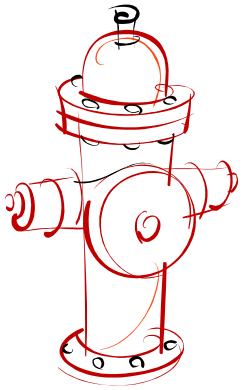
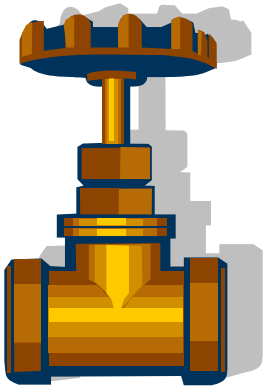
Fire Protection Water Supply
Information Packet

Commercial and Residential





Exeter Township Fire Department
Office of the Fire Marshal

PURPOSE

The regulations governing water supplies for fire protection can be found in the International Fire Code, Section 508 and Appendices B and C. These regulations shall be used as the requirements for establishing necessary fire flow and hydrant locations within the Exeter Township for newly constructed or qualifying remodeled occupancies.

Water is our most precious resource. This is especially true when considering firefighting applications. When it comes down to it, water is the Fire Department's ammunition. Despite all the equipment, training, and efficiency of the firefighting personnel, an adequate water supply for fire fighting plays the most important role in our ability to protect life and property from fire.

The Exeter Township Fire Department and the Pennsylvania American Water Company work closely reviewing water plans each year to ensure that minimum design criteria are met. It is the goal of this document to present a comprehensive yet concise summary of our requirements for water supply within this Township.

Please keep in mind that modifications to these requirements may be necessary, depending upon individual conditions and circumstances. Although we will work diligently to maintain consistency, we reserve the right to require modifications, if necessary, in order to ensure adequate fire protection water supply is provided.

SCOPE

This information packet is intended for use by Developers, Architects, and Contractors for the construction of *Commercial and Residential Occupancies* having access to Township water supply. Please contact us if you have concerns about special circumstances.

DEFINITIONS

ETFD	Exeter Township Fire Department
NFPA	National Fire Protection Association
IFC	International Fire Code
IBC	International Building Code
FDC	Fire Department Connection

GUIDELINES

I. INTRODUCTION

A. Applicable Codes And Standards

1. 2006 Edition of International Codes
2. 2002 Edition of NFPA 72 National Fire Code
3. 2002 Edition of NFPA 13 Installation of Sprinkler Systems
4. Exeter Township Local Ordinances

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PART 1: HYDRANTS

Fire hydrants exist solely for professional firefighting. The proper location, operation, and water flow capability of fire hydrants are essential to the successful execution of fire department operations during a fire incident.

While the Fire Department enjoys the use of fire hydrants, it is the responsibility of the Pennsylvania American Water Company to test, maintain, and service all public fire hydrants within Exeter Township.

This chapter will cover the basic requirements concerning fire flow and fire hydrants.

EXPLANATION OF TERMS USED:

FIRE AREA is the total gross floor area of all floors measured in square feet within the exterior walls, and under the horizontal projection of the roof of a building. For Types I and II Fire Rated construction, this need only include the largest 3 consecutive floors of a building.

FIRE FLOW from a fire hydrant is defined as the flow rate in gallons per minute (GPM) of a water supply, measured at 20 pounds per square inch (psi) residual pressure, available for fire fighting.

WATER MAINS & DEAD ENDS

Water mains supplying fire hydrants shall be no smaller than 6 inch diameter and shall conform to the most recent Pennsylvania American Water Company Standards & Specifications.

It is strongly recommended that private water mains supplying fire hydrants be looped to Township supply for better pressure characteristics. In any case, a water supply system must be hydraulically designed to meet fire flow requirements.

Contact Pennsylvania American Water Company for assistance in modeling new fire lines to determine fire flow. The modeling performed should represent the maximum day demand flows.

PRIVATE MAINS & HYDRANTS

If public hydrants capable of supplying required fire flows are not available within the prescribed distances, the developer may have the option of installing mains and hydrants on private property.

Providing appropriate flow to a system is the responsibility of the developer or property owner. These systems must meet Fire Department standards and gain Fire Department approval prior to installation.

PLEASE NOTE: Private hydrants become the ultimate responsibility of the property owner concerning maintenance and repair. They must also be flow tested and painted prior to the issuance of Fire Department approval for a Certificate of occupancy.

It is important that the property owner understand these responsibilities. Should the property owner not wish to undertake these responsibilities, it is strongly recommended that they actively

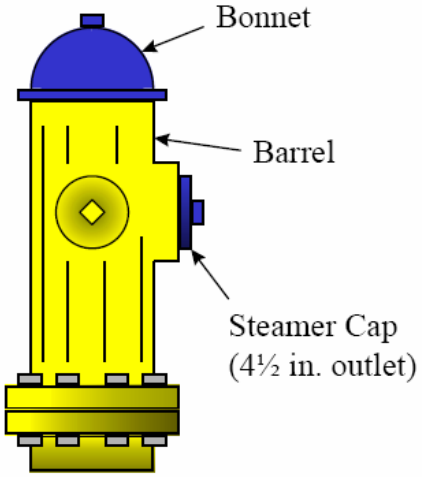
seek a solution to allow for the installation of public hydrants in established easements.

This will take planning, preparation, and coordination with the Water Company. However, the water company will then assume all maintenance and testing responsibilities for that hydrant.

Hydrant Colors

The following color designations are based on National Standard (NFPA 291, Sec 3-2: Marking of Hydrants). The Water Company paints all public hydrants a certain color based on the available water flow measured at 20 psi residual pressure under maximum day demand conditions. The table below shows these designations.

Fire Flows (gpm)	Color	Painted on:
0 - 499	Red	Bonnet
500 - 999	Orange	Bonnet
1,000 - 1,499	Green	Bonnet
1,500 - 3,000	Blue	Bonnet
Above 3,000	Blue	Bonnet & Steamer Cap
-	Yellow	Barrel



Hydrant Paint Scheme Example

Prior to the acceptance of private hydrants by the Exeter Township Fire Department, a hydrant test inspection must be conducted so that appropriate fire flow information is obtained for a base line threshold.

Private hydrants are then required to be painted to this same color scheme depending on actual measured fire flow at 20 psi.

(Below is a photo of a fire hydrant and the stortz connection)

Determining Required Fire Flow

Fire flow requirements may be ascertained by applying Appendices B and C of the current edition of the International Fire Code to the building in question. A copy of this table is provided in Table 1 of Attachment # 1 of this packet. If neither reference is available to you, the Office of the Fire Marshal will gladly assist you in determining the required fire flow. When calling please provide the following:

- The type of construction based on the International Building Code requirements;
- The TOTAL area of all floors for the largest building on the site: Fire Area

Equations

The following equations are used to determine fire flow based on the static, residual (flowing), and pitot pressures:

$$Q_r = 29.83 c_d D^2 \sqrt{P_p} \qquad \text{(Eq. 1)}$$

$$Q_f = Q_r \left(\frac{P_s - 20}{P_s - P_r} \right)^{0.54} \qquad \text{(Eq. 2)}$$

where:

- Q_r is the residual flow at the pitot pressure measured in gpm
- c_d is the friction loss coefficient (usually 0.9 for a smooth 2½" opening)
- D is the diameter of the opening in inches
- P_p is the pitot pressure in psi
- Q_f is the FIRE FLOW in gpm at 20 psi
- P_s is the static pressure in psi
- P_r is the residual pressure in psi

Alternatives to Required Fire Flow

If the required fire flow cannot be obtained by any reasonable means involving different types of building construction, area, or increased sizes in piping, looping, or pumping, as presented in the Procedural Flow Chart in Attachment # 3 of this packet, alternatives will be considered by the Fire Department which give an equivalent level of fire protection. These include but are not limited to:

- On-site stored water by any approved means for the listed flow rate and duration.
- **Non-required fire sprinkler systems:** The Exeter Township Fire Department will grant up to a 50% reduction in fire flow for the voluntary installation of non-required sprinkler systems on a case by case basis.

  A REQUIRED sprinkler system is any required by either the International Building or Fire Code, or any system installed in lieu of:
  - Area Increase
  - Height Increase
  - Distance to exit increase
  - Fire resistive construction
- A Fire Wall that divides the building into two or more distinct areas. This must be a fire wall as defined by the IBC.

Determining Hydrant placement

Table C105.1 of Appendix C of the 2003 International Fire Code outlines the requirements for the average spacing between hydrants as well as the maximum distance from hydrant to any point on street or road frontage based on the required fire flow for a particular building. A copy of these requirements has been provided in Attachment # 2 of this packet.

Access to a building is measured in the same manner that a supply hose would be deployed by a fire pumper truck (engine) on a drivable surface, from a protecting hydrant to the engine stopping point. This is also referred to as a hose lay. Fire fighting crews must then be able to access all parts of the exterior face of the building on foot with hand lines.

The column titled Maximum Distance from Hydrant to any point on street frontage therefore indicates the maximum hose lay distance on a clear drivable surface from any protecting hydrant to a point on a drivable surface from which the first floor of the exterior face of the building is accessible within 150 feet to fire fighting crews on foot.

Fire hydrant locations shall be identified by the installation of reflective markers. The markers shall be spring loaded and colored blue. They shall be located on the hydrant.

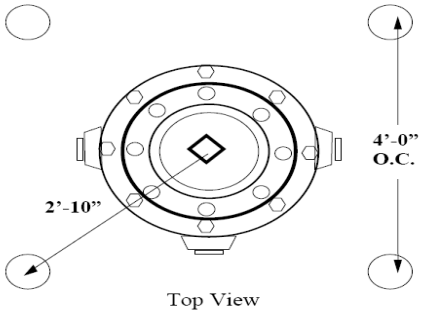
All hydrants shall have a 5-inch STORTZ (steamer) connection and two 2-1/2 inch connections with “READING / Berks County” threads.

Generally, hydrants should be placed at the intersection for increased flexibility. Where this is not possible, they may e placed along a curb or in a parking lot island. In any case, the Exeter Township Fire Department approval is required for any placement of hydrants, public or private.

The Exeter Township Fire Department is to never shut down major arterial streets and/or major intersections for hose lays. In these cases, hydrants may be required on both sides of a street, or on all corners of major intersections.

Protection from Vehicular Damage

If a hydrant is susceptible to any kind of vehicular protection, protection shall be designed and provided.



Top View

Residential Hydrant Plan Submittals

Residential plans will be reviewed the same way as commercial plans. They must comply with the requirements of the IFC, Appendix B Table B105.1 & Appendix C Table 105.1 and/or The Exeter Township Fire Department Water Supplies for Fire Protection Packet – see Attachment # 1 & 2.

It is critical that homes being built comply with the requirements for fire/water flows vs. the size of the homes. Please remember, the GROSS SQUARE FOOTAGE of the entire structure, to include basements, each floor, and attached garages, must be utilized to determine the required fire flow and number of hydrant requirements.

i.e.: if your fire flow report determines there is 2,000 gpm at the construction site, then the gross square footage of the home being built will be limited to 6,200 square feet.

Attention: The Exeter Township Fire Department may allow a 50% credit for residential fire flows if the homes are sprinklered. The ETFD has the right to deny this credit if it is determined that the wildfire risks are above the normal risk assessments for the area.

i.e.: If you have a fire flow of 1750 gpm, and you decide to install fire sprinklers, you can take a 50% credit for fire flows. This would double the water flow assessment, and you would be able to use the 3,500-gpm line for your site, thus you could build an 18,000 sq. ft. fire sprinkled home.

Part II:
Plan Submittal Requirements

General
Please refer to Appendix C of this packet for the Procedural Flow Chart for guidance in acquiring approval of water plans, if required. The chart outlines the manner in which the water plans gain approval or disapproval from the ETFD.

It is strongly recommended that the fire flow requirements be confirmed with our office in the planning stages of a project. Discovering that designed water supplies furnish insufficient fire flow can be a costly setback.

Water Plans for Fire Department approval must be dropped off at for review. If you have special circumstances, a meeting may be set up to discuss you specific issues. This does not necessarily mean we will review your plans while you wait, only that we will review your specific issues, and give advice on how to handle those items you are concerned with.

Calculated Fire Flow
Pennsylvania American Water is responsible for the calculation of fire flow which is to appear on all Water Plans. This calculation is representative of the maximum day demand of the water supply system at the site.

Due to the large amount of fire flow that may be required at certain sites, the following criterion has been established:

Fire Flow Requirement (gpm)	Number of Hydrants to open (nodes to include)
1,500 - 3,000	1
3,000 - 6,000	2
6,000 - 8,000	3

Once the required fire flow has been ascertained and the plans are ready to be submitted for calculation, please provide the number and location of the hydraulically most remote nodes to calculate commensurate with the above table.

The sum of all open hydrants (nodes) should then exceed the required fire flow. This should be indicated on the plans.

Sign Off
If all Fire Department requirements have been met, then Water Plans will be signed by this office.

Remember that copies of the approved Water Plans are required to be submitted with the Construction set documents or the construction plans will not be reviewed by this office.

Part III: Fire Service lines

Downstream from the mains that carry fire protection water to the fire hydrants are the fire service lines that carry water to the fire suppression systems in buildings. Usually, these are fire sprinkler and standpipe systems. This section is included in this packet because the contractors who work on fire service lines are generally the same ones working on fir hydrant mains.

Underground fire service lines are hydraulically sized based on the required fire flow for the sprinkler and/or standpipe system they serve, just as those systems are.

Flushing of Fire Service Lines

The concerns that arise out of the installation of fire service lines are:

- Deposits of sand, stone and other foreign material that could clog a sprinkler head during operation;
- Pressure integrity of service lines;
- Placement of non-indicating valves on the service line that would allow shut off of the system without fire department knowledge

While most hydrant mains are usually looped systems with water continuously running through them, fire service lines are straight feeds, which usually remain stagnate for extended periods of time. They are the only automatic source of fire protection water to a building with such a system.

It is important, therefore, that the integrity of these lines be confirmed upon installation. These lines must be scoured rather than just flushed. Please note that the chlorination flush performed on these lines will not be acceptable as a flush to the fire department because it is not performed at a high enough volume flow rate.

In order to satisfy fire department requirements, fire service lines must be hydrostatically tested and flushed in accordance with NFPA 24: "Installation of Private Fire Service Mains and Their Appurtenances". This Standard indicates that lines are to be flushed at a velocity of 10 feet per second, or the highest available flow rate. The table below is provided to assist you in selecting the proper number and size of lines or pipes in order to properly flush a fire service line.

Suggested Number of Hose Lines or Pipe to Reach Required Flow

Underground Pipe Size	Required Flow Rate	Hose/Pipe Sizes					
		2½"	3"	4"	5"	6"	8"
4 inch	390 gpm	1	1	1	-	-	-
6 inch	880 gpm	2	2	1	1	1	-
8 inch	1,560 gpm	4	3	2	1	1	1
10 inch	2,440 gpm	6	4	3	2	1	1
12 inch	3,520 gpm	8	6	4	2	2	1

Please realize that this is only a suggested guideline and that the actual number and size of lines needed for proper flushing depends on the design flow-rate of the fire suppression system and the available pressure of the water supply system. Either of these may warrant an increase or decrease in the number of lines used to flush a service line.

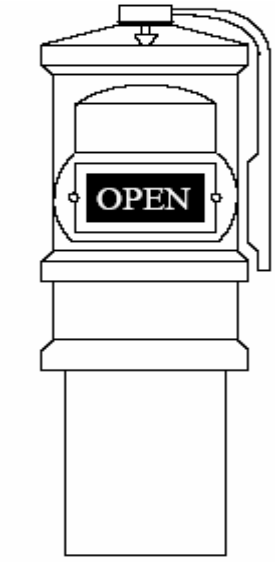
Hydrostatic Test

NFPA 24 sets the standard for how these lines are to be hydrostatically tested. Below is a summary of these requirements:

- Pressurize the fire service line from the tee connection to the main to the connection to the sprinkler or standpipe system.
- Pressurize the line at 200 psi or 50 psi above static pressure for a period of two hours with minimal leakage as described in NFPA 24

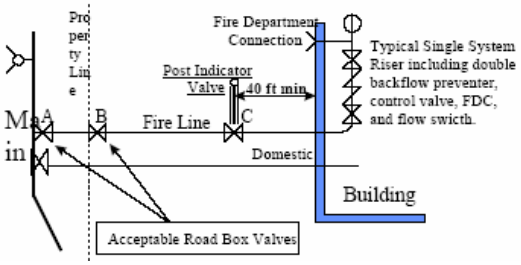
Post Indicating Valves

About one third of all fire sprinkler operation failure is due to control valve closure. The need to ensure an uninterrupted water supply to automatic sprinkler systems is addressed by NFPA #13 & #24 standards. They state that every valve on a fire service line must be of an indicating type, meaning that one should be able to tell be looking at a valve whether it is opened or closed. If a valve is underground, it is not very easy to tell whether or not it is open. This necessitates the requirement for a post indicating valve.



A post indicating valve (PIV) consists of a post that extends above grade about three feet and indicates the condition of the valve (either open or shut). An example of a PIV is shown above.

Conditions which usually merit the need for a PIV are those occasions when a domestic line is tapped off of the fire line and a valve is located on the fire line after the domestic tap. This is illustrated below. Note that valves inside the building are aboveground and can readily be seen to indicate position.



Special circumstances, such as large facilities with private loops, may require PIV's at each sectional valve in addition to any requires on the fire service line.

Valve Exceptions
Control valves located at the tee to the main and at the property line are not required to be of the post indicating type as indicated by valves A and B.

Fire Department Connections
A Fire Department Connection (FDC) serves as a backup inlet to an automatic sprinkler or standpipe system for the fire department's use. This is not to be confused with a wall-hydrant. You cannot get water out of the FDC. It is equipped with a check-valve feeding into the fire protection system.

The design of water plans is an excellent time to seriously consider the location of the FDC. Too often, sprinkler contractors are left to decide its location. This is rarely to both the owner's and fire departments mutual satisfaction. Often, this decision proves costly due to lack of planning.

By considering this fixture at the Water Plan stage, all parties involved can prepare for this requirement.

(All **Existing** FDC 2 ½-inch connections shall be protected with locking Knox caps.)

Example of a properly protected FDC

All **NEW** FDC shall be a 5-inch Stortz connection.

STORTZ connection FDC

The FDC is usually wall-mounted as a Siamese connection or flush mounted. Some general guidelines:

- Locate FDC on the Main Entrance side of the building.
- Locate FDC so fire department personnel can easily access the appliance.
- A three-foot radius clearance around the FDC is required.
- A strobe light is required to be located above the FDC and shall activate upon water flow.

FDC with strobe light

FDC guidelines (continued)

30 ° elbow adapter

- Connection shall be a (5) five-inch “Stortz” fitting with a 30° degree down angle. The top of the fitting shall be a minimum of 24 inches and a maximum of 36 inches above the finished grade.
- Locking 5-inch Stortz Fire Department Connection Caps are required on all FDC’s
- FDC shall be located within 75 feet of a fire hydrant.
- Free standing FDC shall be located a minimum of 5 feet behind the curb to protect from vehicle traffic. Bollard protection may be required to be installed in a manner so as not to obstruct the clear space in front of the inlet.
- FDC shall be clear of any fences, trees, shrubs, walls or any other similar objects.
- Paved areas 10-feet to either side of the FDC, and the area in front of FDC shall be properly signed and striped in the same manner required for Fire Lanes.
- FDC shall be designated by a sign having raised letters at least 1 inch in height, cast on plate as to what type of system and indicate the pressure required at the inlets to deliver the greatest system demand.

LINKS
http://www.exetertownship.com

ATTACHMENTS

1. FIRE FLOWS
2. FIRE HYDRANT NUMBERS
3. WATER FLOW AND SERVICE LINE INTEGRITY STATEMENT
4. FIRE HYDRANT CHART
5. FIRE HYDRANT & WATER MAIN PLAN REVIEW CHECKLIST

ATTACHMENT # 1

FIRE FLOWS

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 *International Building Code*.
c. Measured at 20 psi.

ATTACHMENT # 2

FIRE HYDRANT NUMBERS

TABLE C105.1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS[a, b, c] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT[d]
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

For SI: 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers which can be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis up to a fire-flow requirement of 7,000 gallons per minute and 400 feet for higher fire-flow requirements.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

Fire Hydrant placement is not an exact science. The Fire Department shall always be consulted on exact location of required fire hydrants as tactical considerations must ALWAYS be carefully determined.

ATTACHMENT # 3

Required Water Flow and Service Line Integrity Statement for All City Water Main/Hydrant Submittal

CALCULATED WATER FLOW
All Water Plans shall contain the following paragraph:

"According to calculations reviewed by the Pennsylvania American Water Company, the theoretical available fire flow at node _____ is _____ gallons per minute under maximum day demand conditions with a 20 psi residual. Actual fire flow may vary due to various parameters."

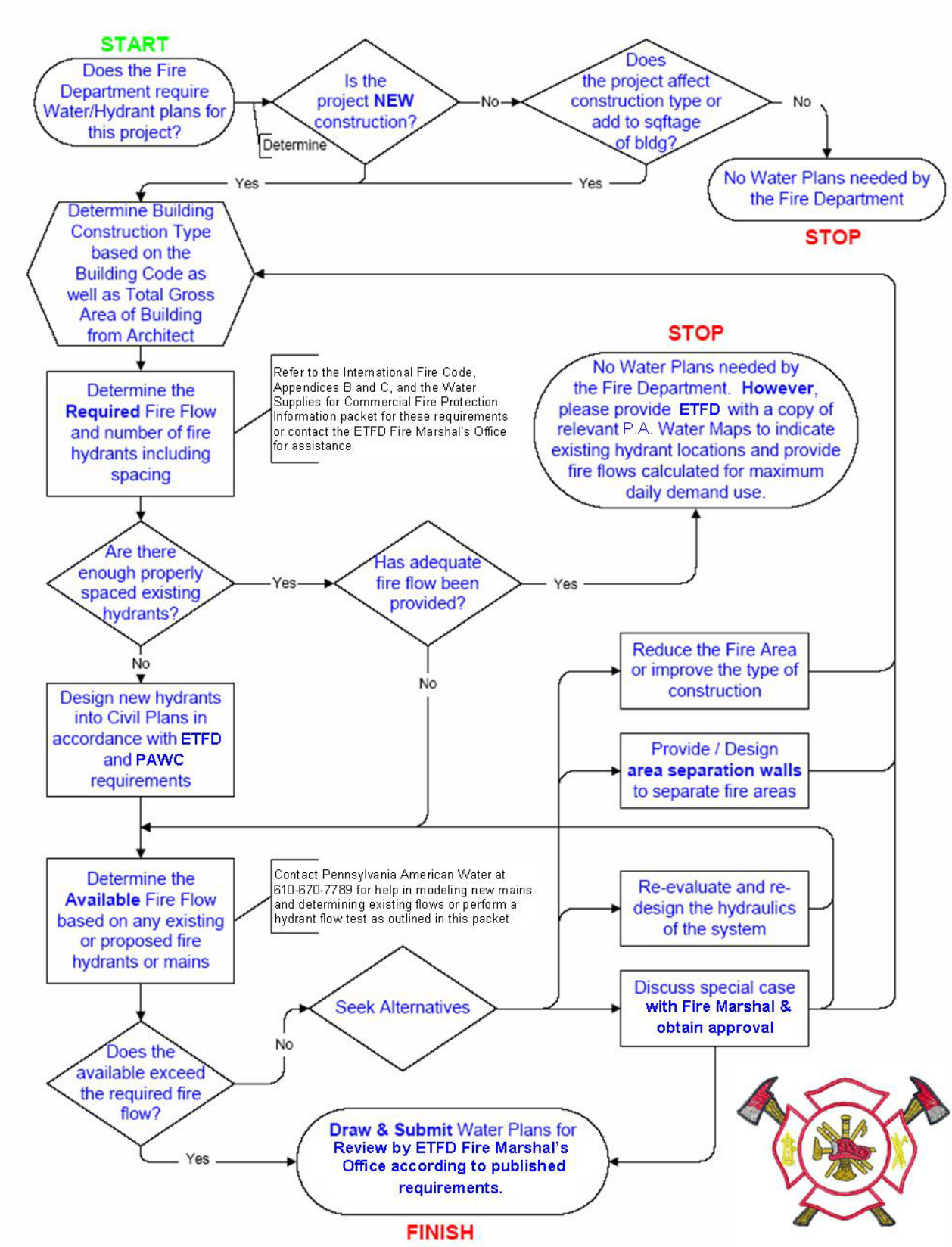
The ETFD Office of the Fire Marshal will not accept plans that do not reflect this completed statement. This statement must be completed and written communication containing the results of this model must be received by the ETFD from the Pennsylvania American Water Company via fax or email prior to acceptance.

NOTICE OF FIRE SERVICE LINE INTEGRITY TEST
The following statements must also be included on any plans that include Fire Service Lines.
"Prior to acceptance by the Exeter Township Fire Department:
All fire service lines shall be hydro-statically tested and flushed per NFPA requirements; Documentation of all acceptance testing of water supply systems for fire protection shall be submitted for approval."
The purpose of this statement is to alert contractors that the following tests are to be performed on fire service lines before they will be accepted by ETFD:

Pressure Test
Pressurize the fire service line from point of connection to the main to point of connection to the sprinkler system at 200 psi, or 50 psi above static pressure for a minimum of 2 hours. This test is best performed before completely backfilling so that all joints are exposed.

Flush Test
The fire service line is to be flushed at a velocity of 10 feet per second, or whatever is available for fire flow. Refer to page 6 of this packet for assistance.
These requirements can be found in NFPA 24 "Standard for the Installation of Private Fire Service Mains and Their Appurtenances".

ATTACHMENT # 4 Water Plans Requirement Chart



ATTACHMENT # 5

FIRE OFFICIAL'S OFFICE
4975 DeMoss Road, Reading, PA 19606, (610) 779-5702

HYDRANTS & WATER MAINS
PLAN REVIEW CHECK-LIST

SUBMIT A MINIMUM OF 2 COPIES OF EACH WATER PLAN. One copy (the original) is for your records, and the other one will be for the ETFD records. We will stamp and sign all copies.

A ***SIGNATURE BLOCK*** for the designer must be provided on each page of the submitted plans. The signature block is to have the following:

Signature_____
Designer Name_____
Date of signature_____

The ***GROSS SQUARE FOOTAGE*** of the entire structure must be indicated on the plans. The ETFD will not add this. It must be clearly indicated on the submitted plans we review.

If ***FIRE WALLS*** are going to be used to "split" the structure into smaller areas, the gross square footage of each of these sections, as well as the total building gross square footage, must be provided.

The ***TYPE OF CONSTRUCTION*** that the architect has assigned to the structure must be indicated on the plans. The ETFD will not add this. It must be clearly indicated on the submitted plans we review.

Provide ***FIRE FLOW CALCULATIONS –*** ETFD will verify these calculations through confirmation from the water department. Fire flows older than 1 year will not be utilized. Calculations must be obtained from Pennsylvania America Water Company @ 610-670-7789

1,500 gallons per minute (gpm) @ 20 pounds per square inch (psi) ARE THE MINIMUM flows and pressures required f*or both residential and commercial sites when hydrants are flowing* ***individually.***

750 gallons per minute (gpm) @ 20 pounds per square inch (psi) ARE THE MINIMUM flows and pressures required per hydrant *for both residential and commercial sites when hydrants are flowing* ***simultaneously****.*

ATTENTION – RESIDENTIAL WATER PLAN SUBMITTALS: **Effective immediately** – All water plan submittals shall have the gross square footage of the homes clearly indicated on the plan submittals. On the submitted plans the maximum size homes are to be indicated, and the fire flows shall be adequate to allow the size of homes being proposed. These plans will be kept on file for our future review, and no home larger than the ones approved will be permitted to be constructed. (Using Appendix B AND C from the International Fire Code, and/or Attachment # 1 & 2 from our "Water Supplies for Commercial Fire Protection Information Packet).
NOTICE: *The Exeter Township Fire Department will allow a 50% credit for residential fire flows ONLY, if the homes are fire sprinkled. Please be aware the ETFD has the right to deny this credit if it is determined the wildfire risks are above the normal risk assessments for the area.*
i.e.: If the water flow requirements for the size of the home you are building indicate that 2,000 gpm is needed, and there is only 1,500 gpm available in the hydrants at your construction site, we will allow you build a home twice the size allowed if fire sprinklers are installed.

COMMERCIAL BUILDING WATER PLAN SUBMITTALS - VERIFY THAT THE FIRE FLOWS ARE ADEQUATE FOR THE STRUCTURE(S) - Using Appendix B AND C from the International Fire Code, and/or Attachment # - Table 1 & 2 from our "Water Supplies for Commercial Fire Protection Information Packet," verify the type of construction and the building GROSS square footage is checked for number of hydrants and fire flows. **PLEASE NOTE**: This is imperative that these are accurate. If they are not accurate, it will delay the project at some point in the future, and may cost the owner/contractor thousands of dollars to fix the problems in the field.

ALL DISTANCE MEASUREMENTS ARE DETERMINED BY HOW THE FIRE TRUCK WOULD TRAVEL. The measurements are not to be determined by how the crow flies, but in the way the fire truck would have to lay the hose on streets and roadways.

Determine that the ***"AVERAGE SPACING BETWEEN HYDRANTS"*** is within Fire Code specifications. Don't forget this is the AVERAGE SPACING of all the hydrants.

Insure the ***"MAXIMUM HOSE LAY DISTANCES"*** are within Fire Code specifications.

Remember to calculate and add the ***150-FOOT HOSE LAY*** from the fire truck to around the entire 1st floor exterior of the building.

THE FIRE DEPARTMENT CONNECTION (*"**FDC**")* must be on the front of the building facing the addressing street. There must also be a hydrant, capable of providing the required fire flow, within 75 feet of the FDC location. The FDC must not be obstructed or blocked in any form, to include vehicle-parking areas. The FDC exterior horn and strobe must be located within 20 feet of all FDC locations; this includes remote FDC units as well.

WATER SUPPLY FEEDS for the sprinklers, standpipes, domestic water systems, all valves, including post indicator valves, are to be indicated on submitted plans.

Where possible, Fire Hydrants and Post Indicator Valves are to be a minimum of 40 feet away from any building. In most cases, fire hydrants should be on the same side of the street that the building is located on.

ALL WATER PLANS SHALL CONTAIN THE FOLLOWING PARAGRAPH:

♦ *"According to calculations reviewed the theoretical available fire flows at node _____ is _____ gallons per minute with a 20 psi residual. Actual fire flow may vary due to various parameters."*

THE FOLLOWING STATEMENTS MUST BE INCLUDED ON ANY PLANS THAT INCLUDE FIRE SERVICE LINES:

♦ *Prior to acceptance by the Exeter Township Fire Department, all fire service lines shall be hydro-statically tested and flushed per NFPA requirements.*

♦ *When available an approved plumbing inspector shall witness all acceptances testing of water supply systems for fire protection. Documentation shall be provided for all water supply systems indicating testing and dates.*

Insure all information provided is accurate on all submitted sheets. Many plans are disapproved simply because of inconsistent information being indicated on the separate submitted plan sheets.

ATTACH COPIES of the approved water plans to each set of submitted construction plans.