
NAHB/OSHA

**Jobsite Safety
Handbook**



**National Association of Home Builders
U.S. Occupational Safety and Health Administration**

NAHB/OSHA

Jobsite Safety Handbook

Acknowledgements

The NAHB/OSHA Jobsite Safety Handbook is the result of a cooperative effort between the National Association of Home Builders and the US Occupational Safety and Health Administration.

Numerous individuals and companies were integral to the development of this document. NAHB and OSHA wish to thank the following for their generous contributions of time and professional expertise in helping to develop this handbook.

Larry Larson, 1996 Chairman, NAHB Construction Safety & Health Committee; Larsen Homes, Englewood, CO

Stuart Price, 1996 Vice Chairman, NAHB Construction Safety & Health Committee; Granor Price Homes, Horseham, PA

Bob Mitchell, Mitchell & Best, Rockville, MD

Leslie Marks, Mitchell & Best, Rockville, MD

Mike Boies, Mitchell & Best, Rockville, MD

Kerry Magalis, Mitchell & Best, Rockville, MD

Pam Hicks, Winchester Homes, Greenbelt, MD

Mark Stevens, Winchester Homes, Greenbelt, MD

This handbook was developed and written under the direction of:

National Association of Home Builders

Kent W. Colton, Executive Vice
President & Chief Executive Officer
1201 15th Street, NW
Washington, DC 20005

United States Department of Labor

Joseph A. Dear, Assistant Secretary
Occupational Safety and Health Administration
200 Constitution Avenue, NW
Washington, DC 20210

The information contained in this publication is not considered a substitute for any provisions of the Occupational Safety and Health Act of 1970 or for any standards written by OSHA.

The NAHB/OSHA Jobsite Safety Handbook is a joint effort by the National Association of Home Builders and the Occupational Safety and Health Administration. The handbook is the first cooperative effort between NAHB and OSHA to assist builders and subcontractors in the residential construction industry.

This handbook is designed to identify safe work practices and related OSHA requirements that have an impact on the most hazardous activities in the construction industry. Many detailed and lengthy requirements...such as the lead and asbestos standards...applicable to portions of the industry are not included in this handbook.

Also, this handbook does not replace any requirements detailed in the actual OSHA regulations for construction (Title 29 Code of Federal Regulations, part 1926); the handbook should only be used as a companion to the actual regulations.

The main goal of the handbook is to explain in an easily understood language what builders can do to comply with safe work practices and some of the OSHA requirements. The goal of the handbook is to help the residential construction industry comply with OSHA standards while focusing on the most common hazards found on their jobsites.

If there is ever any inconsistency between the handbook and the OSHA regulations, the OSHA regulations (29 CFR 1926) will always prevail. This document should never be considered a substitute for any provisions of a regulation.

If you have any questions regarding this handbook, please contact:

Regina CB Solomon, CSP
Director, Labor , Safety & Health Services
National Association of Home Builders
1201 15th Street NW
Washington, DC 20005
Phone: 800-368-5242 ext 226
E-mail: 76176.2421@compuserve.com

Introduction

The residential construction industry represents a significant percentage of the construction work force. For a small company, safe work practices play an important part in reducing injuries and fatalities in the residential construction industry.

Residential construction has been defined by OSHA in the December 1995 "Interim Fall Protection Guidelines For Residential Construction" as *"structures where the working environment, and the construction materials, methods, and procedures employed are essentially the same as those used for a typical house (single-family dwelling) and townhouse construction. Discrete parts of a large commercial structure may come within the scope of this directive (for example, a shingled entranceway to a mall), but such coverage does not mean that the entire structure thereby comes within the terms of this directive."*

This handbook highlights the minimum safe work practices and regulations related to the major hazards and causes of fatalities occurring in the residential construction industry. The information presented in this booklet does not relieve the employer from compliance with all the requirements contained in Title 29 Code of Federal Regulations, Part 1926, and applicable standards for the residential construction industry.

Orientation & Training

Each worker must receive safety orientation and training on applicable OSHA standards, company safety requirements and/or have enough experience to do his/her job safely. This training should be revisited occasionally to ensure proper understanding and implementation of the company safety requirements and OSHA standards.



This worker is cutting lumber with the proper PPE. He is wearing a hard hat, safety glasses and the saw is guarded correctly. His employer has determined that shorts on this jobsite are OK, since it is very hot and there is no skin irritation hazard.

Personal Protective Equipment

Workers must use personal protective equipment, such as:

- Hard hats when overhead, falling or flying hazards exist;
- Safety glasses or face shields for welding, cutting, nailing (including pneumatic), or when working with concrete and/or harmful chemicals;
- Proper shoes or boots to lessen slipping hazards and prevent toe crushing and nail punctures; and
- Safety belts¹ and/or harness systems for fall protection.

¹After January 1998, safety belts can only be used as a positioning device.



On this jobsite the builder keeps the site clean by sorting trash in one area while making a work station for cutting at the other side of the house.

Housekeeping & Access Around Site

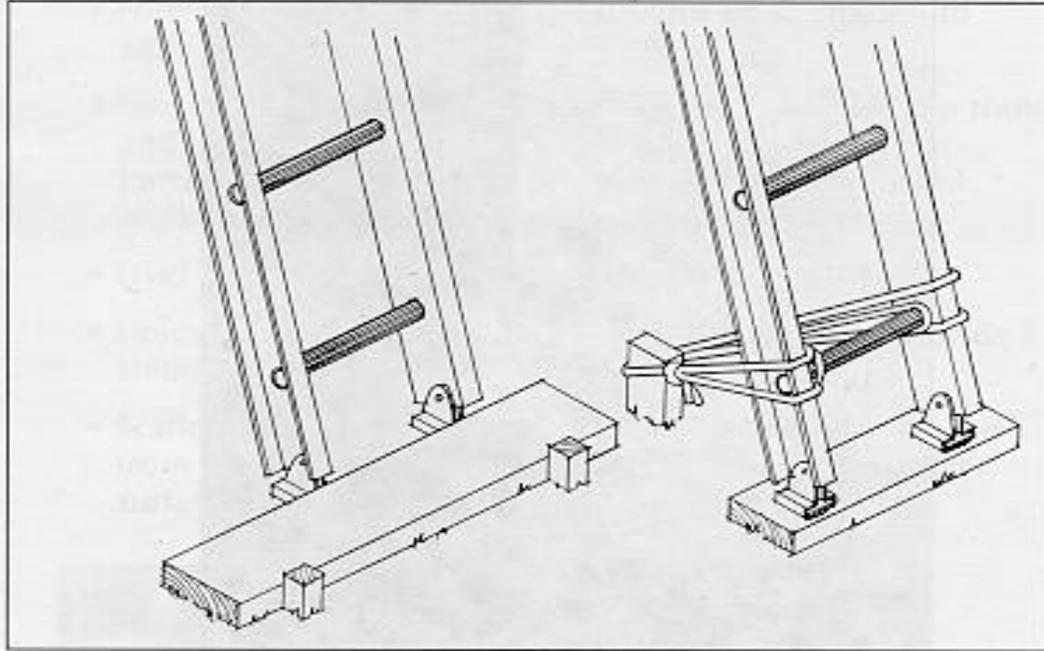
- Keep all walkways and stairways clear of trash/debris and other materials such as tool and supplies to prevent tripping.
 - Keep boxes, scrap lumber and other materials picked up and put in a dumpster or trash/debris area to prevent fire and tripping hazards.
 - Provide enough light to allow workers to see and to prevent accidents.
-



Worker is walking up properly guarded steps.

Stairs & Ladders

- Install permanent or temporary guardrails on stairs before stairs are used for general access between levels to prevent someone from falling or stepping off edges
- Keep manufactured and job-made ladders in good condition and free of defects
- Inspect ladders before use for broken rungs or other defects so falls don't happen. Discard or repair defective ladders.
- Secure ladders near the top or at the bottom to prevent them from slipping and causing falls.



Here are two ways to secure the base of a ladder to ensure proper footing.

- When you can't tie the ladder off, be sure the ladder is on a stable and level surface so it can't be knocked over or the bottom kicked out.
- Extend ladders at least 3 feet above the landing to provide a handhold or for balance when getting on and off the ladder from other surfaces.
- Use ladders only for what they were made and not as a platform, runway, or as scaffold planks.



This worker is climbing a ladder set at the proper angle (4:1) with a three point contact grip method (two hands and one foot). If the worker was going to climb onto the roof, the ladder would need to extend at least 3 feet above the roof surface.

Scaffolds & Other Work Platforms

General

- Provide ladders or stairs to get on and off scaffolds and work platforms safely.
- Keep scaffolds and work platforms free of debris. Keep tools and materials as neat as possible on scaffolds and platforms. This will prevent materials from falling and workers from tripping.
- Erect scaffolds on firm and level foundations.
- Finished floors will normally support the load and provide a stable base.
- Scaffold legs must be placed on firm footing and secured from movement or tipping, especially on dirt or similar surfaces.



Workers are on a fabricated frame scaffold. There is ladder access to the top of the scaffold (out of view), guardrails and cross bracing are installed, and the planking is complete to prevent falls. The workers are also wearing hard hats and using eye protection.

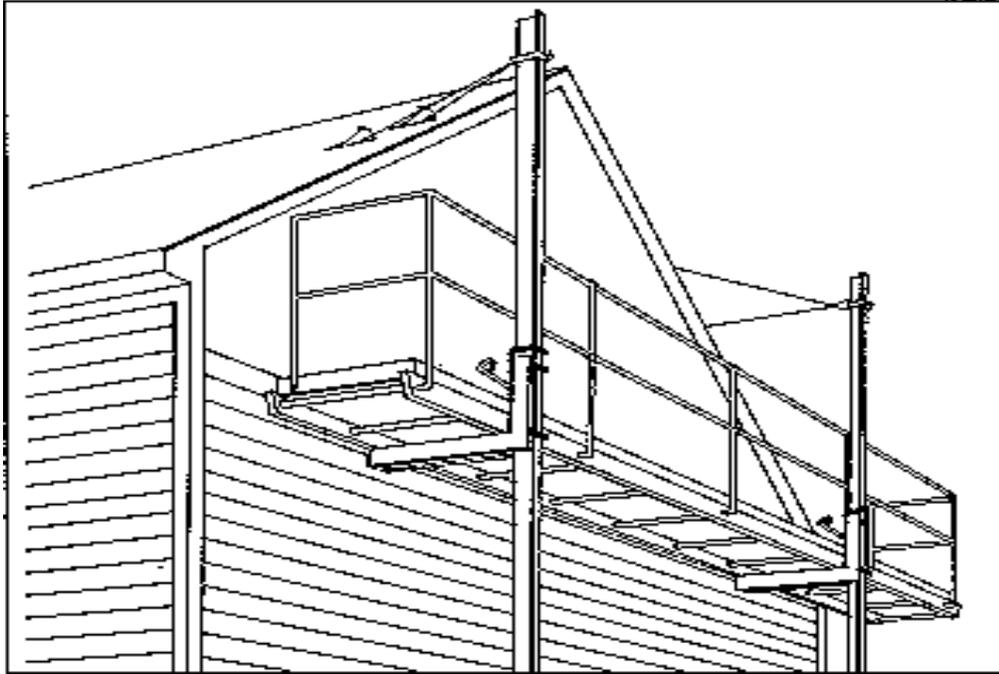


Stable footings/mud sills for this scaffold ensure the stability of the work platform. In this example (right), the siding contractor actually had the base plate manufactured to penetrate the ground while stabilizing the pump jack holes.

- Erecting and dismantling scaffolds must be under the supervision of a competent person.
- The competent person must inspect scaffolds before each use.
- Don't use blocks, bricks, or pieces of lumber to level or stabilize the footings. Manufactured base plates or "mud sills" made of hardwood or equivalent can be used.

Planking

- Fully plank or use manufactured decking to provide a full work platform on scaffolds. The platform decking and/or scaffold planks must be scaffold grade and not have any visible defects.
- Extend planks or decking material at least 6" over the edge or cleat them to prevent movement. The work platform or planks must not extend more than 12" beyond the end supports to prevent tipping when stepping or working.
- Be sure that manufactured scaffold planks are the proper size and that the end hooks are attached to the scaffold frame.

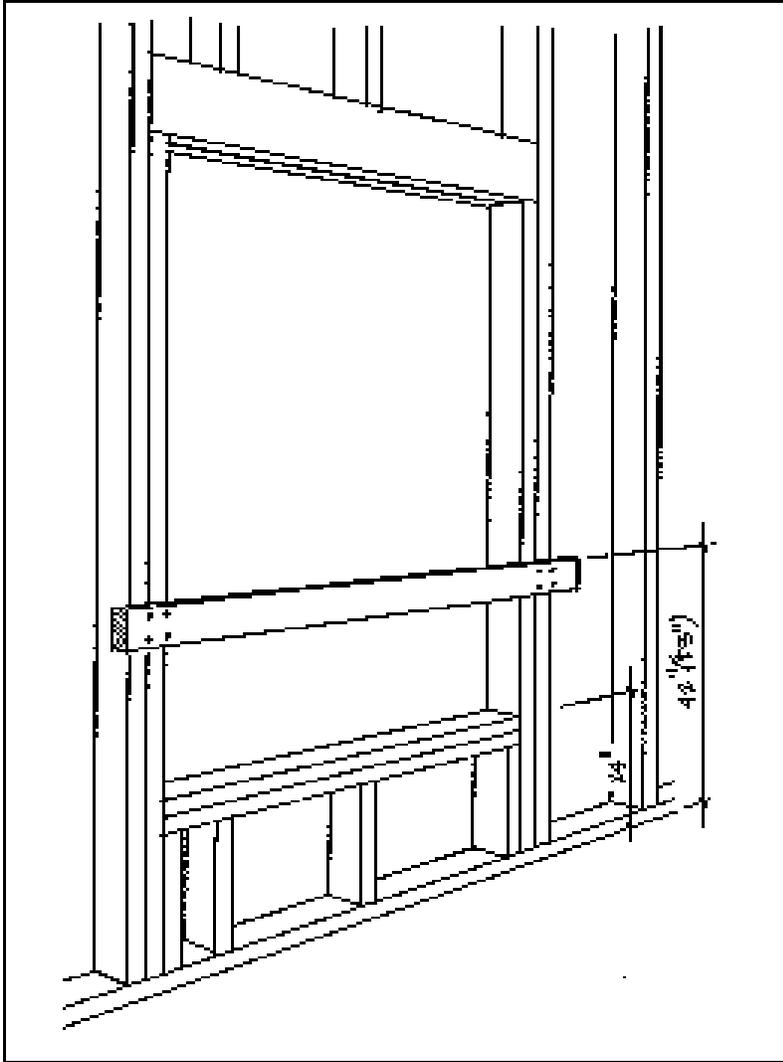


This pump jack scaffold has been erected properly with guardrail and roof connectors. Because of the pump jack scaffold's limited strength, only 2 workers or up to 500 lbs are allowed on the unit.

Scaffold Guardrails

- Guard scaffold platforms that are more than 10 feet above the ground or floor surface with a standard guardrail. If guardrails are not practical, use other fall protection devices such as safety belts/harnesses² and lanyards.
- Place the toprail approximately 42" above the work platform or planking with a midrail about half that high at 21".
- Install toe boards when other workers are below the scaffold.

²After January 1998, safety belts can only be used as a positioning device.

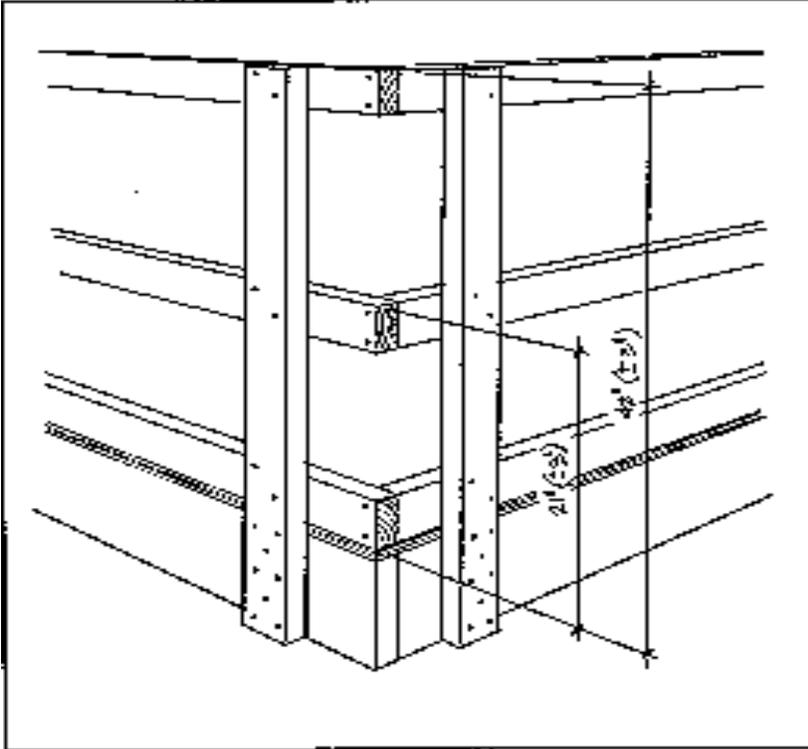


This drawing shows a guardrail at the window opening since the bottom sill height is less than 39". Because the distance between the studs is less than 18", no guardrails were needed between the studs.

Fall Protection

Floor and Wall Openings

- Install guardrails around open floors and walls when the fall is 6 feet or more. Be sure the toprails can withstand a 200 lb load.
- Construct guardrails with a toprail approximately 42" high with a midrail about half that high at 21".



This drawing shows the right height for guardrails - around 42" high with a 21" midrail.

- Install toeboards when other workers are below the work area.
- Cover floor openings larger than 2x2 (inches) with material to safely support the working load.

Alternatives

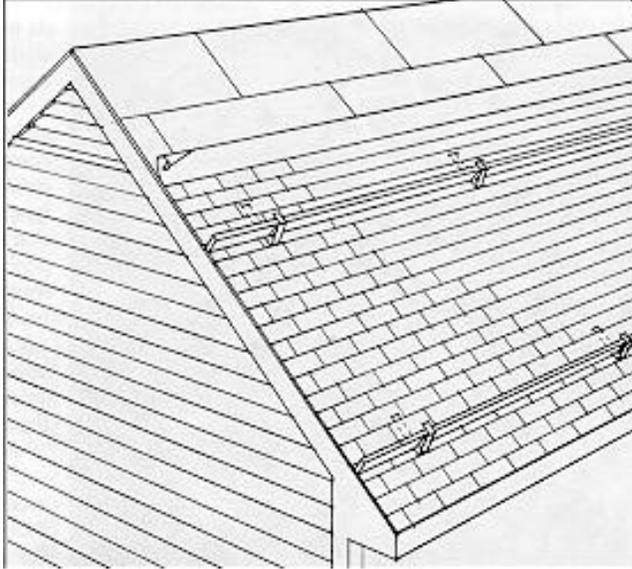
- Use other fall protection systems like slide guards, roof anchors or alternative safe work practices when a guardrail system cannot be used.
- Wear proper shoes or footwear to lesson slipping hazards.
- Train workers on safe work practices before performing work on foundation walls, roofs, trusses, or where performing exterior wall erections and floor installations.

These workers are using recognized safe work practices. They wrap their feet and legs in and around the truss webs to lessen the chances of a fall.



This worker has installed a slide guard on this 8:12 pitch roof eave. The slide guard is a roof bracket with a 2x6 at a 90 degree angle. In this case, the worker is wearing-although not required-a safety belt and lanyard to prevent a fall. After the shingles are placed beyond 8 feet of a roof line, more slide guards will be installed.

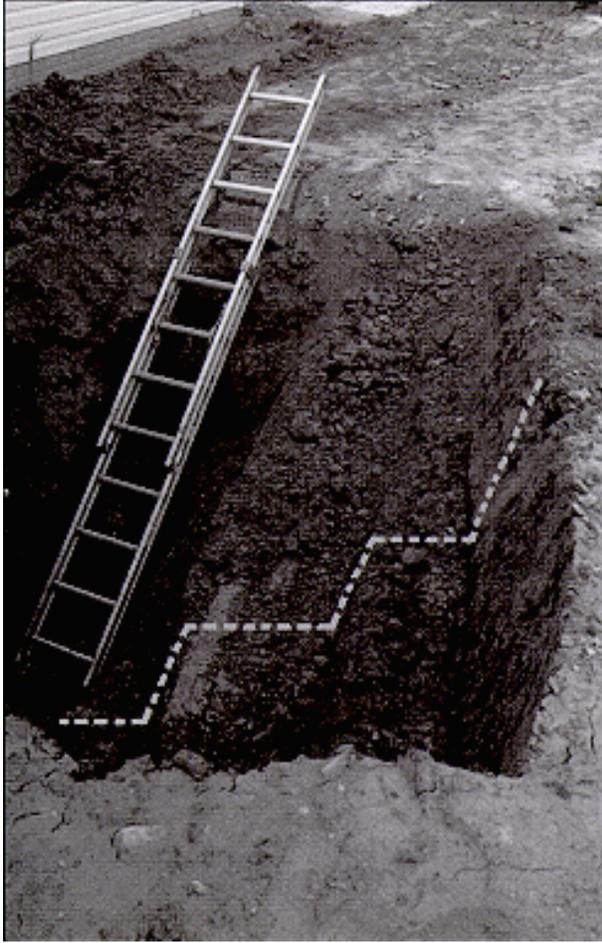




Drawing of 7:12 pitch roof with properly installed slide guards.

Work on Roofs

- Inspect for and remove frost and other slipping hazards before getting onto roof surfaces.
- Cover and secure all skylights and opening, or install guardrails to keep workers from falling through the openings.
- Install slide guards along the roof eave after the first 3 rows of roofing material are installed when the roof pitch is over 4:12 and up to 6:12.
- Install slide guards along the roof eave after the first 3 rows of roofing material are installed and then again every 8 feet up the roof when the pitch exceeds 6:12.
- Use a safety harness system with a solid anchor point on steep roofs with pitch greater than 8:12 or if the ground to eave height exceeds 25 feet.
- Stop roofing operations when storms, high winds or other adverse weather conditions create unsafe conditions.

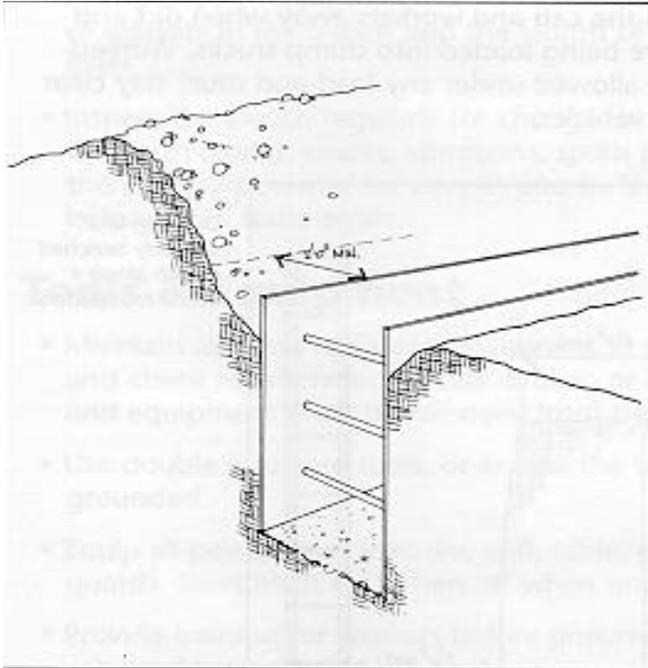


As shown by the dotted line, this excavation was benched at a 1:1 slope after the competent person determined the soil type was stable for that type of protection. Usually, most residential excavations will be type C soil and will need a slope of 1.5:1. A ladder is placed in the excavation to let workers climb in and out easily. The spoils pile is at least 2 feet back from the edge.

Excavations & Trenching

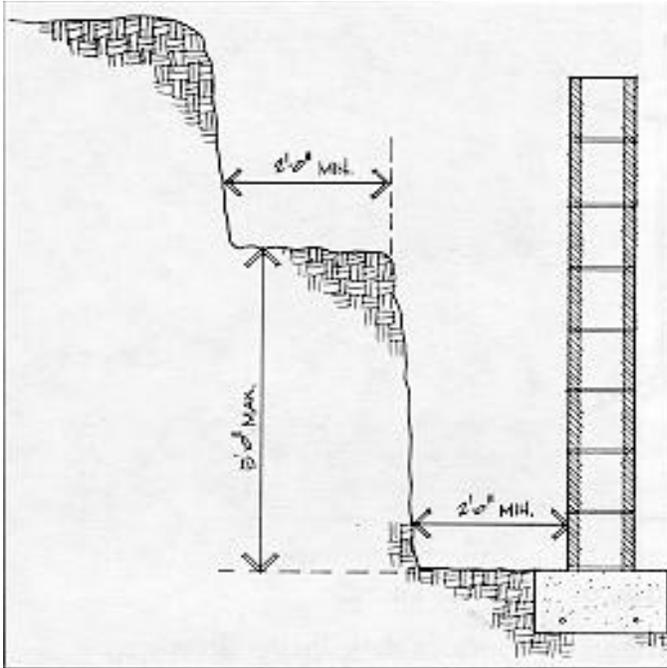
General

- Find the location of all underground utilities by contacting the local utility locating service before digging.
- Keep workers away from digging equipment and never allow workers in an excavation when equipment is in use.
- Keep workers from getting between equipment in use and other obstacles and machinery than can cause crushing hazards.



Drawing of a trench box used the right way.

- Keep equipment and the excavated dirt (spoils pile) back 2 feet from the edge of the excavation.
- Have a competent person conduct daily inspections and correct any hazards before workers enter a trench or excavation.
- Provide workers a way to get into and out of a trench or excavation. Ladders and ramps can be used and must be within 25 feet of the worker.
- For excavations and utility trenches over 5 feet deep, use shoring, shields (trench boxes), benching, or slope back the sides. Unless soil analysis has been completed, the earth's slope must be at least 1.5 horizontal to 1 vertical.
- Keep water out of trenches with a pump or drainage system, and inspect the area for soil movement and potential cave-ins.
- Keep drivers in the cab and workers away when dirt and other debris are being loaded into dump trucks. Workers must never be allowed under any load and must stay clear of the back of vehicles.



Drawing of a properly benched trench along a house foundation.

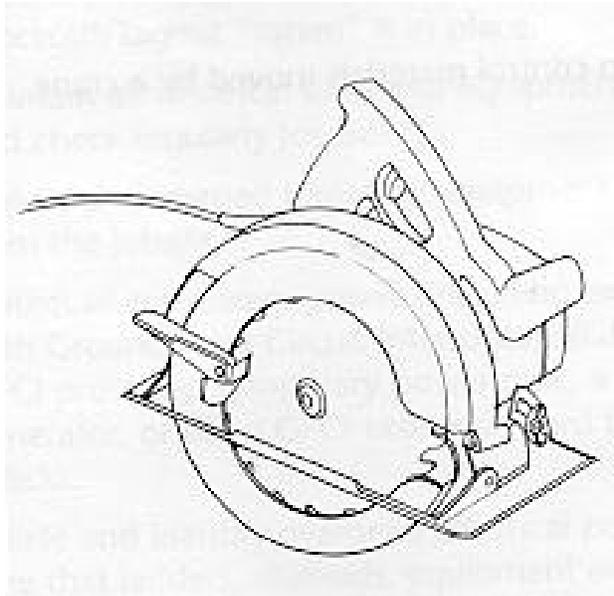
Foundations

After the foundation walls are constructed, special precautions must be taken to prevent injury from cave-ins in the area between the excavation wall and the foundation wall:

- The depth of the foundation/basement trench cannot exceed 7.5 feet deep unless other cave-in protection is provided.
- Keep the horizontal width of the foundation trench at least 2 feet wide. Make sure there is no earth vibration while workers are in the trench.
- Plan the foundation trench work to minimize the number of workers in the trench and the length of time they spend there.
- Inspect the trench regularly for changes in the stability of the earth (water, cracks, vibrations, spoils pile). Stop work if there is any potential for cave-in and fix the problem before work starts again.

Tools & Equipment

- Maintain all hand tools and equipment in safe condition and check regularly for defects. Broken or damaged tools and equipment must be removed from the jobsite.
- Use double insulated tools, or ensure the tools are grounded.
- Equip all power saws (circular, skill, table, etc.) with blade guards. Saws must be turned off when unattended.
- Provide training for workers before pneumatic or powder-actuated tools are used.

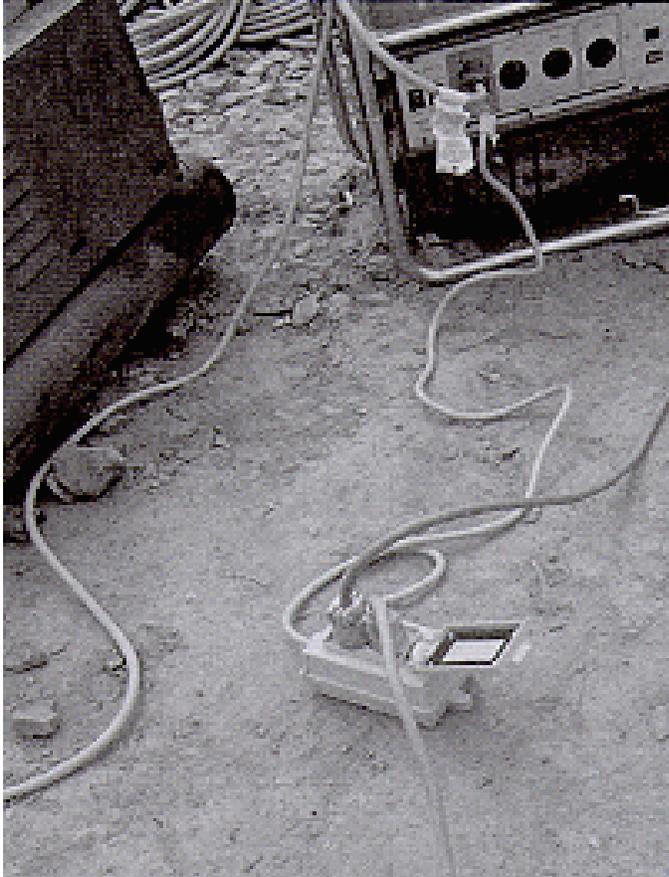


This saw has all moving parts and the saw blade properly guarded.

- Pneumatic and powder-actuated tools must only be used by trained and experienced personnel. Require proper eye protection for workers.
- Never leave cartridges for pneumatic or powder-actuated tools unattended. Keep equipment in a safe place, according to the manufacturers' instructions.

Vehicles & Mobile Equipment

- Inform workers verbally and provide training to stay clear of backing and turning vehicles and equipment with rotating cabs.
- Maintain back-up alarms for equipment with limited rear view or use someone to help guide them back.
- Verify experience or provide training to crane and heavy equipment operators.
- Maintain at least a 10 foot clearance from overhead power lines when operating equipment.
- Block up the raised bed when inspecting or repairing dump trucks.
- Use a tag line to control materials moved by a crane.



This generator is a temporary power source, so the builder has used a GFCI cord to protect against electrocutions. If the extension cord was plugged into the house, a GFCI would still be needed because the extension cord is considered temporary power.

Electrical

- Prohibit work on new and existing energized (hot) electrical circuits until all power is shut off and a positive “Lockout/Tagout System” is in place.
- Maintain all electrical tools and equipment in safe condition and check regularly for defects.
- Broken or damaged tools and equipment must be removed from the jobsite.
- Protect all temporary power (including extension cords) with Ground Fault Circuit Interrupters (GFCIs). Plug into a GFCI protected temporary power pole, a GFCI protected generator, or use a GFCI extension cord to protect against shocks.
- Locate and identify overhead electrical power lines. Make sure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.



This plumber keeps a fire extinguisher close by whenever he is sweating pipes. Any time there is hot work, a fire extinguisher should be close by.

Fire Prevention

- Provide fire extinguishers near all welding, soldering, or other sources of ignition.
- Avoid spraying paint, solvents or other types of flammable materials in rooms with poor ventilation. Build-up of fumes and vapors can cause explosions or fires.
- Store gasoline and other flammable materials in a safety can outdoors or in an approved storage facility.
- Provide one fire extinguisher within 100 feet of employees for each 3,000 square feet of building.

OSHA Consultation Project Directory

A source of assistance with construction safety and health is OSHA's Consultation Project. This division of the Occupational Safety & Health Administration operates independently of the enforcement branch. The program was developed with small businesses in mind, and is available to employers in every state who want help in recognizing and correcting jobsite hazards.

When an employer uses the service, a trained OSHA professional conducts a free onsite "inspection" and consultation. No citations or penalties are given for any of the problems that the inspector/consultant may find, and the service is completely confidential. The employer has the responsibility and obligation through the program to correct the identified within an allotted amount of time. In addition, the onsite consultants can assist in developing and maintaining an effective safety program, offer jobsite training and education for employees, and help locate other sources of assistance for safety and health concerns.

Although this program can be beneficial, you must realize that there is still no guarantee that a jobsite that has received the services of the OSHA Consultation Project will "pass" an OSHA inspection.

The OSHA Consultation Project Directory is available at <http://www.osha.gov/oshdir/consult.html>

OSHA Area & Regional Office Directory

The OSHA Office Directory is available at <http://www.osha.gov/oshdir/>

OSHA State-Plan Directory

Builders and subcontractors must be aware that some states and territories do not fall under the jurisdiction of federal OSHA. In some cases, state OSHA offices will have the duty of enforcing the standards. These states may have additional requirements that go above and beyond the requirements of the federal standard. Approved state agencies have just as much authority, and in some cases more authority, than federal OSHA in regards to the inspection process and the issuing of fines and citations and even jail sentences.

The OSHA State-Plan Directory is available at <http://www.osha.gov/oshdir/states.html>