

January 4, 2024

Bulletin 2024–001-FI

## 2-Stage Fire Alarm Systems

A building that contains an occupancy of Group F-1 (high-hazard industrial) is required by the Vancouver Building By-law (VBBL) to be protected with a single stage fire alarm system. A building that contains a Group B-3 over 3 storeys in height, or a Group B-2, or B-1 occupancy (care, treatment, or detention) must be protected by a 2-stage fire alarm system. For all other buildings the VBBL permits either a single stage or a 2-stage system. However, if a 2-stage system is being proposed, careful detailed emergency planning is required for occupancy. Thus prior to issuance of the building permit the emergency procedures in the fire safety plan must be prepared in cooperation with and approved by the fire department.

Unlike a single stage system where upon activation of a manual station, smoke or heat detector all the bells in the building will sound immediately, a 2-stage fire alarm system will sound an alert signal at the first stage to notify supervisory staff that a fire may be occurring. Supervisory staff must be dispatched to investigate and confirm within 5 minutes. If not confirmed within 5 minutes by supervisory staff, the fire alarm system will automatically go into the second stage to sound the alarm to evacuate the building.

Where the building is for care, treatment, or detention occupancy, a sufficient number of supervisory staff is required by the Fire By-law.

Division B, 2.8.2.2. Care, Treatment and Detention Occupancies

- 1) A sufficient number of supervisory staff shall be on duty in care, treatment and detention occupancies to perform the tasks outlined in the fire safety plan described in Clause 2.8.2.1.(1)(a)



It should be noted that the 5 minute limit is the time to investigate and verify whether the situation is a real fire emergency or a false alarm. It is not the time limit for staff to “acknowledge” the system or “silence” the bells and then proceed to investigate.

It should also be noted that installation of a 2-stage fire alarm system does not reduce false alarms or the associated fees charged by the fire department. The VBBL requires that the fire department be notified and respond at the first stage (alert stage), not the second stage.

*\*\* We Save Lives and Build Safer Communities through Fire Prevention Inspections, Education and Partnerships \*\**

The Fire By-law requires the building to have supervisory staff trained in the fire emergency procedures described in the building fire safety plan.

Division B, 2.8.1.2. Training of Supervisory Staff

- 1) Supervisory staff shall be trained in the fire emergency procedures described in the fire safety plan before they are given any responsibility for fire safety. (See Note A-2.8.1.2.(1).)

Thus for a 2-stage system the fire safety plan must detail the emergency procedures for supervisory staff and the minimum number of supervisory staff required to carry out those procedures 24 hours per day 7 days a week. The emergency procedures for staff will need to be building and occupant dependent and therefore prepared on a case by case basis.

When developing the emergency procedures, consider:

1. Method of alerting staff at the first stage
2. Staff training in the operation of the fire alarm and voice communications system
3. Procedure at the annunciator
4. Procedure for investigation of alert signal
  - what is communication method to other staff (cell phones or walkie-talkies)
  - size of floor area, number of storeys
  - are the elevators operating
  - should investigating staff disembark on the fire floor or floor below and then use the stairs
  - keys to elevators, service rooms, common rooms and common areas readily accessible to all staff
  - is there staff available to open the entrance door for firefighters at alert stage
5. Procedure if real emergency
6. Procedure if false alarm
7. How does the second stage get activated
8. Procedure if a staff member is temporarily unavailable
9. Procedure for change of guard/staff and transfer of duties and information

---

Rick Cheung, P.Eng.  
Assistant Chief Fire Protection Engineer

---

Rob Renning  
Deputy Chief Community Safety

---

Dave Meers  
Assistant Chief Community Safety

---

**\*\* We Save Lives and Build Safer Communities through Fire Prevention Inspections, Education and Partnerships \*\***