ICC-ES Evaluation Report

ESR-4888

Reissued February 2025

This report also contains:

- **CA Supplement**

Subject to renewal February 2026

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION **Section: 07 87 00—Smoke Containment Barriers** **DIVISION: 08 00 00 - OPENINGS** **Section: 08 30 00—Specialty Doors and Frames**	**REPORT HOLDER: BLE SMOKE AND FIRE CURTAINS**	**EVALUATION SUBJECT: BLE SMOKE AND FIRE CURTAINS-- MODEL ESC**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021,2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012, 2009 and 2006 *International Fire Code*® (IFC)

Properties evaluated:

- Smoke containment
- Opening protection

2.0 USES

The BLE Smoke and Fire Curtains Model ESC is a vertically rolling smoke-containment system used in conjunction with fire-resistance-rated elevator hoistway door and frame assemblies or in elevator lobbies to provide a smoke- and draft-control assembly. When installed over elevator openings equipped with a fire-resistance-rated elevator hoistway door and frame assembly, the system is intended for use as an alternative to the requirement for a separated, enclosed elevator lobby in accordance with Item 3 of Section 3006.3 of the 2021, 2018 and 2015 IBC, Exception 3 of 2012 IBC Section 713.14.1, 2009 IBC Section 708.14.1 and 2006 IBC Section 707.14.1.

The BLE Smoke and Fire Curtains Model ESC, when installed away from elevator openings at the intersection of the elevator lobby and non-fire-resistance-rated corridor, is intended for use as an alternative to the requirement for a protective opening in smoke partitions to separate the lobby in accordance with 2021, 2018 and 2015 IBC Section 3006.3 Item 2, 2012 IBC Section 713.14.1 Exception 5, 2009 IBC Section 708.14.1 Exception 5 and 2006 IBC Section 707.14.1 Exception 5. When installed as described in this report, Model ESC forms a protective opening in a smoke partition and is an alternative to the smoke and draft control doors required by 2021, 2018, 2015 and 2012 IBC Section 710.5.2.2, 2009 IBC Section 711.5.2 and 2006 IBC Section 710.5.2.

3.0 DESCRIPTION

3.1 General:

The BLE Smoke Curtain Model ESC smoke containment system consists of a transparent curtain film designed to unroll from a head box unit positioned above the elevator opening, down along the existing elevator frame or auxiliary rails to cover the elevator opening frame in the event of actuation of the smoke detector(s) fire-protection system alarm operation or loss of power. Auxiliary rails are used if the elevator frame is nonferrous, beveled, painted, irregular, or if the presence of rails is desired.

The Model ESC smoke containment system is connected to the smoke-detection system located in the elevator lobby, or to the building's fire-protection system, with the connection initiating deployment of the curtain within 10 seconds of smoke-detection or fire-protection-system alarm operation. A cabling system allows the curtain to unwind. Flexible magnetic strips, on the vertical sides of the curtain, seal the curtain to the elevator door frame or to the auxiliary rails. The system is capable of sensing obstructions during deployment / retraction and will attempt deployment / retraction three times before fully deploying. Any obstruction will need to be manually cleared for the curtain to fully deploy.

In the event that elevator occupants encounter a deployed smoke-containment system, a membrane switch operable from both sides of the curtain can be manually activated, per IBC Section 3002.6, to allow occupants to raise the deployed curtain and exit from the elevator. The raised curtain will redeploy to the closed position after egress if the presence of smoke continues to be detected. After the alarm condition clears, the curtain automatically retracts into the head box unit to the ready position. In the event of a loss of power, a force of less than 15 pounds (66 N) applied at the curtain boundary is required to push the magnetic strips away from the hoistway frame to allow occupant egress. The electrically operated drive control system, when equipped with an optional battery backup, will function as intended in the event of an interruption in the building's electrical power supply. When the system is not equipped with a battery backup, it must be supplied by a suitable source of continuous electrical supply such as an uninterruptable power supply (UPS).

3.2 Components of the Model ESC Smoke Containment System:

3.2.1 Curtain Material: The curtain is a transparent polymeric material. The curtain has a nominal thickness of 0.004-inch (0.1 mm).

3.2.2 Electronically Operated Drive System: The drive-control system, which controls the deployment and retraction of the curtain assembly, is intended for connection to the building's 120VAC power supply and to either the auxiliary contacts of the smoke detectors located in the elevator lobby and the adjacent corridor, or to the building's fire-protection system. The electrically operated, listed releasing device conforms to UL 864. The motor operates a drive shaft located in the roller assembly, which rotates to retract the deployed curtain.

3.3 Smoke and Draft Control:

When tested in accordance with UL 1784 without an artificial bottom seal, the Model ESC smoke-containment system has an air-leakage rating that does not exceed 3.0 cfm per square foot (0.01524 $m^3/s \cdot m^2$) of opening at a pressure differential of 0.10 inch of water (24.9 Pa) at both ambient and elevated temperatures.

4.0 INSTALLATION

4.1 General:

Installation of the system must comply with this report and the manufacturer's published installation and operating instructions. The BLE Smoke and Fire Curtains installation and operating instructions must be available at the jobsite at all times during installation.

The system must be surface-mounted or flush-mounted to the elevator frame. The maximum opening width and height must not exceed, respectively, 68 inches (1.73 m) and 120 inches (3.05 m). The frame surrounding the elevator door must be made from steel with a flat profile. Nonferrous frames require the installation of auxiliary rails.

When installed at the junction of the elevator lobby and a non-fire-resistance-rated corridor, the system must be attached to the wall of the non-fire-resistance-rated corridor with the head box unit installed above the elevator lobby opening to be protected or the ceiling directly above opening to be protected. The maximum opening width and height must not exceed, respectively, 68 inches (1.73 m) and 120 inches (3.05 m).

The electrically operated drive-control system must be installed in accordance with the report holder's published installation instructions, the releasing device listing, and the applicable code. The rewind switches must be connected to the control system and mounted at the height specified in the manufacturer's installation instructions.

Once the system is installed and energized, the curtain assembly must be adjusted, tested and set in accordance with the report holder's published installation instructions.

4.2 Final Adjustment and Inspection:

After installation and initial testing, the installer must perform a final adjustment and inspection of the system in accordance with the report holder's published installation instructions. The operation process, including simulation of the smoke alarm, activation of the releasing device, curtain deployment and rewind must be performed to ensure proper operation. After installation, the system must be maintained in accordance with Sections 5.3 of this report.

5.0 CONDITIONS OF USE:

The BLE Smoke and Fire Curtains Model ESC smoke-containment system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the report holder's published installation instructions, and the applicable code.

5.2 Installation must be by installers authorized by BLE Smoke and Fire Curtains.

5.3 The smoke containment system must be cycle-tested by the building owner of record or the owner's representative on a semiannual basis. A permanent record of the cycle tests must be retained by the building owner of record or the owner's representative.

5.4 When installation is as a smoke-and-draft-control door over an elevator hoistway door and frame, a smoke detector complying with UL 268 must be installed at the ceiling in front of the elevator hoistway door. When installation is at the intersection of the elevator lobby and a non-fire-resistance-rated corridor, smoke detectors complying with UL 268 must be installed at the ceiling on both sides of the protected opening. The smoke detectors must be equipped with an auxiliary contact and battery backup (not provided by BLE Smoke and Fire Curtains) or an emergency electrical system. When approved by the building official or their designated representative, the smoke-containment system may be connected to the building's fire protection system instead of the smoke detectors at the elevator hoistway doors or at the protected opening.

5.5 The smoke-containment system must be used with fire-resistance-rated elevator hoistway doors in order to comply with the "S" label requirements for tight-fitting smoke and draft control assemblies in accordance with the requirements of 2021 and 2018 Section 716.2.2.1, 2015 and 2012 IBC Section 716.5.3 and 2009 and 2006 IBC Section 715.4.3. This allows the elevator doors to open directly into the fire-resistance-rated or non-fire-resistance-rated corridor, eliminating the need for an enclosed elevator lobby in accordance with Item 3 of Section 3006.3 of the 2021, 2018 and 2015 IBC, Exception 3 of 2012 IBC Section 713.14.1, Exception 3 of 2009 IBC Section 708.14.1 and Exception 3 of 2006 IBC Section 707.14.1. In the absence of a corridor, elevator doors equipped with the Model ESC may open directly onto an open floor plan.

5.6 When used as an alternative to the smoke and draft control doors required by 2021, 2018, 2015 and 2012 IBC Section 710.5.2.2, 2009 IBC Section 711.5.2 and 2006 IBC Section 710.5.2, the system must be installed at the opening created by the intersection of the elevator lobby and a non-fire-resistance-rated corridor, to allow elimination of the enclosed elevator lobby in accordance with Item 2 of Section 3006.3 of the 2021, 2018 and 2015 IBC, 2012 IBC Section 713.14.1 Exception 5, 2009 IBC Section 708.14.1 Exception 5 and 2006 IBC Section 707.14.1 Exception 5.

5.7 Model ESC is not intended for use where elevator hoistway pressurization in accordance with 2021, 2018, 2015 and 2012 IBC Section 909.21, 2009 IBC Section 708.14.2 and 2006 IBC Section 707.14.2 is provided, except when the products evaluated in this report are used in smoke-control systems designed by registered design professionals in accordance with the applicable requirements of Section 909 of the IBC and the IFC.

5.8 Under the 2021 IBC and IFC, openings protected with the Model ESC for smoke-and-draft control must be maintained in accordance with Sections 109 and 705.2 of the 2021 IFC and Chapter 9 of NFPA 105. Under the 2021 IBC and IFC, annual inspection must be in accordance with Chapter 9 of NFPA 105. Under the

2018 IBC and IFC, openings protected with the Model ESC for smoke-and-draft control must be maintained in accordance with Sections 108 and 705.2 of the 2018 IFC and Chapter 8 of NFPA 105. Under the 2018 IBC and IFC, annual inspection must be in accordance with Chapter 8 of NFPA 105. Under the 2015, 2012 and 2009 IBC and IFC, openings protected with the Model ESC for smoke-and-draft control must be maintained in accordance with Sections 107 and 703.1.2 of the IFC and Chapter 5 of NFPA 105. Under the 2015, 2012 and 2009 IBC and IFC, annual inspection must be in accordance with Section 5.2 of NFPA 105.

5.9 The smoke-containment system evaluated in this report is intended for use with elevators or elevator lobbies when, in accordance with IBC Section 1003.7, the elevators are not used as a component of a required means of egress from any part of the building.

5.10 The smoke-containment system has not been evaluated for exposure to accelerated aging and certain chemicals.

5.11 The BLE Smoke and Curtains smoke-containment system is manufactured in Sheffield, England, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Smoke-containment Systems Used with Fire-resistance-rated Elevator Hoistway Doors and Frames and at the Intersection of Elevator Lobby and Corridor (AC77), dated May 2023.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4888) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the BLE Smoke and Fire Curtains smoke-containment system described in this report must bear a label indicating the manufacturer's name (BLE Smoke and Fire Curtains), the manufacturer's address, the product name, the model number (ESC), and the leakage rating (unless specified in the installation instructions).

7.3 The report holder's contact information is the following:

BLE SMOKE AND FIRE CURTAINS
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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 87 00—Smoke Containment Barriers

DIVISION: 08 00 00—OPENINGS
Section: 08 30 00—Specialty Doors and Frames

REPORT HOLDER:

BLE SMOKE AND FIRE CURTAINS

EVALUATION SUBJECT:

BLE SMOKE AND FIRE CURTAINS—MODEL ESC

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that BLE Smoke and Fire Curtains Model ESC, described in ICC-ES evaluation report ESR-4888, has also been evaluated for compliance with CBC Chapters 7 and 30 and CFC Chapters 1 and 7 of the code editions noted below.

Applicable code editions:

- 2022 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 *California Fire Code* (CFC)

2.0 CONCLUSIONS

2.1 CBC:

The BLE Smoke and Fire Curtains Model ESC, described in Sections 2.0 through 7.0 of the evaluation report ESR-4888, complies with CBC Sections 3006.3 (Items 3 and 5), 710.5.2.2 and 716.2.2.1, provided the design, installation, inspection and maintenance are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of the CBC, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CFC:

The BLE Smoke and Fire Curtains Model ESC, described in Sections 2.0 through 7.0 of the evaluation report ESR-4888, complies with CFC Sections 108, 109 and 705.2, provided the design, installation, inspection and maintenance are in accordance with the 2021 *International Fire Code*® (IFC) provisions noted in the report and the additional requirements of the CFC, as applicable.

This supplement expires concurrently with the evaluation report, reissued February 2025.