Fuels & Lubricants

Work at Height Standard

Approved: November 2021

Version 1.1

Work at Height Standard

1.0 Introduction

Work at Height procedures are designed to help prevent personnel from potential injury or death resulting from falls from height in excess of 6 feet or 2 meters (4-ft. for US locations). Work at Height is defined as 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 and fixed ladders).

This standard defines the Fuels & Lubricants (F&L) requirements for Work at Height.

Note on text formatting:

Letters in Parentheses (e.g., (A)) indicate linkage to the requirement in the Corporate Work at Height Standard

2.0 Requirements

1. Fall prevention shall be used in place of personal fall arrest equipment when feasible. (L)
2. All work-at-grade alternatives shall be exhausted before undertaking Work at Height. (A)
3. Work at Height shall include, but is not limited to: (B)
    a. Work over excavations (e.g., pits, trenches). The requirements for fall prevention and/or protection are required by this standard when working at the edge of or over an excavation or pit where the base of the excavation or pit is deeper than 6 feet or 2 meters (4-ft. for US locations).
    b. Work over water.
    c. Work at elevations with unprotected sides or edges. The requirements of this standard apply to working at height within 6 feet or 2 meters (4-ft. for US locations) of an unprotected edge with a fall hazard such as on building roofs and storage tanks that do not have standard guardrails.
    d. Work on top of Tanker Trucks and Rail Cars.
    e. Work over or near surfaces containing holes or openings (e.g. skylights).
    f. Elevated work over dangerous or sensitive equipment (moving parts, electrical equipment).
4. A Permit to Work shall be required when conducting the following: (C)
    a. Erecting, modifying and/or dismantling scaffolding, higher than 6 feet or 2 meters (4-ft. for US locations).
    b. Work requiring the use of personal fall arrest systems (e.g., harnesses, lifelines). (Except for routine facility operational tasks conducted at height using

personal fall arrest systems where mandatory operator training includes that task and the use of the personal fall arrest system).

c. Other Work at Height associated with potential risk as identified.

5. Permitted Work at Height shall be performed in accordance with the F&L Permit to Work Standard. (D)
6. A Hazard Analysis shall be performed in accordance with the F&L Hazard Analysis Standard when planning work involving Work at Height to: (E)
    a. Identify significant, potential hazards.
    b. Identify the need for safeguards such as gas testing.
    c. Identify if work will require permits / forms (e.g., Permit to Work, Isolation of Hazardous Energy, Confined Space and Excavation) or certificates.
    d. Assess the need for Simultaneous Operations (SimOps), and if so, to evaluate potential hazards associated with SimOps.
    e. Identify and evaluate precautions to ensure that work may be conducted safely.
7. As part of the hazard assessment process for working at height:
    a. Any equipment and tools being taken aloft must be considered as a potential falling object. Suitable mitigation must be put into place e.g. netting or barriers to prevent falling tools or equipment, barriers to exclude personnel from entering under the worksite, or secondary securing devices such as lanyards, etc.
    b. Housekeeping requirements for work at heights must address the hazard of falling objects.
    c. A warning line system, fall protection/prevention or similar control shall be used when working within 6 feet or 2 meters from an unprotected edge (i.e., without a standard guardrail.)
8. When considering actions to reduce risk from falling objects, control measures shall be considered in the following order:
    a. Elimination – the potential falling object is completely removed.
    b. Substitution – The potential falling object is replaced with a less hazardous one.
    c. Engineering controls – Installing or using additional engineering solutions: physical barriers/bump guards, etc.
    d. Administrative controls – Instructions to reduce the risk from a potential falling object, such as barriers and appropriate signs, to limit access or exposure.
    e. Refer to Appendix B for more guidance falling objects
9. A Job Safety Analysis (JSA) or equivalent shall be conducted at the worksite in accordance with the F&L Hazard Analysis Standard before commencing with work involving Work at Height. (F)
    1. Use Stop Work Authority and address the following conditions when observed:
        a. Manholes or floor openings missing appropriate covers, hard barricades, and/or signage

b. Removed, missing or damaged guardrails. Refer to Appendix A for more guidance on barricade management on open holes & unprotected edge work

c. Unprotected hazards identified with potential to fall from heights

d. High risk SIMOPS, (e.g. crane lift, line opening, overhead work)

e. Inadequate or faulty harness

f. Persons working at height not following tie-off requirement

g. Person is improperly tied off at secure, adequately rated anchor point

h. Inadequate lighting while working at height

10. Personnel performing Work at Height shall employ either fall prevention (e.g., standard guardrail systems, complete and approved scaffolding, fall restraint systems and work platforms,) or fall protection systems (e.g., personal fall-arrest systems). (G)

11. Personnel performing work at heights over water, where there is danger of drowning shall wear an approved life jacket, a buoyant work vests or other similar protective equipment in conformance with facility requirements and local regulations.

12. The clearance between equipment (e.g., scaffolds, ladders, mobile elevated work platforms) and power lines (electrical conductors) shall be in accordance with the F&L Electrical Safe Work Practice Standard. (H)

    a. Overhead power lines pose a risk of electrocution to personnel who inadvertently touch the conductors or who simply work too close to them.

    b. Unqualified personnel shall maintain a minimum safe distance of 20 feet or 6.4 meters from exposed energized electrical conductor or circuit parts.

13. The following requirements shall apply to the construction, inspection, maintenance and use of scaffolding: (I)

    a. Scaffolding shall be properly erected in accordance with applicable legal requirements, as well as Chevron standards, manufacturer specifications and/or accepted best practices.

        i. An engineering review is required prior to use of medium and heavy duty scaffolding. Scaffolding within the F&L sites are light duty (general duty) designated unless specifically designated for special circumstances.

        ii. An engineering review is required before the use of light duty scaffolding greater than 120 feet in height as measured from the base plate.

        iii. Process equipment used as a scaffold base must be able to support the scaffolding during use.

    b. Scaffolding shall be designed, erected, inspected, labeled/tagged, modified and dismantled by Competent Persons or under the supervision of a designated Competent Person.

    c. Scaffold shall provide additional protection from falling objects by the installation of toe boards, screens or guardrail systems, or through the erection

of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects.

d. Ladders extending over 20 feet shall have landing platforms provided every 30 feet of height.

    i. Where no ladder cage or ladder safety device is provided, landing platforms shall be provided every 20 feet of height.

e. Personal fall arrest systems shall be worn by personnel working at heights in excess of 6 feet (or 2 meters), (4-ft. for US locations) and includes but is not limited to:

    i. Erecting, modifying, or dismantling scaffold, higher than 6 feet or 2 meters (4-ft. for US locations).

    ii. Working outside scaffold guardrails where there is a potential for a person to sustain injury by falling.

    iii. Working on scaffolds that are not completely enclosed by a standard guardrail system.

    iv. Scaffolding that is not approved or as stipulated on the scaffold tag.

f. Warning signs and barricades are required for:

    i. Incomplete scaffolds (e.g., Red Tags).

    ii. Erecting, modifying or dismantling scaffold.

    iii. Scaffolding exposed to traffic.

    iv. Areas below scaffold where objects can fall (if not protected by a toe board or edge protection such as a barricade or netting).

g. Scaffolding does not restrict access to or egress from work areas, escape routes or safety/emergency routes.

h. A clearly defined tagging and inspection system is affixed to each scaffolding unit.

    i. Scaffolding shall be inspected by a competent person.

    ii. A green “Safe for Use”, or a red “Unsafe for Use” tag shall be affixed to the scaffold, depending on the outcome of the inspection.

    iii. Yellow tags designed to convey hazards associated with the scaffolding may be used to provide additional information to the users.

i. Scaffolds and scaffold components are securely supported and not loaded in excess of their maximum intended loads or rated capacities. Refer to the manufacturer’s instructions / specifications with regards to the load bearing capacity of the scaffold and its components.

j. Scaffolding is used only as temporary work platforms.

k. The scaffold and scaffold components shall be inspected by a competent person for visible defects at the following frequency:

    i. Upon erection, prior to use and/or at other specified frequencies in accordance with applicable regulatory requirements.

ii. When mobile scaffolding is relocated to a different gradient,

iii. After a Near Loss or Incident involving the scaffolding,

iv. After any occurrence that could affect a scaffold's structural integrity (e.g., modification, overloading, damage, extreme weather conditions).

v. At other specified frequencies per BU/facility requirement.

NOTE: Inspections required prior to each shift being worked for US facilities

l. Documentation shall be maintained for:

i. Records of inspection and maintenance (e.g. inspection tags) or checklist.

14. The reporting unit/business unit/facility shall describe the use, maintenance and inspection of Mobile Elevated Work Platforms (MEWPs), and include but not limited to: (J)

a. Use within manufacturer guidelines (including boom and basket load limits).

b. Operated by Competent Person/s.

c. Use of a personal fall restraint system in conjunction with MEWP when required by the manufacturer or local regulations.

i. Employees shall follow local tie off procedures and manufacturer recommendations for tie off on scissor lifts.

ii. A fall restraint system (fall-arrest harness and **fixed lanyard or SRL(***Class A SRL-LE*)) shall be used in conjunction with MEWP use.

d. Prohibited movement when the boom is elevated in a working position with personnel in the basket.

e. Exiting the basket at height is permissible only if the basket is designed for access/egress.

i. When exiting the basket at an elevated height above 6 feet or 2 meters (4-ft. for US locations), the worker must be tied off 100% of the time with appropriate full body harness and dual lanyards.

15. It is not permitted to stand on the forks of a forklift or on a pallet to work at heights. Only engineered platforms designed by a qualified person can be used, and shall be constructed and loaded in accordance with that design

a. The platform cannot extend beyond 10 inches (250 mm) distance, greater than the overall width of the truck.

b. Operating instructions, the safe working load of the platform and the weight of the empty platform must be attached in a prominent position

c. It is critical that the total weight (platform weight + weight of personnel + weight of tools or objects) is well below the capacity of the forklift

d. The platform must be secured to the forks so that it can not slide

e. There must be an agreed signaling system used to denote movement of the hoist

f. The forklift operator must be competent and remain at the forklift controls at all times

g. Personnel working inside forklift platform must be tied off with a haress and lanyard 100% of the time

h. Only vertical (up and down) movement of the forklift is allowed and the parking brake must be set when the person is in the platform

16. Personal fall arrest or fall restraint equipment shall be worn when making an opening in a surface (e.g., wall, deck or floor opening) or where barricading, covering or guarding is not feasible while performing Work at Height. (M)

17. Surfaces containing openings (e.g., holes in grating) shall be barricaded, covered, guarded, or otherwise made inaccessible to protect personnel from falling, tripping in or stepping into or through the holes or openings. Refer to Appendix A for more guidance on barricade management (K)

18. Personal fall protection shall be worn by personnel who are potentially exposed to falls (including below grade) and not protected by any means of fall prevention. (N)

19. Persons wearing personal fall-arrest systems shall not be permitted to work alone and shall use 100% tie off while performing work at height activities. A safety standby shall be used while an employee is wearing a personal fall arrest system. (O)

    a. The safety standby may be a coworker working on the same job, supervisor, laborer, or any other worker as long as they are able and knowledgeable to summon rescue assistance in the event of a fall.

    b. Stand-by person is not required when routine work in the form of tank truck or rail car loading/unloading is being performed if the following conditions are in place:

        i. Top surface of railcar/tank truck has designated walkway area

        ii. Worker must wear full body harness and self retracting life-line that is permanently attached at the work area

        iii. Worker has been trained and qualified for task to be performed

        iv. Worker has been trained in the use of the fall arrest system in-place

        v. Work task has been assessed, current procedure is in-place, and active JLA is available for task being performed.

20. The use of body belts for personal fall arrest purposes is prohibited. A full-body harness shall be used in all instances in which personal fall arrest is required. (P)

21. Work on portable ladders shall only be considered when there are no other practical means of performing the work for short-duration jobs. (R)

22. The use of portable ladders shall meet applicable legal requirements, as well as Chevron standards and/or accepted best practices. These include: (S)

    a. 4:1 climbing angle

    b. Climbing facing the ladder,

    c. Ladder (other than step ladder) tied off to prevent sideward slippage,

    d. Firm footing for the ladder,

    e. Employee is able to maintain 3 points of contact while climbing and descending, and

f. The employee's center of gravity is inside of the side rails,

g. If you cannot meet items a-f above you must be tied off.

h. All ladders must be inspected prior to each use.

23. Fall protection may not be needed for work from an A frame ladder provided that:

    a. It is used as designed above

    b. There is no suitable anchor point

    c. The ladder is being used as intended for light duty work (such as changing a ceiling light bulb)

    d. The standing step is no higher than 15' feet above adjacent grade and

    e. The worker is not standing on or above the top rung or beyond manufacturer recommendations.

24. Defective or damaged ladders deemed unsafe shall be tagged and removed from service. (T)

25. Anchor Point Selection and Testing - A system shall be in place for ensuring that anchorage points are selected, tested and inspected in accordance with a recognized standard and approved by a Competent Person, including, but not limited to the following:

    a. 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.

    b. Anchorage points for fall protection devices shall, where practical, be above the head of the worker, and must ensure that in the event of a fall the path will be free of obstacles or other hazards and the worker will neither swing nor touch the ground.

    c. Anchorage points shall be tested in accordance with a recognized standard and/or approved by a qualified or competent person to verify that the points are secure and can support the required load.

    d. Dedicated anchor points and lifelines must be tested and/or approved prior to first use and at least every two years.

    e. 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 (kilo-newtons) 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

26. Skylight Barricading and Guarding - Where feasible, skylights flush with the roof surface shall be guarded by either:

    a. Installing permanent skylight metal screens over or under the skylight. The screen must be capable of withstanding a 90 kg (200 pounds) perpendicular load that is applied at any point. The metal screen shall be of such construction

and mounting that under ordinary loads or impacts, it will not deflect downward sufficiently to break the glass below.

b. Installing fixed guardrails - Otherwise, when work is to be performed on a roof where personnel would be exposed to the risk of falling through the openings, the openings shall be covered with temporary wooden planking or metal plates before the work proceeds. The installation of the covering must be performed in a manner that protects the personnel installing the temporary planking from falling through or off of the roof.

27. Building Roofs - Roofs must be strong enough to support the weight of the workers and any equipment.

    a. There is a perception that working on a roof is not hazardous if the worker does not get close to the edge of the roof, and that lifelines are impractical when roofs are so large in some of our facilities. Distance alone is ineffective to protect workers from unprotected sides or edges. However, a combination of safeguards can be safe when there isn't a conforming guardrail system in place.

    b. Guard rails or walls are the preferred method to protect workers.

    c. Fall protection is generally the second best option.

    d. A warning line system can be used under specific circumstances if neither of the above is feasible. This should be carefully evaluated in the hazard analysis phase of the project.

    e. The following must be in place to use a warning line system instead of fall protection (harness and lanyard)

        i. You must place a warning line at least 15 feet (5 meters) from the edge

        ii. The warning line must have a minimum tensile strength of 500 pounds (227 kg). They must also be marked or flagged at not more than 15-foot intervals with high-visibility material. Lines must be between 34 (86 cm) inches and 39 inches (100 cm), above the surface.

        iii. No personnel may pass into the area between the warning line and the edge;

        iv. You must have as part of the permit that no personnel shall pass the warning line.

        v. There must be no pitch to the roof.

28. A written emergency rescue plan shall be in place for every location where an active personal fall-arrest system is used to control a potential fall hazard before commencing Work at Height and includes but is not limited to the following: (U)

    a. A Safety Standby or co-worker is present to notify rescue personnel in the event of a fall.

    b. Rescue personnel are equipped with the appropriate rescue equipment.

    c. Third-party rescue services designated for rescue shall meet availability requirements and are trained and competent to respond to specific emergencies.

29. Fall arrest equipment shall be inspected by a competent person with the following requirements: (V)

a. Equipment testing and certification for use shall be documented at a frequency required by local regulations, at a minimum annual, Or per manufacturer recommendations.

b. Equipment is inspected, tested and recertified for use by a competent person after a fall has occurred.

c. Equipment is repaired or permanently removed from service where inspection has shown evidence of excessive wear or mechanical malfunction.

30. Equipment shall be visually inspected by the user before use.

31. The reporting BU/Facility shall maintain documentation of employees and contractors authorized to perform Permitted Work at Height. (W)

32. Personnel assigned responsibilities in Work at Height shall be trained and competent. (X)

33. Training requirements and competency assessments for personnel conducting Work at Height shall be documented and include but not be limited to: (Y)

    a. Person conducting Work at Height.

    b. Anchorage point identification.

    c. Scaffolding design, erecting, modifying and dismantling.

    d. Rescue personnel.

    e. Inspection personnel.

34. The Work at Height Standard shall define the policy for record retention that meets applicable legal, corporate, and operating company requirements (or at least six months, whichever is more). (Z)

3.0 Roles and responsibilities

Table 1: Roles, Responsibilities & Competencies

Role	Responsibilities	Minimum Performance-Based Skills Required
Work at Height ***Person Working at Height***	• Knows the scope of work and procedures to be followed • Inspects the specific work-at-heights equipment being used (for example, ladders, scaffolds, mobile elevated work platforms, fall-arrest systems, etc.) before use • Uses and operates the specific work-at-heights equipment being used in accordance with the manufacturer's instructions and the Work at Heights Standard • Maintains 100% tie-off • Understands when to stop work	• F&L Permit to Work/ Hazard Analysis Std. elements pertaining to their work. • F&L Work at Height Std. • F&L Awareness Level Training
Work at Height ***Safety Standby***	• Understands the planned work and emergency notification procedures • Knowledgeable about fall protection systems	• F&L Permit to Work/Hazard Analysis Std. • F&L Work at Height Std.

Role	Responsibilities	Minimum Performance-Based Skills Required
	• Ensure person working at height is wearing appropriate fall protection • Ensures person working at height is 100% tied off • Must remain at the worksite as long as work is being conducted at height • In case an emergency develops, use a radio or other means to call for help before attempting rescue • Understands when to stop work.	
Work at Height **Scaffold Supervisor**	• Understands the planned work and emergency notification procedures. • Knowledgeable about fall protection systems. • Ensure person working at height is wearing appropriate fall protection and maintain 100% tie-off, when required. • Supervises all scaffold erection, alterations and dismantling activities. • Inspects scaffolding prior to use, on a daily basis, after inclement weather and after incidents, and records results of findings. • Affixes green / red tag to scaffold after inspection. • Understands when to stop work.	• F&L Permit to Work/Hazard Analysis Std. • F&L Work at Height Std. • F&L Knowledge Level Training.
Work at Height **Scaffold Erector**	• Understands the planned work and emergency notification procedures. • Ensures assistants wear appropriate fall protection equipment and maintain 100% tie-off, when required, during scaffold erecting job. • Inspects all scaffold components before use. • Conducts scaffold erection, alterations and dismantling activities. • Understands when to stop work.	• F&L Permit to Work/Hazard Analysis Std. • F&L Work at Height Std. • F&L Awareness Level Training. • External specific training related to the task activity.

4.0 Training Requirements

Initial Training

Personnel must meet the competency requirements and be trained on the requirements of this standard, prior to starting work. Refer to the F&L Training Requirements Tool.

Refresher Training

Refresher training session shall be provided as follows:

- As required by local regulations or site policy.

- Whenever a person demonstrates insufficient knowledge of the F&L Work at Height Standard.
- When a serious incident related to Work at Height occurred and the root cause identified the need to be retrained.
- Trained on the requirements of this standard, at least every three years

5.0 Records

Records requirements

- Copies of all Permit to Work, Work at Height Form and other associated documentation (including records of inspection, maintenance and competencies) shall be maintained in accordance with F&L Managing Safe Work Process.

Retention requirements

Records shall be retained for the periods as specified below:

- All records mentioned above shall be retained by the facility for at least 1 year after the job has been completed.
- Training Records shall be maintained for 3 years or until re-training occurs.

Document Control Information

Documents Reference List

Required Documents - Title	Attachment
Work at Height Rescue Plan Template	WAH Rescue Plan Template
WAH – Start Work Check (SWC)	WAH – Start Work Check (SWC)
Reference Documents - Title	**Attachment**
Scaffold Inspection Checklist Template (as applicable)	Scaffold Inspection Checklist
Safety Harness Inspection Template	Safety Harness Inspection Template
Ladder Safety Checklist	Ladder Safety Checklist
Personal Fall Protection System Guidance	Personal Fall Protection System Guidance
Work at Heights Review Checklist	Work at Heights Review Checklist
Temp. Suspended Work Platform - Gondola	Suspended Work Platform - Gondola
Work at Heights Form Template (As applicable)	Work at Heights Form Template

Document Control

Description	Corporate	SBU Specific
Approval Date		November 2021
Next Process Document Review		November 2026
Control Number		*Version 1.1*

Document Change History

Changes to this document are listed in the table below by change date.

Date (DD/MMM/YR)	Version Number	Description of Change
80 Nov 2021	*1.0*	*New document for F&L*
01 April 2022	*1.1*	*Included links to revised supporting documents, revised personal fall protection inspection frequency & included fall protection guidance in MEWP.*

Appendix A Barricade Management for Open Holes & Unprotected-Edge Work

The barricade management provide the minimum requirement for the selection and use of barricade as part of managing safe work to protect persons from fall hazards.

1.0 Conditions Requiring Barricades

Manholes or floor openings large enough to fall through; missing, removed or damaged guardrails, leading edges exposing a fall greater than 6’ (4-ft. for US locations) or into another hazard shall be guarded by hard barricading.

1.2. Notifications

Responsibility for ensuring a hard barricade is placed around open holes or leading edges rests with the person or group creating the hazard.

Sites shall define who must be notified by the person or group prior to any grating or guardrail removal to discuss barricade placement and installation.

1.3. Barricade Placement

Hard barricades shall be erected prior to the creation of an open hole or leading edge to avoid leaving an unprotected fall hazard.

Barricades shall be complete and surround the fall hazard. Permanent structures that prevent entry may be used as part of the barricade.

Danger tape shall be wrapped around the hard barricades to communicate the fall hazard.

1.4 Signage

Signs are required on hard barricades protecting fall hazards. The signs must contain information on the fall hazard. Signs should be placed at entry points. Use more than one sign on large boundaries.

1.5 Entering a Barricaded Area

Personnel entering a barricaded area shall verify that the appropriate safeguards are in place and wear the required fall protection for that job.

1.6 Barricade Removal

1.1.1 Barricades shall be removed only after the open hole or leading-edge hazard has been removed or eliminated.

2.0 References

- DS&C – Work at Height Standard
- 29 CFR 1910, 1926 Fall Protection Critical Elements
- Title 8, California Code of Regulations, Sections, 3273, 5157, 1671.2

3.0 Definitions

***Barricading**. Typically, a structure comprised of scaffold material or lumber to restrict or redirect foot traffic around an area or hazard.*

***Cover**. A cover must be substantial enough to support twice the anticipated weight it may encounter, secured to prevent accidental displacement and properly labeled. While the cover is not in place, the opening shall be protected by hard barricading. Temporary floor openings shall have hard barricades*

***Hole**. Any opening in a walking surface large enough for someone to bodily pass through.*

Appendix B Falling Objects Management

Falling object is any object subject to gravity with the potential to cause death, injury or equipment & environmental damage, that falls from its previous static position under its own weight.

1.0 Considerations

Falling objects are considered as:

- Lifting operations
- Hand tools being used at height
- Hand tools/equipment left behind after working at height
- Operations conducted at height
- Assembly/Disassembly of equipment at height
- Equipment mounted at a height that could fall following contact, vibration or environmental conditions - such as piping, lights, cameras, rigging gear, etc.
- Temporary equipment at height
- Where personnel are working on a level directly below the work site

2.0 Roles and Responsibilities

Job Manager (Any person in charge of work that has the authority to implement inspections and control measures to prevent falling objects.) Examples include IMPACT Team Leaders, Capital Project Managers and Maintenance Supervisors

Responsibilities of the Job Manager include:

- Development of a Prevention of Falling Objects strategy and action plan to identify and assess individual work areas and activities where the potential for a falling object exists. This could include identification of areas of opportunity for:
    - the removal of redundant equipment
    - the improvement of maintenance routines
    - developing and setting key performance indicators
    - providing suitable instruction & awareness to personnel
- Development of a Falling Object Prevention Inspection Plan and ensuring regular inspections are undertaken.
- Raising awareness of falling objects and their control measures within the worksite.
- Reviewing action plans on a regular basis.

Assigned Person/Area Owner (Any person in charge of work area that ensures work is being conducted in accordance with the standard and work plans as discussed during pre-job review activities) Examples include Operations Representative, Maintenance Supervisor, Contract Supervisor.

Responsibilities of the Assigned Person/Area Owner include:

- Identifying and inspecting work areas and activities where the potential for an object to fall from height exists.

3.0 Overall Approach

3.1 Management of potential falling objects

The management of potential falling objects is based on the identification and inspection of all areas of the worksite that have items with the potential to fall from height. This is best accomplished by splitting up the worksite into manageable defined areas. Assigned persons and area owners are then given the responsibility for that specific area.

Prior to starting work in an area, the supervisor for the work crew will assess the area for elevated work activities. Priority shall be given to eliminating the hazard by avoiding all over/under work activities when possible. When elimination is not practical, protection must be provided to protect workers from falling objects. The assessment shall include the existence and condition of protective systems such as netting and other physical barriers. Crews moving into areas below elevated work will notify personnel working above prior to beginning work.

Prior to beginning work in elevated positions, the crew supervisor shall ensure that netting is installed and maintained, housekeeping is in order, and secure methods of handing tools and requirements are in place. Crews moving into elevated areas shall notify any personnel below prior to beginning work.

Regular inspections of the area should be undertaken to ensure items are secure, and that any necessary safety devices (such as nets) are in place. Appropriate mitigation actions are to be implemented for any items that are identified as not being suitably secure or where there are potential fall paths (e.g. gaps between access platforms and fixed equipment).

3.2 Inspections

Inspection schedules are determined by the types of ongoing activities and the need to identify the potential for items to become dislodged or damaged during operations.

These inspections should look at the methods of securing items and potential fall paths. If the protective measures are found to be defective, Stop Work Authority must be used, and the finding communicated to the Job Manager.

Inspections should be communicated to the responsible Supervisor(s). If a corrective action (removal of the potential falling object) can be achieved at the time of the inspection, this should be done.

Individuals undertaking the inspection of areas for potential falling objects shall be given suitable information and guidance on how to identify and mitigate items with the potential to become a falling object.

3.3 Classification of Identified Items with the potential to drop

Even a small object falling from a height can cause incidents leading to serious or fatal injuries. The potential harm to the individual may be determined using the Dropped Objects Calculator. A tool is available on the DROPS website

https://www.dropsonline.org/resources-and-guidance/drops-calculator/ to aid in the classification of incidents.

3.4 Mitigation Actions

Mitigation actions identified following the inspection should be controlled and managed using a suitable method of action item closeout. The mitigation actions identified should follow the hierarchy of control.

3.5 Hierarchy of Control

When considering actions to reduce risk from falling objects, control measures should be considered in the following order:

1. Elimination:
    - The potential falling object is completely removed.
2. Substitution:
    - The potential falling object is replaced with a less hazardous one.
3. Engineering controls:
    - Installing or using additional engineering solutions: physical barriers I bump guards, reinforcing fasteners, fitting secondary securing devices, etc.
4. Administrative controls:
    - Instructions created to reduce the risk from a potential falling object, such as barriers and appropriate signs, to limit access or exposure.

3.6 Management of Change

New equipment and I or processes should be assessed for the introduction of falling object risk, and the risks reduced to as low as reasonably practicable. Anytime the work site undergoes changes in process and I or equipment the Management of Change process should be followed.

4.0 Requirements (Turnarounds I Capital Projects I Applicable Overhead Work)

Elevated work during Turnarounds and Capital Projects involves greater risk (e.g. increased amount of work and number of workers in an area) than during normal operations. These situations call for more stringent controls than during normal operations to ensure the safety of all personnel.

4.1 Specific Protective Measures

1. **Barricades and Employee Protection:**

    Barricades with hazard and ownership signage shall be properly erected and maintained when a significant overhead hazard exists. When overhead protection is not adequate, personnel shall be prohibited from entering the affected area.

2. **Perimeter Protection on Platforms:**

    Netting will be placed on scaffold and permanent railing systems to prevent objects from falling off platforms. The netting will be secured with cable ties between the guardrail and toe plate. On scaffolds that have guardrails designed to be used as anchor points, the netting will be secured between the mid-rail and toe-board.

The netting shall be maintained in order to prevent dropped or falling objects. Daily routine inspections of the netting shall be made by all personnel accessing elevated platforms and scaffold decks.

Scaffolds shall be constructed in a manner to eliminate any gaps or holes where tools or materials could fall through. Every effort shall be made to construct scaffolds as close to a vertical structure as possible. If this not feasible, hole-covers shall be secured to the deck to close the gaps.

3. Debris netting:

Debris nets will be installed in strategic locations as a secondary protective system around structures (e.g. when working on overhead structures, pipe bridges, etc.) to protect personnel from falling tools or equipment. The nets will be inspected daily. Objects that fall into the nets will be removed from the nets by the end of each shift.

4. Housekeeping:

Non-essential tools and materials shall not be staged or stored on elevated platforms of scaffold decks. Housekeeping shall be maintained to the highest degree to prevent dropped or falling objects.

Personnel working in elevated areas shall control items and be aware of potential improperly stored or loose item that has been covered and hidden underneath other materials on a scaffold deck such as welding blankets.

All unnecessary tools and materials shall be removed from work areas as soon as feasible to support good housekeeping.

5. Tools & Material Handling/Storage:

When work activities involve the use of materials that can fall through grating, the grating shall be covered by plywood or other materials to prevent objects and materials from falling. Materials used to cover grating shall be secure and shall not cause slipping or tripping hazards.

All hand tools shall have tool lanyards attached to the user when working in elevated positions. Where tool lanyards are not feasible, appropriate precautions (debris netting, overhead protection, barricades to prevent entry, etc.) must be implemented to protect areas below from falling objects.

Workers shall use the "grab-and-twist method" when handing materials to other workers in elevated positions. This method involves the worker releasing material getting a good grip on it and passing it to the worker receiving the material while maintaining a good grip. The worker receiving the material will take the material and give it a twist to ensure a firm grip. The worker releasing the material notes the twist and lets go of the material. Example: A carpenter is passing a scaffold pole to a coworker. The carpenter gets a good grip on the scaffold pole and passes it to their coworker while maintaining a secure grip. The receiving worker twists the pole to ensure they have a good grip; the carpenter does not release the scaffold pole until they feel the twist and know their coworker has control of it.

Tools and material shall not be carried while ascending or descending ladders. Materials and tools will be raised to work locations using other methods, such as rope, wheel wells, and canvas buckets. Larger items and heavy items shall not be lifted using rope. Metal or plastic buckets shall not be used for raising or lowering items

All loose tools and materials necessary for the task at hand shall be placed and stored in canvas bags in the work area. Where applicable the bag shall be secured to a fixed object to prevent the bag from tipping and spilling its contents.

Tools and materials shall not be stored on ledges, in beams webs, etc. Loose items stored in this manner are easily inadvertently dislodged by personnel passing through the area.

Material shall not be stored or stacked next to the edge of a platform. Materials that is stored or staged in elevated areas must be secured from falling to lower elevation.

5.0 Activities with the Potential for Falling Objects

5.1 Lifting Operations

As part of the risk assessment process for lifting operations, the integrity of the load and lifting equipment should be considered. This will include inspections to identify and mitigate any potential hazards from all or part of the load falling or the failure of lifting equipment.

5.2 Working at Height

As part of the risk assessment process for working at height, any equipment and tools being taken aloft should be considered as a potential falling object. Suitable mitigation should be put into place e.g., netting or barriers to prevent falling tools or equipment, barriers to exclude personnel from entering under the worksite, secondary securing devices (lanyards, etc.).

Consider the following:

- Minimizing over/under work using work planning and permitting processes
- Removing personnel from areas underneath activities such as line breaking, equipment assembly or disassembly
- All hand tools or other portable equipment that will be used at height (e.g. wrenches, hammers, drills, etc.)
- Hand tools or other portable equipment that is left at height (e.g. valve persuaders on a column deck)
- Loose parts or parts that are being removed (e.g. blinds, studs, bolts, etc.)
- Use of bags to lift tools or other small items from the ground to the worksite

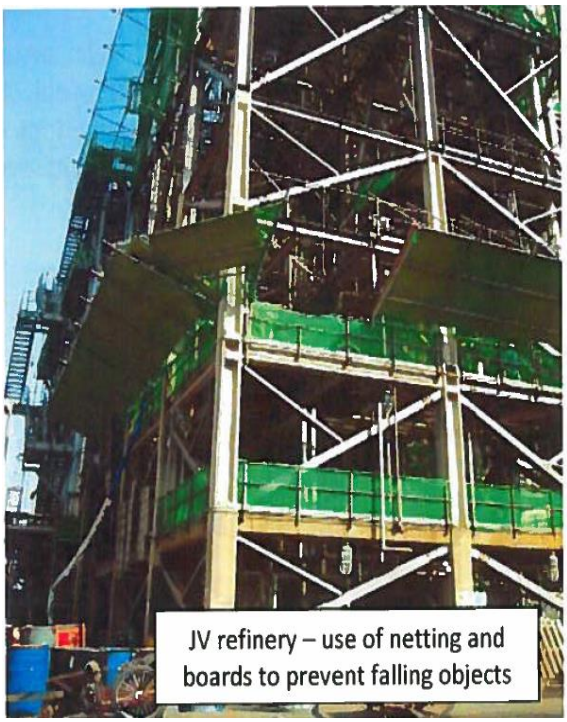
It is not always possible to barricade off the area below the worksite, e.g. during times of high activity such as Turnarounds. Consider the use of netting or similar systems to protect personnel who may be at risk when work is being performed on overhead structures pipe bridges, etc.

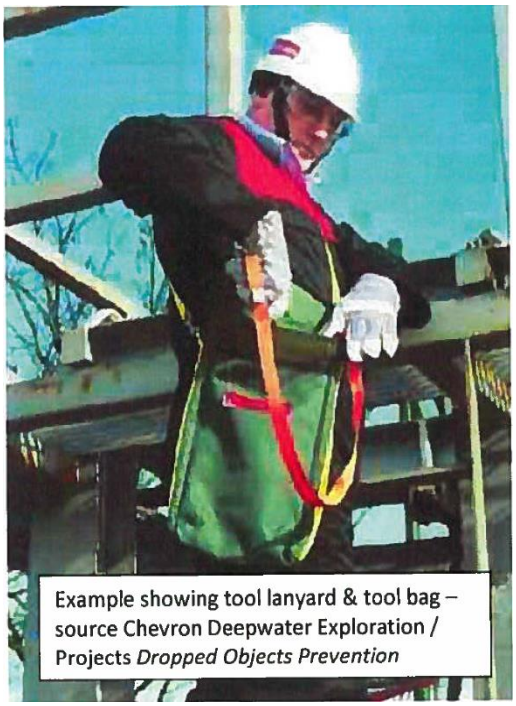
5.3 Scaffolding Operations

Scaffolding operations historically are high-risk activities regarding falling objects. Satisfactory planning, risk assessment, and mitigation measures for potential falling objects are necessary.

Consider the following:

- Falling boards, clamps, or pieces of scaffolding during scaffolding erection or removal.





5.4 Control of Temporary Equipment

The introduction of temporary equipment into worksites can create a falling object

hazard. Temporary equipment must be subjected to the same degree of scrutiny as the fixed equipment. Local procedures or policies should address falling object management.

6.0 Reporting Falling Objects

Once a falling object incident has occurred, the event shall be immediately reported to supervisors. There is a requirement to investigate and categorize the incident for reporting purposes in alignment with the Corporate LI/NLI Investigation procedure.

6.1 Categorizing Falling Objects

A significant near miss is one that has the potential to cause death or major injury.

The tool on the DROPS website (https://www.dropsonline.org/resources-and-guidance/drops-calculator/) is an aid in the classification of incidents.

Appendix C Fall Distance Calculation Tool

Required Ground Clearance Calculation (from where your lanyard snap hook attaches to the anchor point) *** You must be familiar with your equipment!**

Example:

Lanyard Length	(6 ft or 1.8 m)
+ Shock Absorber deployment	(4 ft or 1.2 m)
+ D-Ring movement	(1 ft or 0.3 m)
+ Average body height (heels to D-Ring)	(5 ft or 1.5 m)
+ Safety distance	(1 ft or 0.3 m)
= Total Fall Distance =	**17 feet or 5.1 meters**

Your Calculation:

Lanyard Length		_____
Shock Absorber deployment	+	(4 ft or 1.2 m)
D-Ring movement	+	(1 ft or 0.3 m)
Body height (heels to D-Ring)	+	_____
Safety Distance	+	(1 ft or 0.3 m)
Total Fall Distance	**=**	_____

Height of Anchor Point _____

Minus -

Fall Distance Calculation _____

Equals =

Ground Clearance _____

Anchor Point will hold 5000 lbs (22.2 kilonewtons)?

Identify Anchor Point

_____