Development Services

From Concept to Construction







APPEAL SUMMARY

Status:	Hole	d for	Additional	Information
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Appeal ID: 20546	Project Address: 1600 SW Salmon St	
Hearing Date: 6/19/19	Appellant Name: Tom Jaleski	
Case No. : B-017	Appellant Phone: 503.488.5651	
Appeal Type: Building	Plans Examiner/Inspector: Jody Orrison	
Project Type: commercial	Stories: 6 Occupancy: A-2, A-3, B, E, S-1 Construction Type: I-B	
Building/Business Name: Lincoln High School	Fire Sprinklers: Yes - Throughout	
Appeal Involves: Erection of a new structure	LUR or Permit Application No.:	
Plan Submitted Option: pdf [File 1] [File 2]	Proposed use: High School - Main Building	

APPEAL INFORMATION SHEET

Appeal item 1

Code Section

§1028.2 and §1028.3

Requires

§1028.2 Assembly Main Exit

In a building, room or space used for assembly purposes that has an occupant load of greater than 300 and is provided with a main exit, the main exit shall be of sufficient width to accommodate not less than one-half of the occupant load, but such width shall not be less than the total required width of all means of egress leading to the exit. Where the building is classified as a Group A occupancy, the main exit shall front on at least one street or an unoccupied space of not less than 10 feet (3048 mm) in width that adjoins a street or public way. In a building, room or space used for assembly purposes where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.

§1028.3 Assembly Other Exits

In addition to having access to a main exit, each level in a building used for assembly purposes having an occupant load greater than 300 and provided with a main exit, shall be provided with additional means of egress that shall provide an egress capacity for at least one-half of the total occupant load served by that level and shall comply with Section 1015.2. In a building used for assembly purposes where there is no well-defined main exit or where multiple main exits are provided, exits for each level shall be permitted to be distributed around the perimeter of the building, provided that the total width of egress is not less than 100 percent of the required width.

Proposed Design

Lincoln High school will feature two assembly spaces on Level 02, the Theater Balcony and Gym, with a combined occupant load of over 300 occupants.

Per §1028.2, these assembly spaces must be provided with a main exit. This is typically accomplished through the main entrance, as there is a tendency for occupants to exit the same way they entered the space. The proposed design has two points of entry; therefore, it is proposed that the assembly spaces be served by two main exits: Stair 1 discharging to SW Salmon Street and Stair 4 discharging to the east side of the building.

As well, per §1028.3, assembly spaces provided with a main exit must also be provided with a second means of egress that accommodates at least one-half of the occupant load served by that level; this is accomplished through the remaining stairs distributed around the building at Level 02.

Reason for alternative The proposed strategy is designed to accommodate the anticipated behavior of occupants in an emergency scenario. Due to the way the building is accessed, and the visibility of the stairs from the assembly spaces, both Stair 1 and Stair 4 would realistically be used by the assembly occupants in an event. Though providing two main exits is not prescriptive, the proposed design meets the intent of both §1028.2 and §1028.3 due to the anticipated use of the building and mitigation measures providing equivalent fire life safety protection, listed as follows:

Proposed Access

- Event access will be primarily from the northeast corner of the building on SW Salmon Street. o Access from the east will also be available during events, though occupants will pass by the north access first and likely enter at that location.
- o East entrance is accessed through a gate to the north of the plaza to control access for school security purposes.
- From these two entrances, occupants enter one contiguous lobby on Level 01 known as the Commons.
- From the Commons, Stair 1 and Stair 4 will be used for primary access to the Theater Balcony and Gym on Level 02.
- Both stairs are equally accessible in terms of providing access to the event spaces on Level 02.

Proposed Egress

- · Since both Stair 1 and Stair 4 will be used as main entrances to the assembly spaces on Level 02, both stairs will serve as a primary means of egress (main exit).
- Stair 4 accommodates a larger percentage of the 50% of occupants egressing from the Theater Balcony and Gym due to adjacency to those areas.
- Egress width is calculated as though both spaces will be occupied at the same time.
- Exit signs will be provided every ~100 ft in main egress corridor to Stair 1, exceeding provisions of §1011.1.
- · Lobbies and corridors serving both Stair 1 and Stair 4 will maintain normal operations lighting during after-school events. In an emergency event, the means of egress illumination level will provide an average illumination about 9x greater than the prescriptive requirements identified in §1006.2 of 1 fc along the walking surface.

The proposed design will meet or exceed other egress requirements in the following ways:

- Both stairs provide continuity of protection, as the Commons and other spaces on Level 01 are separated by a minimum 2-hour fire-resistance-rating through a combination of fire-resistancerated shutters, fire glass, and fire barriers.
- · These separated egress paths provide two familiar routes for assembly occupants egressing as they are the same as the access routes that these occupants used to enter the assembly spaces.
- · Exit access travel distance from the Gym is met at the horizontal exit door to the north on Level
- · Exit access travel distance from the Theater Balcony is met at the horizontal exit door at the southeast corner of the space on Level 02; this also provides one means of egress from the

Theater Balcony that leads directly to an exit in accordance with §1028.5.

- In both conditions of the horizontal exit, even though occupants do not need to be accounted for cumulatively in the egress system once they pass through the horizontal exit door per §1025.4, in this proposed design, they will be counted cumulatively.
- 50% of the assembly occupants in the Theater on Level 01 are accommodated through the north exterior doors leading to SW Salmon St; this is near Stair 1, supporting the concept that the north portion of the building is also considered as part of the main entrance/exit.

Therefore, due to the anticipated use of the building and mitigation measures providing equivalent fire life safety protection, it is requested that the two (2) stairways used for access to the assembly spaces on Level 02 be allowed to both serve as the "Assembly Main Exit" to meet the requirements of §1028.2 and that the remaining stairs distributed on Level 02 be allowed to serve as the "Assembly Other Exits" to meet the requirements of §1028.3.

Appeal item 2

Code Section

§1009.3.1.4.1, §1022.4

Requires

§1009.3.1.4.1 Prohibited Openings.

Openings other than those necessary for the purpose of the exit access stairway enclosure shall not be permitted in exit access stairway enclosures.

§1022.4 Openings.

Interior exit stairway and ramp opening protectives shall be in accordance with the requirements of 716. Openings in interior exit stairways and ramps other than unprotected exterior openings shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure.

Elevators shall not open into interior exit stairways and ramps.

Proposed Design

The proposed Level 01 design includes two stairways with openings in the rated enclosure surrounding those stairs. The openings provide unobstructed access to the stairs serving occupants in the Lobby and Commons areas.

Stair 1:

- CONDITION: Six-story interior exit stairway.
- RATING: 2-hour fire-resistance-rated enclosure.
- EGRESS: Two (2) egress doors from enclosure direct to the exterior.
- OPENING PROTECTION:
- o Two openings located on west wall of enclosure at Level 01.
- o Each protected with a 3-hour fire shutter meeting UL 10B (equivalent) and UL 1784, and provided with an automatic-closing device and smoke detection.
- o Both shutters are 11-ft wide by 12-ft tall (132 sf).
- o One of the shutters will include a 3-ft wide by 8-ft tall integral person door.

Stair 4

- CONDITION: Two-story exit access stairway.
- RATING: 2-hour fire-resistance-rated construction at Level 01 to maintain Horizontal Exit at Level 2
- EGRESS: Four (4) egress doors from partial enclosure direct to the exterior.
- OPENING PROTECTION:
- o Two openings located on west wall of enclosure at Level 01.
- o First opening protected with a 3-hour fire shutter meeting UL 10B (equivalent) and UL 1784, and provided with an automatic-closing device and smoke detection; 10-ft wide by 16-ft tall (160 sf).

o Second opening protected by 2-hour fire glass meeting ASTM E 119 or UL 263; size varies as it follows the edge of the stair run.

Reason for alternative The openings in the stairway enclosures provide access to the stairs from occupied areas on Level 01. The openings create an open, active environment that allows for visual and auditory communication between Level 01 and Level 02. This is an important design feature for security in schools to ensure that staff maintains awareness of activities occurring throughout the school. This connection also serves to integrate the assembly activities occurring on both Level 01 and Level

> The intent of §1009.3.1.4.1 and §1022.4 that restrict openings in stair enclosures is to prevent smoke from accidentally infiltrating the stair enclosures and inhibiting the occupants' ability to egress effectively. The commentary specifies that there are two primary concerns that would compromise the safety of the exit enclosure:

Openings from spaces that are not normally occupied (such as storage closets, equipment rooms, toilet rooms); this is because a fire could start in one of these rooms and the door could be unintentionally opened, compromising the enclosure.

Openings that do not protect the stairway with the same level of fire-resistance rating required of the wall assembly; this is because the stair could be compromised prematurely, sooner than the prescribed fire-resistance rating requires.

The proposed design mitigates both concerns and provides equivalent fire life safety to the code requirements as follows:

Spaces adjacent to the stair enclosures on Level 01 will be normally occupied and serve as a public gathering space where it will benefit occupants to have awareness of adjacent spaces. Unintentional opening from the interior of the stair would not occur as they are roll-down fire shutters and, although there is one person-door, occupants egressing within the stair would have full view of the exterior through the curtain wall of the exterior wall in both stair conditions; this would lead them to egress directly to the exterior. In addition, the enclosure at Stair 1 will be pressurized and, should a fire/smoke event occur, will help ensure protection of occupants in the enclosure for the duration of egress. At Stair 4, the occupants are only egressing one story, directly to the exterior, and the stair is not required to be in an enclosure. The partial enclosure simply serves as a continuation of the fire barrier that constitutes the horizontal exit implemented on Level 02.

The openings, depending on location, will be protected by either fire-resistance-rated glazing or fire shutters that deploy upon activation of the fire alarm; both will provide a level of fire-resistance equivalent to or greater than the 2-hour wall assembly of the enclosure.

- 2a. The 2-hour fire-resistance-rated glazing located on the west wall of the Stair 4 enclosure is a prescriptively permitted opening.
- According to Commentary for §1009.3.1.4.1 and §1022.4, glass assemblies that have been tested as wall assemblies in accordance with ASTM E 119 or UL 263 would not be considered as prohibited openings.
- Per §703.3 and §703.6, fire-resistance rated glazing is permitted when tested in accordance with ASTM E 119 or UL 263.
- 2b. The 3-hour fire-resistance-rated fire shutters located on the west wall of the Stair 4 enclosure and on the west wall of the Stair 1 are not prescriptively allowed. The shutters will provide equivalent fire life safety as compared to the code requirements of a stairway enclosure in a fire event by meeting, and in some requirements exceeding, the opening protective provisions of Chapter 7 as follows:

• 3-Hour Fire-Resistance-Rated Assembly:

Table 716.5 requires 90-minute fire shutters when located in 2-hour fire barriers. The proposed shutter assemblies are 3-hour fire-resistance-rated and therefore exceed the wall rating requirement, providing a higher-level of safety.

• UL 10B Equivalent Listed:

§716.5.2 requires fire shutter assemblies to be tested in accordance with UL 10B. The fire shutters proposed are listed under the CAN/ULC S104, the Canadian equivalent to UL 10B.

• UL 1784 Listed:

§716.5.3.1 requires fire door assemblies to be tested in accordance with UL 1784. All shutters are tested in accordance with UL 1784. This means that the shutters will resist smoke for at least 20 minutes. Per §909.4.6, all portions of active or passive smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is less. In other words, the smoke resistance need not exceed 20 minutes to meet prescriptive code requirements. It is expected that in a building of this size, occupants will adequately egress within that 20-minute time frame.

· Activation by Smoke Detection:

§707.6 requires that openings in a fire barrier be limited to 25% percent the length of the wall. To mitigate the proposed condition, smoke detectors will be provided to actuate the shutters in accordance with §716.5.9.3 and §907.3. (Since the building is sprinklered, openings are not limited to 156 sf per §707.6 Exception 1.)

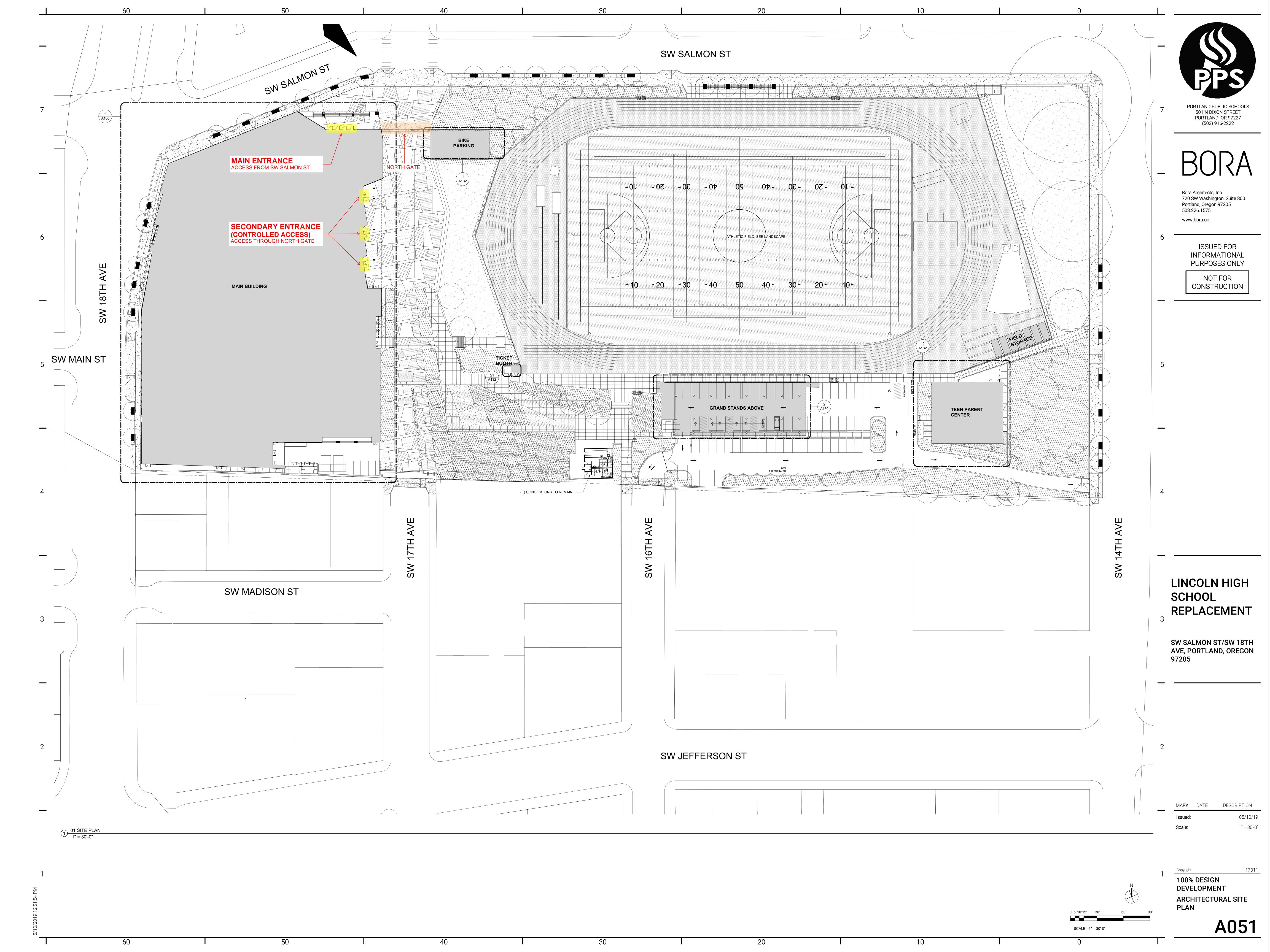
• Automatic-Closing Device:

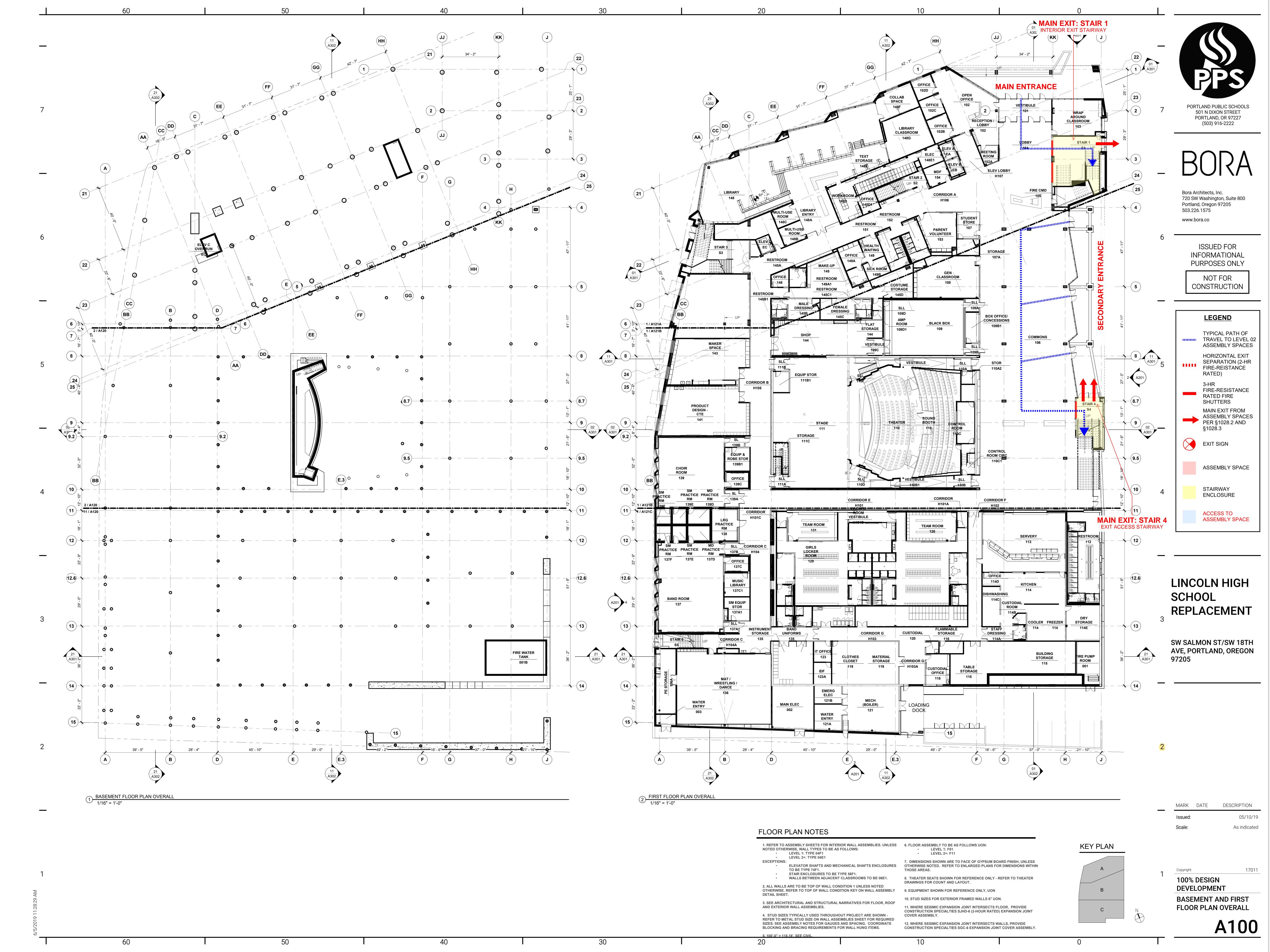
§716.5.11 requires fire shutters of the rolling type to include automatic-closing devices. The proposed fire shutters meet the provisions of NFPA 80 Standard for Fire Doors and Other Opening Protectives.

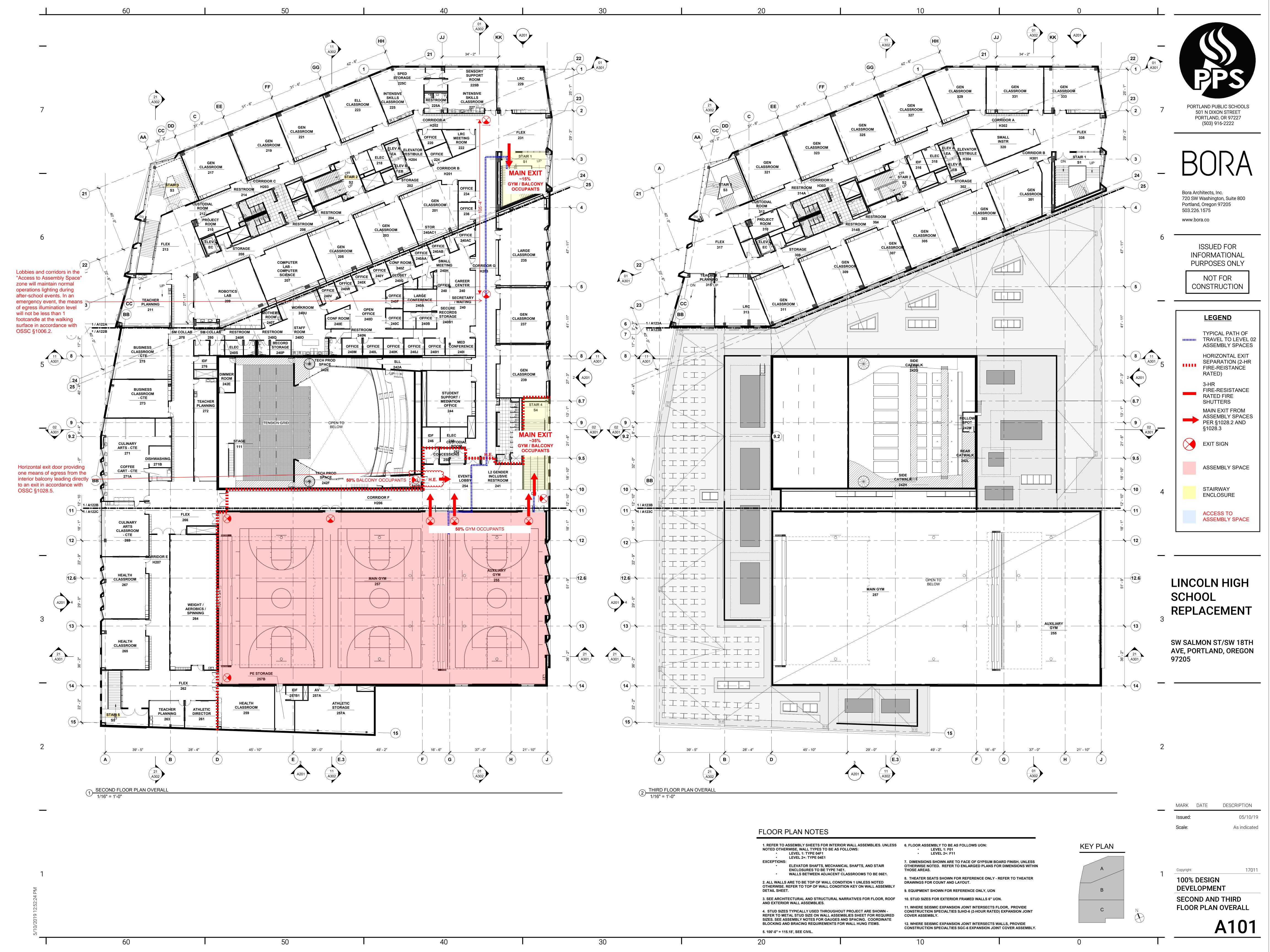
Therefore, due to equivalent life safety protection being provided to meet the intent of §1009.3.1.4.1 and §1022.4, it is requested that the two (2) openings in Stair 1 and the two (2) openings in Stair 4 be permitted when protected with a 3-hour fire-resistance-rated fire shutter or 2-hour fire glass as identified in the proposed design.

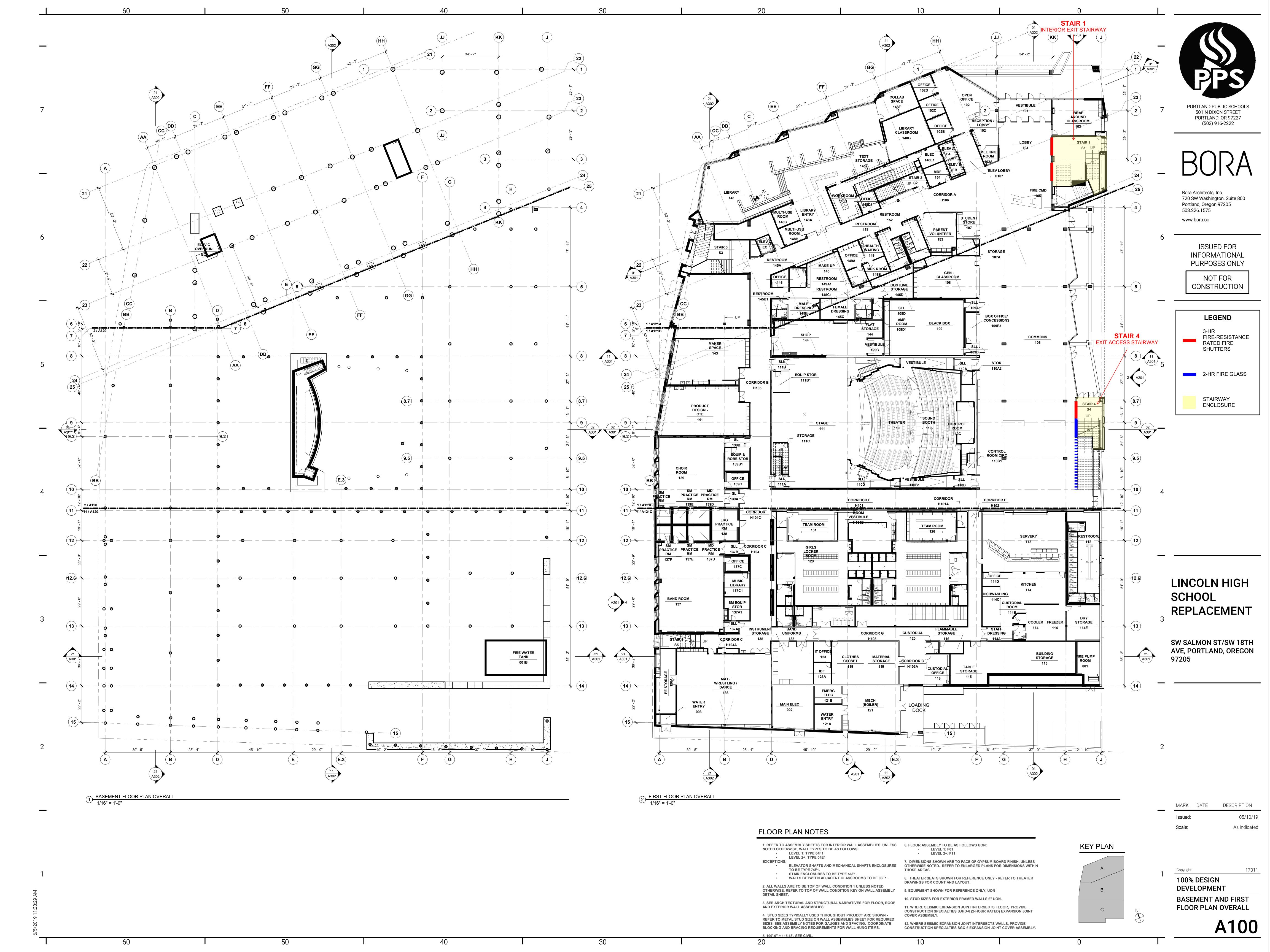
APPEAL DECISION

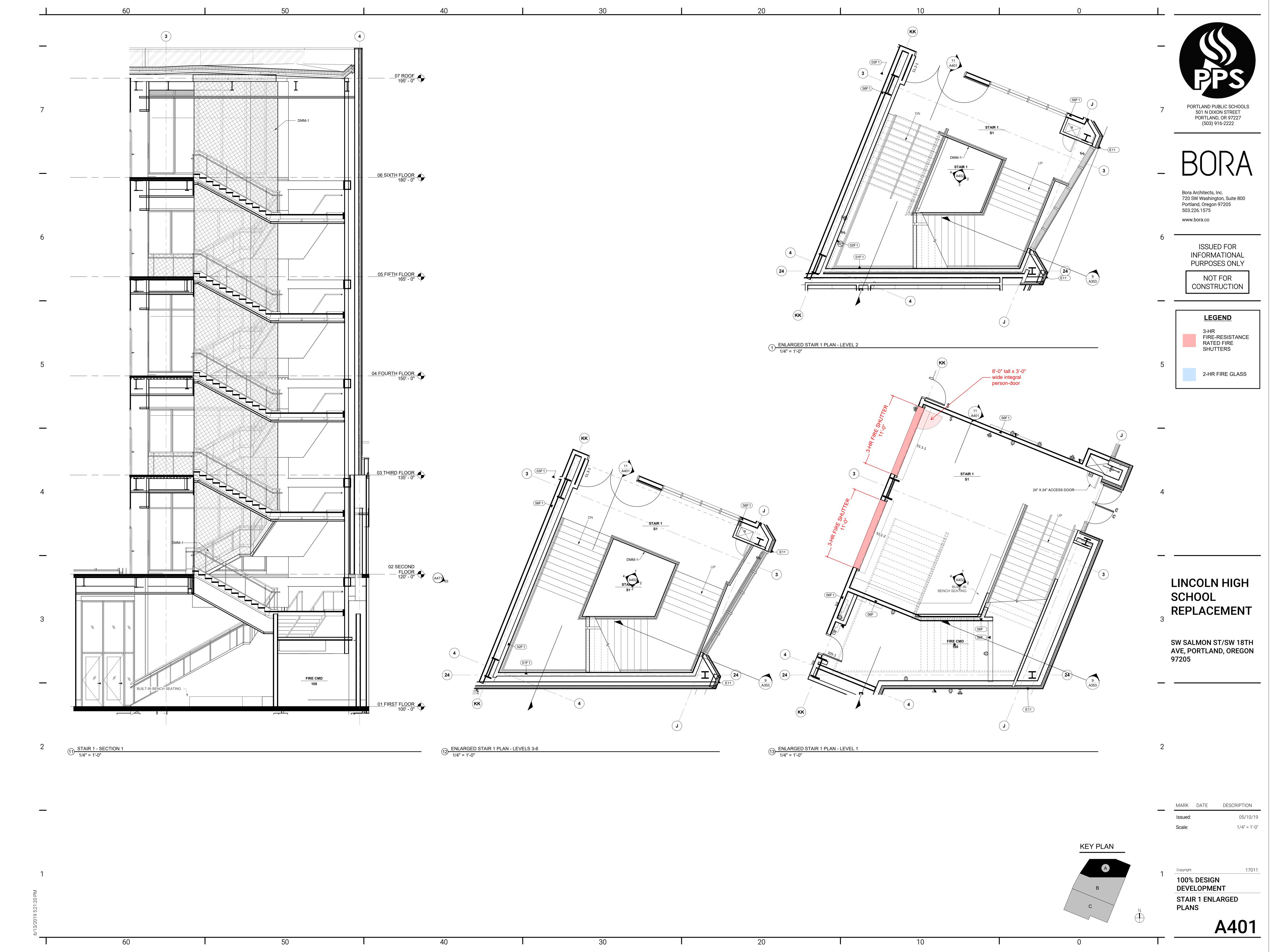
- 1. Assembly occupancy with 2 main exits: Hold for additional information.
- 2. Openings in (2) two hour fire rated stair enclosures: Hold for additional information. Appellant may contact John Butler (503 823-7339) with questions.













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