ACCIDENTS COST EVERYONE

When someone you work with is injured on the job, it doesn't really affect you. Or does it? You might be surprised at the ripple effect an accident can cause. Every accident has costs, and the costs always include more than money.

For instance, accidents directly affect a company's productivity. Obviously; a company that is producing less can't compete with companies that have higher production. If the company loses business because frequent accidents lowered productivity, that means less money for wages and benefits. People may even get laid off.

Thank goodness Workers' Compensation insurance covers the medical expenses of those injured in accidents. But someone has to pay for the insurance. A company with a high accident record must pay higher insurance premiums. The more money spent on those premiums, the less that's available for other things like your paycheck or your benefits!

When there's a serious accident on a site, such as a serious injury or death, you may be out of work while the job is shut down. Many unsafe work sites frequently shut down permanently or are taken over by other companies. People out of work temporarily or permanently, because of an accident, may have trouble making the mortgage or rent payments. Some become homeless. Others may need to dip into their savings or postpone buying a home or moving into a larger apartment. The stress of economic hardship takes its toll on the families of all workers.

When accidents happen frequently in a work environment, everyone feels stressed. You can't be performing at your peak when you are worried about your safety and health. When trusted coworkers lose their jobs and their hopes because of a permanent disability, everyone suffers an emotional loss. Finally, accidents in your work area reflect a poor work record.

You can see that accidents at your work site can affect you in many ways. That's why it's worth it to take the time and care to use the right equipment and procedures, wear the right protective equipment and follow safe work practices. It's also important to be alert to the safety needs of those you work with, and those who work around you. When accidents are prevented, everyone gains.
SAFETY HAPPENS...WHEN YOU TAKE RESPONSIBILITY

Who's responsible for your safety at work? When it comes to safety, do you see yourself as someone who "makes things happen", or as someone who "things just happen to"? Of course you have to depend on supervisors and safety trainers to provide you with safe, well-maintained and appropriate equipment for your job. But it's important to remember that as a user of this equipment, you have a very active role to play in your safety and the safety of those who work with you.

For instance, management ensures that materials you use are clearly labeled for hazards and proper use. But it's up to you to read the label, use the material according to guidelines, and ask questions when you're not sure about what you have read or must do. Then go a step further: be alert to what's going on around you. Are others using the material correctly? Taking responsibility means caring about the safety of others as well.

The same goes for using equipment. You know, by heart, the safety procedures for using your tools and machinery. Your supervisor has probably given you verbal or written guidelines for their use in every situation. But it's up to you to put these guidelines into practice. If you injure yourself because you didn't use guards properly; didn't protect your face, hands, and eyes; or injure someone else because you were careless, who can you blame for the disaster? The responsibility is yours.

Here's another situation:
There's an oil spill on the floor. Someone could slip and fall. It's not your job to clean it up; after all, your job is construction, not maintenance. You know it's there, so you are careful to walk around it. But what about those you work with every day? Someone could be injured unless you "make things happen." It may not be your job to clean it up yourself, but you can make sure the cleanup gets done. Not only do you protect those you work with and depend on to be there every day you also make a big impression on your boss. And that can't hurt.

It's a good feeling to take charge of your own safety. And others appreciate knowing they can depend on you. Management and supervision are doing their part; the rest depends on you "to make things happen."
Always Be On The Lookout

Think about the last accident that happened at work. Chances are it happened because somebody wasn't looking out. Keeping your eyes open to what's going on around you is a key to preventing construction site accidents.

If only people and things on a site would stay put this talk wouldn't be necessary. But let's face the facts. Most construction sites are like Grand Central Station, with people, vehicles, machines, and hoisting equipment constantly moving around, both on the ground and in the air. To protect yourself and those around you, keep a constant lookout not just in front of you, but behind, around, above, and below.

Watch for moving objects. This includes trucks, hoists, and machinery. It would be a lovely world if the drivers of this equipment were looking out just for your welfare. Since you can't depend on them, assume they don't see you until you know they do. Be extra aware when sitting or crouching down behind vehicles that might back up. By the same token, if you're the driver, look out for people who may not expect you to be coming through the area.

Look out below and above. Do not drop anything to the ground from ladders, scaffolds, or second stories. Look below you as you climb down a ladder. Always maintain three point contact with the ladder when climbing up or down. Stay away from swinging loads and from areas where debris is being lowered. If it is necessary to work in these areas, make sure those above you know you're there. And look up often to keep track of the movements above you.

Watch your step. On a construction site, your next step could be into an open stairwell, off the edge of an unfinished platform, through a false ceiling or temporary covering, or into the path of a moving truck. Keep your eyes on the path ahead of you so you won't trip on the pile of lumber that wasn't there the last time you walked by.

In order to "look" your best make it easy for your eyes to do their job. Use proper eye protection and keep your eyewear clean and scratch free. If you need glasses, wear them at all times. Make sure they are either prescription safety glasses or protected by safety goggles.

Keep these points in mind and you will never have to be in the sorry position of saying "I didn't see," when what you really mean is "I wasn't looking."

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BEWARE OF THOSE SHARP POINTED OBJECTS

Part of your on-the-job safety procedure is to protect yourself from the hazards of your work by using safety goggles, face shields, gloves, and the like. You need to protect your hands and feet from the possibility of a puncture wound from a sharp object such as a nail. You should know two things about puncture wounds: how to prevent them and what to do if you get one.

The best way to protect yourself is to keep a clean work environment. This means removing nails from wood immediately when braces, guard rails, forms and the like are dismantled. Move scrap lumber that may contain nails to a scrap heap away from pathways in the work area. Nails alone can be a hazard. They often land point up in mud, weeds, debris, or on bare ground if they have wide heads. Keep the work area clean of dust and other things that might "hide" nails, so you can spot them more easily. Be especially careful about areas at the base of ladders or other places where you or others might step down backwards.

In addition to keeping a clean work site, be extra careful using power tools that drive nails, staples, or punches, and follow recommended precautions when using them.

No matter how careful you are, you or someone else on the job may get a puncture wound. Always treat a puncture wound with special care, even if it doesn't seem to hurt very much. The reason for this is simple: The point of the sharp object carries bacteria deep into the flesh where antiseptics can't reach. The surface of the wound may heal while an infection is developing underneath.

Report a puncture wound at once and thoroughly treat it. Then keep an eye on it. If the wound doesn't seem to be healing or if there is reddening, swelling, or increased pain, you may be developing an infection. If this happens you must see a doctor to get treatment that will prevent serious complications. Anyone who works around sharp objects should also have a tetanus booster every five to ten years to prevent tetanus; an even more serious puncture wound complication.

Good safety practices and prompt first aid are important to protect you from any job related injury. But you must take special care to both prevent and treat puncture wounds, because they can be deadly. Like so many safety programs, preventing puncture wounds mostly boils down to simple good housekeeping.
NO FIRES ALLOWED ON THIS JOB SITE

What's the first thing you would do if a fire started on the site? What's the second? Now's the time to start thinking of answers to these questions, because if it happens, there won't be time to think. And while we're at it, let's talk about preventing fires.

When it comes to fire, a construction site is a disaster waiting to happen. Fire protection systems and fire walls are not yet in place. Dust, flammable fuels, other liquids, and combustible materials are all common at construction sites. Welding operations, electrical systems, and power tools provide the sparks to start fires. There are plenty of things you can do to make your site fire safe. Let's review the important ones.

Before using a torch, get combustible materials away from the area or cover them with flameproof tarpaulins. Store acetylene and oxygen cylinders safely, away from high temperatures and separated from each other. Know your flammable liquids: heating and equipment fuels, solvents, paints, and adhesives. When dispensing these materials, use approved safety cans and always ground and bond containers. Make sure you use these materials in a well ventilated area their vapors can be explosive. If you smoke, light up in designated areas only, never where there are flammable vapors, and always extinguish butts. When you're finished using flammable materials, store them immediately, away from work areas if possible.

Fine particles of dust in the air can be highly flammable. Where possible, use dust-collecting devices on power equipment. Clean up dust and scraps in the woodworking area regularly. Know which plastics, trim, and roofing materials are flammable and keep a respectable distance between them and spark hazards.

Know your fire extinguishers. There are four types of fires, requiring different fire extinguishers. Only Class A fires wood, paper, cloth, and rubbish can safely be put out with water. Class B fires grease, gases, flammable liquids and Class C fires electrical equipment need special extinguishers, such as carbon dioxide, dry chemical, or Halon. Class D fires combustible metals require special chemical agents. Know where the nearest fire extinguisher is, how to use it, and what kinds of fires it's for.

Now back to the question we started out with. The first thing to do in case of fire is SOUND THE ALARM. Even though you may be able to put the fire out with an extinguisher, your first duty is to warn others that there is a fire so that they can get out of the area. Next, act with caution, and act fast. The safety of everyone, including yourself, is the highest priority. Do what you can to extinguish the fire but avoid heroics. You're responsible for preventing fires, not fighting them, unless you're thoroughly trained. With the large potential for fire on a construction site, your fire safe work practices are what really count.
GOOD HOUSEKEEPING MAKES A DIFFERENCE

Let's talk about housekeeping not the kind you do at home, but right here on the job. What difference does good housekeeping on the site make to you? A big difference. Your safety, how much work you get done, and whether or not the job gets finished on schedule, all depend on good housekeeping.

Keeping an orderly work site saves time. When you have to walk around job litter 50 times a day, you waste your time and the company's. It takes time to find the materials you need in a disorderly work area. And when unneeded materials take up available work space, workers get in each other's way and have to wait to do their jobs.

What's the best time to clean up? The answer is "right now". Instead of waiting until the end of the day or week, do it as you go. Cleaning up takes time, but since the cleanup has to take place sooner or later, why not do it right away? The time you save is much greater than the time you spend cleaning up. It might be worthwhile to assign one or two people each day to keep the area clean, so job litter can be removed before it has a chance to get in the way.

In addition to cleaning up the obvious things like job litter, take a moment and look around from time to time. Is there anything in your work area that doesn't need to be there? What about lunch scraps, newspapers, discarded clothing? Can materials be stacked more efficiently (and more safely) to make more room? Is there something out of place that might cause an accident? If you see a housekeeping problem, take care of it. Or bring it to the attention of whoever is supposed to take care of it. When supplies are no longer needed, send them back to the supply yard immediately. This keeps the materials in better shape as well as saving time and space for work.

Resist the temptation to speed up the cleaning process by collecting everything in one bin or corner. When cleaning up, put things where they belong. That way you save time for the person who has to find what you put away.

You can see that good housekeeping saves time. It also saves on frayed nerves. If the area is not cluttered with unnecessary stuff, you have more room to spread out and do a good job without getting into your crew mate's face. I don't mean to sound like your mother, but isn't it time you cleaned this place up?
Toolbox Talk     # 7

HORSEPLAY IS NO JOKE

It seemed like a sure way to get some laughs. Some of the guys greased the rungs of Bill's ladder while he was up there with a can of paint. But the punch line wasn't very funny. Bill decided to press criminal charges and is preparing a civil suit to cover the cost of his broken ankle and lost work time. Some old friendships came to an end that day.

Was this just a case of a practical joke gone wrong? Or was it more proof that practical jokes in the work place are always wrong? Chances are that in Bill's case, one person suggested the joke, and the others went along with it against their better judgment, maybe because no one wanted to make waves. There is someone at every job site with a warped sense of humor who is always thinking up ways to get a laugh at another worker's expense. But deep down inside most of us feel uneasy around this sort of person. We never know where this loose cannon is going to strike next. The best thing you can do for yourself and others is to listen to your inner voice. Let the jokester know in no uncertain terms that you're not going along with the joke. You'd be surprised at how many other people are thinking the same thing but don't have the courage to say it.

Let's talk about some of the results of horseplay gone wrong. While some people can laugh it off when they are the butt of a joke, others may be humiliated or embarrassed. Such jokes may result in anger, hurt feelings, distrust between workers, and even a desire for revenge. When practical jokes are common at a work site, it's hard to pay attention to your job, because you're always on the lookout for the next joke. Horseplay is a safety hazard that can quickly get out of hand and lead to injury or death. If you get hurt as a result of horseplay, don't expect to be covered by workers' compensation, it's not a job related injury. If someone else gets hurt as a result of your horseplay or joke, you may be liable for damages. You will definitely be at risk of losing your job.

It's up to all of us to keep horseplay from getting out of hand. It's a matter of not going along with it. You don't have to confront a practical jokester in front of everybody. Take the person aside and talk confidentially. Point out that such acts as tripping, throwing tools, rearranging or hiding equipment, playing games with compressed air, can cause serious injury to your buddies. Horseplay is not only dangerous it's unfair and stupid.

Did I say that humor on the job is wrong? No way. Being able to laugh is what gets most of us through a day's work. Be as funny as you like, as long as it's not at someone else's expense or a safety hazard. Now, anyone have a good joke to tell?

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KEEPING SIDEWALKS SAFE FOR THE PUBLIC

On a construction site, we expect to walk across broken rock or climb over ditches. We automatically keep a lookout for crane counterweights, equipment, and materials in our path, and things falling from scaffolds. But sometimes we forget that there is a whole world out there full of people who don't expect safety hazards as they walk past where we are working. And they aren't wearing hard hats.

A simple crack in the sidewalk is a good point. Someone who has been walking down that sidewalk every day for 20 years is not going to notice a new crack caused by construction work. They may not be on the lookout for objects on the sidewalk. Be sure you don't leave anything, from a loose nail to a load of bricks, on a sidewalk that pedestrians can reach. Keep the sidewalk scrupulously clean and mend or report cracks immediately. Use barricades to keep the public away from damaged or hazardous sidewalks.

Elderly people are especially at risk in construction areas. Their eyesight, hearing, and reflexes aren't what they used to be, and they lose their balance easily. Always assume that the next person to walk by might be an elderly person and ask yourself if the sidewalk is safe for such a person.

Remember that pedestrian accidents aren't covered by Workers' Compensation. Pedestrians can and do sue construction companies for injuries they sustain in work areas. These lawsuits mean higher insurance rates for your company and less profits left over for your next pay raise.

So take a little time to be aware of the public around you. Make sure that barricades are in place and clearly visible. Report sidewalk hazards immediately. By watching out for the public, you could prevent a tragedy and save your company and maybe yourself from loss of income and public confidence.
THE IMPORTANCE OF ELECTRICAL GROUNDING

Modern construction wouldn't be possible without electricity. But electricity can be a killer if it's not used safely. The most important thing you can do to insure your safety around electricity is to properly ground all electrical tools and equipment. Let's talk about what electrical grounding is.

When there's a current leakage from a tool or piece of equipment, the current will flow through any available conductor until it reaches the ground. Since your body is in contact with that tool, the available conductor is you. What happens when electrical current uses your body to ground itself? The response ranges from a slight tingle to sudden death. Electricity causes muscles to contract, often making it impossible for the affected person to let go of the tool. Severe electrical shock causes the heart muscle to contract and stop beating. Contact with a circuit can also cause blisters and burns.

To prevent ground fault hazards, all electrical tools should be connected by a three-pronged grounded plug. If grounding is not available, always use double insulated tools, which are covered with a non-conducting surface to protect you from contact with the circuit. Or use battery-operated tools. Another device, a ground fault circuit interrupter, is required for all construction personnel while using 15 or 20 amp, 110 volt receptacles. It shuts off electricity if a ground fault occurs.

You can't count on being safe around low voltages. Under the right circumstances, even low voltages can kill. Your body's "resistance" to current depends on a number of things, most importantly, how damp your skin is. Everyone's skin has some moisture in it. The more moisture, the more current flows through you. That's why you are in greater danger of electrical injury when you're working in damp weather or are sweating.

If someone else has come in contact with a circuit, the first thing to do is to break the circuit by disconnecting the electrical supply. Never touch a person who is in contact with a live circuit.

The more you understand about electrical grounding, the less likely you are to suffer an injury. Take the time to make sure your tools and equipment are properly grounded or insulated. Being careless or hasty with electricity can lead to a shocking experience.
COVERING FLOOR OPENINGS

It was a small hole barely big enough for a man to fit through. Terry was going to cover it in the next hour. He grabbed a sheet of 4' by 8' plywood from the stack, threw it over the hole and went to lunch. Along came Will and Jake, who needed just such a sheet of plywood. Wondering why someone had left good plywood lying on the floor instead of stacked, they decided to use the piece on the floor. Naturally, with the plywood between them, they didn't see the hole. Suddenly Jake was standing alone, with one end of a piece of plywood. All that remained of Will was a series of colorful comments coming from the floor below.

We can laugh at this story because Will escaped with only a few bruises, but you can bet that he made sure Terry didn't make the same mistake again. Covering a floor opening safely, so that other people don't get hurt, calls for more than just laying the material over the hole. It should be anchored & marked "HOLE." There's a right way to do everything, and doing less than the right way results in less than complete accident prevention.

Never leave a floor hole unguarded, even for a few minutes. Choose a floor covering that is big enough to overlap the edge of the hole generously. It should be thick enough to cover the hole without sagging in the middle. The bigger the hole, the thicker the covering should be. Unless you intend to stand there and warn everyone who might possibly go past that hole, nail the cover down and mark it "HOLE", even if it's only going to be there an hour. Why take chances? If someone you work with ends up in the hospital because of your carelessness, you've not only disrupted someone else's life, you've also increased your own workload while the other worker is laid up and probably put your job on the line.

One more thing, if you see a hole that is unguarded, not covered, or improperly covered, whose business is it? The answer is that it's everybody's business. Even if it means taking time out from a tight work schedule, report improperly covered holes immediately. Taking responsibility for others' safety is good for business, and that's good for you.
DO THE RIGHT THING

Hal was new on the job. He was young, and he wanted to make a good impression not just on his boss, but also on the other guys. So he was pleased when Joe and Wally motioned him over to them during a fueling break. As they chatted, Wally took out a pack of cigarettes and offered one to Hal. "Gee, thanks," Hal started to say, but something stopped him. Smoking in a fueling area? Wasn't smoking off limits here? But if he refused a cigarette, how would that look to the others?

What would you do in Hal's position? Chances are these kinds of situations come up all the time. We all worry about what other people think of us. Most of us try to say the right things, dress the right way, and so forth, to earn the respect of the people around us. But when it comes to safety on the job, there is only one right thing to do and that is to follow correct safety procedures regardless of what others think or say.

Doing the right thing may mean wearing your protective equipment. You don't have to tell me how silly you feel wearing your goggles or respirator or whatever you're supposed to use, when no one else is doing it. But keep this in mind: your family, your crew mates and your job all depend on your good health and safety. And you protect your health by protecting yourself from workplace hazards.

At times, it may seem overly thorough and a waste of time to follow proper procedures to the letter, especially when you're up against a construction deadline. When was the last time you had to decide between getting the job done in a hurry or stopping to change a dangerously dull drill bit? Resist the temptation to speed up your work by cutting corners on safety, even if others are doing it. In the long run it doesn't payoff, it leads to more accidents, lost work time, and higher insurance rates. All of these affect your company's productivity. Always handle hazardous materials and equipment in the recommended way. Take time to clean up according to proper procedures.

Doing the right thing also means doing something about unsafe conditions that you see around you. It means seeing that a pile of spilled tacks under the scaffold gets cleaned up or the faulty wiring on the new guy's equipment gets taken care of, even if it's not your responsibility. All it takes is a minute or a word to your supervisor. When you report unsafe conditions or procedures that could lead to an accident, it shows that you care about the people you work with.

It's hard to resist peer pressure. Especially when others want you to overlook safety procedures to speed up production or when you're invited to engage in horseplay or practical jokes. We all want to be liked and accepted by our crew mates. But when you have to put your health and safety on the line to gain acceptance, you haven't gained much. In the long run, doing the right thing will gain you respect. And it will encourage others who really want to be safe to join with you in doing the right thing.
THE DEADLY DOZEN

We have often heard of the “Daily Dozen” with regard to proper exercise and maintaining good health. The “Daily Dozen” has a counterpart, known as the “Deadly Dozen”, which also has an important bearing on health and welfare.

The causes of accidents are classified in two categories of 12 each; "Unsafe Actions" and "Unsafe Conditions". If we acquaint ourselves with these enemies, a majority of accidents can be eliminated.

UNSAFE ACTIONS:
1. Unauthorized use or operation of equipment.
2. Failure to secure or tie down against unexpected movement.
3. Operating or working at an unsafe speed.
4. Failure to warn or signal as required.
5. Removing or making safety devices inoperative.
6. Using defective tools or equipment.
7. Using tools or equipment unsafely.
8. Standing in an unsafe place or taking an unsafe posture.
9. Servicing moving or working equipment.
10. Riding hazardous moving equipment.
11. Horseplay, distracting, startling and kidding.
12. Failure to wear personal protective equipment.

UNSAFE CONDITIONS:
1. Lack of adequate guards or safety devices.
2. Lack of adequate warning system.
3. Fire and explosion hazards.
4. Unexpected movement hazards.
5. Poor housekeeping.
6. Protruding object hazards.
7. Close clearance and congestion hazards.
8. Hazardous atmospheric conditions.
10. Hazardous defects of tools, equipment, etc.
11. Inadequate illumination, intense noise.
Toolbox Talk    # 13

WHAT TO DO IF AN ACCIDENT OCCURS ON YOUR JOB

**Major Injuries**

The number one problem at the scene of a major injury is remaining calm. Do not get excited for two reasons:

1. You can lose control of the situation and create a lot of confusion.
2. If the injured person knows you are confused about what to do, he/she becomes overly concerned about their own condition.

The following are recommendations for handling severe injuries:

1. Have someone call an ambulance.
2. Do not move the patient unless he is in danger of further injury.
3. Do not leave the patient alone. Someone should be with him or her at all times.
4. Reassure the patient he/she will be all right. A good mental attitude is important.
5. Use the proper First Aid for the injury.

Once a patient has been removed by the ambulance, take the following steps:

1. Investigate the accident. Get ALL the facts. Get the names of witnesses.
2. Notify the company office. Be sure to make a full written report.
3. If there is a possibility the accident could result in a death or permanent disability, the company office must be notified and Dept. of Labor and Industrial office at once.

**Minor Injuries**

All injuries no matter how minor should be given First Aid and a notation made in the daily work book regarding who, when, where and the treatment administered. Minor accidents can become major accidents. All accidents should be investigated, the cause determined and corrective action taken to prevent recurrence.
WHAT CAN THE EMPLOYEE DO ABOUT ACCIDENT PREVENTION

Many times following a safety meeting, an employee will remark: "What can I do about accident prevention? I just work here." And, more often than not, one finds it hard to come up with a quick answer to that question. It is obvious though, that since safe, or unsafe, conditions, and practices, occur at the employee level, there must be a lot the employee can do about accident prevention. In fact, he has almost total control of safety procedures in your organization.

Following are a few answers to that question:

1. Accept accident prevention as part of your daily duties, and as a personal challenge. You can't pass the buck and leave it to the other fellow.

2. Report unsafe working conditions. If you see an unsafe working condition, report it promptly to your supervisor.

3. Avoid horseplay, and discourage others from playing practical jokes.

4. Follow instruction. Stick to safe, approved methods and do the job the right way. Your supervisor has considered beforehand the best and safest way to undertake the job. Follow his/her plan. You may inadvertently create an unsafe condition for fellow workers.

5. Make suggestions. Develop an interest in your work and study your job. Try to improve methods, quality, and production, and you will also improve safety. Discuss your ideas with your supervisor.

6. Keep your work area neat and orderly. Don't let unnecessary trash, materials and equipment accumulate. Maintain a safe place to work.

7. Dress for the job. Dressing safely will help you work safely. Leave rings at home, wear appropriate shoes and don't wear clothing too loose. Dress cool in summer and warm in winter.
WHO GOT HURT?

The Employee, the Foreman, the Superintendent, and the Company

A fatal injury occurred recently on a work site located near one of our members’ major contracts. When first reports of the accident reached the public, our office was deluged with calls from news media and others requesting information about the incident. So, even though we were not involved, we got hurt a little because the calls tied up our phones and interrupted our people’s work.

It appears that the answer to the stock question, "Who got hurt?" can be answered in one word: "Everybody.” Let's consider all the people who suffer a loss of one kind or another when an accident occurs.

First of all, there is the employee who had the accident. Even if he/she is not injured, their work has been delayed, their ability to satisfactorily perform their work has been placed in doubt, and he/she has suffered the annoyance of having his plans suddenly changed by an undesirable event.

If he/she is injured, their loss will include some of all of the following: pain, discomfort, disability, loss of earnings, and loss of physical ability to continue in their craft, total disability or even their life. There is no doubt that he/she got hurt.

Second, let's consider the foreman. He/she is expected to get a reasonable amount of work with the manpower under their supervision. Anything which delays one of his employees, damages the material or equipment involved or interrupts the orderly accomplishment of the job, reflects unfavorably on their ability to control and direct the work for which he/she is responsible. Accidents certainly hurt them.

Suppose we consider the superintendent next. He/she is charged with completing a specific assignment by a designated date at an established cost. Each incident which delays the construction, damages the material or equipment, injures a workman, or prevents the efficient supervision of the work being performed, also damages their reputation as a manager. They got hurt too!

What about the loss suffered by our company? Every accident which occurs on a job reflects a shadow of doubt on our ability to engineer and construct a facility, to provide capable supervision, to attract a capable work force, and to fulfill a contract. The reputation of our company is hurt by our failure to prevent accidents.

Other areas for consideration are the loss suffered by the customer when completion of the contract is delayed, the additional insurance cost which the construction industry must pay, and even the welfare loss imposed on the public.

We are proud of our improved injury free experience. That is why we insist on the orderly application of our program for accident prevention measures.

That is why we are continually working to improve the skills of our supervisors. That is why we are soliciting your cooperation. Wherever you fit into the picture, we don't want you to get hurt!
BARRICADES AND WARNING DEVICES

Safety planning calls for first things first and the first step in highway construction is the handling of traffic through or around the area involved.

Major sources of injuries involving the public and the worker are caused by accidents which happen during highway construction or maintenance operations are:

(1) Collision with construction equipment.

(2) Collision with other vehicles.

(3) Pedestrians falling into open excavation work.

(4) Driving into open excavation work.

(5) Driving into work areas.

(6) Loss of car control because of minor road repairs, soft shoulders, etc.

Barricades and other warning devices will minimize the likelihood of such accidents.

BARRICADES: Barricades are usually of two types, the horse type and the fence type. The fence type of barricade is recommended for use as a roadblock and around heavy equipment; the horse type is used for all other purposes. Barricades should be properly striped for visibility. It is recommended that stripes be six inches wide and inclined at an angel of 45 degrees from the horizontal.

SIGNS: Signs should conform in shape, size and color to the recommended specifications. Signs should be used freely to designate approach to the operation. Secondary approach warnings, one lane traffic, speed limit, etc.

FLAGMAN: The flagman's duties are of the utmost importance and he/she should be made aware of this importance. Flagmen should place themselves where they will be visible to incoming traffic for at least 500 feet. They should stand on the shoulder opposite the roadblock or in the blocked lane, never in the traffic lane, and should face traffic at all times. Flagmen should use their traffic control flags with authority and not in a haphazard manner. When two flagmen are being used one at each end of an operation, they should coordinate their signals and make sure that oncoming vehicles are not endangered.
GENERAL CONSTRUCTION SAFE PRACTICES #1

Keep oily cloths away from oxygen (explosion danger).

Always light torch with a "torch lighter" (never use a match or cigarette and never in a keg or drum). Open compressed gas cylinders slowly to avoid valve damage.

Keep salamanders or other portable heating equipment away from combustible materials.

Make sure engines in buildings are away from combustibles and exhaust is properly ventilated.

After work, check clothing for hidden hot slag or molten metal. Do not wear oil soaked clothing. Check for clear path first. Then have clear view while carrying load.

Face ladder when climbing. Use both hands. Use hand line or material hoist to lift loads.

Use only sturdy ladders on firm base. Where possible, angle out base one-fourth of ladder working length. Keep area clear of debris.

Have ladder reach at least three feet above landing for easy access. Tie off ladder at top (secure bottom and brace long ladders).

Use scaffold if solid footing or safe ladder access is not possible; made of straight-grained lumber, free of defects and knots. Test plank strength before use.

Platform planks should overlap supports not less than six inches or more than twelve inches and be secured from shifting.

Consider all wires "live" until checked and locked out. Keep safe distance from "live" electricity.

Have electrical power tools and equipment property grounded. Do not use electrical power tools or equipment while standing in water.

All electrical power tools and extension cords should have rubber insulation. Damaged cords should be replace not repaired and never remove the ground prong on a plug for lack of a grounded outlet.

Only qualified personnel should make electrical repairs or installations. Do not use metal ladders and hats near high-powered electricity.

Have all cords, leads, and hose placed safely to avoid tripping hazards or damaged. Keep them way from oil or grease.

Remove or clinch nails in old lumber.

Oil, grease and water spills must be cleaned up right away. Delay can cause an accident. Keep loose materials off stairs, walkways, ramps, platforms, etc.
GENERAL CONSTRUCTION SAFE PRACTICES #2

Report to work rested and physically fit to perform your job.

Wear clothing suitable for weather and your work. Torn or loose clothing, cuffs and neckwear are hazardous.

Wear approved safety footwear suitable for your trade, insure that they are in good condition.

Use gloves, aprons or other suitable skin protection when handling rough materials, chemicals, hot or cold objects. Replace if worn.

Jewelry (rings, bracelets, neck chains) should not be worn.

Special safety equipment is provided for your protection. Use it when required. Keep in good condition, report loss or damage immediately.

In or near old construction locate gas, power and water sources before starting work. Contact utility companies.

"No Smoking" signs stand guard near fire dangers. Obey them, always!

Know location and use of fire extinguishing equipment and how to give fire alarm.

Flammable liquid containers should be clearly labeled and stored in a protected, separate area. Flammable liquids should be used only in small amounts and in approved metal safety cans. Do not refuel a hot or running engine. Clean up spills before starting. Do not block aisles, traffic lanes or fire exits.

Have safe access to work areas the safe way is the right way. Avoid shortcuts use ramps, stairs, walkways, ladders, etc.

Properly brace or shore up excavation side walls if not sloped.

Place excavation spoils far enough away to avoid load strain on walls. Remove surface rocks that may fall.

Do not put vehicles too close to edge of cut.

Bend knees; keep back nearly straight when lifting. Leg muscles, not your back, should do the work. Get help with heavy or bulky materials to avoid dropping load or getting thrown off-balance.
GENERAL CONSTRUCTION SAFE PRACTICES #3

Never adjust or repair machinery while it is in motion. "Lock out" when maintenance job requires.

Operate machinery and vehicles within rated capacity and at safe speeds.

Report defective power tools or machinery to supervisor immediately.

Never point an air hose at anyone or use it to clean clothing extremely dangerous!

Be sure you have clear area behind you before swinging sledgehammer, other tools or materials.

Keep constant check on blocks, cables, clamps and other tackle. Replace if defective.

Store oily wiping rags in covered metal containers or dispose of them safely.

Never use an air hose or pressure to empty gasoline drums.

Welding, cutting operations should be closely supervised. Remove or shield nearby combustibles.

Keep a fire watch with adequate fire extinguishers during and after "hot work" as job location requires.

Do not look at welding or cutting operations without wearing proper eye protection.

Check hose, fittings, valves for leaks (use soapy water).

Keep all tools and materials away from edge of scaffolds, platforms, shaft openings, etc.

Do not use tools with split, broken or loose handles.

Have tools with burred or mushroomed heads dressed. Keep cutting tools sharp and carry in a container (not in your pocket).

Know correct use of hand and power tools before using. Use the right tool for the job.

Only qualified personnel should operate or service power tools, vehicles and other machinery.

Before starting machinery, opening valves, switches, etc., check safety of workmen. Have all safety guards attached.
Toolbox Talk     # 20

GENERAL CONSTRUCTION SAFE PRACTICES #4

When entering different work areas, familiarize yourself with any required safety precautions.

Be sure your footing is well supported before stepping. Watch out for overhanging planks, slippery spots, loose objects, etc.

Be aware of work going on around you. Keep clear of suspended loads, traffic areas and other hazards.

Always have enough light on stairs, aisles, basements, work areas, and walkways.

Place barricades and signs to warn of traffic, and overhead dangers. Have warning lights, flagman or watchman, if necessary.

Place fencing or barricades at excavations and floor openings.

Do not ride on vehicles or mobile equipment unless specifically authorized.

Always be seated when riding authorized vehicles (unless designed for standing).

Report any injuries immediately. Even small cuts can become seriously infected. Report any unsafe conditions or equipment to your supervisor.

Keep "horseplay" and roughhousing away from the job. Practical jokes often become painful injuries.

Keep your mind on your job and temper under control, always!

Hard hats must be worn in all areas indicated (visitors included).

Wear proper eye protection if exposed to flying objects, dust, hot splashing metal, harmful rays and chemicals.

Wear proper respiratory equipment when spray painting, burning, exposed to dust or other toxic hazards as required.

Keep materials orderly. Prevent piles from falling or shifting (tie down or support, if necessary). Shavings, dust, scraps, oil or grease must not accumulate. Make good housekeeping part of the job.

Refuse piles must be removed as soon as possible.
Toolbox Talk     # 21

THE DAY AFTER THE NIGHT BEFORE

Let's talk about drinking. Not drinking on the job, you would never do that because you know it's dangerous to you and everyone around you. But what about drinking the night before? If you think the effects of alcohol are over once you've sobered up from a night of heavy drinking, listen up. You may be surprised.

I have a friend I'll call Frank. He didn't drink often, and never on the job. But one evening he got together with friends to watch a game and drink a few beers. Afterwards the game had to be analyzed, with more beers. Another round of drinks brought on memories of past games and so forth. It wasn't that late when Frank got to bed, but the next morning Frank overslept. He got to work on time by skipping breakfast. He was tired and shaky and kept forgetting what he had to do next. Frank's foreman noticed that he wasn't getting much work done and wondered if he was feeling all right. Frank said he was fine. After all, he was sober and had a good night's sleep, hadn't he?

But by midmorning Frank was desperately ready, to knock off for a break. He stepped back to check his work forgetting that he was on a scaffold 10 feet above the ground. The broken leg and concussion Frank suffered when he hit the ground kept him out of work for weeks a heavy price to pay for a night of drinking.

Think back. Have you ever come to work feeling below par because of drinking the night before? If so, take along level look at what you're doing to yourself and to your future on the job. Abusing alcohol is never a good idea, but it can be down right dangerous on a work night. Dangerous to yourself and everyone who has to depend on you at work the next day.

You don't have to be falling down drunk for alcohol to interfere with your ability to do your job safely. That morning Frank was probably dehydrated, and he had a headache. Although he felt sober, he could still have had enough alcohol in his blood to affect his behavior. His attention span, judgment, and reflexes were noticeably poorer. I'll bet he didn't get enough sleep. And even if he slept like a log, alcohol disturbs sleep rhythms so that he probably didn't get the rest he needed. How would you like to work on a scaffold put up by someone who was tired and had poor reflexes and a short attention span?

Since alcohol is the most frequently abused drug, chances are good that, even if you don't have a drinking problem, more than once your safety has been in the hands of an alcohol-impaired worker. If you suspect that someone is being affected by alcohol or other drugs, you're not doing anyone a favor by ignoring the problem. Let your foreman know you think there's a problem. It's the only way to protect against alcohol related accidents.

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TAKE CARE OF YOUR HANDS

No matter what your job is, your hands are the main point of contact between you and your work. Perhaps this is why hand injuries are a leading cause of job related disabilities. It's very easy to forget that your hands need careful attention if they are to go on serving you as the powerful precision tools that they are now.

Hand injury can be sudden and devastating. Avoid catastrophic hand injuries by being alert to potential hand hazards before accidents happen. Check your equipment. Are all guards in place? Do you always use push sticks and shields when you're supposed to? Remember to use brushes, not your hands, to wipe away debris. In fact, never use your hands to do a task that was meant to be done with a tool. Use lockout/tagout procedures before cleaning or repairing any machinery, and keep your equipment in good working order. We all love surprises but not the kind that are caused by faulty wiring or improperly maintained equipment. Finally, store heavy materials properly, stacking or racking them so they can't fall over or shift position to catch your hand in a death grip.

Use the right personal protective equipment for the task you do. If you use harsh chemicals or solvents this means choosing gloves or barrier creams that are designed for the chemical you are exposed to. (Remember not to use gloves when working with moving machine parts.) Save jewelry and loose sleeves for off the job.

Sometimes hand injury happens gradually, without your noticing it. It's hard to believe that simply doing the same thing over and over again can eventually put your hands out of commission for good. Repetitive motion injuries are a growing problem on the construction site. Use tools and positions that keep your wrists straight. Stop and rest your hands every fifteen minutes, shaking them and stretching out your fingers. If possible, change tasks instead of doing the same task hour after hour.

Another way to injure your hands is to expose them daily to chemicals or conditions that don't hurt right away but will seriously damage your skin eventually. You may be tempted to take shortcuts, going without gloves just this once or most of the time. Harsh chemicals, solvents, extreme heat and cold even plain water can damage your skin or dry it out, leaving it open to infection. Even mild chemicals that have never bothered you can eventually cause allergic reactions in your hands. Protect your skin by always using gloves or barrier creams not just any gloves, but the right size and kind for the hazards you work around.

Don't let a hand injury become a disability. Keep first aid materials available to treat cuts, scratches, and bruises immediately. If dry, red, or irritated skin is a problem, follow your doctor's directions for treating and protecting your hands. When you take these precautions you make sure that your health and your job future are in good hands.
CARPAL TUNNEL SYNDROME / Preventing Repetitive Motion Problems

Your wrist aches, your fingers feel numb, and you have difficulty doing even the simplest tasks like opening a juice jar. What's going on? It may be that you suffer from carpal tunnel syndrome. A hand disorder resulting from repetitious, forceful motion of the hands and wrists. Carpal tunnel syndrome is common and affects those of us who use the same hand motions over and over again at work or at home -painters, textile workers, word processors, cashiers, electronics assemblers, and many others. Fortunately, you don't need to "grin and bear it." Carpal tunnel syndrome is often preventable through proper hand positioning and hand exercises.

Why Your Hand Hurts - The carpal tunnel is the bony cavity in your wrist through which your nerves and tendons extend to the hand. When you repeat the same hand and wrist movements day in and day out, the excess strain causes tendons to swell and press on the main nerve of the hand. This persistent irritation of the nerve can result in pain, numbness, and dysfunction not only in the hands and wrists, but may extend up to the forearm and elbow as well.

What You Can Do About It - If you are at risk for developing carpal tunnel syndrome, why not try to prevent the condition before it occurs? By learning how to position your hands properly and by exercising your hands regularly, you can relieve excess pressure on your tendons and nerves and prevent unnecessary pain and disability.

Hand Positioning - When you keep your wrists and elbows straight, you place less pressure on the tendons and nerves in your hands. Try adjusting your work so that you can keep your forearm and hand straight. Use hand tools with the appropriate width, size, and shape that is, make sure that you can grip the tool comfortably, that the tool can absorb vibration, and that handles are positioned to keep your wrists and hands in alignment.

Hand Exercises - The following exercises, when done daily, can help strengthen wrist and hand muscles and can help relieve strain caused by tasks requiring repetitive motions.

Wrist Rotation - Make a fist and rotate your entire hand (from the wrist) in one direction. Repeat 15 times. Switch directions and repeat 15 times. Then, release your hands, and with fingers extended, do the same rotations.

Hand Stretch - Make a fist, then extend your fingers as far apart as possible. Hold for about 10 seconds. Relax. Repeat the entire sequence 5-10 times until hands and fingers feel relaxed.
EYE PROTECTION IS NECESSARY

If you are wearing your safety glasses or goggles on the job, you're doing the best thing you can to protect your eyes and your future in construction work. If you're not, this talk will give you reasons for wearing your safety eyewear and ideas that may make wearing them easier.

Although you pride yourself on the care you take to do your job safely, it takes only one accident to partially or permanently blind you. Consider the many things you may do that involve flying particles: chipping, grinding, sanding, brushing, sawing, and hammering. Even a speck of dust flying from a power sander can injure your eye if it's traveling at the speed of a bullet. Operations involving bright molten materials can damage your eyes more gradually but just as permanently.

You probably already know it's dangerous to not wear eye protection. Let's talk about the things that may keep you from wearing eye protection even when you know it's unsafe: comfort, the ability to see clearly, and maybe the way you look in safety goggles.

If you find safety glasses or goggles uncomfortable, try a different size or style. Were the glasses you wear specially fitted for you or were they an extra pair your buddy had lying around? Good fit is important to comfort. Wear goggles that are properly ventilated for what you're doing. Unless you're working around splash hazards, use goggles that have plenty of side ventilation. If you wear prescription glasses, they are no excuse for not using safe eye protection. There are two ways to go with this situation: goggles designed to fit over your glasses, or safety glasses made with your prescription.

You can't be blamed for disliking safety eyewear if it makes it hard for you to see. If your goggles fog up, try a model with more ventilation or coat them with an anti-fog liquid. A sweatband or handkerchief around your head can help keep sweat off your goggles. Use the right eyewear for your job. Side shields may be inappropriate if you have to watch to your sides for heavy equipment. Keep your glasses or goggles clean. Take a moment during breaks or lunch to clean them and inspect them for scratches. Replace scratched glasses immediately. Those scratches not only interfere with your seeing, they weaken your glasses so that they may not withstand the heavy impacts they were designed for. Replacing glasses or goggles may seem a nuisance, but it's a lot easier than replacing your eyes.

Whatever job you do, there is safety eyewear designed just for that job. And there are styles available in many types that you wouldn't be ashamed to be seen wearing in public. Keep your glasses or goggles in good condition. And keep them on, every day. In the long run, they'll help you "look" good on the job.
DRESSED FOR THE OCCASION

As you know, there is right and wrong clothing. On the job, when we talk about "dressing for the occasion", we don't mean you should wear a dinner jacket in the lunchroom. We're concerned with two things here: safety and comfort.

Let's consider safety. Even if you don't need special protective equipment like gloves, arm and shin guards, and masks, the style of your clothing is important to your safety. Avoid clothing that can catch in machinery: full sleeves, loose cuffs, long neckties, and pocket flaps. The same goes for jewelry such as bracelets, watch chains, and rings. Keep your cuffs buttoned and shirt tail tucked in. Fuzzy shirts or flammable synthetic material are dangerous around flames or sparks. Beware of clothing that can cause you to trip or slip, slick soled shoes, loose or frayed shoelaces, pants that are too long or have drooping cuffs that get caught on your heel as you back down a ladder. Use gloves for rough work but never around moving parts.

How you take care of your clothes can make a big difference in your safety. Clean clothes are safer. Oily, greasy clothes catch fire easily; dust and grease irritate your skin.

For most of us, dressing for the occasion means dressing for comfort as well as safety. In summer, lightweight cotton is more comfortable than synthetics, while wool is the ideal choice for winter. It provides warmth even when wet. Two lightweight layers of wool keep you warmer than one heavy layer and allow you to adjust your clothing as the day warms up. Remember, it's the air space between your skin and the outer layer of clothing that keeps warmth in, so avoid tight clothing that provides little insulation and may cut off your circulation. In the wind a tightly woven shirt or windbreaker works better than a sweater. Woolen gloves are warmer than leather; wool lined leather gloves keep your hands warm while they protect them against rough objects.

Work outdoors a lot? Researchers are learning that the long-term effects of sun can be deadly. If you are fair skinned, wear a brimmed hat and a long sleeved shirt outdoors or protect your skin with a good sun block.

A word about shoes. There is nothing that can improve your outlook like a pair of comfortable shoes. Shoes should keep your feet dry and warm, support them, and cushion them against the assault of concrete floors. Always wear the right shoes for your work environment. If you wear rubber boots, keep your feet warm with heavy woolen socks or boot liners. Get the size right. Tight shoes pinch your toes and cut off circulation, so your feet get cold. On the other hand, overly loose shoes may cause you to stumble or twist an ankle. Keep your shoes in good repair to protect your feet from sharp objects.

At work, if your clothes are safe and comfortable, you know you're "dressed for the occasion."
Toolbox Talk    # 26

STANDING ON YOUR OWN TWO FEET

How well do your feet "stand up" to the wear and tear of construction work? Those of you who wear comfortable, properly fitted safety shoes probably feel a lot better after a day's work than those who don't. You can rest easier too, knowing you are safe from the one in five work-related accidents involving the foot and leg. Let's talk about some of the work site hazards your feet may encounter and the types of shoes designed for them.

Mechanical hazards are probably your biggest danger on a construction site. Falling objects, compression from rolling objects, and punctures are the top three causes of foot injury. Your safety shoes should have steel toe caps to guard against injuries from falling objects and compression, and instep protection of aluminum, steel, fiber or plastic to protect the top of the foot. Steel insoles or reinforced metal soles protect from puncture from underfoot.

Everyone who works outdoors is entitled to warm, dry feet. Cold, wet feet drain your energy and take your mind off the job. In extreme cold, wear shoes with moisture-proof insulation and insulated socks. Wool socks provide greater warmth in cool or cold weather than cotton. Polypropylene inner socks help to keep sweat and other moisture away from your feet. Wearing the right size shoe is also important to your safety and comfort. Tight shoes result in cold feet and pinched toes. But if your shoes are too loose you may stumble or turn your ankle.

Working in water or poured concrete requires boots or protective shoe coverings tailored to the job. Hip boots are best for working in water over a foot deep. For concrete pours you must use an overshoe that won't be pulled off by the concrete the buckles keep the shoe from falling off and provide support. Always wear overshoes or boots higher than the depth of the concrete, to prevent cement from seeping into the shoe and causing cement infection.

Your feet keep you going all day. Treat them right by wearing the best possible shoes for the work you do. Good work shoes should have solid soles with tread to grip uneven surfaces and a notable heal to sense ladder rungs. High top shoes will protect your ankles from abrasions and provide additional support for simple twists. Work shoes should always be tied.
TOO HOT TO HANDLE

In construction, working outdoors in all sorts of weather is just part of the job. You can't stop working when it gets hot. Therefore, it's important to know how to protect yourself from heat and what to do if someone on your crew gets overheated.

There are two main kinds of heat illness, heat stroke and heat exhaustion. Because they require different treatments, learn to tell the difference between the two.

A victim of heat stroke has flushed, dry skin; a rapid heartbeat; loud, rapid breathing; and a high body temperature of 105°F (41°C) or more. The victim may complain of dizziness and headache or may suffer from confusion, convulsions, delirium, or unconsciousness. This is a medical emergency calling for quick action. While one person calls an ambulance, others should get the victim cooled off. Place the victim in a tub of cool water or use a hose or wet cloths to bring the temperature down. Massage the victim's hands and feet toward the heart to stimulate circulation of the cooler blood of the limbs. Dry the victim off when the temperature returns to normal. Repeat the cooling process if the body temperature again rises.

A victim of heat exhaustion looks very different from a heat stroke victim. This person sweats profusely and has pale clammy skin. Body temperature is normal. The victim may feel giddy and nervous, or may vomit or faint. First aid for heat exhaustion is to get the victim to lie in a cool place and sip cool water. Loosen the victim's clothes and call a doctor. A victim who is unconscious or vomiting will need to be taken to a hospital to be treated intravenously.

Heat exhaustion sometimes includes heat cramps the muscles of the abdomen or limbs knot up and are extremely painful. You can relieve the cramps by massaging the cramped muscles or pressing firmly on them with your hands. If the victim has no other medical condition, you can give half a teaspoon of salt dissolved in 8 ounces of cool water or fruit juice.

A heat-related illness is no fun, and it's usually preventable. Here's what to do to keep healthy in hot weather: If you're not used to working in heat, start out slowly. Take it easy for a few days. Save strenuous exercise for cooler weather. Drink plenty of water at least eight ounces (one glass) every 20-30 minutes while on the job. Avoid alcohol and carbonated drinks, which can cause cramps. If you're prone to heat cramps, check with your doctor about replacing the electrolytes (sodium, potassium, magnesium, zinc, etc.) you lose sweating. Cut heavy, high-fat foods out of your diet and get plenty of rest. Wear loose, light clothing and a hat if you work in the sun. Pay attention to warning signs if you don't feel good, take a break.

One more thing, pay attention to each other. You may notice Joe's flushed skin and rapid breathing before he does. And if he has to go to the hospital, guess who gets to do his work?
PROTECTING AGAINST HEARING LOSS

Nowadays we're a lot more careful about protecting hearing on the job than we used to be. There's a very good reason for this. It sometimes takes many years for loud noise day in and day out to affect a person's hearing. People didn't realize until it was too late that their hearing was being destroyed.

Experts have learned to accurately measure noise in units called decibels (dBs or dBAs). They have gathered information about the effects of noise at different decibel levels and for different lengths of time. Here's what they found out:

Noise levels around us may vary from 60 decibels (normal conversation) to the 140 decibels of a jet engine taking off. Using a power sander typically produces 85 decibels of sound. The louder the noise, the more quickly it can damage hearing. Most people can stand noise up to 80 or 85 decibels all day without physically damaging their hearing. But the 120 decibel noise of a jackhammer can injure your ears in ten minutes or less. Exposure to over 85 decibels for eight hours is considered to be excess noise, requiring hearing protection. If you have to shout to be heard, by someone three feet away, the noise around you is more than 85 decibels.

How does noise do its damage? Deep within your ear are tiny structures called "hair cells." Their vibrations transmit sound to the auditory nerve into the brain. Loud noise causes these hair cells to die off, quickly or very slowly, depending on how loud the noise is, how long it goes on, and how much recovery time you allow yourself.

There are a number of things you can do to protect your hearing. Begin by using the right hearing protection. Earmuffs and ear plugs come in a variety of styles and levels of protection. Some are specially designed to be worn with hard hats, eyeglasses, or face masks. Ear plugs may be disposable or reusable. Whatever ear protection you use, good fit is important. Earmuffs must form a complete seal around the ear, with no hair or clothing sticking out from under the cups. If you use ear plugs, follow the manufacturer's directions exactly when inserting them. And if they are reusable, keep them extremely clean, to prevent ear infections.

If you are around loud noise all day, treat yourself to some quiet time after work. Save the rock concert for your day off. During breaks and lunch, try to get away from the noise. This "silent treatment" helps your ears recover from minor noise damage.

Resist the idea that you can "get used to" noise and can afford to ignore it. Loud noise does not build up your ears the way exercise builds up your muscles. It just goes on destroying your hearing, whether you notice it or not. So why not take care of your hearing every day, it's a "sound" investment in your future.
KEEP YOUR HAT ON

When it comes to personal protection, your best friend on the job is your hard hat. And you've earned the right to wear it proudly, because the work you do is demanding and dangerous. Over the years we've all known someone whose life was saved by a hard hat. Let's talk about how your hard hat does its job, and how you can make sure it keeps on protecting you.

No matter what your hard hat is made of, fiberglass or thermoplastics, it is specially designed and certified by the American National Standards Institute to protect you from high impact. How much impact? Well, how about a hammer dropped onto your head from two stories above? A hard hat is able to do this because the shell is flexible enough to absorb some of the impact and transfer the rest of the impact to the special system of webbing inside the hat. The webbing in turn stretches and spreads the remaining shock throughout the head and body. A hard hat does more than protect you from impact. The space in the hat combines with the reflective surface to help you keep a cool head, 5 to 7 degrees cooler than the average baseball cap, for instance. In addition to protecting from impact and heat, Class A and B hats also protect from certain types of electric shock.

Your hard hat is carefully designed; it will only work well when you use it right. This means keeping that space between the webbing and the shell open it wasn't meant as a place to store your cigarettes or gum. Avoid wearing headgear under your hard hat, except for cold weather liners specially designed for it. The straps should be adjusted to fit you, snug but not tight. Use only your own hard hat.

Check your hat for scratches, cracks, dents, or brittleness. Wash the webbing in detergent at least every 30 days, replacing it when it gets frayed. Avoid getting creative with the shell. Drilling ventilation holes or painting the hat with solvent-based paints can weaken the shell.

Incidentally, before you go out and test your hats by dropping hammers on them from second story windows, let me point out that a hard hat is designed to protect you from this impact only once. In fact, any time your hat receives a heavy blow you should replace it. By the same token, avoid dropping or throwing your hat. Some companies automatically replace hats at regular intervals even when there's no visible damage.

Some 70,000 workers are disabled by head injuries each year. Keep your hard hat on, and your chances of staying ahead of those injury statistics are excellent.
KNOWING YOUR JOB MEANS KNOWING SAFETY

We've talked a lot about safety on the job. Our talks have included such topics as good housekeeping, taking responsibility for safety, and using protective clothing and equipment. But one of the most important things you can do to ensure your own safety is to know what you're doing. I'm talking about job skills, the special know how that many of you take for granted but that is absolutely essential for your safety and the safety of others.

All of you are trained in many areas of work. You know the right way to use equipment and how to operate a piece of machinery safely. And you wouldn't think of using equipment you weren't trained to use. No matter how smart you are and how safety conscious, you can't be completely safe doing a task that you don't have the skills for.

Yet accidents often happen because people don't know what they're doing. No matter how careful you are, if you overload a crane because you don't know what its load limit is, you're headed for a work site disaster. If you use dangerous materials, such as flammable liquids, without knowing their properties, you could put the whole crew in danger.

Knowing your job means knowing what you can and can't do with the equipment and materials you use. It means knowing when to wear protective equipment and exactly what protection is right for the operation you're doing. You wouldn't think of using ordinary safety goggles for welding, any more than you would use welding goggles when grinding or sawing.

The first rule of safety is "know your job." When you know your job, you also know that no matter how skilled you are, you still need to guard against the dangers that are part of it. You won't be tempted to cut corners on safety.

The second rule of safety is "when you don't know, ask." None of us are so skilled that we know everything there is to know. New skills and techniques come along all the time. Or you may have done an operation hundreds of times and realized that you've forgotten some detail that you need to know to be safe. Refresh your memory by rereading safety procedures from time to time. And if you can't find what you need to know, ask your supervisor, especially when it comes to safety. Remember, you're not highly skilled until you're highly safe.
THE ABC'S OF SAFETY

Attitude, Behavior, and Control. A safe attitude means staying alert and focused on the job at hand. Safe behavior means taking safety guidelines and practices seriously. Control means taking responsibility and keeping your work area clean and orderly.

Safety is more than just following your company's guidelines while on the job. Safety is actually a combination of safe attitude, behavior, and control both on and off the job. Attitude means your frame of mind and the way in which you approach a given situation. Behavior means what you do about it and how you react to a situation. Control refers to making your surroundings, where and what you do, safe. Safe attitude, behavior, and control add up to a safer, more productive you.

Attitude - When it comes to safety, attitude isn't exactly everything, but it's darn close. A safe attitude means staying alert and focused on the job at hand, taking safety guidelines and practices seriously, never horsing around on the job, and not letting emotions like anger and frustration get in the way of job performance.

Behavior - How you react to a situation is an important part of being safe. Following established safety guidelines and procedures, refusing to take "shortcuts," using personal protective equipment, asking questions when you need more information about the task at hand are all safe behaviors. Safe behavior also means helping friends, coworkers, and family members understand the importance of safe practices at work, home, or play.

Control - Control means taking responsibility for making your work site, home, or recreational facility a safe place. You can help keep your surroundings safe from potential hazards by keeping them clean and orderly. Keep machines in good repair, clean up spills and debris (or report them to the appropriate person), and make sure that walkways are free from obstacles. Store chemicals properly (both at home and on the job) and never switch containers. At work, be sure to report faulty equipment ventilation, or any potential hazards to your supervisor.

ABC's - Easy As 1-2-3

Attitude, behavior, and control are the three most important (and perhaps the simplest) aspects of personal safety both on and off the job. Take a moment to review your safety ABC's to see if you're doing all you can to protect yourself, your coworkers, and your loved ones from careless, needless, injury.
YOUR SAFETY ATTITUDE

ATTITUDE IS EVERYTHING
You've been getting advice about safety for years. You've listened to it with one ear, but maybe you never thought about it much. Deep down, you may even think "It can't happen to me." Then, your buddy Jack (who's in a hurry to get off work), has a bad accident. It costs him his hand.

The accident affects everyone especially you. You can see what it means to Jack physical pain, emotional shock, lost income. He'll have to train for a new job, and his wife will work longer hours. Things are going to be tough for him and his family for a long time. After the accident, you notice your attitude at work has really changed. You make a point of staying alert. You take extra time to use special equipment and procedures. You're more willing to take suggestions that might protect you. Why wait for this story to become real? A positive attitude toward safety will payoff in countless ways, saving you money, keeping your job, even saving your life. Why wait until you lose something precious before you realize how easy it would have been to save it? Now is the best time to develop a good attitude toward safety.

A Good Safety Attitude
How you deal with these elements adds up to your safety attitude. A good attitude is a habit you can learn!

1. **Focus.** A good attitude means you are focused on the present task. How well are you concentrating? If something else is on your mind or an interesting conversation is going on nearby, you may be distracted. If you're tired or bored, a slip is easy.

2. **Time.** A good attitude means taking time to do the job right. Sure, it takes longer to put on that extra equipment. But is saving a few minutes worth a painful injury? A good attitude also means managing your time well. It may help you to make a list of what you need to do each day. Number the jobs going from most important to least. If you can do them in that order, you'll know you're doing the most important things and are less likely to rush.

3. **Strength.** No, we don't mean muscle strength. What we mean is the strength to do what's right. Others may want you to take shortcuts or fool around. They may ask you to "forget" to file an accident report. A good attitude means you have the strength to do the right thing.

4. **Responsibility.** If you care about yourself and others at work, you'll take responsibility even when a certain task "isn't my job." Wouldn't you appreciate it if someone had cleaned up that broken glass instead of leaving it for you to find as slivers in your hand? A good attitude means thinking of yourself as part of a team. Everyone helps make it a winning one.

5. **Risk.** There's no way to avoid all risks. (Just by getting in your car you're taking a chance). But you can weigh the risks of doing a job in a certain way. Even if the risk is one in a thousand, it's not worth it. A good attitude means being smart and avoid taking risks whenever you can.

Your Attitude Affects Everyone
Your attitude toward safety is a habit that affects everyone where you work and at home. We can always think of excuses for not acting with safety in mind, but in the end, it makes a lot more sense to have a good safety attitude.
NO MORE BACK STRAINS AND SPRAINS

Lifting things is a big part of the work we do around here. We do it so often that it's easy to forget that there is a right way and a wrong way to lift things. Do it the wrong way and you may get away with it 50 or 100 times. But sooner or later you could become an instant invalid. Lower back injury the most common work related injury can cause you lifelong pain and disability. Let's go over the steps for preventing back injury.

Before you begin lifting, wear gloves if you're handling rough equipment. And if you wear safety shoes, you can focus your mind on the load, not on your unprotected toes.

Get a good grip and good footing. Position your feet so that one foot is next to the load and one behind it.

Get under the load by BENDING YOUR KNEES, not your back. This is the single most important thing to remember about lifting.

Use your hands, not your fingers, to grip the load. Keep the load close to your body. Never twist your body when lifting. Turn your whole body by using your feet.

But before you lift anything, how heavy is that load? Studies show that only 10 percent of male industrial workers can lift over 70 pounds safely. Most men shouldn't lift more than 37 pounds and most women shouldn't lift more than 28 pounds. Just because you can lift it doesn't mean you should lift it. Get someone to help you with heavy loads. It's a great way to make friends.

If you do experience back pain, pay attention to it. You will recover from simple strains or sprains by giving yourself a rest. Stay away from heavy lifting until the injury heals. Lifting with an injured back can lead to severe back problems.

If heavy lifting is part of your job or if you strain your back often, do yourself a favor and get into good physical shape with a conditioning program that includes aerobics, weight training, and stretching exercises. Some workers find it helpful to wear back braces when on-the-job lifting is necessary.

Back injuries affect fully half of the nation's work force during their working lives. Follow the directions we've gone over here, and you can be sure of keeping yourself in the injury free half.
IN A BAD BACK MOOD / How Stress Affects Your Back

Too many people spend too little time trying to do too much. The result is stress. The cause of back pain for millions of people, stress is difficult to define but impossible to ignore.

Stress In Your Life: You probably think you can identify the things that cause stress in your life: deadlines at work, budget worries, traffic jams, death or illness of a loved one and other negative experiences. What you may have overlooked are the positive experiences that can be just as anxiety producing. Things like buying a new house or car, planning a wedding, graduating from college or starting a new job are all high on the stress scale. For many people, stress and back pain have become apart of life, but it doesn't have to be that way. You can learn to break the stress connection.

The Stress Connection: Stress preys on the body's most vulnerable part if you're like most people, that's your back. The human spine is designed for strength and flexibility, with three natural curves to carry your body weight evenly. The S shape of your spine is supported by muscles in your back, legs and abdomen. If you spend most of your time sitting or have poor posture, these crucial muscles are weakened and must strain to support your spine. This weakened condition makes it difficult for your muscles to bounce back from stress; instead, they contract and cause pain. You have to learn how to condition your body as well as your mind to beat back stress.

Condition Your Mind: Learn to let go. There are some things in your life that you can't control; accept them and save your energy for the things you can do something about. Learn to relax. Try yoga, meditation, breathing exercises or day dreaming, it doesn't matter what, but do it every day. Reserve 15 minutes for yourself and make a commitment to your "me" time. Learn your signs of stress. Do you break out in a sweat? Do your knees knock? Everyone has a different response to stress. Recognizing yours is the first step in getting it under control. Learn to manage your time. Do things in order of importance and allow yourself to say no without guilt when you can't do something.

Condition Your Body: A regular program of exercise will give you an outlet for some of your tension and strengthen your stress susceptible muscles. Aerobic exercises are especially good stress busters because they make you breathe deeply and pump more oxygen-rich blood through your body (aerobic means "with oxygen"). Aerobic exercise also releases endorphin, your body’s natural painkillers.

You Can Do It: Even if your life isn't completely stress free, it can be free of stress related back pain. You can break the connection between pain and stress by taking care of your body and your mind.

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WHEN YOU HAVEN'T GOT TIME FOR THE PAIN

When your back is acting up and you want quick relief, you have several options from which to choose. In addition to medications, you can try at home remedies such as warm baths, ice massage and heating pads or visit a health care professional for in office treatment. Discuss their pros and cons with your health care professional to choose the right relief for you.

Respect Your Medications

Both over-the-counter and prescription medications should be treated with respect. Follow instructions carefully, and find out if your medication has any side effects that may impair your abilities. Some pain relievers can make you sleepy, disoriented or unable to concentrate. Avoid mixing medications with alcohol or illegal drugs. If you are taking other medications, get advice from your provider. Mixing medications can be harmful.

Common Medications

Aspirin is one of the safest and most effective pain relievers available. It not only relieves your pain, but also works to reduce inflammation. Acetaminophen such as Tylenol are excellent pain relievers for people who cannot take aspirin, but they cannot reduce inflammation. Ibuprofens such as Advil or Nuprin are also good pain relievers and can provide relief from inflammation.

Muscle relaxers or sedatives may be prescribed by your health care professional. Follow their instructions carefully and avoid overuse. These medications can disturb your natural sleep and relaxation cycles and should be taken with care.

Hot or Cold?

Both heat and ice can offer effective pain relief (Caution: Use ice or heat for only 20-30 minutes at a time.) Using a heating pad, soaking in a hot tub or whirlpool or taking a hot bath can relieve pain by relaxing tense muscles. Avoid stressing your lower back by stretching out your legs in the tub; keep your knees bent. Ice reduces inflammation and relieves your pain, but many ice bags are too small. Try a reusable gel pack that can be kept in your freezer or a bag of frozen peas. Both will conform to your back's curves.

Some back specialists recommend ice massage. It's easy to do. Freeze water in an empty margarine tub or paper cup and use it to massage the affected area for 5-10 minutes. Use a gentle, circular motion and avoid unnecessary pressure. The cold numbs the area and decreases pain and swelling. Ask your health care professional for more information.

Try a Little "R & R"

Take 15-20 minutes to relax your back and reduce your stress. Rest and relaxation may be enough to relieve your pain. Try lying on your back on the floor with your calves and feet resting on a chair. Your knees and hips should be at right angles.
How Do You Spell "Relief"?

TENS (transcutaneous electrical nerve stimulation) also offers relief to many back pain sufferers. These small battery powered machines deliver a mild electrical current to your nerves that interrupts your body's pain signals. Ask your health care professional if TENS would work for you. If you prefer a hands on approach, a physician, chiropractor, physical therapist or practitioner of therapeutic massage may be able to relieve your pain.

Back On Track

Even if you work to maintain a healthy back, you may suffer from occasional back pain. Learn what you can do to relieve your pain and beat the back blues.

Avoid Cigarettes and Caffeine

Caffeine and nicotine may increase your pain. Smokers tend to have twice the pain of non-smokers, possibly because smoking stimulates adrenaline and makes them more sensitive to pain. Nicotine also blocks production of one of the body's natural pain relievers. Caffeine also stimulates adrenaline and increases your sensitivity to pain.
Toolbox Talk     # 36

MANAGING BACK PAIN

Does your nagging backache get worse when you're paying the bills or stuck in traffic? Do you avoid exercise to "protect" your back from more pain? Many people don't understand how stress can cause backaches and how exercise can help relieve the pain. They don't understand that they can beat their back pain by learning how to control it.

Understanding Your Pain

Pain is a warning signal from your body. It's telling you that you are doing something that can cause damage. Listen to it. Muscular back pain is often the result of poor physical fitness and stress. Remember that your spine is supported by muscles in your back, abdomen and legs. When you are out of condition, these muscles are weak and susceptible to stress and injury. Over time weak muscles and improper posture can cause permanent, serious damage. Unfortunately, many people who experience back pain do not recognize that the exercise they are avoiding could help relieve their pain and prevent further injury.

Exercising To Control Your Pain

An exercise program designed for you will help you stretch and strengthen the muscles that support your back. It will help condition your body and improve your outlook.

Relaxing To Control Your Pain

Your mind plays an important role in beating your back pain. If you are always thinking about your aching back, you will be more aware of it and it will hurt more. Instead of focusing on your pain, you can learn to use relaxation techniques to direct your focus away from your pain. You can choose from among these suggestions or try another method that works for you. For best results, try to incorporate 15 minutes of relaxation time into your daily routine. Visualization is one way to redirect your thoughts. Find a comfortable spot where you can sit and relax without interruption. Close your eyes and breathe deeply. Imagine a beach, a mountain cabin, a sailboat or your favorite spot to relax. Think about the sights, sounds and smells of your image. Enjoy your daily 15-minute interlude and try to recall the soothing details of your image to help relax your muscles when you are in stressful situations. Muscle relaxation is another technique. It helps you focus on the difference between a tight, tense muscle and a relaxed one. Find yourself a spot where you can sit comfortably. Breathe deeply and concentrate on tightening and then relaxing each muscle in your body. Start with your feet and move up to your face. Hold each muscle tense for five seconds, then release it. Positive thinking helps many people control their pain. Taking a cue from the little engine that could, tell yourself that your back feels better or that you feel more relaxed. Repeat it over and over again. What you think can control how you feel. Biofeedback is another pain control technique you may want to explore.

Remember Who's In Control

Understanding the causes of back pain is the key to controlling it. Learn which relaxation techniques work best for you, consult with your health care professional to develop an exercise program and enjoy back health for life.
BASIC BACK SAVING TIPS

• Lift with your legs, not your back. Remember, legs lift, backs break.

• Support your lower back when you are seated.

• Rest one foot on a footstool when you are standing. Sleep on your side or your back, not your stomach.

• Your shoulders, feet and hips should face forward at all times when you are lifting or carrying.

• Keep walkways, stairs, and halls clear. Be on the lookout for tripping or slipping hazards.

• Push, don't pull. You have twice as much power and less chance of injury.

• Develop a regular exercise program to keep your back flexible and strong.
LIFTING BASICS

TECHNIQUES FOR SAFE LIFTING

Safe lifting means keeping your back aligned while you lift, maintaining your center of balance, and letting the strong muscles in your legs do the actual lifting. By using the following techniques, you can learn how to lift safely and save your back from accidental strain and injury.

1. **Bend Your Knees**

   Bend your knees, not your waist. This helps you keep your center of balance and lets the strong muscles in your legs do the lifting.

2. **"Hug" The Load**

   Try to hold the object you're lifting as close to your body as possible, as you gradually straighten your legs to a standing position.

3. **Avoid Twisting**

   Twisting can overload your spine and lead to serious injury. Make sure your feet, knees and torso are pointed in the same direction when you are lifting.

**The Safe Way to Lift**

Before you lift anything, think about it. Ask yourself: "Can I lift it alone?" "Do I need mechanical help?" "Is it too awkward for one person to handle?" "Should I ask a co-worker for help?" If the load is manageable, follow the steps to lift it safely.

**Tips to Remember**

In addition to these techniques, remember to make sure that your footing is firm before you start and that your path is clear. And be sure to use the same safe techniques when you set your load down. It takes no more time to do a safe lift than it does to do an unsafe lift, so why not play it safe and lift it right?
BAD BACKS MEAN BIG BUCKS

Did you know that back injuries cost employers millions of dollars every year? Officially called “musculoskeletal injuries,” they account for approximately one third of all workplace injuries and 40-60 percent of the total injury costs.

If you suffer a work related back injury, workers' compensation and medical costs may represent only a part of the costs your employer must bear. While you are recovering, your employer incurs indirect or "hidden" costs, including the loss of an experienced worker and the cost of training your replacement, down-time, lost productivity and impaired quality control. These indirect costs may be as much as four times the workers' compensation and medical costs.

Why Should You Care?
Back injuries can be extremely painful, and they hurt everyone. High workers' compensation and medical costs can reduce your company’s ability to compete. As a consumer, you pay for other workers' injuries in the form of higher prices for the goods and services you buy. By understanding that work site injuries are everyone's problem and by working safely, you'll help others as well as yourself.

Workers' Training and Education
Your employer may have training and education programs to teach you basic back anatomy, the importance of good body mechanics, stress management and posture. You may also be trained in proper lifting and carrying techniques. Your company may have programs that train workers at a specific job site, that teach workers how to use new machines or techniques or that train new workers. Or you may work at a company that emphasizes the need for a regular exercise program to develop a stronger, healthier back. Whatever training program your company has, it is designed to reduce your risk of back injury.

Job-Site Modification
Safe work practices are not the only solution to the problem of back injuries. Your company may also use "ergonomics" to reduce the risk of back injury. The science of ergonomics deals with the worker, the task, the tools and the environment. Ergonomic changes reduce risk, remove potential dangers and make the task easier or less stressful. By some accounts the proper design of manual tasks can reduce up to one third of industrial back injuries. Some common ergonomic changes include reducing the sizes or weights of objects to be lifted, installing mechanical lifting aids, and changing the height of a shelf, chair or table.

It’s Up To You
If your job requires you to lift, lower, push, pull or carry items, poor work habits can result in back pain or injury costing thousands of dollars. To help reduce your risk of work-related back injuries, use safe work practices at all times. Get help from a co-worker or mechanical aid when necessary. Respect your back, and it will stand behind you 100 percent!
THE MECHANICS OF LIFTING

How Your Back Works

Back Basics

Your back is made up of moveable bones called vertebrae and shock absorbers called discs between each vertebra. These structures are supported by ligaments and muscles that help keep the back aligned in three balanced curves. (You know your back is balanced or aligned correctly when your ears, shoulders and hips are in a straight line.) When your back's three curves are not in balance, there is a greater likelihood of both back pain and injury.

Lifting Mechanics

When you lift, it's important to keep your back in balance. If you bend at your waist and extend your upper body to lift an object, you upset your back's alignment and the center of balance in your abdominal cavity. You force your spine to support the weight of your body and the weight of the object you're lifting. This situation is called "overload". You can avoid overloading your back by using good lifting techniques. For example, when you bend at the knees and hug the object close to you as you lift, you keep your back in alignment and let the stronger muscles in your thighs do the actual lifting. You do not have to extend your upper body and are able to maintain your center of balance.

Safe Lifting

Safe lifting means protecting your back while you lift. Before you lift anything, think about the lift. Can you lift it alone? Do you need help? Is the load too big or too awkward? When you do lift, be sure to bend at your knees, hug the load close to your body, and raise yourself up with the strong muscles in your thighs. Remember never to twist while lifting; instead, move one foot at a time in the direction you want to go and then turn with your leg muscles. If you use these techniques, you will find lifting is easier, and you can avoid back pain and injury.

If you bend at your waist and extend your upper body to lift an object, you upset your back's alignment and your center of balance.

If you bend at the knees and hug the object close to you, your back stays balanced and the muscles in your legs do the lifting.
BACKING UP HEAVY EQUIPMENT

In a place as busy as the average construction site, backing up heavy equipment is always a risky business. Vehicles such as dump trucks, front-end loaders, and cement trucks are hard to see behind, even with mirrors. Because of this, the best policy to follow when using heavy equipment is to avoid backing up at all except when it's absolutely necessary. When you must back up, prevent backing-up accidents by taking these precautions:

- Check the surrounding area for obstacles before beginning an operation. Walk around and get familiar with the entire area. Remember that materials and equipment are constantly being moved around, so you can't assume that you "know the territory" if you haven't explored it recently.

- As much as possible, keep other vehicles, materials, equipment, and people out of areas where heavy equipment is operating.

- Make sure your mirrors are properly angled to minimize blind spots. Remember, even with mirrors, you may not see everything behind you.

- Reverse alarms are mandatory on all heavy equipment. Equipment operators must check the reverse alarms for proper operation.

- Use reverse alarms on all equipment with "blind-spots" or an obstructed view to the rear. If you are unable to see behind you, always use a person as a "spotter". Make sure you can see the spotter at all times stop immediately if the spotter is not in view.

- Be familiar with the limitations of the equipment you are operating. Use only the equipment you are trained to use and only in the way it was intended to be used.

It would be great if all workers were looking after their own safety. But you can't take it for granted that everyone else is on the lookout. When you're behind the wheel of several tons of heavy machinery, you have the responsibility to use that power carefully and safely to prevent accidents. Remember, the key to staying out of danger with heavy equipment is never to assume that the path behind is clear, unless you or your guide can actually see it.

You can't take it for granted that everyone else is on the lookout. When you're behind the wheel of several tons of heavy machinery, you have the responsibility to use that power carefully and safely to prevent accidents.
LET'S TALK ABOUT THE PARKING LOT

Remember when you were learning to drive? A deserted parking lot was a great place to practice plenty of space to practice turning and shifting gears. But a parking lot during business hours is a tricky place. On the street motorists stay in the road, pedestrians on the sidewalk, with clear rules keeping them apart. In a parking lot there is no barrier between motorist and pedestrian. Both hurry to get to and from their cars and into and out of the parking lot. Being off the road, people sometimes have a false sense of security that can lead to tragedy.

Everyone who uses a parking lot is both a pedestrian and a driver. Let's talk about you as a driver first. Use signals when you enter the parking lot, and SLOW DOWN. It's never safe to go more than 5 miles per hour in a parking lot because people and cars could move in front of you at any time. Give yourself plenty of time to stop unexpectedly. Make extra allowances for icy or wet surfaces. Remember that the person who gets splashed if you carelessly drive through a puddle may be your boss.

Leave plenty of room between you and other vehicles. Resist the impulse to get to work a little earlier by beating someone else to a hotly contested parking spot or by charging into a space you can't see completely. A person could be getting out of the car next to where you park. By the same token, before opening your door, make sure someone is not pulling into the space next to you.

When leaving your parking space, check the rear view mirror and look around carefully before backing out. There are usually many pedestrians in the lot at this time. Know your blind spots and never take chances with them. Drive only in the aisles between parked vehicles. Taking a shortcut across the aisles is an invitation to disaster.

If you must enter or leave a parking lot when the sun is low, be extra careful. Glare from the sun in your face or in the rear view mirror makes it difficult for you (and pedestrians) to see in front and behind.

As a pedestrian, you can increase your safety by moving in a predictable manner. Walk on pedestrian walkways, if possible. Otherwise, walk on the left, facing oncoming traffic. Be alert for cars pulling out of parking spaces. Assume the driver does not see you until the driver signals that you are seen. If it's dark, carry a flashlight or wear or carry something white. Be especially careful when the sun is low in the sky.

Safety means keeping your mind on what you're doing. Most of us tend to have our minds elsewhere when we're in a parking lot. We're thinking about getting to work on time or going home and relaxing. When we enter a parking lot either as pedestrians or as motorists, we need to make a conscious effort to keep our minds on what's in front of us and behind and to the side.
Toolbox Talk     # 43

CRANES AND POWER LINES DON'T MIX

Operating a crane would be a lot easier if we never had to worry about power lines. Power lines are a fact of life at most work sites. Let's review the special hazards of using cranes around them and the precautions you must take to protect yourself and your coworkers. The keys to safe crane operation are following procedures exactly, staying alert, and using good judgment.

The safest way to work around power lines is to have the current shut off during the job. If the current must remain on, be sure you understand all procedures before you begin working in these dangerous conditions. If in doubt, ask. Remember, there are no stupid questions, only stupid mistakes (and sometimes dangerous ones). Be sure you are thoroughly familiar with the operation of your vehicle. Know the length of the boom and the arc it makes when it is raised and lowered.

Staying alert includes constantly remembering those power lines as you work. This is not the time to plan your vacation or rehash that argument with your brother-in-law. Forgetting that you are near a power line can be a fatal mistake. Keep your mind focused on what you are doing and be alert to changes in your surroundings, especially those surroundings near the top of the crane. Make repeated visual checks of your position in relation to power lines. It's easy to get so absorbed in your work that you don't notice what's around you.

Use good judgment when positioning and lowering the boom. Avoid taking chances because you're "sure" it will clear. Crew members and crane operators must work together, with the crew member able to clearly signal the operator if the boom is too close to a power line. Good judgment and teamwork are a must when you move the crane with the boom in the air.

One more point: to stay alert and use good judgment on the job, you need to come to work in good shape. Get plenty of rest and a good meal before starting work. You owe it to those who depend on you.

If you've worked in heavy construction a long time you probably know of someone who has died or been severely injured in a power line accident. The real tragedy is that most of these accidents were the result of poor judgment or forgetfulness. Do your part to prevent needless tragedy. Know your equipment and safe operating procedures before you begin, keep your mind on your job, and remember power lines and cranes don't mix.
WINTER DRIVING

Unless you’re planning to spend the winter in the Caribbean, this talk is for you. It’s about what you need to know to drive safely in winter conditions.

Get ready for winter driving before winter begins. Get your car tuned up; brakes, battery, fluid levels, and exhaust system checked. Make sure your heater and defroster are in good working order and seals on doors and windows in top shape. Replace your wiper blades. Get ready for snow with snow tires, antifreeze, and winter weight oil. Carry emergency supplies sand, salt, shovel, snow chains, snow scraper, booster cables, blankets, and flashlight.

Of all the things you can do to make winter driving less stressful, giving yourself a little more time is the most important. More time to get to and from work and more time to stop when you’re on the road. Going slower is the key to safe driving on slippery roads, and it’s pretty hard to go slower when you’re in a race with the clock.

The biggest hazard of winter driving is slippery roads caused by ice, slushy snow, or rain, especially the first rain after a dry spell when oil and grease have built up on the roads. Remember how far it takes to bring your car to a stop on dry pavement? In winter conditions, allow at least 3 times that distance to reach a full stop and avoid skidding. This means your safe distance behind the car in front of you should be 3 times as far. And you must begin braking 3 times as far away from the stoplight or corner where you turn. Reduce the danger of skidding by driving more slowly and by pumping the brakes as you slow down for a turn, rather than holding them down. If your vehicle is equipped with Anti-lock Breaking System CABS, the procedure is the same except you should apply firm steady pressure to the brake pedal. Anti-locking brakes don't necessarily mean you can stop on snow and ice. Use low gears on slick surfaces, especially hills and curves. Test your brakes frequently and never tailgate.

If in spite of these precautions you find yourself beginning to skid, DO NOT BRAKE. Instead, take your foot off the accelerator and gently turn your car in the direction you want your front wheels to go. Hitting the brakes or turning sharply will only lock you into a skid. If you can't get control of your car it is better to steer into a snow bank or fence than to risk a collision in traffic. Memorize this procedure. You won't have time to look it up when you're skidding.

Visibility is another big hazard of winter driving. In heavy snow, keep your lights on. Stop and clean your windshield and lights if necessary. Get off the road before you get stranded by worsening weather conditions.

If you get stuck in snow, avoid spinning your wheels you'll only dig in deeper. Instead, shovel snow away from the wheel paths and pour salt, sand, or cinders around the drive wheel to improve traction.

To sum up: keep your car in top shape, allow extra time and space on the road, and listen to the weather forecast sometimes the best winter driving strategy is to stay home.

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NO VEHICLE ACCIDENTS ON THIS SITE

Vehicles account for a large share of the accidental injuries and deaths on a construction site. Like highway accidents, most of these accidents can be avoided by simply paying attention and knowing the rules for using these vehicles on a work site. The traffic rules and speed limits we have on this site are in place not to make your life more difficult but to make your life safer. All drivers and operators are expected to follow them.

For instance, there are definite regulations for transporting workers. The passenger load limit for flatbed trucks, dump trucks, pickup trucks and the like is no more than two workers outside the cab, unless the truck has rails or sides. Those two passengers must stay immediately behind the cab and have suitable grab irons on the cab for a handhold. Workers may not ride on the top of side rails, on the running board, on the fender, or with legs hanging over the sides. Any vehicle that regularly transports workers once a day or more must have secure seats, railings, and steps for getting on and off. Never climb onto a vehicle while it is in motion or ride on heavy equipment anywhere but in a seat.

When you operate a vehicle on a sloping surface, always drive up and down hill rather than across. If you must drive across a steep hill, you can reduce your chances of rolling by attaching the vehicle with a wire rope to another vehicle that is stabilized at the top of the hill. When traveling downhill, keep the speed under control with low gears and brakes so that you can stop at any time. Back up only when you can be certain that no one is behind you. If you're not sure, get out and check or use a guide.

Vehicles used on this site must be maintained on a regular schedule. In addition, before you take a vehicle from the storage area, always check the brakes, steering, and warning signal and use the vehicle only if everything checks out. Report loose bolts, fluid and air leaks, broken steps and handholds, and so forth. Clean windshields and mirrors and keep the cab and running boards free of loose items, debris, and grease.

Follow safety procedures when repairing a vehicle. Use tire cages for inflating truck and equipment tires in the repair shop. If you must inflate a tire in the field, make sure you're in the clear and watching the rim during inflation.

Maintenance work on vehicles is a major source of accidents. Always shut down vehicles for repairs, adjustments and lubrication, and set the parking brake. All equipment such as bulldozers, forklifts, backhoes, and tractors should have all blades, hoists, buckets, scoops, etc. lowered to the ground before working on the equipment. If you must work under a raised dump truck body, make sure that the body is locked in the raised position. The same goes for working under and carryall closing gates. When you refuel, do so away from welding operations or machinery that creates sparks. Stop all engines in the area, and don't smoke.

Whenever you're not sure about safety procedures for operating or maintaining your vehicle, ask your foreman. When it comes to vehicle safety, better a "dumb" question than a tragic mistake.
Defensive Driving

What do you think about on your way to and from work every day? Billy's ball game tonight, Sally's lesson on Y! We sometimes take to many everyday items for granted. Driving should not be one of them.

Traffic accidents claim 125 drivers, and injure 5,000 more every day in the United States. Most accidents occur within twenty-five miles of home. This statement should awaken each of us to the fact we do not pay attention to something that has become such a routine part our life. Have you ever gotten home after a hard day's work and thought to yourself, "I do not remember passing that road. It's a good thing the truck knows its own way home."

Becoming a defensive driver starts before you insert your keys in the ignition. When was the last time you walked around your car or truck before you started out the driveway? Did you check the headlights? What about your taillights? If they are not in working order you might find someone in your trunk before you arrive at your destination. If it rains today, will your windshield wipers do a good job? Will you be able to see that car pulling out from his driveway?

Think back to the time you learned to drive! For some it may have been a long time ago. Remember being taught to adjust all the mirrors before starting to drive. We have been taught to look all directions before placing the vehicle in motion. Those lessons should be practiced each time we drive.

On the road, give driving your full attention. Do not try to read a map or the morning newspaper. During a three second distraction, while traveling at 60 mph, your vehicle will cover 264 ft. Almost the length of a football field.

Be alert to the traffic conditions around you, use your mirrors. Assuming the other drivers will do the right thing will get you in trouble every time. Some do not and will not use turn signals, stay within his lane or even dim his highlights. Always expect the unexpected.

Driving at night or after a long hard day presents special hazards. Sleepiness is thought to be a factor in four out of five accidents in which the vehicle runs off the road.

You can help prevent accidents by being alert and driving defensively. You will arrive at your destination in one piece. Practice good driving habits every day. Safety is no accident! Your safety always starts with YOU.
STAYING ON THE SAFE SIDE OF CRANE BOOMS AND BUCKETS

When you're busy doing your job down on the ground, it's easy to forget what's going on overhead. But as a competent construction worker you must know what's going on all around you including up above. In an accident involving a crane boom, the victim is not likely to have a chance to learn from it.

The rule of thumb for working around cranes is simple: stay out from under crane booms, buckets, or suspended loads. This applies whether you are working, walking through, or just standing around. And if you're going to be anywhere near a crane operation, you must wear a hard hat.

Using a crane requires planning: cranes must be positioned so that the boom or bucket won't be swung over workers. It may be necessary to have workers leave the area during the operation or schedule the crane operation for a time when workers aren't around. On a busy job site, the swing area should be roped off or barricaded and clearly marked with warning signs. A traffic controller should be posted on crowded sites.

Beware of falling material or concrete! A chunk of half solidified material from a concrete operation is the most common spill from a bucket and the most frequent cause of crane accidents. A hard hat is poor protection from falling concrete. Stay well in the clear, both when the bucket is landing and when it is lifting away.

You take pride in doing your job quickly and efficiently. Crane booms are usually way up there; it's tempting to trust in luck in order to get your work done. Resist the temptation. You're much too valuable to take a chance with your life.
THE HAZARDS OF HEAVY EQUIPMENT

Heavy equipment is powerful and dangerous, both for the operator and for those who work around it. Let's go over the precautions we should take to be safe around heavy equipment.

The number one rule is to keep clear of moving equipment. Never assume the operator of a crane, shovel, hi-lift, tractor, or other equipment knows where you are or where you're going next.

Remember that on a noisy work site you may not be able to hear a vehicle's back-up signals. Keep an eye out for the movements of equipment. Stay clear of the pinch points of earth moving equipment and cranes at all times. Ideally, these areas should be barricaded off, but with these machines constantly moving around, you can't count on barricades. If you need to go into the danger zone around a piece of equipment, alert the operator to stop the machine and wait until the machine is completely stopped before going in. Always stay out from under loads on cranes or hoists even if it means taking the long way around.

Avoid cutting across the path behind a unit when it's backing up. You could trip and fall. Don't walk beside moving equipment in case it slides or turns, or the load shifts. For the same reason, avoid riding on the running board or drawbar of the unit.

Another good place not to ride is on top of a loaded truck that's moving forms, masonry blocks, or other materials. The load could shift on rough ground and you could be thrown off or injured. Or you could be crushed against an overhead obstruction.

If you're working on portable staging, scaffolds, or work platforms, get off while the unit's being moved.

When you operate heavy equipment, always check the brakes, steering, and other controls before starting. Make sure no one is near your equipment when you start up. The safest way to do this is to walk all the way around the vehicle. Always wear the right eye protection, safety hats, and other personal protective equipment when operating heavy equipment. When you park to leave a machine, lower buckets, shovels, or dippers, apply the parking brake, and shut off the engine. Resist the impulse to jump off your machine. Use the handholds, rails, and steps. Keep these contact points clean and free from grease.

Always stop the engine before lubricating or working on a machine. Be sure to replace any guards that you remove before resuming operation.

Whether you operate heavy equipment or work around it, it pays to respect the tremendous power and momentum of these machines and allow an extra margin of safety around them.
PREVENTING CRANE-BOOM FAILURES

You already know that cranes are pretty dangerous pieces of equipment. When a crane-boom fails, lives can be lost or terribly injured. Most crane boom accidents are preventable, and proper loading is the key to prevention. Today we’ll talk about the safe way to load and operate a crane-boom.

Before you begin loading, always check load limits for the length, size, and angle of the boom. Make sure you have correctly calculated the weight of the load.

Raising the boom too high is a dangerous situation. Avoid the quick release of the load on a near vertical boom. Boom stops should be in place to keep from going over backward.

Side-pulls and non-level working surfaces are major sources of trouble. Be extremely cautious under these conditions. To prevent load swing, the top block should be centered over the load before beginning. Position the boom to avoid long side; pulls and use tag lines or other controls to limit swinging when you move a load horizontally. Turn slowly and smoothly so the boom won't twist. Use properly shored outriggers to keep the crane chassis from tilting. A tilted chassis can cause a side-bend in the boom. Make sure you have sufficient counterweight to prevent tipping the cab.

Steer clear of a boom that has been damaged and not properly repaired. To put it another way, no matter how clever you think you are with baling wire, never attempt makeshift repairs on a crane boom.

A daily inspection of your crane equipment is required for your own protection. Check the brakes, clutch, boom splices and braces.

The major causes of crane boom failure are overloading, improper loading, and poor maintenance. Your safety depends on how well you follow the rules for safe crane operation. You can bet your life that crane operations are not the place to learn new skills, take chances, show off or take shortcuts. If you are not fully trained and deadly serious about what you are doing, you don't belong at the controls of a crane boom.
FILL'ER UP SAFELY

We wouldn't need this talk if we could simply drive the crane or haul the compressor to the corner gas station every time it needed fuel. But on a construction site, nine times out of ten it's not practical to bring the equipment to the fueling site. So you bring the fuel to the equipment. Since gasoline is specially manufactured to be one of the most explosive of all flammable liquids, that's how it works in the engine, we need to take special precautions in transporting and using it.

Whether you are fueling fixed, semi-portable or self-propelled machines, the rules are the same: fuel while the engine is cold, shut off the engine, wipe up spills immediately, and no smoking. Fueling should be done in well ventilated areas, away from flammable surroundings or ignition sources such as sparks, heat, static electricity, or faulty wiring. The same sources we stay away from when using any flammable liquid.

When large quantities of fuel are needed, self-propelled tank vehicles are the safest way to transport fuel. Portable tanks with hand operated pumps can be used in some cases, if the terrain permits. These tanks should be positioned on stable ground and blocked and protected from rolling when fueling. They don't need to be bonded or grounded if the metal nozzle is in contact with the fuel tank being filled. Take special care to avoid spilling. Drain the hose after fueling so fuel won't be spilled in the next fueling operation. Never position the fueling tank so that the gas must travel through more than 15 feet of unsupported hose, or where the hose must be pulled tight to reach the tank being filled. When they're not in use, park portable tanks out of the way of moving equipment, with wheels blocked, if the ground is not level. For smaller fueling operations, where fuel is in a hand carried portable container, be sure the container has a sturdy carrying handle with a flexible metal spark arrester spout small enough to fit in the tank opening and it is equipped with a spill proof sealable lid. The tank should be designed for this use and clearly labeled.

The most important thing to remember in fueling operations is to keep the explosion inside the engine where it belongs. Remember always shut off the engine and other nearby engines while fueling, fuel cold engines only, wipe up spills immediately, and stay away from ignition sources.
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BATTERY BOMBS

Just about any motorist who has driven during the winter months has seen a car battery jumped. The procedure has always looked simple. Just hook the terminals of the dead battery and booster battery together with jumper cables, and the dead battery will receive enough assistance to turn the engine over and start the car.

The only drawback to this method is that many car batteries have exploded and showered motorists with sulfuric acid. One Ohio doctor, for example, reported treating three battery explosion victims in a single month.

Here’s what causes the explosions. Every car battery produces hydrogen gas as part of its chemical process. When a battery is being charged, as is the case when two batteries are hooked to each other with jumper cables, more of this hydrogen gas is produced. If the gas is allowed to accumulate in a small area, any spark or flame will set it off.

To avoid battery explosions you want to avoid concentrating the hydrogen gas as well as any spark or flame that might set it off. So take the following precautions:

- Don’t smoke when working near your cars battery.
- Do nothing that would make a spark near your cars battery. A favorite test of many motorists is to hook the two cables to the booster battery and then touch the other ends of the cables together. If they see a spark, then they are assured that there is current. If the hydrogen gas in or over your battery contacts that spark it can explode.
- The last cable connection should not be to the grounded terminal of the dead battery, but to aground away from the dead battery. Attach the last cable clamp to the engine block, generator/alternator bracket or any other ground at least a foot from the dead battery. The reasoning for this is sound. This last connection will complete the electrical circuit and when any circuit is closed there is apt to be a spark. Naturally you want to keep any spark away from the hydrogen gas in the battery.
- Remember that the last two connections in the jumping procedure should be to hook the grounded terminal of the booster battery to aground at least a foot from the dead battery. If you cannot tell which terminals are grounded and which are not, it is advisable to have someone who can tell make the connections.
Carbon Monoxide

Carbon monoxide (CO) is a product of incomplete combustion of solid, liquid, or gaseous materials that contain carbon. It is colorless, odorless, and tasteless. The most important characteristic of CO is its poisonous or asphyxiating qualities, even in low concentrations. Because it may be released as a result of burning almost any type of fuel or other carbon containing substance, CO presents a widespread hazard.

CO exerts its extremely dangerous action on the body by displacing oxygen from hemoglobin. Hemoglobin is the protein of the red blood corpuscles that normally absorbs oxygen from the air in the lungs and delivers the oxygen to the different tissues in the body which require oxygen to do their work and support life. The affinity of CO for hemoglobin is 190 to 100 times that of oxygen for hemoglobin. Therefore, if even a small amount of CO is present in the air breathed in the lungs, the hemoglobin will absorb the CO in preference to the oxygen present. Lack of oxygen will prevent the body's tissues from doing their work properly and will result in ill effects.

The severity of the CO effects depends upon the quantity of CO that is absorbed by the blood. The amount absorbed and the rate at which it is attained depend upon the concentration of CO in the air, the duration of exposure, and the extent of physical exertion during the exposure. The physiological effects vary according to the concentration of CO and the length of exposure. Early symptoms include tightness across the forehead, headache, weakness, dizziness, nausea, confusion of mind, increased pulse and respiration, and unconsciousness. The following illustrates the relationship between CO Concentration and the effects of exposure (allowable length):

<table>
<thead>
<tr>
<th>Concentration of CO Part Per million</th>
<th>Allowable Length of Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 25 ppm</td>
<td>Allowable (ACGIH TLV, 1994-5) for exposure of 8 hours.</td>
</tr>
<tr>
<td>500 - 1000 ppm</td>
<td>Causes headache, tachypnea, nausea, weakness, dizziness, and mental confusion for exposure of less than 16 hours.</td>
</tr>
<tr>
<td>1,500 ppm</td>
<td>Imminent danger (NIOSH IDLH)</td>
</tr>
</tbody>
</table>

Imminent danger (NIOSH IDLH)

The National Safety Council reported, in its Accident Facts 1994 Edition, which "motor vehicles are the primary cause of all unintentional carbon monoxide deaths, with about 48 percent of the deaths occurring in stationary vehicles and another 10 percent occurring in moving vehicles. Stoves, fireplaces and natural or LP (propane) gas combustion are other sources". It also noted that the death rate for unintentional CO poisoning is four times higher in January than in July.

Of the 582 deaths caused by utility gas and other forms of CO poisoning recorded by the Public Health Service for 1990, one occurred at a mine or quarry, 32 at other industrial places, 10 on farms, 23 on the street or highway, 316 at home, and the remainder elsewhere. The potential for overexposure can occur in many places, everyone should take precautions to protect themselves from the hazard of CO poisoning.

Proper maintenance of the exhaust system of all vehicles is essential to ensure that exhaust fumes are directed away from the driver's compartment. This includes personal vehicles as well as
equipment used in your work activities. The exhaust systems on motor vehicles and other combustion engines should be checked regularly for leaks and cracks. Adequate ventilation must be provided to dilute any CO produced whenever engines are idled or are run in confined spaces.

Background

The April 9, 1995, fatality of a security guard at a work site was attributed to CO poisoning. The victim was found in his car with the engine running, apparently asphyxiated from exhaust fumes. A similar incident occurred in 1993, when the damaged exhaust system in the vehicle assigned to a guard allowed excessive amounts of CO to leak into the vehicle's cab. In 1991, a contract worker succumbed to the poisonous effects of the fuses from a leak in the exhaust system of a gasoline generator in the back of his van. The generator was used to power an electric heater in the front compartment of the van in which the worker was sleeping.
STAYING ON THE SAFE SIDE OF SCAFFOLDS

Scaffolds are involved in most construction jobs. To make sure you're using the scaffold as safely as possible; let's take a few moments to review some guidelines for scaffold safety. Proper setup depends on the kind of scaffold you're using. Each type of scaffolding has specific setup requirements that you should know:

- Pole scaffolding should be anchored in both length and height. The distance between anchors depends on their location and material. Check your company's OSHA rules.
- Free standing towers should be guyed if their height is more than three times the width of the narrowest part of the base.
- The manufacturer's recommendations for properly seating and locking all connections should be used with steel scaffolding.
- Wood scaffolds must have materials and bracing that conform to safety code.
- Foundation sills should be placed under all scaffolds that are set directly on earth.
- Never use "improvised" scaffolding, such as piling boxes on scaffolding to reach higher, instead of building the scaffolding higher.

Too many accidents happen during scaffold work. Most of these accidents can be prevented by putting a little thought into safe procedures and good housekeeping on and around the scaffold. Ensure your safety by taking these precautions:

- Inspect scaffolds each day before using them. Are the guard rails, connectors, fastenings, footings, tie-ins, and bracing in place and secure? Platforms must be closely boarded, fenced and securely fastened.
- Avoid stockpiling materials on scaffolds. Remove all materials and tools at the end of the day. Unnecessary materials on or around scaffolds can falloff and injure workers below or cause workers to trip and falloff the scaffold. Keep the platforms and the entire scaffold area clear of such hazards as debris, unneeded equipment and material.
- Never overload scaffolds. Keep necessary materials piled over ledger and bearer points to minimize platform loading. To prevent materials from falling off scaffolds, place screening up to guard rail height.
- Stay off scaffolds during storms or high winds and clear platforms of all ice and snow before using them. Use sand to make wet planking less slippery.
- Protect scaffolds from being knocked over or weakened. Never allow vehicles or materials to bump or strike against scaffolds. Use taglines to control material hoisted from the ground.
- Before working in high places, check holding devices such as ropes, cables, and chains for weaknesses caused by accidents or normal wear and tear.

When you work on scaffolds you carry your life in your hands and the lives of your crew mates. Unsafe practices may injure you or others below or near the scaffold. Safety depends on the common sense of everyone using the scaffold.
OSHA’s 1996 Scaffolding Requirements

Late in August, OSHA released its new regulations on Scaffolds, which take effect on November 29, 1996. This quick reference was produced as an informative review of the new changes. IEC recommends that all contractors review this regulation, because ignorance of the law is not a defense. The OSHA rewrite and clarification has many of the same requirements plus a few new regulations. Some of the new policies are listed below:

- If workers exceed 10 feet on a ladder jack scaffold, they must use adequate fall protection devices.
- Makeshift devices or ladders can’t be used to raise worker height on a scaffold.
- The maximum distance between the scaffold and the structure is 14 inches, except for plasters and lathers who are allowed 18 inches. If you exceed these requirements, you must install a standard guard rail.
- Planking on scaffolds must be at least 18 inches; unless you are using a window jack, pump jack, ladder jack, roof bracket or top plate scaffold, then the required minimum is 12 inches. While working in restricted space areas, you are allowed to use less than 12 inches, however you are required to use as much as possible.
- Cross braces can be used as top or mid rails (but not both at the same time) as long as the cross point falls within OSHA’s specified heights.
- Planks can not be painted, unless it is with a clear material (you are required to inspect for cracks and damage).
- Parts, metals and other manufactured scaffold materials can't be interchanged unless a competent person determines that it is safe to do so.
- After September 2, 1997, OSHA will require that a lanyard system or guardrails be used to protect workers erecting and dismantling scaffolds, unless a competent person decides safe work practices can protect workers.

OSHA will be working with the industry to define a "competent person" and the "safe practices" that are used within this regulation.
A SCAFFOLD IS NO SAFER THAN ITS WEAKEST PART

When you go up on a scaffold, your life depends on that piece of 2” x 10” lumber you're standing on. How can you be sure that plank is trustworthy? Let's talk about what makes a good scaffold plank and how to use it properly.

First of all, the plank should be not less than 2 by 10 inches in size. It should be rough dressed, seasoned and straight grained. There should be no large, loose or dead knots and no groups of knots in the plank.

It's important to inspect planks before you use them, but since you can't always tell by looking if a plank is sound, test it before you use it. The test is simple to do. Lay the plank across a pair of concrete blocks spaced the same distance apart that the scaffolding supports will be. Have two people stand in the center of the plank. Discard any plank that cracks or bends at a sharp angle under this load.

Once you know the plank is sound, be sure to use it right. Always secure the plank by wiring it to the scaffold. Or if you're using tubular steel scaffolds with fixed distances between the spans, the easiest way to secure the planks is to install cleats on them.

Take good care of scaffold planks. Never weaken them by cutting, drilling or nailing into them, or by allowing them to be fire-damaged by welding sparks. Planks can also be damaged by being thrown from a scaffold or by being driven over by vehicles or equipment. Remember, in the air the scaffold is your life support system.

*A scaffold is only as strong as its weakest plank.*
We all use ladders, both at work and at home. You probably first used a ladder to help your parents paint or to change a light bulb in the ceiling. Nothing to it. But ladders are one of the biggest hazards of overhead work. Let's talk about using your ladder the right way and taking good care of it.

What kind of ladder do you use? If it's a step ladder, make sure the spreaders are locked in place before climbing and remember not to climb past the third rung from the top. Whenever possible, a straight ladder should extend about three feet beyond the point where it's supported. And it should be long enough for you to stand no higher than the fourth rung from the top. The ladder should be secured with lashing at the top and safety feet or cleats at the bottom to prevent slipping. Always use wooden ladders for electrical work.

Position a straight or extension ladder so that the distance the ladder base extends from the wall is about one-fourth the length of the ladder to its support point. For instance, if the support point is twelve feet high, the ladder base should be three feet out from the support point. Avoid leaning a ladder against a sash or window pane. Instead, use a board securely fastened (not nailed) across the top of the ladder and resting against the sides of the window. If your ladder is near a door or walkway, make sure the door is locked or the walkway barricaded to prevent collisions. In public areas, barricade or guard the area around the base of the ladder.

Wear slip-resistant footwear when working on ladders. Always go up and down facing the ladder. Use a tool belt or hang a bucket from the ladder to hold tools and material, so that both hands are free to hold on when climbing the ladder. Always hold on to the ladder with one hand. Avoid leaning past the side of the ladder to reach something. Get down and move the ladder instead.

Take good care of your ladder and check it before using it. Are the nuts and bolts tight? Rungs secure? Do spreaders work? Check for cracks or splinters, faulty safety feet, and oil or grease on the rungs that could cause you to slip. Use your own ladder whenever possible, you know it's in good condition.

There's a right way to carry a ladder, especially going around comers. Whenever possible, carry ladders vertically, or use two people, one at each end.

Like most procedures, using a ladder is a matter of common sense, following safety guidelines, staying alert, and keeping your mind on what you're doing.
WORKING SAFELY WITH LADDERS

Step and Straight Ladder Guidelines
Most of us use ladders from time to time at our work sites, in the office, or at home. Yet few of us stop to review the basic rules for working safely with ladders. The following safety guidelines can help anyone who works with ladders prevent accidental falls, injuries, and disability.

Step Ladders
When working on step ladders; remember never to climb past the second rung from the top. Make sure that the spreaders are functional and locked in place before climbing the ladder. If the ladder is positioned by a door or walkway, make sure that the door is locked or the walkway barricaded to prevent collisions. Do not overreach while working on a step-ladder, reposition the ladder to avoid leaning over the base of support.

Straight Ladders
When working on straight ladders use the four-to-one rule: position the ladder base one foot away from the wall for every four feet of ladder height (up to the support point). Never climb past the third rung from the top on a straight ladder. A straight ladder should extend at least 3 feet past its support point. Tie down your ladder as close to the support point as possible. Make sure that straight ladders have safety feet. To avoid overreaching, do not let the trunk of your body extend past the side of the ladder.

General Guidelines
Persons who work on ladders should wear slip-resistant footwear, and make sure that ladder rungs are free of oil, grease, or other slippery substances. Before climbing any ladder, check its condition. Are nuts and bolts tightened? Are rungs secure? Do spreaders work? Are safety feet functional? If the ladder is in good condition, climb and descend it facing the ladder itself, and holding on with both hands. If you must carry tools, use a tool belt or a bucket attached to a hand line to pull tools up and down. When working on ladders, hold onto the ladder with one hand at all times. And remember; never use a metal ladder when working with electrical current.

Prevent Falls
By using these tips for ladder safety; you can help prevent accidental falls, injuries, and disability. All of us use ladders from time to time, so ladder safety should be everyone’s concern. If the ladder is positioned by a door or walkway, make sure that the door is locked or the walkway barricaded to prevent collisions.

A straight ladder should extend at least 3 feet past its support point. Tie down your ladder as close to the support point as possible.

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A SAFE SITE IS AN ORDERLY SITE

What does good housekeeping mean to you? For some, it might mean straightening the doilies on the sofa arms. But on a construction site, it's a matter of arranging the tools and materials you use in the safest possible way. Let's talk about a few of the ways we can make a work site safer with good housekeeping.

Here's a story about a fellow I'll call Joe. Joe was a good worker and prided himself on getting the job done fast. Well, one day Joe was hurrying to finish a job. He was working with solvent based cement. He knew about the dangers of flammable liquids, but he didn't want to take the time to dispose of the rags he was using to clean up with. He figured he could save a trip and dispose of them all at once at the end of the day. I think you can guess the rest. It was a hot day, there were dust and fumes in the air, and when Joe switched on the drill there was an explosion. It put an end to Joe's hard work, his construction company, and his life.

Most poor housekeeping accidents aren't as dramatic as Joe's. They involve tripping or stumbling over things that aren't where they're supposed to be, stepping on sharp objects, slipping on a puddle of oil or water, or using a tool that has not been properly maintained.

Good housekeeping is a matter of separating scrap from usable material and storing it in scrap piles out of the work area. Rags, scrap paper, old rope, and dust are fire and accident hazards. Tools stored in their proper place not only look better, they are easier to find. How many of you have cut your hand while fishing through a toolbox full of sharp objects for the screwdriver in the bottom?

Keeping a safe, orderly site not only protects you, it makes you feel better about your job. It's a boost to your morale to know you're not walking into a mine field every morning. And it makes a big impression on anyone who is interested in the quality of your work...like your boss.
EVEN A DRILL CAN KILL

Portable electric power tools can be a lethal combination of electricity, sharp edges and fast moving parts. There are probably half a dozen power tools you know how to operate expertly. But do you know everything there is to know about using them safely? Let's review power tool safety. Even if you've heard most of it before, it's a good idea to keep safety procedures fresh in your mind.

Safety begins before you plug in a tool. To prevent unwelcome surprises, always make sure the switch is off. Inspect power tools for defective or broken cord insulation or plugs, improper connections, or a loose or broken switch before using them. Use only equipment that is in good condition. It must be properly grounded; if not, get rid of it, return it to the shop or repair it. OSHA requires the use a ground fault circuit interrupter (GFCI) or equipment grounding all times. Before switching on the tool, think about where you're working. Never use a power tool where flammable vapors or gases are present.

If you're sanding, grinding, chipping, or doing almost any other power tool task, use your safety goggles. Always leave the guards in place on portable saws. And pay attention to the direction of the tool's rotation. You're responsible for seeing that no one is in the path of flying particles.

Report your power tool as unsafe if you find insulation defects, if the brushes spark when the power is turned on or, more importantly, if you feel even a slight shock or tingle when using it. Avoid over straining the tool by using it improperly. Use the switch lock only when the tool is in a stand or jig. Make sure you're on good footing when using heavy tools or working at an awkward angle, such as overhead. Tools can get jammed suddenly and cause you to lose your balance. When you turn off the tool, let it stop completely before putting it down. Always put it in a safe place where it can't hurt someone.

The biggest hazard of portable power tools is electric shock. When the insulation between the frame and the current carrying part of the tool fails, the electricity always grounds itself along the path of least resistance, and most often that's you. If happens, you may sustain injury, severe burns, or fall from a high place. You can expect electric shock to be especially severe if you're working in a damp place or if you sweat a lot. Electric shock can kill you. Keep your work area dry and keep cords away from heat, sharp objects, and chemicals that could damage their insulation.

One more note. As professionals, you don't need to be reminded not to mix horseplay and power tools. And you don't need to tolerate this sort of behavior from other workers. Your use of common sense, well maintained tools, and the right protective equipment shows a healthy respect for both your tools and your life.
WORKING SAFELY WITH POWDER ACTUATED TOOLS

Those of you who have used a powder actuated tool know how much easier it makes your work. But these tools are as dangerous as loaded guns. That is why you must be specially trained and certified to use them.

A powder actuated tool uses a powder charge the way a gun shoots a bullet. It "shoots" a fastener, or stud, into a surface, such as concrete or steel. Like bullets, studs improperly shot can injure or kill workers. All powder actuated tools are equipped with special guards and muzzle fittings to keep you from getting hurt by a ricocheting stud or chips of flying masonry. The tool will not fire without such guards. Let's talk about how to safely use these powerful tools.

First, treat the tool exactly like a loaded gun. Never point it at anyone, put your hand over the muzzle, or drop it. Second, always unload the tool to transport or store it. The same goes for moving from job to job. Keep the tool unloaded until you are ready to drive a stud. Third, like a gun, a powder-actuated tool has a kick. Brace yourself when using it, especially on ladders or scaffolds.

The power loads for powder actuated tools are essentially blank cartridges. They are color and number coded for power level. Always follow the manufacturer's instructions to select the right power load for the material you're firing into. Before loading, check that the chamber is clean.

When you use a powder actuated tool, always wear eye protection, and wear hearing protection if you work in an enclosed area. Before beginning, test drive a fastener with a hammer, to double check that the surface is really the concrete or steel surface you think it is. Studs accidentally fired into wood, sheet rock, or lath and plaster will go through the wall and out the other side with the force of a bullet. To be on the safe side, make sure no one is working on the other side of the wall. And if you want to live long, avoid firing into brittle materials such as glass bricks, tile, cracked concrete, or stone, which are likely to shatter.

To drive a stud, press the tool firmly against the surface at right angles. Fire studs well away from the edge of the surface or any holes at least one-half inch for steel and 3 inches for concrete. And remember, powder actuated tools must not be used near explosives or flammable. To fasten close to an obstacle, adjust the guard so that the barrel is close to the guard edge. Use this feature only when absolutely necessary. The guard is there to protect you. If the tool misfires, keep holding it firmly against the surface for 30 seconds. Then dispose of the power load according to the manufacturer's directions.

Clean and maintain your tool according to instructions and use only factory replacement parts. When using this powerful, dangerous tool, take the time to be sure of what you're doing. It's already saving you lots of time and energy you don't need to save more time by cutting corners on safety.

OSHA requires employee certification for each employee using powder actuated tools. Employees must be certified and have, in their possession, a certificate indicating they have been trained for the particular model tool they are using.
THE SAFE WAY TO HANDLE PIPE

Pipe can be an awkward load to handle. It is hard to balance and it has a tendency to roll when loose. Let's talk about safe practices when handling pipe.

Stay clear of moving or rolling pipe. It's tempting to wait until rolling pipe gets close and then jump over it. This would be fine, except that sooner or later you're likely to slip or trip as you jump. When that pipe slams into you it can do a lot of damage. Watch out for moving pipe too, both to the side and above you. From one end, pipe looks like a very small load. But pipe swings a wide and deadly arc. If it slips in the sling, one end can drop suddenly. Be on the lookout for these hazards.

When you're moving pipe in a sling, make sure it's balanced so that it won't slip out when it's risen. Move only one loose section at a time. It's not safe to try to move pipe that is covered with frost, ice, or snow in a sling. Use a caliper type clamp for these situations.

Protect your fingers by keeping your hands on the outside of the pipe when you're guiding it. The sharp edges can cut your fingers, or slice them right off if the pipe end hits something. If two people are working as a team to carry a length of pipe on your shoulders, keep each other informed of what you're going to do next. You can injure your partner by dropping your end of the pipe unexpectedly or by not lifting at the same time as your partner does. Remember that pipe is like any other heavy load, lift it by bending your knees not your back.

Store pipe with sleepers between layers and securely tie down each layer. When transporting pipe on two wheeled pole trailers, place a wooden strip or piece of belting across the bolsters before loading the pipe. This makes it easier to tighten the binder to keep the pipes from slipping.

Like the many other hazards you find on the typical construction site, pipe is safe to work with as long as you use common sense and stay alert.
THE THREE F’s OF WELDING AND CUTTING

FIRE, FUMES, AND FACE

Welding and cutting operations are so dangerous that they are worth their own special talk. The dangers of welding can be summed up in three words: fire, fumes, and face. Let’s talk first about protecting yourself and your work area from fire caused by sparks or molten metal drips.

The safest way to weld is to work far away from anything that can burn. But since this is not always possible, take plenty of time to clean up and prepare the area before you begin. This means clearing away combustible materials within 30 feet of your welding or cutting job, sweeping the floor clean of dust and debris, and protecting open doorways and windows with a fireproof curtain. If it’s not possible to remove everything that can burn, take these precautions:

• Cover wooden beams, partitions, floors, and scaffolds with sheet metal or asbestos. Or wet down combustible floors, but remember this can create a shock hazard if you're using electric welding equipment.
• Put containers of water or sand below dripping slag or where pieces of hot metal might fall.
• Keep water, sand, or a fire extinguisher on hand to put out fires caused by sparks. In extremely hazardous situations, have someone stand by with a fire extinguisher while you work.
• Do you sometimes weld tanks or drums that may have held flammable liquids or gas? For your safety, insist on an approved test to show that there are no dangerous fumes left in the tank. Do it before you start welding. Never weld where flammable materials have been used recently or where there is dust in the air. If in doubt, use a combustible-gas indicator to check for flammable vapors.

Because welding may produce toxic fumes, good ventilation is just as important to your safety as preventing fires. Those fumes are bad for your health! If screens around your work to prevent fire also interfere with ventilation, you may need to use special ventilating equipment or even wear a respirator. Never weld in a tank or small enclosed area without making sure you’ve got enough ventilation and are working in a “safe atmosphere”. Check with your foreman if you’re not sure. You work better when you stay healthy.

Always protect your face and eyes from sparks, slag, molten metal, and from flash burns caused by radiation from welding equipment. OSHA requires gas welders to wear impact and heat-resistant goggles. Arc welders must wear helmets and goggles that resist heat, fire, impact, and electricity. You should know what kind of protection to wear on welding jobs and not just for the actual cutting and welding. You may not need your helmet for chipping and cleaning metal, but you must wear goggles to protect your eyes from particles of metal. Before you start any welding operation, for safety’s sake make sure you are “covered” when it comes to the three F’s: fire, fumes, and face.
ACETYLENE AND FUEL GASES

There are so many fires and explosions each year from failure to use and handle acetylene and fuel gases safely that I figured I ought to talk about them. I won't have time today to do more than hit the high spots, but I'll try to cover the more important points.

First of all, it's easy to keep out of trouble with these gases, if you'll just use your head. Perhaps the trouble is that people don't take the hazards seriously enough.

All these gases catch fire very easily. Any spark will set them off. That means "no smoking" around them. Keep them away from fire or anything very hot. It doesn't take red hot heat to set them off. From 600° to 800° will do it.

The lower explosive limits of these gases (the smallest amount, when mixed with air, is explosive) are about 2 to 3 percent mostly. This is not much higher than the lower explosive limit of gasoline, 0.5 to 2 percent. Also, the explosive range of liquefied petroleum (LP) gas is not much different from the explosive range of gasoline.

Acetylene and hydrogen are something else. All mixtures with air that have between 4 percent and 74 percent hydrogen are explosive. Acetylene is worse still, for its explosive range is 2.6 to 80 percent. Such wide explosive ranges spell extra hazard because when either of these gases gets to air you're almost certain to have an explosive mixture.

All the LP gases are shipped and handled in cylinders under pressure. In most cases, the pressure is less than 300 pounds because at ordinary temperature it doesn't take much pressure to make them change to liquids. But hydrogen won't do that, so the cylinders are filled to 2,000 pounds pressure. The cylinder pressure for acetylene is 250 pounds. There's a point about this that I want to emphasize.

Acetylene is likely to blow up all by itself, if you compress it. Up around 25 pounds per square inch it becomes what the chemists call "unstable". It doesn't need a spark or flame to explode. It may not blow as soon as it is compressed, but it will, given time enough. So 15 pounds per square inch has been set as the highest safe pressure for acetylene as a gas. But under pressure, acetone, a close relative of the acid is vinegar, dissolves acetylene in big amounts. In the acetone, which is a liquid, it doesn't explode under pressure. So an acetylene cylinder is full of a porous substance filled with acetone. It gives up the acetylene as the pressure is bled off.

Somehow or other, even some welders don't know about this. At any rate, once in a while some guy blows himself up trying to compress acetylene. For example, a welder decided to set up his own shop. He figured that he was being charged too much for acetylene. So he got an acetylene generator, a small second-hand air compressor, and a good strong water tank, and hooked them up. The apparatus worked fined for a few days, and then it let go and the whole place came unstuck. They buried what was left of that fellow.

Acetone loses its ability to hold the acetylene if you heat it up much; so the cylinders have fusible plugs that will melt at about the boiling point of water. If an acetylene valve freezes up, thaw it out with lukewarm water, never hot water. Pour the water over the valve, not the cylinder. Never use a flame of any kind. That goes for any compressed gas cylinder, though it's most important for acetylene.
Since the LP gases are liquid under pressure, the cylinders should be used valve end up only. Otherwise you may get shots of the liquid. The same thing applies to acetylene. A shot of acetone won't help the welding job one bit. Hydrogen does not liquefy under pressure.

The LP gases are all much heavier than air. If there's a leak, they'll go down more than up, but they'll spread out through the air (diffuse), too. Acetylene is just a little lighter than air not enough to count. Hydrogen, though, is about fourteen times lighter than air. That means that if you turn it loose it will go upstairs fast. So look up under the ceiling for hydrogen, down at or under the floor for LP gas.

Handle all compressed gas cylinders carefully. Remember that the metal is fighting pressure all the time unless the cylinder is completely empty. Also, don't forget for a minute that the wallop a cylinder gets if it's dropped onto a concrete floor can break the valve assembly off. If you bang two cylinders together hard, both might let go.

Finally, if you're going to do any welding or use any LP gases for any purpose whatever, be sure you know the safe methods and use them. Use your head, and stay safe and healthy and avoid a fire.
NO SUBSTITUTE FOR SAFETY

It happens all the time. You need to get something done, and the tool or equipment isn't available. This is where a little creativity with substitutes can save you time and energy or it can get you into big trouble. Before you use a "make-do", top and think. Is this substitute really going to save you that much time? Is it really a safe replacement for the right piece of equipment?

For instance, on a construction site, a favorite substitute for almost anything is a cinder block. You can always depend on cinder blocks to break at the wrong time. Everyone has a story about cinder blocks. There was the pipe fitter who was trying to set up a scaffold in a stairway. Cinder blocks under two legs of the scaffold made it fit perfectly. The scaffold was just right, until one of the cinder blocks shattered and dumped him and the scaffold down the stairs. Putting cinder blocks under heavy equipment is an invitation to crushed toes when the blocks give way. Cinder blocks may make great bookshelves, but you can't trust them on the job.

Need another scaffold plank? Resist the impulse to visit the scrap lumber pile or use lumber intended for another purpose. Scaffold planks should meet strict specifications and be tested before they are used.

You use many tools in the course of your work day. It's your job to know which tool is right for which task. Always take the time to properly set up and use tools the way they were intended, even if it means setting up a special tool for a small job. The same goes for protective equipment. Use the right eye protection for the job you're doing, not whatever goggles are in your apron pocket or on loan from your buddy. If you work around loud noise, cotton wads or other materials are no substitute for approved earplugs or earmuffs.

Most of the time the best rule for substitutes is to stay away from them. If you want to be creative, take an art class in your spare time. But if you must use a substitute, a good rule to follow is to make sure it's stronger and safer than whatever it's replacing.
FLAMMABLE LIQUIDS / THE UNSEEN HAZARD

We call them flammable liquids, but it's not the liquid that we need to worry about. It's the vapor that these liquids give off. This vapor and the air in a room form a mixture that is poised to explode at the first spark from a light switch, faulty electrical equipment or static electricity. Even high temperatures or simple friction can set off an explosion. And flammable vapors are especially dangerous because you can't see them, and often you can't smell them.

What are some flammable liquids you use on the job? Solvents, cleaning fluids, and fuels are a few that come to mind. There are three keys to safety with flammable liquids: keep the lid on, use adequate ventilation, and avoid ignition sources.

Keeping the lid on is a matter of good housekeeping. Keep flammable liquid containers tightly covered and store them away from other chemicals in well ventilated, temperature controlled. Dispose of flammable soaked rags and other waste materials in tightly closed, designated containers only. Avoid spilling the stuff on yourself. Check with your supervisor about how to get rid of used flammable liquids. Pouring them down drains simply creates an explosion hazard in pipes and sewers.

Each flammable liquid reaches a peak of explosiveness when enough of it mixes with the oxygen in the air. Prevent buildup of vapors to this level by using flammable only where there is enough ventilation to clear the vapors out. Areas below where you are working should be either sealed off or ventilated as well. Since flammable vapor is heavier than air, you could think of it as an unseen river, flowing downward from wherever you use it, filling excavations, sewers, and pipes, until it meets a spark or flame. If someone is using flammable at the second level of a building and someone below decides to take a cigarette break watch out! The vapors could ignite, flashing back to the worker upstairs.

Keep flammable materials away from areas where there are welding, grinding, cutting operations, smoking areas, or areas of faulty wiring. Where there is heavy use of flammable materials, special spark proof light switches and fixtures should be installed. Before transferring flammable liquids from a drum to another container, connect the drum to the container with a bonding wire. Just the friction of pouring can create enough static electricity to cause a spark. Use fireproof safety containers with vapor screens and vapor tight caps.

One flammable vapor hazard deserves special mention, empty drums that previously contained flammable liquids. When these drums are full, there is not enough oxygen inside them to allow an explosion. But just a few drops of flammable liquid in a closed drum are all that it takes to create an explosive mixture with the air in the drum. Never do any welding or repair work on such a drum without getting clearance first.

Treat flammable liquids with respect. Their vapors can lie low and travel fast and far without you knowing it. They deserve to be called “the unseen hazard”.

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PREVENTING TRENCH WALL CAVE-INS

Excavating and shoring trenches is a job that must be carefully planned and carried out. Each situation is different and depends on the type of soil, the size of the trench, how close the trench is to existing buildings, and the weather. A trench that is inadequately shored for the soil type or moisture level can be a death sentence for those who work below the surface.

When you work on a trench, follow procedures exactly. They have been carefully determined, according to federal, state and local regulations for the soil type on your site. Most cave-ins are caused by not using shoring, using inadequate shoring, excavating too close to a building or utility pole, or misjudging the stability of the soil. Keep these points in mind when working with trenches:

- Keep trenching machines level to prevent undercutting the soil. Keep the shoring as close as possible to the trenching machine without being damaged by the machine's operation. Pile excavated soil at least two feet from the edge of a trench.
- Don't rely on trench shoring to support platforms for equipment such as cement mixers and wheelbarrows. If equipment must be used over a trench, provide extra vertical supporting members between the stringers of the shoring.
- The sheeting that forms the wall of the shored trench must extend at least 18 inches above the top of the trench.
- Use extra caution when walking or moving equipment around trenches. Equipment or soil dropped into the trench could injure workers below. Tripping on equipment or excavated material and falling into a trench are common work site accidents.
- Heavy vibration weakens trench walls. Avoid using vibrating equipment such as jack hammers for rock splitting. Also avoid tamping and backfill operations nearby, unless the trench has shoring adequate to withstand the stresses they cause.
- Before getting into any trench, make sure that the cross bracing is in place and tight. Cross bracing may be cleaved and rigidly wedged screw jacks, hydraulic jacks, or timbers.
- When there has been a change in the weather, such as a heavy rain or thawing after a freeze, check with your supervisor before going into a trench. Trench walls that were safe when dry or frozen can collapse when saturated with water or thawed out.
- Any time you move earth you create an unstable situation. To keep tons of rock and earth in the unstable arrangement of a trench, pay extra careful attention to the details of digging and maintaining that trench.
EXCAVATION PROCEDURES

Before any work is started, a supervisor to oversee all excavating operations must be appointed. This supervisor must be present any time the excavation is open. He must be able to assess the varying types of soil, existing hazards, unsanitary conditions, or any conditions that may pose a hazard to employees.

Prior to excavating, supervisor should be sure that excavation will not encounter any utility lines or contact "Miss Utility" hotlines for marking of utilities in the area.

While working in excavations, efforts shall be made to anticipate changes in material from exposure to air, sun, water, freezing conditions, or loads from any equipment in the area. Any of these factors can be a hazard.

When the excavation is deeper than 5 feet and longer than 8 feet additional precautions must be taken. Stepping the sides or sloping them at an obtuse angle can be used in lieu of shoring.

When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder, must be provided and located no more than 25 feet away.

Daily inspections of excavations shall be made by the supervisor, especially before any employees enter the trench. If evidence of possible cave-ins / slides is viable or suspected, all work in the trench shall cease until proper precautions can be taken.

Employees shall not work in excavations in which water has accumulated.

Adequate personnel barriers should be placed at excavations to prevent accidental falling into trenches.
SUGGESTIONS FOR CAVE-IN RESCUE

Prior to arrival of the Rescue Team or ambulance, a supervisor should take immediate steps to extricate trapped personnel SAFELY! These are some general guidelines:

A. Call Fire department and/or ambulance service for assistance, giving:
   1. Accurate directions to accident location.
   2. Circumstances of accident.

B. Call doctor if company has obtained services of one for emergency situations.

C. If necessary, call Sheriff or Police for their assistance in controlling traffic and the public.

D. One person to direct operations usually foreman or superintendent.

E. Take all necessary safety precautions in rescue effort.
   1. Shoring, etc.
   2. Remain calm

F. Determine depth of trench where individual is trapped use mechanical equipment (shovels, sharp edge tools) with extreme caution.

G. When you get close to victim, use hands to remove dirt.

H. Begin artificial respiration as soon as possible and continue until emergency team is available.

Information to Give Rescue Team

1. State who is in charge of rescue from contracting company.
2. What steps have been taken so far?
3. Depth of trench.
4. What are the ground conditions in area of accident?
THE SIMPLE WHEELBARROW

Let's talk about using wheelbarrows. Now, I know what you're thinking. What is there to know about a wheelbarrow? It's got no motorized parts, no sharp edges, no high maintenance parts, and the design has probably been around for 3,000 years.

It's true that wheelbarrows are safe and very simple to use correctly. But, believe it or not, wheelbarrows have caused some serious injuries. Anytime you balance a heavy load on a single wheel, you have to pay attention to what you're doing. One time a worker lost control of a wheelbarrow as it was going down a ramp with a load of scrap. When the wheelbarrow hit the scrap box it flipped, throwing the surprised worker, who was still holding the handles, into the scrap box. He was lucky to escape with only cuts and bruises.

Because there's no top to a wheelbarrow, some workers think they can keep putting more and more in the wheelbarrow as long as it doesn't fallout. But overloading a wheelbarrow is a sure way to lose control of it. Always put only the amount of weight in a wheelbarrow that you can physically handle on a hill or going around a corner. Making two trips is a lot faster than making one trip and having to stop and pick up the dumped load at the corner or being shorthanded because the person you dumped the load on had to go to the emergency room with broken toes.

When you raise and lower the handles of a wheelbarrow, treat them like any other heavy load you lift. Keep your back straight and bend your knees. Balance the load over the wheel for good control.

Keep your speed under control and keep a tight grip on the handles. If you lose control of the wheelbarrow, let go of the handles and shout a warning to others if necessary. Losing control is a clue that you have overloaded the wheelbarrow.

Avoid trying to move such things as planks with a wheelbarrow. Use a hand truck for these things.

Keep wheelbarrows properly lubricated for easier use. Store them out of the way of aisles and away from emergency equipment.

It doesn't take a college degree or a technical certificate to use a wheelbarrow, just common sense and a few simple precautions.
DRIVING AND PULLING NAILS

Have any of you thought about safety in driving or pulling nails? Perhaps you think there isn't much to it. I might think so, too, if I didn't know that just about everyone who drives a few nails now and then gets a bruised finger or banged-up fingernail sooner or later.

Other unpleasant things can happen, too, when you're driving and pulling nails. For instance, a badly hit nail may fly and strike someone even put out an eye. Loose hammer heads are likely to fly off, and they can land a nasty wallop when you're taking a full arm swing at a spike. A cracked handle can spoil the swing and cause a glancing blow or even a miss.

Sometimes such a handle can push a sliver deep into the palm of your hand. It not only hurts, but such a wound is particularly likely to become infected. You should get first aid at once for a sliver. That sort of injury is usually far more dangerous than most open wounds.

Carpenters learn the knack of driving nails cleanly and quickly without banging their fingers. They have to, or they couldn't be carpenters. Few other men ever do, probably because they figure that "any fool can drive a nail". Anyone can, but unless he takes a little care and uses his head, he won't do a good job or do it safely. It seems so easy, but in reality it isn't.

The hammer must be right. The head must be set at the proper angle and on good and tight. The handle must be smooth, straight grained, and shaped to give a good grip, and of the right length and weight to give good balance. The size of the hammer should be right for the size of the nail. Try driving a 3/8 inch brad with a full-grown claw hammer, and you'll see what I mean. You'll probably bang a finger. The condition of the hammer face is important. It should not be chipped or worn away from the shape the manufacturer gave it, just a trifle off flat from edge to center.

When you drive a nail, the center of the hammer face should always meet the nail head. The direction of the blow should be exactly in line with the nail. If it isn't, the nail may fly at the first blow or bend at the second.

It requires practice to hit a nail right every time or practically so. You have to learn to "groove" your swing, that is, make the hammer head go through the same path every time and hit the nail head always dead center and at the right angle. To find the right angle, you simply set a nail, hold the center of the hammer face on the nail head, and move the handle up or down until the face is perpendicular to the length of the nail. That's the position the hammer should be in when the blow lands.

With practice, anyone can develop the knack of "grooving" a hammer, but few go to the trouble. Actually, it's worthwhile many times over because if you don't have this knack you waste a lot of time pulling out bent nails, you waste nails, you don't do good work, and you'll probably bang a finger now and then.

People even get hurt pulling nails. For example, one "do it yourself" guy went after a 20 penny spike with an ordinary claw hammer. When it didn't come, he threw his weight into it. The handle broke, and his knuckles landed with an awful wallop on the edge of the beam. Two of them were broken. That job called for a pry bar, as he knows now.
Men have fallen off ladders when they took a good yank at a nail that let go easily. And there have been more cases just as silly. You fellows can figure out plenty of ways to get hurt pulling nails if you'll just use your imagination. You'll also see just how such accidents can be avoided.

It really all boils down to this: Keep your tools in good condition, choose the right tool for the job, and use a little judgment.

Finally, never leave nails sticking out unless you're going to hang something on them, and then be sure they're so located that they present no hazard. Deep nail wounds, like any other puncture wounds, are very dangerous. So pullout projecting nails or bend them over flush with the wood so the points can't get anyone.
SAFE PRACTICES FOR CARPENTERS

1. Erect scaffolds and supports from sound material of ample strength to carry the load. Construct platforms of sound lumbar. Secure toe boards and handrails in place.

2. Use both hands to hold on to side rails when going up or down a ladder. Use rope to raise or lower material or tools.

3. Sharp cutting tools are safer to work with than dull ones. Do not use tools with defective handles or mushroomed heads. Keep saws properly set.

4. Keep boards with nails in them out of passageways and working spaces. Nails should be pulled out, or boards piled out of the way.

5. Never leave loose boards or tools on scaffolds, runways or platforms where they may be knocked off onto people below or cause workers to trip.

6. Keep work shoes in good condition so that your footing will always be solid and secure. Turn trouser cuffs up inside and sew.

7. Do not carry sharp edged tools in your pockets unless the edges are protected in a sheath.

8. Clean up all loose material at the end of each workday.

9. Place an adequate number of red lights or warning devices in to indicate material piled close to a walk or passageway used at night. Barricade passageways where there is danger of objects falling from overhead.
WOOD RIP SAWS

No fully satisfactory guard has ever been developed for the ordinary wood table saw because so many different kinds of jobs are done on these saws. Each kind of sawing job can be very well guarded, but no single kind of guard will handle all kinds of jobs. So anyone using a saw must be sure he knows the safe way to perform each operation and must always do it that way. Bear in mind that wood table saws probably cut off more fingers than any other kind of machine.

First, when you have a sawing job, look at your footing. Make sure that the floor isn't slippery and that there's nothing for you to stumble over. Place your feet securely and comfortably, and see that there's nothing loose on the saw table to get in the way.

Next, check the guard. If it's the kind that rides on top of the work, as it should be for all ordinary sawing, particularly ripping, see that it moves up and down freely without side play. If the guard has anti kickback dogs, and it should, see that they move freely and are sharp so they'll dig into the stock if it starts to kick back. If there's a spreader, and there should be, see that it's close to the saw teeth, stiff, and well secured. Check the guide (fence) to make sure it lines up perfectly with the saw blade, and set it for the cut you want.

If you have more than a piece or two to rip, have the stock on a hand truck or stand, placed so you can reach it easily from your position at the saw table. Start the saw, and see that it runs smoothly and quietly. If it doesn't, don't use it until the trouble has been corrected. If you do, it will probably heat up and run snaky and the teeth may catch in the work. That spells trouble. Your hand could be dragged into the saw or, if the anti-kickback dogs don't hold, the piece being sawed could be thrown right back at you.

Take the right position at the table, far enough out of line with the saw blade for a kickback to miss you, but not so far that it's awkward to feed the wood through. In some shops, an extension is added to the saw table so the operator can't stand directly in line with the saw blade, and so long stock can be controlled more easily.

Unless you have seen a kickback, you don't realize how vicious one can be. Those saw teeth are moving at not less than 10,000 feet per minute, perhaps nearly double that. The teeth at the top of the saw blade are running toward you. If they get caught in the wood, they'll shoot it right back the way it came. If you're in the way, it's just too bad.

Saws don't kick back if they're treated right. A properly mounted saw blade in good condition, if used correctly, will cut its way cleanly through the wood. But if you don't feed the wood in straight, it will get against those up running back teeth, and they're apt to grab it, lift it up, and throw it right back at you. Another good way to insult a saw is to feed green or twisty wood through it without a spreader right behind the teeth to keep to stock from binding. The anti kickback dogs should be there too, because the wood might get against the teeth before it reaches the spreader.

Some will tell you that the way to prevent kickbacks is to keep the saw as low as you can and still have it cut through the wood. They're right if those teeth are in first class condition so they'll cut clean and if the stock is fed straight. But if the teeth do catch, they don't need to lift the wood to throw it. Feeding the lumber into the saw is the touchy part. It looks easy and is, if you use care. But it's easy to do it wrong and get into trouble. Keep your mind on the job. Place the front end of the piece on the
saw table against the guide and, being careful to hold it straight, slide it smoothly ahead along the guide to and through the saw. Be sure to keep it against the guide all the way through.

Always keep your hands a safe distance away from that saw blade at least 6 inches, preferably 12. You can do so by using a push stick. If the stick is made right to fit the lumber and has a good handle, you can do a better job with it at the finish of the cut than you can with your hand.

Finally, don't crowd the saw. A saw blade in good condition will take the wood easily. It will almost feed itself. If it doesn't, there's something wrong, and until it's fixed, you'd better use the old handsaw.
CHISELS

There are many misconceptions about chisels and chiseling which results in misuse and abuse and could lead to possible injury.

Here is a list of do's and don'ts compiled by the Hand Tools Institute for the safe use of these tools:

- Before doing any kind of chiseling, put on safety goggles for eye protection. Also make sure the work is securely braced or clamped.

- Then check the condition of the chisel. It should have a sharp, properly ground cutting edge, not only to do a better job but also to accomplish the work safely and quicker. Also check the head or striking surface. If the head is mushroomed, chipped or badly battered, the chisel should not be used.

- Next, never use a common nail hammer to strike a cold chisel because chipping of the hammer or chisel could result, causing eye or other bodily injury. Instead, use a ball peen hammer of the proper size or a hand sledge. The face of the hammer should be larger than the head of the chisel.

- Finally, make sure you are using the proper chisel for the job. Cold chisels are used for cutting and chipping metal, and they should never be used on stone or concrete. Brick chisels are designed for scoring and cutting brick. They should be struck with a heavy hand-drilling hammer, not a bricklayer's hammer that is used for cutting masonry. A brick chisel should never be used on metal.
Toolbox Talk # 73

USING A COLD CHISEL

Keep safe practices in mind when you use a chisel. First, the hazards of chisel work and the ways men get hurt using these tools. Chips from mushroomed heads give the doctors a lot of business and now and then give some to manufacturers of glass eyes. Chips from over tempered chisels or from the material being chiseled sometimes do the same.

Fingers get smashed and knuckles skinned or even broken when the chisel isn't held correctly or the hammer isn't kept in the groove. If a chisel is too short, the hazard is increased. It should be long enough to allow a full four finger grip with clearance of at least 2 inches from the head of the chisel and similar clearance from the work.

Be fussy about the chisel. Don't use it if the head is mushroomed or the cutting edge is nicked (that means it's too hard). And make sure the hammer handle is not split and the head is on firmly. Check the condition of the hammer face, and try the hammer for balance.

The number of injured and lost eyes has proved many times over that eye protection should always be worn on chisel jobs. Probably most safety men prefer goggles to face shields, but many men who object to goggles are willing to wear face shields. There's one thing for sure - a face shield that is faithfully worn is a lot safer than goggles that are now on, now off.

There's some difference of opinion as to the safest way to hold a chisel. Some say you hold it in the hollow of your hand with the palm up, with the first and second fingers back of it and thumb and third finger in front of it. Others prefer a full four-finger grip. Whatever grip you use, the important thing is to keep the chisel steady so that the properly handled (grooved) hammer will always meet it squarely.

A hammer is said to be grooved, when blow after blow goes through exactly the same path (the same swing) and the hammer is held so that the force of the blow is always directly down through the centerline of the chisel to the work. That way you smash no knuckles, strike no glancing blows, and get the most work done.

A properly balanced hammer with a handle the right size and shape to fit a man's hand right is easy learned to groove your hammer and to hold your chisel properly, you'll never miss; the hammer will find the chisel every time.

Don't forget to look out for your footing. You need good balance, and you can't keep it if your feet aren't solidly and comfortably placed. You need plenty of room for your hammer swing and hand and finger room to hold the chisel steady. You have to be able to see the work. And don't forget your eye protection.

One last point before you start to work figure out which way any chips or the cut off ends may fly and be sure they can't hit someone.

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COMPRESSED AIR IS NO JOKE!

Compressed air is a necessary tool in our everyday work; however, we must realize that it can be dangerous, even to the point of death.

Experience has shown that a blast of air at 40 pound per square inch can rupture an eardrum at a distance of four inches. Much worse, it can cause a brain hemorrhage and be fatal.

It can be very dangerous to use compressed air to blow dust or dirt from your body or clothing. As little as 12 psi can "pop" an eyeball from its socket. Air can enter the naval, even through a layer of clothing, and inflate and rupture the intestines. Compressed air, less than 80 pounds pressure, has struck a small wound on a person's hand and blown the arm as round as a grapefruit and caused shooting pains from the fingers to the shoulder. It can cause bubbles of air to enter the bloodstream.

There is absolutely no place for horseplay in using compressed air equipment. A reliable authority advises us that it has been estimated that as little as four pounds of pressure can rupture the bowel. Directed at the mouth, it can rupture the lungs and the intestines.

Compressed air tools can be safe and reliable pieces of equipment. But the above examples clearly demonstrate that compressed air can be a lethal weapon if used improperly.

The fact that compressed air is "only air" sometimes leads people to think it's harmless. It is just air but air driven at a high velocity. A hurricane or a tornado is also "only air" but they can be deadly.

When used to operate equipment, compressed air can be our friend, a very valuable work-saving device. But when improperly or carelessly used, it can be very dangerous.

Always wear prescribed personal protective equipment. Continuously check the condition of tools and air hose to make sure that they do not show evidence of damage or failure, and that connections and couplings are tight. A loose air hose under 80 pounds of pressure makes a pretty effective bullwhip.

We caution you to never look into, or point toward any part of the body, yours or others, the business end of any compressed air apparatus. This is as foolish as looking down the barrel of a gun.
CONCRETE

Anyone working around or with concrete should be aware of the hazards and safety precautions related to this operation.

Employees working more than 6 feet above any adjacent working surface, placing and typing reinforcing steel in walls, piers, or columns shall use a safety belt or equivalent device.

Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement. In other words, the rear has to be protected from the worker.

Handles on bull floats shall be of nonconductive materials or insulated with a nonconductive sheath when used around energized electrical conductors.

When using a powered or rotating type trowling machine, the control switch will automatically shut off the power when the operator removes his hands from the handle DO NOT USE "TIE DOWNS" on the control switches.

Riding concrete buckets for any purposes shall be prohibited.

Vibrator crews shall be kept out from under concrete buckets suspended from cranes or cableways. When discharging on a slope, make sure the ready mix truck’s wheels are blocked and the brakes set to prevent movement.

Personal protective equipment shall be used when needed.

All equipment, hand and power, shall be checked and in safe working condition before use replace or repair all defective tools.

If concrete splatters on the skin, wash off as soon as possible.
CONCRETE CONSTRUCTION

Shoring erected for concrete construction demands strict attention to safety.

Every shoring job requires attention to the character of the soil and the effect of weather conditions. You should be careful to erect the shoring that is applicable to the instructions that you are given.

Steel frame shores must be inspected before erection for defects such as rusting, dents and damaged welds. Locking devices should be in good working order on frames and bases. Do not attempt to straighten buckled struts and braces for reuse.

Only men who are actively working should be permitted in the area during form stripping operations. Safety belts and lanyards must be used when working at heights. Hard hats are essential equipment, and gloves and heavy soled shoes should also be worn.

Do not cut wires that are under tension when stripping forms. Backlash may cause wires to strike eyes, face or other parts of the body.

Job clean up is important in preventing injuries caused by nails, splinters and by tools or other objects that can trip or fall upon workmen. Stripped form lumber for salvage should be cleaned and stacked neatly after all of the nails have been removed. Nails in scrap lumber should be removed or bent over.

Concrete buggies should be kept clean and materials not allowed to collect on the sides.

A wheelbarrow is raised into position by standing between the handles, keeping the back straight, and letting the leg muscles do the work. Look ahead for holes and obstacles so that you can avoid them before they overturn your load.

Build runways of sufficient width so that buggies will not run off. Runways should be kept free of ice, snow, grease and mud. Run cleats, if provided, should be kept clean and in good repair.

MATERIALS HAZARDS

The presence of chemical components in construction materials can sometimes cause various types of skin disorders.

Skin irritations can be prevented by personal cleanliness. Wash hands as frequently as possible, or use a protective hand cream or ointment on exposed skin surfaces.

Try to keep exposed parts of the body away from direct contact with lime and cement. Wear clothing made of durable materials and which fits snugly around neck, wrists and ankles.

Go to First Aid in case of cement burn. For cement in the eye, hold the eye open and flush out with water.