Portland State University
Broadway Housing Project

Life Safety Systems Narrative

Submitted May 27, 2003

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1.0 General (By OTAK)

This document establishes the parameters of the Life Safety Systems for the PSU Broadway Housing Building. This document is to be used in the original construction of the building and as a reference for future tenant improvements to the building.


The acceptance tests required for Life Safety Systems prior to issuance of the occupancy permit will be performed together in a combined group of test sessions. Representatives from the City Fire Department and the Bureau of Buildings will participate. Scheduling acceptance tests with the City Fire Department and the Bureau of Buildings shall occur only after

1.2. Scheduling Acceptance Tests.

Prior to scheduling the acceptance test sessions, the assembled systems must have been thoroughly tested by all System Installation Contractors. Furthermore, the Bureau of Buildings must be notified in a written statement by all System Installation Contractors. This statement will confirm that each system:

1. has been installed in basic conformance with the design documents,

2. effectively accomplishes the agreed intent of the system, and

3. is operational.
2.0 List of Contacts  (By OTAK)

1. Building:
   PSU Broadway Housing
   1975 and 1985 SW 6th Avenue,
   621 SW Jackson Street,
   1984 SW Broadway Street
   Portland, OR 97201

2. Building Owner:
   Kelly T. Saito
   Gerding/Edlen Development Company, LLC
   1120 NW Couch Street, Suite 600
   Portland, OR 97209
   Phone: (503) 299-6000
   Fax: (503) 299-6703

3. Project Architect:
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4. Structural Engineer
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   KPFF Consulting Engineers
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   PAE Consulting Engineers  
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   Portland, OR 97219  
   Phone: (503) 226-2921  
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7. City of Portland  
   Bureau of Development Services – Plans Review Division  
   Contact: Andy Peterson  
   Phone: (503) 823-7301  
   Fax: (503) 823-4591

   Fire Bureau  
   Contact: Daryl Ferchland  
   Phone: (503) 823-2148  
   Fax: (503) 823-4591
### 3.0 Project Zoning (By OTAK)

1. **Planning File No.:** PL02-150640
2. **Design Review Type:** III
3. **Land Use Review File No.:** LU02-156768
4. **Base:** RX
5. **Overlay Zone:** d
6. **Neighborhood:** Downtown
7. **Plan District:** Central City - University
8. **Use:** 384 Housing Units, Retail, Office, and Service Spaces.
9. **City Land Plans:** 1S1E04DA
10. **Parking:** None On-site
11. **Building Height:** 122'-00" to top of parapet, 93'-8" to highest occupied floor
12. **Site Area:** 30,000 square feet
13. **Building Areas:**
   - 1st Floor(Retail) 21,135 sf
   - 2nd Floor(Office) 20,800 sf
   - 3rd Floor(Residential) 21,300 sf
   - 4th Floor 21,025 sf
   - 5th Floor 21,340 sf
   - 6th Floor 20,995 sf
   - 7th Floor 21,445 sf
   - 8th Floor 21,115 sf
   - 9th Floor 21,445 sf
   - 10th Floor 20,995 sf
   - **Total** 211,595 sf
14. Yards: Building built to property line on all sides except the NE face of the west wing is 36' from property line at loading dock area, and the N face of the east wing is 16' from property line at the alley.
4.0 Code Summary (By OTAK)

4.1. Project Description:

Broadway Housing is a ten-story mixed-use building on a 30,000 square foot site located on the downtown Portland block bounded by SW Broadway, SW Jackson, SW Sixth Avenue, and SW College Street. The building consists of 384 studio apartments on floors 3 thru 10, second floor commercial office space, and ground floor retail.

1. Total Building Area: 211,595 gross square feet
   a. Retail 21,135 gross square feet
   b. Office 20,800 gross square feet
   c. Residential 169,660 gross square feet

2. Number of Stories: 10(excluding mechanical penthouse)

3. Occupancy Classifications: Retail – M
   Office – B
   Residential – R1

4. Occupancy Separations: 1-hour
   a. Group B/R1

5. Type of Construction: Type I, Fire Resistive
   a. Allowable Area
      i. Retail/Office Unlimited
      ii. Residential Unlimited

   b. Allowable Height Unlimited

   c. Exterior Bearing Walls
      4-hour less than 5 feet 2-hour, non-combustible elsewhere

   d. Interior Bearing Walls
      3-hour

   e. Exterior Non-bearing Walls
      4-hour less than 3 feet
      2-hour less than 20 feet
      1-hour less than 40 feet
      Non-rated, non-combustible elsewhere

   f. Structural Frame
      3-hour

   g. Partitions(permanent)
      1-hour

   h. Shaft Enclosures
      2-hour

   i. Floors and floor-ceilings
      2-hour

   j. Roofs and roof-ceilings
      2-hour

   k. Exit Corridors
      1-hour
4.2. Applicable Codes


3. ADA as implemented by Chapter 11 of the OSSC.


5. Zoning Code, City of Portland.

6. Oregon Electrical Specialty Code (Based on NFPA 70, National Electrical Code).


5.0 Exit/Egress System (By OTAK)

5.1 Paths

The primary exit path from all residential floors (3 - 10) is a permanent 1-hour rated corridor connecting two separate stairs. The south stair is a 2 hour rated stair and the north stair is a stair open to the atmosphere. There are additional interconnecting open stairs located at alternate floors i.e., 3 to 4, 5 to 6, etc. Both office and retail floors will have assigned exit system per UBC and the Fire Marshal’s direction upon development of tenant spaces.

5.2 Exit Lights:

Exit lights to be provided above entries to the primary exit stairs on each floor per UBC and the Fire Marshal’s direction.

5.3 Egress Illumination:

Emergency exit lighting on emergency power to be provided at stairs, corridors, lobbies and elevator cars and central control station.
6.0 Vertical Transportation (By OTAK)

6.1. Purpose:

Elevators provide access to all floors for use by residents, office tenants, and public. Access is maintained for emergency personnel during fire and power failure emergencies.

6.2. Equipment:

1. Residential Elevators
   a.) Type                       Electric traction elevator
   b.) Number                    2 cars: #1 & #2
   c.) Capacity                  3,500 lbs.
   d.) Speed                     350 fps
   e.) Stops                     10 stops
   f.) Floors Served             1 thru 10, 2nd floor restricted access.
   g.) Exit Floor                First Floor
   h.) Machine Location          Rooftop penthouse

2. Office Elevator
   a.) Type                      Hydraulic elevator
   b.) Number                    1 car: #3
   c.) Capacity                  2,500 lbs.
   d.) Speed                     125 fps
   e.) Stops                     2 stops
   f.) Floors Served             1 and 2
   g.) Exit Floor                First Floor
   h.) Machine Location          First Floor

6.3. Support Equipment & Features:

Two-hour rated shaft enclosures, 90 minute rated door assemblies, entrances non-rated for smoke infiltration.

Emergency lighting with rechargeable battery pack in each car.

Car operation stations include:
   a.) Emergency stop button
   b.) Alarm button
   c.) Key operating firemen’s switch
   d.) Telephone and ADA telephone
   e.) Intercom to lobbies and machine room

Emergency generator includes capacity to return all cars to their floor one at a time in the fastest sequence possible. The emergency generator has the capacity to run continuously one traction car in firemen’s service mode. Two signals include emergency generator on-line and main power on-line.
Permanent sign mounted at elevator hall call stations: “In fire emergencies, do not use elevators - use stairs.”

Fire Emergency Operation:

a.) Firemen’s services for a given elevator is initiated by key switch in a car operating panel or by activation of smoke detector located in any elevator lobby.

b.) When the firemen’s service has been initiated, elevator returns to the home floor, except that it returns to the alternate access floor if smoke detector is activated at the home floor. Initiation of firemen’s service overrides all other manual and automatic operations.

6.4. Test

<table>
<thead>
<tr>
<th>Location</th>
<th>Function</th>
<th>Procedures</th>
<th>Criteria for Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cars</td>
<td>Emergency stop</td>
<td>Push button while moving</td>
<td>Car stops</td>
</tr>
<tr>
<td></td>
<td>Emergency Lighting</td>
<td>Disconnect Power</td>
<td>Light comes on</td>
</tr>
<tr>
<td></td>
<td>Alarm</td>
<td>Push button</td>
<td>Bell rings</td>
</tr>
<tr>
<td></td>
<td>Firemen’s Service</td>
<td>Use key</td>
<td>Car returns to home floor and door opens</td>
</tr>
<tr>
<td></td>
<td>Firemen Operation</td>
<td>1. Operate selected cars by pushing car operating buttons</td>
<td>Car button operates doors only with constant pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Push hall button</td>
<td>Car does not respond</td>
</tr>
<tr>
<td></td>
<td>Emergency Power</td>
<td>Disconnect power to elevators</td>
<td>Automatic transfer for line voltage source to emergency power source.</td>
</tr>
</tbody>
</table>
7.0 Mechanical System (By PAE)

7.1 Systems

This portion of the Building Fire and Life Safety Systems includes the Fire Sprinkler Systems and the Smoke Control Systems. Both systems interface with the fire alarm system.

7.2 Codes

These systems were designed to conform to Fire and Life Safety Codes. Refer to Section 4.2 for a list of applicable codes.
8.0 Fire Sprinkler System  (By PAE)

Note: This portion of the project will be designed and built by the Fire Protection contractor in accordance with performance specifications written by PAE Consulting Engineers, Inc.

8.1. Purpose

Provide complete fire sprinkler coverage of floors 1-10 and the mechanical penthouse.

8.2. Sprinkler System Description

1. Design Hazard Occupancy Level
   The building will be totally sprinklered. Sprinkler design will generally be based on light hazard occupancy. Some areas such as mechanical rooms and all first floor tenant spaces will be based on ordinary hazard occupancy. All sprinkler systems will be wet. There is no parking within the building.

2. Zoning and Sprinkler Head Types
   Each individual floor will be a separate sprinkler zone (1 shutoff valve per floor). Each sprinkler zone will have a flow switch and zone isolation valve with tamper switch. Quick response heads will be provided in all light hazard areas. Horizontal dry sidewall sprinkler heads will be used to protect the overhangs. Sprinkler heads will be provided inside all exterior glazed openings above the alley to provide a water curtain at the discretion of the Fire Bureau. Water curtain sprinklers shall be located at 6'-0" on center, 8" to 12" from the window (on the tenant side of the window) with the sprinkler height adjusted for any soffits. Fire sprinklers shall be provided at the bottom of the elevator shaft (not at the top).

3. Standpipes
   There will be (2) full height exit stairs provided with Class I standpipes. The south stair will be enclosed and have a 6-inch combination standpipe (CSP) with hose connections, fire sprinkler floor isolation valves, flow switches, and fire department test station located within the stairway vestibule. The north stair will be open and will have a 6-inch dry standpipe (DSP) with hose connections located within the stairway landing. Hose outlets (2 ½ inch hose valves with 1 ½ inch reducer and cap) will be provided for all floors above the first floor. Hose connection outlets will be located on the roof to reach all portions of the roof within 200 feet. The dry standpipe will be interconnected with the FDC serving the combination system.

4. Water Service
   There will be a 6-inch fire service to the building. A 2-way 6-inch FDC will be provided adjacent to the building at a readily accessible location.
5. Secondary Water Source
   A 7,500 gallon below slab water storage tank will be provided to satisfy the requirement for a secondary water supply. This will provide the required minimum 250 GPM fire sprinkler flow demand (with hoses) for a 30-minute duration.

8.3. Equipment – Fire Pumps

1. There will be two electric driven fire pumps, and single jockey pump to provide the standpipe flow demand. The pump room is located on the ground floor.

2. The primary fire pump should be sized for the standpipe flow demand of 500 GPM (one enclosed full height stair). The back-up fire pump is not required to be redundant, but must satisfy the fire sprinkler flow demand plus the hose demand (minimum 250 GPM). Due to the fact that the most remote area is the mechanical penthouse on the roof and it is a higher density (ordinary hazard occupancy) than most of the building (light hazard occupancy), the sprinkler fire flow will be between 250-500 GPM. Because of this, the back-up fire pump will be sized in the 400 GPM range. The fire pumps will be selected to provide 65 PSI at the roof level hose connections.

3. Both electric fire pumps will have their own automatic transfer switch and the controls for the pumps will be independent of other components. In addition, the electrical supply for the fire pumps will be sufficiently sized so the pumps will be able run at the same time. The two fire pumps and the jockey pump will all be on emergency power.

8.4. Tests

1. NFPA 13 Sprinklers
2. NFPA 14 Standpipes
3. NFPA 20 Fire Pumps
9.0 Smoke Control Systems (By PAE)

9.1. Purpose

1. The smoke control system will be designed to minimize smoke migration through the building by pressurizing various zones of the building in accordance with the following sections of the State of Oregon Structural Specialty Code (OSSC):
   a. Stairwells: Section 1005.3.3.7 - Pressurized Enclosures
   b. Smoke Control: Section 905 – Smoke Control
   c. Elevator Machine Room: Section 403.7 section 3 - Elevators

2. The following pressurization systems will be included:
   a. Stairwell Pressurization: To minimize smoke in stair enclosures and reduce smoke migration between floors through the stairs.
   b. Corridor Pressurization: To minimize smoke in corridors and allow occupants safe exit to a stairwell. Floors 3 through 10 are each a smoke control zone.
   c. Elevator Pressurization: To minimize smoke migration between floors through the elevator hoistways.

3. There will be a smoke exhaust system for the corridors of the residential floors.

9.2. Description

1. The smoke control systems include a stairwell pressurization system for the south stair (the north stair is open to the atmosphere and requires no mechanical systems), elevator pressurization systems for each of the two high-rise elevators, and a corridor pressurization system for floors 3 through 10 and a corridor smoke exhaust system for floors 3 through 10. Each pressurization and smoke exhaust fan will be powered by emergency power. Switches and status indicators for each fan and the zone dampers will be provided in the Fireman’s Control Panel in accordance with Section 905.13 Firefighter’s Control Panel of the OSSC. The fan switches will have three positions “ON-AUTO-OFF”. The dampers switches will have three positions “OPEN-AUTO-CLOSE”. The status indicators will green, red and yellow pilot lamps:
   a. Green - Fans and dampers in their normal status.
   b. Red - Fans and dampers in their off or closed status.
   c. Yellow - Fans and dampers in a fault status.

2. The stairwell pressurization system will include an automatically controlled relief vent capable of discharging a minimum of 2500 CFM of air at the design pressure difference. This relief will be located in the upper portion of the pressurized exit enclosure. Air will be introduced at several points in the stair to pressurize the stair enclosure to .05” w.c. positive pressure relative to the stairwell vestibule. Leakage from the stairwell will pressurize the vestibule relative to the corridor.
9.3. Equipment

The following equipment will be located on the roof or in penthouses at the roof level:

1. SF-4 East Elevator Shaft Pressurization
2. SF-5 West Elevator Shaft Pressurization
3. SF-2 South Stair Pressurization
4. SF-1 East Corridor Pressurization
5. SF-3 West Corridor Pressurization
6. EF-7 Smoke Exhaust Fan

7. Combination Fire/Smoke dampers with end switches will be provided at each corridor pressurization and smoke exhaust opening on stairs 3 through 10. These dampers power open and “fail” closed via a spring return.

9.4. Pressurization & Exhaust Sequence of Operation

The following sequence of operation provides a brief overview of the various building pressurization and exhaust systems. Refer to the fire alarm matrix for additional sequencing requirements. The continuously operating bathroom exhaust fans remain in operation during these sequences. The bathroom make-up air units serving the corridors shall remain operational unless their discharge smoke detectors are activated. All pressurization fans will have discharge smoke detectors to prevent operation if smoke is detected.

1. Corridor Pressurization
   In the event of a fire alarm on a given floor the following pressurization sequence shall occur:
   a. The combination Fire/Smoke dampers on the fire floor close (to prevent air from being supplied to this floor).
   b. The combination Fire/Smoke dampers close on the floor that is interconnected to the fire floor via an open stairwell.
   c. The combination Fire/Smoke dampers serving the bathroom make-up air system for the two floors listed above remain open.
   d. The combination Fire/Smoke dampers open on the two floors above and the two floors below the two floors described above. This permits full flow of the corridor pressurization air to be split among these floors.
   e. The fire alarm system signals the corridor pressurization fan to start.
   f. All other combination Fire/Smoke dampers remain closed.
   g. The positions of all these dampers are resettable at the fire command station.
2. Corridor Smoke Exhaust
   In the event of a fire alarm on a given floor the following smoke control sequence shall occur:
   a. The combination fire/smoke dampers in the smoke exhaust shaft on the fire floor open to allow air to be exhausted from this floor.
   b. The combination fire/smoke dampers in the smoke exhaust shaft on all other floors close.
   c. The fire alarm system signals the corridor smoke exhaust fan to start.
   d. The positions of these dampers are resettable at the fire command station.

3. Stairwell Pressurization
   In the event of any fire alarm in an area other than an individual residence, the following sequence shall occur:
   a. The fire alarm system shall signal the stair pressurization fan to start.

4. Elevator Pressurization
   In the event of any fire alarm in an area other than an individual residence, the following sequence shall occur:
   a. The fire alarm system shall signal both elevator pressurization fans to start after the elevators have been recalled.

9.5. Smoke Control Zones

The building will have the following smoke control zones:

1. Ground Floor: Smoke barriers create a passive smoke control zone

2. Second Floor: Smoke barriers create a passive smoke control zone.

3. Third through Tenth floor Corridors: Active smoke control as described above.

4. South Stairwell: Active smoke control as described above.

5. North Stairwell: Open to the atmosphere. No smoke control required.

6. High Rise Elevator Shafts: Active smoke control as described above.

7. Low Rise Elevator shafts: Smoke barriers create a passive smoke control zone.

8. Elevator Machine Rooms: A dedicated air conditioning system is provided to treat the elevator machine rooms as a separate smoke control zone to comply with OSSC 403.7 item #3.
9.6. Tests

Provide test procedure as follows:

1. General: Conduct an acceptance test of the smoke control system after the system is complete. Test each component of each system in accordance with Section 905.15 Acceptance Testing of the OSSC. A final test of the smoke control system shall be performed by the Contractor. The test is to be conducted in the presence of, and to the satisfaction of the Architect, City Fire Department, City of Portland Bureau of Buildings Inspection Division, and the Bureau of Building's Mechanical Engineer. Date and time of tests shall be scheduled by the Contractor. The final test report is to be signed by the Owner's representative, Architect, Fire Department, and Bureau of Buildings. Correct any deficiencies discovered during testing and completely retest system.

2. Test: An automatic smoke detector shall be activated. Activation of an automatic smoke detector shall initiate the following functions.
   a. Transmit an alarm to the central fire alarm monitor station.
   b. Activate all building audible and visual alarm devices. (Only when smoke is detected outside of a dwelling unit).
   c. Annunciate audible and visually at the Central Control Station the alarm and the zone in alarm on the annunciator.
   d. Print date, time and location of zone in alarm on printers.
   e. Unlock stairway and exit doors provided with electric locks.
   f. Dispatch all elevators to the Level One floor.
   g. Activate Fire Department communications system. Telephone stations on each floor landing in stairways and elevator lobby to be tested.
   h. Release any magnetically held elevator lobby smoke doors.
   i. Activate the voice alarm and public address system. Pre-recorded voice instructions should be heard on all floors.
   j. Activate the smoke control system through the Building Automation system.

3. A corridor smoke detector shall provide following response:
   a. Corridor pressurization fans energized.
   b. Stairs pressurization fans energized.
   c. Elevator pressurization fans energized.
   d. Corridor exhaust fans energized.

4. The adjacent floors above and below the fire floor(s) will have supply air only and be 0.05" w.c. positively pressurized with respect to the fire floor.

5. The south stair tower pressurization at each floor shall have:
   a. A minimum of 0.05" w.c. positive pressure with respect to the corridor.
   b. The vestibule and stair doors shall have a maximum 30# pull with one door opened at the lobby level.
6. Each elevator shaft shall be tested at mid-level for a minimum pressure of 0.04" w.c. with the elevator doors opened on the first floor lobby level.

7. After five minutes of fan operation, the normal power shall be shut off and the emergency generator shall be energized. The electrical power shall come back on line within 10 seconds from complete shut down.

Note: Per Fred Lee, no special inspections will be required for the smoke control system.
10.0 Smoke Detection System  (By PAE)

10.1. Purpose

To provide smoke detection resulting in a response protecting people and property from the damage caused by fire.

1. Complete smoke detection system coverage in all occupiable areas, common areas, and work spaces to include:
   a. Mechanical equipment rooms.
   b. Electrical equipment rooms.
   c. Telephone equipment rooms.
   d. Elevator machine rooms or similar rooms.
   e. Elevator lobbies (listed as a releasing device or connect to an alarm verification zone).
   f. Main return-air and exhaust-air plenum of each air conditioning system.
   g. Return-air ducts and plenums serving two or more stories.
   h. Egress paths in group R occupancies serving more than 10 occupants.
   i. Corridors.
   j. Dwelling units.
   k. In the ductwork associated with air handlers in conformance with IMC 606.2.1.
   l. First floor lobby.
   m. Elevator shafts, for smoke control functions.
   n. Laundry Rooms.
   o. Open office spaces.
   p. Central Command Station (CCS).

2. Detect smoke in the building and initiate the functions identified in the functional matrix, including but not limited to the following.
   a. Annunciate Alarm signal to the fire alarm panel and at the Central Command Station (CCS) / Firefighters Command Station (FCC).
   b. Provide notification to occupants using audible and visual alarms.
   c. Activate the elevator capture system.
   d. Activate the smoke control system.
   e. Unlock the egress doors. (To be determined.)
   f. Signal the Portland Fire Department.

10.2. Equipment

Smoke detectors, ceiling mount and duct mount variety with remote test stations, connected to the fire alarm system.

10.3. Location

1. Ceiling mounted detectors in all occupiable areas, common areas, and work spaces.
   Locations based on the following criteria:
a. Corridors at 30 linear feet on center.
b. Other open spaces at 600 square feet per detector.

2. Ductwork mounted detectors at points complying with standards and codes.

10.4. Tests

1. By City of Portland, Building Department. Each and every smoke detector shall be tested individually.

2. Periodic tests to maintain the system’s operation.
11.0 Fire Alarm System  (By PAE)

a. Smoke Detection System
b. Voice Evacuation System
c. Firemans Communication System
d. System outputs

11.1. Purpose

To provide a supervised Fire Alarm System for the building that includes capacity for smoke detection, voice alarm signaling, fire department communications, and interfaces to other building systems for emergency response purposes.

11.2. Equipment

1. Smoke detectors, pull stations, control panels, annunciation panel, audible and visible alarms, battery back-up power supplies with chargers, door holders, and an automatic dialer

2. Alarm: Automatically indicate at the Main Fire Alarm Panel, the Remote Alarm Annunciator Panels and on the printer that a fire alarm has been initiated, the zone initiating the alarm, transmit an alarm signal followed by a pre-recorded voice message indicating the system has been initiated and operate all alarm and auxiliary devices throughout the building under the following conditions for all initiating devices:
   a. Smoke or heat detector is activated (except HVAC duct detectors and smoke detectors in elevator shafts)
   b. A manual pull station has been initiated.
   c. A flow or pressure switch of the sprinkler system is activated.

3. Trouble: Automatic indication at the main Fire Alarm Panel, the Remote Fire Alarm Annunciator Panels, and on the printer that a trouble condition has been initiated indicating the system has a trouble condition and the zone initiating the signal under all of the following conditions:
   a. An open or short occurs in the system.
   b. The system goes to improper ground.
   c. A mechanical heating and ventilating system air duct detector has been activated.
   d. The power is shut off to a fire alarm control panel in a building.
   e. The tamper switch at an OS&Y valve has been activated.
   f. When a detector at the top of the elevator shafts or equipment room is activated, primary elevator recall shall be activated and trouble indicated at the main fire panel.

4. Main fire alarm panel at CCS is the point of control for supervisory alarms, remote annunciation, fire alarm indication, emergency voice evacuation, elevator capture, and the Firefighter's telephone master station.
5. System Silence: Audible signals are silence-able from the fire alarm control panel by an alarm silence switch. The alarm indication shall be transferred to a visual alarm condition, reported by a different device. Visual signals flash until system reset. A signal dedicated to sprinkler system water flow alarm is not silence-able while the sprinkler system is flowing.

6. Intersystem Connection Provisions are provided for:
   a. Remote annunciation.
   b. Off-site monitoring.
   c. Emergency generator annunciation as follows:
      Operating status (on-off).
      Malfunction indication.
   d. Fire pump annunciation and control as follows:
      Operating status indication (motor on or off).
      Fire pump power is available at pump.
   e. HVAC controls (refer to Smoke Controls).
   f. Elevator controllers for elevator recall (see Elevators).
   g. Stairwell and exit path door control (see Exit/Egress System).
   h. Fire Suppression Sprinkler System Monitoring (see Fire Sprinkler System).

7. Emergency Voice Alarm Signaling and Communication (paging) System. The system provides a tone and pre-recorded message for automatically alerting the occupants of the need to evacuate the building. The system also can be used as a zoned paging system by emergency response personnel activating it at the CCS.

8. Fire Department Communications System. The system provides for the responders to an emergency event the two-way voice communication between the CCS and elevators, elevator lobbies, emergency and standby electrical power system rooms, and at entries to enclosed stairways.

9. Annunciation: Fire Control Panel displays the location and identification of each zone in alarm.
   a. Fire Alarm Control Panel and Remote Annunciator visually displays system status, testing, disabling, alarms, troubles, maintenance and existing emergencies.
   b. Activation of a fire alarm initiating device or supervisory circuit generates a visual alarm or trouble condition.
   c. Printer: A printer is provided at the Fire Alarm Control Panel to generate a hard copy report for all alarm or trouble conditions.

11.3. Locations

1. Smoke detectors (see section on the Smoke Detection System)

2. Pull stations at each exit enclosure and elevator lobby.

3. Main fire alarm panel will be located in a Firefighter's command center on the First Floor.
4. Emergency Voice Alarm Signaling and Communication (paging) System. A voice evacuation system shall be installed to provide alarm indications in elevators, elevator lobbies, corridors, exit stairways, rooms and tenant spaces exceeding 1,000 square feet in area, dwelling units, and areas of rescue assistance.

5. Firefighter's phone jacks shall be installed at each stair landing, elevator cabs, and in each elevator lobby. Allows two way communication between master panel and telephone jacks.

6. Flow and tamper switches shall be monitored on a per floor basis.

7. The central control shall contain controls for the voice alarm system so a selective or general voice alarm may be manually initiated.

8. Visual Alarms: Visual alarms are provided at each level to serve all public areas, each open office area, restroom, corridor, conference room and selected other areas. All devices will be installed as per ADA and Authority Having Jurisdiction requirement.

11.4. Tests

1. Activate smoke detectors selected at random. Verify that pressurization fans in elevator shafts and stair towers are activated and that the remote annunciator in command center properly indicates location of the incident zone.

2. Activate all pull stations per floor. Ensure zone activation of remote annunciator panel and audible and visual alarms.

3. Activate all tamper switches and all flow switches on every floor and ensure activation of remote annunciator panel.

4. Voice alarm to be heard on floor initiating alarm and floors above and below alarm floor. Activation of elevator cabs and stairwells shall be by manual selection only.

5. Telephone jacks to be tested at all locations. Verify number at telephone at Firefighter's Command Center.

6. Periodic Tests: The system provides a one person field test initiated from the control panel of either the complete system or a specified area supported from either the master control panel or any remote annunciator interface panel, maintaining full function of areas not under test.
   a. Field tests are possible in a silent or audible mode. When in the audible mode, the signals shall audibly annunciate alarms, troubles, and device types.
   b. All field test maintenance and system disabling activity is logged to the printer and historical memory as well as visually displayed at all consoles.
c. The items tested include the following:
   1) System wiring tested to demonstrate correct system response and correct subsequent system operation in the event of:
      i) Open and grounded intelligent analog signaling circuit.
      ii) Open, shorted and grounded network signaling circuit.
      iii) Open, shorted and grounded conventional zone circuits.
      iv) Intelligent device removal.
      v) Primary power or battery disconnected.
      vi) Incorrect device at address.
      vii) Printer trouble, off line, or out of paper.
   2) System evacuation alarm notification appliance shall be demonstrated as follows:
      i) An alarm notification appliances actuate as programmed.
      ii) Audibility and visibility at required levels.
   3) System indications shall be demonstrated as follows:
      i) Correct message display for each alarm input at the control panel, each remote alpha-numeric display.
      ii) Correct printer logging for all system activity.
   4) Secondary power capabilities shall be demonstrated as follows:
      i) System primary power will be disconnected for a period of five minutes. At the end of that period, an alarm condition shall be created and the system shall perform as required.
      ii) System primary power will be restored for 48 hours and system charging current shall be the normal trickle charge for a fully charged battery bank.
      iii) System battery voltages and charging currents shall be checked at the fire alarm control panel using the test codes and displayed on the LCD display.
12.0 Exit Signs and Emergency Lighting  (By PAE)

12.1. Purpose
To provide direction and illumination for paths of egress from each floor to a location outside the building.

12.2. Equipment
1. Exit Signs using illuminated exit lights.
2. Emergency lighting using selected fluorescent fixtures.

12.3. Location
1. Exit signs are placed at the stairway entrances, at corridor intersections, and at the exits to the building and are visible from any direction of approach. Nowhere outside of the dwelling units will be more than 100 feet from an exit sign.
2. Emergency Lighting is located at all floors in corridors, stair landings, elevator cabs, and elevator lobbies in the path of exit.

12.4. Test
1. Emergency egress lighting in all corridors, lobbies, and stair enclosures to demonstrate the maintenance of (1) foot candle minimum at any point in the egress path.
2. Verify exit signing on each floor at appropriate locations.
13.0 Emergency Electrical Power  (By PAE)

a. Lighting System
b. Equipment (Elev, HVAC, ...)

13.1. Purpose

To provide electrical power to the following systems in the event of a normal power system failure:

1. All Firefighter's Command Center functions.
2. Firefighter's Command Center HVAC Unit.
4. Exit Path Illumination and Signs.
5. 2 Fire Pumps.
6. 2 Passenger Elevators.
7. Stairwell Pressurization System.
8. Corridor Pressurization System.
10. Mechanical Control System.
12. Telephone System.
13.2. Equipment

1. A 350kW diesel driven standby generator set located on ground floor provides the standby electrical power. Failure of the main service will result in an automatic transfer to connect the designated building system to the engine generator set within 10 seconds of the failure.

2. Included in the components located in the Central Command Station will be a remote manual start and load transfer control and indication panel for the emergency generator and the transfer switch.

3. The generator shall be provided with a UL listed dual wall sub base tank sized to hold sufficient fuel to supply the building emergency generator for two hours under a full load and for eight hours of fire pump operation.

13.3. Test

1. Generator starts and is prepared to serve the emergency electrical power loads within 10 seconds of failure of the normal electrical power system.

2. Smoke control system; after thirty minutes of operation on the normal electrical power, shut off the normal power to the building and show that emergency power activates automatically and continues to operate the system.

3. All other systems: On one floor, chosen at random, show that smoke detection system, alarm system, and exit route lighting (to grade) function under emergency power.

4. Verify that all Firefighter’s Command Center functions operate on emergency power.

5. Verify that egress door unlocks may be operated manually from Firefighter’s Command Center Emergency power.

6. Verify elevator capture functions.
14.0 Central Command Station (CCS) (By PAE)

a. CCS systems

14.1. Purpose

1. To act as the firefighters' command center (FCC) during an emergency event.

2. To provide a location to monitor the building for a fire condition and initiate appropriate occupant evacuation measures.

3. To override smoke control sequence.

14.2. Equipment

1. Voice alarm and public address system panels.

2. Fire department communications panels.

3. Fire detection and alarm system annunciator panels.

4. Elevator controls and status indicator panels.

5. Air handling controls and status indicators.


7. Sprinkler valve and water flow status display panel.

8. Emergency and standby electrical power status indicator.

9. Telephone with a dedicated outside line to the public telephone service provider's system.

10. Fire pump status indicator panel.

11. Schematic building plans including typical floor plans detailing the building core, means of egress, fire-protection systems, fire fighting equipment and fire department access.

12. A work table.

13. The fire alarm system printer.

14. Typed standard operating procedures and personnel list.

15. Automatic Telephone Dialer to alert offsite emergency response personnel.
14.3. Location

On the ground level near the outside of the building that is easily accessible by emergency response personnel. It is protected from the rest of the building by no less than a one-hour fire resistive occupancy separation. The floor area is not less than 96 square feet and the shortest side of the room is no less than 8 feet long.

14.4. Test

1. Voice alarm and public address.

2. Detection and alarm annunciator panel.

3. Electric door unlocks.


5. Elevator control.

6. Sprinkler and water flow display.

7. Standby power.

8. Fire pumps status.

9. Air Handling Status: Check status under smoke control system test. Observe indicating lights for correct operation.
Diagram 16.1 -- Central Command Station Layout
15.0 Security System  (By PAE)

a. Detection/Monitoring  
b. Access Control  
c. Door controls  
d. Elevator controls interface  
e. LSS interface  
f. Fire Alarm interface

15.1. Purpose

To provide door access security with provisions to allow emergency egress from the building.

15.2. Equipment


2. Electric Door Locks.

3. Door Position Indicators.


15.3. Location

1. Override Switch Panel and Interface to Fire Alarm Panel: Central Command Station.

2. Electric Door Locks for egress: All exit doors listed for automatic unlock.

3. Electric Door Locks not for egress: Specified locations for ease of occupant access control.

15.4. Tests

1. All secured doors in the egress path manually unlock but remain latched upon command from the central command station.

2. All secured doors in the egress path automatically unlock but remain latched upon a fire alarm signal.
16.0 Telephone for Emergency Service  (BY PAE)

16.1. Purpose
Where the stairway doors can be locked, the telephones for emergency service offer two-way communication from the stairway to a continuously occupied emergency service station.

When activated by picking-up the handset from the hook-switch the system will ring the emergency service station’s emergency telephone.

16.2. Equipment
Telephone with an automatic dialer connected to a public telephone service provider line.

16.3. Location
In the stairways with locked doors, at least every fifth floor; for example the 3rd and 8th floors.

16.4. Testing
1. Confirm that it activates and rings at the emergency service station.
2. Confirm that the volume is appropriately loud at both ends and that conversation is possible and intelligible.
3. Confirm that the system operates when the normal electrical power system fails.
17.0 Building Code Appeals (By OTAK)

Appeal Number B-8

Owner: Gerdig / Eden Development
Appellant: Judd Janes, 503-699-4571 FAX: 503-635-5395
Plan Reviewer: Ben Howell
Permit Number: 02-156246-CO
Stories/Occ/Type: 10 / B, R-1 / II-FR
RE: Erection of a new structure
Proposed Use: Retail, Office, Residential
Project Address 626 SW College Street

Design Issue Appeals Summary

17.1. Building Code Section: 603.3.2

1. Building Regulation Requirement
   All openings in exterior walls shall conform to the requirements in Section 503.2 and Table 5-A. Openings less than 20 feet from property line shall be protected by fire assembly having at least three-fourths-hour rating.

2. Building Proposed Design
   The east wing of the building facing north along the alley lies approximately 16' from the adjacent property line. In lieu of providing 45 minute rate fixed-glass windows at the affected apartment units (72 on floors 3 through 10); we propose operable windows with additional sprinkler coverage at interior of units to provided protective water curtain. On the ground and second floors we propose non-rated fixed glass windows with additional sprinkler coverage on the interior.

   We also propose to provide additional interior sprinkler coverage at the large emergency generator louver vent located on the ground floor in lieu of a fire damper.

3. Reason for Alternate
   The apartment units require operable windows for livability and passive mechanical/ventilation system requirements. The windows are of non-combustible construction, and are within only 4 feet of code limit allowing non-rated assembly. The existing single story building on the adjacent property is setback over 48' from property line which allows a 64' separation between existing and proposed structures. See attached site plan and rendering.

   Regarding the generator louver, it is critical that the vent remain open during a fire event so that the generator can provide emergency power. The additional interior sprinkler coverage will provide adequate protection at the opening.
4. Decision by Administrative Staff 2/5/03
Openings within 20' feet of property line: Granted provided the building is sprinklered per the Fire Marshal's Office, and opening are a minimum of 10' above adjacent roof or parking surface. Openings are to have additional sprinkler protection provided as required by the Fire Marshal's Office. Louvered opening for generator ventilation may be installed as proposed, with additional sprinkler protection per the Fire Marshal's Office.

17.2. Building Code Section: 403.7 and 1004.3.4.5

1. Building Regulation Requirement
Section 403.7 requires elevators to open into elevator lobbies which are separated from the remainder of the building as required for rated corridor construction. Section 1004.3.4.5 requires that a lobby be provided which separates elevators from rated corridors. The construction for the separation is required to be compatible to rated corridor construction (one-hour rated walls with 20 minute doors and other openings rated at 45 minutes).

2. Building Proposed Design
The proposed design described below is very similar to the design for Brewery Blocks 3 and 5. The Building Code Board of Appeals unanimously granted the appeal for the Brewery Blocks 3 & 5 on 12/12/02. This appeal includes the additional stipulations the board required for that appeal.

The design proposes to provide elevator hoistway pressurization rather than smoke resistive separation at the lobbies. The system will consist of a fan injecting outside air into each elevator hoistway. The pressurization system will be designed to maintain a minimum pressure of 0.05 inches of water column with either of the fans operating. A smoke detector is provided on each elevator landing to initiate elevator recall.

Upon activation of any of the following:
- Elevator landing smoke detector.
- Sprinkler water flow.
- Any corridor smoke detector.

The elevator hoistway vent will close and the elevator hoistway pressurization system will begin operation. A smoke detector will be provided at the top of each elevator shaft. If the first alarm received is from the top of the elevator shaft, the hoistway vent will open, but the pressurization system will not operate. Upon an elevator shaft pressurization signal, both hoistway pressurization fans will operate. The hoistway pressurization system will provide net positive pressure in the shaft in excess of 0.05 inches of water column, with respect to the fire floor.

In addition, the system will have the following features/constraints:

3. a. Each fan will have a multiple-belt connection to increase reliability.
b. The fans will be subject to regular tests in accordance with the smoke control system requirements.

c. The hoistway fans will be treated as part of the smoke control system for the building, and will be designed in accordance with the requirements of Section 905 of the Oregon Structural Specialty Code.

d. The fans will be inspected and tested during the commissioning of the system to confirm adequate pressure differentials are provided.

e. The pressurization system to be provided with emergency power from the on-site emergency generator, and activated by the building alarm system.

f. The building is provided with full sprinkler protection, and a smoke control system on each floor.

g. The building Life Safety Summary will incorporate the conditions of activation and it will be reviewed with the Fire Marshal’s Office to make sure that there is a full understanding and approval from the Fire Marshal’s Office and from the Bureau of Development Services regarding the operation and testing of the pressurization system. A preliminary meeting was held on January 28, 2003 to review these items.

4. Reason for Alternate

This alternate provides a level of safety equivalent to, or in excess of, that specified in the Code. It is being requested, because closing off the minimal elevator lobbies would significantly impact the design presentation of the space, and corridor system.

One of the key reasons for the elevator vestibule separation is to prevent smoke from using the shaft as an avenue of smoke spread. Using pressure differentials to accomplish this end is a well documented approach to providing elevator hoistway smoke separation. This is to prevent smoke from getting into the hoistway. NFPA 92 A recognizes pressure differentials and elevator hoistway pressurization is an acceptable method of controlling smoke. This point is also illustrated in the book “The Design of Smoke Management Systems” by John H. Klotz and James A Milke. If a sufficient pressure difference across a barrier can be maintained, the migration of smoke across the barrier can be prevented.

In addition to an elevator pressurization system, this building will also have a stair pressurization system and a floor pressurization system to control the flow of smoke in the building. The floor pressurization system will use the pressure sandwich approach to maintain a tenable environment in the egress corridors on the floors without an event.

To prevent infiltration of smoke through the elevator shaft, it is important to discuss system reliability. In many ways, a fan pressurization system can provide a more reliable separation than a physical separation relying on doors. Frequently, doors can get blocked open, fall out of alignment, or fall prey to any number of mechanical problems. The fan systems being proposed will be located in a protected environment. They will not be available for general occupant use, adjustment or operation. They will be supervised and subjected to regular tests as required for components under the smoke control system provisions. These provisions also require features such as emergency power supply, positive status verification, original systems commissioning verification and special inspections. Because there are
fewer components to the system, and those components are in a protected environment and supervised, they should provide a system that is as reliable, if not more reliable, than a series of doors on each level with their associated door closers, latches and releases.

In summary, the Code requires elevator lobbies to protect the corridor environment, and prevent smoke from traveling to other floors of the building via the elevator shaft. The proposed design meets the intent of the Code.

5. Decision by Administrative Staff 2/5/03
Pressurized elevator shafts: **Granted in concept.** Pressurization system and smoke control system is to be reviewed and approved by the Bureau of Development Services prior to issuance or permits. The Fire/Life/Safety Summary is to be reviewed and approved by the Bureau of Development Services prior to issuance of permits.
17.3. Building Code Section: 1005.3.4.6

1. Building Regulation Requirement
   Dead Ends: Corridors may have dead ends provided any dead end portion of a corridor does not exceed 20 feet in length.

2. Building Proposed Design
   The proposed design has dead end corridors in excess of 20 feet in length, but do not exceed 25 feet in length. Windows are located at all dead end corridors, and the exit path is clearly marked.

3. Reason for Alternate
   In order to provide doors to end apartment units, it requires extending the corridor slightly beyond the 20 foot limit. See typical floor plan.

4. Decision by Administrative Staff 2/5/03
   Dead-End Corridor: Granted as proposed.
17.4. Building Code Section: Oregon State Structural Specialties Code Section 713.10
Smoke Dampers and 713.11 Fire Dampers

1. Building Regulation Requirement
   Oregon State Structural Specialties Code Section 713.10.1 Smoke Dampers and 713.11.1
   Fire Dampers require fire and smoke dampers in ducted openings at penetrations of area
   separation walls and smoke barriers.

2. Building Proposed Design
   The building design includes toilet exhaust ducts that penetrate the demising wall between
   two studio apartments to reach a vertical shaft. These ducts will be specified to be not less
   than 26 gage galvanized sheet metal and will have no openings between the apartment they
   serve and the vertical shaft. We propose to eliminate the fire/smoke dampers (FSDs) at this
   wall penetration. The code permits the elimination of FSDs in ducts penetrating corridors
   serving as a means of egress in the exception listed in section 713.10.2 and 713.11.2. That
   exception states “Openings for steel ducts penetrating the required fire-resistive construction
   of corridors are not required to have dampers when such ducts are of not less than 0.019-
   inch (0.48mm) thickness (No. 26 galvanized sheet steel gage) and have no openings serving
   the corridor.” We request permitting this exception to apply to the ducts that penetrate the
   demising wall between apartments.

3. Reason for Alternate
   An FSD is not required in these ducts to limit the passage of smoke or maintain the fire
   resistance of the construction. This is confirmed by the exception permitted in the code for
   ducts crossing corridors serving as a means of egress.

4. Decision by Administrative Staff 2/5/03
   Toilet exhaust duct penetrations: **Granted as proposed.**
Administrative Appeal Action
Bureau of Development Services

Appeal Number B-13

Owner: Gerding/Edlen Development
Appellant: Judd Janes, 503-699-4571 FAX: 503-635-5395
Plan Reviewer: Ben Howell
Permit Number: 02-156246-CO
Stories/Occ/Type: 10 / B, M, R-1 / II-IR
RE: Erection of a new structure
Proposed Use: Retail, Office, Residential - Broadway Housing
Project Address: 625 SW Jackson St

1. BUILDING CODE SECTION: OSSC 1006.3.3.1 Exterior Exit Stairs – General, and 1006.3.3.3 Protection of Exterior Wall Openings.

BUILDING REGULATION REQUIREMENT

OSSC Section 1006.3.3.1 requires that “an exterior exit stairway is open on not less than 2 adjacent sides, except for required structural columns and open-type handrails”. Section 1006.3.3.3 requires that “all openings in an exterior wall within 10’, measured horizontally, of an exterior exit stairway shall be protected by fire assemblies having 45-minute protection rating.”

BUILDING PROPOSED DESIGN

The structural design of the exterior stairway requires concrete pier walls on both east and west sides of the concrete landings to support both landings, and pre-cast concrete stairs. (See attached plan – S5.10). The openings are adjacent on two sides less required structural piers. The openings are protected by wire-mesh assembly instead of guardrails.

The south wall of the stair is enclosed with concrete masonry units, which separates the stair opening from the nearest exterior wall opening by approximately 18’ measured horizontally. See attached plan – A2.03.
REASON FOR ALTERNATE

The pier walls that separate the adjacent openings of the stair act as columns, and therefore meet the intent of the code.

Our interpretation of the code that requires 10’ horizontal separation between openings in exterior wall and stair opening is met by enclosing rear wall of stair. The wall of the stair is continuous from ground level to the roof, and meets the intent of the code by providing adequate separation between apartment windows and stair opening.

2. BUILDING CODE SECTION: OSSC Section 1005.3.4.4 Openings and Penetrations. New Submittal.

BUILDING REGULATION REQUIREMENT

OSSC Section 1005.3.4.4 requires that “openings into exit passageways shall be limited to those necessary for egress for normally occupied spaces”, and “shall be not less than 90 minutes where 2-hour construction is required”.

BUILDING PROPOSED DESIGN

The electrical utility room adjacent to the 2-hour stair egress corridor requires two exits. One exit discharges directly to the outside of the building, and the other discharges into the corridor. The exit into the corridor is required because electrical life safety code requires two exits, and that they be separated by more than half the diagonal length of the room. We propose a 90-minute door assembly for the exit door. See attached plan – A2.01.

REASON FOR ALTERNATE

Our interpretation is that the life safety of the “occupants” in the electrical room require the additional exit into the corridor. The limitations of the structural design (shear walls), and functional design (electrical and fire control room layout), require the exit door be located into the corridor. Providing a 90-minute door meets the intent of the code.
3. BUILDING CODE SECTION: OSSC Section 504 Allowable Floor Areas. New Submittal

BUILDING REGULATION REQUIREMENT

OSSC Section 504.3 requires that “the area of the building shall be such that the sum of the ratios of the actual area for each separate occupancy divided by the total allowable area for each separate occupancy shall not exceed one”.

BUILDING PROPOSED DESIGN

The proposed mixed occupancy building design, which is type II-FR construction, exceeds the allowable occupancy area ratio. See attached tabulation.

REASON FOR ALTERNATE

We request approval of our appeal based on the following:
1. The amount exceeded (1.14) is only slightly over the allowable area ratio (1.00 allowed).
2. The building is fully sprinklered.
3. The Type II-FR construction is nearly equal to Type I-FR construction which allows unlimited area.

The Administrative Staff reviewed the appeal, and the following decision was reached:

1. Classification of north stair as exterior stair: Granted as proposed.

2. Exit from electrical room at exit enclosure: Denied. Proposal does not provide equivalent safety to code requirements.

3. Allowable building area: Denied as proposed. Proposal does not provide equivalent safety to code requirements.
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<th>Allowable Areas for Each Proposed Occupancy:</th>
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<th>R-1 Occupancy:</th>
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STRUCTURAL PIER & NORTH STAIR REQUIRED BETWEEN ADJACENT OPENINGS.
Administrative Appeal Action
Bureau of Development Services

Appeal Number B-21
Reconsideration of 2-05-03, B-8, due to appellant resubmittal.

Owner: Gerding/Edlen Development
Appellant: Judd Janes, 503-699-4571 FAX: 503-635-5395
Plan Reviewer: Ben Howell
Permit Number: 02-156246-CO
Stories/Occ/Type: 10 / B, M, R-1 / II-FR
RE: Erection of a new structure
Proposed Use: Retail, Office, Residential
Project Address: 625 SW Jackson St (formerly 626 SW College St)

1. BUILDING CODE SECTION: 603.3.2

BUILDING REGULATION REQUIREMENT

All openings in exterior walls shall conform to the requirements in Section 503.2 and Table 5-A. Openings less than 20 feet from property line shall be protected by fire assembly having at least three-fourths-hour rating.

BUILDING PROPOSED DESIGN

The east wing of the building facing north along the alley lies approximately 16' from the adjacent property line. In lieu of providing 45 minute rated fixed-glass windows at the affected apartment units (72 on floors 3 through 10); we propose operable windows with additional sprinkler coverage at interior of units to provide protective water curtain. On the ground and second floors we propose non-rated fixed glass windows with additional sprinkler coverage on the interior.

We also propose to provide additional interior sprinkler coverage at the large emergency generator louver vent located on the ground floor in lieu of a fire damper.
REASON FOR ALTERNATE

The apartment units require operable windows for livability and passive mechanical/ventilation system requirements. The windows are of non-combustible construction, and are within only 4 feet of code limit allowing non-rated assembly. The existing single story building on the adjacent property is setback over 48' from property line which allows a 64' separation between existing and proposed structures. See attached site plan and rendering.

Regarding the generator louver, it is critical that the vent remain open during a fire event so that the generator can provide emergency power. The additional interior sprinkler coverage will provide adequate protection at the opening.

**Staff decision 2-5-03: Granted Provided** the building is sprinklered per the Fire Marshal’s Office, and openings are a minimum of 10' above adjacent roof or parking surface. Openings are to have additional sprinkler protection provided as required by the Fire marshals's Office. Louvered opening for generator ventilation may be installed as proposed, with additional sprinkler protection per the Fire Marshal’s Office.

**Reason for Resubmitting Appeal:** We request that the glazing located between grids 8.5 and 10.5 on the ground and second floor lobby be considered part of the non-rated assembly. The two floor curtainwall design extends approximately 27' above grade at alley. We propose to protect the entire opening with sprinkler coverage on the interior. This method of protection is consistent with the previously approved appeal for openings, and meets the intent of the code. See attached plan A3.04.

We also request that the louvers located between grids 5.5 and 6.6 at the water room be considered part of the non-rated assembly. The exhaust louvers are located 10' above grade at the alley. We propose to protect the openings with sprinkler coverage on the interior, which is consistent with the previously approved appeal, and meets the intent of the code. See attached plan – A3.04.
2. BUILDING CODE SECTION: 403.7 and 1004.3.4.5

BUILDING REGULATION REQUIREMENT

Section 403.7 requires elevators to open into elevator lobbies which are separated from the remainder of the building as required for rated corridor construction. Section 1004.3.4.5 requires that a lobby be provided which separates elevators from rated corridors. The construction for the separation is required to be compatible to rated corridor construction (one-hour rated walls with 20 minute doors and other openings rated at 45 minutes).

BUILDING PROPOSED DESIGN

The proposed design described below is very similar to the design for Brewery Blocks 3 and 5. The Building Code Board of Appeals unanimously granted the appeal for the Brewery Blocks 3 and 5 on 12/12/02. This appeal includes the additional stipulations the board required for that appeal.

The design proposes to provide elevator hoistway pressurization rather than smoke resistive separation at the lobbies. The system will consist of a fan injecting outside air into each elevator hoistway. The pressurization system will be designed to maintain a minimum pressure of 0.05 inches of water column with either of the fans operating. A smoke detector is provided on each elevator landing to initiate elevator recall.

Upon activation of any of the following:
1. Elevator landing smoke detector.
2. Sprinkler water flow.
3. Any corridor smoke detector.

The elevator hoistway vent will close and the elevator hoistway pressurization system will begin operation. A smoke detector will be provided at the top of each elevator shaft. If the first alarm received is from the top of the elevator shaft, the hoistway vent will open, but the pressurization fans will not operate. Upon an elevator shaft pressurization signal, both hoistway pressurization fans will operate. The hoistway pressurization system will provide net positive pressure in the shaft in excess of 0.05 inches of water column, with respect to the fire floor.
In addition, the system will have the following features/constraints:

1. Each fan will have a multiple-belt connection to increase reliability.

2. The fans will be subject to regular tests in accordance with the smoke control system requirements.

3. The hoistway fans will be treated as part of the smoke control system for the building, and will be designed in accordance with the requirements of Section 905 of the Oregon Structural Specialty Code.

4. The fans will be inspected and tested during the commissioning of the system to confirm adequate pressure differentials are provided.

5. The pressurization system to be provided with emergency power from the on-site emergency generator, and activated by the building alarm system.

6. The building is provided with full sprinkler protection, and a smoke control system on each floor.

7. The building Life Safety Summary will incorporate the conditions of activation and it will be reviewed with the Fire Marshal's Office to make sure that there is a full understanding and approval from the Fire Marshal's Office and from the Bureau of Development Services regarding the operation and testing of the pressurization system. A preliminary meeting was held on January 28, 2003 to review these items.
REASON FOR ALTERNATE

This alternate provides a level of safety equivalent to, or in excess of that specified in the Code. It is being requested, because closing off the minimal elevator lobbies would significantly impact the design presentation of the space, and corridor system.

One of the key reasons for the elevator vestibule separation is to prevent smoke from using the shaft as an avenue of smoke spread. Using pressure differentials to accomplish this end is a well-documented approach to providing elevator hoistway smoke separation. This is to prevent smoke from getting into the hoistway. NFPA 92A recognizes pressure differentials and elevator hoistway pressurization is an acceptable method of controlling smoke. This point is also illustrated in the book “The Design of Smoke Management Systems” by John H. Kloe and James A. Milke. If a sufficient pressure difference across a barrier can be maintained, the migration of smoke across the barrier can be prevented.

In addition to an elevator pressurization system, this building will also have a stair pressurization system and a floor pressurization system to control the flow of smoke in the building. The floor pressurization system will use the pressure sandwich approach to maintain a tenable environment in the egress corridors on the floors without an event.

To prevent infiltration of smoke through the elevator shaft, it is important to discuss system reliability. In many ways, a fan pressurization system can provide a more reliable separation than a physical separation relying on doors. Frequently, doors can get blocked open, fall out of alignment, or fall prey to any number of mechanical problems. The fan systems being proposed will be located in a protected environment. They will not be available for general occupant use, adjustment or operation. They will be supervised and subjected to regular tests as required for components under the smoke control system provisions. These provisions also require features such as emergency power supply, positive status verification, original systems commissioning verification and special inspections. Because there are fewer components to the system, and those components are in a protected environment and supervised, they should provide a system that is as reliable, if not more reliable, than a series of doors on each level with their associated door closers, latches and releases.
In summary, the Code requires elevator lobbies to protect the corridor environment, and prevent smoke from traveling to other floors of the building via the elevator shaft. The proposed design meets the intent of the Code.

3. **BUILDING CODE SECTION:** 1005.3.4.6

**BUILDING REGULATION REQUIREMENT**

Dead Ends: Corridors may have dead ends provided any dead end portion of a corridor does not exceed 20 feet in length.

**BUILDING PROPOSED DESIGN**

The proposed design has dead end corridors in excess of 20 feet in length, but do not exceed 25 feet in length. Windows are located at all dead end corridors, and the exit path is clearly marked.

**REASON FOR ALTERNATE**

In order to provide doors to end apartment units, it requires extending the corridor slightly beyond the 20 foot limit. See attached typical floor plan.

4. **BUILDING CODE SECTION:** Oregon State Structural Specialties Code Section 709.6 Through Penetrations and 713.11 Fire Dampers.

**BUILDING REGULATION REQUIREMENT**

Oregon State Structural Specialties Code Section 709.6 Through Penetrations and 713.11.1 Fire Dampers require fire dampers in ducted openings at penetrations of rated occupancy separation walls.
BUILDING PROPOSED DESIGN

The building design includes toilet exhaust ducts that penetrate the demising wall between two studio apartments to reach a vertical shaft. These ducts will be specified to be not less than 26 gauge galvanized sheet metal and will have no openings between the apartment they serve and the vertical shaft. We propose to eliminate the fire dampers at this wall penetration. The code permits the elimination of fire dampers in ducts penetrating corridors serving as a means of egress in the exception listed in section 713.11.2. That exception states “openings for steel ducts penetrating the required fire-resistive construction of corridors are not required to have dampers when such ducts are of not less than 0.019-inch (0.48mm) thickness (No. 26 galvanized sheet steel gage) and have no openings serving the corridor.” We request permitting this exception to apply to the ducts that penetrate the demising wall between apartments.

REASON FOR ALTERNATE

A fire damper is not required in these ducts to limit the passage of fire or maintain the fire resistance of the construction. This is confirmed by the exception permitted in the code for ducts crossing corridors serving as a means of egress.

The Administrative Staff reviewed the appeal, and the following decision was reached:

1. Openings within 20’ feet of property line: **Denied.** The Board does not believe the design provides any additional safety over previous submittals. If the appellant wishes to pursue this matter, the appellant may request a hearing before the Building Code Board of Appeals by contacting the Appeals Secretary at 503-823-7335.

2. Pressurized elevator shafts: **See appeal dated 2-5-03, B-8.**

3. Dead-end corridor: **See appeal dated 2-5-03, B-8.**

4. Toilet exhaust duct penetrations: **See appeal dated 2-5-03, B-8.**
NORTH STAIR

- OPEN ON 2 ADJACENT SIDES LESS STRUCTURAL PLECS.
- OVER 10° HORIZONTALLY FROM EXTERNAL WINDOW PENWELL.
STRUCTURAL PIER & NORTH STAIR REQUIRED BETWEEN ADJACENT OPENINGS.
Administrative Appeal Action
Bureau of Development Services

Appeal Number B-19

Owner: Gerding/Edlen Development
Appellant: Judd Janes, 503-699-4571 FAX: 503-635-5395
Plan Reviewer: Darrel Ferchland/Ben Howell
Permit Number: 02-156246-CO
Stories/Occ/Type: 10 / B, M, R-1 / II-FR
RE: Erection of a new structure
Proposed Use: Retail/Office/Residential - Broadway Housing
Project Address: 625 SW Jackson St

1. BUILDING CODE SECTION: NFPA 22 3-7.3

BUILDING REGULATION REQUIREMENT

A second access hatch is required for the secondary water supply storage tank.

BUILDING PROPOSED DESIGN

The proposed 7500 gallon secondary water tank is located below the main water room, and fire control room on the first floor. The size is 23'(L) x 9'(W) x 5'(D). It will be formed out of concrete and lies above the structural mat foundation and adjacent to the main building structural shear wall. The top of the tank will be a CIP concrete topping slab over steel deck construction. The top of the tank is essentially the floor area of the water room and fire control room.

REASON FOR ALTERNATE

We propose a double hatch (approximately 48" x 48") instead of two separate hatches. The reason is the limited floor space available. See attached drawings showing equipment layout.

The Administrative Staff reviewed the appeal, and the following decision was reached:

1. Access to water tank: Granted as proposed.
18.0 Floor Plans (By OTAK)


### GENERAL INFORMATION

**PROJECT DESCRIPTION:** 364-HOUSING UNITS, RETAIL, OFFICE AND SERVICE SPACES

**PROJECT ADDRESS:** 364 S. 15TH ST, REDDING, CA 96001

**LEGAL DESCRIPTION:**
- 3640 PORTLAND, LOT 6, BLOCK 132, TAK 116
- 3640 PORTLAND, LOT 7, BLOCK 132, TAK 116
- 3640 PORTLAND, LOT 8, BLOCK 132, TAK 116
- 3640 PORTLAND, LOT 9, BLOCK 132, TAK 116
- 3640 PORTLAND, LOT 10, BLOCK 132, TAK 116
- 3640 PORTLAND, LOT 11, BLOCK 132, TAK 116

**BUILDING LIMITATIONS PER OICC**

#### BUILDING OCCUPANCY

<table>
<thead>
<tr>
<th>Building Height</th>
<th>Per OICC Table 5-10 and Zoning Map 2013-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Stories</td>
<td>Per OICC Table 5-4</td>
</tr>
</tbody>
</table>

#### ZONING INFORMATION

**TYPE OF ZONING:** CITY OF PORTLAND ZONING CODE

- **OCCUPANCY LIMITATIONS:**
  - **175 FLOOR AREA PER OCCUPANCY:**
    - OFFICE: 2500 SF
    - RETAIL: 5000 SF
    - WAREHOUSE: 7500 SF
    - MANUFACTURING: 10,000 SF

#### STRUCTURAL ENGINEERING DESIGN CRITERIA

**SEISMIC ZONE:** 3

**WIND LOAD:** 50 MPH EXPOSURE B

#### ADMINISTRATIVE APPEALS

**APPEAL NO:** B-9 GRANTED 02 20 03

1. 603.3.2 PROTECTED OPENINGS LESS THAN 30 FEET FROM PROPERTY LINE
2. 603.7 AND 604.3.6.6 ELAVATORS OPEN INTO ELEVATOR LOBBIES
3. 1009.4.6 DEAD-END CORRIDOR LENGTH
4. 708.6 AND 713.11 THROUGH-FEATURING AND FIRE DRAPERS

**APPEAL NO:** B-13 GRANTED 03 30 03

1. 1026.3.1 AND 1683.3.3 OPEN EXTERIOR EXIT STAIR

**APPEAL NO:** B-10 GRANTED 06 30 03

1. NFPA 30.1.1 AND 30.3.1 ACCESS HATCH AT SECONDARY WATER TANK

### BUILDING OCCUPANCY

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>ALLOWED</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE</td>
<td>2500 SF</td>
<td>2500 SF</td>
</tr>
<tr>
<td>RETAIL</td>
<td>5000 SF</td>
<td>5000 SF</td>
</tr>
<tr>
<td>WAREHOUSE</td>
<td>7500 SF</td>
<td>7500 SF</td>
</tr>
<tr>
<td>MANUFACTURING</td>
<td>10,000 SF</td>
<td>10,000 SF</td>
</tr>
</tbody>
</table>

#### BUILDING LIMITATIONS PER OICC CHAPTER 5

- **TYPE OF OCCUPANCY:** 175 FLOOR AREA
- **175 FLOOR AREA PER OCCUPANCY:**
  - OFFICE: 2500 SF
  - RETAIL: 5000 SF
  - WAREHOUSE: 7500 SF
  - MANUFACTURING: 10,000 SF

#### BUILDING "ALLOWABLE" AREA PER OICC CHAPTER 5

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>ALLOWED (SF)</th>
<th>PROPOSED (SF)</th>
<th>OCCUPANCY</th>
<th>OCCUPANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE</td>
<td>2500</td>
<td>2500</td>
<td>RETAIL</td>
<td>5000</td>
</tr>
<tr>
<td>WAREHOUSE</td>
<td>7500</td>
<td>7500</td>
<td>MANUFACTURING</td>
<td>10,000</td>
</tr>
</tbody>
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#### BUILDING CONSTRUCTION TYPE PER OICC CHAPTER 6

<table>
<thead>
<tr>
<th>FIRE PROTECTION REQUIREMENTS</th>
<th>RATING</th>
<th>RATING PROVIDED</th>
<th>ASSEMBLY RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEARING WALLS - EXTERIOR</td>
<td>4 HOURS</td>
<td>4 HOURS</td>
<td>4 HOURS</td>
</tr>
<tr>
<td>HEATING WALLS - EXTERIOR</td>
<td>4 HOURS</td>
<td>4 HOURS</td>
<td>4 HOURS</td>
</tr>
<tr>
<td>STRUCTURAL FRAMES</td>
<td>2 HRS</td>
<td>2 HRS</td>
<td>2 HRS</td>
</tr>
<tr>
<td>SHAFT ENCLOSURES</td>
<td>2 HRS</td>
<td>2 HRS</td>
<td>2 HRS</td>
</tr>
<tr>
<td>EXTERIOR DOORS AND WINDOWS</td>
<td>2 HRS</td>
<td>2 HRS</td>
<td>2 HRS</td>
</tr>
<tr>
<td>STAIRWAYS EXTERIOR</td>
<td>2 HRS</td>
<td>2 HRS</td>
<td>2 HRS</td>
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</table>
### BUILDING FIRE DETECTION AND SUPPRESSION PER OSSL C H A P T E R 9

#### AUTOMATIC SPRINKLER SYSTEM

<table>
<thead>
<tr>
<th>REQUIRED</th>
<th>PROVIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER 403.2</td>
<td></td>
</tr>
</tbody>
</table>

**TYPE CLASSROOMS OF COVERAGE**

- YES - UBC STANDARD 5.5-1 AND NFPA 13
- EACH FLOOR INDIVIDUALLY ZONED
- SHUT OFF EACH FLOOR

**STANDPIPE SYSTEM**

<table>
<thead>
<tr>
<th>PER 405.1 AND TABLE 3.A</th>
<th>YES PER NFPA 14 AND FIRE MARSHAL</th>
</tr>
</thead>
</table>

**SMOKE DETECTION SYSTEM:**

<table>
<thead>
<tr>
<th>PER 403.2</th>
<th>YES</th>
</tr>
</thead>
</table>

**SMOKE CONTROL SYSTEM:**

<table>
<thead>
<tr>
<th>PER 403.2</th>
<th>403.7 - ELEVATOR RM 1956 - SMOKE CONTROL 1035 3.7 - STAIR</th>
</tr>
</thead>
</table>

**FIREFIGHTING SYSTEMS**

- OSSC 403.5/ S4.6 |
- AS REQUIRED BY FIRE MARSHAL |
- AS REQUIRED BY FIRE MARSHAL |

**FIRE PUMPS:**

- PER TABLE 3.A |
- YES PER NFPA 20 AND FIRE MARSHAL |

**WATER STORAGE:**

- PER 403.2 |
- YES |

### BUILDING EXITING PER OSSL C H A P T E R 10

#### BUILDING EXITING PER OSSL C H A P T E R 10

<table>
<thead>
<tr>
<th>NO. OF EXITS</th>
<th>REQUIRED</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st FLOOR</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2nd FLOOR</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3rd FLOOR</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4th FLOOR</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ROOF</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ELEVATOR MACHINE ROOM AND BOILER ROOM</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**ACCESSIBILITY REQUIREMENTS PER OSSL C H A P T E R 11**

- BUILDINGS DESIGNED TO COMPLY WITH OSSL CHAPTER 11 AND FARM HOUSE ACT 85 LUMBS TO BE FULLY ACCESSIBLE. 400 LUMBS REQUIRED BY OSSL TO BE ACCESSIBLE. HOWEVER, OWNER REQUEST 18 ACCESSIBLE LUMBS. REFER PLANS FOR LOCATIONS.

#### OCCUPANCY VENTILATION REQUIREMENTS PER OSSL C H A P T E R 12

- DWELLING UNITS ARE PROVIDED WITH NATURAL VENTILATION BY OPENABLE WINDOWS WITH OPEN AREA NOT LESS THAN 1/20TH OF THE FLOOR AREA SERVED.

<table>
<thead>
<tr>
<th>UNIT LIVING AREA</th>
<th>OPERABLE WINDOW AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 189</td>
<td>189/2 = 0.42</td>
</tr>
<tr>
<td>B 185</td>
<td>185/2 = 0.63</td>
</tr>
<tr>
<td>C 200</td>
<td>200/2 = 10.00</td>
</tr>
<tr>
<td>D 189</td>
<td>189/2 = 0.42</td>
</tr>
</tbody>
</table>

### ENERGY CODE REQUIREMENTS PER OSSL C H A P T E R 13

<table>
<thead>
<tr>
<th>MAX ALLOWABLE WINDOW AREA:</th>
<th>NO LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINDOW CLASS: OPERABLE FIXED</td>
<td></td>
</tr>
<tr>
<td>FROZEN</td>
<td>U = 0.64, SC = 0.07</td>
</tr>
<tr>
<td>EXTERIOR DOORS</td>
<td>U = 0.30</td>
</tr>
<tr>
<td>WALL INSULATION</td>
<td>R-15</td>
</tr>
<tr>
<td>MASONRY CONCRETE W/ INT INSUL.</td>
<td>R-15</td>
</tr>
<tr>
<td>UNDER FLOOR INSULATION</td>
<td>R-15</td>
</tr>
<tr>
<td>SLAB FLOOR EDGE INSULATION</td>
<td>R-15</td>
</tr>
<tr>
<td>ROOFS</td>
<td>R-15</td>
</tr>
<tr>
<td>FORCED AIR DUCT INSULATION</td>
<td>R-5 AND R-8 Varies - REFER TO MECHANICAL SPECIFICATIONS</td>
</tr>
<tr>
<td>PIPE INSULATION</td>
<td>THICKNESS VARIES - REFER TO MECHANICAL AND PLUMBING SPECIFICATIONS</td>
</tr>
</tbody>
</table>
GENERAL NOTES
1. PREPARE SHEET C82.32 FOR OCCUPANT LOAD INFORMATION.
2. DOOR RATING:
   2-HOUR EXIT WALL = 60 MIN. DOOR
   1-HOUR OCCUPANCY SEPARATION = 80 MIN. DOOR
   1-HOUR CORRIDOR SEPARATION = 120 MIN. DOOR

FIRE SAFETY LEGEND
- EMERGENCY EXPRESS PATH
- UNLESS NOTED OTHERWISE
- STAIRS, HALLWAY EXPRESS PATH SHALL BE 60MIN.
- 1HR RATED OCCUPANCY SEPARATION = 60 MIN. DOOR
- 2HR RATED WALL = 90 MIN. DOOR
- 2HR RATED EXTERIOR WALL = 60 MIN. DOOR
- EXIT BOX
- FIRE EXTINGUISHER / GAGES
- FIRE PANEL
- KNOB BOX FOR CONTROLLED KEY ACCESS
- OLF OCCUPANT LOAD FACTOR
- OCCLD OCCUPANT LOAD
- UNIT ON SPACE NAME WITH
- ROOM NAME
- AREA: 1000 SF
- OCC LD = 3
- SPAN AREA OCCUPANT LOAD FACTOR
- OCCUPANT LOAD
- 3RD - 10TH FLOORS - 20 OCC LD, TYP.