

A Safer Job Site

OSHA and NAHB team up to identify the key safety issues for residential builders

BY TOM O'BRIEN

For almost 30 years, the Occupational Safety and Health Administration (OSHA) has been ordered by Congress to "assure every working man and woman in the nation safe and healthful working conditions." Unfortunately, keeping tabs on safety is a much easier task in manufacturing plants and large commercial construction sites than on thousands of small residential job sites scattered all over the country.

Recognizing that many residential job sites could be a lot safer, the National Association of Home Builders (NAHB) has worked with OSHA to assemble an easy-to-follow booklet of minimum safety standards (photo right). The first edition of the *NAHB-OSHA Jobsite Safety Handbook* was published in 1996, but it sold out quickly. Fortunately, a new, slightly revised edition came out early last year.

According to David Delorenzo, NAHB's director of labor, safety and health services, the NAHB-OSHA partnership is "not about enforcement; it's about improving safety.... [We're] trying to get away from the days when OSHA cited people for not having an MSDS (material safety data sheet) for motor oil. Now, motor oil hasn't killed anybody on the job site that I've seen. Let's look at the hazards, and let's figure out how to address them. That's what this is all about."

Not surprisingly, then, the *NAHB-OSHA Jobsite Safety Handbook* focuses on serious hazards, especially the big four: falls, electrocution, trenches and falling objects, which together account for almost 90% of the deaths in construction.

Although the *NAHB-OSHA Jobsite Safety Handbook* is not intended as a substitute for the complete book of OSHA safety regulations (29 CFR1926), according to Delorenzo:

"If you're following everything in there [and you get a visit from OSHA], they're going to realize this is a safe site."

Copies of the booklet can be obtained from the NAHB bookstore (800-223-2665; www.builderbooks.com). With a \$10 cover price (\$8 for NAHB members; bulk-rate discounts available), the *NAHB-OSHA Jobsite Safety Handbook* is cheap insurance against disaster. Every builder should have a copy. In the meantime, here's a sampling of the book's most important safety issues.

A hard hat is no substitute for a safe job site

Employers are required by law to provide personal protective equipment such as safety glasses and hard hats. Far more important than having these devices on hand is the need for employers and employees to ensure a safe working environment. It's up to the employer to maintain an orderly, hazard-free

job site and to provide adequate lighting to prevent accidents. It's also the employer's responsibility to educate workers on OSHA standards and company safety requirements.

Besides following the rules, it's up to the employees to make sure all their tools and safety devices are working properly. It's also the employees' responsibility to make sure their work never puts anyone else at risk and to report unsafe work practices.

As to personal protective equipment:

- Hard hats must be worn whenever there is a danger of falling or flying objects (or overhead electrical shock).
- Eye or face protection must be worn when welding, cutting and nailing (including air-nailing), and when working with concrete or harmful chemicals. Eye and face protectors are designed for specific hazards, so it's important to select the type to match the hazard.
- Safety-toe shoes are not mandatory but are encouraged when working around heavy



An essential piece of safety equipment. In 34 easily readable pages, "NAHB-OSHA Jobsite Safety Handbook" addresses major hazards that residential builders face and highlights minimum safe-work practices.

rolling equipment or falling objects. Sneakers are not banned on the job as long as they have slip-resistant, puncture-resistant soles.

- Safety harnesses, not body belts, should be used for fall protection.

Don't prop up a ladder on a big misshapen rock

Because ladders are the most mobile and temporary devices for working above the ground, it's easy to be lax about their safe use. Serious, debilitating injuries often result from falls of 6 ft. or less. Take the time to set up a ladder properly (drawing right).

- Ladders should be set up at a 4:1 angle (1 ft. out from the base for every 4 ft. of rise).
- To prevent them from slipping or falling over, ladders should be secured either at the top or at the bottom.
- When ladders are used to climb onto or off of an upper surface, they must extend at least 3 ft. above the surface (drawing right).
- When climbing or working on a ladder, the worker should face the ladder and maintain three points of contact with the ladder.
- Do not set up ladders in high-traffic areas.

Scaffolding needs good housekeeping and a firm foundation

Proper scaffold safety is as important for workers on the ground as for those above. To prevent workers from tripping and materials from falling, keep work platforms free of debris, and keep tools and materials as neatly organized as possible. For added safety, install toe boards if workers will regularly be underneath the scaffold.

Here are a few things to be aware of when erecting scaffolds (drawing p. 90):

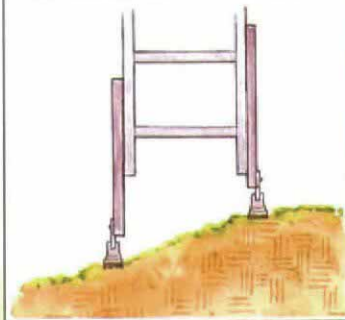
- Each scaffold must be capable of supporting its own weight and four times the maximum intended load. (In other words, do not use pumpjacks for a brick-veneer job.)
 - Use manufactured base plates or mudsills made of hardwood or equivalent to level or stabilize footings. Don't use concrete blocks, bricks or scraps of lumber.
 - Fully plank a scaffold or use manufactured decking to provide a full work surface. Planking or decking must be scaffold grade with no visible defects. Manufactured decking should be inspected periodically to ensure that the end hooks are securely attached to the frame.
 - Keep the front edge of the platform within 14 in. of the face of the work.
 - When using planks, make sure their ends extend at least 6 in. beyond the scaffold edges, or cleat them to prevent movement.
- However, to prevent tipping when workers

The right way to set up and climb a ladder. The base of this ladder is securely braced to prevent slipping. The worker maintains three points of contact while climbing the ladder and has plenty of extension above the roof surface to enable him to get on and off the roof easily.

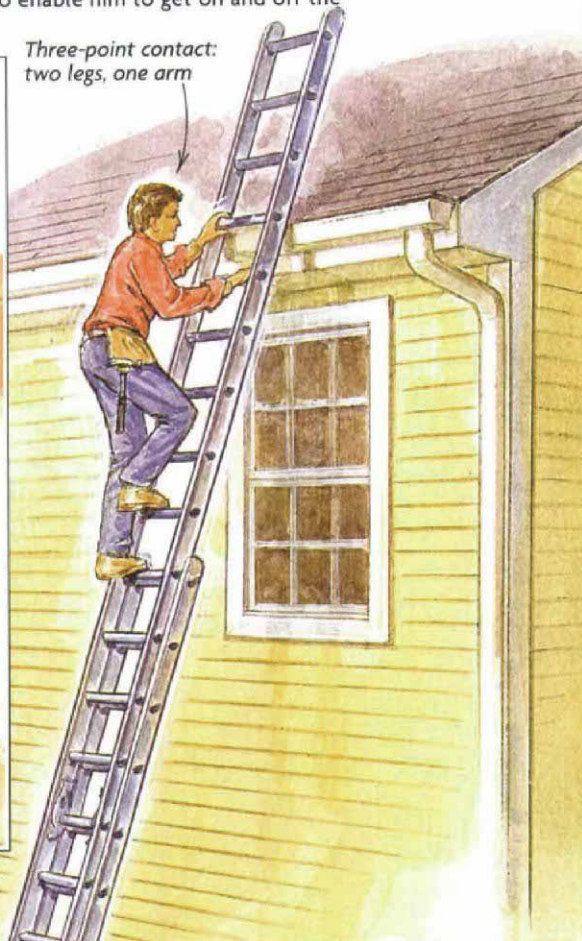
Level the ground or level the ladder. When setting up on uneven ground, take the time to establish firm, level footing ...



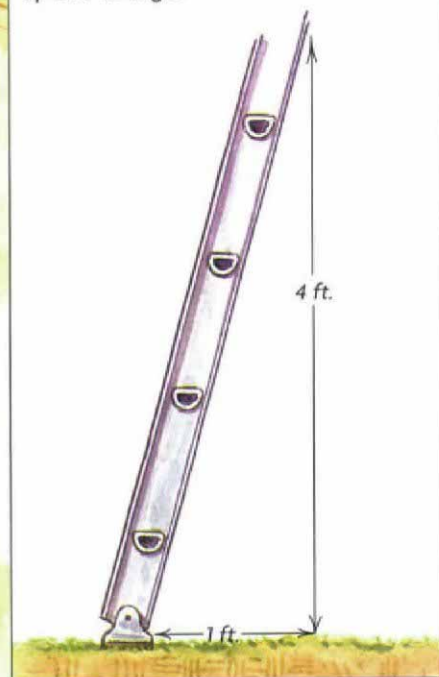
... or attach a set of ladder levelers, which can be obtained from the ladder manufacturer.

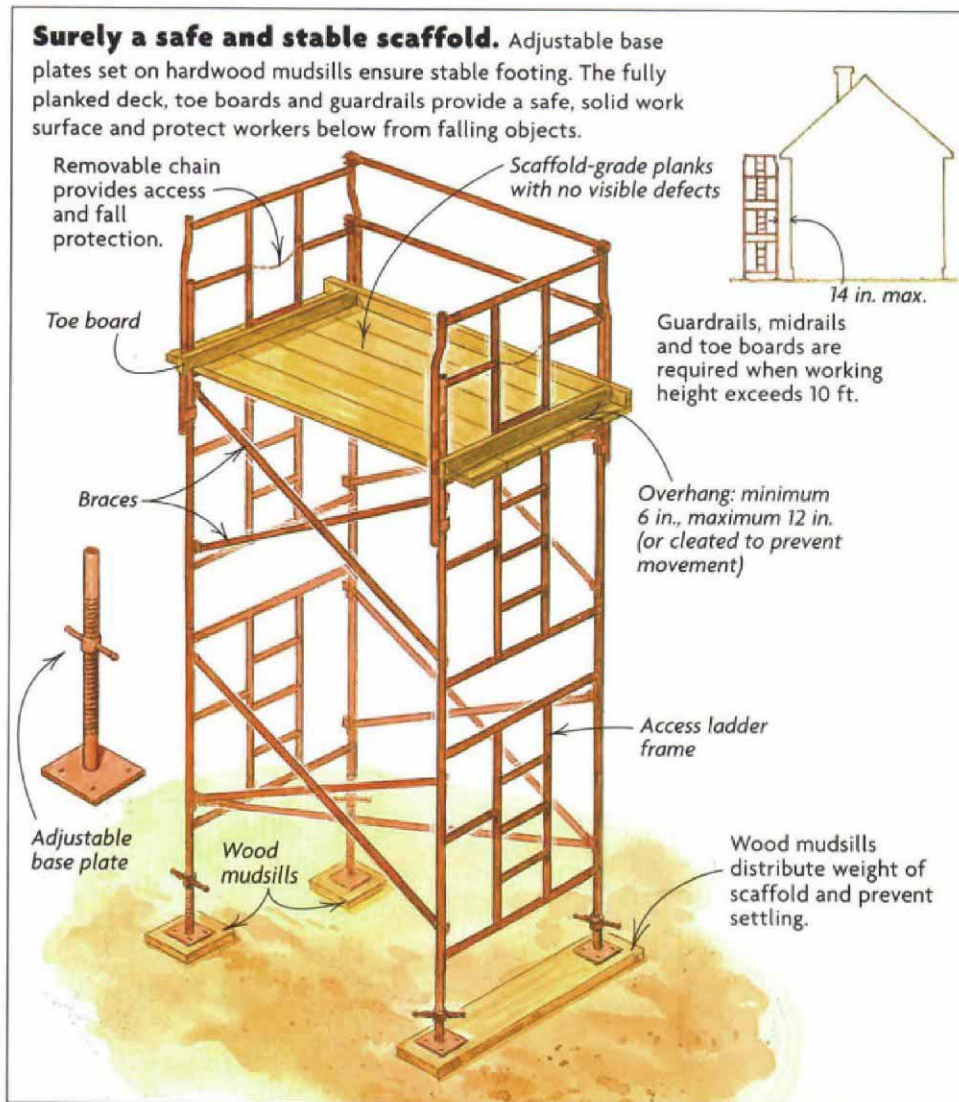


Three-point contact: two legs, one arm



The proper setup angle. For safety and ease of use, ladders should be set up at a 4:1 angle.





are walking on them, do not let planks extend more than 12 in. beyond the edges of the scaffold.

Also do not:

- Place scaffolding within 10 ft. of overhead power lines.
- Swing loads near or on a scaffold unless using a tag line.
- Work from any part of the scaffold other than the platform.
- Use ladders, boxes, barrels or other makeshift contraptions to raise your work height on the scaffold.

Fall protection is easier than falling off a roof

Fall prevention gets complicated only when great heights or steep roofs are involved. Otherwise, it's simple. Guardrails must be installed around openings in floors and across openings in walls when the fall distance is 6 ft. or more (drawings top left, facing page), and on scaffold platforms that are

more than 10 ft. off the ground. Unlike a balustrade, however, an acceptable guardrail need have only a top rail (capable of withstanding a 200-lb. load) approximately 42 in. high and a midrail about half that distance.

Common-sense requirements for roof work include wearing shoes with slip-resistant soles, removing frost and other slip hazards before getting onto roof surfaces, and stopping work when storms or high winds create unsafe conditions.

Additionally:

- Floor openings larger than 2 in. by 2 in. must be covered with material that can safely support the working load.
- Skylights and openings must be securely covered or protected by guardrails to keep workers from falling through the openings.
- When the roof pitch is between 4-in-12 and 6-in-12, slide guards (drawing top right, facing page) must be installed along the roof eave that runs above the first three rows of the roofing material.

- When the roof pitch is between 6-in-12 and 8-in-12, additional slide guards must be installed every 8 ft. up the roof.

- A safety-harness system with a solid anchor point must be used when the roof pitch exceeds 8-in-12, or if the ground-to-eave height exceeds 25 ft.

- Impalement hazards (such as rebar) must be properly guarded or removed.

Don't bury anyone who's still breathing

Workers face risk of serious injury from the heavy equipment that is used for digging trenches and from cave-ins afterward. Don't begin any excavation before contacting the local utility to find the location of underground utilities.

During excavation work:

- Keep workers away from digging equipment, and never allow workers in an excavation when equipment is in use.
- Keep the equipment and the spoils pile (excavated dirt) back 2 ft. from the edge of the excavation.
- Keep water out of trenches with a pump or drainage system, and inspect the area for soil movement and potential cave-ins.
- For excavations and utility trenches over 5 ft. deep, use shoring, shields (trench boxes), benching or sloped-back sides. Unless a soil analysis has been completed, the earth's slope must be at least 1½ ft. horizontal to 1 ft. vertical.

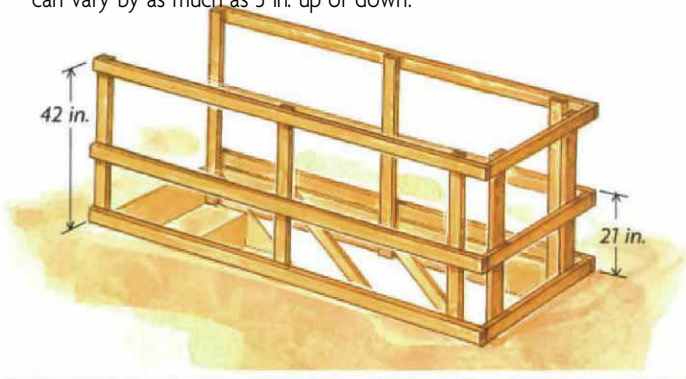
After foundation walls are constructed, additional precautions must be taken to prevent injury from cave-ins that could trap a worker between the excavation wall and the foundation wall (bottom drawing, facing page):

- The depth of the trench cannot exceed 7½ ft. without the provision of some other cave-in protection.
- The width of the foundation trench must be at least 2 ft.
- No work activity is permitted to vibrate the soil while workers are in the trench.
- Inspect the trench regularly for changes in the stability of the earth (water, cracks, vibrations, spoils pile).

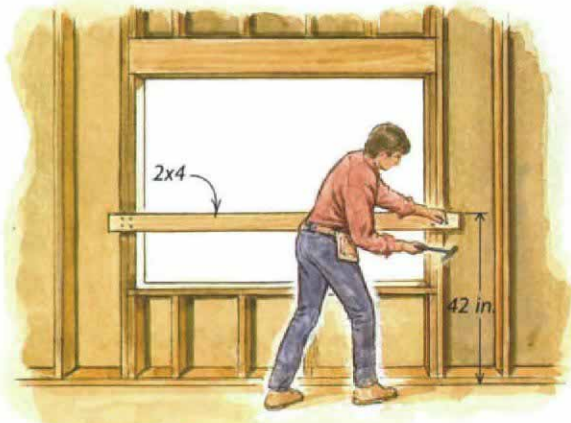
Don't just tape up a damaged extension cord

In addition to overhead and underground power lines, the danger of electrocution lurks within every electrical cord on the job site. The best way to prevent electrocution is to protect all the job site's temporary power with ground fault circuit interrupters (GFCIs). This protection can be done by plugging into a GFCI-protected temporary power

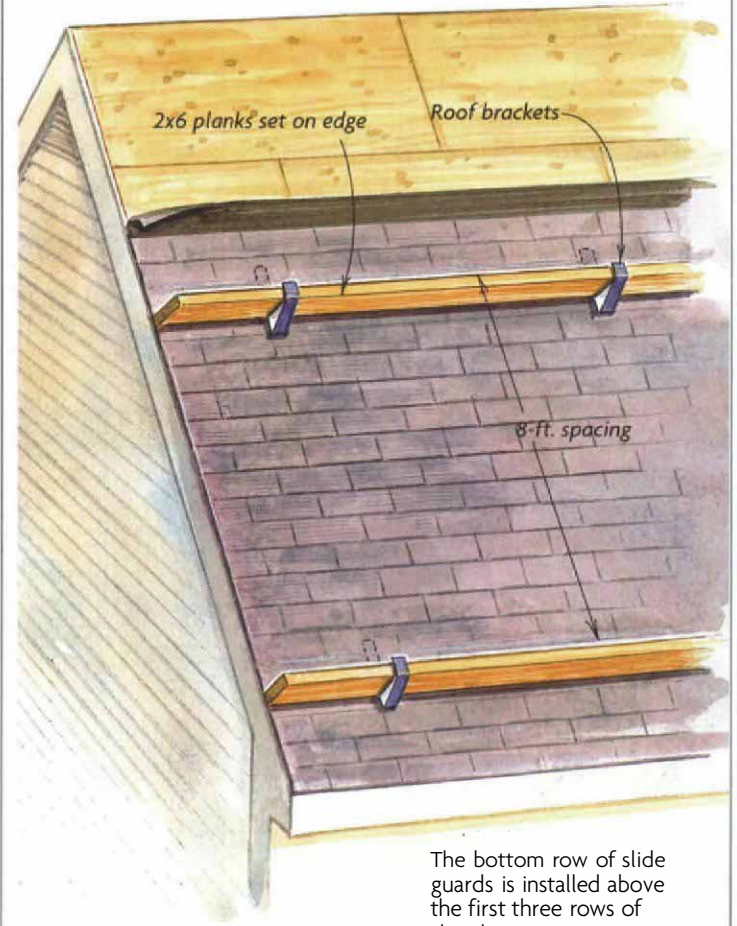
Preventing a tragic misstep. Guardrails must be installed on stairways, around openings in floors and across openings in walls whenever the fall distance exceeds 6 ft. Note: Guardrail heights can vary by as much as 3 in. up or down.



Safety doesn't have to be complicated. For this window opening, a single 2x4 nailed approximately 42 in. off the floor is all it takes to satisfy OSHA safety requirements and, more important, to prevent a tragic fall.



Slide guards provide adequate fall protection unless roof pitch exceeds 8-in-12. This 7-in-12 pitch roof has properly installed slide guards. If the pitch were between 4-in-12 and 6-in-12, only the bottom row of slide guards would be required.



The bottom row of slide guards is installed above the first three rows of shingles.

er pole, a GFCI-protected generator or a GFCI extension cord. It cannot be done by plugging into a household GFCI. (For additional information on the safe use of extension cords and GFCIs, see *FHB* #129, pp. 84-89.)

Additional job-site electrical-safety measures include:

- Use only three-wire type extension cords designed for hard or junior-hard service (look for any of the following letters imprinted on the casing: S, ST, SO, STO, SJ, SJT, SJO, SJTO).
- Maintain all extension cords and electrical tools in safe condition, and remove broken tools and equipment from the job site.
- Never allow any work on hot electrical circuits until all power is shut off and a positive lock-out/tag-out system is in place. □

Since putting away his carpentry tools and becoming an assistant editor at *Fine Homebuilding*, Tom O'Brien has suffered two paper cuts and a nasty run-in with the bagel slicer.

A properly benched trench. To prevent a cave-in from trapping a worker against a foundation wall, the sides of a foundation trench must either be sloped back (1-ft. rise:1½-ft. run), reinforced with shoring or benched according to these dimensions.

