

**CITY OF PLANT CITY**  
**MANUAL OF CROSS CONNECTION**  
**CONTROL**

**2022**

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# **INTRODUCTION**

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The Manual of Cross Connection Control provides standards for implementation of an effective Cross Connection Control Program in the City's Water Supply area in accordance with The Federal Safe Drinking Water Act, The Florida Safe Drinking Water Act, The Rules of the State of Florida Department of Environmental Protection (FAC 62-555.360), the Standard Plumbing Code latest edition, and the City's Code Section 74-519 and Section 78-267. Responsibilities for the control of cross connections are shared by the Consumer, City Manager and other City staff as designated herein and the Florida Department of Health Hillsborough County. This Manual of Cross Connection Control supplements and extends present standards to protect the City's Potable Water Supply Treatment and Distribution System in the interest of public health and safety.

## **SECTION 1 DEFINITIONS**

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AIR-GAP SEPARATION shall mean a physical separation between the City's Potable Water Supply pipeline and an Auxiliary Water Supply, or any sources of contamination or pollution. An approved air-gap separation shall be a distance of at least two times the diameter of the supply pipe measured vertically above the top rim of the vessel, with a minimum distance of one (1) inch.

BACKFLOW PREVENTION ASSEMBLY (BPA) shall mean an assembly that has been approved by the City to protect the City's potable water system from any potential backflow.

BACKFLOW shall mean the undesirable reversal of the flow of water or other liquids, mixtures, gases, or other substances into or towards the distribution pipe of a potable water supply from any source or sources.

CERTIFIED BACKFLOW PREVENTION ASSEMBLY TECHNICIAN shall mean a person who has attended and successfully completed a certification program for BPA Testing, Repair & Maintenance Technician approved by the City. Each person who is certified to test, repair and make reports on BPAs shall be conversant with applicable laws, rules and regulations, is a licensed plumber, a person currently working under a licensed plumber's direction, a City Utility employee, or have other qualifications which are determined by the City to be equivalent. Testing recertification must be renewed every two years and all certifications shall be on file with the City's Cross Connection Control Coordinator.

CITY shall mean the City of Plant City Florida

CITY MANAGER shall mean the City Manager of the City of Plant City or his/her duly authorized deputy, agent or representative.

CONSUMER shall mean any facility, person, firm, or corporation using or receiving water from the City's Potable Water Supply.

CONSUMER WATER SYSTEM shall include any water system located on the Consumer's premises, whether supplied by the City's Potable Water Supply or an Auxiliary Water Supply.

CROSS CONNECTION shall mean any physical arrangement whereby a public potable 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 potable water supply as a result of backflow. By-pass arrangements, jumper connections, removal sections, swivel or changeable devices and other temporary or permanent devices through which or because of which backflow could occur are considered cross connections.

DEDICATED IRRIGATION METER shall mean a potable water meter that is only installed and used for an irrigation system.

DOUBLE CHECK VALVE ASSEMBLY (DCVA) shall mean an Approved Backflow Prevention Assembly composed of two single independently acting approved check valves with shut-off valves located at each end of the assembly and with suitable connections for testing the assembly. This assembly shall not be used to eliminate a Health Hazard.

DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) shall mean an Approved Backflow Prevention Assembly, which includes a line-sized Double Check Valve Assembly, which is installed between two OS&Y resilient seated shut-off valves; a specific bypass water meter which registers accurately for only very low rates of flow and a meter-sized Double Check Valve Assembly which is installed after the bypass meter. This assembly shall not be used to eliminate a Health Hazard.

DUAL CHECK shall mean a compact unit manufactured with two independent spring actuated check valves. The dual check is acceptable only as backflow prevention in residential areas served by reclaimed water irrigation systems as defined in F.A.C. Chapter 62-555.360

FIRE HYDRANT – PRIVATE shall mean a valve used for fire fighting activities which is installed on the Consumer's Water System directly supplied from the City's Potable Water Supply that is not owned or maintained by the City of Plant City.

FIRE SPRINKLER SYSTEM shall mean a system for fire protection purposes that is an integrated system of underground and overhead piping designed in accordance with fire protection and engineering standards. The fire protection system shall be installed separate from the potable water meter service.

HEALTH HAZARD shall mean an actual or potential threat of contamination of a physical or toxic nature to the Potable Water Supply to such a degree or intensity that there would be a danger to the health and well-being of Consumers.

IRRIGATION SYSTEM shall mean a permanent underground watering system equipped with surface, subsurface or overhead emitters which provides water coverage.

NON-HEALTH HAZARD shall mean an actual or potential threat of contamination of a substance that may be objectionable, but not hazardous to the health and well-being of Consumers.

POTABLE WATER shall mean water from any source which has been approved by the Florida Department of Environmental Protection and which has been approved for human consumption by the Florida Department of Health - Hillsborough County. This grade of water conforms to the water quality requirements of state and federal regulatory agencies and is approved for drinking and cooking uses.

PRESSURE VACUUM BREAKER (PVB) shall mean an Approved Backflow Prevention Assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located test cocks and ball valves attached at each end of the assembly. This assembly is designed to be used only on irrigation systems with no backpressure.

PRIMARY BACKFLOW PREVENTION ASSEMBLY shall mean the Approved Backflow Prevention Assembly (BPA) normally located after the water meter and or at the property line which provides for containment of the Consumer's Water System to protect the City's Potable Water Supply from any contaminants or pollutants within the Consumer's Water System that could backflow into the City's Potable Water Supply.

BACKFLOW PREVENTION ASSEMBLY INSTALLER shall mean a certified licensed plumber, a person currently working under the direction of a certified licensed plumber, an underground utility contractor, a City utility employee or an individual who has other qualifications which are determined by the City Manager to be equivalent. The Installer shall properly install all Primary Backflow Prevention Assemblies in accordance with this Manual of Cross Connection Control. The Installer is also responsible to ensure all assemblies are working properly when they are installed.

RECLAIMED WATER shall mean water that has received at least advanced secondary treatment and basic disinfection and is reused for the purpose of irrigation and other approved uses. This grade of water conforms to the requirements of state and federal regulatory agencies. This water is not used for drinking and domestic purposes.

REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (RP) shall mean an Approved Backflow Prevention Assembly which includes two independently acting check valves; a hydraulically operated mechanically independent pressure differential relief valve located between the check valves with properly located resilient seated test cocks, and resilient seated shut-off valves attached at each end of the assembly. This assembly shall be used to eliminate a Health Hazard.

REDUCED PRESSURE DETECTOR ASSEMBLY (RPDA) shall mean an Approved Backflow Prevention Assembly which includes a line-sized RP and is installed between two OS&Y resilient seated shut-off valves; a specific bypass water meter which registers accurately for very low rates of flow and a meter sized Reduce Pressure Backflow Assembly which is installed after the bypass meter. This assembly shall be used to eliminate a Health Hazard.

SERVICE CONNECTION shall mean the City's Potable Water Supply point of delivery to the Consumer's Water System. If a meter assembly and Primary Backflow Prevention Assembly is installed, then the Service Connection shall mean the downstream end of the Primary Backflow Prevention Assembly. If a BPA is not installed, then it shall mean the downstream end of the meter.

WATER SUPPLY – POTABLE shall mean the City's Potable Water Supply or any public Potable Water Supply which has been approved by the Florida Department of Health-Hillsborough County Health and operating under a valid permit.

WATER SUPPLY – AUXILIARY shall mean any Water Supply on or available to the Consumer other than the City's approved Potable Water Supply. Auxiliary Water Supplies may include, but are not limited to, water from any natural source such as a well, spring, river, stream, ponds etc., grey water or reclaimed water. They may be polluted, contaminated, or objectionable and constitute an unacceptable water source over which the City does not have sanitary control.

## **SECTION 2    OBJECTIVES**

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CONTAINMENT:            To protect the City's Potable Water Supply from the possibility of contaminants or pollutants by containing them within the Consumer's Water System that could backflow into the City's Potable Water Supply.

CONTROL: To promote the elimination or control of existing or potential cross connections.

INSPECTION: To provide for a continuing program of cross connection control through inspections and on-going public education.

## **SECTION 3 RESPONSIBILITY**

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### UTILITIES

The City has assigned responsibility for implementation of this program to the Utilities Director or his/her designated representatives. Upon detection of a prohibited cross connection, the City shall direct the Consumer to either eliminate the cross connection or install a Primary Backflow Prevention Assembly. If determined by the City, the Potable Water Supply could be discontinued until the cross connection is eliminated or a Backflow Prevention Assembly (BPA) is installed.

### PLUMBING INSPECTOR

The Plumbing Inspector of the City is responsible for ensuring the Consumer Water System meets all applicable federal, state and local regulations.

The Plumbing Inspector's authority begins at the point of service and extends throughout the entire length of the Consumer Water System. It is the Plumbing Inspector's responsibility to review site and building plans and to perform field inspections to determine that plumbing regulations are met. The Plumbing Inspector works in conjunction with the Cross Connection Control Coordinator to ensure that the Primary Backflow Prevention Assembly is installed according to the City standards. If a cross connection is discovered, it is the Plumbing Inspector's responsibility to require the mandatory elimination of the cross connection.

### CROSS CONNECTION CONTROL COORDINATOR

The Cross Connection Control Coordinator of the City is responsible for establishing and maintaining a Cross Connection Control Program as required by the State of Florida. It is the Cross Connection Control Coordinator's responsibility to review site and building plans and to perform field inspections to ensure that conditions set forth in the Manual of Cross Connection Control are met. The Cross Connection Control Coordinator works in conjunction with the Plumbing Inspector to determine that the Primary Backflow Prevention Assembly is installed per the City standards and to coordinate testing of the new installation. The Cross Connection Control Coordinator also maintains an ongoing program to test and repair all City owned BPAs.

### CONSUMER

The Consumer's responsibility starts at the Service Connection and includes all of the Consumer Water System. The Consumer, at his/her own expense, is required to install a Primary Backflow Prevention Assembly as outlined in SECTION 4 of this Manual. In the event of a known pollutant or contamination into the City's Potable Water Supply due to backflow from the Consumer's premises, the Consumer shall promptly take steps to eliminate further spread of pollution or contamination from the Consumer's premises and immediately notify the City of the hazardous condition. The responsibility is to stop the backflow to the City's Water Supply.

## **SECTION 4 PROCEDURES**

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### INSPECTIONS

To ensure compliance with the Manual of Cross Connection Control, the City's Code Section 78-267 and the current Plumbing Code, plans review and/or field inspections by the Plumbing Inspector and the Cross Connection Control Coordinator are performed on the Consumer Water System to determine the required approved Primary Backflow Prevention Assembly installation.

New reclaimed water systems are inspected by the Plumbing Inspector and the Cross Connection Control Coordinator at the time they are installed and periodically thereafter by the Cross Connection Control Coordinator as per FAC 62-610.469

### CONSTRUCTION

All construction plans and specifications shall be submitted to the City for evaluation to determine the degree of possible cross connection hazards. Evaluation shall include input from the Plumbing Inspector and the Cross Connection Control Coordinator to determine the degree of hazard and to coordinate the proper location and application of the Primary Backflow Prevention Assemblies.

Plans must comply with this Manual of Cross Connection Control prior to plumbing connections to the City's Potable Water Supply. If adequate plans and specifications are not available, the Consumer shall be advised that the installation of a Primary Backflow Prevention Assembly is required where applicable.

After final approval of the installation and satisfactory test results, the City's required BPA testing report will be completed, recorded and filed by the Cross Connection Control Coordinator.

### PRIMARY BACKFLOW PREVENTION ASSEMBLY INSTALLATION

Each Consumer is responsible for having the required Approved Primary Backflow Prevention Assembly installed. The required BPA is determined by the activities performed by the Consumer and the degree of hazard presented by these activities. Requirements are outlined in SECTION 4 of this Manual.

Except for the dedicated residential irrigation meter service, the required BPA shall be the same size as the water service meter and installed as per the approved plans submitted to the City. The Consumer shall bear all expenses associated with each such installation.

In the event of a renovation to a building or property that does not have the current approved BPA, the consumer shall install an approved BPA when the plumbing permit is applied for. The Consumer shall bear all expenses associated with each such installation.

All BPAs shall be selected from the City's list of Approved Backflow Prevention Assemblies and shall be installed plumb, square and level. The BPA shall be installed as per the Standard Detail Drawings outlined in SECTION 10 of this Manual.



The Cross Connection Control Coordinator shall maintain a current list of Approved Backflow Prevention Assemblies for use within the City.

CONSUMERS REQUIRING PRIMARY REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLIES

1. Veterinarians and animal hospitals
2. Hospitals, doctor offices and dental offices
3. Medical buildings, clinics, nursing and convalescent homes
4. Morgues, mortuaries and autopsy facilities, including funeral homes
5. Facilities that store or process chemicals or other bulk liquids
6. Wastewater treatment plants, water reclamation facilities
7. Sanitary sewer lift stations
8. Auto service stations including self-service gas stations
9. Motels and hotels
10. Dairies and cold storage plants
11. Laboratories
12. Commercial car washing installations
13. Metal plating facilities
14. All shopping plazas and malls
15. All industrial facilities
16. Power plants
17. All commercial irrigation systems
18. Dry cleaners
19. Laundry and dyeing plants including self-service laundromats
20. Schools and colleges
21. Automotive plants
22. Breweries and beverage bottling plants
23. Any other operation that presents a Health Hazard as determined by the City Manager

#### CONSUMERS REQUIRING PRIMARY DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLIES

1. Churches
2. Multi-family homes and apartments
3. Restaurants and fast-food facilities
4. Any other operation that presents a Non-Health Hazard as determined by the City Manager

#### CONSUMERS REQUIRING PRIMARY PARALLEL BACKFLOW PREVENTION ASSEMBLIES

1. Automotive plants, power plants and wastewater treatment plants
2. Breweries and beverage bottling plants
3. Chemical plants, manufacturing, processing, compounding or treatment
4. Dairies and cold storage plants
5. Hospitals, medical buildings, clinics, nursing and convalescent homes
6. Schools and colleges
7. Multifamily homes and apartments
8. Shopping plazas and malls
9. Assisted living facilities
10. Motels and hotels
11. Car wash facilities
12. Laundromats
13. Consumers that require an uninterrupted supply of water
14. Other such installations, as determined by the City Manager

#### TESTING BACKFLOW PREVENTION ASSEMBLIES

As part of a complete Cross Connection Control Program, it shall be the responsibility of the City to have a thorough inspection and operational test completed after a Primary Backflow Assembly has been installed. After this initial test, the Primary Backflow Prevention Assembly shall be tested at least once a year by the City.

Proper field-testing gauges that are calibrated once a year shall be used by a Certified Backflow Prevention Assembly Tester.

The annual cost of inspection, testing, maintenance, and repair or replacement of the Primary Backflow Prevention Assembly shall be at the expense of the City.

The Cross Connection Control Coordinator is responsible for all record keeping.

#### REPAIRS TO BACKFLOW PREVENTION ASSEMBLIES

When a BPA test indicates wear or other malfunctions, the BPA shall be repaired or replaced, as necessary. The repairing of the BPA shall consist of the replacement of all discs, seats, diaphragms, gaskets, etc., which are subject to wear, and any other parts found to be worn or otherwise in questionable condition. Replacement of the BPA is deemed necessary only when the assembly cannot be repaired to the original manufacturer standards. Only a Certified Backflow Prevention Assembly Technician shall make such repairs. After all repairs are completed, a final test shall be performed. All repairs and final test results shall be recorded on the City's Backflow Prevention Assembly Annual Test Report. The BPA shall be properly tagged.

#### EMERGENCY PROCEDURES

The Cross Connection Control Coordinator and/or the Plumbing Inspector is authorized to take immediate steps necessary to correct a known hazardous condition, which shall include the option to immediately discontinue Potable Water service to premises where such conditions exist. Such emergency steps, including discontinuance of Potable Water service, may be taken with advance notice to the Consumer.

## **SECTION 5    AUXILIARY WATER SUPPLY**

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#### REQUIREMENTS

No Auxiliary Water Supply shall be interconnected with the City's Potable Water Supply. The only exception is Fire Sprinkler Systems per SECTION 6 of this manual.

## **SECTION 6    FIRE SYSTEMS**

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#### FIRE SPRINKLER SYSTEMS CATEGORIES

Fire systems are defined as two categories as described below.

##### CATEGORY 1

The fire system is a direct connection from the City's Potable Water Supply. This service connection has no tanks, or reservoirs, no physical connection from other water supplies and no antifreeze or other additives of any kind. All sprinkler drains must discharge to the atmosphere, dry wells, or other safe outlets. This Fire Systems shall require a Primary Double Check Detector Assembly installed.

##### CATEGORY 2

The fire system is a direct connection from the City's Potable Water Supply. This service connection is interconnected with elevated and ground storage tanks. This service may have connections to an auxiliary source of water or where antifreeze and other additives are used. This Fire Systems shall require a Primary Reduce Pressure Detector Assembly installed.

## PRIVATE FIRE HYDRANTS

All Private Fire Hydrants shall have a Primary Double Check Detector Assembly installed on the potable water service.

## **SECTION 7 RECLAIMED WATER INSTALLATIONS**

### APARTMENTS AND MULTI FAMILY HOMES POTABLE WATER SUPPLY

Primary Double Check Valve Backflow Prevention Assembly shall be installed at the potable water meter.

### COMMERCIAL AND INDUSTRIAL POTABLE WATER SUPPLY

Primary Reduced Pressure Backflow Prevention Assembly shall be installed at the potable water meter.

### SINGLE FAMILY RESIDENTIAL POTABLE WATER SUPPLY

Primary Dual Check Valve Backflow Prevention Assembly shall be installed at the potable water meter.

### CITY RECLAIMED WATER SUPPLY

The City's Reclaimed Water supply shall be protected with an approved Double Check Valve Assembly only when chemicals are added to the consumer's reclaimed water system or other installations as determined by the City Manager.

## **SECTION 8 POTABLE WATER IRRIGATION INSTALLATIONS**

### RESIDENTIAL IRRIGATION SYSTEMS

A Pressure Vacuum Breaker Assembly shall be installed to isolate the irrigation system plumbing from the Consumer's Water System, per the direction of the Plumbing Inspector. The Consumer shall bear all expenses associated with each such installation.

### COMMERCIAL AND INDUSTRIAL IRRIGATION SYSTEMS

A Pressure Vacuum Breaker Assembly shall be installed when there is no backpressure involved or a Reduced Pressure Backflow Assembly installed when backpressure is involved, per the direction of the Plumbing Inspector. The Consumer shall bear all expenses associated with each such installation.

### DEDICATED RESIDENTIAL IRRIGATION METER

1. An approved Primary Pressure Vacuum Breaker Assembly shall be installed, per the direction of the Plumbing Inspector. The Consumer shall bear all expenses associated with each such

installation.

2. When an existing Residential Irrigation System is retrofitted and separated with a new Dedicated Residential Irrigation Meter, the existing Pressure Vacuum Breaker shall be replaced with a new and approved Pressure Vacuum Breaker selected from the City's list of Approved Backflow Prevention Assemblies and installed per the direction of the Plumbing Inspector and this Manual. The Consumer shall bear all expenses associated with each such installation.

#### DEDICATED COMMERCIAL AND INDUSTRIAL IRRIGATION METER

A Primary Reduced Pressure Backflow Prevention Assembly shall be installed. This BPA shall be installed per the direction of the Plumbing Inspector and this Manual. The Consumer shall bear all expenses associated with each such installation.

## **SECTION 9 NONCOMPLIANCE**

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#### DISCONTINUED SERVICE

A letter listing the type of Primary Backflow Prevention Assembly to be installed will be sent to the Consumer stating the concern and the requirements to meet compliance. Unless otherwise noted in the report, the Consumer shall have thirty (30) calendar days to comply and perform any required corrections. Upon failure to meet requirements or have the Primary Backflow Prevention Assembly installed within the specified time, the Water Supply to the Consumer may be terminated. The Water Supply to the Consumer may also be terminated if any Auxiliary Water Supply is cross connected with the City's Potable Water Supply without the proper air gap separation, or if it is determined by the City that any Health Hazard condition cannot be immediately corrected. Prior to termination of service, the City's Utilities Director and the Consumer shall be notified. Upon discontinuance of water service for noncompliance, the water service to the Consumer shall not be restored until all the requirements are completed.

## **SECTION 10 STANDARD DETAIL DRAWINGS**

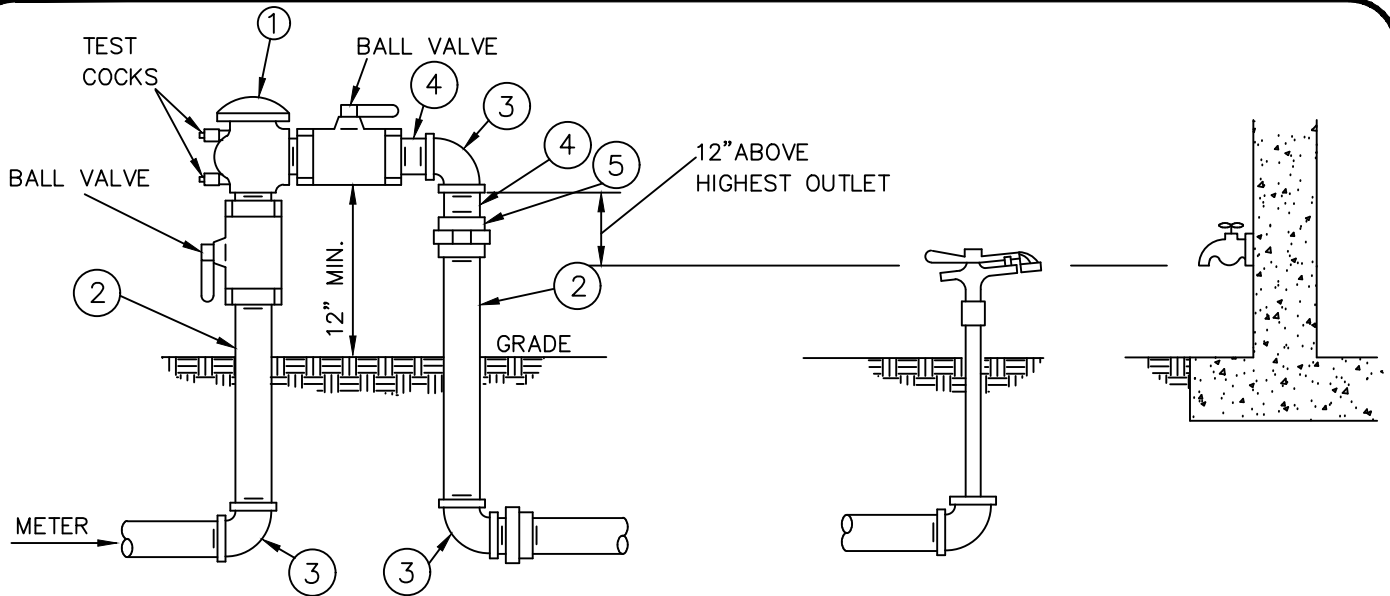
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<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>
WS-11	Installation of a Pressure Vacuum Breaker used only on irrigation systems with no back pressure.
WS-12	Installation of a Backflow Prevention Assembly with the water meter installed in a meter box for 3/4" - 2" services.
WS-13	Installation of a Backflow Prevention Assembly installed above ground for 3/4" - 2" services.
WS-14	Installation of a Parallel Backflow Prevention Assembly and water meter for 3/4" - 2" services.

<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>
WS-15	Installation of a Backflow Prevention Assembly and water meter for 3"- 10" services.
WS-16	Installation of a Parallel Backflow Prevention Assembly and water meter for 3" – 10" services.
WS-17	Installation of a Fire System Double Check Detector Backflow Prevention Assembly 3"- 10" services. Installed on fire systems only with no tanks, additives or another water source.
WS-18	Installation of a Fire System Reduce Pressure Detector Backflow Prevention Assembly 3"- 10" services. Installed on fire systems only with tanks, additives or another water source.
WS-20	Installation of a Residential Dual Check Valve and water meter for 3/4" services.
RS-2	Installation of a Double Check Valve Backflow Prevention Assembly and water meter for Commercial Reclaimed Water Services. Only when chemicals are added to the consumer's reclaimed water system for 3/4" - 2" services.
RS-3	Installation of a water meter for Commercial Reclaimed Water Services. Only when chemicals are not added to the consumer's reclaimed water system for 3/4" - 2" services.
RS-4	Installation of a water meter for Commercial Reclaimed Water Services. Only when chemicals are not added to the consumer's reclaimed water system for 3"- 10" services.
RS-5	Installation of a Double Check Valve Backflow Prevention Assembly and water meter for Commercial Reclaimed Water Services. Only when chemicals are added to the consumer's reclaimed water system for 3"- 10" services.

# **Appendix 1**

Standard Detail Drawings Are Located On The Following Pages



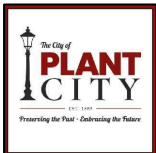
FOR RESIDENTIAL AND COMMERCIAL LAWN IRRIGATION SYSTEMS

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	PRESSURE VACUUM BREAKER ASSEMBLY
2	2	RISERS – GALVANIZED. SCHEDULED 40 PVC FOR RESIDENTIAL ONLY
3	3	ELBOW 90 DEGREE – GALVANIZED. SCHEDULED 40 PVC FOR RESIDENTIAL ONLY
4	2	4" NIPPLES – BRASS OR GALVANIZED
5	1	UNION – GALVANIZED OR STAINLESS STEEL

**NOTES**

1. FIELD ADJUST AND CUT ITEM #2 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION. FOR COMMERCIAL CUSTOMERS ONLY.
3. THE PRESSURE VACUUM BREAKER (P.V.B.) CANNOT BE INSTALLED WHERE IT WILL BE SUBJECT TO BACK PRESSURE.
4. EACH P.V.B. SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. THE P.V.B. SHALL BE INSTALLED 12" ABOVE HIGHEST SPRINKLER HEAD OR OUTLET (NOT TO EXCEED 48" IN HEIGHT).
7. RESIDENTIAL EXEMPT FROM CONCRETE SLAB.
8. ALL RESIDENTIAL PRESSURE VACUUM BREAKERS SHALL BE INSTALLED WITH P.V.C. SCH 40 OR GALVANIZED PIPE.

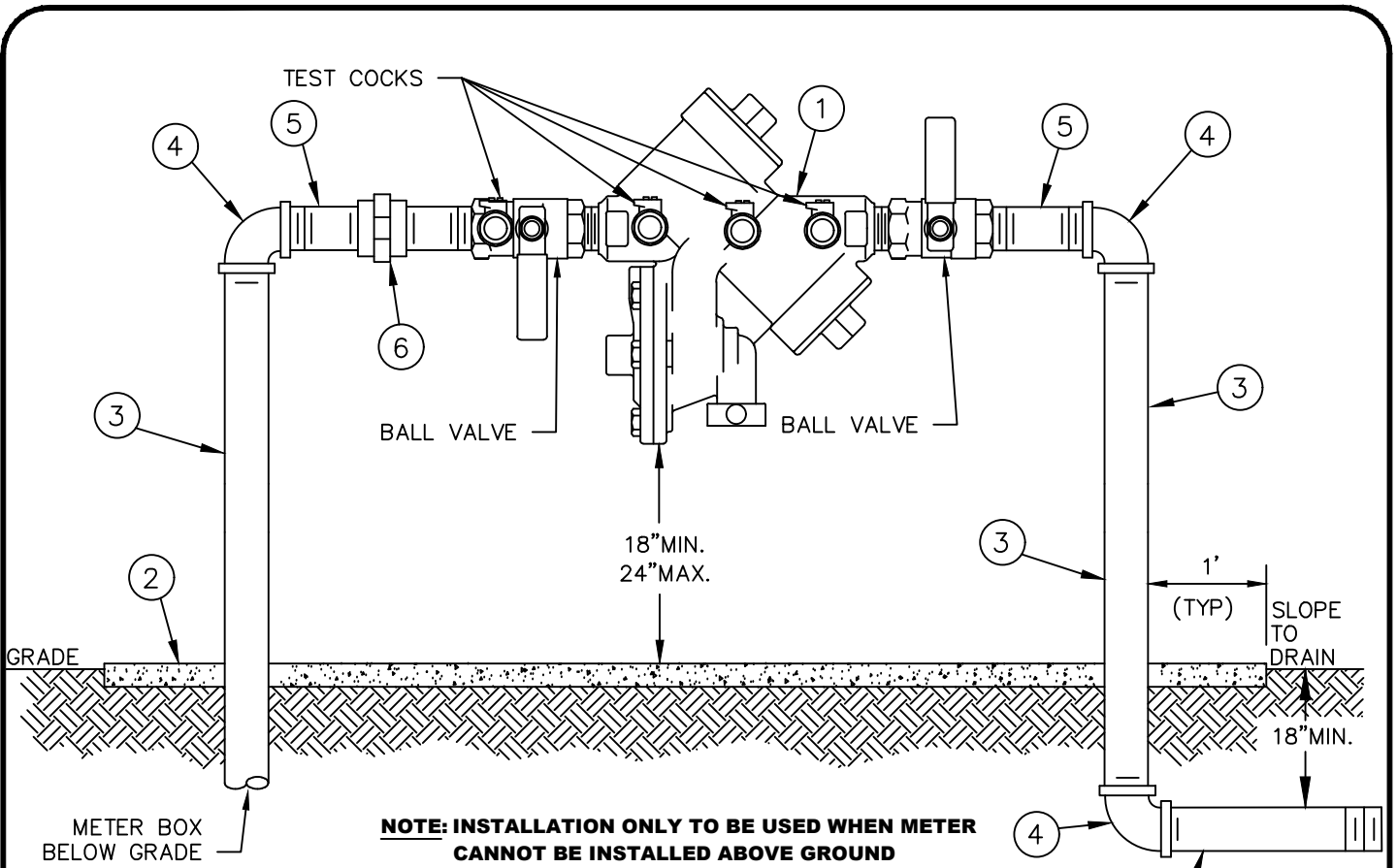
City of Plant City  
 1802 Spooner Drive  
 Plant City, FL 33563  
 Phone: (813) 757-9288



PRESSURE VACUUM BREAKER BACKFLOW PREVENTION ASSEMBLY FOR IRRIGATION  
 1/2" TO 2" SERVICE

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REVISION DATE			PAGE NO.
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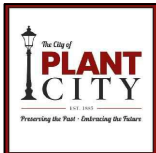
**NOTE: INSTALLATION ONLY TO BE USED WHEN METER CANNOT BE INSTALLED ABOVE GROUND**

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	2	RISERS - GALVANIZED OR BRASS
4	3	ELBOW 90 DEGREE - GALVANIZED OR BRASS
5	3	4" NIPPLE - BRASS OR GALVANIZED
6	1	UNION - GALVANIZED, OR STAINLESS STEEL

**NOTES:**

1. FIELD ADJUST AND CUT ITEM #3 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

City of Plant City  
1802 Spooner Drive  
Plant City, FL 33563  
Phone: (813) 757-9288



REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SINGLE SERVICE  
3/4" TO 2"

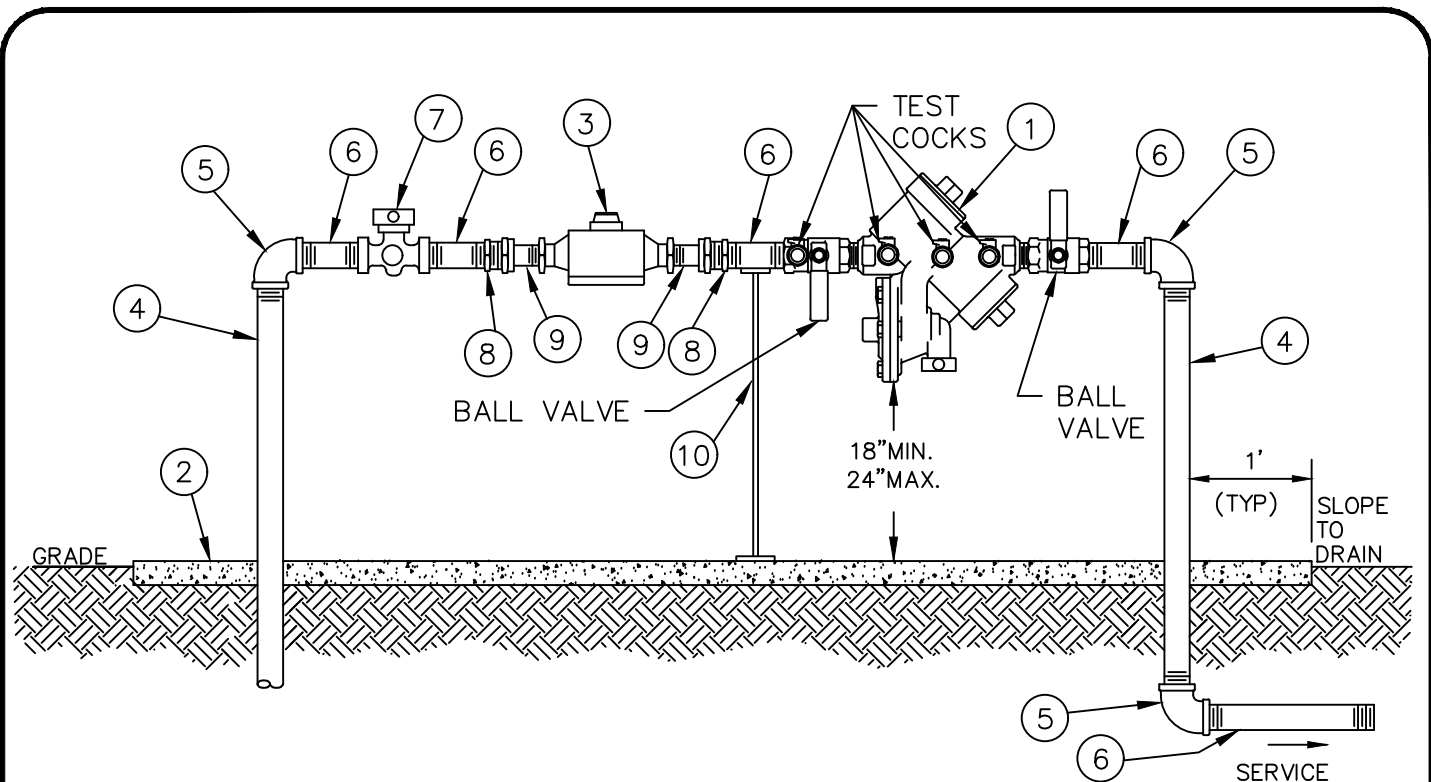
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WS-12

PAGE NO.

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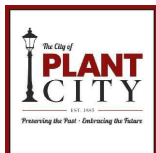


MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	AMR BADGER WATER METER
4	2	RISERS - GALVANIZED OR BRASS
5	3	ELBOWS - GALVANIZED OR BRASS
6	5	4" NIPPLES - BRASS OR GALVANIZED
7	1	CURBSTOP WITH WING LOCK
8	2	BRASS SPUDS ADAPTORS
9	2	BRASS SPUDS - METER CONNECTIONS
10	1	ADJUSTABLE PIPE SUPPORT

**NOTES:**

1. FIELD ADJUST AND CUT ITEM #4 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. ONLY PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

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ABOVE GROUND METER INSTALLATION SINGLE SERVICE  
 WITH BACKFLOW PREVENTION ASSEMBLY  
 $\frac{3}{4}$ " TO 2"

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

DRAWING NO.

WS-13

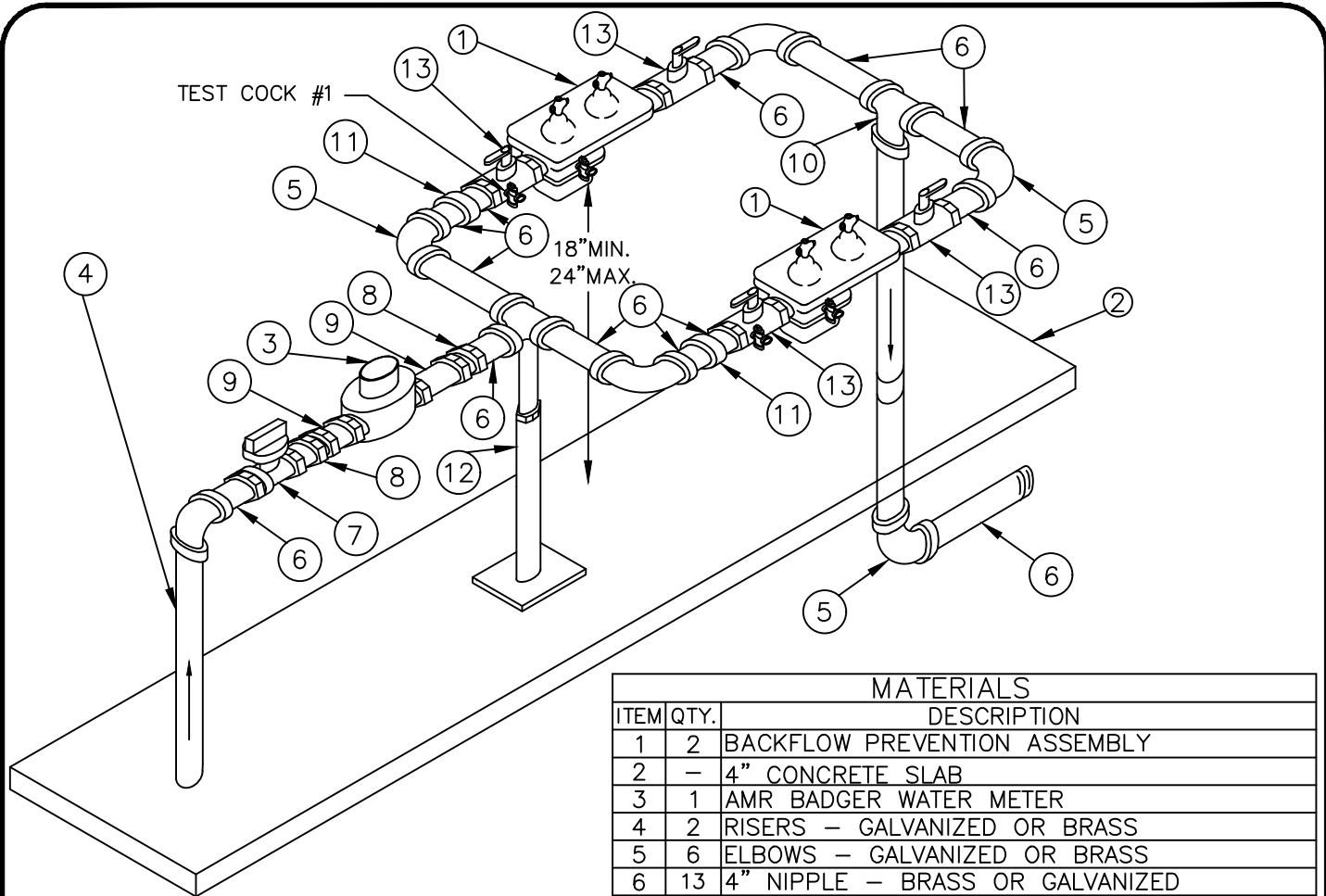
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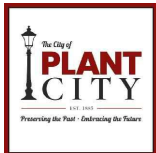


MATERIALS		
ITEM	QTY.	DESCRIPTION
1	2	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	AMR BADGER WATER METER
4	2	RISERS - GALVANIZED OR BRASS
5	6	ELBOWS - GALVANIZED OR BRASS
6	13	4" NIPPLE - BRASS OR GALVANIZED
7	1	CURBSTOP WITH WING LOCK
8	2	BRASS SPUD ADAPTORS
9	2	BRASS SPUDS - METER CONNECTIONS
10	2	TEE- GALVANIZED OR BRASS
11	2	UNIONS-DIELECTRIC
12	1	ADJUSTABLE PIPE SUPPORT
13	4	BALL VALVE

**NOTES:**

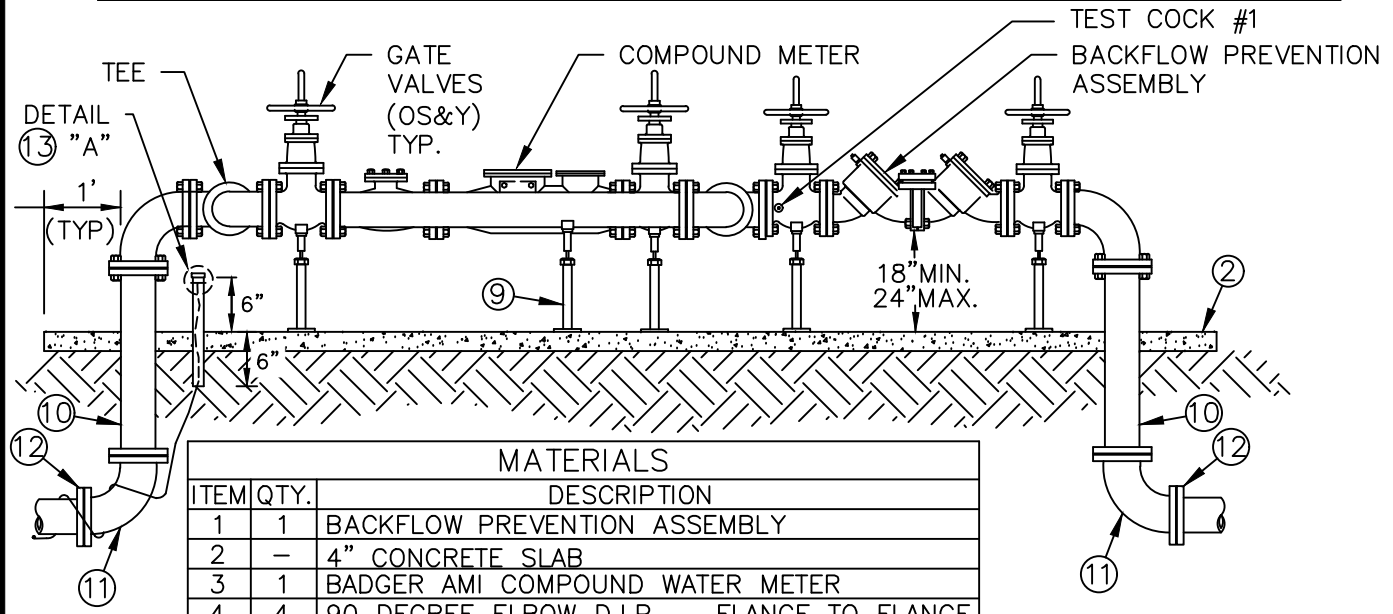
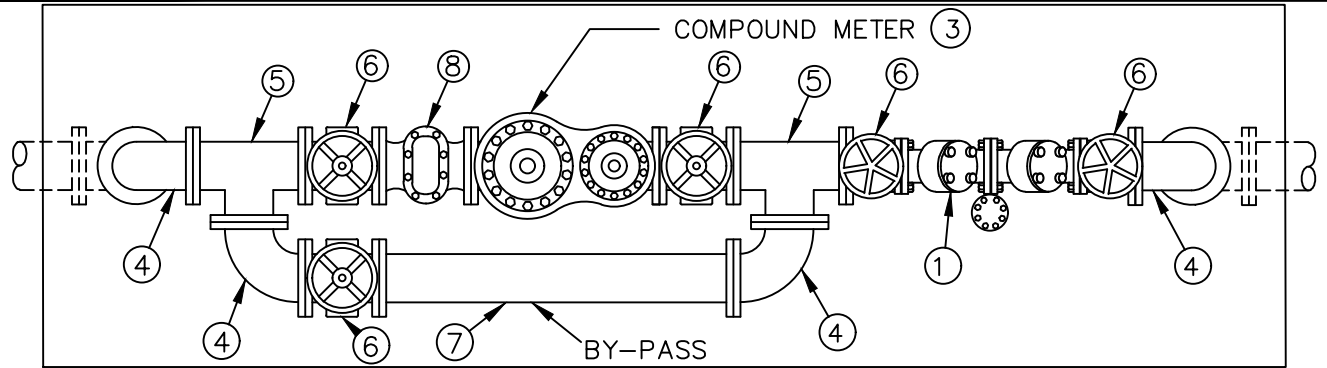
1. FIELD ADJUST AND CUT ITEM #4 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. ONLY PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
7. PARALLEL SYSTEMS ARE REQUIRED FOR FACILITIES WHERE UNINTERRUPTED WATER SERVICE IS MANDATORY.
8. PARALLEL SYSTEMS ARE HIGHLY RECOMMENDED WHERE THERE WILL BE ANY SIGNIFICANT HARDSHIP IMPARTED TO THE FACILITY OR RESIDENTS OF THE FACILITY IF THE POTABLE WATER SERVICE IS INTERRUPTED.

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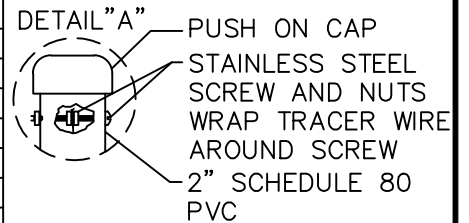


ABOVE GROUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY, PARALLEL INSTALLATION  
 3/4" TO 2"

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
REVISION DATE			WS-14
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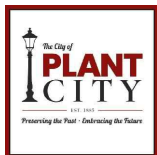
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	BADGER AMI COMPOUND WATER METER
4	4	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
5	2	TEE - FLANGE TO FLANGE
6	5	GATE VALVE C.I. (OS&Y )
7	1	BY - PASS PIPE D.I.P. FLANGE TO FLANGE
8	1	STRAINER - FLANGE TO FLANGE
9	5	ADJUSTABLE PIPE SUPPORTS
10	2	RISERS - D.I.P. - C51 FLANGE TO FLANGE
11	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
12	4	MEGALUG RETAINER GLANDS
13	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



**NOTES:**

- ORDER TO FIT ITEM #10 TO THE PROPER LENGTH.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION
- ALL FITTINGS ABOVE GROUND TO BE FLANGED.
- PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY BLUE.
- SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
- ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
- BY-PASS MUST HAVE AN ADJUSTABLE PIPE SUPPORT.

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COMPOUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY  
 3" TO 10" WATER SERVICE

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

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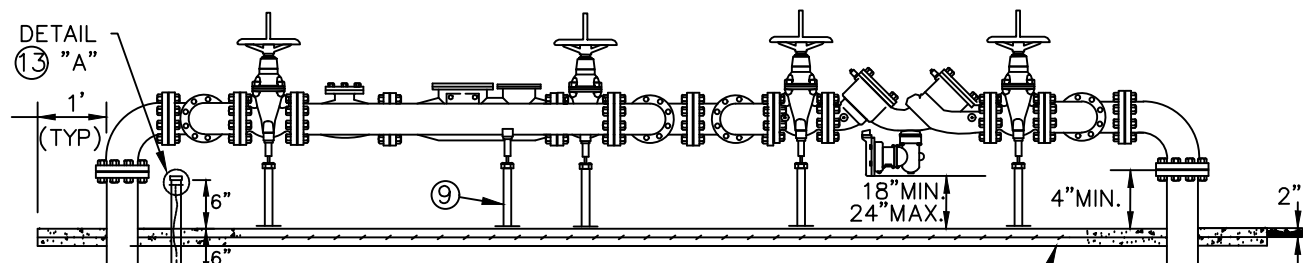
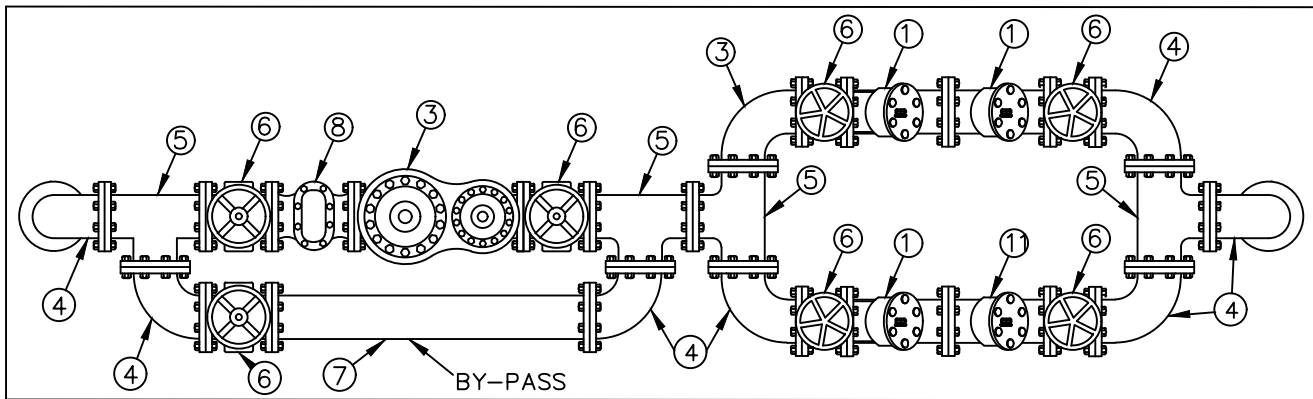
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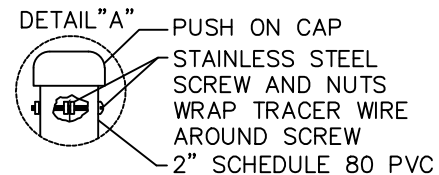
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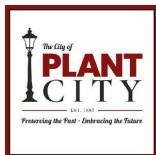
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	BADGER AMI COMPOUND WATER METER
4	8	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
5	4	TEE - FLANGE TO FLANGE
6	7	GATE VALVE C.I. ( OS&Y )
7	1	BY-PASS PIPE D.I.P. FLANGE TO FLANGE
8	1	STRAINER - FLANGE TO FLANGE
9	5	ADJUSTABLE PIPE SUPPORTS
10	2	RISERS - D.I.P. - C51 FLANGE TO FLANGE
11	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
12	4	MEGALUG RETAINER GLANDS
13	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



**NOTES:**

- ORDER TO FIT ITEM #10 TO THE PROPER LENGTH.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
- ALL FITTINGS ABOVE GROUND TO BE FLANGED.
- PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY BLUE.
- SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
- ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
- BY-PASS MUST HAVE AN ADJUSTABLE PIPE SUPPORT.
- PARALLEL SYSTEMS ARE REQUIRED FOR FACILITIES WHERE UNINTERRUPTED WATER SERVICE IS MANDATORY.
- PARALLEL SYSTEMS ARE HIGHLY RECOMMENDED WHERE THERE WILL BE ANY SIGNIFICANT HARDSHIP IMPARTED TO THE FACILITY OR RESIDENTS OF THE FACILITY IF THE POTABLE WATER SERVICE IS INTERRUPTED.

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COMPOUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY PARALLEL INSTALLATION  
3" TO 10" WATER SERVICE

ORIGINAL DRAWING 10/03/2017

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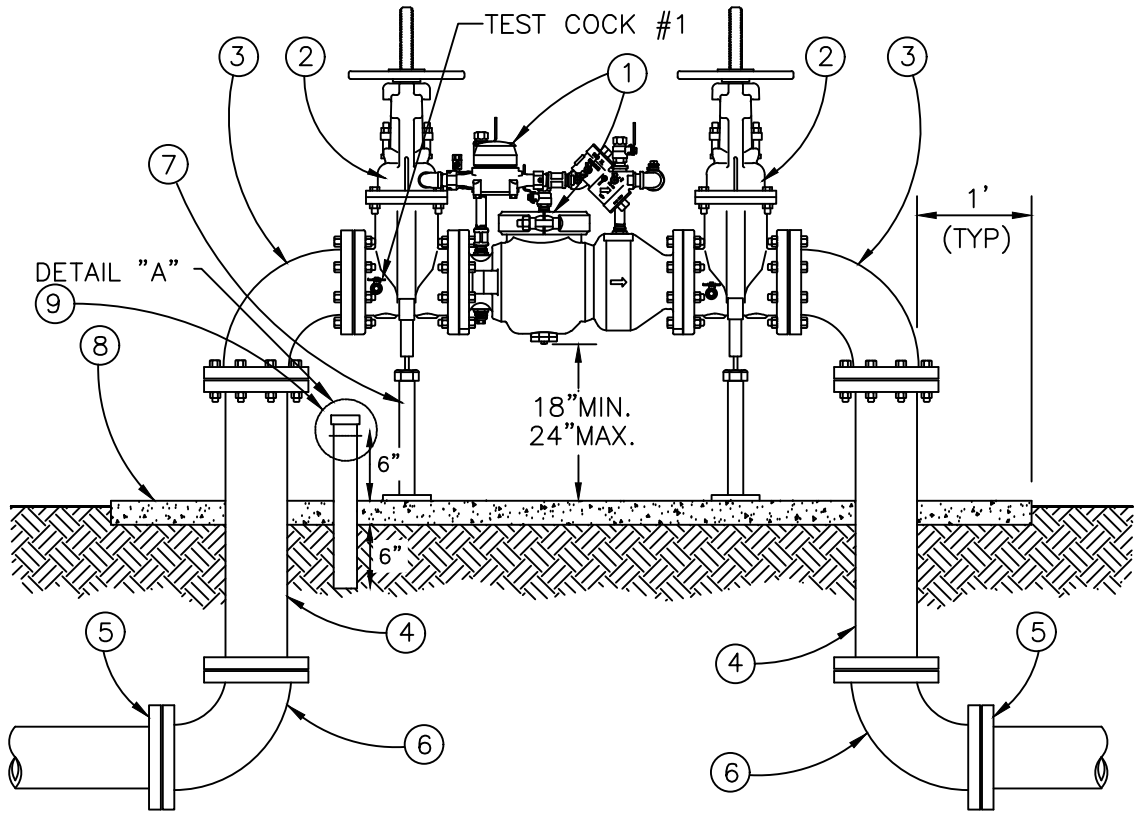
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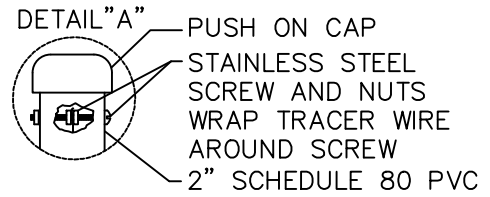
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**DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) TO BE USED ON FIRE SYSTEMS ONLY WITH NO TANKS, ADDITIVES OR ANOTHER WATER SOURCE**

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	DCDA BACKFLOW PREVENTION ASSEMBLY WITH METER
2	2	GATE VALVE (OS & Y)
3	2	90 DEGREE ELBOW, DIP-FLANGE TO FLANGE
4	2	RISERS, DIP-C51 FLANGE TO FLANGE
5	4	MEGALUG RETAINER GLANDS
6	2	90 DEGREE ELBOW, DIP - FLANGE TO MJ
7	2	ADJUSTABLE PIPE SUPPORTS
8	*	4" CONCRETE SLAB
9	1	PIPE TRACER WIRE ASSEMBLY (SEE DETAIL A)



**NOTES:**

1. ORDER TO FIT ITEM #4 TO PROPER LENGTH.
2. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED INCLUDING THE RISERS.
3. ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
4. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
8. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
9. ALL PIPING AND VALVES SHALL BE PAINTED FIRE SAFETY RED.

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LOW HAZARD DOUBLE DETECTOR CHECK BACKFLOW ASSEMBLY 3" TO 10" WATER SERVICE FOR FIRE SYSTEMS

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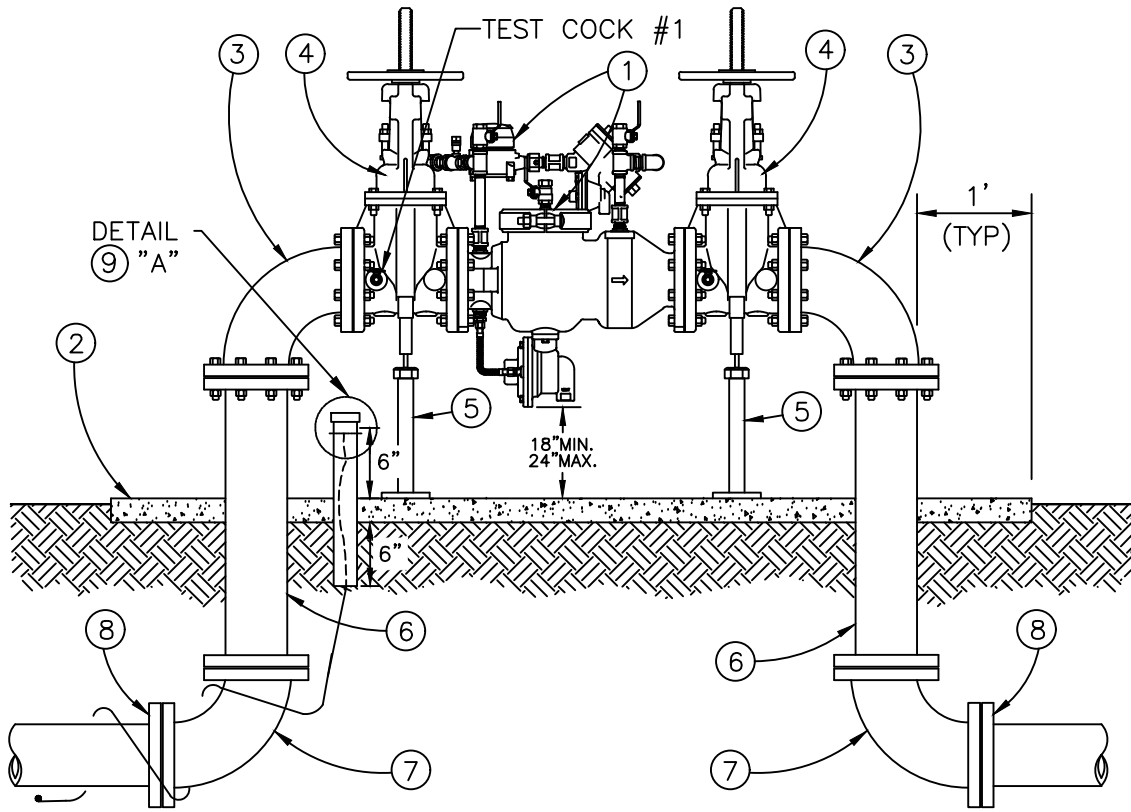
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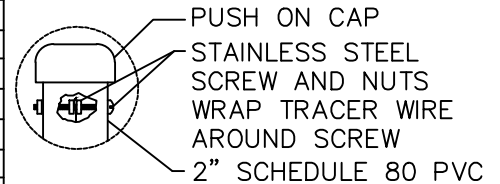


**REDUCE PRESSURE DETECTOR ASSEMBLY (RPDA) TO BE USED ON FIRE SYSTEMS ONLY WITH TANKS, ADDITIVES OR CONNECTIONS TO ANOTHER WATER SOURCE.**

**MATERIALS**

ITEM	QTY.	DESCRIPTION
1	1	RPDA BACKFLOW PREVENTION ASSEMBLY WITH METER
2	2	4" CONCRETE SLAB
3	2	90 DEGREE ELBOW, DIP-FLANGE TO FLANGE
4	2	(GATE VALVE, C.I. ( OS&Y )
5	2	ADJUSTABLE PIPE SUPPORTS
6	2	RISERS, DIP-C51 FLANGE TO FLANGE
7	2	90 DEGREE ELBOW, DIP - FLANGE TO MJ
8	2	MEGALUG RETAINER GLANDS
9	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"

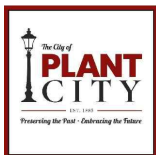
**DETAIL "A"**



**NOTES:**

- ORDER TO FIT #6 TO THE PROPER LENGTH.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
- ALL FITTINGS ABOVE GROUND INCLUDING RISER TO BE FLANGED.
- PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY RED.
- SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

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**HIGH HAZARD BACKFLOW ASSEMBLY 3" TO 10" WATER SERVICE FOR FIRE SYSTEMS**

ORIGINAL DRAWING 10/03/2017

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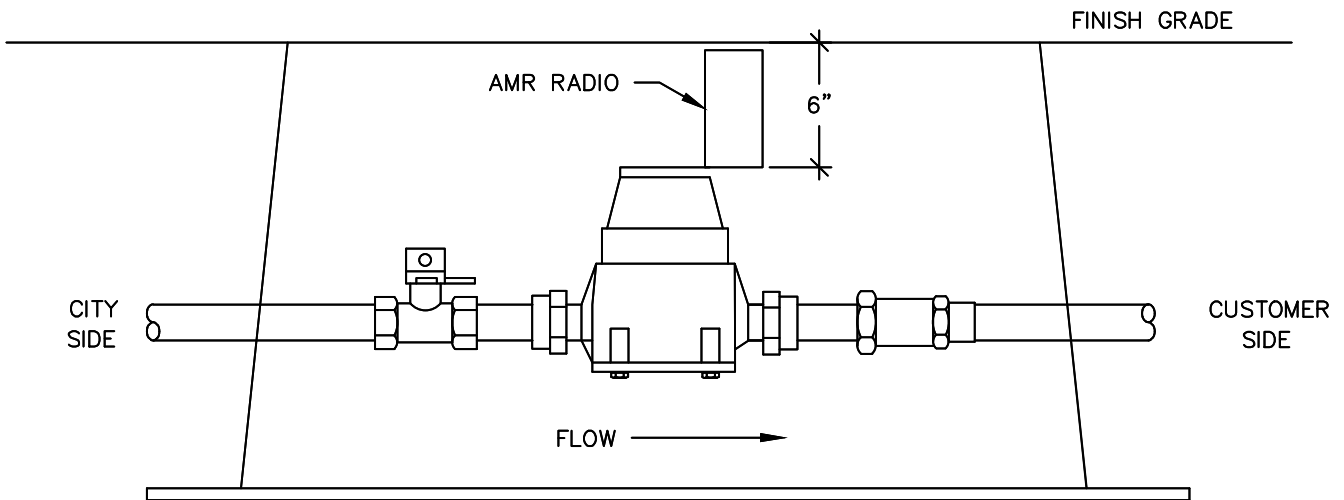
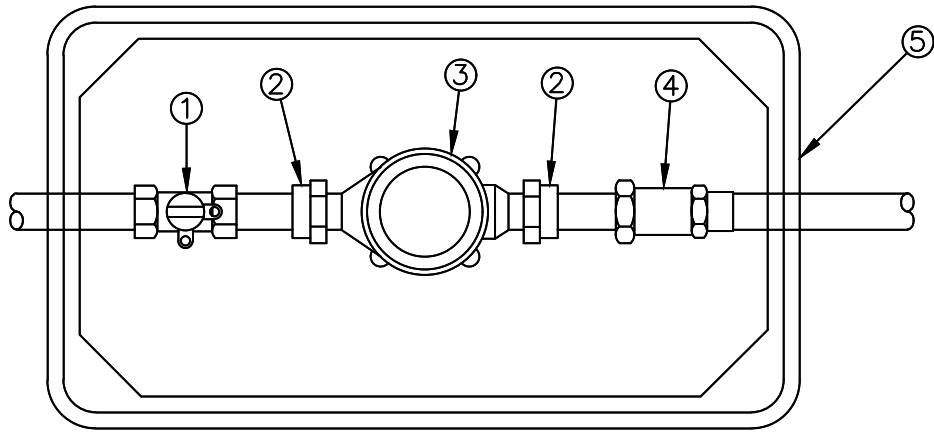
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MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	3/4" CURB STOP
2	2	3/4" X 2" METER CONNECTIONS
3	1	5/8" BADGER AMR WATER METER
4	1	3/4" WILKINS DUAL CHECK VALVE MODEL 700XL
5	1	13"W X 24"L X 15"H PLASTIC METER BOX W/COVER

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POTABLE WATER METER INSTALLATION WITH DUAL CHECK VALVE FOR RESIDENTIAL CUSTOMER WITH RECLAIMED WATER

ORIGINAL DRAWING 10/03/2017

BY:BJG

SCALE: NTS

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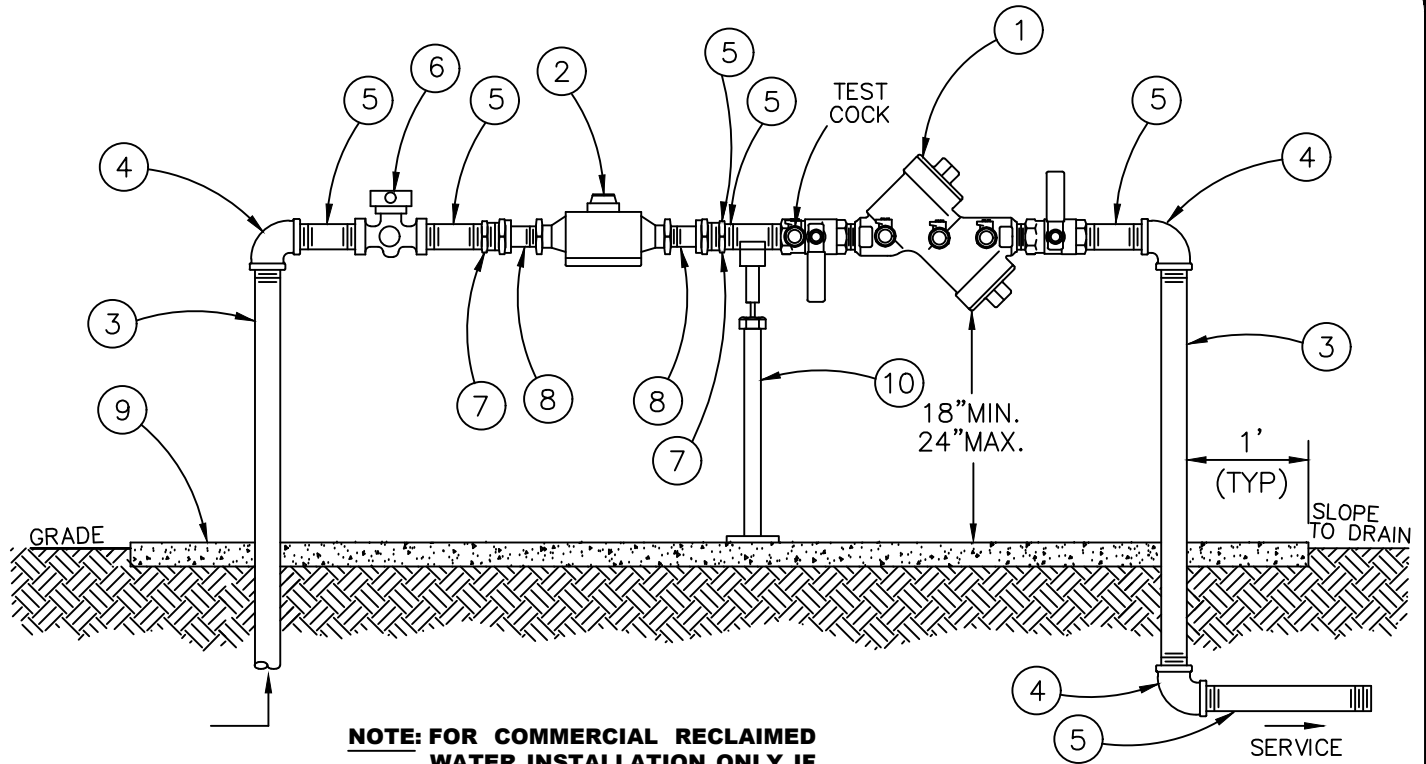
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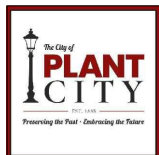
**NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE ADDED TO THE CUSTOMER'S SYSTEM.**

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY
2	1	BADGER AMR RECLAIMED WATER METER
3	2	RISERS - GALVANIZED OR BRASS
4	3	ELBOWS - GALVANIZED OR BRASS
5	5	4" NIPPLES - BRASS OR GALVANIZED
6	1	CURBSTOP WITH WING LOCK
7	2	BRASS SPUD ADAPTORS
8	2	BRASS SPUDS - (METER CONNECTIONS)
9	-	CONCRETE SLAB 4"
10	1	ADJUSTABLE PIPE SUPPORT

**NOTES:**

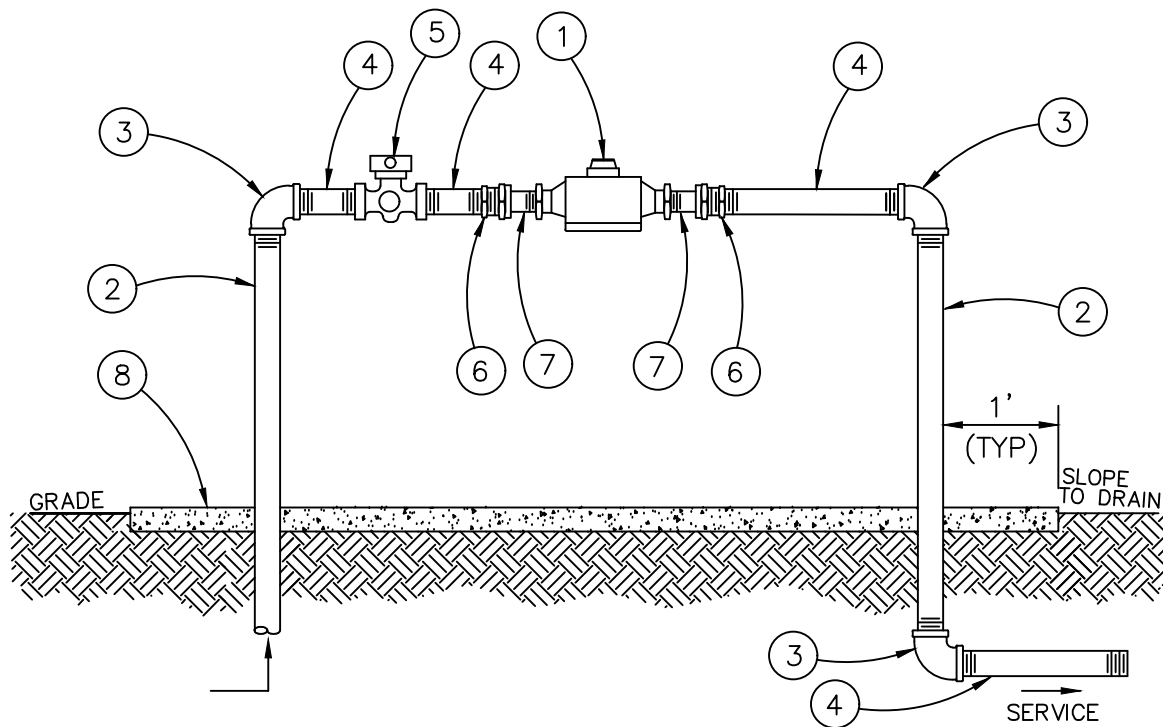
1. FIELD ADJUST AND CUT ITEM #3 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
4. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.

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**ABOVE GROUND RECLAIMED WATER METER INSTALLATION  
SINGLE SERVICE WITH DOUBLE CHECK BACKFLOW ASSEMBLY  
1-1/2" TO 2"**

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
REVISION DATE			RS-2
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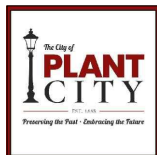
**NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE NOT ADDED TO THE CUSTOMER'S SYSTEM.**

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BADGER AMR RECLAIMED WATER METER
2	2	RISERS - GALVANIZED OR BRASS
3	3	ELBOWS - GALVANIZED OR BRASS
4	4	4" NIPPLES - BRASS OR GALVANIZED
5	1	CURBSTOP WITH WING LOCK
6	2	BRASS SPUD ADAPTORS
7	2	BRASS SPUDS - (METER CONNECTIONS)
8	-	CONCRETE SLAB 4"

**NOTES:**

1. FIELD ADJUST AND CUT ITEM #2 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. PIPE AND FITTINGS TO BE PAINTED PANTONE PURPLE.
4. BACKFLOW ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.

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ABOVE GROUND RECLAIMED WATER METER  
 INSTALLATION SINGLE SERVICE  
 1-1/2" TO 2"

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SCALE: NTS

RS-3

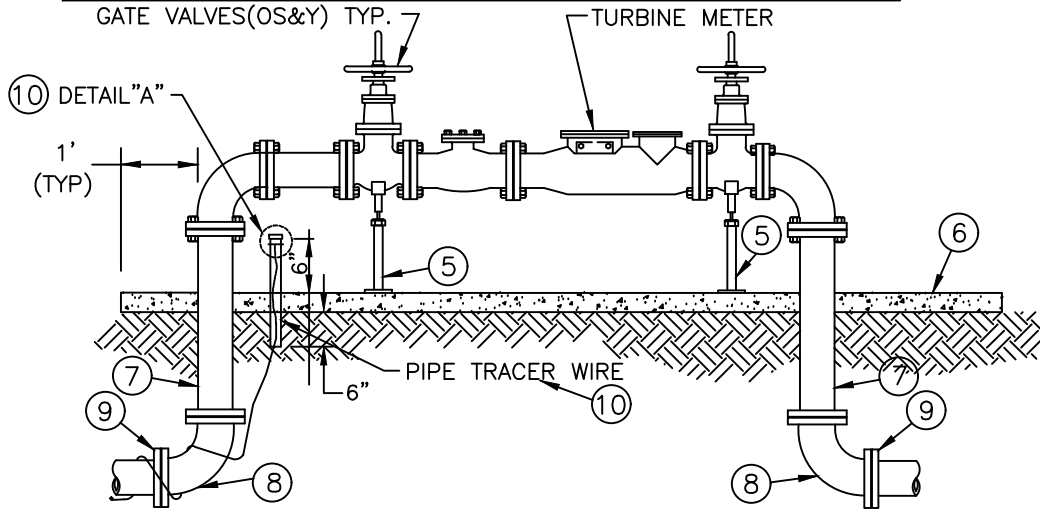
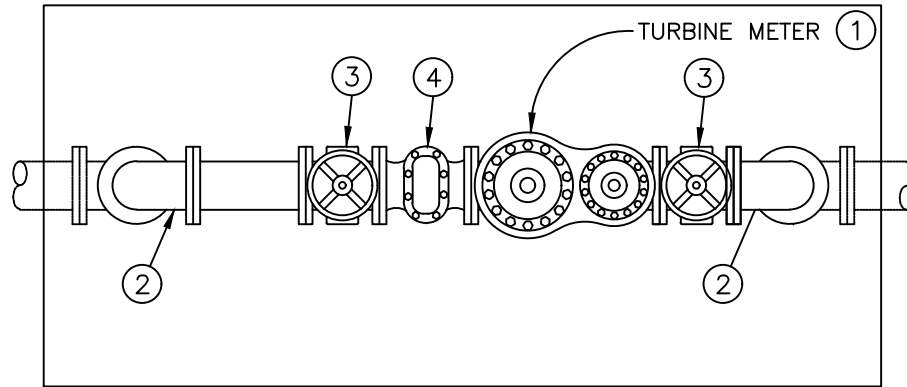
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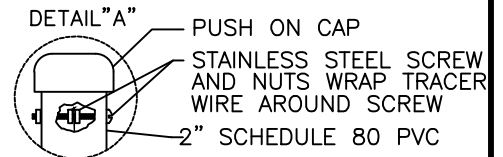
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**NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE NOT ADDED TO THE CUSTOMER'S SYSTEM.**

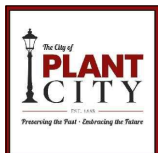
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	AMI TURBINE RECLAIMED WATER METER
2	2	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
3	2	GATE VALVE C.I. ( OS&Y )
4	1	STRAINER - FLANGE TO FLANGE
5	2	ADJUSTABLE PIPE SUPPORTS
6	*	4" CONCRETE SLAB
7	2	RISERS - D.I.P. - FLANGE TO FLANGE ORDER TO FIT
8	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
9	2	MEGALUG RETAINER GLANDS
10	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



**NOTES:**

1. ORDER TO FIT ITEM #7 TO PROPER LENGTH.
2. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED.
3. ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
4. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION IN ALL DIRECTIONS.
5. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
6. PIPE AND FITTINGS TO BE PAINTED: PANTONE PURPLE

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AMI TURBINE RECLAIMED WATER METER  
INSTALLATION SINGLE SERVICE  
3" TO 10" RECLAIMED WATER SERVICE

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ORIGINAL DRAWING 10/03/2017

SCALE: NTS

RS-4

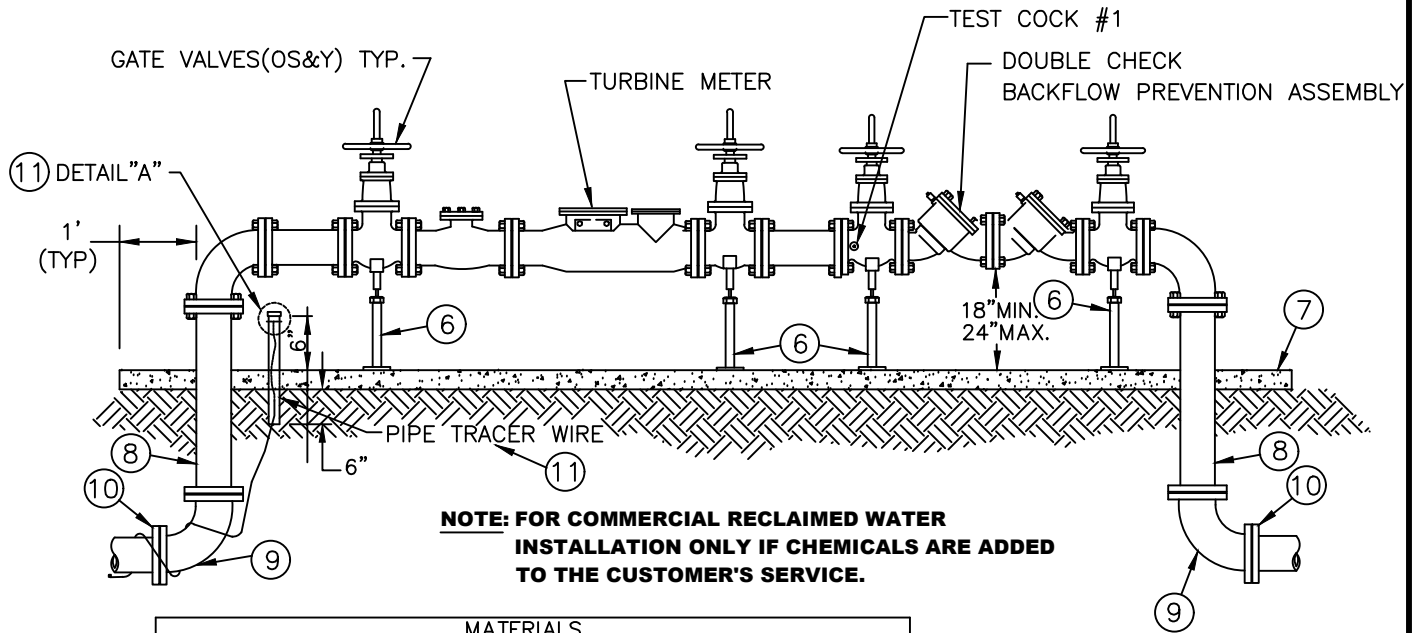
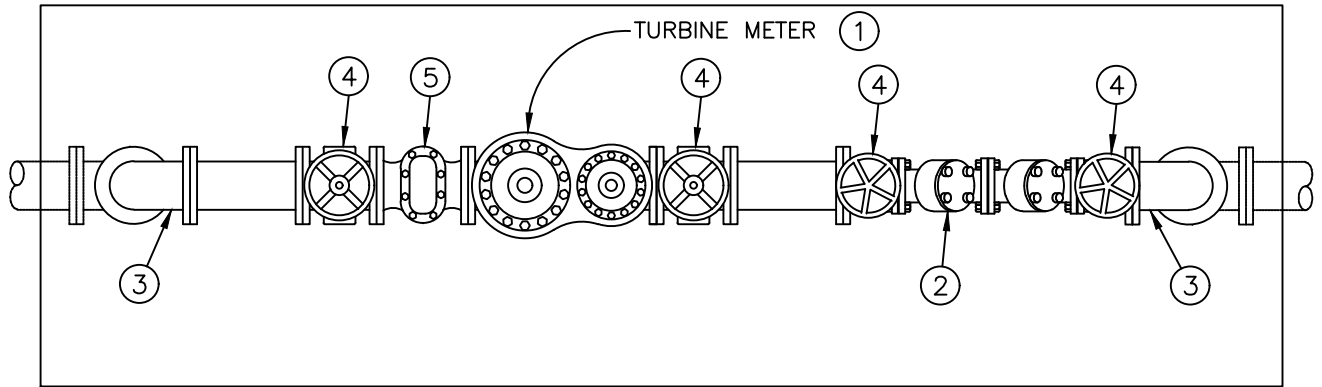
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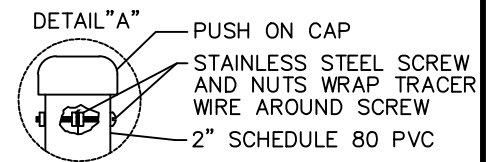
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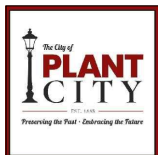
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	AMR TURBINE RECLAIMED WATER METER
2	1	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY
3	2	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
4	4	GATE VALVE C.I. ( OS&Y )
5	1	STRAINER - FLANGE TO FLANGE
6	4	ADJUSTABLE PIPE SUPPORTS
7	*	4" CONCRETE SLAB
8	2	RISERS - D.I.P. - FLANGE TO FLANGE ORDER TO FIT
9	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
10	2	MEGALUG RETAINER GLANDS
11	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



**NOTES:**

1. ORDER TO FIT ITEM #8 TO PROPER LENGTH.
2. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED.
3. ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
4. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
7. PIPE AND FITTINGS TO BE PAINTED: PANTONE PURPLE.

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 Phone: (813) 757-9288



AMI TURBINE RECLAIMED WATER METER INSTALLATION  
 SINGLE SERVICE WITH DOUBLE CHECK BACKFLOW PREVENTION  
 ASSEMBLY 3" TO 10" RECLAIMED WATER SERVICE

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

DRAWING NO.

RS-5

REVISION DATE

PAGE NO.

REVISION DATE

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REVISION DATE