Tailgate/Toolbox Safety Training

Safety Services Company-Safety Meeting Division, PO Box 6408 Yuma, AZ 85366-6408 Toll Free (866) 204-4786

Company Name: _____ Job Site Location: _____

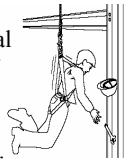
Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 406: Tie-Off Guidelines for Fall Protection

Introduction: One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points for tie-off. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. Improper anchor points and improper use of fall arrest equipment presents hazards to personnel which may be avoided by following these guidelines: In some cases, anchorages must be installed immediately prior to use. In many cases, there is a need to devise an anchor point from existing structures. This point must be capable of supporting 5,000 pounds per worker. A qualified person should evaluate the suitability of these "make shift" anchorages with a focus on proper strength. Ensure that the anchorage is compatible with your system.

Personnel must be properly trained to use personal fall protection systems. Training should include the following:

- ✸ Application limits
- ✸ Proper anchoring and tie-off techniques
- ✸ Estimation of free fall distance (deceleration and total fall distance)
- ✸ Systems use, inspection, and storage (including inspections before each use)
- ✸ Work-site conditions which may effect system use (weather, wind, etc.)
- ✸ Manufacturer's recommendations and instructions



Horizontal lifelines may be subjected to greater loads than the impact load imposed by an attached component. When the angle of horizontal lifeline sag is less than 30 degrees, the impact force imparted by an attached lanyard increases as the angle of sag decreases. The strength of the horizontal lifeline and the anchorages to which it is attached must be at least twice that of the lanyard, and must be increased for each additional employee to be tied off. Extreme care must be taken in considering a horizontal lifeline for multiple tie-offs. In multiple tie-offs to a horizontal lifeline, it is important to note that if one employee falls, the movement of the lifeline may also cause other employees to fall.

Tie-off using a knot in a rope lanyard or lifeline (at any location) can reduce the lifeline or lanyard strength by 50 percent or more. Therefore, a stronger lanyard or lifeline should be used to compensate for the weakening effect of the knot, or the lanyard length should be reduced (or the tie-off location raised) to minimize free fall distance, or the lanyard or lifeline should be replaced by one which has an appropriately incorporated connector to eliminate the need for a knot. Do not attach multiple lanyards together, or attach a lanyard back onto itself.

NOTE: The sliding hitch knot (prusik) should not be used for lifeline/lanyard connections except in emergency situations where no other available system is practical. The "one-and-one" sliding hitch knot is unreliable in stopping a fall and should never be used. The "two-and-two," or "three-and-three" knot may be used in emergency situations; however, limit free fall distance to a minimum because of reduced lifeline/lanyard strength.

Tie-off of a rope lanyard or lifeline around an "H" or "I" beam or similar support, where the line passes over or around rough or sharp surfaces, can reduce its strength as much as 70 percent due to the cutting action of the beam edges. Such a tie-off should be avoided and alternative tie-off rigging should be used. Such alternatives may include: ✸Use a webbing lanyard or wire core lifeline around the beam ✸Use of a snaphook/dee ring connection ✸Use an effective padding of the surfaces ✸Use an abrasion-resistance strap around or over the problem surface.

Follow these guidelines for safety in tie-off of personal fall arrest systems:

- To ensure that accidental disengagement cannot occur, a competent person must ensure system compatibility.
- Tie-off in a manner that limits free fall to the shortest possible distance (six feet maximum), and in a manner which ensures a lower level will not be struck should a fall occur. Always work directly under the anchor point to avoid a swing-fall injury.
- The use of shock absorbers, is highly recommended to reduce fall arresting forces. Shock absorbers can elongate up to 3-1/2 feet, and this distance must be considered when choosing a tie-off point.
- The use of dual leg lanyards (dual shock absorbers) is required for **100% tie-off** when moving between locations. The center D-ring is connected to the users harness, and the snaphooks on the lanyard legs must be connected to suitable anchorages. The user must be connected to an initial anchor before moving to a second location; once in position the user must connect the second lanyard leg to an anchor ***before disconnecting from the initial anchor.*** This ensures that the user is tied-off at all times.
- All equipment must be visually inspected by a qualified person on a regular basis and before each use. Any equipment showing deformities, unusual wear, or deterioration must be immediately discarded. Repairs must be performed only by the equipment manufacturer, or authorized persons.
- Do not allow rope or webbing to come in contact with high temperature surfaces, welding, or other heat sources. Never use natural materials (manila, cotton, etc.) as part of a fall protection system.
- Side, front, and chest d-rings should be used for positioning only. Shoulder d-rings should be used for retrieval only.
- Use only locking snaps and never disable the locking keeper, or alter equipment in any way. Make sure the snap hook is positioned so that its keeper is never load bearing. Visually check that each snap hook freely engages the d-ring or anchor point and that its keeper is completely closed. Do not connect snaphooks to each other, or attach two snaphooks to one D-ring. Do not connect a snaphook directly to a horizontal lifeline

Conclusion: See Tailgate/Toolbox topics **#132:** Harnesses, Belts, & Lines, **#16 (Part A) & 280 (Part B):** Fall Protection (Subpart M), and **#179:** Fall Protection for Steel Erection (Subpart R) for further information on tie-off and fall protection.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

Employee Signatures: ***(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)***

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Foreman/Supervisor's Signature: _____

These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.