



**MANUAL OF STANDARDS SPECIFICATIONS AND DETAILS  
REVISION 3, DATED MAY 19, 2016**

**ADDENDUM NO. 1  
OCTOBER 18, 2018**

The following modifications, additions, deletions and clarifications to the current edition of the ONWASA Manual of Standards, Specifications and Details (MSSD) shall be incorporated into, and become part of, the MSSD.

These revisions reflect recent changes in State of North Carolina statutes, technical clarifications and the adoption of revisions to Article VI of the ONWASA Utility Ordinance by its Board of Directors in March 2018.

**SECTION VII - STANDARD DETAILS**

1. Delete existing Detail WS\_PRV dated May, 2016 and replace it with the attached Detail WS\_PRV dated July, 2018.
2. Delete existing Detail WS\_PRVI dated May, 2016 and replace it with the attached Detail WS\_PRVI dated July, 2018.
3. Delete existing Detail WS\_DCVA dated May, 2016.
4. Insert the attached new Detail WS\_RPSS dated July, 2018.
5. Delete existing Detail WS\_DFSL dated May, 2016 and replace it with the attached Detail WS\_DFSL dated July, 2018.
6. Delete existing Detail WS\_BKF dated May, 2016 and replace it with the attached Detail WS\_BKF dated July, 2018.
7. Delete existing Detail WS\_FHM3/4 dated May, 2016 and replace it with the attached Detail WS\_FHM3/4 dated August, 2018.
8. Delete existing Detail WS\_FHM3 dated May, 2016 and replace it with the attached Detail WS\_FHM3 dated August, 2018.

**END OF ADDENDUM NO. 1**

Approved by the ONWASA Board of Directors on **OCTOBER 18, 2018** \_\_\_\_\_.

Prepared by: David M. Mohr, P.E.  
Engineering Director

## REQUIREMENTS FOR INSTALLATION OF REDUCED PRESSURE PRINCIPAL (RP) AND DOUBLE CHECK VALVE (DCVA) ASSEMBLIES

1. Installation of backflow prevention assemblies shall be performed by a North Carolina Licensed Plumber.
2. The backflow prevention assembly must be installed on the Consumer's property beyond the point of delivery (the Authority water meter) in a location that is not subject to excessive storm water run-off or ponding and maintains adequate clearance around the assembly for testing, maintenance and/or repair.
3. The installation of wyes, tees or bypasses between the Authority water meter and the assembly is strictly prohibited, unless installed as part of an irrigation system meeting the requirements of N.C.G.S. 143-355.4
4. Placement of backflow prevention assemblies within NCDOT Right-of-Way will not be accepted.
5. Landscaping is permitted around an assembly provided it does not prevent physical access to the assembly for testing, maintenance and/or repair.
6. All reduced pressure principle assemblies (RP) must be installed in a horizontal position. Double check valve assemblies (DCVA) may be installed in a vertical position provided the flow of water is in an upward direction or the assembly has been USC approved for vertical installation.
7. All backflow prevention assemblies must be installed above ground and set a minimum of 12" from the valve vent to finished grade (RP type) or 12" from the bottom of the valve to finished grade (DCVA type), and no higher than 30" above finished grade.
8. Installation of backflow prevention assemblies within a structure is permitted, however they must be set a minimum of 12" from the valve vent to the finished floor (RP type) or 12" from the bottom of the valve to the finished floor (DCVA type), and no higher than 30" above the finished floor. For an RP installation, an air gap drain must be installed per the North Carolina Plumbing Code requirements.
9. Backflow prevention assemblies 2-1/2" or larger must be supported to allow for the weight of the backflow prevention assembly. Support shall be provided by pipe stands (no blocks or bricks) and must rest on a footing. Supports shall be spaced so they do not cause interference with the testing and/or repair of the assemblies.
10. Outdoor installations must include a protective enclosure that meets or exceeds North Carolina Plumbing Code standards and have an ASSE 1060 approval plate. Enclosures shall have a hinged door or drain ports and be capable of being mounted securely to the ground. If an enclosure is not removable it must have doors large enough to access the assembly for testing, maintenance and/or repair. Additional methods of weatherization (insulation blankets and/or heat tape) to prevent freeze damage are strongly recommended.
11. All piping must be of ductile iron, PVC, copper or brass.
12. ALL BACKFLOW PREVENTION ASSEMBLY INSTALLATIONS MUST BE INSPECTED AND APPROVED BY THE AUTHORITY PRIOR TO INITIAL CONNECTION TO THE PUBLIC POTABLE WATER SYSTEM.

Note: Appendices within these regulations are subject to change periodically or as required by the State of North Carolina.

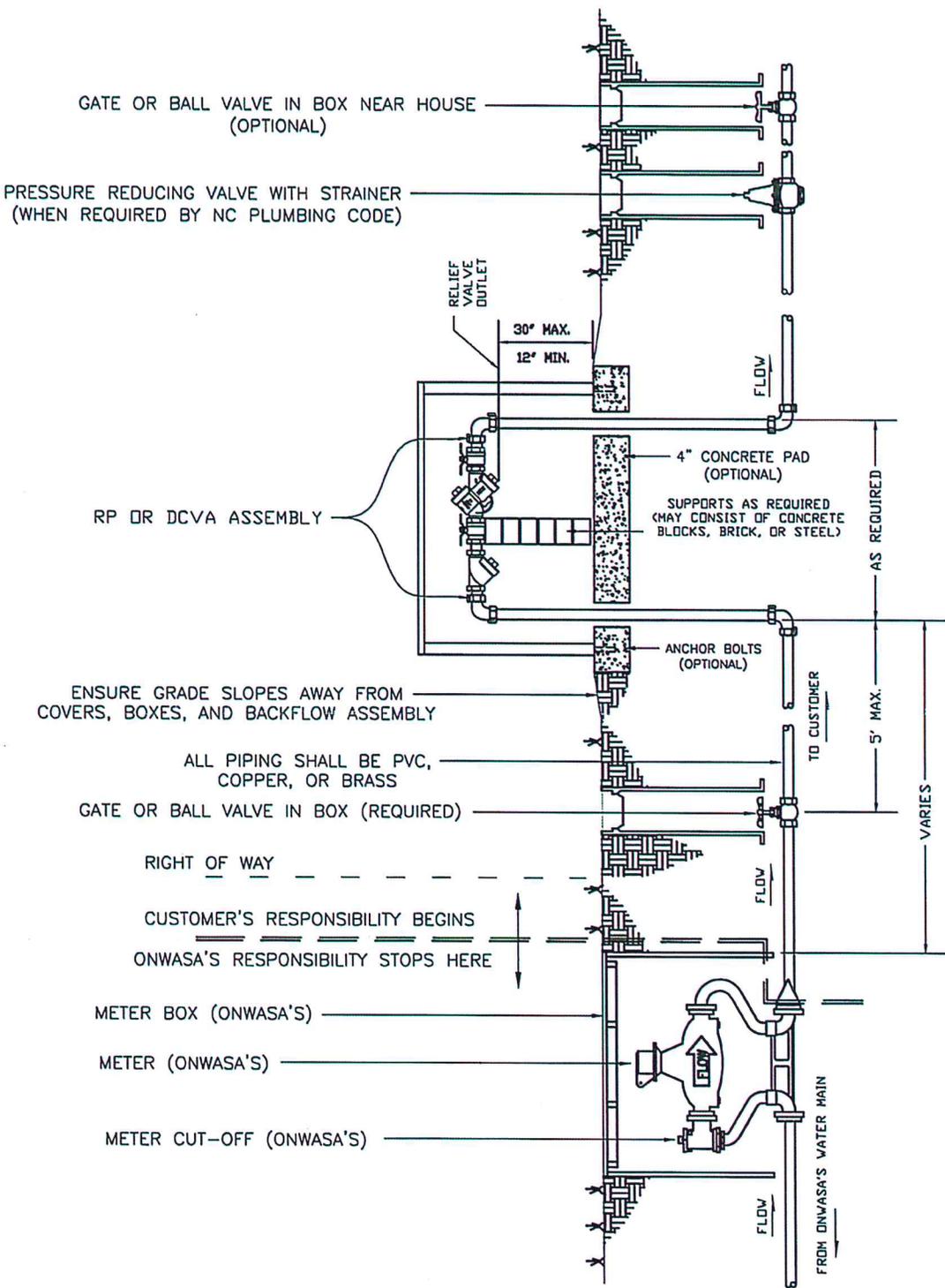


### Onslow Water & Sewer Authority

USE WITH "ONWASA MANUAL OF SPECIFICATIONS, STANDARDS and DETAILS, latest revision"

## Installation Requirements for RP / DCVA / PRV Assembly

SCALE: Not To Scale	DETAIL # WS_PRIV
REVISION DATE: July, 2018	SHEET #: 1 of 1



NOTES:  
 1. THE INSTALLER HAS THE OPTION TO INSTALL THE GATE OR BALL VALVES AND THE PRESSURE REDUCING VALVE INSIDE OF THE ENCLOSURE, HOWEVER TO PREVENT THE OBSTRUCTION DURING THE TESTING OR REPAIR OF THE ASSEMBLY IT IS RECOMMENDED THAT THE GATE OR BALL VALVES AND THE PRESSURE REDUCING VALVE BE INSTALLED OUTSIDE THE ENCLOSURE.

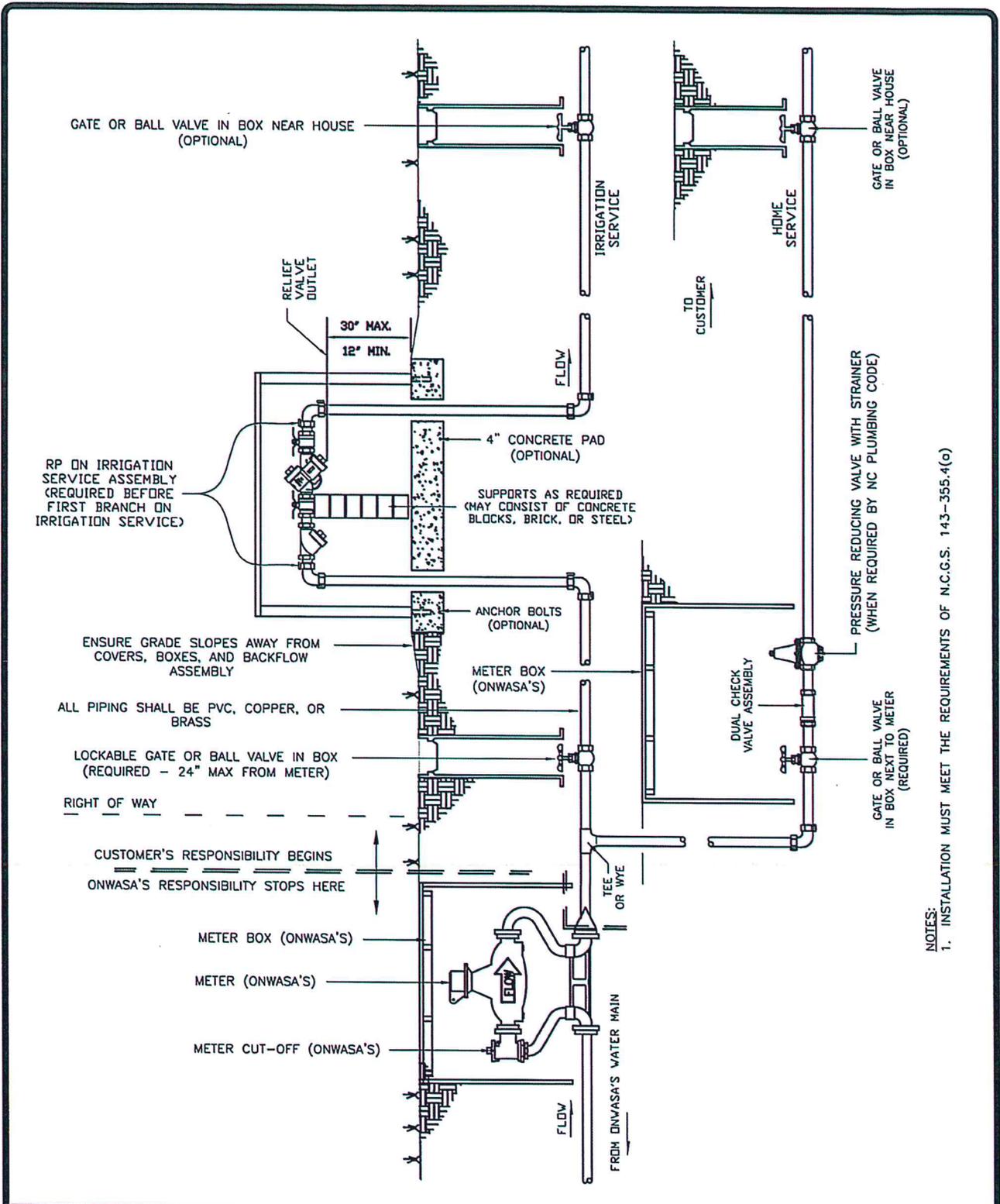


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### 3/4" - 2" Meter RP/DCVA with PRV Assembly

SCALE: Not To Scale	DETAIL # WS_PRVI
REVISION DATE: July, 2018	SHEET #: 1 of 1



GATE OR BALL VALVE IN BOX NEAR HOUSE (OPTIONAL)

RELIEF VALVE OUTLET  
30" MAX.  
12" MIN.

IRRIGATION SERVICE

HOME SERVICE

GATE OR BALL VALVE IN BOX NEAR HOUSE (OPTIONAL)

RP ON IRRIGATION SERVICE ASSEMBLY (REQUIRED BEFORE FIRST BRANCH ON IRRIGATION SERVICE)

4" CONCRETE PAD (OPTIONAL)

SUPPORTS AS REQUIRED (MAY CONSIST OF CONCRETE BLOCKS, BRICK, OR STEEL)

ANCHOR BOLTS (OPTIONAL)

METER BOX (ONWASA'S)

ENSURE GRADE SLOPES AWAY FROM COVERS, BOXES, AND BACKFLOW ASSEMBLY

ALL PIPING SHALL BE PVC, COPPER, OR BRASS

LOCKABLE GATE OR BALL VALVE IN BOX (REQUIRED - 24" MAX FROM METER)

RIGHT OF WAY

CUSTOMER'S RESPONSIBILITY BEGINS  
ONWASA'S RESPONSIBILITY STOPS HERE

METER BOX (ONWASA'S)

METER (ONWASA'S)

METER CUT-OFF (ONWASA'S)

FROM ONWASA'S WATER MAIN

PRESSURE REDUCING VALVE WITH STRAINER (WHEN REQUIRED BY NC PLUMBING CODE)

DUAL CHECK VALVE ASSEMBLY

GATE OR BALL VALVE IN BOX NEXT TO METER (REQUIRED)

NOTES:  
1. INSTALLATION MUST MEET THE REQUIREMENTS OF N.C.G.S. 143-355.4(a)

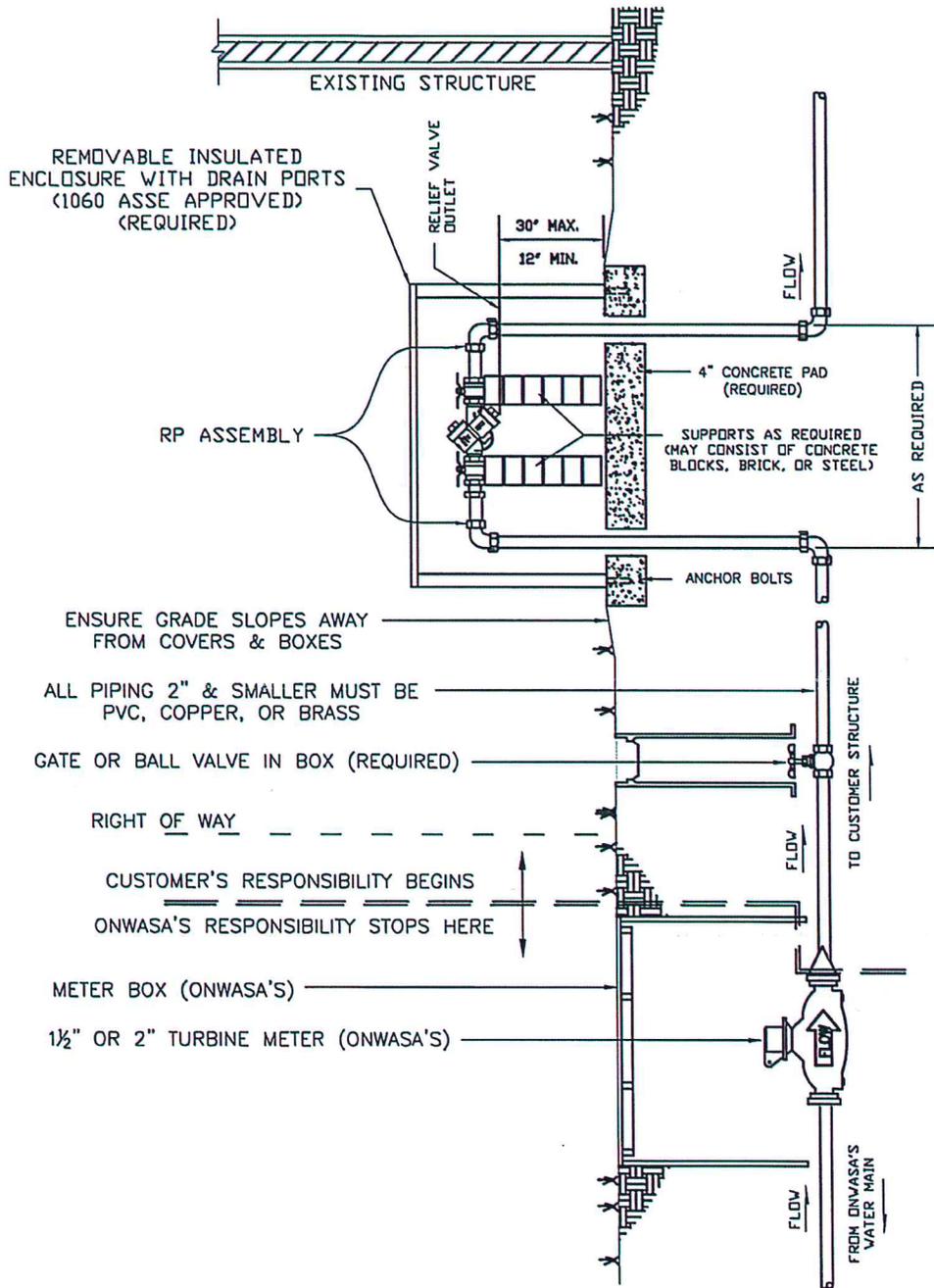


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## RP w/Split Irrigation Service

SCALE: Not To Scale	DETAIL # WS_RPSS
REVISION DATE: August, 2018	SHEET #: 1 of 1



NOTE: ALL BACKFLOW PREVENTERS FOR FIRE PROTECTION SHOULD ALSO MEET THE REQUIREMENTS OF APPLICABLE BUILDING AND FIRE CODES.

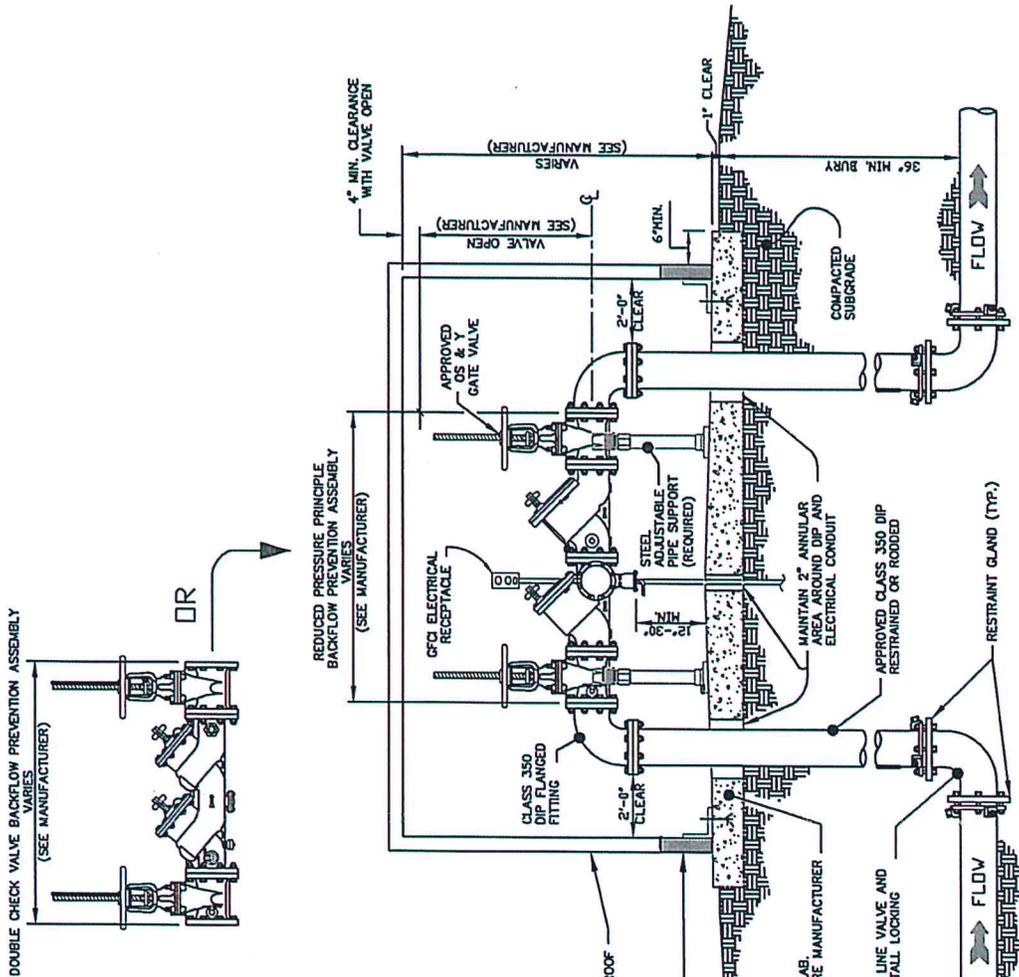


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## 1½" TO 2" FIRE SERVICE LINE

SCALE: Not To Scale	DETAIL # WS_DFSL
REVISION DATE: July, 2018	SHEET #: 1 of 1



- NOTES:**
1. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511.
  2. REDUCED PRESSURE DETECTOR BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1014 & AWWA C510.
  3. DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1015 & AWWA C510.
  4. DOUBLE CHECK DETECTOR BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1048.
  5. BACKFLOW ASSEMBLY SHALL BE CENTERED ON CONCRETE PAD AND CENTERED WITHIN ENCLOSURE.
  6. CLASS 350 DIP SHALL BE INSULATED WEATHERPROOF STANDARD 120V GFCI ELECTRICAL RECEPTACLE TO BE INSTALLED IN ACCORDANCE WITH THE N.C. ELECTRICAL CODE FOR OUTDOOR OPERATION.
  7. PIPE MATERIAL SHALL BE CLASS 350 DIP APPROVED BY THE ONWASA.
  8. INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE LOCAL ORDINANCES AND SPECIFICATIONS IN ADDITION TO THE N.C. PLUMBING CODE & ONWASA BFCO REGULATIONS & APPROVAL.
  9. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF BACKFLOW ASSEMBLY AND COMPLIANCE WITH REPORTING AND TESTING REQUIREMENTS.

CLASS 1, ASSE 1060 HEATED & INSULATED WEATHERPROOF ENCLOSURE ANCHORED TO CONCRETE PAD (REQUIRED)

IF RPZ, PROVIDE DRAIN PORT FOR POSITIVE DRAINAGE OUT OF ENCLOSURE (MINIMUM TWICE THE SIZE OF RPZ)

6" 3000 PSI CONCRETE SLAB, DIMENSIONS PER ENCLOSURE MANUFACTURER SPECIFICATION

DIP, MJ FITTING (ROO BACK TO MAIN LINE VALVE AND PROVIDE REACTION BLOCKING OR INSTALL LOCKING RETAINER GLAND) OR APPROVED EQUAL

APPROVED CLASS 350 DIP, OR C900 PVC RESTRAINED OR RODDED TO MAIN LINE VALVE



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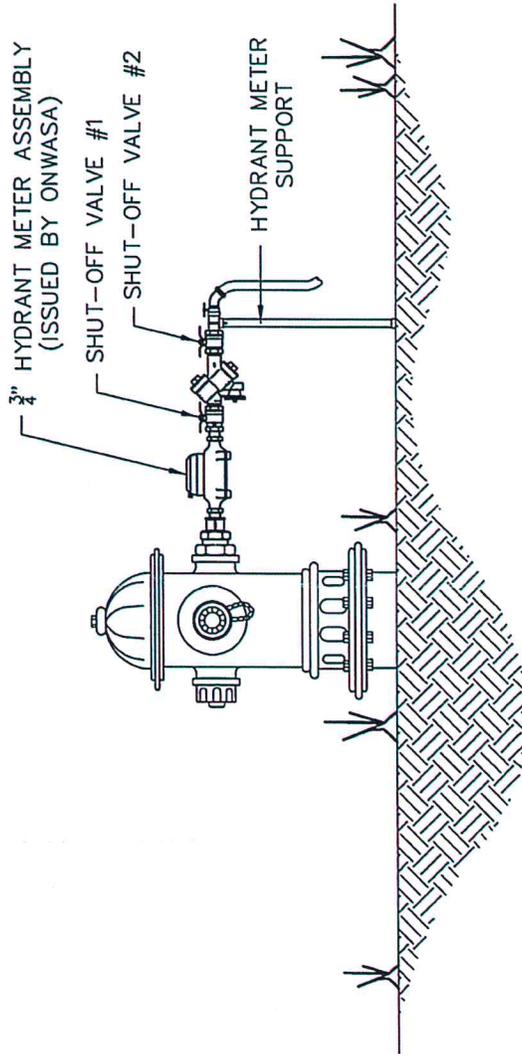
## STANDARD COMMERCIAL OUTDOOR BACKFLOW ASSEMBLY (2 1/2" DIAMETER & LARGER)

SCALE:  
Not To Scale

REVISION DATE:  
July, 2018

DETAIL #  
WS\_BKF

SHEET #:  
1 of 1



- NOTES:
1. HYDRANT METER MUST BE SUPPORTED AT ALL TIMES WHILE IN USE. ACCEPTABLE FORMS OF SUPPORT INCLUDE (BUT ARE NOT LIMITED TO) BRICKS, CONCRETE BLOCKS, AND METER BOXES. OTHER FORMS OF SUPPORT SHALL BE APPROVED BY ONWASA.
  2. IN ACCORDANCE WITH ONWASA'S STANDARD FEE SCHEDULE, ANY DAMAGE DONE TO AN ONWASA ISSUED FIRE HYDRANT METER, AND/OR BACKFLOW ASSEMBLY, WILL RESULT IN A \$100.00 HYDRANT METER TESTING FEE. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR THE COST OF REPLACEMENT PARTS.
  3. WHEN FLOWING, HYDRANT SHALL BE OPENED FULLY AND THROTTLING SHALL BE DONE USING THE NUMBER 2 SHUT OFF VALVE.

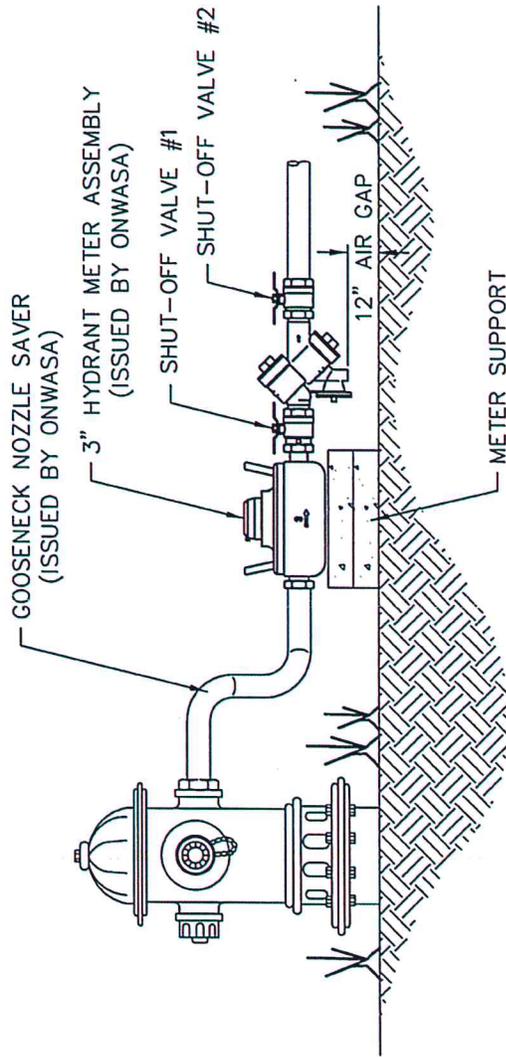


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### 3/4" Fire Hydrant Meter Installation

SCALE: Not To Scale	DETAIL # WS_FHM3/4
REVISION DATE: August, 2018	SHEET #: 1 of 1



**NOTES:**

1. HYDRANT METER MUST BE SUPPORTED AT ALL TIMES WHILE IN USE. ACCEPTABLE FORMS OF SUPPORT INCLUDE (BUT ARE NOT LIMITED TO) BRICKS, CONCRETE BLOCKS, AND METER BOXES. OTHER FORMS OF SUPPORT SHALL BE APPROVED BY ONWASA.
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3. WHEN FLOWING, HYDRANT SHALL BE OPENED FULLY AND THROTTLING SHALL BE DONE USING THE NUMBER 2 SHUT OFF VALVE.



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### 3" Fire Hydrant Meter Installation

SCALE: Not To Scale	DETAIL # WS_FHM3
REVISION DATE: August, 2018	SHEET #: 1 of 1