Guidance for Automatic Sprinkler Systems and Fire Resistance

Introduction

2011 Wisconsin Act 21 (Act 21) requires that an administrative agency have explicit authority to “implement or enforce any standard, requirement, or threshold…” and further states that “a statutory provision containing a specific standard” does not allow for an administrative agency to impose a stricter standard. The Department of Safety and Professional Services (Department) requested an opinion of the Attorney General regarding how, under Act 21, the Commercial Building Code’s automatic fire sprinkler system standards are affected by Wis. Stat. § 101.14(4m).

The direction provided by the Legislature and the Attorney General affects multifamily dwellings (R type occupancy under 2009 IBC § 310.) A multifamily dwelling is defined in Wis. Stat. § 101.971(2) as “an apartment building, rowhouse, town house, condominium, or modular home, as defined in s. 101.71(6), that does not exceed 60 feet in height or 6 stories and that consists of 3 or more attached dwelling units the initial construction of which is begun on or after January 1, 1993. A multifamily dwelling does not include a facility licensed under Wis. Stat. ch. 50. Effective immediately, all provisions of the Wisconsin Administrative Code and the International Building Code that have stricter automatic sprinkler system and fire resistance requirements for multifamily dwellings than Wis. Stat. § 101.14(4m) will no longer be enforced by the Department or delegated/agent municipalities.

Definition of Multifamily Dwelling and When Wis. Stat. § 101.14(4m) Applies

What constitutes a multifamily dwelling for proper application of the automatic sprinkler system and fire resistance requirements found in Wis. Stat. § 101.14(4m)?

Wis. Stats. § 101.971(2) “Multifamily dwelling" means an apartment building, rowhouse, town house, condominium, or modular home, as defined in s. 101.71(6), that does not exceed 60 feet in height or 6 stories and that consists of 3 or more attached dwelling units the initial construction of which is begun on or after January 1, 1993. “Multifamily dwelling" does not include a facility licensed under ch. 50.

Wis. Stat. § 101.71(6)
(a) “Modular home" means any structure or component thereof which is intended for use as a dwelling and:
   1. Is of closed construction and fabricated or assembled on-site or off-site in manufacturing facilities for installation, connection, or assembly and installation, at the building site; or
   2. Is a building of open construction which is made or assembled in manufacturing facilities away from the building site for installation, connection, or assembly and installation, on the building site and for which certification is sought by the manufacturer.
(b) “Modular home” does not mean any manufactured home under s. 101.91 or any building of open construction which is not subject to par. (a) 2.

Wis. Stat. § 101.71(2) “Dwelling” means any building that contains one or more dwelling units. “Dwelling unit” means a structure or that part of a structure which is used or intended to be used as a home, residence or sleeping place by one person or by 2 or more persons maintaining a common household, to the exclusion of all others.

Wis. Stat. § 101.01(12) “Public building” means any structure, including exterior parts of such building, such as a porch, exterior platform, or steps providing means of ingress or egress, used in whole or in part as a place of resort, assemblage, lodging, trade, traffic, occupancy, or use by the public or by 3 or more tenants. When used in relation to building codes, “public building” does not include any of the following:

(a) A previously constructed building used as a community-based residential facility as defined in s. 50.01 (1g) which serves 20 or fewer residents who are not related to the operator or administrator.
(b) An adult family home, as defined in s. 50.01 (1).
(c) A home-based business, as defined by the department by rule.
(d) A not-for-profit facility with the primary purpose of housing or rehabilitating abandoned, injured, or sick wildlife.

From the above statutory definitions several important points of application can be gleaned.

1) ‘Multifamily dwelling’ does not include facilities licensed under Wis. Stat. ch. 50. Facilities licensed under this provision are health care facilities licensed by the Department of Health Services including, but not limited to, hospitals, nursing homes, hospices, and community based residential facilities. Therefore, buildings containing 3 or more dwelling units licensed under Wis. Stat. ch. 50 still require automatic fire sprinkler system and fire resistance.
2) A multifamily dwelling consists of 3 or more dwelling units whereas a public building consists of 3 or more tenants. The following scenarios could occur with a public building tenant(s) in combination with one or more dwelling units.

New construction:

• If a building is commercial, with 1 or 2 dwelling units in combination with another commercial occupancy, the entire building must have an automatic fire sprinkler. Since there are not 3 attached dwelling units it is not a multifamily dwelling and Wis. Stat. § 101.14(4m) does not apply.
• If there 3 dwelling units up to 20, depending on the total dwelling unit area, construction type and non-dwelling unit area, neither the dwelling units or remainder of the building would be required to be sprinklered.
• A mixed use condition where the commercial use is required to be sprinklered will require the entire building to be sprinklered or either separate buildings or separate fire areas must be created.
• If there 21 dwelling units or more, the entire building must be sprinklered or
firewall separation provided to subdivide the multi-family building or to separate
other commercial uses or both.

For existing construction, the above scenarios will need to be evaluated utilizing the
International Existing Building Code depending on the extent of alteration work or
change of occupancy that is occurring.

New Sprinkler and Fire Resistance Requirements for Multifamily Dwellings

Wis. Stat. § 101.14(4m) lays out the requirements approved by the Legislature for automatic
sprinkler systems and fire resistance in multifamily dwellings.

Automatic sprinkler systems may only be required by the Department in multifamily dwellings if:
1. The total floor area, for all individual dwelling units, exceeds 16,000 square feet.
2. The building has more than 20 dwellings units.
3. The total nondwelling unit floor area of the building exceeds the following:
   a. Type 1 fire resistive construction, 16,000 square feet.
   b. Type 2 fire resistive construction, 12,000 square feet.
   c. Type 3 metal frame protected construction, 8,000 square feet.
   d. Type 4 heavy timber construction, 5,600 square feet.
   e. Type 5A exterior masonry protected, 5,600 square feet.
   f. Type 5B exterior masonry unprotected, 5,600 square feet.
   g. Type 6 metal frame unprotected, 5,600 square feet.
   h. Type 7 wood frame protected construction, 5,600 square feet.
   i. Type 8 wood frame unprotected construction, 4,800 square feet.

Automatic sprinkler systems may only be required by a municipality in multifamily dwellings if:
1. The total floor area, for all individual dwelling units, exceeds 8,000 square feet.
2. The building has more than 8 dwellings units.
3. The total nondwelling unit floor area of the building exceeds the following:
   a. Type 1 fire resistive construction, 12,000 square feet.
   b. Type 2 fire resistive construction, 10,000 square feet.
   c. Type 3 metal frame protected construction, 8,000 square feet.
   d. Type 4 heavy timber construction, 5,600 square feet.
   e. Type 5A exterior masonry protected, 5,600 square feet.
   f. Type 5B exterior masonry unprotected, 5,600 square feet.
   g. Type 6 metal frame unprotected, 5,600 square feet.
   h. Type 7 wood frame protected construction, 5,600 square feet.
   i. Type 8 wood frame unprotected construction, 4,800 square feet.
These requirements replace the automatic sprinkler requirements for multifamily dwellings in the IBC, specifically 2009 IBC § 903.2.8.

Two-hour fire resistance may only be required by the Department in multifamily dwellings if:
1. The total floor area, for all individual dwelling units, exceeds 16,000 square feet.
2. The building has more than 20 dwellings units.
3. The total nondwelling unit floor area of the building exceeds the following:
   a. Type 1 fire resistive construction, 16,000 square feet.
   b. Type 2 fire resistive construction, 12,000 square feet.
   c. Type 3 metal frame protected construction, 8,000 square feet.
   d. Type 4 heavy timber construction, 5,600 square feet.
   e. Type 5A exterior masonry protected, 5,600 square feet.
   f. Type 5B exterior masonry unprotected, 5,600 square feet.
   g. Type 6 metal frame unprotected, 5,600 square feet.
   h. Type 7 wood frame protected construction, 5,600 square feet.
   i. Type 8 wood frame unprotected construction, 4,800 square feet.

Two-hour fire resistance may only be required by a municipality in multifamily dwellings if:
1. The total floor area, for all individual dwelling units, exceeds 8,000 square feet.
2. The building has more than 8 dwellings units.
3. The total nondwelling unit floor area of the building exceeds the following:
   a. Type 1 fire resistive construction, 12,000 square feet.
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   c. Type 3 metal frame protected construction, 8,000 square feet.
   d. Type 4 heavy timber construction, 5,600 square feet.
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   f. Type 5B exterior masonry unprotected, 5,600 square feet.
   g. Type 6 metal frame unprotected, 5,600 square feet.
   h. Type 7 wood frame protected construction, 5,600 square feet.
   i. Type 8 wood frame unprotected construction, 4,800 square feet.

These thresholds replace the fire resistance thresholds (fire partitions, fire barriers, fire walls, shaft enclosures horizontal assemblies, etc.) for multifamily dwellings in the IBC, specifically those present in 2009 IBC ch. 7.

The above statutory provisions reference classes of construction as they existed prior to the adoption and effective date of the International Building Code (IBC) on July 1, 2002. These classes of construction correspond roughly to the IBC classes of construction according to the following Table.

<table>
<thead>
<tr>
<th>Prior to July 1, 2002</th>
<th>July 1, 2002 and after</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 fire resistive</td>
<td>Type IA</td>
</tr>
<tr>
<td>Type 2 fire resistive</td>
<td>Type IB</td>
</tr>
</tbody>
</table>
Two hour fire resistance is an alternative to an automatic fire sprinkler system for multifamily dwellings exceeding the above thresholds.

### Requirements Affecting Multifamily Dwellings without Automatic Sprinkler Systems

While Wis. Stat. § 101.14(4m) determines when automatic fire sprinklers fire resistance may be required in a multi-family dwelling, numerous other provisions apply to how buildings are required to be designed in the absence of automatic fire sprinklers and fire resistance. Below are some examples:

- A multi-family dwelling’s height and area may be limited under 2009 IBC ch. 5 in the absence of a sprinkler system. For example, installing an automatic sprinkler system would allow for a multifamily building to be 20 feet higher than the maximum allowable height for that construction type under 2009 IBC Table 503. 2009 IBC § 504.2.

- Incidental accessory occupancies (such as mechanical rooms) require fire resistant separation or an automatic fire sprinkler system, the only exception being if the incidental accessory occupancy is within the dwelling unit. 2009 IBC § 508.2.5.

- The special provisions contained within 2009 IBC § 509 may not be applied to multifamily dwellings without fire resistant assemblies or an automatic sprinkler system.

- Without fire resistance or an automatic sprinkler system, the maximum area of exterior wall openings is reduced. 2009 IBC Table 705.8.

- Different requirements for smoke and fire dampers take effect depending on whether an automatic fire sprinkler system is installed when a wall is not fire resistive. 2009 IBC § 716.

- 2009 IBC § 717.4.2 requires draft stopping in combustible floor and roof systems of a multifamily dwelling with three or more dwelling units when an automatic sprinkler system is not present.

- 2009 IBC Table 803.9 requires a higher class of interior finish for a multifamily dwelling that does not have an automatic fire sprinkler system.

<table>
<thead>
<tr>
<th>Type 3 metal frame protected</th>
<th>Type IIA</th>
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</thead>
<tbody>
<tr>
<td>Type 4 heavy timber</td>
<td>Type IV</td>
</tr>
<tr>
<td>Type 5A exterior masonry protected</td>
<td>Type IIIA</td>
</tr>
<tr>
<td>Type 5B exterior masonry unprotected</td>
<td>Type IIIB</td>
</tr>
<tr>
<td>Type 6 metal frame unprotected</td>
<td>Type IIB</td>
</tr>
<tr>
<td>Type 7 wood frame protected</td>
<td>Type VA</td>
</tr>
<tr>
<td>Type 8 wood frame unprotected</td>
<td>Type VB</td>
</tr>
</tbody>
</table>
• An area of refuge and a clear width of 48 inches between handrails will be required to be installed at exit stairways in multifamily dwellings that are not equipped with an automatic sprinkler system. 2009 IBC § 1007.3.

• The allowable length of a common path of egress is shortened from 125 feet to 75 feet in the absence of an automatic fire sprinkler system. 2009 IBC § 1014.3.

• 2009 IBC Table 1016.1 reduces the maximum exit access travel distance from 250 feet to 200 feet in a multifamily dwelling without an automatic sprinkler system.

• Corridors serving greater than 10 occupants are not allowed to be constructed in multifamily dwellings without an automatic sprinkler system and one half an hour fire resistance rating. 2009 IBC § 1018.1.

• Dead ends in corridors are reduced in length from 50 feet to 20 feet in a multifamily dwelling lacking an automatic sprinkler system. 2009 IBC § 1018.4.

• Multifamily dwellings that have stories with one exit without an automatic sprinkler system have a maximum occupancy of 10 and a maximum 75 foot travel distance to the exit. That is reduced to 4 dwelling units and 50 foot travel distance in higher stories. 2009 IBC Table 1021.2.

• Emergency escape and rescue openings will be required in the absence of an automatic sprinkler system per 2009 IBC § 1029.1.

• Balconies are not permitted to be of non-fire retardant treated wood Type V construction unless an automatic sprinkler system is present. 2009 IBC §1406.3.

Unenforceable Requirements

Some additional requirements placed upon multifamily dwellings that are built without automatic sprinkler systems place a greater emphasis on fire resistance. These alternate provisions cannot be enforced due to Wis. Stat. § 101.14(4m).

Conclusion

The above information is not exhaustive. Building owners, designers, and supervising professionals are required to ensure that the building plans, and the buildings themselves, conform with all applicable provisions of Wisconsin Statute, Wisconsin Administrative Code, and International Building Code.
Automatic sprinkler systems and fire resistance cannot be required by the Department or by delegated/agent municipalities, unless the building meets or exceeds the thresholds established in Wis. Stat. § 101.14(4m). This does not preclude designers from utilizing these systems to take advantage of various designs that would not be available without an automatic sprinkler system or fire resistance.

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