Topic | Fall Protection Systems

Site Specific Training Requirements (Ontario)

Construction employers are required to provide workers, who may use a fall protection system, with specific training in the equipment and systems used for fall protection on the construction site[1] as well as standardized "Working at Heights (WAH)[2]" training.

This means that construction workers need to know the acceptable safeguards for fall-related hazards (per WAH-training) but also demonstrate competency in the use of the specific control measures and systems to address the specific fall-related hazards as presented on a project.

Safeguards in the Workplace

REVIEW with GROUP

1. **At what height** (and hazards) does a worker need to be protected from a fall?
2. **What is the best option for control for fall-related hazards** ? *What are other options for control of fall-related hazards, in order of their effectiveness?*
   GUARDRAIL → TRAVEL RESTRAINT → FALL ARREST SYSTEM
3. Discuss the benefits/limitations of each fall protection system and their typical application to your work.
4. ***What fall protection systems are available and typically used in your workplace? Does it change from project to project?***

HAZARD CONTROL PROCESS

1. RECOGNIZING fall-hazards;
2. ASSESS fall-hazards;
3. CONTROL fall-hazards using appropriate measures; *barriers, personal protective equipment, systems; and devices to eliminate or reduce the likelihood of a fall*; and
4. EVALUATE control measures; *has the likelihood of a fall been reduced, has the consequence of injury been minimized, has effective rescue methods been determined (in the event of a fall).*

Fall Protection Systems

- Guardrails, *physical barrier capable of preventing worker from approaching a fall hazard*;
- Travel Restraint, *harness, lanyard, (and other components) anchored and arranged to keep a worker from a fall-hazard*;
- Fall arrest system, *a system of components attached to anchorage that does not prevent a fall, but prevents a worker from striking the ground (or object below) following a fall* .

Requirements | Fall Protection Systems and Components

Fall protection systems include the use of guardrails and travel restraint arrangements to prevent falls.

Fall protection systems shall:

- Be designed in accordance with applicable regulation and standards
- Be installed, used and maintained per its design and by the requirements of each component used in the system (i.e. anchor, lanyard, connector and harness) and arranged such that a worker cannot approach the fall hazard
- Be regularly inspected by a competent worker (i.e. WAH-trained, and per manufacturer's guideline)

Requirements | Fall Arrest Systems and Components

Use of a fall arrest system should be limited to specific needs and circumstances where other means of fall protection (i.e. guardrail or travel restraint) cannot be used.

Fall arrest systems shall:

- Be designed in accordance with applicable regulation and standards (CSA in Canada, ANSI in the US).
- Be used in accordance with the design as specified or indicated by the manufacturer or professional engineer.
- Be checked and inspected by competent workers before each use.

[1] Required by the Regulations for Construction Projects; O.Reg. 213/91 s.26.2(1)

[2] Required by the Regulations for Construction Projects; O.Reg. 213/91 s.26.2(1.1)

Inspection | Travel Restraint/Fall Arrest System

- Project need/requirements will determine which systems are to be used for project application
- Installation of components of the system shall be as per:
    - Engineer's design; or,
    - Manufacturer's specification(s)
- Fall arrest systems shall be inspected before shift/task start to affirm that the use of the system is as per the intended use and design.
- The inspection shall include:
    - Confirmation of installation per the engineered design drawing; or,
    - Confirmation of installation per the manufacturer's specification;
    - An inspection of the individual components of the system (ropes, anchorages, temporary supports);
- Fall arrest systems should be checked *periodically* while in use to confirm that 'as per' conditions are maintained.
  This check shall be a visual check by competent workers before each use

Inspection | Travel Restraint/Fall Arrest System Components

If there is *any* noted defect/fault during the course of any inspection; the equipment shall not be used and shall be removed from service

Anchorages (Permanent and Temporary)

- Any permanent anchor (as part of the system) shall:
    - Be installed according to the building code; and,
    - Be safe and practical to use as a fixed support.
- Any temporary anchor shall:
    - Be capable of supporting a static weight of 8kN (± 2000 lbs) if used in a fall arrest system;
    - Be capable of supporting a static weight of 6kN (± 1500 lbs) if used in a fall arrest system with a *shock absorber* or in a fall restricting system (i.e. self-retracting lanyard (SRL));
    - Be capable of supporting a static weight of 2kN (± 450 lbs) if used in a travel-restraint system.

Ropes / Lines

- Check for:
    - Cuts or nicks
    - Broken fibers
    - Fuzzy or worn fibers
    - Overall deterioration
    - Modifications by user
    - Fraying/Abrasions
    - Hard or shiny spots
      Indicates possible heat damage
    - Fused fibers or strands
    - Indicates possible heat damage
      Burnt / charred / melted fibers
      Indicates possible heat damage
    - Kinks, hockling* or knots (other than at terminating ends)
      * *unraveling of the rope due to constant turning in the same direction or shock loading*
    - Discoloration of ropes and/or brittle fibers
      Dependant on cause of discoloration but may indicate chemical attack or UV degradation

Harness, Lanyard, and Connectors (Personal Protective Equipment)

- Before first use on a project, all fall protection personal protective equipment shall be inspected and certified for use (typically by the manufacturer and confirmed by a competent worker (i.e. WAH-trained))
- Fall protection personal equipment and devices shall be visually checked by *competent* workers before each use, affirming the following:
    - Labels – available for reference
    - Condition of straps (on harness and lanyard) – for cuts, frayed edges
    - Condition of buckles – for distortion or excessive wear
    - Shock absorber – sheath is not cut or damaged, no evidence of having sustained a fall
    - Hardware – for excessive wear, and smooth operation of locking mechanism(s)

Requirement | After a Fall

1. When a fall arrest system is in use on a project, a fall rescue plan is required;
2. Systems and components, subjected to a fall, shall be removed from service, quarantined/controlled, and returned to the employer for further inspection, investigation and/or permanent removal from their fleet;
3. Systems and components, removed from service, shall be recertified by a professional engineer (P.Eng.) or manufacturer, before being put back into service on a project as a fall arrest system.

Worksheet | Employer Specific Training

Company |		**Location |**	
Talk given by |		**Date |**	

Personnel / Crew Attending |

DEMONSTRATE/REVIEW with GROUP

1. **Discuss** site-specific fall-hazards, and controls available and required, record the discussion below:

2. **Demonstrate** inspection of components in the employer's fleet, *discuss the application and limitations of each.* List the items reviewed below: