

Investigation Report Worker Fatally Crushed by Genie Lift March 18, 2013

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SECTION 1.0 DATE AND TIME OF INCIDENT

1.1 The incident occurred on March 18, 2013, at approximately 3:30 p.m.

SECTION 2.0 NAME AND ADDRESS OF PRINCIPAL PARTIES

2.1 Owner/Prime Contractor

2.1.1 Maple-Reinders Inc.2660 Argentia RoadMississauga, ON L5N 5V4

2.2 Employer

2.2.1 POS Construction Ltd. 206 - 9547 152 Street Surrey, BC V3R 5Y5

2.3 Contractor

2.3.1 Westland Electric Ltd. P-1007 55 Avenue NE Calgary, AB T2E 6W1

2.4 Supplier

2.4.1 United Rentals of Canada Inc.7120 Blackfoot Trail SECalgary, AB T2H 2M1

2.5 Worker(s)

2.5.1 ***** ******** *****************(taper)

POS Construction Ltd.
**** * **** ***

2.5.2 **** ***** (framer)

POS Construction Ltd. **** ** ***** **

POS Construction Ltd.
**** ***** ****



2.5.4	**** ***** **** (taper)
	POS Construction Ltd. **** ******
	**** ******* ** ***
2.5.5	***** ***** ***** (framer)
	POS Construction Ltd. *** *** * ** ********
	****** **
2.5.6	**** ****** (first year electrical apprentice)
	Westland Electric Ltd. *** ****** *************************
	****** **
2.5.7	***** *** ***** **** (second year electrical apprentice)
	Westland Electric Ltd. *** ***** ***
	****** **
2.5.8	**** ******** (electrical journeyman)
	Westland Electric Ltd. ** **** ***** ***********************
	****** **
2.5.9	***** (first year electrical apprentice)
,	Westland Electric Ltd. ** *********************************

2 5 10	**** ******* (senior site superintendent)
2.2.10	Maple-Reinders Inc. *** ***** **** *********************
	**** ***** **
2.5.11	**** ******
	Maple-Reinders Inc. ***** *** **************************
	****** **

SECTION 3.0 DESCRIPTION OF PRINCIPAL PARTIES

3.1 Owner/Prime Contractor

3.1.1 Maple-Reinders Inc. (Maple-Reinders), founded in 1967, operates from coast to coast and



is a design/build and construction management firm that specializes in industrial/commercial/institutional facilities and in the construction and operation of environmental facilities such as waste facilities. It employs approximately 250 workers.

3.2 Employer

3.2.1 POS Construction Ltd. (POS) conducts drywall, steel stud, insulation, and acoustic ceilings contracts. They employ approximately 30 workers in the Calgary, Alberta (AB) area and approximately 8 in the Vancouver, British Columbia (BC) area.

3.3 Contractor

3.3.1 Westland Electric Ltd. (Westland) is a Calgary based electrical contractor for residential, commercial and industrial sites. Westland employs 27 workers.

3.4 Supplier

3.4.1 United Rentals of Canada, Inc. (United Rentals) was founded in 1997 and has become the world's largest equipment rental provider, with an integrated network of 880+ rental locations in 49 states and 10 Canadian provinces.

3.5 Worker

3.5.1 The POS taper (***** ******) had approximately 11 years of experience as a drywall finisher and taper. The taper (***** ******) had been employed with POS since July 11, 2012.

SECTION 4.0 LOCATION OF INCIDENT

4.1 The incident occurred at a two storey commercial construction project, the Maple-Reinders office complex, located at 32 Royal Vista Drive NW in Calgary, AB.

SECTION 5.0 EQUIPMENT, MATERIAL AND OBSERVATIONS

5.1 Equipment and Material

- 5.1.1 **Genie Articulating Boom Lift (Genie Lift)** (Reference Attachment A Photographs 1-2).
 - Model: Z-34/22N
 - Serial number: ********
 - Unit number: 1062963
 - Model year: 2008
 - Machine unladen weight: 5223 kilograms (kg) (11,514 pounds)
 - Related work load (including occupancy): 227 kg (500 pounds)
 - Maximum occupants: 2
 - Maximum allowable side force on platform: 670 N (150 pounds)
 - Maximum allowable wind speed: 12.5 metres/second (m/sec) (28 miles per hour)
 - Maximum platform height: 10.5 m (34 feet 4 inches)
 - Maximum platform reach: 6.8 m (22 feet 4 inches)
 - Raised and lowered by use of hydraulic power



- Platform dimensions:
 - \circ Length = 1.42 m (4 feet 8 inches)
 - \circ Width = 0.76 m (2 feet 6 inches)
 - \circ Height = 1.17 m (3 feet 10 inches)

5.2 Observations

5.2.1 The weather near the commercial construction project, located at 32 Royal Vista Drive NW in Calgary, AB, at the time of the March 18, 2013 incident, was approximately -8.7 degrees Celsius (°C) with snow and fog plus 33 kilometres/hour (km/h) winds according to the Government of Canada - Weather Historical Climate Data website.

SECTION 6.0 NARRATIVE DESCRIPTION OF THE INCIDENT

6.1 Narrative

- 6.1.1 On March 18, 2013, at approximately 7:00 a.m., the POS taper (***********) arrived at the commercial construction worksite located at 32 Royal Vista Drive NW in Calgary, AB. The job task for the POS taper (**********) was to work on the ceiling located in the west stairwell using a Genie lift.
- 6.1.2 The POS taper (***** ******) received approximately 10 minutes of training on the Genie lift from the POS lead hand/taper (******) who was asked to train the POS taper (***** *****) by the POS estimator/project manager (*****). Upon receiving verbal instruction, the POS taper (*******) began using the Genie lift to continue drywall taping on the second floor of the building under construction. POS lead hand/taper (***** *****) ensured that POS taper (*********) was wearing a fall protection harness and was connected to the Genie lift.
- 6.1.3 At approximately 10:00 a.m., the POS framer (**** ******) borrowed the Genie lift for some demolition work that POS framer (**** ******) needed to finish. When POS framer (**** ******) returned the Genie lift around 12:00 p.m., the power was low so POS framer (**** ******) plugged it in to charge the battery. When the POS taper (**** ******) returned from POS taper's (**** *******) lunch break at approximately 12:30 p.m., POS taper (***** *******) started to use the Genie lift.

- 6.1.5 POS taper (***** ******) was staying behind as well because POS taper (*****

 *****) was travelling with POS taper (*******). At approximately 3:30 p.m.,
 the POS taper (*********) walked to the nearby Walmart to purchase some groceries.
- 6.1.6 At approximately 3:45 p.m., the Westland first year electrical apprentice (**********) was conducting electrical work in the second floor men's washroom. The Westland first year electrical apprentice (**********) observed that the Genie lift was close to the ceiling bulkhead and that there was no movement. The Westland first year electrical apprentice (********) went to investigate and observed that the POS taper (***********) was unresponsive and pinned by the neck between the ceiling bulkhead and the platform control panel, cutting off oxygen. (Reference Attachment A Photographs 3 and 4).
- 6.1.7 The Westland first year electrical apprentice (********) proceeded down the stairwell to the main level to find assistance. The Westland first year electrical apprentice (**********) located Westland second year electrical apprentice (********), in the northwest corner of the building, and informed Westland second year electrical apprentice (***********) of the incident. They both went to the Genie lift platform where they were able to push the stop button on the lift. Both of them tried to move the Genie lift using the controls at the ground control platform to free the POS taper (**********). The lift did not respond and appeared to have no power, according to Westland second year electrical apprentice (***********), and they were unable to free POS taper (***********).
- 6.1.8 Westland first year electrical apprentice (**********) returned to the main level and located the Westland electric journeyman (**********) and informed the Westland electric journeyman (**********) of the incident. The Westland electrical journeyman (**********) observed POS taper (*********) and then found Maple-Reinders site superintendent (********). The Westland electrical journeyman (**********) instructed site superintendent (********) to call Calgary 911 immediately.
- 6.1.9 Westland electrical journeyman (**** ********) requested Westland first year electrical apprentice (***** *****) to locate the Westland first year electrical apprentice (********), who was in the IT Server room, for additional assistance because Westland first year electrical apprentice (******) was trained in First Aid.
- 6.1.10 Upon being found, Westland first year electrical apprentice (***********) went to the second floor mezzanine location to where the lift platform was. The Westland electrical journeyman (**** ********) proceeded to the base control panel of the Genie lift located on the main level where Westland electrical journeyman (**** ********) attempted to switch the control access from the platform control panel to the ground control panel of the machine. The controls did not respond.

- 6.1.11 Westland electrical journeyman (**** *************************) plugged in the Genie lift battery to see if the battery power had been drained and if it needed to be recharged. Both Westland electrical journeyman (**** ***********) and the Maple-Reinders senior site superintendent (******* ***********) then located the override switch and were able to gain control of the Genie lift with the ground control panel. This enabled them to lower the platform away from the ceiling bulkhead.
- 6.1.12 Westland first year electrical apprentice (***********) climbed into the Genie lift platform to assess POS taper (**********) and to also assist with lowering the platform. Westland first year electrical apprentice (*********) noticed that POS taper's (**********) hands were positioned in a way that POS taper (************) could not reach the controls.
- 6.1.13 At approximately 3:53 p.m., Calgary Fire Department arrived at the commercial construction site. The Genie lift platform was being lowered to the main level. They assisted Westland first year electrical apprentice (**********) with removing POS taper (**********) from the platform.
- 6.1.14 Emergency Medical Services (EMS) began cardiopulmonary resuscitation (CPR) on POS taper (***** *******) when POS taper (***** *******) was removed from the platform. POS taper (***** *******) was taken by ambulance to a Calgary area hospital.
- 6.1.15 On March 22, 2013, POS taper (***** *******) passed away from injuries sustained in the workplace incident.

6.2 Observations

- 6.2.1 POS taper (***** *******) had the following training:
 - Maple Reinders Inc. Site Orientation Checklist (February 26, 2013)
 - POS Code of Practice Receipt (July 17, 2012)
- 6.2.2 POS taper (***** *******) had been employed by POS since July 11, 2012 and had approximately 11 years of experience as a drywall finisher and taper.
- 6.2.3 At the time of the incident, POS taper (***** ******) was the only POS worker at the worksite.
- 6.2.4 POS lead hand/taper (*********) had the following training:
 - Pacific Straits Inc.: Safety Training Certificate: Genie 1930, Equipment Codes C (scissor lift), Number of Codes 1 (Expiry: October 26, 2014)
 - Fall Protection Certificate (Expiry: October 26, 2014)
 - HILTI: Firestop Systems (date issued: December 5, 2012)
 - Alberta Construction Safety Association (ACSA): Workplace Hazardous



Materials Information System (WHMIS) (Date Trained: September 3, 2011).

- 6.2.5 POS lead hand/taper (***** *****) had approximately 1000 hours operating this model of the Genie lift. POS lead hand/taper (***** *****) stated that the Genie lift had been low on power on Friday (March 15, 2013) and that it had been plugged in all weekend until the morning of Monday, March 18, 2013.
- 6.2.6 When Occupational Health and Safety (OHS) arrived at the worksite on March 18, 2013, at approximately 5:20 p.m., the Genie lift was plugged in and charging.
- 6.2.7 POS framer (***** ***********************) had the following training:
 - Hertz Equipment Rental: Genie S-45: Under 80 feet AWP (Expiry: June 14, 2013)
- 6.2.8 POS rented the Genie lift from United Rentals on February 4, 2013.
- 6.2.9 The following documents were at the worksite for the Genie lift:
 - Genie Operator's Manual with maintenance information: Z-34/22 from 4685 to 7773: Z-34/22N from 5505 to 8857: Fourth Edition: Third Printing: Part No. 1000047
 - Association of Equipment Manufacturers: Aerial Platform: Safety Manual for Operating and Maintenance Personnel
 - Attention: Manual of Responsibilities for Dealers, Owners, Users, Operators, Lessors and Lessees of ANSI/SIA A92.5-2006 Boom-Supported Elevating Work Platforms
- 6.2.10 The Genie Operator's Manual with Maintenance Information: Z-34/22 from 4685 to 7773: Z-34/22N from 5505 to 8857: Fourth Edition: Third Printing: Part No. 1000047 on Page 1 has the 'Safety Rules'. This section outlines the following:

Danger:

• Failure to obey instructions and safety rules in this manual will result in death or serious injury.

Do Not Operate Unless:

- You learn and practice the principles of safe machine operation contained in this operator's manual.
 - Avoid hazardous situations.
 Know and understand the safety rules before going on to the next section.
 - 2. Always perform a pre-operation inspection.
 - 3. Always perform function tests prior to use.
 - 4. Inspect the workplace.
 - 5. Only use the machine as it was intended.

- You read, understand and obey the manufacturer's instructions and safety rules safety and operator's manuals and machine decals.
- You read, understand and obey employer's safety rules and worksite regulations.
- You read, understand and obey all applicable governmental regulations.
- You are properly trained to safely operate the machine.
- 6.2.11 When the incident occurred, there were 308.6 hours on the Genie lift.
- 6.2.12 POS did not complete a hazard assessment on March 18, 2013, the day that the incident occurred. The Genie lift was identified in a Field Level Hazard Assessment (FLHA) conducted on March 6, 2013, and personal protective equipment (PPE) was the method used to eliminate/control the hazard. The POS taper (**********) was not part of this assessment. The March 6, 2013, FLHA did not identify any hazards related to becoming caught between the lift and the building.

The FLHA's that were submitted by POS between February 15, 2013 and March 14, 2013, for work that they were conducting at the Maple Reinders office complex construction site, did not identify the potential hazard of becoming caught between the lift and other pieces of equipment or building components.

- 6.2.13 Maple-Reinders had workers at this site undergo a site specific safety orientation (SP14-Orientation-Site Workers). Subcontractors were required to follow the requirements outlined in the Maple-Reinders Health and Safety Program (SP10 SP11 Subcontractors Responsibilities). This orientation included the following topics:
 - Tools & Equipment
 - Electrical
 - Worksite Hazards
 - Site Specific Hazards

POS taper (**** ******) completed the Maple Reinders' Site Orientation Checklist on February 26, 2012. This orientation was conducted by Maple Reinders site superintendent (**** *****).

- 6.2.14 Maple-Reinders, the prime contractor of this worksite, had put pressure on the subcontractors to be finished this project by a specific date.
- 6.2.15 The area where the Genie lift was situated on the main floor was level and had adequate space to manoeuvre. When this equipment had an extended jib boom, due to the configuration of the second floor ceiling architecture details, it created a congested work area at the ceiling. (Reference Attachment A Photographs 1-3). The POS taper (***** ********) became trapped against the ceiling bulkhead.
- 6.2.16 The distance from the floor of the second floor mezzanine to the ceiling bulkhead where

POS taper (***** ******) was pinned was at a height of approximately 2.63 m (8 feet 8 inches). The height of the Genie lift was approximately 1.17 m (3 feet 10 inches). A guardrail was in place along the edge of the second floor mezzanine that had a top rail that was a height of approximately 1.10 m (3 feet 8 inches). These components would have made it a narrow space to manoeuvre the Genie lift through to where the POS taper (***** *******) was working.

6.2.17 A visual and dry powder magnetic particle inspection of all accessible locations of the Genie lift was conducted on January 30, 2013 by Firth Engineering Ltd. Consulting Engineering & Inspection Services. Their report was dated January 31, 2013, 'RE: Visual and Magnetic Particle Inspection of Genie lift; Model: Z-34/22N, Serial: *********; United Rentals Unit: 1062963; Our File: D01-CH018'.

This report indicated that no defect indications were detected on the base, turntable, main boom section, secondary boom section, boom extension, jib section, one bolt between jib and working platform (ultrasonic inspection only) and jib pins (6 of 6) (ultrasonic inspection only). There were no defect indications detected on the boom pins (24 of 25) (ultrasonic inspection only), however, "due to the configuration of the unit, the remaining one boom pin was not accessible for inspection."

On the welding platform, two cracks were detected. "These defects were weld repaired." "These repairs were inspected on 31 January 2013 and found to be acceptable."

The Firth Engineering Ltd. Consulting Engineering & Inspection Services Report concluded that "On the basis of the above inspection and repair, the above unit is fit for continued service."

- 6.2.18 The Leavitt Machinery: Field Service Report (Work Order #B08093) (March 19, 2013) for the Genie lift stated that "Operate all functions from platform, showing that all were working."
- 6.2.19 The Kova Engineering South Ltd. Report, dated April 19, 2013, for the inspection of the Genie lift, Model Z34/22N, S/N *********, Unit 1062963 stated that "Based upon our inspections of critical load bearing structural components, along with verification of functions associated with the operation of the man lift being in good working order at the time of inspection, it is our opinion that the unit is deemed safe to be placed back into service."

SECTION 7.0 ANALYSIS

7.1 Direct Cause

7.1.1 On March 18, 2013, the POS taper (**********) was found unconscious when pinned by the neck between the main control panel of the Genie lift platform and the ceiling bulkhead, cutting off oxygen flow. POS taper (**********) fatally

succumbed to injuries on March 22, 2013.

SECTION 8.0 FOLLOW-UP/ ACTION TAKEN

8.1 Industry

- 8.1.1 On March 18, 2013, Maple-Reinders started their investigation into the incident that occurred earlier that day.
- 8.1.2 On March 18, 2013, POS started their investigation into the incident that occurred earlier that day.
- 8.1.3 On March 18, 2013, POS voluntarily removed the Genie lift, involved in the incident, from service.
- 8.1.4 On March 18, 2013, OHS placed padlocks on the 3 doors of the commercial construction project, the Maple Reinders office complex, to ensure that no one could enter the site and access the Genie lift when OHS left the property. (Reference Attachment A Photograph 5).
- 8.1.5 On March 19, 2013, OHS placed a STOP USE Tag (#7461) on the Genie lift.
- 8.1.6 On March 19, 2013, the Leavitt Machinery Field Safety Technician (***** ****) was at the incident site to move the base controls of the Genie lift so that the lift platform could be safely brought down to the base of the equipment in order for it to be removed from the incident site.
- 8.1.7 On March 19, 2013, OHS followed the Genie lift, that was towed on the deck of the CWT Specialized, A Division of City Wide Towing and Recovery Services Ltd. (Unit #259) truck, as it travelled to Leavitt Machinery, located at 11330 70 Street SE in Calgary, to ensure continuity for it to be inspected by a third party. Leavitt Machinery conducted tests on the Genie lift and found that they could "Operate all functions from platform, showing that all were working" according to the Leavitt Machinery: Field Service Report (Work Order #B08093) (March 19, 2013).
- 8.1.8 On March 22, 2013, City Wide Towing returned the Genie lift to United Rentals, located at 7120 Blackfoot Trail SE in Calgary, where it had been rented by POS.
- 8.1.9 On April 12, 2013, United Rentals provided OHS with incident documentation as requested.
- 8.1.10 On April 22, 2013, Maple-Reinders provided OHS with an incident investigation report.
- 8.1.11 On April 26, 2013, United Rentals' legal counsel provided OHS with the engineering report from Kova Engineering South Ltd. dated April 19, 2013, for the inspection of the

Genie lift, Model Z34/22N, S/N *********, Unit 1062963. This report stated that "Based upon our inspections of critical load bearing structural components, along with verification of functions associated with the operation of the Genie lift being in good working order at the time of inspection, it is our opinion that the unit is deemed safe to be placed back into service."

- 8.1.12 On April 30, 2013, POS began providing OHS with incident documentation as requested.
- 8.1.13 On May 13, 2013, OHS removed the STOP USE Tag #7461 from the Genie lift involved in the incident.

8.2 Additional Measures

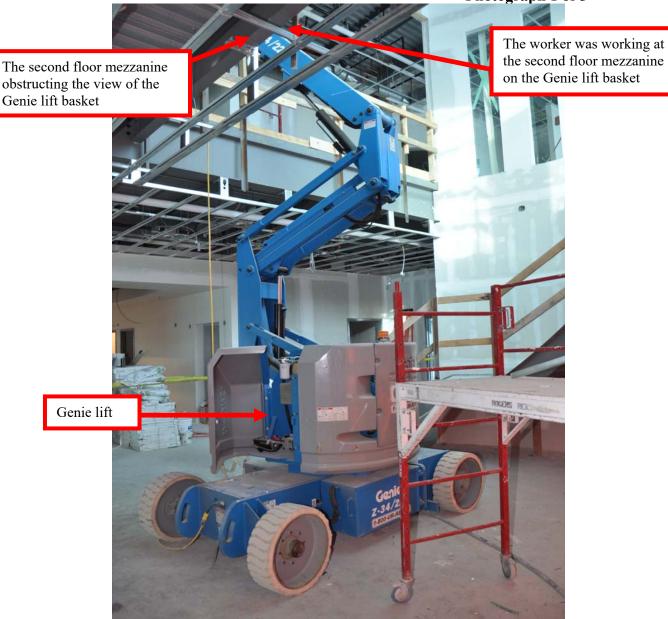
8.2.1 No additional measures were taken.



Officer Date Manager Date Director Date SECTION 10.0 ATTACHMENTS: Attachment A Photographs

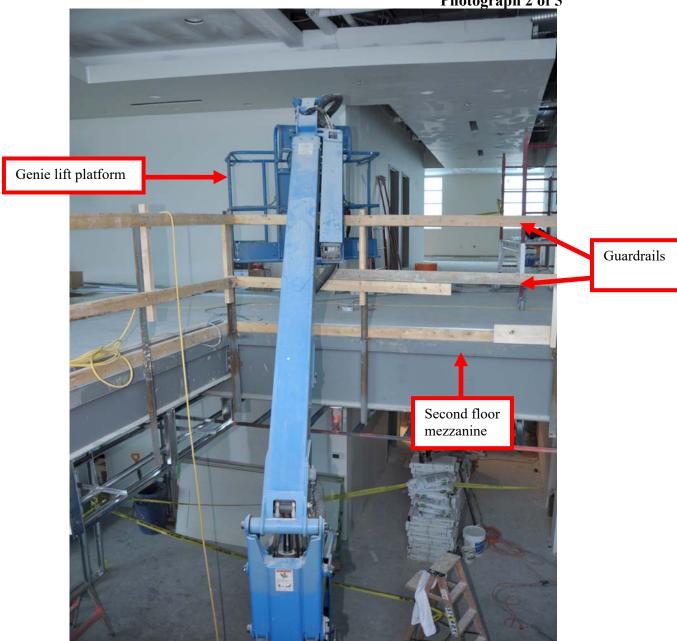


F-OHS-038619-C9699 Attachment A Photograph 1 of 5



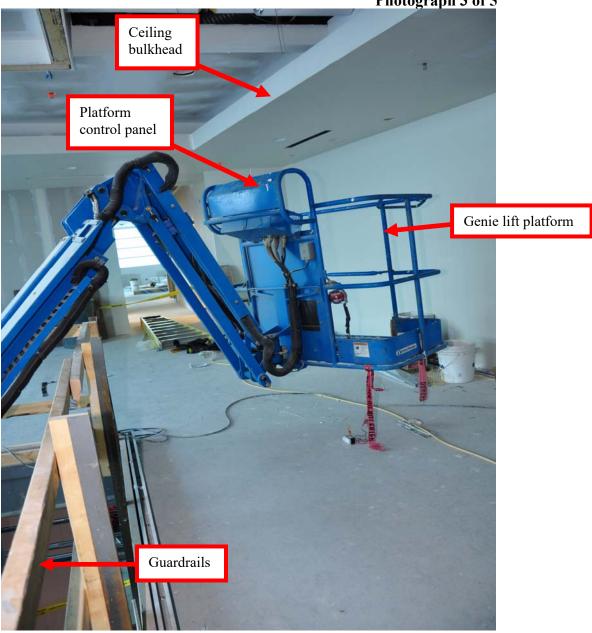
Photograph 1 - Shows the Genie lift, located on the main level of the incident location, with the primary boom and jib boom extended where the POS worker was working in the lift platform between the second floor mezzanine and ceiling bulkhead. (NOTE: The lift platform is not visible due to the second floor mezzanine obstructing the view.)

F-OHS-038619-C9699 Attachment A Photograph 2 of 5



Photograph 2 - Shows the Genie lift, located on the main level of the incident location, with the primary and jib boom extended where the POS worker was working in the lift platform between the second floor mezzanine and ceiling bulkhead. (NOTE: The ground control panel located on the main level is not visible due to the boom obstructing the view.)

F-OHS-038619-C9699 Attachment A Photograph 3 of 5



Photograph 3 – Shows the Genie lift platform in the vicinity of where the POS worker was working in the lift platform between the second floor mezzanine and ceiling bulkhead when the POS worker was found pinned by the neck between the ceiling bulkhead and the platform control panel.



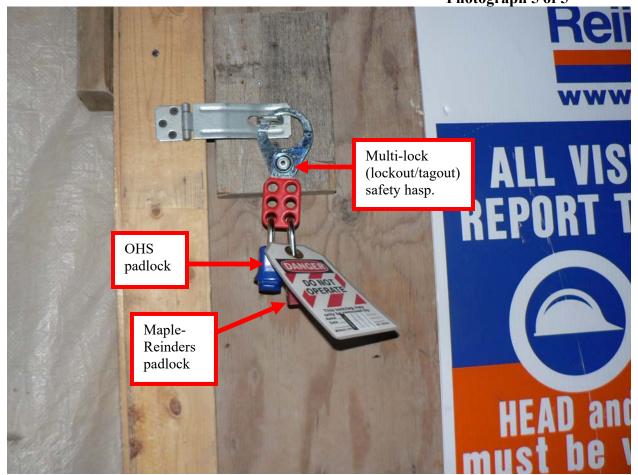
F-OHS-038619-C9699 Attachment A Photograph 4 of 5



Photograph 4 – Shows the Genie lift platform with the platform control panel and cover that the POS worker was utilizing in the lift platform between the second floor mezzanine and ceiling bulkhead when the POS worker was found pinned by the neck between the ceiling bulkhead and the platform control panel.



F-OHS-038619-C9699 Attachment A Photograph 5 of 5



Photograph 5 – Shows a multi-lock (lockout/tagout) safety hasp belonging to Maple-Reinders. A padlock belonging to OHS and a padlock belonging to Maple-Reinders were placed onto this multi-lock (lockout/tagout) safety hasp; the locked out doors to the commercial construction project, the Maple Reinders office complex, ensured that no one could enter the site and access the Genie lift. Each of the 3 doors to access the building had this multi-lock system put in place to prevent entry.

