CHAPTER 7 – FIRE PROTECTION SERVICE

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CHAPTER 7 – FIRE PROTECTION SERVICE

Tap-in drawings for fire protection service are required by the PWSA for all proposed developments and/or redevelopments that are required to install a fire suppression system by the City of Pittsburgh Department of Permits, Licenses, and Inspections (PLI) Office of Fire Prevention. **You must contact the City of Pittsburgh Office of Fire Prevention to determine the fire protection requirements for the development.**

Department of Permits, Licenses, and Inspections
200 Ross Street, 3rd Floor
Pittsburgh, PA 15219
412-255-2175

http://pittsburghpa.gov/pli/

7.1 Single Family Residential Development

A single family residential development is considered development equal to one single family residential unit. Land that has been subdivided or re-subdivided to include multiple single family residential homes will be considered a multi-residential development. **A single family residential unit involving a new fire service requires tap-in drawings.** The applicant will also need to fill out several forms documenting the proposed changes.

Several PWSA forms (i.e., GEN, HYD, SWR, TERM, and WTR) will be filled out, as needed, based upon the type of development requested by the applicant. Samples of these forms can be found in Appendix D.

Contact the PWSA Permit Counter at (412) 255-2443 to arrange for completion of these forms. The applicant must also pay any associated fees related to the water service before the work can proceed.

The applicant is responsible for submitting all required permit applications with the City of Pittsburgh Office of Fire Prevention and/or other related agencies. The Office of Fire Prevention reviews the calculations and requirements for fire suppression systems against the National Fire Protection Association (NFPA) regulations; and issues permits for Underground Fire Mains and Fire Suppression Systems. The Applicant can contact the City of Pittsburgh Department of Permits, Licenses, and Inspections at (412) 255-2039 for more information.

In addition to the PWSA and City of Pittsburgh permit requirements, the applicant must also obtain any applicable Allegheny County Plumbing Permit(s). This can be accomplished by calling Allegheny County Health Department at (412) 578-8393. Their office is located at 3901 Penn Avenue, Building No. 5, Pittsburgh, PA 15224.

7.2 General Requirements

The applicant or his agent must submit the PWSA Water and Sewer Availability Letter Request Form (see Chapter 1). The applicant should obtain copies of the water maps depicting available water mains and any existing water service to the property. The information on the maps should be field verified by the owner. The PWSA Permit Counter can be contacted at (412) 255-2443 to obtain available PWSA records.

It is the policy of the PWSA that it is the responsibility of all design consultants, engineers, and/or architects to determine the adequacy of the existing water systems to fulfill proposed needs at their time and expense. The presence of an existing PWSA water main or an existing water service line in no way implies that PWSA has adequate capacity or pressure for the proposed development.

7.3 Hydrant Flow Test

Before any tap-in drawings can be submitted, the applicant must first apply for a hydrant permit in order to conduct the hydrant flow test.

- The applicant can apply for a hydrant permit at the PWSA Permit Counter, 1200 Penn Avenue, Monday thru Friday, 8 a.m. to 4:30 p.m.
  - The PWSA staff will issue a hydrant permit number. The applicant will complete Form HYD–Hydrant Permit (see Appendix D for an example) and will pay associated fees to the PWSA before the test can take place.
  - The applicant must select the pressure hydrant for the test.
  - The applicant must select two flow hydrants for the test. The first choice flow hydrant must be tested. If the required pressure drop is not achieved, then the applicant is required to flow the second hydrant.
  - PWSA will review the applicant's hydrant selections. PWSA reserves the right to modify the hydrant selections before the applicant performs the test.
- The Operations Division of PWSA will operate all valves and hydrants during the flow tests.
- The applicant must conduct the tests using his own equipment and personnel.
  - The Office of Fire Prevention requires compliance with NFPA 291.
  - The pressure drop during the test must be 20 percent or greater as required by NFPA 291.

Ideal conditions for hydrant flow tests are when outside air temperatures are above 40°F. PWSA will typically not permit hydrant flow tests when the outside air temperature is below 40°F and falling. PWSA can authorize a hydrant flow test to be conducted only if additional safety measures are taken and permitted by the city. (i.e. salt truck, etc.) Hydrant flow tests are also dependent upon the availability of the PWSA crew to operate

the hydrants. **Typically, results from a hydrant flow test are valid for a period of one year from the date of the test.** In certain areas with heavy development, **PWSA may determine that the test results are valid for only six months from the date of the test.**

All hydrant flow test data must be sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania.

The applicant must complete the Hydrant Flow Test Data table (shown in Table 7-1) with the data from the test and additional information regarding the domestic and fire protection water demands. This table must be displayed on all water tap-in drawings.

7.4 Tap-in Drawing Basic Guidelines

Tap-in drawings must comply with the following requirements.

- Drawing size shall be 24 inches x 36 inches (Landscaped).
- Plan views shall be drawn to engineers scale only (typically 1"=20' or 1"=30'), unless otherwise directed.
- Plan view shall be set to City monumentation and City datum unless otherwise directed.
- Drawing shall be readable and drawn to scale with a north arrow pointing to the top or the right of the plan sheet.
- Drawing shall include a plan view of the entire site. All existing topographic and/or unrelated information shall be shown either 50 percent screened or half-toned.
- Existing building(s) footprint(s) shall be displayed and shall show the address, type of building, number of floors, the square footage of each floor and the total square footage of the building
- Existing water mains that will be tapped shall be displayed.
- On all taps greater than 4 inches, supporting thrust block calculations shall be provided as a separate attachment.
- Proposed location and size of the service line shall be shown and stationed. Proposed water information to be shown in bold line weight and text and stationed.
- The appropriate schematic details shall be displayed. Examples of the PWSA standard details are included in Appendix G of this Manual.
- Tapping detail and termination detail (if applicable) shall be shown.
- All fire service line tap-in drawings shall be sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania.
- All fire line facilities shall comply with NFPA 13 and all current regulations.
- The tap-in drawing shall show all existing water service lines connected to the existing building or servicing the site. Existing service lines, whether active or

abandoned, will not be permitted to be used for new residential construction. New commercial, industrial, or institutional developments may utilize existing service lines at the expense and maintenance of the owner.

Fire protection systems are directed to have a separate tap from the PWSA water main. Domestic water service line(s) can be tapped onto said fire line but separated in the public right-of-way with shut-off valve, if deemed acceptable by the PWSA. However, it is the responsibility of the applicant to determine, at his own expense, the adequacy of the existing water system to fulfill the proposed fire system demand.

There are four basic separate items that the applicant is required to show on all water tap-in drawings. These are the Hydrant Flow Test Data (Table 7-1), the Water and Sewer Flow Data (Table 7-2), the PWSA Title Block (Figure 7-1), and the PWSA Approval Block (Figure 7-2).

If applicant is applying for only a fire line tap, the Water & Sewer Flow Data Table is not required.

The applicant must include the following information on the Hydrant Flow Test Data block (see Table 7-1) on each tap-in drawing:

- Total Fire Protection Demand (in gpm).
- Domestic System Peak Demand (in gpm).

Each tap-in drawing must also include an appropriate title block in the lower right-hand corner of the drawing. At a minimum the title block must include the name of the applicant, name of the building or development, and the services address (see Figure 7-1).

Each tap-in drawing must also include the PWSA Approval Block (see Figure 7-2) located to the left of the title block (see sample drawing in Appendix G). The Approval Block provides the PWSA staff with a space to track the review process. The Approval Block contains several options for the type of development proposed by the applicant. The applicant does not complete any sections of the Approval Block. Once PWSA begins review of the tap-in drawings, then PWSA will indicate which types of development are applicable and cross out the descriptions that do not apply.

Any existing water taps that are being terminated by the customer must be shown on the tap-in drawings. However, if terminating a tap is the only proposed change and no new taps are proposed, then the applicant must complete Form TERM–Termination Permit form and may have to prepare termination drawings. Information on the termination-only application can be found in Chapter 3, Tap Terminations.

Table 7-1
Hydrant Flow Test Data

HYDRANT FLOW TEST DATA

(REQUIRED FOR TAPS LARGER THAN 1-INCH)

Date of Test: _____ /_____ /_____ Hydrant Permit No.: _____

Test Performed By:

_____

	FLOW HYDRANT	PRESSURE HYDRANT
Hydrant Number		
Location		
Static Pressure (psi)	XXXXXXXXXXXXXXXXX	
Residual Pressure (psi)	XXXXXXXXXXXXXXXXX	
Flow Observed (gpm)		XXXXXXXXXXXXXXXXX

Fire Protection Demands:

Sprinkler System Peak Demand _____ gpm _____ psi

Inside Hose Demand _____ gpm

Outside Hose Demand _____ gpm

Domestic System Peak Demand _____ gpm

Private Fire Hydrant Demands: _____ gpm

On tap-in drawing display table at 6 inches wide by 5 inches tall.

Table 7-2
Water and Sewer Flow Data

WATER AND SEWER FLOW DATA	
WATER CONSUMPTION	gpd
SANITARY FLOW	gpd
STORM FLOW	cfs
APPLICATION NUMBER (ASSIGNED BY PWSA)	
DEP APPROVAL DATE (ASSIGNED BY PWSA)	

On tap-in drawing display table at 4 inches wide by 3 inches tall.

Figure 7-1
Sample Tap-in Drawing Title Block

ABC DEVELOPERS, INC.

FIRST AVENUE CONDOMINIUMS

123 FIRST AVENUE
PITTSBURGH, PA 15222

SCALE: DATE: _____ ACCESSION NO. C-_____

SHEET: _____ OF _____ CASE NO. _____

On tap-in drawing display table at 6 inches wide by 4 inches tall.

Figure 7-2
PWSA Approval Block for Tap-in Drawings

THE PITTSBURGH WATER AND SEWER AUTHORITY

*** APPROVAL FOR:**

_____ NEW WATER TAP, BACKFLOW PREVENTOR, AND METER INSTALLATION

_____ NEW SANITARY AND/OR STORM SEWER TAP

_____ INCREASE IN FLOW AT EXISTING SEWER AND/OR WATER CONNECTION

_____ SEWER TAP TERMINATION

_____ WATER TAP TERMINATION

**** DISCLAIMER:***

Signatures / Approval by PWSA are for the physical connection(s) to the water and/or sewer system only.

Responsibility for the design and work depicted by the drawings, including the flow design for the facilities, is by the project Professional Engineer shown by the seal and signature affixed to the drawing. The PWSA does not represent or warrant that the water supply to the facilities is sufficient to support the design demands.

PWSA Project Reviewer certifies that he/she has reviewed the above noted document(s) in accordance with the Authority's established rules and regulations. Based on this review, approval is hereby recommended — Date

_____ _____
PWSA Project Reviewer

Approval — Date

_____ _____
Manager of Development Services

_____ _____
Director of Field Operations

On tap-in drawing display table at 6 inches wide by 8 inches tall.

7.5 Other Requirements

7.5.1 Water Meters

If a fire service line will feed hydrants on private property, the line will require a water meter and remote reading device in a meter pit/vault. A ⅝-inch x ¾-inch meter and remote reading device must be purchased from the PWSA where fireline is equipped with typical backflow assembly. PWSA will install to new and/or existing piping, and own and maintain all water meters and remote reading devices.

The tap-in drawing shall include a schematic detail for each meter and remote reading device servicing the development. This detail must show size, type, manufacturer, and model number for each meter and remote reading device. The applicant should provide flow calculations on the drawing showing peak fire protection water demand in gallons per minute (gpm). These calculations will assist PWSA in determining the proper size and type of meter and remote reading device for the fire service.

7.5.2 Meter Pits/Vaults

The PWSA recommends meter pits/vaults for all installations. PWSA requires meter pits for all residential units as directed. If the distance from the PWSA water main to the point of entry of the water service line at the building is greater than 50 feet, then the applicant is required to install a meter pit/vault. The meter pit or vault must be located no farther than 36 inches from the edge of the public right-of-way that contains the PWSA water main. If the distance from the water main to the point of entry at the building is less than 50 feet, then the PWSA may permit the meter to be installed inside the building unless the building is constructed on a slab on grade.

Any meter installed inside a building must be located no more than 36 inches from the point of entry (at the inside face of the wall penetration) of the water service line inside the building unless otherwise approved by PWSA. Where a meter is installed in a building, the remote reading device shall also be installed on the outside wall of the premises or building being served at the driveway or at any other location that in the PWSA's judgment is accessible under most conditions. It shall be securely attached to the building at a level between 3-1/2 and 4-1/2 feet above finished grade, outside of any fenced-in areas if possible, and clear of obstructions. It shall be located on the front of the building or on a side near the front. If two buildings are separated by a driveway, it shall be located on the sides of the buildings facing each other to facilitate reading. Exceptions to these requirements will be made only if approved by the PWSA in writing.

7.5.3 Backflow Prevention

The PWSA has an active backflow prevention program and requires a backflow prevention device to be installed on every fire service line. When applying for a new or replacement water service tap, it is required that all active existing service lines be equipped with an approved backflow prevention device. In no case will a plan be

approved until all existing and new service lines are appropriately protected against backflow. The following requirements apply to all backflow prevention devices.

- Backflow prevention devices must be installed immediately after the water meter and before any branch lines leading off of the water service line.
- Backflow prevention devices must be installed so as to be readily accessible and with adequate space for inspection, testing, maintenance, and disassembly.
- Backflow prevention devices must be mounted in a horizontal position except for models which permit horizontal or vertical mounting.
- Backflow prevention devices such as a reduced pressure zone (RPZ) type with a drain must be protected from freezing by installation in a heated building. Pit or vault installation is prohibited.
- Backflow prevention devices with drains must be installed so that the relief port is always readily visible and vented to drain.
- Preferably, the backflow prevention device should be located a minimum of 18 inches from the nearest wall, and the center line of the pipe and should be located between 24 inches and 48 inches off the deck for horizontal installation.
- Each installation has specific design problems that must be considered. However, the above guidelines and manufacturers' recommendations will be emphasized when plans are submitted for approval.

Each backflow prevention device must be tested annually by the property owner. Single-family units currently are not required to annually test the backflow protection device. PWSA will send a reminder letter to the designated property owner(s) with a test report form. The property owner is responsible for completing the test report form and sending it back to the PWSA with the required flow certifications.

Refer to PWSA Rules and Regulations Section 511 for additional information on the Backflow Program. Please contact the PWSA Permit Counter with questions concerning backflow prevention.

7.6 Taps Log and New Service Questionnaire

Along with the tap-in drawings, the applicant must submit the Taps Log and the New Service Questionnaire. Refer to Appendix D for copies of these forms.

7.7 Administrative Checklist

The applicant is required to submit the Administrative Checklist with the Application. Submittals received without a completed and signed checklist will not be processed in e-Builder and notice will be sent to the applicant requesting checklist submittal for the project. A copy of the Administrative Checklist is included in Appendix A.

7.8 Technical Checklist

The applicant is required to submit the water tap-in drawings along with the Technical Checklist. Submittals received without a completed and signed checklist will not be processed in e-Builder and notice will be sent to the applicant requesting checklist submittal for the project. A copy of the Technical Checklist is included in Appendix H.

7.9 Review of Tap-in Drawings

Before the PWSA will review the tap-in drawings, the following prerequisite conditions must be satisfied:

- The applicant shall have submitted a PWSA Water and Sewer Availability Letter Request Form (see Chapter 1).
- The applicant shall have submitted a complete PWSA Water and Sewer Use Application Form (see Chapter 2).
- The PWSA Water and Sewer Use Application has been approved by all agencies listed on the Form.
- The applicant has submitted an Administrative Checklist and a Technical Checklist.

All submittal items except for the review fee must be submitted electronically as outlined in the Introduction of this Manual. The review fee can be delivered to the PWSA office or mailed to the following address:

Pittsburgh Water and Sewer Authority
Penn Liberty Plaza I
1200 Penn Avenue
Pittsburgh, PA 15222
Attn: Engineering and Construction

Refer to the Introduction of this Manual for a description of the review process and a discussion of review fees.

After the approval of the Application, the water tap-in drawings will initially undergo an administrative review. If the drawings are determined by PWSA to be administratively complete, then the PWSA will conduct a technical review of the drawings.

Once PWSA grants final approval of the tap-in drawings, PWSA will contact the applicant in writing stating that the final review of the tap-in drawings is complete. The letter will request

that the applicant submit one set of 4 mil thick, double-matte, archival quality, permanent, reproducible Mylar drawings. PWSA will review the Mylars submitted by the applicant. Once PWSA approves the Mylars, PWSA will contact the applicant with the amount owed for any tapping, connection, or customer facilities fees. If the applicant so requests, PWSA can provide an electronic and/or hard copy of the approved Mylars for the applicant's records.

The applicant has several forms to complete in order to finalize the approval process and have a permit issued. Contact the PWSA Permit Counter at (412) 255-2443 to arrange for completing these forms and paying the required fees. The additional forms for water service are as follows:

- Form GEN–Customer Application.
- Form WTR–Water Service Connection.
- Form TERM–Termination Permit (if applicable).

Samples of the forms are provided in Appendix D.

7.10 Tapping, Connection, and Customer Facilities Fees

PWSA will calculate the appropriate permit fees based upon the proposed project information submitted by the applicant. The PWSA permit fees for water service are as follows: Tapping Fee, Connection Fee, and Customer Facilities Fee.

The Tapping Fee can be charged to new customers of the PWSA water system to recover the cost of constructing the water related facilities. The water Tapping Fee includes a capacity part and a distribution part. The capacity part includes raw water pumping facilities, a water filtration and treatment plant, finished water pumping stations, large diameter transmission waterlines, booster pumping stations, finished water storage reservoirs, and finished water storage tanks. The distribution part covers smaller diameter waterlines.

The Connection Fee includes the cost of taps and valve operations. PWSA shall perform all drilling of taps and operation of all valves on PWSA water mains. The Connection Fee can vary based upon the size of the service line and the tap-in procedures required by the PWSA and/or ACHD regulations.

The Customer Facilities Fee includes the cost for certain sizes of water meters and remote reading devices. All meters and remote reading devices must be purchased from the PWSA.

A schedule of the PWSA Tapping Fees, Connection Fees, and Customer Facilities Fees for water service lines are listed on Form WTR– Water Service Connection Form provided in Appendix D.

7.11 Tap-in Procedure

The applicant is hereby advised that no tap will be performed unless all water meters and remote reading devices and backflow devices have been installed and subsequently inspected by PWSA. The PWSA must perform the waterline tap, meter and remote reading device installation, and any public valve shutdowns. **Forty-eight hours advance notification from the owner is**

required before the tap is performed. Notification point of contact is the PWSA Sewer/Service Section at (412) 231-0891 or (412) 231-0892.

Listed below are the required steps for tap-in:

- PWSA requires that all permit applications for water and / or sewer service begin with the PWSA Request Form for Water and Sewer Availability.
- Once the Application has been approved by all agencies, PWSA will contact the applicant.
- Upon approval by all agencies, the customer / developer must request an account number from PWSA for any new project. **No work will be scheduled without an account being established.**
- Once the account is established by PWSA, then the customer / developer may apply for a fire service permit.
- After permit approval, the customer / developer may begin site prep for service line, meter and remote device installation, as well as backflow preventer installation.
- Customer / developer shall obtain street opening permit if necessary, and begin excavation to open street and expose water main.
- Customer / developer shall call AMI to schedule tap.
- PWSA will inspect service line / meter installation.
- PWSA will inspect excavation for tap and any tap terminations, if necessary.
- Customer / developer shall make connection from the main to the meter set.
- Customer/ developer shall update account information.

Construction personnel employed by the applicant are responsible for all permitting, excavation, backfill, trench restoration and fire service line installation from the building to the point of the tap-in at the PWSA water main. The applicant's construction personnel must have proper trench shoring and equipment on site to conduct all required work and complete the job.

The responsibility of the work is as follows:

- For customer fire service lines 1 inch and 1½ inches in size, only the PWSA drills and/or connects the ferrule (or corporation cock) to the PWSA water main. For new connections, the customer is responsible for installing the service line and related appurtenances from the ferrule to the building.
- If a 2 to 3 inch fire service line is required, a 4 inch mechanical tapping tee/sleeve will be required. After the 4 inch tapping tee/sleeve, the private service line size can be reduced.
- For fire service lines 4 inches and larger, where the customer desires to install a tapping sleeve, the customer is responsible for installing the tapping sleeve on the PWSA water main. Only PWSA drills the PWSA water main, the owner/contractor will install the PWSA approved connection. The customer is also responsible for

installing the private service line and related appurtenances from the tapping sleeve to the building/facility.

- When the customer desires to install a cut-in tee (or as directed by PWSA for size on size taps), PWSA must shut down the water main. The customer is responsible for installing the cut-in tee completely as directed and the fire service line from the tee to the building. The customer must follow guidelines outlined in 7.11.1 below.
- Any existing service line, which will not be used by the proposed project, must be terminated by the owner. The unused service line must be terminated at the main in a manner acceptable to the PWSA (see appropriate detail in Appendix G). A new tap will not be provided until the abandoned service is terminated and witnessed by a PWSA representative. All costs associated with the termination of existing water service lines are the responsibility of the property owner.
- One-inch connections shall have a minimum distance of 5 feet between taps when the taps are made on the same side of the water main. One-inch connections made on opposite sides of the water main require a minimum alternating distance of 30 inches (alternate offset). Connections larger than 1 inch require a minimum distance of 5 feet between taps unless otherwise directed.

7.11.1 Private Contractor Shutoff Permit

When a water main shut down is required for a tap-in, the applicant's construction personnel must apply for a Private Contractor Shutoff Permit. The applicant can apply for a shutoff permit at the PWSA Permit Counter, 1200 Penn Avenue, Monday thru Friday, 8 a.m. to 4:30 p.m.

The contractor shall submit the Private Contractor Shutoff Application Form at least fifteen (15) days before the shutoff is required. The contractor must also submit a $5000 deposit, payable by cashier's check with the completed application. The deposit payment must be separate from any tap-in permit payments. If the contractor completes the work in the estimated timeframe, the Authority will refund $4500 to the contractor after the work is completed. A copy of the form is provided in Appendix D.