

SUMMARY OF FIRE SPRINKLER REQUIREMENTS FOR ALTERATIONS TO EXISTING BUILDINGS
2018 I-Codes

SCOPE: The City of Lawrence requirements for application of current code provisions. This shall apply to alterations of existing buildings. Additions to existing buildings are outside the scope of this document.

PURPOSE: This document is prepared for the purpose of providing potential applicants information regarding specific occupancies that may require an automatic sprinkler system in the City of Lawrence.

SPECIFICATIONS: The following information, generated from excerpts from the 2018 International Building Code (IBC), 2018 International Fire Code (IFC), and 2018 International Existing Building Code (IEBC) is provided for the use of realtors, citizens, and potential developers as a guideline for when buildings undergoing alteration or change of use may require installation of an automatic fire sprinkler system. A matrix setting forth the requirements for automatic fire sprinkler systems for newly constructed buildings is provided as a supplement to clarify the regulations for alterations. It is intended that most types of alterations or changes in use are addressed; however, plan review staff in the Lawrence Fire Prevention Division or Development Services Division should be consulted to ensure these guidelines are properly applied.

The following definitions and tables identify the types of alterations and list out examples for each. The examples provided are a general list of each occupancy type. Users of this document should contact staff to confirm the interpretation of these provisions and that the intended changes to the existing building would be compliant.

As an alternative to these guidelines, a State of Kansas licensed architect may be consulted to prepare specifications and calculations in accordance with the Performance Compliance Method set forth in the currently adopted edition of the IEBC. Depending on the fire safety condition of an existing building, such calculations may or may not eliminate the need for installation of an automatic fire sprinkler system. Fire Safety Division and Development Services Division plan review staff must review and approve specifications and calculations prepared in accordance with the Performance Compliance Method.

Contact Fire Prevention Division or Development Services Division staff with questions at:

Lawrence Fire Prevention Division	Development Services Division
(785) 832-3174	(785) 832-7700
dleslie@lawrenceks.org	buildinginspections@lawrenceks.org
Lawrenceks.org/fire_medical/prevention	Lawrenceks.org/pds

Definitions

Addition – An extension or increase in floor area or height of a building or structure.

Alteration – Any construction or renovation to an existing structure other than repair or addition.

Change of Occupancy – A change in the use of a building or a portion of a building that results in any of the following.

1. A change of occupancy classification.
2. A change from one group to another group within an occupancy classification.
3. Any change in use within a group for which there is a change in application of the requirements of this code.

Fire Area – The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or horizontal assemblies of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor next above.

High-Rise Building – A building with an occupied floor located more than 75 feet above the lowest level of fire department vehicle access.

Level 1 Alteration – Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.

Level 2 Alteration – Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

Level 3 Alteration – Level 3 alterations apply where the work area exceeds 50 percent of the aggregate area of the building.

Mixed Use – A building or space containing more than one purpose for which more than one occupancy group is assigned.

Occupancy Group – The classification(s) assigned to a building or portion thereof based upon the purpose of the space.

Repair – The restoration to good or sound condition of any part of an existing building for the purpose of its maintenance.

Windowless Story – Stories, including basements, of all buildings where the floor area exceeds 1,500 square feet and where there is not provided at least one of the following types of exterior wall openings:

1. Openings below grade that lead directly to ground level by a code compliant exterior stairway or outside ramp. Openings shall be located in each 50 linear feet, or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet.
2. Opening entirely above the adjoining ground level totaling at least 20 square feet in each 50 linear feet, or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet.

Work Area – That portion or portions of a building consisting of all reconfigured spaces as indicated

on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

Summary of Automatic Fire Sprinkler System Requirements

The following table provides general guidance in determining required installation of automatic fire sprinkler systems in buildings and structures undergoing alteration, based on the requirements found in the current editions of the International Existing Building Code, International Building Code, and International Fire Code as amended and adopted by the City of Lawrence. The requirements for new construction are frequently referenced, so a matrix that summarizes the requirements for new construction is also attached.

Project Type	Automatic Fire Sprinkler System Required Where:
New Construction	See matrix for new construction
Addition	See matrix for new construction
Level 1 Alteration	Alterations shall be done in a manner that maintains the level of fire protection provided.
Level 2 Alteration	<p>Same as Level 1 Alteration, and;</p> <p>Occupancy Groups A, B, E, F-1, H, I M, R-1, R-2, R-4, S</p> <ol style="list-style-type: none"> 1. The work area is required to be provided with automatic sprinkler protection as applicable to new construction (see matrix for new construction); and 2. The work area exceeds 50% of the floor area; and 3. The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump. <p>Mixed uses In work areas containing mixed uses, where one or more of which requires automatic sprinkler protection, such protection shall not be required throughout the work area provided the uses requiring such protection are separated from those not requiring protection by fire-resistance-rated construction having a minimum 2-hour rating for Group H and a minimum 1-hour rating for all other occupancy groups.</p> <p>Windowless stories Work located in a windowless story shall be sprinklered where the work area is required to be sprinklered under the provision of the building code for newly constructed buildings and the building has a sufficient municipal water supply without installation of a new fire pump.</p> <p>High-rise buildings In high-rise buildings, work areas that have exits or corridors shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with automatic sprinkler protection in the entire work area where the work area is located on a floor that has a sufficient sprinkler water supply system from an existing standpipe or a sprinkler riser serving that floor.</p>

	<p>Other required suppression systems</p> <p>In buildings and areas as listed below, work areas that have exits or corridors shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with sprinkler protection where:</p> <ol style="list-style-type: none"> 1. The work area is required to be provided with automatic sprinkler protection in accordance with the International Building code applicable to new construction; and 2. The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation <p>Covered and open mall buildings, High-rise buildings, Atriums, Underground structures, Group I-2, Stages, Special amusement buildings, Aircraft hangars, Group H-5 HPM exhaust ducts, Flammable finishes, Drying rooms, Unlimited area buildings, Incidental uses, Smoke-protected assembly seating, and as otherwise set forth in Section 903.2.11.6 of the International Fire Code.</p>
Level 3 Alteration	<p>Same as Level 2 Alteration, and:</p> <p>High-rise buildings</p> <p>In high-rise buildings, work areas shall be provided with automatic sprinkler protection where the building has a sufficient municipal water supply system to the site. Where the work area exceeds 50 percent of floor area, sprinklers shall be provided in the specified areas where sufficient municipal water supply for design and installation of a fire sprinkler system is available at the site.</p> <p>Rubbish and linen chutes</p> <p>Rubbish and linen chutes located in the work area shall be provided with sprinklered protection or an approved fire suppression system where protection of the rubbish and linen chute would be required under the provisions of the International Building Code for new construction.</p>
Change of Occupancy	<p>Where a change in occupancy classification occurs that requires an automatic fire sprinkler system to be provided based on the new occupancy in accordance with Chapter 9 of the International Building Code, such system shall be provided throughout the area where the change of occupancy occurs. See matrix for new construction.</p>

Examples

Scenario 1:

An existing business undertakes a project to increase energy efficiency of the building systems. Heating and air conditioning equipment, light fixtures, and a water heater are replaced with new energy efficient equipment.

Requirement: By definition this is a Level 1 Alteration. Any existing fire safety systems must be maintained. **A fire sprinkler system is not required.**

Scenario 2:

A bank with 5,000 square feet of office space converts 500 square feet of open cubicle space into a conference room, constructing non-load bearing partition walls and door and window openings for the newly created space and installing electrical and heating and cooling systems.

Requirement: By definition this is a Level 2 Alteration. **A fire sprinkler system is not required** because the work area does not exceed 50% of the floor area of the building. Any required existing fire protection systems must be maintained.

Scenario 3A:

An architectural firm is moving into a single-story ground level 5,000 square feet office space in a multi tenant building for which the total area is 15,000 square feet. The building is not separated with fire-resistive construction. The work area for a remodel project is 3,000 square feet of the space.

Requirement: By definition this is a Level 2 Alteration. **A fire sprinkler system is not required** because the work area does not exceed 50% of the floor area of the building. Any required existing fire protection systems must be maintained.

Scenario 3B:

An architectural firm is moving into a 5,000 square foot single-occupant building and remodeling 3,000 square feet of the space.

Requirement: By definition this is a Level 3 Alteration. Because the work area exceeds 50% of the floor area, and there is sufficient water supply for design of a fire sprinkler system without installation of a new fire pump, a new automatic fire sprinkler may be required dependent upon the standards for a newly constructed building.

Consulting the new construction matrix, office uses fall within the requirements for Group B (Business) Occupancies. **A fire sprinkler system is not required** because the business does not include four or more care recipients that are incapable of self-preservation, or one care recipient incapable of self-preservation located at other than the level of exit discharge. Any required existing fire protection systems must be maintained.

Scenario 4:

An out-patient clinic is moving into a single-story ground level 5,000 square feet office space and remodeling the entire space, including space for procedures and recovery for up to 5 care recipients who may be incapable of self-preservation before, during, and/or after procedures.

Requirement: By definition this is a Level 3 Alteration. Because the work area exceeds 50% of the space, and there is sufficient water supply for design of a fire sprinkler system without installation of a new fire pump, a new automatic fire sprinkler system may be required in accordance with the standards for a newly constructed building.

Consulting the new construction matrix, this office use falls within the requirements for Group B (Business) Occupancies. **A fire sprinkler system is required** because there is capacity for four or more care recipients that are incapable of self-preservation.

Scenario 5A:

A restaurant is moving into a tenant space with 1,500 square feet of space on the ground level and a 750 square foot basement without qualifying openings to the exterior. The basement is to be used for storage and equipment only. The space on the first floor is allocated such that the total computed design occupant load is 98.

Requirement: By definition this is a Change of Occupancy. A fire sprinkler system may be required in accordance with the standards for a newly constructed building. This is also a mixed use, so the standards for new sprinkler systems for each use group must be applied.

Consulting the new construction matrix, the first floor restaurant use falls within the requirements for Group A-2 (Assembly) Occupancies. **A fire sprinkler system is not required** because the work area is less than 5,000 square feet, the occupant load is less than 100, and it is located on the level of exit discharge (ground floor).

Also consulting the new construction matrix, the basement use falls within the requirements for Group S-2 (Storage, low-hazard) Occupancies. The basement is also a story without openings. **A fire sprinkler system is not required** because the use of the basement does not include parking of vehicles, and the area of the story without openings is less than 1,500 square feet.

Scenario 5B:

A restaurant is moving into a tenant space with 1,500 square feet of space on the ground level and 750 square feet of basement without qualifying openings to the exterior. The basement is to be used for storage and equipment only. The space on the first floor is allocated such that the total computed design occupant load is 150.

Requirement: By definition this is a Change of Occupancy. A fire sprinkler system may be required in accordance with the standards for a newly constructed building. This is also a mixed use, so the standards for new sprinkler systems for each use group must be applied.

Consulting the new construction matrix, the first floor restaurant use falls within the requirements for Group A-2 (Assembly) Occupancies. **A fire sprinkler system is required** throughout the A-2 work area because the occupant load is greater than 100.

Also consulting the new construction matrix, the basement use falls within the requirements for Group S-2 (Storage, low-hazard) Occupancies. The basement is also a story without openings. **A fire sprinkler system is not required** for the S-2 work area because the use of the basement does not include parking of vehicles and the area of the story without openings is less than 1,500 square feet.

Scenario 5C:

A restaurant is moving into a tenant space with 1,800 square feet of space on the ground level and 1,800 square feet of basement without qualifying openings to the exterior. The basement is to be used for storage and equipment only. The space on the first floor is allocated such that the total computed design occupant load is 200.

Requirement: By definition this is a Change of Occupancy. An automatic fire sprinkler system may be required in accordance with the standards for a newly constructed building. This is also a mixed use, so the standards for new sprinkler systems for each group must be applied.

Consulting the new construction matrix, the first floor restaurant use falls within the requirements for Group A-2 (Assembly) Occupancies. **A fire sprinkler system is required** throughout the A-2 work area because the occupant load is greater than 100.

Also consulting the new construction matrix, the basement use falls within the requirements for Group S-2 (Storage, low-hazard) Occupancies. The basement is also a story without openings. **A fire sprinkler system is required** throughout the S-2 work area as well because the area of the story without openings is greater than 1,500 square feet.