



# BUILDINGS 2023-010 BULLETIN TECHNICAL

ISSUANCE DATE  
September 7, 2023



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**PURPOSE:** This Bulletin clarifies the construction requirements for Fire Service Access Elevators.

**SUBJECT(S):** Fire Service Access Elevators, Occupant Evacuation Elevators, Water Protection, FSAE, Trench Drain

## RELATED CODE SECTIONS & RESOURCES: BC 403.6.1, BC 3007

### I. BACKGROUND

The 2014 and 2022 NYC Building Code requires new buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access be provided with a minimum of one Fire Service Access Elevator (FSAE). The FSAE ensures safe operation by trained firefighters during a fire emergency in certain high-rise buildings. This Bulletin clarifies two FSAE requirements: 1) service to all floors and areas required to be served by an elevator in the building and 2) the approved method of water protection of FSAE's hoistway.

### II. CLARIFICATION ON NUMBER OF ELEVATORS

Where an elevator is designated<sup>1</sup> as the FSAE for compliance with BC 3007.1, 2022 NYC BC 3003.3.1 clarifies that the FSAE elevator must serve all floors of the building and all portions of such floors must be accessible from the FSAE. The use of multiple FSAE is not permitted to achieve compliance with BC 3007.1. Where situation mandates<sup>2</sup> the use of multiple FSAEs for compliance with BC 3007.1, at least one FSAE must serve each floor and all portions of such floors must be accessible from at least one FSAE.

BC 3003.3.1 in relevant parts states:

"...The elevator in readiness shall serve all floors of the building. For buildings where a Fire Service Access Elevator (FSAE) is provided, the FSAE shall serve all floors of the building..."

### III. CLARIFICATION ON WATER PROTECTION – APPLICABLE LOCATIONS

Section BC 3007.3 requires an approved method to prevent water infiltration into the FSAE hoistway enclosure<sup>3</sup> opening resulting from the operation of the automatic sprinkler system. BC 3007.3 describes

<sup>1</sup> Where the registered design professional elects to designate additional elevators as FSAE beyond minimum quantity required by Code, such additional designated FSAEs must also comply with all FSAE Code requirements.

<sup>2</sup> Tower-on-a-base type buildings with multiple towers is an example of a building that must be provided with multiple FSAE for compliance with BC 3007.1.

<sup>3</sup> Where the FSAE hoistway is part of a multiple lift elevator bank, all openings to the shared hoistway enclosure are direct paths of water infiltration into the FSAE hoistway enclosure. Therefore, all openings into the shared hoistway enclosure are subject to the water protection requirement.

the following three scenarios, where the combined sprinkler discharge must be prevented from entering the FSAE hoistway<sup>4</sup>, see also Figure 1:

1. *Where an elevator lobby is provided in accordance with Section 3007.6, water protection shall be provided to prevent water infiltration from sprinklers located outside of the enclosed elevator lobby.*
2. *Where a corridor is provided in accordance with Section 3007.6 Exception 2, water protection shall be provided to prevent water infiltration from sprinklers located outside of the corridor and from sprinklers inside the corridor that are located beyond 10 feet (3048 mm) of the entrance to the hoistway.*
3. *Where neither an enclosed elevator lobby nor a corridor is provided in accordance with Section 3006.7 Exception 3, water protection shall be provided to prevent water infiltration from sprinklers located beyond 10 feet (3048 mm) of the entrance of the hoistway.*

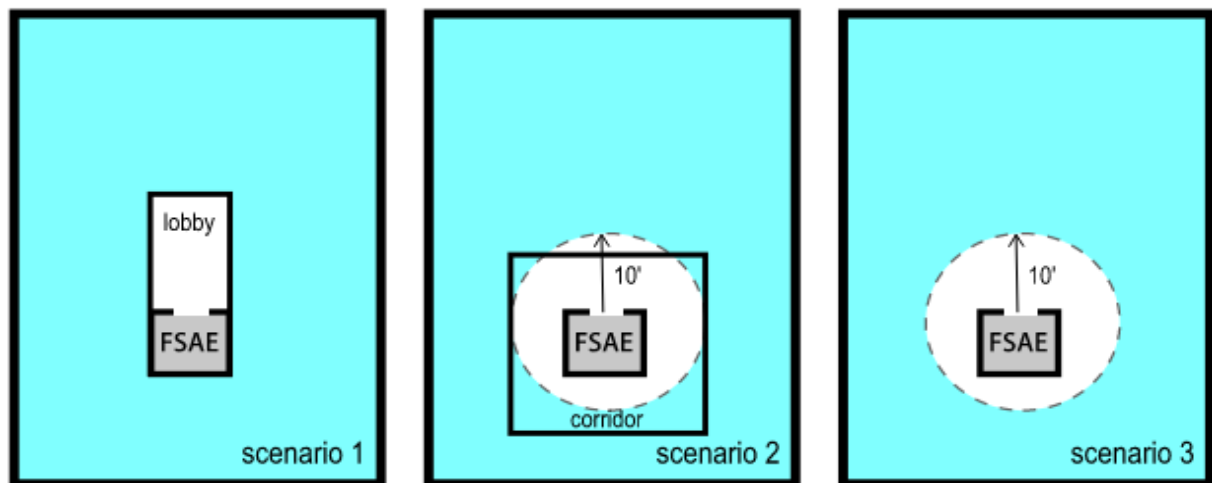


Figure 1: Sprinkler operation outside the FSAE hoistway enclosure opening as described in BC 3007.3. The blue shaded area is the area of consideration for FSAE water protection.

#### IV. OCCUPANT EVACUATION ELEVATORS

BC 3008.4 requires occupant evacuation elevators (OEE) to be provided with water protection to prevent water from infiltrating the hoistway enclosure opening. The methods of water protection for FSAEs and documentation requirements apply to OEEs.

#### V. CLARIFICATION ON PERFORMANCE REQUIREMENTS FOR WATER PROTECTION

Approved methods of water protection must divert and drain the combined volume of water discharged from sprinklers specified in Section III for a minimum flow rate of 100 GPM, or based on site specific sprinkler design flow rate, per FSAE hoistway enclosure opening. Construction documents must be submitted to the department confirming that such flow is prevented from infiltrating the FSAE hoistway enclosure opening and shall include applicable calculations, plans and details, see section VIII for further

<sup>4</sup> Where the FSAE hoistway has multiple openings on the same floor, such as an elevator with dual openings. Water protection must be provided on both paths of infiltration and considered separately.

guidance. Where there are multiple hoistways on the same floor, compliance shall be demonstrated for each FSAE hoistway enclosure opening requiring water protection per BC 3007.3.

## VI. OPTIONS FOR APPROVED WATER PROTECTION METHODS

This section provides guidance on approved methods for water protection.

### A. *Trench Drain Method (100 GPM flow rate per hoistway enclosure opening)*

A trench drain at 100 GPM flow rate at all FSAE hoistway(s) openings is an approved method of water protection preferred by FDNY. Trench drain shall be located immediately adjacent to hoistway enclosure opening. The trench drain body shall have a short dimension not less than 4 inches and a long dimension not less than the width of the opening. Notwithstanding the minimum dimensional requirements of the trench drain body, the drain grate open area must be sized to satisfy 100 GPM flow rate. The threshold is to comply with BC Chapter 11 requirements for accessibility. Downstream drainage connections on each floor shall be sized to accommodate a 100 GPM flow rate for each applicable location and stack(s) shall be sized based on the two largest consecutive floors taking flow.

### B. *Pitched Floors to Drain(s) Method (combined minimum 100 GPM total flow rate)*

Pitched floors to drain(s) with a combined 100 GPM flow rate for each FSAE hoistway opening is an acceptable method of water protection. Where there is an enclosed elevator lobby, the lobby floor may be raised ½" as the high point for the surrounding pitched floor. A maximum design cross slope of 1:48 is required for accessible surfaces as per ANSI A117.1<sup>5</sup>. The drain(s) must be within the elevator lobby or within the 10' of the FSAE opening where elevator lobby is not required.

### C. *Pitched Floor to Drain(s) Method (based on site specific sprinkler design flow rate)*

Pitched floors to drain(s) based on site specific sprinkler design flow rate is an acceptable method for water protection. Water flow calculation(s) must be provided for each unique space and sprinkler design configuration outside of the FSAE hoistway(s). The design sprinkler flow must be based on the hydraulically calculated sprinkler demand, per NFPA 13 requirements for the applicable area as per BC 3007.3. Calculations must reflect submitted sprinkler drawings, where sprinkler head spacing is concentrated, as in water curtains, the additional water flow is to be reflected in the total water flow volume. A maximum design cross slope of 1:48 is required for accessible surfaces as per ANSI A117.1. The combined flow rate of floor drains must be greater than the total of the hydraulically calculated sprinkler demand, per NFPA 13 requirement within the applicable location as per BC 3007.3. The drain(s) must be within the elevator lobby or within the 10' of the FSAE opening where elevator lobby is not required.

## VII. OTHER COMPONENTS OF WATER PROTECTION

### A. *Disposal of water discharge from automatic sprinklers system as Indirect Waste.*

Water discharge from fire sprinkler system is akin to the single pass refrigeration and RPZ discharge, and therefore interpreted as "similar matter" as per NYC Plumbing Code PC 202 definition of *Clear Water Waste*. For the purposes of compliance with BC 3007.3 only, disposal of water discharge from fire sprinkler as indirect waste through an air gap or air break as per NYC PC 802 is deemed compliant with NYC Plumbing Code. A trap shall not be required as per exception to NYC PC 802.2.

<sup>5</sup> As referenced in Chapter 11 of NYC Building Code

**B. Design requirements of floor and trench drains.**

Proposed floor and trench drains must comply with ASME A112.6.3 in accordance with Plumbing Code section PC 412 in consideration of tripping hazards, durability, and heel proof grate.

**C. Hoistway enclosure constructed of water permeable construction.**

As an advisory, for best practice, where hoistway enclosure is constructed of water permeable construction, a waterproofing system around all FSAE hoistway(s) and lobby walls on all levels shall be provided to prevent water from infiltrating into FSAE hoistways between wall and floor assemblies<sup>6</sup>. The waterproofing system shall be provided around hoistway and FSAE walls for a minimum of six (6) inches in height above the finished floor.

**VIII. CONSTRUCTION DOCUMENTS REQUIREMENTS**

The construction documentation for the proposed water protection design submitted by the registered design professional (RDP) must provide sufficient information to demonstrate compliance with the water protection methods as described in this Bulletin. In addition to floor plans indicating the designated FSAE(s)/OEE required to have water protection as per BC 3007.3, the following is a non-exhaustive list of information to be submitted for plan examination:

**A. For Trench Drain Method (100 GPM flow rate per hoistway enclosure opening)**

1. Plumbing plans shall include a certification statement by applicant that the water protection method for compliance with BC 3007.3 is in accordance with accepted methods described in this Building Bulletin.
2. Plumbing riser diagram and plumbing details demonstrating compliance with NYC Plumbing Code and as described in this Bulletin.
3. Changes in floor elevation, where applicable.
4. Location, size, and flow rate of drain(s).
5. Trench drain(s) specification and details as described in Part VI.A. of this Bulletin.

**B. For Pitched Floors to Drain(s) Method (combined minimum 100 GPM total flow rate, site specific calculation is not required)**

1. Items 1, 2, 3 and 4 of part VIII A. above.
2. A brief narrative of proposed water protection design strategy. Indicate how water is diverted and drained.
3. Architectural plans of all applicable floors required compliance with BC 3007.3. Delineation of area of water protection as per BC 3007.3.
4. Direction of finished floor pitch and designed pitch ratio.
5. Floor drain(s) specification and details as described in Part VI.B. of this Bulletin.
6. Tabulation of combined floor drain flow rate per location per floor as described in Part VI.B. of this Bulletin.

**C. For Pitched Floor to Drain(s) Method (based on site specific sprinkler flow rate)**

1. Items 1, 2 and 3 of part VIII A. above.

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<sup>6</sup> Masonry or CMU construction are considered non-water permeable construction, a waterproofing system is not necessary.

2. A brief narrative of proposed water protection design strategy. Indicate how water is diverted and drained.
3. Architectural plans of all applicable floors required compliance with BC 3007.3. Delineation of area of water protection as per BC 3007.3.
4. Direction of finished floor pitch and designed pitch ratio.
5. Provide floor drain(s) specification and details as per site specific design.
6. Sprinkler plans for all applicable floors required reviewed for compliance with BC 3007.3. Identify all sprinklers in the applicable area of automatic sprinkler discharge considered for water protection as per BC 3007.3 on sprinkler plans.
7. Tabulation of total volume of water flow per minute based on the hydraulically calculated sprinkler demand, per NFPA 13 requirements for of the applicable area as per BC 3007.3.
8. Tabulation of combined floor drain(s) flow rate per applicable location per floor as described in Part VI.C. on this Bulletin.
9. Demonstrate the combined flow rate of all applicable floor drains will accommodate the calculated total volume of water flow per minute.

## **IX. OTHER METHODS OF COMPLIANCE**

The options for approved methods of water protection described in this Bulletin provide guidance for compliance with BC 3007.3. For other methods<sup>7</sup> of compliance not specifically described in this Bulletin, the applicant may submit a request to the borough commissioner's office for acceptance. Determination of compliance will be determined on a case-by-case basis. Additional review time maybe required for compliance consideration.

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<sup>7</sup> Where retention and/or detention of sprinkler discharge is to be considered as a method of water protection. The storage/retention volume capacity must be determined by the hydraulically calculated sprinkler demand, per NFPA 13 requirements for of the applicable area as per BC 3007.3 for continuous operation of 30 minutes.