



### Course Instructions

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# Construction Site Safety Practices

## Why Does OSHA Have a Standard for Fall Protection?

In the construction industry in the U.S., falls are the leading cause of worker fatalities. Each year, on average, between 150 and 200 workers are killed and more than 100,000 are injured as a result of falls at construction sites. OSHA recognizes that accidents involving falls are generally complex events frequently involving a variety of factors. Consequently, the standard for fall protection deals with both the human and equipment-related issues in protecting workers from fall hazards.

For example, employers and employees need to do the following:

- Select fall protection systems appropriate for given situations.
- Use proper construction and installation of safety systems.
- Supervise employees properly.
- Use safe work procedures.
- Train workers in the proper selection, use, and maintenance of fall protection systems.

A number of factors are often involved in falls, including unstable work surfaces, misuse or failure to use fall protection equipment and human error. Studies have shown that using guardrails, fall arrest systems, safety nets, covers and restraint systems can prevent many deaths and injuries from falls.

The purpose of this course is to get you familiar with OSHA's construction safety standard for fall protection 29 CFR, Subpart M.

## Fall Protection in Construction

OSHA has construction industry safety standards, set forth in *Title 29 Code of Federal Regulations*, Subpart M, Fall Protection, 1926.500(a), 1926.501, 1926.502, and 1926.503, and developed systems and procedures designed to prevent employees from falling off, onto, or through working levels and to protect employees from being struck by falling objects. The performance-oriented requirements make it easier for employers to provide the necessary protection.

The rule covers most construction workers except those inspecting, investigating, or assessing workplace conditions prior to the actual start of work or after all work has been completed.

The rule identifies areas or activities where fall protection is needed. These include, but are not limited to, ramps, runways, and other walkways, excavations,

hoist areas, holes, formwork and reinforcing steel, leading edge work, unprotected sides and edges, overhand bricklaying and related work, roofing work, precast concrete erection, wall openings, residential construction, and other walking/working surfaces. The rule sets a uniform threshold height of 6 feet (1.8 meters), thereby providing consistent protection. This means that construction employers must protect their employees from fall hazards and falling objects whenever an affected employee is 6 feet (1.8 meters) or more above a lower level. Protection also must be provided for construction workers who are exposed to the hazard of falling into dangerous equipment.

Under the standard, employers are able to select fall protection measures compatible with the type of work being performed. Fall protection generally can be provided through the use of guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, and warning line systems, among others.

The OSHA rule clarifies what an employer must do to provide fall protection for employees, such as identifying and evaluating fall hazards and providing specific training. Requirements to provide fall protection for workers on scaffolds and ladders and for workers engaged in steel erection of buildings are covered in other subparts of OSHA regulations.

The standard prescribes the duty to provide fall protection, sets the criteria and practices for fall protection systems, and requires training. It covers hazard assessment and fall protection and safety monitoring systems. Also addressed are controlled access zones, safety nets, and guardrail, personal fall arrest, warning line, and positioning device systems.

Under *29 CFR Subpart M, Fall Protection, 1926.501*, employers must assess the workplace to determine if the walking or working surfaces on which employees are to work have the strength and structural integrity to safely support workers. Employees are not permitted to work on those surfaces until it has been determined that the surfaces have the requisite strength and structural integrity to support the workers. Once employers have determined that the surface is safe for employees to work on, the employer must select one of the options listed for the work operation if a fall hazard is present.

For example, if an employee is exposed to falling 6 feet (1.8 meters) or more from an unprotected side or edge, the employer must select a guardrail system, safety net system, or personal fall arrest system to protect the worker.

Similar requirements are prescribed for other fall hazards as follows:

## ❖ **Controlled Access Zones - 1926.502(g)**

A controlled access zone is a work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems—guardrail, personal arrest or safety net—to protect the employees working in the zone.

Controlled access zones are used to keep out workers other than those authorized to enter work areas from which guardrails have been removed. Where there are no guardrails, masons are the only workers allowed in controlled access zones.

Controlled access zones, when created to limit entrance to areas where leading edge work and other operations are taking place, must be defined by a control line or by any other means that restrict access. Control lines shall consist of ropes, wires, tapes or equivalent materials, and supporting stanchions, and each must be:

- Flagged or otherwise clearly marked at not more than 6-foot (1.8 meters) intervals with high-visibility material.
- Rigged and supported in such a way that the lowest point (including sag) is not less than 39 inches (1 meter) from the walking/working surface and the highest point is not more than 45 inches (1.3 meters)—nor more than 50 inches (1.3 meters) when overhand bricklaying operations are being performed—from the walking/working surface.
- Strong enough to sustain stress of not less than 200 pounds. Control lines shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
- Control lines also must be connected on each side to a guardrail system or wall.

When control lines are used, they shall be erected not less than 6 feet (1.8 meters) nor more than 25 feet (7.6 meters) from the unprotected or leading edge, except when precast concrete members are being erected. In the latter case, the control line is to be erected not less than 6 feet (1.8 meters) or more than 60 feet (18 meters) or half the length of the member being erected, whichever is less, from the leading edge.

Controlled access zones when used to determine access to areas where overhand bricklaying and related work are taking place are to be defined by a control line erected not less than 10 feet (3 meters) nor more than 15 feet (4.6 meters) from the working edge. Additional control lines must be erected at each end to enclose the controlled access zone. Only employees engaged in overhand bricklaying or related work is permitted in the controlled access zones.

On floors and roofs where guardrail systems are not in

place prior to the beginning of overhand bricklaying operations, controlled access zones must be enlarged as necessary to enclose all points of access, material handling areas, and storage areas.

On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

## ❖ **Excavations - 1926.501(b)(7)**

Each employee at the edge of an excavation 6 feet (1.8 meters) or more deep shall be protected from falling by guardrail systems, fences, barricades, or covers. Where walkways are provided to permit employees to cross over excavations, guardrails are required on the walkway if the fall would be 6 feet (1.8 meters) or more to the lower level.

## ❖ **Fall Protection Systems Criteria and Practices**

### Covers - 1926.502(i)

Covers located in roadways and vehicular aisles must be able to support at least twice the maximum axle load of the largest vehicle to which the cover might be subjected. All other covers must be able to support at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time. To prevent accidental displacement resulting from wind, equipment, or workers' activities, all covers must be secured. All covers shall be color coded or bear the markings "HOLE" or "COVER."

### Guardrail Systems - 1926.501(502)(b)

If the employer chooses to use guardrail systems to protect workers from falls, the systems must meet the following criteria. Toprails and midrails of guardrail systems must be at least one-quarter inch (0.6 centimeters) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for toprails, it must be flagged at not more than 6 feet intervals (1.8 meters) with high-visibility material. Steel and plastic banding cannot be used as toprails or midrails. Manila, plastic, or synthetic rope used for toprails or midrails must be inspected as frequently as necessary to ensure strength and stability.

The top edge height of toprails or (equivalent) guardrails must be 42 inches (1.1 meters) plus or minus 3 inches (8 centimeters), above the walking/working level. When workers are using stilts, the top edge height of the top rail, or equivalent member, must be increased an amount equal to the height of the stilts.

Screens, midrails, mesh, intermediate vertical members, or equivalent intermediate structural members must be installed between the top edge of the guardrail

system and the walking/working surface when there are no walls or parapet walls at least 21 inches (53 centimeters) high. When midrails are used, they must be installed at a height midway between the top edge of the guardrail system and the walking/working level. When screens and mesh are used, they must extend from the top rail to the walking/working level and along the entire opening between top rail supports. Intermediate members, such as balusters, when used between posts, shall not be more than 19 inches (48 centimeters) apart.

Other structural members, such as additional midrails and architectural panels, shall be installed so that there are no openings in the guardrail system more than 19 inches (48 centimeters).

The guardrail system must be capable of withstanding a force of at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction. When the 200 pound test is applied in a downward direction, the top edge of the guardrail must not deflect to a height less than 39 inches (1 meter) above the walking/working level.

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding a force of at least 150 pounds applied in any downward or outward direction at any point along the midrail or other member.

Guardrail systems shall be surfaced to protect workers from punctures or lacerations and to prevent clothing from snagging.

The ends of top rails and midrails must not overhang terminal posts, except where such an overhang does not constitute a projection hazard.

When guardrail systems are used at hoisting areas, a chain, gate or removable guardrail section must be placed across the access opening between guardrail sections when hoisting operations are not taking place.

At holes, guardrail systems must be set up on all unprotected sides or edges. When holes are used for the passage of materials, the hole shall have not more than two sides with removable guardrail sections. When the hole is not in use, it must be covered or provided with guardrails along all unprotected sides or edges.

If guardrail systems are used around holes that are used as access points (such as ladderways), gates must be used or the point of access must be offset to prevent accidental walking into the hole.

If guardrails are used at unprotected sides or edges of ramps and runways, they must be erected on each unprotected side or edge.

#### [Personal Fall Arrest Systems - 1926.502\(d\)](#)

These consist of an anchorage, connectors, and a body harness and may include a deceleration device,

lifeline, or suitable combinations. If a personal fall arrest system is used for fall protection, it must do the following:

- Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness;
- Be rigged so that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level;
- Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters); and
- Have sufficient strength to withstand twice the potential impact energy of an employee free-falling a distance of 6 feet (1.8 meters) or the free fall distance permitted by the system, whichever is less.

The use of a body belt for fall arrest is prohibited; however, the use of a body belt in a positioning device system is acceptable.

Personal fall arrest systems must be inspected prior to each use for wear damage, and other deterioration. Defective components must be removed from service. Dee-rings and snaphooks must have a minimum tensile strength of 5,000 pounds. Dee-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or suffering permanent deformation.

Snaphooks shall be sized to be compatible with the member to which they will be connected, or shall be of a locking configuration.

Unless the snaphook is a locking type and designed for the following connections, they shall not be engaged (a) directly to webbing, rope, or wire rope; (b) to each other; (c) to a dee-ring to which another snaphook or other connector is attached; (d) to a horizontal lifeline; or (e) to any object incompatible in shape or dimension relative to the snaphook, thereby causing the connected object to depress the snaphook keeper and release unintentionally.

OSHA considers a hook to be compatible when the diameter of the dee-ring to which the snaphook is attached is greater than the inside length of the snaphook when measured from the bottom (hinged end) of the snaphook keeper to the inside curve of the top of the snaphook. Thus, no matter how the dee-ring is positioned or moved (rolls) with the snaphook attached, the dee-ring cannot touch the outside of the keeper, thus depressing it open. The use of non-locking snaphooks is prohibited.

On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.

Horizontal lifelines shall be designed, installed, and

used under the supervision of a qualified person, as part of a complete personal fall arrest system that maintains a safety factor of at least two. Lifelines shall be protected against being cut or abraded.

Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet (0.61 meters) or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

Self-retracting lifelines and lanyards that do not limit free fall distance to 2 feet (0.61 meters) or less, ripstitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made of synthetic fibers.

Anchorage shall be designed, installed, and used under the supervision of a qualified person, as part of a complete personal fall arrest system that maintains a safety factor of at least two, i.e., capable of supporting at least twice the weight expected to be imposed upon it. Anchorages used to attach personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and must be capable of supporting at least 5,000 pounds per person attached.

Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds.

**Positioning Device Systems - 1926.502(e)**

These body belt or body harness systems are to be set up so that a worker can free fall no farther than 2 feet (0.6 meters). They shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 3,000 pounds, whichever is greater. Requirements for snaphooks, dee-rings, and other connectors used with positioning device systems must meet the same criteria as those for personal fall arrest systems.

**Safety Monitoring Systems - 1926.502(h)**

When no other alternative fall protection has been implemented, the employer shall implement a safety monitoring system. Employers must appoint a competent person to monitor the safety of workers and the employer shall ensure that the safety monitor:

- Is competent in the recognition of fall hazards,
- Is capable of warning workers of fall hazard dangers and in detecting unsafe work practices,
- Is operating on the same walking/working surfaces of the workers and can see them, and
- Is close enough to work operations to communicate

orally with workers and has no other duties to distract from the monitoring function.

Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations on low-sloped roofs.

No worker, other than one engaged in roofing work (on low sloped roofs) or one covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

All workers in a controlled access zone shall be instructed to promptly comply with fall hazard warnings issued by safety monitors.

**Safety Net Systems - 1926.502(c)**

Safety nets must be installed as close as practicable under the walking/working surface on which employees are working and never more than 30 feet (9.1 meters) below such levels. Defective nets shall not be used. Safety nets shall be inspected at least once a week for wear, damage, and other deterioration. The maximum size of each safety net mesh opening shall not exceed 36 square inches (230 square centimeters) nor be longer than 6 inches (15 centimeters) on any side, and the openings, measured center-to-center, of mesh ropes or webbing, shall not exceed 6 inches (15 centimeters). All mesh crossings shall be secured to prevent enlargement of the mesh opening.

Each safety net or section shall have a border rope for webbing with a minimum breaking strength of 5,000 pounds. Connections between safety net panels shall be as strong as integral net components and be spaced no more than 6 inches (15 centimeters) apart.

Safety nets shall be installed with sufficient clearance underneath to prevent contact with the surface or structure below.

When nets are used on bridges, the potential fall area from the walking/working surface to the net shall be unobstructed.

Safety nets must extend outward from the outermost projection of the work surface as follows:

Vertical distance from working level to horizontal plane of net surface.	Minimum required horizontal distance of outer edge of net from edge of working surface.
Up to 5 feet (1.5 meters)	8 feet (2.4 meters)
More than 5 feet (1.5 meters) up to 10 feet (3 meters)	10 feet (3 meters)
More than 10 feet (3 meters)	13 feet (3.9 meters)

Safety nets shall be capable of absorbing an impact force of a drop test consisting of a 400-pound bag of sand 30 inches (76 centimeters) in diameter dropped from the highest walking/working surface at which workers are exposed, but not from less than 42 inches (1.1 meters) above that level.

Items that have fallen into safety nets including—but not restricted to, materials, scrap, equipment, and tools—must be removed as soon as possible and at least before the next work shift.

#### **Warning Line Systems - 1926.502(f)**

Warning line systems consist of ropes, wires, or chains, and supporting stanchions and are set up as follows:

- Flagged at not more than 6-foot (1.8 meters) intervals with high-visibility material.
- Rigged and supported so that the lowest point including sag is no less than 34 inches (0.9 meters) from the walking/working surface and its highest point is no more than 39 inches (1 meter) from the walking/working surface.
- Stanchions, after being rigged with warning lines, shall be capable of resisting, without tipping over; a force of at least 16 pounds applied horizontally against the stanchion, 30 inches (0.8 meters) above the walking/working surface, perpendicular to the warning line and in the direction of the floor, roof, or platform edge.
- The rope, wire, or chain shall have a minimum tensile strength of 500 pounds, and after being attached to the stanchions, must support without breaking the load applied to the stanchions as prescribed above.
- Shall be attached to each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in the adjacent section before the stanchion tips over.

Warning lines shall be erected around all sides of roof work areas. When mechanical equipment is being used, the warning line shall be erected not less than 6 feet (1.8 meters) from the roof edge parallel to the direction of mechanical equipment operation, and not less than 10 feet (3 meters) from the roof edge perpendicular to the direction of mechanical equipment operation.

When mechanical equipment is not being used, the warning line must be erected not less than 6 feet (1.8 meters) from the roof edge.

#### **❖ Formwork and Reinforcing Steel - 1926.501(b)(5)**

For employees, while moving vertically and/or horizontally on the vertical face of rebar assemblies

built in place, fall protection is not required when employees are moving. OSHA considers the multiple hand holds and foot holds on rebar assemblies as providing similar protection as that provided by a fixed ladder. Consequently, no fall protection is necessary while moving point to point for heights below 24 feet (7.3 meters). An employee must be provided with fall protection when climbing or otherwise moving at a height more than 24 feet (7.3 meters), the same as for fixed ladders.

#### **❖ Hoist Areas - 1926.501(b)(3)**

Each employee in a hoist area shall be protected from falling 6 feet (1.8 meters) or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

#### **❖ Holes - 1926.501(b)(4)**

Personal fall arrest systems, covers, or guardrail systems shall be erected around holes (including skylights) that are more than 6 feet (1.8 meters) above lower levels.

#### **❖ Leading Edges - 1926.501(b)(2)**

Each employee who is constructing a leading edge 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems. If the employer can demonstrate that it is infeasible or creates a greater hazard to implement these systems, he or she must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k).

#### **❖ Overhand Bricklaying and Related Work - 1926.501(b)(9)**

Each employee performing overhand bricklaying and related work 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems, or shall work in a controlled access zone. All employees reaching more than 10 inches (25 centimeters) below the level of a walking/working surface on which they are working shall be protected by a guardrail system, safety net system, or personal fall arrest system.

#### **❖ Precast Concrete Erection - 1926.501(b)(12)**

Each employee who is 6 feet (1.8 meters) or more above lower levels while erecting precast concrete

members and related operations such as grouting of precast concrete members shall be protected by guardrail systems, safety net systems, or personal fall arrest systems. Where the employer can demonstrate, however, that it is infeasible or creates a greater hazard to use those systems, the employer must develop and implement a fall protection plan that meets the requirements of 29 CFR 1926.502(k).

#### ❖ **Protection from Falling Objects - 1926.502(j)**

When guardrail systems are used to prevent materials from falling from one level to another, any openings must be small enough to prevent passage of potential falling objects. No materials or equipment except masonry and mortar shall be stored within 4 feet (1.2 meters) of working edges. Excess mortar, broken or scattered masonry units, and all other materials and debris shall be kept clear of the working area by removal at regular intervals.

During roofing work, materials and equipment shall not be stored within 6 feet (1.8 meters) of a roof edge unless guardrails are erected at the edge, and materials piled, grouped, or stacked near a roof edge must be stable and self-supporting.

#### [Canopies - 1926.502\(j\)\(8\)](#)

When used as protection from falling objects canopies must be strong enough to prevent collapse and to prevent penetration by any objects that may fall onto them.

#### [Toeboards - 1926.502\(j\)\(2\), \(3\), and \(4\)](#)

When toeboards are used as protection from falling objects, they must be erected along the edges of the overhead walking or working surface for a distance sufficient to protect persons working below. Toeboards shall be capable of withstanding a force of at least 50 pounds applied in any downward or outward direction at any point along the toeboard. Toeboards shall be a minimum of 3.5 inches (9 centimeters) tall from their top edge to the level of the walking/working surface, have no more than 0.25 inches (0.6 centimeters) clearance above the walking/working surface, and be solid or have openings no larger than 1 inch (2.5 centimeters) in size.

Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening must be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, for a distance sufficient to protect employees below.

#### ❖ **Training - 1926.503**

Employers must provide a training program that teaches employees who might be exposed to fall

hazards how to recognize such hazards and how to minimize them. Employees must be trained in the following areas: (a) the nature of fall hazards in the work area; (b) the correct procedures for erecting, maintaining, disassembling, and inspecting fall protection systems; (c) the use and operation of controlled access zones and guardrail, personal fall arrest, safety net, warning line, and safety monitoring systems; (d) the role of each employee in the safety monitoring system when the system is in use; (e) the limitations on the use of mechanical equipment during the performance of roofing work on low-slope roofs; (f) the correct procedures for equipment and materials handling and storage and the erection of overhead protection; and, (g) employees' role in fall protection plans; and (h) the standards in this Subpart.

Employers must prepare a written certification that identifies the employee trained and the date of the training. The employer or trainer must sign the certification record. Retraining also must be provided when necessary.

#### ❖ **Ramps, Runways, and Other Walkways - 1926.501(b)(6)**

Each employee using ramps, runways, and other walkways shall be protected by guardrail systems against falling 6 feet (1.8 meters) or more.

## Roofing

#### [Low-Slope Roofs - 1926.501\(b\)\(10\)](#)

Each employee engaged in roofing activities on low-slope roofs with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems or a combination of a warning line system and guardrail system, warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system. On roofs 50 feet (15.25 meters) or less in width, the use of a safety monitoring system without a warning line system is permitted.

#### [Steep Roofs - 1926.501\(b\)\(11\)](#)

Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected by either guardrail systems with toeboards, a safety net system, or a personal fall arrest system.

#### ❖ **Wall Openings - 1926.501(b)(14)**

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet

(1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 meter) above the walking/working surface must be protected from falling by the use of either a guardrail system, a safety net system, or a personal fall arrest system.

## Glossary

**Anchorage** — A secure point of attachment for lifelines, lanyards or deceleration devices.

**Body belt** — A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

**Body harness** — Straps that may be secured about the person in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

**Connector** — A device that is used to couple (connect) parts of a personal fall arrest system or positioning device system together.

**Controlled access zone** — A work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems—guardrail, personal arrest or safety net—to protect the employees working in the zone.

**Deceleration device** — Any mechanism—such as rope, grab, ripstitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards—which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

**Deceleration distance** — The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

**Guardrail system** — A barrier erected to prevent employees from falling to lower levels.

**Hole** — A void or gap 2 inches (5.1 centimeters) or more in the least dimension in a floor, roof, or other walking/working surface.

**Lanyard** — A flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.

**Leading edge** — The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed or constructed.

**Lifeline** — A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and that serves as a means for connecting other components of a personal fall arrest system to the anchorage.

**Low-slope roof** — A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

**Opening** — A gap or void 30 inches (76 centimeters) or more high and 18 inches (46 centimeters) or more wide, in a wall or partition, through which employees can fall to a lower level.

**Personal fall arrest system** — A system including but not limited to an anchorage, connectors, and a body harness used to arrest an employee in a fall from a working level.

**Positioning device system** — A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning backwards.

**Rope grab** — A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

**Safety-monitoring system** — A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

**Self-retracting lifeline/lanyard** — A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, after onset of a fall, automatically locks the drum and arrests the fall.

**Snaphook** — A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically closes to retain the object.

**Steep roof** — A roof having a slope greater than 4 in 12 (vertical to horizontal).

**Toeboard** — A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

**Unprotected sides and edges** — Any side or edge (except at entrances to points of access) of a walking/working surface (e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1 meter) high.

**Walking/working surface** — Any surface, whether horizontal or vertical, on which an employee walks or works, including but not limited to floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel. Does not include ladders, vehicles, or trailers on which employees must be located to perform their work duties.

**Warning line system** — A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

# Stairways and Ladders

## Introduction

Working on and around stairways and ladders is hazardous. Stairways and ladders are major sources of injuries and fatalities among construction workers for example, and many of the injuries are serious enough to require time off the job. OSHA estimates that there are almost 25,000 injuries and as many as 36 fatalities per year due to falls on stairways and ladders used in construction.

OSHA rules apply to all stairways and ladders used in construction, alteration, repair, painting, decorating and demolition of worksites covered by OSHA's construction safety and health standards.

This course is based on OSHA's 29 CFR 1926.1050-1060 (Subpart X)

## General Requirements

These rules specify when employers must provide stairways and ladders. In general, the standards require the following:

- When there is a break in elevation of 19 inches (48 cm) or more and no ramp, runway, embankment or personnel hoist is available, employers must provide a stairway or ladder at all worker points of access.
- When there is only one point of access between levels, employers must keep it clear of obstacles to permit free passage by workers. If free passage becomes restricted, employers must provide a second point of access and ensure that workers use it.
- When there are more than two points of access between levels, employers must ensure that at least one point of access remains clear.

In addition, employers must install all stairway and ladder fall protection systems required by these rules and ensure that their worksite meets all requirements of the stairway and ladder rules before employees use stairways or ladders.

Note: The standard does not apply to ladders specifically manufactured for scaffold access and egress, but does apply to job-made and manufactured portable ladders intended for general purpose use. Rules for ladders used on or with scaffolds are addressed in 29 CFR 1926.451 Subpart L.

## Rules for Ladders

### All Ladders

The following rules apply to all ladders:

- Maintain ladders free of oil, grease and other slipping hazards.
- Do not load ladders beyond their maximum intended load nor beyond their manufacturer's rated capacity.
- Use ladders only for their designed purpose.
- Use ladders only on stable and level surfaces unless secured to prevent accidental movement.
- Do not use ladders on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental movement.
- Do not use slip resistant feet as a substitute for exercising care when placing, lashing or holding a ladder upon slippery surfaces.
- Secure ladders placed in areas such as passageways, doorways or driveways, or where they can be displaced by workplace activities or traffic to prevent accidental movement. Or use a barricade to keep traffic or activity away from the ladder.
- Keep areas clear around the top and bottom of ladders.
- Do not move, shift or extend ladders while in use.
- Use ladders equipped with nonconductive side rails if the worker or the ladder could contact exposed energized electrical equipment.
- Face the ladder when moving up or down.
- Use at least one hand to grasp the ladder when climbing.
- Do not carry objects or loads that could cause loss of balance and falling.

In addition, the following general requirements apply to all ladders, including ladders built at the jobsite:

- Double-cleated ladders or two or more ladders must be provided when ladders are the only way to enter or exit a work area where 25 or more employees work or when a ladder serves simultaneous two-way traffic.
- Ladder rungs, cleats and steps must be parallel, level and uniformly spaced when the ladder is in position for use.
- Rungs, cleats and steps of portable and fixed ladders (except as provided below) must not be spaced less than 10 inches (25 cm) apart, nor more than 14 inches (36 cm) apart, along the ladder's side rails.
- Rungs, cleats and steps of step stools must not be less

than 8 inches (20 cm) apart, nor more than 12 inches (31 cm) apart, between center lines of the rungs, cleats and steps.

- Rungs, cleats and steps at the base section of extension trestle ladders must not be less than 8 inches (20 cm) nor more than 18 inches (46 cm) apart, between center lines of the rungs, cleats and steps. The rung spacing on the extension section must not be less than 6 inches (15 cm) nor more than 12 inches (31 cm).
- Ladders must not be tied or fastened together to create longer sections unless they are specifically designed for such use.
- When splicing side rails, the resulting side rail must be equivalent in strength to a one-piece side rail made of the same material.
- Two or more separate ladders used to reach an elevated work area must be offset with a platform or landing between the ladders, except when portable ladders are used to gain access to fixed ladders.
- Ladder components must be surfaced to prevent snagging of clothing and injury from punctures or lacerations.
- Wood ladders must not be coated with any opaque covering except for identification or warning labels, which may be placed only on one face of a side rail.

**Note:** A competent person must inspect ladders for visible defects periodically and after any incident that could affect their safe use.

### Specific Types of Ladders

- Do not use single-rail ladders.
- Use non-self-supporting ladders at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder.
- Use wooden ladders built at the jobsite with spliced side rails at an angle where the horizontal distance is one-eighth of the working length of the ladder.

In addition, the top of a non-self-supporting ladder must be placed with two rails supported equally unless it is equipped with a single support attachment.

### Step Ladders

- Do not use the top or top step of a step ladder as a step.
- Do not use cross bracing on the rear section of step ladders for climbing unless the ladders are designed and provided with steps for climbing on both front and rear sections.
- Metal spreader or locking devices must be provided

on step ladders to hold the front and back sections in an open position when ladders are being used.

### Portable Ladders

The minimum clear distance between side rails for all portable ladders must be 11.5 inches (29 cm).

In addition, the rungs and steps of portable metal ladders must be corrugated, knurled, dimpled, coated with skid-resistant material or treated to minimize slipping.

Non-self-supporting and self-supporting portable ladders must support at least four times the maximum intended load; extra heavy-duty type 1A metal or plastic ladders must sustain 3.3 times the maximum intended load. To determine whether a self-supporting ladder can sustain a certain load, apply the load to the ladder in a downward vertical direction with the ladder placed at a horizontal angle of 75.5 degrees.

When portable ladders are used for access to an upper landing surface, the side rails must extend at least 3 feet (.9 m) above the upper landing surface. When such an extension is not possible, the ladder must be secured and a grasping device such as a grab rail must be provided to assist workers in mounting and dismounting the ladder. A ladder extension must not deflect under a load that would cause the ladder to slip off its supports.

### Fixed Ladders

- If the total length of the climb on a fixed ladder equals or exceeds 24 feet (7.3 m), the ladder must be equipped with ladder safety devices; or self-retracting lifelines and rest platforms at intervals not to exceed 150 feet (45.7 m); or a cage or well and multiple ladder sections with each ladder section not to exceed 50 feet (15.2 m) in length. These ladder sections must be offset from adjacent sections and landing platforms must be provided at maximum intervals of 50 feet (15.2 m). In addition, fixed ladders must meet the following requirements:
- Fixed ladders must be able to support at least two loads of 250 pounds (114 kg) each, concentrated between any two consecutive attachments. Fixed ladders also must support added anticipated loads caused by ice buildup, winds, rigging and impact loads resulting from using ladder safety devices.
- Individual rung/step ladders must extend at least 42 inches (1.1 m) above an access level or landing platform either by the continuation of the rung spacings as horizontal grab bars or by providing vertical grab bars that must have the same lateral spacing as the vertical legs of the ladder rails.
- Each step or rung of a fixed ladder must be able to support a load of at least 250 pounds (114 kg) applied in the middle of the step or rung.

- Minimum clear distance between the sides of individual rung/step ladders and between the side rails of other fixed ladders must be 16 inches (41 cm).
- Rungs of individual rung/step ladders must be shaped to prevent slipping off the end of the rungs.
- Rungs and steps of fixed metal ladders manufactured after March 15, 1991, must be corrugated, knurled, dimpled, coated with skid-resistant material or treated to minimize slipping.
- Minimum perpendicular clearance between fixed ladder rungs, cleats, and steps and any obstruction behind the ladder must be 7 inches (18 cm), except that the clearance for an elevator pit ladder must be 4.5 inches (11 cm).
- Minimum perpendicular clearance between the centerline of fixed ladder rungs, cleats and steps, and any obstruction on the climbing side of the ladder must be 30 inches (76 cm). If obstructions are unavoidable, clearance may be reduced to 24 inches (61 cm), provided a deflection device is installed to guide workers around the obstruction.
- Step-across distance between the center of the steps or rungs of fixed ladders and the nearest edge of a landing area must be no less than 7 inches (18 cm) and no more than 12 inches (30 cm). A landing platform must be provided if the step-across distance exceeds 12 inches (30 cm).
- Fixed ladders without cages or wells must have at least a 15-inch (38 cm) clearance width to the nearest permanent object on each side of the centerline of the ladder.
- Fixed ladders must be provided with cages, wells, ladder safety devices or self-retracting lifelines where the length of climb is less than 24 feet (7.3 m) but the top of the ladder is at a distance greater than 24 feet (7.3 m) above lower levels.
- Side rails of through or side-step fixed ladders must extend 42 inches (1.1 m) above the top level or landing platform served by the ladder. Parapet ladders must have an access level at the roof if the parapet is cut to permit passage through it. If the parapet is continuous, the access level is the top of the parapet.
- Steps or rungs for through-fixed-ladder extensions must be omitted from the extension; and the extension of side rails must be flared to provide between 24 inches (61 cm) and 30 inches (76 cm) clearance between side rails.
- When safety devices are provided, the maximum clearance distance between side rail extensions must not exceed 36 inches (91 cm).
- Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder.

## Cages for Fixed Ladders

The requirements for cages for fixed ladders are as follows:

- Horizontal bands must be fastened to the side rails of rail ladders or directly to the structure, building or equipment for individual-rung ladders.
- Vertical bars must be on the inside of the horizontal bands and must be fastened to them.
- Cages must not extend less than 27 inches (68 cm), or more than 30 inches (76 cm) from the centerline of the step or rung and must not be less than 27 inches (68 cm) wide.
- Insides of cages must be clear of projections.
- Horizontal bands must be spaced at intervals not more than 4 feet (1.2 m) apart measured from centerline to centerline.
- Vertical bars must be spaced at intervals not more than 9.5 inches (24 cm), measured centerline to centerline.
- Bottoms of cages must be between 7 feet (2.1 m) and 8 feet (2.4 m) above the point of access to the bottom of the ladder. The bottom of the cage must be flared not less than 4 inches (10 cm) between the bottom horizontal band and the next higher band.
- Tops of cages must be a minimum of 42 inches (1.1 m) above the top of the platform or the point of access at the top of the ladder. There must be a way to access the platform or other point of access.

## Wells for Fixed Ladders

The requirements for wells for fixed ladders are as follows:

- Wells must completely encircle the ladder.
- Wells must be free of projections.
- Inside faces of wells on the climbing side of the ladder must extend between 27 inches (68 cm) and 30 inches (76 cm) from the centerline of the step or rung.
- Inside widths of wells must be at least 30 inches (76 cm).
- Bottoms of wells above the point of access to the bottom of the ladder must be between 7 feet (2.1 m) and 8 feet (2.4 m).

## Ladder Safety Devices and Related Support Systems for Fixed Ladders

The connection between the carrier or lifeline and the point of attachment to the body belt or harness must not exceed 9 inches (23 cm) in length. In addition,

ladder safety devices and related support systems on fixed ladders must conform to the following:

- All safety devices must be able to withstand, without failure, a drop test consisting of a 500-pound weight (226 kg) dropping 18 inches (41 cm).
- All safety devices must permit the worker to ascend or descend without continually having to hold, push or pull any part of the device, leaving both hands free for climbing.
- All safety devices must be activated within 2 feet (.61 m) after a fall occurs and limit the descending velocity of an employee to 7 feet/second (2.1 m/sec) or less.

### Requirements for Mounting Ladder Safety Devices for Fixed Ladders

The requirements for mounting ladder safety devices for fixed ladders are as follows:

- Mountings for rigid carriers must be attached at each end of the carrier, with intermediate mountings spaced along the entire length of the carrier, to provide the necessary strength to stop workers' falls.
- Mountings for flexible carriers must be attached at each end of the carrier. Cable guides for flexible carriers must be installed with a spacing between 25 feet (7.6 m) and 40 feet (12.2 m) along the entire length of the carrier, to prevent wind damage to the system.
- Design and installation of mountings and cable guides must not reduce the strength of the ladder.
- Side rails and steps or rungs for side-step fixed ladders must be continuous in extension.

### Defective Ladders

Ladders needing repairs are subject to the following rules:

- Portable ladders with structural defects—such as broken or missing rungs, cleats or steps, broken or split rails, corroded components or other faulty or defective components—must immediately be marked defective or tagged with “Do Not Use” or similar language and withdrawn from service until repaired.
- Fixed ladders with structural defects—such as broken or missing rungs, cleats or steps, broken or split rails or corroded components—must be withdrawn from service until repaired.
- Defective fixed ladders are considered withdrawn from use when they are immediately tagged with “Do Not Use” or similar language, or marked in a manner that identifies them as defective, or blocked—such as with a plywood attachment that spans several rungs.

- Ladder repairs must restore the ladder to a condition meeting its original design criteria before the ladder is returned to use.

## Rules for Stairways

The rules covering stairways and their components generally depend on how and when stairs are used. Specifically, there are rules for stairs used during construction and stairs used temporarily during construction, as well as rules governing stair rails and handrails.

### Stairways Used During Construction

The following requirements apply to all stairways used during construction:

- Stairways that will not be a permanent part of the building under construction must have landings at least 30 inches deep and 22 inches wide (76 x 56 cm) at every 12 feet (3.7 m) or less of vertical rise.
- Stairways must be installed at least 30 degrees—and no more than 50 degrees—from the horizontal.
- Variations in riser height or stair tread depth must not exceed 1/4 inch in any stairway system, including any foundation structure used as one or more treads of the stairs.
- Doors and gates opening directly onto a stairway must have a platform that extends at least 20 inches (51 cm) beyond the swing of the door or gate.
- Metal pan landings and metal pan treads must be secured in place before filling.
- Stairway parts must be free of dangerous projections such as protruding nails.
- Slippery conditions on stairways must be corrected.
- Workers must not use spiral stairways that will not be a permanent part of the structure.

### Temporary Stairs

The following requirements apply to stairways used temporarily during construction.

Except during construction of the stairway,

- Do not use stairways with metal pan landings and treads if the treads and/or landings have not been filled in with concrete or other materials unless the pans of the stairs and/or landings are temporarily filled in with wood or other materials. All treads and landings must be replaced when worn below the top edge of the pan.
- Do not use skeleton metal frame structures and steps (where treads and/or landings will be installed later) unless the stairs are fitted with secured temporary

treads and landings.

**Note:** *Temporary treads must be made of wood or other solid material and installed the full width and depth of the stair.*

## Stair Rails

The following general requirements apply to all stair rails:

- Stairways with four or more risers or rising more than 30 inches (76 cm) in height—whichever is less—must be installed along each unprotected side or edge. When the top edge of a stair rail system also serves as a handrail, the height of the top edge must be no more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stair rail to the surface of the tread.
- Stair rails installed after March 15, 1991, must be not less than 36 inches (91.5 cm) in height.
- Top edges of stair rail systems used as handrails must not be more than 37 inches (94 cm) high nor less than 36 inches (91.5 cm) from the upper surface of the stair rail system to the surface of the tread. (If installed before March 15, 1991, not less than 30 inches).
- Stair rail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
- Ends of stair rail systems and handrails must be built to prevent dangerous projections, such as rails protruding beyond the end posts of the system.

In addition,

- Unprotected sides and edges of stairway landings must have standard 42-inch (1.1 m) guardrail systems.
- Intermediate vertical members, such as balusters used as guardrails, must not be more than 19 inches (48 cm) apart.
- Other intermediate structural members, when used, must be installed so that no openings are more than 19 inches (48 cm) wide.
- Screens or mesh, when used, must extend from the top rail to the stairway step and along the opening between top rail supports.

## Handrails

Requirements for handrails are as follows:

- Handrails and top rails of the stair rail systems must be able to withstand, without failure, at least 200 pounds (890 n) of weight applied within 2 inches (5 cm) of the top edge in any downward or outward direction, at any point along the top edge.

- Handrails must not be more than 37 inches (94 cm) high nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread.
- Handrails must provide an adequate handhold for employees to grasp to prevent falls.
- Temporary handrails must have a minimum clearance of 3 inches (8 cm) between the handrail and walls, stair rail systems and other objects.
- Stairways with four or more risers, or that rise more than 30 inches (76 cm) in height— whichever is less—must have at least one handrail.
- Winding or spiral stairways must have a handrail to prevent use of areas where the tread width is less than 6 inches (15 cm).

## Midrails

Midrails, screens, mesh, intermediate vertical members or equivalent intermediate structural members must be provided between the top rail and stairway steps to the stair rail system. When midrails are used, they must be located midway between the top of the stair rail system and the stairway steps.

## Training Requirements

Employers must train all employees to recognize hazards related to ladders and stairways, and instruct them to minimize these hazards. For example, employers must ensure that each employee is trained by a competent person in the following areas, as applicable:

- Nature of fall hazards in the work area;
- Correct procedures for erecting, maintaining and disassembling the fall protection systems to be used;
- Proper construction, use, placement and care in handling of all stairways and ladders; and
- Maximum intended load-carrying capacities of ladders used.

**Note:** *Employers must retrain each employee as necessary to maintain their understanding and knowledge on the safe use and construction of ladders and stairs.*

## Glossary

**cleat** — A ladder crosspiece of rectangular cross section placed on edge upon which a person may step while ascending or descending a ladder.

**double-cleat ladder** —A ladder with a center rail to allow simultaneous two-way traffic for employees ascending or descending.

**failure** — Load refusal, breakage or separation of components.

**fixed ladder** — A ladder that cannot be readily moved or carried because it is an integral part of a building or structure.

**handrail** — A rail used to provide employees with a handhold for support.

**job-made ladder** — A ladder that is fabricated by employees, typically at the construction site; non-commercially manufactured. **load refusal** — The point where the structural members lose their ability to carry the load.

**point of access** — All areas used by employees for work-related passage from one area or level to another.

**portable ladder** — A ladder that can be readily moved or carried.

**riser height** — The vertical distance from the top of a tread or platform/landing to the top of the next higher tread or platform/landing.

**side-step fixed ladder** — A fixed ladder that requires a person to get off at the top to step to the side of the ladder side rails to reach the landing.

**single-cleat ladder** — A ladder consisting of a pair of side rails connected together by cleats, rungs or steps.

**stair rail system** — A vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling to lower levels.

**temporary service stairway** — A stairway where permanent treads and/or landings are to be filled in at a later date.

**through fixed ladder** — A fixed ladder that requires a person getting off at the top to step between the side rails of the ladder to reach the landing.

**tread depth** — The horizontal distance from front to back of a tread, excluding nosing, if any.

# Personal Protective Equipment

## Introduction

Hazards exist in every workplace in many different forms: sharp edges, falling objects, flying sparks, chemicals, noise and a myriad of other potentially dangerous situations. The Occupational Safety and Health Administration (OSHA) requires that employers protect their employees from workplace hazards that can cause injury.

Controlling a hazard at its source is the best way to protect employees. Depending on the hazard or workplace conditions, OSHA recommends the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible. For example, building a barrier between the hazard and the employees is an engineering control; changing the way in which employees perform their work is a work practice control.

When engineering, work practice and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment (PPE) to their employees and ensure its use. Personal protective equipment, commonly referred to as “PPE,” is equipment worn to minimize exposure to a variety of hazards. Examples of PPE include such items as gloves, foot and eye protection, protective hearing devices (earplugs, muffs) hard hats, respirators and full body suits.

This course will help both employers and employees do the following:

- Understand the types of PPE.
- Know the basics of conducting a “hazard assessment” of the workplace.
- Select appropriate PPE for a variety of circumstances.
- Understand what kind of training is needed in the proper use and care of PPE.

## The Requirement for PPE

To ensure the greatest possible protection for employees in the workplace, the cooperative efforts of both employers and employees will help in establishing and maintaining a safe and healthful work environment.

In general, employers are responsible for:

- Performing a “hazard assessment” of the workplace to identify and control physical and health hazards.
- Identifying and providing appropriate PPE for employees.
- Training employees in the use and care of the PPE.
- Maintaining PPE, including replacing worn or damaged PPE.
- Periodically reviewing, updating and evaluating the effectiveness of the PPE program.

In general, employees should:

- Properly wear PPE,
- Attend training sessions on PPE,
- Care for, clean and maintain PPE, and
- Inform a supervisor of the need to repair or replace PPE.

Specific requirements for PPE are presented in many different OSHA standards, published in 29 CFR. Some standards require that employers provide PPE at no cost to the employee while others simply state that the employer must provide PPE.

## The Hazard Assessment

A first critical step in developing a comprehensive safety and health program is to identify physical and health hazards in the workplace. This process is known as a “hazard assessment.”

Potential hazards may be

physical or health-related and a comprehensive hazard assessment should identify hazards in both categories. Examples of physical hazards include moving objects, fluctuating temperatures, high intensity lighting, rolling or pinching objects, electrical connections and sharp edges. Examples of health hazards include overexposure to harmful dusts, chemicals or radiation.

The hazard assessment should begin with a walk-through survey of the facility to develop a list of potential hazards in the following basic hazard categories:

- Impact,
- Penetration,
- Compression (roll-over),
- Chemical,
- Heat/cold,
- Harmful dust,
- Light (optical) radiation, and
- Biologic.

In addition to noting the basic layout of the facility and reviewing any history of occupational illnesses or injuries, things to look for during the walk-through survey include:

- Sources of electricity.
- Sources of motion such as machines or processes where movement may exist that could result in an impact between personnel and equipment.
- Sources of high temperatures that could result in burns, eye injuries or fire.
- Types of chemicals used in the workplace.
- Sources of harmful dusts.
- Sources of light radiation, such as welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.
- The potential for falling or dropping objects.

- Sharp objects that could poke, cut, stab or puncture.
- Biologic hazards such as blood or other potentially infected material.

When the walk-through is complete, the employer should organize and analyze the data so that it may be efficiently used in determining the proper types of PPE required at the worksite. The employer should become aware of the different types of PPE available and the levels of protection offered. It is definitely a good idea to select PPE that will provide a level of protection greater than the minimum required to protect employees from hazards.

The workplace should be periodically reassessed for any changes in conditions, equipment or operating procedures that could affect occupational hazards. This periodic reassessment should also include a review of injury and illness records to spot any trends or areas of concern and taking appropriate corrective action. The suitability of existing PPE, including an evaluation of its condition and age, should be included in the reassessment.

Documentation of the hazard assessment is required through a written certification that includes the following information:

- Identification of the workplace evaluated;
- Name of the person conducting the assessment;
- Date of the assessment; and
- Identification of the document certifying completion of the hazard assessment.

## Selecting PPE

All PPE clothing and equipment should be of safe design and construction, and should be maintained in a clean and reliable fashion. Employers should take the fit and comfort of PPE into consideration when selecting appropriate items for their workplace. PPE that fits well and is comfortable to wear will encourage employee use of PPE. Most protective devices are available in multiple sizes and care should be taken to select the proper size for each employee. If several different types of PPE are worn together, make sure they are compatible. If PPE does not fit properly, it can make the difference between being safely covered or dangerously exposed. It may not provide the level of protection desired and may discourage employee use.

OSHA requires that many categories of PPE meet or be equivalent to standards developed by the American National Standards Institute (ANSI). ANSI has been preparing safety standards since the 1920s, when the first safety standard was approved to protect the heads and eyes of industrial workers. Employers who need to provide PPE in the categories listed below must make certain that any new equipment procured meets the cited ANSI standard. Existing PPE stocks

must meet the ANSI standard in effect at the time of its manufacture or provide protection equivalent to PPE manufactured to the ANSI criteria. Employers should inform employees who provide their own PPE of the employer's selection decisions and ensure that any employee-owned PPE used in the workplace conforms to the employer's criteria, based on the hazard assessment, OSHA requirements and ANSI standards. OSHA requires PPE to meet the following ANSI standards:

- Eye and Face Protection: ANSI Z87.1-1989 (USA Standard for Occupational and Educational Eye and Face Protection).
- Head Protection: ANSI Z89.1-1986.
- Foot Protection: ANSI Z41.1-1991.

For hand protection, there is no ANSI standard for gloves but OSHA recommends that selection be based upon the tasks to be performed and the performance and construction characteristics of the glove material. For protection against chemicals, glove selection must be based on the chemicals encountered, the chemical resistance and the physical properties of the glove material.

## Training Employees in the Proper Use of PPE

Employers are required to train each employee who must use PPE. Employees must be trained to know at least the following:

- When PPE is necessary.
- What PPE is necessary.
- How to properly put on, take off, adjust and wear the PPE.
- The limitations of the PPE.
- Proper care, maintenance, useful life and disposal of PPE.

Employers should make sure that each employee demonstrates an understanding of the PPE training as well as the ability to properly wear and use PPE before they are allowed to perform work requiring the use of the PPE. If an employer believes that a previously trained employee is not demonstrating the proper understanding and skill level in the use of PPE, that employee should receive retraining. Other situations that require additional or retraining of employees include the following circumstances: changes in the workplace or in the type of required PPE that make prior training obsolete.

The employer must document the training of each employee required to wear or use PPE by preparing a certification containing the name of each employee trained, the date of training and a clear identification of the subject of the certification.

## Eye and Face Protection

Employees can be exposed to a large number of hazards that pose danger to their eyes and face. OSHA requires employers to ensure that employees have appropriate eye or face protection if they are exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially infected material or potentially harmful light radiation.

Many occupational eye injuries occur because workers are not wearing any eye protection while others result from wearing improper or poorly fitting eye protection. Employers must be sure that their employees wear appropriate eye and face protection and that the selected form of protection is appropriate to the work being performed and properly fits each worker exposed to the hazard.

### Prescription Lenses

Everyday use of prescription corrective lenses will not provide adequate protection against most occupational eye and face hazards, so employers must make sure that employees with corrective lenses either wear eye protection that incorporates the prescription into the design or wear additional eye protection over their prescription lenses. It is important to ensure that the protective eyewear does not disturb the proper positioning of the prescription lenses so that the employee's vision will not be inhibited or limited. Also, employees who wear contact lenses must wear eye or face PPE when working in hazardous conditions.

### Eye Protection for Exposed Workers

OSHA suggests that eye protection be routinely considered for use by carpenters, electricians, machinists, mechanics, millwrights, plumbers and pipefitters, sheet metal workers and tinsmiths, assemblers, sanders, grinding machine operators, sawyers, welders, laborers, chemical process operators and handlers, and timber cutting and logging workers. Employers of workers in other job categories should decide whether there is a need for eye and face PPE through a hazard assessment.

Examples of potential eye or face injuries include:

- Dust, dirt, metal or wood chips entering the eye from activities such as chipping, grinding, sawing, hammering, the use of power tools or even strong wind forces.
- Chemical splashes from corrosive substances, hot liquids, solvents or other hazardous solutions.
- Objects swinging into the eye or face, such as tree limbs, chains, tools or ropes.
- Radiant energy from welding, harmful rays from the use of lasers or other radiant light (as well as heat, glare, sparks, splash and flying particles).

## Types of Eye Protection

Selecting the most suitable eye and face protection for employees should take into consideration the following elements:

1. Ability to protect against specific workplace hazards.
2. Should fit properly and be reasonably comfortable to wear.
3. Should provide unrestricted vision and movement.
4. Should be durable and cleanable.
5. Should allow unrestricted functioning of any other required PPE.

The eye and face protection selected for employee use must clearly identify the manufacturer. Any new eye and face protective devices must comply with ANSI Z87.1-1989 or be at least as effective as this standard requires. Any equipment purchased before this requirement took effect on July 5, 1994, must comply with the earlier ANSI Standard (ANSI Z87.1-1968) or be shown to be equally effective.

An employer may choose to provide one pair of protective eyewear for each position rather than individual eyewear for each employee. If this is done, the employer must make sure that employees disinfect shared protective eyewear after each use. Protective eyewear with corrective lenses may only be used by the employee for whom the corrective prescription was issued and may not be shared among employees.

Some of the most common types of eye and face protection include the following:

- **Safety spectacles.** These protective eyeglasses have safety frames constructed of metal or plastic and impact-resistant lenses. Side shields are available on some models.
- **Goggles.** These are tight-fitting eye protection that completely cover the eyes, eye sockets and the facial area immediately surrounding the eyes and provide protection from impact, dust and splashes. Some goggles will fit over corrective lenses.
- **Welding shields.** Constructed of vulcanized fiber or fiberglass and fitted with a filtered lens, welding shields protect eyes from burns caused by infrared or intense radiant light; they also protect both the eyes and face from flying sparks, metal spatter and slag chips produced during welding, brazing, soldering and cutting operations. OSHA requires filter lenses to have a shade number appropriate to protect against the specific hazards of the work being performed in order to protect against harmful light radiation.
- **Laser safety goggles.** These specialty goggles protect against intense concentrations of light produced by lasers. The type of laser safety goggles an employer chooses will depend upon the equipment and operating conditions in the workplace.

- **Face shields.** These transparent sheets of plastic extend from the eyebrows to below the chin and across the entire width of the employee's head. Some are polarized for glare protection. Face shields protect against nuisance dusts and potential splashes or sprays of hazardous liquids but will not provide adequate protection against impact hazards. Face shields used in combination with goggles or safety spectacles will provide additional protection against impact hazards.

Each type of protective eyewear is designed to protect against specific hazards. Employers can identify the specific workplace hazards that threaten employees' eyes and faces by completing a hazard assessment as outlined in the earlier section.

## Welding Operations

The intense light associated with welding operations can cause serious and sometimes permanent eye damage if operators do not wear proper eye protection. The intensity of light or radiant energy produced by welding, cutting or brazing operations varies according to a number of factors including the task producing the light, the electrode size and the arc current. The following table shows the minimum protective shades for a variety of welding, cutting and brazing operations in general industry and in the shipbuilding industry.

**Table 1**  
**Filter Lenses for Protection Against Radiant Energy**

Operations	Electrode size in 1/32" (0.8mm)	Arc current	Minimum* protective Shade
Shielded metal arc welding	< 3	< 60	7
	3 - 5	60 - 160	8
	5 - 8	160 - 250	10
	> 8	250 - 550	11
Gas metal arc welding and flux cored arc welding		< 60	7
		60 - 160	10
		160 - 250	10
		250 - 500	10
Gas tungsten arc welding		< 50	8
		50 - 150	8
		150 - 500	10
Air carbon (light)		< 500	10
Arc cutting (heavy)		500 - 1,000	11
Plasma arc welding		< 20	6
		20 - 100	8
		100 - 400	10
		400 - 800	11
Plasma arc cutting (light)** (medium)** (heavy)**		< 300	8
		300 - 400	9
		400 - 800	10
Torch brazing			3
Torch soldering			2
Carbon arc welding			14

**Table 1 (Continued)**  
**Filter Lenses for Protection Against Radiant Energy**

<b>Operations</b>	<b>Electrode size in 1/32" (0.8mm)</b>	<b>Arc current</b>	<b>Minimum* protective Shade</b>
Gas welding: Light	< 1/8	< 3.2	4
Gas welding: Medium	1/8 - 1/2	3.2 - 12.7	5
Gas welding: Heavy	> 1/2	> 12.7	6
Oxygen cutting: Light	< 1	< 25	3
Oxygen cutting: Medium	1 - 6	25 - 150	4
Oxygen cutting: Heavy	> 6	> 150	5

Source: 29 CFR 1910.133(a)(5).

\* As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxy-fuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

\*\* These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the work piece. The construction industry has separate requirements for filter lens protective levels for specific types of welding operations, as indicated in the table below:

**Table 2**  
**Construction Industry Requirements for Filter Lens Shade  
 Numbers for Protection Against Radiant Energy**

<b>Welding Operation</b>	<b>Shade Number</b>
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10 – 14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 to 6 inches	4 or 5
Heavy cutting, more than 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8- to 1/2-inch	5 or 6
Gas welding (heavy), more than 1/2-inch	6 or 8

Source: 29 CFR 1926.102(b)(1).

## Laser Operations

Laser light radiation can be extremely dangerous to the unprotected eye and direct or reflected beams can cause permanent eye damage. Laser retinal burns can be painless, so it is essential that all personnel in or around laser operations wear appropriate eye protection.

Laser safety goggles should protect for the specific wavelength of the laser and must be of sufficient optical density for the energy involved. Safety goggles intended for use with laser beams must be labeled with the laser wavelengths for which they are intended to be used, the optical density of those wavelengths and the visible light transmission.

The table below lists maximum power or energy densities and appropriate protection levels for optical densities 5 through 8.

<b>Intensity, CW maximum power density (watts/cm<sup>2</sup>) (O.D.)</b>	<b>Attenuation</b>	
	<b>Optical density</b>	<b>Attenuation factor</b>
10-2	5	105
10-1	6	106
1.0	7	107
10.0	8	108

Source: 29 CFR 1926.102(b)(2).

## Head Protection

Protecting employees from potential head injuries is a key element of any safety program. A head injury can impair an employee for life or it can be fatal. Wearing a safety helmet or hard hat is one of the easiest ways to protect an employee's head from injury. Hard hats can protect employees from impact and penetration hazards as well as from electrical shock and burn hazards.

Employers must ensure that their employees wear head protection if any of the following apply:

- Objects might fall from above and strike them on the head;
- They might bump their heads against fixed objects, such as exposed pipes or beams; or
- There is a possibility of accidental head contact with electrical hazards.

Some examples of occupations in which employees should be required to wear head protection include construction workers, carpenters, electricians, linemen, plumbers and pipefitters, timber and log cutters, welders, among many others. Whenever there is a danger of objects falling from above, such as working

below others who are using tools or working under a conveyor belt, head protection must be worn. Hard hats must be worn with the bill forward to protect employees properly.

In general, protective helmets or hard hats should do the following:

- Resist penetration by objects.
- Absorb the shock of a blow.
- Be water-resistant and slow burning.
- Have clear instructions explaining proper adjustment and replacement of the suspension and headband.

Hard hats must have a hard outer shell and a shock-absorbing lining that incorporates a headband and straps that suspend the shell from 1 to 1 1/4 inches (2.54 cm to 3.18 cm) away from the head. This type of design provides shock absorption during an impact and ventilation during normal wear.

Protective headgear must meet ANSI Standard Z89.1-1986 (Protective Headgear for Industrial Workers) or provide an equivalent level of protection. Helmets purchased before July 5, 1994 must comply with the earlier ANSI Standard (Z89.1-1969) or provide equivalent protection.

## Types of Hard Hats

There are many types of hard hats available in the marketplace today. In addition to selecting protective headgear that meets ANSI standard requirements, employers should ensure that employees wear hard hats that provide appropriate protection against potential workplace hazards. It is important for employers to understand all potential hazards when making this selection, including electrical hazards. This can be done through a comprehensive hazard analysis and an awareness of the different types of protective headgear available.

Hard hats are divided into three industrial classes:

- **Class A hard hats** provide impact and penetration resistance along with limited voltage protection (up to 2,200 volts).
- **Class B hard hats** provide the highest level of protection against electrical hazards, with high-voltage shock and burn protection (up to 20,000 volts). They also provide protection from impact and penetration hazards by flying/falling objects.
- **Class C hard hats** provide lightweight comfort and impact protection but offer no protection from electrical hazards.

Another class of protective headgear on the market is called a "bump hat," designed for use in areas with low

head clearance. They are recommended for areas where protection is needed from head bumps and lacerations. These are not designed to protect against falling or flying objects and are not ANSI approved. It is essential to check the type of hard hat employees are using to ensure that the equipment provides appropriate protection. Each hat should bear a label inside the shell that lists the manufacturer, the ANSI designation and the class of the hat.

### Size and Care Considerations

Head protection that is either too large or too small is inappropriate for use, even if it meets all other requirements. Protective headgear must fit appropriately on the body and for the head size of each individual. Most protective headgear comes in a variety of sizes with adjustable headbands to ensure a proper fit (many adjust in 1/8-inch increments). A proper fit should allow sufficient clearance between the shell and the suspension system for ventilation and distribution of an impact. The hat should not bind, slip, fall off or irritate the skin.

Some protective headgear allows for the use of various accessories to help employees deal with changing environmental conditions, such as slots for earmuffs, safety glasses, face shields and mounted lights. Optional brims may provide additional protection from the sun and some hats have channels that guide rainwater away from the face. Protective headgear accessories must not compromise the safety elements of the equipment.

Periodic cleaning and inspection will extend the useful life of protective headgear. A daily inspection of the hard hat shell, suspension system and other accessories for holes, cracks, tears or other damage that might compromise the protective value of the hat is essential. Paints, paint thinners and some cleaning agents can weaken the shells of hard hats and may eliminate electrical resistance. Consult the helmet manufacturer for information on the effects of paint and cleaning materials on their hard hats. Never drill holes, paint or apply labels to protective headgear as this may reduce the integrity of the protection. Do not store protective headgear in direct sunlight, such as on the rear window shelf of a car, since sunlight and extreme heat can damage them.

Hard hats with any of the following defects should be removed from service and replaced:

- Perforation, cracking, or deformity of the brim or shell;
- Indication of exposure of the brim or shell to heat, chemicals or ultraviolet light and other radiation (in addition to a loss of surface gloss, such signs include chalking or flaking).

Always replace a hard hat if it sustains an impact, even

if damage is not noticeable. Suspension systems are offered as replacement parts and should be replaced when damaged or when excessive wear is noticed. It is not necessary to replace the entire hard hat when deterioration or tears of the suspension systems are noticed.

## Foot and Leg Protection

Employees, who face possible foot or leg injuries from falling or rolling objects, or from crushing or penetrating materials, should wear protective footwear. Also, employees whose work involves exposure to hot substances or corrosive or poisonous materials must have protective gear to cover exposed body parts, including legs and feet. If an employee's feet may be exposed to electrical hazards, non-conductive footwear should be worn. On the other hand, workplace exposure to static electricity may necessitate the use of conductive footwear.

Examples of situations in which an employee should wear foot and/or leg protection include:

- When heavy objects such as barrels or tools might roll onto or fall on the employee's feet;
- Working with sharp objects such as nails or spikes that could pierce the soles or uppers of ordinary shoes;
- Exposure to molten metal that might splash on feet or legs;
- Working on or around hot, wet or slippery surfaces; and
- Working when electrical hazards are present.

Safety footwear must meet ANSI minimum compression and impact performance standards in ANSI Z41-1991 (American National Standard for Personal Protection-Protective Footwear) or provide equivalent protection. Footwear purchased before July 5, 1994, must meet or provide equivalent protection to the earlier ANSI Standard (ANSI Z41.1-1967). All ANSI approved footwear has a protective toe and offers impact and compression protection. But the type and amount of protection is not always the same.

Different footwear protects in different ways. Check the product's labeling or consult the manufacturer to make sure the footwear will protect the user from the hazards they face.

Foot and leg protection choices include the following:

- **Leggings** protect the lower legs and feet from heat hazards such as molten metal or welding sparks. Safety snaps allow leggings to be removed quickly.
- **Metatarsal guards** protect the instep area from impact and compression. Made of aluminum, steel, fiber or plastic, these guards may be strapped to the outside of shoes.

- **Toe guards** fit over the toes of regular shoes to protect the toes from impact and compression hazards. They may be made of steel, aluminum or plastic.
- **Combination foot and shin guards** protect the lower legs and feet, and may be used in combination with toe guards when greater protection is needed.
- **Safety shoes** have impact-resistant toes and heat-resistant soles that protect the feet against hot work surfaces common in roofing, paving and hot metal industries. The metal insoles of some safety shoes protect against puncture wounds. Safety shoes may also be designed to be electrically conductive to prevent the buildup of static electricity in areas with the potential for explosive atmospheres or nonconductive to protect workers from workplace electrical hazards.

### Special Purpose Shoes

**Electrically conductive shoes** provide protection against the buildup of static electricity. Employees working in explosive and hazardous locations such as explosives manufacturing facilities or grain elevators must wear conductive shoes to reduce the risk of static electricity buildup on the body that could produce a spark and cause an explosion or fire. Foot powder should not be used in conjunction with protective conductive footwear because it provides insulation, reducing the conductive ability of the shoes. Silk, wool and nylon socks can produce static electricity and should not be worn with conductive footwear. Conductive shoes must be removed when the task requiring their use is completed.

**Note:** *Employees exposed to electrical hazards must never wear conductive shoes.*

**Electrical hazard, safety-toe shoes** are nonconductive and will prevent the wearers' feet from completing an electrical circuit to the ground. These shoes can protect against open circuits of up to 600 volts in dry conditions and should be used in conjunction with other insulating equipment and additional precautions to reduce the risk of a worker becoming a path for hazardous electrical energy. The insulating protection of electrical hazard, safety-toe shoes may be compromised if the shoes become wet, the soles are worn through, metal particles become embedded in the sole or heel, or workers touch conductive, grounded items.

**Note:** *Nonconductive footwear must not be used in explosive or hazardous locations.*

### Foundry Shoes

In addition to insulating the feet from the extreme heat of molten metal, foundry shoes keep hot metal from lodging in shoe eyelets, tongues or other shoe

parts. These snug-fitting leather or leather-substitute shoes have leather or rubber soles and rubber heels. All foundry shoes must have built-in safety toes.

### Care of Protective Footwear

As with all protective equipment, safety footwear should be inspected prior to each use. Shoes and leggings should be checked for wear and tear at reasonable intervals. This includes looking for cracks or holes, separation of materials, broken buckles or laces.

The soles of shoes should be checked for pieces of metal or other embedded items that could present electrical or tripping hazards. Employees should follow the manufacturers' recommendations for cleaning and maintenance of protective footwear.

### Hand and Arm Protection

If a workplace hazard assessment reveals that employees face potential injury to hands and arms that cannot be eliminated through engineering and work practice controls, employers must ensure that employees wear appropriate protection. Potential hazards include skin absorption of harmful substances, chemical or thermal burns, electrical dangers, bruises, abrasions, cuts, punctures, fractures and amputations. Protective equipment includes gloves, finger guard and arm coverings or elbow-length gloves.

Employers should explore all possible engineering and work practice controls to eliminate hazards and use PPE to provide additional protection against hazards that cannot be completely eliminated through other means. For example, machine guards may eliminate a hazard. Installing a barrier to prevent workers from placing their hands at the point of contact between a table saw blade and the item being cut is another method.

### Types of Protective Gloves

There are many types of gloves available today to protect against a wide variety of hazards. The nature of the hazard and the operation involved will affect the selection of gloves. The variety of potential occupational hand injuries makes selecting the right pair of gloves challenging. It is essential that employees use gloves specifically designed for the hazards and tasks found in their workplace because gloves designed for one function may not protect against a different function even though they may appear to be an appropriate protective device.

The following are examples of some factors that may influence the selection of protective gloves for a workplace.

- Type of chemicals handled.

- Nature of contact (total immersion, splash, etc.).
- Duration of contact.
- Area requiring protection (hand only, forearm, arm).
- Grip requirements (dry, wet, oily).
- Thermal protection.
- Size and comfort.
- Abrasion/resistance requirements.

Gloves made from a wide variety of materials are designed for many types of workplace hazards. In general, gloves fall into four groups:

1. Gloves made of leather, canvas or metal mesh;
2. Fabric and coated fabric gloves;
3. Chemical- and liquid-resistant gloves;
4. Insulating rubber gloves

### Leather, Canvas or Metal Mesh Gloves

Sturdy gloves made from metal mesh, leather or canvas provides protection against cuts and burns. Leather or canvas gloves also protect against sustained heat.

- **Leather gloves** protect against sparks, moderate heat, blows, chips and rough objects.
- **Aluminized gloves** provide reflective and insulating protection against heat and require an insert made of synthetic materials to protect against heat and cold.
- **Aramid fiber gloves** protect against heat and cold, are cut-resistant and abrasive-resistant. They also wear well.
- **Synthetic gloves** of various materials offer protection against heat and cold are cut-resistant and abrasive-resistant and may withstand some diluted acids. These materials do not stand up against alkalis and solvents.

### Fabric and Coated Fabric Gloves

Fabric and coated fabric gloves are made of cotton or other fabric to provide varying degrees of protection.

- **Fabric gloves** protect against dirt, slivers, chafing and abrasions. They do not provide sufficient protection for use with rough, sharp or heavy materials. Adding a plastic coating will strengthen some fabric gloves.
- **Coated fabric gloves** are normally made from cotton flannel with napping on one side. By coating the unnapped side with plastic, fabric gloves are transformed into general-purpose hand protection offering slip-resistant qualities. These gloves are used for tasks ranging from handling bricks and wire to chemical laboratory containers. When selecting gloves to protect against chemical exposure hazards,

always check with the manufacturer or review the manufacturer's product literature to determine the gloves' effectiveness against specific workplace chemicals and conditions.

### Chemical- and Liquid-Resistant Gloves

Chemical-resistant gloves are made with different kinds of rubber: natural, butyl, neoprene, nitrile and fluorocarbon (viton); or various kinds of plastic: polyvinyl chloride (PVC), polyvinyl alcohol and polyethylene. These materials can be blended or laminated for better performance. As a general rule, the thicker the glove material, the greater the chemical resistance but thick gloves may impair grip and dexterity, having a negative impact on safety.

Some examples of chemical-resistant gloves include:

- **Butyl gloves** are made of a synthetic rubber and protect against a wide variety of chemicals, such as peroxide, rocket fuels, highly corrosive acids (nitric acid, sulfuric acid, hydrofluoric acid and red-fuming nitric acid), strong bases, alcohols, aldehydes, ketones, esters and nitro compounds. Butyl gloves also resist oxidation, ozone corrosion and abrasion, and remain flexible at low temperatures. Butyl rubber does not perform well with aliphatic and aromatic hydrocarbons and halogenated solvents.
- **Natural (latex) rubber gloves** are comfortable to wear, which makes them a popular general-purpose glove. They feature outstanding tensile strength, elasticity and temperature resistance. In addition to resisting abrasions caused by grinding and polishing, these gloves protect workers' hands from most water solutions of acids, alkalis, salts and ketones. Latex gloves have caused allergic reactions in some individuals and may not be appropriate for all employees. Hypoallergenic gloves, glove liners and powderless gloves are possible alternatives for workers who are allergic to latex gloves.
- **Neoprene gloves** are made of synthetic rubber and offer good pliability, finger dexterity, and high density and tear resistance. They protect against hydraulic fluids, gasoline, alcohols, organic acids and alkalis. They generally have chemical and wear resistance properties superior to those made of natural rubber.
- **Nitrile gloves** are made of a copolymer and provide protection from chlorinated solvents such as trichloroethylene and perchloroethylene. Although intended for jobs requiring dexterity and sensitivity, nitrile gloves stand up to heavy use even after prolonged exposure to substances that cause other gloves to deteriorate. They offer protection when working with oils, greases, acids, caustics and alcohols but are generally not recommended for use with strong oxidizing agents, aromatic solvents, ketones and acetates.

**Note:** When selecting chemical-resistant gloves be sure to consult the manufacturer's recommendations, especially if the gloved hand(s) will be immersed in the chemical.

## Care of Protective Gloves

Protective gloves should be inspected before each use to ensure that they are not torn, punctured or made ineffective in any way. A visual inspection will help detect cuts or tears but a more thorough inspection by filling the gloves with water and tightly rolling the cuff towards the fingers will help reveal any pinhole leaks. Gloves that are discolored or stiff may also indicate deficiencies caused by excessive use or degradation from chemical exposure.

Any gloves with impaired protective ability should be discarded and replaced. Reuse of chemical-resistant gloves should be evaluated carefully, taking into consideration the absorptive qualities of the gloves. A decision to reuse chemically-exposed gloves should take into consideration the toxicity of the chemicals involved and factors such as duration of exposure, storage and temperature.

## Body Protection

Employees who face possible bodily injury of any kind that cannot be eliminated through engineering, work practice or administrative controls, must wear appropriate body protection while performing their jobs. In addition to cuts and radiation, the following are examples of workplace hazards that could cause bodily injury:

- Temperature extremes;
- Hot splashes from molten metal's and other hot liquids;
- Potential impacts from tools, machinery and materials;
- Hazardous chemicals.

There are many varieties of protective clothing available for specific hazards. Employers are required to ensure that their employees wear personal protective equipment only for the parts of the body exposed to possible injury. Examples of body protection include laboratory coats, coveralls, vests, jackets, aprons, surgical gowns and full body suits.

If a hazard assessment indicates a need for full body protection against toxic substances or harmful physical agents, the clothing should be carefully inspected before each use, it must fit each worker properly and it must function properly and for the purpose for which it is intended.

Protective clothing comes in a variety of materials, each effective against particular hazards, such as:

- **Paper-like fiber** used for disposable suits provides protection against dust and splashes.
- **Treated wool and cotton** adapts well to changing temperatures, is comfortable and fire-resistant and protects against dust, abrasions and rough and irritating surfaces.
- **Duck** is a closely woven cotton fabric that protects against cuts and bruises when handling heavy, sharp or rough materials.
- **Leather** is often used to protect against dry heat and flames.
- **Rubber, rubberized fabrics, neoprene and plastics** protect against certain chemicals and physical hazards. When chemical or physical hazards are present, check with the clothing manufacturer to ensure that the material selected will provide protection against the specific hazard.

## Hearing Protection

Determining the need to provide hearing protection for employees can be challenging. Employee exposure to excessive noise depends upon a number of factors, including:

- The loudness of the noise as measured in decibels (dB).
- The duration of each employee's exposure to the noise.
- Whether employees move between work areas with different noise levels.
- Whether noise is generated from one or multiple sources.

Generally, the louder the noise, the shorter the exposure time before hearing protection is required. For instance, employees may be exposed to a noise level of 90 dB for 8 hours per day (unless they experience a Standard Threshold Shift) before hearing protection is required. On the other hand, if the noise level reaches 115 dB hearing protection is required if the anticipated exposure exceeds 15 minutes.

Table 4, below, shows the permissible noise exposures that require hearing protection for employees exposed to occupational noise at specific decibel levels for specific time periods. Noises are considered continuous if the interval between occurrences of the maximum noise level is one second or less. Noises not meeting this definition are considered impact or impulse noises (loud momentary explosions of sound) and exposures to this type of noise must not exceed 140 dB. Examples of situations or tools that may result in impact or impulse noises are powder-actuated nail guns, a punch press or drop hammers.

**Table 4**  
**Permissible Noise Exposures**

<b>Duration per day, in hours</b>	<b>Sound level in dB*</b>
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

\*When measured on the A scale of a standard sound level meter at slow response.

Source: 29 CFR 1910.95, Table G-16.

If engineering and work practice controls do not lower employee exposure to workplace noise to acceptable levels, employees must wear appropriate hearing protection. It is important to understand that hearing protectors reduce only the amount of noise that gets through to the ears. The amount of this reduction is referred to as attenuation, which differs according to the type of hearing protection used and how well it fits. Hearing protectors worn by employees must reduce an employee's noise exposure to within the acceptable limits noted in Table 4.

Manufacturers of hearing protection devices must display the device's NRR on the product packaging. If employees are exposed to occupational noise at or above 85 dB averaged over an eight hour period, the employer is required to institute a hearing conservation program that includes regular testing of employees' hearing by qualified professionals.

Some types of hearing protection include:

- **Single-use earplugs** are made of waxed cotton, foam, silicone rubber or fiberglass wool. They are self-forming and, when properly inserted, they work as well as most molded earplugs.
- **Pre-formed or molded earplugs** must be individually fitted by a professional and can be disposable or reusable. Reusable plugs should be cleaned after each use.
- **Earmuffs** require a perfect seal around the ear. Glasses, facial hair, long hair or facial movements such as chewing may reduce the protective value of earmuffs.

## OSHA Assistance

OSHA can provide extensive help through a variety of programs, including technical assistance about effective safety and health programs, state plans, workplace consultations, voluntary protection programs, strategic partnerships, training and education, and more. An overall commitment to workplace safety and health can add value to your business, to your workplace and to your life.

## Safety and Health Program Management Guidelines

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. In fact, an effective safety and health program forms the basis of good worker protection and can save time and money (about \$4 for every dollar spent) and increase productivity and reduce worker injuries, illnesses and related workers' compensation costs.

To assist employers and employees in developing effective safety and health programs, OSHA published recommended Safety and Health Program Management Guidelines. These voluntary guidelines apply to all places of employment covered by OSHA.

The guidelines identify four general elements critical to the development of a successful safety and health management program:

- Management leadership and employee involvement.
- Work analysis.
- Hazard prevention and control.
- Safety and health training.

The guidelines recommend specific actions, under each of these general elements, to achieve an effective safety and health program.

# Nail Gun Safety

## A Guide for Construction Contractors

### Introduction

Nail guns are used every day on many construction jobs—especially in residential construction. They boost productivity but also cause tens of thousands of painful injuries each year. Nail gun injuries are common—one study found that 2 out of 5 residential carpenter apprentices experienced a nail gun injury over a four-year period. When they do occur, these injuries are often not reported or given any medical treatment. Research has identified the risk factors that make nail gun injuries more likely to occur. The type of trigger system and the extent of training are important factors. The risk of a nail gun injury is twice as high when using a multi-shot contact trigger as when using a single-shot sequential trigger nailer.

This course is for residential home builders and construction contractors, subcontractors, and supervisors. The course was developed to give construction employers the information they need to prevent nail gun injuries. Throughout the course types of triggers and key terms are described. The course also highlights what is known about nail gun injuries, including the parts of the body most often injured and the types of severe injuries that have been reported. Common causes of nail gun injuries are discussed, and six practical steps that contractors can take to prevent these injuries are described. These steps are:

- 1) Use full sequential trigger nail guns;
- 2) Provide training;
- 3) Establish nail gun work procedures;
- 4) Provide personal protective equipment (PPE);
- 5) Encourage reporting and discussion of injuries and close calls; and
- 6) Provide first aid and medical treatment.

This Nail Gun Safety course includes actual workplace cases along with a short section on other types of nail gun hazards and sources of additional information.

Nail guns are powerful, easy to operate, and boost productivity for nailing tasks. They are also responsible for an estimated 37,000 emergency room visits each year. Severe

nail gun injuries have led to construction worker deaths.

Nail gun injuries are common in residential construction. About two-thirds of these injuries occur in framing and sheathing work. Injuries also often occur in roofing and exterior siding and finishing.

How likely are nail gun injuries? A study of apprentice carpenters found that:

- 2 out of 5 were injured using a nail gun during their 4 years of training.
- 1 out of 5 were injured twice.
- 1 out of 10 were injured three or more times.

More than half of reported nail gun injuries are to the hand and fingers. One-quarter of these hand injuries involve structural damage to tendons, joints, nerves, and bones. After hands, the next most often injured are the leg, knee, thigh, foot, and toes. Less common are injuries to the forearm or wrist, head and neck, and trunk. Serious nail gun injuries to the spinal cord, head, neck, eye, internal organs, and bones have been reported. Injuries have resulted in paralysis, blindness, brain damage, bone fractures, and death.

Nail guns present a number of hazards and risks. We have prepared this publication to provide builders and contractors with the latest information on nail gun hazards and practical advice on the steps you should take to prevent nail gun injuries on construction jobs.

This course covers nail guns (also called nailers) used for fastening wood, shingles, and siding materials. The course refers specifically to pneumatic tools but also applies to nail guns that use gas, electric, or hybrid power sources. It does NOT cover powder actuated tools used for fastening material to metal or concrete. This course assumes that contractors are generally familiar with how nail guns work and the various types of specialized nail guns (for example, framing, roofing, flooring).

This course is applicable to all nail guns. The emphasis is on framing (“stick” and “coil”) nail guns because they fire the largest nails, are the most powerful, and are considered to be the most dangerous to use.

### - Worksite story -

*A 26-year-old Idaho construction worker died following a nail gun accident in April 2007. He was framing a house when he slipped and fell. During the fall, his finger was on the contact trigger of the nail gun he had been using. The nosepiece hit his head as he fell, driving a 3-inch nail into his skull. The nail injured his brain stem, causing his death. When inspected afterward, the safety controls on the nail gun were found to be intact. Death and serious injury can occur while using nail guns—even when they are working properly.*



## Triggers

Nail gun safety starts with understanding the various trigger mechanisms. Here is what you need to know:

### How triggers differ

All nailers rely on two basic controls: a finger trigger and a contact safety tip located on the nose of the gun. Trigger mechanisms can vary based on: 1) the order in which the controls are activated, and 2) whether the trigger can be held in the squeezed position to discharge multiple nails OR if it must be released and then squeezed again for each individual nail. Combining these variations gives four kinds of triggers. Some nail guns have a selective trigger switch which allows the user to choose among two or more trigger systems. Each trigger type is described below along with a summary of how the controls are activated.

### Full Sequential trigger

This is the safest type of nail gun trigger. This trigger will only fire a nail when the controls are activated in a certain order. First, the safety contact tip must be pushed into the work piece, then the user squeezes the trigger to discharge a nail. Both the safety contact tip and the trigger must be released and activated again to fire a second nail. Nails cannot be bump fired. Also known as singleshot trigger, restrictive trigger, or trigger fire mode.

#### Single nail:

Push safety contact, then squeeze trigger

#### Multiple nails:

Release both safety contact and trigger and repeat process

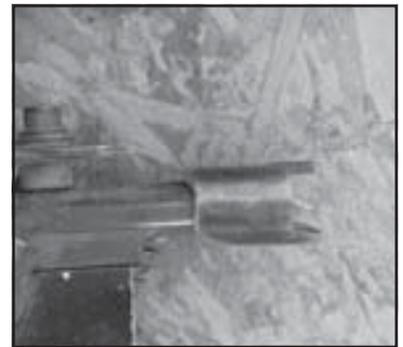
### Contact trigger

Fires a nail when the safety contact and trigger are activated in any order. You can push the safety contact tip first and then squeeze the trigger, or you can squeeze the trigger first and then push the safety contact tip. If the trigger is kept squeezed, a nail will be driven each time the safety contact is pushed in. This is called bump firing or bounce nailing, and all nails can be bump fired. This might also be known

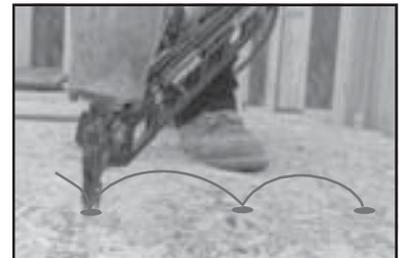
## Illustrated terms



Trigger



Contact safety tip



**Bump firing or bounce nailing is using a nail gun with a contact trigger held squeezed and bumping or bouncing the tool along the work piece to fire nails.**

**Red dots show path of motion.**



as bump trigger, multi-shot trigger, successive trigger, dual-action, touch trip, contact trip, and bottom fire.

#### Single nail:

Push safety contact, then squeeze trigger, or squeeze trigger, then push safety contact

#### Multiple nails:

Squeeze and hold trigger, then push safety contact to fire one nail, move and push safety contact again to fire additional nails

### Single Sequential trigger

Like the full sequential trigger, this trigger will only fire a nail when the controls are activated in a certain order. First, the safety contact tip must be pushed into the work piece. Then, the user squeezes the trigger to discharge a nail. To fire a second nail, only the trigger must be released. The safety contact tip can stay pressed into the work piece. Nails cannot be bump fired.

#### Single nail:

Push safety contact, then squeeze trigger

#### Multiple nails:

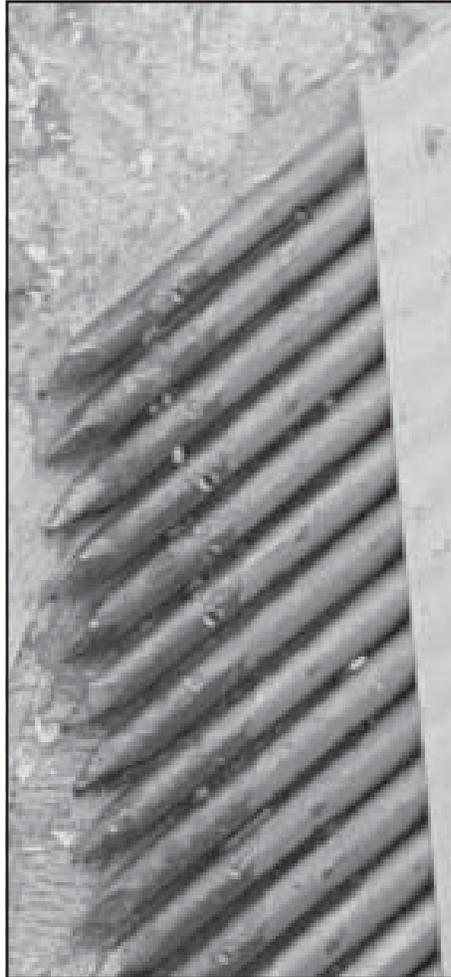
Release trigger, move tool, and squeeze trigger to fire additional nail

### Single Actuation trigger

Like the contact trigger, this trigger will fire a single nail when the safety contact and trigger are activated in any order. A second nail can be fired by releasing the trigger, moving the tool and squeezing the trigger again without releasing the safety contact tip. Note that some manufacturers refer to these triggers as “single sequential triggers,” but they are different. The first nail can be bump fired with a single actuation trigger but not with a true single sequential trigger.

#### Single nail:

Push safety contact, squeeze trigger, or squeeze trigger, then push safety contact to fire



#### Multiple nails:

Release trigger, move tool, and squeeze trigger to fire additional nail

### Other trigger terms

The International Staple, Nail and Tool Association (ISANTA) voluntary standard includes technical definitions for trigger “actuation systems.” Tool manufacturers have names for trigger modes such as “intermittent operation method” or “precision placement driving.” Contractors and workers use their own names for triggers and operating modes such as “single shot” and “multi-shot.”

The bottom line: contractors should check the tool label and manual for manufacturer-specific trigger names and operating information.

### Worksite story

*Two framers were working together to lay down and nail a subfloor. One framer was waiting and holding the nail gun with his finger on the contact trigger. The other framer was walking backwards toward him and dragging a sheet of plywood. The framer handling the plywood backed into the tip of the nail gun and was shot in the back. The nail nicked his kidney, but fortunately he recovered. As a result of this incident, the contractor switched to using only sequential triggers on framing nail guns. Co-workers can get injured if they bump into your contact trigger nail gun. You can prevent this by using a full sequential trigger.*

### Useful terms

**Recoil** is the rapid rebound or kickback after the nailer is fired.

**A double fire** occurs when a second nail unintentionally fires because the nailer recontacted the work piece after recoil. It can also occur if the safety contact slips while the user is positioning the nail gun. Several tool manufacturers offer “anti-double fire” features for their nail guns.

### You should know

Unintended nail discharge is a common source of injuries. A study of workers’ compensation records found that two-thirds of nail gun injury claims involved some type of unintended nail gun discharge or misfire.

## How Nail Gun Injuries Happen

There are seven major risk factors that can lead to a nail gun injury. Understanding them will help you to prevent injuries on your jobsites.

### Unintended nail discharge from double fire.

*Occurs with CONTACT triggers.*

The Consumer Product Safety Commission (CPSC) found that contact trigger nailers are susceptible to double firing, especially when trying to accurately place the nailer against the work piece. The CPSC found that a second unintended firing can happen faster than the user is able to react and release the trigger.

Unintended nails can cause injuries.

Double fire can be a particular problem for new workers who may push hard on the tool to compensate for recoil. It can also occur when the user is working in an awkward position, such as in tight spaces where the gun doesn't have enough space to recoil. The recoil of the gun itself can even cause a non-nail injury in tight spaces if the nail gun hits the user's head or face.

### Unintended nail discharge from knocking the safety contact with the trigger squeezed.

*Occurs with CONTACT and SINGLE ACTUATION triggers.*

Nail guns with contact and single actuation triggers will fire if the trigger is being held squeezed and the safety contact tip gets knocked or pushed into an object or person by mistake. For example, a framer might knock his leg going down a ladder or bump into a co-worker passing through a doorway. Contact trigger nailers can release multiple nails, and single actuation trigger nailers can release a single nail to cause injury.

Holding or carrying contact trigger or single actuation trigger nail guns with the trigger squeezed increases the risk of unintended nail discharge.

Construction workers tend to keep a finger on the trigger because it is more natural to hold and carry an 8-pound nail gun using a full, four-finger grip. Tool manufacturers, however, do warn against it.

### Nail penetration through lumber work piece.

*Occurs with ALL trigger types.*

Nails can pass through a work piece and either hit the worker's hand or fly off as a projectile (airborne) nail. A blow-out nail is one example. Blow-outs can occur when a nail is placed near a knot in the wood. Knots involve a change in wood grain, which creates both weak spots and hard spots that can make the nail change direction and exit the work piece. Nail penetration is especially a concern for placement work where a piece of lumber needs to be held in place by hand. If the nail misses or breaks through the lumber it can injure the non-dominant hand holding it.

### Nail ricochet after striking a hard surface or metal feature.

*Occurs with ALL trigger types.*

When a nail hits a hard surface, it has to change direction and it can bounce off the surface, becoming a projectile. Wood knots and metal framing hardware are common causes of ricochets. Problems have also been noted with ricochets when nailing into dense laminated beams. Ricochet nails can strike the worker or a co-worker to cause an injury.

### Missing the work piece.

*Occurs with ALL trigger types.*

Injuries may occur when the tip of the nail gun does not make full contact with the work piece and the discharged nail becomes airborne. This can occur when nailing near the edge of a work piece, such as a plate. Positioning the safety contact is more difficult in these situations and sometimes the fired nail completely misses the lumber. Injuries have also occurred when a nail shot through

## Illustrated terms



Common nail gun grip with finger on trigger



Nail penetration through the lumber is a special concern where the piece is held in place by hand



Toe-nailing

### Worksite story

*A carpenter apprentice on his first day ever using a nail gun injured his right leg. He was working on a step ladder and was in the process of lowering the nail gun to his side when the gun struck his leg and fired a nail into it. He had no training prior to using the nail gun. New worker training is important and should include hands-on skills.*

### You should know

Studies of residential carpenters found that the overall risk of nail gun injury is twice as high when using contact trigger nail guns compared to using sequential trigger nail guns.<sup>8</sup>

*Note that the studies could not quantify injury risks associated with specific tasks; it is likely that some nailing tasks are more dangerous than others.*

About 1 in 10 nail gun injuries happen to co-workers.<sup>9</sup> This is from either airborne (projectile) nails or bumping into a co-worker while carrying a contact trigger nail gun with the trigger squeezed.

A voluntary ANSI standard<sup>10</sup> calls for all large pneumatic framing nailers manufactured after 2003 to be shipped with a sequential trigger. However, these may not always be FULL SEQUENTIAL triggers. Contractors may need to contact manufacturers or suppliers to purchase a FULL SEQUENTIAL trigger kit.

plywood or oriented strand board sheathing missed a stud and became airborne.

### Awkward position nailing.

*Occurs with ALL trigger types.*

### Unintended discharges are a concern in awkward position work with CONTACT and SINGLE ACTUATION triggers.

Nailing in awkward positions where the tool and its recoil are more difficult to control may increase the risk of injury. These include toe-nailing, nailing above shoulder height, nailing in tight quarters, holding the nail gun with the non-dominant hand, nailing while on a ladder, or nailing when the user's body is in the line of fire (nailing towards yourself). Toe-nailing is awkward because the gun cannot be held flush against the work piece. Nailing from a ladder makes it difficult to position the nail gun accurately. Nailing beyond a comfortable reach distance from a ladder, elevated work platform, or leading edge also places the user at risk for a fall.

### Bypassing safety mechanisms.

*Occurs with ALL trigger types.*

Bypassing or disabling certain features of either the trigger or safety contact tip is an important risk of injury. For example, removing the spring from the safety contact tip makes an unintended discharge even more likely. Modifying tools can lead to safety problems for anyone who uses the nail gun. Nail gun manufacturers strongly recommend against bypassing safety features, and voluntary standards prohibit modifications or tampering.<sup>7</sup> OSHA's Construction standard at 29 CFR 1926.300(a) requires that all hand and power tools and similar equipment, whether furnished by the employer or the employee shall be maintained in a safe condition.

### Worksite story

*After his crews experienced many double fires and a related serious nail gun injury, a New Jersey contractor switched to using only sequential triggers. He believes he has eliminated the risk of double fire injuries and he estimates that the change has had only a slight impact on productivity—a few extra hours per house.*



# Six Steps to Nail Gun Safety

## 1 Use the full sequential trigger

The full sequential trigger is always the safest trigger mechanism for the job. It reduces the risk of unintentional nail discharge and double fires—including injuries from bumping into co-workers.

- At a minimum, provide full sequential trigger nailers for placement work where the lumber needs to be held in place by hand. Examples include building walls and nailing blocking, fastening studs to plates and blocks to studs, and installing trusses.

Unintended nail discharge is more likely to lead to a hand or arm injury for placement work compared to flat work, where the lumber does not need to be held in place by hand. Examples of flat work include roofing, sheathing, and subflooring.

- Consider restricting inexperienced employees to full sequential trigger nail guns starting out. Some contractors using more than one type of trigger on their jobs color-code the nail guns so that the type of trigger can be readily identified by workers and supervisors.
- Some contractors have been reluctant to use full sequential triggers fearing a loss of productivity. How do the different types of triggers compare?

The one available study had 10 experienced framers stick-build two identical small (8 ft x 10 ft) wood structures—one using a sequential trigger nail gun and one using a contact trigger nail gun. Small structures were built in this study so that there would be time for each carpenter to complete two sheds.

Average nailing time using the contact trigger was 10% faster, which accounted for less than 1% of the total building time when cutting and layout was included.<sup>11</sup> However, in this study the trigger type was less important to overall productivity than who was using the tool; this suggests productivity concerns should focus on the skill of the carpenter rather than on the trigger.

Although the study did not evaluate framing a residence or light commercial building, it shows that productivity is not just about the trigger. The wood structures built for the study did include common types of nailing tasks (flat nailing, through nailing, toe-nailing) and allowed comparisons for both total average nailing time and overall project time. The study did not compare productivity differences for each type of nailing task used to build the sheds.

## 2 Provide training

Both new and experienced workers can benefit from safety training to learn about the causes of nail gun injuries and specific steps to reduce them. Be sure that training is provided in a manner that employees can understand. Here is a list of topics for training:

- How nail guns work and how triggers differ.
- Main causes of injuries – especially differences among types of triggers.
- Instructions provided in manufacturer tool manuals and where the manual is kept.
- Hands-on training with the actual nailers to be used on the job. This gives each employee an opportunity to handle the nailer and to get feedback on topics such as:
  - How to load the nail gun
  - How to operate the air compressor
  - How to fire the nail gun
  - How to hold lumber during placement work
  - How to recognize and approach ricochet-prone work surfaces
  - How to handle awkward position work (e.g., toe-nailing and work on ladders)
  - How best to handle special risks associated with contact and single actuation triggers such as nail gun recoil and double fires. For example, coach new employees on how to minimize double fires by allowing the nail gun to recoil rather than continuing to push against the gun after it fires.
- What to do when a nail gun malfunctions.
- Training should also cover items covered in the following sections of the guidance, such as company nail gun work procedures, personal protective equipment, injury reporting, and first aid and medical treatment.

## 3 Establish nail gun work procedures

Contractors should develop their own nail gun work rules and procedures to address risk factors and make the work as safe as possible. Examples of topics for contractor work procedures include but are not limited to the following:

### Do's...

- Make sure that tool manuals for the nailers used on the job are always available on the jobsite.
- Make sure that manufacturers' tool labels and instructions are understood and followed.

## You should know

Training is important: untrained workers are more likely to experience a nail gun injury than a trained worker.<sup>12</sup>

Training does not trump triggers: trained workers using contact triggers still have twice the overall risk of injury as trained workers using sequential triggers.



- Check tools and power sources before operating to make sure that they are in proper working order. Take broken or malfunctioning nail guns out of service immediately.
- Set up operations so that workers are not in the line of fire from nail guns being operated by co-workers.
- Check lumber surfaces before nailing. Look for knots, nails, straps, hangers, etc. that could cause recoil or ricochet.
- Use a hammer or positive placement nailer when nailing metal joinery or irregular lumber.
- For placement work, keep hands at least 12 inches away from the nailing point at all times. Consider using clamps to brace instead of your hands.
- Always shoot nail guns away from your body and away from co-workers.
- Always disconnect the compressed air when:
  - Leaving a nailer unattended;
  - Travelling up and down a ladder or stairs;
  - Passing the nail gun to a co-worker;
  - Clearing jammed nails;
  - Performing any other maintenance on the nail gun.
- Recognize the dangers of awkward position work and provide extra time and precautions:
  - Use a hammer if you cannot reach the work while holding the nailer with your dominant hand.
  - Use a hammer or reposition for work at face or head height. Recoil is more difficult to control and could be dangerous.
  - Use a hammer or full sequential trigger nailer when working in a tight space. Recoil is more difficult to control and double fires could occur with contact triggers.
  - Take extra care with toe-nailing. Nail guns can slip before or during firing because the gun cannot be held flush against the work piece. Use a nail gun with teeth on the safety contact to bite into the work piece to keep the gun from slipping during the shot. Use the trigger to fire only after the safety contact piece is positioned.
- Recognize the dangers of nail gun work at height and provide extra time and precautions:
  - Set up jobs to minimize the need for nailing at height.
  - Consider using scaffolds instead of ladders.
  - If work must be done on ladders, use full sequential trigger nailers to prevent nail gun injuries which could occur from bumping a leg while climbing up or down a ladder.
  - Position ladders so you don't have to reach too far. Your belt buckle should stay between the side rails when reaching to the side.
  - Maintain three points of contact with the ladder at all times to prevent a fall—this means that clamps may need to be used for placement work. Holding a nailer in one hand and the work piece with the other provides only two points of contact (your feet). Reaching and recoil can make you lose your balance and fall. Falls, especially with contact trigger nailers, can result in nail gun injuries.

### Don'ts...

- Never bypass or disable nail gun safety features. This is strictly prohibited. Tampering includes removing the spring from the safety-contact tip and/or tying down, taping or otherwise securing the trigger so it does not need to be pressed. Tampering increases the chance that the nail gun will fire unintentionally both for the current user and anyone else who may use the nail gun. Nail gun manufacturers strongly recommend against tampering and OSHA

requires that tools be maintained in a safe condition. There is NO legitimate reason to modify or disable a nail gun safety device.

- Encourage your workers to keep their fingers off the trigger when holding or carrying a nail gun. If this is not natural, workers should use a full sequential nail gun or set down the nailer until they begin to nail again.
- Never lower the nail gun from above or drag the tool by the hose. If the nail-gun hose gets caught on something, don't pull on the hose. Go find the problem and release the hose.
- Never use the nailer with the non-dominant hand.

#### 4 Provide Personal Protective Equipment (PPE)

Safety shoes, which help protect workers' toes from nail gun injuries, are typically required by OSHA on residential construction sites. In addition, employers should provide, at no cost to employees, the following protective equipment for workers using nail guns:

- Hard hats
- High Impact eye protection – safety glasses or goggles marked ANSI Z87.1
- Hearing protection – either earplugs or earmuffs

#### 5 Encourage reporting and discussion of injuries and close calls

Studies show that many nail gun injuries go unreported. Employers should ensure that their policies and practices encourage reporting of nail gun injuries. Reporting helps ensure that employees get medical attention (see #6 below). It also helps contractors to identify unrecognized job site risks that could lead to additional injuries if not addressed.

Injuries and close calls provide teachable moments that can help improve crew safety.

If you have a safety incentive program, be sure that it does not discourage workers from reporting injuries. Employers that intentionally underreport work-related injuries will be in violation of OSHA's injury and illness recordkeeping regulation.

#### 6 Provide first aid and medical treatment

Employers and workers should seek medical attention immediately after nail gun injuries, even for hand injuries that appear to be minimal. Studies suggest that 1 out of 4 nail gun hand injuries can involve some type of structural damage such as bone fracture.<sup>13</sup> Materials such as nail strip glue or plastic or even clothing can get embedded in the injury and lead to infection. Barbs on the nail can cause secondary injury if the nail is removed incorrectly. These complications can be avoided by having workers seek immediate medical care.

#### Other Nail Gun Related Hazards

**Air pressure.** Pneumatic tools and compressor use are regulated under OSHA's Construction standard at 29 CFR 1926.302(b). The provisions in this standard that are relevant for nail guns are provided below.

- (1) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

**Note:** An OSHA letter of interpretation<sup>14</sup> allows the use of a quick disconnect with a pull-down sleeve to meet this requirement. It is composed of a male fitting (connector) and female fitting (coupling) that has a sleeve which must be pulled away from the end of the hose to separate the two fittings to prevent the tool from becoming accidentally disconnected.

#### Worksite story

*A construction worker accidentally drove a 16 penny framing nail into his thigh. It didn't bleed much and he didn't seek medical care. He removed the nail himself. Three days later he felt a snap in his leg and severe pain. In the emergency room, doctors removed a sheared off nail and found that his thigh bone had fractured. Not all injuries are immediately visible. Failure to seek medical care can result in complications and more serious injuries.*



**Worker using recommended PPE when working with nail guns: hard hat, safety glasses, and hearing protection**

- (3) All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 p.s.i. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
- (5) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.
- (6) The use of hoses for hoisting or lowering tools shall not be permitted.

**Noise.** Pneumatic nail guns produce short (less than a tenth of a second in duration) but loud “impulse” noise peaks: one from driving the nail and one from exhausting the air. Most nail gun manufacturers recommend that users wear hearing protection when operating a nailer.

Available information indicates that nail gun noise can vary depending on the gun, the work piece, air pressure, and the work setting. The type of trigger system does not appear to affect the noise level. Peak noise emission levels for several nailers ranged from 109 to 136 dBA.<sup>15,16</sup> These loud short bursts can contribute to hearing loss. Employers should provide hearing protection in the form of earplugs or muffs and ensure that they are worn correctly. Employers should also ask about noise levels when buying nail guns—studies have identified ways to reduce nail gun noise and some manufacturers may incorporate noise reduction features.

**Note:** OSHA's standard for exposure to continuous noise levels (29 CFR 1926.52) addresses both the noise level and the duration of exposure. In this standard, workers exposed for 15 minutes at 115 A-weighted decibels (dBA) have the same exposure as workers exposed for 8 hours at 90 dBA.

The NIOSH and OSHA limit for impulse noise is 140 decibels: above this level a single exposure can cause instant damage to the ear.

NIOSH recommends that an 8-hour exposure should not exceed 85 dBA and a one-second exposure should not exceed 130 dBA without using hearing protection.

**Musculoskeletal disorders.** Framing nail guns can weigh up to 8 pounds and many framing jobs require workers to hold and use these guns for long periods of time in awkward hand/arm postures. Holding an 8-pound weight for long periods of time can lead to musculoskeletal symptoms such as soreness or tenderness in the fingers, wrist, or forearm tendons or muscles. These symptoms can progress to pain, or in the most severe cases, inability to work. No studies have shown that one trigger type is any more or less likely to cause musculoskeletal problems from long periods of nail gun use. If use of a nail gun is causing musculoskeletal pain or symptoms of musculoskeletal disorders, medical care should be sought.

## Conclusion

Nail gun injuries are painful. Some cause severe injuries or death. Nail gun injuries have been on the rise along with the increased popularity of these powerful tools. These injuries can be prevented, and more and more contractors are making changes to improve nail gun safety. Take a look at your practices and use this course to improve safety on your job sites. Working together with tool gun manufacturers, safety and health professionals, and other organizations, we can reduce nail gun injuries.

## For Additional Information

### OSHA

Woodworking eTool—Handheld Nail/Stapling Guns [www.osha.gov/SLTC/etools/woodworking/production\\_handheldstaplegun.html](http://www.osha.gov/SLTC/etools/woodworking/production_handheldstaplegun.html)

### Center for Construction Research and Training (CPWR)

Nail Gun Hazard Alert [www.cpwr.com/hazpdfs/Nail%20Gun%20Safety%20pg%20flier%20FINAL.pdf](http://www.cpwr.com/hazpdfs/Nail%20Gun%20Safety%20pg%20flier%20FINAL.pdf) Nail Gun Injuries, Productivity, and Recommendations

[www.elcosh.org/en/document/1160/d001056/nail-guns%253A-injuries%252C-productivity-and-recommendations.html](http://www.elcosh.org/en/document/1160/d001056/nail-guns%253A-injuries%252C-productivity-and-recommendations.html)

### International Staple, Nail and Tool Association (ISANTA)

American National Standard SNT-101-2002—Safety Requirements for Portable, Compressed-Air-Actuated Fastener Driving Tools.

Home Page [www.isanta.org/](http://www.isanta.org/)

### Oregon OSHA

Pneumatic Nail and Staple Gun Safety Hazard Alert [www.oro sha.org/pdf/hazards/2993-21.pdf](http://www.oro sha.org/pdf/hazards/2993-21.pdf)

### California OSHA

Pneumatically Driven Nailers and Staplers CCR Title 8, Section 1704 [www.dir.ca.gov/Title8/1704.html](http://www.dir.ca.gov/Title8/1704.html)

### Nail gun video materials

WorkSafe British Columbia—Nail Gun Safety, and Safe Handling of Nail Guns [www2.worksafebc.com/Publications/Multimedia/Videos.asp?ReportID=35773](http://www2.worksafebc.com/Publications/Multimedia/Videos.asp?ReportID=35773)

Unsafe Handling of Nail Guns. Case study and video [www.speakingofsafety.ca/2011/04/28/unsafe-handling-of-nail-guns/](http://www.speakingofsafety.ca/2011/04/28/unsafe-handling-of-nail-guns/)

Sacramento Bee—Nail Gun Safety [www.youtube.com/watch?v=MsCu9luSRRY&feature=related](http://www.youtube.com/watch?v=MsCu9luSRRY&feature=related)

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- 7 American National Standard Institute (ANSI) [2002]. Safety Requirements for Portable, Compressed-Air-Actuated Fastener Driving Tools. ANSI SNT-101-2002 Sections 4.4: Tools shall not be modified or altered; 8.4.2.3: Improperly functioning tools must not be used; 8.4.2.5.1: Do not remove, tamper with, or otherwise cause the tool operating controls to become inoperable.
- 8 Lipscomb H, Nolan J, Patterson D, Dement D [2010]. Surveillance of Nail Gun Injuries by Journeyman Carpenters provides important Insight into Experiences of Apprentices. *New Solutions* 20(1) 95-114. Also Lipscomb H, Nolan J, Patterson D, Dement J [2008]. Prevention of Traumatic Nail Gun Injuries in Apprentice Carpenters: Use of Population-Based Measures to Monitor Intervention Effectiveness. *Am J Ind Med* 51:719-727.
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- 11 Lipscomb H, Nolan J, Patterson D, Makrozahopoulos D, Kucera K, Dement J [2008]. How Much Time is Safety Worth? A Comparison of Trigger Configurations on Pneumatic Nail Guns in Residential Framing. *Public Health Reports* 123:481-486.
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### Contacting NIOSH

To receive documents or more information about occupational safety and health topics, please contact NIOSH: 1-800-CDC-INFO (1-800-232-4636); TTY: 1-888-232-6348; e-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) or visit the NIOSH web site at [www.cdc.gov/niosh](http://www.cdc.gov/niosh).

### Contacting OSHA

To order additional copies of this publication, to get a list of other OSHA publications, to ask questions or to get more information, or to file a confidential complaint, contact OSHA at 1-800-321-OSHA (6742) or TTY: 1-877-889-5627 or go to [www.osha.gov](http://www.osha.gov).

DHHS (NIOSH) Publication Number 2011-202 | OSHA Publication Number 3459-8-11

# Construction Site Safety Practices Final Exam

1. According to OSHA estimates, how many injuries occur per year on ladders and stairways?
  - a. 25
  - b. 250
  - c. 2,500
  - d. 25,000
2. Masons are the only workers allowed to work in a controlled access zone without \_\_\_\_\_.
  - a. Safety cords
  - b. Guardrails
  - c. Ropes
  - d. None of the above
3. Which one of the statements below is NOT true about rules that apply to ladders
  - a. It is best to extend the ladder while in use
  - b. Keep areas clear around the top and bottom of ladders
  - c. Face the ladder when moving up or down
  - d. Use at least one hand to grasp the ladder when climbing
4. When portable ladders are used for access to an upper landing surface, the side rails must extend:
  - a. 1 foot about the upper landing surface
  - b. 2 feet above the upper landing surface
  - c. 3 feet above the upper landing surface
  - d. 4 feet above the upper landing surface
5. Control lines in a controlled access zone must be strong enough to sustain stress of how much weight?
  - a. Not less than 200 pounds
  - b. Not less than 250 pounds
  - c. Not less than 300 pounds
  - d. Not less than 400 pounds
6. Nail guns are responsible for an estimated \_\_\_\_\_ emergency room visits each year:
  - a. 15,000
  - b. 21,000
  - c. 37,000
  - d. 42,000
7. Studies of residential carpenters found that the overall risk of nail gun injury is \_\_\_\_\_ as high when using contact trigger nail guns compared to using sequential trigger nail guns:
  - a. almost
  - b. twice
  - c. three times
  - d. not
8. An example of a health hazard includes:
  - a. High intensity lighting
  - b. Overexposure to harmful dusts, chemicals or radiation
  - c. Rolling objects
  - d. Sharp edges
9. For heavy gas welding, what is the minimum protective shade number required for filter lenses?
  - a. 3
  - b. 4
  - c. 5
  - d. 6
10. Hard hats must have straps that suspend the shell from \_\_\_\_\_ away from the head:
  - a. 1 to 1 ¼ inches
  - b. 1 ¼ to 1 ½ inches
  - c. 1 ½ to 1 ¾ inches
  - d. 1 ¾ to 3 inches
11. Each year, on average, between \_\_\_\_\_ workers are killed and more than 100,000 are injured as a result of falls at construction sites:
  - a. 20 and 30
  - b. 150 and 200
  - c. 50 and 75
  - d. 5 and 10
12. Lanyards and vertical lifelines must have a minimum breaking strength of \_\_\_\_ pounds:
  - a. 1500
  - b. 2500
  - c. 3000
  - d. 5,000
13. To prevent cuts and lacerations, how thick must Toprails and Midrails of a guardrail system be?
  - a. 1/4 inch
  - b. 1/3 inch
  - c. 1/2 inch
  - d. 1 inch
14. One study on nail guns found that \_\_\_\_\_ out of 5 residential carpenter apprentices experienced a nail gun injury over a four-year period.
  - a. 1
  - b. 2
  - c. 3
  - d. 4

## Construction Site Safety Practices Final Exam *continued*

15. Which of the following are steps you can take to prevent nail gun injuries?
  - a. Provide training
  - b. Provide personal protective equipment
  - c. Establish nail gun work procedures
  - d. All of the above
16. Why does this course put an emphasis on framing (“stick” and “coil”) nail guns?
  - a. They fire the largest nails
  - b. They are the most powerful
  - c. They are considered to be the most dangerous to use
  - d. All of the above
17. Which of the following can cause a nail to ricochet, becoming a projectile?
  - a. Wood knots
  - b. Metal framing
  - c. Dense laminated beams
  - d. All of the above
18. Which of the following should ropes and straps used in lanyards, lifelines, and strength components of body belts and body harnesses be made of?
  - a. Hemp
  - b. Cotton
  - c. Synthetic Fibers
  - d. None of the above
19. For placement work, keep hands at least \_\_\_\_\_ inches away from the nailing point at all times.
  - a. 9 inches
  - b. 10 inches
  - c. 11 inches
  - d. 12 inches
20. Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of \_\_\_\_\_ pounds.
  - a. 1,000 pounds
  - b. 2,000 pounds
  - c. 3,000 pounds
  - d. 4,000 pounds
21. Which of the following is a true statement about safety nets?
  - a. Needs a border rope with a breaking strength of at 5,000 pounds
  - b. Installed with sufficient clearance underneath to prevent contact with surface below
  - c. Connections between safety net panels should be spaced no more than 6 inches apart
  - d. All of the above
22. Toeboards shall be capable of withstanding a force of at least \_\_\_\_\_ pounds applied in any downward or outward direction at any point along the toeboard.
  - a. 30 pounds
  - b. 40 pounds
  - c. 50 pounds
  - d. 60 pounds
23. A “Hole” is defined as a void or gap \_\_\_\_\_ inches or more in the least dimension in a floor, roof, or other walking/working surface.
  - a. 1 inch
  - b. 2 inches
  - c. 3 inches
  - d. 4 inches
24. A system including, but not limited to, an anchorage, connectors, and a body harness used to arrest an employee in a fall is called a \_\_\_\_\_:
  - a. Personal fall arrest system
  - b. Warning line system
  - c. Safety-monitoring system
  - d. None of the above
25. What is a rope grab?
  - a. A rope grab is not used in fall protection
  - b. A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall
  - c. A roof having a slope greater than 4 in 12
  - d. None of the above

# Florida Workers Compensation System

## INTRODUCTION

THE WORKERS' COMPENSATION SYSTEM GUIDE IS INTENDED TO GIVE ALL PARTIES A GENERAL OVERVIEW AND SUMMARY OF THE WORKERS' COMPENSATION SYSTEM. IT IS NOT INTENDED TO SUPERCEDE OR TAKE THE PLACE OF THE FLORIDA WORKERS' COMPENSATION LAW (CHAPTER 440, FLORIDA STATUTES) OR FLORIDA WORKERS' COMPENSATION CASE LAW.

ITS PURPOSE IS TO ASSIST ALL STAKEHOLDERS IN THEIR ROLES AND RESPONSIBILITIES. IT PROVIDES GENERAL INFORMATION AND REFERENCES THAT MAY ASSIST WITH RESOLVING ISSUES AND ANSWERING QUESTIONS.

## PART 1— Employee Section

### INJURED WORKER DUTIES:

#### 1. If you have an accident or are injured on the job you must:

- Tell your employer you have been injured, as soon as possible. The law requires that you report the accident or your knowledge of a job-related injury within 30 days of your knowledge of the accident or injury.
- When you do so, you must ask your employer what doctor you can see. You must see a doctor authorized by your employer or the insurance company.
- Your employer may tell you to call the insurance company handling your claim; the name and phone number should be on the “Broken Arm” poster that should be posted at your workplace.
- If it is an emergency and your employer is not available to tell you where to go for treatment, go to the nearest emergency room and let your employer know as soon as possible what has happened.

***Your employer is required by law to report your injury to the insurance company within 7 days of when you report your accident or injury. If they do not do this, and they do not give you a phone number for the insurance company to call, you can call the workers' compensation (WC) hotline for assistance at 1-800-342-1741.***

- After you or your employer report the injury to the insurance company, many companies will have an insurance claim adjuster call you within 24 hours to explain your rights and obligations.
  - If you receive a message and a number to call, you should call as soon as possible to find out

what you need to do to get medical treatment.

- Within 3-5 business days after you or your employer report the accident, you should receive an informational brochure explaining your rights and obligations, and a Notification Letter explaining the services provided by the Employee Assistance Office of the Division of Workers' Compensation. These forms may be part of a packet which may include some or all of the following:
  - A copy of your accident report or “First Report of Injury or Illness,” which you should read to make sure it is correct;
  - A fraud statement, which you must read, sign and return as soon as possible, or benefits may be temporarily withheld until you do so;
  - A release of medical records for you to sign and return; and
  - Medical mileage reimbursement forms that you should fill out, after seeking medical treatment, and send to your claims adjuster for reimbursement.

***If you do not receive a call or the information packet from the insurance company, you can call the WC hotline for assistance at 1-800-342-1741.***

#### 2. When you see the doctor:

- Give the doctor a full description of the accident or how you were injured.
- Answer all questions the doctor might have about any past or current medical conditions or injuries.
- Discuss with the doctor if the injury is related to work or not.
- If related to work, find out if you can work or not.
  - If you are released to work but can't return to your same job, you should get instructions from the doctor on what work you can and cannot do.
  - Keep and attend all appointments with your doctor, or benefits may be suspended.

#### 3. After seeing the doctor:

- Speak with your employer as soon as you leave the doctor. Tell your employer how much your job means to you, and explain to them what work the doctor said you can and cannot do.
  - If you are admitted to a hospital, call or have someone call your employer for you to explain what happened and where you are.
- Give your employer the doctor's note as soon as possible.
- Ask your employer if they have work for you to return to that does not require you to do things the doctor said you cannot do yet.
  - If yes, ask when you should report for work.

- If not, make sure your employer has a way to contact you if appropriate work becomes available.
- Contact the insurance company and let them know what the doctor said about your injuries and work status.
- You should continue to stay in contact with your employer and the insurance company throughout your treatment and recovery.

#### 4. Benefits you may receive:

- **Money you may be entitled to:**
- Indemnity Benefits: If you are unable to work for more than 7 days, you should receive money to partly replace what you were not able to earn after your accident.

*Note: Your weekly benefit can never exceed the maximum compensation rate for the year in which your accident or illness occurred. For a table of the maximum compensation rates go to:*

[http://www.myfloridacfo.com/division/WC/insurer/bma\\_rates.htm](http://www.myfloridacfo.com/division/WC/insurer/bma_rates.htm)

- ❖ Temporary total disability: If your doctor says you cannot work at all:
  - ❖ You should receive money equaling about 66 2/3% of your regular wages at the time you were hurt. Your benefit is paid to you beginning with the 8th day you lose time from work.
  - ❖ The first 7 days lost from work is only paid if you lose more than 21 days from work.
  - ❖ If your injury is critical, you may receive 80% of your regular wages for up to 6 months after the accident.
  - ❖ You can receive up to a total of 104 weeks of temporary total disability and/or temporary partial disability benefits.
- ❖ Temporary partial disability: If you can return to work, but you cannot earn the same wages you earned at the time you were hurt:
  - ❖ You will receive money equaling 80% of the difference between 80% of what you earned before your injury and what you are able to earn after your injury.

#### Example:

Your average weekly wage: \$320  
 (Earnings before injury) X .80 = \$256  
 Your weekly earning after injury: -\$150  
   \$106  
   \$106 X .80 = \$84.80

Weekly temporary partial disability benefit: \$84.80

- ❖ You can receive up to a total of 104 weeks of temporary total disability and/or temporary partial disability.

- ❖ Impairment benefits: Once your doctor says you are at Maximum Medical Improvement, you are as good as he or she expects you to get. At this point your doctor should evaluate you for:
  - ❖ Possible permanent work restrictions and,
  - ❖ A permanent impairment rating. If you receive a permanent impairment rating, you will receive money based on that rating.

- **Medical treatment:**

Your employer is responsible for providing medical treatment.

- Do not delay in getting a doctor's appointment from your employer or insurance company.
- **Do not go on your own to your private doctor for treatment.** The insurance company must authorize the doctor who is to treat you.
  - ❖ If you do not get a doctor's name from the insurance company, you should contact your adjuster and ask for a doctor.

- **Reemployment Services assistance you may receive:**

If you are unable to return to your job because of permanent work restrictions resulting from your on-the-job injury, you may obtain information or assistance from the Bureau of Employee Assistance and Ombudsman Office/Reemployment Services Section at the following website, by phone or by e-mail:

- <http://www.myfloridacfo.com/division/WC/employee/reemployment.htm>
- Telephone: (800) 342-1741 - option 4
- Email: [w cres@myfloridacfo.com](mailto:w cres@myfloridacfo.com)

*For assistance on how any of the above benefits are calculated, call the WC hotline at 1-800-342-1741.*

#### 5. If you have a dispute with your insurance company:

- First, try to talk about the problem with your adjuster or their supervisor.
- If you still need assistance, contact the WC hotline at 1-800-342-1741.
- If the insurance company still will not agree to pay the benefits that you believe you are entitled to, you can file a Petition for Benefits with the Office of the Judges of Compensation Claims.
  - **You may wish to hire an attorney to represent you in this action.**
  - See Appendix B, a flow chart of the dispute process.

*For assistance on how to fill out and file a Petition for Benefits, call the WC hotline at 1-800-342-1741.*

#### 6. Employee Workers' Compensation Criminal Violations:

The following are criminal violations of s. 440.105, F.S., that constitute a felony of the first, second or third degree depending on the monetary value of

the fraud as provided in s. 775.082, s. 775.083, or s. 775.084, F.S.:

- Filing a false claim of on-the-job injuries or exaggerating injuries.
  - An injured employee or any party making a claim of an on-the-job injury will be required to provide his or her personal signature attesting that he or she has reviewed, understands, and acknowledges the following statement:  
*“Any person who, knowingly and with intent to injure, defraud, or deceive any employer or employee, insurance company, or self-insured program, files a statement of claim containing any false or misleading information commits insurance fraud, punishable as provided in s. 817.234.”*
  - If the injured employee or party refuses to sign the document, benefits or payments shall be suspended until such signature is obtained.

## HOW TO GET MORE INFORMATION AND HELP WITH YOUR CLAIM:

### 1. Division of Workers’ Compensation Employee Assistance and Ombudsman Office:

- The Employee Assistance and Ombudsman Office (EAO) will assist you at no cost with questions or concerns you may have about your workers’ compensation claim.
- EAO works on your behalf to resolve issues with your workers’ compensation claim.
- EAO offices are located around the state to assist you.
  - Website: <http://www.myfloridacfo.com/division/WC/employee/default.htm>
  - [http://www.myfloridacfo.com/division/WC/employee/eao\\_offices.htm](http://www.myfloridacfo.com/division/WC/employee/eao_offices.htm)
  - Phone (toll free): 1-800-342-1741

### 2. The Division of Workers’ Compensation Website: [www.myfloridacfo.com/WC](http://www.myfloridacfo.com/WC)

- For additional information click on “Information and FAQs” on the left side of the Division’s homepage.

**NOTE:** See appendix for additional website information.

## PART 2— Employer Section

### EMPLOYER DUTIES:

#### 1. If you see an accident on the job or someone reports one:

- Contact your insurance company right away.
- Stay in contact with your employee and the

adjuster until the injured worker is back on the job.

#### 2. If the employee is released to work with restrictions:

- Get the doctor’s list of restrictions from the injured worker or directly from the doctor’s office, and
- Meet with the injured worker to see if work is available that he/she can do.
- If restricted work is available:
  - Discuss with the injured worker:
    - ❖ Starting time and date,
    - ❖ What you can pay him/her based on new job duties, and
  - Report the restricted work to the adjuster.
- Inform the adjuster:
  - When the injured worker is scheduled to return to restricted work.
  - If the injured worker will not be earning what he/she earned before:
    - ❖ Send the adjuster wage information on a weekly or bi-weekly basis to determine if temporary partial benefits are due.
  - If the injured worker is unable to, due to restrictions, continue working, or
  - If you can’t give him/her restricted work any longer, or
  - If the doctor releases him/her to regular work.

**For assistance, call the WC hotline at 1-800-342-1741.**

### EMPLOYER REQUIREMENTS:

#### 1. Posting Requirement:

- The “Broken Arm Poster” and the “Anti-Fraud Notice” should be posted in a conspicuous place and should identify the name of the insurance company providing coverage and where to call to report an accident or injury. Contact your insurance company to obtain the poster and the notice.

#### 2. Recording Requirement:

- Record all workplace injuries and retain the records for at least 2.5 years.

#### 3. Reporting Requirement:

- Report all workplace deaths to the Division within 24 hours of discovery.
  - Call: 1-800-219-8953
  - Fax: 1-850-413-1979
  - Email: [DFSfatalityreport@myfloridacfo.com](mailto:DFSfatalityreport@myfloridacfo.com)
- Note: This notification to the Division does not replace the claim administrator First report of Injury or Illness reporting requirement under 440.185(2), F.S.
- Report all job-related injuries to the insurance company within 7 days of discovery.

- Provide a copy of the injury report to the injured worker (Form DFS-F2-DWC-1).
- Report required wage information to the insurance company within 14 days of learning of an injury that will require the employee to miss work for more than 7 days or that results in a permanent impairment.
- If requesting the employee's authorization for release of social security benefit information, give the Form DFS-F2-DWC-14 to the employee, submit the Request for Social Security Disability Benefit Information to the Social Security Administration office nearest to the employee's address, and send a copy of the completed form to the Division within 14 days of the request (Form DFS-F2-DWC-14).

### **PENALTIES FOR LATE FILING OF A CLAIM THAT WAS DUE TO THE EMPLOYERS FAILURE TO TIMELY NOTIFY THE INSURER:**

If the First Report of Injury (DFS-F2-DWC-1) is filed late with the Division, due to the late reporting of the accident by the employer to the insurance company, the employer may be penalized for the late filing, according to the following schedule:

- \$100 for 1 through 7 days of untimely filing.
- \$200 for 8 through 14 days of untimely filing.
- \$300 for 15 through 21 days of untimely filing.
- \$400 for 22 through 28 days of untimely filing.
- \$500 for over 28 days of untimely filing.

In addition to the above administrative penalty paid to the Division, the employer may be liable for penalties and interest on the late payment of compensation, due to the late filing.

### **PENALTIES AND INTEREST FOR LATE PAYMENT OF COMPENSATION PAID DIRECTLY TO THE INJURED WORKER ALONG WITH THE INDEMNITY PAYMENT THAT WAS LATE:**

1. If any installment of compensation for death or dependency benefits, or compensation for disability benefits payable without an award is not paid within 7 days after it becomes due, there shall be added to such unpaid installment a penalty of an amount equal to 20 percent of the unpaid installment, which shall be paid at the same time as, and in addition to, such installment of compensation.
2. If any installment of compensation is not paid when it becomes due, the employer, insurance company or servicing agent shall pay interest at the rate of 12 percent per year from the date the installment becomes due until it is paid, whether such installment is payable without an order or under the terms of an order. The interest payment shall be the greater of the amount of interest due or \$5.

If you as an employer receive a notice from the Division about a late filing with a filing penalty due to the Division and penalties and interest due to the injured employee, you send the filing penalty payment to the Division and the penalty & interest payment, on the late indemnity payments, directly to the injured employee.

### **WORKERS' COMPENSATION COVERAGE/ COMPLIANCE REQUIREMENTS FOR THE EMPLOYER:**

Chapter 440, F.S., establishes workers' compensation coverage requirements for employers.

**1. Construction Industry:** An employer in the construction industry who employs one or more part- or full-time employees must obtain workers' compensation coverage. Sole proprietors, partners, and corporate officers are considered employees. Members of a limited liability company are considered corporate officers. Corporate officers may elect to exempt themselves from the coverage requirements of Chapter 440.

A construction industry contractor, who sub-contracts all or part of their work, must obtain proof of workers' compensation coverage or a Certificate of Election to be Exempt from all subcontractors, prior to work being done. If the sub-contractor is not covered or exempt, for purposes of workers' compensation coverage, the sub-contractor's employees shall become the statutory employees of the contractor. The contractor will be responsible to pay any workers' compensation benefits to the sub-contractor and its employees.

**2. Non-Construction Industry:** An employer in the non-construction industry, who employs four or more part- or full-time employees, must obtain workers' compensation coverage. Corporate officers are considered employees, unless they elect to exempt themselves from the coverage requirements of Chapter 440. Sole proprietors and partners in the non-construction industry are not considered to be employees unless they elect to be employees. Members of a limited liability company will be considered as corporate officers and employees, unless they elect to exempt themselves from the coverage requirements of Chapter 440.

**3. Agricultural Industry:** Agricultural employers with six or more regular employees and/or 12 or more seasonal employees, who work for more than 30 days, must obtain workers' compensation liability coverage for those employees.

**4. Out-of-State Employers:** An out-of-state employer engaged in work in Florida must immediately notify their insurance carrier that it has employees working in Florida. A company that has employees working in Florida must have a Florida workers' compensation insurance policy or an endorsement must be added

to the out-of-state policy that lists Florida in section 3.A. of the policy. A contractor working in Florida who contracts with an out-of-state subcontractor must obtain proof of a Florida workers' compensation policy or an endorsement to the out-of-state employer's policy that lists Florida in section 3.A. of the policy, on the declaration page. Otherwise, the Florida contractor's policy must include the out-of-state subcontractor and their employees per Chapter 440.10 (1) (g), Florida Statutes.

- **Extraterritorial Reciprocity:** Out-of-state employers whose home jurisdiction has in its statute an "extraterritorial reciprocity" clause allowing temporary employees from another jurisdiction (including Florida) to work under the "home state's" workers' compensation policy is permitted to work in Florida using the workers' compensation policy from their "home state", as long as the work is temporary in nature. Temporary is defined as no more than 10 consecutive days with a maximum of 25 total days in a calendar year. [For a list of the current jurisdictions who have an extraterritorial reciprocity statute, contact the Division of Workers' Compensation at 850.413.1609].

### OBTAINING REQUIRED COVERAGE:

1. **Coverage Options:** Contact a Florida-licensed insurance agent to obtain a workers' compensation policy. If the employer has applied for and been rejected by two non-affiliated workers' compensation insurers in the voluntary market, within the last sixty (60) days, they may contact the Florida Workers' Compensation Joint Underwriting Association (FWCJUA) at (941) 378-7400 or go to their website at [www.fwcjua.com](http://www.fwcjua.com). The employer may also consider leasing employees from a Professional Employer Organization or PEO. In this circumstance, the PEO becomes the employer and provides workers' compensation coverage to each employee who is paid by the leasing PEO.
2. **Accurate Employer Job Classification and Payroll:** Since workers' compensation premiums are based on the information provided by the employer, it is important that accurate information such as what type of work is being performed (i.e. interior trim carpentry, roofing, restaurant, clerical, etc.) and estimated payroll for each job classification code is reported to the insurance company. If any changes occur in the job duties or services performed or the employer's payroll amount during the policy term, the employer must notify its insurance company.
3. **Professional Employer Organization or Employee Leasing Company:** If an employer enters into an employee leasing agreement with a licensed employee leasing company, the agreement entails workers' compensation coverage only for employees listed with the employee leasing company.

The client company is responsible for workers' compensation coverage for all nonleased employees. The payroll for all employees must be paid through the leasing company. Any changes in job duties or status of an employee must be reported to the leasing company promptly.

4. **Individual Self Insurers:** Pursuant to chapter 440.38, F.S., an employer may become individually self insured and secure the payment of workers' compensation by providing proof of financial strength necessary to ensure timely payments of current and future claims. Authorization and regulation of individual self insurers is through the Division.
5. **Commercial Self-Insurance Funds:** Pursuant to chapter 624.462, F.S., a group of persons may form a commercial self-insurance fund for purposes of pooling and spreading liabilities for any commercial and/or casualty insurance. Authorization and regulation of commercial self-insurance funds is through the Office of Insurance Regulation.

### WORKERS' COMPENSATION EXEMPTION ELIGIBILITY REQUIREMENTS AND INFORMATION:

1. **General Information:** An individual who meets the eligibility requirements to obtain an exemption pursuant to s. 440.05, F.S., may elect an exemption from the coverage requirements of Chapter 440, F.S. Once an exemption is obtained, the exempted individual may not receive workers' compensation benefits when he/she sustains a work-related injury. Certificates of Election to be Exempt shall apply only to the corporate officer named on the Notice of Election to be Exempt and apply only within the scope of the business or trade listed on the Notice of Election to be Exempt. Exemptions are effective on the date they are issued by the Division.
2. **Key Exemption Eligibility Information:** An officer of a corporation who elects to be exempt may not recover workers' compensation benefits. Further, the corporation must be registered with the Florida Department of State, Division of Corporations. Eligibility requirements and required documentation are detailed in Chapter 440.05, Florida Statutes and are outlined below.

**A driver's license number or Florida ID number is required to obtain or renew a Certificate of Election to be Exempt.**

- A. **Non-construction industry corporate officer:**
  - The applicant must be listed as an officer of the corporation in the records of the Florida Department of State, Division of Corporations.
  - There is no limit to the number of corporate officers eligible for exemption.
  - There is no application fee.

- All Non-construction Industry Certificates of Exemption issued by the Division, on or after January 1, 2013, are valid for two years.
- Non-construction limited liability members are eligible for an exemption. The applicant must own at least 10% of the limited liability company.

**B. Construction industry corporate officer, including a member of a limited liability company (LLC):**

- The applicant must be listed as an officer of the corporation in the records of the Florida Department of State, Division of Corporations.
- The applicant must own at least 10 percent of the corporation or Limited Liability Company.
- A \$50 application fee is required.
- No more than three officers of a corporation (including LLC) or of any group of affiliated corporations (including LLCs) may elect to be exempt per Chapter 440.02 (15) (b) (2), Florida Statutes.
- All Construction Industry Certificates of Exemption issued by the Division are valid for two years.

**Out-of-state contractors that are corporations or limited liability companies can qualify as foreign corporations or foreign limited liability companies by filing specific forms and documentation with the Florida Division of Corporations. For more information, please call (850) 245-6051 or log on to [www.sunbiz.org](http://www.sunbiz.org).**

**3. How to Obtain an Exemption:** To access the DWC Notice of Election to be Exempt online application system, go to the Division of Workers' Compensation's website at [www.myfloridacfo.com/wc](http://www.myfloridacfo.com/wc) and select the "Apply for an Exemption" icon. For additional information concerning workers' compensation exemptions, please contact customer service at 850-413-1609.

**DIVISION OF WORKERS' COMPENSATION ENFORCEMENT AUTHORITY:**

**1. Enforcement and Authority:**

- The Florida Division of Workers' Compensation is responsible for enforcing employer compliance with the coverage requirements of the workers' compensation law. Compliance investigators have the authority to enter and inspect any place of business for purposes of ensuring employer compliance with workers' compensation law. Investigators can also request an employer's business records. An employer must produce the required business records within ten business days of receiving the Division's written request for records.
- The failure of an employer to comply with the workers' compensation coverage requirements

is considered to pose an immediate danger to public health, safety, and welfare; the Division **shall** issue a Stop-Work Order within 72 hours of determination of non-compliance, which requires the employer to cease all business operations.

- If an employer conducts business operations in violation of a Stop-Work Order, the employer shall be assessed an additional penalty of \$1,000 per day for each day of violation.

**2. A Stop-Work Order Can Be Issued:**

- When an employer who is required to secure Florida workers' compensation coverage fails to do so;
- When the employer fails to provide records requested by the Division of Workers' Compensation within ten business days of request;
- When an employer materially understates or conceals payroll, misrepresents or conceals employee duties or fails to utilize Florida's class codes and workers' compensation rates.

**3. A Stop-Work Order May Be Released:**

- When an employer provides proof of compliance and pays a penalty of \$1,000, as a down payment, and agrees to enter into a payment agreement with the Division for the full amount. The penalty is a minimum of \$1,000 and is based on the insurance premiums which should have been paid, but were not (evaded premium), multiplied by 2 for the prior two years.

**EMPLOYER WORKERS' COMPENSATION CRIMINAL VIOLATIONS:**

The following are criminal violations of s. 440.105, F.S., and constitute a misdemeanor of the first degree, punishable as provided in s. 775.082 or s. 775.083, F.S.

- It is unlawful to knowingly:
  - Coerce or attempt to coerce, as a precondition to employment or otherwise, an employee to obtain a certificate of election of exemption pursuant to s. 440.05, F.S.
  - Discharge or refuse to hire an employee or job applicant because the employee or applicant has filed a claim for benefits.
  - Discharge, discipline, or take any other adverse personnel action against any employee for disclosing information to the division or any law enforcement agency relating to any violation or suspected violation of any of the provisions of Chapter 440.
  - Fail to update applications for coverage as required by s. 440.381(1), F.S., within 7 days after the reporting date for any change in the required information, or to post notice of coverage pursuant to s. 440.40, F.S.

- Participate in the creation of the employment relationship in which the employee has used any false, fraudulent, or misleading oral or written statement as evidence of identity.

The following are criminal violations of 440.105, F.S., and constitute a felony of the first, second or third degree depending on the monetary value of the fraud as provided in s. 775.082, s. 775.083, or s. 775.084, F.S.:

- Working without workers' compensation coverage, if required.
- Submitting an altered or fraudulent certificate as proof of coverage for workers' compensation insurance or a false "exemption" certificate.
- Misclassifying employees to lower premiums or treating employees as subcontractors when they are not in order to hide or conceal payroll.
- Violating a stop-work order.

Employees and Employers can submit a fraud referral to Division of Insurance Fraud on line at <https://apps8.fdfs.com/first/> or by calling toll-free 1-800-378-0445 (inside Florida) or 850-413-3261 (outside Florida). A reward of up to \$25,000 may be offered to citizens for information leading to an arrest and conviction in complex fraud schemes.

## COMPLIANCE AND COVERAGE ASSISTANCE MAY BE OBTAINED FROM:

- 1. Construction Policy Tracking Database:** The Construction Policy Tracking Database provides information to contractors regarding the coverage status of the contactors they use. This easy-to-use system will send contractors automatic electronic notification of any changes to their sub-contractors' coverage status. The only action required of the contractor is to register and list the sub-contractors for whom he/she would like to receive coverage notification.
- 2. Proof of Coverage Database (Compliance):** The Compliance Database provides information regarding workers' compensation coverage and exemptions from workers' compensation for employers.
- 3. Noncompliance On-line Referral Form:** To report an employer you suspect has failed to secure required workers' compensation insurance coverage, go to the Division of Workers' Compensation's website at [www.myfloridacfo.com/wc](http://www.myfloridacfo.com/wc) and select the "Report Suspected Workers' Comp Non-Compliance" icon.
- 4. Compliance Stop-Work Order Database:** The Compliance Stop-Work Order Database lists employers that have been issued a stop-work order.
- 5. Notice of Election to be Exempt:** To access the DWC Notice of Election to be Exempt online application system, go to the Division of Workers' Compensation's website at [www.myfloridacfo.com/](http://www.myfloridacfo.com/)

[wc](#) and select the "Apply for an Exemption" icon. These and other databases can be found at <http://www.myfloridacfo.com/WC/>

## PART 3—Health Care Provider Section

### HEALTH CARE PROVIDER DUTIES:

1. A health care provider must comply with the workers' compensation statutes, rules and reimbursement manuals. Section 440.13, F.S., addresses the statutory guidelines for providing medical treatment and care under the workers' compensation health care delivery system. Ch. 69L-7, Florida Administrative Code (F.A.C.), addresses the health care provider's responsibilities for successfully participating and providing medical treatment under the workers' compensation system.
2. A health care provider must get authorization from the self-insured employer or insurance company before providing medical care to an injured worker, or payment may be denied. The DFS-F5-DWC-25 form is the required document that health care providers must use to request authorization for treatment. The request for authorization must be submitted to the insurance company if the employer is not self-insured.
  - Prior authorization is not required when emergency treatment and care, as defined in s.395.002, F. S., is needed to treat the injured employees medical condition(s). When an injured worker is being given emergency treatment, the provider may verify the name of the employer and/or insurance company in the Division's Proof of Coverage Database.
  - The self-insured employer or insurance company must respond to authorization requests for treatment by the end of the third business day after receiving a request, or within 10 days for bills exceeding \$1,000. A self-insured employer or insurance company's failure to respond to a written request for authorization within 3 or 10 business days, as required by statute, will constitute authorization. Payment for authorized treatments must be made within 45 days.
  - The billing and medical treatment report forms that must be used are identified in section 69L-7.710, F.A.C. (See appendix for forms and links).
3. Chapter 69L-7: Workers' Compensation Medical Reimbursement and Utilization Review specifically addresses the health care provider responsibility for:
  - Providing only care authorized by the insurance company and medically necessary to treat the compensable medical condition;

- Providing medical documentation, records and reports to support the medical necessity of the treatment rendered and to communicate to the insurance company, the medical condition of the injured employee;
- Identifying work limitations and restrictions to facilitate return to work;
- Properly completing and filing DFS-F5-DWC-25 forms within three business days of the initial treatment and, thereafter, within 24 hours of each subsequent or followup visit, upon occurrence of an actionable event or change in the injured employees' medical condition or the treatment plan, or at a maximum once every 30 days;
- Cooperating with efforts by the insurance company and the Division to resolve disputes arising from medical treatment and care rendered;
- Completing and filing medical claim bills consistent with established billing and reporting policies.

4. Only physicians licensed by the Florida Department of Health under chapters 458, 459, 460, 461, 463, or 466, F.S., can determine permanent impairment. The impairment rating guide to be used for calculation of impairment rating is specific to the date of accident as follows:

- **AMA, 3rd EDITION** for date of injury on or prior to 6/30/90.
- **MINNESOTA GUIDE** for date of injury on 07/01/90 through 06/20/93
- **1993 Florida Impairment Rating Guide (FIRG)** for date of injury on 06/21/93 through 01/07/97.
- **1996 FL Uniform P.I.R. Schedule** for date of injury on 01/08/97 and thereafter.

For further information, please refer to Florida law, s. 440.15(3)(b).

5. The Florida Workers' Compensation Health Care Provider Reimbursement Manual, contains the Maximum Reimbursement Allowances (MRA) determined by the Three-Member Panel, pursuant to Section 440.13(12), F.S. The Three-Member Panel establishes reimbursement policies, guidelines, codes and maximum reimbursement allowances for services and supplies provided by health care providers. The manual also includes payment policies for pharmacists and medical suppliers.

Ambulatory surgical centers should use the Florida Workers' Compensation Reimbursement Manual for Ambulatory Surgical Centers.

Hospitals should follow the Florida Workers' Compensation Reimbursement Manual for Hospitals.

6. Non-payment complaints may be filed with Medical Services Section via:

- Email: [WCMedBillNonpay@myfloridacfo.com](mailto:WCMedBillNonpay@myfloridacfo.com);
- Fax: 850.413.1982 ; or

- USPS: DWC-Medical Services Section, 200 East Gaines Street, Tallahassee, FL 32399

7. A health care provider must provide each carrier that has authorized them to provide workers' compensation medical services for reimbursement with a signed fraud statement, pursuant to section 440.105(7), Florida Statutes. A carrier cannot require the signed fraud statement more than once per year.

### MEDICAL BILL REIMBURSEMENT DISPUTES:

Florida's Workers' Compensation Law provides an opportunity for a health care provider to contest the reimbursement paid on a bill. The health care provider must file its Petition for Resolution of Reimbursement Dispute within 45 days of the provider's receipt of the notice of disallowance or adjustment of payment. Additional provider requirements are as follows:

- The Petition must be on the Petition for Resolution of Reimbursement Dispute (DFS-Form 3160-0023).
- The petition must be served on the carrier and on all affected parties by certified mail.
- The petition must be accompanied by all documents and records that support the allegations contained in the petition.

The carrier is allowed to defend its disallowance or adjustment of payment decision. The carrier has 30 days from receipt of the petition to file its response with the Department, with a copy sent to the provider. The carrier's response must include all documentation substantiating its disallowance or adjustment. Failure to respond timely constitutes a waiver of all carrier objections to the petition. The Department has 120 days, after receipt of all documentation, to provide the petitioner, carrier, and all affected parties a written determination of whether the carrier properly adjusted or disallowed payment. In issuing its decision, the Department must be guided by Florida's Workers' Compensation Law and relevant administrative rules. For additional information, please refer to Subsection 440.13(7), Florida Statutes, and Rule Chapter 69L-31, Florida Administrative Code.

### HEALTH CARE PROVIDER CRIMINAL VIOLATIONS:

The following are criminal violations of s. 440.105, F.S., and constitute a felony of the first, second or third degree depending on the monetary value of the fraud as provided in s. 775.082, s. 775.083, or s. 775.084, F.S.:

- Any physician licensed under chapter 458, 459, 460, 461, 463, or 466 or any other practitioner licensed under the laws of this state who knowingly and willfully assists, conspires with, or urges any person to fraudulently violate any of the provisions of this chapter.
- Any person or governmental entity licensed under

chapter 395 to maintain or operate a hospital in such a manner as to knowingly and willfully allow the use of the facility in a scheme or conspiracy to fraudulently violate any of the provisions of Chapter 440.

## PART 4—Insurance Company Section

### INSURANCE COMPANY DUTIES:

1. The Insurance Company has the responsibility to:

- Adjust claims without harassment, coercion, or intimidation.
  - Investigate any knowledge or notice of a claim to assure prompt delivery of disability and medical benefits to an injured worker and ensure an efficient and self-executing system.
    - This knowledge includes, but is not limited to, receipt of any information, written or verbal, from any source reporting an accident or injury or requesting authorization to treat an injury.
  - Electronically file policy, claims, and medical information with the Division.
  - File a First Report of Injury or Illness and mail copies to the injured worker and the employer.
  - Respond to requests for medical treatment by authorized doctors within 3 business days after receipt of a written request.
  - Send to the injured worker, within 3 days of knowledge of the injury, a brochure explaining the injured worker's rights and benefits under the law and the Employee Notification Letter.
- Obtain a signed fraud statement from the injured worker.
  - Pay the first installment of compensation for total disability or death benefits within 14 days after the employer receives notification of the injury or death.
    - This applies where the injured worker can't return to work and begins losing time from work immediately following the accident and continues to lose time past 7 days.
    - If the injured worker loses days from work that are not continuous, then the first installment of compensation is due on the 6th day after the first 8 calendar days of disability.
  - Investigate and, if denying the claim, do so within 14 days of obtaining knowledge of the accident or injury. If more than 14 days are needed to investigate the claim:
    - Send the 120-day letter to the injured worker;
    - Timely initiate benefits; and
    - If denied, file a denial of the claim within 120 days of the initial provision of benefits.
  - Pay, disallow, or deny all medical, dental, pharmacy and hospital bills properly submitted to the insurance company within 45 days after receipt of a completed bill on the proper form.
  - Obtain the DWC-25 form to document the work status and treatment plan of the injured worker.
  - Authorize or deny medical referrals in writing, from authorized health care provider, within 3 business days of receipt of the request.
    - If the referral for testing, examination or treatment is more than \$1,000, the authorization or denial must be made within 10 business days of receipt of the written request.

## Reporting responsibilities of the claims handler:

	Form	Rule
<b>1. Information for Employees or Employers</b>		
Mail an informational brochure to the injured worker within 3 business days after notification of the injury or illness.	DFS-F2-DWC-60 or DFS-F2-DWC-61	69L-3.0035
Annually mail an informational brochure to the employer.	DFS-F2-DWC-65 or DFS-F2-DWC-66	69L-3.0036
Provide a paper copy of the injury report to the worker and employer within three days when notified of an injury by phone or electronic data interchange (EDI)	DFS-F2-DWC-1 or Form IA-1	69L-3.0045
Provide a paper copy of the form DFS-F2-DWC-4 (or letter if applicable, pursuant to 69L-56 and the EDI Event Table) to the employer and employee for actions or changes specified in rule.	DFS-F2-DWC-4	69L-3.0091
Provide a paper copy of the form DFS-F2-DWC-12 to the employer and employee for any denial or rescission of benefits.	DFS-F2-DWC-12	69L-3.012
For dates of accident on or after 10/1/03 involving temporary disability, provide an informational letter to eligible injured workers explaining the benefits and requirements of temporary partial disability within five days of learning of the worker's release to restricted work.		69L-3.0191 69L-3.01915
<b>2. Forms Reported to the Division of Workers' Compensation</b>		
Proof of coverage (POC): Submit to the Division by electronic data interchange policy information for Certificates of Insurance, Endorsements, Reinstatements, Cancellations and Non-Renewals pursuant to the filing time periods in Rule 69L-56.210, F.A.C.	(IAIABC standards for POC, Release 2.1, 6/1/07 Edition and Supplement)	69L-56.100
Complete and submit an electronic FROI (First Report of Injury) or a FROI and SROI (Subsequent Report of Injury) combination as provided in 69L-56.300, F.A.C.. A FROI (First Report of Injury) or a FROI and SROI (Subsequent Report of Injury) combination as referenced in 69L-56.300, F.A.C. must be reported to the Division for lost-time and death cases and receive a Transaction Accepted Acknowledgement Code on or before 21 days after the Claim Administrator's knowledge of the injury, or as otherwise referenced in rule 69L-56.301, F.A.C.	IAIABC standards for Claims EDI Release 3 FROI, SROI (EDI), 01/01/09 Edition and Supplement	69L-56.301 (EDI)
Complete and submit an electronic SROI to report certain significant changes in a lost-time case (as specified in rule 69L-56.304 & .3045, F.A.C.) and receive a Transaction Accepted Acknowledgement Code on or before 14 days after the Claim Administrator has knowledge of the new or changed information.	IAIABC standards for Claims EDI Release 3 FROI, SROI (EDI), 01/01/09 Edition and Supplement	69L-3.0091 (paper) 69L-56.304 69L-56.3045 (EDI)
Upon denial of benefits or rescission of a prior denial, report such action to the Division on a DFS-F2-DWC-12 as provided in the rule. For electronic reporting in compliance with 69L-56.300, submit a FROI or a SROI as provided in the rule.	DFS-F2-DWC-12 (paper) FROI, SROI (EDI)	69L-56.3012 (EDI)
Complete and submit electronic periodic reports of cumulative benefits paid in lost-time cases on a SROI, and receive a Transaction Accepted Acknowledgement Code within 30 days after the intervals specified in rule 69L-56.3013, F.A.C.	IAIABC standards for Claims EDI Release 3 FROI, SROI (EDI), 01/01/09 Edition and Supplement	69L-56.3013 (EDI)

	Form	Rule
<b>Forms Reported to the Division of Workers' Compensation</b> <i>(continued)</i>		
Electronically submit all medical, dental, pharmacy, and hospital claims for both medical only and lost-time cases to the Division within 45-calendar days of when the medical bill is paid, adjusted, disallowed or denied. File all forms electronically in the format specified in the <i>Florida Medical EDI Implementation Guide</i> (MEIG) 2010.		69L-7.710
Within 14 days after request by the Division, file a completed Form DFS-F2-DWC-35 (Permanent Total Supplemental Worksheet) with the Division's Permanent Total Section.	DFS-F2-DWC-35	69L-3.0194 69L-3.01945
Within 14 days after a request by the Division, file a completed Form DFS-F2-DWC-33 (Permanent Total Offset Worksheet) with the Division's Permanent Total Section.	DFS-F2-DWC-33	69L-3.0194 69L-3.01945
Complete and submit an electronic FROI (First Report of Injury) with MTC AQ to electronically report any cases changing claim administration to the Division and receive a Transaction Accepted Acknowledgement Code on or before 21 days after the effective date of the new Claim Administrator's acquisition of the claim, in compliance with 69L-56.304, F.A.C.		69L-56.304 (EDI)
If requesting the employee's authorization for release of social security benefit information, furnish the Form DFS-F2-DWC-14 to the employee, submit the Request for Social Security Disability Benefit Information to the Social Security Administration office nearest to the employee's address, and send a copy of the completed form to the Division within 14 days of the request.	DFS-F2-DWC-14	69L-3.021

**Other forms for reporting information to the Division may be required for dates of injury prior to October 1, 2003. Please contact the Division for further information.**

### **SPECIAL DISABILITY TRUST FUND:**

The Special Disability Trust Fund (SDTF) was created by the Florida Legislature in 1955 and operates under the authority granted by Chapter 440.49, Florida Statutes. The SDTF was created to encourage the re-employment of injured workers by mitigating the potential liability to the employer from a second injury to the employee. The SDTF reimburses insurance companies and eligible self-insured employers (referred to as the employer/carrier) for expenses incurred due to claims from an employee who meets the eligibility requirements of the statute and case law. Section 440.49(7), Florida Statutes, limits reimbursement to injuries occurring prior to January 1, 1998. Thus, the SDTF has been prospectively abolished; although, the SDTF continues to receive, review, accept, and reimburse eligible claims and levy assessments against employer/carriers.

### **ASSESSMENTS:**

Insurance companies, assessable mutuals, self-insurance funds and individual self-insurers are required to pay the Division assessments to support the Workers' Compensation Administration Trust Fund and the Special Disability Trust Fund. The assessment is applied on a calendar year basis and is based upon actual and calculated premiums.

Please refer to <http://www.myfloridacfo.com/division/wc/rates.htm> for current and historic assessment rates.

### **PENALTIES THAT CAN BE ASSESSED AGAINST INSURANCE COMPANIES:**

#### **1. Medical CPS Timely Disposition Penalties:**

Pursuant to Section 440.20(8)(b), F.S., the Division shall impose penalties for late payments, disallowances or denials of medical, hospital, pharmacy, or dental bills that are below a 95% timely performance standard. The insurance company shall pay to the Workers' Compensation Administration Trust Fund a penalty of:

- Twenty-five dollars for each bill below the 95% timely performance standard, but meeting a 90% timely standard.
- Fifty dollars for each bill below a 90% timely performance standard.

#### **2. Medical CPS Timely Filing Penalties:**

Pursuant to Section 69L-24.006(2), F.A.C., insurance companies that fail to submit a minimum of 95% of all medical bills timely are subject to an administrative fine. Each untimely filed medical bill which falls below the 95% requirement is subject to the following penalty schedule:

- 1-30 calendar days late \$5;

- 31-60 calendar days late \$10;
- 61-90 calendar days late \$25;
- 91 or greater calendar days late \$50.

**3. Medical CPS Rejected Not Resubmitted Penalties:** Pursuant to Section 69L-24.006(2), F.A.C., each medical bill that does not pass the electronic reporting edits shall be rejected by the Division and considered not filed. If the medical bill remains rejected and not corrected, resubmitted and accepted by the Division for greater than 90 days, an administrative fine shall be assessed in the amount of \$50 for each such medical report.

**4. CPS Penalty Calculation for Each Untimely Filing of the First Report of Injury (DWC-1) pursuant to Section 440.185(9), F.S. and Section 69L-24.006(1)(b), F.A.C.:**

- \$100 for 1 through 7 days of untimely filing
- \$200 for 8 through 14 days of untimely filing
- \$300 for 15 through 21 days of untimely filing
- \$400 for 22 through 28 days of untimely filing
- \$500 for over 28 days of untimely filing

**5. Audit Penalties:**

- S. 440.20(8), F.S, states that the Division shall assess a \$50 penalty for each payment of indemnity that is below the minimum 95% performance standard and equal to or greater than a 90% timely payment performance standard. The Division shall assess a penalty of \$100 for each payment of compensation below the 90% timely payment performance standard.
- S. 440.525, F.S. and Rule 69L-24.007, F.A.C., Insurers Standards and Practices, states that willful or non-willful administrative penalties may be assessed for intentional violation in disregard for the unlawfulness acts, or failure to comply with a Department order. Unreasonable delay in claims handling, timeliness and accuracy of payments and reports under 440.13, 440.16 and 440.185, F.S. or patterns or practices. The penalties assessments shall be as follows:
  - \$20,000 for a single willful violation; not to exceed an aggregate of \$100,000 for all pattern and practice violations for same action.
  - \$2,500 for a non-willful violation, not to exceed an aggregate of \$10,000 for all pattern and practice violations arising from the same action.
- The entire Rule may be viewed at <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=69L-24>.

### **PENALTIES AND INTEREST FOR LATE PAYMENT OF COMPENSATION PAID DIRECTLY TO THE INJURED WORKER ALONG WITH THE INDEMNITY PAYMENT THAT WAS LATE:**

1. Pursuant to Section 440.20(6), F.S., if any installment

of compensation for death or dependency benefits, or compensation for disability benefits payable without an award is not paid within 7 days after it becomes due, there shall be added to such unpaid installment a penalty of an amount equal to 20 percent of the unpaid installment, which shall be paid at the same time as, and in addition to, such installment of compensation.

2. Pursuant to Section 440.20(8), F.S., if any installment of compensation is not paid when it becomes due, the employer, insurance company or servicing agent shall pay interest at the rate of 12 percent per year from the date the installment becomes due until it is paid, whether such installment is payable without an order or under the terms of an order. The interest payment shall be the greater of the amount of interest due or \$5.

### **INSURANCE COMPANIES UNLAWFUL ACTION:**

It shall be unlawful for any insurance entity to revoke or cancel a workers' compensation insurance policy or membership because an employer has returned an employee to work or hired an employee who has filed a workers' compensation claim.

### **INSURANCE COMPANIES ANTI-FRAUD RESPONSIBILITIES:**

Rule Chapter 69D-2, F.A.C. was adopted September 15, 2006, requiring insurance companies and health maintenance organizations (HMO) to file updated Special Investigations Unit (SIU Descriptions or anti-fraud plans pursuant to section 626.9891, F.S.

The type of filing required depends on the insurance company's volume of Florida annual direct written premium. Those insurance companies that write \$10 million or more in annual direct written premium are subject to s. 626.9891(1), F.S. and 69D-2.003, F.A.C. and those that write less than \$10 million in annual direct written premium are subject to s. 626.9891(2), F.S. and 69D-2.004, F.A.C.

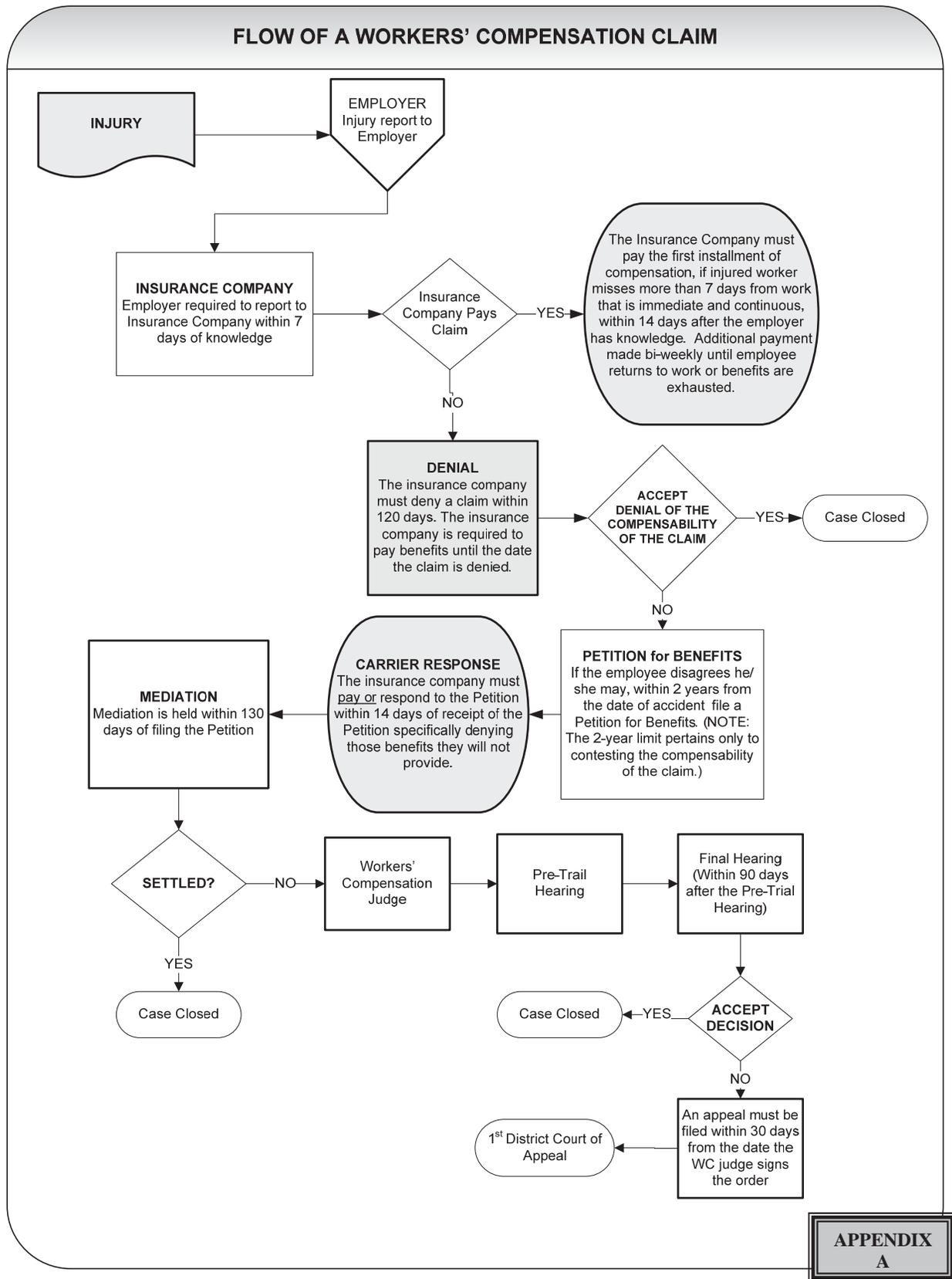
For instructions on required anti-fraud filings, click on "Instructions for Filing SIU Descriptions and Anti-fraud plans to IFPR" found on the Division of Fraud website <http://myfloridacfo.com/fraud/>. Filings are required to be submitted via Division of Insurance Fraud's on-line electronic database known as IFPR (Insurance Fraud Plan Reporting).

Use form DFS-L1-1689/SIU for more than \$10 million in Florida annual direct written premium.

Use form DFS-L1-1690/Anti-fraud plans if less than \$10 million in Florida direct written premium.

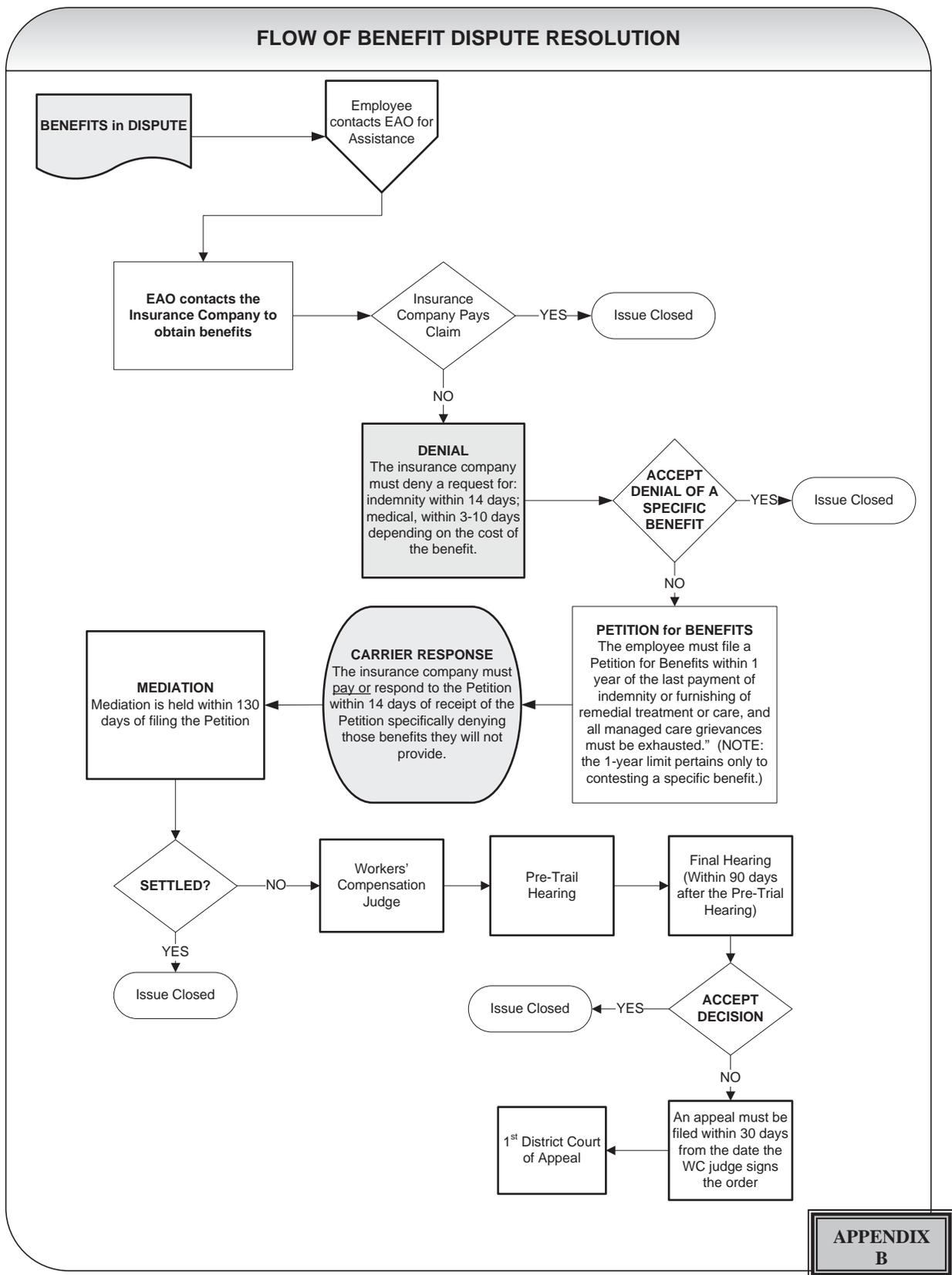
Insurance companies are required to report suspect fraud and can submit a fraud referral to Division of Insurance Fraud on-line at <https://apps8.fldfs.com/first/>.

# PART 5—Appendix



**APPENDIX  
A**

## FLOW OF BENEFIT DISPUTE RESOLUTION



**APPENDIX B**

## ADDITIONAL RESOURCES

WC website:  
<http://www.myfloridacfo.com/Division/WC>

WC hotline:1-800-342-1741

Date of Issuance: July 2014

## EMPLOYEE SECTION

The State of Florida Employee Assistance Office:

[http://www.myfloridacfo.com/division/wc/employee/eao\\_offices.htm](http://www.myfloridacfo.com/division/wc/employee/eao_offices.htm)

Email: [wceao@myfloridacfo.com](mailto:wceao@myfloridacfo.com)

The Maximum Compensation Rates:

[http://www.myfloridacfo.com/division/wc/insurer/bma\\_rates.htm](http://www.myfloridacfo.com/division/wc/insurer/bma_rates.htm)

WC Claims Database:

<https://apps.myfloridacfo.com/claimsweb/ClaimSearch.aspx>

WC Insurer/Claims Administrator Database:

[http://www.myfloridacfo.com/WCAPPS/Carrier/Car\\_Srch10.asp](http://www.myfloridacfo.com/WCAPPS/Carrier/Car_Srch10.asp)

WC Rehabilitation and Reemployment Program:

<http://www.myfloridacfo.com/division/WC/employee/reemployment.htm>

## EMPLOYER SECTION

Anti-Fraud Reward Program Notice Poster:

<http://www.myfloridacfo.com/division/WC/pdf/Anti-FraudNotice.pdf>

Broken Arm Poster:

[English](#) | [Spanish](#)

Bureau of Compliance District Offices:

[http://www.myfloridacfo.com/Division/WC/Employer/boc\\_offices.htm](http://www.myfloridacfo.com/Division/WC/Employer/boc_offices.htm)

Construction Policy Tracking Database:

<http://www.myfloridacfo.com/WCAPPS/Contractor/logon.asp>

Compliance Stop-Work Order Database:

<http://www.myfloridacfo.com/WCAPPS/SWO/SWOquery.asp>

Proof of Coverage Database (Compliance):

<https://apps8.fldfs.com/proofofcoverage/Search.aspx>

Noncompliance Referral Form (Whistle Blower):

[https://apps.fldfs.com/NonCompliance\\_Referral/mainpage.aspx](https://apps.fldfs.com/NonCompliance_Referral/mainpage.aspx)

WC Forms:

<http://www.myfloridacfo.com/Division/WC/PublicationsFormsManualsReports/Forms/Default.htm>

WC Compliance Proof of Coverage Query database:

<https://apps8.fldfs.com/proofofcoverage/Search.aspx>

## HEALTH CARE PROVIDER SECTION

Dental Claim Form, DFS-F5-DWC-11:

<http://ada.org/>

- A copy of the DWC-11 can be obtained by contacting the American Dental Association <http://ada.org/>.

- Instructions for using the DWC-11 [http://www.myfloridacfo.com/Division/WC/pdf/DWC-11instr\\_1-1-07.pdf](http://www.myfloridacfo.com/Division/WC/pdf/DWC-11instr_1-1-07.pdf)

Disputed Reimbursement Rule, Ch. 69L-31:

<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=69L-31>

Petition for Resolution of Reimbursement Dispute:

<http://www.myfloridacfo.com/division/WC/pdf/DFS-3160-0023.pdf>

Florida WC Uniform Medical Treatment/Status Reporting Form, DFS-F5-DWC-25:

[PDF Interactive PDF](#) [Excel Format](#) [Word Format](#)

- Instructions for using:

<http://www.myfloridacfo.com/Division/WC/pdf/DFS-F5-DWC-25instr.pdf>

Expert Medical Advisor Certification Application:

<http://www.myfloridacfo.com/Division/WC/pdf/DFS-3160-0021.pdf>

Health Insurance Claim Form, DFS-F5-DWC- 9 (CMS 1500):

Sample form: <http://www.cms.hhs.gov/cmsforms/downloads/CMS1500805.pdf>

To purchase this form for use, contact a local form vendor or call 1-800-482-9367 X.1770 for vendor information.

- Instructions for health care providers: <http://www.myfloridacfo.com/Division/WC/pdf/DWC-9instrHCP.pdf>

- Instructions for ambulatory surgical centers: [http://www.myfloridacfo.com/Division/WC/pdf/DWC-9instrASC\\_1-1-07.pdf](http://www.myfloridacfo.com/Division/WC/pdf/DWC-9instrASC_1-1-07.pdf)

- Instructions for Pain Management Programs: [http://www.myfloridacfo.com/Division/WC/pdf/DWC-9instrWHPM\\_1-1-07.pdf](http://www.myfloridacfo.com/Division/WC/pdf/DWC-9instrWHPM_1-1-07.pdf)

Hospital Billing Form (UB-04) (CM1450), DFS-F5-DWC-90 (see page 18):

Sample form: <http://www.cms.hhs.gov/Transmittals/downloads/R1104CP.pdf>

To purchase this form for use, contact a local form vendor or call 1-800-482-9367 X.1770 for vendor information.

- Instructions for using the DWC-90:

- [Hospital](#)
- [Ambulatory Surgical Centers](#)
- [Home Health Agencies](#)
- [Nursing Home Facilities](#)

**WC Compliance Proof of Coverage Query database:**  
<https://apps8.fldfs.com/proofofcoverage/Search.aspx>

**Statement of Charges for Drugs and Medical Supplies Form, DFS-F5-DWC-10,**

- Form: <http://www.myfloridacfo.com/Division/WC/pdf/DFS-F2-DWC-10.pdf>
- Instructions:  
<http://www.myfloridacfo.com/Division/WC/pdf/DFS-F2-DWC-10instr.pdf>

**Reimbursement Manuals:**  
<http://www.myfloridacfo.com/Division/WC/provider/reimbursement-manuals.htm>

**Laws regarding Florida's Workers' Compensation, Chapter 440, F.S.:**  
<http://www.flsenate.gov/Laws/Statutes/Chapter440>

**Rules regarding Florida's Workers' Compensation:**  
<https://www.flrules.org/Gateway/Division.asp?DivID=370>

## INSURANCE COMPANY SECTION

**Electronic Data Interchange (EDI) Requirements:**  
<http://www.myfloridacfo.com/Division/WC/EDI/default.htm>

**WC Publications and Reimbursement Manuals:**  
<http://www.myfloridacfo.com/Division/WC/PublicationsFormsManualsReports/Manuals/Default.htm>

**The Maximum Compensation Rates:**  
[http://www.myfloridacfo.com/Division/WC/insurer/bma\\_rates.htm](http://www.myfloridacfo.com/Division/WC/insurer/bma_rates.htm)

**Form DFS-L1-1689/SIU Description:**  
[Form DFS-L1-1689 \(Word\)](#)  
[Form DFS-L1-1689 \(PDF\)](#)

**Form DFS-L1-1690/Anti-fraud plans:**  
[Form DFS-L1-1690 \(Word\)](#)  
[Form DFS-L1-1690 \(PDF\)](#)

**Rule 69L-24, F.A.C., Workers' Compensation Insurers' Standard and Practices**  
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=69L-24>

## Florida Workers' Compensation System Final Exam

26. Your employer is required by law to report your injury to the insurance company within \_\_\_\_\_ days of when you report your accident or injury.
- 30
  - 45
  - 7
  - 10
27. Within \_\_\_\_\_ business days after you or your employer report the accident, you should receive an informational brochure explaining your rights and obligations
- 7 - 10
  - 14
  - 21
  - 3-5
28. Temporary total disability: If your doctor says you cannot work at all: you should receive money equaling about \_\_\_\_\_ of your regular wages at the time you were hurt.
- 75%
  - 66 2/3%
  - 100%
  - 50%
29. You can receive up to a total of \_\_\_\_\_ weeks of temporary total disability and/or temporary partial disability benefits.
- 52
  - 26
  - 75
  - 104
30. The employer must record all workplace injuries and retain the records for at least \_\_\_\_\_ years.
- 1
  - 5
  - 2.5
  - 3
31. An employer in the construction industry who employs \_\_\_\_\_ or more part- or full-time employees must obtain workers' compensation coverage.
- one
  - two
  - five
  - ten
32. A *Stop-Work Order May Be Released*: When an employer provides proof of compliance and pays a penalty of \_\_\_\_\_, as a down payment, and agrees to enter into a payment agreement with the Division for the full amount.
- \$500
  - \$10,000
  - \$1,000
  - \$1500
33. With regards to *Medical Bill Reimbursement Disputes*, the health care provider must file its Petition for Resolution of Reimbursement Dispute within \_\_\_\_\_ days of the provider's receipt of the notice of disallowance or adjustment of payment.
- 15
  - 30
  - 14
  - 45
34. Considering *Penalties That Can Be Assessed Against Insurance Companies*, pursuant to Section 69L-24.006(2), F.A.C., insurance companies that fail to submit a minimum of \_\_\_\_\_ of all medical bills timely are subject to an administrative fine.
- 75%
  - 95%
  - 90%
  - 65%
35. Regarding *Audit Penalties*, S. 440.20(8), F.S, states that the Division shall assess a \_\_\_\_\_ penalty for each payment of indemnity that is below the minimum 95% performance standard and equal to or greater than a 90% timely payment performance standard.
- \$50
  - \$75
  - \$100
  - \$150

# Business Practices for Construction Contractors

## What is the purpose of this course?

This course examines the basics of operating a small construction contracting business and provides construction tax tips for contractors of all sizes. This course is broken into 6 informational sections that discuss the following: the Florida lien law, the legal structures of businesses, the cost of goods sold, business expenses, net profit or loss, the difference between employees and independent contractors, and finally figuring self-employment tax.

## Part 1: Florida Lien Law

According to Florida law, if you are not paid-in-full for work or for materials you have provided, you have a right to enforce a claim for payment against the client's property. This claim is known as a construction lien.

If you as a contractor fail to pay subcontractors or material suppliers, those people who are owed money may look to the property owner for payment, even if you have been paid in full. This means that if a lien is filed against the owner's property, that property could be sold against his/her will to pay for labor, materials, or other services which you as the contractor may have failed to pay.

This section provides information regarding Florida Statute 713, Part 1, as it pertains to home construction and remodeling. It provides information on the steps a property owner can take to avoid construction liens on his/her property.

### Steps Property Owners Can Take

If you are hired as a contractor and the improvements cost more than \$2,500, the property owner has the right to do the following:

- The property owner may be liable if he/she has paid you, the contractor, and you then failed to pay your suppliers or subcontractors. A Release of Lien is a written statement that removes the owner's property from the threat of lien. Before the owner makes any payment, he/she has the legal right to request this waiver from suppliers and subcontractors covering the materials used and work performed on their property.
- The property owner can request from you, the contractor, (via certified or registered mail) a list of all subcontractors and suppliers who have a contract with you to provide services or materials to the owner's property.
- If your contract calls for partial payments before the work is completed, the property owner has a legal right to request a Partial Release of Lien covering all workers and materials used to that point.

- Before the property owner makes the last payment to you as the contractor, he/she can request an affidavit from you that specifies all unpaid parties who performed labor, services, or provided services or materials to the owner's property. The owner can legally require you to provide him/her with final releases from these parties before he/she makes the final payment.
- The property owner may file a Notice of Commencement before beginning his/her home construction or remodeling project. The local authority that issues building permits is required to provide this form to the owner. The owner would then record the form with the Clerk of the Circuit Court in the county where his/her property that is being improved is located. The owner can also post a certified copy of the record at the job site. (In lieu of a certified copy, the owner may post an affidavit stating that a Notice of Commencement has been recorded. The owner can attach a copy of the Notice of Commencement to the affidavit.)
- In addition, the building department is prohibited from performing the first inspection on the owner's property if the Notice of Commencement is not also filed with the building department. The owner can also supply a notarized statement that the Notice has been filed, with a copy attached.

The Notice of Commencement notes the intent to begin improvements, the location of the property, description of the work and the amount of bond (if any). It also identifies the property owner, contractor, surety, lender and other pertinent information. Failure to record a Notice of Commencement or incorrect information on the Notice could contribute to the property owner having to pay twice for the same work or materials.

### Notice to Owner from a Lienor

Prior to filing a lien, a lienor who does not have a direct contract with the owner, must serve the owner with a Notice to Owner. The Notice to Owner must state the lienor's name and address, and a description of the real property and the nature of the services or materials being furnished. The Notice to Owner must be served before commencing, or within 45 days of commencing, to furnish the services or materials (but before the owner's final payment to the contractor). A lien cannot be enforced unless the lienor has served the Notice to Owner as described above.

### Whose Responsibility is it To Get These Releases?

The owner can stipulate in the agreement with you, the contractor, that you must provide all releases of lien. If it is not a part of the contract, however, or the

owner is acting as their own contractor, **the owner** must get the releases.

If the owner borrows money to pay for the improvements and the lender pays you, the contractor, directly without obtaining releases, the lending institution may be responsible to the owner for any loss.

### What Can Happen If The Property Owner Doesn't Get Releases Of Lien?

The owner will not be able to sell his/her property unless all outstanding liens are paid. Sometimes a landowner can be forced to sell his/her property to satisfy a lien.

### Who Can Claim A Lien On A Property?

You the contractor, as well as laborers, materials suppliers, subcontractors and professionals such as architects, landscape architects, interior designers, engineers or land surveyors have the right to file a claim of lien for work or materials.

### Contesting a Lien

A lien is valid for one year, unless a lienor files a lawsuit to enforce the lien prior to the expiration of the year. An owner has a right to file a Notice of Contest of Lien during the one-year period. Upon the filing of a Notice of Contest of Lien, a lienor must file a lawsuit to enforce the lien within 60 days. Failure of the lienor to timely file a lawsuit renders the lien invalid.

## Part 2: Business Legal Structures

The most common legal structures of business are the sole proprietorship, partnership, and corporation. When beginning a business you must decide which form of business to use. Legal and tax considerations enter into this decision. Only tax decisions are discussed in this course.

- **Note:** Your form of business determines which
- income tax return form you have to file.

### Sole Proprietorships

A sole proprietorship is an unincorporated business that is owned by one individual. It is the simplest form of business organization to start and maintain. The business has no existence apart from you the owner. Its liabilities are your personal liabilities. You undertake the risks of the business for all assets owned, whether or not used in the business. You include the income and expenses of the business on your personal tax return

Note: If you are the sole member of a domestic limited liability company (LLC), you are not a sole proprietor if you elect to treat the LLC as a corporation.

If you are a sole proprietor the following table can help you determine some of the forms you may be required to file:

IF you are liable for:	THEN use Form:	Separate Instructions:
Income Tax	1040, U.S. Individual Income Tax Return and Schedule C (Form 1040), Profit or Loss from Business or Schedule C-EZ (Form 1040), Net Profit from Business	Instructions for 1040, U.S. Individual Income Tax Return Instructions for Schedule C (Form 1040)
Self-employment tax	Schedule SE (Form 1040), Self-Employment Tax	Instructions for Schedule SE (Form 1040)
Estimated tax	1040-ES, Estimated Tax for Individuals	
Social security and Medicare taxes and income tax withholding	941, Employer's Quarterly Federal Tax Return. 943, Employer's Annual Federal Tax Return for Agricultural Employees. 944, Employer's Annual Federal Tax Return	Instructions for Form 941 Instructions for Form 943 Instructions for Form 944
Providing information on social security and Medicare taxes and income tax withholding	W-2, Wage and Tax Statement (to employee) and W-3, Transmittal of Wage and Tax Statements (to the Social Security Administration)	
Federal unemployment (FUTA) tax	940, Employer's Annual Federal Unemployment (FUTA) Tax Return	Instructions for Form 940
Filing information returns for payments to nonemployees and transactions with other persons	See Information Returns	
Excise Taxes	Refer to the Excise Tax web page	

## Partnerships

A partnership is the relationship existing between two or more persons who join to carry on a trade or business. Each person contributes money, property, labor, or skill, and expects to share in the profits and losses of the business.

A partnership must file an annual information return to report the income, deductions, gains, losses, etc. from its operations, but it does not pay income tax. Instead, it “passes through” any profits or losses to its

partners. Each partner includes his or her share of the partnership’s items on his or her tax return.

Partners are not employees and should not be issued a Form W-2. The partnership must furnish copies of Schedule K-1 (Form 1065) to the partners by the date Form 1065 is required to be filed, including extensions.

If you are a partnership or a partner (individual) in a partnership, the following table can help you determine some of the forms that you may be required to file:

**Chart 1 (Partnership)**

<b>If you are a partnership then you may be liable for...</b>	<b>Use Form...</b>	<b>Separate Instructions...</b>
Annual return of income	1065, U.S. Return of Partnership Income	Instructions for Form 1065 U.S. Return of Partnership Income
Employment taxes: <ul style="list-style-type: none"> <li>• Social security and Medicare taxes and income tax withholding</li> <li>• Federal unemployment (FUTA) tax</li> <li>• Depositing employment taxes</li> </ul>	941, Employer’s Quarterly Federal Tax Return and 943, Employer’s Annual Federal Tax Return for Agricultural Employees (for farm employees) 940, Employer’s Annual Federal Unemployment (FUTA) Tax Return	Instructions for Form 941 Employers QUARTERLY Federal Tax Return Instructions for Form 943 Employers Annual Federal Tax Return for Agricultural Employees Instructions for Form 940 Employers Annual Federal Unemployment (FUTA) Tax Return
Excise Taxes	Refer to the Excise Tax Web page	
<b>If you are a partner (individual) in a partnership then you may be liable for...</b>	<b>Use Form...</b>	<b>Separate Instructions...</b>
Income Tax	1040, U.S. Individual Income Tax Return and Schedule E (Form 1040), Supplemental Income and Loss	Instructions for 1040 U.S. Individual Income Tax Return Instructions for Schedule E (Form 1040)
Self-employment tax	1040, U.S. Individual Income Tax Return and Schedule SE (Form 1040), Self-Employment Tax	Instructions for Schedule SE (Form 1040)
Estimated tax	1040-ES, Estimated Tax for Individuals	

## Husband and Wife Business

If you and your spouse jointly own and operate an unincorporated business and share in the profits and losses, you are partners in a partnership, whether or not you have a formal partnership agreement. Do not use Schedule C or C-EZ. Instead, file Form 1065, U.S. Return of Partnership Income.

## Corporations

In forming a corporation, prospective shareholders exchange money, property, or both, for the corporation’s capital stock. A corporation generally takes the same deductions as a sole proprietorship to

figure its taxable income. A corporation can also take special deductions. For federal income tax purposes, a C corporation is recognized as a separate taxpaying entity. A corporation conducts business, realizes net income or loss, pays taxes and distributes profits to shareholders.

The profit of a corporation is taxed to the corporation when earned, and then is taxed to the shareholders when distributed as dividends. This creates a double tax. The corporation does not get a tax deduction when it distributes dividends to shareholders. However, shareholders cannot deduct any loss of the corporation.

If you are a C corporation, use the information in the table below to help you determine some of the forms you may be required to file:

If you are a C corporation or an S corporation then you may be liable for...	Use Form...	Separate Instructions...
Income Tax	1120, U.S. Corporation Income Tax Return	Instructions for Form 1120 U.S. Corporation Income Tax Return
Estimated tax	1120-W, Estimated Tax for Corporations	Instructions for Form 1120-W
Employment taxes: • Social security and Medicare taxes and income tax withholding • Federal unemployment (FUTA) tax	941, Employer's Quarterly Federal Tax Return or 943, Employer's Annual Federal Tax Return for Agricultural Employees (for farm employees) 940, Employer's Annual Federal Unemployment (FUTA) Tax return	Instructions for Form 941 Instructions for Form 943 Instructions for Form 940
Excise Taxes	Refer to the Excise Tax Web page	

## S Corporations

An eligible domestic corporation can avoid double taxation (once to the corporation and again to the shareholders) by electing to be treated as an S Corporation. Generally, an S Corporation is exempt from federal income tax other than tax on certain capital gains and passive income. Shareholders of S corporations report the flow-through of income and losses on their personal tax returns and are assessed tax at their individual income tax rates. On their tax return, the S Corporation's shareholders include their share of the corporation's separately stated items of income, deduction, loss, and credit, as well as their share of non-separately stated income or loss. To qualify for S corporation status, the corporation must

meet the following requirements:

- Be a domestic corporation
- Have only allowable shareholders
  - May be individuals, certain trusts, and estates and
  - May not be partnerships, corporations or non-resident alien shareholders
- Have no more than 100 shareholders
- Have only one class of stock
- Not be an ineligible corporation (i.e. certain financial institutions, insurance companies, and domestic international sales corporations).

The following table outlines filing requirements for S Corporation:

If you are an S corporation then you may be liable for...	Use Form...	Separate Instructions...
Income Tax	1120S 1120S Sch. K-1	Instructions for Form 1120S Instructions for Form 1120S Sch. K-1
Estimated tax	1120-W (corporation only) and 8109	Instructions for Form 1120-W
Employment taxes: • Social security and Medicare taxes and income tax withholding • Federal unemployment (FUTA) tax • Depositing employment taxes	941 (943 for farm employees) 940 8109	Instructions for Form 941 Employers QUARTERLY Federal Tax Return Instructions for Form 943 Employers Annual Federal Tax Return for Agricultural Employees Instructions for Form 940 Employers Annual Federal Unemployment (FUTA) Tax Return
Excise Taxes	Refer to the Excise Tax Web page	

## Limited Liability Company (LLC)

A limited liability company (LLC) is an entity formed under state law by filing articles of organization as an LLC. Owners of an LLC are called members. Most states do not restrict ownership, and so members may include individuals, corporations, other LLCs and foreign entities. There is no maximum number of members. Most states also permit “single-member” LLCs, those having only one owner. The members of an LLC are not personally liable for its debts. An LLC may be classified for federal income tax purposes as either a partnership, a corporation, or an entity disregarded as an entity separate from its owner.

## Part 3: Cost of Goods Sold

If you make or buy goods to sell, you can deduct the cost of goods sold from your gross receipts on Schedule C. However, to determine these costs, you must value

your inventory at the beginning and end of each tax year.

This applies to you if you are a manufacturer, wholesaler, or retailer or if you are engaged in any business that makes, buys, or sells goods to produce income. This does not apply to a personal service business, such as the business of a doctor, lawyer, carpenter, or painter. However, if you work in a personal service business and also sell or charge for the materials and supplies normally used in your business, this does apply to you.

**Note:** If you must account for an inventory in your business, you must generally use an accrual method of accounting for your purchases and sales.

Figure your cost of goods sold by filling out lines 35 through 42 of Schedule C. An example of Schedule C can be found below:

Part III Cost of Goods Sold (see instructions)	
30 Method(s) used to value closing inventory:    a <input type="checkbox"/> Cost    b <input type="checkbox"/> Lower of cost or market    c <input type="checkbox"/> Other (attach explanation)	
31 Was there any change in determining quantities, costs, or valuations between opening and closing inventory? If “Yes,” attach explanation .....	<input type="checkbox"/> Yes <input type="checkbox"/> No
35 Inventory at beginning of year. If different from last year’s closing inventory, attach explanation .....	35
36 Purchases less cost of items withdrawn for personal use .....	36
37 Cost of labor. Do not include any amounts paid to yourself .....	37
38 Materials and supplies.....	38
39 Other costs .....	39
40 Add lines 35 through 39 .....	40
41 Inventory at end of year .....	41
42 Cost of goods sold. Subtract line 41 from line 40. Enter the result here and on line 4.....	42

### Line 35: Inventory at the Beginning of the Year

If you are a merchant, beginning inventory is the cost of merchandise on hand at the beginning of the year that you will sell to customers. If you are a manufacturer or producer, it includes the total cost of raw materials, work in process, finished goods, and materials and supplies used in manufacturing the goods. Opening inventory usually will be identical to the closing inventory of the year before. You must explain any difference in a schedule attached to your return.

### Donation of Inventory

If you contribute inventory (property that you sell in the course of your business), the amount you can claim as a contribution deduction is the smaller of its fair market value on the day you contributed it or its basis. The basis of donated inventory is any cost incurred for the inventory in an earlier year that you would otherwise include in your opening inventory for the year of the contribution. You must remove the amount of your contribution deduction from your opening inventory. It is not part of the cost of goods sold.

If the cost of donated inventory is not included in your opening inventory, the inventory's basis is zero and you cannot claim a charitable contribution deduction. Treat the inventory's cost as you would ordinarily treat it under your method of accounting. For example, include the purchase price of inventory bought and donated in the same year in the cost of goods sold for that year.

### **Line 36: Purchases Less Cost of Items Withdrawn for Personal Use**

If you are a merchant, use the cost of all merchandise you bought for sale. If you are a manufacturer or producer, this includes the cost of all raw materials or parts purchased for manufacture into a finished product.

#### **Trade Discounts**

The differences between the stated prices of articles and the actual prices you pay for them are called trade discounts. You must use the prices you pay (not the stated prices) in figuring your cost of purchases. Do not show the discount amount separately as an item in gross income.

#### **Cash Discounts**

Cash discounts are amounts your suppliers let you deduct from your purchase invoices for prompt payments. There are two methods of accounting for cash discounts. You can either credit them to a separate discount account or deduct them from total purchases for the year. Whichever method you use, you must be consistent. If you want to change your method of figuring inventory cost, you must file Form 3115, Application for Change in Accounting Method.

If you credit cash discounts to a separate account, you must include this credit balance in your business income at the end of the tax year. If you use this method, do not reduce your cost of goods sold by the cash discounts.

#### **Purchase Returns and Allowances**

You must deduct all returns and allowances from your total purchases during the year.

#### **Merchandise Withdrawn from Sale**

If you withdraw merchandise for your personal or family use, you must exclude this cost from the total amount of merchandise you bought for sale. Do this by crediting the purchases or sales account with the cost of merchandise you withdraw for personal use. You must also charge the amount to your drawing account.

A drawing account is a separate account you should keep to record the business income you withdraw to pay for personal and family expenses. As stated above,

you also use it to record withdrawals of merchandise for personal or family use. This account is also known as a "withdrawals account" or "personal account."

### **Line 37: Cost of Labor**

Labor costs are usually an element of cost of goods sold only in a manufacturing or mining business. Small merchandisers (wholesalers, retailers, etc.) usually do not have labor costs that can properly be charged to cost of goods sold. In a manufacturing business, labor costs properly allocable to the cost of goods sold include both the direct and indirect labor used in fabricating the raw material into a finished, saleable product.

#### **Direct Labor**

Direct labor costs are the wages you pay to those employees who spend all their time working directly on the product being manufactured. They also include a part of the wages you pay to employees who work directly on the product part time if you can determine that part of their wages.

#### **Indirect Labor**

Indirect labor costs are the wages you pay to employees who perform a general factory function that does not have any immediate or direct connection with making the saleable product, but that is a necessary part of the manufacturing process.

#### **Other Labor**

Other labor costs not properly chargeable to the cost of goods sold can be deducted as selling or administrative expenses. Generally, the only kinds of labor costs properly chargeable to your cost of goods sold are the direct or indirect labor costs and certain other costs treated as overhead expenses properly charged to the manufacturing process.

### **Line 38: Materials and Supplies**

Materials and supplies, such as hardware and chemicals, used in manufacturing goods are charged to cost of goods sold. Those that are not used in the manufacturing process are treated as deferred charges. You deduct them as a business expense when you use them.

#### **Line 39: Other Costs**

Examples of other costs incurred in a manufacturing or mining process that you charge to your cost of goods sold are as follows.

#### **Containers**

Containers and packages that are an integral part

of the product manufactured are a part of your cost of goods sold. If they are not an integral part of the manufactured product, their costs are shipping or selling expenses.

### **Freight-in**

Freight-in, express-in, and cartage-in on raw materials, supplies you use in production, and merchandise you purchase for sale are all part of cost of goods sold.

### **Overhead Expenses**

Overhead expenses include expenses such as rent, heat, light, power, insurance, depreciation, taxes, maintenance, labor, and supervision. The overhead expenses you have as direct and necessary expenses of the manufacturing operation are included in your cost of goods sold.

### **Line 40: Add Lines 35 through 39**

The total of lines 35 through 39 equals the cost of the goods available for sale during the year.

### **Line 41: Inventory at the End of the Year**

Subtract the value of your closing inventory (including, as appropriate, the allocable parts of the cost of raw materials and supplies, direct labor, and overhead expenses) from line 40. Inventory at the end of the year is also known as closing or ending inventory. Your ending inventory will usually become the beginning inventory of your next tax year.

### **Line 42: Costs of Goods Sold**

When you subtract your closing inventory (inventory at the end of the year) from the cost of goods available for sale, the remainder is your cost of goods sold during the tax year.

## **Part 4: Business Expenses**

You can deduct the costs of operating your business. These costs are known as business expenses. These are costs you do not have to capitalize or include in the cost of goods sold but can deduct in the current year.

To be deductible, a business expense must be both ordinary and necessary. An ordinary expense is one that is common and accepted in your field of business. A necessary expense is one that is helpful and appropriate for your business. An expense does not have to be indispensable to be considered necessary.

### **Bad Debts**

If someone owes you money you cannot collect, you have a bad debt. There are two kinds of bad debts,

business bad debts and nonbusiness bad debts. A business bad debt is generally one that comes from operating your trade or business. You may be able to deduct business bad debts as an expense on your business tax return.

### **Business Bad Debt**

A business bad debt is a loss from the worthlessness of a debt that was either of the following:

1. Created or acquired in your business.
2. Closely related to your business when it became partly or totally worthless.

- **Note:** A debt is closely related to your business if
- your primary motive for incurring the debt is a
- business reason.

Business bad debts are mainly the result of credit sales to customers. They can also be the result of loans to suppliers, clients, employees, or distributors. Goods and services customers have not paid for are shown in your books as either accounts receivable or notes receivable. If you are unable to collect any part of these accounts or notes receivable, the uncollectible part is a business bad debt.

- **Note:** You can take a bad debt deduction for these
- accounts and notes receivable only if the amount
- you were owed was included in your gross income
- either for the year the deduction is claimed or for a
- prior year.

### **Car and Truck Expenses**

If you use your car or truck in your business, you may be able to deduct the costs of operating and maintaining your vehicle. You also may be able to deduct other costs of local transportation and traveling away from home overnight on business.

- **Note:** You may qualify for a tax credit for qualified
- plugin electric vehicles, qualified plugin electric
- drive motor vehicles, and alternative motor vehicles
- you place in service during the year.

### **Local Transportation Expenses**

Local transportation expenses include the ordinary and necessary costs of all the following:

- Getting from one workplace to another in the course of your business or profession when you are traveling within the city or general area that is your tax home. Generally, your tax home is your regular place of business, regardless of where you maintain your family home. It includes the entire city or general area in which your business or work is located.
- Visiting clients or customers.

- Going to a business meeting away from your regular workplace.
- Getting from your home to a temporary workplace when you have one or more regular places of work. These temporary workplaces can be either within the area of your tax home or outside that area.

Local business transportation does not include expenses you have while traveling away from home overnight. However, if you use your car while traveling away from home overnight, use the rules in this section to figure your car expense deduction.

- **Note:** You cannot deduct the costs of driving your car or truck between your home and your main or regular workplace. These costs are personal commuting expenses.

## Methods for Deducting Car and Truck Expenses

For local transportation or overnight travel by car or truck, you generally can use one of the following methods to figure your expenses:

- Standard mileage rate
- Actual expenses

- **Note:** If you qualify to use both methods, figure your deduction both ways to see which gives you a larger deduction.

## Standard Mileage Rate

You may be able to use the standard mileage rate to figure the deductible costs of operating your car, van, pickup, or panel truck for business purposes.

## Choosing the Standard Mileage Rate

If you want to use the standard mileage rate for a car or truck you own, you must choose to use it in the first year the car is available for use in your business. In later years, you can choose to use either the standard mileage rate or actual expenses. If you use the standard mileage rate for a car you lease, you must choose to use it for the entire lease period (including renewals).

## Standard Mileage Rate Not Allowed

You cannot use the standard mileage rate if you:

- Operate five or more cars at the same time
- Claimed a depreciation deduction using any method other than straight line
- Claimed a section 179 deduction on the car
- Claimed the special depreciation allowance on the car
- Claimed actual car expenses for a car you leased

- Are a rural mail carrier who received a qualified reimbursement

## Parking fees and tolls

In addition to using the standard mileage rate, you can deduct any business-related parking fees and tolls. (Parking fees you pay to park your car at your place of work are nondeductible commuting expenses.)

## Actual Expenses

If you do not choose to use the standard mileage rate, you may be able to deduct your actual car or truck expenses. Actual car expenses include the costs of the following items:

- Depreciation
- Registration
- Licenses
- Gas
- Tires
- Parking fees
- Lease payments
- Garage rent
- Repairs
- Oil
- Insurance
- Tolls

If you use your vehicle for both business and personal purposes, you must divide your expenses between business and personal use. You can divide your expenses based on the miles driven for each purpose.

## Reimbursing Your Employees for Expenses

You generally can deduct the amount you reimburse your employees for car and truck expenses. The reimbursement you deduct and the manner in which you deduct it depend in part on whether you reimburse the expenses under an accountable plan or a non-accountable plan.

## Depreciation

If property you acquire to use in your business is expected to last more than 1 year, you generally cannot deduct the entire cost as a business expense in the year you acquire it. You must spread the cost over more than 1 tax year and deduct part of it each year on Schedule C. This method of deducting the cost of business property is called depreciation.

You can depreciate property if it meets all the following requirements.

- It must be property you own.
- It must be used in business or held to produce income. You never can depreciate inventory because it is not held for use in your business.
- It must have a useful life that extends substantially beyond the year it is placed in service.

- It must have a determinable useful life, which means that it must be something that wears out, decays, gets used up, becomes obsolete, or loses its value from natural causes. You never can depreciate the cost of land because land does not wear out, become obsolete, or get used up.
- It must not be excepted property. This includes property placed in service and disposed of in the same year.

## Repairs

You cannot depreciate repairs and replacements that do not increase the value of your property, make it more useful, or lengthen its useful life. You can deduct these amounts on line 21 of Schedule C or line 2 of Schedule C-EZ.

## Section 179 Deduction

You can elect to deduct a limited amount of the cost of certain depreciable property in the year you place the property in service. This deduction is known as the “section 179 deduction.” The maximum amount you can elect to deduct during 2014 is generally \$500,000 (higher limits apply to certain property). This limit is generally reduced by the amount by which the cost of the property placed in service during the tax year exceeds \$2 million. The total amount of depreciation (including the section 179 deduction) you can take for a passenger automobile you use in your business and first place in service in 2014 is \$3,160 (\$11,160 if you take the special depreciation allowance for qualified passenger automobiles placed in service in 2014).

## Listed Property

You must follow special rules and recordkeeping requirements when depreciating listed property. Listed property is any of the following:

- Most passenger automobiles.
- Most other property used for transportation.
- Any property of a type generally used for entertainment, recreation, or amusement.
- Certain computers and related peripheral equipment.

## Form 4562

Use Form 4562, Depreciation and Amortization, if you are claiming any of the following:

- Depreciation on property placed in service during the current tax year.
- A section 179 deduction.
- Depreciation on any listed property (regardless of when it was placed in service).

- **Note:** If you have to use Form 4562, you must file Schedule C. You cannot use Schedule C-EZ

## Employees’ Pay

You can generally deduct on Schedule C the pay you give your employees for the services they perform for your business. The pay may be in cash, property, or services.

To be deductible, your employees’ pay must be an ordinary and necessary expense and you must pay or incur it in the tax year. In addition, the pay must meet both the following tests:

- The pay must be reasonable.
- The pay must be for services performed.

You cannot deduct your own salary or any personal withdrawals you make from your business. As a sole proprietor, you are not an employee of the business.

- **Note:** If you had employees during the year, you must use Schedule C. You cannot use Schedule C-EZ

## Kinds of Pay

Some of the ways you may provide pay to your employees are listed below:

- Awards
- Bonuses
- Education expenses
- Fringe benefits
- Loans or advances not expected to be repaid
- Transferred property
- Reimbursements
- Sick pay
- Vacation pay

A fringe benefit is a form of pay for the performance of services. The following are examples of fringe benefits:

- Benefits under qualified employee benefit programs
- Meals and lodging
- Use of a car
- Flights on airplanes
- Discounts on property or services
- Memberships in country or social clubs
- Tickets to entertainment or sporting events

Employee benefit programs include the following:

- Accident and health plans.
- Adoption assistance.

- Cafeteria plans.
- Dependent care assistance.
- Educational assistance.
- Group-term life insurance coverage.
- Welfare benefit funds.

You can generally deduct the cost of fringe benefits you provide on your Schedule C in whatever category the cost falls. For example, if you allow an employee to use a car or other property you lease, deduct the cost of the lease as a rent or lease expense. If you own the property, include your deduction for its cost or other basis as a section 179 deduction or a depreciation deduction

- **Note:** You may be able to exclude all or part of the fringe benefits you provide from your employees' wages.

## Insurance

You can generally deduct premiums you pay for the following kinds of insurance related to your business.

1. Fire, theft, flood, or similar insurance.
2. Credit insurance that covers losses from business bad debts.
3. Group hospitalization and medical insurance for employees, including long-term care insurance.
4. Liability insurance.
5. Malpractice insurance that covers your personal liability for professional negligence resulting in injury or damage to patients or clients.
6. Workers' compensation insurance set by state law that covers any claims for bodily injuries or job-related diseases suffered by employees in your business, regardless of fault.
7. Contributions to a state unemployment insurance fund are deductible as taxes if they are considered taxes under state law.
8. Overhead insurance that pays for business overhead expenses you have during long periods of disability caused by your injury or sickness.
9. Car and other vehicle insurance that covers vehicles used in your business for liability, damages, and other losses. If you operate a vehicle partly for personal use, deduct only the part of the insurance premium that applies to the business use of the vehicle. If you use the standard mileage rate to figure your car expenses, you cannot deduct any car insurance premiums.
10. Life insurance covering your employees if you are not directly or indirectly the beneficiary under the contract.

11. Business interruption insurance that pays for lost profits if your business is shut down due to a fire or other cause.

## Self-Employed Health Insurance Deduction

You may be able to deduct the amount you paid for medical and dental insurance and qualified long-term care insurance for you and your family.

## Prepayment

You cannot deduct expenses in advance, even if you pay them in advance. This rule applies to any expense paid far enough in advance to, in effect, create an asset with a useful life extending substantially beyond the end of the current tax year.

## Interest

You can generally deduct as a business expense all interest you pay or accrue during the tax year on debts related to your business. Interest relates to your business if you use the proceeds of the loan for a business expense. It does not matter what type of property secures the loan. You can deduct interest on a debt only if you meet all of the following requirements:

- You are legally liable for that debt.
- Both you and the lender intend that the debt be repaid.
- You and the lender have a true debtor-creditor relationship.

## Pension Plans

You can set up and maintain the following small business retirement plans for yourself and your employees:

- SEP (Simplified Employee Pension) plans.
- SIMPLE (Savings Incentive Match Plan for Employees) plans.
- Qualified plans (including Keogh or H.R. 10 plans).

SEP, SIMPLE, and qualified plans offer you and your employees a tax favored way to save for retirement. You can deduct contributions you make to the plan for your employees on line 19 of Schedule C. If you are a sole proprietor, you can deduct contributions you make to the plan for yourself on line 28 of Form 1040. You can also deduct trustees' fees if contributions to the plan do not cover them. Earnings on the contributions are generally tax free until you or your employees receive distributions from the plan. You may also be able to claim a tax credit of 50% of the first \$1,000 of qualified startup costs if you begin a new

qualified defined benefit or defined contribution plan (including a 401(k) plan), SIMPLE plan, or simplified employee pension.

Under certain plans, employees can have you contribute limited amounts of their before-tax pay to a plan. These amounts (and earnings on them) are generally tax free until your employees receive distributions from the plan.

### Rent Expense

Rent is any amount you pay for the use of property you do not own. In general, you can deduct rent as a business expense only if the rent is for property you use in your business. If you have or will receive equity in or title to the property, you cannot deduct the rent.

### Unreasonable Rent

You cannot take a rental deduction for unreasonable rents. Ordinarily, the issue of reasonableness arises only if you and the lessor are related. Rent paid to a related person is reasonable if it is the same amount you would pay to a stranger for use of the same property. Rent is not unreasonable just because it is figured as a percentage of gross receipts.

Related persons include members of your immediate family, including only brothers and sisters (either whole or half), your spouse, ancestors, and lineal descendants.

### Rent on your Home

If you rent your home and use part of it as your place of business, you may be able to deduct the rent you pay for that part. You must meet the requirements for business use of your home.

### Rent Paid in Advance

Generally, rent paid in your business is deductible in the year paid or accrued. If you pay rent in advance, you can deduct only the amount that applies to your use of the rented property during the tax year. You can deduct the rest of your payment only over the period to which it applies.

## Taxes

You can deduct on Schedule C or C-EZ various federal, state, local, and foreign taxes directly attributable to your business.

### Income Taxes

You can deduct on Schedule C or C-EZ a state tax on gross income (as distinguished from net income)

directly attributable to your business. You can deduct other state and local income taxes on Schedule A (Form 1040) if you itemize your deductions. Do not deduct federal income tax.

### Employment Taxes

You can deduct the social security, Medicare, and federal unemployment (FUTA) taxes you paid out of your own funds as an employer. You can also deduct payments you made as an employer to a state unemployment compensation fund or to a state disability benefit fund. Deduct these payments as taxes.

### Self-Employment Tax

You can deduct one-half of your self-employment tax on line 27 of Form 1040.

### Personal Property Tax

You can deduct on Schedule C or C-EZ any tax imposed by a state or local government on personal property used in your business. You can also deduct registration fees for the right to use property within a state or local area.

### Real Estate Taxes

You can deduct on Schedule C or C-EZ the real estate taxes you pay on your business property. Deductible real estate taxes are any state, local, or foreign taxes on real estate levied for the general public welfare. The taxing authority must base the taxes on the assessed value of the real estate and charge them uniformly against all property under its jurisdiction.

### Sales Tax

Treat any sales tax you pay on a service or on the purchase or use of property as part of the cost of the service or property. If the service or the cost or use of the property is a deductible business expense, you can deduct the tax as part of that service or cost. If the property is merchandise bought for resale, the sales tax is part of the cost of the merchandise. If the property is depreciable, add the sales tax to the basis for depreciation.

### Excise Taxes

You can deduct on Schedule C or C-EZ all excise taxes that are ordinary and necessary expenses of carrying on your business.

### Fuel Taxes

Taxes on gasoline, diesel fuel, and other motor fuels

you use in your business are usually included as part of the cost of the fuel. Do not deduct these taxes as a separate item. You may be entitled to a credit or refund for federal excise tax you paid on fuels used for certain purposes.

## Business Use of Your Home

To deduct expenses related to the part of your home used for business, you must meet specific requirements. Even then, your deduction may be limited.

To qualify to claim expenses for business use of your home, you must meet the following tests.

1. Your use of the business part of your home must be:
  - a. Exclusive
  - b. Regular
2. For your business, and the business part of your home must be one of the following:
  - a. Your principal place of business
  - b. A place where you meet or deal with patients, clients, or customers in the normal course of your business, or
  - c. A separate structure (not attached to your home) you use in connection with your business.

### Exclusive Use

To qualify under the exclusive use test, you must use a specific area of your home only for your trade or business. The area used for business can be a room or other separately identifiable space. The space does not need to be marked off by a permanent partition. You do not meet the requirements of the exclusive use test if you use the area in question both for business and for personal purposes.

### Regular Use

To qualify under the regular use test, you must use a specific area of your home for business on a continuing basis. You do not meet the test if your business use of the area is only occasional or incidental, even if you do not use that area for any other purpose.

### Principal Place of Business

You can have more than one business location, including your home, for a single trade or business. To qualify to deduct the expenses for the business use of your home under the principal place of business test, your home must be your principal place of business for that business. To determine your principal place of business, you must consider all the facts and circumstances. Your home office will qualify as your

principal place of business for deducting expenses for its use if you meet the following requirements:

- You use it exclusively and regularly for administrative or management activities of your business.
- You have no other fixed location where you conduct substantial administrative or management activities of your business.

Alternatively, if you use your home exclusively and regularly for your business, but your home office does not qualify as your principal place of business based on the previous rules, you determine your principal place of business based on the following factors.

- The relative importance of the activities performed at each location.
- If the relative importance factor does not determine your principal place of business, you can also consider the time spent at each location.

If, after considering your business locations, your home cannot be identified as your principal place of business, you cannot deduct home office expenses.

### Other Expenses You Can Deduct

You may also be able to deduct the following expenses:

- Advertising
- Bank fees
- Donations to business organizations
- Education expenses
- Energy efficient commercial buildings deduction expenses
- Impairment-related expenses
- Interview expense allowances
- Licenses and regulatory fees
- Moving machinery
- Outplacement services
- Penalties and fines you pay for late performance or nonperformance of a contract
- Repairs that keep your property in a normal efficient operating condition
- Repayments of income
- Subscriptions to trade or professional publications
- Supplies and materials
- Utilities

### Expenses You Cannot Deduct

You usually cannot deduct the following as business expenses:

- Bribes and kickbacks
- Charitable contributions
- Demolition expenses or losses
- Dues to business, social, athletic, luncheon, sporting, airline, and hotel clubs
- Lobbying expenses
- Penalties and fines you pay to a governmental agency or instrumentality because you broke the law
- Personal, living, and family expenses'
- Political contributions
- Repairs that add to the value of your property or significantly increase its life

## Part 5: Figuring Net Profit or Loss

After figuring your business income and expenses, you are ready to figure the net profit or net loss from your business. You do this by subtracting business expenses from business income. If your expenses are less than your income, the difference is net profit and becomes part of your income on page 1 of Form 1040. If your expenses are more than your income, the difference is a net loss. You usually can deduct it from gross income on page 1 of Form 1040. But in some situations your loss is limited.

- **Note:** If you have more than one business, you must figure your net profit or loss for each business on a separate Schedule C.

### Net Operating Losses (NOLs)

If your deductions for the year are more than your income for the year (line 41 of your Form 1040 is a negative number), you may have a net operating loss (NOL). You can use an NOL by deducting it from your income in another year or years.

Examples of typical losses that may produce an NOL include, but are not limited to, losses incurred from the following:

- Your trade or business
- Your work as an employee (unreimbursed employee business expenses)
- A casualty or theft
- Moving expenses
- Rental property

### [A loss from operating a business is the most common reason for an NOL.](#)

For details about NOLs, see Publication 536, Net Operating Losses (NOLs) for Individuals, Estates, and Trusts. It explains how to figure an NOL, when to use it, how to claim an NOL deduction, and how to figure an NOL carry-over.

## Part 6: Employees vs. Independent Contractors

It is critical that business owners correctly determine whether the individuals providing services are employees or independent contractors.

Generally, you must withhold income taxes, withhold and pay Social Security and Medicare taxes, and pay unemployment tax on wages paid to an employee. You do not generally have to withhold or pay any taxes on payments to independent contractors.

### Independent Contractors

People who are in an independent trade, business, or profession in which they offer their services to the general public are generally independent contractors. However, whether these people are independent contractors or employees depends on the facts in each case. The general rule is that an individual is an independent contractor if the payer has the right to control or direct only the result of the work and not what will be done and how it will be done. The earnings of a person who is working as an independent contractor are subject to self-employment tax. If you are an independent contractor, you are self-employed.

### Employees

You are not an independent contractor if you perform services that can be controlled by an employer (what will be done and how it will be done). This applies even if you are given freedom of action. What matters is that the employer has the legal right to control the details of how the services are performed.

If an employer-employee relationship exists (regardless of what the relationship is called), you are not an independent contractor and your earnings are generally not subject to self-employment tax.

## Part 7: Self-Employment Tax

- **Note:** The Self Employment tax rules apply no matter how old you are, and even if you are already receiving social security and Medicare benefits.

Generally, you must pay SE tax and file Schedule SE (Form 1040) if your net earnings from self-employment were \$400 or more. Use Schedule SE to figure net earnings from self-employment.

### Sole Proprietor or Independent Contractor

If you are self-employed as a sole proprietor or independent contractor, you generally use Schedule C or C-EZ (Form 1040) to figure your earnings subject to SE tax.

## Maximum Earnings Subject to Self-Employment Tax

Only the first \$117,000 of your combined wages, tips, and net earnings in 2014 is subject to any combination of the 12.4% social security part of SE tax, social security tax, or railroad retirement (tier 1) tax.

All of your combined wages, tips, and net earnings in 2014 are subject to any combination of the 2.9% Medicare part of SE tax, social security tax, or railroad retirement (tier 1) tax.

If your wages and tips are subject to either social security or railroad retirement (tier 1) tax, or both, and total at least \$117,000, do not pay the 12.4% social security part of the SE tax on any of your net earnings. However, you must pay the 2.9% Medicare part of the SE tax on all your net earnings.

## Additional Medicare Tax

A 0.9% Additional Medicare Tax may apply to you if your net earnings from self-employment exceeds a threshold amount (based on your filing status).

## Special Rules and Exceptions

### Aliens

Generally, resident aliens must pay self-employment tax under the same rules that apply to U.S. citizens. Nonresident aliens are not subject to SE tax unless an international social security agreement in effect determines that they are covered under the U.S. social security system.

### Child Employed by Parent

You are not subject to SE tax if you are under age 18 and you are working for your father or mother.

### State or Local Government Employee

You are subject to SE tax if you are an employee of a state or local government, are paid solely on a fee basis, and your services are not covered under a federal-state social security agreement.

### More Than One Business

If you have earnings subject to SE tax from more than one trade, business, or profession, you must combine the net profit (or loss) from each to determine your total earnings subject to SE tax. A loss from one business reduces your profit from another business.

### Community Property Income

If any of the income from a trade or business, other than a partnership, is community property income under state law, it is included in the earnings subject to SE tax of the spouse carrying on the trade or business.

## Gain or Loss

Do not include in earnings subject to SE tax a gain or loss from the disposition of property that is neither stock in trade nor held primarily for sale to customers. It does not matter whether the disposition is a sale, exchange, or an involuntary conversion.

## Lost Income Payments

If you are self-employed and reduce or stop your business activities, any payment you receive from insurance or other sources for the lost business income is included in earnings subject to SE tax. If you are not working when you receive the payment, it still relates to your business and is included in earnings subject to SE tax, even though your business is temporarily inactive.

## Figuring Earnings Subject to SE Tax

There are three ways to figure your net earnings from self-employment:

1. The regular method.
2. The nonfarm optional method.
3. The farm optional method.

You must use the regular method unless you are eligible to use one or both of the optional methods.

## Why Use an Optional Method?

You may want to use the optional methods when you have a loss or a small net profit and any one of the following applies:

- You want to receive credit for social security benefit coverage.
- You incurred child or dependent care expenses for which you could claim a credit.\*
- You are entitled to the earned income credit.\*
- You are entitled to the additional child tax credit.\*

\* An optional method may increase your earned income, which could increase your credit

## Effects of Using an Optional Method

Using an optional method could increase your SE tax. Paying more SE tax could result in your getting higher benefits when you retire.

If you use either or both optional methods, you must figure and pay the SE tax due under these methods even if you would have had a smaller tax or no tax using the regular method.

The optional methods may be used only to figure your SE tax. To figure your income tax, include your actual earnings in gross income, regardless of which method you use to determine SE tax.

## Regular Method

Multiply your total earnings subject to SE tax by 92.35% (.9235) to get your net earnings under the regular method. See *Short Schedule SE*, line 4, or *Long Schedule SE*, line 4a. Net earnings figured using the regular method are also called actual net earnings.

## Actual Net Earnings

Your actual net earnings are 92.35% of your total earnings subject to SE tax (that is, multiply total earnings subject to SE tax by 92.35% (.9235) to get actual net earnings). Actual net earnings are equivalent to net earnings figured using the regular method.

## Optional Net Earnings Less than Actual Net Earnings

You cannot use this method to report an amount less than your actual net earnings from self-employment.

## Reporting Self-Employment Tax

Use Schedule SE (Form 1040) to figure and report your SE tax. Then enter the SE tax on line 57 of Form 1040 and attach Schedule SE to Form 1040.

Most taxpayers can use Section A- Short Schedule SE to figure their SE tax. However, certain taxpayers must use Section B- Long Schedule SE.

- **Note:** If you have to pay SE tax, you must file Form
- 1040 (with Schedule SE attached) even if you do not
- otherwise have to file a federal income tax return.

**Joint Return** Even if you file a joint return, you cannot file a joint Schedule SE. This is true whether one spouse or both spouses have earnings subject to SE tax. If both of you have earnings subject to SE tax, each of you must complete a separate Schedule SE. However, if one spouse uses the Short Schedule SE and the other spouse has to use the Long Schedule SE, both can use the same form. Attach both schedules to the joint return.

## More than One Business.

If you have more than one trade or business, you must combine the net profit (or loss) from each business to figure your SE tax. A loss from one business will reduce your profit from another business. File one Schedule SE showing the earnings from self-employment, but file a separate Schedule C, C-EZ, or F for each business.

# Business Practices for Construction Contractors

## Final Exam

36. A Release of Lien waiver can be used when the improvements cost more than \_\_\_\_\_.
- \$500
  - \$1,000
  - \$2,500
  - No designated amount
37. Which of the following are common legal structures for businesses?
- Sole proprietorships
  - Partnerships
  - Corporations
  - All of the above
38. An eligible domestic corporation can avoid double taxation (once to the corporation and again to the shareholders) by electing to be treated as an S Corporation.
- True
  - False
39. Which tax form will you use to deduct the cost of goods sold from your gross receipts?
- Schedule A
  - Schedule C
  - Form 1040
  - Form 1120S
40. Line 38 of Schedule C asks you to deduct which of the following?
- Inventory at the Beginning of the Year
  - Cost of Labor
  - Inventory at the End of the Year
  - Materials and Supplies
41. You cannot generally deduct premiums you pay for insurance as a business expense.
- True
  - False
42. Which of the following can you usually not deduct as a business expense?
- Licenses and regulatory fees
  - Moving machinery
  - Personal, living, and family expenses
  - Supplies and materials
43. Which of the following is the most common reason for an NOL (Net Operating Loss)?
- A loss from operating a business
  - Moving expenses
  - Casualty or theft
  - Rental property
44. What is an independent contractor?
- Someone who performs services that can be controlled by an employer
  - Someone in an independent trade, business, or profession in which they offer their services to the general public
  - A payer
  - Someone who contributes money, property, labor, or skill, and expects to share in the profits and losses of a business
45. You do not have to pay the Self-Employment Tax if you are receiving social security benefits.
- True
  - False

# Florida Construction Contracting Laws and Rules

## What is the purpose of this course?

This course will provide information on laws and rules that regulate the construction industry in Florida. The Florida Legislature has found these laws to be necessary in the interest of public health, safety, and welfare. The goal of this course is to provide information that will be helpful in abiding by Florida's laws and rules for contractors. The course is broken into 5 sections by topic.

## Part 1:

### Down Payments and Timely Starts

1. A contractor who receives an initial payment totaling **more than 10 percent** of the contract price for repair, restoration, improvement, or construction to residential real property must abide by the following:

- Apply for the necessary work permits within 30 days after the date payment is made (except where the work does not require a permit)
- Start the work within 90 days after the date any necessary permits for work are issued

• **Exception:** If the person who made the payment has agreed, in writing, to a longer period to apply for the necessary permits (or start the work; or to longer periods for both) then the above rules do not apply.

2. A contractor who receives money for work (repair, restoration, addition, improvement, or construction of residential real property) **in excess** of the value of the work performed will not fail or refuse to perform work for any 90-day period with the intent to defraud the owner.

Intent to defraud may be inferred when there is proof that a contractor received money that exceeds the value of the work performed and the following apply:

- The contractor failed to perform any of the contracted work during any 60-day period;
- The failure to perform work during the 60-day period was not related to the owner's termination of the contract or a material breach of the contract by the owner; and
- The contractor failed, for an additional 30-day period after the date of mailing of notification\* to perform any work for which he or she contracted,

*\*Notification consists of a certified letter (return receipt requested) mailed to the address of the contractor as listed in the written contracting agreement. The letter must indicate that:*

- *the contractor has failed to perform any work for a 60-day period,*
- *the failure to perform the work was not the result of the owner's termination of the contract or a material breach of the contract by the owner, and*
- *the contractor must recommence construction within 30 days after the date of mailing of the letter*

Any person who violates these rules is guilty of theft and will be prosecuted and punished.

## Part 2:

### Prohibited Acts by Unlicensed Principals

For these laws and rules it is important to know the following definitions:

**Primary qualifying agent**—a person who possesses the required skill, knowledge, and experience of construction contracting activities. This person has the responsibility to supervise, direct, manage, and control construction activities on a job for which he or she has obtained the building permit. This person's technical and personal qualifications have been established by investigation and/or examination.

**Certificate holder**—a person who holds a certificate of competency issued by the Department of Business and Professional Regulation.

**Registrant**—a person who is registered with the Department of Business and Professional Regulation as a certified contractor.

1. An uncertified or unregistered person associated with a contracting firm **cannot** do the following:

- Conceal from the primary qualifying agent any material activities or information about the contracting firm;
- Exclude any aspect of the contracting firm's financial or other business activities from the primary qualifying agent;
- Knowingly cause any part of the contracting firm's activities, financial or otherwise, to be conducted without the primary qualifying agent's supervision
- Assist, or participate in, the violation of any of the Florida statutes with any certificate holder or registrant.

2. The Department of Business and Professional Regulation (the Department) will investigate any incident where it appears that an uncertified or unregistered person associated with a contracting firm is in violation of the above mentioned rules.

If the Department finds there is probable cause to believe any of these rules have been violated, the Department will prepare and file an administrative complaint that will be served on the uncertified or unregistered person. The Department will prosecute the complaint.

3. When the Department of Business and Professional Regulation finds a violation of these rules, they are authorized to impose a fine of \$5,000 **maximum**. The Department will also assess fees for the investigative and legal costs of the prosecution.  
Any fines and fees must be paid within 30 days of the final order's filing. In the event of an appeal, the time for payment of fines and fees will be postponed until a final order is rendered.  
If any fines and/or fees imposed by the Department are not paid within the time provided, the Department may bring action in the appropriate circuit court of the state for enforcement of the final order.
4. The Department of Business and Professional Regulation may suspend, revoke, or deny issuance/renewal of a certificate or registration for any individual or business organization that associates with a person (as an officer, director, or partner or in a managerial or supervisory capacity) who has been found to have violated these rules.

### Part 3: Qualifications for Practice and Restrictions

1. Any person who wants to engage in contracting on a statewide basis needs to establish his or her competency/qualifications and become certified by the Department of Business and Regulation.  
To establish his or her competency, a person will need to pass the appropriate examination that has been approved by the board and certified by the Department.
2. A person must be certified or registered in order to engage in the business of contracting in the state of Florida. However, a subcontractor who is not certified or registered may perform construction work under the supervision of a person who is certified or registered (provided that the work is within the scope of the supervising contractor's license). The supervising contractor is then responsible for the work.

#### These rules do not affect the need to abide by local construction licensing ordinances.

To enforce these regulations, The Department of Business and Regulation may issue a cease and desist order to prohibit any person from engaging in the business of contracting who does not hold the

required certification or registration. For the purpose of enforcing a cease and desist order, the Department may file a proceeding in the name of the state of Florida seeking the issuance of an injunction or a writ of mandamus against any person who violates the cease and desist order.

A county, municipality, or local licensing board may also issue a cease and desist order to prohibit any person from engaging in the business of contracting who does not hold the required certification or registration for the work being performed.

3. Unless a contractor holds a state certificate or registration in the following trade categories the contractor should subcontract all of the following trades:

- electrical
- mechanical
- plumbing
- roofing
- sheet metal
- swimming pool
- air-conditioning work

The following exceptions also apply:

- A general, building, or residential contractor will be responsible for any construction or alteration of a structural component of a building or structure. Any certified general contractor or certified underground utility and excavation contractor may perform any of the following for any construction project in the state:
  - clearing and grubbing
  - excavation
  - grading
  - other site work

Any certified building contractor or certified residential contractor may perform the above mentioned work for any construction project in this state, limited to the lot on which a specific building is located.

- A general, building, or residential contractor will not be required to subcontract the installation, or repair made under warranty, of the following:
  - wood shingles
  - wood shakes
  - asphalt or fiberglass shingle roofing materials on a new building of his or her own construction
- A general contractor will not be required to subcontract structural swimming pool work. All other swimming pool work needs to be subcontracted to a licensed, certified, or registered swimming pool contractor.
- A general contractor will not be required to subcontract the construction of:
  - a main sanitary sewer collection system
  - a storm collection system
  - a water distribution system (not including the continuation of utility lines from the mains to the buildings)
- A general contractor can also perform any of the services, on public or private property, for which a license as an underground utility and excavation contractor is required.

- A general contractor will not be required to subcontract the continuation of utility lines from the mains in mobile home parks. Such continuations are to be considered a part of the main sewer collection and main water distribution systems.
  - A solar contractor will not be required to subcontract minor electrical, mechanical, plumbing, or roofing work so long as that work is within the scope of the license held by the solar contractor. The work must also exclusively pertain to the installation of residential solar energy equipment.
  - No general, building, or residential contractor certified after 1973 will act as, or advertise himself or herself to be, a roofing contractor unless he or she is certified or registered as a roofing contractor.
4. When a certificate holder wants to engage in contracting in any area of the state of Florida, **he or she is only required to show evidence of having a current certificate to the local building official**, tax collector, or other person in charge of the issuance of licenses and building permits in the area. The contractor must also pay the fee for the occupational license and building permit required of any other persons.

The following rules also apply:

Fraud and Willful Violation of Building Codes:

*A local construction regulation board may deny, suspend, or revoke the authority of a certified contractor to obtain a building permit (or limit him or her to obtaining a permit with specific conditions) if the local board has found the contractor to be guilty of fraud or a willful building code violation within the county or municipality the local board represents.*

*Denial or revocation of the authority to obtain a building permit may also occur if the local construction regulation board has proof that the contractor was found guilty in another county or municipality (within the past 12 months) of fraud or a willful building code violation and finds that such fraud or violation would have been considered fraud or a violation if committed in the county or municipality that the local construction board represents.*

*Notification of the permit denial should be submitted to the Department of Business and Regulation within 15 days of the local construction regulation board's decision to deny the permit.*

Proof of Liability and Property Damage Insurance:

*The local government may deny issuance of, or may suspend, any outstanding building permit where a contractor fails or refuses to provide proof of the required public liability and property damage insurance coverage. The local government may deny issuance of, or may suspend, any outstanding building permit where a contractor fails or refuses to provide proof of the required workers' compensation insurance coverage.*

• **Important Note:**

• It is the policy of the state of Florida that fines and other penalties are provided in order to ensure compliance with regulations in order to protect the public. **However, the collection of fines and the imposition of penalties are intended to be secondary to the primary goal of attaining compliance with state laws and local jurisdiction ordinances.**

• Consequently, the Florida State Legislature intends that a local jurisdiction agency **will issue a notice of noncompliance as its first response to a minor violation of a regulatory law.** This is for any instance in which it is reasonable to assume that the violator was unaware of a law or unclear as to how to comply with it.

• A “**minor violation**” is a violation that does not result in economic or physical harm to a person, or adversely affect the public health, safety, or welfare. Furthermore, a minor violation would not create a significant threat of such harm.

• A “**notice of noncompliance**” is a notification by the local jurisdiction agency that is issued to the licensee subject to the ordinance that is in violation. A notice of noncompliance **should not** be accompanied with a fine or other disciplinary penalty. The notice should identify:

- the specific ordinance that is being violated
  - provide information on how to comply with the ordinance
  - specify a reasonable time for the violator to comply with the ordinance
- Failure of a licensee to take action correcting the violation within a set period of time would then result in the institution of further disciplinary proceedings.

5. **Certificates are not transferable from one person to another.**

6. The board will designate types of specialty contractors that can be certified. The limit of the scope of work and responsibility of a specialty contractor will be established by the board. However, a **certified specialty contractor category** established by the board is as a voluntary statewide licensing category and **does not create a mandatory licensing requirement.** Any mandatory statewide construction contracting licensure requirements must be established through a specific statutory provision by the Florida State Legislature.

7. If an eligible applicant fails a contractor's written examination, except the general and building contractors' examination, (and provides the board with acceptable proof of lack of comprehension of written examinations) the applicant may petition the board to be administered a uniform oral examination.

The oral exam is subject to the following conditions:

- The applicant documents 10 years of experience in the appropriate construction craft.

- The applicant files written recommendations concerning his or her competency in the appropriate construction craft.
  - The applicant is administered only one oral examination within a period of 1 year.
8. Any public record of the board, when certified by the executive director of the board, may be received as prima facie evidence (facts presumed to be true) in any administrative or judicial proceeding.
9. These rules do not prevent any contractor from acting as a prime contractor (primary qualifying agent) where the **majority** of the work to be performed under the contract is within the scope of his or her license. These rules do not prevent any contractor from subcontracting to other licensed contractors the remaining work which is part of the contracted project. Furthermore, these laws do **not** do the following:
- Prevent any licensed engineer or architect from contracting directly with a licensed contractor for the preparation of plans, specifications, or a master design manual addressing structural designs used to make an application for building permits.

- Require a licensed engineer or architect, when preparing drawings, specifications, plans, or master design manuals for use by any licensed contractor, to prepare site-specific drawings, specifications, or plans for the design and construction of single-family and two-family dwellings; swimming pools, spas, or screened enclosures; or any other structure not exceeding 1,200 square feet or one story in height. For the purpose of issuing building permits, local building officials will accept such drawings, specifications, or plans when submitted by any licensed contractor. Upon good cause shown, local government code enforcement agencies may accept or reject plans.

The term “**master design manual**” means a restrictive design manual that should be used to design, permit, and construct structures. The manual must be prepared by a licensed engineer or architect and specifically detail the limits of its use. The manual should include, but is not limited to:

- the structure type
- size
- materials
- loading conditions
- time limits
- applicable codes
- associated criteria

The manual must also detail the required training for the contractor, engineer, or architect who is using the manual. All master design manuals must be peer reviewed by an independent licensed engineer or architect having no financial interest in the development of the manual or the construction of structures outlined in the manual. The engineer or architect conducting the peer review must be identified in the manual.

However, a licensed engineer or architect is not required for the preparation or use of any design

guide adopted by the Florida Building Commission as part of the building code.

10. The addition of a new type of contractor or the expansion of the scope of practice of any type of contractor will not limit the scope of practice of any **existing** type of contractor. This is unless the Florida State Legislature expressly provides such a limitation.
11. Any local act, law, ordinance, or regulation that pertains to hoisting equipment used in construction, demolition, or excavation work that is not already preempted by the Occupational Safety and Health Administration (including, but not limited to, local worksite regulation regarding hurricane preparedness or public safety) is prohibited and is preempted by the state of Florida. This hoisting equipment includes but is not limited to:
- power-operated crane
  - derricks
  - hoists
  - elevators
  - conveyors

## Part 4: Duty to Notify of Recovery Fund

1. Any agreement or contract for repair, restoration, improvement, or construction to residential real property must contain a written statement explaining the consumer’s rights under the recovery fund. **However, there is an exception where the value of all labor and materials does not exceed \$2,500.** The written statement must be substantially in the following form:

### FLORIDA HOMEOWNERS’ CONSTRUCTION RECOVERY FUND

**PAYMENT MAY BE AVAILABLE FROM THE FLORIDA HOMEOWNERS’ CONSTRUCTION RECOVERY FUND IF YOU LOSE MONEY ON A PROJECT PERFORMED UNDER CONTRACT, WHERE THE LOSS RESULTS FROM SPECIFIED VIOLATIONS OF FLORIDA LAW BY A LICENSED CONTRACTOR. FOR INFORMATION ABOUT THE RECOVERY FUND AND FILING A CLAIM, CONTACT THE FLORIDA CONSTRUCTION INDUSTRY LICENSING BOARD AT THE FOLLOWING TELEPHONE NUMBER AND ADDRESS:**

This statement should be immediately followed by the board’s address and telephone number:

Division of Professions  
Construction Industry Licensing Board  
1940 North Monroe Street  
Tallahassee, FL 32399-0783  
Phone: 850-487-1395

2. If the board finds a **first** violation of this rule then the board may fine the contractor up to \$500. The money must be deposited into the recovery fund.
- If the board finds a **second or subsequent** violation

of this rule, then the board will fine the contractor \$1,000 per violation. The money must be deposited into the recovery fund.

## Part 5: Disciplinary Guidelines

1. Each board will adopt, and periodically review, the disciplinary guidelines applicable to each ground for disciplinary action which may be imposed by the board, the respective practice acts, and any rule of the board.
  2. The disciplinary guidelines will specify a meaningful range of designated penalties based upon the severity and repetition of specific offenses. It is the Florida legislature’s intent that minor violations be distinguished from those which endanger the public health, safety, or welfare. It is also intended that these guidelines provide reasonable and meaningful notice to the public of likely penalties which may be imposed for proscribed conduct. Finally that such penalties be consistently applied by the board.
  3. A specific finding of mitigating or aggravating circumstances will allow the board to impose a penalty other than those provided for in the guidelines. If applicable, the board will adopt by rule disciplinary guidelines to designate possible mitigating and aggravating circumstances and the variation and range of penalties permitted for such circumstances.
  4. The Department must review the disciplinary guidelines for compliance with the Florida legislature’s intent to determine whether the guidelines establish a meaningful range of penalties.
5. The administrative law judge must follow the penalty guidelines established by the board and must state in writing the mitigating or aggravating circumstances upon which the recommended penalty is based.
  6. The following table will lay out normal penalty ranges for disciplinary cases. This table does not include aggravating or mitigating circumstances.
  7. In instances where the nature of the charges or the facts of the case indicate that the contractor lacks understanding of the laws and rules regulating the construction industry, the board will require continuing education hours as an additional penalty to the guidelines listed in the table. All continuing education hours assessed as part of a penalty will be in excess of the credit hours required for biennial renewal as stated in this act and rules.
  8. For purposes of these guidelines, violations for which the contractor has previously been issued a citation will be considered repeat violations.
  9. In addition, the board will assess the costs of investigation and prosecution, excluding costs related to attorney time.
  10. In addition, the board will order the contractor to make restitution in the amount of financial loss suffered by the consumer. This is to the extent that the order does not contravene federal bankruptcy law.
  11. The absence of any violation shall be viewed as an oversight, and will not be construed as an indication that no penalty is to be assessed. Instead the guideline penalty for the offense most closely resembling the omitted violation will apply.

The Department may also challenge such rules.

VIOLATION	PENALTY RANGE	
	MINIMUM	MAXIMUM
(a) Section 489.129(1)(a), F.S. Obtaining license through fraud or misrepresentation		
If misrepresentation	\$5,000 fine and probation, suspension and/or revocation.	\$10,000 fine and revocation.
If fraud	\$5,000 fine and probation, suspension or revocation.	\$10,000 fine and revocation.
(b) Sections 489.129(1)(b), 455.227(1)(c), F.S. Convicted or found guilty of a crime relating to contracting.	\$3,500 fine or probation or suspension.	\$10,000 fine and probation, suspension or revocation.
(c) Section 489.129(1)(c), F.S.: Violating any part of Chapter 455, F.S.		
1. Section 455.227(1)(a), F.S.: Fraud, deceit, misleading, or untrue representations.	\$5,000 fine and probation or suspension.	\$10,000 fine and probation, suspension or revocation.
2. Section 455.227(1)(r), F.S.: Improperly interfering with an investigation or disciplinary action.	\$5,000 fine or probation or suspension.	\$10,000 fine and probation, suspension or revocation.

VIOLATION	PENALTY RANGE	
	MINIMUM	MAXIMUM
(d) Section 489.129(1)(d), F.S.: Assisting unlicensed person to evade provision of Chapter 489, F.S.	\$5,000 fine and probation or suspension.	\$10,000 fine and probation, suspension or revocation.
(e) Section 489.129(1)(e), F.S.: Combining and conspiring with unlicensed person or entity to evade provision of Chapter 489, F.S.	\$5,000 fine and probation or suspension.	\$9,000 fine and probation, suspension or revocation.
(f) Sections 489.129(1)(f), 489.119(2), F.S.: Acting under a name not on license. FIRST OFFENSE  SECOND OFFENSE	\$1,500 fine.  \$2,500 fine.	\$5,000 fine and probation or suspension. \$5,000 fine and suspension or revocation.
(g) Section 489.129(1)(g), F.S.: Mismanagement or misconduct causing financial harm to the customer. FIRST OFFENSE  REPEAT OFFENSE	\$1,500 fine or probation or suspension. \$5,000 fine and probation or suspension.	\$2,500 fine and probation or suspension. \$10,000 fine and revocation.
(h) Section 489.129(1)(h), F.S.: Local disciplinary action.	Use penalty herein listed for the violation most closely resembling the act underlying the local discipline.	Use penalty herein listed for the violation most closely resembling the act underlying the local discipline.
(i) Section 489.129(1)(i), F.S.: Failing in any material respect to comply with the provisions of Part I of Chapter 489, F.S.	Use penalty herein listed for the violation most closely resembling the act underlying the local discipline;	Use penalty herein listed for the violation most closely resembling the act underlying the local discipline;
1. Section 489.1195(2)(e), F.S.: Failure to supervise construction activities. FIRST OFFENSE  REPEAT OFFENSE	\$2,500 fine and probation or suspension. \$5,000 fine and probation or suspension.	\$5,000 fine and probation or suspension. \$10,000 fine and revocation.
2. Sections 489.113, 489.117, F.S.: Contracting beyond scope of practice allowed by license, no safety hazard. FIRST OFFENSE  REPEAT OFFENSE	\$1,000 fine or probation or suspension. \$3,000 fine and probation or suspension.	\$5,000 fine and probation or suspension. \$10,000 fine and revocation.
3. Sections 489.113, 489.117, F.S.: Contracting beyond scope of license, safety hazard is created. FIRST OFFENSE  REPEAT OFFENSE	\$4,000 fine and probation or suspension. \$5,000 fine and probation, suspension or revocation.	\$8,000 fine and probation or suspension. \$10,000 fine and revocation.
4. Section 489.1425, F.S.: Failure to notify residential property owner of recovery fund. FIRST OFFENSE REPEAT OFFENSE	\$250 fine. \$1,000 fine.	\$500 fine. \$1,000 fine.

VIOLATION	PENALTY RANGE	
	MINIMUM	MAXIMUM
5. Section 489.116, F.S.: Contracting with a delinquent license. FIRST OFFENSE  REPEAT OFFENSE	\$1,500 fine, respondent must pay all fees and costs required to place license in current and active status, or probation or suspension. \$2,500 fine, respondent must pay all fees and costs required to place license in current and active status, and probation or suspension.	\$2,500 fine, respondent must pay all fees and costs required to place license in current and active status, and probation or suspension. \$5,000 fine and suspension or revocation, respondent must pay all fees and costs required to place license in current and active status, and probation or suspension.
6. Section 489.116, F.S.: Contracting with an inactive license.	\$5,000 fine and probation or suspension.	\$10,000 fine and revocation.
7. Section 489.117, F.S.: Contracting in a city or county where the contractor is not licensed. First violation, where the jurisdiction is not adjacent to one where contractor is properly licensed, or practice outside the geographical scope of the license was willful.	\$1,000 fine or probation or suspension.	\$2,500 fine and probation or suspension.
8. Section 489.119, F.S.: Failure to qualify a business organization. FIRST OFFENSE  REPEAT OFFENSE	\$2,500 fine.  \$5,000 fine.	\$5,000 fine and probation or suspension. \$10,000 fine and probation, suspension or revocation.
9. Section 489.119(5)(b), F.S.: License number not appearing in advertisement. FIRST OFFENSE REPEAT OFFENSE	\$250 fine. \$500 fine.	\$1,000 fine. \$2,500 fine and probation.
10. Section 489.124, F.S.: Failure to keep business and financial records as required.	\$1,000 fine.	\$5,000 fine and revocation.
11. Section 489.126(2), F.S.: Failure to apply for all necessary permits within 30 days of entering contract or failure to start within 90 days after issuance of all necessary permits when the contractor receives an initial payment of more than 10 percent of the contract price for repair, restoration, improvement or construction to residential real property. FIRST OFFENSE  REPEAT OFFENSE	\$2,500 fine or probation or suspension. \$5,000 fine and probation or suspension.	\$5,000 fine and probation or suspension. \$10,000 fine and probation, suspension or revocation.
(j) Section 489.129(1)(j), F.S.: Abandonment. FIRST OFFENSE  REPEAT OFFENSE	\$2,500 fine and probation or suspension. \$5,000 fine and probation or suspension.	\$7,500 fine and probation or suspension. \$10,000 fine and revocation.

VIOLATION	PENALTY RANGE	
	MINIMUM	MAXIMUM
(k) Section 489.129(1)(k), F.S.: False payment statements, false statement of insurance coverage.		
1. False payment statement. FIRST OFFENSE	\$2,500 fine.	\$7,500 fine and probation or suspension.
REPEAT OFFENSE	\$5,000 fine and/or probation or suspension.	\$10,000 fine and revocation.
2. False statement of insurance coverage. FIRST OFFENSE	\$1,000 fine and probation or suspension.	\$5,000 fine and probation or suspension.
REPEAT OFFENSE	\$5,000 fine and probation or suspension.	\$10,000 fine and probation, suspension or revocation.
(l) Section 489.129(1)(l), F.S.: Committing fraud or deceit in the practice of contracting.		
1. Causing no monetary or other harm to licensee's customer.	\$2,500 fine and probation or suspension.	\$10,000 fine and revocation.
2. Causing monetary or other harm to licensee's customer.	\$5,000 fine and probation or suspension.	\$10,000 fine and revocation.
(m) Section 489.129(1)(m), F.S.; Misconduct or incompetency in the practice of contracting, shall include, but is not limited to:		
1. Failure to honor a warranty. FIRST OFFENSE	\$1,000 fine or probation or suspension.	\$5,000 fine and probation or suspension.
REPEAT OFFENSE	\$2,500 fine and probation or suspension.	\$10,000 fine and revocation.
2. Violation of any provision of Title 61G4, F.A.C., or Chapter 489, Part I, F.S. FIRST OFFENSE	\$1,000 fine or probation or suspension.	\$2,500 fine and probation or suspension.
REPEAT OFFENSE	\$5,000 fine and probation or suspension.	\$10,000 fine and suspension or revocation.
3. Failure to abide by the terms of a mediation agreement or another offense under this part. FIRST OFFENSE	\$2,500 fine.	\$5,000 fine and probation.
REPEAT OFFENSE	\$5,000 fine and probation or suspension.	\$10,000 fine and suspension or revocation.
(n) Section 489.129(1)(n), F.S.: Committing gross negligence, repeated negligence, or negligence resulting in a significant danger to life or property. FIRST OFFENSE	\$3,000 fine and probation, suspension or revocation.	\$10,000 fine and suspension or revocation.
REPEAT OFFENSE	\$10,000 fine and probation, suspension or revocation.	\$10,000 fine and revocation.

VIOLATION	PENALTY RANGE	
	MINIMUM	MAXIMUM
(o) Section 489.129(1)(o), F.S.: Proceeding on any job without obtaining applicable local building department permits and/or inspections.		
1. Late permits. Contractor pulls permit after starting job but prior to completion of same and does not miss any inspections.	\$250 fine.	\$3,000 fine and probation.
2. Failure to obtain inspections. FIRST OFFENSE	\$500 fine.	\$2,500 fine and probation or suspension.
REPEAT OFFENSE	\$2,500 fine and probation or suspension.	\$5,000 fine revocation.
3. Job finished without a permit having been pulled, or no permit until caught after job, or late permit during the job resulting in missed inspection or inspections. FIRST OFFENSE	\$1,000 fine.	\$5,000 fine and probation.
REPEAT OFFENSE	\$5,000 fine.	\$10,000 fine and suspension or revocation.
(p) Section 489.129(1)(p), F.S.: Intimidating, threatening, coercing, or otherwise discouraging the service of a notice to owner under Part I of Chapter 713, F.S., or a notice to contractor under Chapter 255 or Part I of Chapter 713, F.S. FIRST OFFENSE	\$2,500 fine and probation or suspension.	\$5,000 fine and probation or suspension.
REPEAT OFFENSE	\$5,000 fine and suspension or revocation.	\$10,000 fine and revocation.
(q) Section 489.129(1)(q), F.S.: Failure to satisfy a civil judgment obtained against the licensee or the business organization qualified by the licensee within a reasonable time. For purposes of this section “reasonable time” means sixty (60) days following the entry of a civil judgment that is not appealed. The Board will consider a mutually agreed upon payment plan as satisfaction of such judgment, so long as the payments are current. FIRST OFFENSE	\$500 fine or proof of satisfaction of civil judgment.	\$5,000 fine or proof of satisfaction of civil judgment.
REPEAT OFFENSE	\$5,000 fine or proof of satisfaction of civil judgment.	\$10,000 fine or proof of satisfaction of civil judgment, and suspension or revocation.

## Florida Construction Contracting Laws and Rules Final Exam

46. A contractor who receives money for work (repair, restoration, addition, improvement, or construction of residential real property) in excess of the value of the work performed will not fail or refuse to perform work for any \_\_\_\_\_ period with the intent to defraud the owner.
- 30-day
  - 45-day
  - 90-day
  - 120-day
47. When the Department of Business and Professional Regulation finds a violation of the rules for Prohibited Acts by Unlicensed Principals, they are authorized to impose a fine of \_\_\_\_\_ maximum.
- \$10,000
  - \$5,000
  - \$2,000
  - \$1,000
48. Any fines and fees must be paid within \_\_\_\_\_ of the final order's filing.
- 60 days
  - 45 days
  - 10 days
  - 30 days
49. No general, building, or residential contractor certified after \_\_\_\_\_ will act as, or advertise himself or herself to be, a roofing contractor unless he or she is certified or registered as a roofing contractor.
- 1956
  - 2010
  - 1973
  - 1995
50. A "\_\_\_\_\_ " is a violation that does not result in economic or physical harm to a person, or adversely affect the public health, safety, or welfare. Furthermore, a minor violation would not create a significant threat of such harm.
- minor violation
  - small infraction
  - minor incident
  - random accident

# Wind Mitigation Techniques

## Introduction

Wind mitigation specifically targets structural and nonstructural aspects to prevent or lessen damage caused by high winds that occur with storms. In Florida, the primary concern is wind damage caused by hurricanes. Hurricane season begins June 1 and ends November 30, which means that Floridians are at risk for exposure to hurricane force winds over 40% of the time.

In 2002, changes were incorporated into the Florida Building Code to improve resistance of newly constructed homes to hurricane/wind damage. The Florida Building Commission also developed and adopted within the Florida Building Code methods to incorporate recognized wind damage mitigation techniques into site-built, single-family residential structures constructed before the implementation of the 2002 Florida Building Code changes. These wind mitigation methods can be found in the *2014 Florida Statutes, Section 553.844 Windstorm loss mitigation; requirements for roofs and opening protection.*

## From 2014 Florida Statutes, Section 553.844:

- (1) *The Legislature finds that:*
  - (b) *Hurricanes represent a continuing threat to the health, safety, and welfare of the residents of this state due to the direct destructive effects of hurricanes as well as their effects on windstorm insurance rates.*
  - (c) *The mitigation of property damage constitutes a valid and recognized objective of the Florida Building Code.*
  - (d) *Cost-effective techniques for integrating proven methods of the Florida Building Code into buildings built prior to its implementation benefit all residents of the state as a whole.*
- (2) *The Florida Building Commission shall:*
  - (b) *Develop and adopt within the Florida Building Code a means to incorporate recognized mitigation techniques for site-built, single-family residential structures constructed before the implementation of the Florida Building Code.*

## The State Legislature mandates five mitigation areas to be addressed, here is the first:

### From 2014 Florida Statutes, Section 553.844:

1. *Prescriptive techniques for the installation of gable-end bracing.*

## From Chapter 17, Section 1701.1 of the Florida Building Code - Existing Building, 5th Edition (2014):

This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase the resistance of gable end walls to out-of-plane wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

The provisions of this chapter are applicable to buildings that meet **all of the following** eligibility requirements:

1. The building is occupancy Group R-3 (1-2 family dwellings).
2. The building includes one or more wood-framed gable end walls constructed using platform framing techniques.
3. The building shall have a mean roof height of 35 feet or less.
4. The building includes attic-framing members in the area where retrofit members will be installed shall be made of conventional lumber assembled with nails or the like or with truss plates.
5. The wall below a gable end wall being retrofitted shall be made of conventional lumber assembled with nails or the like, or with truss plates, or the wall shall be made of concrete or masonry.
6. Each gable end wall being retrofitted has or will be provided with studs or vertical webs spaced 24 inches on center maximum.
7. Each gable end wall being retrofitted has a maximum height of 16 feet.
8. The building is or would be assigned to risk category I or II in accordance with Table 1604.5 in the Florida Building Code, Building.
9. The ceiling diaphragm of the retrofitted building in the area of the retrofit shall be comprised of minimum 1/2-inch gypsum board, minimum nominal 3/8-inch wood structural panels, or plaster.
10. The roof diaphragm of the building in the area of the retrofit shall be of minimum nominal 4-foot by 8-foot paneling made of plywood, oriented strand board, or similar, or boards butted to each other along their long edges and ends.

The strengthening scheme provided by chapter 17 requires the installation of lateral braces, retrofit studs, and other load path components to supplement existing framing:

1. Retrofitting shall be in accordance with Section 1705 for installation of added studs where existing ones are too far apart (*strengthens the gable end itself*).
2. Lateral braces and retrofit studs shall be installed at each primary stud as specified in Sections 1706 and 1707.
3. Locations for retrofits and the installation of retrofit studs that strengthen primary studs are established in Section 1706.
4. The installation of lateral braces that connect ceiling and roof diaphragms via attic-framing members shall be in accordance with Section 1707 (*transmits lateral loads into the diaphragms*).
5. Section 1708 describes the two methods for the installation of straps that connect the ends of retrofit studs to lateral braces.
6. Section 1709 describes the connection of gable end walls to the walls below (*to help brace the top of those walls*).

Figure 1704.1 shows the general schematic arrangement of the various elements:

At each primary stud subject to strengthening, the retrofit configuration shall be determined in accordance with Table 1704.1 (not shown here), which includes required gusset angle bracket sizes, fasteners and stud length limitations, all based on the exposure category and maximum design wind speed. These methods are intended for applications where the gable end wall framing is provided by a wood gable end wall truss OR a conventionally framed rafter system. The retrofits are appropriate for wall studs oriented with their broad face parallel to OR perpendicular to the gable end surface.

## From Florida Building Code - Existing Building, 5th Edition (2014):

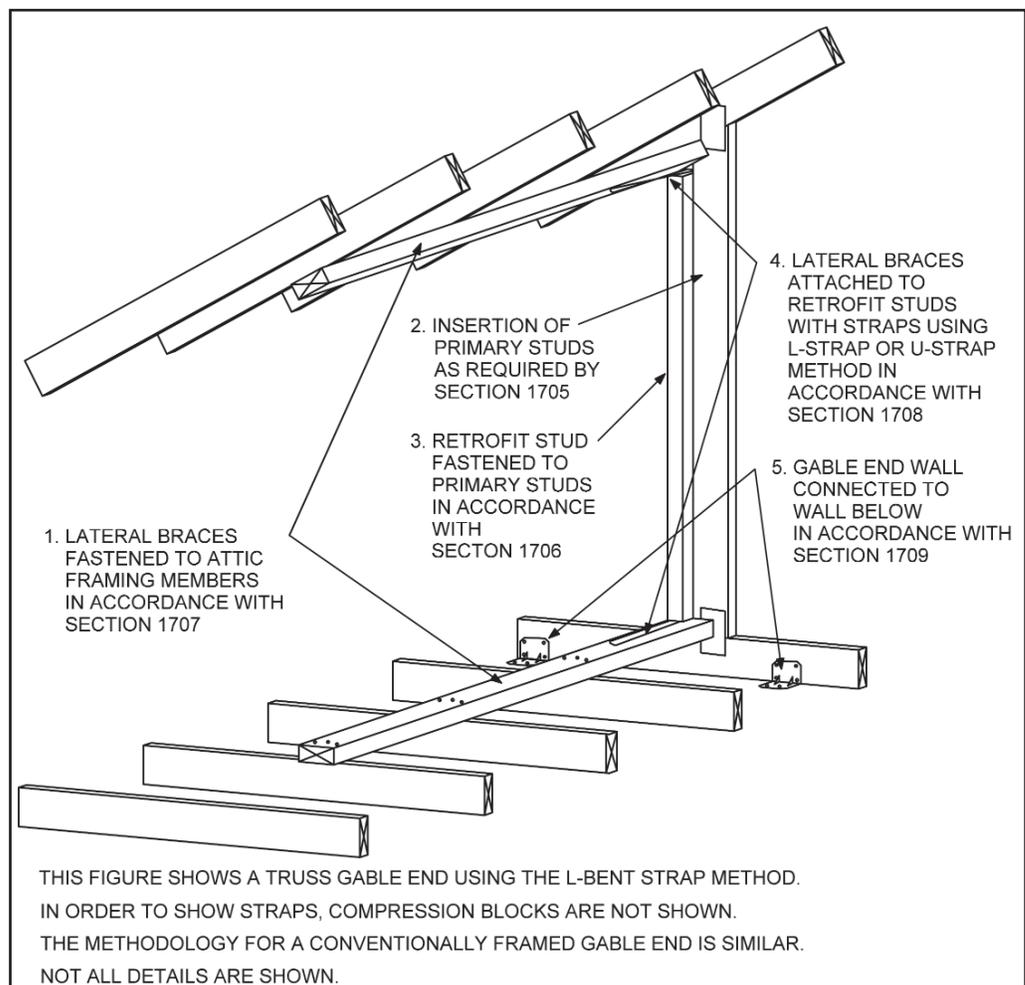
### SECTION 1702 DEFINITIONS

**ADDED STUD.** Studs installed in a gable end wall to provide the required minimum spacing between existing wall studs prior to adding any retrofit studs needed to brace or stiffen the gable end wall.

**ATTIC-FRAMING MEMBERS.** Structural members such as ceiling joists, rafters, and roof trusses that support ceiling diaphragms or roof decking.

**BALLOON FRAMING.** A type of wall framing where vertical wall framing members of the gable end wall and the rectangular wall below are continuous from the top of the gable end wall to the bottom of the rectangular wall below.

**COMPRESSION BLOCK.** A piece of lumber used to restrain an existing or retrofit stud against movement or deflection toward the interior of the building, attached to a lateral brace and bearing directly against the primary or retrofit stud.



**FIGURE 1704.1**  
**GENERAL MEANS OF GABLE END RETROFIT**

**EXISTING STUD.** A stud in a gable end wall that already exists before the installation of added studs or conducting gable end bracing and stiffening using lateral braces or retrofit studs.

**GABLE END WALL.** The triangular wall segment at a gable end whose framing members may be conventionally framed, balloon framed, or framed with a truss.

**GABLE END TRUSS.** A roof truss at an exterior wall with lumber members oriented with their wide faces parallel to the plane of the wall.

**GUSSET ANGLE BRACKET.** Metal connectors intended by the manufacturer to connect materials at right angles to each other supplied by the manufacturer with fasteners.

**LATERAL BRACE.** A lumber member typically installed horizontally on the top of attic floor framing members or on the bottom of pitched roof framing members used to transfer both compression and tension loads applied by a gable wall existing, added or retrofit stud into either the ceiling or roof diaphragm.

**NAIL PLATE.** A manufactured metal plate made of galvanized steel with factory punched holes for fasteners. A nail plate may have the geometry of a strap.

**PLATFORM FRAMING.** A type of wall framing where structural framing members of the gable end wall terminate at or above the top plate on the rectangular wall below the gable end wall.

**PRIMARY STUD.** An existing or added stud as defined above. A vertical member installed against the gable end wall sheathing and connected to the top and bottom chords of the gable end framing that provides the required minimum spacing of structural members supporting the wall sheathing.

**RETROFIT.** The process of strengthening or improving buildings or structures, or individual components of buildings or structures for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes intend.

**RETROFIT STUD.** A vertical lumber member used to supplement the strength or stiffness of an existing or added (primary) stud.

**STUD-TO-PLATE CONNECTOR.** A manufactured metal connector designed to connect studs to lumber plates.

## From Florida Building Code - Existing Building, 5th Edition (2014):

### SECTION 1705 ADDED STUDS

**1705.1 Requirements for added studs.** Along a

platform framed gable end wall where an existing stud is longer than 3 feet and the distance (centerline to centerline) between that stud and an adjacent stud that is also longer than 3 feet is greater than 22 1/2 inches, an added stud shall be installed. This requirement also applies to the top truss of a piggyback truss assembly. The length of the stud shall be the maximum length of the stud itself exclusive of the depth of the top chord and bottom chord members. If an existing stud is interrupted by other members, such as by a diagonal in a truss with a gable end, it shall include retrofit stud sections above and below the interrupting member to provide continuity from the top of the bottom chord to the bottom of the top chord of the gable end framing, or wood structural members shall be added to provide this continuity. If a lateral brace is being omitted, as allowed in Section 1707.4.1, then the existing or added stud shall not be required to be continuous from an interruption to the location of the omitted lateral brace. Added studs shall have at minimum the same narrow and wide face dimensions as the existing studs.

**1705.2 Placement of added studs.** Added studs shall be installed with the same orientation as existing studs. Added studs of piggyback trusses shall align with required primary studs in the truss below.

**1705.3 Attachment of added studs.** In the case of conventional framing, each end of each required added stud shall be attached to the top and bottom plates. In the case of truss construction, each end of each required added stud shall be attached to the top and bottom chord of the truss. Attachments shall be made by attaching a stud-to-plate metal connector with minimum uplift capacity of 175 pounds fastened with 1 1/2 -inch long fasteners complying with Table 1703.5 (not shown here).

**1705.4 Interrupted or short existing studs.** Existing studs longer than 3 feet that extend to only one end of attic framing members shall be retrofitted using the methods of Section 1706.6. Existing studs that are interrupted shall be retrofitted using the methods of Section 1706.7.

### SECTION 1706 RETROFIT STUDS

**1706.1 Requirements for retrofit studs.** Except as allowed by Section 1706.5, a retrofit stud shall be installed at each primary stud longer than 3 feet where lateral braces can be installed using the methods of Section 1707. The size of retrofit studs shall be as required by Table 1704.1 (not shown here) for the appropriate retrofit configuration. Where straps are installed using the L-bent strap method of Section 1708.1.1, retrofit studs shall extend from the top of the lower lateral brace up to the bottom of the upper lateral brace, except that a maximum gap of 1/8 inch (3 mm), is allowed at the bottom and 1/2 inch at the top. Where straps are installed using the U-bent

method of Section 1708.1.2, retrofit studs shall extend beyond the ends of lateral braces such that lateral braces can fully butt against the retrofit studs.

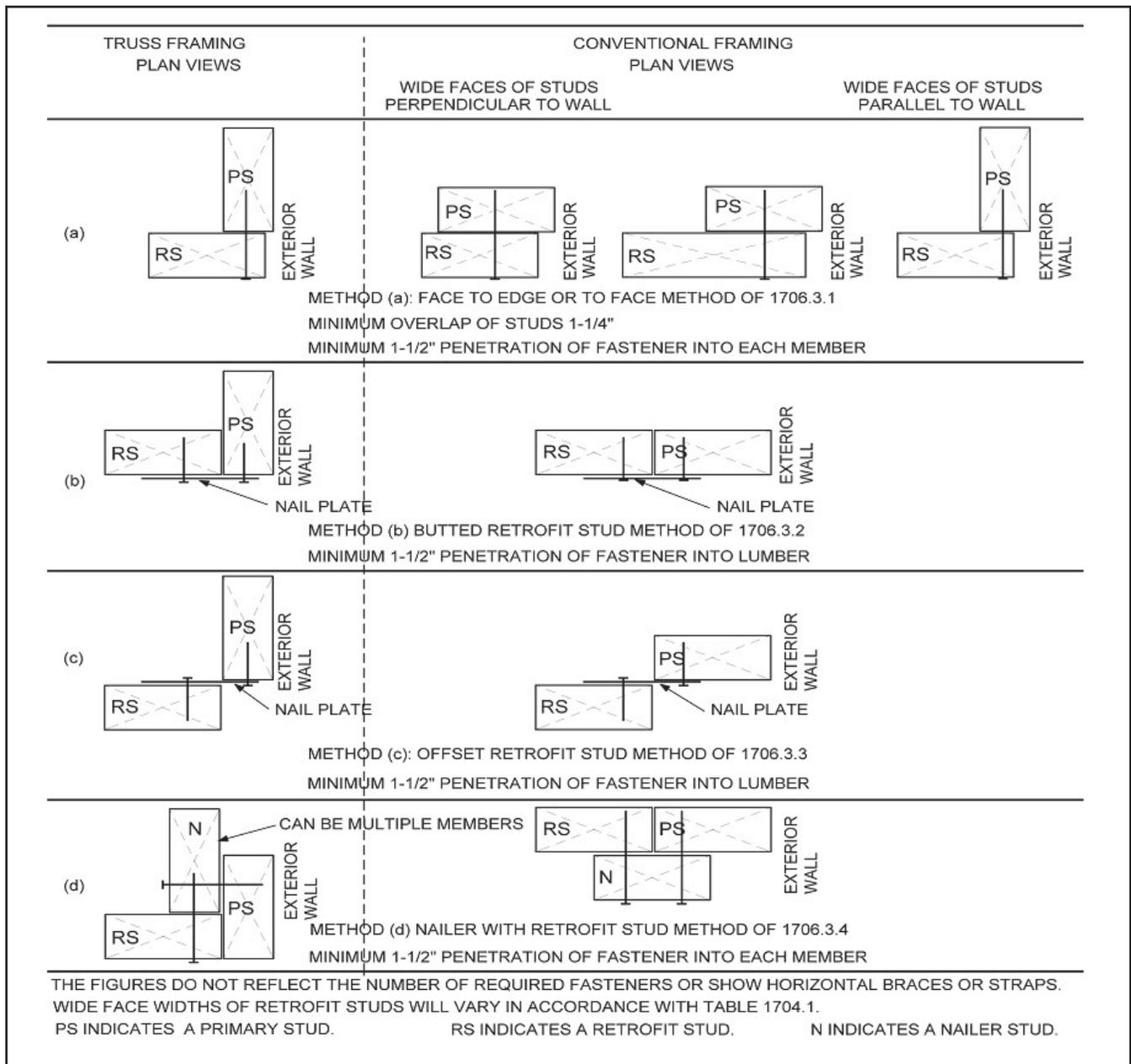
- **Exception:** A retrofit stud need not be added where the distance between it and an adjacent retrofit, primary stud would be less than 14 1/2 inches.

**1706.2 Piggyback trusses.** Primary studs of piggyback truss assemblies shall have retrofit studs sized and placed such that a single continuous retrofit stud is installed and fastened to the primary stud of both the lower and upper truss. Added studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected

to the retrofit stud using an approved connector with minimum tension capacity of 175 pounds.

**1706.3 Placement of retrofit studs.** Retrofit studs and nailers can be placed on either side of primary studs. Retrofit studs shall be installed in accordance with one of the following methods:

Code Sections 1706.3.1 through 1706.3.4 describe each of the four methods. The balance of Section 1706 describes attachment and fastening methods for the retrofit studs as well as “work-around” techniques to deal with various existing conditions, such when a “ladder assembly” or spliced retrofit studs are allowed.



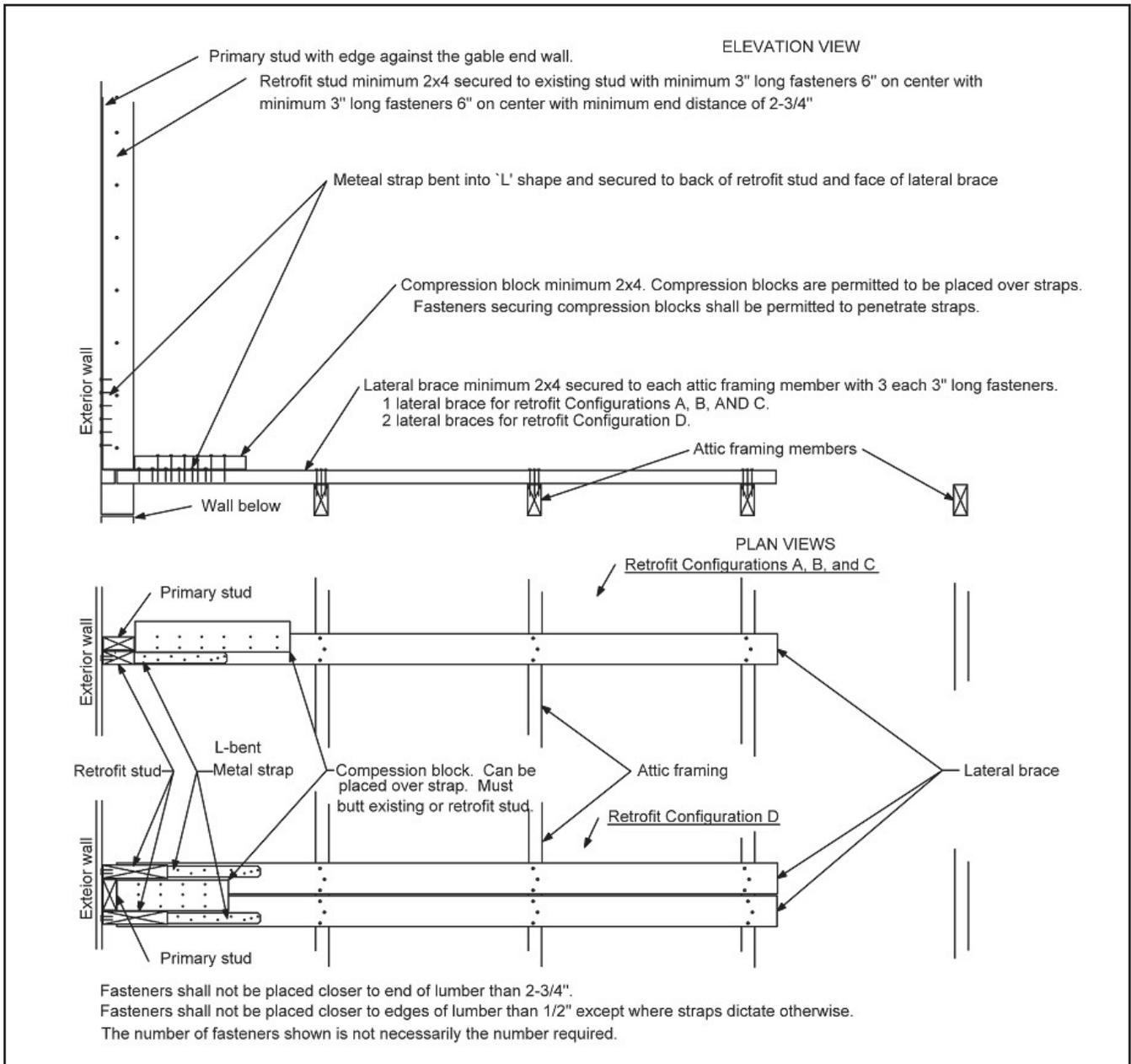
**FIGURE 1706.3**  
**PLACEMENT OF RETROFIT STUDS**

**From Florida Building Code - Existing Building, 5th Edition (2014):**

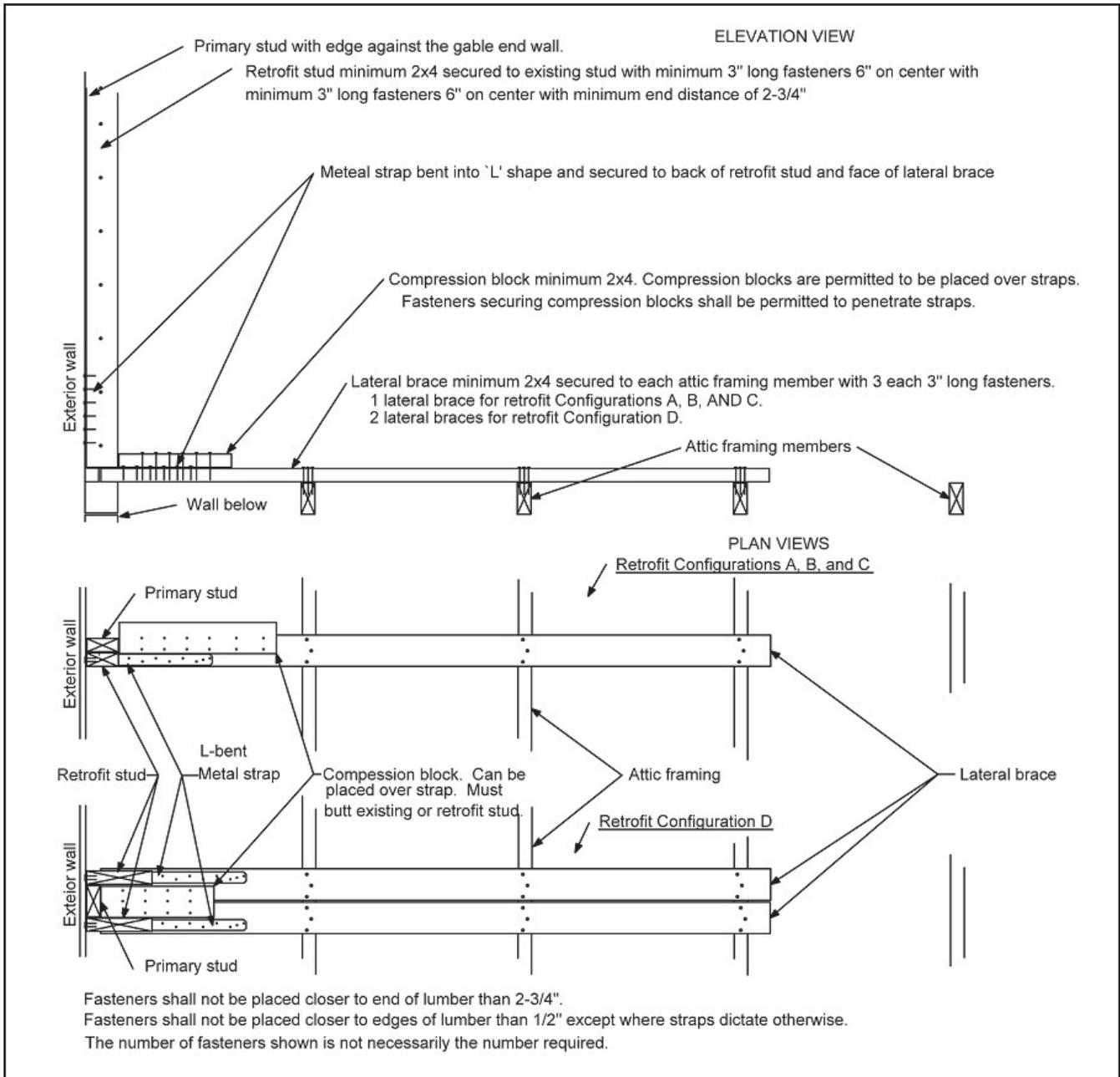
**SECTION 1707 LATERAL BRACES**

**1707.1 Requirements for lateral braces.** At each end of a retrofit stud, a lateral brace shall be installed as indicated in Figure 1707.1(1) or Figure 1707.1(3) for

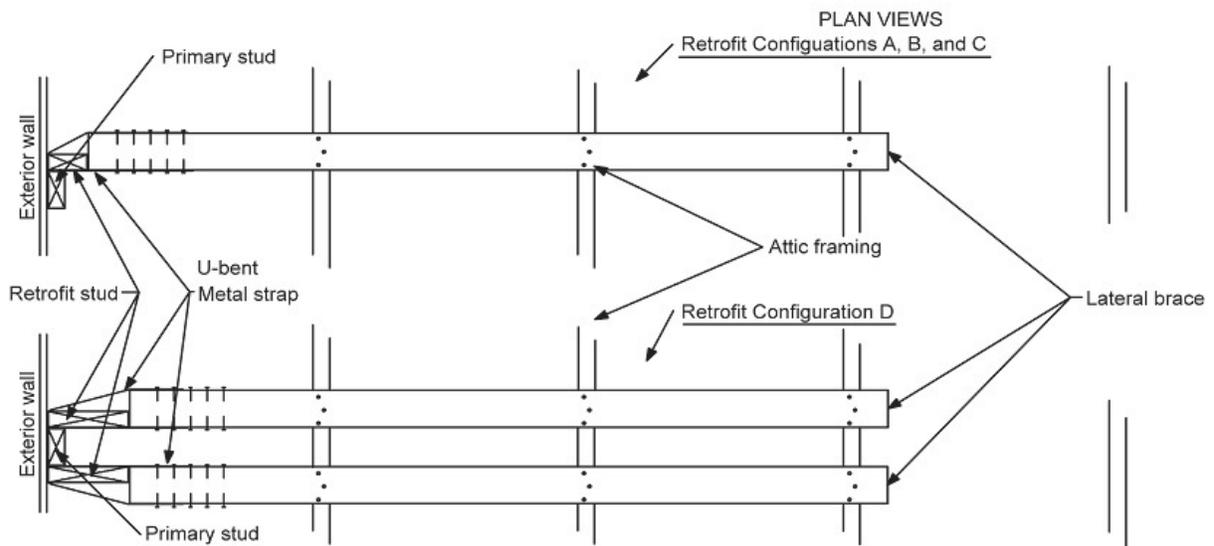
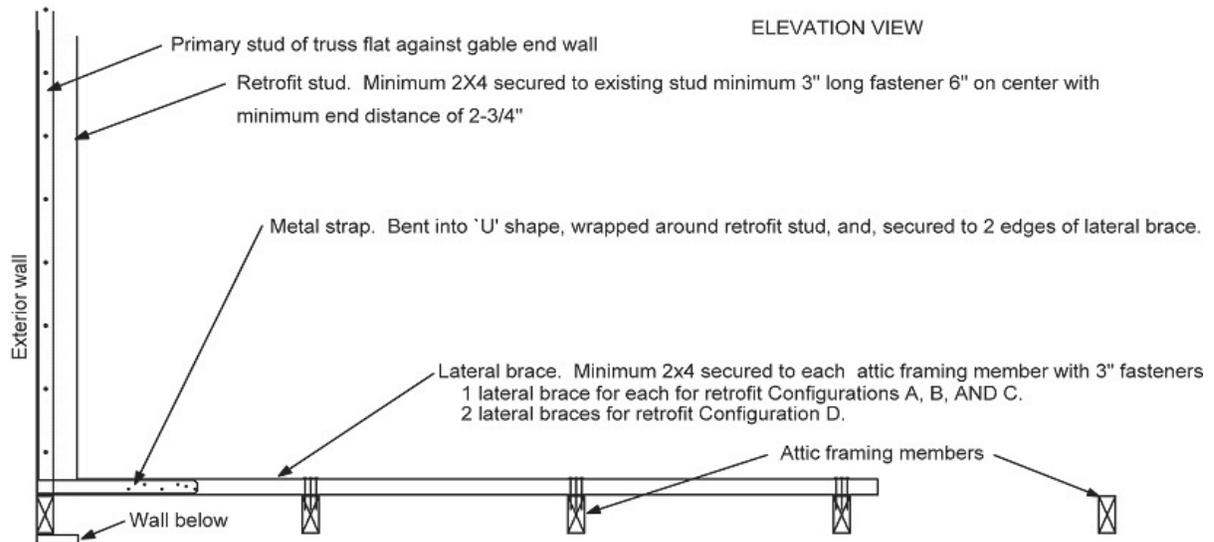
trusses and Figure 1707.1(2) or Figure 1707.1(4) for conventionally framed gable end walls. Lateral braces shall be allowed to be omitted in accordance with Section 1706.6 or 1707.4.1. Alternative methods for providing lateral bracing are allowable in accordance with Section 1707.4. Lateral braces shall be minimum 2 x 4 lumber except as required by Section 1707.4.1 or Section 1706.6.



**FIGURE 1707.1(1)  
TRUSS GABLE END WALL WITH L-BENT STRAPS**

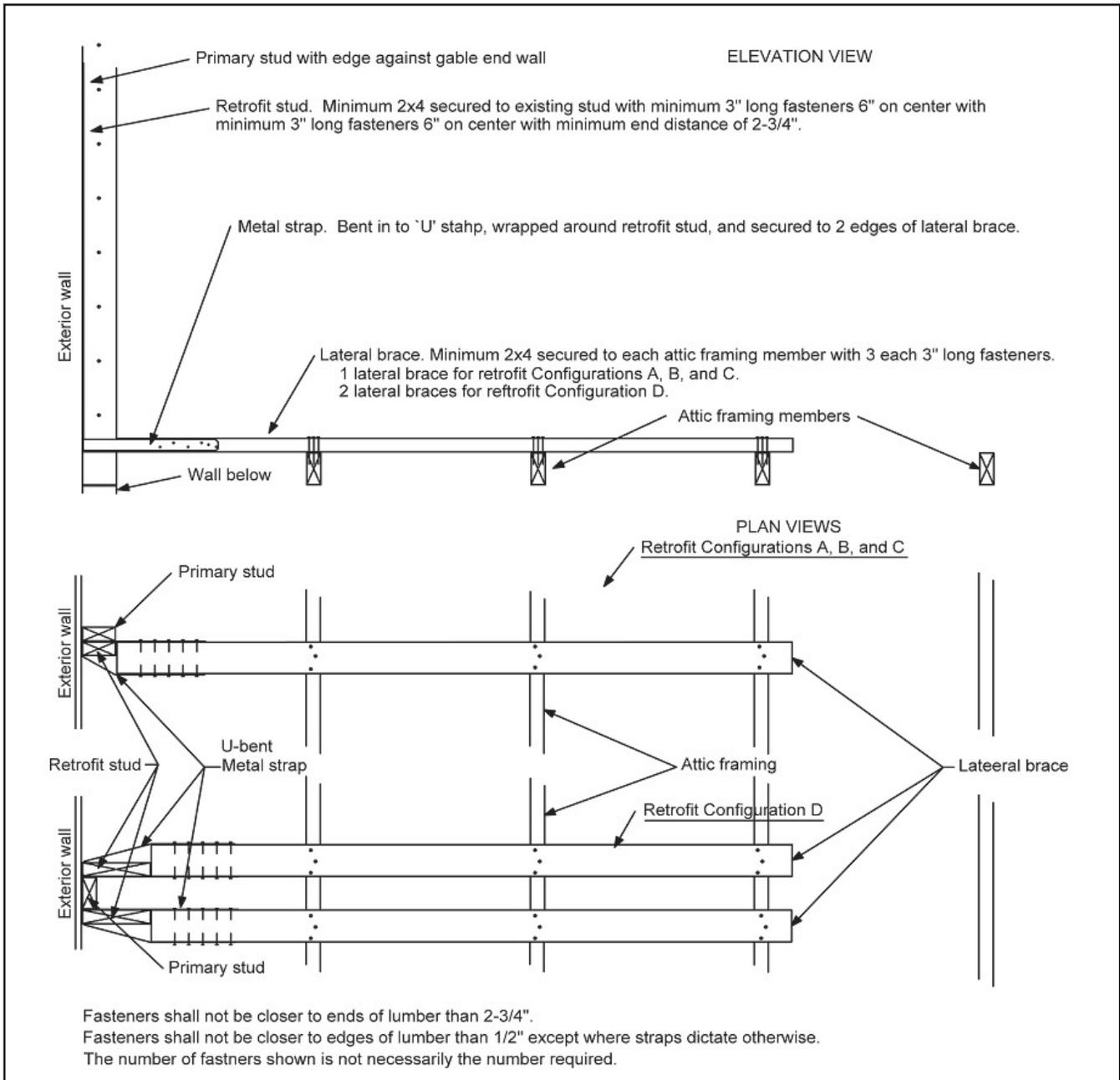


**FIGURE 1707.1(2)**  
**CONVENTIONALLY FRAME GABLE END WALL WITH L-BENT STRAPS**



Fasteners shall not be placed closer to ends of lumber than 2-3/4".  
 Fasteners shall not be placed closer to edges of lumber than 1/2" except where straps dictate otherwise.  
 The number of fasteners shown is not necessarily the number required.

**FIGURE 1707.1(3)**  
**TRUSS GABLE END WALL WITH U-BENT STRAPS**



**FIGURE 1707.1(4)**  
**CONVENTIONALLY FRAME GABLE END WALL WITH U-BENT STRAPS**

**1707.2 Placement.** Lateral braces shall be placed approximately perpendicular to the attic-framing members and extend so they are attached to a minimum of three attic-framing members. The attic-framing member farthest from the gable end wall shall be a minimum of 6 feet from the exterior sheathing or siding on the gable end wall. Lateral braces shall be installed with their wide faces across attic framing members. Where the method of Section 1708.1.1 is used, lateral braces shall butt against the sheathing or siding of the wall. Where the method of Section 1708.1.2 is used, lateral braces shall butt against the retrofit studs.

- **Exception:** Where existing conditions prevent placement of continuous lateral braces on attic-framing members, installation shall be in accordance with Section 1707.4.

Code Sections 1707.3 through 1707.3.3 describe attachment and fastening methods for the lateral braces. Sections 1707.4 through 1707.8 describe "work-around" techniques to deal with various existing conditions, such when outlookers exist or where existing conditions prevent installation of lateral braces near the peak of roofs.

Section 1708 describes the attachment of lateral braces to retrofit studs.

Section 1709 describes the various methods to connect gable end walls to the wall below, including for truss gable end walls, wood frame walls below, concrete or masonry walls below, and platform framed gable end walls.

## The State Legislature mandates five mitigation areas to be addressed, here is the second:

### From 2014 Florida Statutes, Section 553.844:

2. *Secondary water barriers for roofs and standards relating to secondary water barriers. The criteria may include, but need not be limited to, roof shape, slope, and composition of all elements of the roof system. The criteria may not be limited to one method or material for a secondary water barrier.*

### From Chapter 7 of the Florida Building Code - Existing Building, 5th Edition (2014):

#### 708.7

When a roof covering on an existing site-built single family residential structure is removed and replaced, the following procedures shall be permitted to be performed by the roofing contractor:

- (a) Roof-decking attachment shall be as required by Section 708.7.1.
- (b) A secondary water barrier shall be provided as required by Section 708.7.2.

● **Exception:** Single family residential structures permitted subject to the Florida Building Code are not required to comply with this section.

Code Sections 708.7.1, 708.7.1.1, and 708.7.1.2 describe roof decking fastening requirements.

### From Chapter 7 of the Florida Building Code - Existing Building, 5th Edition (2014):

**708.7.2 Roof secondary water barrier for site-built single family residential structures.** A secondary water barrier shall be installed using one of the following methods when roof covering is removed and replaced:

1. In either HVHZ (High Velocity Hurricane Zone) or Non-HVHZ regions:
  - a) All joints in structural panel roof sheathing or decking shall be covered with a minimum 4-inch wide strip of self-adhering polymer modified bitumen tape applied directly to the sheathing or decking. The deck and self-adhering polymer

modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.

- b) The entire roof deck shall be covered with an approved asphalt impregnated 30# felt underlayment or approved synthetic underlayment installed with nails and tin-tabs in accordance with Section 1518.2, 1518.3, or 1518.4 of the Florida Building Code, Building. (No additional underlayment shall be required over the top of this sheet.) The synthetic underlayment shall be fastened in accordance with the manufacturer's recommendations.

#### 2. Outside the HVHZ:

- a) The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting ASTM D 1970 or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer's installation instructions. No additional underlayment shall be required on top of this sheet for new installations.
- b) An underlayment system approved for the particular roof covering shall be applied with the following modification:
  - (1) For roof slopes that require one layer of underlayment, a layer of approved asphalt impregnated ASTM D 226 Type I or Type II, ASTM D 4869, Type II or Type IV underlayment or approved synthetic underlayment shall be installed. The felt is to be fastened with 1-inch round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12-inches o.c. and one row at the overlaps fastened 6-inches o.c. Synthetic underlayment shall be fastened in accordance with this section and the manufacturer's recommendations.
  - (2) For roof slopes that require two layers of underlayment, an approved asphalt impregnated ASTM D 226 Type I or Type II, ASTM D 4869, Type II or Type IV underlayment shall be installed in a shingle-fashion and lapped 19 inches and fastened with 1-inch round plastic cap, metal cap nails or nails and tin-tabs, attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12-inches o.c. and one row at the overlaps fastened 6-inches o.c. An approved synthetic underlayment shall be installed in accordance with this section and the manufacturer's installation instructions. (No additional underlayment shall be required over the top of this sheet).

• **Exceptions:**

- 1. Roof slopes < 2:12 having a continuous roof system shall be deemed to comply with Section 708.7.2 requirements for a secondary water barrier.
- 2. Clay and concrete tile roof systems installed as required by the Florida Building Code are deemed to comply with the requirements of Section 708.7.2 for secondary water barriers.

**708.8**

When a roof covering on an existing site-built single-family residential structure is removed and replaced on a building that is located in the wind-borne debris region as defined in the Florida Building Code, Building and that has an insured value of \$300,000 or more or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of \$300,000 or more:

- (a) Roof to wall connections shall be improved as required by Section 708.8.1.
- (b) Mandated retrofits of the roof-to-wall connection shall not be required beyond a 15-percent increase in the cost of reroofing.

• **Exception:** Single-family residential structures permitted subject to the Florida Building Code are not required to comply with this section.

## The State Legislature mandates five mitigation areas to be addressed, here is the third:

### From 2014 Florida Statutes, Section 553.844:

3. *Prescriptive techniques for improvement of roof-to-wall connections. The Legislature recognizes that the cost of retrofitting existing buildings to meet the code requirements for new construction in this regard may exceed the practical benefit to be attained. The Legislature intends for the commission to provide for the integration of alternate, lower-cost means that may be employed to retrofit existing buildings that are not otherwise required to comply with the requirements of the Florida Building Code for new construction so that the cost of such improvements does not exceed approximately 15 percent of the cost of reroofing. Roof-to-wall connections shall not be required unless evaluation and installation of connections at gable ends or all corners can be completed for 15 percent of the cost of roof replacement. For houses that have both hip and gable roof ends, the priority shall be to retrofit the gable end roof-to-wall connections unless the width of the hip is more than 1.5 times greater than the width of the gable end. Priority shall be given to connecting the corners of roofs to walls below the locations at which the spans of the roofing members are greatest.*

## From Florida Building Code - Existing Building, 5th Edition (2014):

**708.8.1 Roof-to-wall connections for site-built single-family residential structures.** Where required by Section 708.8, the intersection of roof framing with the wall below shall provide sufficient resistance to meet the uplift loads specified in Table 708.8.1 (not shown here), either because of existing conditions or through retrofit measures. As an alternative to an engineered design, the prescriptive retrofit solutions provided in Sections 708.8.1.1 through 708.8.1.7 shall be accepted as meeting the mandated roof-to-wall retrofit requirements.

• **Exceptions:**

- 1. Where it can be demonstrated (by code adoption date documentation and permit issuance date) that roof-to-wall connections and/or roof-to-foundation continuous load path requirements were required at the time of original construction.
- 2. Roof-to-wall connections shall not be required unless evaluation and installation of connections at gable ends or all corners can be completed for 15 percent of the cost of roof replacement.

Code Sections 708.8.1.1 through 708.8.1.7 describe the allowable methods obtaining access for retrofitting roof to wall connections, as well as the exact methods for installing and fastening straps depending on the style of roof and the wall construction below.

## The State Legislature mandates five mitigation areas to be addressed, here is the fourth:

### From 2014 Florida Statutes, Section 553.844:

4. *Strengthening or correcting roof-decking attachments and fasteners during reroofing.*

## From Florida Building Code - Existing Building, 5th Edition (2014):

**706.3.2 Roof diaphragms resisting wind loads in high-wind regions.** Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building located where the ultimate design wind speed,  $V_{ult}$ , is greater than 115 mph, as defined in Section 1609 (the HVHZ shall comply with Section 1620) of the Florida Building Code, Building, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the Florida Building Code, Building, including wind uplift. If the diaphragms and

connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the Florida Building Code, Building.

**708.7.1 Roof decking attachment for site-built single-family residential structures.** For site-built single family residential structures the fastening shall be in accordance with Section 708.7.1.1 or 708.7.1.2 as appropriate for the existing construction. 8d nails shall be a minimum of 0.113 inch in diameter and shall be a minimum of 2 1/4 inch long to qualify for the provisions of this section for existing nails regardless of head shape or head diameter.

#### 708.7.1.1

Roof decking consisting of sawn lumber or wood planks up to 12 inches wide and secured with at least two nails (minimum size 8d) to each roof framing member it crosses shall be deemed to be sufficiently connected. Sawn lumber or wood plank decking secured with smaller fasteners than 8d nails or with fewer than two nails (minimum size 8d) to each framing member it crosses shall be deemed sufficiently connected if fasteners are added such that two clipped head, round head, or ring shank nails (minimum size 8d) are in place on each framing member it crosses.

#### 708.7.1.2

For roof decking consisting of wood structural panels, fasteners and spacing required in columns 3 and 4 of Table 708.7.1.2 (not shown) are deemed to comply with the requirements of Section 706.3, Florida Building Code, Existing Building for the indicated design wind speed range. Wood structural panel connections retrofitted with a two part urethane based closed cell adhesive sprayed onto the joint between the sheathing and framing members are deemed to comply with the requirements of Section 706.3, Florida Building Code, Existing Building, provided testing using the manufacturer's recommended application on panels connected with 6d smooth shank nails at no more than a 6-inch edge and 12-inch field spacing demonstrate an uplift resistance of a minimum of 200 psf.

Supplemental fasteners as required by Table 708.7.1.2 (not shown here) shall be 8d ring shank nails with round heads and the following minimum dimensions:

1. 0.113-inch nominal shank diameter.
2. Ring diameter a minimum of 0.010 inch over shank diameter.
3. 16 to 20 rings per inch.
4. A minimum 0.280-inch full round head diameter.
5. Ring shank to extend a minimum of 1 1/2 inches from the tip of the nail.
6. Minimum 2 3/8-inch nail length.

## The State Legislature mandates five mitigation areas to be addressed, here is the fifth:

### From 2014 Florida Statutes, Section 553.844:

5. *Adding or strengthening opening protections.*

### From Florida Building Code - Existing Building, 5th Edition (2014):

**706.4 Replacement of windows and doors.** The replacement of garage doors, exterior doors, skylight, operative and inoperative windows shall be designed and constructed to comply with Chapter 16 of the Florida Building Code, Building.

#### • Exceptions:

1. Opening protection exception. For one- and two-family dwellings constructed under codes other than the Florida Building Code and located in windborne debris regions, the replacement of garage doors and exterior doors with glazing, sliding glass doors, glass patio doors, skylights, and operable and inoperable windows within any 12-month period shall not be required to have opening protection but shall be designed for wind pressures for enclosed buildings, provided the aggregate area of the glazing in the replaced components does not exceed 25 percent of the aggregate area of the glazed openings in the dwelling or dwelling unit.
2. Opening protection exception for High-Velocity Hurricane Zones. For one-and two-family dwellings constructed under codes prior to September 1, 1994, the replacement of exterior doors with glazing, sliding glass doors, glass patio doors, skylights, and operable and inoperable windows within any 12- month period shall not be required to have opening protection provided the aggregate area of the glazing in the replaced components does not exceed 25 percent of the aggregate area of the glazed openings in the dwelling or dwelling unit.

#### 706.5

Openings in sunrooms, enclosed balconies and enclosed porches constructed under existing roofs or decks are not required to be protected, provided the space is separated from the building interior by a wall and all openings in the separating wall are protected in accordance with Section 1609.1.2 of the Florida Building Code, Building. Such spaces shall be permitted to be designed as enclosed or partially enclosed. (High-Velocity Hurricane Zones must comply with Chapter 16 of the Florida Building Code, Building.)

#### • Exceptions:

1. Exterior balconies or porches under existing roofs

- or decks enclosed with screen or removable vinyl and acrylic panels complying with the Florida Building Code, Building, Section 2002.3.3 shall not be required to be protected and openings in the wall separating the unit from the balcony or porch shall not be required to be protected unless required by other provisions of this code.
- 2. High-Velocity Hurricane Zones must comply with Chapter 16 of the Florida Building Code, Building.

**From 2014 Florida Statutes, Section 553.844:**

- (3) *The Legislature finds that the integration of these specifically identified mitigation measures is critical to addressing the serious problem facing the state from damage caused by windstorms and that delay in the adoption and implementation constitutes a threat to the health, safety, and welfare of the state. Accordingly, the Florida Building Commission shall develop and adopt these measures by October 1, 2007, by rule separate from the Florida Building Code, which take immediate effect and shall incorporate such requirements into the next edition of the Florida Building Code. Such rules shall require or otherwise clarify that for site-built, single-family residential structures:*
- (a) *A roof replacement must incorporate the techniques specified in subparagraphs (2)(b)2. and 4.*
  - (b) *For a building that is located in the wind-borne*

*debris region as defined in s. 1609.2 of the International Building Code (2006) and that has an insured value of \$300,000 or more or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of \$300,000 or more, a roof replacement must incorporate the techniques specified in subparagraph (2)(b)3.*

- (c) *Any activity requiring a building permit that is applied for on or after July 1, 2008, and for which the estimated cost is \$50,000 or more, must include provision of opening protections as required within the Florida Building Code for new construction for a building that is located in the wind-borne debris region as defined in s. 1609.2 of the International Building Code (2006) and that has an insured value of \$750,000 or more, or, if the building is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of \$750,000 or more.*

This is the end of the *Florida Wind Mitigation Methods* Module. Please note that this has only been an overview of the prescriptive wind mitigation methods included in the Florida Building Code to promote a general awareness of what is allowed. A comprehensive understanding of these techniques can only be gained by a thorough reading of the appropriate sections of the Florida Building Code.

## Wind Mitigation Techniques Final Exam

51. **Considering Attachment of added studs, in the case of conventional framing, each end of each required added stud shall be attached to:**
  - a. the top plate only
  - b. the bottom plate only
  - c. the top and bottom plates
  - d. the roof decking
52. **Regarding Lateral Braces Placement, the attic-framing member farthest from the gable end wall shall be a minimum of \_\_\_\_ from the exterior sheathing or siding on the gable end wall.**
  - a. 3 feet
  - b. 6 feet
  - c. 10 feet
  - d. 12 inches
53. **With respect to Roof secondary water barriers, one exception is that roof slopes \_\_\_\_ having a continuous roof system shall be deemed to comply with Section 708.7.2 requirements for a secondary water barrier.**
  - a. < 1:12
  - b. < 4:12
  - c. < 6:12
  - d. < 2:12
54. **For Roof diaphragms resisting wind loads in high-wind regions, roof decking consisting of sawn lumber or wood planks up to \_\_\_\_\_ wide and secured with at least two nails (minimum size 8d) to each roof framing member it crosses shall be deemed to be sufficiently connected.**
  - a. 6 inches
  - b. 8 inches
  - c. 12 inches
  - d. 16 inches
55. **The replacement of garage doors, exterior doors, skylight, operative and inoperative windows shall be designed and constructed to comply with \_\_\_\_\_ of the Florida Building Code, Building.**
  - a. Chapter 16
  - b. Chapter 8
  - c. Chapter 1
  - d. Chapter 10

# Lead Safe Practices

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## Health Hazards of Lead Exposure

Pure lead (Pb) is a heavy metal at room temperature and pressure. A basic chemical element, it can combine with various other substances to form numerous lead compounds.

Lead has been poisoning workers for thousands of years. Lead can damage the central nervous system, cardiovascular system, reproductive system, hematological system, and kidneys. When absorbed into the body in high enough doses, lead can be toxic.

In addition, workers' lead exposure can harm their children's development.

Short-term (acute) overexposure—as short as days—can cause acute encephalopathy, a condition affecting the brain that develops quickly into seizures, coma, and death from cardio respiratory arrest. Short-term occupational exposures of this type are highly unusual but not impossible.

Extended, long-term (chronic) overexposure can result in severe damage to the central nervous system, particularly the brain. It can also damage the blood-forming, urinary, and reproductive systems.

There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects that take longer to develop.

## SYMPTOMS OF CHRONIC OVEREXPOSURE

Some of the common symptoms include:

- Loss of appetite;
- Constipation;
- Nausea;
- Excessive tiredness;
- Headache;
- Fine tremors;
- Colic with severe abdominal pain;
- Metallic taste in the mouth;
- Weakness;
- Nervous irritability;
- Hyperactivity;
- Muscle and joint pain or soreness;
- Anxiety;
- Pallor;
- Insomnia;
- Numbness; and
- Dizziness

## REPRODUCTIVE RISKS

Lead is toxic to both male and female reproductive systems.

Lead can alter the structure of sperm cells and there is evidence of miscarriage and stillbirth in women exposed to lead or whose partners have been exposed. Children born to parents who were exposed to excess lead levels are more likely to have birth defects, mental retardation, or behavioral disorders or to die during the first year of childhood.

Workers who desire medical advice about reproductive issues related to lead should contact qualified medical personnel to arrange for a job evaluation and medical follow-up—particularly if they are pregnant or actively seeking to have a child. Employers whose employees may be exposed to lead and who have been contacted by employees with concerns about reproductive issues must make medical examinations and consultations available.

## CHELATING AGENTS

Under certain limited circumstances, a physician may prescribe special drugs called chelating agents to reduce the amount of lead absorbed in body tissues. Using chelation as a preventive measure—that is, to lower blood level but continue to expose a worker—is prohibited and therapeutic or diagnostic chelations of lead that are required must be done under the supervision of a licensed physician in a clinical setting, with thorough and appropriate medical monitoring. The employee must be notified in writing before treatment of potential consequences and allowed to obtain a second opinion.

## Worker Exposure

Lead is most commonly absorbed into the body by inhalation. When workers breathe in lead as a dust, fume, or mist, their lungs and upper respiratory tract absorb it into the body. They can also absorb lead through the digestive system if it enters the mouth and is ingested.

A significant portion of the lead inhaled or ingested gets into the bloodstream. Once in the bloodstream, lead circulates through the body and is stored in various organs and body tissues. Some of this lead is filtered out of the body quickly and excreted, but some remains in the blood and tissues. As exposure continues, the amount stored will increase if the body absorbs more lead than it excretes. The lead stored in the tissue can slowly cause irreversible damage, first to individual cells, then to organs and whole body systems.

# Construction Workers and Lead Exposure

## HOW LEAD IS USED

In construction, lead is used frequently for roofs, cornices, tank linings, and electrical conduits. In plumbing, soft solder, used chiefly for soldering tinplate and copper pipe joints, is an alloy of lead and tin. Soft solder has been banned for many uses in the United States. In addition, the Consumer Product Safety Commission bans the use of lead-based paint in residences. Because lead-based paint inhibits the rusting and corrosion of iron and steel, however, lead continues to be used on bridges, railways, ships, lighthouses, and other steel structures, although substitute coatings are available.

Construction projects vary in their scope and potential for exposing workers to lead and other hazards. Projects such as removing paint from a few interior residential doors may involve limited exposure. Others projects, however, may involve removing or stripping substantial quantities of lead-based paints on large bridges and other structures.

## MOST VULNERABLE WORKERS

Workers potentially at risk for lead exposure include those involved in iron work; demolition work; painting; lead-based paint abatement; plumbing; heating and air conditioning maintenance and repair; electrical work; and carpentry, renovation, and remodeling work. Plumbers, welders, and painters are among those workers most exposed to lead. Significant lead exposures also can arise from removing paint from surfaces previously coated with lead-based paint such as bridges, residences being renovated, and structures being demolished or salvaged. With the increase in highway work, bridge repair, residential lead abatement, and residential remodeling, the potential for exposure to lead-based paint has become more common.

Workers at the highest risk of lead exposure are those involved in:

- Abrasive blasting and
- Welding, cutting, and burning on steel structures.

Other operations with the potential to expose workers to lead include:

- Lead burning;
- Using lead-containing mortar;
- Power tool cleaning without dust collection systems;
- Rivet busting;
- Cleanup activities where dry expendable abrasives are used;
- Movement and removal of abrasive blasting enclosures;

- Manual dry scraping and sanding;
- Manual demolition of structures;
- Heat-gun applications;
- Power tool cleaning with dust collection systems; and
- Spray painting with lead-based paint.

## OSHA's Lead Standard

OSHA's Lead Standard for the Construction Industry, Title 29 Code of Federal Regulations 1926.62, covers lead in a variety of forms, including metallic lead, all inorganic lead compounds, and organic lead soaps.

## EXPOSURE LIMITS

The standard establishes maximum limits of exposure to lead for all workers covered, including a permissible exposure limit (PEL) and **action level (AL)**.

The **permissible exposure limits (PEL)** sets the maximum worker exposure to lead: 50 micrograms of lead per cubic meter of air (50µg/m<sup>3</sup>) averaged over an eight-hour period. If employees are exposed to lead for more than eight hours in a workday, their allowable exposure as a time weighted average for that day must be reduced according to this formula:

Employee exposure (in µg/m<sup>3</sup>) = 400 divided by the hours worked in the day.

The AL, regardless of respirator use, is an airborne concentration of 30µg/m<sup>3</sup>, averaged over an eight-hour period. The AL is the level at which an employer must begin specific compliance activities outlined in the standard.

## APPLICABILITY TO CONSTRUCTION

OSHA's lead in construction standard applies to all construction work where an employee may be exposed to lead. All work related to construction, alteration, or repair, including painting and decorating, is included. Under this standard, construction includes, but is not limited to:

- Demolition or salvage of structures where lead or materials containing lead are present;
- Removal or encapsulation of materials containing lead;
- New construction, alteration, repair, or renovation of structures, substrates, or portions or materials containing lead;
- Installation of products containing lead;
- Lead contamination from emergency cleanup;
- Transportation, disposal, storage, or containment of lead or materials containing lead where construction activities are performed; and
- Maintenance operations associated with these construction activities.

## Employer Responsibilities

### WORKER PROTECTIONS

Employers of construction workers are responsible for developing and implementing a worker protection program. At a minimum, the employer's worker protection program for employees exposed to lead above the PEL should include:

- Hazard determination, including exposure assessment;
- Medical surveillance and provisions for medical removal;
- Job-specific compliance programs;
- Engineering and work practice controls;
- Respiratory protection;
- Protective clothing and equipment;
- Housekeeping;
- Hygiene facilities and practices;
- Signs;
- Employee information and training; and
- Recordkeeping.

Because lead is a cumulative and persistent toxic substance and health effects may result from exposure over prolonged periods, employers must use these precautions where feasible to minimize employee exposure to lead.

The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective, site specific worker protection program. These professionals may work independently or may be associated with an insurance carrier, trade organization, or onsite consultation program.

### ELEMENTS OF A COMPLIANCE PROGRAM

For each job where employee exposure exceeds the PEL, the employer must establish and implement a written compliance program to reduce employee exposure to the PEL or below. The compliance program must provide for frequent and regular inspections of job sites, materials, and equipment by a competent person. Written programs, which must be reviewed and updated at least every six months, must include:

- A description of each activity in which lead is emitted (such as equipment used, material involved, controls in place, crew size, maintenance practices);
- The means to be used to achieve compliance and engineering plans and studies used to determine the engineering controls selected where they are required;
- Information on the technology considered to meet the PEL;
- Air monitoring data that document the source of lead emissions;

- A detailed schedule for implementing the program, including copies of documentation (such as purchase orders for equipment, construction contracts);
- A work practice program;
- An administrative control schedule, if applicable; and
- Arrangements made among contractors on multi-contractor sites to inform employees of potential lead exposure.

### Hazard Assessment

An employer is required to conduct an initial employee exposure assessment of whether employees are exposed to lead at or above the AL based on:

- Any information, observation, or calculation that indicates employee exposure to lead;
- Any previous measurements of airborne lead; and
- Any employee complaints of symptoms attributable to lead exposure.

Objective data and historical measurements of lead may be used to satisfy the standard's initial monitoring requirements.

### INITIAL EMPLOYEE EXPOSURE ASSESSMENT

Initial monitoring may be limited to a representative sample of those employees exposed to the greatest concentrations of airborne lead. Representative exposure sampling is permitted when there are a number of employees performing the same job, with lead exposure of similar duration and level, under essentially the same conditions. For employees engaged in similar work, the standard requires that the members of the group reasonably expected to have the highest exposure levels be monitored. This result is then attributed to the other employees of the group.

The employer must establish and maintain an accurate record documenting the nature and relevancy of previous exposure data. Instead of performing initial monitoring, the employer may in some cases rely on objective data that demonstrate that a particular lead containing material or product cannot result in employee exposure at or above the action level when it is processed, used, or handled.

### BIOLOGICAL MONITORING TESTS

Analysis of blood lead samples must be conducted by an OSHA approved lab and be accurate (to a confidence level of 95 percent) within plus or minus 15 percent, or 6 µg/dl, whichever is greater. If an employee's airborne lead level is at or above the AL for more than 30 days in any consecutive 12 months, the employer must make biological monitoring available on the following schedule:

- At least every two months for the first six months and every six months thereafter for employees

exposed at or above the action level for more than 30 days annually;

- At least every two months for employees whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl; and
- At least monthly while an employee is removed from exposure due an elevated blood lead level.

## PENDING EMPLOYEE EXPOSURE ASSESSMENT

Until the employer performs an exposure assessment and documents that employees are not exposed above the PEL, OSHA requires some degree of interim protection for employees. This means providing respiratory protection, protective work clothing and equipment, hygiene facilities, biological monitoring, and training—as specified by the standards—for certain tasks prone to produce high exposure. These include:

- Manual demolition of structures such as dry wall, manual scraping, manual sanding, and use of a heat gun where lead containing coatings or paints are present;
- Power tool cleaning with or without local exhaust ventilation;
- Spray painting with lead-containing paint;
- Lead burning;
- Use of lead-containing mortar;
- Abrasive blasting, rivet busting, welding, cutting, or torch burning on any structure where lead-containing coatings or paint are present;
- Abrasive blasting enclosure movement and removal;
- Cleanup of activities where dry expendable abrasives are used; and
- Any other task the employer believes may cause exposures in excess of the PEL.

## TEST RESULTS SHOWING NO OVEREXPOSURES

If the initial assessment indicates that no employee is exposed above the AL, the employer may discontinue monitoring. Further exposure testing is not required unless there is a change in processes or controls that may result in additional employees being exposed to lead at or above the AL, or result in employees already exposed at or above the AL being exposed above the PEL. The employer must keep a written record of the determination, including the date, location within the work site, and the name and social security number of each monitored employee.

## EMPLOYEE NOTIFICATION OF MONITORING RESULTS

The employer must notify each employee in writing

of employee exposure assessment results within five working days of receiving them. Whenever the results indicate that the representative employee exposure, without the use of respirators, is above the PEL, the employer must include a written notice stating that the employee's exposure exceeded the PEL and describing corrective action taken or to be taken to reduce exposure to or below the PEL.

## Medical Surveillance

When an employee's airborne exposure is at or above the AL for more than 30 days in any consecutive 12 months, an immediate medical consultation is required when the employee notifies the employer that he or she:

- has developed signs or symptoms commonly associated with lead-related disease;
- has demonstrated difficulty in breathing during respirator use or a fit test;
- desires medical advice concerning the effects of past or current lead exposure on the employee's ability to have a healthy child; and
- is under medical removal and has a medically appropriate need.

## MEDICAL EXAMS

The best indicator of personal lead exposure is through a blood test to indicate elevated blood lead levels. A medical exam must also include:

- Detailed work and medical histories, with particular attention to past lead exposure (occupational and non-occupational), personal habits (smoking and hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive, and neurological problems;
- A thorough physical exam, with particular attention to gums, teeth, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems; evaluation of lung function if respirators are used;
- A blood pressure measurement;
- A blood sample and analysis to determine blood lead level;
  - Hemoglobin and hematocrit determinations, red cell indices, and an exam of peripheral smear morphology; and
  - Zinc protoporphyrin; blood urea nitrogen; and serum creatinine;
- A routine urinalysis with microscopic exam; and
- Any lab or other test the examining physician deems necessary.

## INFORMATION FOR THE EXAMINING PHYSICIAN

The employer must provide all examining physicians with a copy of the lead in construction standard, including all appendices, a description of the affected employee's duties as they relate to the employee's exposure, the employee's lead exposure level or anticipated exposure level, a description of personal protective equipment used or to be used, prior blood lead determinations, and all prior written medical opinions for the employee.

### WHEN MONITORING SHOWS NO EMPLOYEE EXPOSURES ABOVE THE AL

Employers must make available, at no cost to the employee, initial medical surveillance for employees exposed to lead on the job at or above the action level on any one day per year. This initial medical surveillance consists of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin (ZPP) levels. In addition, a medical surveillance program with biological monitoring must be made available to any employee exposed at or above the action level for more than 30 days in any consecutive 12 months.

### AFTER THE MEDICAL EXAMINATION

Employers must obtain and provide the employee a copy of a written opinion from each examining or consulting physician that contains only information related to occupational exposure to lead and must include:

- Whether the employee has any detected medical condition that would increase the health risk from lead exposure;
- Any special protective measures or limitations on the worker's exposure to lead,
- Any limitation on respirator use; and
- Results of the blood lead determinations.

In addition, the written statement may include a statement that the physician has informed the employee of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.

The employer must instruct the physician that findings, including lab results or diagnoses unrelated to the worker's lead exposure, must not be revealed to the employer or included in the written opinion to the employer. The employer must also instruct the physician to advise employees of any medical condition, occupational or non-occupational, that necessitates further evaluation or treatment. In addition, some states also require laboratories and health care providers to report cases of elevated blood lead concentrations to their state health departments.

## Medical Removal Provisions

Temporary medical removal can result from an elevated blood level or a written medical opinion. More specifically, the employer is required to remove from work an employee with a lead exposure at or above the AL each time periodic and follow-up (within two weeks of the periodic test) blood sampling tests indicate that the employee's blood level is at or above 50 µg /dl. The employer also must remove from work an employee with lead exposure at or above the AL each time a final medical determination indicates that the employee needs reduced lead exposure for medical reasons. If the physician who is implementing the employer's medical program makes a final written opinion recommending the employee's removal or other special protective measures, the employer must implement the physician's recommendation.

For an employee removed from exposure to lead at or above the AL due to a blood lead level at or above 50 µg/dl, the employer may return that employee to former job status when two consecutive blood sampling tests indicate that the employee's blood lead level is below 40 µg /dl. For an employee removed from exposure to lead due to a final medical determination, the employee must be returned when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition that places the employee at increased risk of lead exposure.

The employer must remove any limitations placed on employees or end any special protective measures when a subsequent final medical determination indicates they are no longer necessary. If the former position no longer exists, the employee is returned consistent with whatever job assignment discretion the employer would have had if no removal occurred.

### WORKER PROTECTIONS AND BENEFITS

The employer must provide up to 18 months of medical removal protection (MRP) benefits each time an employee is removed from lead exposure or medically limited. As long as the position/job exists, the employer must maintain the earnings, seniority, and other employment rights and benefits as though the employee had not been removed from the job or otherwise medically limited. The employer may condition medical removal protection benefits on the employee's participation in follow-up medical surveillance.

If a removed employee files a worker's compensation claim or other compensation for lost wages due to a lead-related disability, the employer must continue medical removal protection benefits until the claim is resolved. However, the employer's MRP benefits obligation will be reduced by the amount that the employee receives from these sources. Also, the

employer's MRP benefits obligation will be reduced by any income the employee receives from employment with another employer made possible by virtue of the employee's removal.

## RECORDS REQUIREMENTS INVOLVING MEDICAL REMOVAL

In the case of medical removal, the employer's records must include:

- The worker's name and social security number,
- The date of each occasion that the worker was removed from current exposure to lead,
- The date when the worker was returned to the former job status,
- A brief explanation of how each removal was or is being accomplished, and
- A statement indicating whether the reason for the removal was an elevated blood lead level.

## Recordkeeping

### EMPLOYER REQUIREMENTS

The employer must maintain any employee exposure and medical records to document ongoing employee exposure, medical monitoring, and medical removal of workers. This data provides a baseline to evaluate the employee's health properly. Employees or former employees, their designated representatives, and OSHA must have access to exposure and medical records in accordance with 29 CFR 1910.1020. Rules of agency practice and procedure governing OSHA access to employee medical records are found in 29 CFR 1913.10.

### EXPOSURE ASSESSMENT RECORDS

The employer must establish and maintain an accurate record of all monitoring and other data used to conduct employee exposure assessments as required by this standard and in accordance with 29 CFR 1910.1020. The exposure assessment records must include:

- The dates, number, duration, location, and results of each sample taken, including a description of the sampling procedure used to determine representative employee exposure;
- A description of the sampling and analytical methods used and evidence of their accuracy;
- The type of respiratory protection worn, if any;
- The name, social security number, and job classification of the monitored employee and all others whose exposure the measurement represents; and

- Environmental variables that could affect the measurement of employee exposure.

## MEDICAL SURVEILLANCE RECORDS

The employer must maintain an accurate record for each employee subject to medical surveillance, including:

- The name, social security number, and description of the employee's duties;
- A copy of the physician's written opinions;
- The results of any airborne exposure monitoring done for the employee and provided to the physician; and
- Any employee medical complaints related to lead exposure.

In addition, the employer must keep or ensure that the examining physician keeps the following medical records:

- A copy of the medical examination results including medical and work history;
- A description of the laboratory procedures and a copy of any guidelines used to interpret the test results; and
- A copy of the results of biological monitoring. The employer or physician or both must maintain medical records in accordance with 29 CFR 1910.1020.

## DOCUMENTS FOR EMPLOYEES SUBJECT TO MEDICAL REMOVAL

The employer must maintain—for at least the duration of employment—an accurate record for each employee subject to medical removal, including:

- The name and social security number of the employee;
- The date on each occasion that the employee was removed from current exposure to lead and the corresponding date which the employee was returned to former job status;
- A brief explanation of how each removal was or is being accomplished; and
- A statement about each removal indicating whether the reason for removal was an elevated blood level.

## EMPLOYER REQUIREMENTS RELATED TO OBJECTIVE DATA

The employer must establish and maintain an accurate record documenting the nature and relevancy of objective data relied on to assess initial employee exposure in lieu of exposure monitoring. The employer must maintain the record of objective data relied on for at least 30 years.

## DOCUMENTS FOR OSHA AND NIOSH REVIEW

The employer must make all records—including exposure monitoring, objective data, medical removal, and medical records—available upon request to affected employees, former employees, and their designated representatives and to the OSHA Assistant Secretary and the Director of the National Institute for Occupational Safety and Health (NIOSH) for examination and copying in accordance with 29 CFR 1910.1020.

## WHEN CLOSING A BUSINESS

When an employer ceases to do business, the successor employer must receive and retain all required records. If no successor is available, these records must be sent to the Director of NIOSH.

## Exposure Reduction and Employee Protection

The most effective way to protect workers is to minimize their exposure through engineering controls, good work practices and training, and use of personal protective clothing and equipment, including respirators, where required. The employer needs to designate a competent person capable of identifying existing and predictable lead hazards and who is authorized to take prompt corrective measures to eliminate such problems. The employer should, as needed, consult a qualified safety and health professional to develop and implement an effective worker protection program. These professionals may work independently or may be associated with an insurance carrier, trade organization, or onsite consultation program.

## Engineering Controls

Engineering measures include local and general exhaust ventilation, process and equipment modification, material substitution, component replacement, and isolation or automation. Examples of recommended engineering controls that can help reduce worker exposure to lead are described as follows.

### EXHAUST VENTILATION

Equip power tools used to remove lead-based paint with dust collection shrouds or other attachments so that paint is exhausted through a high-efficiency particulate air (HEPA) vacuum system. For operations such as welding, cutting/burning, or heating, use local exhaust ventilation. Use HEPA vacuums during cleanup operations.

For abrasive blasting operations, build a containment structure that is designed to optimize the flow of clean ventilation air past the workers' breathing zones. This

will help reduce the exposure to airborne lead and increase visibility. Maintain the affected area under negative pressure to reduce the chances that lead dust will contaminate areas outside the enclosure. Equip the containment structure with an adequately sized dust collector to control emissions of particulate matter into the environment.

### ENCLOSURE OR ENCAPSULATION

One way to reduce the lead inhalation or ingestion hazard posed by lead-based paint is to encapsulate it with a material that bonds to the surface, such as acrylic or epoxy coating or flexible wall coverings. Another option is to enclose it using systems such as gypsum wallboard, plywood paneling, and aluminum, vinyl, or wood exterior siding. Floors coated with lead-based paint can be covered using vinyl tile or linoleum.

The building owner or other responsible person should oversee the custodial and maintenance staffs and contractors during all activities involving enclosed or encapsulated lead-based paint. This will minimize the potential for an inadvertent lead release during maintenance, renovation, or demolition.

### SUBSTITUTION

Choose materials and chemicals that do not contain lead for construction projects. Among the options are:

- Use zinc-containing primers covered by an epoxy intermediate coat and polyurethane topcoat instead of lead-containing coatings.
- Substitute mobile hydraulic shears for torch cutting under certain circumstances.
- Consider surface preparation equipment such as needle guns with multiple reciprocating needles completely enclosed within an adjustable shroud, instead of abrasive blasting under certain conditions. The shroud captures dust and debris at the cutting edge and can be equipped with a HEPA vacuum filtration with a self-drumming feature. One such commercial unit can remove lead-based paint from flat steel and concrete surfaces, outside edges, inside corners, and pipes.
- Choose chemical strippers in lieu of hand scraping with a heat gun for work on building exteriors, surfaces involving carvings or molding, or intricate iron work. Chemical removal generates less airborne lead dust. (Be aware, however, that these strippers themselves can be hazardous and that the employer must review the material safety data sheets (MSDSs) for these stripping agents to obtain information on their hazards.)

### COMPONENT REPLACEMENT

Replace lead-based painted building components such

as windows, doors, and trim with new components free of lead-containing paint. Another option is to remove the paint offsite and then repaint the components with zinc-based paint before replacing them.

## PROCESS OR EQUIPMENT MODIFICATION

When applying lead paints or other lead-containing coatings, use a brush or roller rather than a sprayer. This application method introduces little or no paint mist into the air to present a lead inhalation hazard. (Note that there is a ban on the use of lead-based paint in residential housing.)

Use non-silica-containing abrasives such as steel or iron shot/grit sand instead of sand in abrasive blasting operations when practical. The free silica portion of the dust presents a respiratory health hazard.

When appropriate for the conditions, choose blasting techniques that are less dusty than open-air abrasive blasting. These include hydro- or wet-blasting using high-pressure water with or without an abrasive or surrounding the blast nozzle with a ring of water, and vacuum blasting where a vacuum hood for material removal is positioned around the exterior of the blasting nozzle.

When using a heat gun to remove lead-based paints in residential housing units, be sure it is of the flameless electrical softener type. Heat guns should have electronically controlled temperature settings to allow usage below 700 degrees F. Equip heat guns with various nozzles to cover all common applications and to limit the size of the heated work area.

When using abrasive blasting with a vacuum hood on exterior building surfaces, ensure that the configuration of the heads on the blasting nozzle match the configuration of the substrate so that the vacuum is effective in containing debris.

Ensure that HEPA vacuum cleaners have the appropriate attachments for use on unusual surfaces. Proper use of brushes of various sizes, crevice and angular tools, when needed, will enhance the quality of the HEPA-vacuuming process and help reduce the amount of lead dust released into the air.

## ISOLATION

Although it is not feasible to enclose and ventilate some abrasive blasting operations completely, it is possible to isolate many operations to help reduce the potential for lead exposure.

Isolation consists of keeping employees not involved in the blasting operations as far away from the work area as possible, reducing the risk of exposure.

## Housekeeping and Personal Hygiene

Lead is a cumulative and persistent toxic substance that poses a serious health risk. A rigorous housekeeping

program and the observance of basic personal hygiene practices will minimize employee exposure to lead. In addition, these two elements of the worker protection program help prevent workers from taking lead contaminated dust out of the worksite and into their homes where it can extend the workers' exposures and potentially affect their families' health.

## HOUSEKEEPING PRACTICES

An effective housekeeping program involves a regular schedule to remove accumulations of lead dust and lead-containing debris. The schedule should be adapted to exposure conditions at a particular worksite. OSHA's Lead Standard for Construction requires employers to maintain all surfaces as free of lead contamination as practicable. Vacuuming lead dust with HEPA-filtered equipment or wetting the dust with water before sweeping are effective control measures. Compressed air may not be used to remove lead from contaminated surfaces unless a ventilation system is in place to capture the dust generated by the compressed air.

In addition, put all lead-containing debris and contaminated items accumulated for disposal into sealed, impermeable bags or other closed impermeable containers. Label bags and containers as lead-containing waste. These measures provide additional help in controlling exposure.

## PERSONAL HYGIENE PRACTICES

Emphasize workers' personal hygiene such as washing their hands and face after work and before eating to minimize their exposure to lead. Provide and ensure that workers use washing facilities. Provide clean change areas and readily accessible eating areas. If possible, provide a parking area where cars will not be contaminated with lead. These measures:

- Reduce workers' exposure to lead and the likelihood that they will ingest lead,
- Ensure that the exposure does not extend beyond the worksite,
- Reduce the movement of lead from the worksite, and
- Provide added protection to employees and their families.

## CHANGE AREAS

The employer must provide a clean change area for employees whose airborne exposure to lead is above the PEL. The area must be equipped with storage facilities for street clothes and a separate area with facilities for the removal and storage of lead-contaminated protective work clothing and equipment. This separation prevents cross contamination of the employee's street and work clothing.

Employees must use a clean change area for taking off street clothes, suiting up in clean protective work

clothing, donning respirators before beginning work, and dressing in street clothes after work. No lead-contaminated items should enter this area.

Work clothing must not be worn away from the jobsite. Under no circumstances should lead-contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or for disposal following applicable federal, state, and local regulations.

## SHOWERS AND WASHING FACILITIES

When feasible, showers must be provided for use by employees whose airborne exposure to lead is above the permissible exposure limit so they can shower before leaving the worksite. Where showers are provided, employees must change out of their work clothes and shower before changing into their street clothes and leaving the worksite. If employees do not change into clean clothing before leaving the worksite, they may contaminate their homes and automobiles with lead dust, extending their exposure and exposing other members of their household to lead.

In addition, employers must provide adequate washing facilities for their workers. These facilities must be close to the worksite and furnished with water, soap, and clean towels so employees can remove lead contamination from their skin.

Contaminated water from washing facilities and showers must be disposed of in accordance with applicable local, state, or federal regulations.

## PERSONAL PRACTICES

The employer must ensure that employees do not enter lunchroom facilities or eating areas with protective work clothing or equipment unless surface lead dust has been removed. HEPA vacuuming and use of a downdraft booth are examples of cleaning methods that limit the dispersion of lead dust from contaminated work clothing.

In all areas where employees are exposed to lead above the PEL, employees must observe the prohibition on the presence and consumption or use of food, beverages, tobacco products, and cosmetics. Employees whose airborne exposure to lead is above the PEL must wash their hands and face before eating, drinking, smoking, or applying cosmetics.

## END-OF-DAY PROCEDURES

Employers must ensure that workers who are exposed to lead above the permissible exposure limit follow these procedures at the end of their workday:

- Place contaminated clothes, including work shoes and personal in a properly labeled closed container.
- Take a shower and wash their hair. Where showers

are not provided, employees must wash their hands and face at the end of the work shift.

- Change into street clothes in clean change areas.

## Protective Clothing and Equipment

### EMPLOYER REQUIREMENTS

Employers must provide workers who are exposed to lead above the PEL or for whom the possibility of skin or eye irritation exists with clean, dry protective work clothing and equipment that are appropriate for the hazard. Employers must provide these items at no cost to employees. Appropriate protective work clothing and equipment used on construction sites includes:

- Coveralls or other full-body work clothing;
- Gloves, hats, and shoes or disposable shoe coverlets;
- Vented goggles or face shields with protective spectacles or goggles;
- Welding or abrasive blasting helmets; and
- Respirators.

Clean work clothing must be issued daily for employees whose exposure levels to lead are above 200  $\mu\text{g}/\text{m}^3$ , weekly if exposures are above the PEL but at or below 200  $\mu\text{g}/\text{m}^3$  or where the possibility of skin or eye irritation exists.

### HANDLING CONTAMINATED PROTECTIVE CLOTHING

Workers must not be allowed to leave the worksite wearing lead contaminated protective clothing or equipment. This is an essential step in reducing the movement of lead contamination from the workplace into the worker's home and provides added protection for employees and their families.

Disposable coveralls and separate shoe covers may be used, if appropriate, to avoid the need for laundering. Workers must remove protective clothing in change rooms provided for that purpose.

Employers must ensure that employees leave the respirator use area to wash their faces and respirator face pieces as necessary. In addition, employers may require their employees to use HEPA vacuuming, damp wiping, or another suitable cleaning method before removing a respirator to clear loose particle contamination on the respirator and at the face-mask seal.

Place contaminated clothing that is to be cleaned, laundered, or disposed of by the employer in closed containers. Label containers with the warning: "Caution: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead-contaminated wash water in accordance with applicable local, state, or federal regulations."

Workers responsible for handling contaminated

clothing, including those in laundry services or subcontractors, must be informed in writing of the potential health hazard of lead exposure. At no time shall lead be removed from protective clothing or equipment by brushing, shaking, or blowing. These actions disperse the lead into the work area.

## PREVENTING HEAT STRESS

Workers wearing protective clothing, particularly in hot environments or within containment structures, can face a risk from heat stress if proper control measures are not used.

Heat stress is caused by several interacting factors, including environmental conditions, type of protective clothing worn; the work activity required and anticipated work rate, and individual employee characteristics such as age, weight, and fitness level. When heat stress is a concern, the employer should choose lighter, less insulating protective clothing over heavier clothing, as long as it provides adequate protection. Other measures the employer can take include: discussing the possibility of heat stress and its signs and symptoms with all workers; using appropriate work/rest regimens; and providing heat stress monitoring that includes measuring employees' heart rates, body temperatures, and weight loss. Employers must provide a source of water or electrolyte drink in a non-contaminated eating and drinking area close to the work area so workers can drink often throughout the day. Workers must wash their hands and face before drinking any fluid if their airborne exposure is above the PEL.

## Respiratory Protection

Although engineering and work practice controls are the primary means of protecting workers from exposure to lead, source control at construction sites sometimes is insufficient to control exposure. In these cases, airborne lead concentrations may be high or may vary widely. Respirators often must be used to supplement engineering controls and work practices to reduce worker lead exposures below the PEL. When respirators are required, employers must provide them at no cost to workers.

The standard requires that respirators be used during periods when an employee's exposure to lead exceeds the PEL, including

- Periods necessary to install or implement engineering or work practice controls, and
- Work operations for which engineering and work practice controls are insufficient to reduce employee exposures to or below the PEL.

Respirators also must be provided upon employee request. A requested respirator is included as a requirement to provide increased protection for those

employees who wish to reduce their lead burden below what is required by the standard, particularly if they intend to have children in the near future. In addition, respirators must be used when performing previously indicated high exposure or "trigger" tasks, before completion of the initial assessment.

## PROVIDING ADEQUATE RESPIRATORY PROTECTION

Before any employee first starts wearing a respirator in the work environment, the employer must perform a fit test. For all employees wearing negative or positive pressure tight-fitting face piece respirators, the employer must perform either qualitative or quantitative fit tests using an OSHA-accepted fit testing protocol. In addition, employees must be fit tested whenever a different respirator face piece is used, and at least annually thereafter.

Where daily airborne exposure to lead exceeds 50 µg/m<sup>3</sup>, affected workers must don respirators before entering the work area and should not remove them until they leave the high exposure area or have completed a decontamination procedure. Employers must assure that the respirator issued to the employee is selected and fitted properly to ensure minimum leakage through the face piece-to-face seal.

## RESPIRATORY PROTECTION PROGRAMS

When respirators are required at a worksite, the employer must establish a respiratory protection program in accordance with the OSHA standard on respiratory protection, 29 CFR 1910.134. At a minimum, an acceptable respirator program for lead must include:

- Procedures for selecting respirators appropriate to the hazard;
- Fit testing procedures;
- Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations, including cartridge change schedules;
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;
- Training of employees in the respiratory hazard to which they are potentially exposed during routine and emergency situations;
- Training of employees in the proper use of respirators, including putting on and removing them, any limitations of their use, and their maintenance;
- Procedures for regularly evaluating the effectiveness of the program;
- Procedures to ensure air quality when supplied air is

used;

- A written program and designation of a program administrator; and
- Record-keeping procedures.

In addition, the construction industry lead standard stipulates medical evaluations of employees required to use respirators.

If an employee has difficulty in breathing during a fit test or while using a respirator, the employer must make a medical examination available to that employee to determine whether he or she can wear a respirator safely.

## SELECTING A RESPIRATOR

The employer must select the appropriate respirator from Table 1 of the lead standard, 29 CFR 1926.62(f)(3) (i). The employer must provide a powered air-purifying respirator when an employee chooses to use this respirator and it will provide the employee adequate protection. A NIOSH-certified respirator must be selected and used in compliance with the conditions of its certification. In addition, if exposure monitoring or experience indicates airborne exposures to contaminants other than lead such as silica, solvents, or polyurethane coatings, these exposures must be considered when selecting respiratory protection.

Select type CE respirators approved by NIOSH for abrasive blasting operations. Currently, there are two kinds of CE respirators with the following assigned protection factors (APFs): a continuous flow respirator with a loose-fitting hood, APF 25; and a full face-piece supplied-air respirator operated in a positive-pressure mode, APF 2,000.

For any airline respirator, it is important to follow the manufacturer's instructions regarding air quality, air pressure, and inside diameter and length of hoses. Be aware that using longer hoses or smaller inside diameter hoses than the manufacturer specifies or hoses with bends or kinks may reduce or restrict the airflow to a respirator.

## Employee Information and Training

The employer must inform employees about lead hazards according to the requirement of OSHA's Hazard Communication standard for the construction industry, 29 CFR 1926.59, including—but not limited to—the requirements for warning signs and labels, material safety data sheets (MSDSs), and employee information and training.

## PROGRAM REQUIREMENTS

Employers must institute an information and training program and ensure that all employees subject to

exposure to lead or lead compounds at or above the action level on any day participate. Also covered under information and training are employees who may suffer skin or eye irritation from lead compounds. Initial training must be provided before the initial job assignment. Training must be repeated at least annually and, in brief summary must include:

- The content of the OSHA lead standard and its appendices;
- The specific nature of operations that could lead to lead exposure above the action level;
- The purpose, proper selection, fit, use, and limitations of respirators;
- The purpose and a description of the medical surveillance program, and the medical removal protection program;
- Information concerning the adverse health effects associated with excessive lead exposure;
- The engineering and work practice controls associated with employees' job assignments;
- The contents of any lead-related compliance plan in effect;
- Instructions to employees that chelating agents must not be used routinely to remove lead from their bodies and when necessary only under medical supervision and at the direction of a licensed physician; and
- The right to access records under "Access to Employee Exposure and Medical Records," 29 CFR 1910.1020.

All materials relating to the training program and a copy of the standard and its appendices must be made readily available to all affected employees.

## WARNING SIGNS

Employers are required to post these warning signs in each work area where employee exposure to lead is above the PEL:

- WARNING
- LEAD WORK AREA
- POISON
- NO SMOKING OR EATING

All signs must be well lit and kept clean so that they are easily visible. Statements that contradict or detract from the signs' meaning are prohibited. Signs required by other statutes, regulations, or ordinances, however, may be posted in addition to, or in combination with, this sign.

## Lead Safe Practices Final Exam

56. **Lead can damage which of the following:**
- a. Nervous system
  - b. Cardiovascular system
  - c. Reproductive system
  - d. All of the above
57. **Lead is most commonly absorbed into the body via:**
- a. Digesting
  - b. Blood stream
  - c. Inhalation
  - d. None of the above
58. **In construction, lead is frequently used for:**
- a. Roofs
  - b. Tank Linings
  - c. Electrical conduits
  - d. All of the above
59. **An employer's worker protection program for employees exposed to lead should include:**
- a. Respiratory protection
  - b. Signs
  - c. Protective clothing and equipment
  - d. All of the above
60. **Employers are required to post which of the following signs in each work area where employee exposure to lead is above the permissible exposure limit?**
- a. Wash your hands before returning to work
  - b. Caution
  - c. Lead Work Area
  - d. All of the above