

1301:7-7-04**Emergency planning and preparedness.****(A) Section 401 General**

- (1) 401.1 Scope. Reporting of emergencies, coordination with emergency response forces, emergency plans, and procedures for managing or responding to emergencies shall comply with the provisions of this paragraph.

Exception: Firms that have approved on-premises fire-fighting organizations and that are in compliance with approved procedures for fire reporting.

- (2) 401.2 Approval. Where required by this code, fire safety plans, emergency procedures and employee training programs shall be approved by the fire code official.

- (3) 401.3 Emergency responder notification. Notification of emergency responders shall be in accordance with paragraphs (A)(3)(a)(401.3.1) to (A)(3)(c)(401.3.3) of this rule.

(a) 401.3.1 Fire events. In the event an unwanted fire occurs on a property, the owner or occupant shall immediately report such condition to the fire department.

(b) 401.3.2 Alarm activations. Upon activation of a fire alarm signal, employees or staff shall immediately notify the fire department.

(c) 401.3.3 Delayed notification. A person shall not, by verbal or written directive, require any delay in the reporting of a fire to the fire department.

- (4) 401.4 Required plan implementation. In the event an unwanted fire is detected in a building or a fire alarm activates, the emergency plan shall be implemented.

- (5) 401.5 Making false report. A person shall not give, signal or transmit a false alarm.

- (6) 401.6 Emergency evacuation drills. The sounding of a fire alarm signal and the carrying out of an emergency evacuation drill in accordance with the provisions of paragraph (E)(405) of this rule shall be allowed.

- (7) 401.7 Unplanned evacuation. Evacuations made necessary by the unplanned activation of a fire alarm system or by any other emergency shall not be substituted for a required evacuation drill.

- (8) 401.8 Interference with fire department operations. It shall be unlawful to interfere with, attempt to interfere with, conspire to interfere with, obstruct or restrict the mobility of or block the path of travel of a fire department emergency vehicle

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in any way, or to interfere with, attempt to interfere with, conspire to interfere with, obstruct or hamper any fire department operation.

(B) Section 402 Definitions

- (1) 402.1 Definitions. The following terms are defined in rule 1301:7-7-02 of the Administrative Code.

"Emergency evacuation drill."

"Lockdown."

- (2) 402.2 Terms used for this rule. The following word takes on exclusive meaning as used in this rule pursuant to section 3781.104 of the Revised Code.

"Smoke detector." A readily removable device, sensitive to either visible or invisible particles of combustion or both, which automatically detects any fire condition and broadcasts locally a signal or alarm.

(C) Section 403 Emergency preparedness requirements

- (1) 403.1 General. In addition to the requirements of paragraph (A)(401) of this rule, occupancies, uses and outdoor locations shall comply with the emergency preparedness requirements set forth in paragraphs (C)(2)(403.2) to (C)(12)(c)(iii)(403.12.3.3) of this rule. Where a fire safety and evacuation plan is required by paragraphs (C)(2)(403.2) to (C)(11)(d)(403.11.4) of this rule, evacuation drills shall be in accordance with paragraph (E)(405) of this rule and employee training shall be in accordance with paragraph (F)(406) of this rule.

- (2) 403.2 Group A occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group A occupancies, other than those occupancies used exclusively for purposes of religious worship with an occupant load less than 2,000, and for buildings containing both a Group A occupancy and an atrium. Group A occupancies shall comply with paragraphs (C)(2)(a)(403.2.1) to (C)(2)(d)(403.2.4) of this rule.

- (a) 403.2.1 Seating plan. In addition to the requirements of paragraph (D)(2)(404.2) of this rule, the fire safety and evacuation plans for assembly occupancies shall include a detailed seating plan, occupant load and occupant load limit. Deviations from the approved plans shall be allowed provided the occupant load limit for the occupancy is not exceeded and the aisles and exit accessways remain unobstructed.

(b) 403.2.2 Announcements. In theaters, motion picture theaters, auditoriums and similar assembly occupancies in Group A used for noncontinuous programs, an audible announcement shall be made not more than 10 minutes prior to the start of each program to notify the occupants of the location of the exits to be used in the event of a fire or other emergency.

Exception: In motion picture theaters, the announcement is allowed to be projected upon the screen in a manner approved by the fire code official.

(c) 403.2.3 Fire watch personnel. Fire watch personnel shall be provided where required by paragraph (C)(12)(a)(403.12.1) of this rule.

(d) 403.2.4 Crowd managers. Crowd managers shall be provided where required by paragraph (C)(12)(c)(403.12.3) of this rule.

(3) 403.3 Ambulatory care facilities. Ambulatory care facilities shall comply with the requirements of paragraphs (C)(3)(a)(403.3.1) to (C)(3)(c)(403.3.3) of this rule as well as (A)(401) and (D)(404) to (F)(406) of this rule.

(a) 403.3.1 Fire evacuation plan. The fire safety and evacuation plan required by paragraph (D)(404) of this rule shall include a description of special staff actions. This shall include procedures for stabilizing patients in a defend-in-place response, staged evacuation, or full evacuation in conjunction with the entire building if part of a multitenant facility.

(b) 403.3.2 Fire safety plan. A copy of the plan shall be maintained at the facility at all times. The plan shall include all of the following in addition to the requirements of paragraph (D)(404) of this rule:

(i) Locations of patients who are rendered incapable of self-preservation.

(ii) Maximum number of patients rendered incapable of self-preservation.

(iii) Area and extent of each ambulatory care facility.

(iv) Location of adjacent smoke compartments or refuge areas, where required.

(v) Path of travel to adjacent smoke compartments.

(vi) Location of any special locking, delayed egress or access control arrangements.

(c) 403.3.3 Staff training. Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by the staff not less than every two months. A copy of the plan shall be readily available at all times within the facility.

(d) 403.3.4 Emergency evacuation drills. Emergency evacuation drills shall comply with paragraph (E)(405) of this rule. Emergency evacuation drills shall be conducted not less than four times per year.

Exception: The movement of patients to safe areas or to the exterior of the building is not required.

(4) 403.4 Group B occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for buildings containing a Group B occupancy where the Group B occupancy has an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge and for buildings having an ambulatory care facility.

(5) 403.5 Group E occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group E occupancies and for buildings containing both a Group E occupancy and an atrium. Group E occupancies shall comply with paragraphs (C)(5)(a)(403.5.1) to (C)(5)(c)(403.5.3) of this rule.

(a) 403.5.1 First emergency evacuation drill. The first emergency evacuation drill of each school year shall be conducted within 10 days of the beginning of classes.

(b) 403.5.2 Time of day. Emergency evacuation drills shall be conducted at different hours of the day or evening, during the changing of classes, when the school is at assembly, during the recess or gymnastic periods, or during other times to avoid distinction between drills and actual fires.

(c) 403.5.3 Assembly points. Outdoor assembly areas shall be designated and shall be located a safe distance from the building being evacuated so as to avoid interference with fire department operations. The assembly areas shall be arranged to keep each class separate to provide accountability of all individuals.

(6) 403.6 Group F occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and

maintained in buildings containing a Group F occupancy where the Group F occupancy has an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

(7) 403.7 Group H-5 occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group H occupancies.

(a) 403.7.1 Group H-5 occupancies. Group H-5 occupancies shall comply with paragraphs (C)(7)(a)(i)(403.7.1.1) to (C)(7)(a)(iv)(403.7.1.4) of this rule.

(i) 403.7.1.1 Plans and diagrams. In addition to the requirements of paragraph (D)(404) and paragraph (G)(6)(407.6) of this rule, plans and diagrams shall be maintained in approved locations indicating the approximate plan for each area, the amount and type of HPM stored, handled and used, locations of shutoff valves for HPM supply piping, emergency telephone locations and locations of exits.

(ii) 403.7.1.2 Plan updating. The plans and diagrams required by paragraphs (D)(404), (C)(7)(a)(i)(403.7.1.1) and (G)(6)(407.6) of this rule shall be maintained up to date and the fire code official and fire department shall be informed of all major changes.

(iii) 403.7.1.3 Emergency response team. Responsible persons shall be designated as an on-site emergency response team and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses, identifying locations where HPM is stored, handled and used, and be familiar with the chemical nature of such material. An adequate number of personnel for each work shift shall be designated.

(iv) 403.7.1.4 Emergency drills. Emergency drills of the on-site emergency response team shall be conducted on a regular basis but not less than once every three months. Records of drills conducted shall be maintained.

(8) 403.8 Group I-1 occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group I occupancies. Group I occupancies shall comply with paragraphs (C)(8)(a)(403.8.1) to (C)(8)(c)(iv)(403.8.3.4) of this rule.

- (a) 403.8.1 Group I-1 occupancies. Group I-1 occupancies shall comply with paragraphs (C)(8)(a)(i)(403.8.1.1) to (C)(8)(a)(vii)(403.8.1.7) of this rule.
- (i) 403.8.1.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by paragraph (D)(404) of this rule shall include special employee actions including fire protection procedures necessary for residents and shall be amended or revised upon admission of any resident with unusual needs.
- (a) 403.8.1.1.1 Fire evacuation plan. The fire evacuation plan required by paragraph (D)(404) of this rule shall include a description of special staff actions. In addition to the requirements of paragraph (D)(404) of this rule, plans in Group I-1 Condition 2 occupancies shall include procedures for evacuation through a refuge area in an adjacent smoke compartment and then to an exterior assembly point.
- (b) 403.8.1.1.2 Fire safety plans. A copy of the fire safety plan shall be maintained at the facility at all times. Plans shall include the following in addition to the requirements of paragraph (D)(404) of this rule:
- (i) Location and number of resident sleeping rooms.
- (ii) Location of special locking or egress control arrangements.
- (ii) 403.8.1.2 Employee training. Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Such instruction shall be reviewed by employees at intervals not exceeding two months. A copy of the plan shall be readily available at all times within the facility.
- (iii) 403.8.1.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. In Group I-1 Condition 2 occupancies, training shall include evacuation through an adjacent smoke compartment and then to an exterior assembly point. The training shall include actions to take if the primary escape route is blocked. Where the resident is given rehabilitation or habilitation training, methods of fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program. Residents shall be trained

to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

(iv) 403.8.1.4 Drill frequency. In addition to the evacuation drills required in paragraph (E)(2)(405.2) of this rule, employees shall participate in drills an additional two times a year on each shift. Twelve drills shall be conducted in the first year of operation. Drills are not required to comply with the time requirements of paragraph (E)(4)(405.4) of this rule.

(v) 403.8.1.5 Drill times. Drill times are not required to comply with paragraph (E)(4)(405.4) of this rule.

(vi) 403.8.1.6 Resident participation in drills. Emergency evacuation drills shall involve the actual evacuation of residents to a selected assembly point and shall provide residents with experience in exiting through all required exits. All required exits shall be used during emergency evacuation drills.

(vii) 403.8.1.7 Emergency evacuation drill deferral. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency specified in paragraph (E)(2)(405.2) of this rule.

(b) 403.8.2 Group I-2 occupancies. Group I-2 occupancies shall comply with paragraphs (C)(8)(b)(i)(403.8.2.1) to (C)(8)(b)(iii)(403.8.2.3) of this rule as well as (A)(401) and (D)(404) to (F)(406) of this rule.

(i) 403.8.2.1 Fire evacuation plans. The fire safety and evacuation plans required by paragraph (D)(404) of this rule shall include a description of special staff actions. Plans shall include all of the following in addition to the requirements of paragraph (D)(404) of this rule.

(a) Procedures for evacuation for patients with needs for containment or restraint and post-evacuation containment, where present.

(b) A written plan for maintenance of the means of egress.

(c) Procedure for a defend-in-place strategy.

(d) Procedures for a full-floor or building evacuation, where necessary.

(ii) 403.8.2.2 Fire safety plans. A copy of the plan shall be maintained at the facility at all times. Plans shall include all of the following in addition to the requirements of paragraph (D)(404) of this rule:

(a) Location and number of patient sleeping rooms and operating rooms.

(b) Location of adjacent smoke compartments or refuge areas.

(c) Path of travel to adjacent smoke compartments.

(d) Location of special locking, delayed egress or access control arrangements.

(e) Location of elevators utilized for patient movement in accordance with the fire safety plan, where provided.

(iii) 403.8.2.3 Emergency evacuation drills. Emergency evacuation drills shall comply with paragraph (E)(405) of this rule.

Exceptions:

1. The movement of patients to safe areas or to the exterior of the building is not required.

2. Where emergency evacuation drills are conducted after visiting hours or where patients or residents are expected to be asleep, a coded announcement shall be an acceptable alternative to audible alarms.

(c) 403.8.3 Group I-3 occupancies. Group I-3 occupancies shall comply with paragraphs (C)(8)(c)(i)(403.8.3.1) to (C)(8)(c)(iv)(403.8.3.4) of this rule.

(i) 403.8.3.1 Employee training. Employees shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment. Training of new employees shall be provided promptly upon entrance to duty. Refresher training shall be provided not less than annually.

(ii) 403.8.3.2 Employee staffing. Group I-3 occupancies shall be provided with 24-hour staffing. An employee shall be within three floors or

300 feet (91 440 mm) horizontal distance of the access door of each resident housing area. In Group I-3 Conditions 3, 4 and 5, as defined in rule 1301:7-7-02 of the Administrative Code, the arrangement shall be such that the employee involved can start release of locks necessary for emergency evacuation or rescue and initiate other necessary emergency actions within 2 minutes of an alarm.

Exception: An employee shall not be required to be within three floors or 300 feet (91 440 mm) horizontal distance of the access door of each resident housing areas in areas in which all locks are unlocked remotely and automatically in accordance with section 408.4 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(iii) 403.8.3.3 Notification. Provisions shall be made for residents in Group I-3 Conditions 3, 4 and 5, as defined in rule 1301:7-7-02 of the Administrative Code, to readily notify an employee of an emergency.

(iv) 403.8.3.4 Keys. Keys necessary for unlocking doors installed in a means of egress shall be individually identifiable by both touch and sight.

(9) 403.9 Group M occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for buildings containing a Group M occupancy where the Group M occupancy has an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge and for buildings containing both a Group M occupancy and an atrium.

(10) 403.10 Group R occupancies. Group R occupancies shall comply with paragraphs (C)(10)(a)(403.10.1) to (C)(10)(c)(vi)(403.10.3.6) of this rule.

(a) 403.10.1 Group R-1 occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group R-1 occupancies. Group R-1 occupancies shall comply with paragraphs (C)(10)(a)(i)(403.10.1.1) to (C)(10)(a)(iii)(403.10.1.3) of this rule.

(i) 403.10.1.1 Evacuation diagrams. A diagram depicting two evacuation routes shall be posted on or immediately adjacent to every required egress door from each hotel or motel sleeping unit.

(ii) 403.10.1.2 Emergency duties. Upon discovery of a fire or suspected fire, hotel and motel employees shall perform the following duties:

(a) Activate the fire alarm system, where provided.

(b) Notify the public fire department.

(c) Take other action as previously instructed.

(iii) 403.10.1.3 Fire safety and evacuation instructions. Information shall be provided in the fire safety and evacuation plan required by paragraph (D)(404) of this rule to allow guests to decide whether to evacuate to the outside, evacuate to an area of refuge, remain in place, or any combination of the three.

(b) 403.10.2 Group R-2 occupancies. Group R-2 occupancies shall comply with paragraphs (C)(10)(b)(i)(403.10.2.1) to (C)(10)(b)(iii)(403.10.2.3) of this rule.

(i) 403.10.2.1 College and university buildings. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group R-2 college and university buildings. Group R-2 college and university buildings shall comply with paragraphs (C)(10)(b)(i)(a)(403.10.2.1.1) and (C)(10)(b)(i)(b)(403.10.2.1.2) of this rule.

(a) 403.10.2.1.1 First emergency evacuation drill. The first emergency evacuation drill of each school year shall be conducted within 10 days of the beginning of classes.

(b) 403.10.2.1.2 Time of day. Emergency evacuation drills shall be conducted at different hours of the day or evening, during the changing of classes, when school is at assembly, during recess or gymnastic periods or during other times to avoid distinction between drills and actual fires. One required drill shall be held during hours after sunset or before sunrise.

(ii) 403.10.2.2 Emergency guide. Fire emergency guides shall be provided for Group R-2 occupancies. Guide contents, maintenance and distribution shall comply with paragraphs (C)(10)(b)(ii)(a) (403.10.2.2.1) to (C)(10)(b)(ii)(c)(403.10.2.2.3) of this rule.

(a) 403.10.2.2.1 Guide contents. A fire emergency guide shall describe the location, function and use of fire protection

equipment and appliances accessible to residents, including fire alarm systems, smoke alarms, and portable fire extinguishers. Guides shall include an emergency evacuation plan for each dwelling unit.

(b) 403.10.2.2.2 Emergency guide maintenance. Emergency guides shall be reviewed and approved by the fire code official.

(c) 403.10.2.2.3 Emergency guide distribution. A copy of the emergency guide shall be given to each tenant prior to initial occupancy.

(iii) 403.10.2.3 Evacuation diagrams dormitories. A diagram depicting two evacuation routes shall be posted on or immediately adjacent to every required egress door from each dormitory sleeping unit. Evacuation diagrams shall be reviewed and updated as needed to maintain accuracy.

(c) 408.10.3 Group R-4 occupancies. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for Group R-4 occupancies. Group R-4 occupancies shall comply with paragraphs (C)(10)(c)(i)(403.10.3.1) to (C)(10)(c)(vi)(403.10.3.6) of this rule.

(i) 403.10.3.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by paragraph (D)(404) of this rule shall include special employee actions, including fire protection procedures necessary for residents, and shall be amended or revised upon admission of a resident with unusual needs.

(a) 403.10.3.1.1 Fire safety plans. A copy of the plan shall be maintained at the facility at all times. Plans shall include the following in addition to the requirements of paragraph (D)(404) of this rule:

(i) Location and number of resident sleeping rooms.

(ii) Location of special locking or egress control arrangements.

(ii) 403.10.3.2 Employee training. Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by the employees at intervals not

exceeding two months. A copy of the plan shall be readily available at all times within the facility.

(iii) 403.10.3.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. The training shall include actions to take if the primary escape route is blocked. Where the resident is given rehabilitation or habilitation training, methods of fire prevention and actions to take in the event of a fire shall be a part of the rehabilitation training program. Residents shall be trained to assist each other in case of fire to the extent their physical and mental abilities permit them to do so without additional personal risk.

(iv) 403.10.3.4 Drill frequency. In addition to the evacuation drills required in paragraph (E)(2)(405.2) of this rule, employees shall participate in drills an additional two times a year on each shift. Twelve drills with all occupants shall be conducted in the first year of operation.

(v) 403.10.3.5 Drill times. Drill times are not required to comply with paragraph (E)(4)(405.4) of this rule.

(vi) 403.10.3.6 Resident participation in drills. Emergency evacuation drills shall involve the actual evacuation of residents to a selected assembly point and shall provide residents with experience in exiting through all required exits. All required exits shall be used during emergency evacuation drills.

Exception: Actual exiting from emergency escape and rescue windows shall not be required. Opening the emergency escape and rescue window and signaling for help shall be an acceptable alternative.

(11) 403.11 Special uses. Special uses shall be in accordance with paragraphs (C)(11)(a)(403.11.1) to (C)(11)(d)(403.11.4) of this rule.

(a) 403.11.1 Covered and open mall buildings. Covered and open mall buildings shall comply with the requirements of paragraphs (C)(11)(a)(i)(403.11.1.1) to (C)(11)(a)(vi)(403.11.1.6) of this rule.

(i) 403.11.1.1 Malls and mall buildings exceeding 50,000 square feet. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for

covered malls exceeding 50,000 square feet (4645 m2) in aggregate floor area and for open mall buildings exceeding 50,000 square feet (4645 m2) in aggregate area within the perimeter line.

(ii) 403.11.1.2 Lease plan. In addition to the requirements of paragraph (D)(2)(b)(404.2.2) of this rule, a lease plan that includes the following information shall be prepared for each covered and open mall building:

(a) Each occupancy, including identification of tenant.

(b) Exits from each tenant space.

(c) Fire protection features, including the following:

(i) Fire department connections.

(ii) Fire command center.

(iii) Smoke management system controls.

(iv) Elevators, elevator machine rooms and controls.

(v) Hose valves outlets.

(vi) Sprinkler and standpipe control valves.

(vii) Automatic fire-extinguishing system areas.

(viii) Automatic fire detector zones.

(ix) Fire barriers.

(iii) 403.11.1.3 Lease plan approval. The lease plan shall be submitted to the fire code official for approval, and shall be maintained on site for immediate reference by responding fire service personnel.

(iv) 403.11.1.4 Lease plan revisions. The lease plans shall be revised annually or as often as necessary to keep them current. Modifications or changes in tenants or occupancies shall not be made without prior approval of the fire code official and building official.

(v) 403.11.1.5 Tenant identification. Tenant identification shall be provided for secondary exits from occupied tenant spaces that lead

to an exit corridor or directly to the exterior of the building. Tenant identification shall be posted on the exterior side of the exit or exit access door and shall identify the business name and address using plainly legible letters and numbers that contrast with their background.

Exception: Tenant identification is not required for anchor stores.

- (vi) 403.11.1.6 Unoccupied tenant spaces. The fire safety and evacuation plan shall provide for compliance with the requirements for unoccupied tenant spaces in paragraph (K)(311) of rule 1301:7-7-03 of the Administrative Code.
- (b) 403.11.2 High-rise buildings. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for high-rise buildings.
- (c) 403.11.3 Underground buildings. An approved fire safety and evacuation plan in accordance with paragraph (D)(404) of this rule shall be prepared and maintained for underground buildings.
- (d) 403.11.4 Buildings using occupant evacuation elevators. In buildings using occupant evacuation elevators in accordance with Section 3008 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, the fire safety and evacuation plan and the training required by paragraphs (D)(404) and (F)(406) of this rule, respectively, shall incorporate specific procedures for the occupants using such elevators.
- (12) 403.12 Special requirements for public safety. Special requirements for public safety shall be in accordance with paragraphs (C)(12)(a)(403.12.1) to (C)(12)(c)(iii)(403.12.3.3) of this rule.
- (a) 403.12.1 Fire watch personnel. Where, in the opinion of the fire code official, it is essential for public safety in a place of assembly or any other place where people congregate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall provide one or more fire watch personnel, as required and approved. Fire watch personnel shall comply with paragraphs (C)(12)(a)(i)(403.12.1.1) and (C)(12)(a)(ii)(403.12.1.2) of this rule.

- (i) 403.12.1.1 Duty times. Fire watch personnel shall remain on duty while places requiring a fire watch are open to the public, or when an activity requiring a fire watch is being conducted.
 - (ii) 403.12.1.2 Duties. On-duty fire watch personnel shall have the following responsibilities:
 - (a) Keep diligent watch for fires, obstructions to means of egress and other hazards.
 - (b) Take prompt measures for remediation of hazards and extinguishment of fires that occur.
 - (c) Take prompt measures to assist in the evacuation of the public from the structures.
- (b) 403.12.2 Public safety plan for gatherings. Where the fire code official determines that an indoor or outdoor gathering of persons has an adverse impact on public safety through diminished access to buildings, structures, fire hydrants and fire apparatus access roads or where such gatherings adversely affect public safety services of any kind, the fire code official shall have the authority to order the development of or prescribe a public safety plan that provides an approved level of public safety and addresses the following items:
 - (i) Emergency vehicle ingress and egress.
 - (ii) Fire protection.
 - (iii) Emergency egress or escape routes.
 - (iv) Emergency medical services.
 - (v) Public assembly areas.
 - (vi) The directing of both attendees and vehicles including the parking of vehicles.
 - (vii) Vendor and food concession distribution.
 - (viii) The need for the presence of law enforcement.
 - (ix) The need for fire and emergency medical services personnel.

(c) 403.12.3 Crowd managers for gatherings exceeding 1,000 people. Where facilities or events involve a gathering of more than 1,000 people, crowd managers shall be provided in accordance with paragraphs (C)(12)(c)(i) (403.12.3.1) to (C)(12)(c)(iii)(403.12.3.3) of this rule.

(i) 403.12.3.1 Number of crowd managers. The minimum number of crowd managers shall be established at a ratio of one crowd manager for every 250 persons.

Exception: Where approved by the fire code official, the number of crowd managers shall be permitted to be reduced where the facility is equipped throughout with an approved automatic sprinkler system or based upon the nature of the event.

(ii) 403.12.3.2 Training. Training for crowd managers shall be approved.

(iii) 403.12.3.3 Duties. The duties of crowd managers shall include, not be limited to:

(a) Conduct an inspection of the area of responsibility and identify and address any egress barriers.

(b) Conduct an inspection of the area of responsibility to identify and mitigate any fire hazards.

(c) Verify compliance with all permit conditions, including those governing pyrotechnics and other special effects.

(d) Direct and assist the event attendees in evacuation during an emergency.

(e) Assist emergency response personnel where requested.

(f) Other duties required by the fire code official.

(g) Other duties as specified in the fire safety plan.

(d) 403.12.4 Apparatus access at carnivals, fairs, and amusement buildings. At all events subject to or permitted in accordance with paragraph (E)(6)(b) (105.6.2) or (E)(6)(d)(105.6.4) of rule 1301:7-7-01 of the Administrative Code, no parking, vehicle, vendor, concession apparatus, booth, or any other obstruction shall be arranged or maintain in any manner that blocks the unobstructed access of emergency response vehicles to the permitted premises or in any manner that blocks the emergency response vehicles

from accessing all portions of the permitted premises. The determination of access necessary shall be based upon the size and turning radius of the equipment and vehicles of the permitting entity or authority.

(D) Section 404 Fire safety, evacuation and lockdown plans

(1) 404.1 General. Where required by paragraph (C)(403) of this rule, fire safety, evacuation and lockdown plans shall comply with paragraphs (D)(2)(404.2) to (D)(4)(a)(404.4.1) of this rule.

(2) 404.2 Contents. Fire safety and evacuation plan contents shall be in accordance with paragraphs (D)(2)(a)(404.2.1) and (D)(2)(b)(404.2.2) of this rule.

(a) 404.2.1 Fire evacuation plans. Fire evacuation plans shall include the following:

(i) Emergency egress or escape routes and whether evacuation of the building is to be complete by selected floors or areas only or with a defend-in-place response.

(ii) Procedures for employees who must remain to operate critical equipment before evacuating.

(iii) Procedures for the use of elevators to evacuate the building where occupant evacuation elevators complying with Section 3008 of the building code as listed in rule 1301:7-7-80 of the Administrative Code are provided.

(iv) Procedures for assisted rescue for persons unable to use the general means of egress unassisted.

(v) Procedures for accounting for employees and occupants after evacuation has been completed.

(vi) Identification and assignment of personnel responsible for rescue or emergency medical aid.

(vii) The preferred and any alternative means of notifying occupants of a fire or emergency.

(viii) The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.

- (ix) Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.
 - (x) A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided.
 - (b) 404.2.2 Fire safety plans. Fire safety plans shall include the following:
 - (i) The procedure for reporting a fire or other emergency.
 - (ii) The life safety strategy including the following:
 - (a) Procedures for notifying occupants, including areas with a private mode alarm system.
 - (b) Procedures for occupants under a defend-in-place response, including the type, location, and operating instructions of temporary door locking devices, if any. However, this paragraph shall not be construed to give the fire code official authority to approve or prohibit the use of any temporary door locking device approved and used in conformance with the rules developed by the Ohio Board of Building Standards. .
 - (c) Procedures for evacuating occupants, including those who need evacuation assistance.
 - (iii) Site plans indicating the following:
 - (a) The occupancy assembly point.
 - (b) The locations of fire hydrants.
 - (c) The normal routes of fire department vehicle access.
 - (iv) Floor plans identifying the locations of the following:
 - (a) Exits.
 - (b) Primary evacuation routes.
 - (c) Secondary evacuation routes.
 - (d) Accessible egress routes.
 - (i) Areas of refuge.

- (ii) Exterior areas for assisted rescue.
 - (e) Refuge areas associated with smoke barriers and horizontal exits.
 - (f) Manual fire alarm boxes.
 - (g) Portable fire extinguishers.
 - (h) Occupant-use hose stations.
 - (i) Fire alarm annunciators and controls.
 - (j) Automated defibrillator devices.
 - (v) A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.
 - (vi) Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.
 - (vii) Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.
- (c) 404.2.3 Lockdown plans. Where facilities develop a lockdown plan, the lockdown plan shall be in accordance with paragraphs (D)(2)(c)(i) (404.2.3.1) to (D)(2)(c)(iii) (404.2.3.3) of this rule.
 - (i) 404.2.3.1 Lockdown plan contents. Lockdown plans shall be approved by the fire code official and shall include the following:
 - (a) Initiation. The plan shall include instructions for reporting an emergency that requires a lockdown.
 - (b) Accountability. The plan shall include accountability procedures for staff to report the presence or absence of occupants.
 - (c) Recall. The plan shall include a prearranged signal for returning to normal activity.

- (d) Communication and coordination. The plan shall include an approved means of two-way communication between a central location and each secured area.
- (ii) 404.2.3.2 Training frequency. The training frequency shall be included in the lockdown plan. The lockdown drills shall not substitute for any of the fire and evacuation drills required in paragraph (E)(2)(405.2) of this rule.
- (iii) 404.2.3.3 Lockdown notification. The method of notifying building occupants of a lockdown shall be included in the plan. The method of notification shall be separate and distinct from the fire alarm signal.
- (3) 404.3 Maintenance. Fire safety and evacuation plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building.
- (4) 404.4 Availability. Fire safety and evacuation plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the fire code official for review upon request.
- (a) 404.4.1 Distribution. The fire safety and evacuation plans shall be distributed to the tenants and building service employees by the owner or the owner's agent. Tenants shall distribute to their employees applicable parts of the fire safety plan affecting the employees' actions in the event of a fire or other emergency.
- (b) 404.4.2 An evacuation plan indicating the primary and secondary emergency evacuation routes, and including proper occupant-to-building orientation, shall be permanently and conspicuously posted at the main exit door inside of each room accessible to all persons in all educational occupancies. The plan shall not be obscured from view by any materials.

(E) Section 405 Emergency evacuation drills

- (1) 405.1 General. Emergency evacuation drills complying with paragraphs (E)(2)(405.2) to (E)(9)(405.9) of this rule shall be conducted not less than annually where fire safety and evacuation plans are required by paragraph (C)(403) of this rule or where required by the fire code official. Drills shall be designed in cooperation with the local authorities.
- (a) 405.1.1 Schools and children's homes. A principal or person in charge of a public or private school or educational institution having an average

daily attendance of twenty or more pupils or a person in charge of any children's home or orphanage housing twenty or more minor persons shall instruct and train such children by means of drills or rapid dismissals so that such children in a sudden emergency may leave the building in the shortest possible time without confusion. Such drills or rapid dismissals shall be conducted in accordance with the following:

- (i) All drills or rapid dismissals shall be conducted at the times and frequencies prescribed in this rule.
- (ii) The principal or person in charge of a public or private school or educational institution having an average daily attendance of twenty or more pupils shall conduct not less than one drill or rapid dismissal during each month of the school year as required by and in accordance with section 3737.73 (E) of the Revised Code.
- (iii) The principal or person in charge of a school or educational institution that has smoke detectors or a sprinkler system in all classroom buildings of the school or educational institution shall conduct a drill or rapid dismissal not less than six times during the school year.
- (iv) The principal or person in charge of a school or educational institution that does not have smoke detectors or a sprinkler system in all classroom buildings of the school or educational institution shall conduct a drill or rapid dismissal not less than nine times during the school year.
- (v) The principal or person in charge of a children's home or orphanage shall conduct drills or rapid dismissals at least once each month while the home is in operation as required by and in accordance with section 3737.73 (A) of the Revised Code.

A drill or rapid dismissal conducted pursuant to this paragraph shall not be conducted in such a manner that the evacuation of students is in conjunction with the dismissal of students for the day.

In conjunction with the drills or rapid dismissals required in this paragraph, the principal or person in charge of a public or private primary or secondary school or educational institution shall instruct pupils in safety precautions to be taken in case of a tornado alert or warning and shall designate an appropriate location or locations

to be used to shelter pupils in case of a tornado, tornado alert, or warning in accordance with paragraph (D)(408) of this rule.

(b) 405.1.2 Records. While school is in operation, the person responsible for conducting fire drills pursuant to section 3737.73 of the Revised Code shall file a copy of the fire drill records containing the information required under paragraph (E)(5)(405.5) of this rule and other information required by the state fire marshal for inspection verification with the state fire marshal. When required by the fire code official, such fire drill records shall also be submitted to the firefighting agency having jurisdiction that conducts inspections of the subject facility. Such fire drill records shall be submitted at the middle point and again at the end of the school year. The "school year" includes any time during which the average daily attendance comprises twenty or more pupils.

(c) 405.1.3 Intent to conduct inspections of emergency evacuation drill records. Pursuant to section 3737.73 (C) of the Revised Code, any duly constituted fire department of a political subdivision of this state may become the designee of the state fire marshal for the purposes of annually conducting inspections of schools, educational institutions, children's home, or orphanage to determine compliance with this paragraph and sections 3737.73 (A), (B), (E), or (F) of the Revised Code.

To become the state fire marshal's designee, the fire department shall file a written notice with the state fire marshal of the department's intent to conduct inspections of schools, educational institutions, children's homes or orphanages. Such written notice shall identify each school, educational institution or children's home that the fire department intends to inspect specifically by name and address. Notice shall be submitted to the state fire marshal on or before the first day of August of each calendar year.

Any fire department that files a written notice with the state fire marshal of its intent to conduct inspections and becomes the state fire marshal's designee shall remain the state fire marshal's designee and shall conduct inspections for the purposes of determining compliance with this paragraph and with section 3737.73 of the Revised Code until such time as the department notifies the state fire marshal that it will no longer conduct such inspections. Such notice shall be in writing and shall identify each school, educational institution, children's home, or orphanage specifically by name and address and shall clearly state that the department will no longer inspect. The notice shall be submitted to the state fire marshal at least 30 days prior to the time that the department discontinues its inspection program.

Nothing in this paragraph shall be construed to limit a fire code official's authority to conduct an inspection of a school for the purposes of determining compliance with this code.

(i) 405.1.3.1 Inspections. After filing a notice in accordance with paragraph (E)(1)(c)(405.1.3) of this rule, a fire department shall thereafter conduct inspections in accordance with the following:

(a) 405.1.3.1.1 School or educational institution. The fire department shall annually inspect a school or educational institution for the purpose of determining whether or not the principal or person in charge of the school or educational institution has, in accordance with paragraph (E)(1)(a) (405.1.1) of this rule and section 3737.73 of the Revised Code, conducted drills or rapid dismissals, has instructed pupils in safety precautions to be taken in case of a tornado alert or warning, and has designated an appropriate location to be used to shelter pupils in case of a tornado, tornado alert, or warning.

(b) 405.1.3.1.2 Children's home or orphanage. The fire department shall annually inspect a children's home or orphanage for the purpose of determining whether or not the principal or person in charge of the children's home or orphanage has conducted drills or rapid dismissals in accordance with paragraph (E)(1) (a)(405.1.1) of this rule and section 3737.73 of the Revised Code.

Upon inspection and a determination that the school, educational institution, children's home, or orphanage has not complied with the provisions of this paragraph or the provision of section 3737.73 of the Revised Code, the state fire marshal's designee shall issue a written warning to the principal or person in charge of the school, educational institution or children's home. The warning shall indicate the specific violation and the date by which the violation shall be corrected.

(ii) 405.1.3.2 Jurisdiction. For the purpose of this paragraph, the fire agency having jurisdiction shall be the state fire marshal or any such duly constituted fire department of a political subdivision having filed the written notice of intent to conduct inspections in accordance with this paragraph.

- (2) 405.2 Frequency. Required emergency evacuation drills shall be held at the intervals specified in Table 405.2 of this rule or more frequently where necessary to familiarize all occupants with the drill procedure.

Table 405.2 Fire and evacuation drill frequency and participation

<u>Group or occupancy</u>	<u>Frequency</u>	<u>Participation</u>
<u>Group A</u>	<u>Quarterly</u>	<u>Employees</u>
<u>Group B^b</u>	<u>Annually</u>	<u>All occupants</u>
<u>Group B^{b,c} (Ambulatory care facilities)</u>	<u>Annually</u>	<u>Employees</u>
<u>Group B^b (Clinic, outpatient)</u>	<u>Annually</u>	<u>Employees</u>
<u>Group E</u>	<u>Monthly^a</u>	<u>All occupants</u>
<u>Group F</u>	<u>Annually</u>	<u>Employees</u>
<u>Group I-1</u>	<u>Semiannually on each shift</u>	<u>All occupants</u>
<u>Group I-2</u>	<u>Quarterly on each shift^a</u>	<u>Employees</u>
<u>Group I-3</u>	<u>Quarterly on each shift^a</u>	<u>Employees</u>
<u>Group I-4</u>	<u>Monthly on each shift^a</u>	<u>All occupants</u>
<u>Group R-1</u>	<u>Quarterly on each shift</u>	<u>Employees</u>
<u>Group R-2^d</u>	<u>Four annually</u>	<u>All occupants</u>
<u>Group R-4</u>	<u>Semiannually on each shift^a</u>	<u>All occupants</u>

a. In severe climates, the fire code official shall have the authority to modify the emergency evacuation drill frequency.

b. Emergency evacuation drills are required in Group B buildings having an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

- c. Emergency evacuation drills are required in ambulatory care facilities in accordance with paragraph (C)(3)(403.3) of this rule.
- d. Emergency evacuation drills in Group R-2 college and university buildings shall be in accordance with paragraph (C)(10)(b)(i)(403.10.2.1 of this rule. Other Group R-2 occupancies shall be in accordance with paragraph (C)(10)(b)(ii)(403.10.2.2) of this rule.
- (3) 405.3 Leadership. Responsibility for the planning and conduct of drills shall be assigned to competent persons designated to exercise leadership.
- (4) 405.4 Time. Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions that occur in case of fire.
- (5) 405.5 Record keeping. Records shall be maintained of required emergency evacuation drills and include the following information:
- (a) Identity of the person conducting the drill.
 - (b) Date and time of the drill.
 - (c) Notification method used.
 - (d) Employees on duty and participating.
 - (e) Number of occupants evacuated.
 - (f) Special conditions simulated.
 - (g) Problems encountered.
 - (h) Weather conditions when occupants were evacuated.
 - (i) Time required to accomplish complete evacuation.
- (6) 405.6 Notification. Where required by the fire code official, prior notification of emergency evacuation drills shall be given to the fire code official.
- (7) 405.7 Initiation. Where a fire alarm system is provided, emergency evacuation drills shall be initiated by activating the fire alarm system.
- (8) 405.8 Accountability. As building occupants arrive at the assembly point, efforts shall be made to determine if all occupants have been successfully evacuated or have been accounted for.

- (9) 405.9 Recall and reentry. An electrically or mechanically operated signal used to recall occupants after an evacuation shall be separate and distinct from the signal used to initiate the evacuation. The recall signal initiation means shall be manually operated and under the control of the person in charge of the premises or the official in charge of the incident. Persons shall not reenter the premises until authorized to do so by the official in charge.

(F) Section 406 Employee training and response procedures

- (1) 406.1 General. Where fire safety and evacuation plans are required by paragraph (C)(403) of this rule, employees shall be trained in the fire emergency procedures based on plans prepared in accordance with paragraph (D)(404) of this rule.
- (2) 406.2 Frequency. Employees shall receive training in the contents of fire safety and evacuation plans and their duties as part of new employee orientation and not less than annually thereafter. Records of training shall be maintained.
- (3) 406.3 Employee training program. Employees shall be trained in fire prevention, evacuation and fire safety in accordance with paragraphs (F)(3)(a)(406.3.1) to (F)(3)(d)(406.3.4) of this rule.
- (a) 406.3.1 Fire prevention training. Employees shall be apprised of the fire hazards of the materials and processes to which they are exposed. Each employee shall be instructed in the proper procedures for preventing fires in the conduct of their assigned duties.
- (b) 406.3.2 Evacuation training. Employees shall be familiarized with the fire alarm and evacuation signals, their assigned duties in the event of an alarm or emergency, evacuation routes, areas of refuge, exterior assembly areas and procedures for evacuation.
- (c) 406.3.3 Fire safety training. Employees assigned fire-fighting duties shall be trained to know the locations and proper use of portable fire extinguishers or other manual fire-fighting equipment and the protective clothing or equipment required for its safe and proper use.
- (d) 406.3.4 Emergency lockdown training. Where a facility has a lockdown plan, employees shall be trained on their assigned duties and procedures in the event of an emergency lockdown.

(G) Section 407 Hazard communication

- (1) 407.1 General. The provisions of paragraphs (G)(2)(407.2) to (G)(7)(407.7) of this rule shall be applicable where hazardous materials subject to permits under paragraph (A)(5)(5001.5) of rule 1301:7-7-50 of the Administrative Code are located on the premises or where required by the fire code official.
- (2) 407.2 Material Safety Data Sheets. Material Safety Data Sheets (MSDS) for all hazardous materials shall be either readily available on the premises as a paper copy, or where approved, shall be permitted to be readily retrievable by electronic access.
- (3) 407.3 Identification. Individual containers of hazardous materials, cartons or packages shall be marked or labeled in accordance with applicable federal regulations. Buildings, rooms and spaces containing hazardous materials shall be identified by hazard warning signs in accordance with paragraph (C)(5)(5003.5) of rule 1301:7-7-50 of the Administrative Code.
- (4) 407.4 Training. Persons responsible for the operation of areas in which hazardous materials are stored, dispensed, handled or used shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of a fire, leak or spill. Responsible persons shall be designated and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses and identification of the locations where hazardous materials are located, and shall have access to Material Safety Data Sheets and be knowledgeable in the site emergency response procedures.
- (5) 407.5 Hazardous Materials Inventory Statement. Where required by the fire code official, each application for a permit shall include a Hazardous Materials Inventory Statement (HMIS) in accordance with paragraph (A)(5)(b)(5001.5.2) of rule 1301:7-7-50 of the Administrative Code.
- (6) 407.6 Hazardous Materials Management Plan. Where required by the fire code official, each application for a permit shall include a Hazardous Materials Management Plan (HMMP) in accordance with paragraph (A)(5)(a)(5001.5.1) of rule 1301:7-7-50 of the Administrative Code. The fire code official is authorized to accept a similar plan required by other regulations.
- (7) 407.7 Facility closure plans. The permit holder or applicant shall submit to the fire code official a facility closure plan in accordance with paragraph (A)(6)(c)(5001.6.3) of rule 1301:7-7-50 of the Administrative Code to terminate storage, dispensing, handling or use of hazardous materials.

(H) Section 408 Tornado shelters in schools

(1) 408.1 Pursuant to section 3737.73 of the Revised Code, principals or persons in charge of public or private primary and secondary schools or educational institutions having an average daily attendance of twenty or more pupils shall designate appropriate locations in their respective facilities to be used to shelter pupils in case of a tornado, tornado alert, or tornado warning. The designation of such locations shall be in accordance with the standards prescribed by the fire marshal, as set forth herein. However, nothing in these rules shall be construed as requiring a school or institution to construct or improve a facility or area thereof for use as a tornado shelter, or to install a tornado alarm system.

(2) 408.2 Specific safety requirement.

- (a) The fire alarm system shall not be used to alert building occupants of a tornado, tornado alert, or tornado warning.
- (b) The principal or person in charge of the school shall submit a clear, comprehensive, detailed, and legible drawing to the local fire code official, showing the building floor plan(s) and designated tornado shelter area(s). Each room or area shown on the plan shall be clearly indicated as to its particular use.
- (c) The drawing required by paragraph (H)(2)(b)(408.2) of this rule, shall be submitted to the local fire code official for his information. A copy shall be maintained in the office of each school, for examination by the state fire marshal or local fire code official.
- (d) Tornado drills shall be conducted at least once a month whenever school is in session during the tornado season. For the purpose of this rule, "tornado season" is the period from the first day of April to the last day of July. A record of such drills shall be maintained in the office of each school for examination by the fire code official.
- (e) The occupants of modular classroom facilities shall be moved out of such facilities and to the designated tornado shelter area(s) in the event of a tornado, tornado alert, or tornado warning.
- (f) Each local fire code official conducting the annual inspection of each school or institution shall be designated pursuant to division (C) of section 3737.73 of the Revised Code to verify compliance with the tornado safety provisions of this rule.

(3) 408.3 Standards for shelter designation.

It is recommended that the designation of areas to be used as tornado shelters be in accordance with the following criteria:

- (a) Whenever possible, designate areas which are located below ground level, in the core of the building, in rooms or spaces with short ceiling spans, and on the leeward side. The farther the area is below ground level, the greater the protection. In any event, the area should be on the lowest floor, in the center of the building, and in a corridor or small room.
- (b) First aid kits and supplies should be in or close to the tornado shelter area(s).
- (c) Avoid walls of glass, windows, skylights, and areas containing trophy cases or other fixtures of glass.
- (d) Avoid load-bearing walls and exterior walls, especially those on the windward side or facing the south, southwest, or west.
- (e) Avoid corridors which are not baffled with a wall or walls and that open to the south, southwest, or west.
- (f) Avoid an area with only one exit, unless overriding considerations should prevail.
- (g) Avoid rooms or areas which are locked, since they may not be readily accessible during an emergency.
- (h) Avoid, absolutely, chimneys and the use of cars, buses, and modular classroom buildings.
- (i) Avoid rooms or spaces with long ceiling spans, that are opposite openings or doorways that lead into rooms with windows in exterior walls, or that are within the unprotected, falling radius of higher building components.

(4) 408.4 General considerations.

Every building is different and contains some vulnerable elements that cannot be counted upon to withstand a tornado. Portions of buildings that contain one or more of these elements should be avoided wherever possible.

- (a) Windows, skylights, and other components of glass, should be avoided. Glass is no match for tornado force winds and usually breaks into many jagged pieces which are blown into interior spaces from the windward side. Acrylic or poly carbonate plastics are more resistant to impact than glass, but large panes will pop out. Tempered glass will shatter into

thousands of cube-like pieces that will be propelled by the winds like shrapnel. Windows at the ends of corridors, particularly those facing south, southwest, and west, are very dangerous. They will probably be blown down the corridor in a wind tunnel effect.

- (b) Windward side walls, which usually are on the south and west, receive the full strength of the winds. It is assumed that windows on these sides will be broken and blown into the rooms on the windward side. This often results in increased air pressure, which aids in raising the roof.
- (c) Wind tunnels occur in unprotected corridors facing the oncoming winds, which usually come from the south or west. Openings facing these directions allow the winds to penetrate into interior spaces. The winds apparently occupy almost the entire volume of such a wind tunnel, as debris marks have been found to cover the full height of the walls. If entrances are baffled with a solid massive wall, this effect is much less serious.
- (d) Lightweight roofs such as steel deck plate, wood planks, or plywood will usually be lifted up by the wind and partially carried away, with some roof debris falling below.
- (e) Heavier roofs, especially precast concrete planks, may lift up and move slightly and then fall, but not always returning to their original support location. If the support has collapsed, the heavy roof may fall into the area below.
- (f) Long-span rooms almost always have high ceilings. The exterior walls are usually higher than the typical one-story wall. Often these walls, especially those with southern or western exposures, will collapse into the long span. If they are load-bearing walls, the roof will cave in on the area also. Avoid rooms such as gyms, auditoriums and cafeterias.
- (g) Load-bearing walls are the sole support for floors or roofs above. If winds cause the supporting walls to fail, part or all of the roof or floors above will collapse. The most dangerous locations in a building are usually along the south and west sides, and at all corners.
- (h) Masonry construction is not immune to wall collapse. Most masonry walls are not vertically reinforced, and can fail when high horizontal forces occur, such as those caused by winds.

Replaces: This rule was previously located (and will remain) at 1301:7-7-04.

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