



**INTEROFFICE MEMORANDUM**  
**Oregon Occupational Safety & Health Division**

June 14, 2002

**TO:** Robert Salinas, SFO Consultation Manager  
**FROM:** Marilyn Schuster, Standards & Technical Resources Manager  
**SUBJECT:** Requested Construction Interpretations

The following answers are in response to your May 1, 2002 memo:

- 1 Q. The traffic control requirements for construction activities refer to the American National Standards Institute (ANSI) D6.1e-1989: Manual on Uniform Traffic Control Devices for Streets and Highways. What requirements, interpretations, directives or policies does Oregon OSHA have regarding the use of the Oregon Department of Transportation (ODOT) manual for Traffic Control on State Highways for Short Term Work Zones? If none exists, could you provide guidance regarding the application of the ODOT manual.
- 1 A. ODOT's Short Term Traffic Control Handbook was cooperatively developed by ODOT, OR-OSHA, Portland General Electric and other utility companies, and city and county engineers. A letter from Technical Section, dated February 12, 1991 (still in effect), was issued to OR-OSHA field staff directing them to use the Traffic Control for Short Term Work Zones handbook. A new edition of the MUTCD was recently adopted at the federal level. As soon as it is determined that all revisions have been made, OR-OSHA will adopt the new edition. Also, committee work (at ODOT) will continue on the development of a new edition of the Short Term Traffic Control Handbook. Mike Mitchell is on that committee. One goal of the committee is to develop a handbook for use by all entities, including ODOT, OR-OSHA, utilities, and municipalities. It probably is a good idea that written guidance in the application of the handbook be issued to the field staff in the future.
- 2 Q. Are orchard ladders allowed to be used on construction projects? Are there any

requirements or circumstances that need to be considered if these ladders are used on construction projects? If orchard ladders are allowed to be used on construction projects, are they required to have a metal spreader or locking device?

- 2 A. There is nothing in the rules that prohibits the use of orchard ladders on construction sites. In fact, in some instances, such as on rough or sloped ground, the tripod design of orchard ladders is really the safest to use. The intent of 1926.1053(b)(4) is to prohibit ladders from being used for purposes other than for what they are designed, such as scaffold platforms, bridging, support, or in unsafe locations or on unsuitable surfaces. An orchard ladder, for instance, is designed to be used on soil or turf, with each leg slightly penetrating the ground. Orchard ladders should never be used on concrete or hard surfaces. While it is not required that a tripod ladder be equipped with a spreader brace, it is recommended that such ladders have spreader braces, especially when there's potential for a leg becoming unanchored. Tripod ladders with spreader braces, commonly called electrician's tripod step ladders, are common on construction sites.
- 3 Q. Under what circumstances can a body belt be worn in aerial lifts as part of a fall protection system? Under what circumstances must a full body harness be worn in aerial lifts as part of a fall protection system. Are there different requirements for the use of body belts vs. a full body harness in Division 2 than there are in Division 3?
- 3 A. Division 3 requires that a full body harness be incorporated into a fall arrest system when working from an aerial lift. The minimum that Division 2 requires is that a body belt be incorporated into a fall arrest system when working from an aerial lift, though nothing prohibits the use of a full body harness. The reference to the use of a belt as "the minimum" should be a hint that there's a safer way to work, namely by using a full body harness. The September 1, 2000 memo from Barry Jones and Steve Beech allows the use of a body belt (as part of a fall restraint system) while working from an aerial lift on a construction site so long as it is physically impossible for the worker to move, be bounced, or thrown out of the bucket.
- 4 Q. When working over water in an aerial lift on a construction project is fall protection equipment required to be worn? Please explain your answer.
- 4 A. Fall protection is required to be worn when working from an aerial lift over water. While the wall of the bucket provides the primary fall protection, the lanyard

attached to either a body belt or full body harness provides additional protection from being thrown out of the bucket. There's no exemption in the rule that allows someone to work in a bucket without being attached by a lanyard while over water, and there is a potential for injury from the impact, or from drowning.

5 Q. What is the definition of "High Voltage"? What is the definition of "High Voltage Lines"? Is the "Neutral" line considered to be part of the "High Voltage Line" system? Is the "ground wire" that runs down the pole considered to be part of the "High Voltage Line" system. What are the clearance requirements for "High Voltage Lines"? Do the clearance requirements apply to the "Neutral" line? Do the clearance requirements apply to the above mentioned "ground wire"?

5 A. "High Voltage is defined in 1926, Subpart V (which applies **only to the construction** of electrical transmission and distribution lines and equipment) as 750 to 230,000 volts, phase to phase. **All other construction electrical activities**, are covered by 1926, Subpart K. Tables K-1, K-2 and K-3, and the subheading for 1926.403(j), imply that "high voltage" is over 600 volts, nominal.

The term "high voltage lines" is not defined in either 1926, Subpart K or V. Subpart V defines "high voltage", and Subpart V defines "electrical supply lines" as those conductors used to transmit electric energy and their necessary supporting or containing structures. Oregon's Overhead Line Safety Act defines "overhead line" as any bare or insulated electric conductor installed above the ground. Thus, "high voltage lines" are overhead supply lines used to conduct electric energy at voltages over 600 volts up to 230,000 volts. Voltage over 230,000 volts is referred to as "extra high voltage".

A neutral line is part of a high voltage overhead distribution line system. The neutral provides the pathway for the current to return to its source. When a neutral is broken, or if a phase drops across it, the neutral will become energized. Normally there's no visible evidence of the neutral being energized. Otherwise, if a system is not damaged and is working as designed, the neutral is not energized. Transmission line systems do not have neutrals.

A ground, running down a pole, is also part of a high voltage overhead supply system. When a ground is properly designed and installed, and not damaged, its connection to the earth is of sufficient low impedance and ampacity that ground fault current which may occur (if the system is faulted or overloaded) cannot build to voltages dangerous to people.

The overhead high voltage line clearance requirements are listed in 1926, Subpart K, 1926.416(a) and OAR437-003-0047. While the requirements for equipment, tools and material are specific (minimum of 10 feet or more, depending on the voltage, must be kept at all times) the requirements for worker exposure is less specific and is performance based. OAR437-003-0047(1) says that no one is allowed to be within such proximity to high voltage lines that contact can be made unless accidental contact with the lines has been effectively guarded against. Non-qualified workers (those not familiar with the construction and operation of the equipment and the hazards involved) are normally not allowed within 10 feet of overhead high voltage lines.

While it certainly is a good idea to stay a safe distance from a neutral line (which may become energized if the supply system is damaged), the 10 foot rule does not apply to neutrals. A neutral is part of an "electric power circuit" as referred to in 1926.416(a), but it is not a "high voltage line as referred to in OAR437-003-0047(1) and (2). The neutral is normally located on a cross arm with a phase, or approximately 6 feet or less below the phases (within the electric supply space on the pole, and at least 40 inches above the communication space). This means that if a 10 foot clearance from the energized phases is maintained (by non-qualified workers), a safe distance from the neutral will also be maintained, as required by 1926.416(a)(1).

The clearance requirements do not apply to grounds on poles. Most supply systems are designed with more than an ample number grounds, and unless the system is damaged or highly overloaded (such as from a direct lightning strike to a pole that someone is working next to), there should not be any hazard to someone working in close proximity to a ground.