CITY OF SAN ANTONIO

DEVELOPMENT SERVICES AND FIRE DEPARTMENTS

TO: All Development Services and Fire Department Customers

SUBJECT: **INFORMATION BULLETIN 187**
Residential Fire Flow Requirements and Procedures

DATE: August 2, 2010 – *Revised February 27, 2012*

The Planning and Development Services Department (PDSD) and San Antonio Fire Department (SAFD) have developed this information bulletin to describe the minimum fire flow requirements for one- and two-family residential dwellings per Sections 102.5, 507 and B105.1 of the 2012 *International Fire Code* (IFC), as currently adopted by COSA. This information bulletin also describes the process for the development, plan review and approval of public water mains that serve residential one- and two-family developments.

I. Fire Flow Requirements for One- and Two Family Dwellings

As noted in **Attachment A** of this Information Bulletin, one- and two family dwellings that are constructed on lots which began the plat process on or after August 1, 2010 are subject to the minimum fire flow requirements of the 2012 IFC. These minimum requirements are summarized below.

- An approved water supply capable of supplying the required fire flow fire protection shall be provided to the premises (2012 IFC Section 507.1).
- The water supply shall consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of providing the required fire flow (Section 507.2)
- The minimum fire flow and flow duration requirements for one- and two-family dwellings having a *fire-flow calculation area* $\leq$ 3,600 ft^2 shall be 1,000 gallons per minute (gpm) for 1 hour. (Section B105.1)
- Fire flow and flow duration for one- and two-family dwellings having a *fire-flow calculation area* > 3,600 ft^2 shall not be less than that specified in Table B105.1 - See **Attachment B** of this Information Bulletin. (Section B105.1)
- *Fire-flow calculation area* is the total floor area of all floor levels within the exterior walls, and under the horizontal projections of roof of the building as noted in Section B104.

II. Process for Design and Plan Review of Fire Flow Requirements

Through the normal process of residential development, many customers design the public water main infrastructure for the development well before the building permit application stage for the one- or two-family dwellings. This public water main infrastructure is generally intended to satisfy the City's fire flow requirements.

The following lists summarizes the steps established to properly design, review and install public water main systems for one- and two-family residential developments to help ensure that these systems can meet the fire flow requirements for the anticipated one- and two-family dwellings.

- The developer and engineer will submit their engineered design of a public water main system to their water purveyor (e.g., SAWS; Bexar Met Water District, etc.) per their water purveyor's normal submittal and review process.
- During the review process, the water purveyor will require the developer and/or design engineer to specify, in writing, the anticipated size of houses that will be built in the proposed development. This will be used to determine the minimum fire flow requirements for the proposed development. The developer and/or design engineer shall also verify in writing that they understand that if larger houses are proposed than originally anticipated during the infrastructure planning and review, that additional fire protection features (See Section III below) may be required to meet the City's fire flow requirements for those future houses. The example letter shown in **Attachment C** of this Information Bulletin may be used to document this information for the water purveyor's review.
- During the platting process, a general note will be required to be included on the approved plat that clearly indicates the fire flow demand that the public water main system has been designed for. The note on the plat shall read as follows:

  In an effort to meet the City of San Antonio's fire flow requirements for the proposed residential development, the public water main system has been designed for a minimum fire flow demand of _____ gpm at 25 psi residual pressure. The fire flow requirements for individual structures will be reviewed during the building permit process in accordance with the procedures set forth by the City of San Antonio Director of Development Services and the San Antonio Fire Department Fire Marshal.

  The design engineer for the plat shall fill in the blank space in the note above. The water purveyor shall review that this note is included on the proposed plat as part of the plat review process.
- During the building permit application and review process, the City shall review the fire flow requirements for these structures as follows:
  - For one- and two-family dwellings with a fire-flow calculation area $\leq$ 3,600 ft^2, a fire flow test report **will not be required** to be submitted with the building permit application. For these size dwellings, the review through the water purveyor and the plat process described above will be sufficient to verify that adequate fire flow is provided.

- For one- and two-family dwellings with a fire-flow calculation area > 3,600 ft^2, a fire flow test report **will be required** to be submitted with the building permit application. Please refer to Information Bulletin 143 for the procedures and format for submitting fire flow test reports with your building permit application.

III. Reducing Fire Flow Requirements for One- and Two-Family Dwellings

In the event that a proposed one- or two-family dwelling is proposed that requires more fire flow than what is available to the premises as determined by the required fire flow test report, there are several prescribed code compliant alternatives that can be included in the design of the dwelling to reduce the required fire flow demand. These are summarized below.

- A reduction in required fire flow of 50 percent is permitted when the building is equipped with an approved automatic fire sprinkler system. (Section B105.1, exception). The automatic fire sprinkler system shall be installed in accordance with NFPA 13, 13R or 13D or per 2012 *International Residential Code* Section P2904.
- Changing the construction type from all wood construction (Type V-B) to a one-hour fire-rated construction (Type V-A) or a partly or fully non-combustible construction type (Type II or III) will reduce the fire flow demand on a structure as noted in Table B105.1.
- Reducing the fire flow calculation area of a structure by either 1) reducing the size of the structure itself, or 2) installing a fire wall without openings as noted in Section B104.2.
- Submitting an alternative method of compliance (e.g., Code Modification Request) to the City for review per 2012 IFC Section 104.9. The alternative method is required to provide a level of fire protection and safety equivalent to, if not better, than that prescribed by the City's fire code. Please refer to Information Bulletin 114 for the application form and process description.

The design team is encouraged to review and consider one or more of these options as necessary if/when this situation is encountered.

If you have any questions on this process, please contact Michael Shannon, PE, CBO, PDSD Building Division Development Services Engineer at **(210) 207-5006**.

Attachment A

Memo Outlining Effective Date of Residential Fire Flow Requirements

CITY OF SAN ANTONIO

PLANNING & DEVELOPMENT SERVICES AND FIRE DEPARTMENTS

TO: All Planning and Development Services and Fire Department Customers

SUBJECT: Effective date of the 2009 International Fire Code (IFC) one-and two-family dwelling fire flow requirements

DATE: June 29, 2010 (*revised August 2, 2010*)

On October 1, 2009, City council adopted the 2009 International Fire Code with local amendments that went into effect on January 1, 2010. The time between City Council action and the effective dates (i.e., the "grace period") was established to help facilitate customers and development during this transitional period and allow time for designs to be modified as needed to meet the newly adopted 2009 IFC.

One of the major changes in the new adopted code is the requirement for one- and two-family dwellings designed per the 2009 *International Residential Code* (IRC) to meet the minimum fire flow requirements of the IFC, specifically Sections 102.5, 507 and B105.1. We recognize that many of the Planning and Development Services (PDSD) an customers have spent a considerable amount of time and money on the purchase and development of land, including public water main infrastructure, based upon the previous fire code (2006 IFC with local amendments) that did not clearly establish these minimum fire flow requirements for one- and two-family dwellings.

Because of these concerns and the temporary financial hardships that this change may impose, **PDSD will begin reviewing fire flow for one- and two-family dwellings on projects that begin the plat process on or after August 1, 2010. These plats will have an ID number of 100305.** Those residential one- and two-family projects that have been developed and designed through the platting process prior to August 1, 2010 (i.e., projects with plat ID numbers of 100304 or lower), will not be subject to the new fire flow requirements of the 2009 IFC as recently adopted by the City. Please note that this further extension to help facilitate the transition from the previous codes to the current codes is only for the fire flow requirements associated with one- and two-family dwellings constructed per the 2009 IRC. All other portions of the project are to be designed per the 2009 IRC and IFC with local amendments as applicable.

Should you have any questions, please contact Mr. J. Barry Archer, PE, CBO, Assistant Director at 210-207-8236 or Mike Shannon, PE, CBO, Development Services Engineer at 210-207-5006.

Roderick Sanchez, AICP, CBO
Director and Building Official
Planning and Development Services Dept.

Earl Crayton II
Assistant Chief/Fire Marshal
San Antonio Fire Dept.

Attachment B

2009 IFC Table B105.1

TABLE B105.1
MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS

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	

For SI: 1 square foot = 0.0929 m2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. Types of construction are based on the *International Building Code*.

b. Measured at ~~20~~ psi residual pressure.

25 PER COSA AMENDMENTS

Attachment C

Example Letter to Water Purveyor Outline Fire Flow Design

Owner/Developer Letterhead

[Date]

[Owner]
[Owner address 1]
[Owner address 2]
[CSZ]

IV. Determination of Required Fire Flow for Residential Development

Project: [Project Name]
[Project Address]
San Antonio, Texas

In an effort to meet the City of San Antonio's fire flow requirements for the proposed residential development referenced above, the public water main system has been designed by my design engineer(s) as follows (*developer and/or design engineer to fill in the blank spaces*):

- The development will generally consist of one- and/or two-family dwellings with a maximum fire-flow calculation area of _____ ft^2.
- The total number of lots in the development is _____.
- Based upon this maximum anticipated size of dwelling, my design team has designed the minimum fire flow capabilities of the proposed public main system for _____ gpm at 25 psi residual pressure in accordance with the **2012 International Fire Code**, as currently adopted by the City of San Antonio, and water purveyor's water service regulations.

By signing below, I acknowledge that I understand that if houses are eventually proposed to be constructed in this development that are larger than the maximum size anticipated during the infrastructure planning, design and review (i.e., larger than that listed above), additional fire protection features may be required to meet the City's fire flow requirements for those future houses.

Respectfully,

[Owner/Developer Firm Name]

[Signature of Owner/Developer]

_____

[Printed Name of Owner/Developer]