Mandatory Requirements for Elevator Updating or Modernization of Motion and Operation Control

This Directive is being issued by a provincial safety manager pursuant to section 30 of the Safety Standards Act.

Date of Issue: March 11, 2010

General Details

In accordance with Section 15 introductory paragraph, 15 (d), 18 (1) (b), and 30 of the Safety Standards Act, this Directive prescribes the terms and conditions for a permit issued for the modernization of motion & operation control for traction and hydraulic elevators in order to increase the minimum basic level of safety for existing elevators that are to be modernized.

Specific Details

Please note that the following requirements modify or are in addition to all other regulation or code requirements for alterations. Any requirements that conflict or are in discrepancy with the requirements prescribed by this directive are without effect to the extent of the conflict or discrepancy.

In accordance with Section 18 (1) (b) of the Safety Standards Act, it is hereby directed that the following terms and conditions are attached to permits issued for elevators in process of updating or modernization of motion and operation control.

Referenced main clauses of requirements (in brackets) are from the latest adopted edition of and revisions to the B44 Code for Elevators and Escalators.

This directive will be in effect on April 30, 2010. All jobs sold on or after this date must comply with the following requirements.

Traction Elevators:

1. Car and counterweight buffer return switches for oil buffers, except trailing buffers (2.26.2.22)
2. Elevators (traction only) referred to in introductory paragraph of 8.4 and installed in B44 Seismic Risk Zone, ZB44 2 or greater (1998 BC Building Code (1998 BCBC) Velocity Related Seismic Zone, Zv 2 and greater) – for application of seismic protection requirements of 8.4, equivalence between B44 seismic risk zone ranges and 1998 BCBC velocity related seismic zone ranges, use the following table:
   \[
   \begin{align*}
   Z_{B44} \ 2 & = Z_v \ 2 \ and \ 3 \\
   Z_{B44} \ 3 \ and \ greater & = Z_v \ 4 \ and \ greater
   \end{align*}
   \]
   a. Submission of Elevating Devices Seismic Data Sheet
   b. Ring & string counterweight displacement switch (8.4.10.1.1 (a) (2) (a))
c. Seismic switch (shaker box) – this requirement is only for installations in B44 Seismic Risk Zone, ZB44 3 or greater – if exclusively used to control elevator(s) in a building, it must be installed in the machine room (8.4.10.1.1 (a) (1))

d. Driving machine and deflecting sheave rope retainers (8.4.3.1)
e. Car & counterweight upper and lower guiding member position restraints (8.4.5.1, 8.4.7.2.1)

3. Car platform guard (apron, toe guard) (2.15.9 only to the extent the existing pit must permit, but in no case less than the leveling or truck zone, plus 75 mm (3 in))

4. Hoistway door safety retainers (2.11.11.8)

5. Car door restrictor must be added (2.12.5)

6. Car emergency communication (2.27.1.1)

7. Emergency brakes (rope grippers, sheave jammers, secondary drum brakes, etc., additional to safeties and independent of driving machine brake) – technical specifications and drawings for means of mounting emergency brakes must be approved and sealed, with signature and date, by a BC registered professional engineer (2.19)

8. Where the driving machine is retained, the driving-machine brake shall be dismantled and cleaned to ensure safe and proper operation, including but not limited to:
   a. Residual pads
   b. Linings
   c. Pins
   d. Springs
   e. Sleeves
   f. Discs
   g. A brake marking plate must be provided. The brake setting and method of measurement must be permanently and legibly marked on the driving-machine brake (Appendix J.2.6.1 (a))

Any worn parts must be replaced and tested.

9. Pit ladder (2.2.4.2)

10. Where an internal cab modernization is to be performed, either alone or in conjunction with any other alteration, an “Elevating Devices Internal Cab Modernization Data Sheet” must be submitted. Where the internal cab modernization results in an increase or decrease in the deadweight of the car that is sufficient to increase or decrease the sum of the deadweight and rated load, as originally installed, by more than 5%, the installation must conform to 8.7.2.15.2 (a) to (j) and a BC registered professional engineer must review the elevator load-bearing system capability. This analysis of the elevator load-bearing system capability change comprises, as a minimum, all load-bearing components addressed in 8.7.2.15.2 (a) to (j), including but not limited to, sheave shaft, brake, electric motor, bearings, machinery and sheave beams, supports and foundations, worm and gear, as applicable where provided, due to the changes caused by the new car deadweight and new counterweight (if changed). The BC registered professional engineer must confirm in writing conformance of load-bearing system capability to 8.7.2.15.2 (a) to (j), as applicable, and seal, with signature and date, the Elevating Devices Internal Cab Modernization Data Sheet. After the 5% limit described in 8.7.2.15.2 has been exceeded for the first time, every subsequent addition or reduction of deadweight performed on an elevator car must be reviewed by a BC registered professional engineer. For this purpose, the elevator load-bearing system capability change analysis, confirmation of conformance of this system to code requirements, and sealing of the Elevating Devices Internal Cab Modernization Data Sheet must be done by the BC registered professional engineer in the same manner as previously described. Independently of whether an increase or decrease of the sum of car deadweight plus rated load, as described in 8.7.2.15.2, exceeds 5% or not, a balanced load test must be witnessed by an elevating devices safety officer, upon acceptance inspection of every internal cab modernization.
The increased sheave shaft loading, due to car and counterweight, must be within the OEM specifications, as updated to current safety code.

Hydraulic Elevators:

1. Elevators (hydraulic only) referred to in introductory paragraph of 8.4 and installed in B44 Seismic Risk Zone, ZB44 2 or greater (1998 BC Building Code (1998 BCBC) Velocity Related Seismic Zone, Zv 2 and greater) – for application of seismic protection requirements of 8.4, equivalence between B44 seismic risk zone ranges and 1998 BCBC velocity related seismic zone ranges, use the following table:

   \[
   \begin{array}{c|c}
   ZB44 & Zv \\
   \hline
   2 & 2 \text{ and } 3 \\
   3 \text{ and greater} & 4 \text{ and greater}
   \end{array}
   \]

   a. Overspeed valve (8.4.11.2)
   b. Pressure piping fittings must be made only of materials that conform to code material specifications and grades, classes, types, etc., of these material specifications, intended clearly for pressure service
   c. Piping supports (8.4.11.3, Table 8.4.11.3)
2. Car door restrictor must be added (2.12.5)
3. Hoistway door safety retainers (3.11, 2.11.11.8)
4. Car platform guard (apron, toe guard) (3.15.1.1, 3.15.1.2, 2.15.9 only to the extent the existing pit must permit, but in no case less than the leveling or truck zone, plus 75 mm (3 in))
5. Car emergency communication (2.27.1)
6. Pit ladder (3.2, 2.2.4.2)

Provincial Safety Manager – Elevating

For more information on the British Columbia Safety Authority, please visit our web site at: www.safetyauthority.ca
Relevant Legislation

Safety Standards Act

Powers of provincial safety manager

15 A provincial safety manager may exercise any or all of the powers of a safety officer and may do one or more of the following:

(d) issue a safety order;

Powers of safety officers

18 (1) For the purposes of this Act and in the course of performing their duties, safety officers may exercise any or all of the following powers and any other powers assigned to them under the regulations:

(b) when issuing a permit, include terms and conditions;

Directives

30 (1) A provincial safety manager may, in writing, on their own initiative or if requested by any person, issue a directive on the interpretation, application or operation of this Act and the regulations.

(2) The directive may be issued

(a) generally,

(b) for a specific regulated product or class of regulated products,

(c) for specific regulated work or class of regulated work,

(d) for a class of persons, or

(e) for or in relation to a specified period of time.

(3) The provincial safety manager must make reasonable efforts to notify all persons affected by a directive.

(4) If there is a conflict between a regulation and a directive of a provincial safety manager, the regulation prevails.

(5) A directive may be given in advance of an application for a permit, certificate or other permission required under this Act.