

EXCAVATION AND TRENCHING

Excavations and trench cave-ins account for an increasing number of fatalities and serious injuries in construction, usually resulting from separate, yet related causes.

Inadequate shoring, misjudgment of soil conditions, defective shoring materials, and failure to adjust to changing conditions surrounding excavations and trenching operations are some of the leading causes of deaths and injuries.

A checklist to determine what type of shoring is needed should include such specific conditions as: Traffic, nearness of structures and their conditions, soil, ground water, water table, overhead and underground utilities, and weather.

For complete trenching and shoring safety requirements, refer to MIOSHA (Michigan Occupational Safety and Health Act) Construction Safety Standards, Part 9. Remember the major causes of deaths and accidents are:

- Improperly shored and sloped trenches.
- Loads too near trenches.
- Shocks and vibrations.
- Improper or defective shoring material.
- Change in soil conditions.
- Improper site and trench preparations.

PROPER LIFTING

Another leading cause of injuries, not only in construction but all occupations, is back injuries from over-exertion due to improper lifting.

To avoid back injuries, remember these two rules: **BEND YOUR KNEES — USE YOUR LEG MUSCLES TO LIFT** — and **IF THE LOAD IS TOO BIG — GET HELP!**

There is a right way and wrong way to lift. Size up the load, get a good footing, and put your body close to the load. Place your feet about 8 to 12 inches apart and bend your knees to grasp the load. While bending at the knees, grasp the load, lifting gradually by straightening the legs, and keep your back straight. Always keep the load close to your body.

If you intend to place an object on a table or bench, rest it on the edge, then slide the object above your waist, lift the object for support. Change your grip, then bend your knees again to get extra leg-muscle power for the final lift.

When carrying a load, decide in advance the route you will take and check for hazards that might trip you. Use caution while changing direction with loads. Don't twist your body, but turn it to match changes in foot direction.

CONSTRUCTION SAFETY

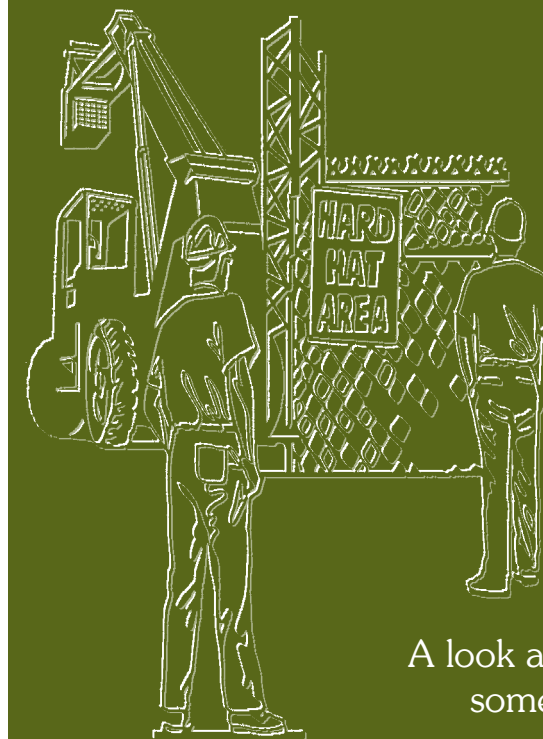
As a construction worker, you are part of a challenging industry and part of a unique team. While working, your fellow construction workers safety will also depend on you.

This brochure is provided to help you do your job safely. The seven topics covered here are only some of the conditions that could lead to accidents and injuries, but they are the **LEADING SEVEN** areas of accidents in the construction industry in Michigan.

Remember – the **SAFE WAY** is the **BEST WAY!**



Construction Safety



A look at
some
common
causes of accidents
in the industry
and

**How to
Prevent Them**

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SLIPS AND FALLS

Slips and falls are the leading cause of construction accidents in Michigan, so remember these safety tips:

- Keep walking and working surfaces clear of litter and debris.
- Keep walking and working surfaces as level as possible. Faulty patching, wear, sagging supports, warped boards, and poorly constructed working surfaces are conditions to look for to eliminate slips and falls.
- Grease, oil, water, dirt, and inclement weather all leave surfaces potentially dangerous. A continuous effort should be made to keep working surfaces clear and dry.
- If a slip and fall condition does exist, remember this important suggestion: when crossing rough or slippery surfaces, take short steps – toes pointed out, walking on the whole portion of your foot. (The closer you come to putting your foot straight down, the less chance you have of slipping and falling). Do not make sharp turns. If a fall does start to happen, protect your head and neck from injury by looking at the spot you are about to hit. Relax, go limp, and don't resist the fall. As you land – roll.

LADDERS

Used in 95 percent of all construction jobs, the ladder is a simple tool that is another leading cause of construction accidents and injuries. Workers overlook the potential danger by using ladders improperly. Remember these tips:

- Inspect a ladder before use. If unsafe, don't use it. Look for wear, loose rungs, and defects.
- Don't over reach. Move your ladder with your work. Both shoulders outside the ladder means you're reaching too far.
- Place your ladder on solid footing. If there's a danger of the ladder moving – tie it off! If there's a danger of the ladder being hit – barricade it.
- Never use metal ladders outdoors during inclement weather or on windy stormy days.
- Use a ladder that will reach the work. A ladder should reach three feet above the work level.
- Use the four to one rule: For every four feet of height, move the base of a ladder one foot away from the wall.
- Carry tools in proper carrying devices and keep your hands free for climbing.
- When climbing, always face your ladder.

Defective and unsafe ladders and improper use result in ladder accidents. Periodic inspections and continuing safety reminders are two ways to help eliminate them.

SCAFFOLDING

Scaffolding, in itself, cause two conditions that can lead to construction accidents and injuries – falls from elevated positions, and being struck by objects falling from scaffolds.

All scaffolding must be guarded with safety railing when working at heights of 10 feet or more. It must be equipped with toeboards, and be adequately designed to support at least four times the anticipated weight of the workers and materials that will be working on it. Scaffolding components that are not designed to be compatible should not be mixed.

Inspect all scaffolding equipment each day, before using. Never use damaged or defective equipment and avoid rusted parts as their strength is unknown.

When erecting scaffolding, provide adequate sills for scaffold post and use base plates. Use adjusting screws instead of blocks when on uneven grades. Make sure you plumb and level scaffolding and do not force end braces when constructing.

A recent study revealed that 54 percent of all scaffolding accidents result from problems with planking. Use properly graded and inspected lumber for planking. Inspect it daily for splits, knots, and remove damaged planking.

Toeboards also must be installed to eliminate the possibility of tools and debris being kicked or pushed on people below.

ELECTRICITY

Almost every construction worker uses powered tools or temporary electrical wiring on the job.

All too often, fixing a worn cord or grounding a temporary lighting system is thought of as the electrician's job. Unfortunately, this attitude leads to many serious accidents on the construction site – accidents that could have been avoided if workers would treat all situations involving electricity with respect, because as little as 46 volts can kill a person.

An important fact to remember is that even a small shock can have serious consequences on a construction site. An improperly grounded drill can cause a worker to fall off a ladder or slip from a scaffold. Shocks from a frayed extension cord could cause carpenters to drop a circular saw on themselves or someone below.

In order to avoid such experiences, and possible serious injury, construction workers should follow these few simple rules:

- 1) When working in wet conditions, all electrical tools must be used with a G.F.C.I. (ground fault conductor interrupter) grounded power supply.
- 2) Ground fault conductor interrupters, or an assured ground program, must be used on all electric power tools.
- 3) Extension cords must not have frayed insulation or be fastened with staples, hung from nails, or suspended from wires.
- 4) All temporary lights must be equipped with non-conductive guards.

PERSONAL PROTECTIVE EQUIPMENT

Being hit by falling objects...striking objects as you slip or fall...flying objects... and having objects roll over your feet are some of the reasons construction workers need personal protective equipment!

Whether it is a hard hat, safety shoes, safety belts, ear plugs, lanyards, shields, glasses, or goggles, the rule is the same... to be protected, workers must wear personal protective equipment!

The most important piece of safety equipment a construction worker can wear is the hard hat. About three percent of all disabling injuries are injuries where safety helmets could have provided a significant level of protection.

A 12-inch crescent wrench from an elevation of 58 feet can strike a worker in one second at a speed of 43.5 m.p.h. Never be on the job without a hard hat!

Foot injuries also account for many of construction's on-the-job injuries. A typical foot injury is caused by objects falling less than four feet and weighing about 65 pounds. Wear foot protection!

No matter what the job — your hands, eyes, legs, and arms are important. Wear personal protective equipment — it's designed to protect YOU!