



CROSS-CONNECTION CONTROL PROGRAM

City of Panama City, Florida
Public Works / Environmental Compliance



INTRODUCTION

The City of Panama City Water Supply System, PWS 1030517, hereinafter referred to as the "community water system (CWS)," has the responsibility to protect the public water supply from contamination caused by cross-connections on customers' premises. A cross-connection is defined in Rule 62-550.200, Florida Administrative Code (F.A.C.) as follows:

"CROSS-CONNECTION" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewage or other waste, or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as the result of backflow. By-pass arrangements, jumper connections, removable sections, swivel, or changeable devices, and other temporary or permanent devices through which or because of which backflow could occur are considered to be cross-connections. Discovery of any cross-connection could be cause for immediate water service termination.

Pursuant to Rule 62-555.360, F.A.C., the CWS is required to establish and implement a cross-connection control (CCC) program utilizing backflow protection at or for service connections from the CWS. The CCC program must include a written plan that contains, as a minimum, the following components:

- I. Legal authority for the CWS's CCC program.
- II. The CWS's policy establishing where backflow protection at or for service connections from the CWS is mandatory.
- III. The CWS's policy regarding ownership, installation, inspection/testing, and maintenance of backflow protection that the CWS is requiring at or for service connections from the CWS.
- IV. The CWS's procedures for evaluating customers' premises to establish the category of customer and the backflow protection being required at or for the service connection(s) from the CWS to the customer.
- V. The CWS's procedures for maintaining CCC program records.

Component I: Legal authority for the Community Water Service (CWS's) Cross Connection Control Program (CCC program) i.e., an ordinance, a bylaw or resolution, or water service rules and regulations. (See signed copy of Ordinance #2607 at the end of this plan).

Whereas, the City Commissioners of the City of Panama City, Florida, have been directed by the Federal Environmental Protection Agency under Public Law 99-339 (The Safe Drinking Water Act Amendments of 1986) and the State of Florida Department of Environmental Regulation (Chapter 62-555.360) to implement and enforce a backflow and cross-connection control program.

This CCC program provides for the rules and regulations under Ordinance #2607 as well as the penalties for non-compliance. The Environmental Compliance Division under the direction of the Public Works Department has been charged with the enforcement of the following plan as outlined herein:

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Section 1 – General Policy

1.1 Purpose

- To protect the public potable water supply system from the possibility of contamination or pollution by isolating potential hazards through the use of approved backflow prevention methods.
- To promote the elimination or control of existing cross-connections, actual or potential, with a customer's water system, non-potable water system, plumbing fixtures, and industrial piping systems.
- To provide for a continuing program of cross-connection control that will prevent the contamination or pollution of the public potable water supply system.

1.2 Application

These Rules and Regulations shall apply to all properties and areas served by the City of Panama City's public potable water supply system, whether inside City's limits or out.

1.3 Water System / Point of Delivery

For the purposes of these Rules and Regulations, the water system shall be considered as consisting of two parts: the public potable water supply system and the customer's water system. The public potable water supply system shall consist of all source, treatment, storage, distribution, and metering facilities under the control of the City of Panama City. The customer's water system shall include all facilities beyond the meter setting used to convey water from the public potable water supply system to the points of use. The point at which the public potable water system ends, and the customer's water system begins shall hereinafter be referred to as the Point of Delivery.

1.4 Responsibility

The City of Panama City, as the purveyor of potable water, shall be responsible for the protection of the public potable water supply system from contamination or pollution due to the backflow (back-pressure or back-siphonage) of contaminants or pollutants through a customer's water system.

1.5 Authority

Pursuant to the authority granted under the City of Panama City General Ordinances, Ordinance #2607 hereby adopts, establishes, and publishes these rules and regulations.

The City of Panama City's Director of Public Works or City's Utility Engineer shall designate a representative(s) to serve as an enforcement agent(s) for the Cross-Connection Control Program. Said agent(s) shall be trained in accordance with accepted industry practices to identify hazards, actual or potential, with a customer's water system, non-potable water system, plumbing fixtures, and industrial piping systems and shall have authority to require a customer to install an approved backflow prevention assembly suitable for the degree of hazard.

Section 2 – Definitions

For purposes of these Rules and Regulations, the following definitions shall apply unless the context clearly indicates or requires a different meaning. If a word or term used in these Rules and Regulations is not contained in the following list, its definition, or other technical terms used, shall have the meanings or definitions listed in most recent edition of the American Water Works Association Manual M14, Recommended Practice for Backflow Prevention and Cross-Connection Control.

Air Gap (AG)

An air gap is a vertical, physical separation between the end of a water supply outlet and the flood-level rim of a receiving vessel. This separation must be at least twice the diameter of the water supply outlet and never less than one inch. An air gap is considered the maximum protection available against backpressure backflow or back-siphonage but is not always practical and can easily be bypassed.

- An air gap is measured vertically from the lowest end of the supply pipe to the flood level rim or highest possible water level of the fixture or tank into which it discharges. In general, the separation must be twice the supply pipe inside diameter, but never less than one inch. The close proximity of walls or obstructions will necessitate the use of a larger air gap. A larger air gap will also be required if foaming materials are added to the reservoir so that foam does not back up into the supply pipe.

Approved

Accepted by the City of Panama City Utilities Engineer or his/her designated Representative.

Assembly

An assembly of one or more approved body components including approved shutoff valves.

Authorized Agent

An employee of the City of Panama City that has been trained in accordance with accepted industry practices to identify hazards, actual or potential, with a customer's water system, non-potable water system, plumbing fixtures, and industrial piping systems; and with the authority to require of a customer the installation of an approved backflow prevention assembly for the sole purpose of adequately protecting the public water supply system.

Auxiliary Water Supply

Any water supply on or available to the premises other than the purveyor's approved public potable water supply. These auxiliary waters may include water from another purveyor's public water supply or any natural source(s) such as but not limited to wells, rivers, springs, streams harbor, etc. or "Used Waters", "Industrial Fluids". These waters may be polluted or contaminated, or they may be objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

Backflow

The flow of water or other liquids, mixtures, or substances under pressure into the distribution piping of a potable water supply system from any source or sources other than its intended source.

Backflow Preventer

An assembly, device or method that prohibits backflow of fluid into a potable water system. The type of backflow preventer used shall be based on the degree of hazard, either existing or potential.

Back Pressure

A pressure, higher than the public potable water supply pressure, caused by a pump, elevated tank, boiler, water heater or any other means that may cause backflow.

Back-Siphonage

The flow of water or other liquids, mixtures, or substances into the distribution piping of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

Chemicals in Fluid Form

Plating acids, alkalis circulated cooling towers that are chemically or biologically treated or stabilized with toxic substances. Contaminated natural waters such as from wells, springs, rivers, bays, harbors, seas, irrigation canals or systems, etc. oils, gases, glycerin, paraffins, caustic and acid solutions and other liquids and gaseous fluids in industrial or other purposes; or for firefighting purposes.

Contamination

A means of impairment of the quality of the potable water supply system by sewage, industrial fluids, or waste fluids, compounds, or other materials to a degree which creates an actual hazard to the public health through poisoning or the spread of disease.

Cross-Connection

Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water and the other non-potable water or industrial fluids of questionable safety, through which, or because of which, backflow or back-siphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system, or with potentially contaminated supply or auxiliary water system, constitutes one type of cross-connection. Other types of cross-connections include connectors such as swing connections, removable sections, four-way valves, spools, dummy sections of pipe, swivel or change-over devices, sliding multiport tubes, solid connections, etc.

Cross-Connection Control by Containment

The installation of an approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or it shall mean the installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

Cross-Connection Control by Isolation

The installation of an approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or it shall mean the installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

Cross-Connection Controlled

A connection between a potable water system and a non-potable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.

Double Check Detector Backflow Prevention Assembly (DCDA)

A specially designed backflow assembly composed of a line-sized approved double check valve assembly with a bypass connection containing a specific water meter and an approved double check valve assembly. The bypass meter shall be capable of accurately registering very low rates (up to 3 gpm) and shall show a registration for all flow rates. This assembly shall only be used to protect against non-health (low) hazards.

Double Check Valve Backflow Prevention Assembly (DC)

A complete assembly consisting of two internally spring-loaded, independently operating check valves located between two tightly closing resilient-seated shut-off valves and with four properly placed resilient-seated test cocks for testing the water tightness of each check valve. The assembly shall only be used to protect against non-health (low) hazards.

Dual Check (DuC)

A device containing two internally spring-loaded, independently acting check valves, excluding shut-off valves and test cocks and cannot be tested in-line. This is not an approved backflow prevention assembly.

Hazard, Degree of

The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

*****Health hazard (high)**

Any condition, device or practice in the water supply system and its operation which could create, or in the judgment of the Panama City Public Works Department, may create a danger to the health and wellbeing of the water customer. An example of a health hazard is a structural defect, including cross-connections, in a water supply system.

*****Health hazard (low)**

A cross connection, or potential cross connection involving any substances that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.

Industrial Fluid Systems

Any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or approved water supply. This may include, but not be limited to: Polluted or contaminated waters, all types of process waters and "used waters" originating from the public potable water system which may have deteriorated in sanitary quality.

Irrigation Systems

A system of piping which allows water to be applied to land or soils by means of a permanent above ground or subsurface drip system, sprinkler, or micro-sprinkler equipment under water pressure.

Non-Potable Water

Water which is not safe for human consumption or which is of questionable potability.

Non-Residential Service Connection

Any facility or structure that is open to the public and performs services for a monetary exchange for profit or not for profit. These connections are to include but not limited to fire line connection, irrigation connections, recreational refreshment areas and potable water.

Pollution

Means the presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a hazard to impair the usefulness of quality of the water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonable affect such waters for domestic use.

Potable Water

Water that is distributed by the CWS that has been treated and is safe for human consumption.

Pressure Vacuum Breaker (PVB)

An assembly containing an independently operating check valve and internally spring-loaded, independently operating air inlet valve located on the discharge side of the check valve; and that is equipped with properly placed resilient-seated designed to be operated under pressure for prolonged periods of time to prevent back siphonage only. The assembly may not be subjected to any back pressure.

Public Works Director / Designated Agent

The Public Works Director in charge of the Utility Department of the City of Panama City is vested with the authority for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this program. The Public Works Director may assign the enforcement of this program to the agent or employee of his choice.

Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA)

A specially designed backflow assembly composed of a line-sized approved reduced pressure principle assembly, with a bypass connection containing a specific water meter and an approved reduced pressure principle assembly. The bypass meter shall be capable of accurately registering very low flow rates (up to 3 gpm) and shall a registration for all flow rates. This assembly shall be used to protect against both non-health (low) and health (high) hazards.

Reduced Pressure Principle Backflow (RP)

A complete assembly consisting of a mechanical, independently acting, hydraulically dependent relief valve, located between two internally spring-loaded, independently operating check valves, located between two tightly closing resilient-seated shut off valves and with four properly placed resilient-seated test cocks for testing the water tightness of each valve. This assembly shall be used to protect against health (high) hazard.

Residential Service Connection

Any service connection that is two inches or less in diameter and supplies water to a building or premise containing only dwelling units. Non-residential service connection means any other service connection.

Water Purveyor

This term shall mean the owner or operator of the public potable water system supplying an approved water supply to the public. As used herein, the terms water purveyor and Panama City Public Works Department may be used synonymously.

Water Service Connections

The terminal end of a service connection from the public potable water system, i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. Service connections shall also include water service connections from a fire hydrant and all other emergency or temporary water service connections from the public potable water system.

Water Used

Any water supplied by a water purveyor from a public potable water system to a customer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

Section 3 – Requirements

3.1 Establishing a customer service connection backflow preventer

Residential irrigation service connections, commercial irrigation service connections, and any fire service connections are high health hazard and will require backflow prevention. High health hazard utility service connections should refer to table 62-555.360-2 below for minimum backflow protection requirements. Existing water customers that do not have an approved backflow prevention assembly installed will have **30 calendar days** from the date of notification to install an appropriate backflow protection assembly as required by the Florida Department of Environmental Protection (FDEP) FAC 62-555.360.

Component II:

The CWS's policy establishing where backflow protection at or for service connections from the CWS is mandatory. This policy applies to all new and existing customers. The following minimum backflow protection shall be provided at or for service connections from the CWS to the following categories of customers:

Table 62-555.360-2: Categories of Customers for Which Each Community Water System (CWS) Shall Ensure Minimum Backflow Protection Is Provided at or for the Service Connection from the CWS to the Customer (Effective 5-5-14)	
Category of Customer	Minimum Backflow Protection ¹ to Be Provided at or for the Service Connection from the CWS to the Customer
Beverage processing plant, including any brewery	DC if the plant presents a low hazard ² ; or RP if the plant presents a high hazard ²
Cannery, packing house, rendering plant, or any facility where fruit, vegetable, or animal matter is processed, excluding any premises where there is only restaurant or food service facility	RP
Car wash	RP
Chemical plant or facility using water in the manufacturing, processing, compounding, or treatment of chemicals, including any facility where a chemical that does not meet the requirements in paragraph 62-555.320(3)(a), F.A.C., is used as an additive to the water	RP
Dairy, creamery, ice cream plant, cold-storage plant, or ice manufacturing plant	RP ³
Dye plant	RP
Film laboratory or processing facility or film manufacturing plant, excluding any small, noncommercial darkroom facility	RP
Hospital; medical research center; sanitarium; autopsy facility; medical, dental, or veterinary clinic where surgery is performed; or plasma center	RP
Laboratory, excluding any laboratory at an elementary, middle, or high school	RP
Laundry (commercial), excluding any self-service laundry or Laundromat	RP

Marine repair facility, marine cargo handling facility, or boat moorage	RP
Metal manufacturing, cleaning, processing, or fabricating facility using water in any of its operations or processes, including any aircraft or automotive manufacturing plant	DC if the facility presents a low hazard ² ; or RP if the facility presents a high hazard ²
Mortuary	RP
Premises where oil or gas is produced, developed, processed, blended, stored, refined, or transmitted in a pipeline or where oil or gas tanks are repaired or tested, excluding any premises where there is only a fuel dispensing facility	RP
Premises where there is an auxiliary or reclaimed water system ^{4,5}	A. At or for a residential service connection ⁶ ; DuC ⁷
	B. At or for a non-residential service connection ⁶ ; DC if the auxiliary or reclaimed water is a low hazard ^{8,9} ; or RP if the auxiliary or reclaimed water is a high hazard ^{8,9}
Premises where there is a cooling tower	RP
Premises where there is an irrigation system that is using potable water and that: I. Is connected directly to the CWS's distribution system via a dedicated irrigation service connection	I. At or for a residential or non-residential dedicated irrigation service connection ⁶ ; PVB if backpressure cannot develop in the downstream piping ¹⁰ ; or RP if backpressure could develop in the downstream piping ¹⁰
II. Is connected internally to the customer's plumbing system	
Premises where there is a wet-pipe sprinkler, or wet standpipe, fire protection system that is using potable water and that: I. Is connected directly to the CWS's distribution system via a dedicated fire service connection ¹²	I.A. At or for a residential dedicated fire service connection ⁶ ; DuC if the fire protection system contains no chemical additives and is not connected to an auxiliary water system ⁴ ; or RP or RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system ^{4,13}

II. Is connected internally to the customer's plumbing system	I.B. At or for a non-residential dedicated fire service connection ⁶ : DC or DCDA if the fire protection system contains no chemical additives and is not connected to an auxiliary water system ⁴ ; or RP or RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system ^{4,13}
	II. None ¹¹
Radioactive material processing or handling facility or nuclear reactor	RP
Paper products plant using a wet process	RP
Plating facility, including any aircraft or automotive manufacturing plant	RP
Restricted-access facility	RP
Steam boiler plant	RP
Tall building – i.e., a building with five or more floors at or above ground level	DC if the customer has no potable water distribution lines connected to the suction side of a booster pump; or RP if the customer has one or more potable water distribution lines connected to the suction side of a booster pump
Wastewater treatment plant or wastewater pumping station	RP
Customer supplied with potable water via a temporary or permanent service connection from a CWS fire hydrant	Varies ¹⁴

¹ Means of backflow protection, listed in an increasing level of protection, include the following: a dual check device (DuC); a double check valve assembly (DC) or double check detector assembly (DCDA); a pressure vacuum breaker assembly (PVB); a reduced-pressure principle assembly (RP) or reduced-pressure principle detector assembly (RPDA); and an air gap. A PVB may not be used if backpressure could develop in the downstream piping.

² The CWS shall determine the degree of hazard. “Low hazard” or “non-health hazard” and “high hazard” or “health hazard” are defined in *AWWA Manual M14* as incorporated in paragraph 62-555.360(1)(a), and subsection 62-555.360(2), F.A.C.

³ A DC may be provided if it was installed before 5-5-14; and if such a DC is replaced on or after 5-5-14, it may be replaced with another DC.

⁴ For the purpose of this table, “auxiliary water system” means a pressurized system of piping and appurtenances using auxiliary water, which is water other than the potable water being supplied by the CWS and which includes water from any natural source such as a well, pond, lake, spring, stream, river, etc., includes reclaimed water, and includes other used water or industrial fluids described in *AWWA Manual M14* as incorporated in paragraph 62-555.360(1)(a), and subsection 62-555.360(2), F.A.C.; however, “auxiliary water system” specifically excludes any water recirculation or treatment system for a swimming pool, hot tub, or spa. (Note that reclaimed water is a specific type of auxiliary water and a reclaimed water system is a specific type of auxiliary water system.)

⁵ The Department shall allow an exception to the requirement for backflow protection at or for a residential or non-residential service connection from a CWS to premises where there is an auxiliary or reclaimed water system if all of the following conditions are met:

- The CWS is distributing water only to land owned by the owner of the CWS.
- The owner of the CWS is also the owner of the entire auxiliary or reclaimed water system up to the points of auxiliary or reclaimed water use.
- The CWS conducts at least biennial inspections of the CWS and the entire auxiliary or reclaimed water system to detect and eliminate any cross-connections between the two systems.

⁶ For the purpose of this table, “residential service connection” means any service connection, including any dedicated irrigation or fire service connection, that is two inches or less in diameter and that supplies water to a building, or premises, containing only dwelling units; and “non-residential service connection” means any other service connection.

⁷ A DuC may be provided only if there is no known cross-connection between the plumbing system and the auxiliary or reclaimed water system on the customer’s premises. Upon discovery of any cross-connection between the plumbing system and any reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated. Upon discovery of any cross-connection between the plumbing system and any auxiliary water system other than a reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated or shall ensure that the backflow protection provided at or for the service connection is equal to that required at or for a non-residential service connection.

⁸ Reclaimed water regulated under Part III of Chapter 62-610, F.A.C., is a low hazard unless it is stored with surface water in a pond that is part of a storm water management system, in which case it is a high hazard; well water is a low hazard unless determined otherwise by the CWS; industrial fluids and used water other than reclaimed water are high hazards unless determined otherwise by the CWS; reclaimed water not regulated under Part III of Chapter 62-610, F.A.C., and surface water are high hazards.

⁹ Upon discovery of any cross-connection between the plumbing system and any reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated.

¹⁰ A DC may be provided if both of the following conditions are met:

- The dedicated irrigation service connection initially was constructed before 5-5-14.
- No chemicals are fed into the irrigation system.

¹¹ The CWS may rely on the internal backflow protection required under the *Florida Building Code* or the predecessor State plumbing code. The CWS may, but is not required to, ensure that such internal backflow protection is inspected/tested and maintained the same as backflow protection provided at or for service connections from the CWS.

¹² The Department shall allow an exception to the requirement for backflow protection at or for a residential or non-residential dedicated fire service connection from a CWS to a wet-pipe sprinkler, or wet standpipe, fire protection system if both of the following conditions are met:

- The fire protection system was installed and last altered before 5-5-14.
- The fire protection system contains no chemical additives and is not connected to an auxiliary water system as defined in Footnote 4.

¹³ Upon discovery of any cross-connection between the fire protection system and any reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated.

¹⁴ The CWS shall ensure that backflow protection commensurate with the degree of hazard is provided at or for the service connection from its fire hydrant.

- **Non-health hazard (low hazard)**” means a cross connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.
- **Health hazard (high hazard)**” a cross connection or potential cross-connection involving any substance that could, if introduced into the potable water supply, cause death or illness, spread disease, or have high probability of causing such effects.

Consideration for Fire Service Line

Fire service lines may feed internal fire sprinkling systems, hose connections, storage tanks, fire hydrants and other types of suppression systems thus the types of fire suppression are classified on the basis of water source and arrangements of the water supply. AWWA categorizes fire suppression systems into six (6) distinct classes (Class 1 through Class 6.) The description and plumbing for the variety of possible fire suppression plumbing arrangements is beyond the scope of this document and for any fire service line that includes the connection of any plumbing beyond fire sprinkling systems. The reader is referred to AWWA Recommended Practices for Backflow Prevention and Cross-Connection Control M14 and NFPA, Chapter 13.

Fire service lines connected directly to public water mains only where no pumps, tanks, and there are no reservoirs, or physical connection from other water supplies and there are no antifreeze or other additives of any kind and where all sprinkler drains discharge to the atmosphere, dry wells, or other safe drains or outlets may not constitute a health hazard condition. However, if any of the following conditions exist backflow prevention is required.

Examples of Special Conditions Requiring Backflow Prevention Assemblies on Fire sprinkler lines

1. Underground fire sprinkler pipelines running and within 10 ft. horizontally of sewer pipelines or other pipelines carrying significant toxic materials.
2. When water is supplied to a site or an area from two or more services of a water or from two different water utilities.
3. Occupancies (or change in occupancies) that could involve the use, storage or handling of types and quantities of materials in a manner that could present a significant health hazard to the domestic water supply.
4. Premises with unusually complex piping systems (usually these premises will have an approved backflow prevention assembly on their domestic service piping).
5. Systems with pumper connections in which non-toxic corrosion inhibitors or other non-toxic chemicals are added to tanks of fire trucks, or where the water purveyor cannot be assured of the potability of the input to the pumper connection.

3.2 Requirements 1-5

Component III: The CWS's policy regarding ownership, installation, inspection/testing, and maintenance of backflow protection that the CWS is requiring at or for service connections from the CWS.

1. Except for dual check devices (DuC), the customer shall own, and shall be responsible for installation, inspection/testing, and maintenance of, any backflow protection required at or for a service connection from the CWS. The CWS shall own, and shall be responsible for installation and maintenance of, any Duc required at a service connection from the CWS; however, the customer shall be responsible for installation and maintenance of the thermal expansion control that is necessary, and required under the Florida Building Code, where a Duc is installed at a service connection to a customer using storage water heating equipment. At least 60 days before the CWS installs a Duc at the service connection to a customer, the CWS will notify the customer in writing and advise the customer to install thermal expansion control if the customer's plumbing system includes storage water heating equipment but does not include thermal expansion control.

****** The following table shows the schedule that the CWS will follow for installation of backflow protection required at or for service connections.

Type of Service connection	Schedule
New service connection to a customer in a category listed in component II.	Before water service is initiated
Existing i.e., previously constructed-service connection where the CWS will install a dual check device (DuC)	At least 60 days after the customer receives written notification from the CWS advising the customer to install thermal expansion control if the customer's plumbing system includes storage water heating equipment but does not include thermal expansion control. If the service connection is to a premise where there is an auxiliary water system, the CWS shall deliver the aforementioned written notification within 30 days after the CWS discovers the auxiliary water system and shall install the DuC 60 to 90 days after the customer receives the aforementioned written notification.
Existing- i.e., previously constructed-service connection to a customer in any category listed in Component II except premises where there is a reclaimed water system or service connections where the CWS will install a DuC.	Within 30 days after the CWS notifies the customer in writing to install backflow protection at or for the service connection.

2. All new backflow protection required at or for the service connection from the CWS shall conform to, or comply with the following standards

** New dual check devices (DuC) shall conform to the latest edition of American Society of Sanitary Engineers (ASSE) standard 1024 or Canadian Standards Association (CSA) Standard B64.6 or B64.6.1.

- New double check valve assemblies shall conform to the latest edition of ASSE Standard 1015, American Water Works Association (AWWA) Standard C510, or CSA Standard B64.5.
- New double check detector assemblies shall conform to the latest edition of ASSE Standard 1048.
- New pressure vacuum breaker assemblies shall conform to the latest edition of ASSE Standard 1020 or CSA Standard B64.1.2.
- New reduced-pressure principle assemblies shall conform to the latest edition of ASSE Standard 1013, AWWA Standard C511, or CSA Standard B64.4.
- New reduced-pressure principle detector assemblies shall conform to the latest edition of ASSE Standard 1047.
- New air gaps shall comply with the latest edition of American Society of Mechanical Engineers Standard A112.1.2.

Additionally, all new customer-owned backflow preventers required at or for dedicated fire service connections from the CWS shall be listed by a nationally recognized testing laboratory, such as Underwriters Laboratories, Inc., or Factory Mutual, Inc., pursuant to Chapter 633, Florida Statutes.

New DuC devices required at or for service connections from the CWS will be installed immediately downstream of the water meter and in the meter box. All other backflow protection required at or for service connections from the CWS shall be installed downstream from, and within five feet after, the CWS's water meter box or the customer's property line unless a deviation is approved by the CWS. The CWS will consider, and may approve, on a case-by-case basis, deviations requested and justified in writing; but in no case shall there be any outlet, tee, tap, or connection of any type to or from the water piping between the water meter, or property line, and the required backflow protection.

All new backflow protection required at or for service connections from the CWS shall be installed in accordance with the manufacturer's instructions and the installation criteria in American Water Works Association Manual of Water Supply Practices—M14, Third Edition, Recommended Practice for Backflow Prevention and Cross-Connection Control. Additionally, all new customer-owned backflow preventers required at or for dedicated fire service connections from the CWS shall be installed in accordance with applicable National Fire Protection Association standards adopted in Chapter 69A-3, Florida Administrative Code, and all other new customer-owned backflow protection required at or for service connections from the CWS shall be installed in accordance with the latest edition of the Florida Building Code by a licensed plumbing contractor.

3. All air gaps (AGs) required at or for service connections from the CWS shall be inspected at least annually. Persons inspecting AGs required at or for service connections from the CWS shall be a certified or registered plumbing contractor or shall be a backflow preventer tester holding a current certification from one of the following organizations or schools:

- The American Backflow Prevention Association;
 - The American Society of Sanitary Engineering;
 - The American Water Works Association;
 - The Florida Water and Pollution Control Operators Association;
 - The University of Florida Center for Training, Research, and Education for Environmental Occupations.
4. All backflow preventer assemblies (i.e., double check valve assemblies and double check detector assemblies; pressure vacuum breaker assemblies; and reduced pressure principle assemblies and reduced-pressure principle detector assemblies) required at or for non-residential service connections from the CWS shall be tested after installation or repair and at least annually thereafter and shall be repaired if they fail to meet performance standards. All backflow preventer assemblies required at or for residential service connections from the CWS shall be tested after installation or repair and at least biennially (once every two years) thereafter and shall be repaired if they fail to meet performance standards. Residential service connections are service connections, including dedicated irrigation or fire service connections that are two inches or less in diameter and that supply water to a building, or premises, containing only dwelling units; all other service connections are non-residential service connections.

Persons testing backflow preventer assemblies required at or for dedicated fire service connections from the CWS shall be a certified Fire Protection System Contractor I or II pursuant to Chapter 633, Florida Statutes. Persons testing backflow preventer assemblies required at or for all other service connections from the CWS shall be a certified or registered plumbing contractor or shall be a backflow preventer tester holding a current certification from one of the following organizations or schools:

- The American Backflow Prevention Association;
- The American Society of Sanitary Engineering;
- The American Water Works Association;
- The Florida Water and Pollution Control Operators Association;
- The University of Florida Center for Training, Research, and Education for Environmental Occupations; or
- Any other organization or school approved in writing by the CWS.

Backflow preventer assemblies required at or for service connections from the CWS shall be tested using the procedures in one of the following standards or manuals:

- The latest edition of American Society of Sanitary Engineering Standards 5013, 5015, 5020 5047, and 5048;
- The latest edition of Canadian Standards Association Standard B64.10.1;
- The latest edition of Backflow Prevention: Theory & Practice by the University of Florida Center for Training, Research, and Education for Environmental Occupations;
- The latest edition of the Manual of Cross-Connection Control by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research Center; or
- Any other standard or manual approved in writing by the CWS.

Testing equipment used to test backflow preventer assemblies required at or for service connections from the CWS shall be verified/calibrated at least annually in accordance with the equipment manufacturer's recommendations.

5. All dual check devices (DuC) required at service connections from the CWS shall be refurbished or replaced at least once every 10 years or at a lesser frequency if the CWS determines and documents that the lesser frequency is appropriate based on data from spot-testing Duc devices at service connections or based on data from backflow sensing meters at service connections.

Section 4 – Site Evaluation

Component IV: The CWS's procedures for evaluating customers' premises to establish the category of customer and the backflow protection being required at or for the service connection(s) from the CWS to the customer.

1. The CWS authorized agent will evaluate the proposed plan documents for. New facilities to establish the category prior to construction and confirm compliance with the CWS Program before the CWS begins supplying water to the service connection.
2. The CWS authorized agent will evaluate the customer's premises at an existing—i.e., previously constructed—service connection whenever any of the following events occur:
 - Whenever the customer connects to a reclaimed water distribution system. The CWS will coordinate with the reclaimed water supplier to ensure that reclaimed water service is not turned on until appropriate backflow protection is provided at the potable water service connection.
 - Whenever an auxiliary water system is discovered on the customer's premises.
 - Whenever a prohibited or inappropriately protected cross-connection is discovered on the customer's premises.
 - Whenever the customer's premises are altered under a building permit in a manner that could change the backflow protection required at or for a service connection to the customer. The OWS will coordinate with the local building department so the CWS will know when building permits are being applied for or issued.
3. To evaluate the customer's premises at a service connection from the CWS, the CWS authorized agent will use "a water use questionnaire" and, if necessary, will also review construction plans or conduct an on-site inspection.
4. If at any point and time during a site survey, site evaluation or an inspection the inspector finds a cross-connection, suspects a cross-connection or finds a conflict on or attached to the potable water service that could pose a high probable health risk to the CWS, the inspector shall eliminate any of the above threats by locking out the water service lines without notice.

Section 5 – Test Report Submissions and Storage

Component V: The CWS's procedures for maintaining CCC program records.

*** Fraudulent inspection reports or test results submitted by an approved and certified cross-connection technician shall be just cause for revocation of their "approved" status with the City. Other penalties may be pursued if the quality of public drinking water is jeopardized as a result of a backflow prevention assembly receiving a fraudulent inspection or test report.

In an effort to minimize the costly data entry associated with this program, the City of Panama City has partnered with **Swift Comply LLC**. Swift Comply is an online portal-based platform in which test reports are to be filed using any number of devices such as: tablet, phones and computers. The fee associated with each submission is **\$5.00** per submission (see details on failed devices needing to be re-submitted). This fee is passed on to the tester and will be paid directly to **Swift Comply LLC**. in accordance with their payment structure and under their terms and conditions.

1. The CWS will maintain, in electronic form via **Swift Comply LLC**. And paper form, a current inventory of all backflow protection required at or for service connections from the CWS. The inventory will include the following for each service connection where backflow protection is required:
 - The service connection number or other identification number used by the CWS;
 - The service connection address;
 - The service connection category (i.e., non-residential or residential) and subcategory (standard, dedicated irrigation, or dedicated fire);
 - The location of the backflow protection at/for the service connection;
 - The type of hazard isolated (i.e., the category of customer);
 - The date when backflow protection was initially installed at or for the service connection;
 - The type of current backflow protection (i.e., air gap, reduced-pressure principle assembly, reduced-pressure principle detector assembly, pressure vacuum breaker assembly, double check valve assembly, double check detector assembly, or dual check device (DuC);
 - If the type of current backflow protection is a backflow preventer assembly, the size, manufacturer, model, serial number, and date installed; and If the type of backflow protection is a DuC, the size, manufacturer, model, date installed, and if any DuC is refurbished (instead of replaced), the date refurbished.
2. The CWS will maintain, in either electronic or paper format, records of the installation, inspection/testing, and repair of all backflow protection required at or for service connections from the CWS.

The inventory described will include the date when backflow protection was initially installed at or for any service connection where backflow protection is required. Also, the inventory described in Component V.A. will include the date when any current backflow preventer assembly or any current dual check device (DuC) was installed.

Furthermore, if any DuC is refurbished (instead of replaced), the inventory described in Component V.A. will include the date the DuC was refurbished.

Records of the inspection of air gaps (AGs) required at or for service connections from the CWS will be maintained by keeping either an electronic or paper copy of (AG) inspection reports. Records of the testing and repair of backflow preventer assemblies required at or for service connections from the CWS will be maintained by keeping either an electronic and /or paper copy of backflow preventer assembly testing and repair reports. All (AG) inspection reports, and all backflow preventer assembly testing and repair reports will be kept for not less than 10 years.

3. The CWS will prepare and submit a CCC Program Annual Report. The first annual report will cover calendar year 2020, and subsequent annual reports will cover each calendar year thereafter. Each annual report will be prepared using the latest version of Form 62-555.900 (13), FDEP CCC Program Annual Report. Each annual report will be submitted to the appropriate department within the Department of Environmental Protection district office or approved county health department within three months after the end of the calendar year covered by the report.

Section 6 - Construction Standards for Backflow Installations.

All backflow prevention assemblies shall be installed in accordance with the City code of Ordinances, the current adopted Plumbing Code for the State of Florida and applicable Florida State law. Additionally, all backflow prevention assemblies shall be installed by a licensed plumbing contractor licensed to do business in the State of Florida and shall install devices in accordance with the following standard installation requirements to ensure the proper operation and accessibility to the assembly. In accordance with **Florida State Statutes, Chapter 489, Licenses, 489.103, EXEMPTION (7)** homeowners are permitted to act as their own contractor and install their own backflow prevention device / devices.

**** A plumbing permit is required for all backflow prevention device installations.**

1. Only approved assemblies will be installed. If a device for whatever reason is not approved, a detailed reason as to the reason for its exclusion. Assemblies that have been installed or repaired shall not be altered from their approved configuration.
2. All backflow assembly devices and piping must be covered with an approved wrap or insulation. Coverings must be kept aesthetically pleasing to not create an eye sore for the view of the public.
3. If a backflow assembly must be subjected to environmental conditions that could freeze or heat the assembly beyond its working temperature, some means of protection shall be installed to provide the correct temperature environment for the device. Special precaution must be taken to protect the device from external heat sources (i.e. welding or soldering equipment) that could damage the internal components and prevent proper working order of the device.

4. No part of a backflow prevention assembly shall be submerged in water or installed in a location that would be subject to flooding.
5. ** Reduced-Pressure Principle Assembly (RP) – Device must be installed only in the horizontal position. The device must be installed at least twelve (12) inches above the flood level of the surrounding area and in a position where it is easily accessible for testing. This device has a relief port that dumps water when the water pressure is fluctuating. This port must never be capped off as to not allow water to escape from it. For high hazards applications.
6. If a backflow assembly is located in a swale, ditch or area subject to flooding, the minimum ground clearance shall be measured from the established flood elevation.
7. Backflow assemblies shall not be installed so that the inlet shut off valve of the backflow assembly is the next piped fitting (including piping) after the water meter, except where a meter bypass, limited area fire system, or strainer is needed; in which case the inlet shut off valve shall be the next piped fitting after the bypass, fire system or strainer.
8. A backflow preventer assembly shall be installed within 24 inches of the water meter and before any interval branch in the supply line. Exceptions to this rule are available on a case-by-case basis for residential irrigation only and will require approval from the Environmental Compliance Division Supervisory staff.
9. Backflow prevention assemblies shall never be installed in a pit, vault or any other area subject to flooding.
10. Where the backflow assembly has been approved to be installed within the served building, the backflow prevention assembly inlet valve shall be a minimum of 18 inches from the wall or immediately after the 90-degree bend where the supply enters the floor. It is recommended that a floor drain be installed as close as possible to the assembly. In the absence of a floor drain a funnel drain will be allowed. No device can be installed in a vertical orientation unless the device is approved for such installation. The assembly shall be readily available form 8:00 am. To 5:00 pm., Monday through Friday. A closet minimum size is 40 inches x 72 inches with a 30-inch standard door.
11. Each installation shall include properly located test cocks and manufacturer approved resilient seat shut off valves. All shut off valves 2 inches and under shall be a fully ported ball valve.
12. Lines shall be thoroughly flushed prior to installation. A wye strainer with a blow down connection may be required ahead of the assembly to protect the assembly from recurring debris damage.
13. All backflow prevention devices 2.5 inches or larger shall be installed with copper, ductile iron, or galvanized risers. Above ground devices 2 inches and smaller are permitted to use schedule 40 Poly Vinyl Chloride (PVC).

14. For backflow prevention devices 2.5 inches or larger using mechanical joint (MJ) fitting above and below the ground will require steel allthread rod and fittings as required.
15. No freeze protection equipment may be attached to the backflow prevention device or test cocks. If needed, it shall be placed on the riser pipe located closest to the premises to allow flow throughout the assembly.
16. *** Transient and Non-Transient bulk water users renting hydrant meters will be required to complete a **"Bulk Water"** permit application. All applications will be reviewed and approved by the Environmental Compliance Division and must follow the rules and regulations as set forth in the Temporary Hydrant Meter Service Agreement. Air gap details (if required) are attached at the end of this section.

Section 7- Typical Construction Detail Drawings

Attached at the end of this plan are detailed drawing for the installation requirements as it pertains to the City of Panama City's Public Works Engineering minimum standards. For additional drawings not mentioned here, visit our website at www.pcgov.org/167/Engineering and see "Standard Details" at the bottom of the Engineering information page. **Only residential irrigation accounts are eligible to take advantage the "Alternate Irrigation Backflow Installation" exception as illustrated in PW-26.**

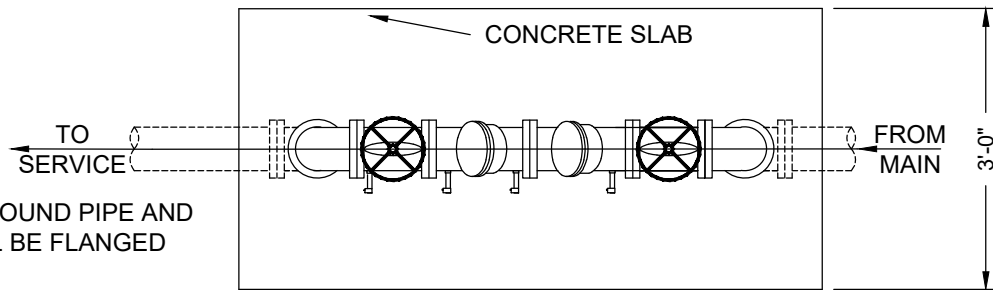
PW-11	Backflow preventer 2 1/2" & larger construction detail.
PW-12	Backflow preventer 1/2 - 2" construction detail.
PW-14	Backflow preventer Fire line w/ meter and bypass.
PW-15	Backflow preventer w/ Detector Check Assembly (DCVA).
PW-18	Backflow preventer 2 1/2" & larger w/ meter.
PW-19	Backflow preventer 2 1/2" & larger w/ meter and bypass.
PW-23	Backflow preventer w/ Detector Check Assembly (DCVA).
PW-25	Pressure Vacuum Breaker construction detail. Residential
PW-26	Residential Irrigation Alternate Location Installation.
AG-1	Transient and Non-transient Air Gap Detailed drawing.

Residential Irrigation Alternate Location Installation requirements.

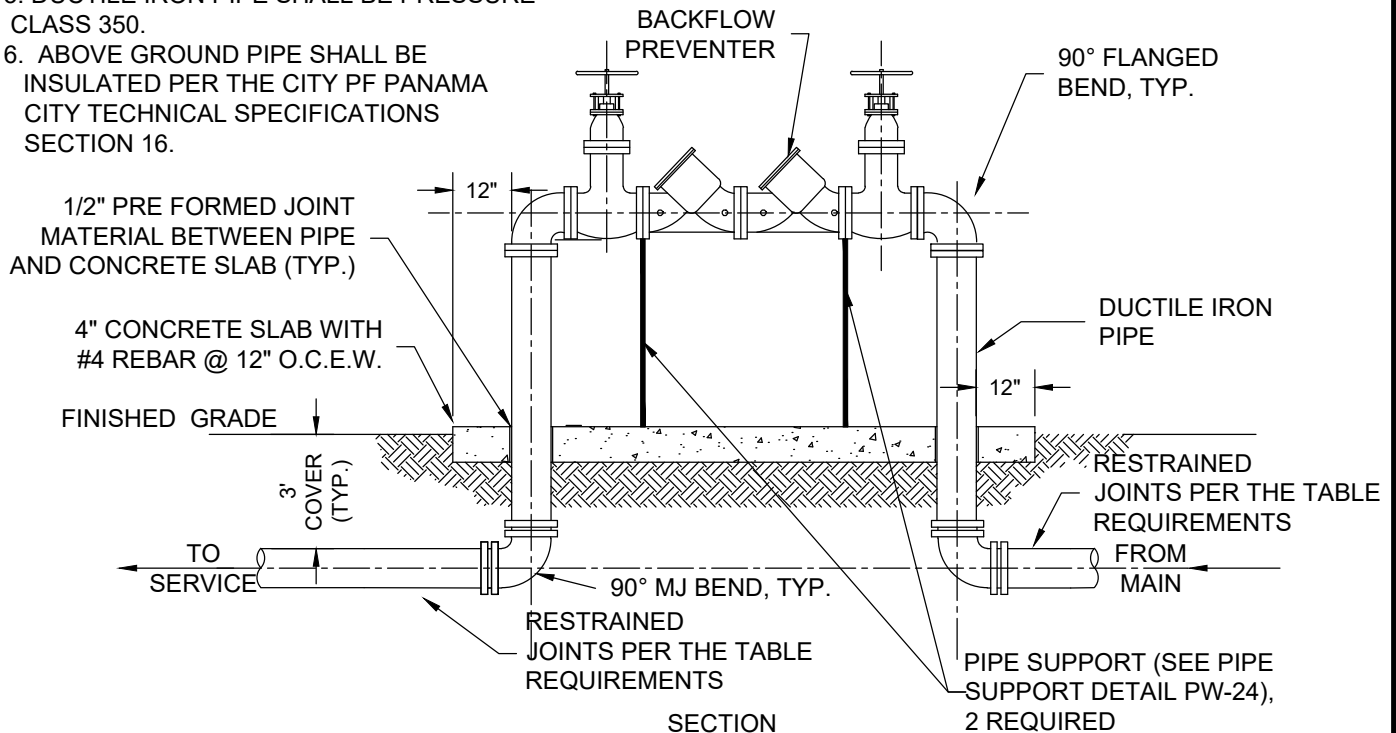
Only residential irrigation customers will be allowed to apply for this exception. It must be approved by the Environmental Compliance division before the project can proceed. Homeowners must follow the detail as published on PW-26 and the ditch in which the piping was run must be left open for inspection. Our inspector will be required to inspect the installation within 48 hours from the time a customer's / contractor calls the project in and states that the project is ready for inspection. The sleeving must be visible from both the meter box and where the device comes up out of the ground. All other terms and conditions for backflow installation are still required. Visual confirmation will need to be noted on the bi-annual certification that no connections have been made between the service connection and the backflow device. This follows along with University of Florida Treeo Center testing procedures in identifying and notating any possible cross connections.

NOTES:

1. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
2. ALL VALVES SHALL HAVE HANDWHEELS.
3. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
4. BACKFLOW PREVENTER SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
5. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
6. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.



PLAN VIEW



SECTION

BACKFLOW PREVENTER - 2 1/2" AND LARGER

N.T.S.



PANAMA CITY, FLORIDA
STANDARD DETAILS

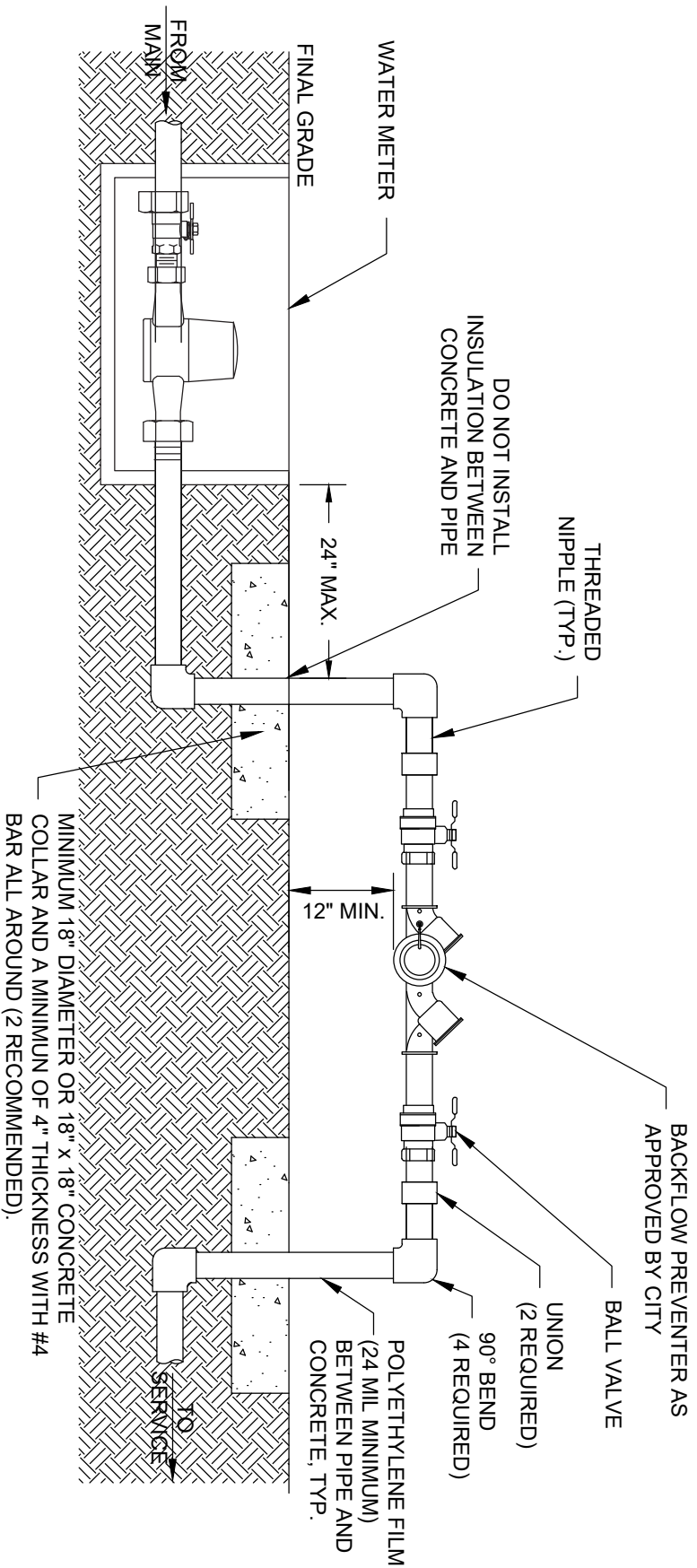
BACKFLOW PREVENTER -2 1/2" AND LARGER

DATE : MAY 2018

SCALE : NTS

REVISION: MAY 2020

FIGURE : PW-11



- NOTES:
1. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.
 2. THE BACKFLOW PREVENTER SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY
 3. PLACE POLYETHYLENE FILM (24 MIL MINIMUM) BETWEEN THE PIPE AND CONCRETE IF APPLICABLE.
 4. PIPING CAN BE SCH 40 METALLIC, COPPER OR SCHEDULE 40 P.V.C.

BACKFLOW PREVENTER - 1/2" - 2"

N.T.S.

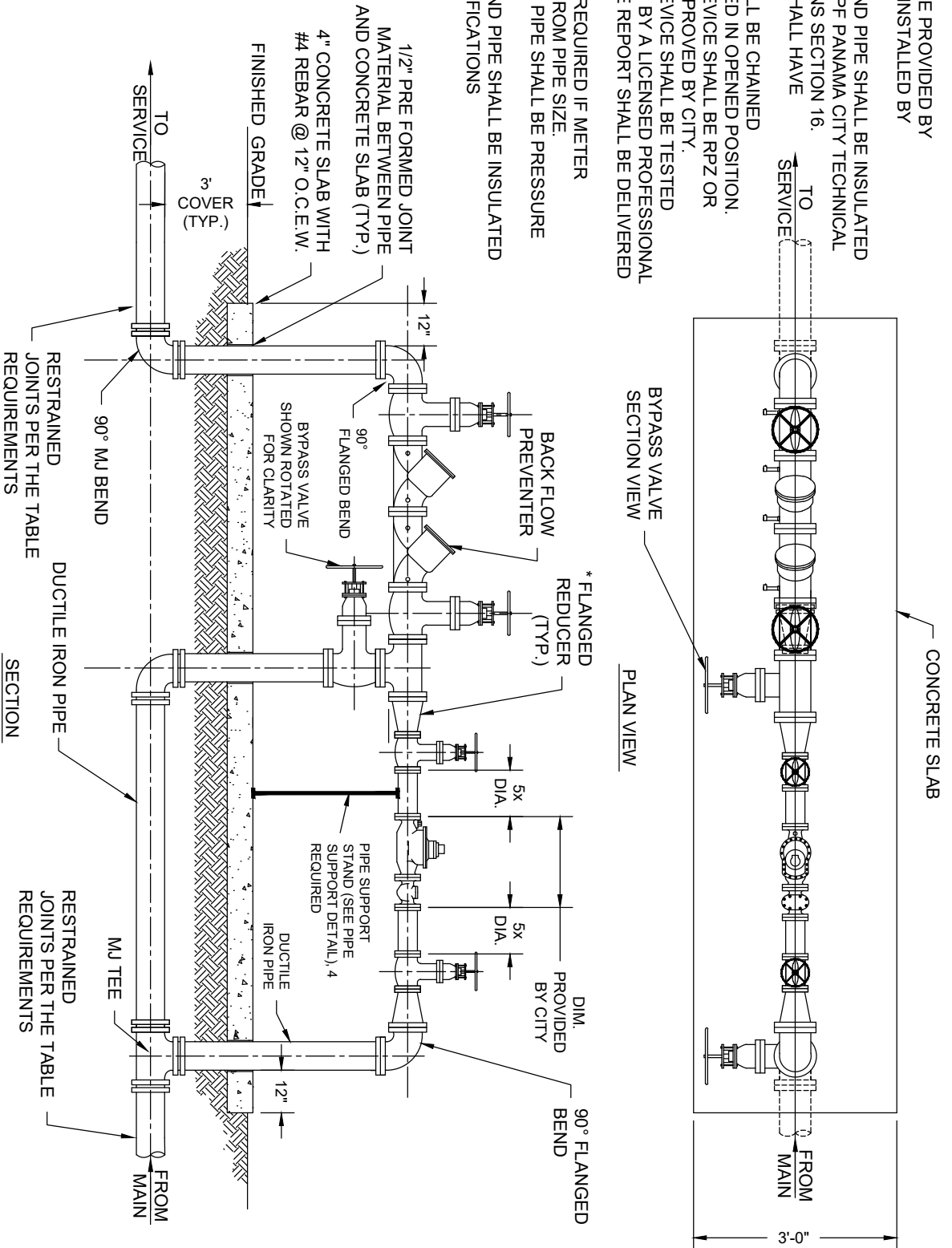
DATE : MAY 2018
SCALE : NTS
REVISION: JUNE 2021
FIGURE : PW-12

PANAMA CITY, FLORIDA
STANDARD DETAILS
BACKFLOW PREVENTER - 1/2"-2"



NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.
3. ALL VALVES SHALL HAVE HANDWHEELS.
4. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
5. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
6. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
7. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
8. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
9. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS



FIRE LINE METER & BACKFLOW WITH BYPASS

N.T.S.



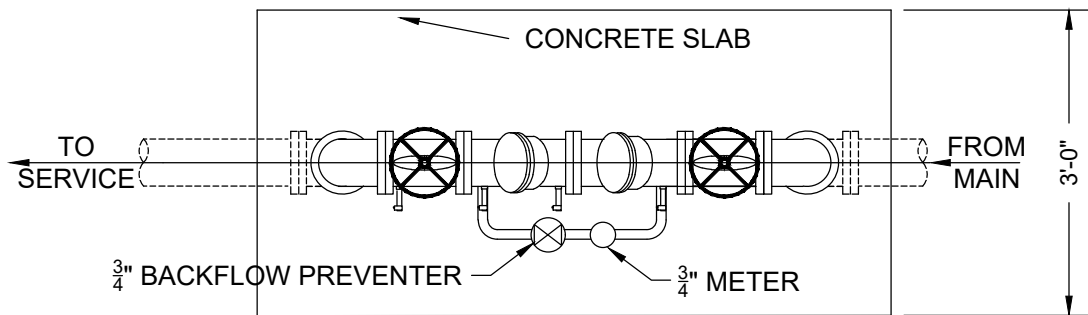
PANAMA CITY, FLORIDA
STANDARD DETAILS

FIRE LINE METER AND BACKFLOW
PREVENTER WITH BYPASS

DATE : MAY 2018
SCALE : NTS

REVISION: MAY 2021

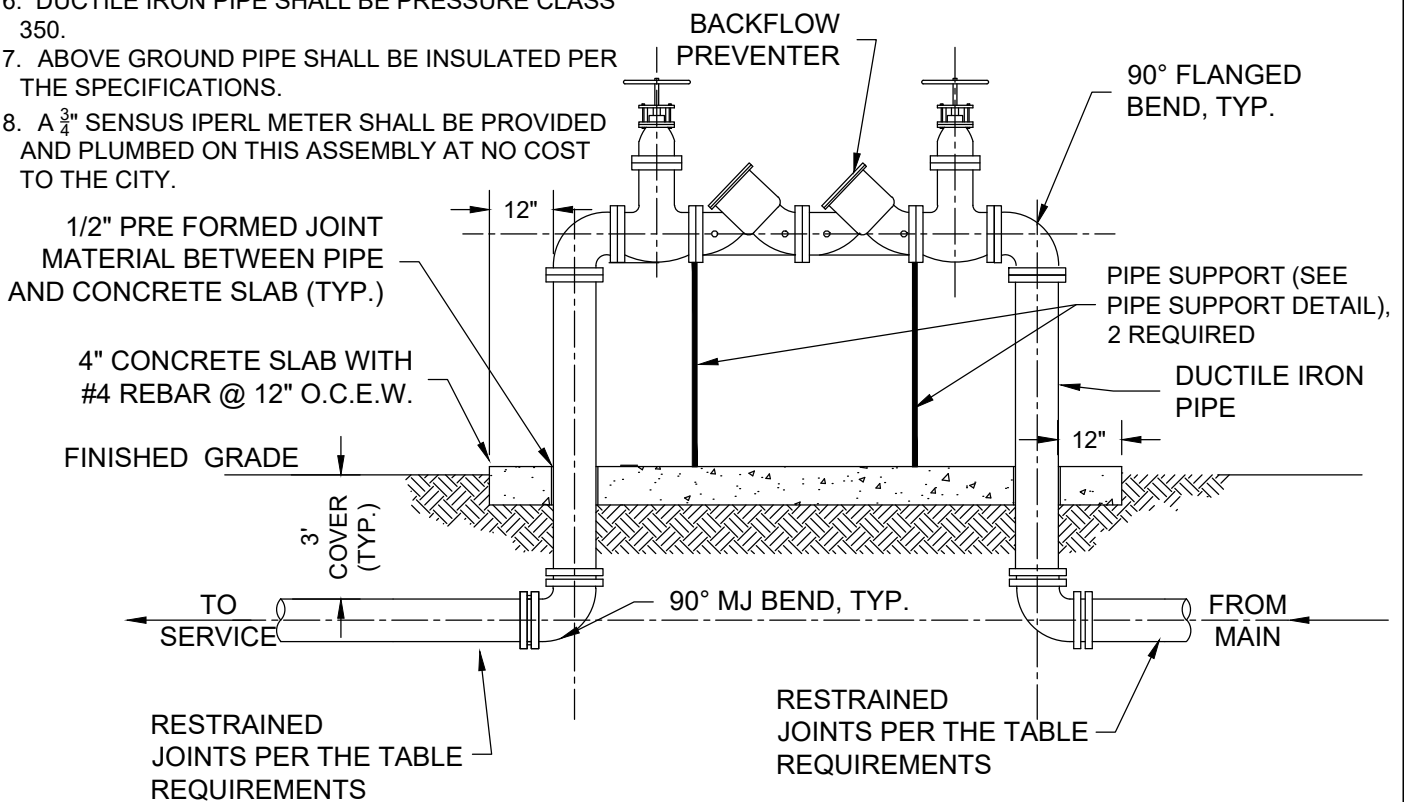
FIGURE : PW-14



NOTES:

1. DCDA SIZE TO BE DETERMINED BY THE FIRE SYSTEM DESIGNER.
2. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16. ALL VALVES SHALL HAVE HANDWHEELS.
3. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY. PROVIDE CUT SHEET/SPECIFICATIONS TO CITY FOR APPROVAL.
4. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
6. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
7. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS.
8. A $\frac{3}{4}$ " SENSUS IPERL METER SHALL BE PROVIDED AND PLUMBED ON THIS ASSEMBLY AT NO COST TO THE CITY.

PLAN VIEW



SECTION

**FIRE LINE DOUBLE CHECK DETECTOR
ASSEMBLY BACKFLOW PREVENTER**

N.T.S.



PANAMA CITY, FLORIDA
STANDARD DETAILS

FIRE LINE BACKFLOW PREVENTER

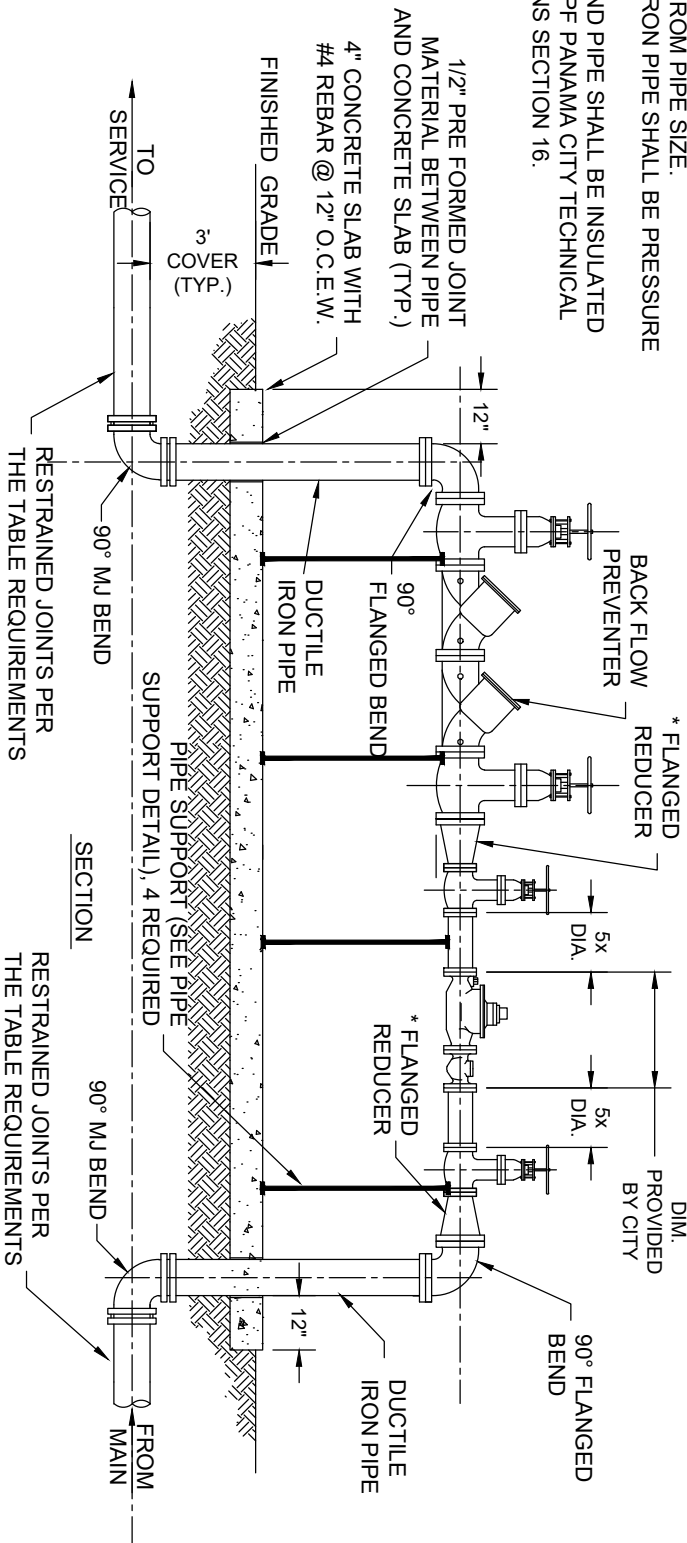
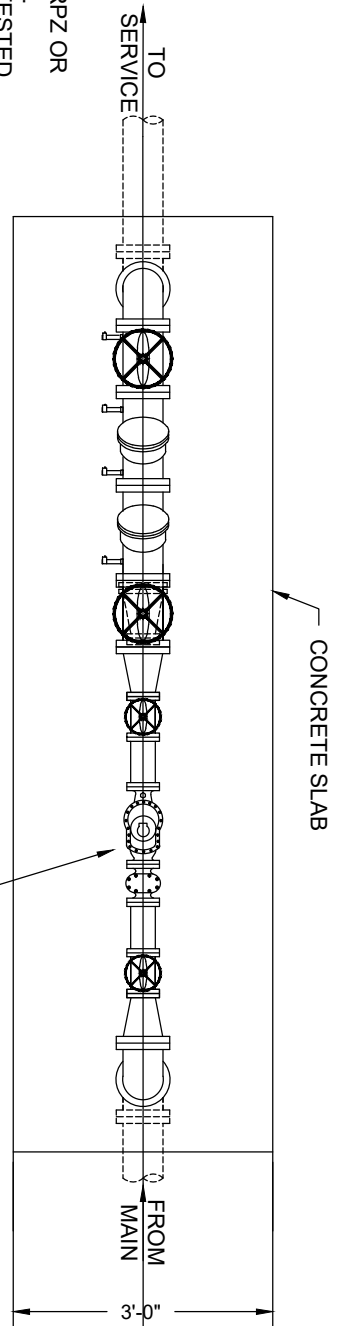
DATE : MAY 2018
SCALE : NTS

REVISION: MAY 2021

FIGURE : PW-15

NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL VALVES SHALL HAVE HANDWHEELS (OS & Y).
4. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
6. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
7. ALL DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
8. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY PF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.



2 1/2" & LARGER - METER & BACKFLOW

N.T.S.



PANAMA CITY, FLORIDA
STANDARD DETAILS

2 1/2" & LARGER WATER METER &
BACKFLOW PREVENTER

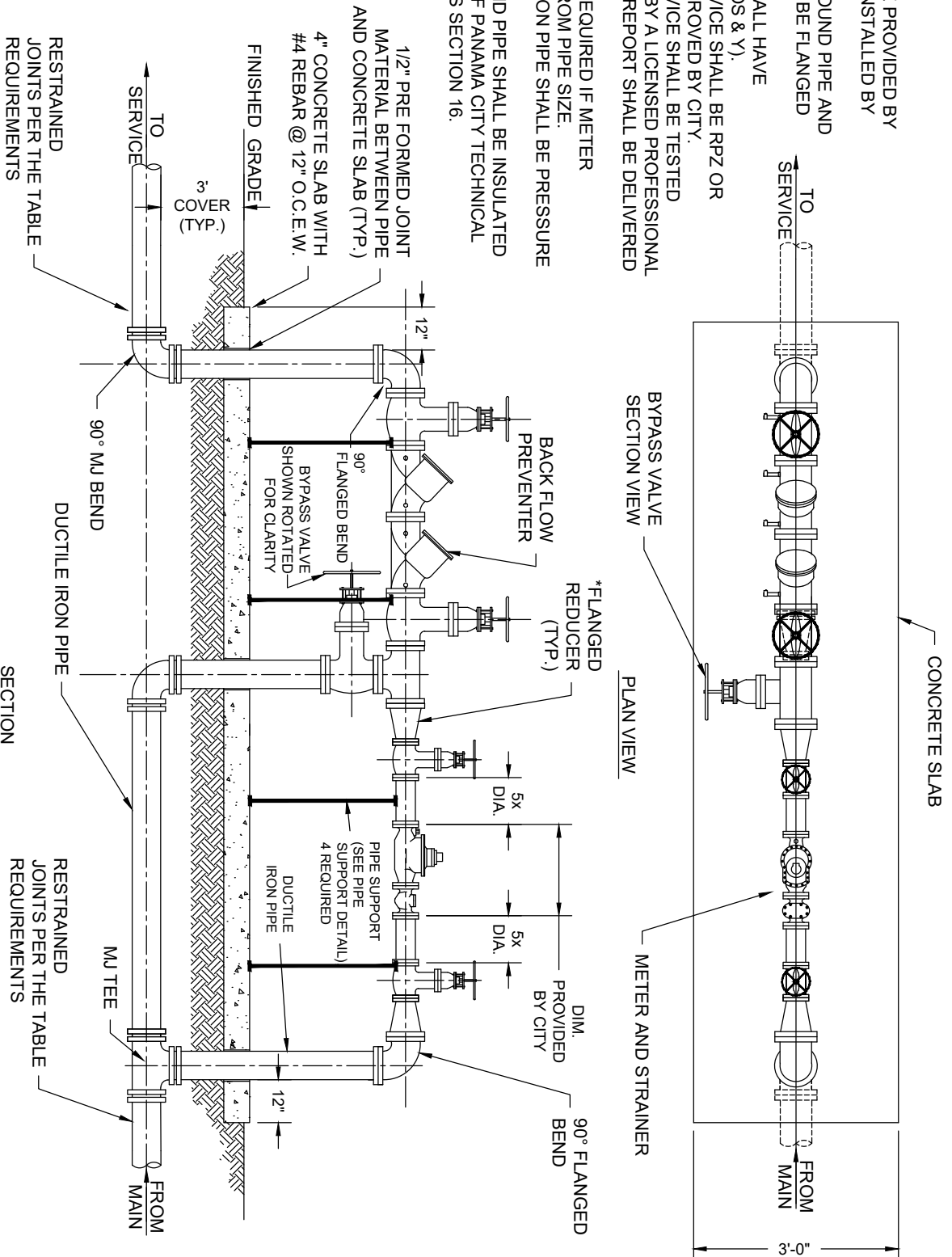
DATE : MAY 2018
SCALE : NTS

REVISION: MAY 2021

FIGURE : PW-18

NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL VALVES SHALL HAVE HANDWHEELS (OS & Y).
4. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
6. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
7. ALL DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
8. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.



2 1/2" & LARGER - METER & BACKFLOW WITH BYPASS

N.T.S.



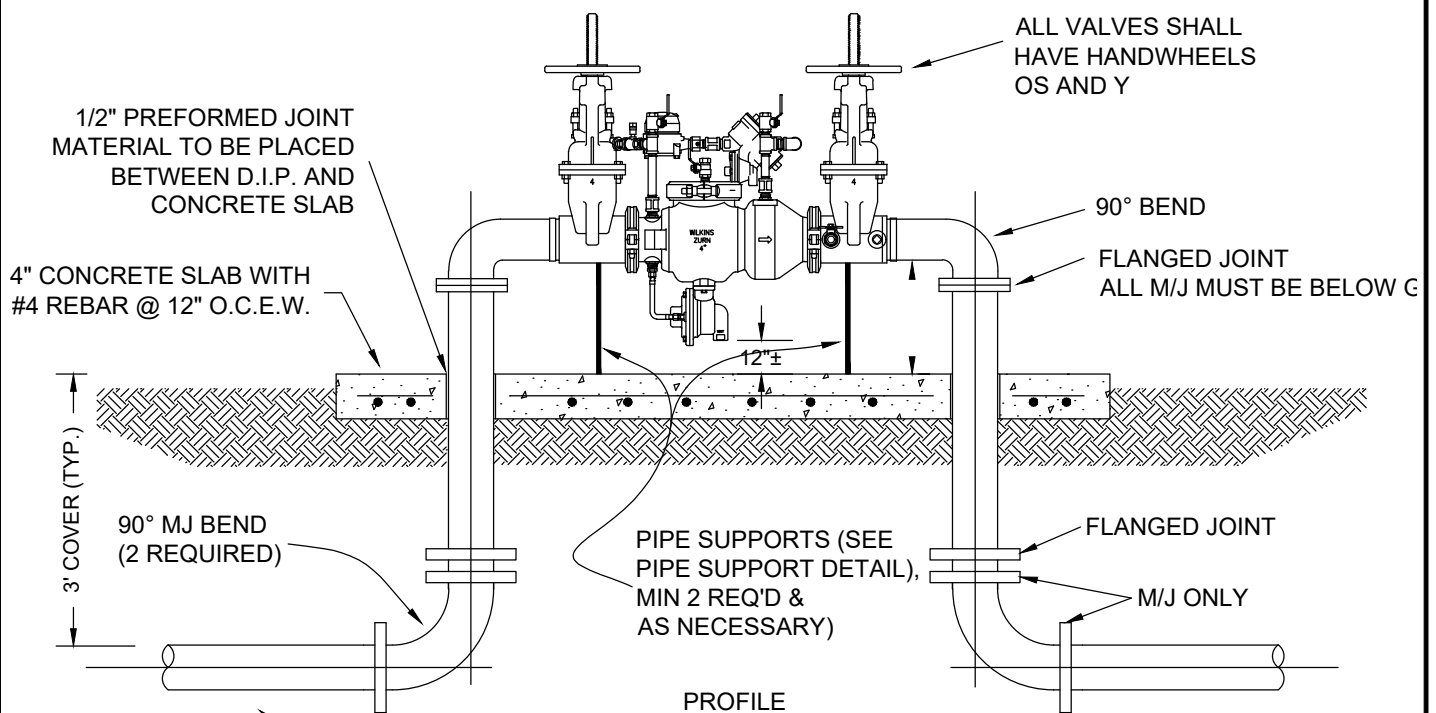
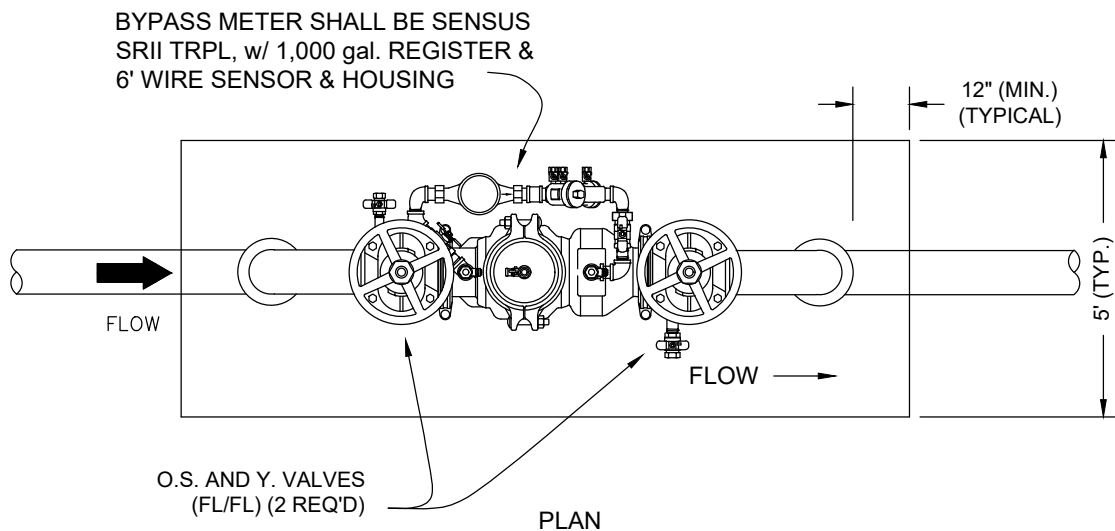
PANAMA CITY, FLORIDA
STANDARD DETAILS

2 1/2" AND LARGER - METER AND BACKFLOW
PREVENTER WITH BYPASS

DATE : MAY 2018
SCALE : NTS

REVISION: MAY 2021

FIGURE : PW-19



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE DUCTILE IRON w/ FLANGED JOINTS.
2. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
3. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY PF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.
4. ALL DCVA ASSEMBLIES MUST COME COMPLETELY ASSEMBLED FROM THE FACTORY.

DOUBLE DETECTOR CHECK VALVE ASSEMBLY FOR FIRE LINES

N.T.S.



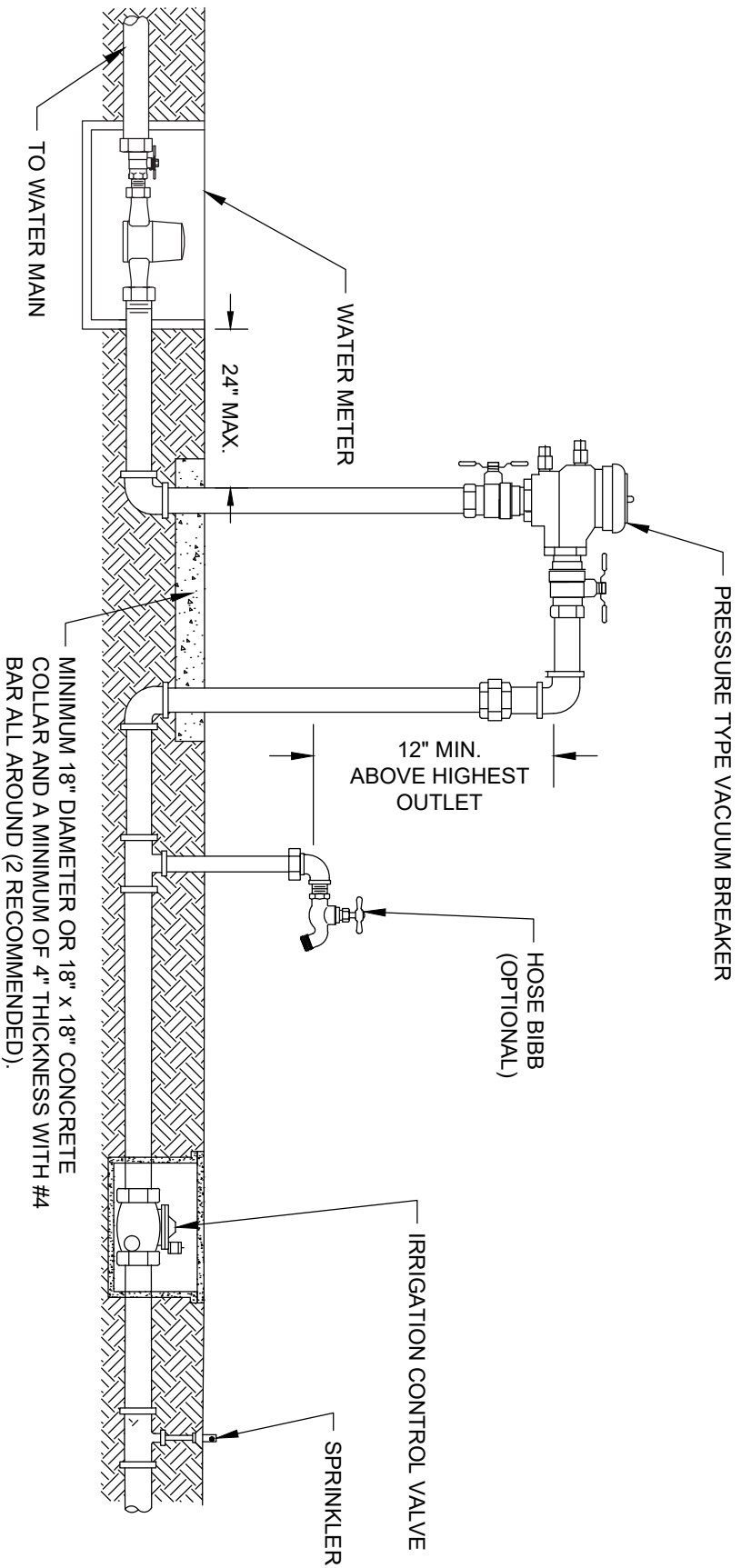
PANAMA CITY, FLORIDA
STANDARD DETAILS

DOUBLE DETECTOR CHECK VALVE ASSEMBLY

DATE : MAY 2018
SCALE : NTS

REVISION: JUNE 2021

FIGURE : PW-23



- NOTES:
1. DOWNSTREAM SIDE OF PRESSURE TYPE VACUUM BREAKER MAY BE MAINTAINED UNDER PRESSURE BY A VALVE, BUT ANY BACKPRESSURE BY PUMP OR OTHER MEANS IS STRICTLY PROHIBITED.
 2. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.
 3. THE BACKFLOW PREVENTER SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY
 4. PLACE POLYETHYLENE FILM (24 MIL MINIMUM) BETWEEN THE PIPE AND CONCRETE WHERE APPLICABLE.
 5. PIPING CAN BE SCH 40 METALLIC, COPPER OR SCHEDULE 40 P.V.C.

PRESSURE VACUUM BREAKER (PVB)

N.T.S.



PANAMA CITY, FLORIDA
STANDARD DETAILS

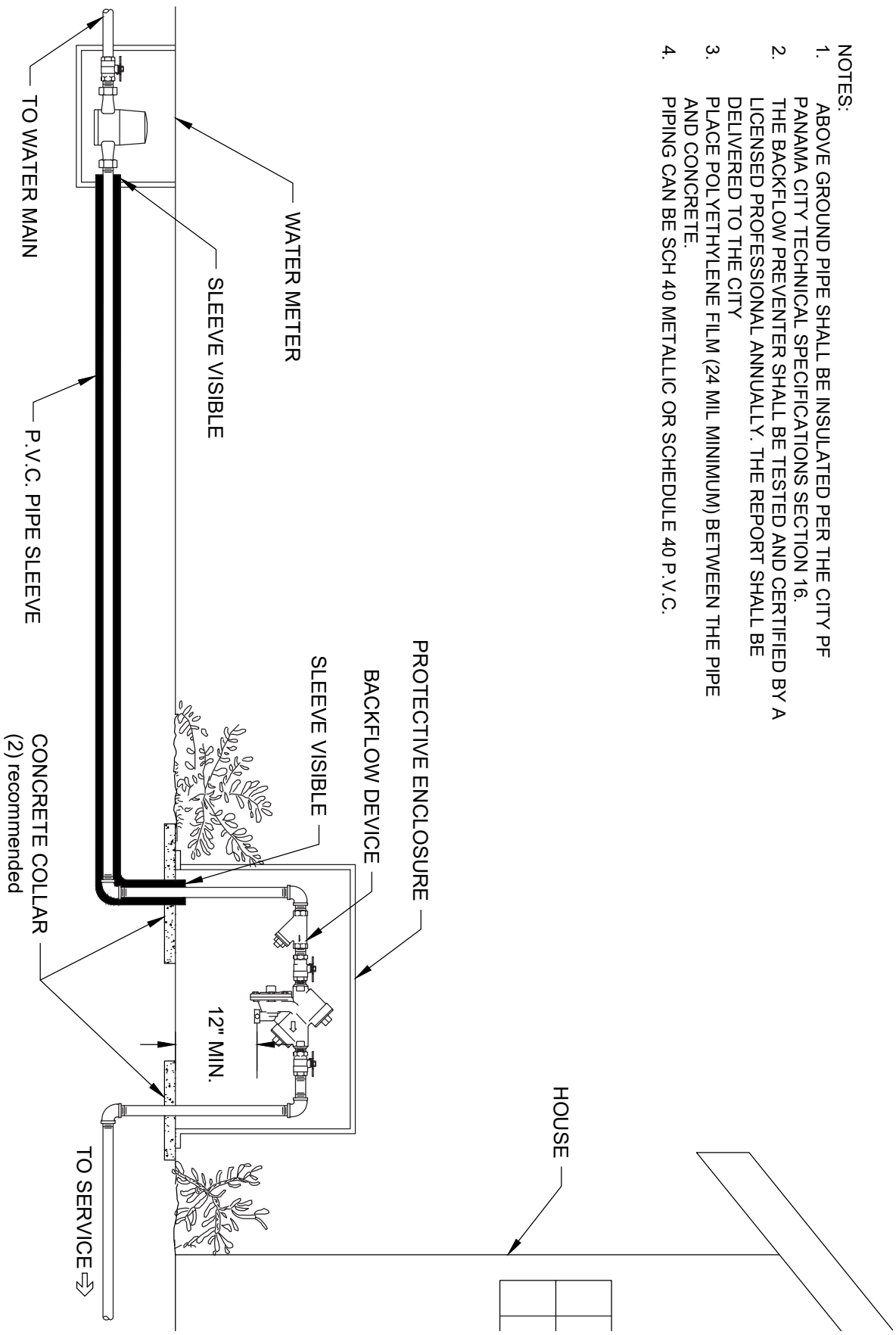
PRESSURE TYPE VACUUM BREAKER

DATE : MAY 2018
SCALE : NTS

REVISION: JUNE 2021


FIGURE : PW-25

- NOTES:
1. ABOVE GROUND PIPE SHALL BE INSULATED PER THE CITY OF PANAMA CITY TECHNICAL SPECIFICATIONS SECTION 16.
 2. THE BACKFLOW PREVENTER SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY
 3. PLACE POLYETHYLENE FILM (24 MIL MINIMUM) BETWEEN THE PIPE AND CONCRETE.
 4. PIPING CAN BE SCH 40 METALLIC OR SCHEDULE 40 P.V.C.



**1/2"-2" ALTERNATE RESIDENTIAL IRRIGATION
BACKFLOW PREVENTER INSTALLATION DETAIL**

N.T.S.

	PANAMA CITY, FLORIDA STANDARD DETAILS		DATE : FEB 2021
	1/2"-2" BACKFLOW PREVENTER INSTALLATION DETAIL		SCALE : NTS
			REVISION: JUNE 2021
			FIGURE : PW-26

CITY OF PANAMA CITY TRANSIENT NON-TRANSIENT AIR-GAP
DETAIL

