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## State Fire Marshal Division

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### APARTMENT (GROUP R-2) INFORMATION SHEET

#### SECTION 1 — INTRODUCTION

This fire safety information sheet is based on the 2007 Minnesota State Fire Code (MSFC) and the 2007 Minnesota State Building Code (MSBC). It contains a summary of the rules that apply to apartment buildings.

**Apartment Building** is an R-2 occupancy. R-2 occupancies are residential facilities containing more than two dwelling units where the occupants are primarily permanent in nature.

**Dwelling unit** is a residential occupancy where the occupants are primarily permanent in nature containing living facilities, including provisions for sleeping, eating, cooking, and sanitation.

For requirements relating to resorts, see the State Fire Marshal Division Information Sheet titled, *Resorts*. For requirements relating to hotels and motels, see the State Fire Marshal Division Information Sheet titled, *Hotel and Motel*.

Apartment buildings constructed before July 10, 2007 are considered existing buildings and are required to meet the minimum requirements specified in MSFC (07) for existing buildings. Compliance with previous editions of the state fire code could be considered as an acceptable alternative. Buildings constructed on or after July 10, 2007 are considered new and are required to meet the 2007 MSFC provisions for new buildings.

Apartments may be required to meet other provisions that are not listed here. This information sheet provides an overview of the major code requirements that apply to apartment operations and does not attempt to cover every situation. References to the applicable code sections are found in brackets, [ ].

More information is available from the Minnesota State Fire Marshal Division at (651) 201-7200. Email questions to [firecode@state.mn.us](mailto:firecode@state.mn.us) or view our web page at [www.fire.state.mn.us](http://www.fire.state.mn.us) for the latest information on fire in Minnesota.

#### SECTION 2 — GENERAL FIRE SAFETY PROVISIONS

##### 2.1 Combustible Waste Material-New and Existing

Combustible waste material creating a fire hazard shall not be allowed to accumulate in buildings [MSFC (07) Section 304.1].

Dumpsters must be outside and at least 5 feet from combustible walls or openings [MSFC (07) Section 304.3.3].



## **2.2 Occupancy Specific Inspection**

Apartment buildings are inspected to the requirements of the code applicable to the occupancy types present. Buildings about which there is a question as to how to classify shall be included in the occupancy group that its use or character most closely resembles.

## **2.3 Fire Apparatus Access Road - New**

For all newly constructed buildings, approved fire apparatus access roads must be provided so that all portions of the facility are within 150 feet of fire department access [MSFC (07) Section 503.1.1]. See the SFMD Policy titled, *Fire Department Access*.

## **2.4 Water Supply – New**

For all newly constructed buildings, approved water supplies capable of providing the required water flow for fire protection must be provided when required by the local fire chief [MSFC (07) Section 508.1]. See the SFMD Policy titled, *Fire Department Water Supplies*.

## **2.5 Premises Identification – New and Existing**

Approved numbers or addresses shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. The premises identification numbers shall contrast with their background. In rural areas, the use of fire numbers is acceptable [MSFC (07) Section 505.1].

## **2.6 Storage of Combustible Materials – New and Existing**

Storage of combustible materials inside buildings shall be orderly [MSFC (07) Section 315.2].

Fueled equipment (motorcycles, lawnmowers, etc.) shall not be stored, operated or repaired within apartment buildings [MSFC (07) Section 313.1].

Storage of equipment utilized for maintenance purposes is allowed in approved locations when the aggregate capacity of the stored equipment does not exceed 10 gallons and the building is equipped throughout with an automatic sprinkler system installed in accordance with MSFC Section 903.3.1.1.

## **2.7 Storage under Stairways – New**

The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways shall be protected by 1-hour fire-resistance-rated construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stair enclosure.

**Exception:** Spaces under stairways serving and contained within a single residential dwelling unit in Group R-2 or R-3 shall be permitted to be protected on the enclosed side with 0.5-inch (12.7 mm) gypsum board.

There shall be no enclosed usable space under exterior exit stairways unless the space is completely enclosed in 1-hour fire-resistance-rated construction. The open space under exterior stairways shall not be used for any purpose.

### **2.7.1 Storage under Stairs-Existing**

Storage rooms or spaces that meet the definition of incidental use areas (greater than 100 square feet in size) must be 1-hour fire separated from the rest of the building with a 20-minute fire rated door that is self-closing. Existing wood lath and plaster in good condition or 1/2-inch (12.7 mm) gypsum wallboard is acceptable where one-hour fire barriers are required.

Combustible materials shall not be stored under stairs in fire rated exits or exit enclosures.

## **2.8 Guardrails – New**

Unguarded floor openings, open and glazed sides of stairways, landings and ramps and balconies or porches that are more than 30 inches above grade or the floor below shall be protected by guardrails in accordance with the MSFC (07) Section 1013]. The guards shall form a protective barrier not less than 42 inches high. The guards shall have balusters or ornamental patterns such that a 4-inch diameter (102 mm) sphere cannot pass through any opening up to a height of 34 inches. From 34-42 inches above the adjacent walking surfaces, a sphere 8-inch in diameter (203 mm) shall not pass [MSFC (07) Section 1013.3].

### **Guardrails – Existing**

Guards shall be provided at the open sides of means of egress that are more than 30 inches (762 mm) above the floor or grade below. The guards shall form a protective barrier not less than 42 inches high except for the following existing guards:

1. Existing guards on the open side of stairs, which are permitted to be not less than 30 inches (760 mm) high.
2. Existing guards within dwelling units, which are permitted to be not less than 36 inches (910 mm) high.
3. Existing guards in assembly areas.
4. Existing guards on stairs and balconies of buildings designated as historic structures, which are permitted to be not less than 24 inches (610 mm) high.

Open guards shall have balusters or ornamental patterns such that a 6-inch (152 mm) diameter sphere cannot pass through any opening up to a height of 34 inches (864 mm) except when one of the following conditions exist:

1. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.
2. Approved existing open guards.

## **2.9 Handrails – New**

Stairways shall have handrails on each side. Aisle stairs provided with a center handrail need not be provided with additional handrails. The height should be measured above stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches and not more than 38 inches [MSFC (07) Section 1012.2]. Handrails with circular cross sections shall have an outside diameter of at least 1 ¼ inches and not greater than 2 inches or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches and not greater than 6 ¼ inches with a maximum cross section dimension of 2.25 inches. The gripping surface of the handrail shall be continuous, without interruption by newel posts or other obstructions.

### **Handrails – Existing**

Stairway handrails in existing buildings shall have handrails on at least one side. They shall be located so that all portions of the stairway width required for egress capacity are within 44 inches of a handrail [MSFC (07) Section 1027.13]. Aisle stairs provided with a center handrail are not required to have additional handrails.

## **2.10 Stairways – New**

The width of stairways shall not be less than 44 inches. Stairways shall have a minimum headroom clearance of 80 inches measured vertically from a line connecting the edge of the nosings. Stair riser heights shall be 7 inches maximum and 4 inches minimum. Stair tread depths shall be 11 inches minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at right angle to the tread's leading edge. All stairways shall be built of materials consistent with the types permitted for the type of construction of the building [MSFC (07) Section 1009.1].

### **Stairways – Existing**

Existing stairs in buildings shall be permitted to remain if the rise does not exceed 8 ¼ inches (210 mm) and the run is not less than 9 inches (229 mm). Existing stairs can be rebuilt [MSFC (07) Section 1027.10].

### **2.11 Stairway Identification – New and Existing**

Stairway identification signs are required in all enclosed stairways in buildings four or more stories in height [MSFC (07) Section 1020.1.6].

### **2.12 Means of Egress Illumination – New and Existing**

The means of egress in all R-2 occupancies shall be illuminated at all times the building space served by the means of egress is occupied [MSFC (07) Section 1006.1]. A back-up power supply must also be provided [MSFC (07) Section 1006.3]

*Exception: Where each living unit has direct access to the outside of the building at grade, emergency illumination is not required.*

### **2.13 Means of Egress Identification – New and Existing**

Exit signs are required for identification of exits in both new and existing buildings. Exit signs shall be located as necessary to clearly indicate the direction of egress travel. An exit sign need not be visible from every point in a building, however no point shall be more than 100 feet from the nearest visible sign [MSFC (07) Section 1011.1]. Exit signs are not necessary from rooms or areas that require only one exit.

## **SECTION 3 — NUMBER, TYPE AND ACCESS TO EXITS**

### **3.1 Number and Type of Exits**

Every room shall have access to at least one exit. This exit usually takes the form of the interior halls, stairs and doors found within the building. Additional exits are usually required as follows.

### **3.2 Emergency Escapes from Sleeping Rooms**

In addition, every room used for sleeping below the fourth story shall have at least one approved emergency escape (second means of egress) that is separate from the main exit from the space. Any one of the following four options will satisfy the requirement for an emergency escape from a sleeping room [MSFC (07) Section 1026.1]:

1. The space is provided with an escape window complying with MSFC (07) Section 1026.1, as amended or State Fire Marshal Policy INS-04. Because this is the most common type of emergency escape, additional information on escape windows is provided in the next section (Section 4) of this fact sheet.
2. An automatic sprinkler system is protecting the building.
3. The room has a door leading directly to the exterior of the building.
4. There is a second separate means of escape. The second means of escape may be through an adjacent non-lockable space, independent of and remote from the primary exit. The adjacent non-lockable space must be provided with a code complying exit or egress window. The second means of escape shall not be through a furnace room or through a space/area that could become blocked by a malfunctioning furnace or water heater. The second means of escape must also be sufficiently separated from the primary means of escape such that a single fire will not block both routes [MSFC (07) Section 1026.1, as amended]. See also the SFMD policy INS-04 titled, *Escape Windows*.

Sliding glass doors may be accepted as qualifying exit doors from dwelling rooms provided that the doors are maintained operational at all times. Sliding glass doors are only acceptable for spaces with an occupant load of 10 or less [MSFC (07) Section 1008.1.2 Exception 4].

**3.3 A Second Exit is required from Residential Areas with an Occupant Load of 10 or more**

Apartment buildings will also require a second exit from floors containing residential areas with an occupant load of 10 or more. Such a second exit is in addition to any requirements for emergency escapes and usually takes the form of a second door or stairway off the corridor.

**MSFC Table 1004.2.1: Minimum Egress Requirements**

<b>Occupancy</b>	<b>Minimum of two exits required when the number of occupants exceeds</b>	<b>Minimum of two exits required when the square footage exceeds</b>	<b>Occupant load factor (square feet per person)</b>
Apartments (R-2)	10	2000 square feet	200

**MSFC Table 1019.2: Buildings with One Exit**

<b>Occupancy</b>	<b>Maximum Height of Building Above Grade Plane</b>	<b>Maximum Occupants (or dwelling units) per Floor and Travel Distance</b>
Apartments (R-2)	1 Story	10 Occupants and 75 Feet Travel Distance

MSFC (07) Table 1019.2 outlines the requirements for apartment occupancies with only one means of egress. If a two-story apartment occupancy has more than 10 occupants located on the second level and these dwelling units are more than 75 feet in travel distance to the primary exit, a second means of egress must be provided.

To decide if a second exit is required, it is first necessary to determine the occupant load of each floor. Two different ways are used to establish the occupant load, with the larger number being used:

1. Calculate the occupant load on each floor based on the occupant load in square feet of area per person from Table 1. To do this, determine the total area of each floor (gross square feet). Divide the gross square feet by the occupant load factor to arrive at the number of occupants on the floor. Round up to the next whole number (a calculated value of 5.4 equals an occupant load of 6 people). Thus, a floor with a gross floor area of 2,000 square feet has an occupant load of 10 people.
2. Determine the actual number of persons on a floor. This is usually done based on the number of occupant in each dwelling unit. Caretakers and owners are included in the numbers of persons occupying a floor.

The larger of the two numbers determined above is the occupant load of the floor. If the occupant load for a floor is more than 10 persons, a second exit is required [MSFC (07) Section 1015.1]. A second exit need not be provided from the ground floor when the occupant load is 10 persons or fewer [MSFC (07) Section 1015.1].

**3.4 Exiting from Nonresidential Areas**

Assembly, business and mercantile occupancies require more detailed information to determine exiting. Consult with the State Fire Marshal Division for more information and assistance in evaluating egress requirements.

### **3.5 Access to Doors and Windows – New and Existing**

Exit doors from individual dwelling units may be provided with a night latch, dead bolt or security chain provided that such devices are openable from the inside without the use of a key or tool and mounted at a height not to exceed 48 inches above the finished floor.

All locking devices shall be of an approved type. Double keyed dead bolts must be replaced with locks that do not require a key to open from the inside [MSFC (07) Section 1008.1.8].

### **3.6 Dead Ends in Corridors**

When two exits are required, the maximum length of dead end in a corridor is 20 feet for new, 50 feet for existing [MSFC (07) Section 1017.3-new, 1027.17.4-existing].

### **3.7 Travel Distance to Exits**

Exits shall be so located that the maximum length of exit access travel, measured from the most remote point to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in MSFC (07) Table 1016.1-new, Table 1027.17.4-existing.

### **3.8 Common path of exit travel – New and Existing**

Exits shall be so located on each story such that the maximum length of exit access travel, measured from the most remote point within a story to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in MSFC (07) Table 1016.1.

Maximum travel distance without a sprinkler system: 200 feet

Maximum travel distance with a sprinkler system throughout: 250 feet

## **SECTION 4— APPROVED ESCAPE WINDOWS**

See Section 3.2 above for determining if an escape window is required from each sleeping room. When required, this section of the fact sheet covers the requirements for these windows.

### **4.1 Types of Approved Escape Windows**

Approved egress/escape windows include the following [MSFC (07) Section 1026.1]:

- Double hung windows
- Sliding windows
- Casement windows

**Awning style windows do not meet this requirement.**

### **4.2 Minimum Size**

When used as an emergency escape, only a single window in each room need meet the minimum size requirements listed below. The window sash cannot be removed to meet the size requirements and windows must be measured with the window fully opened by the normal window opening mechanism.

For escape windows installed prior to July 10, 2007: (State Fire Marshal Policy INS-04)

- A minimum of 20 inches in width
- A minimum of 20 inches in height
- A minimum of 648 square inches (4.5square feet) of clear opening
- A maximum of 48 inches from the floor to the sill opening

*Note: The above is considered the absolute minimum regardless of existing or window replacement.*

For escape windows installed above or below the level of exit discharge on or after July 10, 2007:

- A minimum of 20 inches in width
- A minimum of 24 inches in height
- A minimum of 820 square inches (5.7 square feet) of clear opening
- A maximum of 44 inches from the floor to the sill opening

For grade or ground floor escape windows installed on or after July 10, 2007:

- A minimum of 20 inches in width
- A minimum of 24 inches in height
- A minimum of 720 square inches (5.0 square feet) of clear opening
- A maximum of 44 inches from the floor to the sill opening

#### **4.3 Special Situations**

For unique situations, please see the State Fire Marshal Division policy INS-04 titled, *Escape Windows* for information on how to treat situations that do not fit the conditions outlined here. See this policy too for information on the use of window wells for egress windows below grade.

See the attached diagrams for further information on egress/escape windows.

## **SECTION 5 — FIRE RESISTIVE CONSTRUCTION AND INTERIOR FINISH**

### **5.1 Occupancy Separation – New**

All occupancy separations shall be in accordance with the MSBC (07). In general, the occupancy separations between an R-2 and A, B, E, I, R-2, R-3, R-4, S-2 and M occupancies is two (2) hours. Separation between an R-2 and a U occupancy is one (1) hour [MSBC (07) Table 508.3.3]

*Exception:* Except for Group H and I-2 areas, where the building is equipped throughout with an approved automatic sprinkler system, the fire resistance ratings in Table 302.2.2 shall be reduced by one-hour but to not less than one (1) hour and to not less than that required for floor construction according to the type of construction.

### **Occupancy Separation – Existing**

All occupancy separations in existing buildings shall be in accordance with MSFC (07) Section 705. In general, the occupancy separations between an R-2 and A, B, M, S and U occupancies is one (1) hour. All other occupancy separations shall be in accordance with the MSBC (07). There are numerous exceptions – read carefully in MSFC (07) Section 705.2.3.

Occupancy separations shall be provided in new buildings in accordance with MSBC (07). Existing buildings must comply with MSFC (07) Section 705, as amended.

Areas that are incidental to the main occupancy shall be separated in accordance with MSBC (07) Table 508.2].

Group R occupancies and the exits there from shall be separated from Group A, B, M, S, and U occupancies by at least one (1) hour fire resistive construction [MSFC (07) Section 705.2.3, as amended]. Group R occupancies shall be separated from all other occupancies in accordance with MSBC (07) Table 508.3.3.

*Exceptions:*

1. In buildings protected throughout by an approved automatic sprinkler system, one (1) hour occupancy separations need not be provided.
2. An occupancy separation need not be provided between Group A and Group R Occupancies if the building is provided with a fire alarm system having automatic smoke detection throughout the Group A occupancy.

3. Fire rated opening protection need not be provided between Group A and Group R Occupancies when such openings are designed to resist the passage of smoke and the openings are protected by an approved automatic sprinkler system.
4. Any occupancy separation need not be provided where two or more occupancies occur in the same building or structure and are so intermingled that separations are impracticable provided that the exit provisions and protection requirements for the more restrictive occupancy are provided.
5. Any occupancy separation need not be provided between a Group R-3 occupancy with sleeping accommodations for ten or fewer person and Group B or M Occupancies which are accessory if interconnected smoke detectors are provided. At least one smoke detector shall be located in the Group B or Group M occupancy and additional detectors may be needed in accordance with manufacturer's instructions. Smoke detectors in the sleeping areas shall be located as specified in Section 907.2.10 and shall be audible in all sleeping areas.

When accessory uses are part of a larger major use, the following need not be separated [MSFC (07) Section 705.2.3]

- Assembly rooms having a floor area of not over 750 square feet.
- Administrative and clerical offices and similar rooms that do not exceed 25 percent of the floor area of the major use.
- Gift shops, administrative offices and similar rooms in R-2 occupancies not exceeding 10 percent of the floor area of the major use.
- The kitchen serving the dining area of which it is a part.

## **5.2 Fire-Resistive Corridor Construction**

The requirements for fire-resistive corridor construction vary depending on the occupancy classification and date of construction.

### **5.2.1 Requirements for (Group R Division 2) apartment occupancies**

Corridors serving an occupant load of 10 or more shall have walls and ceilings of not less than one-hour fire resistive construction as required by the MSBC. Existing walls surfaced with wood lath and plaster in good condition or 1/2 inch gypsum wallboard or openings with fixed wired glass set in steel frames when approved. Door openings into such corridors shall be protected by 20-minute fire assemblies or solid wood doors not less than 1 3/4 inches thick. Where the existing frame will not accommodate the 1 3/4 inch thick door, a 1 3/8 inch thick solid bonded wood core door or equivalent insulated steel door shall be permitted. Doors shall be self-closing or automatic-closing by smoke detection. Transoms and openings other than doors from corridors to rooms shall comply with the MSBC or shall be covered with a minimum of 3/4 inch plywood or 1/2 inch gypsum wallboard or equivalent material on the room side. Corridor protection is not required when the building is protected with an approved automatic sprinkler system throughout [MSFC (07) Section 1027.17.1, as amended].

### **Requirements for Group R-2 (Apartments) – New Construction**

Corridors serving an occupant load of ten or more shall have protection for the walls, floor and ceiling meeting the requirements for one-hour fire resistive construction as specified in MSBC (07) and MSFC (07) Table 1017.1. Doors opening into the corridor shall have 20-minute fire resistance and be self-closing or automatic-closing by detection of smoke.

## **5.3 Incidental Use Areas – New and Existing**

Incidental use areas shall be separated from other uses as follows:

Shops, storage rooms and laundry rooms exceeding 100 square feet in size, and rooms containing boilers or central heating plants shall be separated from the rest of the building by not less than a one-hour fire resistive occupancy separation [MSFC (07) Section 705.3.1, as amended]. When approved by the fire



chief, existing wood lath and plaster in good condition or ½ inch gypsum wallboard is permitted where one-hour occupancy separations are required.

*Exception:* A separation need not be provided if the hazardous area is protected with automatic sprinklers and the construction of such areas is capable of resisting the passage of smoke. Doors to such areas shall be a minimum of one-hour fire-rated, solid-core wood doors or insulated steel doors. Doors shall be self-closing or automatic-closing by smoke detection.

#### **5.4 Vertical Openings – New Construction**

Vertical openings must comply with the requirements of the MSBC. All floor levels must be fire separated.

##### **Vertical Openings – Existing:**

Interior vertical shafts including but not limited to, stairways, elevator hoist ways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected as specified in MSFC (07) Table 704.1. In general, 2 stories may be open, 3 to 5 stories must be one-hour fire separated or have sprinkler protection throughout and over 5 stories must have one-hour fire separation. Vertical openings in compliance with the NFPA Life Safety Code [2000 Edition] can be considered an alternative to the MSFC.

#### **5.5 Maintenance of Fire-Resistive Construction**

Other fire-resistive construction, including occupancy separations, area separation walls, exterior walls due to location on property, fire-resistive requirements based on type of construction, draft-stop partitions and roof coverings may be required in some occupancies. When required, they shall be maintained as specified in the MSFC (07) and MSBC (07) and shall be properly repaired, restored or replaced when damaged, altered, breached, penetrated, removed or improperly installed [MSFC (07) Section 703.1].

#### **5.6 Interior Finish – New Construction**

Must meet the requirements of MSBC (07) Chapter 8.

##### **Interior Finish - Existing**

Vertical exits and exit passageways in Group R-2 occupancies, in a fully sprinklered building are required to meet a Class B flame spread rating. Vertical exits in non-sprinklered buildings are required to meet a Class A flame spread rating in accordance with MSFC (07) Table 803.3. Interior finish on walls and ceilings shall be Class A, B or C (I, II or III) in other spaces [MSFC (07) Section 803.3]. For complete details, see MSFC (07) Table 803.3.

## **SECTION 6 — FIRE ALARM AND DETECTION SYSTEMS**

#### **6.1 Alarm requirements for Apartment (Group R Division 2) occupancies**

A fire alarm system shall be provided throughout any new Group R-2 occupancy when any of the following conditions are met:

1. Any guest room or dwelling unit is located two or more stories above the story containing the lowest level of exit discharge;
2. Any guest room or dwelling unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit;
3. The building contains more than 16 dwelling units or guest rooms; or
4. The building is used as a dormitory, convent, monastery, fraternity or sorority and has an occupant load of 20 or more.

**Exception:** A fire alarm system is not required in buildings that do not have interior corridors serving guest rooms and where each dwelling unit has an exit door opening directly to an exterior exit access that leads directly to the exits. [MSFC (07) Section 907.2.9].

### **6.1.1 Initiation**

Initiation of the fire alarm system shall be by automatic means. Approved fire detectors shall be provided in boiler and furnace rooms, laundry rooms, mechanical and electrical rooms, trash-collection rooms, storage rooms, and similar areas. Automatic smoke detectors shall be provided in all common areas and interior corridors serving as required means of egress.

[MSFC (07) Section 907.2.9.1].

*Exception:* System fire and smoke detectors are not required when an approved automatic fire-extinguishing system is installed throughout the building.

### **6.1.2 Notification**

Activation of the fire alarm system or automatic sprinkler system shall initiate a general evacuation signal. MSFC (07) Section 907.2.9.3

**6.1.3 Dwelling unit smoke detectors.** Dwelling unit smoke detectors required by Section 907.3.6 shall not be connected to the building fire alarm system. MSFC (07) Section 907.2.9.3

**Exception:** Connection of such detectors for annunciation only.

#### **6.1.3.1 Dwelling Unit Room Detectors**

Listed single and multiple station smoke alarms shall be installed in accordance with the provisions of the MSFC (07) and the household fire warning equipment provisions outlined within NFPA 72 (02). A smoke detector shall be installed in each sleeping room and at a point centrally located in the corridor or area giving access to each separate sleeping area. A smoke alarm shall be installed in each story within a dwelling unit, including basements and cellars, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

## **6.2 Alarm Requirements for Apartment (Group R-2) Occupancies – Existing**

A fire alarm system shall be provided throughout any existing Group R-2 occupancy when any of the following conditions are met:

1. Any guest room or dwelling unit is located two or more stories above the story containing the lowest level of exit discharge;
2. Any guest room or dwelling unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit;
3. The building contains more than 16 dwelling units or guest rooms; or
4. The building is used as a dormitory, convent, monastery, fraternity or sorority and has an occupant load of 20 or more. MSFC (07) 907.3.5

**Exception:** A fire alarm system is not required in buildings that do not have interior corridors serving guest rooms and where each dwelling unit has an exit door opening directly to an exterior exit access that leads directly to the exits.

### **6.2.1 Initiation (Existing)**

Initiation of the fire alarm system shall be by automatic means. Approved fire detectors shall be provided in boiler and furnace rooms, laundry rooms, mechanical and electrical rooms, trash-collection rooms, storage rooms, and similar areas. Automatic smoke detectors shall be provided in all common areas and interior corridors serving as required means of egress.

*Exception:*

System fire and smoke detectors are not required when an approved automatic fire-extinguishing system is installed throughout the building.

### **6.2.2 Notification (Existing)**

Activation of the fire alarm system or automatic sprinkler system shall initiate a general evacuation signal.

### **6.2.3 Dwelling unit smoke detectors (Existing)**

Dwelling unit smoke detectors required by MSFC (07) Section 907.3.6 shall not be connected to the building fire alarm system.

**Exception:** Connection of such detectors for annunciation only.

#### **6.2.3.1 Dwelling Unit Room Detectors (Existing)**

Smoke detectors shall be installed in hallways or areas giving access to each separate sleeping area. Where sleeping rooms are on an upper level only, the detector shall be placed at the center of the ceiling directly above the stairway. Existing dwelling units not already provided with single or multiple station smoke alarms shall be provided with approved single or multiple station smoke alarms installed and maintained in accordance with MSFC (07) Section 907.2.10 (Section 6.3 below) meeting requirements for new construction. For buildings constructed prior to August 1, 1989, detectors can receive their primary power from battery supply. For buildings constructed on or after August 1, 1989, detectors shall be connected to a centralized power source; but smoke alarms shall be located as required for new buildings [MSFC (07) Section 907.3.6].

### **6.3 General Installation Requirements for all Detectors**

Detector location and spacing shall be as follows, in addition to the manufacturer's instructions.

[NFPA 72 (02)]:

- a. Smoke detectors in rooms with ceiling slopes greater than 1-foot rise per 8 feet horizontally shall be located at the high side of the room.
- b. A smoke detector installed in a stairwell shall be so located as to ensure that smoke rising in the stairwell cannot be prevented from reaching the detector by an intervening door or obstruction.
- c. A smoke detector installed to detect a fire in the basement shall be located in close proximity to the stairway leading to the floor above.
- d. Smoke detectors shall be mounted on the ceiling at least 4 inches from a wall or on a wall with the top of the detector not less than 4 inches or more than 12 inches, below the ceiling.
- e. Smoke detectors shall not be located within kitchens, garages, or in other spaces where temperatures can fall below 32° F, or exceed 100° F.
- f. Smoke detectors shall not be located within 3 feet of supply registers of a forced air heating or cooling system and doors to a kitchen or bathroom with tub or shower
- g. For peaked ceilings, the smoke detector must be installed within 3 feet of the peak.

UL or FM (Factory Mutual) listed and approved fire-alarm systems both hardwired and wireless are also acceptable. Detectors with a battery shall emit a signal when the battery is low.

### **6.4 Visual Signaling Devices**

Dwelling units for persons with hearing impairments shall be provided with visible and audible alarm indicating appliances, activated by both the smoke detectors in the dwelling unit and the building fire alarm system [MSFC (07) Section 907.10.1.4].

## **SECTION 7 — FIRE SPRINKLER AND STANDPIPE SYSTEMS**

### **7.1 Automatic Sprinkler Systems – New**

An approved automatic sprinkler system shall be provided throughout all buildings with a Group R-2 fire [MSFC (07) Section 903.2.7].

### **Automatic Sprinkler Systems – Existing**

1. An approved automatic sprinkler system is required in existing R-2 basements when used for dwelling units and the basement exceeds 2,500 square feet in size and there is not provided at least 20 square feet of opening entirely above the adjoining ground level in each 50 lineal feet of exterior wall on at least one side of the building. Openings shall have a minimum dimension of 30 inches. If any portion of the basement is located more than 75 feet from a required opening, the basement shall be sprinklered throughout.
2. Existing rubbish and linen chutes shall be protected with automatic sprinkler protection.

### **7.2 Standpipe Systems – New**

A Class III wet standpipe shall be installed when either of the following conditions are met:

1. Class III standpipe systems shall be installed throughout all apartment buildings where the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access [MSFC (07) Section 905.3.1].

#### *Exceptions:*

1. Class I standpipes are allowed in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet above the lowest level of fire department vehicle access.
3. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.
4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.

2. Class III wet standpipes shall be installed in Group R-2 occupancies three or more stories in height where any portion of the building's interior area is more than 200 feet (60,960 mm) of travel, vertically or horizontally, from the nearest point of fire department vehicle access. Standpipes required by this section shall be installed in enclosed stairways.

See MSFC (07) Section 905 for required locations of standpipe hose connections.

### **Standpipe Systems – Existing**

Standpipe systems complying with MSFC (07) Section 905 are required in existing buildings which have occupied floors located more than 50 feet above below the lowest level of fire department access. The standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access [MSFC (07) Section 905.11].

## **SECTION 8 — FIRE EXTINGUISHERS**

### **8.1 Extinguisher Size and Location**

Fire extinguishers shall be spaced in accordance with the MSFC (07) and NFPA 10 [2002 Edition]. The MSFC requires a maximum of 75 feet travel distance to access a fire extinguisher. So these devices must be spaced appropriately so a person does not have to travel more than 75 feet to access an extinguisher [MSFC (07) Section 906].

### **8.2 Installation and Maintenance**

Extinguishers shall be installed, mounted, inspected, tested and maintained according to MSFC (07) Section 906.

A quick check for all fire extinguishers is necessary on a monthly basis. Minimal knowledge is necessary to perform this inspection [NFPA 10 (2002 Edition)].

Extinguishers shall receive maintenance at least yearly. Maintenance, servicing and recharging shall be performed by trained persons having available the appropriate servicing manuals, the proper type of tools, recharge materials, lubricants, and manufacturer's recommended replacement parts [MSFC Section 901.6.1].

## **SECTION 9 — HEATING AND ELECTRICAL EQUIPMENT**

### **9.1 Heating Appliances**

All heating equipment shall be listed by a nationally recognized testing agency (U/L, Factory Mutual, etc.) [MSFC (07) Section 605.7].

Heating appliances shall be installed and maintained with proper clearance from combustibles [MSFC (07) Section 315.2].

Unvented portable fuel burning heaters (kerosene, LP, fuel oil, etc.) shall not be used in apartment occupancies [MSFC (07) Section 603.4].

Furnaces, water heaters, and other heating equipment shall be installed in accordance with their listing, the MSBC (07), the Mechanical Code and the Electrical Code. All heating appliances installed in garages shall be at least 18 inches above the floor.

Woodburning appliances shall only be connected to a chimney flue serving an appliance burning other fuels when unless listed for such service.

### **9.2 Electrical Services**

Electrical hazards shall be corrected according to MSFC (07) Section 605.1 and the Electrical Code.

Multiplug adapters, such as multiplug extension cords, cube adapters, strip plugs and other devices shall comply with the MSFC (07) and the Electrical Code [MSFC (07) Section 605.4].

Receptacles and outlets serviced by extension cord-type wiring are prohibited [MSFC (07) Section 605.5].

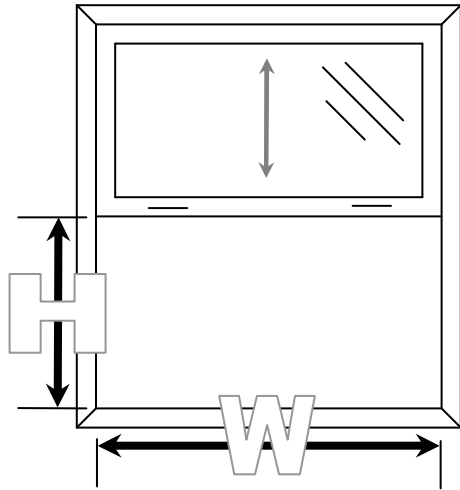
Power taps are permitted when polarized or grounded and protected with listed overcurrent protection [MSFC (07) Section 605.4.1].

Extension cords and flexible cords shall not be used as a substitute for permanent wiring [MSFC (07) Section 605.5].

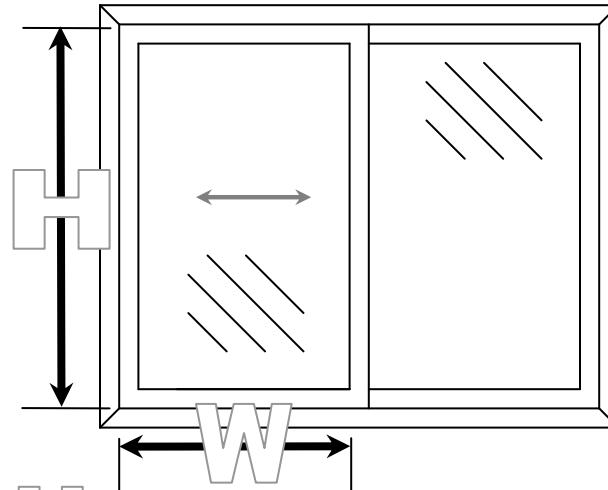
# Escape Window Worksheet for Windows Installed Before July 10, 2007

## 1) CHECK WINDOW HEIGHT AND WIDTH

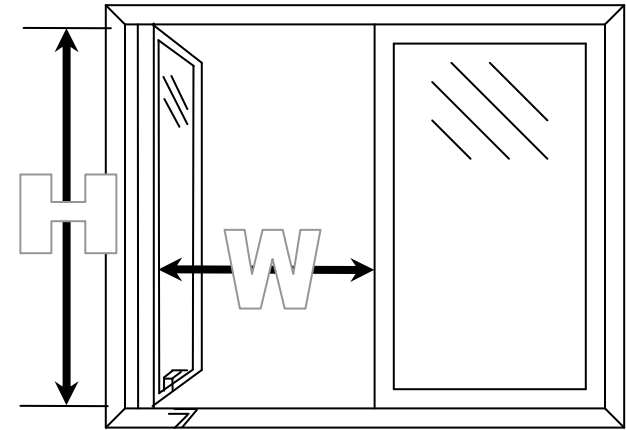
DOUBLE HUNG



SLIDING



CASEMENT



Is the clear openable height, **H** at least 20 inches?

Yes  No

Is the clear openable width, **W** at least 20 inches?

Yes  No

## 2) Check Window Opening Area (fill in the three blanks)

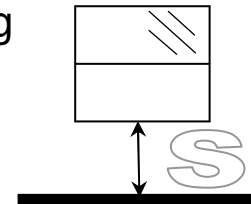
**H** \_\_\_\_\_ **X** **W** \_\_\_\_\_ = **A** \_\_\_\_\_  
 Openable height (inches)                      Openable width (inches)                      Openable area (square inches)

Is the clear openable area, **A** at least 648 square inches?

Yes  No

## 3) Check the distance from the floor to the bottom of opening

Is the distance, **S** from the floor to the finished sill  
 (bottom of opening) 48 inches or less?



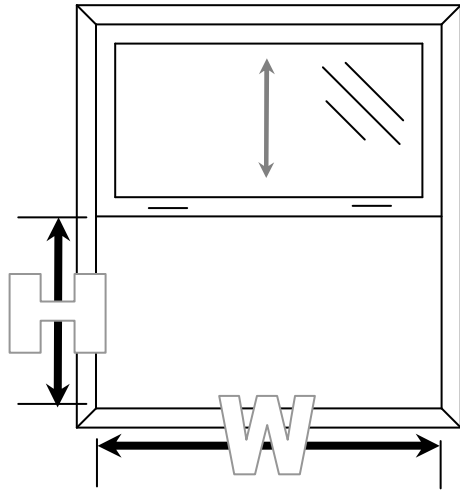
Yes  No

If you answered yes to all questions then the window should comply with the 2007 Minnesota State Fire Code.  
 For assistance: Minnesota State Fire Marshal Division (651) 201-7200; TTY: (651) 282-6555; firecode@state.mn.us

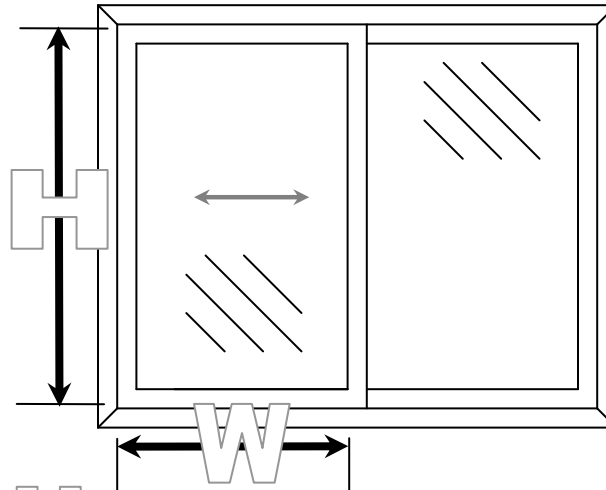
# Escape Window Worksheet for Ground Floor Windows Installed On or After July 10, 2007

## 1) CHECK WINDOW HEIGHT AND WIDTH

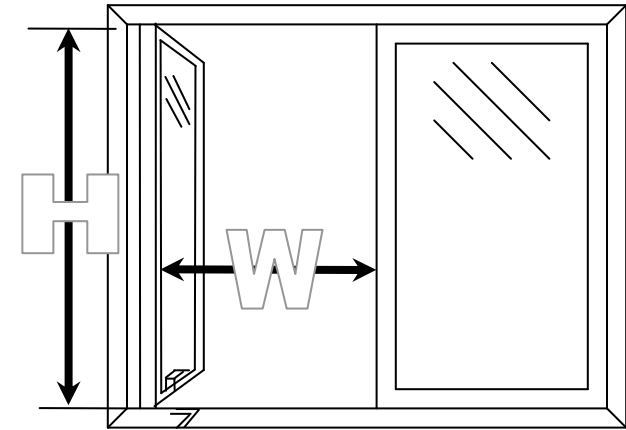
DOUBLE HUNG



SLIDING



CASEMENT



Is the clear openable height, **H** at least 24 inches?

Yes  No

Is the clear openable width, **W** at least 20 inches?

Yes  No

## 2) Check Window Opening Area (fill in the three blanks)

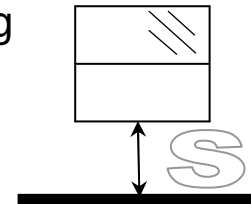
**H** \_\_\_\_\_ **X** **W** \_\_\_\_\_ = **A** \_\_\_\_\_  
 Openable height (inches)                      Openable width (inches)                      Openable area (square inches)

Is the clear openable area, **A** at least 720 square inches?

Yes  No

## 3) Check the distance from the floor to the bottom of opening

Is the distance, **S** from the floor to the finished sill  
 (bottom of opening) 44 inches or less?



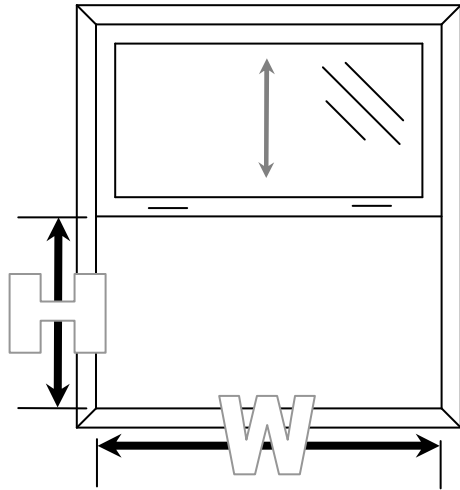
Yes  No

If you answered yes to all questions then the window should comply with the 2007 Minnesota State Fire Code.  
 For assistance: Minnesota State Fire Marshal Division (651) 201-7200; TTY: (651) 282-6555; firecode@state.mn.us

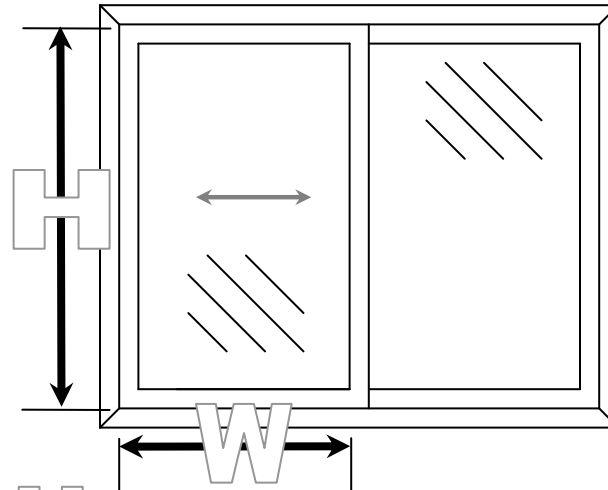
**For Escape Windows Installed Above or Below the Level of Exit Discharge on or after July 10, 2007:**

**1) CHECK WINDOW HEIGHT AND WIDTH**

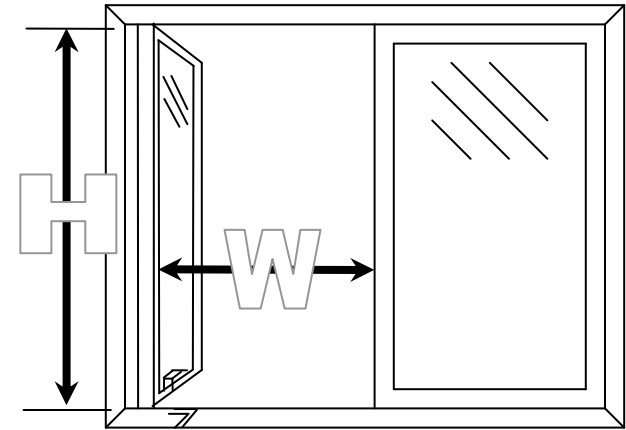
DOUBLE HUNG



SLIDING



CASEMENT



Is the clear openable height, **H** at least 24 inches?

Yes  **No**

Is the clear openable width, **W** at least 20 inches?

Yes  **No**

**2) Check Window Opening Area (fill in the three blanks)**

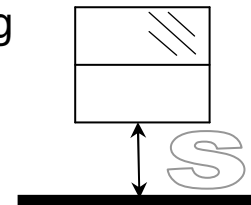
**H** \_\_\_\_\_ **X** **W** \_\_\_\_\_ = **A** \_\_\_\_\_  
 Openable height (inches)                      Openable width (inches)                      Openable area (square inches)

Is the clear openable area, **A** at least 820 square inches?

Yes  **No**

**3) Check the distance from the floor to the bottom of opening**

Is the distance, **S** from the floor to the finished sill  
 (bottom of opening) 44 inches or less?



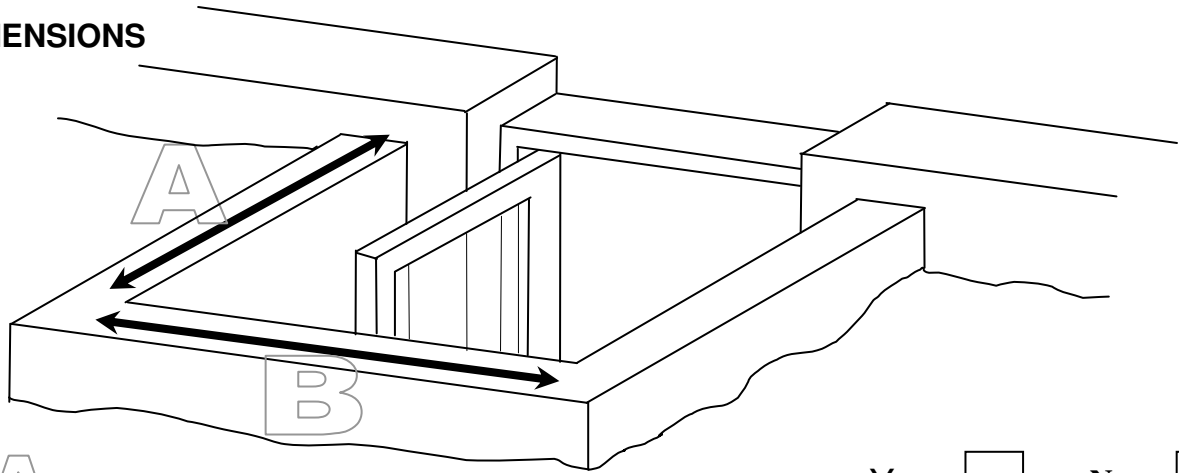
Yes  **No**

If you answered yes to all questions then the window should comply with the 2007 Minnesota State Fire Code.  
 For assistance: Minnesota State Fire Marshal Division (651) 201-7200; TTY: (651) 282-6555; firecode@state.mn.us



# Window Well Worksheet

## 1) CHECK WINDOW WELL DIMENSIONS



Is the clear horizontal distance, **A** at least 36 inches?

Yes  **No**

Is the clear horizontal distance, **B** at least 36 inches?

Yes  **No**

## 2) Check Window Well Opening Area (fill in the three blanks)

$$\text{A} \quad \underline{\hspace{2cm}} \quad \times \quad \text{B} \quad \underline{\hspace{2cm}} \quad = \quad \text{Area} \quad \underline{\hspace{2cm}}$$

Horizontal distance (inches)

Horizontal distance (inches)

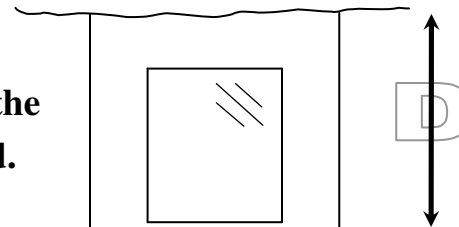
Net horizontal opening (square inches)

Is the **Area** at least 1,296 square inches?

Yes  **No**

## 3) Check the vertical depth of the window well

If the distance, **D** from the bottom of the well to the top at grade is more than 44 inches, a ladder is required.  
If a ladder is required, is one provided?



Yes  **No**

If you answered yes to all questions then the window should comply with the 2007 Minnesota State Fire Code  
For assistance: Minnesota State Fire Marshal Division (651) 201-7200; TTY: (651) 282-6555; firecode@state.mn.us