WORKING AT HEIGHTS

SWS #19000-028

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SCOPE AND PURPOSE:

The purpose of this Standard is to identify and communicate Suncor St. Clair Ethanol minimum requirements and associated procedures, processes and work practices which are to be utilized and implemented to protect workers from potential hazards associated with working at heights that may endanger the worker's health and/or safety (ex. dropped objects, falling from height, etc.)

This document establishes the minimum standards for personnel when a worker has the potential to be exposed to any of the following hazards -

- Falling more than 1.8 metres (6 feet)
- Falling into operating machinery
- Falling into water or other liquid
- Falling into or onto a hazardous substance or object
- Falling through an open work surface
- Potential exposure to being struck by a dropped object associated with work at heights – including personal injury/death, structural damage, damage to equipment, damage to the environment via material release, fire.

All working at heights activities will be managed within the Suncor St. Clair Energy Plant (SCEP) work planning and safe work permit system.

This standard applies to all SCEP employees, contractors, sub-contractors, consultants and agents of SCEP and any deviation to this standard requires approval through the SCEP Management of Change Process.

Contractors and sub-contractors are required to have and implement their own Working at Heights Standard, which is equivalent to or more stringent than the following.

1.0 Roles and Responsibilities

The following are positions with assigned responsibilities for work involving the identification, assessment and implementation of controls for working at heights:

Environment, Health and Safety Team Lead –

- Support the development and maintenance of the Standard in compliance with regulatory requirements
- Support the implementation of the Standard
- Assist with the identification of fall prevention/arrest and restraint devices required to support the safe execution of work
- Oversee coordination of training of employees
- Assist with the maintenance of records and documents pertaining to this standard
- Ensuring that non-conformances with the Standard and/or the law, are subject to appropriate corrective action
- Support monitoring of effective implementation of Standard through the Observation Based Safety (OBS) program and procedural audits

Discipline Managers (Operations, Maintenance, Technical, etc.) -

- Accountable to ensure that hazards associated with working at heights are identified and associated controls have been evaluated through the work planning process, are implemented through the safe work permit and all other applicable standards
- Assist the identification of the work scope
- Accountable to ensure the development of adequate controls measure and procedure to eliminate and potential for hazards associated with working at heights (fall/dropped objects, etc.)
- Accountable to ensure that all work is identified that requires the use of fall restraint/fall arrest - and the potential installation of fall prevention systems (permanent platforms, etc.)is evaluated
- Responsible to ensure all workers are provided with appropriate fall protection equipment required
- **Accountable to ensure the development a fall protection rescue plan and implement for any work that includes the use of fall restraint, fall arrest and/or mobile platform in place of elimination or isolation**
- Accountable to ensure workers under their supervision are trained in working at heights and are aware of dropped object consequences
- Accountable to ensure visual and documented inspections of fall protection equipment are being conducted
- Accountable to ensure that a provision for prompt rescue of fallen employee is planned
- Accountable to assure that fall protection equipment is used in compliance with this document including manufacturer and regulatory requirements

Shift Supervisor/Permit Issuer are responsible to –

- Provide operations technical oversight and work authorization when implementing the standard and other associated Standards (i.e. Safe Work Permit, Confined Space) to support the safe execution of **Work At Heights**

- Ensure that hazards associated with working at heights are identified and associated controls have been evaluated through the work planning process, are implemented through the safe work permit and all other applicable standards
- Ensure an appropriate anchor point (per section 6.0) is selected, documented and confirmed permit receiver is aware of the correct anchor/tie off point
- Eliminate all fall hazards/dropped object potential whenever possible & practical to do so
- **Develop a fall protection rescue plan** (utilizing the SCEP Fall Arrest Rescue Plan Form, Safe Work Permit or other documented process where appropriate) **and implement for any work that includes the use of all restraint, fall arrest and/or mobile platform in place of elimination or isolation in consultation with the affected worker**
- Ensure workers are trained in working at heights and are aware of dropped objects consequences
- Ensure visual and documented inspections of all protection equipment and assure that fall protection equipment is used in compliance with this document including manufacturer and regulatory requirements
- Ensure understanding the procedure for rescue and escape plans of workers who may be unable to rescue themselves from an elevated work area
- Ensure all tools and other loose objects are secured and areas below work at heights are danger taped off
- Facilitate the completion of an incident report any time that a fall arrest system is engaged. Please note that the **Ministry of Labour must be notified if a worker falls and is arrested by any system other than a fall restricting system (please see definitions below)**

Permit Receiver/Worker is responsible to –

- Complete working at heights training and ensure it is up to date
- Perform a pre-use inspection on all fall protection equipment before use and assure that fall protection equipment is used in compliance with this document including manufacturer and regulatory requirements
- Report any equipment that does not pass pre-use inspection. Apply danger tape and a danger tag detailing why the piece of equipment cannot be used. The piece of equipment is to be reported to the EHS department to correct the issue
- Work with Shift Supervisor/Permit Issuer to eliminate all fall hazards and dropped objects potential whenever possible & practical to do so. Conduct a hazard assessment for the work and ensure all control measures are in place prior to beginning work (documented on the Safe Work Permit)
- Know the capabilities of the fall protection equipment being used
- Ensure anchor/tie off point is known
- Follow all manufacturers' specifications including weight limits
- Use anchor slings or similarly approved device (i.e. dog leash) to engineered anchor points/tie off points
- Ensure all tools and other loose objects are secured and areas below work at heights are danger taped off
- **Understand (and be competent to support) the fall protection rescue plan and implement for any work that includes the use of fall restraint, fall arrest and/or mobile platform in place of elimination or isolation**

- Conduct a hazard assessment for the work and ensure all control measures are in place prior to beginning work (documented on the Safe Work Permit)
- Immediately report to the Shift Supervisor and assist with the completion of an incident report any time that a fall arrest system is engaged and remove from service any fall protection equipment damaged or subjected to a fall. **Ministry of Labour must be notified if a worker falls and is arrested by any system other than a fall restricting system (please see definitions below)**

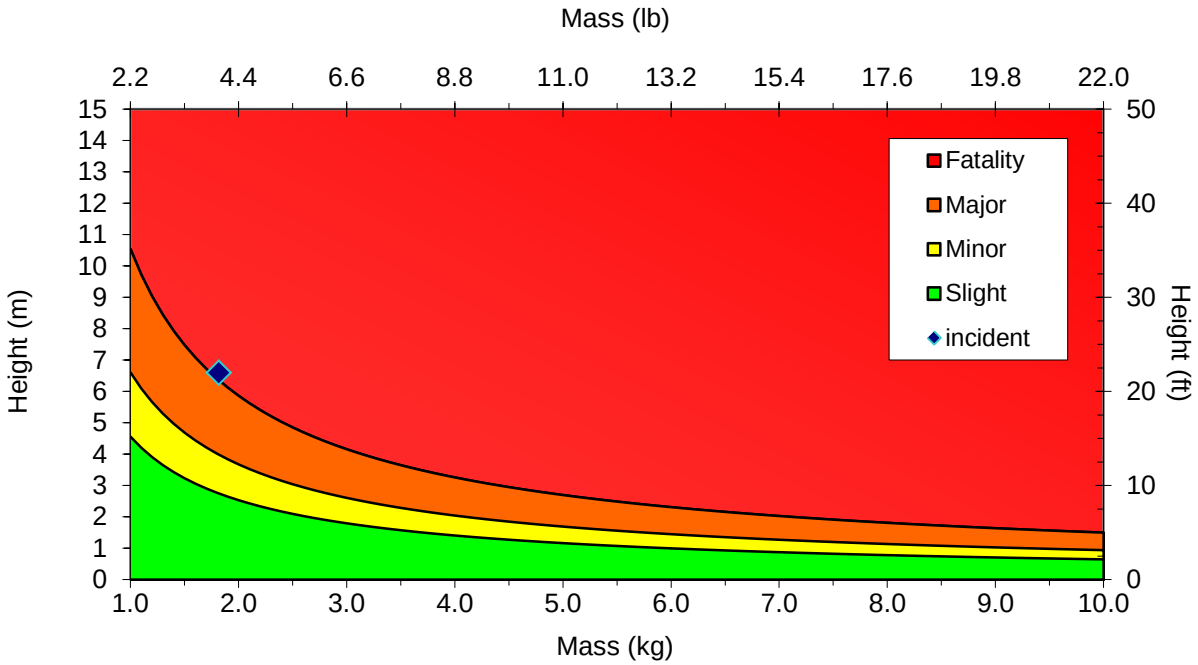
2.0 Hazard Assessment

Prior to conducting any work that includes the potential to conduct work at heights/dropped objects, the Discipline Manager is accountable to ensure that the field supervisor (in consultation with the Permit Issuer) conducts a hazard analysis to identify the hazards associated with the work and determine the controls necessary to ensure that the potential fall hazard and dropped objects/unsecured objects at heights hazards are eliminated, isolated and/or fall restraints are in place to ensure the work can be performed safely. Two key components of the hazards assessment include both the work at heights, as well as the potential for dropped objects to impact the work area below. The Permit Issuer and field supervisor must ensure the controls are captured and documented on the Safe Work Permit during permit development.

The field supervisor is responsible to ensure that controls agreed to during the Safe Work Permit process are implemented in the field and may utilize a documented field level risk assessment process to support the evaluation where appropriate.

The Suncor Dropped Objects Consequence Calculator may be utilized to quantify the risk of a dropped object associated with the work. The calculator is available on the controlled drive under \\file128\stclair\Operations\Employee Resource Centre\EHS Records\Incidents

An example of the calculator is provided below for reference:



Item Dropped	Weight	Force When Dropped From:		
		32 feet	48 feet	300 feet
10 inch Crescent Wrench	12 oz.	24 lbs.	36 lbs.	225 lbs.
12 inch Crescent Wrench	1 lb. 8 oz.	48 lbs.	72 lbs.	450 lbs.
9 inch Pliers	15 oz.	30 lbs.	45 lbs.	281 lbs.
Square Washer	3.5 oz.	7 lbs.	1.7 lbs.	66 lbs.
5/8 x 16 Machine Bolt	1 lb. 10 oz.	52 lbs.	78 lbs.	488 lbs.
Sledge Hammer	6 lbs.	192 lbs.	288 lbs.	1,800 lbs.
3 inch Valve Wrench	15 lbs.	480 lbs.	720 lbs.	4,500 lbs.

2.1 Work at Heights Hazard and Dropped Objects Assessment and Controls

Working at Heights Hazard Assessment and Controls

A worker must ensure that a fall protection system is utilized when work is to be conducted at heights where there is the potential of:

- Falling more than 1.8 meters (6 ft.) or
- Falling into operating machinery, or
- Falling into water or other liquid, or
- Falling into or onto a hazardous substance or object, or
- Falling through an open work surface, or

Fall protection and dropped objects systems are listed below in order of required evaluation, from preferred to least preferred.

Elimination

Provide workers with tools to perform work on ground level, or in a space where risk of fall/dropped objects is eliminated or reduced/minimized (based on original plan) via procedural changes, facility changes, alternate construction techniques and/or installations.

Fall/Dropped Prevention via Isolation *(Passive Fall Protection)*

Physical barriers to the identified fall/dropped objects hazards are installed. Examples include, but are not limited to:

- Permanent platforms, guard rails, swing gates, etc.
- Use of an approved aerial lift, mobile platform, etc.
- Erect a temporary physical barrier (scaffold)

- Warning barriers and bump lines - **must be set up at least 2 meters (6 feet 6 inches) from unprotected edges and must be 1.07 meters (42 inches) high and consist of weighted posts, fibre rope with warning flags and/or signs along their entire length**

Fall (Travel)/Dropped Objects Restraint

An assembly of components capable of ensuring that workers/objects movement is restricted on a work surface such that the worker/object is unable to fall by preventing access to the fall location (i.e. use of anchor points and/or restraint devices to make fall points inaccessible or to secure tools to belts, etc.)

Fall Restricting

Utilized in a work scenarios were exposure to a fall may not be eliminated via previous methods. The risk of a fall is managed via an assembly of components (approved personal protective equipment utilizing approved/appropriate fall restricting devices – harness (please note that belt harnesses are prohibited at the St. Clair Ethanol site), self-retracting lanyards, anchor points, etc.) that when connected to an anchor point, is capable of restricting a workers fall. A worker's maximum free fall distance must be minimized to the smallest distance, **should not exceed a maximum of 2 feet and must not expose the worker to more than 1800 pounds of force and not introduce the potential for pendulum swing (**Note that arresting force is calculated as follows; Maximum Arresting Force/Body Weight = Gravitational Force that an individual will experience. The maximum arresting force for associated weight limits must be indicated on the decelerating device)

Waste disposal and debris chutes may be installed for work at heights to ensure material safely reaches the ground.

Fall Arrest (Other than Fall Restricting)

Utilized in a work scenarios were exposure to a fall may not be eliminated via previous methods. The risk of a fall is managed via an assembly of components (approved personal protective equipment utilizing approved/appropriate fall arresting devices – harness (please note that belt harnesses are prohibited at the St. Clair Ethanol site , lanyards, anchor points, etc.) that when connected to an anchor point, is capable of arresting a workers fall **and ensures the worker cannot hit the ground or an object or level below, must not expose the worker to more than 1800 pounds of force and not introduced the potential for pendulum swing.** (Note that arresting force is calculated as follows; Maximum Arresting Force/Body Weight = Gravitational Force that an individual will experience. The maximum arresting force for associated weight limits must be indicated on the decelerating device). **A worker's maximum free fall distance must be minimized to the smallest distance to limit arresting forces** – and a Self-Retracting Lanyard (SRL) or personal fall limiter should be utilized in place of a shock absorbing lanyard wherever practicable.

To calculate the fall distance of the fall arrest system to ensure the appropriate clearance from the potential impact area below, the following must be added together considered:

1) The length of the lanyard (Self Retracting preferred/recommended whenever practicable)
2) The length of the deployed deceleration device (shortest distance possible)
3) Average Body Length (6 feet)
4) Safety Factor of 3 feet

Administrative Controls *– to be included in all hazards assessments associated with work at heights/dropped objects*

Use of fall arrest plans (where appropriate), annual and pre-use inspections, safe work permit processes and work practices to increase workers awareness of fall hazards.

Dropped Objects Hazard Assessment and Controls

Workers must ensure that drop object controls are applied whenever there is a potential exposure to being struck by a dropped object associated with work at heights – including personal injury/death, structural damage, damage to equipment, damage to the environment via material release, fire etc.

There are two key types of dropped objects;

- Static Sources – any object that falls from its previous fixed position under its own weight, solely due to the force of gravity

- Dynamic Sources – any object that falls from its previous fixed position due to the application of an energy or force (ex. Motion, mechanical, electrical, pressure, temperature, chemical, radiation, sound, biological)

Isolation Controls

- Debris netting installed on scaffold/work platforms to prevent dropped objects
- Installation of fire blankets and/or plywood decking to prevent objects from falling through metal grading. Fire blankets may be considered for small objects such as bolts, screws, welding rod and small tools
- Catchment platforms (bulkheads) may be utilized when work is occurring at various elevations. The platform must be constructed of materials with sufficient strength to withstand the maximum expected force/load applied
- Enclosed chutes may be utilized to safely remove materials at height. The proper bin/containment screening or cover should be used depending on the waste material.
- Tethers and tie-downs for tools, etc.

Administrative Controls

For dropped objects administrative controls include:

- Danger taping and flagging and/or fences and/or cement barriers may be utilized to ensure the area below the work to prevent access and potential impact of a dropped object. The control zone must be established that includes consideration for an object to “bounce”.
- Limiting the number of tools brought up to the work platform

- Housekeeping – remove unnecessary tools from heights as soon as reasonable possible, unused tools are to be stored away from leading edges and in toolboxes wherever practicable and tripping hazards are to be eliminated from access/egress area. In the event that the worksite is left unattended, all materials and tools are to be secured and/or removed and all materials are to be cleaned up following work activities

3.0 Development Of A Fall Rescue Plan

A Fall Rescue Plan must be developed whenever Fall Arrest is the risk mitigation methodology that must be utilized due to restrictions preventing the implementation of the preferred Elimination/Isolation/Restraint controls.

Any work that includes the use of Fall Arrest and/or aerial/mobile platform – a fall protection rescue plan must be developed and implemented. The SCEP Fall Arrest Rescue Plan Form may be utilized to support the development of a documented fall protection rescue plan.

The Fall Rescue Plan must be available and reviewed at the work site before beginning any work where there is a risk of falling.

Workers using a fall arrest system, shall not work alone unless a self-rescue method is executable and a means of Immediately notifying the control room of the event is available.

4.0 Guardrail Systems

An approved guardrail system shall be used when a worker has access to the perimeter or open side of any work surface and is exposed to a fall equal to or greater than 1.8 meters.

Guardrails must be no farther than 300mm or one foot from the edge of the work surface and must be able to withstand defined loads anywhere along its length without exceeding the allowable unit stress for each material used.

Self-closing access gates (swing gates) must be in place to permit access to platforms not serviced by stairs.

A guard rail may be temporarily removed to allow materials to be brought in only if the edges are clearly barricaded and marked with warning signs and all personnel are connected to a fall protection system.

If warning barriers and bump lines are utilized as the fall protection system they **must be set up at least 2 meters (6 feet 6 inches) from unprotected edges and must be 1.07 meters (42 inches) high and consist of weighted posts, fibre rope with warning flags and/or signs along their entire length**

Sections 26.3 of Ontario Regulation 213/91 – Construction Requirements regulated under the Occupational Health and Safety Act, R.S.O . 1990, c.O.1 provides detailed **minimum** requirements related to guard rail systems – which **must be complied to at all times**. Please consult the Health Safety department if there are any questions or concerns. The most current version of the regulation may be reviewed www.ontario.ca/laws.

Openings in a work surface with a diameter greater than 12 inches must be protected by a guardrail or a protective covering that completely covers the opening, is securely fastened, includes signage identifying the open work surface being covered and is capable of supporting a live load of at least 540 pounds per square inch. Please note that work surfaces openings with a diameter of less than 12 inches must be covered by material which will protect against dropped objects and/or slips, trips and falls.

5.0 Fall Protection Equipment Requirements

All components of a fall protection system must be compatible with one another and the environment in which they are used.

Personal fall protection equipment must –

- Self-retracting lanyards are to be selected preferentially and utilized whenever practicable
- Include a CAN/CSA approved full body harness (belt harnesses are strictly prohibited)
- Be attached properly to engineer approved anchor points with a minimum load capacity of at least 22.2 kn. (5,000 pounds) per person in any direction the load can be applied, or twice the maximum arrest force. Anchor points used for the attachment of personal fall protection equipment must be independent of any anchorage being used to support, suspend, or lift platforms or loads
- Be connected and used in accordance with manufacturer's specifications and instructions
- Be rigged to minimize the free fall distance of less than 2 feet with or without a shock absorber
- Maintain sufficient distance between the anchor point and any first obstruction in order to allow for a safe stop/arrest of any fall without striking
- The **deceleration force will not exceed 8 kn or 1800 pounds**. (Note that arresting force is calculated as follows; Maximum Arresting Force/Body Weight = Gravitational Force that an individual will experience. The maximum arresting force for associated weight limits must be indicated on the decelerating device)
- The personal fall protection system must allow for an unobstructed fall
- Include the following qualities for Carabineers, snap hooks or D-Rings –
    - Self-closing and self-locking type
    - May only be opened by at least two consecutive deliberate manual actions
    - Marked with its breaking strength in the major axis and the name or trademark of the manufacturer
- Anchor self-retracting devices above the worker's head unless the manufacturer's specifications allow the use of a different anchor location, used in a manner that minimizes the hazards of swinging, and limits the free fall distance to 2 feet (absolute maximum of 5 feet)
- Restrict the worker's vertical free fall distance in the event of a fall by the work position system to 600 millimeters or less
- If the center of gravity of a worker using a work positioning system extends beyond an edge from which the worker could fall or if the work surface presents a slipping or tripping hazard because of its state or condition the worker must use a back-up personal arrest system in combination with the work positioning system.

Use of safety nets is subject to evaluation and approval by a professional engineer, the Discipline Manager and the Permit Issuer.

6.0 Anchor Points

There are three basic types of anchor systems utilized as part of fall protection system;

Designed Fixed Systems – load-rated anchors specifically engineered/designed and permanently installed for fall protection purposes as an integral part of a building or structure

Temporary Fixed Support – anchor systems designed to be temporarily connected to a structure utilizing specific installation requirements.

Existing Structural Features/Equipment – not designed specifically as an anchor point, but is verified by a professional engineer or competent person to have adequate capacity to serve as an anchor point

Anchor points must meet the following requirements :

- **Installed in a manner that prevents accidental disengagement from the support structure**
- **Must be located above the head to minimize to minimize potential hazards – including but not limited to pendulum effect.** Pendulum effect occurs as a worker moves away from their anchor point – increasing the fall distance and associated "swing", and may cause a worker to strike a nearby object. A lifeline may be utilized when an anchor point cannot protect against the pendulum effect
- **Must be free from sharp edges to avoid fraying the lanyard – when securing around a beam or edged anchor point, a protective guard and/or wrap must be installed to prevent abrasion**
- **Inspected prior to use by worker and at least annually by a competent person, with current certification markers visible.**
- **Must have a minimum load capacity of 22.2kn (5,000 pounds) per person in any direction the load can be applied, or twice the maximum arrest force.** Note that temporary anchor points may be used if it can support 8kn (1800 pounds) without exceeding the allowable unit stress for each material used and when used with a fall-arrest system incorporating a shock absorber can support 6kn or 1350 pounds without exceeding the allowable stress for each material.

Examples of equipment that **do not** meet the requirements of an anchor point and must not be used include, but are not limited to;

- Cable trays
- Welded pipe less than 2 inches in diameter
- Threaded pipe
- Conduit
- Handrails
- Ladder rungs
- Grating
- Roof hatches

7.0 Pre-use Inspections – Fall Protection Equipment

Workers that have current Working at Heights Training are deemed competent to conduct pre-use inspections. Pre-use inspections are not formally documented and are to include, at a minimum:

- Examination of the manufactures tag. If harness is greater than 5 years old, consideration may be given to retire the harness from service
- Examination of the annual certification. Ensure tag identifies an external certification of the equipment has occurred within the last 365 days
- Examination of all webbing on both sides and from end to end. Flex the webbing, bending it gently to expose any signs of damage
- A check of all sewn straps and reinforcing points for signs of wear and tear
- Look for cut, pulled or broken stitches
- A check for discoloured, fused or melted fibers that may indicate signs of chemical or heat damage
- Inspection of all buckles, D-rings and other metal parts for cracks (signs of metal fatigue)
- A check for deformation or sharp edges, which may result in cuts to the webbing during use
- A check that grommets must be tight, not distorted or broken, no missing grommets and/or no extra holes punched

WARNING – Standard full body harnesses are not designed for a combined personnel and tool weight in excess of 300 pounds

If any issues are identified during pre-use inspection – the equipment is to be danger tagged and provided to EHS for disposal/replacement. If there are any questions or concerns regarding pre-use inspections, *please contact the EHS Department.*

8.0 Elevated Work Platforms

A competent worker working from an elevated work platform shall be protected from a fall hazard by using a fall restricting/arresting system that includes one of the following:

- A full body harness with a self-retracting lanyard or fixed length lanyard (shock absorbing and shortest possible length to eliminate/limit fall potential while allowing work to occur) secured to an engineered anchor point

- A full body harness with a self-retracting lanyard or fixed length lanyard (shortest possible length to eliminate/limit fall potential) secured a **horizontal lifeline** that has been approved by a professional engineer and has been installed and used in accordance with the written instructions from the manufacturer or authorized agent and the instructions are readily available

- A full body harness with a self-retracting lanyard or fixed length lanyard (shortest possible length to eliminate/limit fall potential) secured a **vertical lifeline** and/or rope grab Manufactured for commercial distribution and installed and used in accordance with the written instructions from the manufacturer or authorized agent, and the instructions are readily available in the workplace. Installed and used in accordance with written instructions certified by a professional engineer as per applicable provincial and regulatory requirements and the instructions are readily available in the workplace. The vertical lifeline is made of wire rope or synthetic material suitable for all relevant work site hazards, is free of imperfections/knots/splices and extends to at least 1.2 meters from the ground or safe work platform. The vertical lifeline must have only one person attached unless otherwise designed by the manufacturer and must be effectively protected to prevent abrasion and secured to minimize swing.

A written emergency response procedure must be developed as part of the Fall Protection Plan.

In addition to other hazards assessment considerations – the worker and permit issuers will also review the following:

- Inspect area for potential to contact overhead lines
- Inspect area for grade changes, curbs, crop-offs, etc.
- Inspect the surface of operations to ensure it is level and firm
- Ensure the worker remains on the work platform at all times and does not access the guard rail for any reason
- There is a means for the worker to communicate with Operations if there is an issue

The worker shall conduct a documented pre-use inspection per the manufacturer's requirements and submit completed inspections to their supervisor.

Suspended Platforms

A worker who is on or is getting off a suspended platform, suspended scaffold or boatswain's chair shall wear a full body harness connected to fall arrest system. Every lifeline used with a suspended scaffold or boatswain's chair shall be suspended independently and securely attached to a fixed support so that the failure of the structure or the supporting system will not cause lifeline to fail.

A written emergency response procedure must be developed as part of the Fall Protection Plan.

9.0 Ladders

All ladders will be inspected prior to use and formally inspected as per manufacture's recommendations by a competent person with details recorded in the online inspection database and field marking applied to the ladder (which includes inspection date).

Ladders will be marked for identification purposes. Ladders found without a legible identification mark are to be removed from service until inspected and approved for use or replaced.

The following guidelines must be adhered to in order to ensure safe ladder use –

- All ladders will be inspected prior to use and must be CSA approved and be marked with a current inspection sticker
- Ladder cages must be installed for any ladder that is 20 feet or greater in length
- All ladders must be secured against movement and placed on a base that is stable
- The base of inclined portable ladders shall be no further from the base of a wall or structure than ¼ of the height to where the ladder contacts the wall or structure (1:4 ratio)
- The side rails of a portable ladder must extend at least 1 meter (3 rungs) above a platform or landing if the ladder is used as a means of access to the platform or landing
- 3 Point Contact shall be maintained when ascending and descending the ladder
- Ladders must be made of non-conductive material when used near electrical equipment
- Ladders must not be painted, paint can hide damage
- Only one worker is permitted on a ladder at any time
- Lifting ropes and lifting bags are to be used for tools and equipment
- May only be used on firm, flat surfaces and may not be used closer than 3 meters to any unprotected edge
- Never lean to one side or overreach
- Ladders must be equipped with non-slip feet, placed on a base that is stable, and be secured against movement
- Ladder must not be erected close to or on any high-traffic area, doorway and/or escape-way unless adequate barricades, etc. are utilized to protect both the worker and passer-by.
- Ladder must not be placed adjacent to an existing guard rail (must be **at least** 2 meters or 6 feet 6 inches from the guardrail – further if the ladder is greater than 6 feet high). If ladders are utilized adjacent to a guard rail, a fall protection system must be utilized – which may include a temporary scaffold extension of the guard rail.

Ladders are designed for access to higher/lower levels. **Work may only be executed from ladder when all alternative work platforms (scaffold, etc.) cannot be installed and/or present additional risks, and the following requirements are met in addition to the guidelines listed above –**

- The worker must don a full body harness and be tied off to an approved anchor point (ensuring that the ladder does not extend beyond the tie point), must utilize a self-retracting lanyard (SRL) and must have a fall rescue plan
- The worker **must not access the top two rungs (top 3 feet)**
- Ladders must be moved and re-secured as work progresses utilizing the belt buckle rule. Your belt buckle (or the center of your torso) must not extend past the edge of the ladder at any time
- Worker must ensure three point contact at all times
- Tools must be secured
- The area below the ladder must be danger taped off to prevent other workers inadvertently accessing the area and placing themselves in the line of fire

The Worker and permit issuers must review height and duration of task, risk to side-load, risk to over-reach, risk of force/movement, ability to maintain three point contact, etc.

5 primary risk factors that contribute to instability and increase fall potential when utilizing a ladder and must be avoided at all times include;

- Extended horizontal reaching
- Handling bulky or heavy overhead
- Applying large force
- Applying constant force
- Work fatigue

Pre-Use Inspection – Ladders

Ladders shall be inspected prior to use and at least annually by a competent person.

Pre-use inspections are to include checks for –

- Loose, worn or damaged rungs or side rails
- Cage condition (where applicable) – damaged or corroded
- Corroded guards, bolts and rivet heads
- Damaged or corroded handrails and brackets
- Broken or loose anchorages
- Weakened or damaged rungs
- Slippery surfaces
- Clutter obstructing the base of the ladder or platform
- A current annual certification

Any damaged or defective ladders are to be danger taped and tagged, immediately removed from service and the area supervisor is to be notified.

10.0 Annual Certification and Inspection

Any equipment that is used as part of a fall protection system but could also be used for other activities, such as slings, chokers, carabineers, etc., must be tagged, identified, or otherwise controlled and used only as part of a fall protection system. This equipment must be evaluated and approved by a Qualified Person before incorporating them as part of a fall protection system. The Suncor St. Clair Ethanol facility utilizes LiftSafe Engineering & Service Group Inc. to conduct annual inspections and certifications of all equipment associated with fall protection systems.

All equipment is clearly marked with the date of inspection and a certification number. Certification records are maintained electronically on the "Liftsafe portal" with access rights available through the Environment Health and Safety Department. In addition an annual binder is printed for references purposes in the event that the portal is unavailable.

Please note that Liftsafe is unable to inspect self-retracting lanyards longer than 20 feet and therefore the certifications are conducted by the manufacturer and records are stored on \\file128\stclair\Operations\Employee Resource Centre\EHS Records\Safety

If a piece of equipment does not have a current certification, the worker is to apply danger tape and a danger tag detailing why the piece of equipment cannot be used. The piece of equipment is to be reported to the EHS department to correct the issue.

- In hot-work operations or those involving chemicals or other factors that could cause damage, fall protection equipment must be designed and/or protected to avoid burning or deterioration
- All Components of personal protection, i.e. harnesses, lanyards, anchorage, lifelines, and connectors must meet the manufacturer and regulatory requirements

11.0 Training

All workers who will be working at heights, utilizing fall protection equipment, etc., must receive working at heights (WAH) training from a Ministry of Labour accredited course and trainer (such as the Industrial Educational Cooperative).

A document training and instruction record for each worker shall be maintained and include at a minimum –

- Workers name
- Date of training
- The instructors signature
- The date of expiry

In addition to WAH training, all workers must review proper use of specific fall protection equipment onsite with a competent person prior to first use.

In addition to WAH training, all workers utilizing a Powered Elevating Work Platform (PEWP) must have current Aerial Work Platform Training, a mobile equipment license, and must review the proper use and specific controls onsite with a competent person prior to first use.

Employee training records are maintained on the Suncor St. Clair Training Matrix in combination with the Industrial Educational Cooperative Database where appropriate. Contractors are responsible to comply and maintain records of all associated training requirements.

12.0 Definitions

Anchor Point: Any point of attachment for the purposes of fall protection, certified by a profession engineer.

Competent Worker: An employee/contractor with the following qualifications –

- ✓ Adequately qualified (formal certifications/designations are required if applicable)
- ✓ Suitably trained and with sufficient experience to safely perform work
- ✓ Familiar with applicable regulatory and site specific requirements
- ✓ Cognizant of actual and potential workplace hazards

CSA: Canadian Standards Association

Deceleration Device: Any mechanism which serves to dissipate the force of the fall which would otherwise be imposed on the worker, for example an energy absorber.

Engineered: Designed and/or approved by a Registered Professional Engineer

Fall Arresting Device: A device that provides a means of arresting the accidental vertical or near vertical fall of an individual, and subsequent to the arrest of the fall does not, by itself, permit the release or further lowing of the individual.

Fall Arrest System: The system utilized to minimize the chance for injury during a fall. It consists of an engineered anchor point, connecting means a full body harness, and a shock absorbing lanyard. See applicable CSA and other standards for full compliance.

Fall Distance: The 1.8 meters (6 feet) fall distance is measured from the employee's feet to the walking and working surface.

Fall Protection System: Any system or a combination of systems that protects workers from falls from heights such as handrails, fall restrain systems, fall arrest systems, and safety nets.

Fall Restraint System: A system of components designed to eliminate the chance of an accidental fall. This may be accomplished by use of barricades and hand railing, or may utilize an anchor point, a connecting means (such as a lanyard), and a body supporting device (such as a full body harness).

Fall Restricting System: *Utilized in a work scenarios were exposure to a fall may not be eliminated via previous* methods. The risk of a fall is managed via an assembly of components (approved personal protective equipment utilizing approved/appropriate fall restricting devices – harness (please note that belt harnesses are prohibited at the St. Clair Ethanol site), self-retracting lanyards, anchor points, etc.) that when connected to an anchor point, is capable of restricting a workers fall. A worker's maximum free fall distance must be minimized to the smallest distance, should not exceed a maximum of 2 feet and must not expose the worker to more than 1800 pounds of force and not introduce the potential for pendulum swing (Note that arresting force is calculated as follows; Maximum Arresting Force/Body Weight = Gravitational Force that an individual will experience. The maximum arresting force for associated weight limits must be indicated on the decelerating device)

Free Fall Distance: The distance a worker may fall before a fall arrest system engages and begins to slow the fall.

Guardrail System: Means any assembly of components joined together to provide a barrier to prevent a worker from falling from the edge of a surface.

Maximum Arresting Force: The peak force measured by the test instrumentation during arrest of test weight in the dynamic tests set forth in ANSI Z359 Fall Protection Code 2.93

Personal Fall Protection Equipment: Any equipment that is personally fitted issued and forms part of the fall protection system.

Personal Fall Limiter: A self-retracting lanyard with a quick activating breaking system that limits free-fall.

Safety Harness: A device used to transfer the forces experienced during and after a fall to the torso or upper legs of a worker. CSA approved 5-point full body harnesses are required. Belts or 3-point harnesses are not allowed.

Shock Absorbing Lanyard: Shock Absorbing Device used in combination with safety harness designed to limit the fall arrest forces so they do not exceed the injury threshold of the human body.

Self-Retracting Life Line/Lanyard: a deceleration device containing a drum wound line which can be slowly extracted from or retracted onto the drum under slight tension during normal worker movement, and which, after the onset of a fall, automatically locks and arrests the fall.

Work Positioning System: A system of components attached to vertical safety line and including a full body harness, descent controllers and positioning lanyards used to support or suspend a worker in tension at a work position.

Working: Means while travelling, stationary or at any time exposed to a fall from a surface not protected by approved handrails, guardrails, or some other approved fall arrest or restraint device.

13.0 References

CAN/CSA-Z259.10-M90 (R1998), Full Body Harness

CAN/CSA-Z259.11-M92 (R1998), Shock Absorbers for Personal Fall-Arrest Systems

CAN/CSA-Z259.1-95 (R1999), Safety Belts and Lanyards

CSAZ259.12-01, Connecting Components for Personal Fall Arrest Systems

CSA Standard CAN3-Z11-M81, Portable Ladders

ANSI Standard A14.2, Ladders-portable metal-safety requirement

14.0 Review/Revision

A review of this document will occur following a regulatory change or at a minimum of every 5 years. The Document Control Administrator will notify the Environment Health and Safety Team Lead - who will steward the review and will engage the Operation Coordinator to support the review from an operations and maintenance perspective

END OF PROCEDURE

REVISIONS			
No.	**Date (mm/dd/yyyy)**	**Author**	**Description**
0	10/18/2016	L. Nauta	Created