Work at Height
CoW Technical Standard

Version	Date	Approver
1.0	March 31, 2024	JO EHS

Introduction

The Work at Height CoW Standard is designed to reduce the potential for injury or fatalities resulting from falls from height and falling objects. Work at Height is defined as work performed where there is a potential for a person to sustain injury by falling, including falling below ground level or while gaining access or egress (excluding staircases and fixed ladders). This standard is also intended to reduce the potential for dropped and falling objects when personnel are working at height.

Scope

Work at Height includes work performed at 6 feet (1.8 meters) above grade or above any other level or work at elevations with unprotected sides or edges, including but not limited to:

- Work over or adjacent to excavations (e.g., pits, trenches).
- Work over water.
- Work over or near surfaces containing holes or openings (e.g., skylights).

Elevated work over dangerous equipment (e.g., moving parts, electrical equipment) regardless of height unless the equipment is covered or guarded to eliminate the hazard.

Requirements

The following sections provide minimum requirements for working at heights and supporting guidance to clarify those requirements' intent.

- Requirements of this Standard **shall** be met.
- Guidance in this Standard **may** be used as an aid to develop local documents that meet or exceed Control of Work (CoW) requirements. If examples are provided within guidance sections, they are not meant to represent the only acceptable means for meeting a requirement. WJO may develop or utilize other suitable methods not discussed in this document as long as the requirements are met. Implementation of guidance is not auditable.

1.	**Requirement:**	**Work at Height shall be authorized in accordance with the Work Authorization CoW Standard.**
2.	**Requirement:**	**Permit Required Work Authorization shall be required when conducting the following:** **a. Erecting, modifying, and/or dismantling scaffolding.** **b. Work requiring the use of personal fall arrest systems (e.g., harnesses, self-retracting lanyards, etc.) when work requires movement between multiple anchorage points.** **i. Permits shall not be required for routine work tasks conducted at height using personal fall arrest systems when that routine task requires the completion of mandatory training including the use of a personal fall arrest system.** **ii. WJO shall identify the routine work tasks that do not require a permit, and that list of tasks shall be approved by the Division Superintendent or Team Leader.**
	Guidance	Tasks that could be considered routine, and therefore do not require a permit, include derrickmen latching and unlatching elevators from the monkey-boards, and tank truck or railcar top loading where a permanent system is in place for personnel accessing the top hatch to have the ability to access their personal fall arrest system.
3.	**Requirement:**	**Hazard analysis for work performed at height shall be conducted in accordance with the Hazard Analysis OE Standard.**
	Guidance:	A Work at Height Hazard Analysis should include, but is not limited to: • Acceptable proximity to overhead powerlines • Load-bearing capacity of the structure from or on which work will be conducted (e.g., scaffolding, roof, mobile elevated work platform (MEWP), etc.) • Identification and prevention of potential dropped/falling objects • Prevention of personnel falling (e.g., use of fall protection systems, lanyard lengths, etc.) • Recognition of potential fall path obstructions • Hazards introduced by the use of control measures • Physical capabilities and competency of the workers • Emergency response
4.	**Requirement:**	**Personnel performing work at height shall be protected by fall protection.**
	Guidance:	WJO should utilize the Hierarchy of Controls to select appropriate fall protection: 1. Hazard elimination 2. Passive fall protection 3. Fall-restraint systems 4. Fall-arrest systems 5. Administrative controls

		For details refer to Appendix C: Hierarchy of Fall Protection.
5.	**Requirement:**	**The clearance between equipment (e.g., scaffolds, MEWPs) and powerlines (electrical conductors) shall be in accordance with the Electrical Safe Work CoW Standard.**
6.	**Requirement:**	**Scaffolding:** **a. Scaffolding that allows for work at height shall be designed, erected, inspected, labeled/tagged, modified, and dismantled by Competent Persons or under the supervision of a Competent Person in accordance with applicable legal requirements, WJO Standards including Safety in Design (SID), manufacturer specifications and/or accepted best practices.** **b. When erecting, working on, or working from scaffolding, Personal fall arrest systems shall be worn by personnel working above the minimum height requirement of 6 feet (1.8 m) including but not limited to the following situations:** **i. Erecting, modifying, or dismantling scaffold** **ii. Working outside scaffolding guardrails** **iii. Working on scaffolds that are not completely enclosed by a guardrail system** **iv. Working on scaffolding in a manner that is not approved or stipulated on the scaffold tag** **c. A highly visible multi-color tagging system shall be used to tag each scaffolding access point and indicate if the scaffold is safe for use. The system shall include the following:** **i. Green tag – scaffold is 100% complete and safe for access** **ii. Yellow tag – scaffold is in modified status but can be used safely with additional controls as stated on the tag** **iii. Red tag – scaffold is incomplete and is not safe to use except by scaffolders** **d. Scaffolding shall be used only as temporary work platforms in accordance with WJO SID.** **e. The frequency of inspection for scaffold and scaffold components shall be established and shall include inspection by a Competent Person for visible defects:** **i. Prior to use** **ii. After any occurrence that could affect the scaffold's structural integrity (e.g., modification, overloading, damage, extreme weather conditions)** **iii. Every 7 days**
7.	**Requirement:**	**WJO shall define the use, maintenance, and inspection of Mobile Elevated Work Platforms (MEWPs) including but not limited to:** **a. Use within manufacturer guidelines (including boom and basket load limits).**

		b. **Operation by trained and authorized persons in accordance with applicable regulatory requirements and manufacturer specifications.** c. **Use of a personal fall prevention or protection system that meets original equipment manufacturer requirements of the MEWP.** d. **Prohibited movement when the boom is elevated in a working position with personnel in the basket unless the MEWP was specifically designed for movement with personnel in the basket.**
8.	**Requirement:**	**Personal fall protection systems shall be worn when making an opening in a surface (e.g., wall, deck, or floor opening) and/or when working near open holes when barricades are not in place or guardrails have been removed.**
	Guidance:	If the opening is smaller than a person's body (example: 1 ft x 1 ft), it is not out of scope for this requirement. Reference regulatory guidelines for specific sizing.
9.	**Requirement:**	**Open holes in floors or platforms shall have covers that are secured, can hold twice the expected load, and are visibly and legibly labeled and/or tagged to prevent inadvertent removal of the cover.** a. **Where a hole cannot be completely covered, a barricade and warning signs shall be in place around the hole.**
10.	**Requirement:**	**Persons working at height where a personal fall arrest system is required shall not be permitted to work alone and shall use 100% tie off.** a. **Any exceptions to this requirement shall be approved by Division Superintendent or Team Leader, and personnel shall have the ability to self-rescue.**
	Guidance:	Remote monitoring can be utilized via cameras or other appropriate methods so long as the rescue plan can be initiated in a timely manner.
11.	**Requirement:**	**Personnel working on Mobile Elevated Work Platforms (MEWPs) shall not work alone, a standby person is required.** a. **The standby person shall be trained to operate the lower controls.**
12.	**Requirement:**	**A full body harness shall be used in all instances in which personal fall arrest systems are required.** a. **The use of body belts for personal fall arrest system purposes is prohibited.**

	Guidance:	A device designed to help eliminate or prevent suspension trauma added to a body harness should be considered for WaH activities, especially when rescue efforts may be delayed due to: • Rescue team response time • Hard to access locations. • Working at extreme heights Examples of devices include: • Suspension Trauma relief straps • Self-rescue harness
13.	**Requirement:**	**A system shall be in place for ensuring that anchorage points are selected, tested, and inspected in accordance with recognized standards and local regulations. Anchorage points shall be reviewed and approved by a Competent Person. Anchorage points shall meet the following criteria:** **a. Anchorage points for fall protection devices shall, where practical, be above the head of the worker, and must ensure that the potential fall path is free of obstacles or other hazards and the worker will not swing or touch the ground.** **b. Anchorage points shall be certified by the manufacturer to support the required load or tested in accordance with a recognized standard, or approved by a qualified or Competent Person to verify that the points are secure and can support the required load.** **c. Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and shall be capable of supporting:** **i. At least 5,000 pounds or 22.2 kN (kilonewtons) static force per attached employee, or** **ii. Designed, installed, and used as part of a complete personal fall arrest system that maintains a safety factor of at least two.**
	Guidance:	Selection of the type and location of anchorage points will depend on the nature and location of the task and the type of construction of the building or supporting structure.
14.	**Requirement:**	**Fall protection systems and their components shall be used, maintained, and inspected per manufacturer's requirements and recommendations, and shall be inspected for visible defects prior to each use.** **i. If excessive wear or damage to the equipment or components is observed, or if the system has been subjected to a fall, remove affected equipment/components from service immediately, and follow the manufacturer recommendations for repair, or destroy the equipment.**

15.	**Requirement:**	**Portable ladders shall meet manufacturer guidelines, applicable legal requirements, accepted best practices and be appropriate for intended use.** **a. Ladders shall be designed for:** **i. 4:1 climbing angle** **ii. Climbing facing the ladder** **iii. Employee is able to maintain 3 points of contact while ascending and descending**
	Guidance:	Always consider alternatives utilizing the hierarchy of controls prior to conducting work at height using stand-alone portable ladders. Criteria to use ladders should include: • Ladder (other than step ladders) tied off to prevent sideward slippage • Firm footing for the ladder • The employee's center of gravity is inside of the side rails • If the first three items above cannot be met, other alternatives should be considered. • An Extension ladder should extend three rungs past the desired level of access.
16.	**Requirement:**	**Defective or damaged ladders shall be tagged and removed from service.**
17.	**Requirement:**	**A documented, viable rescue plan shall be in place where personal fall arrest systems are used and shall include the following at a minimum:** **a. Trained and competent rescue personnel who are equipped with the appropriate rescue equipment.**
	Guidance:	The rescue plan should consider the following details: • Job specific plans • How the rescue plan can be executed in a timely manner to prevent suspension trauma • Methods for confirming that the work crew has discussed the rescue plan including: – How to contact responders – Location of rescue equipment and responders • Recognition of potential suspension trauma Teams responsible for rescue should be trained, properly equipped, and adequately drilled for proficiency with local regulatory requirements.
18.	**Requirement:**	**Personnel conducting activities associated with Work at Height shall meet the training and competency requirements that apply to their roles, in accordance with the CoW Training and Competency Standard.**
19.	**Requirement:**	**Personnel performing Work at Height over water, where there is danger of drowning, shall wear an approved life jacket, a buoyant work vest or other similar protective equipment in accordance with facility requirements and local regulations.**

20.	**Requirement:**	**Documentation associated with Work at Height shall adhere to the record retention requirements detailed in the Control of Work CoW Standard.**
21.	**Requirement:**	**Dropped object prevention and mitigation measures shall be identified during Hazard Analysis and appropriate controls shall be established.**
	Guidance:	Methods for prevention and mitigation that should be considered include, but are not limited to: • Work Evaluation - Prior to starting work in an area, the supervisor for the work crew assesses the area for elevated work activities. The assessment should include the existence and condition of protective systems such as netting and other physical barriers. Crews moving into areas below elevated work should notify personnel working above prior to beginning work. • Maximizing work at grade level, minimizing materials taken to heights until needed. • Toe boards, catch nets, temporary roofing, floor fabric, or similar means, where appropriate, to retain objects with potential to fall. • All tools, loose materials, and equipment that have the potential to drop to lower areas during work are secured utilizing appropriate methods (e.g., lanyards, materials bags, self-closing tool bags/boxes). • Barricades and signs/tags are in place to restrict access to areas under and around elevated surfaces on which work is being performed to prevent entry into a potential dropped object area. • Proper Housekeeping of all areas. • Non-essential tools and materials should not be staged or stored on elevated platforms. • Workers using the “twist method” when handing materials to other workers in elevated positions. This method involves the receiving worker twisting the material to ensure a good grip prior to the other employee releasing the material. • Workers are not carrying tools and materials while ascending or descending ladders. Materials and tools should be raised to work locations using other methods, such as rope, wheel wells and canvas buckets. Larger items and heavy items should not be lifted using rope. • All loose tools and materials necessary for the task at hand should be placed and stored in canvas bags in the work area. Where applicable, the bag should be secured to a fixed object to prevent the bag from tipping and spilling its contents. • Tools and materials should not be stored on ledges, in beams, etc. Loose items stored in this manner can be easily and inadvertently dislodged by personnel passing through the area. • Material should not be stored or stacked next to the edge of a platform. Materials that are stored or staged in elevated areas should be secured from falling to lower elevations.

Appendix A: Terms and Definitions

Term	Definition
100% tie off	A control method whereby a person working at height is always connected to an anchor so that they are protected by their fall-arrest system or work-positioning system while ascending, descending, moving point to point, or conducting work activity.
Anchorage	A component cast or fixed into a building or structure for the purpose of attaching a scaffold or safety line. Anchorages used to attach personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and must be capable of supporting at least 5,000 pounds (22.2 kilonewtons [kN]) per person attached.
Body Belt (Safety Belt)	A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.
Body Harness	A component of a personal fall-arrest system, which includes straps, which may be secured about the worker in a manner that will distribute the fall-arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to the components of a personal fall-arrest system.
Guardrails	A protective barrier that prevents falling or movement into an unsafe area (e.g., around stairways and edges of platforms to prevent falling from a height or falling into hazardous machinery). See SID-SU-5106 Section 2 for more information.
Personal Fall Arrest System	A system used to arrest a worker in a fall from a working level. It consists of anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
Personal Fall Restraint System	A system that prevents the user from falling any distance. It consists of a full body harness, along with an anchorage, connectors, and other necessary equipment.
Fall Protection	Any equipment, device, or system that prevents personnel from falling from an elevation or mitigates the effect of such a fall.
Mobile Elevating Work Platform (MEWP)	A machine used to hoist people within a safety cage to an elevated worksite. The complete machine includes the platform, lifting mechanism, and chassis or vehicle, as applicable. Also known as power-operated elevating work platform, aerial lift, manlift, scissor lift, cherry picker, or crane lift platform.
Work at Height (Elevated Work)	Work performed where there is a potential for a person to sustain injury by falling from one surface to another surface that is not at the same level, including below ground level or in the course of gaining access or egress (excluding staircases).

Appendix B: Roles and responsibilities

Role	Responsibilities	
Competent Person	An individual who is capable of identifying potential hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate these conditions.	• Knowledge of applicable standards within area of expertise. • Subject Matter Expert for specialized work (e.g., excavation inspector, lifting and rigging specialist, work at heights, etc.). • Mitigates hazards associated with specialized work. • Understands when to stop work. • Provides technical support and regulatory advice for specific work-related topics.
Person Performing Work at Height	An individual with knowledge of the requirements of the Work at Height Standard who is capable of identifying potential hazards, can identify the scope for their work (e.g., scaffolds, portable ladders, MEWPs, barricading, guarding), and can identify the minimum anchor points for equipment.	• Knowledgeable about the scope of work and procedures to be followed. • Inspects the specific work at height equipment being used (e.g., ladders, scaffolds, MEWP, fall-arrest systems) before use. • Adheres to the manufacturer guidelines/instructions and the Work at Height Standard for any specific Work at Height equipment being used. • Understands when to stop work.
Rescue Personnel	Personnel who meet specified competency requirements and who are on call to rescue workers who have fallen from height. May include WJO personnel, contract personnel, third-party rescue services and local emergency personnel.	• Understands the requirements for the rescue plan relevant to the location prior to commencing work. • Reviews the pertinent information to determine hazards and appropriate mitigation measures prior to any entry. • Ensures response time for work is appropriate for the hazards of the work. • Provides input to Rescue Planning and during rescue response. • Trained and qualified to perform Work at Height Rescue. • Participates in rescue drills as required by standards. • Understands when to stop work related to rescue operations.

Appendix C: Hierarchy of Fall Protection

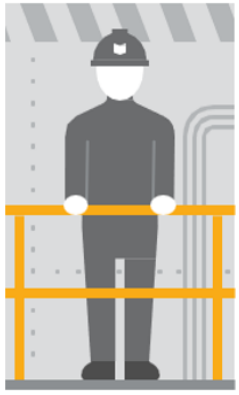
Work at Height Safe Work Practice (SWP)

know the hierarchy of fall protection

As the hierarchy progresses, so does the risk.

1. hazard elimination

The best and preferred solution is to eliminate the gravity hazard.



2. Use passive fall protection for working at Height

Cover open holes and use barriers, such as guardrails, around unprotected edges. Use passive protection rather than personal protective equipment (PPE) because it is generally considered to provide a higher level of safety.

3. fall-restraint systems

Use PPE to limit your range of movement and prevent falls and secondary injuries, and aid in rescue efforts.

4. Use fall-arrest systems

Wear PPE to arrest a fall and prevent you from making contact with the ground or surrounding structure.

5.Use other administrative controls

Reduce the possibility of a fall and increase awareness of fall hazards by using processes and equipment such as safety monitors and barriers.

Appendix D: References

Internal References

	WJO Control of Work Process
	WJO Hazard Analysis CoW Technical Standard
	WJO Work Authorization CoW Technical Standard
	WJO Electrical CoW Technical Standard
	WJO Training and Competency Standard
	WJO TC&S | Safety in Designs SID-SU-5106-5.0

External References

American National Standards Institute

ANSI A92.2-1969	Vehicle Mounted Elevating and Rotating Work Platforms
ANSI Z359.1-20202	The Fall Protection Code

International Association of Oil and Gas Producers (IOGP)

Report No. 459	Life-Saving Rules
Report No. 577	Fabrication site construction safety recommended practices

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.140	Personal fall protection systems
29 CFR 1910.23	Ladders
29 CFR 1910.28	Duty to have fall protection
29 CFR 1910.29	Fall protection systems and falling object protection
29 CFR 1910.450	Scaffolding
29 CFR 1910.501	Duty to have fall protection