Accident

Prevention Program

Last Revised. 02/20/2024

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POLICY STATEMENT

Safety is not just another priority at Haskell Corporation; it is a core value that defines our fundamental responsibility to protect our employees, customers, and the community. We believe strongly that every employee should have the opportunity to return home safely each day, without injury or illness, and be able to enjoy quality time with their family and friends.

Haskell Corporation is fully committed to providing and maintaining a safe working environment for our employees and we desire to conduct all work in full compliance with applicable regulations, customer guidelines, good common sense, and the provisions of our health and safety policies. We also develop site-specific safety plans to establish the safety rules for each project, taking into account the particular location, activities, and specific hazards of each project.

Senior management has committed resources to provide training and instruction for our employees and supervisors and to maintain our tools and equipment, in accordance with approved standards.

We firmly believe that no job is so important that it cannot be completed in a safe manner. All Company personnel, regardless of position, have the express authority to suspend any operation, which in their opinion constitutes a significant hazard to the life or health of a person, value of an asset, or the condition of the environment.

The Corporate Safety Manager will review and revise this policy as necessary, at regular intervals.

Ray Pierce
Safety Director

Evan M. Haskell
President

ABRASIVE BLASTING

1.0 Purpose

The purpose of this policy is to provide safe guidelines for the operation and maintenance of abrasive blasting equipment and their related components.

2.0 Scope

This policy applies to all personnel involved in abrasive blasting jobs performed by Haskell Corporation.

3.0 Definitions

- **Abrasive:** means a solid granular substance used for blasting (often referred to as 'blast media')
- **Abrasive Blasting:** means forcible application of an abrasive to the surface of an object

4.0 Procedures

4.1. Responsibility

4.1.1. Supervisor

- Should be aware of potentially hazardous conditions that may arise during the blasting process, such as lead and other heavy metals, asbestos, and flammable atmospheres, prior to starting any blasting job, and should, take measures to protect employees.
- Should instruct all blast operators, prior to the start of a job, on the form, fit and functions of the machines to be used.
- Supervisors should ensure that all employees are trained on related safety topics.
- Should understand the importance of regularly scheduled maintenance for continued safe operation of blast equipment.
- Should ensure that all employees comply with this policy and all other related policies.
- Employees should be familiar with the safe operating functions of blasting equipment to be used on a job.
- Blast operators should comply with all company procedures.
- Employees should have knowledge of hazards associated with respirable silica

4.2. EQUIPMENT SAFETY

4.2.1. Equipment Handling

Follow these guidelines when moving blasting equipment to prevent back strains and crushing injuries:

- Use a forklift, crane or other type of lifting device for transporting a blast machine; always use a lifting device when the machine contains abrasive.

- Never manually move a blast machine where abrasive has been spilled on hard surfaces or on a wet or slippery surface.
- Never attempt to manually move a blast machine containing abrasive.
- Always disconnect hoses from machines to avoid interference during movement.
- When an empty two-wheeled machine must be manually moved, use two physically capable workers and ensure that the surface is smooth, level and uncluttered by hose, debris or other obstacles that prevent smooth rolling.
- On job sites requiring continual manual machine handling, use a four-wheeled blast machine or towing attachment on a two-wheeled machine.

4.2.2. Air Compressors

Air compressors should be located in a well-ventilated area. It should be able to obtain large volumes of clean, toxicant-free air. This means the compressor should be placed “upwind from the blasting” operation and out of the range of dust and flying abrasives.

Due to the high pressure that air compressors create, precautions should be taken to prevent unleashing of strong forces that can cause serious bodily injury.

Air compressors should be inspected daily, prior to use, by a competent person. Inspection should include, but are not limited to the following:

- Look for broken airlines.
- Look for damaged air fittings.
- Ensure the filters are clean.

Never adjust the pressure setting on a compressor above the blast equipment maximum working pressure rating. The maximum working pressure rating is indicated on the manufacturer’s metal identification plate.

4.2.3. Blast Pot

Position blast pots and/or compressors on level ground. Machines operate best when they sit on level surfaces. Oils and other lubricants work more effectively when the parts are not sitting at an unnatural tilt. If a level site is impossible, the operator should use wheel blocks or construct a temporary base for the equipment.

For communication purposes place blast pot between the compressor and the surface to be blasted. This will enable the “pot tender” and operator to make visual contact.

All couplings and pipefitting on the blast pot, compressor, and hoses should be airtight.

Blast Pots should be inspected daily, prior to use, by a competent person.

4.2.4. Hoses and Connectors

Wooden ramps should be placed over blasting hoses to protect hoses that stretch across roadways.

Couplings should have safety wires in place and be secure as required by federal safety regulations. The operator should be responsible to ensure that each coupling has safety wires (tie wire) in place. Outside couplings, such as quarter-turn and “crow’s foot” type couplings, can be accidentally disconnected when hoses are dragged over rough ground.

Whip checks should be installed at bull hose connections.

Pot attendant should carefully check for leaks immediately after the hoses have been pressurized and immediately correct them. The pot attendant should also replace rubber gaskets in hose couplings and tighten pipe fittings. In addition the pot attendant should ensure there is an ample supply of gaskets available on each jobsite.

The operator should hold onto the blast hose until the air pressure from the nozzle drops off to zero.

Do not use hose with soft spots. Soft spots pose danger of unexpected blowouts that may cause serious injury if struck by high-velocity abrasive. Cutting out the, worn section and installing couplings to join the good pieces together may repair hoses with one or two soft spots. When repairing hose, ensure that the ends are cut square and smooth and fit firmly against the coupling

Never use tape to repair a blown-out hose.

Immediately replace a hose if a blowout or leak occurs.

Hose ends should come into contact with coupling gaskets to prevent leaks and to maintain static electricity conductivity.

When all air is exhausted, the hose shou1d be carefully laid down. Hoses should never be dropped or thrown down because such actions may damage nozzles and the remote control handle assemblies.

4.2.5. Nozzles and Remote Controls

All blast machines should be equipped with remote control systems to start and stop the blasting process. Remote controls consist of either an Electric Remote Control Switch or an Air Actuated Remote Lever. On the Electric Remote Control the trigger mechanisms is encased to prevent accidental start-up of blasting.

Blast nozzles should be equipped with an operating valve which must be held open manually. A support should be provided on which the nozzle may be mounted when it is not in use. Never tape, strap, or tie down an operating valve. If the lever cannot freely open, the safety feature of remote controls is completely circumvented.

Without remote controls, when an operator loses control of a pressurized blast hose, it will wildly whip around blowing high-velocity abrasive in every direction. Emergency depressurization of the hose is vital.

If there is the slightest delay in reaction time of the handle lever or lever lock to open, check for, dust and dirt build-up around pivot pins before resuming blasting. Also, test the tension on the lever springs, and replace them immediately if they do not respond rapidly.

Remote control systems should be well maintained by only designated personnel. Dirty, worn-out parts may interfere with the controls ability to shut-off, culminating in potentially serious injuries to blast operators and bystanders.

Increasing depressurization time signals the need to replace the muffler filter element.

Substituting component pieces with other manufacturer's parts is not allowed.

Inspect blast nozzles for wear and cracks on the inner liner. When a nozzle orifice is worn 1/16" larger than its original size, it should be replaced. Continuing to use a nozzle, beyond the maximum wear point may result in eroding away the liner to the point where abrasive will blow-out through the side of the nozzle.

Check nozzles and nozzle holders for deterioration of thread form. The blast nozzle should be bonded and grounded to prevent the build up of static charges.

Threads on nozzles and their companion holders must not be cross-threaded, worn or distorted.

Hoses that are being tied and lifted to blasting operations being conducted above grade, i.e., scaffolds, should be depressurized to prevent accidental start-up.

Compressed air should not be used for cleaning purposes except where the pressure is reduced to less than 30 p.s.i.

4.3. Operator Signals

On the job site, voice communication is often impossible. Even shouts cannot be heard over the noise of compressors and blasting.

In addition, the operator's head will be enclosed in the helmet, which blocks out sound and limits vision. For these reasons, an industry wide standard set of hand and sound signals has been developed.

Signals may be visual hand movements, flashing light, pulls on a rope or sounds made by banging a hammer or using a horn or electric buzzer.

Every operator should become familiar with the signals to be used on the jobsite.

4.4. ENVIRONMENTAL CONTROLS

4.4.1. Electrical Safety

The work area should be inspected for exterior electrical power lines that may endanger operators.

Blasters should use care to avoid directly blasting power lines and insulators.

Indoor work areas should be inspected for electrical wiring, which should be protected from blasting.

Electrical power should be shut off and not restored until the wiring is inspected for damage and determined to be safe.

Electrical wiring used for equipment on the job site should be constructed of heavy-duty casings and equipped with dust-tight, moisture-resistant connectors.

Inspect wiring to ensure that it is in good condition and properly grounded.

Electrical control panels and terminal boxes should be UL-approved, dust tight and moisture-free enclosures.

Use Dust-tight, moisture-free connectors on all electrical fittings.

Keep electrical cords and fittings away from water and other liquids.

For prevention of electrical shock with electrically operated remote controls, transformers should be used to reduce incoming high voltage to no more than 12 to 24 volts at the operator's control handle.

4.5. Fire Protection

Always consult with client safety representative for specific instructions when the work environment may be flammable.

If possible do not blast in atmospheres that contain flammable fumes.

On applications where flammable gas is present and cannot be avoided, install additional grounding wires on blast machines and nozzles, and use ventilation systems to reduce the fume concentrations to an acceptable level.

4.6. Walking and Working Surfaces

Take precautions at the work site to eliminate hazardous surface obstacles that may interfere with worker mobility.

Prior to working from scaffolds ensure that a competent person has inspected them.

Check means of access to areas where blasting will occur. Ladders should extend three feet beyond working surface. Portal should be large enough for workers and hoses to pass so not to cause hazards.

Surfaces where platforms, scaffolding, scissor lifts or personnel lifts are used should be level, dry, free of obstructions and holes and in compliance with other conditions recommended by manufacturers and safety specialists.

Spent abrasive and debris should be removed from walking and working surfaces as soon as possible and not allowed accumulate.

Spent abrasive and debris removed from surfaces should be disposed of in accordance with the Federal and State regulations on solid and hazardous waste.

4.7. Enclosures and Containment

Adequate ventilation should be provided for employees working within enclosures. Referred too as “engineering controls” the ventilation equipment needed for job site containment of abrasive blasting must comply with OSHA regulations. These regulations are the same for field-installed enclosures as for stationary blast room facilities (refer to29 CFR 1910.94).

Consult with client representative and safety personnel prior to job start-up to plan for ventilation while working in enclosures.

4.8. Temperature Extremes

Never operate compressor if hoses are frozen. When winter temperatures drop below freezing, check them for ice prior to pressurizing hoses. The moisture within the hoses may have frozen over night, resulting in loss of control over the guillotine.

Provide adequate drinking water, especially during summer.

4.9. PERSONAL PROTECTION

4.9.1. Fall Protection

Secure blast hoses by tying them to scaffolding or personnel platforms, when working from elevations, to prevent injury from hoses falling on other personnel working below or near blasting area.

Workers should be certified to operate lift equipment, if blasting is to be performed from aerial work platforms.

4.9.2. Respiratory Protection

Inhaling dust in a blasting operation is dangerous, and can result in severe lung diseases or death. Whenever employees are potentially exposed to hazardous substances such as dusts, fumes, mists, vapors, or gases in the course of their work, their exposure should not exceed NIOSH Permissible Exposure Limits (PEL) for the substance of potential exposure.

Before using any blasting abrasive, check the Safety Data Sheets (SDS) to find out the chemical composition of the abrasive material.

Investigate the chemical and physical composition of the materials that are to be removed from the surface. Some protective coatings consist of lead, cadmium, chromium, titanium or other metals which when pulverized to respirable dust particles can cause harm to respiratory system.

All personnel within an abrasive blasting zone should wear goggles and proper respiratory protection. The blasting zone is an area where any personnel may be subjected to unacceptable levels of respirable dust. The type of protection is dependent on the hazardous dust generated from pulverized abrasive

and surface materials. Equipment for protection of the eyes and face should be supplied to the operator when using a respirator which design does not provide such protection.

Breathing air quality should comply with Safety Policy “Supplied Air Respirators”.

Ventilation systems and dust collectors may be necessary in enclosed conditions.

Workers must wear proper approved respirators during clean up and until the work site atmosphere has been found safe to breathe without the need of respirators.

Spent abrasive and debris removed from surfaces must be disposed of in accordance with the Federal and State regulations on solid and hazardous waste.

Helmet air filters must meet OSHA’s breathing air filter criteria with properly functioning pressure regulator, gauge and pressure relief valve.

Check air filter cartridge for cleanliness as described in the owner’s manual.

Carbon monoxide monitor and alarm systems should include field calibration kit.

Never attach breathing air hose to plant or stationary fittings.

4.9.3. Hearing Protection

Noise from abrasive blast nozzles can be loud enough to damage the hearing of blasters and others on the work site. The noise level depends on nozzle size and pressure and noise generated in the surrounding area.

In accordance with OSHA regulations, workers must not be exposed to noise levels exceeding 80 decibels as an eight-hour time-weighted average (80 dBA TWA), therefore all blasters should wear earplugs.

Other workers are required to wear earplugs as per Safety Policy P-253 Noise and Hearing Conservation.

Length of exposure to noise, noise level readings, and distance from the noise source are factors used in determining level of hearing protection required.

4.9.4. Protective Clothing

Blaster should wear heavy-duty gloves Employees should wear steel toe boots.

Helmet lenses should be changed as soon as pitting or frosting takes place. Use only the original respirator manufacturer’s replacement lenses. Substituting lenses violates the respirator’s NIOSH approval in addition to voiding the respirator manufacturer’s warranty.

5.0 Regulations

- Federal 29CFR 1926.57
- Washington WAC 296-818
- California Title-8 5151

ACCESS TO RECORDS

1.0 Purpose

This section provides Haskell Corporations policy regarding employee access to exposure and medical records, as regulated by 29CFR 1910.1020

2.0 Scope

The provisions of this policy apply to the authorized access to all records relating to an employee's workplace health exposures and associated medical records.

3.0 Definitions

- **Access**: means the right and opportunity to examine and copy
- **Employee exposure record**: means a document or other record containing environmental or biological information related to the employee.
- **Employee medical record:** means a record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel, or technician.

4.0 Procedures

Haskell should provide access to all employee exposure and medical records, relating to the requesting employee, within 15 working days or make specific arrangements for additional time. Requests made by anyone other than the employee will require written authorization and consent, from the affected employee.

4.1. Associated Costs

Initial Requests: There should be no cost or burden charged to the employee or authorized requester, for either the collection or submission of employee records.

Subsequent Requests: A reasonable fee for the cost of duplication may be imposed for additional requests for information that was previously provided.

Access Restrictions

With respect for exclusively original records, (x-ray films, etc.) Haskell may restrict employee/representative access to local viewing or may make arrangements for a temporary transfer of custody.

With respect for requests made by a designated/authorized representative, without the employee's consent, the requester should specify in writing the particular record and occupational health need for access.

With respect for access to significantly sensitive information, (terminal illness diagnosis, psychiatric opinions, etc.) which Haskell believes would be detrimental to the health of the employee, Haskell will restrict access to designated/authorized employee representatives.

4.2. Employee Exposure Records

Employee exposure record" means a record containing any of the following kinds of information:

- Workplace environmental reports pertaining to the employee's exposure to a toxic substance or harmful physical agent;
- Specific reports of 'similarly affected' employees provided that the request does not invade the similarly affected employee's right of privacy
- Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.

4.3. Medical Records

The requester may have access to the following types of employee medical records: *See Notes below.

- Original transcripts
- Summary findings
- Testing Reports

*Note: The physician may recommend that the employee or designated representative have access to the associated records under consultation, to allow discussion.

*Note: Medical records may protect the privacy of other parties, referenced in the medical records, without violating this policy.

4.4. Summary Analysis Documents

Haskell will ensure that the submission of any related analysis, pertaining directly or indirectly to the requesting employee be free of personal identifiers, so as to provide factual documentation only that is non-discriminatory in nature. Summary Analysis Documents include the following types of records:

- Raw data lists of testing/sampling, related to groups of employees
- Spreadsheets or Database reports, with tables and graphs

4.5. Government Access

Haskell will provide prompt access to relevant exposure and medical records to representatives of OSHA, the Department of Labor, State Labor Departments, in accordance with 29CFR 1913.10

Haskell will post all written requests for significantly sensitive employee records in accordance with 29CFR 1913.10(d)

4.6. Record Retention

Medical records must be retained for the duration of employment plus 30 years.

4.7. Access to records

Whenever access is requested to an analysis which reports the contents of employee medical records by either direct identifier (name, address, social security number, payroll number, etc.) or by information which could reasonably be used under the circumstances indirectly to identify specific employees (exact age, height, weight, race, sex, date of initial employment, job title, etc.), personal identifiers should be removed before access is provided.

4.8. Employee information

Upon an employee's first entering into employment, and at least annually thereafter, information should be given to current employees of the existence, location, availability and the person responsible for maintaining and providing access to records and each employee's rights of access to these records.

4.9. Transfer of Records

In the event that Haskell Corporation is ceasing to do business, employee records subject to this policy should be transferred to the successor employer. If Haskell Corporation is either ceasing to do business and there is no successor employer to receive and maintain the records, or intends to dispose of any records required to be preserved for at least thirty (30) years, affected current employees should be notified of their rights of access to records at least three (3) months prior to the cessation of business.

5.0 Regulations

- Federal 29CFR 1910.1020
- Washington WAC 296-802-500
- California Title-8 3204

ACCIDENT INVESTIGATION

1.0 Purpose

To ensure the accurate and timely investigation of workplace accidents

2.0 Scope

This policy applies to work performed by all departments, divisions, and work locations under the control of Haskell Corporation, including Sub-contractors (where applicable).

3.0 Definitions

- **Accident:** means an undesirable event, which results in bodily injury or property damage
- **Incident:** means an undesirable event, which does not result in injury or property damage
- **Near Miss:** means an unplanned event that had the potential to cause an accident or incident
- **Injury:** means an physical trauma to the body, requiring medical treatment
- **First Aid:** means an physical trauma to the body, NOT requiring medical treatment
- **Disease:** means an physiological condition resulting from an exposure in the work place
- **Fatality:** means any work-related death (Natural Causes are excluded)
- **Report:** means a Verbal or Written notification of the above issues
- **Investigation:** means a formal process for determining cause of the above issues

4.0 Procedures

The supervisor or designated safety representative will initiate a formal investigation within two hours of first knowledge of any injury or incident, using the Haskell Accident / Investigation report and implement corrective action as soon as practical.

4.1. Investigation

Contact the Home Office for assistance, if appropriate

The safety representative or superintendent should complete the appropriate investigation reporting form (accident, incident, injury), including the development of a timeline or sequence of events whenever possible- to help determine surface and root causes for the accident

When an accident or an incident occurs and an employee is injured important information needs to be gathered. Remember you are gathering information to use in developing a sequence of steps that led up to the accident

4.1.1. Investigation Guidelines

- Investigate while the facts are fresh

- Collect precise information about every person and object near the scene
- Inspect and record any changed physical characteristics of the accident site
- Preserve any physical evidence, such as potentially defective equipment
- Take photos to help preserve the scene (if allowed)
- Talk to the injured person
- Talk to any eyewitnesses (separately if possible)
- Ask simple open-ended questions, one question at a time, and attempt to have events related chronologically to ensure through coverage
- Distinguish a person's actual knowledge from hearsay
- Ask when, where, who, how and what was said or done
- Avoid opinions, judgments or conclusions and be as objective as possible
- Avoid commenting on the information gathered, except to confirm or clarify data
- Stress getting the facts
- Do not comment on liability or fault during the investigation, but listen for clues in the conversation around you
- Unsolicited comments often have merit
- Review and finalize any notes immediately upon completion of your inspection and any interview or other communication with those involved
- Fill out the appropriate accident, incident, or near-miss form, giving an accurate account of the facts

4.1.2. Cause Analysis

Depending on the nature and severity of the event, Haskell may elect to incorporate the Ishikawa Analysis (Fish Bone Diagram), Apollo Root Cause, or the 5 Why Analysis to assist in determining the underlying cause of an event.

- Contact the Home Office for assistance with Cause Analysis
- After the investigation has been completed the next step is to determine cause. This step may be rather involved because you are first analyzing events to discover "surface cause(s)" for the accident, and then, by asking "why" a number of times, attempting to identity their elated "root causes".
- Remember, surface causes are usually pretty obvious and not too difficult to uncover. However, it may take more time to accurately determine the root cause that contributed to the conditions and practices associated with the accident.

4.1.3. Lessons Learned

- Once the sequence of events have been developed and the surface and root causes identified recommendations for corrective actions must be determined. Input for corrective actions should come from all participants because different people will see it from different angles and offer varying suggestions.
- Recommendations for corrective action should describe the engineering/management controls and/or interim measures that relate directly to the surface and root causes for the accident.

4.2. Reporting

Written reports should be completed within 24 hours of the incident and be submitted to client and corporate office.

Verbal report and follow-up – Most clients will require a post-accident follow-up that will review what happened and why it happened. Accident / Incident reporting should be communicated in the timeframe specified per contract. Haskell Corporation needs to take a very aggressive and proactive approach. All accidents are serious and our presentation needs to show our sincerity in addressing the lessons learned so that the same type of incident will not occur again. The way we communicate this to the client is vital. They need to know that a full investigation was conducted and we have an action plan in place. We need to show competence in all phases from incident occurrence management, through investigation process, determining root cause, establishing the lesson learned and "corrective action(s)" or recommendations to keep from repeating the incident. If additional follow up is expected someone must be designated in charge, a time frame established for this to happen, and final report when action is completed.

4.2.1. Presentation tips:

- Know the intended audience and purpose
- Have copies of the completed investigation report
- Have a logical sequence (practice beforehand)
- Use visual presentations
- Be confident
- Provide no surprises

4.2.2. Presentation Format:

- Scope of the Investigation
- What happened
- Why it happened
- Recommendations
- Lessons Learned
- Questions

5.0 Regulations

- Washington WAC 296-800-320, 296-800-330
- California Title 8 3203
- Federal 29CFR 1960.29

Accident Investigation Form

SUMMARY INFORMATION

General

Date:	Time:	Day:	Shift:	Reported:

☐ **Injury/Illness**
☐ *Haskell 1st Aid*
☐ *Off Site 1st Aid*
☐ *OSHA*

☐ **Auto/Property** ☐ **Environment** ☐ **Incident/Near Miss** ☐ **Other – Attach Explanation**

Summary

Description of Incident. *(How the Incident occurred & sequence of events. Attach additional pages, if needed.)*

Primary Analysis

Direct Cause	**Indirect Cause**	**Basic Cause** *(Proximate Cause Table)*

Surface Cause(s): What actions and/or conditions caused or led up to the event? *(Refer to Potential Cause Matrix)*

Actions:	☐ 1. Procedures	☐ 2. Tools/Equip	☐ 3. Protective Systems	☐ 4. Awareness
Conditions:	☐ 5. Exposure	☐ 6. Tools/Equip	☐ 7. Protective Systems	☐ 8. Workplace Layout

Contributing Factor(s): What Human of System Factors influenced occurrence of the event? *(Refer to Root Cause Profile Chart)*

Human Factors:	☐ 9. Capability	☐ 10. Condition	☐ 11. Behavior	☐ 12. Knowledge/Skill
System Factors:	☐ 13. Supervision	☐ 14. Training	☐ 15. Selection	☐ 16. Planning
	☐ 17. Purchasing	☐ 18. Maintenance	☐ 19. Policies	☐ 20. Communication

The underlying cause of this event is related to:

☐ **Unsafe Condition** ☐ **Unsafe Action** ☐ **Management** ☐ **Other – Attach Explanation**

Corrective Action

Corrective Action Plan: What will be done to prevent a second Incident? *(Attach additional pages, if needed.)*

☐ **Re-Train** ☐ **Re-Design** ☐ **Re-Enforce** ☐ **Other**

Assigned to: Date:

Review

Completed By

Name: Date:

Title: Phone:

Management Review

Safety Manager: Date:

Project Manager: Date:

President: Date:

Employee Acknowledgement

Print Name

Signature: Date:

INJURY INFORMATION

File:

Injured Person

The following sections may contain confidential employee information, please respect the privacy of the injured person by maintaining strict control of this form

First	M.I.	Last	Claim #

SSN:	Date Hired:	DOB:

Emergency Contact:	Phone:

Schedule		*Wage*		*Position*		
Hrs/Day	Days/Wk	*Hourly*	*Fringe*	*Craft*	*Local*	☐ *Apprentice* ☐ *Journeyman*

Did this injury/illness originate or occur during the course of current employment? ☐ No ☐ Yes ☐ ?

Is this event related to a prior injury/illness or pre-existing condition? ☐ No ☐ Yes ☐ ?

Is the source, cause, or validity of this injury in question or doubt? ☐ No ☐ Yes ☐ ?

Did the injured person report this incident within 24-hrs and prior to medical treatment? ☐ No ☐ Yes ☐ ?

List Any Witnesses

ACTIVITY

What was the employee doing just before the event?

Action:	**Object:**

EVENT

What actually caused the injury/illness?

Event:	**Source:**

INJURY

What Type of injury/illness resulted from the event?

Nature:

BODY PART

What part of the body was affected or Injured? ***(indicate left or right)***

Head	**Torso**	**Upper Limb**	**Lower Limb**	**Systems**

TREATMENT

What level of treatment was provided?

☐ **On-Site First Aid** ☐ **Off-Site First Aid** ☐ **Off-Site Medical Aid** ☐ **ER/9-1-1**

Medical Facility Name:

Provider Name:	Phone			
Address:	City		State	Zip

Treatment:

Follow Up Treatment Plan:

Released to Job of Injury?	☐ No ☐ Yes	Date:		
Follow up Appointment?	☐ No ☐ Yes	Date:		
Restricted Work Activity?	☐ No ☐ Yes	Starting Date:	Estimated # of days:	
Day(s) Away from Work?	☐ No ☐ Yes	Starting Date:	Estimated # of days:	

POTENTIAL CAUSE LIST	File:

List ALL Potential Surface and Contributing Factors	
CODE	**Category & Description** *(Potential Cause Matrix)*
1.1	*EXAMPLE* Description: Taking Shortcuts – Near shift end, worker was hurrying
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:
	Description:

	Count the number of potential causes for each code			
	1.	2.	3.	4.
	5.	6.	7.	8.
	9.	10.	11.	12.
	13.	14.	15.	16.
	17.	18.	19.	20.
	Place a check in the corresponding boxes on Form IIR-1			

Sequence of Events	File:

Establish the 'planned' and 'actual' sequence of events.	
Planned Activity	***Actual Events***
Attach JSA / STA or describe below	Describe the events leading up to the event.

Deviations from plan	
	Description:
	Description:
	Description:
	Description:
	Description:

Potential Severity (of this or future events)		
☐ LOW	☐ MEDIUM	☐ HIGH
Potential for recurrence		
☐ LOW	☐ MEDIUM	☐ HIGH
Preventative Controls Assigned		
☐ N/A	☐ YES	☐ NO

Attachments:		
☐ 5-Why Analysis	☐ Ishikawa Analysis	☐ Apollo Cause Map & Report

Employee Statement

Employee: _____ DOB: _____ SSN: xxx-xx-____

Supervisor: _____ Date / Time: _____ / _____

Work Area: _____

Details

What were you doing just before the incident / injury occurred? (List activities, tools in use, etc.)

What happened or went wrong? (what *unexpected* action/condition led to the incident / injury)

Describe the incident / injury? (i.e.: dropped object, part of the body injured, etc.)

What specific object/thing/action caused the incident / injury? (machine, tool, environment, chemical, overexertion, etc.)

Was anyone else injured?	☐ Yes	☐ No
Did anyone witness the incident / injury?	☐ Yes	☐ No

Provide any additional details on the back of this form or on an attached sheet of paper.

Statement/Release: I certify that these facts are true and correct to the best of my knowledge. I hereby authorize the full release of all medical records or other information related to this incident, to my employer or their designated representative.

_____ _____

Signature of Employee **Date of Report**

Witness Statement

Name: _____ Craft _____ Level: _____

Work Area: _____ Supervisor: _____

Incident: _____

Details

Did you personally witness the incident / injury?	☐ Yes ☐ No

If NO, skip to the bottom, sign/date, and return.

Who else was in the immediate area?

What did you see/hear/observe?

Please provide a sketch of what you remember seeing on the back of this form.

Did you wish to remain anonymous?	☐ Yes ☐ No

Statement: I certify that these facts are true and correct to the best of my knowledge.

_____ _____

Signature of Witness **Date of Report**

Provide any additional details on the back of this form or on an attached sheet of paper.

Supervisor Statement

Employee: _____ Craft: _____ ☐STF ☐SUP ☐FMN ☐APP ☐JNY ☐OTH

Supervisor: _____ Date / Time: _____ / _____

Work Area: _____

Details

What was the employees work assignment? (Location, activities, tools in use, etc.)

What factors may have contributed to the event? (*unexpected* actions/conditions)

Unsafe Action ☐ Unsafe Condition ☐ Could be both, explain completely, use back

What could be done to prevent future events like this? (*Proactive* suggestions.)

Did you witness the incident / injury?	☐ Yes ☐ No
If this is an injury report, do you question the validity of how it occurred?	☐ Yes ☐ No

Provide any additional details on the back of this form or on an attached sheet of paper.

Statement: I certify that the above facts are true and correct to the best of my knowledge.

Signature of Supervisor **Date of Report**

Direct Causes	Indirect Causes	Basic Causes
Struck by/against	Failure to secure	No oversight
Falls	Guarding	Poor maintenance.
Caught in/between	Improper use	Training
Exertion	Unsafe position	Policies
Contact with….	Environmental	Stress
Impact (vehicle)	Defect	Engineering

Potential Cause Matrix

Use this table to identify potential incident / injury & illness cause paths.				
Surface Factors				
Actions	**1. Procedures**	**2. Tools/Equip./Vehicles**	**3. Protective Systems**	**4. Awareness**
	1.1 Taking shortcuts	2.1 Improper use of	3.1 Failure to use PPE	4.1 Lack of Awareness
	1.2 Lack of Authorization	2.2 Inappropriate for Task	3.2 Improper use of PPE	4.2 Distractions
	1.3 Violation of procedure	2.3 Using Broken/Defective/Incomplete	3.3 Failure to use Protective Systems	4.3 Change in process
	1.4 Using wrong procedure	2.4 Exceeding Limitations of	3.4 Removal of Protective Systems (guards)	4.4 Routine/Repetitive Activity
	1.5 Improper application of procedure	2.5 Unauthorized Modification of	3.5 Using Inadequate Protective Systems	4.5 Body Position
	1.6 Other	2.6 Other	3.6 Other	4.6 Other
Conditions	**5. Exposure To**	**6. Tools/Equip./Vehicles**	**7. Protective Systems**	**8. Workplace Layout**
	5.1 Previously Unidentified Hazards	6.1 Broken/Defective	7.1 Inadequate Guards/Protection	8.1 Congested or Limited Space
	5.2 General Environment (weather, etc.)	6.2 Inadequate	7.2 Defective Guards/Protection	8.2 Illumination/Ventilation/Sanitation
	5.3 Acts of Violence	6.3 Incorrect/Wrong	7.3 Inadequate Warning Systems	8.3 Organization/Housekeeping
	5.4 3rd Party Activity/Condition	6.4 Beyond Usable Service Life	7.4 Protective Devices not available	8.4 New/Unfamiliar work area
	5.5 Significant External Event	6.5 Unauthorized Modification of	7.5 Exceeding Design Limitations	8.5 Access/Egress Restrictions
	5.6 Other	6.6 Other	7.6 Other	8.6 Other
Contributing Factors				
Human	**9. Physical Capabilities**	**10. Physical Condition**	**11. Behavior**	**12. Skill Level**
	9.1 Physical Deficiency	10.1 Previous Injury/Illness	11.1 Aggressive	12.1 Lack of Skill
	9.2 Sensory Deficiency	10.2 Anxiety/Stress	11.2 Overconfident	12.2 New Skill
	9.3 Systemic Deficiency	10.3 Fatigue/tiredness	11.3 Negligent	12.3 Infrequent Skill
	9.4 Exceeding Personal Limitations	10.4 Substance Abuse	11.4 Apprehensive	12.4 Repetitive Skill
	9.5 Other	10.5 Other	11.5 Other	12.5 Other
System	**13. Management**	**14. Training**	**15. Employee Selection**	**16. Schedule/Planning**
	13.1 Commitment	14.1 Need not recognized	15.1 Incomplete Background Check	16.1 Time Pressure
	13.2 Chain of Command	14.2 Not Provided	15.2 Not qualified/Under qualified	16.2 Budget Pressure
	13.3 Leadership/Supervision	14.3 Inadequate	15.3 Unaddressed Historical Issues	16.3 Lack of Resources
	13.4 Failure to correct deficiencies	14.4 Negative Reinforcement	15.4 Substance Abuse	16.4 Accelerated Schedule
	13.5 Other	14.5 Other	15.5 Other	16.5 Other
	17. Purchasing	**18. Maintenance**	**19. Policies/Procedures**	**20. Communication**
	17.1 Wrong item/part	18.1 Lack of Maintenance	19.1 Lack of Policy	20.1 Communication Barriers
	17.2 Substituted item/part	18.2 Inadequate Maintenance	19.2 Inadequate Policy	20.2 Lack of Communication
	17.3 Shipping Delay	18.3 Exceeded Lifespan	19.3 Lack of Policy Enforcement	20.3 Conflicting Communications
	17.4 Ordering Delay	18.4 Failure to Inspect	19.4 Changes to Policy	20.4 Communication method
	17.5 Other	18.5 Other	19.5 Other	20.5 Other
Responsibility:		**1. Employee**	**2. Management**	**3. Other**

ACCIDENT PREVENTION PLANS (APP/IIPP)

1.0 Purpose

This policy is designed to provide a standardized structure for our site specific APP/IIPP plans, for the purpose of reducing the risk of personal injury related to our work activities.

2.0 Scope

This policy applies to all field construction activities for Haskell Corporation.

3.0 Definitions

- **SSP/APP/IIPP**: means a site specific safety & health plan that is created for a particular project

4.0 Procedures

Due to the varied nature and type of work conducted by Haskell Corporation, individual plans are used to address the specific needs of each project, regarding our responsibility for preventing accidents, injuries, and illnesses. The individual plans are collectively referred to as Site Specific Safety Plans, Accident Prevention Plans, or Injury & Illness Prevention Plans.

The essential outlines of all SSP/APP/IIPP include:

- Employee Orientation
- Description of our policies
- Review of JSA/STA process
- Hazard and Injury reporting/correction
- Proper use of Personal Protective Equipment
- Emergency Procedures
- Location of First Aid Kits and Fire Extinguishers
- Review of Hazardous Chemicals & SDS
- Specific Training Requirements
- Prohibited Practices
- Method of Communication

5.0 Regulations

- Federal 29CFR 1926.20
- Washington WAC 296-800-140
- California Title-8 3203

ACCIDENT REPORTING

1.0 Purpose

To ensure the accurate and timely reporting of workplace accidents

2.0 Scope

This policy applies to work performed by all departments, divisions, and work locations under the control of Haskell Corporation, including Sub-contractors (where applicable). The term Accident refers to any unplanned event that caused harm to persons, equipment or the environment, or any such unplanned event that had the potential to harm persons, equipment or the environment.

3.0 Definitions

- **Accident**: means an undesirable event, which results in bodily injury or property damage
- **Incident**: means an undesirable event, which does not result in injury or property damage
- **Near Miss**: means an unplanned event that had the potential to cause an accident or incident
- **Injury**: means an physical trauma to the body, requiring medical treatment
- **First Aid**: means an physical trauma to the body, NOT requiring medical treatment
- **Disease**: means an physiological condition resulting from an exposure in the work place
- **Fatality**: means any work-related death (Natural Causes are excluded)
- **Report**: means a Verbal or Written notification of the above issues
- **Investigation**: means a formal process for determining cause of the above issues

4.0 Procedures

All accidents, injuries, industrial illnesses and significant near misses should be reported to the supervisor or designated safety representative within one hour of first knowledge. Any necessary materials, tools or equipment will be available to assist in conducting an investigation

If an employee has reported an injury, which did not initially result in medical treatment and later decides to seek such treatment, they are required to notify Haskell Corporation, prior to seeking or obtaining medical care.

In the event of an emergency or unexpected worsening of an employee's condition, occurring during non-working hours, the employee should notify Haskell Corporation, of the change as soon as practical.

Employees are expected to report ALL injuries, and safety concerns no matter what, without fear of reprisal or negative consequence. A comment box should be available at the Project Superintendents office or Site Safety Managers office where employees may report safety and health hazards anonymously if they desire. Haskell Corporation is committed to ensuring the safety of our employees and wishes to learn from every accident/injury event, so we can prevent future occurrences.

4.1. Responsibilities

4.1.1. Employee

- Report all injuries and incidents immediately, to supervisor and safety representative.
- Cooperate with all reporting and investigation requirements.
- Comply with recommendations of supervisor, safety representative, and doctor.

4.1.2. Supervisor or Safety Representative:

- Injuries resulting in a fatality or the hospitalization of one or more employees must be verbally reported to applicable regulatory agencies within 8 hours of their discovery.
- Unless specified otherwise by contract, all incidents must also be reported to our client in a timely manner but not longer than 24 hours after any incident.
- Provide or arrange transport of injured worker to medical treatment facility
- Accompany worker to treatment facility and coordinate with treating physician, regarding availability of light duty work and obtain a signed light duty work release if appropriate
- Perform an investigation and prepare written accident reports for internal use within 24 hours and as required by customer. Refer to the Accident Investigation chapter of this IIPP for the required forms and guidance.
  - Communication with Corporate Management verbally does not satisfy the requirement for a formal, written report of an incident or injury.
  - Immediately begin gathering written statements from anyone who can shed light on an incident; when and how it occurred, etc.
- Develop, implement or recommend corrective action
- Share Lessons Learned with other crews, to avoid recurrence
- Cooperate with client investigations or reporting as needed. *Client requirements and expectations should be identified during mobilization

4.1.3. Management

- Review all written reports for accuracy and enter in database for trending
- Evaluate effectiveness of reporting and investigation process
- Provide assistance as needed to complete reports and investigations

4.1.4. Training

- Safety Coordinators are trained for incident response and incident investigation procedures. On project sites where there is no Safety Coordinator the Project Manager or their designee should be trained to fulfil this role.

5.0 Regulations

- Washington WAC 296-800-320, 296-800-330
- California Title 8 3203

AERIAL LIFTS

1.0 Purpose

The purpose of this procedure is to provide requirements for the safe use of mechanical elevating equipment.

2.0 Scope

This procedure applies to aerial lift devices such as man-lifts and scissor-lifts used to elevate personnel to a work area.

3.0 Definitions

- **Aerial Device:** means any powered vertical or extendable (articulating boom or telescopic boom) aerial platform such as JLG's and scissor lifts, which are used to position personnel.
- **Platform:** means a personnel-carrying device (basket or bucket), which is a component of an aerial device.

4.0 Procedures

Only safe equipment, proper job procedures, and qualified operators should be used in the operation of aerial work platforms.

4.1. Responsibilities

Supervisors should ensure aerial work platforms are operated by qualified personnel in a safe manner and are maintained in a safe operating condition. This includes performance of required inspections.

Operators should perform a daily inspection of any aerial work platforms in their use.

The jobsite supervisor should assure that qualified personnel perform all scheduled maintenance inspections.

4.2. Qualification

A designated competent person from the jobsite should provide operating instructions to employees. Upon completion of a written examination with a passing score of 70%, the competent person then should have the employee demonstrate the requirements of the performance evaluation.

If an employee has a valid Haskell Corporation mobile equipment card and they are transferred to another jobsite, a site specific orientation/evaluation should be done to familiarize the employee with any hazards or unique characteristics of the jobsite and any differences in the type of equipment that they have been previously evaluated on.

Only employees that have a valid, current driver's license may be permitted to drive any type of mobile equipment.

4.3. Operating Rules

A survey should be made of the jobsite for hazards such as ditches, debris, unguarded openings, overhead obstructions, etc. The machine should only be operated on a firm level surface.

Aerial Lifts must never be operated in the blind. If the operator cannot fully see obstructions in the path of travel, a spotter should be posted to give guidance and to keep other hazards out of the area.

A daily safety inspection should be made and kept with the machine to ensure safe working condition. Never use any equipment that has an obvious defect.

Aerial lifts must have a signal alarm that is audible above the surrounding noise level whenever any control is actuated or the lift is moved. Additionally, when the lift is maneuvered in tight quarters an observer (spotter) should be used to signal that it is safe to do so.

Never use equipment for purposes or in ways for which it was not intended.

Read the manufacturer's operating instruction manual and follow the recommended procedures. The operating instruction manual should be stored with the equipment itself. All equipment rented should come with the manual.

A full body harness and lanyard should be worn when working in manlifts. The lanyard should be attached to a secure anchorage point in the basket. In some cases, such as a client's requirement, it may be necessary to use a harness and lanyard while operating a scissor lift.

The maximum load limit and other design limitations of the equipment should not be exceeded.

Personnel should stand firmly on the floor of the platform and not sit or climb on the railing of the platform.

Flagging and barricades should be placed around work areas located in pedestrian or motor vehicle traffic lanes, or work areas.

The machine should not be in motion while work is being performed.

The basket and ground controls should be tested each day before use.

The basket or platform should be cleaned out upon completion of the job.

4.4. Operations near Energized Lines and Equipment

Equipment should be operated so that safe approach distances to energized (exposed or insulated) power lines and parts are maintained.

Voltage Range (Phase to Phase)	Minimum Safe Distance (Feet)
0 to 300 V	Avoid Contact
300 V to 50 KV	10
50 KV to 200 KV	15
200 KV to 350 KV	20
300 KV to 500 KV	25
500 KV to 750 KV	35
750 KV to 1000 KV	45

A designated person should be on standby observing operations to monitor approach distances and warn the operator before the minimum approach distance is reached.

DO NOT maneuver machine or personnel inside the prohibited zone. Assume all electrical parts and wiring are energized unless otherwise known and locked out.

4.5. Maintenance and Inspection

An effective maintenance program should be instituted to detect and initiate proper corrective action(s) assuring the safe operating condition of aerial work platforms.

At the beginning of the shift, the operator should perform a safety inspection of the machine to identify any deficiencies. Deficiencies should be reported to the supervisor.

Deficiencies that present a serious injury potential or may cause considerable damage to the equipment or materials through equipment failure should warrant immediate corrective action. In such case, the aerial work platform should be tagged and removed from service.

Only qualified personnel should make repairs or modifications to aerial work platforms. Repairs should be made in accordance with the manufacturer's recommendations.

5.0 Regulations

- OSHA 29CFR
- Washington WAC 296-207-370
- California Title-8 3648

AIR QUALITY - OUTDOOR

1.0 Purpose

Protecting outdoor workers exposed to smoke from wildfires and generally unhealthy outdoor air.

2.0 Scope

This policy applies to all Haskell projects where workers are exposed or likely to be exposed to hazardous outdoor air quality. DOSH defines unhealthy air quality asa PM2.5 concentration of 20.5 µg/m3 (Air Quality Index 69) or more for wildfire smoke.

Smoke from wildfires contains chemicals, gases and fine particles that can harm health. The greatest hazard comes from breathing fine particles in the air, which can reduce lung function, worsen asthma and other existing heart and lung conditions, and cause coughing, wheezing and difficulty breathing.

3.0 Definitions

3.1. AQI – Air Quality Index - Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 or below represents good air quality, while an AQI value over 300 represents hazardous air quality.

3.2. PM2. 5 - Refers to particles that have a diameter less than 2.5 micrometres (more than 100 times thinner than a human hair) and remain suspended for longer. These particles are formed as a result of burning fuel and chemical reactions that take place in the atmosphere.

3.3. Wildfire smoke. Emissions from fires in wildlands or in adjacent developed areas. Wildfire smoke contains a complex mixture of gasses and particulates. Fine particulates such as PM2.5 are the primary pollutant in wildfire smoke.

4.0 Procedure

4.1. Determine if there is Harmful Exposure

Protection from Wildfire Smoke applies to workplaces and operations where the current Air Quality Index (AQI) for PM2.5 particulate is 69 or greater ("unhealthy") and where there is reasonable anticipation that employees may be exposed to wildfire smoke.

This policy requires determination of employee exposure to PM2.5 for worksites before each shift and periodically thereafter as needed. This can be accomplished by any of the following methods:

4.1.1. Checking AQI forecasts and current AQI for PM2.5 from the following web sources:

4.1.1.1. U.S. EPA AirNow
4.1.1.2. U.S. Forest Service Wildland Air Quality Response Program
4.1.1.3. California Air Resources Board
4.1.1.4. Local air pollution control district
4.1.1.5. Local air quality management district

NOTE:The AQI for PM2.5 must be logged daily on all Haskell projects

4.1.2. Obtaining (by telephone, email, text, other effective method) AQI forecasts and the current AQI for PM2.5 directly from:

4.1.2.1. EPA
4.1.2.2. California Air Resources Board
4.1.2.3. Local air pollution control district
4.1.2.4. Local air quality management district

4.2. Protect Workers if the Outside Air is Harmful

Projects must take the following measures to protect workers when the current AQI for PM2.5 is 69 or greater:

4.2.1. Implement a system for communicating wildfire smoke hazards in a form readily understandable by all affected employees, including provisions designed to encourage employees to inform the employer of wildfire smoke hazards without fear of reprisal.
4.2.2. Training employees according to Appendix A.
4.2.3. Implement engineering controls, when feasible, to reduce employee exposure to PM2.5 to less than a current AQI of 69 (or as low as feasible if less than a current AQI of 69 cannot be achieved). Examples include providing enclosed structures or vehicles for employees to work in, where the air is filtered.
4.2.4. Whenever engineering controls are not feasible or do not reduce employee exposures to PM2.5 to less than a current AQI of 69, implement changes to work procedures or schedules when practicable. Examples include changing the location where employees work or their work schedules.
4.2.5. Provide proper respiratory protection equipment, such as disposable filtering facepiece respirators (dust masks), other half facepiece respirators, or full facepiece respirators.

4.2.5.1. NOTE: To filter out fine particles, respirators must be labeled N-95, N-99, N-100, R-95, P-95, P-99, or P-100, and must be labeled as approved by the US National Institute for Occupational Safety and Health (NIOSH). Full facepiece respirators provide at least five times as much protection from fine particles as half facepiece respirators such as filtering facepiece respirators (dust masks).

4.2.6. Projects must provide respirators for employee use on a voluntary basis when the current AQI for PM2.5 is equal to or greater than 150 but less than 500**.**

4.2.7. Projects must require employees to use respirators when the current AQI for PM2.5 is greater than 500.

4.2.8. If respirators are used by any employee, either voluntary or mandatory use, the worker should be medically qualified and fit tested for respirator use in accordance with the Respiratory Protection policy in this Accident Protection Program.

4.3. If Current AQI for PM2.5 is less than 69

If the current AQI for PM2.5 is less than 69, projecs may provide filtering facepiece respirators (dust masks) to employees.

5.0 Training

5.1. Train employees according Appendix A

6.0 Responsibilities

6.1. The project manager is responsible to implement

7.0 Attachments

7.1. Appendix A - Protection from Wildfire Smoke Information to Be Provided to Employees (Mandatory)

8.0 Regulations

8.1. California title 8 5141-1

8.2. Washington WAC 296-62-085

Appendix A

1.0 Protection from Wildfire Smoke Information to Be Provided to Employees (Mandatory)

1.1. The health effects of wildfire smoke.

Although there are many hazardous chemicals in wildfire smoke, the main harmful pollutant for people who are not very close to the fire is “particulate matter,” the tiny particles suspended in the air.

Particulate matter can irritate the lungs and cause persistent coughing, phlegm, wheezing, or difficulty breathing. Particulate matter can also cause more serious problems, such as reduced lung function, bronchitis, worsening of asthma, heart failure, and early death.

People over 65 and people who already have heart and lung problems are the most likely to suffer from serious health effects.

The smallest -and usually the most harmful -particulate matter is called PM2.5 because it has a diameter of 2.5 micrometers or smaller.

1.2. The right to obtain medical treatment without fear of reprisal.

Employers should allow employees who show signs of injury or illness due to wildfire smoke exposure to seek medical treatment, and may not punish affected employees for seeking such treatment. Employers should also have effective provisions made in advance for prompt medical treatment of employees in the event of serious injury or illness caused by wildfire smoke exposure.

1.3. How employees can obtain the current Air Quality Index (AQI) for PM2.5.

Various government agencies monitor the air at locations throughout the US and report the current AQI for those places. The AQI is a measurement of how polluted the air is. An AQI over 100 is unhealthy for sensitive people and an AQI over 150 is unhealthy for everyone.

Although there are AQIs for several pollutants, this policy about wildfire smoke only uses the AQI for PM2.5.

The easiest way to find the current and forecasted AQI for PM2.5 is to go to www.AirNow.gov and enter the zip code of the location where you will be working. The current AQI is also available from the U.S. Forest Service at https://tools.airfire.org/ or a local air district, which can be located at www.arb.ca.gov/capcoa/dismap.htm. Employees who do not have access to the internet can contact their employer for the current AQI. The EPA website www.enviroflash.info can transmit daily and forecasted AQIs by text or email for particular cities or zip codes.

1.4. The requirements in Title 8, section 5141.1 about wildfire smoke.

If employees may be exposed to wildfire smoke, then the employer is required to find out the current AQI applicable to the worksite. If the current AQI for PM2.5 is 69 or more, the employer is required to:

1.4.1. Check the current AQI before and periodically during each shift.
1.4.2. Provide training to employees.
1.4.3. Lower employee exposures.
1.4.4. Provide respirators and encourage their use.

1.5. The employer's two-way communication system.

Projects should alert employees when the air quality is harmful and what protective measures are available to employees.

Projects should encourage employees to inform their employers if they notice the air quality is getting worse, or if they are suffering from any symptoms due to the air quality, without fear of reprisal.

The project communication system is: _____

_____

_____

1.6. The project methods to protect employees from wildfire smoke.

Employers should take action to protect employees from PM2.5 when the current AQI for PM2.5 is 69 or greater. Examples of protective methods include:

1.6.1. Locating work in enclosed structures or vehicles where the air is filtered.
1.6.2. Changing procedures such as moving workers to a place with a lower current AQI for PM2.5.
1.6.3. Reducing work time in areas with unfiltered air.
1.6.4. Increasing rest time and frequency, and providing a rest area with filtered air.
1.6.5. Reducing the physical intensity of the work to help lower the breathing and heart rates.
1.6.6. Voluntary use of respirators

The control system at this worksite is: _____

_____

_____

1.7. The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke.

Respirators can be an effective way to protect employee health by reducing exposure to wildfire smoke, when they are properly selected and worn. Respirator use can be beneficial even when the AQI for PM2.5 is less than 69, to provide additional protection.

When the current AQI for PM2.5 is 69 or greater, employers should provide their workers with proper respirators for voluntary use. If the current AQI is greater than 500, respirator use is required.

A respirator should be used properly and kept clean.

The following precautions should be taken:

1.8. Respirators should be certified for protection against the specific air contaminants at the workplace. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Center for Disease Control and Prevention certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will list what the respirator is designed for (particulates, for example).

Surgical masks or items worn over the nose and mouth such as scarves, T-shirts, and bandannas will not provide protection against wildfire smoke. An N95 filtering facepiece respirator, shown in the image below, is the minimum level of protection for wildfire smoke.

1.9. Read and follow the manufacturer's instructions on the respirator's use, maintenance, cleaning and care, along with any warnings regarding the respirator's limitations. The manufacturer's instructions for medical evaluations, fit testing, and shaving should also be followed, although doing so is not required by Title 8, section 5141.1 for voluntary use of filtering facepiece respirators.

1.10. Do not wear respirators in areas where the air contains contaminants for which the respirator is not designed. A respirator designed to filter particles will not protect employees against gases or vapors, and it will not supply oxygen.

1.11. Employees should keep track of their respirator so that they do not mistakenly use someone else's respirator.

1.12. Employees who have a heart or lung problem should ask their doctor before using a respirator.

1.13. How to properly put on, use, and maintain the respirators provided by the employer.

To get the most protection from a respirator, there must be a tight seal around the face. A respirator will provide much less protection if facial hair interferes with the seal. Loose-fitting powered air purifying respirators may be worn by people with facial hair since they do not have seals that are affected by facial hair.

The proper way to put on a respirator depends on the type and model of the respirator.

For those who use an N95 or other filtering facepiece respirator mask that is made of filter material:

1.13.1. Place the mask over the nose and under the chin, with one strap placed below the ears and one strap above.

1.13.2. Pinch the metal part (if there is one) of the respirator over the top of the nose so it fits securely.

For a respirator that relies on a tight seal to the face, check how well it seals to the face by following the manufacturer's instructions for user seal checks. Adjust the respirator if air leaks between the seal and the face. The more air leaks under the seal, the less protection the user receives.

Respirator filters should be replaced if they get damaged, deformed, dirty, or difficult to breathe through. Filtering facepiece respirators are disposable respirators that cannot be cleaned or disinfected. A best practice is to replace filtering facepiece respirators at the beginning of each shift.

If you have symptoms such as difficulty breathing, dizziness, or nausea, go to an area with cleaner air, take off the respirator, and get medical help.

ASBESTOS

1.0 Purpose

Exposure to asbestos has been shown to cause lung cancer, asbestosis, mesothelioma, and cancer of the stomach and colon. The purpose of this program is to inform employees of the hazards of asbestos, how to identify where it is located, how to minimize exposures and the safe handling practices.

2.0 Scope

This policy applies to any employee who may be exposed to Asbestos during the course of their employment with Haskell Corporation

3.0 Definitions

Accredited inspector means any person meeting the accreditation requirements of the Federal Toxic Substance Control Act, Section 206(a)(1) and (3). 15 U.S.C. 2646(a)(1) and (3).
Aggressive method means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.
Amended water means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
For purposes of this standard, “asbestos” includes PACM, as defined below.
Asbestos abatement project means an asbestos project involving three square feet or three linear feet, or more, of asbestos-containing material.
Asbestos-containing material (ACM) means any material containing more than 1% asbestos.
Asbestos project - includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.
Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.
Building/facility/vessel owner means any legal entity or person who owns any public or private building, vessel, structure, facility, or mechanical system or the remnants thereof, including the agent of such person, but does not include individuals who work on asbestos projects in their own single-family residences, no part of which is used for commercial purposes. Also included is any lessee, who exercises control over management and recordkeeping functions relating to a building, vessel, and/or facility in which activities covered by this standard takes place.
Certified industrial hygienist (CIH) means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Class I asbestos work means activities involving the removal of thermal system insulation or surfacing ACM/PACM.
Class II asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
Class III asbestos work means repair and maintenance operations where "ACM," including TSI and surfacing ACM and PACM, may be disturbed.
Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.
Clean room means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
Closely resemble means that the major workplace conditions which have contributed to the levels of historic asbestos exposure are no more protective than conditions of the current workplace.
Competent person means, one who is capable of identifying existing asbestos, hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them. The competent person should be certified as an asbestos supervisor for Class I and Class II work, and for Class III and Class IV work involving 3 square feet or 3 linear feet or more of asbestos-containing material. For Class III and Class IV work, involving less than 3 square feet or 3 linear feet, the competent person should be trained in an operations and maintenance (O&M) course which meets the criteria of EPA (40 CFR 763.92(a)(2)).
Critical barrier means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
Decontamination area means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment contaminated with asbestos.
Demolition means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products. Where feasible, asbestos-containing materials should be removed from all structures prior to the commencement of any demolition activity.
Department means the department of Labor & Industries.
Director means the director of the department of Labor & Industries or his/her authorized representative.
Director of NIOSH means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.
Disturb or disturbance refers to activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. **Disturbance** includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard size glove bag or waste bag in order to access a building or vessel component. In no event should the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which should not exceed 60 inches in length and width.

Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Equipment room (change room) means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber means a particulate form of asbestos, five micrometers or longer, with a length-to-diameter ratio of at least three to one.

Glove bag means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

Homogeneous area means an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial hygienist means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

Intact means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Friable ACM that is disturbed, as defined in this part, is presumed to be no longer intact.

Modification for the purpose of this policy means a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a “modification” for the purposes of.

Negative initial exposure assessment means a demonstration by the employer that employee exposure during an operation is expected to be consistently below the PELs.

PACM means “presumed asbestos-containing material.”

Presumed asbestos-containing material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980. The designation of a material as “PACM” may be rebutted.

Project designer means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. 763.90(g).

Regulated area means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or can reasonably be expected to exceed the permissible exposure limit.

Removal means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

Renovation means the modifying of any existing vessel, vessel section, structure, or portion thereof.

Repair means overhauling, rebuilding, reconstructing, or reconditioning of vessels, vessel sections, structures or substrates, including encapsulation or other repair of ACM or PACM attached to vessels, vessel sections, structures or substrates.

Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).
Surfacing ACM means surfacing material which contains more than 1% asbestos.
Thermal system insulation (TSI) means ACM applied to pipes, fittings, boilers, breaching, tanks, ducts, or other structural components to prevent heat loss or gain.
Thermal system insulation ACM is thermal system insulation which contains more than 1% asbestos.

4.0 Responsibilities

Project Managers, Superintendents, General Foremen, Site Safety Managers have the responsibility to:

4.1.

4.1.1. Determine if any aspect of a project includes handling asbestos by surveying materials before work begins.
4.1.2. Ensure that Sub-contractors handling asbestos are licensed by Washington Department of Labor and Industry, DOSH and have been reviewed by Haskell Safety.
4.1.3. Ensure that all project employees have been given Asbestos Awareness training when there is a potential for exposure to Asbestos Containing Materials (ACM)
4.1.4. Report damaged asbestos containing materials to the client project coordinator for repair. All damaged asbestos materials must be repaired or encapsulated to prevent release of fibers as soon as possible.

5.0 Procedures

5.1. Awareness Training

Asbestos awareness training is required for employees whose work activities may bring them into contact with asbestos containing material (ACM) or presumed asbestos containing material (PACM) but who do not disturb the ACM or PACM during their work activities. The training must be documented and renewed annually for affected employees.

Asbestos materials are used in the manufacture of heat-resistant clothing, automotive brake and clutch linings, and a variety of building materials including insulation, soundproofing, floor tiles, roofing felts, ceiling tiles, asbestos-cement pipe and sheet, and fire-resistant drywall. Asbestos is also present in pipe and boiler insulation materials, pipeline wrap and in sprayed-on materials located on beams, in crawlspaces, and between walls. Many Haskell Corporation clients have systems which contain Asbestos insulation and materials. Haskell will consult with client coordintators to determine if there is a potential for exposure to our employees.

5.2. Permissible Exposure Limits

No employee will be exposed to asbestos fibers without approved respiratory protection if airborne concentrations equal or exceed 0.1 asbestos fibers per cubic centimeter (0.1 f/cc) in an eight (8) hour time weighted average. Fibers are defined as 5 micrometers or longer, with a length to diameter ratio of at least 3 to 1.

The excursion limit for asbestos is 1.0 fiber per cubic centimeter (1f/cc) for 30 minutes.

5.3. Signage

Signs and labels should identify when Asbestos is present, its location, and appropriate work practices which, if followed, will ensure that asbestos containing material (ACM) and/or presumed asbestos containing material (PACM) will not be disturbed.

5.4. Identification

The following refinery materials are presumed to be asbestos containing (PACM) and will be handled according to DOSH standards unless analysis, labeling, P&ID's, or MSDS prove otherwise:

5.5. Asbestos Projects Nearby

If Haskell Corporation employees or sub contractors working immediately adjacent to a Class I asbestos jobs are exposed or likely to be exposed to asbestos due to the inadequate containment of such job, they should be removed from the area until the enclosure breach is repaired and an industrial hygienist has stated that it is safe to return to the affected area.

6.0 Procedures

It is Haskell Corporation policy to avoid all contact with asbestos and asbestos-related materials. It can be expected that we could potentially come into contact with asbestos or asbestos-related material during projects performed in process facilities such as Oil Refineries, Power Plants, Pulp and Paper Mills. This is not an all inclusive list of potential asbestos containing facilities.

No employee untrained or unprotected will be allowed in an area when asbestos is being removed.

On all projects, be alert for existing materials that could contain asbestos.

Should you come across asbestos contaminated material or presumed asbestos containing materials (PACM), do not proceed with removal, and notify your supervisor immediately before proceeding.

Asbestos removal is governmentally regulated to protect your health. Very specific rules exist governing the removal process and disposal.

The removal of asbestos materials will be done only by professionals trained and certified for asbestos abatement and removal.

Personal protective equipment for working around asbestos includes a disposable, full body covering and full face respirator with the proper cartridge.

7.0 Regulations

- OSHA 29CFR 1926.1127
- Chapter 296-62 WAC, Part I-1

BENZENE

1.0 Purpose

To ensure that employees are aware of protected and protected from incidental exposures to systems and equipment that may contain Benzene liquids or residues.

2.0 Scope

This policy applies to all Haskell employees while working in select areas of petroleum refineries. Employees should refer to the particular facility orientation program and PSM guidance materials, for the location of any system or equipment that may contain Benzene.

3.0 Definitions

- **PEL:** means the permissible exposure limit as set by OSHA- 1PPM
- **PPM**: means Parts Per Million

4.0 Procedures

In the course of the work done by the Haskell Corporation, particularly in petro-chemical facilities, employees may have to work on or around systems and equipment that have contained 105Benzene. Each facility should know which pieces of equipment and streams contain or have contained Benzene, and will provide this information and site specific emergency plans to Haskell and its employees- prior to the commencement of work on those systems.

4.1. Physical and Chemical Characteristics

Benzene is a clear, colorless liquid with a distinctive sweet odor. Benzene is a highly flammable liquid. Its vapors can form an explosive mixture. Benzene vapors are heavier than air. Locations where Benzene may be present in concentrations exceeding 3,250 ppm are considered Class 1 Group D for the purposes of conforming to the requirements of 29CFR 1910.309

Benzene liquid is highly flammable. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use non-sparking tools when opening or closing benzene containers. Fire extinguishers must be readily available. Know where they are located and how to operate them. Smoking is prohibited in areas where benzene is used or stored. Ask your supervisor where benzene is used in your area and for additional safety rules.

4.2. Health Effects

Benzene is primarily an inhalation hazard and it is a known carcinogen. Systemic absorption is a central nervous system (CNS) depressant. Inhalation of high concentrations can affect the CNS function.

Aspiration of small amounts of liquid Benzene immediately causes pulmonary edema and hemorrhage of pulmonary tissue. There is some absorption through the skin. Absorption may be more rapid in the case of abraded skin.

4.3. Regulatory Limits

The permissible exposure limits (PEL) for Benzene in accordance with the regulations listed in section 5 are as follows:

- 8-hr TWA Maximum exposure is 1 part per million (ppm) in air for an 8hour workday
- 10-hr TWA Adjusted for a 10 hour day, the PEL is 0.8ppm
- 15-min STEL Maximum short term exposure limit (STEL) is 5 ppm for any 15 minute period

4.4. Exposure monitoring

Determinations of employee exposure should be made from breathing zone air samples that are representative of each employee's average exposure to airborne Benzene. All employees should be notified of any personal monitoring results, within 60 days following receipt of results by Haskell. Employees may request copies of monitoring on specific jobs, through their supervision. All monitoring should be done by a competent person.

Access to monitoring records will be in accordance with Haskell Policy.

4.5. Control methods

Potential exposure to Benzene will be controlled using engineering controls or safe work practices and may include the use of respiratory protection, depending upon the potential exposure level, duration, and frequency and the feasibility of each option.

Engineering controls and safe work practices should be considered the preferred methods for reducing employee exposures to Benzene.

When engineering controls or safe work practices are not feasible, appropriate respiratory protection must be worn. Respirator selection should be in accordance with Haskell Policy.

Appropriate personal protective equipment, including gloves, goggles, or other appropriate gear, should be worn when eye or skin exposures to Benzene is likely. Refer to the daily task-specific Job Safety Analysis (JSA).

4.6. Respiratory Protection

Whenever engineering controls or work practices are not feasible to reduce employee exposure below the PEL, then respiratory protection must be worn as a method of compliance. These situations may occur during unit shut down, draining of equipment, repairs, emergencies and confined space entry.

4.7. Regulated areas

A regulated area is any area where airborne concentrations of Benzene can exceed, or reasonably be expected to exceed, the permissible exposure limit. Anyone entering a regulated area must have appropriate respiratory protection and other personal protective equipment, such as chemical resistant gear, if skin contact may be a concern.

4.7.1. Regulated areas should be posted as follows:

Danger: Benzene
Cancer Hazard
Flammable, No smoking
Authorized personnel only
Respirator required

4.8. Training

Refer to Haskell Training Program:

Benzene Awareness

5.0 Regulations

- Federal 29CFR 1910.1028
- Washington WAC 296-849, 296-800-170
- California Title-8

BLINDING

1.0 Purpose

To establish the proper procedures for the correct installation and removal of blinds.

2.0 Scope

This policy applies to all situations requiring the installation or removal of piping blinds in refining, chemical, or other process facilities. Where a client policy differs from this policy, the more stringent policy should prevail.

3.0 Definitions

- **Blind:** a physical plate that can be bolted between flanges to seal off a section of piping
- **Blind List:**

4.0 Procedures

Blinds generally provide the most effective method of guaranteeing that a liquid or vapor will be safely contained and not transferred through a line or equipment involved.

Prior to any blind removal or installation, it is necessary to make sure that the permits required to do the job have been obtained. Always work with the unit operator or the client's designated representative. If a blind list is available, the supervisor should obtain a copy of it. If no blind list is available, the supervisor should get with the unit operator or the client's representative to identify all of the blinds that will be installed or removed and the sequence that this will be done.

The crew supervisor should tag any blinds installed by Haskell Corporation with their name and date on the tag. A blind number should also be on the tag. A Haskell blind list/log should be kept of all the blinds that are installed. The blind list will include the blind number, the location and system, and the name of the unit operator or client's representative that directed the installation or removal of the blind.

Prior to installing or removing a blind, the supervisor will discuss the condition of the line that will be worked on with the unit operator and obtain or verify the following information:

- What product was in the line?
- Has the line been completely drained and depressurized? -VERIFY
- Has the line been steamed or flushed?
- Is the line warm to the touch?
- Is the line under a nitrogen or inert gas purge?

- Does work on the line require any special protective clothing such as acid gear, rubber gloves, face shield, Fresh Air Respirators, etc?
- Have the process unit operator show you the drain and have them verify that the drain is not plugged.
- If working at an elevated position, flag off the area below, so that the installation or removal of a blind will not create a hazard for anyone walking or working below.
- Communicate with others working in the area of any potential hazard.

4.1. Blinding Sequence

1. Loosen the studs and break the seal on the flange before removing them. Remember to always break the seal away from your face. If there is any pressure or product in the line, immediately bolt up the flange and contact the unit operator. Follow their instructions before proceeding further.
2. Remove one less than one half of the studs. If possible, leave the studs in place on the bottom half of the flange.
3. Wedge open the flange, leaving enough room for the blind to be installed.
4. Remove the old gasket, making sure that the flange surface is clean. Never put your fingers between the flanges. Always use scrapers to clean the flange surface, being careful not scratch or gouge the surface.
5. When installing the blind with gaskets, place an anti seizing lubricating compound such as “Never-Seez” on the flange side of the gasket, not the blind side.
6. When preparing to remove the blind to put the line back in service, contact the unit operator for the proper gasket specifications. Spread the flanges enough to remove the blind and be certain that all of the old gaskets have been removed and cleaned before inserting the correct type gasket for service.
7. Insert studs in the flanges before removing the wedges. Place anti seize compound on one side of each stud. When a stud can only be removed from one direction, always anti seize compound on the end of the stud, which comes out last.
8. While keeping fingers clear, knock the wedges out. Always use extreme caution. Always notify your partner or others in the area in case the wedge flies out. It is advisable to wear gloves for all blinding work.
9. Make sure that flange faces are square. If not, remove two studs and install drift pins. Tighten one stud in each side of the flange. Remove the drift pins and four-bolt the flange.
10. One bolt thread minimum must be showing and no more than four threads maximum.
11. Tighten studs in a crisscross pattern until all studs are tight. Check all studs one last time.
12. Contact the unit operator for a hammer test when the blinds have been removed. Clean up the job site and dispose of all old gaskets.
13.

5.0 Regulations

- Federal 29CFR 1910.147
- Washington WAC
- California Title-8 4799

BLOODBORNE PATHOGENS

1.0 Purpose

The Haskell Corporation has adopted a policy for the safety and health of its employees who may find themselves at risk for exposure to Bloodborne Pathogens (BBP). This policy is to establish procedures in compliance with WAC 296-62-08001 and to establish controls to protect employees, who may become involved in a "first response" situation involving injuries, from the hazards of exposure to bloodborne pathogens.

2.0 Scope

*NOTE: It must be clearly understood that currently there are no employees within the company that are required to administer first aid as a condition of employment or part of their job description. Any employee (including Safety Representatives) that may **choose** to administer first aid does so as a "Good-Samaritan" only and may be afforded any legal protection offered under those regulations and while acting in that capacity.*

3.0 Definitions

- **Blood:** means human blood, human blood components, and products made from human blood
- **Bloodborne Pathogens:** means pathogenic microorganisms that are present in human blood and can cause disease in humans. Including; but are not limited to (HBV) & (HIV)
- **Contaminated:** means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- **Contaminated sharps**: means any contaminated object that can penetrate the skin including, but not limited to, needles, broken glass, and objects.
- **Decontamination:** means the use of a physical or chemical agent to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles
- **Exposure Incident:** means a specific event involving direct contact with potentially infectious body fluids or contaminated materials
- **HBV:** means hepatitis B virus.
- **HIV:** means human immunodeficiency virus.
- **Universal Precautions**: means a set of barrier controls between the rescuer and injured person

4.0 Procedures

It is the policy of Haskell Corporation to treat all bodily fluids as potentially contaminated substances.

4.1. Exposure Determination

Personnel in the following classifications may be exposed to blood borne pathogens in performance of their jobs.

- Site Safety Representatives
- Superintendents and Foreman (Note: Haskell Corporation policy is to provide First aid and CPR trained supervision on each job site. On smaller jobs where there is no full time safety person, one of these individuals may be designated as the site safety representative. Only the designated site safety representative is considered occupationally exposed.)

Providing emergency first aid treatment (applying dressings) to bleeding traumatic injuries that may occur on the job.

- Providing Cardio-Pulmonary Resuscitation.
- Inadvertent contact with an infected person's blood or bodily fluids.

This exposure determination should be made without regard to the use of personal protective equipment.

4.2. Exposure Control

Universal precautions will be used to prevent contact with blood or other potentially infectious materials, including all body fluids. When differentiation between body fluid types is difficult or impossible, all body fluids should be considered potentially infectious materials. For the purposes of this policy, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens

Engineering and work practice controls will be used to eliminate or minimize employee exposure where feasible. Where occupational exposure remains after institution of these controls, personal protective equipment should also be used.

Exposed employees should wash their hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.

If washroom facilities are not immediately available, anti-bacterial towelettes such as Vionex are readily available in all first-aid and blood borne pathogen kits.

Food and drink should not be kept in refrigerators, freezers, shelves, cabinets, or on countertops or bench tops where blood or other potentially infectious materials are present. For example, the designated first aid room or area would be off limits for the storage or consumption of food or drink.

All procedures involving blood or other potentially infectious materials should be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

4.3. Personal Protective Equipment

Disposable nitrile gloves will be provided and worn by employees when treating bleeding injuries.

Resuscitation bags, pocket masks or mouthpieces will be provided and used for mouth to mouth resuscitation. When there is occupational exposure, the employee should be provided, at no cost to the employee, appropriate personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices.

4.4. Housekeeping

All equipment and surfaces which have been in contact with blood or other potentially infectious material will be decontaminated as soon as feasible, using an appropriate disinfectant such as Clorox bleach.

Contaminated waste such as used dressings, Band-Aids, disposable gowns; aprons and gloves will be collected and placed into properly marked, sealed plastic bio-bags for disposal at a proper facility.

4.5. Training

Employees should receive initial and annual refresher training to include as part of their orientation. It should include.

- A review of the Haskell Corporation Exposure Control Plan.
- An explanation of the epidemiology, modes of transmission and symptoms of HIV and HBV.
- Hazard recognition and safe work practices.
- Exposure incident definition and reporting requirements.
- Opportunity for questions and discussion.

Training records should be maintained for 3 years from the date on which the training occurred.

4.6. Exposure Incident Evaluation and Follow-Up

Following any report of an exposure incident, the exposed employee will be provided with a confidential medical evaluation and follow-up report including:

- Documentation of the route(s) of exposure
- Circumstances under which the exposure occurred
- Identification and documentation related to the source individual

Source individual's blood will be tested for HBV/HIV as soon as feasible after exposure

The exposed individual will be advised of the source individual's test results and informed of applicable laws and regulations concerning disclosure of identity and infectious status of the source individual.

Exposed individual will be provided with blood testing, post exposure counseling and evaluation of any related illness or conditions.

Exposure incidents will be reported using forms and procedures specified in Accident/Injury/Incident Reporting section of the Haskell Corporation Safety Program.

All employees who have an exposure incident will be advised of their right to receive Hepatitis B immunization at no cost to them at a reasonable time and place. Employees who decline immunization will complete a vaccination declination form.

4.7. Safe Practices

Hand washing facilities will be provided at each job site. This may consist of; running water, soap and disposable towels; antiseptic hand cleanser and disposable towels; or antiseptic wipes.

Employees will wash their hands as soon as feasible after removal of gloves or other personal protective equipment- regardless of visible condition of the rescuers' skin.

Employees will wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon a feasible following contact with blood or other potentially infectious materials.

4.8. Medical Records

Employee medical records are confidential and should not be disclosed without the employee's express written consent, to any person within or outside the workplace. Exceptions include delivery to state and federal agencies as required in their rules governing Occupational Exposure to Bloodborne Pathogens.

Medical records should include only:

- The name and the social security number of employees involved
- A copy of the employee's hepatitis B vaccination status, including the dates of all hepatitis B vaccinations and any medical records relative to the employee's ability to receive the vaccination.

Haskell Corporation should maintain the required record for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020

4.9. Annual Review

This policy will be evaluated annually for content and effectiveness and updated in accordance with current regulations. A copy of the Exposure Control Plan is accessible to employees in accordance with 29 CFR 1910.1020(e).

5.0 Regulations

- Federal 29CFR 1910.1030
- Washington WAC 296-823
- California Title-8 5193

CADMIUM

1.0 Purpose

The Cadmium Exposure Control Program has been developed to control worker exposure to Cadmium in compliance with the OSHA standard 29CFR 1926.1127. Industrial air monitoring has shown that some workers may be exposed to airborne concentrations of Cadmium during both routine and non-routine operations. *Exposure to elevated levels of Cadmium may cause nausea, vomiting, cramps, diarrhea, irritation to the nose, throat and lungs, damage to mucous membranes and even lung cancer.

2.0 Scope

This policy applies to any employee who may be exposed to cadmium during the course of their employment with Haskell Corporation

3.0 Definitions

- **Action level (AL):** means an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air (2.5 ug/m(3)), calculated as an 8-hour time-weighted average (TWA).

4.0 Procedures

Worker exposure to Cadmium will be controlled below Occupational Safety and Health Administration (OSHA) limits by the use of engineering controls, work practices, or other administrative controls. If engineering controls fail to reduce employee exposure below the OSHA Permissible Exposure Limits (PELs), or when work site controls are not feasible, additional training, respiratory protection, and other personal protective equipment will be provided and required.

A competent person (one who is capable of identifying existing and predictable Cadmium hazards and who has authorization to take prompt corrective measures to eliminate them), Industrial Hygienist, or other Safety and Health professional will determine proper control measures and/or personal protective equipment for work activities involving potential Cadmium exposures.

4.1. Exposure Determination, Air Monitoring and Control

4.1.1. Exposure Limits

- OSHA Permissible Exposure Limit (PEL): 5.0 μg/m3 as an 8-hour time-weighted average (TWA).
- The action level (AL) for Cadmium is 2.5 μg/m3

4.3. Exposure Determination

For each work activity with potential exposure to Cadmium, an exposure determination must be made so that proper controls and practices can be implemented. This determination will be performed utilizing either historical or objective data or by performing initial air monitoring.

The primary activity associated with elevated Cadmium exposure is 'hot-work' (welding, cutting, grinding, arc gouging, etc.) involving Cadmium-containing alloys, especially stainless steel. Other activities that may involve exposure to Cadmium include demolition of painted structures, removal of industrial coatings and performing other work that has the potential to disturb Cadmium containing products.

4.4. Air Monitoring

Work activities with a potential for Cadmium exposure, for which no historical or objective data exists, will require initial monitoring. Air monitoring must be representative of each task that will be conducted (i.e., monitoring conducted while setting up the work area cannot be used to represent exposures during hot work). Workers should wear personal protective equipment during initial monitoring. Continued air monitoring will be based on the following:

If initial, representative, full-shift (e.g. at least 7 of an 8 hour shift), personal air sampling indicates exposure ***below*** the AL, sampling may be discontinued and the area may be de-regulated. While full-shift sampling is preferred, partial shift / task samples are acceptable if work with potential Cadmium exposure lasts less than 7 hours.

If representative, full-shift, personal air sampling indicates exposure ***between*** the AL and the PEL; the area may be deregulated as it relates to personal protective equipment and demarcation requirements. Controls should be established in an effort to obtain exposures below the AL. Sampling must be repeated at least every six months if above the AL and every three months if above the PEL or until two samples collected at least seven days apart show the exposures to be less than the AL. (If work activity occurs less frequently than the requirement, air monitoring must be performed each time the activity is performed.)

If initial, representative, full-shift, personal air sampling indicates exposure ***above*** the PEL, the area must be regulated. Engineering controls will be established in an effort to obtain worker exposures below the PEL. After controls are implemented, personal air sampling must be repeated (at least quarterly1) until two samples collected at least seven days apart verify exposures below the PEL. If the scope of the work is less than 7 days, two samples taken at the greatest interval possible (but not less than 3 days) can be used as documentation that the exposure is controlled. While the job task in question does not need to be regulated at the next occurrence, confirmation monitoring must be performed at the next opportunity.

If sampling is discontinued and procedures, equipment, or materials involving Cadmium-related activities change in such a way as to possibly increase the Cadmium exposure, then sampling will be reinstated.

4.5. Controlling Exposure

Engineering controls are the preferred method for reducing Cadmium exposures. Ventilation is the most common engineering control for reducing airborne Cadmium levels. Dilution or local ventilation uses vents, air movers, and/or fume extraction equipment to move welding fumes or dust away from individual workers. (Care must be taken to ensure ventilation exhaust does not expose other workers.)

Any work method that will reduce the levels of dust or hot work fumes will lower worker exposures. Additionally, worker position and proximity to hot work fumes affects exposure. Work practices that keep workers out of fumes or dust should be utilized wherever possible.

Cadmium-containing coatings should be completely removed prior to performing hot work or other activities that can create fumes or dust. Sufficient coating should be removed to prevent bubbling or vaporizing of adjacent coatings, when hot work is performed.

4.6. Regulated Areas

If the exposure determination indicates exposure above the PEL, the area must be regulated. The size of a particular regulated area is dependent upon numerous factors and is not preset. The potential exposure will be affected by the scope of work and work practices. The following requirements must be met with a regulated area:

The regulated area should be demarcated in such a way that all workers are aware of a potential Cadmium hazard. Projects will use special colored flagging to mark Cadmium regulated areas. The selected color may be determined by each site.

- Access to the regulated area should be limited to trained and authorized individuals
- Appropriate PPE should be utilized to minimize worker exposure
- Procedures should be established to decontaminate workers before leaving the area
- Contaminated PPE and clothing should be disposed of daily or laundered or in such a manner as to minimize unprotected exposure

If prior monitoring indicates there is a potential for over-exposure, the area must remain regulated, and personal protective equipment must be worn until sufficient testing indicates that Cadmium levels are below the PEL. Areas may be deregulated (without confirmation air monitoring) when the work with potential for Cadmium exposure is discontinued and the area has been properly cleaned.

4.7. Regulated Areas – Large/Partitioned Confined Spaces

Typically, if work performed in a confined space generates Cadmium exposure levels above the PEL, the entire space is considered regulated and all occupants are covered by the procedures detailed above.

For large confined spaces, it may be possible to regulate only a portion of the space. Stringent procedures must be in place to physically divide the space, provide unique access, and ensure a dedicated ventilation control system.

4.8. Respiratory Protection

When working with Cadmium, respirators will be required for the following:

- When exposures exceed the PEL
- When engineering or administrative controls do not reduce exposure below the PEL
- When workers must enter regulated areas
- As interim protection during exposure assessments or during installation of controls

Respirator selection must be made based on the following chart:

Airborne Concentration	Required Respirator Type
10 x PEL or less	Half-face air-purifying respirator with P-100/HEPA filters
25 x PEL or less	Powered air-purifying respirator (PAPR) with loose fitting hood or helmet equipped with P-100/HEPA filters, or supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous-flow mode.
50 x PEL or less	Full facepiece air-purifying respirator equipped with P-100/HEPA filters, or a PAPR with a tight-fitting half mask equipped with P-100/HEPA filters, or a supplied-air respirator with a tight-fitting half mask operated in continuous-flow mode.
1000 x PEL or less	PAPR with a tight-fitting full facepiece or hood equipped with P-100/HEPA filters or a supplied-air respirator with full facepiece operated in the pressure-demand or other positive-pressure mode or with a full facepiece operated in continous flow mode.
> 1000 x PEL or unknown	Self-contained breathing apparatus with a full facepiece operated in the pressure-demand or other positive-pressure mode.

If initial monitoring results are unavailable, and requirements are not clear, an Industrial Hygienist or qualified Safety and Health professional can provide the necessary guidance.

All respirator use should be in accordance with the Haskell Respiratory Protection Program.

4.9. Personal Protective Equipment (PPE)

When worker exposures to Cadmium exceed exposure limits, without regard to the use of respirators, personal protective equipment must be issued and worn. PPE requirements for Cadmium are intended to minimize additional employee exposure.

Personal protective equipment (PPE) used for reducing exposure to Cadmium may include:

- Coveralls or similar full-body work clothing
- Head covers
- Gloves

PPE may be disposable or reusable. Reusable PPE would include cloth coveralls, shoes or boots worn only at work, cloth or leather gloves, and cloth hoods. Disposable clothing includes paper or synthetic

clothing, shoe covers, and head covers. When performing hot work, appropriate cloth coveralls should be used. *Disposable (TYVEK®, paper, etc.) coveralls may not be suitable for hot work.

Protective clothing and equipment should be cleaned, laundered, repaired, or replaced as necessary to maintain their effectiveness. Disposable clothing may be used more than once as long as the integrity of the clothing is not impaired and employees are not exposed to Cadmium contaminants during subsequent use.

When laundering reusable clothing, the release of contaminants must be controlled below the PEL. Dissolvable bags are available to minimize potential exposure to laundry personnel. (These types of bags are available from some commercial services or vendors. Keep in mind that they dissolve when exposed to water. A standard plastic bag should be used as an outer covering when utilized in the field.)

Commercial laundry services must be notified of the presence of Cadmium contamination.

Haskell Corporation will provide and use disposable clothing for employees who may be exposed to Cadmium.

4.10. Hygiene Facilities and Practices

Every effort should be made to prevent workers from spreading contamination to other areas of the work place and to their homes. The following facilities and practices should be provided and used:

4.11. Change Rooms

Where feasible, change rooms will be provided for employee's personal clothing and other personal items. Provisions should be available in change rooms for storing clean and contaminated clothing separately. If a change room is not feasible, non-contaminated personal clothing may be stored in containers, vehicles, or other areas outside of the regulated area. Personal protective equipment should be donned before entering the work area.

When leaving the regulated area during the work shift, all personal protective equipment (i.e. coveralls, gloves, boots, etc.) should be HEPA vacuumed before personnel are allowed the leave the regulated area. Contaminated PPE should be removed, and left outside of the entrance to the regulated area (in the change room if available) for pick up for laundering. If PPE is decontaminated and stored in a way to minimize airborne exposure, it may be reused for continued work during the same work shift.) Workers should wash their hands and face before eating, drinking, or smoking.

If the regulated area is a confined space, removal/decontamination may take place in an area outside the regulated area to minimize the risk of other hazards (i.e. remaining in the confined space, elevated work area, etc.) Travel distance from the regulated area must be minimized, and steps must be taken to minimize exposure to other workers when covered workers are exiting.

4.12. General

A site specific plan written plan should be developed for emergency situations involving a substantial release of cadmium at a client facility.

Protective gear, respirators, and tools should be decontaminated according to standard procedures.

If “street clothing” is worn directly under Cadmium protective clothing, steps must be taken to minimize the potential for contamination of clothing that will leave the project.

There should be no eating, drinking, smoking, chewing gum, or applying cosmetics when working with Cadmium.

Compressed air may not be used as a decontamination method.

Contaminated clothing that will not be re-used must be stored in sealed container or bags.

4.13. Contaminated Work Areas

Work areas which are contaminated with Cadmium must be cleaned in such a way that minimizes potential for worker exposure. Exemptions to this requirement are as follows:

Work areas which by their nature cannot be effectively cleaned (e.g. open air field activities, the floor of a temporary fabrication tent, etc.)

Confined spaces do not need to be decontaminated prior to start up. However, anytime work will be performed in the contaminated space, an exposure determination must be performed and workers must be protected accordingly.

Temporary structures (e.g. fabrication tents, spark enclosures, etc.) do not need to be decontaminated if the materials will be sent for disposal. Workers must be protected during the tear down process.

HEPA vacuum or wet methods should be the methods of first choice. If these are found to be ineffective, other methods (e.g. dry sweeping, shoveling, etc) can be used if the area is isolated and workers protected properly.

*****Compressed air should not be used for cleaning*****

Equipment that is potentially contaminated with Cadmium particulates does not need to be decontaminated provided it is handled in such a way that does not create an exposure hazard to workers. Examples of equipment that must be decontaminated include fire blankets, hand tools and PPE.

Procedures should be developed and implemented to minimize employee exposure to cadmium when performing maintenance on ventilation systems and the changing of air filters.

4.14. Waste Disposal

All waste disposal procedures for any given project must be developed and coordinated with the site Environmental Contact. Disposable clothing or respirator cartridges contaminated with Cadmium can typically be discarded with normal waste as long as they are properly bagged and labeled so as not to release dust during disposal.

4.15. Medical Surveillance

Workers who are, or will be exposed at or above the action level for Cadmium for thirty or more days per year should be included in a medical surveillance program. Medical surveillance will also be made available for workers who experience signs and symptoms of Cadmium exposure or who are exposed in emergency situations. The exam will include:

- Completion of Respiratory Protection Questionnaire
- Additional tests deemed appropriate by the examining physician

4.16. Training

A Cadmium training program should be established for workers who have potential airborne or eye and skin exposure to Cadmium, above the Action Level. There is no required frequency for refresher training, however, it is suggested that Cadmium training be covered along with other metals (arsenic, lead, cadmium) annually. The initial worker training program should consist of the following:

- Health hazards associated with Cadmium exposure
- The sources of exposure, and the specific nature of operations that could result in exposure to Cadmium as well as any necessary protective steps
- The purpose and description of the medical surveillance program
- The engineering controls and work practices associated with the worker's job assignment as well as other measures workers can take to protect themselves
- A review of requirements contained in the OSHA standard

Training must be documented and available for audit.

4.17. Recordkeeping and notification

All exposure monitoring records will be kept for a period of not less than thirty years

Individual medical surveillance records for Cadmium must be kept for the individual's duration of employment plus thirty years.

Any objective data used to determine exemptions from initial monitoring or any other data used to show negative exposure assessments must be kept for thirty years.

When Safety and Health or any other group responsible for notification receives results of air monitoring, biological monitoring, or medical findings or opinions, the worker should be notified of the results within fifteen working days. Work activities considered to be covered by the Construction Standards require notification in five working days.

4.18. Program Review

The written program must be reviewed and updated annually or more often to reflect significant changes in employer's compliance status.

The written Program should be provided for examination and copying upon request of affected employees or their representatives.

4.19. ACTIVITIES WHICH MAY EXCEED THE ACTION LIMIT (Based on available data)

- Welding, cutting, or grinding of materials with cadmium-coated surfaces
- Heating of cadmium-coated surfaces (pre / post weld heat treating)
- Any other process that produces dust or fumes containing Cadmium

5.0 Regulations

• Federal	29CFR	1910.1027
• Washington	WAC	269-62-074
• California	Title-8	1532, 5207

CHAIN, AIR AND ELECTRIC HOISTS

1.0 Purpose

To provide procedures and requirements for the safe use, inspection and maintenance of chain, air and electric hoists used at all Haskell Corporation project sites.

2.0 Scope

This policy applies to any employee who will operate Chain, Electric or Air Hoists during the course of their employment with Haskell Corporation.

3.0 Definitions

4.0 Procedures

4.1. Construction, operation and maintenance

Chain and electric hoists should be of what is known as "all steel construction." No cast iron should be used in parts subject to tension except drums, bearings or brake shoes.

The chains should be made of the best quality steel or iron with welded links.

Chain and electric hoists should have a factor of safety of at least five.

Chain and electric hoists should be equipped with an approved device which will automatically lock the load when hoisting is stopped.

Electric hoists should be provided with an approved limit stop to prevent the hoist block from traveling too far in case the operating handle is not released in time.

4.2. Air hoists.

To prevent piston rod lock nuts from becoming loose and allowing rod to drop when supporting a load, lock nut should be secured to piston rod by a castellated nut and cotter-pin.

A clevis or other means should be used to prevent hoists cylinder becoming detached from hanger.

4.3. Overhead Hoists

The safe working load of the overhead hoist, as determined by the manufacturer, should be indicated on the hoist, and this safe working load should not be exceeded.

The supporting structure to which the hoist is attached should have a safe working load that meets or exceeds that of the hoist.

The support should be arranged so as to provide for free movement of the hoist and should not restrict the hoist from lining itself up with the load.

The hoist should be installed only in locations that will permit the operator to stand clear of the load at all times.

Air hoists should be connected to an air supply of sufficient capacity and pressure to safely operate the hoist. All air hoses supplying air should be positively connected to prevent their becoming disconnected during use.

All overhead hoists in use should meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer.

4.4. Chain Falls and Pull-Lifts (Come Along)

Chain falls and pull-lifts should be clearly marked to show the capacity and the capacity should not be exceeded.

Chain falls should be regularly inspected to ensure that they are safe, particular attention being given to the lift chain, pinion, sheaves and hooks for distortion and wear. Pull-lifts should be regularly inspected to ensure that they are safe, particular attention being given to the ratchet, pawl, chain and hooks for distortion and wear.

Straps, shackles, and the beam or overhead structure to which a chain fall or pull-lift is secured should be of adequate strength to support the weight of load plus gear. The upper hook should be moused or otherwise secured against coming free of its support.

Scaffolding should not be used as a point of attachment for lifting devices such as tackles, chain falls, and pull-lifts unless the scaffolding is specifically designed for that purpose.

5.0 Regulation

- Chapter 296-24-237 WAC
- OSHA standard 29CFR 1926.554

COLD WEATHER EXPOSURE

1.0 Purpose

To provide a safe and healthful working environment and protect Haskell Corporation employees who perform work in cold weather environments

2.0 Scope

This policy applies to employees working in outdoor environments, and selected indoor environments, where there is an elevated risk of suffering from a cold-related illness

3.0 Definitions

- **Acclimatization**: means the body's temporary adaptation to work in the heat that occurs gradually as a person is exposed to it.
- **Chilblains**: means a condition where the capillary-bed of an employee's affected skin is significantly damaged
- **Cold Related Illness (CRI)**: means a serious medical condition resulting from the body's inability to cope with a particular decrease in body heat, and includes hypothermia, frostbite, and similar illnesses
- **Frostbite**: refers to a condition where skin or body parts become frozen or semi-frozen (related to gangrene)
- **Hypothermia**: refers to the condition of having an unusually low body temperature
- **Trench foot/ Immersion Foot**: refers to a condition related to prolonged exposure of the feet to wet and cold

4.0 Procedures

It is the policy of Haskell Corporation that all affected employees are required to comply with the Cold Weather Exposure policy and are encouraged to actively participate in identifying ways to reduce the risk of experiencing cold related illness in the workplace.

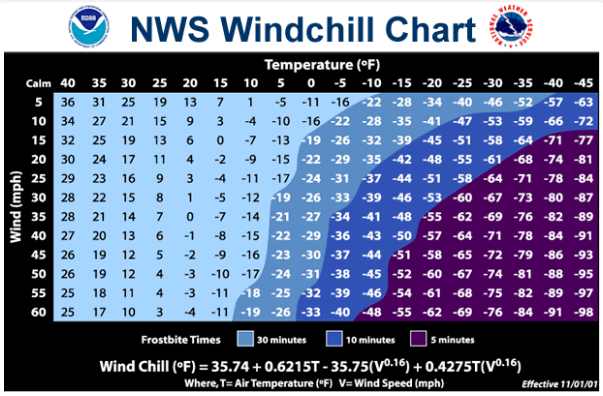
4.1. Hazard Evaluation

Haskell Corporation will evaluate potential construction sites and outdoor workplaces, where cold weather exposure risk may exist, to identify and evaluate CRI hazards. The following is a list of where we might expect hazards to occur:

- WA, OR, CA, MT, ID: Seasonal (October-May)
- All work in the State of Alaska
- Working on or near chillers or cooler equipment/facilities

Wind Chill Chart

Haskell supervisors will be aware of the daily wind speed and temperature



4.2. General Provisions

Haskell Corporation will consider the following recommendations, to protect workers from cold stress:

- Schedule maintenance and repair jobs in cold areas for warmer months
- Schedule cold jobs for the warmer part of the day
- Reduce the physical demands of workers, using equipment
- Use relief workers or assign extra workers for long, demanding jobs
- Provide warm liquids to workers
- Provide warm areas for use during break periods
- Monitor workers who are at risk of cold stress
- Provide cold stress training that includes information about:
    - Worker risk
    - Prevention
    - Symptoms
    - The importance of monitoring yourself and coworkers for symptoms
    - Treatment
    - Personal protective equipment

4.3. General Expectations

Workers should avoid exposure to extremely cold temperatures when possible. When cold environments or temperatures cannot be avoided, workers should follow these recommendations to protect themselves from cold stress:

- Wear appropriate clothing.
    - Wear several layers of loose clothing- layering provides better insulation. Avoid tight clothing, which reduces blood circulation
    - When choosing clothing, be aware that some clothing may also restrict physical movement, resulting in a hazardous situation
- Make sure to protect the ears, face, hands and feet in extremely cold weather

  - Boots should be waterproof and insulated
  - Wear a hard-hat liner; it will keep your whole body warmer
  - Wear wool-based protection next to hands, feet, face/head
- Move into warm locations during work breaks
- limit the amount of time outside on extremely cold days
- Carry extra cold weather gear, such as socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid
- Avoid touching cold metal surfaces with bare skin
- Monitor your own physical condition and that of your coworkers

4.4. First Aid awareness and actions in the event of a cold related illness:

The following chart helps employees recognize the main types of cold related illnesses, signs, symptoms, and the appropriate treatment to reduce the effects of the cold related illness. This chart will be posted in the employee job shack.

4.4.1. Signs & Symptoms

Condition	Symptoms	Treatment
Chilblains	• Redness • Itching • Possible blistering • Inflammation	• Avoid scratching • Slowly warm the skin • Use corticosteroid creams to relieve itching • Keep blisters and ulcers clean and covered
Trench Foot	• Reddening of the skin • Numbness • Leg cramps • Swelling • Tingling pain • Blisters or ulcers • Bleeding under the skin • Gangrene (the foot may turn dark purple, blue, or gray)	• Remove shoes/boots and wet socks • Dry their feet gently • Avoid walking on feet, as it may cause tissue damage
Hypothermia	• Early Symptoms • Shivering • Fatigue • Loss of coordination • Confusion and disorientation • Late Symptoms • No shivering • Blue skin	• Alert the supervisor and request medical assistance. • Move the victim into a warm room or shelter. • Remove their wet clothing. • Warm the center of their body first-chest, neck, head, and groin-using an electric blanket, if available; or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.

	• Dilated pupils • Slowed pulse and breathing • Loss of consciousness	• Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person. • After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck. • If victim has no pulse, begin cardiopulmonary resuscitation (CPR).
Frostbite	• Reduced blood flow • Numbness • Tingling or stinging • Aching • Bluish or pail, waxy skin	• Get into a warm room as soon as possible. • Unless absolutely necessary, do not walk on frostbitten feet or toes-this increases the damage. • Immerse the affected area in warm-not hot-water (the temperature should be comfortable to the touch for unaffected parts of the body). • Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers. • Do not rub or massage the frostbitten area; doing so may cause more damage • Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

COMPETENT PERSONS

1.0 Purpose

To provide guidance for complying with Haskell Corporation and Federal Regulations requiring written designation of personnel competent to perform certain functions

2.0 Scope

This policy applies to all Haskell worksites and employees.

3.0 Definitions

- **Competent Person**: An employee capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to all personnel and who has authorization to take prompt corrective measure to eliminate them.

4.0 Procedures

The Competent Person must have immediate knowledge of the subject, either by years of experience in the specific field, formal education, or specialized training pertaining to:

- Job activity being performed
- Operation and use of specific equipment
- Potential hazards associated with specific jobs
- Safety, health and environmental standards

4.1. Making designations

All Competent Person designations must be approved by the project manager or his/her designee and the project safety supervisor/safety representative.

4.2. Designated activities

The following activities are performed by a Competent Person:

- Perform inspections on, and maintain all lifting equipment
- Supervise erection, alteration and dismantling of scaffolding
- Perform and maintain the electrical Assured Grounding Program
- Inspect excavations and shoring
- Assign qualified equipment operators
- Perform atmospheric tests and issue permits for confined space entry
- Supervise tag and lock-out procedures

- Inspect and calibrate air analyzing equipment
- Perform carbon monoxide monitoring operations
- Supervise asbestos and lead abatement activities
- Perform ladder inspections
- Perform fire extinguishers inspections
- Perform life line inspections
- Perform harness/lanyard inspections

4.3. Records

Written records of Competent Person designations should be recorded on the Competent Person Designation form. These records should be kept on file at the project safety office or designated project location.

4.4. Instructions

The Competent Person designation relates to a very specific aspect of various OSHA regulations that require employers to evaluate and designate one or more individuals for the purpose of ensuring that the OSHA requirements are met in a consistent and effective manner at each workplace. This designation should not be confused with or as a replacement for other methods of verifying employee competency levels or abilities to perform specific tasks/job activities.

It is important to limit the designation of Competent Persons to the lowest number of persons actually needed to fully satisfy the OSHA requirements, without jeopardizing safety, quality, or production.

**While it is common for Superintendents and General Foremen to be designated as Competent Persons, although qualified individuals may be found at all levels of employment within the company.*

Complete all sections of form F-114.1, including:

- **Project:** Indicate the project (s) the designation(s) will apply to
- **Job #:** Indicate job number or enter the current year to cover multiple work locations
- **Employee:** Enter the employee's full name and the last four digits of their SSN as indicated
- **Competencies:** Use check boxes to indicate designated competencies
- **Verification:**
  - Review any existing documentation or credentials
  - Obtain photo-copies of certificates or wallet cards
- **Substantiation:**
  - Review Haskell Corporation policy for the particular competencies
  - Review the specific OSHA language for clarification of competencies
  - Review any relative client policies or procedures
  - If substantiating with experience, indicate years of experience
  - If substantiating with Union, indicate apprentice/journey status
- **Validation:**
  - Provide an effective date for all competencies

- Have employee sign acceptance /acknowledgement of responsibility
- Have Project Manager sign final authorization/designation

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8 1518

COMPETENT PERSON DESIGNATION

OSHA Standard Requirements	Applicable to Subcontractor (yes/ no)	Designated Competent Person (Name)
Subpart C – General Provisions		
1926.20 General Safety	☐ ☐	
Subpart D – Health and Environmental Controls		
1926.53 Ionizing Radiation	☐ ☐	
1926.54 Non-ionizing Radiation	☐ ☐	
1926.55 Gases, Vapors, Fumes, Dusts, Mists	☐ ☐	
1926.57 Ventilation	☐ ☐	
1926.59 Hazard Communication	☐ ☐	
1926.62 Lead	☐ ☐	
Subpart E – Personal Protective Equipment		
1926.101 Hearing	☐ ☐	
1926.103 Respirator Protection	☐ ☐	
Subpart H – Materials Handling, Storage		
1926.251 Rigging Equipment for Material Handling	☐ ☐	
Subpart J – Welding and Cutting		
1926.354 Welding, Cutting and Heating	☐ ☐	
Subpart K – Electrical		
1926.404 Wiring Design and Protection	☐ ☐	
Subpart L – Scaffolding		
1926.451 Scaffolding	☐ ☐	
Subpart M – Fall Protection		
1926.502 Fall Protection Criteria and Practices	☐ ☐	
1926.503 Training	☐ ☐	
Subpart N – Cranes, Derricks		
1926.550 Cranes and Derricks	☐ ☐	
1926.552 Hoists and Elevators	☐ ☐	
Subpart O – Motor Vehicles and Equipment		
1926.601 Motor Vehicles	☐ ☐	
Subpart P – Excavations		
1926.651 Specific Excavation Requirements	☐ ☐	
1926.652 Requirements for Protective Systems	☐ ☐	
Subpart Q – Concrete and Masonry Construction		
1926.701 General Requirements	☐ ☐	
1926.703 Cast-in-Place Concrete	☐ ☐	
1926.705 Lift-Slab Operations	☐ ☐	
Subpart R – Steel Erection		
1926.752 Bolting, Riveting, Fitting-up, Etc.	☐ ☐	
Subpart S – Tunnels, Shafts, Caissons		
1926.800 Tunnels and Shafts	☐ ☐	
1926.802 Compressed Air	☐ ☐	

OSHA Standard Requirements	Applicable to Subcontractor (yes/ no)		Designated Competent Person (Name)
Subpart T – Demolition			
1926.850 Preparatory Operations	☐	☐	
1926.852 Chutes	☐	☐	
1926.859 Mechanical Demolition	☐	☐	
Subpart U – Blasting and Use of Explosives			
1926.900 General Provisions	☐	☐	
1926.901 Blaster Qualifications	☐	☐	
1926.911 Misfires	☐	☐	
Subpart V – Power Transmission and Distribution			
1926.955 Overhead Lines	☐	☐	
1926.957 Construction in Energized Substations	☐	☐	
Subpart X – Stairways and Ladders			
1926.1053 Ladders	☐	☐	
1926.1060 Training Requirements	☐	☐	
Subpart Z – Toxic and Hazardous Substances			
1926.1101 Asbestos	☐	☐	
1926.1101 through 1926.1148 Toxic and Hazardous Substances	☐	☐	
Subpart J – General Environmental Controls			
1910.146 Permit-required confined spaces	☐	☐	
Mobile Equipment			
Rought terrain forklift	☐	☐	

I certify that the listed employees are competent persons, as defined and required by specific OSHA standards. They are individual(s) capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Name (print) _____ Company Name _____

Contractor Signature _____ Date _____

COMPRESSED AIR

1.0 Purpose

The purpose of this policy and procedure is to establish procedures for the protection of Haskell Corporation employees working with or on compressed air equipment.

Background

Air compressors are used for a variety of applications at Haskell Corporation. Air compressor storage tanks store excess air that is generated from the compressor, providing a convenient and readily accessible air source.

Because of the air pressure within these storage tanks, potential dangers can develop if certain practices and precautions are not followed. This safety policy and program provides guidelines for the safe use of air compressor storage tanks. It lists training requirements, guidelines for locating drains and traps, and requirements for gauges and valves.

2.0 Scope

The following policy and procedures pertain to the use of compressed air in Haskell Corporation fabrication shops and on all projects in the field.

3.0 Definitions

Air Distribution Lines – Rigid piping or flexible hose used to distribute compressed air to equipment and machinery

Air receivers / Air Compressor Storage Tank - Pressurized vessel that stores air generated from an air compressor

Drain Valve - A valve that is installed at the lowest point of an air compressor storage tank to provide for the removal of accumulated oil and water

Pressure regulation Devices - Valves, gauges and other regulating devices designed to prevent over pressurization of a compressed air system

Trap - A device which uses venting head pressure to purge the tank from condensed water

4.0 Procedure

4.1. General safety requirements for compressed air

The following precautions pertain to all use of compressed air:

4.1.1. All pipes, hoses, and fittings must have a rating of the maximum pressure of the compressor. Compressed air pipelines should be identified (psi) as to maximum working pressure.

4.1.2. Air supply shutoff valves should be located (as near as possible) at the point-of-operation.

4.1.3. Air hoses should be kept free of grease and oil to reduce the possibility of deterioration.

4.1.4. Hoses should not be strung across floors or aisles where they are liable to cause personnel to trip and fall. When possible, air supply hoses should be suspended overhead, or otherwise located to afford efficient access and protection against damage.

4.1.5. Hose ends must be secured to prevent whipping if an accidental cut or break occurs.

4.1.6. Pneumatic impact tools, such as riveting guns, should never be pointed at a person.

4.1.7. Before a pneumatic tool is disconnected (unless it has quick disconnect plugs), the air supply must be turned off at the control valve and the tool bled.

4.1.8. Compressed air must not be used under any circumstances to clean dirt and dust from clothing or off a person's skin.

4.1.9. Compressed air should not be used for cleaning purposes except where the pressure is reduced to less than 30 psi. and effective chip guarding and personal protective equipment is implemented.

4.1.10. Goggles, face shields or other eye protection must be worn by personnel using compressed air for cleaning equipment.

4.1.11. Static electricity can be generated through the use of pneumatic tools. This type of equipment must be grounded or bonded if it is used where fuel, flammable vapors or explosive atmospheres are present.

4.2. Safety Requirements for Operating & Maintaining Compressed Air Machinery:

All components of compressed air systems should be inspected regularly by qualified and trained employees. Maintenance superintendents should check with state and/or insurance companies to determine if they require their own inspection of this equipment.

Operators need to be aware of the following:

4.2.1. Air receivers:

The maximum allowable working pressures of air receivers should never be exceeded except when being tested. Only hydrostatically tested and approved tanks should be used as air receivers.

4.2.1.1. Air tanks and receivers should be equipped with inspection openings, and tanks over 36 inches in diameter should have a manhole. Pipe lug openings should be provided on tanks with volumes of less than five cubic feet.

4.2.1.2. The intake and exhaust pipes of small tanks, similar to those used in garages, should be made removable for interior inspections.

4.2.1.3. No tank or receiver should be altered or modified by unauthorized persons.

4.2.1.4. Air receivers should be fitted with a drain cock that is located at the bottom of the receiver.

4.2.1.5. Receivers should be drained frequently to prevent accumulation of liquid inside the unit. Receivers having automatic drain systems are exempt from this Requirement.

4.2.1.6. Air tanks should be located so that the entire outside surfaces can be easily inspected. Air tanks should not be buried or placed where they cannot be seen for frequent inspection.

4.2.1.7. Each air receiver should be equipped with at least one pressure gauge and an ASME safety valve of the proper design.

4.2.1.8. A safety (spring loaded) release valve should be installed to prevent the receiver from exceeding the maximum allowable working pressure.

4.2.1.9. Only qualified personnel should be permitted to repair air tanks, and all work must be done according to established safety standards.

4.2.2. Air Distribution Lines:

4.2.2.1. Air lines should be made of high quality materials, fitted with secure connections.

4.2.2.2. Only standard fittings should be used on air lines.

4.2.2.3. Operators should avoid bending or kinking air hoses.

4.2.2.4. Air hoses should not be placed where they will create tripping hazards.

4.2.2.5. Hoses should be checked to make sure they are properly connected to pipe outlets before use.

4.2.2.6. Air lines should be inspected frequently for defects, and any defective equipment repaired or replaced immediately.

4.2.2.7. Compressed air lines should be identified as to maximum working pressures (psi), by tagging or marking pipeline outlets.

4.2.3. Pressure regulation Devices

4.2.3.1. Only qualified personnel should be allowed to repair or adjust pressure regulating equipment.

4.2.3.2. Valves, gauges and other regulating devices should be installed on compressor equipment in such a way that cannot be made inoperative.

4.2.3.3. Air tank safety valves should be set no less than 15 psi or 10 percent (whichever is greater) above the operating pressure of the compressor but never higher than the maximum allowable working pressure of the air receiver.

4.2.3.4. Air lines between the compressor and receiver should usually not be equipped with stop valves. Where stop valves are necessary and authorized, ASME safety valves should be installed between the stop valves and the compressor.

4.2.3.5. The Safety valves should be set to blow at pressures slightly above those necessary to pop the receiver safety valves.

4.2.3.6. Blow off valves should be located on the equipment and shielded so sudden blow offs will not cause personnel injuries or equipment damage.

4.2.3.7. Case iron seat or disk safety valves should be ASME approved and stamped for intended service application.

4.2.3.8. If the design of a safety or a relief valve is such that liquid can collect on the discharge side of the disk, the valve should be equipped with a drain at the lowest point where liquid can collect.

4.2.3.9. Safety valves exposed to freezing temperatures should be located so water cannot collect in the valves. Frozen valves must be thawed and drained before operating the compressor.

4.2.3.10. All safety valves should be tested frequently and at regular intervals to determine whether they are in good operating condition. Safety valves, indicating/controlling devices, and other safety appliances need to be constructed, located, and installed so they cannot be rendered inoperative by any means.

4.2.4. Air Compressor Operation

4.2.4.1. Air compressor equipment should be operated only by authorized and trained personnel.

4.2.4.2. The air intake should be from a clean, outside, fresh air source. Screens or filters can be used to clean the air.

4.2.4.3. Air compressors should never be operated at speeds faster than the manufacturers' recommendation.

4.2.4.4. Equipment should not become overheated.

4.2.4.5. Moving parts, such as compressor flywheels, pulleys, and belts that could be hazardous should be effectively guarded.

4.2.5. Compressed Air Equipment Maintenance

4.2.5.1. Only authorized and trained personnel should service and maintain air compressor equipment.

4.2.5.2. Exposed, non-current-carrying, metal parts of compressor should be effectively grounded.

4.2.5.3. Low flash point lubricants should not be used on compressors because of its high operating temperatures that could cause a fire or explosion.

4.2.5.4. Equipment should not be over lubricated.

4.2.5.5. Gasoline or diesel fuel powered compressors should not be used indoors.

4.2.5.6. Equipment placed outside but near buildings should have the exhausts directed away from doors, windows and fresh air intakes.

4.2.5.7. Soapy water of lye solutions can be used to clean compressor parts of carbon deposits, but kerosene or other flammable substances should not be used. Frequent cleaning is necessary to keep compressors in good working condition.

4.2.5.8. The air systems should be completely purged after each cleaning.

4.2.5.9. During maintenance work, the switches of electrically operated compressors should be locked open and tagged to prevent accidental starting.

4.2.5.10. Portable electric compressors should be disconnected from the power supply before performing maintenance.

5.0 Regulations

5.1. Federal 1910.101

CONCRETE WORK

1.0 Purpose

This policy sets forth requirements to protect all Haskell Corporation employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926 -- Subpart Q.

The policy establishes requirements for protecting employees from accidents and injuries resulting from the:

- Premature removal of formwork
- Failure to brace masonry walls
- Failure to support precast panel
- Inadvertent operation of equipment
- Failure to guard reinforcing steel

2.0 Scope

This policy applies to employees and Sub-contractors engaged in concrete related construction, demolition, alteration, or repair, at client jobsites.

3.0 Definitions

- **Anchored Bridging:**
- **Bull float:** means a tool used to spread out and smooth concrete.
- **Formwork**: means the total system of support for freshly placed or partially cured concrete, including the mold or sheeting (form) that is in contact with the concrete as well as all supporting members including shores, re-shores, hardware, braces, and related hardware.
- **Lift slab**: means a method of concrete construction in which floor, and roof slabs are cast on or at ground level and, using jacks, lifted into position.
- **Limited access zone**: means an area alongside a masonry wall, which is under construction, and which is clearly demarcated to limit access by employees.
- **Precast concrete:** means concrete members (such as walls, panels, slabs, columns, and beams) which have been formed, cast, and cured prior to final placement in a structure.
- **Re-shoring:** means the construction operation in which shoring equipment (also called re-shores or re-shoring equipment) is placed, as the original forms and shores are removed, in order to support partially cured concrete and construction loads.
- **Shore:** means a supporting member that resists a compressive force imposed by a load.
- **Vertical slip forms:** means forms which are jacked vertically during the placement of concrete

- **Jacking operation:** means the task of lifting a slab (or group of slabs vertically from one location to another (e.g., from the casting location to a temporary (parked) location, or to its final location in the structure), during the construction of a building/structure where the lift-slab process is being used.
- **Competent person**: means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

4.0 Procedures

It is the policy of Haskell Corporation that all concrete activities are completed in accordance with

4.1. GENERAL REQUIREMENTS

- No construction loads should be placed on a concrete structure or portion of a concrete structure unless the employer determines that the structure or portion of the structure is capable of supporting the loads, based on:
    - Information received from a person who is qualified in structural design
    - Confirmation of curing, per ASTM Standards from a certified testing facility
- All protruding reinforcing steel, onto and into which employees could fall, should be guarded to eliminate the hazard of impalement.
- No employee (except those essential to the post-tensioning operations) should be permitted to be behind the jack during tensioning operations.
- Signs and barriers should be erected to limit employee access to the post-tensioning area during tensioning operations.
- No employee should be permitted to ride concrete buckets.
- No employee should be permitted to work under concrete buckets while buckets are being elevated or lowered into position.
- To the extent practical, concrete buckets should be routed so that no employee, or the fewest number of employees, is exposed to the hazards associated with falling concrete buckets.
- Rubber boots and gloves should be used when working with concrete. Boot uppers and glove cuffs should be duct taped to the pant legs and shirt sleeves, respectively, to eliminate exposure.
- No employee should be permitted to apply a cement, sand, and water mixture through a pneumatic hose unless the employee is wearing protective head and face equipment.

4.2. EQUIPMENT and TOOL requirements

Concrete mixers
• Concrete mixers with one cubic yard or larger loading skips should be equipped with the following:
○ A mechanical device to clear the skip of materials; **and**
○ Guardrails installed on each side of the skip
Power concrete trowels

• Powered and rotating type concrete troweling machines that are manually guided should be equipped with a control switch that will automatically shut off the power whenever the hands of the operator are removed from the equipment handles.
Concrete buggies
• Concrete buggy handles should not extend beyond the wheels on either side of the buggy.
Concrete pumping systems
• Concrete pumping systems using discharge pipes should be provided with pipe supports designed for 100 percent overload.
• Compressed air hoses used on concrete pumping system should be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized.
Concrete buckets
• Concrete buckets equipped with hydraulic or pneumatic gates should have positive safety latches or similar safety devices installed to prevent premature or accidental dumping.
• Concrete buckets should be designed to prevent concrete from hanging up on top and sides.
Tremies
• Sections of tremies and similar concrete conveyances should be secured with wire rope (or equivalent materials) in addition to the regular couplings or connections.
Bull floats
• Bull float handles used where they might contact energized electrical conductors, should be constructed of nonconductive material or insulated with a nonconductive sheath that's electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.
Masonry saws
• Masonry saw should be guarded with a semicircular enclosure over the blade.
• A method for retaining blade fragments should be incorporated in the design of the semicircular enclosure.

4.3. Lockout Tagout procedures

No employee should be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources have been locked out and tagged, in accordance with **Haskell Safety Policy**

Tags should read "Do Not Start" or similar language to indicate that the equipment is not to be operated.

4.4. CAST-IN-PLACE CONCRETE

General Requirements for Formwork

Formwork should be designed, fabricated, erected, supported, braced and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork. Formwork which is designed, fabricated, erected, supported, braced and

maintained in conformance with the Appendix to this section will be deemed to meet the requirements of this paragraph.

Drawings or plans, including all revisions, for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, should be available at the jobsite.

Shoring and Re-shoring

All Shoring equipment (including equipment used in re-shoring operations) should be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings.

Shoring equipment found to be damaged such that its strength is reduced to less than that required by Sections 6 and 7 of the American National Standard for Construction and Demolition Operations Concrete and Masonry Work, ANSI A10.9-1983, should not be used for shoring.

Erected shoring equipment should be inspected immediately prior to, during, and immediately after concrete placement.

Shoring equipment that is found to be damaged or weakened after erection, such that its strength is reduced to less than that required by Sections 6 and 7 of the American National Standard for Construction and Demolition Operations Concrete and Masonry Work, ANSI A10.9-1983, should be immediately reinforced.

The sills for shoring should be sound, rigid, and capable of carrying the maximum intended load.

All base plates, shore heads, extension devices, and adjustment screws should be in firm contact, and secured when necessary, with the foundation and the form.

Eccentric loads on shore heads and similar members should be prohibited unless these members have been designed for such loading.

Whenever single post shores are used one on top of another (tiered), the following specific requirements must be met, in addition to the general requirements for formwork:

- The design of the shoring should be prepared by a qualified designer and the erected shoring should be inspected by an engineer qualified in structural design.
- The single post shores should be vertically aligned.
- The single post shores should be spliced to prevent misalignment.
- The single post shores should be an adequately braced in two mutually perpendicular directions at the splice level. Each tier should also be diagonally braced in the same two directions.
- Adjustment of single post shores to raise formwork should not be made after the placement of concrete.
- Re-shoring should be erected, as the original forms and shores are removed, whenever the concrete is required to support loads in excess of its capacity.

Vertical Slip Forms

The steel rods or pipes on which jacks climb or by which the forms are lifted should be:

- Specifically designed for that purpose; and
- Adequately braced where not encased in concrete.

Forms should be designed to prevent excessive distortion of the structure during the jacking operation.

All vertical slip forms should be provided with scaffolds or work platforms where employees are required to work or pass.

Jacks and vertical supports should be positioned in such a manner that the loads do not exceed the rated capacity of the jacks.

The jacks or other lifting devices should be provided with mechanical dogs or other automatic holding devices to support the slip forms whenever failure of the power supply or lifting mechanism occurs.

The form structure should be maintained within all design tolerances specified for plumb during the jacking operation.

The predetermined safe rate of lift should not be exceeded.

Reinforcing Steel

Reinforcing steel for walls, piers, columns, and similar vertical structures should be adequately supported to prevent overturning and to prevent collapse.

Employers should take measures to prevent unrolled wire mesh from recoiling. Such measures may include, but are not limited to, securing each end of the roll or turning over the roll.

Removal of Formwork

Forms and shores (except those used for slabs on grade and slip forms) should not be removed until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination should be based on compliance with one of the following:

- The plans and specifications stipulate conditions for removal of forms and shores, and such conditions have been followed, or
- The concrete has been properly tested with an appropriate ASTM standard test method designed to indicate the concrete compressive strength, and the test results indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.

Re-shoring should not be removed until the concrete being supported has attained adequate strength to support its weight and all loads in place upon it.

4.5. PRECAST CONCRETE

Precast concrete wall units, structural framing, and tilt-up wall panels should be adequately supported to prevent overturning and to prevent collapse until permanent connections are completed.

Lifting inserts which are embedded or otherwise attached to tilt-up precast concrete members should be capable of supporting at least two times the maximum intended load applied or transmitted to them.

Lifting inserts which are embedded or otherwise attached to precast concrete members, other than the tilt-up members, should be capable of supporting at least four times the maximum intended load applied or transmitted to them.

Lifting hardware should be capable of supporting at least five times the maximum intended load applied transmitted to the lifting hardware.

No employee should be permitted under precast concrete members being lifted or tilted into position except those employees required for the erection of those members.

4.6. LIFT-SLAB OPERATIONS

It is the standard policy for Haskell Corporation to sub-contract this type of concrete work, however, the following guidelines should be observed during lift-slab operations within the control of Haskell Corporation.

Planning

Lift-slab operations should be designed and planned by a registered professional engineer who has experience in lift-slab construction.

Such plans and designs should be implemented by the employer and should include detailed instructions and sketches indicating the prescribed method of erection.

These plans and designs should also include provisions for ensuring lateral stability of the structure during construction.

Equipment

Jacking equipment should be capable of supporting at least two and one-half times the load being lifted and the equipment should not be overloaded. All jacks must meet the following limitations:

- Jacks/lifting units should be marked to indicate their rated capacity
- Jacks/lifting units should not be loaded beyond their rated capacity

For the purpose of this provision, jacking equipment includes any load bearing component which is used to carry out the lifting operation(s).

Such equipment includes, but is not limited, to the following:

- Threaded rods
- Lifting attachments
- Lifting nuts
- Hook-up collars

- T-caps
- Shear heads
- Columns
- Footings

Jacks/lifting units should be designed and installed so that they will neither lift nor continue to lift when they are loaded in excess of their rated capacity.

Jacks/lifting units should have a safety device installed which will cause the jacks/lifting units to support the load in any position in the event any jacklifting unit malfunctions or loses its lifting ability.

Jacking operations should be synchronized in such a manner to ensure even and uniform lifting of the slab. During lifting, all points at which the slab is supported should be kept within ½ inch of that needed to maintain the slab in a level position.

If leveling is automatically controlled, a device should be installed that will stop the operation when the ½ inch tolerance set forth in paragraph (g) of this section is exceeded or where there is a malfunction in the jacking (lifting) system.

If leveling is maintained by manual controls, such controls should be located in a central location and attended by a competent person whole lifting is in progress. In addition to meeting the definition in Section V-J of this policy, the competent person must be experienced in the lifting operation and with the lifting equipment being used.

The maximum number of manually controlled jacks/lifting units on one slab should be limited to a number that will permit the operator to maintain the slab level within specified tolerances of paragraph (g) of this section, but in no case should that number exceed 14.

When making temporary connections to support slabs, wedges should be secured by tack welding, or an equivalent method of securing the wedges to prevent them from falling out of position. Lifting rods may not be released until the wedges at that column have been secured.

All welding on temporary and permanent connections should be performed by a certified welder, familiar with the welding requirements specified in the plans and specifications for the lift-slab operation.

Load transfer from jacks/lifting units to building columns should not be executed until the welds on the column shear plates (weld blocks) are cooled to air temperature.

Jacks/lifting units should be positively secured to building columns so that they do not become dislodged or dislocated.

Equipment should be designed and installed so that the lifting rods cannot slip out of position, or locking or blocking devices used so that a positive connection between the lifting rods and attachments will prevent components from disengaging during lifting operations.

Execution

Non-Essential Employees are to vacate the building/structure during jacking operations unless an independent registered professional engineer, other than the engineer who designed and planned the lifting operation, has determined that the building/structure has been sufficiently reinforced to insure the integrity of the building/structure. One method to comply with this provision is to ensure that continuous bottom steel is provided in every slab and in both directions through every wall or column head area. (Column head area means the distance between lines that are one and one-half times the thickness of the slab or drop panel. These lines are located outside opposite faces of the outer edges of the shearhead sections. The amount of bottom steel should be established by assuming loss of support at a given lifting jack and then determining the steel necessary to carry, by catenary action over the span between surrounding supports, the slab service dead load plus any service dead and live loads likely to be acting on the slab during jacking. In addition, the surrounding supports must be capable of resisting any additional load transferred to them as a result of the loss of support at the lifting jack considered.

> **NOTE**: Due to the hazardous nature of this work, only those employees, who are essential to the jacking operation, should be permitted in the structure while any jacking operation is taking place unless the building/structure has been reinforced sufficiently to ensure its integrity during erection.

The phrase "reinforced sufficiently to ensure its integrity" means that a registered professional engineer, independent of the engineer who designed and planned the lifting operation, has determined from the plans that if there is a loss of support at any jack location, that loss will be confined to that location and the structure as a whole will remain stable.

Under no circumstances should any employee who is not essential to the jacking operation be permitted to pass near or immediately beneath a slab while it is being lifted.

A jacking operation begins when a slab or group of slabs is lifted, and ends when the slabs are secured (with either temporary connections or permanent connections).

5.0 Regulations

- Federal 29CFR 1926 Subpart Q
- Washington WAC 296-155-680
- California Title-8 Article 29

CONFINED SPACES

1.0 Purpose

It is management's responsibility to ensure the health and safety of our employees while performing work in confined spaces and to provide the necessary training for our supervisors and craft personnel as to the hazards associated with this type of work, while maintaining full compliance with State and Federal safety regulations.

2.0 Scope

This program applies to all Haskell Corporation projects, including their Sub-contractors and should be used prior to entry into any confined space.

3.0 Definitions

The following definitions establish the essential understanding of 'confined space' work for Haskell Corporation. Without exception, all 'confined spaces' will fit into one definition or the other.

- **NPCS- Non-Permit Confined Space**: means a space that:
  - Is large enough for an employee to enter and perform assigned work
  - has limited means or restricted means of entry or exit
  - Is not designed for continuous occupancy
- **PRCS-Permit Required Confined Space**: means a space that meets the definition of a NPCS **and** has one or more of the following characteristics:
  - Contains or has the potential to contain a hazardous atmosphere
  - Contains a material that has the potential for engulfing an entrant
  - Has an internal configuration that might cause an entrant to be entrapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to smaller cross section
  - Contains any other recognized serious safety or health hazards

- **Acceptable entry conditions**: The conditions that must exist in a Confined Space to allow entry and ensure that employees involved can safely enter into and perform work within the space.
- **Attendant**: Means a trained individual stationed outside one or more permit required confined spaces, who monitors the authorized entrants and who performs only those duties assigned to ensure the safety of the workers within the confined space.
- **Authorized entrant**: A trained employee who is authorized to enter a permit space.

- **Blanking or blinding**: The absolute closure of a pipe, line, or duct by the installation of a solid plate (such as a spectacle blind or a skillet blind) or line-cap, which is capable of withstanding the maximum potential pressure of the pipe, line, or duct without leakage.
- **Emergency**: Any occurrence (including any failure of hazard control or monitoring equipment) or an event either internal or external to the confined space that could endanger entrants.
- **Entry**: The action by which a person passes through an opening into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
- **Entry permit**: The written or printed document that is provided by the employer to allow and control entry into a permit space.
- **Entry Supervisor**: The person (such as the Construction Superintendent, foreman, etc.) responsible for determining if acceptable entry conditions are present at a confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.
    - *NOTE: An entry Supervisor also may serve as an attendant or as an Authorized Entrant, as long as that person is trained and equipped as required by this section for each role he or she fills. Also the duties of Entry Supervisor may be passed on from one individual to another during the course of an entry operation.*
- **Hazardous Atmosphere**: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is escape, unaided from a confined work space), injury or acute illness from one or more of the following causes:
    - Flammable gas, vapor or mist in excess of 10% of its lower explosive limit (LEL).
    - Airborne combustible dust at concentration that meets or exceeds its LEL;
        - *NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of five (5) feet or less.*
    - Atmospheric oxygen concentration below 19.5% or above 23.5%.
    - Atmospheric concentration of any substance, which could result in employee exposure in excess of its permissible exposure, limit a defined by OSHA.
    - Any other atmospheric condition that is immediately dangerous to life or health (IDLH).
- **Inert Entry:** The action by which a person passes through an opening into a confined space that has been filled or is filled with an inert gas such as nitrogen. This constitutes an IDLH environment where proper set-up and execution of work and safety systems is critical. In many process facilities where Haskell Corporation performs work, Inert Entries are used for the unloading and loading of potentially pyrophoric catalyst, packing or desiccants. These entries are done in nitrogen environments.
- **Isolation**: The process by which all potential energy sources are removed from or controlled within a Confined Space. Isolation may include such means as: Blanking and Blinding, or removal of sections of lines, pipes, or ducts; use of a double block and bleed system; lock-out and tag-out of electrical energy sources; or blocking or disconnecting all mechanical linkages.
- **Oxygen deficient atmospheres**: Oxygen deficient atmospheres are deemed to exist if the atmosphere contains ***less than 19.5%*** by volume

- **Oxygen enriched atmospheres**: Oxygen enriched atmospheres are deemed to exist if the atmosphere contains ***more than 23.5%*** by volume
- **Prohibited condition**: Any condition in a confined space that is not allowed by the permit during which entry is authorized.
- **Rescue service**: The personnel designated to rescue employees from confined spaces.
- **Retrieval system**: The equipment (including retrieval line, full body harness, wristlets, if appropriate, and a lifting device, or anchor) used for non-entry rescue of persons from spaces
- **Testing**: The process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit.

4.0 Procedures

It is the policy of Haskell Corporation to ensure the safety of all personnel during the completion of work in NPCS or PRCS. This policy establishes the minimum standard for establishing acceptable entry conditions that will protect all personnel who may enter a confined workspace, which includes compliance with applicable State and Federal safety regulations.

This policy includes, but is not limited to provisions for: permitting, atmospheric testing, ventilation requirements, isolation requirements, hazard evaluation, personal protective equipment (PPE), entry planning, emergency and rescue procedures, employee training and exposure monitoring.

Haskell Corporation should provide all the necessary equipment for ventilating, testing, monitoring, communications, lighting, barriers or shields, safe ingress/egress, rescue equipment, and any PPE at no cost to employees. Haskell Corporation should maintain that equipment properly, and ensure that employees use that equipment properly.

4.1. Training

Training should be provided for all employees whose duties include working in or around a Confined or Inert Space. Haskell Corporation should document that the required training has been accomplished. The documentation should include employee name, trainer signature/initials, and dates of training. Training documentation should be made available to affected employees & their authorized representative.

Prior to work in permit required spaces, or any space that is IDLH, employees should be trained of their duties as Entry Supervisor, authorized entrant, and as confined space attendant. The initial training should be performed during the Haskell Corporation new hire/rehire orientation. Additional training should be conducted annually for affected employees, prior to a change in assigned duties, if a new hazard has been created or hazardous changes have occurred. All training should be documented.

4.2. Hazard Analysis

The Site Safety Manager and General Foreman or their designee should perform a written Hazard Assessment specific to the vessel being entered and the work being undertaken. The Hazard Assessment must to address all the risks associated with the work such as: setting up for an inert entry, necessary equipment at the work site, access and egress to the equipment, provisions for adequate lighting, control of employee access, lifting and rigging activities, removal of vessel internals, and installation of warning signs.

The Site safety Manager, General Foreman or their designee will communicate the Hazard Assessment to all affected personnel.

4.3. Preparation of confined spaces

The entry Supervisor should check that the following steps have been taken to prepare the space before anyone enters.

1. Notify any and all affected departments of service interruption.
2. All confined space work areas must be isolated by posting a danger sign or other equally effective means. The space should be purged, flushed or ventilated as necessary to eliminate or control atmospheric hazards. Utilize barriers or other means to protect entrance to unauthorized personnel.
3. Coordinate entry operations with the host employer, when both host employer and contractor personnel will be working in or near confined space and inform the host employer of any hazards confronted or created.
4. Complete the lockout /tag-out procedures. *See lockout / tag-out procedure.*
5. Before entering a confined space, the content must be drained and clean-out doors opened where provided. Further, all lines / pipes supplying the confined space must be isolated inoperable which may include, but not limited to, blinding or securing valves by means of a double block and bleed in the closed position.
6. Prior to issuing the CONFINED SPACE ENTRY PERMIT, the owner or user of the confined space must furnish a Safety Data Sheet (SDS) for each of the chemicals, which were recently used in the confined space.
7. Ensure pedestrian, vehicle, or other barriers as necessary to protect entrants from external hazards are in place; and
8. Verify that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry
9. Prior to issuance of the permit, appropriate tests of the atmosphere must be made by authorized supervisory personnel from outside the confined space to determine if:
    a. Oxygen concentration must be between 19.5 – 23.5 percent by volume.
    b. Flammable gases and vapors, which must be lower than 10 percent of the lower explosive limit (LEL).
    c. Potentially toxic air contaminants cannot meet or exceed its PEL.

These tests, for the above conditions, must be done in the order given. Tests must be made with appropriate monitoring equipment. The authorized supervisory personnel required to monitor the

atmosphere must be trained in proper use, calibration and care of monitoring instruments and must remain at the site until all monitoring is completed.

Any employee who enters the space, or that employee's authorized representative, should be provided an opportunity to observe the pre-entry testing.

Any affected entrant or that employee's authorized representative may request that the space be reevaluated because the entrant or representative has reason to believe that the evaluation of that space may not have been adequate.

If the tests indicate the atmosphere is safe, but the work may produce a hazardous atmosphere from such processes as cutting, welding or use of cleaners and solvents, entry without appropriate respiratory protection will only be permitted subject to additional atmospheric testing and monitoring by authorized personnel.

If tests indicate that the atmosphere is unsafe, the confined space must be ventilated until the hazardous atmosphere is removed, prior to employee entry.

Entrants may participate in, or should at least review any air monitoring results, prior to entry

If after ventilating the space, tests indicate a non-respirable atmosphere (less than 19.5 percent or above 23.5 percent oxygen) or levels of toxic contaminants hazardous to health, no person will be allowed to enter unless equipped with an approved air-line respirator or a self-contained breathing apparatus (SCBA), safety harness and lifeline and has been properly trained in that use of the equipment.

Verify that the Entry Supervisor, attendant and all entrants have current training

A form of communication has been established with the entry team

An attendant is located outside the space for the duration of the entry operation

A rescue plan is in place and at least one employee on site is trained in first-aid CPR

4.4. Entry Requirements

A properly completed Confined Space Entry Permit must be posted at the entrance to the space BEFORE anyone is allowed to enter. If the client/confined space owner issues a permit, a Haskell Corporation permit will not need to be issued in parallel, as long as all Federal and State regulations are met as defined by CFR 1910.146 and WAC 296-62-145 and is approved by the site Safety Supervisor. All entrants should read and understand the requirements of the permit.

Atmospheric testing before entry as defined in sections 7 through 10 of Preparation of Confined Spaces.

Personal Protective equipment such as but not limited to basic PPE, coveralls, impervious gloves, boots, face, and eye protection must be worn as required by the nature of the operation to be performed.

Specific clothing may be required if the contaminant can cause dermatitis, chemical burns, or be absorbed through the skin. All necessary PPE should be provided to the employee at no cost to them.

Permits should expire when a predetermined time listed on the permit has elapsed or when work is completed. Permits may be canceled at any time if conditions in the space change and it becomes unsafe to enter.

If multiple employers work inside the same space, they should coordinate with each other as to the nature of their work, the intended duration of that work so that they should not endanger employees of the other employer.

In potentially explosive or flammable atmosphere, non-sparking tools and portable vapor proof electric lighting, not exceeding 12 volts must be used. Smoking, open flames, cutting and welding will be prohibited.

Entry requirements should be reviewed when it has been determined that a hazard was not covered on the permit, if conditions inside or outside the permit change, employee complaints, if there has been an injury or a near miss, or there has been an unauthorized entry.

A list of other operational equipment that might be used with this program, but not limited to, is as follows:

- A calibrated combustible gas/oxygen/toxic survey meter or individual meters to sample for combustible atmospheres and oxygen deficiency.
- Supplied air-breathing (SAR) apparatus, such as a self-contained respirator with full face piece operating in pressure demand mode (SCBA), or TYPE-C supplied-air respirator with full face piece operating in pressure demand mode with an emergency bottle must be worn in atmospheres immediately dangerous to life and health (IDLH).
- A supplied air TYPE-C respirator, in either continuous flow or pressure demand mode, may be used in areas, which are not immediately hazardous to life and from which the wearer can escape.
- Harness and lifelines: Harness should be capable of retrieving an inert body in an upright position. A full body harness with a single lifting ring attached in the upper back, or with dual lifting rings attached to the shoulder straps, is recommended in open areas. Where egress through narrow openings is necessary, wristlets with attached lifting rings may be required instead of a body harness. Sufficient lifelines of minimum one-half inch manila rope may be required to provide constant connection between the worker in the confined space and the attendant outside.
- Ventilation: A portable blower with a minimum of 600 CFM 1.5 inches of static pressure may be required to supply air and ventilate the confined space prior to and during occupancy.

4.5. Emergency and Rescue Procedures

Planning for an emergency is a top priority for confined space entry work. A rescue team must be designated for all confined space entry operations. The rescue team may include trained Haskell

Corporation personnel, an outside rescue service agency, or client personnel trained for emergency rescue within their specific facility. The Entry Supervisor is required to make the determination of the rescue team make up and list it on the entry permit. Only personnel trained in rescue may enter the space for the purpose of rescue. Whenever a confined space entry poses an IDLH atmosphere, rescue services and systems MUST be on site and at the ready to respond. If outside agencies are designated for emergency services they should be noted on the site specific safety plan and contacted to ensure rescue abilities.

In the event of a sudden life-threatening or otherwise potentially dangerous situation requiring immediate action which involves entry into a confined space as defined in this program, and in the absence of time to complete testing and ventilation procedures, the atmosphere will be considered as unsafe to enter without the use on approved air-supplied breathing device.

Communication procedure(s) must be established prior to any confined space entry between the attendant and the authorized entrants. The options for communication include but are not limited to radio, voice, and whistle or emergency air horn.

The attendant must be able to initiate rescue procedures if necessary by calling for assistance on the radio, emergency air horn, emergency alarm, or emergency telephone numbers within the facility. The attendant should never attempt rescue or enter in the confined space.

The preferred way of leaving a space, when conditions deteriorate is self-rescue, where entrants evacuate the space with no assistance- at the first sign of trouble.

To facilitate non-entry rescue, all employees performing work inside a confined space should be required to us e a full body harness attached to a lifeline secured outside the confined space and the other end secured to the back D ring of the harness. State and Federal regulations allow two (2) exceptions to this requirement as follows:

- If such equipment will increase the overall risk of injury to the workers within the confined space
- If the use of such equipment would not assist in rescue- An example of this would be working from scaffolding within a confined space or towers and vessels with internal baffles.

Employees injured inside a confined space and transported to an outside medical facility should have the Safety Data Sheet (SDS) pertaining to any potential exposure transported with them to the facility.

The Entry Supervisor, the attendant, all authorized entrants and any other personnel that may be associated with the confined space entry work, should have a clear understanding of the emergency procedures relating to the entry, as well as emergency procedures that may occur outside the confined space that would require immediate evacuation of the confined space. The required rescue equipment should be specified on the Entry Permit and in place prior to entry.

4.6. Duties of Confined Space Entry Team

4.6.1. Entry Supervisor

The Entry Supervisor is the person that ensures that conditions are safe. Before entry, the supervisor verifies that the permit is filled out completely and that all steps are listed on it are taken and then signs the permit. The Entry Supervisor or their designee should be responsible for ensuring that all entrants are out of the Permit Space then close out the permit at the end of each shift or when the work has been completed.

4.6.2. Attendant

The attendant is a trained individual stationed outside one or more Confined Space openings, who monitors the authorized entrants and who performs only those duties assigned within this policy and procedure. The attendant duties include the following:

1. Locates the nearest emergency alarm system to the particular confined space being entered.
2. Maintains a clear understanding of the emergency procedures specific to his or her location.
3. If an incident occurs to workers inside the confined space, the primary function of the attendant is to get help.

ATTENDANTS ARE NOT AUTHORIZED TO ATTEMPT ENTRY RESCUE

4. Maintain a continuous and accurate count of authorized entrants working within the confined space and ensure that an entrant roster is accurate, while refusing to allow unauthorized entrants into the confined space.
5. Obtains any necessary information about the hazards that may be encountered within the confined space and understands all of the conditions of the confined space entry permit and has signed the permit.
6. Maintains communication with the entrants.
7. Only under extreme circumstances should a confined space attendant monitor more than 1 confined space. This provision should be planned prior to entry activities.

4.6.3. Authorized Entrant

The authorized entrant is an individual that has received training, testing, and medical certifications (respiratory use etc.) associated with working in a confined space and who has been assigned to do so by their supervisor and approved by the Entry Supervisor. The duties of the authorized entrant include but are not limited to the following:

1. Have a clear understanding of the required PPE (its use and limitations) while performing work within the confined space.
2. Ensures that he/she has complete understanding of the permit requirements, hazards associated with the work, emergency procedures, rescue procedures, communication systems/procedures, work scope and the required tools.
3. Maintain communication with the Attendant to enable the Attendant to monitor the conditions within the confined space and to evacuate the space if the conditions warrant.

4. Alerting the Attendant whenever the Entrant recognizes any of the entry team members with warning signs or symptoms of heat stress, fatigue or any other condition that may lead to injury.
5. Exit the confined space as safely and quickly as possible whenever they are instructed to do so by the Attendant, the Entry Supervisor or the Safety Department, or if an air quality monitor within the confined space goes into the alarm mode, any other evacuation is sounded, or if any conditions within the space change from when the permit was first issued.
6. Inform Supervision and the client of any problems encountered or associated with the confined space entry.

4.7. Recordkeeping

All necessary records should be maintained for a minimum of 1 year. The permit required confined space program should be reviewed annually and the program should be revised as necessary.

4.8. Reclassification of PRCS

A space classified a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:

1. If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.
2. If it is necessary to enter the permit space to eliminate hazards, such entry should be performed under PRCS policy. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.

NOTE: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.

3. The Entry Supervisor should document the basis for determining that all hazards in a permit space have been eliminated through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification should be made available to each employee entering the space or to that employee's authorized representative.
4. If hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space should exit the space. The Entry Supervisor should then reevaluate the space and determine whether it must be reclassified as a permit space.

4.9. Procedure Review

This confined space procedure should be reviewed annually using canceled permits and other pertinent documents within 1 year after each entry. The program will be revised as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

5.0 Regulations

- Federal 29CFR
- Washington WAC 296-809
- California Title-8

CRANE SAFETY

1.0 Purpose

Haskell Corporation has developed these written guidelines to ensure safe operation of Crawler, Wheel Mounted, Floating, Overhead Cranes, and Derricks. The intent of these policies is to minimize the risk of injury to workers and prevent property damage by adhering to State and Federal regulations and standards as well good industry practice pertaining to the operation of cranes.

2.0 Scope

The Haskell Crane Safety Policy applies to all situations where Construction Cranes are in operation by Haskell employees.

3.0 Definitions

ANGLE INDICATOR (BOOM) - An accessory that measures the angle of the boom to the horizontal.

APPOINTED - Assigned specific responsibilities by KBR or their representative.

AXIS OF ROTATION - The vertical axis around which the crane superstructure rotates.

THE BASE - The traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawler, or wheel platform.

BOOM - A member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.

BOOM ANGLE - The angle between the longitudinal centerline of the boom and the horizontal.

BOOM HOIST - A hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.

BOOM STOP - A device used to limit the angle of the boom at the highest position.

CAB - A housing that covers the rotating superstructure machinery and/or operator's station. On truck-cranes, a separate cab covers the driver's station.

COUNTERWEIGHT - A weight used to supplement the weight of the machine in providing stability for lifting working loads.

CRANE OPERATOR - Directly controls the crane's functions.

CRANE OWNER - Has custodial control of a crane by virtue of lease or ownership.

CRANE USER - Arranges the crane's presence on a worksite and controls its use there.

CRAWLER CRANE - Consists of a rotating superstructure with an engine, operating machinery, and boom, mounted on a base, equipped with crawler treads for travel. Its function is to hoist and swing loads at various radiuses.

DESIGNATED - Selected or assigned by their supervisor as being qualified to perform specific duties.

DRUM - The cylindrical members around which ropes are wound for raising and lowering the load or boom.

JIB - An extension attached to the boom point to provide added boom length. The jib may be in line with the boom or offset to various angles.

LIFT DIRECTOR - Directly oversees the work being performed by a crane and the associated rigging crew.

LOAD (WORKING) - The external load, in pounds, applied to the crane, including the weight of load attaching equipment such as load blocks, shackles, and slings.

LOAD BLOCK (LOWER) - Means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

LOAD BLOCK (UPPER) - The assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.

LOAD HOIST - A hoist drum and rope reeving system used for raising and lowering loads.

LOAD RATINGS - Crane ratings in pounds established by the manufacturer.

LOCOMOTIVE CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radiuses.

OUTRIGGERS - Extendable or fixed metal arms, attached to the mounting base that rest on supports at the outer ends.

ROPE - Refers to a wire rope unless otherwise specified.

SIDE LOADING - A load applied at an angle to the vertical plane of the boom.

SITE SUPERVISOR - Exercises supervisory control over the worksite on which a crane is being used and over the work that is being performed on that site.

SUPERSTRUCTURE - The rotating upper frame structure of the machine and the operating machinery mounted thereon.

TRUCK CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on an automotive truck equipped with an engine for travel. Its function is to hoist and swing loads at various radiuses.

WHEEL MOUNTED CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on a base or platform equipped with axles and rubber wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radiuses.

WHIPLINE (AUXILIARY HOIST) - A separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.

WINCH HEAD - A power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

4.0 Procedures

4.1. Inspections

All cranes should be inspected daily prior to any lifts. The crane operator should maintain the crane's logbook. All mobile cranes and boom trucks should be equipped with an adequate fire extinguisher and the operator should be trained on its use. The operator should refuse to operate the equipment when he/she knows it is unsafe, and should consult a Supervisor immediately. Daily documented inspections should include but may not be limited to the following:

- Lubrication, fuel, oil, hydraulic oil reservoirs, water or coolant, etc.
- Air tanks
- Batteries
- Inspect all brakes, including load brakes and clutches for proper operation.
- Check all operating mechanisms, such as hooks, boom, drums, outrigger components, limit switches and safety devices.
- Inspect all rigging hardware, wire ropes, sheaves and drums.
- Visually inspect all components of the machine used in the lifting, swinging or lowering of the load or boom, for any defects, which may result in an unsafe operation.
- Visual inspection of the boom and jib for any evidence of cracks or physical damage.

4.2. Periodic Inspections

A detailed and documented inspection of the crane should be conducted periodically, at least monthly, and should include the requirements of the daily inspection section, as well as items listed below but should not be limited to:

- Hydraulic and pneumatic hoses, fittings and tubing.
- All welded connections for cracks.
- Steering, braking and locking devices for proper operation.
- Cracked or worn pins, gears, rollers and locking devices.
- Excessive wear on clutches and brakes.
- Entire crane for structural damage or fatigue
- Indicator systems and power plants for proper operation.

4.3. Annual Inspection

All cranes and boom trucks should receive an annual inspection and certification by an approved and licensed agency, with certifications provided to Haskell Corporation upon request.

4.4. Load Charts

All manufacturers' rated capacity load charts for each crane should remain with each crane readily available for the operator.

4.5. Maintenance

All maintenance of cranes and boom trucks cranes should be performed in accordance with the manufacturer's recommendations. The key word for our maintenance program is "preventative". All records should be kept with the crane or at the home office. Only trained and qualified personnel should

make any necessary repairs. Any defects found that should be necessary to take the crane out of service, then a DANGER DO NOT OPERATE tag should be affixed to the crane.

4.6. Low Temperature/High Wind Condition Operations

4.6.1. Scope

If the temperature is lower than 35 F, or the wind, including gust, is greater than 25 MPH, a systematic approach for determining the safe operation of equipment will be established.

4.6.2. Equipment

This scope applies to mechanical and hydraulic cranes, side booms, loaders, forklifts, and man lifts. This type of equipment should be operated within the constraints of recognized “Good Management Practices” established by the manufacturer’s operating recommendations.

Safety devices are required to be on all equipment and must be in proper working order before operations begin. If any of the devices are not in proper working order the equipment must be taken out of service and operations must not resume until the device is working properly again. Examples of safety devices may include: crane level indicator, boom stops, jib stops, foot pedal brake locks, horns, etc.

All manufacturer procedures applicable to the operational functions of equipment, including its use with attachments, must be complied with.

The manufacturer's procedures and prohibitions must be complied with when assembling and disassembling equipment.

The operator should have ready access to procedures applicable to the operation of the equipment located in the cab of the equipment. Procedures include rated capacities (load charts), recommended operating speeds, special hazard warnings, instructions and operator's manual.

Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons ("A/D director").

4.6.3. Application

Operation of load-bearing equipment and cranes should be reviewed for equipment limitations at or below ambient temperatures and wind velocities as described in the “Scope section above. The intent is not to prohibit the use of this equipment at these temperatures, but to carefully review the work, procedures, and equipment limitations. Official temperatures should be obtained at the nearest local weather station.

4.6.4. Responsibilities Duties of assigned personnel

While the organizational structure of various construction activities may differ, the following duties are described here for purposes of assignment. All assignments listed below must be assigned in the worksite organization. (A single individual may perform one or more of these assignments concurrently.)

The designations listed below are described in WAC 296-155-53401 which can be found on the Haskell website by using this link.

- Crane owner: Has custodial control of a crane by virtue of lease or ownership.
- Crane user: Arranges the crane's presence on a worksite and controls its use there.
- Site supervisor: Exercises supervisory control over the worksite on which a crane is being used and over the work that is being performed on that site.
- Lift director: Directly oversees the work being performed by a crane and the associated rigging crew.
- Crane operator: Directly controls the crane's functions.

Regardless of temperature or wind velocity, the on-site responsible individual will suspend the lifting operation if personnel or equipment safety is questionable. Individual job sites may develop operating guidelines that are more restrictive than these outlines.

4.6.5. Review Criteria

The equipment must not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met.

When evaluating the safety of work at temperatures below the manufacturer’s recommended operating guidelines, the following should be reviewed:

Hydraulic fluid – ensure that the grade of hydraulic fluid is appropriate for use in the low temperature environment.

A competent person must conduct a visual inspection of equipment prior to each shift. The inspection must consist of observation for apparent deficiencies. Some inspection items should include control mechanisms, pressurized lines, hooks and latches, wire rope, electrical apparatus, tires (when used), and ground conditions.

Hooks or other attachment assemblies should be capable of being closed and locked to eliminate the hook throat opening. Alternatively, shackles and bolt pins may be used.

Pre-operational inspections should be in accordance with manufacturer recommendations and should be documented. Special attention should be placed on all hoisting mechanisms, including wire ropes and associated rigging. Any special preparations identified by the manufacturer for operating load-bearing equipment in low temperatures should also be documented.

Prior to performing work a 20-30 minute warm-up period for the equipment should be conducted. This allows a check of all moving components and ensures that appropriate hoses and seals are flexible.

4.7. Operators

4.7.1. Cranes must only be operated by the following qualified employees:

4.7.1.1. Designated Persons (Qualified Operator).
4.7.1.2. Trainees under the direct supervision of a designated person.
4.7.1.3. Maintenance and test workers (when it is necessary in the performance of their duties).
4.7.1.4. Inspectors (Crane).

Only the employees specified above can enter a crane cab, with the exception of supervisors and those persons authorized by supervisors.

All crane operators should meet the requirements of WAC 296-24-23529 to ensure that they are not limited by any health or physical restrictions and must furnish supporting documentation upon request. All crane operators should be adequately trained and experienced on the equipment to be operated. The operator is generally responsible for the safety of the crane operation as soon as the load is lifted clear of the ground. Due to this responsibility, whenever there is reasonable cause to believe that the lift might be unsafe, the operator must refuse to lift until the concern has been reported to the supervisor, any hazards rectified and safety conditions assured. Safety should always be the operator's most important concern.

4.8. Riggers

Personnel responsible for rigging should be qualified and proficient in the proper use of slings, ropes, cables and related equipment such as shackles, "crosby" clips, eyebolts, etc. Riggers should be knowledgeable of proper rigging practices for determining the "weight of the load", and the center of gravity.

One designated person should direct the operator with "industry standard" hand signals. If more than one person is directing the operator with hand signals, the operator should cease all crane operations until it is determined which one person is responsible for directing the crane operation.

4.9. Signaling Cranes

A signal person must be provided for the following situations:

4.9.1. The point of operation is not in full view of the crane operator
4.9.2. The view is obstructed when the equipment is traveling
4.9.3. The operator or the person handling the load determines it is necessary due to site specific concerns
4.9.4. The use of a two-way radio may be necessary to use for communication in lieu of hand signals. Any radio communication that is to be given for the purpose of signaling the crane during a crane lift should be on a predetermined, dedicated channel for the

purpose of that crane lift only. The device used to transmit signals must be tested on site before beginning operations to ensure that the signal transmission is effective, clear and reliable.

4.9.5. Signals to operators must use the hand, voice, audible method. Means of transmitting the signals (direct line of sight, radio, etc) must be suitable and appropriate for the site conditions. Standard hand signals compliant with OSHA standards should be used.

4.9.6. If the ability to transmit signals is interrupted at any time, the operator must safely stop operations requiring signals until communication is reestablished and a proper signal is given and understood.

Each signal person must:

4.9.7. Know and understand the type(s) of signals used;

4.9.8. Be competent in the application of the type of signals used;

4.9.9. Have a basic understanding of equipment operation and limitations, including the crane dynamics of swinging and stopping loads, boom deflection from hoisting loads;

4.9.10. Demonstrate the qualification through an oral or written test, and practical test.

Only one person should give signals to a crane at a time, unless the emergency stop signal is given due to safety issues.

4.10. Rigging General Guidelines

All rigging equipment should be inspected for damage or defects by a competent person prior to each use and periodically during use to ensure it is safe. Damaged or defective rigging should be immediately removed from service.

A suspended load should never be left unattended. Suspended loads should be kept clear of all obstructions.

All employees should be kept clear of loads about to be lifted and of suspended loads. No person should position themselves under a suspended load. Loads should not be swung over the heads of workers in the area. Tag lines should be used to control loads to keep them from swinging over workers and into other equipment, buildings or machinery in the area. Hands or fingers should not be placed between the sling and its load while the sling is being tightened around the load.

The lift zone should be properly flagged off.

All rigging should be properly labeled indicating the rated capacity for the type of hitches used, the sling angle, and the number of legs if more than one sling is used. Labels and identification markings should be permanently affixed to the rigging. If labels and identification markings are missing or illegible, the rigging should be removed from service.

All rigging equipment not in use should be removed from the immediate work to minimize hazard to employees.

Wire ropes or cables should not be allowed to kink. Protective (chafing) pads should be used where cables or nylon slings are wrapped around sharp objects or corners. Corner pads or wood blocks should be used to prevent cable kinks.

Rated capacities of each lifting device and connection point should be checked and adhered to. Rigging should not be overloaded. All loads should be checked just off the ground for stability and balance before hoisting. Slings should be set to avoid slippage. Whenever any sling is used, shock loading is prohibited. A sling should not be pulled from under a load when the load is resting on the sling and damage to the sling may result.

4.11. Custom Lifting Accessories

Special custom design grabs, hooks, clamps, or other lifting accessories for such units as modular panels, prefabricated structures and similar materials, should be marked to indicate the safe working loads and should be proof-tested to 125 percent of the rated load prior to use.

4.12. Chains and Cables

If at any time any three foot length of chain is found to have stretched one-third the length of a link it should be discarded.

Proof coil steel chain, also known as common or hardware chain, or other chain not recommended for slinging or hoisting by the manufacturer, should not be used for hoisting purposes.

The practice of placing bolts or nails between two links to shorten chains is prohibited.

Splicing broken chains by inserting a bolt between two links with the heads of the bolt and the nut sustaining the load, or passing one link through another and inserting a bolt or nail to hold it, is prohibited.

Wrought iron chains in constant use should be annealed or normalized at intervals not exceeding 6 months when recommended by the manufacturer. The chain manufacturer should be consulted for recommended procedures for annealing or normalizing. Alloy chains should not be annealed. Wherever annealing of chains is attempted, it should be done in properly equipped annealing furnaces and under the direct supervision of a competent person thoroughly versed in heat treating.

Cables should be periodically inspected. A copy of the report of the inspections of each running cable should be filed in a place readily accessible to the department, or authorized representative.

4.13. Wire rope slings

Use only wire rope slings that have permanently affixed and legible identification markings as prescribed by the manufacturer, and that indicate the recommended safe working load for the type(s) of hitch (es) used, the angle upon which it is based, and the number of legs if more than one.

Minimum sling lengths.

a. Cable laid and 6x19 and 6x37 slings should have a minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves or end fittings.
b. Braided slings should have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings.
c. Cable laid grommets, strand laid grommets and endless slings should have a minimum circumferential length of 96 times their body diameter.

Safe operating temperatures. Fiber core wire rope slings of all grades should be permanently removed from service if they are exposed to temperatures in excess of 200°F. When nonfiber core wire rope slings of any grade are used at temperatures above 400°F or below minus 60°F, recommendations of the sling manufacturer regarding use at that temperature should be followed.

End attachments.

a. Welding of end attachments, except covers to thimbles, should be performed prior to the assembly of the sling.
b. All welded end attachments should not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer should retain a certificate of the proof test, and make it available for examination.

4.14. Metal mesh slings

Each metal mesh sling should have permanently affixed to it a durable marking that states the rated capacity for vertical basket hitch and choker hitch loadings.

Handles should have a rated capacity at least equal to the metal fabric and exhibit no deformation after proof testing.

Attachments of handles to fabric. The fabric and handles should be joined so that:

a. The rated capacity of the sling is not reduced.
b. The load is evenly distributed across the width of the fabric.
c. Sharp edges will not damage the fabric.

Coatings which diminish the rated capacity of a sling should not be applied.

All new and repaired metal mesh slings, including handles, should not be used unless proof tested by the manufacturer or equivalent entity at a minimum of 1-1/2 times their rated capacity. Elastomer impregnated slings should be proof tested before coating.

Metal mesh slings which are not impregnated with elastomers may be used in a temperature range from minus 20°F to plus 550°F without decreasing the working load limit. Metal mesh slings impregnated with polyvinyl chloride or neoprene may be used only in a temperature range from zero degrees to plus 200°F. For operations outside these temperature ranges or for metal mesh slings impregnated with other materials, the sling manufacturer's recommendations should be followed.

Repairs.

(a) Metal mesh slings which are repaired should not be used unless repaired by a metal mesh sling manufacturer or an equivalent entity.
(b) Once repaired, each sling should be permanently marked or tagged, or a written record maintained, to indicate the date and nature of the repairs and the person or organization that performed the repairs. Records of repairs should be made available for examination.

4.15. Synthetic web slings

Each sling should be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.

Synthetic webbing should be of uniform thickness and width and selvage edges should not be split from the webbing's width.

Fittings should be:

a) Of a minimum breaking strength equal to that of the sling; and
b) Free of all sharp edges that could in any way damage the webbing.

Attachment of end fittings to webbing and formation of eyes. Stitching should be the only method used to attach end fittings to webbing and to form eyes. The thread should be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

Environmental conditions. When synthetic web slings are used, the following precautions should be taken:

a) Nylon web slings should not be used where fumes, vapors, sprays, mists or liquids of acids or phenolics are present.
b) Polyester and polypropylene web slings should not be used where fumes, vapors, sprays, mists or liquids of caustics are present.
c) Web slings with aluminum fittings should not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

Safe operating temperatures. Synthetic web slings of polyester and nylon should not be used at temperatures in excess of 180°F. Polypropylene web slings should not be used at temperatures in excess of 200°F.

Repairs.

a) Synthetic web slings which are repaired should not be used unless repaired by a sling manufacturer or an equivalent entity.
b) Each repaired sling should be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service. Retain a certificate of the proof test and make it available for examination.
c) Slings, including webbing and fittings, which have been repaired in a temporary manner should not be used.

4.16. Wire rope

Safe loads. Whenever used in connection with work, employment, occupations or uses to which these standards are applicable, wire rope should not be subjected to loads in excess of one-fifth the breaking load as given in the schedule of the cable manufacturer. Except as required in standard for material hoists.

Condemned. When cables deteriorate through rust, wear, broken wires, undue strain or other conditions to the extent of fifteen percent of their original strength, use of cables should be discontinued.

Straps and ribbons. The strap or steel ribbon type of cable should not be used in the suspension of scaffolding.

Inspections. There should be not less than monthly inspection of all wire rope in use, and all wire rope must be inspected before put into use.

(5) Fastening. The following methods of fastening and attaching wire rope should be adhered to:

(a) Sockets. The end of wire rope to be set into socket fittings held securely with molten babbitt or zinc (not lead). The wires of the cable should be frayed out and each wire bent toward the outside of socket, so that the end of each wire projects well into the depth of the socket. This method of fastening cables should be left in the hands of an experienced workers in this kind of work.

(b) Wrapping. Thimbles spliced into rope and the splice securely wrapped.

(c) Bolted. Thimbles inserted and held in place by at least a three bolt clamp or three U-bolt clips. Clamps should be of standard size for the sizes of the cable in use.

(d) Lashing. For temporary work, by-passing rope at least twice around large object such as a post, avoiding sharp points and carrying the end back several feet and securing it by clamps, clips or lashing to the cable.

4.17. Hooks and Shackles

Hooks and shackles should only be used in a manner recommended by the manufacturer.

Hooks that do not have an identified manufacturer recommendation should be tested at twice the intended safe working load to determine their quality before initially put to use.

4.18. Rigging Removal From Service Criteria

Rigging and hooks that are damaged or defective should not be used. All rigging and hooks should be taken out of service when the following conditions are present or exceeded:

Hooks & Shackles

- If deformed or misshapen

Wire Rope

- Missing or illegible identification tag
- Broken Wires-
  - Strand-laid: 10 randomly distributed or 5 locally distributed
  - Cable-laid: 20 broken wires per lay
  - Six-Part Braided: 20 broken wires per braid
  - Eight-Part Braided: 40 broken wires per braid
- Severe localized abrasion or scuffing
- Evidence of Kinking, Crushing, Bird Caging, or other structural defect
- Evidence of thermal damage (torch marks, discoloration, etc.)
- Cracked, Deformed, or worn out ends or attachments (hooks, eyelets, rings, etc.)
- Significant corrosion
- Knots
- Any other condition that causes doubt in the strength of the rigging

Synthetic Web Slings

- Missing or illegible identification tag
- Evidence of Acid or Caustic exposure
- Evidence of Thermal or UV exposure (burns, charring, discoloration)
- Holes, tears, cuts, snags, significant abrasion
- Broken, abraded, or significantly worn stitching
- Knots
- Any other condition that causes doubt in the strength of the rigging

Polyester Round Slings

- Missing or illegible identification tag
- Evidence of Acid or Caustic exposure

- Evidence of Thermal or UV exposure (burns, charring, discoloration)
- Holes, tears, cuts, snags, significant abrasion that exposes core yarn
- Broken, abraded, or significantly worn core yarn
- Knots
- Any other condition that causes doubt in the strength of the rigging

Alloy Steel Chain Slings

- Missing or illegible identification tag
- Cracked, Broken, stretched, or significantly deformed links or hooks
- Evidence of Thermal exposure (burns, charring, discoloration)
- Evidence of pitting or corrosion
- Knots
- Any other condition that causes doubt in the strength of the rigging
- Annealing or normalizing procedures should only be done in accordance with the chain manufacturer's specifications.

Wire Mesh Slings

- Missing or illegible identification tag
- Cracked, Broken, stretched, or significantly deformed mesh or hooks
- Reduction of wire diameter by:
    - 25% from abrasion
    - 15% from corrosion
- Reduction of Choker slot depth or End Fitting Openings by:
    - 10% from any cause
- Evidence of Thermal exposure (burns, charring, discoloration)
- Significant lack of flexibility
- Knots
- Any other condition that causes doubt in the strength of the rigging

Slings should not be shortened with knots or bolts or other makeshift devices. Slings should not be kinked, or knotted.

4.19. Critical Lift

All critical lifts should have a Critical Lift Plan completed and reviewed with the Safety Department, the job site supervisor, and all personnel involved in the critical lift.

A critical lift is defined as:

- Any lift that is heavier than 80% of the crane’s capacity from the crane’s load (capacity) chart
- Any tandem crane lift
- Any lift that involves the hoisting of personnel

- Any lift over an existing building such as a hospital or office building that cannot be completely evacuated prior to the lift. Personnel in such a building should be notified prior to the lift
- Any lift over highly sensitive process equipment, machinery, or service

4.20. Pre-Lift Meeting

Operators and all personnel assigned to the crew involved with the critical lift, should have a pre-lift meeting to establish a complete understanding of proper procedures used to determine the "weight of the load" and safe connection points and should use these procedures prior to making of any critical lifts. If, during the course of the lift, any of the parameters identified on the critical lift plan worksheets are found to be underestimated, i.e. the load weight, radius angle, etc., the critical lift meeting will be reconvened to determine the appropriate course of action.

4.21. Personnel Lifts- for cranes

The use of a crane to hoist personnel on a on a platform is only permitted when the erection, use and dismantling by conventional means of reaching the worksite, such as aerial lift, ladder, stairway, scaffold or elevating work platform, would be more hazardous or is not possible because of structural design or worksite conditions.

The crane should be uniformly level and located on firm footing. Cranes equipped with outriggers should have all of them fully deployed.

Hoisting of personnel should be performed in a slow, cautious, controlled manner with no sudden movements. Free-fall is prohibited.

Load and boom hoist drum brakes, swing brake, and locking devices should be engaged when the occupied personnel platform is in a stationary work position.

Load lines should be capable of supporting, without failure, at least seven (7) times the maximum intended load.

4.22. Personnel Platforms

The personnel platform and suspension system should be designed by a registered engineer and meet the OSHA/DOSH regulations for platform specifications.

Lifting bridles on personnel baskets should consist of four legs so attached that the stability of the platform is ensured. At no time should the angle of the slings be less than 45°.

Lifting bridles should be secured at each corner of the personnel basket by a shackle.

Before connecting the bridle legs to the hooks, they should be connected to a single ring or hook.

The hook should be of a type that can be closed and locked, eliminating the hook throat opening.

All bridles, rigging hardware, etc., should have a safety factor of seven (7).

All eyes in wire ropes should be fabricated with thimbles.

Bridles and associated hardware used for attaching the personnel basket to the hoist line should not be used for any other service.

A safety cable should attach the bridle assembly above the equipment lifting hook.

The platform should be designed to support its own weight and at least (5) five times the maximum intended load.

4.22.1. Trial Lift

A Pre-Lift Meeting should be held prior to the trial lift at each new work location and should be repeated for any personnel newly assigned to the operation. The personnel to be lifted should attend the Pre-Lift Meeting.

A trial lift with unoccupied personnel loaded to the anticipated lift weight, should be made from ground level and to each location where personnel are to be hoisted and positioned. The platform should be held for a period of at least five (5) minutes.

The trial lift should be performed immediately prior to placing personnel on the platform. The crane operator should determine that all systems, controls and safety devices are activated and functioning properly; no interference exists and equipment loading during all maneuvers necessary to reach the work locations remains under the 50% limit of the crane's rated capacity.

A single trial lift may be performed at one time for all locations that are to be reached from a single set up position.

The trial lift should be repeated prior to hoisting personnel whenever the crane is moved and set up in a new location. A Suspended Work Platform Checklist should be completed before a personnel platform lift is performed. A new checklist may or may not be necessary for each new set up as predetermined by a representative from the Safety Department.

4.22.2. Work Practices

Occupants should keep all parts of their body inside the platform during the raising, lowering and positioning of the platform, except when performing the duties of a signal person.

Before personnel exit or enter a hoisted personnel platform that is not landed, the platform should be secured to the structure unless securing to the structure creates an unsafe situation.

The crane operator should remain at the controls at all times when the platform is occupied and the crane's engine is kept running.

Taglines should be used unless their use creates an unsafe situation.

Hoisting of employees should be immediately discontinued upon any indication of danger, including bad weather.

Personnel being hoisted, including the signal person should remain in continuous radio communication with the crane operator.

4.23. Hazard assessments

Before beginning equipment operations the Lift Director or their designee should identify the work zone by either:

1. Demarcating boundaries (such as with flags, or a device such as a range limit device or range control warning device) and prohibiting the operator from operating the equipment past those boundaries, or
2. Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.

Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If so, meet the requirements in Option (1), Option (2), or Option (3) of this section, as follows:

1. Option (1)--DE energize and ground. Confirm from the utility owner/operator that the power line has been DE energized and visibly grounded at the worksite.
2. Option (2)--20 foot clearance. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet to the power line by implementing the measures specified in paragraph (b) of this section.
3. Option (3)--Table A clearance.

Where encroachment precautions are required under Option (2) or Option (3) of this section, all of the following requirements must be met:

Conduct a planning meeting with the operator and the other workers who will be in the area of the equipment or load to review the location of the power line(s), and the steps that will be implemented to prevent encroachment/electrocution.

If tag lines are used, they must be non-conductive.

Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings, at 20 feet from the power line (if using Option (2) of this section) or at the minimum approach distance under Table A (if using Option (3) of this section). If the operator is unable to see the elevated warning line, a dedicated spotter must be used in addition to one of these measures:

1. A proximity alarm set to give the operator sufficient warning to prevent encroachment.

A device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device must be set to give the operator sufficient warning to prevent encroachment.

2. A device that automatically limits range of movement, set to prevent encroachment.
3. An insulating link/device installed at a point between the end of the load line (or below) and the load.

4.24. Electrical Clearance

The operation of any equipment closer to high voltage lines than the distance listed below is positively prohibited. Clearance refers to the way the equipment is located for the job, not how it is operated while working. Clearance is measured from the boom tip at its closest boom angle to the proximity to the energized lines.

TABLE A

Normal Voltage KV (Phase to Phase)	**Minimum Required Clearance, ft.** (Note 1)
To 50	10
50 to 200	15
200 to 350	20
350 to 500	25
500 to 750	35
750 to 1000	45
Note: (1) environmental conditions such as fog, smoke or precipitation may require increased clearances.	

5.0 Regulations

- Federal 29CFR 1926.251, 1926.1400
- Washington WAC 296-155-529
- California Title-8

CRAWLER & TRUCK CRANES

1.0 PURPOSE

To describe guidelines for the maintenance and use of crawler and wheel mounted cranes. This applies to truck and self-propelled wheel cranes, and any variations that retain the same fundamental characteristics.

2.0 GENERAL

Employees who operate this equipment must be trained and certified in its safe use, operation, and inspection in accordance with the Haskell Corporation Procedures. Contact your supervisor or site safety representative for Procedures.

This procedure defines minimum acceptable standards to ensure employee safety, and applies to all Haskell Corporation Projects.

Rigging equipment not in use should be removed from the immediate work area so as not to present a hazard to employees.

3.0 DEFINITIONS

ANGLE INDICATOR (BOOM) - An accessory that measures the angle of the boom to the horizontal.
APPOINTED - Assigned specific responsibilities by Haskell Corporation or their representative.
AXIS OF ROTATION - The vertical axis around which the crane superstructure rotates.
THE BASE - The traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawler, or wheel platform.
BOOM - A member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.
BOOM ANGLE - The angle between the longitudinal centerline of the boom and the horizontal.
BOOM HOIST - A hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.
BOOM STOP - A device used to limit the angle of the boom at the highest position.
CAB - A housing that covers the rotating superstructure machinery and/or operator's station. On truck-cranes, a separate cab covers the driver's station.
COUNTERWEIGHT - A weight used to supplement the weight of the machine in providing stability for lifting working loads.
CRAWLER CRANE - Consists of a rotating superstructure with an engine, operating machinery, and boom, mounted on a base, equipped with crawler treads for travel. Its function is to hoist and swing loads at various radiuses.
DESIGNATED - Selected or assigned by Haskell Corporation or their representative as being

qualified to perform specific duties.
DRUM - The cylindrical members around which ropes are wound for raising and lowering the load or boom.
JIB - An extension attached to the boom point to provide added boom length. The jib may be in line with the boom or offset to various angles.
LOAD (WORKING) - The external load, in pounds, applied to the crane, including the weight of load attaching equipment such as load blocks, shackles, and slings.
LOAD BLOCK (LOWER) - Means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.
LOAD BLOCK (UPPER) - The assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.
LOAD HOIST - A hoist drum and rope reeving system used for raising and lowering loads.
LOAD RATINGS - Crane ratings in pounds established by the manufacturer.
LOCOMOTIVE CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radiuses.
OUTRIGGERS - Extendable or fixed metal arms, attached to the mounting base that rest on supports at the outer ends.
ROPE - Refers to a wire rope unless otherwise specified.
SIDE LOADING - A load applied at an angle to the vertical plane of the boom.
SUPERSTRUCTURE - The rotating upper frame structure of the machine and the operating machinery mounted thereon.
TRUCK CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on an automotive truck equipped with an engine for travel. Its function is to hoist and swing loads at various radiuses.
WHEEL MOUNTED CRANE - Consists of a rotating superstructure with an engine, operating machinery and boom, mounted on a base or platform equipped with axles and rubber wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radiuses.
WHIPLINE (AUXILIARY HOIST) - A separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.
WINCH HEAD - A power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

4.0 PROCEDURES

4.1. Operators

Cranes must only be operated by the following qualified employees:

- Designated Persons (Qualified Operator).
- Trainees under the direct supervision of a designated person.
- Maintenance and test workers (when it is necessary in the performance of their duties).
- Inspectors (Crane).
- Only the employees specified above can enter a crane cab, with the exception

of supervisors and those persons authorized by supervisors.

4.2. Operators Qualifications

Operators are required to pass a written and operational test. This test must be administered by a Competent Person.

Operators and operator trainees must meet the following physical qualifications:

- At least 20/30 vision in one eye and 20/50 in the other.
- The ability to distinguish colors, regardless of position, if color is required for operation.
- Sufficient strength, endurance, agility, coordination, and reaction speed to meet the demands of equipment operation.
- Adequate hearing, for the specific operation.
- Employees with disabilities or emotional instability that could be a hazard to the operator or others must be referred for specialized clinical or medical judgment.
- Evidence that an operator is subject to seizures or loss of physical control is sufficient reason for disqualification. Specialized medical tests may be required to determine these conditions.
- Operators and trainees should have normal depth perception, field of vision, reaction time, manual dexterity, coordination, and no tendencies to dizziness or similar undesirable characteristics.

4.3. Operators Guidelines

The operator must respond to signals from the signal person. When a signal person or crane follower is not required as part of the crane operation, the operator is then responsible for the lifts. However, the operator must obey a stop signal at all times, no matter who gives it. (See Hand signals)

Each operator is responsible for the operations under their direct control. If there is any doubt about safety, the operator must consult with the supervisor before handling the loads.

Before leaving the crane unattended, the operator must:

- Land any load, bucket, lifting magnet or other device.
- Disengage the master clutch.
- Set travel, swing, boom brakes and other locking devices.
- Put controls in the “off” or neutral position.
- Secure the crane against accidental travel.
- Stop the engine.

NOTE: An exception to stopping the engine may exist when crane operations are frequently interrupted during a shift and the operator must leave the crane. Under these circumstances, the engine may remain running and the following conditions must apply:

- The operator must land any load, bucket, lifting magnet, or other device.
- The operator must be situated where unauthorized entry of the crane can be monitored.

- The crane must be located within an area protected from unauthorized entry.

When a local storm warning exists, consideration must be given to the recommendations of the manufacturer for securing the crane.

If there is a warning sign on the switch or engine starting controls, the operator must not close the switch or start the engine until the warning sign has been removed by a designated competent person.

Before closing the switch or starting the engine, the operator must observe and ensure that all controls are in the “off” or neutral position and that all employees are in the clear.

If power fails during operations, the operator must:

- Set all brakes and locking devices.
- Move all clutches or other power controls to the “off” or neutral position.

The operator must be familiar with the equipment and its proper care. If adjustments or repairs are necessary, the operator must promptly report this to the designated competent person, and must also notify the next operator.

All controls must be tested by the operator at the start of a new shift. If any controls fail to operate properly, they must be adjusted or repaired before beginning work.

The manufacturer’s boom assembly and disassembly procedures must be followed. Any deviation from the manufacturer’s procedure must require blocking of the boom or boom sections to prevent inadvertent dropping of the boom.

When removing pins or bolts from the boom, workers must not get under the boom.

Each outrigger must be visible to the operator or to a signal person during extension or setting.

4.4. General Requirements

4.4.1. Size of Load

Cranes must not be loaded beyond the specifications of the load-rating chart, except for test purposes.

The load must be within the rated capacity of the crane in its existing configuration.

When loads that are not accurately known are to be lifted, the person responsible for the lift must get the weight of the load. Loads must not exceed the crane ratings at the radius in which the load is to be lifted.

When rotation resistant ropes are used with an operating design factor less than 5, but in no case less than 3.5, the following special provisions must apply for each such lifting assignment:

- An appointed person must direct each lift.
- A qualified person must decide that the rope is in satisfactory condition both

before and after lifting, but more than one broken wire in any one lay is sufficient reason to consider not using the rope for such lifts.

- Operations must be conducted at slow speeds to minimize dynamic effects.

Each lift under these provisions must be recorded in the crane inspection record and these prior uses must be considered before permitting another lift.

These provisions are not intended to permit duty cycle or repetitive lifts to be made with operating design factors of less than 5.

4.4.2. Attaching the Load

The hoist line must not be wrapped around the load.
The load must be attached to the hook by means of slings or other devices of sufficient capacity.

4.4.3. Holding the Load

The operator must not leave the controls while the load is suspended.
EXCEPTION: Under the circumstances when a load is suspended for a long period of time, the operator may leave the controls if the person directing the lift and the operator have established requirements for restraining the boom hoist, telescoping, load swing, outrigger functions and provided notices, barricades, or whatever other necessary precautions are completed.
Employees must not be allowed to stand or pass under a suspended load.
If the load hoist mechanism is not equipped with an automatic brake and the load must remain suspended for a long period of time, the operator must hold the drum from rotating downward. The boom hoist brake must be set.

4.4.4. Moving the Load:

Before traveling a crane load, a designated person should be responsible for determining and controlling safety. Decisions such as position of the load, boom location, ground support, travel route, and speed of movement should be in accordance with the designated person's determinations. "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

The person directing the lift must ensure that:

- The crane is level and, where necessary, blocked.
- The load is well secured and balanced in the sling or lifting device before it is lifted more than a few inches.
- The lift and swing path are clear of obstructions.
- All employees are clear of the swing radius of the crane counterweight.

Before starting a lift, the following conditions must be noted:

- Hoist rope must not be kinked.
- Multiple-part lines must not be twisted around each other.
- The hook must be brought directly over the load to minimize swinging.
- If there is slack in the rope, it must be determined that the rope is seated on the drum and in the sheaves as the slack is removed.
- The effect of wind on the load and on crane stability.

During lifting operations, care must be taken that:

- There is no sudden acceleration or deceleration of the load.
- Load, boom or other parts of the machine do not contact any obstruction.
- The boom is never side loaded.

The operator must avoid lifting loads over people.

On wheel-mounted cranes, loads must not be lifted over the front area, except as specified by the crane manufacturer. This prevents the load from from potentially falling on the cab or motor section of the the truck.

The operator must test the brakes each time a heavy load is handled by lifting it a few inches and applying the brakes.

Any time outriggers are used, they must be fully extended and set to remove the machine weight from the wheels. When outrigger pads are used, they must be attached to the outriggers. Blocking under outrigger floats, when required, must meet the following requirements:

- Sufficient strength to prevent crushing, bending or shear failure.
- The size has to completely transmit the load to the supporting surface, prevent shifting, toppling and excessive settlement under load.
- Use of blocking only under the outer bearing surface of the extended outrigger beam.

Two full wraps of rope must remain on the respective drums at all times.

When two or more cranes are used to lift one load, one designated competent person must be responsible for the operation. That person must analyze the operation and instruct everyone involved in the proper positioning, rigging of the load, and the movement to be made. Decisions such as the need to reduce crane ratings, load position, boom location, ground support, and speed of movements must be in accordance with this determination.

While in transit, the following additional precautions must be used:

- The boom must be carried in line with the direction of motion.
- The superstructure must be secured against rotation (or the boom placed in a boom rack mounted on the carrier), except when negotiating turns when there is an operator in the cab or the boom is supported on a dolly.
- The empty hook must be lashed or otherwise restrained so that it cannot swing freely.

Before traveling with a load, a competent person must review the need to reduce crane ratings, load position, boom location, ground support, travel route, and speed of movement. Specified tire pressure must be maintained. The boom must be carried in line with the direction of travel. Sudden starts and stops must be avoided. Tag lines must be used to control swinging of the load.

A crane with or without a load must not be moved with the boom so high that it may bounce back over the cab.

When rotating the crane, sudden starts and stops must be avoided. Rotational speed must be slow enough that the load does not swing out beyond the radius of control. A tag line must be used.

When a crane is to be operated with the boom at a fixed angle, the boom-hoist pawl or other positive holding device must be engaged.

4.4.5. Use of Winch Heads (Cat Heads):

Fiber and wire rope must not be handled on a cathead without the knowledge of the operator. While a cathead is being used, the operator must be within convenient reach of the power unit control lever. Cat head operators must be trained and qualified to operate a cathead.

Employees are not permitted to ride the headache ball, or a load suspended from the hook.

4.4.6. Signals

Standard signals to the operator must be used unless voice communication equipment (telephone, radio, or equivalent) is used. Signals must be discernible or audible at all times If the signals are not clearly understood the operator must not move the load..

4.4.7. Hand signals

Hand signals to crane and derrick operators should be those prescribed by the applicable ANSI standard for the type of crane is use.
Hand signals must be posted conspicuously on the project and on all lifting equipment.

4.4.8. Special signals

For special conditions that occur, additions to or modifications of the standard signals may be required. In all cases, these special signals must be agreed upon in advance by the Rigging Supervisor, Operator and the signal person.

4.4.9. Audible Travel Signals

When moving the vehicle, the following signals must be used:

- STOP - one audible signal.
- GO AHEAD - two audible signals.
- BACK UP - three audible signals.

4.5. HANDLING THE LOAD

Cranes will not be loaded beyond the rated load capacity except for test purposes provided within these guidelines. A substantial and durable rating chart with clearly legible letters and figures should be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at their control station.

When attaching a load, the hoist chain or hoist rope will be free from kinks or twists and will not be wrapped around the load. Loads are attached to the load block hook by means of a sling or other approved lifting device. The load will be secured and properly balanced in the sling or lifting device before it is lifted more than a few inches. Before starting to hoist, the following conditions must be noted:

Hoist rope will not be kinked.

Multiple part lines will not be twisted around each other.

The hook will be brought over the load in such a manner as to prevent swinging.

During hoisting, be sure that there is no sudden acceleration or deceleration of the moving load and the load does not contact any obstructions.

Cranes will not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not endangered and that various parts of the crane will not be over stressed.

While any employee is on the load or hook, hoisting, lowering, or traveling is prohibited. Loads must not be carried over employees, if the load or hook approaches going over employees, a warning signal is sounded.

The operator tests the brakes each time a load approaching the rated load is handled by raising the load a few inches and applying the brakes. The crane will not be lowered where less than two full wraps of rope remain on the hoisting drum.

When two or more cranes are used to lift a load, one qualified responsible person will be in charge of the operation. He/she analyzes the operation and instructs everyone involved in the proper positioning, rigging of the load, and the movements to be made.

The operator must not leave his position at the controls while the load is suspended.

4.6. Inspections

A competent person must inspect all machinery and equipment before each use. Any deficiencies must be repaired, or defective parts replaced, before continued use. A written monthly inspection must be documented.

Defective equipment should not be used and removed from service immediately.

A thorough annual inspection of the hoisting machinery must be made by a competent person, or by a government or private agency recognized by the US Department of Labor. Haskell Corporation should maintain a record of the dates and results of inspections for each hoisting machine and equipment.

The inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals the inspections must be performed. The intervals are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are designated as “frequent” and “periodic”, with respective intervals between inspections defined below:

- Frequent Inspection: Daily to monthly intervals.
- Periodic Inspection: 1 to 12 month intervals, or as specifically recommended by the manufacturer.

The following items will be inspected for defects at intervals defined as “Frequent Inspections” and by observation during operation for any defects that might appear between regular inspections. Any deficiencies such as those listed will be carefully examined and a determination made by management as to whether they constitute a safety hazard:

- All control mechanisms for poor adjustment interfering with proper operation: **DAILY**.
- All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter: **DAILY**.
- All safety devices for malfunction: **DAILY**.
- Deterioration or leakage in air or hydraulic systems: **DAILY**.
- Crane hooks with deformations or cracks. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook: **DAILY**.
- Rope reeving for noncompliance with manufacturer’s recommendations: **DAILY**.
- Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation: **DAILY**.

4.7. Wire Rope Inspection

A thorough inspection of all wire rope will be made at least once a month. A record, which includes the date of inspection, signature of the designated competent person who performed the inspection, identifier for the rope and condition of the rope, must be documented and kept on file. All inspections will be performed by competent persons. Wire rope must be taken out of service when any of the following conditions exist:

- In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
- Wear of one-third the original diameter of outside individual wires.
- Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
- Evidence of heat damage.
- Reductions from nominal diameter of more than 1/64 inch for diameters up to an including 5/16 inch (.04 cm), 1/32 inch (0.08 cm) for diameters 3/8 inch (.95 cm) to and including ½ inch (1.27 cm), 3/64 inch (.18 cm) for diameters 9/16 inch (1.43 cm) to and including ¾ inch (1.94 cm), 1/16 inch (.16 cm) for diameters 7/8 inch (.09 cm) to 1-1/8 inch (2.9 cm) inclusive, 3/32 inch (.24 cm) for diameters 1-1/4 inch (3.2 cm) to 1-1/2” (3.3 cm) inclusive.

- In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.
- Wire rope safety factors must be in accordance with American National Standards Institute B30.5 - 1968 or SAE J959-1966.

Heavy wear and/or broken wires may occur in sections contacting equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Particular care will be taken to inspect ropes at these locations.

Wire ropes that have been idle for a period of a month or more due to shut down or storage of a crane, will be given a thorough inspection before use. The inspection will be for all types of deterioration and will be performed by a designated competent person. A record that includes the date of inspection, signature of the person who performed the inspection, identifier for the rope and condition of the rope must be kept on file.

4.8. Spreader Bars

All job-made spreader bars must have all welds x-rayed before and after load testing. SWL and number stamped or welded on.

4.9. Ballast or Counterweight

Cranes must not be operated without the ballast or counterweight in place as specified by the crane manufacturer. Under specific conditions, such as during crane assembly, unusual boom configurations, etc., the crane manufacturer's recommendations for the amount of ballast or counterweight approved by the manufacturer for use on a given machine must not be exceeded. Unauthorized addition of ballast or counterweight constitutes a hazard in two ways:

- The structural competence of the various parts of the machine may be exceeded causing failure.
- The manufacturer's margin of backward stability may be exceeded and the crane may turn over backwards or it may damage various parts of the machine.

4.10. Footing

Firm footing under both Crawler tracks, all tires, and individual outrigger pads should be level within 1%. Where such footing is not otherwise supplied, it must be provided by timbers, cribbing, or other structural members to distribute the load not to exceed the allowable bearing capacity of the underlying material.

4.11. Operating Near Electric Power Lines

Except where electrical distribution and transmission lines have been de- energized and visibly grounded at point of work or where insulating barriers, that are not a part of an attachment to the crane, have been erected to prevent physical contact with the lines, cranes must be operated so that no part of the crane or load enters into the "Danger Zone".

For lines rated 50KV. or below, minimum clearance between the lines and any part of the crane or load (including handling appendages) is 20 feet.

Caution must be exercised when working near overhead lines having long spans, as they tend to move laterally or vertically due to the wind and could breach the danger zone.

While in transit without a load and the boom lowered, the clearance must be as specified in Paragraph E.

A qualified signal person must be assigned to observe the clearance when the crane moves to within a boom's length of the limits specified in Paragraph E. The operator is not in the best position to judge distance between the power line and the crane.

If cage-type boom guards, insulating links, or proximity warning devices are used on cranes, these devices must not be a substitute for the requirements of Step j (1) (a) above, even if these devices are required by law or regulation.

Before beginning operations near electrical lines, the person responsible for the job must notify the owners or their authorized representatives, provide them with all pertinent information, and request their cooperation.

Any overhead wire must be considered energized until a qualified person or electrical utility authority verifies that it has been de-energized.

Durable signs must be installed at the operator's station and on the outside of the crane warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 feet (3.1 m) is maintained between the crane, or the load and energized power lines. Greater clearances are required for lines exceeding 50KV. These signs must be revised when local jurisdiction requires greater clearances.

Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests should be made and recorded to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

NOTE: Haskell Corporation will use the following tables 1 and 2 as a minimum requirement. Haskell Corporation will also comply with local agency guidelines or plant owners that have a policy requiring greater safety clearances.

REQUIRED CLEARNACE FOR NORMAL VOLTAGE IN OPERATION NEAR HIGH VOLTAGE POWER LINES AND OPERATION IN TRANSIT WITH NO LOAD AND BOOM OR MAST LOWERED

Table 1 Minimum Clearance Distances	
Voltage (nominal, kV)	**Minimum clearance distance (feet)**
Up to 50	10
Over 50 to 200	15
Over 200 to 345	20
Over 345 to 500	25
Over 500 TO 750	35

Over 750 to 1,000	45
Over 1000	(As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Table 2 Minimum Clearance Distances While Traveling With No Load and Boom/Mast Lowered	
Voltage (nominal, kV)	**While traveling--minimum clearance distance (feet)**
Up to 0.75	4 (while traveling/boom lowered).
Over .75 to 50	6 (while traveling/boom lowered).
Over 50 to 345	10 (while traveling/boom lowered).
Over 345 to 750	16 (while traveling/boom lowered).
Over 750 to 1,000	20 (while traveling/boom lowered).
Over 1,000	(As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution)

Note: The value that follows "to" is up to and includes that value.

4.12. Cabs

Necessary clothing and personal belongings must not be stored where they interfere with access or operation.

Tools, oil cans, waste, and other necessary articles must be stored in the toolbox, and must not be allowed to lie loose in the cab.

4.13. Refueling

When refueling with gasoline using a portable container, it must be a safety-type can equipped with an automatic closing cap and flame arrestor.

Machines must not be refueled while the engine is running.

Smoking or open flames is not allowed in the refueling area.

4.14. Fire extinguishers

A portable fire extinguisher, with a minimum extinguisher rating of 10 ABC, must be installed in a vertical position in the cab or at the machinery housing.

Operating and maintenance employees must be familiar with the use and care of the fire extinguishers provided.

Regulations

DISCIPLINARY ACTION

1.0 Purpose

To establish basic rules pertaining to employee conduct, performance, and responsibilities so that all personnel can conduct themselves according to certain rules of good behavior and good conduct.

The purpose of these rules is not to restrict the rights of anyone, but rather to help people work together harmoniously according to the standards we have established for efficient and courteous service for our customers.

2.0 Scope

The content of this policy applies to all Haskell employees. This policy may also apply to Sub-contractors.

3.0 Definitions

- **Verbal Warning:** means a communication of violation to an employee, this may be documented in the supervisors logs, on JSA/STA, or timesheet
- **Written Warning**: means a formal record of violation will be created and put in the employees' personnel file
- **Termination:** means the employee will be removed from the worksite for a set period of time.

4.0 Procedures

It is Haskell Corporation's commitment to provide to all of our employees, including Sub-contractors a safe working environment. To achieve this goal, compliance to the safety rules and procedures are a mandatory requirement and are considered a condition of employment for employees at all levels.

Employees and Sub-contractors found to be in non-compliance with the safety procedures and policies of Haskell Corporation, our clients and General and Prime Contractors, should be counseled to discuss the infraction and to inform the individual(s) of the rule or procedure that was violated and the corrective action to be taken. Discipline may be Verbal, Written, up to and including termination of employment.

It should be the responsibility of Project Managers, the Safety Department, Superintendents, and Foremen to enforce the program. Any discipline system may not be followed in all situations. Haskell Corporation's management should determine on a case-by-case basis, whether to follow these guidelines or depart from it, depending on the circumstances of the case. Generally Haskell Corporations discipline policy is a progressive one consisting of 1) Verbal Warning (this is documented in the employee file) 2) Written Warning 3) Termination from project.

Physical inspections of work areas should be conducted to ensure compliance with safety rules and policies.

4.1. Verbal Warnings

Safety violations, which may result in a verbal warning on the first offense, a written, reprimand on the second offense and termination on the third offense include but are not limited to:

- Failure to wear all required personal protective equipment (PPE)
- Failure to handle or operate tools in a safe manner

4.2. Written Warnings

Safety violations, which may result in a written, reprimand on the first offense and termination on the second offense include but are not limited to:

- Violation of a safety regulation; including but not limited to:
- Failure to follow proper fall protection procedures
- Failure to inspect or follow proper scaffold procedures such as tagging system, inspections and modifications
- Violation of company or client permit procedures

Violation of company or client safety rule which have the potential for causing immediate injury or creating an imminent danger situation such as but not limited to:

- Horseplay/Drugs/Alcohol/Harassment
- Improper use of tools/Equipment
- Failure to follow safety instructions
- Failure to report unsafe conditions
- Failure to report job related injuries
- Failure to comply with flagged off or barricaded areas -such as but not limited to:
  - Crane and overhead lift areas
  - Supplied air work
  - Asbestos or lead abatement areas
  - Radiation zones
  - Confined Spaces
  - Excavations/Trenches
- Failure to use required personal protective equipment (PPE) -such as but not limited to:
  - Safety Glasses
  - Hard Hats
  - Respiratory equipment
  - Acid gear

4.3. Immediate Termination

Safety violations, which may result in immediate termination on the first offense, include but are not limited to:

- Violations of company or client permitting procedures such as but not limited to:
  - Confined space entry
  - Hot work
  - Mobile entry
- Gross or deliberate violation of safety rules, practices or directions
- Violation of company or client Drug and Alcohol Policy
- Possessing firearms or explosives on company or client property
- Provoking or instigating a fight or fighting during working hours on company or client property
- smoking in a restricted area
- Violation of Lockout Tagout procedures
- Deliberately falsifying company records and statements of injury or illness
- Violation of special procedures
- Sleeping on the job

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

DISCIPLINARY ACTION FORM

Issued to: _____ SSN: _____
(Printed Name)

Issued by: _____ DATE: _____
(Printed Name)

TYPE:	☐ Safety Violation	Policy Violation	☐ Other

ACTION:	Verbal	☐ Written	☐ Suspension	☐ Termination

Description of violation:

Action Plan:

Did employee deliberately violate a written company policy? ☐ Yes ☐ No

Was employee aware of the policy? ☐ Yes ☐ No

Has employee violated this policy before? ☐ Yes ☐ No

EMPLOYEE ACKNOWLEDGEMENT

I agree with the statements on this form and understand that continued violation of the rule(s) listed above will result in further disciplinary measures, up to and including termination of employment.

Employee: _____ DATE: _____
(Signature)

Distribution: Employee File ☐ Individual ☐ Craft Steward ☐ Client

DOT OPERATOR QUALIFICATION

1.0 Purpose

This policy intends to establish Haskell's responsibility to maintain compliance with the Operator Qualification (OQ) requirements of individual pipeline Operator's OQ plans and ensure that all DOT Covered Tasks are performed by competent and qualified individuals.

2.0 Scope

This policy applies to all Haskell employees working on client projects that are regulated by the DOT, under 49 CFR Part 192 or 49 CFR Part 195. **This policy does not apply to oil/gas refining facilities.*

3.0 Definitions

- **Abnormal Operating Condition:** means any observable condition that is not as intended or expected, which may produce or result in an adverse outcome or negative consequence.
- **Covered Task:** means a particular task that:
- Is performed on a pipeline facility
- Is an operations and maintenance task
- Is performed as a requirement of Part 192 or Part 195
- Affects the operation or integrity of the pipeline
- **Operator:** means the owner/operator of the pipeline system
- **Operator Qualification:** means a verbal, written, and/or physical assessment of an individuals' knowledge, skill, and/or ability to perform a Covered Task safely
- **Pipeline Facility:** means all new and existing piping, rights-of-way, and any equipment, intermediate facility, or building used in the *transportation* of oil/gas or in the treatment of oil/gas during the course of transportation.

*****Collection, storage, and processing are not typically included in the definition of Pipeline Facilities*****

4.0 Procedures

Haskell Corporation intends to ensure that all employees assigned to perform Covered Tasks on regulated DOT facilities have appropriate knowledge, skills, and abilities to perform their work in the safety possible manner. As Haskell Corporation is not a pipeline system owner/operator, our responsibility is limited to compliance with various owner/operator programs and policies. However, irrespective of a particular owner/operator policy, Haskell will refer to this policy to ensure compliance with DOT OQ requirements.

4.1. Policy Coordinator

The Haskell Corporate Safety Manager, will manage and oversee the implementation and administration of this policy. The policy coordinator will obtain and review applicable sections of owner/operator

policies and make arrangements to qualify employees in accordance with the operator's requirements. Any questions related to the implementation of this policy should be directed to the Policy Coordinator at (360) 734-1200 x.3215

4.2. Covered Tasks

Haskell will rely on individual Pipeline System Operators to provide a comprehensive list of covered tasks that apply to their system and relate to our work. Covered Task descriptions should include both normal and abnormal conditions related to the performance or completion of the task.

4.3. Qualification

Haskell will qualify employees in accordance with individual owner requirements. Employees may be qualified by oral exam, written exam, or performance exam, depending on the Operator's written program and policy requirements. A primary component of any qualification will be the understanding and ability to recognize and respond to an Abnormal Operating Condition (AOC).

4.4. Evaluators

Authorized OQ Evaluators must have sufficient experience, knowledge, and/or training in the task or qualification subject they will provide evaluation for and be registered with or authorized by the particular operator/consortium.

4.5. Training

Specific Task Training may be provided for new hires or newly assigned employees, under the direct observation of a previously qualified individual, prior to assessment and qualification of the new hire or newly assigned employee. Additional training may also be provided to individuals who are involved in an incident or who fail to pass an initial OQ evaluation. Any individual who receives specific task training will be evaluated in accordance with the Operator's standing policy, to verify knowledge, skills, and abilities, at the completion of their training and prior to work assignment.

4.6. Span of Control

Haskell may meet or exceed Operator requirements regarding the acceptable Span of Control, for the performance of a Covered Task by an un-qualified or newly assigned individual. In all cases, the effective Span of Control will ensure that the Covered Task is performed in accordance with applicable rules, DOT Regulations, and Owner policies.

4.7. Re-Evaluation

4.7.1. Incidents

In the event of an accident/incident related to the performance of a Covered Task, or non-response of an individual to an established AOC, Haskell will re-qualify the individual(s) who either caused or contributed to the event.

4.7.3. For Cause

Any individual observed performing a Covered Task inappropriately or negligently will be stopped, re-evaluated/re-trained, and possibly restricted from continuing to perform any Covered Task on DOT regulated pipeline systems.

4.7.4. Periodic

All Haskell employees will be periodically re-qualified in accordance with particular operator requirements. Re-qualification intervals should not exceed 5 years.

4.8. Abnormal Operating Conditions (AOC's)

Planned versus Abnormal operating conditions are reviewed with all crew members during daily Safety Task Assignment JSA/STA reviews. Employees are authorized to stop work if a potentially dangerous situation is observed or imminent. Following the recognition of an AOC, a meeting is held with all affected parties to discuss the observation and best method of controlling exposure to the hazard.

4.9. Management of Change

Any change to this policy, an operator's policy, or the regulations will be communicated to every affected employee upon official notification of a change. If the changes have the potential to affect the validity of an individual's qualification, the affected individual will be re-qualified or provided with additional training, in accordance with the change. Potential changes requiring attention under this part include, new tooling/equipment, new work processes, significant changes to the pipeline system or regulations.

4.10. Recordkeeping

Haskell will maintain individual qualification records for all affected employee at the project location, for review and audit by the Operator. Individual record formats may vary, depending on the individual Operator's policy and/or record management system; however, every qualification record will contain at least the following information: Individual's Name, Covered Task, Date of Qualification, and Method of Qualification.

4.10.1. Record Retention

Haskell will maintain all documents related to an individual's Qualification for a period of not less than five (5) years from the last date of uninterrupted qualification.

4.11. Subcontractors

Haskell intends to manage subcontractor qualification as follows:

- Subcontractors may provide proof of individual qualification in accordance with this policy and 49 CFR Part 192 or 49 CFR Part 195
- Haskell may allow subcontractor employees to perform Covered Tasks under direct observation by a qualified individual, within the Operator's Span of Control provisions (if applicable)

5.0 Regulations

- Federal 49CFR Part 192, Part 195
- Washington *See Below*
- California *See Below*
- Agency Oversight-
    - USDOT/OPS- Office of Pipeline Safety
    - WUTC- WA. Utilities and Transportation Commission
    - CPUC- California Public Utilities Commission
    - EFSEC- Energy Facility Site Evaluation Council
    - FERC- Federal Energy Regulatory Commission

DRIVER SAFETY

1.0 Purpose

To ensure that staff who drive vehicles in the course of their work demonstrate safe, efficient driving skills and other good road safety habits at all times.

To maintain all company vehicles in a safe, clean and roadworthy condition to ensure the maximum safety of the drivers, occupants and other road users, and reduce the impacts of company vehicles on the environment – this also applies to personal vehicles used for work purposes.

2.0 Scope

This policy affects all Haskell employees and subcontractors on all Haskell Corporation projects and sites.

3.0 Procedures

The procedures for Haskell Corporation is that: “While driving company vehicles or personal vehicles for work purposes, staff must comply with traffic legislation, be conscious of road safety and demonstrate safe driving and other good road safety habits”.

3.1. The following actions in company vehicles will be viewed as serious breaches of conduct and dismissal may be a consequence:

- 3.1.1. Drinking or being under the influence of drugs while driving
- 3.1.2. Driving while disqualified or not correctly licensed
- 3.1.3. Reckless or dangerous driving causing death or injury
- 3.1.4. Failing to stop after a crash
- 3.1.5. Acquiring demerit points leading to suspension of licence
- 3.1.6. Any actions that warrant the suspension of a licence.

4.0 Responsibilities as an employee

4.1. Every driver of a company vehicle will:

- 4.1.1. Ensure they hold a current driver licence for the class of vehicle they are driving and this licence is carried when driving a company vehicle
- 4.1.2. Immediately notify their supervisor or manager if their driver licence has been suspended or cancelled, or has had limitations placed upon it
- 4.1.3. Be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work

4.1.4. Display the highest level of professional conduct when driving a company vehicle
4.1.5. Regularly check the oil, tyre pressures, radiator and battery levels of company vehicles they regularly use
4.1.6. Comply with traffic legislation when driving
4.1.7. Assess hazards while driving and anticipate 'what if' scenarios
4.1.8. Drive within the legal speed limits, including driving to the conditions
4.1.9. Wear a safety belt at all times
4.1.10. Never drive under the influence of alcohol or drugs, including prescription and over the counter medication if they cause drowsiness – to do so will merit disciplinary measures
4.1.11. Avoid distraction when driving – the driver will adjust car stereos/mirrors etc before setting off, or pull over safely in order to do so
4.1.12. Report any near-hits, crashes and scrapes to their manager, including those that do not result in injury, and follow the crash procedures outlined in this policy
4.1.13. Report infringements to a manager at the earliest opportunity
4.1.14. Report vehicle defects to a manager before the next vehicle use.
4.1.15. In addition, it is required that all drivers:
4.1.16. Take regular and adequate rest breaks, at least every two hours
4.1.17. Stop when tired
4.1.18. Plan their journeys, taking into account pre-journey work duties, the length of the trip and post-journey commitments
4.1.19. Stay overnight if driving time and non-driving duties exceed 10 hours in one day.

4.2. If an employee is driving their own vehicle for the purposes of work, the same policies apply. In addition:

4.2.1. The employee must seek the employer's agreement before using their vehicle for work
4.2.2. The car must be legally registered, warranted and insured for the purposes of work – the employee must show evidence of this on request
4.2.3. The employee must not carry loads for which the vehicle is unsuited, nor may they carry more passengers than for whom there are seat belts
4.2.4. The vehicle must not be used in conditions for which it was not designed (such as off-road).

5.0 Responsibilities as an employer

The employer will take all steps to ensure company vehicles are as safe as possible and will not require staff to drive under conditions that are unsafe and/or likely to create an unsafe environment, physical distress, fatigue, etc.

5.1. The employer will do this by undertaking the following tasks:

5.1.1. Giving priority to safety features when selecting new vehicles, including:

5.1.2. Only buying and/or hiring vehicles that rate four or more stars on the ANCAP (Australasian New Car Assessment Program) tests
5.1.3. Choosing vehicles with ESC (Electronic Stability Control), ABS brakes and side head-protecting airbags
5.1.4. Only buying and/or hiring vehicles that are light coloured
5.1.5. Fitting all vehicles with a first aid kit, fire extinguisher, reflective vest, torch and emergency triangle.
5.1.6. Ensuring all vehicles are well maintained and that the equipment promotes driver, operator and passenger safety by:
5.1.7. Servicing the vehicles according to manufacturers' recommendations
5.1.8. Setting up procedures where employees check vehicles' oil, water, tyre pressures and general cleanliness on a monthly basis, then record the inspections
5.1.9. Keeping maintenance schedules in the glove boxes of all vehicles, which are completed each time the vehicles are serviced in any way
5.1.10. Following the maintenance schedules in the vehicles' manuals
5.1.11. Setting up a procedure to identify and rectify faults as soon as practicable.
5.1.12. Collecting and collating statistics on incidents, crashes and their causes, including:

5.1.12.1. The number of crashes
5.1.12.2. Who was thought to be at fault
5.1.12.3. The probable causes of the crashes and other contributors, such as unrealistic work schedules
5.1.12.4. The financial cost of all crashes
5.1.12.5. The number of prosecutions
5.1.12.6. The number of near-miss events
5.1.12.7. Other costs, such as downtime, ACC compensation claims, temporary workers and lost productivity.
5.1.12.8. Monitoring and managing work schedules to ensure they do not encourage unsafe driving practices by:
5.1.12.9. Recommending staff to have 10 hours' minimum continuous rest and 11 hours' maximum driving time every 24 hours
5.1.12.10. Requiring non-commercial drivers to take 10-minute breaks every two hours of driving.
5.1.12.11. Taking into account individual drivers' needs by:
5.1.12.12. Requiring staff to keep driving logs that are regularly checked by a supervisor or manager. This is also a requirement for Inland Revenue purposes.
5.1.12.13. Identifying driver training needs and arranging appropriate training or retraining, including providing:
5.1.12.14. A thorough induction to the company's road safety policies and procedures
5.1.12.15. Driver training opportunities to all staff

5.1.12.16. Driver assessment and required training as part of all staff inductions
5.1.12.17. Advanced driver training or specific practical training as required and identified
5.1.12.18. Regular staff seminars or refresher meetings on safety features, fatigue, driver responsibility, drink-driving and fuel-efficient driving
5.1.12.19. Driver training log updates on personnel files.
5.1.12.20. Encouraging safe driving behaviour by:
5.1.12.21. Not paying staff speeding or other infringement fines
5.1.12.22. Forbidding the use of mobile phones in vehicles while driving
5.1.12.23. Encouraging regular breaks while driving
5.1.12.24. Providing taxis and designated drivers to and from work social events
5.1.12.25. Providing food and non-alcoholic drinks at work functions
5.1.12.26. Encouraging the use of taxis and buses whenever necessary
5.1.12.27. Ensuring the employer is informed if existing staff become unlicensed.
5.1.12.28. Encouraging better fuel efficiency by:
5.1.12.29. Setting up and promoting a car pool scheme for work car use
5.1.12.30. Setting up and promoting a workplace travel plan
5.1.12.31. Providing training on, and circulating information about, travel planning and efficient driving habits
5.1.12.32. Encouraging the use of other transport and/or remote conferencing whenever practical.

6.0 What employees are to do if there is a crash in a company vehicle:

6.1. Immediately stop your vehicle at the scene or as close to it as possible, making sure you are not obstructing traffic. Ensure your own safety first. Help any injured people and call for assistance if needed.

6.2. Try to get the following information:

6.2.1. Details of the other vehicle(s) and registration number(s)
6.2.2. Name(s) and address(es) of the other vehicle owner(s) and driver(s)
6.2.3. Name(s) and address(es) of any witness(es)
6.2.4. Name(s) of insurer(s).

6.3. Give the following information:

6.3.1. Your name and address and company details.
6.3.2. If you damage another vehicle that is unattended, leave a note on the vehicle with your contact details.
6.3.3. Contact the police:
6.3.4. If there are injuries
6.3.5. If there is a disagreement over the cause of the crash

6.3.6. If you damage property other than your own
6.3.7. If damage to the vehicle looks to be worth more than $2500.

7.0 Follow-up

7.1. If there is an injury or major damage, report the crash to your manager as soon as you can.

8.0 How the success of the policy will be measured

8.1. The success of this policy will be measured by the increase or decrease in:
8.2. The number of crashes involving company vehicles
8.3. The number of at-fault crashes involving company vehicles
8.4. The number of traffic infringements received
8.5. The costs of repairs and maintenance
8.6. Other financial costs associated with vehicle use
8.7. The average cost of vehicle-related workers' compensation claims.

ELECTRICAL SAFETY

1.0 Purpose

To provide essential guidance for working safely with portable electrical tools, cords, and associated equipment, including general access to electrical circuits (outlets) in a 'user' capacity

2.0 Scope

This policy applies to all Haskell work locations and employees

3.0 Definitions

3.1. GFCI- Ground Fault Circuit Interrupter: means an independent in-line device that is capable of detecting electrical over-current situations and stopping the flow of electricity between the source and a tool

3.2. AGP-Assured Grounding Program: means a systematic approach to the inspection and testing of electrical devices, to ensure integrity and reliability of the components

3.3. Authorized – In order to be authorized to perform any task consisting of a specific operation on a specific piece of electrical equipment, personnel must receive documented training and a demonstration of competency.

4.0 Procedures

4.1. Procedure

4.1.1. Each job site will implement an effective assured equipment grounding program in accordance with DOSH/OSHA requirements. All employees will be trained in the requirements of the electrical safety program. The job site superintendent is designated as being competent and responsible for overseeing implementation of this program. If Ground Fault Circuit Interrupters (GFCI) are used, they may replace the assured grounding requirements.

4.1.2. Haskell Corporation does not perform electrical work, as such, none of our employees is a "Qualified Employee" with respect to this policy.

4.1.3. Safety-related work practices should be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices should be consistent with the nature and extent of the associated electrical hazards. No employees should work in proximity to any part of an electrical power circuit that the employee could contact the electrical power circuit in the course of the work, unless the employee is protected against electrical shock by de-

energizing the circuit and grounding it or by guarding it effectively by insulation or other means.

4.1.4. Portable ladders should have non-conductive side rails.

4.1.5. Conductive items of jewelry or clothing should not be worn unless they are rendered non-conductive by covering, wrapping or other insulating means.

4.1.6. Any electrical system, conductors and parts of electrical equipment that have been de-energized but have not been locked or tagged out should be treated as live parts.

4.1.7. No work should be performed, no materials should be piled, stored or otherwise handled, no scaffolding or structures should be erected or dismantled, nor any tools, machinery or equipment operated within the specified minimum distances from any energized high voltage electrical conductor capable of energizing the material or equipment; except where the electrical distribution and transmission lines have been de-energized and visibly grounded at point of work, or where insulating barriers not a part of or an attachment to the equipment have been erected to prevent physical contact with the lines or equipment. Equipment should be operated proximate to, under, over, by, or near energized conductors only in accordance with the following:

4.1.7.1. For lines rated 50 kV or less, minimum clearance between the lines and any part of the equipment or load should be ten feet

4.1.7.2. For lines rated over 50 kV, minimum clearance between the lines and the equipment or load should be ten feet plus 0.4 inch for each kV

4.1.7.3. For services over 50 kV, twice the length of the line insulator but never less than ten feet

4.1.8. Explosion proof electrical equipment, rated for hazardous environments should be used when performing work in areas that have the potential to develop flammable or explosive atmospheres, such as but not limited to confined spaces. Any equipment or structure that has the potential to develop a static charge such as storage tanks should be grounded.

4.1.9. All cord sets should have double insulation (SO cord or better), weather and sun resistant with a ground conductor, free of splices. Temporary lighting should be equipped with guards over the bulbs.

4.1.10. Qualified electricians should be the only employees authorized to perform maintenance and repair on electrical equipment. Field repairs or tampering with any electrical equipment by unauthorized employees should not be allowed. Employees should not wear rings, watches or other conductive materials when working with electrical equipment.

4.1.11. Haskell personnel (other than qualified electrical workers), should only perform specific tasks on the specific types of equipment for which they are authorized and competent to perform.

4.2. Training

4.2.1. Employees should be trained in and familiar with the safety-related work practices that pertain to their respective job assignments. For a person to be considered an "authorized person", he or she should:

4.2.1.1. a. Be trained to identify and understand the relationship between electrical hazards and possible injury.

4.2.1.2. b. Be trained in the safety-related work practices, safety procedures, and other personnel safety requirements as necessary to provide protection from the electrical hazards associated with their job assignment and the tasks they are required to perform.

4.2.2. General electrical safety refresher training should take place no less often than once every three years.

4.3. Assured Grounding Program

4.3.1. All 120-volt, single phase, 15 ampere and 20 ampere receptacle outlets on construction sites, which are not part of the permanent wiring of the building or structure and which are in use by employees, should have approved ground fault circuit interrupters for personnel protection.

4.3.2. All electrical tool, cords and equipment connected to a GFCI should be connected at the power source. GFCI breakers should be tested prior to use.

4.3.3. Continuity circuitry testing will be performed following any repairs to the following equipment:

4.3.3.1. Cord sets and receptacles not part of the permanent wiring of buildings or structures

4.3.3.2. All electrical equipment and tools used in connection with processes of construction or alterations

4.3.4. This program does not apply to "double insulated" systems or tools which need not be tested

4.4. Energized parts

4.4.1. This section applies to work performed on exposed live parts (involving either direct contact or by means of tools or materials) or near enough to them for employees to be exposed to any hazard they present. If exposed live parts are not de-energized (i.e., for reasons of increased or additional hazards or infeasibility), other safety-related work practices should be used to protect employees who may be exposed to the electrical hazards involved. Such work practices should protect employees against contact with energized circuit parts directly with any part of their body or indirectly through some other conductive object.

4.4.2. Employees may not enter spaces containing exposed energized parts unless illumination is provided that enables the employees to work safely. Protective shields, protective barriers or insulating materials as necessary should be provided.

4.4.3. Only qualified persons may work on electric circuit parts or equipment that have not been de-energized under the procedures of paragraph (b) of this section. Such persons should be capable of working safely on energized circuits and should be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

4.5. Testing

4.5.1. All equipment will be tested before first use for grounding and continuity of the circuitry.

4.5.2. Equipment returned to service following repairs should be tested for continuity before being used.

4.5.3. Each item subject to testing should be done at intervals not exceeding 3 months.

4.6. Inspection

4.6.1. Electrical equipment will be visually inspected each day for any external defects, including deformed or missing connection pins/prongs, insulation damage and indications of possible internal damage. Equipment noted as defective or suspect will be tagged “Do Not Use” and will not be used until repaired, re-tested and results recorded.

4.7. Portable Electric Tools

4.7.1. Portable electric power tools should be equipped with an assured ground, or may be of the double insulated type. Double insulated tools should be labeled as “Double Insulated” or contain a double square ☐- meaning the same.

4.7.2. Portable electric tools should be visibly marked as approved by an underwriting agency such as Underwriters Laboratories, Inc., or Factory Mutual Engineering Corp.

4.7.3. Power tools should be disconnected from their power source while changing attachments or while performing maintenance or repairs.

4.7.4. Electrical tools should not be used where the hazard of fire or explosion exists.

4.7.5. Qualified personnel should make all repairs to electrical tools and cords. Repairs in tool-end power cords require replacement of the entire power cord (new ends are not allowed).

4.7.6. Personnel should be familiar with the safe operation of portable electrical tools and should use required personal protective equipment.

4.7.7. Employees may never yank the cord to disconnect it from the receptacle or to hoist or lower tools.

4.8. Operations Near Energized Overhead Lines or Equipment

4.8.1. If work is to be performed near overhead lines, the lines should be de-energized and grounded, or other protective measures should be provided before work is started. If the lines are to be de-energized, arrangements should be made with the person or organization that operates or controls the electric circuits involved to de-energize and ground them. If protective measures, such as guarding, isolating, or insulating, are

provided, these precautions should prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

4.8.2. "Qualified persons." Haskell Corporation does not perform electrical work, as such, none of our employees is a “Qualified Employee” with respect to this policy.

4.8.3. When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table S-5 unless:

4.8.4. The person is insulated from the energized part (gloves, with sleeves if necessary, rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed), or

4.8.5. The energized part is insulated both from all other conductive objects at a different potential and from the person, or

4.8.6. The person is insulated from all conductive objects at a potential different from that of the energized part.

TABLE S-5 - APPROACH DISTANCES FOR QUALIFIED EMPLOYEES - ALTERNATING CURRENT

Voltage range (phase to phase)	Minimum approach distance
300V and less	Avoid Contact
Over 300V, not over 750V	1 ft. 0 in. (30.5 cm).
Over 750V, not over 2kV	1 ft. 6 in. (46 cm).
Over 2kV, not over 15kV	2 ft. 0 in. (61 cm).
Over 15kV, not over 37kV	3 ft. 0 in. (91 cm).
Over 37kV, not over 87.5kV	3 ft. 6 in. (107 cm).
Over 87.5kV, not over 121kV	4 ft. 0 in. (122 cm).
Over 121kV, not over 140kV	4 ft. 6 in. (137 cm).

4.8.7. When an unqualified person is working in an elevated position near overhead lines, the location should be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:

4.8.8. For voltages to ground 50kV or below - 10 feet;

4.8.9. For voltages to ground over 50kV - 10 feet plus 4 inches for every 10kV over 50kV.

4.8.10. Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines should be operated so that a clearance of 10 ft. is maintained. If the voltage is higher than 50kV, the clearance should be increased 4 in. for every 10kV over that voltage.

4.9. Lockout Tagout

4.9.1. While any employee is exposed to contact with parts of electric equipment or circuits which have been de-energized, the circuits energizing the parts should be locked out, tagged out or both.

4.9.2. Any required Lockout Tagout procedures (for repairs) should follow the requirements of Haskell Safety Policy LOCKOUT TAGOUT.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

EMERGENCY ACTION PLANNING

1.0 Purpose

Each Haskell location should have a written Emergency Action Plan, appropriate to the hazards of the workplace, in order to respond to an emergency that may require rescue or evacuation.

Each Emergency Action Plan should be prepared to reflect all known probable emergency conditions which may arise from within the workplace and from adjacent workplaces, the minimum of which will include fire or other emergencies. Emergency Action Plans are developed with cooperation from the client who knows what type of emergencies can arise in their facility.

The emergency action plan must be available to all employees to review. An emergency action plan must be in writing, kept in the workplace and available to employees for review. However, if a site has 10 or fewer employees the plan may be orally to employees.

1.1. Emergency Response Planning, Issuing and Annual Review Guidelines

Emergency Procedures should be issued and discussed with all new/transferred personnel upon arrival for assignment.

Emergency Action Plans should be established, implemented, reviewed, maintained and updated annually in conjunction with:

- Client emergency services department requirements.
- Haskell safety staff and management.
- The requirement to ensure the plan is up to date to reflect current circumstances at the workplace.

The plan is to be reviewed before the job and when conditions warrant and should be used for routine and non-routine emergencies as well as changes in operation, and products or services which warrant new emergencies situations.

1.2. Reviewing the Emergency Action Plan with Employees

A verbal review of the emergency action plan should occur with employees:

- When the plan is developed or the employee is assigned initially to a job.
- When the employee's responsibilities under the plan change.
- When the plan is changed.
- Periodically

1.3. Procedures for Emergency Evacuation Planning

The emergency action plan must include procedures for emergency evacuation. An emergency action plan must include, at a minimum, procedures for emergency evacuation, including type of evacuation and exit route assignments.

The individual site evacuation procedure should be appropriate to the risk must be developed and implemented to:

- Notify staff, including the first aid attendant, of the nature and location of the emergency,
- Evacuate employees safely and include procedures to account for all employees after evacuation,

- Check and confirm the safe evacuation of all employees,
- Notify the fire department or other emergency responders, and
- Notify adjacent workplaces or residences which may be affected if the risk of exposure to a substance extends beyond the workplace. Notification of the public must be in conformity with the requirements of other jurisdictions, including provincial and municipal agencies.

1.4. List of Potential Emergencies

The emergency action plan must include procedures for reporting a fire or other emergency. An emergency action plan must include, at a minimum, procedures for reporting a fire or other emergency.

Each location should conduct a risk assessment for hazards posed by potential hazardous substances from accidental release, fie or other such emergencies that could cause an evacuation or rescue and list the potential emergencies for Haskell operations. Procedures for each of these potential emergencies should be contained within the Emergency Action Plan. Examples include:

- Fire
- Gas Leaks/Chemical Spills
- Bomb Threats
- Medical Emergencies
- Explosion
- Workplace Violence

1.5. Guidance Procedures for Potential Emergencies

1.5.1. Fire

- Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.
- If nearby staff have been trained, and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
- Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
- Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

1.5.2. Gas Leaks/Chemical Spills - Upon smelling or noticing a gas leak or unusual vapors, or a **chemica**l spill:

- Pull fire alarm (if present) or sound warning and evacuate the premises via the nearest exit
- Proceed to the Emergency Assembly Area
- Contact local emergency response personnel by phone or radio
- Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

If employees are required to control a release of a hazardous substance, to perform cleanup of a spill, or to carry out testing before re-entry, Haskell should provide:

- Adequate written safe work procedures and documented training.
- Appropriate personal protective equipment which is readily available to employees and is adequately maintained, and
- Material or equipment necessary for the control and disposal of the hazardous substance.

1.5.3. Bomb Threats

- If a threat is received by phone, mail or other means, get as much information as possible.
- If the threat is received by phone, try to keep the person on the line for as long as possible. Do not hang up the phone, even after the call has been terminated.

- Contact local emergency response personnel by phone or radio.
- If a suspicious device is identified, evacuate the immediate area and notify local emergency response personnel.

1.5.4. Medical Emergencies

- Call for assistance by phone or radio. Give the exact location and details of the medical emergency.
- If qualified, provide basic first aid, and keep the person comfortable. Do not move the person. Do not leave him/her unattended.
- Arrange for emergency medical transportation based on the medical planning portion of the site's Emergency Action Plan.

1.5.5. Explosions

- Get down on the floor, take shelter under tables or desks, and protect your face and head against flying glass and debris.
- Once it is safe to do so, evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
- Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

1.5.6. Workplace Violence

- Notify security immediately by phone or radio and report the occurrence.
- Do NOT attempt to physically intervene. Protect yourself first at all costs.

2.0 Emergency Response Equipment

2.1. Listing of Types of Emergency Equipment

Each site Emergency Action Plan should identify, list the locations of and provide operational procedures for types of emergency equipment. For off-site locations, available emergency equipment should be identified and reviewed with workers prior to commencing work activities. Examples include:

- Living areas with an audible alarm and a fire hose cabinet.
- Emergency lighting, exit doors, dampers and fire stop flaps.
- First aid kits located throughout the facility and in vehicles.
- Portable fire extinguishers being located throughout the facility and clearly marked.
- Only authorized and trained personnel will operate emergency equipment.

2.2. Inspection & Maintenance Records

Maintenance records must be kept, including but not limited to the name of manufacturer, the type of equipment, the date put into service, when and for what purpose the equipment has been used, the date of the last inspection and name of the inspecting person, any damage suffered, and the date and nature of any of maintenance on emergency response equipment.

Ropes and associated equipment must be inspected visually and physically by qualified employees after each use for rescue, evacuation or training purposes.

The Haskell designated representative will perform and maintain the Haskell Emergency Inspection Checklist Form on a monthly basis. The checklist should be maintained for retention in active files for two years and in on site archives for seven years.

3.0 Media Response Plan

Haskell employees must not be interviewed by anyone unless the Legal Department has given prior approval. In most cases the Legal Department will have an attorney present for such interviews.

Note: If after Haskell personnel have received approval for an interview from the Legal Department and another party's attorney appears unannounced, you should politely adjourn the interview until the Haskell Legal Department can be contacted. Personnel must not give any work related interviews, affidavits, written or recorded statements, or depositions without the express approval from the Haskell Legal Department.

In the case of interviews of Haskell employees by non-attorneys, (law enforcement, government officials, media, etc.) you must inform the Legal Department before the interview. If the interview is taped or videotaped, you must request a copy of the tape. If the interview is reduced to writing, you must ask for a copy of any notes or statements taken. This procedure is to avoid information being misrepresented.

All media requests should be referred to the Haskell Chief Operating Officer. Unless requested to do so by the Legal Department, other Haskell personnel are not to give interviews or make statements to the media. Management prefers that families of personnel involved in an incident receive initial notification from a Haskell representative and not the media.

4.0 Training

Haskell should ensure training for Emergency Action Plan is delivered, documented and prepares the staff and facility for emergency conditions. Haskell will designate and train employees to assist in a safe and orderly evacuation of other employees. Requirements include:

- All employees must be given adequate instruction in the fire prevention and emergency evacuation procedures applicable to their workplace.
- The designated site representative should provide the Emergency Action Plan orientation to all new/transferred personnel before they begin work.
- All personnel should receive a review/update orientation at least annually, or whenever any new/revised information is to be provided.
- The Emergency Action Plan Orientation Check List should be completed after orientation and the record maintained in the individual's training records.
- Haskell management should ensure that contractors/consultants working in areas under the supervision of Haskell also receive the Emergency Action Plan orientation upon arrival to the area.
- Employees expected to perform duties under the Emergency Action Plan will be trained prior to assuming their roles. This will include simulated rescue or evacuation exercises and regular retraining, appropriate to the type of rescue or evacuation being provided, and training records must be kept.

- A list of trained staff responders should be posted and maintained indicating their name, response function, their work location and what type of equipment they have been trained for.

5.0 Location and Use of Emergency Facilities

Haskell should ensure each Emergency Action Plan lists the location and how to use emergency facilities for each work site. For off-site locations, outside services that can provide assistance in the event of an emergency should be identified and reviewed with workers prior to commencing work activities. A list should be posted in a conspicuous area showing local emergency facilities and how to contact. Examples include:

- Client Emergency Response Department (Initial Responder for All Emergencies If Applicable)
- Local Police, Local Hospital, Poison Center (Poison Response) 1-800-332-1414, etc.

6.0 Fire Protection & Response

Haskell should ensure each Emergency Action Plan provides fire protection and response planning within each site Emergency Action Plan and is utilized during all phases of work. As a minimum, all should include the following:

6.1. Protection

- Smoking is not permitted except in designated 'SMOKING" areas.
- Facilities should be designed and maintained in accordance with local fire code and regulations.
- Portable fire extinguishers should be stationed, inspected and maintained in accordance with local fire code and regulations. Haskell personnel should be trained in their use.
- Flammable and combustible liquids should be properly stored.
- Employees should report all fire safety issues to their immediate supervisor.
- Facilities should be inspected by use of the Haskell Emergency Inspection Checklist

6.2. Response

In the event of a fire**,** personnel working in facility will adhere to the following procedure for their work area:

- Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.
- If nearby staff have been trained, and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
- Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
- Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

Roads are designated as fire lanes. Vehicles can stop there for unloading, but no parking will be allowed.

7.0 Alarm & Emergency Communication

Each Emergency Action Plan for Haskell should contain methods to address alarms and communications in case of an emergency. For off-site locations, the method of emergency notification should be identified and reviewed with workers prior to commencing work activities.

7.1. Alarm System

A system must be in place to alert employees. The alarm system should be distinctive and recognizable as a signal to evacuate the work area or perform actions designated under the emergency action plan. For sites with 10 or fewer employees in a particular workplace, direct voice communication is an acceptable procedure for sounding the alarm provided all employees can hear the alarm. Each Emergency Response plan will describe how to activate an alarm and what to do after either activating or hearing an alarm.

Personnel responding to any alarm should avoid complacency. Every alarm should be treated as an actual incident until proven otherwise. Treating and responding to alarms as a routine happening can result in injuries, fatalities and destruction of property.

7.2. Communications

Haskell responders and security use telephones, cell phones and radios in conjunction with emergency response.

8.0 Rescue and Evacuation Procedures

8.1. Procedures for Rescue and Medical Services

Each site Emergency Action Plan should address who performs recue services when required. It is the position of Haskell that all rescue and medical duties are performed by client emergency responders or local governmental responders when on their location. For off-site locations, evacuation procedures and methods of rescue should be identified and reviewed with workers prior to commencing work activities.

At least one member of a rescue team must be a first aid attendant trained to immobilize an injured employee.

Effective communications must be maintained between the employees engaged in rescue or evacuation and support persons.

8.2. Procedure for Evacuation

8.2.1. Preparation for Evacuation

Each site Emergency Action Plan should contain a procedure for evacuation if required.

The Haskell designated Emergency Coordinator will maintain an active list of all Haskell and contract emergency responders.

8.2.2. Critical Plant Operations Personnel

Staff designated to remain in the facility to shut down or supervise critical operations or equipment will be specifically trained and authorized by management to perform their duties before any evacuation may occur.

8.2.3. Evacuation Drills

Evacuation drills should be conducted at least annually. Before conducting an evacuation drill a pre-drill assessment of the evacuation routes and assembly points should be conducted. The pre-drill assessment is intended to verify that all egress components (stairs, doors, etc.) are in proper order and that occupants can use them safely.

8.2.4. Coordination Within a Facility

Emergency training and drills should also be coordinated within a Haskell facility so that key staff are involved in the planning process and are aware of their responsibilities in an emergency as well as during the drill.

Facility management also needs to be informed of the potential for the interruption in productivity and business operations. Alternatives for the continuity of critical operations need to be considered.

8.2.5. Procedures to Account for All Employees After Evacuation

The emergency action plan must include procedures to account for all employees after the evacuation. An emergency action plan must include, at a minimum, procedures to account for all employees after evacuation. Each muster or assembly point will have a blank roster for evacuees to enter their name. All completed rosters will be gathered and checked against a master list of employees assigned or checked in at the facility to verify all employees are accounted for.

8.2.6. Emergency Evacuation Notification and Routes

In the event of an emergency occurring within or affecting the work site, the Emergency Coordinator makes the following decisions and ensures the appropriate key steps are taken:

- Advise all personnel of the emergency.
- Activate the emergency notification sequence to alert the appropriate responders and initiate emergency notification within the building.
- Evacuate all persons to the identified assembly area and account for everyone including visitors and clients.

All personnel will proceed to the primary safe area immediately located at the identified emergency assembly area for their location.

A copy of escape routes should be posted in all offices, at all alarm stations and at all exits.

8.2.7. Sweep Check by Haskell Designated Responders

- Haskell trained responders will establish a pattern that will permit covering the area in the shortest time, with a minimum of backtracking.
- When the evacuation alarm rings, stop work immediately, and conduct a sweep of the area. Ask everyone to leave the premises immediately and proceed to the identified emergency assembly area for their location.

- If you encounter smoke or flame, leave that section immediately, finish your sweep and evacuate the building by activating fire alarm pull stations. Remember, if in doubt get out.
- If anyone refuses to leave, note their name and location, and advise the client emergency services personnel.
- Meet the client emergency services personnel and advise them of your sweep or an area of smoke or flame that you were unable to check. Assist with head count and evacuation if required.
- Ensure that everyone stays at the emergency assembly area until the Emergency Coordinator has given an all clear to re-enter the building.
- In the event of inclement weather, the client will make arrangements to have buses either as temporary shelter or to transport personnel to another location.

8.2.8. Evacuation or Drill Evaluation

Following an evacuation or drill a response review should be conducted and documented by the Haskell Emergency Coordinator and lessons learned share with the appropriate responders and staff using the Haskell Evacuation Report.

9.0 Emergency Response Program Management

Contact information will be provided to employees who need additional information pertaining to the plan or to their respective duties. The Haskell site manager may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.

For the purpose of this Emergency Action Plan guidance the Emergency Coordinator will be designated by the Haskell site manager. His/her alternate will be the Haskell Site Safety Supervisor or otherwise designated by the site manager.

Employees performing rescue or evacuation must wear personal protective clothing and equipment appropriate to the hazards likely to be encountered.

9.1. Duties

9.1.1. Haskell Emergency Coordinator

The Haskell Emergency Coordinator ensures that:

- Evacuation drills are conducted on an annual basis.
- Inspections of facilities are performed monthly.
- All necessary repairs of components for evacuation paths are completed.
- Plans for the modification of any part of an evacuation path are reviewed.
- An up to date list of Fire Wardens is maintained.
- Radios and reflective vests and other response equipment are available.

During an evacuation or evacuation exercise, the Haskell Emergency Coordinator:

- Coordinates activities in accordance with either local authorities or the client Security and ERT as required.
- Coordinates Fire Wardens and informs them the nature of the emergency via handheld radios.

Following an evacuation or evacuation exercise, the Haskell Emergency Coordinator:

- Notifies Fire Wardens that it is safe to re-enter the building.
- Prepares a report following an evacuation (actual or drill).

- Reports to management for follow up or corrective actions.

9.1.2. Haskell Site Safety Supervisor

- Assist the Haskell Emergency Coordinator when requested.

9.1.3. Fire Wardens

- Be equipped with radios and reflective vests. The equipment is to be handed into the Haskell Emergency Coordinator and reissued to the next oncoming Fire Warden for the designated area.
- Be familiar with exits and muster stations for their responsible area.
- Direct residents safely out of the building to the designated muster station or to an alternate location.
- Sweep their effected area, ensuring that the alarms are properly functioning and that residents evacuate safely.
- In order to account for all employees after evacuation the fire wardens or designated personnel should complete a head count and reconcile the evacuees with the attendance or daily housing report at the assigned muster station or alternate location.
- Radio unaccounted for personnel to Security.
- Notify personnel that they may re-enter the building when permission has been given by the appropriate authorities.

9.1.4. Residents, Contractors & Visitors

- All employees, users, contractors and visitors will follow the instructions of the Fire Wardens, Security, ERT, Safety Personnel, managers and supervisors when asked to evacuate the building.
- Know the two safest and most direct evacuation routes from their work area(s).
- Know the designated evacuation assembly point for the building.

Haskell Emergency Inspection Checklist

Department:	Location:	Date of Inspection:
Inspected by:	Title:	Ext:

This form is to be used monthly.

	N/A	Yes	No
EGRESS			
Is every means of egress arranged and clearly marked, so that the way to safety is unmistakable at all times?			
Are exits signs lit?			
Are there sufficient exits for the prompt escape of all employees in case of fire or other emergencies?			
Are doors that aren't exits that could be mistaken as one, clearly marked "Not an Exit"?			
Do exit doors swing out?			
Are means of egress at least 28 inches at any point and adequate width for the number of people?			
Are egresses kept clear of obstructions and materials at all times?			
Is there proper lighting for emergency exiting? (i.e. during a power failure)			
Are at least two exits by separate ways of travel available for each occupant?			
Is the minimum width of any exit way no less than 28 inches?			
Are furnishings and decorations so placed that they will not obstruct the exits, the access thereto, or the egress there from, or the visibility thereof?			
Are explosive and highly flammable furnishings or decorations prohibited?			
EMERGENCIES/EVACUATION			
Are evacuation maps posted in readily accessible places?			
Do employees know where their muster point is located?			

This form is to be used monthly.	N/A	Yes	No
Do employees know area hazards, the nearest exit and alternate routes of escape?			
Do employees know the preferred means of reporting emergencies?			
Do employees know the site emergency number(s)?			
Is the site emergency number posted on or by the phone?			
Do employees know what signal indicates evacuation?			
Can all personnel perceive the employee alarm?			
Do employees with special assistance needs been addressed?			
Employees questioned know where the emergency shut off is for the natural gas			
FIRE PROTECTION			
Are fire hydrants accessible?			
Are fire hydrants inspected yearly and records maintained to show the date?			
Are control and operating valves locked open or electronically supervised?			
Are fire hoses maintained and periodically tested?			
Are combustible materials kept away from ignition sources?			
Are standpipe and hose system components visually inspected quarterly?			
Is the accumulation of flammable and combustible materials controlled so they do not contribute to fire emergency?			
All product, supplies, merchandise etc. not piled within 18” of Sprinkler heads			
No Combustibles within three feet of Hot Water Tank, Space Heaters and/or Electrical panels			
All Compressed Gas Cylinders tied or chained to eliminate tipping			
DETECTION AND ALARM SYSTEMS			
Are detection systems installed and maintained?			

This form is to be used monthly.	N/A	Yes	No
Are all trouble alarms and fire signals investigated?			
Do detection/alarm systems shut down or reverse HVAC systems for smoke control?			
Do detection/alarm systems close smoke or fire doors?			
Do detection/alarm systems activate local alarms?			
Are alarm and PA systems periodically tested?			
PORTABLE FIRE EXTINGUISHERS			
Does everyone know where the nearest fire extinguisher is stored?			
Has the area fire extinguisher been maintenance tested within the last year and tagged to show the date?			
Are fire extinguishers accessible and the proper type for the fire hazard?			
Are employees trained in how to use fire extinguishers?			
Is there a fire extinguisher mounted within 75 ft. of any point in an area?			
Are the extinguishers clean and well cared for?			
Is the seal and lock pin in place?			
Clear access to extinguishers? Not blocked			
Is the extinguisher location plainly marked, so as to be visible at a distance?			
Is the extinguisher class marked on the extinguisher?			
FIRST AID / MEDICAL SUPPLIES			
Are first aid supplies stocked, clean, accessible and sanitary?			
Are there eye/body wash facilities near injurious corrosive materials?			
Is a person or persons adequately trained to render first aid available in the near proximity to the workplace?			
Are AEDs present and operators trained?			

This form is to be used monthly.	**N/A**	**Yes**	**No**
Condition of First Aid Kits Acceptable			
Are employees/subcontractors familiar with the incident/accident reporting process?			
Do employees/subcontractors know where accident/incident forms are located?			

Date of last inspection of sprinkler system (required yearly) _____

Comment/Actions:

Haskell Evacuation Report

This form is to be used to record all emergency evacuations (including drills).

Building Details

Building Name _____ Number of Floors (including ground) _____

Designated Muster Station _____ Person Completing Form _____

Evacuation Details

Evacuation Date/Time: _____/_____ Evacuation Drill Yes ☐ No ☐

Trigger for Evacuation: Fire Alarm Activated ___ Drill ___ ERT ___ Security ___

Emergency Situation:

_____

_____

_____

Condition: Staff Only ____ All Occupants ____ After Hours ____ Unoccupied ___ Weather _____

Number of Evacuees _____ Elapsed Time to Evacuate _____ minutes

Evacuation was orderly with no panic Yes ☐ No ☐

Mobility-impaired persons present (sight, hearing, physical, etc.)? Yes ☐ No ☐

The majority of evacuees went to the mustering points? Yes ☐ No ☐

Were the building occupants notified of this drill? Not a drill ☐ Yes ☐ No ☐

Emergency Control Organization

Emergency Coordinator _____ Deputy Emergency Coordinator _____

Emergency Coordinators were stationed at the proper emergency control point?	Yes ☐	No ☐
All Fire Wardens reported to the Emergency Coordinator?	Yes ☐	No ☐
If not, who did not report in? _____		
All Fire Wardens were identifiable (vests, hard hats, flash lights)?	Yes ☐	No ☐
Control of external building exits achieved?	Yes ☐	No ☐
Did the Fire Wardens perform their duties correctly?	Yes ☐	No ☐
Evacuation maps and emergency procedures posters are up-to-date?	Yes ☐	No ☐

Building Fire & Emergency Equipment

Was the evacuation signal audible throughout the building?	Yes ☐	No ☐
Automatic closing fire doors closed when the fire alarm activated?	Yes ☐	No ☐
Card access doors automatically released when the fire alarm activated?	Yes ☐	No ☐
Fire doors and emergency exits unobstructed?	Yes ☐	No ☐

Emergency Response Members

Client: Maintenance ☐ Security ☐ Haskell Emergency Coordinator ☐ HSE ☐

Emergency Response Team Fire Brigade ☐ Ambulance ☐ Police ☐ Other: _____

Haskell Action Sheet

Issue(s)	Action(s) Required	By Who	By When	Sign Off/Date

Records

- Keep the original in your Emergency Response folder and monitor to ensure all action items completed as soon as possible. Report delays to senior management.
- Copies should be distributed in accordance with the Haskell Site Emergency Action Plan.

Emergency Action Plan Orientation Check List

Employee Name _____ Department _____

Hire/Transfer Date _____ Orientation Date _____

[ ] Emergency Procedures

[ ] Evacuation route(s) from assigned work area

[ ] Evacuation from an unfamiliar area

[ ] Location of Emergency Assembly Areas

[ ] Receiving and following instructions during an emergency

[ ] ALL CLEAR and re-entry procedure

[ ] Reporting hazards and/or substandard conditions

[ ] Advising anyone who may require assistance during an emergency evacuation

[ ] Location of Emergency Equipment (i.e. Fire Extinguishers, etc.)

Employee Signature: _____

Orientation Conducted by: _____

Job Position/Title: _____

Sample Emergency Action Plan Core Requirements

POTENTIAL EMERGENCIES **(BASED ON HAZARD ASSESSMENT)**	The following are identified potential emergencies: • Fire • List others	
EMERGENCY PROCEDURES	In the event of a fire occurring within or affecting the work site, the Emergency Coordinator (or deputy) makes the following decisions and ensures the appropriate key steps are taken: • advise all personnel • pull the fire alarm to alert the nearest fire station and initiate all fire alarms within the building • evacuate all persons to a safe point in the assembly area and account for everyone including visitors and clients	
LOCATION OF EMERGENCY EQUIPMENT	Emergency equipment is located at: • Fire Alarm – List • Fire Extinguisher – List • Fire Hose - List	
WORKERS TRAINED IN THE USE OF EMERGENCY EQUIPMENT	(1) _____ (2) _____ (3) _____ (4) _____	
EMERGENCY RESPONSE TRAINING REQUIREMENTS	Type of Training • Use of fire extinguishers • Practice fire drills	Frequency • Orientation and annually • At the call of site management
LOCATION AND USE OF EMERGENCY FACILITIES	The nearest emergency services are located at: • List facilities	

FIRE PROTECTION REQUIREMENTS	• List all site fire protection requirements.
ALARM AND EMERGENCY COMMUNICATION REQUIREMENTS	• Pulling the fire alarm automatically alerts the fire department and initiates an alarm within the building • The fire alarm signal is (describe sound and pattern)
FIRST AID	First aid supplies are located at: • List First Aiders are: • List all names Transportation for ill or injured workers is by (describe). The contact number or radio channel is (describe).
PROCEDURES FOR RESCUE AND EVACUATION	In case of fire: • Advise all personnel • Pull the fire alarm • Evacuate all persons to a safe point in the staff parking lot and account for everyone including visitors and clients • Assist ill or injured workers to evacuate the building • Provide first aid to injured workers if required • Call emergency response personnel to arrange for transportation of ill or injured workers to the nearest health care facility if required.
DESIGNATED RESCUE AND EVACUATION WORKERS	The following workers are trained in rescue and evacuation (or describe client rescue organization): (1)_____ (2)_____ (3)_____ (4) _____
Completed on: _____ Signed: _____	

ENVIRONMENTAL PROTECTION

1.0 PURPOSE

Haskell Corporation has developed this Environmental Management plan to support our efforts in providing high quality services to our clients while ensuring a safe and healthy workplace for our employees and acting as a responsible member of the community.

This plan was designed to limit the environmental impact of our work and reduce potential risks that our operations may pose to individuals or the environment. The plan also provides the means for ensuring a high level of environmental responsibility, stewardship, and accountability.

2.0 Scope

The content and conditions of this plan apply to all field construction and installation operations. This includes every aspect of our work, from mobilization and groundbreaking to the delivery of completed products. In addition to our direct processes and activities, all ancillary field operations related to the completion of our work also fall within the scope of this plan, including administrative activities, sub-contractor involvement, vendor/supplier support, and waste management.

2.1. Policy Statement

Haskell Corporation believes that protection of the environment is paramount to the successful completion of our projects and will take appropriate measures to protect the condition of the air, land and water we work on or near. We will also take appropriate steps to protect our employees when dealing with environmental risks.

Through improvement, and through the education of our employees, Haskell will continually raise the environmental awareness of our corporate culture in order to ensure that the protection of the environment is an integral part of our collective activities.

2.2. Primary Concerns

The plan is designed to identify and manage all potentially adverse environmental risks to air, land, water, and life, which could result from our construction processes. Specifically, the plan strives to:

- Control and monitor consumption of priority resources
- Minimize and control the production of wastes
- Limit or prevent adverse effects to the environment
- Recycle, reuse, and reduce where feasible

1.5 Potential Waste Streams:

- Gasoline/Diesel (fuels)

- Hydraulic oil (lubricants)

3.0 RESPONSIBILITIES

The ultimate responsibility for safety and health rests with Evan M. Haskell, president of Haskell Corporation. In order to ensure the effective application of the Environmental Management Plan, specific responsibilities have been delegated as follows.

3.1. Management

The Home Office Project Manager and/or Corporate Safety Manager are responsible for establishing and overseeing the plan at each location. Management will remain fully aware of all activity related to environmental compliance throughout the project.

3.2. Supervision

The Superintendent and/or Site Safety Manager are responsible for the implementation, daily enforcement and monitoring of the plan, with support and guidance from the Home Office.

3.3. Employees

Haskell employees and subcontractors are required to report any environmental spill, concern, or hazard to their supervisor immediately. Employees may assist with mitigation, if properly trained and protected.

3.4. Emergency Contact List

The following people may be contacted at any time for information or direction, regarding environmental compliance on Haskell Corporation Projects. Please try to contact one of the onsite contacts first, shaded section, as they will be most familiar with existing site conditions.

Contact	Position	Office	Cell	EMAIL
Evan Haskell	President	734-1200		ehaskell@haskellcorp.com
Terry Corrigan	Vice-President	734-1200 x3214	360-739-8501	tcorrigan@haskellcorp.com
Ray Pierce	Safety Director	734-1200 x3215	360-739-4558	rpierce@haskellcorp.com

On Site Assistance

A contact list for environmental concerns should be developed for every project.

4.0 Procedure

4.1. Hazard Evaluation

Environmental Risks will be evaluated systematically, by project phase, to identify both the presence and potential severity of each particular environmental concern. The Home Office Project Manager and

Corporate Safety Manager will develop a preliminary Environmental Hazard Review and estimate the potential for initial implementation at the site. Subsequent reviews of the site environmental risks will be conducted by the Site Superintendent and/or Site Safety Manager, throughout the project.

4.2. Environmental Hazard Review

- Identified Environmental Concern
- Risk Evaluation (Probability-Duration-Severity)
- Method of Observation
- Method of Control
- Location of Risk

4.3. Hazard Management

The following control methods, for protecting sensitive resource areas and mitigating identified environmental concerns, will be initiated or installed as indicated on the Environmental Hazard Review.

4.4. Global Controls

Global controls will be provided to address general environmental concerns on the project. These controls will be monitored and supplemented with Local Controls as needed.

- Provide awareness training to all site workers
- Require chemical list and SDS
- Provide Sanitary Services
- Establish Housekeeping Policy
- Waste Collection Services
- Dedicated Storage Areas

4.5. Local Controls (examples)

Local controls will be used to address immediate environmental risks and will be appropriate and effective to control or mitigate any potential release. For example; drip pans below fueling areas should be capable of containing the potential spillage or overfill of the fueling activity, silt fencing should be capable of withstanding expected rainfall and erosion conditions.

- Drip Pans and Spill Containment Kits
- SWP Silt Fencing
- Vehicle Wash Stations
- Special waste disposal

4.6. Unexpected Environmental Releases

In the event of an unexpected release or environmental threat, the Haskell Superintendent will immediately assess the situation and either initiate an onsite response or contact the appropriate 3rd-party resource.

4.7. Initial Reporting

Any identifiable release of a hazardous/environmentally sensitive substance will require immediate notification to the appropriate Federal, State and Local representatives in addition to project owner representatives.

4.8. Onsite Resource Response:

Haskell employees and subcontractors are expected to address minor environmental events as they occur, using available spill containment and collection materials and equipment. Typical materials and equipment include; poly-sheeting, sorbent pads/socks/booms, waste disposal bags/drums.

4.9. 3rd-Party Resource Response:

Large spills and significant environmental releases will be handled by qualified 3rd-party resources. Haskell employees and subcontractors will assist the cleanup efforts, provided they have appropriate training and protective gear. Haskell should identify the appropriate local entities that should act as qualified responders for possible environmental threats.

4.10. Disposal

All wastes associated with an environmental release event will either be collected in appropriate containers for off-site disposal in accordance with current regulations or filtered/treated on-site with qualified oversight. *Legal, off-site disposal is the preferred method of handling environmental wastes.

4.11. Confirmation of Cleanup:

Effective cleanup of small/minor environmental releases will be evaluated by the Haskell Superintendent and appropriate owner representatives on a case-by-case basis. This will typically involve visual assessment of soil/surface water conditions.

Effective cleanup of large/major environmental releases will be made by Haskell Superintendent, appropriate governmental and owner representatives and will typically be confirmed by soil/water sampling and analysis.

4.12. Compliance Audits

The Superintendent and/or Site Safety Manager will conduct a weekly audit of any environmental incidents and ongoing site practices, including the activities of sub-contractors. The audit will consist of completion of a site-wide Environmental Checklist and subsequent follow-up of any open action items.

4.13. Performance Reporting

The Superintendent and/or Site Safety Manager will prepare a monthly summary report of all weekly audit findings and follow-up actions for submission to the home office for review. The monthly summary will be made available to employees, subcontractors, and client representatives.

4.14. Management Review

The home office Project Manager will review the monthly compliance report, which is to be submitted by the 5th of each month. The Superintendent will follow-up on any identified issue that is not marked as complete or closed within 2 business days.

4.15. Recordkeeping

A copy of this plan and all environmental hazard assessments, program audits, corrective actions, and other related information will be maintained for a period of 5-years.

4.16. Training and Instruction

During initial orientation, employees and subcontractors will receive specific information regarding identified environmental hazards or concerns as well as any project specific training that may be required. Employees and subcontractors will be advised as to the nature of the hazards and the global or local controls that are to be in place to mitigate the hazards, as well as their personal responsibility for complying with the plan.

EXCAVATION & TRENCHING

1.0 Purpose

To ensure that our employees have proper guidance on the protection requirements for working in or around excavations

2.0 Scope

This policy applies to all Haskell jobsites and employees including sub-contractors.

3.0 Definitions

- **Benching:** A method of protecting employees from cave-ins by excavating the sides to form one or more horizontal levels or steps, usually with vertical or near vertical surfaces between levels
- **Competent Person**: A person who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees, and who has the authority to take prompt corrective measures to correct them
- **Excavation**: Any man made cut, cavity, trench or depression in an earth surface, formed by intentional earth removal
- **Protective System**: A method of protecting employee from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, shield systems, sloping and benching systems, and other systems that provide the necessary protection
- **Shield**: A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employee within the structure. Shields can be permanent structures or portable and moved along as work progresses. Shields used in trenches are usually referred to as “trench boxes” or “trench shields”
- **Shoring (Shoring System)**: A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins
- **Sloping (Sloping System):** A method of protecting employees from cave-ins by excavating soil at an appropriate angle of incline that will prevent a cave-in
- **Trench**: A narrow excavation (in relation to its length). In general the depth is greater than the width, but the width is no greater than 15 feet at the bottom

4.0 Procedures

The customer’s contract coordinator and the Haskell Corporation Site Supervisor should control all trenching and excavation work performed at customer/client facilities. All surface encumbrances that are located so as to create a hazard to employees should be removed or supported, as necessary to safeguard employees.

4.1. Underground Utilities

The estimated location of utility installations, such as sewer, telephone, fuel, electric, waterlines or any other underground installations that may be expected to be encountered during excavation work, should be determined prior to opening an excavation. Any necessary customer/client permits will be obtained prior to digging. Outside any client's private property or any place else deemed necessary, recommended standards and procedures of the Washington Utilities Coordinating Council and the American Public Works Association should be followed.

Before proceeding with any excavation in Washington State contact the following:

Utility Notification Center
811 or 1-800-424-5555
www.callbeforeyoudig.org

For other states go to the following web link to obtain the appropriate contact information for excavations.

http://www.call811.com/state-specific.aspx

When excavation operations approach the estimated location of underground installations, the exact location of the installations should be determined by safe and acceptable means. While the excavation is open, underground installations should be protected, supported or removed as necessary to safeguard employees.

4.2. Access and Egress

A stairway, ladder, ramp or other safe means of egress should be located in trench excavations that are 4 feet or more in depth as to require no more than 25 feet of lateral travel for employees.

4.3. Inspections

Daily inspections of excavations, the adjacent area and protective systems should be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. The competent person, prior to the start of work should perform an inspection. Inspections should be performed as needed throughout the shift. Inspections should also be performed after every rainstorm or other hazard-increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

Where there is evidence of a situation that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees should be removed from the hazardous area until the necessary precautions have been taken to ensure safety.

4.4. Exposure to Vehicle Traffic

Employees exposed to vehicle traffic should wear a warning vest made from high visibility material. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to

approach the edge of the excavation and the operator does not have a clear and direct view of the edge of the excavation, a warning system should be used such as barricades, hand signals, or stop logs.

No employee should be permitted underneath loads handled by lifting or digging equipment. Employees should be required to stand away from any vehicle that is being loaded or unloaded to avoid being struck by falling material.

4.5. Hazardous Atmospheres

Where oxygen deficient atmospheres (*atmospheres containing less than 19.5 percent oxygen*) or hazardous atmosphere exists or could be reasonably expected to exist, such as areas where hazardous substances are stored nearby, the atmosphere in the excavation should be tested by a competent person before employees enter excavations greater than 4 feet in depth.

Adequate precautions should be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. Precautions such as providing ventilation or respiratory protection. When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing should be conducted as often as necessary to ensure that the atmosphere remains safe.

4.6. Emergency rescue equipment

Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, should be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment should be attended when in use.

Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, should wear a harness with a lifeline securely attached to it. The lifeline should be separate from any line used to handle materials, and should be individually attended at all times while the employee wearing the lifeline is in the excavation.

Whenever internal combustion engine-driven equipment is operated inside a shaft, a ventilation system should be provided and operated in accordance with Section 4.13.

4.7. Protection from Water Hazards

Employees should not work in excavations in which there is accumulated water, or in excavations where there is water accumulating. The precautions necessary to protect employees against the hazards posed by water accumulation vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal equipment or use of a safety harness and lifeline.

4.8. Stability of Adjacent Structures

Where the stability of adjoining buildings, walls or other structures is endangered by excavation operations, support systems such as shoring, bracing or underpinning should be provided to ensure the stability of such structures.

Excavation below the level of the base of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees should not be permitted except when one or more of the following criteria is met:

- A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure
- The excavation is in stable rock
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity, or poses a hazard to employees

Sidewalks, pavements, and appurtenant structures should not be undermined unless a support system or another method of protection is provided.

4.9. Protection of Employees from Loose Rock or Soil

All excavated materials are to be placed not closer than 24 inches (2ft) from the edge of an excavation or trench.

Adequate protection should be provided to protect employees from loose rock or soil that could pose a hazard. Such protection should consist of scaling to remove loose material; installation of protective barricades at intervals as necessary or other means that provide equivalent protection.

4.10. Fall Protection

Walkways should be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with chapter 296-155 WAC, Part C-1 should be provided where walkways are 4 feet or more above lower levels.

(b) Adequate barrier physical protection should be provided at all remotely located excavations. All wells, pits, shafts, etc., should be barricaded or covered. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., should be backfilled.

4.10.1. Fall protection is not required at excavations when employees are:

4.10.1.1. Directly involved with the excavation process and on the ground at the top edge of the excavation; or

4.10.1.2. Working at an excavation site where appropriate sloping of side walls has been implemented as the excavation protective system.

4.10.2. Fall protection is required for employees standing in or working in the affected area of a trench or excavation exposed to a fall hazard of ten feet or more and:

4.10.2.1. The employees are not directly involved with the excavation process; or

4.10.2.2. The employees are on the protective system or any other structure in the excavation.

4.10.3. Persons considered directly involved in the excavation process include:

4.10.3.1. Foreman of the crew.
4.10.3.2. Signal person.
4.10.3.3. Employee hooking on pipe or other materials.
4.10.3.4. Grade person.
4.10.3.5. State, county, or city inspectors inspecting the excavation or trench.
4.10.3.6. An engineer or other professional conducting a quality-assurance inspection.

4.11. Protective Systems

Each employee in an excavation should be protected from cave-ins by an adequate protective system designed in accordance with this section except when:

- Excavations are made entirely in stable rock; or
- Excavations are less than 4 feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

Protective systems should have the capacity to resist without failure all loads that are intended, or could reasonably be expected to be applied or transmitted to the system.

4.11.1. Design of sloping and benching systems

The slopes and configurations of sloping and benching systems should be selected and constructed in accordance with requirements of OSHA CFR1926.652 or WAC 296-155-650

4.11.2. Design of support systems, shield systems and other protective systems

Designs of support systems, shield systems and other protective systems should be selected and constructed by the project manager or his designee in accordance with requirements set forth in CFR 1926.652 or WAC 296-155-650 Appendices C and D.

- **Option 1** Design of support systems, shield systems, or other protective systems, that are drawn from manufacturer's tabulated data should be in accordance with all specifications, recommendations and limitations issued by the manufacturer.
- **Option 2** Design by a Registered Professional Engineer. Support systems, shield systems, and other protective systems should be approved by a Registered Professional Engineer. The designs should be in written form and should include the following:
    - A plan should indicating the sizes, types and configurations of the material to be used in the system
    - The identity of the professional engineer

  At least one copy of the design should be maintained at the job site during the construction of the protective system.

4.12. Soil Classification

Soil classification system is a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an

analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

4.12.1. Stable rock

Stable Rock is defined as: natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

4.12.2. Type A

These are cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A.

However, no soil is Type A if any of the following are true/present:

- The soil is fissured/significantly cracked
- The soil is subject to vibration from heavy traffic, pile driving, similar effects
- The soil has been previously disturbed
- The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4h:1v) or greater
- The material is subject to other factors that would require it to be classified as a less stable material

4.12.3. Type B

- Cohesive soil with an unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf
- Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and in some cases silty clay loam and sandy clay loam.
- Previously disturbed soils except those, which would otherwise be classified as Type C soil
- Soil that meets the unconfined compressive strength or cementation requirements for Type A but is fissured or subject to vibration
- Dry rock that is not stable
- Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4h:1v), but only if the material would otherwise be classified as Type B

4.12.4. Type C

- Cohesive soil with an unconfined compressive strength of 0.5 tsf or less
- Granular soils including gravel, sand and sandy loam
- Submerged rock that is not stable

Material in a sloped, layered system where the layers dip into the excavation or a slope of four horizontal to one vertical (4h:1v) or steeper.

4.13. Mechanical Ventilation Systems

When local exhaust ventilation is used, the system (including exhaust fans, jets, ducts, hoods, separators, and all necessary appurtenances) should be designed, constructed, installed, inspected, tested, maintained, and operated so as to ensure the required protection by maintaining a volume and velocity of exhaust air sufficient to gather dusts, fumes, mists, vapors, or gases from the equipment or processes, and to convey them to suitable points of safe disposal, thereby preventing their dispersion in harmful quantities into the atmosphere of work rooms or other places where persons are employed.

When general mechanical ventilation is used, the volume and distribution of air should be sufficient to dilute airborne contaminant concentrations in employees' breathing zones to safe levels.

4.13.1. Duration of Operations.

The exhaust system should be in operation continually during all operations for which it is designed. The system should continue to operate for some time after the cessation of said operations, the length of time to depend upon the individual circumstances and effectiveness of the ventilation system.

4.13.2. Disposal of Exhaust Materials.

The air outlet from every dust separator/collector and the dusts, fumes, mists, vapors or gases collected by an exhaust or ventilating system should discharge to the outside atmosphere, provided that the exhaust system should discharge to the outer air in such a manner that it will not cause a harmful exposure in any accessible workplace. Collecting systems which return air to work areas may be used if contaminants which accumulate in the work area air do not result in harmful exposure to employees.

The air exhausted from blast-cleaning equipment, grinding, buffing, polishing equipment and all other equipment requiring exhausting of dust or particulate should be discharged through dust-collecting equipment. Dust and refuse discharged from an exhaust system should be disposed of in such a manner that it will not result in harmful exposure to employees.

4.14. Training

All Haskell employees and those of its sub-contractors who are involved in excavation operations and exposed to excavation operation hazards should be trained on the hazards of excavations and the procedures in this section. All such training should be documented.

Employees who are involved in excavation operations and exposed to excavation operation hazards should be trained in excavator notification and excavation practices required Cal OSHA Title 8 -1541 and Government Code Sections 4216 through 4216.9.

5.0 Regulations

- Federal 29CFR 1926-.651
- Washington WAC 296-155-650
- California Title-8 1540

FALL PROTECTION

1.0 Purpose

To provide minimum standards for work at height.

As a principle: No person, as a result of work at height, should be exposed to the risk of being hit by a falling object.

No person should be exposed to the risk of a fall that is likely to cause injury.

2.0 Scope

The requirements of this procedure are mandatory to all Haskell employees working on site, including Sub-contractors.

3.0 Definitions

- **Anchorage**: A secure point of attachment for lifelines, lanyards or deceleration devices, which is capable of withstanding at least 5,000 pounds or four times the intended load
- **Full Body Harness**: A configuration of connected straps to distribute a fall arresting force over at least, the thighs, shoulders and the pelvis with provisions for attaching a lanyard, a lifeline or a deceleration device.
- **Connector**: A device, which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system (such as a buckle or D ring sewn into the body harness, or a snap hook spliced or sewn to a lanyard or self-retracting lifeline/lanyard).
- **Controlled Access Zone**: A designated area in which certain work may take place without the use of guardrail systems, Personal Fall Arrest systems, or Safety Net systems
- **Deceleration Device**: Any mechanism, such as Rope grab, shock absorbing lanyard, automatic self-retracting lifeline/lanyard, etc., which serves to dissipate a substantial amount of energy imposed on an employee during fall arrest.
- **Guardrail System**: A barrier erected to prevent employees from falling to lower levels.
- **Lanyard**: A flexible line of rope, wire rope, or strap, which generally has a connector at each end, for connecting the body harness to a deceleration device, lifeline or anchorage.
- **Leading Edge**: The edge of a floor, roof or framework for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking or form work sections are placed, formed, or constructed. A leading edge is considered to be an unprotected side and edge during periods when it is not actively and continuously under construction.
- **Lifeline**: A flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorage at both ends to stretch horizontally (horizontal lifeline).

And which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

- **Wall Opening**: A gap or void, which is 30 inches or more high and 18 inches or more in width, in a wall or partition, through which employees can fall to a lower level.
- **Personal Fall Arrest System**: A system used to arrest an employee in a fall from a walking/working surface including an anchorage point, connectors, body harness and may include a lanyard, deceleration device, lifeline or suitable combinations of these.
- **Rope Grab**: A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking or both.
- **Safety Monitoring System:** A safety system, used in conjunction with a warning line system only, in which a competent person, having no additional duties, monitors the proximity of up to 8 workers to the fall hazard, when working between the warning line and unprotected sides or edges, including the leading edge of a low pitched roof or walking/working surface.
- **Self-Retracting Lifeline:** A deceleration device, which contains a drum-wound line which may be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.
- **Shock Absorbing Lanyard:** A flexible line of webbing, cable or rope used to secure a harness to a lifeline or anchorage point that has an integral shock absorber.
- **Walking/working surface:** Any area whose dimensions are 45 inches or greater in all directions, through which workers pass or conduct work.
- **Warning line system**: A barrier erected on a walking/working surface or on a low pitch roof (4/12 pitch or less, to warn employees that they are approaching an unprotected fall hazard.
- **Work at Height:** Work at height includes work being performed in a situation where there is potential for a person or an object, including equipment, material, tools and debris, to fall or be emitted sideways or upwards or otherwise hit persons during work from a scaffold, permanent work platform, through a ceiling or floor and the like. Examples are hosing material from elevated structures, opening drain valves that discharge at height, tools falling off a working platform, rock and soil falling into a trench and falling material deflected off the side of a building.

  Work at height can either be external, performed outside of any confining structure, or internal where work is performed above or inside a confining structure (eg tank, boiler internal etc), that has access holes or openings below or above allowing any falling object to enter or exit the work area.

4.0 Training

A training program should be provided for each employee who might be exposed to fall hazards. Training should enable each employee to recognize the hazards of falling & should train each employee in the procedures to follow to minimize these hazards.

Re-training should be provided when the following are noted:

1. Deficiencies in training.
2. Work place changes.
3. Fall protection systems or equipment changes that render previous training obsolete.

Training should be documented and maintained showing the following:

1. Who was trained, when, dates of training
2. Signature of person providing training & date employer determined training was deemed adequate.

5.0 Responsibilities

Supervisors are responsible for the following:

- Ensuring that the potential of an object or person to fall is managed as per this procedure.
- Ensuring there are written procedures and equipment available for the safe retrieval of a person who has fallen. If necessary, establish that local Rescue Services are available and able to respond effectively.
- Ensuring that the user of a fall arrest system does not work alone.
- Ensuring industrial safety nets are managed appropriately.
- Ensuring their employees or Sub-contractors are familiar with this procedure,
- Adherence to its guidelines,
- Providing necessary fall protection equipment, and P.P.E. The site should obtain/maintain and store all necessary hardware to comply with this procedure. This equipment should meet OSHA/ANSI requirements.
- Ensuring all persons using personal fall protection systems and P.P.E. are trained in the safe and correct use of that equipment
- Ensuring that inspections of all components of personal fall protection system are conducted annually.
- Initiating a rescue plan after a worker has fallen.
- Authority as Qualified Person to make any additional recommendations and administer this procedure and should be responsible for supporting fall protection training through scheduling and implementation.
- Designating a Site Safety Manager for the project if necessary, with approval of the candidate by Haskell Corporate management, and whose responsibilities should be identical to those listed in this section with exception to designating a Site Safety Manager.

User of Personal Fall Protection Systems are responsible for the following:

- Inspecting harnesses and lanyard assemblies prior to every use.
- Ensuring that the fall-arrest / travel restrain system is used properly taking into account fall clearance etc.

6.0 Procedures

6.1. Fall Protection Work Plan

Whenever there is the possibility of employees exposed to a hazard of falling 6 feet or more in height, a site specific written fall protection work plan must be completed by a Qualified Person (usually a Supervisor or Safety Manager). The supervisor should be required perform a risk assessment and to analyze the work assignment using the fall protection work plan. Once the work plan has been developed, a copy should remain at the work site for review. The work plan should be reviewed by all employees assigned to that task- prior to beginning work and should be followed completely.

6.2. When Fall Protection is Required

Approved personal fall arrest, personal fall restraint or positioning systems should be worn by those employees whose work exposes them to falling in excess of 6 feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected.

6.3. Risk Management Before Work Starts

Prior to starting any work at height, the person in control of the workgroup should document a risk assessment in a formal JSA to identify hazards that may result in a fall of an object or person and to identify control measures to minimize the risk.

If there is a risk of an object falling onto persons working below, then the flowchart in Attachment 1 should be used to determine the appropriate controls.

If there is a risk of a person falling and the control measures involve a fall arrest harness system, then a rescue plan should be completed.

Scaffold erection and demolition techniques should comply with ANSI/OSHA Scaffolding – General

If workers have to access tank top roofs or building roofs the risk assessment must consider the consider the physical integrity of the roofs

6.4. Rescue Plan

Rescue Methods/Options of Fallen Personnel

In the unlikely event that a fall arrest occurs on-site, personnel with the use of an articulating man lift or ladders where feasible, will rescue all employees. Alternate rescue would be through the local emergency services.

Communication

In the event of a fall, the following people will be notified as soon as possible.

1) Rescue personnel,

2) Manager/Supervisor,

3) Safety manager/coordinator,

4) Fire Department and emergency medical services if necessary.

At the beginning of any work activity where fall protection is an issue, rescue plans must be identified and discussed with all employees in case of a fall. The Project Manager, Superintendent or Site Safety Manager will develop the rescue plan(s). Rescue plans may be in the JHA format and must list the specific fall hazards addressed.

All employees involved in a fall arrest or fall will be sent immediately for a medical evaluation to determine the extent of injuries, if any.

Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components

- The capacity of a one person rescue system should range from 130 to 310 pounds (59 to 140kg). The capacity of a two person rescue system should range from 130 to 620 pounds (59 to 280kg). The maximum and minimum rated working loads for each system component should encompass the capacity range of the assembled system.
- **Operation.** It should be possible to engage the RSRL (Self-Retracting Lanyard Component with integral Rescue Capability) into its rescue mode of operation at any time, subject to the manufacturer's instructions. It should not be possible to inadvertently change to or from rescue mode. The RSRL should be capable of raising or lowering the load to affect rescue. The minimum mechanical advantage offered by the RSRL in rescue mode should be 3:1, neglecting frictional losses. When in rescue mode, the RSRL device should automatically stop and hold the load if the rescuer intentionally or unintentionally relinquishes control. The RSRL devise should have a means to stabilize the device during use in rescue mode.
- Powered Operation Devices that are operational by use of a power source other than manual should have means to limit applied lifting force and speed. A manual back-up means of operation should be provided.
- Rope tackle blocks should have a secondary means to prevent uncontrolled lowering of the load. Rope tackle blocks should have a minimum theoretical mechanical advantage of 3:1.
- Descent Energy and Capacity. The capacity of decent devices addressed by this standard should be 310 pounds, see capacity, one person.

6.5. Control Measures for Risk of an Object Falling

If there is a risk of an object falling on to persons working below then one of the following falling object risk management methods should be implemented:

- **Time method** – planning or otherwise managing work so that tasks creating an overhead work situation do not occur at the same time for different work groups.
- **Distance Method** – planning or otherwise managing work so that tasks creating an overhead work situation do not occur in what is reasonably foreseeable and demarcated as the cordoned area.

- **Physical Barrier** at the elevated work area or the lower work area – could include, but are not limited to, steel mesh, structural ply, conveyor belt, insertion rubber, steel plate, scaffold planks etc. Grid mesh is not a physical barrier when the size of an object, tool, equipment etc. has the potential to fall through the grid mesh.
- Priority should be given to eliminating the risk by not having the workgroups work above and below each other.
- Consideration should be given to the use of tool lanyards to prevent them from falling.
- Barricading of access areas above a work area at a lower level should be carried out .Each employee on a walking/working surface with an unprotected side or edge which is greater than 4 feet or more above a lower level should be protected by the use of a guardrail system, safety net system, warning line system or personal fall arrest system.

6.6. Control Measures for Risk of a Person Falling

No person should work in a position where there is potential for an un-arrested fall from a height of 6 feet measured from the top of the walking working surface to the nearest lower level or object that a falling worker could strike.

Control measures to prevent a person falling in order of priority are:

- A barricade such as standard guardrails,
- A fall protection cover placed over an opening,
- A travel restraint system

If fall prevention control measures are not practicable, then the following control measures to arrest a fall must be implemented—

- A fall arresting platform, or
- A personal fall-arrest system
- Provision should be made for users to approach and connect onto a fall protection system without being exposed to a fall-risk situation. If there is the risk of a fall, they should be protected by means of another fall-arrest system with provision for transferring to or from each system whilst always connected to one system or the other. The approach may comprise for example a fully protected walkway. The same requirements apply when persons are leaving the system.
- All fall arresting, descent control, and rescue equipment should be approved and used in accordance with the manufacturer's recommendations.

6.7. Walking Working Surface

Each employee on walking/working surfaces should be protected from falling through holes or to lower levels greater than 4 feet by the use of a guardrail system, cover, travel restraint or personal fall arrest system. In addition, a guardrail system used at a hole should:

- Be erected on all unprotected sides or edges of the hole or edges of the hole.

- Have no more than two sides provided with removable guardrail system sections to allow passage of materials. When the hole is not in use, it should be closed with a cover.

Covers for holes in floors, roofs and other walking/working surfaces should meet the following requirements:

- Covers located in roadways and vehicular aisles should be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover as determined by the first line supervisor.
- All covers should be capable of supporting without failure at least twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time as determined by the first line supervisor.
- All covers should be secured when installed so as to prevent accidental displacement by the wind, equipment or employees
- All covers should be marked with the word “HOLE” or “COVER” to provide warning of the hazard.

6.8. Controlled Access / Leading edge control zone

The control zone should begin a minimum of 6 feet back from the leading edge to prevent exposure by employees who are not protected by fall restraint or fall arrest systems.

The control zone should be separated from other areas of the low pitched roof or walking/working surface by the erection of a warning line system.

6.9. Warning line system

The warning line system should comply with the following provisions:

- The warning line system should be erected around all sides of the roof work area.
- The warning line system should be erected not less than 6 feet from the roof edge.
- Points of access, material handling areas, storage areas, and hoisting areas should be connected to the work area by an access path formed by a warning line system.

When the path to a point of access is not in use, a rope, wire, chain or other barricade, equivalent in strength and height to the warning line system should be placed across the path to the point where the path intersects the warning line system erected around the work area, or that path should be offset so that a person cannot walk directly into the work area.

Warning line systems should consist of ropes, wires, chains and supporting stanchions as follows:

- Each line should be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material (e.g. caution tape).
- Each line should be rigged and supported in such a way that at its lowest point (including sag) is not less than 36 inches from the walking/working surface and its highest point is not more than 42 inches.

- After being erected, with the rope, wire or chain attached, stanchions should be capable of resisting, without tipping over, a force of at least 16 pounds, applied horizontally against the stanchion.
- The rope, wire, or chain should have a minimum tensile strength of 200 pounds and after being attached to the stanchions, should be capable of supporting, without breaking, the loads applied to the stanchions.
- The line should be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchions tip over.

6.10. Safety Monitor system

A Safety Monitor system may be used in conjunction with a warning line system as a method of guarding against falls during work on low-pitched roofs and leading edge work only. When selected, the safety monitor system should be addressed in the fall protection work plan, including the name of the safety monitor.

The safety monitor system should not be used when adverse weather conditions create additional hazards. A person acting in the capacity of safety(s) should be trained in the function of both the safety monitor and warning line systems. And meet the following:

- Be a competent person
- Have control authority over the work as it relates to fall protection
- Be instantly distinguishable over members of the work crew by wearing highly visible, distinctive and uniform apparel, while in the control zone.
- Engage in no other duties while acting as safety monitor.
- Be positioned in relation to the other workers, so as to have a clear unobstructed view and be able to maintain normal voice communication.
- Not supervise more than 8 workers at one time.

6.11. Overhead protection

When an employee is exposed to falling objects, each employee should wear a hard hat and one of the following measures should be implemented:

- Erect toe boards, screens or a guardrail system to prevent objects from falling from higher levels.
- Erect a canopy structure and keep potential fall objects from far from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced.
- Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that objects would not go over the edge if they were accidentally displaced.

6.12. Unusual applications

There may be unusual applications where other configurations not addressed in this procedure should be used, such as but not limited to boatswain's chairs, chest harnesses or spider platforms. These alternatives should be discussed with the employee's supervisor and client Operations Safety, prior to implementation in the field.

6.13. Guardrail systems

Guardrail systems should be so surfaced as to prevent injury to an employee from punctures or laceration. Guardrail systems and their use should comply with the following requirements;

A standard guardrail should consist of top rail, midrail or equivalent protection, and posts, and should have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the floor, platform, runway, or ramp level.

Top rails should be capable of withstanding without failure, a force of at least 200 pounds applied either horizontally or vertically downward at the top rail, at any point along the top rail. If wire rope is used for top rails, it should be flagged at not more than 6-foot intervals with high visibility material. Wire, manila, plastic or synthetic rope being used for top rails should be inspected frequently as necessary to ensure it continues to meet strength requirements.

Mid rails should be installed midway between the top rail and the walking/working surface. The mid rail should be capable of withstanding without failure, a force of at least 150 pounds applied in any outward or downward direction, at any point along the mid rail. Wire, manila, plastic or synthetic rope being used for mid rails, should be inspected frequently as necessary to ensure it continues to meet strength requirements.

Screens and mesh, when used should extend from the rail to the walking/working surface and along the entire opening between top rail supports. The screen or mesh should be capable of withstanding, without failure, a force of at least 150 pounds applied in any outward or downward direction.

6.14. Safety Net Systems

Safety nets should be provided when working more than 25 feet above the lower level, and the use of ladders, scaffolds, catch platforms, temporary floors, safety lines or personal fall arrest systems are impractical. Safety nets should be installed as close as practical under the walking/working surface on which employees are working, but in no case more than 30 feet below such level. Contact the Corporate Safety Manager for additional safety net requirements.

6.15. Personal Fall Arrest Systems

Personal Fall Arrest Systems and their use should comply with the following provisions:

Inspection – Personal fall arrest systems should be inspected daily before each use, by the user for wear, damage and other deterioration, and defective components should be removed from service. The user is responsible for the safety equipment in his/her possession and all manufacturer instructions are followed.

Haskell Superintendent will ensure that maintenance inspections that meet with the manufactures requirements or the job specifications are maintained as required.

Haskell tool room will maintain inspections on all fall protections systems that are maintained in the Bellingham facility and ensure that Personal Fall Protection systems that are distributed to job site locations have been inspected. All state and federal regulations will be adhered to.

System Requirements – Personal fall arrest systems, when stopping a fall should:

- Limit maximum arresting force on employees to 1800 pounds when used with body harness
- Be rigged such that an employee cannot free-fall more than 6 feet or contact any lower level
- Bring an employee to a complete stop and limit deceleration distance an employee travels to 3.5 feet and have sufficient strength to withstand twice the potential impact energy of an employee free-fall distance permitted by the systems, whichever is less

Hoisting Areas – When a personal fall arrest system is used at hoist areas, it should be rigged to allow the movement of the employee only as far as the edge of the walking/working surface.

Equipment Used During Falls – Personal Fall arrest systems and components subjected to impact loading should be immediately removed from service and should not be used again for employee protection.

All safety belts, harnesses and lanyards placed in service or purchased on or before February 1, 1997, should be labeled as meeting the requirements contained in ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines and Drop Lines for Construction and Industrial Use.

All personal fall arrest, personal fall restraint and positioning device systems should be labeled as meeting the requirements contained in ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components. NOTE: See appendix 1 to this section

- **Body Harness**

Body harnesses should be used only for employee protection and not to hoist material.

Body harnesses should be worn properly affording a snug, yet comfortable fit, and according to manufacturer's instructions.

- **Connectors: Dee-rings, Snap Hooks and Carabineers**

D-rings, snap hooks and carabineers should be of the locking type and have a minimum tensile strength of 5,000 pounds and proof-tested to a minimum tensile load of 3,600 pounds. All connectors should be drop forged, pressed and formed steel, or made of equivalent materials. They should have a corrosion-resistant finish with all surfaces smooth to prevent damage to interfacing parts of the system.

- **Lanyards and Lifelines**

Lanyards and vertical lifelines should have a minimum breaking strength of 5,000 pounds and be protected against being cut or abraded. Ropes and straps (webbing) used in lanyards should be made from synthetic fibers.

Each person should be attached to their own separate lanyard or lifeline.

Lanyards secured to a body harness (for fall protection) should be secured in the center of the wearer's back near shoulder level or above the wearer's head.

Lanyards should be secured in a manner so as to allow the least free fall distance possible, up to a maximum of 6 feet and not allow contact with objects below.

Horizontal lifelines should be designed, installed and used under the direction of the Safety Department, as part of a complete fall arrest system, which maintains a safety factor of at least two to one.

Self-Retracting Lifelines/Lanyard that automatically limit free fall distance to 2 feet or less should be capable of sustaining a minimum tensile load of 3.000 pounds. The use of an additional lanyard should be avoided when using self-retracting lifelines/lanyards the latching device on the self-retracting lifelines/lanyards should be connected directly to the body harness using the existing d-ring.

6.16. Anchorage

Personal fall arrest equipment should be independently attached to an anchorage (tie off point) capable of supporting at least 5,000 pounds for each employee attached or should be designed, installed and used as part of a complete personal fall arrest system which maintains a safety factor of at least two, as determined by the first line supervisor.

Building structures (columns, floor, steel grating and handrail, for example) may be used as tie off points, provided that they are capable of withstanding the loads indicated in this policy.

6.17. Positioning Device System

Positioning devices should be rigged such that an employee cannot free fall more than 2 feet. Positioning device systems should be inspected prior to each use for wear, damage, and other deterioration, and defective components should be removed from service. The use of non-locking snap hooks should be prohibited. Anchorage points for positioning device systems should be capable of supporting two times the intended load or 3,000 pounds, whichever is greater.

6.18. Inspection and Maintenance

To maintain their service life and high performance, all belts and harnesses should be inspected frequently. Users are required to perform visual and tactile inspection before each use. Annual inspection should be performed by a competent person. If any of the conditions listed below are found the equipment should be replaced or repaired. Equipment that is damaged or has arrested a fall should be removed from service immediately.

6.18.1. Harness Inspection

1. **Belts and Rings:** For harness inspections begin at one end, hold the body side of the belt toward you, grasping the belt with your hands six to eight inches apart. Bend the belt in an inverted "U." Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Check D-rings and D-ring metal wear pads for distortion, cracks, breaks, and rough or sharp edges. The D-ring bar should be at a 90 degree angle with the long axis of the belt and should pivot freely.

   Attachments of buckles and D-rings should be given special attention. Note any unusual wear, frayed or cut fibers, or distortion of the buckles. Rivets should be tight and unmovable with fingers. Body side rivet base and outside rivets should be flat against the material. Bent rivets will fail under stress.

   Inspect frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut or burnt stitches will be readily seen.
2. **Tongue Buckle:** Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Rollers should turn freely on the frame. Check for distortion or sharp edges.
3. **Friction Buckle:** Inspect the buckle for distortion. The outer bar or center bars must be straight. Pay special attention to corners and attachment points of the center bar.

6.18.2. Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures detailed below.

6.18.3. Hardware

Snaps: Inspect closely for hook and eye distortion, cracks, corrosion, or pitted surfaces. The keeper or latch should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper rocks must provide the keeper from opening when the keeper closes.

Thimbles: The thimble (protective plastic sleeve) must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble should be free of sharp edges, distortion, or cracks.

6.18.4. Lanyards

Steel Lanyards: While rotating a steel lanyard, watch for cuts, frayed areas, or unusual wear patterns on the wire. The use of steel lanyards for fall protection without a shock-absorbing device is not recommended.

Web Lanyard: While bending webbing over a piece of pipe, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Due to the limited elasticity of the web lanyard, fall protection without the use of a shock absorber is not recommended.

Rope Lanyard: Rotation of the rope lanyard while inspecting from end to end will bring to light any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable

change in original diameter. The rope diameter should be uniform throughout, following a short break-in period. When a rope lanyard is used for fall protection, a shock-absorbing system should be included.

6.18.5. Shock-Absorbing Packs

The outer portion of the shock-absorbing pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to the D-ring, belt or lanyard should be examined for loose strands, rips and deterioration.

6.18.6. Visual Indication of Damage to Webbing and Rope Lanyards

Heat

In excessive heat, nylon becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed and should not be used above 180 degrees Fahrenheit.

Chemical

Change in color usually appears as a brownish smear or smudge. Transverse cracks appear when belt is bent over tight. This causes a loss of elasticity in the belt.

Ultraviolet Rays

Do not store webbing and rope lanyards in direct sunlight, because ultraviolet rays can reduce the strength of some material.

Molten Metal or Flame

Webbing and rope strands may be fused together by molten metal or flame. Watch for hard, shiny spots or a hard and brittle feel. Webbing will not support combustion, nylon will.

Paint and Solvents

Paint will penetrate and dry, restricting movements of fibers. Drying agents and solvents in some paints will appear as chemical damage.

6.18.7. Cleaning of Equipment

Basic care for fall protection safety equipment will prolong and endure the life of the equipment and contribute toward the performance of its vital safety function. The proper storage and maintenance after use is as important as cleaning the equipment of dirt, corrosives or contaminants. The storage area should be clean, dry and free of exposure to fumes or corrosive elements.

Nylon and Polyester

Wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion. Then wipe the belt dry with a clean cloth. Hang freely to dry but away from excessive heat.

Drying

Harness, belts and other equipment should be dried thoroughly without exposure to heat, steam or long periods of sunlight.

6.19. Program Evaluation

This fall protection program will be evaluated periodically to determine the effectiveness. The following criteria will be used to evaluate its performance:

- Accident reports
- Number of accidents.
- Management/staff compliance with program components.
- Periodic on-site audits.
- Staff feedback and interviews.

In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the circumstances of the fall or other incident should be investigated to determine if the fall protection plan needs to be changed. Project Management should implement those changes to prevent similar types of falls or incidents.

7.0 Regulations

- Federal 29CFR 1926.500
- California Title-8 1670

8.0 Attachments

- Fall Protection Work Plan Template
- Working at heights Decision Making Guide

FALL PROTECTION WORK PLAN

Project: _____ Dates Valid: _____

Completed By: _____ Phone: _____

Note: All affected employees will review all the requirements of this fall protection work plan prior to starting any work requiring fall protection. This plan will be maintained at the jobsite during work activities. Affected employees must also have current training in accordance with Haskell's Health & Safety Manual, prior to performing work covered by this plan.

Work/Task Description: *(include tools required)*

_____

Is there a hazard of falling more than 6 feet, while performing this task?	☒ Yes	☐ No
Can this work/task be relocated, to eliminate the employee fall hazard?	☐ Yes	☒ No

1. Location/Structure: _____

   Working Surface Details: *Check all that apply.* Height: _____

   ☐ Roof ☐ Perimeter/Leading edge ☐ Floor/Wall openings

   ☐ Scaffolding ☐ Steel Structure ☐ Mobile Equipment

   ☐ Other (describe): _____

   Work will be accessed by: *Check all that apply.*

   ☐ Ladder ☐ Scaffold ☐ Mobile Equipment

   ☐ Other (describe): _____

2. Method(s) of fall protection to be provided: *Check all that apply.*

   ☐ Fall restraint ☐ Guardrails ☐ Warning line

   ☐ Fall arrest ☐ Catch platform ☐ Safety monitor

   ☐ Other (describe): _____

3. Specific Fall Protection Equipment:

   Manufacturer: _____ Style/Model: _____

   Type: _____ Capacity: _____

   Special Requirements: _____

4. Describe the method used to determine the adequacy of attachment points: *Check all that apply.*
   - ☐ Manufacturer's data
   - ☐ Existing engineering/design documents
   - ☐ Evaluation by qualified engineer
   - ☐ Good faith assessment
   - ☐ Other (describe): _____

5. Describe the procedure for assembly, maintenance, inspection, and disassembly of the fall protection system to be used:

   _____

6. Describe the correct procedure for handling, storage, and securing of tools and materials:

   _____

7. Describe the method of providing overhead protection for workers who may be in, or pass through, the area below the work site: *Check all that apply.*
   - ☐ Barricading
   - ☐ Toe boards on scaffolds and floor openings
   - ☐ Hard hats required
   - ☐ Warning signs
   - ☐ Other (describe): _____

8. Identify all affected employees:

Designated Monitor:_____

Affected Employees:

9. Special Conditions:

_____ _____

Approved By: _____ Date: _____

Post-Fall Emergency Rescue Plan

Emergency Notification & Contact Numbers:

Immediately	☐ Onsite Rescue Team	Phone: _____
Within FIVE minutes*	☐ Emergency Responders	Phone: 9-1-1
Within 1 hour	☐ Haskell Safety Manager	Phone: _____

Communication Method: *Check all that apply.*

- ☐ Direct Voice
- ☐ Whistle/Horn
- ☐ Other (describe): _____
- ☐ Mobile Phone or Radio
- ☐ Hand Signals

Describe any obstructions or obstacles to reaching the worker:

_____

Describe the method for accessing injured workers: *Check all that apply.*

- ☐ Utilize Portable Rescue ladders
- ☐ Utilize Fixed Ladders/Stairs
- ☐ Utilize Existing Tagged Scaffolds
- ☐ Other (describe): _____
- ☐ Utilize man-lift/Scissor-lift
- ☐ Utilize Drop Lines or Retraction Devices
- ☐ Utilize other personnel lift or platform

Specific Post-Fall Rescue Equipment:

Manufacturer: _____ Style/Model: _____

Type: _____ Capacity: _____

Special Requirements: _____

Identify Rescue Team Members: *Include copies of training records.*

Rescue Team Supervisor:_____

Retrieval Team:

Ground Receiving Team:

This Rescue Plan is designed to address the potential need for the rapid recovery of a suspended worker, following an unexpected fall event. Optimal Recovery options will ensure that the worker is relieved from suspension-trauma risk and placed in a secure position within **five minutes**.

Pre-Fall Planning

Employees will receive adequate training and knowledge in the potential fall hazards associated with this work, the proper use of the available rescue equipment, the purpose of this plan, and their duties/responsibilities during/after an unexpected fall event.

Moment of Fall & Fall Suspension

Affected employees will recognize the potential for significant physical trauma associated with a fall event, the need to reposition the suspended worker (or self), and how to summon assistance.

Post-Fall Rescue Effort

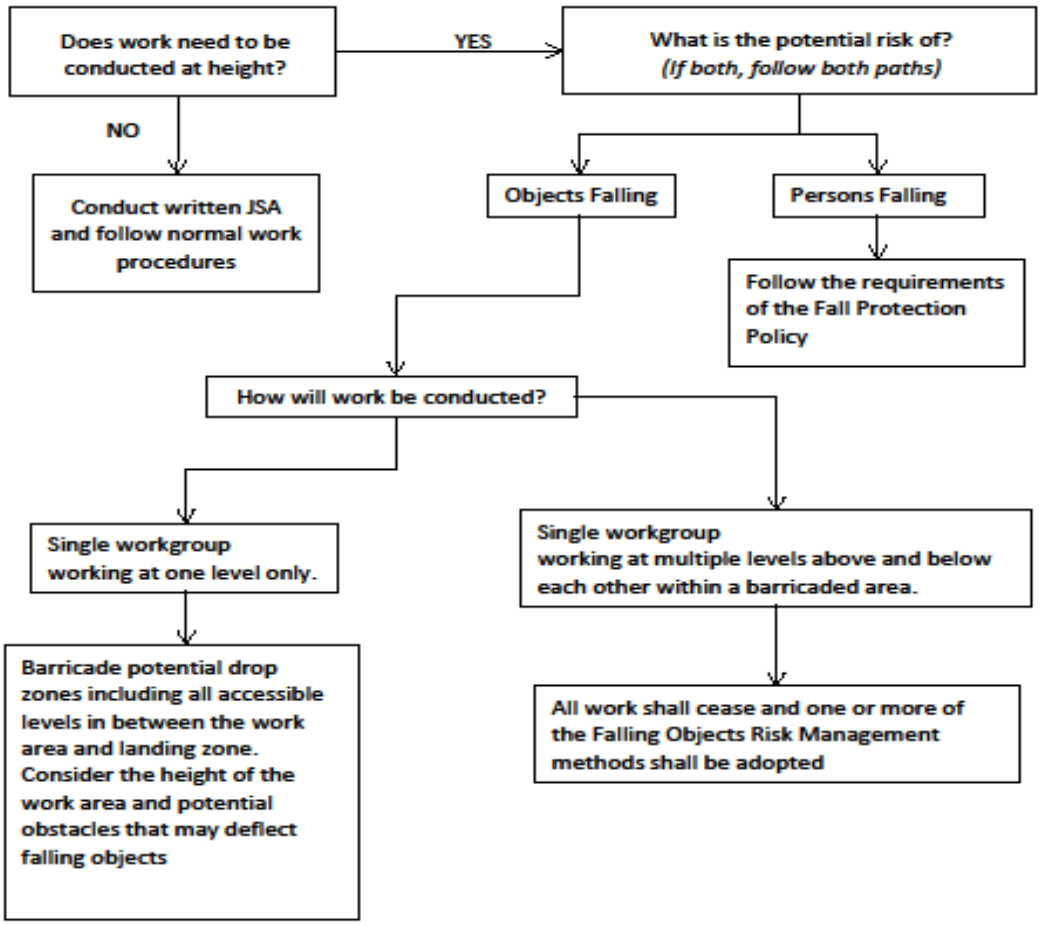
*Response Time is critical, as the suspended worker is at great risk of suffering from reduced blood flow, toxic shock, and even death – regardless of their visible injuries.

Rescue Plan Steps:

1. Contact Rescue Supervisor/Team
2. Deploy Rescue Retrieval Team and Equipment
3. Assess/Stabilize fall victim in place
4. Effect a complete recovery
5. Re-Assess/Stabilize fall victim
6. Evaluate the effectiveness of the Rescue Operation

This plan must remain at the work site and should be returned to the Safety office after the duration of the job.

Working at heights Decision Making Guide



Falling Objects Risk Management Methods:

- Time: have each workgroup work in their work area at a different time to eliminate the risk.
- Distance: move the workgroups apart sufficiently to be out of each others fall zone as demarcated by the cordoned area.
- Physical Barrier: encapsulate the work area to prevent objects falling from the work area.

If there are any issues relating to Work at Height, cobtact the relevant Safety Representative

9.0 Appendix 1 - ANSI/ASSE Z359.1:

Safety Requirements for Personal Fall Arrest Systems, Subsystems & Components

This standard contains product design criteria and test procedures for fall arrest components, subsystems and systems.

Several key changes have been made to Z359.1.

Gate strength requirements have increased for snap hooks and carabiners

The 1999 standard requires a test for 220 lb. force against the gate face and 350 lb. force against the side of the gate. The gate mechanism may not disengage from the nose of the snap hook or carabiner.

The new standard increases the strength requirement to 3,600 lb. in all directions of potential loading to the gate. Test procedures will change to exert static loads on the gate face, gate side and from inside the gate outward, forcing the gate away from the nose of the device.

2) The standard includes a front attachment element for fall arrest. The old standard states that only the dorsal (back) D-ring may be used for attachment of a personal fall arrest system. The revised standard includes attachment of the fall arrest system to a front-mounted D-ring, located approximately in the area of the sternum. However, connection at the front D-ring is limited to systems that restrict free fall distance to 2 ft. or less and limit the maximum fall arrest loads on the front D-ring to 900 lb. of force or less. This will be particularly useful in products selected by climbers and rope access workers.

3) The standard includes additional testing and warnings for twin-leg shock-absorbing lanyards. Concerns over potential misuse of twin-leg shock absorbing lanyards prompted additional test requirements and warnings for these products, which were not mentioned in the 1999 version. The new standard includes a 5,000 lb. static test of the joint between the two lanyard legs.

The standard also requires that the product label include a warning to attach only the center snap hook to the back D-ring of the harness. More warnings will be included in user instructions, such as a warning not to attach the unused leg of the lanyard to any point on the harness except attachment points specifically approved by the harness manufacturer for that purpose.

FATIGUE MANAGEMENT

1.0 Purpose

This policy was written to help manage fatigue and the resultant safety risk to personnel during prolonged work periods.

2.0 Scope

This policy applies to all Haskell Corporation employees and Sub-contractors.

3.0 Definitions

4.0 Procedures

1. Personnel should not work more than 19 shifts in a row without taking time off.
2. Personnel must take a sum of at least two shifts (10 or 12 hrs. each) off during a 21 day period.
    a. Time off may be taken in whole shifts (10 or 12 hrs.) or half shift (5-6 hrs.) increments. It is preferable to take time off one shift per week.

    b. Time off can be considered cumulative. For example, a night shift worker on 12 hour shifts can take 6 hours off 4 nights in a row, 4 separate 6 hour periods off in 21 days, 2 separate 12 hr. shifts off in 21 days, or two twelve hour shifts off back to back in order to meet the criteria.

3. Time off should ultimately be managed by the respective supervisor.
    a. A time-off schedule will be posted prior to the start of any unit shutdown window.
    b. Foremen and/or Superintendents will coordinate scheduling of time off to accommodate the work schedule or level of activity in the unit or work area.
    c. All supervisors are responsible for monitoring the fatigue levels of their teams and may require additional time off for individuals if they feel it is warranted.
4. Deviations from this policy require the approval of the Haskell Corporate Safety Director.

There should be work hour limitations and job rotation schedules to control fatigue, allow for sufficient sleep, and increase mental fitness in an effort to control employee turnover and absenteeism.

Where practical ergonomic equipment will be considered for use to improve workstation conditions such as but not limited to: lift assist devices, rubber mats for standing, proper lighting and temperature control.

An analysis of work tasks to control fatigue must be performed periodically.

Break rooms with chairs and tables will be provided for workers to sit periodically.

Employees in safety critical positions should be monitored for fatigue/tiredness and lack of mental acuity. Employees in safety critical positions should report to supervision if they feel fatigued or tired.

Employees must not chronically use over-the-counter or prescription drugs or other substances to increase mental alertness. Employees should be discouraged from taking any substance known to increase fatigue, including fatigue that sets in after the effects of a drug or substance wears off.

5.0 Training

Initial and annual training should be provided on how to recognize fatigue, how to control fatigue through appropriate work and personal habits, and reporting of fatigue to supervision.

6.0 Regulations None

FIRE PROTECTION

1.0 Purpose

Haskell Corporation will take the necessary steps and provide the necessary equipment for the protection of personnel and property from fire damage. Fire protection will be instituted at all warehouse, office and job site locations.

2.0 Scope

This policy applies to all Haskell facilities and work areas

3.0 Definitions

- **Flammable:** means any material having a flashpoint lower than 100 degrees Fahrenheit
- **Combustible:** means any material having a flashpoint higher than 100 degrees Fahrenheit

4.0 Procedures

Employees need to understand their role in responding to an emergency incident involving an incipient fire.

Supervisors should ensure that fire extinguishers are inspected monthly and maintained in “Ready Condition” at all times , and that employees are trained in the use of equipment as deemed necessary by the exposure.

4.1. Equipment - General

Sufficient access to all firefighting equipment should be maintained at all times. The equipment must be conspicuously located and easy to reach.

All firefighting equipment must be periodically inspected and maintained in a ready to use condition.

4.2. Training

Personnel should be trained in the use of equipment prior to initial assignment and annually thereafter. This training is to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.

4.3. Portable Fire Extinguishers

A fire extinguisher, rated not less than 2a, as indicated on the manufacturer’s label, must be provided for each 3000 square feet of protected work area or warehouse. Travel distance from any point of the protected area to the nearest fire extinguisher should not exceed 100 feet.

The specific type of fire extinguisher must be determined according to the specific risk.

A fire extinguisher rated 10b or higher should be provided within 50 feet of any storage area where greater than 5 gallons of flammable or combustible liquids are stored.

Portable fire extinguishers should be subjected to monthly visual inspections by a qualified person to ensure that extinguishers are at full charge and that there is no evidence of damage to any of the exterior parts. Portable fire extinguishers should be subjected to and an annual maintenance check. Each extinguisher must have a durable tag attached to show the date of the last visual inspection, along with the initials of the person making the inspection. The inspection tags should also indicate annual maintenance activities. Annual maintenance records should be kept for 1 year.

4.4. Fire prevention measures

Smoking is prohibited at or in the vicinity of operations which constitute a flammable or combustible fire hazard, and must be posted as follows: “No Smoking or Open Flame”.

Internal combustion engine powered equipment should be located so that the exhausts are positioned away from flammable and combustible materials.

Temporary buildings, when located within another building or structure, must be constructed of either noncombustible materials or have a fire resistance rating of not less than one hour.

Flammable and Combustible storage areas must be kept free from an excess accumulation of combustible materials. Accumulated waste piles may not exceed 29 feet in height.

4.5. Flammable and Combustible Liquids

Only approved containers and portable tanks should be used for storage and handling of flammable and combustible liquids. Approved metal safety cans should be used for the handling and use of flammable liquids in quantities greater than one gallon.

Flammable and combustible liquids should not be stored in areas used for exits, stairways, or normally used for the safe passage of people.

No more than 25 gallons of flammable or combustible liquids can be stored in a room unless it is stored within an approved storage cabinet.

Any storage of flammable liquid containers outside of buildings should not exceed 1,100 gallons in any one local area. Groups of containers should be separated by a minimum 5-foot clearance. These storage containers must be no closer than 20 feet to any building. Outside storage areas must be kept free of weeds, debris, and other combustible materials.

Dispensing and handling of all flammable and combustible liquids must be done according to standards outlined in the OSHA standards 1926.152 (e) (1-5) and WAC 296-155 (250 – 280).

5.0 Regulations

- Federal 29CFR
- Washington WAC 296-800-300
- California Title-8 1922, 6151

FIRST AID (CPR/AED)

1.0 Purpose

To ensure that employees have immediate access to effective primary medical attention if the need arises

2.0 Scope

This policy affects all Haskell employees. These procedures should only apply to injuries requiring first aid and includes the use of CPR/AED

3.0 Definitions

- **First Aid:** means treatment of an employee injury that occurs at the place of employment
- **AED:** means an Automatic External Defibrillator-used for Cardiac Emergencies
- **CPR**: means Cardio-Pulmonary Resuscitation- related to Cardiac Emergencies

4.0 Procedures

In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first aid should be available at the worksite to render first aid.

A valid certificate in first aid training must be obtained from the American Red Cross, or equivalent training that can be verified by documentary evidence.

Because of the different types of jobsites Haskell Corporation works in, an emergency procedure should be established in the site specific health and safety plan for each project to address any emergencies beyond basic first aid. These procedures should be reviewed and made known to all employees at the jobsite as part of their orientation.

Proper equipment for prompt transportation of the injured person to a physician or hospital or a communication system for contacting necessary ambulance service should be provided.

Emergency phone numbers or radio frequencies should be posted in a conspicuous place at the jobsite.

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable flucshing facilities should be provided within the work area.

4.1. Qualifications

All Jobsite Foremen or persons in charge of crews will be first aid and CPR trained. If their duties require them to be away from the jobsite, other persons certified in first aid and CPR will be designated.

Other persons designated by the Safety Coordinator, Superintendent or Project Manager, will be trained to augment or surpass the standard requirements of first aid and CPR training, including the use of AED.

4.2. Training

The Site Safety Representative or Superintendent will ensure that all employees receive training during their Site Specific Orientation regarding such things as basic emergency procedures, jobsite evacuation plan and first aid kit locations.

A Valid first aid card will include both first aid and cardiopulmonary resuscitation (CPR) training, be provided by the American Heart Association, Red Cross, or other authorized entity, and be within its expiration date.

4.3. Showers & Eye Wash

The Haskell Home Office has portable and fixed eye-wash stations located in several locations in the Structural and Pipe Fabrication shops. Field construction projects, or other facilities where possible exposure to caustic or corrosive materials, will provide designated emergency showers and eye wash stations. The Project Superintendent should be responsible to ensure that these requirements are met.

4.4. First Aid Kits

First aid supplies should be easily accessible when required. First aid kits should consist of appropriate items which will be adequate for the environment in which they are used. For construction operations, items should be stored in a weather proof container with individual sealed packages of each type of item.

The Home Office Shipping & Receiving manager will ensure that all portable/field use first aid kits are properly maintained and stocked before issuing to the field. First aid kits, maintained on the Haskell Corporate premises, are checked and re-stocked regularly, by a third-party.

Kits issued to company vehicles will be maintained by the person to whom the vehicle is issued.

Kits that are maintained on a jobsite will be under the responsibility of the Superintendent or Site Safety Representative.

4.5. First Aid Kit locations

- All company trucks
- At each jobsite (in each jobsite trailer)
- Main office, Fabrication Shop and Pipe Shop

4.6. Automated External Defibrillator (AED)

A fully charged AED is maintained by the Home Office Safety Department and in the Field Safety Office of large industrial projects, when required. Instructions on use, a dedicated one-way valve breathing mask for resuscitation, and a basic BBP kit will be maintained with each AED.

4.7. Bloodborne Pathogen Exposure

Please refer to Haskell Safety Policy BLOODBORNE PATHOGENS for information regarding the potential exposure to infectious bodily fluids.

4.8. Supplementary supplies

In addition to the basic kits provided at each job site main office trailer, the following supplementary supplies will be available. Quantities are based on maximum number of supported personnel (HASKELL employees- plus Sub-contractors if HASKELL is providing Safety and support).

Supplementary First Aid Contents		Number of Personnel Supported:				
ITEM NR:	ITEM:	<10	10-24	25-49	50-100	>100
1	Adhesive Gauze (“Coban”) 3" X 5 Yd. roll	1	3	4	5	6
2	Alcohol, quart, isopropyl	1	1	2	2	3
3	Band Aid, 1" X 3"	20	30	50	100	150
4	Band Aid, 3/4" X 3"	20	30	50	100	150
5	Band Aid, Finger Tip	5	15	20	30	50
6	Band Aid, Knuckle	5	15	20	30	50
7	BioHazard marked sealable plastic bags	3	6	12	20	30
8	Blankets	2	2	2	2	2
9	Bufferin, Box of 150/2's	1	1	1	1	2
10	Cotton Balls, box	1	1	1	2	2
11	Cotton Tip Swabs (Q-Tip), box 100	1	1	1	2	2
12	Disposable aprons or lab coats	2	2	5	5	5
13	Disposable CPR masks	1	2	3	5	8
14	Emagrin Forte Cold Tablets, Box of 150/2's	1	1	1	1	2
15	Eye Glass Cleaning Station	1	1	1	2	2
16	Eye Wash Dispenser	1	1	1	2	2
17	Eye Wash Refill (Qt)	1	1	1	2	2
18	Gauze bandage, 4" square	5	10	15	20	30
19	Hydrogen Peroxide, pint	1	1	2	2	3
20	Instant Cold Pack	2	5	10	15	20
21	Liquid Chlorine Bleach, 1 Gal Container.	1	1	1	1	1
22	Neosporin Antibiotic Ointment, 1 oz. tube	1	1	2	2	3
23	Rubber (or Vinyl) Gloves	6	12	20	35	50
24	Stretcher	1	1	1	1	1
25	Throat Lozenges, Box of 250/2's	1	1	1	1	2
26	Tylenol Caplets, extra strength, Box of 125/2's	1	1	1	1	2
27	Water-Jel Burn Dressing, 4" X 4"	2	4	6	8	10
28	Trauma Kit, Mini-pac	1	1	1	1	1
29	EMT Holster	1	1	1	1	1
30	Flashlight, AA Penlight size	1	1	1	1	1

5.0 Regulations

- Federal 29CFR 1926.50
- Washington WAC 296-800-150
- California Title-8 3400

FLEET SAFETY

1.0 Purpose

To minimize risk associated with motor vehicle operations by establishing a program to assure that owned, leased, and non-owned motor vehicles operating in the course of company business are in safe operating condition and are operated by competent, qualified operators in a safe manner.

2.0 Scope

This policy applies to all Haskell employees and Sub-contractors, during the operation of owned or leased vehicles and equipment over roadways, while in the course of normal business.

3.0 Definitions

Motor vehicle: means any vehicle, machine, tractor, trailer, or any combination of these that is driven by mechanical power and used on the roadways in the transportation of people or materials.

4.0 Procedures

All Company vehicles should be kept clean inside and out. Vehicles should be washed and detailed as needed to reflect a well-maintained appearance. Any trash should be removed when leaving or parking the vehicle. Keeping vehicles clean and well maintained is important to our customers, our image, and enhances employee respect of company property. Drivers of assigned vehicles are responsible for cleanliness and appearance of their individual vehicle. Drivers of unassigned vehicles please advise the Equipment Manager or Supervisor of unacceptable cleanliness or appearance

4.1. Compliance with legal requirements

Company owned vehicles will be operated strictly in accordance with Federal, State and local motor codes and ordinances including mandatory use of seat belts.

4.2. Passengers

All passengers in any vehicle used to conduct Haskell Corporation business should wear seatbelts while the vehicle is moving. Passengers should not travel on any exterior portion of a vehicle (in pickup truck beds, running boards, bumpers, etc.) that is not intended for that purpose. A passenger should not travel in any vehicle seat that is not equipped with a seatbelt. A passenger should not travel in the cargo portion of any cargo vehicle. This paragraph applies irrespective of the distance traveled. RCW 46.61.660.

4.3. Non-Company Owned Vehicles

Non Company owned vehicles will not be used for company business unless specifically approved by a corporate officer and the individual provides evidence of adequate liability insurance. (Minimum $1,000,000 per occurrence).

Users of privately owned vehicles for company business must:

- Operate the vehicle safely and in compliance with all laws and regulations
- Meet Haskell driver qualification and selection criteria
- Agree to motor vehicle records (MVR) criteria policy and review procedures
- Agree to meet Haskell safe driving performance expectations
- Adhere to Haskell safety restraint use policy
- Never operate the vehicle on company business while under the influence of alcohol or any other substancees
- Not use mobile devices/cell phones use policy addressing driver distraction
- Submit to driver testing and training as deemed necessary by Haskell
- Follow Haskell crash reporting and investigation procedures
- Sign a Personally-Owned vehicle Use Agreement that includes guidelines for personal use

4.4. Company owned vehicles

Company owned vehicles will be operated only by company employees for company business purposes. Individuals assigned a personal company vehicle will be authorized to garage it at their home and use it for travel between home and place of work.

4.5. Qualified Drivers

A list of qualified drivers will be established and maintained. Only individuals on this list will be permitted to operate company vehicles.

4.6. Driver Selection

In order to be listed as a qualified DOT driver, the individual must:

- Complete an employment with verifiable employment history and favorable references (with regard to driving performance) from previous employers
- Possess a valid state drivers license for the type vehicle to be operated (Vehicles with GVWR, or combinations over 26,000 lbs. must possess a valid commercial driving license)
- Be a current employee at least 21 years of age
- Have a favorable driving record
- Have prior experience operating similar type vehicles
- Sign a drug and alcohol clinic consent form

4.7. Driver Monitoring & Supervision

Driving records will be requested through company insurance broker, or other authorized agent, and reviewed annually for adverse trends.

Driver monitoring will be through normal supervisory channels.

A list of all qualified drivers will be maintained by the vehicle dispatcher.

4.8. Driver Files

Will be established and maintained for each driver. These files will contain, as a minimum:

- A copy of driver's license.
- A copy of record of driving convictions (MVR).
- A copy of medical card (CDL holder only).
- A copy of Written Test Administered and Road Test Record (CDL holders only).

4.9. Disqualification

Drivers will be disqualified based on serious or excessively frequent traffic citations, or when in the opinion of senior management, their continuing operation of company owned vehicles constitutes an unacceptable risk.

4.10. Vehicle Inspection and Maintenance

Vehicle Files will be established for each motor vehicle and item of mobile equipment. This file will contain the following information:

- Year-Make-Model
- Vin/Serial number
- Date of acquisition
- Copy of Certificate of Registration
- Insurance Certificate
- Copy of any required inspections and certifications

Copy of vehicle repair and maintenance record providing a complete chronological history of all repairs and preventive maintenance performed, including date, mileage, nature of work, name of individual or firm performing the work.

Pre-Trip Inspections: Operator will perform pre- trip vehicle safety inspection prior to dispatch for any vehicle over 6,000 lbs. GVWR.

Maintenance Safety Inspections: Passenger cars and pickup trucks will be inspected at least quarterly by a certified maintenance mechanic.

Preventive Maintenance: Vehicle maintenance will be performed on a scheduled preventive basis, either by time increment or mileage. A vehicle safety check will be made, during scheduled maintenance.

4.11. Accident Investigation

Drivers are required to report all motor vehicle accidents where there is visible or suspected physical damage to either vehicle.

Motor vehicle accidents occurring on public streets or highways will be investigated by applicable traffic law enforcement agency.

Following involvement in an accident in which a Haskell Corporation employee is cited, the driver will be required to undergo a drug test for cause, in accordance with the alcohol and drug policy, and an updated MVR will be requested. Depending on circumstances, disciplinary action may be initiated.

Motor vehicle accidents occurring on job sites will be investigated and reported by the site safety representative. If negligence on part of Haskell Corporation employee is suspected, a "for cause" drug screen may be initiated, and depending on circumstances disciplinary action may be imposed.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

GLOBALLY HARMONIZED SYSTEM (GHS)

1.0 Overview

The Globally Harmonized System of Classification and Labeling of Chemicals or GHS is an internationally agreed-upon system, created by the United Nations. It is designed to replace the various classification and labeling standards used in different countries by using consistent criteria for classification and labeling on a global level. Its development began at the United Nations Rio Conference in 1992, when the International Labor Organization (ILO), the Organization for Economic Co-operation and Development (OECD), various governments and other stakeholders met at a United Nations conference. It supersedes the relevant European Union (which has now implemented the United Nations' GHS into EU law as the CLP Regulation) and United States standards.

Before the GHS was created and implemented by the United Nations, there were many different regulations on hazard classification in use in different countries. While those systems may have been similar in content and approach, they resulted in multiple standards and classifications and labels for the same hazard in different countries. Given the extent of international trade in chemicals, and the potential impact on neighboring countries when controls are not implemented, it was determined that a worldwide approach was necessary.

The GHS was designed to replace all the diverse classification systems and present one universal standard which all countries should follow (however, the GHS is not compulsory under UN law). The system provides the infrastructure for participating countries to implement a hazard classification and communication system, which many less economically developed countries would not have had the money to create themselves. In the longer term, the GHS is expected to improve knowledge of the chronic health hazards of chemicals and encourage a move towards the elimination of hazardous chemicals, especially carcinogens, mutagens and reproductive toxins, or their replacement with less hazardous ones.

The final "Globally Harmonized System (GHS) for classification and labeling" standard was created at the 1992 Rio Conference on Environment and Development with the statement that “A globally harmonized hazard classification and compatible labeling system, including material safety data sheets and easily understandable symbols, should be available if feasible, by the year 2000”.

2.0 Hazard Communication

After the substance or mixture has been classified according to the GHS criteria, the hazards need to be communicated. As with many existing systems, the communication methods incorporated in GHS include labels and SDS’s. The GHS attempts to standardize hazard communication so that the intended audience can better understand the hazards of the chemicals in use. The GHS has established guiding

3.0 GHS Label Elements

The standardized label elements included in the GHS are:

Symbols (GHS hazard pictograms):

Convey health, physical and environmental hazard information, assigned to a GHS hazard class and category. Pictograms include the harmonized hazard symbols plus other graphic elements, such as borders, background patterns. Also, harmful chemicals and irritants are marked with an exclamation mark. Pictograms will have a black symbol on a white background with a red diamond frame. For transport, pictograms will have the background, symbol and colors currently used in the UN Recommendations on the Transport of Dangerous Goods. Where a transport pictogram appears, the GHS pictogram for the same hazard should not appear. Examples of all the pictograms and downloadable files can be accessed on the UN website for the GHS at http://www.unece.org/trans/danger/publi/ghs/pictograms.html

One of the new symbols implemented by the GHS

Signal Words:

"Danger" or "Warning" will be used to emphasize hazards and indicate the relative level of severity of the hazard, assigned to a GHS hazard class and category. Some lower level hazard categories do not use signal words. Only one signal word corresponding to the class of the most severe hazard should be used on a label.

Hazard Statements:

Standard phrases assigned to a hazard class and category that describe the nature of the hazard. An appropriate statement for each GHS hazard should be included on the label for products possessing more than one hazard.

The additional label elements included in the GHS are:

Precautionary Statements:

Measures to minimize or prevent adverse effects. There are four types of precautionary statements covering: prevention, response in cases of accidental spillage or exposure, storage, and disposal. The precautionary statements have been linked to each GHS hazard statement and type of hazard.

Product Identifier (ingredient disclosure):

Name or number used for a hazardous product on a label or in the SDS. The GHS label for a substance should include the chemical identity of the substance. For mixtures, the label should include the chemical identities of all ingredients that contribute to acute toxicity, skin corrosion or serious eye damage, germ cell mutagenicity, carcinogenicity, reproductive toxicity, skin or

respiratory sensitization, or Target Organ Systemic Toxicity (TOST), when these hazards appear on the label.

Supplier identification:

The name, address and telephone number should be provided on the label.

Supplemental information: Non-harmonized information on the container of a hazardous product that is not required or specified under the GHS. Supplemental information may be used to provide further detail that does not contradict or cast doubt on the validity of the standardized hazard information.

GHS label format

The GHS includes directions for application of the hazard communication elements on the label. In particular, it specifies for each hazard, and for each class within the hazard, what signal word, pictogram, and hazard statement should be used. The GHS hazard pictograms, signal words and hazard statements should be located together on the label. The actual label format or layout is not specified in the GHS. National authorities may choose to specify where information should appear on the label or allow supplier discretion. There has been discussion about the size of GHS pictograms and that a GHS pictogram might be confused with a transport pictogram or "diamond". Transport pictograms are different in appearance than the GHS pictograms. Annex 7 of the Purple Book explains how the GHS pictograms are expected to be proportional to the size of the label text. So that generally the GHS pictograms would be smaller than the transport pictograms.

4.0 GHS material safety data sheet or safety data sheet

The safety data sheet (The GHS has dropped the word “material” from material safety data sheet. It will now be called the safety data sheet or SDS) is specifically aimed at use in the workplace. It should provide comprehensive information about the chemical product that allows employers and workers to obtain concise, relevant and accurate information that can be put in perspective with regard to the hazards, uses and risk management of the chemical product in the workplace. The SDS should contain 16 sections. While there were some differences in existing industry recommendations, and requirements of countries, there was widespread agreement on a 16 section SDS that includes the following headings in the order specified:

1. Identification
2. Hazard(s) identification
3. Composition/ information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure control/ personal protection
9. Physical and chemical properties
10. Stability and reactivity

11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information.

The primary difference between the GHS requirements in terms of headings and sections and the international industry recommendations is that sections 2 and 3 have been reversed in order. The GHS SDS headings, sequence and content are similar to the ISO, EU and ANSI MSDS/SDS requirements. The SDS should provide a clear description of the data used to identify the hazards. There is a table comparing the content and format of a current MSDS/SDS versus the GHS SDS provided in Appendix A of the OSHA GHS guidance document available at this website http://www.osha.gov/dsg/hazcom/ghs.html#3.0

5.0 Training

Current training procedures for Hazard Communication in the United States are more detailed than the GHS training recommendations. Therefore, educating employees on the updated chemical and product classifications and related pictograms, signal words, hazard statements and precautionary measures will represent the greatest training challenge. Training will be a key component of the overall GHS approach and should incorporate information as it is introduced into the workplace. Employees and emergency responders will need to be trained on all new program elements, from hazard statements to pictograms. Bear in mind, if products are imported from countries that implement GHS prior to the United States and Canada, employee training may need to begin earlier than expected.

6.0 Implementation

The adoption of the GHS is expected to facilitate international trade by increasing consistency between the laws in different countries that currently have different hazard communication requirements. There is no set international implementation schedule for the GHS. The goal of the United Nations was broad international adoption by 2008. Different countries will require different time frames to update current regulations or implement new ones.

OSHA Published the final rule on March 26, 2012 for implementation of GHS. The final rule requires product manufacturers to adopt the standard by June 1, 2015 and product distributors to adopt the standard by December 1, 2015. Workers must be trained by December 1, 2013.[10][11]

HAND & POWER TOOL USE

1.0 Purpose

This policy will provide guidance on the safe use of hand and power tools for Haskell employees.

2.0 Scope

This policy applies to all employees who use or are potentially exposed to hazards related to hand and power tools.

3.0 Definitions

- **Hand Tool:** means a tool that is used with manual effort
- **Power Tool:** means a tool that is used with some form of mechanical advantage or effort

4.0 Procedures

Haskell Corporation will not issue or permit the use of any tools, which are defective and therefore unsafe. Tools, which are supplied by the company or the employee, must be inspected and maintained in proper condition.198

4.1. Responsibilities

Supervisors should assure proper tools are used and are in good repair.

Employees should use the proper tool for the job and should be responsible for the safe use and condition of such tools.

The supervisor reserves the right to tag and remove any defective tool from service, regardless of ownership.

4.2. General Tool Requirements

Tools will not be issued to employees unless they have been properly trained on the specific tool to be used.

All guards provided for power operated tools must be operable and remain in place while in use. Guards must be supplied for isolating belts, gears, shafts, flywheels, spindles, drums, chains and any other rotating or moving parts.

All tools equipped with or provided with handles should have the handle installed during operation unless manufacturers operating instructions define situations or circumstances where operation of the power tool is acceptable without the handle installed.

Any tool identified as unsafe should be red taged or have the controls locked out to render them inoperable or they should be physically removed from the project site.

Personal protective equipment such as eye, face and hand protection must be used whenever the hazard of flying or splashing objects are created by hand or power tools.

Machines designed for a fixed location must be securely anchored to prevent walking or moving.

Tools should be properly used and maintained in a safe condition at all times. Damaged, defective or otherwise deficient tools should be tagged and removed from service until repaired.

Personnel who are competent in such operations should perform repairs and sharpening of tools.

Proper tools should be used for the job at hand. Size or capacity of a tool should be matched up to the requirements of the job. Substitute or makeshift tools should no be used unless approved by the supervisor.

Cheater bars should not be used to gain additional leverage unless the manufacturer designs the tool for such use.

Operating handles of jacks should be removed from the jack if possible, when the lift is completed and the handle is no longer needed.

Tools should not be thrown to another employee or from higher elevations to the ground. Tools with sharp or pointed edges should not be carried in pockets but in pouches or buckets when not in use.

Properly insulated tools should be used.

Lanyards or other suitable devices should be used to prevent hand tools from dropping into open pipes, shafts, etc., unless adequate covering is installed.

Non-sparking tools or those approved for explosive locations should be used where the sources of ignition may cause fire or explosion.

Where craftsmen furnish their own tools, such tools should conform to the requirements specified herein.

No tool should be placed at an elevated surface such as the top of a stepladder, scaffold or platform, where it may fall onto an employee. When tools are used on or next to grating, a suitable cover/barrier should be installed to prevent tools from passing through the grating.

Tools should not be strewn about or left on the floor or at the base of a ladder, where they may create a tripping hazard.

Tools should not be carried in hand while climbing/descending a ladder. They are to be placed in an appropriate container and hoisted/lowered using a rope.

Proper storage facilities should be used for the safe storage of tools, abrasive wheels and cutting blades.

4.3. Switches and Controls

Hand held powered drills, grinders (wheel diameter 2 inches or greater), disc sanders (discs 2 inches or greater), reciprocating saws, saber, scroll and jig saws with blade shanks greater than ¼ in should be equipped with constant pressure switch. They may have a lock on control, provided that a single motion of the finger can accomplish the shut-off.

Powered tools such as routers, grinders (wheel 2 inches in diameter and less), disc sander (discs 2 inches in diameter or less) and routers, nibblers may be equipped with a positive on-off control.

Pneumatic nailers or staplers must have a safety device on the muzzle to prevent it from ejecting fasteners when not in contact with the work surface. All hoses exceeding ½" I.D. must have a safety device at the source of supply to reduce the pressure in the event of hose failure.

4.4. When using Circular Saws you must:

1. Use a constant pressure switch to turn on or operate any circular saw using a blade that has a diameter greater than two inches.
2. Remove cracked saws and saw blades from service.
3. Make sure power driven circular saws that have a blade diameter larger than two inches have guards above and below the base plate (shoe) as listed in thetable below, Portable circular saw guarding requirements.

Portable Circular Saw Guarding Requirements

Upper Guard	Lower Guard
Covers the blade to the depth of the teeth, except for the minimum arc necessary to allow the base to tilt for bevel cuts.	Covers the blade to the depth of the teeth, except for the minimum arc necessary to allow proper: • Retraction of the guard • Contact with the work. Automatically and instantly returns to the position covering the blade when the saw is withdrawn from contact with the work.

4.5. When using portable Belt Sanding machines you must:

Guard:

1. Nip points where the sanding belt runs onto a pulley
2. The unused run of the sanding belt.

4.6. Guards

Tools designated to accommodate a guard should have the guard in place in operating condition.

Belts, gears, shaft, pulleys, sprockets, spindles, drums, and other types of moving drives should be isolated.

Guards should not be altered or modified without written approval from the manufacturer.

Portable circular saws (blade 2 inches or greater) should have a guard above and below the base plate shoe.

The installation, guarding, use and care of grinding wheels should comply with the standards set forth in the current ANSI B7.1 standard “Safety Code for the Use, Care and Protection of Abrasive Wheels”.

Band saws should be fully enclosed, except for their point of operation.

Guards are not required for abrasive wheels 2 inches in diameter or less when used inside of materials, for which the material itself acts as a guard(i.e., grinding the inside of a pipe).

4.7. Abrasive Wheels and Cutting Blades

Abrasive wheels, scratch brushes and cutting blades should be properly rated for use on a particular power tool. The specified RPM rating of the wheel/blade should meet or exceed that of the power tool.

Cracked, bent worn or otherwise damaged wheels/blades should be removed from service until repaired. All wheels must be inspected before mounting and prior to each use.

Cutting blade should be maintained in a sharpened state to minimize hazards created by dull blades.

All bench mounted abrasive wheels must be equipped with a protective hood, which allows only an exposure of ¼ of the wheel or a 90-degree angle. The safety guard must be strong enough to withstand a bursting wheel. The gap between the safety guard and the working abrasive surface must be no greater than ¼ inch

A work rest must be provided and the distance between the work rest and the abrasive wheel should not exceed 1/8 of inch.

All portable abrasive wheels must be provided with safety guards, which are mounted in alignment with the wheel and strong enough to withstand the wheel braking.

Safety glasses and a full-face shield should be worn for all grinding operations.

4.7.1. Use proper flanges.

You must:

• Mount all abrasive wheels between flanges that have a diameter at least one-third the diameter of the wheel.

Exemption:

This requirement does not apply to the following types of wheels:

- Mounted wheels
- Cup, cone or plug wheels with threaded inserts or projecting studs
- Abrasive disc wheels (inserted nut, inserted washer and projecting stud type)
- Plate mounted wheels
- Cylinder, cup, or segmental wheels mounted in chucks
- Types 27, 28 and 29 wheels
- Internal wheels less than two inches in diameter
- Modified Type 6 and 11 wheels (terrazzo)
- Types 1 and 27A cutting-off wheels.

You must:

- **Make sure flanges are:**
  - Dimensionally accurate
  - Properly balanced
  - Flat
  - Free of rough surfaces or sharp edges.
- **Make sure, if a wheel is mounted between two flanges, that both flanges:**
  - Are the same diameter
  - Have equal bearing surfaces.

Exemption:

The following wheels do not require same diameter, equal bearing surface flanges:

- **Types 27, 28, and 29 wheels with adaptors**
- **Modified Types 6 and 11 wheels with tapered K dimension**
- **Internal wheels less than two inches in diameter.**

You must:

- **Make sure the driving flange is:**
  - Part of the spindle

  or

- Securely fastened to the spindle.

4.7.2. Use blotters when required.

You must:

- Use a blotter between each flange and the abrasive wheel surface to uniformly distribute flange pressure.
- Make sure the blotter covers the entire flange contact area.
- Use a new blotter each time a wheel is mounted unless the wheel has a blotter already attached to it by the manufacturer.
- Make sure scuffed or damaged blotters are not used.

Exemption:

You do not need to use a blotter with:

- Mounted wheels
- Abrasive disc and Type 2 wheels which are mounted by inserted nuts, inserted washers, or projecting studs
- Plate mounted wheels
- Wheels mounted in chucks (such as cylinders and segmental wheels)
- Types 27, 28 and 29 wheels
- Type 1 and Type 27A cutting-off wheels
- Internal wheels less than two inches in diameter
- Diamond and cubic boron nitride wheels with metal or carbon fiber cores.

4.7.3. Mount wheels properly

You must:

- Make sure wheels fit freely on the spindle, wheel sleeves, or adaptors, and remain free under all grinding conditions.
- Make sure wheel, blotter and flange surfaces that contact each other are flat and free of foreign particles.
- Make sure any reducing bushing used in the wheel hole:
  - Fits freely on the spindle and maintains proper clearance
  - Does not exceed the width of the wheel or contact the flanges.
- Make sure that multiple wheels mounted between a single set of flanges are either:
  - Cemented together

  OR

  - Separated by spacers that have a diameter and bearing surface that is the same as the mounting flanges.

Abrasive wheels and cutting blades attached to power tools should be allowed to stop their rotation prior to setting the tool down. Power tools equipped with abrasive wheels or cutting blades should not be dropped or thrown onto hard surfaces.

Abrasive wheels and cutting blades should be installed only on equipment designed for their use. Attachments should not be bored out or otherwise forced onto the spindle or shank.

Where arbors are used, their rating should meet or exceed that of the power tool.

4.8. Hand Tools

Impact tools such as drift pins, punches and chisels should be free from mushroomed, cracked or chipped heads or shanks.

Suitable holding devices or tongs should be used to hold impact tools while being struck.

Cutting edges should be maintained in a sharp condition.

Appropriate safety equipment should be obtained and properly usedwhile working with hand tools.

Wrenches, sockets, etc., should be pulled rather than pushed to increase leverage, nor should tools be struck by hammers or other tools unless designed for such use by the manufacturer.

Wooden handles should fit snugly and should be free of cracks and splinters. Files should be equipped with handles.

Hand tools should be used properly.

Screw drivers and files should not be used as pry bars

Wrenches, pliers, etc., should not be used as hammers.

Chisels, punches, files, etc., should not be used as wedges.

Adjustable pipe, end and socket wrenches should not be used with sprung jaws or damaged gears.

Wrenches should fit snugly on nuts/bolts.

Non-sparking hand tools should be used in locations where sources of ignition may cause a fire or explosion.

4.9. Portable Electric Tools

Portable electric power tools should be equipped with an assured ground, or may be of the double insulated type. Double insulated tools should be labeled as “Double Insulated” or contain a double square ☐ meaning the same.

Portable electric tools should be visibly marked as approved by an underwriting agency such as Underwriters Laboratories, Inc., or Factory Mutual Engineering Corp.

Power tools should be disconnected from their power source while changing attachments or while performing maintenance or repairs.

Electrical tools should not be used where the hazard of fire or explosion exists.

Repairs should be made by qualified personnel. Repairs in power cords should be replacement of the entire power cord.

Personnel should be familiar with the safe operation of portable electrical tools and should use required personal protective equipment.

Never yank the cord to disconnect it from the receptacle or to hoist or lower tools.

4.10. When using Pneumatic Power Tools you must:

Follow the manufacturer's instructions for safe use of the tool,

Make sure the tool cannot accidentally eject an attachment,

Ensure Impact tools are operated with all retainer or safety clips installed,

Ensure personnel are familiar with the safe operation, care and maintenance of pneumatic tools and utilize proper safety equipment including eye and hearing protection,

Ensure hose and hose connections are be rated for the intended purpose,

Ensure hose exceeding 0.56 inch inside diameter is equipped with safety-type couplings and properly secured to prevent displacement,

Ensure hoses and hose connections are inspected daily. Those having excessive wear, damage, etc., should be removed from service. Approved banding should be used in connecting hose to fittings/couplings. The use of wire, hose clamps and or tape is prohibited,

Ensure compressed air is not directed at any portion of the body or allowed to contact a person's body and should not be used to dust off clothing or work activities,

Ensure hoses are not used for hoisting/lowering tools, and should not be routed across ladders, steps, scaffolds or walkways, so as to not pose a tripping hazard. Hoses should be routed overhead whenever possible to protect them from damage and to prevent a tripping hazards.

4.11. Use Pneumatic tools safely

Exemption:

This section does not apply to:

Tools specifically for medical or dental use
Tools specifically for use in the food processing industry
Tools mounted in stationary installations

Air hoists
Construction and mining tools such as paving breakers, diggers, tampers, and rock drills.

You must:

1. Relieve the pressure in the air line before disconnecting a compressed air tool from the line or disconnecting a hose joint unless there is automatic valve closing protection at the joint being separated.
2. Disconnect the tool from the compressed air supply before repairs are done.
3. Make sure that eye protection is worn at all times by:
   - The person operating the tool
   - Other persons in the area where tools are being used.

4.12. Hydraulic Power Tools

The maximum anticipated working pressures in the hydraulic system should not exceed the safe working pressure rating of any component in the system, including hoses, fittings, couplings and gauges.

Only approved hydraulic fluid should be used.

Hoses, fittings, couplings, etc., should be inspected prior to each use and should be removed from service when deficiencies are observed. Do not check for leaks using your hands because fluid under pressure may puncture the skin.

Repairs should be made by qualified personnel and properly tested to ensure safe operation.

Personnel using hydraulic equipment should be properly trained in the use, care and maintenance of hydraulic equipment, including its limitations.

Personnel using or near operating hydraulic equipment should utilize proper protective equipment.

4.13. Gasoline Powered Tools

Gasoline powered tools should be turned off and allowed to cool to ambient temperature before refilling. Spills should be properly cleaned and the waste properly disposed of.

Gasoline powered tools should not be used in a confined /enclosed space where such use may cause oxygen deficiency or increased levels of carbon monoxide. Adequate ventilation should exist.

Employees should be trained in the safe use, care and maintenance of gasoline powered tools, and should use proper safety equipment.

Gasoline should be stored in an approved and properly labeled “Safety Can” equipped with a self-closing spout and a flame arrester.

Smoking is not permitted while refueling powered tools.

Gasoline powered tools should not be altered or modified in any way which may affect personal safety and/or the design or intended use of the manufacturer.

4.14. Powder Actuated Tools

Powder – Actuated tools should be designed, maintained and used in accordance with ANSI A10.3 "Safety Requirements for Powder – Actuated Fastening System", as well as then requirements set forth herein.

Personnel using powder-actuated tools should be trained in their use, care and maintenance by the manufacturer or his representative, and should have an operator's card in their possession. The operating manual for the powder-actuated tool should be readily available to the user, along with tables specifying the load ranges for materials.

Proper safety equipment should be utilized while operating powder-actuated equipment.

Suitable barriers should be erected and properly posted, identifying the use of powder-actuated tools. Postings should be posted within 50 feet of the operation.

Powder-actuated tools, such as Hilti guns, should be inspected and tested before use to ensure that safety devices operate properly. A procedure, recommended by the manufacturer, should be utilized for this inspection. Any tool not operating properly or developing a defect during use, should be immediately removed from service and tagged for repair.

Powder-actuated tools should not be loaded until just before firing. Loaded tools should never be left unattended for any reason.

Powder-actuated tools whether loaded or unloaded, should not be pointed at anyone else. Hands should be kept away from the barrel end.

Only fasteners and explosive charges designed by the manufacturer should be used in that particular tool. Explosive charges should be properly stored as required by the manufacturer.

Powder-actuated tools should not be used within a flammable or explosive atmosphere.

Fasteners should not be driven into very hard or brittle material, such as cast iron, glazed tile, surface-hardened steel, glass block, live rock, faced brick, or hollow tile. Driving fasteners into materials, which are easily penetrated, should be avoided unless substantial backing is installed.

Fasteners should not be driven into spalled surfaces caused by other fasteners, nor should they be driven into pre-drilled holes.

5.0 Regulations

- Federal 29CFR 1926.301, 1926.302
- Washington WAC 296-155-G
- California Title-8 1699, 1707

HARASSMENT

1.0 Purpose

To aid in the prevention of workplace harassment or violence and to help maintain a safe work environment

2.0 Scope

This policy applies to all Haskell work locations and employees

3.0 Definitions

- **Harassment**: means to verbally or otherwise intimidate another person with the intent or threat of causing emotional harm or loss of employment for not submitting to unwanted treatment.
- **Sexual Harassment**: means Inappropriate behavior of a sexual nature, such as repeated sexual advances or offensive remarks, that occurs usually in a workplace, school, or other institutional setting, especially by a person in authority with respect to a subordinate.
- **Hostile Environment**: means a condition that unreasonably interferes with the victim's work performance for the behavior to be regarded as unlawful harassment. The behavior must be unwanted, as well as harsh or widespread in the eyes of a "reasonable person." The consequence is a "hostile environment" if these traits are present.
- **Violent Act**: means to physically or otherwise intimidate another person with the intent or threat of causing physical harm

4.0 Procedures

Haskell Corporation has adopted the following guidelines to deal with intimidation, harassment, or other threats of (or actual) violence that may occur during business hours on its premises.

All employees, including supervisors and temporary employees should be treated with courtesy and respect at all times. Employees are expected to refrain from fighting, horseplay, or other conduct that may be dangerous to others or is by definition, harassment.

Conduct that threatens, intimidates or coerces another employee, a customer, or a member of the public at any time, including off duty periods will not be tolerated. This prohibition includes all acts of harassment, including harassment that is based on an individual's sex, race, age, or any characteristic protected by federal, state, or local law.

All forms of harassment, both direct and indirect, should be reported as soon as possible to your immediate supervisor or any other member of management. This includes threats by employees, as

well as threats by customers, vendors, solicitors, or other members of the public. When reporting a threat of violence or other harassment, you should be as specific and detailed as possible.

All suspicious individuals or activities should also be reported as soon as possible to a supervisor. Do not place yourself in peril. If you see or hear a commotion or disturbance near your workstation, do not try to intercede or see what is happening.

Haskell Corporation will promptly and thoroughly investigate all reports of harassment, threats of (or actual) violence and suspicious individual or activities, and will notify the local law enforcement authorities when deemed appropriate. The identity of the individual making a report will be protected to the extent practical. In order to maintain workplace safety and the integrity of its investigation, Haskell Corporation may suspend employees, either with our without pay, pending investigation.

Anyone determined to be responsible for harassment, threats of (or actual) violence or other conduct that is in violation of these guidelines will be subject to prompt disciplinary action up to and including termination of employment.

Unless a harassment situation is brought to the attention of management, there can be no reasonable expectation that action be taken by the company to correct it. Haskell Corporation encourages employees to bring their harassment concerns, disputes or differences with other employees to the attention of their supervisor before the situation escalates to sexual harassment, a hostile work environment or into potential violence. If you aren't comfortable talking to your direct supervisor about a harassment concern, you should contact the Corporate Safety Director at (360) 734-1200. Haskell Corporation is eager to assist in resolution of employee disputes, and will not discipline employees for raising such concerns.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

HAZARD COMMUNICATION - SDS

1.0 Purpose

The purpose of this standard is to establish uniform requirements to insure that the hazards of all chemicals used within the workplace are evaluated and that the hazard information is transmitted to affected employees. This standard “is intended to address comprehensively the issue of evaluating and communicating chemical hazards to employees in the construction sector, and to pre-empt any state law pertaining to this subject”.

2.0 Scope

This policy applies to all divisions, departments, and locations within Haskell Corporation, including fabrication shops, offices, and field construction projects.

3.0 Definitions

- **GHS** – Globally Harmonized System of Classification and Labeling of Chemicals
- **SDS:** means a comprehensive document containing essential health and safety information about a particular product, produced by a manufacturer

4.0 Procedures

Working with hazardous chemicals may increase the risk of illness, aggravate health problems, or contribute to fire or other safety hazards. Each employee has the “Right-To-Know”. The ultimate objective of this standard is to reduce the number of illnesses and injuries related to hazardous chemicals in the construction segment of the industry.

4.1. Training

Employees should be provided with documented effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets. Information and training may relate to general classes of hazardous substances to the extent appropriate and related to reasonably foreseeable exposures of the job.

There should be pre task meetings to inform employees of the hazards of non-routine tasks (i.e., the cleaning of reactor vessels, etc.) & the hazards associated with chemicals contained in unlabeled pipes in their work areas.

4.2. Procedure

Preparation and distribution of labels and Safety Data Sheets is the responsibility of the manufacturer or distributors of the product, but it is up to project management to obtain SDS for each hazardous chemical in the workplace (the SDS sheets will be collected at the home office for distribution on an ongoing basis), and to assure that containers of hazardous substances are properly labeled. The hazardous chemical list and training is entirely the responsibility of project management.

On projects with multiple contractors there should be coordination meetings to determine if others are using hazardous materials that may affect Haskell employees or where our activities may affect others. SDS for other contractors' hazardous materials should be obtained at such coordination meetings and distributed to affected workers. Where employees must travel between work places during a work shift (multi job sites), the written program may be kept at a primary job site. The written program is maintained at the Haskell Corporate office.

The major elements of the Hazard Communication Program are:

- Hazardous chemical list
- Safety Data Sheets (SDS's)
- Warning labels
- Training

4.3. Hazardous Chemical List

A hazardous chemical list should be developed covering all of the known hazardous chemicals used or stored at the workplace. The hazardous chemical list must be available at each work site for the employees and also available to other employers at each work site.

4.4. Safety Data Sheets (SDS)

SDS should be maintained and readily accessible at each project site. SDSs are also maintained at the corporate office. They should be available in case of an emergency. SDS must be made available, upon request, to employees, their designated representatives.

Every project site must have Safety Data Sheets for all hazardous or toxic substances. Each SDS **must** be in English and **must** address sixteen (16) information categories pertaining to the product. If the occasion arises that an employee does not speak English, information should be given them in their own language.

Information in the SDS should be presented using the following 16 headings in the order given below:

1. Identification
2. Hazard(s) identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures

7. Handling and Storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

A review of SDSs for carcinogenic or extremely hazardous chemicals is necessary to inform employees how they will be protected from carcinogens at the workplace.

- See Title 29 Code of Federal Regulations section 1910.1200 Appendix A
- See Title 29 Code of Federal Regulations section 1910.1200 Appendix B

Project Management is responsible to a periodic review of chemicals on site and replacing old SDSs with updated sheets when they are received?

4.1. Labels

ALL USERS OF ANY PRODUCT AT THE JOB SITE MUST READ AND BE FAMILIAR WITH ALL CONTAINER LABELS.

As of June 1, 2015, all labels will be required to have pictograms, a signal word, hazard and precautionary statements, the product identifier and supplier identification. The regulations require container labels to provide basic information about the product's hazards:

Necessarily, labels are not comprehensive, but provide a quick source of reference. If a container does not have a label, consult the hazardous chemical list or SDS for appropriate information. Ensure that all secondary containers are labeled.

The manufacturer or distributor must label all hazardous and toxic substances before entering the workplace. Employers however have the responsibility of seeing that all containers at the work place are labeled, including in-house containers. If a substance is transferred into a portable or in-house container, which will be used by one or more employee, or on more than one shift, the container must be labeled at the time of transfer.

Containers of hazardous chemicals should be labeled to provide the following information:

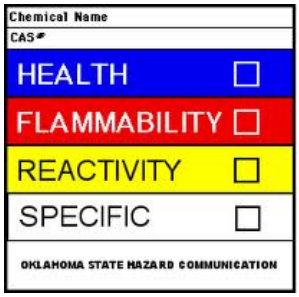
(A) Product identifier;
(B) Signal word;
(C) Hazard statement(s);
(D) Pictogram(s);
(E) Precautionary statement(s)

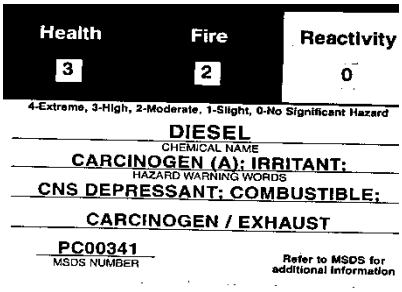
Many labels also provide details about a chemical in words, pictures, numbers or symbols. In order for these labels to be effective, the employees must know what each word, picture, number or symbol mean. Each label should be self-explanatory. If a label is not self-explanatory, the chemical list or relevant SDS should be consulted.

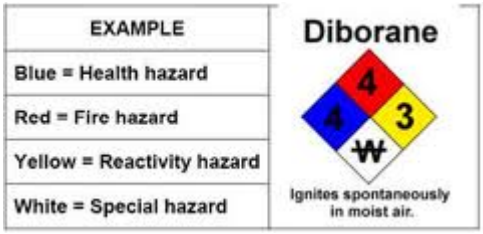
The project management should ensure that labels or other forms of warning are legible, in English, and prominently displayed on containers, or readily available in the work area throughout each work shift.

4.2. NFPA LABEL

Below are some examples of Hazard Material Identification Guide labels. These labels are meant to identify the hazard associated with various chemicals.







4.3. Secondary Container Labeling

In the US, secondary container labels are required when operations in a work-place setting includes the transferring of smaller amounts from the original container to a secondary container such as a flask, or bottle.

Secondary labels must comply with OSHA standards. The standards are in effect to prevent any cases where uncertainty of the handled material could jeopardize the health and safety of anyone on site. However, secondary workplace labels are not needed if the transferred product is used up in its entirety by the person handling it with in their work shift. All original labels cannot be removed, altered, or defaced and if a replacement label is needed, no information can be omitted from the first to the second label.

There are two mandatory pieces of information which need to be included on the Secondary Labels: the identity of the hazardous chemicals within the product and the hazards, either physical, health-related, or environmental, the components present.

4.4. Missing or Damaged Labels

If a container is found in the workplace that is unlabeled or carries a defaced label, the employee should immediately notify a supervisor. If the supervisor is unable to identify the container, the supervisor should contact the Safety Department to have the material properly disposed of. Employees should not

dispose of unknown materials or substances themselves since it may be considered a hazardous waste which must be disposed of in accordance with Federal, State or local ordinances.

4.5. Training

The training requirement of the standard is the most important tool for getting the required information to employees. The purpose of the training is to reduce the occurrence of injuries and illnesses resulting from the inappropriate use of chemicals and products.

The site supervisor for each project is required to see that hazards and precautions relating to products used on that specific job site are covered in a tool box meeting. This meeting should cover the information provided on labels and the hazardous chemical list. Review of commonly used products on every project is not required, but the foreman should confirm that the entire crew is familiar with hazards and precautions for such products.

Training of new hires is part of the Haskell Corporation's New Hire/rehire Orientation. Transferred employees who have already been through the orientation will be expected to be trained on any specific hazard that has already been covered in a previous toolbox meeting.

The specific points to be covered in the training are:

- An overview of the regulations, including the purpose of and information available on the hazardous chemical list, SDS and labels for products.
- The need for each employee to be familiar with the nature of the hazards in the work place. Employees should be advised to take quick inventory of the products that are present at each site and to confirm their understanding of hazards and precautions relating to these products.
- The requirement that the hazardous chemical list be present at all works sites. The general contractor, construction manager, owner, mechanical contractor, etc. (at a designated place) can hold this information. If a place is not designated for this information, it must be kept in our tool box or office trailer.
- Basic information about the types of hazardous substances found on our construction sites. In addition to the information provided in the Hazardous Chemical List, the home office will supply supplemental training materials for common products.
- Employees should be encouraged to ask questions during the introduction and tool box meeting when they are uncertain about what is being covered.

4.6. Hazardous Non-Routine Tasks

Periodically, employees are required to perform hazardous, non-routine tasks. Prior to starting work on such projects, each affected employee will be given information by their supervisor about hazardous chemicals to which they may be exposed during such activity. This information will include:

- Specific chemical hazards.
- Protective/safety measures the employee can take.
- Measures taken to lessen the hazards including ventilation, respirators, presence of another employee, and emergency procedures.

4.7. Informing Contractors

It is the responsibility of the on-site Supervisor to provide contractors with employees with the following information:

- Toxic and hazardous substances to which they may be exposed while on the job site.
- Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures.

The on-site Supervisor will be responsible for contacting each contractor before work is started, to gather and disseminate any information concerning chemical hazards each contractor is bringing to the workplace.

4.8. Handling of Empty Containers and Used Batteries

BATTERIES: Small consumer size batteries, AA, AAA, C, and D are classified a hazardous waste by the Department of Ecology. Haskell Corporation encourages recycling and proper disposal of hazardous waste. As such any used batteries should be returned to the tool room for proper disposal. This includes all typical household “dry cell: batteries either rechargeable or single-use as well as lithium, Ni-cad, nickel metal hydride (NiMH) from power tools and cellular phones.

EMPTY CONTAINERS: A container under environmental regulations can be an aerosol can, a 5-gallon bucket, a 55-gallon drum or a 200 gallon tote bin. After regulated or hazardous contents are spent, their containers will be regulated differently by various agencies such as OSHA, L&I or DOT. Regulated containers must be empty – as defined by the regulatory agencies – before disposal.

Empty containers will be stored in an area protected from the weather and where employees cannot accidentally add waste material. Empty containers should either be stored upside down where rainwater cannot accumulate and create an unknown hazard. Containers that are stored upright should be covered, bungs tightly in place, all labels removed and container marked “empty”. It is also a good idea to add the name of the product last stored in the container.

Aerosol cans used at the Haskell Corporation main shop facility will be released of stored pressure through a carbon filter system, remaining contents drained and captured. Site facilities will follow the customer required guidelines for disposal procedures.

5.0 Regulations

A written hazard communication program should be developed, implemented, and maintained at each workplace that describes how labels & other forms of warning, safety data sheets, & employee information will be met.

- Federal 29CFR 1910.1200
- Washington WAC
- California Title-8 5194

HEARING CONSERVATION

1.0 Purpose

The purpose of this program is to protect employees from noise induced hearing loss as set forth in the requirements of CFR 1926.52 Occupational Noise Exposure.

2.0 Scope

A hearing conservation program is required whenever employee noise exposures equal or exceed an 8-hour time weighted average (TWA) sound level of 85 dBA.

3.0 Definitions

- **Action Level:** The PEL of noise for an employee working an 8 hour shift is 90 decibels. At this point, Engineering Controls, Administrative Controls or PPE must be used.
- **Administrative Controls:** A procedure that limits daily exposure to noise by control of an employee's work schedule in a high noise environment.
- **Area Monitoring:** The testing of a work area for noise by monitoring the noise in general locations without considering movement of the employee in and out of the different areas.
- **ANSI:** The American National Standards Institute is a private nonprofit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.
- **Audiogram:** Chart, graph or table resulting from an audiometric test. This test shows an individual's hearing threshold levels.
- **Baseline Audiogram:** An audiogram used for comparison to future audiograms. This may also be called a reference, preplacement or entrance audiogram.
- **dBA:** Decibels, A-weighted - A sound level reading in decibels made on an A-weighted network of a sound level meter (SLM) set to slow response.
- **Dose:** The cumulative amount of noise that a person is exposed to over a certain period of time. Exposure to 95 dBA for 4 hours would be equivalent to a dose of 100% while exposure to 90 dBA for 8 hours would also be equivalent to 100%.
- **Engineering Controls:** Any mechanical device or physical barrier that reduces the sound level at the source or along the path
- **Hearing Conservation Program (HCP):** The program of employee protection against noise.
- **Harmful noise:** any sound produced during employment capable of producing occupational loss of hearing as hereinafter defined. Sound of an intensity of less than 90 decibels, A scale, should be deemed incapable of producing occupational loss of hearing as defined in this section.

- **Noise Dosimeter:** An electronic instrument that measures various noise levels along with the exposure times and integrates them into one cumulative measurement that indicates the percentage of the safe dose for that time period.
- **Occupational Hearing Loss:** noise-induced hearing loss with a change in Standard Threshold Shift (STS) relative to the baseline audiogram of an average of 10 dB or more in either ear at 2000, 3000 and 4000 hertz, and the employee's total hearing level is 25 decibels (dB) or more above audiometric zero (also averaged at 2000, 3000, and 4000 hertz) in the same ear(s).
- **Permissible Exposure Limit (PEL):** The exposure limit enforced by OSHA.
- **Personal Monitoring:** The testing of a work area for noise by monitoring the individual employee's movement into and out of different work areas.
- **Sound Level Meter:** An electronic instrument for the measurement of sound levels.
- **Standard Threshold Shift:** (STS) An average hearing threshold shift of 10 dB or more in either ear at 2000, 3000, and 4000 hertz. This may be temporary or permanent.
- **Time Weighted Average:** (TWA) The sound level which, if constantly exposed to over an 8 hour workday, would result in the same noise dose as measured.

4.0 Procedures

It is the policy of the Haskell to provide a safe working environment that avoids employee exposure to excessive noise levels. Haskell will take measures to reduce workplace noise to acceptable levels. Where such measures fail to reduce sound levels adequately, employees will be provided hearing protection and enrolled in the Hearing Conservation Program at no cost to the employee.

Haskell may provide employee assistance or accommodation; either through the acquisition of quieter equipment or through reassignment to an equivalent job, to any employee who is found to have a noise induced hearing loss as a result of his or her job duties to such a degree that it affects job performance.

Haskell adopts the five elements of an OSHA hearing conservation program which are:

- Monitoring, employee notification, and observation of monitoring
- Audiometric (noise) testing programs and test requirements
- Provision of Hearing protectors and hearing protector attenuation
- Training program and access to information and training materials
- Recordkeeping

4.1. Responsibilities

4.1.1. Management

Haskell managers are responsible for budgeting annual audiometric testing costs and ensuring that the required training is made available to employees. Managers are responsible for enrolling employees as required in this HCP. Managers are responsible for ensuring that noise monitoring for suspect areas identified by supervisors is conducted and corrective actions taken. Managers will notify employees

within 21 days of receiving the report on their hearing tests or if the results of monitoring indicates the employee's routine 8 hour TWA exceeds 50% of the PEL.

Managers will ensure that engineering or administrative control alternatives are considered, evaluated, and implemented before employees are included in the HCP.

Managers will ensure that employee audiometric test records are maintained in the appropriate personnel files.

Managers may use random checks of employee training, audiometric testing, and hearing protection use to ensure the HCP is being properly implemented.

4.1.2. Supervision

Supervisors are responsible for requesting and coordinating periodic noise monitoring for their work area or project. Supervisors will schedule employees for hearing tests and training if the employees are included in the HCP. Employees who are placed in a job where excessive noise levels (90 dBA or above) may occur will be scheduled for audiometric tests within 180 days of their placement. This will include both new hires and employees transferred into high noise jobs.

Supervisors are responsible for enforcing the use of hearing protection through disciplinary action as prescribed in Haskell Safety Policy. Supervisors will ensure that an adequate supply and variety of hearing protection is made available and that employees are reminded to wear protection when required.

4.1.3. Employee

Employees must inform their supervisor if a change occurs in the workplace that results in exposure to higher noise levels. Employees will use noise control measures or will wear and maintain hearing protection as required. Employees will attend training on noise exposure and the requirements of the HCP. Employees included in the HCP will have medical evaluations and follow-up audiograms scheduled by their supervisor as a condition of employment. Employees are to report any known or discovered medical problems that can interfere with their hearing to their supervisor.

Employees that observe a colleague not wearing hearing protection around machinery/equipment so labeled should advise the employee to do so. If compliance is not achieved after doing so, the supervisor should be alerted and they will provide the employee with hearing protection and enforce its use.

4.2. Background

Sound level intensity is measured in units called decibels (dB). The sound level of a normal conversation is approximately 65 dB, and the pain threshold level or level at which pain begins is about 120 to 125 dB. The OSHA permissible exposure limit for noise is 90 dB averaged over an 8-hr work shift. Employee exposure is measured with either a sound level meter or a personal dosimeter. Sound level meters are real time monitors that display the current noise level. Employees may also wear dosimeters, during

their work shift, which average the sound level throughout the day and calculate a noise dose. The OSHA allowable noise dose is 100%, which corresponds to 90 dB, averaged over an 8-hour day.

The human ear has three parts: the outer ear, the middle ear and the inner ear. The outer ear, which includes the auricle and the ear canal, collects sound waves and channels them to the eardrum. The eardrum is a thin membrane, which stretches across the ear canal, collects sound waves and channels them to the eardrum. The eardrum is a thin membrane, which stretches across the ear canal and separates the outer ear from the middle ear. The middle ear is an air filled chamber that contains three small bones, which transmit sound vibrations from the eardrum to the inner ear. The inner ear contains a fluid filled structure called the cochlea. The cochlea is lined with tiny hair cells, which turn vibration into electrical nerve signals that are perceived by the brain as sound.

There are two types of hearing loss: conductive and Sensorneural. Conductive hearing loss is due to impairment of sound transmission before it reaches the inner ear and is usually not a result of prolonged and excessive hearing noise exposure. Sensorneural hearing loss is a result of damaged hair cells in the cochlea and is often due to repeated and excessive exposure to noise. Aging can also cause significant Sensorneural damage; however, noise induced hearing loss occurs more quickly and is more extreme.

The hair cells in the cochlea correspond to the audible frequency range, which is 20 Hz to 20,000 Hz for a normal young ear. Exposure to loud noises for an extended period of time causes the hair cells to become worn down and thus, less sensitive to sound waves. The hearing loss is permanent, and the hair cells sensitive to the higher frequency range around 4,000 Hz are usually the first to be damaged. Prolonged and excessive hearing exposure will damage more and more hair cells causing permanent hearing loss over a wider frequency range. Hearing aids are not very effective for noise induced hearing loss because they function by amplifying sound.

4.3. Monitoring

When employee noise exposure may equal or exceed an 8-hour TWA of 85 dBA, individual or representative monitoring will be conducted to determine actual employee exposure. Dosimeters will be used to measure personal employee exposure and sound level meters will be used to conduct area sampling. Sound level meters will be used for determining the daily exposure of employees only when noise levels and exposure are continuous.

After the initial noise exposure assessment, monitoring will be repeated annually or whenever a change in production, process, equipment or controls increases the sound level.

Monitors will be calibrated before and after sampling. Employees included in the hearing conservation program will be given the opportunity to observe the monitoring. Employees who have confirmed exposure at or above 85 dBA will be notified of the monitoring results, in accordance with this policy.

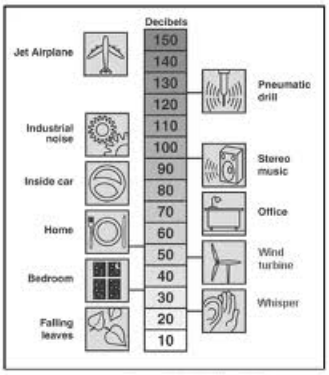
4.4. Noise Control

Whenever employee noise exposures equal or exceed an 8-hour TWA of 90 dBA, feasible administrative or engineering controls must be used. Altering the work process/schedule is an example of a simple and effective administrative control. Sound-proofing panels are an example of effective engineering control.

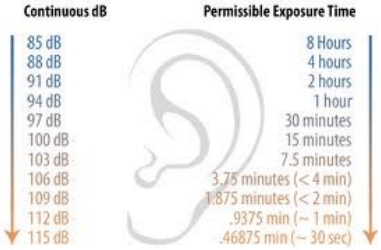
If engineering or administrative controls are not feasible or not able to reduce exposure level below 90 dBA, then appropriate hearing protection should be used.

Music and other broadcasted media (DVD, CD, Radio, Tape, etc.) shall not be at a volume that is distracting or in and of itself requires workers to use hearing protection.

These charts provide a brief overview of some common noise levels and the allowable time limits



Equipment Type	Typical Maximum Noise Level in dBA at 50 feet
Dump Truck	88
Loader	86
Dozer	84
Grader	85
Vibratory Roller	82
Backhoe	85
Chain Trencher	85
Spreader	88
Paver	89
Water Truck	88
Pickup Truck	67
Backhoe/Skiploader	86
Forklift	86
Compactor	89
Pile Driver	85
Concrete Truck	88
Concrete Pump	82
Delivery Truck	80
Crane	83



4.5. Hearing Protection

Hearing protection should be made available to all employees exposed to an 8 hour TWA of 85 dBA or greater at no cost to the employee. These hearing protectors should be worn by employees who are exposed to an 8-hour TWA of 85 dBA, or are exposed to noise above 115 dBA, or to any impulse or impact noise at or above 140 dBA using an impulse sound level meter. Employees should be given the opportunity to select their hearing protectors from a variety of suitable hearing protectors.

Supervisors will ensure that employees wear the hearing protection when it is required by noise levels or while working in signed areas at a host facility.

Hearing Protector styles range from moldable foam plugs, to over-the-ear cap attenuators, to noise-cancelling headsets. Hearing protectors help reduce noise exposure to a level which is designed to prevent hearing loss. It is important to remember that multiple attenuation factors cannot be added together when two hearing protectors are worn. For example, if an employee using a pair of ear plugs with an attenuation factor of 30 dB, adding a pair of ear muffs with a noise reduction rating of 20 dB does not resulting a total attenuation factor of 50 dB. Only 5 to 10 additional decibels of sound attenuation can be obtained from the additional earmuffs.

All hearing protection used on Haskell projects must be ANSI rated and approved. The ANSI S12 6 standard specifies laboratory-based subjective-method for measuring, analyzing, and reporting the passive noise-reducing capacity of hearing protection devices.

Any audio device such as “Ear Buds” or similar device is not permitted. These devices isolate individuals and introduce distraction from the work environment.

The project Superintendent or site Safety Manager should evaluate the hearing protection to be used for the specific noise environments in which it will be used.

4.6. Audiograms

Within 6 months of an employee's first exposure at or above an 8-hr. time-weighted avg. 85 decibels, a valid baseline audiogram should be established against which future audiograms can be compared. If a mobile audiometric van is used, the baseline should be established within 1 yr of first exposure at or above an 8-hr. time-weighted avg. 85 decibels.

Audiometric testing will be made available to all employees whose exposures equal or exceed an 8-hr. time-weighted avg. 85 decibels. All audiometric testing is conducted by qualified 3rd-party providers, to ensure accuracy of data collection and reporting.

Baseline and annual audiograms are provided (at no cost) to employees who are or may be exposed at or above the PEL and are used to evaluate the impact of occupational noise as well as the overall effectiveness of this program.

Prior to being tested to establish a baseline, employees must have at least 14 hours without exposure to workplace noise. Testing to establish a baseline audiogram should be preceded by hearing protection may be used to meet the requirement. Employees should also be given notice that they are to avoid high levels of noise.

At least annually after obtaining the baseline audiogram employees exposed at or above an 8-hour time-weighted average of 85 decibels should be tested to obtain a new audiogram. Annual audiograms should be compared to determine if the audiogram is valid and if a standard threshold shift has occurred. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift, the employee should be informed of this in writing, within 21 days of the determination. Additionally, If a threshold shift has occurred, hearing protection should be re-evaluated and refitted. If necessary a medical evaluation may be required.

4.7. Training

Hearing Conservation training will be provided to all affected employees on an annual basis and include the following basic elements:

- The effects of noise on hearing.
- The purpose, care, selection, fitting, and maintenance of hearing protectors.
- The results of any noise tests conducted in the work area.
- The purpose and methods of audiometric testing.

Refresher training will be given annually for all employees or included in the HCP. This training may be provided through a qualified internal, state, or third party provider. Training should be updated consistent to changes in PPE and work processes and include the proper techniques of wearing hearing protection.

4.8. Recordkeeping

All records related to occupational exposure to noise will be kept as follows.

When a Standard Threshold Shift (STS) occurs that meets the criteria of occupational hearing loss, it must be recorded in section 5 as hearing loss on the OSHA log 300. The date listed for the hearing loss illness will be the date that the STS was first diagnosed.

Records on work area noise testing exposure will be accurately maintained for 5 years.

All employee audiometric test records will be maintained for the duration of employment plus 5 years. After that time records will be removed and stored/destroyed consistent with existing OSHA requirements and the state record retention policy in place at the time.

Audiometric test records will include: a) Name and job classification b) Date of the audiogram c) Examiner's name d) Date of audiometer calibration e) Employee's most recent noise exposure assessment.

Records will be provided on request to employees, former employees, and OSHA inspectors/auditors.

5.0 Regulations

- Federal 29CFR 1910.95
- Washington WAC 296-817
- California Title-8 5095

HEAT RELATED ILLNESS

1.0 Purpose

To provide a safe and healthful working environment and protect Haskell Corporation employees who perform work in an outdoor environment. Haskell Corporation will evaluate and reduce hazards if employees are exposed to temperature extremes radiant heat, humidity, or limited air movement while working in an outdoor environment.

2.0 Scope

This policy applies to all employees working in outdoor environments, and selected indoor environments, where there is risk of suffering from a heat-related illness.

3.0 Definitions

- **Acclimatization:** means the body's temporary adaptation to work in the heat that occurs gradually as a person is exposed to it.
- **Drinking Water:** means water satisfying the Department of Health's requirements as potable water suitable for drinking by the public. Water packaged as a consumer product is an acceptable source of drinking water.
- **Environmental risk factors for heat illness:** means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.
- **Heat Related Illness (HRI)**: means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.
- **Outdoor Environment:** means an environment where work activities are conducted outside of a building shell (generally referring to a ceiling and al least three sides). Environments such as vehicle cabs, sheds, and tents, or other non-permanent structures may be considered an outdoor environment when the environment factors are not controlled.
- **Personal risk factors for heat illness**: means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.
- **Shade**: means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. Some shade producing areas are not adequate to cool

the body; for instance, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

4.0 Procedures

It is the policy of Haskell Corporation that all affected employees are required to comply with the Heat Related Illness (HRI) policy and are encouraged to actively participate in identifying ways to reduce the risk of experiencing heat related illness in the workplace. This heat prevention procedure should be made available to employees.

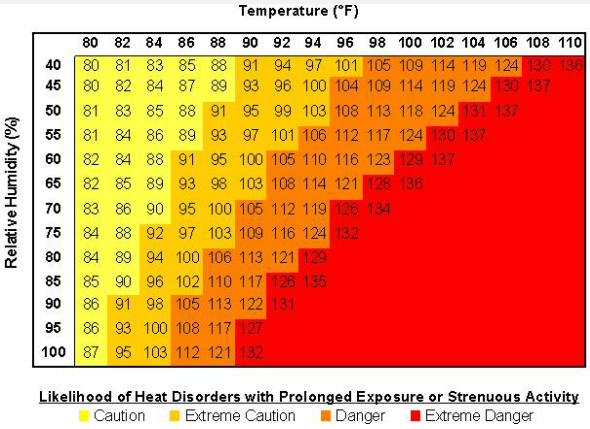
4.1. Hazard Evaluation

Haskell Corporation will evaluate our construction sites and outdoor workplaces, to identify and evaluate HRI hazards. The following is a list of where we might expect hazards to occur:

- Seasonal high heat and humidity (~May-September)
- Reflected heat from pavement, concrete or asphalt
- Radiated heat from equipment
- Heavy work clothing and PPE
- Specific job duties involving increased physical exertion

Heat Index Chart

Haskell supervisors will be aware of the daily humidity and temperature



4.2. Prevention, Controls and Correction of Hazards

When HRI hazards are present Haskell Corporation may utilize one or more of the following options to aid in minimizing heat exposure:

- Engineer temperature controls (install fans or barriers)
- Utilize mechanical aids where possible to reduce the work rate
- Regulate the length of exposure, additional breaks may be provided during peak temperature times and/or adjust work hours to avoid the hottest time of the day
- Prevent Dehydration - Water will be provided and made readily accessible in sufficient quantity to provide one quart per employee per hour

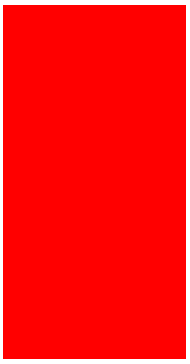
- Employees will be encouraged to frequently drink small quantities of water since one quart or more over the course of an hour may be necessary when the work environment is hot and employees may be sweating more than usual during the performance of work.
- New employees or employees off the job for two weeks or more will limit time of moderate to heavy work to 50% on the first day and increase work by 10% each day until acclimatized.
- Cooling vest, bandanas, neck covers may be provided to employees.
- Provisions will be made for shaded areas for breaks.
- Train workers on awareness and symptoms to look for and methods used to cool the employee off, how to identify workers who are more susceptible.

4.3. First Aid awareness and actions in the event of a heat related illness:

The following chart helps employees recognize the main types of heat related illnesses, signs, symptoms, and the appropriate treatment to reduce the effects of the heat related illness. This chart will be posted in the employee job shack.

4.3.1. Signs & Symptoms

Condition	Symptoms	Treatment
Sunburn	• red, hot skin • may blister	• move to shade, loosen clothing • apply cool compresses or water
Heat Rash	• red, itchy skin • bumpy skin • skin infection	• apply cool water or compresses • keep affected area dry • control itching and infection with prescribed medication
Heat cramps	• muscle spasms in legs or abdomen • grasping the affected area • abnormal body position	• move person to a cooler location • stretch muscles for cramps • give cool water or electrolyte-containing fluid to drink
Heat exhaustion	• headaches • clumsiness • dizziness/lightheadedness/fainting • weakness/exhaustion/fatigue • heavy sweating/clammy/moist skin • irritability/confusion • nausea/vomiting • paleness • high pulse rate	• move person to a cooler place (do not leave alone) • loosen and remove heavy clothing that restricts evaporative cooling • if conscious, provide small amounts of cool water to drink • fan person, spray with cool water, or apply a wet cloth to skin to increase evaporative cooling • call 911 if not feeling better within a few minutes
Heat stroke	• any of the above but more severe	• call 911



- sweating may or may not be present
- red or flushed, hot dry skin
- bizarre behavior
- mental confusion or losing consciousness
- panting/rapid breathing
- rapid, weak pulse
- seizures or fits
- can be fatal

- move person to a cooler place (do not leave alone)
- cool worker rapidly
- loosen and remove heavy clothing that restricts evaporative cooling
- fan person, spray with cool water, or apply a wet cloth to skin to increase evaporative cooling

In the event that medical treatment is needed beyond first aid and 911 must be called, either the foreman or safety supervision will call 911 from cellular or land line whichever is applicable.

Directions to the worksite will be provided by employer representative.

4.4. Emergency Response Assessment

For situations where an employee may be suffering from either Heat Exhaustion or Heat Stroke, the foreman, superintendent, safety supervisor should ask the following questions to evaluate proper treatment needs:

1. "What is your name?" and/or "What is my name?" *(if responder is known by victim)*
2. "Where are we now?" and/or "Where do you live?"
3. "What day is this?"

Inability to answer these questions is a strong indicator that the person is suffering from Heat Stroke and that immediate medical attention is needed- CALL 9-1-1 and cool the person down immediately.

4.5. Training

All training will be provided prior to outdoor work assignments presenting heat related illness hazards, and at least annually thereafter. Training will be documented.

4.5.1. Employee training

Training in the following topics will be provided to all employees who may be exposed to a heat related illness hazard:

- The environmental factors that contribute to the risk of heat related illness
- Awareness of personal factors that may increase susceptibility to heat illness
- Haskell Corporation procedures for identifying, evaluating, and controlling exposure
- The importance of removing personal protective equipment during all breaks
- The importance of frequent consumption of small quantities of water, one quart or more over the course of an hour may be necessary when the work environment is hot and employees may be sweating more than usual in the performance of their duties
- The importance of acclimatization

- The common signs, symptoms, and types of heat related illness
- The importance of immediately reporting to Haskell Corporation, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers
- Haskell Corporation procedures for responding to symptoms of possible heat related illness, including how emergency medical services will be provided should they become necessary
- The purpose and requirements of this standard
- The worker's right to receive the protections provided by this standard.

4.5.2. Supervisor training

Prior to assignment as a supervisor of employees working in the heat, training on the following topics will occur:

- The information provided for employee training above
- The procedures for implementing the applicable provisions in this policy
- The procedures the supervisor is to follow when an employee exhibits signs or symptoms consistent with possible heat illness, including emergency response procedures
- The procedures for moving employees to a place where they can be reached by an emergency medical service provider if necessary
- How to provide clear and precise directions to the emergency medical provider who needs to find the work site

4.6. State Rules

4.6.1. Washington

- Provide training to all employees
- Provide potable drinking water
- Have emergency response plan

Outdoor Temperature Action Levels	
Non-breathing clothes including vapor barrier clothing or PPE such as chemical resistant suits	52°F
Double-layer woven clothes including coveralls, jackets and sweatshirts	77°F
All other clothing	89°F

Activity Workload Examples	
Resting	• Sitting quietly(break/lunch)
	• Sitting with moderate arm movement (desk/computer)
Light	• Sitting/Standing with moderate arm movement (general)
	• Bench or Machine type work (standing with mostly arm movement)
	• Bench or Machine type work (including walking between stations)
	• Using small hand/power tools
	• Driving tractor/forklift/aerial lift
Moderate	• Vigorous arm movements (scrubbing/cleaning/tool use)

	• Full body movement up to 4 MPH (Walking and carrying ~6Lb tools/materials)
Heavy	• Vigorous tool use (construction saws/hammers) • Frequent ladder use (changing levels) • Intermittent Shoveling (dry materials) • Elevated of Confined Space Work (with tools) • Frequent lifting/pushing/pulling (35-65 Lb)
Very Heavy	• Steady Shoveling (wet soil/sand) • Steady Lifting/Carrying materials (>50 Lb)

4.6.2. California

- Provide Training to all workers and supervisors
- Provide fresh water for employees (1qt/hr)
- Provide continuous access to shade (5min/periodic breaks)
- Develop written plan

Outdoor Temperature Action Levels	
Provide Shade, or alternate cooling measures, for up to 25% of workforce and allow/encourage periodic 5min breaks	85°F
High-heat procedures should include, but are not limited to: 1. Effective communication by voice, observation or electronic means 2. Observation of employees for alertness and signs/symptoms of heat illness 3. Designating one or more employees on each worksite as authorized to call for emergency medical services 4. Reminding employees to drink water throughout the shift 5. Pre-shift meetings before beginning work to review the high heat procedures, encourage drinking water, and remind employees of their right to take a cool-down rest when necessary.	95°F

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8 3395

HEXAVALENT CHROMIUM (CrVI)

1.0 Purpose

The Hexavalent Chromium Exposure Control Program has been developed to control worker exposure to hexavalent chromium (CrVI) in compliance with OSHA Standard 29 CFR 1926.1126, as preliminary air monitoring has shown that some workers could be exposed to airborne CrVI during routine and non-routine operations.

Caution: Exposure to elevated levels of CrVI may cause irritation to the nose, throat and lungs, damage to mucous membranes and lung cancer.

2.0 Scope

This policy applies to all Haskell employees who are or may be exposed to CrVI in respirable quantities.

3.0 Definitions

- **Personal Exposure Limit (PEL):** means the established regulatory limit for personal exposure
- **Action Limit (AL):** means the established threshold limit for ensuring compliance with the rule

4.0 Procedures

Worker exposure to CrVI will be controlled below Occupational Safety and Health Administration (OSHA) limits by the use of engineering controls, work practices, or administrative controls. If engineering controls fail to reduce exposure below the OSHA Permissible Exposure Limits (PELs) for more than 30 days per year, or when controls are not feasible, respirators and other personal protective equipment will be provided and required to be used.

A project competent person (one who is capable of identifying existing and predictable CrVI hazards in the surroundings and who has authorization to take prompt corrective measures to eliminate them), Industrial Hygienist, or other Safety and Health professional will determine proper control procedures and/or personal protective equipment for work activities involving CrVI exposure.

4.1. Exposure Determination, Air Monitoring and Control

- OSHA has set the Permissible Exposure Limit (PEL) for CrVI at 5 µg/m³ as an 8 hour time weighted average (TWA).
- The action level (AL) for CrVI is 2.5 µg/m3

For each work activity with potential exposure to CrVI, an exposure determination must be made so that proper controls and practices can be implemented. This determination will be performed utilizing either

historical or objective data or by performing initial air monitoring. Use the Exposure Determination Worksheet at the end this section for initial analysis of the operation involving potential CrVI.

4.2. Performance-oriented option.

Determine the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data, historical monitoring data, or objective data sufficient to accurately characterize employee exposure to chromium (VI).

4.3. Employee notification of determination results. 1926.1126(d)(4)

1926.1126(d)(4)(i)
Within 5 work days after making an exposure determination individually notify each affected employee in writing of the results of that determination or post the results in an appropriate location accessible to all affected employees.

1926.1126(d)(4)(ii)
Whenever the exposure determination indicates that employee exposure is above the PEL, describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

The primary activity associated with elevated CrVI exposure is hot work (welding, cutting, grinding, arc gouging, etc.) involving chromium-containing alloys, especially stainless steel. Other activities that may involve exposure to CrVI include demolition of chromate treated wood and removing chromium containing coatings and performing other work in a regulated area.

4.4. Air Monitoring

Work activities with potential for CrVI exposure for which no historical or objective data exists will require initial monitoring to be conducted. Air monitoring will be performed at the beginning of each project for each type of work with a potential for CrVI exposure. Air monitoring must be representative of each task that will be conducted (i.e., monitoring conducted while setting up the work area cannot be used to represent exposures during hot work). Workers should wear personal protective equipment during initial monitoring. Continued air monitoring will be based on the following:

If initial, representative, full-shift (e.g. at least 7 of an 8 hour shift), personal air sampling indicates exposure below the AL, sampling may be discontinued and the area may be deregulated. While full-shift sampling is preferred, partial shift / task samples are acceptable if work with potential CRVI exposure lasts less than 7 hours.

If initial, representative, full-shift, personal air sampling indicates exposure between the AL and the PEL, the area may be deregulated as it relates to personal protective equipment and demarcation requirements. Controls should be established in an effort to obtain exposures below the AL. Sampling must be repeated at least every six months if above the AL and every three months if above the PEL or until two samples collected at least seven days apart show the exposures to be less than the AL. (If work

activity occurs less frequently than the requirement, air monitoring must be performed each time the activity is performed.)

If initial air sampling indicates exposure potential above the PEL, the work area must be regulated and Engineering Controls will be established in an effort to obtain worker exposures below the PEL. After controls are implemented, personal air sampling must be repeated (at least quarterly) until two samples collected at least seven days apart verify exposures below the PEL. If the scope of the work covers less than 7 days, two samples taken at the greatest interval possible (but not less than 3 days) can be used as documentation that the exposure is controlled. While the job task in question does not need to be regulated, confirmation monitoring must be performed at the next opportunity.

If sampling is discontinued and procedures, equipment, or materials involving CrVI-related activities change in such a way as to possibly increase the CrVI exposure, then sampling will be reinstated.

4.5. Controlling Exposure

Appendix I contains a list of tasks which present reasonable likelihood of worker exposure above the AL.

Engineering controls are the preferred method for reducing CrVI exposures. Ventilation is the most common engineering control for reducing airborne CrVI levels. Dilution or local ventilation uses vents, air movers, and/or fume extraction equipment to move welding fumes or dust away from individual workers. (Care must be taken to ensure ventilation exhaust does not expose other workers.)

Any work method that will reduce the levels of dust or hot work fumes will lower worker exposures. Additionally, worker position and proximity to hot work fumes affects exposure. Work practices that keep workers out of fumes or dust should be utilized wherever possible.

Chromate coatings should be removed with a chemical stripper or a power tool, such as a needle gun, that utilizes a HEPA attachment prior to performing hot work or other activities that can create fumes or dust. When removing a section of chromate coating prior to cutting or other hot work, sufficient coating should be removed to prevent bubbling or vaporizing when hot work is performed.

4.6. Regulated Areas

If the exposure determination indicates exposure above the PEL, the area must be regulated. The size of a regulated area is dependent upon worker exposure levels and is not preset. The exposure will be affected by the scope of work and work practices. The following requirements must be met with a regulated area:

- The regulated area should be demarcated in such a way that all workers are aware of a potential CrVI hazard. Projects will use special colored flagging to mark CrVI regulated areas. Color may be determined by each site.
- Access to the regulated area should be limited to trained and authorized individuals
- Appropriate PPE should be utilized to minimize work exposure.
- Procedures should be established to decontaminate workers before leaving the area.

- Contaminated PPE and clothing should be laundered or disposed of in such a way as to minimize potential exposure.
- There should be no eating, drinking, smoking, chewing of tobacco or gum, or the application of cosmetics in areas where skin or eye contact with chromium (VI) occurs. Affected employees should not carry the products associated with these activities, or store such products in these areas.

If prior monitoring indicates there is a potential for over-exposure, an area must remain regulated, and personal protective equipment must be worn until sufficient testing indicated that CrVI levels are below the PEL. Areas may be deregulated (without confirmation air monitoring) when the work with potential for CrVI exposure is discontinued and the area has been cleaned.

4.7. Large/Partitioned Confined Spaces

Typically, if work performed in a confined space creates exposure levels above the PEL, the entire space is considered regulated and all occupants are covered by the procedures detailed above.

For large confined spaces, the regulated area can be minimized by physically partitioning the space. Procedures must be in place to physically divide the space, provide unique entrance/egress and dedicated ventilation control.

4.8. Respiratory Protection

When working with CrVI, respirators will be required for the following:

- When exposures exceed the PEL;
- When engineering or administrative controls do not reduce exposure below the PEL;
- When workers must enter regulated areas; and
- As interim protection during exposure assessments or during installation of controls.

Respirator selection must be made based on the following chart:

Airborne Concentration	Required Respirator Type
10 x PEL or less	Half-face air-purifying respirator with P-100/HEPA filters
25 x PEL or less	Powered air-purifying respirator (PAPR) with loose fitting hood or helmet equipped with P-100/HEPA filters, or supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous-flow mode.
50 x PEL or less	Full facepiece air-purifying respirator equipped with P-100/HEPA filters, or a PAPR with a tight-fitting half mask equipped with P-100/HEPA filters, or a supplied-air respirator with a tight-fitting half mask operated in continuous-flow mode.
1000 x PEL or less	PAPR with a tight-fitting full facepiece or hood equipped with P-100/HEPA filters or a supplied-air respirator with full facepiece operated in the pressure-demand or other positive-pressure mode or with a full facepiece operated in continous flow mode.

Airborne Concentration	Required Respirator Type
> 1000 x PEL or unknown	Self-contained or supplied air breathing apparatus with a full facepiece operated in the pressure-demand or other positive-pressure mode.

If previous monitoring results are not available, and respirator requirements are not clear, and Industrial Hygienist or other Safety and Health professional can provide the necessary guidance.

All respirator use should be in accordance with the Haskell Respiratory Protection Program found in this Accident Prevention Program.

When worker exposures to CrVI exceed exposure limits, without regard to the use of respirators, personal protective equipment must be issued and worn. For typical hot work activities, the potential for dermatitis is very low. PPE requirements for CrVI are required to minimize additional exposure outside work area. Personal protective equipment (PPE) used for exposure to CrVI include:

- Coveralls or similar full-body work clothing
- Head covers
- Foot covers
- Gloves

PPE supplied may be disposable or reusable. Reusable PPE would include cloth coveralls, shoes or boots worn only at work, cloth or leather gloves, and cloth hoods. Disposable clothing includes paper or synthetic clothing, shoe covers, and head covers. When performing hot work, appropriate cloth coveralls should be used. Disposable (TYVEK®, paper, etc.) coveralls may not be suitable for hot work.

Protective clothing and equipment should be cleaned, laundered, repaired, or replaced as necessary to maintain their effectiveness. Disposable clothing may be used more than once as long as the integrity of the clothing is not impaired.

When laundering reusable clothing, the release of metal dusts must be controlled below the PEL. Dissolvable bags are available to minimize exposure to laundry personnel. (These types of bags are available from some commercial services or vendors. Keep in mind that they dissolve when exposed to water. A standard plastic bag should be used as an outer covering when utilized in the field.)

Commercial laundry services must be notified of the presence of CrVI contamination.

Haskell Corporation will provide disposable clothing for employees who may be exposed to CrVI.

4.9. Hygiene Facilities and Practices

Every effort should be made to prevent workers from spreading contamination to other areas of the work place and to their homes. The following facilities and practices should be provided and used:

4.10. Change Rooms

When feasible, clean change rooms should be provided, for storing street-clothing and other personal items. Provisions should be made available in change rooms for storing clean and contaminated clothing separately. If a change room is not feasible, non-contaminated personal clothing may be stored in containers, vehicles, or other areas outside of the regulated area. Personal protective equipment should be donned before entering the work area.

When leaving the regulated area during the work shift, all personal protective equipment (i.e. coveralls, gloves, boots, etc.) should be HEPA vacuumed before personnel are allowed the leave the regulated area. Contaminated PPE should be removed, and left outside of the entrance to the regulated area (in the change room if available) for pick up for laundering. If PPE is decontaminated and stored in a way to minimize airborne exposure, it may be reused for continued work during the same work shift.) Workers should wash their hands and face before eating, drinking, or smoking.

If the regulated area is a confined space, removal/decontamination may take place in an area outside the regulated area to minimize the risk of other hazards (i.e. remaining in the confined space, elevated work area, etc.) Travel distance from the regulated area must be minimized, and steps must be taken to minimize exposure to other workers when covered workers are exiting.

4.11. General

Protective gear, respirators, and tools should be decontaminated according to standard procedures.

If “street clothing” is worn directly under CrVI protective clothing, steps must be taken to minimize the potential for contaminating clothing that will leave the project.

There should be no eating, drinking, smoking, chewing gum, or applying cosmetics when working with CrVI.

Compressed air may not be used as a decontamination method.

Contaminated clothing that will not be re-used must be stored in sealed container or bags.

4.12. Contaminated Work Areas

Work areas which may be contaminated with CrVI must be cleaned in such a way that minimizes potential for worker exposure. Exemptions to this requirement are as follows:

- Work areas which by their nature cannot be effectively cleaned (e.g. open air field activities, the floor of a temporary fab tent, etc.)
- Confined spaces do not need to be decontaminated prior to start up. However, anytime work will be performed in the contaminated space, an exposure determination must be performed and workers must be protected accordingly.
- Temporary structures (e.g. fab tents, spark enclosures, etc.) do not need to be decontaminated if the materials will be sent for disposal. Workers must be protected during the tear down process.

HEPA vacuum or wet methods should be the methods of first choice. If these are found to be ineffective, other methods (e.g. dry sweeping, shoveling, etc.) can be used if the area is isolated and workers protected properly.

Equipment potentially contaminated with CrVI particulates does not need to be decontaminated provided it is handled in such a way that does not create an exposure hazard to workers. Examples of equipment that must be decontaminated include fire blankets, hand tools and PPE.

4.13. Waste Disposal

All waste disposal procedures for any given project must be developed and coordinated with the site Environmental Contact. Disposable clothing or respirator cartridges contaminated with CrVI can typically be discarded with normal waste as long as they are properly bagged and labeled so as not to release dust during disposal.

4.14. Medical Surveillance

Workers who are, or will be exposed at or above the action level for CrVI for thirty or more days per year should be included in a medical surveillance program. Medical surveillance will also be made available at no cost to workers who experience signs and symptoms of CrVI exposure or who are exposed in emergency situations.

Medical surveillance will be conducted within 30 days of initial assignment and annually thereafter. Exam will include:

- Physical examination of skin and respiratory tract
- Completion of Respiratory Protection Questionnaire
- Completion of Hexavalent Chromium Questionnaire
- Additional tests deemed appropriate by the examining physician

4.15. Training

A CrVI training program should be established for workers who have potential airborne or eye and skin exposure to CrVI. There is no required frequency for refresher training, however, it is suggested that CrVI training be covered along with other metals (arsenic, lead, cadmium). The initial worker training program should consist of the following:

- Health hazards associated with CrVI exposure
- The sources of exposure, and the specific nature of operations that could result in exposure to CrVI as well as any necessary protective steps
- The purpose and description of the medical surveillance program
- The engineering controls and work practices associated with the worker's job assignment as well as other measures workers can take to protect themselves
- A review of requirements contained in the OSHA standard

4.16. Recordkeeping and notification

Medical surveillance records for CrVI must be kept for the duration of employment plus thirty years.

Any objective data used to determine exemptions from initial monitoring or any other data used to show negative exposure assessments must be kept for thirty years.

When Safety and Health or any other group responsible for notification receives results of air monitoring, biological monitoring, or medical findings or opinions, the worker should be notified of the results within fifteen working days. Work activities considered to be covered by the Construction Standards require notification in five working days.

5.0 Regulations

- Federal 29CFR 1926.1126
- Washington WAC 296-62-08003
- California Title-8 1532, 5206

HEXAVALENT CHROMIUM (CrVI) EXPOSURE DETERMINATION WORKSHEET

Prepared By	Date		Area/Unit	Equipment #	Description

	A) Hot Work Method – Select only ONE below			
	Hot Work Process	Fume Level	Score	
	Stick Welding, Arc Gouging, Torch Cutting	High Fume Producing	9	☐
	MIG Welding, Plasma Cutting	Medium Fume Producing	3	☐
	TIG Welding, Grinding	Low Fume Producing	1	☐

	B) Base Metal Chrome Content (refer to attached Cr content table) Select only ONE below			
	Percentage of Chrome in Base Metal or Filler Rod/Wire	Chrome Content	Score	
	17% - >	High Chrome Content	9	☐
	9% - 17%	Medium Chrome Content	3	☐
	0.5 – 9%	Low Chrome Content	1	☐
	Less than 0.5% Chrome (Carbon Steel & Galvanized)	Very Low Chrome Content	-5	☐

	C) Work Area (Select only ONE below)			
Type of Space		Description	Score	
Confined Space		Includes all small confined spaces. For large confined spaces consult the safety coordinator for determination.	9	☐
Semi-Enclosed		Includes Weld Bays, Spark Enclosures and Indoor Shops without local exhaust ventilation.	3	☐
Open Air Location		Includes only open air welding without any barriers i.e. no fire blanket or other such materials that may block air flow.	1	☐

	D) Duration Per Shift (Time spent actually performing fire work)			
Length of Hot		Description	Score	
Long (Full Shift)		More than 6 hours of actual time creating emission	4	☐
Moderate (Half Shift)		Between 4 and 6 hours of actual fire work (emission)	3	☐
Short		Between 2 and 4 hours of actual fire work	2	☐
Very Short		Less than 2 Hours of actual fire work	1	☐

	E) Ventilation (Subtract from total score)			
Type of Ventilation		Description	Score	
Local Exhaust		Local Ventilation that captures the point source of the emission	-8	☐
Dilution Ventilation		General dilution ventilation (i.e. Copus Blower, Air Horn)	-4	☐
Open Air		Natural ventilation (no obstructions between emission and air) No fire blankets, plastic or other structure blocking natural ventilation (wind)	-2	☐

See description of compliance method (back pg.) based on score The use of monitoring data may override this determination as it may provide additional data.	Total Score	

HEXAVALENT CHROMIUM EXPOSURE DETERMINATION

15 points or Greater: **CrVI Regulated Tasks or "Hot Zones":**

- **Employee Awareness:** Demarcate areas with Danger Tape, CrVI warning tags and signs. All personnel inside Hot Zone area must wear required PPE.
- **Respiratory Protection:** A minimum of a P100, or HEPA, 1/2 mask Air Purifying Respirator (APR). Higher protection factor respirators may be needed in some other instances. Persons performing alloy fire work inside a confined space should wear supplied air respiratory protection. Contact a Safety Coordinator for assistance.
- **Outer Clothing:** Workers performing fire work must wear an outer layer of clothing, or other protective suit, that is properly layered or discarded after each shift or at the end of the job; whichever comes sooner.
- **Hygiene:** Hand and face washing facilities are to be readily available. Workers should not eat, drink, smoke or use smokeless tobacco until after removing the outer layer of clothing and washing their hands and face.
- **Decontamination:**
    - All contaminated materials should be bagged and sealed, and labeled with a "Hexavalent Chromium" warning label either for waste or laundry service.
    - All surfaces should be maintained as free as practical of CrVI accumulations. Wet or HEP A vacuuming methods should be utilized for decon. Compressed air blowing should not be used. Areas that do not need to be decontaminated include: confined spaces that will return to process service and open air locations such as pipe racks, gravel areas, etc.
- **Monitoring:** All tasks with duration greater than 3 hours must be monitored with CrVI sampling medium. Contact the Safety Coordinator for sampling advice and scheduling.

10 to 14 points: CrVI Controlled Tasks:

- **Employee Awareness:** Training required for all personnel participating in all work
- **Exposure Monitoring:** Monitoring should be performed on alloy work greater than 2 hours in length total fume producing time. For carbon steel, monitoring should be considered for further evaluation, contact Industrial Hygiene or Safety for guidance.
- **Objective Data may be used in place of monitoring -** The data must reflect workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the current operations.

Less than or equal to 9 Points: Tasks Not Regulated:
No additional control measures beyond standard fire work protocols and personal hygiene methods.

Low Chrome Content 0.5-9%	
Material Type	**Chrome Content (%)**
1Cr	0.8 - 1.25
11/4 Cr	1.0 - 1.5
2 1/4 Cr	1.9 - 2.6

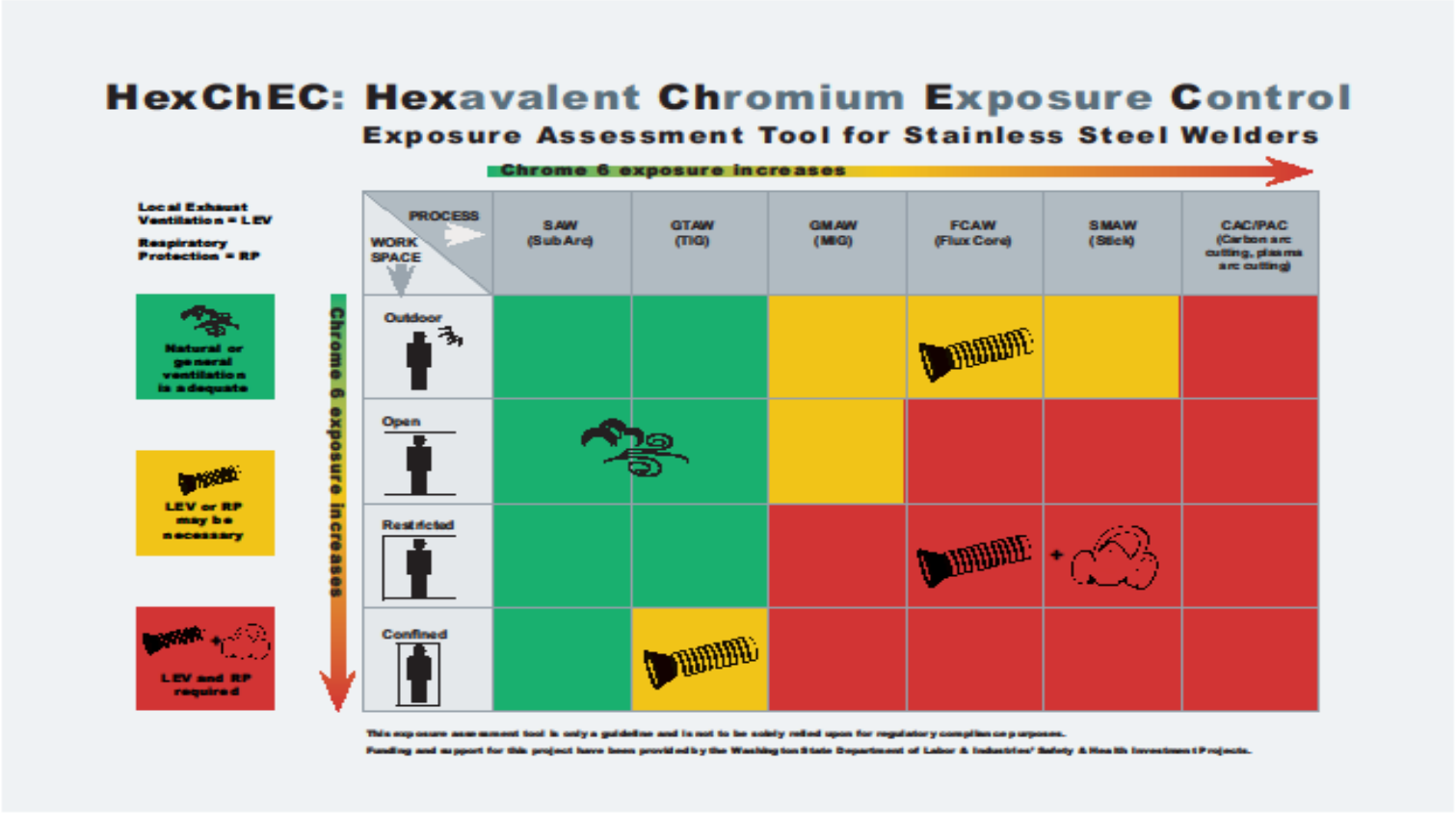
Medium Chrome Content >9-17%	
Material Type	**Chrome Content (%)**
9 Cr	8.0 - 10.0
405 Stainless (ss)	11.5 - 14.5
410/410S ss	11.5 - 13.0
17-4 PH ss	15.5 - 17.5
Alloy600	14.0 - 17.0
Alloy C-276	14.5 - 16.5

Welding Filler Material Not Included Above	
Material Type	**Chrome Content (%)**
Inconel 117 Electrode	21.0 - 26.0
Inconel 617	20.0 - 24.0
Inconel 82	20.0 average
Inconel 182	14.0 average
Inconel A	15.0 average
Inconel 112	21.5 average

High Chrome Content >17%	
Material Type	**Chrome Content**
304/304L ss	18.0 - 20.0
308 ss	19.0 - 21.0
309 ss	22.0 - 24.0
310 ss	24.0 - 26.0
316/316L ss	16.0 - 18.0
3171317L	18.0 - 20.0
321 ss	17.0 - 19.0
347 ss	17.0 - 19.0
904Lss	19.0 - 23.0
Alloy 20	19.0 - 21.0
AL-6Xss	20.0 - 22.0
Nitronic50	20.5 - 23.5
Nitronic60	16.0 - 18.0
Duplex 2205 ss	21.0 - 23.0
Alloy 800/800H	19.0 - 23.0
Inconel 625	20.0 - 23.0
Alloy 825	19.5 - 23.0

HASKELL
CORPORATION

HEXAVALENT CHROMIUM EXPOSURE DETERMINATION CHART



HIRING & TERMINATION

1.0 Purpose

To establish a consistent and effective method of hiring and terminating employees from employment

2.0 Scope

This policy applies to all employees and all Haskell work locations

3.0 Definitions

- **Harassment:** means discrimination or harassment as defined by the Equal Employment Opportunity Commission (EEOC), American's with Disabilities Act (ADA), or other recognized authority.
- **Hiring**: means to hire or rehire an employee for either temporary or ongoing (at will) employment
- **Terminating**: means to release an employee from their work assignment (includes: ROF and Standby)

4.0 Procedures

It is the policy of Haskell Corporation to ensure that every employee is hired and released from employment in strict accordance with Federal and State laws. Haskell Corporation does not tolerate harassment.

4.1. Hiring a new worker

The following process will be used to ensure compliance with this policy:

- Verify employees' dispatch paperwork
- Have employee register on the New Hire Log
- Have employee fill out the Federal W-4 and I-9 forms (validate information)
- Review the Haskell Orientation and/or Site Specific Safety & Health Plan
- Complete a drug/alcohol verification/screening in accordance with ASAP or CORP policy
- Dispense the following Personal Protective Gear
    - Hard Hat (w/Haskell sticker and Employee Name Label)
    - Safety Glasses
    - Hearing Protection
    - Gloves
- Provide any specific training required
- Release to foreman

Under federal law, an employer doesn't have to hire or promote the most qualified applicant. But the employer cannot base decisions on personal characteristics that are not job-related. These characteristics often include:

- Age
- Race
- Sex
- Religion
- National origin
- Disability

An interviewer isn't allowed to ask questions relating to these characteristics. Interview questions that aren't allowed include:

- Are you married? Are you planning to get married?
- Do you have children? Are you planning to have children?
- Where were you born?
- What's your sexual orientation?
- Have you ever been arrested?

An interviewer can, however, ask about a personal characteristic if it could hinder your ability to fulfill the job's requirements. Some examples might be:

- Have you ever been **convicted** of a crime?
- Can you prove that you are eligible to work in the US?
- Can you do this job with or without reasonable accommodations?

4.2. Releasing a worker from employment

The following steps will be taken to ensure compliance with this policy:

- Verify reason for release and prepare a Separation Form
- Have employee fill out the TOP section of the Separation Form
- Sign & Date form and give BOTTOM section to employee
- Thank employee for their work/service

Employers are not allowed to terminate or discriminate against employees the following reasons:

- Age
- Race
- Sex
- Religion
- National origin
- Disability
- Pregnancy

And it is illegal for an employer to terminate an employee:

- For refusing to break a law
- In retaliation for filing a discrimination or safety claim
- For taking leave under the Family and Medical Leave Act
- Without following its own stated procedure or policy
- For reasons not contained in the employment contract, if one exists

5.0 Regulations

- Federal
- State

HOT WORK (WELDING/CUTTING/GRINDING)

1.0 Purpose

To establish the minimum requirements for ensuring the safety and health of personnel engaged in or affected by hot work activity.

2.0 Scope

This policy applies to all Haskell employees who perform welding cutting or grinding activities, including fabrication shops and field construction projects.

2.1. The following activities are exceptions to the requirements of this policy:

2.1.1. The normal operation of fired heaters.
2.1.2. Use of electrical devices that are rated as intrinsically safe or 1 watt or less in power.
2.1.3. Use of any electrical device where the unrestricted use of motor vehicles is permitted.
2.1.4. All identified (with signage) low voltage electrical boxes.

2.2. Hot work capable of producing open flame, sparks or intense radiant heat such as but not limited to: welding, grinding, torch cutting / brazing, jack hammers and post weld heat treating within the following areas requires a review by a client Health & Safety Representative or Operations Supervisor to determine the acceptable controls for the job (i.e. permit, continuous monitoring, fire watch).

2.2.1. Inside any Refinery or other Process Facility Operating Unit
2.2.2. At any location where such activity could be an ignition source to the surrounding area or materials

3.0 Definitions

- **Approved:** means listed or approved by a nationally recognized testing laboratory such as Underwriters Laboratory Inc. or Factory Mutual Insurance, etc.
- **Hot Work:** means any operation where heat, spark, fire or molten metal could be produced, such as welding, burning, and cutting, using oxy-acetylene or plasma arc process, or grinding. This also includes the use of any tools that are not intrinsically safe inside a Class I Division I area. Some facilities should require hot work permits. These requirements should be strictly adhered to.
- **Fire watch**: means an individual assigned to monitor hot work activities for detection of possible fires. Fire watch personnel should be trained and knowledgeable in the use of available fire extinguishers and how to summon help in the event of an emergency.

4.0 Procedures

Supervisors should ensure hot work activities are performed in a safe manner with fire potentials controlled, as specified herein. This includes inspections and authorizations for all procedures.

Employees are responsible for the proper use of welding, cutting and grinding equipment for its safe use. Only qualified personnel should be allowed to operate welding and cutting equipment.

4.1. Hotwork Permit

Before any hotwork is permitted the area should be inspected for fire hazards and a written hotwork permit should be used to authorize hotwork operations.

4.2. Hazards

There are a number of hazards associated with welding, cutting and grinding. By following the guidelines outlined in this directive the hazards listed below which can cause injuries, can be eliminated/or minimized.

Flash Burns – The most common injuries from welding are flash burns, caused by the ultraviolet light produced by the arc. A flash burn is like sunburn of the outer surface of the eye resulting in a gritty feeling in the eye.

Radiation burns – Unfiltered ultraviolet light from welding or cutting can cause severe short term burn and poses the same long term skin cancer risks as sunburn.

Heat, Sparks, Open Flames, Metal Spatter – Can cause burns to the welder as well as bystanders and can cause a fire by not covering or removing flammable materials or substances. Prepare for the job by removing all potential fire hazards before starting task.

Electric Shock – Can be caused by electric welders from welding on steel or other conductive materials or when the welding is wet or damp and when not properly grounded.

Fume poisoning – Fumes from such metals as zinc, lead and cadmium, and others can enter the nose or the mouth. Continuous exposure may lead to long-term health disorders. Appropriate point source ventilation or respiratory protection should be used.

Improper Handling of Gas Cylinders - Acetylene must be stored upright. The use of oil, grease or similar substances on torches or regulators in oxygen service may burn, or if ignited, explode.

Any defective equipment should be tagged Danger Do Not Operate. Repairs or maintenance should only be done by trained and qualified employees.

4.3. General Requirements

Mixtures of fuel gases and air or oxygen may be explosive and should be guarded against. No device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to

consumption, except at the burner or in a standard torch, should be allowed unless approved for the purpose.

Under no condition should acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 p.s.i. gage pressure or 30 p.s.i. absolute pressure. (The 30 p.s.i. absolute pressure limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.) This requirement does not apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use. The use of liquid acetylene should be prohibited.

Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds should be used for welding, burning, cutting and grinding operations. Use of replacement tips will not nullify the "approved apparatus" status of a torch, if such replacement tips are made to the same specifications as the original tip of the torch at the time of approval by the nationally recognized testing laboratory, or if the use of such tips in conjunction with convertor/adaptors results in the same specifications as the original tip at the time of approval by the nationally recognized testing laboratory.

Individuals performing welding/cutting tasks should be trained in the safe operations of their equipment and the process. Those in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems should be trained and judged competent for this work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems are readily available. Arc welding or cutting equipment having a functional defect should not be used.

No employee should enter a confined space to perform welding, cutting or grinding without following the requirements of section 2.4 Confined Space Entry and any of the requirements of the permit should the space be a permit required confined space. Welding machines should be left on the outside of a confined space and heavy portable equipment should be blocked to prevent accidental movement.

Employees using hotwork equipment should report any defect or safety hazards and discontinue use of equipment they feel is unsafe until it has been evaluated and its safety has been assured. Repairs should be made only by qualified personnel.

Cords and hoses should not create a tripping hazard for personnel.

Suitable flash protection should be used to provide eye protection for other personnel working in the area.

Where inert gas is used as a purging gas, or during the shielded arc process, appropriate measures should be instituted so as not to create an oxygen deficient atmosphere within the area, or low areas.

Where possible and/or necessary, local exhaust ventilation and point source ventilation should be used should be used to minimize respiratory hazards. When necessary appropriate respirators should be worn.

First aid equipment should be readily available at all times.

When arc welding is performed in wet or high humidity conditions, employees should use additional protection, such as rubber pads or boots, against electric shock.

Adequate (temporary) fire extinguishing equipment should be readily available during all hot work activities.

When arc welders or cutters leave or stop work or when machines are moved, the power supply switch should be kept in the off position.

4.4. Fire Protection

Fire watches trained in the use of fire extinguishing equipment and who are also familiar with the procedures for sounding an alarm in the event of a fire should be posted when required. This should be when a client permit requires one or more and in locations where a small fire might develop such as combustible materials within 35 feet of heat source, or materials in excess of 35 feet but that might easily ignite. Floor and wall openings within a 35 foot radius which expose combustible materials in adjacent areas including concealed spaces in walls or floors and areas adjacent to the opposite side of ceilings, walls or metal partitions. If all the hazards are not mitigated that allow safe welding and cutting operations then hot work should not be done until it is safe. Fire watches should have a 20# fire extinguisher or charged water hose up to 1 ½ in diameter, equipped with a nozzle readily available.

Unless client policy states otherwise, Fire Watches should remain at least one half hour after the hot work operation was completed.

If the hot work cannot be relocated and if all the fire hazards cannot be removed, shields, such as fire blankets, etc. should be used to confine the heat, sparks and slag and to protect the immovable fire hazards. Where coverings, such as fire blanket are used to contain hot work debris at floor, wall or other openings, this material should not create a fall hazard for personnel. If fire hazards cannot be removed or shields cannot be used to confine heat, sparks, slag and protect the immovable fire hazards, the welding/cutting should not be performed.

4.5. Protective Clothing

Protective clothing worn during hot work activities should be of fire resistance properties. Highly combustible materials such as nylon, polyester, etc. should not be worn while performing, or in close proximity to hot work activities.

Pants and long sleeves should be free of cuffs, so as not to trap hot materials. Long sleeve shirts should be worn. Suitable protective clothing, such as leather sleeves or jacket, should be worn while performing overhead hot work activities.

Suitable hand protection should be worn as determined by the nature of the welding, burning, cutting or grinding operation.

4.6. Eye, Face and Ear Protection

Only approved eye, face and era protection should be worn while performing, or in close proximity to, hot work activities. Approved welding helmets (ANSI Z89.1-1986) equipped with proper filter lens should be worn. The welding helmet and lens should be free of defects, excess spatter or cracks.

Safety glasses or goggles should be worn under the welding helmet, protecting the welder from flying metallic particles, sparks, flames or debris.

Other nearby personnel should be protected from the UV rays by wearing approved safety glasses or noncombustible or flame proof screens or shields.

Only approved eye protection should be worn. Refer to OSHA Standard 29 CFR 1926.102 (b) Table E-2 Filter Lens Shade Numbers For Protection against Radiant Energy. This table should be used as a guide for the selection of filter lens used in welding and cutting operations.

4.7. Respiratory Protection

Any hotwork involving lead base metals, zinc, cadmium, mercury, beryllium or exotic metals or paints not listed here should have proper ventilation, respiratory protection or a combination of both.

4.8. Compressed Gas Cylinders

4.8.1. Inspection of compressed gas cylinders.

Gas identification should be stenciled or stamped on the cylinder or affixed with a label. No compressed gas cylinder should be accepted for use that does not legibly identify its content by name.

Compressed gas cylinders should be inspected periodically to ensure they are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections should be conducted in accordance with Compressed Gas Association Pamphlets C-6-1968 and C-8-1962.

4.8.2. Compressed gases.

The handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks should be in accordance with Compressed Gas Association Pamphlet P-1-1965.

4.8.3. Safety relief devices for compressed gas containers.

Compressed gas cylinders, portable tanks, and cargo tanks should have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963.

4.8.4. Cylinders.

Cylinders should be handled carefully. Rough handling, knocks, and falls are liable to damage the cylinder, valve or safety devices and result in leakage.

The transfer, handling, storage, and use of acetylene in cylinders should comply with the provisions of CGA Pamphlet G-1-2009 (Acetylene) (Compressed Gas Association, Inc., 12th ed., 2009).

Cylinders should not be positioned in proximity to electrical equipment so as to become part of the electrical circuit.

All cylinders should be secured in an upright position at all times during use and storage.

Cylinders should not be secured to a metal fabricating table, piping, structures, etc. which are being welded upon using the electric arc process, unless suitable insulation is installed. Electrodes should not be permitted to come in contact with a cylinder.

Cylinders should be hoisted only when in approved cart. Cylinders should not be placed where they may be exposed to welding debris such as sparks, fire, molten metal or other falling debris.

No cylinder containing oxygen or acetylene or other fuel or gas should be permitted within a confined/enclosed space.

When not in use or at the completion of the activity or shift, all cylinders should be broken down and capped, unless otherwise permitted.

Cylinders designed to utilize a special key or wrenches to open/close valves should have proper key/wrench in place at all times while in use.

Oxygen cylinders should be stored a minimum of 20 feet from any flammable gases or petroleum products.

Before connecting a regulator to a cylinder valve, the valve should be opened slightly and closed immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The valve should be opened while standing to one side of the outlet; never in front of it. A fuel-gas cylinder valve should never be opened up, cracked near other welding work or near sparks, flame, or other possible sources of ignition.

4.9. Cable, Grounding and Electrode Holders

Only leads free from repair or splice for 10 feet from the electrode holder should be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.

When a cable other than the lead wears and exposes bare conductors, the portion exposed should not be used until it is protected by insulation equivalent in performance capacity to the original.

All cables should be capable of handling the current produced through the welding activity.

All leads should be properly installed. All welding machines should be properly grounded.

All cables and leads should be routed away from the path of travel so as not to create a tripping hazard, nor expose the cable(s) to potential damage. When possible it is best to route cables overhead at a height of 7 feet and properly secured using non-conductive materials.

Where exposed to either foot traffic or vehicular traffic, all cables should be adequately protected from damage by covering them with suitable material, which is adequately secured against displacement.

Electrode holders, which become hot, should be allowed to air cool. Dipping of electrode holders in water or other cooling agents is prohibited.

4.10. Defective Equipment

Any arc welding or cutting equipment having a functional defect should not be used.

Any gas welding or cutting equipment having a functional defect should not be used.

Any defective equipment should be red tagged with the words DO NOT OPERATE written on it. The defective tools should be turned over to a Haskell Supervisor or taken to the site tool room.

No repairs should be made to defective equipment except by authorized service technicians properly trained to make such repairs.

5.0 Regulations

- Federal 29CFR 1926 Subpart J
- Washington WAC 296-155-H
- California Title-8 CCR 4851

HOUSEKEEPING

1.0 Purpose

To establish the requirement and responsibilities for routine housekeeping to ensure that work areas are maintained in a clean manner and present an acceptable appearance.

2.0 Scope

This policy applies to all personnel and facilities

3.0 Definitions

3.1. Reserved

4.0 Procedures

All personnel will work towards maintaining their respective workplaces in a clean and orderly manner.

Supervisors should:

- Estimate waste that will be generated before any work is performed so that the need for containers and waste removal can be determined.
- Plan for the necessary time to insure good housekeeping standards are maintained.
- Conduct or arrange for inspections in their area of responsibility.
- Insure that each work area under their supervision is maintained at an acceptable level of appearance and cleanliness.
- Initiate corrective action for deficient items noted during inspections.
- Ensure employees are instructed on the proper disposal method for wastes, including waste classified as hazardous.
- Encourage segregation of waste materials to create opportunities for reuse or recycling.

Housekeeping encompasses all activities related to the cleanliness of Haskell facilities, projects, materials, and equipment and the elimination of nonessential materials and hazardous conditions. The following general housekeeping practices must be applied to all areas where employees perform maintenance, construction, or other activities:

- Garbage, scrap, debris and other trash materials are to be properly disposed of in designated containers and should be removed on frequent and regular intervals.
- Containers used for garbage and other oily, flammable or hazardous wastes should be equipped with solid covers to control the potential for run-off.

- Material and equipment will be stored only in appropriate storage locations.
- Floors should be maintained clean and as dry as reasonably practicable. Liquid spills are to be cleaned up immediately.
- Equipment is to be kept clean and in good working condition.
- Tools, supplies, parts, and equipment will not be used in a manner that would be hazardous or adversely affect the work quality. Control should be used to insure that the work area is maintained in an acceptable manner.
- Welding splatter and slag should be contained with the use of high temperature protective screens or shields. Welding splatter or slag should be cleaned up before leaving the work site for an extended period of time. The entire welding work site will be cleaned at the end of the work shift.
- Compressed air should not exceed 30 psi when used for cleaning purposes. Eye protection is required during these cleaning operations. The use of compressed air for cleaning an employee's body or clothing is prohibited.
- Shelved items must be placed in an orderly manner and arranged so that the items cannot easily fall while nearby items are being retrieved.
- Items will not be placed in front of shelves so that employees must climb or reach over the items stored in front of the shelves to retrieve items.
- Storage of excessive combustibles such as cardboard boxes or pallets is discouraged.
- Items stored should remain 18" below the plane of the sprinkler heads, or 24" below the ceiling in areas without automatic sprinkler systems.
- Every floor, working place, and passageway should be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings.

4.1. Inspections

Work areas will be inspected for deficiencies in cleanliness and good physical appearance. Inspections should be performed at a frequency that will ensure the desired level of cleanliness and appearance are maintained throughout the day.

Supervisors should monitor these areas to insure that housekeeping is acceptable.

In shared storage areas, shops, or offices, supervisors of the various employees should work closely together to insure that housekeeping is maintained in an acceptable manner.

During inspections, any safety related deficiencies that constitute hazardous conditions should be given priority attention. Hazardous conditions that constitute imminent danger should be immediately reported to the supervisor and/or Safety department, for guidance and direction.

4.2. Inspection guidelines:

- Housekeeping is being maintained as an integral part of every work operation.
- Ensure that sufficient receptacles are available for waste and debris.
- Cleaning and removal of waste, debris, and dust is being performed regularly.

- Stairways, aisles, corridors, and passageways are free from loose material and debris and are not used for storage.
- Tools, cords, and other materials are not strewn about where they may cause tripping or other safety hazards.
- Lunch rooms, wash rooms, toilets, drinking fountains, and other employee comfort facilities are being constantly maintained in a sanitary condition.
- Deficiencies in facility appearance (such as a need for painting and other appearance related maintenance items) should be noted during the inspections.
- Deficiencies in the area of corrective maintenance such as leaking valves or fittings, excessive motor vibrations, etc., should be noted during the inspections.

5.0 Regulations

- Federal 29CFR 1910.22, 1910.141, 1926.25
- Washington WAC
- California Title-8

HYDRO BLASTING

1.0 Purpose

To establish practices for the personnel requirements, operator training, operating procedures and recommended equipment for the proper operation of all types of high-pressure water jetting (HYDRO BLASTING) equipment. Additionally, to establish a baseline for the necessary awareness and hazards associated with high pressure water jetting.

2.0 Scope

Haskell Corporation does not typically self-perform Hydro Blasting activities. This work is sub-contracted to service providers specializing in such work. This policy is intended to provide a minimum guidance to project management on the proper operation of high-pressure water jet (Hydro Blasting) cleaning and cutting equipment. Sub-contractors performing such work on Haskell projects should have a Hydro Blast policy that meets or exceeds this policy.

In this document the word "should" indicates a requirement that is to be adopted in order to comply with these practices.

The term “Hydro Blasting” covers all water jetting activities including the use of additives or abrasives at pressures approximately 1,000 psi or higher.

These practices are also applicable at lower pressures where there is foreseeable risk of injury.

Any person including Sub-contractors on a Haskell project required to operate, or maintain high-pressure water jetting equipment should have been trained and have demonstrated the ability and knowledge to do so.

3.0 Definitions

High-pressure water jet systems -high pressure water jet systems are water delivery systems which have nozzles or other openings whose function is to increase the speed of liquids. Solid particles or additional chemicals may also be introduced, but the exit in all cases will be in a free stream. In terms of these recommended practices, the system should include the pumps (pressure producing devices), and the hoses, lances nozzles valves and safety devices, as well as any heating elements or injection systems attached thereto.

High Pressure Water Cleaning -the use of high pressure water, with or without the addition of other liquids or solid particles, to remove unwanted matter from various surfaces, where the pressure of the liquid jet exceeds 1, 000 psi at the orifice.

Caution: the lower limit of 1,000 psi does not mean that pressures below 1,000 psi cannot cause injury or require any less attention to the principles of these recommended practices. Adequate precautions, similar to those of these recommended practices, are required at all pressures.

High Pressure Water Cutting -the use of high-pressure water, with or without the addition of other liquids or solid particles to penetrate into the surface of a material for the purpose of cutting that material and where the pressure of the liquid jet exceeds 1000 psi at the orifice.

Lancing -an application whereby a lance and nozzle combination is inserted into and retracted from the interior of a pipe or tubular product, to include rigid lances and flex lances (Whips).

Dump System-an operator controlled manually operated device or system that rapidly reduces the pressure to a level that yields a pressure flow at the nozzle that is considerably below the risk threshold.

Moleing - is an application whereby a hose fitted either with a nozzle or with a nozzle attached to a lance is inserted into or retracted from the interior of a tubular product. It is a system commonly intended for cleaning the internal surfaces of pipes or drains.

It can be self-propelled by its backward directed jets, and is manufactured in various shapes, sizes and combinations of forward and backward directed jets.

Nozzle - a device with one or more openings where the fluid discharges from the system. The nozzle restricts the area of flow of the fluid accelerating the water to the required velocity and shaping it to the required flow pattern and distribution for a particular application. Combinations of forward the backward nozzles are often used to balance the thrust. Such nozzles are commonly referred to as tips, jets, orifices, etc.

Qualified Operator – an employee who has met the training requirements set forth in this policy. Additionally, this employee must have endorsements from management personnel recognizing his or her ability to perform work indirectly supervised.

Shot gunning -an application whereby a lance and nozzle combination can be manipulated in virtually all planes of operation.

Hose assembly -a hose with couple attached in accordance with manufacturer's specifications.

Lance -a rigid metal tube used to extend the nozzle from the end of the hose.

Stinger – A metal pipe safety device designed for connection at the end of a flex lance. The nozzle is thereby attached to the tip ahead of the stinger device. This control device prevents the flex lance from reversing out of the pipe being hydro blasted, which may cause physical impact to the operator. Stinger devices must measure one and one half times the internal diameter of the pipe, or tubes being blasted.

Engineering Controls- These are methods utilized to control, modify or reduce the probability of impact to the worker, i.e. visual markings of lances, flexible lance safety guards, line mole back out preventers, alternative technology controls, etc.

4.0 Policy

4.1. Protective Clothing and Personnel Protection

4.1.1. OSHA Compliance -all applicable OSHA regulations covering personal protective equipment should be followed

4.1.2. Head Protection -all operators should be issued suitable head protection, which should be worn. It should include a full-face shield.

4.1.3. Eye Protection -"suitable" eye protection (adequate for the purpose and of adequate fit on the person) should be provided to all operators of high pressure water jetting equipment, and must be worn within the working area. Additionally, several states have regulations governing eye protection, which must be conformed with. Where liquids liable to cause eye damage are encountered, it may be necessary to use either a combination of visor and goggles, or a full hood with shield.

4.1.4. Body Protection -all operators should be supplied with suitable waterproof clothing having regard to the type of work being undertaken. Garments should provide full cover to the operator, including his arms. Liquid or chemical resistant suits should be worn when there is a reasonable probability of injury that can be prevented by such equipment.

4.1.5. Hand Protection -adequate hand protection should be supplied to all operators and should be worn when there is a reasonable probability of injury that can be prevented by such equipment.

4.1.6. Foot Protection -all operators should be supplied with waterproof boots with steel toecaps a metatarsal guard should be used by jetting gun operators.

4.1.7. Hearing Protection -most high-pressure water jetting operations produce noise levels in excess of 90db and so suitable ear protection issued in accordance with OSHA standards must be worn and provision should be made for its regular inspection and maintenance. All personnel and operators should receive instruction in the correct use of ear protectors, so that nose exposure lies within the limits as specified in the Haskell HS Procedure 18-Hearing Conservation.

4.1.8. Respiratory Protection –The Haskell HS Procedure 11-Respiratory Protection should be observed where there is a reasonable probability of injury or illness due to environmental, atmospheric conditions.

4.1.9. Equipment Limitations - it should be recognized that protective equipment may not necessarily protect the operator from injury by direct high pressure water jet impact.

4.2. Pre-Operational Procedures

4.2.1. Planning/ Job Hazard Analysis (JSA) -each job should be preplanned. Personnel familiar with the equipment to be cleaned or the material to be cut as well as the work environment should meet with the personnel that will be doing the work. The PTA should outline potential hazards of the work area, environmental problems, safety standards, and emergency alarm/aid procedures and identify each work party member’s

training/craft designation. This process should be documented and filed with the Haskell HSE Department.

4.2.2. Check List -a checklist should be used to assure that the proper procedures and proper equipment selection are followed.

4.2.3. Inspection - Valves and seating surfaces in pressure regulating devices as well as hose assemblies encounter high wear during high pressure water jetting. These items must be frequently inspected as part of the Preventative Maintenance (PM) Program. All pressure equipment should be inspected prior to use with respect to the following:

4.2.3.1. Correct pressure rating and size

4.2.3.2. Free from external damage, i.e., exposed and broken wires

4.2.3.3. All end fitting and couplings are in good order and of the correct pressure rating for the

4.2.3.4. Unit operating pressure.

4.2.4. Dump Valve -all systems should incorporate at least one fluid shut off or dump device. The gun operator must always be able to shut down the water jet by releasing pressure on the trigger, switch or foot valve pedal.

4.2.5. Warning Barriers & Signs - Barricades and signs should be erected to encompass the hazard area and signs posted to warn personnel they are entering a hazardous area. The perimeter should be outside the effective range of the jet wherever possible. Barriers may be of rope, safety tape, barrels, etc., as long as they give an effective warning and are highly visible.

4.2.6. Hose -hose should be arranged so a tripping hazard does not occur. Hoses, pipes and fittings should be supported to prevent excessive way, and/or wear created by vibration or stress of the end connections, when laid on the ground, over sharp objects or on vertical runs. All hoses should be checked for evidence for damage, wear or imperfections. The check should be made periodically during the operation.

4.2.7. Fittings -all fittings should be cleaned and lubricated before installing in the system. Be sure all fittings hoses and nozzles are fit for the purpose.

4.2.8. Pre-flushing -the system should be completely flushed with sufficient water to remove any

4.2.9. contaminants before installing the nozzle.

4.2.10. Nozzle -all orifices should be checked in all nozzles for any stoppage and/or damage or imperfections.

4.2.11. Electrical Equipment -any electrical equipment in the immediate area of the operation that presents a hazard to the operator should be de-energized, shielded or otherwise made safe.

4.3. Operational Procedures

4.3.1. All high-pressure water jetting operations should be controlled by a designated supervisor who is deemed competent by Management in all aspects of jetting operations.

4.3.2. The operation of high-pressure water jetting equipment should be by two or more Qualified Operators according to the equipment being used and the nature of the job. These operators should work as a team with one member in charge. The operator of the gun or lance should maintain the lead role and full control of the nozzle while jetting is in progress.

4.3.3. Code of Signals -before starting a jetting operation the team members, one of whom must be in charge, should agree on a code of signals to be used during the operation of the equipment.

4.3.4. Gun Operator -one operator from the team should hold the lance, gun or delivery hose, with the nozzle mounted on it. His primary duty is to direct the jet. A Qualified Operator must perform this task.

4.3.5. Second Operator -the second operator of the team should attend the pump unit, keep close watch on the first operator for signs of difficulty or fatigue, and watch the surrounding area for intrusion by other persons or unsafe situations. If required, he will shut off the pressure until it is safe to continue. Caution should be exercised in shutting off the pressure rapidly as this can cause the loss of footing by the gun operator.

4.3.6. Additional Operators –further operators are required in the following circumstances:

4.3.6.1. To assist the first operator with the handling of the lance if it is too long or heavy for one man. When the job is configured with support personnel providing flex lance assistance he or she must position himself or herself to the rear of the nozzle jetting operation ensuring that no obstructions occur with the Qualified Operator, such as potential contact or visual obscurities. The nozzle operator must always maintain clear visibility of the nozzle's entry point.

4.3.6.2. To provide communication if the lance operator is out of sight of the pump unit operator.

4.3.7. The control valve must be held open manually, generally by a squeeze action of the hand or press of a foot pedal by the operator, who should always have control of this device. The hand-control normally takes the form of a trigger or lever which should be provided with either a guard adequate to prevent accidental operation, or the means of being immobilized in the "off" position by means of a safety catch. The gun may be fitted with a shoulder pad or handgrips to facilitate back- thrust control.

4.3.8. Objects to be cleaned should never be held manually. Objects that may be displaced by the high pressure fluid must be secured so that no personnel are in proximity to the fluid stream of the hydro blasting activity.

4.3.9. The minimum total length of a hydro-blasting gun (hand-operated control valve, lance and nozzle resembling a gun layout) should be 66 inches from the shoulder pad to the nozzle.

4.3.10. Properly sized anti-withdrawal (reversing) devices should be used on all flex lance, rigid lance and line moling jobs. The anti-withdrawal device must attach to the equipment being cleaned. In addition to use of anti-withdrawal devices when line moling, a stinger must be attached to the end of the nozzle. The combined length of the hose connection, stinger, and nozzle should be a minimum of 1.5 times the diameter of the pipe being cleaned unless the pipe being cleaned has a "T" then the combined length should be 3 times the diameter of the largest pipe. Additional length of stingers may be required to prevent accidental reversal of the line mole assembly in the piping. A variance form must be completed if a stinger and/or an anti-withdrawal device cannot be used.

4.3.11. Nozzle End Identification -hoses should be conspicuously marked no closer than 24" from the nozzle to warn the operator of the nozzle location. Markings should be secured with yellow 3M chemical resistant tape or other equally effective method. These marking locations should identify and forewarn the nozzle operator to dump or depressurize the system.

4.3.12. A system is not to be operated above the lowest working pressure (40% of the burst pressure) of any of its components.

4.3.13. Operators should have good access to the workplace and a safe working platform, with sound footing. The area in which work is to proceed should be kept clear of loose items and debris to prevent tripping and slipping hazards. Only approved scaffolding or platforms should be used. No ladders, step stools, benches, etc. are to be used. Use only approved scaffolding or platforms that are job specific.

4.4. Training Requirements

The training should include the following elements, but is not limited to:

4.4.1. Cutting Action – The cutting action of a high pressure water jet and potential hazard it poses to the human body should be demonstrated through the use of audio/visual and actual use of equipment.

4.4.2. System Operation – The operation of the system should be explained identifying potential problematic occurrences and proper corrective actions.

4.4.3. Control Devices – The operation of all control devices should be explained. The importance of not tampering or modifying any control devices in addition to adequate maintenance and acceptable working order must be emphasized.

4.4.4. Equipment Maintenance – Valves and seating surfaces in pressure regulating devices encounter high wear during high pressure water jetting. These items must be frequently inspected as part of the Preventative Maintenance (PM) Program.

4.4.5. Hose – The proper method of connecting hoses including laying out without kinks, protected from excessive wear, and proper tools to use on couplings and fittings should be explained.

4.4.6. High Pressure Connections – Ensure high-pressure connections are secured to inhibit accidental dislodging. Cable “Whip Checks” must be install e d a t every high-pressure connection.

4.4.7. Stance – The proper stance for sound footing and how to use the various Devices for lancing, shotgunning, and moleing should be demonstrated. The trainee, under close supervision, should use the various devices while the unit is operating under moderate pressures.

4.4.8. Personal Protective Equipment (PPE) – The minimum PPE should be explained and demonstrated. The employee should be instructed on the various ensembles of PPE, including how specific clothing and other types of devices should be worn according to the level of hazards that are encountered. Additionally, employees should be instructed on the proper use and care of PPE.

4.5. Work Permits

A pre-operational, operational, and post-operational hydro-blasting permit is generally required from the client site prior to performing hydro blast work. Typically, hydro blast permits include: job description and equipment being cleaned, precautions taken to protect electrical equipment, maximum operating pressure, list of qualified personnel and any PPE required.

Prior to performing any work, including pre-operational set up, the crew foreman should contact the client representative to obtain necessary permits and note special precautions.

4.6. Equipment Standards

4.6.1. Dump System - the system should be equipped with a device, which will either shut down the unit, idle it to a safe rpm, bypass the flow or reduce the discharge pressure to a low level. Only the nozzle operator should manually control the dump system. The dump system actuator device should be shielded to preclude inadvertent operation. This device should immediately shut off the high-pressure water stream if the operator loses control.

4.6.2. Emergency Shut Down - The system should be shut down or depressurized any time: the barricade is violated, the equipment malfunctions (special attention should be given to the dump control valve), repairs need to be made or the system is left unattended.

4.6.3. Relief System - the system should be equipped with an automatic relief device on the discharge side of the pump.

4.6.4. Automatic Pressure Relief Devices -these may take the form of:

4.6.4.1. Pressure relief valve or bursting disc in holder

4.6.4.2. Automatic pressure regulating valve (unloading valve)

4.6.4.3. Bypass valve

5.0 Regulations

5.1. OSHA 1910.134

5.2. OSHA 29 usc 654 section 5

HYDRO FLUORIC ACID (HF)

1.0 Purpose

To ensure that employees are aware of protected and protected from incidental exposures to systems and equipment that may contain Hydro Fluoric Acid (HF).

2.0 Scope

This policy applies to all Haskell employees while working in select areas of petroleum refineries. Employees should refer to the particular facility orientation program and PSM guidance materials, for the location of any system or equipment that may contain HF Acid.

3.0 Procedures

In the course of the work done by the Haskell Corporation, particularly in petro-chemical facilities, employees may have to work on or around systems and equipment that have contained HF Acid. Each facility should know which pieces of equipment and streams contain or have contained HF Acid, and will provide this information and site specific emergency plans to Haskell Corporation and its employees prior to the commencement of work on those systems.

3.1. Training

All affected personnel should receive at a minimum; an overview on the hazards of HF; including medical treatment of burns, where the chemical is located on site, and what to do in the unlikely event that a release has occurred.

Personnel trained in HF first aid and knowledgeable about the specific health effects of HF should be available on all shifts while HF Acid work is being performed.

3.2. Protective Clothing And Work Requirements

Proper PPE should be available for all personnel who work in or enter an HF alkylation unit for any reason.

HF acid protective clothing is to be used in a facility Alky Unit or in areas where exposure to HF Acid may occur. The HF Acid area is usually identified by a yellow curb or painted line surrounding the area. Prior to any work in a facility that operates an Alky unit using HF acid, the Haskell Site Safety Manager or project Superintendent should determine the method of demarcation of that unit. Any time personnel enter this area the following minimum protective clothing requirements must be followed:

3.2.1. Class "D"

The potential for HF Acid or vapor exposure is "minimal". Activities performed in the Class "D" clothing are restricted to MONITORING TYPE ACTIVITY AT GROUND LEVEL only, where contact with HF contaminated equipment is not required.

a) Class "D" Clothing = Hard hat with attached face shield in down position and neck protector. Neoprene/PVC jacket (buttoned) and attached gauntlet. Neoprene/PVC glove with seal-tight glove cups, Neoprene overshoes or boots.
b) Class "D" Work = Entering the acid areas for supervision, instructions, etc. Reading meters, levels, gauge, etc. Visual inspections and visual equipment checks.

NOTE: If HF Acid or vapors become evident while performing the tasks listed above, the clothing type must be upgraded to a higher level to accommodate the work being done.

NOTE: When monitoring functions are performed above grade or when climbing on equipment may be required, Class C clothing must be worn.

NOTE: The operator of heavy equipment within acid area under non-emergency conditions is not required to wear Alky gear as long as he/she does not leave the cab. Safety glasses are required.

3.2.2. Class "C"

The potential for HF Acid or vapor exposure is "minimal", such as: (1) working around closed systems, or (2) the worker is located a safe distance from any possible exposure.

When performing work that requires Class "C" clothing, there should be another person present in the area. No work in Class “C” should be performed alone.

3.2.3. Class "C" Clothing = Class "D" Clothing plus; Neoprene/PVC trousers.

3.2.4. Class "C" Work = :

a) Working in a CLOSED SYSTEM. Examples include the following tasks; switching pumps and lines, depressurizing, draining, venting, and bleeding.
b) Obtaining non-acid samples such as cooling water or condensate.
c) Crafts-type work where no exposure to acid/vapor exists (insulating, scaffolding, etc.).
d) Opening manways of vessels which have been neutralized, blinded, and have air movers installed and operating.
e) Entering vessels for repair, inspection, etc., which have been neutralized, blinded, and gas-free.
f) Obtaining metal thickness, inspecting, lubricating, and hydro testing lines and equipment in good condition.
g) Hot bolting flanges.
h) Hot tapping on equipment not in HF Acid service.
i) Welding, removal and installation of equipment, e.g., valves, pipes, pumps, control valves, sight glasses, pressure transmitters, etc., after equipment, bleeders, and vents are capped, bull plugged, or blinded.
j) Removal and installation of pump seals within acid area on depressurized and blinded pumps.
k) Disconnecting and connecting conduit, electrical lines, air lines, impulse lines, thermocouples, pump motors, etc.
l) Removal of scale or sludge from equipment (must wear appropriate respirator).
m) Back flushing exchangers.
n) Conducting monitoring type activities above grade.

NOTE: If HF Acid or vapors become evident while an employee is involved in any of the above activities, the area should be evacuated and the employee should upgrade protection to Class "B" or "A" depending on conditions, before reentering the area to continue the work.

3.2.5. Class "B"

A potential or actual exposure of a MINIMAL nature exists from HF Acid and/or vapors. However, if there is a significant increase in the release of HF Acid or vapors during the following activities, the area

should be evacuated and the employee should upgrade the protection to Class "A" before reentering the area to continue the work.

3.2.6. Class "B" Clothing [Half Suits]

a) Neoprene/PVC air hood jacket with a full face mask respirator, and attached gauntlet Neoprene/PVC gloves with seal-tight glove cups.
b) Neoprene/PVC trousers and overshoes or boots.

3.2.7. Class "B" Work

a) Opening low point drains on equipment that has been depressurized for equipment outage.
b) Checking lines that have been depressurized and drained.

3.2.8. Class "B" Requirements/Responsibilities

a) Qualified bottled watch will be provided a safe distance up wind for the duration of the task.
b) Effective radio communications equipment must be provided between the bottle watch and the individual wearing the "B" suit.

NOTE: The above "B" jobs can be performed in class "A" gear at the discretion of the employee involved. However, a Safety Overseer and additional "A" geared person are not required. "B" suit jobs do not present a situation that is immediately dangerous to life and health. The work can be terminated and walked away from. If conditions change and an increase of HF Acid exposure occurs, the area must be evacuated and the level of protection must be upgraded to Class "A" before reentering the area to continue the work.

3.2.9. Class "A"

An actual or high possibility for exposure to HF Acid exists when conducting the intended work activity. A qualified Safety Overseer is required for all "A" suit jobs. Standard facility procedures for handling HF Acid emergencies should be followed when there is an uncontrolled release and/or fire.

3.2.10. Class "A" Clothing

a) Totally enclosed, full body, Neoprene/PVC suit used with SCBA or airline respirator.
b) An added optional level of protection is the use of Viton gloves inside Alky suit gloves as a liner.

3.2.11. Class "A" Work. The following are examples of work activities that would require a "A" suit:

a) Draining, depressurizing, venting, bleeding to atmosphere, sewer, pad, etc., through an open-piping system.
b) Extracting exchanger bundles after the exchanger has been depressurized, neutralized, and blinded.
c) Controlled work in an environment where heavy concentrations of HF Acid or vapors are anticipated.
d) Emergency repair work, such as closing valves and lines to equipment which have failed.
e) Emergency rescue activities.
f) Installation and removal of blinds, caps, half-unions, or bull plugs used to isolate equipment and lines.
g) Removal of equipment, e.g., valves, pipes, pumps, control valves, pressure transmitters, level-trolls, sight glasses, etc., before installing blinds, caps, half-unions, and bull plugs to isolate line.

h) Installation of equipment, e.g., valves, pipes, pumps, control valves, pressure transmitters, level-trolls, sight glasses, etc., before installing blinds, caps, half-unions, and bull plugs to isolate line.
i) Opening or parting a pipe flange.
j) Opening manways without air movers or installing air movers on vessels.
k) Rodding out equipment on lines whether using or not using a bleeder cleaner.

3.2.12. Class “A” Personnel Requirements/Responsibilities (Applicable for SCBA and Air Line "A" Suit work unless indicated otherwise)

a) The Safety Manager has total authority to direct all participants in the safe execution of Class "A" work. Additionally, the Supervisor/Foreman has the authority to direct any individuals not involved in the work to leave the area.
b) For an airline respirator only, a qualified bottle watch will be provided for the duration of the task. The bottle watch will be positioned a safe distance up wind from the job site. (Not applicable for SCBA job).
c) The minimum number of qualified personnel in fully suited "A" suits will be based on the complexity of the job. This requirement will be set by the Safety Manager or Foreman for each job.
d) A minimum of 1 additional qualified person will be fully suited in "C" gear while work is in progress. A Supervisor/Foreman directing the job may fill this function.
e) A qualified Safety Overseer will be positioned a safe distance upwind with an "A" suit and SCBA immediately available for emergency use.
f) Effective communications must be provided between the bottle watch and the individuals wearing "A" suits.

3.3. Cleaning/ Neutralizing HF Acid Clothing

Designated areas and facilities should be provided for neutralization, cleaning, and storage of all HF Acid protective clothing. Since protective clothing is only acid resistant, not acid proof, it should be washed and neutralized immediately after any contact with HF.

a) Keep protective clothing clean and in good order. Do not work in any damaged clothing, especially damaged protective gloves.
b) If HF contacts clothing, tools or equipment on which an employee is working or using, the employee will stop work and neutralize the clothing, tools, or equipment before resuming work.
c) All gear will be cleaned and inspected by qualified personnel.
d) Notify the Project Safety Manager or Superintendent when any repairs are needed to "B" and "A" gear.

3.4. General Safe Practices

a) Employees will make sure they are familiar with first aid treatment for HF burns, as well as the use and location of equipment neutralizing vats and barrels, and emergency showers within the unit.
b) Whenever an employee is in the designated Acid Area, he or she will be in radio contact with a designated safety watch.
c) HF Acid Clothing should not be used outside of the HF Acid area.
d) Material and equipment should be neutralized before transferring it from the HF Acid area whenever possible.
e) Do not use an impact wrench to loosen final bolts in flanges where acid or scale might be present. The rotating socket can throw acid or acid scale a considerable distance.
f) Do not work under drips, leaks, or under workers making the initial opening of equipment.
g) Suitably equipped first-aid kits should be readily available in HF alkylation units and other areas of the refinery where HF may be present.
h) Keep a portable HF Acid first aid kit nearby whenever work is being performed at an elevated or remote location. Report any shortage of first aid equipment to the Alky Operator immediately.
i) All users of personal protective equipment should inspect the equipment prior to use, or in the case of "B" and "A" gear, prior to assembly. Gloves, although pretested after cleaning, are to be air tested again before use. Particular attention should be paid to "B" and "A" suits where tape has been used to secure the gloves.
j) All tools that have been used on equipment containing HF must be neutralized and cleaned before being returned to tool boxes or the Alky tool house.
k) As an added precaution, employees will wash hands and face whenever they leave the area and the task is complete.
l) Wash up acid spills immediately. Use low water pressure to avoid spreading acid over large areas.
m) Keep discarded waste and rubbish in designated Alky waste containers. Separate metal wastes from other types, and place is proper Alky metal waste bins.
n) Work on wind-ward side of equipment containing HF.
o) Warn all persons, working below or nearby, before venting or opening equipment that may contain HF. Always open equipment as though it were under pressure. Do not take anything for granted.
p) No contact lenses should be worn in an acid containing environment. If you are in HF PPE Don’t wear contact lenses!

3.5. Physical and Chemical Characteristics

Hydrogen fluoride mixes readily with water forming hydrofluoric acid. For all practical purposes, they are considered the same chemical. HF acid is used extensively in the extraction, processing, and refining of metals, rock, brick, and oil. It is an intermediate for many chemical reactions and syntheses. It is used to remove and inhibit rust, and to etch, polish, and frost glass. It is used in the manufacture of silicon semiconductor chips. HF acid is used in commercial automotive cleaners, rust removers and inhibitors for ceramics and fabrics, and water spot removers. It is released into the environment from

manufacturing and welding processes, volcanoes, and sea salt aerosol. It has a strong irritating odor; however, odor should not be depended on to provide sufficient warning of exposure. It is considered a weak acid but is still extremely harmful due to its ability to penetrate tissue.

3.5.1. Physical Properties: Hydrofluoric acid (solution of HF in water), is a colorless solution. Its exact physical properties (boiling point, melting point and density) depend on the concentration of HF in the aqueous solution. Despite having an irritating odor, HF may reach dangerous levels without an obvious smell.

3.5.2. Chemical properties: Hydrofluoric acid is a very strong, reactive and corrosive acid.

3.6. Health Effects

Hydrogen fluoride gas is an acute poison that may immediately and permanently damage lungs and the corneas of the eyes. Aqueous hydrofluoric acid is a contact-poison with the potential for deep, initially painless burns and ensuing tissue death. By interfering with body calcium metabolism, the concentrated acid may also cause systemic toxicity and eventual cardiac arrest and fatality, after contact with as little as 25 square inches of skin. It should therefore be handled with extreme care, using protective equipment and safety precautions beyond those used with other mineral acids.

HF as a neutral lipid-soluble molecule penetrates tissue more rapidly than typical mineral acids. Because of the ability of HF acid to penetrate tissue, poisoning can occur readily through exposure of skin or eyes, or when inhaled or swallowed. Symptoms of exposure to hydrofluoric acid may not be immediately evident, and this can provide false reassurance to victims, causing them to delay medical treatment.

HF interferes with nerve function, meaning that burns may not initially be painful. Accidental exposures can go unnoticed, delaying treatment and increasing the extent and seriousness of the injury. Symptoms of HF exposure include irritation of the eyes, skin, nose, and throat, eye and skin burns, rhinitis, bronchitis, pulmonary edema (fluid buildup in the lungs), and bone damage.

Once absorbed into blood through the skin, HF acid reacts with blood calcium and may cause cardiac arrest. Burns with areas larger than 160 cm2 (25 square inches) have the potential to cause serious systemic toxicity from interference with blood and tissue calcium levels.

In some cases, exposures can lead to hypocalcemia. Thus, hydrofluoric acid exposure is often treated with calcium gluconate, a source of Ca2+ that sequesters the fluoride ions. HF chemical burns can be treated with a water wash and 2.5% calcium gluconate gel or special rinsing solutions. However, because it is absorbed, medical treatment is necessary; rinsing off is not enough. Intra-arterial infusions of calcium chloride have also shown great effectiveness in treating burns.

HF burns, not evident until a day after

ROUTES OF EXPOSURE: HF Acid can be absorbed systemically into the body by ingestion, inhalation, or skin or eye contact. Eye exposure to HF acid is highly unlikely to result in systemic toxicity. Inhalation is an important route of exposure.

3.7. Regulatory Limits

The OSHA permissible exposure limit is TWA (8- hour) 3 ppm but concentrations should be kept as low as possible.

NIOSH IDLH: 30 ppm

3.8. Exposure monitoring

Determinations of employee exposure should be made from breathing zone air samples that are representative of each employee's average exposure to airborne HF Acid. All employees should be notified of any personal monitoring results, within 60 days following receipt of results by Haskell. Employees may request copies of monitoring on specific jobs, through their supervision. All monitoring should be done by a competent person.

Access to monitoring records will be in accordance with Haskell Policy.

3.9. Control methods

Potential exposure to HF Acid will be controlled using engineering controls or safe work practices and may include the use of respiratory protection, depending upon the potential exposure level, duration, and frequency and the feasibility of each option.

Engineering controls and safe work practices should be considered the preferred methods for reducing employee exposures to HF Acid.

When engineering controls or safe work practices are not feasible, appropriate respiratory protection must be worn. Respirator selection should be in accordance with Haskell Policy.

Appropriate personal protective equipment, including gloves, goggles, or other appropriate gear, should be worn when eye or skin exposures to HF Acid is likely. Refer to the daily task-specific Job Safety Analysis (JSA).

3.10. Respiratory Protection

Whenever engineering controls or work practices are not feasible to reduce employee exposure below the PEL, then respiratory protection must be worn as a method of compliance. These situations may occur during unit shut down, draining of equipment, repairs, emergencies and confined space entry.

3.11. Regulated Areas

Prior to any work in a facility that operates an Alky unit using HF acid, the Haskell Site Safety Manager or project Superintendent should determine the method of demarcation of that unit.

The HF Acid areas are marked at all points of entry. Such markings warn people that HF is present, that access is strictly limited, and that protective clothing is required.

A regulated area is any area where concentrations of HF Acid can exceed, or reasonably be expected to exceed, the permissible exposure limit. Anyone entering a regulated area must have appropriate personal protective equipment, such as chemical resistant gear, if skin contact may be a concern.

3.11.1. Regulated areas are generally posted as follows:

Danger: HF Acid
Authorized personnel only
Respirator required

HF Acid Awareness

4.0 Regulations

- Federal
- Washington
- California

HYDRO TESTING WITH USE OF HIGH PRESSURE PUMPS

1.0 Purpose

The purpose of this procedure is to establish a baseline method of safe operation while performing hydro testing activities to mechanical process components and piping. Additionally, this procedure should promote communication between all affected parties while performing such activities. Furthermore, it should support the prevention and safeguarding of any unanticipated high-pressure component ruptures and failures.

2.0 Scope

All Haskell Corporation employees who are designated to perform such tasks should strictly adhere to the requirements set forth in this policy. This policy should be followed and become familiarized by all entities (i.e. contractors) and work parties involved with hydro testing activities.

3.0 Procedure

3.1. All affected personnel should conduct a pre-task analysis to identify any imminent or potential hazards that hydro testing operations may generate prior to commencement of any said activity.

3.2. All affected personnel should familiarize themselves with the components or process equipment to be hydro tested ensuring high-pressure connections are secure and the maximum burst pressure is not exceeded.

3.3. The required pressure for the equipment scheduled for hydro testing should not exceed the maximum pressure (psi) of the lowest rated component within the design of the designated test pump. These conditions and specifications should be identified by all affected craft prior to commencing the activity.

3.4. All hoses that are utilized to furnish the water supply to the process equipment from the test pump should be thoroughly inspected for evidence of damage, wear or imperfections. Hoses identified as meeting the aforementioned conditions should be immediately discarded and removed from the process. All hoses should have a maximum burst rating pressure exceeding the hydro testing pressure requirements.

3.5. All affected parties performing hydro testing activities should conduct a physical inspection of the equipment to identify any substandard conditions, or other circumstances that may delay or cause a termination of the operation. Ensure all components and fittings within the system are adequately rated to withstand the targeted hydro test pressure.

3.6. All control devices within the process, such as valves; pump engagement/disengagement and pressure relief valves should be inspected prior to commencement of hydro testing projects. All affected personnel should first identify that the equipment is ready to sustain the water supply prior to engaging test pumps. For example, personnel should ensure all associated valves are in the open position to accommodate the water supply, thus preventing backpressure to the pump. Stoppages in the process may cause the test pump to exceed its maximum pressure rating resulting in a line or component rupture.

3.7. Haskell Corporation operators should at all times have visual contact or equivalent communications to achieve real time knowledge of the system's pressure. A valve downstream of Haskell Corporation' point of attachment should be installed with a psi gauge representing the overall system pressure. This will support the prevention of the system exceeding its maximum allowable pressure and causing any unanticipated ruptures and failures.

3.8. Pressure relief valves should be installed downstream of Haskell Corporation' point of attachment as a secondary control to eliminate over pressuring of the process components. The Haskell Corporation pump relief system should be set no greater than its maximum allowable pressure for the lowest rated component within the hydro blast pump design.

3.9. Safety Cables/Bridge (Whip Checks) should be used at all times on high-pressure connections to assure a positive joining in the event of coupling or attachment failure.

3.10. All necessary permits and authorizations must be executed prior to performing such activities, where applicable.

3.11. Proper delineation should be recognized while performing hydro testing activities. Such areas should be barricaded with red tape identifying the purpose of the task and each entity involved with the operation.

3.12. All necessary personal protective equipment should be worn at all times during these operations.

4.0 Qualifications

All Haskell Corporation employees supporting or directly involved with hydro testing activities should have met the Qualified Operator requirements prior to performing such activities.

The Qualified Operator should be responsible for communicating the requirements of this policy to all affected personnel, and ensuring the guidelines prescribed in this policy are carefully followed.

The Qualified Operator should delay or terminate the operation should a condition exist that will compromise the structural integrity of the test pump, or the personal safety of any affected individual.

HYDROGEN SULFIDE (H_2S)

1.0 Purpose

To ensure that employees are aware of protected and protected from incidental exposures to systems and equipment that may contain or release harmful quantities of hydrogen sulfide (H_2S)

2.0 Scope

This policy applies to all Haskell employees while working in select areas of petroleum refineries. Employees should refer to the particular facility orientation program and PSM guidance materials, for the location of any system or equipment that may contain Hydrogen Sulfide.

3.0 Definitions

- **H_2S:** means Hydrogen Sulfide
- **PPM:** means Parts Per Million
- **PEL:** means Permissible Exposure Limit – 10PPM

4.0 Procedures

In the course of the work done by the Haskell Corporation, particularly in petro-chemical facilities, employees may have to work on or around systems and equipment that contain and/or may be able to release harmful quantities of H_2S. Haskell Corporation expects each facility to provide specific information regarding the potential for exposure to H_2S to Haskell and its employees- prior to the commencement of work on those systems.

4.1. Physical and Chemical Characteristics

Hydrogen sulfide (H_2S) is a colorless gas with a powerful nauseating smell of rotten eggs. The odor is a poor warning property because hydrogen sulfide exposure quickly deadens the sense of smell. The gas is heavier than air and may collect in low areas such as sewers, pits, tunnels or gullies. High airborne levels of hydrogen sulfide (between 4.3 and 46.0 percent of gas by volume in the air) may catch fire if there is a source of ignition. If the gas is burned, toxic by-products such as sulfur dioxide will be formed. Hydrogen sulfide is incompatible with oxidizing agents, such as nitric acid and chlorine-trifluoride, and may react violently or ignite spontaneously.

The physical characteristics of Hydrogen sulfide gas are below:

H_2S Characteristic	
Chemical Symbol	H_2S

Color	Colorless
Odor	“Rotten eggs” (detectable at 10 ppb)
Specific Gravity	1.192 (heavier than air)
Explosive Limits	Lower 4%, Upper 44% volume in air
Toxicity	Highly Toxic
Flammability	Flammable
Solubility	0.4%
Incompatibilities	Strong oxidizers, strong nitric acid, metals

4.2. Health Effects

Hydrogen sulfide is extremely toxic. It may cause death instantaneously in high airborne concentrations. Low levels may be extremely irritating to the lungs, nose, throat and eyes.

Hydrogen sulfide can be detected by smell at levels as low as 0.13 parts hydrogen sulfide per million parts air (ppm). Odor cannot be used as a warning because the gas can deaden the sense of smell within 2 to 15 minutes in exposures of approximately 100 ppm. A single breath of hydrogen sulfide at about 1000 ppm may paralyze the respiratory system and result in coma and death. Convulsions may also occur. Prolonged exposure at about 250 ppm hydrogen sulfide may cause the lung tissue to swell and fill up with water (pulmonary edema).

This effect may occur after the exposed worker recovers from the irritant effects of the gas. Exposures of 20 to 50 ppm hydrogen sulfide for one hour may cause inflammation of the cornea and the delicate lining of the eye and eyelid (a condition called keratoconjunctivitis). Exposures for long periods at 50 ppm may cause severe irritation of the nose, throat and lungs. Workers exposed to lower concentrations of hydrogen sulfide may develop headaches, eye disorders and chronic bronchitis.

Physiological Response	
10 ppm	Beginning eye irritation
50-100 ppm	Slight conjunctivitis and respiratory tract irritation after 1 hour exposure
100 ppm	Coughing, eye irritation, loss of sense of smell after 2-15 minutes. Altered respiration, pain in the eyes and drowsiness after 15-30 minutes followed by throat irritation after 1 hour. Several hours exposure results in gradual increase in severity of these symptoms and death may occur within the next 48 hours.
200-300 ppm	Marked conjunctivitis and respiratory tract irritation after 1 hour of exposure
500-700 ppm	Loss of consciousness and possibly death in 30 minutes to 1 hour.
700-1000 ppm	Rapid unconsciousness, cessation of respiration and death.
1000-2000 ppm	Unconsciousness at once, with early cessation of respiration and death in a few minutes. Death may occur even if individual is removed to fresh air at once.

4.3. Monitoring

Each employee should be issued a personal air monitor (PAM) for hydrogen sulfide detection monitor with an audible alarm preset for 10 ppm.

Area Monitoring for airborne concentrations of hydrogen sulfide at Haskell Corporation work sites is conducted using a four-gas meter and accomplished using the procedures detailed in the Confined Space Entry Program.

Area monitors will be set to alarm when airborne hydrogen sulfide concentrations exceed the OSHA STEL limit of 20ppm.

Haskell Corporation employees will not work in areas with airborne concentrations above OSHA Permissible Exposure Limits.

If circumstances require an exception to the above, NIOSH approved self contained breathing apparatus or air-supplied respirators will be used.

In confined spaces, hydrogen sulfide hazards will be controlled in accordance with Haskell Corporation's Confined Space Entry program. Controls include but are not limited to dilution, ventilation, forced air ventilation and the use of NIOSH approved respiratory protection (SCBA and air supplied only).

Whenever a PAM or four-gas monitor alarms leave the area immediately to a designated fresh air area and do not reenter until conditions are proven safe or appropriate respiratory protection is donned. Employees should be aware of the facility contingency plan for H2S release.

Upon commencing operations at a work site, obtain, know and understand the host facility's contingency plan. This will be reviewed at each individual work site within the host facility as the evacuation route and meeting point may vary with each location.

4.4. Training

Haskell Corporation employees will be trained in the hazards and safe control of hydrogen sulfide exposure using the training materials included in this program.

Annual training will be conducted per the Haskell Corporation Safety Program. Information and training will be given to all employees who may be exposed to Hydrogen Sulfide. The training program will inform employees of the following:

- The characteristics, possible sources, and hazards of Hydrogen Sulfide
- Proper use of the Hydrogen Sulfide detection methods
- Recognition of, and proper response to, Hydrogen Sulfide warnings
- Symptoms of Hydrogen Sulfide exposure
- Proper rescue techniques and first-aid procedures to be used in a Hydrogen Sulfide exposure
- Proper use and maintenance of personal protective equipment and demonstrated proficiency in using PPE should be required

- Wind direction awareness
- Use and operation of all Hydrogen Sulfide monitoring systems

Site specific training will be conducted by the site foreman and per the Haskell Corporation Safety Program. Information and training will be given to all employees (Haskell Corporation and Sub-contractors) who may be exposed to Hydrogen Sulfide. The training program will inform employees of the following:

- Emergency response procedures and shutdown procedures
- Locations of safety equipment
- Confined space and enclosed facility entry procedures
- Routes of egress
- Worker awareness and understanding of workplace practices and maintenance procedures to protect personnel from exposure to hydrogen sulfide
- Facility sources of Hydrogen Sulfide

Training is documented according to the recordkeeping section of this program as well as the recordkeeping sections of the Hazard Communication Program and Confined Space Entry programs.

Haskell Corporation employees will be trained for safe confined space entry according to the implemented Confined Space Entry Program.

4.5. Recordkeeping

Training records included in this program are retained with and according to the requirements of the Haskell Corporation Hazard Communication Program.

Confined Space Entry training records are kept according to the Confined Space Entry Program.

Hydrogen sulfide monitoring results are documented and retained according to the Haskell Corporation Confined Space Entry Program and made available to employees and authorized agents in accordance with Haskell Policy.

4.6. Control methods

Potential exposure to H_2S will be controlled using engineering controls or safe work practices and may include the use of respiratory protection, depending upon the potential exposure level, duration, and frequency and the feasibility of each option.

Engineering controls and safe work practices should be considered the preferred methods for reducing employee exposures to H_2S.

When engineering controls or safe work practices are not feasible, appropriate respiratory protection must be worn. Respirator selection should be in accordance with Haskell Policy: **Respiratory Protection**.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

INJURY MANAGEMENT PROCEDURE

1.0 Purpose

To outline the procedure to be followed in implementing Haskell Corporations Injury Management Policy.

To outline the roles and responsibilities of Haskell Corporation and its workers with regard to the management of work-related injuries and return to work processes.

2.0 Scope

This procedure applies to all workers employed by Haskell Corporation.

3.0 Definitions

Light Duty, Limited Duty or Modified Duty Assignments:

In most cases, some temporary modification of duties can be made for an employee that would allow them to return to work in a limited capacity, subject to his/her medical restrictions. Such temporary modifications are called "light duty, limited duty, or modified duty" assignments.

In certain circumstances this may mean the worker is placed in an alternative Work Site/Training Center/Institute where the suitable duties are available.

Current work capacity:

In relation to a worker, means a present inability arising from a work-related injury such that the worker is not able to return to their pre-injury employment but is able to return to work in suitable employment.

Medical Approval:

Medical approval refers to a doctor’s agreement that the work duties offered are within the workers current work capacity and should not cause harm to the injured/ill worker.

Approval from an independent medical examiner appointed by Haskell Corporations Insurer may also be used where appropriate.

Medical Restrictions

Directions provided by a doctor to advise Haskell Corporation and the injured/ill worker regarding physical and/or psychological limits to be put in place to assist with recovery from a work-related injury/illness.

Medical Restrictions may include but are not limited to the number of hours to be worked, lifting capacity or preventing work in certain areas of Haskell Corporation.

Occupational Rehabilitation Program:

A documented process to assist injured/ill workers to return to work from a work-related illness or injury.

Offer of Suitable Employment (OSE):

A written offer detailing the duties offered and hours of work for an injured worker who is able to return to work.

Personal Illness or Injury:

An injury, illness or disease that is not related to employment.

Pre-Injury Duties:

Duties undertaken by a worker, as per their position description. Duties undertaken prior to a work-related injury occurring.

Productive Duties:

Productive Duties are any suitable duties performed by an injured worker that provide meaningful employment and contribute to the project.

Rehabilitation Provider:

An external organization approved by our Insurer that provides independent support to injured workers and their employer by facilitating the injury management and return to work process.

Workers:

Any employee of Haskell Corporation. Any person who holds a current contract of employment with Haskell Corporation.

Suitable Employment:

Suitable employment is work that is suited to the Workers medical condition, capacity for work, skills and experience.

It is work the injured worker can do without the risk of further injury. The aim is to support the injured worker so they can remain at or return to work while they recover from their injury and return to their normal work when possible.

Supervisor:

Any Director, Manager or Supervisor who has the responsibility for the management of staff.

Workers Compensation Claim:

If a worker has a work-related injury or illness, they may be able to receive compensation from Haskell Corporations Workers Compensation Provider. To do this they must report a work related Injury to the project Safety Manager or Haskell Corporations Safety Director.

Work Related Injury:

Work-related injuries, illnesses and fatalities are those in which an event or exposure in the work environment either caused or contributed to the condition. In addition, if an event or exposure in the work environment significantly aggravated a pre-existing injury or illness, this is also considered work-related

4.0 Actions

This Section Outlines the Steps Taken in the Injury Management Process

1. Injury reported by worker. Refer to Reporting Procedure for further detail.
2. Worker is assessed by the Site Safety Manager to determine the extent of injury and weather onsite first aid or off site medical is required.
3. Worker receives onsite first aid or off site first aid/medical treatment. Worker is transported to offsite medical facility by Haskell vehicle or ambulance.
4. Supervisor or Site Safety Manager contacts Haskell Safety Director to advise of the injury as soon as they become aware an injury has occurred.
5. The Haskell Safety Director or designee contacts the injured Worker to provide contact details and outline Haskell Corporation's processes. A workers compensation claim is initiated if appropriate. Written contact will be initiated if the Haskell Safety Director or designee is unsuccessful in establishing contact by telephone or telephoning is deemed inappropriate.
6. Injury Report and Workers Compensation Claim Form are completed promptly by worker if appropriate. Assistance may be provided if the worker is unable to complete the forms personally.
7. Haskell Safety Director or designee forwards the completed claim form and associated medical certificates within ten (10) days of receipt, to the insurer for recording or determination of liability.
8. Haskell Safety Director or designee begins a consultation process with the injured Worker, their Supervisor, treating health practitioners and Rehabilitation Provider (if appointed).

   Haskell Corporation will commence planning a workers return to work, to the extent that it is reasonable to do so, as soon as the first Physicians Activity Prescription Form is received.

   In initiating discussions regarding returning to work, the Haskell Safety Director will make all reasonable efforts to consult with the parties involved.

   When initiating return to work discussions with the injured Worker, the Haskell Safety Director will take into consideration the nature of the Workers injury or illness and begin consultation at an appropriate time. Advice on whether or not it is appropriate to commence return to work discussions may be sought from the treating doctor prior to commencement.

During the consultation process, the Worker and Haskell Safety Director or designee will discuss potential medical restrictions and available return to work options that can be offered within those restrictions.

The injured Worker may be assisted by a representative during any consultation.

The injured Worker can request the participation of an approved Rehabilitation Provider at any time during the consultation process.

9. The Haskell Safety Director or designee will develop a Return to Work Plan based on the information gathered as part of the consultation process and provide this to the worker, treating health practitioners, and supervisor for review and approval. The Return to Work Plan will detail identified suitable employment, medical restrictions and return to work goals. The Return to Work Plan must be signed by all parties to the agreement.

   A Return to Work Plan cannot commence without medical approval and the appropriate Activity Prescription Form being provided.

   Any issues arising from the Return to Work process may be dealt with under Haskell Corporation's Return to Work Issue Resolution Procedure.

10. Haskell Safety Director or designee will monitor and update the Return to work plan in accordance with the Activity Prescription Form provided by the injured Workers Attending Physician.

    The Haskell Safety or designee will maintain contact with injured worker, Supervisor, treating health practitioner(s) and Rehabilitation Provider and continue the consultation process as the Return to Work Plan progresses.

11. The injured Worker completes Return to Work process and returns to pre-injury duties. This is confirmed by providing a final Activity Prescription Form from the treating doctor who indicates the Worker is fit to return to normal duties.

    If an injured worker is unable to ever return to their pre-injury duties, Haskell Corporation will consider offering alternative employment at Haskell Corporation, within the worker's ongoing medical restrictions. Any alternative employment offered will be in accordance with Haskell Corporations operational requirements.

5.0 Responsibilities

This Section Outlines the Responsibilities of All the Parties required to be involved in the Occupational Rehabilitation Program

Haskell Safety Director or designee, Supervisors, Injured Worker

The Haskell Safety or designee is required to:

- Manage, monitor and review the Injury Management Policy and Procedure;
- Ensure that the confidentiality of information is maintained and appropriate disclosure authorities are obtained before releasing any information to third parties.
- Develop sustainable working relationships with the relevant insurer case manager, supervisors, injured workers, treating health practitioners, rehabilitation and other service providers;
- Ensure workers are aware of their rights and responsibilities in the event of a work related injury or illness;
- Consult, to the extent that is reasonable, with the injured Worker, supervisors, treating doctors and rehabilitation providers in planning return to work options;
- Provide injured Workers with clear, accurate and current details of their return to work arrangements;
- Ensure workers who are participating in return to work plans have suitable and productive duties that make a contribution to Haskell Corporations operations and are within their identified medical capacity;
- Manage, monitor and review return to work plans and suitable duties in consultation with the injured worker, their supervisor, treating health practitioner(s) and rehabilitation providers;
- Participate in the Return to Work Issue Resolution Process should it be required;
- Ensure compliance with legislative requirements in relation to employee compensation and return to work processes;
- Ensure workers receive compensation entitlements for a work related injury or illness;
- Promptly process all paperwork relating to a worker's compensation injury; and
- Interact with workers who have a personal illness or injury and their supervisors, where appropriate, to facilitate their return to the workplace.

Supervisors

Supervisors are required to:

- Ensure an injured worker receives appropriate first aid or medical treatment;
- Promptly advise the Haskell Safety or designee via telephone or email as soon as they become aware of any work-related injuries that require medical treatment and/or time off work;
- Comply with the requirements of the Haskell Corporation Incident Reporting Procedure.
- Promptly forward any paperwork received (including a copy of the Injury Report) relating to a workplace injury to the Haskell Safety or designee;
- Facilitate and/or implement changes as needed to provide a workplace that is safe and free of any risks to health and safety;
- Facilitate the necessary advice and/or training to the workers with regard to preventing work-related injuries;

- Stay in contact with the injured worker while they are away from the workplace;
- Participate in return to work planning discussions with an injured worker and the Haskell Safety or designee;
- Participate in Return to Work Issue Resolution Processes should they be required;
- Ensure that staff under their supervision follow Policies and Procedures; and
- Provide appropriate supervision to all workers.

Injured Workers

Injured Workers are required to:

•Report any workplace injuries/illnesses to their supervisor immediately or if immediate reporting is not possible as soon as reasonably practicable;

•Advise their supervisor within one hour (1) of the commencement of their usual working day if they are unable to attend work due to a work place injury/illness. If notification within the specified time period is not possible, notification should be made as soon as practicable;

•promptly complete all necessary paperwork relating to their workplace injury/illness;

•make reasonable efforts to return to work in Suitable or Pre-Injury Duties;

•make reasonable efforts to actively participate in return to work planning and any ongoing return to work discussions;

•discuss with their treating health practitioner any duties they will be able to complete while injured/ill;

•abide by the doctor's medical restrictions both at work and at home;

•actively participate and co-operate in assessment of your capacity to work, rehabilitation progress or future employment prospects;

•if unable to attend an assessment appointment, the worker must contact the Insurer to request an alternative date. If a worker unreasonably refuses to attend a medical examination arranged by the insurer, the insurer has the right to suspend access to compensation payments.

•make any medical appointments concerning their injury outside of work hours where possible. Where it is not possible to do so, provide their supervisors with reasonable notice of their absence from work prior to the absence occurring;

•regularly communicate with their Supervisor and/or the Haskell Safety or designee in relation to the status of their injury and their return to work program;

•make reasonable efforts to participate in a Return to Work Issue Resolution Process should it be required; and

•immediately advise their Supervisor or the Haskell Safety or designee if they have an aggravation or re-occurrence of their injury.

LEAD

1.0 Purpose

The purpose of this program is to minimize employee exposure to lead. Exposure to lead at construction job sites can occur during abatement, removal and/or contact with lead containing products such as paints, mastics, coatings, mortars, cements, roof cornices, tank linings, electrical conduit, solders, manufacturing and occupational lead dust.

2.0 Scope

This policy applies to all Haskell employees who may be exposed to Lead in the course of employment.

3.0 Definitions

- **Action Level**: an airborne concentration of lead greater than 30 micrograms per cubic meter (30 μg/m³) calculated as an 8 hour time weighted average (TWA)
- **Lead**: The word "lead" when used in this program means elemental lead, all inorganic lead compounds and a class of lead compounds called soaps. Lead is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form lead compounds.
- **Lead based Paint**: Although there is no federal guideline or definition for lead based paint, it is generally accepted to be dry paint that contains 0.06% (600ppm) or greater lead by weight.
- **μg/m³**: "Micrograms per cubic meter" of air. This is the common unit for reporting airborne concentrations of lead.
- **μg/dl**: "Micrograms per deciliter", of whole blood.
- **NIOSH/MSHA**: National Institute of Occupational Safety and Health Administration / Mine Safety and Health Administration are federal agencies which conduct research on safety and health issues and test respirators.
- **HEPA filter**: High Efficiency Particulate Air filter. Filters that remove 99.97% of all particulate 0.3 microns or greater in diameter.
- **Competent Person**: One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has the authorization to take prompt corrective measures to eliminate them.
- **PEL or Permissible exposure limit**: 50μg/m³, as an 8-hour Time Weighted Average (TWA). This is the maximum 8-hour average concentration of lead that an employee may be exposed to during each workday.

4.0 Procedures

It is the plan of Haskell Corporation to maintain employee lead exposure below the minimum exposure limit through engineering and work practice controls. Additionally, during Haskell activites that may produce lead emissions, control such of emissions of lead into the environment via air, water or soil.

This procedure applies to situations where abatement, removal, maintenance and repair tasks involve the disturbance of known or suspected lead-based paint. Lead may be present when using abrasive blasting, welding, burning, cutting, sanding, manual scraping, chemical stripping or heat gun applications in many client facilities where all lead containing materials have not yet been abated. This program establishes methods for complying in substance with OSHA 29 CFR 1910.1025 Lead Standard for General Industry OSHA 29 CFR 1926/26 Lead Exposure in Construction and any other state regulated agencies such as WAC 296-155-17603.

No employee will be exposed to airborne lead above the PEL without proper protection and the following methods should be used as feasible and effective for maintaining airborne lead exposures below the PEL:

Engineering controls, such as general area ventilation for contaminants, local exhaust ventilation for spot removal, vacuum blasting or vacuum equipped power tools. When ventilation for contaminants is used, manometers, and / or velometers will be used to evaluate the mechanical performance of the ventilation system.

A respirator should be used during the time period necessary to install or implement engineering or work practice controls, where engineering and work practice controls are insufficient, and in emergencies.

Administrative and work practices controls, such as but not limited to:

- Appropriate work practices to ensure the lead containing materials are not disturbed.
- Worker rotation.
- Limiting exposure time(s) in an 8-hour period.
- Lead surface cleaning by an outside contractor.
- Warning signs.
- Hygiene facilities and practice.
- Protective work clothing and equipment.
- Housekeeping.

During the period that respirators are worn, the protection fit factor of the specific respirator may be used to determine employees' exposures to airborne lead and to achieve compliance with the PEL. The protection factors are listed in the Respiratory Protection Section of this IIPP Table 1.

If employees working immediately adjacent to a lead abatement activity are exposed to lead due to the inadequate containment of such job, the employees should be removed from the area until the enclosure breach is repaired or an exposure assessment deems it is safe to return.

4.1. Employee Information and Training

All employees who work on projects where lead exposures are known to or expected to be above the Action Level should be provided information and training on the hazards of lead and measures for controlling these hazards and protecting health.

Employees will receive initial comprehensive lead training before performing work that may involve airborne lead exposure. This training will be repeated annually as a refresher course if the lead work continues. Training should be documented including dates of training, employee name, and trainer name.

The content of the lead training should include:

- The specific nature of activities or operations that may result in airborne lead exposure above the action level.
- Federal and state regulations that apply to lead exposure. Appendices A & B of the regulation.
- The nature of the operations which could result in exposure to lead above the action level
- The health effects and risks of lead exposure.
- Engineering controls, including contaminants and ventilation systems.
- Work practices for controlling lead exposure, including housekeeping, protective clothing, and proper hygiene facilities and practices.
- Methods for monitoring airborne lead concentrations and exposure.
- The medical surveillance program including biological monitoring, medical examinations, consultations and medical removal protection. Employees will be notified within five working days after the receipt of biological monitoring results.
- Precautions for female employees who are pregnant.
- Instructions to employee that chelating agents should not be used to remove lead from their bodies.

All employees who may be exposed to lead above the Action Level or who may be required to wear a respirator will be provided initial and periodic medical examinations.

All employees who are temporarily removed from lead exposure due to elevated lead exposure due to elevated blood levels or at the recommendation of a physician, may be reassigned other duties at the site that do not involve exposure to lead above the Action Level.

4.2. Competent Person

All work activities where employee exposures may exceed the Action Level will include a Competent Person in both the planning and performing stages of projects involving lead exposure.

The competent person will be a supervisor with training and experience in conducting jobs involving lead exposure. The competent person will have the capability of identifying hazards and the authority to take immediate action to eliminate them.

The competent person should be at the work site at all times while lead exposure activities are in progress. He or she may have other job duties, but will be able to monitor work continuously for hazards or deficiencies.

The competent person will control access of persons into work areas.

4.3. Warning Signs

Warning signs will be posted in the work area around activities where lead exposures may exceed the Permissible Exposure Limit. Ropes, tape, walls or containments should demarcate the work area.

Signs will be posted at every accessible side of the work area. These signs will be easily visible from a distance so that employees can read the sign and take the necessary protective measures before entering the work area, Signs will read as follows:

WARNING: LEAD WORK AREA
POISON
NO SMOKING OR EATING

All persons entering work areas will wear protective clothing and respirators.

Eating, drinking, smoking and chewing is prohibited in work areas and any area where lead exposure may exceed the Permissible Exposure Limit (PEL).

4.4. Containment

Where required by state, federal, or local regulations, the project sponsor, or the project owner, a containment area should be constructed and used as specified.

The purpose of containment is to restrict or prevent the spread of lead-containing dust or debris to surrounding areas or the environment. While the proper use of containment can help protect the public and the environment, they generally cause a significant increase in airborne lead concentrations in the area. Containment may increase the potential for higher employee lead exposures. Therefore the use of well designed exhaust ventilation and the use of more protective respirators may be necessary to properly protect workers.

Containment may include any of the following:

- Rigid or flexible barriers or sheets surrounding the work area.
- Complete unventilated enclosure built around the work area.
- Complete enclosures maintained under negative pressure by exhaust ventilation with exhaust air filtration.

Containment may also require the construction and use of platforms or scaffolding. These may be stationary or moveable, ground supported or suspended.

4.5. Personal Hygiene Facilities and Practices

Clean change areas will be provided for all projects where employee lead exposures exceed the Permissible Exposure Limit. These clean change areas will be equipped with storage facilities for street clothing and a separate area for the removal and storage of lead-contaminated clothing and equipment. This change area will be designed and used so that contamination of street clothing will be maintained below the Action Level.

Shower facilities will be provided for all projects (where feasible) when employee lead exposures exceed the Permissible Exposure Limit. Showers will comply with all state and federal regulations. All employees, whose airborne lead exposures may exceed the Permissible Exposure Limit, will shower, or at a minimum wash their hands and face at the end of each work shift. Employees required to shower will not leave the workplace wearing any clothing worn while performing lead exposure activities.

Clean lunch areas will be provided for all projects where employee airborne lead exposures may exceed the Permissible Exposure Limit. Employees will remove or clean their protective clothing and wash their hands and face before eating, drinking or smoking. Airborne lead exposures in the lunch area will be maintained below the action level.

An adequate number of clean lavatory and hand washing facilities will be provided. These will comply with all state or Federal Sanitation regulations. Where required by Federal or State regulations, the project sponsor or project owner, decontamination units will be constructed as specified. These generally are maintained under negative pressure and contain clean change rooms showers and dirty equipment rooms.

4.6. Protective Clothing and Equipment

All employees should wear protective clothing and equipment whose airborne lead exposures may exceed the Permissible Exposure Limit. Protective clothing will be provided at no cost to the employee.

Protective clothing will include washable or disposable full body coveralls. Other protective equipment will include face shields, hats, gloves, shoes or disposable shoe covers, eye protection, and hearing protection as appropriate.

Disposable clothing will be used for no more than one workday. They will be disposed of as lead-contaminated waste.

Reusable coveralls will be collected at the end of each workday in closed containers. Authorized laundries according to all applicable State and Federal regulations pertaining to lead contaminated laundry and water discharge will clean contaminated clothing.

Reusable protective clothing (coveralls) will be laundered at least weekly, and clean coveralls provided daily to employees whose exposure levels without regard to a respirator are over 200µg/m³ of lead as an 8-hour TWA.

Protective clothing and equipment will be removed in the contaminated section of the change area and will not be worn into any clean areas not contaminated with lead.

4.7. Health Effects of Lead

Common symptoms of acute lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia. Long term (chronic) overexposure to lead may result in severe damage to the blood-forming, nervous, urinary, and reproductive systems.

4.8. Painted Pipe (Leaded)

Routine work practice on painted pipe and structural steel if hot work needs to occur. Remove a 3" band of paint on all sides where hot work may occur. By doing this, the work area is considered non-leaded.

4.9. Removal of Leaded Paints

Removal of leaded paints using power tools, like grinding wheels or needle guns, for periods of twenty minutes or less during a shift does not create exposures above the permissible exposure limit. Respiratory protection must be worn.

Small scale work involving removal of paint does not fall into the lead program. Any large scale jobs, involving more than 40-60 minutes of removal should be handled by trained lead workers.

4.10. Respiratory Protection and Use

Respiratory protection will be used in combination with engineering controls and work practices, to maintain employee airborne lead exposures below the Permissible Exposure Limit.

Respirators will be worn by all employees, who may be exposed to airborne lead at or above the Permissible Exposure Limit.

Employee qualification for respirator use includes:

- Medical: Each employee will successfully complete an annual respiratory medical evaluation. A physician will determine if an employee is medically capable of wearing a respirator.
- Training: Each employee will receive annual training on the selection, use, maintenance and limitations of the specific respirators that will be used for controlling airborne exposures to lead. This training will be provided as part of initial and annual lead training.
- Fit testing: Each employee will be qualitatively fit-tested every 6-months on the specific half-mask, negative pressure respirator that will be used. Fit test procedures will be in accordance with all State and Federal regulations. Each employee who will be required to wear full face

negative pressure respirators will be quantitatively fit tested every 6 months on the specific device being used.

- Facial Hair: Each employee wearing face piece respirators will be clean-shaven, with no facial hair that interferes with the sealing surface of the face piece or the operation of inhalation or exhalation valves.
- Corrective lenses: Eyeglasses with temple bars that extend through the sealing surface of a full-face respirator will not be worn.

4.11. Respirator Selection

All respirators selected for use will be approved by NIOSH/MSHA for use against lead-containing dusts, mists, and fume.

Selection of proper respirator will be based upon the known or expected concentration of airborne lead, the need for eye or face protection, the presence of any other hazardous gases, vapors, dusts, mists, or fumes, and the need for worker mobility, visibility and communication. In every case, the respirator selected for use will maintain employees' actual inhalation exposures below the PEL.

4.12. Respirator Issue

The competent person will issue respirators to employees who meet the qualification for respirator use outlined in this respiratory protection program.

Only properly selected respirators that provide an adequate degree of protection will be issued for use. Employees will not use any respirator that is not issued by Haskell Corporation.

4.13. General Respirator Requirements:

Each employee will inspect his or her respirator before each use. The straps, facepiece, valve assemblies, covers, cartridges, hoods, helmets, hoses, fittings and or regulators will be examined for defects or malfunctions. Any defective or malfunctioning respirator will not be used until properly repaired or replaced.

Each employee will perform a 10 second negative pressure test before each use of negative pressure respirators. Respirators that do not successfully pass this negative pressure field test will not be used.

Respirators will be according to manufacturer's instructions and only in their NIOSH/MSHA approved configuration. Only those parts that are supplied by the manufacturer as part of the respirator's NIOSH/MSHA approved configuration will be used.

Air purifying respirators will not be used in oxygen deficient atmospheres containing less than 19.5% oxygen.

Only Supplied Breathing Air operated in the pressure demand mode will be used for entry into Immediately Dangerous to Life or Health (IDLH) or unknown atmospheres. IDLH atmospheres can be those with less than 19.5% oxygen and/or those that contain concentrations of hazardous materials above the personal exposure limit (PEL).

Employees may not be assigned to projects that require supplied breathing unless they have received training in its use, with current records on file.

4.14. Respirator Inspection

All respirators will be inspected routinely before and after each use by the wearer. Respirator inspection will include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connection tubes, canisters, hoses and helmets. Rubber and elastomeric parts will be inspected for reliability and signs of deterioration.

4.15. Respirator Cleaning

Respirators will be cleaned and disinfected each day to ensure that proper protection is provided for the wearer. Respirators will be cleaned and disinfected according to instructions provided by the manufacturer.

The supervisor is responsible for ensuring that each individual properly stores respirator issued to them each day.

4.16. Respirator Storage

The competent person will be responsible for the daily and overnight storage of the respirators issued to Haskell Corporation employees. Respirators will be stored in a secure, clean, dry area. Hose connections will be protected to prevent internal contamination.

4.17. Respirator Repair

Only qualified trained persons, according to instructions provided by the manufacturer will perform repairs. Only manufacturer approved replacement parts will be used according to their instructions for installation. After repairs have been made, respirators will be cleaned and inspected before use.

4.18. Monitoring For Lead

A hazard assessment may be conducted if the “competent person” is aware of or observes anything that would lead him to believe it is necessary. This may be done by area sampling or by monitoring individual employees with personal air sampling pumps to determine the lead exposure. Where a determination conducted shows a possibility of employee exposure at or above the action level additional monitoring will continue and should be repeated at least every 6 months to ensure that exposure is below the PEL. The employee should continue to be monitored at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level. Should an employee be found to have been over exposed the medical procedures and blood sampling and continued monitoring required will be conducted.

Affected employees should be notified of the results of any monitoring performed within 15 working days, either individually in writing or by posting the results in an appropriate location that is accessible to affected employees. Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the written notice should includ a

statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

It should be noted that it is Haskell Corporation's policy to contract out any work that would require lead abatement to a qualified subcontractor.

4.19. Site Compliance Program

Prior to the start of any job that may exceed the full shift PEL a written compliance plan must be developed to describe the work. It will include:

- A description of the task involved with lead exposure.
- List the equipment used.
- Identify the material involved.
- Identify control measures to reduce exposure.
- Summary of previous monitoring data that establishes personal protective gear needed or arrangements to conduct monitoring with Health Group.
- Crew size and responsibility.
- Maintenance practices.
- Provide for frequent inspection of the job by a competent person.

The compliance program must be reviewed with crew prior to start of work.

When ventilation is used to achieve compliance with the standard it will be evaluated through testing or air monitoring by the Superintendent or Site Safety Manager.

The written program must be revised & updated annually.

4.20. Medical Surveillance Program

Workers who are, or will be exposed at or above the action level for Lead for thirty or more days per year should be included in a medical surveillance program. Medical surveillance will also be made available for workers who experience signs and symptoms of Lead exposure or who are exposed in emergency situations. Medical examinations & procedures should be performed by or under the supervision of a PLHCP.

Medical surveillance will be conducted within 30 days of initial assignment and annually thereafter. Exam will include:

- Physical examination of skin and respiratory tract
- Completion of Respiratory Protection Questionnaire
- Completion of Lead Questionnaire
- Additional tests deemed appropriate by the examining physician

Employees occupationally exposed on any day to lead at or above the action level should have made available at no cost to the employee, biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels to each employee

Blood sampling & monitoring should be conducted every 6 months until two consecutive blood samples & analysis are acceptable. Any employee with elevated blood levels should be temporarily removed. The sampling & monitoring should be performed at least monthly during the removal period. Employees should be notified in writing within five days when lead levels are not acceptable. The standard requires that employees temporarily removed for lead exposure be afforded *medical removal protection benefits*.

4.21. Evaluation of Program Effectiveness

The Corporate Safety Manager should periodically meet with field supervisors as necessary to evaluate the effectiveness of this program. Changes will be made, as necessary, to ensure the continued effectiveness of this program.

5.0 Regulations

- Federal 29CFR 1926.62
- Washington WAC 296-62-07521
- California Title-8 5189

LINE BREAKING

1.0 Purpose

To prevent injury or incident when opening lines or equipment

2.0 Scope

This policy applies when lines or equipment are to be opened which contain or have contained toxic, corrosive, hot, or flammable material that has the potential to harm workers.

3.0 Definitions

3.1. Annular Space – The space between the seat of a valve and the immediate flange.

3.2. Bleeder Blind – A slip blind, purge blind, or blind flange capable of relieving pressure on one side of an isolation point to a safe location.

3.3. Delayed Release Potential – A hazardous condition where isolation is verified, but it is possible for a release to occur due to a plugged substance that may release. This hazard exists when there are single block isolations on sulfur, coke, crude / vacuum tower bottoms, and slurry.

3.4. Four Bolt – For purposes of this policy, a four bolted flange has four wrench-tight bolts equally spaced around the flange.

3.5. Hot Bolt – The sequential removal and replacement of one bolt at a time on live process-piping or equipment flange that contains eight or more bolts, while controlling the potential for flange break away and consequent line of fire incident. Additionally, each bolt being replaced should be tightened and torqued to the required level of

tightness before loosening the next bolt. Hot bolting is not considered an initial line opening since flange integrity is maintained and the flange is not opened or parted.

3.6. Initial Line Opening –A flange, manway, head, etc. that is initially parted or opened on piping, valves, vessels, or other equipment that contains or previously contained flammables, combustibles, toxics, or steam. See Section 8.1 for exceptions.

3.7. Line Break Tag – A tag typically placed by Facility Operations to identify the location of a line opening.

3.8. Risk Analysis (RA) - The process for identifying and mitigating the hazards associated with work that is out of the ordinary or infrequently performed along with specific tasks such as a critical lift or welding on in service equipment. See Risk Analysis.

3.9. Safety Checklist – A written document (Attachment A) that is completed prior to the initial line opening. The form documents that equipment has been prepared, whether Basic Clearance Criteria have been met, and if it is safe to proceed with initial line opening or if a RAM is required.

3.10. Skip Bolt – The act of removing every other bolt in a non-pressurized system in preparation for a line opening. Skip Bolting is a practice used in an attempt to minimize the time spent freeing bolts before a fresh air job or “A-suit” job.

4.0 Procedure

5.0 Training

6.0 Responsibilities

7.0 Attachments

Safety Checklist for Line Breaking

This checklist should be used for all initial line openings and attached to any associated Permit to Work (PTW).

Job Description: _____

Permit Number: _____

	Yes	No
Can the Basic Clearance Criteria be met? (See Basic Clearance Criteria matrix below)		
Is a RAM required?		
Is the RAM document available in the field?		
Is a Variance required?		
Is the Variance available in the field?		

Gas Test	Time	H2S	% LEL	Temperature	Pressure	Liquid Hazard
Result						

Operator Signature: _____

Maintenance Signature: _____

Basic Clearance Criteria for Line Opening from C-1.0 Line Opening Green Book Policy

Parameter	Basic Clearance Criteria	RAM Required	Variance Required
Basic Clearance Criteria cannot be determined /measured (Bleeders are not available)		Yes	Yes
H_2S within 6" of closest bleeder	< 10 ppm	≥ 10 ppm	≥ 50 ppm
% LEL within 6" of closest bleeder	< 10%	≥ 10%	≥ 25%
Equip temp	< 150° F	≥ 150° F	≥ 200°F
Pressure	< 1 psig	≥ 1 psig	≥ 2 psig that is toxic, corrosive, hot or flammable service and does not dissipate in 60 sec or less
Liquid Hazard	Periodic Drip	More than Periodic Drip (requires RAM with at least one Business Team Lead or higher)	If there is a Potential for an Uncontrolled or Unknown Quantity

See reverse side for the Delayed Release Potential Checklist →

Safety Checklist for Line Breaking: Delayed Release Potential Checklist

This checklist should be used for all openings where there is a Delayed Release Potential and attached to the associated Permit to Work (PTW).

Table 1: Does a Delayed Release Potential Exist?

Item	Yes	No
Does the system contain sulfur, coke, crude/vacuum tower bottoms, or slurry?		
Is the system isolated with a single block?		
Is the process temperature greater than 150°F? (temperature outside of the isolated section)		

*If **Yes** to **all 3** questions above, proceed to Table 2 below.*

Table 2: Additional Items to Consider (at least one item must be implemented from below)

Items to Consider	Implemented?	
	Yes	No
Provisions for verifying that the valves/isolation is holding		
Measures to implement in the event of a potential uncontrolled release is present (such as shielding)		
Provisions for steam, nitrogen, pressure or other approaches to clear materials and prevent delayed release		
Appropriate blinding when leaving equipment open		
Consideration for vented blinds that reduce de-blinding risk		
Hot bolting with extended bolts to control flange breaks		
Include the Hot Equipment Class of PPE requirements (see Table 3)	Circle PPE Type Below	
Steps for all workers to participate in a safety review of the specific task		
Requirements for operator standby and supervisor presence/oversight		

Table 3: Hot Equipment PPE Requirements

	Contact with sulfur, coke, crude/vacuum tower bottoms, or slurry		
Contact Potential	Anticipated	Not anticipated but potential exists	Highly unlikely
PPE Type	Thermal PPE with hood	Thermal over jacket with face shield	Face shield

Foreman Signature: _____

Supervisor Signature: _____

LOCKOUT-TAGOUT

1.0 Purpose

This procedure is to define the minimum requirements for isolation, lockout, and tagging of project equipment and systems to protect employees from exposure to hazardous energy sources, both stored and active.

2.0 Scope

This procedure will apply to all Haskell Corporation and sub-contractor personnel on a Haskell Corporation project or sub contracted portion of any project, who are not working under the approved loack out tag out procedure of a client facility.
This procedure describes:
Personal danger tags
Locks and scissors
Isolating equipment
Basic shutdown and isolation steps
Required documentation

3.0 Definitions

Affected employee: An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee: A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Block: One solid piece of substantial material placed under a suspended load or machine part, which completely immobilizes all potential vertical movement

Chock: One solid piece of substantial material placed between horizontal pieces or on both the downward and upward slope of inclined equipment to immobilize potential lateral movement

Disconnect: Device: A pipe valve, electrical switch, or other mechanical device which will cut off the source of power or supply at the entry point to the machine or equipment

Potential Energy source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hazardous Energy Supervisor: Individual with the Authority and the Responsibility to place locks on any and all equipment that poses a potential Hazardous Energy release harmful to Project Personnel or to the safety of the Equipment. This person could be but is not limited to a General Foreman, Foreman, Safety Manager, etc.

Hot tap: A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. it is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockbox: A device used in a Group Lockout to contain keys to all locks used to isolate a system that is to be worked on by affected employees. Affected employees place their personal locks on the Lockbox to isolate the lockout system keys for the duration of the work that is being performed. The Hazardous Energy Supervisor should ensure that their lock is the last lock to be removed from a Group Lockout Lockbox.

Lockout: The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device: Active devices used to control energy and prevent the accidental energizing of a machine or equipment. Devices include blank flanges and bolted slip blinds

Tagout: The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device: Passive devices used as a warning system to prevent the inadvertent or accidental energizing of a machine or equipment.

4.0 Procedures

Unless otherwise noted in the contract, the appropriate representative of the customer and/or facility in which the work area is located, will be requested, prior to the start of work, to de-energize and render inoperative all mechanical equipment, electrical circuits and vessels containing chemicals or pressurized fluids in the immediate vicinity of the work area, and have locks and tags attached to all points where such equipment, circuits or pressurized vessels can be energized.

4.1. Exceptions:

This policy does not apply to the following:

Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or startup of the equipment is controlled by the unplugging of the equipment from the

energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that it is demonstrated that: continuity of service is essential; shutdown of the system is impractical; and documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

Lockout/Tagout

If an energy isolating device is capable of being locked out, affected employees should utilize lockout, unless it can be demonstrated that the utilization of a tagout system will provide full employee protection.

If an energy isolating device is not capable of being locked out, affected employees should utilize a tagout system.

4.2. Lockout or tagout device application.

Lockout or tagout devices should be affixed to each energy isolating device by authorized employees.

Lockout devices, where used, should be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.

Tagout devices, where used, should be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment should be fastened at the same point at which the lock would have been attached.

Where a tag cannot be affixed directly to the energy isolating device, the tag should be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

4.3. Full Employee Protection

When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device should be attached at the same location that the lockout device would have been attached, it must be demonstrated that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.

Additional means to be considered as part of the demonstration of full employee protection should include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Following the application of lockout or tagout devices for energy isolation, all potential stored or residual energy should be relieved, disconnected, restrained & otherwise rendered safe. If there is a possibility of the reaccumulation of stored energy, verification of isolation should be continued until the servicing or maintenance is completed, or until the possibility of such energy accumulation no longer exists.

No device, valve, switch, control, or piece of equipment should be operated with a danger tag and/or lockout attached to it regardless of circumstances!

4.4. Energy Control Procedure

Tags

Personal Danger Tag

Personal danger tags are attached to locks on isolation points to identify and protect the individual who places it. Only standardized danger tags should be used.

Tag- Front Side

- Will have the word "DANGER" Do Not Operate
- This lock/tag may only be removed by:

Tag - Back Side

- Will have the words "DANGER- This energy source has been LOCKED OUT
- Only the individual who signed the reverse side may remove this lock/tag.
- Remarks _____

Filling out the tag properly

The tag installer will fill out all appropriate information on the tag. The minimum information will include: Installer's name, date, on the front of the tag.

Employers name and means for contacting the employee under remarks.

The tag will be secured by means of a non-releasable, self-locking nylon cable tie with an unlocking strength of no less than 50 lbs. The tag will be affixed to the lock, scissors hasp or lock box. Whichever means of lockout is used.

Tags, locks, hasps, tie wraps, locking devices and lock boxes can be acquired from the Hazardous Energy Control Supervisor in the Supervisors Office Trailer. (Other devices also available are breaker locks, chain, cable, valve covers, etc.)

4.5. Request for Lockout Tagout

Affected Employees, Crew Coordinators, or Contractor Lockout Tagout Coordinators should request a Lockout Tagout if they or their employees may be subjected to any hazardous energy source.

The Affected Employee, Crew Coordinator/Lockout Tagout Coordinator should fill out a "Request for Lockout Tagout" to be submitted to the Hazardous Energy Control Supervisor.

The "Request for Lockout Tagout" should list the system or equipment that may have a potential for hazardous energy.

The "Request for Lockout Tagout" should describe in detail the work to be performed on the system or equipment.

The "Request for Lockout Tagout" should then be given to the Hazardous Energy Supervisor for review and evaluation in accordance with this procedure.

4.6. Responsibility

Hazardous Energy Supervisor responsibilities are:

- Review and evaluate all "Requests for Lockout Tagout" for the need for a Lockout Tagout.
- If the review of the "Request for Lockout Tagout requires a Lockout Tagout, the Hazardous Energy Supervisor should review the Lockout Tagout with the affected employees, and ensure that the affected employees understand the boundaries of the Lockout Tagout. The Hazardous Energy Supervisor should hang the first Lockout device on each Lockout Tagout location or on Client/Customer designated multiple isolation point such as a lock box or other isolation device for a particular piece of equipment or system and should ensure that the Personnel Protective locks are installed by the Affected Personnel in accordance with this procedure.
- If the review of the "Request for Lockout Tagout" does not require and Lockout Tagout the Hazardous Energy Supervisor should review the "Request for Lockout Tagout" with the Requester to ensure that the requestor agrees that a Lockout Tagout is not required.
- All Requests for Lockout Tagout should be retained until completion of the project.
- Ensure that there are sufficient isolation devices and tags to accomplish the necessary LO/TO functions on the project.
- Update and maintain the isolation logs in conjunction with Sub-contractors, coordinating supervisors, and crew coordinators.
- Ensure that all equipment and systems intended for work have been properly shut down, de-energized/depressurized, isolated and locked/tagged prior to work start.
- Monitor and audit the LO/TO process periodically.
- Ensure that all work has been completed, all unnecessary materials and tools removed from the area and all workers have removed their locks and tags and are clear of the equipment prior to removing locks and tags.
- Ensure that the LOTO log and survey are cleared and up to date and all locks and tags have been accounted for.
- Keep the logbook current immediately after any change in the status of any control device governed by this procedure.

- The Hazardous Energy Supervisor must apply his/her isolation device to each isolation location. (First on and last oft) The Hazardous Energy Supervisor's lock is the first isolation device on and the last isolation device off.
- The Hazardous Energy Supervisor should have the Authority and the Responsibility to place locks on any and all equipment that poses a potential Hazardous Energy release harmful to Project Personnel or to the safety of the Equipment.

Crew Coordinator Responsibilities

- The Crew Coordinator is responsible for ensuring the equipment has been disarmed, locked out (with a lock and hasp or other built-in locking mechanism, or a self-locking cable tie to render the equipment inoperable), and that tags are properly applied to all energy sources associated with the equipment being prepared for repair or service. This is accomplished through a walk down of the system with the Hazardous Energy Supervisor. Some equipment and systems may have multiple energy sources that require additional locks and tags (operating voltage, control voltage and heat trace circuits) for example.
- Testing the machine/equipment to determine the isolation procedure has effectively been isolated should be done.
- Relieving, disconnecting, or restraining any residual energy left in the machine after the lock-out/tag-out procedure is applied.
- Before releasing the machine from lock-out/tag-out, inspecting the machine and equipment to ensure that non-essential items have been removed from the equipment and that all employees have been safely removed or positioned prior to start-up.

    - The Crew Coordinator should keep a Hazardous Energy Control Logbook.

    - All pertinent information should be logged and a LOTO survey completed.

4.7. Affected Person

The affected person should have the authority to ensure isolation by the methods listed below:

The affected employee has the authority to walk down the system with the Hazardous Energy Supervisor and verity all isolation devices are in place as described on the LOTO survey.

- The affected person has the authority to apply their personal LOTO device and tag to any or all isolation energy source locations on equipment the affected person is working on or inside of.
- The affected person should attach their own lock unless the Lockout/Tag-out is considered a group lockout. If the Lockout Tagout is considered a group lock out the locks should be installed in accordance with the Group Lock out procedure.
- The affected person should review the equipment and Hazardous Energy Control Lockout Tagout Form.
- The affected person has the authority to test the machine/equipment to determine the isolation procedure has effectively isolated the machine or equipment prior to commencing work.

4.8. Group Lockout

- The Hazardous Energy Supervisor will apply their lock(s) and tag(s) at all isolation points where locks and tags are required or they should verify that all isolation points have been isolated by the Client/Customer and then apply their personal lock(s) to Client/Customer designated multiple isolation point such as a lock box or other isolation device.
- The Hazardous Energy Supervisor will then place their lock out key(s) in a Haskell group lock box.
- The Crew Coordinator and the affected personnel have the authority to walk down the system and verify locks and tags and review the Hazardous Energy Control Lockout Tagout form each day prior to his/her crew working on the isolated equipment.
- The Crew Coordinator applies his lock to a Group Lock box multi-lock hasp. The Crew Coordinator will ensure that all personnel working on the equipment or system under the Lockout Tagout have applied their own Locks to the Lock box.

4.9. Equipment Isolation Device Removal

- The individual who placed the lock on the isolation point is the only person who may remove a Personal Danger Tag/lock except as noted below. Personal Danger Tags and locks must be removed when the work is completed. If there is no other shift and the work is not complete the existing contractor coordinator lock and tag should be left in place.
- If the machinery/equipment is still in a hazardous condition at the end of a shift, the Hazardous Energy Supervisor must leave his/her lock and tag in place.
- Affected persons must remove their personal locks and tags at the end of their shift prior to leaving the site.

Personal Danger Tags and personal locks should not be removed by anyone other than the person who installed the lock or tag except as noted below.

Personal Danger tags and personal locks should not be removed by anyone other than that person named in the lockout tagout or another person specifically authorized by the Site Manager (or delegate) on an "Authority to Remove Personal Danger Tag Form."

4.10. Locks And Multi-Lock Hasps

Locks designated for LOTO should be used for no other purpose and should have the name of the affected person affixed.

Where required, personnel needing to isolate a facility and/or equipment should be issued a suitable good quality padlock.

Padlocks should be individually keyed; there should be no duplicate or master keys for isolation locks. Tags will be secured by nylon tie wraps or equivalent non-reusable ties with a breaking strength of not less the 50 lbs.

Multi Lock hasps will be issued for tasks in which multiple personnel may be required to isolate equipment.

4.11. Shift Change / Interim Locks and Tags

Specific procedures must be followed to accommodate those situations where it is necessary to continue the current lockout status of equipment/systems into subsequent shifts. Typically, off-going employees will remove their locks/tags and these will immediately be replaced by the locks/tags of the incoming employees. If there will be a time period between off-going and incoming employees removing/applying their personal locks, or if work will not resume until the next day, an alternate system of providing a safe "equipment down" status may be utilized. Interim locks and tags may be used to maintain an "equipment down" status when it becomes necessary for individuals to remove their personal locks and tags prior to completion of a job. When this occurs, after the last employee has removed their personal lock and tag from a group lockbox, the off-going Lockout Tagout Supervisor will apply an interim lock and tag fully describing the reason the equipment is locked out. This is to protect the equipment and explain the current status until the next shift begins work. No one is allowed to work under the protection of an interim lock and tag.

Any time that an Interim Lock has been applied the Lockout Supervisor must ensure that the time and date of application and removal of Interim is entered in the Lockout Tagout Written Log.

Prior to the resumption of work by anyone affected by the Lockout Tagout which had interim locks applied, a review of Lockout Tagout Isolation Points must be conducted and logged in the Lockout Tagout Written Log.

Interim locks may be keyed alike.

Employees must be trained in the purpose and limitations of interim locks.

4.12. Isolating Equipment

Equipment may be isolated only by using the following methods:

- Electrical -Circuit breakers, knife switches, removal of fuses.
- Mechanical - Double block and bleed, installation of a blind in a flanged joint, or removal of a spool piece, actuator locks, chocking, blocking, chaining, or wedging, etc.

Push button switches, trip wires, control room/operating station switches, pneumatic, hydraulic, solenoid operated valves are not acceptable forms of isolation.

It is the practice of Haskell Corporation to require isolations be made with both locks and tags wherever possible.

Electrical isolations requiring High Voltage switching must be done by suitably qualified personnel operating under an authorized access permit issued by the supply authority. (High Voltage is voltage above 480Volts AC or 1500 Volts DC).

There are four specific steps, which create the basic principle that need to be applied in successfully isolating plant or equipment. These steps are:

- Isolate

- Lock
- Tag
- Test to confirm Zero potential energy

4.13. Basic Shutdown And Isolation Procedure

Shutdown and isolation require an orderly procedure for preparing the machine or equipment for the application of isolation devices, locks, and tags. The specifics may change because of differing situations, but the following procedure should be applied where possible.

Isolation - This involves the application of energy-isolating devices that have been identified as being capable of preventing any hazard to those who will be working on the equipment.

Application of Isolation Equipment - Isolation and lockout devices will be applied only by the Hazardous Energy Supervisor. The point of attachment must secure the energy control devices safely and securely in the OFF or SAFE position. Locks and tags will be positioned so that they are clearly visible.

Release of Stored Energy - Once isolation of the main energy source has occurred, and it has been physically locked and tagged out at the point of control, the hazard will be eliminated by disconnecting or restraining any and all of the potential, stored, or residual energy (including electrical, mechanical and pneumatic).

Note: All personnel on the project must be trained in this procedure.

5.0 TRAINING

- Employees should receive Hazardous Energy Control training. All training should be documented.
- Retraining should be provided if there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.
- All training or retraining must be documented, signed, and certified.
- All affected employees are to be instructed in the purpose and use of the Hazardous Energy Control Procedure.
- Employees should receive training in the recognition of hazardous energy source, type and magnitude of energy available, and methods and means necessary for energy isolation and control. The training should include tagging requirements, limitations, and employee roles and responsibilities.

6.0 Program review

When Haskell Corporation is working at a site where such as in new construction where there is no facility specific LOTO program, and there is risk that must be mitigated by use of the Haskell LOTO program, there should be a periodic review of the energy control procedure at least annually to ensure that the procedure is being followed. The program review should be conducted by the safety director or their designee, but it must be someone other than those actually using the Lockout Tagout in progress.

A certified review of the inspection including date, equipment, employees & the inspector should be documented.

7.0 Regulations

- Federal: 29 CFR 1910.147
- Washington WAC 296-803
- California T8 CCR 3314

8.0 Forms

- Energy Isolation Request
- Lock Removal Request

REQUEST FOR LOCK OUT TAG OUT

_____
Date

_____
Hazardous Energy Control Supervisor

_____
LOTO Requestor

_____
Crew Coordinator

Affected Employees

_____

_____

_____

_____

_____

_____

_____

_____

System/Equipment to be LOTO:

Work to be performed: _____

_____

_____

_____

Signatures

LOTO Required	Date	LOTO Not Required	Date
Hazardous Energy Control Supervisor		Hazardous Energy Control Supervisor	
Crew Coordinator		Crew Coordinator	

HAZARDOUS ENERGY SURVEY

PROJECT	DATE	LOTO NUMBER
CREW COORDINATOR	HAZARDOUS ENERGY CONTROL SUPERVISOR	
EQUIPMENT DESCRIPTION		
REASON FOR ISOLATION		

Hazardous Energy Source	Volts	Pressure	Temperature	Other

METHOD OF ISOLATION (Circle items that apply)

ELECTRICAL ISOLATION BLIND FLANGE SLIP BLIND DISCONNECTED LINE
ISOLATION SPOOL
DOUBLE VALVE & VENT OPEN FLANGE INSTRUMENT DISCONNECT BLOCK CHOCK

ISOLATION DEVICE & LOCATION	LOCK NO.	DATE INSTALLED	DATE REMOVED

LOCK REMOVAL AUTHORIZATION
I, _____ Print the name of the person requesting removal of the lock or tag
(a) Have made all efforts to contact _____ Print name of person named on lock and tag
(b) Have made a thorough search of the equipment isolated to verify that _____ is not present. Print name of person named on lock and tag
(c) Now request authority to remove their Personal Danger Tag and Lock Date _____
Signed by requesting authority *Date:* _____
Confirmed by Site Safety and Health Officer *Date:* _____
Printed name of Project Manager or Delegate *Date:* _____
Authorization signature by Project Manager or Delegate

LOCK OUT TAG OUT LOG SHEET				
PERSONNEL	**LO/TO#**	**LOCK#**	**DATE INSTALLED**	**DATE REMOVED**

MANUAL LIFTING

1.0 Purpose

This program is designed to provide employees with information that will reduce the potential for injury due to strains or sprains related to manual lifting activities.

This program has the following primary objectives:

- Ensuring employees are not required to frequently and consistently manually lift tools or materials greater than 50 pounds as part of their routine job functions
- Ensuring that employees do not lift greater than 50 pounds without assistance
- Assisting in identifying, assessing, and controlling risks associated with manual handling tasks
- Reducing the incidence of manual handling injuries
- Establishing an effective system for manual handling

2.0 Scope

This policy applies to all Haskell employees

3.0 Definitions

- **Manual Lift**: means a lift performed using human power, without mechanical assistance

4.0 Procedures

It is the policy of Haskell Corporation to ensure that employees are provided with the ability to lift tools, equipment, and materials in a safe manner, without risk of injury. This policy provides essential guidance and is to be used in conjunction with the Haskell Manual Lift Training Program.

4.1. Responsibilities

Environmental Health and Safety (EH&S) has overall responsibility for program implementation and should perform the following, as requested:

- Evaluate material handling tasks
- Provide training
- Assist in selection of appropriate assist devices

4.1.1. Each Department should be responsible to:

- Identify operations which involve lifting or material handling tasks that may place individuals at risk for back or other injuries

- Institute engineering controls to reduce manual lifting injury potential
- Ensure that all affected employees are trained in the appropriate requirements of this program
- Provide training in proper material handling as needed
- Provide employees with human assistance or lift assisting devices as necessary

4.1.2. Supervisors should be responsible to:

- Ensure affected employees who frequent and consistent lift are trained
- Ensure that employees use proper lifting techniques
- Make assistance available to employees who manually handle or lift 50 pounds or greater
- Contact EH&S for assistance in equipment selection, evaluations, and training
- Ensure all employees who experience work-related injuries follow appropriate procedures

4.1.3. Employee should be responsible for:

- Attend any required training
- Use proper lifting and material handling techniques as outlined in this policy
- Limit manual lifting or handling tasks to objects less than 50 pounds
- Get assistance whenever manual handling or lifting materials that are 50 pounds or greater
- Report injuries within 24 hours of their occurrence

4.2. Principles of Proper Lifting

Whether it is during leisure activities or as a part of paid work, everyone lifts, holds, carries, pushes and pulls on a daily basis. Manual material handling involves lifting light, heavy and awkward objects. Safe lifting is a critical aspect of daily activities and should be the focus of any manual material handling. Before you lift, remember the following:

- Use lift assist devices (hand dollies, carts, lift tables, forklifts)
- Wear supportive shoes
- Carry all movements out horizontally (e.g., push and pull rather than lift and lower)
- Reduce the size of the material to keep it light, compact and safe to grasp
- Always use your body weight and not your feet when pushing
- Try to have most workplace deliveries placed at hip height
- Always keep objects in the comfort zone (between hip and shoulder height)
- Keep all loads close to and in front of the body
- Keep the back aligned while lifting
- Maintain the center of balance
- Let the legs do the actual lifting

4.3. Plan the lift

- Don’t lower the material if it must be lifted again
- Don’t place material on ground unless it has handles up at least 12”
- Never lift materials that can slide

- Size up the load, its weight, shape and position
- Determine if the load is too large, too heavy or too awkward to move alone
- Get help from a coworker or use equipment to help with the lift when necessary
- Decide on the best route to take
- Check for any problems or obstacles such as slippery or cluttered floors
- Always exercise or warm-up the back prior to lifting

4.3.1. SQUAT LIFTING should be done for a majority of all lifts. Squat lifting should be performed as follows:

- Stand as close to the load as possible
- Move your feet shoulder width apart
- Tighten your stomach muscles so you can tuck your pelvis
- Bend at the knees, keeping your back straight and stomach tucked
- Get a good firm grip on the load
- Hug the load close to the center of your body
- Lift smoothly with your legs gradually straightening into a standing position
- Avoid twisting your body as you lift

4.3.2. CARRYING LOADS:

- Keep the load close to the center of your body to take full advantage of the mechanical leverage of your body,
- Do not change your grip on the load unless it is weight supported,
- Avoid twisting your body without pivoting your feet at the same time,
- If you must change direction, move your feet in that direction instead of twisting your trunk in that direction,
- Make sure you can see over the load,
- Move carefully toward your destination, and
- If a heavier load is carried for some distance, consider storing it closer.

4.3.3. PUSHING LOADS:

- It is better to Push a load (i.e., cart, bin) rather than pull
- Keep elbows near 90 degrees
- Avoid slopes
- Avoid uneven floors

4.3.4. UNLOADING OBJECTS should be done the same way as lifting objects, but in the reverse order as follows:

- Slowly bend your knees to lower the load
- Keep your back straight and the weight close to the center of your body
- Allow enough room for fingers and toes when the load is set down

- Place the load on a bench or table by resting it on the edge and pushing it forward with your arms and body
- Secure the load to ensure that it will not fall, tip over, roll or block someone's way

4.3.5. ONE-ARM LOADS are used when carrying items such as pails or buckets. Lifting and carrying one-arm loads should be performed as follows:

- Bend the knees and at the waist keeping your back straight
- Grasp the handle of the load firmly
- Lift with your legs not your shoulders and upper back
- Keep your shoulders level while switching hands regularly to reduce overexertion on one side of the body while carrying the load

4.3.6. TEAM LIFTS are used when objects are too heavy, too large or too awkward for one person to lift. Team lifts should be performed as follows:

- Work with someone of similar build and height, if possible
- Choose one person to direct the lift (e.g., "lift on the count of three")
- Lift with your legs and raise the load to the desired level at the same time
- Always keep the load at the same level while carrying
- Move smoothly and in unison
- Set the load down together

4.3.7. OVERHEAD LIFTS should be minimized but if necessary should be conducted as follows:

- When lifting or lowering objects from above the shoulders
- Lighten the load whenever possible
- Use something sturdy such as a step stool or platform to decrease the vertical lift distance
- When you are lowering objects from above the shoulders, slide the load close to your body, grasp the object firmly, slide it down your body and proceed with your move

4.4. Mechanical Aids and Proper Design Strategies

Mechanical aids for carrying or moving loads are to be used whenever possible to minimize manual material handling. These mechanical aids include hand trucks, carts, dollies, forklifts, hoists and wheelbarrows. When using carts make sure they have large casters. Even when mechanical aids are used, safe lifting procedures should still be followed by maintaining the natural curvature of the back, using the legs for any lifting that is encountered and avoid twisting the back.

When designing or modifying storage areas, store heavy items between the average knee-to-shoulder height (>18" - <60") of workers and avoid placing on floor. Also, lighter items should be stored on top shelves. Whenever possible decrease object/container size, change container shape, and add handles to aid in manual handling.

4.5. Use of Back Belts

Claims have been made that back belts reduce forces on the spine, increase intra-abdominal pressure, remind workers to lift properly, stiffen the spine, and reduce bending motions. Although back belts are being bought and sold under the premise that they reduce the risk of back injury, there is insufficient scientific evidence that they actually deliver what is promised. The National Institute for Occupational Safety and Health (NIOSH) does not recommend the use of back-belts to prevent injuries for workers.

Due to information that is currently available, Haskell Corporation does not advocate the use of back-belts. It is recommended that back-belts be provided to employees only by and under the direction of a physician. The procurement of back-belts will not be the responsibility of Haskell Corporation.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

MOBILE EQUIPMENT

1.0 Purpose

Many different tasks fall to powered industrial vehicles. Each new situation can provide an opportunity for error. At any time during the performance of a task, the operator, pedestrian(s), the equipment, the product, or structures could be harmed or damaged unless the operator and pedestrians are constantly diligent. This procedure establishes minimum guidelines for employees working with or in proximity to mobile equipment of any kind. It is intended to assist in the control of health hazards and to ensure compliance with regulatory standards.

2.0 Scope

This policy & procedure applies to all Haskell Corporation employees and those of its Sub-contractors.

This policy & procedure controls the use of mobile equipment on all Haskell Corporation projects. It establishes safe operational guidelines, associated risk management issues and enforcement of this policy.

3.0 Definitions

4.0 Procedures

4.1. Mobile Equipment Safety Guidelines:

4.1.1. Mobile Equipment should be operated with the utmost courtesy, care and consideration for the safety and convenience of pedestrians. Pedestrians should be afforded the right-of-way at all times.

4.1.2. In crowded pedestrian areas, operators must yield or park and proceed on foot.

4.1.3. Each requirement of this policy applicable to safety and considerations for care and courtesy should be applied for persons in wheelchairs or any type of mobility assistance device.

4.1.4. Mobile Equipment is not to be operated by anyone without training for the specific equipment. Authorization to operate mobile equipment will be issued to employees qualifying under appropriate training and functional evaluation by a competent person.

4.1.5. The use of equipment not belonging to Haskell Corporation is prohibited without prior authorization of Haskell Project management. The use of borrowed equipment may only occur if the operator has been trained on the specific equipment to be used. Being trained on a similar piece of equipment to the one being borrowed does not qualify a worker to use the borrowed piece of equipment.

4.1.6. Passenger occupancy must not exceed the passenger limit and load capacity designated by the manufacturer. Only mobile equipment designed and equipped to transport passengers may be used for this purpose.

4.1.7. Mobile Equipment operating on project site roadways must travel in the direction of and with the flow of traffic and obey all traffic regulations and signs.

4.2. Mobile Equipment Safety Instructions:

4.2.1. Make sure the equipment is in safe working condition before each use.

4.2.2. Report any mechanical or equipment defects to your supervisor.

4.2.3. Before starting the equipment, assure it is in neutral. The driver and approved passengers should fasten seat belts and adjust them for a proper fit.

4.2.4. Check the area behind the equipment before backing up.

4.2.5. All body parts- feet, legs and arms should be within the confines of the equipment while it is in motion.

4.2.6. Always remain seated and hold on while equipment is in motion.

4.2.7. Do not exceed the posted speed limit.

4.2.8. Slow down before and during turns. All turns should be executed at reduced speeds.

4.2.9. Drive the mobile equipment only as fast as terrain and safety considerations allow.

4.2.10. Avoid sudden stops or change of direction that may result in a loss of control.

4.2.11. Brake to control speed when traveling down an incline.

4.2.12. Operators may not wear headsets to include IPOD ear buds while operating mobile equipment. Headsets may cause distractions and may result in an accident.

4.2.13. When the mobile equipment does not include an enclosed cab the operator and approved passengers should wear eye protection rated ANSI Z87 or Z87.1.

4.2.14. When the equipment is to be left unattended for extended duration such as overnight or longer, turn the key to the off position. Remove the key and engage the brake.

4.2.14.1. Keys may be left in unattended mobile equipment when it is within a secured facility ie, security fencing, or security guards.

4.2.14.2. Mobile equipment may be left running while unattended in cold weather if all controls are neutralized and brakes are set.

4.2.15. The operator should not use, or attempt to use any mobile equipment in any manner or for any purpose other than for which it is designated without written authorization from the manufacturer.

4.3. Applied Loads

4.3.1. Mobile equipment used to lift or move power lines, equipment other material should be used within its maximum load rating and other design limitations for the conditions under which the work is being performed.

4.3.2. The operator should not load the equipment beyond its established load limit and should not move loads which because of the length, width, or height that have not been secured for safe transportation.

4.4. Inspections

4.4.1. At the beginning of each shift, the operator should perform a documented inspection of the assigned equipment, reporting immediately to their supervisor any malfunction of the clutch or of the braking system, steering, lighting, or control system and tag out the equipment if necessary.

4.4.2. The critical safety components of mechanical elevating and rotating equipment should receive a thorough documented visual inspection before use on each shift.

4.4.3. Note: Critical safety components of mechanical elevating and rotating equipment are components whose failure would result in a free fall or free rotation of the boom or other appurtenance.

4.5. Limited Visibility

No equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee or client facility equipment or other objects are exposed to the hazards created by the moving vehicle, unless:

4.5.1. The vehicle has a reverse signal alarm audible above the surrounding noise level, or

4.5.2. The vehicle is backed up only when a designated employee (spotter) signals that it is safe to do so.

4.6. Operating Equipment Near Exposed Energized Power Lines or Equipment

4.6.1. Mechanical equipment should be operated so that the minimum approach distances are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

4.6.2. A designated employee (spotter) other than the equipment operator should observe the approach distance to exposed power lines and equipment and give timely warnings before the minimum approach distance is reached. A spotter should not be required if it can be demonstrated that the operator can accurately determine that the minimum approach distance is being maintained. For the sake of simplicity, the minimum approach distance should be 3.5ft if working at 3000 feet or less above sea level. If working at greater than 3000 feet above sea level or a lesser approach distance is necessary, OSHA standard 1910.269 (p)(4)(i) must first be referenced and the guidelines therein should be adhered to.

4.6.3. The energized lines or equipment exposed to contact should be covered with insulating protective material that will withstand the type of contact that could be made during the operation.

4.6.4. Each employee should be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The measures used should ensure that employees will not be exposed to hazardous differences in electric potential. Unless it can demonstrate that the methods in use protect each employee

from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, the measures used should include all of the following techniques:

4.6.4.1. Using the best available ground to minimize the time the lines or electric equipment remain energized,
4.6.4.2. Bonding mechanical equipment together to minimize potential differences,
4.6.4.3. Providing ground mats to extend areas of equipotential, and
4.6.4.4. Employing insulating protective equipment or barricades to guard against any remaining hazardous electrical potential differences.

4.7. Fueling

4.7.1. The operator of a gasoline or diesel powered piece of equipment should shut off the engine before filling the fuel tank and should ensure that the nozzle of the filling hose is in contact with the filling neck of the tank.
4.7.2. No one should be on the equipment during fueling operations except as specifically required by design.
4.7.3. There should be no smoking or open flames in the immediate area during fueling operation.

5.0 Regulations

- Federal: CFR 1910.269

NATURALLY OCCURING RADIOACTIVE MATERIALS (NORM)

1.0 Purpose

This policy establishes a baseline process to educate and protect our workforce from the potential harmful effects of radiation exposure in excess of background levels. This is accomplished by establishing assessment, mitigation measures and implementation strategies to be implemented when historical and/or facility information indicates NORM is likely to be present.

2.0 Scope

This policy applies to all Haskell Corporation employees and those of its Sub-contractors.

3.0 Definitions

4.0 Procedures

4.1. Background

Naturally occurring radioactive material (NORM) is all around us. It is naturally present in our environment, generated by cosmic, terrestrial and human sources. NORM is present in rock formations, soil, groundwater, coal, oil, and gas deposits. Exposure to NORM is continual and cumulative.

Radon is a radioactive gas with a boiling point and vapor pressure similar to that of propane, resulting in higher concentrations of radon in natural gas liquids. Radon decays to low-level particulate radioactive lead-210, bismuth-210 and polonium-210, and can cause concentrated or accumulated quantities in or around Haskell Corporation work areas.

Levels of natural or background radiation vary greatly depending on location. Approximately one half of a U.S. person's total annual average radiation exposure comes from natural sources. The average annual radiation exposure from natural occurring sources is about 3.1 millisieverts (mSv). Radon and Thoron gases account for two-thirds of this exposure, while cosmic, terrestrial, and internal radiation account for the remainder (Although no adverse health effects have been discerned from doses arising from these sources of natural radiation exposure and NORM).

There is potential for buildup of NORM substances in some HASKELL CORPORATION work sites. Examples of these sites include:

4.1.1. Pipelines possessing residual hydrocarbons like propane, butane, demethanized mix and natural gasoline
4.1.2. Hydrocarbon process vessels
4.1.3. Hydrocarbon storage tanks

4.1.4. Geothermal process equipment and waste streams

4.2. Responsibility

Haskell Corporation is a general contractor who enters client facilities under contract to provide services and labor per client requirements. Haskell Corporation clients are solely responsible to identify type, locate and control all NORM AND TENORM present at the jobsite. If Haskell Corporation is contractually required to identify type, locate and control NORM and TENORM present at the jobsite, a qualified subcontractor will perform surveys/tests of the work area to determine if there is a presence of NORM and TENORM and the extent of any hazardous. The subcontractor will then perform all responsibilities assigned to the client in this policy.

The Haskell Corporation Safety Director is responsible for administering, coordinating, reviewing, and updating this policy.

4.3. Training

4.3.1. All employees with the potential of being exposed to Naturally Occurring Radioactive Materials (NORM) and Technically Enhanced Radioactive Materials (TENORM) should be trained, initially and annually, in this procedure. This training should include the potential exposure for both routine and emergency situations.

4.3.2. All training should be documented.

4.3.3. Additional training materials may be obtained from Haskell Corporation's Client.

4.4. Testing, Air Monitoring, Identifying, Maintenance, Ventilation, Protection Devices, and Communication

4.4.1. The client facility representative is solely responsible for:

4.4.1.1. Identifying and typing of radionuclides and communicating with Haskell Corporation Holdings, Inc. all possible exposure risks and required precautions.

4.4.1.2. Testing may include dosimetery, monitoring, metering, spectrum analysis, litmus crystals or any other effective means.

4.4.1.3. Determining exposure potential and coordinating with Haskell Corporation the appropriate time, distance and shielding and other engineered protection requirements (TDS).

4.4.1.4. Providing NORM work procedures and instructions.

4.4.1.5. Upkeep of ventilation systems

4.4.1.6. Provide protection devices

4.4.1.7. Decontamination & Personal Hygiene Facilities

4.4.1.8. Communicating with Haskell Corporation Holdings, Inc. Supervision the location of areas and surfaces, which pose potential exposure to NORM, TENORM and other radionuclides.

4.4.1.9. Provided all special NORM and TENORM training and PPE to Haskell Corporation Holdings, Inc. employee-owners.

4.5. NORM Types of Concern in the Oil & Gas Industry

4.5.1. There are many different types of radioactive materials found in nature. The oil and gas industry is concerned with the following 4 particular types of NORM, which are the daughter products of Uranium-238 and Thorium-232:

4.5.1.1. Radium-226
4.5.1.2. Radium-228
4.5.1.3. Thorium-228, and
4.5.1.4. Radon-222.

4.5.2. Hydrocarbon bearing sandstone and limestone formations can contain the naturally occurring radioactive isotopes of uranium and thorium such as Uranium-238 and Thorium-232.

4.5.3. Uranium-238 and Thorium-232 each have their own unique decay schemes, passing through a number of radioactive transformations, which include

4.5.3.1. radium
4.5.3.2. radon, and
4.5.3.3. thorium, until a stable or non-radioactive element is formed.

4.6. Exposure

4.6.1. The Supervisor is responsible for communicating with the client facility representative and Haskell Corporation's Safety Director, any concerns pertaining to identifying work areas and surfaces which pose potential exposure to NORM and TENORM and the types of radionuclides that may be present.

4.6.2. If at any time an employee-owner is suspicious or aware of potential exposures that are not addressed, the Employee-owner is to contact the Supervisor who will then coordinate with the client representative and the Haskell Corporation's Safety Director in addressing the employees/owners concerns.

4.6.3. Once areas and surfaces of potential NORM and TENORM exposure have been identified, the Supervisor is to coordinate with the client facility representative and the Haskell Corporation Safety Director to ensure employees-owners are adequately protected from harmful exposure. This protection may include time resistance distance and shielding, Respiratory Protection, Personal Protective Equipment, and any additional training that may be needed.

4.7. Personal Protective Equipment

4.7.1. Additional Personal Protective Equipment may include, as directed by the client:

4.7.1.1. A respirator that is appropriate for NORM and TENORM particulate.
4.7.1.2. Suitable coveralls and gloves.
4.7.1.3. Activities should be conducted in well-ventilated areas to which access has been restricted.

4.7.1.4. Plastic ground covers should be utilized to the extent possible to contain contaminants and facilitate cleanup.

4.7.1.5. Gloves, respirators, coveralls, and rags should be decontaminated or placed in double bags, sealed and held for proper disposal.

4.7.1.6. The need for Personal Monitoring and Medical Monitoring should be evaluated and provided if necessary.

4.7.2. Personal Protective clothing exposed to NORM and TENORM should not be cleaned by:

4.7.2.1. Air blasting

4.7.2.2. Shaking

4.7.2.3. Any method that could create airborne NORM and TENORM particulate.

4.8. Personal Hygiene

4.8.1. All employees/owners exposed to NORM and TENORM should wash their hands and faces before eating, drinking or smoking.

4.8.2. No eating, drinking or tobacco products in the area where possible NORM and TENORM exposure may occur.

4.8.3. Workers should shower before leaving work site.

4.8.4. Vehicles should not be parked in contaminated areas.

4.8.5. Employees/owners are to maintain an extremely high level of personal hygiene.

4.9. Possible sources of Exposure are:

4.9.1. Fly ash

4.9.2. Oil and gas separators

4.9.3. Phosphate mining and mill tailings

4.9.4. Used oil and gas pipelines

4.9.5. Oil and gas production sites and facilities

4.9.6. Pipe handling facilities

4.9.7. Oil-water separators

4.9.8. Ditches

4.9.9. Pits used for disposal of production water

4.9.10. Soil

4.9.11. Pipe and pipe storage areas

4.10. Pre Job Activities

4.10.1. A Job Safety Analysis (JSA) and pre-planning will be conducted and should include an evaluation of NORM and TENORM to ensure that work activity precautions are communicated to each employee-owner involved.

4.10.2. Signage and barricades should be placed at a sufficient distance to protect any employee from entry into the areas, which pose hazards from NORM and TENORM.

4.10.3. All work activities involving NORM and TENORM are to be coordinated with the Haskell Corporation Safety Director.

5.0 Regulations

OSHA 29 CFR 1910.97

NITROGEN (N_2)

1.0 PURPOSE

The purpose of this procedure is to provide information on the properties and hazards of Nitrogen so they are fully understood and effectively managed thus minimizing the potential asphyxiation hazard.

2.0 Scope

This program applies to all Haskell and Sub-Contractor employees who may come into contact with or work with Nitrogen.

3.0 Definitions

4.0 Procedures

4.1. Nitrogen Properties

Nitrogen is a colorless, odorless gas that makes up over 78% of our atmosphere. When the nitrogen concentration increases, the atmosphere in the area may contain less than 19.5% oxygen. Breathing atmospheres of less than 19.5% oxygen can lead to progressively adverse health effects, to include rapid death, as it displaces carbon dioxide in the lungs and tells the body to stop breathing. Nitrogen is typically used in the refining industry to displace air in order to create an oxygen deficient atmosphere. Other gases (helium and argon) used for welding operations can create similar hazards.

4.2. Training

All affected Haskell and sub-contractor employees will be trained in the hazard of Nitrogen.

4.3. Pre-Job Planning

Typically process facilities using nitrogen employ a line labeling color code standard whereby all nitrogen piping, utility stations, hose end fittings, manifolds and any temporary piping, will be identified by a specific color such as purple/magenta. Haskell Project management and the HSE department should gain understanding of the facility standards for nitrogen use and train affected employees on those standards. Documented planning and Job Safety Analysis (JSA) will be conducted for project operations involving potential nitrogen exposure. This includes anytime an active purge is being applied to a system in or around equipment associated with the work.

4.4. Warning Signage/Barricades

Temporary warning signs, tags, and/or barrier flagging which state, **“Caution Nitrogen Hazard**”, “**Possible Oxygen Deficient Environment”,** must be in place wherever potential personnel exposure to

nitrogen exists. This applies to affected workers whether the situation is for temporary use of N_2 or where N_2 is venting to atmosphere either periodically or continuously.

As determined by the hazard assessment, nitrogen vent / purge points will be labeled and barricaded with a minimum 3' perimeter or as determined by monitoring, oxygen content must be greater than 19.5 percent outside of the barrier.

4.5. Cylinder Labeling

All packaging used to transport nitrogen must be either “UN/DOT Specification” or “UN/DOT Authorized” and in proper condition for transport. DOT Code of Federal Regulations, Title 49, also specifies the following labeling and identification requirements:

4.5.1. DOT Shipping Name: Nitrogen, Compressed
4.5.2. DOT Hazard Class: 2.2
4.5.3. DOT Shipping Label: Nonflammable Gas
4.5.4. NITROGEN, COMPRESSED UN 1066 CAUTION HIGH PRESSURE GAS MAY CAUSE RAPID SUFFOCATION DO NOT REMOVE THIS LABEL

Nitrogen cylinders should contain an identifying label UN1066 pictured below, along with written warnings as outlined above.

4.6. Cylinder Storage and Handling

4.6.1. Unless designed otherwise, compresses nitrogen cylinders must be stored upright.
4.6.2. The cylinder should be properly supported to prevent it from falling.
4.6.3. Compressed nitrogen cylinders swhall bestored outdoors or in a well-ventilated area.
4.6.4. The protective cap must be in place when not in use.
4.6.5. No compressed nitrogen cylinder should be permitted within a confined/enclosed space.

4.7. Pneumatic Tools

Compressed nitrogen should not be used to power pneumatic tools or blowers except when they are used in an inert atmosphere.

5.0 Regulations

5.1. OSHA 29 usc 654 section 5

ORIENTATION / TRAINING

1.0 Purpose

To establish a consistent and effective process for orienting and training new employees for their job assignments.

2.0 Scope

This policy applies to all Haskell employees, regardless of assignment. Specific orientation and training materials are provided for each work location.

3.0 Definitions

- **Orientation**: Initial overview/awareness training
- **Training**: Task specific training / evaluation of performance

4.0 Procedures

It is the policy of Haskell Corporation to ensure that every employee is provided with sufficient knowledge about our safety and health policies and procedures, prior to their assignment to work. This policy does not replace formal or required training, but provides a basic overview of the health and safety program, related policies, and essential information needed to assist employees in making good choices.

The following topics may be covered during initial employee orientation: *NOTE: not all topics apply to all work locations, separate orientations/training may be required for employees who transfer from one work location to another.

Records should be kept to document safety and health training for each employee by name or other identifier, training date, types of training and training providers.

4.1. Orientation Topics

- Accident prevention & reporting
- Asbestos Awareness
- Confined Space Entry
- Electrical Safety
- Environmental Policy
- Excavation/Trenching
- Fall Protection
- Fire Protection
- First Aid / CPR / BBP
- Hand/Power Tool Use

- Hazard communication (SDS)
- Hearing Conservation
- Housekeeping
- Lockout Tagout
- Material Handling
- Mobile Equipment Operation
- Personal Protective Equipment
- Project Specific Safety
- Scaffolding Safety
- Substance Abuse Policy
- Welding/Cutting/Grinding

Additional topics or subjects may be added from time to time, to address changes in regulations or specific project requirements.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

PERMIT TO WORK

1.0 Purpose

Most process facilities are a pretty straightforward process that are inherently dangerous if safety procedures are not followed. This policy establishes that Haskell Corporation employees will follow client safe work permit procedures where applicable. Compliance with safety procedures is complicated whenever contractors and subcontractors work at a facility. Some of the potentially hazardous situations where contractors are often brought in to augment plant personnel include line breaking, entering confined spaces and working on systems where lockout/tagout procedures need to be followed. Many accidents are attributed to a lack of communication between the contractor and the plant personnel. Process facilities generally have a safety orientation meeting with contractors prior to beginning work where Permit to Work procedures and policies are explained.

2.0 Scope

This policy applies to all Haskell employees and Sub-contractors who perform tasks in client facilities where a Permit to Work procedure exists. Haskell Corporation is a constructor and not a process facility operator, as such, we do not have standardized Permit to Work procedures. It is Haskell Corporation policy to strictly adhere to client facility permit to work procedures.

3.0 Background

3.1. Permit Areas

Process facilities are covered under several sections of the Occupational Safety and Health Administration's Process Safety Management Standard found at 29CFR 1910.119. Plants will meet the OSHA threshold if they exceed 10,000 pounds of many different chemicals. There is an exemption for "hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not part of a process containing another highly hazardous chemical by this standard." OSHA's Process Safety Standard specifically calls for establishing a "hot work" permit system.

OSHA's confined space entry standard, found at 29CFR 1910.146, will also apply to most plants. All confined spaces should be labeled as "Danger—Permit Required Confined Space—Do Not Enter." Even non- permitted confined spaces will need to be labeled as "Non-permit required." Permit-required confined space operations include the cleaning of process vessels, railcar tankers, truck tankers and grain bins, to name a few.

A non-permit required confined space is large enough and configured so that an employee can bodily enter to perform assigned work. It also has limited entry and exit (other examples include silos and feed hoppers) and is not designed for continuous human occupancy. Most, if not all, confined spaces at an ethanol plant will be permit-required confined spaces that may contain a hazardous atmosphere, contains a material that has the potential for engulfing an entrant such as grain or contains any other recognized serious safety or health hazard. The internal configuration could potentially trap or asphyxiate an entrant with inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section.

A safe work permit system starts with deciding what operations will need a permit to be completed. Some examples of common operations needing safe work permits include:

3.1.1. Hot work—welding, cutting, grinding and spark producing work,
3.1.2. Line break—liquid and gaseous chemicals, water, sewer and process water,
3.1.3. Confined space entry,
3.1.4. Hoist and rigging, also called heavy lift or critical lift
3.1.5. Working at elevated heights,
3.1.6. Fire detection and suppression system impairment during maintenance, testing, or construction,
3.1.7. Air and water pollution abatement system maintenance on areas such as the CO2 scrubber or bag house maintenance.

3.2. Operations Covered

A safe work permit doesn't mean that the job is safe and easy to complete. It simply authorizes employees or contractors to work in the hazardous conditions. The main purpose of the permit system is to ensure that all the steps have been taken to make the job as safe as possible, while coordinating the work with the plant's operations and maintenance staffs. Multiple permits will most likely be needed, covering multiple categories of potential hazards. A safe work permit system can aid overall plant hazard abatement with the added attention to detail. Plus, personnel will no longer struggle through an undocumented and ever-changing process to get a job done.

One example of a situation needing multiple permits is during construction and retrofitting when process piping is welded to a process vessel. The welding will take place on both sides of piping entering the process vessel, so the hot work section of a safe work permit document is completed, along with the confined space section.

Another example is when a plant's footprint is being reconfigured. Process vessels are lifted by a crane and repositioned. In this case, complete the permit section for hoist and rigging (also known as critical lift in some facilities) along with the hot work section to weld the new or reconfigured piping. If the operation involves the use of a scissor lift or aerial platform to reach the area, then also complete the section for working at elevated heights.

Another example is the addition of a chemical storage tank and the installation of a new line to the tanker loading area. The new tank will need to be checked for proper cleaning and any hazardous gases present if the tank being added to the plant is a used one. The confined space section along with the hot work section will need to be completed in the safe work permit.

In the final example, some states' operating permits have provisions for operational fire detection and suppression systems along with air and water pollution abatement. Bag house maintenance is covered in the air and water pollution abatement section. While not required by OSHA, adding this to the "safe work permit" can help with documentation requirements for regularly scheduled and emergency work on these systems.

3.3. Implementation

Whenever a safe work permit system is employed by a client, employees will be trained in its purpose and use. Employees should be continually trained and checked to make sure the safe work permit system is followed and updated as needed.

Each safe work permit needs to be authorized by the appropriate plant supervisor before work is started. This usually involves the signature of the shift supervisor at a minimum, if not the plant manager. Before authorizing, the permit should be reviewed to ensure that all steps have been taken to reduce the risk of accident. The employee performing the work should also sign the permit. To ensure proper coordination between plant personnel and Haskell employees, the crew foreman should also sign the permit stating that they know and understand the permit provisions.

Sub-contractors must also know when a permit will be required and be trained in proper completion and closeout procedures. One of the best ways to ensure coordination and compliance with the safe work permit system is to cover the procedure at a pre-construction conference. Sit down with the client and ask them to explain the expectations of contractors and subcontractors to complete the work safely and incident- and injury-free.

PERSONAL PROTECTIVE EQUIPMENT

1.0 Purpose

To provide the requirements for hazard assessment and eye, face, head, foot, hand and hearing protective equipment selection. To establish requirements for training and selection and maintenance of various types of personal protective equipment, used by employees. To provide training relating to the proper use, care and maintenance of various types of personal protective equipment.

2.0 Scope

This policy applies to all departments, divisions, and locations of Haskell Corporation. The initial training should be a part of the new hire/rehire orientation and additional training should be done as conditions or requirements change.

3.0 Definitions

- **Contaminant:** means any material, which by its own action upon, within, or to a person is likely to cause physical harm.
- **Hazard Assessment:** means an assessment of the workplace to determine if hazards are present, or likely to be present, which require the use of Personal Protective Equipment (PPE)

4.0 Procedures

Supervisors should ensure that safe work practices are followed and that personnel use appropriate PPE properly. In the event that wearing of PPE creates a greater hazard when performing the assigned work, the supervisor should determine the safest way to proceed. Supervisors should also perform random inspections as appropriate.

The Job-Site Supervisor, with assistance from the Safety Department should be responsible for performing a documented hazard assessment of each type of construction project to assure the sources of hazards are identified to workers and their supervisors. They will ensure that the proper PPE is issued and that a maintenance record is maintained as required by state and federal mandated laws.

Each employee should be provided the appropriate personal protective equipment and should utilize such equipment as intended/designed by the manufacturer. Any defective equipment should be reported immediately to the supervisor and should be removed from service.

4.1. Training

Prior to being allowed to perform work requiring the use of PPE, employees must be trained to know when to wear PPE, what PPE should be worn, how to put on, take off, and adjust any PPE that is used.

Employees must be trained to know the limitations of the PPE. The training should include the correct use, care, and maintenance of PPE. Employees will be required to demonstrate an understanding of the following items:

- When PPE is necessary.
- How to properly don, take off, adjust and wear required PPE.
- Limitations of PPE.
- Proper use, identification of defects/wear/damages, maintenance and disposal methods for PPE.

If there is a reason to believe that an employee who has been trained does not have the required understanding and skill or there are changes in the workplace, the employee must be retrained.

All PPE training should be documented. Training should include the employee name, the dates of training, and the training content.

4.2. Minimum Attire

All employees and visitors are required to comply with the following minimum dress/attire requirements:

- Shirts should have a minimum 4” sleeve length;
- Pants should be full-length and made of durable materials;
- Boots should be made of leather and suitable for construction.
- Employees should contain or remove all loose clothing, long hair, or jewelry that could become tangled or caught in tools, equipment, or machinery, or otherwise pose a danger to the employee or a co-worker.
- Office personnel and visitors to any Haskell production or construction operation or facility should comply with the above minimum requirements with the exception that work boots are not required if the visit does not involve persons getting into close proximity to the work activities.
- All visitors must wear closed toed shoes. Sandals or “Flip Flop” style shoes are not allowed.

4.3. Selection

Selection of personal protective equipment (PPE) should be based on assessment of the hazards of the job sites and the hazards the employees are likely to encounter. PPE should be used in conjunction with engineering controls, guards and good work practices.

Safety glasses (ANSI Z87) with side shields, hard hats and sturdy work boots are the required minimum PPE for all projects.

PPE should not be altered, modified or abused in any manner which affects the intended protection features as designed by the manufacturer are. PPE should be of the type and size, affording optimum protection and comfort for the user.

PPE should be worn properly and maintained in good repair, relating to its physical appearance and/or sanitary condition.

PPE that is damaged or shows signs of wear, jeopardizing the protection afforded by the equipment, should be removed from service and repaired and/or replaced.

Employee owned PPE is not allowed. Any required PPE should be provided at no cost to the employee by Haskell Corporation.

4.4. Care of PPE

All Personal Protective equipment, must be provided, used, and maintained in a sanitary and reliable condition.

4.5. Eye and Face Protection

Eye and face protection equipment of approved design should be worn when engaged in all operations on Haskell projects including fabrication shops and while performing any task unless the eye protection causes a hazard. In such instances, alternate means of eye and face protection should be selected. Eye protection is not required while performing the normal activities in project site or corporate offices, or while in a completely enclosed vehicle or piece of equipment. If the purpose of being in the vehicle or equipment is to perform maintenance tasks, approved eye protection must be worn. Face shields, goggles and similar equipment must be of approved design and construction according to ANSI Standard Z87.1 – 1989 and marked as approved.

Dark lenses are only permitted in outside areas during daylight. They are not permitted at night or in any poorly lit areas.

Employees who wear prescription glasses and are required to wear approved eye protection should comply with the following;

- Prescription safety glasses should be equipped with side shields and will be marked with Z87-1 (usually marked on the temple bar).
- Mono-goggles or safety glasses can be worn over prescription glasses, providing the device does not disturb the adjustment of the prescription lenses.

Eye/face protection should be worn properly and in good condition. Damaged eye/face protection equipment should be replaced.

Nonflammable welding hoods with lift-up or stationary lenses, providing appropriate shade of filtered protection against ultra violet light should be worn while welding. Approved safety glasses should be worn under welding hoods, providing additional protection against eye injury.

While grinding and cutting with abrasive saws, safety glasses in conjunction with a full face shield should be worn.

Sufficient cleaning stations should be available for cleaning safety glass lenses.

Where exposure to eye injury through contact with chemicals exists, chemical resistant goggles should be worn. Adequate eyewash/shower stations should be available for immediate use.

4.6. Head Protection

Head protection should be worn on all construction projects as part of the minimum required PPE in which there is the possibility of injury from impact, falling or flying objects, or from electrical shock and burns.

Hard hats must be of approved design in accordance with ANSI Z89.1 and marked as approved.

Hard hats should be kept in good repair and in good sanitary condition. Worn or damaged liners should be replaced, as needed. All Haskell Corporation craft personnel should wear ORANGE Hard Hats

Cleaning/sanitizing should be done using warm soapy water or solutions approved by the manufacturer. Solvents, which are not approved, may seriously deteriorate the structural integrity of the shell, thereby reducing afforded protection.

4.7. Hand Protection

The company should supply and employees are required to wear appropriate hand protection when exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes. Gloves should be selected according to the specific work performed.

Hand protection (gloves) should not be worn where their use may create a greater hazard (i.e., exposure to rotating equipment). Hand protection should be fitted properly and be kept in good condition.

All personnel engaged in welding and burning must wear approved leather gloves.

4.8. Foot Protection

Minimum foot protection in all construction areas is sturdy, hard-soled leather work boot, covering the ankle. Employees working on particular customers projects may be required to wear ANSI Z41.1 safety Shoes. Metatarsal guards may also be required.

All footwear worn on projects should be in good condition.

4.9. Respiratory Protection

Refer to the Respiratory Protection section this safety manual for all requirements meeting State and Federal respiratory standards, 29 CFR 1910.134 and WAC296-62-071.

4.10. Hearing Protection

Whenever employees are exposed to noise levels that exceed the OSHA permissible noise exposure limits as outlined below, hearing protection devices should be provided.

Duration per Day, Hours	Sound Level, Decibels
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105

A hearing protection program has been developed to eliminate hearing loss due to the occupational exposures to noise and ensure the safest possible working environment for our employees. This program applies to all employees of the company. Areas measured with sound levels that are continuous or intermittent steady state noise levels that are greater than or equal to 85 dBA (decibels), or where peak sound levels for impact or impulse noise is greater than 140 dBA, constitute high noise areas. Personnel entering posted noise areas must wear hearing protection at all times

Working over or adjacent to water

When an employee is employed under conditions which expose them to a risk of drowning, they should wear a U.S. Coast Guard approved life saving device, unless it can be shown that conditions, such as shouldow water, are such that flotation would not be achieved.

Prior to and after each use, the buoyant life saving device should be inspected for defects which would alter their strength or buoyancy. Defective units should not be used.

Ring buoys with at least ninety feet of line should be provided and readily available for emergency rescue operations. Distance between ring buoys should not exceed two hundred feet.

At least one lifesaving skiff should be immediately available at locations where employees are working over or adjacent to water. Each skiff, or skiffs, should:

(a) Be suitable for conditions where used.

(b) Be equipped with oar locks securely attached to gunwales, oars, one boat hook, and one cork ring buoy with fifty feet of suitable line attached.

Whenever boats or skiffs cannot be used, due to swift currents, life lines close to the water surface should be provided and, wherever practicable, a line should be stretched across the stream with tag lines.

Where workers are transported by boat or barge, only such number of persons should be carried that can be safely accommodated on fixed seats. Capacity showing number of persons should be plainly marked on vessel.

All workers should be provided with a U.S. Coast Guard approved buoyant life saving device while transported in open boats and/or barges, and where deemed necessary by the department, workers should wear same while in transport.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

POWERED INDUSTRIAL TRUCKS (FORKLIFTS)

1.0 Purpose

To provide safety requirements relating to fire protection, design, maintenance and use of powered industrial lift trucks (forklifts).

2.0 Scope

This policy applies to all Powered Industrial Trucks (PIT/Forklifts) owned, leased, or operated by Haskell Corporation employees.

3.0 Definitions

- **Powered Industrial Truck:** means a mobile, power-propelled truck used to carry, push, pull, lift, stack or tier materials.
- **Forklift**: means an industrial vehicle with a power-operated pronged platform that can be raised and lowered for insertion under a load to be lifted and moved. Also refers directly to any one of eleven different classifications of powered industrial trucks as defined by OSHA.

For the purposes of this policy, Powered Industrial Trucks and Forklifts are synonymous by definition.

4.0 Procedures

It is the policy of Haskell Corporation to ensure that only qualified personnel operate forklifts and that all forklifts are operated and maintained in accordance with current regulations.

4.1. Responsibilities

Supervisors shall ensure that powered industrial trucks are operated by qualified personnel in a safe manner and are maintained in a safe operating condition. This includes the performance of required inspections.

Operators should perform a daily inspection of any powered industrial truck in their use and the inspection should remain with the truck for the duration of that day. The inspection sheet should be turned into the jobsite office and kept on file.

The Jobsite Supervisor or their designee shall assure that all required maintenance is performed and qualified personnel perform repairs.

The Jobsite Supervisor may act as the competent person if they are qualified or may designate a competent person to certify a trained and experienced operator as set forth in the qualification part of this section.

4.2. Training & Qualifications

Avoid duplicative training. A designated competent person from the job site shall administer to trained and experienced forklift operators a written examination. Upon completion of the written examination with a passing score of 70%, the competent person then shall have the employee demonstrate the requirements of the forklift performance evaluation to demonstrate their ability to drive the forklift safely.

Employees are required to be trained and certified prior to operating each specific type of equipment. All trainers must have the knowledge and ability to teach and evaluate operators. Reevaluation of each operator's performance is required at least once every three (3) years. Mandatory refresher training should be provided when unsafe operations are observed, after an accident, if operation a different vehicle type, changes in conditions, etc.

Trainees may operate a powered industrial truck only:

Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence; and

Where such operation does not endanger the trainee or other employees.

Training should consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

All operator training and evaluation should be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

Powered industrial truck operators shall receive initial training in the following topics, except in topics which are not applicable to safe operation of the truck on the affected project.

Forklift-related topics:

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
- Differences between the truck and the automobile;
- Truck controls and instrumentation: where they are located, what they do, and how they work;
- Counter weight and counter balance;
- Load evaluation and center of gravity;
- Engine or motor operation;

- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaptation, operation, and use limitations;
- Vehicle capacity;
- Vehicle stability;
- Any vehicle inspection and maintenance that the operator will be required to perform;
- Refueling and/or charging and recharging of batteries;
- Operating limitations;
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

Only employees that have a valid, current driver's license may be permitted to drive any type of mobile equipment.

Any employee with a current Haskell Corporation mobile equipment card transferred from another jobsite should have a site specific orientation/evaluation to familiarize the employee with any hazards or unique characteristics of the jobsite and any differences in the type of equipment from those that they had been previously evaluated on.

4.3. Procedure

Powered industrial trucks, including attachments, shall be designed for their intended use.

Powered industrial trucks shall bear a label or similar identification, indicating type of truck, and load capacity. Such identification shall be conspicuously located and legible.

Powered industrial trucks shall not be altered or modified.

Powered industrial trucks found to be defective shall be reported to the Supervisor. Those affecting safe operation of the equipment warrant tagging and immediate removal of the forklift from service.

The operator shall be the only person permitted to ride on the forklift, unless the manufacturer provides additional seating.

Personnel shall not ride on the forks or the load.

Personnel shall not walk or stand under the elevated forks of the truck. Nor shall any person walk or stand in front of any forklift supported load while that person is also positioned in front of another object that presents a pinch hazard.

Powered industrial trucks shall not be left unattended while the engine is running. The carriage of fixed mast forklifts and the boom of variable reach forklifts shall be lowered to the lowest possible position, the engine turned off, and brakes set prior to the operator leaving the equipment.

Unnatended is defined as a PIT that is more than 25 feet from the operator, or is out of view of the operator, regardless of distance.

4.4. Load Management

Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads, which cannot be centered.

Loads shall be kept as low to the ground as possible during transit.

The load backrest shall be used to prevent the load from falling backwards.

Only loads within the rated capacity of the truck shall be handled.

4.5. Safety Devices

Powered industrial trucks shall be equipped with falling-object-protective-structure (FOPS) with suitable shielding (overhead) to protect the operator from falling objects. Shielding may not necessarily protect the operator from a falling capacity load.

Powered industrial trucks should be equipped with a backup alarm which automatically activates while operating in reverse.

Lights should be maintained in an operable condition.

Powered industrial trucks should have an operable horn.

Seat belts shall be worn at all times by the operator.

Trailers must be chocked and secured.

4.6. Travel Management

Traffic rules shall be followed at all times.

Powered industrial trucks shall be properly controlled at all times. Horseplay, careless or reckless operation of a powered industrial truck shall not be permitted.

Cross aisles, blind spots and corners shall be approached cautiously. The operator shall slow down and sound the horn.

Pedestrians shall be given the right of way. When following pedestrians, a safe distance shall be maintained.

Loads that obstruct the operator’s vision shall be transported backwards.

Grades shall be ascended/descended slowly. Steep grades (10% or more) shall be descended with the load upgrade.

Loads shall be kept as close to the ground as possible with forks tilted back.

Dock boards and bridge plates shall be properly secured prior to driving onto them. Floor coverings such as plate or other material shall be capable of supporting the entire combined weight of the forklift and the load. Such coverings shall be secured from displacement.

Powered industrial trucks should cross railroad tracks diagonally whenever possible.

Trucks (highway), trailers and railroad cars should have their brakes set and wheels chocked while being loaded and unloaded.

4.7. Fire Protection/Prevention

Fuel storage areas for fuel shall be controlled in accordance with OSHA / DOSH requirements.

The engine shall be turned off and allowed to cool prior to refueling.

Smoking, open flames or other ignition sources shall be restricted from fueling areas.

Spillage shall be cleaned up and properly disposed of prior to restarting the equipment. This includes on the engine or other parts of the equipment.

4.8. Attached Personnel Platforms

When using forklifts as elevated work platforms, a platform or structure built specifically for hoisting persons may be used if the following requirements are complied with:

The structure must be securely attached to the forks and must have standard guardrails and toe boards installed on all sides and be marked with the rated capacity of the platform.

The hydraulic system must be so designed that the lift mechanism will not drop faster than 135 feet per minute (pressure holding valves) in the event of a failure in any part of the system. Forklifts used for elevated work platforms must be identified as being designed for that purpose.

A safety strap must be installed or the control lever must be locked to prevent the boom from tilting.

An operator must be in control of the forklift at all times while workers are in the platform.

A means shall be provided where personnel on the platform can shut off power to the truck.

Except when inching or maneuvering at a very low speed, the forklift must not be moved from point to point while workers are in the platform.

Personnel shall wear a full body harness while using the platform. Lanyards shall be secured to the handrail or other provided anchorage point. Anchorage to points outside the platform shall not be permitted.

The use of ladders, planking, or scaffold within the platform to gain additional height, shall not be permitted.

4.9. Maintenance and Inspection

An effective maintenance program shall be instituted to detect and initiate proper corrective action(s) assuring the safe operating condition of powered industrial forklifts.

Prior to use, the operator shall perform a general inspection to identify obvious deficiencies. Deficiencies shall be reported to the supervisor. Deficiencies which present a serious injury potential or may cause considerable damage to the equipment or materials through equipment failure shall warrant immediate corrective action. In such a case, the forklift shall be danger tagged noting the problem, and removed from service.

Only qualified personnel shall make repairs to powered industrial trucks. Repairs shall be made in accordance with the manufacturer's recommendations.

Powered industrial trucks shall be maintained in a safe operating condition with a daily inspection performed prior to being placed in service.

5.0 Regulations

- Federal 29CFR
- Washington WAC 296-863-200
- California Title-8 3657

PRESSURE TESTING

1.0 Purpose

This document focuses on safe work practices designed to help prevent worker injury during hydrostatic and pneumatic testing of non-cast iron metal piping systems.

2.0 Scope

This procedure applies to the pressure testing of standard metal piping systems, ***excluding cast iron systems***. It does not apply to:

- Cast iron piping systems;
- Fiberglass piping systems;
- Plastic piping systems;
- PVC piping systems; or
- CPVC piping systems.

3.0 Procedure

Safely pressure testing piping systems can be challenging at times. However, much of the time the procedures are routine and can be accomplished with minimal risk to workers. The keys to safe pressure testing are knowing the potential hazards and understanding how to eliminate them, or at least how to minimize them as much as possible.
Hydrostatic testing is the preferred method of testing because it generates considerably less stored energy and thus involves less risk to workers. In this type of testing, a liquid, usually water, is pumped into the system before it is pressurized with air or gas. Water can't be compressed like the air or gas used by itself for pneumatic testing, so considerably less stored energy is generated. While there are still hazards associated with hydrostatic testing, Haskell recommends the use of hydrostatic testing over pneumatic testing whenever possible. At times, hydrostatic testing may not be acceptable for the following reasons:

- The owner requires/specifies that the system be tested pneumatically;
- The building is complete and can't be subjected to the release of a test medium.
- The piping system is designed in such a way that it can't be filled with water or another liquid test medium; and
- The piping system will be used for a specific type of service that can't accept traces of a liquid test medium, such as high purity piping systems for pharmaceuticals or food.
- ***Pneumatic testing*** is more dangerous for workers and should be performed only when hydrostatic testing isn't acceptable for one or more of the reasons above. Pneumatic testing generates potentially dangerous stored energy because the air or gases are easily compressed

when used in the systems without liquid. To get a feel for how potentially hazardous pneumatic testing can be, take a look at the following comparisons between the stored energy in piping systems, and the equivalent stored energy in Trinitrotoluene (TNT), an explosive that is the standard measure of strength for bombs.

- 500 feet of one inch pipe at 150 psi is equal to 1.6 ounces of TNT
- 500 feet of two inch pipe at 150 psi is equal to 8 ounces of TNT
- 500 feet of six inch pipe at 150 psi is equal to 5 pounds of TNT

Haskell Corporation recommends the use of pneumatic testing only as a last resort.

3.1. Safe Pressure Testing

Most of the hazards associated with pressure testing come from the sudden, unintended release of stored energy. The risk of injury from a failing joint, connection, gauge, valve, fitting or another component increases during the testing process, especially during pneumatic testing. Safe work practices are needed for all types of pressure testing in order to protect the workers performing the tests.

3.2. Pressure Testing Hazards

- Pressure testing hazards include:
- Flying objects such as valves, flanges, gauges, and fittings;
- Flying shrapnel such as small pieces of pipe, pipe fittings, or other system components that shatter into parts from the pressure;
- Oxygen displacement from an inert gas used for testing; and
- Flooding in areas where energized electrical sources are present.

3.3. Injuries from Pressure Testing

Most, but not all, injuries from improper pressure testing are inflicted by flying objects. Some of the more obvious pressure testing injuries include:

- Puncture wounds;
- Eye damage;
- Lacerations;
- Broken bones;
- Contusions;
- Concussions; and
- Internal injuries.
- Less obvious pressure testing injuries include:
- Asphyxiation from the unexpected release and accumulation of inert testing gases such as nitrogen or argon, especially in confined spaces or low lying areas; and
- Electrocutions from flooding in areas where energized electrical sources come into contact with a conductive liquid (usually water).

Workers can protect themselves from all of these injuries when they are provided with an appropriate Standard Operating Procedure (SOP), have the proper training, including safe work practices, and carefully implement the

safe work practices in conjunction with the SOP. HASKELL recommends that each project establish a pre-test safety plan for each specific pressure testing application. All workers who will be involved in a pressure test should be part of the pre-test safety planning process for that particular application.

3.4. Common Causes of Pressure Testing Failures

Some of the most common causes of piping system failures during pressure testing operations include:

- Over pressurizing a system;
- Inadequate/improper pressure testing equipment;
- Poor system/component design;
- Operator error;
- Inadequate repairs/modifications to a system;
- Failure to properly isolate parts being tested from other parts of a system; and
- Failure to properly isolate equipment from the piping system being tested.

3.5. General Pressure Testing Safety

Now that we've identified seven common causes of piping system failures that can occur during pressure testing, let's look at each of them individually to determine how best to address them.

3.5.1. Over Pressurizing a System

To avoid over pressurizing a system the *test pressure* has to be established. The engineer or other qualified person who will make that determination needs to know the *design pressures* for each component in the piping system such as gauges, valves, fittings, etc. that will be included in the test. , Design pressures for components in the system that will be isolated from the test are not considered in the calculation. Design pressures and other vital specifications, such as testing temperatures (certain types of metal become brittle when they get cold) are provided by the manufacturers of the pipe and the other system components. Once the information is obtained, formulas are used to determine the test pressure.

- Determine the test pressure and time.
- Install a calibrated pressure relief valve set to the appropriate release pressure for all tests over 100 psi when pneumatic testing.
- Increase the pressure gradually according to the applicable SOP and ASME standard.
- Never exceed the test pressure.

3.5.2. Inadequate/Improper Pressure Testing Equipment

Pressure testing equipment includes items such as gauges, pumps, cylinders, hoses, connections, etc. Test equipment is considered inadequate if it is of poor quality, not designed for the maximum pressure that it will endure, not properly calibrated, and/or not working properly.

Use only test equipment that is designed and built by reputable manufacturers.

Use the most current/accurate information provided by the manufacturer to ensure that the equipment is designed for your specific pressure testing application.

Ensure that the test gauges are calibrated. Refer to the calibration stickers to ensure that the gauges have been professionally calibrated within the past 12 months.

Check each calibrated gauge just prior to installation to ensure that it is registering zero. If it is not at zero, it is damaged and must be replaced with a properly working calibrated gauge before proceeding with the test.

Test pressure should register on the gauges as close to the 12 o'clock position as possible. For example, if the test pressure is determined to be 100 psi, select a 200 psi pressure gauge. The test pressure (100 psi) should be at the top of each gauge in the 12 o'clock position.

3.5.3. Poor System/Component Design

A system is improperly designed if any single component is inadequate for the application. When any part of the system, such as a fitting, valve, gauge, flange, adaptor, hose connection or flex connector, is not designed to endure the anticipated test pressure, failure will occur.

Verify proper system design prior to installation. Before performing a pressure test on an unfamiliar system, verify that the engineer or other qualified person has established the original design rating from original data reports or new calculations based on sizes, wall thicknesses, etc.

3.5.4. Operator Error

Operator error usually occurs when worker(s) feel rushed or otherwise become distracted. In those instances, workers may fail to follow the established SOP and/or equipment or material manufacturers' guidelines.

Use the applicable SOP and ASME standard to prepare a pre-test safety plan.

Include all affected workers in the pre-test safety planning process.

Ensure that all affected workers receive the proper training, tools, materials and supervision needed to safely perform the test.

3.5.5. Inadequate Repairs/Modifications to a System

Inadequate repairs or modifications to systems can lead to problems. Use of improper fittings, misalignments, rolled or cut gaskets, etc. result in inadequate repairs or modifications, and cause pressure testing failures.

Carefully inspect all parts of the piping system that will be included in the test before beginning. Pay especially close attention to joints and connections.

Follow the applicable SOP and ASME standard for the gradual increases in testing pressure.

3.5.6. Failure to Properly Isolate the Parts of the System Being Tested from Other Parts of the System –

Failure to isolate one or more parts of a system that are not part of the test can result in system failure. For example, failure to isolate a relief valve that isn't designed for the test pressure will activate the valve and unexpectedly release the test medium into the environment under pressure. Even worse, failure to isolate a gauge, meter, or some other component that isn't designed to endure the test pressure can cause it to shatter under pressure creating high-speed flying objects.

Review the pre-test safety plan, including the piping system drawings, just before starting the testing process.

Carefully follow the appropriate safe pressure testing procedures contained in your project's established SOP for the specific type of test to be performed and the applicable ASME standard.

Establish and use a checklist to ensure that you don't inadvertently omit an important part of the isolation process.

Make sure the checklist includes isolating/blocking parts of the system that are not to be included in the test.

3.5.7. Failure to Properly Isolate Equipment from the Piping System Being Tested

Failure to isolate equipment from the system could result in injury or damaged equipment. When equipment arrives for installation it generally has already been tested. And, equipment typically has a lower design pressure than that of the piping system.

Carefully follow the appropriate safe pressure testing procedures contained in your project's established SOP for the specific type of test to be performed and the applicable ASME standard.

Establish and use a checklist to ensure that you don't inadvertently omit an important part of the isolation process.

Make sure that isolating/blocking the equipment is included on the checklist.

3.6. Safe Work Practices for Hydrostatic Testing

3.6.1. Standard Operating Procedures (SOP)

Establish an SOP for each of your specific hydrostatic testing applications based on the most current/applicable ASME standard and this document's safety guidelines.

Use this safe work practices section and the applicable ASME standard to develop your project's SOP for each specific pressure testing application.

3.6.2. Checklist

Using your SOP for the specific hydrostatic testing application, develop a checklist to help affected workers perform the test safely.

See Appendix B for a sample hydrostatic pressure test checklist.

3.6.3. Pre-Test Safety Plan

Develop a pre-test safety plan using the applicable SOP and corresponding checklist.

Include all affected workers, companies and owners in the pre-test safety planning process.

Identify the potential hazards and the protective measures affected workers will use to protect themselves from those hazards.

See Appendix A for guidance on pre-test safety plans.

3.6.4. Worker Training

Only qualified Journeyman crafts people should perform hydrostatic test procedures for Haskell Corporation.

Ensure that the affected workers understand the potential hazards and how they are to protect themselves from those hazards.

3.6.5. Pre-Test Safety Briefing

Just prior to performing the hydrostatic test, conduct a pre-test safety briefing. Review the pre-test safety plan.Ensure that affected workers fully understand the process, the potential hazards and the protective measures.

Ensure that affected workers have the proper equipment, materials and personal protective equipment they need to safely perform the hydrostatic test.

Establish the communication system (two-way radios, cell phones, etc.) that will be used for affected workers to communicate with each other during the test.

Establish an emergency response plan including emergency shutdown procedures, and provide affected workers with emergency contact information/telephone numbers.

3.6.6. Walk Down

Carefully perform a walk down inspection of the system. Take the checklist with you so that you don’t inadvertently omit critical tasks. Pay close attention to detail as you perform the walk down.

Identify any adjacent equipment that could be affected by a failure and isolate or otherwise protect the equipment.

Ensure that the system has been completed according to the drawings and that no ends of the piping system are left open.

Ensure that the system is vented at all of its high points to bleed out air from the system while it is being filled with the test medium.

Ensure that all joints and connections are exposed for inspection/evaluation. Remove insulation if necessary.

Look for damaged components, misaligned segments and anything else that is out of place.

Ensure that all parts of the system that are not part of the test are properly isolated from the part of the system to be tested.

Ensure that all necessary lockout/tagout procedures have been completed according to the SOP.

3.7. Final Preparation

- Carefully complete final preparations using the checklist to ensure that nothing critical is omitted.
- Make component replacements or repairs, if necessary, before proceeding.
- Once the air pockets are bled off from the system, close off and secure/seal all vents.
- Verify the test pressure and the design pressure from the system engineer or other qualified person.
- Verify that the test gauges are calibrated. Refer to the calibration sticker to ensure that the gauges have been professionally calibrated within the past 12 months.
- Check the calibrated gauges just prior to installation to ensure that they are registering zero. If they are not registering zero, they may have been dropped and must be replaced immediately.
- Make sure test pressure registers on the gauges as close to the 12 o'clock position as possible. For example, if the test pressure is determined to be 100 psi, select a 200 psi pressure gauge. The test pressure (100 psi) should be at the top of the gauges in the 12 o'clock position.
- Verify that the metal temperature at test time is satisfactory.
- Barricade the test area with red danger tape to keep non-essential personnel out.
- Post warning signs to keep non-essential personnel at a safe distance.
- Ensure that the test equipment is securely connected to the system.
- Use two test gauges, one at the pressure source and one at the highest or furthest point from the pressure source.
- Verify that all non-essential personnel are clear from the area.
- Inform all affected personnel that the test is about to start.

3.8. Personal Protective Equipment

Personal protective equipment is critical in case there is a failure in the piping system during the testing operation.

Ensure that all affected workers are wearing a hardhat, safety glasses and gloves when pressure testing any piping system. Require the use of face shields and/or hearing protection in addition to the other protective equipment when appropriate.

3.9. Testing

Continue with the checklist to ensure that you don't omit any critical tasks. Remember to verify the maximum allowable pressure for the system and pay close attention to the actual pressure shown on the test gauges.

Apply pressure gradually according the applicable SOP.

Never exceed the maximum allowable working pressure of any individual component in the system. Be sure to follow the recommended test pressures cited in the applicable ASME standard. For example, ASME B31.1– 2012 Power Piping states that the hydrostatic test pressure should be not less than 1.5 times the design pressure. Make certain that you have the *most current version* of the correct ASME standard for your specific application and follow its recommendations carefully.

Maintain the hydrostatic test pressure at the recommended level above the design pressure for at least 10 minutes before reducing it to the design pressure. For example, ASME B31.1 – 2012 Power Piping states that the hydrostatic pressure should be maintained at 1.5 times the design pressure (minimum). Once reduced to design pressure, maintain it for the length of time it takes to carefully inspect/evaluate the system for leaks, or according to the customer's specifications.

Carefully inspect all joints and connections for signs of leaking.

3.10. Post Test

- Carefully follow the SOP to safely, gradually release the pressure from the system and collect the waste liquid test medium when required.
- Release pressure before attempting to repair any leaks. *Never* attempt to repair leaks while the system is under pressure.
- Drain the system.
- If the facility has requirements regarding the collection and/or disposal of the liquid test medium, be sure to follow them carefully.
- Repair any leaks that occur.
- Retest the piping system if necessary.

4.0 Safe Work Practices for Pneumatic Testing

4.1. Standard Operating Procedures (SOP)

Establish an SOP for each of your specific pneumatic testing applications based on the most current/applicable ASME standard and this document's safety guidelines.

Develop a pneumatic testing permit/permit system as part of each pneumatic testing application SOP.

Use this safe work practices section and the applicable ASME standard to develop your project's SOP for each specific pressure testing application.

4.2. Checklist

Using the SOP for the specific pneumatic testing application develop a checklist to help affected workers perform the test safely.

See Appendix C for a sample pneumatic pressure test checklist.

4.3. Pre-Test Safety Plan

- Develop a pre-test safety plan using the applicable SOP and corresponding checklist.
- Include all affected workers, companies and owners in the pre-test safety planning process.
- Identify the potential hazards and the protective measures affected workers will use to protect themselves from those hazards.

See Appendix A for guidance on pre-test safety plans.

4.4. Permit and Approval to Proceed

Complete the permit and get it approved and signed by the appropriate supervisor.

See Appendix D for a sample pneumatic pressure test permit.

4.5. Worker Training

Train all affected workers on the pneumatic test process that will be used for the specific application.

Use the applicable SOP, the corresponding checklist and the permit as training resources.

Ensure that the affected workers understand the potential hazards and how they are to protect themselves from those hazards.

4.6. Pre-Test Safety Briefing

- Just prior to performing the pneumatic test, conduct a pre-test safety briefing.
- Review the pre-test safety plan.
- Ensure that affected workers fully understand the process, the potential hazards and the protective measures.
- Ensure that affected workers have the proper equipment, materials and personal protective equipment they need to safely perform the pneumatic test.
- Establish the communication system (two-way radios, cell phones, etc.) that will be used for affected workers to communicate with each other during the test.
- Establish an emergency response plan including emergency shutdown procedures, and provide affected workers with emergency contact information/telephone numbers.

4.7. Walk Down

Carefully perform a walk down inspection of the system. Take the checklist with you so that you don't inadvertently omit critical tasks. Pay close attention to detail as you perform the walk down.

- Identify any adjacent equipment that could be affected by a failure and isolate or otherwise protect the equipment.
- Ensure that the system has been completed according to the drawings and that no ends of the piping system are left open.
- Ensure that all joints and connections are exposed for inspection/evaluation. Remove insulation if necessary.
- Look for damaged components, misaligned segments and anything else that is out of place.
- Ensure that all parts of the system that are not part of the test are properly isolated from the part of the system to be tested.
- Ensure that all necessary lockout/tagout procedures have been completed according to the SOP.

4.8. Final Preparation

Carefully complete final preparations using the checklist to ensure that nothing critical is omitted.

- Make component replacements or repairs, if necessary, before proceeding.
- Verify the test pressure and the design pressure from the system engineer or other qualified person.
- Verify that the test medium is non-flammable and non-toxic such as air, nitrogen or argon.
- Verify that the test gauges are calibrated. Refer to the calibration stickers to ensure that the gauges have been professionally calibrated within the past 12 months.
- Check the calibrated gauges just prior to installation to ensure that they are registering zero. If they are not registering zero, they may have been dropped and must be replaced immediately.
- Make sure test pressure registers on the gauges as close to the 12 o'clock position as possible. For example, if the test pressure is determined to be 100 psi, select a 200 psi pressure gauge. The test pressure (100 psi) should be at the top of the gauges in the 12 o'clock position.
- Verify that the metal temperature at test time is satisfactory.
- Barricade the test area with red danger tape to keep non-essential personnel out.
- Post warning signs to keep non-essential personnel at a safe distance.
- Where permitted/appropriate, install a pressure relief valve set to release slightly over the test pressure as determined by the engineer or other qualified person.
- Ensure that the test equipment is securely connected to the system.
- Use two test gauges, one at the pressure source and one at the highest or furthest point from the pressure source.
- Ensure that both test gauges are connected to the system with adaptors made of the same material.
- Verify that all non-essential personnel are clear from the area.
- Inform all affected personnel that the test is about to start.

4.9. Personal Protective Equipment

Personal protective equipment is critical in case there is a failure in the piping system during the testing operation.

Ensure that all affected workers are wearing a hardhat, safety glasses and gloves when pressure testing any piping system. Require the use of face shields and/or hearing protection in addition to the other protective equipment when appropriate.

4.10. Testing

Continue with the checklist to ensure that you don't omit any critical tasks. Remember to verify the maximum allowable pressure for the system and pay close attention to the actual pressure shown on the test gauges.

- Apply pressure gradually according the applicable SOP and ASME standard.
- Never exceed the recommended pressure above the design pressure at any time throughout the test, but never go below the recommend level under the design pressure. For example, in ASME B31.1 – 2012 Power Piping the recommendation is to never exceed 1.5 times the design pressure, and never test below 1.2 times the design pressure. Test at the lowest possible pressure recommend by the applicable ASME standard. For example, when ASME B31.1 – 2012 is the applicable standard, test at 1.2 times the design pressure whenever possible.
- Gradually increase the pressure to no more than 1/2 the design pressure.
- Continue increasing the pressure in increments of approximately 1/10 the test pressure and maintain it for at least 10 minutes. Repeat the process until the required test pressure has been achieved and maintained for at least 10 minutes.
- Next, reduce the pressure to the design pressure or 100 psig, whichever is lower.
- Maintain the pressure for the length of time it takes to carefully evaluate the system for leaks, or according the customer's specifications.
- Carefully inspect all joints and connections for signs of leaking. Use a liquid leak detector to identify any leaks.

4.11. Post Test

Carefully follow the SOP to safely, gradually bleed the stored energy from the system.

- Release pressure before attempting to repair any leaks. *Never* attempt to repair leaks while the system is under pressure.
- Repair any leaks that occur.
- Retest the piping system if necessary.

Appendix A – Pre-Test Safety Planning Guidance

Perform a hazard analysis before starting any pressure test. Be sure the analysis is performed as close as possible to the start of the test. And, be sure to:

- Identify the worker who will be responsible for supervising the test;
- Identify each worker who will be performing the test;
- Inform each worker involved in the test about the hazard analysis; and
- Require each affected worker to participate in the hazard analysis.

1.0 Supervisor's Responsibilities

The designated supervisor should be responsible for ensuring that:

- Each worker who will be performing the test has been properly trained to safely perform the work; and
- Each worker performing the test has received the necessary tools and equipment, including the safety equipment identified in the hazard analysis.

The steps for performing an effective hazard analysis are as follows.

1. Break the pressure test down into specific steps (refer to the applicable SOP).
2. Identify and record the hazards associated with each step.
3. Determine the best way to safely complete each step.
4. Develop and record safe work procedures for each step.
5. Include each affected worker in the safe work procedures development process.
6. Perform a pre-test briefing just before the test begins. Include the following topics in the pre-test briefing:

- Review each hazard that was identified in the hazard analysis;
- Review each of the established safe work procedures;
- Determine whether any changes to the safe work procedures are needed due to last minute changes in the scope of work or other last minute changes.
- Ensure that all of the necessary personal protective equipment is present.
- Provide each affected worker with a sign-off sheet to indicate that they are familiar with the hazards associated with the test and understand how they are to protect themselves from those hazards. Collect and file the completed sign-off sheets.

Appendix B – Sample Hydrostatic Test Checklist

1.0 Pre-Test:

_____All affected persons informed (Owner, GC/CM, PMs, workers, other trades, suppliers, etc.)

_____Design pressure and test pressure established/provided by Engineer or Qualified Person

_____Applicable SOP/ASME test pressures identified

_____Pre-test safety plan completed/reviewed

_____Affected workers properly trained

_____Affected workers system of communication established

_____All test equipment adequate for required test pressure

_____The range for both test gauges is approximately double the test pressure

_____Test gauges calibrated

Gauge #1 Date:_____

Gauge #2 Date: _____

_____Test gauges certified (where applicable)

Gauge #1 Date: _____

Gauge #2 Date: _____

_____Metal temperature verified/satisfactory

_____Test area barricaded with danger tape to keep non-essential personnel at a safe distance

_____Warning signs posted to keep non-essential personnel at a safe distance

_____Walk down inspection completed

_____System complete

_____Vent valves closed

_____Fill/block valves closed

_____Joints and connections exposed

_____Valves properly configured

_____System parts undamaged/properly aligned

_____Bolted connections torqued according to manufacturer specifications

_____Lockout/tagout completed where applicable

_____Emergency contact information/telephone numbers established/provided

_____Emergency shutdown procedures established/provided

_____Equipment isolated/blocked from the piping system

_____Other parts of the piping system not included in the test removed or isolated

_____Pressure relief valve properly sized and installed in vertical position

2.0 Test:

_____Test equipment securely attached to the system

_____Test pressure re-verified

_____All non-essential personnel removed from area

_____All affected personnel wearing hardhats, safety glasses and gloves

_____All affected personnel wearing face shields and/or hearing protection where appropriate

_____Pressure applied gradually according to the SOP/ASME standard

_____Pressure maintained according to the applicable SOP/ASME standard/customer specifications

_____All joints and connections carefully inspected for leaks

3.0 Post Test:

_____Pressure released before leak repairs are started

_____Stored energy gradually released according to SOP

_____Liquid test medium collected according to SOP

_____Liquid test medium disposed of properly according to SOP

_____Leak repairs made and system retested if necessary

Appendix C – Pneumatic Test Checklist

1.0 Pre-Test:

_____All affected persons informed (Owner, GC/CM, PMs, workers, other trades, suppliers, etc.)

_____Design pressure and test pressure established/provided by Engineer or Qualified Person

_____Applicable SOP/ASME test procedures identified

_____Pre-test safety plan completed/reviewed

_____Affected workers properly trained

_____Affected workers system of communication established

_____Non-flammable/non-toxic gas for test medium

_____Test medium reviewed with affected workers

_____All test equipment adequate for anticipated maximum test pressure

_____The range for both test gauges is approximately double the test pressure

_____Test gauges calibrated

Gauge #1 Date _____

Gauge #2 Date: _____

_____Test gauges certified (where applicable)

Gauge #1 Date: _____

Gauge #2 Date: _____

_____Metal temperature verified/satisfactory

_____Test area barricaded with danger tape to keep non-essential personnel at a safe distance

_____Warning signs posted to keep non-essential personnel at a safe distance

_____Pressure relief valve installed/set to appropriate pressure

_____Walk down inspection completed

_____System complete

_____Vent valves closed

_____Fill/block valves closed

_____Joints and connections exposed

_____Valves properly configured

_____System parts undamaged/properly aligned

_____Bolted connections torqued according to manufacturer specifications

_____Lockout/tagout completed where applicable

_____Emergency contact information/telephone numbers established/provided

_____Emergency shutdown procedures established/provided

_____Equipment isolated/blocked from the piping system

_____Other parts of the piping system not included in the test removed or isolated

_____Pressure relief valve installed in the vertical position

_____Test medium valve is in the closed position before attachment

_____Pressure regulator is fully backed out allowing zero flow

2.0 Test:

_____Test equipment securely attached to the system

_____Test pressure re-verified

_____All non-essential personnel removed from area

_____All affected personnel wearing hardhats, safety glasses, and gloves

_____All affected personnel wearing face shields and/or hearing protection where appropriate

_____Pressure applied gradually according to the applicable SOP/ASME standard

_____Pressure maintained according to the SOP/ASME standard/customer specs

_____All joints and connections carefully inspected for leaks with liquid leak detector

3.0 Post Test:

_____Pressure released before leak repairs are started

_____Stored energy gradually released according to SOP

_____Leak repairs made and system retested if necessary

Appendix D – Pneumatic Test Permit

System to be Tested: _____

Date: _____ Start Time: _____ Finish Time: _____

Notifications:	**Initials:**
_____Owner (when applicable)	_____
_____GC/CM	_____
_____Other Affected Trades	_____
_____Safety Department	_____

Comments:

_____
_____
_____
_____
_____
_____

Pressure Test Supervisor:

_____Applicable SOP Established
_____Maximum Allowable Test Pressure Verified
_____Design Pressure Verified
_____Pre-Test Portion of Checklist Complete

Full Name: _____ Signature: _____

Date:_____

Pressure Test Approvals:

Superintendent: _____ Signature: _____

Date:_____

Safety Manager:_____ Signature:_____

Date: _____

PROCESS SAFETY MANAGEMENT

1.0 Purpose

To establish the essential guidelines for complying with specific OWNER requirements, related to the PSM standard.

2.0 Scope

The provisions apply to all situations where Haskell employees are potentially affected by the PSM standard.

3.0 Definitions

Process Safety Management (PSM): The purpose of Process Safety Management is to prevent or minimize consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals in various process facilities such as refineries, pulp mills, etc.

4.0 Procedures

This section is included for awareness only because Haskell Corporation does not have any direct operations that require compliance with PSM regulations, except for training requirements. Our involvement with PSM is through client companies and our responsibility is to train our personnel based on the hazards identified to us (the contractor) by the host employer in accordance with OSHA 29 CFR 1910.119 and WAC 296-67-029. This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

Haskell Corporation should ensure that all employees, including Sub-contractors working on PSM sites, should comply with the program. Haskell Corporation will respect the confidentiality of trade secret information when the process safety information is released from client.

All employees must respect the confidentiality of trade secret information when the process safety information is released to them.

4.1. Application

This section applies to the following:

- A process which involves a chemical at or above the specified threshold quantities:
- A process which involves a flammable liquid or gas on site in one location, in a quantity of 10,000 pounds (4535.9 kg) or more except for:

- Hydrocarbon fuels used solely for workplace consumption as fuels (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical.
- Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without benefit of chilling or refrigeration.

4.2. Host Employer Responsibilities

For contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process, the Host should comply with 29 CFR 1910.119 by performing the following:

- The Host employer, when selecting a contractor, should obtain and evaluate information regarding the contract employer's safety performance and programs.
- The Host employer will inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process.
- The Host employer will explain to contract employers the applicable provisions of their emergency action plan.
- The Host employer will develop and implement safe work practices to control the entrance, presence and exit of contract employers and contract employees in covered process areas.
- The Host employer periodically evaluates the performance of contract employers in fulfilling their obligations.
- The Host employer will maintain a contract employee injury and illness log related to the contractor's work in process areas.
- The Host employer should issue a hot work permit for hot work operations the fire prevention and protection requirements in 29 CRF 1910.252 (a) have been implemented prior to beginning the hot work operations; it should indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit should be kept on file until completion of the hot work operations.

4.3. Contractor Employer Responsibilities

- Haskell Corporation will assure that each employee is adequately trained in the work practices necessary to safely perform his/her job.
- Haskell Corporation employees should not perform any type of work on or near a covered process without first obtaining an authorization permit from the host employer.
- Haskell Corporation employees should follow safe work practices during operations such as lockout/tagout, confined space entry, opening process equipment or piping.

4.4. Employee Training

Haskell Corporation does not own, operate, or manage any activities involving Process Safety Management. However, we do perform a variety of work activities for specific clients who must comply with 29CFR 1910.119 (PSM), including maintenance and repair work, refinery turnarounds, major renovation, and capital improvement projects, involving or adjacent to covered processes. Thus, we

require that all employees be informed of the following, prior to performing any job functions where such conditions exist:

- The known or potential fire and explosion hazards
- Any Toxic chemical release hazards, related to the job or the process
- The applicable provisions of the emergency action plan
- The location of all related SDS's
- The work practices necessary to safely perform their job. *This will be done in conjunction with training provided through their professional trade unions, the New Hire Orientation, and ongoing training provided on site
- Method of advising the Host employer of any unique hazards presented by the contract employer's work, or any hazards found by the contract employer's work

Documentation that each contract employee has received and understood the training is required. The record should show the identity of the worker, date of training and the method used to verify understanding. All training records will be maintained for the duration of the individual's employment or 1 year, whichever is greatest.

4.5. Reporting of Hazards

Haskell Corporation should advise the facility owner of any unique hazards created by our own work or any hazards found during the course of performing the project.

4.6. Compliance of Safety Rules and Policies

To assure compliance, all project employees should:

- Perform regularly scheduled audits focusing on the safety performance of the employees.
- Cooperate with compliance audits and correct any deficiencies.
- Comply with all requirements stated on the Hot Work Permit issued by the client. No hot work should be performed until a valid hot work permit is obtained from the client facility.

4.7. Incident Investigation

Any incident that does or could have resulted in the catastrophic release of hazardous chemicals should be immediately reported to the client and promptly investigated. The investigation should be completed within 24 hours of knowledge that the incident occurred.

An incident report should follow the investigation and contain the following information:

- Date of the incident
- Date the investigation began
- Factors contributing to the incident
- Corrective measures and/or recommendations to prevent a recurrence

Issues raised from the investigation should be promptly dealt with by project management and communicated to the client and affected employees.

4.8. Management of Change

Any time that work performed by Haskell employees has the potential to change or affect an existing owner's process; the project supervisor will ensure that the potential impact is promptly communicated to the owner/representative.

Similarly, any changes in an owner's process will be communicated by the client/owner to Haskell employees prior to potential exposure to the new hazard.

5.0 Regulations

- Federal 29CFR
- Washington WAC 296-67
- California Title 8, Section 5189

PROJECT SAFETY

1.0 Purpose

To establish minimum requirements for health, safety, and environmental controls at field project locations

2.0 Scope

This policy applies to work performed at field locations that are under the temporary control of Haskell Corporation, including Sub-contractors (where applicable)

This policy does not apply to the Haskell Home Office or Fabrication Shops

3.0 Definitions

Accident: means an undesirable event, which results in bodily injury or property damage

Incident: means an undesirable event, which ***does not*** result in injury or property damage

4.0 Procedures

It is the policy of Haskell Corporation to ensure that all field projects have effective procedures in place to address the specific safety and health needs relevant to that project, for the protection of employees, Sub-contractors, and other personnel.

4.1. Site Specific Plan

Prior to beginning work at a field project, the Project Manager will meet with the Corporate Safety Director to review job safety requirements. This review will include scope of work, schedule, special hazards, and subcontractor scope of work.

Subcontractor submittals to be reviewed include: Safety program, site-specific safety plan, safety performance questionnaire and workers compensation rate sheet (Washington only).

If job is more than 5 days duration or 5 employees or involves special hazards, the project manager and Corporate Safety Manager will jointly prepare a site specific safety plan using the forms provided in Haskell Corporation Safety Manual. For larger, longer duration or especially hazardous jobs, the Corporate Safety Manager will determine whether a more detailed or elaborate site-specific safety plan is necessary.

The completed site-specific work plan for Haskell and its Sub-contractors will be reviewed and approved prior to beginning work. A copy of this plan is to be kept on the job site at all times.

The Haskell Superintendent is responsible for following the requirements of the site-specific safety plan, including monitoring subcontractor compliance.

4.2. Job site Safety Meetings

Documented safety meetings be conducted by foremen for their crews on a weekly basis and reported using a Job site Safety Meeting report form. Subcontractor personnel may either hold their own weekly toolbox safety meetings, or attend those held by Haskell supervision. If separate meetings are held, subcontractor will provide Haskell Superintendent with documentation.

4.3. Job site Inspection

4.3.1. Routine Hazard Inspections

Safety Inspections – A joint documented jobsite HSE audit consisting of at least one manager and one craft member elected by the work force as their representative should be conducted weekly. Corrective action should be implemented within a reasonable time period, when unsafe conditions are noted. The results of the inspection and corrective action taken will be documented and should be reviewed with the crews at the weekly safety meeting.

Supervisors are expected to maintain continuous surveillance of their work areas to identify and correct unsafe work practices and conditions, and implement necessary safeguards for special hazards such as overhead work, crane picks, excavations, ignition sources, and radiation hazards (e.g. radiography).

General controls such as plant layout, facilities and equipment will be considered from a hazard reduction and safety standpoint. Housekeeping will be regularly inspected and corrective action taken as needed. Walking surfaces, traffic flow and illumination should be sufficient to allow safe personnel movement and emergency egress.

Tools and equipment will be inspected and maintained in safe operating condition and repaired as needed. Major equipment will be scheduled for routine preventive maintenance. Machine guarding and lockout/tag out procedures should comply with State and Federal requirements.

Material Handling will be monitored and mechanical methods introduced where needed.

Portable fire extinguishers will be available in all work areas. Welding and other hot work activities should be conducted in areas free of flammable or combustible material or special precautions should be taken. Fire watch should be used where appropriate and should be trained and knowledgeable of their duties. Adequate ventilation including fume removal will be provided.

Emergency procedures should be established and reviewed on a regular basis. Emergency phone numbers should be posted near shop and office telephones. First aid supplies will be adequate and available.

4.3.2. JSA- Job Safety Analysis

Field supervisors should go through a daily safety preview of their work, using the Haskell JSA form. The supervisor/foreman will consider how to complete the work in the safest manner practical. The supervisor must review the completed form with all employees who will perform the work, before work actually begins and following any changes to the hazards/controls during the shift.

Each daily JSA will include the following:

- Date & Time
- Job Location
- Nature of work
- Identified Hazards
- Hazard Controls
- Employee Sign-off

After a review of the JSA, employees are encouraged to offer any input they may have to ensure a safer working environment. They are required to sign the back of the JSA indicating they have discussed the job and all associated hazards, PPE, permits, etc., required to perform the tasks in a safe and productive manner. The finalized JSA will be kept on file, throughout the project and archived for one year.

4.4. Fire Control Measures

Each job site work center/area and unit of mobile equipment in use by Haskell Corporation will be equipped with at least one 10 lb. B-C dry chemical fire extinguisher, for immediate use on small fires. Where indicated, larger equipment may be placed in strategic locations on the site.

4.5. Emergency Procedures

Personnel safety is given top priority, over property or environmental preservation

Unless otherwise required by customer contract, response by Haskell Corporation personnel to an emergency will be limited to sounding the jobsite alarm, or notification of designated, trained emergency response personnel, and prompt evacuation. Any further actions to minimize property or environmental damage will be evaluated by the Superintendent or Project Manager, and will be based on the circumstances, equipment and personnel available.

Fire/Explosion: Personnel on the scene must rapidly evaluate whether to attempt to fight fire with available equipment and personnel or to sound alarm and evacuate immediately.

Toxic Gas Release: Immediately sound alarm. Depending on the nature of the hazard, use appropriate respiratory protection, if available. If Haskell Corporation personnel are in a position to take immediate action to prevent further release without endangering themselves, they should do so. Otherwise evacuate up wind to a safe area until the all clear is given.

Environmental Spill: Drum racks used for storing and dispensing hazardous liquids in quantities greater than 25 gallons, including fuels will be located in a an area providing adequate spill containment. At a

minimum, the area will be contained within a visqueen berm, adequate for containment of the contents of the largest single container.

Significant Spills: (greater than 5 gallons or the EPA reportable quantity, whichever is the lesser) The senior Haskell field supervisor on the scene will notify the Haskell Corporate Safety Manager with the following information:

- The exact location and nature of spill
- Environmental area surrounding spill
- If in or near water: Name of river, lake, stream or body of water
- Approximate amount of material spilled
- Access to area
- The Haskell safety & loss control manager will brief Haskell senior management and report incident to appropriate governmental agencies.

4.6. Reporting Requirements

Superintendents or safety representatives should maintain the following records on site:

- Monthly Accident Summary Report
- Accident investigation reports (FAX copy to Haskell Safety (360) 734-5538 within 24 hrs.)
- Report of Job site Safety Meeting
- Record of Weekly Job Site Safety Audit
- Subcontractor held safety meetings, including attendance rosters.

Superintendent or safety representative will provide an immediate report to the Haskell Safety Manager and Project Manager, for any serious accidents or incidents, requiring either outside response or mandated reporting to governmental agencies, which could potentially result in unfavorable media attention.

4.7. Employee Safety Concerns Reporting Procedures

It is Haskell Corporations intent to have all employees involved in safety. It is requested and Haskell supports and encourages employees to report all incidents or situations which they believe or perceive could cause injury or illness.

Concerns may be reported in any of the following ways:

- Speak to job superintendent
- Weekly safety toolbox meeting
- Completing a Near-Miss Report
- Site Safety Manager
- Safety Director – Ray Pierce – (360) 676-7215

All concerns will be documented, and the superintendent is responsible to report back to the employee any resolution of the concern.

4.8. Stop Work Authority

It is the policy of Haskell Corporation to maintain a safe and secure work environment against any risk or exposure to personal harm, property damage or adverse effects to the environment.

As such, it is the duty and the right of everyone employed and engaged by Haskell Corporation to exercise a STOP WORK policy whenever any employee, members of the public, or the local environment are at risk. Management supports the decision of its employees in the diligent execution of this policy:

- STOP WORK should be applied if any situation arises due to an unsafe action or behavior or omission or non-action of any party involved in the operation, and if such situation were permitted to continue, may potentially lead to the occurrence of an untoward incident;
- Any person regardless of position, seniority or discipline has the right and duty to apply the STOP WORK policy if in his/her opinion or judgment, such activity is deemed to be a potential incident;
- There should be no blame or fault put on any employee call for a STOP WORK order even if, upon investigation, the STOP WORK was deemed unnecessary. The STOP WORK order must be applied in good faith;
- Timing is a critical factor. There should not be any delay in calling for a STOP WORK order if the need arises.

Work that has ceased due to a STOP WORK order, should not be resumed until all safety aspects are cleared to the satisfaction of the employee who initated the STOP WORK order or the employee responsible for the STOP WORK order to be initiated, in the first place.

Forms:

Safety Meeting Attendance Record

JOB SITE/PROJECT NAME:	
DATE:	SUPERVISOR:

SAFETY MEETING AGENDA:

1. Review of any safety inspections conducted since the last safety meeting.
2. Review any new DOSH/OSHA citation(s) to assist in correction of hazards.
3. Share lessons learned from recent accident investigations.
4. Inquire about any unreported injuries, near miss events, or safety concerns

Other Subjects Discussed:

a. _____

b. _____

c. _____

d. _____

ATTENDANCE:

Note: By Initialing this form I am certifying my attendance and that I have properly reported all on the job injuries.

	NAME (Please Print)	Initials		NAME (Please Print)	Initials
1.			11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

RECORDKEEPING

1.0 Purpose

The purpose of this Procedure is to provide the recordkeeping requirements for occupational injuries and illnesses.

2.0 Scope

This Procedure applies to all Haskell Corporation projects and locations

3.0 Responsibilities

It should be the responsibility of the Construction Manager to ensure that the requirements of this Procedure are adhered to.

It should be the responsibility of all supervisors to ensure their employees report all occupational injuries and illnesses at the time of their occurrence.

It should be the responsibility of the Site Safety Manager to implement and ensure the adherence to the requirements of this Procedure and report violations and/or noncompliance issues to project management for immediate corrective action.

It should be the responsibility of all employees to practice safe work habits and report all occupational injuries and illnesses at the time of their occurrence.

4.0 Procedures

4.1. Requirements

4.1.1. Haskell should comply with all occupational injury and illness reporting requirements established by OSHA, state worker's compensation agencies, and the Company's worker's compensation insurance carrier.

4.2. Forms Required for Accidents Resulting in Injury or Illness

4.2.1. First-aid Log

4.2.1.1. When an accident involving an injury or a suspected injury occurs, appropriate and timely medical attention should be secured for those involved. If an accident involves first-aid treatment, an entry should be made on the First Aid Log.

4.3. Incident Investigation Report

4.3.1. The Formal Investigation Form, (described in Incident Investigation,), answering each question in sufficient detail to determine a root cause and contributing causes and assign corrective action should be completed for each incident for which a formal investigation is warranted.

4.4. Report of Injury

4.4.1. A Report of Injury should be completed for every accident where an employee has sustained a recordable injury or illness, has an alleged injury, or has seen a physician as a first-aid case.

4.4.2. The Report of Injury should be distributed as follows:

- Original - Claim's office of the Company's worker's compensation insurance carrier handling the claims for the location of the accident within 48 hours of the incident. The claims officer should forward a copy to the state's designated agency.
- Copy - HSE professional's project file (where it can be reviewed by OSHA)
- Copy - Injured employee's file
- Copy - Corporate HSE Manager within 48 hours of the incident.

4.5. OSHA 300 Log

4.5.1. Haskell should, strictly adhere to 29 CFR 1904 for determining the recordability and recordkeeping of occupational injuries and illnesses.

4.5.2. Within seven (7) calendar days of receiving information that a recordable injury or illness has occurred and entry should be made on the OSHA 300 Log and 301 Incident Report forms.

4.5.3. If questions arise regarding recordability, the project Safety Manager should present the facts of the case to the Corporate Safety Director for a determination.

4.5.4. Any attempt to falsify the records of Haskell should result in disciplinary action, up to and including termination.

4.5.5. At the end of each year a copy of the OSHA 300 and OSHA 300A Logs should be signed by the Corporate Safety Director.

4.5.6. A copy of the annual OSHA summary of injuries and illness should be posted in each establishment in a conspicuous place or places where notices to employees are customarily posted. The posted annual summary should not be altered, defaced or covered by any other material.

4.5.7. The annual OSHA summary of injuries and illness should be posted no later than February 1st of the year following the year covered by the records and the posting should be kept in place until April 30th.

4.6. Request for Medical Opinion and Release to Return to Work

4.6.1. When an employee is sent to a physician, the Haskell Request for Medical Opinion and Release to Return to Work should be sent with the employee. An employee should not be allowed to return to work without a return to work release from the physician.

4.7. Request for access to Medical and/or Exposure Records

4.7.1. When an employee's medical files are requested, the injured worker should sign the Request for Access to Medical and Exposure Records and this document should be maintained on file with the employee's records.

4.8. Establishing an individual injury/worker's compensation file

4.8.1. In order to ensure that records are maintained in a consistent and useful manner, Haskell requires that individual injury/worker's compensation files be established in the following manner.

4.8.1.1. The file label should read:

- Employee Name Date of injury Claim #

All information relating to the injury should be placed in this file.

5.0 Record Retention

5.1. OSHA Records

5.1.1. OSHA 300 Logs, the privacy case lists, the annual summary, and the OSHA 301 Incident Report forms should be retained for a minimum of five (5) years.

5.2. Formal Investigation Report

5.2.1. The original Investigation Report should be filed in the injured person's workers compensation file. This form should be retained for a minimum of 7 years.

5.3. Report of Injury

5.3.1. A copy should be placed in the injured person's workers compensation file, which should be archived for 30 years after the worker leaves employment.

5.4. Physician's Reports

5.4.1. Reports from physicians should be placed in the injured person's workers compensation file, which should be archived for 30 years after the worker leaves employment.

5.5. Physician's Release

5.5.1. When a physician releases a patient to return to work, they should complete a Return to Work Form, indicating if the employee has restrictions or if the employee is being given a full release. If the employee does have restrictions imposed by the physician, then a full release should be obtained when those restrictions are lifted.

5.5.2. The original form, which has been returned from a physician, should be placed in an injured person's permanent workers compensation file, which should be archived for 30 years after the worker leaves employment.

RESPIRATORY PROTECTION

1.0 Purpose

This Respiratory Protection Program was developed to ensure the safest possible working environment for our employees. The purpose of this policy is to establish respiratory protection requirements for the selection, issuance, use, inspection, cleaning, storage and repair of respirators used to control employee exposures to air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays or vapors and oxygen deficient atmospheres.

2.0 Scope

The respiratory protection program covers all employees who may require the use of respiratory protection. Respirators and medical evaluations should be of no cost to the employee. Training will be conducted annually.

The use of respirators is required when occupational exposure levels exceed OSHA Permissible Exposure Limits (PELs) and engineering or administrative exposure controls are not feasible to implement.

The voluntary use of dust masks (filtering face piece respirators) is permissible in atmospheres that are not hazardous. Prior to use of the voluntary respirators (including filtering face pieces), they must be evaluated and approved by the respiratory program administrator to ensure that the respirator use will in Itself not create a hazard. If filtering face piece respirators are used, Haskell should provide the users with the information contained in Appendix D of OSHA Standard 29 CFR 1910.134.

The program is administered by the Haskell Corporate Safety Director or designee who has the knowledge and experience to understand OSHA's respiratory protection standard (29 CFR 1910.134), evaluate respiratory hazards at the facility/project, select appropriate respirators based on facility/project hazards or potential hazard, and train employees on the use of selected respirators.

3.0 Definitions

- **Air Purifying Respirator:** means a respirator in which the ambient air is passed through an air-purifying element that removes the contaminant(s). The air is passed through the air-purifying element by inhaling or pulled through by a blower.
- **Filtering Facepiece (dust mask):** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium, e.g. 3M 8210 Dust/Mist Respirator.
- **High Efficiency Particulate Air Filter (HEPA):** means a filter that removes from the air 99.9% or more of the aerosols having a diameter of 0.03 microns or greater.
- **Immediately Dangerous to Life or Health (IDLH):**-means any condition that poses an immediate threat of irreversible adverse health effects that would interfere with an individual's ability to

escape unaided from an area (e.g., atmospheres with less than 19.5% or greater than 23.5% oxygen and/or atmospheres containing dangerous airborne concentrations of hazardous materials).

- **Permissible Exposure Limit (PEL):** means the maximum acceptable exposure concentration permitted for a particular substance often averaged over a period of 8 hours. The PEL is a defined limit enforced by OSHA.
- **Self -Contained Breathing Apparatus (SCBA):** means an atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.
- **Supplied –Air Respirator (SAR) or Airline Respirator:** means an atmosphere supplying respirator for which the source of breathing air is drawn from a separate, stationary system or an uncontaminated environment.
- **Time Weighted Average (TWA):** means the average concentration of a particular contaminant averaged over a specific time period- usually 8 hours.
- **User Seal Check**: means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

4.0 Procedures

4.1. Respirator Use

Respirators are to be used only it has been determined that engineering control measures are not feasible or during emergency situations with high exposure. Respirators and filter cartridges should be provided which are applicable and suitable for the intended purpose, hazards and atmosphere where they will be used.

4.2. Employee Respirator Training

Each employee required to wear a respirator should receive annual training on the selection, use, maintenance and limitations of the specific respirators to be used for controlling contaminated air. This training should be provided as part of initial and annual respiratory protection training. Retraining of employees should also be performed when the following situations occur:

- A change in the workplace or type of respirator should render the previous training obsolete.
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

Training is done by the Haskell Safety Department before employees wear their respirators and annually thereafter as long as they wear respirators. Our supervisors who wear respirators or supervise employees who do, will also be trained on the same schedule.

Additional training will also be done when an employee uses a different type of respirator or workplace conditions affecting respiratory hazards or respirator use have changed.

Training will cover the following topics:

- Why the respirator is necessary,
- The respirator's capabilities and limitations,
- How improper fit, use or maintenance can make the respirator ineffective,
- How to properly inspect, put on, seal check, use, and remove the respirator,
- How to clean, repair and store the respirator or get it done by someone else,
- How to use a respirator in an emergency situation or when it fails,
- Medical symptoms that may limit or prevent respirator use,
- Respiratory hazards to which employees are potentially exposed during routine and emergency situations,
- Our obligations under the respiratory protection standard 29 CFR 1910.134.

4.3. Responsibilities

4.3.1. Management

- Provide sufficient resources for the successful application of this policy,
- Periodically review and update policy,
- The Safety Manger should assist supervisors and employees in determining if their respiratory protection meets the requirements of this policy,
- The Safety Manager or his designee should be responsible for maintaining respiratory protection records and should be responsible for coordinating respiratory questionnaires and health examinations.

4.3.2. Supervision

- Enforce the content of this policy in accordance with Haskell Corporation guidelines,
- Supervisors should ensure that all employees are trained and fit tested annually,
- Be aware of the company's Respiratory Protection Policy,
- Assist employees with respirator selection.

4.3.3. Employee

- Comply with the guidelines of this policy,
- The employee should use the provided respiratory protection in accordance with instructions and training received in this policy,
- The employee should guard against damage to the respirator,
- Notify tool room attendant of damage prior to use,
- When not in use the respirator should be stored in the bag provided.

4.4. Employee Qualifications for Respirator Use

4.4.1. Medical Evaluation

Each employee, assigned tasks requiring the use of respirators, should complete a respirator use questionnaire and/or receive a respiratory health examination. The respiratory questionnaire should be completed by the employee and reviewed by a professional licensed health care professional to determine that the employee is medically capable of wearing a respirator. If any of the mandatory questions are answered positively, the professional licensed health care professional should seek additional information, discuss the results and/or require a physical examination. All questionnaires and medical evaluations should be confidential.

4.4.2. Fit Testing

Employees wearing respirators with tight-fitting face pieces including Supplied Air Respirators (SARs) and Self-Contained Breathing Apparatus (SCBAs] should be fit tested to ensure that selected respirators achieve a proper face to face piece seal.

Fit testing should be performed before initial use of the selected respirator, whenever respirator size, make, or model is changed, and at least annually thereafter. Fit testing requirements should comply with respiratory protection program requirements.

Every respirator wearer should receive a qualitative (e.g., irritant smoke, saccharin solution or isoamyl acetate banana oil) or quantitative fit tests (Porta-Count® or Dynatech® Fit Testing Instruments) and fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly (user seal check).

4.4.3. Facial Hair

The wearing of face piece respirators requires being clean-shaven, with no facial hair that interferes with the sealing surface of the face piece, or the operation of the inhalation or exhalation valves. All respirator wearers should be clean-shaven

4.4.4. Corrective Lenses

Eyeglasses with temple bars that extend through the sealing surface of a full face piece respirator should not be worn with a full face piece respirator.

4.5. Evaluation of Workplace Respiratory Hazards

The following criteria should be used to determine if respiratory protection is required.

When the SDS sheet of the substance you are working with recommends the use of respiratory protection.

A PPE hazard assessment or Haskell Corporation’s /Client’s past exposure monitoring records indicate respiratory protection is required for a job or location.

4.7. Voluntary Respirator Use

Employees have the right to wear a respirator if they feel it is necessary. However, a medical evaluation, training and a fit test must be performed prior to an employee wearing a respirator. Additionally, employees who voluntarily use any respirator must be provided with Appendix D to Section 1910.134. This is mandatory information for employees using respirators when not required.

4.8. Respirator Selection

The appropriate respirators should be selected from among those approved and certified by NIOSH/MSHA. Appropriate respirator cartridges should be selected by utilizing the manufacturers' cartridge selection guidelines. Types of respirators issued by Haskell Corporation include, but are not limited to, 3M 6200, 3M 7000, North 7700 air purifying respirators, Scott Air-Pak 2.2 SCBA and Scott 804072-12 supplied air respirator.

Appropriate surveillance should be maintained of work area conditions and the degree of employee exposure or stress that would affect respirator effectiveness.

4.9. General Requirements

Each employee should inspect the respirator before each use. The straps, facepiece, valve assemblies, covers, cartridges, hoods, helmets, hoses, fittings and regulators should be examined for defects or malfunctions. Any defective or malfunctioning respirator should not be used until properly repaired or replaced.

Employees should perform a 10-second negative pressure test and a 10-second positive pressure test before each use of negative pressure respirators. Respirators that do not successfully pass this field test should not be used.

Employees using respiratory protection must leave the contaminated area if they detect filter break-through or resistance and to wash or change cartridges.

Respirators should be used according to manufacturers' instructions and only in their NIOSH/MSHA approved configuration.

Air purifying respirators should not be used in oxygen deficient atmospheres (containing less than 19.5% oxygen).

4.10. Work in IDLH Atmospheres

Self-Contained Breathing Apparatus (SCBA) operated in the pressure demand mode should be used only for entry into Immediately Dangerous to Life or Health (IDLH) or unknown atmospheres. IDLH atmospheres can be those with less than 19.5% oxygen and/or those that contain dangerous airborne concentrations of a hazardous material.

If Supplied Air Respirators (SAR) are used in IDLH atmospheres, the wearer must be equipped with emergency escape bottles.

Anyone working in an IDLH atmosphere must be equipped with retrieval equipment.

Anyone wearing a Supplied Air Respirator or a Self Contained Breathing Apparatus must be properly trained in their use. Refer to the Supplied Air Respirator Policy of this manual for further instructions.

4.11. Respirator Inspection

All respirators should be inspected routinely before each use by the wearer. Respirator inspection should include a check of the tightness of connections and condition of the facepiece, headbands, valves, connection tubes, canisters, and hoses. Rubber and elastomeric parts should be inspected for pliability and signs of deterioration.

4.12. Respirator Cleaning and Storage

Respirators should be cleaned and disinfected after each use to ensure that proper protection is provided for the wearer. Respirators should be cleaned and disinfected according to instruction by the manufacturer. Respirators should be stored after each use, in a sealed container or plastic bag to protect them from the environment. Respirators should be stored after each use, in a manner that protects them from deformation such as being crushed by heavy objects.

4.13. Respirator Repair or Disposal

Only qualified personnel should do replacement or repairs with parts designed for the respirator. No attempt should be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations. After repairs are made, respirators should be cleaned, inspected and properly stored. When a respirator is deemed unuseable it should be destroyed and disposed of.

4.14. Respiratory Program Evaluation

We evaluate our respiratory program for effectiveness using the following steps:

- Checking fit-test results and health provider evaluations.
- Talking with employees who wear respirators about their respirators – how they fit, do they feel they are adequately protecting them, do they notice any difficulties in breathing while wearing them, do they notice any odors while wearing them, etc.
- Periodically checking employee job duties for changes in chemical exposure.
- Periodically checking maintenance and storage of respirators.
- Periodically checking how employees use their respirators.

4.15. Recordkeeping

The following records will be kept:

- A copy of this completed respirator program,
- Results of the Qualitative Fit Test (QLFT) or Quantitative Fit Test (QNFT) administered including:
    1. The name or identification of the employee tested,
    2. Type of fit test performed and name of the test administrator,

3. Specific make, model, style, and size of respirator tested,
4. Date of test; and,
5. The pass/fail results for QLFTs or the fit factor and recording of the test results for QNFTs.

- Employee training records,
- Medical evaluation results should be retained and made available as needed,
- Fit test records should be maintained for respirator users until the next fit test is administered,
- The records will be kept at the Haskell Corporation Corporate Office or Project Site Office.

5.0 Appendix D to Sec. 1910.134 Mandatory Information for Employees Using Respirators When Not Required

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

6.0 Regulations

- Federal 29CFR
- Washington WAC 296-24-J
- California Title-8 5144
- USACE EM 385-1-1

SAFETY AUDITS

1.0 Purpose

The purpose of this Procedure is to provide the minimum requirements for conducting HSE audits to ensure that requirements are met and to identify opportunities for improvement.

2.0 Scope

2.1. This Procedure applies to all Haskell Corporation projects.

3.0 References

3.1. Title 29 Code of Federal Regulations (CFR) Part 1926

4.0 Responsibilities

It should be the responsibility of the Corporate Construction Manager and the Corporate Safety Director to ensure that the requirements of this Procedure are adhered to.

It should be the responsibility of the Haskell Construction Manager to ensure that immediate corrective action is taken on all audit findings and that the requirements of this Procedure are adhered to.

It should be the responsibility of all supervisors to ensure that immediate corrective action is taken on all audit findings.

It should be the responsibility of the Site Safety Manager to monitor the corrective action on the audit findings to ensure that all items have been corrected report violations and/or noncompliance issues to project management for immediate corrective action.

It should be the responsibility of all employees to practice safe work habits and comply with established safe work practices.

5.0 Procedures

5.1. Requirements

5.1.1. The Corporate Safety Director should periodically conduct compliance audits on all Haskell projects.

5.1.2. The Corporate Safety Director should meet with the Construction Manager (CM), the HSE professional; subcontract administrator; and sub¬contractor representatives, as necessary, to conduct the audit.

5.1.3. The Corporate Safety Director should interview craft personnel, as necessary, during the course of the audit.

5.1.4. The Corporate Safety Director should meet with the CM and site HSE professional to review the findings and recommendations.

5.2. Post audit

5.2.1. The Project Manager (PM)should prioritize the recommendations made in the audit report. This list should serve as the basis for corrective action taken within 10 days of the audit.

5.2.2. The PM should address each of the specific recommendations made in the audit report indicating action taken or to be taken and the time frame for completing the action and should distribute this infor¬mation according to the Corrective Action Tracking Procedure.

5.3. Audit Distribution

5.3.1. The initial audit report should be distributed as follows:

5.3.1.1.	Original	Construction Manager
5.3.1.2.	Copy	HSE Professional
5.3.1.3.	Copy	Home Office File

5.4. The final audit report and the Construction Manager's plan to address the audit findings should be distributed as follows:

5.4.1.1.	Original	Corporate Safety Director
5.4.1.2.	Copy	Project Manager, Haskell
5.4.1.3.	Copy	Site Safety Manager
5.4.1.4.	Copy	Site Safety Committee
5.4.1.5.	Copy	Construction Manager

6.0 Record Retention

6.1. A copy of each HSE audit should be maintained on file in the Project Safety Office for the duration of the project.

7.0 Forms and Exhibits

7.1. HSE Audit Form

HASKELL CORPORATION

Audit Form

Date: _____

Auditor (s): _____

Work Activity: _____

Group Audited: _____

Specific Areas Visited: _____

Category + / -	Follow-Up Requiredi	Findings (Good / Bad)	What contact was made or interim corrective action taken?	Target Date
	☐			
	☐			
	☐			
	☐			
	☐			
	☐			

NOTE: *Indicate audit Category from the list below (i.e. B5) Include in the column good findings with a (+) and areas needing improvement with a (-)*

A) Actions of People
1. Avoiding Line of Fire
2 Avoiding Pinch Points
3. Smart Job Setup
4. Looking Out for Others
5. Housekeeping
6. Barricade Set Up
7. Training / Knowledge
8. Other

B) PPE
1. Eyes & face
2. Hearing Protection
3. Head / Hard Hat
4. FRC
5. Correct Gloves
6. Protective Clothing
7. Respiratory
8. Fall Protection
9. Other

C) Tools & Equipment
1. Right for job/Correct Use
2. In safe condition/Inspected
3. Spill Prevention Measures
4. Waste/Recycle Containers
5. Trained for Use
6. Guards / Safety Devices
7. Other

D) Documentation
1. Permits: Complete and accurate
2. JSA Complete, Reviewed, Onsite
3. Haskell Work practice being followed?
4. MSDS Reviewed & Onsite
5. LO/TO Complete
6. Other

E) Health
1. Restroom Facilities
2. Hand Washing Facilities
3. Drinking Water
4. Other
5. Other

F) Environment
1. Ambient Temprature
2. Noise
3. Hazardous Atmosphere
4. Inclement Weather
5. Other

G) Facility
1. Equipment In Safe Condition
2. Electrical Equipment
3. Fire Extinguishers
4. Hazardous Material Storage
5. Security
6. Other

SAFETY BULLETIN BOARDS

1.0 Purpose

This policy is intended to assist in the effective communication of health and safety related information within the refinery. Separate from this policy, contractors are expected to provide their own safety bulletin boards.

2.0 Scope

This policy applies to all Haskell projects

3.0 Definitions

Not Applicable

4.0 Procedure

The Safety Bulletin Board locations and assigned responsibility for up keep are listed below. Each clearly labeled Safety Bulletin Board will be conveniently located in a lighted area in order that employees can see it at least once a day.

Each Safety Bulletin Board will be under the control of Project Management. Project Management or their designee is responsible for posting new materials, removing material one month old, and for maintaining the board in a neat condition.

4.1. Examples of safety information displayed on the boards are:

- 4.1.1. OSHA, State and local agency mandated safety related posters
- 4.1.2. Safety Meeting Minutes
- 4.1.3. Information from area Inspections
- 4.1.4. Safety Memos and Alerts
- 4.1.5. Hygiene monitoring results
- 4.1.6. Any other related safety and health information

4.2. Locations

At a minimum, a safety bulletin board should be maintained at one such location as listed below:

- 4.2.1. Fabrication Shops
- 4.2.2. Crew Eating Facility
- 4.2.3. Project Site Office Building

4.2.4. Centraly Located Project Kiosk

5.0 Training

Not applicable

6.0 Responsibilities

Site Safety Manager or in their absence, another designee of project management to maintain bulletin boards weekly.

7.0 Attachments

None

8.0 Regulations

8.1. WAC 296-800-19005

SAFETY RESPONSIBILITIES

1.0 Purpose

This guideline will help to ensure that our Health-Safety-Environmental policies and procedures are developed and administered efficiently and effectively and will provide additional support to our overall commitment to safety, at all levels of the organization.

2.0 Scope

This policy applies to work performed by all departments, divisions, and work locations under the control of Haskell Corporation, including Sub-contractors (where applicable).

3.0 Definitions

3.1. Management Team: means the following:

3.1.1. President, Vice-President, Chief Financial Officer
3.1.2. Project sponsors, Project Managers, Shop Managers
3.1.3. Safety Manager, Quality Manager, Accounting Manager

3.2. Supervisor:

3.2.1. FOREMEN
3.2.2. SUPERINTENTENTS
3.2.3. GENERAL FOREMEN
3.2.4. GENERAL SUPERINTENDENTS
3.2.5. LEADMEN
3.2.6. Other assigned individual that is responsible for the work of another employee.

4.0 Procedures

Each person assigned a title above, will be familiar with their responsibilities as listed herein, and be fully prepared and are duly authorized to take action on behalf of Haskell Corporation, to ensure that our policies and procedures are administered in accordance with the Haskell ACCIDENT PREVENTION PROGRAM (IIPP).

4.1. Responsibilities

Haskell has established the following health and safety accountabilities, to ensure the protection of employees from harm. Every employee will comply with safe and healthy work practices by incentives, training, re-training programs and disciplinary programs.

4.2. Management Team Responsibilities

4.2.1. Provide a safe working environment for our employees and Sub-contractors
4.2.2. Develop and administer a Health, Safety, and Environmental management program that meets or exceeds applicable requirements
4.2.3. To make health, safety, and environmental protection a fundamental part of pre-construction job planning
4.2.4. To initiate and implement corrective actions, to mitigate identified safety concerns
4.2.5. Provide workers and supervisors with adequate training and instruction, to do their jobs in a safe and efficient manner
4.2.6. Revise policies and procedures on a regular basis, to ensure compliance with regulations

4.3. Superintendents

4.3.1. Superintendents are expected to implement the safety program at each job location
4.3.2. The Superintendent will designate competent persons for certain tasks, as required
4.3.3. Conduct weekly safety meetings with foremen
4.3.4. Routinely conduct weekly Health, Safety and Environmental Audits
4.3.5. Correct and report any identified deficiencies
4.3.6. Review audit deficiencies and corrections at weekly Tool Box meetings
4.3.7. Set a personal example of safe behavior
4.3.8. Ensure that employees get the proper training for the job at hand
4.3.9. Ensure that all incidents, near misses, environmental issues are investigated, resolved and followed through to completion
4.3.10. Observe environmental practices and make sure they comply with Haskell Corporation Safety and Environmental policies.

4.4. General Foremen, Foremen/Supervisors

4.4.1. Conduct daily safety meetings (JSA reviews) with their crews
4.4.2. Set a personal example of safe behavior
4.4.3. Enforce company safety and environmental rules
4.4.4. Ensure that employees use assigned/required PPE properly
4.4.5. Foremen are responsible to ensure employees have been trained on safe work procedures
4.4.6. Participate in the investigation of accidents and near miss incidents affecting their crew or work.
4.4.7. Assure that injured workers receive timely, proper medical treatment
4.4.8. Correct all unsafe conditions and activities immediately and report those which cannot be corrected to the General Foreman or Superintendent
4.4.9. Contribute ideas and suggestions for improving the safety program
4.4.10. Initiate disciplinary action within work crew when appropriate (e.g. repeated violations, gross negligence, and willful disregard for safety requirements)
4.4.11. Additional duties may be added to the above list as the company requires, but the specific duties outlined above should be considered a minimum

4.5. Employees/Crafts

4.5.1. As a condition of employment all employees are expected to work safely and to follow established policies, procedures and work practices to ensure that their safety and health, and that of their fellow workers, is not jeopardized

4.5.2. Correct all unsafe conditions and work practices immediately and report those which cannot be corrected to your supervisor

4.5.3. Be aware of environmental requirements of Haskell Safety manual

4.5.4. Learn to recognize and minimize any potential environmental incidents

4.5.5. Clean up and report all spills to foreman

4.5.6. Report all incidents, injuries, or other unexpected events immediately to supervisor

4.5.7. Cooperate with others at all times

4.5.8. Ask for information or assistance when unsure

4.5.9. STOP WORK- if imminent danger/hazard is observed or likely

4.6. Corporate Safety Manager

4.6.1. Responsible and authorized with overall accountability for this injury and illness prevention program.

4.6.2. Contribute to company growth by developing and implementing a comprehensive safety program, focused on minimizing the frequency and severity of accidents, injuries and occupational illnesses

4.6.3. Coordinate safety activities of project managers, supervisors and safety committees

4.6.4. Establish measurement and accountability for supervisory safety performance

4.6.5. Investigate and evaluate business operations to develop corporate accident prevention and loss control programs, policies and procedures

4.6.6. Provide technical support to project managers in preparing bid responses and participate in planning to integrate safety considerations into project

4.6.7. Periodically visit project job sites to evaluate safety and environmental program effectiveness, identify accident producing conditions, and develop and assure implementation of corrective actions

4.6.8. Establish and maintain OSHA records

4.6.9. Develop safety training and orientations for new employees and supervisors

4.6.10. Interview, select, train and supervise site safety supervisors

4.6.11. Function as designated site safety representative if necessary

4.6.12. Develop policies and procedures necessary to assure employees (including supervisors) are screened, evaluated, and selected based on their ability to work safely

4.6.13. Assist with applicant interviewing and selection, employee counseling, and general personnel project work as assigned

4.6.14. Develop professional business relationship with customer and competitor safety counterparts and other key management personnel to establish and maintain a strong and favorable company image

4.6.15. Maintain the Haskell Accident Prevention Plan and update when Federal, State and client rules change or new policies are developed. . The Haskell Accident Prevention Plan should be reviewed annually for effectiveness and content relevant to our normal work scope. Revisions and updates should be communicated to Haskell Management Personnel via email website and staff meetings.

4.6.16. Implement training for supervision to ensure compliance with code requirements

4.7. Site Safety Supervisor

4.7.1. The Site Safety Supervisor should support implementation of company safety and environmental programs at assigned job sites

4.7.2. Prepare and submit incident reports to Haskell and Client as needed

4.7.3. They should provide on-site management representation for safety function

4.7.4. Assist the Superintendent and Foremen in fulfilling their safety responsibilities

4.7.5. Conduct ongoing surveillance of job site to detect unsafe work practices and conditions, identify necessary corrective actions, and implement through line management whenever possible except in cases of imminent peril

4.7.6. Observe environmental practices and make sure they comply with Haskell policies

4.7.7. Conduct a weekly Safety and Environmental Audit

4.7.8. Review audit deficiencies and corrections at weekly Tool Box meeting

4.7.9. Establish a cooperative working relationship with customer management and safety personnel, and attend customer safety meetings as Haskell representative

4.7.10. Evaluate requirements for safety supplies including company issued personal protective equipment and first aid supplies, coordinate with Haskell Corporate Safety Manager and establish and maintain adequate quantities at job site

4.7.11. Issue personal protective equipment

4.7.12. Provide necessary training, including respirator fit tests

4.7.13. Establish and maintain required jobsite records (training, accident, etc.)

4.7.14. Provide support to foremen for planning and organizing their required weekly "job site" safety meetings. Attend these meetings whenever possible, and actively participate from time to time at own discretion

4.7.15. Act as the lead investigator for serious injuries

4.7.16. Coordinate with injured employees to minimize impact of injury

4.7.17. Be the primary point of contact for OSHA/DOSH/CAL-OSH inspectors

5.0 Regulations

- Federal 29CFR 1910.1020
- Washington WAC 296-800-110, 296-800-120
- California Title-8 3204

SCAFFOLDS

1.0 Purpose

To provide procedures and requirements for construction, safe use, inspection and tagging of scaffolds at industrial, commercial and construction sites.

2.0 Scope

This policy applies to all work performed on scaffolding at industrial construction projects. This procedure covers the four basic forms of scaffolding commonly used by employees of Haskell Corporation:

- Tubular Welded scaffold
- Tube and Coupler scaffold
- System Scaffold
- Mobile Scaffold manually propelled

3.0 Definitions

- **Bearer:** A horizontal member of a scaffold upon which the platform rests.
- **Brace**: A tie (usually mechanical) that holds one scaffold member in a fixed position, with respect to another.
- **Cleat**: A structural block used at the end of the platform to prevent it from slipping off its support.
- **Competent Person**: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions through training, knowledge, experience and who has the authority necessary to eliminate and correct hazards.
- **Coupler**: A mechanical device, constructed of steel (drop forged, malleable iron or structural grade aluminum) which is used to lock components of tubular metal scaffold together.
- **Guardrail**: A protective barrier erected on all open sides of a platform as a form of fall protection. Guardrails should consist of a handrail, mid rail and toe board.
- **Manually Propelled Scaffold**: A portable rolling scaffold supported by casters or wheels.
- **Maximum Intended Load**: The total of all loads including the working load (workers, tools, equipment and material), the weight of the scaffold and any other anticipated loads.
- **Platform**: An elevated work space for personnel, tools, machinery and/or equipment.
- **Post/ Vertical pole**: A vertical support extending from a suitable base to bearer.
- **Runner**: The lengthwise horizontal bracing upon which the platform rests.
- **Scaffold**: Any temporary elevated platform and its supporting structure used to support workers, tools, equipment and/or materials.
- **Sill**: An additional support used under bases to distribute the weight over a large area.

- **System Scaffold**: A quick erect metal scaffold system with integrated locking rings on the posts, bearers, braces, ties and runners. A base supports the posts.
- **Tube and Coupler Scaffold**: An assembly consisting of tubing which serve as posts, bearers, braces, ties and runners. A base supports the posts. Special couplers connect the tubes in various positions.
- **Welded Frame Scaffold**: A sectional, panel or frame metal scaffold built of prefabricated, welded sections which consist of posts and horizontal bearers with intermediate members.
- **Working Load**: Total load imposed by workers, tools, equipment and material.

4.0 Procedures

It is the objective of Haskell Corporation to establish safe work practices for constructing, working on and dismantling scaffolding and to comply with all applicable OSHA and DOSH standards. This procedure applies to all employees who use, construct, work on or dismantle scaffolding. No scaffolding should be erected, moved, modified or dismantled, except under the supervision of a designated competent person.

4.1. Training

Scaffold User training should be part of the mandatory Haskell Corporation Safety Orientation for all new employees. Depending upon the job additional scaffold user training should be done under the supervision of the designated competent person and should be good for one year.

Training should address the following among site specific hazards:

- Fall Protection
- Electrical Safety
- Falling Object Protection
- Scaffold Use
- Load Capacity.

Retraining will occur in the following situations:

- When worksite changes present hazards which an employee has not been previously trained on,
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present hazards an employee has not been previously trained on;
- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the required knowledge.

4.2. Procedures

Scaffolds should be provided for employees engaged in work activities that cannot be performed safely from the ground or from solid construction.

Scaffolding erection and modification should be under the direction of a competent person. All scaffolds should meet the requirements of this procedure and the safety rules and instructions of the manufacturer.

A competent person before each work shift should inspect scaffolds and scaffold components for visible defects and after any occurrence which could affect a scaffold's structural integrity. Equipment found to be unsafe must be tagged out by Competent Person. Employees must comply with any tag placed on a scaffold.

Proper flagging should be placed sufficiently around the area around the base of the scaffold to protect any personnel below from falling objects.

4.3. General Requirements

Footings or anchorage should be sound, rigid and capable of carrying the maximum intended load.

Standard guardrails and toe boards should be installed on all open sides and ends more than 6 feet above the ground.

Scaffolding and their components should be capable of supporting 4 times the maximum load.

Any scaffolding, including accessories, damaged or weakened for any cause should be repaired immediately or replaced.

All planking should be scaffold grade or the equivalent.

Platforms should be level.

An access ladder or the equivalent safe access/egress should be provided. Ladders should extend a minimum of 36 inches above the platform unless a suitable grab rail is installed and properly secured.

Planks should not extend over their end supports more than 12 inches or less than 6 inches.

Poles, legs and uprights should be plumb.

The maximum work level height should not exceed 3 times the least base dimension below the platform. Where the basic mobile unit does not meet this requirement, outrigger frames should be employed to achieve this least base dimension, or provisions should be made to guy or brace the unit against tipping.

Guardrails should be 2x4 inches, or the equivalent, approximately 42 inches high with a mid-rail.

Supports should be at intervals not to exceed 8 feet.

Toe boards should be a minimum of 4 inches.

Slippery conditions on scaffolds should be eliminated as soon as possible after they occur.

Employees should not work on scaffolds during storms or high winds.

Tools, materials and debris should not be allowed to accumulate.

Scaffolds should be secured to a building or structure not to exceed 30 feet horizontally or 25 feet vertically.

Scaffolding over 125 feet in height should be designed by a registered professional engineer.

Tagging system should comply with CFR 1926.200 (refer to tagging section of this procedure) Signs, Signals, Barricades; Red, Yellow, Green.

All scaffold tags should be dated with: date of erection, inspector and erector's name, duty rating in pounds per square foot.

Scaffold legs must be set on adjustable bases or plain bases, on mud sills or other foundations to adequately support the maximum rated load.

Bottom braces should be placed as close to the base as possible.

4.4. Scaffold Tags

Red Scaffold Tag: Used to identify an inherent danger. **SCAFFOLD SHOULD NOT BE USED**. Red scaffold tags delineate scaffolds which are unsafe due to the following:

- Scaffold is partially completed.
- Scaffold is being disassembled.
- Scaffold has been found to be defective or damaged.

Green Tag Scaffold: Denotes the scaffold meets all Federal, State and OSHA requirements. Scaffold is safe for personnel use.

Yellow Scaffold Tag: Denotes a scaffold which, due to location, configuration and/or obstructions, cannot be completed meeting all Federal, State and OSHA requirements. The yellow tag requires the use of additional personal protective equipment, e.g. where guard rails cannot be installed, and fall protection is required.

4.5. Mobile Scaffolds

**Does not include Aerial Lift Scaffolds- Refer to Haskell Safety Policy AERIAL WORK PLATFORMS*

Mobile scaffolds should be designed to withstand loads and circumstances for which they are used.

Freestanding scaffolds should not exceed 3 times their minimum base dimensions

The construction, and design load of mobile scaffolds should be computed using the following factors as basis:

- Light Duty 25 pounds per square foot

- Medium duty 50 pounds per square foot
- Heavy duty 75 pounds per square foot

Mobile scaffolds should rest on suitable footing and should stand plumb.

Mobile scaffolds may be constructed from tubular welded scaffold or tube and coupler scaffold.

The minimum width for any mobile work platform should be 20 inches.

A registered professional engineer should approve mobile scaffolds exceeding 50 feet in height.

Manually propelled scaffolds may be moved while personnel are on board, providing:

- The floor is within 3 degrees of level and is free of pits, holes, depressions and other items which could cause the scaffold to become unstable.
- When ready for rolling, the minimum dimension of the scaffold base is at least half of the scaffold's height. If outriggers are used, they should be installed on both sides of the staging.
- The wheels are equipped with rubber or resilient tires.
- Tools, material and equipment are secured or removed from the platform.
- The height of the mobile scaffold should not be increased by installing a ladder on the platform, or by placing planking on the mid rails or handrails.
- Any force applied in a moving scaffold should be at the base of the scaffold.

4.5.1. Wheels and Castors

Wheels or casters should be properly designed for strength and dimensions to support 4 times the design working load.

All scaffold wheels, casters and swivels should be provided with a positive locking device, or other effective means to prevent movement of the scaffold.

Ladder stands should have at least 2 locking casters or other means of locking the unit in position. If only 2 casters are used, they should be of the directional type and if 4 casters are used, at least 2 of the 4 should be of the swivel type.

Locking devices should be kept in the locked position when workers are climbing or working on scaffolds and ladder stands.

Where leveling of the elevated work platform is required, screw jacks or other similar means for adjusting the height should be provided in the base section of each mobile unit. The screw jack should extend into its leg tube at least 1/3 its length, but in no case should the exposed portion of the screw jack exceed 12 inches.

4.6. Guardrails

All scaffold work levels 30 inches or higher above the ground or floor should have guardrail protection that meets the requirements of this section.

A standard guardrail should consist of top rail, midrail or equivalent protection, and posts, and should have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the floor, platform, runway, or ramp level. (Note: the permissible tolerance on height dimensions is one inch). The top rail should be smooth-surfaced throughout the length of the railing. The midrail should be approximately halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails should not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

All guardrails and other permissible types, including their connections and anchorage, should be designed for a live load of 20 pounds per linear foot applied either horizontally or vertically downward at the top rail. Dimensional details of railing members of a few types of construction which comply with this strength requirement are given in 4.6.1 below.

Note: It is recognized that the minimum value of railing strength here specified is inadequate for safety under operating conditions where railings are liable to receive heavy stresses from crowds, trucking, handling materials, etc. For such conditions, additional strength should be provided by use of heavier stock, closer spacing of posts, bracing, or otherwise.

Railing members should be framed in such a position that they will afford the greatest support and protection, for example, top rails of structural steel angles should have the outside face of vertical leg located on the side adjacent to the side of normal contact by the employee.

The following are some acceptable guardrail specifications: other combinations will be accepted as long as equivalent strength and protection are maintained.

4.6.1. Alternate Guardrail Construction

In wooden construction, the posts are to be of at least 2-inch by 4-inch nominal material spaced not to exceed 6 feet, the top rails to be smooth with corners rounded and not less than 2-inch by 4-inch nominal material. The posts may be spaced on 8-foot centers if the top rails consist of double 1-inch by 4-inch nominal boards, provided that 1 board is fastened in a flat position on top of the posts and the other is fastened in an edge-up position to the inside of the posts and the side of the top board. Single midrails, where permitted, should be not less than 2-inch by 4-inch nominal material and installed on the contact side of the guardrail.

If constructed of standard metal pipe, the top rails and single midrail, where permitted, to be 1 1/2-inch outside diameter or larger. The posts to be 1 1/2-inch outside diameter or larger, the spacing not to exceed 8 feet.

Guardrails installed on or before May 26, 2011. If constructed of structural metal, the top rails to be angle iron of at least 2-inch by 2-inch by 1/4-inch angles or other metal shapes of equivalent bending strength; and the single midrail, where permitted, to be iron or steel of at least 2-inch by 2-inch by 1/4-inch angles or other metal shapes of equivalent strength. The posts to be angle iron of at least 2-inch by 2-inch by 1/4-inch stock, the spacing not to exceed 8 feet.

Guardrails installed after May 26, 2011. If constructed of structural metal, the top rails to be angle iron of at least 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent bending strength; and the single midrail, where permitted, to be iron or steel of at least 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent strength. The posts to be angle iron of at least 2-inch by 2-inch by 3/8-inch stock, the spacing not to exceed 8 feet.

4.6.2. Toeboards

Where toeboards are required, they should be constructed of wood, concrete, metal, or other suitable material. Where constructed of metal grille, mesh should not exceed 1-inch. The top of the toeboard should be not less than 3 1/2 inches above the platform, walkway, or other working level and the bottom clearance should not exceed 1/4-inch.

Note: Where materials are piled, higher toeboards, or paneling from floor to intermediate rails or top rail should be provided where necessary for safety.

HASKELL SCAFFOLD TAGS

THIS SCAFFOLD HAS BEEN ERECTED TO MEET OSHA/WISHA STANDARDS AND IS SAFE FOR ALL CRAFT WORK

DO NOT ALTER

HASKELL CORPORATION

SCAFFOLD BUILDER: _____

DATE ERECTED: _____

RATING-POUNDS PER SQ. FT.: _____

MAXIMUM HEIGHT: _____

Scaffold tag #1 front side, Green

AUTHORIZED PERSONNEL MUST INSPECT SCAFFOLD PRIOR TO USE

PERMIT ISSUED Inspected By	Company	Date	Time

THIS SCAFFOLD MAY NOT MEET OSHA/WISHA SPECIFICATIONS

FALL PROTECTION REQUIRED YES ___ NO ___

LIST ANY HAZARDS _____

DO NOT ALTER

HASKELL CORPORATION

SCAFFOLD BUILDER: _____

DATE ERECTED: _____

RATING-POUNDS PER SQ. FT.: _____

MAXIMUM HEIGHT ALLOWED: _____

WORK SAFELY

Scaffold tag #2 front side, yellow

WARNING

THIS SCAFFOLD IS NOT COMPLETE

DO NOT USE

HASKELL CORPORATION

Scaffold tag #3 front side, red

WARNING

THIS SCAFFOLD IS NOT COMPLETE

DO NOT USE

HASKELL CORPORATION

SIGNED BY _____

DATE _____

Scaffold tag #1 back side, Red

AUTHORIZED PERSONNEL MUST INSPECT SCAFFOLD PRIOR TO USE

PERMIT ISSUED Inspected By	Company	Date	Time

Scaffold tag#2 back side, Yellow

5.0 Regulations

- California Title-8 1637, 3622, 3209

SHORT SERVICE EMPLOYEES

1.0 Purpose.

The purpose of this Program is to identify, adequately supervise, train and manage Haskell Corporation field employees (Short Service Employees) and those of its sub-contractors who have less than six months experience in their trade or craft in order to prevent injury and harm to themselves, others, the property which they are servicing and the surrounding environment.

2.0 Scope

This policy augments the apprenticeship programs that union employees must undergo to achieve Journeyman status. This policy affects all Haskell Corporation field employees and employees of its sub-contractors on customer sites requiring a Short Service Employee program. This policy specifically will apply to employees with less than six months experience in their respective trade or craft.

This policy establishes Haskell Corporation's requirements for Short Service Employees servicing our customers in process facilities. This Program will provide each Project Manager with the tools necessary to provide for the well-being, health and safety of these Haskell Corporation employees.

3.0 Definitions.

3.1.1. Short Service Employee (SSE): A Short Service Employee is any Haskell Corporation field employee who has less than six (6) months experience in the same trade with Haskell Corporation or other union contractor. Any union apprentice is considered a SSE and will be assigned a SSE Mentor.

3.1.2. SSE Mentor: The SSE Mentor will be a union craft Journeyman employee with at least five (5) years of experience in the same craft working with Haskell Corporation or other union contractors.

3.1.3. Project Manager: Haskell Corporation's Project Manager for the project in which the SSE is assigned.

3.1.4. Safety Manager: Haskell Corporation's Safety Manager for the project in which the SSE is assigned

4.0 Procedure

Any Haskell Corporation field employee who has less than six (6) months experience in the same trade with Haskell Corporation or other union contractor is considered to be an SSE. The Project Manager will

ensure that the SSE is assigned an SSE Mentor, periodically track the performance of the SSE and provide the necessary training as set forth in this Program.

4.1. Responsibilities.

4.1.1. Health, Safety and Environment Manager. The HSE Manager will develop training for the SSE. The HSE Manager or their designee will provide training or arrange for training with outside entities.

4.1.2. Project Manager. The Project Manager will ensure that the SSE is assigned a mentor, periodically track the performance of the SSE and provide the necessary training as set forth in this Program.

4.1.3. SSE. The SSE will attend necessary training. He will follow instructions as set forth by the SSE Mentor and the Project Manager.

4.1.4. SSE Mentor. The SSE Mentor will ensure the Short Service Employee is trained in accordance with OSHA 29 CFR 1910, General Safety, 40 CFR, Environmental and 49 CFR, DOT-Transportation. In some cases, the SSE Mentor may be a Project Manager.

4.2. Training

In addition to any training developed by Haskell Corporation, the Project Manager or their designee will determine the customer's requirements for SSE's, e.g., notification, information required, training, etc.

4.3. Customer Notification of SSE

The Project Manager will ensure that the affected Haskell Corporation customer is notified of any SSE employee who may enter on a customer's site, before that employee begins any work for that customer. Approval will be secured from the customer's management before the SSE initially enters upon the customer's property. A single person crew cannot be an SSE and crew sizes of less than five should have no more than one SSE.

The Project Manager or their designee will complete any required forms related to Short Service Employees.

4.4. Site Specific Orientation

The SSE Mentor will give the SSE an orientation and tour of the project site. The tour will cover all work areas the SSE may encounter while working at the customer's facility. At a minimum the SSE Mentor will cover all Haskell Corporation plans related to the customer's property in addition to any required by the customer. Topics to be included, but not limited to the following:

- Proper Clothing and PPE
- HAZCOM
- Lifting Techniques and Ergonomics
- Severe Weather
- Correct Tools

- Environmental Concerns

The Project Manager will ensure that each SSE receives training in the following:

- The hazards present at the customer's site
- The procedures, processes and personal protective equipment developed and to be used to prevent these hazards from causing injuries, property damage and environmental incidents, and
- The skills necessary to conduct their assigned jobs safely and efficiently while providing product quality and economy.

After training the Project Manager will ensure that the SSE has a clear understanding of the topics and the skills necessary to perform their job in a safe and responsible manner.

The Project Manager will ensure that each SSE receives training in accordance with this plan before starting work, when:

- The SSE is first hired
- The SSE is assigned to a new job
- The SSE may be exposed to new substances, procedures, location, and processes that may present a new hazard to the SSE

4.5. SSE Identification

The SSE will be required to wear highly visible green tape around the cap of their hard hat which designating SSE status.

4.6. SSE Supervision

The SSE Mentor will provide close supervision and not permit the SSE to perform any task for which he/she has not been properly trained. The SSE Mentor will ensure that the SSE understands the tasks to be performed, the associated hazards and risks, and how to perform the job safely and responsibly. A performance review will be conducted weekly while the SSE is on the project site. Input will be submitted by the assigned SSE Mentor for consideration.

A Short Service Employee may not work alone. A work crew of less than 5 employees may not have more than one Short Service Employee.

4.7. SSE Designation Removal

After a 6 month period the SSE designation may be removed or reasons given for an extension. In order to remove an SSE from SSE status, the SSE must convince the Project Manager that they have a good working knowledge of both Haskell Corporation's and the customer's health, safety, and environmental policies, demonstrated a familiarity with the safety and environmental concerns on customer's property, and has demonstrated safe and environmentally responsible work for the past six (6) months. Only after

meeting these prerequisites may an employee be removed from the SSE process. The removal of SSE status with Haskell Corporation does not imply removal of union apprentice status.

4.8. Recordkeeping

The Project Manager will maintain a file of all SSE's assigned to their work area. He will forward a copy of all documentation to the HSE Manager. The HSE Manager will also maintain a copy of all documentation related to SSE's.

SILICA

1.0 Purpose

To provide adequate guidance for employees who may be exposed to respirable silica, during the course of their employment with Haskell Corporation

2.0 Scope

This policy applies to employees assigned to field construction projects and fabrication shop facilities

3.0 Definitions

- **Silica:** means Silicone Dioxide, Sand, Quartz, or other natural forms of SiO2

4.0 Procedures

It is the policy of Haskell Corporation to ensure that our employees are aware of and protected from exposures to silica, at or above established thresholds.

4.1. Background

Silica is the name applied to a natural mineral composed of silicon dioxide, known for its hardness since the 9th century, which occurs in either the crystalline or amorphous form. Silicon dioxide is an acidic oxide, chemical formula SiO2 with a melting point of about 1650 degrees Centigrade, which is practically insoluble in water, but can be attacked/dissolved by hydrogen fluoride, and hot alkali and basic metal oxides. Silica makes up about 21% of the earth's crust, and is the most abundant mineral and the most common of all chemical compounds. Crystalline silica is the basic component of soil, sand, granite, and many other minerals. Pure silicon dioxide crystals are found naturally in three polymorphic forms: quartz (the most common type which is often called free silica); tridymite; and cristobalite, all of which involve tetrahedral SiO4 units linked together by shared vertices in different arrangements/bond lengths, some with chains of edge sharing SiO4 tetrahedra.

4.2. Hazard-Health Effects

Similar to Asbestos, Silicon dioxide or silica is most hazardous when airborne, as a dry finely-powdered sub-micron particle, which may be inhaled deep into the lungs. When silica-containing material is drilled, broken, ground, buffed, cut, sawed, struck or otherwise damaged/pulverized, it will likely release small particles into the air. Aside from inhalation, pure silica is basically inert and harmless. When ingested, silica passes unchanged through the gastrointestinal tract, with zero nutritional value and zero toxicity.

Silica materials are generally not considered to be harmful **unless** pulverized or damaged to the extent that particles become respirable. Silica is generally considered to be potentially harmful when very small particles are inhaled deep into the lungs, where the macrophages are unable to remove the fragments which then become lodged in the alveolar lung tissue, scarring/fibrotic changes in the lungs.

Breathing in crystalline silica dust over time can lead to a disabling lung disease such as silicosis or lung cancer. Quartz is the most common type of crystalline silica mineral.

Lung cancer is believed to be more common among persons who are/were cigarette smokers and have been exposed to significant amounts of fine silica dust in high-risk workplaces (mines, mills, quarries, foundries, some construction, rock drilling, abrasive blasting, tunneling, and factories).

The two determining factors directly related to the probability of developing these diseases are:

- **The amount and duration of exposure** - persons exposed frequently over a long period of time are more at risk, making it important to minimize time and amount of exposures
- **Whether or not one smokes cigarettes** - the first thing a smoker should do to reduce their risk of developing lung cancer is to stop smoking.

4.3. Initial Exposure Assessment

Where the presence of crystalline silica is known or suspected on a jobsite, an initial determination will be made as to whether an employee working in that area will be exposed to any levels of crystalline silica through the course of performing assigned work. This assessment may be accomplished by the direct inspection, monitoring, or testing of the affected area, or by obtaining reliable and current, objective or sampling data previously collected on the area. Full shift personal samples should be representative of the employees regular, daily exposure to silica. All new jobsites known or suspected to contain the possibility of an occupational crystalline silica exposure hazard will be assessed to determine:

- The level of silica exposure expected during the course of the work to be performed
- The actions necessary to insure the protection of the employees
- The extent to which the provisions of this policy apply

Employees are to assume that any area known to contain crystalline silica or crystalline silica composite materials will have concentration level above the permissible exposure limits (PEL) unless certified otherwise by environmental sampling or monitoring.

Once the area has been evaluated, all affected employees working on the site will be trained on the specific hazards associated with the crystalline exposure and instructed on what the procedures will be required for entry and the performance of work.

4.4. General Precautions

When the work to be performed results in crystalline silica exposure at any concentration, or is required in an area containing free crystalline silica or crystalline silica-containing materials and could result an

employee being incidentally exposed to concentrations in excess of the permissible exposure limit, the following precautions will be taken by all employees working in the area.

4.4.1. Engineering controls such as ventilation or wet methods must be used to control silica-containing dusts.
4.4.2. Personal protective equipment such as gloves, coveralls and eye protection should be used to control silica exposures.
4.4.3. Respirators must be selected based upon measured exposure levels and the assigned protection factor of respirators.

4.5. Engineering Controls

Engineering controls should be employed to limit the concentrations and exposure to crystalline silica whenever feasible. Engineering controls may include but are not limited to: Dust collection/evacuation systems (central or tool specific) area ventilation systems or wet methods. Where dust collection/filtration systems that collect crystalline silica from the air are employed, provisions must be established for the safe handling and disposal of collected crystalline silica dusts and crystalline silica contaminated filters. Documentation or reasoning must be provided while engineering controls are not feasible.

4.6. Respiratory Protection

Employees must wear, as a minimum, full-face, negative pressure, air-purifying respirators equipped with High Efficiency Particulate (HEPA) type filters or equivalent at all times. The provisions of the written Respiratory Protection Program will apply at all times.

4.7. Full Body Protection

Where the potential exists for the excessive accumulation of crystalline silica on employee's clothes, all employees engaged in these operations will wear disposable coveralls or one-piece, full bodywork suits (Tyvek or equivalent) with head covers, shoe coverlets, and work gloves.

4.8. Other Personal Protective Equipment

Employees working in the affected area may be required to wear other personal protective equipment items as determined by the work being performed or contractual requirements (i.e. hard hat, reflective safety vest, safety glasses, etc.); the wearing of this equipment will not preclude or interfere with need for respiratory or full body protection as required above.

4.9. Changing Area

Prior to the start of work in any area known to contain high levels of crystalline silica or the work to be performed is likely to generate high levels of crystalline silica, an area will be established for changing into and out of protective clothing and required personal protective equipment. The area must be located outside of the area containing crystalline silica or crystalline silica-containing materials, but close enough to the work area as to limit the travel distance from the work area to the changing area. The

designated changing area must be clean and contain separate storage containers for the employee's street clothes and contaminated protective clothing that prevents cross contamination.

4.10. Clothes Changing and Replacement

When designated changing areas are employed, upon leaving the work area for extended breaks (i.e. lunch) or at the end of the work day, all protective clothing will be removed in a contained, designated changing area and collected on site for disposal. Soiled protective clothing will be collected in a closed container located in the changing area which prevents dispersion of crystalline silica outside of the container and marked as crystalline silica contaminated waste for disposal.

Employees must not attempt to remove crystalline silica or crystalline silica-contaminated work dirt and debris from protective clothing, equipment, or work surfaces by blowing, shaking, or any other means that may disperse the crystalline silica into the air. In the event that contaminated clothing or personal protective equipment is to be collected and cleaned/decontaminated, it will be collected in a separate container and marked with the following warning:

CAUTION:
Dispose of crystalline silica
Contaminated wash water
in accordance with applicable
local, state, or federal regulations

4.11. Housekeeping

When cleaning up job sites, floors and other surfaces where excessive amounts of crystalline silica can accumulate, should wherever possible, be cleaned by vacuuming or other method that minimizes the likelihood of crystalline silica from becoming airborne. Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective. Where vacuuming methods are employed, the vacuums must be equipped with HEPA filters and used and emptied in a manner that minimizes the reentry of crystalline silica into the workplace.

Upon completion of work or upon removal of tools and equipment from areas containing crystalline silica or crystalline silica-containing material, employees must wipe all tools and equipment items off inside the areas before removing them from the work site. Rags and wipers used for cleaning of tools, equipment or other finished work surfaces, must be collected in a separate container and disposed of as crystalline silica-contaminated waste.

4.12. Hygiene Facilities and Practices

Employees must wash their hands and face at the end of each work shift or upon leaving areas containing crystalline silica or crystalline silica-containing materials for extended breaks or offsite errands. If the jobsite does not contain adequate washing facilities, portable washing stations will be provided in or adjacent to the designated changing area.

Food or drinks will not be taken into, or consumed inside areas containing crystalline silica or crystalline silica-containing materials. A designated break/eating area will be established at the start of the job to insure that employees have a clean area for rest and meal breaks.

Smoking on the jobsite will be prohibited at all times. Smoking or the chewing of tobacco or gum will not be permitted in areas containing crystalline silica or crystalline silica-containing materials at any time. Designated smoking areas may be established outside of the crystalline silica exposure areas, changing area, and break area for employees who wish to smoke, provided they are located in areas approved for smoking by the general contractor and/or site owner.

4.13. Medical Surveillance

It is not expected that any employee will be exposed to concentrations of crystalline silica at or above the Permissible Exposure Limits (PEL) during the course of their work activities. Therefore, mandatory medical surveillance should not routinely be performed for all employees working in areas known to contain crystalline silica or crystalline silica-containing materials.

4.14. Employee Information and Training

Prior to assignment or start up of work in areas known to contain crystalline silica or potential exposure to crystalline silica materials, all affected employees will be provided with information concerning crystalline silica hazards according to the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59.

In addition, each employee will receive trained in the following:

- OSHA Recommended Precautions for Crystalline Silica Exposure in General Industry
- The specific nature of the types of work to be performed which could result in exposure
- Engineering control options in the work environments and safe work practices to be followed
- The provisions of this exposure plan and any site specific job hazard analysis performed

In general, training and re-training is required at least annually or under the following circumstances:

- Prior to entry into a new area containing crystalline silica or crystalline silica containing materials
- Prior to a change in assigned duties involving crystalline silica work areas or materials
- Following evidence of a new crystalline silica hazard to employees
- When it is determined that an employee's knowledge is inadequate

5.0 Regulations

- Federal 29CFR 1910.1200 29CFR 1926.1153
- Washington WAC 296-901, 296-901-140
- California Title-8
- Alaska 29CFR 1910.1200 29CFR 1926.1153

SPILL PREVENTION

1.0 Purpose

To protect employees, the public, and the environment from accidental exposure to health hazards arising from accidental release of hazardous materials.

2.0 Scope

This policy applies to all Haskell operations including, Home Office, Fabrication Facilities, Field Sites. Haskell Corporation does not specialize in spill response and clean up. In the event that our work scope necessitates a spill response team and actions as outlined in this policy, Haskell Corporation will rely on the client facility for training of our personnel to respond to a spill, or a professional response team will be secured before such work begins.

3.0 Definitions

- **Incidental Spill:** means spills of hazardous liquids of less than 1 gallon liquid or 10 lbs. of solids. These typically may be cleaned up by the user without involving a response team.
- **Minor Spill:** means spills of hazardous liquids of more than incidental size and less than 56 gallons liquid or 600 lbs. solids.
- **Serious Spill**: means spills of hazardous liquids greater than minor in size, or where spill involves contact of incompatible materials or entry into storm or city sewer system. Spills of hazardous materials meeting this definition will require external assistance, notification and reporting.
- **Spill Coordinator:** means the Spill Coordinator who will be the site safety representative, or in his absence, the senior management representative on the scene.

4.0 Procedures

Safety and protection of the environment are top priorities at Haskell Corporation. Not only do we place a strong commitment on safety and health, but also proper waste disposal, reduction and recycling is cost effective and is an appropriate part of a good safety and health program. Our work is done in a wide range of jobsites. Some larger facilities have in-house environmental recycling and disposal programs. We encourage our employees to use and support these programs.

At jobsites where no program is in place, it may become necessary to contract a local recycler or disposal service such as Safety-Kleen Systems and Onyx Services when necessary. The following is a list of some of the items that when sent back to the Haskell warehouse in appropriately labeled containers are sent to the waste site and recycled or disposed of properly.

- Oil based paint, sludge and solids
- Solvents and paint liquids

- Latex paints
- Fluorescent light bulbs and ballasts
- Contaminated or used motor oil and oil filters
- Used antifreeze
- Fuels
- Aerosol flammables/paints and cleaners
- Alkaline, Lithium and Nickel-Cadmium (Ni-Cad) batteries
- Mercury

For more information about hazardous materials, refer to the corresponding Safety Data Sheet or the Hazard Communication section of this ACCIDENT PREVENTION PROGRAM.

It is the intent of this policy to minimize the likelihood of spills involving hazardous materials and procedures to be implemented to minimize environmental impact and hazards to personnel should such a spill occur. Hazardous materials used in routine job site operations include paints, flammable liquids, and petroleum based oils and solvents.

Although stringent precautions will be exercised any time hazardous materials are being handled, unforeseen events may occur which could result in an accident or emergency situation. It is vital that immediate appropriate actions be taken by the involved employees to minimize adverse environmental and personnel hazards.

This plan is intended to address incidental and minor spills as defined below and provide transition and notification of appropriate external responders for serious spills.

4.1. Hazard evaluation

4.1.1. Operations analysis: Construction operations will be evaluated during the planning phase and weekly during jobsite safety inspections. Storage and use of hazardous materials will be evaluated and precautions identified and implemented where necessary.

4.1.2. Identification of contaminants: In most cases, contaminants will be identified by location of the source. In cases where unknown contamination is encountered during construction, e.g. contaminated soils, identification may be made by appearance or smell in some cases. If this is not sufficient, specimens may be collected and submitted to an environmental lab for analysis.

4.2. Monitoring

Recognition training for employees will occur as an integral part of new employee safety orientation. This will include how to recognize potential problems and questionable materials and odors such as refuse, oil slick, and color on soils or water, oily or chemical odors.

4.3. Spill prevention & work practices

4.3.1. Separate storage areas will be established for each of the following types of hazardous liquids: paints and solvents, petroleum base fuels and oils, acids, and bases. Each storage area will provide spill containment adequate for the liquids stored therein and

will be prominently marked with the acceptable types of liquids which are compatible and can be stored there.

4.3.2. Spill kits should be easily accessible, highly visible and should contain the appropriate supplies for materials and quantities that may be spilled.

4.3.3. Employees should be instructed on the proper response procedures for spilled materials. The training should include materials that are available for use, proper waste disposal, and communication procedures.

4.3.4. Areas where chemicals may be used or stored should be maintained using good housekeeping practices. This includes, but is not limited to, clean and organized storage, labeling, and secondary containment where appropriate.

4.3.5. Hazardous liquids will be transported within the jobsite by lift truck in their original sealed shipping containers, with no more than 3 - 55 gallon containers per pallet. Pallets will be provided with a solid sheet of plywood or particle board to increase drum stability and to prevent broken pallets. Barrels transported by pallet will be banded together. Single drums may be handled using the special forklift drum handling attachment.

4.3.6. All hazardous liquids will be stored at ground level in designated storage areas.

4.3.7. Only one drum will be opened for use at any time, and drum openings will be closed with original bungs or pump apparatus.

4.3.8. When hazardous chemicals are removed from their original shipping containers, quantities will be minimized to those immediately required and temporary containers will be labeled in accordance with the HazCom program Section 2.1 Haskell Safety Manual.

4.3.9. Only individuals who have been trained and have job responsibilities for handling the specific chemical are authorized to open chemical shipping containers.

4.4. Spill response & emergency priorities

4.4.1. Injury prevention and treatment

4.4.2. Spill containment and pollution prevention

4.4.3. Cleanup and decontamination

4.4.4. Proper disposal of hazardous waste

4.4.5. Notification of external agencies

4.5. Person discovering spill

4.5.1. Report spill to job superintendent and/or site safety representative giving location of spill, type of substance, size of container involved, quantity released and rate of leakage.

4.5.2. Keep all personnel not required for assistance out of the immediate area of the spill.

4.5.3. Provide first aid to injured personnel, and decontaminate skin or clothing as necessary.

4.5.4. Initiate immediate corrective action to prevent additional spillage if necessary and can be done safely.

4.6. Spill Coordinator:

4.6.1. Determine the source, extent, and nature of the spill.

4.6.2. Assess the situation to determine whether evacuation of the area or entire job site is necessary.
4.6.3. Initiate partial or total job site evacuation if necessary.
4.6.4. Evaluate possible hazards to human health or the environment presented by the spill.
4.6.5. Assume operational control of response team and implement control and cleanup procedures.
4.6.6. Implement internal notification procedures.

4.7. Work limitations

Haskell personnel may attempt to contain and clean up small spills of relatively non-hazardous chemicals such as fuel, oil or solvent type materials. Any spills involving more large quantities or more hazardous materials will be addressed by private or governmental agency HAZMAT teams.

4.8. Authorized personnel

The Haskell Job Superintendent and/or Site Safety Representative are authorized to implement this policy, and act as Interim Spill Coordinator if needed.

4.9. Responsible individual

4.9.1. If the Spill Coordinator determines that the facility has had a release that could threaten human health or the environment and cannot be controlled within the scope of this plan, or if evacuation of the vicinity around the job site is advisable, he will immediately initiate the following notification procedures:
4.9.2. Contact appropriate regulatory agency. Refer to the site-specific plan for up to date contact numbers.

Provide the following information, if available:

4.9.3. Name and phone number of caller
4.9.4. Name and address of the job site
4.9.5. Time and type of incident
4.9.6. Name and estimated quantity of materials involved (to the extent known at the time)
4.9.7. Extent of injuries, if known
4.9.8. Possible hazards to human health or the environment outside the facility
4.9.9. Once the material involved in a release has been identified, control procedures described below will be implemented. The procedures involve physically controlling the spread of a spill in the event that a liquid waste is released and cleaning up spill residue from the spill of a liquid or solid.

4.10. Response team

On notification of a spill, response team will immediately report to spill area and don protective clothing and equipment as specified in the site specific plan; taking the following into consideration.

4.10.1. Avoid all contact with unknown contaminants unless personal protective clothing and equipment is worn.
4.10.2. If spill involves ignitable liquids, immediately remove all potential sources of ignition.
4.10.3. Initiate immediate measures to prevent further leakage.
4.10.4. Transfer un-spilled liquids from damaged container into an empty and undamaged container previously used to store same material.
4.10.5. Dike, divert, or absorb liquids using absorbent materials available (dry soil may be used), and/or floor sweep compound to prevent entry into sewer system or offsite migration.
4.10.6. Further protect storm drains, sewers, ditches and drainages to prevent entry using earth dikes and polyethylene sheet.
4.10.7. Mark areas using traffic barricades and tape to warn others, restrict access, and prevent accidental contamination or trackout.
4.10.8. Clean up spilled material using absorbents, shovels or stiff brooms.
4.10.9. Spread second application of absorbent compound over spill area allowing a few minutes for material absorption, then sweep up and place in drum.
4.10.10. Put all contaminated soils and absorbents in a suitable properly labeled container as directed by spill coordinator.
4.10.11. Decontaminate all equipment used in cleanup as directed by Spill Coordinator, and replace supplies used.
4.10.12. Replace and restock spill equipment.
4.10.13. Provide assistance to spill personnel if necessary.

4.11. Personal & equipment decontamination

4.11.1. Individuals involved in cleaning up any quantity or type of spill will thoroughly wash their hands, face, and other exposed areas upon completion of work, prior to rest breaks/lunch, or as needed to remain uncontaminated.
4.11.2. Tools and equipment used for cleanup purposes will be thoroughly cleaned and decontaminated prior to being released for normal use, returned to rental/leasing company, or demobilized from the site.

4.12. Emergency medical care and treatment:

Emergency medical care and treatment is addressed in the site specific HEALTH-SAFETY-ENVIRONMENT Plan and may be dependent on the nature and severity of personal exposure.

4.13. Reporting:

In the event that a spill of hazardous materials becomes reportable under government regulations, the Spill Coordinator will prepare a written report on the incident and submit it to the EPA Regional Administrator and the State Department of Environmental Quality within 15 days of the release.

The report will include the following:

4.13.1. The name, address, and telephone number of the owner and operator of the job site.

4.13.2. The name, address, and telephone number of the facility.
4.13.3. The date, time, physical location, and type of incident.
4.13.4. The name and quantity of material involved.
4.13.5. The extent of any resultant injuries.
4.13.6. An assessment of the actual or potential hazards to human health or the environment.
4.13.7. Estimated quantity and disposition of material cleaned up following the incident.
4.13.8. Any other information as appropriate.

5.0 Regulations

- Federal 29CFR
- Washington WAC
- California Title-8

STAIRWAYS AND LADDERS

1.0 Purpose

The purpose of this policy is to establish safety requirements at industrial and commercial sites for safe access to each elevation of the work area.

2.0 Scope

This policy is applicable to all Haskell Corporation employees and Sub-contractors. This policy applies to all stairways and ladders used in construction, alteration, repair (including painting and decorating), and demolition workplaces covered under chapter 296-155 WAC, and also sets forth, in specified circumstances, when stairways are required to be provided.

3.0 Definitions

- Equivalent means alternative designs, materials, or methods that the employer can demonstrate will provide an equal or greater degree of safety for employees than the method or item specified in the standard.
- Failure means load refusal, breakage, or separation of component parts. Load refusal is the point where the structural members lose their ability to carry the loads.
- Handrail means a rail used to provide employees with a handhold for support.
- Lower levels means those areas to which an employee can fall from a stairway or ladder. Such areas include ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, material, water, equipment, and similar surfaces. It does not include the surface from which the employee falls.
- Nosing means that portion of a tread projecting beyond the face of the riser immediately below.
- Platform means a walking/working surface for persons, elevated above the surrounding floor or ground.
- Point of access means all areas used by employees for work-related passage from one area or level to another. Such open areas include doorways, passageways, stairway openings, studded walls, and various other permanent or temporary openings used for such travel.
- Riser height means the vertical distance from the top of a tread to the top of the next higher tread or platform/landing or the distance from the top of a platform/landing to the top of the next higher tread or platform/landing.
- Spiral stairway means a series of steps attached to a vertical pole and progressing upward in a winding fashion within a cylindrical space.
- Stairrail system means a vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling to lower levels. The top surface of a stairrail system may also be a "handrail."

- Tread depth means the horizontal distance from front to back of a tread (excluding nosing, if any).
- Unprotected sides and edges means any side or edge (except at entrances to points of access) of a stairway where there is no stairrail system or wall 36 inches (.9 m) or more in height, and any side or edge (except at entrances to points of access) of a stairway landing, or ladder platform where there is no wall or guardrail system 39 inches (1 m) or more in height.

4.0 Procedures

Ladders should be used to give safe access to all elevations that are not supplied with permanent or temporary stairways, or suitable platforms, ramps, or runways. Ladders should not be used in the horizontal position as a platform, runway or scaffold. Ladders should not be used for any other purpose other than their intended purpose. The construction, Installation, and use of ladders should conform to ANSI A14, 1. ANSI A14.2, ANSI A14.3, and ANSI A14.4, as applicable.

Supervisors should ensure that all employees or Sub-contractors are trained to this directive and adhere to these procedures and guidelines.

4.1. General Requirements

A stairway or ladder should be provided at all personnel points of access where there is a break in elevation of nineteen inches (48 cm) or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.

Employees should not use any spiral stairways that will not be a permanent part of the structure on which construction work is being performed.

A double-cleated ladder or two or more separate ladders should be provided when ladders are the only means of access or exit from a working area for twenty-five or more employees, or when a ladder is to serve simultaneous two-way traffic.

When a building or structure has only one point of access between levels, that point of access should be kept clear to permit free passage of employees. When work must be performed or equipment must be used such that free passage at that point of access is restricted, a second point of access should be provided and used.

When a building or structure has two or more points of access between levels, at least one point of access should be kept clear to permit free passage of employees.

All stairway and ladder fall protection systems required by this policy should be provided and installed and should comply with all other pertinent requirements of this policy before employees begin the work that necessitates the installation and use of stairways, ladders, and their respective fall protection systems.

Portable ladders should have slip resistant feet.

Single-rail ladders should not be used.

Three-legged ladders may be used for specific tasks, if accepted by the client.

The use of ladder climbing devices should be in acccrdance with applicable standards.

Articulated ladders are allowed if they meet ANSI A14.2 standard.

Ladders should be surfaced so as to prevent injury to an worker from punctures or lacerations and to prevent snagging of clothing.

Wooden ladders should not be coated with any opaque covering. except for identification or warning labels that may be placed on only one face of a side rail.

A metal spreader bar or locking device should be provided on each stepladder to hold the front and back sections in an open position.

Any ladder accessory, including but not limited to. Ladder levelers, ladder stabilizers or stand-off devices, ladder jacks or ladder straps or hooks, that may be installed or used in conjunction with ladders must be installed and used per manufacturer's instructions.

4.2. Length of ladders

a. All portable ladders should be of sufficient length and should be placed so that workers will not stretch or assume a hazardous position.

b. Portable ladders used as temporary access should extend at least 3ft (0.9 ml above the upper landing surface.

(1) When a 3ft (0.9-ml extension is not possible. a grasping device (such as a grab rail) should be provided to assist workers in mounting and dismounting the ladder.

(2) In no case should the length of the ladder be such that ladder deflection under a load would. by itself cause the ladder to slip from its support.

c. The length of portable stepladders should not exceed 20 ft (6m).

d. When splicing of side rails is required to obtain the required length, the resulting side rail must be at least equal in strength to a one-piece side rail made of the same material.

4.3. Width of ladders

a. The minimum clear distance between the sides of individual rung/ step ladders should be 16 in (40.6 em).

b. The minimum clear distance between side rails for all portable ladders should be 12 in (30.4 em).

4.4. Spacing of rungs, cleats, and steps on ladders.

a. On portable ladders, spacing of rungs should be 8 in (20.3 cm) - 14 in (35.5 cm) on center and uniform.

b. On step stools, spacing should be not less than 8 in (20.3 cm) or more than 12 in (30.4 cm) apart. as measured from their centerlines.

c. On extension trestle ladders, spacing on the base section should be not less than 8 in (20.3 cm) or more than 18 in (45.7 cm) apart as measured from their centerlines. On the extension section, spacing should not be less than 6 in (15.2 cm) or more than 12 in (30.4 cm) apart, as measured from their centerlines.

4.5. Set-up of ladders.

a. Ladders should not be placed in passageways, doorways, driveways, or any locations where they may be displaced by any other work unless protected by barricades or guards.

b. Portable ladders should be used at such a pitch that the horizontal distance from the top support to the foot of the ladder will not be greater than the vertical distance between these points.

c. Wooden job-made ladders. with spliced rails, should be used at an angle such that the horizontal distance from the vertical plane is 1/8 the length of the ladder.

d. Ladders should be secured by top, bottom, and intermediate fastenings, as necessary to hold them rigidly in place and to support the loads that will be imposed upon them.

e. The steps or rungs of all ladders should be set to provide at least 7 in (17.7 cm) toe space from the inside edge of the rung to the nearest interference.

f. The top of a non-self-supporting ladder should be placed with the two rails supported equally, unless the ladder is equipped with a single support attachment.

g. The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure should be not more than 12 in (30.5 cm\ or less than 2- 1/2 in (6.4 cm).

4.6. Use of ladders

- Ladders should be restricted to their intended use.
- Ladders should not be loaded beyond their maximum intended, nor beyond the manufacturer's rcapacity as listed on the duty rating sticker.
- Ladders should be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders should be immediately tagged "DO NOT USE." or with similar wording. and withdrawn from service until restored to a condition meeting their original design.
- Ladders should not be moved, shifted, or extended while occupied.
- Ladders should not be climbed by more than one person at a time unless it is designed to be climbed by more than one person.
- Users must face the ladder when ascending or descending, and should not carry objects that could cause injury in the event of a fall.
- Portable ladders used as means of access to ascend and descend to a work location do not require fall protection. However only light work for short periods of time should be performed on portable ladders. No work requiring lifting of heavy materials or substantial exertion should be done from ladders.
- When ladders are the only means of access to or from a working area for 25 or more workers, or when a ladder is to serve simultaneous two-way traffic, double-cleated ladders should be used.
- Portable ladders should have slip-resistant feet.
- The top or top step of a stepladder should not be used, as a step unless it has been designed to be so used by the manufacturer.
- Ensure latches are in place before climbing an extension ladder.
- Keep loose tools off the steps and top platform.

4.7. Ladder Base

The ladder base must be placed with a secure footing. Portable ladder feet should be in good working order and placed on a substantial base, and the area around the top and bottom of the ladder should be kept clear. Ladders should not be placed on boxes, barrels, or other unstable bases to obtain additional height. The ladder should be properly placed to prevent slipping, or it should be tied off or held in position by another employee.

4.8. Ascending or Descending

When ascending or descending, the climber must face the ladder with hips within the side rails. The ladder user should not lean outside the ladder side rails. Move the ladder instead. Each rung should be used. Always use both hands to climb up and down so you can control your center of gravity and won't fall. Never carry anything in your hands while you go up or down the ladder. Carry tools in a tool belt or transfer tools in a bucket tied to rope. Never jump from a ladder while descending.

4.9. Working from a Ladder

Always inspect a ladder before using for physical defects. Ladders are not to be painted except for numbering purposes. Rungs must be free of grease and/or oil. Do not use ladders for skids, braces, workbenches or any purpose other than climbing. Once a ladder is properly set to perform work, the following safety precautions should be taken:

- Keep loose tools off the steps and top platform.
- Never over reach on a ladder. Reaching farther than you should, moves the center of gravity and may cause the ladder or the ladder user to fall.
- The top or top step of a stepladder should not be used as a step unless so designed by the manufacturer.
- Match the ladder to the job being performed. If the job requires frequent movement of the ladder, a manlift or scaffold may be more appropriate.
- Always maintain a 3-point stance on a ladder. Two feet and at least one hand. When working from a ladder 6 feet or higher, with both hands performing work, the ladder user should use a fall arrest system.
- Employees should not work from higher than the third rung from the top of an extension or straight ladder.
- Area around the base of the ladder should be flagged off sufficiently to protect personnel working below from falling objects.
- If you must place a ladder over a doorway, barricade the door to preent its use and post a warning sign.
- Only one person is allowed on a ladder at a time unless the ladder is designed for more than one person
- Ladders should not be moved, shifted or extended while occupied.

4.10. Job made ladders

- Job made ladders should be made in accordance with ANSI A14.4.

4.11. Step Ladders

All stepladders should have safety feet and/or safety treads. Stepladders are not to be used as a leaning ladder. The stepladder center locking mechanism should be locked in place before the ladder is used, and its four legs placed on a level surface. An employee should not work from higher than the third rung from the top of a straight ladder. Do not place tools or materials on the steps or platform of a stepladder.

4.12. Extension Ladders

In most cases, setting up large extension ladders is a 2-person job. In addition to the above general requirements, the following apply to extension ladders:

- Keep hands and fingers on the outside of the side rails
- Never use the rungs to adjust the length of the ladder
- After raising the extension portion of a two or more stage ladder to the desired height, check to ensure that the safety dogs or latches are engaged
- Raise extension ladders to the vertical position or against a wall before extending them. When accessing the top of an extension ladder to tie it off, someone else should hold the base of the ladder.
- The side rails should not extend less than 36 inches above the landing, roof or platform to provide an adequate handhold.

A simple rule for setting up a ladder is to place the base a distance from the vertical wall ¼ the working length of the ladder. If the foot of the ladder must be placed considerably closer than this distance, it should be securely held or tied at the top and the bottom before beginning work. Care should be exercised to ensure the ladder is tied to a secure, immovable object. Conduit should not be used to secure a ladder.

4.13. Damaged Ladders

Ladder users should inspect the ladder before use and if a defect is found or suspected, report it to the supervisor, or to the tool room. The use of ladders with broken or missing rungs or steps, broken or split side rails, or other faulty or defective construction is strictly prohibited. When ladders with such defects are discovered, they should be immediately withdrawn from service and properly tagged with a Do Not Use tag. Identify the defect on the tag and return it to the tool room.

5.0 Regulations

- Federal 29CFR 1926.1053
- Washington WAC 296-876
- California Title-8 1637
- USACE EM385-1-1

STEEL ERECTION

1.0 Purpose

This policy establishes Haskell Corporation's minimum guidelines for protecting workers during structural steel erection and assembly.

2.0 Scope

This policy applies to all employees and Sub-contractors at Haskell work locations. These guidelines cover all steel erection/assembly activities where two or more pieces of structural steel are joined together, as part of any structure or building- regardless of current or future use. This includes, but is not limited to the following types of work: Hoisting, laying-out, placing, connecting, welding, burning, guying, bracing, bolting, plumbing and rigging of structural steel, steel joists, and metal buildings.

3.0 Definitions

- **Anchored Bridging:** means that the steel joist bridging is connected to a bridging terminus point.
- **Bolted Diagonal Bridging**: means diagonal bridging that is bolted to a steel joist or joists.
- **Bridging Clip**: is a device that is attached to the steel joist to allow the bolting of the bridging to the steel joist.
- **Bridging Terminus Point:** is a wall, beam, tandem joists (with all bridging installed and a horizontal truss in the plane of the top chord) or other element at an end or intermediate point(s) of a line of bridging that provides an anchor point for the steel joist bridging.
- **Choker:** is a wire rope or synthetic fiber rigging assembly that is used to attach a load to a hoisting device.
- **Cold Forming**: means the process of using press brakes, rolls, or other methods to shape steel into desired cross sections at room temperature.
- **Column**: means a load-carrying vertical member that is part of the primary skeletal framing system. *Columns do not include posts.*
- **Competent Person**: is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- **Connector:** is an employee who, working with hoisting equipment, is placing and connecting structural members and/or components.
- **Constructability**: is the ability to erect structural steel members in accordance with subpart R without having to alter the over-all structural design.
- **Construction Load**: (for joist erection) means any load other than the weight of the employee(s), the joists and the bridging bundle.
- **Controlled Decking Zone:** (CDZ) is an area in which certain work (for example, initial installation and placement of metal decking) may take place without the use of guardrail systems, personal

fall arrest systems, fall restraint systems, or safety net systems and where access to the zone is controlled.

- **Controlled Load lowering:** is defined as lowering a load by means of a mechanical hoist drum device that allows a hoisted load to be lowered with maximum control using the gear train or hydraulic components of the hoist mechanism. Controlled load lowering requires the use of the hoist drive motor, rather than the load hoist brake, to lower the load.
- **Controlling Contractor:** means a prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for the construction of the project planning, quality, completion.
- **Critical Lift:** is a lift that either exceeds 75 percent of the rated capacity of the crane or derrick, or requires the use of more than one crane or derrick.
- **Decking Hole:** is a gap or void more than 2 inches (5.1 cm) in its least dimension and less than 12 inches (30.5 cm) in its greatest dimension in a floor, roof or other walking/working surface. Pre-engineered holes in cellular decking (for wires, cables, etc.) are not included in this definition.
- **Derrick Floor:** means an elevated floor of a building or structure that has been designated to receive hoisted pieces of steel prior to final placement.
- **Double Connection:** means an attachment method where the connection point is intended for two pieces of steel which share common bolts on either side of a central piece.
- **Double Connection Seat:** is a structural attachment that, during the installation of a double connection, supports the first member while the second member is connected.
- **Erection Bridging:** is the bolted diagonal bridging that is required to be installed prior to releasing the hoisting cables from the steel joists.
- **Fall Restraint System:** is a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness, along with an anchorage, connectors and other necessary equipment. The other components typically include lanyard, and may also include a lifeline and other devices.
- **Girt:** (in systems engineered buildings) means a “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting wall material.
- **Headache Ball**: is a weighted hook that is used to attach loads to the hoist load line of the crane.
- **Hoisting Equipment:** is commercially manufactured lifting equipment designed to lift and position a load of known weight to a location at some known elevation and horizontal distance from the equipment’s center of rotation. “Hoisting equipment” includes but is not limited to cranes, derricks, tower cranes, barge-mounted derricks or cranes, gin poles and gantry hoist systems. A “come-a-long” (a mechanical device, usually consisting of a chain or cable attached at each end, that is used to facilitate movement of materials through leverage) is not considered hoisting equipment.
- **Leading Edge:** means the unprotected side and edge of a floor, roof, or formwork for a floor or other walking/working surface (such as deck) which changes location as additional floor, roof, decking or formwork sections are placed, formed or constructed.
- **Metal Decking**: is a commercially manufactured, structural grade, cold rolled metal panel formed into a series of parallel ribs. This includes metal floor and roof decks, standing seam

metal roofs, other metal roof systems and other products such as bar gratings, checker plate, expanded metal panels, and similar products. After installation and proper fastening, these decking materials serve a combination of functions including, but not limited to: a structural element designed in combination with the structure and provide a diaphragm action; a walking/working surface; a form for concrete slabs; a support for roofing systems; and a finished floor roof.

- **Multiple Lift Rigging:** means a rigging assembly manufactured by wire rope rigging suppliers that facilitates the attachment of up to five independent loads to the hoist rigging of a crane.
- **Opening:** is a gap or void 12 inches or more in its least dimension in the floor, roof or other walking/working surface. For the purposes of this section, skylights and smoke domes that do not meet the strength requirements of 1926.754 (e)(3) will be regarded as openings.
- **Permanent Floor**: is defined as a structurally completed floor at any level or elevation (including slab on grade).
- **Personal Fall Arrest System:** is a system used to arrest an employee in a fall from a working level. A personal fall arrest system consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these. The use of a body belt for fall arrest is prohibited.
- **Positioning Device System:** is a body belt or body harness rigged to allow an employee to be supported on an elevated, vertical surface, such as a wall or column and work with both hands free while leaning.
- **Post:** means a structural member with a longitudinal axis that is essentially vertical, that weighs 300 pounds or less and is axially loaded (a load presses down on the top end), or is not axially loaded, but is laterally restrained by the above member. Posts typically support stair landings, wall framing, mezzanines and other substructures.
- **Project Structural Engineer of record**: is the registered, licensed professional responsible for the design of structural steel framing and whose seal appears on the structural contract documents.
- **Purlin:** (in systems-engineered metal buildings) is a “Z” or “C” shaped member formed from sheet steel spanning between primary framing and supporting roof material.
- **Qualified Person:** is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.
- **Safety Deck Attachment:** means an initial attachment that is used to secure an initially placed sheet of decking to keep proper alignment and bearing with structural support members.
- **Shear Connector:** is headed steel studs, steel bars, steel lugs, and similar devices which are attached to a structural member for the purpose of achieving composite action with concrete.
- **Steel Erection:** is the construction, alteration or repair of steel buildings, bridges and structures, including the installation of metal decking and all planking used during the process of erection.
- **Steel Joist:** is defined as an open web, secondary load-carrying member of 144 feet or less, designed by the manufacturer, used for the support of floors and roofs. This does not include structural steel trusses or cold-formed joists.

- **Steel Joist Girder:** is an open web, primary load-carrying member, for the support of floors and roofs. This does not include structural steel trusses.
- **Steel Truss**: means an open web member designed of structural steel components by the project structural engineer of record. For purposes of this section, a steel truss is considered equivalent to a solid web structural member.
- **Structural Steel:** is a steel member, or a member made of a substitute material (such as, but not limited to, fiberglass, aluminum, or composite members). These members include, but are not limited to, steel joists, joist girders, Purlins, columns, beams, trusses, splices, seats, metal decking, girts, and all bridging, and cold formed metal framing which is integrated with the structural steel framing of a building.
- **Systems-Engineered Metal Building**: is defined as a metal, field–assembled building system consisting of framing, roof and wall coverings. Typically, many of these components are cold-formed shapes. These individual parts are fabricated in one or more manufacturing facilities and shipped to the job site for assembly into the final structure. The engineering design of the system is normally the responsibility of the systems-engineered metal building manufacturer.
- **Unprotected Sides and Edges:** means any side or edge (except at entrances to points of access) of a walking/working surface (for example a floor, roof, ramp or runway), where there is no wall or guardrail system at least 39 inches high.

4.0 Procedures

It is the policy of Haskell Corporation that all steel erection activities are completed in accordance with this policy and current regulations. We expect every employee and subcontractor to follow these guidelines and we will take adequate care to ensure compliance.

Haskell Corporation will approach all steel erection activities in the following manner:

4.1. Layout & Sequencing

Every steel erection project will require preliminary planning and consideration of the following:

Adequate access/haul roads will be established and maintained throughout the erection activities to allow for the safe movement of equipment, vehicles, and personnel.

Material staging areas will be firm, well-graded, and properly drained.

Haskell Corporation will not begin erection activities without:

- Certification that the foundation system has reached 75% minimum compressive strength or that it has sufficient strength to withstand anticipated loads

AND

- Written Notification that any required repairs to anchor bolts are complete

4.2. Hoisting & Rigging Equipment

Haskell Corporation will evaluate the type, size, and number of lifting equipment necessary to complete steel erection activities in an orderly and efficient manner. All cranes and other lifting devices will be inspected upon arrival to the site and daily thereafter, while in use.

4.3. Assembly & Erection

Structural stability must be maintained at all times! This may require the use of struts, supports, guy wires, or other methods to ensure that incomplete portions of steel are protected during assembly.

For multi-story structures, the permanent floors must be installed as the erection of the structure progresses. There cannot be more than eight stories between the active erection floor and the upper-most structurally complete floor, except where integrity is maintained as a result of the design.

At no time can there be more than four floors or 48 feet (14.6 m), whichever is less, of unfinished bolting or welding above the foundation or uppermost permanently secured floor, except where the structural integrity is maintained as a result of the design.

A fully planked or decked floor or nets must be maintained within two stories or 30 feet (9.1m), whichever is less, directly under any erection work being performed.

4.4. Walking/working surfaces.

Tripping Hazards, like shear connectors (such as headed steel studs, steel bars or steel lugs), reinforcing bars, deformed anchors or threaded studs must not be attached to the top flanges of beams, joists or beam attachments so that they project vertically from or horizontally across the top flange of the member until after the metal decking, or other walking/working surface, has been installed.

When shear connectors are used in construction of composite floors, roofs and bridge decks, employees must lay out and install the shear connectors after the metal decking has been installed, using the metal decking as a working platform. Shear connectors must not be installed from within a controlled decking zone (CDZ), as specified in 29 CFR 1926.760 (c) (8).

Safe access must be provided and maintained to all working levels. Employees are not permitted to slide down ropes, columns, ladders, or ‘free-climb’ structures.

4.5. Plumbing- up

When deemed necessary by a competent person, plumbing-up equipment must be installed in conjunction with the steel erection process to ensure the stability of the structure.

When used, plumbing-up equipment must be in place and properly installed before the structure is loaded with construction material such as loads of joists, bundles of decking or bundles of bridging.

Plumbing-up equipment (temporary straps, ratchets, cables, etc.) will only be removed with the approval of a competent person.

4.6. Metal decking

Metal decking bundle packaging and strapping must not be used for hoisting unless specifically designed for that purpose.

Loose items such as donnage, flashing, or other materials placed on the top of the metal decking bundles to be hoisted, must be secured prior to movement

Bundles of material must be landed in accordance with the Open Web Steel Joist portion of this section.

Metal decking bundles will be landed on framing members so that enough support is provided to allow the bundles to be un-banded without dislodging the bundles from the supports.

At the end of each shift or when environmental or jobsite conditions require, metal decking and other materials must be secured against unexpected displacement.

4.7. Floor Holes And Openings.

Framed metal deck openings must have structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructability.

Roof and floor holes and openings must be decked over. Where large size, configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stair wells, etc.) each employee who is on a walking/working

Surface with an unprotected edge or side more than 15 feet (4.6m) above a lower level must be protected from fall hazards by guardrail systems, safety net systems, and personal fall arrest systems, positioning device systems or fall restraint systems.

Metal decking holes and openings must not be cut until immediately prior to being permanently filled with the equipment or structure needed or intended to fulfill its specific use and which meets specified strength requirements of the following section, or must be covered immediately.

4.8. Covering roof and floor openings

Covers for roof and floor openings must be capable of supporting, without failure, twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.

All covers must be secured when installed to prevent accidental displacement by the wind, equipment or employees.

All covers must be painted with high-visibility paint or must be marked with the word “**HOLE**” or “**COVER**” to provide warning of the hazard.

Smoke or skylight fixtures that have been installed are not considered covers for the purposes of this section unless they are capable of supporting, without failure, twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.

4.9. Decking gaps around columns

Wire mesh, exterior plywood, or equivalent, must be installed around columns where planks or metal decking do not fit tightly. The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

4.10. Installation of metal decking

Metal decking must be laid tightly and immediately secured upon placement to prevent accidental movement or displacement. However, a Controlled Decking Zone (CDZ) may be established in that area of the structure over 15 and up to 30 feet above a lower level where metal decking is initially being installed and forms the leading edge of a work area.

During initial placement, metal decking panels must be placed to ensure full support by structural members.

4.11. Derrick floors

A derrick floor must be fully decked and/or planked and the steel member connections completed to support the intended floor loading.

Temporary loads placed on a derrick floor must be distributed over the underlying support members so as to prevent local overloading of the decking material.

4.12. Column anchorage

All Columns must be anchored by a minimum of 4 anchor rods (anchor bolts).

Each column anchor rod (anchor bolt) assembly, including the column-to-base plate weld and the column foundation, must be designed to resist a minimum eccentric gravity load of 300 pounds (136.2kg) located 18 inches (.46m) from the extreme outer face of the column in each direction at the top of the column shaft.

Columns must be set on level finished floors, pre-grouted leveling plates, leveling nuts, or shim packs which are adequate to transfer the construction loads.

All columns must be evaluated by a competent person to determine whether guying or bracing is needed. Guying or bracing must be installed if it is needed.

4.13. REPAIR, REPLACEMENT, FIELD MODIFICATION of ANCHOR RODS (Anchor Bolts).

Anchor rods (anchor bolts) must not be repaired, replaced, or field-modified without the approval of the project structural engineer of record.

Prior to the erection of a column, Haskell must provide written notification to the steel erector if there has been any repair, replacement or modification of the anchor rods (anchor bolts) of that column.

4.14. BEAMS and COLUMNS

During the final placing of solid web structural members, the load must not be released from the hoisting line until the members are secured with at least two bolts per connection, of the same size and strength as shown in the erection drawings, drawn up wrench-tight or the equivalent as specified by the project structural engineer of record. Solid web structural members used as diagonal bracing must be secured by at least one bolt per connection drawn up wrench-tight or the equivalent as specified by the project structural engineer of record.

A competent person must determine if more than two bolts are necessary to ensure the stability of cantilevered members. Install additional bolts as needed.

4.15. Diagonal bracing

Solid web structural members used as diagonal bracing must be secured by at least one bolt per connection drawn up wrench-tight or the equivalent as specified by the project structural engineer of record.

4.16. Double connections at columns/beam webs over a column

When two structural members on opposite sides of a column web, or a beam web over a column, are connected sharing common connection holes, at least one bolt with its wrench-tight nut must remain connected to the first member unless a shop-attached or field-attached seat or equivalent connection device is supplied with the member. (SEE Appendix H to subpart R for examples of equivalent connection devices).

If a seat or equivalent device is used, the seat (or device) must be designed to support the load during the double connection process. It should be adequately bolted or welded to both a supporting member and the first member before the nuts on the shared bolts are removed to make the double connection.

4.17. Column splices

Each column splice must be designed to resist a minimum eccentric gravity load of 300 pounds (136.2 kg) located 18 inches (.46 m) from the extreme outer face of the column in each direction at the top of the column shaft.

4.18. Perimeter columns

Perimeter columns must not be erected unless they extend a minimum of 48 inches (1.2 m) above the finished floor to permit installation of perimeter safety cables prior to erection of the next tier, (see Appendix F to Subpart R for exceptions).

Perimeter columns must not be erected if they have holes or other devices in or attached to perimeter columns at 42-45 inches (107-114 cm) above the finished floor and the midpoint between the finished floor and the top cable for installation of perimeter safety cables, (see Appendix F to Subpart R for exceptions).

4.20. Open web steel joists

Where steel joists are used and columns are not framed in at least two directions with solid web structural steel members, a steel joist must be field-bolted at the column. Procedures for the installation of this joist can be found in 29 CFR 1926.757 (a) (1).

Where constructability does not allow a steel joist to be installed at the column an alternate means of stabilizing joists must be installed on both sides near the column and must:

- Provide stability equivalent to (A) (1) of this section.
- Be designed by a qualified person.
- Be shop installed.
- Be included in the erection drawings.
- Hoisting cables must not be released until the seat at each end of the steel joist is field-bolted and the joist is stabilized.

Where steel joists at or near columns span 60 feet (18.3 m) or less, the joist must be designed with sufficient strength to allow one employee to release the hoisting cable without the need for erection bridging.

Where steel joists at or near columns span more than 60 feet (18.3 m), the joists must be set in tandem with all bridging installed unless an alternative method of erection, which provides equivalent stability to the steel joist, is designed by a qualified person and is included in the site-specific erection plan.

A steel joist or steel joist girder must not be placed on any support structure unless such structure is stabilized.

When steel joist(s) are landed on a structure, they must be secured to prevent unintentional displacement prior to installation.

No modification that affects the strength of a steel joist or steel joist girder will be made without the approval of the project structural engineer of record.

Field-Bolted Joists, except for steel joists that have been pre-assembled into panels, connections of individual steel joists to steel structures in bays of 40 feet (12.2 m) or more must be fabricated to allow for field bolting during erection. These connections must be field-bolted unless constructability does not allow.

Steel joists and steel joist girders must not be used as anchorage points for a fall arrest system unless written approval to do so is obtained from a qualified person.

A bridging terminus point must be established before bridging is installed.

4.21. Attachment of steel joists/steel joist girders

Each end of “K” series steel joists must be attached to the support structure with a minimum of two-inch (3 mm) fillet welds 1 inch (25 mm) long or with two ½-inch (13 mm) bolts, or the equivalent.

Each end of “LH” and “DLH” series steel joists and steel joist girders must be attached to the support structure with a minimum of two ¼ -inch (6 mm) long, or with two ¾-inch (19 mm) bolts, or the equivalent.

Except for panels that have been pre-assembled from steel joists with bridging, each steel joist must be attached to the support structure, at least one end on both sides of the seat,

Immediately upon placement in the final erection position and before additional joists are placed.

Panels that have been pre-assembled from steel joists with bridging must be attached to the structure at each corner before the hoisting cables are released.

4.22. Steel joist erection

Both sides of the seat of one end of each steel joist that requires bridging under Tables A and B must be attached to the support structure before hoisting cables are released.

For joists over 60 feet, both ends of the joist must be attached as described in Paragraph B of this section and the provisions of paragraph D of this section before the hoisting cables are released.

On steel joists that do not require erection bridging under Tables A and B, only one employee must be allowed on the joist until all bridging is installed and anchored.

Haskell Corporation or subcontractor employees must not be allowed on steel joists where the span of the steel joist is equal to or greater than the span shown in Tables A and B except in accordance with 1926.757 (d).

When permanent bridging terminus points cannot be used during erection, additional temporary bridging terminus points are required to provide stability.

4.23. Erection bridging

Where the span of the steel joist is equal to or greater than the span shown in Tables A and B the following will apply:

- A row of bolted diagonal erection bridging must be installed near the midspan of the steel joist.
- Hoisting cables must not be released until bolted diagonal erection bridging is installed and anchored.
- No more than one employee must be allowed on these spans until all other bridging is installed and anchored.

Where the span of the steel joist is over 60 feet (18.3 m) through 100 feet (30.5 m), the following will apply:

- All rows of bridging must be bolted diagonal bridging.
- Two rows of bolted diagonal erection bridging must be installed near the third points of the steel joists.

- Hoisting cables must not be released until this bolted diagonal erection bridging is installed and anchored.
- No more than two employees will be allowed on these spans until all other bridging is installed and anchored.

Where the span of the steel joist is over 100 feet (30.5 m) through 144 feet (43.9 m): the following will apply:

- All rows of bridging must be bolted diagonal bridging.
- Hoisting cables must not be released until all bridging is installed and anchored.
- No more than two employees will be allowed on these spans until all bridging is installed and anchored.

For steel members spanning over 144 feet (43.9 m), the erection methods used must be in accordance with 1926.756.

Where any steel joists specified in paragraphs (C) (2) and (D) (1), (D) (2), and (D) (3) of this section is a bottom chord bearing joist, a row of bolted diagonal bridging must be provided near the support(s). This bridging must be installed and anchored before the hoisting cable(s) is released.

When bolted diagonal erection bridging is required, the following will apply:

- The bridging must be indicated on the erection drawing.
- The erection drawing must be the exclusive indicator of the proper placement of this bridging.

Shop-installed bridging clips, or functional equivalents, should be used where the bridging bolts to the steel joists.

When two pieces of bridging are attached to the steel joist by a common bolt, the nut that secures the first piece of bridging must not be removed from the bolt for the attachment of the second.

Bridging attachments must not protrude above the top chord of the steel joist.

4.24. Landing/placing loads

During the construction period, Haskell or Sub-contractors placing a load on steel joists must ensure that the load is distributed so as not to exceed the carrying capacity of any steel joist.

Except for paragraph (e)(4) of this section, no construction loads are allowed on the steel joists until all bridging is installed and anchored and all joist-bearing ends are attached.

The weight of a bundle of joist bridging must not exceed a total of 1,000 pounds (454 kg). A bundle of joist bridging must be placed on a minimum of three steel joists that are secured at one end. The edge of the bridging bundle must be positioned within 1 foot (.30 m) of the secured end.

No bundle of decking may be placed on steel joists until all bridging has been installed and anchored and all joist bearing ends attached, unless all of the following conditions are met:

- Haskell has first determined from a qualified person and documented in a site-specific erection plan that the structure or portion of the structure is capable of supporting the load.
- The bundle of decking is placed on a minimum of three steel joists.
- The joists supporting the bundle of decking are attached at both ends.
- At least one row of bridging is installed and anchored.
- The total weight of the bundle of decking does not exceed 4,000 pounds (1816 kg).
- Placement of the bundle of decking must be in accordance with paragraph (E) (5) of this section.

The edge of the construction load must be placed within 1 foot (.30m) of the bearing surface of the joist end.

4.25. Systems-engineered metal buildings

All of the requirements of this section apply to the erection of systems-engineered metal buildings except for the requirements in the Column Anchorage (5), and Open Web Steel Joists (6).

Each structural column must be anchored by a minimum of four anchor rods (anchor bolts).

Rigid frames must have 50 percent of their bolts or the number of bolts specified by the manufacturer (whichever is greater) installed and tightened on both sides of the web adjacent to each flange before the hoisting equipment is released.

Construction loads must not be placed on any structural steel framework unless such framework is safely bolted, welded or otherwise adequately secured.

In girt and eave strut-to-frame connections, when girts or eave struts share common connection holes, at least one bolt with its wrench-tight nut must remain connected to the first member unless a manufacturer-supplied, field-attached seat or similar connection device is present to secure the first member so that the girt or eave strut is always secured against displacement.

Both ends of all steel joists or cold-frame joists must be fully bolted and/or welded to the support structure before:

- Releasing the hoisting cables.
- Allowing an employee on the joists.
- Allowing any construction loads on the joists.

Purlins and girts must not be used as an anchorage point for a fall arrest system unless written approval is obtained from a qualified person.

Purlins may only be used as a walking/working surface when installing safety systems, after all permanent bridging has been installed and fall protection is provided.

Construction loads may be placed only within a zone that is within 8 feet (2.5 m) of the center-line of the primary support member.

4.26. Falling object protection

All materials, equipment, and tools, which are not in use while aloft, should be secured against accidental displacement.

For falling objects other than materials being hoisted, Haskell must bar other construction processes below steel erection unless overhead protection for the employees below is provided.

4.27. Training

Training required by this section must be provided by a qualified person(s).

Haskell Corporation should provide a training program for all employees exposed to fall hazards. The program will include training and instruction in the following areas:

- The recognition and identification of fall hazards in the work area.
- The use and operation of guardrail systems (including perimeter safety cable systems), personal fall arrest systems, positioning device systems, fall restraint systems, safety net systems, and other protection to be used.
- The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection used.
- The procedures to be followed to prevent falls to lower levels and through or into holes and openings in walking/working surfaces and walls. The fall protection requirements of this steel erection standard.

In addition to the training required in paragraphs (A) and (B) of this section, Haskell will provide special training to employees engaged in the following activities:

- Multiple-lift rigging procedure. The employer must ensure that each employee who performs multiple lift rigging has been provided training in the following areas:
    - The nature of the hazards associated with multiple lifts.
    - The proper procedures and equipment to perform multiple lifts required by 1926.753.

Haskell Corporation must ensure that each connector has been provided training in the following areas:

- The nature of the hazards associated with connecting.
- The establishment, access, proper connecting techniques and work practices required.

Where CDZs are being used, Haskell or its Sub-contractors will assure that each employee has been provided training in the following areas:

- The nature of the hazards associated with work within a controlled decking zone.
- The establishment, access, proper installation techniques and work practices required by 1926.760(c) and 1926.754(e).

5.0 Regulations

- Federal 29CFR 1926 Subpart R
- Washington WAC 296-155-701
- California Title-8 1710

STOP WORK AUTHORITY

1.0 Purpose

The purpose of this policy is to increase the effectiveness of the Haskell ACCIDENT PREVENTION PROGRAM through the empowerment of all its personnel. This policy has been developed and implemented for the purpose of practicing and enforcing a “Stop Work Authority” in the workplace; whereby it is the intent of Haskell Corporation to ensure all safe practices and safeguards necessary are implemented to abate all imminent hazards and conditions on its projects. Employees are encouraged to exercise their rights to stop work when an unsafe condition is observed.

2.0 Scope

This policy applies to all Haskell operations at both Client and Haskell sites and locations.

3.0 Procedures

3.1. Application

3.1.1. Any Haskell or sub-contractor employee regardless of position or seniority, upon seeing a potentially dangerous situation, can use their Stop Work Authority to halt the operations and express his or concerns about safety, which will be addressed by all persons involved before starting the work up again.

3.1.2. When a Stop Work Intervention occurs, the Haskell HSE department must be immediately notified by the on-site Supervisor. The Haskell HSE Department will respond to the affected job site to conduct an observation / inspection to validate all safety concerns. All corrective actions must be undertaken and implemented at this time ensuring no imminent hazards exist before proceeding with work activities.

3.1.3. All identified hazards during the intervention process must be completely eliminated and/or controlled to a degree that minimizes the exposure insofar as practical prior to the work resuming. All necessary administrative, engineering, and personal protective equipment control measures must be prescribed in an effort to protect and/or prevent potential exposures from occurring.

3.1.4. Stop Work Intervention details of each occurrence must be clearly documented and filed with the HSE Department for further evaluation. Interventions must be investigated and analyzed by the HSE Department and all respective management to focus on the lessons learned and findings from each occurrence.

3.1.5. In an effort to strengthen Haskell’s JHA process and Hazard Identification, intervention investigation results should be utilized as guidance and education in prioritizing risk potentials and hazards in the workplace. Corrective actions taken resulting from a Stop

Work Intervention should be documented for future mitigating measures. Follow up efforts should be executed by the HSE Department and Supervision to ensure similar hazards don't reoccur.

3.1.6. Employees are responsible to initiate a Stop Work Intervention when they feel it's necessary. Management is responsible to create a culture where Stop Work Authority is exercised freely without fear of reprisal.

3.1.7. Employees should not fear any form of reprisal or intimidation from Haskell Management for exercising their Stop Work Authority.

3.2. Steps to Initiate Stop Work Authority

3.2.1. When an employee identifies an unsafe condition they should initiate a Stop Work Intervention.

3.2.1.1. Any worker may stop work by announcing that there is a safety issue and requesting that everyone affected must stop work and move to a safe location if necessary.

3.2.1.2. The worker initiating Stop Work must then notify their immediate supervisor that Stop Work has been initiated and explain the safety concern.

3.2.2. The immediate supervisor will coordinate the Stop Work procedure.

3.2.3. Supervisors should conduct Stop Work efforts in a positive manner.

3.2.4. All affected personnel and supervision should be notified of the stop work issue.

3.2.5. Affected work should not resume until the issue has been corrected.

4.0 Training

All Haskell and sub-contractor personnel will receive training on Stop Work Authority during their onboarding process prior to their initial work assignment.

Additionally, the essence and concepts of this initiative is also embedded in the Haskell JSA which is also strongly expressed during the employee training. The training will specifically emphasize the roles and responsibilities of the employees in exercising a Stop Work Intervention along with the accountability associated with not stopping, or proceeding with work when unsafe conditions are identified.

Haskell should retain records of training. Record of attendance for this training will be kept in the HSE Department for records retention. Employees will print and sign their name on a training attendance sheet, which will indicate the subject training topics and date of completion. Such records will be maintained for no less than one (1) year subsequent to the delivery and completion of the training.

SUBCONTRACTOR MANAGEMENT

1.0 Purpose

This policy is designed to ensure that our Sub-contractors maintain an acceptable standard for health and safety, while working under Haskell Corporation and to ensure compliance with client and owner requirements.

2.0 Scope

This policy applies to all tier-Sub-contractors that have a contractual obligation to Haskell Corporation, including pass-through contracts.

3.0 Definitions

- **Subcontractor:** is any entity performing work or services involving direct labor, on behalf of Haskell Corporation, for a fee.
- **Pass-through Contract:** is a strategy where owner requirements are carried (passed-through) to each tier subcontractor.

4.0 Procedures

Subcontractor is expected to perform all work in a safe and professional manner, comply with all safety, health, and environmental requirements listed in the subcontract documents issued by Haskell, and follow all applicable laws, codes, ordinances, rules, regulations, and other lawful orders of Federal, State, and local authorities. Subcontractor has the primary responsibility and obligation to provide a safe work environment for its employees, tier Sub-contractors, vendors, and visitors who may be exposed to hazards related to subcontractor's work.

Subcontractor is responsible for the development, administration, and enforcement of their own particular safety, health, and environmental management program, regardless of any oversight provided by Haskell. Subcontractor should pass all imposed requirements through to lower tier Sub-contractors.

Subcontractor should provide competent supervision to oversee and direct their work and employees at all times. Subcontractor supervision should meet the definition and designation requirements of OSHA.

Subcontractor is required to maintain a Substance Abuse Prevention Program (SAPP) that is in compliance with Haskell and OWNER requirements, as well as regulatory guidelines. All employees assigned to the project must successfully complete a pre-employment test, in accordance with an approved protocol.

The Haskell Safety Director will meet with Sub-contractors for post-job safety performance reviews.

4.1. Industrial insurance (workers comp)

Haskell assumes no responsibility for subcontractor Worker's Compensation coverage required by applicable laws. Subcontractor will provide a copy of all First Report of Injury (New Claim Form) to Haskell within two working days of an event.

4.2. Safety & health program

Subcontractors will be pre-qualified by a review of their safety programs, safety training documents, and safety statistics. A Prequalification Questionnaire which details four (4) year history of safety metrics, such as TRIR, EMR, DART, and Fatality Rate must be completed by all Sub-contractors and approved by the Haskell Corporate Safety Director prior to contract award. A copy of the Haskell safety program is available for review/copy upon request. Subcontractor may adopt any part of Haskell's program, as desired and appropriate for its work. Subcontractor will ensure that its plan is aligned with these requirements and applicable regulations. Use of any portion of Haskell's program and approval of Sub-contractors program does not relieve subcontractor responsibility for providing a safe workplace nor eliminate the potential for subcontractor to be subject to regulatory review, including citation for non-compliance.

Subcontractor safety and health program should include or address the following; to the degree these issues are applicable to subcontractor's particular scope of work.

- Identification of project- refer to RFP
- Description of Work- refer to Scope
- Responsibilities- Org Chart and authority
- HSE Objectives/goals
- General Rules of Employee Conduct
- Method for identifying and controlling hazards
- Personal Protective Equipment- Minimum and conditional guidelines
- Orientation and training plan
- Inspection and audit schedule
- Accident Reporting/Investigation/Correction
- Emergency Response Plan- provision for EMS/Fire
- Specific work-plans:
  - Fall Protection
  - Scaffolding
  - Unit/Vessel Entry
  - Crane Picks
  - Electrical Safety

4.3. Job Planning

4.3.1. Subcontractors should be included in any required pre job risk assessments and the planning of hazard mitigation relevant to their scope of work.

4.3.2. Subcontractors should be included in any kick off meetings relevant to their scope of work.

4.3.3. Subcontractors should be included in daily JSA safety meetings, hazard assessments and safety inspections.

4.4. Regulatory References- identify applicable codes/rules

Subcontractor will develop and submit detailed Job Hazard Analysis (JHA) for each significant phase of work. The JHA should identify: Known hazards and planned mitigation measures.

Haskell and subcontractor should meet to review and discuss subcontractor's approach and written plans, following award and prior to commencement of any work. A final revised copy of subcontractor plans should be provided to Haskell and MADE available to employees during completion of all work activities addressed by the plans.

4.5. Safety representatives

Subcontractor should provide qualified and competent individuals to oversee all health, safety, and environmental issues related to its work. Safety representatives should be provided as follows:

Type of Project	Conditions	# of Reps.**	Qualifications*
Small-Scale Short-term:	<35 employees and <6 months	1 PT	OSHA-10
Small-Scale Long-Term:	<35 employees and >6 months	1 PT	OSHA-30
Large-Scale Short-Term:	>35 employees and <6 months	1 FT +	OSHA-30/500/CSP
Large-Scale Long-Term:	>35 employees and >6 months	1 FT +	OSHA-500/CSP/BS-BA

*All Safety Representatives will possess and maintain First Aid/CPR/AED/BBP training

** subcontractor will provide additional Safety Representatives for every additional 50 FT employees

Subcontractor should provide names and list of qualifications of their safety representatives, for review and approval by Haskell. Once approved by Haskell, subcontractor may not change Safety Representatives without notification and approval from Haskell.

4.6. First aid & medical care

Subcontractor is responsible for providing onsite first aid supplies, equipment, and treatment for its employees, regardless of any co-existent capability of Haskell to provide similar services. Subcontractor may request and receive assistance in this area without retribution. Subcontractor is responsible for providing for emergency transportation to appropriate medical facilities.

4.7. Hazardous Materials

Subcontractor is responsible for the safe and lawful acquisition, transportation, storage, use, and disposal of all chemicals related to or necessary for the completion of its work. Subcontractor will maintain a list of chemicals brought to the site and associated Safety Data Sheets (SDS).

4.8. Worksite clothing

All employees of subcontractor are required to comply with the following minimum dress/attire requirements. It is up to the subcontractor to monitor and enforce these requirements. Shirts should have a minimum 4" sleeve length, pants should be made of full-length durable materials, and boots should be made of leather and suitable for construction. Subcontractor should ensure that employees contain or remove all loose clothing, long hair, or jewelry that could become tangled or caught in tools, equipment, or machinery, or otherwise pose a danger to the employee or a co-worker.

4.9. Personal protective equipment

Subcontractor employees should wear additional Personal Protective Equipment (PPE) as appropriate and suitable to protect the employees from general or specific workplace hazards. The use or provision of PPE does not relieve subcontractor from its duty to eliminate or reduce hazards using alternate methods. All PPE used should conform to current ANSI, NIOSH, OSHA (or other approved agency) standards. Subcontractor is required to prepare a task-specific PPE analysis, in accordance with 29 CFR 1926 Subpart E.

4.10. Worksite inspections

Subcontractor is responsible for conducting 'frequent and regular' jobsite inspections, to evaluate and identify potential hazards. Haskell requests that inspection frequency be at least weekly, to reduce the potential for persistent conditions.

Subcontractor should inspect all tools and equipment in accordance with manufacturer's guidelines or common industry standards. Inspections will be documented. Heavy equipment should be inspected prior to use on site, for mechanical defects and leaks.

Subcontractor should notify Haskell of any regulatory inspections (OSHA, EPA, etc.) and allow Haskell the opportunity to observe or participate in the inspection. Subcontractor will provide a copy of any citation, notice of violation, or similar document issued by a regulatory agency related to the completion of its work.

Haskell will conduct monthly reviews of subcontractor's inspection documentation and perform periodic inspections of subcontractor's work and work areas to assess compliance with the inspection requirements.

4.11. Orientation & training

Subcontractor employees will be provided with sufficient information regarding tools, equipment, chemicals, and work practices to ensure the safe completion of all assigned work. Operators of heavy equipment must be qualified or certified, as appropriate, to operate equipment.

Each employee should be provided with an overview of the project and associated hazards upon arrival to the site. Basic site orientation provided by Haskell should cover the following:

- Jobsite Safety Rules
- Emergency Procedures
- Security Rules

- Basic PPE Rules

subcontractor should provide additional information to its employees related to their specific policies, work assignments, and other associated requirements, prior to starting work, including:

- Hazardous Chemicals (SDS)
- Additional/specific PPE
- Specific Task Training
- Company-specific rules
- Disciplinary Action

4.12. Non-compliance

Subcontractor is responsible for the prompt correction of any violation of safety and health standards, identified safety hazards, or similar deficiencies related to the performance of its work. In the event that an apparent violation, unsafe condition, or unsafe act is witnessed or observed by Haskell, subcontractor will be notified immediately of a Non-Compliance Event (NCE).

Failure to promptly correct the NCE may result in the following actions by Haskell:

- Issue a formal stop work order (subcontractor is responsible for associated costs/delays)
- Haskell may correct situation (costs may be back-charged to subcontractor)
- Termination of the subcontract or assessment of penalties

4.13. Submittals

Subcontractor should submit documents and records, related to its work, according to the following schedule.

Submittals			
Title	Due	Copies	Dist.
Prequalification Form	1	1	SM
Safety Plan	1	2	SM, Available at site
SDS List	1	1	Available at site
Equipment Certification	1	1	Available at site
Accident Reports	2	1	PM
Inspection Reports	2	1	Available at site
Incident Register	3	1	SM
	1-prior to job 2-during job 3- post job		SM- Safety Manager PM- Project Manager

5.0 Regulations

5.1.1.	Federal	29CFR
5.1.2.	Washington	WAC
5.1.3.	California	Title-8 1699, 1707

6.0 Forms

6.1.1. SUBCONTRACTOR EVALUATION

SUBSTANCE ABUSE

1.0 Purpose

The primary purpose of this policy is to provide a consistent and reliable approach to preventing accidents and injuries due to Substance Abuse in the workplace.

2.0 Scope

The Haskell Corporation Substance Abuse Policy applies to all active employees

3.0 Definitions

Drug: means any substance that has known mind or function altering effects on a person, including psychoactive substances prohibited or controlled by federal or state controlled substance laws

Medication: means a substance legally **prescribed** by a licensed medical practitioner, for particular and explicit use by the employee

Sample: means oral fluid (saliva), urine, hair or blood

4.0 Procedures

4.1.1. Our policy on illegal drug use, marijuana and alcohol in the workplace is zero tolerance of any detectable levels in body fluids. Haskell Corporation has a vital interest in maintaining a safe, healthy and efficient workplace for the benefit of its employees, clients, and the public. The use of performance impairing drugs can cause avoidable injuries to employees, damage to property and significant productivity losses.

4.1.2. The 2012 passage of Washington state initiative 502, legalizing possession of 1 ounce of Marijuana for recreational use, does not modify our drug-free workplace policy. Marijuana remains illegal under federal law, and is classified as a Schedule I controlled substance under the Controlled Substances Act (CSA), 21 U.S.C. § 801-971.

4.1.3. Haskell wishes to ensure a safe and productive work environment, where employees are prohibited from:

4.1.3.1. Unlawfully manufacturing, distributing, possessing or using controlled substances

4.1.3.2. The misuse or abuse of prescribed medications

4.1.3.3. Having detectable levels of illicit drugs or alcohol present in their bodies, during working hours

4.1.3.4. Violations of federal and/or state laws relating to controlled substances

4.1.4. The only exception to this policy is the authorized possession, use and transportation of medication, prescribed by a physician and used according to prescription instructions,

unless such use would pose a recognizable safety risk to the employee, other employees or the public. Employees under the influence of legally prescribed medications which have hazard warnings relative to mental impairment should not be authorized to operate heavy machinery, hand power tools or any equipment requiring mental alertness.

4.1.5. Being under the influence of alcohol is hereby defined as a breath alcohol test level of 0.04 NG/ML. Violations are grounds for immediate dismissal.

4.1.6. The company drug and alcohol testing program will be implemented in accordance with this procedure. Employees working on jobsites where customer requirements for drug screening are more stringent will be tested in accordance with those requirements. Haskell Corporation should not pay for cost of drug tests, program administration and for the employee's wages during the time necessary for follow up random testing associated with a worker testing positive for a controlled substance. Each employee or applicant will be required to sign a clinical consent form. Employees who are required to submit to reasonable suspicion or post-accident testing agree to accept, at the company's discretion, transportation to a location where the test will be conducted and to their residence.

4.1.7. Unannounced searches of employees and their personal property for drugs or alcohol may be conducted for cause while on company property or the property of Haskell Corporation customers whose policies mandate such actions. Entry onto Haskell premises or jobsites is conditioned upon and constitutes consent to search. Employees are expected to cooperate in conducting such tests and searches. An employee's refusal to consent will result in denial of access. Denial of access will result in employee termination due to unavailability for work.

4.1.8. All Haskell employees are governed equally by this program. This includes all management, office, and bargaining and non-bargaining unit craft personnel.

4.1.9. Depending on the size, location and duration of out of town jobs, the Haskell program coordinator may be the Haskell Corporate Safety Director or a responsible representative located at the jobsite.

4.2. Testing Levels

DOT Cutoff Levels		
DRUGS	**SCREEN LEVEL (Ng/Ml)**	**CONFIRMATION LEVEL (Ng/Ml)**
Alcohol	0.02% (BAC*)	0.04% (BAC*)
Amphetamines	500	250
Marijuana (THC)	50	15
Cocaine	150	100
Opiates	2000	2000 heroin/codeine
Phencyclidine (PCP)	25	25

Non-DOT Cutoff Levels		
DRUGS	**SCREEN LEVEL (Ng/Ml)**	**CONFIRMATION LEVEL (Ng/Ml)**

Alcohol	0.02% (BAC*)	0.04% (BAC*)
Amphetamines	300	300
Barbiturates	300	100
Benzodiazepines	300	100
Cannabinoids, UR	20	10
Cocaine Metabolites	300	150
Opiates	2000	2000 heroin / 2000 codeine
Phencyclidine (PCP)	25	25
Methadone	300	100
Propoxyphene	300	200

4.2.1. If a confirmed result is 0.04 alcohol concentration or greater, the employee must be immediately removed from performing his/her duties. A confirmation result of 0.02 alcohol concentration or higher but lower than 0.04 requires the employee to be removed from the site for a minimum of 24 hours and subject to another alcohol test. Arrangements should be made for the employee's safe transportation home.

4.2.2. Test results at or above the screening limits must confirm positive before a positive test result is issued. Alternative methods (e.g. GC/MS) must be used for confirmation testing. Laboratories should report positive test results to medical reviewing officer for specimens confirmed at or above these levels.

4.3. Pre-Employment Testing

4.3.1. Wherever possible, employees will be tested prior to reporting to jobsite. Where union contract does not provide for pre-screening, employees will be tested within 24 hours after arrival at job site, and will be classified as "provisional" pending favorable test report.

4.3.2. Each applicant for a position in the company will be subject to the company's substance abuse policy.

4.3.3. All offers of employment to applicants will be contingent upon the applicant passing a drug test in accordance with the company's policy.

4.3.4. On project sites where there is limited access to third party screening facilities a visual integrated drug screen cup will be used to initially screen perspective employees. In the event that this visual test method is positive for a controlled substance, the perspective employee being tested should be required to submit to a more specific alternate chemical method in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry (GC/MS) is the preferred confirmatory method. Clinical consideration and professional judgment will be applied to any visual test result, particularly when preliminary positive results are indicated.

4.3.5. If a perspective employee is found to be positive for a controlled substance where there is a valid medical reason, the employee will be provided with a physical demands analysis form to be reviewed and signed by the prescribing physician. In the event that the prescribing physician indicates that the perspective employee cannot safely perform

their job duties while under the influence of the controlled substance, they may not be employed by the company

4.3.6. An applicant who refuses to submit to a pre-employment testing when requested, or refuses to sign the company's substance abuse policy consent form, will not be employed by the company.

4.3.7. If an applicant's test is positive for any prohibited substance, the applicant will not be employed by the company.

4.4. Random Testing

4.4.1. Where applicable the random drug testing should be performed to comply with NASAP standards.

4.4.2. Five percent (5%) of all subject employees (pool) will be randomly selected for testing each month. A minimum of 50% of pool will be tested annually. Names of those selected will be confidentially communicated to the Haskell program coordinator, who will individually notify those to be tested. Upon notification the employee must go immediately to the collection site and submit samples for testing. Refusal to submit a sample or properly complete documentation for a random test will be considered a refusal to test, which will require discipline up to and including termination.

4.5. Reasonable Suspicion or For Cause Testing

4.5.1. Employees whose conduct or behavior is suggestive of alcohol or drug impairment in the opinion of two supervisory personnel will be tested. If the collection facility is off site, they will be transported by a non-impaired employee, first to the test facility, then to their residence pending receipt of test results.

4.5.2. Employees suspected of being unfit for duty will be escorted by a supervisor or designated company representative to the authorized testing location. The employee's cooperation with the escort and the collection will be required.

4.5.3. Refusal to cooperate in the collection procedure or refusal to take the test will require discipline up to and including termination.

4.6. Post-Accident Testing

4.6.1. Employees involved in work related injury, regardless of severity, that requires professional medical treatment may be subject to a drug test at the discretion of project management.

4.6.2. Employees involved in an accident or safety related incident of any kind while in a company vehicle or while on company time or on company property, may be subject to a drug test at the discretion of project management.

4.6.3. The company may require an employee who contributed to an accident be tested.

4.7. Recordkeeping and Confidentiality

4.7.1. All drug test results will be treated as confidential. The craft shop steward will be used to confidentially contact craft personnel regarding any need to discuss test results with the medical reviewing officer. The craft shop steward will also be used to communicate

positive test results to employees, and will be present if an employee is being requested to submit to a for-cause test. Records will be maintained under control of the program coordinator. Information released to supervisors will be limited to "pass" or "fail".

4.8. Specimen Collection

4.8.1. Collection facilities will provide for employee privacy and provisions for washing hands. Witnessed collection will not be required without cause.

4.9. Medical Review Officer (MRO)

4.9.1. Responsibilities

A medical review officer will be contracted with the collection agency. This individual will be a licensed physician, and is responsible for:

4.9.1.1. Reviewing program administration, random test drawings, collection procedures and lab test results to assure they are in accordance with NIDA/DOT protocols.

4.9.1.2. Contacting individuals with confirmed positive lab test results by telephone or in person to ascertain if there is a reasonable explanation other than use of illicit drugs.

4.9.1.3. Making the medical determination of whether the test result is positive or negative based on all available information, including information obtained per (2) above.

4.9.1.4. Notifying the Haskell program coordinator of all test results.

4.9.2. Name, address, phone number

For employees hired in the Bellingham area, the Collection agency is:

Authorized ASAP Service centers

Whatcom Occupational Health
3010 Squalicum Parkway
Bellingham, WA 98225
Phone (360) 676-1693

Express Care
4291 Meridian # 106
Bellingham Washington 98226
Phone (360) 734-4300

For employees hired outside the Bellingham area, the Collection agency is:

Authorized ASAP Service centers
Approved onsite Client locations

4.9.3. North American Substance Abuse Program (NASAP) certified laboratory

4.9.4. Lab screening tests will conducted by a Pacific Toxicology Laboratory and will consist of EMIT test with all suspected positive's confirmed by two Gas Chromatography /Mass Spectroscopy (GC/MS) tests. The medical reviewing officer will review and confirm all

suspected positive test results prior to communicating to the field. Positive test specimens will be retained by lab for a period of at least 12 months.

4.10. Disposition of employees who test positive or refuse testing:

4.10.1. Individuals refusing to take the test or sign the consent agreement will be terminated for failure to comply with company policy or will not be selected for employment.

4.10.2. Individuals found to be in possession of illegal or uncontrolled legal drugs, alcohol or other prohibited materials (including Marijuana) will be terminated and will not be eligible for rehire.

4.10.3. Individuals will be contacted and counseled regarding potentially positive test results by the MRO prior to his determining the test positive. Individuals confirmed positive by the MRO or who are otherwise determined to be involved in the sale or use of illegal or uncontrolled legal drugs will be counseled by the Haskell program coordinator and craft shop steward regarding their rights for re-testing and rehire, following which they will be terminated.

4.10.4. Individuals terminated under this program will not be eligible for re-hire until they present documented evidence of successful completion of a recognized employee assistance program evaluation, and if evaluation establishes the need, completion of an alcohol/drug rehabilitation program.

4.11. Employee Assistance Program (EAP) Training and Awareness

4.11.1. Supervisory personnel will receive an orientation on recognition of physical, behavioral and performance indicators of probable drug use. Informational material including company policy on use of illicit drugs, posters, and community service hot line phone numbers will be posted in main jobsite trailer and Haskell main shop.

4.12. Violations

Any employee who violated this substance abuse policy should be subject to discipline up to and including termination. Nothing in this policy changes the at-will employment relationship, and employees may be terminated at any time, with or without cause or notice.

4.13. The following instances will be considered as "refusal to submit":

4.13.1. Any refusal to provide a specimen as directed. Pre-access refusals subsequent to the donor completing the membership application should carry the same consequences as failing the pre-employment test.

4.13.2. Failure to provide a sufficient breath or urine sample with no medical explanation for the failure.

4.13.3. Refusal to sign any of the required documents associated with specimen collection.

4.13.4. Providing false information to collector and/or on the CCF.

4.13.5. Failure to report for the collection or to stay at the collection site after the collection process commences.

4.13.6. Failed to permit the observation or monitoring of a specimen if required.

4.13.7. Fail or decline to take an additional drug test the employer or collector has directed you to take.

4.13.8. Fail to under a medical examination or evaluation as directed by the MRO as part of the verification process.

4.13.9. Fail to cooperate with any part of the testing process (e.g. refuse to empty pockets when directed by the collector, behave in a confrontational way that disrupts the collection process, refuses to remove hat, coat, gloves, coveralls when directed or failure to wash hands as directed.)

4.13.10. For an observed collection, failed to follow the observer's instructions to raise your clothing above the waist, lower clothing and underpants, and to turn around to permit the observer to determine if you have any type of prosthetic or other device that could be used to interfere with the collection process.

4.13.11. Possess or wear a prosthetic or other device that could be used to interfere with the collection process.

4.13.12. Admit to the collector that you adulterated or substituted the specimen.

4.13.13. The confirmed specimen reported to the MRO by the laboratory was diluted, adulterated or substituted. A dilute specimen requires immediate re-testing. If a second dilute specimen is submitted the test should carry the same consequences as failing the pre-employment test.

5.0 Regulations

- Federal 29CFR
  49CFR 199 DOT
- Washington WAC
- California Title-8

SUPPLIED AIR RESPIRATORS

1.0 Purpose

Haskell's Supplied Air Respiratory Policy is designed to ensure that all employees engaged in Fresh Air work are protected from potential hazards associated with those activities.

2.0 Scope

This policy applies to all Fresh Air work performed by Haskell employees in sensitive work areas of Refineries, IDLH Locations, etc. *Fresh Air work areas/locations will be defined on work permits.

3.0 Definitions

Fresh Air: means a dedicated and independent supplied air system, including a source (bottles or compressor), dedicated airline hoses, respiratory face pieces (masks/hoods), and emergency escape apparatus (SCBA/Escape Packs).

IDLH: means Immediately Dangerous to Life or Health and includes potential exposures to any contaminant at a level or concentration that is likely to cause irreparable harm to a person.

Bottle Watch Attendant: means a dedicated person who is capable of monitoring and communicating with a Fresh Air Team, during the work activity (Bottle Watch Attendants are not allowed to have any duties that are not directly related to the Fresh Air work.)

4.0 Procedures

Haskell Corporation has adopted standard safe operating procedures for the use of supplied air breathing equipment to assist in protecting employees who may be exposed to atmospheres immediately dangerous to life and health (IDLH).

4.1. Training

The safety department and field supervisors should ensure that all employees who may be required to use supplied air equipment are thoroughly trained and qualified (with documentation of training/testing on file) before being placed in a position where they may have to utilize such equipment.

An untrained employee should not use or operate any supplied breathing air equipment or be used in the position of Bottle Watch Attendant.

Training should include the following:

- Functions and use of supplied breathing air mask/regulators
- Functions and use of 30-45 minutes rescue equipment and 5-minutes egress systems

- Proper “connection” procedures for all associated equipment
- Proper use of the Fresh Air System including low-pressure alarms and bottle transfer procedures
- Maximum hose lengths including the use and limitations of “splitters”
- Care and maintenance of all associated equipment
- Personal Medical Clearance & Fit testing
- Bottle Watch Attendant duties
- Hazard recognition
- Importance of teamwork/planning (including Breathing Air Checklist)
- Procedures for “flagging”/utilizing Hazard Zones
- Emergency procedures, which include:
    - Communication procedures
    - Alarms/locations
    - Escape routes
    - Standard rescue methods

Employees should receive refresher training and re-certification every twelve (12) months.

EMPLOYEES SHOULD NOT BE ISSUED OR ASSIGNED SUPPLIED BREATHING AIR EQUIPMENT WITHOUT CURRENT MEDICAL CERTIFICATION, FIT TESTING, AND FRESH AIR TRAINING.

4.2. Job Organization/Planning

Organization and planning are very important parts of safely performing any supplied breathing air work. Supervisors assigned fresh air projects should:

- Conduct a job analysis to determine the minimum number of employees, including Safety Bottle Watches, required to safely completing the assigned work.
- Plan their job with teamwork in mind and working in-groups of at least two (2) workers at any one time. (1-bottle watch and 1-worker in supplied air)
- Understand that workers are being required to use supplied breathing air because of the hazards associated with the work and treat it accordingly by:
    - Requesting and reviewing an SDS.
    - Asking questions, e.g., “What other PPE may be required?” “Is the line purged or bled down?” etc.
    - Following all required procedures.
- Develop an emergency/rescue plan for their specific project which should include:
    - Communication procedures between the Safety Watch, crew and supervision.
    - Alarms/locations.
    - Rescue procedures.
    - Deciding escape routes and placing the breathing air hoses accordingly.

Note: Restricted “escape routes” should require the use of 5 minutes egress/escape systems i.e. towers, elevated platforms and scaffolding, etc.

- Complete the Checklist for Supplied Breathing Air and forward it to the Safety Office after reviewing it with all workers involved. (See Appendix)

  Note: Supplied air checklists do not have to be completed for every task in fresh-air. They should be completed at the beginning of supplied air work for the day as deemed necessary thereafter by the supervisor or safety department.

4.3. Equipment set-up and use

The employees assigned to use the equipment should inspect all supplied breathing air equipment prior to each use. Any equipment not performing in accordance with the manufacturer's specifications should be immediately returned to the tool-room and removed from service and the Safety Department notified.

When utilizing breathing air cylinders (cascade system), a minimum of two breathing air cylinders should be connected to the regulator supplying breathing air to the employees, with one cylinder designated as the "back-up" or emergency cylinder. *One full emergency back-up cylinder should be maintained at all times or the workers removed from the area and work discontinued.

A four-cylinder cascade system is preferred, which allows the use of three cylinders for supplied breathing air work, with one being constantly maintained as the emergency backup.

All breathing air cylinders should be checked to verify that they do in fact contain grade D breathing air.

After inspection of the equipment, the supplied breathing air system may be transported to the work area and assembled, with each worker in the fresh-air team double-checking for proper assembly.

4.4. Supplied Air Team (Fresh Air)

A fresh air team should consist of, at a minimum, one (1) trained and authorized worker in supplied breathing air equipment and one (1) trained and authorized Bottle Watch Attendant. The use of a "buddy system" is encouraged and should be implemented whenever practical. The Fresh Air Team leader should make final determination of team make-up.

The bottle cart or control station for breathing air should be located and positioned so that:

- The Bottle Watch Attendant remains outside the Hazard Zone and is not exposed to the hazards associated with the supplied air work being performed.
- Constant visual contact is maintained between the Bottle Watch Attendant and all workers in respiratory equipment, unless approved radio communication is established.

NOTE: If the bottle cart or control station cannot be located out of the designated Hazard Zone, the Bottle Watch Attendant should wear the same protective equipment as the Fresh Air Team.

Supplied breathing air hoses should be placed along access/egree (evacuation) routes. Airline hoses should not be attached to handrails or other structures in a manner that would reduce the potential for escape.

An adequate length of airline hose should be available to allow the respirator user to move about the entire work area and to safely evacuate without removing the equipment.

NOTE: Hose lengths should not exceed 300 feet from the source of air to the mask.

The Safety Bottle Watch should not allow cylinder pressure to drop below 600 lbs. before transferring the system to another bottle and should have a 30-45 minute SCBA available AT ALL TIMES.

4.5. Hazard Zones

When there is a potential for a hazard exposure that is or may become immediately dangerous to life and/or health (IDLH), a "Hazard Zone" should be established around the entire work area by using red "Danger-Danger" flagging/ribbon.

The Hazard Zone should extend far enough beyond the work area to warn other workers in the area. Personnel and area gas monitors may be used to determine exposure and/or hazard release and to ensure the "Hazard Zone" flagging continues to maintain safe work area.

Employees entering flagged "Hazard Zone" areas should be equipped with the same level of personal protective equipment as the workers using the supplied breathing air.

All employees assigned to work in potential IDLH atmospheres should:

- Be equipped with full body hardness and safety lifeline for quick extrication from the Hazard Zone (confined space only.)
- Be equipped with a 5-minutes egress/escape system, which can be utilized independently of the supplied breathing air system.
- Have supplied breathing air systems attached to the employee by a harness system that will prevent the respirator from being accidentally pulled off or the face seal from being broke.
- Verify that enough breathing air is readily available to complete the job safely.
- Verify that all connections are made correctly and that all equipment is properly assembled and in proper working condition, including low-pressure alarm system.

At the conclusion of the assigned work and when all employees have discontinued the use of supplied breathing air system, all equipment should be returned to the tool room for cleaning.

4.6. Respirator Cleaning Procedure

4.6.1. Disassemble

- Remove filters, cartridges, canisters, speaking diaphragms, demand and pressure valve assemblies, hoses, or any components recommended by the manufacturer.
- Discard or repair any defective parts.

4.6.3. Clean

- Wash components in warm water (43°C [110°F]) with a mild detergent or with a cleaner recommended by the manufacturer.
- A stiff bristle (not wire) brush may be used to help remove the dirt.

4.6.4. Disinfect

If the detergent or cleaner does not contain a disinfecting agent, respirator components should be immersed for 2 minutes in one of the following:

- A commercially available respirator disinfectant, used as directed
- A bleach solution (concentration of 50 parts per million of chlorine)**Make this by adding approximately 1 ½ teaspoons of bleach to 1 gallon of water at 43°C (110°F)*

4.6.5. Rinse

- Rinse all components thoroughly in clean, warm running water (43°C [110°F]).

Note: The importance of thorough rinsing can't be overemphasized. Detergents or disinfectants that dry on face pieces could cause dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts, if not completely removed.

4.6.6. Dry

- Drain all residual water/rinse agents
- Air-dry components or hand dry components with a clean, lint-free cloth

4.6.7. Reassemble

- Reassemble the facepiece components
- Replace filters, cartridges, and canisters, if necessary (for testing)
- Test the respirator to make sure all components work properly.

5.0 Regulations

- Federal 29CFR
- Washington WAC 296-842
- California Title-8 1531

VACUUM TRUCKS

1.0 Purpose

This policy has been established to provide a baseline reference to ensure safety of personnel and protection of the environment while conducting vacuum truck operations. Full compliance to this policy will enhance Haskell Corporations' ability to mitigate and/or eliminate hazardous conditions associated with vacuum truck operations and potential environmental impacts.

2.0 Scope

Haskell Corporation does not self-perform Vacuum Truck activities. This scope is sub-contracted to service providers specializing in such work.

This policy should apply to all employees and Sub-contractors engaged in vacuum truck operations, including management, supervision and lead personnel. All commercial vehicle operators subject to vacuum truck operations should acquire training as outlined in this policy.

3.0 Definitions

Inches of Mercury: This is a measurement of vacuum. It denotes the height the atmosphere will push a column of mercury up a closed tube containing a vacuum, usually expressed as Hg.

Vacuum Loading: The principle of loading fluid by using vacuum only. Outside air pressure pushing fluid through a tube or hose to a point of lesser pressure.

Bubble Effect: The principle of injecting air as a means to allow the loading of fluids from depths beyond the capacity of vacuum alone.

Air Flow Loading: The principle of loading fluids by creating a high velocity flow of air that will pick up the fluid and carry it along.

4.0 Procedures

4.1. Equipment Inspection

Before beginning operations, vacuum truck operators should obtain any required permits and inspect vacuum trucks, equipment, and loading/offloading sites to assure safe operations.

The operator must be satisfied with the current operating conditions of all safety components and accessories prior to operating his or her assigned equipment/vehicle.

An inspection report must be completed and filed with the HSE department at the beginning of each shift. Should any of the safety devices be determined inoperable, all necessary repairs should be made prior to any work activities. The equipment/vehicle may not be placed in service should the operator detect inoperable safety components and accessories.

The following is a list of accessories and devices to be inspected, but not limited to:

Tractor/Power Unit:

- Service brakes, including trailer brake connections
- Parking brake
- Steering mechanism
- Lighting devices and reflectors
- Tires
- Horn
- Windshield wiper(s)
- Rear vision mirrors(s)
- Coupling devices
- Cab condition (seating, doors, locks, ventilation, etc.)
- Instrumentation (communication devices, speedometer, dash lights, etc.)

Vacuum Unit:

- Hose cleanliness, integrity and connections
- Fire extinguisher condition
- Integrity of fittings and attachments
- First-Aid kit
- Ground cable condition
- Liquid levels (pump locations)
- Hatch covers
- Tank condition (check inspection certifications)
- Float assembly

4.2. Personal Protective Equipment (PPE)

4.2.1. PPE should be made available to Driver/Operators. Driver/Operators should discuss every assignment with their immediate supervision and determine adequate levels of PPE prior to commencement of the operation. The HSE department must be contacted should supervision need consultation on the required types and levels of PPE.

4.2.2. Regulatory obligations affecting wearers of respirators must be executed for Driver/Operators. Sub-contracted vacuum truck service providers must show documentation of current fit testing for any personnel using respiratory protection other than loose fitting PAPRs.

4.2.3. Driver/Operators will perform wash-out activities on the vacuum tanks/trailers. This operation will expose workers to an elevated working platform affixed to the vacuum

tank. As a result, Driver/Operators should at all times be fastened to the top of the tank utilizing a full body harness with shortened lanyard. An anchor point should be secured at the top of the vacuum tank during wash out activities, or at any other time the driver is located on the working platform.

4.2.4. While performing vacuum operations, Driver/Operators are repetitively exposed to high noise areas emanating from the vacuum pumps. Driver/Operators should ensure at all times during these operations that hearing protection is worn.

4.3. Surge Shock

When switching between vacuum and pressure, be sure to use your bleeder valve to equalize the pressure or vacuum in the tank before moving the 4- way valve. This avoids any great surge shocks to the vacuum pump and helps control what might be happening at the end of your hose.

4.4. Static Grounding/Bonding

When working with flammables, always use a static discharge cable between the truck and the storage tank. Do this whether you are loading or unloading. The flow of material through the hose can build enough static electricity to throw a very large spark when the hose is disconnected. This could be very dangerous in an area where a vapor cloud has formed.

The complete vacuum transfer system needs to be bonded so that there is a continuous conductive path from the vacuum truck through the hose and nozzle to the tank or source container and grounded to dissipate stray currents to earth (ground).

Prior to starting transfer operations, vacuum trucks need to be grounded directly to the earth or bonded to another object that is inherently grounded (due to proper contact with the earth) such as a large storage tank or underground piping.

A safe and proper ground to earth may be achieved by connecting to any properly grounded object including but not limited to any one or more of the following examples: a metal frame of a building, tank, or equipment that is grounded. An existing facility grounding system such as that installed at a loading rack. Fire hydrants metal light posts, or underground metal piping with at least 10' of contact with earth. A corrosion free metal ground rod of suitable length and diameter (approximately 9' long and 5/8-in. diameter), driven 8' into the earth (or to the water table, if less).

4.5. Conductive Hose

Vacuum hose constructed of conductive material or thick walled hose with imbedded conductive wiring, should be used when transferring flammable and combustible liquids when the potential for a flammable atmosphere exists in the area of operations. Conductive hose should provide suitable electrical conductance less than or equal to 1 mega ohm per 100 feet (as determined by the hose manufacturer). Thin walled metallic spiral-wound conductive hoses should not be used because of the potential for electrical discharge through the thin plastic that covers the metal spiral.

4.6. Vacuum Pumps and Blowers

Under normal conditions, the absence of oxygen minimizes the risk of ignition in a vacuum truck. However, operating rotary lobe blowers and vacuum pumps at high speeds creates high air movement and high vacuum levels, resulting in high discharge air temperatures and high discharge vapor concentrations that can present potentially ignitable conditions.

4.7. Vacuum Exhaust Venting and Vapor Recovery

A number of methods can be used by vacuum truck operators to safely vent vacuum pump exhaust vapors, including but not limited to the following:

4.7.1. Operators can prevent dieseling by locating the vacuum truck upwind of vapor sources and by extending the vacuum pump discharge away from the diesel engine air intake; vapors may be returned to the source container using conductive and closed connections

4.7.2. Vapors may be vented into the atmosphere to a safe location using a safety venture

4.7.3. Vacuum truck operators may provide vertical exhaust stacks, extending approximately 12' above the vacuum truck (or higher if necessary), to dissipate the vapors before they reach ignition sources or other potential hazards and personnel

4.7.4. Vacuum truck operators may attach a length of exhaust hose to the vacuum exhaust that is long enough to reach an area that is free from potential hazards, sources of ignition, and personnel. The hose should be preferably extended 50' downwind of the truck and away from the source of the liquids

4.8. Vapor Emissions

Another point to remember when working with flammables, corrosives or poisons: be aware that the exhaust from the vacuum pump and the exhaust from the bleeder valve may contain large quantities of vapor from the product in the tank. Vapor emissions from the pump or tank may be vented through an appropriate carbon canister absorber to avoid any vapor clouds from the product. Remember to follow all permit requirements for use of this type of vapor control device. Haskell must ensure the effectiveness of the applied emissions control operations

4.9. Volatile Organic Compounds

When engaging volatile organic compound (VOC) control devices (carbon absorbers), the Haskell HSE Department should be immediately notified to determine the appropriate specifications and efficiencies of the carbon absorber units. Furthermore, all monitoring for the VOC control devices must be performed by competent person(s) familiarized with organic monitoring equipment and practices.

Note Should a scope of work incorporate the use of VOC carbon absorbers, the designated Project Management and Supervisory team should ensure and/or coordinate the installation of such units prior to commencement of any projects. Vacuum Truck service provider should be ultimately responsible for physically and compliantly installing and constructing the carbon absorber units.

4.10. Atmospheric Testing

The areas in which vacuum trucks are to operate must be free of hydrocarbon vapors in the flammable range. The areas where the vacuum truck operator and others work without respirators must also be at or below air contaminant PELs or STELs. Therefore, testing should be conducted when appropriate. Where required by facility procedures, permits should be issued prior to the start of any vacuum truck operations.

If there is any question whether an area is free of flammable vapors or toxic gasses, atmospheric testing should be performed by a qualified person using a properly calibrated and adjusted 4 gas monitor with combustible gas detection capabilities.

Testing should be conducted before any operation is started, and if necessary, during operations, including, but not limited to the following:

4.10.1. When operations in the area are subject to change such as automatic pump start up or product receipt into or transfer out of a tank located in the vicinity of the vacuum truck operations. In these situations, consideration should be given to the use of LOTO procedures on equipment that could create a hazardous condition or where required by regulation (see 29 CFR 1910.147).

4.10.2. When off-loading a waste container where pockets or layers of hydrocarbons, hydrogen sulfide, water and other hazardous materials may exist.

4.10.3. When atmospheric condition changes, such as wind direction, storm, etc. affect the operation.

4.10.4. When an emergency situation, such as product or vapor release, occurs within the facility that may affect atmospheric conditions in the vicinity of vacuum truck operations.

Vacuum trucks should not be allowed inside diked areas around petroleum storage tanks, other production units or operations vessels until the areas have been tested for hydrocarbon vapors by qualified persons, determined to be safe and entry authorized and/or a permit is issued if required by facility procedures.

Specific atmospheric monitoring for hydrocarbons should be conducted on the carbon absorbers at the frequencies specified by the HSE department. Area monitoring of worker breathing zones and peripheral locations surrounding the vapor recovery operations should also be conducted. This measure will help reduce or eliminate any potential ignitable conditions from generating as well as safeguard any unexpected biological exposures.

4.11. Operator Qualification

Sub-contracted service provider operators should show documentation of the following at a minimum:

4.11.1. Vacuum truck operators should be trained and properly licensed in accordance with applicable regulations.
4.11.2. Vacuum trucks should not enter into tank dike area until such areas have been checked/monitored and rendered safe.
4.11.3. Vacuum trucks cargo tanks should be depressurized.
4.11.4. Vacuum truck operators must be aware of the effect of speeds, turns and the changing center of gravity
4.11.5. Vacuum truck operators should maintain proper distances when operating vacuum trucks inside facilities with restricted clearances.
4.11.6. Completing a certification of road test indicating the employees' competency while operating the respective equipment.
4.11.7. Completing all applicable operations training, to include course room and manipulative skills evaluation on subject equipment.
4.11.8. Completing regulatory training as it pertains to the DOT- Federal Motor Carrier Safety Regulations.
4.11.9. Completing hazardous waste/material hauling and/or equivalency pursuant to the DOT Research and Special Programs Administration (RSPA).

4.12. Personnel Safety

Vacuum truck personnel working in petroleum facilities should be: trained in the safe operation of the vacuum equipment; familiar hazards of the petroleum products, by-products, wastes and materials being transferred, aware of relevant government and facility safety procedures and emergency response requirements.

4.12.1. SDS for the products being transferred should be available to vacuum truck operators. Safe air contaminant levels should be identified, and a qualified person should assess the potential for exposure.
4.12.2. Appropriate PPE such as respirators should be worn when a hazard assessment indicates they may be required to prevent exposures to toxic materials or air contaminants at or above PELs , STELs and relevant TLVs.
4.12.3. All personnel should leave the vacuum truck cab during loading and off-loading operations.
4.12.4. When transferring flammable liquids or hazardous materials , vacuum truck operators should remain positioned between the vacuum truck and the source or receiving tank, vessel, or container and within 25' of the vacuum truck throughout the operation. Vacuum truck operators should monitor the transfer operation and be ready to quickly close the product valve and stop the pump in the event of a blocked line or release of material through a broken hose or connection.
4.12.5. Smoking, or any other source of ignition, should not be permitted within at least 100' (depending on local procedures and atmospheric conditions) of the truck, the discharge

of the vacuum pump, or any other vapor source. Facility smoking and hot work policies should be followed if they are more restrictive.

4.13. Emergency Procedures

4.13.1. Driver/Operators should secure continuous, effective communication with essential personnel at all times during a vacuum assignment enabling the operator to promptly report emergency conditions.

4.13.2. All incidents/accidents must be reported to the direct supervisor immediately following the occurrence. The HSE Department should be notified immediately thereafter. Haskell will initiate its investigation procedures if necessary.

4.13.3. Should a prohibitive or unexpected condition onset and be deemed unsafe or unhealthful, the Driver/Operator or anyone within he vicinity should immediately terminate the operation until further evaluation is rendered.

4.13.4. Any affected person(s) working in the vicinity of a Haskell vacuum operation has the authority to cease the activity in an effort to prevent an accidental occurrence. Further evaluation will be executed by essential personnel to determine the level of the hazard and to modify the existing operation in an effort to eliminate the hazard, if needed.

4.13.5. Driver/Operators should at all times possess an emergency contact list for essential client and Haskell contacts.

5.0 Regulations

5.1. OSHA 29 usc 654 section 5

WORKING OVER OR ADJACENT TO WATER

1.0 Purpose

To provide all employees at all levels, with a good basic understanding of the hazards involved in working in any marine environment, be it over, or alongside water.

2.0 Scope

This policy applies to all Haskell employees and Sub-contractors who perform tasks over or adjacent to a body of water. Marine work of any description presents some unusual hazards, and some traps for the unwary. Water is a dynamic entity -it is always changing, and in doing so changes its surrounding terrain. This policy addresses hazards in a water environment, and offers ways of minimizing or isolating, if not eliminating, those hazards.

3.0 Procedure

3.1. Employees working over or near water should be trained in their responsibilities and the hazards and safe work practices associated with this task.

3.2. When an employee is employed under conditions which expose them to a risk of drowning, they should wear a U.S. Coast Guard approved life saving device, unless it can be shown that conditions, such as shouldow water, are such that flotation would not be achieved.

3.3. A Job Safety Analysis (JSA) listing the hazards associated with the work is required to be completed and signed by all members of the crew that may be working over or near water before the work begins.

3.4. Prior to and after each use, the buoyant life saving device should be inspected for defects which would alter their strength or buoyancy. Defective units should not be used.

3.5. Ring buoys with at least ninety (90) feet of line should be provided and readily available for emergency rescue operations. Distance between ring buoys should not exceed two hundred (200) feet.

3.6. At least one lifesaving skiff should be immediately available at locations where employees are working over or adjacent to water. Each skiff, or skiffs, should:

3.6.1. Be suitable for conditions where used.

3.6.2. Be equipped with oar locks securely attached to gunwales, oars, one boat hook, and one cork ring buoy with fifty feet of suitable line attached.

3.6.2.1. Whenever boats or skiffs cannot be used, due to swift currents, life lines close to the water surface should be provided and, wherever practicable, a line should be stretched across the stream with tag lines.

3.6.2.2. Where workers are transported by boat or barge, only such number of persons should be carried that can be safely accommodated on fixed seats. Capacity showing number of persons should be plainly marked on vessel.

3.6.2.3. No employee who will be performing work over or near water, where the danger of drowning exists, should work alone at any time.

All workers should be provided with a U.S. Coast Guard approved buoyant life saving device while transported in open boats and/or barges, and where deemed necessary by the department, workers should wear same while in transport.

4.0 Regulations

4.1. Federal 29 CFR - 1926.106

4.2. Washington WAC 296-155-23

REVISION HISTORY

Revision No.	Revised By	Approved By	Approval Date
1	Ray Pierce	Corporate Safety Director - Ray Pierce	09/03/2020
Description: Added Safety Bulletin Board Policy			
2	Ray Pierce	Corporate Safety Director - Ray Pierce	09/03/2020
Description: Updated Line Breaking Policy			
3	Ray Pierce	Corporate Safety Director - Ray Pierce	09/28/2020
Description: Added Air Quality – Outdoor Policy			
4	Ray Pierce	Corporate Safety Director - Ray Pierce	04/07/2021
Description: Added Alaska reference to OSHA standard on Respirable Silica			
5	Ray Pierce	Corporate Safety Director - Ray Pierce	06/03/2021
Description: Updated secondary container labeling section in Hazard Communication			
6	Ray Pierce	Corporate Safety Director Ray Pierce	05/31/2022
Description: Updated scope and Supervisor responsibilities in Accident Reporting			
7	Ray Pierce	Corporate Safety Director Ray Pierce	01/24/2023
Description: Corrected typos and language in the Lockout Tagout policies			
8	Ray Pierce	Corporate Safety Director	02/20/2024
Description: Updated the Mobile Equipment policy to allow cokd weather warming of equipment while unattended.			
9	Ray Pierce	Corporate Safety Director	02/22/2024
Updated post accident drug testing verbiage			