

Existing Elevator Modernization/Fire Alarm Interface

Issue:

Changes to the Elevating Devices Codes Regulation (AR 62/2009) have resulted in some confusion between the Elevating Devices Regulation, the Alberta Building Code and the Alberta Fire Code related to upgrading existing elevators when installing new elevator controllers.

Purpose:

To provide clarity for building owners, operators, designers, fire alarm installers, fire alarm technicians, electricians, elevator installers and elevator mechanics as well as Safety Codes Officers in the Elevator, Building, Fire and Electrical disciplines when installing new controllers with FEO on existing elevators as per Alberta Regulation AR 62/2009 and the ASME A17.1-2007/CSA B44-07 Safety Code for Elevators and Escalators:

The clarification will cover the requirement to install Firefighter Emergency Operation (FEO) on an elevator, in an existing building:

- 1) What are the concerns for a building, regarding changes to the Fire Alarm System?
- 2) What types of equipment and standards must be used to deal with the detection and notification portions of the FEO?
- 3) What are the requirements for “professional involvement” and permitting?
- 4) What are the requirements for verification or re-verification of the Fire Alarm System after FEO is installed?
- 5) What are the requirements for Inspection, Testing and Maintenance requirements for detection and notification equipment?

Discussion Principles

- 1) No existing building is required to upgrade the elevator controller; however, when the owner of an existing elevator decides to modernize the elevators by installing a new controller, that controller will be required to have FEO.
- 2) The requirement to have FEO does not, in any way, create a requirement to install a Fire Alarm System in a building. Conversely having a Fire Alarm System in the building does not, in any way, create any requirement to upgrade the elevator system to include FEO.
- 3) Where the elevator in an existing building is modernized and FEO is added, all of the additional detection devices, components and wiring, which are required to upgrade the elevator system to FEO, MUST be part of the Fire Alarm System.

Note: It is not acceptable to have two systems for the detection of the products of combustion in a building. This would lead to confusion amongst owners, occupants and servicing personnel and create unreasonable operational difficulties for building operators and the responding fire department.

Requirements:

- 1) All equipment used to detect products of combustion and control elevators must meet the appropriate ULC Standards* (S527 for control panels, S529 for smoke detectors) referenced in the current Alberta Building Code and the current Alberta Fire Code. The spacing, wiring, installation must comply with the appropriate portions of S524, as per the current version of the ABC, which is the Fire Alarm Installation standard.
- 2) Where the building is of a size/type where its design and construction requires (or would have required) professional involvement as per the ABC the design and installation of additional fire alarm equipment will also require professional involvement.
- 3) Where devices are added to a building with a fire alarm system, to accommodate FEO, the Fire Alarm System will have its operation verified as per the current requirements of the ABC, AFC and S537. If this addition required professional involvement for design and installation the verification will also require professional involvement.
- 4) Only smoke detectors that conform to S529 may be used for smoke detection in an FEO system. **“(smoke alarms are not permitted)”**
- 5) All FEO detection and notification systems must be maintained annually in accordance with S536 either as part of the Fire Alarm System or, where no fire alarm system exists, as the independent Elevator Recall Control Supervisory Panel (ERCSP). Records of this maintenance must be retained on-site for at least two years as per the AFC.
- 6) Installation of new devices and wiring for FEO, both in a stand alone system in a building with no Fire Alarm System, and where the FEO devices are part of the existing Fire Alarm System, will require the owner, designer or installer to obtain a Building Permit from the Authority Having Jurisdiction. If a new circuit, or additional wiring to existing circuits, is installed an Electrical Permit from the AHJ will be required as well.
- 7) Elevators without emergency backup power supplied shall be identified to firefighters as such by signage in each car, in symbols and text no less than 30 mm in height on a contrasting background, as below:

 **Normal Power”.**

- 8) FEO upgraded elevators with emergency backup power supplied shall be identified to firefighters as such in each car so supplied, in symbols and text no less 30 mm in height on a contrasting background as below:

 **Emergency Power”.**

Possible Modernization Types

1) Existing building where the owner decides to upgrade to FEO and the building does not have a FAS

- a. FEO smoke detectors mounted in elevator lobbies (within 6.4 m of all hoistway entrances), hoist way and machine room,
- b. The FEO does not require the installation of a FAS,
- c. An Elevator Recall Control Supervisory Panel (ERCSP) will be installed in a building mechanical/electrical room but not the elevator machine room. This panel will be identified as the ERCSP by signage on the panel cover, in letters no less than 30 mm in height on a contrasting background and in addition state in the same lettering that:

“This is NOT a Fire Alarm System”.

- d. This system must have the ERCSP detection designed and installed in accordance with the relevant portions of the currently referenced version of S524.

2) Existing building where the owner decides to upgrade to FEO and the building does have a FAS

- a. FEO smoke detectors shall be mounted in elevator lobbies (within 6.4 m of all hoistway entrances), hoist way and machine room,
- b. All detection and control of the elevators in FEO will be through the Fire Alarm Control Panel.
- c. Upgrading may need to be accomplished by using addressable FAS or require the use of smoke (heat in machine room may be possible) detectors with integral relays for the purpose of providing signals to the elevator controller and this must all be connected to the Fire Alarm Control Panel in an approved manner. (S529, S530, S524). Where smoke detectors with integral relays are used a fault in the elevator signalling wires must cause the elevator to go to its recall position. The system must be configured for normally-closed contacts so that a break in the wiring will be immediately detected by the elevator going to its recall position. A separate ERCSP providing a single signal to the FAS will not be acceptable.
- d. Unsupervised (120V systems with no annunciator or control panel) Fire Alarm configurations are not able to be upgraded to provide FEO as per ASME A17.1/CSA B44 which requires electrical supervision of the system devices and therefore must be replaced by a compliant Fire Alarm System at the time the elevator controller is upgraded.

3) Existing building where the FAS is upgraded (see Standata FCI-08-06) and the owner has decided not to upgrade elevators to FEO

- a. The upgrade to the FAS does not generate any requirement to upgrade the elevator system,
- b. No additional smoke detectors are required to be mounted in elevator lobbies, hoist way and machine room,
- c. No FEO is required to be installed in building.

Conclusion:

Designers, installers, Safety Codes Officers and the local Fire Department need to engage in full discussion of the requirements and expectations of the elevator and its interface to any fire alarm system prior to the installation or upgrade of an elevator which utilises newer technology to provide Firefighter Emergency operation in accordance with ASME A17.1-2007/CSA B44 – 07.

This joint interpretation has been approved by the Fire, Building and Elevator Technical Sub-Councils of the Safety Codes Council and their respective Administrators and applies throughout the province of Alberta.

Note: New Buildings must comply with all the applicable requirements for the Alberta Building Code and the Elevating Devices Codes Regulation.

*The following ULC documents and editions are referenced in this Standata:

CAN/ULC-S524-01, "Installation of Fire Alarm Systems"
ULC-S527-99, "Control Units for Fire Alarm Systems"
CAN/ULC-S529-02, "Smoke Detectors for Fire Alarm Systems"
CAN/ULC-S530-91, "Heat Actuated Fire Detectors"
CAN/ULC-S536-04, "Inspection and Testing of Fire Alarm Systems", and
CAN/ULC-S537-04, "Verification of Fire Alarm Systems"