



Grain Handling Safety Coalition

## GRAIN SAFETY LIFELINE PROTECTION SYSTEM Definition of Terms

The following terms and definitions are provided in reference to their application of use in grain bin Lifeline Protection Systems.

Also included is a cross reference guide of terms used in the GHSC “**Lifeline Protection System**” video as they refer to OSHA standards.

Definitions have come from the following sources:

- NFPA - National Fire Prevention Association
- ANSI - American National Standard Institute
- GHSC - Grain Handling Safety Coalition. These definitions reference the grain bin lifeline protection system and lifeline graphic developed by GHSC.
- OSHA – Occupational Safety and Health Administration

Click on the links below to take you to alphabetical listings and the OSHA cross reference guide.

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### Disclaimer:

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## A

**Air-purifying Respirator:** See Dust Mask.

**Anchor or Anchorage:** A secure point of attachment for lifelines, lanyards, or deceleration devices. Reference OSHA 1915.151(b). See also sidewall anchor and/or peak anchor. (GHSC)

**Anchorage:** The terminating component of a fall protection system or rescue system that is intended to support any forces applied to the system. (ANSI)

**Anchorage Connector:** A component or subsystem that functions as an interface between the anchorage and a fall protection, work positioning, rope access, or rescue system for the purpose of coupling the system to the anchorage. (ANSI)

**Anchor point:** A single structural component used either alone or in combination with other components to create an anchor system capable of sustaining the actual and potential load on the rope rescue system.

**High Anchor Point:** A point above an obstacle to be negotiated used for attachment of rescue systems. (NFPA)

**Anchor Plate:** A sidewall anchor made with 3/16" plate steel approximately 10" square (inside bin) with a second plate on the outside of the bin. The two plates are sandwiched together and bolted with four 5/16" grade 8 bolts. The inside plate has a 1/4 x 2 x 2 angle iron welded to it with a 3/4" hole drilled into the angle iron just large enough for a carabiner to attach to it. The edge of the hole needs to be at least 3/4" from the edge of the angle iron. (GHSC)

**Active Belay Device:** See Belay Device.

**Angle Iron Anchor:** A sidewall anchor that can be attached inside the bin wall by using bolts that are on a vertical bin sheet splice. A 12" long piece of 3/16" inch thick by 1 1/2" wide angle iron with four holes along the center of the angle iron to bolt it to the splice bolts. (GHSC)

<b>Angle of Repose:</b>	The slope of the grain surface at any location where grain can flow freely. The angle of repose should be approximately 20°-25° for corn and 23°-27° for soybeans. Anything significantly steeper is an indication that the grain is not in good condition and a hazard could exist if a person goes into the bin. The angle of repose is the maximum slope at which a heap of loose grain will stand without sliding. (GHSC)
<b>Ascender:</b>	A device used for managing rope that slides freely in one direction. It is used to ascend a rope, grab a rope, or move along a horizontal rope. (GHSC)
<b>Ascent Device:</b>	Also listed under Device- Ascent Device. An auxiliary equipment system component; a friction or mechanical device utilized to allow ascending a fixed line. (NFPA)
<b>Assisted Rescue:</b>	A rescue requiring the assistance of others. (ANSI)
<b>Atmosphere problems:</b>	“The atmosphere within a bin, silo, or tank shall be tested for the presence of combustible gases, vapors, and toxic agents when the employer has reason to believe they may be present. Additionally, the atmosphere within a bin, silo, or tank shall be tested for oxygen content unless there is continuous natural air movement or continuous forced-air ventilation before and during the period employees are inside.” OSHA 272(g)(1)(iii)
<b>Authorized Entrant:</b>	A term used to describe a U.S. federally regulated industrial worker designated to enter confined spaces who meets specified training requirements for each specific space he or she enters. (NFPA)
<b>Automatic Descent Control Device:</b>	A load lowering device or mechanism that automatically controls pay-out speed of line or descent speed under load once it has been engaged. (ANSI)
<b>Avalanche: (Also Avalanche Conditions)</b>	Grain that is moving because a buildup of grain on a bin wall has fallen or could fall. Has potential to bury someone. A pyramid of grain is the same hazard. A very hazardous situation because a bin entrant could easily be knocked over and entrapped or engulfed. Grain seeking its natural angle of repose. Refers to OSHA 1910.272(g)(6). (GHSC)

<b>Bad Grain Condition:</b>	Grain that has one or more of the following characteristics: heating, crusting, a musty or sour odor, does not flow well, has chunks, does not have a normal angle of repose, is bridged, is in a pyramid, or other condition that is not normal. Also referred to as Out of Condition Grain. See Good Grain Condition for the opposite condition. (GHSC)
<b>Belay or Belaying:</b>	<ol style="list-style-type: none"> <li>1. The method by which a potential fall distance is controlled to minimize damage to equipment and/or injury to a live load. (NFPA)</li> <li>2. Belaying involves one person (called the belayer) having some control over a device and rope to which another person (the entrant) is connected. As the bin entrant moves, the belayer pays out or takes in rope to minimize the potential fall distance. The belayer must take care not to tug on the entrant or pull the entrant off his or her stance. (GHSC)</li> </ol> <p><b>To use a belay system:</b></p> <ol style="list-style-type: none"> <li>1. Connect a belay device to an appropriate anchor.</li> <li>2. Thread the rope through an appropriate belay device.</li> <li>3. Attach the working end of the rope to the entrant's harness.</li> <li>4. The belayer feeds and/or pulls the rope through the device as the entrant moves, taking care to avoid both excessive slack and excessive tension.</li> </ol>
<b>Belayer:</b>	The rescuer who operates the belay system. (NFPA)
<b>Belay Device:</b>	A mechanical piece of equipment used to control a rope during belaying. There are two kinds of devices: active belay device and passive belay device.
<b>Active Belay Device</b>	An active belay device is recommended such as a Petzl Rig. An active device will engage the rope and hold the entrant without any action by the belayer. It should also be able to release easily to give the entrant slack when he needs it.
<b>Passive Belay Device</b>	A passive belay device is not recommended. It will effectively do an adequate job of controlling the rope but it requires action by the belayer which is less desirable. (GHSC)
<b>Belay System:</b>	A non-tensioned, manually operated system designed to belay a load. (NFPA)
<b>Bend:</b>	A knot that joins two ropes or webbing pieces together. (NFPA)
<b>Bight:</b>	The open loop in a rope or piece of webbing formed when it is doubled back on itself. (NFPA)
<b>Bin Entrant:</b>	The person going into a grain bin to check the grain condition or perform other work activities. See Two Person Lifeline System. See Entrant. See OSHA 1910.272(g)(2). (GHSC)
<b>Bin Entry Permit:</b>	The written certification by the employer authorizing employees to enter a grain bin. This permit specifies what actions must be taken prior to entry. See OSHA 1910.272(g)(1)(i). (GHSC)

<b>Bridging Grain:</b>	"Bridging" occurs when grain clumps together because of moisture or mold, creating an empty space beneath the grain as it is removed. Bridged grain resists the downward pull that normally moves loose grain to the bin outlet and rarely becomes hard enough to support a person. If a worker steps onto the bridge, it can collapse under the worker's weight, entrapping or engulfing him/her in the empty space. See OSHA Hazard Alert. (GHSC)
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## C - D

<b>Caked Grain:</b>	Out of condition grain that is stuck together. It could be the size of a baseball to the size of a two car garage or larger. (GHSC)
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<b>Carabiner:</b>	<ol style="list-style-type: none"><li>1. An oblong metal ring with a spring loaded gate used to quickly connect and disconnect components in safety-critical systems. Carabiners with locking gates are recommended. <b>See</b> Screw Gate Carabiner and Automatic Locking Carabiner. (GHSC)</li><li>2. A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object. (ANSI)</li></ol>
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<b>Carabiner, Automatic Locking:</b>	Features an automatic locking gate to prevent accidental opening of the gate. Usually consists of a spring loaded collar that automatically closes tight over the gate when the person lets go of it. (GHSC)
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<b>Carabiners, Screw Gate:</b>	Features a sleeve that can be tightened to prevent accidental opening of the gate. Consists of a threaded collar which simply screws down over the gate so it cannot open. The user twists the collar with his/her fingers to close and open the gate. Sometimes referred to as a Manual lock or screw lock carabiner. (GHSC)
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<b>Certified Anchorage:</b>	An anchorage for fall arrest, positioning, restraint, or rescue systems that a qualified person certifies to be capable of supporting the potential fall forces that could be encountered during a fall or that meet the criteria for a certified anchorage. (ANSI)
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<b>Clothes Line:</b>	A loop of rope extending from the top entry point to the knot passing pulley in the peak of the bin. A permanent rope in a grain bin used only to easily and quickly install a lifeline in the bin. (GHSC)
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<b>D Ring:</b>	See Harness D ring.
<b>Descender:</b>	A device designed to help regulate friction and control the descent on a fixed rope. It allows a worker to position (secure) himself at any point on the rope. (GHSC)
<b>Descending a Line:</b>	A means of traveling down a fixed line using a descent control device. (NFPA)
<b>Descent Control Device:</b>	See Descender.
<b>Device, Ascent Device</b>	Also listed under <b>Ascent Device</b> . An auxiliary equipment system component; a friction or mechanical device utilized to allow ascending a fixed line. (NFPA)
<b>Dust Mask: (Air-purifying Respirator)</b>	Per OSHA - A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. OSHA 1910.134(b)

## E - F

<b>Emergency Action Plan:</b>	A written plan that covers designated actions employers and employees must take to ensure employee safety from fire and other emergencies. OSHA requires all employers to develop and implement an emergency action plan. See OSHA 1910.272(d), 1910.272(i)(2). (GHSC)
<b>Engineered Anchor:</b>	An anchor designed by a qualified person or engineer. Other anchors can be effective but are designed or identified by people with practical experience. (GHSC)
<b>Engulfment:</b>	<ol style="list-style-type: none"> <li>1. Getting buried in grain above your head. See OSHA 1910.272(g)(2). (GHSC)</li> <li>2. The surrounding and effective capture of a person by a fluid (e.g., liquid, finely divided particulate) substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing. (NFPA)</li> </ol>

<b>Entrant:</b>	The person going into a grain bin to check the grain condition or to perform other work activities. See also Bin Entrant. See OSHA 1910.272(g)(2).
<b>Entry:</b>	The action by which a person passes into a confined space. Entry includes ensuing work or rescue activities in that environment and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, trench, or excavation. (NFPA)
<b>Entry Permit:</b>	A written or printed document, established by an employer, for non-rescue entry into confined spaces. (NFPA)
<b>Entrapment:</b>	Buried in grain to the waist or above, but not covering the head. (GHSC)
<b>Eye Bolt Anchor:</b>	A type of sidewall anchor used in a lifeline system. Consists of a 5/8" forged eye bolt installed in a 3/4" hole in the bin sheet. The outside of the bin has a 2" schedule 40 steel pipe 6" long as a backer with two 3/4" holes for the eyebolt to go through and a nut to hold everything in place. This has been successfully tested in bin sheets 19 gauge thick. (GHSC)
<b>Figure 8 Knot:</b>	The type of knot used to make a loop or bight on the end of a rope. (GHSC) See video instructions at: <a href="http://www.animatedknots.com/fig8follow/">http://www.animatedknots.com/fig8follow/</a> or <a href="http://www.netknots.com/rope_knots/figure-eight/">http://www.netknots.com/rope_knots/figure-eight/</a> .
<b>Forced-Air ventilation: (Aeration)</b>	A process of moving volumes of air through grain or seed to cool and ventilate (expose substance to the circulation of fresh air) the material to maintain quality. This process will also force fresh air into the space above the grain in a bin where the entrant will work. (GHSC)
<b>Flowing Grain:</b>	<ol style="list-style-type: none"> <li>1. Grain that is flowing or moving because it is being removed from the bin by an unloading system.</li> <li>2. Grain that is moving because it is breaking off a grain pyramid.</li> <li>3. Grain that was stuck to the bin wall and is falling off. (GHSC)</li> <li>4. See also OSHA 19101.272(g)(1)(iv), OSHA 1910.272(g)(6).</li> </ol>
<b>Frontal D-Ring Attachment:</b>	An attachment element affixed to the full body harness within the vertical seven-inch sternum (breastbone) area that is designed to withstand dynamic fall arrest, restraint, and post-fall suspension forces. (ANSI)
<b>Full Body Harness:</b>	A harness that goes around a person's chest, waist and legs with attachment points for a lifeline to distribute forces over the person's

thighs, shoulders, chest, and pelvis. The combination of a chest harness and sit harness. (GHSC) See OSHA 1910.272(g)(2).

## G - H

<b>Good Grain Condition:</b>	Grain that is cool to the touch, sweet to the smell, and flows freely. Corn that is traded is normally number 2 yellow corn. Beans are normally number 1 yellow beans as defined by the USDA. (GHSC) See also Out of Condition Grain or Bad Grain Condition for the opposite condition.
<b>Grain Bin:</b>	A round or square, concrete, wooden, or steel structure used to store grain. Some bins are smooth walled with bolted or welded panels. Most bins are corrugated steel bin sheets. Bins with a 30 degree slope peaked roof are the most common but they can have flat roof. See Grain Silo. (GHSC)
<b>Grain Storage Structure:</b>	Any structure that is designed to hold the pressures of grain or has been modified to hold grain. Examples are barns, rectangular warehouse buildings, and machine sheds. See OSHA 1910.272(c), OSHA 1910.272(g)(2). (GHSC)
<b>Grain Silo:</b>	<ol style="list-style-type: none"><li>1. A type of grain bin that is normally several times taller than the diameter. Most silos are be made of concrete and have a fairly flat top. They can be alone but often grain silos are in large groups and connected together.</li><li>2. Silos on farms are often designed for storing forage crops instead of grain.</li><li>3. Some silos are made of bolted together smooth wall steel sheets.</li><li>4. There is no secret in differentiating a silo from a bin. The hazards are the same. The terms are more of a personal choice.</li><li>5. Often the terms are used synonymously. See Grain Bin.</li></ol>
<b>Guardrail for Fall Protection:</b>	A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway that is 4 feet or more above the next lower level to prevent falls. A standard railing consists of top rail, intermediate rail, and posts, and has a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level. The top rail is smooth-surfaced throughout the length of the railing. The intermediate rail is approximately halfway between the top rail and the floor, platform, runway, or ramp. (GHSC)
<b>Harness D-ring:</b>	A metal ring on a harness where the lifeline is attached. The D-ring can

be located on the front of the harness (person's chest) or the back. (GHSC)

**Harness, Full Body:**

A body support designed to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders. (ANSI)

**Hazards in a (grain) bin:**

Several conditions that could cause harm to a person who enters the bin. These conditions include toxic and/or low oxygen level, bad atmosphere, bridged grain, out of condition grain, pyramids of grain, plugged sumps with unloading equipment operating, equipment operating in a bin, grain stuck on bin walls, grain angle of repose that is too steep or other hazards. (GHSC)

See also OSHA 1910.272(g)(1)(i), 1910.272(g)(1)(iii), 1910.272(g)(2), 1910.272(e)(1)(i), 1910.272(g)(6).

**Hazard:**

A condition or changing set of circumstances that presents a potential for injury, illness, or property damage. The potential or inherent characteristics of an activity, condition, or circumstance, which can produce adverse or harmful consequences. (ANSI)

**Helmet or Hard Hat:**

Personal protective equipment for the head. It is recommended but not a required for a grain bin lifeline. (GHSC)

**Hold the Entrant:**

The observer must be able to "hold the entrant" until rescue help can arrive. This means maintaining the entrant's position in such a way as to prevent engulfment. A lifeline with an active belay device makes it possible to do this. See Belay device.

**I - L**

**Knot:**

A fastening made by tying together lengths of rope or webbing in a prescribed way. (NFPA)

**Knot Passing Pulley:**

A large pulley installed in the peak of a grain bin that will allow ropes, knots, and carabiners to pass through. It is an effective component in supporting the bin entrant so he or she is not entrapped or engulfed. (GHSC)

**Ladder, Ladder Bracket,**

Components of a ladder system used to climb the outside of a grain bin

<b>Ladder Fall Protection, Ladder Platform:</b>	or to enter a bin from the top entry point in order get down to the surface of the grain (and back). No parts of the ladder or any of its components are adequate anchor points for a grain bin lifeline or for a fall arrest system. (GHSC)
<b>Lanyard:</b>	<ol style="list-style-type: none"> <li>1. Safety lanyards are a worker's vital link to his/her fall protection anchor point.</li> <li>2. Lanyards are typically short sections of rope, webbing, or cable usually attached to the D-ring of a worker's safety harness. Lanyards can have a shock absorbing feature or simply be a short connection to a lifeline or fall protection anchor point.</li> <li>3. Y-Lanyards allow the user to navigate obstacles while remaining tied-off 100 percent of the time. See Y-Lanyard. (GHSC)</li> <li>4. A component consisting of a flexible rope, wire rope, or strap, which typically has a connector at each end for connecting to the body support and to a fall arrester, energy absorber, anchorage connector, or anchorage. (ANSI)</li> </ol>
<b>Lifeline Components:</b>	The grain bin lifeline system described by GHSC consists of 7 components: a full body harness, knot passing pulley, lifeline rope, sidewall anchor, sling, carabiner, and a belay device. An experienced person may be able to rig a lifeline with fewer components. (GHSC)
<b>Lifeline Rope:</b>	A 7/16" or 1/2" diameter static kernmantle rope such as one used for climbing, rescue, or rope access. See OSHA 1910.272(g)(2). (GHSC)
<b>Lifeline System:</b>	A term referring to the equipment and procedures used to keep a person that enters a grain bin from being entrapped above their waist in grain. (GHSC)
<b>Line-Ascending Line:</b>	A means of safely traveling up a fixed line with the use of one or more ascent devices. NFPA
<b>Line - Descending Line:</b>	A means of safely travelling down a fixed line using a descent control device. (NFPA)
<b>Lockout:</b>	A method for keeping equipment from being set in motion and endangering workers. (NFPA)
<b>Lockout/Tagout:</b>	<ol style="list-style-type: none"> <li>1. The act of placing a locking device on an energy-source, in accordance with an established procedure, that ensures the energy-isolating device and the equipment being controlled cannot be</li> </ol>

operated until the lockout device is removed. A tag must be attached telling who installed this device and when. (GHSC)

2. See OSHA 1910.272(g)(1)(ii), 1910.272(m)(4).
3. The placement of a lock/tag on the energy isolating device in accordance with an established procedure, indicating that energy isolating device shall not be operated until removal of the lock/tag in accordance with an established procedure. The term “lockout/tagout” allows the use of a lockout device, a tag, or a combination of both. (ANSI)

## M - Q

<b>Manual Descent Control Device:</b>	A load lowering device or mechanism that, once engaged, requires manual attention to control pay-out speed of line or descent speed under load. (ANSI)
<b>Multiple Point - Anchor Point:</b>	A system configuration providing load distribution over more than one anchor point, either proportionally or disproportionately. (NFPA)
<b>Non-Certified Fall Arrest Anchorage:</b>	A fall arrest anchorage that a competent person can judge to be capable of supporting the predetermined anchorage forces. (ANSI)
<b>Observer:</b>	The person in a grain bin entry procedure who stays outside the bin to watch the entrant and maintains the entrant’s safety. See OSHA 1910.272(g)(3), 1910.272(g)(5). (GHSC)
<b>Observer Skills:</b>	<p>The training, knowledge, experience and physical ability needed to control a lifeline. These skills include:</p> <ul style="list-style-type: none"><li>• Knowledge and ability to attach the lifeline to the entrant and to the belay device.</li><li>• Knowledge and ability to attach the belay device to the sidewall anchor.</li><li>• Ability to tie a figure 8 knot.</li><li>• Ability to use a water knot or fisherman knot unless the equipment has manufactured ends or loops that do not require knots.</li><li>• MUST/need to be able to follow manufacturer’s recommendations on the use of the belay device.</li><li>• Mental concentration and physical ability to belay the entrant by keeping the slack in the lifeline to two feet or less. This is a critical skill and requires the observer’s constant attention.</li><li>• Trained in rescue procedures. (GHSC)</li></ul>

- See OSHA 1910.272(g)(5).

**OSHA 1910.272, Subpart R:**

Scope – “This section contains requirements for the control of grain dust fires and explosions, and certain other safety hazards associated with grain handling facilities.”

The grain industry is one of nine industries that has a specific OSHA standard commonly referred to as the Grain Handling Standard - OSHA 1910.272(a).

**Out of Condition Grain:**

Also referred to as Bad Grain Condition. Grain that has one or more of the following characteristics: heating, crusting, a musty or sour odor, does not flow well, chunks, abnormal angle of repose, bridging, pyramid(s) or other conditions that are not normal. See Good Grain Condition for the opposite condition. (GHSC)

**Peak Anchor:**

1. An anchor (secure point of attachment) placed at the peak (pointed extremity) of a grain bin.
2. The peak anchor should be an engineered anchor designed by the bin manufacturer or a qualified person or engineer in order to safely handle the load of an entrapped entrant.
3. ***The knot passing pulley is attached to the peak anchor.***

The lifeline should go from entrant to the knot passing pulley (attached to the peak anchor) and then to the belay device that is connected to the sidewall anchor. (See Lifeline Graphic).

This configuration allows the entrant the best protection against engulfment or entrapment above the waist, especially when the entrant is close to the center of the bin. (GHSC)

**Positioning Lanyard:**

A lanyard used to transfer forces from a body support to an anchorage or anchorage connector in a positioning system. (ANSI)

**Properly Installed Lifeline:**

A lifeline with all 7 components connected together correctly. The least understood components are the top anchor and sidewall anchor. These are critical component to the lifeline system. Without correct anchorage the lifeline is ineffective. (GHSC)

**Pyramid of Grain:**

A hazard in a grain bin that is a potential entrapment or engulfment situation. “Out of condition grain” clumps together and forms a pyramid or mountain of grain. A grain pyramid/mountain can range in size from a few feet in height and diameter to 50 feet tall and 75 feet wide (and larger). A pyramid can sometimes be broken up very easily or it may be rock hard and almost impossible to break up. (GHSC)

**Qualified Person:**

1. *Confined Space* - A person who by reason of training, education and experience is knowledgeable in the operation to be performed and is competent to judge the hazards involved and specify controls and/or protective measures. (ANSI confined space list)
2. *Fall Protection* - A person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems. Many jurisdictions require that individuals who design or evaluate physical structures be registered with the jurisdiction as a professional engineer. (ANSI fall protection list)
3. *General* - One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project. OSHA- 29 CFR 1926.32(l)

## **R - S**

**Rescue Trained Observer:**

“The employee acting as observer shall be trained in rescue procedures, including notification methods for obtaining additional assistance.”  
OSHA 1910.272(g)(5)

**Rescue Kit:**

The equipment used to rescue a person from a grain bin. A rescue kit is needed in case of an emergency occurs during bin entry. This kit is a combination of hardware, tools, rope equipment, and first aid items that might be used in an emergency. *Most importantly*, the rescue kit should include multiple copies of an emergency action plan. See OSHA 1910.272(g)(4). (GHSC)

**Rescue Plan:**

1. A written plan that includes procedures, equipment and training to implement an emergency rescue. See OSHA Rescue Plan Checklist. (GHSC)
2. A written process that describes in a general manner how rescue is to be approached under the specified parameters, such as location or circumstances. (ANSI)

**Rescue Procedures:**

A written series of logical steps that describes the specific manner in which rescue is to be accomplished. (ANSI)

**Rigging:**

1. The process and equipment to attach a person using a body harness to an anchor. (GHSC)
2. The process of building a system to move or stabilize a load or the system itself. (ANSI)

<b>Rope Rescue Equipment:</b>	Components used to build rope rescue systems including life safety rope, life safety harnesses, and auxiliary equipment. (NFPA)
<b>Rope Rescue System:</b>	A system comprised of rope rescue equipment and an appropriate anchor system intended for use in the rescue of a subject. (NFPA)
<b>Self-Retracting Lanyard (SRL):</b>	A device containing a drum wound line that automatically locks at the onset of a fall to arrest (stop) the user, but that automatically pays out from and retracts onto the drum during normal movement of the person to whom the line is attached. After onset of a fall, the device automatically locks the drum and arrests the fall. ANSI
<b>Sidewall Anchor:</b>	<p>An engineered anchor attached to the bin wall at the top entry point that is effective in supporting the bin entrant so he/she is not entrapped. It is used in conjunction with a knot passing pulley attached to a peak anchor. See Lifeline Graphic. (GHSC)</p> <p><b>Caution:</b> A sidewall anchor used alone is not positioned geometrically correct to prevent an entrapment while grain is being taken from the center discharge of a grain bin. A sidewall on one side of a bin will not protect an entrant that is on the opposite side of the bin. A sidewall anchor will not protect an entrant in a bridging situation.</p>
<b>Slack (in a lifeline):</b>	The excess rope in the lifeline system. Slack can be anywhere between the sidewall belay device and the entrant. Slack should be limited to two feet or less to ensure the entry person is not entrapped above the waist in flowing grain. It is also needed to limit the force on a person if they are walking on bridged and/or crusted grain and fall through the surface. (GHSC)
<b>Sling:</b>	<ol style="list-style-type: none"> <li>1. <i>Homemade</i> - An item used for climbing or rigging made from a piece of webbing tied in a loop with a water knot or made from a piece of accessory cord and tied in a loop with a fisherman's knot. It is used to connect the sidewall anchor to the belay device in the GHSC lifeline system.</li> <li>2. <i>Manufactured or Sewn Loops</i> - An item used for climbing or rigging consisting of a sewn loop of webbing. It is used to connect the sidewall anchor to the belay device in the GHSC lifeline system. (GHSC)</li> </ol>
<b>Sloped Bin Roof:</b>	The lifeline system as shown in the GHSC video is designed for a grain bin or silo with a sloping, peaked roof using a top sidewall entrance. The system may be adaptable for other structures but may require a different configuration than what is shown and the use of different procedures. (GHSC)

**Stiffeners:**

Vertical supports on the inside or outside of a grain bin to support the bin. Stiffeners are bolted to the bin sidewall. There are normally two to three stiffeners per bin sheet or sidewall panel. (GHSC)

## T - Z

**Tag Line:**

An extra rope (any type of rope) provided to assist the entrant in walking toward the exit or moving around in the bin. A tag line is not part of a lifeline system and does not provide protection against engulfment/entrapment. (GHSC)

**Tagout:**

A method of tagging, labeling, or otherwise marking an isolation device during hazard abatement operations to prevent accidental removal of the device. (NFPA)

**Temperature Cables:**

Vertical cables installed in a grain bin to measure the temperature of grain and air space in the bin. Information from the temperature cable thermocouples is useful to make decisions on aeration and grain movement to maintain grain quality. (GHSC)

**Top Anchor:**

See Peak Anchor.

**Top Entry Point or Top Entry Door:**

A door or opening in the bin roof through which an entrant can enter a grain bin. It is usually close to the edge of the bin roof at the sidewall of the bin, or near the sidewall ladder if one is present. (GHSC)

**Travel Restraint Line:**

A rope, or wire rope, used to transfer forces from a body support to an anchorage or anchorage connector in a travel restraint system. (ANSI)

**Travel Restraint System:**

A combination of anchorage, anchorage connector, lanyard (or other means of connection), and body support that limits travel in such a manner that the user is not exposed to a fall hazard. (ANSI)

**Two-Person Lifeline System:**

Includes an entrant and an observer. This is required by OSHA. It must include an observer stationed outside the bin whose only responsibility is monitoring the entrant and a different person who enters the bin to perform work (entrant). Use of 2 people during bin entry is a "Best Practice" for farms and recommended by GHSC and other agricultural and safety professionals. See OSHA 1910.272(g)(2), 1910.272(g)(3), OSHA 1919.272(g)(5). (GHSC)

**Water Knot:**

The only acceptable knot for tying webbing together. It is tied by forming an overhand knot in one end and then following it with the other end, feeding in the opposite direction. (GHSC)

Video instructions:

<http://www.animatedknots.com/waterknot>

[http://www.netknots.com/rope\\_knots/water-knot/](http://www.netknots.com/rope_knots/water-knot/)

**Webbing:**

1. A strong fabric woven as a flat strip or tube of varying width commonly used in climbing and industrial applications. (GHSC)
2. A narrow woven fabric with selvedge edges and continuous filament yarns made from light and heat resistant fibers. (ANSI)

**Y-Lanyard:**

A double lanyard that is a flexible line of rope, wire rope, or strap which is used to secure the body harness to an anchor point. By having a double lanyard, a person can be moving one attachment while the other is still connected so the user is always protected. (GHSC)

## OSHA Cross Reference Guide to Terms

OSHA Reference & link	Terms used in the video refer to:
<a href="#">1910.134</a>	Respiratory Protection
<a href="#">1915.151(b)</a>	Anchorage
<a href="#">1910.272(c)</a>	Grain Storage Structure
<a href="#">1910.272 (d)</a>	Bin Entry Permit
<a href="#">1910.272(d)</a> <a href="#">1910.272(i)(2)</a> <a href="#">Emergency Action Plan Checklist</a>	Emergency Action Plan (See <a href="#">1910.38 - Emergency action plans</a> for plan requirements.)
<a href="#">1910.272(e)(1)(i)</a>	hazards
1910.272(g)(1)(i) (use <a href="#">1910.272(g)</a> for link)	bin entry permit, hazards
<a href="#">1910.272(g)(1)(ii)</a> 1910.272(m)(4) - scroll down from above link	lock out/tag out
OSHA 1910.272(g)(1)(iii) (use <a href="#">1910.272(g)(1)(ii)</a> for link)	Atmosphere, hazard
1910.272(g)(1)(iii)(A) (use <a href="#">1910.272(g)(1)(ii)</a> for link)	Ventilation, hazard
1910.272(g)(1)(iv) (use <a href="#">1910.272(g)(1)(ii)</a> for link)	Flowing grain
<a href="#">1910.272(g)(2)</a>	bin entrant, engulfment, entrant, full body harness, grain storage structure, hazards, lifeline rope, 2 person lifeline system.

<a href="#">1910.272(g)(3)</a> <a href="#">1910.272(g)(5)</a>	2 person lifeline system, observer, observer skills
1910.272(g)(4) (use <a href="#">1910.272(g)(3)</a> for link)	rescue kit, rescue equipment
<a href="#">1910.272(g)(6)</a>	flowing grain avalanche, hazards
<a href="#">1926.32(m)</a>	qualified person
<a href="#">OSHA Hazard Alert</a>	bridging grain
<a href="#">OSHA Rescue Plan Checklist</a>	rescue plan

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