

2023 IPLOCA HEALTH AND SAFETY AWARD

LEDCOR PIPELINE – SAFETY ALERT INTEGRATION FOR COMPREHENSIVE HAZARD ASSESSMENTS.



WHO WE ARE: FORWARD. TOGETHER.



- Established in 1947 (75 years)
- Exceeding > \$3 billion in annual revenue
- 6,000 - 8,000 employees
- 100% employee owned
- 75% of our revenues are from **repeat clients**

OUR VISION: FORWARD. TOGETHER.

Our unique perspective comes from expertise in many areas.
Our vision, mission, and values guide everything we do.

OUR VALUES



Safety: Zero incidents through best practices



Quality: Continuous measurements & improvement



Integrity: Ethical, honest, consistent & highly regarded



Sustainability: Balancing People, Planet & Profit



Success: Client and employee satisfaction, shareholder

OUR MISSION

“Committed to building Ledcor Lifetime Clients through accountability, innovation, quality and sustainability.”

OUR BUSINESS PRINCIPLES

- Always commit to our capacity — and not over
- Senior leadership engagement on the job
- Fiscal accountability
- Disciplined approach to delivering all services

ONE LEDCOR



Buildings



Pipeline



Oil & Gas



Mining



Petro Chemical



Power



Communications



Infrastructure



Aviation



Forestry



Marine



Properties



PIPELINE

Ledcor is experienced in the **construction of 2" to 60"** pipelines including mainline cross-country construction utilizing mechanized or manual welding methods. We operate in a variety of geographic terrains encompassing prairie, muskeg, heavily forested and mountainous regions.

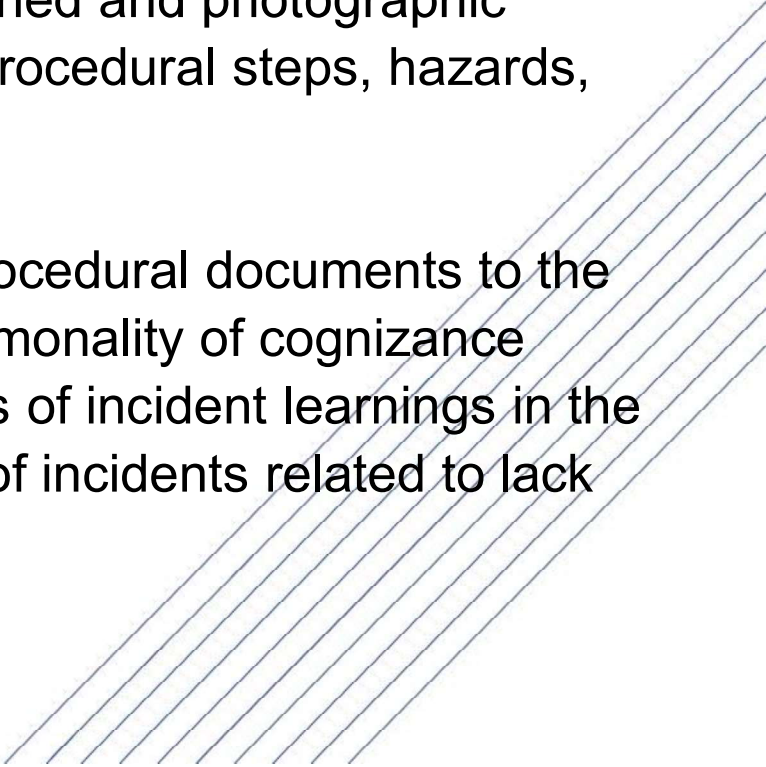
Ledcor's current capacity includes 2 mainline spreads of modern pipeline construction equipment.

We can also provide qualified inside plant construction, handling above and underground piping in and around oil sands related mines, SAGD and upgrader facilities.

Ledcor pipeline services include:

- ✓ Mainline Construction
- ✓ Pipeline Integrity Services & Maintenance
- ✓ Investigative digs
- ✓ Hydrostatic Testing
- ✓ Labour Resource Management

SAFETY ALERT INTEGRATION INITIATIVE FOR COMPREHENSIVE HAZARD ASSESSMENTS - INTRODUCTION

- Ledcor Pipeline Limited has developed and implemented the Safety Alert Integration Initiative to aid with the development and interpretation of the job hazard assessments and safe work practices.
 - The Safety Alert Integration Initiative was created to assist the development of the worker's hazard recognition and supplementation of Ledcor's hazard assessments. The inclusion of past lesson's learned and photographic information helped with improve cognizance of procedural steps, hazards, and controls.
 - Ledcor Pipeline Limited analyzed the revised procedural documents to the work execution and experienced a trending commonality of cognizance from the workforce when provided with examples of incident learnings in the JHA/SWP documents. This led to the reduction of incidents related to lack of awareness to the procedures.
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EXAMPLE OF SAFETY ALERT INTEGRATION – WELDING JHA



HEALTH, SAFETY, & ENVIRONMENT

CMS

JOB HAZARD ASSESSMENT (JHA)

Document No. CON-HSE-HAZ-FM-007 PIP-CGL-JHA-000 Rev. 04

		High 3B	- Welding crew to communicate with each other in the welding tents and shacks before welding starts so, that proper eyewear is on.	Low 1B	
Shack Safety	- Electrical shock	High 3B	- Keep wet clothing, gloves away from live areas of BUG.	Low 1B	
	- Air quality	Medium 2B	- Check ventilation fans for proper operation, and exterior louvers are functioning. - All Welders and helpers must wear approved respirators and have a completed a certified fit-test.	Low 1B	
	- Folding floor and door openings, potential pinch points	High 3C	- Have yourself and coworkers' feet and hands clear of floor and doors when closing.	Medium 2B	
	- Metal dust build up.	Medium 2D	- Periodically sweep shack floor to eliminate inhaling any metal particles.	Low 1B	
	- Broken door and floor hinges	Medium 2B	- Inspect regularly; if broken, they must be repaired before proceeding.	Low 1B	
	- Tag line missing or not in good condition	Medium 3C	- Tag lines must be attached and used when shack is being moved/hoisted. - Check the ropes condition make sure there is no knots that could potentially catch on near by objects and the rope is a good working length.	Low 1B	
	- Suspended shack	High 4B	- Never stand under suspended shack. - Use taglines when moving welding shack.	Medium 2B	
	- Operator inattention or unexpected equipment movement	High 3D	- Operator must always be alert. Never wear earphones or use a mobile device while operating the equipment or connected to a load.	2B	Refer to the HSE Alert – Welding Shack Shifted

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Welding Rev 4 - Page 17 of 20



HS&E Alert

DATE:

TO: Ledcor Constructors

SUBJECT: Pipeline –

– Welding Shack Shifts



Photo shows pipelayer and Shack setup on pipe section.



Closer view of the pipe and shack following the incident.

DESCRIPTION OF INCIDENT:

A welding crew had set in on a 7-joint section of pipe. In the second of three shacks, two sets of welders and helpers had begun the third pass of the weld when the pipelayer that was hooked up to the shack started to unexpectedly roll forward. The shack shifted on the pipe resulting in one of the welders having their legs pinned between the inside wall of the shack and the welding equipment. One of the helpers also injured their shoulder when they were struck by the inside wall of the shack.

CONTRIBUTING FACTORS:


- The pipelayer was not effectively secured to prevent the machine from unexpectedly rolling forward.

PREVENTATIVE MEASURES:

- Ensure operators review and understand manufacturers requirements including proper parking practices.
 - When working on slopes, operators must remain vigilant and attentive at all times, even while stationary.
 - Equipment should never be shut off when working on slopes.
 - Whenever possible, park on flat level ground. If equipment must be parked or remain stationary while on a slope, lower ground engaging implements if equipped. If the equipment does not have ground engaging implements, place cribbing under the tracks to prevent inadvertent movement.
- Prior to entering a shack, occupants to have positive confirmation with operators to ensure equipment brakes have been fully engaged.






Example of the completed welding JHA and include newly added control highlighted in yellow and the safety alert with lesson's learned pictures that is integrated and referenced in the document.

EXAMPLE OF SAFETY ALERT INTEGRATION- CRIBBING SWP

 CMS
SAFE WORK PRACTICE
Cribbing or Skid Pile Building
HEALTH, SAFETY, & ENVIRONMENT Document No. Rev. 02

- Complete or review and sign off on a Field Level Hazard Assessment (FLHA) prior to starting work.
- Lower all ground engaging equipment, set the park or emergency brake and engage any safety lock out controls if at any time the operator leaves the equipment or if ground personnel approach the equipment.
- Be familiar with the communication procedure; use of proper hand signals and have verbal communication with the operator prior to commencing any spotting activity.

4.0 EQUIPMENT REQUIREMENTS Standard Personal Protective Equipment (PPE)

 **Head Protection**  **Eye Protection**  **High-visibility Vest or Clothing**  **Safety Footwear**  **Protective Gloves**

Task/Process Specific Equipment

- Personal Protective Equipment suitable and necessary for the hazards of the work being performed as per [CON-HSE-WMT-SWP-001 Personal Protective Equipment Safety](#).
- Skid Hook (when approved as per the Project Specific Safety Plan).


Note: Job built tools are not permitted for use on any Ledcor site unless they are engineered as per jurisdictional and legislative requirements.

5.0 WORK PRACTICE

5.1 Inspection of Skids

- Preparation of work area/start of shift.
- Skids are commonly made from softwoods such as spruce, pine, or fir for building skid piles as they are lighter and mostly provide warnings of failure such as cracking, splitting, or rot in the wood. Other materials including hardwood and synthetic may also be used.
- Wood used to construct cribbing should be of similar type, having roughly the same weight bearing characteristics. If soft wood is used in conjunction with a hardwood, cribs constructed from hardwoods and softwoods will perform like softwood cribs in terms of capacity. The crib structure is only as strong as its weakest timber.
- Looking at the integrity of the material - Skids should be visually inspected each time they're handled for signs of cracking and/or damage.
- Skids must be inspected for exposure to the environment elements. Snow, ice covered skids must be clean and dried prior to use. Building skid piles using snow/ice covered skids will cause skids to slide rendering the whole skid pile unstable.

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 **THINK SAFETY™**
WORK SAFELY **HS&E Alert**

DATE:
TO: Ledcor Constructors
SUBJECT: Pipeline – Pipe Movement



 

Photo shows the skid piles where the pipe rolled. Location and conditions of the work location. (Slings were put back on after the incident).

DESCRIPTION OF INCIDENT:
A Watercourse Crossing crew was tasked with moving a pipe section with an approximate 5-degree side bend and lower it into the ditch in preparation for tie-in. After the pipe section had been lowered in and set on the cribbing (using two pipelayers), the supervisor instructed the Lead Hand to take off the sling on the north end of the pipe to observe if there was any movement, no movement was noticed at this time. The Supervisor proceeded with removing the second sling, when they noticed a slight movement of the pipe, the Supervisor instructed the Lead Hand to stay further away from the pipe and watched from a distance as the pipe slowly rolled off skid piles and rested against the excavation wall.

CONTRIBUTING FACTORS:

- The pipe section did not have the correct number of skid piles to prevent unexpected movement.
- Cribbing and Skid Pile SWP does not clearly state when it's required to use skid piles when skidding pipe sections with bends.

PREVENTATIVE MEASURES:

- Cribbing and Skid Pile Building SWP is to be updated to include pile configurations on side bends, overbends and sags.
- Review the best practices for dealing with side bends, overbends and sags with your crews to verify they understand when to use the correct pile configurations.
- When dealing with soft or unfavorable ground conditions, utilize a piece of plywood to improve pile stability.

CONFIDENTIAL – INTERNAL USE ONLY HSE-COM-FM-007 Rev. 02

Example of the completed cribbing SWP and the safety alert that is integrated into the document.

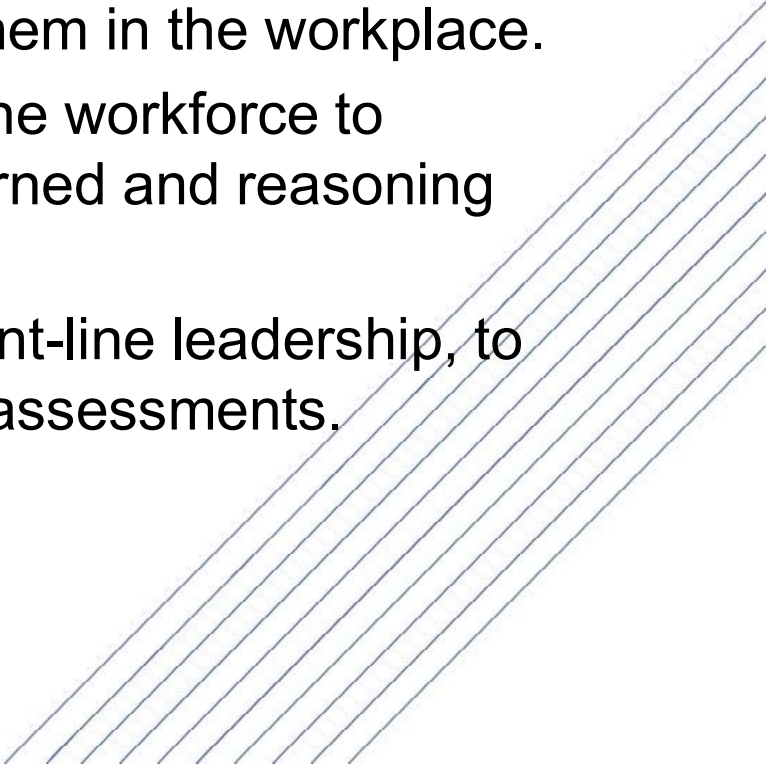
SAFETY ALERT INTEGRATION INITIATIVE FOR COMPREHENSIVE HAZARD ASSESSMENTS- FINDINGS

In order to understand the challenges experienced by the workforce and develop a hazard assessment that improves the safety and knowledge of the employees, Ledcor management developed the following action plan:

- I. Develop JHA's & SWP's to include relevant safety alerts that are applicable to the work being performed.
- II. Update the JHA's & SWP's to include the results communicated in the safety alerts.
- III. Area of focus identified by management include:
 - Increasing awareness of safety alert integration with the workforce.
 - Gathering feedback on inclusion of safety alerts in the job hazard assessments/ safe work practices.
 - Continual improvement and updating of the hazard assessments.
 - Start with the job hazard assessments then expand the initiative to Ledcor safe work practices.

SAFETY ALERT INTEGRATION INITIATIVE FOR COMPREHENSIVE HAZARD ASSESSMENTS - SOLUTIONS

In order to increase the awareness of the workforce and proactively amplify the functionality of the hazard assessments, the following were proposed :


- I. Development of the workforce and front-line leadership by boosting awareness of relevant incident findings and building more insight into the hazards around them in the workplace.
 - II. Expand the knowledge and insight of the workforce to confidently understand the lessons learned and reasoning behind Ledcor expectations.
 - III. Feedback and implementation from front-line leadership, to help generate effectiveness of hazard assessments.
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SAFETY ALERT INTEGRATION INITIATIVE - IMPLEMENTATION

- As of Q1 2023, the implementation of Safety Alert integration into the hazard assessments on all Ledcor Pipeline projects has been initiated with the trial run of the welding JHA and cribbing SWP.
 - ✓ Ledcor is working with front line supervisors to implement the integration of the safety alerts into the key work scope job hazard assessments and safe work practices.
 - ✓ A formal roll out of the JHA/SWP's and open discussions during safety meetings to generate feedback from the workforce.
 - ✓ Review of job hazard assessments and safe work practice with workforce to improve insight into incident lessons learned.
 - ✓ Review of job hazard assessments and safe work practice with workforce to improve insight into the motivations behind Ledcor policies, programs and expectations.
- During the trial run, supervisors have provided positive feedback from the roll out of the welding JHA and the cribbing SWP.

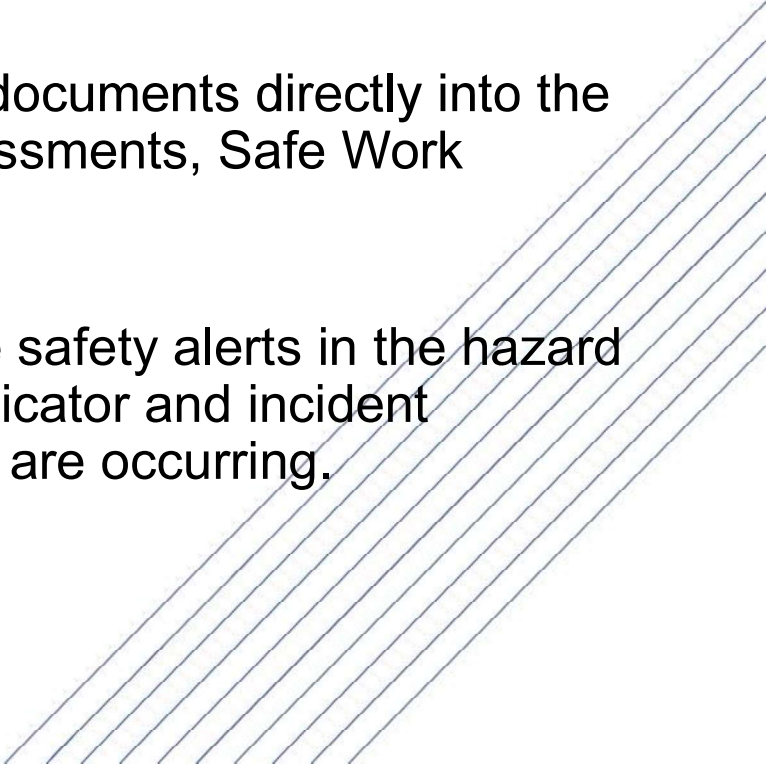
SAFETY ALERT INTEGRATION INITIATIVE FOR COMPREHENSIVE HAZARD ASSESSMENTS - ACHIEVEMENTS

Since the implementation of this initiative, here are some key highlights of Q1, 2023:

- Employee survey on the addition of safety alerts integrated into the job hazard assessments show an improvement of insight into the incident lessons learned and intention behind Ledcor expectations.
 - Employee survey on the effectiveness of the safety alerts integrated into the job hazard assessments shows an increase of awareness in hazard recognition.
 - Generation of discussions and the reassessment of hazard are clarified and more frequent.
 - No repeat incidents on these key scopes as personnel are improving their information retention and understanding past lessons learned.
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SAFETY ALERT INTEGRATION INITIATIVE- LONG TERM PLANNING

As an employer, Ledcor is actively working to improve the health and safety of the workforce by increasing general awareness and transparency on the motivations Ledcor has by implementing the policies, controls and programs that are established today. Ledcor Management's long-term planning is to:

- Review the job hazard assessments and safe work practice to ensure the information is current and relevant to the tasks.
 - Expand the initiative to include lesson's learned documents directly into the procedural documents such as Job Hazard Assessments, Safe Work Practices and other safe work methods.
 - Monitor the effectiveness of the integration of the safety alerts in the hazard assessments by continuing to assess leading indicator and incident investigation data to ensure the expected results are occurring.
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**FORWARD.
TOGETHER.**

