



CITY OF DUNWOODY

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MEMORANDUM

To: Honorable Mayor & City Council

From: Michael Nier, Chief Building Official

Date: February 15, 2010

Subject: Residential Fire Suppression Sprinkler Systems - Review

Promotion of safety is one of the core values in the Community Development Department. As such, staff continues to work diligently in evaluating systems and programs in our adopted Building Code that will better protect Dunwoody citizens. The recent Dunwoody residential house fire has focused everyone's attention on residential fire suppression systems. Accordingly, this memo evaluates residential fire suppression technologies.

Currently the city is enforcing the 2006 International Codes as adopted by the State of Georgia. The International Residential Code currently does not require sprinkler systems in one and two single family dwellings, though it is anticipated to be included in 2013 adoption of the code for all new single family homes. This requirement was adopted in the 2009 edition of the code, however the state is on a 6 year adoption cycle (i.e. every other edition is adopted), and compliance to this code is not yet mandated in Georgia. Upon reviewing the system outlined in the 2009 edition of the code, it describes a simple NFPA 13D system as the preferred system for minimum life safety. The International Building code has been amended by the state to reference NFPA 101 Life Safety Code as the governing code for sprinkler system construction standards.

Our Department has been researching other communities to better understand what fire suppression technology would best promote life-safety. Staff has researched the Sandy Springs ordinance and made contact with the Georgia Department of Community Affairs (DCA) and the State Fire Marshal's Office, regarding this matter and has discovered the following information:

- Any change to the mandatory International Codes would have to be first submitted to the DCA for comment under state law section 8-2-25 and 8-2-26, this action places the ordinance on the state records as an enforceable requirement.
- In reviewing NFPA 101 for sprinkler design, section 24.3.5 for sprinkler systems in residential structures it must be in accordance with section 9.7 which states systems must comply with NFPA 13, NFPA 13R or NFPA 13D.
- DCA staff said that Sandy Springs' submittal did not comply with OCGA 8-2-25 (c) (1) and they therefore declined to review the local sprinkler amendment. Sandy Springs cannot therefore enforce this ordinance.

The City of Sandy Springs Sprinkler System ordinance's intent is to focus on individual apartments that were being rebuilt as a result of a fire. They city later added a requirement for all detached single family houses located less than 20 feet apart from one another. The City modified the approved 13D system to incorporate sprinkler



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heads in only a limited number of locations in their staff's professional opinion warranted fire suppression coverage. The locations in particular, included the kitchen area and fuel-fired mechanical rooms.

The City of Morrow has a sprinkler requirement for all new single family homes and the City of Marietta has an ordinance that requires that homes closer together than 10 feet must be sprinkled. Scottsdale, Maryland, however, has the longest record of sprinkled single family homes. Their ordinance has been in effect since 1986 and 15 years of research data have been compiled regarding this jurisdiction. The data reveal that:

- over 50% of the homes have sprinkler systems
- Approximately 600 homes had fires and about 8% were in sprinkled homes
- no deaths have occurred in sprinkled homes (49 fires) as opposed to 13 in non-sprinkled homes (nearly 600)
- there was less water damage in sprinkled homes
- there was less water consumption in fighting fires (approximately 1/10 in sprinkled homes in comparison)
- there was less damage caused by the fire (\$2,166 in sprinkled homes compared to \$45,019 non-sprinkled)
- 90% of the fires were controlled by a single head, and 92% by activation of two heads
- Insurance rates decreased from 5 to 30%

In Scottsdale, competition from sprinkler contractors has reduced installation costs to approximately .80 cents per square foot, or about half of what the estimated cost is locally. Based on an average 5,000 square foot home, a system would cost approximately \$8,000 locally.

The requirement of a sprinkler system for single family detached dwellings should be carefully evaluated and implemented utilizing approved sprinkler systems designed to save lives. There is no evidence that the Sandy Springs sprinkler system prevents any fires or increases any level of life safety. Consideration should be given to the system that is outlined in the new upcoming code that is anticipated to be adopted and enforced in 2013. The minimum standard by state guidelines, today and in the future, for residential sprinkler systems is NFPA 13D which is designed to slow the progression of fires and suppress possible "flashovers" by cooling the surrounding air which can provide valuable minutes to allow people to safely escape a fire and provides an increased level of life safety.



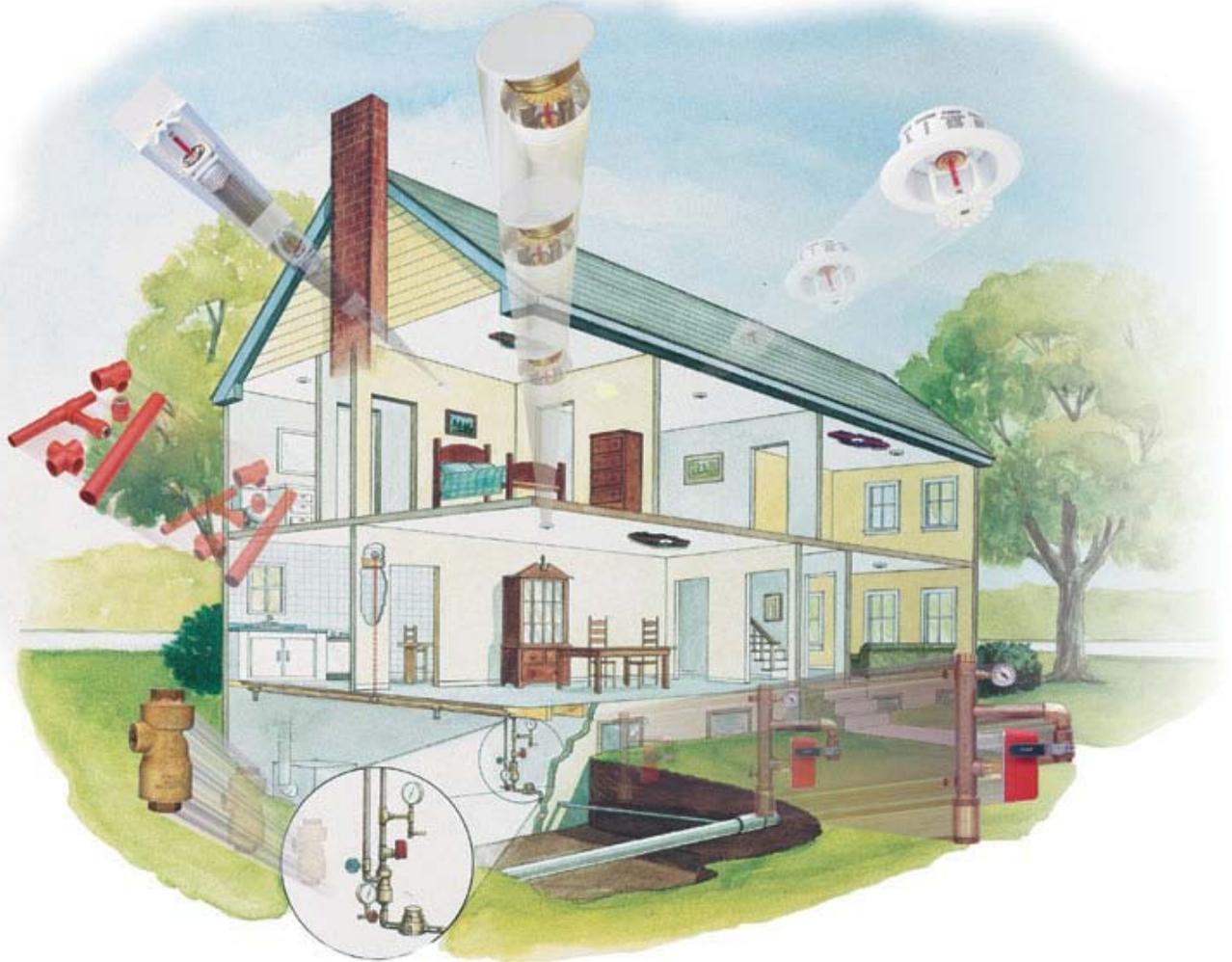
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ANNEX A

13D-19

Table A.1.2(b) Fires and Associated Deaths and Injuries in Dwellings, Duplexes, and Manufactured Homes by Area of Origin: Annual Average of 1986-1990 Structure Fires Reported to U.S. Fire Departments

Area of Origin	Civilian Deaths	Civilian Percent	Fires	Percent	Injuries	Percent
Living room, family room, or den	1,380	37.1	42,600	10.5	2,546	18.6
Bedroom	919	25.6	50,200	12.4	3,250	23.7
Kitchen	541	15.1	92,670	22.9	3,987	29.1
Dining room	83	2.3	3,780	0.9	189	1.4
Heating equipment room or area	62	1.7	15,130	3.7	374	2.7
Hallway or corridor	48	1.3	3,690	0.9	155	1.1
Laundry room or area	47	1.3	15,370	3.8	363	2.7
Garage or carport*	45	1.2	14,580	3.6	524	3.8
Bathroom	44	1.2	8,040	2.0	271	2.0
Unclassified structural area	43	1.2	4,530	1.1	104	0.8
Crawl space or substructure space	41	1.2	11,200	2.8	317	2.3
Multiple areas	41	1.1	3,350	0.8	96	0.7
Ceiling/floor assembly or concealed space	32	0.9	3,470	0.9	64	0.5
Wall assembly or concealed space	27	0.8	7,090	1.8	93	0.7
Closet	23	0.6	5,020	1.2	186	1.4
Exterior balcony or open porch	22	0.6	5,570	1.4	121	0.9
Exterior wall surface	22	0.6	14,620	3.6	118	0.9
Unclassified area	21	0.6	2,590	0.6	87	0.6
Attic or ceiling/roof assembly or concealed space	21	0.6	10,740	2.7	98	0.7
Tool room or other supply storage room or area	20	0.5	4,160	1.0	133	1.0
Lobby or entrance way	17	0.5	1,410	0.3	44	0.3
Interior stairway	17	0.5	1,100	0.3	41	0.3
Chimney	17	0.5	60,530	14.9	75	0.5
Unclassified function area	17	0.5	1,090	0.3	43	0.3
Unclassified storage area	14	0.4	2,460	0.6	80	0.6
Area not applicable	11	0.3	1,180	0.3	22	0.2
Exterior stairway	8	0.2	1,090	0.3	25	0.2
Lawn or field	7	0.2	1,670	0.4	24	0.2
Trash room or area	5	0.1	1,140	0.3	14	0.1
Product storage area	5	0.1	780	0.2	23	0.2
Unclassified means of egress	5	0.1	610	0.2	15	0.1
Unclassified service or equipment area	4	0.1	380	0.1	12	0.1
Library	3	0.1	180	0.0	11	0.0
Other known area	26	0.7	12,880	3.2	195	1.4
Total	3,589	100.0	404,900	100.0	13,691	100.0

Note: Fires are estimated to the nearest 10; civilian deaths and injuries are estimated to the nearest 1.

* Does not include dwelling garages coded as a separate property, which averaged 19 deaths, 259 injuries, and 21,170 fires per year.

(Source: 1986-1990 NFIRS and NFPA survey.)

Distribution Systems, and ASTM F 442, *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)*, as described in 5.2.2.2 is listed for fire sprinkler service. Listed pipe is identified by the logo of the listing agency.

A.5.2.9.2 Not all fittings made to ASTM F 437, *Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, ASTM F 438, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40*, and ASTM F 439, *Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, as described in 5.2.9.2 are listed for fire sprinkler service. Listed fittings are identified by the logo of the listing agency.

A.6.2 The connection to city mains for fire protection is often subject to local regulation of metering and backflow prevention requirements. Preferred and acceptable water supply arrangements are shown in Figure A.6.2(a), Figure A.6.2(b), and Figure A.6.2(c). Where it is necessary to use a meter between the city water main and the sprinkler system supply, an acceptable arrangement as shown in Figure A.6.2(c) can be used. Under these circumstances, the flow characteristics of the meter are to be included in the hydraulic calculation of the system [see Table 8.4.4(g)]. Where a tank is used for both domestic and fire protection purposes, a low water alarm that actuates when the water level falls below 110 percent of the minimum quantity specified in 6.1.2 should be provided.