



## **FLORIDA FIRESAFETY SCHOOL EVALUATION SYSTEM**

### FIRE SAFETY EVALUATION SYSTEM FORM INSTRUCTIONS FOR COMPLETION

#### **Introduction**

This Fire Safety Evaluation System is an alternative to Section 69A-58.008, Florida Administrative Code. Its use is therefore not mandatory but should be completed at the request of the affected school district. The term "shall" is used herein to indicate that if these provisions are applied, the procedures mandated are to be followed to ensure the effectiveness of the evaluation system.

The Fire Safety Evaluation System is a measuring system. It compares the level of safety provided by an arrangement of safeguards that may differ from those specified in Section 69A-58.008, Florida Administrative Code, to the level of safety provided in a building that conforms exactly with the details of the Code.

The use of this Fire Safety Evaluation System is designed and intended to be used for evaluating existing educational occupancies (through the 12th grade). It is not designed or intended to be used for evaluating day care centers (unless they are an incidental use within an educational occupancy).

#### **Procedure for Determining Equivalency**

Evaluate the factor's affecting either every fire zone, or the building as a whole using the "Fire Safety Evaluation Worksheets " (Parts 1 through 5).

Zoning must divide the building into units that consist of one or more complete fire/smoke zones.

*A Fire/smoke zone is a portion of a building that is separated from all other portions of the building by building construction having at least a 1 -hour fire resistance rating or smoke partitions conforming to the requirements of Section 8.2.4 of NFPA 101(2000 ed.).*

Any vertical openings (shafts, stairs) involved also must provide 1-hour separation with opening protected by 45 minutes fire resistance doors. In facilities- completely protected by automatic sprinkler protection, these fire resistance requirements do not apply. The elements separating one zone from another, must be of smoke-resisting construction with self-closing doors or the doors equipped with automatic closers operated by smoke detectors.

Zones shall be permitted to be either adjacent to each other (e.g., separate wings or building sections) or above each other (e.g., floors or groups of floors).

Select and circle the safety value for each parameter in Part 1 that best describes the conditions in the facility or the zone being evaluated.

Each of the safety parameters are to be analyzed, and the safety value for each parameter that best describes the condition in the building is to be identified. Only one value for each of the parameters is to be chosen. If two or more values appear to apply, the one with the lowest point value governs.

Using the "FACILITY FIRESAFETY REQUIREMENT WORKSHEET" (Part 5), determine the acceptability of the general building systems (utilities; HVAC; elevator installations; and rubbish chutes, incinerators, and laundry chute installations).

Equivalency is achieved if the building or fire/smoke zone evaluations show equivalency or better in each and every zone and the requirements of the " FACILITY FIRESAFETY REQUIREMENT WORKSHEET " (Part 5) are met.

### **Glossary for Fire Safety Evaluation Worksheet for Educational Occupancies**

Introduction. This glossary is provided to assist in completing the "Fire Safety Evaluation Worksheet for Educational Occupancies." This glossary provides expanded discussion and definitions for various items in the worksheet to assist the user where questions of definition or interpretation arise. To the maximum extent possible, the glossary does not repeat the definitions already existing in NFPA 101, Life Safety Code (2000 ed.).

#### **Step 1 - Identify Hazardous Areas**

In order to determine segregation of hazards, hazardous areas need to be identified. A hazardous area is any space or-compartment in which a hazardous activity or storage of flammable or readily combustible products exists that possesses the potential for producing a fully involved fire. Examples of these types of areas in typical educational occupancies include the following: (a). Chemistry Laboratories, (b). Chemistry Storage Rooms, (c). Shops and Industrial Technology Areas (such as vehicle repair shops, wood shops, metal shops, welding shops and similar uses), (d). Storage and receiving areas for large quantities of combustible materials, (e) Boiler rooms and heating plants, (f) Areas used for the storage of flammable liquids or liquid-fueled vehicles. Ref. NFPA 101 (2000 ed.) Section 6.2, NFPA 1 Sec. 2-1.77.

#### **Step 2 - Determine the Fire Protection Provided**

The parameter value for hazardous areas is based on the presence or absence of the fire protection necessary to control or confine the hazard. Two different types of fire protection are considered. The first consists of automatic sprinklers or other appropriate extinguishing systems covering the entire hazard. The credit for sprinklers shall not to be given unless the hazardous area is separated from the rest of human occupancy or the egress route by reasonably smoke-resistant partitions and doors. The second is a complete fire enclosure having a sufficient fire resistance rating to contain the potential fire severity of the hazardous area. This includes the following: (a) The separation of the hazardous area from any structural framing members, (b) Partitions separating the hazardous area from all other spaces, and (c) Fire protection rated doors sufficient to exceed the potential of the fire load involved. Any hazardous space that has any of these protection systems is classified as having single protection.

#### **Step 3 - Determine Degree of Deficiency and Assign Parameter Values**

The parameter value ultimately is determined by the degree of the deficiency of the hazardous area based on the level of protection needed.

In some situations, more than one hazardous area with the same or differing levels of deficiency exists. The overall charge is based on the single most serious deficiency for the hazardous area.

## Hazard Protection Table

	No protection	Sprinkler protection	Fire resistance-rated enclosure	Protected with both sprinklers and fire resistance-rated enclosures
Not structurally Endangering	Single deficiency	No deficiency		
Structurally Endangering	Double deficiency	Single deficiency	Single deficiency	No deficiency

### Vertical Openings

These values apply to vertical openings and penetrations including exit stairways, ramps, and any other vertical exits, pipe shafts, ventilation shafts, duct penetrations, and laundry and incinerator chutes. The charge for vertical openings is based on the fire resistance of the enclosure, if provided. Ref. NFPA 101 (2000 ed.) Sections 4.5.5 and 8.2.5.

A vertical opening or penetration is classified as open if it is: (a) Unenclosed; (b) Enclosed but has doorways (or similar portals) that are without doors; (c) Enclosed but has unprotected openings other than doorways; and (d) Enclosed with cloth, paper, or similar materials without any sustained fire stopping capabilities.

The credit for vertical opening protection varies depending on the number of stories connected by the vertical opening and the degree of enclosure.

### Sprinklers

Where an automatic sprinkler is installed for either total or partial building coverage, the system shall be in accordance with the requirements of NFPA 13, Standard for the Installation of Sprinkler Systems. Ref. NFPA 101, (2000 ed.) Section 9.7 and NFPA 1(2000 edition) Section 7-3.

To receive credit for protection, the sprinkler system must be equipped with an automatic alarm initiating device that activates the building's fire alarm system or otherwise sounds an alarm sufficiently audible to be heard in all occupied areas.

To receive credit for "total building" sprinkler protection, the entire building must be provided with sprinkler coverage and must cover all zones of the building.

### Fire Alarm

Fire alarms are discussed in Section 9-6 of NFPA 101 (2000 ed.). An operating and functional Fire Alarm system is a **required** item for Educational Facilities.

**Manual System Only** - There is a fire alarm system that meets the requirements for manual fire alarm initiation of Section 9-6 (NFPA 101, 2000 ed.).

**Manual With Detection in Hazardous Areas** - There is a manual fire alarm system with automatic detection in hazardous areas such as boiler rooms, shops, laboratories, kitchens, laundry rooms, and storage rooms.

**Manual With Detection and Fire Department Notification** - There is a fire alarm system that complies with the requirements of the previous paragraph, and, in addition, automatically transmits a signal to the fire

department that is committed to serve the area in which the building is located through a direct connection, an approved central station, or through other acceptable means.

### **Smoke Detection**

All references to detectors herein refer to smoke detectors. No credit is given for heat detectors in habitable space except as specifically noted in this section. Heat detectors can be credited in the following two situations: (a). Uninhabitable spaces where ambient temperatures can be expected to reach 120°F (50°C) or fall below 0°F (-18°C), provided separation from inhabited spaces is at least 20-minute fire resistance-rated, (b). Hazardous areas where particles of combustion may normally be present such as kitchens, chemistry laboratories, and industrial technology areas. Ref. NFPA 101 (2000 ed.) Section 9.6.2 and NFPA 1 (2000 ed.) Section 7-7.4.

To meet the requirements for smoke detector coverage, the spaces must be provided with smoke detectors installed in accordance with NFPA 72, National Fire Alarm Code.

Only those detectors whose activation will sound the alarm throughout the zone of origin are to be credited in this parameter.

If the building is evaluated by zones, the evaluation is based solely on detection within the zone.

In order to receive credit for smoke detection in corridors only, all corridors in the building or zone must have smoke detectors.

### **Interior Finish**

Classification of interior finish is based on the flame-spread rating of the interior finish tested in accordance with NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials. The requirements apply to wall and ceiling finish materials.

No consideration is included in the safety parameter value for any finish with a flame-spread rating of more than 200 or for any finish not rationally measured by NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials. Thus, this FSES should not be used where such conditions exist. Such materials include foamed plastics, asphalt-impregnated paper, materials that melt, drip, or delaminate, or those capable of inducing extreme rates of fire growth and rapid flashover. In any case where these materials are involved, the resultant risk is considered beyond the capacity of this evaluation system and requires individual appraisal.

Any interior finish having a flame spread of 75 or less that is protected by automatic sprinklers is evaluated as having a flame spread not exceeding 25. Any interior finish having a flame spread of more than 75 but not more than 200 that is protected by automatic sprinklers is evaluated as having a flame spread not exceeding 75.

### **Exit Access**

The charge for dead-end access is made where any corridor affords access in only one direction to a required exit.

If dead-end distances exceed 50 ft (15 m), a separate analysis must be made to evaluate the potential of flashover of any spaces that could block egress from the dead end and to determine the potential rate of smoke filling of the egress system involved. If the safe time is shorter than the expected egress time, the evaluation should be discontinued unless a corrective action is specified.

The 50 ft (15 m) dead-end limit is applicable to existing buildings or new fully sprinklered buildings. A value of 20 ft (6 m) should be used for other new buildings.

Any system with common path of travel in excess of that permitted by NFPA 101 should be considered deficient under Safety Parameter 9, "Exit(s)."

### **Exit(s)**

Exit(s) are the paths of travel from a room to the outside using any types and arrangements described in Chapter 7 (NFPA 101 2000 ed.)

**Single Route.** A single route exists where occupants on any floor do not have either a direct exit or multiple routes.

**Multiple Routes.** Multiple routes exist where the occupants on a floor have a choice of two separate means of egress routes to the outside using the permitted types in Chapters 14 and 15 (NFPA 101).

**Common path of travel- Multiple Routes.** An exit route is deficient if it fails to meet any of applicable criteria of NFPA 101, Life Safety Code, including capacity. Any system with common path of travel in excess of that permitted by NFPA 101 (75 ft. unsprinklered, and 100 ft. sprinklered) should be considered deficient under Parameter 9, "Exit(s)".

**Smokeproof Enclosure.** Credit for a smokeproof enclosure shall be permitted to be given for a stairway designed and tested in accordance with the requirements of 7-2.3 (NFPA 101, 2000 ed.) for a smokeproof enclosure. To receive credit for a smokeproof enclosure, all exit stairs credited in Safety Parameter 9, "Exit(s)" and Safety Parameter 8, "Exit Access," shall meet the smokeproof enclosure requirements.

**Direct Exit.** To be credited for direct exits, each room shall have within that unit a door that opens to the exterior at grade level or onto an exterior balcony with direct access to an exterior exit. Where such openings are directly onto grade in a location where any person egressing can move directly away from the building without further exposure, the credit for direct exit shall be given even if there are no other exit routes from the space.

### **Corridor/Room Separation**

The values assigned in Safety Parameter 10, "Corridor/Room Separation," are based on the quality of separation between the room and the corridor. For purposes of this evaluation, corridor separation in new buildings is considered as complete (i.e., 1 hour with door closer) if it meets the requirements of 15.3.6 (NFPA 101, 2000 ed.) or its exceptions.

For areas within educational occupancies that use an "open-plan" concept where all of the classrooms exit through an intervening space (such as a Media or Activity Center), a separate evaluation is recommended that calculates fuel loading and available safe egress time.

Corridor/room separation is defined in the following paragraphs.

**No Separation Exists or Multiple Penetrations.** The separation is judged to be non-existent if there is no corridor leading to an exit, there are no barriers against smoke or fire spread, there are no doors between corridors and adjacent rooms, or there are multiple penetrations. Examples of penetrations include transfer grills for air movement, transoms, and non fire-rated glass.

Incomplete. The separation is judged as "incomplete" if the wall to the corridor has some unprotected openings (louvers, gaps, or transfer grills) between the floor and ceiling but these openings are minor in relation to the area of the room or they are located low in walls or doors. If openings exist above the ceiling level, the separation is considered complete if the ceiling in the room is a completed membrane. In this case, the separation rating is based on the level of resistance involved in the wall/ceiling system.

**Solid Core Doors.** This parameter should be used if the corridor/room doors are solid core wood or metal, doors at least 1½ inches thick.

**Doors with 20 Minute or Greater Fire Protection Rating.** Use this parameter if doors and frames are fire-rated for 20 minute or greater protection but are not self-closing or automatic closing. This includes doors that are rated, that have closers, but are being held, propped or wedged open.

#### **Procedure for Computing Individual Safety Evaluations:**

Transfer each of the 10 circled safety parameter values from Part 1 to the unshaded blocks corresponding to each safety parameter in Part 2.

Add the three columns, keeping in mind that any negative numbers need to be deducted.

Transfer the resulting values for S1, S2, and S3 to Part 4.

#### **Determine Mandatory Requirements**

Circle the mandatory values in Part 3 for the building being evaluated.

Transfer the circled values from Part 3 to the boxes marked Sa, Sb, and Sc in Part 4.

#### **Equivalency Evaluation**

As indicated in Part 4, subtract the mandatory values for "Required Control ... .. Required Egress," and "Required General Fire Safety" from the respective "provided" values calculated in Part 2. Enter the difference in the appropriate boxes.

For each row check "yes" if the value in the answer box is zero (0) or greater. Check "no" if the value in the answer box is negative.

The safety parameters identified in Part 1 cover a majority of the considerations necessary to evaluate equivalent fire safety. However, some considerations are not evaluated by this method. These are treated separately in Part 5. Complete Part 5 by checking the appropriate box for each item.

#### **Equivalency Conclusions**

If all of the checks in Part 4 are in the "yes" column and the considerations identified in Part 5 are met, the level of fire safety is at least equivalent to that prescribed for general purpose buildings.

If one or more of the checks in Part 4 are in the "no" column, or some or all of the items in Part 5 are not met or some combination of these results, the level of fire safety is determined, by this system, not to be equivalent to the life safety requirements of NFPA 101, Life Safety Code (2000 ed.).

# FLORIDA SCHOOL EVALUATION SYSTEM

# PART 1

SAFETY PARAMETERS	PARAMETER VALUES										
<b>1. CONSTRUCTION</b> Florida Building Code Construction Types.	Combustible					Noncombustible					
	V (000) or (111)		Type IV (2HH)		Type III (200) or (211)		Type II (000)		Type II (111)		Type I (443) or (332) Type II (222)
	1 Story	1	2	2	1	2	1	2	2		
	2 Stories	0	1	1	0	1	0	1	2		
	3 Stories	-1	0	0	-1	0	-1	0	2		
4 Stories	-2	-1	-1	-2	-1	-2	-1	2			
<b>2. SEGREGATION OF HAZARDS</b>	Hazard Exposed to Exit				Hazard Separated From Exit			No Deficiencies			
	Double Deficiency		Single Deficiency		Double Def.		Single Def				
	-7		-4		-4		0		0		
<b>3. VERTICLE OPENINGS</b>	Open (or incomplete enclosure)				Enclosed			Single Story			
	Connects 4 or more Stories	Connects 3 Stories	Connects 2 Stories	Smoke Resistant or < 30 Min	30 Minutes to 1 Hour	> 1 Hour					
	-10	-6	-2	1	2	4		0			
<b>4. SPRINKLERS</b>	None		Partial			Complete Building					
			Hazardous Areas Only or Present in Limited Areas Only		Occupied Areas but Lacking in Unoccupied Areas (Attics)	Standard		Quick Response			
	0		1	6		10		12			
<b>5. FIRE ALARM (REQUIRED)</b>	Manual System Only			Manual With Heat Detection in Hazardous Areas			Manual With Heat Detection and Fire Department Notification				
	2			4			6				
<b>6. SMOKE DETECTION</b>	None	Hazardous Areas Only			Corridors		Complete Building				
	0	1			2		4				
<b>7. INTERIOR FINISH IN EXIT ROUTES (Flame Spread Rating)</b>	> 75 to ≤ 200			> 25 to ≤ 75			≤ 25				
	-3			-1			0				
<b>8. EXIT ACCESS</b>	Max. Dead End Length			No Dead Ends > 20'. and Travel is							
	> 35' to 50'	> 20' to ≤ 35'		>200' to 300'		>100' to 200'		> 50' to 100'	≤ 50'		
	-2	-1		-1		0		1	3		
<b>9 EXIT(s)</b>	Interior Corridor--- Only One Way Out	Interior corridor ----More Than One Way Out					Direct Exit				
		Deficient	Not Deficient	Smokeproof Enclosures							
	-6	-2	0		3		5				
<b>10. CORRIDOR TO ROOM SEPARATION</b>	No Separation Exist or Multiple Penetrations	Separation Exist and the Level of Protection is:									
		Incomplete	Solid Core Door	Doors With ≥ 20 Minutes FPR		Door with ≥ 20 Min. FPR & Self/Auto Closure.	Direct Exit to the Outside				
	-6	-2	1	2		4	0				

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## PART 2

### INDIVIDUAL SAFETY EVALUATION

Safety Parameters	Fire Control (S1)	Egress Provided (S2)	General Fire Safety Provided (S3)
1. Construction			
2. Segregation of Hazards			
3. Vertical Openings			
4. Sprinklers			
5. Fire Alarm			
6. Smoke Detection			
7. Interior Finish			
8. Exit Access			
9. Exit Systems			
10. Corridor/Room Separation			
<b>Total</b>	<b>S1 =</b>	<b>S2 =</b>	<b>S3 =</b>



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## PART 3

### MANDATORY REQUIREMENTS

Building Height	Control Requirement (Sa)	Egress Requirement (Sb)	General Fire Safety (Sc)
<b>1 Story</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2 Stories</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>3 Stories</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>&gt; 3 Stories</b>	<b>3</b>	<b>4</b>	<b>3</b>

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## PART 4

### EQUIVALENCY EVALUATION

		PASS	FAIL
Control Provided (S1) minus Required Control (Sa) +/- 0	_____ - _____ = _____		
Control Provided (S2) minus Required Egress (Sb) +/- 0	_____ - _____ = _____		
General Fire Safety (S3) minus Required Gen. Fire Safety (Sc) +/- 0	_____ - _____ = _____		

# FLORIDA SCHOOL EVALUATION SYSTEM

# PART 5

## FACILITY FIRESAFETY REQUIREMENT WORKSHEET

<b>Considerations</b> Systems conform to the requirements of the State Requirements for Educational Facilities	<b>Met</b>	<b>Not Met</b>	<b>Not Applicable</b>
A. Building utilities			
B. Air conditioning, heating and ventilation			
C. Elevators			
D. Rubbish chutes, incinerators and laundry chutes			
E. Fire Drills			
F. Fire Alarm System			

**ABOVE REQUIREMENTS MUST BE MET BEFORE OCCUPANCY IS APPROVED**