ADMINISTRATIVE BULLETIN

NO. AB-090

DATE : March 27, 2010 (Updated 01/01/2011 for code references)

SUBJECT : Disability Access

TITLE: : **Destination-Based Elevator Control System Requirements**

PURPOSE : The purpose of this Bulletin is to establish acceptable design criteria and standards for Destination-Based Elevator Control Systems

REFERENCE : 2010 San Francisco Building Code, based on the 2010 California Building Code
Section 104A.2.8, Alternate materials, design and methods of construction
Section 1102B, Definitions, Equivalent Facilitation
Section 1116B, Elevators and Platform (Wheelchair) Lifts
Section 1117B.5, Signs and identification
Section 1133B.8.6, Protruding objects
ICC/ANSI A117.1-2003 American National Standard: Accessible and Usable Buildings and Facilities

DISCUSSION : Destination-based elevator control systems are proposed as performance-based alternatives to traditional elevator control systems. These systems are desirable for many projects to increase elevator efficiency resulting in reduced wait and travel times, to provide high standards of building sustainability including energy efficiency, and to allow flexibility in elevator operation and system design. Adopted area plans for development of the City and County of San Francisco rely on high-density buildings in certain areas of the City to meet planning goals; elevators with destination-based control systems allow higher usage efficiencies, helping achieve those City goals.

The codes regulating elevator control systems prescriptively detail requirements for traditional elevator control systems, for example size and location of car and hall buttons. These prescriptive requirements lead to standardized installations that allow all users to be able to readily understand and use elevator systems, and provide for accessible operation by persons with disabilities. Alternate designs that provide equivalent performance to the prescriptive requirements of the codes may be approved on a case-by-case basis administratively if such alternate designs provide a code equivalent of that prescribed in the code for suitability, strength, effectiveness, fire resistance, durability, safety, sanitation, and accessibility for persons with disabilities.

Destination-based elevator systems must meet all of the code requirements for conventional elevator systems except for elements specifically addressed in this bulletin. Such elevator systems will be considered to have met the requirements for approval of alternate design through “equivalent facilitation” if the specific conditions listed in this bulletin are met. Any proposal for approval of a destination-based elevator control system that does not meet these conditions, or that fails to meet any other prescriptive requirement not addressed in this Administrative Bulletin, may be considered for administrative approval by the Department of Building Inspection on a case-by-case basis.

In cases where there are proposals substantially different from the alternatives prescribed in this bulletin, such proposals shall go to the Access Appeals Commission. A proposed destination-based elevator control system meeting the specific conditions of this Administrative Bulletin will not typically be required to have such determination of "equivalent facilitation" ratified by the Access Appeals Commission, and will be determined to have met requirements as a "Local Equivalency".

DEFINITIONS:

For the purpose of this Administrative Bulletin the following definitions shall apply:

Active signage: Electronic signage, such as an LCD display, that displays visual information to the user, and that can be changed or reprogrammed.

Keypad: Telephone-style user input device with accessibility function key, and may include additional floor keys.

Keypad console: The hall user interface, includes keypad, visual display, speaker, and may include other control keys, such as individual floor designation keys, and other components such as access card readers.

Passive signage: Static, unchanging signage.

ALTERNATE DESTINATION-BASED ELEVATOR CONTROL SYSTEM DESIGN REQUIREMENTS

Application

The installation of new and certain alterations of existing destination-based elevator control systems require building permits. This bulletin applies to newly installed, altered, or modernized destination-based elevator control systems in new and existing buildings for which building permits are issued after the effective date of this bulletin. Alterations to which this bulletin applies include changes in hardware, software, signaling, and operation that affect the user experience, but exclude maintenance, repair, adjustment, and in-kind replacement of equipment.

As an alternate to meeting the prescriptive requirements of the San Francisco Building Code, the following features shall be provided.

Section I: Keypad Console

A. General

Keypad consoles shall include an accessible keypad, a visual display with active signage, and a speech output speaker.

1) All keypad consoles shall be accessible.

2) Keypad consoles on floors where there is a building entry, including entry from parking and transfer levels, shall have the word "Elevator" in 5/8 inch (16 mm) high raised characters and in Braille on or immediately adjoining the faceplate of the keypad console.

3) Keypad consoles on floors where there is a building entry, including entry from parking and transfer levels, shall indicate the floors served in raised lettering and in Braille.

4) Keypad consoles and keys shall have a non-glare finish.

5) All components of keypad consoles, including keypad, display, and speaker shall be adjacent and not more than six inches (152 mm) apart. The display shall be located above the keypad.

6) If a security system or other form of access control system is in use, when accessible function key is pressed speech prompts shall be provided such as, "Present security credential."

7) Any additional features provided at the keypad console shall also be made accessible.

B. Location

1) Wall-mounted keypad consoles shall be provided at each floor elevator lobby for each group of elevators, located between elevator entrances in a location similar to conventional elevator hall stations.

2) Additional keypad consoles outside the immediate elevator lobby may be wall-, pedestal- or kiosk-mounted.

3) Keypad consoles outside the immediate elevator lobby shall provide a short verbal direction to the assigned elevator, such as, "Elevator A to left."

C. Keypad

1) Keypads shall include a 12-key ascending telephone keypad arrangement per ICC/ANSI. Keypads shall have a Star in the lower left corner and a Minus Sign in the lower right corner. The Star key shall dispatch an elevator to the main egress level from any other floor.

2) Keys shall have white characters on a black surface.

3) Keypad consoles shall have no sharp corners or edges.

4) All console keys shall be not less than 3/4 inch (19 mm) in the smallest dimension, be raised a minimum of 1/8 inch (3 mm), have square shoulders, and be activated by mechanical, detectable motion.

5) Keys or the keyboard console shall be sloped upward at 15 to 25 degrees from the vertical plane, except that the slope may be reduced or other measures may be taken such that the keypad does not become a "protruding object" as defined by Section 1133B.8.6.

6) Keypads shall have an Accessibility Function key. That key shall be located directly below the numeric keys, shall be a rectangle or square shape, and shall be of a size that is larger than the numeric keys so that it may be clearly distinguished from other keys.

7) The Accessibility Function key shall include the International Symbol of Accessibility (ISA) and the standard, raised equilateral triangle (three-dot) symbol for access complying with ICC/ANSI standards.

8) Any keys in addition to the Accessibility Function key and the 12-key keypad shall comply with items 1 through 7 above and shall be arranged in columns to the right of the keypad with horizontal spacing 1.5 times the horizontal spacing between the numeric keys and with the same vertical spacing as the numeric

keys. Such additional keys shall be labeled with raised white lettering on a black surface and in Braille, with Braille preferably located to the left of the raised lettering.

D. Active Visual Display

1) Active visual displays shall provide a contrast ratio of at least 200:1 with light characters on a dark, solid, static background. Visual display of elevator assignment shall be illuminated for a minimum of 5 seconds upon activation of the Accessibility Function key.

2) Character font, size and other visual characteristics shall meet ICC/ANSI requirements.

E. Keypad Console Speech Output

1) For keypad consoles on floors where there is a building entry or where the elevator group can be entered for the first time, including entry from parking and transfer levels, when the Accessibility Function key is pressed, a verbal announcement of floors served by the elevator group shall be provided.

2) After the Accessibility Function key is pressed, a speech prompt shall direct the user to enter a destination floor.

3) When a destination floor has been entered on the keypad or through an access control system, a speech prompt will, within two seconds, indicate the destination floor that was entered and will indicate which elevator is assigned to this destination.

4) The keypad console shall make an audible indication of an invalid key press sequence.

5) Auditory volume shall be at least 10dBA above ambient sound level, but not more than 80 dBA. At the ground floor elevator lobby, auditory volume shall be maintained at the required volume by an automatic gain control (AGC) or shall be set at not less than 75 dBa. Speech output shall be measured 36 inches (915 mm) in front of the console.

6) Auditory speech shall be clearly intelligible. Assessment of speech intelligibility shall be conducted at times of day when ambient noise volume is at its highest.

7) When intelligibility is not demonstrated to the satisfaction of the Department of Building Inspection, speech messages announcing the elevator letter designations shall include the use of the International Phonetic Alphabet, such as, “Elevator D Delta.”

***Section* II. Wayfinding to Designated Elevator**

A. General

In addition to the requirements of Section I above, wayfinding shall be made accessible as required below.

B. Floor and Route

1) Floor shall be consistently designated and routes from consoles to elevator cabs shall be as direct as practical.

2) Floor Designations in Newly Constructed Buildings

a) Floor designations shall begin with ‘one’ or ‘zero’ at the ground floor and shall increase by one for each successive higher floor.

b) The first floor below the ground floor shall be designated ‘minus one’ (–1), and shall decrease by one for each successive lower floor.

c) Floors shall not be designated by alphabetic letters such as ‘M’ or ‘Mezzanine,’ ‘P1' or ‘Parking Level 1,’ etc.

3) Elevator Assignment Adjacency

An elevator adjacent to the keypad console and on the same side of the lobby shall be assigned unless the adjacent elevator(s) is (are) out of service.

C. Active Signage

1) Visual Annunciators

a) There shall be, adjacent to and either above or next to each elevator entrance, or on the elevator car door jamb, a visual annunciator that includes the elevator designation letter shall illuminate upon car arrival or earlier.

b) In newly constructed buildings, a visual annunciator shall be installed at a height of at least 80 inches (2032 mm), measured to the centerline, above finished floor with a minimum character height of 4 inches (102 mm).

c) In existing buildings, a visual annunciator with a minimum character height of 2-1/2 inches (64 mm) shall be installed at a height of at least 72 inches (1829 mm) above finished floor.

2) Speech Annunciator

a) There shall be, adjacent to each elevator entrance or on the car door frame, a speech annunciator.

b) Speech annunciators shall comply with the requirements of Section I-E, Keypad Console Speech Output, above.

3) Floor Destination Indicator

a) There shall be on each elevator car door jamb an active floor destination display.

b) The minimum character height for elevator car door jamb display shall be 9/16 inch (14 mm) minimum for floor destinations and 3/8 inch (10 mm) for other text.

D. Passive Signage

1) Doorjamb Marking

Elevators shall be designated by complying doorjamb markings to show both floor number and car identification. Such elevator identification shall be located immediately below the floor number designation. Each elevator shall be identified by a single letter, in ascending alphabetical order, assigned clockwise from the main entrance to the ground floor elevator lobby, except that for large group installations or special elevator lobby arrangements, other clearly understandable designations may be approved on a case-by-case basis. Elevator systems with more than 26 elevators may use alpha-numeric designations, such as 'A1.' All doorjamb car letter markings shall conform to the specific floor number requirements, including size, of the California Building Code, including Section 1116B.

2) Additional Building Signage

Passive signage for directional information and other identification shall conform to the minimum requirements of Section 1117B.5 and ICC/ANSI, with characters not less than 5/8 inch (16 mm) in height and in standard raised lettering and in Braille. The intent of this requirement is that all signs provided for sighted persons shall also be provided in an accessible format.

***Section* III. Elevator Car Controls and Information**

1) The elevator car shall not have non-functional, exposed floor buttons.

2) There shall be a speech announcement inside the car indicating the floor served, with the announcement to be completed prior to the initiation of door opening, preferably at the start of deceleration.

Procedure for Application of these Requirements

Project sponsors wishing to apply the equivalencies or alternatives detailed in this bulletin must fill out and submit with any permit submittal documents a Request for Approval of Local Equivalency form. Details of procedures for the review of local equivalencies and appeal of departmental determinations may be found in Administrative Bulletin AB-005, Procedures for Approval of Local Equivalencies.

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Vivian L. Day, C.B.O. Date
Director
Department of Building Inspection

Approved by the Building Inspection Commission on March 17, 2010

Attachment A: Request for Local Equivalency

ATTACHMENT A

REQUEST FOR APPROVAL OF LOCAL EQUIVALENCY FOR MODIFICATION OR ALTERNATE MATERIALS, DESIGN OR METHODS OF CONSTRUCTION

DATE SUBMITTED _____ [Note: This form shall be recorded as part of the permanent construction records of the property]

If no permit application has been filed, a Preapplication Review Fee is required for review of a request for local equivalency or modification, per SFBC Table 1A-B, Item 5. Additional fees may be required by Fire Department and other City review agencies.

If a permit application has been filed, no additional fees are required for this review.

Permit Application # _____

Property Address: _____

Block and Lot: ____/____ Occupancy Group: _____ Type of Construction: _____ No. of Stories: _____

Describe Use of Building _____

_____

Under the authority of the 2010 San Francisco Building Code, Sections 104A.2.7 and 104A.2.8; the 2010 San Francisco Mechanical Code, Section 105.0; the 2010 San Francisco Electrical Code, Section 89.117; and the 2010 San Francisco Plumbing Code, Section 301.2; the undersigned requests modifications of the provisions of these codes and/or approval of alternate materials, designs or methods of construction. Two copies of supporting documents, including plans showing the proposed modifications or alternate materials, design or methods of construction, are attached.

Regular Code Requirement (specify Code and Sections) _____

_____

_____

Proposed Modification or Alternate _____

_____

_____

_____

_____

Case-by-Case Basis of Request - Describe the practical difficulties presented in meeting the specific conditions of the code and how the proposed modification or alternate meets the intent of the code. A separate form should be filled for each requested modification or alternate. Attach copies of any Administrative Bulletin, Code Ruling, reference, test reports, expert opinions, etc., which support this request. The Department may require that an approved consultant be hired by the applicant to perform tests or analysis and to submit an evaluation report to the Department for consideration.

Requested by:	PROJECT SPONSOR	ARCHITECT/ENGINEER	
Print Name:			
Signature:			
Telephone:			[Professional stamp here]

PLAN REVIEWER COMMENTS:

RECOMMENDATIONS: ☐ Approve ☐ Approve with conditions ☐ Disapprove
[signed off/dated by:]

Plan Reviewer: _____ Date: _____

Group Leader/ Plan Review Manager _____ Date: _____

for Fire Marshal (if required): _____ Date: _____

CONDITIONS OF APPROVAL or OTHER COMMENTS: