2100 POWELL

Welcome to 2100 Powell!

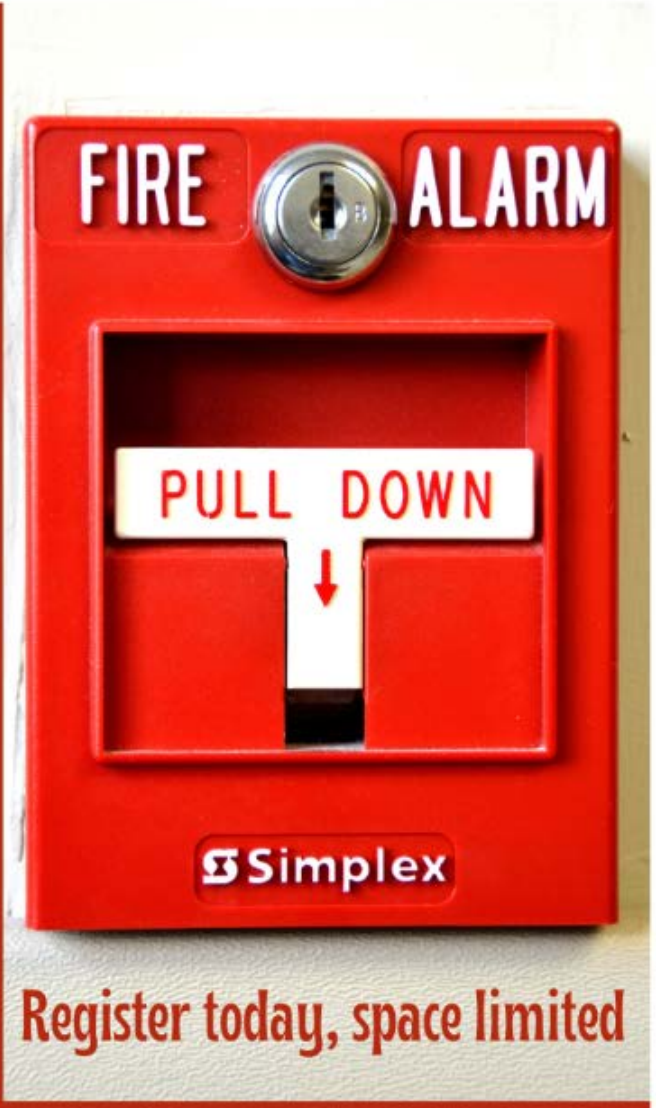
Backpack to Briefcase: Fire Life Safety Systems

Join the Chief Engineer and Fire Life Safety Director at 2100 Powell Street for a special education session covering various aspects of Fire Life Safety in a Hi-Rise office building. Discussion will include code requirements for testing, inspection and maintenance of fire alarm and sprinkler systems, as well as emergency plans, evacuation and relocation procedures.

You'll tour the facility's Fire Control Center, Fire Pump Room and Generators. After the tour, enjoy appetizers and beverages with your fellow attendees.

Thank you to our Partner Sponsor

METCON



Register today, space limited

BOMA Oakland/East Bay

Thursday, April 25, 2024

2100 Powell, Emeryville
3:00 - 5:00 PM

Toby Ludwick – Chief Engineer - CBRE

Code Compliance

- The California Fire Code (CFC) contains regulations consistent with nationally recognized and accepted practices for safeguarding life and property from the hazards of:
- Fire and explosion.
- Dangerous conditions arising from the storage, handling, and use of hazardous materials and devices.
- Hazardous conditions in the use or occupancy of buildings or premises.
- The CFC also contains provisions to assist emergency response personnel. These fire-safety-related building standards are referenced in other parts of Title 24.
- It's a fully integrated code based on the 2021 International Fire Code®.

Pertinent Fire Standards

National Fire Protection Association (NFPA)

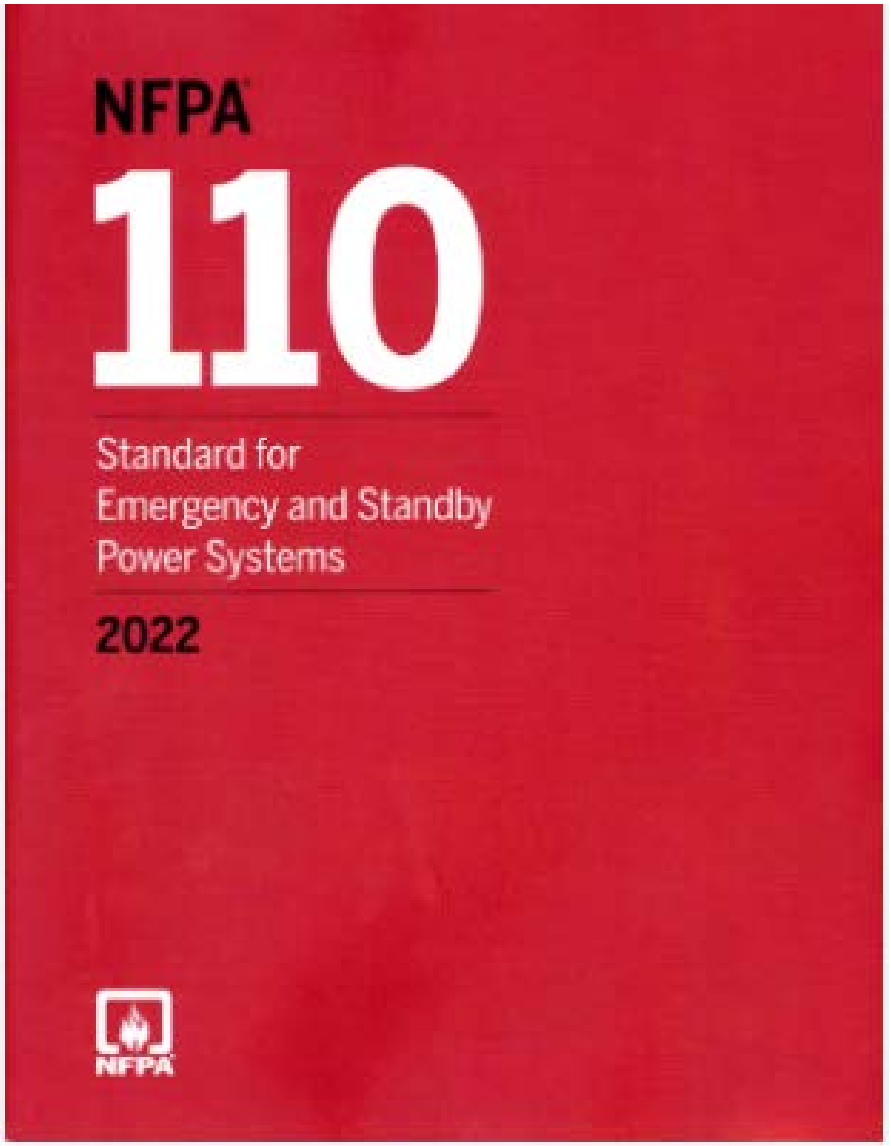
- **NFPA 10** - Portable Fire Extinguishers: Fire extinguishers are inspected monthly by engineering staff and serviced annually by a third-party vendor
- **NFPA 25** - Water-based Fire Protection: Fire Pump Testing, Fire Hydrant, Water Tank, Wet and Dry Standpipe Inspection and Testing at various intervals
- **NFPA 30** – Flammable and Combustible Liquids: Flammable materials (paints, solvents, etc.) are properly stored inside an FM-approved flammable liquid safety cabinet
- **NFPA 72** – Fire Alarm and Signaling: Fire alarm system is tested by a third-party vendor per NFPA, test results documented and deficiencies corrected
- **NFPA 80** – Fire dampers, smoke dampers, and combination fire/smoke dampers are inspected and tested one year after installation and every 4 years thereafter or as required by the authority having jurisdiction (AHJ).
- **NFPA 92** - Smoke control systems, including stairway pressurization and lobby smoke evacuation, are tested at least semi-annually or more frequently as required by local ordinance or AHJ.

NFPA®

Pertinent Fire Standards

National Fire Protection Association (NFPA)

- **NFPA 110** – Standard for Emergency and Standby Power Systems: Emergency generators are run under building emergency load for at least 30 minutes monthly (at a minimum). All Automatic Transfer Switches are tested monthly under load. Proper documentation is maintained.



Applicable Certifications:

- Fire Safety Director Certification
- Administered by SFFD and Local 39
- 9 week course with retired SFFD Fire Captain, 27 hours total with a term paper due at completion
- Certificate needs to be renewed every 5 years by attending 3 hour course

SAN FRANCISCO FIRE DEPARTMENT
and
I.U.O.E., LOCAL 39 STATIONARY ENGINEERS

Certificate of Competence

THIS IS TO CERTIFY THAT

Toby D. Ludwick

WAS RECERTIFIED AS A

FIRE SAFETY DIRECTOR

ON THE 19th DAY OF SEPTEMBER 2019.

As per the San Francisco Fire Code, Section 404.2
and is properly certified within the meaning of the California Code of Regulations,
Title 19, Section 3.09 (This certificate does not exclusively recommend the bearer.)
Certification expiration date: SEPTEMBER 19, 2024

Bart Florence
Business Manager

Jeanine Nicholson, Chief of Department
San Francisco Fire Department

Applicable Certifications:

- Fire Pump Test Certificate
- Administered by CA OSFM in accordance with Title 19 CCR
- Certificate needs to be renewed annually
- Authorizes certificate holder to operate and test fire pumps
- Together with a Type-L License which is held by the building owner, this cert allows for in-house testing of fire pumps

Fire Pump Test Certificate

TOBY LUDWICK

Having achieved a passing score on the fire pump test exam,
is hereby authorized by the

Office of the State Fire Marshal

To conduct

FIRE PUMP TESTS

In accordance with Title 19 of the California Code of Regulations.

LICENSE#: [redacted] **EXPIRES:** **December 31, 2024**

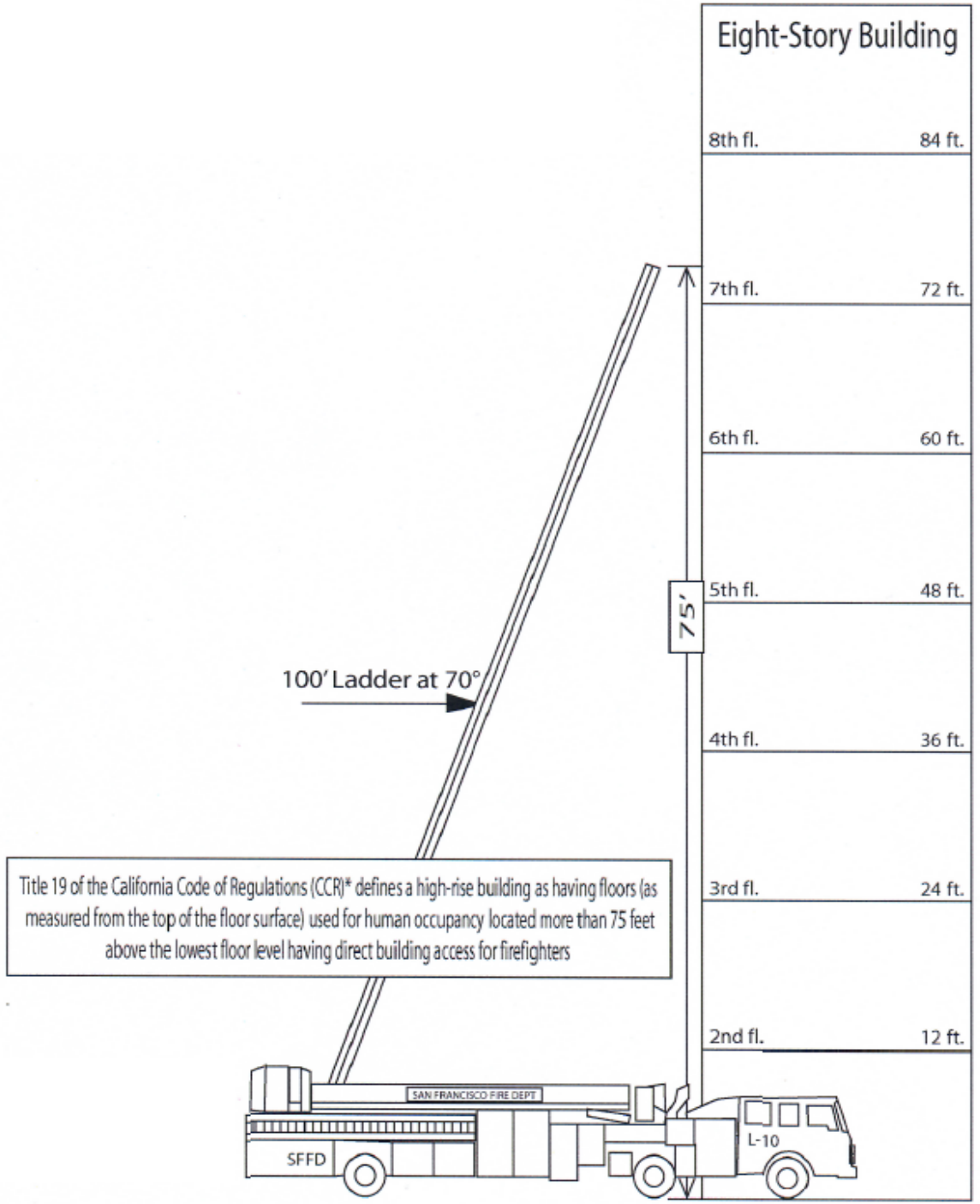
CAL FIRE – OFFICE OF THE STATE FIRE MARSHAL

11/29/2023

AES FP CERT 09/2016 REV.

Typical Hi-Rise Building Attributes

- 8 stories or over 75 feet tall
- Reinforced Concrete & Steel Construction
- 4 hour Fire Rated Stairwells
- Fire Rated Construction of key walls, doors and ceilings
- Emergency Generator
- Fire Alarm System
- Sprinkler System
- Most likely requires relocation instead of full evacuation

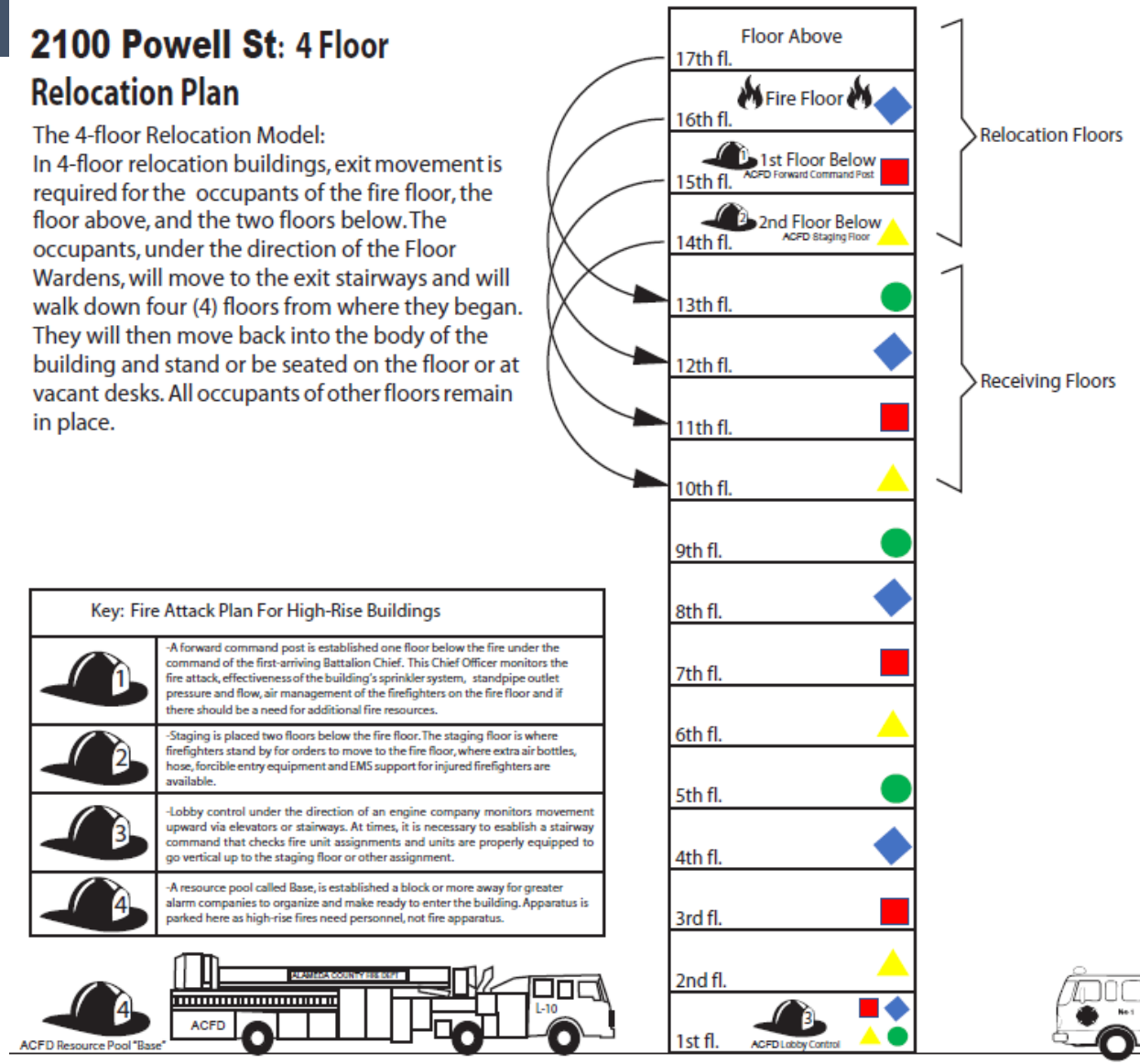


Relocation and Evacuation

- Relocation is generally required for buildings over 7 stories as it would take too long to safely evacuate occupants from the upper floors of a hi-rise building all the way to the street.
- Relocation allows building occupants to clear the stairwells to make way for the Fire Department who will make use of the stairwells, as well as elevators (if viable) to conduct search, rescue and fire-fighting operations.
- Occupants are not to use elevators for relocation or evacuation.
- 4-hour fire-rated, pressurized and ventilated stairwells are one of the safest areas of the building.
- Occupants of the 6th floor and below evacuate to the designated refuge area.

2100 Powell St: 4 Floor Relocation Plan

The 4-floor Relocation Model:
In 4-floor relocation buildings, exit movement is required for the occupants of the fire floor, the floor above, and the two floors below. The occupants, under the direction of the Floor Wardens, will move to the exit stairways and will walk down four (4) floors from where they began. They will then move back into the body of the building and stand or be seated on the floor or at vacant desks. All occupants of other floors remain in place.



Key: Fire Attack Plan For High-Rise Buildings	
1	-A forward command post is established one floor below the fire under the command of the first-arriving Battalion Chief. This Chief Officer monitors the fire attack, effectiveness of the building's sprinkler system, standpipe outlet pressure and flow, air management of the firefighters on the fire floor and if there should be a need for additional fire resources.
2	-Staging is placed two floors below the fire floor. The staging floor is where firefighters stand by for orders to move to the fire floor, where extra air bottles, hose, forcible entry equipment and EMS support for injured firefighters are available.
3	-Lobby control under the direction of an engine company monitors movement upward via elevators or stairways. At times, it is necessary to esablish a stairway command that checks fire unit assignments and units are properly equipped to go vertical up to the staging floor or other assignment.
4	-A resource pool called Base, is established a block or more away for greater alarm companies to organize and make ready to enter the building. Apparatus is parked here as high-rise fires need personnel, not fire apparatus.

Title 19 of the California Code of Regulations (CCR)* defines a high-rise building as having floors (as measured from the top of the floor surface) used for human occupancy located more than 75 feet above the lowest floor level having direct building access for firefighters

Relocation Symbols

- 7th through 16th floors: Occupants Relocate 4 floors down and wait for further announcements.
- 6th floor and below – Evacuate to designated Relocation area.
- Stairwells are marked with relocation symbols to help occupants identify their relocation floor during drills and emergencies.
- **Through our Floor Warden Training curriculum, building occupants are trained to proceed down the stairwell, single file, on the right side to make room for firefighters who may be coming up on the left.**

RELOCATION MATRIX

Floor	Relocate to	Symbol
16	12	
15	11	
14	10	
13	9	
12	8	
11	7	
10	6	
9	5	
8	4	
7	3	
6	Exit Building	
5	Exit Building	
4	Exit Building	
3	Exit Building	
2	Exit Building	
G	Exit Building	

Evacuation Area

- Occupants of the 6th floor and below are directed to evacuate to the safe refuge area away from the building in the event of a fire.
- Occupants may also be asked to evacuate for other emergency scenarios depending on the circumstances.
- The public address system allows important information to be broadcast to occupants

EXTERIOR REFUGE MAP

2100 Powell Street, Emeryville, CA 94608

N

Not to Scale

INFORMATION
In the event of a bomb threat or other emergency situation that requires you to evacuate the building, primary and alternate assemble areas have been established. You are advised to report to the pre-determined assembly area for information and accountability purposes.
Stay at least 300 feet away from danger and have a secondary path to safety.
ASSUME ALL ALARMS ARE REAL. NEVER RE-ENTER THE BUILDING UNTIL THE "ALL CLEAR" HAS BEEN GIVEN BY BUILDING PERSONNEL

NOTIFICATIONS	
WHOOP	ALARM SOUNDS LIKE
FLASHING STROBE	ALARM LOOKS LIKE
911	FIRE DEPARTMENT & POLICE

1) ALERT OTHERS CALMLY BUT FIRMLY TO EVACUATE THE FLOOR IMMEDIATELY
2) DIRECT OTHERS AWAY FROM DANGER AND ACTIVATE FIRE ALARM
3) CLOSE (DO NOT LOCK) DOORS AS YOU EVACUATE TO CONTAIN SMOKE AND FIRE
4) EVACUATE IMMEDIATELY AND CALL 911
5) MOVE QUICKLY AND CALMLY (DO NOT RUN) TO YOUR DESIGNATED SAFE REFUGE AREA

Fire Control Center

- AKA ‘FCC Room’
- Control Center for Emergency Response
- Information and Operation of Critical Systems during an Emergency
- Fire Dept and Building Fire Safety Director “Command Center”

Fire Alarm Initiation Devices

- Will activate alarm on four floors (Floor of event, one floor above and two floors below).
- Smoke Detectors are sensitive to smoke, dust or particulates.
- Manual Pull Stations are located next to each stairwell, and in the main building lobby.
- Waterflow switches initiate the alarm system when a sprinkler head is activated and water flows through the piping. They are located on every floor at the stairwells. Some buildings have multiple valves per floor depending on their size and contents.

Smoke Detector

Manual Pull Station

Sprinkler Control Valve

Waterflow Switch

Fire Alarm Notification Devices

- Public Address and notification devices are crucial for fast and efficient emergency response.
- Speaker-Strobes are the new standard where separate horns, strobes and speakers were utilized previously.
- Strobes flash brightly during alarm.
- A “Whooping” horn tone will be heard followed by an automated announcement during an alarm.
- Speaker and Strobe Devices are located strategically throughout the building.

Ceiling-Mount
Speaker-Strobe

Wall-Mount
Speaker-Strobe

Fire Sprinkler System

- All floors are covered by the Fire Sprinkler System.
- Provides protection in the event of fire to suppress fire quickly and minimize fire and smoke damage.
- Each sprinkler head is activated independently by HEAT from a fire.
- When a sprinkler flow switch is activated, 4 floors will go into alarm.
- Per NFPA 25 the Weekly, Monthly, Quarterly, Annual and 5-year testing and inspections are required for various components and equipment.

- **Never touch or hang items from a sprinkler!**

Fire & Smoke Doors

- Rated Fire Doors are used to control smoke and the spread of fire.
- Door closures & magnetic holders ensure rated doors are closed when a fire occurs.
- A tight seal is required to control the spread of smoke and maintain differential pressures between floors, particularly in elevator lobbies where smoke can move through hoist-ways in a phenomenon known as the chimney effect.
- Any door with an automatic door closure should not be propped open.

Emergency Lighting and Exit Signs

- Emergency Exits are clearly indicated by illuminated signage.
- Emergency Lighting and Exit Signs are inspected monthly by building Engineers.
- During a power outage the building emergency generator will automatically start to provide emergency lighting and exit lighting only. *Not all lights remain lit!*

Stairwell Emergency Phones

- Located every 4 floors at stairwell landings.
- Used for providing information to the Fire Command Center during an emergency.
- Report disabled or injured persons that require assistance.
- Tested Annually by Fire Alarm vendor per NFPA 72, tested periodically by in-house staff.

Elevators

- DO NOT Use Elevators during EMERGENCIES
- Fire Recall Mode
  - Elevators “recall” to first floor if smoke is detected by system in floor 3-16 elevator lobbies.
  - Phase I and II Testing Completed Monthly.
- Elevator Emergency Phone
  - Contacts 24/7 monitoring center to request assistance.
  - Tested Monthly.
- Seismic Operation
  - Elevators are designed to stop and remain in place during an earthquake.

Portable Fire Extinguishers

PLEASE NOTE: Fire Extinguishers are for small fires, and to be used by *properly trained personnel only!* Your safety and the safety of others is the primary concern.

If a fire is discovered, pull the nearest manual pull station to alert others and follow your evacuation/re-location plan!

All general purpose extinguishers in our facility should be A-B-C rated (Combustible Material, Flammable Liquid and Electrical).

Gauge should be in the “green”.

The Certification Tag should indicate it was serviced within the last year.

Building occupants are taught to utilize the P.A.S.S. method via the Floor Warden training curriculum.

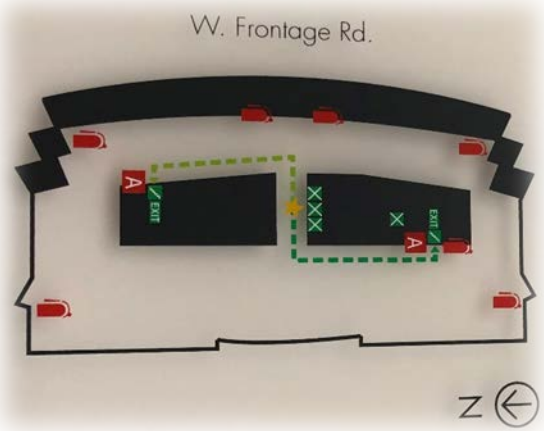
Per NFPA 10 Monthly Periodic Inspections are completed by in-house staff and serviced Annually by a licensed third-party vendor.

Evacuation Plans

Located in Elevator Lobbies and adjacent to Stairwell Exits.

What's on the plan…

- Nearest Exit
- Secondary Exit
- Common Area Fire Extinguisher
- Pull Station
- Should be checked periodically for accuracy and legibility, particularly after construction or improvements.



Floor Warden Training Program

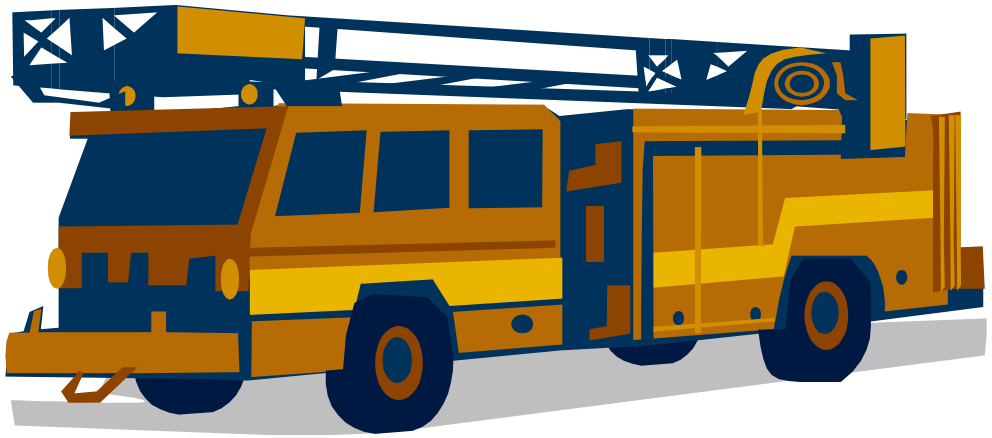
What's the Floor Warden program about?

Disseminating Vital Emergency Preparedness Information to all Occupants of the Building

- Prevention
- Training
- Emergency Event Preparation

Floor Warden Team:

- Floor Wardens & Deputy Floor Wardens
- Area Searchers
- Stairwell Monitors
- Elevator Monitors
- Aides for the Disabled



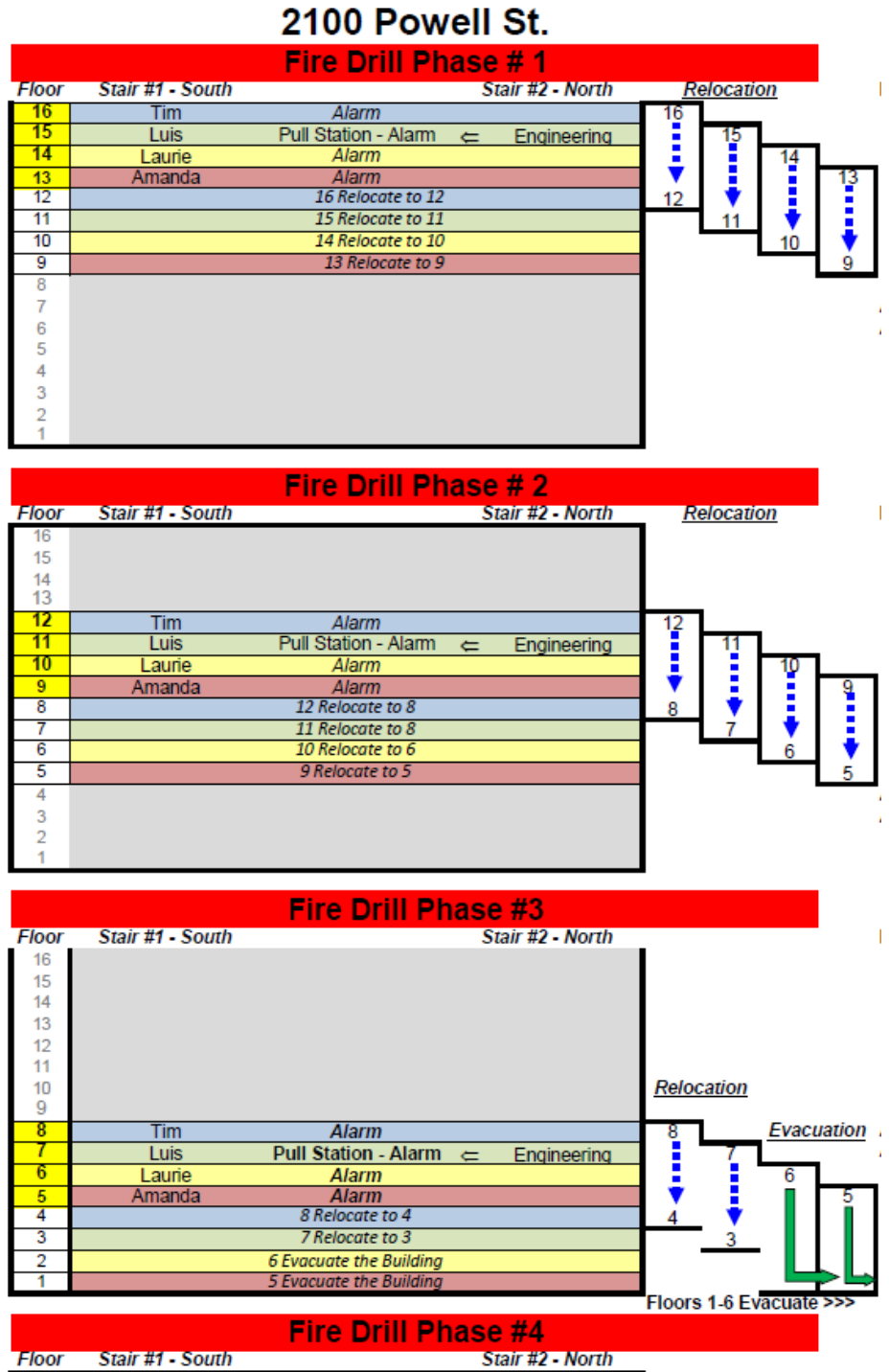
Fire Drill

Fire Drill are required at least annually by the AHJ.

The entire building team is involved and given various roles to insure the training exercise is a success.

Tenants are trained in advance with the assistance of our Floor Wardens, who disseminate what they've learned to their co-workers. Tenants are competitive in being the most efficient and well-organized.

The drill is done in 4 phases to allow all occupants a chance to participate, 4 floors are included in each phase of the drill which is based on our Relocation/Evacuation model.



Security Officer Training

The Chief Engineer/Fire Life Safety Director trains Security Team on Emergency Response, Fire Alarm Panel Operation, Building Life Safety Features, and all aspects of the Facility Emergency Plan semi-annually. New team members are trained as they are on-boarded.

2100 Powell Street – Emeryville, CA

EST-3 FIRE ALARM PANEL OPERATING PROCEDURES

MAIN FIRE ALARM PANEL (FACP) IS LOCATED IN THE 1ST FLOOR FCC ROOM NEXT TO THE LOBBY
REMOTE ANNUNCIATOR PANEL IS LOCATED IN THE MAIN LOBBY AT THE SECURITY CONSOLE

PANEL SILENCE – ALARM SILENCE – PANEL RESET

PANEL SILENCE:

Press **<Panel Silence>** to silence tone at Fire Alarm panel.

Note that this only silences the local tone at the Fire Alarm Panel, and has no affect on any other Fire System operation.

ALARM SILENCE:

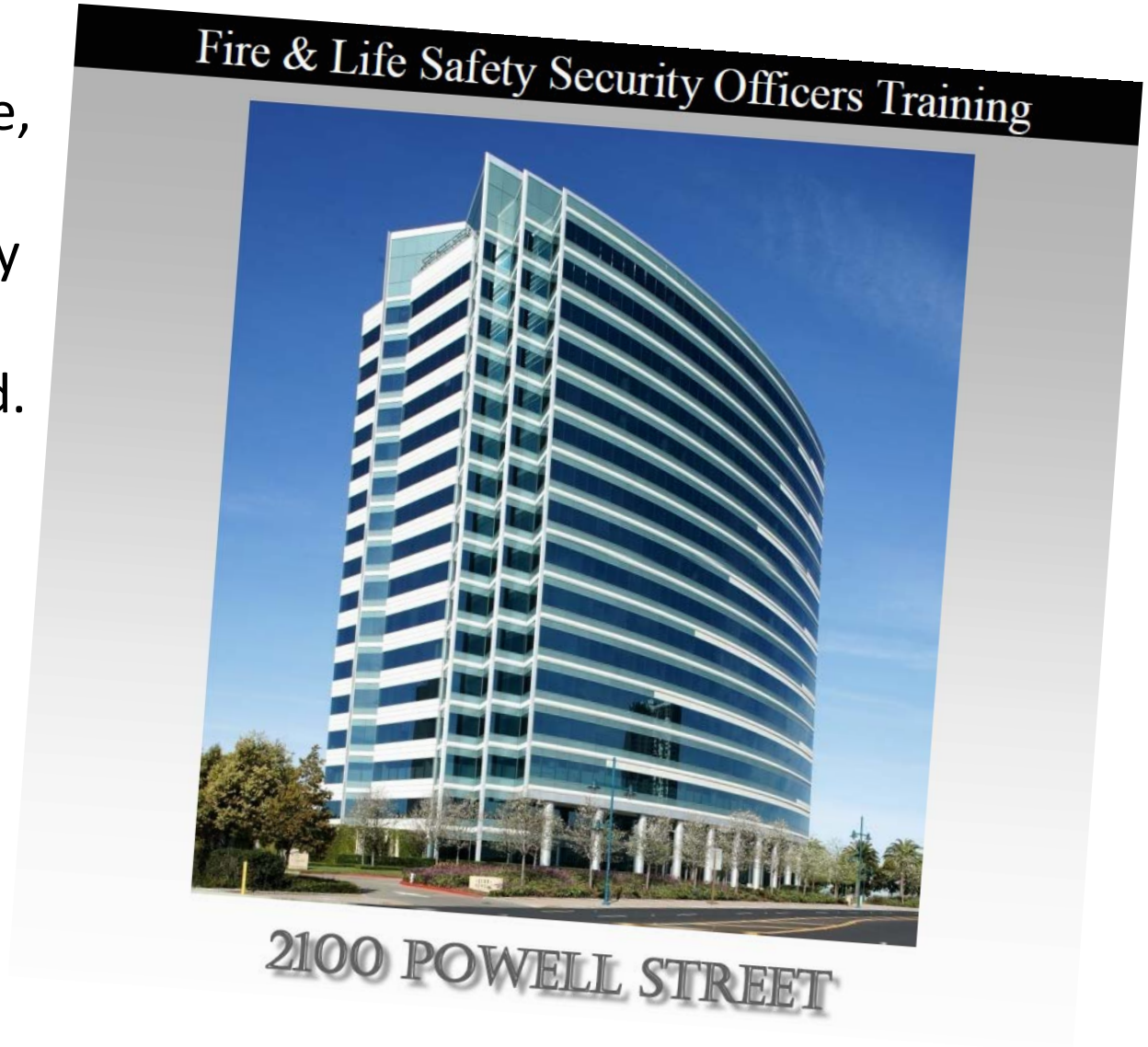
Press **<ALARM SILENCE>** to silence horn/strobes & automated announcements after the "All Clear" has been issued by the Fire Dept. or Fire/Life Safety Director.

SYSTEM RESET:

Press **<SYSTEM RESET>** to reset alarm devices and system.

NOTE: If a device (Smoke detector, manual pull station or water flow) is still sensing an alarm condition, panel will not reset and will remain in alarm.

NOTE: Silencing the Horn/Strobes and resetting the system is to be done only under the direction of the Emeryville Fire Department or the building Fire/Life Safety Director.

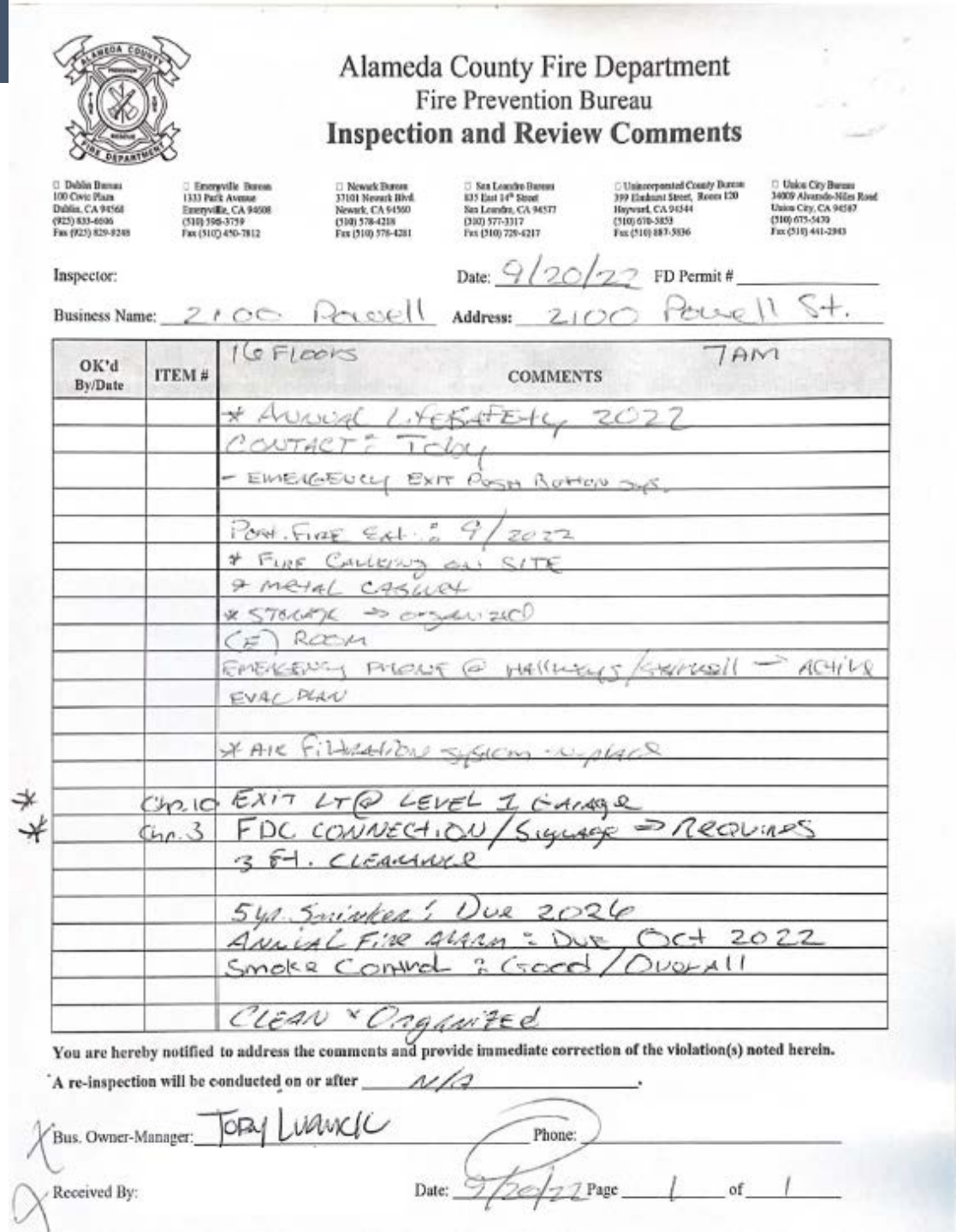


Annual Hi-Rise Inspection

A mandated Annual Hi-Rise Fire Inspection is completed annually by the Chief Engineer/Life Safety Director and the ACFD Code Compliance Officer.

This multi-faceted inspection includes a full walk of the premise, including tenant and mechanical spaces as well as review of testing and inspection documentation to insure the facility is code compliant and safe for continual occupancy.

It presents a great opportunity to build rapport with the AHJ as well as reinforce important safety requirements with our tenants.



Alameda County Fire Department
Fire Prevention Bureau
Inspection and Review Comments

Dublin Bureau, 100 Civic Plaza, Dublin, CA 94568, (925) 833-6606, Fax (925) 829-9248
Emeryville Bureau, 1333 Park Avenue, Emeryville, CA 94608, (510) 596-3759, Fax (510) 450-7812
Newark Bureau, 37101 Newark Blvd, Newark, CA 94560, (510) 578-4218, Fax (510) 578-4281
San Leandro Bureau, 835 East 14th Street, San Leandro, CA 94577, (510) 577-3317, Fax (510) 728-6217
Unincorporated County Bureau, 399 Elmhurst Street, Room 120, Hayward, CA 94544, (510) 670-5853, Fax (510) 887-5836
Union City Bureau, 34009 Alvarado-Niles Road, Union City, CA 94587, (510) 675-5430, Fax (510) 441-2943

Inspector: Date: 9/20/22 FD Permit #

Business Name: 2100 Powell Address: 2100 Powell St.

OK'd By/Date	ITEM #	COMMENTS
		16 FLOORS 7AM
		* ANNUAL LIFE SAFETY 2022
		CONTACT: Toby
		- EMERGENCY EXIT PUSH BUTTON SYS.
		PORT. FIRE EXT.: 9/2022
		* FIRE CAULKING ON SITE
		* METAL CASING
		* STORAGE → ORGANIZED
		(E) ROOM
		EMERGENCY PHONE @ HALLWAYS/BASEMENT → ACTIVE
		EVAC PLAN
		* AIR FILTRATION SYSTEM - IN PLACE
*	Chp. 10	EXIT LT @ LEVEL 1 GARAGE
*	Chp. 3	FDC CONNECTION/SIGNAGE → REQUIRES 3 FT. CLEARANCE
		5yr. Sprinkler: Due 2026
		Annual Fire Alarm: Due Oct 2022
		Smoke Control: Good/Overall
		CLEAN & Organized

You are hereby notified to address the comments and provide immediate correction of the violation(s) noted herein.

A re-inspection will be conducted on or after N/A.

Bus. Owner-Manager: Toby Lvancic Phone:

Received By: Date: 9/20/22 Page 1 of 1

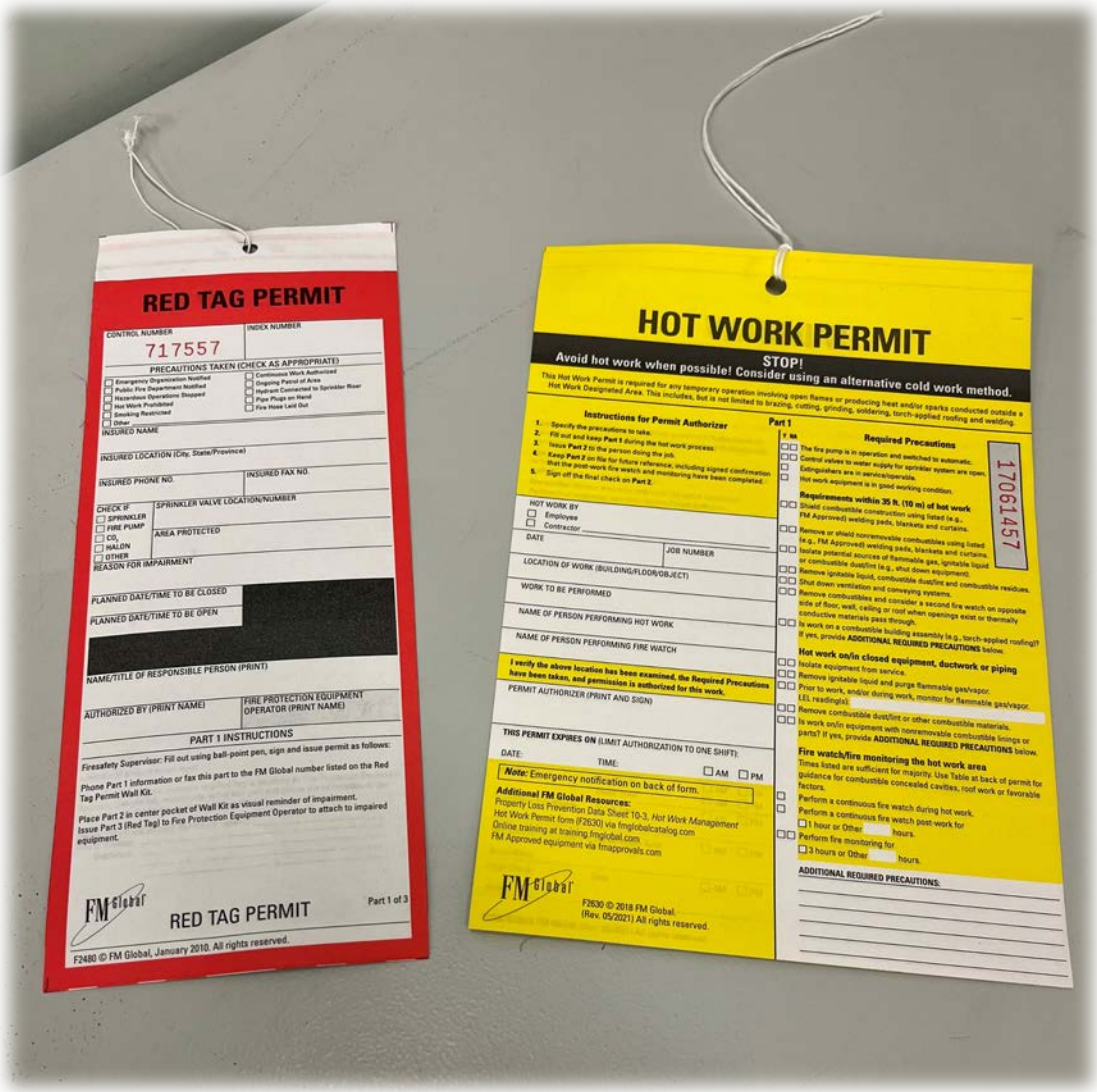
Insurance Requirements and Contractor Management

Insurance Carriers typically perform site visits every one to two years. They have an extensive list of items to be performed to minimize risk and potential loss.

FM Global provides detailed forms for contractor and construction management. Hot Work and Red Tag Permits for sprinkler impairments or drain down.

Hot Work is done under close supervision and many precautions are taken. Hot Work cannot be allowed when the sprinkler system is not in service.

Sprinkler drain downs are monitored closely to be sure the system is refilled and put back in service after work is complete. Sprinkler fitters are not allowed to leave the premise until they have restored the system.



Fire Alarm Control Panel (FACP) Replacement Project

In 2022 our Fire Alarm vendor informed us that our Edwards Systems Technologies (EST-3) fire alarm panel would become much more difficult to service as they would no longer be manufacturing replacement parts for the panel.

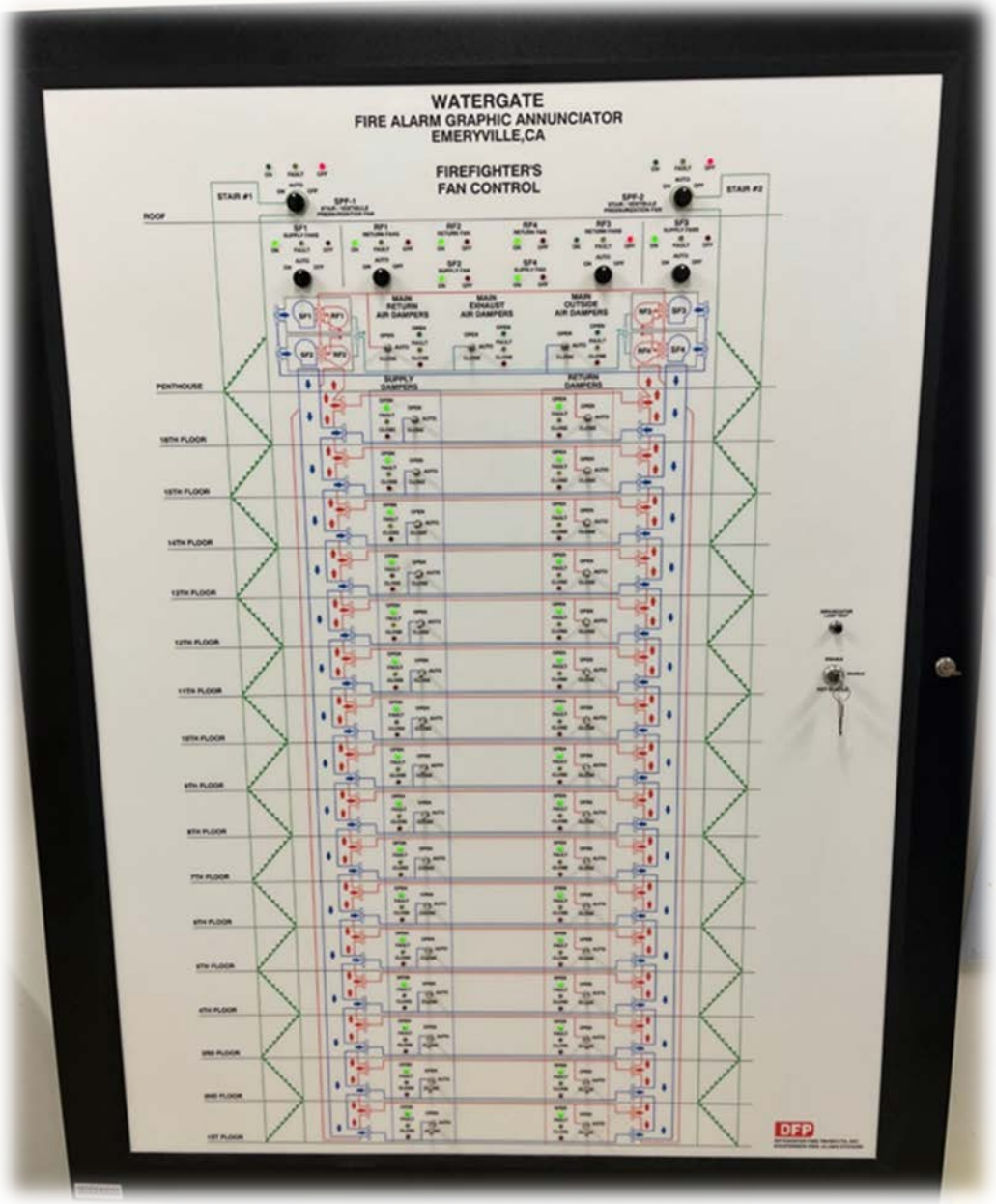
After 20+ years, this industry workhorse panel is slowly being phased out. While they will still support the EST 3, they are focusing their efforts on rolling out their new EST-4 line of products

Fortunately EST is a non-proprietary system manufacturer. This allowed us to get competitive bids from multiple licensed installers in the area. We budgeted for the project and selected our incumbent provider, ADT Commercial, to purchase, install and commission the new panel.

The process is nearly complete after almost 18 months. We are just now finishing up the last few aspects of smoke control testing.

Smoke Control - Firefighters Fan Control Panel

- Resides in Fire Control Room (FCC).
- Provides status indications of all smoke control fans and dampers.
- Indicates system faults and status of components in normal and alarm modes.
- Allows Firefighters to override automatic controls during fire events to purge smoke and control spread of smoke through the building.



Smoke Control System Re-certification: A Case Study

- Per updated 2020 Fire Code, and guidance from NFPA 92, the Authority Having Jurisdiction (AHJ) required the building's smoke control system to be re-certified, due to the age of the building.
- After nearly 20 years of Tenant Improvements, wear and tear, and renovations, the building's system needed attention.
- Unsealed penetrations between floors and fire-rated walls needed to be sealed.
- The smoke control fans, dampers and status switches all needed to be verified.
- Fire Doors, door holders and sweeps needed to operate consistently.
- No new permits or certificates of occupancy would be approved until the AHJ received confirmation that the system worked as designed.

Smoke Control System Documentation

- Original Design drawings and documents were tracked down.

SMOKE CONTROL SYSTEM DESIGN

The building is protected throughout with an automatic sprinkler system. The typical office floors is served by a supply and return fan system located on the roof. Upon any alarm condition, the return fans begin operation, the supply dampers open on all floors including the floor of alarm; and the return dampers close on all floors except the floor of alarm.

The system design criteria, that occurs upon any alarm, is that the pressure on the zone of alarm is to be maintained at a level at least 0.05 inches water column lower than the zones above and below. Also, the pressure in the alarm zone should be maintained at a level 0.05 inches water column lower than the pressure in the smoke proof stair vestibules open to that zone, and the pressure in the vestibules should be at least 0.05 inches water column lower than the pressurized stair.

Smoke Control System Testing Methodology

- The original smoke control consultant (Jeff Maddox of The Fire Consultants, previously of Rolf Jensen & Associates) was contacted and retained to assist in system verification.
- Several tests of the system were required to identify and correct deficiencies. Test were performed after hours. Tests required activating the alarm system on every floor and verifying differential pressures between floors using Handheld Manometer and tubing ran through the stairwells.
- The Engineering Team worked to verify all supply and return dampers operated and reported correct status, adjusted smoke fans to provide adequate pressurization, added fire stop materials wherever unsealed penetrations were found and installed door sweeps to fire doors with large gaps that allowed air to pass underneath.

Existing Smoke Control Matrix

***= SEE FIRE ALARM SYSTEM OPERATIONAL MATRIX "SMOKE CONTROL ACTIVATION" COLUMN, FOR A DESCRIPTION OF DEVICES THAT COMPRISE A SMOKE CONTROL ALARM.

EXISTING - SMOKE CONTROL MATRIX

Smoke Control Alarm ***	Stairwell and Vestibule Pressurization Fans		HVAC																								
			Penthouse fans		Penthouse Dampers			Return shaft FSD's																			SA Duct FSD's
	SPF-1	SPF-2	RF-1&3	SF-1&3	EA	RA	OA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Floor 1 & 2nd Floor Lobby	On	On	On	Off	Open	Close	Open	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Tenant Floor 2	On	On	On	Off	Open	Close	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 3	On	On	On	Off	Open	Close	Open	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 4	On	On	On	Off	Open	Close	Open	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 5	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 6	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 7	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 8	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 9	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close			
Floor 10	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close	Close			
Floor 11	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close	Close			
Floor 12	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close	Close			
Floor 13	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close	Close			
Floor 14	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close	Close			
Floor 15	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close	Close			
Floor 16	On	On	On	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Open	Close			
SF-1 Duct Detector	On	On	Off	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
SF-2 Duct Detector	On	On	Off	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
SF-3 Duct Detector	On	On	Off	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			
SF-4 Duct Detector	On	On	Off	Off	Open	Close	Open	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close	Close			

Abbreviations:

AC Air Conditioning unit
EF Exhaust Fan (Toilets)
FSD Fire/Smoke Damper
OA Outside Air
RA Return Air
EA Exhaust Air
RF Return/exhaust Fans
SF Supply Fans
SPF Stair/vestibule Pressurization Fan

HVAC points only included in matrix. All FSD's to have end switches for damper position monitoring.

NOTES:

1. PROVIDE A 30 SECOND DELAY BEFORE SENDING SIGNAL TO CLOSE SUPPLY AIR DAMPERS. THIS IS TO ALLOW COMPLETE SHUTDOWN OF SUPPLY AIR FANS. RETURN DAMPERS ACTIVATE IMMEDIATELY.
2. EXHAUST FAN EF-3 FOR TOILET EXHAUST AND ASSOCIATED AIR DAMPERS ARE NOT PART OF THE SMOKE CONTROL SYSTEM.
3. FANS SF2 AND SF4 ARE NOT PART OF THE SMOKE MANAGEMENT SYSTEM AND ARE INCLUDED ON THE SMOKE CONTROL PANEL TO MONITOR OPERATION ONLY AS REQUESTED BY THE EMERYVILLE FIRE DEPARTMENT.
4. SF1 AND SF3 ARE MONITORED AND CONTROLLED BY THE FIREFIGHTER'S FAN CONTROL TO ASSIST IN CLEAN UP OPERATIONS AS REQUESTED BY THE EMERYVILLE FIRE DEPARTMENT.

Smoke Control System Testing Results and Corrections

- After several rounds of testing, a handful of floors could not achieve the design differential pressure threshold of 0.05” water column to adjacent floors.
- The consultant recommended altering the smoke control fire alarm sequence to provide greater differential pressure.
- The building contracted with its fire alarm service provider, ADT, to re-design the smoke control sequence by opening Supply Dampers on floors adjacent to the fire floor to provide greater pressure.
- Once the new program was updated, the system was re-tested and ultimately passed, **the process took nearly 2 years to complete!**

Smoke Control System Ongoing Testing and Maintenance

- To maintain the integrity of the System, an ongoing testing protocol was developed by the consultant and approved by the AHJ.
- Semi-Annual (in-house) and Annual (contracted) testing of system components is required to maintain compliance.
- Whenever a TI is completed, a successful test of the floor is required for the Fire Permit to be approved before the space is occupied.

SMOKE CONTROL TESTING MATRIX				
	Testing Interval	Weekly Self-test (UUKL)	6 month Interval	12 month Interval
Test Item				
Each smoke exhaust shaft damper opens/ closes		X	X Witness at Panel	X Witness in Field
Passive dampers		X	X Witness at Panel	X Witness in Field
Smoke exhaust fans turn on		X	X Witness at Panel	X Witness in Field
Stair pressurization fans activate		X	X Witness at Panel	X Witness in Field
Confirm Stair Press Fan Blows Air in Stairs			X Witness in Field	X Witness in Field
Manual actuation of smoke control switches				X Witness at Panel
Visual Review of Integrity of fire and smoke barriers, and of other horizontal and vertical barriers				X Witness in Field
Retest Stair and Floor to Floor Pressures, and Staire Door Forces				X Witness in Field

Semi-Annual & Annual Testing Checklist

- A PM work order in Angus CMMS is used to verify that testing protocols are met and documented.
- The entire Engineering Team is actively engaged in identifying and correcting issues as they arise. The team is accountable for proper operation and takes pride in a well-functioning system.

SMOKE CONTROL INSPECTION AND TESTING SUMMARY CHECKLIST

Project: 2100 POWELL STREET
System ID:

Special Inspector:
Start - Complete Dates:

	Yes	No
1. Semi-annual Inspection Items		
a. Each smoke exhaust shaft damper opens/closes (at panel)	☐	☐
b. Passive dampers close (at panel)	☐	☐
c. Smoke exhaust fans turn on (at panel)	☐	☐
d. Stair pressurization fans activate (at panel)	☐	☐
e. Confirm Stair Press Fan Blows Air in Stairs (in field)	☐	☐
2. Annual Inspection Items		
a. Each smoke exhaust shaft damper opens/closes (in field)	☐	☐
b. Passive dampers close (in field)	☐	☐
c. Smoke exhaust fans turn on (in field)	☐	☐
d. Stair pressurization fans activate (in field)	☐	☐
e. Manual actuation of smoke control switches (at panel)	☐	☐
f. Visual Review of Integrity of fire and smoke barriers, and of other horizontal and vertical barriers (in field)	☐	☐
g. Confirm Stair Press Fan Blows Air in Stairs (in field)	☐	☐
h. Retest Stair and Floor to Floor Pressures (in field)	☐	☐
i. Retest Stair Door Forces Under 30 Lb (in field)	☐	☐

2100 POWELL

Thanks for coming!

Questions?

-

Property Tour:

- FCC Room – New Alarm Panel
- Fire Pump Room
- Generators

**Followed by snacks and beverages in the Amenity Center.*

Many thanks to Metcon for sponsoring and the CBRE Management Team for hosting!