Technical Bulletin

Fire Industry Association

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A guide to fire detection and fire alarm zone plans

Introduction

A zone plan is a vital part of a fire detection and fire alarm system, providing essential information on the layout of detection zones within a building. A correctly orientated zone plan significantly enhances response efficiency, aiding occupants, staff, and emergency responders in quickly identifying the location of an alarm activation.

BS 5839-1 provides specific recommendations regarding the design and installation of zone plans to ensure clarity and effectiveness. Whilst a "You Are Here" marker is often considered good practice, it is not a recommendation under the standard, which is often a common misconception amongst industry professionals. What is required is a method of correctly orientating yourself to the layout of the building and knowing where you are within the building is required. This can be achieved by having the location of the Control and Indicating Equipment (CIE) or the "You Are Here" indicator on the plan.

What is a zone plan?

A zone plan is a diagrammatic representation of a building, showing specific topographic information, such as the building entrances and the main circulation areas, whilst also identifying division of the building into fire detection zones. A zone plan can serve multiple functions such as allowing building occupants to determine which area of a premises is affected by an activation, to allow them to investigate and confirm fire alarm signals, but their primary function is for the fire and rescue service to quickly assess and locate a fire. This usually comprises a printed plan of the premises, mounted on or adjacent to the Control and Indicating Equipment (CIE), showing relevant information. This can also be represented as an electronic illuminated mimic, or an appropriately designed Visual Display Unit[1] (VDU).

The importance of fire alarm zone plans

Fire alarm zone plans are a recommendation of BS 5839-1. The standard states that a zone plan should be displayed on or adjacent to each CIE. This ensures that any individual responding to an alarm activation can immediately determine the affected area, improving response times, aiding in safe evacuation procedures and allowing faster fire-fighting action.

Failure to provide a compliant and accurate zone plan is defined as a major non-compliance under BS 5839-1. The absence of a zone plan or the presence of an inaccurate or outdated plan could lead to delays in emergency response, increasing the risk to occupants and property.

The significance of issues surrounding compliance of zone plans should not be underestimated, as highlighted in the tragic fire at Rosepark Care Home in 2004, where the subsequent Fatal Accident Inquiry identified that had a correctly orientated and clearly labelled zone plan been in place, the emergency responders could have identified the fire's exact location much sooner, thereby improving their response efficiency and potentially saving lives.

[1] Display screen not forming an integral part of the CIE.

Key elements of a compliant zone plan

To maintain compliance and ensure usability, clarity and efficiency, a fire alarm zone plan should include the following elements:

- **It should accurately represent the building layout** – The plan should be an up-to-date depiction of the protected premises, including key features such as stairwells, circulation spaces, fire doors, and escape routes.

- **It should show clearly the defined detection zones** – Each fire alarm detection zone should be clearly marked and labelled with a zone number or designation by way of colour coding or hatching to further improve clarity, with boundaries that correspond to the layout of the building.

- **It should be orientated to match the viewer's perspective (correctly orientated) -** The plan must be positioned and drawn in a way that reflects the user's actual standing position relative to the building layout, as viewed from the CIE location. When the zone plan is on the wall and the CIE is shown in its accurate location, the building layout should be rotated to show the CIE on the top horizontal wall. This way, if an individual is stood facing the CIE, and a door is shown on the left-hand side on the zone plan, it will actually be on their left-hand side.

- **It should be permanently displayed -** The zone plan should be securely affixed to the building and located on or adjacent to the CIE and any repeat panels[2] where necessary[3] to ensure accessibility.

- **It should have a clear and simple format -** Clarity is crucial; overly complex or cluttered plans reduce effectiveness and may result in a delayed response from the viewer. Often, zone plans do include additional information such as locations of fire detection and fire alarm devices and firefighting equipment. Whilst this practice is not precluded, it should be ensured that the inclusion of additional information such as this does not detract attention away from the intended purpose of the zone plan.

[2] Where repeat indicating equipment relates to only part of the premises, the adjacent zone plan need only relate to that part of the premises.

[3] Repeat indicating equipment not used for the purpose of fire procedures does not need a zone plan on or adjacent to it.

Common issues with zone plans

Incorrectly orientated or poorly designed zone plans can cause confusion during a fire event. Common issues include:

- **Plans not matching the actual layout** – Floor plan discrepancies can delay response time.
- **Ambiguous or missing zone markings** – Poorly defined zones reduce clarity and legibility for responders.
- **Illegible or small-scale plans** – Plans should be clear, concise, unambiguous and easily legible at a glance to avoid delays.
- **Misalignment with the user's perspective** – A plan that does not align with the viewer's position at the fire alarm system CIE can lead to disorientation.
- **Outdated plans** – Changes to building layouts or modifications to the fire alarm system detection zoning should be reflected in updated zone plans as part of the modification.
- **Emergency lighting** – BS 5266 also recommends that there is adequate emergency lighting to provide 15 lux at the CIE and the zone plan, to illuminate within 5 seconds of the lighting circuit failure and to remain for the full duration of the emergency lighting provision, which is commonly 3 hours.

Best practices for premises management

To ensure compliance with **BS 5839-1** and industry best practice:

- **Involve fire safety professionals** – Engage with experienced personnel to create or assist in the creation of an effective, clear, and concise user-friendly plan.
- **Ensure accuracy and relevancy** – Premises management should be aware that any changes to the building layout or modifications to their FD&A system should be reflected on the zone plan.
- **Provide staff training** – Premises management should ensure that all relevant personnel understand how to read and use the zone plan effectively.
- **Regular inspection** – Premises management should ensure that the zone plan is displayed on or adjacent to the CIE, and that it remains free from obstruction and clearly legible, whilst ensuring that its printed using materials resistant to wear and environmental conditions to further maintain clarity over time.

Inspection and maintenance of zone plans

To maintain compliance with BS 5839-1, fire alarm zone plans should be regularly inspected and updated as necessary. The following best practices should be followed:

- **Routine inspections:** During maintenance visits, technicians should verify the accuracy of the zone plan against the current building layout, checking for correct orientation.
- **Recording deficiencies:** Any missing, outdated, or inaccurate zone plans should be documented as a major non-compliance issue i.e. at the time of a Special Inspection being carried out
- **Updating following building modifications:** If structural or layout changes to the building are observed by a servicing technician, they should advise the premises management of the need to ensure the fire alarm zone plans be updated accordingly.

Conclusion

A well designed, clear, concise and correctly orientated zone plan is a crucial aspect of an effective fire detection and alarm system. The Rosepark Care Home fire serves as a stark reminder of the consequences of poor fire alarm zone planning. Compliance to BS 5839-1 ensures that the zone plan serves its primary purpose: to provide clear, accurate, and accessible information during a fire event, enabling swift identification of the affected zone and improving emergency response times.

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