Elevating and Amusement Devices Safety Program	Ref. No.: 280-19
ADVISORY	Date: August 30, 2019

Subject: Fatal Incident involving a Worker on a Freight Elevator
Distribution: Posted on TSSA website

1. **Advisory**

1.1 This advisory intends to bring awareness related to:

- Elevator components shall be repaired or replaced by components of equivalent material, strength and design as intended by the original equipment manufacturer
- No work (repairs) shall be performed on an elevating device by a person other than a mechanic
- The need to keep elevator components in a good state of repair and to replace worn out or defective components as soon as possible
- Makeshift repairs, even if seemingly innocuous could pose serious risks

2. **Background**

2.1 The Technical Standard and Safety Authority has completed an investigation of a fatal incident involving a worker in connection with an elevating device type known as a **freight elevator**.

2.2 Ontario Regulation 209/01 defines freight elevator.

> "freight elevator" means an elevator that is designed and constructed to carry freight and on which an attendant and freight handlers are permitted ride;

2.3 Freight elevators are not passenger elevators, and typically are provided with doors such as;

On the landing side

- vertically sliding bi-parting doors (unlike horizontally sliding doors found on passenger elevators)

Inside the freight elevator

- vertically sliding car gates (unlike horizontally sliding car doors found on passenger elevators)

The elevator code generally defines these types of doors as;

> **vertically sliding, biparting door:** a counterweighted or counterbalanced door consisting of two or more panels, so arranged that the panels move vertically away from each other to open or vertically toward each other to close.
>
> **vertically sliding car gate:** a counterweighted or counterbalanced assembly, consisting of one or more sections that move vertically to open or close.

When these door types are not "power operated", they are provided with PULL STRAPS, that allow freight handlers to "manually" pull on the straps to open and close the doors.

3. Summary of Incident

3.1 The fatal scenario resulted when the upward travelling freight elevator caught the upper panel of the vertically sliding bi-parting landing door. The upward motion of the elevator then pulled the door panel away from its closed and locked position and away from the stationary lower panel. This resulted in the elevator shaft being exposed before the elevator came to a stop. A nearby worker on the floor where the door panel was pulled open observed the unusual situation, and while looking into the hoistway to assess the scene was fatally injured when the upper panel suddenly dropped resulting in the fatality.

4. Incident Investigation

4.1 The investigation proposed a failure scenario where;

- A broken car gate pull strap was replaced by an unapproved cord (rope) that was likely tied into a loop to make it easier to pull down
- As the freight elevator ascended to the third floor, the cord or loop from the car gate was dangling outside the moving elevator
- As the moving freight elevator passed the second floor, the dangling car gate cord became entangled around the strap and fastener of the top panel of vertically sliding bi-parting door
- The force created by the cord (that was attached to the ascending elevators car gate and now snagged around the upper landing door panel) pulled the upper door panel through the mechanical lock of the landing door, which in turn caused the landing door to be wrenched open.
- A worker saw the upper panel of the vertically sliding bi-parting door open unexpectedly and stuck his head into the hoistway to investigate. Unfortunately, at the same time, the cord snapped, and the door dropped, causing a fatal injury.

4.2 The investigation revealed that;

- The pull strap on the car gate had broken at least 15 days prior to the accident.
- The pull strap had been replaced by a piece of telephone wire by an employee who was not an elevator mechanic. T
- The employee told the building maintenance manager that the strap was broken and that he had made a repair.
- The night before, or the morning of the incident, the telephone wire was replaced by the cord involved in the incident by an unknown person.

5. Ontario Regulation 209/01, and the Elevating Devices Code Adoption Document

5.1 All owners shall ensure that no person shall be involved in a task that is necessarily ancillary or incidental to the installation or maintenance of an elevating device unless he or she is supervised by a mechanic. Although the onus is on owners to make sure that unlicensed persons do not repair elevators, if a mechanic notes a repair has been made that does not appear to have been made by a licensed mechanic (such as a replacement of a strap made with a telephone cord) the mechanic should advise the owner so that the owner can caution his/her employees against making repairs to an elevating device.

5.2 Any repairs or replacements shall be made with parts of at least equivalent material, strength, and design. Mechanics are reminded that if they note that straps are missing or have been replaced with cords or wires that are not equivalent to the OEM cord, replacement straps that are the OEM equivalent should be ordered and replaced. In addition, mechanic should be aware of any unsafe conditions that could be created by makeshift repairs, in particular the danger posed by excessive cord length or the “looping” of the end of the cord.

6. A17.1 / B44 Code Requirements for Pull Straps

6.1 Manually operated vertically sliding bi-parting car and landing doors shall be provided with pull straps on the inside and outside of the door. The bottom of the strap shall be not more than 2 000 mm (79 in.) above the landing when the panel is in the fully opened position, and the length of the strap shall not be extended by means of ropes or other materials.

7. Maintenance Requirements

7.1 Elevator maintenance contractors and their technicians are reminded that section 8.6.4.13.1 of the A17.1 / CSA B44 code requires that door systems and their associated components are maintained to ensure safe and proper operation at an interval not exceeding 6 months. This shall include, but not limited to door closers, or in this case pull straps.