Subject: Firefighters’ Emergency Operation [FEO], Special Emergency Service [SES], & Fire Code Retrofit [FCR] – Clarification of Requirements

Sent to: ALL ELEVATOR CONTRACTORS and CONSULTANTS

1. INSTRUCTIONS TO SUBMITTING ENGINEERS & CONTRACTORS

1.1 Each professional engineer submitting designs, or any contractors installing, NEW elevators or performing ADDITIONS or ALTERATIONS which consist of:

- NEW elevators equipped with [FEO]
- ADDITION of [FEO] Firefighters’ Emergency Operation to existing elevators
- ADDITION of [FCR] Fire Code Retrofit to existing elevators
- ALTERATION of existing [FEO] Firefighters’ Emergency Operation
- ALTERATION of existing [SES] Special Emergency Operation, or
- ALTERATION of existing [FCR] Fire Code Retrofit

shall ensure that elevators comply with the applicable requirements of:
- CSA B44 - Safety Code for Elevators and
- applicable TSSA Director’s Rulings

The inclusion of these features shall be in accordance with interpretations in Section 2 below, which explain,
- which rules apply to new equipment, added or altered systems
- which colours apply to engravings and switch markings
- when a 50mm Firefighters Elevator symbol is required or permitted

1.2 Possible deviations from this order are permitted on projects for which TSSA receives the design submission before the First Day of January 2004, except that no variances are permitted for new elevators.

2. INTERPRETATIONS

2.1 Subject of interpretation
The interpretations refer to the following requirements as applicable to FEO, SES and FCR:
- Clause 2.27.3 to 2.27.8 of B44-00, Firefighters’ Emergency Operation [FEO]
- TSSA Director’s Ruling No.60/88, Elevator Fire Code Retrofit [FCR] in Health Care Facilities,
- TSSA Director’s Ruling No.105/93/Rev.2/94, Elevator Fire Code Retrofit [FCR] in Residential Buildings,
- Ontario Building Code [OBC], Ontario Regulation 403/97 and earlier editions enforced at the time of original elevators installation or initial licensing,
- Ontario Fire Code [OFC], Ontario Regulation 627/92 and 388/97.
**NEW, ADDITION, ALTERATION - Matrix of Permissible Options**

<table>
<thead>
<tr>
<th>New or Existing Elevator</th>
<th>Proposed Controller</th>
<th>Scope of Work</th>
<th>Feature Being Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW Elevator w/</td>
<td>New Control</td>
<td>INCLUSION of</td>
<td>✔ OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>× NO¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>× NO¹</td>
</tr>
<tr>
<td>EXISTING Elevator w/</td>
<td>New Controller &amp;</td>
<td>INCLUSION of</td>
<td>✔ OK</td>
</tr>
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<td></td>
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<td>✔ OK</td>
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<td></td>
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<td>ADDITION of</td>
<td>✔ OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ALTERATION to</td>
<td>✔ OK</td>
</tr>
</tbody>
</table>

1 Feature is not permitted on new equipment  
2 Special cases may permit addition of previously absent feature if trying to match other elevators in the group  
3 Alterations such as: a) upgrade from manual recall to auto recall or b) addition of Phase II where previously not present would be permitted in lieu of compliance to 8.7.2.28 or 8.7.3.31.8

**TABLE: Interpretations**

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Building Type where the elevator is located</th>
<th>FEO/SES/FCR required by OBC or OFC?</th>
<th>RULES Which this elevator does or must meet?</th>
<th>Required colour of switch markings in car and at landing</th>
<th>Colour of 50 mm FF Hat at entrance frame Required or Permitted?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INSTALLATION of NEW ELEVATOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a</td>
<td>Any Building Type</td>
<td>- FEO is required by current OBC</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>RED hat required</td>
</tr>
<tr>
<td>1b</td>
<td></td>
<td>- FEO is NOT required by OBC,</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>RED hat permitted</td>
</tr>
<tr>
<td>1c</td>
<td></td>
<td>- But provided voluntarily</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>NO hat permitted</td>
</tr>
<tr>
<td>2</td>
<td>ADDITION of FCR (to existing controller only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>Residential Building or Health Care facility</td>
<td>FCR required by OFC in building in column C2 but prohibited in other buildings</td>
<td>- TSSA Director's Ruling #105/93 Rev.2/94 or #60/88 Rev.1/88</td>
<td>Yellow Required</td>
<td>YELLOW hat required</td>
</tr>
<tr>
<td>2b</td>
<td></td>
<td>- Voluntarily provided FEO instead of FCR</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>YELLOW hat permitted</td>
</tr>
<tr>
<td>2c</td>
<td></td>
<td></td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>RED hat permitted</td>
</tr>
<tr>
<td>3</td>
<td>ADDITION of FEO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a</td>
<td>Any building, including Residential or Health Care</td>
<td>- Not required by any code.</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>NO hat permitted</td>
</tr>
<tr>
<td>3b</td>
<td></td>
<td>- FEO voluntarily provided</td>
<td>- B44-00 rule 2.27.3 to 2.27.8</td>
<td>RED Required</td>
<td>RED hat permitted</td>
</tr>
<tr>
<td>4</td>
<td>ALTERATION to an installation which has FEO, SES or FCR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4a</td>
<td>Any building, including Residential or Health Care</td>
<td>- Required by B44-00 when work listed in 3.1.5 is performed</td>
<td>- B44-00 rule 2.27.3 to 2.27.8- Does not meet applicable OBC*</td>
<td>RED Required</td>
<td>YELLOW hat permitted</td>
</tr>
<tr>
<td>4b</td>
<td></td>
<td>If required as in 4a or voluntarily altered FCR, SES or FEO</td>
<td>- B44-00 rule 2.27.3 to 2.27.8- Fully meets applicable OBC*</td>
<td>RED Required</td>
<td>RED or YELLOW hat permitted</td>
</tr>
</tbody>
</table>

**Note re OBC**: Undated “applicable OBC” means the OBC enforced at the time of original elevator installation.

For elevators that are altered per 4 above and that have had FCR done previously, the existing yellow hat symbol on the door frame must remain, unless the Building is upgraded to the most recent OBC requirements as applicable for a red hat installation, in which case a red hat symbol can replace an existing yellow hat symbol.

Further information may be obtained by contacting: Director - ED/AD Division, Technical Standards and Safety Authority, 4th Floor – West Tower, 3300 Bloor St. West, Toronto ON. M8X 2X4 Ph: 416 325 2000 Fax:416 326 8248  
ED-175-02.doc 2/5
2.2 Reason for, and explanation of, interpretations given in Table on page 2

2.2.1 The interpretations in the Table answer commonly asked questions:

- Which rules apply to new or existing elevators being provided with operation system for use by firefighters? For answer see Table, column C4.
- Which colour must, or is permitted to, be used for marking of “FIRE OPERATION” (in case of FEO) or “EMERGENCY” (in case of FCR) switches inside the car and operating instructions with a hat symbol (in case of FEO per Figure 2.27.7.2 in B44-00) if provided inside the car? For answer see Table, column C5.
- Which colour must, or is permitted to be used for a 50 mm FF hat symbol when posted at the entrance frame at the recall level. Also, which elevators must, or must not have such FF hat? For answer see Table, column C6.
- Why some elevators are required to be designated by the 50 mm FF hat at the entrance frame in red or yellow colour, but other elevators are not permitted to have one in either colour? For rationale see 3.3 in this Bulletin.

2.2.2 Answers in the Table are formulated in relation to the following factors:

- Type of work on the elevator (see Table, groups of rows numbered 1, 2., 3 and 4 in column C1),
- Type of building occupancy where an elevator is, or is to be, located (see Table, column C2), and
- Whether the elevator was in the past, or is to be now, provided voluntarily for use by firefighters or because of requirements in OBC or OFC or B44 (see Table, column C3).

2.3 Summary of interpretations

- YELLOW identification of switches inside the car and at landing and the 50 mm FF hats at entrance frames are permitted only for elevators for which the retrofit was required by OFC and performed in accordance with Director Rulings No 60/88 and 105/93. However for elevators that are altered and that have had FCR done previously, the existing 50 mm yellow hat symbol on the door frame may remain.
- For other elevators RED colour must be used for identification of “FIRE OPERATION” switches inside the car and for “FIRE RECALL” switches at landings as well as the 50 mm FF hat symbol at the entrance frame if permitted, regardless whether the FEO system is provided voluntarily or in response to requirements in OBC or B44.
- RED 50 mm FF hat symbol may be posted or remain posted at the entrance frame only if the elevator fully met all OBC requirements applicable at the time of the original installation of the elevator. Lack of the 50 mm hat indicates that all elevators are equally equipped for use by firefighters.
- A voluntarily provided operating system that does not meet either Director’s Rulings #60 or 105 or B44 Code requirements applicable to FEO or SES systems must not have any identification of switches or labels, in red or yellow, which could imply that the operating system is intended for use by the firefighters.
- Per FCR rulings 105/93 and 60/88, it is permitted to have additional features such as recall to the alternate level and automatic recall, provided the related building equipment (e.g. fire alarm system etc.) can support these features as required by the applicable OBC.

3. Background to Code Requirements and Rationale for Interpretations

3.1 Historical background to FEO requirements of B44-00

3.1.1 Several years before 1975, some basic requirements for FF operation were introduced in Building Codes. We do not know who enforced the requirements or how many elevators were equipped with FF operation.

3.1.2 Requirements for FF operation were first introduced in B44 Code with its 1975 edition, in new clause 3.12.15 (enforced in Ontario as of 01/07/1976), to be applied “where the Building Code enforcing authority requires elevators to be arranged for firefighter’s operation”. B44-Supplement 2 of 1980, Clause 3.12.15.4 (enforced in Ontario as of 01/01/1981), added more explicit rules. Also, the terms Special Emergency Operation [SES] was introduced. New special rules for elevators designated “Firefighter’s Elevator” were introduced, including requirement for “a red outline of firefighter’s hat …be used exclusively to identify elevators that comply with …building code…. This identification shall be located on the elevator entrance frame…recall level.”

3.1.3 Various operational changes were made in B44 after 1981. Since non-fully compliant FF features, were being installed in buildings where the OBC requirements did not apply, B44 Supplement 1-1987 made it clear that the
requirements of B44 Clause 3.12.15, including 3.12.15.9 apply to elevators “where SES is provided either voluntarily or when required by the …Building Code”.

3.1.4 With the B44 –00 edition many new and revised requirement have been introduced in rules 2.27.3 up to 2.27.8, including the change in terminology, from SES to FEO. Special Canadian rule 2.27.7.4 is formulated to direct Canadian Code users to special requirements in Canadian building codes respecting designation of “Firefighter’s Elevators”. The “NOTE” following the B44 rule 2.27.7.4 is misleading because it refers to only one out of many Building Code requirements for FF elevators. See full list of requirements in 3.2 below.

3.1.5 If an existing elevator was provided with FEO, SES or FCR because such operation system had been required by OBC or OFC, the following B44-00 rules require that it must be brought into compliance with B44-00 requirements in rules 2.27.3 to 2.27.8* when any of the following elevator components is replaced or altered:

- C8.6.12.5.3.1 – Replacement of elevator controller
- 8.7.2.16.1 & 8.7.3.17 – Change in type of service
- 8.7.2.27.4 & 8.7.3.31.5 – Alteration of elevator controller
- 8.7.2.27.5 & 8.7.3.27.6 – Change in type of motion control
- 8.7.2.27.6 & 8.7.3.27.7 – Change in type of operation control

* NOTE: The intent is not to require upgrading of an elevator and related building features to the current OBC requirement beyond those applicable at the time of the original elevator installation. If the elevator was not installed in a “high building” or for other reason the OBC did not require provision of a “Firefighter’s Elevator”, compliance with 2.27.7.4 will not be required.

3.2 Designation “Firefighter’s Elevator”

According to OBC-1997†, articles 3.2.6.9 and 3.2.7.9, in “high buildings” at least one elevator must be provided for use by firefighters. In addition to all B44 requirements, the elevator must meet several additional OBC requirements, including the following:

†NOTE: Requirements in previous editions of OBC may differ.

- Minimum car platform area – 2.2 m²
- Minimum capacity – 900 kg,
- Capable of reaching the top floor from the designated (recall) floor within 1 min.,
- The mechanical part of the interlock must remain engaged and the interlock contact and associated wiring must maintain their electrical continuity and remain operational for at least 1 h when the door assembly is subjected to fire exposure per CAN4-S104, or the entrances must be protected by a vestibule or corridors meeting the OBC – 3.2.6.9 (3) (b) or (c),
- Must serve every building floor above the designated floor level,
- All electrical conductors for operation of the elevator must be protected against exposure to fire, as specified in the OBC – 3.2.6.9(6)
- Emergency power must be capable of simultaneous operation of all designated FF elevators, with exceptions specified in 3.2.7.9(3).

3.3 Rationale for interpretations

3.3.1 No elevator is allowed to have a RED 50 mm FF hat designation at the recall level entrance frame unless it meets OBC requirements applicable at the time of the original elevator installation (see 3.2 above), otherwise it would give false sense of security to firefighters.

3.3.2 When FEO is provided voluntarily, be it for a new or existing elevator, the FEO must meet the B44 requirements. However, the elevator and the related building features may not necessarily meet all OBC requirements for high buildings. Typically, this would be the case with a new elevator in a low-rise building where FEO is not mandated by OBC; or the case where FEO is added to an existing elevator, or upgrading of an existing FCR or SES to FEO. The addition of FEO or the upgrading of existing emergency operation systems would assist firefighters in their work and in any other building emergencies.
3.3.3 All elevators that are equipped with FEO or SES must at least meet all B44 requirements that were applicable at the time of original installation or subsequent alteration. These are the requirements that correspond to rules 2.27.3 to 2.27.8 (except 2.27.4.4) of B44-00. Consequently, elevators equipped with FEO or SES should have their in-car and recall switches marked in red to indicate to the firefighters what is the level of operational features and security level that FEO or SES offer. For these elevators, lack of FF hat at the recall level indicates that all elevators provide the same level of service and protection and that none is specially designated “for use of firefighters”.

3.3.4 Exceptions to the above principles are the elevators in residential buildings and health care facilities. Instead of a system fully complying with B44, the TSSA Rulings (see 2.1 on page 1) permit that one or more elevators in the specific buildings may be equipped with a “basic” FCR version of firefighters’ operation. This permission is based on the special retrofit provisions in Section 9 of OBC. The YELLOW coloured 50 mm FF hats at the entrance frame communicates to firefighters that only the identified elevator(s) in the building is/are provided with FCR system and the yellow marking of the switches indicates that the FEO system provides a lesser level of protection than a SES or FEO system. Yellow markings are not permitted for any other elevators.

3.3.5 There are no provisions in the OFC, OBC, B44 Code or Ontario Elevating Devices Regulations that would permit TSSA to accept retrofit of FCR type operational system for use by firefighters in buildings with occupancy other than residential and health care.

3.3.6 If an elevator has a 50mm red or yellow hat symbol mounted in the hall at the recall level, and is subsequently altered per 3.1.5, it is not the intent of this bulletin to remove the existing 50 mm hat symbol as this may cause confusion to the firefighters.

Roland Hadaller,  
Chief Engineer - EDAD PROGRAM

Roger Neate,  
Manager of Operations - EDAD PROGRAM