THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR
DIVISION OF FIRE

COLUMBUS FIRE

Winter School 2018

Lt. William Loper

MURPHY'S LAWS

Willi's

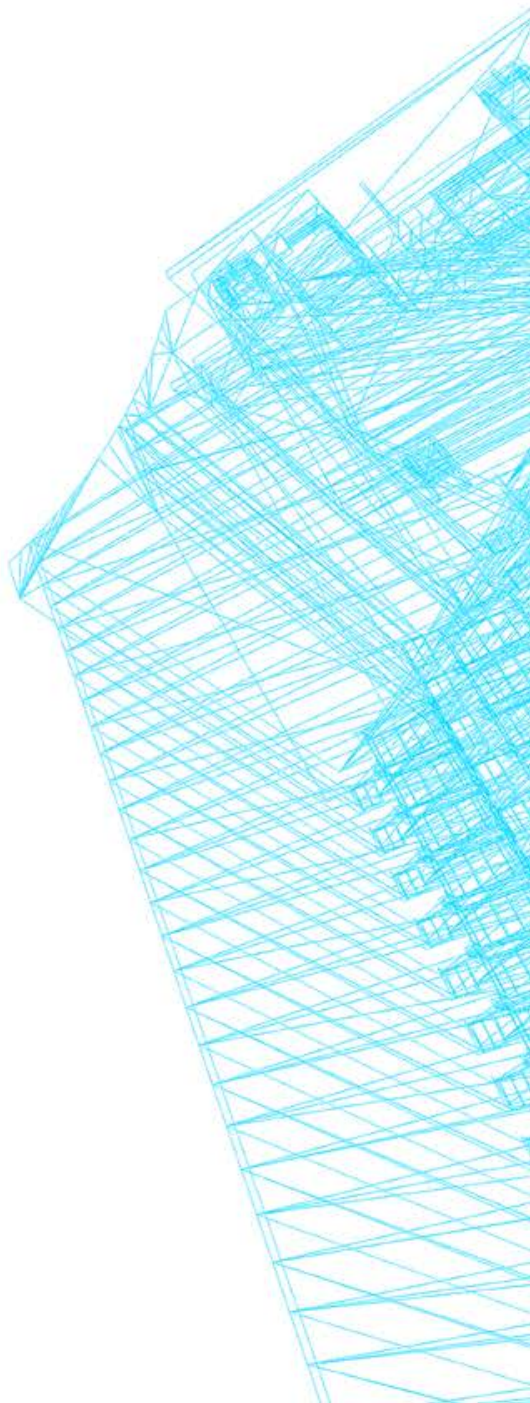
- If there is a possibility of several things going wrong, the one that will cause the most damage will be the first one to go wrong.
- Anything that can go wrong will go wrong.
- If anything can't go wrong, it will anyway.
- If you perceive that there are four possible ways in which something can go wrong, and circumvent these, then a fifth way, unprepared for, will promptly develop.
- If everything seems to be going well, you have obviously overlooked something.
- Everything takes longer than you think.
- You never find a lost article until you replace it.
- You get the most of what you need the least.
- Nature always sides with the hidden flaw.

TOPICS

- Fire Safety During Construction - OFC Chapter 33 and NFPA 241
- Water Flow Requirements
- Rapid Key Entry System
- Emergency Responder Radio Responder
- Significate OFC Changes
- Significate City of Columbus Fire Code Changes

FIRE SAFETY FOR CONSTRUCTION

OFC Chapter 33 and NFPA 241



DEUTSCHE BANK

DEUTSCHE BANK - OUTCOMES

- Three Contractor’s Supervisors Criminally Indicted
- Department of Building Staff Shuffle
- Public Rallies Calling to Improve Fire Codes and Their Enforcement

NIOSH INVESTIGATION

- Delayed notification of the fire by building construction personnel
- Standpipe and sprinkler system inoperable
- Delay in establishing water supply
- Inaccurate information about standpipe
- Blocked stairwells preventing firefighter access and egress
- Maze-like interior conditions from partitions and construction debris
- Extreme fire behavior; uncontrolled fire rapidly progressing and extending below the fire floor
- Heavy smoke conditions causing numerous firefighters to become lost or disoriented

NIOSH RECOMMENDATION

- Municipalities should ensure that construction and/or demolition is done in accordance with NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations.

DENVER APARTMENT FIRE

HOUSTON APARTMENT FIRE

CROCKER PARK CONSTRUCTION SITE

NFPA 58

Table 6104.3

Location of LP-gas containers

LP-gas container capacity (water gallons}	Minimum separation between LP-gas containers and buildings, public ways or lot lines of adjoining property that can be built upon		Minimum separation between LP-gas containers[b,c] (feet)
	Mounded or underground LP-gas containers[a] (feet)	Above-ground LP-gas containers[b] (feet]	
Less than 125[c,d]	10	5[C]	None
125 to 250	10	10	None
251 to 500	10	10	3
501 to 2,000	10	25[e,f]	3
2,001 to 30,000	50	50	5
30,001 to 70,000	50	75	(0.25 of sum of diameters of adjacent LP-gas containers)
70,001 to 90,000	50	100	
90,001 to 120,000	50	125	

NFPA 241

4.2 Temporary Offices and Sheds.

4.2.1 *

Separation distances between buildings under construction and construction-related structures, such as temporary offices, trailers, sheds, and other facilities for the storage of tools and materials having combustible construction or contents, shall be in accordance with Table 4.2.1.

Table 4.2.1 Separation Distances

Temporary Structure Exposing Wall Length		Minimum Separation Distance	
m	ft	m	ft
6	20	9	30
9	30	11	35
12	40	12	40
15	50	14	45
18	60	15	50
>18	>60	18	60

OWNERS RESPONSIBILITY FOR FIRE PROTECTION

- The owner shall designate a person to be the Fire Prevention Program Superintendent who shall be responsible for the fire prevention program and ensure that it is carried out through completion of the project.
- The authority to enforce … provisions as necessary to secure the intent of this Chapter.

ACCESS FOR FIRE FIGHTING

- **Required Access**
  - Approved temporary or permanent roads, capable of supporting vehicle loading under all weather conditions
  - Within 100 feet of temporary or permanent fire department connections
- **Key Boxes (Knox)**
  - Key boxes shall be provided as required by Chapter OFC5.

MEANS OF EGRESS

- **Stairways required**
  - Greater than 50 feet or four stories
  - At least one temporary lighted stairway shall be provided, unless one or more of the permanent stairways are erected
- **Maintenance of Egress**
  - Required means of egress shall be maintained during construction and demolition, remodeling or alterations and additions.
- **Stairway floor number signs**
  - Temporary stairway floor number signs shall be approved

WATER SUPPLY FOR FIRE PROTECTION

- An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.

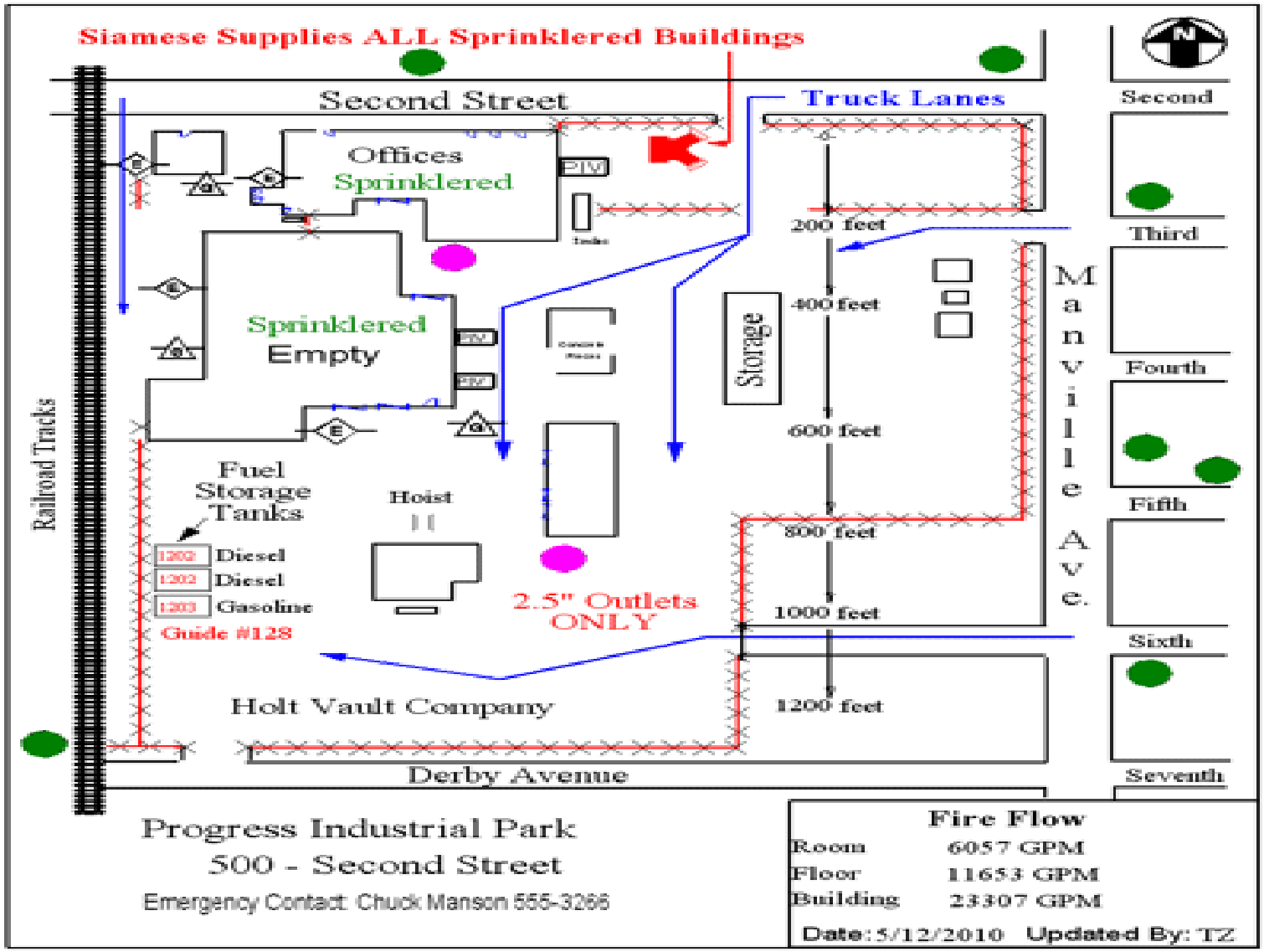
STANDPIPES / FIRE EXTINGUISHERS

- **Standpipes**
  - Four or more stories in height
  - Fire department hose connections adjacent to usable stairs
- **Temporary FDC**
- **Portable Fire Extinguishers**

  Each stairway on all floor levels

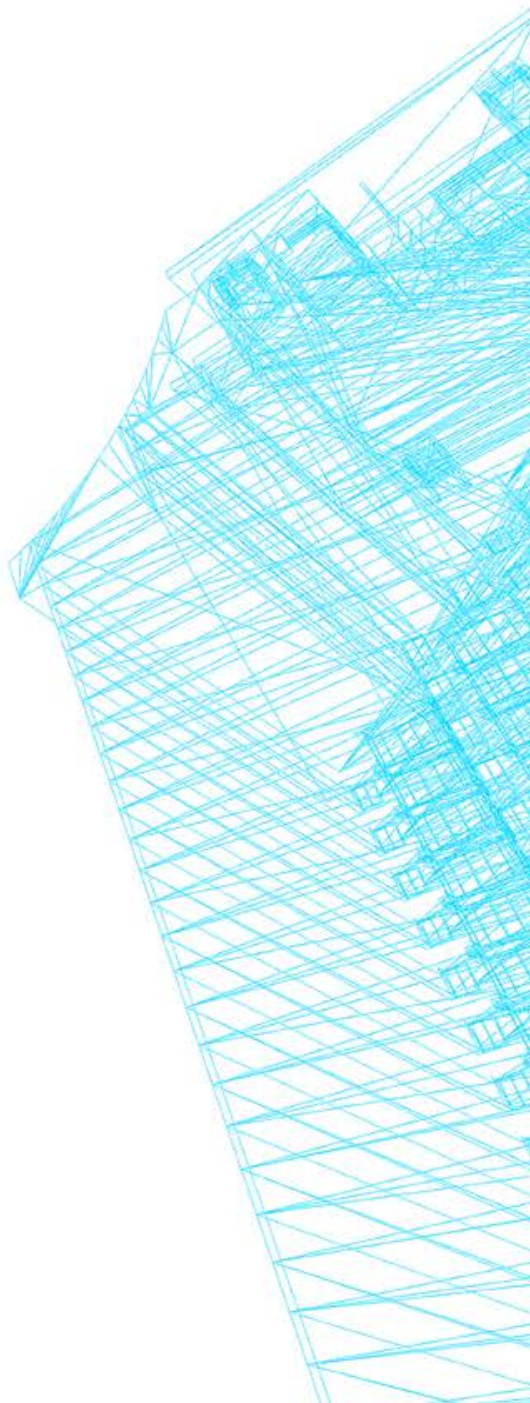
  Every storage and construction shed

  To address hazards


Siamese Supplies ALL Sprinklered Buildings
Second Street
Truck Lanes
Offices
Sprinklered
PIV
Tanks
200 feet
400 feet
600 feet
800 feet
1000 feet
1200 feet
Storage
Manville Ave.
Second
Third
Fourth
Fifth
Sixth
Seventh
Sprinklered
Empty
Railroad Tracks
Fuel
Storage
Tanks
1202 Diesel
1202 Diesel
1203 Gasoline
Guide #128
Hoist
2.5" Outlets
ONLY
Holt Vault Company
Derby Avenue
Progress Industrial Park
500 - Second Street
Emergency Contact: Chuck Manson 555-3266
Fire Flow
Room 6057 GPM
Floor 11653 GPM
Building 23307 GPM
Date: 5/12/2010 Updated By: TZ

FIRE FLOW REQUIREMENTS

OFC Chapter 5 and Appendix B and C



REQUIRED FIRE-FLOW

TABLE B105.1(1)
REQUIRED FIRE-FLOW FOR ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
0-3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2) at the required fire-flow rate
0-3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	$^1/_2$
3,601 and greater	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	$^1/_2$ value in Table B105.1(2)	1

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

TABLE B105.1(2)
REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
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	

REQUIRED FIRE-FLOW

TABLE B105.2
REQUIRED FIRE-FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the *International Fire Code*	25% of the value in Table B105.1(2)[a]	Duration in Table B105.1(2) at the reduced flow rate
Section 903.3.1.2 of the *International Fire Code*	25% of the value in Table B105.1(2)[b]	Duration in Table B105.1(2) at the reduced flow rate

For SI: 1 gallon per minute = 3.785 L/m.

a. The reduced fire-flow shall be not less than 1,000 gallons per minute.

b. The reduced fire-flow shall be not less than 1,500 gallons per minute.

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 in rural areas or small communities where the development of full fire-flow requirements is impractical.

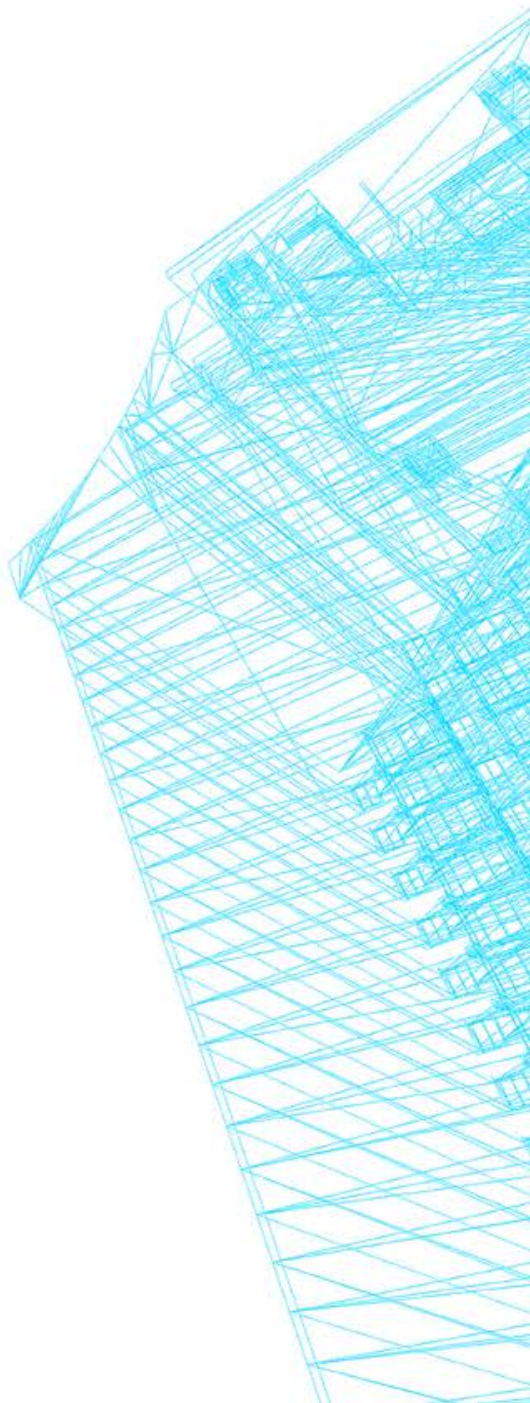
B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

FIRE HYDRANTS NUMBER AND SPACING

TABLE C102.1
REQUIRED NUMBER AND SPACING OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c, f, g] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d, f, g]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more[e]	200	120

RAPID KEY ENTRY SYSTEM



1 KNOX PADLOCK *page 18*

2 KNOX GATE & KEY SWITCH *page 17*

3 KNOX REMOTE POWER BOX *page 21*

4 KNOX FDC LOCK *page 14*

5 KNOX STORZ LOCK *page 15*

6 KNOXVAULT™ 4400 *page 12*

7 KNOXBOX™ 3200 *page 13*

8 KNOX DOCUMENT BOX *page 19*

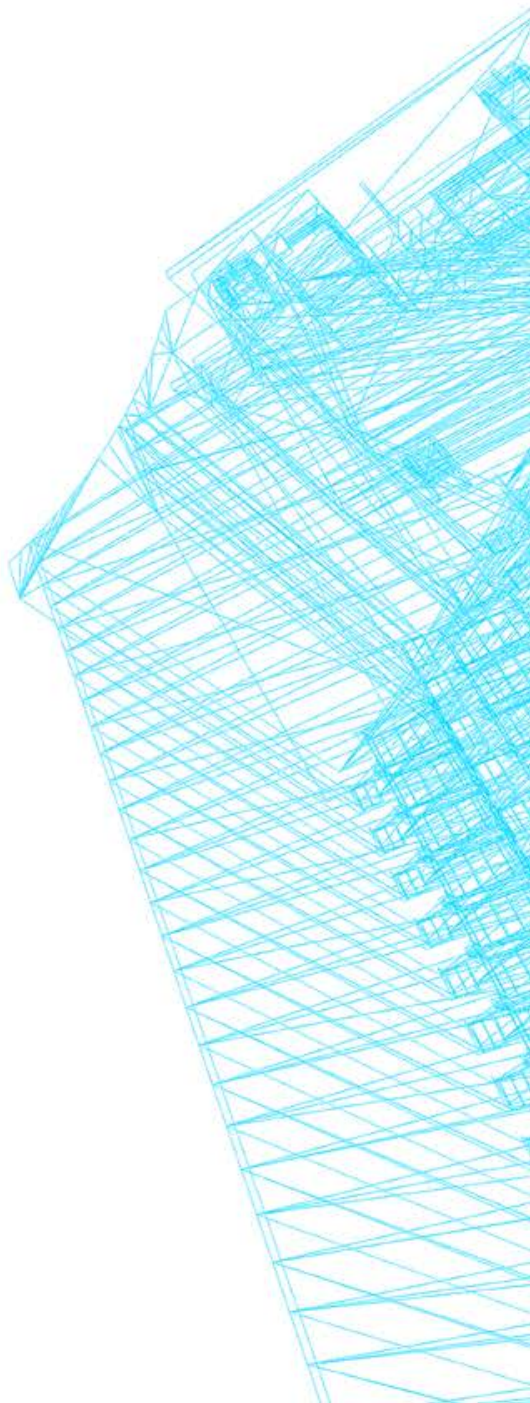
9 KNOX ELEVATOR BOX *page 20*

10 KNOX STANDPIPE LOCK *page 16*

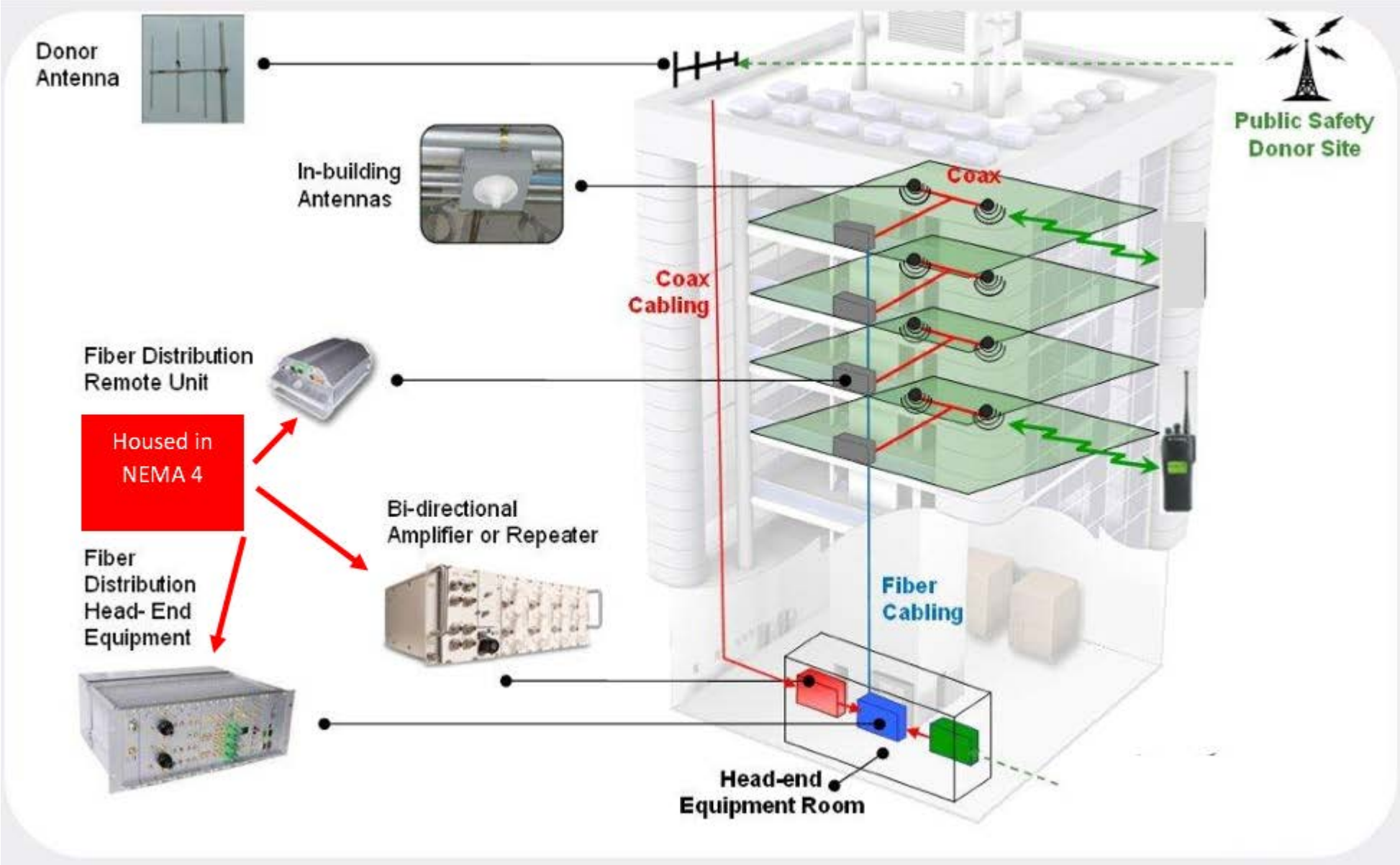
11 KNOX KEYSECURE® *page 22*

12 KNOX DRUGBOX™ *page 23*

EMERGENCY RESPONDER RADIO SYSTEM (ERRS)

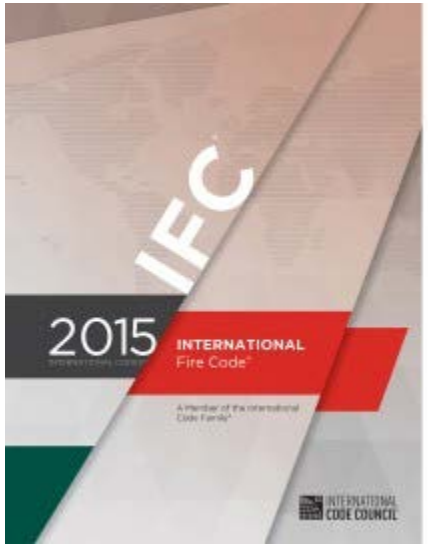


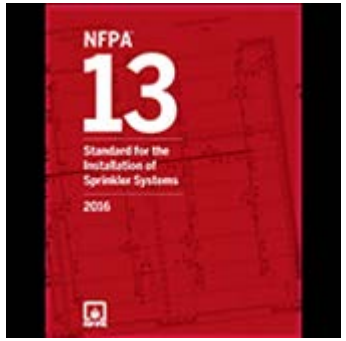
- OBC – 916
- Ohio FC – 510
- Columbus FC
  - NFPA 1221
  - NFPA 72

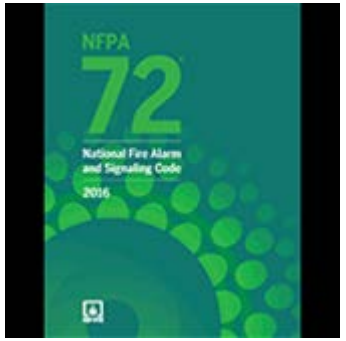


NEW OHIO FIRE CODE

December 15, 2017
Based on IFC 2015 and Limited IFC 2018
Adopted the latest NFPA reference codes





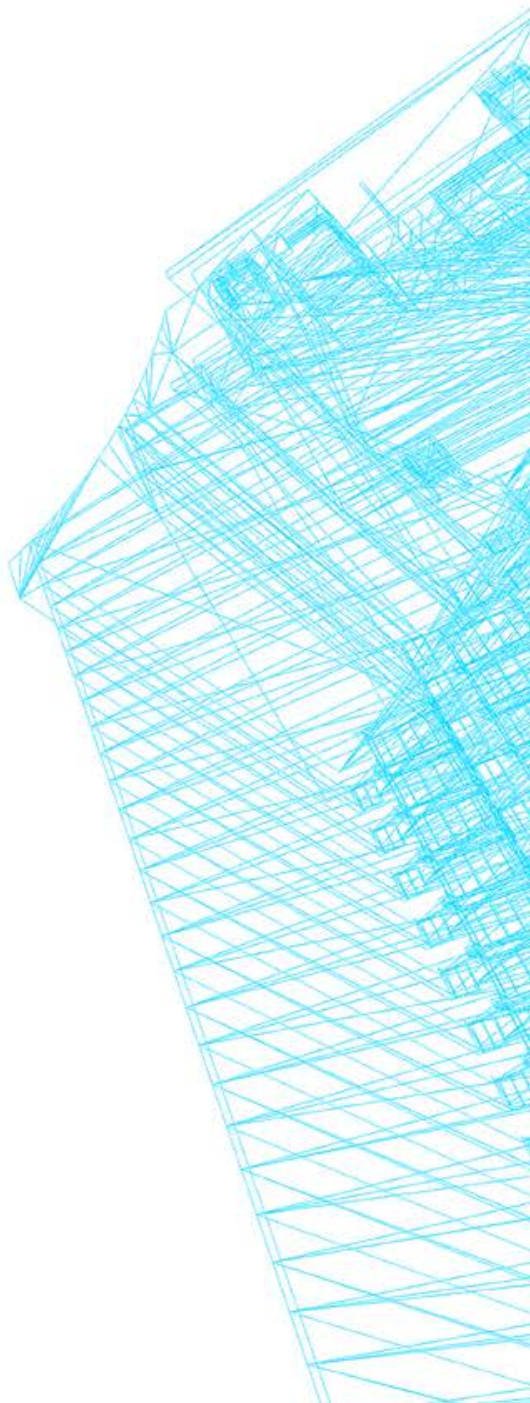


OHIO FIRE CODE

- **Chapter 11 – Construction Requirements for Existing Buildings**
  - The provisions of this rule shall apply to existing buildings constructed prior to the adoption of this code The provisions of this rule shall not apply to existing buildings unless the conditions at the building constitute a distinct hazard to life or property in the opinion of the fire code official
- **1008.1.9.11 Temporary door locking device in school buildings**
  - Device shall be permitted when approved by the building official and noted on the certificate of occupancy only in school buildings where the requirements of sections are met
- **New OFC provisions state that CO detection is now required in Group I-1, I-2, I-4, and R occupancies and in classrooms in Group E occupancies if certain conditions exists. (OFC 915.1.1.)**

CITY OF COLUMBUS FIRE CODE

Final Draft
June 2018 – Adoption
Fee Increase likely December 2018



COLUMBUS FIRE CODE

- Idle Semi Trailers / Metal Storage Containers
- Outdoor Storage of Wood and Plastic Pallets
- Cooking on Balconies and Patios
- Private Fire Hydrants Painting and Color Coding
  - All new private hydrant installations the developer shall color code the hydrant(s) to designate the level of service being provided by that hydrant
- Rapid Key Emergency Access System
- Emergency Power Required for Electric Fire Pumps
  - Unless Approved By the Fire Code Official

COLUMBUS FIRE CODE

- **Electric Vehicle Charging Station**
  - **Shall be located a minimum of 10’ from fire hydrants**
  - **Subject to vehicular damage - barrier must be installed in accordance with Ohio Fire Code Section 312**
  - **A fire department emergency power disconnect shall be provided within 50’ of the electric vehicle charging station but no closer than 10’**
    - **Knox Remote Power Box (Red) with dual key**
    - **The disconnect shall be mount at a height of 60” from grade**
    - **A sign with red background and white letter stating “FD Emergency Power Off – Electric Vehicle Charging Station” must be installed at each disconnect.**

COLUMBUS FIRE CODE

- **Field Adjustable PRV on Standpipes**
- **Manual dry standpipes connection in an open parking garage stairs**
- **Sprinkler of exterior balconies, decks, and patios required**
- **Standard Naming of Stairways (A,B,C,D,E…)**
- **Water based fire suppression systems shall be provided with a water supply capable of providing the required flow and pressure as determined by the design in accordance with the appropriate referenced standard *and the design shall include a 10 psi safety factor.***

HANDOUTS AND QUESTIONS