

**ACCIDENT PREVENTION SIGNS, TAGS,
LABELS, SIGNALS, PIPING SYSTEM
IDENTIFICATION, AND TRAFFIC CONTROL**



TITAN UNIVERSITY

The Leader in Government Construction Training

Government Safety Course Series

EM 385-1.1, 29 CFR 1910.145, 29 CFR 1926.200
ANSI/IEEE C95.2, -ANSI Z136.1, -ANSI Z535.1
ANSI Z535.2, -ANSI Z535.5,
ANSI/ASME A13.1, -DOT (MUTCD)



CONSTRUCTION MANAGEMENT BEGINS WITH TITAN

TITAN UNIVERSITY

4700 Millenia Blvd., Suite 175
Orlando, FL 32839
Phone: 407-559-2005

TITAN University is a division of Titan, Consultants and Engineers, LLC and is not affiliated with, or connected to the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), U.S. Army Corp of Engineers (USACE), National Fire Protection Agency (NFPA), or the Environmental Protection Agency, (EPA)



The leader in Government Construction Training

MODULE 1 INTRODUCTION TO PROPER GOVERNMENT CONSTRUCTION SIGNS

Construction sites can be hazards waiting to happen. Fortunately, if you work on Government Construction sites, you know what a big deal safety signs, tags, and labels are. They're all over the place and just one of the USACE and NAVFAC solutions to keeping the jobsite safe as possible.

Safety signs play a key role on Government Construction projects. They notify people of:

- Tripping hazards
- Hot work activities being performed in an area.
- No Smoking Zones
- Hazardous Material Storage Areas
- Lock-out Tag-out activities taking place.
- Environmental watch areas, to name a few.

It's easy to forget that certain areas are hazardous on construction sites. After all, the hazardous area could have been in a different area yesterday! People take days off occasionally. In other words, it's difficult for everyone on a construction site to be on the same page with everyone else... all the time.

USACE and NAVFAC know this. It's why they take signage so seriously and have rigorous requirements when it comes to Safety Signs.

All warning systems such as signs, tags, and labels must be visible at all times when the hazard or problem exists. The warning sign, tag, or label must be removed as soon as the hazard or problem no longer exists to avoid any confusion which could lead to another accident of its own.

All employees must be informed on what each sign and label on the worksite means. After all, miscommunication is one of the main reasons for construction accidents. Training should also include where the signs are and any special precautions that may be required.

The safety and occupational health (SOH) related signs in the USACE Sign Standards Manual have been determined to meet or exceed ANSI and/or OSHA requirements. You can find the USACE Sign Standards Manual in your Course Materials. Contractors can use signs meeting either the OSHA or ANSI standards for temporary use during the life of a project.



The leader in Government Construction Training

MODULE 2 SIGNS, TAGS, LABELS, & PIPING SYSTEMS

Signs, Tags, Placards, Labels, and Piping Systems shall meet or exceed the following standards:

- 29 CFR 1910.145; Specifications for Accident Prevention Signs and Tags;
- 29 CFR 1926.200; Accident Prevention Signs and Tags;
- ANSI/IEEE C95.2;
- ANSI Z136.1;
- ANSI Z535.1;
- ANSI Z535.2;
- ANSI Z535.5;
- ANSI/ASME A13.1; and
- DOT Federal Highway Administration, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).

The type of sign or tag used in a particular situation must be appropriate for the degree of hazard or intent of message. The workplace safety signs with Danger and Caution headings have standard legends that must be used exactly as shown in the USACE Sign Standards Manual.

If a sign with a unique legend that doesn't appear in the UNICOR catalog is needed, the procedures detailed on page should be followed. The sign legend shall be concise, easy to read and should contain enough information to be easily understood.

There are often two to three parts of a safety sign:

1. Signal Word: Indicates the relative level of severity of hazard such as DANGER, CAUTION, NOTICE, WARNING
2. Message Panel: The message panel describes a hazard, indicates how to avoid it, and advises workers of the consequences if the hazard is not avoided.
3. Safety Symbol: Conveys the message without using words

MODULE 3 DANGER SIGNS

DANGER	<ul style="list-style-type: none"> • Only used if circumstances indicate an imminently hazardous situation that, if not avoided, will result in death or serious injury.
USACE STANDARD	<ul style="list-style-type: none"> • Signal word “Danger” is white on a red background at the top of the sign. • See <i>Figure 1</i>.
ANSI ALTERNATE STANDARD	<ul style="list-style-type: none"> • Must have signal word “DANGER” in white letters at the top of rectangular safety red background (top of sign). Safety Alert symbol precedes signal word. Base of symbol is on the same horizontal level as the base of the letters of the signal word - the height equaling or exceeding the signal word height. • See <i>Figure 2</i>.
OSHA ALTERNATE STANDARD	<ul style="list-style-type: none"> • Danger Signs may have “DANGER” in white letters on a safety red oval background with a white border on a black rectangular field. This distinctive panel shall appear in the uppermost portion of the sign. No other signal word or symbol shall be used within this distinctive shape and color arrangement. • See <i>Figure 3</i>.

Figure 1: USACE Standard, Signal Word: **DANGER**



Figure 2: ANSI Alternate Standard, Signal Word: **DANGER**



Figure 3: OSHA Alternate Standard, Signal Word: **DANGER**



USACE Standard — Message Panel — Workplace Safety Signs

Message Panels describe the specific danger in black letters on a white background. On other approved Danger Signs, the message is white lettering on a red background, like in Figure 4.

Figure 4: OSHA or ANSI Alternate Standard, Signal Word: **DANGER**



MODULE 4 WARNING SIGNS

WARNING	<ul style="list-style-type: none"> • Only for circumstances indicating potentially hazardous situations that, if not avoided, could result in death or serious injury. Hazards may be the same as Danger signs but significantly <i>less</i> in magnitude.
SIGNAL WORD USACE STANDARD	<ul style="list-style-type: none"> • Signal word “Warning” in black lettering on an orange background under a black top border. There are no Warning workplace safety signs in the Corps system.
SIGNAL WORD ANSI ALTERNATE STANDARD	<ul style="list-style-type: none"> • Must have signal word “WARNING” in black letters on rectangular orange background at the top of the sign. Safety alert symbol precedes the signal word. Base of the symbol is on the same horizontal level as the base of the signal word letters. Height equals or exceeds Signal Word height. • <i>See Figure 1</i>
OSHA ALTERNATE STANDARD	<ul style="list-style-type: none"> • Warning Signs may have the signal word “WARNING” in black letters within a safety orange truncated diamond on a black rectangular background. The distinctive panel shall be located at the uppermost portion of the sign. No other word or symbol can be used within this distinctive shape or color arrangement. • <i>See Figure 2</i>

Figure 1: ANSI Standard, Signal Word: *WARNING*



Figure 2 OSHA Standard Alternative, Signal Word: *WARNING*



USACE Standard Message Panel

On approved Warning signs the message panel shall be in black lettering on an orange background.

OSHA or ANSI Alternate Standard:

The message panel shall be in black lettering on a white background or white lettering on a black background. The message may, as an alternative, be in black letters on a safety orange background. The symbol/pictorial panel, if used, shall be square with a black symbol on a white background. The symbol panel used as an alternative may be square with a black symbol on an orange background.

MODULE 5 CAUTION SIGNS

CAUTION

- Used only when circumstances indicate potentially hazardous situation that, if not avoided, may result in a minor or moderate injury. May also be used to alert of unsafe practices that may result in property damage. Hazards may be the same as those associated with Danger signs but are of **significantly less** magnitude.

SIGNAL WORD USACE STANDARD

- The word “Caution” appears in yellow lettering on black bar at the top of the yellow message panel. On other approved Caution Safety Signs the signal word “Caution” appears in black lettering on a yellow background under a black top border.

- See Figure 1**

SIGNAL WORD ANSI ALTERNATE STANDARD

- Must have signal word “CAUTION” in black lettering on a rectangular yellow background placed at the top of the sign. Safety alert symbol precedes the signal word if the hazard is a potential personal injury hazard. (The alert symbol is not used when the situation is used to indicate property damage hazards.) Base of the symbol is on the same horizontal level as the base of the letters of the signal word – the height shall equal or exceed the signal word height.

- See Figure 2**

OSHA ALTERNATE STANDARD

- Caution signs may have the signal word “CAUTION” in safety yellow letters within a black rectangular background, and this distinctive panel shall be located in the uppermost portion of the sign. No other signal word or symbol shall be used with this distinctive color or signal shape arrangement.

- See Figure 3**

Figure 1: USACE Standard – Caution Signal Word



Figure 2: ANSI Alternate Standard – Caution Signal Word



Figure 3: OSHA Alternate Standard – Caution Signal Word



USACE Standard Message Panel

The descriptive legend appears in black lettering on a yellow panel.

OSHA or ANSI Alternate Standard:

The message panel shall be in black lettering on a white background or white lettering on a black background. The message may, as an alternative, be in black lettering on a safety yellow background. The symbol/pictorial panel, if used, shall be square with a black symbol on a white background. As an alternative, it may be square with a black symbol on a safety yellow background. See Figure 4.

Figure 4: OSHA or ANSI Alternate - CAUTION



MODULE 6 NOTICE SIGNS

NOTICE	<ul style="list-style-type: none"> • May be used to indicate a statement of company policy directly or indirectly related to the safety of personnel or protection of property. Signal word should not be associated directly with a hazard or hazardous situation and shall not be used in place of “DANGER”, “WARNING”, or “CAUTION.” These signs are used to control or define access and circulation. They are used primarily for information and are not placed to identify a hazard.
SIGNAL WORD USACE STANDARD	<ul style="list-style-type: none"> • Notice signs shall have the signal word “NOTICE” in white lettering on a safety blue background on a rectangular field, and this distinctive panel shall be located in the uppermost portion of the visual alerting device. No other signal word or symbol shall be used within this distinctive shape and color arrangement. See Figure 1.
COLOR AND SYMBOL	<ul style="list-style-type: none"> • The message shall be in safety blue or black letters on a white background. The symbol/pictorial panel, if used, shall be square with a safety blue or black symbol on a white background.
USACE Alternative for Outdoor Use	<ul style="list-style-type: none"> • Notice signs posted on USACE managed property for public viewing in areas accessible to the public, including recreation areas, may have white letters on blue background. Text for these custom signs shall be approved by the District Sign Manager. Other signs used to define access and use may include prohibition symbol signs or Restricted Area signs.

Figure 1: USACE Notice Sign



MODULE 7 SAFETY SIGNS

GENERAL SAFETY	<ul style="list-style-type: none">• May be used to indicate general instructions relative to safe work practices, remind of proper safety procedures or indicate the location of safety equipment. These signs identify rules and facilities relating to health, first aid, medical equipment, sanitation, housekeeping practice and general safety information.
LEGEND PANEL	<ul style="list-style-type: none">• White signal word “SAFETY” on safety green header with black text on white panel.• See Figure 1.
FIRE SAFETY	<ul style="list-style-type: none">• Fire safety signs may be used to indicate the location of emergency firefighting equipment. Fire extinguisher signs shall be placed where fire extinguishers are not visible from designated exit pathways. NFPA 10 D2.2.2 The message panel shall be in safety red letters on a white background in either a square or rectangular field. The symbol/pictorial panel, if used, shall be safety red on white or white on safety red. Figure 2.
Directional Arrow Signs	<ul style="list-style-type: none">• Directional arrow signs may be used to indicate the direction to emergency equipment, safety equipment, and other locations important to safety.• See Figure 3.

Figure 1: Legend Panel



Figure 2: Fire



Figure 3: Directional Arrow Signs





The leader in Government Construction Training

MODULE 8 COLOR CODING & PIPING SYSTEMS

Color coding shall be in accordance with the table you see on your screen. This table will also be in your downloadable course material. Color specifications for Corps safety signs are found in the USACE Sign Standards Manual.

RED

- Red shall be the color used for identifying dangerous conditions, emergency controls, fire detection equipment and fire suppression systems, and containers of flammable liquids.

ORANGE

- Orange shall be the color used for designating dangerous parts of machines and energized equipment. Orange shall also be used for temporary traffic control signs in construction zones.

YELLOW

- Yellow shall be the color for designating conditions requiring caution, marking dangerous chemicals, marking physical hazards, and markings for ionizing radiation.

GREEN

- Green shall be the color for designating safety equipment and operator devices and the location of first-aid and safety equipment (other than firefighting equipment).

BLUE

- Blue shall be the color used for designating information of a non-safety nature.

PURPLE

- Purple shall be the color used to designate ionizing radiation hazards.

Piping Systems

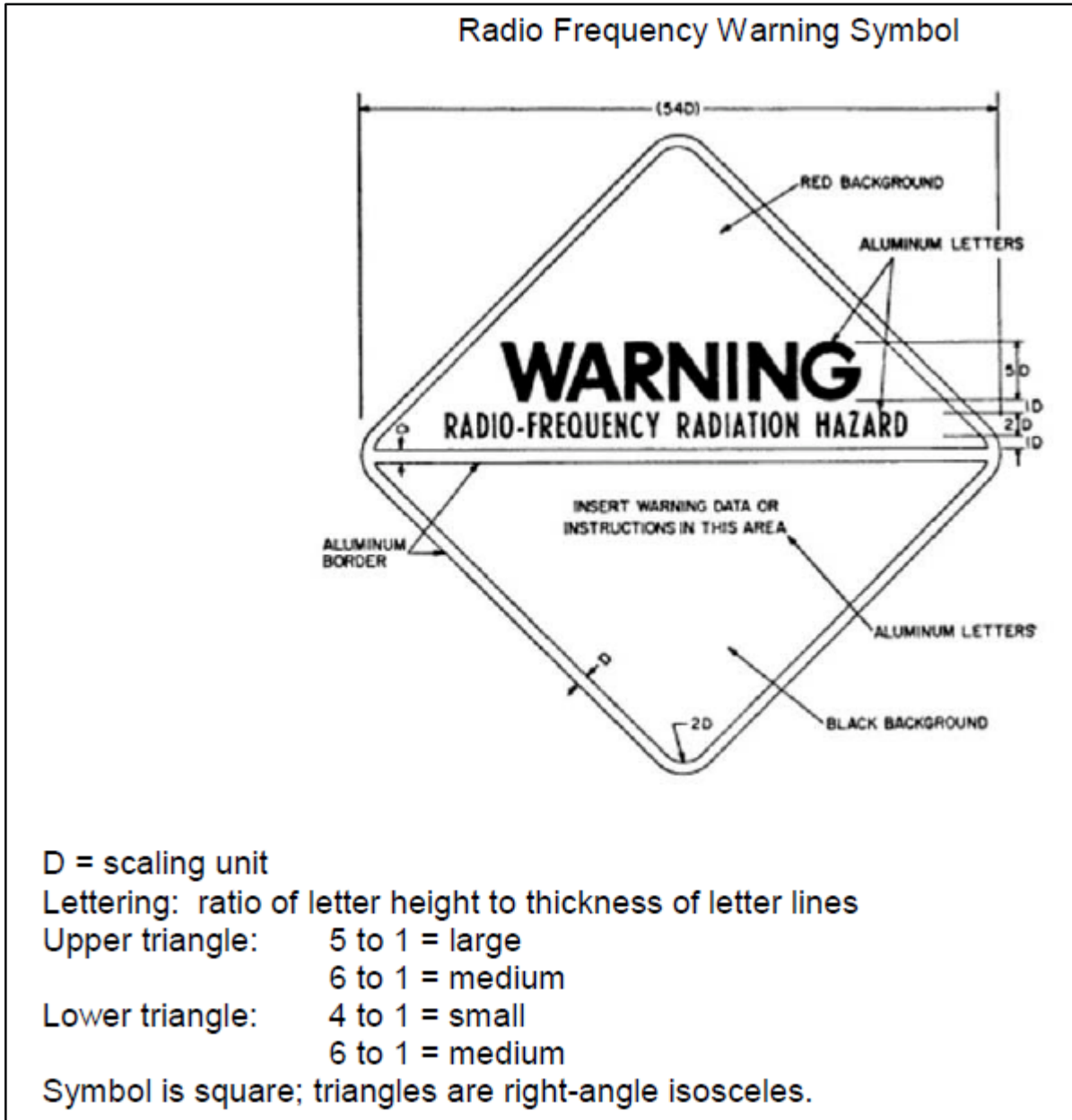
The identification of piping systems (including pipes, fittings, valves, and pipe coverings) shall be in accordance with the table you see on your screen and comply with ANSI/ASME A13.1 color scheme and directional flow requirements.



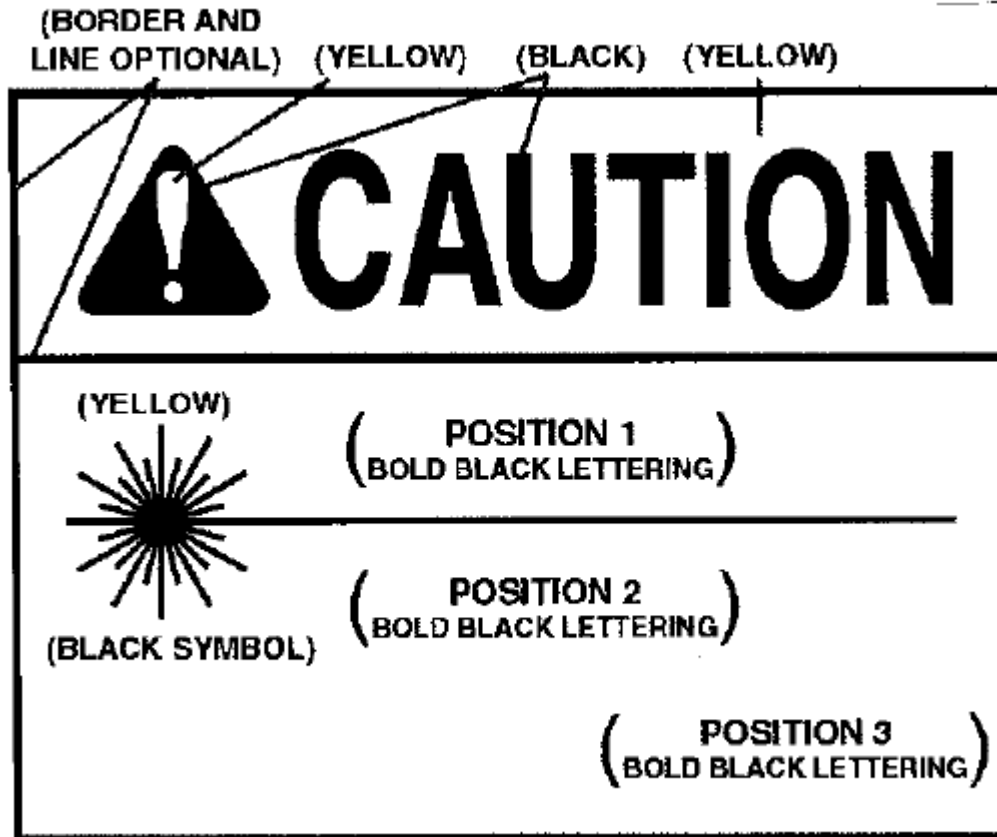
MODULE 9 RF RADIATION

The RF radiation hazard-warning symbol below shall be used in the identification of RF radiation hazards.

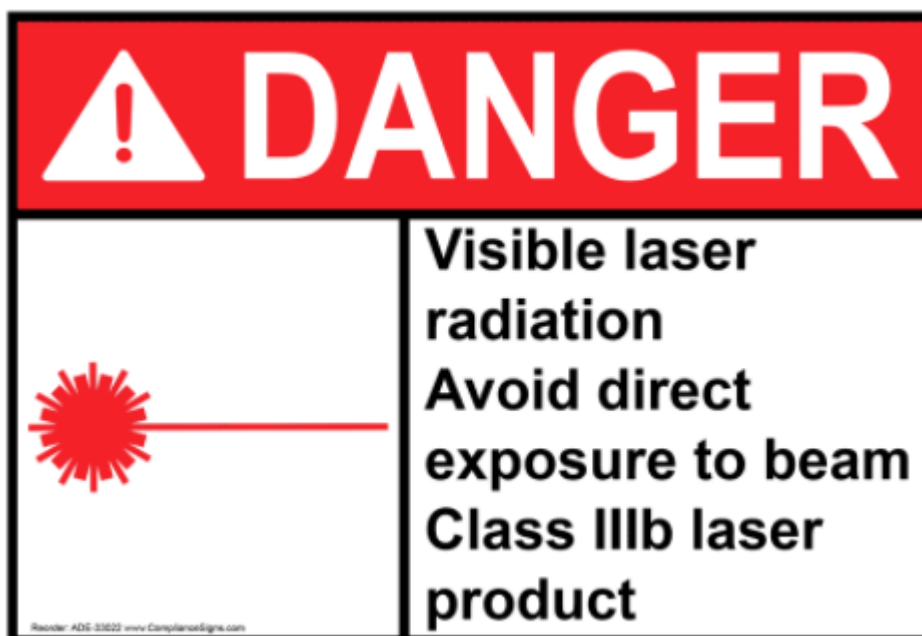
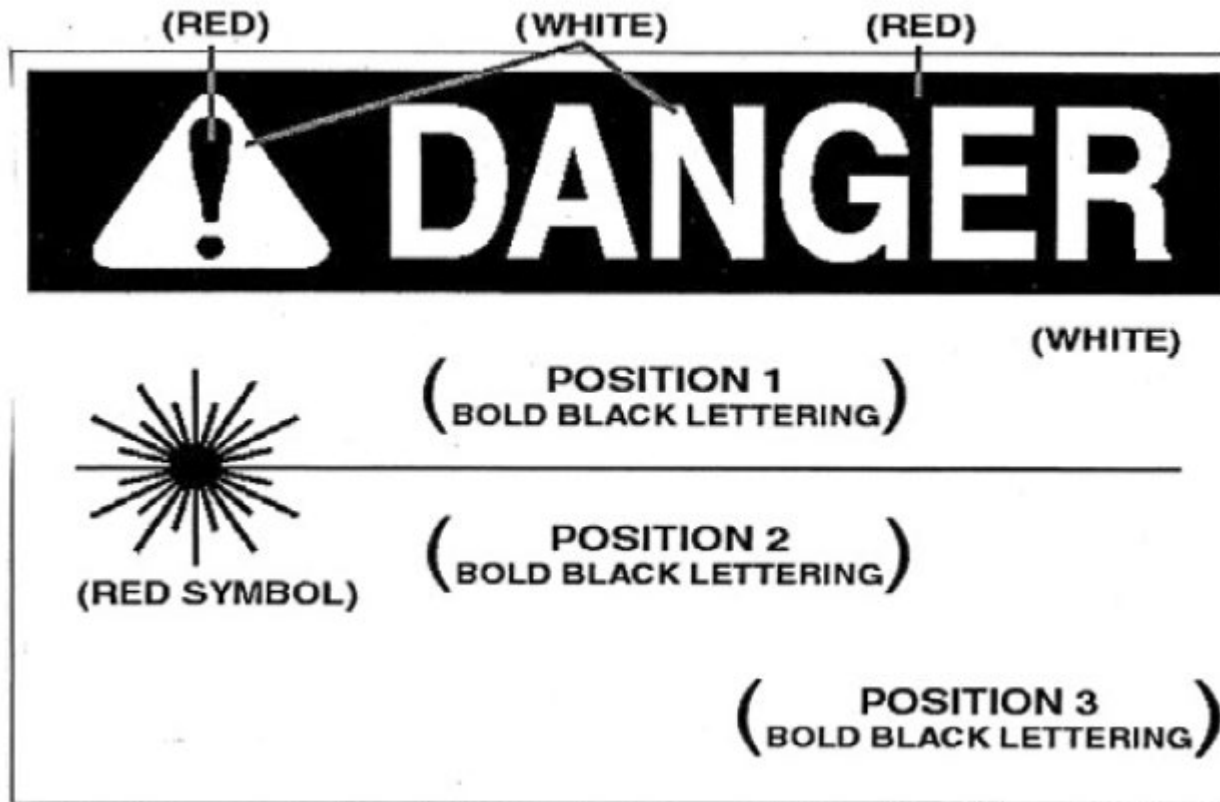




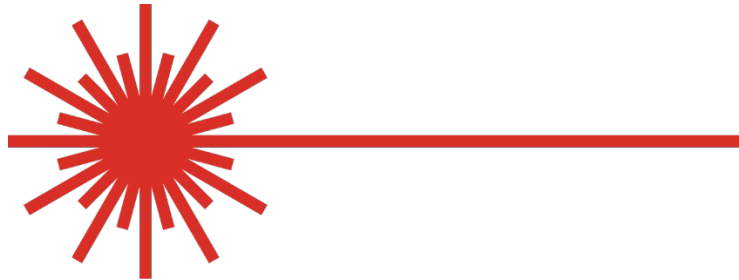
Laser caution and warning signs shall be in accordance with ANSI Z136.1.



Laser Warning Sign



Ionizing radiation warning signs, labels, and signals shall contain the "Laser Warning Symbol" shown here.



The Radiation Safety Officer (RSO) must post in a conspicuous location a sign or signs bearing the standard Laser Warning Symbol and the following appropriate words:

Caution, Radiation Area

"Caution, Radiation Area" signs are used where the radiation field is equal to or greater than 5 mrem (0.05 mSv) in any 1 hour and less than 100 mrem (1 mSv) in any 1 hour at 30 cm from the radiation source

Caution, High Radiation Area

"Caution, High Radiation Area" signs are used where radiation field is equal to or greater than 100 mrem (1 mSv) in any 1 hour at 12 in (30 cm) from the radiation source and less than 500 rads (5 Gy) in any 1 hour at 3.3 ft (1 m) from the radiation source

Grave Danger, Very High Radiation Area

"Grave Danger, Very High Radiation Area" signs are used in areas where the radiation field is equal to or greater than 500 rads (5 Gy) in any 1 hour

Caution, Airborne Radioactivity Area

"Caution, Airborne Radioactivity Area" signs are used in rooms and enclosures, or in areas where airborne radioactive material concentrations are greater than the derived air concentration (DAC) limits listed in 10 CFR 20, Appendix B or where concentrations (excluding Radon- 222) exist to such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6% of the annual limit on intake (ALI) or 12 DAC-hours.

Caution, Radioactive Material

The "Caution, Radioactive Material" sign is used in areas or rooms where quantities of radioactive materials in excess of ten times the 10 CFR 20, Appendix C quantities are used or stored.



The leader in Government Construction Training

MODULE 10 SAFETY SIGN REQUIREMENTS

Finishes

Safety sign finishes shall be of durable materials with colors in accordance with the USACE Signs Standards Manual, or ANSI Z535.1.

Placement

Safety signs shall be placed to alert and inform the viewer in sufficient time to take appropriate evasive actions to avoid potential harm from the hazard. They shall be legible, non-distracting, and not hazardous in themselves. They shall be fabricated with retro- reflective sheeting as appropriate for adequate visibility under normal and emergency operating conditions.

Containers

Each container of hazardous material shall be labeled, tagged, or marked with the identity of the material(s), appropriate hazard warnings, potential health effects and the name and address of the manufacturer, importer, or other responsible party.

Signs, placards, process sheets, batch tickets, operating procedures, or other written means may be used in lieu of affixing labels to stationary process containers if the alternative method identifies the containers to which it is applicable and conveys the information required above. The written information shall be readily available to employees in their work area throughout each work shift.

Portable containers into which hazardous material(s) are transferred from labeled containers and which are intended only for the immediate use by the employee who performs the transfer are not required to be labeled. However, there shall be a means of indicating that the hazardous material has been used in the container.

Signs, tags and labels shall be located as close as safely possible to their respective hazards. Tags will be affixed by a positive means (such as wire, string, or adhesive) that prevents their loss or unintentional removal.

Signs, tags, and labels shall be legible and in English.

Sign Design and Location

Signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located so that they are not a hazard.

- Construction areas shall be posted with legible traffic signs at points of hazard in accordance with the MUTCD.
- Signs required to be seen at night shall be reflectorized.



The leader in Government Construction Training

MODULE 11 LOCKOUT/TAGOUT (LOTO)

- Locks and tags used for lockout/tagout shall
- Be capable of withstanding the environment that they are exposed to for the maximum period of time the exposure is expected;
- Indicate the identity of the employee applying the device;
- Be of a unique design or color to readily identify them as belonging to the LOTO program;
- Not be used for anything other than lockout activities;
- Identify the person who applied the lock or tag. Locks may have a tag attached with the employee's name and/or photograph which will satisfy this requirement;
- Locks shall be substantial enough to prevent removal without the use of excessive force or unusual techniques (such as with the use of bolt cutters);
- Tags shall, in addition, meet all of the following requirements:
- Have a standardized (within a project) print and format;
- Be constructed and printed so that exposure to weather conditions, ultraviolet (UV) light, wet or damp locations, or corrosive environments will not cause the tag to deteriorate or the message to become illegible;
- Be attached by means that are: Non-reusable; Substantial enough to prevent inadvertent or accidental removal; Attachable by hand; Self-locking; Non-releasable, with a minimum unlocking strength of no less than 50 lb (22.6 kg); and have the basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie; and
- Warn against the hazardous condition resulting from system energization and include wording such as "DANGER - DO NOT START, OPEN, CLOSE, ENERGIZE, OPERATE".

Foreign Language

In areas where a significant percentage of the workforce or the visiting population speaks primarily in a foreign language, the use of symbol signs is strongly encouraged.

When no symbols exist or where words are essential, two signs - one in English and one in the foreign language - should be placed side by side.

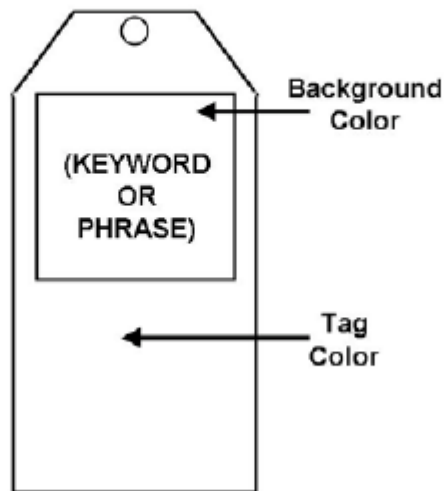
These signs will follow the same format: same overall size, letter size and style, color, and mounting.

Because of variations in dialect, the legends on non-English signs shall be developed at the local level.

Two languages should never appear on the same sign.

MODULE 12: ACCIDENT PREVENTION TAGS

Accident Prevention Tags



Accident prevention tags shall be used only as a temporary means of warning employees of an existing hazard (i.e., defective tools, equipment, caution orders and tags for hazardous energy control).

Tags shall contain a signal word (either "DANGER" or "CAUTION") and a major message (presented in either pictographs, written text, or both) to indicate the specific hazardous condition or the instruction to be communicated to the employee. The signal word shall be readable at a minimum distance of 5 ft (1.5 m) or such greater distance as warranted by the hazard. The signal word and major message shall be understandable to all employees who may be exposed to the hazard. > See 08.A.06 for basic design criteria.

Accident prevention tags shall be rectangular in shape and shall be no smaller than 3 in x 5 in (8 cm x 13 cm). The corners may be square cut, chamfered, or rounded.

Kerosene lamps and open flame pots shall not be used for, or with, warning signs or devices.

Warning signs shall be placed on unattended government-owned floating plant and land-based heavy equipment accessible to the public and shall read "No Trespassing – U.S. Government Property".



The leader in Government Construction Training

MODULE 13: MARINE SIGNALS

Each crewmember shall be given a written description of, and shall become familiar with, his/her emergency duties and shall become familiar with the vessel's emergency signals.

Signal Devices

Signal devices shall be provided on all vessels to give signals required by the navigation rules applicable to the waters on which the vessel is operated. Signal devices shall be provided on all vessels to give signals required by the navigation rules applicable to the waters on which the vessel is operated.

A sufficient number of signaling devices shall be placed on each deck so that they can be distinctly heard/seen above the normal background noise at any point on the deck. All signaling devices shall be so interconnected that actuation can occur from at least one strategic point on each deck.

Housekeeping

Projection and tripping hazards shall be removed, identified with warning signs, or distinctly marked with safety yellow.

Idle Plants

Plant fleeting areas will be designated in which all idle plant shall be moored. Such areas shall have warning buoys, signs, and lights in prominent locations.

Personal Flotation Devices (PFD's)

PFD's must be worn by personnel in areas where deck perimeter protection is not present. Such areas may be used by crew to transit or access areas of the boat, but when doing so, all other requirements of this Section must be met. Areas where railings are removed shall be blocked off from access by a suitable barrier, or shall be clearly marked as PFD- required areas by signage, deck markings, or other means

Submerged Pipeline

Whenever buoyant or semi-buoyant pipeline is used, the dredge operator will assure that the pipeline remains fully submerged and on the bottom. Whenever it is necessary to raise the pipeline, proper clearances shall be made and maintained and the entire length of the pipeline will be adequately marked.

Submerged pipelines shall be marked in accordance with local USCG requirements and as approved by the GDA.

Unless otherwise specified by the USCG, submerged pipelines are considered to require special marks and shall have a USCG-approved flashing yellow light.

Indicators, such as signs or buoys that state "DANGER SUBMERGED PIPELINE" will be placed at the beginning and end of the pipeline. In addition, indicators are required in areas which reduce the charted depth by more than 10%, and, as a minimum, every 1000 ft (304.8 m) to clearly warn of the pipeline length and course.



The leader in Government Construction Training

Barges

If barges or other vessels are used to anchor the beginning and/or end of the submerged pipeline, they shall be lighted in accordance with 33 CFR 88.13.

Within a navigation channel, each end of the pipeline shall be identified with a regulatory marker buoy. Lengths of submerged pipeline located outside of the navigation channel, which reduce the charted depth by more than 10 percent, will be identified with high visibility buoys marked with 360-degree visibility retro-reflective tape, such as orange neoprene buoys, placed at an interval not to exceed 500 ft (152.4 m) to clearly show the pipeline length and course.

Pipelines

Pipelines shall be marked with the owner's name for positive identification in the event of loss (adrift) or damage to vessels operating in the area.

Hand Signals

Standard hand signals shall be posted at the operator's position, signal control points and other points as necessary to inform those concerned.

Manual (hand) signals may be used when the distance between the operator and signal person is not more than 100 ft (30.5 m). Radio, telephone, or a visual and audible electrically-operated system shall be used when the distance between operator and signal person is more than 100 ft or when they cannot see each other.

Signal and Flag Persons

A signal person shall be provided when the point of operation (includes area of load travel and area immediately surrounding the load placement) is not in full view of the vehicle, machine, or equipment operator; when vehicles are backed more than 100 ft (30.5 m); when terrain is hazardous; or when two or more vehicles are backing up in the same area.

These requirements apply to the operation of all motor vehicles, machinery and mechanized equipment, All-Terrain Vehicles (ATVs), Utility Vehicles (UVs), and other specialty vehicles. Operators must also comply with state and host nation regulations as applicable to the above listed equipment.

A flag person or other controls shall be provided when operations or equipment on or next to a highway create a traffic hazard. An exception shall be made only when an adequate mechanical signaling, or control device is provided for safe direction of the operation.

Where manual (hand) signals are used, only one person shall be designated to give signals to the operator. This signal person shall be located to see the load and be clearly visible to the operator at all times.

Flag signaling shall be accomplished by use of red flags at least 18 in (45.7 cm) square or sign paddles. In periods of darkness, red lights shall be used.

High visibility apparel shall be worn by flag and signal persons.

Signal systems shall be protected against unauthorized use, breakage, weather, or interference; any malfunction



The leader in Government Construction Training

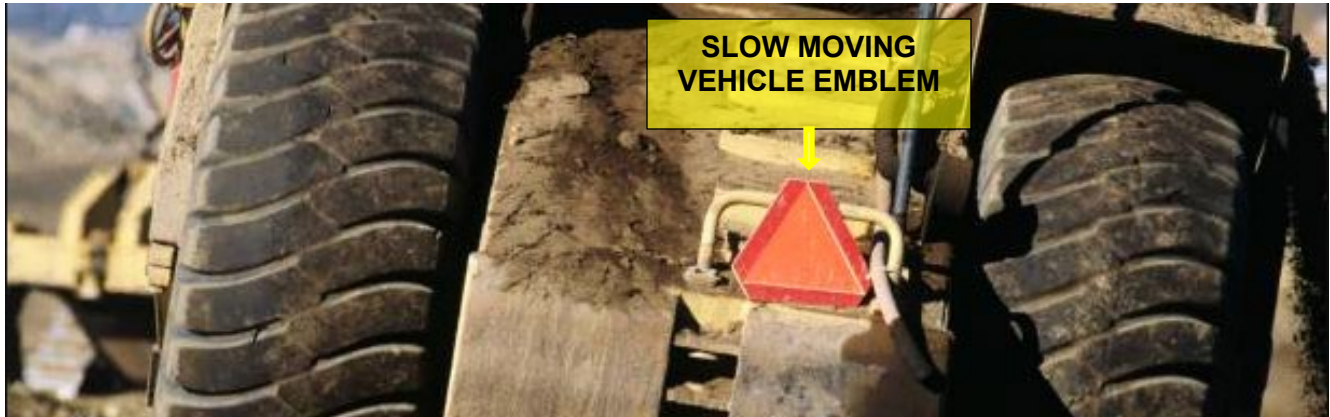
shall be a cause to stop all work.

Only persons who are **competent and qualified** by experience and/or training with the operations being directed shall be used as signal persons.

Signal persons shall back one vehicle at a time. While under control of a signal person, the driver shall not back or maneuver until directed, and the driver shall stop when visual contact with the signal person is lost.

The signal person shall have a warning device of clear range and penetrating sound to warn persons when the load is coming in, so they have time to get in the clear.

MODULE 14 TRAFFIC CONTROL



Traffic control shall be accomplished in accordance with DOT Federal Highway Administration's Manual Uniform Traffic Control Device (MUTCD). You can download each of this manuals 9 parts at: <https://mutcd.info/>

The Contractor must conduct all of his operations in a way that provides the least possible impediment to the safe and reasonable movement of traffic over existing roads during the life of the contract.

The Contractor is responsible for providing, erecting, maintaining, and removing all traffic signs, barricades, and other traffic control devices necessary used to maintain traffic.

All barricades, warning signs, lights, temporary signals, other devices, flagmen, and signaling devices shall meet or exceed the minimum requirements of the local DOT requirements.

Prior to project start, the Contractor (Typically the Project Manager) will have to submit complete details of the proposed traffic control plan for the maintenance of traffic and access through the contract work area. This Traffic Control Plan must be accepted by the GDA. Once approved, the Contractor and GDA together will coordinate on the required permits from local authorities prior to closing or restricting any roads. Onsite work cannot begin, and no roads can be closed until all barricades, danger, warning, and detour signs are erected.

When roads are temporarily closed to public access, barricades or gates must highly visible both in the daytime and at night. To maintain their visibility, barriers must be coated with reflective paint or be applied with highly reflective tape on both sides and be signed as "ROAD CLOSED".

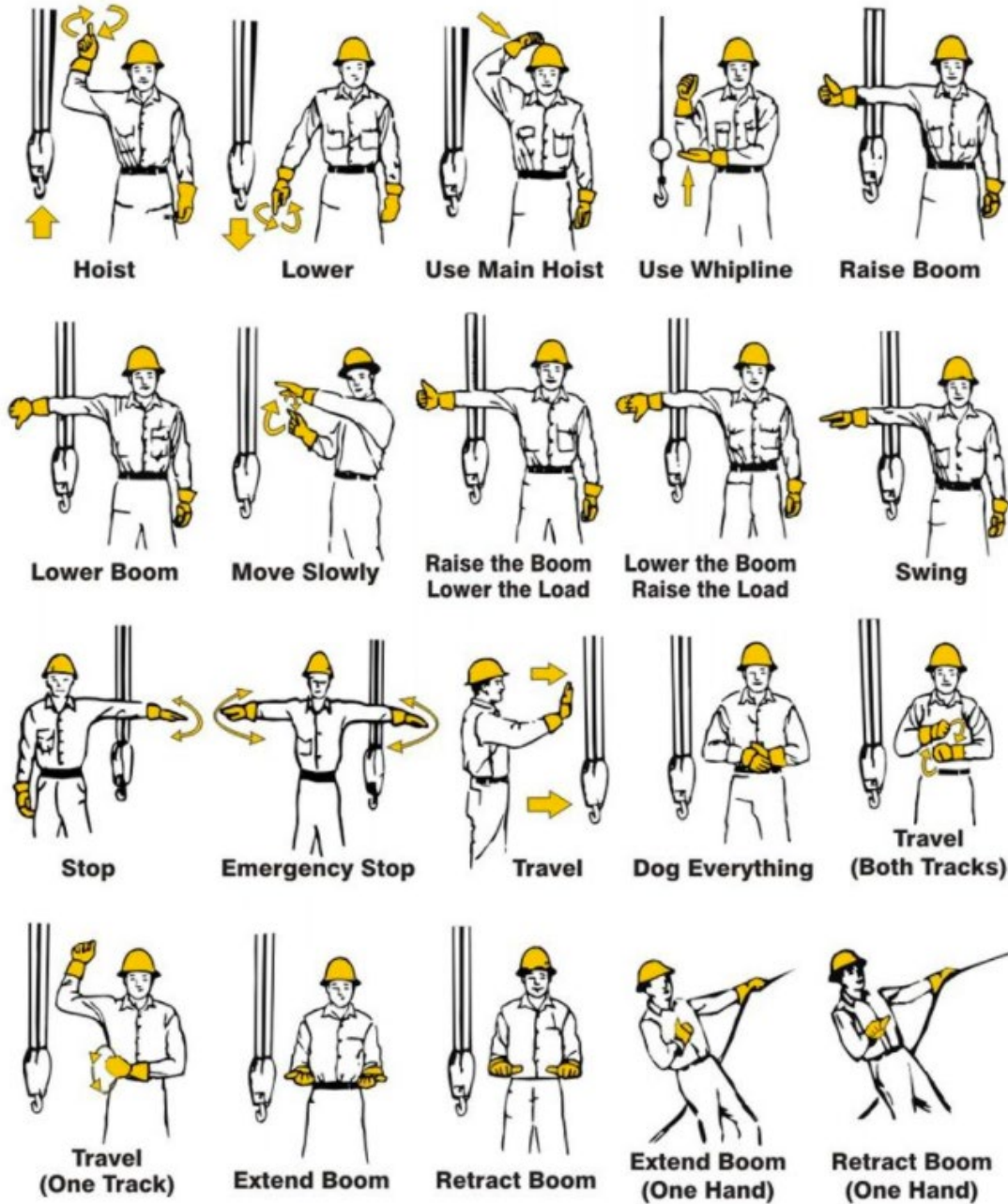
Affected roads must also be posted with appropriate warning signs a minimum of 100 ft **before** the barrier* Size and placement of signs depends on viewing distance and speed limit of roadway.

Vehicles or equipment that, by design, move at 25 mph (40 km/h) or less on public roads shall display the slow-moving vehicle emblem.

* Make sure this information is included in the Traffic Control Plan drawing.

SIGNAL SYSTEMS, PERSONNEL, & PROCEDURES

A standard signal system shall be used on all operations. Hand signals for crane operations shall conform to ANSI/ASME B30 series.



Traffic flagging procedures shall be in accordance with the DOT Federal Highway Administration's MUTCD.