

HIGH-RISE PRESUBMITTAL CONFERENCE (2018 SBC)

Date: [9/28/22]



Seattle Department of
Construction & Inspections

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AS PART OF A PLANNED COMMUNITY DEVELOPMENT, TO DESIGN AND CONSTRUCT A NEW ADDITION TO THE EXISTING HISTORIC LLOYD BUILDING, A 10-STORY OFFICE BUILDING. THE ADDITION IS A 240' COMMERCIAL OFFICE TOWER, COMPRISED OF 18-STORIES OF SPECULATIVE OFFICE SPACE, GROUND FLOOR RETAIL SPACE, AND (5) LEVELS OF BELOW-GRADE PARKING ON THE PARCEL BOUNDED BY STEWART STREET TO THE NORTH, SIXTH AVENUE TO THE WEST, OLIVE WAY TO THE SOUTH, AND AN ALLEY TO THE WEST.

THE PROJECT WILL INCLUDE UP TO 346,490 SF OF SPECULATIVE OFFICE SPACE, APPROXIMATELY 6,000 SF OF GROUND-FLOOR RETAIL SPACE, AND A BELOW-GRADE PARKING GARAGE WITH UP TO 150 STALLS.

THE DEVELOPMENT WILL INCLUDE THE RENOVATION OF THE EXISTING HISTORIC LLOYD BUILDING AND DEMOLITION OF ONE EXISTING, 7-STORY PARKING STRUCTURE AND DEMOLITION OF AN EXISTING SURFACE AREA PARKING LOT.

The following section requires the applicant to demonstrate to the City that this project is in compliance

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with the high-rise building section, 403, of the 2018 Seattle Building Code. Be aware that Seattle has a significant number of amendments to the International Building Code – full text of each section is NOT reprinted here and can be found at: [http://www.seattle.gov/sdci/codes/codes-we-enforce-\(a-z\)/building-code#2018seattlebuildingcode/](http://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/building-code#2018seattlebuildingcode/) You are required to comply with all of the Seattle amendments.

Note: The use of a code alternate or code modification request requires an additional form unless the desired Code Alternate is published in the Seattle Building or Fire Code. The form can be found at: <http://www.seattle.gov/sdci/permits/forms>

* Seattle amendment to IBC

HIGH-RISE BUILDING CODE REQUIREMENTS - * DENOTES SEATTLE AMENDMENT IN SECTION

Section 403 Highrise Buildings	
403.1.1.1* Presubmittal Conference	<i>Note: At least 60 days prior to structural application-arrange a presubmittal conference; provide documentation /appropriate analyses and schematic drawings two weeks prior to conference; approved predesign meeting minutes are required prior to permit application and shall be inserted into plans as part of the permanent permit record</i>
403.1.1.2* Smoke Control Presubmittal Conference	<i>Note: At least 60 days prior to architectural application, arrange a second presubmittal conference to review the conceptual smoke control design (see SBC 909.1.1). Provide a draft 909 Concept Report two weeks prior to the smoke control presubmittal conference.</i>
403.2.3* Structural Integrity of enclosures.	<i>Key Items: All fire service access elevators; all exit enclosures and elevator hoistway enclosures in risk category III or IV buildings; and all exit enclosures and elevator hoistways in buildings more than 420 feet in height shall comply with Sections 403.2.3.1 through 403.2.3.4.</i>
	Proposal: <i>The proposed design is risk category II and less than 420 feet in height. Will comply with 403.2.3.1 through 403.2.3.4 for FSAE elevator hoistways.</i>
Conference discussion & decisions:	
403.3* Automatic sprinkler system	<p><i>Key Items: Provide a sprinkler system in accordance with Section 903.3.1.1 and Seattle Fire Code (SFC) Section 914.3.1. (and as modified under Section 914.3.1.2 when applicable). Provide a secondary water supply where required by SFC Section 914.3.2. Describe proposed sprinkler system and secondary water supply. Fire pump rooms not directly accessible from the outside are not required to be accessible through an enclosed passageway from an interior exit stairway or exterior exit. See SFD Administrative Rule 09.03.20. High-rise building sprinkler systems shall be combination standpipe/sprinkler systems incorporating the following features:</i></p> <ol style="list-style-type: none"> <i>1. Each floor sprinkler system shall be connected between standpipe risers.</i> <i>2. Shut-off valves, water-flow devices and check valves (or pressure reducing valves) shall be provided on each floor at the sprinkler system connection to each standpipe.</i> <i>3. Two four-way fire department connections serving the combination system shall be provided on elevator streets well separated from each other.</i> <i>4. When a mid-level fire pump is required to meet pressure requirements, two pumps with the same rating shall be installed.</i> <i>5. Dry-pipe sprinkler systems serving parking garages may use a separate two-way fire department connection. The dry-pipe sprinkler system shall be supplied by the on-site water tank.</i> <i>6. The standpipe risers in each required stair shall be a minimum pipe size of 6 inches.</i>

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	<p>7. Two 2½-inch hose connections shall be provided on every floor level landing in every required stairway. If pressure reducing valves (PRV) are required, each hose connection shall be provided with its own PRV.</p> <p>8. The system shall be designed to provide a minimum flow of 300 gpm at a minimum pressure of 150 psi [maximum 205 psi at each standpipe connection] in addition to the flow and pressure requirements contained in NFPA 14. See attached "Seattle Requirements for High-Rise Secondary Water Supply"</p>
	<p>Proposal: [No issues. A combined sprinkler/standpipe system will be provided with 6" risers in each egress stairwell. The system will be fed from a fire pump (with redundant backup pump) in the P5 level and an associated fire tank sized in accordance with ordinary hazard density. The system will be code compliant with all Seattle, SFC and SFD requirements. The water storage tank shall be designed to store approximately 60,000 gallons usable for fire protection. The tank size is based on Ordinary Hazard Group 2 density. Final tank sizes shall be based on the fire sprinkler contractor's final hydraulic calculations and shall be updated prior to construction.]</p>
Conference discussion & decisions:	
403.3.2* Water supply to required fire pumps.	<p>Key Items: In Type IV-A and Type IV-B buildings that are more than 120 feet in building height, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets.</p> <p style="padding-left: 40px;">Exception: Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through not fewer than one of the connections.</p>
	<p>Proposal: No issue. Proposed design is Type I-A construction.</p>
Conference discussion & decisions:	
403.4.2 Fire alarm systems	<p>Key Items: Fire alarm systems shall comply with Section 907.2.12. Describe proposed fire alarm system. Fire alarm interaction with smoke control system will be discussed at the smoke control presubmittal conference.</p>
	<p>Proposal: [No issues. A fully addressable emergency voice/alarm communication system in compliance with Section 907.2.12 will be provided for the building. System shall be tied into the smoke control system. All FSAE lobbies will be monitored by addressable combination heat/smoke detection sensors per NFPA 72 Section 21.5 with a high temperature indicator light provided for every floor.]</p>
Conference discussion & decisions:	
403.4.4 Emergency voice/alarm communication systems	<p>Key Items: An emergency voice/alarm communication system shall be provided in accordance with SFC Section 907.5.2.2.</p>
	<p>Proposal: [No issues. An emergency voice/alarm communication system in compliance with</p>

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<i>Section 907.5.2.2 will be provided for the building.</i>	
Conference discussion & decisions:	
403.4.5 Emergency responder radio coverage	Key Items: <i>Emergency responder radio coverage shall be provided in accordance with SFC Section 510. For information on emergency responder radio coverage systems, see SFD Client Assistance Memo (CAM) 5123.</i>
	Proposal: <i>[No issues. Emergency responder radio coverage will be provided in accordance with code.]</i>
Conference discussion & decisions:	
403.4.6 Fire command (Center)	Key Items: <i>Dedicated fire command center – provide details on the plans submitted for the pre-submittal conference. Requirements include (but are not limited to) approved location nearby, accessible to the fire service access elevators and minimum room size per SBC 911.1.6. See SFC Section 508.</i>
	Proposal: <i>A single dedicated Fire Command Center will be provided to serve the project. The location is as indicated on the drawings provided for the High Rise Conference.</i>
Conference discussion & decisions:	
403.4.8 Emergency power systems	Key Items: <i>Provide an emergency power system complying with Chapter 27 and Section 403.4.8. Include size, location and type of generator, fuel tank fill location, and vent terminations. See Director’s Rule 8-2005 on protected above ground fuel tanks. System supervision with manual start and stop features shall be provided at the fire command Center. Provide a 2 hr. separation unless meeting the requirements for the exception for rooms within sprinklered parking garages per Section 909.11. Also see attached “Seattle Requirements for Generator Fuel Tanks” Provide location on the plans submitted for the pre-submittal conference.</i>
	Proposal: <i>No issues. The design will conform to applicable sections of the Seattle Building Code. Please refer to the attached High Rise Conference drawings.</i> <i>Fuel type: Diesel</i> <i>Tank type: UL142 double wall steel tank</i> <i>Capacity: 660 gallon (max allowable of 1,320 gal in building)</i>
Conference discussion & decisions:	
403.4.8.4* Emergency power loads	Key Items: <i>Provide emergency power to exit signs & means of egress illumination; elevator car lighting; emergency voice/alarm communication; fire alarm and detection systems; emergency responder radio coverage system, power and lighting for mechanical equipment rooms and fire command center; lighting for elevator cars, machine rooms, machine spaces and control rooms; Ventilation and cooling equipment for elevator sepes, machine spaces and control rooms; fire pumps;</i>

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	<i>smoke control system; all fire service access and occupant evacuation elevators and one elevator per group per Section 3016.9. All elevators shall be transferable to an emergency power system.</i>
	Proposal: [No issues. A standby diesel generator will be provided for emergency power for all systems noted above.]
Conference discussion & decisions:	
403.5.1* Remoteness of interior exit stairways	Key Item: <i>Exit stairways shall be separated by not less than 30 feet or one-fourth the diagonal dimension whichever is less measured as straight line between nearest points of the outer faces of the walls of the exit enclosures. Pressurization shafts are considered to be part of the stair enclosure and are subject to the separation requirements. Primarily R occupancy buildings are allowed 15 feet.</i>
	Proposal: No issues. The design will conform to applicable sections of the Seattle Building Code.
Conference discussion & decisions:	
403.5.2 Additional exit stairway	Key Items: <i>For buildings other than Group R-2 that are more than 420 feet(128 m) in building height, one additional exit stairway meeting the requirements of Sections 1011 and 1023 shall be provided in addition to the minimum number of exits required by Section 1006.3. Amenity assembly spaces above 420 ft associated with, and ancillary to the Group R-2 occupancy do not require an additional stair. An occupant evacuation elevator per Section 403.6.2 may be provided in lieu of a required additional exit stairway per 403.5.2.</i>
	Proposal: Not Applicable. The proposed design will be less than 420 feet in height.
Conference discussion & decisions:	
403.5.3* Stairway door operation	Key Items: <i>Stairway doors must be capable of unlocking upon signal from fire command center and must unlock upon activation of fire alarm anywhere in building. Where stairway doors are not locked from the stairway side, wiring and/or conduit shall be installed to facilitate potential future installation of locking hardware.</i>
	Proposal: No exception taken. It is currently anticipated that the stairway doors will be locked from the stairway side as a part of the building security system. Stairway doors will be wired to unlock upon activation of the fire alarm system or upon command sent from Fire Command Center.
Conference discussion & decisions:	
403.5.3.1* Stairway communications system	Key Items: <i>In required stairways a telephone or other two-way communication system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each exit stairway.</i>

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	Proposal: [No issues. Two-way communication to an approved constantly attended station will be provided no less than every fifth floor in each stairway.]
Conference discussion & decisions:	
403.5.4* Smoke control in exit stairways	Key Items: Provide a smoke control system complying with Section 403.5.4. Every required exit stairway serving floors more than 75 feet above the lowest level of fire department vehicle access shall comply with Sections 909.20.5 and 1023.11. Smoke control system concepts to be further described and discussed in the smoke control presubmittal conference. For high-rise buildings that have a simple shaft configuration and utilize shaft pressurization for smoke control (i.e., no building-wide smoke control system), shaft pressurization fan status and controls using switches in accordance with Section 909.16.2 (or equivalent) may be installed on the main fire alarm control panel (FACP) in lieu of installing a dedicated fire-fighter's smoke control panel. The building graphics normally provided on the smoke control panel shall be laminated and mounted in the vicinity of the FACP for quick reference by emergency responders. See SDCI Director's Rule: Testing of Stairway and Hoistway Pressurization Systems in High Rise Buildings
	Proposal: [The building is being designed with stair pressurization systems on emergency power in accordance with Sections 403.5.4, 909.20.5, and 1023.11. Stairs 1, 2, 3 and 4 will pre pressurized. Further Discussion will be included for the 909 pre submittal conference.
Conference discussion & decisions:	
713.14* Smoke control in elevator hoistways	Key items: Provide hoistway opening protection with one of the following: enclosed elevator lobbies complying with Section 713.14.3; additional doors at each hoistway door opening per 713.14.3 item 3 or elevator hoistway pressurization complying with Section 909.21. Describe which option is being proposed. Pressurization concepts to be further described and discussed in the smoke control presubmittal conference.
	Proposal: [No hoistway pressurization systems are proposed. Elevators P1 and P2 are not required to be protected because their travel distance is less than 75 feet. Elevators 1 and 2 are protected by a smoke and draft control door assembly per 713.14.3.3 Elevators A, B, C, D, E, F, and G are protected by fire partition enclosed elevator lobbies per 713.14.3.1 Elevator S1 is protected by a smoke partition enclosed elevator lobby per 713.14.3.2]
Conference discussion & decisions:	
403.5.5 Luminous egress path	Key Items: Luminous egress path markings shall be provided in accordance with Section 1025.

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markings	
	<p>Proposal: No issues. The design will conform to applicable sections of the Seattle Building Code.</p> <p>Confirm that no luminous markings are required at the split-level floor conditions between the new tower and the Lloyd building.</p>
Conference discussion & decisions:	
403.5.8* Stairway termination	<p>Key Items: All required interior exit stairways shall terminate at a roof in a penthouse with a door complying with Sections 1010.1.1 and 1010.1.2. The building official is permitted to approve an alternate design at the pre-design conference. The intent is for all required stairways to have at least one door or approved penthouse alternate roof hatch that opens directly to the exterior on a roof level, and that all other roof levels may be accessed via stairs, ships ladders or alternating tread devices.</p> <p>See attached "Seattle High-rise Requirements for a Roof Hatch When Approved as a Penthouse Alternate"</p>
	<p>Proposal: No issues. The design will conform to applicable sections of the Seattle Building Code.</p>
Conference discussion & decisions:	
403.6* Elevators	<p>Key Items: Elevator installation and operation in high rise buildings shall comply with Chapter 30 and Section 403.6. Describe proposed primary and alternate recall floors.</p>
	<p>Proposal: [Primary recall floor to be Level 1 for all elevators with a secondary recall floor of Level 2 for all above grade elevators and Level P1 for below grade elevators. To be confirmed with Fire Marshall.]</p>
Conference discussion & decisions:	
403.6.1* Fire service access elevator	<p>Key Items: In buildings with occupied floor more than 120 ft. above the lowest level of fire department vehicle access, a minimum of two fire service access elevators shall be provided in accordance with Section 403.6.1. Each fire service access elevator shall be served by a different machine or control room. Indicate location of fire service access elevators, and how the water prevention requirements of Section 403.6.1.2 will be complied with. Sump capacity shall be 3000 gph per state code requirements. Note: Separate shafts and pressurizations systems are not required for the two fire service access elevators.</p>
	<p>Proposal: The building will be equipped with two fire service access elevators meeting the criteria described above. The new tower core will contain both fire service access elevators. These two cabs will also provide the clear dimensions required for Seattle Fire Department stretcher operations.</p>

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	<p>In addition, two elevators serving the 10-story Lloyd building will also provide the clear dimensions required for Seattle Fire Department stretcher operations.</p> <p>It is the design intent that two fire service access elevators in the new 18-story tower are able to serve the entire building, including the split-level floors and mezzanines within the connected 10-story Lloyd building. Confirm that this arrangement meets the Seattle Building Code requirement for not less than two fire service elevators.</p> <p>Water intrusion into the FSAE hoistways shall be prevented by means of either floor drains at elevator lobbies, sloped floors, or by elevating the FSAE lobby 1" above adjacent spaces.</p>
Conference discussion & decisions:	
Chapter 7	
403.8* Emergency operational plan	<p>Key Items: In accordance with SFC Section 404, the building is required to have a Fire Safety and Emergency Plan. SFC Section 9309 requires that a Fire Safety Director appointed by the building owner is responsible to oversee the preparedness and initial response of a building's fire and life safety systems and building occupants to a fire alarm, in addition to conducting annual emergency evacuation drills. For more information, see SFD CAMs 5963 and 5982.</p>
	<p>Proposal: [No Issue taken. Plans will be provided prior to occupancy.]</p>
Conference discussion & decisions:	
Chapter 7	
712* Vertical openings	<p>Key Items: The code limits the number of stories that can be in common atmosphere with one another without the required fire barrier separation between them. The plans submitted for the predesign meeting should show all architectural floor openings including those relating to escalators. If architectural floor openings reach the threshold meeting the definition of an atrium, the atrium code requirements shall be addressed. Note any garage elevators or duct system using the provisions of Section 712. Fire alarm and smoke control systems will need to be designed to take unenclosed vertical openings into account.</p>
	<p>Proposal: No issues. The design will conform to applicable sections of the Seattle Building Code. A three story atrium is not included in the project. Provisions are being designed into the building that will allow future tenants to provide vertical openings that connect two stories.</p> <p>Confirm that the proposed split levels can be considered a single story, and that the mezzanine approach at levels 4 and 7 is allowed.</p>
Conference discussion & decisions:	
CHAPTER 10, MEANS OF EGRESS	
Chapter 10* General	<p>Key Items: Provide an exiting plan and describe any issues requiring interpretation or a code alternate or code modification. Indicate occupancy loads and load factors for all assembly type spaces. Clearly note all locations where exit access stairways are being proposed.</p>
Code Alternate/ Modification <input type="checkbox"/> (form attached)	<p>Proposal: No issues. The design will conform to applicable sections of the Seattle Building</p>

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	Code.
Conference discussion & decisions:	
CHAPTER 30, ELEVATORS	
3016.9* Elevator operation on emergency power - recall	<i>Key Items: Elevators shall comply with Sections 3016 through 3019 for hoistway smoke control (lobbies, extra doors or pressurization), elevator operation on emergency power, general emergency operation requirements, and phase I and phase II recall requirements.</i>
	Proposal: [No issues. The design will conform to applicable sections of the Seattle Building Code.]
Conference discussion & decisions:	

3020.1* & 3020.4* Construction of Hoistways, and machine and control rooms	<i>Key Items: Construction of hoistways and hoistway enclosures shall comply with ASME A17.1 Section 2.1 as amended.</i>
	Proposal: No issues. The design will conform to applicable sections of the code.
Conference discussion & decisions:	

OTHER	
Other	Describe any significant interpretation requests or special conditions you wish to address including any issues requiring a code alternate or code modification.
Code Alternate/ Modification <input type="checkbox"/> (form attached)	Proposal: <ol style="list-style-type: none"> 1. Confirm mezzanine and split level approach at levels 4 & 7 of the existing Historic Lloyd Structure where they connect to the new tower. <ol style="list-style-type: none"> a. No separate FSAE cabs provided for the Lloyd floors b. No atrium is created if a future tenant elects to knock out a portion of the slab connecting to a level below. 2. Confirm high occupancy floor loading strategy for future tenant improvements. The building has been designed for additional floor loading on select floors. <ol style="list-style-type: none"> a. Levels 2, 8, 9 and 18 are designed for 100 psf loading. 3. Confirm method of seismic risk strategy. Building intends to meet requirements of Risk Category II. <ol style="list-style-type: none"> a. Is calculation required to include concentrated B occupancy loads? b. Confirm Level 1 lobby can use load factor of 1:150 rather than 1:15 despite its size? 4. Confirmation of FCC location and FSAE Planning <ol style="list-style-type: none"> a. FCC is located south of the 6th Ave entrance and sized at 200 sf per section 911.1.1.3. b. Two FSAE cabs serving levels 1 – Penthouse. These double as high-rise passenger elevators for all above-grade levels. c. Parking shuttles serving levels P5-L1 are sized for stretchers but do not serve as FSAE.

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	<p> <i>The main elevator lobby within the core doubles as the FSAE vestibule at all levels. There is no vestibule enclosure on the ground floor where the building's exit discharge will occur per the exception provided under section 403.6.1.5.2.</i> </p> <ul style="list-style-type: none"> e. FSAE hoistway water protection is provided by sloping the thresholds of the FSAE lobby to increase the FSAE lobby floor by 1 inch relative to the floor outside of the lobby. No further drains provided in the lobby itself. f. Stair 4 is accessed directly from the FSAE lobby, as well as from outside of the FSAE lobby on the office floor plates. <ul style="list-style-type: none"> i. At the occupied roof deck of the penthouse level, the second entry to Stair 4 is directly from the roof terrace. There is an overhead canopy at this door and for a portion of the egress path leading up to it. <ul style="list-style-type: none"> 5. At Stair 4, the standpipe hose connection is proposed at the intermediate landing. This is consistent throughout the building. At Stairs 1, 2, 3, 5, & 6 the standpipes are located at the main landing and are consistent throughout the building. Please confirm that the locations are acceptable. 6. Confirm approach to achieving 1hr rated wall for code required fire-separation along the alley. <ul style="list-style-type: none"> a. Can interior layer of GWB in rated assembly be deferred to tenant? 7. Confirm that no luminous markings are required at the split-level floor conditions between the new tower and the Lloyd building. 8. Confirm extent and access requirements for Fire Department for building PV array and the roof below. <ul style="list-style-type: none"> a. It is assumed that this roof is accessed for maintenance only, and that 5' clear below the panel is sufficient 9. Confirm locations of required building address signs per SBC Section 502.2.1.1.
Conference discussion & decisions:	

Seattle Requirements for High-Rise Secondary Water Supply

Water Tank: An automatic secondary on-site water supply storage tank shall be provided for high-rise buildings in accordance with SFC Sec. 904.3.2, and meet the requirements of NFPA 22 and the following:

OPTION 1 Single Fire Pump with Storage Tank Having Automatic Refill Features**Tank Refill Lines:**

Dual automatic refill lines, each capable of refilling the tank at a minimum rate of 110 percent of the fire pump(s) capacity, shall be installed. Ref: SFD Administrative Rule 9.03.20 or its successors

A manual tank fill bypass designed for and capable of refilling the tank at a minimum rate of 110 percent of the fire pump(s) capacity shall be provided. Ref: SFD Administrative Rule 9.03.20 or its successors

Tank Fill Valves and Control Systems: The two automatic refill lines shall have separate automatic tank fill valves that are listed for fire service and arranged for automatic operation. Each automatic tank fill valve shall be provided with a separate approved means of actuation such as float assemblies, pressure sensors, etc. that are supervised by the fire alarm system. The status of the valves (i.e., 'open', 'closed') shall be indicated at the valves and in the Fire Command Center (FCC).

The tank shall be kept filled, and the water level shall never be more than 4 inches below the designated fire service level. Ref: NFPA 22 - 14.4.3

Tank Level Indicators: Two tank level indicators are required, one located in the FCC and another in the immediate vicinity of the tank fill valves. The tank level indicator monitoring shall be provided through the fire alarm system in accordance with NFPA 72.

Two separate and distinct signals shall be initiated: one indicating that the required water level has been lowered or raised (off-normal), and the other indicating restoration. Ref: NFPA 72 - 17.16.3.1

The off-normal signal shall be initiated when the water level falls three inches or rises three inches. Ref: NFPA 72 - 17.16.3.2.1

Tank Low Level Alarm: Separate and distinct tank low level audible and visible alarms shall be provided in the FCC and in the vicinity of the tank fill valves, and activate when the tank

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water level drops below 50% capacity. The tank low level monitoring shall be provided through the fire alarm system in accordance with NFPA 72. The signaling devices shall be clearly labeled "Water Tank Low Level Alarm" or equivalent. An independent silence switch shall be provided for the tank low level alarms in the immediate vicinity of the alarm devices.

Tank Overflow Protection: An approved means to prevent the tank from overflowing into the building shall be provided. Where an automatic shutoff valve is provided, it shall be listed for fire service and have dual (redundant) means of actuation such as two float assemblies, pressure sensors, etc. that are supervised by the fire alarm system. The valve shall be supervised by the fire alarm system and status (i.e., 'open', 'closed') indicated at the valve and in the FCC.

Pump By-pass: A full size by-pass shall be installed around the storage tank and the fire pump in accordance with NFPA 20. The by-pass shall be installed on the supply side of the tank fill valves and connected to the system on the downstream side of the fire pump and any sprinkler system pressure regulating valves installed on feed mains.

OPTION 2: Two Fire Pumps and Storage Tank Without Automatic Refill Features

The primary fire pump shall be supplied by a dedicated fire service main and the secondary fire pump supplied from the storage tank. The pumps shall operate at the same rated flow capacity and at similar discharge pressures. When using Option 2, automatic refill of the tank is not required.

The means to fill the tank shall be sized to fill the tank in a maximum time of 8 hours. Ref: NFPA 22 – 14.4.2

The tank shall be kept filled, and the water level shall never be more than 4 inches below the designated fire service level. Ref: NFPA 22 - 14.4.3

Tank Level Indicator: A tank level indicator is required in the immediate vicinity of the tank fill valve.

Pump By-pass: A full size by-pass shall be installed around the primary fire pump in accordance with NFPA 20. The by-pass shall be connected to the system on the downstream side of any sprinkler system pressure regulating valves installed on feed mains.

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Seattle Requirements for High-Rise Generator Fuel Tanks

Ensure that the as a minimum the following information is provided on the on the architectural plan submittals:

1. Provide detail on plans indicating type of tank (i.e., UL-142, UL-2085, or other type of tank), type of fuel, and how much will be stored on-site.
2. Provide detail on plan (plan and elevation views) showing the location of the diesel fill connection, located on the exterior of the building, at least 5 feet from building openings and property lines in accordance with SFC Section 5704.2.7.5.2.
3. Provide details on plans indicating location (plan and elevation views) and routing of normal vent for diesel tank (manifolding of normal vents is not allowed) in accordance with SFC Section 5704.2.7.3.3.
4. Provide details on plans indicating location and routing of emergency vents diesel tanks (manifolding of emergency vents is not allowed) in accordance with SFC Section 5704.2.7.4.

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Seattle Requirements for Protection of Wiring Required by Section 909.11

1. Power and control wiring that serves the pressurization and other smoke control equipment, regardless of voltage, shall have fire-resistance-rated protection (rated cable, installation in shafts, embedment, etc.) of at least two hours. **Exception:** Fire-resistance rating is not required for wiring serving a generator in an unprotected area in a garage that is separated from the rest of the building by 2 hour-rated construction.
2. Where wiring protection is provided by installing in a rated shaft, protection of wiring is required between the fire command center and the shaft.
3. Protection of wiring is not required for rooftop or penthouse wiring where installed outside the building envelope or in a penthouse that is not required to be protected.
4. Protection is not required for HVAC fans used to exhaust intermittent floors.
5. Protection is not required for the dampers on the HVAC equipment unless dedicated for shaft pressurization.
6. Wiring required to have 2-hour protection can be in a shaft with other wiring. The "independent route" requirement in Section 909.11 means separate raceway from normal power.

* Seattle amendment to IBC

**Seattle High-Rise Requirements for a Roof Hatch
When Approved as a Penthouse Alternate**

1. Roof hatch dimensions shall be a minimum of 3'-0" wide x 12'-0" long.
2. Roof hatch shall be installed with a snow sensors/heating cables system.
3. Roof hatch shall be motorized with a remote pushbutton station located at the base of the top stair landing leading to the hatch.
4. Roof hatch electrical system shall be on building emergency power.
5. Provide switch in the Fire Command Center that unlocks the electro-magnetic locks on the hatch doors.
6. Interlock electromagnetic locks on hatch doors with fire alarm system to unlock automatically on any fire alarm signal.
7. Roof access shall be provided by extending the stairway or providing an alternating tread device to the roof surface. Ensure required headroom clearance is met where the stair or alternating tread device leads to the hatch.
8. Roof hatch shall be operable from the roof.

* Seattle amendment to IBC