

Review of Plans General Checklist

The following checklist gives general requirements for commercial building code compliance

Public buildings must conform to the requirements of the Tennessee Public Buildings Accessibility Act. It is the responsibility of the owner and design professional to comply with accessibility codes and standards for the enforcement of the Tennessee Public Building Accessibility Act. TCA 68-120-204

State buildings, educational occupancies and any other occupancy requiring an inspection by the state fire marshal for initial licensure, must comply with the requirements of NFPA 101 Life Safety Code, 2012 edition. In the case of a conflict between the codes, the more stringent provision shall prevail with the exception of those items listed in Rule 0780-02-02-.04.

Starting construction before plans approval may be considered as a just cause to issue a stop work order. It will also compromise, if not prevent, the issuance of a Certificate of Occupancy upon completion of the project. Rule 0780-2-3-.10

Plans submittal requirements: When submitting documents using the Portal application it is important to use correct document types that best match the documents being submitted, e.g., *Sprinkler Shop Drawings*, *Energy Certificates*, etc., to ensure an accurate and timely response to your submittal:

- Provide the Tennessee Fire Marshal's TFM number and Project number on all plans and correspondence.
- Provide a corresponding letter which indicates, in the order of the review, where the revised items may be located on the drawings.
- Identify all corrections by means of a mark or cloud, and provide only the sheets that require correction. If the number of corrections warrant complete revised sets of plans, revised sets are acceptable.
- Ensure that all revised documentation is sealed by the design professional of record. Please note that corrections in letter form, such as will comply, etc., are not acceptable as a review response.
- Document security settings must allow the application of markups and stamps, allow multiple PDF documents to be combined or merged into a single document, and allow the application of electronic signatures and certification. IBC 107.2.1, TSFMO Policy
- Use a standardized font recognized by Adobe Acrobat (such as Arial) to prevent loss of information during the conversion process from DWG to PDF.

New buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. Emergency responder radio coverage must be verified in the field. The test should be performed by the local fire department after interior and exterior walls and the roof are constructed.

Information to be Included on the Plan Drawings

1. On the cover sheet, provide the current minimum State of Tennessee adopted codes and standards on the plans.
 - (a) International Building Code, 2012 edition (excluding Chapter 11 and Section 3411)
 - (b) International Fuel Gas Code, 2012 edition
 - (c) International Mechanical Code, 2012 edition
 - (d) National Electric Code, NFPA 70, 2017 edition.
 - (e) International Energy Conservation Code, 2012 edition, or
 - (f) International Energy Conservation Code, 2006 edition (Group F-1, F-2, S-1, & S-2 Only)
 - (g) International Fire Code, 2012 edition.
 - (h) International Existing Building Code, 2012 edition (scope of work related to existing buildings)
 - (i) 2010 ADA Standards for Accessible Design (for buildings required to comply with Tennessee Public Building Accessibility Act)
 - (j) NFPA 101 Life Safety Code, 2012 edition (State Buildings, Educational occupancies and any occupancy requiring an inspection by the TSFMO for initial licensure)
2. The plans are not properly sealed. The registrant shall superimpose his or her signature and date of signature across the face and beyond the circumference of the seal. A&E Rule 0120-02
The design of the registrant's seal required by T.C.A. § 62-2-306 shall be as follows:



Architect



Engineer

Electronic signatures and dates of signature are not required to be placed across the face and beyond the circumference of the seal but must be placed adjacent to the seal.

3. Modified sheets and/or design revisions are not properly sealed. When revisions are made to sealed documents, the revisions are to be resealed and appropriately dated in accordance with A&E Rule 0120-02.
4. On the cover sheet, provide the building name, 911 street address (if one has been assigned), city and county.
5. Provide the use and occupancy classification(s). For multiple occupancy classifications, show the classification of each area on the plans.
6. For multiple occupancies, identify the design approach on the cover sheet. For example: non-separated mixed occupancy, separated mixed occupancy, or a combination thereof.

7. Provide the responding fire department's information: Include the Fire Chief/Fire Marshal's name, mailing address, phone, and email.
8. Provide the scope of work on the cover sheet. For example: new construction, an addition to an existing building, an alteration to an existing building, a repair of an existing building, or a change of use and occupancy classification.
9. If a state agency will license the facility, identify the licensing agency and the license type on the cover sheet.
10. On the cover sheet, provide building height, area, and number of stories.
 - 1) Show allowable height, area, and number of stories
 - 2) Identify the building's height, area(s), and number of stories
 - 3) Show height, story, or area increases due to sprinkler system installation
 - 4) Show area increase due to street frontage
 - 5) For unlimited area buildings, show that all requirements are met.
11. On the cover sheet, identify special requirements of IBC Chapter 4 *Special Detailed Requirements Based on Use & Occupancy* that have been incorporated into the plans.
12. On the cover sheet, identify the construction type of the building or structure in accordance with IBC Chapter 6.
13. Identify the specific sprinkler standard on the cover sheet. Include the scope of building protection: e.g., Equipped Throughout, Partial, Incidental Area. IBC 107.2.1, IBC 903.3.1
14. Give a clear statement on where seismic bracing is required on the cover sheet.
15. Identify the standpipe Class in accordance with IBC 905.
16. Provide the IECC Climate Zone.
17. Provide a legend of abbreviations used on the plans and their meaning.
18. Provide the distance on the plans of each from the real or imaginary line(s) to the building(s) in accordance with IBC 705.3.
19. Hourly ratings of structural members, floors, roofs, exterior and interior bearing and nonbearing walls.
20. Hourly rating of corridors, shaft enclosures, stairway enclosures, tenant separations, dwelling or sleeping unit separations, and occupancy separations.
21. Provide an updatable "Index of Drawings" which reflects the most current drawing revision and the date revised with each submission. IBC 107.2.1
22. The following drawings were indexed but not provided with the submittal. IBC 107.2.1
23. The following drawings were submitted but not shown in the "Index of Drawings" IBC 107.2.1

24. In other than R-2, R-3, and I-1 occupancies, provide a complete Life Safety Plan:
 - (1) Show the means of egress of rooms to an exit and a public way
 - (2) Show the travel distance to reach an exit from most remote space in the building
 - (3) Show the longest common path of travel. IBC 1016.1 and Table 1016.2
 - (4) Show the fire-resistance ratings and/or smoke ratings of exits and corridors
 - (5) Show occupant load calculations with occupant load factors for each space based on its intended use. IBC Table 1004.1.2
 - (6) Show the number of occupants at exits and exit discharges and the clear width of the doors. IBC 1005.3 and 1008.1.1

25. Provide COMcheck Compliance Certificates for energy code compliance with signature and date by a Tennessee registrant. Software & Web Tools are available at <http://www.energycodes.gov/software-and-web-tools> Include all categories for the project scope of work: i.e. exterior envelope, interior lighting, exterior lighting, and mechanical. If the scope of work in an existing building does not require an upgrade to current IECC requirements, include a letter identifying the exception(s) used. Combine all individual energy documents into one pdf and submit through TN SFMO Portal under "Energy Certificates".

26. REScheck is required for this project. Provide REScheck Compliance Certificates with signature and date by a Tennessee registrant. Software & Web Tools are available at: <http://www.energycodes.gov/software-and-web-tools> Combine all individual energy documents into one pdf and submit through TN SFMO Portal under "Energy Certificates".

27. Provide PDF copy of the specifications manual, IBC Section 107, Rule 0780-02-03-.03(3) and A&E Rule 0120-02-.08(3).

Building Data Height & Area Evaluation

28. The building exceeds the allowable area for this type of use, construction type and open space. IBC Table 503.

29. The building exceeds the allowable number of stories for this type of use, construction type and open space. IBC Table 503.

30. The building exceeds the allowable height for this type of use, construction type and open space. IBC Table 503.

Fire-Rated Assemblies, Listings, & Detailing

31. Use the International Building Code terms for fire-resistance assemblies:

FIRE WALL. A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall. IBC Section 202 & 706.

FIRE BARRIER. A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained. IBC Section 202 & 707

FIRE PARTITION. A vertical assembly of materials designed to restrict the spread of fire in which openings are protected. IBC Section 202

SMOKE BARRIER. A continuous membrane, either vertical or horizontal, such as a wall, floor or ceiling assembly, that is designed and constructed to restrict the movement of smoke. IBC Section 202

SMOKE PARTITION. A continuous membrane that is designed to form a barrier to limit the transfer of smoke. NFPA 101, 3.3.254

HORIZONTAL ASSEMBLIES. A fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained. IBC Section 202

32. Provide a wall type legend that identifies fire walls, fire barriers, fire partitions, smoke barriers and/or smoke partitions and their rating in hours. Specify the Gypsum Association assembly number or the UL (or other) assembly number.
33. For all fire rated assemblies, provide Gypsum Association or UL assembly listing (or other) details in their entirety including design illustrations and material specifications without modification or manipulation, IBC 107.2.1, 703.3. Provide construction details and fire rating calculations for IBC Section 721 assemblies. IBC 107.2.1 Include the following:
 - (1) Fire rated walls, columns, beams, floor/ceiling and roof/ceiling assemblies.
 - (2) Fire rated joint systems for fire rated assembly connections such as wall-to-wall, floor-to-floor, floor-to-wall, head-of-wall, and bottom-of-wall joints where not inherently tight.
 - (3) Curtain Wall Joint Systems for perimeter fire containment systems such as unrated curtain wall-to-rated floor assemblies where not inherently tight. The UL Online certification directory available at: <http://database.ul.com/cgi-in/XYV/template/LISEXT/1FRAME/index.html>.
 - (4) See UL's terms and conditions of use.
34. Show assembly numbers on Architectural sectional detail drawings. IBC 107.2.1, 703.3
35. Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:
 - (1) Be located in accessible concealed floor, floor-ceiling or attic spaces;
 - (2) Be located within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition; and
 - (3) Include lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch stroke in a contrasting color incorporating the suggested wording. "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS" or other wording.

Exception: Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

Site Plans

36. Provide site plan drawings showing the location and footprint of all new and existing structures, property lines and/or assumed property lines, grade elevations, water mains and other utilities, fire hydrants, fire department access and all ingress/egress to public ways. Include size and location of LP-Gas storage tanks and any other above ground storage tanks. IBC 107.2.5
37. The fire apparatus road must extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building unless otherwise approved by the fire chief of the responding fire department. IFC 503.1.1
38. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet exclusive of shoulders, except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches unless otherwise approved by the fire chief of the responding fire department. IFC 503.2.1
39. Dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved area for turning around fire apparatus unless otherwise approved by the fire chief of the responding fire department. IFC 503.2.5
40. When there is no fire main available, provide engineered design intent for a dependable supply with appurtenances to satisfy hydrant requirements. Show the location of reservoirs, tanks, fire pump house, private fire mains, etc. with preliminary design calculations on the plans furnished by the engineer of record. IBC 107.2.1, IFC 507.2
41. When fire main is available and there are no existing fire hydrants near the building site, provide hydraulic design values for any new proposed site water main(s) and fire hydrant(s). Provide calculations for water flow (gpm) and residual pressure (psi) on plans furnished by the engineer of record. IBC 107.2.1, IFC 507.3
42. Provide the following flow test data on the plans for existing fire hydrants (IBC 107.2.1, IFC 507.4). Show flow test data next to the hydrant tested. Hydrant flow test must have been conducted within the last six months during peak demand hours.
 - (1) Static pressure (psi), residual pressure 20 psi min., and flow 500 gpm min. Department of Environment & Conservation Rules and Regulations 0400-45-01-.17(18).
 - (2) Name and address of party responsible for performing test, date test taken (within the last 6-months), time test taken (a.m./p.m.), and elevation of test hydrant.
43. Fire hydrants must be provided so that any portion of the building's exterior is within 400 ft. (for unsprinkled buildings) or 600 ft. (for sprinkled buildings) hose lay of a fire hydrant measured along vehicle access route. (IFC 507.5.1) Check with a local fire code official as some jurisdictions require closer spacing.
44. Hydrants shall not be located closer than 40 ft. from the building being protected. IFC 507.2.1, NFPA 24 7.2.3
45. With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. IBC 912.2

46. For new buildings or existing buildings with new or relocated fire department connections, the location of fire department connections shall be approved by the fire chief. IBC 912.2

General Means of Egress Evaluation

47. The means of egress shall have a ceiling height of not less than 7 feet 6 inches. IBC 1003.2
48. Walking surfaces of the means of egress must have a slip-resistant surface and be securely attached. IBC 1003.4
49. Where changes in elevation of less than 12 inches exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1010 shall be used. Where the difference in elevation is 6 inches or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials. IBC 1003.5
50. The path of egress travel along a means of egress shall not be interrupted by any building element other than a means of egress component as specified in this chapter. Obstructions shall not be placed in the required width of a means of egress except projections permitted by this chapter. The required capacity of a means of egress system shall not be diminished along the path of egress travel. IBC 1003.6 The minimum width of corridors specified in Table 1018.2 shall be as determined in Section 1005.1, IBC 1018.2.
51. The number of occupants shall be calculated as prescribed in Table 1004.1.2. For areas without fixed seating, the occupant load shall not be less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.1.2.
52. For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. The occupant load for areas in which fixed seating is not installed, such as waiting spaces, shall be determined in accordance with Section 1004.1.2 and added to the number of fixed seats. The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each wheelchair space and one occupant for the associated companion seat. For areas having fixed seating without dividing arms, the occupant load shall not be less than the number of seats based on one person for each 18 inches of seating length. The occupant load of seating booths shall be based on one person for each 24 inches of booth seat length measured at the backrest of the seating booth. IBC1004.4
53. The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.3 inch per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story. IBC 1005.3.1
- Exception:* For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.2 inch per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

54. The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch per occupant. IBC 1005.3.2

Exception: For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inch per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

55. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress are required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress. IBC 1007.1

56. Where elevators are provided in buildings four or more stories above, or four or more stories below, grade plane, at least one elevator shall be provided for fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretcher in accordance with IBC 3002.4.

57. Egress must not be through kitchens, storage rooms, closets, or any space identified as a hazardous location. IBC 1014.2

58. Dead ends in exits and exit access must not exceed 20 feet (see exceptions). IBC 1018.4
The common path of travel must not exceed the distances in Table 1014.3.

TABLE 1014.3 COMMON PATH OF EGRESS TRAVEL:

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)		WITH SPRINKLER SYSTEM (feet)
	Occupant Load		
	≤ 30	> 30	
B, S	100	75	100
U	100	75	75
F	75	75	100
H-1, H-2, H-3	Not Permitted	Not Permitted	25
R-2	75	75	125
R-3	75	75	125
I-3	100	100	100
All others	75	75	75

59. Where two exits or exit access doors are required from a building or area, they must be separated by one-half the diagonal dimension of the building or area served or one-third in fully sprinkled buildings. IBC 1015.2.1

60. At least two means of egress must be provided in any room or space when the occupant load exceeds the values of Table 1015.1 or common path of travel exceeds the limitations of Section 1014.3. As needed, apply 1015.3 (Boiler, incinerator and furnace rooms), 1015.4 (Refrigeration machinery rooms) and 1015.5 (Refrigerated rooms or spaces).

TABLE 1015.1 SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY:

OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B, E, F, M, U	49
H-1, H-2, H-3	3
H-4, H-5, I-1, I-2, I-3, I-4, R	10
S	29

61. Exit access travel distance shall be measured from the most remote point within a story along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. IBC 1016.3

62. Exit access travel distance shall not exceed the values given in Table 1016.2.

TABLE 1016.2 EXIT ACCESS TRAVEL DISTANCE:

OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250
I-1	Not Permitted	250
B	200	300
F-2, S-2, U	300	400
H-1	Not Permitted	75
H-2	Not Permitted	100
H-3	Not Permitted	150
H-4	Not Permitted	175
H-5	Not Permitted	200
I-2, I-3, I-4	Not Permitted	200

63. Two exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be provided where one of the following conditions exists, IBC 1021.2:

- (1) The occupant load or number of dwelling units exceeds one of the values in Table 1021.2(1) or 1021.2(2).
- (2) The exit access travel distance exceeds that specified in Table 1021.2(1) or 1021.2(2) as determined in accordance with the provisions of Section 1016.1.

64. Three exits, or exit access stairways or ramps providing access to exits at other stories, shall be provided from any story or occupied roof with an occupant load from 501 to and including 1,000. Four exits, or exit access stairways or ramps providing access to exits at other stories, shall be provided from any story or occupied roof with an occupant load greater than 1,000. IBC 1021.2.4

65. Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide direct access to grade. The exit discharge shall not reenter a building. IBC 1027.1
The exit discharge shall provide a direct and unobstructed access to a public way. IBC 1027.5

Laboratories, Laboratory Rooms, and Laboratory Work Areas

66. Laboratories and vocational shops that are not in a Group E occupancy must provide either 1-hour separation or be equipped with an automatic sprinkler system. IBC Table 509.
67. Laboratories in educational occupancies and other occupancies subject to NFPA 101 are required to comply with NFPA 45 when they contain more than 1 gallon of flammable or combustible liquid or greater than 75 SCF of flammable gas. NFPA 101, 8.7.4.1 & NFPA 45, 1.1.2
 - (1) Laboratory units shall be classified as Class A (High Fire Hazard), Class B (Moderate Fire Hazard), Class C (Low Fire Hazard), or Class D (Minimal Fire Hazard), according to the quantities of flammable and combustible liquids specified in Table 10.1.1(b) or (b). NFPA 45 4.2.1.1
 - (2) Instructional laboratory units shall be classified as Class C or Class D laboratory units limited to the quantities in Table 10.1.1(b). NFPA 45 4.2.2.1
 - (3) Laboratory units in educational occupancies shall be separated from non-laboratory areas by 1-hour construction (NFPA 45, 5.1.3). Separation requirements based on height allowances shall be in accordance with NFPA 45, Table 5.1.1.

Architectural Floor Plans

Provide dimensioned floor plans which show the use of each space (IBC 107.2.1). For projects that require use of NFPA 101, use the more restrictive requirement.

68. Show a 1-hour, 2-hour, or 3-hour rated fire barrier between separated occupancies or uses. IBC 508.1, 508.4 and Table 508.4 No separation is required between non-separated occupancies. IBC 508.3.3
69. Incidental use Areas must be separated and/or protected in accordance with IBC Table 509. IBC 509.4
70. Show the rating of corridors, shaft enclosures, stairway enclosure, tenant separations, dwelling or sleeping unit separations, and occupancy separations. IBC 107.2.1
71. Vertical openings shall comply with IBC Section 712. IBC 712.1
72. Elevator, exit stairways, and mechanical shafts must be enclosed with a 1-hour rated fire barrier for up to 3-stories or 2-hour for 4-stories or more. (IBC 713.4 and 1022.2) See 1009.3 for exceptions.
73. Doors serving 50 or more people and stairway doors must swing in the direction of exit travel. IBC 1008.1.2
74. Doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock unless it is panic hardware or fire exit hardware. IBC 1008.1.10 (see exceptions)
75. Gates used as a component in the means of egress shall conform to the applicable requirements for doors. IBC 1008.2 (see exceptions)

- 76. Interior exit stairways shall lead directly to the exterior of the building or shall be extended to the exterior of the building with an exit passageway conforming to the requirements of Section 1023, except as permitted in Section 1027.1. IBC 1009.2 Floor openings between stories created by exit access stairways shall be enclosed. IBC 1009.3
- 77. Exit access stairway enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both. IBC 1009.3.1 Exit access stairway enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories. The number of stories connected by the exit access stairway enclosures shall include any basements, but not any mezzanines. IBC 1009.3.1.2
- 78. Corridors shall be fire-resistance rated as fire partitions in accordance with Table 1018.1 and Section 708. The minimum width of corridors specified in Table 1018.2 shall be as determined in Section 1005.1, IBC 1018.2. For projects that require use of NFPA 101, use the more restrictive requirement, when a difference in the adopted Codes exists.

TABLE 1018.1 CORRIDOR FIRE-RESISTANCE RATING:

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	Not Permitted	0.5
I-2 ^a , I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 ^b

TABLE 1018.2 MINIMUM CORRIDOR WIDTH:

OCCUPANCY	WIDTH (minimum)
Any facilities not listed below	44 inches
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24 inches
With a required occupancy capacity less than 50	36 inches
Within a dwelling unit	36 inches
In Group E with a corridor having a required capacity of 100 or more	72 inches
In corridors and areas serving gurney traffic in occupancies where patients receive outpatient medical care, which causes the patient to be incapable of self-preservation	72 inches
Group I-2 in areas where required for bed movement	96 inches

- 79. Fire partition rated corridors must be continuous from the point of entry to an exit and must not be interrupted by intervening rooms (see Exception). IBC 1018.6
- 80. Exit stairways must be separated from the interior of the building by one or two-hour rated fire barrier. (IBC 1022.2) A fire-resistance rated exit enclosure must provide a continuous protected path of travel to an exit discharge or public way. (IBC 1022.3) A maximum of 50% of the required number

and capacity of exit enclosures may discharge through areas on the level of exit discharge in sprinklered buildings (see exceptions). IBC 1027.1

81. Exit passageways serving as an exit component in a means of egress system shall have walls, floors and ceilings of not less than a 1-hour fire-resistance rating, and not less than that required for any connecting interior exit stairway or ramp. Exit passageways shall be constructed as fire barriers. The minimum unobstructed width of exit passageways shall be determined as specified in Section 1005.1 but such width shall not be less than 44 inches, except that exit passageways serving an occupant load of less than 50 shall not be less than 36 inches in width. IBC 1023.3, 1023.2
82. Exterior walls and unprotected openings must be rated by one hour fire barrier with 45-minute rated opening protection for either the unprotected exterior wall of an exit stairway or an adjacent unprotected exterior wall that is less than 180° for a 10 ft. horizontal projection and extending vertically from the ground to a point 10 ft. above the topmost landing. IBC 1022.7
83. Exterior exit stairways and ramps serving as an element of a required means of egress shall be separated from the interior of the building as required in Section 1022.2. Openings shall be limited to those necessary for egress from normally occupied spaces. IBC 1026.1, 1026.6
84. Horizontal exits serving as an exit in a means of egress system shall be provided by a fire wall complying with Section 706; or it shall be provided by a fire barrier continuous from exterior wall to exterior wall and complying with Section 707 or a horizontal assembly complying with Section 711, or both. The minimum fire-resistance rating of the separation shall be 2 hours. Opening protectives in horizontal exits shall also comply with Section 716. Duct and air transfer openings in a fire wall or fire barrier that serves as a horizontal exit shall also comply with Section 717. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than 2 hours with no unprotected openings. IBC 1025.1, 1025.2
85. Elevators shall not be in a common shaft enclosure and shall not open into a stairway. IBC 1022.4 and 3002.7
86. Elevator machine rooms and machinery spaces must be rated the same as the hoist-way enclosure with rated door assemblies of 60-min. or 90-min. IBC 3006.4
87. Openings in exit enclosures shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure. BC 713.7.1 Penetrations other than those necessary for the purpose of a shaft are prohibited in shaft enclosures. IBC 713.8.1
88. Provide an attic draft-stopping floor plan for buildings of combustible construction buildings (see exceptions). IBC 107.2.1 and 718.4

Building Elevations

89. For new buildings, provide building elevations showing north, south, east & west elevations. IBC 107.2.1 and Chapter 2 Definition of Building Height & Grade Plane. Show the following items:
 - (1) Finished ground levels adjoining the building at exterior walls.
 - (2) The calculated grade plane (average of finished ground levels).
 - (3) Dimension the height of each level from the referenced grade plane.
 - (4) Dimension the average height of the highest roof structure from the referenced grade plane.

Architectural Wall/Floor Sections and Details

90. Construction Type I and II Partitions must be constructed of noncombustible materials or fire retardant treated wood. IBC 603.1 Combustibles are not permitted in concealed spaces of Type I and II construction (see exceptions). IBC 718.5
91. Fire barrier walls must extend continuously through concealed spaces from the top of the foundation or assembly below to the underside of a floor or roof sheathing. IBC Section 707 and 707.5
92. The supporting construction must be protected to afford the required fire-resistance rating of the horizontal assembly supported. IBC 711.4
93. A shaft that does not extend to or through the underside of the roof deck of the building must be enclosed at the top with the same rating as the shaft separation. (IBC 713.12) Shafts that do not extend to the bottom of the structure must be separated with shaft rated protection at the bottom. IBC 713.11
94. Equipment recessed in a fire-resistance rated wall must not decrease the rating of that wall. IBC 714.3.2
95. Fire-blocking must be installed in combustible construction to cut off vertical and horizontal concealed draft openings and must form an effective barrier between floors, between a top story and a roof or attic. IBC 718.2 and 718.2.1
96. Draft-stopping must be installed in floors and attics in buildings of combustible construction buildings. IBC 718.3 and 718.4—see exceptions.

Stair, Ramp, Handrail & Guard Details

97. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches. When a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing to less than one-half its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches. IBC 1008.6
98. All stair steps leading into the main entrance to a public building must have detectable nosings of a contrasting color. The texture and color must be applied a width of not less than one inch and not more than two inches for the entire length of the edge of each stair step in accordance with TCA 68-120-119.
99. Stair treads must be minimum 11 in. and risers must be a maximum 7 in., but not less than 4 in., and with leading edge of a tread (nosing) meeting profile criteria. IBC 1009.7.2
100. The width of stairways shall be determined as specified in Section 1005, but shall not be less than 44 inches. (IBC 1009.4) Minimum headroom clearance in a stairway enclosure is 80 in. IBC 1009.5

101. There shall be a stairway landing at the top and bottom of each stairway. The width of the landing shall not be less than the width of the stairways they serve. IBC 1009.8
102. Handrails are required on both sides of stairs with extensions and mounted between 34 in. and 38 in. measured vertically to the top of the railing from the top of a stair tread nosing. (IBC 1009.15 and 1012.2) Handrail extensions must return to a wall, guard, or a walking surface. IBC 1012.6
103. One stair must extend to the roof for buildings four or more stories in height above grade plane (see Exception). IBC 1009.16
104. All interior exit ramps shall be enclosed in accordance with the applicable provisions of Section 1022. Exit access ramps shall be enclosed in accordance with the provisions of Section 1009.3 for enclosure of stairways. IBC 1010.2
105. Ramps used as part of a means of egress shall have a running slope not steeper than one unit vertical in 12 units horizontal (8-percent slope). The slope of other pedestrian ramps shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope). (IBC 1010.3) The slope measured perpendicular to the direction of travel of a ramp shall not be steeper than one unit vertical in 48 units horizontal (2-percent slope). IBC 1010.4
106. Ramps shall have landings at the bottom and top of each ramp, points of turning, entrance, exits and at doors. (IBC 1010.7) Ramps with a rise greater than 6 inches shall have handrails on both sides. (IBC 1010.9) Edge protection complying with Section 1010.10.1 or 1010.10.2 shall be provided on each side of ramp runs and at each side of ramp landings. IBC 1010.10
107. Guards must be provided at the open side of a means of egress that exceeds 30 in. above the floor or grade below at any point within 36" horizontally to the edge of the open side. (IBC 1013.2) Guards mounting height minimum is 42 in. (see exceptions) and maximum 4 in. sphere clearance for intermediate rails. IBC 1013.3 and 1025.14
108. Exit stairways extending below the level of exit discharge must have a discharge identification barrier with directional exit sign to prevent unintentional travel beyond the level of exit discharge. IBC 1022.8

Door/Door Hardware/Window Schedules and Details

109. Provide a door schedule and opening details. Schedule must show the rating of opening protectives and the door hardware set number. IBC 107.2.1
110. The minimum width of each egress door opening shall be sufficient for the occupant load served and shall provide a minimum clear width of 32 inches (see exceptions), a minimum height of 80 in., and the width of any single door must not exceed 48 in. IBC 1008.1.1
111. Egress doors shall be of the pivoted or side-hinged swinging type (see exceptions). IBC 1008.1.2
112. The floor on both sides of any door must be substantially level and may not vary more than one-half inch for a distance at least equal to the width of the widest door leaf. IBC 1008.1.5

113. Provide design criteria for the delayed egress locks, access-controlled egress doors or electromagnetically locked egress doors. IBC 1008.1.9.2, 1008.1.9.3 and 1008.9.4
The design must show which system is used, a legend for access-control components, location of these devices, device mounting heights, system connections to electrical power, system connections to the fire alarm system, and system operation statement.
114. Door locking for classrooms in existing and new educational occupancies may comply with Section 15.2.2.2.4 of NFPA 101, 2018 edition.
115. Door locking for classrooms in existing and new colleges and university instructional buildings may comply with Section 39.2.2.2.2 of NFPA 101, 2018 edition.
116. Openings in an exit access stairway enclosure shall be protected in accordance with Section 716 as required for fire barriers. Doors shall be self- or automatic-closing by smoke detection in accordance with Section 716.5.9.3 and IBC 1009.3.1.4
117. In a corridor 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection-rated glazing of 20 minutes and shall be exempt from the hose stream test. Glazing material in any other part of the door assembly, including transom lights and sidelights, shall be tested in accordance with NFPA 257 or UL 9, including the hose stream test, in accordance with Section 716.6. IBC 716.1, 716.5 and Table 716.5.
118. Fire door assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F above ambient at the end of 30 minutes of standard fire test exposure. (IBC 716.5.5) Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
119. Roll-up doors in a fire-resistance rated barrier or partition, smoke partition, or smoke barrier must be activated by smoke detectors. (IBC 716.5.9.3 and 715.5.11) Heat detection is permitted if ambient conditions prohibit installation of smoke detection. IBC 907.4.3
120. Closures and positive latching hardware are required on fire rated door assemblies and doors in smoke partitions and barriers. IBC 716.5.9
121. Except as specifically permitted by this section, egress door shall be readily openable from the egress side without the use of a key or special knowledge or effort. IBC 1008.1.9
122. Provide a glazing schedule. IBC 107.2
123. Rated glazing is required in fire window assemblies located in fire rated walls. IBC 716.6, Table 716.6
124. Glazing within 24 inches of doors and less than 60 inches above the walking surface must be safety glazing. IBC 2406.4.2
125. Safety glazing must be used when all the following conditions exist:
 - 1) The exposed area of an individual pane is greater than 9 square feet;

- 2) The bottom edge of the glazing is less than 18 inches above the floor;
- 3) The top edge of the glazing is greater than 36 inches above the floor; and
- 4) One or more walking surface(s) are within 36 inches, measured horizontally and in a straight line, of the plane of the glazing.

IBC 2406.4.3

Interior Elevations and Finishes

126. Interior wall and ceiling finish requirements shall be specified for rated exit stairways, exit access corridors, rooms and enclosed spaces as defined by occupancy group. IBC 803.9 and Table 803.9
127. Interior floor finish and floor covering materials shall comply with Sections 804.2 through 804.4.2. IBC 804.1
128. Combustible materials installed on or embedded in floors of buildings of Type I or II construction shall comply with Sections 805.1.1 through 805.1.3. IBC 805.1
129. In occupancies in Groups A, E, I and R-1 and dormitories in Group R-2, curtains, draperies, hangings and other decorative materials suspended from walls or ceilings shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 806.2 or be noncombustible. IBC 806.1
- Exceptions:*
- (1) Curtains, draperies, hangings and other decorative materials suspended from walls of sleeping units and dwelling units in dormitories in Group R-2 protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1 and such materials are limited to not more than 50 percent of the aggregate area of walls.
 - (2) Decorative materials, including, but not limited to, photographs and paintings in dormitories in Group R-2 where such materials are of limited quantities such that a hazard of fire development or spread is not present.
130. In Groups I-1 and I-2, combustible decorative materials shall meet the flame propagation criteria of NFPA 701 unless the decorative materials, including, but not limited to, photographs and paintings, are of such limited quantities that a hazard of fire development or spread is not present. In Group I-3, combustible decorative materials are prohibited. IBC 806.1
131. Fixed or movable walls and partitions, paneling, wall pads and crash pads applied structurally or for decoration, acoustical correction, surface insulation or other purposes shall be considered interior finish if they cover 10 percent or more of the wall or of the ceiling area, and shall not be considered decorative materials or furnishings. IBC 806.1
132. In Group B and M occupancies, fabric partitions suspended from the ceiling and not supported by the floor shall meet the flame propagation performance criteria in accordance with Section 806.2 and NFPA 701 or shall be noncombustible. IBC 806.1
133. Thermal and acoustical insulation shall comply with Section 720. IBC 807.1
134. Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for

applying interior finish. IBC 808.1.1 Acoustical ceiling systems that are part of fire-resistance-rated construction shall be installed in the same manner used in the assembly tested and shall comply with the provisions of Chapter 7. IBC 808.1.1.2

Structural Drawings

135. For existing buildings which have not been previously reviewed by the SFMO, provide one of the two following options:
- (1) a letter* from the submitting designer stating that the existing structural systems are adequate; or,
 - (2) a sealed structural engineer's analysis supporting that the building is capable of resisting the loads specified in Chapter 16 of the International Building Code.
- * The designer's letter shall be sealed and include that he or she is competent by experience, education or a combination thereof to determine that the existing structural systems for the building are adequate.
136. Construction documents shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603.1.1 through 1603.1.9 shall be indicated on the construction documents. Provide:
- (1) Floor and roof live loads. IBC 1607
 - (2) Ground snow load. IBC 1607
 - (3) Design load-bearing values of soils
 - (4) Ultimate design wind speed, Vult, (3-second gust), miles per hour (mph) (km/hr) and nominal design wind speed, Vasd as determined in accordance with Section 1609.3.1 and wind exposure
 - (5) Seismic design category and site class in accordance with Section 1613.3.5
 - (6) Design live load values for stairs, guard, and hand railings.
137. For buildings located in flood hazard areas established in Section 1612.3, provide flood design data
138. Each building and structure shall be assigned a risk category in accordance with Table 1604.5. IBC 1604.5 Where a building or structure is occupied by two or more occupancies not included in the same risk category, it shall be assigned the classification of the highest risk category corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher risk category, both portions shall be assigned to the higher risk category. IBC 1605.4.5
139. Provide the structural design for this pre-engineered building. The design of pre-engineered steel structures or structural components (i.e., trusses, buildings, etc.) must be prepared, sealed, signed, and dated by a Tennessee registrant as required by T.C.A. 62-2-102(b). Structural shop drawings for this pre-engineered building will be a stipulation on the plans upon initial approval of the project and no response is required at this time for this item.
140. Identify structural connection details for fire walls for foundation, floor, and roof which under fire conditions will allow collapse of the structure on either side. IBC 706.1, 706.2, Table 706.4, and 706.6
141. Trusses spanning 60 feet or great shall conform to the requirements of IBC 2211.3.3.

Mechanical Drawings

142. Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code. Construction documents shall indicate where penetrations will be made for mechanical systems, and the materials and methods for maintaining required structural safety, fire-resistance rating and fireblocking. IBC 107.2.1 and IMC 106.3.1
143. Penetrations of exit stairways with steam lines, gas lines, roof drain piping, water lines, electrical conduit, and HVAC duct are prohibited. Only sprinkler piping, standpipes, and electrical conduit serving the stairway, or duct systems/other equipment necessary for stair pressurization, are permitted. IBC 1022.5
144. Corridors must not serve as supply, return, exhaust, relief, or ventilation air ducts (see exceptions). IBC 1018.5
145. Shaft enclosures that are permitted to be penetrated by ducts and transfer openings must be protected with combination fire/smoke dampers (see exceptions). IBC 717.5.3
146. Fire dampers are required where duct systems penetrate a one hour or more fire-resistance rated fire partition, fire barrier, and fire wall. (IBC 716.5) Fire dampers may be omitted in fire partitions where the duct penetrating the wall meets minimum exceptions. IBC 717.5.4
147. Fire dampers may be used instead of a fire rated shaft when duct systems penetrate a fire-resistance- rated floor/ceiling assembly that connects no more than two stories. IBC 717.6.1
148. Duct systems penetrating non-fire rated floor/ceiling horizontal assemblies must be protected by a shaft enclosure under IBC Section 713 or equipped with a fire damper at each floor line where the duct connects no more than 3-stories (see Exception No. 2 for duct penetrating one floor). IBC 717.6.3
149. Smoke dampers must be installed in duct system penetrations at smoke barriers unless the duct is a part of a smoke removal system. IBC 717.5.5
150. Ceiling dampers or other methods of protecting openings in rated floor/ceiling or roof/ceiling assemblies must comply with the construction details of the tested floor/roof/ceiling assemblies with listed ceiling air diffusers or listed ceiling dampers. IBC 716.6, 716.6.2
151. Smoke dampers shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.3 and one of the method describe in Section 717.3.3.2.
152. HVAC systems greater than 2,000 cfm serving more than one room must have a duct mounted smoke detector mounted in the return air stream (IMC 606.2.1, 606.2.2). These smoke detectors must be wired to a fire alarm system when one is provided in a constantly attended location for supervisory signals. IBC 907.3.1
153. HVAC return air riser systems serving two or more stories must have duct mounted smoke detector shutdown at each connection to the vertical riser. (IBC 907.2.13.1.2) These smoke detectors

must be wired to a fire alarm system when one is provided in a constantly attended location for supervisory signals. IMC 907.3.1

154. For new buildings, guards shall be provided where appliances, equipment, fans or other components that require service and roof hatch openings are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. IMC 304.11
155. In Type I or II construction, materials exposed to plenum airflow must be noncombustible or limited combustible and have a maximum smoke developed index of 50. IBC 718.5 and IMC 602.2.1
156. Show venting of elevator hoist ways serving four stories or more (see exceptions for sprinkled buildings). IBC 3004.1
157. Provide commercial kitchen hood ventilation system Design Intent information by a Tennessee registered engineer. See the Kitchen Hood and Duct Design Intent Ventilation Control and Fire Protection of Commercial Cooking Operations correction list.
158. Provide UL (or other) fire-stop details in their entirety including design illustrations and material specifications without modification or manipulation for penetrations through rated assemblies (IBC 107.2.1 and Section 714). The details must be the latest version. Provide:
 - (1) Name of the listing laboratory
 - (2) Date of detail or last revised date
 - (3) (as applicable) Is the joint intended to be load bearing, and is it indicated as a load bearing system in the listings?
 - (4) (as applicable) Is the joint tested and listed to comply with the amount and type of expected building movement?
159. Clothes dryers shall be exhausted in accordance with the manufacturer's instructions. Dryer exhaust systems shall be independent of all other systems and shall convey the moisture and any products of combustion to the outside of the building. IMC 504.1
160. Exhaust ducts for domestic clothes dryers shall conform to the requirements of Section 504.6.1 through 504.6.7. IMC 504.6

Smoke Control Systems

161. Where a Smoke Control System is required, the system must be designed, installed, and tested in accordance with the requirements of IBC Section 909.
162. Buildings, or portions thereof, required to have a smoke control system in accordance with IBC Section 909 shall not be issued a certificate of occupancy until such time that the provisions of this section have been fully complied with and that the fire department has received satisfactory instruction on the operation, both automatic and manual, of the system and a written maintenance program complying with the requirements of Section 909.20.1 of the International Fire Code has been submitted and approved. IBC 909.19

Exception: In buildings of phased construction, a temporary certificate of occupancy, as approved by the fire code official, shall be allowed provided that those portions of the building to be occupied meet the requirements of this section and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings. IBC 909.19

Note: The above requirements and special inspection of the system will be a stipulation on the plans. No response is required at this time for this item.

163. Smoke control systems shall be tested by a special inspector. The test scope shall be as follows:
- (1) During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.
 - (2) Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements and detection and control verification.

IBC 1705.17 and 1705.1

164. Special inspection agencies for smoke control shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers. IBC 1705.17.2

Plumbing Drawings

165. Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code. Construction documents shall indicate where penetrations will be made for pipes, fittings and components and shall indicate the materials and methods for maintaining required structural safety, fire-resistance rating and fireblocking. IBC 107.2.1 and IPC 106.3.1
166. Penetrations of exit stairways with steam lines, gas lines, roof drain piping, water lines, electrical conduit, and HVAC duct are prohibited. Only sprinkler piping, standpipes, and electrical conduit serving the stairway, or duct systems/other equipment necessary for stair pressurization are permitted. IBC 1022.5
167. Provide UL (or other) fire-stop details in their entirety including design illustrations and material specifications without modification or manipulation for penetrations through rated assemblies. IBC 107.2.1, Section 714

Sprinkler System Water Supply Availability and System Demand

168. Provide flow test information:
- (1) Name of person who conducted the flow test
 - (2) Date and location of test

Note: The test must be less than six months old. If reliable or current information is not available, the engineer should supervise the performance of a new flow test and/or will verify the accuracy of a new flow test during preliminary design. A&E Board Standard of Care for fire sprinkler design.

169. Provide preliminary hydraulic calculation results including, required design density, area of application, required hose stream, and required duration.
170. Where the potential exists for water pressures exceeding 175 psi, provide a pressure reducing valve meeting the requirements of NFPA 13 8.16.1.2. Specify the setting for pressure-reducing valves.
171. Identify the sprinkler system occupancy hazard classification for the facility or portion of the facility, as follows: *Light and Ordinary (Groups 1 and 2), Extra (Groups 1 and 2), or Special Occupancy Hazards.*
NFPA 13 Chapter 5
- Note:* Commercial kitchens, Storage spaces 50 sf or larger, janitor closets, and gas furnace rooms must be Ordinary Group 1. Large stack rooms in Libraries and Stage Areas must be Ordinary Group 2. Laboratories using chemicals must be classified Ordinary Group 1 (Class C or D laboratory) or Ordinary Group 2 (Class A or B laboratory). NFPA 45 6.2.1.1
172. Provide the following calculations based on NFPA 13 Chapter 11, NFPA 13R Chapter 7, or NFPA 13D Chapter 8:
- (1) Identify the hydraulically most demanding area of the building
 - (2) Provide preliminary flow (gpm) and pressure (psi) demand calculations for the greatest demand area. Include the required sprinkler head pressure, sprinkler system piping elevation loss, and friction loss (including device friction loss such as backflow preventers and isolation valves).
NFPA 13 Chapter 11
 - NFPA 13: Density/Area Concept, duration is based upon occupancy hazard
 - NFPA 13R: 4-Head design, 30-minute duration
 - NFPA 13D: 2-Head design, 10-minute duration
 - (3) Provide a graph plotting the water supply curve (static psi at zero gpm flow and residual psi at gpm flow) and system demand (preliminary calculated point of residual psi at gpm flow) to show that the water supply (fire hydrant test) exceeds sprinkler system water demand for the building.

General Automatic Sprinkler Design Intent

173. Provide details of the system as applicable:
- (1) Total area protected on each floor
 - (2) Pipe type and schedule of wall thickness
 - (3) Type and nominal K-factor of sprinklers
 - (4) Calculation of loads for sizing, details of sway bracing
 - (5) Temperature rating of any high-temperature sprinklers
 - (6) Give the size and location of all risers and mains
 - (7) Give the location of any small enclosures in which no sprinklers are to be installed
 - (8) Give the location of any areas where sprinklers are omitted by exceptions of NFPA 13 or 13-R
 - (9) Location of preaction or deluge valves
 - (10) Size and location of standpipe riser and hose outlets

174. Specify that all system gauges and valves must be accessible for operation, inspection, and maintenance. NFPA 13 8.1.2
175. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in the following areas in accordance with Section 903.3.1 and their listings in accordance with IBC 903.3.2:
- (11) Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with this code.
 - (12) Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities.
 - (13) Dwelling units and sleeping units in Group I-1 and R occupancies.
 - (14) Light-hazard occupancies as defined in NFPA 13.
176. Automatic sprinklers shall be installed with due regard to obstructions that will delay activation or obstruct the water distribution pattern. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands, or equipment that exceeds 4 feet in width. Not less than a 3-foot clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers. IBC 903.3.3
177. Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with IBC 903.3.5.1.
- (1) Valves shall not be installed between the domestic water riser control valve and the sprinklers. *Exception:* An approved indicating control valve supervised in the open position in accordance with Section 903.4 (or when required by NFPA 101 9.7.1.2).
 - (2) The domestic service shall be capable of supplying the simultaneous domestic demand and the sprinkler demand required to be hydraulically calculated by NFPA 13, NFPA 13D or NFPA 13R.
 - (3) A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand as required by NFPA 13R. IBC 903.3.5.1.2
 - (4) An automatic secondary on-site water supply having a capacity not less than the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings assigned to Seismic Design Category C, D, E or F as determined by the International Building Code. An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the automatic sprinkler system. The secondary water supply shall have a duration of not less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13. IBC 903.3.5.2
178. Show that the automatic sprinkler system is supervised per IBC 903.4:
- (1) Provide tamper switches at all control valves.
 - (2) Provide a flow switch or alarm check valve and specify connection to the general building alarm that sounds within 5 minutes of flow. NFPA 13 6.9.1
 - (3) For high-rise buildings, the requirements of NFPA 13 8.17.1.6 must be met.
179. Identify the type of above ground pipe or tube materials used for the sprinkler system. NFPA 13 6.3, NFPA 13R 5.2, NFPA 13D 5.2
180. All sprinkler pipe and fittings shall be so installed that the system can be drained. NFPA 13 8.16.2, NFPA 13R 6.9.1, NFPA 13D 7.2.1. Provide a method for drainage where the lead-in terminates at a point lower than grade.

181. Show location of the test connection(s). Test connections shall be provided at locations that will permit flow tests of water supplies and connections. NFPA 13 8.17.4.1.1, NFPA 13R 6.10.1, NFPA13D 7.2.4.
182. Specify seismic restraints for sprinkler piping and specify flexible couplings at flexure joints per NFPA 13 9.3.2.1.
183. Show clearance around piping passing through concrete floors and concrete/CMU walls and foundation where required. NFPA 13 9.3.4, NFPA 13R 6.13
184. Show typical seismic bracing details, location of 4-way bracing, longitudinal and latitudinal bracing, line restraint bracing, and the clearance required around sprinkler pipe based on pipe size.
185. A proposed sprinkler system solenoid valve used for elevator hoist ways and machine rooms must be tested and listed for this particular application and be supervised by the fire alarm system to satisfy the code. NFPA 13 6.1.1
186. Protection of atrium glass walls designed as smoke partitions shall comply with all the following:
 - (1) Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side *only if there is not a walkway on the atrium side.*
 - (2) The sprinklers shall be located between 4 inches and 12 inches away from the glass and at intervals along the glass not greater than 6 feet.
 - (3) The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction. IBC 404.6, Exception 1, NFPA 101 8.6.7(1)(c)
187. Where specific application window sprinklers are specified, they shall be installed in accordance with their listing. NFPA 13, 6.1.1
188. Provide details for protection of special storage and commodities in accordance with NFPA 13 Chapter 12.
189. Automatic sprinkler system riser rooms shall be designed with adequate space for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working room around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair, or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly. Automatic sprinkler system riser rooms shall be provided with a door(s) and unobstructed passageway large enough to allow removal of the largest piece of equipment. IBC 901.8

Sprinkler System MP&E Requirements

190. Where aboveground water-filled supply pipes, risers, system risers, or feed mains pass through open areas, cold rooms, passageways, or other areas exposed to temperatures below 40°F (4°C), the pipe shall be protected against freezing by insulating coverings, frost proof casings, listed heat tracing systems, or other reliable means capable of maintaining a minimum temperature between 40°F (4°C) and 120°F (48.9°C). NFPA 13 8.16.4.1.3, NFPA 13R 6.7.2.1

191. The dry-pipe valve room must be lighted and heated and the source of heat must be a permanently installed type. NFPA 13 7.2.5.2.1 and NFPA 13 7.2.5.2.1
192. Automatic Sprinkler Systems, from the point of service, shall be monitored by an approved supervising station. Rule 0780-02-07-.01(g), IBC 901.6.1
193. On the Electrical drawings, specify the NFPA 72 compliant monitoring and signal transmission device and show the location of all supervisory and alarm components which will perform the functions required by IBC 903.4 and 903.4.1 for the automatic sprinkler system.

Civil Utility Plan Requirements

194. Civil Drawings shall include the following items that pertain to the design of the private fire service main (IFC 507.2.1 and NFPA 24 4.1.3):
 - (1) Size and location of all water supplies and *underground utilities*.
 - (2) The following items that pertain to *private fire service mains*:
 - (a) Size, length, location, material
 - (b) Point of connection to the main
 - (c) Sprinkler systems *point of service*. Point of service means the point immediately after the tap of the service main where water is used exclusively for fire protection purposes.
 - (d) Sizes, types, and locations of valves, valve indicators, regulators, meters, and valve pits.
 - (e) Depth at which the top of the pipe is laid below grade.
 - (f) Method of restraint
 - (3) The following items that pertain to *hydrants*:
 - (a) Size, location, number of outlets, and whether outlets are to be equipped with independent gate valves.
 - (b) Static and residual hydrants used in flow
 - (c) Method of restraint
 - (4) Size, location, and piping arrangement of *fire department connections*
195. All connections to private fire service mains for fire protection systems shall be arranged in accordance *with one of the following* so that they can be isolated (IFC 507.2.1 and NFPA 24 6.2.11):
 - (1) A post indicator valve installed not less than 40 ft. from the building. For buildings less than 40 ft. in height, a post indicator valve shall be permitted to be installed closer than 40 ft. but at least as far from the building as the height of the wall facing the post indicator valve.
 - (2) A wall post indicator valve.
 - (3) An indicating valve in a pit, installed in accordance with Section 6.4.
 - (4) A backflow preventer with at least one indicating valve not less than 40 ft. from the building. For buildings less than 40 ft. in height, a backflow preventer with at least one indicating valve shall be permitted to be installed closer than 40 ft. but at least as far from the building as the height of the wall facing the backflow preventer.
 - (5) A nonindicating valve, such as an underground gate valve with an approved roadway box, complete with T-wrench, located not less than 40 ft. from the building. For buildings less than 40 ft. in height, a nonindicating valve shall be permitted to be installed closer than 40 ft. but at least as far from the building as the height of the wall facing the backflow preventer.
 - (6) Control valves installed in a fire-rated room accessible from the exterior.
 - (7) Control valves in a fire-rated stair enclosure accessible from the exterior.

Automatic Sprinkler System Site Plan (Underground)

196. Provide the following information on the Automatic Sprinkler System Design Intent site plan:
- (1) Show the location of the point of service for the underground sprinkler piping on the site plan. and provide a note stating, "Installation of all sprinkler system piping from the point of service must be performed by a Tennessee registered sprinkler contractor." Rule 0780-2-7-.08
 - (2) Provide details of the underground piping from the point of service to the building. Identify: the NFPA 24 6.2.11 system isolation valve location & type, underground piping material type and size, depth of bury, valve pit, trench detail, and thrust block size and location. IFC 507.2.1, NFPA 24 Chapter 4, 5, 10, and NFPA 13 Chapter 10, NFPA 13R 5.3, NFPA 13D 5.3
 - (3) The potable water supply shall be protected against backflow in accordance with the requirements of this section and the International Plumbing Code. IBC 903.3.5, IPC 608.16.4
 - (4) Identify whether a reduced pressure backflow preventer or meter are present. When used, specify that this equipment is listed for fire protection use. NFPA 24 5.3
 - (5) With respect to hydrants, driveways, buildings and landscaping, and fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus.
 - (a) Visible location: Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the fire chief. IBC 912.2.1
 - (b) Existing buildings: On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an approved sign mounted on the street front or on the side of the building.
 - (6) Show the location of the fire pump and/or water tank location when required by design. NFPA 24 5.6, and 5.7
197. All connections to private fire service mains for fire protection systems shall be arranged so that they can be isolated (NFPA 24 6.3.1). The sprinkler system isolation valve must be electronically supervised by a fire alarm system. IBC 903.4
- Exception:* Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored. IBC 903.4.1, Exception 1
198. Service mains must not run under buildings unless special precautions are taken. Provide details showing the method utilized, e.g., arched foundation walls, covered trenching, and isolation valves. NFPA 13 10.6.1, 10.6.2
199. Provide a lead-in detail where the underground piping passes through the foundation and attaches to the riser. Clearance shall be provided around all piping extending through walls, floors, platforms, and foundations, including drains, fire department connections, and other auxiliary piping. NFPA 13 9.3.4.1

NFPA 13 Systems

200. Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 except as provided in Section 903.3.1.1.1.

Exempt Locations (IBC 903.3.1.1.1): Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

- (1) Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
- (2) Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the fire code official.
- (3) Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
- (4) Rooms or areas that are of noncombustible construction with wholly noncombustible contents.
- (5) Fire service access elevator machine rooms and machinery spaces.
- (6) Machine rooms and machinery spaces associated with occupant evacuation elevators designed in accordance with Section 3008.

Multiple buildings attached by canopies, covered breezeways, common roofs, or a common wall(s) shall be permitted to be supplied by a single fire sprinkler riser. The maximum system size shall comply with NFPA 13 8.2.1. IBC 903.3.1.1, NFPA 13 8.2.4

201. Provide the total area protected of each floor for each system riser. The maximum area limitation for the provided number of risers is: Light or ordinary hazard - 52,000 sq. ft. per riser and extra hazard - 40,000 sq. ft. per riser. NFPA 13 8.2.1
202. Except as permitted by IBC 903.3.1.1.1, all areas must be protected, including:
 - (1) Elevator shafts must have sidewall spray sprinklers shall be installed at the bottom of each elevator hoist way not more than 2 ft (0.61 m) above the floor of the pit. NFPA 13 8.15.5.1
 - (2) In noncombustible stair shafts having noncombustible stairs with noncombustible or limited-combustible finishes, sprinklers shall be installed at the top of the shaft and under the first accessible landing above the bottom of the shaft. NFPA 13 8.15.3.2.1
(Provide sprinklers under all combustibles ground floors, exterior docks, and platforms (see reference for exceptions). NFPA 13 8.15.6.1
 - (3) Provide sprinklers under combustible exterior roofs or canopies exceeding 4 ft. in width (see reference for exceptions). NFPA 13 8.15.7.1
 - (4) Provide sprinklers in every aisle and tier for library stack rooms (see reference for exceptions). NFPA 13 8.15.9
 - (5) Provide sprinklers for electrical equipment rooms (see reference for exceptions). NFPA 13 15.10.1
 - (6) Automatic sprinklers in elevator machine rooms or at the tops of hoist ways shall be of ordinary- or intermediate temperature rating. NFPA 13 8.15.5.3
Note: The electrical equipment room exception does not apply elevator equipment rooms.
 - (7) Provide sprinklers at stages, under the stage (if combustible construction or used for storage), and at all adjacent stage areas. NFPA 13 8.15.16.1
Note: Where proscenium opening protection is required provide a deluge system with open heads no more than 3 feet from the stage side of the opening, and at a maximum of 6 feet on center. NFPA 13 8.14.15.2 8.15.16.2
 - (8) Combustible concealed spaces must be sprinklered per NFPA 13 8.15.1.1
 - (9) Within dwelling units, bathrooms, closets, and pantries are to be sprinklered per NFPA 13 8.15.8.1.1 & 8.15.8.2

NFPA 13R Systems

203. Automatic sprinkler systems in Group R occupancies up to and including four stories in height shall be permitted to be installed throughout in accordance with NFPA 13R. IBC 903.3.1.2, NFPA 13R 1.1
204. The water supply source shall be *one of the following*:
- (1) A connection to a reliable waterworks system with or without a pump, as required.
 - (2) An elevated tank
 - (3) A pressure tank installed in accordance with NFPS 13 and NFPS 22
 - (4) A stored water source with an automatically operated pump
205. Any type of pipe or tube acceptable under the plumbing code for underground supply pipe shall be acceptable as underground supply for the system when installed between the point of connection and the system riser. NFPA 13R 5.3
206. A wet pipe system shall be used where piping is installed in areas that can be maintained reliably above 40°F (4°C). NFPA 13R 5.4.1
207. Piping in areas that cannot be maintained reliably above 40°F (4°C) shall be protected by use of *one of the following* methods (NFPA 13R 5.4.2):
- (1) Antifreeze system
 - (2) Dry pipe system
 - (3) Pre-action system
 - (4) Listed standard dry-pendent, dry-upright, or dry-sidewall sprinklers extended from pipe in heated areas.
- Where antifreeze systems, dry pipe systems, and pre-action systems are installed, they shall be installed in accordance with NFPA 13. NFPA 13R 5.4.3
208. Sprinkler protection shall be provided for exterior balconies, decks, and ground floor patios of dwelling units where the building is of Type V construction, provided there is a roof or deck above. Sidewall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch to 6 inches below the structural members and a maximum distance of 14 inches below the deck of the exterior balconies and decks that are constructed of open wood joist construction. IBC 903.3.1.2.1
209. Breezeways' (Exterior stair/Open-ended corridor) shall be constructed and protected by one of the following options:
- (1) Breezeway enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both. Opening protectives shall be in accordance with the requirements of Section 716 and shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the enclosure. IBC 1026.6, 1022
Note: In this approach, NFPA 13R 6.6.5 may be applied and the building and the building would be protected throughout in accordance with the IBC.
 - (2) Separation from the interior of the building is not required for exterior stairways or ramps connected to open-ended corridors, when designed in accordance with IBC 1026.6, *Exception 4*, as follows:
 - (a) The building, including corridors, stairways, or ramps, shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

- (b) The open-ended corridors comply with Section 1018.
- (c) The open-ended corridors are connected on each end to an exterior exit stairway or ramp complying with Section 1026.
- (d) The exterior walls and openings adjacent to the exterior exit stairway or ramp comply with Section 1022.7.
- (e) At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet or an exterior stairway or ramp shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

210. Sprinklers shall be installed in all areas except where omission is permitted by NFPA 13R 6.6.2 through 6.6.7.

- (1) Sprinklers shall not be required in bathrooms where the bathroom area does not exceed 55 ft².
- (2) Except where specified in 6.6.4, sprinklers shall not be required in clothes closets, linen closets, and pantries within dwelling units that meet all the following conditions:
 - (a) The area of the space does not exceed 24 ft²
 - (b) The least dimension does not exceed 3 ft.
 - (c) The walls and ceilings are surfaced with noncombustible or limited-combustible materials.
- (3) Sprinklers shall be installed in any closet used for heating and air-conditioning equipment except when fuel-fired equipment is present, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.
- (4) Sprinklers shall not be required in any porches, balconies, corridors, carports, and stairs that are open and attached, unless required by IBC 903.3.1.2.1 (exterior balconies, decks, and ground floor patios of dwelling units where the building is of Type V construction) or Breezeways designed using IBC 1026.2 Exception 4.
- (5) Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, Safety Code for Elevators and Escalators, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment.
- (6) Sprinklers shall not be required in closets (regardless of size) on exterior balconies and exterior breezeways/corridors, regardless of size, as long as the closet does not have doors or unprotected penetrations directly into the dwelling unit.

211. Piping hanging and bracing methods shall comply with NFPA 13. NFPA 13R 6.13

Electrical Drawings

212. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official. IBC 107.2.1

213. Show the locations of exit signs, detection devices, occupant notification devices, and emergency lighting.

214. The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied. IBC 1006.1 In the event of power supply failure, an emergency electrical system shall automatically illuminate all of the following areas:
- (1) Aisles and unenclosed egress stairways in rooms and spaces that require two or more means of egress.
 - (2) Corridors, interior exit stairways and ramps and exit passageways in buildings required to have two or more exits.
 - (3) Exterior egress components at other than their levels of exit discharge until exit discharge is accomplished for buildings required to have two or more exits.
 - (4) Interior exit discharge elements, as permitted in Section 1027.1, in buildings required to have two or more exits.
 - (5) Exterior landings as required by Section 1008.1.6 for exit discharge doorways in buildings are required to have two or more exits.
215. The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702. IBC1006.3
216. Exit signs must be visible from all directions of travel and have an emergency power source or be a listed self-illuminating type sign. IBC 1011.1 and 1011.6.3
217. Electrical outlet boxes located on opposite sides of fire-resistance rated walls must be separated by a horizontal distance of 24 in. IBC 714.3.2
218. Recessed light fixtures in fire-resistance rated ceilings must be protected or be listed for use in a fire-resistance rated assembly. IBC 716.4.1.2
219. Provide ground fault interrupters for receptacles in accordance with NFPA 70, 210.8.
220. Provide balanced electrical panel load schedules in accordance with NFPA 70 Article 220
221. Provide a minimum 3 ft. horizontal, the greater of 6½ ft. vertical or the height of the equipment, and the greater of 30 in. wide or the width of the equipment working space in front of electrical equipment. (IFC 605.3 and 2017 NFPA 70 110.26(A) (1-3), Table 110.26(A)(1)) Working spaces may not be used for storage and may not contain ductwork, piping, etc.
222. There must be one entrance not less than 32 in. wide and 6½ ft. high at each end of the working space for electrical equipment rated for 1,200 amperes or more and 6 ft. (1.8m) wide containing over current devices, switching devices, or control devices. (2017 NFPA 70 110.26(C)(2)) Both entrances shall open in the direction of the egress and be equipped with panic bars, pressure plates, or other devices that are normally latched but open under simple pressure.
223. Dry-type transformer installed indoors and rated 112½ KVA or less must have a separation of at least 12 in. from combustible material unless separated from the combustible material by a fire-resistant, heat-insulated barrier. 2017 NFPA 70 450.21(A)
224. Individual dry-type transformers of more than 112½ KVA rating must be installed in a transformer room of minimum 1-hour fire-resistance construction unless specified otherwise. NFPA 70, 450.21(B)

225. Provide UL (or other) fire-stop details in their entirety including design illustrations and material specifications without modification or manipulation for penetrations through rated assemblies. IBC 107.2.1, Section 714

Fire Alarm Design Intent

226. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code. (IBC 907.2) A minimum of one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or water flow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed.
227. An emergency voice alarm communication system is required for the following:
- Group E occupancies including adult day care and child day care 907.2.3
 - A covered mall building with a total floor area > 50,000 Ft². IBC 402.7.4
 - High Rise Buildings. IBC 403.4.4
 - Special amusement buildings. IBC 411.6
 - Group A occupancies with an occupant load of 1,000 or more IBC 907.2.1.1

The systems shall be provided in accordance with Section 907.5.2.2.

228. Where audible appliances are provided to produce signals for sleeping areas, they shall produce a low frequency alarm signal that complies with NFPA 72, 18.4.5.3.
229. A fire alarm system control panel or annunciating device must be located in an area where trouble signals are monitored audibly and visually and which are distinctive from alarm signals. 2010 NFPA 72 10.12 and 10.16.
230. Automatic smoke detection must be provided at each fire alarm control panel excluding annunciator panels in areas not continuously occupied that contain controlling equipment (IBC 907.4.1). Heat detection is permitted if ambient conditions prohibit installation of smoke detection. IBC 907.4.1
231. A fire alarm zone indicator panel shall be located at grade level at the normal point of fire department access or at a constantly attended building security control center. IBC 907.6.3.1
232. Manual pull devices must be located not more than 5 ft. from the entrance to exterior exit doors and doors accessing stairway exits (see exceptions). IBC 907.4.2
233. Where an automatic smoke detection system is required it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions, approved automatic heat detectors shall be permitted. IBC 907.4.3 Location and spacing shall be in accordance with NFPA 72 17.7.3.

234. Smoke detectors controlling hold open devices must be located in accordance with 2010 NFPA 72 17.7.5.6. Hold open devices must be supervised by the fire alarm system. IBC 907.3
235. Smoke-activated doors. Automatic-closing doors installed in the locations listed in IBC 715.4.7.3 shall be automatic closing by the actuation of smoke detectors installed in accordance with IBC 907.10 or by loss of power to the smoke detector or hold-open device. Doors that are automatic closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated. IBC 715.4.7.3
236. Visible alarm notification appliances must be provided in public and common areas including 20% spare capacity provisions addition in employee work spaces. IBC 907.5.2.3
237. Show decibel (dBA) rating for all audible notification devices and candela (cd) rating for all visible notification devices on drawings next to each signaling device. IBC 107.1.1, 907.5.2
238. Audible device spacing must be compliant with 2010 NFPA 72 18.4, Table A.18.4.3.
239. Visual device spacing must be compliant with 2010 NFPA 72 18.5, Tables 18.5.4.3.1(a) & 18.5.4.3.1(a).
240. An automatic sprinkler system when installed must be connected to the fire alarm system. IBC 903.4 & IFC 903.4
241. Show the following electrical and fire alarm connections. IBC 907.3
- (1) Door hold open, delayed egress locks, access-controlled egress doors or electromagnetically locked egress doors.
 - (2) Air distribution system duct smoke detectors.
 - (3) Commercial kitchen hood ventilation fire extinguishing system.
 - (4) Commercial kitchen cooking equipment shunt trip circuit breakers and gas solenoid valves unless a mechanical gas line shut-off is specified.
 - (5) Sprinkler system flow switch or alarm check valve connection to the general building alarm and central station.
 - (6) Sprinkler system water control valve supervisory alarm connection for tamper switches.
242. Provide a note on the drawings stating the following: "All required documentation regarding the design of fire detection, alarm, and communications systems and the procedures for maintenance, inspection, and testing of fire detection, alarm, and communications systems shall be maintained at an approved, secured location for the life of the system." IFC 901.6.2.1
243. The Fire Alarm Control Panel circuit disconnecting means shall have a red marking, shall be accessible only to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT." The location of the circuit disconnecting means shall be permanently identified at the fire alarm control unit. 2010 NFPA 72, 10.5.5.2.2