SWOFSC UNIFIED STANDARD B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

SECTION B101
GENERAL

B101.1 Scope: The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this SWOFSC Unified Standard. This SWOFSC Unified Standard does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions: For the purpose of this SWOFSC Unified Standard, certain terms are defined as follows:

FIRE-FLOW: The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA: The floor area, in square feet (m^2), used to determine the required fire-flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases: The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings where the development of full fire-flow requirements is impractical.

B103.2 Increases: The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply system: For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the fire code official is authorized to utilize NFPA 1142 or the *International Urban Wildland Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General: The fire-flow calculation area shall be the total floor area of all floor levels within the exterior walls, and under the horizontal projections of the roof of a building, except as modified in Section B104.3.

B104.2 Area separation: Portions of buildings which are separated by fire walls without openings, constructed in accordance with the *Ohio Building Code*, are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type IB construction: The fire-flow calculation area of buildings constructed of Type IA and Type IB construction shall be the area of the three largest successive floors.

> **Exception:** Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.1 One-, two-, and three-family dwellings: The minimum fire-flow requirements for one-, two-, and three-family dwellings having a fire-flow calculation area which does not exceed 3,600 square feet (344.5 m^2) shall be 1,000 gallons per minute (3785.4 L/min). Fire-flow and flow duration for dwellings having a fire-flow calculation area in excess of 3,600 square feet (344.5 m^2) shall not be less than that specified in Table B105.1.

> **Exception:** A reduction in required fire-flow of 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system.

B105.2 Buildings other than one-, two-, and three-family dwellings: The minimum fire-flow and flow duration for buildings other than one-, two-, and three-family dwellings shall be as specified in Table B105.1.

> **Exception:** A reduction in required fire-flow of up to 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *Ohio Building Code.* Where buildings are also of Type I or II construction and are a light-hazard occupancy as defined by NFPA 13, the reduction may be up to 75 percent. The resulting fire-flow shall not be less than 1,500 gallons per minute (5678 l/min) for the prescribed duration as specified in Table B105.1.

TABLE B105.1: See page B-3

B105.3 Water mains: Water main size shall be designed using Table B105.1 requirements. No water main shall be less than six (6) inches in diameter (AWWA) in one-, two- and three-family dwelling areas and not less than eight (8) inches in multi-family areas or commercial areas. All water mains shall be sectionalized and looped. *Dead end water mains* should be avoided and, if used, shall require approval from the fire code official and public water authority.

SECTION B106
REFERENCED STANDARDS

ICC	OBC-05	Ohio Building Code	B104.2; Table B105.1
ICC	OFC-05	Ohio Fire Code	B105.2
ICC	IUWIC-03	International Urban-Wildland Interface Code	B103.3
NFPA	1142-01	Standard on Water Supplies for Suburban and Rural Fire Fighting	B103.3

Table B105.1
Minimum Required Fire-flow and Flow Duration for Buildings[a]

Fire-Flow Calculation Area (square feet)					Fire-flow (gallons per minute)[c]	Flow Duration (hours)
Type IA and IB[b]	Type IIA and IIIA[b]	Type IV and V-A[b]	Type IIB and IIIB[b]	Type V-B[b]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
		115,801-125,500	83,701-90,600	51,501-55,700	6,250	
		125,501-135,500	90,601-97,900	55,701-60,200	6,500	
		135,501-145,800	97,901-106,800	60,201-64,800	6,750	
		145,801-156,700	106,801-113,200	64,801-69,600	7,000	
		156,701-167,900	113,201-121,300	69,601-74,600	7,250	
		167,901-179,400	121,301-129,600	74,601-79,800	7,500	
		179,401-191,400	129,601-138,300	79,801-85,100	7,750	
		191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. The minimum required fire-flow shall be permitted to be reduced by 25 percent for Group R.

b. Types of construction are based on the *Ohio Building Code*.

c. Measured at 20 psi.