

A church rebuilding site is filled with joyous work but also hazards.

■ *Coming to work under the influence of foreign substances*

Alcohol, drugs, or sleep-inducing cold medicines and power tools are not good bedfellows. This is a hard and fast rule for good and obvious reasons.

■ *Smoking on the job*

Most construction tasks require two hands. If you go through life with one hand because you "had to smoke" while operating a piece of power machinery, that is a high price to pay for smoking.

■ *Self awareness of something amiss*

Sometimes, a job site is the first time you have ever had to face an issue simply because it is the first time you have ever done a particular task. When working on Mt. Zion church in 1996, a young African volunteer "froze up" on the roof and literally could not move. Until that moment in his life he did not know that he had a severe but not uncommon fear of heights. After the contractor and work leader safely got him off the roof, he was given equally important jobs that did not require him climbing! If a worker expresses discomfort doing anything, find alternative tasks and report the incident to the volunteer coordinator. A worker who suddenly starts to feel dizzy or experience other unusual physical or psychological discomfort should report such to his group leader and, if necessary, seek clearness on removing himself from that task.

■ *Playfulness and horsing around*

Construction sites are not the place to play tag, play "catch" with blocks of wood or masonry, or "horse around." Valuable construction materials can be destroyed in addition to putting yourself and others at risk.

■ *Keeping up your body fluids*

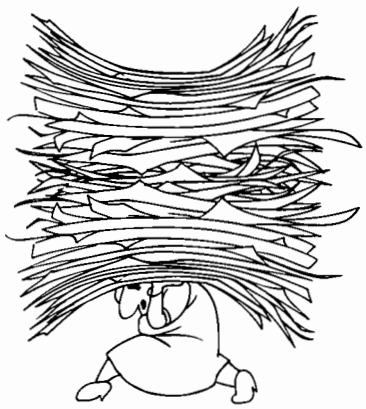
Whether in the winter or summer, construction demands a lot from your body and especially in the summer workers sweat a lot. Drink at every meal, use salt to help in water retention (fire fighters take salt tablets) and take drinks before you feel the need for them

■ *Wearing or using provided safety equipment*

QWI provides hard-hats, safety glasses, and gloves and asks that everyone use them while on the job. All of the above list have to do with the way a worker prepares and presents himself for work to be productive and work safely all day. A pattern of willful violation of any of the above items are grounds for being sent home.

Chapter 2

Working Together for Lifting and Carrying



Most of the tasks done by volunteers on a construction site do not require any great construction knowledge. Most of the work involves moving material and/or tools from one place to another. This work requires teamwork and knowledge about how to lift reasonable loads. It also requires self-confidence in not attempting to carry unreasonable loads. To be "*macho*" is in itself a safety hazard. Here are my rules for lifting and carrying heavy loads:

- Never attempt to lift a load you cannot pick up with ease.
- Always lift with your legs from a squat position with your back straight.
- Lift heavy or awkward loads with a friend.
- Decide, before you lift, your vocal commands and who is going to give them. This gets increasingly important as the number of people required to lift a load is increased. Decide, before you lift. your vocal commands for putting the load down as well. For example, Susan, who has a good clear voice is chosen as lift-leader. She will tell everyone involved, *"I will say, 'Ready to lift?' At this point we will all squat and get good hand-holds. Then, I will say, ' one, two, three,* ***Lift!.'*** *Then, without jerking, we will lift on the word 'lift' smoothly and carry the load. When we have arrived I will say, 'Ready to descend?' Then I will say, ' one, two, together,* ***down.'"***

- Handle certain loads carefully. It is seldom appropriate to suddenly drop a heavy load and never when carrying with others. The primary, but not only danger, is dropping it on your or another's feet. A HVAC contractor working with us in Greensboro dropped a five gallon bucket of paint on his feet (on another job site) and eventually became a double amputee as a result. Part of the work leader's teaching safety is teaching volunteers the nature of the material they will be carrying so that they can work intelligently. Sometimes a load is not heavy but fragile and if not carried properly can be irreparably damaged. An example is roof trusses that are engineered and built in factories to carry heavy roof and snow loads. But laid flat, as they are delivered, usually bundled together with plastic or metal strapping for unit strength, they individually become very vulnerable unless carried very carefully by lots of people. The individual roof truss is lifted by the group following the vocal commands of the leader *as if it were a very heavy load.* Keeping the truss flat is the secret; so working as a team is most important. When the trusses are pushed upright, as they will eventually sit on the structure, they have structural integrity and can stand alone with one or two workers holding them absolutely plumb (straight up and down) while they are secured with braces until the plywood is nailed down on top of them. Here again, working as a well oiled machine and carefully moving together so as not to put any stress on the truss joints while listening to the explicit instructions of the work leader are most important.

- When carrying loads up and down ladders, carry only what you can safely manage and carry it close to your body so that you can keep both hands on the ladder. Roofing shingles can be laid over one shoulder. Rely on others on the roof to remove the weight from your body or carry it on to the roof by yourself. Stepping off the ladder while carrying a load is a most critical time and needs to be done confidently, keeping the weight of the load moving toward the top of the roof. Do not allow others to take the load from you as you are leaving the ladder.

- Carry panels of sheet rock in a vertical position with a partner. Both should stand on the same side of the rock. First lift on one side to get it into the vertical position; then with one hand on the top edge to keep it vertical and with the other under for lifting, carry it to the site. Use the assistance of others or lower it towards yourselves *slowly* to avoid breaking the rock . It is very fragile until fastened into position. Very heavy or bulky loads that have to be carried by one person up a ladder (such as a whole roll of roofing felt) should only be carried by the most experienced and strongest workers.

- Safely carrying and erecting extension ladders is a two person operation. Carry the ladder lengthwise with your partner at the other end but on the same side of the ladder. To erect the ladder place it on the ground perpendicular to the building with the foot of the ladder at the end closest the building. The person at the foot of the ladder stands on the lowest rung during this next operation. The person at the top end, furthest from the building, lifts his end and, walking under the ladder and pushing it up, hand over hand, pushes it upright. His partner can soon help pull the ladder toward himself but *must not take his body weight off the bottom rung until the ladder is vertical.*

  With the ladder upright, hold the outside extension with one hand and pull the ladder rope (which controls the inside extension) to lift the extension, resting at intermediate rungs as necessary to get a new purchase on the rope, until the highest extension desired is reached. Make sure both rung clips are secured before climbing.

  To safely put an extension ladder down, first lower the inner extension by pushing the ladder away from the house until absolutely plumb. While holding the outside extension with one hand, carefully pull the ladder rope to disengage the rung clips. Then *slowly*, let the rope slip through your hand until the inner extension is returned to the ground. Then pull the rope slightly to engage the clips onto the bottom rung. Now, one partner again stands on the bottom rung with the ladder between him and his partner. The other partner now slowly and carefully walks backwards with his hands moving hand over hand up the ladder until he reaches the end of the ladder. When he reaches the middle of the ladder he will be holding all of the weight of the ladder; but as he continues, this burden will lessen. Under no circumstances may his partner take his body weight off the bottom rung until his partner is out from under the ladder. On very heavy ladders or while learning, use a friend to help push the ladder up or take it down.

Chapter 3

Working Up High

Working up high is one of the most hazardous jobs in construction. This is, of course, due to gravity, which normally works as our friend. Whether the job is climbing around on and over roof trusses, hanging ceiling sheet rock, or putting on the roof, work up high requires great care and common sense. Some work is done from ladders, some from scaffolds with walk-boards, and some on a sloped surface such as the roof. Here are some do's and don'ts:

- Do not work up high unless you feel confident that with care you can do what is required. Always work under someone more experienced.
- Be careful of those working directly below you. Instruct them, when suddenly moving under you to shout up "*Man under!*" to inform you of their presence.
- Be cautious when passing heavy loads to another person also working high. Do not hand off a heavy load suddenly as you can easily unbalance the other person or the both of you.
- On scaffolding always have guard rails at least waist high. On a mobile "Baker's scaffold" guard rails should be on all sides and protect in all directions.

- With exterior pump jacks, use the safety net and end guards provided.
- Only allow experienced craftspeople to erect scaffolds or pump jacks. They should never work alone in putting them up. Remember, the law holds responsible the person who erects a scaffold for the safety of those who work on the scaffold!
- Use roof jacks with good, knot free, 2 x 6 pressure treated planks to support shingles and workers on steep roofs.
- When nailing or stapling felt, never step on a piece of felt that is not secured. Never throw a piece of scrap felt onto the roof for someone to inadvertently step on. They will discover the toboggan effect!
- When working from a ladder, the temptation is to reach too far away from the ladder (this is called over-extending) thereby shifting your center of gravity, which is your pelvis area, so far as to cause the ladder to fall. *Do* move the ladder more frequently; *don't* over-extend!
- Remember, a little healthy fear is a good thing when working up high.
- Do not get overtired. Realize that the stress of working up high is much greater than working on terra firma. This means that breaks (coming down the ladder) should be more frequent than when working below. Do not allow beginning workers to work up high longer than four hours in a normal work day. By the end of the four hours they will have worked up a normal eight hour work fatigue.

- Do not rest your hammer or other hand tools on the tops of step ladders or wall plates. They are easily forgotten and when another moves the ladder, the hammer can come down on his or her head.

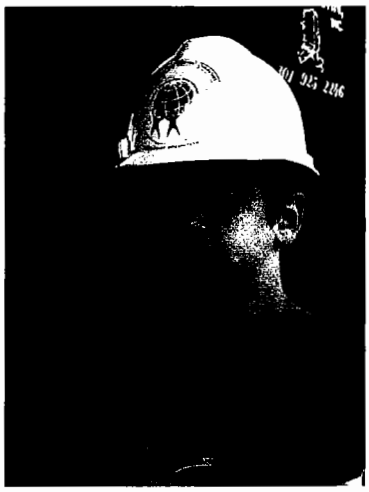
It is a fact that most of the serious accidents that happen to "professionals" working up high is because they become so confident they literally forget where they are and walk right off the roof or end of the scaffold. Never forget where you are and never work without appropriate safety equipment. Volunteers should not be allowed to use professional tree climbing equipment unless they are working under the close supervision of a professional climber and agree to wear all of the required safety harnesses. Always check ropes as well as the belts and spur leather for wear and tear. Climbing ropes that have sustained a severe fall should be discarded.

A ropes course under trained leaders can be a good team-building activity, but make sure the leader is competent and has good, safe equipment.

Chapter 4

Working on the Ground

Accident awareness and prevention are as important for those working on the ground as for those working up high. Many of the accidents that occur are preventable with the knowledge of how others have gotten hurt. As in working up high, there are some general do's and don'ts:



- Do wear one of the provided hard-hats. They are one of the few required pieces of safety equipment.
- Keep the work area clean and free of obstructions. This author sustained a serious injury when stepping off a ladder onto a 4" block of wood. The subsequent ankle sprain required a course in walking with crutches! The team leader, contractor or other leader may ask you to help sweep or pick up trash. This is not punitive nor a gender related task. Especially when carrying heavy loads with limited visibility it is important to know that you and your fellow workers are not going to be tripping over trash or other materials. Before beginning a series of trips carrying a lot of material, take the time to clean and sweep the path before the carrying begins.
- Work at a pace you can sustain all day. It is better to carry lighter loads and to work at a pace which allows you to be as productive at 4 in the afternoon as you were at 9 in the morning. The race we are in is only won if all the workers arrive safely at the end of the job.
- Always be on the lookout for the unexpected safety hazard. For example, when roofers are using the commonly used felt nail that has a large, flat head they may inadvertently drop some nails. The nails invariably land head down with the sharp nail a target for your feet and plenty long enough to penetrate shoes as well. When novice roofers are spreading and nailing felt, it is a good idea to appoint a person from the ground crew to patrol for and pick up the dropped nails.
- Be aware of those working above you. Be aware that if they drop a nail, or worse, if a big roll of roofing felt or their hammer gets away from them, you don't want to be underneath. If you must go directly under them, let them know you are there. Likewise, if they drop something heavy, a shouted warning should cause quick evacuation instead of looking up to see what all the yelling is about!
- A good way to prevent accidents is to ask yourself the question, *"What should I do if..."* We asked this question aloud once, before working on some home-built scaffolding. The answer was to know what the escape route was if, by chance, the scaffold collapsed. Later that morning, a section of the scaffold did collapse and the two carpenters working up on top, when the alarm was given, smoothly swung onto the top of the wall. No one was hurt. Their escape route was well and profitably learned in advance of needing it.

- Experienced carpenters do not put a piece of lumber on the ground with a protruding nail. Pull the nail or knock it over. In areas of demolition, watch where you put your feet. Ask an experienced carpenter how to pull nails easily.
- Wear safety equipment appropriate for the job. Wear goggles when working with any material that can chip. When stuffing fiberglass insulation wear a disposable face mask. When working with pressurized foam insulation, wear the disposable rubber gloves recommended. Whether working on the ground, on ladders, or up top, *it is everyone's job to be a safety officer.* If you see something that looks unsafe, call it to the attention of your team leader or someone else. Do not assume it is someone else's responsibility.

Chapter 5

Working with Electric Power Tools

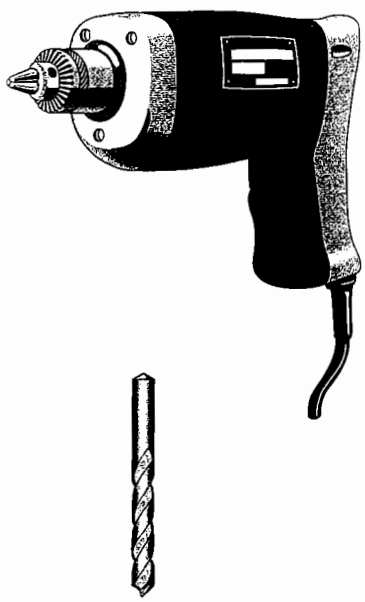
All electric power tools come with clearly written and illustrated safety instructions. The work coordinator should make sure all of these are available as an addendum to this chapter so that beginners can read what the manufacturer considers the most important safety issues.

If the supervisor asks you to use a power tool to accomplish a job and you have not yet been checked out or run the tool before, tell him so he can then check you out or get a substitute. Watch others when they work, but watch the teacher closest. She or he is supposed to know how to do it best.

A power tool is designed to do jobs that are done by hand tools but does them much more quickly and (sometimes) accurately. Here are some general guides for tools commonly used on a construction site by volunteers.

Electrical Hazards

All electric tools manufactured today are "double insulated" against electric shock but have not always been so. Be careful where you lay or support a metal-bodied tool in case it is not properly insulated or grounded. This author observed a serious accident that happened to a worker building a tennis court in East Africa. One worker rested his power drill against a chain-link fence which grounded the drill. Suddenly, the entire fence became "live" and another worker resting against the fence was electrocuted. For the same reason, keep extension cord ends and power tools out of puddles of water and in good repair.

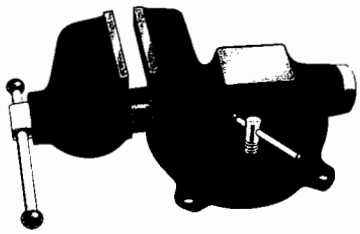


Drills

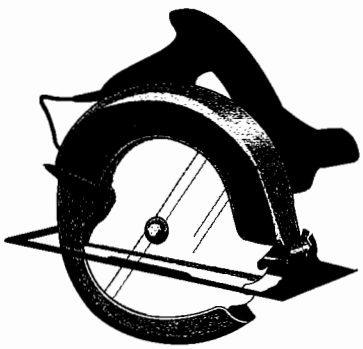
Drills are designed to create holes in wood or masonry. Different bits are used for different materials or jobs. The turning force is called "torque" and is considerable with better quality or larger drills or drills using large bits. Here are some good do's and don'ts:

- Don't force the drill into the material. A sharp drill bit will cut at a good rate of speed.
- Small drill bits must move more quickly than large drill bits. If small bits take too big a "bite" into the material they may break.
- Always hold the drill with both hands, using the drill side handle if it has one. If a drill bit suddenly becomes obstructed, it will suddenly stop and that torque will be transferred to the body of the drill and you!. Hold the drill firmly, releasing the trigger, and the bit will probably come free. If not, reverse its direction.
- Right-angle drills, commonly used for drilling studs for electrical wires or plumbing, often use a spur bit. This kind of bit is identical to the hand brace and bit that your father or grandfather may have used. It works by

screwing into the wood and then the small screw tip continues to draw the bit through the wood at a measured pace. Work slowly and carefully especially after the screw works free on the other side. If necessary, reverse the drill and then enter from where the screw came out on the other side of the stud to finish the hole.



- When drilling metal, wear safety glasses and make sure the piece you are drilling is large enough not to move. Otherwise use a drill press and clamp down the piece being drilled. *Under no circumstances should you hold a small piece of wood, metal or plastic with your hand while you are trying to drill it. Place it in a vice or hold it with a good pair of pliers.*
- Never activate the drill with the chuck key in the chuck.
- Always return the drill and bits to the tool trailer when finished.
- Report any broken or lost drill bits to your team leader or work supervisor.

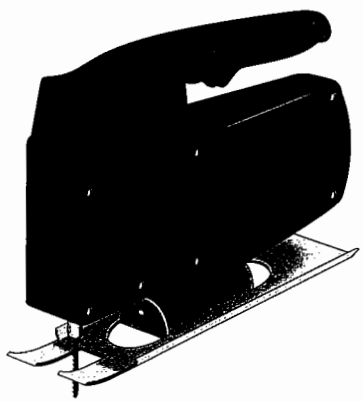


Circular Saws

The most common saw on the modern job site is the circular saw. Used safely, they are no more dangerous than a hand saw. Used unsafely, fingers and toes can easily be lost. Understand that unlike the common hand saw which cuts back and forth with the blade facing down, the circular saw cuts in one direction only, moves at hundreds of revolutions a minute, and cuts *up* toward the operator. The saw has a blade guard that slowly retracts as you cut through the wood and then, when the cut piece of wood falls away, springs back into place so that when the operator puts the saw down, the blade does not cut into the floor or whatever surface it is placed onto. This is especially important as the saw seldom comes to a stop before the carpenter puts it down. Pay attention to these important safety considerations when using a circular saw:

- A dull blade causes accidents by requiring excess force to move the blade through the wood. A sharp blade will require little force to move the saw.
- If the blade works loose, report it to the supervisor.
- Check that the blade guard retracts easily and completely. It can gum up with saw dust; so check it frequently.
- Never support both ends of the piece you are cutting. Allow one end to fall free. Otherwise, the wood may pinch the saw blade as you cut, causing the saw to "kick-back" dangerously.
- Never touch the saw blade to the piece to be cut until it is running at full speed. Likewise, cut through the wood completely before releasing the trigger.
- Hold the larger end of a piece of wood securely on saw horses while cutting off the smaller end.

- Clamp small pieces to the saw horse and use both hands on the saw.
- Move the saw slowly so the speed stays high. Your saw will live longer.
- Wear safety goggles or a face shield.
- Nail temporary blocks on the saw horse and you can put both hands on the saw.
- Get instructions for diagonal cuts as they are much harder to do correctly.
- Never leave the saw unattended without pulling the plug from the power source.
- Always be aware of the location of the power cord to avoid cutting it with the saw. Cutting through your own power cord not only holds up the work but it tends to identify you as a beginner.
- Always return the saw to the tool trailer along with any extension cord you may have borrowed. Always report any damaged blade or saw.

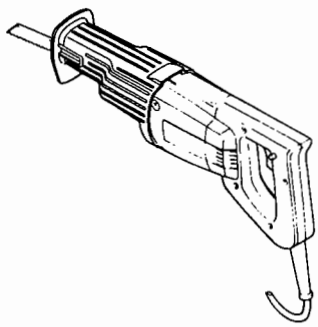


Jig or Saber Saws

Saber saws (also known as jig saws) have blades that move up and down and in some sophisticated saws in an orbital direction. They are easy for the beginner to master, but some of the same rules apply as with circular saws. For example, if the blade is dull, the operator tends to break the blade by having to apply too much pressure. The speed is variable on some of these saws which helps you cut different materials. Important safety considerations for these saws include:

- Choose the right blade for the material to be cut.
- Cut at the right speed for the material.
- Always wear eye protection.
- Always use a sharp blade.
- Never hold fingers above or below the work piece so that they are in the path of the blade.
- Remember, the saw does not have a blade guard! Allow the blade to come to a complete stop and then lay it on its side up on the work surface, not on the ground. Many blades have been broken by inadvertently kicking the blade of a saw left on the ground.
- A blade gets very hot when cutting. Allow the blade to cool before changing or replacing the blade.
- Saber saws can cut curved lines. Cut curves at high speed while moving the body of the saw slowly to allow the blade to clear the material necessary to make the turn.

- When making an interior cut, let the saw come to a complete stop before removing the blade from the material. Likewise, when continuing an interior cut, place the blade into cut and then, with teeth away from the end of the cut, bring the saw up to full speed before continuing the cut. As with circular saws, do not start the saw with the blade teeth in contact with the material you want to cut..
- Always hold your saw firmly and never release it until the blade has come to a complete stop. Always unplug a power saw if you walk away from it. Return the saw and spare blades to the tool trailer and report broken blades so that they can be replaced.



Reciprocating or "Sawzall" Saws

Reciprocating saws work back and forth like a saber saw but are held with both hands so that the blade sticks out away from the operator. It works much like the common hand saw so it feels comfortable to the beginner. As with the saber saw, it has a variety of blades and can cut a variety of materials. But as with the drill, different materials require different speeds to keep the blades sharp and require different strengths (temper) of steel. Harder materials require a blade with smaller teeth that moves faster. Blades for hard materials are also more brittle, thereby more easily broken. Important safety considerations for reciprocating saws include:

- Only use sharp blades and allow blade to cut its own way through the material.
- Know what is on the other side to avoid cutting where you don't want to.
- Keep both hands on the body of the saw.
- Allow the blade to come to a complete stop before removing blade from an interior cut.
- Wear eye protection.
- When inserting the saw into walls or floors of existing construction, try to avoid cutting electrical wires or water pipes. If you do, you will know!
- A working blade gets hot. Allow it to cool before touching it.
- Keep spare blades with the saw.
- Return the saw and blades to the tool trailer when finished, and report broken blades. Discard dull or broken blades.

Tile Cutting Saws

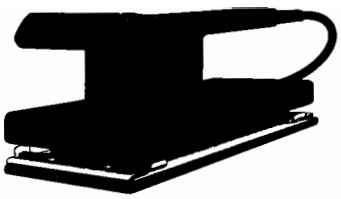
Tile cutting saws are usually mounted above a water filled tray and have diamond chips imbedded into the outside of the blade. The water is recirculated so that a steady stream keeps the blade cool while cutting. Always make sure this pump is working properly before cutting any material. Improperly cooled, the blade has a very short life. These blades cost over $200 each so keeping them cool for maximum life is important! Cut at high speed and do not force material into the saw. *Always* wear eye and face protection and be careful of others standing too near.

- Clean the tray of sediment frequently and after each use to minimize water pump clogging.

Belt Sanders

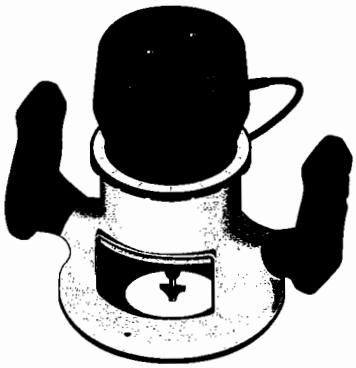
A belt sander is used in finishing work. The belt is glued together to form a continuous piece of sandpaper. Belts come in different "grits" just like normal sheets of sand paper. The sander is heavy and difficult for beginners to use successfully. Important safety considerations when using a belt sander include:

- Get a skilled person to teach you how to properly use the belt sander.
- Always work with both hands on the tool.
- Make sure the belt is put on tool in the right direction. Belts come with arrows stamped inside. Unfortunately, the arrows get erased after a belt has run a while. If the belt comes off, get a trained operator to remount it for you. Putting it on backwards will destroy the belt as soon as the machine is turned on.
- Follow the manufacturer's instructions for usage and safety.
- Remember, a belt sander will remove a lot of stock quickly so use it sparingly.
- Always have the dust collection bag properly mounted.
- Wear a dust mask and eye protection.
- Unplug the sander when changing belts.
- Wait until the sander has come to a stop before putting it down. Lay it on its side when you put it down.
- Keep the sander's tracking properly adjusted to avoid breaking belts. Always return the belt-sander to the tool trailer along with any extra belts. Report any broken or worn-out belts or a clogged dust collector.



Vibrating or Orbital Sanders

Vibrating or orbital sanders take half-sheets of standard sand paper. They have no dust collection system so a face dust mask is advisable. They are very easy and safe to use. Always unplug them when changing sanding sheets.



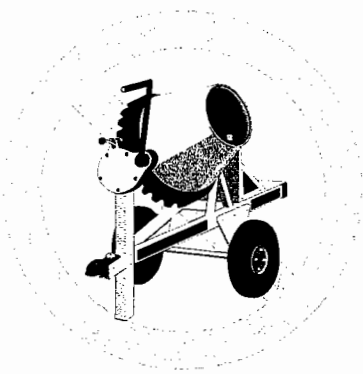
Routers

Routers are used to finish and shape wood for trim and furniture work. Do not use a router unless you have been trained how to use it safely. The router bit rotates at 10,000 rpm, so a broken router bit can be a lethal missile.

Portable Shop Tools & Large Machinery

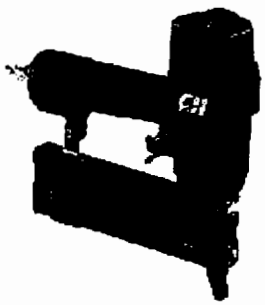
Often the contractor or another group will bring table saws and other portable shop tools to the work site. These tools are normally off-limits. This is because these tools are many times more powerful than electric hand tools, and they require constant supervision when used by beginners. Never assume learning one operation with a stationary shop tool has cleared you to try other operations.

Do not decide to teach yourself how to use these dangerous machines. The result might be a hand caught in a cement mixer or a piece of wood being thrown across the church at dangerous speeds by a power saw or shaper.



Chapter 6

Air-powered Tools



The most common air tools on a construction site are power nailers and staplers. Air powered tools are driven by air from a compressor. The air is stored in a steel tank for that purpose. They are safe when properly used but lethal when improperly used or carried.

All power driving tools, whether electric or air driven, have two triggers as a safety feature. The first trigger is the one activated by your finger. The second is not activated until the nose of the nailer is depressed against the spot where you want to drive the nail. There are at least two conditions that can create safety hazards that you need to look out for:

- Never carry the tool with the finger trigger depressed. Brushing the nose of the tool against your leg could cause the nailer to fire, putting a nail into your leg.
- Never nail close to the edge of the wood. The wood can split away causing the nail to fly freely through the air.

The recycling time of an air-powered tool is very short. Learn to catch the tool as it recoils from the power of shooting the nail. If you do not learn how to do this properly, you will quickly have driven three nails instead of the one desired! Learn to nail by "bouncing" the tool against the work (with the tool in both hands) rather than releasing your finger each time. Your finger generally can't release fast enough making double or triple nailing the result! Safety considerations include:

- Always wear eye protection.
- Never lay the tool down so that the nose is depressed.
- Always check air hoses for leaks and wear.
- Always remove the hose and add a few drops of air lubricating oil to the air orifice of the nailer when adding new nails, or use an automatic oiler between the hose and nailer.
- When lowering the nailer by the hose, do not grasp the hose by the quick-release mechanism at the end of the hose. The nailer will come away and fall. Always receive the nailer by grasping the handle.
- Keep the compressor and steel tank clean and dry.

Chapter 7

Chain Saws

Chain saws are for felling and cutting up trees. They may be gas-driven or electric. No volunteer should be allowed to use a chain saw without proper instruction and strict oversight. Chain saws are normally a farm or wilderness tool requiring great care and experience. Here are some general do's and don'ts:

- Don't think that reading these safety considerations gives you permission to teach yourself how to run a chain saw.
- Always start carefully with the blade held away from your body.
- Never cut wood so that the blade goes into the dirt.
- When cutting off the limbs of a downed tree, start at the outside of the limb and cut off fireplace lengths working toward the trunk.
- As with other saws, never support both ends of the piece you are cutting. Allow one end to fall free. Otherwise, the wood may pinch the saw blade as you cut, causing the saw to "kick-back" dangerously.
- If possible, roll a trunk to cut off limbs under the trunk.
- Cut a trunk into sections by cutting most of the way from above, then rolling trunk over until the uncut section is up. Carefully (without the saw's teeth moving) insert the blade into the previous cut and then cut up to complete the cut. Be very careful that the blade nose is not so close to the end that it kicks out and back toward you.
- If both ends of a log are supported, *cut from underneath* and pull the saw up. Be careful to stop pulling as you near the end of the cut. If both ends are supported and you cut from the top, the saw blade may become stuck in the cut. Call an experienced woodsman when this happens to help you free the saw without damage.
- Always cut small limbs and branches with loppers, not with a chain saw.
- Turn off the saw when filling it with gas and oil.
- When filling a chain saw with gasoline, carry out all safety procedures normally used when working with flammable liquids. Do not smoke or allow any sparks or flames around gasoline. Keep containers tightly fastened to prevent the escape of gasoline vapor.
- Do not attempt to fell a tree with a chain saw without on-site instruction. You will have to know: how your chain saw works; the nature of the wood of the tree you are cutting; whether there are dead limbs that could fall in the process of cutting and need to be removed prior to dropping the tree; how to plan an escape route for yourself if the tree

does not fall where you intend it to (leave your saw behind if this happens!); how to make a proper undercut; how to make a clean back cut; how to "hinge" and slope a back cut to make the tree go a different direction from straight down. These are lessons that have to be learned from good, careful woodsmen. Remember, there are no old accident-prone woodsmen. Always clean the blade and bar before returning the saw to the tool trailer. Remount and retension the blade properly. Learn how to sharpen the blade and do so as part of using it. Replace the blade guard. Replace the gas and oil cans and any of the other hand tools you used. Typically, it takes as much time to clean and resharpen a saw for the next time it is used as it takes to cut the tree. If you don't do that, it will not be able to be used until someone else does. Allow yourself time for clean-up and maintenance as well as for cutting time.

- When felling a tree, keep all bystanders clear and physically restrain children. Under the excitement of a tree falling, little ones have been known to run right under the path of the falling tree! Chain saws require more "down time" for cleaning, adjusting blade tension, adjusting the carburetor, and sharpening than any other power tool. Learning such cleaning and maintenance tasks is a necessary part of successfully running a chain saw. Do not attempt to run a chain saw until you know how to do all of these attendant tasks.
- When felling a tree, have a more experienced person direct your efforts and watch the action of the top of the tree while you are cutting. The safety officer stands where he can be clearly seen by the cutter. Agree on clear hand signals for shutting down the saw and evacuation as people's voices can seldom be heard over the sound of the saw. After being told to evacuate, move in the direction the safety officer tells you so you don't run in the direction the tree is falling.

Chapter 8

Vehicle Safety

Over 80% of vehicle accidents involving non-profit vehicles are one vehicle accidents. This means that most of the accidents are caused by errors of judgement on the part of the driver usually because she or he was not adequately trained. Quaker Workcamps International, in order to keep our accident and insurance rates low, requires that drivers of our vehicles have a valid driver's license. Drivers may also be given a driving history check by our insurance company.

Make sure all drivers and vehicles are appropriately registered in the states in which they will operate. All laws and protocols required for emergency response vehicles must be followed.

Backing Up

All drivers should learn the following backing up technique. A helper should stand behind or beside the vehicle giving appropriate hand signals for backing. If the driver cannot see the helper in the rear view mirror well enough to see the hand signals, she or he will not attempt to reverse. The helper must stand far enough behind the vehicle for hand signals to be translated into action. Do not wait for the vehicle to be inches away from contact with an object before signaling "*Stop!*"

The helper must stand so that he or she can clearly see the driver in the mirror. If the helpger can see the driver, the driver can see the helper. As the driver backs, especially when turning, the helper must move his own body to assure constantly being able to see the driver in the mirror. The helper must constantly be on the lookout for the unexpected. Look up! Is the truck you are backing going to hit an overhang? Is there a child running in back of the vehicle? The helper should use the following signals whether using hands and arms in daylight or two flashlights fitted with airport plastic cones at night.

Back up. 

Both hands and arms pointing toward driver then both sweeping upward in a slow, steady motion, repeated. **The driver should move back in a straight line, slowly.**

Back left. 

Left hand pointing down while right hand sweeps upward. **The driver should back while turning the wheel such that the back of the car moves in the direction of the lowered left hand.**

Back right. 

Right hand pointing down while left hand sweeps upward. **The driver should back while turning the wheel such that the back of the car moves in the direction of the lowered right hand.**

Stop. 

Both arms or flashlight cones slowly crossed. **The driver should slowly come to a complete stop with vehicle stopping as the helper's arms or cones cross.**

Stop! 

Both arms or flashlight cones suddenly cross. The helper should clench their fists to signify a quick stop is required. **Emergency stop! The driver should hit the brakes. Any time the helper crosses their arms or cones the driver should stop the vehicle immediately.**

Chapter 9

Working Around Heavy Equipment

Heavy equipment such as bulldozers, backhoes, and cranes are found on many church rebuilding sites. One of the reasons we have a minimal age limitation on our sites is because you, the worker, have to take so much personal responsibility for your own safety. Heavy equipment is by definition hazardous. There are certain reasons for this that lie in the nature of the machines themselves:

- They make a large amount of noise such that the operator cannot hear anyone trying to communicate by voice.
- They have many "blind spots" which means the operator can only see his work area and even then the driver may depend on hand signals from a person working with him on the ground. Such a person traditionally working with a bulldozer and operator is called the "swamper."
- These machines move with great power and are not designed to make rapid stops.

Heavy equipment is used for moving earth, digging ditches and holes, and helping to move material from one part of the job site to another. Many times ground workers are required to load the scoup of a skiploader with bricks or bags of material which are then easily carried to another place where they are needed. At the new location, ground workers are required to off load and neatly stack the material in the space where it is needed. Sometimes heavy equipment is used to lift roof trusses, plywood, or sheetrock to the location where it will be used or near where building is going on. By now you should start to sense some of the safety rules:

- ALWAYS assume the operator is blind and deaf. You must take responsibility for yourself and others remembering to get and stay out of the way of the machine. Don't assume you can shout a warning to the operator or someone else in the way. Move quickly to remove yourself or others from danger.
- If you and others are working as a ground crew, have one person designated to signal the operator when it is safe to move. Only give that signal when the ground crew is safely away from the machine.
- Heavy machines do not turn like a car. They can turn in one location which means they can spin quickly. Always leave enough distance to allow the swing around without having to move suddenly.
- Machines should always be left with their equipment resting on the ground in case of hydraulic failure.
- Lifting a truss with a crane requires workers on the wall to position and nail the truss on the walls and then to nail triangular supports to hold it absolutely plumb. Never attempt to take the crane hook off the truss until it is completely secured.

- The swamper or safety officer should be on the ground and in a position where easily seen by the operator and where the rest of the work area can be seen as well. The crane operator can work more effectively and safely if the swamper or safety officer tells him the tiny adjustments needed to get the truss exactly in position. Wall workers let the swamper know their requirements which is then relayed to the crane operator.. Teamwork is crucial here. Likewise, the safety officer should stop the work if other workers are moving unaware that they are directly under the material above.
- No volunteers, unless licensed to operate heavy equipment, should attempt to operate any of the heavy machines.

Chapter 10

Safety Preparations

At the beginning of every workcamp, the Project Director or Safety Officer should identify skilled medical personnel who may be a part of the volunteers or leaders. Skilled nurses, EMT trained personnel, or doctors should be identified in case of a serious emergency. The location of first-aid kits and "what to do if..." should be discussed.

Prior to the workcamp, the on-site coordinator and project director should visit the headquarters of the ambulance unit that would respond if 911 or the local emergency number is called. This is to make sure the local crew is aware of the location of the construction site and that they may have to be dealing with serious construction-related injuries.

Medical Form

Make sure all workcampers have the following form on file:

name_____ birth date_____age_____

address_____

_____ state_____ zip code_____

health insurance company_____

policy number_____ medical record number_____

insurance company phone number to inform of accident_____

In case of emergency whom shall we notify?

name_____ relationship_____

home phone(_____)_____ work phone(_____)_____

Describe physical or mental conditions that may affect your service such as allergies, asthma, diabetes, and prescription drugs you take regularly. Be sure to note any allergies you have to medications:

_____

_____

I hereby release Quaker Workcamps International, its Board of Directors and staff of liability for any injuries I may sustain as a participant in this workcamp.

signed_____ date_____

If under 18 or covered by your parents' insurance, have them sign:

I, the parent/guardian of_____do hereby consent
to any x-ray examination, anesthetic, medical/surgical diagnosis or treatment, or
hospital services that may be rendered under the general or specific instructions
of the QWI Director, Project Director, or On-Site Coordinator. I hereby release Quaker Workcamps International, its Board of Directors and staff of liability for any injuries that may be sustained by my child as a participant in this workcamp.

signed_____ date_____

Signs and Posters

Copy the sign and poster templates in this section as needed and post them around the workcamp and work site to promote safety.

Working safely is the only way to work.

Safety is everyone's responsibility.

Safety is more important than job deadlines.

It is my responsibility to work as safely as possible.

It is my responsibility to ask if I don't know how to do something safely.

It is my responsibility to remind my neighbor not to take risks.


SAFETY
FIRST
PLEASE FASTEN
YOUR SEATBELTS


DANGER
CONSTRUCTION
AREA


DANGER
FALLING
MATERIAL


DANGER
KEEP
OUT


SAFETY
FIRST
KEEP THIS AREA
SAFE AND CLEAN


SAFETY
FIRST
DON’T TRY TO LIFT MORE
THAN YOU ARE ABLE


SAFETY
FIRST
THE SAFE WAY IS
THE BEST WAY

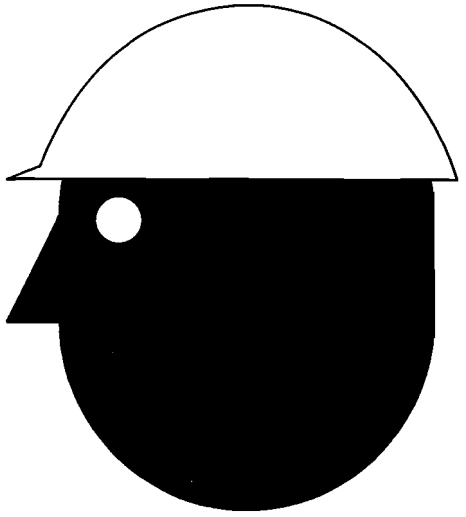

SAFETY
FIRST
DON’T TAKE
CHANCES

BE CAREFUL

PREVENT ACCIDENTS

DANGER

HARD HAT AREA



DANGER

NO SMOKING

I WANT YOU

To Remember Safety –

As **You** work to

rebuild this Church!

Remember, all of God's workers work safely, & all her angels fly with their seat belts fastened!

Chapter 11

Emergency Procedures

Emergency Phone Numbers

Fire _____

Police _____

Hospital _____

QWI Main Office _____

Fire Response Plan

Review this plan at a particular site so that everyone knows what to do:

(person discovering emergency) In case of a fire, shout "Fire" and then tell the location of the fire to the central office staff.

Central office staff: Sound the emergency alarm and call 911, giving the location of the fire. Stay on the phone to the 911 dispatcher to give any updates on the fire or possible victims.

DO NOT PANIC but MOVE QUICKLY TO EVACUATE THE BUILDINGS.

Everyone should move quickly to the assembly site and report to a leader who should be taking roll. Remain calm and quiet. As you leave your room, make sure all beds are empty.

Volunteer Coordinator: Take roll and report any absentees to the central office staff.

Safety Officer: Move to the scene of the fire and report on the extent of the fire to the office.

Project Director: Make sure all volunteers are accounted for. If necessary, move people away from the fire scene to allow emergency crews to work.

Accident Response Plan

Review this plan at a particular site so that everyone knows what to do. If a serious accident occurs do the following:

(**Person observing accident)** Report accidents to the central office staff.

Central office staff: Sound the emergency alarm and call 911. Stay on line to the 911 operator so that you can relay messages to responding emergency crews.

Safety Officer: Immediately take your radio to the scene of the accident or other emergency. Report to the office the nature and extent of the injuries or other incident. Speak calmly and clearly. If a medical professional is on the scene, let him or her report to the office. Keep other volunteers away from the victim so that emergency workers have room to work. There should be an agreed upon assembly area for volunteers. If necessary, move construction vehicles so that emergency vehicles can get to the victim.

Medical professional or EMT: Respond to the scene of the emergency and take command of the response team. Administer first aid but report (if necessary through the safety officer) to the office to alert responding emergency crews as to the nature and extent of the emergency. Only you have the authority to cancel the 911 call. If you are in doubt, let them come on in. If you are clear they are not needed, cancel the call.

Medical supplies transport: A level-headed volunteer should be designated to carry the first-aid kit from the office to the site of the accident. It is your job to return the kit after it has been used and is no longer needed. Report used items for replenishment.

Emergency Crew Direction givers: Volunteers need to direct the responding emergency crews to the scene of the accident. After the emergency crews have arrived, go to the assembly area.

Project Director or designee: Find out who has been injured and secure the medical form for transport to the emergency room. Advise responding crews of any known allergies to medications. Also report any medical history that may be important. This form can be copied for hospital and doctor's records but must be retained by the staff person staying with the victim.

Volunteer Coordinator and other staff: Gather and calm the other volunteers. If the incident involves a major collapse or fire, take roll call and make sure everyone is accounted for. If there are missing people, immediately report to the central office staff who is missing.

Central office staff: After the emergency is over and the victim is appropriately taken care of, do the following:

- Notify the victim's family and, if need be, keep them appraised of developments.

- Notify the victim's insurance company as soon as reasonably possible. (If the victim will depend on Habitat Health Insurance or Volunteers for Peace insurance, the proper forms must be filled out. Receipts for any up-front expenditures must be copied and submitted for reimbursement.)
- Notify QWI headquarters by phone as soon as possible.
- The project director or staff on duty need to prepare a detailed accident report including times, procedure being carried out, a clear description of how the accident occurred, when and how the alarm was raised, first-aid administered and by whom, subsequent medical follow-up including who was notified, by whom and when. Eye-witness accounts are most helpful. Responsible people reading the report need to be asked to evaluate QWI safety procedures and indicate how the accident could have been avoided. The accident report and the follow-up by such responsible people should be submitted to the Director for appropriate follow-up action. Eventually, this information needs to be shared with the other volunteers to attempt to avoid such an accident ever happening again. Staff need to review their emergency plan to see if they responded in the best possible ways.
- If people were actual witnesses to the incident, get them to write down what they saw and heard. This should be done as soon as possible after they can be calm about the incident. They should sign and date these reports. After a time of rest the community should meet and discuss their individual and corporate response to the incident. How quickly and clearly was the incident reported? How long did it take to relay that information to the local emergency service? Did everyone with assigned responsibilities report promptly and execute those responsibilities? Was the victim's life saved because of such prompt and efficient turn-out? Can volunteers make suggestions to make the plan better?