Designation: E2238 – 12

Standard Guide for Evacuation Route Diagrams[1]

This standard is issued under the fixed designation E2238; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard is intended to provide minimum guidelines for the design and placement of evacuation route diagrams (ERDs) used in buildings. It covers the evacuation of building occupants when directed by emergency response authorities in emergencies such as fire, earthquake, and bomb threat.

NOTE 1—Evacuation from the facility is not appropriate in all emergencies. For example, a tornado or a release of hazardous materials may require sheltering within the building. This diagram standard is intended to be used in conjunction with a facility emergency plan and instructions on appropriate actions from building management, or emergency response authorities, or both.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E2072 Specification for Photoluminescent (Phosphorescent) Safety Markings

2.2 *Other Standards:*

NFPA 101 Life Safety Code® (Safety to Life from Fire in Buildings and Structures)[3]

NFPA 170 Standard for Fire Safety and Emergency Symbols[3]

UL 1994 Standard for Luminous Egress Path Marking Systems[4]

ICC/ANSI A117.1 Standard for Accessible and Usable Buildings and Facilities[5]

FEMA Guideline: Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters November 2010.

3. Terminology

3.1 *Definitions:*

3.1.1 *area of refuge*—an area that is either (*1*) a story in a building where the building is protected throughout by an approved, supervised automatic sprinkler system and has not less than two accessible rooms or spaces separated from each other by smoke-resisting partitions; or (*2*) a space located in a path of travel leading to a public way that is protected from the effects of fire, either by means of separation from other spaces in the same building or by virtue of location, thereby permitting a delay in egress travel from any level.

NOTE 2—An area of refuge is intended for use by impaired persons awaiting rescue by trained emergency personnel in the event of fire. It is not necessarily designed for use in emergencies requiring the use of substantial construction, such as windstorm.

3.1.2 *area of rescue assistance*—an area in a building constructed for physically disabled persons to enter and await fire department assistance during fire and emergency conditions in accordance with ADA Guidelines 4.1.3 to 4.3.11.5.

3.1.3 *assembly points*—area(s) outside of the building that has been predetermined as a meeting point for building occupants to gather and be accounted.

3.1.4 *dead end*—a path that leads to no exit.

3.1.5 *path of egress*—the way(s) out of a building, consisting of the exit access, exit, and exit discharge.

3.1.6 *temporary shelter*—a pre-determined room/area of the building where occupants are directed in the event that the emergency requires remaining in the building, such as a tornado or release of hazardous material.

4. Significance and Use

4.1 Evacuation route diagrams are informational signs used to advise building occupants, be they employees, residents, patients, or visitors, of the best route(s) to egress the building, or to temporary shelter from their location. It is a pictorial representation of the building/floor layout showing the closest such route from a given point in the building. This standard will provide guidelines that can be used to provide uniformity in the development and use of these signs. Consistency in design and placement of these signs can serve to increase familiarity and comprehension as well as reduce confusion, thus improving the ability of occupants to egress from the facility more easily and quickly in an emergency.

[1] This specification is under the jurisdiction of ASTM Committee E34 on Occupational Health and Safety and is the direct responsibility of Subcommittee E34.40 on Hazard Communications.

Current edition approved Oct. 15, 2012. Published November 2012. Originally approved in 1986. Last previous edition approved in 2002 as E2238 - 02, which was withdrawn July 2011 and reinstated in October 2012. DOI: 10.1520/E2238-12.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, http://www.nfpa.org.

[4] Available from Underwriters Laboratories (UL), 333 Pfingsten Rd., Northbrook, IL 60062-2096, http://www.ul.com.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

4.2 Occupancies where standardization of ERDs would be most beneficial include those which frequently have occupants unfamiliar with the facility, such as hotels, places of assembly, offices, healthcare facilities, and multiple occupancy buildings.

5. Format and Content

5.1 *Format*—The overall format of ERDs should be simple. To be quickly read and understood by those unfamiliar with the building layout, ERDs should contain only the information necessary for the occupant to become oriented to and locate the egress path(s) from their location. The diagram should show at least two ways to exit from the locations where the diagram is posted.

5.1.1 *Area Covered*—To minimize confusion, ERDs should only cover the area/floor of the facility that contains the at least two exits, an area of rescue assistance (if applicable), and an area of refuge (if present). The top of the ERD should display a title indicating the floor number (see Fig. 1).

5.1.2 *Color*—Optimally, signs should be provided in color with graphics to more easily distinguish the routes.

5.1.3 *Current Location*—The current location should be indicated by a solid red circle at least ¼ in. in diameter, and labeled "YOU ARE HERE" in capital letters.

5.1.4 *Exits*—Exits should be marked by a rectangle marked "EXIT" in red capital letters with arrows pointing to exits.

5.1.5 *Temporary Shelter*—Temporary shelters should be marked by dashed double red lines, shaded, and labeled "TEMPORARY SHELTER" in capital letters.

5.1.6 *Paths*—Paths should not direct building occupants through areas which are not intended for egress, such as storerooms, hazardous areas, rooms that can be locked, or other areas as specified by NFPA 101, Life Safety Code.

5.1.7 *Dead Ends*—Dead ends should be depicted using thick black line with the label "DEAD END" in capital letters.

5.1.8 *Elevators*—Elevators are often not permitted for use in emergencies (such as fire or earthquake), and may be recalled to the first floor and become unavailable. For these reasons, elevators should be shown on the diagram, but not indicated as part of the means of egress.

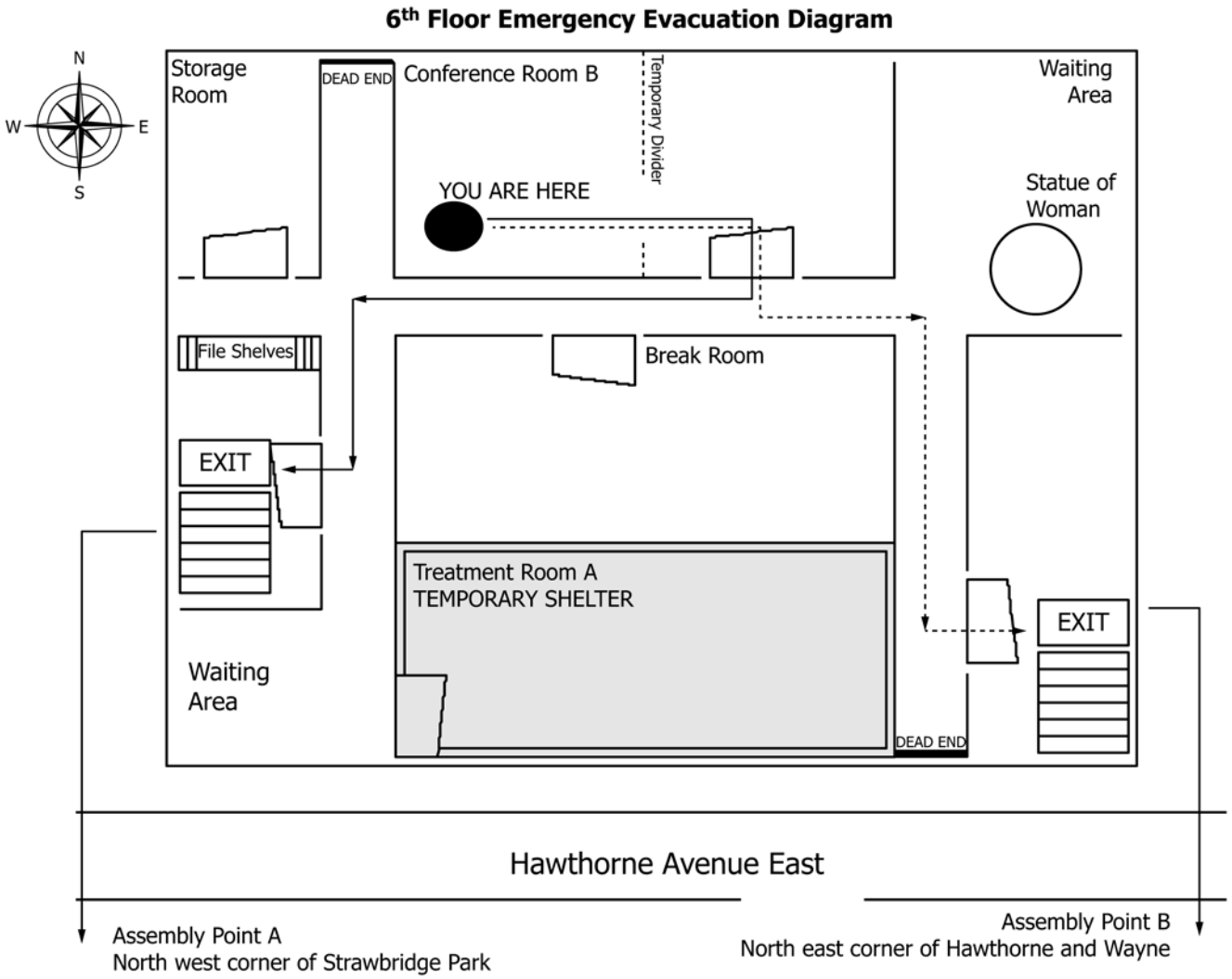

FIG. 1 Sample Evacuation Diagram

5.1.9 *Landmarks and Barriers*—Landmarks and barriers should be represented by a comparable but simplified graphic and identified by a suitable descriptive label.

5.1.10 *Major Means of Egress Components*—Components, including corridors, doors, stairs, and ramps in egress paths should be shown in a simplified form.

5.1.11 *Assembly Points*—When evacuation to the building exterior is specified, the ERD should display point(s) of assembly for building occupants to gather and to be accounted.

5.1.12 *Key*—Where needed, a key should be provided in the lower right corner of the diagram to more clearly define the symbols used.

5.2 *Language*—Depending on the needs of the region and nature of building occupants expected, sign information may need to be multi-lingual.

6. Visibility and Readability

6.1 *Sign and Print Size*—The ERD should be a minimum of 8 ½ in. high by 11 in. wide. It is recommended that text follow NFPA 170, 11.2.4.

6.2 *Illumination*—The ERD should be continuously illuminated on its face with a minimum of one (1) footcandle (10.8 lux). ERDs can be photoluminescent in accordance with Specification E2072 (with a minimum luminance of 5 millicandela per square meter after 90 minutes) or UL1994.

7. Durability

7.1 ERDs should be durable and not subject to deterioration such as fading and tearing.

NOTE 3—One cost-effective option is to print ERDs on paper and laminate.

7.2 ERDs should be replaced when, through wear or damage, they become difficult to read.

8. Orientation

8.1 ERDs should represent and be oriented to the actual floor arrangement as viewed by building occupants. This means that the top of the diagram should be oriented in the direction the reader is facing.

9. Placement

9.1 *Locations*—The frequency and location of ERD placement should be determined by the needs of the facility. Larger facilities of complex design may require more frequent ERDs than smaller buildings with simple layouts. Facilities with substantial numbers of occupants unfamiliar with the building may also call for more ERDs than those where visitors are infrequent. Facilities should consider placing ERDs in every room, at each exit (if there are multiple room exits), and in large open occupancy areas every 50-75 ft.

9.2 *Height*—ERDs should be mounted 48-60 in. (152 cm) above the finished floor to the center of the sign.

10. Keywords

10.1 diagram; egress; evacuation; exit